GFOI

Global Forest Observations Initiative

TAKING STOCK OF OUR FORESTS

Global Forest Observations Initiative

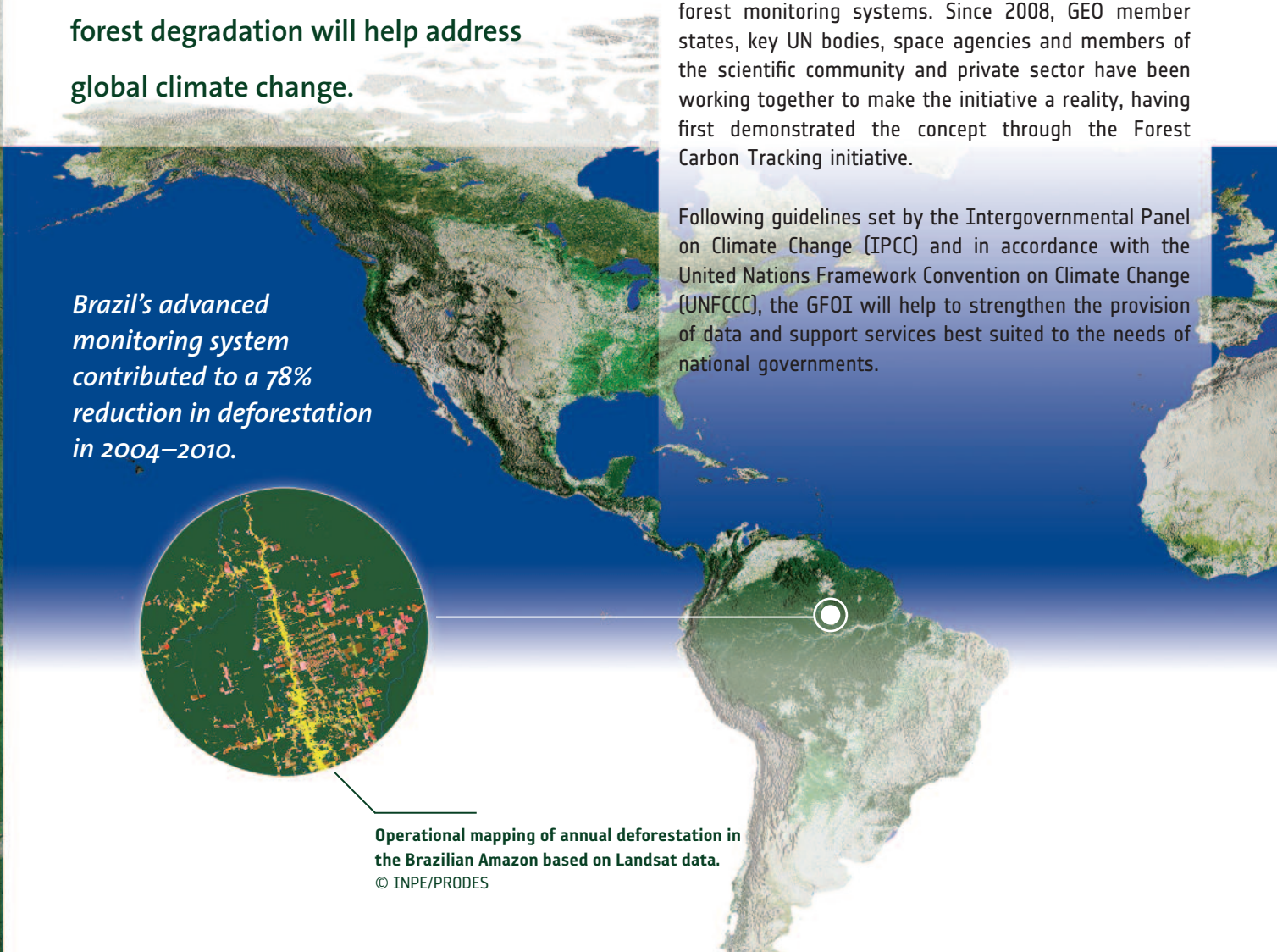
By absorbing and storing atmospheric carbon, forests play an important role in the global carbon cycle and in the moderation of atmospheric greenhouse gases. Reducing deforestation and forest degradation will help address global climate change.

