GROUP ON EARTH OBSERVATIONS

GEO Progress, Priorities and Issues

Jose Achache
GEO Secretariat Director

26th CEOS SIT
Frascati, 24-25 May 2011

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GEO, the Group on Earth Observations

An Intergovernmental Organization with 87 Members and 61 Participating Organizations

U.S. Department of State, Washington DC
July 31, 2003

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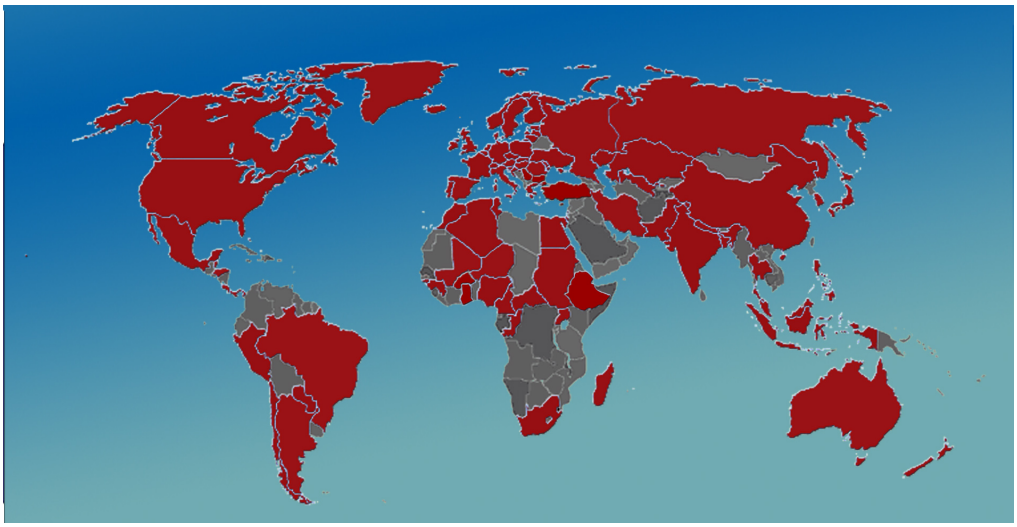
GEO, the Group on Earth Observations

An Intergovernmental Organization with 87 Members and 61 Participating Organizations



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Beijing Declaration

(3) Data Sharing Action Plan
- (1) Create the Data CORE
- (2c) Monitoring data sharing progress
- (4) Integrate Data Sharing into responsibilities of Tasks
- (7) Maximize number of fully openly accessible Datasets

(2,4) Sustain & enhance observation systems and capacity building

(5) Provide data and information to new initiatives, including Global Carbon Obs. (including GFOI), GEOBON, and Global Land Cover

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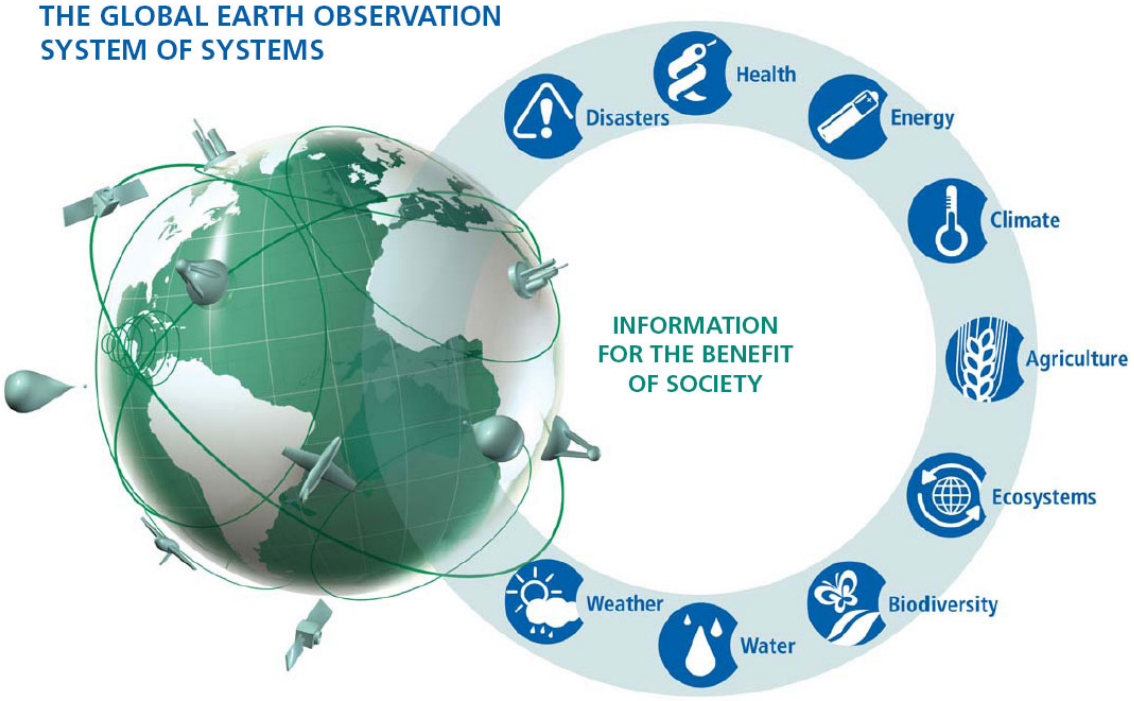

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Data Sharing

Since Beijing Summit, focus has shifted to Implementation.

