CEOS' Role for GEO FCT / GFOI

1st Space Data Coordination Group Meeting

March 6-9, 2012, CSA, Montreal

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Co-Chair and CEOS PoC

GROUP ON EARTH OBSERVATIONS | Forest Carbon Tracking

Background on CEOS

- Committee of Earth Observation Satellites was established in 1984
- Recommendation from a Panel of Experts on Remote Sensing from space
- Participated by 29 space agencies and 20 other national and international bodies
- “Space Arm” of GEO

CEOS SIT-23

Communiqué on Forest and Carbon Monitoring

1) Agreement among willing CEOS Member agencies to ensure availability of current and future data supply on a basis adequate for the implementation and operation of continuous services;

2) Documented procedures to secure interoperability of optical and SAR sensors based on case study results;

3) Documented procedures on linking wall-to-wall, time series satellite data coverage to (1) ecosystem models and (2) traditional forest inventories, to consistently estimate carbon stocks at project and national scales;

4) Validation procedures for satellite applications in forest monitoring;

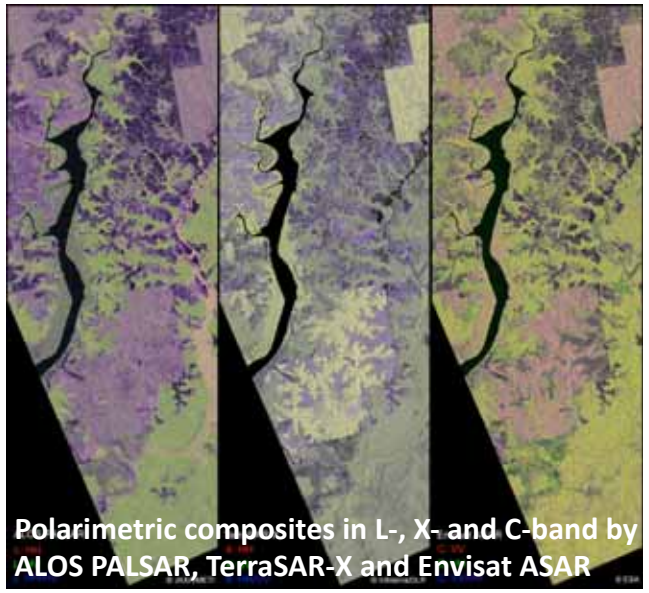
5) Visualisations of progress and demonstration results for GEO-VI and COP-15 – making clear the capacity of these initiatives to support policy objectives.

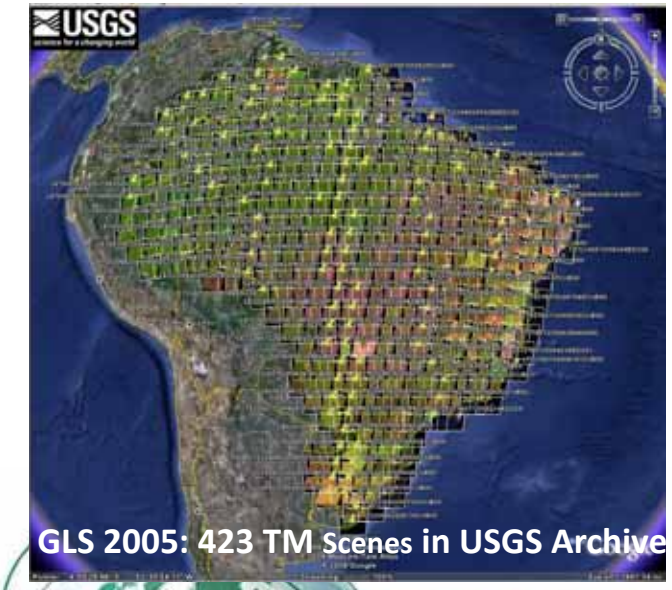
4 March 2009

GROUP ON EARTH OBSERVATIONS | Forest Carbon Tracking

Previous SDC Meetings

- 1st Space Data Coordination Meeting, ESA, ESRIN - Frascati, 22 June 2009
- 2nd SDC Meeting, JAXA, Tsukuba, 27/28 Aug 2009
- 3rd SDC Meeting, WHRC / USGS, Woods Hole, 13/14 May 2010
- 4th SDC Meeting, ESA, Frascati, 11 Feb 2011


Polarimetric composites in L-, X- and C-band by ALOS PALSAR, TerraSAR-X and Envisat ASAR



GLS 2005: 423 TM Scenes in USGS Archive

Objectives

- Provide space agency **status reports** of acquisitions, processing and dissemination;
- Consolidate and integrate **forthcoming imaging activities** occurring under the auspices of the FCT in order to avoid gaps and overlaps and optimise resources;
- Assess **feed-back** from the FCT SDS on satellite data availability, access, suitability and processing;
- Develop the **way forward** for subsequent phases in accordance with data providers' framework and missions' data policies as described in the FCT Data Requirements document and as prescribed in the SDS.

