THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

15TH SESSION

21–25 May 2012
Geneva

Contribution by

Group on Earth Observation Secretariat

GEO & GEOSS

Mr. Espen Volden
Scientific and Technical Officer

GROUP ON EARTH OBSERVATIONS

GEO & GEOSS

23 May 2012
CSTD-15, Geneva

Espen Volden
GEO Secretariat

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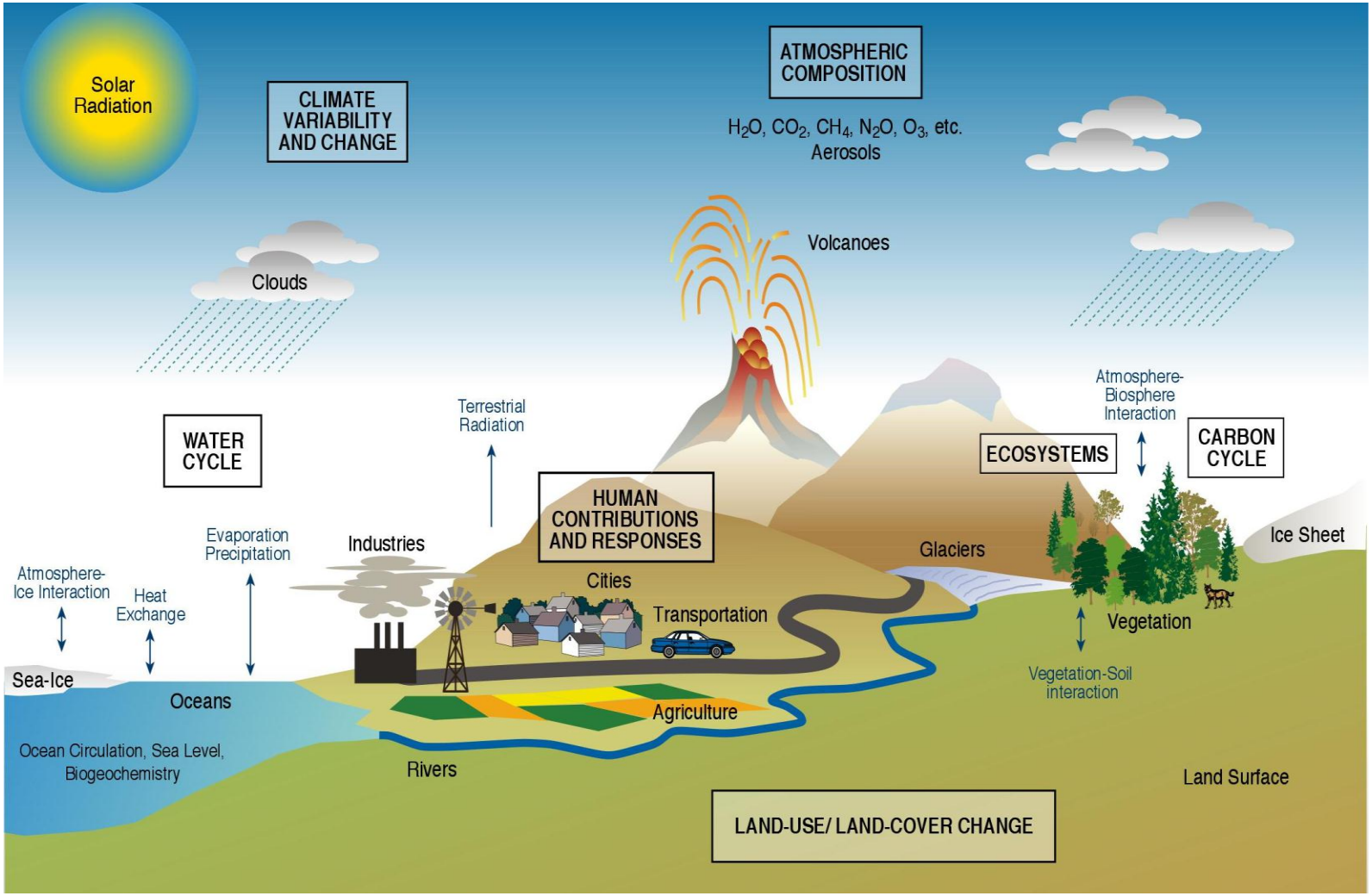
The Earth is a complex system of systems



