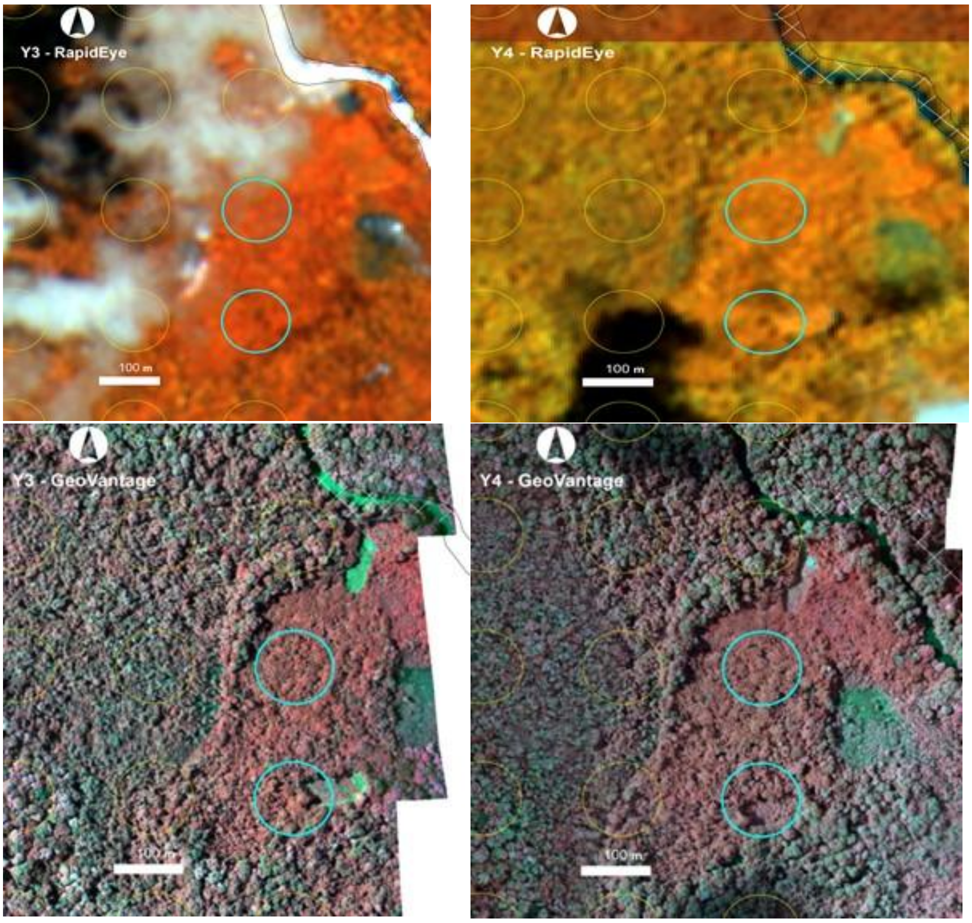
Guyana Forestry Commission

Guyana REDD+ Monitoring Reporting & Verification System (MRVS)

Year 4 Interim Measures Report

1 January 2013 – 31 December 2013



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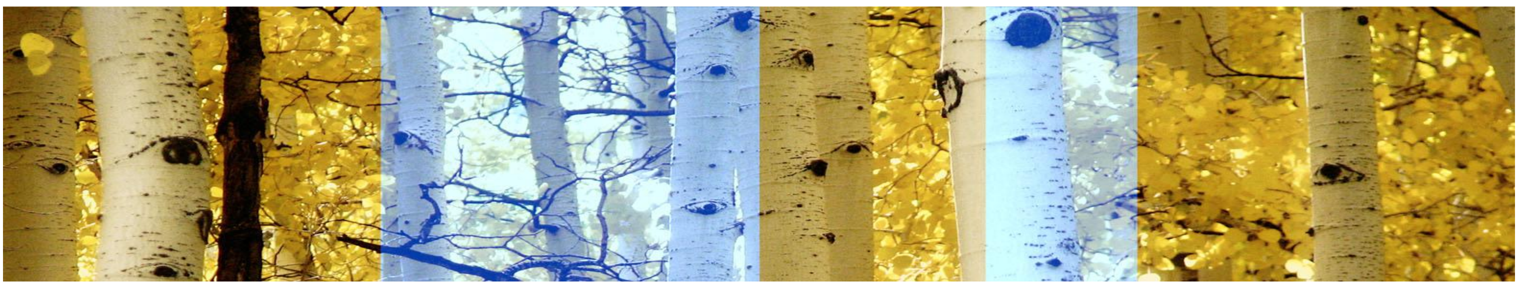

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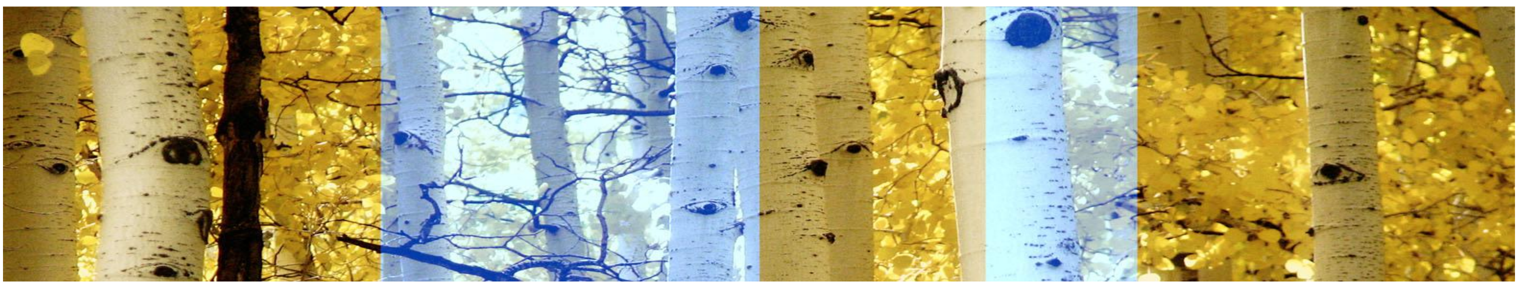

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PREFACE

The Joint Concept Note (JCN) between the Government of Guyana and the Government of the Kingdom of Norway identifies the stepwise and progressive development of the Guyana Monitoring Reporting and Verification System (MRVS) as an "Indicator of Enabling Activity" as outlined in the JCN, Section 2. The JCN also outlines the mechanism for financial payments for forest carbon based services to Guyana. These payments are results-based with deforestation and forest degradation measured against an agreed level.

In 2009 Guyana developed a national framework for a national MRVS. This framework was developed as a "Roadmap[1]" that outlines progressive steps over a 3 year period that would build towards a full MRVS being implemented. The aim of the MRVS is to establish a comprehensive, national system to monitor, report and verify forest carbon emissions resulting from deforestation and forest degradation in Guyana. The first year was 2010 which required a number of initial reporting activities to commence. These were designed to assist in shaping the next steps planned for the following years.

The initial steps allowed for a historical assessment of forest cover to be completed, key database integration to be fulfilled and for interim/intermediate indicators of emissions from deforestation and forest degradation to be reported for subsequent periods. To date, four national annual assessments have been conducted, including the one outlined in this Report. The first assessment period covered 01 October 2009 to 30 September 2010 (Year 1) and the second (Year 2) covered the period 01 October 2010 to 31 December 2011. The third assessment covered the calendar year of 2012 and this fourth assessment covers the calendar year of 2013.

The agreement between Guyana and Norway launched one of the first national-scale REDD+ initiatives in the world. It is important that the development and implementation of the MRVS is seen as a continuous learning process that is progressively improved. This is particularly relevant as the MRVS matures and the trends and drivers of forest change are better understood. This process also assists to inform other countries seeking to take this same path.

In tandem with the work summarised in this report, an accompanying and closely connected programme of work is being implemented by Guyana Forestry Commission (GFC), with the assistance of a specialist firm (Winrock International) to develop a national forest carbon measurement system and related emission factors.

This programme will establish national carbon conversion values, expansion factors, wood density and root/shoot ratios as necessary. Additionally, a detailed assessment of key processes affecting forest carbon, including a summary of key results and capacities as well as a long-term monitoring plan for forest carbon, will be further developed.

This aspect of the MRVS work, in tandem with continued work as summarized in this report, will enable a range of areas, including forest degradation to be comprehensively monitored, reported and verified at the national scale. In accordance with the MRVS Road Map both aspects of work started in Year 2.

As the MRVS is being developed, the reporting in this period, as was the case in previous years will be based on several agreed REDD+ Interim Indicators. The Report therefore aims to fulfill the requirements of a number of "Interim Indicators for REDD+ Performance in Guyana" for the period 01 January 2013 to 31 December 2013, as identified by the JCN Table 2 These intermediate indicators allow for reporting to take place in the interim, while the full MRVS is under development.

This Report describes the satellite imagery and GIS datasets, and processing of these data. It also provides a summary of the 'Interim Measures' that report on Guyana's progress towards implementation of its Low Carbon Development Strategy (LCDS).

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[1] http://www.forestry.gov.gy/Downloads/Guyana_MRV_workshop_report_Nov09.pdf

The methods and results of the assessment for the period 01 January 2013 to 31 December 2013 will be subject to independent third party verification. This is a requirement under the JCN to enable the results-based financial support for 2014. The fourth verification will take place in 2015, and will be conducted annually for the duration of the Guyana / Norway Partnership.

Version 1 of the Report was released for a 1 month period (1st December, 2014 – 1st January, 2015) for feedback. Following the period of public review, this revised version, Version 2, of the Report has been completed. This Version integrates stakeholder feedback and responses. This Version is subject to independent third party verification by Det Norske Veritas (DNV), an independent verification firm contracted by the Government of Norway. This final version (Version 3) of the Report, will be made public via the GFC website, and has integrated findings and recommendations from the independent verification exercise.

This Report is issued jointly by Indufor and the Guyana Forestry Commission (GFC).

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SUMMARY

In December 2012, a revised Joint Concept Note (JCN) under the Guyana/Norway Agreement was issued, and replaced the JCN of 2011. The revised JCN provides an update on progress in key areas of work including the MRVS. REDD+ Interim Indicators and reporting requirements, as had been outlined in the 2009 JCN, were maintained. The intention is that these interim measures will be phased out as the Monitoring Reporting and Verification System (MRVS) is established[2].

The basis for comparison of the area-based interim measures is the 30 September 2009 Benchmark Map[3]. The first reporting period (termed Year 1) is set from 01 October 2009 to 30 September 2010 with the second reporting period (Year 2) covering 01 October 2010 to 31 December 2011, a fifteen (15) month period. The Year 3 and Year 4 reports both cover the 2013 and 2014 calendar years, respectively.

For the Benchmark and Year 1 analyses, medium resolution satellite images were used to calculate the forest area, in accordance with Guyana's national definition of forest for REDD+, as at 1990.

The total forested area at this point was estimated as 18.39 million hectares (ha) (with an indicative accuracy of 97.1%). In 2012 as planned, Guyana's forest area was re-evaluated using RapidEye 5m imagery. This analysis has resulted in an increase in the forested area by approximately 110 000 ha to 18.5 million ha of which 15.5 million ha is administered by the State. The revised 2012 forest area, and subsequent Year 3 loss is used as the reference point from which the rate of change is calculated.

Forest change between 1 January 2013 and 31 December 2013 was determined using high resolution 5 m imagery for the whole of Guyana. The change reported in this assessment captures only the change that took place in the 12 month period under review – Year 4. The continued wall to wall RapidEye coverage at 5m resolution has allowed the boundaries and the drivers of change to be mapped with greater certainty.

The inclusion of Landsat 8 images into the detection process has enabled the assessment of change for areas under persistent cloud. This allows for spatial tracking of forest change areas through time as outlined under Approach 3 of the IPCC Good Practice Guidelines.

Forest change of Forest to Non-forest excluding degradation between 1 January 2013 and 31 December 2013 (12 months) is estimated at 12 733 ha. Over the Year 4 reporting period, this equates to a total deforestation rate of 0.068%. This rate of change is lower than the previous Year 3 period which was reported as 0.079%. In Year 4, as in previous years an independent map accuracy assessment has been undertaken by a team from the University of Durham. The accuracy of the activity (area) data has been the focus of these assessments to date.

For the 2013 (Year 4) forest change mapping conducted by GFC with technical support from IAP, results show a correspondence (prevalence) of 99.93% between reference image interpretation and GFC mapping based on a sample of 55,119 one-hectare circular plots. This demonstrates a very high level of correspondence between the MRVS maps and results, and the reference data.

The Year 4 accuracy assessment has independently determined a deforestation rate of 0.07% with a standard error of 0.01% at the 95% confidence interval. The full results of the independent map accuracy assessment are provided in Appendix 7.

Significant progress was made in Years 3 and 4, in mapping forest degradation. The area of forest degradation as measured by interpretation of the 5 m RapidEye satellite imagery in the

[2] The Participants agree that these indicators will evolve as more scientific and methodological certainty is gathered concerning the means of verification for each indicator, in particular the capability of the MRV system at different stages of development.

[3] Originally the benchmark map was set at February 2009, but due to the lack of cloud-free data the period was extended to September 2009.

2011 assessment was 5 467 ha. This was annualised and benchmarked at 4 368 ha. Year 3 saw 1 963 ha of forest degradation which has increased to 4 352 ha in Year 4. Evidence suggests that this fluctuation is due to a consolidation of mining operations around existing infrastructure.

The accuracy of deforestation mapping as assessed independently by the University of Durham showed that the total area of change from Forest to Degraded forest was 3 856 ha with a standard error of 746 ha, 95% confidence interval.

It is envisaged that the reference measure as well as the interim performance indicators will only apply while aspects of the MRVS are being developed and will be phased out and replaced by a full forest carbon accounting system as methodologies are proven.

The main deforestation driver for the current forest year reported (Year 4) is mining which accounts for 90% of the deforestation in this period. It should be noted that the driver of mining includes mining infrastructure. The majority (86%) of the deforestation is observed in the State Forest Area. The temporal analysis of forest change post 1990 indicates that most of the change is clustered around existing road infrastructure and navigable rivers. In Year 4 the change has continued primarily near the footprint of historical change.

This information provides a useful basis for planning an on-going monitoring programme that focuses on key hotspot areas and assists in the development of policies that can mitigate potential impacts of deforestation. These include, but are not limited to, the implementation of the National Land Use Plan as well as the newly developing Strategic Plan for the natural resources sector.

The findings of this assessment will enable targets for REDD+ activities to be designed that aim to bring about the largest positive impact in maintaining forest cover while enabling continued sustainable development and improved livelihoods for Guyanese.

A summary of the key reporting measures and a brief description for these interim measures are outlined in Table S1. In this report, the analysis covers the benchmark period (1990-2009), the first year (Year 1) the second year (Year 2) the third year (Year 3) and the fourth year (Year 4) of reporting.

Outputs and results are also provided for the intact forest landscape – IFL (Ref. measure. 2). The eligible IFL area of 7.6 million ha as calculated in the benchmark period is used for reference. All land cover changes are measured relative to the original IFL area.

Relevant measures are also reported for forest management indicators (measures Ref. 3 and 4). Where applicable, a reference measure has been included. In Year 4, for the first time new shifting agriculture areas are reported under forest degradation.

Table S1: Interim Measures

Measure Ref.	Reporting Measure	Indicator	Reporting Unit	Adopted Reference Measure	Year 2 Period	Year 3 Period	Year 4 Period	Difference between Year 4 & Reference Measure
1	Deforestation Indicator	Rate of conversion of forest area as compared to the agreed reference level.	*Rate of change (%)/yr^{-1}*	0.275%	0.054%	0.079%	0.068%	0.207%
2	Degradation Indicators	National area of Intact Forest Landscape (IFL). Change in IFL post Year 1, following consideration of exclusion areas.	*ha*	7 604 820	7 604 754 (66 ha loss)	7 604 580 (174 ha loss)	7 604 425 (155 ha loss)	-395 ha *(155 ha loss in Year 4)*
2b		Determine the extent of degradation associated with new infrastructure such as mining, roads, settlements post the benchmark period.	*ha*	4 368	5 460	1 963	4 352	16 ha
3	Forest Management	Timber volumes post 2008 as verified by independent forest monitoring (IFM). These are compared to the mean volume from 2003-2008	*t CO_2*	3 386 778[4]	3 685 376[5]	2 159 151	3,106,693	280,085
4	Emissions resulting from illegal logging activities	In the absence of hard data on volumes of illegally harvested wood, a default factor of 15% (as compared to the legally harvested volume)	*t CO_2*	411 856	18 289	11 217	11,533	400,323
5	Emissions resulting from anthropogenic forest fires	Area of forest burnt each year should decrease compared to current amount.	*ha/yr^{-1}*	1 706[6]	28	208	395	1 311
6	Emissions resulting from subsistence forestry, land use and shifting cultivation lands (i.e. slash and burn agriculture).	Emissions resulting from communities to meet their local needs may increase as a result of inter alia a shorter fallow cycle or area expansion.	*ha/yr*	-	-	-	765	-

Encouragement of carbon sinks (Ref measure 7) is now under review. Reforestation of previously deforested sites is currently monitored in the GIS once a deforestation site shows signs of being abandoned. Evidence suggests that these sites take a considerable time to regenerate. This is unsurprising due to the nature of the soil disturbance and displacement associated with mining activities. It is recommended that a long-term measurement plan be developed to monitor the carbon stock accumulation over time. The purpose of this plan would be to develop a realistic re-measurement interval. Once carbon stocks show signs of recovery, emission factors could be developed and linked to the GIS to provide a carbon stock estimation.

[4] Assessment completed based in Winrock International Report to the Guyana Forestry Commission, December 2011: ***Collateral Damage and Wood Products from Logging Practices in Guyana.*** This methodology only applies to emissions and not any removals due to re-growth of the logged forest. This Reference measure is presented in this Year 4 report for 12 months as Year 4 spans 12 months. The prorated value for this reference measure was presented for Year 2, equated to 15 months to aid comparability with the 15 month period for Year 2. The same is the case for the Reference level for illegal logging for Years 2, 3 and 4.
[5]Computed for the period 1 October 2010 to 31 December 2011. (15 months)
[6] Degradation from forest fires is taken from an average over the past 20 years.

Table S2: Impending Interim Measure

Measure Ref.	Reporting Measure	Indicator	Reporting Unit	Reference Measure	Year 2 Period	Year 3 Period	Year 4 Period	Difference between Year 4 & Reference Measure
7	Encouragement of increasing carbon sink capacity of non-forest and forest land	Changes from non-forest land to forest (i.e. through plantations, land use change) or within forest land (sustainable forest management, enrichment planting)	Not considered relevant in the interim period.	N/A	N/A	N/A	N/A	N/A

TABLE OF CONTENTS

APPENDICES

ACKNOWLEDGEMENTS

In addition to GFC, a number of agencies and individuals have assisted in providing inputs into the MRVS programme. GFC and Indufor would like to acknowledge the support of the Ministry of Natural Resources and the Environment and the Office of Climate Change for their strategic guidance.

The continued support and oversight of the members of the MRVS Steering Committee and the Multi-Stakeholder Steering Committee of the LCDS are also especially acknowledged.

The GFC team would also like to acknowledge the following colleagues for their support.

- Guyana Geology and Mines Commission for providing location datasets for mining areas.
- Guyana Lands & Surveys Commission for providing spatial data relating to, settlements and agricultural leases.
- ESRI for providing support in GIS software and overall technical support.
- Norwegian Space Centre for supporting the advancement of work on accuracy assessment
- CI for their role in supporting the implementation of this, as well as other aspects of the Guyana MRVS.
- The Project team of Global Canopy Programme, North Rupununi District Development Board and the North Rupununi communities, Kanashen Village, WWF, Iwokrama and other partners working on the CMRV Project in Region 9.
- Winrock International for work on the forest carbon monitoring system.
- Guiana Shield Facility and UNDP for supporting work under the MRVS.
- Other Partners

GLOSSARY

The following terms and abbreviations are used throughout the report.

AGLB	Above Ground Live Biomass
ASAR	Phased Array Type C-band Synthetic Aperture Radar
AWiFS	Advanced Wide Field Sensor
CLAS	Carnegie Landsat Analysis System
CMRV	Community Monitoring Reporting and Verification System
DMC	Disaster Monitoring Constellation
DN	Digital Number
DTM	Digital Terrain Model
ESRI	Environmental Systems Research Institute
EVI	Enhanced Vegetation Index
FCPF	Forest Carbon Partnership Facility
FIRMS	Fire Information for Resource Management System
FPIC	Free Prior Informed Consent
FRIU	Forest Resource Information Unit (GFC)
FTP	File Transfer Protocol
GCP	Global Canopy Programme
GEMI	Global Environmental Monitoring Index
Geo FCT	The Forest Carbon Tracking Task force
GFC	Guyana Forestry Commission
GGMC	Guyana Geology and Mines Commission
GIS	Geographic Information System
GLCF	Global Land Cover Facility
GL&SC	Guyana Lands & Surveys Commission
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics
GPS	Global Positioning System
GV	Green Vegetation
INPE	National Institute for Space Research in Brazil (Instituto Nacional de Pesquisas Espaciais)
IPCC	Inter Governmental Panel on Climate Change
IRS (LISS)	Indian Remote Sensing Linear Self Scanning Sensor
ITTO	International Tropical Timber Organisation
JCN	Joint Concept Note
LAI	Leaf Area Index
LCDS	Low Carbon Development Strategy
LULUCF	Land Use, Land Use Change and Forestry
MERIS	Medium Resolution Imaging Spectrometer
MMU	Minimum Mapping Unit
MODIS	Moderate Resolution Imaging Spectroradiometer
MOU	Memorandum of Understanding
MRSid	Multi-resolution Seamless Image Database
MRVS	Monitoring Reporting and Verification System
MS	Multispectral
MSAVI	Modified Soil Adjusted Vegetation Index
NARI	National Agricultural Research Institute, Guyana
NAS	Network Attached Storage
NDAVI	Normalised Difference Vegetation Index
NIR	Near Infrared
NPAS	National Protected Areas System
NRDDB	North Rupununi District Development Board

PAC	Protected Areas Commission
Pan	Panchromatic
Radar	Radio Detection and Ranging
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus Sustainable Forest Management
SAIL	Scattering by Arbitrarily Inclined Leaves
SAVI	Soil Adjusted Vegetation Index
SFA	State Forest Area
SMA	Spectral Mixture Analysis
SPOT	Satellite Pour l'Observation de la Terre
SRTM	Shuttle Radar Topography Mission
SWIR	Short Wave Infrared
UNFCCC	United Nations Framework Convention on Climate Change
UNREDD	United Nations REDD Programme
USGS	United States Geological Survey
VNIR	Visible and Near Infrared
WWF	Worldwide Fund for Nature

1. INTRODUCTION

1.1 Country Description

The total land area for Guyana is 21.1 million hectares (ha) and spans from 2 to 8° N and 57 to 61° W. Guyana shares common borders with three countries: to the north-west - Venezuela, the south-west - Brazil, and on the east - Suriname.

Guyana's 460 km coastline faces the Atlantic on the northern part of the South American continent. The coastal plain is only about 16 km wide but is 459 km long.

It is dissected by 16 major rivers and numerous creeks and canals for irrigation and drainage. The main rivers that drain into the Atlantic Ocean include the Essequibo, Demerara, Berbice, and Corentyne. These rivers have the classic wide mouths, mangroves, and longitudinal sand banks so much associated with Amazonia, and mud flows are visible in the ocean from the air.

The geology in the centre of the country is a white sand (*zanderij*) plateau lying over a crystalline plateau penetrated by intrusions of igneous rocks which cause the river rapids and falls.

1.2 Guyana Low Carbon Development Strategy

The Government of Guyana has embarked on a national programme that aims to protect and maintain its forests in an effort to reduce global carbon emissions and at the same time attract resources to foster growth and development along a low carbon emissions path.

On 8 June 2009 former President Bharrat Jagdeo launched Guyana's Low Carbon Development Strategy (LCDS). The Strategy outlines Guyana's vision for promoting economic development, while at the same time contributing to combating climate change. A revised version of the LCDS was published on 24 May 2010 and subsequently an LCDS Update was presented to the public in March 2013 by President Donald Ramotar. The LCDS aims to achieve two goals:

1. Transform Guyana's economy to deliver greater economic and social development for the people of Guyana by following a low carbon development path; and
2. Provide a model for the world of how climate change can be addressed through low carbon development in developing countries if the international community takes the necessary collective actions, especially relating to REDD+.

As at September 2009 Guyana had approximately 87% of its land area covered by forests, approximately 18.5 million ha. Historically, relatively low deforestation rates have been reported for Guyana.

Guyana's LCDS has expressed Guyana's commitment to providing a model of how to address the second most important source of carbon dioxide emissions world-wide. Deforestation and forest degradation are estimated to contribute approximately 12% of global emissions (IPCC). Guyana's forest resources have the potential to make a large contribution to the emission-reduction efforts targeted by the Kyoto Protocol (as part of the United Nations Framework Convention on Climate Change, UNFCCC).

Guyana currently records a comparatively low deforestation rate, reported in its Interim Measures MRVS Report, as ranging between 0.02% and 0.079% per annum. Deforestation rates typically expand along with economic development, thus prompting the formation of the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD programme), the Forest Carbon Partnership Facility (FCPF) and the REDD+ Partnership, among others.

The activity undertaken, as summarised in this Report, forms part of the fourth year of the three-phase Road Map developed for Guyana's MRVS. The objective of the initial MRVS Road Map activity is to undertake comprehensive, consistent, transparent and verifiable assessment of forest area change for the historical period of (about) 1990 to 2009 using several period steps of archived Landsat-type satellite data that meet the criteria of the IPCC Good Practice Guidelines for LULUCF.

1.3 Establishing Forested Area

Land classified as forest follows the definition as outlined in the Marrakech Accords (UNFCCC, 2001). Guyana has elected to classify land as forest if it meets the following criteria:

- Tree cover of minimum 30%
- At a minimum height of 5 m
- Over a minimum area of 1 ha.

In accordance with the JCN, the national forest cover as at 1990 based on this definition is used as a start point. The previous 2010 report prepared by GFC provides a detailed description of this process.

In summary, this process involved:

- Determination of the 1990 forest area using medium resolution satellite images (Landsat) by excluding non-forest areas (including existing infrastructure) as at 1990.
- From this point forward accounting for forest to non-forest land use changes that have occurred between 1990 and 2010 using a temporal series of satellite data.

The 2010 Interim Measures report estimated that as at the benchmark period (30 September 2009) the total forest area that met the above definition was 18.39 million ha (± 0.41 million ha). This figure was further verified by the University of Durham (UoD) with an indicative accuracy of (97.1%).

The 2012 (Year 3) assessment used a forest area (including State Land, State Forest and Amerindian Villages) of 18.50 million ha as the starting point. The increase in forest area resulted from the re-analysis of the 1990 forest / non-forest classification. These boundaries were updated using 5 m satellite imagery. This was a necessary change in order to ensure the delineation of mapped change events are at a consistent resolution with the updated forest / non-forest boundary. This means that historical change was included in the reported forest area figures until year two. From year three forward, the analysis does not take into account historical change mapped from landsat as it was undertaken using RapidEye imagery. This entails comparing different analyses based on imagery of significantly different resolution. To generate a truly comparative figure, a full 'back cast' analysis of historical change events at the updated RapidEye resolution would be necessary. This is a comprehensive exercise and would essentially entail an extensive long term analysis of all historical mapping periods, with reference to all historical imagery.

Any new land cover change for the Year 4 period has been subtracted from the revised forest area, as it was for Year 2. Next year (year five) there will be a shift in the basemap registration. This is due to updating from a GeoCover basemap at 30m resolution to a new basemap aligned with RapidEye's updated ground control points. This will result in another minor revision in non forest area, at which point the non forest area for Guyana will be finalised and benchmarked.

A national coverage of RapidEye was obtained in 2012 and 2013 - this constitutes a continued improvement on the historical Landsat data used. As with previous years this revision will be subject to independent audit, firstly by the accuracy assessors University of Durham (UoD) and secondly by the project verifiers Det Norske Veritas (DNV).

1.4 Overview of Progress & New Developments in the Implementation of Guyana's Monitoring Reporting & Verification System (MRVS)

Guyana's MRVS Roadmap Phase 1

The MRVS Roadmap for Phase 1 was designed to guide the initial development of Guyana's MRVS for REDD+ and considered the international requirements and national needs for the MRVS. Included was a detailed capacity assessment based on the state of the existing national forest monitoring technical capabilities at the time of its development and the requirements for a MRVS in order to define a detailed plan to establish sustained MRVS capacities within the country and to bridge the gap in capacities. The Roadmap was developed through a consultative, multi-stakeholder process, which benefitted from inputs from local and international experts.

Along with work at the national level, Guyana has continued to make significant contribution to the global debates on REDD+ and modalities and experiences with monitoring and MRVS. In the context of evolving agreements at the UNFCCC level regarding MRVS methodologies for implementation, Guyana made significant progress in piloting methodologies and data collection techniques. This allows for sharing of lessons learnt and taking stock of those lessons for future plans as well as working closely with the international community and high level stakeholders.

MRVS Roadmap Phase 1 Review

At the completion of implementation of the MRVS Roadmap for Phase 1, a series of consultation sessions were conducted over the period 24-27 March, 2014 in Georgetown, Guyana. The consultations with national and international partners and experts reviewed the progress achieved and lessons learned, and discussed the foundations for continued engagement and next steps in further developing Guyana's forest monitoring capacities. This allowed for focus to be placed on:

- Reviewing the progress made to date, reflecting on the need for ongoing and continuous activities and identifying gaps in implementation so far;
- Dialogue with national and international partners and experts on achievements, outcomes and lessons learned;
- Developing next steps for the further development of Guyana's MRVS.

The workshop brought together over 50 participants from different national key governmental agencies and institutions, national monitoring experts, international donor organizations, representatives from local and indigenous communities, and national and international NGOs.

Areas of Achievement in MRVS Roadmap Phase 1

Over the period 2009 and 2012, the Roadmap was implemented in three phases: National Strategy Formulation, Country Readiness Phase and Implementation Phase. This resulted in the development of a sustained and efficient national mechanism and institutional framework with competencies for MRVS at different levels, including capacities to perform forest area change assessment for historical periods and to perform carbon stock measurements. In addition, sub-national REDD+ demonstration activities were developed, internal and national communication mechanisms were sustained, research on key issues was conducted and Guyana engaged with the international community. Activities included data gap filling, eligibility gap filling, capacity and institutional gap filling, and methodological gap filling.

With the completion of development and implementation of MRVS Roadmap Phase 1, Guyana has made significant achievements in implementing national forest monitoring and an MRVS. This system has served to report on performance of "REDD+ Interim Indicators" outlined in the MoU between Guyana and Norway, the results of which are represented in the annual MRVS Interim Measures Reports. The Guyana-Norway Partnership has shown that some of the methods discussed at international levels are working, especially partnerships between developed and developing countries. Guyana has accomplished pioneering work and substantial capacity improvements, is able to measure and monitor both deforestation and forest degradation and is developing protocols specific to measuring and monitoring the individual drivers of forest change. Work began in 2010 in the areas of forest area change assessment and forest carbon stock assessment and monitoring. These activities were carried out in collaboration with international experts on REDD+, namely Winrock International, Pöyry and Indufor.

The aim of these work areas was to determine the historical and current patterns of deforestation and their drivers. To date, Guyana has completed forest area change assessments for the periods 1990–2000; 2001–2005; 2006 to September 2009 (Benchmark); 1 October 2009 to 30 September 2010 (Year 1); and 1 October 2010 to 31 December 2011 (Year 2). The benchmark map, which provides a snapshot of the country's forest area as of 30 September 2009, was created for use as the baseline for future comparison. The subsequent assessments conducted for 2010 and 2011 map and report all conversion of forest to non-forest.

Over the years there have been improvements in technologies used for conducting the forest area change assessment. One such improvement has been in the use of high level 5 metre resolution imagery on a national scale - previously, Landsat 30 m resolution imagery was used to map and measure forest area change for Guyana. The improved resolution enabled better identification of change boundaries, drivers of change and areas of forest degradation. In particular, it was revealed that the mapping of forest degradation is more precise when using high resolution imagery rather than medium-resolution imagery.

Concurrently, work has been completed on Phases 1 (High Potential for Change) and 2 (Medium Potential for Change). The completion of these two phases are part of the development of a long-term, robust and scientifically sound national forest carbon monitoring system (FCMS).

Other activities achieved during the implementation of the FCMS within MRVS Roadmap Phase 1 include:

- The use of spatial analysis techniques to develop a forest carbon stratification map, which was then used to establish the sampling design and location of the sample plots needed to determine the emission factors for deforestation.
- An analysis of the main drivers of degradation and deforestation and identification of the best methods for estimating carbon stock changes for each. Based on the analysis, the Stock Change method was selected for measuring deforestation and the Gain– Loss method was chosen for degradation.
- Ongoing training and capacity building for GFC staff in collecting field-based data used to determine emission factors. These emission factors will then be used, in conjunction with the activity data obtained from the remote sensing analyses, to generate estimates of CO_2 emissions.
- The determination of emission factors for Guyana in terms of the emissions and removals of CO_2 per unit of activity data. These factors were derived from data collected by GFC staff.
- The development of a long-term monitoring plan to be implemented as part of the MRVS.
- Ongoing capacity-building sessions for GFC staff and other relevant stakeholders in the implementation of the FCMS.

MRVS Roadmap Phase 2

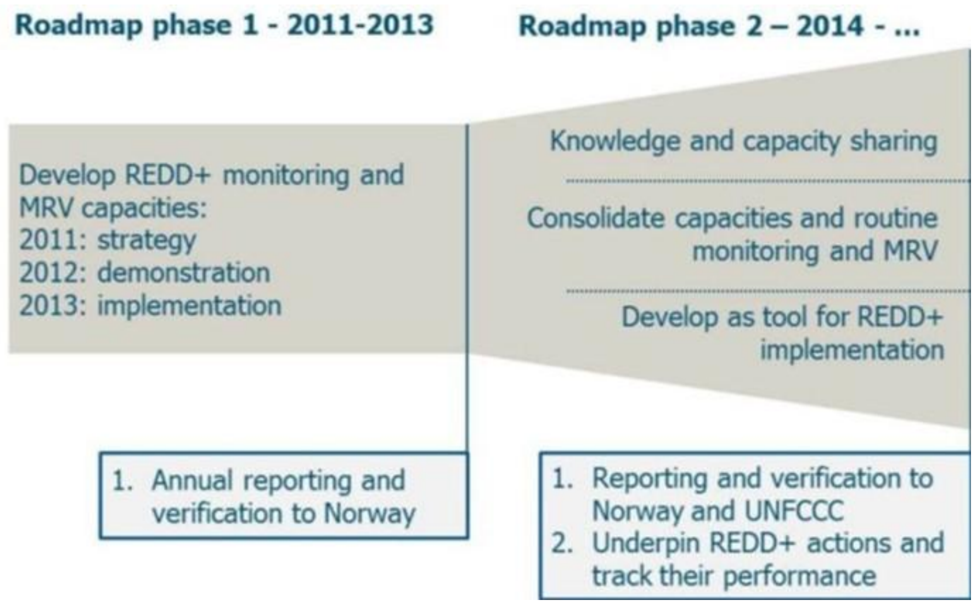
The overall proposed objective for MRVS Roadmap Phase 2 is to consolidate and expand capacities for national REDD+ monitoring and MRVS. This will support Guyana in meeting the evolving international reporting requirements from the UNFCCC as well as continuing to fulfil additional reporting requirements e.g. to meet obligations under the bilateral cooperation agreement with the Government of Norway. It will also support Guyana in further developing forest monitoring as a tool for REDD+ implementation. Consolidating and expanding capacities following MRVS Roadmap Phase 2 will allow Guyana to fulfil its REDD+ objectives to:

- Underpin and stimulate strategies and priorities for REDD+ implementation.
- Track performance of REDD+ activities and their impacts (carbon & non-carbon).
- Continue to support the building of capacity for MRVS implementation at the government and non-government levels and other parties that have a role in MRVS related activities.

Three specific areas were identified where key activities are recommended for the next 1-3 years in order to consolidate and expand capacities:

- Consolidate capacities and routine REDD+ monitoring and MRVS
- Develop national forest monitoring as a tool for REDD+ implementation
- Knowledge sharing and capacity building

Figure 1-1: Progression of REDD Monitoring Frame for Phase 1 & 2 of Roadmap



Source: Terms of Reference for continuing to Develop Capacities for a National Forest Monitoring and Measurement, Reporting and Verification System to Support REDD+ Participation of Guyana Roadmap Phase 1 Achievements, Evolving Requirements and Roadmap for Phase 2 Activities, Guyana Forestry Commission, September 2014

1.5 MRVS Development Areas

There are several areas that are being actively developed and improved during the period that interim measures are recorded. This includes development of the monitoring systems to facilitate reporting on impending measures such as shifting cultivation and afforestation.

The transition from medium resolution (30 m) Landsat to high resolution RapidEye images (5 m pixel resolution) has increased the opportunity to better delineate and detect land use change. Year 4 has utilised Rapideye imagery again, with supplementary Landsat 8 imagery used where no RapidEye coverage existed.

It is worth noting that currently there are very few operational medium resolution satellite systems that are freely available, or that obtain images frequently enough to allow national reporting of change. To reduce the risk of inadequate coverage GFC has invested in the tasking of an individual satellite data provider. The overall aim is to improve operational methods and to phase out or replace the interim measures.

In following this approach further investment in data analysis and reporting tools and methodologies to monitor change has been made.

Year 4 Development Areas

Guyana has established a robust MRVS that is able to spatially account for the area of deforestation and degradation with confidence. There are several technical improvements that support the progressive introduction of relevant interim measures – i.e. shifting cultivation. Specifically these developments include:

- Development of a second reporting framework aligned to the IPCC Land Use, Land-Use Change and Forestry (LULUCF) template for annual assessments. This is based on the IPCC 2003 GPG tabular format. The LULUCF area change has been reported formally for the first time in November 2014. To assist with this process a formalised excel-based tool has been developed. See Appendix 6.
- Further sub-division of the non-forest area into the relevant IPCC classes. In preceeding reports this area has been presented as 'non-forest'.
- Development of methodology and guidelines for mapping and monitoring shifting cultivation.
- At the time of the report's release – development of relevant emission factors for degradation due to forest harvesting activities. Further work is on-going to determine appropriate emission factors for other forms of forest degradation.
- Development of an operational method for accuracy assessment data collection.
- Development of a partnership between FAO and the GFC. FAO has started developing the Space Data Management System (SDMS) which is a cloud-based system hosted at FAO, Rome. It is designed to "Acquire, Query, Process and Deliver Earth Observation Data and Forest information products to participating UN-REDD countries". These processes are to be made available through country-specific web portals. Guyana is interested in participating in the initiative as it is perceived that the SDMS will assist in streamlining the image data processing aspects of the MRVS.

Future Development Areas

The future focus is to enhance the MRVS to ensure it keeps abreast of international best practice guidance, new datasets, processes and routines. It is also clear that in a short space of time the monitoring programme has provided a clear overview of the location, scale and drivers of forest change. This information provides an understanding of reference levels for REDD+ through better understanding of carbon emission profiles by each driver.

- Update of the satellite base map to higher accuracy. RapidEye has updated the positional accuracy over Guyana using control points derived from VHR (Very High Resolution) Digital Globe imagery. In the West of Guyana an offset of up to 30 m is observed. This is due to the steep topographic relief and change in the UTM zone. The GFC team will update and improve the existing base maps using RapidEye's improved 3A ortho-corrected product.
- Collaboration with the University of Maryland (Prof. Hansen) to evaluate the potential of producing country-specific change estimates from medium-resolution satellite imagery.
- Collaboration with an expert-group, that is developing guidance material on appropriate methods to assist with the calculation of uncertainty associated with activity data.
- Further refinement of methods to quantify afforestation resulting from regenerating non-forest areas, and studies to show the carbon accumulation rate on abandoned mining sites. This work links in with Guyana's planned mining reclamation project and the consideration of appropriate emission factors.
- Integration of carbon measurements with spatial datasets to create activity-specific emission factors for degradation and shifting cultivation. This work is in on-going collaboration with Winrock International.
- Alignment of the community MRV to facilitate integration with the national MRVS.

2. LAND ELIGIBLE UNDER GUYANA'S LCDS

Under the Memorandum of Understanding (MOU) between Guyana and Norway, not all land is included in Guyana's Low Carbon Development Strategy (LCDS). Only lands under the ownership of the State are included in the LCDS. In 2013, some additional land was transferred from State Lands and State Forest Area to titled Amerindian lands as part of Guyana's land titling process. Tenure classifications in Guyana were changed in 2013 with the number of categories reduced from five to four as outlined in Table 2-1. This change means that Iwokrama and Kaieteur National Park are now amalgamated into a single class termed 'Protected Areas' for technical classification although still separate for administrative purposes.

State Forest Area

According to the Forest Act Section 3, Chapter 61:01, the State Forest Area is that area of State Land that is designated as State Forest. This area of State Forest has been gazetted.

State Lands

For purposes of this assessment, State Lands are identified as areas that are not included as part of the State Forest Area that are under the mandate of the State. This category predominantly includes State Lands, with isolated pockets of privately held land, but does not include titled Amerindian villages.

Protected Areas

To date, the four Protected Areas that come under the scope of the Protected Areas Act are: Iwokrama, Shell Beach, Kanuku Mountains and Kaieteur National Park. Altogether these account for a total of 1 141 000 ha designated as Protected Areas.

Titled Amerindian Land

The Amerindian Act 2006 provides for areas that are titled to Amerindian villages. It includes both initial titles as well as extensions that have been granted to these titled areas. Table 2-1 provides a summary of land eligible for inclusion under the MoU with Norway.

The eligible area of forest, which includes the State Forest Area (SFA) and State Lands under LCDS as calculated from the mapping analysis, is estimated at 14.83 million ha. This excludes Iwokrama, Kaieteur National Park and titled Amerindian Land. Combined, these forested areas make up 3.67 million ha.

Table 2-1: Updated Land Classes[7]

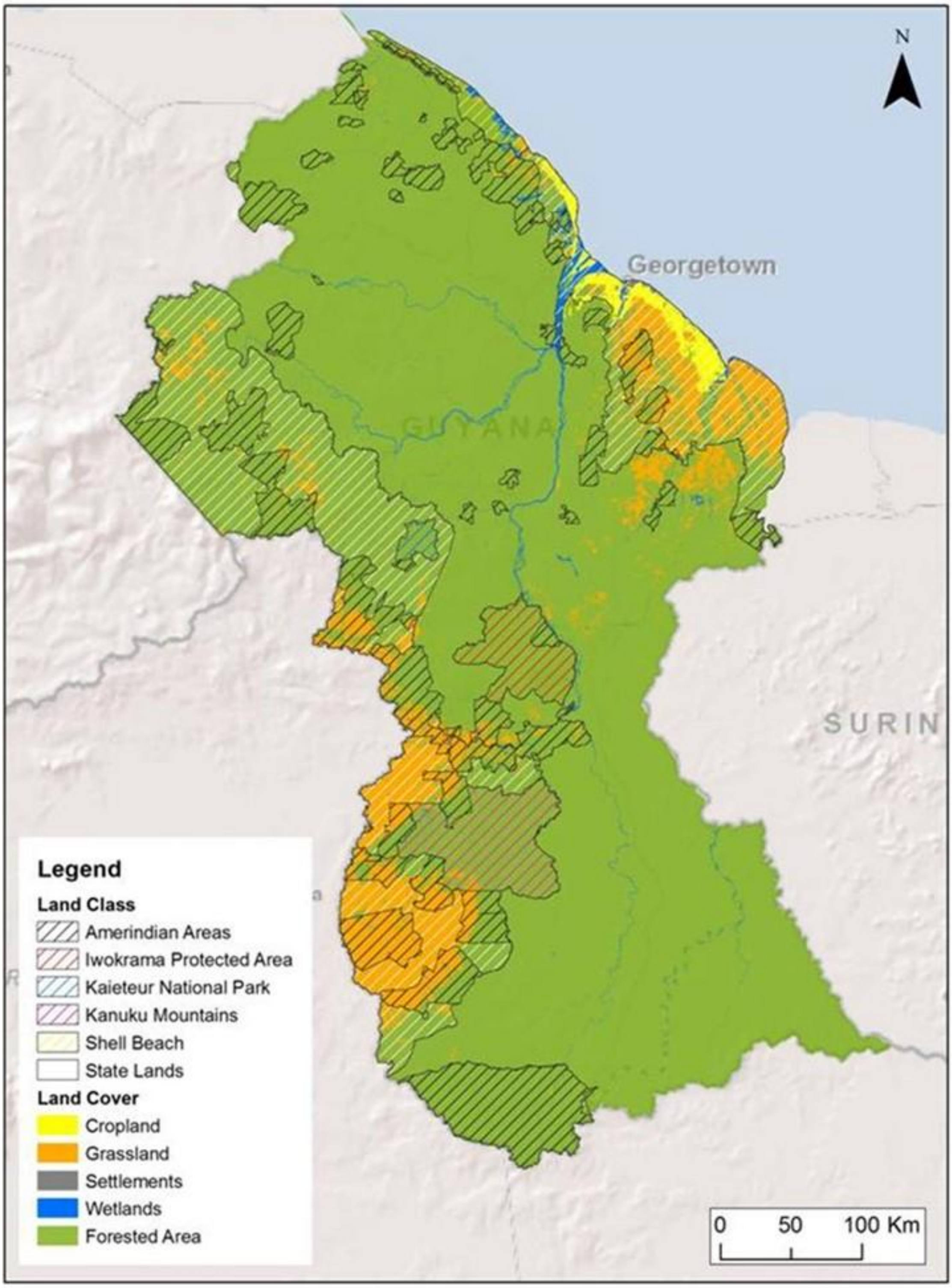
2013 Land Classes	Forest	Non-Forest					
		Grassland	Cropland	Settlements	Wetlands	Other Land	Total
	(Area '000 ha)						
State Forest Area	12 267	184	9	7	125	5	12 597
Titled Amerindian lands **(*incl newly titled lands*)	2 584	691	2	11	22	5	3 315
State Lands	2 559	1 136	208	40	82	51	4 076
Protected Areas*	1 090	26	>1	>1	21	>1	1 140
Total Area	**18 500**	**2 037**	**220**	**59**	**250**	**62**	**21 128**

*Included for the purpose of broad classification but conditions may apply regarding payment for service agreements. **It should be noted that the process for titling Amerindian lands changes the forested and non-forested areas for the remaining categories.

[7] Guyana's forest definition has been applied to distinguish forest and non-forest areas in categories listed.

The location of these areas is shown in Map 2-1.

Map 2-1: Land Classes



3. FOREST & LAND COVER DATASETS

For the interim measures report the total land area is divided by forest and non-forest components as determined at 30 September 2009 (Benchmark). This was originally created from interpretation of the Landsat time series and refined using the RapidEye imagery in 2013. The non-forest area was further subdivided in 2014 into the relevant IPCC non-forest classes.

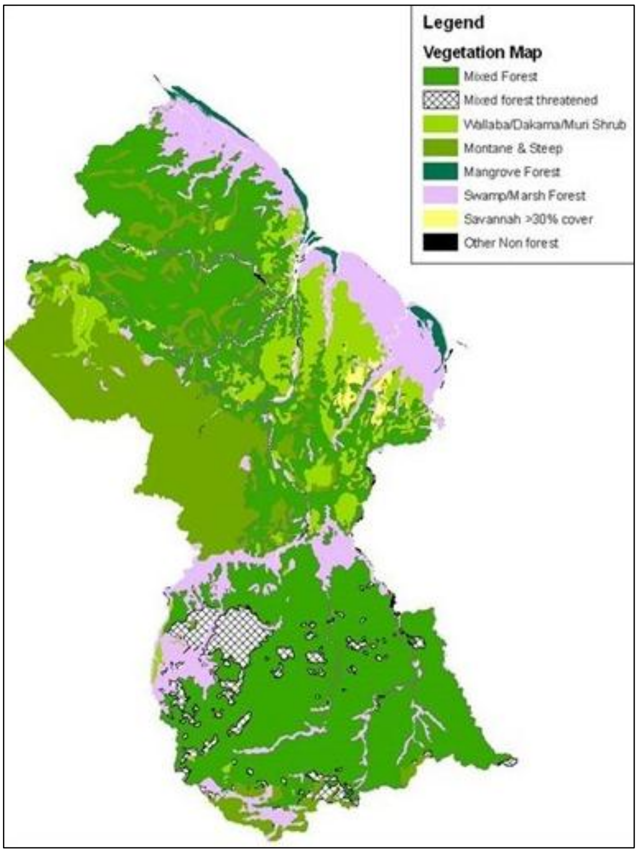
In developing the MRVS, it is important that forest and non-forest components are identified and mapped so that changes between the two classes can be monitored. For areas identified as forested, further stratification is generally required to divide forest types by their potential carbon storage capacity[8].

As a starting point two datasets that depict the different forest types have been considered. Both maps were produced in 2001 by Dr. Hans ter Steege, University of Utrecht, Netherlands, in collaboration with the GFC Forest Resources Information Unit (FRUI).

The first provides a detailed forest vegetation map for the entire State Forest Area (SFA) and was created from various existing vegetation maps. It was updated using interpretations of historical aerial photographs and satellite radar imagery from the Japanese Earth Remote Sensing satellite (JERS 1). The maps completeness was supported by analysis of field data collected during the Commission's forest inventories.

At the same time a national forest and land use classification map at 1:1 000 000 scale was produced (Map 3-1). This is based mainly on national soil survey data made available by the National Agricultural Research Institute (NARI).

Map 3-1: Simplified National Vegetation Map 1:1 000 000 Scale



[8] In Guyana's case the forest carbon plots established by GFC and Winrock International show that the carbon stocks across forest types are similar. The basis for the carbon stock stratification is related to accessibility.

Using these maps GFC modified the classification schema to produce a simplified version. This conforms to the six broad land use categories in accordance with IPCC reporting guidelines (Table 3-1). A description of the land use categories is provided in Appendix 3.

Table 3-1: Preliminary Land Use Categories

<table>
<tr><th>Class</th><th>IPCC Landcover Class</th><th>Guyana Landcover Description</th></tr>
<tr><td rowspan="7">Forest Land</td><td rowspan="7">Forest Land</td><td>Mixed forest</td></tr>
<tr><td>Wallaba/Dakama/Muri forest</td></tr>
<tr><td>Swamp/Marsh forest</td></tr>
<tr><td>Montane forest</td></tr>
<tr><td>Mangrove forest</td></tr>
<tr><td>Savannah Forest</td></tr>
<tr><td>Shifting Agriculture systems</td></tr>
<tr><td rowspan="9">Non forest</td><td>Cropland</td><td>Cropland</td></tr>
<tr><td rowspan="2">Grassland</td><td>Tropical unmanaged grassland</td></tr>
<tr><td>Tropical unmanaged shrubland</td></tr>
<tr><td rowspan="2">Wetlands</td><td>Open Water</td></tr>
<tr><td>Herbaceous unmanaged wetland</td></tr>
<tr><td rowspan="2">Settlements</td><td>Human Settlement areas and roading</td></tr>
<tr><td>Pre 1990 Mining Area</td></tr>
<tr><td rowspan="2">Other land</td><td>Bare exposed rock outcrops</td></tr>
<tr><td>Bareland</td></tr>
</table>

The intention is to update and refine these maps as appropriate using satellite imagery. The revised map will incorporate change detected from 1990 to September 2009 and will form the basis of the forest stratification map which delineates forest strata by potential carbon stocks. This is an input required for the carbon forest monitoring system to determine the amount of CO_2 sequestered or emitted.

4. MONITORING & SPATIAL DATASETS

The process developed aims to enable areas of change (>1 ha) to be tracked spatially through time, by driver (i.e. mining, infrastructure and forestry). The approach adopted seeks to provide a spatial record of temporal land use change across forested land (commensurate to an Approach 3).

The datasets used for the change analysis have evolved over time. Initially the historical change analysis from 1990 to 2009 was conducted using Landsat imagery. From 2010 a combination of DMC and Landsat was used and from 2011 onwards these datasets were superseded with high resolution images from RapidEye.

This progression is outlined as follows:

- 1990 to 2000 – Landsat 30 m
- 2001 to 2005 – Landsat 30 m
- 2006 to 2009 September - Landsat 30 m
- 2009 – 2010 October (Year 1) - Landsat 30 m and DMC (22 & 32 m)
- 2010- 2011 December (Year 2) Landsat 30 m and RapidEye 5 m
- 2012 December (Year 3) RapidEye 5 m supplemented as necessary by Landsat 5 & 7
- 2013 December (Year 4) RapidEye 5 m supplemented as necessary by Landsat 8.

Over time several map products have been produced. The first, the Benchmark forest map, was determined through analysing change from 1990 to 2009. The Benchmark map provides a snapshot of forest area as at 30 September 2009.

The 'Year 1' map covers the first year after the benchmark map. For this period all forest to non-forest changes from 2009 to 2010 September were mapped spatially and reported. The main dataset used over this period was 30 m Landsat imagery.

For the 2010-11 assessment, higher resolution 5 m imagery was tasked over previously identified change areas. The area covered was 12 million ha which equated to 56% of Guyana’s land area. The improved resolution enabled better identification of change boundaries, drivers of change and areas of forest degradation.

From 2012 onwards high resolution (5 m) coverage has been acquired over Guyana. This has enabled both change and the forest area to be mapped more accurately.

Experience has proven that it is necessary to task the satellite in order to meet specific reporting requirements[9]. If a proactive approach is not adopted then there is a risk that the coverage and image resolution are insufficient to map forest change.

4.1 Data Structure, Operators and Training

All spatial data is stored on the Network Attached Storage (NAS) at GFC and builds on the archived and manipulated data output from the previous analyses. The NAS is managed by the IT team at GFC and is routinely backed up and stored off-site.

The Year 2 data report recommended a central repository for all spatial information for inter-agency use. GFC holds a consolidated geodatabase of all required GIS datasets. In the latter part of 2014 a partnership with FAO was initiated. This seeks to develop a working model to evaluate the Space Data Management System (SDMS). Potentially, SDMS allows for consolidated online storage of image products that are created during pre-processing. GFC is

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[9] The JCN – states that only images collected between August and December of the same calendar year can be used in the analysis. High resolution imagery is required in order to accurately delineate forest degradation around deforestation events.

keen to evaluate this option and run the relevant SDMS modules in parallel to standard MRVS reporting methods adopted by GFC.

As with previous years the relevant datasets that are used for the analysis have been documented and archived. This includes brief metadata about the dataset, its location on the network and anticipated update frequency. Several datasets are actively used and reside on GFC's Forest Resource Information Unit (FRIU) network drive. These datasets are copied into a working folder at the beginning of each year. Care has been taken not to disrupt the structure of FRIU datasets and also to avoid duplication of datasets.

GIS and remote sensing data and layers are stored on the dedicated NAS. Image metadata is recorded. Information recorded includes sensor, path and row, and processing applied. New folders are created as these scenes are processed using ENVI image processing software and all associated files generated are also retained.

All images are named using a common format that identifies the satellite, path and row, image date, provider, processing level (e.g. O = orthorectified) and any post-processing that has been applied to register the imagery to a terrain corrected base mosaic (W = warped/co-registered).

The satellite images are all full band stacks in DAT or GeoTiff format. The DAT format is used due to its interoperability between software.

GFC now has six GIS operators and a GIS manager. All desktop computers are running ArcGIS (10) as provided by ESRI under the LCDS assistance program. Two copies of ENVI have also been installed to enable image processing. Both are dongle versions and include maintenance contracts. In addition several customised toolbars that assist with standardising or automating the mapping process have been developed.

Guyana has released a National Policy on Geographic Information (NPGI) which is currently at the finalisation stage. This policy outlines how Guyana intends to form a National GIS Committee which will work toward consistency in geographic information between all government agencies.

4.2 Agency Datasets

Several Government agencies that are involved in the management and allocation of land resources in Guyana hold spatial datasets. Since 2010 GFC has coordinated the storage of these datasets. These agencies have been involved in a restructure which means they all now fall under the Ministry of Natural Resources and The Environment (MNRE). The Ministry has responsibilities for forestry, mining, environmental management, wildlife, protected areas, land use planning and coordination and climate change.

Table 4-1: Agency Datasets Provided

	Agency	Role	Data Held
Ministry of Natural Resources & the Environment	Guyana Forestry Commission (GFC)	Management of forest resources	Resource management related datasets
	Guyana Geology and Mines Commission (GGMC)	Management of mining and mineral resources	Mining concessions, active mining areas
	Guyana Lands and Surveys Commission (GL&SC)	Management of land titling and surveying of land	Land tenure, settlement extents and country boundary
	Protected Areas Commission	Management of Protected Areas System in Guyana	Spatial representations of all protected areas

To date, interim datasets have been provided by GFC, GGMC, GL&SC and the newly created Protected Areas Commission (PAC). With the creation of PAC in 2012, a new spatial dataset delineating all legally Protected Areas was developed. This is progressively updated as necessary.

The Ministry of Public Works is overseeing the development of the Amalia Hydropower Project. This planned hydroelectric project includes roading and site clearance. Spatial representations of these areas are being updated as the project develops.

These datasets will be incorporated into the Year 4 analysis to assist in the detection of land use change events.

4.3 Agency Responsibilities

Guyana Forestry Commission

The GFC is responsible for advising the Minister on issues relating to forest policy, forestry laws and regulations. The Commission is also responsible for the administration and management of all State Forest land. The work of the Commission is guided by a National Forest Plan (2011) that has been developed to address the National Forest Policy (2011).

The Commission develops and monitors standards for forest sector operations, develops and implements forest protection and conservation strategies, oversees forest research and provides support and guidance to forest education and training.

The Forest Resource Information Unit (FRIU) holds a range of operational spatial datasets that are used to assist in the management of forest resources.

Guyana Geology Mines Commission

The main functions of GGMC are to:

- Promote mineral development
- Provide technical assistance and advice in mining, mineral processing, mineral utilization and marketing of mineral resources
- Conduct mineral exploration
- Research the areas of exploration and mining, and utilization of minerals and mineral products.

The GGMC also has a role in the enforcement of the conditions of Mining Licenses, Mining Permits, Mining Concessions, Prospecting Licenses (for Large Scale Operations), Prospecting Permits (for Medium and Small Scale operations) and Quarry Licenses. It is responsible for the collection of rentals, fees, charges and levies payable under the Mining Act.

The GIS section at GGMC routinely collects information using field GPS units. The spatial layer developed holds information on the location of dredge sites and if available the person licensed to operate the dredge. The intention is that this dataset is updated quarterly.

GGMC also holds a spatial layer that defines the location of large and medium scale mining concessions and proposed reconnaissance areas.

Guyana Lands & Surveys Commission

The Guyana Lands and Surveys Commission (GL&SC) remit includes the provision of land policy recommendations and draft land use plans to ensure orderly and efficient utilization of public land resources; advise on land surveying matters, and effective and efficient land administration.

- GL&SC also has a GIS unit that creates and provides geographic information. Several base datasets held by GL&SC have been identified as particularly useful. These include:
    - The extent of larger settlements, in particular, Georgetown
    - The location of registered agricultural leases

- Historical aerial photography not held by GFC.

- Datasets from GGMC and GL&SC were consolidated into the GIS and used to assist with identification of areas undergoing change.

Section 4.4 provides details of image and GIS datasets considered relevant for the continued monitoring and mapping of temporal forest change in Guyana.

Protected Areas Commission

In 2012, following the passage of the Protected Areas Act, the Protected Areas Commission was established. The mandate of the PAC is to establish, manage, maintain, promote and expand the National Protected Areas System (NPAS). Under the Protected Areas Act, existing and new State owned protected areas, Amerindian protected areas, privately managed protected areas and urban parks such as the Botanical Gardens and Zoological Park comprise the NPAS, which will be managed by the Protected Areas Commission.

4.4 Monitoring Datasets - Satellite Imagery

In keeping with international best practice, the method applied in this assessment utilizes a wall-to-wall approach that enables complete, consistent, and transparent monitoring of land use and land use changes over time. The core datasets used for the Year 4 analysis include full country coverage at 5 m from RapidEye which is supplemented with Landsat 8 as necessary to accommodate cloud cover.

Presently, the annual change reporting is geared towards satisfying a series of interim measures. This requires that changes in forest land to other land uses be reported relative to the 2009 Benchmark map. Currently changes occurring in land defined as non-forest are not reported. The basic premise is that eventually changes in the six IPCC categories will be reported for the LULUCF sector.

RapidEye

The RapidEye constellation consists of five satellites which have been providing high resolution multi-spectral images since the start of RapidEye's commercial operations in February 2009. RapidEye holds imagery in an online image archive, and is also available to be tasked to cover specific areas. RapidEye provides both '1B' and '3A' 5 m resolution products.

The decision to commission this coverage was to ensure national coverage at a resolution high enough to capture forest change and degradation activities. The coverage also allows for robust estimates of change – as required for the national MRVS.

GFC has tasked the RapidEye constellation to provide a countrywide coverage of Guyana.

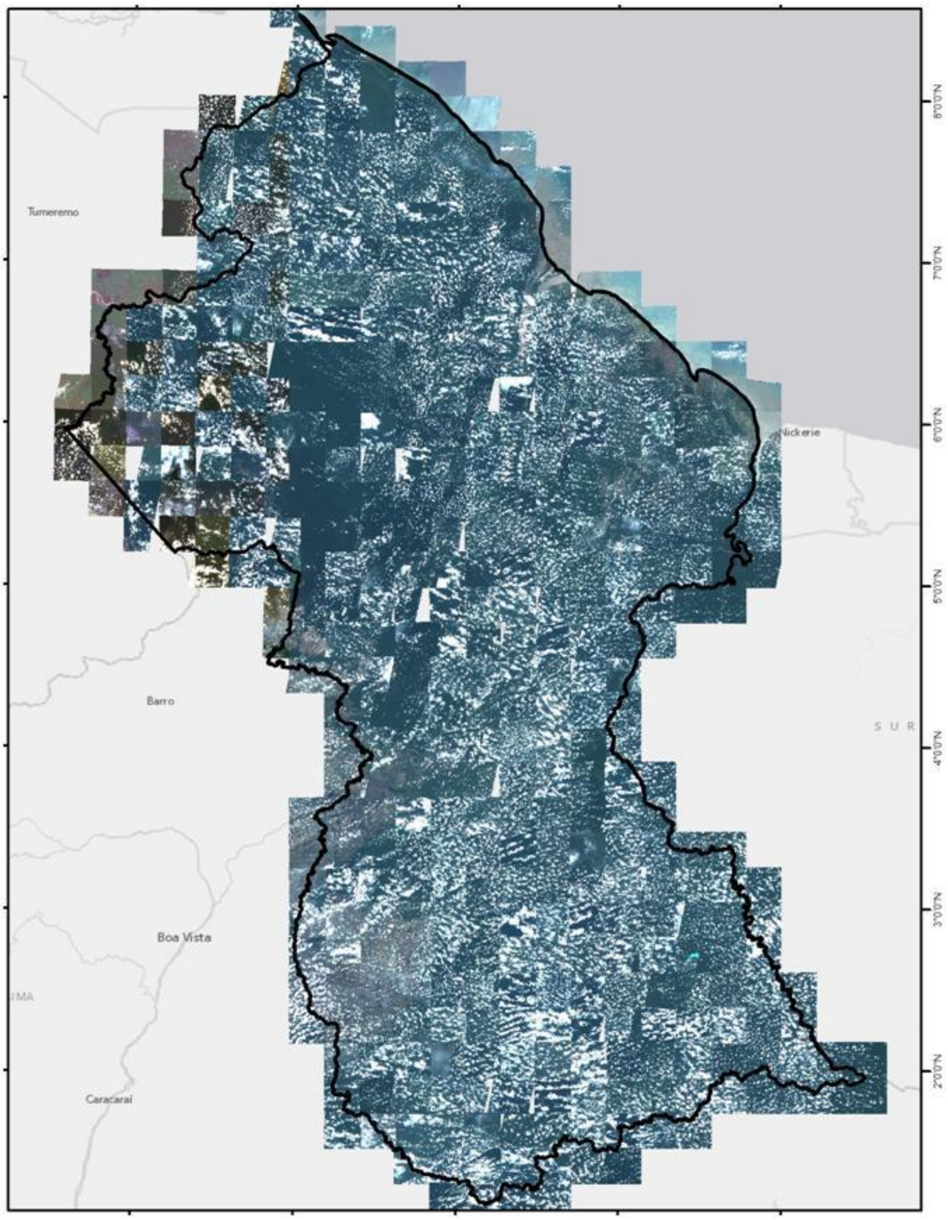
Since 2012 GFC has progressively improved the positional accuracy of the RapidEYE image base. This process initially involved co-registering the RapidEye 'image swaths' to match the existing Geo-Cover base map. The updated tie points were then returned to RapidEye and used to correct 2013 (Year 4) image coverage.

In 2014 RapidEye updated the positional accuracy over Guyana using control points derived from VHR (Very High Resolution) Digital Globe imagery. In the West of Guyana an offset of up to 30 m is observed. This is due to the steep topographic relief and change in the UTM zone.

It is proposed for Year 5 that the GFC team update and improve the existing base maps using RapidEye's improved 3A ortho-corrected product. The revised basemap will be used as a reference from the next reporting period onwards.

Figure 4-1 shows the RapidEye coverage of Guyana for the 2013, or Year 4 mapping period.

Figure 4-1: 2013 RapidEye Coverage



For the analysis a higher priority is placed on images acquired at the end Year 4 reporting period, with the majority of images acquired in November 2013. Due to the typically cloudy nature of satellite imagery over Guyana multiple scenes over the same location are required. Nearly all areas have three separate images covering each footprint. Supplementary to the RapidEye acquisition, 30 m Landsat 8 data is also analysed. Wall to wall coverage of Landsat imagery for Guyana has been downloaded from the United States Geological Survey (USGS) online catalogue.

Landsat

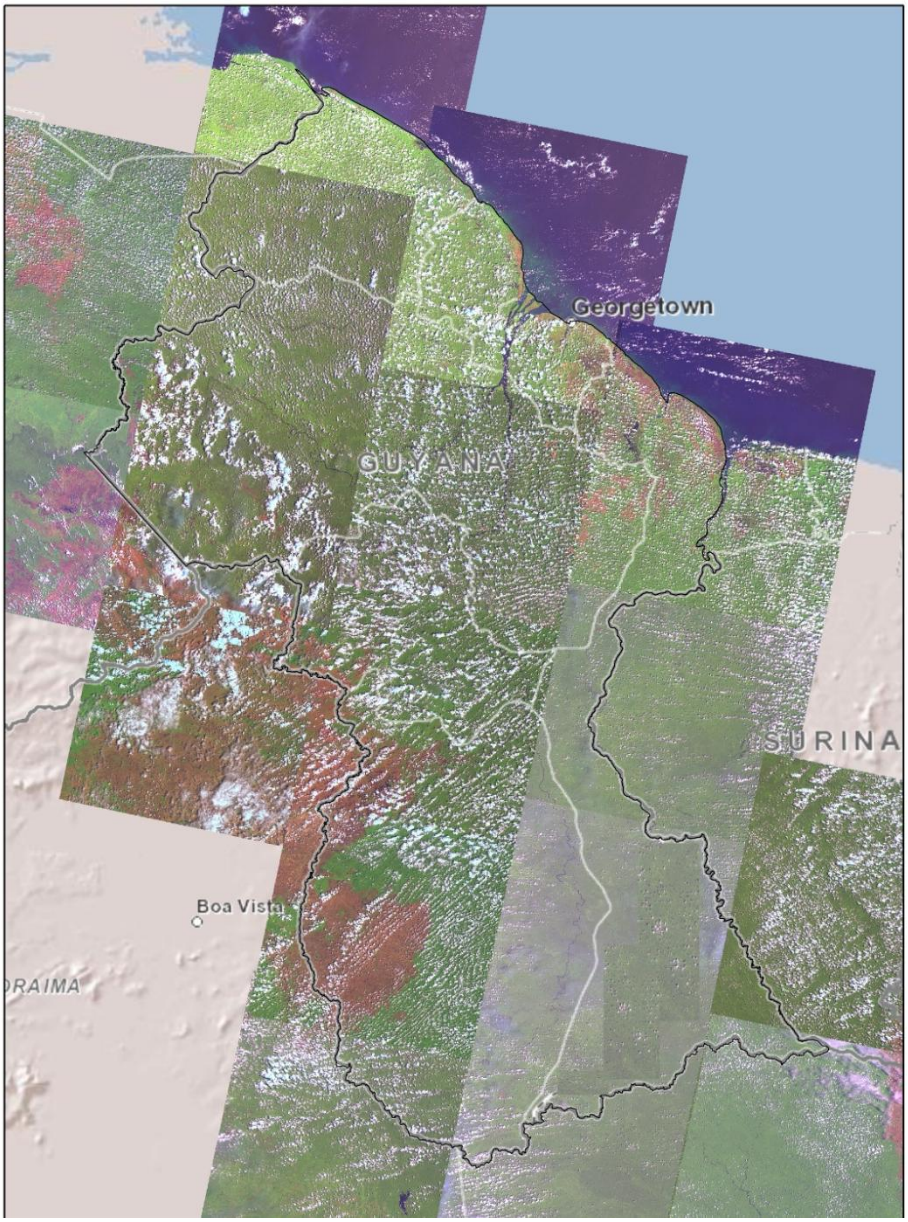
Landsat 8 imagery launched on 11 February 2013 also provides temporal coverage over Guyana. This imagery is archived and is freely available and can be sourced from either the United States Geological Survey (USGS) or National Institute for Space Research (INPE)

Brazil. Imagery sourced through USGS comes processed as “L1T” or terrain corrected (using SRTM 90 m DTM), whereas INPE imagery typically does not.

Landsat acquires images over the same area every 16 days. The Landsat Data Continuity Mission Landsat 8 provides a source of freely available imagery at 30 m resolution. The sensor collects 11 spectral bands from visible (~0.5μm) to thermal (~12μm) wavelengths.

The figure below shows the Landsat 8 coverage over Guyana for 2013.

Figure 4-2: 2013 Landsat 8 Coverage



To ensure consistency across datasets all imagery is geo-referenced to a base mosaic image which was generated from data provided in MrSid format by the Global Land Cover Facility (GLCF). The GLCF holds a global set of regional images which are divided into tiles and overlap each other seamlessly at their edges. This ensures consistency between images of a similar type, and also between different image types and resolutions.

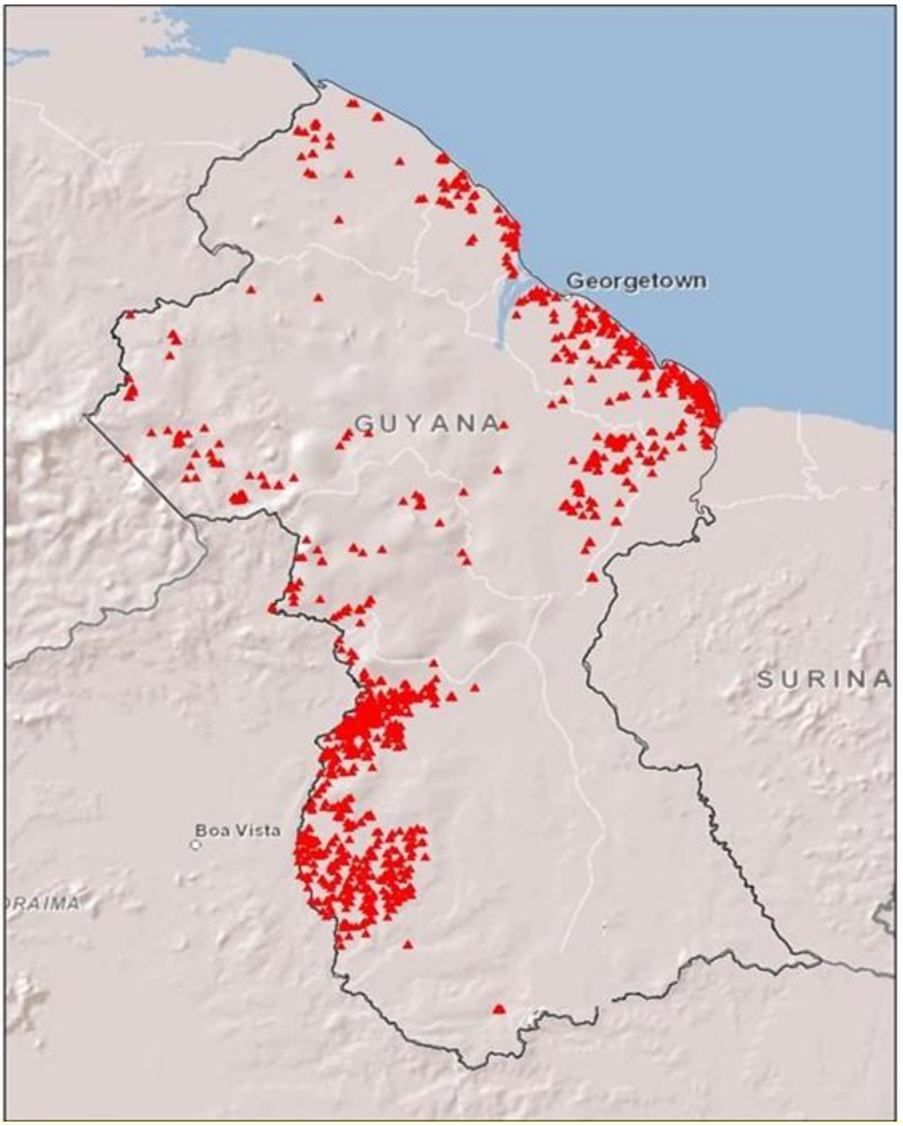
The approach employed in the previous analyses allowed for land cover change greater than one hectare in size to be tracked through time and attributed by its driver (i.e. mining or agriculture). This approach has been continued through into Year 4 using the same methodology. A series of refinements to the image processing chain have been implemented to facilitate the use of higher resolution RapidEye imagery on a national scale.

