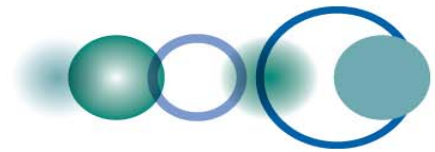


# The GEO Forest Carbon Tracking (FCT) initiative

Towards the Implementation of a global  
Forest Carbon Tracking System

Giovanni Rum,  
GEO Secretariat

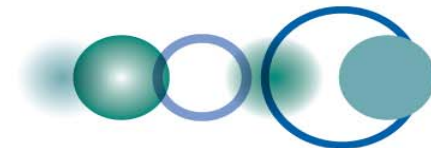




# GEO, the Group on Earth Observations

## An Intergovernmental Organization with 81 Members and 58 Participating Organizations





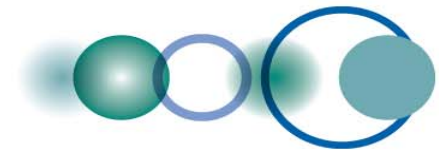
# The Group on Earth Observations

The Group on Earth Observations was established at the EO Summit in 2005 in Brussels with one major objective:

**To establish a coordinated and sustained  
Global Earth Observation System of Systems  
GEOSS**

**to enhance informed decision making in  
different areas of the Society.**





## GEO outcomes

- Improve and Coordinate Observation Systems
- Provide Easier & More Open Data Access
- Foster Use (Science, Applications)
- Build Capacity

GEOSS will be built from the expansion and interlinking of existing observation and information systems and the investments of Members and Participating Organizations in new systems.





# THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS

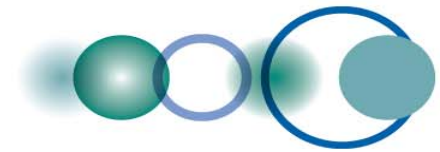




# The Forest Carbon Tracking (FCT) initiative Summary

National bodies, space agencies and research institutions are working together within the intergovernmental Group for Earth Observations (GEO), to facilitate access to satellite, airborne and in situ data, to establish technical standards and to create the appropriate framework for the implementation a global forest carbon tracking system, based on a network of national systems

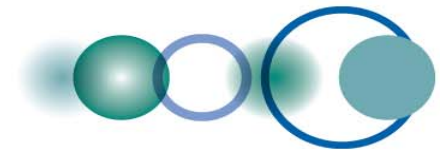




# Scope

This presentation will describe the objectives, activities and progress of the GEO's effort to demonstrate the feasibility of this System, to develop its building blocks and to realize its vision for implementation.





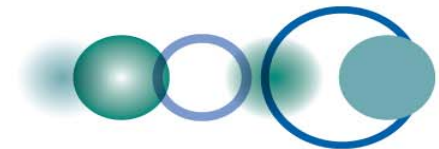
# The need

An operational global forest monitoring system based on a network of national systems is needed, *inter alia*, to support reducing greenhouse gas emissions from deforestation and forest degradation (REDD)

- inclusion of forests in a post-2012 climate agreement is important for many developing countries
- Monitoring, Reporting and Verification (MRV) systems will be critical, and require global Earth observation systems