This presents an opportunity for CEOS to:

- Optimize existing CEOS infrastructure to support the **GEOSS Data-CORE**
- Coordinate the collection of CEOS contributions to the **GEOSS Data-CORE**
- On the longer term, contribute to consensus on, and bring in solutions for: Licensing options, Attribution, Single-Sign-On
- Arrange further GCI trainings/workshops and further capacity building: *CEOS tools, CEOS data, CEOS dissemination, CEOS training*

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GEOSS Common Infrastructure

General direction: Enabling / Facilitating / Enhancing:

- GEOSS Interoperability
- Data Sharing (including Data-CORE)
- Resource (Data/Service/Tool) Discovery and Access

Goals for 2011

- Facilitated access to datasets and other resources supporting the Earth Observation Priorities identified in UIC report http://sbageotask.larc.nasa.gov/Final_SBA_Report_US0901a.pdf
- Enable discovery of, and facilitate access to, Data-CORE contributions

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GCI is for Data Discovery and Retrieval

- The GCI is Operational
- The User Interface Committee has performed a GEOSS-Wide Survey of prioritites
- Resources have been pledged as contributions to the Data-CORE

- To achieve convincing and demonstrable benefits at the GEO-VIII Plenary, a short term action is underway (ADC, GCI providers and Others) to collaborate bi-laterally with a few **data providers** to:
  - Identify datasets supporting the Critical Earth Observation Priorities
  - To mutually adapt interfaces to enable effective data discovery and access ('fewer clicks to the data'), better usability/user experience

Important role for CEOS and its Agency as data providers. Several CEOS colleagues are involved in this "Sprint to Plenary"

Adaptation of interfaces can go hand-in-hand with ongoing action to harmonise portals

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FCT: Forest Carbon Tracking

- 15 to 20% of global carbon emissions are thought to arise from tropical deforestation
- Reduced deforestation and increased reforestation is a rapid response mechanism for reducing emissions
- Significant environmental, social and economic benefits parallel the climate benefit (biodiversity, ecosystem services,…)

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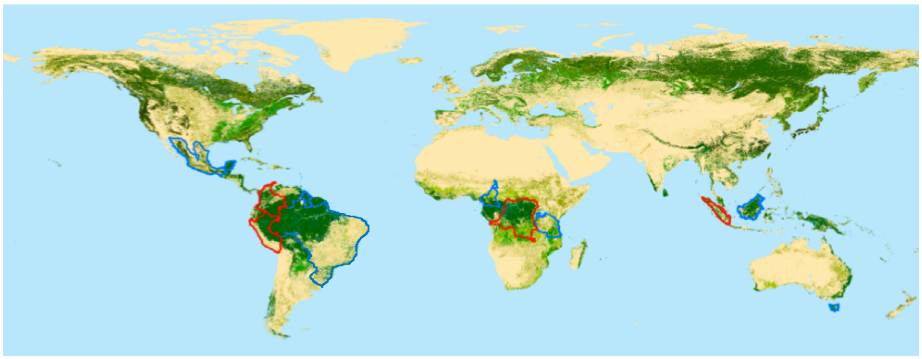
A Network of National Demonstrators



From 2009:
- Brazil
- Guyana
- Mexico
- Indonesia (Borneo)
- Australia (Tasmania)
- Cameroon
- Tanzania

From June 2010:
- Colombia
- DR Congo
- Peru, and
- Sumatra in Indonesia

From 2011 onwards: Progressive inclusion of countries from UN-REDD & World Bank FCPF is being planned.

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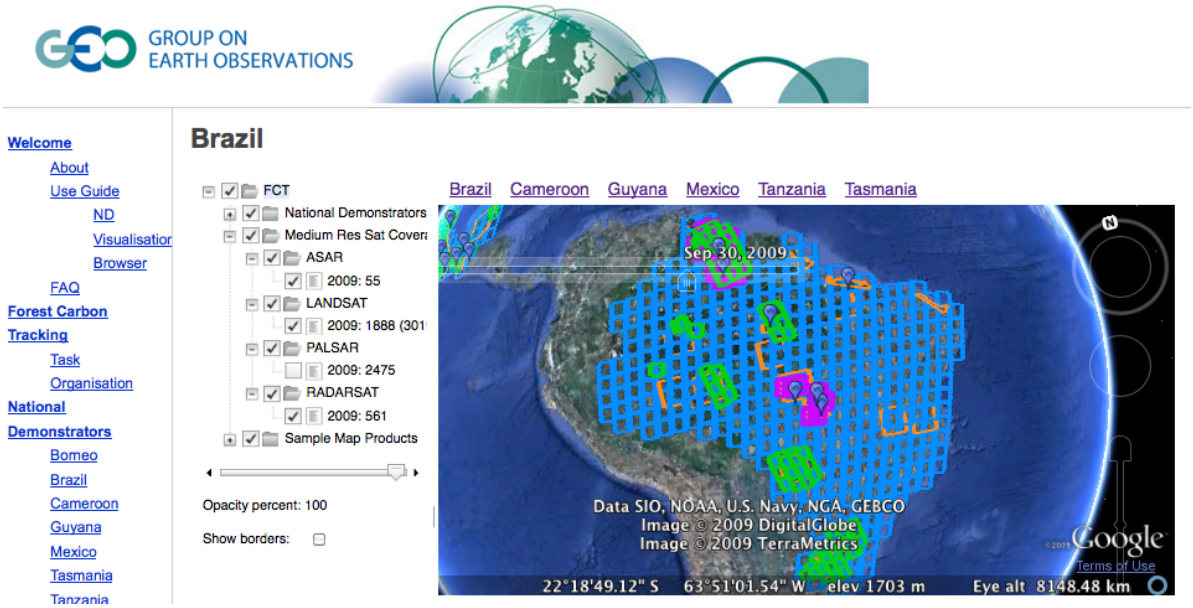
An FCT Portal for Sharing Data