4.5 Additional Ancillary Satellite Images & Fire Datasets

The Fire Information Resource Management Service (FIRMS) Active fire dataset derived from thermal bands carried on the MODIS satellite is also assessed. This data is freely available and is distributed via FIRMS. This dataset is used to assist with the detection of fire-driven change events.

Previous analyses have utilised FIRMS to assist with identifying fire locations and risk areas. The presence of fire will be confirmed using higher resolution datasets. Figure 4-3 shows the MODIS-identified fire locations for the Year 4 period.

Figure 4-3: 2013 FIRMS Data



4.6 Accuracy Assessment Datasets

The purpose of the Accuracy Assessment (AA) is to provide an assessment of the quality of the GFC's mapping of land cover land use change across Guyana. It is established practice that data used for accuracy assessment be either an independent interpretation of the same datasets used for the change mapping or, if available, higher resolution data.The results of the independent accuracy assessment and report are provided in Appendix 7.

Currently, there are no commercially available satellites capable of supplying imagery of sufficiently high spatial resolution with appropriate revisit frequency on a national scale. The accuracy assessment conducted for Year 2 (2011-12) noted that a pixel size of at least 1-2 m is needed to identify forest degradation resulting from human infrastructure.

As part of a continuous improvement process GFC and Indufor have developed an operational method that captures high-resolution aerial imagery using a highly portable aerial multispectral imaging system. The camera system (provided by GeoVantage) is a flexible unit that can be installed quickly and easily on to various models of light aircraft. The resolution of the images captured across Guyana ranged from about 25 to 60 cm, a resolution capable of identifying forest degradation with some certainty.

The strategy employed uses the imaging system to capture high-quality image data at sites pre-determined by a stratified random sample that covers the majority of Guyana. The full sample coverage is achieved by including the RapidEye images over areas where it is not possible to safely operate a small aircraft.

The locations of these transects were provided to Indufor by the independent accuracy assessment team from Durham University, UK. Individual image frames acquired over the sample site locations were stitched together to form a mosaic. The mosaics obtained from the system were then delivered to the accuracy assessment team for analysis. The system is versatile enough to operate at low altitude (2000 ft) which increases flexibility in cloudy conditions.

In Year 3 the Accuracy Assessment involved the collection of 143 sample units randomly selected from primary sampling units. The accuracy assessment in Year 3 was carried out primarily using GeoVantage aerial imagery. Therefore in order to generate the best possible change reference dataset a repeat coverage of aerial imagery was acquired for Year 4.

It is recognised that there are practical and operational difficulties in generating an identical dataset with perfect overlap between Years 3 and 4. For example, there will be areas where GeoVantage data are missing or cannot be collected in areas where long-range flights with a light aircraft are not feasible or safe. In such cases the best available RapidEye data were selected and reinterpreted. Where possible the RapidEye data will be used in parts of the *low risk stratum* where human access is particularly limited and there is no history of logging or mining.

The following figure shows a comparison between the RapidEye imagery and the aerial photography. The left and middle images are from RapidEye and the right image from the aerial survey.

Figure 4-4: Comparative Resolution of the RapidEye and Aerial Imagery

5. DEVELOPMENT OF MAPPING METHODS

Since inception several mapping methods have been developed and refined. The focus has been on improving the determination of forest degradation for a range of drivers (as detailed below). The improvement process combines analysis of satellite imagery supported by field verification.

The aim was to develop monitoring methods for inclusion in the MRV. In some cases these have been integrated into the MRV in Year 4.

- Evaluation of methods for mapping and integrating of shifting agriculture
- Monitoring Forest Degradation
- Assessment of methods for monitoring change in areas under forest management
- Methodology for monitoring reforestation over mining areas and roads
- Evaluation of methods for monitoring degradation caused by anthropogenic fires.

A summary of the key findings of each is presented as follows:

Monitoring Shifting Cultivation

An evaluation of methods for detecting and mapping of areas under shifting cultivation has been undertaken. There are currently no best practice methodologies for doing this, especially on a national scale.

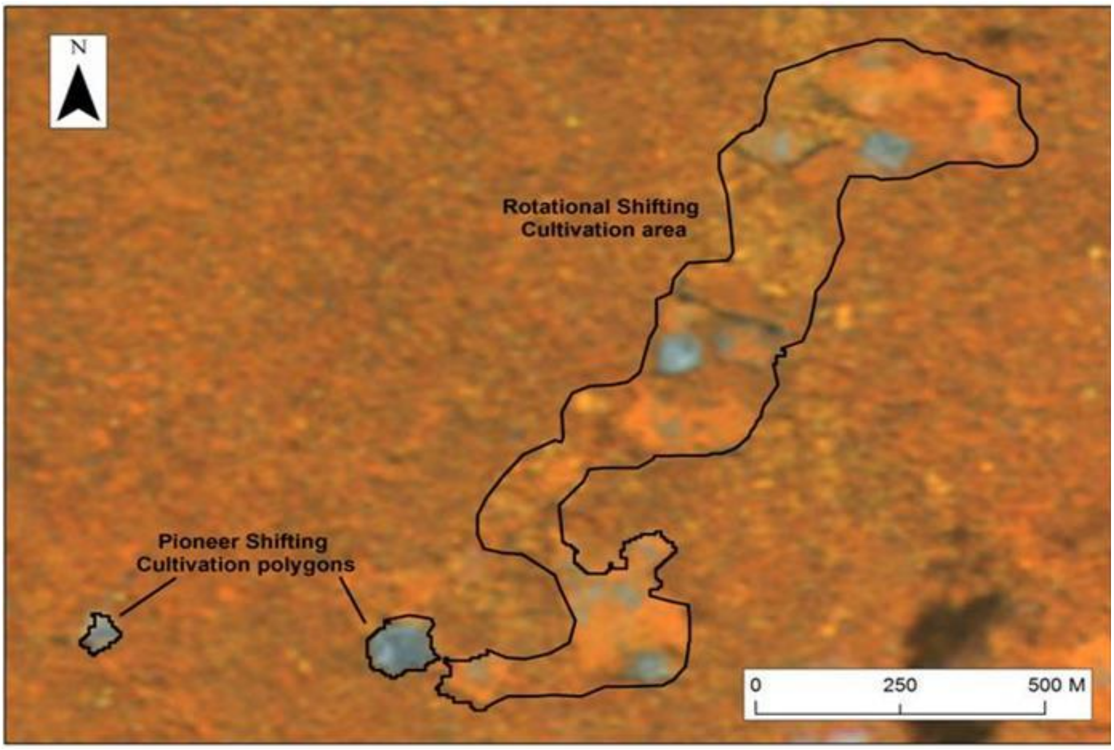
An appropriate detection and mapping methodology has been developed and operationalised in the year 4 analysis. The method adopted allows the calculation of the area which tracks newly cleared areas >0.25 ha. This is much smaller than the 1 ha minimum mapping unit (MMU) applied to deforestation. A matrix of shifting cultivation types within Guyana is shown below:

Table 5-1: Shifting Cultivation Types

Shifting Cultivation Type	Pre-change landcover	Rationale/Description	Monitoring	Reported
Pioneer	High/Primary forest	Pioneer shifting cultivation consists of newly cut areas which were seen as high forest in the previous year. All available evidence suggests these areas have not historically been degraded or anthropogenically affected. They tend to occur around the fringes of historical rotational shifting cultivation areas. A 100% carbon loss is assumed here as the pre change landcover was high forest.	Using RapidEye imagery the evolution of these areas is being monitored from year 4 onward. Minimum Mapping Unit (MMU) = 0.25 ha	Yes
Rotational	Unknown (varied)	Rotational shifting cultivation consists of historically degraded and impacted areas. All available evidence suggests these areas are in various states of succession from newly burnt areas to late successional secondary forest areas. They tend to occur around the areas of long term human habitation. Field work is required to determine a carbon value/emission factor for these systems, as they are technically 'forest remaining forest'.	The boundaries of these areas are delinated, but it is not possible to monitor changes inside the boundaries of historical rotational areas due to the low resolution and infrequent temporal coverage of Landsat images.	No

A spatial representation of these areas is shown in Figure 5-1. It shows the extent of the rotational area and the appearance of two new areas in close proximity to the rotational area.

Figure 5-1: Shifting Cultivation example



Further work is required to confirm the emission and removal factors. Once calculated these can be linked to the spatial representation. This will enable a calculation of the carbon stock change to be included in the MRV.

As appropriate these refinements to the mapping process have been documented in the mapping guide.

Monitoring Forest Degradation

The forest degradation method developed in 2011 has been retained for this assessment. This work showed that in Guyana forest degradation around deforestation sites is unique, with the main contributors being the opening of roads linked to new infrastructure, and degradation mainly associated with mining activity - which is dynamic.

The current method uses high resolution 5 m RapidEye to determine the impact of degradation.

The method development was supported by field inspections that measured the stock changes caused by degradation. The field assessment involved the establishment of field transects 20 m in width from the edge of deforestation events. The field measurements suggest that infrastructure-related degradation is restricted to the immediate area around the deforestation site.

Interpretation of the images showed that the forest cover returns to an intact state inside 40 m from the deforested event. Beyond this point it is possible to identify forest disturbances provided the disturbances are large enough (>100 m^2) and the vegetation is disturbed to the point where the soil is exposed.

Based on these results it was concluded that the most pragmatic approach was to use the RapidEye imagery to assist with the identification of degradation events. A set of GIS-based rules were developed. These replaced the default approach used for the Year 1 assessment. This process is documented in the Year 2 MRVS report[10].

[10] www.forestry.gov.gy

Further image coverages obtained in Years 3 and 4 indicate that degraded forest areas are either in transition to a state of deforestation or are only temporary in nature - as shown in section 6.6 of this report. Further work is required to confirm the fate of these areas.

It is also important to consider the possibility that historical mining sites may be re-entered or areas of small-scale prospecting extended. This has been observed in the field with previously abandoned sites and the surrounding areas being revisited and mined.

To ensure these activities are captured in the MRVS, the FRIU team revisits all areas identified in preceding assessments (post 2011) using high-resolution imagery and update areas if changes have occurred.

Monitoring Forest Degradation - Areas under Forest Management

The current interim measure uses post-2008 timber volumes as verified by independent forest monitoring (IFM), and applies the Gain Loss Method based on forest harvest and illegal logging volumes. These values are then compared to the mean volume from 2003-2008. This work evaluated the ability of RapidEye to provide supplemental information through the detection of harvest and roading activities.

The field assessment covered a range of clearance activities associated with forest harvest. These included the formation of roads (primary, secondary and skid trails), log markets, and harvesting operations.

The main findings of this work indicate that:

- The assessment showed that individual canopy openings are too small for detection in high resolution imagery such as RapidEye. A possible exception is if the operations are recent and the harvesting is clustered. However, even in such cases, the harvest yield is relatively low and it is difficult to detect a change in forest cover.
- This finding concurs with other studies that have used the spatial patterns of log landings and road infrastructure (Matricardi et al., 2001,Asner et al., 2005, Souza Jr et al., 2005).

It is suggested that the current interim measure is retained.

- The size of secondary access roads is small (road widths ~3-4 m). Unless detected during formation it is likely that these roads will remain undetected. It is possible to detect larger roads wider than 10 m.

This suggests that small-scale roads associated with forest harvesting cannot be mapped reliably. It should be noted that within the application of the Gain Loss method in the forest management indicator, provision is made for logging infrastructure impacts and collateral/incidental damage. This is informed by field data from forest concessions in Guyana. This is additional justification for continuing to use the Gain Loss method as this is most comprehensive.

Monitoring Reforestation of Mining Areas & Roads

This study addresses the monitoring of reforestation. The reforestation aspect looks at the potential for identifying regeneration (carbon stock accumulation) of abandoned mining sites and roads, using high resolution imagery.

It is clear on the satellite imagery that any type of change in the vegetative cover is detected. It is, however, difficult to determine the composition or structure of this cover. The field inspections indicate that biomass recovery is slow and that no measureable biomass (i.e. woody vegetation >2 cm) across the site may exist.

The main findings of this work indicate that:

- Abandoned mining sites can be detected and monitored using high-resolution imagery. A methodology has been adapted to allow temporal monitoring of these areas in the MRVS.

- The field inspections indicate that the rate of regeneration is very slow. In all historical mining sites visited (period 1990 to 2012) the forest cover had not regenerated to a state where the biomass is measurable.

This indicates that the change in environmental conditions caused by mining affects the ability of these sites to regenerate. It is recommended that a long-term measurement plan be developed to monitor the carbon stock accumulation over time. The purpose of this plan would be to develop a realistic re-measurement interval. Once carbon stocks show signs of recovery, emission factors could be developed and linked to the GIS to provide a carbon stock estimation.

Monitoring Forest Degradation on Sites Affected by Fire

The impact of human induced or anthropogenic forest fires is included in the assessment of the associated emissions (Interim Measure 5). The interim performance indicator is the area burnt each year decreasing compared to the current area.

In Guyana the cause of fires (biomass burning) is associated with forest cover change which, based on local knowledge, is largely human induced. The current detection method uses information from the Fire Information for Resource Management System (FIRMS)

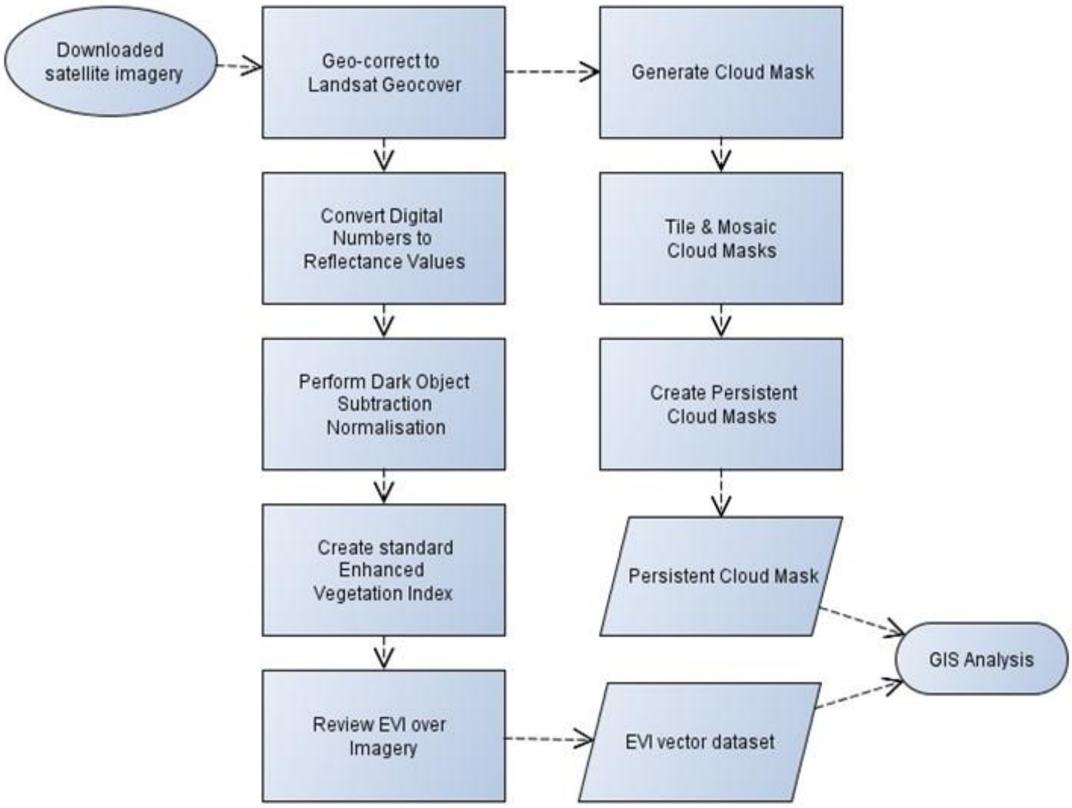
In 2012 the detection of forest fires changed to using high resolution 5 m imagery and FIRMS data. The successful detection of burnt areas depends on the intensity and the scale of the fire.

The land classes attributed can be either deforestation, if it leads to a permanent land use change from forest land to non-forest (>1 ha), or forest degradation, if the area burnt does not lead to a land cover change. Overall the fire detection methodology has been improved by the inclusion of higher resolution imagery. These changes have been incorporated into the Mapping Standard Operating Procedures (SOP).

The image processing follows the process documented in Figure 5-2. The process is automated to produce a GIS change layer that is derived from the Enhanced Vegetation Index (EVI) vegetation ratio. A second aspect is the creation of a persistent cloud mask. All data is tied to the Landsat Geo-cover dataset and ground control points retained. From Year 5 forward this will change slightly as the base dataset will be updated using the revised RapidEye imagery. However, historical change datasets will need to be updated to accommodate any spatial adjustments.

Once the EVI-change layer is produced direct interpretation and manual editing of the change area is conducted. The following pre-processing steps are undertaken in ENVI using customised routines. A brief description of each step is provided, with the stepwise process explained in further detail.

Figure 5-2: Image Processing Flow Diagram



5.1 Image Geo-correction

All satellite images are co-registered to the 2005 Landsat Geocover base map. Accurate co-registration is important to ensure that changes detected in future time periods are valid and not simply artifacts caused by inaccurate co-registration. Mismatches should be less than one Geocover pixel (<14.25 m). All GCPs are to be recorded and saved.

5.2 Image Normalisation

Radiometric normalisation is a recommended image processing practise to ensure the radiometric values within images obtained over different time periods and by different sensors are calibrated to common reference values. There are many methods applied for the normalisation of images that perform either a relative correction to a single scene or an absolute correction to standard reflectance units.

For practical purposes based on the project timeline, the number of RapidEye images to process, the generally high level of clouds per image and the availability of atmospheric correction data, the dark subtraction radiometric normalisation method implemented in ENVI was chosen.

Each scene is evaluated and the band minimum Digital Number (DN) values were automatically selected from each scene and subtracted from all pixels within the scene with the assumption the band minimum values are dark targets that are only influenced by atmospheric scattering.

The method adopted uses a combination of automated (calculation of vegetation indices) and manual interpretation and editing. The objective of the approach was to use a vegetation index to delineate areas of forest and non-forest.

Identified areas of non-forest within the forest mask represent potential areas of forest change (i.e. deforestation or degradation). The delineated non-forest areas were input into a GIS and used as an ancillary layer in the Year 4 change analysis mapping.

The key to differentiating forest from non-forest is to link the reflectance properties of the vegetation to its structure. Several vegetation indices exist that enhance non-forest detection as described by *Asner (1998).*

For this work the Enhanced Vegetation Index (EVI) as described in *Huete et al.* (1997) was favoured over other vegetation indices as it includes the blue reflectance. The strength of the EVI is in its ratio concept which provides a correction for soil background signal and reduces atmospheric influences, including aerosol scattering. This is particularly relevant given the lack of any aerosols, water vapour, and ozone concentrations to correct atmospheric conditions.

The EVI is calculated with the following equation as presented and described in *Huete et al 200*2,

$$\mathrm{EVI} = G \frac{\rho_{\mathrm{NIR}} - \rho_{\mathrm{red}}}{\rho_{\mathrm{NIR}} + C_1 \times \rho_{\mathrm{red}} - C_2 \times \rho_{\mathrm{blue}} + L} \qquad (1)$$

where G is the gain factor, ρ are atmospherically corrected or partially atmosphere corrected (Rayleigh and ozone absorption) surface reflectances, L is the canopy background adjustment that addresses nonlinear, differential NIR and red radiant transfer through a canopy, and C_1, C_2 are the coefficients of the aerosol resistance term, which uses the blue band to correct for aerosol influences in the red band. The coefficients adopted in the EVI algorithm are, L=1, C_1=6, C_2 = 7.5 and G = 2.5.

The EVI values range from 0 to 1 with low values indicating non-vegetative surfaces and those closer to 1 representing closed canopy forest. The same approach was successfully applied to separate forest and non-forest components for the 1990-2010 period[11].

The method has also been widely discussed in the scientific literature. *Deng et.al. (2007)* found that EVI was effective in vegetation monitoring, change detection, and in assessing seasonal variations of evergreen forests.

Additionally, the EVI has been found to perform well in the heavy aerosol, biomass burning conditions in Brazil *(Miura, Huete, van Leeuwen, & Didan, 1998).Miura, Huete, Yoshioka, and Holben (2001)* and also showed EVI ratio can successfully minimize residual aerosol effects resulting from the dark target-based atmospheric correction. The same approach was applied in this assessment.

The automated change detection process produces a vector layer delineating the potential areas of non-forest. The vector layer is subsequently input into the GIS for review, editing and attribution.

5.3 Persistent Cloud

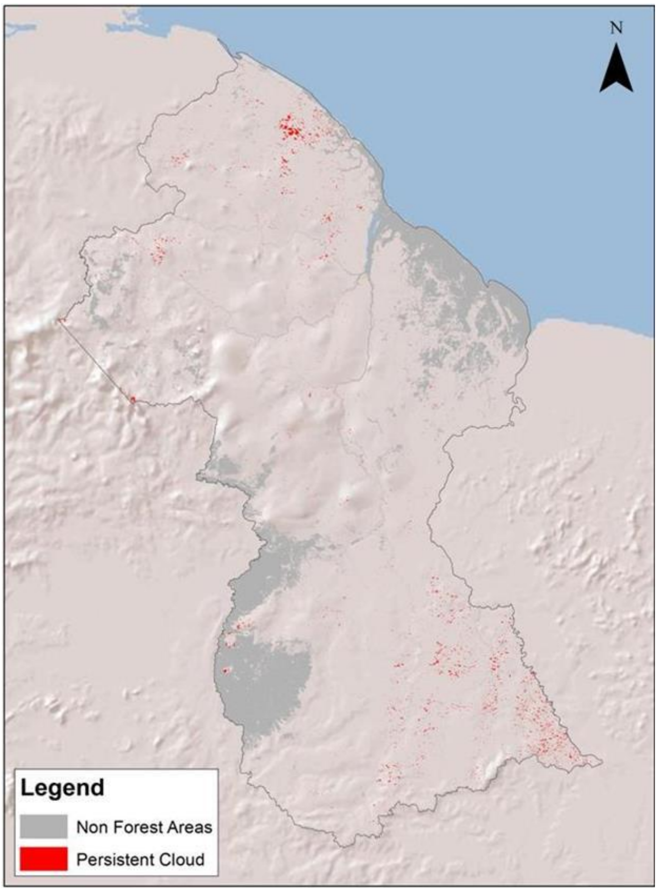
One potential issue is detection of change in areas of sporadic and persistent cloud. In areas of sporadic cloud (i.e. where at least one period is clear) the change was attributed to the relevant change period. If areas are under persistent cloud cover then it is not possible to evaluate the area for change.

The impact of cloud was assessed by generating cloud masks for each RapidEye and Landsat image to identify those areas of persistent cloud. The masks were generated by a simple band threshold approach and edited to remove areas of non-forest. The cloud mask does not identify cloud shadow so it provides only a broad estimate of cloud coverage.

[11] The independent accuracy assessment conducted in 2011 reported the accuracy of the forest and non-forest mapping to be 99%.

The analysis showed that for Year 4 less than 0.2% of the land area was persistently covered in cloud. The distribution of the cloud is quite scattered and located over the country most notably in the SE and NW of the country as shown on Figure 5-3.

Figure 5-3: 2013 Persistent Cloud Cover



5.4 Spatial Mapping of Land Cover Change

The GIS-based monitoring system is designed to map change events in the year of their occurrence and then monitor any changes that occur over that area each year. Where an area (polygon) remains constant, the land use class and change driver are updated to remain consistent with the previous analysis. Where there is a change in the land cover of an area, this is recorded using the appropriate driver. The following drivers of land use change are relevant. Drivers can lead to either deforestation or forest degradation.

5.5 Deforestation

Formally, the definition of deforestation is summarised as the long-term or permanent conversion of land from forest use to other non-forest uses (GOFC-GOLD, 2010). An important consideration is that a forested area is only deemed deforested once the cover falls and remains below the elected crown cover threshold (30% for Guyana). In Guyana's context forest areas under sustainable forest management (SFM) that adhere to the forest code of practice would not be considered deforested as they have the ability to regain the elected crown cover threshold.

The five historic anthropogenic change drivers that lead to deforestation include:

1. Forestry (clearance activities such as roads and log landings)
2. Mining (ground excavation associated with small, medium and large scale mining)
3. Infrastructure such as roads (included are forestry and mining roads)

4. Agricultural conversion
5. Fire (all considered anthropogenic and depending on intensity and frequency can lead to deforestation).

In Year 4, a new driver ‘settlements’ has been added to the driver matrix. It allows the team to describe human settlement driven change such as new housing developments.

5.6 Degradation

There is still some debate internationally over the definition of forest degradation. A commonly adopted definition outlined in IPCC (2003) report is:

"*A direct human-induced long-term loss (persisting for X years or more) of at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation or an elected activity under Article 3.4 of the Kyoto Protocol* ".

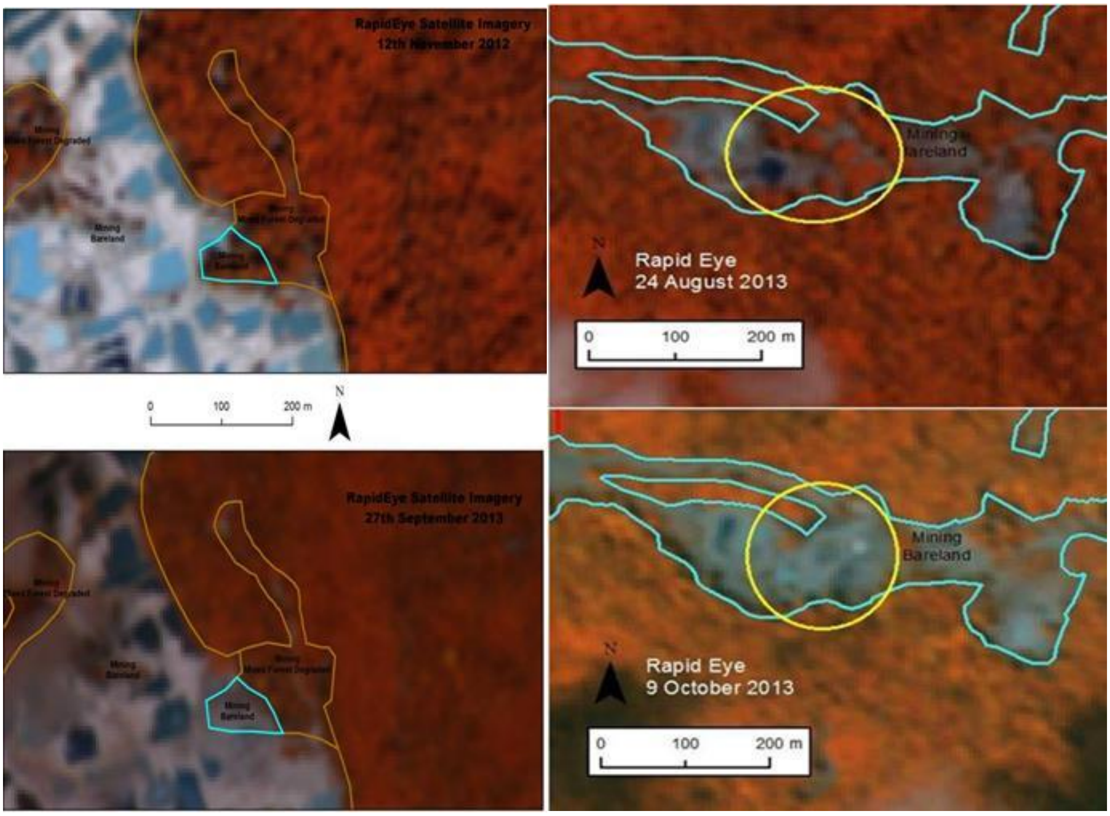
The main sources of degradation are identified as:

- Harvesting of timber (reported since 2011 using the Gain Loss Method)
- Shifting cultivation (prototype method developed in 2012)
- Fire
- Associated with mining sites and road infrastructure.

Image evidence and fieldwork over the last two years has shown that each of these drivers produce a significantly different type of forest degradation. Shifting agriculture and forest harvest operations are temporally persistent. Forest degradation surrounding new infrastructure is different in nature. Image evidence suggests that this type of degradation is dependent on the associated deforestation site, and often is not persistent in nature. Often the sites are either in transition to deforestation or are only temporarily degraded.

Figure 5-4 shows two sites in transition from a degraded forest state to full deforestation.

Figure 5-4: Degradation Transitioning to Deforestation



In the above examples you can see the edge of a deforestation site moving from a degraded to a deforested state. Figure 5-5 shows one of the abandoned mining sites, only affected temporarily before moving back into a revegetated state.

Figure 5-5: Abandoned Mining Site

5.7 Change Analysis

To facilitate the analysis Guyana has been divided into a series of regularly spaced grids. The mapping process involves a systematic review of each 24 x 24 km tile, divided into 1 km x 1 km tiles at a resolution of 1:8000.

If cloud is present on the RapidEye then Landsat images over that location are also assessed. The tile size was chosen to align with the footprint of a single RapidEye tile. The RapidEye tiles were then subset to a 1 km x 1 km grid. The process involves a systematic tile-based manual change detection analysis in the GIS.

The EVI vector outputs from the change detection process are edited as required to delineate new change events. Change is attributed with the acquisition date of the pre and post change image, driver of change event, and resultant land use class. A set of mapping rules has been established that dictate how each event is classified and recorded in the GIS.

The input process is standardised through the use of a customised GIS tool which provides a series of pre-set selections that are saved as feature classes. The mapping process is divided into mapping and QC. The QC team operates independently to the mapping team and is responsible for reviewing each tile as it is completed.

The following table provides an overview of drivers and associated deforestation or degradation activities that are reported spatially in the GIS as part of the MRVS. Appropriate methods have been established for all activities. Reforestation/Afforestation is the only activity not yet reported in the MRVS. The identification of the driver of specific land-use change depends on the characteristics of the change. Certainty is improved by considering the shape, location and context of the change in combination with its spectral properties.

Table 5-2: Summary of Activities & Drivers Captured in the GIS

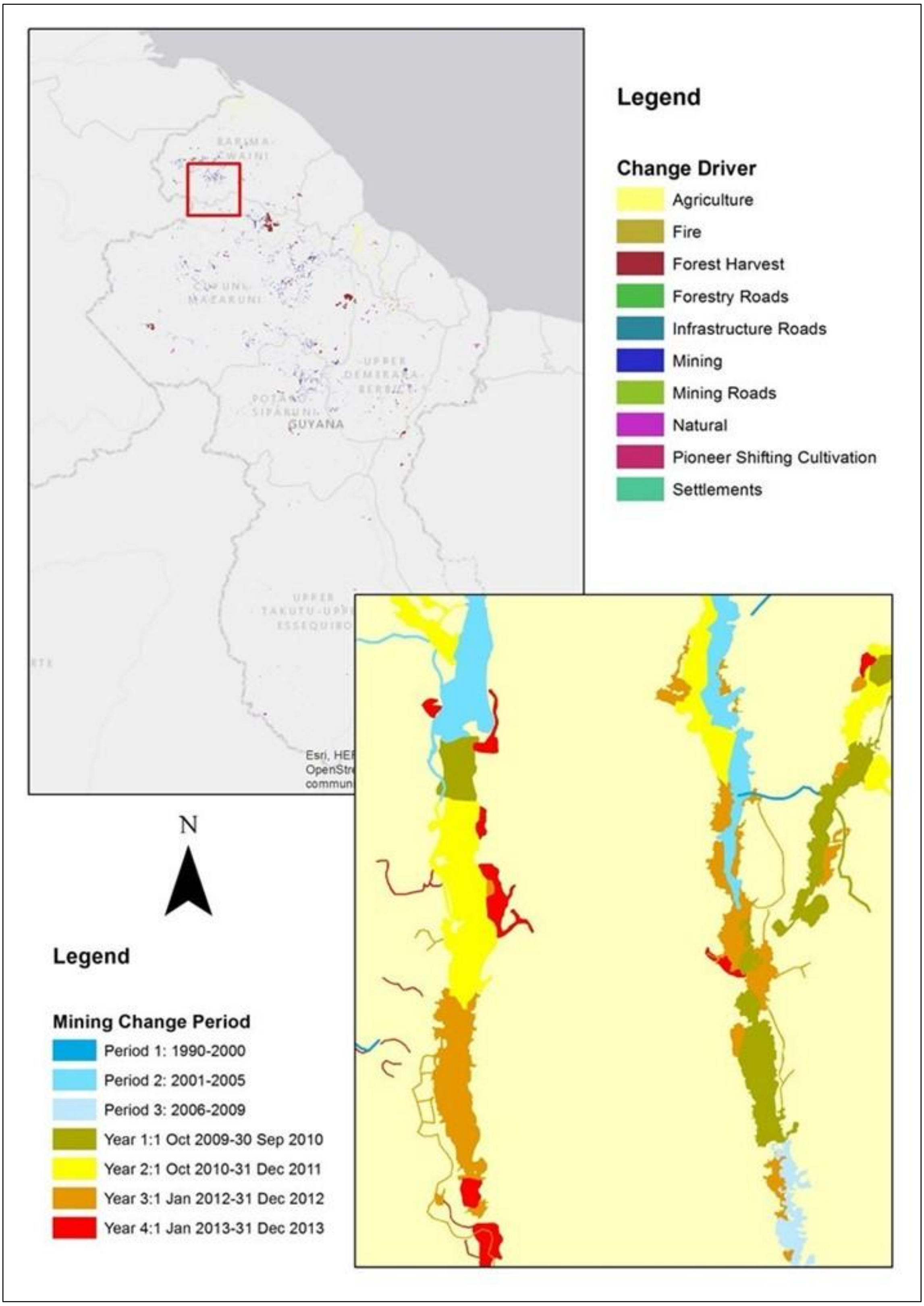
Activity	Driver	Criteria	Ancillary Info Available	Spatially Mapped	End Land Use Class
Forestry	SFM	Fall inside state forest area and is a registered concession	Annual harvest plans, GIS extent of concession, previously mapped layers, Satellite imagery	No. Volumetric measure used	Degraded forest by type
	Infrastructure	Roads > 10m		Yes	Settlements
Settlements	Settlements	Areas of new human settlement	Population data, image evdience.	Yes	Settlements
Mining	Infrastructure	Roads >10 m	Existing road network, Satellite imagery	Yes	Settlements
	Deforestation	Deforestation sites > 1 ha	Dredge sites, GIS extent of mining concessions, previously mapped layers, Satellite imagery	Yes	Bareland
	Degradation	Assess any area >0.25 ha within 100 m buffer around deforestation event &– road or new infrastructure -revisit sites post 2011to assess change	Existing infrastructure incl. deforestationsites post 2011,Satellite imagery	Yes	Degraded forest by type
Agriculture	Deforestation	Deforestation sites > 1 ha	Registered agricultural leases, Satellite imagery	Yes	Bareland or crop land
Fire	Deforestation	Deforestation sites > 1 ha	FIRMs fire points, spatial trends from preceding periods, Satellite imagery	Yes	Bareland or crop land
	Degradation	Degraded forest sites		Yes	Degraded forest by type
Infrastructure	Deforestation	Roads >10 m	Existing road network Satellite imagery	Yes	Settlements
	Degradation	Assess any area >0.25ha within 100 m buffer around deforestation event – road or new infrastructure - revisit sites post 2011 to assess change	Existing deforestation sites, Satellite imagery	Yes	Degraded forest by type
Shifting Agriculture	Degradation	Assess historical patterns	Proximity to rural populations, water sources and Satellite imagery	Yes	Degraded forest by type
Reforestation/ Afforestation	Reforestation	Monitor abandoned deforestation sites	Historical land use change, Satellite images	Yes	Reforestation Forest or land cover by type
	Afforestation	Monitor historical non forest areas	Satellite imagery	Yes	Afforestation by land cover class.

Previous assessments and specific projects show that the spatial distribution of change in Guyana follows a pattern and is clustered around existing access routes (GFC Year 1 & 2; 2010, 11; Watt & von Veh, 2009 & von Veh & Watt 2010).

Potentially there is some overlap between drivers as the exact cause of the forest change can be difficult to determine. This is particularly relevant when deciding on the driver of road construction when mining and forestry areas use the same access routes.

Supplementary GIS layers are also included in the decision-making process to reduce this uncertainty. The decision based rules are outlined in the mapping guidance documentation. This documentation, held at GFC, provides a comprehensive overview of the mapping process and rules. The following example provides an overview of the detail captured in the GIS. Evident are temporal changes in forest cover due to a range of forest change drivers.

Figure 5-6: Example of Forest Change Mapping



5.8 Land Use Changes Not Recorded Spatially in the MRVS

There are several land cover changes that are not reported spatially in the MRVS at this interim stage. For completeness the general extent of these areas is mapped to ensure that they are not accounted for as measured land use change – these are listed as follow:

Forest Harvest

Forest harvest activities are accounted for using extraction records. Concessionaires are required to submit annual plans to GFC that show intended harvesting activities. All blocks require approval before harvesting may commence. This information is recorded in the GIS by GFC and as practical are tracked using satellite imagery.

On the satellite imagery forestry activity within the State Forest Area is often first identified by the appearance of roading and the degradation caused by surrounding selective harvest areas.

These areas are delineated as a single polygon around the spatial extent of the impacted area (degradation as a result of forest harvest). Following this, a land use class of degraded forest by the forest type is assigned.

Natural Events

Natural events are considered non-anthropogenic change, so do not contribute to deforestation or degradation figures. These changes are typically non-uniform in shape and have no evidence of anthropogenic activity nearby. While these are not recorded in the MRVS, they are mapped in the GIS. These areas are attributed with a land class of degraded forest by forest type or bareland as appropriate.

6. FOREST CHANGE

The results summarise the Year 4 period (1 January 2013 to 31 December 2013) forest change. This includes estimates of deforestation and degradation for all land eligible under Guyana's LCDS.

The measurement period for Year 4 is calculated over a 12 month period with the satellite imagery used to assess and calculate the land cover change acquired from August 2013 to December 2013.

As agreed under the JCN, infrastructure associated with the construction of the Amaila Falls hydro power development is itemised separately.

For reference, historical changes relating to the benchmark period (1990 to 30 September 2009 and Year 1 (01 October 2009 to 30 September 2010) are also provided.

Previously the change for each period has been calculated by progressively subtracting the deforestation for each period from the forest cover as at 1990. The forest area has since been updated using high resolution satellite images. This has meant that the forest/non-forest boundaries have been refined.

As with previous assessments forest is defined in accordance with Guyana's national definition of forest which has remained consistent across the historic benchmark period, and Years 1, 2 and 3.

The forest cover estimated as at 1990 (18.47 million ha) was determined using manual interpretation of historical aerial photography and satellite images. This area was determined during the first national assessment (GFC 2010) and verified independently by the University of Durham (UoD, 2010 and 2011). By 2011 the forest cover had reduced to 18.38 million ha due to deforestation. In 2012 the forest cover was reassessed using high resolution imagery and the baseline figure increased to 18.5 million ha. This revised figure has been used as the revised 1990 reference point from which all change is subtracted.

The results for each period are further divided by the five drivers of forest change. This information can be used to provide indicative trends for the periods analysed.

For the Year 4 change detection, four main improvements have been implemented:

- The historical non-forest area has been subdivided into its constituent classes. This allows for a description of Guyana's landcover in accordance with IPCC classes.
- Shifting agriculture has been reported for the first time. It is included as a form of forest degradation in the deforestation tables.
- The method for mapping degradation around new infrastructure established in 2011 has been retained for this assessment.
- The impact of cloud (which may obscure change) has been minimised by using multiple high-resolution images acquired over the same location, and creating a persistent cloud mask, to check these areas. As necessary this coverage is supplemented using Landsat 8.

Additional factors that should be considered when evaluating the forest change results include:

- Forest change reported for the Year 4 period is based on interpretation of satellite images acquired for the last four months of 2013.
- The reporting of reforestation of previously forested sites is still under review. Many of these sites are abandoned mining areas. Biomass recovery is known to be very slow. The areas are brought into the MRVS and tagged with the first date at which they appear to be abandoned. In this way it is possible to allocate carbon accumulation rates once these are established.
- Roads visible on the images (>10 m on RapidEye) were included in the analysis. All roads were treated as deforestation events. This is a conservative approach as some vegetation

cleared for roads appeared to regenerate. Further work is required to ascertain the regeneration potential of these areas. This is planned and will form part of the carbon monitoring program.

6.1 Changes in Guyana's Forested Area 1990-2012

Historical Analysis

The historical analysis indicates that the total area converted from forest to non-forest between 1990 and 2009 was 74 917 ha. This was calculated by subtracting the initial 1990 forest area as mapped in the GIS from the 2009 September forest area (~19.75 years).

This estimate included all forest to non-forest change i.e. detected mining, road infrastructure, agricultural conversion and fire events that result in deforestation. It does not include forest degradation caused by selective harvesting, fire or shifting agriculture.

The same approach and criteria was applied to calculate the area of deforestation from 2009 to 2010 (Year 1 period). The total area of deforestation for this period was calculated at 10 287 ha. In Year 2 the change figure was similar and reported as 9 891 ha, with a rise in deforestation seen in Year 3 to 14 655 ha.

6.2 Year 4 Analysis

For Year 4 the total area of deforestation over the 12 month period is calculated at 12 733 ha. This is a decrease of about 1 922 ha when compared to Year 3.

The total change and change expressed as a percentage of forest remaining is provided in Table 6-1.

Table 6-1: Area Deforested 1990 to 2013

Period	Years	Analysis resolution	Forest Area ('000 ha)	Change ('000 ha)	Change Rate (%)
Initial forest area 1990		30m	18 473.39		
Benchmark (Sept 2009)	19.75	30m	18 398.48	74.92	0.41
Year 1 (Sept 2010)	1	30m	18 388.19	10.28	0.056
Year 2 (Oct 2010 to Dec 2011)	1.25	30m & 5m	18 378.30	9.88	0.054
Year 3 (Jan 2012 to Dec 2012)	1	5m	*18 487.88	14.65	0.079
Year 4 (Jan 2013 to Dec 2013)	1	5m	18 475.14	12.73	0.068

*A new start forest area is used from year 2 forward as the analyses were undertaken using 5m resolution imagery and a 5m resolution updated non forest basemap. This is further explained in section 1.3

Based on the initial 1990 forest area, the forest cover change for the 1990-2009 period is estimated at 0.41% (i.e.<1%). As with Year 1, the FAO (1995) equation as cited in Puyravaud (2003) has been used to calculate the annual rate of change. Puyravaud (2003) suggests an alternative to this equation, but at low rates of deforestation the two are essentially the same.

Equation 6-1: Rate of Forest Change

$$q = \left(\frac{A_2}{A_1}\right)^{1/(t_2-t_1)} - 1$$

Whereby the annual rate of change (%/yr or ha/yr) is calculated by determining the forest cover A_1 and A_2 at time periods t_1 and t_2.

If the 1990-2009 period is annualised this represents an average rate of change of about 3 800 ha/yr^{-1} which is equivalent to a deforestation rate of - 0.02%/ yr.

From this point the deforestation increased for the Year 1 period to 0.06% and has remained at a similar level for Year 2 (0.054%). The rate is in fact lower (0.043%) if the change is expressed as an annual rate rather than presented for the entire Year 2 period.

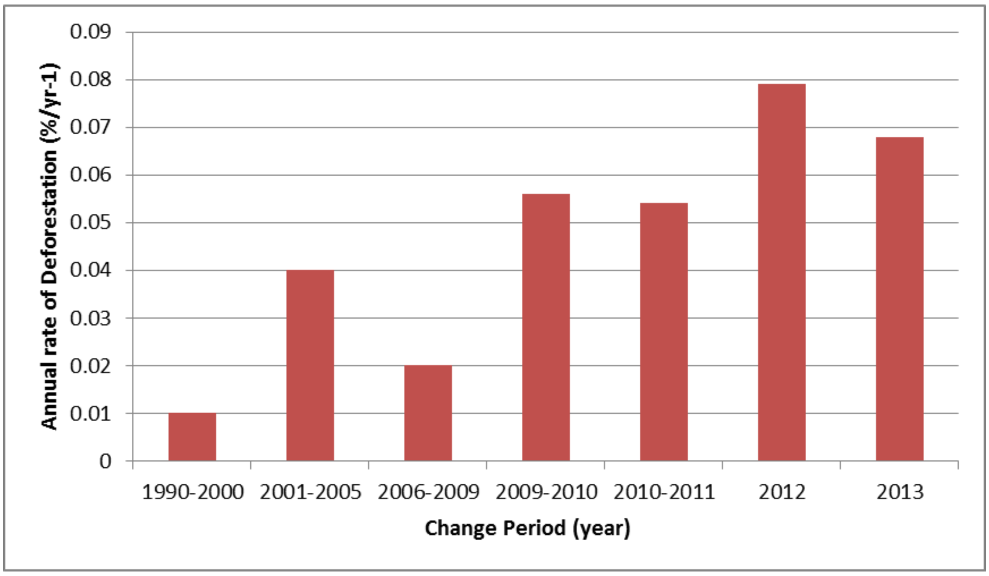
In Year 3 the deforestation rate increased relative to previous years to 0.079%, but in Year 4 a decrease has occurred to 0.068%

Overall, Guyana's Year 4 deforestation rate is low when compared to the rest of South America, which according to the FAO 2010 forest resource assessment (FRA) is tracking at an annual deforestation rate of -0.41%/yr[12].

The following figure shows the deforestation trend by period. The rate presented has been annualised for the benchmark and Year 1 period. The value for the full 15 month assessment period is shown for Year 2. Year 3 (2012) and Year 4 (2013) were annual assessments.

The trend shows that deforestation rates have increased since 1990 and peaked in 2012. From 2009-10 onwards the deforestation rate has fluctuated between 0.054% and 0.079%. A decline in deforestation compared to 2012 is observed in 2013.

Figure 6-1: Annual Rate of Deforestation by Period from 1990 to 2013



6.3 Forest Change by Driver

The forest change was divided and assessed by driver. In Year 4, degradation as measured from the 5 m RapidEye images was also included in the analysis. Details of this methodology are provided in the Year 2 interim measures report which is available from the GFC.

Table 6-2 provides a breakdown by forest change drivers for the benchmark, Year 1, 2, 3 and 4 periods. Interpretation of the change areas during the benchmark period identifies mining (which includes mining infrastructure) as the leading contributor of deforestation (60% of the total), particularly between 2001 and 2005.

The area of deforestation attributed to mining (which includes mining infrastructure) has decreased slightly from Year 3 to Year 4 with approximately 11 518 ha deforested in this year, this is appoximately 90% of all recorded deforestation in 2013.

[12] A revision to the FRA estimate is expected in 2015.

Table 6-2: Forest Change Area by Period & Driver from 1990 to 2013

Driver	Historical Period			Year 1	Year 2 2010-11 (15 months)		Year 3 2012		Year 4 2013	
	1990 to 2000	2001 to 2005	2006 to 2009	2009-10	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation
	Area (ha)									
Forestry (includes forestry infrastructure)	6 094	8 420	4 784	294	233	147	240	113	330	85
Agriculture (permanent)	2 030	2 852	1 797	513	52	N/A	440	0	424	N/A
Mining (includes mining infrastructure)	10 843	21 438	12 624	9 384	9 175	5 287	13 516	1 629	**11 251	2 955
Infrastructure	590	1 304	195	64	148	5	127	13	278	112
Fire (deforestation)	1 708	235		32	58	28	184	208	96	395
Settlements									23	20
Year 4 Shifting Agriculture										765
Year 2 forest degradation converted to deforestation							148		67	N/A
Year 3 forest degradation converted to deforestation									200	N/A
Amaila Falls development (Infrastructure Roads)					225				64	20
Area Change	**21 267**	**34 249**	**19 400**	**10 287**	**9 891**	**5 467**	**14 655**	**1 963**	**12 733**	**4 352**
Area Change for Year 4 without Shifting Agriculture										3 587
Total Forest Area of Guyana	18 473 394	18 452 127	18 417 878	18 398 478	18 388 190		**18 502 531**		18 487 876	
Total Forest Area of Guyana Remaining	18 452 127	18 417 878	18 398 478	18 388 190	18 378 299		18 487876		18 475 143	
Period Deforestation (%)	0.01%	0.04%	0.02%	0.056%	0.054%		0.079%		0.068%	

**Forestry infrastructure accounts for the full total of deforestation from forestry activities.

**Mining Infrastructure accounts for 918 ha in 2013 out of the total deforestation driven by mining of 11 518 ha, when Year 2 & 3 transitional areas are taken into account.

***Amalia Falls Development has been split from other infrastructure driven change for reporting purposes.

6.4 Degradation

The area of degradation in close proximity to deforestation events in Year 1 was estimated as 92 413 ha – which was calculated using the default method outlined in the Norway/Guyana JCN. In Year 2 infrastructure as measured from satellite imagery was estimated at 5 467 ha. This figure is substantially lower than the figure previously reported.

The difference is due to implementation of a revised and more precise methodology for degradation assessment. In the Year 1 assessment it was not possible to reliably measure degradation from Landsat type imagery (30 m) due to the resolution of the imagery, and the scale of degradation events in Guyana. From Year 2 onwards the approach was changed and high-resolution imagery was used to identify forest degradation events.

In Year 4 the area degraded has increased somewhat from 1 963 ha in Year 3, to 4 352 ha in Year 4. The fluctuation in areas mapped as degraded does not track with the associated deforested area. It is thought this is due to significant areas near mining sites being degraded in initial activites and then deforested once the site is fully operational.

The main cause of degradation in Year 4 continues to be mining which accounts for 68% of all degradation mapped. This is expected as mining also accounts for the largest area of deforestation. The established trend is that forest degradation impacts are largely detected around mining areas. The remaining contributors to degradation are from newly established shifting agriculture areas (18%), fire (9%), roading construction and settlements (3%), and forestry related activities such as degradation during road formation (~1%).

6.5 Transition of Degraded Areas to Deforestation

During the mapping process, areas of historical degradation are revisited. This review checks for any changes in the forest cover and for any expansion. The monitoring process identified that 67 ha of Year 2 areas, and 200 ha of Year 3 areas had been deforested during the Year 4 reporting period. Table 6-3 provides a summary of the area of each land cover class deforested.

Table 6-3: Transition of Degradation to Deforestation

Period	Driver	Start Land cover Class	Year 3 Deforested (ha)	Year 4 Deforested (ha)
Year 2 Degradation Areas	Mining	Mixed Forest Degraded	111.5	63
		Montane Forest Degraded	31.7	1.8
		Swamp/Marsh Forest Degraded	0.3	
		Wallaba/Dakama/Muri Degraded	4.6	2.2
Total Area (ha)			**148.1**	**67**
Year 3 Degradation Areas	Mining	Mixed Forest Degraded		190
		Montane Forest Degraded		8
		Swamp/Marsh Forest Degraded		0.6
		Wallaba/Dakama/Muri Degraded		1.6
Total Area (ha)				**200**

The changes recorded all occur around existing mining areas. Initial evidence suggests that forest areas are degraded during the initial activities. If the areas are fully operationalised then it is probable that these areas recover. Alternatively, if mining proceeds, the areas are converted to deforestation. Further evaluation work is required to better understand the temporal dynamics – i.e. the time taken to deforestation, and if not deforested the carbon emissions due to degradation activities.

6.6 National Trends

The temporal analysis provides a useful insight into deforestation trends relative to 1990. A more meaningful comparison is provided if the rates of change are divided by driver and annualised using Equation 6-1. In general the following trends by driver are observed:

- Forestry related change has remained relatively stable from Years 1 to 4. As in the case of earlier assessments, these are attributed to a forestry driver rather than attributing this change to Infrastructure.
- Agricultural developments causing deforestation have remained stable between Years 3 & 4 and are in line with historical levels.
- Mining remains the largest contributor to deforestation. The area of deforestation also includes roads used to access mining sites and areas of degradation that have been converted to deforestation. This includes roads that lead direct to mining sites. Mining deforestation has decreased slightly between Years 3 and 4.
- The area deforested and degraded from fire post 2000 has remained relatively stable.

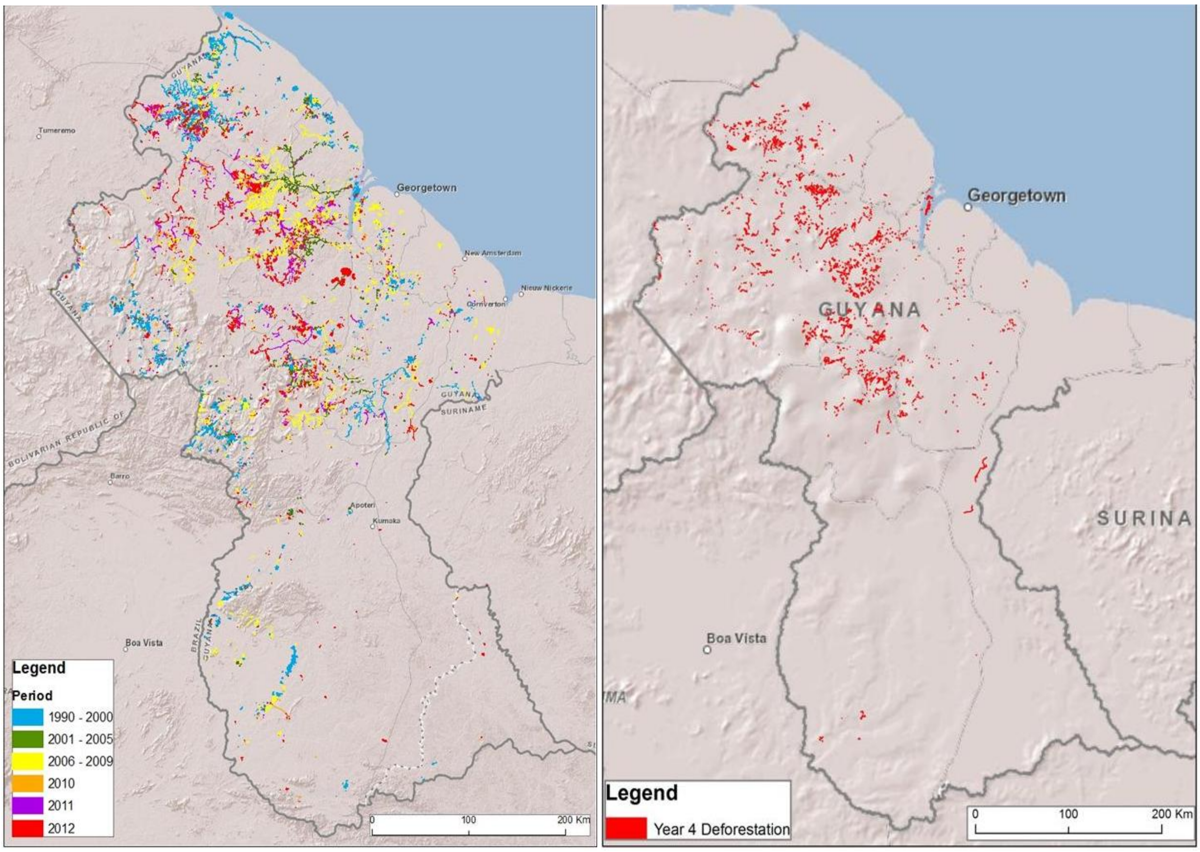
Table 6-4: Annualised Rate of Forest Change by Period & Driver from 1990 to 2013

Change Period	Change Period (Years)	Annualised Rate of Change by Driver: Forestry	Agriculture	Mining	Infrastructure	Fire	Settlements	Annual Rate of Change (ha)
		Annual Area (ha)						
1990-2000	10	609	203	1 084	59	171		2 127
2001-2005	5	1 684	570	4 288	261	47		6 850
2006-2009	4.8	1 007	378	2 658	41			4 084
2009-10	1	294	513	9 384	64	32		10 287
2010-11	1.25	186	41	7 340	298	46		7 912
2012	1	240	440	13 664	127	184		14 655
2013	**1**	**330**	**424**	**11 518**	**342**	**96**	**23**	**12 733**

6.7 Deforestation & Degradation Patterns

The temporal analysis of deforestation from 1990 to 2013 is presented in Map 6-1. The map, which presents change from all drivers, shows that most of the change is clustered[13] and that new areas tend to be developed in close proximity to existing activities. Most Year 4 deforestation activities fall close to or inside the footprint of historical change areas in the north and west of the country.

Map 6-1: Historical & Year 4 Forest Change



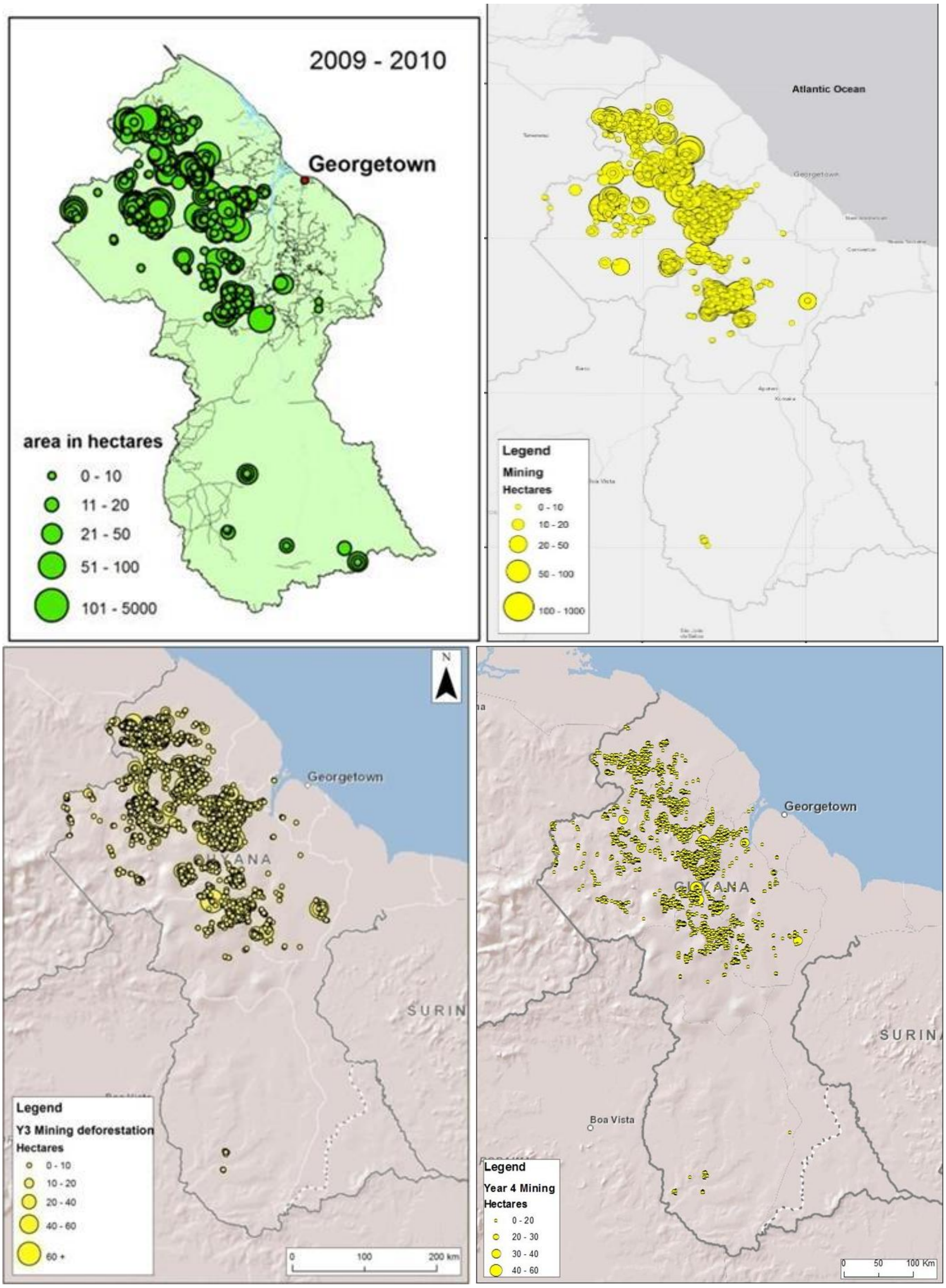
The distribution pattern also shows that areas of increased activity tend to be clustered around the existing road infrastructure and navigable rivers as both provide accessibility. Historically

[13]For the purposes of display the areas of deforestation have been buffered to make them more visible.

very little change has been observed beyond central Guyana. This continues in Year 4, with only small areas of change observed in this region.

The following series of maps show the temporal and spatial distribution of deforestation by driver (mining, forestry and agricultural and biomass burning). The relative size of the change is represented by scaling the symbol proportional to the area it represents.

Map 6-2: Mining Spatial & Temporal Distribution Year 1 to Year 4



Mining

The spatial trend on Map 6-2 shows that mining activities, including associated road construction, are concentrated in the northwest of the country. Forest change related to mining includes mining sites and any infrastructure associated with the operation, and historical degraded areas that have been converted to deforestation. This includes any roads that lead directly to mining.

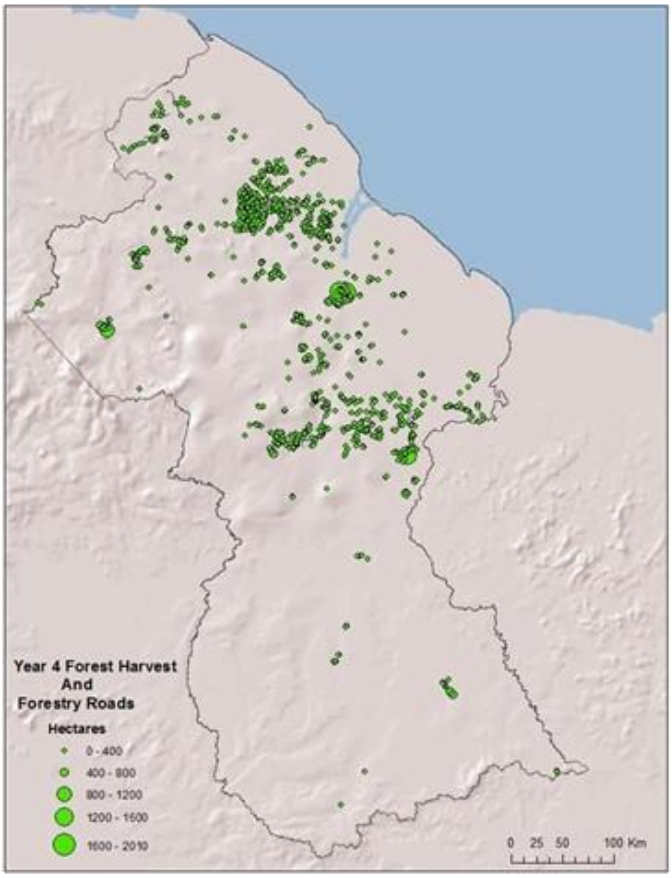
As with previous years most of the deforestation activity occurs in the State Forest Area (SFA). In particular Year 4 mining activities are consolidated in the centre of Guyana. Additional mining is observed to the west of the core mining area.

Forestry

Map 6-3 shows that the majority of the forestry activities are located inside the SFA. During the Year 4 period, all deforestation events are associated with forestry harvest operations. The main causes of forest clearance include road and log market construction. The area detected is relatively stable (at <300 ha /year) if compared to the last three years.

Under the existing interim measures, forest harvesting is reported in terms of carbon removal (tCO_2) rather than spatially. However, overall activity at the harvest block level (100 ha) across concessions is monitored.

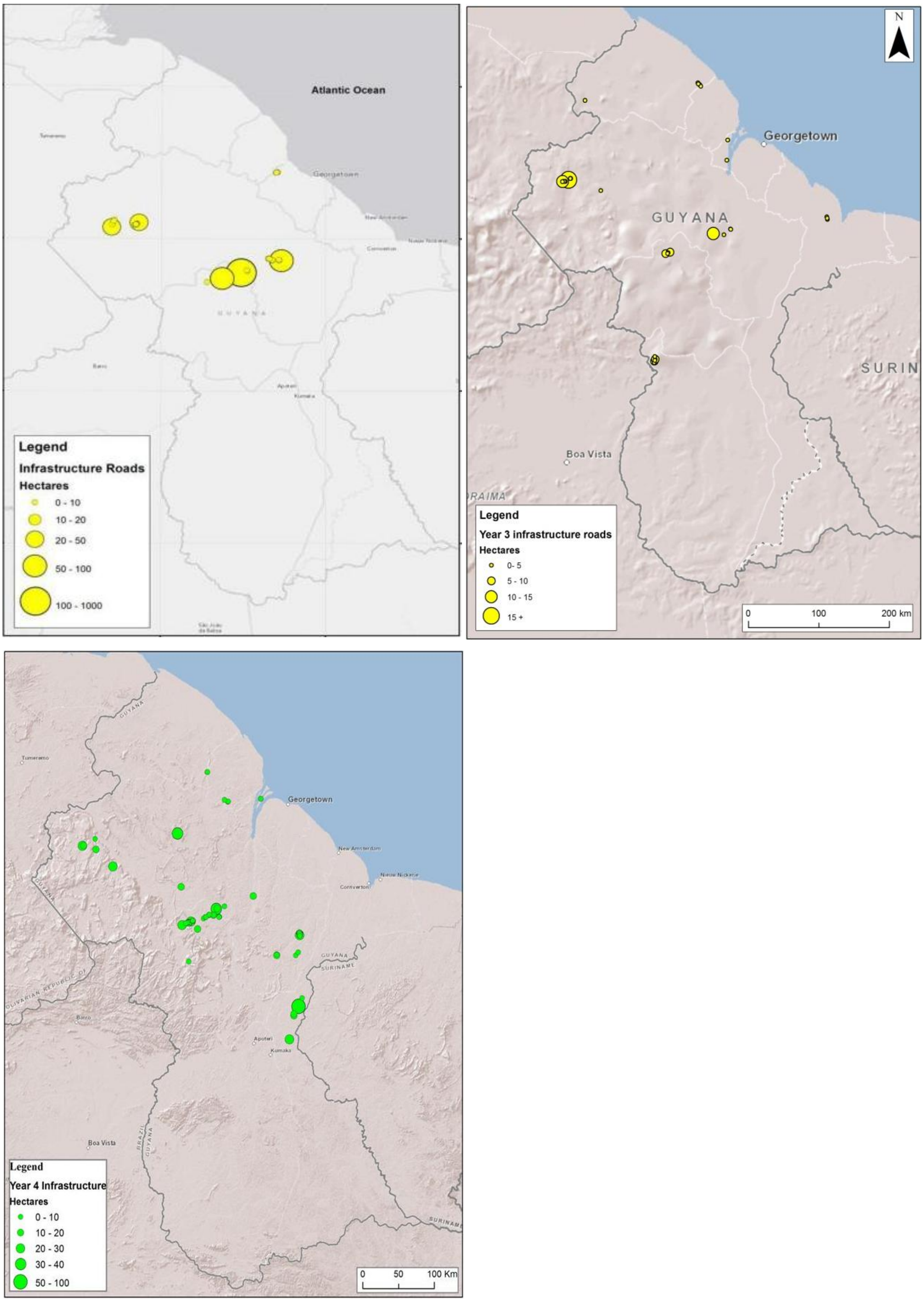
Map 6-3: Forestry Spatial & Temporal Distribution in Year 4



Infrastructure

In Year 4 infrastructure developments have increased compared to Year 3. The area of clearance is in a similar location. The main change is related to road construction activities which are also observed in close proximity to towns. Map 6-4 shows the distribution of infrastructure developments – note the maps include Amalia Falls Road in central Guyana.

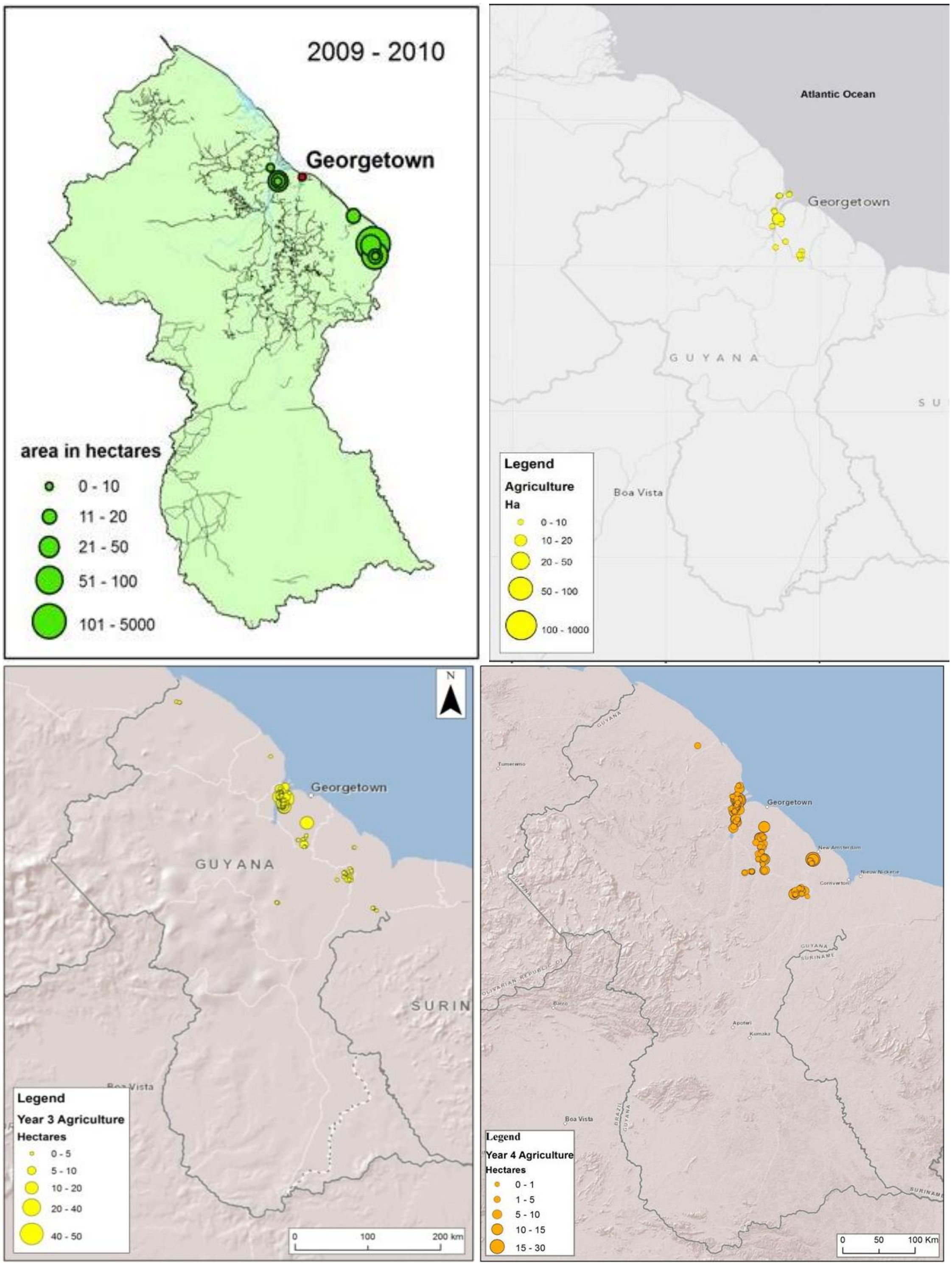
Map 6-4: Infrastructure Roads Spatial & Temporal Distribution Year 2 to Year 4



Agricultural Development

In Year 4 agricultural developments leading to deforestation have increased to 424 ha which is in line with 2009-10 levels. The main areas of development are located close to Georgetown and the northeastern regions of Guyana. They are in close proximity to the river network.