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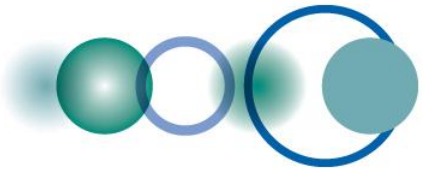

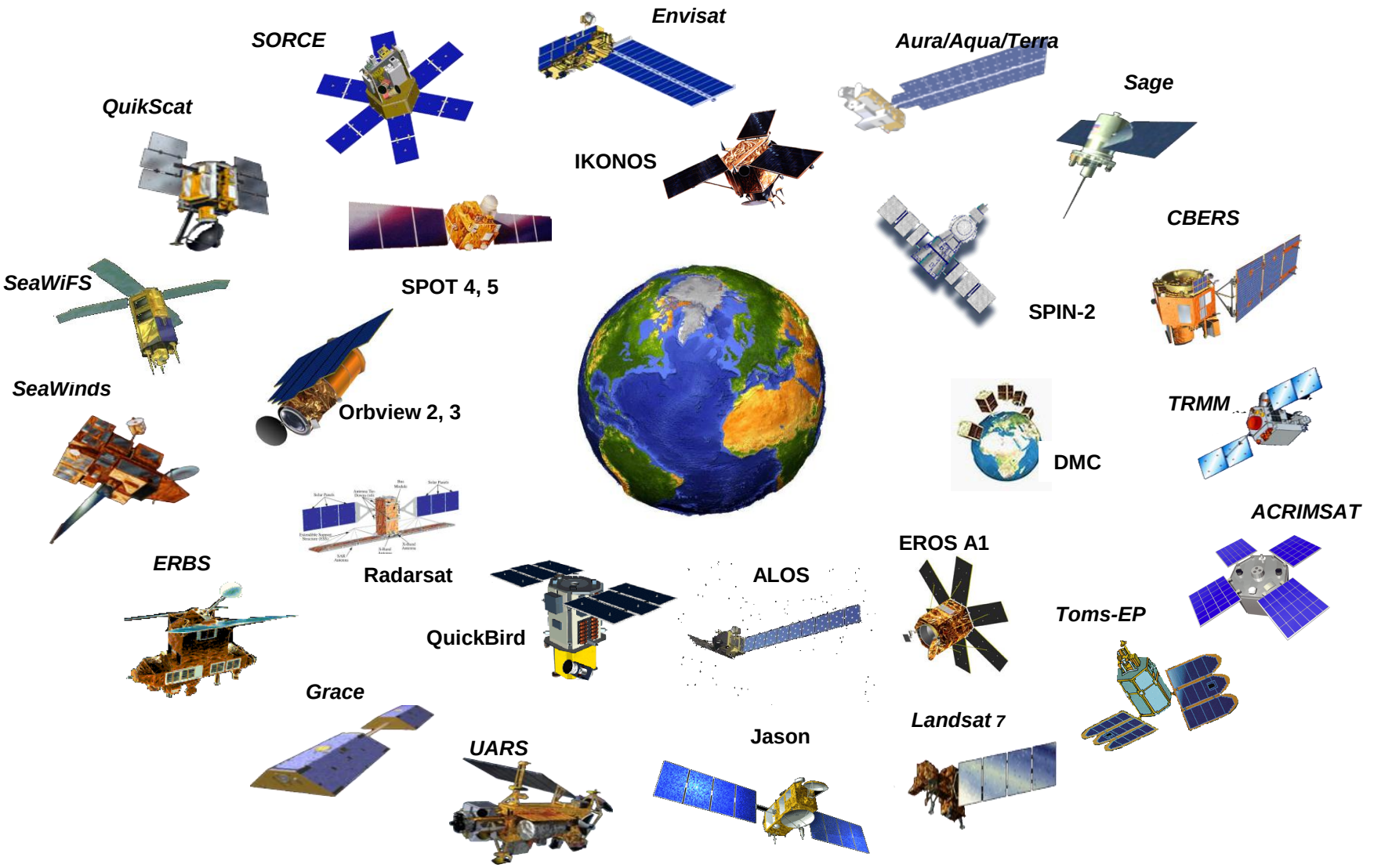

Space Observation Systems

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In-situ systems

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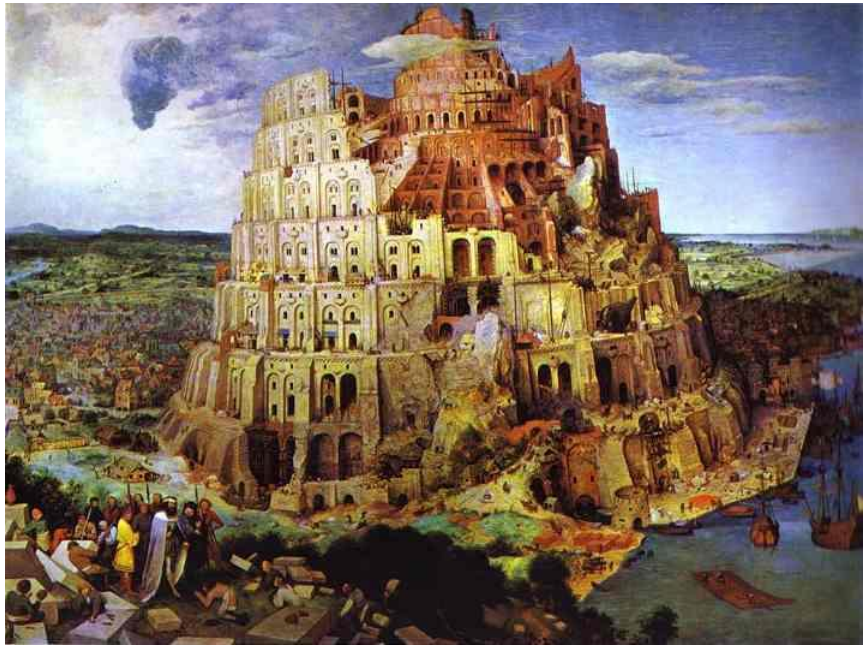
The Tower of Babel problem…

Need for:

- **Earth observation Coordination**
- **Interoperable Architecture and Formats**
- **Data Sharing**

… to benefit fully from Earth Observation Systems



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GEO, the Group on Earth Observations

An Intergovernmental group with 88 Members and 64 Participating Organizations

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

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What is GEO?

- launched in response to calls for action by the 2002 World Summit on Sustainable Development, Earth Observation Summits, and by the G8 (Group of Eight) leading industrialized countries
- voluntary partnership of governments and international organizations
  - 88 member governments + EC
  - 61 Participating Organizations (PO)
- provides a framework within which these partners can develop new projects and coordinate their strategies and investments
- charged with developing GEOSS

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What is GEOSS?

- **the Global Earth Observation System of Systems**
- **an integrating public infrastructure, interconnecting a diverse, growing array of Earth observing instruments and information systems for monitoring and forecasting changes in the global environment**
- **supports policymakers, resource managers, scientists and other experts to ensure informed decision making for society, scientists for their research and citizens in their daily life**
- **10-year implementation plan**
- **2015: Global, Coordinated, Comprehensive and Sustained System of Observing Systems**

GEOSS Implementation requires: *Data Sharing Principles*

- **Full and Open Exchange of Data…**
  - Recognizing Relevant International Instruments and National Policies and Legislation
- **Data and Products at Minimum Time delay and Minimum Cost**
- **Free of Charge or Cost of Reproduction for Research and Education**

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GEOSS: main objectives

- Improve and Coordinate Observation Systems (identify gaps & avoid duplications)
- Provide Easier & More Open Data Access
- Foster Use (Science, Applications)
- Building Capacity

… to answer Society's need for informed decision making

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GEOSS: A Global, Coordinated, Comprehensive and Sustained System of Observing Systems

GEO-Portal - GEO-Portal Home - Mozilla Firefox

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http://www.geoportal.org/web/guest/geo_home

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GEO - Group on Earth Observations | G... | GEO-Portal - GEO-Portal Home