EO Data Coordination

GEO-FCT – EO Data Coordination

CEOS

OPTICAL

LSI Constellation
- USGS (USA)
- CNES (France)
- INPE (Brazil)
- ISRO (India)
- GISTDA (Thailand)
- JAXA (Japan)

SAR

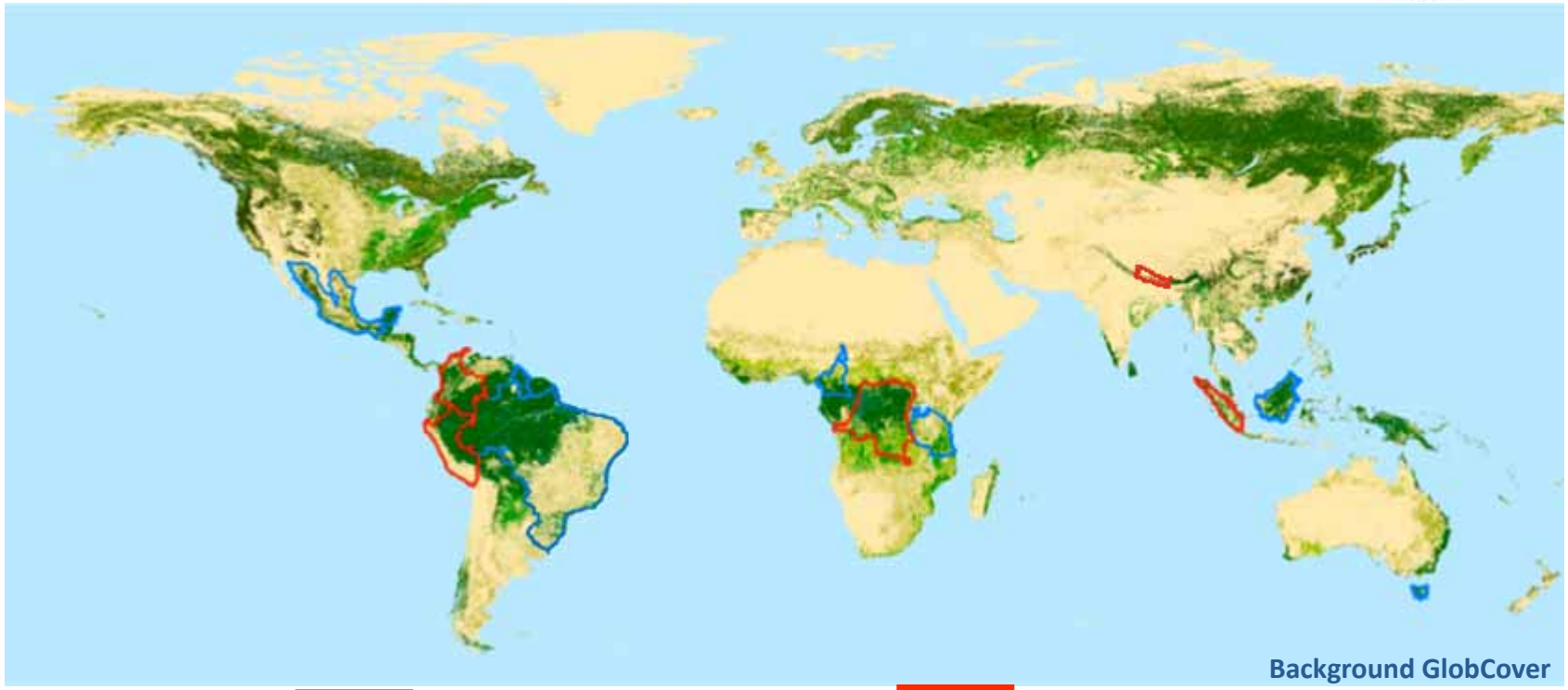
- JAXA (Japan)
- CSA (Canada)
- ESA (Europe)
- ASI (Italy)
- DLR (Germany)

Commercial

(V)HR

- GeoEye
- Ikonos
- Quickbird
- (RapidEye)
- DMC
- (Spot)
- (CSM e-Geos)
- (TSX Astrium GIS)
- (RS-2 MDA)

National Demonstrators



From 2009

- Brazil
- Guyana
- Mexico
- Indonesia (Borneo)
- Australia (Tasmania)
- Cameroon
- Tanzania

From June 2010

- Colombia
- DR Congo
- Peru
- and adding Sumatra to Indonesia

From June 2011

- Nepal

From 2012 onwards progressive inclusion of countries from UN-REDD & World Bank FCPF is being planned.