Efficient and sustainable national forest monitoring systems require reliable, timely and affordable observations to estimate greenhouse gas emissions and removals associated with forest carbon.

Through its Global Forest Observation Initiative (GFOI), the Group on Earth Observations (GEO), together with key partners, is facilitating the supply and use of forest observations for countries interested in establishing forest monitoring systems. Since 2008, GEO member states, key UN bodies, space agencies and members of the scientific community and private sector have been working together to make the initiative a reality, having first demonstrated the concept through the Forest Carbon Tracking initiative.

Following guidelines set by the Intergovernmental Panel on Climate Change (IPCC) and in accordance with the United Nations Framework Convention on Climate Change (UNFCCC), the GFOI will help to strengthen the provision of data and support services best suited to the needs of national governments.

Brazil's advanced monitoring system contributed to a 78% reduction in deforestation in 2004–2010.



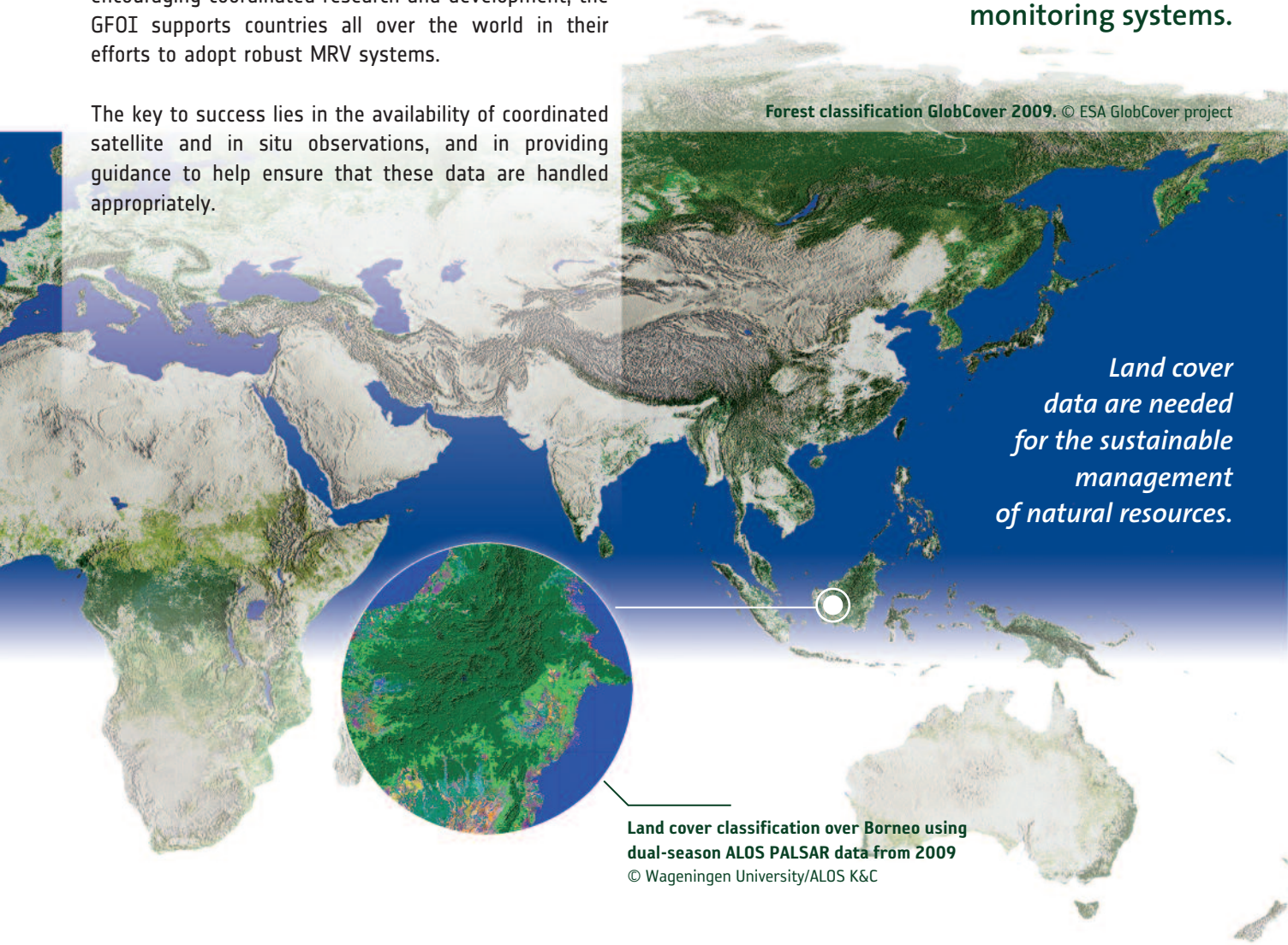
Operational mapping of annual deforestation in the Brazilian Amazon based on Landsat data.