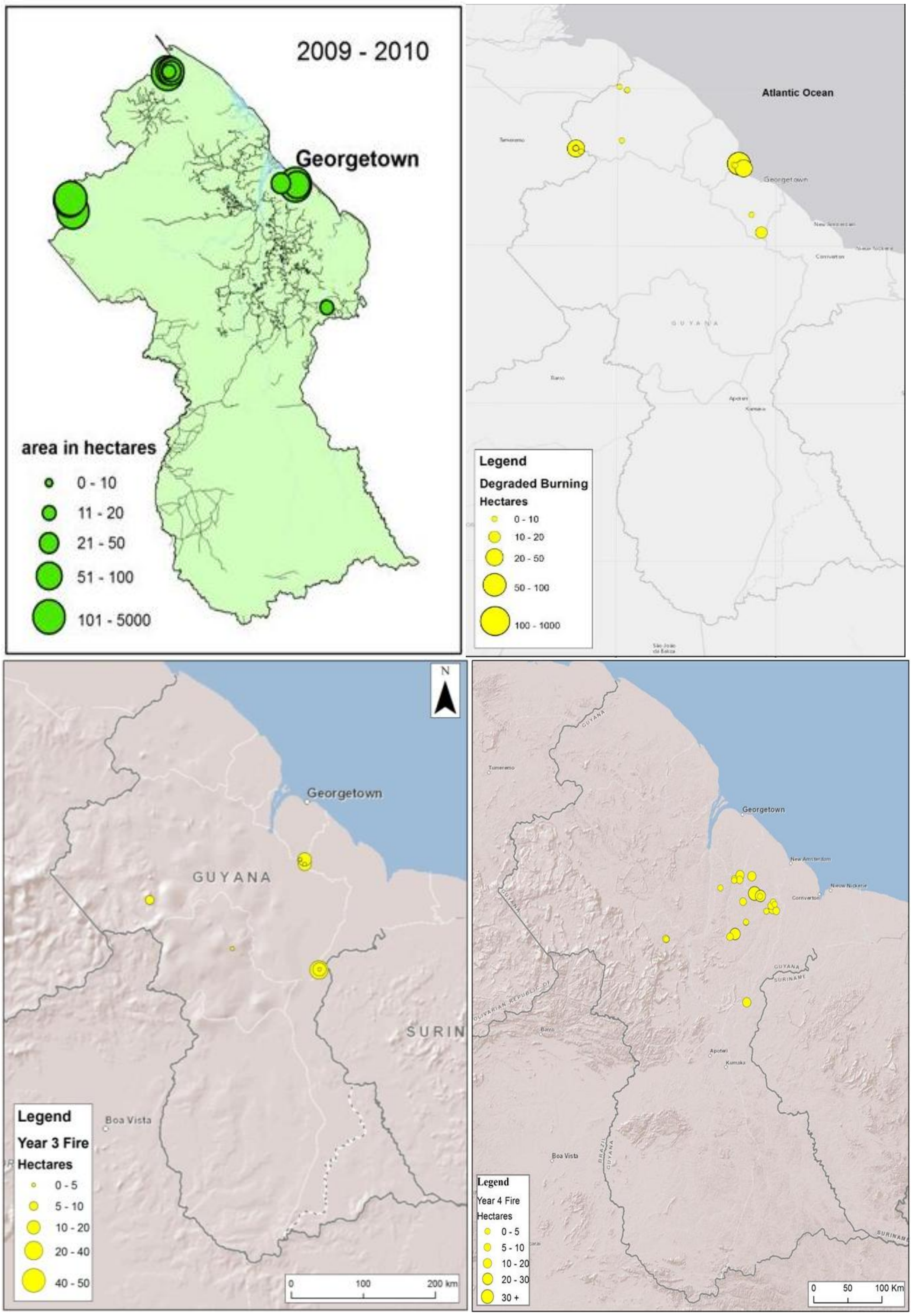
Map 6-5: Agriculture Development Spatial & Temporal Distribution Year 1 to Year 4



Biomass Burning - Fire

A majority of recurring fire events occur in the white sand forest area surrounding Linden. Burning events can be a precursor to agricultural development, or related to other clearance activities. Fire is also very common in the non-forest savannah areas to the south of the country. Map 6-5 shows the distribution of fires resulting in deforestation.

Map 6-6: Biomass Burning - Fire Temporal and Spatial Distribution Year 1 to Year 4



6.8 Changes in Categorisation of Forest Areas

The areas of State Forest Area (SFA) and State Lands under LCDS are estimated at 14.83 million ha.

This change does not impact on the overall forest change figures for Year 4, but the re-categorisation of land does change the forest area reported for the State Forest Area, State Lands and Amerindian Villages. The forest areas for Kaieteur National Park and Iwokrama have remained the same.

6.9 State Forest Area

Historical Change

In the previous assessment the total change in SFA between 1990 and 2009 was estimated at 63 646 ha. Overall the SFA accounted for 85% of all deforestation for the benchmark period. Annualised this represented a change rate of 3 200 ha/yr which is equivalent to a deforestation rate of - 0.03%/yr. During the Year 1 period, deforestation in the SFA was calculated at 8 910 ha. Overall 87% of all change for the year occurred inside the SFA.

A similar trend was seen in Year 2 with around 9 362 ha cleared, and a deforestation rate within this sub category of 0.076% (note that this is calculated as a proportion of the land area making up this sub category), which is very similar to Year 1. A small increase is due to the transfer of forested area under the State Forest Estate category to Amerindian titled land. In Year 3 forest change was dominated by mining (95%) followed by forestry activities (2%). Infrastructure development, fire and agriculture are less prominent and contribute around 3% of the deforestation observed.

In Year 4 the trend continues with 94% of deforestation attributed to mining activities. Degradation surrounding new infrastructure such as mining sites has increased from 1 749 ha in Year 3 to 3 400 ha.

Table 6-5 provides a breakdown of forest change by driver for all periods including Year 4. Degradation is reported for the Year 2, 3 and 4 periods.

Table 6-5 SFA Total Forest Change by Driver from 1990 to 2013

Driver	Benchmark Period			Year 1	Year 2 2010-11		Year 3 2012		Year 4 2013	
	1990 - 2000	2001-2005	2006 -2009	2009-10	Deforested	Degraded	Deforested	Degraded	Deforested	Degraded
	Area (ha)									
Forestry	6 026	8 253	4 293	270	211	147	229	113	318	85
Agriculture (permanent)	384	247	62	3	33		102	0	69	N/A
Mining	10 122	19 930	12 007	8 582	8 788	5 038	12 179	1 499	10 202	2 616
Infrastructure	374	1 228	89	24	322	5	44	13	283	108
Fire (deforestation)	564	67		32	5	4	145	125	22	284
Settlements									11	20
Year 4 Shifting Agriculture										287
Degradation (Year 2) converted to deforestation					225		148		62	
Degradation (Year 3) converted to deforestation									194	
Area Deforested	**17 470**	**29 725**	**16 451**	**8 910**	**9 362**	**5 194**	**12 848**	**1 749**	**11 161**	**3 400**
Total Forested SFA Area (ha)	12 481 363	12 463 894	12 434 169	12 417 718	12 341 893		12 341 893		12 329 045	
Total Forested SFA Remaining (ha)	12 463 894	12 434 169	12 417 718	12 408 807	12 332 530		12 329 045		12 317 884	
Period Deforestation rate (%)	0.01%	0.05%	0.03%	0.07%	0.08%		0.10%		0.09%	

6.10 Changes in Guyana's State Lands

Historical Change

For the period spanning 1990 to 2009 a deforestation figure of 8 161 ha was reported. This equated to approximately 11% of all deforestation for the benchmark period. Annualised this represented a change rate of 463 ha/yr or an equivalent deforestation rate of- 0.01%/ yr. For Year 1 deforestation in State Lands was calculated at 742 ha.

In Year 2 the total area deforested had decreased to 202 ha. Like the SFA, the main contributor to deforestation is mining which accounted for approximately 59% of the change. This is followed by infrastructure in the form of roads, agriculture, fires and lastly forestry.

In Year 3 the level of deforestation increased to 749 ha which is similar to the value reported in 2009-10. The deforestation was shared equally between agriculture and mining. In Year 4 the deforestation figure has increased again to 912 ha accounting for 8% of total deforestation. Forest degradation has also seen an upward trend from 85 ha in Year 3 to 213 ha in Year 4. In Year 4 this accounted for around 5% of all mapped forest degradation.

Table 7-6 provides a breakdown by driver for the benchmark and Year 1, 2, 3 and 4 periods.

Table 6-6: State Lands Forest Change by Driver from 1990 to 2012

Driver	Benchmark Period			Year 1	Year 2 2010-11		Year 3 2012		Year 4 2013	
	1990-2000	2001-2005	2006-2009	2009-10	Deforested	Degraded	Deforested	Degraded	Deforested	Degraded
	Area (ha)									
Forestry	24	93	30	24	7		6	0	1	0
Agriculture	1 565	2 563	1 735	510	19		324	0	353	N/A
Mining	306	814	190	175	120	26	331	38	443	131
Infrastructure	30	72	18	32	47		49	0	33	24
Fire	720	1			9	4	39	47	70	57
Settlements									12	0
Year 4 Shifting Agriculture										7
Degradation (Year 2) converted to deforestation									0	
Degradation (Year 3) converted to deforestation									0	
Area Deforested	**2 645**	**3 543**	**1 974**	**741**	**202**	**30**	**749**	**85**	**912**	**219**
Forested State Land Area	3 095 485	3 092 840	3 089 297	3 087 324	3 084 306		3 084 306		3 084 104	
Forested State Land Area remaining	3 092 840	3 089 297	3 087 324	3 086 583	3 084 104		3 084 104		3 083192	
Period Deforestation rate (%)	0.01%	0.02%	0.01%	0.02%	0.01%		0.02%		0.03%	

6.11 Amerindian Areas

Forest change and degradation is also monitored for Amerindian areas.

Forest change has been mapped across the titled Amerindian areas. The trend indicates that Year 4 deforestation (660 ha) and the annual rate (0.03%) have increased relative to Year 1 and 2, but the area is less than that mapped in Year 3 (1056 ha).

Mining dominates the change areas and contributes around 92% of the total change for Year 4. The area of forest degradation (734 ha) is dominated by shifting agriculture[14] (62% of the area). Shifting cultivation is often observed in the areas surrounding Amerindian communities. Degradation associated with mining operations contributes 208 ha of the total (~28%).

[14] Shifting cultivation is reported for the first time in Year 4. The area reported is new areas of shifting cultivation above 0.25 ha in area.

Table 6-7: Amerindian Forest Change by Driver from 1990 to 2013

Driver	Benchmark Period			Year 1	Year 2 2010-11		Year 3 2011-12		Year 4 2013	
	1990-2000	2001-2005	2006-2009	2009-10	Deforested	Degraded	Deforested	Degraded	Deforested	Degraded
	Area (ha)									
Forestry					15		4	0	11	0
Agriculture	55	18	0	0	0		13	0	2	0
Mining	415	694	426	627	267	216	1 005	92	606	208
Infrastructure	0	4	89	8	0		34	0	26	<1
Fire (deforestation)	425	166	0	0	44	20	0	36	4	54
Settlements									0	0
Year 4 Shifting Agriculture										471
Degradation (Year 2) converted to deforestation									5	
Degradation (Year 2) converted to deforestation									6	
Area Deforested	**895**	**883**	**515**	**635**	**326**	**236**	**1 056**	**129**	**660**	**734**
Forested Amerindian Lands	2 490 707	2 489 812	2 488 930	2 488 415	2 546 852		2 546 852		2 546 526	
Forested land Remaining	2 489 812	2 488 930	2 488 415	2 487 780	2 546 526		2 546 526		2 545 866	
Period Deforestation rate (%)	0.00%	0.01%	0.00%	0.03%	0.01%		0.04%		0.03%	

7. VERIFYING FOREST CHANGE MAPPING & INTERIM MEASURES

As part of the MRVS reporting process an independent accuracy assessment is also conducted. The results of the accuracy assessment will be reviewed by independent auditors.

The Accuracy Assessment scope dictates that a third party not involved in the change mapping conducts an assessment of deforestation, forest degradation and forest area change estimates for the Year 4 period (2013). Specifically, the terms of reference asked that confidence limits be attached to the forest area estimates.

The methods applied in this report follow the recommendations set out in the GOFC-GOLD guidelines. The aim is to help identify and quantify uncertainty in the level and rate of deforestation and the amount of degraded forest area in Guyana over the period 1 January 2013 to 31 December 2013 (Interim Measures Period – Year 4).

This year high-resolution aerial photography (see section 4.6) has been used to assess the wall-to-wall mapping of Guyana undertaken by the Guyana Forestry Commission (GFC).

7.1 Accuracy Assessment Conclusions & Recommendations

In Year 3 the accuracy assessment concluded that the quality of the mapping undertaken by GFC, which was based largely on interpretation of Landsat and RapidEye imagery, was of a good standard.

An indication of the quality of the mapping is the prevalence statistic. This showed that the correspondence between the map and reference data was high at 0.986 or 98.6% agreement. Several recommendations were made at the conclusion of the assessment and as appropriate these have been considered and added to the Year 4 assessement – These include:

1. To refine and enhance the methodology developed in 2012/13 to assess **Year 4** deforestation, taking note of IPCC Good Practice Guidelines and GOFC/GOLD recommendations. This will include an outline of revisions to the (1) sample design, (2) response design, and (3) analysis design. For the design component, reference data to be used should be identified, and literature cited for methods proposed. The design must ensure representativeness of the scenes selected for analysis and state the sampling specifications to be used.
2. Report on REDD+ interim measures and national estimates (Gross Deforestation, Extent of Degradation associated with new infrastructure, emissions from forest fires, and cropland linked to shifting cultivation – referred to in the context of the Joint Concept Note between the Governments of Guyana and the Kingdom of Norway), with a priority being on gross deforestation and the associated deforestation rate (i.e. change over time) and assessing their error margins/confidence bands, and providing verification of the deforestation rate for the period Year 3 to Year 4. This assessment should be done with the recognition that “best efforts” will have to be applied in situations where there is a challenge in terms of availability of change reference data and will have to entail field / overflight verification. The error analysis should highlight areas of improvement for future years to decrease uncertainties and maintain consistency.
3. Provide an assessment of the accuracy of the GFC Year 4 mapping of area changes (deforestation, degradation), and an error assessment on IPCC land cover change (e.g. Forest to Bareland; Bareland to Settlement). The error analysis should comment on the changes that can be mapped reliably from satellite imagery and highlight areas of improvement to decrease uncertainties and maintain consistency. Additionally, the assessment should consider the impact of how missing data were treated for national estimation (if this is observed to be the case). It is required that real reference data is used either from the ground, ancillary data (e.g. for concessions) and/or high resolution imagery for reference.

8. INTERIM MEASURES

On 9 November 2009 Guyana and Norway agreed on a framework that establishes the pathway of REDD+ implementation. Under this framework several forest-based interim measures have been established.

In December 2012, a revised Joint Concept Note (JCN) under the Guyana/Norway Agreement was issued, and replaced the JCN of 2009. The revised JCN updated the progress in key areas of work including on the MRVS. REDD+ Interim Indicators and reporting requirements, as had been outlined in the 2009 JCN, were maintained.

The intention is that these interim measures will be phased out as the MRVS is established[15].

The basis for comparison of a majority of the interim measures is the 30 September 2009 benchmark map[16]. The first reporting period (Year 1) is set from 1 Oct 2009 to 30 Sept 2010. The means of monitoring and estimation during the interim period are identified as medium resolution satellite images. This includes: a time series of Landsat TM and ETM+, a composite of daily acquired MODIS (250 m resolution) taken as close as possible to the end of the benchmark reporting period September 2009.

For Year 2, RapidEye was tasked over the most actively changing areas (12 million ha). As with preceding periods Landsat, MODIS and ASAR radar data were also used to ensure a full national coverage.

In Years 3 & 4 a national coverage of RapidEye was commissioned. Images were acquired from August to December in 2012 and 2013.

A summary of the key reporting measures and brief description for these interim measures are outlined in Table 9-1. The calculations to determine the rate of deforestation (ref. measure 1) are reported in Section 6.

Outputs and results are provided for the Intact Forest Landscape (ref. measure 2) and forest management indicators (ref. measure 3 and 4) are outlined in this section.

For measures such as forest degradation this is the second time this has been calculated using direct measurement from high-resolution satellite imagery. For the Year 1 assessment the default measure was applied which meant degradation was calculated by applying a 500 m buffer around mining sites and roads.

Table 8-1: Reported Interim Measures

Measure Ref.	Reporting Measure	Indicator	Reporting Unit	Adopted Reference Measure	Year 2 Period	Year 3 Period	Year 4 Period	Difference between Year 4 & Reference Measure
1	Deforestation Indicator	Rate of conversion of forest area as compared to the agreed reference level.	*Rate of change (%)/yr^{-1}*	0.275%	0.054%	0.079%	0.068%	0.207%
2	Degradation Indicators	National area of Intact Forest Landscape (IFL). Change in IFL post Year 1, following consideration of exclusion areas.	*ha*	7 604 820	7 604 754 (66 ha loss)	7 604 580 (174 ha loss)	7 604 425 (155 ha loss)	395 ha (155 ha loss in Year 4)
2b		Determine the extent of degradation associated with new infrastructure such as mining, roads, settlements post the benchmark period.	*ha*	4 368	5 460	1 963	4 352	16 ha

[15]The participants agree that these indicators will evolve as more scientific and methodological certainty is gathered concerning the means of verification for each indicator, in particular the capability of the MRV system at different stages of development.
[16]Originally the benchmark map was set at February 2009, but due to the lack of cloud-free data the period was extended to Sept 2010.

Measure Ref.	Reporting Measure	Indicator	Reporting Unit	Adopted Reference Measure	Year 2 Period	Year 3 Period	Year 4 Period	Difference between Year 4 & Reference Measure
3	Forest Management	Timber volumes post 2008 as verified by independent forest monitoring (IFM). These are compared to the mean volume from 2003-2008	*t CO_2*	3 386 778 [17]	3 685 376[18]	2 159 151	3 106 693	280 085
4	Emissions resulting from illegal logging activities	In the absence of hard data on volumes of illegally harvested wood, a default factor of 15% (as compared to the legally harvested volume)	*t CO_2*	411 856	18 289	11 217	11 533	400 323
5	Emissions resulting from anthropogenic forest fires	Area of forest burnt each year should decrease compared to current amount.	*ha/yr^{-1}*	1 706[19]	28	208	395	1 311
6	Emissions resulting from subsistence forestry, land use and shifting cultivation lands (i.e. slash and burn agriculture).	Emissions resulting from communities to meet their local needs may increase as a result of inter alia a shorter fallow cycle or area expansion.	*ha/yr*	-	-	-	765	-

8.1 Interim Reporting Indicators

The following provides a description, justification and performance measurement for each of the seven indicators. Historically only the first five of the seven measures are reported, with IM6 being added and reported in Year 4.

8.2 Gross Deforestation – Measure 1

Emissions from the loss of forests are identified as among the largest per unit emissions from terrestrial carbon loss in tropical forests. Above ground biomass and below ground biomass combined represent approximately 75% of total carbon[20]. Several key performance indicators and definitions have been developed as follows.

Interim Performance Indicators

- Comparison of the conversion rate of forest area as compared to agreed reference level as set out in the JCN.
- Forest area as defined by Guyana in accordance with Marrakesh Accords.

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[17] Assessment completed based in Winrock International Report to the Guyana Forestry Commission, December 2011: ***Collateral Damage and Wood Products from Logging Practices in Guyana.*** This methodology only applies to emissions and not any removals due to re-growth of the logged forest. This Reference measure is presented in this Year 3 report for 12 months as Year 3 spans 12 months. The prorated value for this reference measure was presented for Year 2, equated to 15 months to aid comparability with the 15 month period for Year 2. The same is the case for the Reference level for illegal logging for Years 2 and 3.

[18] Computed for the period October 1 2010 to December 31 2011. (15 months)

[19] Degradation from forest fires is taken from an average over the past 20 years.

[20] Indicative figures C/ha for tropical low land forest in Bolivia (GOFC-GOLD). This is not necessarily the case in peat soils, where this pool is more 'important' than below-ground biomass and in some strata may even be more important than above-ground biomass.

- Conversion of natural forest to tree plantations shall count as deforestation with full loss of carbon.
- Forest area converted to new infrastructure, including logging roads, shall count as deforestation with full carbon loss.

Gross Deforestation Monitoring Requirements

Using the benchmark forest cover map as a base (30 September 2009) the intention is to identify activity data related to:

- Expansion of human infrastructure (e.g. new roads, settlements and mining and agricultural expansion.

Monitoring Approach

The accepted approach as outlined in the JCN, uses medium resolution images to identify new areas of development at a one hectare scale. In Year 3 and 4 nationwide high-resolution (5 m) images supplemented by medium resolution satellite images have been used. This improves on the Year 2 coverage which was only acquired over 56% of the country.

8.3 Degradation Indicators - Measure 2

The interim measure provided to monitor degradation is based on the definition of Intact Forest Landscapes (IFL).

"*IFL is defined as a territory within today's global extent of forest cover which contains forest and non-forest ecosystems minimally influenced by human economic activity, with an area of at least 500* km^2 *(50,000 ha) and a minimal width of 10 km (measured as the diameter of a circle that is entirely inscribed within the boundaries of the territory)*".

The extent of Intact Forest was determined at the end of September 2010. It is a requirement that the total area of intact forest must remain constant from this date. In determining the IFL, only those areas that meet the forest definition are included.

Within the areas that qualify as IFL, the following rules (first 4 bullets are elimination criteria) are defined:

- Settlements (including a buffer zone of 1 km).
- Infrastructure used for transportation between settlements or for industrial development of natural resources, including roads (except unpaved trails), railways, navigable waterways (including seashore), pipelines, and power transmission lines (including in all cases a buffer zone of 1 km on either side).
- Agriculture and timber production used for local use.
- Industrial activities during the last 30-70 years, such as logging, mining, oil and gas exploration and extraction, peat extraction, etc.
- Areas with evidence of low-intensity and old disturbances are treated as subject to "background" influence and are eligible for inclusion in an IFL. Sources of background influence include local shifting cultivation activities, diffuse grazing by domestic animals, low-intensity village-based selective logging, and hunting.

8.4 IFL Data Sources & Methods

The following provides a description of process and datasets used to generate the IFL. The datasets used were available as at 2010. Since the generation of the reference IFL layer GFC has continued to improve the quality of the base datasets and moved to high-resolution countrywide coverage. This has enabled continuous monitoring of forest change (deforestation and degradation) at a national level. It is proposed that the IFL be replaced in the near term to reflect these improvements.

The areas excluded from IFL are:

Settlements

The population of Guyana is approximately 770 000, of which 90% reside on the narrow coastal strip (approximately 10% of the total land area of Guyana). Guyana's coastal strip ranges from 10 to 40 miles (16 to 64 km) in width.

Settlement extents were provided by GL&SC for six municipalities. In addition the Bureau of Statistics provided 2002 census data for settlements with population >1000 people. The approximate extent of these settlements was determined from satellite imagery. The national Gazetteer which provides a spatial location of settlements was used to identify the remaining settlements.

Amerindian titled areas that have been digitised as at 2009.

Infrastructure, Mining & Navigable Rivers

Infrastructure used for transport was identified using satellite images and assisted by GPS tracks. Infrastructure associated with SFM is not subtracted from the IFL unless it connects settlements. Only those roads that can be mapped from medium resolution satellite imagery or those leading to settlements have been included.

Historical and current mining areas and the associated infrastructure from 1990 to 30 September 2009 are subtracted from the IFL. These areas have been mapped from medium resolution satellite imagery

Navigable waterways and seashore are as defined from medium resolution images and 1995-96 radar imagery. Only those rivers identified from satellite imagery (~30 m width) have been included in the analysis. All of the rivers mapped in Year 1 are considered navigable.

Permanent Agriculture & Forest Production

Areas of permanent agriculture as identified from satellite imagery and supported by available agricultural leases are digitised from paper maps by GL&SC. Forest production areas under SFM are held by GFC and are available in a GIS format. These areas are excluded from the IFL.

Industrial-scale Exploitation of Resources

Industrial-scale exploitation of timber (clearfelling with no natural regeneration), peat extraction and oil exploration are not practiced in Guyana in the period under review.

Background Sources

Background sources such as shifting cultivation. Shifting cultivation areas have been defined from medium resolution satellite imagery.

8.5 Calculation of the Year 4 Intact Forest Landscape

IIn accordance with the interim indicators the total area of intact forest must remain constant from the benchmark date (30 September 2009) onwards. Any change in area shall be accounted for as deforestation with full loss of carbon. The intention of the IFL is to allow a user to determine whether a specific activity falls within or outside an IFL with a margin of error of less than 1 km.

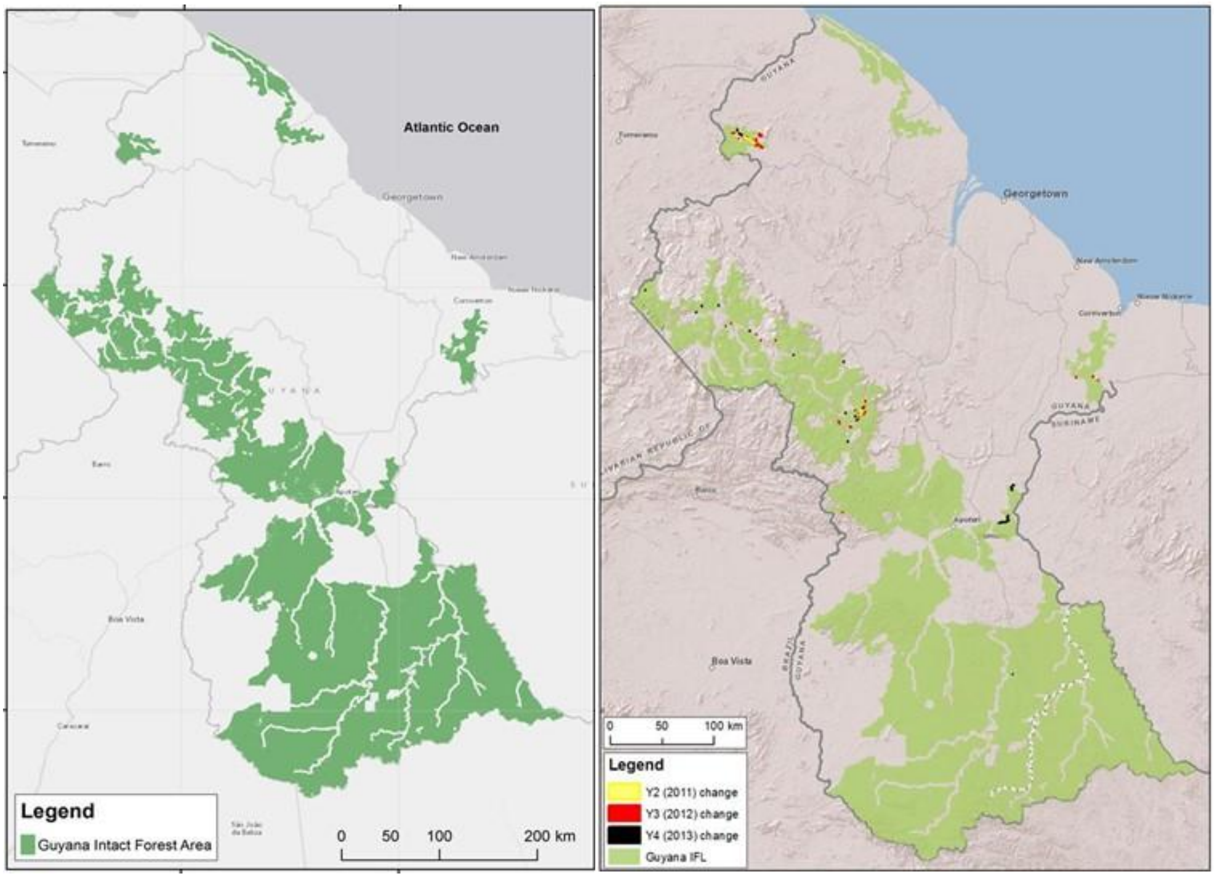
In 2011 approximately 56% of Guyana was imaged with high resolution imagery. This was expanded to full coverage in 2012 and 2013. This move has improved the spatial coverage and provides a robust means of detecting changes associated with deforestation and degradation. This should enable the replacement of the IFL interim measure with a national monitoring process based on high resolution satellite imagery.

In Year 4 the same benchmark IFL area was used. The analysis identified 155 ha of deforestation, 59 ha of which was mapped in Amerindian areas.

It is proposed that deforestation located in Amerindian areas is not counted in calculating the reduction in financial remuneration. These areas are part of the Government of Guyana's continuous land titling and demarcation programme.

Map 8-1 (left) shows the extent of the benchmark IFL as created for the Year 1 period. At this point the total intact forest landscape area in Guyana was estimated at 7.60 million ha. The second map identifies the deforestation that has occurred inside the IFL since Year 1.

Map 8-1: Intact Forest Landscape Maps



8.6 Carbon Loss as Indirect Effect of New Infrastructure – Measure 2b

The carbon loss associated with new infrastructure was determined by buffering the extent of areas detected in the medium resolution imagery by 500 m. This is the default option if the extent of degradation cannot be mapped. This was the case for Year 1 as there were a very limited number of high resolution scenes available over Guyana.

For the Year 2 assessment, high resolution 5 m imagery was tasked and over 12 million ha were acquired. This area covered the most actively changing areas. The approach taken for Year 2 was to visually assess the satellite imagery surrounding new infrastructure for signs of forest degradation. Analysis of the images and follow up fieldwork indicated that degradation around new infrastructure was fragmented and was directly related to the deforestation activity.

The degradation impact was localised and did not extend further than 40 m from the deforestation site. Based on these findings a conservative 100 m buffer was applied around all new Year 2 infrastructure. Any forest degradation observed inside this buffer was mapped.

In Year 3 and 4 this approach was retained. Furthermore, areas of degradation identified in Year 2 and 3 were revisited and reassessed for change.

MRVS Year 4 has, within mapping protocols, integrated the assessment of re-entry of existing mines and has included the results of this assessment within the total degradation reported for Year 4. Forest degradation that occurred in Year 4 has been mapped when surrounding Year 2, Year 3 and Year 4 infrastructure and mining.

Interim Performance Indicators

- Determine the extent of degradation associated with new infrastructure such as mining, roads and settlements.
- If it cannot be determined from medium resolution imagery (either directly, or using a remote sensing technique) then a buffer of 500 m is applied from the external edge of each deforestation site. A 50% loss in biomass is assumed.

The area of degradation for the Year 1 period (1 Oct 2009 to 30 Sept 2010) was estimated at 92 413 ha. This area does not necessarily reflect forest degradation in a practical sense as it is based on applying the 500 m buffer around all detected deforestation events greater than one hectare.

The Year 2 area is considerably lower at 5 460 ha. This can be attributed to the method applied which is based on interpretation of high-resolution satellite images rather than the calculation and application of a generic buffer to all new infrastructure.

Degradation continued to fall in Year 3 with only 1 963 ha mapped. Of interest in Year 3 is the fact that areas of previous degradation have been deforested (141 ha). Under Interim Measures 50% of the carbon loss over these areas has already been accounted. For Year 4 the degradation area 4 352 was a similar level to that of Year 2. As noted in Section 5.6 further work is required to better understand the temporal dynamics of degradation and the carbon emissions should the area not be deforested.

8.7 Forest Management – Measure 3

Management

Under interim measures, forest management includes selective logging activities in natural or semi-natural forests.

The intention of this measure is to ensure sustainable management of forest with net zero emissions or positive carbon balance in the long term. The requirement is that areas under SFM be rigorously monitored and activities documented such as harvest estimates. The following information is documented by the GFC and available for review for the period 1 January 2013 to 31 December 2013:

- Production by forest concession
- Total production.

The reporting requirements include data on extracted timber volumes post 2008 and are available for verification. These are compared against the mean volume from 2003-2008. Any increase in extracted volume above the 2003-2008 mean is accounted for as an increase in carbon emissions. This is unless otherwise documented using the Gain Loss or stock difference methods as described by the IPCC for forests remaining forests. In addition to harvested volume, a default expansion factor shall be used to account for losses due to harvesting i.e. collateral damage. This is unless it can be shown this is already accounted for in the recorded extracted volume.

Production volumes are recorded on declaration/removal permits, issued by the GFC to forest concession and private property holders. Upon declaration, the harvested produce is verified, permits collected and checked and sent to the GFC's Head Office for another level of audit, followed by data input into the central database. The permits include details on the product, species, volume, log tracking tags number used, removal and transportation information, and in the case of large timber concessions, more specific information on the location of the harvesting.

Production reports are generated by various categories including total volume, submitted to various groups of stakeholders and used in national reporting. Details on the main processes are provided below:

Monitoring of Extracted Volume: Monitoring in the forest sector is coordinated and executed by the GFC and occurs at four main levels: forest concession monitoring, monitoring through the transportation network, monitoring of sawmills and lumberyards, and monitoring ports of export.

For forest harvesting and transport, monitoring is done at station level, at concession level and supplemented by random monitoring by the GFC's Internal Audit Unit and supervisory staff. At all active large concessions, resident forest officers perform the function of ensuring that all monitoring and legality procedures are strictly complied with. In instances of breach, an investigation is conducted and, based on the outcome, action is instituted according to GFC's standard procedures for illegal actions and procedural breaches.

Prior to harvesting, all forest concessions must be in possession of valid removal permit forms. Permit numbers are unique to operators and are issued along with unique log tracking tags. Production volumes are declared at designated GFC offices with checks made at this stage on legality of origin and completion of relevant documents, including removal permit, production register and log tracking. Removal permits require that operators declare: date of removal, type of product, species, volume, destination, vehicle type, vehicle number, name of driver/captain, tags, diameter of forest product (in case of logs) and other relevant information. This is one of the initial control mechanisms that is in place whereby monitoring is done for proper documentation and also on the declared produce, etc. Control and quality checks are also undertaken at another level once entered in the centralised database for production. Removal permits and log tracking tags are only valid for a certain period and audit for use beyond that time is also an important part of the QA/QC checks conducted by the GFC. The unique identity of each tag and permit by operator also allows QA/QC to be conducted for individual operators' use. Thus, checks are allowed across time, by operator and by produce being declared.

In the case of large forest concessions, only approved blocks (100 ha) in Annual Plans are allowed to be harvested in a given year. Harvesting outside of those blocks, even if these areas are within the legally issued concessions, is not permitted. As such, this forms part of the QA/QC process for large concessions (Timber Sales Agreements and Wood Cutting Leases). As one prerequisite for approval of Annual Plans, forest inventory information at the pre-harvest level must be submitted, accompanied by details regarding the proposed operations for that 12 month period, such as maps, plans for road establishment, skid trail alignment etc. The QA/QC process that is executed at this initial stage requires the application of the guidelines for Annual Plans which must be complied with prior to any such approval being granted. A new addition to the monitoring mechanism has been the use of bar code scanners that allow for more real-time tracking of legality of origin of forest produce.

In the case of Amerindian lands and private property, the documentary procedures outlined above as regards to removal permitting and log tracking, are only required if the produce is being moved outside the boundaries of the area. From this point onwards, the procedures that apply to State Forest concessions, apply to this produce as well.

Data Collection: Following receipt of removal permits and production registers, monthly submissions are made to GFC's Head Office for data entry. There is a dedicated unit in the GFC's Management Information System section that is responsible for performing the function of data collection, recording, and quality control. Data is entered in SQL databases custom designed for production totals. This database has built in programmatic QA/QC controls that allow automatic validation and red flagging of tags being used by unauthorised operators, or permits being incorrectly, incompletely or otherwise misused, and cross-checking of basic entry issues including levels of production conversion rates, etc.

As a second stage of QA/QC, a separate verifier, not involved in the data entry, validates all entries made as accurate and correct and posts validated data to secured storage areas in the database. There are security features at several levels of the database operations including a read/write only function for authorised users, and change tracking of production information by staff, as well as others. At the end of every month, data is posted to the archives and a separate unit of the GFC is responsible for cross-checking volume totals by species, concession and by period, and preparing the necessary report for external consumption.

A continuous process of further development and strengthening of the GFC's databases has been identified. This will specifically focus on strengthening of the procedural and illegal logging databases and also on the Amerindian/Private Property production databases.

Forest Produce included in IMR: in tabulating the declared volumes for forest management, the following primary products that are extracted from the forest were:

- Logs
- Lumber (chainsawn lumber)
- Roundwood (piles, poles, posts, spars)
- Splitwood (shingles, staves)
- Fuelwood (charcoal, firewood)

Logging Damage – Default Factor

In 2011 progress was made in developing a methodology and finalising factors to assess Collateral Damage in a Technical Report developed by Winrock International for the GFC: *Collateral Damage and Wood Products from Logging Practices in Guyana,* December 2011.

The objective of the report is to examine how emission factors were developed that relate total biomass damaged (collateral damage) and thus carbon emissions, to the volume of timber extracted. This relationship will allow the estimation of the total emissions generated by selective logging for different concession sizes across the entirety of Guyana. The following field data have been collected with which the emission factors have been developed:

1. Measurements in a sample of logging gaps to collect data on the extracted timber biomass and carbon in the timber tree and the incidental carbon damage to surrounding trees.
2. Estimating the carbon impact caused by the logging operations such as skid trails. Although selective logging clears forest for roads and decks, their emissions will be estimated through the stock-change method based on estimates of area deforested by logging infrastructure determined in the land cover change monitoring.

Accounting for the impact of selective logging on carbon stocks involves the estimation of a number of different components:

- Biomass removed in the commercial tree felled – emission.
- Incidental dead wood created as a result of tree felling – emission.
- Damage from logging skid trails – emission.
- Carbon stored in wood products from extracted timber by product class – removal.
- Regrowth resulting from gaps created by tree felling - removal.

The **emissions** from selective logging are expressed in equation form as follows:

$$\textit{Emissions, t } CO_2/yr = \{[Vol \times WD \times CF \times (1-LTP)] + [Vol \times LDF] + [Lng \times LIF]\}*3.67 \quad \textit{(Eq. 1)}$$

Where:

Vol = volume of timber over bark extracted (m^3)

WD = wood density (t/m^3)

CF = carbon fraction

LTP = proportion of extracted wood in long term products still in use after 100 yr (dimensionless)

LDF = logging damage factor—dead biomass left behind in gap from felled tree and incidental damage (t C/m^3 extracted)

Lng = total length of skid trails constructed to extract Vol (km)

LIF = logging infrastructure factor—dead biomass caused by construction of infrastructure (t C/km of skid trail to extract the Vol)

3.67 = conversion factor for t carbon to t carbon dioxide

<u>Wood in long term products</u>

Not all the carbon in harvested timber gets emitted to the atmosphere because a proportion of the wood removed may be stored in long term wood products. Total carbon stored permanently into wood products can be estimated as follows.

$$C_{WP} = C * (1 - WW) * (1 - SLF) * (1 - OF)$$ (Eq. 2)[21]

Where:

$C_{WP:}$ = Carbon stock in long-term wood products pool (stock remaining in wood products after 100 years and assumed to be permanent); t C ha^{-1}

C = Mean stock of extracted biomass carbon by class of wood product; t C ha^{-1}

WW = Wood waste. The fraction immediately emitted through mill inefficiency by class of wood product

SLF = Fraction of wood products with a short life that will be emitted to the atmosphere within 5 years of timber harvest by class of wood product

OF = Fraction of wood products that will be emitted to the atmosphere between 5 and 100 years of timber harvest by class of wood product

The methodology presented here is a module in an approved (double verified) set of modules for REDD projects posted on the Verified Carbon Standard (VCS) set of methodologies.

The reported difference between the annual mean for the period 2003-2008 and the assessment year of 1 January 2013 to 31 December 2013 is shown in the table below. For this period t CO_2 has reduced by 280 085 t CO_2.

Table 8-2: Interim indicator on Forest Management

Period	Description	Volume (t CO_2)
1 January 2013 – 31 December 2013	t CO_2 emissions arising from timber harvesting	3 106 693
2003-2008 (annual average)	t CO_2 emissions arising from timber harvesting	3 386 778
Difference (t CO_2)		**280 085**

[21] This is directly from the VCS (Verified Carbon Standard) approved methodology for wood products –6CP-W Wood Products November 2010

Explanatory Note 1

The following steps are taken in the computation of gross emissions from forest management activities:

Step 1: Compile background data to inform computations

- Compile annual production of forest products
- Compile annual area under harvest of various categories of Operators taking into consideration blocks under harvest by large concessions, small forest concessions areas, and titled Amerindian Areas involved in forestry activities.
- Compute Yield in cubic meters per hectares by dividing the harvest level by the area size.

Step 2: Computing impact of incidental impact and collateral damage emanating from logging activities. Factors derived from data collected from 121 Logging Plots.

- Compute total skid trails constructed during the assessment period.
- Applying a logging damage factor of 0.95 t C/m3, and a logging infrastructure factor of 32.84 t C/km, derive total gross carbon emission impact from collateral damage and logging infrastructure by:

  (Area under harvest in hectares **X** Average Yield per ha in cubic meters) **X** Logging Damage Factor of 0.95 t C/m3)

  X (length of skid trails of that year in km **X** logging infrastructure factor of 32.84 t C/km)

Step 2 results in t C of collateral damage and infrastructure impacts from forest harvest, which then multiplied by 3.67 as the multiplier of t C to CO2, is the total CO2 emanating from forest management activities resulting from collateral damage and forest infrastructure.

Step 3: Computing the actual impact of extracted wood including provision for storage in long term wood products. Long term wood products storage computation based on Winjum et al 1998.

- Compute total gross emissions emanating from wood extracted by:

  (Area under harvest in hectares **X** Average Yield per ha in cubic meters)

X (Average carbon storage value per cubic meters of 0.4 t C/m3) – (Carbon Stored in Long Term Wood Products computed by method proposed in Winjum et al 1998)

Step 3 results in the computation of total gross emissions taking account of wood stored in Long Term Wood Products and is converted to CO2 by multiplying the above product by 3.67.

Step 4: Computing the total CO2 emissions from total forest management

- Results of Step 2 + Results of Step 3

8.8 Emissions Resulting from Illegal Logging Activities – Measure 4

Areas and processes of illegal logging must be monitored and documented as far as practicable. Monitoring and estimation of such areas is recommended to be done by assessing the volumes of illegally harvested wood. In the absence of hard data, a default factor of 15% (as compared to the legally harvested volume) is required to be used. It is stated in the Joint Concept Note that this factor can be adjusted upwards and downwards pending documentation on illegally harvested volumes, inter alia from Independent Forest Monitoring. Additionally, medium resolution satellite imagery can be used for detecting human infrastructure and targeted sampling of high-resolution satellite images for selected sites.

In the historic reporting, the default level of 15% of harvested production of 705 347 m^3 corresponding to 411 856 t CO_2, is used in the absence of a complete database of illegal activities being in place at that time. This level includes provision for collateral damage arising from logging activities. Production volumes are recorded in custom designed databases which are updated monthly by the GFC, subject to internal verification, and are backed up and stored monthly offsite.

The rate of illegal logging for the assessment Year 4, January 2013 to 31 December 2013, is informed by a custom designed database that is updated monthly, and subject to routine internal audits. This database records infractions of illegal logging in Guyana in all areas. This level for the reporting period is 400 323 t CO_2, less than the historic period level.

Table 8-3 Interim Indicator on Illegal Logging

Period	**Description**	**Volume (t CO_2)**
1 January 2013 – 31 December 2013	t CO_2 emissions arising from illegal logging	11 533
2003-2008 (annual average)	t CO_2 emissions arising from illegal logging	411 856
Difference (t CO_2)		**400 323**

Reporting on illegal logging activities is done via the GFC's 32 forest stations located strategically countrywide, as well as by field, monitoring and audit teams, through the execution of both routine and random monitoring exercises. The determination of illegal logging activities is made by the application of standard GFC procedures. The infractions are recorded, verified and audited at several levels. All infractions are summarised in the illegal logging database and result in a total volume being reported as illegal logging for any defined time period.

Explanatory Note 2

The following steps are taken in the computation of the total emissions from illegal logging activities:

Step 1: Compile background data to inform computations

- Compile annual illegal logging timber volume
- Compile annual area under harvest of various categories that may have been subject to illegal logging.
- Compute Yield in cubic meters per hectares by dividing the illegal logging production by the area size

Step 2: Computing impact of collateral damage emanating from illegal logging activities. Factors derived from data collected from 121 Logging Plots.

- Applying a logging damage factor of 0.95 t C/m3, derive total gross carbon emission impact from collateral damage by:

  (Area under harvest in hectares **X** Average Yield per ha in cubic meters) **X** Logging Damage Factor of 0.95 t C/m3)

Step 2 results in t C of collateral damage from illegal logging activities, which then multiplied by 3.67 as the multiplier of t C to CO2, is the total CO2 emanating from illegal logging activities resulting from collateral damage.

Step 3: Computing the actual impact of extracted wood including provision for storage in long term wood products. Long term wood products storage computation based on Winjum et al 1998.

- Compute total gross emissions emanating from wood extracted by:

  (Area under harvest in hectares **X** Average Yield per ha in cubic meters)

X (Average carbon storage value per cubic meters of 0.4 t C/m3) – (Carbon Stored in Long Term Wood Products computed by method proposed in Winjum et al 1998)

Step 3 results in the computation of total gross emissions taking account of wood stored in Long Term Wood Products and is converted to CO2 by multiplying the above product by 3.67.

Step 4: Computing the total CO2 emissions from total illegal logging

- Results of Step 2 + Results of Step 3

8.9 Emissions from Anthropogenic Forest Fires – Measure 5

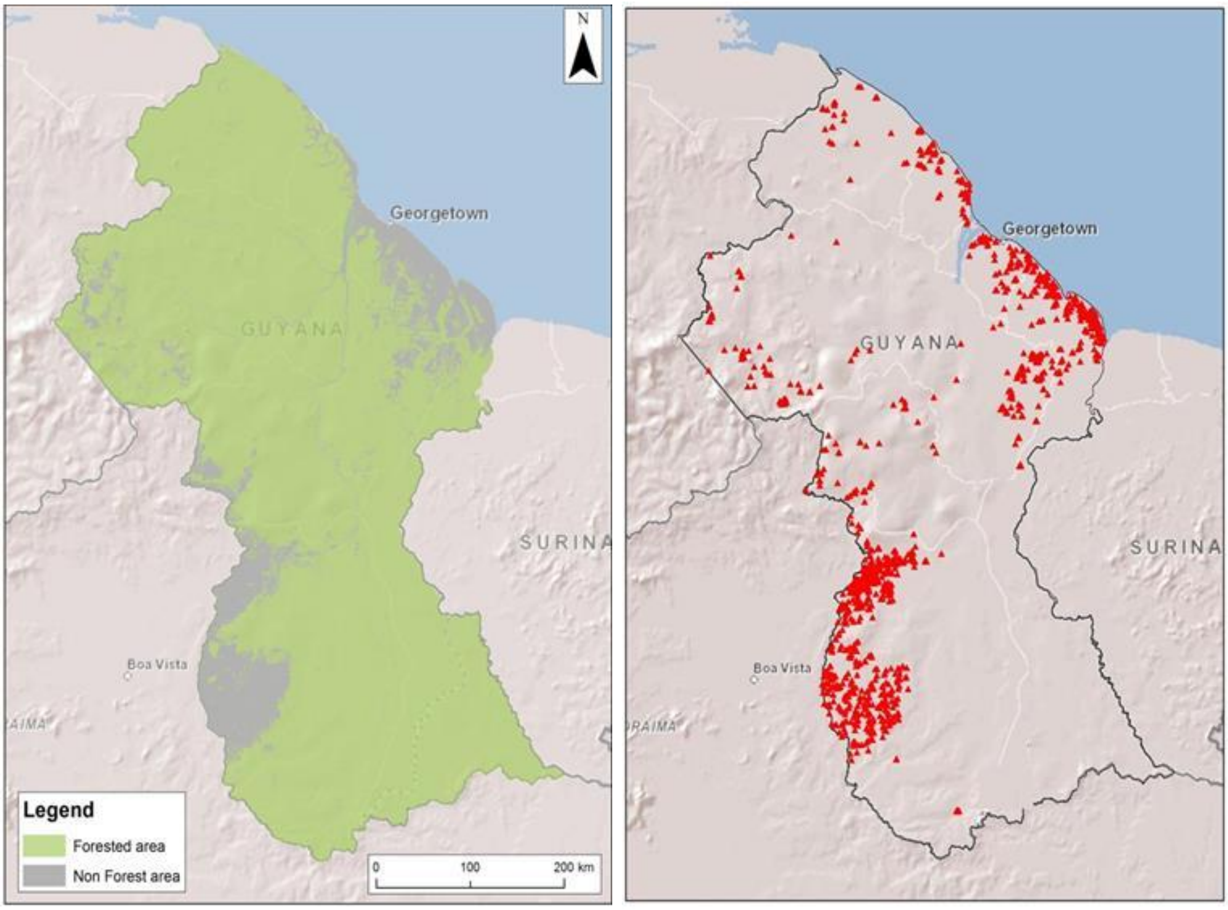
The FIRMS fire point data from MODIS was used to identify potential fire locations (Map 8-2). In addition a systematic review of all fire points was undertaken to validate the presence of fire and establish the extent using the RapidEye imagery. This is an accepted approach that is documented in the GOFC-GOLD sourcebook.

The initial approach used to set a reference level was to calculate the area burnt for the 1990 to September 2009 period. Over this 19 year period a total of 33 700 ha of forest was identified as degraded by burning[22]. This equated to a mean annual area of 1 700 ha. The mean area burnt was accepted as a suitable Interim Measures benchmark against which all subsequent change could be compared.

In Year 2 a considerably lower area of 28 ha was mapped. In Year 3 the area degraded by fire increased to 208 ha with a further increase to 395 ha in Year 4. Although this trend is upward in nature, it is still represents a very small area and well below the benchmark figure.

Overall, fire is an immaterial change driver in Guyana with almost all fires occurring within non forest/grassland landscapes as shown in Map 8-2.

Map 8-2: Non Forest Area & FIRMS Fire Data 2010-2013



The main non-forest areas as determined from the 2012 RapidEye imagery are located in the south along the Brazilian border and closer to Georgetown on the coastal fringe.

[22]This does not include areas deforested as a result of fire events. This has been recorded as deforestation. The .El Niño weather pattern is known to have occurred during this period.

9. ONGOING MONITORING PLAN & QA/QC PROCESSES

A formal QA/QC process has been continually developed over time. The process ensures that the national change analysis is consistent and repeatable. The key elements of the process include:

- Development of the monitoring plan to ensure the provision of satellite data to cover the reporting period. A partnership and supply contract with RapidEye has been initiated.
- Continued tasking of higher resolution (RapidEye) satellite imagery to ensure better delineation of change.
- Facilitating data sharing between agencies through inter-agency training.
- Inclusion of over-flights and capture of geo-referenced oblique photos to confirm vegetation types and change. A database is being built over time containing many thousand aerial oblique photos over different land-cover types in Guyana.
- Integration of a high-resolution airborne camera system to enable an unbiased assessment of map products.
- Upgrading of GPS units to assist with photographic documentation, and geo-tagging.
- Development of routines to automate processing of remote sensing datasets.
- Development of standardized toolbars to enable consistent attribution of change and documentation of drivers of change. Incorporation of GIS datasets in a geodatabase.
- Development of training materials to assist with the attribution of change Review of appropriate peer-review documentation to ensure best practices are adopted in developing methods
- Development of fully aligned IPCC format reporting area change output from an operational MRVS.

The process splits the analysis into RapidEye tiles, maps the change, then merges the tiles back together to form the updated master layer. A feature dataset is created for each tile, which appears like the example shown in Figure 9-1.

Figure 9-1: Feature Dataset Schema

```
Tile_2141206
    All_Change_2012_2141206
    RE2141206_120914_RE4_r_ow_ref_dos_evi_ds0pt310_cf3_sv6_masked
    RE2141206_121115_RE4_r_ow_ref_dos_evi_ds0pt350_cf3_sv6_masked
    Tile_2141206_Overlaps
```

Once each tile is complete it is merged with the new master, an important step is to ensure the edges of the merged tiles are consistent in attribution and topology.

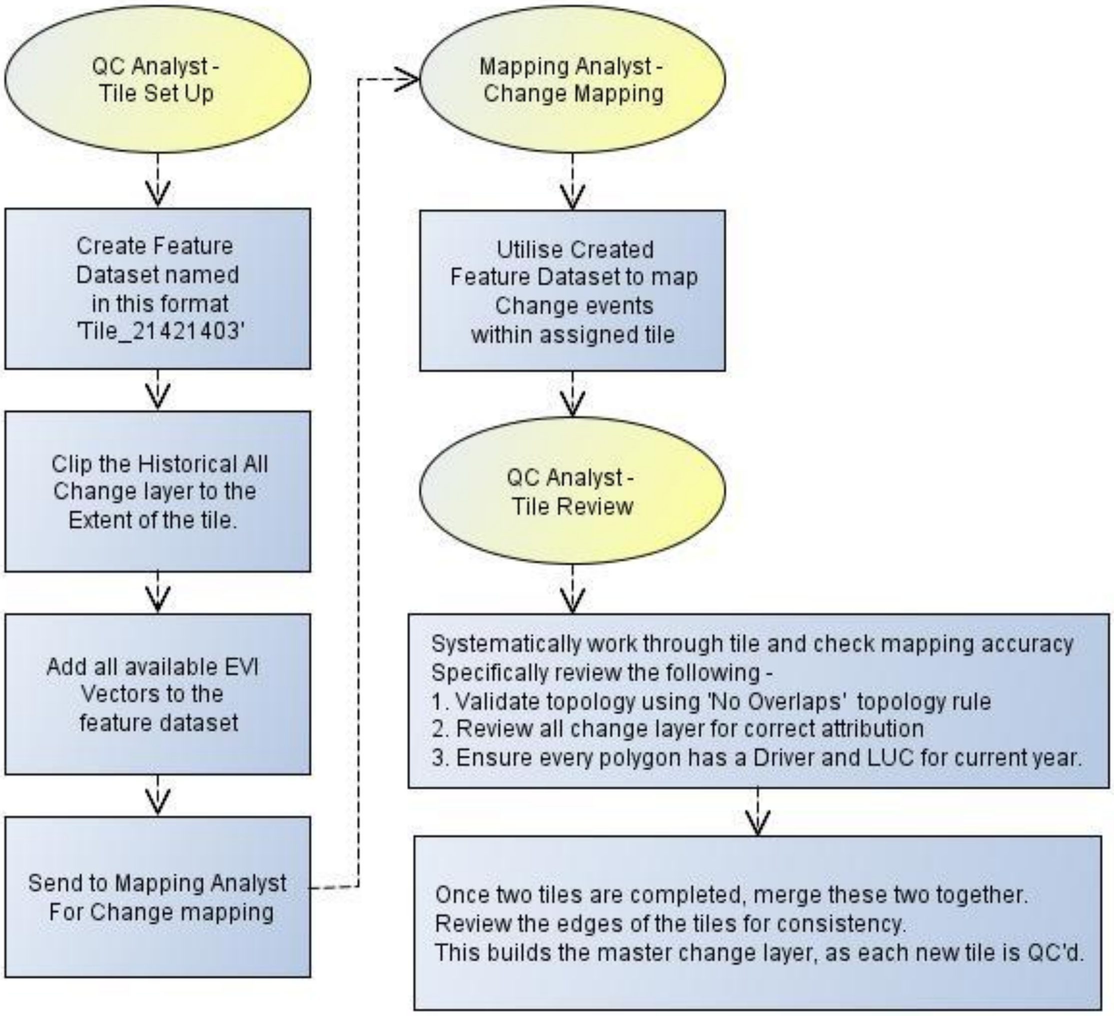
The following description outlines the mapping process while Figure 9-2 shows the technical QC as it is applied.

QC steps -

1. Stitch master datasets together, ensuring consistency.
2. Select rivers and non-forest and clip to remove overlaps.
3. Clip master to country boundary.
4. Check persistent cloud areas.
5. Self intersect the layer to find any final overlaps.
6. Calculate areas and delete any areas under 25 m² (1 Rapideye pixels) these are considered invalid slithers.

7. Harmonise table to ensure drivers LUCs are consistent.
8. Intersect with land classes layer.

Figure 9-2: QC Process Outline



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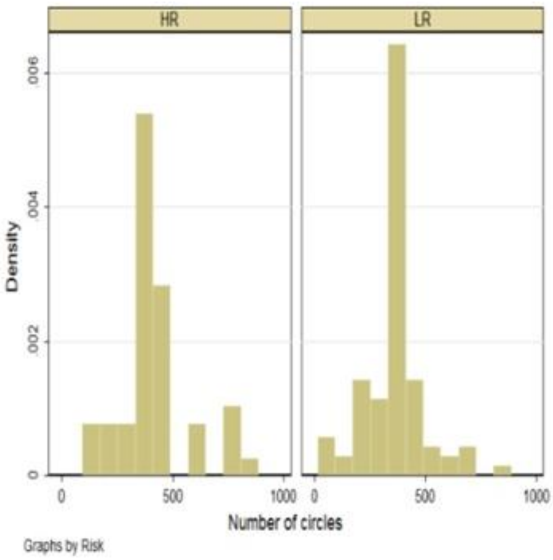
Appendix 1

2012 Follow up Actions

Observation	GFC Response	Year 4 Update
<u>CAR 3 - Minor</u> **Requirement:** Interim Measures 1.1 (1 1)Gross Deforestation, Interim Measures2.1 (2 1) Loss of intact forest and Interim Measures 2.3 (2b 1) **Non-Compliance:** Clarity on transition plan relating to internal capacity building and maintenance **Objective evidence:** Current management and oversight of the GIS unit is due to transition to local people. It is not clear how GFC is able to ensure continued internal capacity building and maintenance that will ensure the high level of delivery of GIS services	Within the Year 3 (2012) assessment period, the most significant involvement of local resources was seen over the past 3 years. In this period, a separate and dedicated unit was established to perform MRV assessments and saw the contracting of 4 new staff for this purpose. This has brought the local staffing complement of the GFC dedicated to this effort to 6 persons. For the 2012 assessment, while oversight was provided by a full time specialist of Indufor who was stationed in Guyana for 1 year, this effort was directed at building local capacities for not only GIS and RS mapping and analyses, but also project management and oversight. This leadership role by GFC staff is evidenced by the degree of involvement in both mapping and management aspects of the Year 3 assessment process. It should be recognised that ongoing technical assistance is a feature of all international MRV systems – especially during the initial development phase. The GFC is mindful of this and will continue to use technical assistance as required to ensure future reporting adheres to GPG and meets the stipulated requirements. The plan in moving forward towards the Year 4 assessment is to maintain efficient planning for all activities related to forest cover monitoring and mapping, as well as capitalising on the experiences built within the new unit to fully and effectively manage and execute the analysis to be done.	*Oversight and coordination of MRVS Year 4 activities predominantly completed by local staff of the GFC.* *Involvement of Indufor continues to be decreased over Year 4 MRVS.* *In-country time of Indufor consultant decreased to half that of the year 3 MRVS process.* *Two local MRVS supervisors, one of whom is the Manager, currently undertake a full leadership role in MRVS work.* *Approach undertaken in Year 4 MRVS takes on a learning by doing approach with both direct training through activity execution, as well as specialised training administered through professional courses.* *Involvement of Indufor focused on development areas.* *Coordination of MRVS as part of REDD+ activities coordinated fully by local staff of GFC, with administrative coordination being executed by the same local GFC team in Year 4 MRVS, as in the first year of the MRVS.*
<u>CAR 4 – Minor</u> **Requirement:** Interim Measure 2.2 (3 1) **Non-Compliance:** Expanding Staff Capacity in forest carbon monitoring beyond current levels. **Objective evidence:** Although the GIS staff has seen expansion within the staffing the Forest Carbon Monitoring relies heavily on a few individuals and current work load may be heavy for existing local personnel under the programme.	The Forest Carbon Monitoring Unit within the GFC, has built significant capacity over the past 3 years in managing and implementing the activities involved in the execution of the monitoring programme. This is evidenced by dedicated staff who work on the management aspect of this activity fulltime, as well as a cadre of field staff from the GFC Forest Resources Management division, who have been trained to perform activities such as data collection, recording and processing. All field activities are managed and executed by local staff, with support from external specialists in the area of design and future system development areas. There is scope to increase the number of local staff in the management aspect of the forest carbon monitoring system from its current level. However, this expansion will be managed with keen consideration to the fact that fieldwork may be more extensive in the current design phase but perhaps less intensive in the full operational stage when relevant system elements will have already been established.	*Adjustment done to task load to reduce field activities of data management function in REDD Secretariat.* *Additional staff recruited and in training to undertake fieldwork load as well as to understudy data management activities.* *Synergies and cross fertilisation of REDD+ and MRVS Forest Area Assessment Unit with Forest Carbon Unit executed. With planned reporting on forest carbon emission which necessitates forest carbon and spatial aspects converging, this approach is seen as effective and advisable. This also allows for extensive capacity built within the Forest Area Assessment Unit, to be fully utilised, recognising that intensive work on remote sensing is concentrated in 6 to 7 months of the year.*

Observation	GFC Response	Year 4 Update
<u>CAR 5 – Minor</u> **Requirement:** Overall Guyana MRV programme **Non-Compliance:** Current system does not establish tolerance levels as part of a QA/QC design framework, necessary for an MRV system **Objective evidence:** Current manuals cover the activities to be undertaken however they do not cover predefined fallback options for errors in the system. Current QA&QC focus on fixing the problems found but not on the relevancies of the error and whether this has an effect on other datasets.	Manuals of Procedures as seen in Sample Design, Standard Operating Procedures, and Mapping Protocols define system processes for both forest carbon and forest cover monitoring. QA and QC processes embedded within these systems are designed to reflect best practice as recommended by IPCC, GOFCGOLD as well as methods outlined in peer reviewed, published scientific studies. Current systems are designed to achieve as high accuracy and precisions levels as possible e.g. main elements of the forest carbon monitoring system aim for statistical results that reflect 95% confidence level +/- 15% of the mean. Although of minimal occurrence, in instances of errors in data collection and processing, currently full system checks are performed across datasets. In the future general tolerance levels for main components, the forest area and forest carbon monitoring systems may be beneficial to the overall operation of the MRVS as well as integration within the relevant SOPs.	Section added to Standard Operating Procedure (SoP) that addresses types of errors and relevance of errors. Procedures developed and integrated within SoP are being implemented and have formed the basis of QA/QC procedures currently in place in the MRVS. Uncertainly levels continue to be reported for all data results and are set at %% CI +/- 15% of the mean.
<u>Observation</u> **Requirement:** Interim indicator 1, 2 and 3 **Potential Non-Compliance:** Accuracy assessment's sampling plan and estimate of standard error of the model-assisted estimator. **Objective evidence:** The DU has assumed the 1 ha-plot as unit of observation and that it is stratified SRS. This is evidenced from the calculations such as the ones provided 11-8 for the High Risk Stratum, where the confusion matrix and all the calculations of the model-assisted estimator and its variance have been made considering the 1 ha plot as the sampling unit (i.e. 24125 units in the matrix). Hence, it has been assumed that it is an SRS within that stratum, which differs from the sampling design.	The accuracy assessment report clearly states that —A two-stage sampling with stratification of the primary units was adopted to provide precise estimates of forest area. The first stage sample units are 15 by 1 km rectangular areas derived from SRS (simple random sampling) of each of the two strata. The second stage systematically samples 1 ha mapping areas within each unit. The rationale is to calculate within-stratum means and variances and then weighted estimates of forest area, where the weights are proportional to the stratum sizes. The stratum size is derived from the analysis of deforestation risk carried out using relevant GIS data layers. As with SRS variance estimators, stratified estimators can be biased when used with systematic sampling. However, stratification of the model assisted difference estimator is, in this case, used to increase the precision of the forest area estimates; a variable closely related to the variable on which the stratification is based. The calculations were done separately by stratum and weights applied when combined.	**Background** The Year 3 accuracy assessment for gross deforestation and forest degradation in Guyana used two-stage sampling with stratification of the primary units. Stratification was based on factors that contribute to risk of deforestation by the primary drivers of land cover change in Guyana i.e. alluvial gold mining, logging and agriculture. The land cover map for Guyana is updated every 12 months based on interpretation of satellite imagery, initially 30 m pixel-size Landsat and, since 2012, 6.5 m pixel-size RapidEye. The mapping covers the entire land area of Guyana and uses multiple looks for every satellite image footprint to compensate for areas obscured by clouds and cloud shadow. Accuracy assessment is guided by established principles of statistical sampling for area estimation and by good practice guidelines (GOFC-GOLD, 2012, UNFCCC Good Practice Guidance (GPG) and Guidelines (GL)). The initial purpose of the sampling strategy for the Guyana MRV was to determine the status of the forest resource by checking the accuracy of the wall-to-wall mapping based on satellite observations. The Year 1 assessment recognised that deforestation from mining, logging or agriculture was more likely in regions where transportation was possible and so stratification should be based on a "risk" map
This may have some implications as: a) The formulae for the model-assisted estimator and its variances sourced from Roberts & Walters (2012) assumes a SRS.	The formulae used for the model assisted difference estimator is taken from McRoberts, Tomppo and Naesset (2010) Scandinavian Journal of Forest Research, 25, 368-381 and McRoberts (2010) Remote Sensing of Environment, 114, 1017-1025. and Sarndaland Swensson (1987) International Statistical Review, 55, 279-294 and McRoberts (pers comm to Indufor). The DNV notes suggest that the interim measures report might have used different terminology. The model assisted difference estimator uses the difference between a model (what Sarndall and Swensson refer to as a naïve estimator) and a probability-based sample. The DU accuracy assessment used a probability-based sample for the first stage and systematically sampled within this; potential bias was examined and an additional analysis of the sample sizes between the strata is	

Observation	GFC Response	Year 4 Update
	presented below. There is no evidence of any systematic bias although the discussion in the report could have been clearer.	derived from established GIS data sets (roads, settlements, mining, logging & agriculture concessions). The purpose of stratification is to calculate the within-stratum means and variances and then calculate a weighted average of within-stratum estimates where the weights are proportional to the stratum size. Stratification will reduce the variance of the population parameter estimate and provide a more precise estimate of forest area than a simple random sample. The analysis design assigned a model-assisted difference estimator to each stratum independently. The model-assisted difference estimator uses the relationship between the sample observations and the model predictions to again reduce the variance of the population parameter estimate. The sampling design and the associated response design are limited by the quality and availability of suitable reference data to verify interpretations of the GFC Forest Area Assessment Unit (FAAU). In Year 1 when mapping was interpreted from Landsat data, the accuracy assessment was based on satellite data of a finer spatial resolution such as DMC, RapidEye, CBERS, IKONOS and Spot). In Years 2 and 3 the GFC Forest Area Assessment Unit (FAAU).turned to RapidEye and the primary mapping tool and by Years 3 and 4 the whole country is mapped from multiple looks of RapidEye data at 6.5 m pixel size. Therefore, the response design of the accuracy assessment looked at aerial imagery as an appropriate fine-resolution source of data to validate land cover changes. In Year 3 the aerial reference data were acquired using a two-stage random sampling design with stratification of the primary units and the area estimations were estimated from a model-assisted difference estimator to each stratum independently. The confidence intervals for the area estimates for gross deforestation and forest degradation were significantly improved from Year 2 to Year 3.
b) Stehman (1997) proves that estimating the overall accuracy of a cluster sampling (with equal-size clusters; in the Guyana case are unequal-size clusters) with formulae from an SRS may bias the results of the standard errors.	As stated above, bias is always a problem in any systematic sampling procedure. The DNV feedback highlights possible bias associated with the GeoVantage flights not always mapping 15 km^2 precisely. Durham University has looked at the distributions of the primary sampling units and these are shown in the density plots below. Analysis of variance shows that there is no significant difference in means between the two strata and standard deviations are very similar. [Bartlett's test of equal variances between Strata Chi2 = 0.8709; Prob>chi2 = 0.351]. Therefore, although it is not ideal to have variability in the size of the primary sample units, this was an unavoidable consequence of using an aircraft flying at low altitude over a rainforest; in some cases the imaging failed and only part of these data were collected, in other cases additional data were collected. There was no systematic pattern to this. In previous years, cloud cover resulted in some unevenness in sampling. 	
In view of this, the reported results in the Accuracy Assessment on areas and confidence intervals may be biased. GFC are encouraged to improve this potential issue.	The land cover (LULC) change categories for Guyana are Forest, Degraded Forest and various non-forest classes. The data for land cover transitions are captured in the MRV and are replicated in the independent Accuracy Assessment; that is, the drivers of change are recorded where possible. Some of the LULC change categories are very small in area (Forest to Cropland is a good example) and robust statistical assessment of such change in Year 4 needs to be balanced against the priority of assessing deforestation and forest degradation due to mining	

<table>
<tr><th>Observation</th><th>GFC Response</th><th>Year 4 Update</th></tr>
<tr><td></td><td>and logging. GFC is aware that the use of stratified sampling and validation of satellite-based mapping with aerial GeoVantage data has reduced uncertainty in the aerial estimate of forest change for Year 3. If a similar approach is taken in Year 4, the estimate of deforestation rate will also be improved. It is appropriate that the Accuracy Assessment team be asked to model this uncertainty and where possible to comment on uncertainly by land cover type / change driver. The GFC mapping is based on expert manual interpretation of 5 m resolution satellite imagery. It is not a machine-based classification because cloud cover and image data quality over the entire country make it near impossible to create a national dataset that would allow automatic classification; hence the trained expert interpretation team and QC procedures.</td><td rowspan="2">The feedback from DNV and the Norwegian Ministry of Environment via the stakeholder consultation phase shows the requirement to optimise the methods used for accuracy assessment to reduce the uncertainties in forest change estimates. The approach taken in Years 1-3 had been to optimise the forest area estimates and was to a large extent constrained by the availability of appropriate reference data.
Improvements to address CAR and Observations
The experience of deploying the GeoVantage aerial multispectral imagery in a stratified random design opens up the possibility for the first time of repeating the survey to generate a reference change dataset.
The idea of quantifying change in a forest resource as the difference between two successive inventories was first applied to individual forest stands. A repeated measurement of a selected number of representative stands to assess forest resources has a history dating back to the establishment of permanent sampling plots in Europe in the late 19th century.
For estimating change it is best to retain the same sample throughout all occasions but for estimating the average over all occasions it is best to draw a new sample on each occasion (Cochran, 1963).
For the Guyana MRV, the goal in years one and two were to assess the accuracy of the GFC wall-to-wall mapping and to ensure that forest/non-forest and forest degradation classes were correctly labelled. Another goal was to provide confidence limits on the assessments of forest cover at the national scale. The accuracy assessment was required to address the REDD+ interim measures agreed between the Governments of Norway and Guyana where the initial priorities were on assessing confidence intervals around estimates of forest area for 1990, 2009 (benchmark period) and for each subsequent year of MRV reporting. The MRV has developed so that the quality of the wall-to-wall</td></tr>
<tr><td>GFC should note that this is in fact required by the 2006 IPCC GL for Tier1/2 + Approach 2/3 where the reporting is made over change categories and uncertainty has to be reported for the change categories (i.e. ForestLand to CropLand), not the LULC categories (i.e. ForestLand). So a future MRV compliant with 2006 IPCC GL will require determining the uncertainty in the estimation of change.</td><td>As a next step in Accuracy Assessment efforts when the full MRVS is in place, a land cover change confusion matrix will be developed and uncertainties will be attached to each land use/cover category, thereby giving uncertainty in the estimate of change. At this point, the MRVS is in its final interim stage.</td></tr>
</table>

Observation	GFC Response	Year 4 Update
		mapping has improved with better quality satellite image data and operating procedures for interpretation and GIS processing. Over the same period, the accuracy assessment increased the size and quality of the reference sample used to assess forest area and assign confidence intervals at the 95% confidence limit. The accuracy assessment for Year 3 (2012-13) was based on a new aerial multispectral dataset (from GeoVantage) with very fine spatial resolution and a much increased sample size. Nevertheless, it was clear from the report and from independent comments that the Accuracy Assessment team should review the approach for reporting of rate-of-change statistics for Deforestation and Forest Degradation. It is therefore timely to consider strategies to increase the precision of change estimates, in this case annual gross deforestation and forest degradation. Approaches for estimating activity data include: (i) post-classification of two forest attribute maps, (ii) construction of a forest attribute change map, and (iii) use of a forest attribute change sample. For Guyana, the established MRV protocol is for the entire country to be remapped on an annual basis, and so a forest change map will be generated and a reference sample will be needed to assess its accuracy. If however, the focus of assessment places emphasis on inference, that is optimising the precision of the change estimates, it makes sense to generate an *attribute change sample* as the reference data for the change map and for the gross deforestation area estimate. Estimation methods to assess population parameters at successive re-measurement occasions are well established and can be defined as the difference between the estimates of the population parameter at two successive epochs. $\Delta\hat{Y}_{2,1} = \hat{Y}_2 - \hat{Y}_1$ When the same sample set is re-measured, the estimator of the variance of the change of the mean becomes

Observation	GFC Response	Year 4 Update
		$var\ (\Delta\hat{Y}_{2,1}) = var\ (\Delta\hat{Y}_2) + var\ (\Delta\hat{Y}_1) - 2 \times \hat{\rho}(Y_2, Y_1) \times \sqrt{var\ (\hat{Y}_2)\ var\ (\hat{Y}_1)}$ where$\hat{\rho}(Y_2, Y_1)$is an estimate of the correlation coefficient between the observations on the second and the first occasion and is restricted to values between -1 and +1.When the correlation is positive the variance of the change will be less than the sum of the variances on the first and second occasions. However, it should be noted that as time separates the sampling epochs the correlation will tend to reduce. The rate of decrease will depend on how well change is correlated with the attribute value on the first occasion. **Summary and Conclusion** 1. Year 4 involves independent assessment of land cover change using a two-stage stratified random change analysis design. The reference sample will include comparison of high resolution GeoVantage aerial imagery where possible for 143 first-stage sample areas. This analysis is independent of the GFC national mapping. 2. The change assessment will assess gross deforestation, forest degradation by driver and change in non-forest land cover types as defined by IPCC. 3. There will be an independent assessment of the quality of GFC National Forest Change mapping accuracy. 4. An accuracy assessment report will describe changes to methods from Year 3, results and estimates, as specified above and summary recommendations. 5. Uncertainty on the rate of change is established for year 4. Full Report on Sample Design Plan for Accuracy Assessment developed and available at GFC, provides further details on the above and this Observation.