http://www.geo-fct.org/

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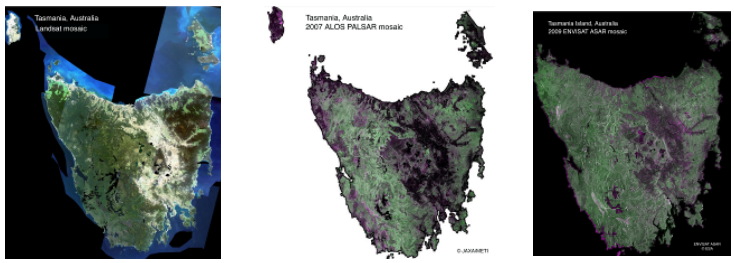
Annual multi-sensors time series Acquisitions coordinated by CEOS

Borneo, L-band SAR 1994-2010 (JERS-1 and ALOS PALSAR)



Tasmania, Landsat 2007, ALOS PALSAR 2007 and ENVISAT ASAR 2009

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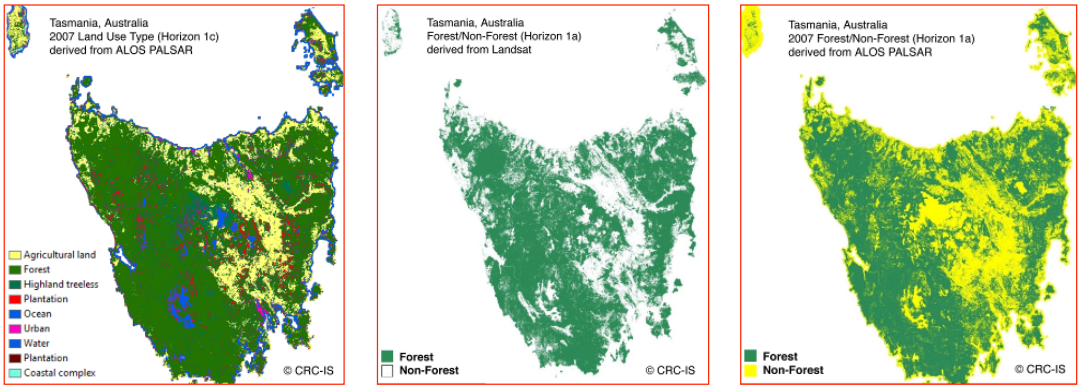
Forest Information Prototypes



Tasmania

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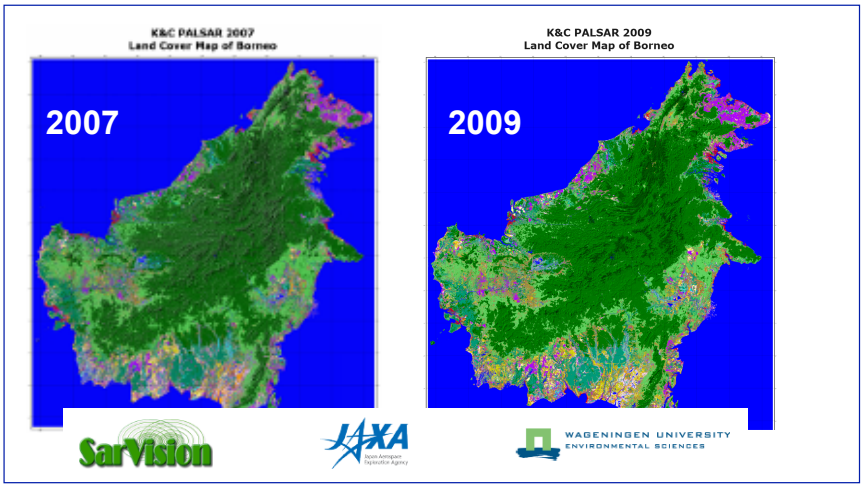
Forest Information Prototypes



Borneo
Land Use/Land Cover from ALOS PALSAR

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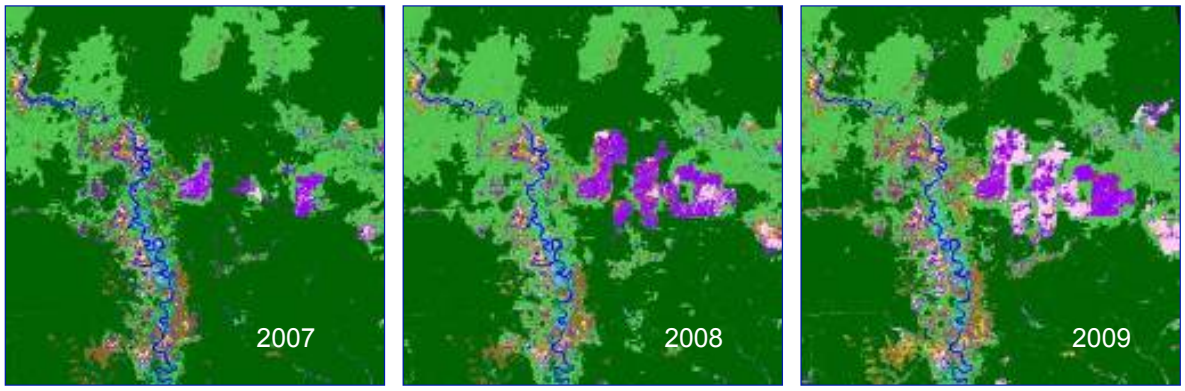
Forest Information Prototypes