GROUP ON EARTH OBSERVATIONS | GEO Portal

provided by: esa

HOME | ABOUT GEOPORTAL | SEARCH GEOSS | go | MAP VIEWER | CONTACTS

GEO Portals Usability Survey

BROWSE RESOURCES BY SOCIETAL BENEFIT AREAS

- DISASTERS
- HEALTH
- ENERGY
- CLIMATE
- WATER
- WEATHER
- ECOSYSTEMS
- AGRICULTURE
- BIODIVERSITY

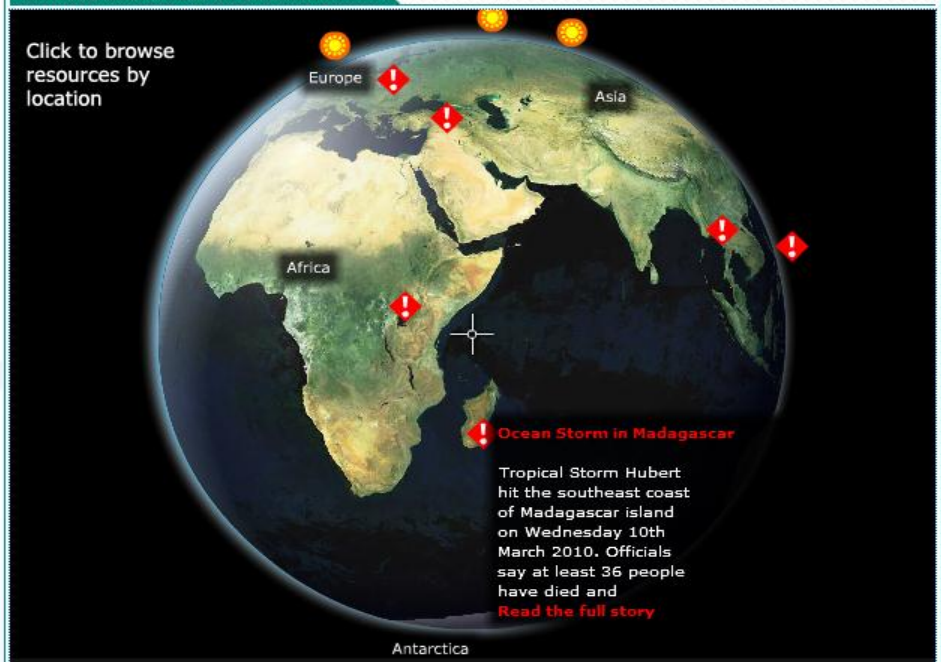
CAPACITY BUILDING

GEOSS Resources for Haiti Earthquake

WELCOME TO GEOPORTAL

The GEOportal provides an entry point to access remote sensing, geospatial static and in-situ data, information and services. More ...

BROWSE RESOURCES BY LOCATION



zoom - Change Surface Texture | Find a place | Key

GEONETCAST

GEOSS Common Infrastructure (GCI)

- About GCI
- REGISTER YOUR RESOURCES
- Standards and Interoperability Registry
- More about Registry System
- Best practices wiki
- GEO SECRETARIAT
- News

GEOSS AUGMENTATION

- Develop and Test your Services and Processing Components
- AIP-3
- GEOSS Clearinghouses Test Area

BREAKING NEWS

EO NEWS

javascript:getFlash();

Start | GEO-Portal - GEO-... | Novell GroupWise - ... | To_Do | 2nd Symposium | presentations | GEO_intro.ppt | GEOSS_water.ppt | 1:41 PM

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GEO/GEOSS: Science & Technology

- **GEO for scientists**
- **A framework for scientists contributing to GEOSS (observing systems and information systems of the future)**
  - **promoting international cooperation**
  - **providing visibility**
  - **potential support for research (*but GEO is not a funding mechanism!)***

GEO/GEOSS: Science & Technology

GEOSS for scientists needing data

Facilitating delivery of global datasets to improve modelling

- **GDEM**
- **Global land cover**
- **Digital geological map data**
- **Global meteorological and environmental data**

- **Virtual constellations**
  - **precipitation**
  - **land surface imaging**
  - **ocean surface topography**
  - **atmopheric chemistry**
  - **ocean colour radiometry**
  - **ocean surface vector winds**

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Examples of use in different societal benefits areas

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Food security: The GEOGLAM Initiative