Appendix 2

Joint Concept Note on REDD+ Cooperation between Guyana and Norway

Joint Concept Note

Background

On November 9th, 2009, Guyana and Norway signed a Memorandum of Understanding (MoU) regarding cooperation on issues related to the fight against climate change, in particular those concerning reducing emissions from deforestation and forest degradation in developing countries (REDD-plus[1]), the protection of biodiversity, and enhancement of sustainable, low carbon development.

An accompanying Joint Concept Note (JCN) set out the framework for taking the Guyana-Norway co-operation forward. It set out how Norway would provide Guyana with financial support for REDD-plus results, and formed the basis for the first payment from Norway to Guyana. An update of the Joint Concept Note was finalized in March 2011 and has guided the partnership until December 2012.

Since the first Joint Concept Note was published, considerable progress has been made in the Guyana-Norway cooperation.

This current version of the Joint Concept Note replaces the concept note of March 31 2011.

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1 As defined in the Bali Action Plan (2/CP.13).

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Section 1: Introduction

This Joint Concept Note constitutes the overarching framework for taking the Guyana-Norway cooperation forward. Specifically, it addresses Paragraphs 2 (c), 3 and 4 of the MoU signed between Guyana and Norway on November 9th, 2009. The Joint Concept Note sets out how Norway is providing, and will continue to provide, financial support to Guyana, based on Guyana's delivery of results as measured, and independently verified or assessed, against two sets of indicators:

- *REDD-plus Performance Indicators:* A set of forest-based greenhouse gas emissions-related indicators, as described in more detail in section 3 below. Results against these indicators will be independently verified according to the established practice of the partnership. These indicators will gradually be substituted as a system for monitoring, reporting and verifying (MRV) emissions from deforestation and forest degradation in Guyana is established. The development of the MRV system is guided by the MRV roadmap.[2]

- *Indicators of Enabling Activities*: Indicators are identified that can be independently assessed[3] through publicly available information on progress regarding a set of policies and safeguards to ensure that REDD-plus contributes to the achievement of the goals set out in Paragraph2(c) of the MoU signed between Guyana and Norway on November 9th, 2009, namely "that Guyana's LCDS Multi-Stakeholder Steering Committee and other arrangements to ensure systematic and transparent multi-stakeholder consultations will continue and evolve, and enable the participation of all affected and interested stakeholders at all stages of the REDD-plus/LCDS process; protect the rights of indigenous peoples; ensure environmental integrity and protect biodiversity; ensure continual improvements in forest governance; and provide transparent, accountable oversight and governance of the financial support received." The enablers are described in more detail in Section 2 and table 1 below.

Norwegian financial support is being channeled through a multi-contributor financial mechanism – the Guyana REDD-plus Investment Fund (GRIF). The support is financing two sets of activities:

- The implementation of Guyana's Low Carbon Development Strategy (LCDS)
- Guyana's efforts in building capacity to improve overall REDD+ and LCDS efforts.

Section 4 sets out how the financial mechanism operates.

The first payment to the GRIF was made in October, 2010 and the second payment in March 2011 for results achieved between October 1, 2009 and September 30, 2010. The third contribution was announced in December 2012 for forestry results from January 1st to December 31st 2011 and for results on indicators of Enabling Activities from October 1st 2010 to December 21st 2012.

The contents of this concept note have been updated to include the longer term goals of the partnership towards its end in 2015. The annual progress in developing the MRV system and in

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[2] http://www.forestry.gov.gy/Downloads/Terms_of_%20Reference_for_Guyana's_MRVS_Draft.pdf

[3] Up until now the enabling activities have been 'verified', this have been a challenging exercise since qualitative and subjective views highly influence the understanding and verification of the indicators. The Governments of Guyana and Norway have therefore chosen to change the language from'verified' to 'independently assessed' in order to accommodate for the qualitative nature of these indicators.

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strengthening the quality of REDD-plus-related forest governance will be defined as steps towards reaching these goals. The Government of Guyana is responsible for making publicly available the necessary data for assessing performance against the given indicators.

Section 2: Enabling Activities

The continuation of result-based financial support from Norway to Guyana will depend on publicly observable progress on forest governance, as outlined below.

Section 2.1 Indicators of Enabling Activities

Performance in enabling activities will be measured against progress on six key categories of activities:

Strategic framework:

All aspects of Guyana's planned efforts to reduce deforestation and forest degradation, including forest conservation, sustainable management of forests and enhancement of forest carbon stocks ("REDD-plus"), are being developed in a consistent manner, through an internationally recognized framework for developing a REDD-plus programme, and will continue to evolve over time. Guyana is developing its REDD-plus efforts under the Forest Carbon Partnership Facility (FCPF), managed by the World Bank. Furthermore, all REDD-plus efforts will, at all stages, be fully integrated with Guyana's Low Carbon Development Strategy (LCDS). The contributions to Guyana's LCDS from Norway and other contributors, including the FCPF, will be administered in a transparent manner. Information concerning all expenditures, both planned and implemented, will be publicly available on the relevant website of the Government of Guyana, and through national systems of public disclosure, including to the National Assembly.

Guyana has chosen the Forest Carbon Partnership Facility (FCPF) as the strategic framework for its REDD+ efforts. The Readiness Preparation Proposal (RPP) will be finalized during 2012 with IDB as the delivery partner.

Goal of the partnership

Guyana and Norway support the relevant decisions of the UNFCCC COPs in Cancun, Durban and Doha, and in particular the decision to agree a new, global climate agreement by 2015, for implementation from 2020 at the latest. The Governments believe that the partnership between the two countries can provide many useful lessons for the crafting of the new agreement, as well as influencing the effective functioning of other multilateral processes, e.g. the FCPF. This could include lessons on creating effective climate finance mechanisms, setting REDD+ reference levels, and providing practical lessons on the implementation of safeguards. By the end of 2014, the Governments will make one or more joint submissions to the UNFCCC, covering each area where there the Governments believe that there are shared lessons that will help the global multilateral process. As well, the Government of Guyana's Readiness Package ("R-package") will be prepared and assessed by the FCPF's Participants Committee (PC) in the fall meeting 2014, contingent on financial resources from FCPF, or other resources, being available in time to do so.

Improved Financial Intermediation

Subject to IDB decision-making processes, the IDB Financial and Safeguards Intermediary role will be operational in the first half of 2013.

By the end of 2013, an outline strategy will be prepared setting out how the interim financial mechanisms could in the future be transitioned into national systems once mutually agreed benchmarks for independent assessment of financial, social and environmental safeguards are met. This could form part of a submission into the UNFCCC process, as a contribution to global efforts to design effective REDD+ finance mechanisms.

Continuous multi-stakeholder consultation process:

The LCDS, including the REDD-plus strategy and prioritized LCDS funding needs, is subject to an institutionalized, systematic and transparent process of multi-stakeholder consultation, enabling the participation of all potentially affected and interested stakeholders at all stages of the REDD-plus/LCDS process. This process will continue to evolve over time. Particular attention will be given to the full and effective participation of indigenous peoples and other forest-dependent communities.

Goals of the partnership

- Monthly meetings of the Multi Stakeholder Steering Committee (MSSC), with comprehensive minutes of every meeting made publicly available immediately upon approval from the following MSSC meeting.
- Information and consultation program in place by June 2013, leading to a sustainable intensification of outreach activities both in the hinterland and elsewhere, including: :
    - From January 2013 keeping the GRIF and LCDS web pages updated with relevant information about the progress of ongoing processes.
    - Initiating in January 2013 a responsible body for communication, information and consultations - located either in the Office of Climate Change (OCC), the Project Management Office (PMO) or REDD Secretariat. The body will be established in January 2013 and, subject to timely availability of GRIF resources, will be fully operational by the end of 2013, with the ability to lead the development and sustain the implementation of the elements identified below.
    - The establishment of information and consultation routines tailored specifically to the needs of Amerindian communities, including non-internet based channels of communication like in-person meetings, information folders, and traditional media.
    - Coordinated information flows related to the different parts of LCDS implementation, including but not limited to LCDS progress, IFM, EITI, FLEGT, FCPF and GRIF projects.
    - Collaboration with the National Toshaos Council (NTC) and MSSC members to strengthen their capabilities to function as agents of information sharing.
    - Develop annual stakeholder engagement and awareness plans consistent with the conceptual process framework developed, to be implemented starting in early 2014.

4

Governance:

A transparent, rules-based, inclusive forest governance, accountability and enforcement system for forest governance in Guyana is being progressively strengthened, in accordance with Guyana's outline REDD-plus Governance Development Plan (RGDP) and the enabling activities for 2012, as outlined in table 1.

Goals of the partnership

- Application for EITI Candidacy presented to the EITI board by May 2013, application for EITI compliance at the last EITI board meeting in 2015.
- Commencement of formal negotiations with the EU by the end of 2012, with the aim of agreeing to a Voluntary Partnership Agreement (VPA) under the EU FLEGT Action Plan, by March 2015. Ratification of the VPA by Guyana by September 2015. Development of a plan for the implementation of the VPA to be completed by the end of 2015.
- Continued implementation of Independent Forest Monitoring (IFM), with the first IFM assessment due by the end of 2013; In keeping with Section 4 of the agreed Terms of Reference for IFM, the next IFM assessments will be conducted at 2 years intervals thereafter, the next one taking place in December 2015
- Enforcement and implementation of activities outlined by the Special Land Use Committee (SLUC) – and communicated publicly – will continue in 2013.
- The fifth national report submitted by 31 March 2014 to the CBD, including to the extent possible a description of the synergies between the protection of biodiversity, REDD+ and the LCDS.
- Implementation of a GoG (MNRE) programme, with actions focused on specific efforts to manage degradation from extractive activities where this needs to be done, including, for example: the start up of an enhanced miners' environmental knowledge programme through a mining extension service initiative and enhanced dialogue with the sectors and relevant stakeholders towards ensuring that sectoral best practices are applied and sustained thereafter.

The rights of indigenous peoples and other local forest communities as regards REDD-plus:

The Constitution of Guyana guarantees the rights of indigenous peoples and other Guyanese to participation, engagement and decision making in all matters affecting their well-being. These rights will be respected and protected throughout Guyana's REDD-plus and LCDS efforts. There shall be a mechanism to enable the effective participation of indigenous peoples and other local forest communities in planning and implementation of REDD-Plus strategy and activities.

Guyana's policy is to enable indigenous communities to choose whether and how to opt in to the REDD-plus/LCDS process. This will take place only when communities wish to do so with their titled lands, in accordance with Guyana's policy of respecting the free, prior and informed consent of these communities.

Goals of the partnership

- GRIF funding made available to enable the achievement of the Government of Guyana's policy objective of completion of land titling for all eligible Amerindian communities by 2015, with progress measured relative to a publicly available timeline.
- GRIF funding made available for all CDPs through the Amerindian Development Fund.
- Opt In mechanism designed based among other things on evaluation of the piloting experience of the mechanism, and implemented starting in July 2015.

5

- Implementation starting by June 2013 of the part of the outreach program under the multi-stakeholder indicator which is tailored and targeted towards the needs of Amerindian communities.

Integrated land-use planning and management:

Several aspects of REDD+ relates to the development of a system for environmentally sustainable and climate smart area planning and management. Several of the current interim performance indicators and enabling activities are directly relevant in this context. To ensure sustained positive impact from our combined efforts, the long term goal should be for these indicators and activities to result in a formalized system for area planning and management:

Goals of the partnership

- By September 2015, Guyana has a formal system in place for holistic area planning and management.
- A key element of this system should be a publicly available map of area use (including, but not limited to, full transparency regarding existing and planned concession and reconnaissance areas for forestry and mining, titled lands for Amerindian communities, areas planned and concessioned for industrial agriculture etc.)
- In the process of developing the system for area planning and management and the area use map, formal status of varying degrees of protection should be awarded to a significant part of the areas identified as Intact Forest Landscapes and priority areas for biodiversity, This will gradually replace the Intact Forest Landscapes interim performance indicator. The measures taken will as a whole be in line with Guyana's stated goal of maintaining 99,5 per cent of its forest for the duration of the partnership and stay on a similar trend after 2015, though the degree of forest protection will depend on various factors, including the availability of international climate finance.

Monitoring, reporting and verification:

Guyana has progressed far in developing a national MRV system. Guyana has established a deforestation baseline and performed two forest area assessments for the years 2009-10 and 2010-11.

Goals of the partnership

- Guyana has implemented the MRV-roadmap and reached a reporting level incorporating several Tier 3 elements by the end of 2015. These Tier 3 elements include, but are not necessarily limited to, the use of high resolution data at national level that allows for disaggregation, the use of methods that provide estimates of greater certainty than lower tiers for key carbon pools, the use of comprehensive field sampling that is linked to GIS based systems which integrates land use and management activity data, and is subject to quality checks, and validations. Further, other areas relevant to Tier 3 reporting, will be further explored as stated in the MRV Roadmap.
- Guyana will conclude technical analyses that inform a reference level that is to be submitted to the UNFCCC. The reference level will reflect the core elements of the reference level agreed by the GoG and the GoN, and also make provisions that the reference level be reassessed at regular intervals as/if global rates decrease. The aim is to submit the reference level to the UNFCCC by mid 2014, if this is technically feasible. If

this goal proves impossible to meet due to technical challenges, the deadline can be extended after written agreement by both parties

Section 2.2 Assessing Progress Against Enabling Indicators

Table 1 below sets out how progress will be measured regarding enabling indicators going forward. These indicators are informed by the long term goals of the partnership as agreed in section 2.1 above, and thereafter updated in accordance with the long term goals.

Guyana and Norway have agreed that the necessary information to assess Guyana's delivery on these indicators will be easily accessible in the public space. Independent assessment of the information thus accessible determines to what degree, the REDD-plus enablers have been met.

Section3: REDD-plus performance indicators

Guyana is being paid for its performance through an incentive structure which rewards keeping deforestation below an agreed reference level, as well as avoiding increased forest degradation.

The Governments of Guyana and Norway strongly endorse the establishment of such an incentive structure under the United Nations Framework Convention on Climate Change (UNFCCC). To help facilitate such an agreement, the Governments have decided to pilot such an incentive structure on a national scale and in a pragmatic, gradually evolving, workable and hopefully replicable manner. Once an international regime is in place, the Guyana-Norway partnership will be adjusted accordingly. Section 3.1 sets out the incentive structure, while Section 3.2 outlines how performance is to be assessed.

Section 3.1 REDD+ incentive structure

The payments due to Guyana for a given year are paid post facto. They are calculated as follows:

1. Measure avoided deforestation by subtracting Guyana's observed deforestation rate against the agreed *reference level*. See Section 3.1.1

2. Determine avoided greenhouse gas emissions by applying a set of *carbon-density proxies* to:
   (i) convert the observed avoided deforestation rate into avoided greenhouse gas emissions;
   (ii) subtract increased emissions from forest degradation based on agreed indicators and their reference levels as set out in table 2.
   See Section 3.1.2.

3. Apply an interim carbon price of US$5 per tonne of avoided emissions, providing Guyana does not exceed an agreed level of deforestation within the context of the Guyana-Norway partnership – see Section 3.1.3. If the deforestation rate is above the levels stipulated in section 3.1.3, payments will be reduced and ultimately cease.

Section 3.1.1 – Measuring Avoided Deforestation and Forest Degradation

Setting a Deforestation Reference Level

For a global REDD+ mechanism to be effective it must incentivize both (i) reductions in deforestation in countries with high levels of deforestation and (ii) maintenance of low deforestation rates in countries that have maintained their forest cover. If only countries with high deforestation rates are compensated for improving their forest protection under an international climate regime, deforestation pressures will move to countries with currently low deforestation, like Guyana, and the overall emissions reduction effect will be diluted or lost.

On the other hand, if a global incentive structure does not ensure global additionality, the international community will be paying for "hot air" and there will be no mitigation impact.

This point is broadly accepted within the UNFCCC negotiations, and there is general agreement that a REDD-mechanism must provide genuine incentives for forest conservation in low deforestation countries, as well as ensure global additionality.

Therefore, Norway and Guyana have – pending the finalization of a UNFCCC reference level methodology – decided to use the "combined reference level" methodology to set a provisional reference level, based on an equal weighting of Guyana's mean 2000 - 2009 deforestation rate and the mean 2005 – 2009 rate in developing countries with deforestation. The "combined reference level" methodology provides incentives for all categories of forest countries, and ensures that emissions from deforestation and forest degradation are reduced cumulatively at a global level.

In setting a historical deforestation baseline for Guyana under the Guyana-Norway REDD+ partnership, the mean value for the 2000-2009 period is used; 0.03% (see box 1 for background). This adheres to the principles used for setting the historical deforestation baseline in the Brazilian Amazon Fund.

The "global average deforestation rate" is calculated[4] across 85 developing forested countries by dividing the sum of reported forest area loss in only those countries which lost forest by the starting area of forest across all countries, Data on forest loss is taken from FAOs Forest Resources Assessment 2010 (FRA 2010). For the period 2005-2010 the "global average deforestation rate" was 0.52%. This figure will be subject to revision given new data from future FAO FRA's or from the IPCC.

The reference level for Guyana is the mean value of these two measures, that is, 0.275%.

Setting Reference Levels for forest degradation indicators.
In the first two years of the partnership, Guyana's MRVS was not sufficiently developed to enable an analysis of forest degradation in Guyana that would enable a facts- based reference level to be established for all degradation indicators. Guyana has made substantial progress in improving the knowledge base for degradation indicators, and the current set of indicators and their associated reference levels are described in table 2.

Section 3.1.2 Converting to Avoided Greenhouse Gas Emissions
Guyana is working to implement an IPCC-compliant MRV-system for emissions or removals of carbon from Guyana's forest sector. Until such a system is in place, a set of basic interim (proxy) indicators will be used to assess Guyana's performance. As a more sophisticated forest carbon accounting-system is implemented, these basic indicators will be gradually phased out. The set of interim performance indicators is based on the following assumptions:

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[4]The open source Osiris database was used for these calculations (www.conservation.org/osiris). Note that this is an underestimate because it does not include deforestation that occurred within countries that had a net gain in forest, nor does it account for all deforestation in countries that lost forest as some countries' reported forest area loss are net values.

- They provide justification and prioritization for near-term implementation of REDD-plus efforts.
- They are based on conservative estimates while encouraging the development of a more accurate MRV system over time through building national capacities.
- They will contribute towards the development of a national MRV-system, based on internationally accepted methodologies and following the IPCC reporting principles of completeness, consistency, transparency, uncertainty, comparability, and encourage independent international review of results.

When calculating reduced emissions from avoided deforestation, an interim default value of 100 tons of Carbon is applied. This interim carbon figure corresponds to 367 tons of CO2. When calculating emissions caused by forest degradation, a default value of 400 tons per hectare is applied, this corresponds to 1468 tons of CO2. These conservative carbon values help to ensure that emission reductions from deforestation are not over-estimated and emissions from forest degradation are not under-estimated.

The interim indicators are described in table 2 below.

Section 3.1.3 Calculating Payment

Payments due to Guyana will be calculated by applying an interim carbon price of US$5/ton CO2, as established in Brazil's Amazon Fund.

However, this price will only be applied if Guyana's observed deforestation rate is below the agreed level. This is explained in the following section.

Agreed maximum level of Deforestation

If designed for maximum effectiveness and efficiency, a future global incentive system could allow for significant variations in individual countries' deforestation rates while still ensuring global additionality.

However, in the absence of a global system, such an approach alone would imply that Guyana would be eligible for significant payments even if it were to increase its deforestation along a business-as-usual trajectory towards the agreed reference level of 0.275%.

However, neither Norway nor Guyana wishes to see such an increase in deforestation, and in November 2009 the Joint Concept Note clearly stated that:

"(…) the Participants agree that Norwegian financial support from 2011 onwards is also dependent on no national-level increase in deforestation over an agreed level that should be as close to historical levels as is reasonable in light of expanded knowledge of these historical rates and the quality of that knowledge. Such a level can only be set when more robust data is available concerning current and historic deforestation."

At the same time, Guyana's national development requires limited but strategic use of forest assets to enable (i) a limited amount of economic activity to take place within the forest, where the economic value to the nation of such activity is very valuable; (ii) a limited amount of essential national infrastructure to be constructed where this is in line with critical development goals; (iii) support for the sustainable development of forest villages. Guyana is reaching a stage of economic development where experience from other countries suggests that enabling these objectives brings further deforestation pressures.

Therefore, pending the introduction of a global incentive system, it would defeat the purpose of making REDD+ an attractive development option for forest countries if this REDD+ agreement meant that no increases at all be allowed in Guyana's historically low deforestation rates. First, the rates are so small that the margin of error of measurements in itself could yield significant annual variations (as measured in per cent). Second, insisting on such strict limitations would probably yield an insufficient incentive structure for the people of Guyana to stick to a low-deforestation development path, as the economic downsides would be disproportionate to the incentive offered.Third, the relevance of historical trends when deforestation rates are extremely low is not as useful a predictor of future pressures on the forest as it is in countries with higher historic rates of deforestation.

There is no given mathematically correct answer to how these concerns should best be balanced. Guyana and Norway have chosen a model that on the one hand enables Guyana to exercise careful, strategic use of limited forest areas for high value economic activity, the construction of essential national infrastructure and sustainable development of forest villages. On the other hand, the model puts in place incentives that would quickly penalize an upward trend in deforestation, see box 2.

The essence of this approach has two implications:

(i) One-off predictable and controllable deforestation events will be allowed for critical national infrastructure that is part of Guyana's transition to a low carbon development path.[5] During the duration of the current Guyana-Norway partnership, the only such event will be the construction of the Amaila Falls hydro-electricity plant. This plant is the flagship of Guyana's Low Carbon Development Strategy, and is expected to eliminate over 92% of the country's energy-related emissions, after the emissions associated with its construction are accounted for[6]. It will only go ahead after Guyana and Norway have agreed that the necessary Environmental and Social safeguards have been met, and an independent verification agreed by Guyana and Norway confirms the overall beneficial effects of the project from a climate change perspective.

(ii) Economic activities will be permitted within the forest, within a ceiling on deforestation of 0.056 per annum, without any financial penalty apart from the reduction in compensation caused by a smaller margin between the reference level and the verified deforestation level. For any deforestation rate up to this level, Guyana will be eligible for payments equaling the full margin between the reference level and the verified deforestation level. For deforestation rates between 0,056 per cent and 0,1 per cent (unless they relate to the Amaila Falls project as described above), eligibility for payments would be calculated as a gradually decreasing percentage of the payments that would be due if only the margin between the reference level and the verified deforestation level were taken into account, as set out below. At deforestation rates at or above 0,1 per cent, no payments would be due to Guyana for that given year.

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5 The exception is only from the 'agreed maximum level of deforestation' provision. The emissions resulting from such activities would still be part of the total deducted from the reference level to determine total payments due to Guyana. I.e., emissions from Amaila would still count as deduction in total amount due to Guyana in the years when Amaila was established.

6 The January 2011 ESIA for the Amaila Falls project can be found at http://amailahydropower.com/latest-news/key-project-documents. Section 5 details how a 92% reduction in net greenhouse gas emissions is calculated.

Box 2:
Mechanism for reducing results based payments if deforestation rate exceeds the agreed maximum level (0,056%)

Deforestation rates (%)	Up to 0.056	0.057-0.062	0.063-0.080	0.081-0.090	0.091-0.1
Reduced compensation (% per 0.0015 increased deforestation)	0	1,5	2,0	2,5	3,0

Examples of reductions in compensation at levels above agreed maximum level:

Deforestation rate (%)	Up to 0.056	0.07	0.08	0.09	0.1
Reduced compensation (%)		25	45	70	100

This approach is compatible with the Government of Guyana's declared long-term strategy to maintain the maximum amount of forest cover in Guyana, if an appropriate incentive structure is in place to make this strategy viable. This is being done through a balanced mix of maintaining forests under full protection (areas where only small-scale subsistence farming by forest dependent communities is allowed) and sustainable commercial forest management (where existing forestry concessions can operate within the terms of their licenses and the GFC's sustainable forest management guidelines).

In sum, this means:

a) that a ceiling on the level of deforestation that can take place before 2015 with any incentives still flowing, has been set at only around 35 per cent of the level of deforestation that the reference level would imply;
b) the accommodation of limited annual upward variations to ensure that the incentive structure still makes REDD+ a positive development choice for Guyana; and
c) that Guyana is incentivized to maintain more than 99.5 per cent of its forest cover for the duration of the partnership.

See box 3 for a summary description of how performance based payments will be calculated.

Norwegian support to GRIF – alone or in combination with other contributors – will not exceed the sum calculated on the basis of the above described methodology.

It is also likely that while support from Norway will be sufficient to provide majority funding for results delivered by Guyana, in a given year, it is unlikely to equal the total sum owed to Guyana. Therefore, to ensure that the incentives which underpin the partnership are fully in place, Guyana and Norway will work together to seek to get other Participants to join the partnership.

Once other Participants are in place with sufficient commitments to the Partnership, this will enable Norwegian (and other Participants') contributions to vary directly with performance, i.e. a reduction in estimated emissions will lead to relatively higher contributions, increases to relatively lower contributions.

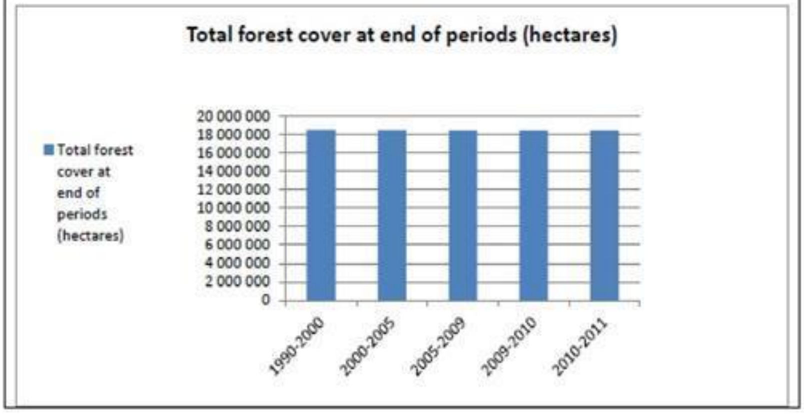
Box 1:

To improve knowledge on historical deforestation rates in Guyana, an analysis of forest area change since 1990 to September 2009 has been undertaken, using archived Landsat-type satellite datathat met the IPCC Good Practice Guidelines for Land Use, Land Use Change and Forestry (LULCF). The analysis was conducted by Pöyry-New Zealand, upon assignment by the Guyana Forestry Commission. The report was subsequently subject to independent verification by Det Norske Veritas (DNV). The reports can be downloaded at www.regjeringen.no/guyana or www.forestry.gov.gy

	Historical period				
	1990 - 2000	2001 - 2005	2006 - 2009	Year 1 2009 -2010	Year 2 2010 – 2011 (15 months)
Driver			Area (ha)		
Forestry	6094	8420	4784	294	234
Agriculture	2030	2852	1797	513	72
Mining	10843	21438	12624	9384	9205
Infrastructure	590	1304	195	64	149
Fire	1708	235		32	136
Area deforested	21267	34249	19400	10287	9796
Total forest area of Guyana	18 473 394	18 425 127	18 417 878	18 398 478	18 388 190
Total forest area of Guyana remaining	18 452 127	18 417 878	18 398 478	18 388 190	18 378 394
Deforestation %	0,01 %	0,04 %	0,02 %	0,06 %	0,05 %

The estimates include all forest to non-forest change, i.e. detected mining, road infrastructure, agricultural conversion and fire events that result in deforestation. They do not include degradation caused by selective harvesting, fire or shifting agriculture. It should be noted that the numbers for the historical analysis are annualized, but that firm enough data to establish actual rates for any given year are not available. Insights gathered from countries where such data exist, indicate that there is most probably a fairly significant year-on-year variation.

A key conclusion to be drawn from the study is that forest cover in Guyana has remained relatively stable over the 20 year benchmark period, as illustrated below:



Box 3:
How will results based payments be calculated?

To calculate the results based payments due to Guyana based on the results in any given year, the following steps will be followed:

1. Subtracting Guyana's reported and verified deforestation rate from the agreed interim reference level of 0.275%;
2. Calculating the carbon emission reductions achieved through avoided deforestation (as compared to the agreed reference level) by applying an interim and conservatively set estimate of carbon loss of 100tC/ha. This value will be replaced once a functional MRV system is in place. The interim carbon loss figure corresponds to 367tCO_2/ha.
3. Subtracting from that number changes in emissions – on a ton-by-ton basis – from forest degradation as measured against agreed indicators and their reference levels, as specified in Table 2.
4. In calculating the carbon effects of forest degradation, an interim and conservatively set carbon density of 400 tC/ha will be applied. Upon agreement under the UNFCCC on how to estimate and account for emissions from degradation, this approach will be adjusted accordingly;
5. The tons of "avoided emissions" is then multiplied with an interim carbon price of US$ 5/ton CO2, as established in Brazil's Amazon Fund.
6. If the deforestation rate in a given rate exceeds 0,056, the payments will be gradually reduced as a proportion of the sum derived through step 1-4 above, or cease (if at or exceeding 0,1 per cent), as stipulated in section 3.1.3, box 2.

Section 3.2 Monitoring Progress Against reducing emissions and enhancing removals of carbon in Guyana's forests

Progress against reducing emissions and enhancing removals of carbon in Guyana's Forests will in time be measured through the MRV system that is being put in place as set out in the MRV-system Road-map[7].

Pending the implementation of the MRV-system, Table 2 sets out the interim REDD+ performance indicators described above. Guyana and Norway agree that these indicators will evolve as more scientific and methodological certainty is gathered concerning the means of verification for each indicator, in particular the capability of the MRV system at different stages of development.

A roadmap for the establishment of a national MRV system and accompanying Terms of Reference for the system have been developed to provide a framework for verifiable, performance monitoring, set against international best practice and nationally appropriate

[7] http://www.forestry.gov.gy/Downloads/Terms_of_%20Reference_for_Guyana's_MRVS_Draft.pdf

circumstances. In years 1, 2 and 3 (2009-2011), implementation has also commenced in a number of administrative and technical areas. Broad based MRV-system Steering and Technical Committees have been established and initial technical work has commenced and advanced in forest area and forest carbon stock assessment and monitoring. The framework has been created for annual reporting on deforestation and forest degradation in accordance with interim REDD+ Performance Indicator that will evolve into a full MRV system. The first product has been the completion of historic reporting on forest/non forest cover and deforestation by driver, over the period 1990 to 2009, accompanied by annual reporting of forest/non forest cover and deforestation and forest degradation results in accordance with REDD+ Interim indicators set out in the JCN. Concurrently, work is also proceeding for field based assessments of forest carbon stock assessment and monitoring, the establishment of demonstration activities, and detailed technical studies on reference level setting and forest degradation, as well as other areas.

During 2009-2011, significant improvements to Guyana's ability to measure deforestation indicators were made. In particular, it was determined (and independently verified) that deforestation rates were extremely low.

Progress has also been made to gain a greater understanding of how degradation is to be measured, and this leading to further work in 2013 and onwards, when new scientifically-based knowledge will enable progress on refining the reporting on indicators to assess degradation, including that from mining and infrastructure (currently the dominant drivers of degradation).

Guyana and Norway have agreed that annual independent verification of REDD+ performance indicators will be conducted by one or more neutral expert organizations, to be appointed jointly by the Participants. The assessment determines what results Guyana has delivered according to the established indicators for REDD-plus performance. For the first and second reporting periods, the measurement of progress was carried out by Poyry, Indufor and WinRock in collaboration with the Guyana Forestry Commission, and independent verification was carried out by DNV. DNV was selected on the basis of an international tender process in accordance with Norwegian procurement regulations.

Section 4: Financial mechanism:

The Guyana REDD+ Investment Fund (GRIF) is channeling REDD-plus financial support from Norway and other potential contributors to the implementation of Guyana's LCDS.

Pending the creation of an international REDD+ mechanism, the Guyana REDD+ Investment Fund (GRIF) represents an effort to create an innovative climate finance mechanism which balances national sovereignty over investment priorities with ensuring that REDD+ funds adhere to globally accepted financial, environmental and social safeguards.

The GRIF is an interim solution for channelling climate finance to Guyana - designed for the Guyana-Norway Partnership up to 2015 - pending the transfer of payment intermediation, and associated processes, to Guyana's national systems. This will be done when it is possible to specify how independent verification of Guyana's adherence globally accepted financial, environmental and social safeguards can be implemented. This will draw on UNFCCC and other relevant guidance.

Until such time as national systems can be used, the World Bank's International Development Association (IDA) was invited byGuyana and Norway to act as Trustee and is responsible for providing financial intermediary services to the GRIF.

14

The Trustee (i) receives payments for forest climate services provided by Guyana; and (ii) transfers these payments and any investment income earned on these payments, net of any administrative costs, to Partner Entities, for projects and activities that support the implementation of Guyana's LCDS. Transfer of funds takes place on approval by the GRIF Steering Committee, which consists of Guyana and Norway, with observers from Partner Entities, as well as Guyanese and Norwegian civil society.

Partner Entities provide operational services for the approved LCDS investments, and apply their own globally accepted operational procedures and safeguards. As of December 2012, Guyana and Norway have approved as Partner Entities the Inter-American Development Bank (IDB), the World Bank and the United Nations Development Group.

More information on the operation of the GRIF is set out in the Administration Agreement between the Government of Norway and the World Bank.[8]

Improved Financial Intermediation

The Guyana REDD+ Investment Fund (GRIF) has experienced significantly slower than anticipated progress, although important lessons have been learned. The two Governments recognize the need for disbursements from the GRIF into Guyana's economy and relevant LCDS and REDD+ investments to strengthen the effectiveness of REDD+ as an intrinsic part of Guyana's sustainable development. As such, work is being undertaken to allow for a more flexible, fit-for-purpose financial mechanism that would ensure the application of internationally recognized safeguards while allowing for stronger Guyanese ownership. As part of this, a pilot for an IDB role as Financial and Safeguards Intermediary is being developed, with the goal of it being operational in the first half of 2013.

Goal of the partnership

The proposed role for the IDB as Fiduciary Safeguards Intermediary will ensure compliance with IDB's fiduciary, environmental and social safeguards for simpler projects. If proven suitable for the implementation of a range of GoG–activities it can also be useful to the further development of Guyana's domestic institutional capability.

It is hoped that by 2015, the financial mechanisms of the partnership can be used as examples of interim flexible climate financing instruments, which allow for rapid approval of projects and stronger national ownership, while at the same time applying internationally recognized (in this case IDB) standards for fiduciary, environmental and social safeguards.

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[8] http://lcds.gov.gy/guyana-redd-investment-fund-grif.html

Table 1- Key REDD+ Efforts in 2012/13 (from 21 December 2012 to 15 June 2013):

Improved REDD+ Governance

Through 2012, the Government of Guyana continued to improve governance standards within the REDD+-related forest dependent sectors. These efforts to improve REDD+ -related governance, will continue in 2013 and onwards. The information necessary to assess Guyana's completion of the actions below will be easily accessible in the public space.[9] Based on the goals of the partnership presented in section 2 the following actions will take place between December 21st 2012 and June 15th 2013:

Strategic framework

- Continued engagement between the IDB and the GFC with the aim of advancing an agreement on the FCPF, contingent on the completion of IDB's internal processes of approval of Guyana's FCPF programme.
- Guyana will publish its LCDS Addendum which will highlight its updated REDD+ strategy, including learnings to date from the Guyana-Norway partnership and an outline plan for advancement on the FCPF programme.

Continuous multi-stakeholder consultation process

- Monthly meetings of the MSSC, with comprehensive minutes of every meeting made publicly available immediately upon approval from the following MSSC meeting.
- Establishment of a Communications and Outreach team within the OCC, PMO or REDD+ secretariat, in anticipation of GRIF resources for its operations (see next point).
- With reference to the long term goals: Information and consultation project concept note presented to GRIF SC. The project will be addressing general information concerning Climate change and REDD+, LCDS and the Norway Guyana partnership, specific information on Amerindian land titling, the opt-in mechanism, FLEGT, EITI, IFM, GRIF projects and other relevant information. The project will recognize the need of tailored and non-internet based information to indigenous groups and others without stable internet access.
- Regular updates of the GRIF and LCDS webpages.

Governance

- Application for EITI Candidacy at EITI board meeting in May 2013.
- Develop an interim definition of legality for the EU FLEGT VPA for Guyana by end of June 2013.
- Outline in 2013 a GoG (MNRE) programme, with a particular focus on specific efforts to manage degradation from extractive activities where this needs to be done, including, for example: an enhanced miners' environmental knowledge programme through a mining extension service initiative and enhanced dialogue with the sectors and relevant stake holders towards ensuring sectoral best practices are applied and sustained thereafter, where necessary

[9] http://www.lcds.gov.gy/ and http://www.regjeringen.no/nb/dep/md/tema/klima/klimaogskogprosjektet/norge-og-guyana-avtale-om-a-bevare-guyan.html?id=592318

The rights of indigenous peoples and other local forest communities as regards REDD+

- Present the Amerindian Land Titling project to the GRIF steering committee, after the normal GRIF public hearing period for new project notes is concluded
- Opt-in concept note ready and pilot community for opt-in mechanism selected.
- Strategy and development of tailored information and consultations for hinterland communities addressed in the outreach program.
- Initiating implementation of Community Development Plans through the Amerindian Development Fund.

Integrated land-use planning and management

- Strategic Approach to land use planning publicly communicated by March 2013.
- Establish a plan, timeline and responsible agency for the development of a map of area use (including, but not limited to: existing and planned concession and reconnaissance areas for forestry and mining, titled lands for Amerindian communities, areas planned and concessioned for industrial agriculture etc.)
- Based on the evolving area use map, determine a roadmap by June 2013 to codify the formal status of varying degrees of protection for the areas identified as Intact Forest Landscapes and priority areas for biodiversity.This will gradually replace the Intact Forest Landscapes interim performance indicator.

Table 2: Interim Indicators for REDD+ performance in Guyana[10]

Source of emissions or removals	Justification	Interim performance indicator	Monitoring and estimation	IPCC LULUCF reporting
Deforestation indicator:				
Gross deforestation	Emissions from the loss of forests are among the largest per unit emissions from terrestrial carbon loss.	Rate of conversion of forest area as compared to agreed reference level. Forest area as defined by Guyana in accordance with the Marrakech accords: • Minimum 30% tree cover • At a minimum height of 5 meter • Over a minimum area of 1 ha. Conversion of natural forests to tree plantations shall count as deforestation with full carbon loss. Forest area converted to new infrastructure including logging roads, shall count as full carbon loss, unless otherwise	Forest cover as of September 2009 will be used as baseline for monitoring gross deforestation. Reporting to be based on medium and high resolution satellite imagery and in-situ observations where necessary. Monitoring shall detect and report on expansion of human infrastructure (eg. new roads, settlements, pipelines, mining/agriculture activities etc.)	Activity data on change in forest land

[10] The Participants agree that these indicators will evolve as more scientific and methodological certainty is gathered concerning the means of verification for each indicator, in particular the capability of the MRV system at different stages of development. Based on experiences from the first and second reporting and verification exercise, some adjustments have been made in this table. However, the process has identified a need to develop further detail on the operationalisation of the indicators. Significant improved ability to operationalise the indicators has already been achieved, and this process will continue over the duration of the partnership.

18

		informed by field study that identifies an alternative carbon loss level.		
Degradation indicators:				
Loss of intact forest landscapes[11]	Degradation of intact forest through human activities will produce a net loss of carbon and is often the pre-cursor to further processes causing long-term decreases in carbon stocks. Furthermore, preserving intact forests will contribute to the protection of biodiversity.	The total area of intact forest landscapes within the country should remain constant. Any loss of intact forest landscapes area[12] shall be accounted as deforestation with full carbon loss. The IFL Baseline map developed in the first reporting period will be used to assess changes. Note that this indicator will be subject to review as stipulated in section 2.1.[13]	Using similar methods as for forest area change estimation.	Changes in carbon stocks in forests remaining as forests
Forest management (i.e. selective logging) activities in natural or semi-natural forests	Forest management should work towards sustainable management of	All areas under forest management should be rigorously monitored and	Data on extracted volumes is collected by the Forestry Commission. Independent forest	Changes in carbon stocks in forests remaining as forests

[11] Intact Forest Landscape (IFL) is defined as a territory within today's global extent of forest cover which contains forest and non-forest ecosystems minimally influenced by human economic activity, with an area of at least 500 km^2 (50,000 ha) and a minimal width of 10 km (measured as the diameter of a circle that is entirely inscribed within the boundaries of the territory)." (See www.intactforests.org)

[12] When assessing loss of IFL, the established elimination criteria will be applied:

- Settlements (including a buffer of 1 km);
- Infrastructure used for transportation between settlements or for industrial development of natural resources, including roads (except unpaved trails), railways, navigable waterways (including seashore), pipelines and power transmission lines (including a buffer of 1 km on each side);
- Areas used for agriculture and timber production;
- Areas affected by industrial activities during the last 30-70 years, such as logging, mining, oil and gas exploration and extraction, peat extraction, etc.

The threshold values for IFL-patches (500 km2, min. width 10 kms) will not be applied in assessing IFL loss.

[13] The analysis of loss of IFL area during the second reporting period was conducted after the verification process had ended. The result reported under this indicator for the second reporting period will therefore be verified in relation to the year 3 verification.

	forest with net zero emissions or positive carbon balance in the long-term.	activities documented (i.e. concession activities, harvest estimates, timber imports/exports). Increases in total extracted volume,expressed in tons of CO_2, (as compared to mean volume 2003 – 2008) will be accounted as increased forest carbon emissions[14] unless otherwise can be documented using the gain-loss or stock difference methods as described by the IPCC for forests remaining as forests. In addition to the harvested volume, an appropriate expansion factor of 25 % (applied to the whole population of trees under forest management, i.e. harvested + remnant trees) shall be used to take account of carbon loss caused by collateral damage, etc, unless it is documented that this has already been reflected in the recorded	monitoring will act as an additional data source on forest management to complement this information. Accounting of this indicator should be done in terms of carbon units referred as close as possible to extraction of biomass from the above ground carbon pool.	

14 The participants agree on the need to create incentives for net-zero or carbon positive forest management practices in Guyana. This will require a sophisticated MRV system to assess the carbon effects of forestry activities. This will be an objective of the MRV system under development. In the interim period, focus will be on incentives for avoiding increased emissions from forest management activities.

20

		extracted volume.		
Carbon loss as indirect effect of new infrastructure.	The establishment of new infrastructure in forest areas often contributes to forest carbon loss outside the areas directly affected by constructions.	High resolution satellite imagery and/or field observations shall be used to detect degradation in a 100m buffer surrounding new infrastructure (incl. mining sites, roads, pipelines, reservoirs etc.). As the benchmark for this indicator, the annualized number of the mapped degraded area from the second reporting period will be used (4368 ha)[15]. Any degradation above this benchmark in subsequent reporting years will result in reduced compensation. Unless other emission factors can be documented through the MRVS, these areas shall be accounted with a 50 % annual	Mediumand high resolution satellite to be used for detecting human infrastructure (i.e. small scale mining) and related degradation.	Changes in carbon stocks in forests remaining as forests

[15] For the second reporting period, Guyana made use of a new and significantly improved method for mapping infrastructure related degradation. A historical proxy analysis of areas affected by degradation from infrastructure was conducted for the period 2000-2010. The total area of a 100m buffer surrounding all new infrastructure was calculated for the historical period, as well as for the for the year 2 reporting period. This analysis indicated that the area affected by new infrastructure in the year 2 reporting period was comparable to the historical period. This exercise will be verified in the next verification of the interim performance indicators.

As a benchmark for infrastructure related degradation in future reporting periods, the area mapped as degraded in the second reporting period will be used. This area equaled 5460 ha, but as the second reporting period had a length of 15 months, and subsequent reporting periods will be 12 months, this number was annualized. The new benchmark is therefore 4368 ha.

		carbon loss, i.e. areas mapped in one year will be accounted with a further 50 % carbon loss in subsequent reporting periods.		
Emissions resulting from subsistence forestry, land use and shifting cultivation lands (i.e. slash and burn agriculture).	Emissions resulting from communities to meet their local needs may increase as result of *inter alia* shorter fallow cycle or area expansion.	Not considered relevant in the interim period before a proper MRV-system is in place.		Changes in carbon stocks in forests remaining as forests
Emissions resulting from illegal logging activities	Illegal logging results in unsustainable use of forest resources while undermining national and international climate change mitigation policies	Areas and processes of illegal logging should be monitored and documented as far as practicable.	The monitoring of illegal logging is within the main objectives of the GFC's forest monitoring system, and is informed by an illegal logging database. In addition to reporting on illegal logging via the database, Independent Forest Monitoring will support performance monitoring of forest legality through the IFM framework. Should IFM detect potentially significant challenges with the established forest monitoring system, this indicator will be reassessed. In the absence of hard data on volumes of illegally harvested wood, a default factor of 15% (as compared to the legally harvested	Changes in carbon stocks in forests remaining as forests

22

			volume) will be used. This factor can be adjusted up and downwards pending documentation on illegally harvested volumes, inter alia from Independent Forest Monitoring. Medium resolution satellite to be used for detecting human infrastructure and targeted sampling of high-resolution satellite for selected sites. Accounting of this indicator should be done in terms of carbon units referred as close as possible to extraction of biomass from the above ground carbon pool.	
Emissions resulting from anthropogenically caused forest fires	Forest fires result in direct emissions of several greenhouse gases	Area of forest burnt each year should decrease compared to current amount	Coarse-resolution satellite active fire and burnt area data products in combination with medium resolution satellite data used for forest area changes	Emissions from biomass burning
Indicator on increased carbon removals:				
Encouragement of increasing carbon sink capacity of non-forest and forest land	Changes from non-forest land to forest (i.e. through plantations, land use change) or within forest land (sustainable forest management, enrichment planting) can increase the	Not considered relevant in the interim period before a proper MRV-system is in place but any dedicated activities should be documented as far as practicable. In accordance with Guyanese policy, an environmental impact		Activity data on change to forest land and changes in carbon stocks in forests remaining as forests

23

	sequestration of atmospheric carbon.	assessment will be conducted where appropriate as basis for any decision on initiation of afforestation, reforestation and carbon stock enhancement projects.		

24

Appendix 3

Year 4 Satellite Image Catalogue

All new imagery that is available has been added to the existing archive at GFC. The following table describes the naming conventions and column headings for the image catalogue shown in Table 2. This archive is dynamic and will be continually added to over time.

Table 1: Image Catalogue Naming Conventions

Image Stack Name	Image name in the following format: Satellite (2-3), Path (4), Row (1-3) _ Image Date (YYMMDD)_Image Provider (1)_Processing level (1-2)
Acquisition Month	The month of 2013 when image was taken
Mapping Stream	The mapping stream that the imagery is for.
Data Provider	The name of the data provider.
Satellite Instrument	The satellite or instrument of origin

Table 2: Summaryof 2013 Satellite Images

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
L8P229R58_130822_U_O_W.tif	August	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P229R58_130923_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P229R59_130923_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P229R59_131110_U_O.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R56_131101_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R56_131203_U_O_W.tif	December	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R57_131016_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R57_131101_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R58_131019_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R58_131101_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R59_131019_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P230R59_131101_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R55_131023_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R56_131007_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R56_131124_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R57_131023_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R57_131108_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R58_130905_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R58_131023_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R59_130905_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P231R59_131108_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R54_131014_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R54_131115_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R55_130912_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R55_131115_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R56_131115_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R57_130928_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P232R57_131014_U_O_W.tif	October	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P233R55_130903_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P233R55_131106_U_O_W.tif	November	Year 4	Landsat 8 DCM	USGS Glovis	30
L8P233R56_130903_U_O_W.tif	September	Year 4	Landsat 8 DCM	USGS Glovis	30
RE2041228_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041228_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041228_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041228_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041228_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041228_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041228_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041228_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041228_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041328_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041328_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041328_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041328_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041328_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041328_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041328_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041328_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041328_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041328_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041328_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041425_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041425_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041425_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041425_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041425_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041425_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041425_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041425_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041425_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041425_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041426_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041426_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041426_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041426_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041426_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041426_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041426_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041426_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041426_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041426_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041426_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041426_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041427_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041427_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041427_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041427_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041427_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041427_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041427_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041427_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041427_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041427_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041427_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041427_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041428_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041428_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041428_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041428_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041428_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041428_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041428_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041428_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041428_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041428_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041428_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041428_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041428_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041524_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041524_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041524_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041524_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041524_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041524_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041524_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041524_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041524_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041525_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041525_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041525_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041525_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041525_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041525_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041525_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041525_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041525_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041525_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041525_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041525_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041526_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041526_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041526_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041526_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041526_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041526_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041526_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041526_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041526_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041526_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041526_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041526_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041526_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041527_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041527_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041527_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041527_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041527_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041527_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041527_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041527_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041527_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041527_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041527_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041527_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041528_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041528_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041528_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041528_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041528_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041528_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041528_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041528_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041528_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041528_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041528_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041528_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041528_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041623_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041623_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041623_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041623_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041623_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041623_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041623_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041623_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041623_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041623_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041623_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041624_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041624_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041624_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041624_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041624_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041624_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041624_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041624_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041624_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041624_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041624_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041625_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041625_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041625_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041625_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041625_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041625_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041625_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041625_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041625_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041625_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041625_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041625_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041626_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041626_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041626_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041626_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041626_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041626_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041626_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041626_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041626_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041626_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041626_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041626_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041626_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041627_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041627_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041627_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041627_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041627_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041627_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041627_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041627_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041627_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041627_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041627_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041627_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041628_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041628_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041628_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041628_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041628_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041628_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041628_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041628_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041628_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041628_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041628_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041628_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041722_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041722_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041722_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041722_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041722_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041722_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041722_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041722_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041723_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041723_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041723_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041723_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041723_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041723_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041723_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041723_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041723_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041723_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041723_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041724_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041724_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041724_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041724_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041724_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041724_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041724_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041724_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041724_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041724_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041724_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041725_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041725_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041725_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041725_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041725_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041725_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041725_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041725_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041725_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041725_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041725_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041725_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041726_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041726_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041726_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041726_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041726_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041726_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041726_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041726_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041726_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041726_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041726_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041726_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041727_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041727_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041727_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041727_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041727_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041727_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041727_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041727_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041727_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041727_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041727_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041727_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041728_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041728_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041728_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041728_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041728_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041728_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041728_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041728_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041728_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041728_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041728_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041728_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041728_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041822_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041822_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041822_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041822_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041822_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041822_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041822_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041822_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041823_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041823_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041823_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041823_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041823_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041823_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041823_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041823_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041823_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041823_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041824_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041824_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041824_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041824_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041824_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041824_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041824_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041824_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041824_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041824_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041824_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041824_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041824_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041825_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041825_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041825_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041825_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041825_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041825_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041825_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041825_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041825_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041825_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041826_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041826_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041826_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041826_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041826_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041826_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041826_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041826_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041826_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041826_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041826_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041826_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041826_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041827_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041827_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041827_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041827_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041827_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041827_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041827_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041827_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041827_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041827_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041827_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041827_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041827_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041828_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2041828_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041828_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041828_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041828_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041828_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041828_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041828_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041828_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041828_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041828_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041828_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041828_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041828_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041828_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041922_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041922_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041922_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041922_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041922_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041922_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041922_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041922_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041923_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041923_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041923_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041923_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041923_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041923_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041923_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041923_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041923_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041923_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041924_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041924_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2041924_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041924_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041924_130904_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041924_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041924_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041924_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041924_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041924_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2041924_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2041924_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041925_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041925_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2041925_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2041925_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041925_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041925_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041925_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041925_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041925_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041926_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041926_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041926_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041926_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041926_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041926_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041926_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041926_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041926_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041926_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041926_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041926_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041926_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2041927_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2041927_130901_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2041927_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041927_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2041927_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041927_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041927_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041927_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041927_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041927_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041927_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2041927_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041927_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2041928_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2041928_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2041928_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2041928_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041928_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2041928_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041928_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2041928_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2041928_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2041928_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042023_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042023_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042023_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042023_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042023_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042023_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042023_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2042023_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042024_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042024_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042024_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042024_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042024_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042024_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042024_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042024_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042024_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042024_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2042024_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042025_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2042025_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042025_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042025_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042025_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042025_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042025_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042025_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042026_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042026_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042026_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042026_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042026_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042026_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042026_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042026_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042026_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042026_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042026_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042027_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042027_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042027_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042027_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042027_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042027_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042027_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042027_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042027_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042027_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042027_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042027_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042028_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042028_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042028_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042028_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042028_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042028_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042028_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042028_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042028_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042123_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042123_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042123_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042123_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042123_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042123_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042123_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2042123_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042124_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042124_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042124_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042124_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042124_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042124_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042124_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042124_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042124_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2042124_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042125_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042125_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042125_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042125_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042125_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042125_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2042125_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042126_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042126_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042126_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042126_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042126_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042126_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042126_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042126_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042126_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042127_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042127_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042127_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042127_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042127_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042127_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042127_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042127_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042127_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042127_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042128_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042128_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042128_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042128_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042128_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042128_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042128_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042128_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042128_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042223_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042223_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042223_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042223_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042223_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042223_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2042223_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042224_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042224_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042224_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042224_130917_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042224_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042224_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042224_131024_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042224_131204_RE2_r_ow.dat	December	Year 4	RapidEye 2	RapidEye	5
RE2042224_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042225_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042225_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042225_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042225_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042225_131010_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2042225_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042226_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042226_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042226_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042226_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042226_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042226_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042226_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042226_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042227_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042227_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042227_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042227_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2042227_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042227_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042227_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042227_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042227_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042227_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042228_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042228_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042228_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042228_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042228_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042228_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042228_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042228_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042228_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042326_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042326_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042326_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042326_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042326_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042326_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042326_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042326_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042327_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042327_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042327_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042327_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042327_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042327_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042327_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042327_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042327_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042327_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042327_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042328_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042328_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042328_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042328_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042328_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042328_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042328_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042328_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042328_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042328_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042328_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042425_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042425_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042425_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042425_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042425_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042425_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042426_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042426_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042426_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042426_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042426_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042426_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042426_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042426_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042427_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042427_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042427_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042427_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2042427_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042427_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042427_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042427_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042427_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042427_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042427_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042427_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042428_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042428_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042428_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042428_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042428_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042428_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042428_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042428_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042428_131023_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042428_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042428_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2042428_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042525_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042525_130827_RE3_r_ow.dat	August	Year 4	RapidEye 3	RapidEye	5
RE2042525_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042525_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042525_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042525_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042525_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042526_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042526_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042526_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042526_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042526_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042526_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042526_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042527_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042527_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042527_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042527_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042527_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042527_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042527_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042527_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042527_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042527_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042527_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042528_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042528_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042528_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042528_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042528_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042528_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042528_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042528_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042528_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042528_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042528_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042625_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042625_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042625_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042625_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042625_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042625_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042626_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2042626_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042626_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042626_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042626_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042626_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042626_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042627_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042627_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042627_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042627_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042627_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042627_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042627_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042627_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042627_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042628_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042628_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042628_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042628_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042628_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042628_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042628_131009_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2042628_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042628_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042628_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042726_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042726_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042726_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042726_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042726_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042726_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042727_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042727_130902_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2042727_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042727_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042727_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042727_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042727_131225_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2042728_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042728_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042728_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042728_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2042728_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042728_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042728_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042728_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042728_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2042828_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2042828_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2042828_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2042828_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042828_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2042828_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2042828_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2042828_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2043028_130826_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2043028_130907_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2043028_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2043028_131006_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2043028_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2043028_131011_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2043028_131114_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139605_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139605_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139605_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139605_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139605_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139605_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139605_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139605_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139606_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139606_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139606_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139606_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139606_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139606_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139606_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139606_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139606_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139606_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139606_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139607_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139607_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139607_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139607_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139607_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139607_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139607_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139607_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139607_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139607_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139607_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139608_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139608_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139608_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139608_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139608_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139608_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139703_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139703_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139703_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139703_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139703_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139703_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139703_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139703_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139703_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139703_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139704_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139704_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139704_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139704_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139704_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139704_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139704_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139704_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139704_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139704_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139704_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139704_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139704_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139705_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139705_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139705_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139705_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139705_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139705_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139705_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139705_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139705_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139705_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139705_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139705_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139706_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139706_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139706_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139706_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139706_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139706_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139706_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139706_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139706_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139706_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139706_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139706_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139707_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139707_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139707_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139707_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139707_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139707_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139707_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139707_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139707_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139707_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139708_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139708_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139708_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139708_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139708_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139708_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139708_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139708_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139709_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139709_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139709_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139709_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139709_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139709_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139709_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139709_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139709_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139710_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139710_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139710_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139710_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139710_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139710_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139710_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139710_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139710_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139710_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139802_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139802_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139802_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139802_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139802_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139802_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139802_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139802_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139803_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139803_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139803_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139803_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139803_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139803_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139803_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139803_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139803_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139803_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139803_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139803_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139804_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139804_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139804_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139804_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139804_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139804_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139804_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139804_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139804_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139804_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139804_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139804_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139804_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139804_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139804_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139805_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139805_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139805_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139805_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139805_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139805_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139805_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139805_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139805_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139805_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139805_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139805_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139805_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139806_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139806_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139806_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139806_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139806_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139806_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139806_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139806_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139806_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139806_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139806_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139806_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139806_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139806_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139807_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139807_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139807_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139807_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139807_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139807_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139807_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139807_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139807_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139807_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139807_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139808_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139808_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139808_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139808_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139808_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139808_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139808_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139808_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139808_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139809_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139809_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139809_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139809_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139809_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139809_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139809_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139809_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139809_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139809_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139809_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139810_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139810_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139810_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139810_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139810_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139810_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139810_131024_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139810_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139810_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139810_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139811_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139811_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139811_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139811_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139811_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139811_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139811_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139812_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139812_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139812_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139812_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139812_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139812_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139812_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139902_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139902_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139902_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139902_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139902_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139902_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139902_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139902_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139902_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139903_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139903_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139903_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139903_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139903_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139903_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139903_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139903_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139903_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139903_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139903_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139903_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139904_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139904_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139904_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139904_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139904_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139904_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139904_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139904_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139904_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139904_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2139904_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139904_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139904_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139904_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139904_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2139904_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139905_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139905_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139905_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139905_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139905_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139905_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139905_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139905_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2139905_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139905_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139905_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139905_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139905_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139905_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139906_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139906_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139906_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139906_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139906_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139906_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139906_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139906_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2139906_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139906_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139906_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139906_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139906_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139906_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139907_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139907_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139907_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139907_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139907_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2139907_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2139907_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139907_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139907_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139907_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139907_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139907_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139907_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2139907_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139908_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139908_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139908_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139908_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139908_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139908_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139908_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139908_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139908_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139908_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2139909_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139909_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139909_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139909_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139909_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139909_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2139909_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2139909_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2139909_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139909_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139909_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2139910_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139910_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139910_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139910_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139910_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139910_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139910_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139910_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2139910_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139910_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139911_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139911_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139911_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2139911_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139911_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139911_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2139911_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139911_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2139912_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139912_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139912_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139912_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139912_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139912_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139912_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2139912_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139913_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139913_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139913_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2139913_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2139913_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139913_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139913_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2139913_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2139914_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2139914_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139914_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2139915_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139915_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139915_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139915_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139915_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2139916_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139916_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2139916_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2139917_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2139917_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140002_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140002_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140002_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140002_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140002_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140002_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140002_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140002_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140002_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140003_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140003_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140003_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140003_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140003_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140003_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140003_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140003_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140003_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140003_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140003_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140003_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140003_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140004_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140004_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140004_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140004_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140004_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140004_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140004_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140004_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140004_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140004_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140004_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140004_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140004_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140004_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140004_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140004_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140004_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140004_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140005_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140005_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140005_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140005_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140005_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140005_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140005_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140005_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140005_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140005_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140005_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140005_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140005_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140005_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140006_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140006_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140006_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140006_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140006_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140006_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140006_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140006_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140006_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140006_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140006_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140006_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140006_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140006_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140006_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140006_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140007_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140007_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140007_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140007_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140007_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140007_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140007_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140007_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140007_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140007_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140007_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140007_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140007_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140007_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140007_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140008_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140008_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140008_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140008_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140008_131022_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140008_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140008_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140008_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140008_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140008_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140008_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140008_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140009_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140009_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140009_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140009_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140009_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140009_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140009_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140009_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140009_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140009_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140010_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140010_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140010_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140010_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140010_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140010_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140010_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140010_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140010_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140010_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140011_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140011_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140011_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140011_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140011_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140011_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140011_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140011_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140012_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140012_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140012_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140012_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140012_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140012_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140012_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140012_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140012_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140012_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140012_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140013_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140013_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140013_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140013_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140013_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140013_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140013_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140013_131124_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140014_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140014_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140014_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140014_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140015_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140015_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140015_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140015_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140015_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140016_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140016_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140016_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140016_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140017_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140017_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140101_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140101_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140101_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140101_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140101_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140101_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140101_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140101_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140101_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140102_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140102_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140102_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140102_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140102_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140102_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140102_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140102_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140102_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140102_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140102_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140103_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140103_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140103_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140103_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140103_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140103_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140103_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140103_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140103_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140103_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140103_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140103_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140104_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140104_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140104_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140104_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140104_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140104_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140104_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140104_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140104_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140104_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140104_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140104_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140104_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140104_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140104_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140104_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140104_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140104_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140104_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140105_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140105_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140105_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140105_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140105_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140105_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140105_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140105_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140105_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140105_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140105_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140105_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140105_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140105_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140105_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140105_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140106_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140106_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140106_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140106_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140106_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140106_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140106_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140106_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140106_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140106_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140106_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140106_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140106_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140106_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140107_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140107_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140107_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140107_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140107_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140107_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140107_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140107_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140107_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140107_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140107_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140107_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140107_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140107_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140108_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140108_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140108_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140108_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140108_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140108_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140108_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140108_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140108_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140108_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140108_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140108_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140108_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140109_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140109_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140109_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140109_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140109_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140109_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140109_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140109_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140110_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140110_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140110_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140110_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140110_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140110_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140110_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140110_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140110_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140110_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140111_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140111_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140111_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140111_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140111_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140111_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140111_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140112_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140112_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140112_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140112_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140112_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140112_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140112_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140112_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140113_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140113_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140113_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140113_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140113_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140113_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140113_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140114_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140114_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140114_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140114_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140114_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140115_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140115_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140115_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140115_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140116_130819_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140116_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140116_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140116_131021_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140116_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140201_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140201_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140201_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140201_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140201_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140201_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140201_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140201_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140201_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140202_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140202_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140202_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140202_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140202_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140202_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140202_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140202_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140202_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140202_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140202_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140203_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140203_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140203_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140203_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140203_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140203_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140203_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140203_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140203_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140203_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140203_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140204_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140204_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140204_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140204_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140204_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140204_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140204_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140204_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140204_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140204_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140204_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140204_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140204_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140204_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140204_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140204_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140204_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140205_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140205_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140205_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140205_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140205_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140205_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140205_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140205_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140205_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140205_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140205_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140205_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140205_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140205_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140205_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140205_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140206_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140206_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140206_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140206_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140206_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140206_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140206_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140206_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140206_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140206_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140206_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140206_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140206_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140206_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140206_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140206_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140207_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140207_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140207_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140207_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140207_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140207_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140207_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140207_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140207_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140207_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140207_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140207_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140207_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140208_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140208_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140208_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140208_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140208_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140208_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140208_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140208_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140208_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140208_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140208_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140208_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140209_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140209_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140209_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140209_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140209_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140209_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140209_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140209_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140209_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140210_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140210_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140210_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140210_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140210_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140210_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140210_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140210_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140210_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140211_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140211_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140211_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140211_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140211_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140211_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140211_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140212_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140212_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140212_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140212_131006_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140212_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140212_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140212_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140212_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140213_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140213_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140213_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140213_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140213_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140213_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140214_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140214_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140214_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140214_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140215_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140215_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140215_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140301_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140301_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140301_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140301_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140301_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140301_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140301_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140301_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140302_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140302_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140302_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140302_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140302_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140302_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140302_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140302_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140302_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140303_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140303_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140303_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140303_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140303_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140303_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140303_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140303_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140303_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140303_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140303_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140304_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140304_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140304_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140304_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140304_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140304_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140304_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140304_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140304_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140304_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140304_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140304_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140304_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140305_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140305_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140305_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140305_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140305_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140305_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140305_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140305_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140305_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140305_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140305_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140305_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140305_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140305_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140306_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140306_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140306_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140306_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140306_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140306_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140306_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140306_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140306_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140306_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140306_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140306_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140307_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140307_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140307_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140307_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140307_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140307_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140307_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140307_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140307_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140307_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140307_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140307_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140307_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140307_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140308_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140308_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140308_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140308_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140308_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140308_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140308_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140308_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140308_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140308_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140308_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140308_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140309_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140309_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140309_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140309_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140309_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140309_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140309_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140309_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140310_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140310_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140310_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140310_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140310_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140310_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140310_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140310_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140310_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140311_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140311_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140311_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140311_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140311_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140311_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140312_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140312_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140312_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140312_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140312_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140313_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140313_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140313_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140313_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140313_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140313_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140314_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140314_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140314_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140314_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140314_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140314_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140401_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140401_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140401_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140401_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140401_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140401_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140401_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140402_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140402_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140402_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140402_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140402_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140402_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140402_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140402_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140402_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140403_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140403_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140403_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140403_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140403_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140403_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140403_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140403_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140404_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140404_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140404_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140404_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140404_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140404_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140404_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140404_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140404_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140404_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140404_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140404_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140405_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140405_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140405_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140405_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140405_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140405_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140405_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140405_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140405_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140405_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140405_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140405_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140405_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140405_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140405_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140406_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140406_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140406_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140406_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140406_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140406_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140406_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140406_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140406_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140406_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140406_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140406_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140406_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140406_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140406_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140407_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140407_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140407_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140407_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140407_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140407_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140407_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140407_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140407_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140407_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140407_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140407_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140407_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140407_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140407_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140407_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140408_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140408_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140408_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140408_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140408_130923_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140408_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140408_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140408_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140408_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140408_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140408_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140408_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140408_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140409_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140409_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140409_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140409_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140409_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140409_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140409_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140409_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140409_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140410_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140410_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140410_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140410_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140410_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140410_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140410_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140410_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140410_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140410_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140411_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140411_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140411_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140411_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140411_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140411_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140411_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140411_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140412_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140412_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140412_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140412_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140412_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140412_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140413_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140413_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140413_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140413_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140413_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140413_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140413_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140414_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140414_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140414_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140414_131012_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140414_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140414_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140501_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140501_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140501_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140501_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140501_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140501_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140502_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140502_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140502_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140502_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140502_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140502_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140502_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140502_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140502_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140503_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140503_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140503_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140503_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140503_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140503_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140503_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140503_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140503_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140503_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140503_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140504_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140504_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140504_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140504_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140504_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140504_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140504_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140504_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140504_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140504_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140504_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140505_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140505_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140505_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140505_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140505_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140505_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140505_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140505_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140505_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140505_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140505_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140505_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140505_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140505_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140506_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140506_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140506_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140506_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140506_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140506_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140506_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140506_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140506_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140506_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140506_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140506_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140506_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140507_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140507_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140507_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140507_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140507_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140507_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140507_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140507_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140507_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140507_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140507_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140507_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140507_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140507_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140507_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140508_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140508_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140508_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140508_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140508_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140508_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140508_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140508_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140508_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140508_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140508_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140508_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140509_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140509_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140509_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140509_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140509_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140509_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140509_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140509_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140509_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140509_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140509_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140509_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140510_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140510_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140510_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140510_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140510_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140510_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140510_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140510_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140510_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140511_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140511_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140511_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140511_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140511_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140511_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140511_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140511_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140512_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140512_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140512_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140512_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140512_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140512_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140513_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140513_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140513_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140513_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140513_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140513_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140513_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140513_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140514_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140514_130906_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140514_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140514_131024_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140514_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140601_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140601_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140601_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140601_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140601_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140601_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140601_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140602_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140602_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140602_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140602_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140602_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140602_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140602_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140602_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140602_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140602_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140602_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140602_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140602_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140603_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140603_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140603_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140603_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140603_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140603_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140603_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140603_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140603_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140603_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140603_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140603_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140604_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140604_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140604_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140604_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140604_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140604_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140604_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140604_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140604_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140604_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140604_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140604_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140604_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140605_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140605_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140605_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140605_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140605_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140605_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140605_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140605_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140605_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140605_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140605_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140605_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140605_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140605_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140605_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140605_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140606_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140606_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140606_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140606_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140606_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140606_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140606_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140606_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140606_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140606_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140606_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140606_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140606_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140606_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140606_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140607_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140607_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140607_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140607_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140607_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140607_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140607_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140607_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140607_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140607_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140607_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140607_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140607_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140607_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140608_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140608_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140608_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140608_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140608_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140608_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140608_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140608_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140608_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140608_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140608_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140608_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140608_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140609_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140609_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140609_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140609_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140609_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140609_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140609_131109_RE1_r_ow.dat	November	Year 4	RapidEye 1	RapidEye	5
RE2140609_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140609_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140609_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140609_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140609_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140609_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140610_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140610_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140610_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140610_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140610_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140610_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140610_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140610_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140611_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140611_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140611_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140611_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140611_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140611_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140611_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140611_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140611_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140612_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140612_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140612_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140612_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140612_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140612_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140612_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140613_130820_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140613_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140613_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140613_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140613_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140701_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140701_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140701_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140701_130930_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140701_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140701_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140701_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140701_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140702_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140702_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140702_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140702_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140702_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140702_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140702_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140702_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140702_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140702_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140702_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140702_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140703_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140703_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140703_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140703_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140703_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140703_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140703_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140703_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140703_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140703_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140703_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140703_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140703_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140704_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140704_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140704_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140704_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140704_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140704_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140704_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140704_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140704_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140704_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140704_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140704_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140704_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140704_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140705_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140705_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140705_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140705_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140705_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140705_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140705_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140705_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140705_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140705_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140705_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140705_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140705_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140705_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140705_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140705_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140705_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140706_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140706_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140706_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140706_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140706_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140706_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140706_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140706_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140706_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140706_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140706_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140706_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140706_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140706_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140706_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140706_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140706_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140707_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140707_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140707_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140707_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140707_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140707_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140707_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140707_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140707_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140707_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140707_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140707_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140707_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140707_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140708_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140708_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140708_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140708_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140708_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140708_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140708_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140708_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140708_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140708_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140708_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140708_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140708_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140709_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140709_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140709_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140709_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140709_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140709_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140709_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140709_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140709_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140709_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140710_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140710_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140710_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140710_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140710_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140710_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140710_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140710_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140710_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140711_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140711_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140711_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140711_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140711_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140711_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140711_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140711_131124_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140711_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140711_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140802_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140802_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140802_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140802_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140802_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140802_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140802_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140802_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140802_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140802_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140802_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140803_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140803_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140803_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140803_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140803_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140803_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140803_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140803_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140803_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140803_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140803_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140803_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140803_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140803_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140803_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140804_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140804_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140804_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140804_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140804_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140804_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140804_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140804_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140804_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140804_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140804_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140804_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140804_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140804_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140804_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140804_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140804_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140805_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140805_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140805_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140805_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140805_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140805_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140805_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140805_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140805_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140805_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140805_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140805_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140805_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140805_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140805_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140805_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140805_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140805_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140806_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140806_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140806_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140806_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140806_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140806_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140806_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140806_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140806_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140806_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140806_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140806_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140806_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140806_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140806_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140806_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140806_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140806_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140806_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140806_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140807_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140807_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140807_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140807_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140807_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140807_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140807_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140807_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140807_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140807_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140807_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140807_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140807_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140807_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140807_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140808_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140808_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140808_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140808_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140808_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140808_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140808_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140808_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140808_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140808_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140808_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140808_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140808_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140808_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140808_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140809_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140809_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140809_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140809_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140809_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140809_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140809_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140809_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140809_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140809_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140809_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140809_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140809_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2140809_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140810_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140810_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140810_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140810_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140810_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140810_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140810_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140810_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140810_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140810_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140810_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2140810_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140811_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140811_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140811_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140811_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140811_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140811_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140811_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140811_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140811_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140902_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140902_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140902_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140902_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140902_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140902_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140902_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140902_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140902_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140902_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140902_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140903_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140903_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2140903_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140903_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140903_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140903_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140903_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140903_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140903_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140903_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140903_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140903_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2140903_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140903_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140903_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140903_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140904_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140904_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140904_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140904_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140904_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140904_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140904_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140904_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140904_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140904_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140904_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140904_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140904_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140904_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140904_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140905_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140905_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140905_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140905_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140905_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140905_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140905_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140905_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140905_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140905_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140905_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140905_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140905_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140905_131111_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2140905_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140905_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140905_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140906_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140906_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2140906_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140906_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140906_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140906_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140906_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140906_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140906_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2140906_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140906_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140906_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140906_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140906_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140906_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140906_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140906_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2140907_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140907_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140907_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140907_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2140907_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140907_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140907_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140907_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140907_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140907_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140907_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140907_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140907_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140907_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140907_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2140907_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140908_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140908_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140908_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140908_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140908_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140908_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2140908_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140908_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140908_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140908_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140908_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140908_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140908_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140908_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2140908_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140909_130820_RE1_r_ow.dat	August	Year 4	RapidEye 1	RapidEye	5
RE2140909_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140909_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2140909_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2140909_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2140909_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140909_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140909_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140909_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140909_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2140909_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140909_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2140909_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2140909_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2140910_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140910_130920_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2140910_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2140910_131026_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2140910_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140910_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2140910_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2140910_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2140910_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141002_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141002_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141002_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141002_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141002_130930_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141002_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141002_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141002_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141002_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141002_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141003_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141003_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141003_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141003_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141003_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141003_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141003_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141003_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141003_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141003_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141003_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141003_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141003_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141003_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141004_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141004_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141004_130924_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141004_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141004_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141004_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141004_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141004_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141004_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141004_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141004_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141004_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141004_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141004_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141005_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141005_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141005_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141005_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141005_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141005_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141005_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141005_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141005_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141005_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141005_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141005_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141005_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141006_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141006_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141006_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141006_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141006_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141006_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141006_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141006_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141006_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141006_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141006_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141006_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141006_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141006_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141006_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141006_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141007_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141007_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141007_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141007_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141007_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141007_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141007_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141007_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141007_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141007_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141007_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141007_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141007_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141007_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141007_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141008_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141008_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141008_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141008_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141008_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141008_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141008_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141008_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141008_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141008_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141008_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141009_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141009_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141009_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141009_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141009_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141009_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141009_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141009_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141009_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141009_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141009_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141009_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141010_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141010_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141010_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141010_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141010_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141010_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141010_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141010_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141010_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141101_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141101_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141101_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141101_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141101_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141101_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141101_130930_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141101_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141101_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141101_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141101_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141101_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141101_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141102_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141102_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141102_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141102_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141102_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141102_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141102_130930_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141102_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141102_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141102_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141102_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141102_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141102_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141103_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141103_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141103_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141103_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141103_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141103_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141103_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141103_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141103_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141103_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141103_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141103_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141103_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141103_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141104_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141104_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141104_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141104_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141104_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141104_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141104_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141104_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141104_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141104_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141104_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141104_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141104_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141104_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141105_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141105_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141105_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141105_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141105_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141105_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141105_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141105_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141105_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141105_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141105_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141105_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141105_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141105_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141106_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141106_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141106_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141106_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141106_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141106_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141106_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141106_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141106_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141106_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141106_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141106_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141106_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141106_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141106_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141106_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141106_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141106_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141107_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141107_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141107_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141107_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141107_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141107_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141107_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141107_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141107_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141107_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141107_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141107_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141107_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141107_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141107_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141107_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141108_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141108_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141108_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141108_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141108_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141108_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141108_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141108_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141108_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141108_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141108_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141108_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141108_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141108_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141108_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141109_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141109_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141109_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141109_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141109_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141109_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141109_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141109_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141109_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141109_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141109_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141109_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141109_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141110_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141110_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141110_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141110_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141110_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141110_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141110_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141110_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141110_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141110_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141201_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141201_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141201_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141201_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141201_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141201_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141201_130930_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141201_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141201_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141201_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141201_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141201_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141201_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141202_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141202_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141202_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141202_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141202_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141202_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141202_130930_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141202_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141202_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141202_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141202_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141202_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141202_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141203_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141203_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141203_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141203_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141203_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141203_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141203_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141203_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141203_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141203_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141203_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141203_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141203_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141203_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141203_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141204_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141204_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141204_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141204_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141204_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141204_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141204_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141204_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141204_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141204_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141204_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141204_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141204_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141204_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141204_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141205_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141205_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141205_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141205_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141205_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141205_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141205_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141205_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141205_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141205_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141205_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141205_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141205_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141206_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141206_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141206_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141206_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141206_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141206_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141206_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141206_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141206_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141206_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141206_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141206_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141206_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141206_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141206_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141206_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141207_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141207_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141207_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141207_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141207_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141207_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141207_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141207_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141207_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141207_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141207_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141207_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141207_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141207_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141207_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141207_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141207_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141208_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141208_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141208_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141208_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141208_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141208_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141208_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141208_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141208_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141208_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141208_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141208_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141208_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141209_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141209_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141209_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141209_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141209_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141209_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141209_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141209_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141209_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141209_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141209_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141209_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141210_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141210_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141210_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141210_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141210_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141210_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141210_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141210_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141210_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141210_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141211_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141211_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141211_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141211_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141211_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141211_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141211_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141301_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141301_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141301_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141301_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141301_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141301_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141301_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141301_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141301_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141301_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141301_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141302_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141302_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141302_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141302_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141302_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141302_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141302_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141302_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141302_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141302_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141302_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141303_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141303_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141303_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141303_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141303_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141303_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141303_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141303_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141303_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141303_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141303_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141303_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141303_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141304_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141304_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141304_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141304_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141304_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141304_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141304_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141304_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141304_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141304_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141304_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141304_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141304_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141304_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141304_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141304_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141305_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141305_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141305_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141305_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141305_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141305_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141305_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141305_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141305_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141305_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141305_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141305_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141305_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141306_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141306_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141306_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141306_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141306_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141306_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141306_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141306_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141306_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141306_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141306_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141306_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141306_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141306_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141306_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141307_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141307_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141307_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141307_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141307_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141307_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141307_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141307_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141307_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141307_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141307_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141307_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141307_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141307_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141307_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141308_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141308_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141308_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141308_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141308_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141308_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141308_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141308_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141308_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141308_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141308_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141308_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141308_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141308_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141308_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141309_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141309_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141309_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141309_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141309_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141309_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141309_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141309_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141309_131119_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141309_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141309_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141309_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141309_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141310_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141310_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141310_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141310_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141310_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141310_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141310_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141310_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141310_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141310_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141310_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141311_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141311_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141311_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141311_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141311_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141311_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141311_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141311_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141311_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141311_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141311_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141311_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141312_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141312_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141312_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141312_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141312_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141312_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141312_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141312_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141312_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141312_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141312_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141313_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141313_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141313_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141313_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141313_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141313_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141313_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141313_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141313_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141401_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141401_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141401_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141401_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141401_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141401_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141401_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141401_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141401_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141401_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141401_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141401_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141401_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141401_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141402_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141402_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141402_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141402_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141402_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141402_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141402_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141402_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141402_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141402_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141402_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141403_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141403_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141403_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141403_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141403_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141403_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141403_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141403_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141403_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141403_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141403_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141403_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141403_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141404_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141404_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141404_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141404_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141404_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141404_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141404_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141404_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141404_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141404_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141404_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141404_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141404_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141404_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141404_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141405_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141405_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141405_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141405_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141405_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141405_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141405_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141405_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141405_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141405_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141405_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141405_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141405_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141405_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141406_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141406_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141406_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141406_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141406_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141406_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141406_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141406_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141406_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141406_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141406_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141406_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141406_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141406_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141406_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141407_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141407_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141407_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141407_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141407_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141407_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141407_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141407_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141407_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141407_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141407_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141407_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141407_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141407_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141407_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141408_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141408_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141408_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141408_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141408_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141408_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141408_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141408_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141408_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141408_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141408_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141408_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141408_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141408_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141409_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141409_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141409_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141409_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141409_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141409_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141409_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141409_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141409_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141409_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141409_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141409_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141409_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141409_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141409_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141410_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141410_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141410_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141410_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141410_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141410_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141410_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141410_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141410_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141410_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141410_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141410_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141410_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141410_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141410_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141410_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141410_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141411_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141411_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141411_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141411_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141411_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141411_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141411_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141411_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141411_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141411_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141411_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141411_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141411_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141411_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141412_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141412_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141412_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141412_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141412_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141412_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141412_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141412_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141412_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141412_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141412_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141412_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141412_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141413_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141413_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141413_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141413_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141413_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141413_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141413_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141413_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141413_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141413_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141414_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141414_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141414_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141414_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141414_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141414_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141414_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141501_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141501_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141501_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141501_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141501_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141501_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141501_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141501_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141501_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141501_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141501_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141501_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141501_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141502_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141502_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141502_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141502_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141502_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141502_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141502_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141502_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141502_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141502_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141502_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141502_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141503_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141503_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141503_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141503_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141503_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141503_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141503_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141503_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141503_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141503_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141503_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141504_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141504_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141504_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141504_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141504_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141504_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141504_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141504_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141504_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141504_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141504_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141504_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141504_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141504_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141504_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141505_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141505_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141505_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141505_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141505_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141505_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141505_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141505_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141505_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141505_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141505_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141505_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141505_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141505_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141505_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141505_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141506_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141506_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141506_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141506_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141506_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141506_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141506_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141506_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141506_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141506_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141506_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141506_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141506_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141506_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141506_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141506_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141506_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141507_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141507_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141507_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141507_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141507_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141507_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141507_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141507_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141507_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141507_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141507_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141507_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141507_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141507_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141507_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141507_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141507_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141507_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141508_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141508_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141508_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141508_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141508_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141508_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141508_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141508_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141508_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141508_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141508_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141508_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141508_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141508_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141508_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141508_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141509_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141509_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141509_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141509_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141509_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141509_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141509_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141509_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141509_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141509_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141509_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141509_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141509_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141509_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141509_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141510_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141510_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141510_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141510_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141510_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141510_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141510_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141510_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141510_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141510_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141510_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141510_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141510_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141510_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141510_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141510_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141510_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141511_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141511_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141511_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141511_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141511_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141511_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141511_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141511_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141511_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141511_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141511_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141511_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141511_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141511_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141511_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141511_131231_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141512_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141512_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141512_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141512_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141512_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141512_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141512_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141512_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141512_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141512_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141512_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141512_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141513_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141513_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141513_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141513_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141513_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141513_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141513_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141513_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141513_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141513_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141514_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141514_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141514_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141514_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141514_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141514_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141514_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141601_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141601_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141601_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141601_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141601_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141601_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141601_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141601_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141601_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141601_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141601_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141601_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141601_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141601_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141602_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141602_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141602_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141602_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141602_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141602_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141602_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141602_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141602_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141602_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141602_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141602_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141603_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141603_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141603_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141603_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141603_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141603_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141603_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141603_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141603_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141603_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141603_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141603_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141603_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141604_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141604_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141604_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141604_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141604_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141604_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141604_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141604_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141604_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141604_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141604_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141604_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141604_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141604_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141604_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141605_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141605_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141605_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141605_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141605_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141605_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141605_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141605_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141605_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141605_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141605_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141605_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141605_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141605_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141605_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141605_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141605_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141606_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141606_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141606_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141606_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141606_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141606_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141606_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141606_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141606_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141606_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141606_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141606_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141606_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141606_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141606_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141606_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141607_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141607_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141607_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141607_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141607_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141607_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141607_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141607_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141607_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141607_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141607_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141607_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141607_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141607_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141607_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141607_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141607_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141607_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141607_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141608_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141608_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141608_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141608_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141608_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141608_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141608_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141608_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141608_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141608_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141608_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141608_131017_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141608_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141608_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141608_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141608_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141609_130901_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141609_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141609_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141609_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141609_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141609_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141609_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141609_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141609_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141609_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141609_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141609_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141609_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141609_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141609_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141609_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141609_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141610_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141610_130901_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141610_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141610_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141610_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141610_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141610_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141610_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141610_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141610_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141610_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141610_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141610_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141610_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141610_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141611_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141611_130901_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141611_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141611_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141611_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141611_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141611_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141611_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141611_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141611_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141611_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141611_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141611_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141611_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141611_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141611_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141612_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141612_130901_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141612_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141612_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141612_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141612_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141612_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141612_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141612_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141612_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141612_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141612_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141612_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141612_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141613_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141613_130906_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141613_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141613_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141613_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141613_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141613_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141613_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141613_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141613_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141613_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141613_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141614_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5
RE2141614_130915_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141614_130915_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141614_130918_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141614_130920_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141614_131005_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141614_131016_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141614_131112_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141614_131209_RE3_r_ow.dat	December	Year 4	RapidEye 3	RapidEye	5
RE2141701_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141701_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141701_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141701_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141701_130918_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141701_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141701_131007_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141701_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141701_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141701_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141701_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141701_131117_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141701_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141702_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141702_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141702_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141702_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141702_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141702_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141702_131003_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141702_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141702_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141702_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141702_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141702_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141702_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141702_131203_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141703_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141703_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141703_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141703_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
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RE2141703_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141703_131008_RE2_r_ow.dat	October	Year 4	RapidEye 2	RapidEye	5
RE2141703_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141703_131013_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141703_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141703_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141703_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141703_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141704_130819_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141704_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141704_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141704_130902_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141704_130908_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
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RE2141704_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141704_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141704_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
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RE2141704_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141704_131103_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141704_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141704_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141704_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141705_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141705_130824_RE5_r_ow.dat	August	Year 4	RapidEye 5	RapidEye	5
RE2141705_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141705_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141705_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141705_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141705_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141705_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141705_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141705_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141705_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141705_131026_RE1_r_ow.dat	October	Year 4	RapidEye 1	RapidEye	5
RE2141705_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141705_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141705_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
RE2141705_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
RE2141706_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141706_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141706_130912_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141706_130922_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
RE2141706_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5
RE2141706_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141706_130927_RE1_r_ow.dat	September	Year 4	RapidEye 1	RapidEye	5
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RE2141706_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141706_131009_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141706_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141706_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141706_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141706_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141706_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141706_131116_RE3_r_ow.dat	November	Year 4	RapidEye 3	RapidEye	5
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RE2141707_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141707_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141707_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141707_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
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RE2141707_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141707_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
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RE2141707_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
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RE2141707_131020_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141707_131110_RE2_r_ow.dat	November	Year 4	RapidEye 2	RapidEye	5
RE2141707_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141707_131122_RE5_r_ow.dat	November	Year 4	RapidEye 5	RapidEye	5
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RE2141708_130821_RE2_r_ow.dat	August	Year 4	RapidEye 2	RapidEye	5
RE2141708_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141708_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141708_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141708_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141708_130925_RE4_r_ow.dat	September	Year 4	RapidEye 4	RapidEye	5