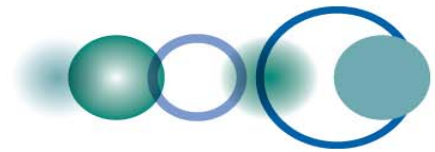




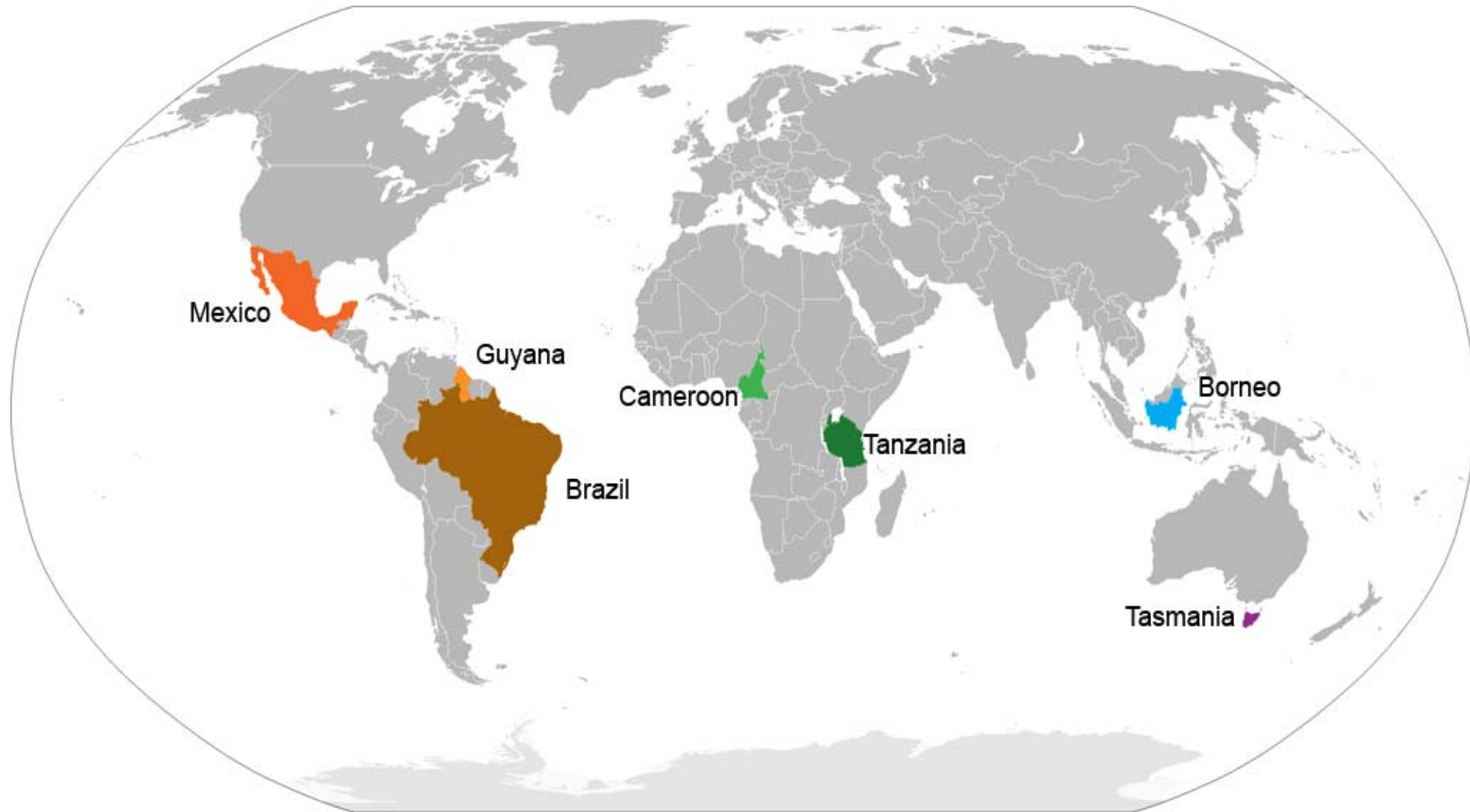
# The GEO FCT Partnership

- Leadership of Australia, Canada, Japan and Norway
- CEOS, the Committee on Earth Observation Satellites, and its members agencies
- FAO, GOFC-GOLD, EC-JRC & research groups
- Google
- Seven 'National Demonstrators' for the project in 2009-2010
  - Australia, Brazil, Cameroon, Guyana, Indonesia, Mexico and Tanzania.



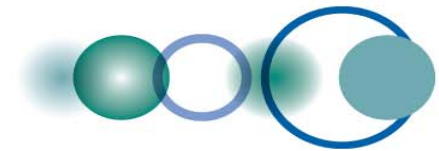


# GEO FCT Partnership: NDs



Growing list of candidates for 2010 participation





# The GEO FCT initiative

## How is it unique ?

GEO FCT is an interim framework for coordination among governments, space and forest agencies, research institutions and early adopter countries to:

- Establish National end-to-end demonstrators showing the elements and operations of a global system of systems
- Develop institutional arrangements for secure data access and continuity
- Initiate, validate and promote the standards and the protocols for comparability and interoperability





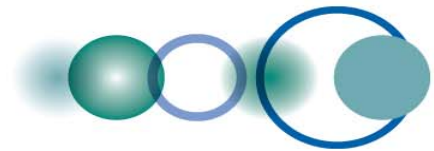
## The GEO FCT initiative

What will be made available to UNFCCC ?