Optical Satellites

Satellite	Spectral Bands	Geometric Resolution	Swath Width	Repeat Cycle
Landsat 5*, 7	VNIR, SWIR, TIR	30 m / 120 m (TIR)	185 km	16 days
IRS: AWiFS	VNIR, SWIR	56 m	740 km	4 days
IRS: LISS-III	VNIR, SWIR	23 m	140 km	24 days
CBERS 2b: CCD**	VNIR	20 m	114 km	26 days
SPOT 4, 5	VNIR, SWIR	20 m / 10 m	60 km	26 days

* Mission lost in November 2011

** Mission lost in May

2010

SAR Satellites

Satellite	Frequency / Polarisation	Geometric Resolution	Swath Width	Repeat Cycle
ALOS PALSAR*	L-band (23.6 cm) / full pol	7 m – 154 m	30 – 360 km	46 days
RADARSAT-1	C-band (5.6 cm) / HH	9 m – 100 m	45 – 500 km	24 days
RADARSAT-2	C-band (5.6 cm) / full pol	3 m – 100 m	20 – 500 km	24 days
ENVISAT ASAR	C-band (5.6 cm) / dual pol	30 m – 150 m	56 – 400 km	35 days
TerraSAR-X	X-band (3.1 cm) / full pol	1 m – 16 m	5 – 100 km	11 days
COSMO-SkyMed	X-band (3.1 cm) / full pol	1 m – 100 m	10 – 100 km	16 days

* Mission lost in April 2011

FCT Acquisition Summary

Campaign	Summer 2009	Spring 2010	Summer 2010	Spring 2011	Summer 2011	Total
ALOS PALSAR	6189	7531	13746	15079	mission lost	**42545**
RADARSAT-2	595	1278	875	1160	1093	**5001**
ENVISAT ASAR	684	1419	2785	1547	3318	**9753**
COSMO - Skymed	not planned	183	N/A	N/A	91	**274**
TerraSAR-X	not planned	243	126	170	217	**756**
Landsat 5 & 7	6288	5280	11362	11691	10149	**44770**
SPOT	TPM by ESA, but restrictions related to repatriation		2252	2810	6192	**11254**
CBERS-2B	3580	N/A	mission lost	mission lost	mission lost	**3580**
IRS	not planned	100	13674	6015	1187	**20976**

Achievements

- **Coordinated acquisition** of satellite data over FCT National Demonstrators and Verification Sites: **more than 139,000 scenes acquired** until Oct 2011
- **Distribution of EO data: all required** 2009 data delivered to PD teams, **most of 2010** and **2011 and historical data on-going**
- **Expansion** of demonstration area: **> 10 Msqkm** with emphasis on tropical region

Latest Milestones

- CEOS Plenary 25 in Lucca, November 2011
  - Approved **CEOS Data Strategy** for GFOI / FCT
  - Endorsed **GFOI Implementation Plan**
  - Lucca Statement: "... continued support to the GFOI and leadership in the coordination of the necessary satellite observations, including through the establishment of a **Space Data Coordination Group** for that purpose"
- GEO VIII Plenary in Istanbul, November 2011
  - Approved GFOI Implementation Plan

CEOS Linkage

- Implement CEOS Data Strategy
- Guidance from and report back to CEOS on progress achieved against the SDCG work plan;
  - SIT meetings and workshops
  - CEOS Plenary
  - CEOS Action list
- Work closely with CEOS LSI Constellation;
- Links to other CEOS WGs: WGCV, WGISS, …

Today's Objectives

- to agree on the contents of the **Terms of Reference**, operating procedures and Chairmanship for the group;
- to define and draft the **SDCG workplan** for the next 2-year horizon;
- **assessment of the capacity and availability** of each individual mission (operational, near-future) to contribute to the global acquisition strategy;
- to discuss and agree on a straw man version and table of content for the **Baseline Global Observation Strategy** and assign writing roles and responsibilities, and
- to discuss ways to interface with the **commercial data providers**.