Stack Name	Acquisition Month	Mapping Stream	Satellite/Instrument	Data Provider	Resolution (m)
RE2141708_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141708_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141708_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141708_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141708_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141708_131015_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141708_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141708_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141708_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141708_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
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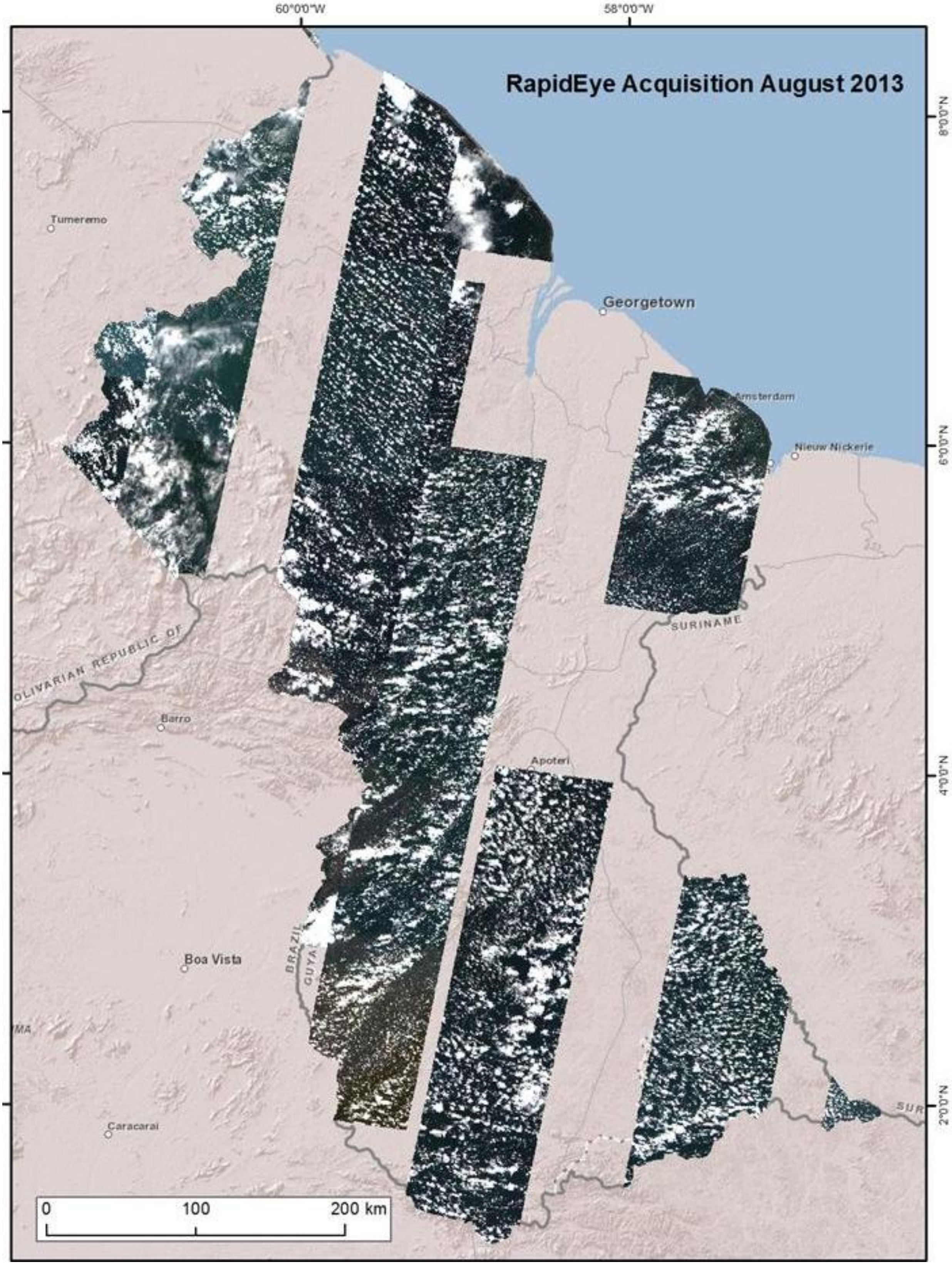
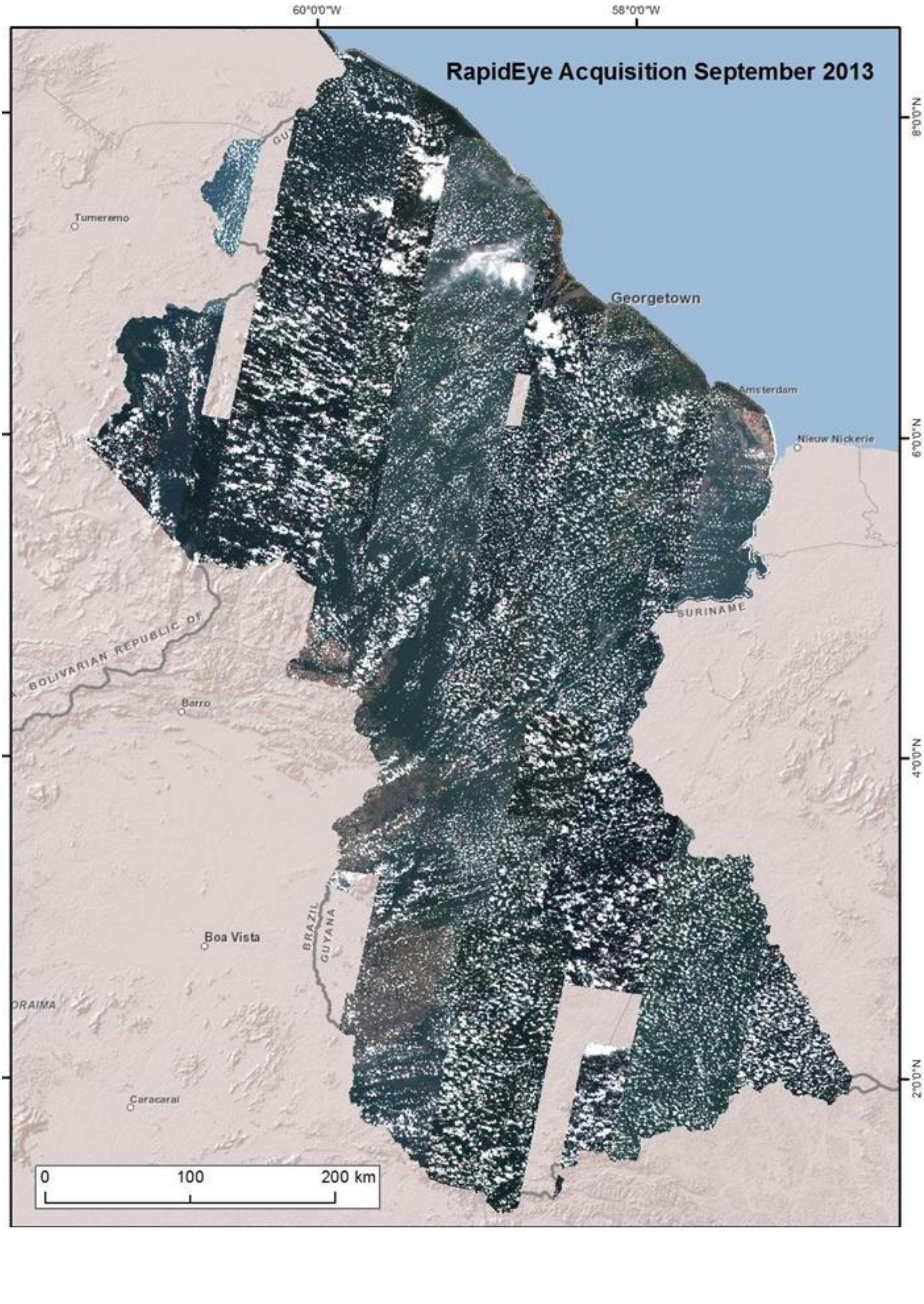
RE2141709_130904_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141709_130909_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141709_130919_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141709_130923_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141709_130924_RE3_r_ow.dat	September	Year 4	RapidEye 3	RapidEye	5
RE2141709_130926_RE5_r_ow.dat	September	Year 4	RapidEye 5	RapidEye	5
RE2141709_130928_RE2_r_ow.dat	September	Year 4	RapidEye 2	RapidEye	5
RE2141709_131004_RE3_r_ow.dat	October	Year 4	RapidEye 3	RapidEye	5
RE2141709_131004_RE4_r_ow.dat	October	Year 4	RapidEye 4	RapidEye	5
RE2141709_131010_RE5_r_ow.dat	October	Year 4	RapidEye 5	RapidEye	5
RE2141709_131102_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141709_131112_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141709_131121_RE4_r_ow.dat	November	Year 4	RapidEye 4	RapidEye	5
RE2141709_131211_RE5_r_ow.dat	December	Year 4	RapidEye 5	RapidEye	5
RE2141709_131212_RE1_r_ow.dat	December	Year 4	RapidEye 1	RapidEye	5
RE2141709_131224_RE4_r_ow.dat	December	Year 4	RapidEye 4	RapidEye	5
RE2141710_130822_RE4_r_ow.dat	August	Year 4	RapidEye 4	RapidEye	5

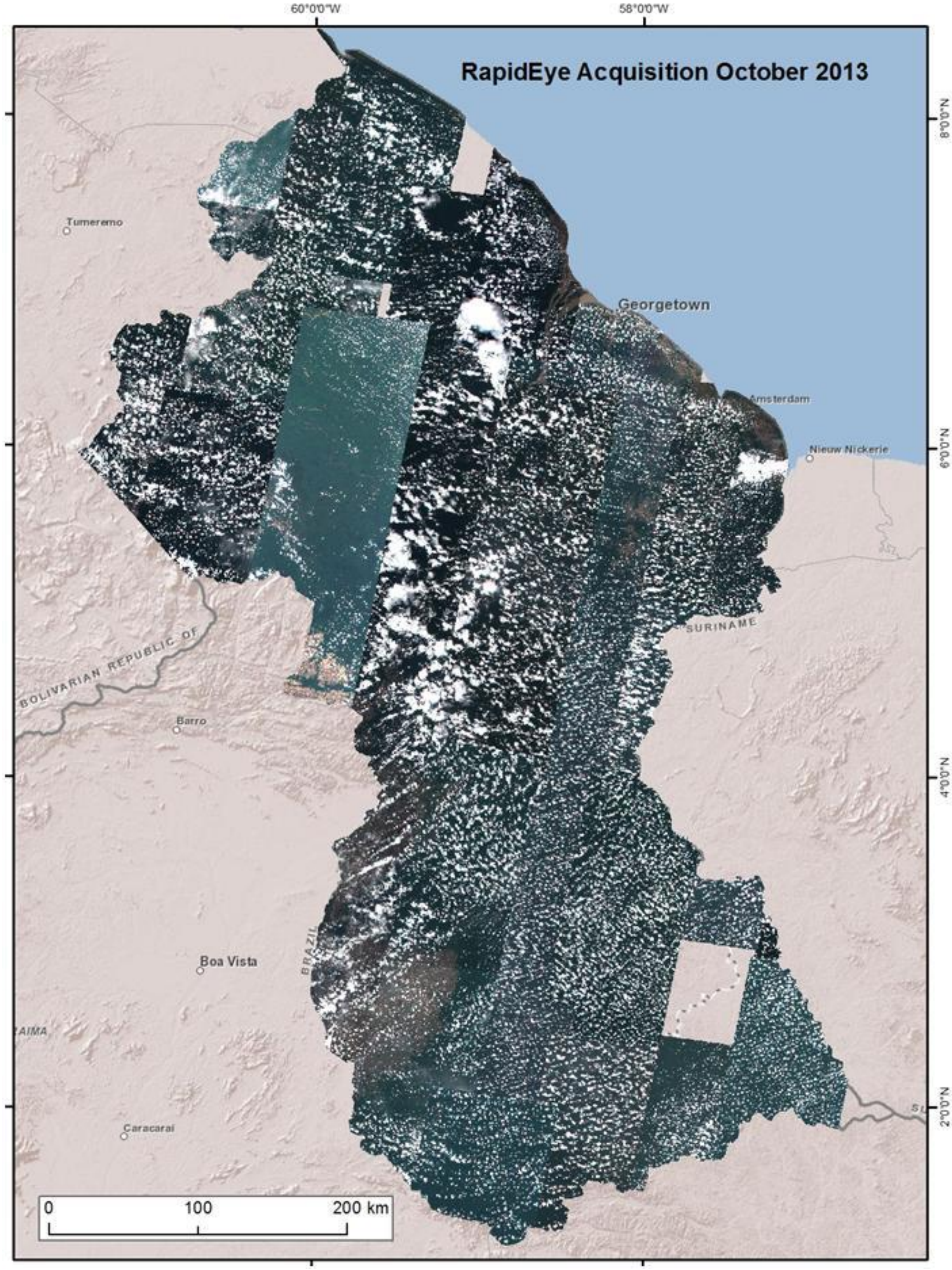
Appendix 4

Monthly RapidEye Acquisitions

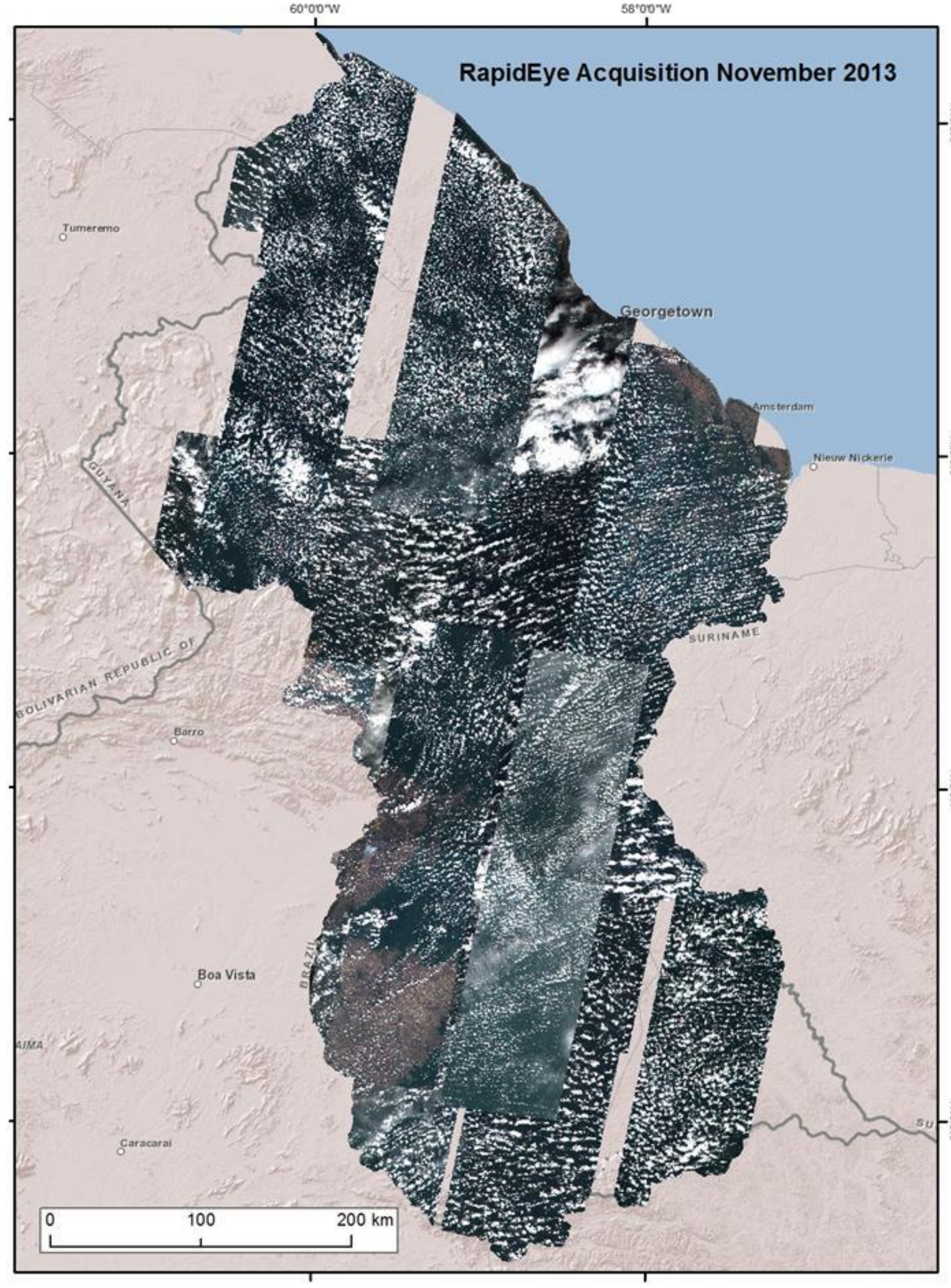


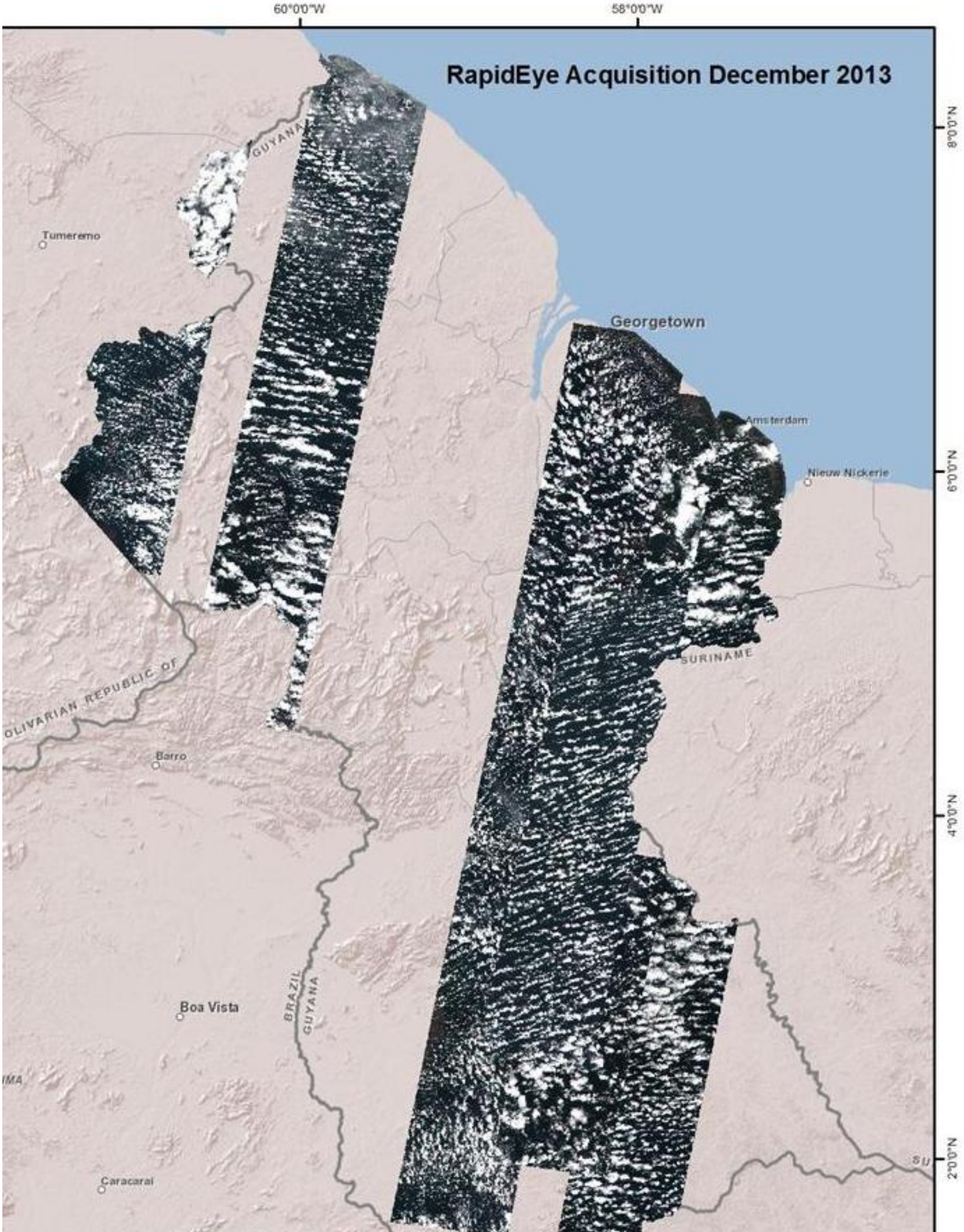
RapidEye Acquisition August 2013
60°0'0"W
58°0'0"W
8°0'0"N
6°0'0"N
4°0'0"N
2°0'0"N
Tumeremo
Georgetown
Amsterdam
Nieuw Nickerie
SURINAME
BOLIVARIAN REPUBLIC OF
Barro
Apoteri
Boa Vista
Caracarai
BRAZIL
GUYANA
0
100
200 km


60°0'0"W
58°0'0"W
RapidEye Acquisition September 2013
8°0'0"N
6°0'0"N
4°0'0"N
2°0'0"N
Tumeremo
Georgetown
Amsterdam
Nieuw Nickerie
SURINAME
BOLIVARIAN REPUBLIC OF
Barro
BRAZIL
GUYANA
Boa Vista
Caracarai
0
100
200 km



RapidEye Acquisition October 2013
60°0'0"W
58°0'0"W
8°0'0"N
6°0'0"N
4°0'0"N
2°0'0"N
Tumeremo
Georgetown
Amsterdam
Nieuw Nickerie
SURINAME
BOLIVARIAN REPUBLIC OF
Barro
Boa Vista
Caracarai
0
100
200 km


RapidEye Acquisition November 2013
60°0'0"W
58°0'0"W
8°0'0"N
6°0'0"N
4°0'0"N
2°0'0"N
Tumeremo
Georgetown
Amsterdam
Nieuw Nickerie
SURINAME
GUYANA
BOLIVARIAN REPUBLIC OF
Barro
Boa Vista
Caracarai
BRAZIL
0
100
200 km



RapidEye Acquisition December 2013
60°0'0"W
58°0'0"W
8°0'0"N
6°0'0"N
4°0'0"N
2°0'0"N
Tumeremo
GUYANA
Georgetown
Amsterdam
Nieuw Nickerie
SURINAME
BOLIVARIAN REPUBLIC OF
Barro
Boa Vista
BRAZIL
GUYANA
Caracarai
0
100
200 km

Appendix 5

Land Use Class Description

IPCC Land Use Categories

The following land use classes will be used as the MRVS is developed. These are briefly introduced below and currently are based on the default categories as defined by IPCC guidelines.

1. **Forest land**

- This category includes all land with woody vegetation consistent with thresholds used to define forest land in the national GHG inventory, sub-divided into managed and unmanaged, and also by ecosystem type as specified in the *IPCC Guidelines*3. It also includes systems with vegetation that currently fall below, but are expected to exceed, the threshold of the forest land category.
- During the MRVS development a stratification map will be produced. This builds on existing work undertaken at GFC in 2001 by consolidating the existing forest strata into six classes (see below).

2. **Grassland**

- This category includes rangelands and pasture land that is not considered as cropland. It also includes systems with vegetation that fall below the threshold used for the forest land category that are not expected to exceed, without human intervention, the threshold used in the forest land category. The category also includes all grassland from wild lands to recreational areas as well as agricultural and silvi-pastural systems, subdivided into managed and unmanaged consistent with national definitions.

3. **Cropland**

- This category includes arable and tillage land, and agro-forestry systems where vegetation falls below the thresholds used for the forest land category, consistent with the selection of national definitions

4. **Wetland**

- This category includes land that is covered or saturated by water for all or part of the year (e.g., peatland) and that does not fall into the forest land, cropland, grassland or settlements categories. The category can be subdivided into managed and unmanaged according to national definitions. It includes reservoirs as a managed sub-division and natural rivers and lakes as unmanaged sub-divisions.

5. **Settlements**

- This category includes all developed land, including transportation infrastructure and human settlements of any size, unless they are already included under other categories. This should be consistent with the selection of national definitions

6. **Other land**

- This category includes bare soil, rock, ice, and all unmanaged land areas that do not fall into any of the other five categories. It allows the total of identified land areas to match the national area, where data are available.
- The following table provides an overview of the preliminary land use classification for Guyana.

Guyana Land Use Classes

Land Use	Land Use Type	2001 Classes	Map Classes
Forest Land	Mixed forest	1 to 1.4 & 1.8	Class 1
	Wallaba/Dakama/Muri Shrub Forest	2 to 2.6	Class 2
	Swamp/Marsh forest	3.1 to 3.3	Class 3

	Mangrove	4.1	Class 4
	Savannah >30% cover	5, 6	Class 5
	Montane & steep forest	1.5 -1.7[23], 7.1, 7.2. 8.1	Class 6
	Plantations	Locations in GFC's GIS	Area insignificant
Grassland	Savannah <30% cover	Grouped as non-forest	Class 15
	Grassland		
Cropland	Cropland		Class 17
	Shifting Agriculture		Class 22
Wetland	Wetland open water		Classes 18 and 19
	Herbaceous wetland		
Settlements	Settlements		Class 20
Other land	Other land		Class 18 and 30

Forest Type Mapping by GFC

- In 2001 a series of detailed forest vegetation maps was produced for the entire State Forest Area. These combine various existing vegetation maps with new interpretations of aerial photographs and satellite radar imagery (JERS-1), coupled with analysis of field data collected during the Commission's forest inventories. The resulting maps are to be made available to forest concession holders to assist with their forest management planning activities.
- Secondly, a less detailed map has been produced for the entire country, based mainly on national soil survey data made available by the National Agricultural Research Institute (NARI). This map will be available to all of the Commission's stakeholders.
- To complete this work GFC's Forest Resource Information Unit drew on the skills and experience of former Tropenbos Program Manager, Dr Hans ter Steege. Dr ter Steege has extensive knowledge of Guyana's diverse forest vegetation types and specialist skills in digital cartography.

National Vegetation Map of Guyana

- Produced for the Guyana Forestry Commission and Dr Hans ter Steege, University of Utrecht, Netherlands, in collaboration with the GFC Forest Resources Information Unit 2001.

Methods

- The following provides a summary of the process used to create these maps.
- The National Vegetation Map is based on the GINRIS soil map (1:1 000 000) which was kindly provided for this purpose by the NRMP. Although problems were encountered with the accuracy of the National Map, it was felt that at the 1:1 000 000 scale they were of less importance and that using the GINRIS basemap would ensure compatibility among National Theme Maps.
- In making the National Map, use was made of the usually strong correspondence between major forest and soil types, realizing that the soil map is in fact an interpretation

[23] This class (1.7) has also been identified as potentially threatened by fire.

of vegetation cover. Based on the strong correspondence a first forest type was assigned to each of the soil classes. Problems then arose in a few areas.

- For instance, white sands are covered by Wallaba forest, Dakama forest, Muri scrub, or grass, and peat soils may have palm swamp, broadleaved swamp forest, or open swamps.
- To improve the interpretation of the forests on white sand first a digital combination of low forest of Vinks NE-Guyana map (Vink 1957) with the white sands of the soil map was created. Low forest on white sand was classified as Dakama. Then a combination of the new 'Vegetation map' was made with the dry and wet savannah themes of Vink. Dry savannah on white sand was classified as Muri scrub/grassland, dry savannah on other soil as (intermediate) savannah, wet savannah on peat was classified as open coastal swamp, on white sand as wet savannah/muri scrub on white sand, the other as open swamp. Because in the two maps that were intersected edges of similar vegetations are not identical, a great number of small 'stray' polygons were created that had to be manually removed.
- For central and North West Guyana, FIDS maps were used to classify the various white sand areas. In a few cases white sand polygons were split into the different types of forest, especially in central Guyana. Large stretches of wet forest exist in south Guyana. These were digitized into the National Map on the basis of the regional FIDS maps. In other cases large forest areas classified as wet forest were reclassified into mixed forest in accordance with FIDS coverage.
- In the southwest savannah cover from the FIDS maps was superimposed. However, the level of detail was much greater than the other parts of the map and it was decided to use the savannah interpretation of Huber et al (1995) for this vegetation type, which is nearly identical. In the Pakaraimas, also the interpretation of Huber et al. (1995) was used for the open non-forest vegetation types. The forests in this area were not classified on the basis of soil but rather on altitude. Submontane forest from 500-1500 m and montane forest above 1500 m. These areas were obtained by intersecting the vegetation map with altitudes obtained from a digital elevation model of Guyana.
- Several draft versions were produced and discussed. At close inspection it became clear that even at the 1:1 000 000 scale there were inconsistencies between the vegetation map and the river base map[24]. However, as the vegetation map appeared to be correct in most instances no further changes were made.
- A descriptive legend of the map was produced based on ter Steege and Zondervan (2000), Fanshawe 1952, Huber et al 1995 and FIDS reports (de Milde and de Groot 1970 a-g) (see below).
- The map was finally produced in three sizes, A4 (letter), A3 (tabloid) and A0 (1:1 000 000). TIFF & JPG versions for the GFC web page were also produced (See The Map in Appendix 4).

Provisional Forest Types

- The following forest types have been grouped into 1 of 6 forest classes. This classification will form the basis of the forest carbon stratification map. This map groups forest types according to their carbon storage potential and identifies those forest areas under threat of degradation or deforestation. The intention is to use the map to assist with the design of the carbon monitoring plot network.

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[24]The rivers base layer has subsequently been improved as part of the MRVS implementation

Class 1: Mixed rainforest

The following mixed forest classes have been merged to form a single class

1. **Mixed rainforests on Pleistocene brown sands in central to NW Guyana**

Forests on the brown sands of the Berbice formation are almost invariably characterised by species of *Eschweilera* and *Licania*. Species, which may be locally dominant are *Eschweilera sagotiana, E. decolorans, E. confertiflora, Licania alba, L. majuscula, L. laxiflora, Chlorocardium rodiei, Mora gonggrijpii, Alexa imperatricis, Swartzia schomburgkii, S. leiocalycina, Catostemma commune, Eperua falcata, Pouteria guianensis, P. cladantha, Aspidosperma excelsum* and *Pentaclethra macroloba*. Mono-dominance is common in forests on brown sands in central Guyana and tends to get less in an eastward direction. Towards the east in Guyana and across the border in Suriname the species mix changes slightly and the more common species are *Goupia glabra, Swartzia leiocalycina, Aspidosperma excelsum, Manilkara bidentata, Terminalia amazonica, Parinari campestris, Vochysia surinamensis, Emmotum fagifolium, Humiria balsamifera, Catostemma fragrans, Hymenaea courbaril, Licania densiflora* and *Eperuafalcata.* The latter forest on light brown sands extends south towards the Kanuku mountains, where it grades into semi-evergreen mixed forest of the Rupununi district (1.4).

2. **Mixed rainforests of the Northwest District**

The dry land forests of the Northwest District of Guyana and eastern Venezuela are characterised by a high abundance of *Eschweilera sagotiana, Alexa imperatricis, Catostemma commune, Licania* spp. and *Protium decandrum*. These species are found abundantly in almost every dry land forest type in this region. Poor mono-dominant stands of *M. gonggrijpii* are found on the (probably) more clayey soils between the Cuyuni and Mazaruni.

3. **Mixed rainforest in the Pakaraimas**

Dicymbe altsonii (endemic to Guyana) is the main characteristic and one of the most common canopy species in the 'mixed forests' of the lowland eastern Pakaraima Mountains. *Dicymbe* may be absolutely dominant over large areas. Co-dominants are *Eperua falcata, Eschweilera sagotiana, E. potaroensis, Mora gonggrijpii, Alexa imperatricis, Licania laxiflora, Swartzia leiocalycina, Vouacapoua macropetala* and *Chlorocardium rodiei*. *Eschweilera potaroensis,* an endemic of this region, may be co-dominant in forests around the confluence of the Potaro and Essequibo Rivers.

4. **Mixed rainforest in south Guyana**

Dry (deciduous) forest types fringe the savannahs in south Guyana. Most of the dry forest stands show high presence of *Goupia glabra, Couratari, Sclerolobium, Parinari, Apeiba, Peltogyne, Catostemma, Spondias mombin* and *Anacardium giganteum.* South of the Cuyuwini river to east of the New River the forest is characterised by a high presence of *Geissospermum sericeum*, *Eschweilera* cf. *pedicellata, Lecythis corrugata, Pouteria coriacea* and *Pourouma* spp. Several other taxa, characteristic of late secondary forest, have fairly high presence this region: *Parkia, Ficus, Sclerolobium, Trichilia, Parkia, Parinari* and *Goupia*. *Eperua falcata(rugiginosa?), Pterocarpus* and *Macrolobium acaciifolium* are common in forests along the rivers in this area.

5. **Complex of mixed forest and swamp forest in south Guyana**

Large stretches of this type occur in SW Guyana between the upper reaches of the Oronoque and New Rivers. The forest is characterised by high occurrence of *Geissospermum, Pterocarpus* and *Eperua*.

Class 2: Wallaba/Dakama/Muri Scrub Forest

These are forests located on excessively drained white sands and include the following classes;

1. **Clump wallaba forest**

Clump wallaba forest, dominated by *Dicymbe altsonii* and *D. corymbosa* with co-dominance of *Eperua, Catostemma* and *Hyeronima* is found on excessively drained white sand ridges in the Mazaruni basin.

2. Clump wallaba/wallaba forest

In the upper Mazaruni basin *Dicymbe corymbosa* and *Eperua* spp. dominate nearly all forests on white sand. *Chamaecrista* and *Micrandra* are common co-dominants.

3. Wallaba forests (dry evergreen forest)

Dry evergreen forest on bleached white sands (albic Arenosols) occurs from the Pakaraima escarpment, through central Guyana and northern Suriname into a small narrow portion of French Guiana. *Eperuafalcata* and *E. grandiflora* are strongly dominant and may form, alone or together, more than 60% of the canopy individuals. Common other species in the canopy layer are *Catostemma fragrans, C. altsonii, Licania buxifolia, Talisia squarrosa, Formosacousinhood, Eschweilera corrugata, Aspidosperma excelsum, Terminalia Amazonia, Chamaecrista adiantifolia, Chamaecrista apocouita, Swartzia* spp., *Dicymbe altsonii* (west Guyana only), *D. corymbosa* (ibid.), *Manilkara bidentata* (Pomeroon-Waini water divide) and *Pouteria*.

4. Forests on white sands in south Guyana

Very small patches of forests on white sand are found in south Guyana. In SW. Guyana *Eperua* is the most commonly found tree genus.

5. Dakama forest

Forest dominated by *Dimorphandra conjugata* (Dakama forest) is common on the higher parts of waterdivides from central Guyana to western Suriname. This forest type is characterised by very high standing litter crop (up to 800 ton/ha, Cooper 1982) and is very fire prone. Other species, characteristic for Dakama forests, are *Eperua falcata, Talisia squarrosa, Emmotum fagifolium* and *Swartzia bannia*. *Humiria balsamifera* (Muri) co-dominates the degraded Dakama forest and Dakama-Muri scrub with *Dimorphandra*.

6. Muri scrub/white sand savannah

In areas where fires are very regular or in flood-prone areas Dakama forest degrades into Muri-scrub, dominated by *Humiria* balsamifera. Other common species in this scrub are *Swartzia bannia, Clusia fockeana, Licania incana, Bombax flaviflorum, Ocotea schomburgkiana, Trattinickia burserifolia, Ternstroemia punctata* and *Byrsonima crassifolia*.

Class 3: Swamp/Marsh forest

This class combines Swamps, swamp and marsh forests

1. Open swamps

Herbaceaous and grass swamps in brackish and sweet water with *Cyperus, Montrichardia, Commelina,* Paspalum and *Panicum.*

2. Marsh Forest

Mora excelsa forms extensive stands along the rivers on alluvial silt up to the confluence of Rupununi and Rewa rivers. Canopy associates of the *Mora* forest are *Carapa guianensis, Pterocarpus officinalis, Macrolobium bifolium, Eschweilera wachenheimii, E. sagotiana, Clathrotropis brachypetala, C. macrostachya, Eperua falcata, E. rubiginosa, Catostemma commune, C. fragrans, Pentaclethra macroloba, Vatairea guianensis, Symphonia globulifera, Terminalia dichotoma* and *Tabebuia insigni*.

The rivers in the savannah area are bordered by gallery forest, which is inundated during part of the year. Trees species such as *Caryocar microcarpum*, *Macrolobiumacaciifolium*, *Senna latifolia*, *Zygia cataractae* and *Genipa spruceana* occur along all the rivers in S-Guyana. In the open savannah *Mauritia* is a dominating element in the landscape.

3. Coastal swamp forest

In permanently flooded, flat plains in the present coastal zone a low swamp forest is found. Characteristic species are *Symphonia globulifera, Tabebuia insignis/fluviatilis, Pterocarpus officinalis* and *Euterpe oleracea*. Species that can become locally dominant in this forest type in

Guyana are *Pentaclethra macroloba, Vatairea guianensis, Pterocarpus officinalis* and *Virola surinamensis*. *Manicaria saccifera* is commonly found as a narrow belt along rivers. More inland the duration of flooding is less pronounced and forest composition is slightly different. Common species here are *Symphonia globulifera, Virola surinamensis, Iryanthera* spp., *Pterocarpus officinalis, Mora excelsa, Pachira aquatica, Manicaria saccifera* and *Euterpe oleracea*.

Class 4: Mangrove forest

1 Mangrove forests

Mangrove forests occur in a narrow belt of a few kilometres wide along the coast and along the banks of the lower reaches of rivers. The mangrove forest along the coast consists mainly of *Avicennia germinans*, with occasional undergrowth of the salt fern, *Acrostichum aureum*. *Rhizophora* occupies the more exposed, soft silts in river mouths and shores. Where the water is distinctively brackish a third mangrove species can be found, *Laguncularia racemosa*. Further inland mangrove species mix with *Euterpe oleracea* palms and such trees as *Pterocarpus officinalis.*

Class 5 Savannah >30% forest cover

This class contains forest with lower volume that still meets the national definition of forest. Those areas that do not have been excluded and are treated as non-forest

1. **Lowland shrub and grass savannah**

   Lowland grass savannahs

   Lowland savannahs, dominated by the grasses *Trachypogon* and *Axonopus* and the shrubs *Curatella* and *Byrsonima* are found mainly in the southern parts where the Pakaraima Mts. border the Rupununi and Rio Branco savannahs and are also scattered throughout the western part of the region. At slightly higher altitude *Echinolaena* and *Bulbostylis* are also typical. Savannahs on white sands have more sedges and also include more genera typical of the alpine meadows.

   Lowland shrub savannah

   Fire-climax savannah vegetation, which contains characteristic species such as: *Curatella americana, Byrsonima crassifolia, Byrsonima coccolobifolia, Antonia ovata, Palicourearigida*, *Tibouchina aspera* and *Amasonia campestris*. The main grasses belong to the genera *Trachypogon, Paspalum, Axonopus* and *Andropogon* and the main sedges to the genera *Rhynchospora* and *Bulbostylis*

   Highland open vegetation types

2. **Xeromorphic scrub**

   Xeromorphic scrub is found throughout the Pakaraimas. *Humiria, Dicymbe, Clusia* and *Dimorphandra* are typical genera of this vegetation type.

3. **Tepui scrub**

   At high altitudes tepui scrub is found - in Guyana only on Mts. Roraima and Ayanganna. Most characteristic genera are *Bonnetia, Schefflera, Clusia,* and *Ilex*.

4. **Upland savannah**

   Uplands savannahs are very similar in composition to lowland savannahs. The upland savannahs on white sands have more sedges and also include more genera typical of the alpine meadows.

5. **Alpine meadows**

   The alpine meadows are also a very rich and distinct formation within the Guyana Highlands. In Guyana it is only found in the upper reaches of the Kamarang R., Mt. Holitipu and Lamotai Mt., both along the lower Kamarang R. Grasses are usually not dominant but are replaced by *Stegolepis*spp.. Other common genera include *Abolboda, Xyris, Orectanthe, Chalepophyllum, Lagenocarpus* and *Brocchinia*.

Class 6: Montane & steep forest

This class groups forests found at higher altitudes and on steep slopes.

1. Submontane forest of south Guyana

Submontane forest is found in the Acarai Mts from 600-800 m. The forest is quite similar to the forest in the Kanuku Mts. with *Centrolobium, Cordia, Peltogyne, Vitex, Inga, Protium, Tetragastris, Parkia, Pseudopiptadenia, Spondias* and *Genipa.* Forests on the mountain tops are dominated by Myrtaceae and *Clusia* on Sierra do Acarai.

2. Rain forest and evergreen forest on steep hills

Throughout the central and North West Guyana dolerite dykes penetrate through the sediments. These dykes are often covered with lateritic soils that are rocky, gravelly or clayey. There is little quantitative information available on the forest composition on these soils, except for central Guyana. Common trees are *Eschweilera* spp., *Licania* spp., *Swartzia* spp., *Mora gonggrijpii*, *Chlorocardium rodiei*. On lateritic soils in central Guyana a local endemic, *Vouacapoua macropetala*, forms extensive stands with *Eschweilera sagotiana, Licania laxiflora, Sterculia rugosa, Poecilanthe hostmanii* and *Pentaclethra macroloba*. On the rocky phase of laterite, a low shrubby forest is found. Myrtaceae (*Eugenia* spp., *Calycolpes, Marlierea*) and Sapotaceae (*Ecclinusa, Manilkara*) dominate here. Because of the occurrence of steep slopes landslides are not uncommon on laterite ridges. Often liana forest is encountered on such landslides. Pioneers, such as *Cecropia* spp., *Schefflera morototonii, Jacaranda copaia* and *Pentaclethra macroloba* are also abundantly present on such sites in central Guyana.

3. Forest on steep hills in Pakaraimas

Not much is known about specific composition of this forest. The composition, though, is quite similar to mixed rain forest (1.3), with *Dicymbe altsonii, Mora gongrijppii* and *M. excelsa*. In the forests along the foothills of the southern Pakaraima Mts., *Cordia/Centrolobium* forest is found (see 1.7).

4. Forest on steep hills in south Guyana

Forests along the foothills and middle slopes of the Kanuku Mts. are characterised by *Cordia alliodora, Centrolobium paraense, Apeiba schomburgkii, Acacia polyphylla, Pithecellobium* s.l., *Peltogyne pubescens, Manilkara* spp., *Cassia multijuga* and *Vitex* spp. *Manikara* dominates the higher areas. Low forest/woodland with *Erythroxylum* and *Clusia* are on slopes with bare rock.

The South Rupununi Savannah, in particular, has rock outcrops with a typical ‘rock vegetation’. The species present on the smallest rock plates are: *Cereushexagonus, Melocactus smithii, Cnidoscolus urens, Cyrtopodium glutiniferum* and *Portulacasedifolia*.

5. Submontane forests of the Pakaraima uplands

Submontane forests, from 500 – 1500m, are fairly similar in composition to the lowland forests surrounding them, with species from *Dicymbe, Licania, Eschweilera, Mora, Alexa* being common to dominant. On white sands *Dicymbe, Dimorpandra, Eperua* and *Micrandra* are the most characteristic genera. Dry submontane forest is characterised by *Dicymbe jenmanii* (endemic to the Kaieteur region), *Moronobea jenmanii, Humiria balsamifera, Chrysophyllum beardii, Tabebuia* spp., *Anthodiscus obovatus, Saccoglottis, Dimorphandra cuprea* and *Clusia* spp.

6. Upper montane forests of the Pakaraima highlands

Upper montane forests (1500-2000m) are only found on the high table mountains, such as Mts. Roraima, Ayanganna and Wokomung. Typical highland genera such as *Bonnetia* *tepuiensis, Schefflera, Podocarpus, Magnolia* and *Weinmannia* are found here. Low scrubs with Melastomataceae, Rubiaceae, *Ilex* and *Podocarpus steyermarkii* are also expected.

Non-forest Classes

In 2014 the non-forest areas were mapped from high resolution satellite images and further divided into the following IPCC classes.

- Cropland
- Grassland
- Wetland and open water
- Settlements
- Other land

Literature cited and/or used:

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Appendix 6

IPCC Common Reporting Format Tables

In 2014 Guyana has reported the LULUCF activity data in IPCC format. The forest classes reported conform to the stratification applied to the Forest Carbon Monitoring System. The following excerpt summarises the approach taken and is drawn from the GFC/ Winrock International report.

A key first step in estimating emissions factors for deforestation was to use a stratified sampling design applied to the forests of Guyana. A stratified sampling design allows for maximum flexibility in designing a sampling protocol within each stratum that is tailored to the desired level of precision—for Guyana the target is a 95% confidence interval of ±<15% of mean - as well as the time and resources available to collect the data. Stratification criteria for the FCMS include both *ecological considerations* that affect how much carbon is contained within a given area of land as well as *human pressure considerations* related to how the land is being used (and how it will be used in the future). For example, it is desirable to group all lands of similar carbon stocks that are under similarly high pressure of future deforestation into one stratum, and other lands that are of similar carbon stocks but under little to no pressure into a separate stratum. In this way, resources can be optimized so that sampling intensity is greater (thus precision is higher) in the areas most likely to undergo change in the future.

An overarching spatial analysis framework, operating in a Geographical Information System (GIS) was used to create a Potential for Future Change (PFC) stratification system that developed a relationship between the historical deforestation pattern and the spatially represented factors of deforestation. This method of stratification aims to understand which forest change factors, or combinations of factors, contribute most significantly to the historical pattern of deforestation. Humans tend to deforest areas that are close to roads and settlements (accessible for clearing), clearly demarcating some areas as having high potential for future change and others as low potential.

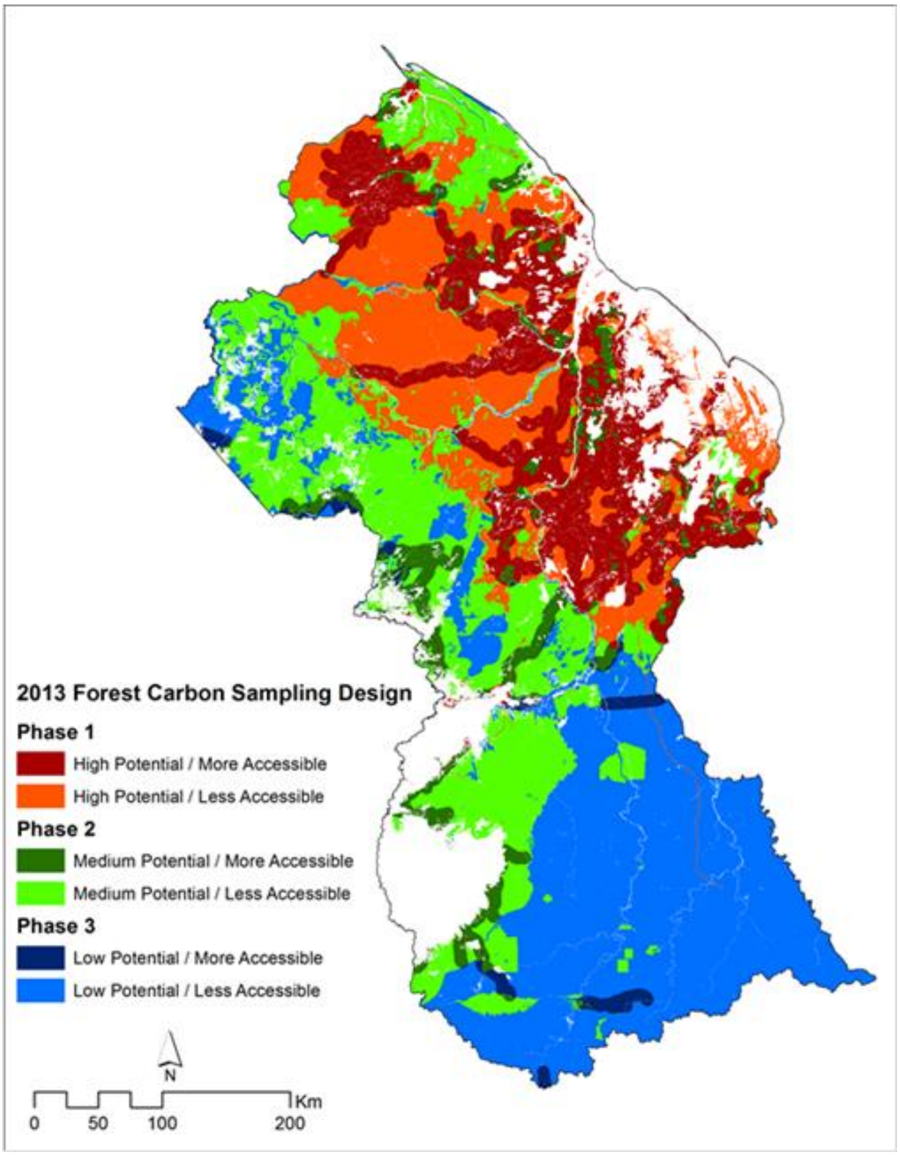
Two recent historical periods, 2000-2005 and 2005-2009, were considered for defining the pattern of forest change. The PFC spatial analysis framework and the specific techniques are discussed in the spatial techniques report[25].This PFC framework resulted in the identification of three strata based on their potential for future change—high (HPfC), medium (MPfC), and low (LPfC) potential for change (Figure 1).

In addition to stratifying by potential for change, the forests were also stratified by accessibility. A large portion of Guyana's forestland is not easily accessible and the purpose of the sampling stratification is to overcome some operational constraints while maintaining robust sampling results. Therefore, the factor of accessibility was introduced in the sampling stratification methodology to provide a forest carbon sampling framework that allows for efficient collection of data.

The accessibility strata were also included because, given the long history of logging in Guyana, our initial working assumption was that areas near roads would have been disturbed and have lower carbon stocks than those areas far from roads. The more accessible (MA) stratum is defined as 5 km straight-line distance from both sides of roads for a total of 10 km, a distance which allows a field team of 4 or 5 people to travel to the sampling point and return to the road within one day. The less accessible (LA) stratum is defined as all forestland outside the 5 km road buffer were likely to show little disturbance (Figure 1).

[25]Petrova S., K. Goslee, N. Harris, and S. Brown. 2013 Spatial Analysis for Forest Carbon Stratification and Sample Design for Guyana's FCMS: Version 2. Submitted by Winrock International to the Guyana Forestry Commission.

Figure 1: Stratification of Guyana's Forest Area by Deforestation Threat, or Potential for Future Change



The number of sampling plots and the design of the plots was determined by a preliminary sampling process that randomly located plots across various forest types identified in the Guyana vegetation map, and across a latitude and longitude gradient. Different sampling methods were tested aiming at the optimum design, balancing data collection with precision, robustness, efficiency and scientific integrity. Single plots and cluster plots (a cluster of four plots) were tested during preliminary data collection. Results from the preliminary fieldwork, indicated that cluster plots were most appropriate because when compared to single plots, results showed improvement in precision across plots, reduction of variability within plots, and reduction in travel time in sampling for reaching the precision target. The results also showed that there were no significant differences in carbon stocks among the main forest types and that stratification by forest type was not necessary[26].

[26]Brown, S., K. Goslee, F. Casarim, N. L. Harris, and S. Petrova. 2014. Sampling Design and Implementation Plan for Guyana's REDD+ Forest Carbon Monitoring System (FCMS): Version 2. Submitted by Winrock International to the Guyana Forestry Commission.

Using this stratification the forest area has been divided by risk and accessibility. Work is still ongoing to determine the appropriate emission factors for certain change drivers across the different strata. These include forest degradation and afforestation – as appropriate

Additionally, in 2014 the area of non-forest has been subdivided into the relevant IPCC classes. Since this is the first year this has been completed no changes have been recorded between non-forest classes. GFC in collaboration with Winrock are expecting to formally complete the work to find Emission Factors specific to Guyana in 2015.

The following tables describe the deforestation figures for area in the IPCC common reporting format (CRF).

Table 4.1. LAND TRANSITION MATRIX — **Inventory 2013**

Areas and changes in areas between the previous and the current inventory year — **Submission 2014 v1**

GUYANA

TO: 2013 (Year 4) / FROM: 2012 (Year 3)	Forest land (HPfC MA)	Forest land (HPfC LA)	Forest land (MPfC)	Forest land (LPfC)	Cropland (managed)	Grassland (unmanaged)	Wetlands (unmanaged)	Settlements	Other land	Initial area at Y3
	(kha)									
Forest land (HPfC MA)(2)	3568.89	*NO*	*NO*	*NO*	*NE*	*NE*	*NE*	*NE*	*NE*	
Forest land (HPfC LA)(2)	*NO*	3175.75	*NO*	*NO*	*NE*	*NE*	*NE*	*NE*	*NE*	3568.89
Forest land (MPfC)(2)	*NO*	*NO*	5570.68	*NO*	*NE*	*NE*	*NE*	*NE*	*NE*	3175.75
Forest land (LPfC)(2)	*NO*	*NO*	*NO*	6172.56	*NE*	*NE*	*NE*	*NE*	*NE*	5570.68
Cropland (managed)(4)	0.28	0.14	0.004	*NO*	219.96	*NE*	*NE*	*NE*	*NE*	6172.56
Grassland (unmanaged)(5)	*NO*	*NO*	*NO*	*NO*	*NE*	2037.00	*NE*	*NE*	*NE*	219.96
Wetland (unmanaged)(6)	*NO*	*NO*	*NO*	*NO*	*NE*	*NE*	249.95	*NE*	*NE*	2037.00
Settlements(7)	0.64	0.64	0.270	0.06	*NE*	*NE*	*NE*	59.21	*NE*	249.95
Other land (8)	4.95	4.11	1.08	0.29	*NE*	*NE*	*NE*	*NE*	73.69	59.21
Final area at Y4	3563.02	3170.85	5569.33	6172.21	220.39	2037.00	249.95	60.82	84.12	73.69
Net change (9)	-5.87	-4.90	-1.35	-0.35	0.42	0.00	0.00	1.61	10.43	21127.70

Documentation for Notation keys used:

There are no land use changes between forest categories (NO).

Afforestation/reforestation activity in Guyana occurs through regeneration of abandoned mining sites primarily. These areas are monitored at present but not reported (NE).

There is no human induced conversion from forest to grasslands in Guyana (NO).

Land use changes between non-forest land uses were not estimated in this reporting period (NE).

There was no detectable land use conversion to wetlands (NO).

There is currently no human induced conversion from Low Potential for Change Forest to cropland in Guyana (NO).

TABLE 4.A SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Forest Land

GREENHOUSE GAS SOURCE & SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals [8] [9]
Land-Use Category	Subdivision[1]	Total area[2] (kha)	Area of organic soil[2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area[4]	Net carbon stock change in soils per area [4]		Carbon stock change in living biomass[3] [4]			Net carbon stock change in dead organic matter[4]	Net carbon stock change in soils [4] [6]		
				Gains	Losses	Net change		Mineral soils[5]	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils[7]	
				(t C/ha)						(kt C)						(kt)
A. Total Forest Land		18,487.88														
1. Forest Land remaining Forest Land	High Potential for Change/More Accessible Forest (HPfC MA) remaining HPfC MA	3,568.89														
	High Potential for Change/Less Accessible Forest (HPfC LA) remaining HPfC LA	3,175.75														
	Medium Potential for Change Forest (MPfC) remaining MPfC	5,570.68														
	Low Potential for Change Forest (LPfC) remaining LPfC	6,172.56														
2. Land converted to Forest Land[10]																
2.1 Cropland converted to Forest Land	Cropland to High Potential for Change/More Accessible Forest	NE														
	Cropland to High Potential for Change/Less Accessible Forest	NE														
	Cropland to Medium Potential for Change Forest	NE														
	Cropland to Low Potential for Change Forest	NE														
2.2 Grassland converted to Forest Land	Grassland to High Potential for Change/More Accessible Forest	NE														
	Grassland to High Potential for Change/Less Accessible Forest	NE														
	Grassland to Medium Potential for Change Forest	NE														

GREENHOUSE GAS SOURCE & SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals (8) (9)
Land-Use Category	Subdivision(1)	Total area(2) (kha)	Area of organic soil(2) (kha)	Carbon stock change in living biomass per area (3) (4)			Net carbon stock change in dead organic matter per area(4)	Net carbon stock change in soils per area (4)		Carbon stock change in living biomass(3) (4)			Net carbon stock change in dead organic matter(4)	Net carbon stock change in soils (4) (6)		
				Gains	Losses	Net change		Mineral soils(5)	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils(7)	
				(t C/ha)						(kt C)						(kt)
	Grassland to Low Potential for Change Forest	NE														
2.3 Wetlands converted to Forest Land	Wetlands to High Potential for Change/More Accessible Forest	NE														
	Wetlands to High Potential for Change/Less Accessible Forest	NE														
	Wetlands to Medium Potential for Change Forest	NE														
	Wetlands to Low Potential for Change Forest	NE														
2.4 Settlements converted to Forest Land	Settlements to High Potential for Change/More Accessible Forest	NE														
	Settlements to High Potential for Change/Less Accessible Forest	NE														
	Settlements to Medium Potential for Change Forest	NE														
	Settlements to Low Potential for Change Forest	NE														
2.5 Other Land converted to Forest Land	Other Land to High Potential for Change/More Accessible Forest	NE														
	Other Land to High Potential for Change/Less Accessible Forest	NE														
	Other Land to Medium Potential for Change Forest	NE														
	Other Land to Low Potential for Change Forest	NE														

Documentation box:

Afforestation/reforestation activity in Guyana occurs through regeneration of abandoned mining sites primarily. These areas are monitored in the MRV at present but not reported (NE).