Central Kalimantan Verification Site – Annual Land Cover Change (Horizon 1d) derived from annual ALOS PALSAR

Courtesy of Wageningen University

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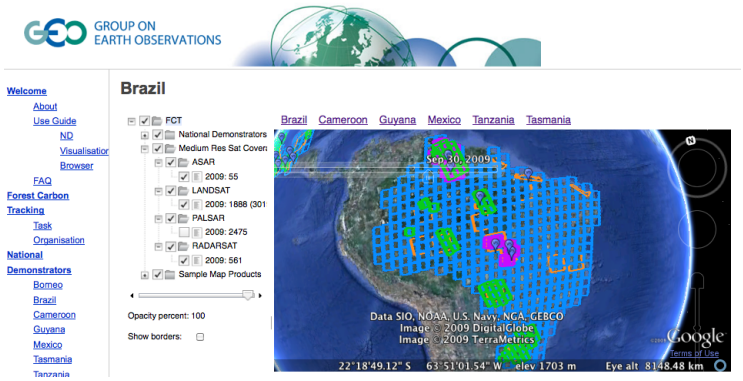
The Global Forest Observations Initiative

Provide reliable information of suitable consistency, accuracy and continuity to support forest carbon Monitoring, Reporting and Verification (MRV)



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GFOI: Key components

- *Support to national governments*: consistent and comparable methods fundamental to comparable national systems.
- *Observations and measurement*: systematic observations and measurements are essential for effective reporting. Continuity and interoperability of data supply needed
- *Methods and protocols for data collection, processing and integration*: promote and encourage development of methods and protocols for data collection, processing and integration.
- *Continuing research and development*: promote coordinated research and development needed for continuous improvement of national forest information systems.
- *National capacity building*: to help governments develop national forest information systems, GEO will work in collaboration with other providers such as the FAO.

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GFOI: Implementation Plan

- The Implementation Plan for the Global Forest Observation Initiative shall be submitted to GEO-VIII Plenary, currently planned for mid-November 2011. Based on the scenario established during the GFOI Concept Phase in 2010, the Plan itself shall be a detailed and realistic technical and management proposal
- The production of the GFOI Implementation Plan is supervised by a GFOI Task Force, which has been established by the GEO-VII Plenary;
- The membership of the GFOI Task Force includes senior representatives from GEO Members and Participating Organizations, UNFCCC Secretariat, World Bank; the IPCC Inventory Program has been invited to provide a representative;
- A dedicated Planning Team is responsible for the production of the Plan, under the direction of the GFOI Task Force;

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Schedule

	2011	2012	2013	2014	2015	2016
GEO Initiatives						
FCT						
Demonstration Campaigns						
Data processing & Reports						
Science Reviews	SDS-2					
GFOI						
Definition Phase						
Start-up & initial operations						
Operational phase						
Methodologies reviews						

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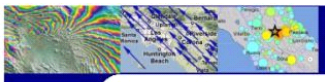

SUPERSITES

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documents
apply for access
collaborators
links
contact

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Seattle-Vancouver
Vesuvius
Etna
Istanbul
Tokyo
Chile
Haiti
L'Aquila

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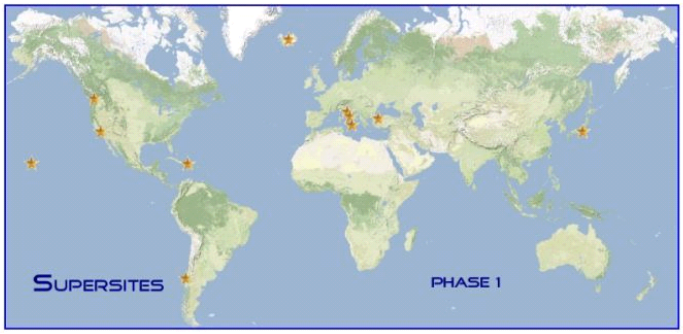
Welcome to the Supersite Website

The Supersites have data for the study of natural hazards in geologically active regions, including information from Synthetic Aperture Radar (SAR), GPS crustal deformation measurements, and earthquakes. The data are provided in the spirit of GEO, ESA, NASA and the National Science Foundation (NSF), that easy access to Earth science data will promote their use and advance scientific research, ultimately leading to reduced loss of life from natural hazards.

Click on a site in the map below, or see the regions listed below in Phase 1 and Phase 2 Supersites.

This website is a prototype created by UNAVCO and WInSAR on behalf of the Group on Earth Observations (GEO) and the European Space Agency (ESA). The web site will attain an official design and move to a permanent home once a host is selected.



Summary

Supersites is an initiative of the geohazard scientific community. The Supersites provide access to spaceborne and in-situ geophysical data of selected sites prone to earthquake, volcano or other hazards. The initiative began with the "Frascati declaration" at the conclusion of the 3rd International Geohazards workshop of the Group of Earth Observation (GEO) held in November 2007 in Frascati, Italy. The recommendation of the workshop was "to stimulate an international and intergovernmental effort to monitor and study selected reference sites by establishing open access to relevant datasets according to GEO principles to foster the collaboration between all various partners and end-users". This