Measurement, Reporting and Verification (MRV) systems are expected to be a crucial part of any future international climate agreement, including Reducing Emissions from Deforestation and forest Degradation, sustainable forest management, conservation and carbon enhancement (REDD+) under the UNFCCC.

By facilitating a supply of reliable observations, helping to build capacity, developing methods and guidance and encouraging coordinated research and development, the GFOI supports countries all over the world in their efforts to adopt robust MRV systems.

The key to success lies in the availability of coordinated satellite and in situ observations, and in providing guidance to help ensure that these data are handled appropriately.

Responding to the urgent need to reduce deforestation and forest degradation, the Global Forest Observations Initiative fosters the sustained availability of satellite data for national forest monitoring systems.



Forest classification GlobCover 2009. © ESA GlobCover project

Land cover data are needed for the sustainable management of natural resources.

Land cover classification over Borneo using dual-season ALOS PALSAR data from 2009
© Wageningen University/ALOS K&C

FOREST VALUES

Through their influence on carbon, water and energy cycles, forests help regulate Earth's climate. They also protect the land from erosion, flood and drought, yield food and medicines, and are rich in biodiversity – their value to the global and local environments and livelihoods is without question. Nevertheless, forests continue to be subject to extensive deforestation and degradation owing to the ever-increasing pressure for agricultural land and the development of new infrastructure.

Deforestation and forest degradation account for a significant proportion of global greenhouse gas emissions. Immediate and short-term objectives for forest monitoring and carbon tracking are dictated by the need to reduce these emissions.

Reliable information on the extent and changes in forest cover and the carbon they hold is needed for policy being negotiated within the UNFCCC. The GFOI will also help to broaden both the supply of observations and their use for other forest-related issues such as biodiversity and natural resource assessment.

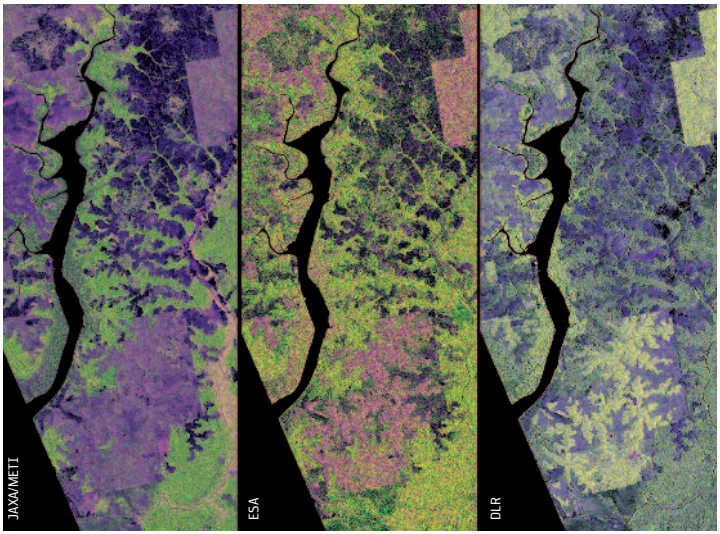
DATA SUPPLY

The GFOI supports an approach that is based on a reliable supply of satellite data and sufficient measurements taken in situ to estimate changes a country's forest cover and carbon stocks, and associated greenhouse gas emissions and absorption.