TABLE 4.B SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Cropland

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals (10) (11)
Land-Use Category	Subdivision (1)	Total area(2) (kha)	Area of organic soil(2) (kha)	Carbon stock change in living biomass per area (3) (4)			Net carbon stock change in dead organic matter per area(4)	Net carbon stock change in soils per area (4)		Carbon stock change in living biomass(3), (4), (6)			Net carbon stock change in dead organic matter(4) (7)	Net carbon stock change in soils (4) (8)		
				Gains	Losses	Net change		Mineral soils(5)	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils	
				(t C/ha)						(kt C)						(kt)
B. Total Cropland		220.39														
1. Cropland remaining Cropland		219.96														
2. Land converted to Cropland(12)																
2.1 Forest Land converted to Cropland	High Potential for Change/More Accessible Forest to Cropland	0.28														
	High Potential for Change/Less Accessible Forest to Cropland	0.14														
	Medium Potential for Change Forest to Cropland	0.004														
	Low Potential for Change Forest to Cropland	NO														
2.2 Grassland converted to Cropland		NE														
2.3 Wetlands converted to Cropland		NE														
2.4 Settlements converted to Cropland		NE														
2.5 Other Land converted to Cropland		NE														

Documentation box:

Land use changes between non-forest land uses were not estimated in this reporting period (NE).

There is currently no human induced conversion from Low Potential for Change Forest to cropland in Guyana (NO).

TABLE 4.C SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Grassland

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals (10) (11)
Land-Use Category	Subdivision (1)	Total area(2) (kha)	Area of organic soil(2) (kha)	Carbon stock change in living biomass per area (3) (4)			Net carbon stock change in dead organic matter per area(4)	Net carbon stock change in soils per area (4)		Carbon stock change in living biomass(3), (4), (6)			Net carbon stock change in dead organic matter(4) (7)	Net carbon stock change in soils (4) (8)		
				Gains	Losses	Net change		Mineral soils(5)	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils(9)	
				(t C/ha)						(kt C)						(kt)
B. Total Grassland		2,037.00														
1. Cropland remaining Cropland		2,037.00														
2. Land converted to Grassland(12)																
2.1 Forest Land converted to Grassland	High Potential for Change/More Accessible Forest to Grassland	NO														
	High Potential for Change/Less Accessible Forest to Grassland	NO														
	Medium Potential for Change Forest to Grassland	NO														
	Low Potential for Change Forest to Grassland	NO														
2.2 Cropland converted to Grassland		NE														
2.3 Wetlands converted to Grassland		NE														
2.4 Settlements converted to Grassland		NE														
2.5 Other Land converted to Grassland		NE														

Documentation box:

Land use changes between non-forest land uses were not estimated in this reporting period (NE).

There is currently no human induced conversion from Forest to grasslands in Guyana (NO)

TABLE 4.D SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Wetlands

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						
Land-Use Category	Subdivision (1)	Total area(2) (kha)	Area of organic soil(2) (kha)	Carbon stock change in living biomass per area (3) (4)			Net carbon stock change in dead organic matter per area(4)	Net carbon stock change in soils per area (4)		Carbon stock change in living biomass(3), (4), (6)			Net carbon stock change in dead organic matter(4) (7)	Net carbon stock change in soils (4) (8)		Net CO_2 emissions/ removals (10) (11)
				Gains	Losses	Net change		Mineral soils(5)	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils(9)	
				(t C/ha)						(kt C)						(kt)
B. Total Wetlands		249.95														
1. Wetlands remaining Wetlands		249.95														
1.1 Peat extraction		NE														
1.2 Flooded land remaining flooded land		NE														
2. Land converted to Wetlands		NE														
2.1 Land converted for Peat extraction		NE														
2.2 Land converted to flooded land		NE														
2.3 Land converted to other wetlands		NE														

Documentation box:

Land use changes between non-forest land uses were not estimated in this reporting period (NE).
The Wetlands category was not subdivided (NE)

TABLE 4.E SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Settlements

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO_2 emissions/ removals [10] [11]
Land-Use Category	Subdivision [1]	Total area[2] (kha)	Area of organic soil[2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area[4]	Net carbon stock change in soils per area [4]		Carbon stock change in living biomass[3], [4], [6]			Net carbon stock change in dead organic matter[4]) [7]	Net carbon stock change in soils [4] [8]		
				Gains	Losses	Net change		Mineral soils[5]	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils[9]	
				(t C/ha)						(kt C)						(kt)
B. Total Settlements		60.82														
1. Settlements remaining settlements		59.21														
2. Land converted to Settlements																
2.1 Forest Land converted to Settlements	High Potential for Change/More Accessible Forest to Settlements	0.64														
	High Potential for Change/Less Accessible Forest to Settlements	0.64														
	Medium Potential for Change Forest to Settlements	0.27														
	Low Potential for Change Forest to Settlements	0.06														
2.2 Cropland converted to Settlements		NE														
2.3 Grassland converted to Settlements		NE														
2.4 Wetland converted to Settlements		NE														
2.5 Other Land converted to Settlements		NE														

Documentation box:

Land use changes between non-forest land uses were not estimated in this reporting period (NE).

TABLE 4.F SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Other land

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						
Land-Use Category	Subdivision [1]	Total area[2] (kha)	Area of organic soil[2] (kha)	Carbon stock change in living biomass per area [3] [4]			Net carbon stock change in dead organic matter per area[4]	Net carbon stock change in soils per area [4]		Carbon stock change in living biomass[3], [4], [6]			Net carbon stock change in dead organic matter[4] [7]	Net carbon stock change in soils [4] [8]		Net CO_2 emissions/ removals [10] [11]
				Gains	Losses	Net change		Mineral soils[5]	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils[9]	
				(t C/ha)						(kt C)						(kt)
B. Total Other Land		84.12														
1. Other land remaining Other land		73.69														
2. Land converted to Other land[12]																
2.1 Forest Land converted to Other land	High Potential for Change/More Accessible Forest to Cropland	4.95														
	High Potential for Change/Less Accessible Forest to Cropland	4.11														
	Medium Potential for Change Forest to Cropland	1.08														
	Low Potential for Change Forest to Cropland	0.29														
2.2 Cropland converted to Other land		NE														
2.3 Grassland converted to Other land		NE														
2.4 Wetlands converted to Other land		NE														
2.5 Settlements converted to Other land		NE														

Documentation box:

Land use changes between non-forest land uses were not estimated in this reporting period (NE).

Appendix 7

Independent Accuracy Assessment Report

Durham University

Guyana Forestry Commission
Ensuring Sustainable Forestry

Guyana Forestry Commission
Guyana REDD+ Monitoring Reporting and Verification System (MRVS)

Accuracy Assessment Report

November 2014

Glossary of Statistical and Technical Terms and Acronyms used in the Report

Bias	Bias is a term which refers to how far the average statistic lies from the parameter it is estimating. The bias is the average (expected) difference between the measurement and the truth.
Change sample	May also be termed paired sample or a matched sample where the same attribute, or variable, is measured twice under different circumstances. In the Guyana case, the change sample is identical but measured a year apart.
CIR	Colour Infrared or "false colour" imagery
Confidence interval	A confidence interval for a parameter is a random interval constructed from data in such a way that the probability that the interval contains the true value of the parameter can be specified, with the most common being 95% (0.95) or 99% (0.99).
Confidence Level	If independent samples are taken repeatedly from the same population, and a confidence interval calculated for each sample, then a certain percentage (confidence level) of the intervals will include the unknown population parameter. A confidence level of 95% or 0.95 means that there is a probability of at least 95% that the result is reliable
Estimator	An estimator is a rule for "guessing" the value of a population parameter based on a random sample from the population. An estimator is a random variable, because its value depends on which particular sample is obtained, which is random. A canonical example of an estimator is the sample mean, which is an estimator of the population mean.
Error matrix	An error matrix or contingency table is a way of summarising the relationship between variables, each of which can take only a small number of values. It is a table of frequencies classified according to the values of the variables in question
Errors of commission	Sometimes referred to as "false positives", errors of commission or user's errors. Reading across this contingency table (rows) shows the percent error of commission, or how many areas were incorrectly mapped / labelled according to the independent reference sample data.
Errors of omission	Sometimes referred to as producer's errors. Reading down the table (columns) shows the percent error of omission, or how many areas of a given class were mistakenly left off the map.
GeoVantage	Airborne imagery - Very high spatial resolution approx. 0.2-0.3 m pixel size used by the Accuracy Assessment team to validate the mapping of the GFC in the MRV
Orthorectified image	Orthorectification of imagery is a process that systematically removes distortion due to perspective and topography to create a perspective where scale is uniform across the image.
Precision	Precision is a measure of how close an estimator is expected to be to the true value of a parameter
RapidEye	Satellite imagery - High spatial resolution (6 m pixel size) image data used to identify deforestation and forest degradation by the GFC for the MRV.

Reference data	In this context reference data refers to an independent sample collected to validate deforestation and forest degradation data.
RGB	Red-Green-Blue or "near-true colour" imagery.
Simple random sample	A sample drawn from a population using a random mechanism so that every element of the population has a known chance of being included in the sample.
Standard error	The Standard Error of a random variable is a measure of how far it is likely to be from its expected value; it is the standard deviation of the values of a given function of the data (parameter), over all possible samples of the same size.
Stratification	In a stratified sample, subsets of sampling units are selected separately from different strata, rather than from the sampling frame as a whole. Stratified sampling techniques are generally used when the population is heterogeneous, or dissimilar, where certain homogeneous, or similar, sub-populations can be isolated.
Two-stage cluster sampling	In two-stage cluster sampling the population is divided into N clusters. At the first stage a (usually) random sample of the clusters is selected. At the second stage smaller units (sample elements) are selected either randomly or systematically from each cluster.
Variance	A measurement of the degree of spread between numbers in a dataset. Variance measures how far each number in a dataset is from the mean.

References:

Cochran, W.G. (1977) Sampling Techniques, J. Wiley & Sons Inc., New York.

http://mathworld.wolfram.com/

*ST*atistical *E*ducation through *P*roblem *S*olving: http://www.stats.gla.ac.uk/

Explanatory Note on Statistical Methods

The statistical methods used to estimate forest area (and forest degradation) change from Year 3 to Year 4 in the Guyana MRV report uses a near-identical approach to that in the published paper by Popatov et al. (2014). The only difference to the formulae stated in the Popatov paper are that they had clusters where the within-cluster sample sizes were equal. In the case of Guyana these were planned to be equal but each airborne flight resulted in some differences. In this case both the SAS SURVEYMEANS and the equivalent R Survey package use formulae to adjust for these differences. These formulae don't appear in print, but are coded internally and so we take these on trust. We could in principle reproduce them.

To elaborate on the statistical method chosen, we are extremely fortunate to have available a large change-sample, namely 55 119 hectares observed in Year 3 and Year 4. Without going into deep statistical detail, a paired sample of this kind is far more efficient and powerful (these are statistical terms) in estimating change than would be two independent samples. This is largely because sources of uncertainty associated with independent samples disappear when one has a paired sample. Our main response variable is a classification of changes between Year 3 and Year 4. This is a multinomial response variable. The possible classes for this response variable are:

1. Forest in Year 3 and Year 4
2. Forest in Year 3, but Degraded in Year 4
3. Forest in Year 3, but NonForest in Year 4
4. NonForest in Year 3 and NonForest in Year 4
5. etc.

There are nine such classes for this response variable, reflecting three possible states in Year 3 and another three possible states for year 4. Statistically, this is similar to a binomial proportion change problem, for example estimating a change in voting habits. Estimating the proportions of Guyana belonging to these nine classes is a key objective. For the objective of estimating rate of change of deforestation, attention focuses on the first three classes and the probabilities of change conditional on the state being Forest in Year 3.

To analyse the sample data, we must first describe the method of data collection and then choose the appropriate method. We are treating the sample as though it is a stratified cluster sample. There is initial stratification of Guyana into low and high risk strata, each containing 7500 hectares. Clusters are sampled at random from these strata. Next, hectares are sampled from each cluster. For a number of reasons, the number of hectares sampled from each cluster varies. The statistical consequence is that the formulae for estimating variances now become very complicated, and indeed meaningless except to professional statisticians. We have treated the sample from each cluster as a random sample. Actually this isn't quite true. Instead, up to 360 hectares were sampled systematically over each cluster, using a predefined regular grid. The proportion of hectare sampled is high, on average. As the professional statistician associated with the project, my judgements are as follows. First, there is a risk that linear features such as roads might be expected to be over-represented in the sample. This would then lead to a slight overestimation of deforestation rate. It is not possible post-hoc to correct for this behaviour. Secondly, no account is taken of the potential for there to be spatial correlation between hectares which are physically close. The consequence would likely be a slight under-reporting of standard errors. However, the sampled hectares are sufficiently distant from each other that is appears reasonable to treat spatial correlation as zero. As such, although we recognize that samples are not fully random within each cluster, we judge that it is statistically safe to treat them as though they are.

Under these conditions, the method of analysis is straightforward using statistical software. In the report we explained how we used a package called "survey" within the (free) statistical language "R". This provides an equivalent alternative to the SURVEYMEANS procedure available in the (not free) statistical language SAS. It may help to note that a recent paper [1] describes a problem which is the same as ours in the essentials, and provides a detailed appendix showing essentially the same formulae as we have shown. The analysis in this paper used the SAS SURVEYMEANS procedure.

[1] National satellite-based humid tropical forest change assessment in Peru in support of REDD+ implementation

P V Potapov, J Dempewolf, Y Talero, M C Hansen, S V Stehman, C Vargas, E J Rojas, D Castillo, E Mendoza, A Calderón, R Giudice, N Malaga and B R Zutta. Environ. Res. Lett. 9 (2014) (13pp) doi:10.1088/1748-9326/9/12/124012.

As extra analysis to explore deforestation rates more finely, we also defined a secondary response variable as the proportion of forest cover remaining in Year 4, conditional on the state being Forest in Year 3. For the vast majority of hectares, the proportion is one. To analyse this problem we use essentially the same SAS SURVEYMEANS (or R survey equivalent) procedure as before, with the difference that the response is numerical rather than multinomial. This extra analysis gives a more accurate assessment of deforestation rate as the response variable contains more information about the actual level of deforestation in a specific hectare.

EXECUTIVE SUMMARY

1. This report was commissioned by Indufor Asia Pacific Ltd for the Guyana Forestry Commission (GFC) in support of a system to Monitor, Report and Verify (MRVS) forest resources and carbon stock changes as part of Guyana's engagement in the UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+). The scope of the work was to conduct an independent assessment of deforestation, forest degradation and forest area change estimates for the period January – December 2013. Specifically, the terms of reference asked that confidence limits be attached to forest area estimates.

2. The methods used in this report follow the recommendations set out in the GOFC-GOLD guidelines to help identify and quantify uncertainty in the level and rate of deforestation and the amount of degraded forest area in Guyana over the period 01 January 2013 to 31 December 2013 (Interim Measures Period – Year 4). Very high spatial resolution aerial imagery and high resolution satellite imagery and field visits are used to assess the wall-to-wall mapping of Guyana undertaken by Indufor Asia Pacific Ltd (IAP) and Guyana Forestry Commission (GFC) based primarily on data from the RapidEye satellite constellation system.

3. A change analysis was conducted using a two-stage cluster sampling with stratification of the primary units was adopted to provide precise estimates of forest area. Two strata were selected according to "risk of deforestation", that is: high risk areas that are proximal to settlements, roads, logging concessions and known mining dredge sites; and, the remainder low risk land. Interpretations of deforestation and degradation drivers were made from expert image interpretation of very high spatial resolution aerial imagery or high spatial resolution satellite imagery.

4. For the 2013 (Year 4) Forest Change Mapping conducted by GFC with technical support from IAP, results show a correspondence (prevalence) of 99.93% between reference image interpretation and GFC mapping based on a sample of 55,119 one-hectare circular plots. This demonstrates a very high level of correspondence between the MRVS maps and the reference data: 99.56% in High Risk stratum and 99.89% in Low Risk stratum.

5. The estimate of the annual area of change from January to December 2013 (Year 4) Forest to Non-forest is 13,695 ha with a standard error of 1,819 ha and a 95% confidence interval (10,129, 17,261).

6. The estimate of the annual rate of deforestation that occurred in 2013 (Year 4) is 0.07% with a standard error of 0.0101% and a 95% confidence interval (0.056%, 0.0954%).

7. The accuracy of the mapping of forest degradation by GFC within the MRVS for 2013 (Year 4) has a correspondence (prevalence) between reference image interpretation and GFC mapping of 99.98%.

8. The estimate of the annual rate of the rate change from Forest to Degraded forest between Y3 and Y4 is 0.0214% with a standard error of 0.00413% and a 95% confidence interval (0.0133%, 0.0295%).

9. The analysis for 2013 (Year 4) did not detect any change to the Intact Forest Landscape.

1. AREAS OF ACTIVITY

1. To refine and enhance the methodology developed in 2013/14 to assess Year 4 deforestation, taking note of IPCC Good Practice Guidelines and GOFC/GOLD recommendations (GOFC-GOLD, 2013).

2. Outline methodology for accuracy assessment including an outline of the (1) sample design, (2) response design, and (3) analysis design (GOFC-GOLD, 2013). For the design component, reference data to be used should be identified, and literature cited for methods proposed. The design must ensure representativeness of the scenes selected for analysis. Applicants are required to state the sampling specifications to be used.

3. Reporting on REDD+ interim measures and national estimates (Gross Deforestation, Intact Forest Landscape, Extent of Degradation associated with new infrastructure, and emissions from forest fires – referred to in the context of the Joint Concept Note between the Government of Guyana and the Kingdom of Norway), including initial interim results, with a priority being on gross deforestation and the associated deforestation rate (i.e. change over time) and assessing their error margins/confidence bands, and providing verification of the deforestation rate figure for Year 4 as an area change total and by driver.

4. Accuracy assessment on the area changes (deforestation, degradation), an error assessment on the quality of attribution of types of changes mapped (agriculture, mining, forestry and fire), an examination of why changes were mapped well or not. Make recommendations that can be used to improve efforts in the future. This assessment should be done with the recognition that “best efforts” will have to be applied in situations where there is a challenge in terms of availability of reference data and will have to entail field / overflight verification. The error analysis should highlight areas of improvement for future years to decrease uncertainties and maintain consistency. Additionally, the assessment should also consider the quality on how missing data were treated for national estimation (if this is observed to be the case). It is required that real reference data is used either from the ground, ancillary data (e.g. for concessions), and/or high resolution imagery for reference.

This assessment is done with the recognition that “best efforts” will have to be applied in situations where there is a challenge in terms of availability of reference data and will have to entail field / over-flight verification. The error analysis highlights areas of improvement for future years to decrease uncertainties and maintain consistency. Additionally, the assessment considers the effect of missing data for national estimation. It is required that real reference data are used either from the ancillary map data (e.g. for concessions), and the data acquired specifically for accuracy assessment including aerial photography and high spatial resolution imagery.

Specifically, the objectives are targeted towards:

- Providing confidence and credibility in the estimates derived from the mapping exercise, nationally and at the international level;
- Providing a greater understanding of error patterns and to provide recommendations on how these may be used to inform a continuous improvement programme for future years;
- Providing the client with the resources needed to improve local ownership and capacity for the Guyana Forestry Commission and its partners to use and produce such data for themselves in future.

2. RATIONALE

The DNV Audit of the Guyana MRV made an Observation under the list of Corrective Action Requests in their monitoring period Year 3 verification report (DNV Report 2013-1760).

Observation of a Potential Non-Compliance: Accuracy assessment's sampling plan and estimate of standard error of the model- assisted estimator – Appendix A-13.

GFC requested that the Accuracy Assessment team review the *Observation* and if necessary recommended improvements to the sampling design in order optimise the precision of the estimates of deforestation and forest degradation. In particular, DNV want reassurance that the estimates of stratum variances are based on a stratified random sampling design rather than a simple random sampling design. GFC also requested that the Accuracy Assessment team review the reporting of rate-of-change statistics for Deforestation and Forest Degradation that accompany each annual estimate. This was in response to CAR-2 where DNV judged that a stakeholder comment that confidence interval should be reported on the Year 3 gross deforestation rate of 0.079%.

3. AREA REPRESENTATION

The total land area for Guyana is 21,127,762 hectares, calculated from the national boundary Shapefile provided by GFC in 2014. The digital maps contained in the report were obtained from the Guyana Forestry Commission (GFC), the Guyana Land and Surveys Commission (GL&SC). All maps use the WGS 84 datum and are projected to UTM Zone 21N. For mapping, the GFC uses ArcGIS v.10.2 software.

3.1 Forest Area

Land classified as **forest** by GFC follows the definition from the Marrakech Accords (UNFCCC, 2001). Under this agreement forest is defined as: a minimum area of land of 1.0 hectare (ha) with tree crown cover (or equivalent stocking level) of more than 10-30% with trees with the potential to reach a minimum height of 2-5 m at maturity in situ.

In accordance with the Marrakech Accords, Guyana has elected to classify land as forest if it meets the following criteria:

- Tree cover of minimum 30%
- At a minimum height of 5 m
- Over a minimum area of 1 ha.

The forest area was mapped by IAP/GFC by excluding non-forest land cover types, including water bodies, infrastructure, mining and non-forest vegetation. The first epoch for mapping is 1990, and from that point forward land cover change from forest to non-forest has been mapped and labelled with the new land cover class and the change driver. GFC have conducted field inspections and measurements over a number of non-forest sites to verify the land cover type, the degree of canopy closure, the height of the vegetation and its potential to regenerate back to forest. The mapping was based on manual interpretation of satellite imagery at approximately 1:24,000 using ArcGIS software.

The Y4 mapping process involves a systematic review of each 24 × 24 km RapidEye tile which was further zoomed at a resolution of 1:8000 under a sub-tile of 1 × 1 km. It involves editing the EVI vector outputs (generated through series of image processing steps: DN to reflectance, dark subtraction, cloud masking and EVI generation) from change detection processes required to delineate new change events. The input process is standardised through the use of a customised GIS tool. Details of the IAP/GFC Y4 mapping explained in the Standard Operating Procedure for Forest Changes Assessment. Areas mapped as deforested during the period 1990-2009 are used to establish the *deforestation rate* for the benchmark reporting period.

The purpose of this report is to build upon the estimates of deforestation established for Years 1, 2 and 3 and to quantify the precision of the estimate of deforestation and forest degradation in Year 4. A second task is to identify the processes (drivers) that are responsible for deforestation and degradation, and where possible to estimate the precision of area estimates.

4. SAMPLING DESIGN FOR VERIFYING YEAR 4 FOREST CHANGE AND FOREST DEGRADATION MAPPING

4.1 Change sample design

The Year 3 accuracy assessment for gross deforestation and forest degradation in Guyana used two-stage sampling with stratification of the primary units. Stratification was based on factors that contribute to risk of deforestation by the primary drivers of land cover change in Guyana, namely alluvial gold mining, logging and agriculture. The land cover map for Guyana is updated every 12 months based on interpretation of satellite imagery, initially 30 m pixel-size Landsat and, since 2012, 6.5 m pixel-size RapidEye. The mapping covers the entire land area of Guyana and uses multiple looks for every satellite image footprint to compensate for areas obscured by clouds and cloud shadow.

Accuracy assessment is guided by established principles of statistical sampling for area estimation and by good practice guidelines (GOFC-GOLD, 2013, UNFCCC Good Practice Guidance (GPG) and Guidelines (GL)). The purpose of the sampling strategy for the Guyana MRV was to determine the status of the forest resource by checking the accuracy of the wall-to-wall mapping based on satellite observations. The Year 1 assessment recognised that deforestation from mining, logging or agriculture was more likely in regions where transportation was possible and so stratification should be based on a "risk" map derived from established GIS data sets (roads, settlements, mining, logging and agriculture concessions). The purpose of stratification is to calculate the within-stratum means and variances and then calculate a weighted average of within-stratum estimates where the weights are proportional to the stratum size. Stratification will reduce the variance of the population parameter estimate and provide a more precise estimate of forest area than a simple random sample. The analysis design selected a model-assisted difference estimator to each stratum independently. The model-assisted difference estimator uses the relationship between the sample observations and the model predictions to again reduce the variance of the population parameter estimate.

The sampling design and the associated response design are limited by the quality and availability of suitable reference data to verify interpretations of the GFC Forest Area Assessment Unit (FAAU). In Year 1 when mapping was interpreted from Landsat data, the accuracy assessment was based on satellite data of a finer spatial resolution such as DMC, RapidEye, CBERS, IKONOS and SPOT). In Years 2 and 3 the GFC Forest Area Assessment Unit (FAAU).turned to RapidEye and the primary mapping tool and by Years 3 and 4 the whole country is mapped from multiple looks of orthorectified RapidEye resampled data to 5 m pixel size. Therefore, the response design of the accuracy assessment looked at aerial imagery as an appropriate fine-resolution source of data to validate land cover changes. In Year 3 the aerial reference data were acquired using a two-stage random sampling design with stratification of the primary units and the area estimations were estimated from a model-assisted difference estimator to each stratum independently. The confidence intervals for the area estimates for gross deforestation and forest degradation were significantly improved from Year 2 to Year 3.

The feedback from DNV and from the Norwegian Ministry of Environment via stakeholder consultation phase, demonstrates the requirement to optimise the methods used for accuracy assessment to reduce the uncertainties in forest change estimates. The approach taken in Years 1-3 had been to optimise the forest area estimates and was to a large extent constrained by the availability of appropriate reference data.

4.2 Improvements to address CAR and Observations

The experience of deploying the GeoVantage aerial multispectral imagery in a stratified random design opens up the possibility for the first time of repeating the survey to generate a ***reference change*** data set. The idea of quantifying change in a forest resource as the difference between two successive inventories was first applied to individual forest stands. A repeated measurement of a selected number of representative stands to assess forest resources has a history dating back to the establishment of permanent sampling plots in Europe in the late 19th century.

For estimating **change** it is best to retain the same sample throughout all occasions but for estimating the **average** over all occasions it is best to draw a new sample on each occasion (Cochran, 1963). For the Guyana MRV, the goal in years one and two were to assess the accuracy of the GFC wall-to-wall mapping and to ensure that forest/non-forest and forest degradation classes were correctly labelled. Another goal was to provide confidence limits on the assessments of forest cover at the national scale. The accuracy assessment was required to address the REDD+ interim measures agreed between the Governments of Norway and Guyana where the initial priorities were on assessing confidence intervals around estimates of forest area for 1990, 2009 (benchmark period) and for each subsequent year of MRV reporting. The MRV has developed so that the quality of the wall-to-wall mapping has improved with better quality satellite image data and operating procedures for interpretation and GIS processing. Over the same period, the accuracy assessment increased the size and quality of the reference sample used to assess forest area and assign confidence intervals at the 95% confidence limit. The accuracy assessment for Year 3 (2012-13) was based on a new aerial multispectral dataset (from GeoVantage) with very fine spatial resolution and a much increased sample size. Nevertheless, it was clear from the report and from independent comments that the Accuracy Assessment team should review the approach for reporting of rate-of-change statistics for Deforestation and Forest Degradation. It is therefore timely to consider strategies to increase the precision of change estimates, in this case annual gross deforestation and forest degradation.

Approaches for estimating activity data include: (i) post-classification of two forest attribute maps, (ii) construction of a forest attribute change map, and (iii) use of a forest attribute change sample. For Guyana, the established MRV protocol is for the entire country to be remapped on an annual basis, and so a forest change map will be generated and a reference sample will be needed to assess its accuracy. If however, the focus of assessment places emphasis on inference, that is optimising the precision of the change estimates, it makes sense to generate an *attribute change sample* as the reference data for the change map and for the gross deforestation area estimate. Estimation methods to assess population parameters at successive re-measurement occasions are well established and can be defined as the difference between the estimates of the population parameter at two successive epochs.

$$\Delta\hat{Y}_{2,1} = \hat{Y}_2 - \hat{Y}_1$$

When the same sample set is re-measured, the estimator of the variance of the change of the mean becomes

$$var\ (\Delta\hat{Y}_{2,1}) = var\left(\Delta\hat{Y}_2\right) + var\left(\Delta\hat{Y}_1\right) - 2 \times \hat{\rho}\ (Y_2, Y_1) \times \sqrt{var\left(\hat{Y}_2\right) var\ (\hat{Y}_1)}$$

where $\hat{\rho}\ (Y_2, Y_1)$ is an estimate of the correlation coefficient between the observations on the second and the first occasion and is restricted to values between -1 and +1. When the correlation is positive the variance of the change will be less than the sum of the variances on the first and second occasions. However, it should be noted that as time separates the sampling epochs the correlation will tend to reduce. The rate of decrease will depend on how well change is correlated with the attribute value on the first occasion (Cochran, 1963).

4.3 Advantages of a Change Sample approach for accuracy assessment

It is assumed that Guyana requires spatially explicit change information in the form of a map, as well as precise estimates of the annual area of change in forest cover and degradation. In this case, area estimates based on a statistical change sample is an alternative to deriving area metrics from maps or change maps. National scale (wall-to-wall) maps of change are not necessarily satisfactory for estimating area of gross change because of the very high classification accuracy required to ensure accurate area estimates for a rare class such as change. A sampling approach allows very detailed interpretation to be applied to a smaller total area and this should reduce the frequency of errors associated with misclassification; the sampling approach needs to be rigorous in design and analysis in order to minimise sampling variability. In summary sampling offers a practical, cost-effective alternative for the objective of estimating area of gross deforestation (Kohl et al., 2006).

A change sample for reference data will:

1. have a smaller variance than an estimate of change derived from two equivalently sized sets of independent observations provided the correlation coefficient is positive;
2. increase the precision of the change estimate by virtue of the reduction of the variance of estimated change;
3. despite its obvious advantage, encounter practical and inferential problems if resampling the same areas proves difficult, or if, as time passes, the sample or the stratification of the sampling scheme, is no longer representative of the target population (Schmid-Haas, 1983);
4. for the same sample size, require no additional resource but allow both map accuracy and area estimation to be performed;
5. be an alternative to wall-to-wall mapping and may be preferred because of lower costs, normally smaller classification error, and rapid reporting of results;
6. have value when assessing any additional forest change map product such as the University of Maryland Global Change map 2000-2012 or any annual updates published by Maryland.

For the Year 4 accuracy assessment of the Guyana MRV, the change reference data will use the identical *two-stage random stratified* sampling design used in Year 3. The stratification is based on independent variables related to risk of deforestation and forest degradation, these are not specific to any particular driver and can be applied even if the primary cause of deforestation were to shift from mining to logging, say, as has been the case in the past. While the sampling design stays the same, the inference approach will change from a model-assisted estimator to a stratified random sampling estimator.

The GFC mapping is a complete enumeration of the country; there is no sampling involved and so no sampling variability. In selecting the appropriate estimator for the sample, it is assumed that the sample design is unbiased and so the only contribution to bias is measurement error. For the change reference data, there is sampling variability which will contribute to the mean square error, however, measurement variance is assumed to be the same for both approaches.

4.4 Maps to be validated

The accuracy assessment task is to assess the accuracy of a countrywide thematic land use map digitized in the main from high spatial resolution RapidEye imagery, supplemented in a few areas by Landsat TM and ETM+ imagery. The map depicts **Non-Forest** areas for all periods from 1990 up to Year 4 (2013) and includes a field indicating the Land Use category for each year of MRV mapping. The GIS also indicates for **degraded forest** classes broken down into a **year class** and **driver** to indicate when the degradation occurred. For Year 4 only, the non-forest classes are also subdivided into IPCC non-forest land cover types. The maps were interpreted with a minimum mapping unit (MMU) of 1 ha and digitized manually using ArcGIS software at 1:15,000 scale for RapidEye scenes (the majority) and 1:24,000 scale for Landsat TM and ETM+ scenes.

The thematic accuracy of the maps was assessed using the following well established procedures:

1. Select the thematic criteria to be assessed and identify the data to be used for validation;
2. Determine the number of sample areas to be assessed;
3. Select the sample areas using an appropriate random or stratified sample;
4. Prepare a sampling grid and decision tree for thematic assessment;
5. Conduct sampling.

The desired goal of this validation is to derive a statistically robust and quantitative assessment of the uncertainties associated with the forest area and area change estimates.

Several factors potentially impact on the quality of forest mapping (GOFC GOLD, 2013), namely

- The spatial, spectral and temporal resolution of the imagery
- The radiometric and geometric pre-processing of the imagery
- The procedures used to interpret deforestation, degradation and respective drivers
- Cartographic and thematic standards (i.e. minimum mapping unit and land use definitions)
- The availability of reference data of suitable quality for evaluation of the mapping

It is clear that accepted approaches were used to minimize these sources of error following IPCC and GOFC-GOLD good practice guidelines as appropriate.

Mapping of 1990 and through the reference period (1990-2009) suffered from cloud cover, temporal specificity of image acquisition and uneven spatial distribution of high resolution reference imagery over Guyana. This situation improved in Years 2 and 3 with the country-wide acquisition of RapidEye data in 2012 and early 2013. Sample selection for Year 4 has improved because RapidEye imagery covers all of Guyana and there are very few locations where persistent cloud cover prevented useful data being acquired within the census period. Areas of persistent cloud cover were mapped using latest available Landsat during Y4 (SOP of IAP/GFC Y4 mapping).

The verification process used follows recognised design considerations in which three distinctive and integral phases are identified: response design, sampling design, and analysis and estimation (Stehman and Czaplewski, 1998).

4.5 Response Design

The table below summarises the data available to validate the Year 4 *Forest/non-Forest* and *forest degradation* map polygons and attribute labels. It also specifies the areas covered by the GeoVantage aerial photography and the High Resolution RapidEye imagery used to validate the Year 4 mapping.

Table 4.1: Data sources used for Validation

Application	Dataset used	Provider	Sensor	Spectral Range	Date of Acquisition	Pixel size (m)	Area (ha)	% of Guyana
Forest assessment	RGB and CIR aerial photography	GeoVantage	4 channel multi-spectral sensor	Visible and NIR	July-Aug 14	0.25-0.60	288,940	1.37
	RapidEye	BlackBridge	5 channel multi-spectral sensor	Visible and NIR	Aug-Dec 13	5	21,127,762	100

A critical component of any accuracy assessment is the need for appropriate reference data (Herold et al, 2006; Powell et al 2004). It is often the case that reference data itself contains errors and is not a gold standard and at least one study reports large differences of the order of 5-10% between field-based and remotely sensed reference data (Foody, 2010; Powell et al. 2004). Therefore, a key aspect of the response design is to use reference data that allow forest / non- forest land cover to be classified with certainty. Year 4 deforestation and degradation was mapped by the IAP/GFC team from RapidEye imagery supplemented in a few areas by Landsat TM and ETM+, while the accuracy assessment primarily used GeoVantage RGB and CIR (Colour InfraRed) aerial photographs supplemented by the detailed reinterpretation of RapidEye satellite imagery in parts of Guyana that were beyond the safe operational range of Cessna light aircraft.

The 2010 (Year 1) Durham University Accuracy Assessment report concluded that RapidEye and IKONOS data were of sufficient spatial resolution to identify deforestation and the main drivers of deforestation. In particular, areas of agriculture could be distinguished from shifting cultivation and that infrastructural features such as mine dredges & camps and roads associated with mining and logging could be mapped with confidence. In Year (2) the Accuracy Assessment report concluded that areas of degradation and its likely driver (cause) were difficult to identify with confidence from RapidEye and Landsat data. Very high spatial resolution satellite data are difficult to task for wide area coverage and so an alternative source of high resolution imagery was sought to support the accuracy assessment exercise for Year 3 in order to have sufficient spatial resolution to identify forest degradation.

The mapping and digitising was undertaken by a small team of 5 GFC staff using a rules-based manual interpretation method. For consistency, the Accuracy assessment was also carried out in Durham by a small team (four persons) using the same rules-based approach. Any misinterpretation or labelling error is most likely to arise from human-error or interpretation using poor quality imagery or areas partially obscured by cloud or cloud shadow.

For this reason the response design allows areas of obvious uncertainty to be coded as *Omitted*. It is helpful that the classification is binary in nature and the accuracy assessment team are not faced with the more complicated task of assessing forest or land cover type where spatial, spectral and radiometric resolution can be limiting factors (Khorram, 1999).

The Interim Measures for Year 4 includes an assessment of the mapping of areas of forest degradation. Degradation has been mapped alongside Year 4 deforestation using a rule-based approach for infrastructure and for shifting cultivation. Noting exclusions as detailed in Table 4.2.

Table 4.2: Year 4 Deforestation/Degradation Assessment Exclusions

Reference	Criteria
1	Land use change that occurred prior to January 2013 or after December 2013
2	Roads less than a 10 m width.
3	Naturally occurring areas – i.e. water bodies
4	Cloud and cloud shadow

The following sections provide a summary of the datasets available and the way they were used for the accuracy assessment.

4.5.1 GEOVANTAGE PHOTOGRAPHY

The Accuracy Assessment (AA) dataset was captured using GeoVantage's aerial imaging camera system. The system mounts externally on to most light aircraft – for the imaging in Guyana, both a Cessna 172 (Figure 4.1) and 206 were evaluated. The camera uses a multi spectral sensor, capturing red, green, blue, and near infrared spectral bands. The spatial resolution of the imagery depends on the altitude that the data is captured. For this project the operating altitude ranged from 2000 to 5000 ft. This corresponded to imagery that ranged from 25 to 60 cm. GeoVantage's system is designed to enable the pilot to operate the system and fly the aircraft simultaneously. However, for this project the system was customised - it was therefore decided that the pilot would be accompanied by an operator. The operator's primary role is to operate the camera system. The operator also assisted the pilot in navigation due to the complexity, distribution and number of sample rectangles. Navigation includes selecting the best path between rectangles, selecting the correct rectangle to sample and within each rectangle selecting the appropriate lines for the pilot to fly.

To preserve an optimal ratio of imagery coverage and flight time, GeoVantage imagery was acquired only from rectangles that were within a distance of 150 km from the airstrips where there was enough support (fuel, service, administration) for the operation (see Figure 4.1).

4.5.2 RAPIDEYE

RapidEye is a constellation of five high-resolution visible and near infrared satellites. These acquire five-band multispectral imagery at 6.5 m (resampled to 5 m) nominal ground pixel size. These data were provided to GFC as a Level 3A orthorectified image product using a Landsat orthorectified mosaic for horizontal control and SRTM v4.1 for height control (total accuracy 30m CE90 at worst; February 2011 Product Guide; www.rapideye.de). The imagery was resampled to 5m spatial resolution by cubic convolution. The RapidEye data contain clouds for which an unusable data mask (udm) file was produced and delivered by RapidEye. This mask highlights the areas of unusable data within an image but it fails to detect small clouds, haze and cloud shadows. However the data are of good quality and remain useful for validation purposes. As some parts of Guyana were outside the 150km limit from the airstrips, the RapidEye imagery was used for the accuracy assessment of these parts.

4.5.3 LANDSAT-based Non-Forest map

Landsat TM and Landsat ETM+ data from 1990 was used to generate an assessment of 1990 Forest/ Non-forest land cover. This map layer has been refined over the past three years using RapidEye data and now includes rivers and major waterways. The Landsat data were referenced to the Landsat GeoCover dataset which is a collection of high resolution satellite imagery provided in a standardized, orthorectified format (http://glcf.umd.edu/research/portal/geocover/). Landsat data were not be used for map accuracy assessment.

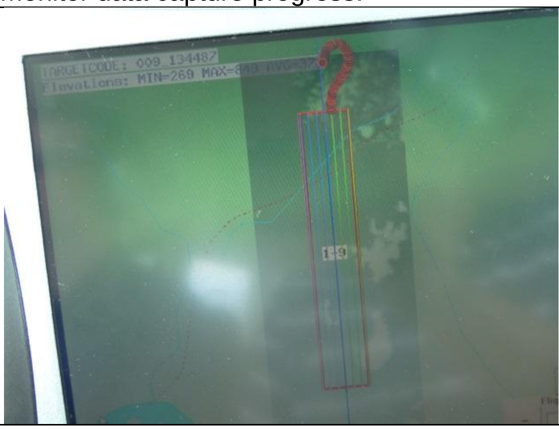
GeoVantage Camera System with spectral bands (Blue, Green, Red & Near Infrared)	Camera system (connected with data and GPS cables) mounted with on Cessna 172 right wing
	
Flight plans (red rectangles) prepared by GeoVantage System based on Year 3 sample grids	Tracking (red dots) selected flight plan (red rectangles) using gps system connected with camera system
	
Tracking (red dots) by GeoVantage camera system within a sample grid (red rectangle). The parallel lines within the rectangular sample grid shows flight lines: green lines (completed tracks) and blue lines (remaining tracks) to monitor data capture progress.	
	

Figure 4.1: The GeoVantage instrument showing mounting on a Cessna 172 and the computer with data capture and flight planning software.

4.6 Data Provided by Guyana Forestry Commission

The Forest Resource Information Unit (FRIU) holds a range of operational spatial data that were used to assist in the stratification into areas of high and low risk of deforestation. A summary of the spatial layers updated for Year 3 mapping is provided in Table 4.3.

Table 4.3: GFC GIS Datasets

Data Group	**Layer Name**	**Created/ Update freq**	**Description**
Admin	guyana_boundary	Received August 2013	Updated country boundary for Guyana.
Hydro	Waterbodies (GFC)	Received August 2013	Waterbodies layer, digitised from geo-corrected Landsat imagery. Layer integrated into the 1990 forest / non-forest map
Managed Forest Areas	State_Forest_2006	2006	Layer showing the extent of the state forest boundary.
	TSA_WCL_Merged	6 monthly	A merged layer showing all active Timber Sales Agreements (TSA) and Wood Cutting Leases (WCL) (large forest concessions)
	PropSFEP_Merged	6 monthly	A merged layer of all proposed State Forest Exploratory Permits
	activeSFEP_Merged	6 monthly	A merged layer of all active State Forest Exploratory Permits.
	activeSFPs_Merged	6 months	All active State Forest Permits (small forest concessions). Merged by Division – Demerara, Essequibo, Berbice, North West
	logging_Camps	NA	Point location of logging camp sites, based on the Annual Operating plan.
	harvest_Areas	NA	Polygons showing extent of harvest activities (pre 2008, 2008 & 2009)
Roads	gps roads_dd	3-6 months	All GPS roads and trails as at August 2013.
Agricultural Leases	GFCAGleases	Upon titling	Agricultural leases that fall within the State Forest Estate (Administrative Regions: 1, 2, 3, 6, 7, 8 and 10)
Mining Areas	LRG_Scale-Aug2010_region, MED_Scale-Aug2010_region, Mining_dredges	Upon granting of mining permit/licence/ claim	Large and Medium scale mining areas including dredge locations. Received March 2012.

4.7 Sampling Design

The sampling design refers to the methods used to select the locations at which the reference data are obtained. To assess the Year 4 deforestation map a two stage sampling strategy with stratification of the primary units was adopted. In the first stage, a rectangles grid of 5 km by 15 km in size was created within the spatial extent of the country's national boundary[27]. This resulted in 2837 rectangles; note that only rectangles that their centroid was within the national boundary are selected (Figure 4.2).

[27] According to the Interim Measures Report October 2013, the national boundary was defined by following information received from the GL&SC and with the aid of RapidEye imagery.

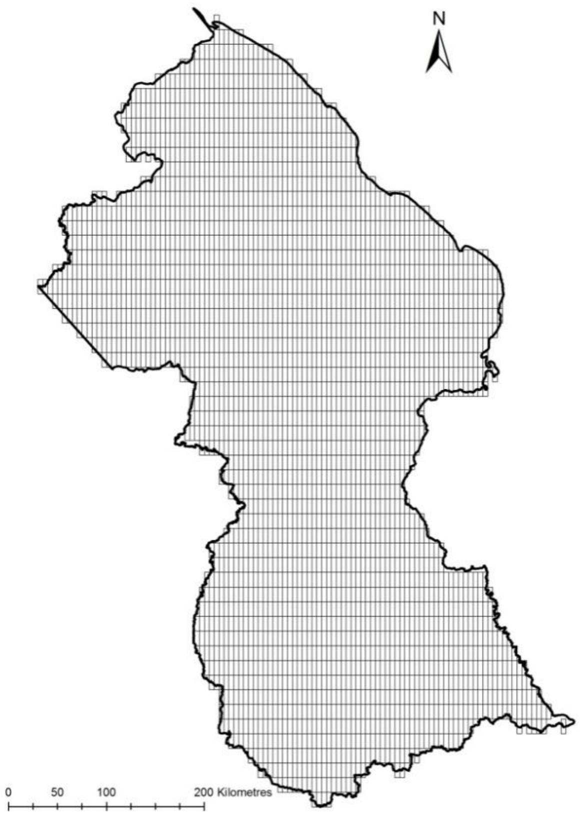


Figure 4.2: A grid of 5km by 15km in size was created, mainly for practical reasons to be compatible with the aerial imagery acquisition.

To optimize the process of acquiring aerial imagery from the by GeoVantage sensor, an elongated sampling grid was chosen and 5x15 km^2 rectangles shape was selected. The North-South direction was chosen because it follows the shape of Guyana, works well with the GeoVantage software and is less expensive than a square grid.

As the area of the country is large, and deforestation is observed to be clustered around relatively small areas of human activity, it is efficient to adopt a stratified sampling framework rather than use simple random or systematic sampling (Gallego, 2000; Foody, 2004; Stehman, 2001). For each stratum, sample means and variances can be calculated; a weighted average of the within stratum estimates is then derived, where weights are proportional to stratum size. In this case, the goal is to improve the precision of the forest (or deforestation) area using a stratum-based estimate of variance that will be more precise that using simple random sampling (Stehman and Czaplewski, 1998; Stehman, 2009). Based on geographical data provided by GFC, grid rectangles were stratified according to factors closely associated with risk of deforestation and forest degradation. In particular, data about the location of logging camps, mining dredges, settlements, and the existing road network were used (see Table 4.3 and Figure 4.3). This way, all grid rectangles that satisfied the following criteria were selected.

Contain at least one of: logging camps, mining dredges, or settlements,
OR
Intersect with at least one road.

This resulted in the classification of grid rectangles into two strata. The ones that satisfied the criteria named "High Risk" and the ones that did not satisfy the criteria named "Low Risk". This resulted in 1018 "High Risk" squares and 1819 "Low Risk" squares (see
Figure 4.3).

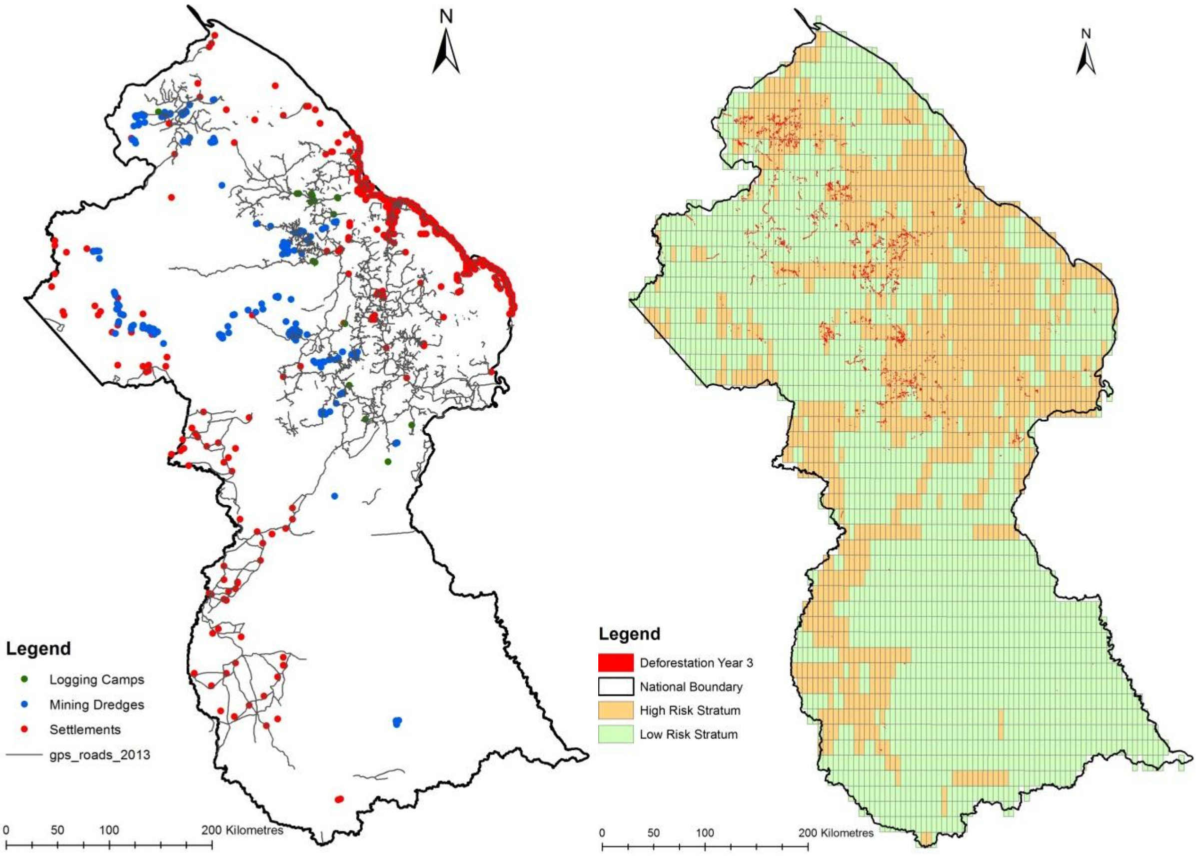


Figure 4.3 Left **-** Criteria for sampling stratification. Right – Strata.

Year 4 deforestation is shown in Figure 4.3 (right) and Figure 4.4. as a red overlay on the sampling stratification map. It demonstrates that about 67% of the deforestation for Year 3 falls within the "High Risk" stratum with the remaining 33% falling within the "Low Risk" rectangles.

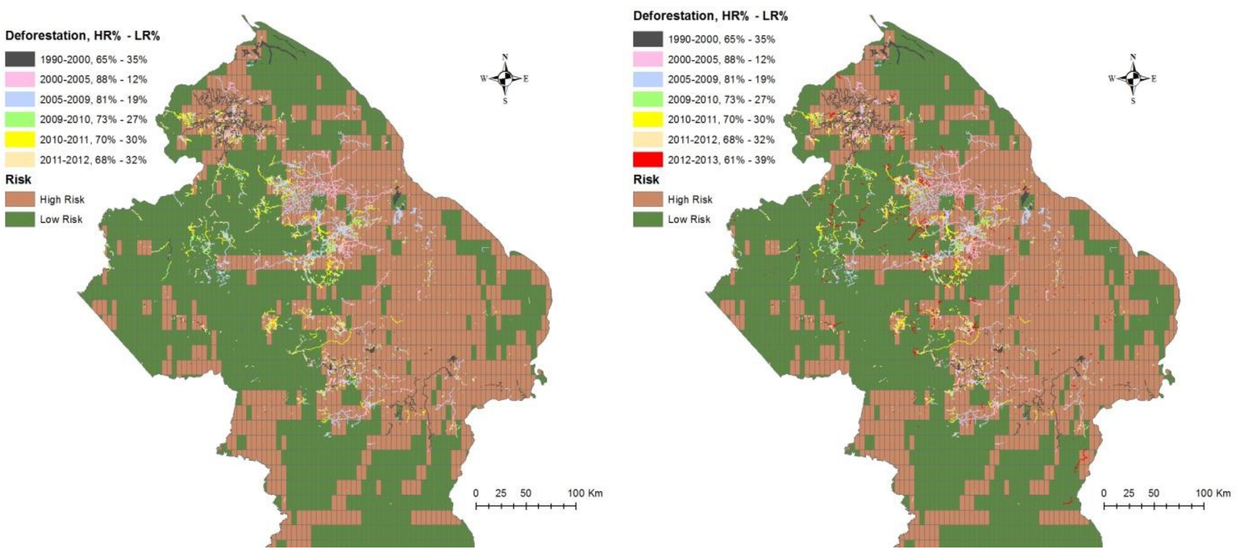


Figure 4.4 Mapped deforestation all period up to Year 3 (left); deforestation all periods up to Year 4 (right) – with Y4 deforestation in Red.

Table 4.4 Spatial data used to assist with defining risk strata

Data Group	Layer Name	Created/ Update Frequency	Description
Admin	guyana_boundary	Received August 2013	Updated country boundary for Guyana.
Managed Forest Areas	logging_camps	N/A	Point location of logging camp sites, based on the Annual Operating plan.
Roads	gps roads_dd	3-6 months	All GPS roads and trails as at August 2013.
Mining Areas	mining_dredges	Upon granting of mining permit/licence/claim	Mining Dredge sites normally found in/around rivers
Population	Settlements	N/A	An extraction of a number of larger settlements from the place names point feature class.

The map in Figure 4.3 suggests that there is lower probability of sampling deforestation in the Low Risk stratum than the High Risk stratum and so, in order not to under sample and miss deforestation events in this stratum, a weighting was applied when randomly selecting rectangles to analyse in detail. As the area ratio of High Risk to Low Risk is 35:65, we decided to randomly sample 65% of HR and 35% of LR. This resulted in 662 "High Risk" rectangles and 637 "Low Risk" rectangles (see Table 4.5). As it would have been utopic to sample all these rectangles, one ninth of them (143) were selected (see Figure 4.5).

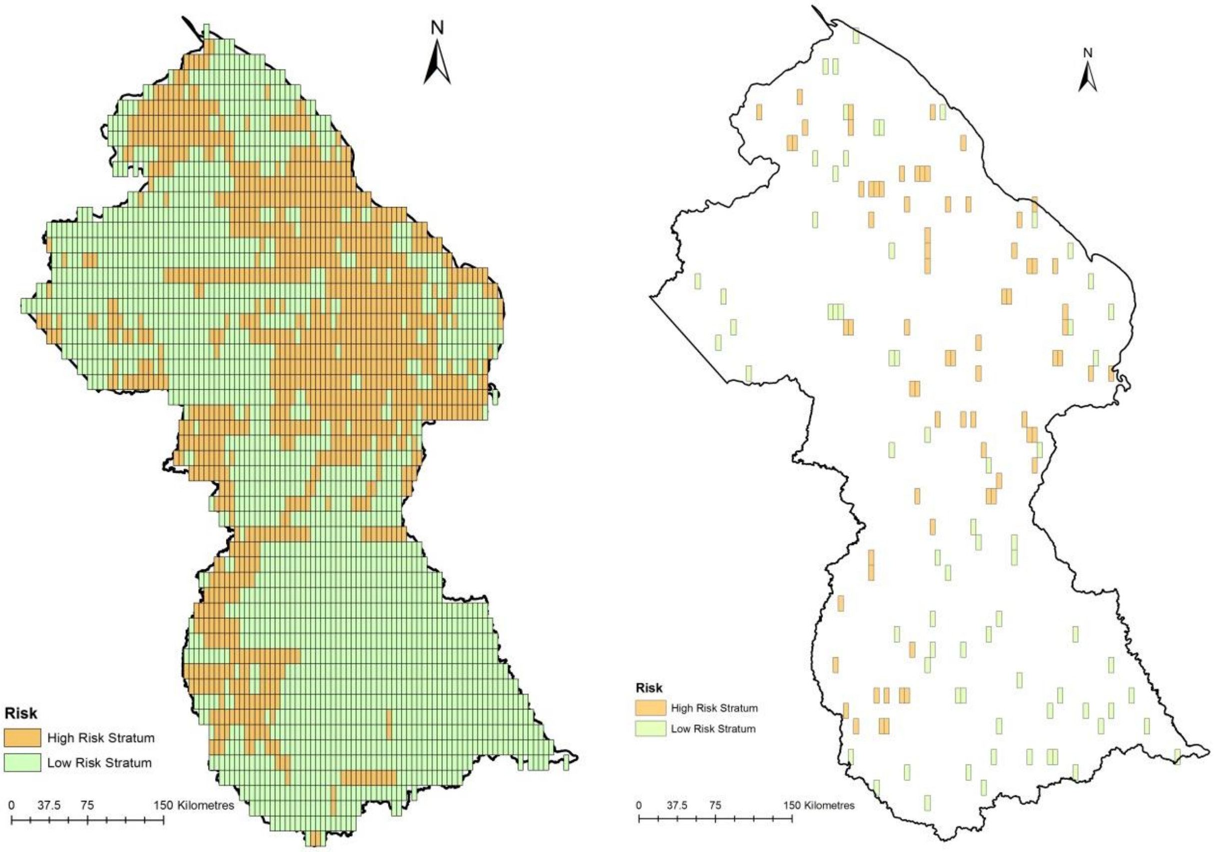


Figure 4.5 High and Low risk strata (left) and final random sampling of the High Risk (65%) Low Risk (35%) strata (right image).

Table 4.5: Area represented by each stratum

Stratum	Total number of rectangles	Area (ha)	Percent of Guyana (%)
Total Grid	2837	21,161,033	100.16
High Risk	1018	7,586,408	35.91
Low Risk	1819	13,574,625	64.25
HR 65% random	662	4,937,823	23.37
LR 35% random	637	4,751,349	22.49
1/9 of HR 65%	73	543,935	2.57
1/9 of LR 35%	70	522,332	2.47

Within each grid square, a systematic sample of points spaced at regular 200 m intervals was created, yielding more than 300 points in each sample square. These points were then buffered to create a circular sampling area of one hectare in size corresponding to the minimum mapping unit (MMU). Each of the grid squares was assigned an ID according to its centre point location, and each of the sampling circles has an ID according to its respective centre point location. In total 55,119 one hectare sampling areas became available for accuracy assessment.

For each primary sampling unit, the land cover class (e.g. Forest or Non-Forest, Degradation or Non-Degradation) is determined for the Year 4 deforestation and degradation map. The assessment follows a systematic procedure where the GIS table for the samples is populated using a GIS toolbar.

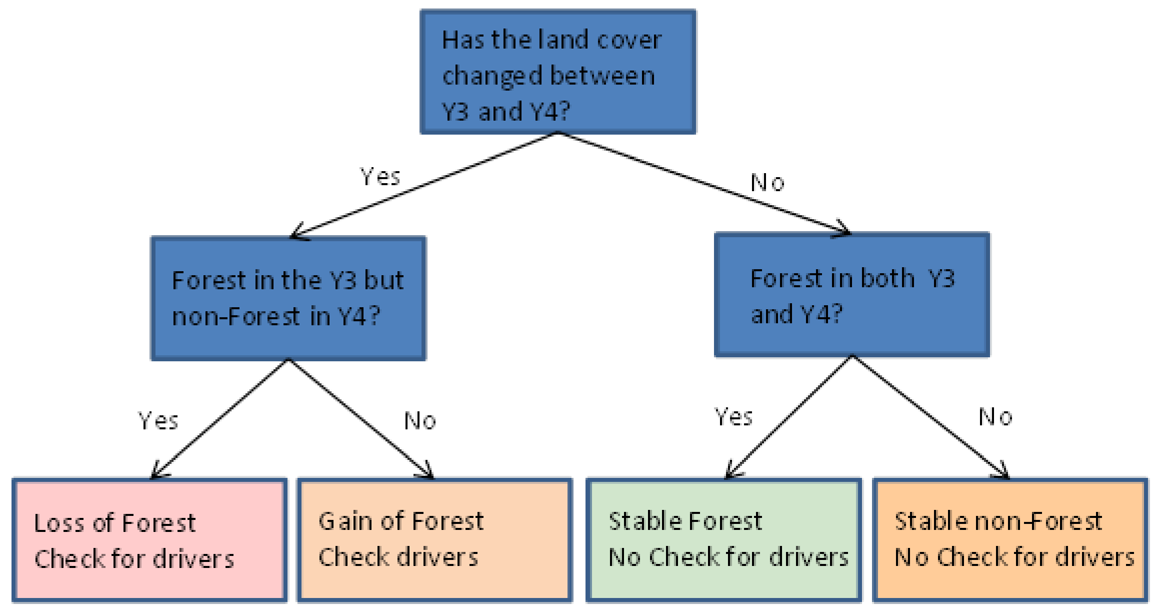
Specifically the tools used to interpret and validate the Year 4 map data included the appropriate high resolution photography and satellite imagery (see Table 4.1). Also available were GIS data indicating mining, forestry and agricultural concessions.

Year 4 Accuracy Assessment involved the collection of 143 notionally equally sized sample units using the exact same randomly selected locations as Year 3. The reference data selected for the accuracy assessment in Year 4 was a combination of GeoVantage aerial imagery, RapidEye and the Landsat-based non-forest map layer. The repeat coverage of GeoVantage aerial imagery acquired for Year 4 was designed to generate the best possible change reference data set.

It was recognised at the outset that there are practical and operational difficulties in generating an identical data set with perfect overlap between years 3 and 4. For example, there will be areas where GeoVantage data are missing or cannot be collected in areas where long-range flights with a light aircraft are not feasible or safe. In such cases the best available RapidEye data will be selected and reinterpreted. It is likely that RapidEye data will be used in parts of the Low Risk Stratum where human access is particularly limited and there is no history of logging or mining.

4.8 Decision Tree for Year 3 – Year 4 Change Analysis

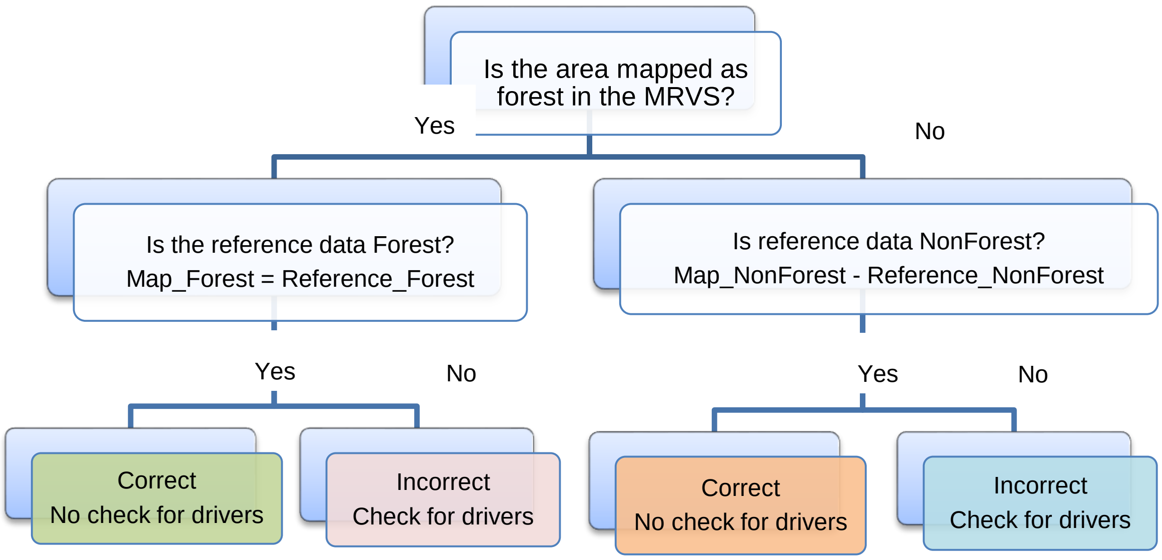
Change for each Land-Cover / Land-use Class. The analysis will report a gross deforestation change estimate based on a stratified random change estimator. This will provide confidence interval information on the deforestation estimate (i.e. the amount of change) which is an improvement on previous years where only the total forest area was estimated with a confidence interval. In previous years it was not possible to estimate with any precision the uncertainty associated with the annual deforestation rate. Figure 4.8.1 illustrates a change decision tree where the Y3 land cover is forest. There will be equivalent decisions changes from forest to degraded forest and for forest to non-forest land cover types. These statistics allow change in major land cover categories to be reported and areas estimated.



Y3 Reference Class	Y4 Reference Class		
	Y4 Forest	Y4 Non-forest	Total
Y3 Forest	Stable Forest	Loss	
Y3 Non-forest	Gain	Stable non-forest	
Total			Change reference sample

Figure 4.8.1: Decision tree for sample change analysis

The reference change sample is also used to check the GFC Land-Cover Mapping for 2013 (Year 4) constructed from manual interpretation of wall-to-wall RapidEye imagery by the GFC Forest Resource Mapping Unit. GeoVantage and RapidEye reference data from the end of 2013 and beginning of 2014 were used to check the accuracy of the mapping. Figure 4.8.2 illustrates the decision tree followed during the accuracy assessment of the GFC map for 2013 (Year 4).The error matrix (see Figure 4.8.2) shows how the statistics are used to indicate the overall quality of the mapping and to quantify possible mapping bias. These data could be used to generate a national estimate of gross deforestation and forest degradation including confidence intervals on the area estimates using error adjustment (McRoberts, 2010; McRoberts and Walters, 2012; Olofsson et al., 2013).



	Reference Images			
Map CLASS	Forest	NonForest	Total	
Forest	15259	59	15318	
NonForest	35	6072	6107	
Total	15294	6131	21425	

Figure 4.8.2 Decision tree for GFC map accuracy assessment (with example data only)

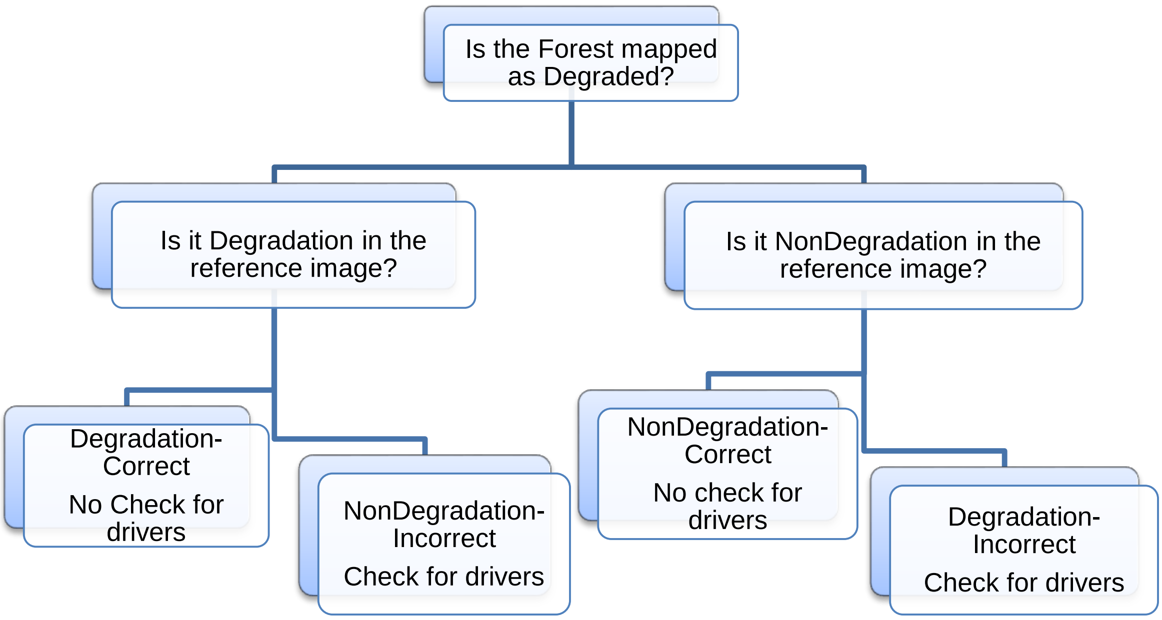


Figure 4.8.3 The intrerpretation steps for forest degradation accuracy assessment.

When assessing the 2013 (Year 4) GFC map, any areas seen to be incorrect were labelled with the appropriate deforestation driver or marked as afforested. Interpreting the correct driver relies on following the Mapping Rules that include identifying the causes based on experience in the field and with image interpretation.

The most important points to note are:

1. Only areas of forest degradation that relate to Year 4 are estimated; degradation that was identified and interpreted as pre-year 4 are not included in the accuracy estimates.
2. Areas of shifting cultivation are classified as “Pioneer” and “Rotational” even if they are smaller in size than the minimum mapping unit (1 ha).
3. Areas of infrastructure including roads and settlements are classified as non-forest as are water bodies.
4. Areas cloud and shadow or missing data are labeled as *Omitted*.
5. Areas representing Year 5 change (post Dec 2013) were also omitted from the analysis as this change postdates the Year 4 reference imagery. These areas are labeled as Year 5.

Figure 4.8.4 illustrates the data and GIS procedures used to assess change between Year 3 and Year 4. The pair of images at the top of the figure shows a sample hectare where the operator musts assess whether change has occurred between the pair of images and record the nature of this change on the interpretation toolbar shown at the bottom of the figure. The middle and bottom pair of images show the analysis of the GFC map data and the decision that are made to assess correspondence between the GFC mapping and the reference imagery. Again, the GIS toolbar is used to record the results of the interpretation For example; M(ap)_Forest – R(eference)_Forest indicates agreement whereas M(ap)_Forest – R(eference)_NonForest would highlights a mapping error.

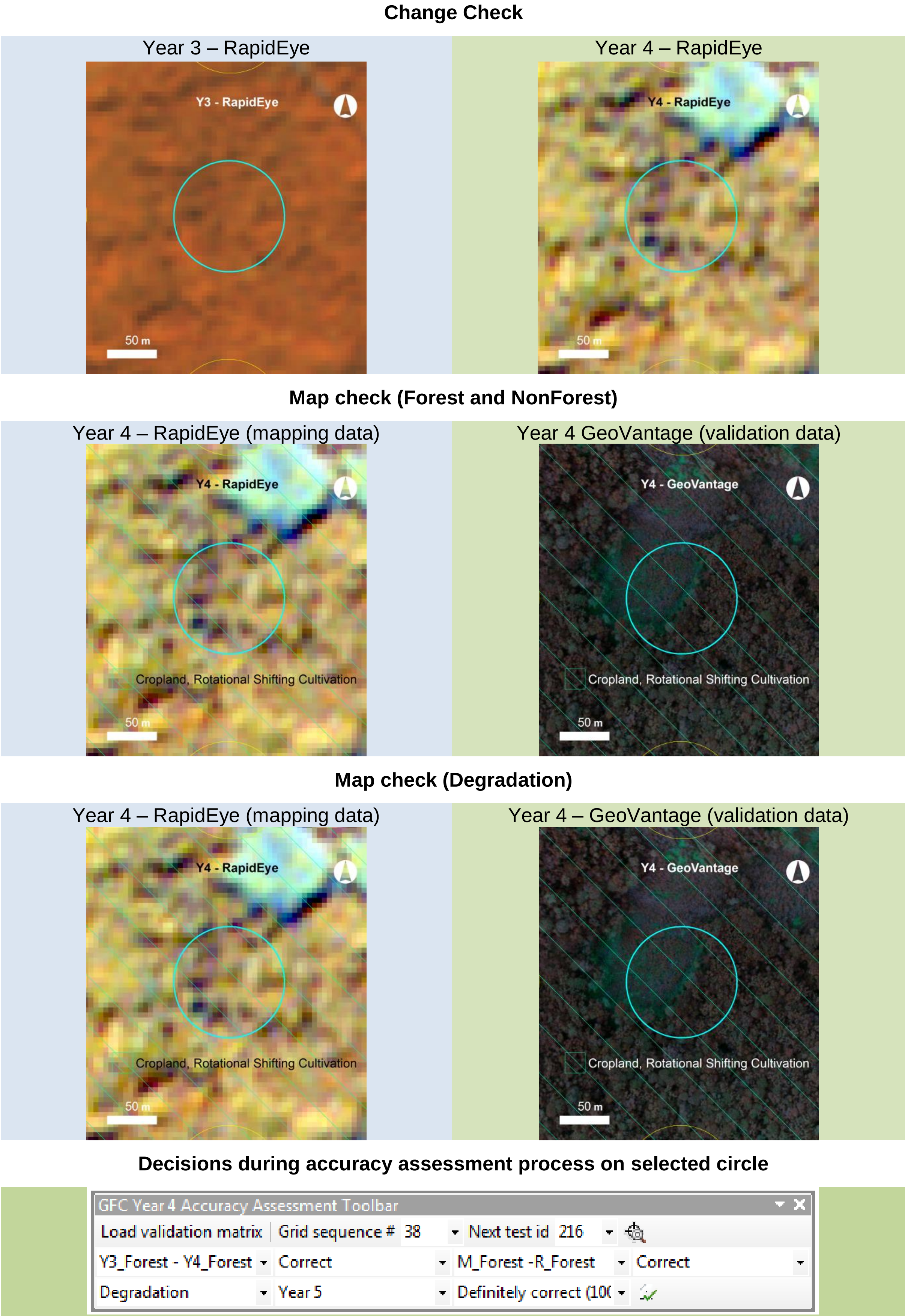


Figure 4.8.4 Example on the steps followed during decision making processes for each individual 1 ha sample using the DU Accuracy Assessment Toolbar.