G20 FRANCE 2011 NEW WORLD NEW IDEAS

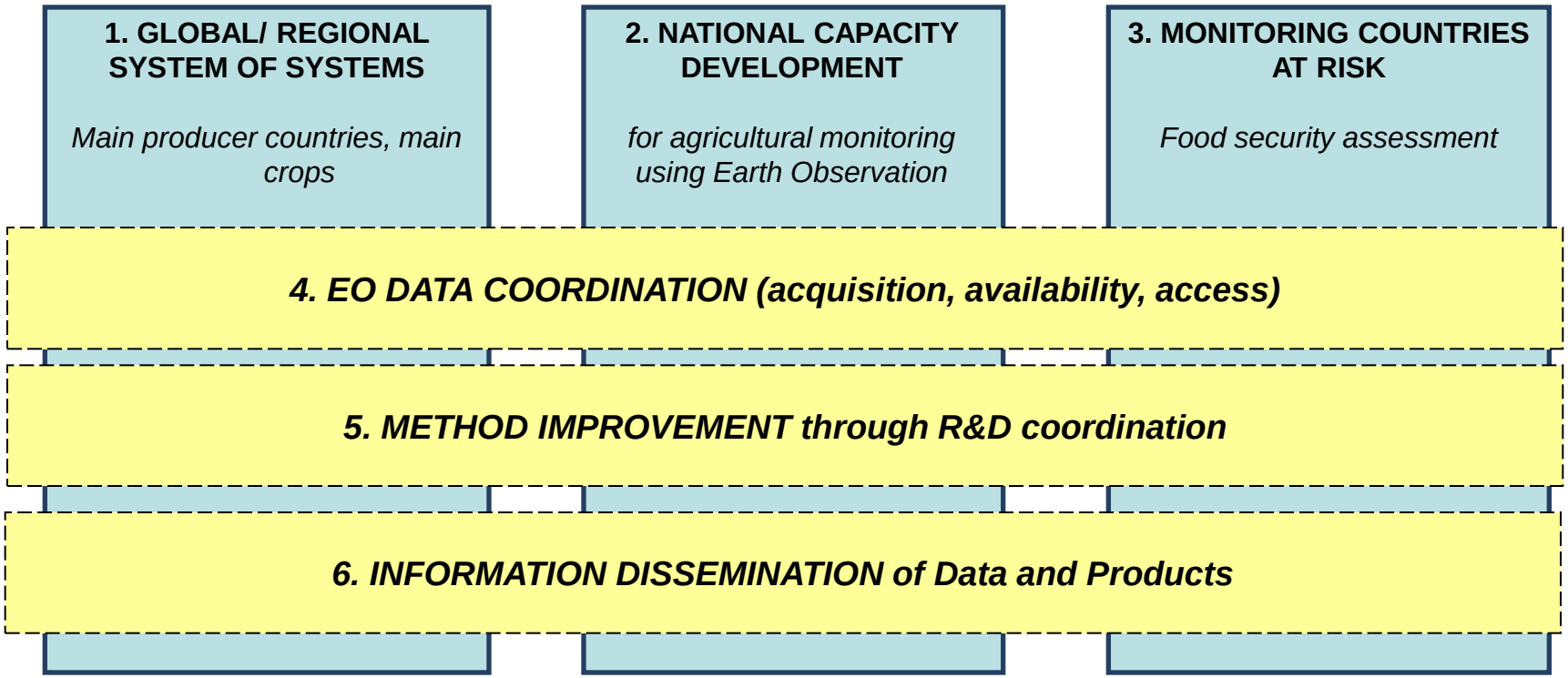
G20 Final Declaration

44. We commit to improve market information and transparency in order to make international markets for agricultural commodities more effective. To that end, we launched:

- The "Agricultural Market Information System" (AMIS) in Rome on September 15, 2011, to improve information on markets ...;
- The **"Global Agricultural Geo-monitoring Initiative" (GEO-GLAM)** in Geneva on September 22-23, 2011. This initiative will coordinate satellite monitoring observation systems in different regions of the world in order to enhance crop production projections and weather forecasting data.