esa
JAXA
NASA
DLR
NSF
UNAVCO

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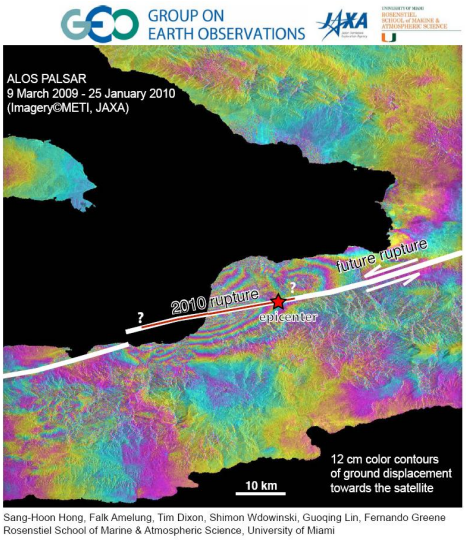
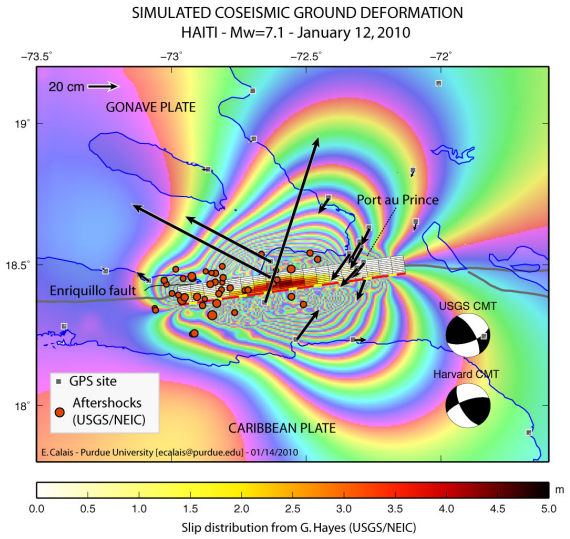
Haiti: Seismic Risk from InSAR



PALSAR interferogram
(Falk Amelung, Miami Univ)



Synthetic Interferogram
(Eric Calais, Purdue Univ)

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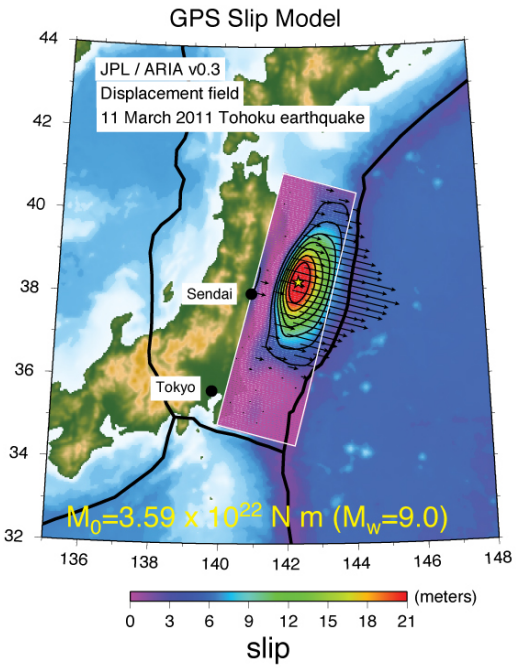
The Tohoku-Oki Supersite



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GPS Displacement Field

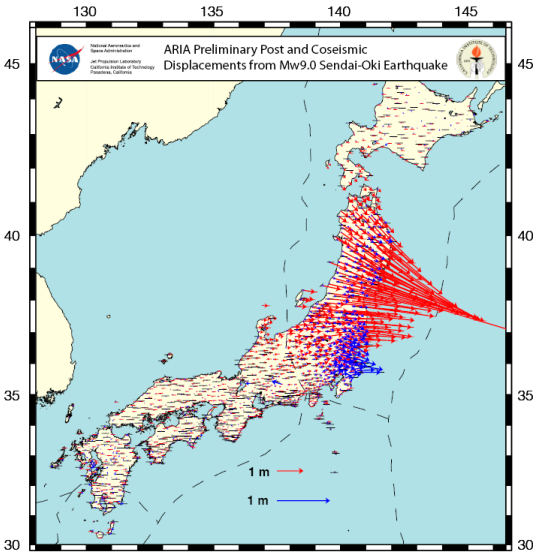

Figure shows horizontal displacements based on ARIA verion 0.3 position estimates for GEONET stations. Coseismic displacement is shown in red, and first 8 hours of postseismic motion is shown in blue, including motion caused by aftershocks. Bars at end of vector show 95% error estimate. Solutions courtesy of ARIA team at JPL and Caltech (email aria@jpl.nasa.gov or aria@caltech.edu). All original GEONET RINEX data provided to Caltech by the Geospatial Information Authority (GSI) of Japan.

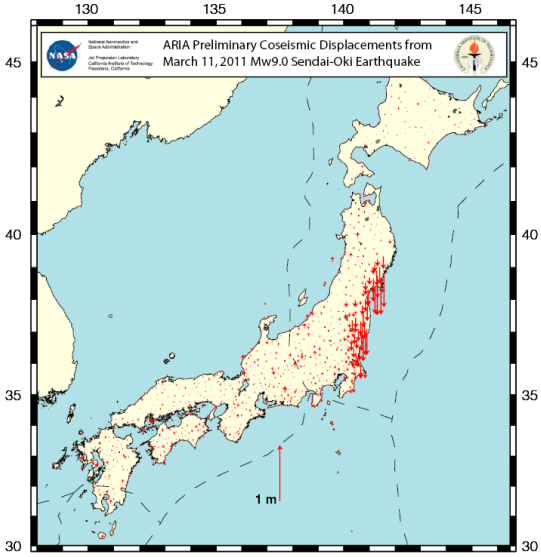

Figure shows version 0.2 vertical displacements based on difference between estimated positions of GEONET stations at 05:00 and 06:30 UTC on March 11, using JPL's Rapid orbit solution and using JPL's GIPSY-OASIS software. Solutions courtesy of ARIA team at JPL and Caltech. All original GEONET RINEX data provided to Caltech by the Geospatial Information Authority (GSI) of Japan.

