

Forest Carbon Tracking

A New GEO sub-Task in WP 2009-2011

Leads: Australia (Department of Climate Change & CSIRO)

Japan (JAXA)

Norway (NSC)

CEOS (NSC, CSIRO, JAXA)

FAO

GTOS (GOFC-GOLD)

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

International Context

- Initiative supports political requirements related to the UNFCCC negotiations in relation to reduction of emissions from deforestation
- Window of opportunity for political attention towards COP-15 in Copenhagen end 2009
- Unique opportunity for GEO, CEOS and the forest community to demonstrate capability to develop a consistent, long-term forest carbon monitoring system

GEO Task Objectives

Ultimate Goal: Demonstrate to climate negotiators that that coordinated Earth Observations 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 network of national forest carbon monitoring systems

To support this goal, the task objectives are:

- 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
- Consolidation of observational requirements and associated products, ultimately leading to an annual, mid-resolution global forest-change monitoring program, augmented by frequent near-real time observations in special areas.
- Coordination of observations, including securing their continuity
- Coordinated assessment of tools and methodologies
- Coordination of the production of reference datasets
- Improvement of access to observations, datasets, tools and expertise and associated capacity building activities.

Task Outputs/Deliverables

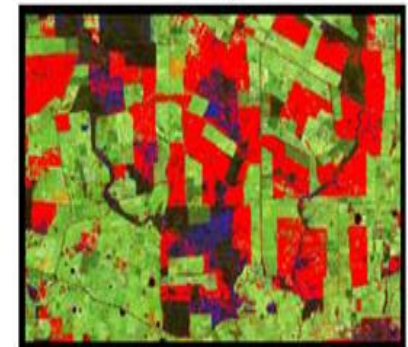
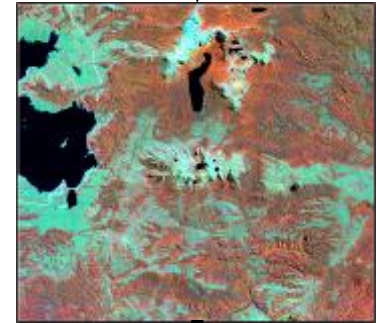
1. Regional reference test-sites established in consultation with national governments, NGO's and expert teams
2. Optical + SAR data acquisition strategy agreed and established via CEOS agencies
3. Optical + SAR datasets routinely provided by space agencies, initially over reference sites
4. Satellite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

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)

- Sites should be located in countries with own stated intent to develop national forest carbon monitoring systems, and requiring capacity building support
- Donor countries and/or donor NGO's clearly identified
- Countries with proposed test-sites and their government institutions having commitment for capability to support ground observations
- Relevant national forest management authorities in host countries being involved
- Clear management and governance arrangements being outlined
- Resources for the acquisition and analysis of the data clearly identified
- Timely and specified reporting on progress and deliverables, including specific data products, for each site

Proposed Guidelines for Establishment of Test Sites and Recognition by GEO Task (3)

- Initial focus will be on cloud-affected areas
- Large areas (to demonstrate repetitive, wall-to-wall, accurate wide-area forest mapping capabilities - e.g. Borneo, Amazon)
- Sites to include representative scientific projects on forest change, with appropriate in-situ observations
- Availability of archived SAR and optical data to demonstrate changes is preferred



Nominated Initial Test-sites

- Amazon region in Brazil
- Borneo, with focus on the Indonesian part
- Tanzania, with focus on mountain forest
- Tasmania (Australia)
- Additional sites to be defined by UN REDD (FAO)
- Utilise synergy with CEOS LSI Constellation regional areas and FAO FRA 2010 sites

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

Short-term SAR Actions

1. Provide a short document on optimal SAR **data modes and products** for forest-cover change monitoring both annual and specially active areas – March 2009
2. Write a short paper on SAR acquisition strategies (including synergistic sensors/platforms) ready for execution by relevant space agencies in CEOS – March 2009
3. Establish and document the methodology for generation of annual, ortho-rectified, terrain illumination-corrected mosaics – April 2009
4. Report on agreed and robust forest-change & trend monitoring methodology, that is complimentary with current optical (eg NCAS) methods – late April 2009 (**presentation at ISRSE – GEO Forest & Carbon Workshop – Stressa, May 3-9, 2009**)
5. Documented accuracy assessment of mid-resolution, wall-to-wall, annual forest change mapping methods - August 2009
6. Demonstrate annual and near-real time monitoring capability of optical/SAR deforestation and forest degradation – early November 2009 (K&C + others) (for showcasing at **COP-15 possible side-event – Copenhagen 2009**)

Progress to-Date

- Definition of the initial test-sites close to be agreed in Brazil, Indonesia, Tasmania, Tanzania.
- FAO to conclude in March the first UN-REDD countries.
- CSA propose to co-lead development of SAR applications for forest ecosystems
- Draft letter to carefully selected SAR experts regarding optimal SAR data modes and products