As part of the GFOI's long-term goal for progressive expansion, the Space Data Coordination Group, established by the Committee on Earth Observation Satellites (CEOS), helps ensure that the necessary coverage is available from a range of satellite missions. These coordinated observations include data that are publically available and data from commercial providers.

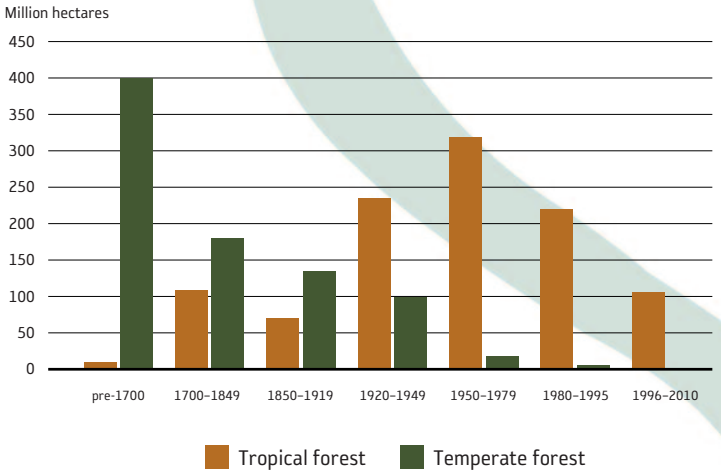
The GFOI also helps to ensure that governments have access to data that are processed to a level that is useful for any particular country.

The GFOI website offers access to background and geospatial information, data processing, and research and development activities.



Synergistic use of satellite sensors can help to achieve the confidence required for operational monitoring. These three synthetic aperture radar images of Central Kalimantan, in the Indonesian part of Borneo, were acquired by ALOS PALSAR (left) ASAR on Envisat (middle) and TerraSAR-X (right).

© JAXA–METI/ESA/DLR



© FAO "State of the World's Forests 2012"

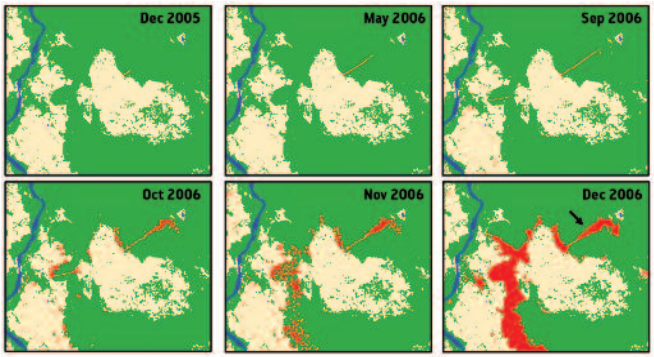
Rates of deforestation have slowed in temperate regions but the deforestation of tropical forests remains relatively high.

CAPACITY BUILDING

Helping develop human and technical capacity is important to the initiative.

Building capacity, particularly in developing countries, is essential to establishing and running reliable, efficient and sustainable forest monitoring and carbon accounting systems. As well as access to the necessary observations, this requires support and technical assistance in data handling and procedures.

In the coming years, GFOI aims to support countries in their efforts to establish national forest monitoring systems with the help of donor countries, UN bodies, NGOs and technical expert panels currently involved in related capacity building activities.