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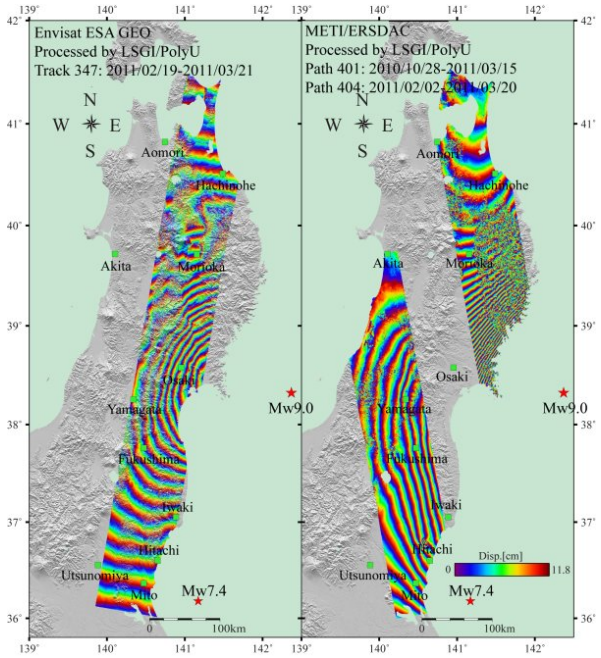
Envisat and Alos Interferograms



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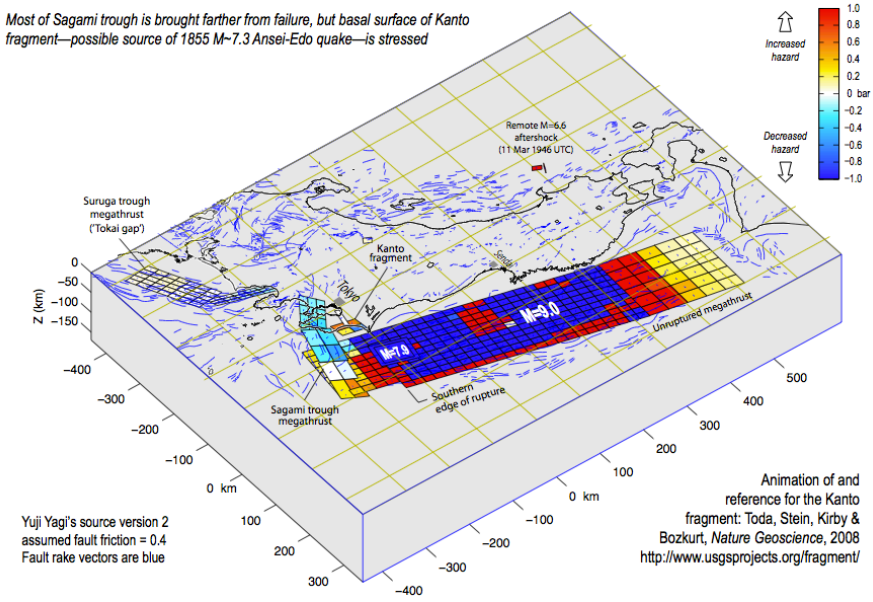
Coulomb Stress Change after Tohoku-oki

Coulomb stress imparted by the M=9.0 Off-Tohoku rupture and its M=7.9 aftershock to Japan Trench, Sagami Trough and Kanto Fragment



Caltech, USA

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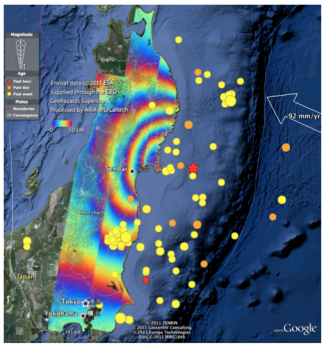
Tohoku-oki Earthquake and Tsunami, March 2011

All agencies contributed data or high-level products!

- ASI – COSMO-Skymedcoseismic and postseismicinterferograms
- CSA – RADARSAT-2 damage maps
- DLR – TerraSAR-X data, damage maps
- ESA – ERS-2 and Envisat ASAR data
- JAXA – PALSAR data
- NASA – imagery, interferograms and various high-level products
- CNES, USGS, …



The International Charter is focused on products for a short response period. Early access to data complements the Charter to provide scientific understanding of hazards necessary for improved risk assessment, forecast, and development of appropriate mitigation and adaptation strategies.

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Tohoku-oki earthquake and tsunami event supersite

- Up to 4,500 site visitors/day during 1st 2 weeks
- 34,000 unique IP addresses during March
- 11 TB of SAR data downloaded (~20,000 scenes)

Recent Download Volumes (GB) by Month

	January	February	March	April
Open Server	709	382	4,076	3,706
Password Protected Server	625	394	2,061	3,192
	1,334	776	6,137	6,898

Unique IP addresses downloading SAR Data

	March	April
ESA index (ERS-2 and Envisat ASAR)	1,146	416
JAXA index (ALOS PALSAR)	203	237
DLR index (TerraSAR-X)	272	210
ALL Tohoku-oki Event Supersite indicies	1,289	577

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JECAM: Joint Experiment on Coordinated Agricultural Monitoring

✓ Develop a series of research sites over a range of different cropping systems

✓ Facilitate the inter-comparison of data and methods for crop area, condition monitoring and yield estimation, with the aim of establishing 'best practices' for different agricultural systems