GEO FCT supports countries establishing national systems for forest carbon tracking by:

- access to long-term satellite, airborne and in situ data, and the associated analysis and prediction tools
- creating the framework and technical standards for a global network of national systems
- developing methodologies and products that follow UNFCCC guidelines



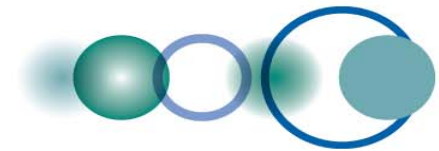


# The Path to Implementation

The GEO FTC initiative will pave the way for countries to establish national MRV systems as part of a global network via eight main actions:

1. A commitment by CEOS members to provide satellite data, tools and training for national wall-to-wall forest carbon tracking.
2. Guide countries on methods and standards for data processing to produce forest information products.
3. Guidance on linking ground measured forest inventories, remote-sensing data and carbon models.





# The Path to Implementation

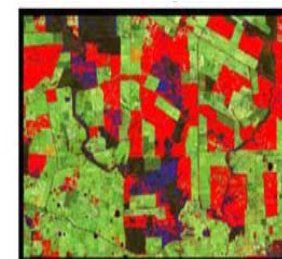
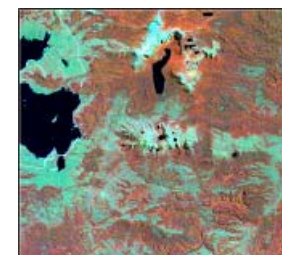
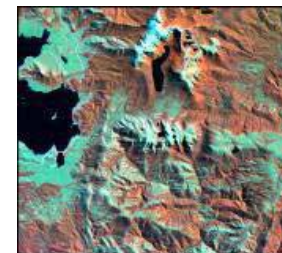
4. Develop validation and accuracy assessment procedures for forested area and carbon stocks.
5. Grow the network of 'National Demonstrator' countries: Southeast Asia, Africa and South America.
6. Raise awareness of the demonstrations to the UNFCCC and other major fora, showing the policy implications of new capabilities.
7. Create a coordinated network of processing facilities to ensure countries are supported in data processing.
8. Prepare for a transition from demonstration to operation.



## Products identification

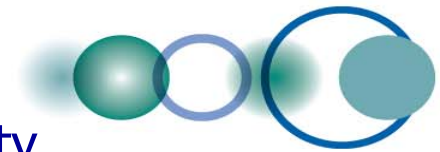


- Horizon-1: Annual, wall to wall Forest/Non-Forest map and trends and associated accuracy metrics, at moderate resolution (<30m ), preferably from a 1990 baseline.
- Horizon-2:
  - Forest Degradation (& trends)
  - Land-use (e.g. agriculture, shifting cultivation, plantations, native forest ), Forest class: secondary forest (eg after fire or after agriculture); Softwood, hardwood, native, Plantation type mapping pre- and post-1990
  - Sparse woody perennial cover