The rules for validating each point account for small discrepancies between the original mapping that was digitized at 1:15,000 scale RapidEye. Minor discrepancies might include digitizing error due to map generalization and map-to-image mis-registration. These are distinct from factors that might explain misclassification or mislabeling in the mapping or indeed in the validation of the mapping. Misclassification can occur due to poor radiometric quality of imagery, spectral overlap among classes, scale / resolution of imagery and human error.

Furthermore, where a discrepancy between the mapping and the validation data is detected, an interpretation will be made of the correct assignment for the sample point. A toolbar was created so that both errors of omission and commission could be tagged; that is each label A, B, C, D in Table 4.9.1 could be selected. For errors of omission, the interpreter could assign the correct land cover class and, if the area has been deforested in the 2013 period, make an assessment of the driver causing the change. The toolbar also included a confidence label on a 0-4 scale. This allows for uncertainties in interpretation to be removed from the estimation and validation process if required.

The two-stage sampling strategy with stratification of the primary units uses a large sample size that will allow for assessment of the true extent of false positives and negatives in accordance with the GOFC-GOLD (2013) recommendations. Note that the right hand side of the interpretation toolbar contains a dropdown database entry to represent the confidence or certainty of the interpretation. Uncertainty, in this case refers to doubt in the interpreters mind about the nature of the change observed not the classification between forest and non-forest. The uncertainty will refer to confidence in interpreting the driver for change and is recorded on a four interval percentage scale

4.9 Analysis and Estimation

The analysis procedure, assisted by the toolbar provides the process to validate the points within each sample grid square. These data were recorded in a database, one for each stratum, and used to generate a cross tabulation between reference data and the maps. The structure of the tabulation, sometimes called a confusion- or error-matrix is shown in Table 4.9.1. This matrix is widely used to quantifying the quality of the classification and characterizing the error (Foody, 2002; Story and Congalton, 1986; Van Oort, 2007). The labels assigned to sample points in the reference data are cross-tabulated against the mapped classes for each sampling frame.

Table 4.9.1 Structure of accuracy assessment matrix

<table>
<tr><th rowspan="5">Map</th><th rowspan="2">Class</th><th colspan="4">Reference Data</th></tr>
<tr><th>No change</th><th>Change</th><th>% of Total Area</th><th>User Accuracy</th></tr>
<tr><th>No change</th><td>A</td><td>B</td><td>X</td><td></td></tr>
<tr><th>Change</th><td>C</td><td>D</td><td>Y</td><td></td></tr>
<tr><th>Total</th><td>x’</td><td>y’</td><td>100</td><td></td></tr>
<tr><th colspan="2">Producer Accuracy</th><td></td><td></td><td></td><td></td></tr>
</table>

Cells **A** and **D** represent map areas that have been validated as correct. Counts in cell **B** are false negatives and those in cell **C** false positives. Interpretation of these data assumes that the reference data are error free, that the sampling is unbiased and of sufficient size. Nevertheless, the confusion matrix provides a simple and convenient method to illustrate the nature of any disagreement between the map and the reference data.

The accuracy of a class is expressed in two ways, as a user's and producer's accuracies (Story and Congalton 1986; Van Oort 2005). The user's accuracy indicates the probability that land classified into a given land cover class by the map is actually that class on the ground. It is also referred to as the error of commission as sample points that are incorrectly classified are commissioned into another class (i.e. forest misclassified as non-forest or the reverse).

The producer's accuracy provides a measure of accuracy of the classification scheme. The producer accuracy is also known as the error of omission because areas that have been incorrectly classified are “omitted” from the correct class. This accuracy indicates how well the sample points falling on a given land cover type are classified, i.e., it is the probability of how well the reference data fitted the map.

For a simple random sample the user's accuracy is calculated by dividing the number of correctly classified sample points in each class by the total number of sample points classified in each class (row total). The producer's accuracy value is calculated by dividing of the total number of correctly classified plots in each class by the total reference data plots in each class (column total).

Unlike a simple random sample, raw counts in a stratified sample cannot be directly used to make unbiased statistical estimates. For stratified random sampling, each cell must converted into an estimated joint probability (the proportion of total class counts per percentage class area) before the assessment statistics are derived.

4.10 Precision of Area Estimates for Year 4 Deforestation and Forest Degradation maps

The two-stage sampling with stratification of the primary units design optimises the probability of sampling deforestation and forest degradation in Year 4 when the area concerned represents only a tiny fraction of the national land area. Furthermore, there are several factors such as cloud cover, accessibility, safety and cost that limit the availability and quality of reference data.

A key consideration is minimising the risk of intoducing any possible bias into the estimates. Bias may arise from sampling, from cloud cover patterns and perhaps from the distribution and coverage of the reference data. Sampling bias can be assessed from the joint probabliity matrices. The distribution of cloud cover has been assessed qualitatively from cloud cover masks but this can be quantified more formally from the sample area data and from the cloud mask data derived from analysis of the RapidEye satellite imagery.

The analysis reported here analysed 55,119 hectares. Assessment also included aerial over-flights conducted in good conditions in July-August 2014. The GeoVantage imagery and geo-positioned oblique aerial imagery provides valuable evidence that helped confirm the interpretations of the validation team, particularly with regard to the drivers for deforestation.

The validation team consists of three well qualified and experienced image interpreters, three of whom visited Guyana many times and have participated in field visits and over-flights. They acted as mentors for the other interpreter. Every effort was made to inform the team validating the mapping about the geography of Guyana, forest types, definitions of land cover, definitions of deforestation and forest degradation, the processes driving deforestation and forest degradation, and the rules that were followed by the original mapping team. The validation team were very familiar with satellite imagery, particularly GeoVantage, and RapidEye.

An experiment was conducted to ensure that the data used to validate the mapping was as precise as possible. This involved blind replication of two sample grids. Each interpreter analysed the same grids, which were in the HR stratum. The grids were purposely selected to include areas of high activity (mining, forest roads, agriculture, etc) and used GeoVantage and RapidEye data. The results are shown in Table 4.10.1 and demonstrate that with initial training the team were consistent over 93%.

Table 4.10.1: Agreement Among Interpretation team members on Mapping Accuracy Assessment

Source	Interpreter 1	Interpreter 2	Interpreter 3
Interpreter 2	94.40%		
Interpreter 3	94.04%	90.37%	
Interpreter 4	93.51%	94.86%	90.37%

This exercise was followed by discussion among assessment the team about how to follow the GFC/Indufor IAP Standard Operating Procedure for Forest Change Assessment (Year 4 Update). The results demonstrate that it is difficult to achieve a level of image interpretation that is better than 95% correct; Foody (2010) discusses the impact of imperfect ground reference data and demonstrates the impacts it can have on reported Producer's accuracy. This study of consistency does not allow us to conclusively attribute an error value to the reference data. However, it demonstrates that we have made best efforts to reduce interpreter bias through training and by acquiring a good set of data to evaluate interpretations.

5. RESULTS

Results are organised into four main sections. First, an assessment is made of the quality of the Year 3 deforestation and degradation mapping undertaken by IAP and GFC. This is based largely on interpretation of RapidEye imagery.

Secondly, we assess the consistency of the interpretations made by the Durham validation team to ensure that the quality of the reference data is of a good standard.

Thirdly, we present estimates of forest area and deforestation rate for Year 4 (2013) based on the two-stage sampling design with stratification of the primary units and a change sample analysis.

Fourthly, we assess the Year 4 forest degradation data and the mechanisms responsible for that degradation.

Finally, we repeat the model assisted difference estimation method used in previous years for comparative purposes. This analysis differs from the change sample analysis in that it is based on comparing the reference data with the GFC map rather than looking at an independent assessment of image pairs for each sample hectare.

5.1 Quality of Mapping

The prevalence statistic is a good measure of overall correspondence between the map and reference data. We found that for Year 4, prevalence was greater than 0.99 or 99% agreement, see Table 5.1. This is a very high figure, better than one would expect from automated classification of multispectral remotely sensed data, and is almost certainly explained by the manual process of interpretation and on-screen digitizing. We also note that only a very small proportion of the reference data 332/55,119 (0.602%) were omitted because the ground was obscured by cloud or cloud shadow. This compared favourably with 14% in the Year 2 and 1.27% analysis. Missing reference data were excluded from the analysis.

Need to put some text on Forest Degradation tables 5.2.1a and 5.2.1b.

Table 5.1: Combined error matrix (unweighted) for the Forest-NonForest Year 4 map.

Forest-non Forest	**Class**	**Reference Images**			
		Forest	**Non-forest**	**Total**	**User Accuracy**
Year 4 Map	Forest	46981	28	47009	99.94%
	Non-forest	10	7235	7245	99.86%
	Total	46991	7263	54254	
Producer Accuracy		99.87%	99.98%	99.61%	99.93%

169 samples omitted due to cloud and cloud shadow; 12 Year 5 deforestation; 684 non-year 4 deforestation

Table 5.2.1a**:** Contingency matrix for Forest Degradation mapped from all periods up to Year 3 (previously reported): high risk & low risk strata combined

Combined	**Class**	**Reference Images**			
		Degradation	**Non-degradation**		**User Accuracy**
	Degradation	657	141	798	82.33%
	Non-degradation	184	41360	41544	99.56%
		841	41501	42342	
Producer Accuracy		78.12%	99.66%		99.23%

11054 omitted; 202 that were Year 4 and 1,521 where the driver was not accounted for.

Table 5.2.1b**:** Contingency matrix for Forest Degradation mapped for Year 4 only: HR & LR strata combined

Year 4 Degradation	Reference Images				
Both HR and LR	**Class**	**Degradation**	**NonDegradation**	**Total**	**User Accuracy**
	Degradation	511	0	511	100.00%
Year 4 Map	**NonDegradation**	9	46254	46263	99.98%
	Total	520	46254	46774	
Producer Accuracy		98.27%	100.00%	99.98%	

5.2 Change Sample Estimates

5.2.1 Methodology

We treat the design as a stratified cluster design. The clusters are rectangles. The strata are HR and LR. A simple random sample of rectangles from each stratum is taken. Then, within each rectangle, hectares are systematically sampled. This sample design can be analysed routinely using several statistical packages, which we describe below.

The reference data consisted of 55,119 primary sample units stratified into HR and LR areas as described in the sampling design (Section 4.7) and randomly sampled within each stratum. This design allows a probability-based inference approach to be applied. This approach assumes (1) that samples are selected from each stratum randomly; (2) that the probability of sample selection from each stratum can be estimated; (3) the sampling fraction in each stratum is proportional to the total population and that the relative sample size reflects, in this case, a ratio of 65:35 between HR and LR stratum respectively.

There are two obvious objections to the assumptions underlying our analysis.

1. Hectares within clusters are sampled systematically within the rectangles, rather than at random. However, the total area sampled within the rectangle is typically large relative to the rectangle. As such, we think this issue is ignorable.

2. Hectares sampled within rectangles can be physically close. Therefore, there is the possibility of spatial correlation between neighbouring hectares. This does not affect the estimation of forest cover, or the estimation of change from forest to non-forest. However, it does affect the standard errors which are computed for those estimates. The Standard Errors (SEs) reported will be a bit smaller than they ought to be but it is likely that the differences will be tiny and this can be established with further modelling.

Key inputs to the analysis are the total numbers of LR and HR hectares. These are given as 7,937,898 (21,580 sampled hectares) for HR, and 13,189,864 (33,539 sampled hectares) for LR.

Apart from no-change samples (Forest to Forest or NonForest to NonForest or Forest Degradation to Forest Degradation) between Year 3 and Year 4, the key changes include: Forest to NonForest (Table 5.2.1.1), Forest to Forest degradation (Table 5.2.1.2), Forest degradation to NonForest (Table 5.2.1.3), NonForest to Forest degradation (Table 5.2.1.4).

Table 5.2.1.1 Example of ‘Forest’ to ‘NonForest’ change for sample unit highlighted in blue

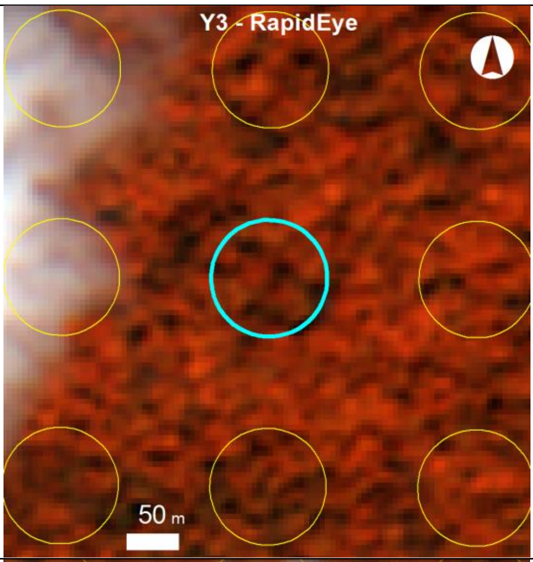
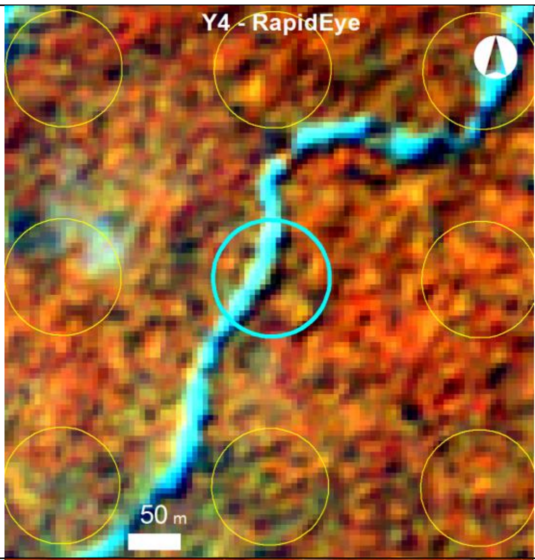
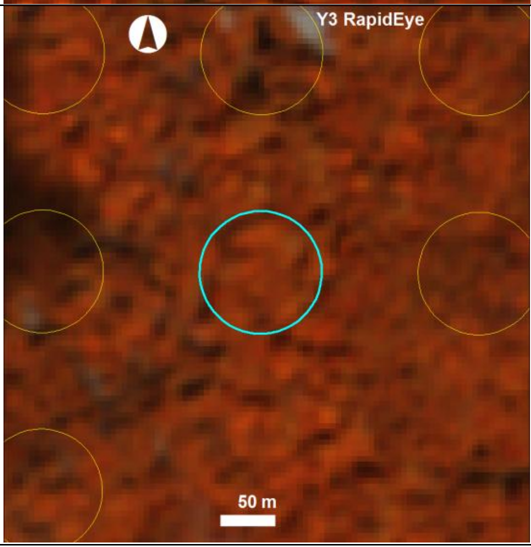
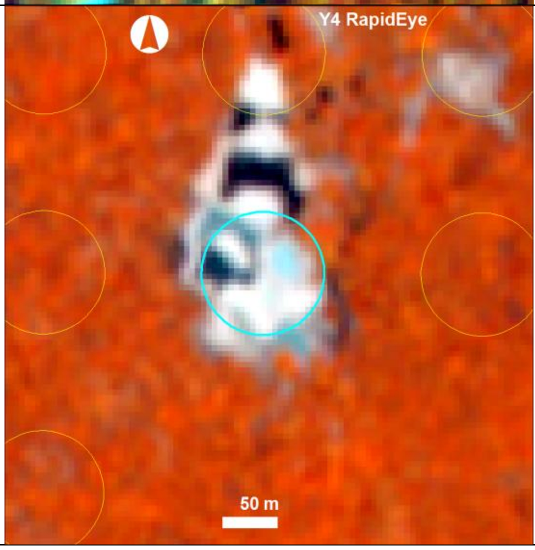
Driver	Year 3	Year 4
Forest road		
Mining		

Table 5.2.1.2 Example of 'Forest' to 'Forest degradation' change for sample unit highlighted in blue

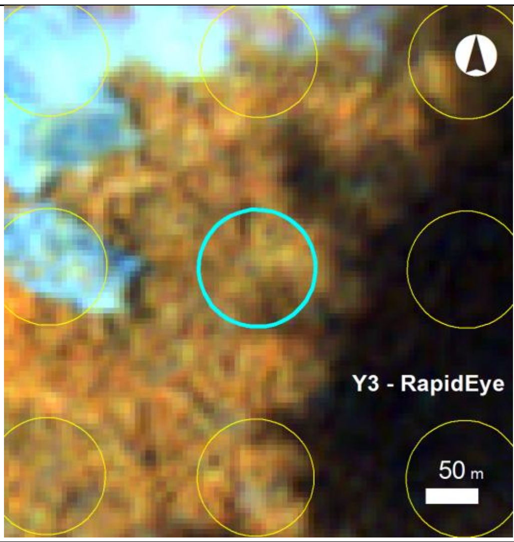
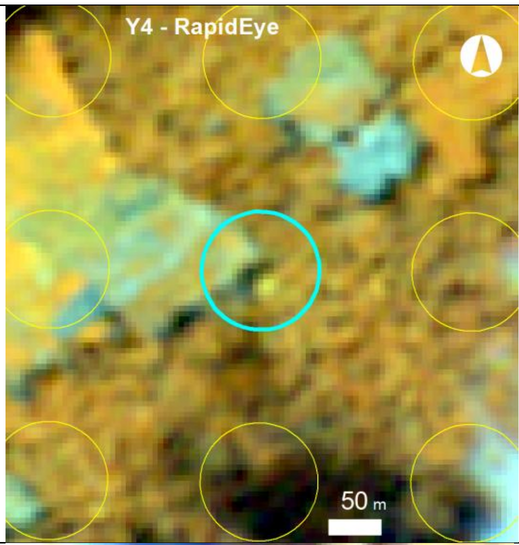
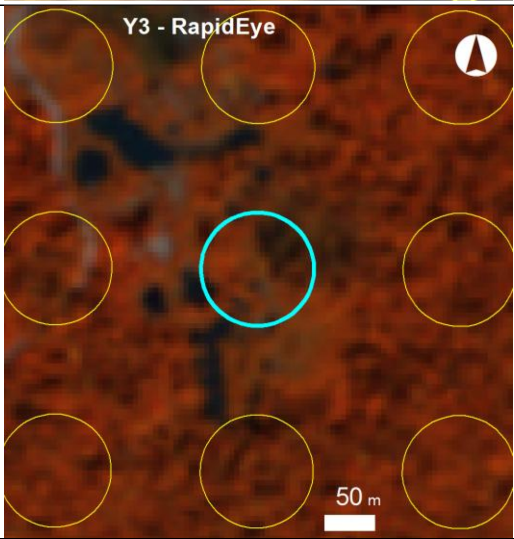
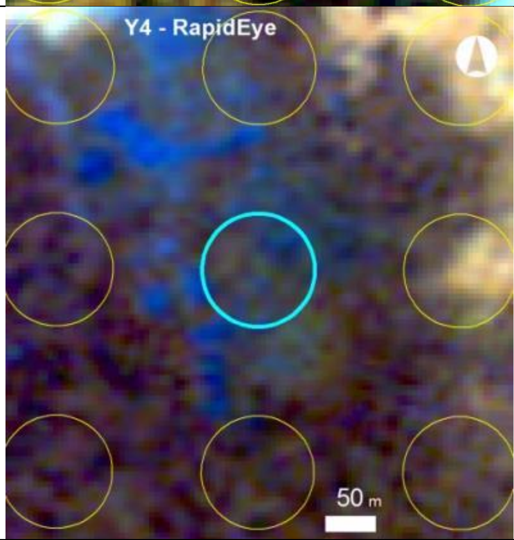
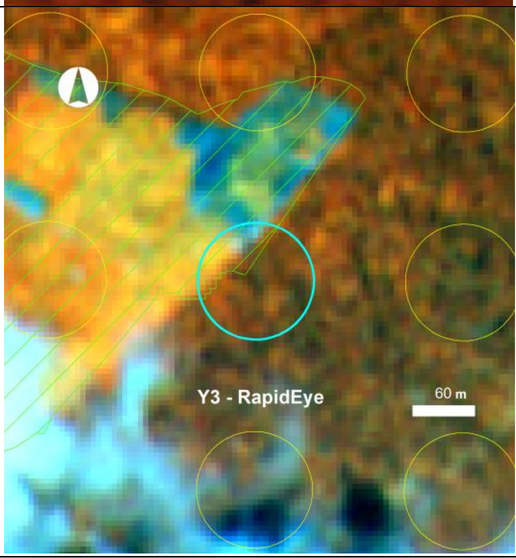
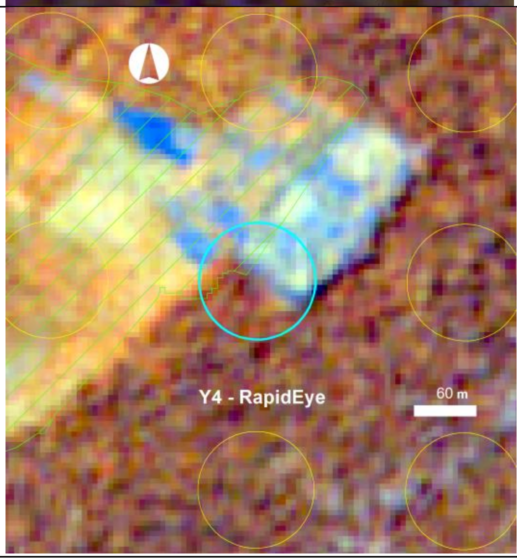
Driver	Year 3	Year 4
Shifting cultivation		
Mining		
Agriculture		

Table 5.2.1.2 Example of ‘Forest’ to ‘Forest degradation’ change for sample unit highlighted in blue

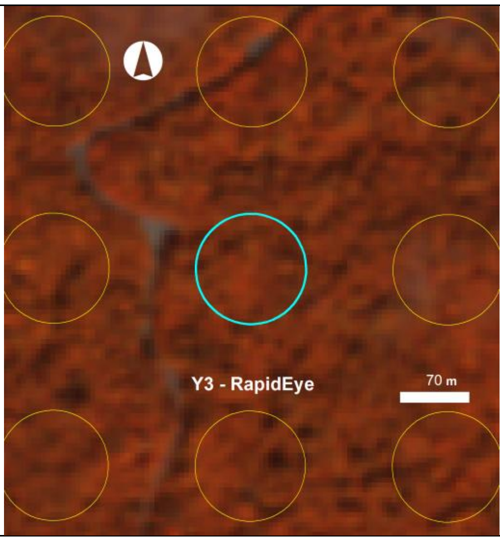
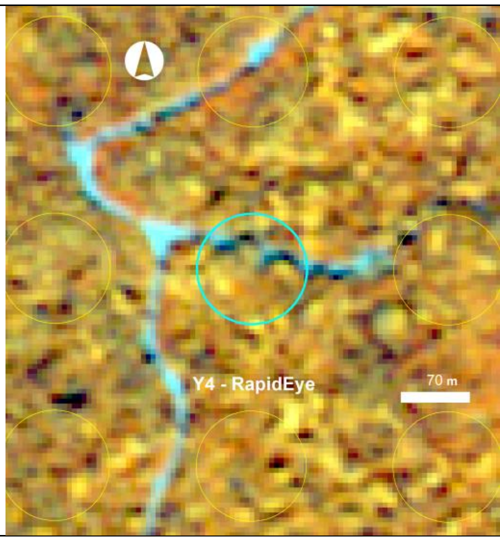
Driver	Year 3	Year 4
Forest road		

Table 5.2.1.3 Example of ‘Forest degradation’ to ‘NonForest’ change for sample unit highlighted in blue

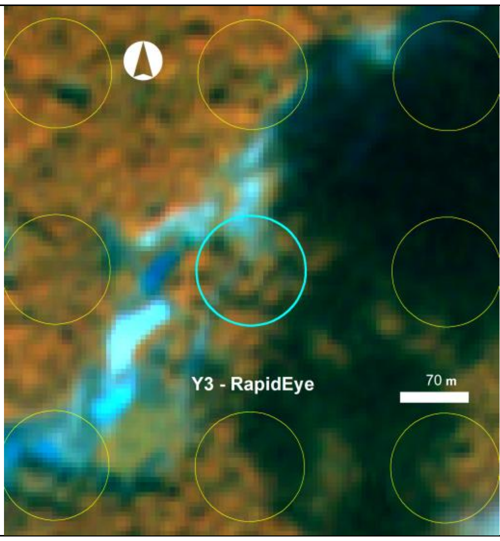
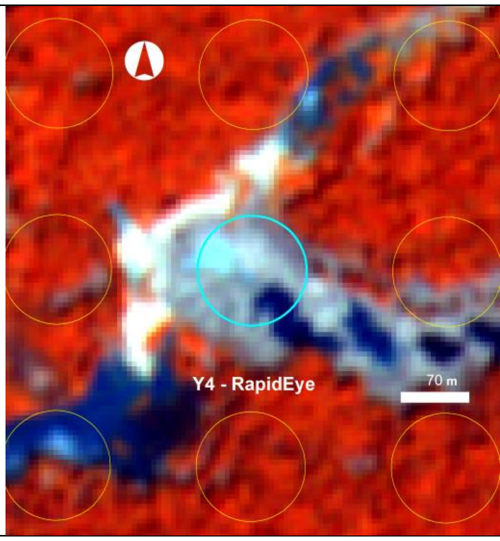
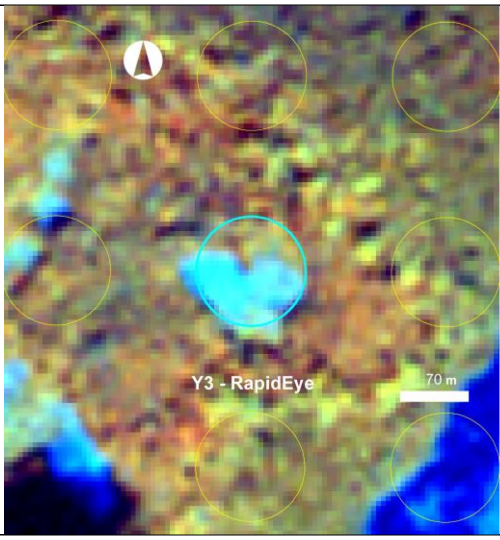
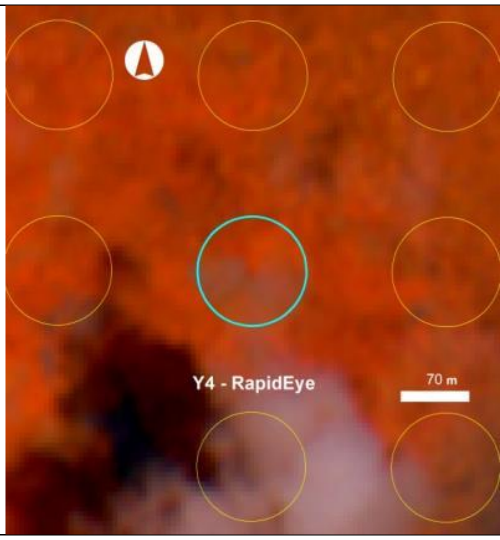
Driver	Year 3	Year 4
Mining		

Table 5.2.1.4 Example of ‘NonForest’ to ‘Forest degradation’ change highlighted in blue

Driver	Year 3	Year 4
Mining		

5.2.2 Software and estimators

To carry out the analysis, we have used the survey package available with the statistical package R Core Team (2014). This package is free and used by and supported by most of the world's academic statisticians, and increasingly is the commercial tool of choice. The survey package provided in Lumley (2004, 2014) provides functionality similar to that provided by the SAS package[28], and uses the same standard formulae for estimation of means and variances. These formulae are set out below and described conveniently in Lumley (2014).

Definitions and Notation

For a stratified clustered sample design, together with the sampling weights, the sample can be represented by an $n \times (P+1)$ matrix

$$(W, Y) = \left(w_{hij}, y_{hij}\right)$$
$$= (w_{hij}, y_{hij}^{(1)} y_{hij}^{(2)}, \dots \dots \dots, y_{hij}^{(p)})$$

Where

$h = 1,2, \dots \dots \dots, H$ is the stratum number, with a total of H strata

$i = 1,2, \dots \dots \dots, n_h$ is the cluster number within stratum h, with a total of n_h clusters

$j = 1,2, \dots \dots \dots, m_{hi}$is the unit number within cluster i of stratum h, with a total of m_{hi}units

$p = 1,2, \dots \dots \dots, P$ is the analysis variable number, with a total of P variables

$n = \sum_{h=1}^{H} \sum_{i=1}^{n_h} m_{hi}$is the total number of observations in the sample

w_{hij} denotes the sampling weight for observation j in cluster i of stratum h

y_{hij} = $(y_{hij}^{(1)} y_{hij}^{(2)}, \dots \dots \dots, y_{hij}^{(p)})$ are the observed values of the analysis variables for observation j in cluster i of stratum h, including both the values of numerical variables and the values of indicator variables for levels of categorical variables.

Mean

$$\hat{\bar{Y}} = \frac{(\sum_{h=1}^{H} \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} y_{hij})}{w}$$

Where

$$w_{\dots} = \sum_{h=1}^{H} \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij}$$

Is the sum of the weights over all observations in the sample.

Confidence limit for the mean

The confidence limit is computed as

$$\hat{\bar{Y}} \pm StdErr\left(\hat{\bar{Y}}\right). t_{df,\infty/2}$$

Where $\hat{\bar{Y}}$ is the estimate of the mean, $StdErr\left(\hat{\bar{Y}}\right)$ is the standard error of the mean, and $t_{df,\infty/2}$is the $100(1 - {}^{\infty}/_{2})$ percentile of the t distribution with the dfcalculated as described in the section "t Test for the Mean".

Proportions

The procedure estimates the proportion in level $c_k$for variable C as

$$\hat{p} = \frac{\sum_{h=1}^{H} \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} y_{hij}^{(q)}}{\sum_{h=1}^{H} \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij}}$$

Where $y_{hij}^{(q)}$ is value of the indicator function for level $C = c_k$

$y_{hij}^{(q)}$equals $\mathbf{1}$ if the observed value of variables C equals c_k, and

$y_{hij}^{(q)}$ equals $\mathbf{0}$ otherwise.

Total

The estimate of the total weighted sum over the sample,

[28] SAS SURVEYMEANS procedure. http://www.math.wpi.edu/saspdf/stat/pdfidx.htm

$$\hat{Y} = \sum_{h=1}^{H} \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} y_{hij}$$

For a categorical variable level, $\hat{Y}$ estimates its total frequency in the population.

Variance and standard deviation of the total

$$\hat{V}(\hat{Y}) = \sum_{h=1}^{H} \frac{n_h(1-f_h)}{n_h - 1} \sum_{i=1}^{n_h} (y_{hi\cdot} - \bar{y}_{h\cdots})^2$$

Where

$$y_{hi\cdot} = \sum_{j=1}^{m_{hi}} w_{hij} y_{hij}$$

$$\bar{y}_{h\cdot\cdot} = (\sum_{i=1}^{n_h} y_{hi\cdot}) / n_h$$

The standard deviation of the total equals

$$Std(\hat{Y}) = \sqrt{\hat{V}(\hat{Y})}$$

Confidence limits of a total

$$\hat{Y} \pm StdErr\,(\hat{Y}).\,t_{df,\infty/2}$$

5.3 Results

5.3.1 Estimates of forest cover in Year 3

We can put aside that we have Year 4 information and obtain estimates of Year 3 forest cover. These can be compared to estimates obtained by other means. Table 5.3.1 shows the total areas classified as Degraded, Forest, and NonForest, together with a standard error and a 95% confidence interval. For example, the estimate of non-degraded Forest cover in Year 3 is 18,098,345 ha, standard error 31,046.9 ha, and 95% confidence interval (18,037,494, 18,159,196) ha. We note that this estimate is smaller than other estimates seen.

Table 5.3.2 gives the same information as in Table 5.3.1, but shows proportions rather than totals. So, the proportion of Year 3 Forest cover is 0.8566, standard error 0.0015, 95% confidence interval (0.8537, 0.8595). Note that proportions add to one.

Table 5.3.1. Analysis of Y3 hectares of all classes

	Hectares	SE	2.5%	97.5%
Y3 Degraded forest	209,979	8,790	192,751	227,207
Y3 Non degraded forest	18,098,345	31,047	18,037,494	18,159,196
Y3 Non forest	2,819,438	30,215.96	2,760,216	2,878,660

Table 5.3.2. Analysis of Y3 proportions of all classes

	Mean	SE	2.5%	97.5%
Y3 Degraded forest	0.0099	0.0004	0.0091	0.0108
Y3 Non-degraded forest	0.8566	0.0015	0.8537	0.8595
Y3 Non-forest	0.1334	0.0014	0.1306	0.1363

5.3.2 Estimates of forest cover in Year 4

We now repeat these analyses for Year 4. Table 5.3.3 shows the total areas classified as degraded forest, non-degraded forest, and non-forest, together with a standard error and a 95% confidence interval. For example, the estimate of non-degraded forest cover in Year 4 is 18,046,210 hectares, standard error 31,258 hectares, and 95% confidence interval (17,984,946; 18,107,474) hectares.

Table 5.3.4 shows proportions instead of totals. Otherwise the interpretation is as for Year 3.

5.3.3 Analysis of Y4 hectares of all classes				
	Hectares	SE	2.5%	97.5%
Y4 Degraded forest	222,499	9,050	204,762	240,237
Y4 Non-degraded forest	18,046,210	31,258	17,984,946	18,107,474
Y4 Non forest	2,859,053	30,386	2,799,497	2,918,609

5.3.4 Analysis of Y4 proportions of all classes				
	Mean	SE	2.5%	97.5%
Y4 Degraded forest	0.0105	0.0004	0.0097	0.0114
Y4 Non-degraded forest	0.8541	0.0015	0.8512	0.857
Y4 Non forest	0.1353	0.0014	0.1325	0.1381

5.3.3 Estimates of change from Year 3 to Year 4.

We analyse change from Year 3 to Year 4 as follows. We have matched pairs of sample data, where the hectares seen in Year 3 are seen again in Year 4. Therefore it is natural to concentrate upon the change for each pair. This is analogous to the matched paired t-test, where we calculate differences between pairs, and then analyse the differences.

There are three possible outcomes for each pair, depending on how the hectare was classified in Year 3. If the classification had been Forest (non-degraded), the possibilities are Forest in Year 3 and Year 4, Forest in Year 3 and Degraded in Year 4, and Forest in Year 3 and Non Forest in Year 4. Therefore, these will result a total of nine possible combinations of Year 3 classification with Year 4 classification.

Table 5.3.5a shows estimates for the total number of hectares of each possible combination. As an example, we estimate the area of Guyana which was classified as Forest (non-degraded) in Year 3 and Forest (non-degraded) in Year 4. The estimate is 18,046,210 hectares, standard error 31,257.9, 95% confidence interval (17,984,946; 18,107,474).

The estimate of Forest to Non Forest change in Table 5.3.5a is likely to overestimate gross deforestation because it does not take account of the partial deforestation, or indeed reforestation (NonForest to Degradation) that takes place as a result of various deforestation drivers (road, mining, settlements, and agriculture) within a change sample. The classes where the catagorcal change analysis is likely to be in error are shown in a grey hue.

In order to account for this over- and under estimation, precise measurements of the area of deforestation, based on both Y3 and Y4 imagery, within these Y3Forest to Y4NonForest samples was added as a weight variable (quantifying the precise amount of forest loss within each sample) and the estimates recalculated. Therefore, in Table 5.3.5b we estimate the area of Guyana which was classified as Forest in Year 3 and NonForest in Year 4. The estimate is 13,695 hectares, standard error 1,819 hectares, 95% confidence interval (10,129 ha; 17,261 ha). Appendix 1 gives the same information as Table 5.3.5a, but disaggregated by stratum. Appendix 2 gives the same information as appendix, but shows proportions rather than totals. The precise amount of reforestation (NonForest to Degradation) is by the same logic overestimated at 3,095 hectares but we have not been able to make a precise estimate of the area of change because 75% of the samples are in the low risk stratum where we have no GeoVantage high resolution imagery, see Table 5.2.1.4 for a visual example of the difficulties in producing precise per-hectare reforestation area estimates.

Table 5.3.5a. Analysis of Y3Y4 totals of class changes				
	Hectares	SE	2.5%	97.5%
Y3 Non-degraded forest.Y4_Non-degraded forest	18,046,210	31,258	17,984,946	18,107,474
Y3 Non-forest.Y4_Non-forest	2,816,343	30,201	2,757,150	2,875,535
Y3 Degraded forest.Y4_Degraded forest	208,140	8,753	190,985	225,296
Y3 Non-degraded forest.Y4_Degraded forest	11,264	2,057	7,233	15,295
Y3 Non-forest.Y4_Degraded forest	3,095	1,095	950	5,241
Y3 Degraded forest.Y4_Forest	0	0	0	0
Y3 Non-forest.Y4_Non-degraded forest	0	0	0	0
Y3 Degraded forest.Y4_Non-forest	1,839	822	227	3,451
Y3 Degraded forest.Y4_Non-forest	40,871	3,931	33,167	48,575

Table 5.3.5b. Total deforestation in hectares Y3 to Y4				
	Hectares	SE	2.5%	97.5%
loss	13,695	1,819	10,129	17,261

The change from forest to degraded forest shown in the last row of Table 5.3.5a also exaggerates the rate and total area affected because the analysis uses categorical data that does not account for partial degradation within a sample area. The data shown in Tables 5.3.6a and 5.3.6b use precise, within-sample areas estimates a continuous variable to estimate change precisely. The total area for change from Forest to Degraded forest is 3,856 hectares, standard error 746 hectares, 95% confidence interval (2,393 ha; 5,319 ha), see table 5.3.7a. Table 5.3.7b shows the same data disaggregated by stratum.

Table 5.3.6a Rate of forest loss (as %) from Forest to Forest Degraded between Y3 and Y4				
	Mean	SE	2.5%	97.5%
Forest Degradation	0.0214	0.00413	0.0133	0.0295

Table 5.3.6b Mean Forest loss to Forest Degradation (as %) per hectare by stratum between Y3 and Y4				
Forest Degradation	Mean	SE	2.5%	97.5%
HR	0.0411	0.00933	0.0228	0.0594
LR	0.0109	0.00395	0.0032	0.0187

Table 5.3.7a Total Forest Degradation from Forest to Forest Degraded from Y3 to Y4				
	Hectares	SE	2.5%	97.5%
Forest Degradation	3,856	746	2,393	5,319

Table 5.3.7b Total rate of Forest loss from Forest to Forest Degradation in hectares between Y3 and Y4 by stratum				
Forest Degradation	Hectares	SE	2.5%	97.5%
HR	2,564	582	1,424	3,705
LR	1,292	467	376	2,207

5.4 Estimating rate of change.

The key issue is to estimate the rate of change of gross deforestation. To do this, we restrict attention to hectares which in Year 3 were classified as non-degraded forest, and then estimate the rates at which they continued to be Forest, or were classified as degraded or non-forest.

Table 5.3.5a shows total areas for these changes. As an example, the number of hectares estimate as forest in Year 3, and still forest in Year 4, is 18,046,210 hectares, standard error 31,258, 95% confidence interval (17,984,946; 18,107,474). The estimated number of hectares of forest in Year 3 lost to Forest Degradation in Year 4 is 11,264 hectares with a standard error of 2,057 hectares, 95% confidence interval (7,233 ha; 15,295 ha). This analysis uses categorical data without taking account for the overestimation of deforestation due to partial clearance of a change sample (e.g. due to roads), and the estimated number of hectares of forest in Year 3 lost to non-forest in Year 4 is 40,871 hectares.

Accounting for the correct proportion of deforestation for all deforestation drivers, the estimated number of hectares of forest in Year 3 lost to non-forest in Year 4 is **13,695 hectares** with a standard error of **1,819 hectares** (see Table 5.3.5b). Appendix 3 gives the same information as table 5.3.5b but disaggregated by stratum. It is important to note the effect of accounting for the proportion of forest loss within samples intersected by roads in particular. We note from the distribution of areas deforested in samples intersected by roads (see Figure 6.2) that the majority of show deforestation of less than 20% cover which might, according to the interim measures mapping rules be regarded as Forest. Even if these samples were classified as Forest Degradation rather than deforestation that would impact the results greatly. There is an urgent need to clarify the precedence for the mapping rules set out in the interim measures with Norway. The analysis could be re-run based easily if the road samples with <30% forest cover loss were reclassified as Degraded Forest.

Table 5.4.1 shows the mean deforestation rate per hectare using the weighting variable to account for partial change within each sample hectare. The estimated rate of change of forest in Year 3 lost to NonForest in Year 4 is 0.07%, standard error 0.0101%, 95% confidence interval (0.056%; 0.0954%). This is the key estimate of the analysis.

Table 5.4.2 shows the same information as Table 5.4.1, but disaggregated by stratum (HR and LR). For example, the rate of change from Forest (Y3) to NonForest (Y4) is estimated at 0.0864% in HR stratum and 0.0701% in the LR stratum.

Table 5.4.1 Mean Deforestation rate per hectare (%)

	Mean	SE	2.5%	97.5%
Year 4 Forest loss	0.07	0.0101	0.056	0.0954

Table 5.4.2 Mean Deforestation rate per hectare by stratum (%)

	Mean	SE	2.5%	97.5%
HR	0.0864	0.0155	0.0561	0.1167
LR	0.0701	0.013	0.0446	0.0956

5.5 Intact Forest Landscape

The GFC MRVS reports 154.80 ha deforestation within the IFL. None of the accuracy assessment change samples overlapped with Year 4 deforestation events. In previous years 58 samples intersected with the mapped Intact Forest Landscape (IFL). Table 5.5.1 shows a breakdown of the drivers for change in the IFL but these are not directly relevant to Y4 change.

Table 5.5.1 Drivers for change in the Intact Forest Landscape (IFL)

Drivers	Hectares	Proportion
Mining	106.99	69.11%
Mining Roads	11.2	7.24%
Forest Roads	4.59	2.97%
Infrastructure Roads	28.88	18.66%
Forest Harvest	3.14	2.03%
Total	154.8	

Table 5.5.2 Errors seen in IFL mapping for all periods

Driver	Count	Proportion
Incorrect - forest road	2	3.45%
Incorrect - grassland	34	58.62%
Incorrect - others	5	8.62%
River	17	29.31%
Total	58	

Table 5.5.3 Intact Forest Landscape

Year 4 Forest-NonForest Map	Reference Images				
Both HR and LR	Class	Forest	NonForest	Total	User Accuracy
Year 4 Map	Forest	14884	0	14884	100.00%
	NonForest	0	226	226	100.00%
	Total	14884	226	15110	
	Producer Accuracy	100.00%	100.00%		100.00%

5.6 Deforestation rate comparison

Table 5.6.1 shows the Year 3 to Year 4 deforestation area and rate data compared. Note that the map-based estimate does not have a standard error associated with it but that the mapping and the change sample estimates are of similar magnitude.

Table 5.6.1 Comparison of Forest Change Estimates Source

	Forest area change (ha) Year 3- Year 4	Year 4 Rate (%)	SE of Y4 Rate (%)
GFC / Indufor GIS Map Estimate	12,733	0.0680	
Durham Change Sample Estimate	13,695	0.07	0.0101

6. DISCUSSION

The results divide into three important areas that warrant further discussion:

i) reliability of the procedures used to identify deforestation and attribute the correct driver (reason for the change) from satellite imagery
ii) representativeness of the sample used to estimate bias and precision of the forest area mapping;
iii) assessment of the process to assist validation and verification in future years.

6.1 Sampling

There is a large literature highlighting the difficulties associated with mapping and verifying deforestation rates in the world's humid tropical forests (e.g. Achard et al., 2002; Grainger, 2008; Hanson et al., 2008; Hanson et al., 2010). Any approach that uses satellite imagery to overcome the lack of reliable forest inventory data will need to account for errors caused by areas obscured by clouds (and cloud shadows) and low spatial resolution imagery. In addition to errors where deforestation has been missed, there is also the difficulty of interpreting and accounting for areas of degradation that do not constitute deforestation.

The approach taken by GFC to develop a wall-to-wall mapping exercise is ambitious but will generate very precise, location-specific data. Once established in a GIS, these data can be updated relatively easily but adding to the map units when new deforestation is identified from new imagery or fieldwork. The Interim Measures agreement, however, cause difficulties when modifying mapping data in a GIS as areas "deforested" or "degraded", because once accounted for, these land over classes should remain with the same label. In reality, there are many cases where sampling has revealed misclassification or reclassification of areas that are labelled as "deforested" or "degraded" but which are actually intact forest. These anomalies do not impact on the change sample but are picked up in the analysis of map accuracy. They will not impact on forest area estimates or the estimated deforestation rate.

Using a change sample is clearly the most efficient and powerful way to detect change over a year.

The levels of precision achieved are not likely to be much improved by taking a larger sample. For example, taking a 10% larger sample (a further 5000 hectares) leads to approximately a 5% improvement in precision. There is an argument for taking a smaller sample. A sample of around 25000 hectares (half of present) would still deliver about 75% of the current precision. It is possible that finer attention to different strata, and appropriate stratified sampling allocations, could reduce the cost of sampling appreciable, without much reducing the precision.

In Year 4 approximately 40% of the mapped deforestation falls in the LR stratum. If new strata were defined as follows:

VHR = 606 rectangles (21.37% area of the country) [randomly sampled 10%=61 -> 14% of Y4 deforestation would fall within VHR]
HR = 691 rectangles (24.38% area of the country) [randomly sampled 3.5%=48 -> 6.8% of Y4 deforestation would fall within HR]
LR = 1540 rectangles (54.41% area of the country) [randomly sampled 1.5%=46 -> 4% of Y4 deforestation would fall within LR]

A GIS query shows that 91.67% of Y4 deforestation falls within the VHR, 4.9% within the HR, and 3.4% fell within the LR, see Figure 6.1.

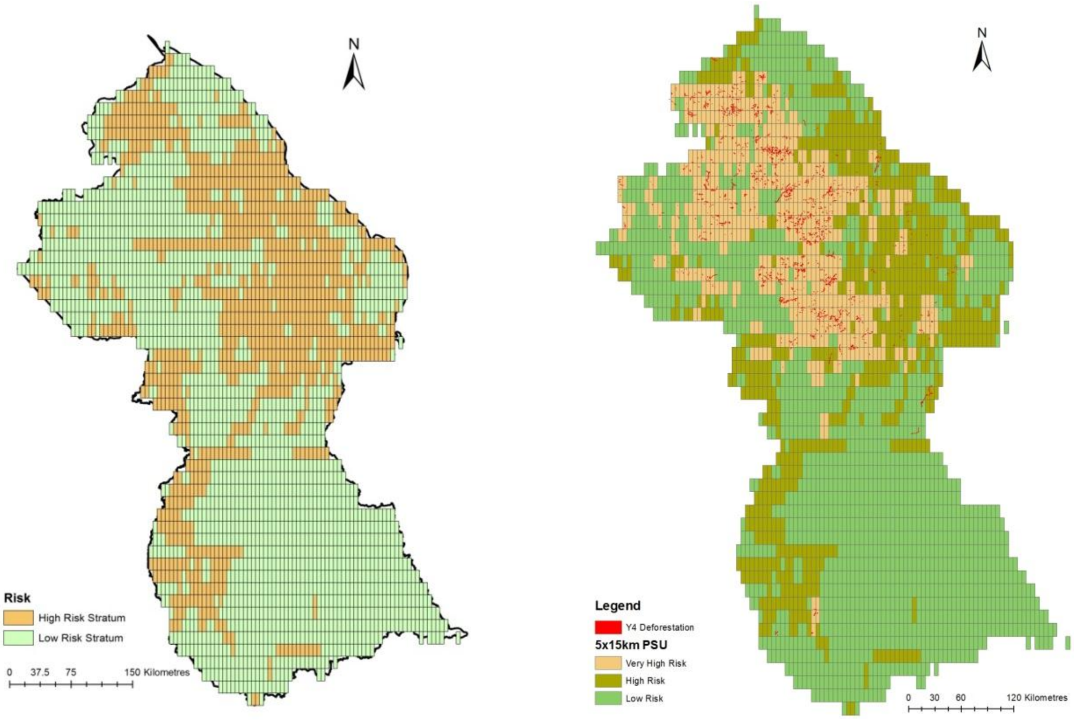


Figure 6.1 **Left** - Stratification used in this analysis and **Right** is a possible three strata model where Very High Risk intersects with occurrence of Y1 or Y2 or Y3 deforestation; High Risk intersects with mapped settlements, roads and mining concessions; Low Risk is the remainder.

There is a tradition in panel survey sampling (for example to collect the attitudes of patients) to repeat the survey over the same patients, leading to a change sample. It is fairly normal here to refesh the panel periodically, by adding new members to it and perhaps also dropping members.

We expect the basis of future assessments to be based on the current change sample approach and would investigate reducing the overall sample size (dropping some existing planned re-observations), but perhaps would introduce some new areas each year.

Some of the events being measured are extremely rare. The deforestation rate this year is based on 47,121 observations (hectares), of which 111 exhibit some kind of deforestation, i.e. 0.24%, or about 1/400, and where for most of these more than half the observed hectare is associated with a forest or mining road and so a large proportion of the hectare is still forest. Figure 6.2 shows the histogram of all change samples that intersect with roads. This reveals that the vast majority show forest canopy loss of less than 30% and might therefore be classified as forest degradation rather than deforestation. If this were the case, the annual deforestation rate would be much less than reported above.

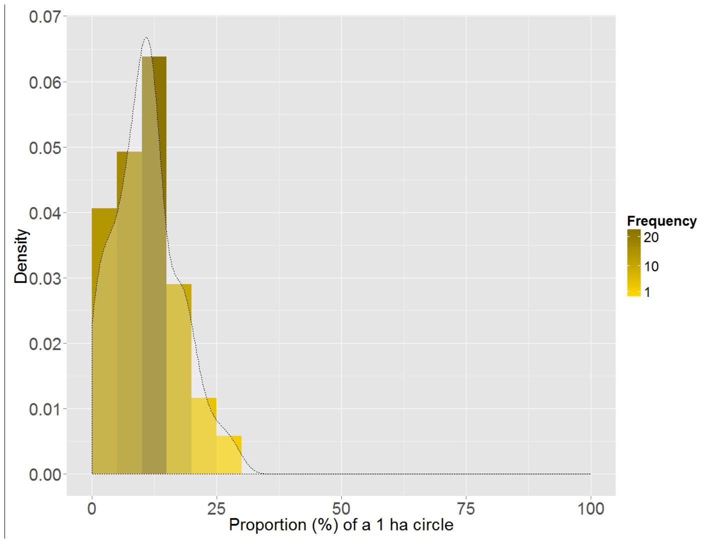


Figure 6.2 Proportion of forest loss within a 1 ha sample

Be aware that basing a rule on a confidence interval, for example that the upper 95% boundary for deforestation rate be less than some threshold, means requiring a good understanding of the sample size necessary to achieve such a level of precision. Indeed, the target may be unachievable. Please note that there are other alternative methods for computing the CI for rare events in survey sampling and these are all theoretically justified but lead to different answers.

6.2 Drivers of Forest Change

The results from the Durham University stratified sample confirms GFCs conclusion that mining and mining related infrastructure is the overwhelming driver for deforestation and forest degradation. In the Year 2 Accuracy Assessment report we noted that degradation was difficult to identify particularly in Landsat imagery. In Year 3 the amount of forest mapped as degraded as risen sharply, most probably because of the ability to identify canopy openings and other forms of disturbance from the improved spatial and spectral resolution RapidEye data. RapidEye imagery is sufficiently detailed to allow interpretation of forest structure and canopy openings in a way that is impossible with Landsat imagery.

Through checking the change from Year 3 to Year 4, it became possible to easily and quickly identify which mapping errors were Year 4 related. Assessment of the quality of attribution of types of changes mapped (agriculture, mining, and roads for Y4 only) is assessed for of the 55,119 one hectare samples. The accuracy assessment was able to interpret the drivers of forest change more easily using high quality aerial imagery. Tables 6.3.1 and 6.3.2 show the deforestation data broken down by driver for the wall-to-wall mapping and the DU accuracy assessment sample. These data highlight the difficulty of identifying roads even in the 6.5 m spatial resolution RapidEye imagery compared to the GeoVantage aerial imagery. Areas that appear on satellite imagery as mining are often in fact related to mining infrastructure. Any disagreements appear to relate to the difficulty of identifying minor roads and distinguishing natural canopy openings and forms of anthropogenic disturbance even from the improved spatial and spectral resolution of RapidEye imagery.

The breakdown of deforestation by driver (as mapped by GFC and shown in Table 6.3.1) reveals that mining is the dominant driver for deforestation and forest degradation in year 4. The pattern of errors in degradation mapping is shown in table 6.3.2 and this reveals a broader range of drivers including agriculture, forest and mining infrastructure, forest harvest, settlements and fire. The GeoVantage aerial imagery is, because of its fine spatial resolution and excellent radiometric fidelity, able to reveal detail in helping to assign drivers that was not available to the mapping team using RapidEye satellite imagery.

A complete breakdown of all the change observed from the reference data in Year 3 and Year 4 is shown in the tables of appendix 1 of the accuracy assessment report.

Table 6.3.1 – Deforestation drivers mapped by Indufor AP Ltd. Year 4 (2013) only

Driver	Hectares	Proportion
Mining	10334.11	82.89%
Mining Roads	916.58	7.35%
Forestry Roads	324.95	2.61%
Infrastructure Roads	341.98	2.74%
Fire	95.88	0.77%
Forest Harvest	5.5	0.04%
Agriculture	424.3	3.40%
Settlements	23.34	0.19%
Total	12466.64	

Table 6.3.2 – Deforestation drivers that were not mapped by Indufor Asia Ltd. (All Periods)		
Driver	Samples/Hectares	Proportion
Agriculture	25	6.25%
Forest road	14	3.50%
Grassland	151	37.75%
Infra-road	8	2.00%
Mining	43	10.75%
Mining road	61	15.25%
Natural	9	2.25%
Others	18	4.50%
Settlements	8	2.00%
River	26	6.50%
Unknown	1	0.25%
Year 5	36	9.00%
Total	400	

6.3 Examples of mapping accuracy assessment

The accuracy of the GFC mapping for 2013 (Year 4) produced a correspondence statistic of 99.93% (Table 5.1) and Figure 6.3.1 illustrate an area where the assessors recognised that a near-perfect correspondence between the GIS map and the reference data. In other places various mapping errors were identified and, although very few in quantitative terms, these are shown as illustrations of the types of errors discovered from close scrutiny with the high-quality reference data, see Figures 6.3.2 to 6.3.8. Figure 6.3.2 (A) and Figure 6.3.3 shows errors in mapping non-forest boundaries while roads missed in the MRVS mapping are shown in Figure 6.3.2(B) and Figure 6.3.4.

Forest to non-forest change events that occurred pre-2009 are assigned to the wrong period, in this case 2013 (Year 4), an example is shown in Figure 6.3.5. Figures 6.3.6 and 6.3.7 show areas of forest degradation by agriculture (see Figure 6.3.6) and shifting cultivation (see Figure 6.3.7) missed in the GFC 2013 (Year 4) mapping. Figure 6.3.8 shows road having less than 10m width that according to the mapping rules should be recorded as forest degradation have been mapped as deforestation events. The imagery shows clearly that it can be almost impossible to recognise such subtlety when interpreting from RapidEye imagery. Some areas of 2014 (Year 5) deforestation and forest degradation were also recognised in the GeoVantage imagery, these are not mistakes in the GFC mapping but care has to be taken with the any reference data collected after the end of the census period, see Figures 6.3.9 and 6.3.10.

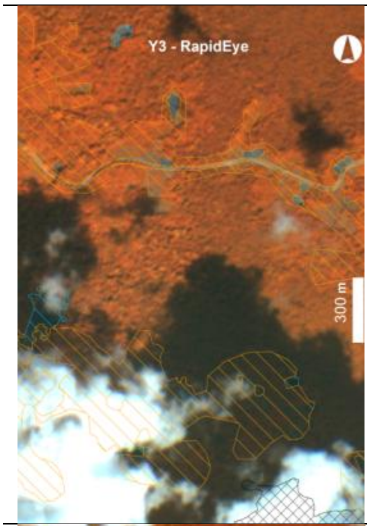
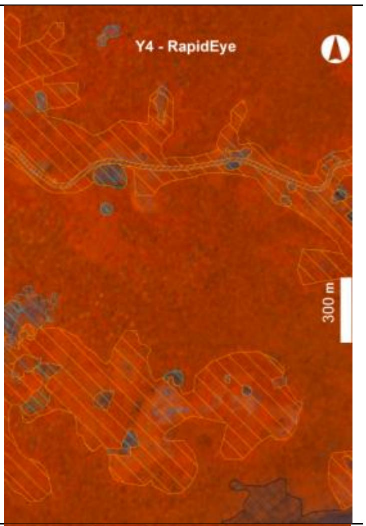
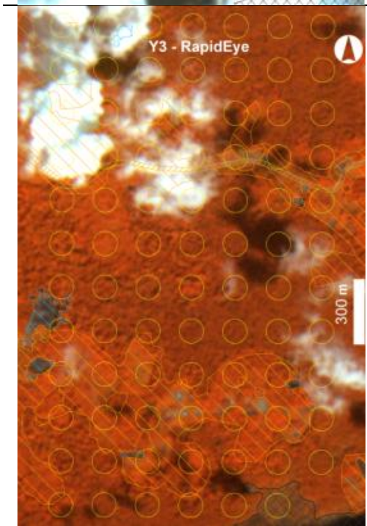
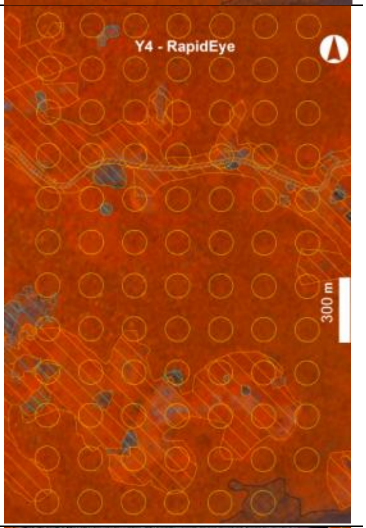
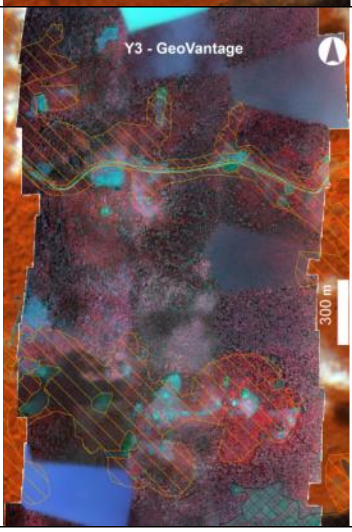
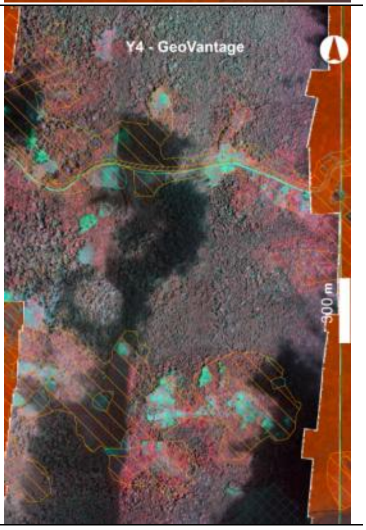
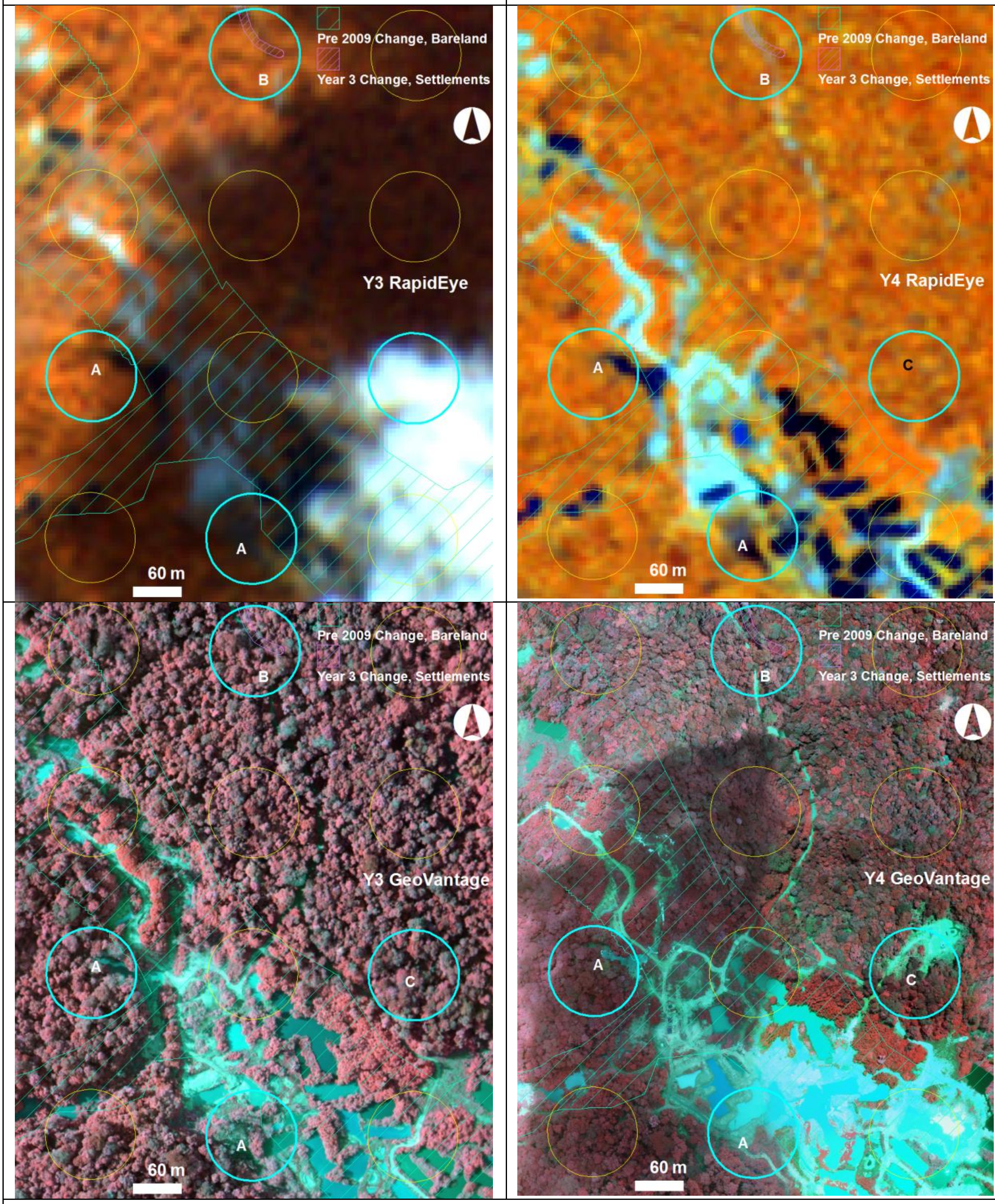
Year 3		Year 4
	Mapping datasets – RapidEye	
	Mapping datasets with sample circles – RapidEye	
	Validation datasets - GeoVantage	

Figure 6.3.1: Example of an area of forest change well mapped by GFC map between Year 3 and Year 4

Year 3	Year 4

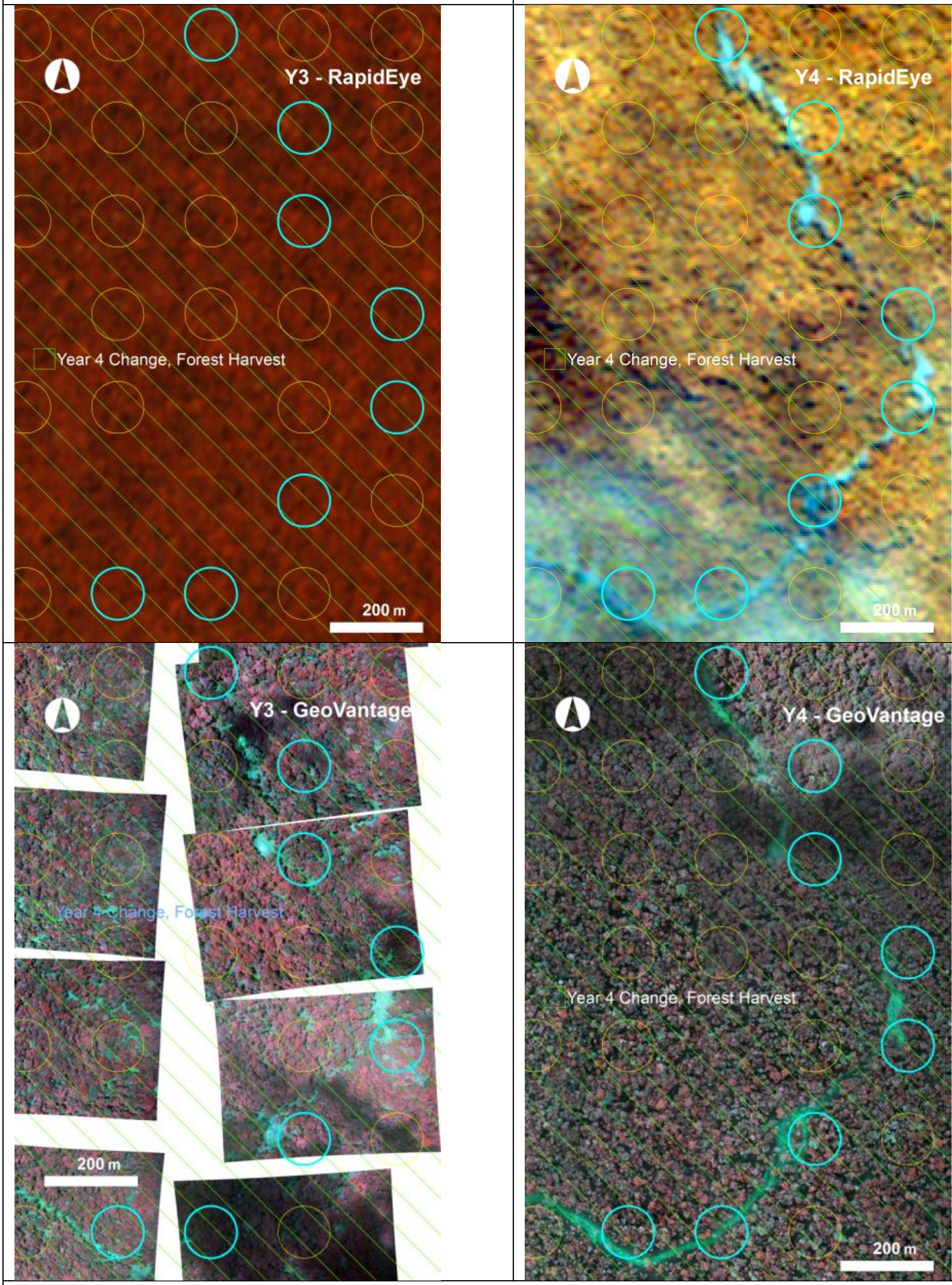


A and B - Area of deforestation (by mining) in Year 4
B - Area of deforestation (mining road) in Y3 and Y4
C - Forest degradation in GeoVanatage in August 2014 (example of Y5 Forest Degradation)

Figure 6.3.2: Areas of change where interpretation requires both RapidEye and GeoVantage imagery to identify the nature of the change.

Figure 6.3.3: An area where assigning a change class and identifying map accuracy is difficult according to Figure the mapping rules agreed in the joint concept note agreement between Norway and Guyana.

Year 3	Year 4



Forest degradation - the RapidEye and GeoVantage

Figure 6.3.4: Areas that show Road mapped as Forest Degradation

Figure 6.3.5: Areas of deforestation correctly mapped to pre-2009 deforestation. The imagery shows Year 4 deforestation.

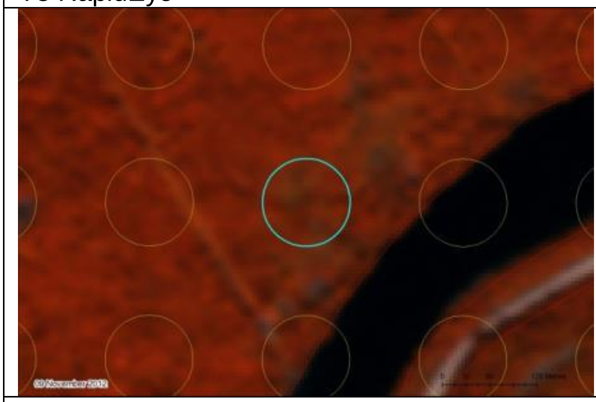
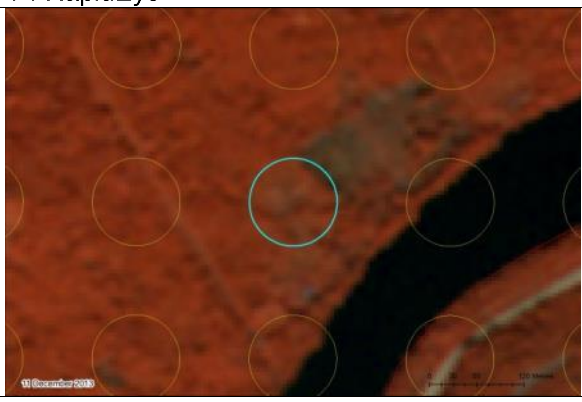
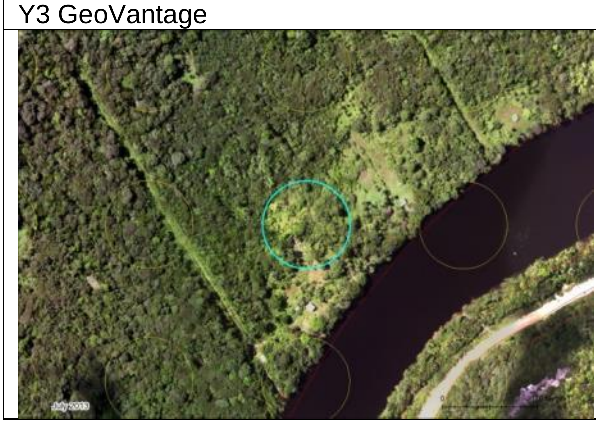
Y3 RapidEye	Y4 RapidEye
	
Y3 GeoVantage	Y4 GeoVantage
	

Figure 6.3.6: Forest degradation seen on the GeoVantage imagery

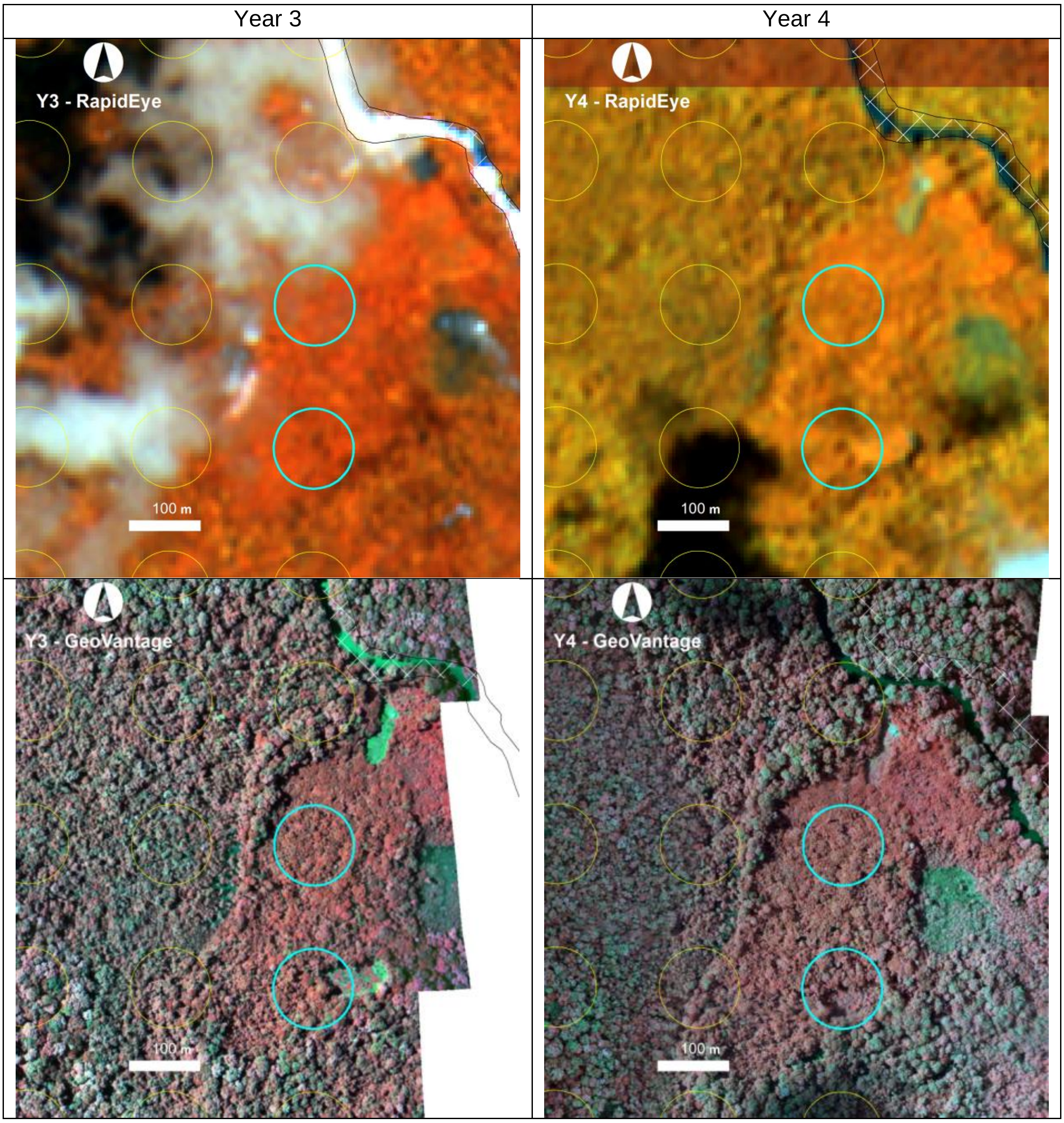


Figure 6.3.7: Area of Forest degradation (Shifting cultivation) identified by Geovantage imagery.