✓ Facilitate data acquisition and data sharing

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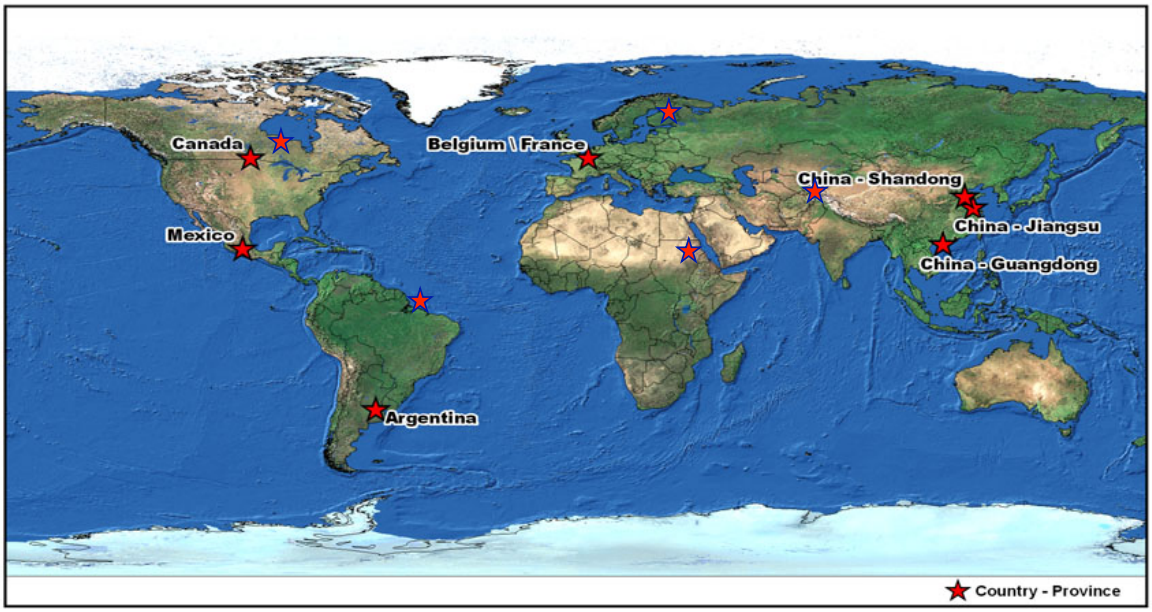
JECAM Sites Distribution



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Agricultural Monitoring Systems Contributing to JECAM

USDA United States Department of Agriculture Foreign Agricultural Service
ИКИ
CSIRO
GLOBAL WATCH GIEWS
FAO FIAT PANIS
中国农业科学院 The Chinese Academy Of Agricultural Sciences
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS helping to build a world without hunger
GMFS Global Monitoring for Food Security
esa
CSA ASC
FIVIMS
WFP World Food Programme
INTA Instituto Nacional de Tecnología Agropecuaria
Rice Information System
sarmap your information gateway
USAID FROM THE AMERICAN PEOPLE
Agriculture and Agri-Food Canada
NET
SADC
EUROPEAN COMMISSION DIRECTORATE-GENERAL Joint Research Centre
UNIVERSITY OF MARYLAND
CGIAR
इसरो isro
IRSA
SDSU
MARS Bulletin
Conab
GLAM Global Agriculture Monitoring
Science for Global Insight IIASA

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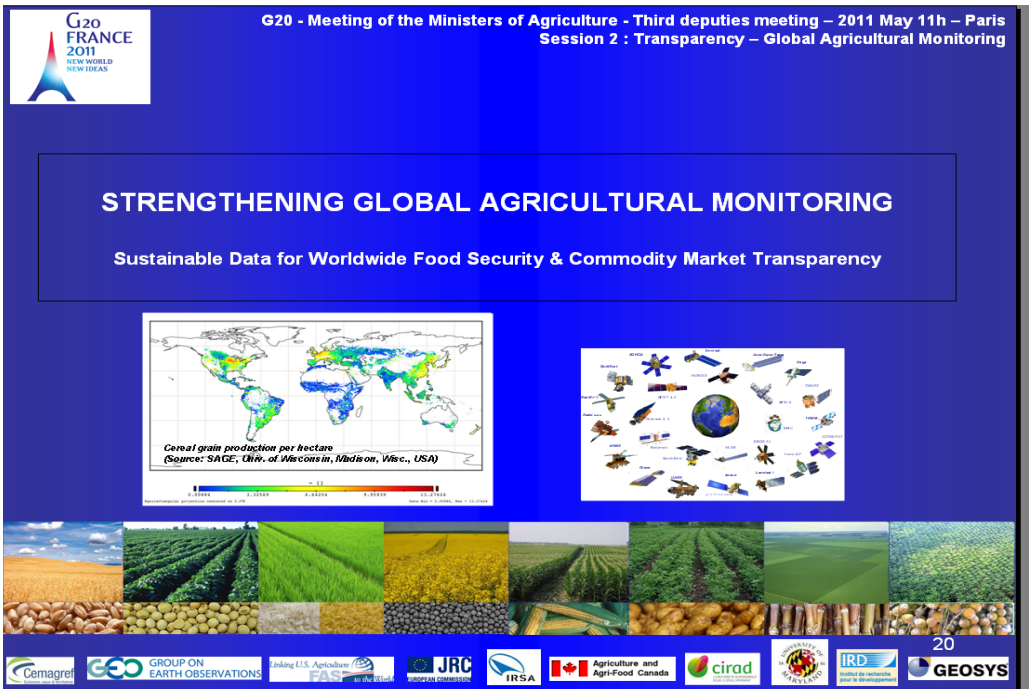
G-20



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Coordinated Data Acquisition

JECAM – The Joint Experiment for Crop Assesment and Monitoring Initiative

- Initial correspondence sent to CEOS did not achieve a positive response as anticipated;
- Need to identify points of contacts with each agency to coordinate data acquisition;
- JECAM should have a similar approach to FCT in terms of space data coordination meetings to specify what is required as agencies do not adjust acquisition procedures on short notice;
- The XV Brazilian remote Sensing Symposium from April 30th to May 5th is hosting a Ag COP meeting and might be the opportunity to get the Agencies involved (INPE, ISRO, USGS already represented, but also ESA, DLR, CNES, CSA also welcome).