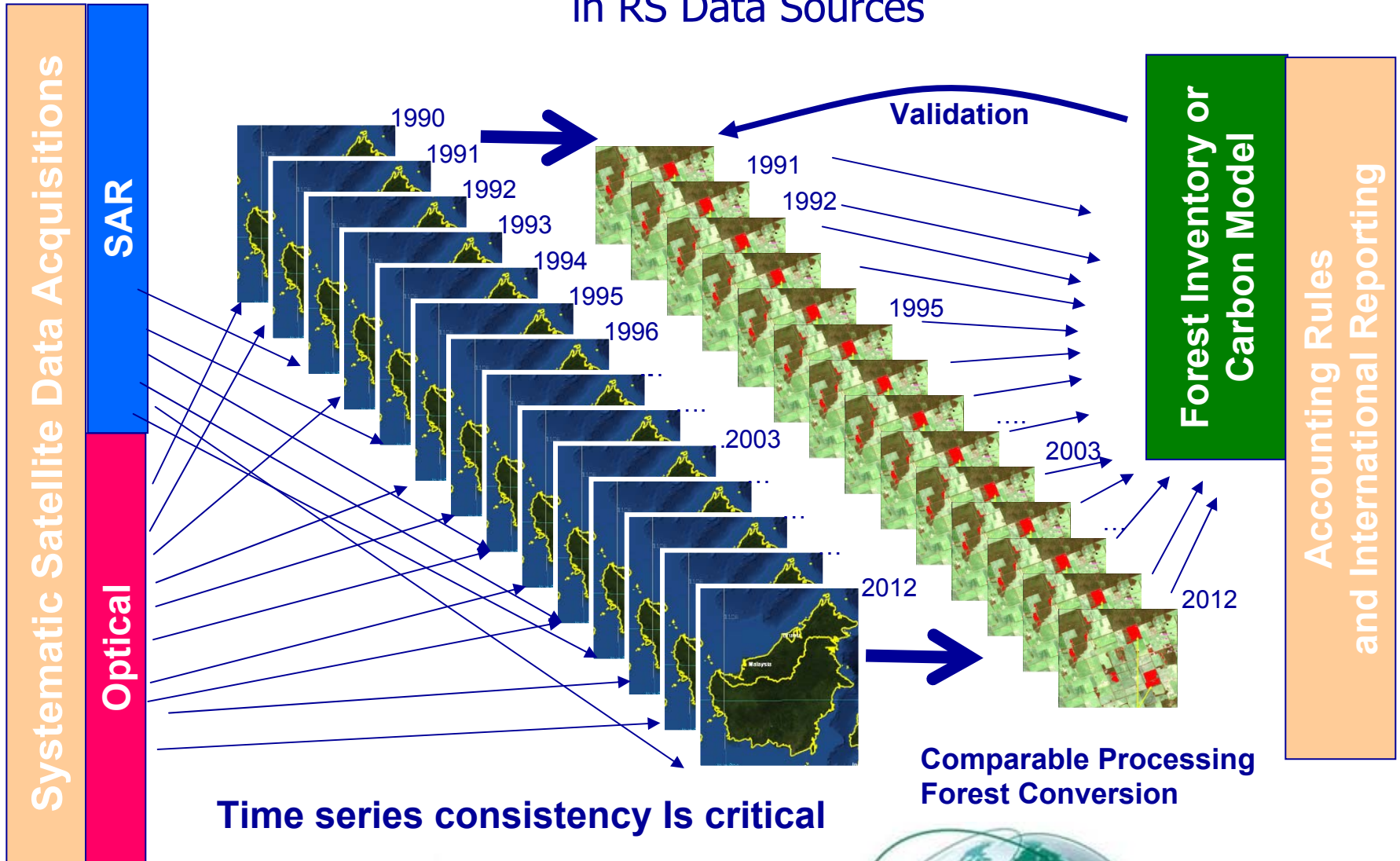


**A yearly, wall-to-wall, medium-resolution monitoring approach has been identified as the best suited to cover a wide range of potential outcomes of the policy-framework negotiations.**

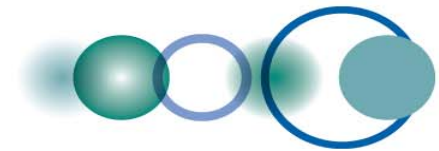




# Interoperability and complementarity in RS Data Sources







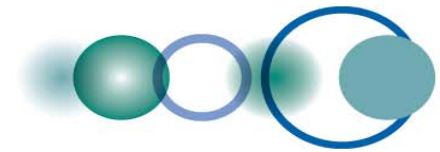
# FCT activities summary

The Task will demonstrate this capability, initially via the establishment of robust methodologies, satellite acquisition plans and a series of national demonstration areas (ND – National Demonstrators). Through a coordinated and iterative process, ND's will provide the elements to define a template for the roll-out of a consistent and reliable global system.