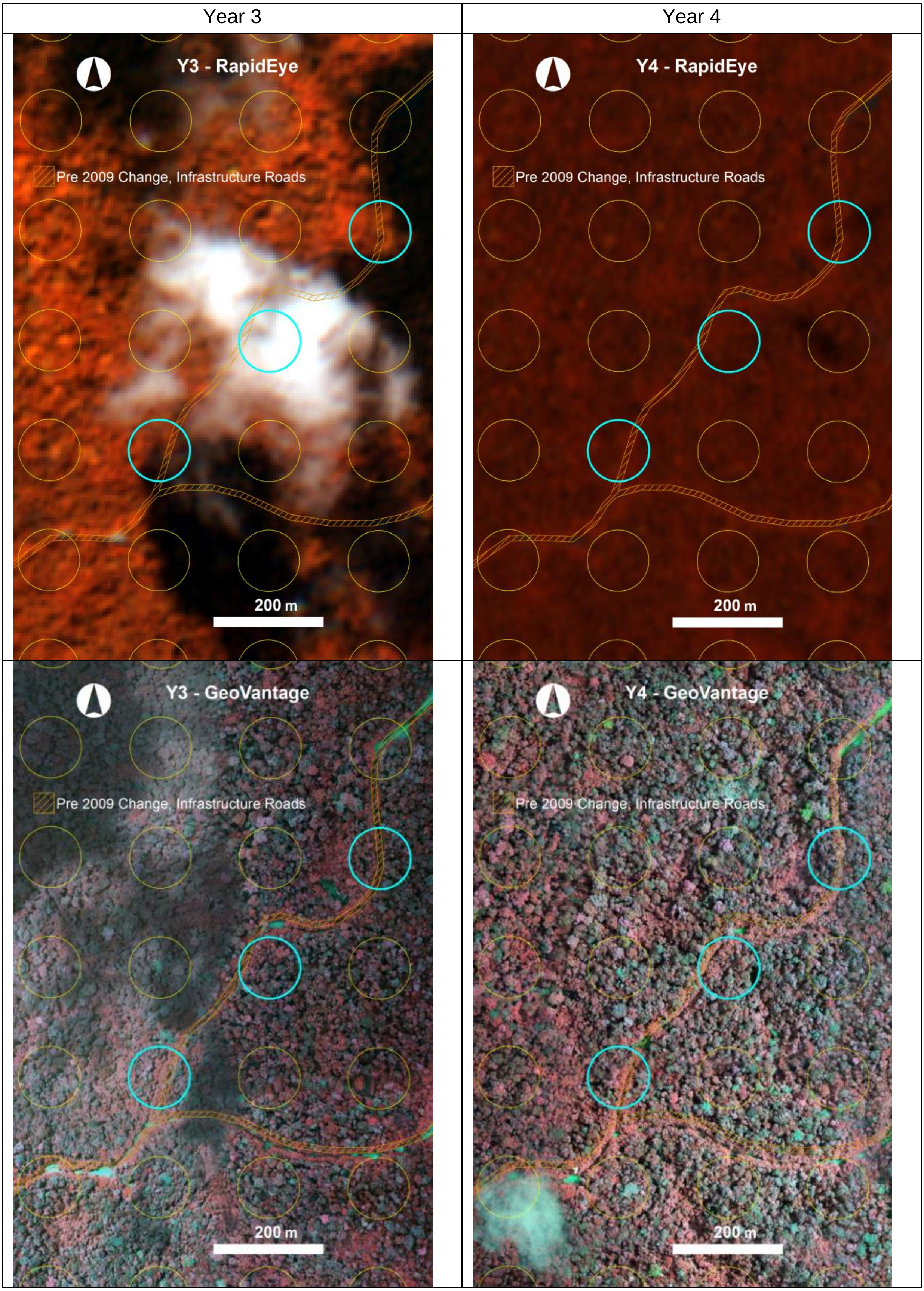
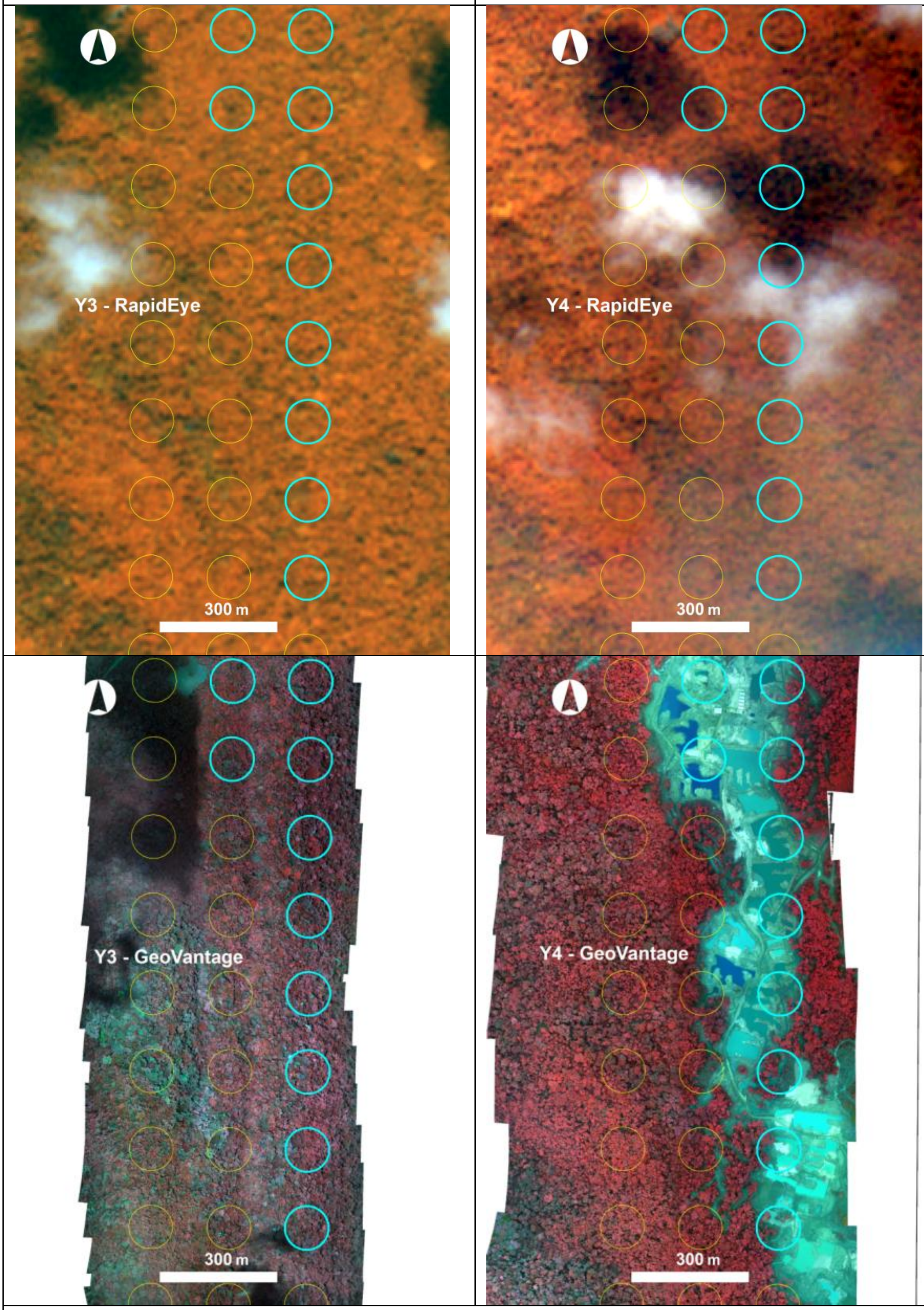


Figure 6.3.8: Roads mapped from RapidEye appear less than 10 m when seen in GeoVantage

Year 3	Year 4



Explanation
Deforestation by mining in Y5 as viewed in GeoVantage captured during August 2014 (Year 5).

Figure 6.3.9: An area where RapidEye shows no change but the GeoVantage acquired in August 2014 shows deforestation associated with Year 5 mining activities. This is not a mapping error and will be picked up during the 2014 mapping period (Year 5).

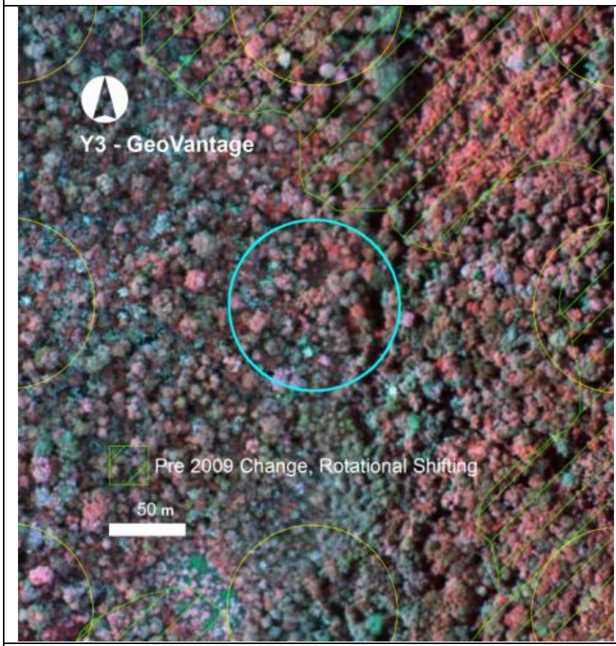
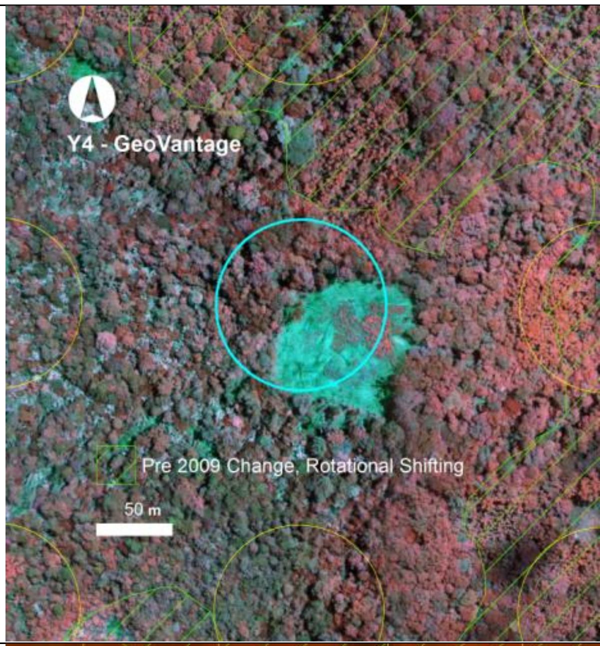
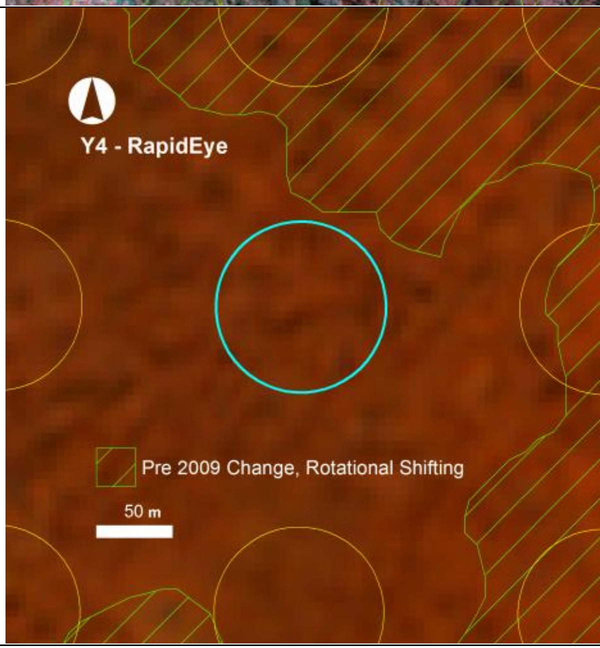
Year 3	Year 4
	
Area of forest loss due to "Pioneer shifting cultivation". In this case the degradation occurred after 14th November 2013 and is picked up in the August 2014 GeoVantage imagery.	

Figure 6.3.10: An area of forest degradation due to Pioneer Shifting Cultivation, in this case the change is also associated with 2014 (Year 5) activity as the change is only seen in the GeoVantage

7. SUMMARY AND CONCLUSIONS

1. We conclude that the quality of the mapping undertaken by GFC-IAP based largely on interpretation of RapidEye imagery is of a good standard. Only a very small percentage of the mapped area of Guyana and of the GeoVantage aerial photography and RapidEye satellite reference data could not be used. Missing reference data were excluded from the analysis.
2. The methods used by GFC and IAP follow the good practice recommendations set out in the GOFC-GOLD guidelines and considerable effort has been made to acquire cloud free imagery towards the end of the census period January to December 2013 (Year 4).
3. The GeoVantage aerial photography was of good spatial resolution and radiometric quality and this helped remove much of the ambiguity and uncertainty associated with the validation process. Geovantage data were needed to help assess partial deforestation within sample areas, particularly forest and mining road infrastructure.
4. We found that for Year 4 the prevalence was 0.9993 or 99.93% overall and 0.9988 or 99.88% for the HR stratum and 0.9997 or 99.97% for the LR Stratum. This is a very high figure, much better than one would expect from automated classification of multispectral remotely sensed data, and is almost certainly explained by the high spatial and radiometric resolution of the RapidEye multispectral imagery and the meticulous and painstaking manual process of interpretation and on-screen digitizing.
5. The estimate of the annual area of change from January to December 2013 (Year 4) Forest to Non- forest is 13,695 ha with a standard error of 1,819 ha and a 95% confidence interval (10,129, 17,261).
6. The estimate of the annual rate of deforestation that occurred in 2013 (Year 4) is 0.07% with a standard error of 0.0101% and a 95% confidence interval (0.056%, 0.0954%). This compares well with a deforestation rate extracted from the wall-to-wall mapping from the MRVS of 0.068%.
7. The accuracy of the mapping of forest degradation by GFC within the MRVS for 2013 (Year 4) has a correspondence (prevalence) between reference image interpretation and GFC mapping of 99.98%.
8. The estimate of the annual rate of the rate change from Forest to Degraded forest between Y3 and Y4 is 0.0214% with a standard error of 0.00413% and a 95% confidence interval (0.0133%, 0.0295%).
9. The analysis for 2013 (Year 4) did not detect any change to the Intact Forest Landscape.
10. The GIS data file containing all of the change sample areas is available and can be used to help cross check interpretations.
11. The IAP-GFC maps show a deforestation rate over the 12 month period of Year 4 of 0.068%. The accuracy assessment estimates a deforestation rate over the same period of 0.07%.

8. RECOMMENDATIONS

To improve the precision of the change estimates and map validation for future years, we make the following recommendations:

1. The RapidEye data from the end of each census period are essential in order to provide assurance that change events occurred within the relevant annual period. At a minimum, these data should be acquired to cover the change sample grids.
2. GeoVantage aerial imagery data provide an excellent tool for interpretation and are often needed to establish the precise amount of change within a sample areas and the driver for change.
3. The rate of deforestation is low and so a change sample analysis requires a large sample size to provide precise estimates. The effect of doubling the sample size on the rate of deforestation (that is using 110,238 samples) decreases the SE from 0.0001000678 to 0.0000707578, a relative improvement in precision of 1.4142. So, twice the data but only root (2) the improvement in precision.
4. As the levels of precision achieved are not likely to be much improved by taking a larger sample there is an argument for taking a smaller sample. A sample of around 25000 hectares (half of present) would still deliver about 75% of the current precision. It is possible that finer attention to different strata, and appropriate stratified sampling allocations, could reduce the cost of sampling appreciable, without much reducing the precision.
5. The change estimate uses systematic rather than random sampling within-clusters. There appears to be an issue with systematic sampling in that linear features such as roads might be expected to be over-represented in the sample. This would then lead to an overestimation of deforestation rate. It is not possible to correct for this behaviour. This is an issue that needs to be revisited in terms of sampling methodology within a cluster (rectangle). The magnitude of this effect on the estimator should be modelled.
6. Contined traning of GIS operator.
7. From the GFC Map data it proved difficult to separate unambiguously Y4 degradation from degradation mapped from other periods. Therefore, the only reliable source of data on degradation is from the change sample and this did not account for the precise amount of degradation within each sample. Therefore the area of Y4 degradation is overestimated. This estimate can be improved by adding a weighting variable for the amount of degradation within a sample.
8. GFC have improved from Year 3 the standard of interpretation, mapping and quality control. The challenge will be to maintain this standard of mapping into future years with dedicated and experienced staff.

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10. APPENDICES

Appendix 1: Analysis of total class changes Year 3 to Year 4 by stratum				
	Hectares	SE	2.5%	97.5%
HR:Y3Y4Y3_Degradation.Y4_Degradation	157,802	7,543	143,018	172,585
LR:Y3Y4Y3_Degradation.Y4_Degradation	50,339	4,440.9	41,635	59,043
HR:Y3Y4Y3_Forest.Y4_Degradation	7,725	1,685	4,422	11,027
LR:Y3Y4Y3_Forest.Y4_Degradation	3,535	1,180	1,227	5,852
HR:Y3Y4Y3_NonForest.Y4_Degradation	738	520	-284	1,755
LR:Y3Y4Y3_NonForest.Y4_Degradation	2,360	963	472	4,248
HR:Y3Y4Y3_Degradation.Y4_Forest	0	0	0	0
LR:Y3Y4Y3_Degradation.Y4_Forest	0	0	0	0
HR:Y3Y4Y3_Forest.Y4_Forest	6,230	22,205	6,186,515	6,273,558
LR:Y3Y4Y3_Forest.Y4_Forest	11,816,174	22,000	11,773,055	11,859,292
HR:Y3Y4Y3_NonForest.Y4_Forest	0	0	0	0
LR:Y3Y4Y3_NonForest.Y4_Forest	0	0	0	0
HR:Y3Y4Y3_Degradation.Y4_NonForest	1,839	822	227	3,451
LR:Y3Y4Y3_Degradation.Y4_NonForest	0	0	0	0
HR:Y3Y4Y3_Forest.Y4_NonForest	23,174	2,915	17,460	28,888
LR:Y3Y4Y3_Forest.Y4_NonForest	17,697	2,636	12,530	22,864
HR:Y3Y4Y3_NonForest.Y4_NonForest	1,516,587	21,244	1,474,950	1,558,224
LR:Y3Y4Y3_NonForest.Y4_NonForest	1,299,756	21,466	1,257,683	1,341,829

Appendix 2: Analysis of total class changes (in proportion) Year 3 to Year 4 by stratum				
	Mean	SE	2.5%	97.5%
HR:Y3Y4Y3_Degradation.Y4_Degradation	0.01988	0.00095	0.01802	0.02174
LR:Y3Y4Y3_Degradation.Y4_Degradation	0.00382	0.00034	0.00316	0.00448
HR:Y3Y4Y3_Forest.Y4_Degradation	0.00097	0.00021	0.00056	0.00139
LR:Y3Y4Y3_Forest.Y4_Degradation	0.00027	0.00009	0.00009	0.00044
HR:Y3Y4Y3_NonForest.Y4_Degradation	0.00009	0.00007	-0.00004	0.00022
LR:Y3Y4Y3_NonForest.Y4_Degradation	0.00018	0.00007	0.00004	0.00032
HR:Y3Y4Y3_Degradation.Y4_Forest	0	0	0	0
LR:Y3Y4Y3_Degradation.Y4_Forest	0	0	0	0
HR:Y3Y4Y3_Forest.Y4_Forest	0.78485	0.0028	0.77936	0.79033
LR:Y3Y4Y3_Forest.Y4_Forest	0.89585	0.00167	0.89258	0.89912
HR:Y3Y4Y3_NonForest.Y4_Forest	0	0	0	0
LR:Y3Y4Y3_NonForest.Y4_Forest	0	0	0	0
HR:Y3Y4Y3_Degradation.Y4_NonForest	0.00023	0.0001	0.00003	0.00043
LR:Y3Y4Y3_Degradation.Y4_NonForest	0	0	0	0
HR:Y3Y4Y3_Forest.Y4_NonForest	0.00292	0.00037	0.0022	0.00364
LR:Y3Y4Y3_Forest.Y4_NonForest	0.00134	0.0002	0.00095	0.00173
HR:Y3Y4Y3_NonForest.Y4_NonForest	0.19106	0.00268	0.18581	0.1963
LR:Y3Y4Y3_NonForest.Y4_NonForest	0.09854	0.00163	0.09535	0.10173

Appendix 3: Total deforestation in hectares Year 3 to Year 4 by stratum				
	Hectares	SE	2.5%	97.5%
HR	5,403	967	3,508	7,298
LR	8,292	1,541	5,272	11,313

Appendix 8

Feedback and Responses from Public Review Process

Person/ Entity providing comments	Comment	GFC's response
TAAMOG	The Amerindian Action Movement of Guyana (TAAMOG) has perused the 2013 fourth performance report on Interim Measures for REDD + under Guyana's current monitoring, reporting and verification system (MRVS). Please be informed that TAAMOG is pleased with the 2013 Forest performance under the memorandum of understanding (MOU) between the Governments of Guyana and the Kingdom of Norway in the fight against Climate Change. TAAMOG therefore endorses fully the fourth performance report and is highly impressed with Guyana's 0.068% deforestation rate and I can assure you that Guyana's Indigenous People are also pleased with the fourth performance report as they continue to benefit from Guyana's Low Carbon Development Strategy (LCDS). TAAMOG wishes to extend congratulations to you and the staff members of the Guyana Forestry Commission (GFC) for the extremely hard work demonstrated and continue to demonstrate in ensuring that Guyana's Forests are sustainably managed.	The GFC wishes to thank TAAMOG for its review and subsequent provision of comments to the MRVS Interim Measures Report for Year 4.
N**orwegian Ministry of Climate and Environment**	**General Comments** We would like to take this opportunity to congratulate you on the finalization of another Interim Measures Report. The three previous reports have received a lot of positive attention in the international REDD+ community, and it is good to see that Guyana is continuing the work to develop a transparent forest monitoring system of high technical quality. We note that the deforestation rate seems to have been reduced since 2012. This is good news, even though the deforestation rate is still higher than the deforestation rates reported historically. We would encourage Guyana to analyze the reasons for the shifting deforestation rates in the later years, and to use the information generated through the forest monitoring system to develop targeted policies that can further contribute to maintaining low deforestation rates in Guyana. This way, the forest monitoring system can be further developed as a policy tool, in addition to meeting reporting needs. Congratulations with the successful update of the MRVS roadmap. The first roadmap has been highlighted as instrumental in the development of	The GFC wishes to thank the Norwegian Ministry of Climate and Environment for its review and subsequent provision of comments to the MRVS Interim Measures Report for Year 4. Information on the MRVS is shared with relevant GoG agencies to inform strategic planning and policy making. The GFC is also pleased to have completed the MRVS Roadmap Phase 1. Shifting agriculture is one of the new areas in the Year 4 Assessment and the GFC is pleased to integrate this aspect in the reporting.

	Guyana's forest monitoring system, and we hope that the updated roadmap can contribute to further advances. It is encouraging to see that a method for estimating shifting cultivation is included in this year's report. It is also encouraging to see that work is being done to also report using IPCC formats in the future.	
	Specific Comments Page 20: We note the separation between pioneer and rotational shifting cultivation, and the limitations by Landsat data to enable a historical analysis due to the resolution of the imagery. Would it be possible to conduct a historical analysis based on the RapidEye imagery available for the later years? If this is the case, has this been done?	There are two aspects to consider; the first is detection and the second is monitoring. While it is possible to delineate the general extent of shifting cultivation from historical Landsat series because of the small and scattered pattern of the activity (each clearance is often < 1 ha) and the lack of frequent temporal coverage it is difficult to determine the rotation period. For Guyana, the approach taken has been to delineate historical extent from Landsat. Since 2012 full coverage from RapidEye has enabled the annual detection and new shifting cultivation events. These are monitored and classified according to mapping rules (established in 2013). Over time the rotation length will be established. To further advance this work it would be prudent to determine shifting cultivation is treated. This work would seek to determine; confirm the minimum mapping unit, establish a benchmark level, and importantly qualify the Carbon contribution of shifting cultivation to Guyana's emission profile.
	Page 20: Based on the delineation of rotational shifting cultivation areas. Would you expect that	Pioneer is likely to cover less area than rotational shifting cultivation

	these practices lead to more or less shifting cultivation than the more easily quantified pioneer shifting cultivation?	due to the effort to clear new areas. However the dynamics of shifting cultivation are primarily dependent on the local population size. *See above comment.*
	Page 36 – Table 6.2: This is a very informative table. It might be even clearer if shifting cultivation is separated from the total degradation area change number, as shifting cultivation estimation differs from the methods used to calculate infrastructure related degradation (and because infrastructure related degradation has a specified benchmark, whereas shifting cultivation does not at this point in time).	In this table Pioneer SC has been incorporated into the existing infrastructure degradation benchmark. It is currently 765ha out of the 4 352 ha of degradation. Change made in Table 6.2.
	Page 38 – Table 6.4: We note that Forestry seems to have contributed to a lot more forest change in the period 2001-2009 than in the period 2009-2013. If we have understood correctly, a corresponding fall in production of forest based products is not observed in Guyana. If this is the case, could you please elaborate on the reason why this fall in forestry as a deforestation driver is not clearly reflected in production numbers? We note that production has been reported as somewhat below the benchmark level for this indicator in the last few years, but it seems the difference is not in the same magnitude as the numbers in Table 6.4.	The majority of forest change from the driver of Forestry resulting in deforestation is on account of forest infrastructure, specifically forest roads. Forest harvest volumes and associated incidental and collateral damage are recorded under forest degradation as this practice does not results in deforestation. In both drivers of Forestry and Mining, forest roads and mining roads are included. As such, Table 6.2 on Page 36, shows this breakdown. During the period 2000 to 2009, a significant amount of forestry infrastructure was established, infrastructure which has not expanded in any notable expanse post 2009. For example, the Puruni Road, the Barama Buckhall Road, Mabura Branch Road to Siparuni, some areas of the Barama Network in the North West, and the Unamco Road, among others, which service the main forest harvest areas have seen little change in terms of expansion that would have resulted in forest clearing post 2009. Over the period 2010 to 2013, the majority of forest harvest took place using this existing infrastructure with minimal expansion and maintenance in some instances. Whilst there have been a few new infrastructure established in forest areas post 2009, such as in some areas in Buckhall, in Siparuni (as part of Demerara Timbers Ltd. operations, a few expansions in the UNAMCO Road, and in the Variety

		Woods and Greenheart Ltd concession, these have been small in comparison to that of the major infrastructure work conducted in the 1990 to 2000 period, and that was continued over the 2001 to 2009 period. There is therefore not a direct relationship between forestry production levels and forest infrastructure (which is the primary element of deforestation from forestry) as significant forest harvest levels can be, and has been attained using existing infrastructure. This is a point that is encouraged as part of Sustainable Forest Management practices in Guyana as a way of limiting impact on forest through effective planning and strategic management of forest concessions. Some may argue that there is even a more inverse relationship between forest infrastructure (the main aspect of forestry deforestation) and forest production levels, as it is after roads are established then forest harvest takes place. It should be noted that forestry **degradation** resulting from forest harvest has increased in 2013 over the 2012 period.
	Page 49 – Table 8.1: See comment above relating to shifting agriculture and infrastructure related degradation.	Shifting Agriculture is reported separately in this table from degradation. Please refer to other comment and responses on monitoring shifting agriculture above.
	Page 51: It is proposed that the IFL indicator is removed due to the national forest monitoring system being implemented. We want to highlight that the phasing out of this indicator is subject to other progress as described in the JCN of 2012, and that any revision to this indicator should take this into account. The implementation of the monitoring system is only one of several work tracks relating to this indicator.	This is noted and added value of monitoring large tracks of forest area for change in forest cover, concurrently as deforestation and forest degradation are being monitored at a detailed scale at one hectare, should be considered.
	Accuracy assessment report Thank you for providing a full accuracy assessment report as an annex to the IMR. As accuracy assessment is an important part of forest	Noted

<table>
<tr><td></td><td>monitoring, this enables a more complete verification of the IMR.</td><td></td></tr>
<tr><td></td><td>Parts of the accuracy assessment report are challenging to follow. This is particularly relevant when the estimators used in the analysis are described. One example is that it is hard to see how/if the estimators described on page 29 are appropriate for this kind of analysis. The fact that explanations are not provided for all symbols used in the estimators makes the logic particularly challenging to follow. Summarized, it is difficult for external readers to understand all mathematical considerations taken into account when producing the estimates in the report. We would therefore recommend spending some time to make the report more reader friendly in future accuracy assessment reports. We would also welcome further elaboration on the mathematical and statistical estimators used in this year's IMR.</td><td rowspan="2">A meeting between Durham and Norway/GFC is requested to provide additional clarification on the methods applied and processes undertaken.
Two Sections have been added to the Report: one on Acronyms Used, and another explaining the Mathematical and Statistical Estimators used and making reference to P V Potapov, J Dempewolf, Y Talero, M C Hansen, S V Stehman, C Vargas, E J Rojas, D Castillo, E Mendoza, A Calderón, R Giudice, N Malaga and B R Zutta. Environ. Res. Lett. 9 (2014) (13pp) doi:10.1088/1748-9326/9/12/124012. This Article is also available at the GFC should there be a desire to access same. We hope that this paper will provide the relevant background on the type of estimators used and additional examples to show their appropriateness for this application.

We recognise with the view that the description of the statistical analysis is challenging. Unfortunately, the reality is that these are largely meaningful only to those with professional statistical training. The purpose of the description is to state formally the analysis that we have carried out, and why, in order that another professional statistician can verify that the analysis is appropriate. It is arguable that instead of publishing the formulae used, we would be better served in the report by limiting to giving the rationale for the kind of analysis we carried out, together with references to implementational details in the statistical literature.

Let us now come to further elaboration on the statistical method chosen. We are extremely fortunate to have available a large change-sample, namely 55119 hectares observed in Year 3 and Year 4. Without going into deep statistical</td></tr>
<tr><td></td><td>It seems that the estimations are done only based on the reference data (samples), and not on the full RapidEye wall-to-wall map that is available from GFC/Indufor. This is surprising, as one would generally get less uncertain results by using the available wall-to-wall map for this purpose. In previous years, it had been commented that the estimations using the wall-to-wall map might have been carried out in a sub-optimal manner. It seems that rather than working to improve this method, a more simplified method using only the reference samples have been used. We would welcome elaboration on the reasons for taking this approach. As mentioned, estimations using the full wall-to-wall map would most likely produce more certain results.</td></tr>
</table>

		detail, a paired sample of this kind is far more efficient and powerful (these are statistical terms) in estimating change than would be two independent samples. This is largely because sources of uncertainty associated with independent samples disappear when one has a paired sample. Our main response variable is a classification of changes between Year 3 and Year 4. This is a multinomial response variable. The possible classes for this response variable are: 1. Forest in Year 3 and Year 4 2. Forest in Year 3, but Degraded in Year 4 3. Forest in Year 3, but NonForest in Year 4 4. NonForest in Year 3 and NonForest in Year 4 5. etc. There are nine such classes for this response variable, reflecting three possible states in Year 3 and another three possible states for year 4. Statistically, this is similar to a binomial proportion change problem, for example estimating a change in voting habits. Estimating the proportions of Guyana belonging to these nine classes is a key objective. For the objective of estimating rate of change of deforestation, attention focuses on the first three classes and the probabilities of change conditional on the state being Forest in Year 3. To analyze the sample data, we must first describe the method of data collection and then choose the appropriate method. We are treating the sample as though it is a stratified cluster sample. There is initial stratification of Guyana into low and high risk clusters, each containing 7500 hectares. Clusters are sampled at random from these strata. Next, hectares are sampled from each cluster. For a number of reasons, the

		number of hectares sampled from each cluster varies. The statistical consequence is that the formulae for estimating variances now become very complicated, and indeed meaningless except to professional statisticians. We have treated the sample from each cluster as a random sample. In actual fact, up to 360 hectares were sampled systematically over each cluster, using a predefined regular grid. The proportion of hectare sampled is high, on average. First, there is a risk that linear features such as roads might be expected to be over-represented in the sample. This would then lead to a slight overestimation of deforestation rate. It is not possible post-hoc to correct for this behaviour. Secondly, no account is taken of the potential for there to be spatial correlation between hectares which are physically close. The consequence would likely be a slight under-reporting of standard errors. However, the sampled hectares are sufficiently distant from each other that is appears reasonable to treat spatial correlation as zero. As such, although we recognize that samples are not fully random within each cluster, we judge that it is statistically safe to treat them as though they are. Under these conditions, the method of analysis is straightforward using statistical software. In the report we explained how we used a package called "survey" within the (free) statistical language "R". This provides an equivalent alternative to the SURVEYMEANS procedure available in the (not free) statistical language SAS. It may help to note that a recent paper [1] describes a problem which is the same as ours in the essentials, and provides a detailed appendix showing essentially the same formulae as we have shown. The analysis in this paper used the SAS SURVEYMEANS procedure.

		[1] National satellite-based humid tropical forest change assessment in Peru in support of REDD+ implementation P V Potapov, J Dempewolf, Y Talero, M C Hansen, S V Stehman, C Vargas, E J Rojas, D Castillo, E Mendoza, A Calderón, R Giudice, N Malaga and B R Zutta. Environ. Res. Lett. 9 (2014) (13pp) doi:10.1088/1748-9326/9/12/124012. As extra analysis to explore deforestation rates more finely, we also defined a secondary response variable as the proportion of forest cover remaining in Year 4, conditional on the state being Forest in Year 3. For the vast majority of hectares, the proportion is one. To analyze this problem we use essentially the same SAS SURVEYMEANS (or R survey equivalent) procedure as before, with the difference that the response is numerical rather than multinomial. This extra analysis gives a more accurate assessment of deforestation rate as the response variable contains more information about the actual level of deforestation in a specific hectare. The change-sample required a careful assessment of the land cover status of each sample hectare and this was undertaken for both Year 3 and Year 4 using the best available reference data. In most cases these data came from GeoVantage aerial imagery that is of superior spatial detail than the wall-to-wall RapidEye imagery collected by GFC and processed by Indufor. We explain in the report that it was also necessary, as part of the process of interpretation to refer to the RapidEye imagery as the GeoVantage aerial imagery was collected in August 2014, part way through Year 5. There were also areas of Guyana where, for safety reasons, it was not

		possible to collect GeoVantage imagery and in these low-risk sample units, RapidEye imagery was reinterpreted by the accuracy assessment team. Therefore in summary, the accuracy assessment used reference data of the highest quality available and that the wall-to-wall RapidEye data was an integral part of change assessment.
Conservation International-Guyana	**General Comments** As the first national-scale REDD+ arrangement, Guyana's REDD+ Framework and its attendant payment scheme, are being considered by the international community as an important yardstick to measure the outcome(s) of fast-start climate change mitigation efforts as it relates to REDD+. The reporting on drivers is important progress in terms of improving the accuracy of the emissions estimates but also for helping identify appropriate measures to work towards national REDD+ objectives. The inclusion of shifting cultivation is also an important addition. Such progress and strengths presented will provide the foundations for stronger MRVS.	Noted
	Consideration should be given to the implementation of measures to mainstream the use of the outputs of the MRVS by land managers and other stakeholders to address the drivers of deforestation and as a layer of monitoring of their operations. The presentation of data on detected change in protected areas and titled Amerindian lands, and making the spatial data on forest change more widely available would be good steps in this direction in the immediate-term. Given the restricted areas in which deforestation and forest degradation occur, such information could help validate good management practices, and communicate management effectiveness.	Currently MRVS Results and input data are shared with GGMC, EPA, GLSC, MNRE and PAC. These are among the main land use and land management agencies. The GIMU provides additional analytical support for decision making relating to REDD+ areas.
	Though specific edits are not provided, typographic errors were noted.	Thank you for this feedback. We have further reviewed the Report for additional edits that were required.
	Specific Comments The importance of the central repository of data and images cannot be overemphasized. This initiative could serve as a trigger for improved coordination of spatially explicit information for identifying high risk and low risk areas as well as providing information needed to create overlay maps of the areas of known land-use types, projected new development projects, timber harvest permits, mining concessions, amongst	With the development and implementation of the MRVS, the GFC has been the agency responsible for gathering, processing, analysing and storing data used in the measurement and monitoring of forest area change. In fulfilling this purpose, the GFC has become the central repository for all data for purposes of the MRVS. The GGMC,

	other background information that will be helpful for projecting high risk areas but also verifying mapping results.	GLSC, EPA and the Ministry of Natural Resources & the Environment all have access to and utilise the imagery acquired. Data sharing protocols have been established among the agencies to govern this and other shared land use datasets. Through the coordination of the Ministry of Natural Resources & the Environment, coordination amongst the agencies is further strengthened.
	The formation of the National GIS committee which will work towards consistency of geographic information across all government institutions represents very positive progress towards inter-institutional collaboration and also towards a more efficient, effective and sustainable forest monitoring effort. We look forward to this work leading to the establishment of a national Spatial Data Infrastructure.	The formation of the national GIS committee continues to be a priority initiative of the MNRE. Along with this the GIMU has undertaken the operation role of collating and analyse geographic information for inter and intra sectoral purposes and with an aim of supporting the national spatial data infrastructure.
	We acknowledge the potential to link community MRV to the national MRVS to strengthen Guyana's national REDD+ programme and believe that this may be promising for both data collection for establishing emissions factors and verification of changes detected through the GFC's maps. Community MRV will become important for considering jurisdictional approaches to REDD+, where community-based monitoring may be integrated with cost-effectiveness and with important value in securing permanence.	The approach taken by Guyana is the build the national MRVS and to use this as a platform to build capacity and capability at the community level. This has been progressing well over the past 3 years with collaborations in the north Rupununi (Annai) as well as the South of Guyana (Kanashen). The GFC views community MRV as an important component of the MRVS. To this end, the GFC aims to continue its work in building and strengthening the capacities of communities in the implementation of CMRV activities.
	Page 4. The significance of the improvement in precision in the mapping of forest degradation when using high resolution imagery rather than medium-resolution should be stated.	At the commencement of the MRVs in 2010 the possibility of mapping degradation was considered. However, due to the scale of degradation (less the 1 ha MMU) in Guyana coupled with the low resolution and lack of Landsat coverage, degradation was estimated by applying a default 500 m buffer to areas of deforestation – as specified in the Guyana/Norway JCN. In 2011 extensive field work was conducted (See 2011 MRVs report) to understand the degradation dynamics surrounding deforestation

		events. Subsequent to this work an annual coverage of RapidEye has been used to track and delineate degradation events. These points were detailed in MRVS Report issued in 2011. The standard operating procedures (SOPs) for mapping outline how these events are mapped using high resolution imagery.
	Page 7. The description of “Titled Amerindian Land” seems to include a paragraph describing the general lands eligible under the Guyana-Norway Agreement. We assume that this is a typographical error.	Paragraphs separated in IMR.
	Page 13. A description of measures in place to ensure that no deforestation is unduly credited to the Amaila Hydropower Project. The project should be employing measures to avoid, minimize and restore its impacts, including deforestation.	The MRVS monitors and reports on all deforestation activities and for the third year, has reporting separately on impact of Amaila Fall Hydro project. This type of reporting is envisaged to continue under the national MRVS. This mapping of impact of the Amaila Falls project is based on background information within the GFC’s GIS that outlines the general footprint of the Falls and associated infrastructure, as such, the mapping of deforestation attributed to this activities is validated. The SoPs for mapping is also quite clear in distinguishing infrastructure impacts from other types of land use impacts such as mining. Further, the MRVS has also established trends that relate to mining and forestry infrastructure as these general lead to or are surrounding mining and forest areas. Management of impacts related to this project is outside of the remit of this national MRVS and is a dedicated function of another Agency.
	Page 14. The paragraph describing the Protected Areas Commission contains the following sentence; “The PAC under the Protected Areas Act provides for … including a mechanism for sustainable long term financing…” This seems to inaccurately suggest that the PAC is responsible for the National Protected Areas Trust Fund	Text removed from IMR.
	2.8 Coverage of difference satellites. 2.8.1 It is unclear if there was any area that was covered by neither RapidEye nor Landsat due to	This is documented in the report. Section 5.3 shows the 2013 persistent cloud map. It is estimated

	clouds. If this was not a problem, it will be helpful to explicitly state this as an area or percent value.	that less than 0.2% (of the forest area of Guyana) has no coverage from either Landsat or RE.
	2.8.2 Page 18 "GeoVantage … capable of identifying degradation with some certainty" – we suggest specifying how much certainty.	The accuracy assessment quoted a standard error for the estimation of forest degradation for Guyana and for each stratum. The report notes that forest degradation and its related driver can be easily identified from the GeoVantage imagery. Therefore, the level of uncertainty is quantified in the SE statistic provided in the Report. It is intended to point out that it would be difficult to assess the quality of the GFC mapping of forest degradation from RapidEye data without access to higher spatial resolution imagery such as GeoVantage or equivalent. The important point that we make is: deforestation is easily identified from RapidEye, whereas forest degradation is much more difficult to identify because the scale of the disturbance can be very localised.
	2.9 Shifting cultivation. 2.9.1 The interim indicator is "Emissions resulting from communities to meet their local needs may increase as a result of inter alia a shorter fallow cycle or area expansion" yet is represented as ha/yr without estimates of emissions factors. This is an inconsistency that should be clarified.	This Interim Indicator is not applicable for the current reporting period. This is clearly outlined in the current Joint Concept Note. The GFC is actually going beyond the required level of reporting as outlined in the JCN in providing a value for impact of shifting agriculture. Having said this, the GFC has been undertaking a phased approach to developing the MRVS to report on this Indicator. Like in the early period of reporting on the degradation indications on infrastructure and forest management, when reporting was done in hectares and cubic meters respectively, reporting on shifting agriculture is starting off in a hectare value, and will move, as the systems are developed, to emissions reporting. In 2015, this is intended to be advanced in the execution of field work to establish an emission factor for shifting agriculture. This is a rather complex issue however, which is included in the development of this aspects of the MRVS, as it is apparent that the treatment of pioneer and

		rotational shifting agriculture needs to be considered separately.
	2.9.2 Page iv states that shifting cultivation is classified as degradation yet 100% of the carbon stock is considered to be lost. In the Durham accuracy assessment, it states that the pioneer shifting cultivation is deforestation whereas the rotational historical shifting cultivation is classified as degradation. Please clarify which is correct.	This was incorrectly stated in the Accuracy Assessment report, and has been corrected. All shifting agriculture is considered forest degradation at this point as it is below the MMU for deforestation.
	2.9.3 Table 3-1 classifies shifting agriculture as forest yet the Appendix 5 classifies it as cropland. Again, it will be useful to clarify this.	This has been noted. It is a nomenclature issue more than anything, as the different LUC's are separated in both IM & IPCC reporting. In future Shifting Agriculture will be classified as the relevant degraded forest type.
	2.10 Deforestation vs degradation – definition 2.10.1 Page 27 Deforestation "long-term or permanent change of land from forest use to other non-forest uses" – has a cut-off point in terms of the number of years required to classify as "long-term" in Guyana been determined?	Guyana has a more specific definition & is mentioned in 3rd sentence that is based on a sustainable management system that works on 25-60 year cycles. For MRVS purposes also, a definition of Forest has been developed which in essence defines deforestation. In 2015, a definition of forest degradation will be developed.
	2.10.2 Table 6-1: lists a change rate of 0.41% for 2009. This should be an annual rate or 0.02% (based on 19.75 years as listed in the report).	The rate reported at the benchmark is not an annual rate but a cumulative rate at as September 2009, thereby forming the benchmark. This is the intention of the benchmark and from this point forward annual assessment are competed reporting on annual change levels. This rates takes into account 19.75 years of deforestation. As such, the percent of 0.41 for the benchmark is correct.
	2.10.3 Primary vs Degraded Forests. FAO (2010) reports that only 45% of Guyanese forests are primary; the use of a single emissions factor for deforestation may therefore be conservative but there may also be under-calculation of the sequestration from re-growth. What is the cut-off between non-degraded forest and degraded forest?	The current plan does not involve the use of a single emission factor for forest degradation. The current plan is to establish emission factors for each driver and stratum. The threshold of cut-off between forest and non-forest is based on the forest definition. Work planned for 2015 will also involve finalising a definition for forest degradation which will define the percent and year of impact (continuous and persistent) that will define forest degradation. Remote sensing work in mapping forest degradation for 2013 uses for

		example for forest degradation arising from shifting agriculture, a level of 0.25 ha and greater. This will be further explored.
	2.10.4 Page 9, footnote 9 states that the carbon stocks are similar across forest types. We suggest providing more information here: Are all the sampling plots in primary forest? What about these degraded/regenerating forests? Logged forests? How "similar" is similar?	In the commencement of activities in developing Guyana's Forest Carbon Monitoring System, preliminary sampling was conducted by randomly locating plots across various forest types outlined in the Guyana vegetation map, and across a latitude and longitude gradient. The areas sampled for the preliminary plots were located in large concession areas with good access—these areas were identified on maps and sampling point randomly located using a module for this task in the GIS software. Different sampling methods were tested aiming at the optimum design, balancing data collection with precision, robustness, efficiency and scientific integrity. Single plots and cluster plots were tested during preliminary data collection. Initially, it was thought that different forest types would have significantly different carbon stocks. The only differences were found in those forests identified as swamp forests. Because of this, and because there was no significant difference between the other forest types, which account for far more area across Guyana, it was determined that stratification by forest type is not necessary. Overall, it was concluded that based on the past experience and preliminary data obtained to date in Guyana, stratifying by forest type did not add any further information, and that all forest types within the high threat for deforestation zone can be considered on stratum from a carbon stock perspective. The carbon pools that will be included in the FCMS to determine the carbon stocks will be standing live trees (above and below ground), standing dead wood, lying dead wood, and soil. Change in soil carbon emissions will also be addressed for drivers that are likely

		to result in emissions of soil carbon (e.g. conversion to permanent agriculture, mining, infrastructure).
	2.10.5 Page 21. The section on Monitoring forest Degradation suggests that, “infrastructure-related degradation is restricted to the immediate area around the deforestation site.” However, longer term studies (Seiler, 2001; Sih, Jonsson and Luikart, 2000; Laurance, Goosem and Laurance, 2009) suggest that degradation from infrastructure, especially roads, is sensitive to time and the vegetation type.	In Guyana this is monitored and uses empirical data not assumptions. The extent of any visible degradation is monitored in a spatially explicit manner. So if there are any variations, they will be recorded.
	2.11 Estimate of Degradation Area for Year 4. According to the AA, “it proved difficult to separate unambiguously Year 4 degradation from degradation mapped from other periods… area of Year 4 degradation is overestimated”. According to the AA, change samples may be needed to increase the accuracy of the yearly attribution of degradation episodes.	Increasing the number of samples in the AA is not cost effective and not necessary. In fact in the AA report it suggests reducing the number of samples, might still provide an acceptable level of confidence.
	2.12 Natural Events. Page 32 – “Natural events are considered non-anthropogenic change so do not contribute to deforestation or degradation figures”. This may be problematic as there is no way to determine whether degradation detected around mining sites or along roads is due to wind-throw (natural) or cutting (anthropogenic). Or was it the intention to say that it is lumped in with the drivers when occurring in close proximity and is not distinguished? Please clarify.	All degradation surrounding infrastructure is considered a result of that infrastructure as a conservative measure. Generally speaking very few natural events occur in the populated areas of Guyana, mostly these occur in the more mountainous terrain to the SE & far W of the country.
	2.13 State lands vs other forest areas 2.13.1 Page 7 .Under State Lands the report states, “For purposes of this assessment, State Lands are…the State Forest Estate.” We assume this was meant to refer to the “State Forest Area” as described in the preceding section.	Noted. Change has been made to this Section.
	2.13.2 Page 7. The description of what constitutes State Lands indicates that “pockets of privately held lands” are included. It would be useful to include a description of the extent of these isolated pockets and the rational for their inclusion as State Land.	Paragraph added to describe this category and justify its inclusion. Privately held forests lands is a very minimal percent of total forest cover and in most cases not separately delineated. The original category that this was part of was State Lands and for this reason it is categories in this way until such time that specifically delineated GPS boundaries are available for inclusion in the MRVS and separation as a separate category.
	2.13.3 Only land under the LCDS is eligible for REDD+ and this included only State Forest Area and State Lands. As such, there is potential for leakage into private forests (The 2010 FAO Forest	All land areas and change in land areas, and forest are monitored under the MRVS. The MRVS addresses leakage by conducting a

	Resources Assessment cites 2,983,000 ha in private forests (FAO 2010). The report implies that they are included in the mapping and estimates but it is important to clarify how changes in deforestation and degradation rates in private forests will be monitored to assess leakage.	full wall to wall monitoring of forest and land cover of Guyana. In this way, if there is deforestation occurring in State Forest or Amerindian Lands, these are clearly identified and linked to the relevant category.
	2.13.4 Page 33 "estimates of deforestation and degradation for all land eligible under Guyana's LCDS" and Table 6-1 lists Forest area as 18,475,000ha for 2013 – does this mean that there are 25,000 ha of forest that are not eligible? Please include data to clarify.	No, there is no area excluded. Table 2.1 has been rounded for summary purposes in Version 1.
	2.14 Level of degradation 2.14.1 Aside from the logging degradation (see below), other degradation drivers are reported as hectares. This will be a challenge for emissions factors given that the level of degradation, and thus emissions will vary depending on the degree of degradation. Please clarify how this will be addressed?	The current plan does not involve the use of a single emission factor for forest degradation. The current plan is to establish emission factors for each driver and stratum. This is being further advanced in 2015.
	2.14.2 Page.54. "determine the extent of degradation" – we suggest emphasizing that mapping of the area impacted is not enough to quantify "the extent" given that degradation can include anything from selective harvesting to degradation down to just above 30% canopy cover and thus have substantial variation in terms of emissions. Please indicate how this will be addressed.	The main goal of this report—it reports on interim measures –mostly focussed on area change and in some cases forest carbon emissions. For purposes of developing a complete picture of change in area and emissions due to degradation, we have identified several causes and have completed or are in process of collecting data to quantify emissions by the various causes of degradation. Causes of degradation we have identified are timber harvesting (legal and illegal), degrading activities in 100 m wide buffers around mining and infrastructure, rotational shifting cultivation, and fire. Work on logging emissions is completed and work on developing EF for other causes of degradation is in process.
	2.15 Fires 2.15.1 The indicator for fire is the area which has been affected even though the "Interim measure" is "emissions resulting from anthropogenic forest fires". As such, while reporting on an annual area of forest fires is a good start, it is important to note that this does not necessarily indicate emissions levels. Low-intensity fire over a large area may emit less carbon than high-intensity fires in smaller areas. In addition, forests which burn more than once (which may or may not be detected by the	We are aware that area of fire does not tell the emission story and have used the IPCC method (Equation 2.27 from the IPCC 2006 GL) to estimate emissions from fire and developed EFs for each stratum (range from 775-1043 t CO_2/ha burned, including CO_2, CH_4, and N_2O). Historically (2001-2012) emissions from fire are estimated to be about 278,000 t CO_2 or 0.2% of total emissions—practically insignificant. This is a part

	mapping for previous burns) are likely to burn more intensely and display higher emissions (Balch et al 2011, Cochrane et al 1999). Please indicate how this will be addressed.	of the current development work in execution.
	2.15.2 Page 44. says that the map shows "distribution of fires resulting in deforestation" yet earlier in the document it implies that there will be data on degradation from fires – the total area is listed but the spatial distribution of this information is not reported. Please clarify how the degradation level (e.g. loss of aboveground biomass) will be assessed.	Activity data for degradation by fire is not available as of yet (see Table 6-2). But given that the extent is likely very small and hard to detect with confidence and that emissions from deforestation by fire is insignificant, resources are better spent on monitoring of significant degradation sources. Degradation by fire is likely caused by fires escaping from shifting cultivation areas in a particularly dry season—as part of current work on the carbon dynamics of shifting cultivation, evidence for escaping fires will be collected to assess if this source of emissions is significant.
	2.15.3 Have low-intensity under-storey fires been accounted for in the assessment of degraded vs non-degraded forest? Low intensity ground-fires can be difficult to detect (Barlow et al 2012) and smaller fires may go undetected with MODIS methodologies (Oliveras et al 2014, GOFC-GOLD 2014). Has there been ground-truthing to check for un-detected fires? E.g. Use of community MRV results to check against mapping and FIRMS data.	See above
	2.16 Reference Measures. The adoption of a reference measure of 0.275% (the average of Guyana historical deforestation rates + global average deforestation rates 2005-2010) reflects the intention to pay Guyana for maintaining such low deforestation rates and not only for reducing deforestation below historic levels. In the Joint Concept Note, it is agreed that results based payments will not be awarded if the deforestation rate increases above 0.1% and will be reduced if increasing beyond 0.056% (the rate for the Benchmark Year1). The justification for the selection of this value as the benchmark is unclear and does not reflect the deforestation rates prior to the signing of the MoU in 2009 (Deforestation for 2005-2009 = 0.02%, 2000-2005 = 0.04%). Please clarify.	The MRVS reporting is based on the GoG GoN agreed JCN. Whilst this may be a matter of relevance, this should be taken up in another track.
	Further development of the MRVS – Gaps 3.1 Degradation from Logging. It is suggested that the GFC reassess estimates of degradation from logging. Given the complexities of forest governance in remote areas, dependence on official statistics for both legal timber volumes and maintenance (or not) of a 15% illegal logging rate is insufficient. Independent monitoring of	GFC's method of estimating degradation for logging is based on a published peer reviewed scientific publication that was informed by field work from Guyana: Pearson, TRH, S Brown, and FM Casarim. 2014. Carbon emissions from tropical forest degradation caused by

	logging rates should be encouraged in order to review the current rates and estimates of illegality within the system. The reporting in Year 4 is in accord with what was agreed for the interim measures but these data are insufficient for the long term	logging. Environ, Res. Lett 9 034017 (11 pp) doi:10.1088/1748-9326/9/3/034017) There is no basis for requesting a reassessment as the method derived was developed following intensive field work and robust methods applied that are in keeping with IPCC guidance. Monitoring of illegal logging is based on the GFC's expansive system of monitoring, and is open to scrutiny in independent verification. We do not agree with, nor see the justification for the conclusion of remoteness of areas leading to complexities of forest governance. There is no evidence to support this claim. The indicators currently reported against are interim indicators and are intended to be replaced by a full scale forest carbon emissions and removals reporting in the long term.
	3.2 Use of timber volumes and Gain Loss calculations. The justification for retaining the use of official timber volumes to calculate loss from timber activities lies in their explanation (p22) that RapidEye cannot detect individual canopy gaps unless harvesting is clustered and recent. This flaw implies then that the degradation assessment may be underestimating disturbance. This does not seem fully justified as there are alternative methods available to identify degradation from logging. For example, consider fusion of multi-temporal Landsat and ALOS-PALSAR (Reiche et al 2015).	The EF developed for timber harvesting are based on cubic meters of timber removed (e.g t CO2/m3 of volume extracted = sum of emissions associated with extracted log, collateral damage, and construction of skid trails to remove logs). See also recent paper Pearson, TRH, S Brown, and FM Casarim. 2014. Carbon emissions from tropical forest degradation caused by logging. Environ, Res. Lett 9 034017 (11 pp) doi:10.1088/1748-9326/9/3/034017) for further details. The annual reported volume of timber harvested in cubic meters is very robust and the method developed and used in Guyana is peer reviewed and given problems of identifying individual gaps (even using submeter RS imagery) identifying gaps is difficult and even then what to do with the gap—need field work and factors to relate area of gap to volume removed etc…for which we do have factors for Guyana but the variability around gap area is very high. Also gap area does not equate well with timber and biomass damaged as sometimes we found very small gaps even though tree

		felled was large—it depends on other characteristics of forest structure.
	3.3 Page37. “Forestry related change has remained relatively stable between Year 1 and 4” – this maybe an artifact of the use of official timber volume statistics and not a reflection of actual logging rates. Please clarify.	The timber production data are also verified and reflect well, all of logging activities. This statistic is generated by a formal, structured, well managed system of reporting, that is transparent and open for scrutiny.
	3.4 Illegal logging. Degradation from illegal logging is estimated as an additional 15% of that from legal logging (p. v). There is no citation for the basis for this percentage. Clarke 2006 (World Bank report) that cites 15% based on “perceptions of local experts” (Clarke 2006). Is there any further data to back these up? It appears low compared to other Latin American countries. The report states that this rate of 15% may change based on the “Independent Forest Monitoring” but seems to also imply that this monitoring is done by the GFC based on reports from its outposts. Verification by an independent auditor outside of the GFC would be advisable.	GFC was the first to raise objection with the use of the 15% estimate of illegal logging on the basis that we believe it to be too high. This number was based by a GoN contracted Study completed by CIFOR where consultant Mr. Jorge Trevin concluded that this is the rate of illegal logging. The purpose of the MRVS Report is to provide results based on agreed benchmarks. This is being done.
	3.5 Leakage. Leakage is not addressed in the methods and not explicitly a requirement of the interim measures but we suggest that this should be addressed. There are a number of areas where lack of clarity of definitions outline in the interim report (see above) should be addressed explicitly to clarify potential for leakage.	All land areas and change in land areas, and forest are monitored under the MRVS. The MRVS addresses leakage by conducting a full wall to wall monitoring of forest and land cover of Guyana. In this way, if there is deforestation occurring in State Forest or Amerindian Lands, these are clearly identified and linked to the relevant category.
	3.6 Amerindian Lands. Page 53. “It is proposed that deforestation located in Amerindian areas is not counted in calculating reduction in financial remuneration”. This proposal is problematic given that: a. Amerindian communities are facing invasions and encroachment from outsiders due to mining and road building (GCP 2014). This is likely to increase given the proximity of some roads (e.g. Lethem road) to Amerindian lands. b. Disregarding mining or other activities in Amerindian lands could create perverse incentives to focus such activities in these lands. c. If they are not within the LCDS, they are subject to leakage and negative social & environmental outcomes which need to be monitored.	The MRVS Report does not conclude on financial remuneration. This is a separate process led by a separate GoG agency. All forest change are monitored and report under the MRVS for purposes of completeness and comprehensiveness.
	3.7 Amaila Falls Project. It is clear from the JCN that the deforestation from the Amaila Falls	The JCN does not conclude that deforestation from Amaila Falls will

	Project will be excluded from the calculations. However, it is not explicit in the MRVS if/how monitoring of the longer-term impacts of the project will be included in mapping and REDD+ planning.	be excluded from the computations. The only stipulation on exclusion of Amaila Falls is with respect to the institution of the sliding scale. The MRVS monitors all impacts across drivers as identified in the MRVS. As long as the MRVS continues to be implemented all change will be mapped across all drivers, including from the Project.
	3.8 Below-ground carbon pools. It is not clear how the below-ground biomass and soil carbon pools are being treated. They are not included in the Interim Measures required yet they are one of the IPCC carbon pools which should be included in reporting (GOFC-GOLD 2014). This may be particularly relevant for the flooded forests. Have there been efforts to identify peat soils in these areas? Deforestation of peat forests can have significant consequences for emissions (Murdiyarso et al 2010). Given that there are extensive areas of peat soils in other Amazonian countries (e.g. Peru, see Draper et al 2014) and Guyana contains areas of swamp forest (as per Appendix 5), it is important to confirm the absence/presence and extent of these soils. In addition, given that mining is the main driver of deforestation, emissions factors must account for the emissions from extensive soil disturbance caused by mining activities. The effects on soil carbon from mining is extensive (Shrestha and Lal 2006, Frouz et al 2009) much higher than conversion to agricultural production such that a differentiated system of accounting should be considered.	Other Report by GFC also needs to be considered in the area that this comment addresses – such as on the forest carbon monitoring system- those reports provide details on how we included all IPCC pools—above and below ground biomass, dead wood, litter and soil and include these when we estimate EFs If a sampling plot is located on a highly organic soils then we will know this. Our field work has not identified forests on highly organic soils so this is not included at present. Emission factors for mining do factor in soil disturbance using the IPCC 2006 approach. Yes, soils under mining are disturbed but given the form of mining in Guyana a lot of the top soil is washed away and deposited elsewhere in streams/rivers. So for now we use a relatively conservative estimate of the impacts. We have found NO evidence of peat soils in any of our field work (based on random selection of sample sites).
	3.9 Costs. There is no assessment of the cost efficiency of the mapping and emissions factor work that is being carried out. How does RapidEye compare to LiDAR mapping of carbon as done in Peru (Asner et al 2014)? What are the costs involved? Information on the costs of the current system would help increase transparency and promote evaluation of the current system. Comparison with other potential mapping methodologies could be carried out at as a separate exercise.	Costs of implementing the current system are outlined in the consultancy contracts. Satellite imagery offers the most cost-effective option for detecting and monitoring country-scale forest change (data cost alone is USD 1 cent vs approx. 5-10/ha in favour of RapidEye over LiDAR). A sampling approach however, does make sense and this has been adopted for the accuracy assessment. This is based on the capture high resolution airborne imagery (~0.25 m). The approach

		could be expanded to evaluate LiDAR which with field calibration could be used to determine Carbon stocks, detect degradation and map change. An evaluation of technology especially makes sense in Guyana thanks to the availability of robust base datasets. The results of which would provide a useful reference for other tropical countries.
	3.10 Supplementary information and steps to improve MRVS and REDD+. 3.10.1 It can be expected that measures to improve recovery of mined out sites will be implemented in the near to medium term, therefore it is essential that the MRVS take on board advances to assess reforestation and the associated sequestration.	A priority area outlined in the MRVS Roadmap Phase 2 is that of: Refining the measurement and reporting of forest degradation and reforestation/regrowth. To this end, in addressing this priority area in the implementation of Phase 2 of the Roadmap, the GFC will seek to consolidate analysis of current and new drivers of forest degradation; Test and agree on a definition reflecting the key processes leading to forest degradation and that will guide following steps by using existing data and its relationship to definition of forest; and implement for further research and systematic measuring and monitoring with focus on main sources of emissions from forest degradation, reforestation and regrowth on the national level.
	3.10.2 Some information on the relative role of illegal vs legal mining would be useful. It appears that the georeferenced data is available for the mining areas so it would be good to overlay this with mining detected. This information would help focus REDD+ planning.	The main objective of the Interim Measures Report is to provide results on the interim measures as well as a detailed outline on the methods that would have been applied to generate these results. The results of the MRVS along with the datasets generated are shared with key agencies in the natural resources sector including the GGMC & GIMU. These agencies utilise the data for purposes relating to management of the specific area of work (e.g. mining) and strategic interventions and analysis are done at this level. As such the national MRVS is seen to be a critical component in informing this process however, the aspect regarding the legality of activities is addressed at the agency level, in this case the GGMC.

	3.10.3 Given the influence of migration to/from rural areas on deforestation and degradation patterns, it would be helpful to include information on population dynamics in high-risk and low-risk areas.	The national MRVS has been designed to monitor and report on forest area change across identified drivers of deforestation and forest degradation and to generate emission factors for forest carbon removals and emissions reporting. Influencing these drivers may be several factors such as population dynamics. In the development of the MRVS in the medium term, we do see that an assessment of the processes that impact on these drivers may be informative.
	3.10.4 The Interim Report mentions intent to align the MRVS with community MRV initiatives. Given the high rates of accuracy found in community forest monitoring (Danielsen et al 2013, Palmer Fry 2011) and the existence of studies (Butt et al 2015) and projects (GCP 2014, WWF 2014) specific to Guyana, community MRV could feed information into a national MRVS both in terms of the collection of data for creation of emissions factors but also to detect forest degradation events (especially low-intensity fires which may not be detected by remote sensing images) and verify changes detected by the GFC mapping. This also works towards promoting local participation in the process which can help address safeguard (d) of the Cancun Safeguards.	It is with this view in mind that the GFC continues to support the development of community MRV projects. It is intended that the data collected at the level of the communities will feed into the national MRVS. Work at the level of the communities in this regard will also serve to validate data collected at the national scale. Data coming from community MRV will be linked to the national forest monitoring system, thereby allowing sub-national monitoring to inform and strengthen national monitoring. This data exchange is an essential component and various options are currently being explored as to how this can be done efficiently in Guyana. Developing standard operating procedures with user friendly documentation for communities is part of this.
	3.10.5 Considering that Guyana will also need to produce a summary report on Safeguard Information Systems, consideration of the links between the MRVS and a future SIS will be beneficial to both monitoring systems. The potential synergies are particularly relevant for the case of the carbon-related safeguards (leakage (g) and permanence (f)) and participation of (d) and respect for (c) indigenous and local communities.	With the implementation of the MRVS Roadmap Phase 2, the continued work will be aligned with the outcomes of Cop 19 (Warsaw, 2013). At the COP19 in Warsaw, November 2013, discussions on REDD+ advanced and final agreements were made resulting in a complete REDD+ package (known as "The Warsaw Framework on REDD+"). The decisions included, among other things, modalities for national forest monitoring systems, modalities for measurement, reporting and verification, guidance on addressing drivers, safeguards reporting, and

		procedures for submitting forest reference (emission) levels. Earlier decisions included Methodological guidance for REDD+ (4/CP15) and Modalities relating to forest reference emission levels and forest reference levels (12/II CP.17). The development and implementation of Guyana's MRVS seek meet with these evolving international requirements. MRVS Phase 2 Roadmap highlights safeguards as an area of work.
	Summary of Key Recommendations 4.10 Within the text of the report and future reporting, we suggest the inclusion of explicit definitions of key terms and methodologies used as well as information on the level of certainty.	We have elaborated on definitions in the Accuracy Assessment Report where some of the more complex terminologies have been presented. The main aim of the AA is to provide accuracy levels and this has been done. Within the FCMS this has also been done.
	4.11 We suggest a reassessment of the methodology used to assess degradation from logging activities, both in terms of the official statistics and the estimate of illegal activity.	We continually assess the approach we use and as it is now in a high impact factor peer reviewed journal we strongly believe we do not need to reassess the method. There is no basis for requesting a reassessment as the method derived was developed following intensive field work and robust methods applied. Further, monitoring of illegal logging is based on the GFC's expansive system of monitoring, and is open to scrutiny in independent verification. We do not agree with, nor see the justification for the conclusion of remoteness of areas leading to complexities of forest governance. There is no evidence to support this claim. The indicators currently reported against are interim indicators and are intended to be replaced by a full scale forest carbon emissions and removals reporting in the long term.
	4.12 We suggest including Amerindian lands in the calculations given the risks of leakage, illegal mining and logging, or encroachment from non-Amerindian actors. Such an approach will also be consistent with the national approach that Guyana has taken for the MRVS.	Amerindian lands are include in the MRVS. See Section 6.11 of the Report.
	4.13 Identification of a strategy to assess (and deal with) leakage should be considered. For	All land areas and change in land areas, and forest are monitored

	degradation, we suggest extending beyond estimating the area degraded and accounting for the intensity of fires and other disturbances.	under the MRVS. The MRVS addresses leakage by conducting a full wall to wall monitoring of forest and land cover of Guyana. Degradation monitoring under the MRVS includes areas affected by fire and other disturbances. In 2015 the plan for continuing work on degradation includes establishing emission factors for key drivers which will essentially use the area estimate generated through the remote sensing work along with the emission factors developed to more effectively account for impacts on forest carbon.
	4.14 We suggest incorporation of estimates of changes in soil carbon stocks.	See response to comment 3.8 above already include soil emissions and have found no evidence of peat soils in our field sampling, though we do know swamp forest exist in Guyana and have sampled in some of these but no evidence of highly organic soils to date (based on soil sampling and analysis), but we will investigate this further. The key question is do they exist in areas that are subject to deforestation.
	4.15 We suggest including studies of Guyana peat soils.	
	4.16 Data and verification from community MRV in the national strategy should be included. This can contribute to calculation of emissions factors but also to verification of degradation and deforestation detected during the mapping, especially for shifting agriculture.	It is with this view in mind that the GFC continues to support the development of community MRV projects. It is intended that the data collected at the level of the communities will feed into the national MRVS. Work at the level of the communities in this regard will also serve to validate data collected at the national scale. Data coming from community MRV will be linked to the national forest monitoring system, thereby allowing sub-national monitoring to inform and strengthen national monitoring. This data exchange is an essential component and various options are currently being explored as to how this can be done efficiently in Guyana. Developing standard operating procedures with user friendly documentation for communities is part of this.
	4.17 Identification and building on links between the MRVS and the Safeguard Information Systems should be considered.	With the implementation of the MRVS Roadmap Phase 2, the continued work will be aligned with

		the outcomes of Cop 19 (Warsaw, 2013). The development and implementation of Guyana's MRVS seek meet with these evolving international requirements. Safeguards feature prominently in the MRVS Roadmap Phase 2. A key activity includes the exploration of the use the REDD+ monitoring and MRV data to assist the development of a Safeguard Information System, also in the context of evolving guidance from the UNFCCC negotiations on this matter.
	4.18 We suggest continuing to build upon the progress in capacity building and methods development.	Capacity building and methods development continues to be an ongoing and continuous process, building on what has already been achieved. The importance placed on capacity building by the GFC is reflected in the MRVS Roadmap Phase 2, for which the overall proposed objective is to consolidate and expand capacities for national REDD+ monitoring and MRV. This will support Guyana in meeting the evolving international reporting requirements from the UNFCCC as well as continuing to fulfil additional reporting requirements e.g. to meet reporting commitments under the bilateral cooperation agreement with the Government of Norway. It will also support Guyana in further developing forest monitoring as a tool for REDD+ implementation, building on the already established foundation.

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