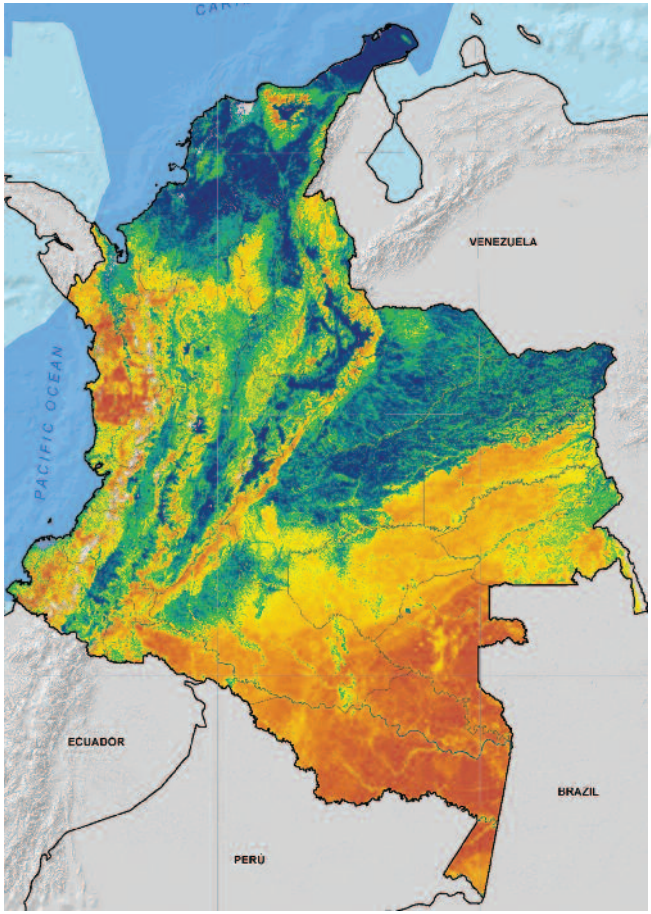
↑
Systematic global observations of forests by satellites are necessary for consistent time series of data. Sustainability requires coordinating satellite resources.
© Synoptics BV / Wageningen University

← **Guidance on gathering in situ data and combining them with remotely sensed data is fundamental for estimating carbon stocks and related greenhouse gas emissions.**
© René Siwe, GAF AG

METHODS AND GUIDANCE

A set of methods and guidelines for estimating and predicting future carbon stocks is being developed to support countries in their effort to build national forest monitoring systems. This will help ensure that forest carbon assessments are credible, comparable and transparent.

The documents, which are scheduled for completion in 2013, will provide recommendations on establishing national MRV systems consistent with IPCC guidance and UNFCCC requirements.



RESEARCH AND DEVELOPMENT

New satellite sensors and measuring techniques continue to be developed. The GFOI will help ensure that research and development activities continually investigate and improve the way in which combined satellite data and ground-based information can be turned into enhanced information products, carbon models and national reporting systems.

Regular improvements depend on the integration of current and future observation systems as well the consideration of the cost with respect to the various approaches.

The GFOI will interact with leading scientific organisations to remain abreast of new information on the readiness of emerging approaches in the operational domain.

← **Carbon stock distribution of forests in Colombia in 2007.**

THE GFOI PARTNERSHIP

The Global Forest Observations Initiative is being developed by GEO, led by: Australia, Norway, the USA, the UN Food and Agriculture Organization (FAO) and the Committee on Earth Observation Satellites (CEOS). The Intergovernmental Panel on Climate Change (IPCC), the World Bank Forest Carbon Partnership Facility, Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD) and institutions in GEO member countries also play important roles.

CEOS has committed resources from the world's space agencies to provide a systematic contribution to the GFOI. This is being led by the European Space Agency (ESA), the Norwegian Space Centre (NSC) and the United States Geological Survey (USGS). Other national space agencies engaged to date are from Argentina, Brazil, Canada, China, France, Germany, Japan and the USA.

www.gfoi.org

GROUP ON EARTH OBSERVATIONS

The Group on Earth Observations is coordinating efforts to build a Global Earth Observation System of Systems, or GEOSS.

GEO was launched in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialised countries. These high-level meetings recognised that international collaboration is essential for exploiting the growing potential of Earth observations to support decision making in an increasingly complex and environmentally stressed world.

GEO is a voluntary partnership of governments and international organisations. As of September 2012, GEO's Members include 89 Governments and the European Commission. In addition, 64 intergovernmental, international, and regional organisations with a mandate in Earth observation or related issues have been recognised as Participating Organisations.

www.earthobservations.org

Committee on Earth Observation Satellites

Established in 1984, the Committee on Earth Observation Satellites (CEOS) coordinates civil spaceborne observations of Earth. Currently, 52 members and associate members comprising space agencies, national, and international organisations strive to enhance international coordination and data exchange to optimise the benefits to society.

www.ceos.org

Deforestation in the Amazon