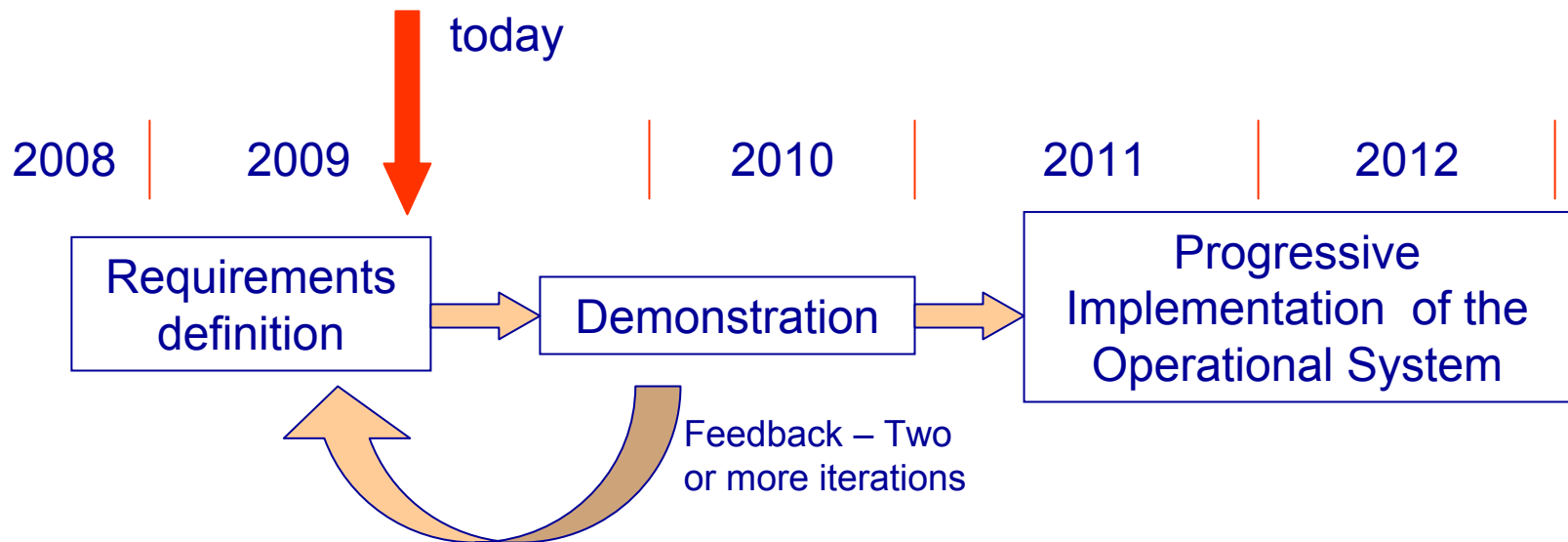
The task therefore includes three main interconnected phases:

- Requirements definition
- Demonstration
- Implementation of the operational system



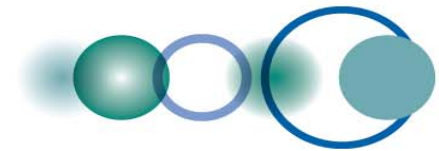


# GEO FCT task main phases



The selected approach allows progressive inclusion of additional National Demonstrators into subsequent demonstration cycles and a smooth transition to a pre-operational and then to an operational system



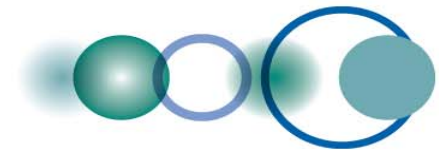


## CEOS Satellite observations 2009

Sensor	Brazil	Guyana	Mexico	Cameroon	Tanzania	Borneo	Tasmania
ALOS PALSAR	4541	159	375	116	405	507	86
RADARSAT-2	126	41	243	acquisition by ENVISAT	acquisition by ENVISAT	161	24
ENVISAT ASAR	303	67	acquisition by RADARSAT	107	182	acquisition by RADARSAT	25
Landsat 5 & 7	1665 (+ 3500 INPE)	107 (+ 88 INPE)	484	115	115	173	41
CBERS-2B: CCD	3500	80	N/A	N/A	N/A	N/A	N/A

## Scenes acquired over the 7 NDs during June-Sept 2009

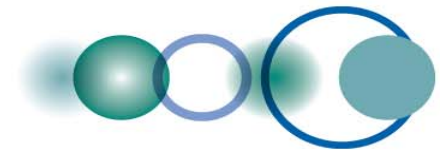




## Organizational aspects

- Task Team established, key Technical and Management processes identified and in place. Modular approach ready to include additional contributions and participations
- Network of organizations and institutions ready to support National Demonstrators Countries for 2009 data processing identified
- Coordination with other major initiatives in the domain (such as UN-REDD) active





