Forest Carbon Tracking

A GEO sub-Task in WP 2009-2011

Co-Leads:

Australia (Department of Climate Change & CSIRO)

Japan (JAXA)

Norway (NSC)

Canada (CSA)

The Netherlands

CEOS (NSC, CSIRO, JAXA)

FAO

GTOS (GOFC-GOLD)

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Sub-task Number: CL-09-03b
Overarching GEO Task: Global Carbon Observation and Analysis System

GEO Area: CLIMATE
Related GEO Communities of Practice: Carbon Cycle (former IGCO) and Forest

Why forests; Why Carbon?

- A large proportion (up to 20%) of global emissions are thought to arise from tropical deforestation
- Reduced deforestation and increased reforestation is a rapid response to reducing emissions
- For countries, there are potentially very significant environmental, social and economic benefits and implications that parallel the climate implications
- Design of effective national forest monitoring systems that can serve UNFCCC - Climate Change negotiations, is a key decision at COP-15 (Copenhagen 2009)

- Therefore efforts on designing of operational forest monitoring systems must focus on these economic and policy drivers, not on technology

GEO Task Goal

Demonstrate to climate negotiators that that coordinated satellite earth observations, field measurements and reporting can provide the basis for reliable information services of suitable consistency, accuracy and continuity, to support Forest Carbon Tracking, leading to eventual establishment of a global network of national forest carbon monitoring verification and reporting systems

OBJECTIVES

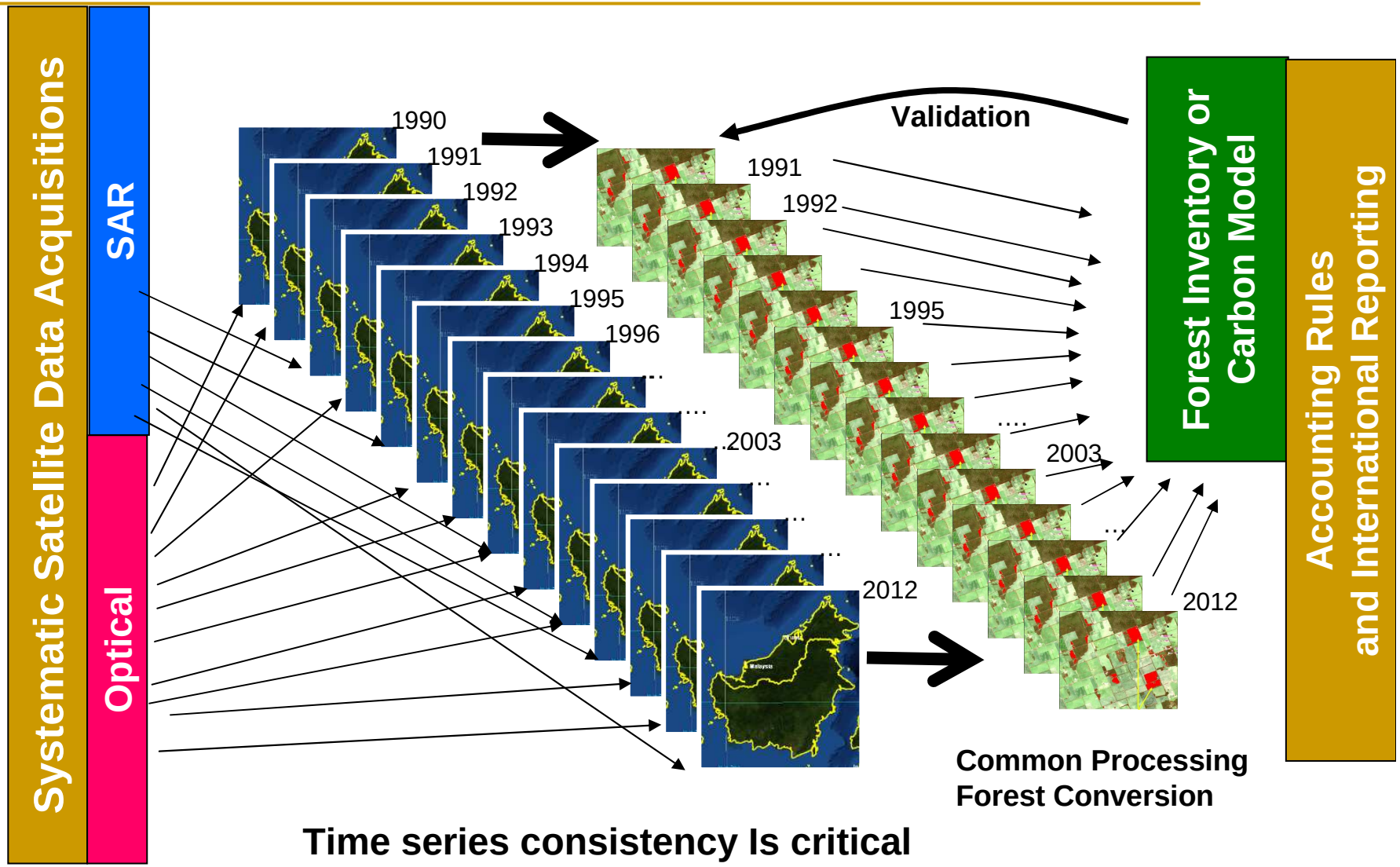
To support this goal, the task objectives are:

- **Consolidation of observational requirements and associated products, ultimately leading to unencumbered delivery of annual, mid-resolution global forest-change monitoring information, augmented by frequent near-real time observations in special areas**
- **Demonstrate initial monitoring capability via establishment of regional demonstration/reference test-sites, using similar input satellite data and agreed methodologies, to demonstrate forest-change monitoring capability, in support of climate policy needs**
- **Coordination of protocols for consistent field measurement and validation**
- **Coordination of data analysis tools and standards methodologies**
- **Coordination of the production of reference documents and datasets**
- **Improvement of access to observations, datasets, tools and expertise and associated capacity building activities.**

Task Outputs/Deliverables

1. Regional reference test-sites established in consultation with national governments, NGO's and expert teams
2. Optical + SAR data acquisition strategy agreed and established via CEOS agencies
3. Forest change data (Optical + SAR) products agreed and being routinely produced, by national/regional programs
4. Establish guidelines for annual, mid-resolution global forest-change monitoring program
5. Satellite data processing, accuracy assessment and correction methods widely agreed and documented
6. Consistent field measurement guidelines and protocols implemented across national demonstrators
7. Provision of in-country access to observations, datasets, tools and expertise and associated capacity building activities.

Interoperability in Source of Satellite Data

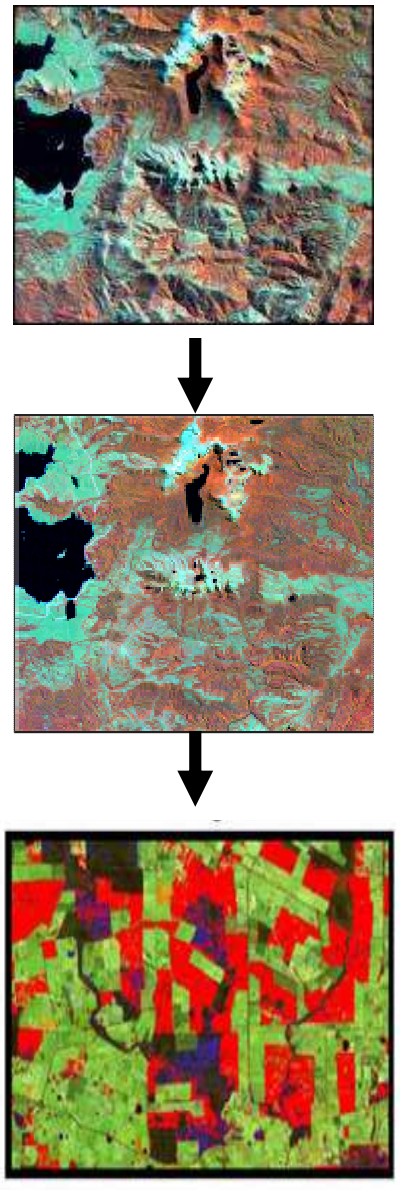


Key Deliverable: Development of Methods for production of repeatable Land-Cover Products for Ingestion into Carbon Models

Needs

Expert community agreement on data analysis methods for:

- optical & SAR data integration
- processing into annual, orthorectified, terrain illumination-corrected mosaics
- Methods for production of Information Products on annual forest cover change at medium resolution



Establishment of Test Sites (1)

- This GEO Task will establish a number of reference test-sites to demonstrate and develop approaches and methods for using current Earth observation capabilities for long-term, operational forest-cover change and carbon monitoring.

- Test-sites need to have key characteristics to qualify and endorsed in support of this task

Once the initial sites are identified, we will ask CEOS members work with space agencies to secure the necessary Earth observation datasets and possible additional support from agencies for the data processing.

Proposed Guidelines for Establishment of Test Sites and Recognition by GEO Task (2)

To ensure rapid progress by the task, the selection of priorities for large-scale national demonstrators and for validation/measurement reference sites therein, should be based on the following criteria:

- **An initial choice of NDs will be based on entire countries or large regions, where their central governments have officially stated an interest or intent to implement national forest carbon monitoring verification and reporting systems.**

- **If needed, external donor countries and/or donor organisations would have been already identified for long-term involvement and support of capacity building, field measurement and satellite data acquisition and analysis, and monitoring system implementation.**

- **National government institutions (e.g. forest management authorities) would have committed local expert capability and access to field data, in support of the specific FCT in-situ measurement and validation activities.**
- **ND Countries would preferably already have ongoing nested forest inventory, science validation test-sites.**
- **Priority will be given initially to cloud-affected areas (e.g. Borneo, Congo Basin, Amazon Basin), with active forest management, including deforestation – aforestation activities and forest degradation, so that repetitive, wall-to-wall, accurate wide-area forest mapping capabilities can be demonstrated**

Nominated Initial Test-sites

- Americas: Brazil (Amazon region), Guyana & Mexico
- Africa: Cameroon, Tanzania
- Asia: Indonesia (Borneo island)
- Oceania: Australia (Tasmania island)

- Utilise synergy with CEOS LSI Constellation regional areas and FAO FRA 2010 validation sites

Note: Final area and coverage of each regional test-site is being finalised in conjunction with key countries and their governments.

Progress to-Date

- Initiation of Work Plan and country/agency commitments
- Definition of the initial NDs agreed
- GEO Document on Satellite Optical/SAR Data Requirements and systematic acquisition strategies released (June 2009)
- Draft document on National Demonstrators open for comment (June 2009)
- Draft document on Satellite Data Processing (in preparation – release for comment July 2009).
- Draft document on field measurement guidelines and protocols (initiated, expected release for comment August 2009)
- Draft document on Accuracy assessment and verification (initiated, expected release September 2009)
- Draft document on Data & Model linking and visualisation (initiated, expected release September 2009)
- Technical Workshops: Brazil 0908, Australia 0409; Italy 0509; Thailand 0709; ….

GROUP ON EARTH OBSERVATIONS

CEOS

Thank you