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CFP for Decision Support Projects

71 full proposals selected:

25% Agriculture
55% Water
17% Health
3% Energy

New Applications Projects (45%)
Applications Improvements (46%)
Demonstration Projects (9%)

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CFP for Decision Support Projects

Next Phase => Funding:

- GEO will not directly provide funding for projects identified through this CFP
- GEO CBC/UIC is working to put selected project teams in contact with relevant resource-providing organizations
- USA is working to fund a Donor Coordinator to facilitate the matchmaking of projects with funding organizations

What can CEOS do?

- Consider funding appropriate proposals
- Support data needs for appropriate proposals
- Staff serve as advisors for appropriate proposals

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2012-2015 Work Plan – What's New?

(i) Target-Driven Approach – Targets to Tasks

(ii) 3-Part Structure

(iii) Streamlined Number of Tasks

(iv) Improved Task Management

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2012-2015 Work Plan

1. **INFRASTRUCTURE**
   (Architecture and Data Management)
2. **INSTITUTIONS AND DEVELOPMENT**
   (Capacity Building, Science and Technology, User Engagement)
3. **INFORMATION SERVICES**

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Schedule – 2012-2015 Work Plan

Dec-Feb	GEO community invited to make proposals following guidelines accepted by GEO-VII
7 March	**Work Plan V0** submitted to GEO community for *technical* review.
4-6 May	**Work Plan Symposium** (Geneva) discussed V0 among Task contributors, Committees and Communities of Practice
26 May	**Deadline for comments**
Late June	Work Plan V1 submitted to GEO Principals for *official* review.
1 September	Deadline for comments
November	Work Plan V2 submitted to GEO-VIII

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Recommended Changes to Version 0 *Structure* (in red)

1. INFRASTRUCTURE

(Architecture and Data Management)

2. INSTITUTIONS AND DEVELOPMENT

(Capacity Building, Science and Technology, User Engagement)

3. INFORMATION SERVICES

This part would be renamed. The 9 GEOSS Societal Benefit Areas would be re-introduced

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Recommended Changes to Version 0 *Table of Contents* (in red)

1. INFRASTRUCTURE

IN-01 GEOSS Common Infrastructure

IN-02 Earth Observing Systems

IN-03 Earth Data Sets

IN-04 GEOSS Communication Networks

IN-05 GEOSS Design & Interoperability

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Recommended Changes to Version 0 *Table of Contents* (in red)

2. INSTITUTIONS AND DEVELOPMENT

ID-01 Data Sharing

ID-02 Catalyzing Resources for GEOSS

ID-03 Institutions & Individual Capacity

ID-04 Building Communities & Awareness/ Building a User-driven GEOSS

ID-05 Ensuring GEOSS Sustainability

ID-06 Gap Analysis

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Recommended Changes to Version 0 *Table of Contents* (in red)

3. INFORMATION SERVICES

DS-01 Disaster Risk Reduction and Early Warning
DS-02 High-Impact Weather Forecasting
DS-03 Climate Information
DS-04 Ocean Monitoring, Forecasting & Resources
DS-05 Integrated Water-Cycle Information
DS-06 Disease Early Warning
DS-07 Energy and Geo-Resources Management

Titles will be adjusted according to discussions

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Recommended Changes to Version 0 *Table of Contents* (in red)

3. INFORMATION SERVICES

DS-08 Human Impact Monitoring and Forecasting
DS-09 Global Agricultural Monitoring & Early Warning
DS-10 Global Land Cover
DS-11 Global Forest Observation
DS-12 Global Carbon Observation and Analysis
DS-13 Global Ecosystem Monitoring
DS-14 Global Biodiversity Observation (GEO BON)
DS-15 Tracking Pollutants (Mercury, POPs)

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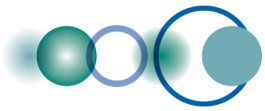

CEOS-GEO Coordination

Continued interaction between GEO Secretariat and CEOS representatives (CEOS-Chair Team, CEOS CEO & deputy, Co-Chair from CEOS, SEO, CEOS-SEC), Working Groups, Task Forces, Task Teams, including:

- 13 December GEO-CEOS Coordination Meeting in Geneva
- 16 Feb GEO-CEOS Actions Workshop
- CEOS Co-Chair in ADC and GCI-CT
- CEOS Leads and Participants in GEO Task Teams (including 1st WP Symposium) and Carbon Community of Practice
- CEOS Inputs to Work Plan v0, and to several drafting teams

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Issues requiring attention

- **Cross-cutting coordination**
  Including Space <-> In situ
- **Increased demands for coordinated data acquisition:**
  GFOI, JECAM, Supersites, Water
- Efficient integration of new initiatives into the GEO Work Plan
  Trend towards parallel initiatives, e.g. on disasters
- Need to complete the broader GEOSS Architecture,
  Interoperability of systems and data, Data Management, Rationalisation of portals, integrated systems, user-friendly cross-catalogue searching

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Thank you!