GEO FCT Prototype Portal, <http://www.geo-fct.org/>



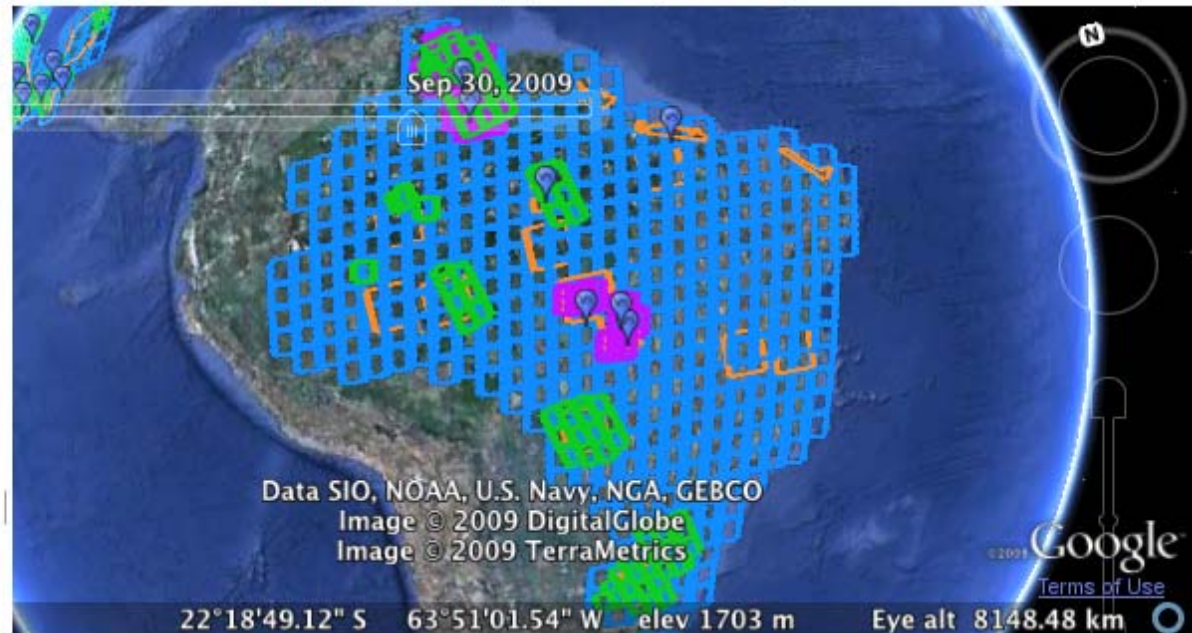
- [Welcome](#)
- [About](#)
- [Use Guide](#)
- [ND](#)
- [Visualisation](#)
- [Browser](#)
- [FAQ](#)
- [Forest Carbon Tracking](#)
- [Task](#)
- [Organisation](#)
- [National Demonstrators](#)
- [Borneo](#)
- [Brazil](#)
- [Cameroon](#)
- [Guyana](#)
- [Mexico](#)
- [Tasmania](#)
- [Tanzania](#)

## Brazil

- FCT
  - National Demonstrators
  - Medium Res Sat Cover
    - ASAR
      - 2009: 55
    - LANDSAT
      - 2009: 1888 (301)
    - PALSAR
      - 2009: 2475
    - RADARSAT
      - 2009: 561
  - Sample Map Products

Opacity percent: 100  
Show borders:

[Brazil](#) [Cameroon](#) [Guyana](#) [Mexico](#) [Tanzania](#) [Tasmania](#)



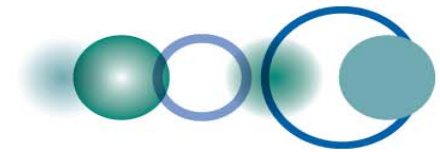


## Reference definitions

- GEO Forest Carbon Tracking dataset specification, close to conclusion
- Satellite interoperability standards, initiated and progressing
- Standards for in-situ measurement, validation procedures and accuracy assessment for the remote sensing of forested areas and for carbon stock estimates, initiated
- Guidelines for Countries to join the initiative and act as National Demonstrator, drafted
- Definition of the operational system, initiated

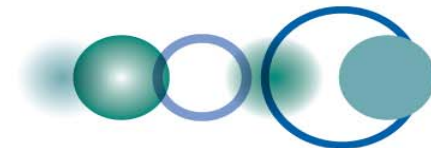
The relevant documents are available on request and will be posted on the web portal.





- Produce and promote the 2009 GEO FCT dataset and results
- Perform the 2010 Demonstration campaign repeating annual dataset and results for the existing National Demonstrators plus Engagement of additional Countries
  - test satellite data coordination mechanisms
  - test systems, standards and protocols to provide consistent results for multiple circumstances
  - Continue to build-up a consistent historical archive

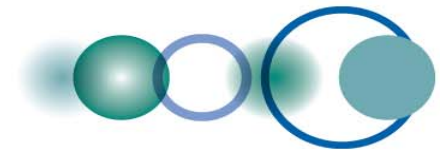




- Progress and promote key GEO-branded standards and protocols
  - refined as lessons are learned from 2009 & 2010 demonstrations
- Support 'architecture planning' of global system architecture for transition to operations







# Thank you

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