➢ **The G20 Cannes Summit (November 2011) endorsed Action Plan on Food Price and Volatility and Agriculture**

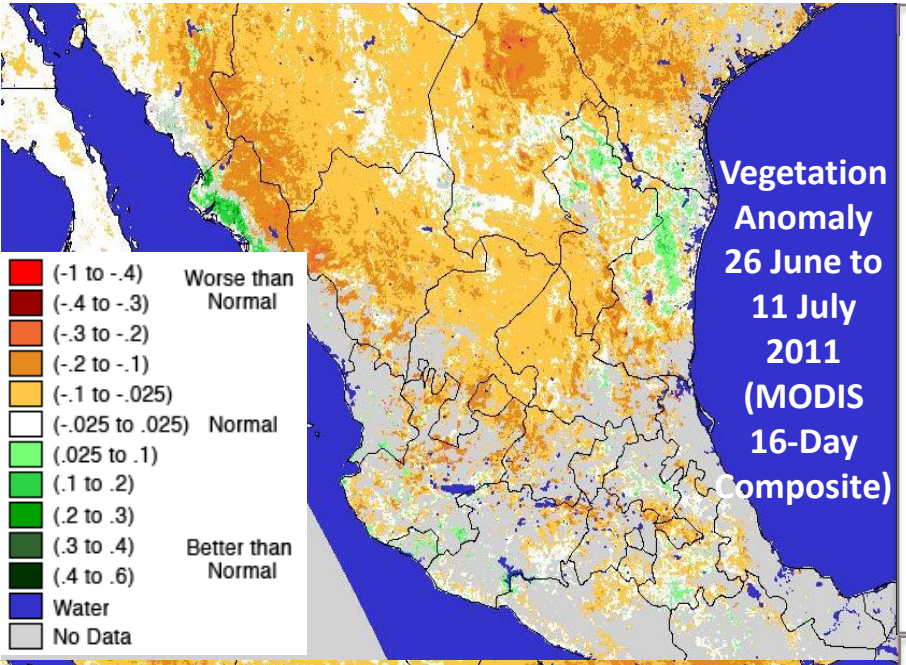
Food security: GEOGLAM

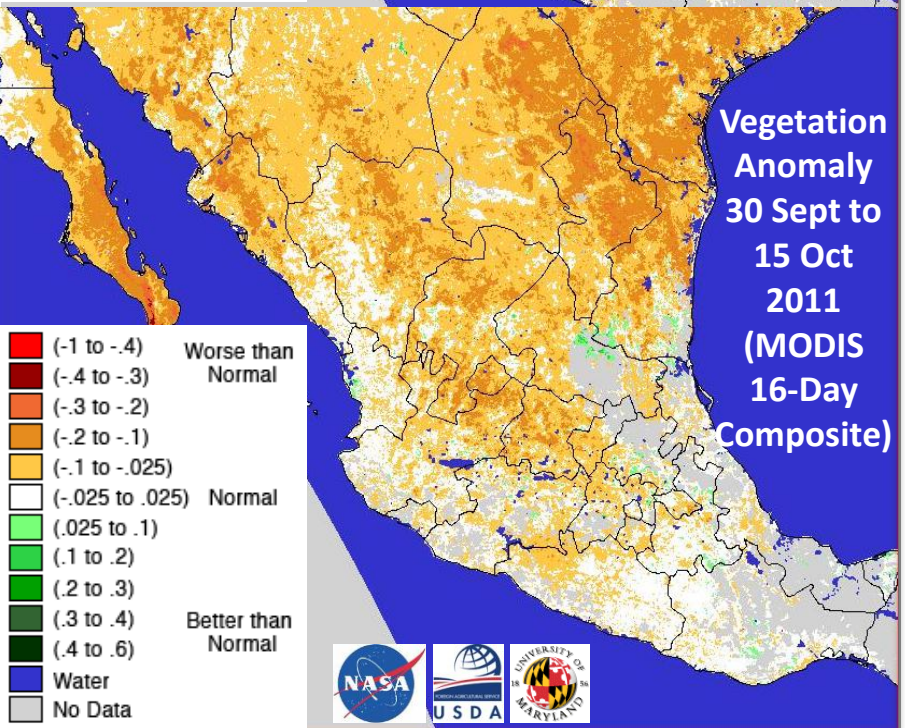


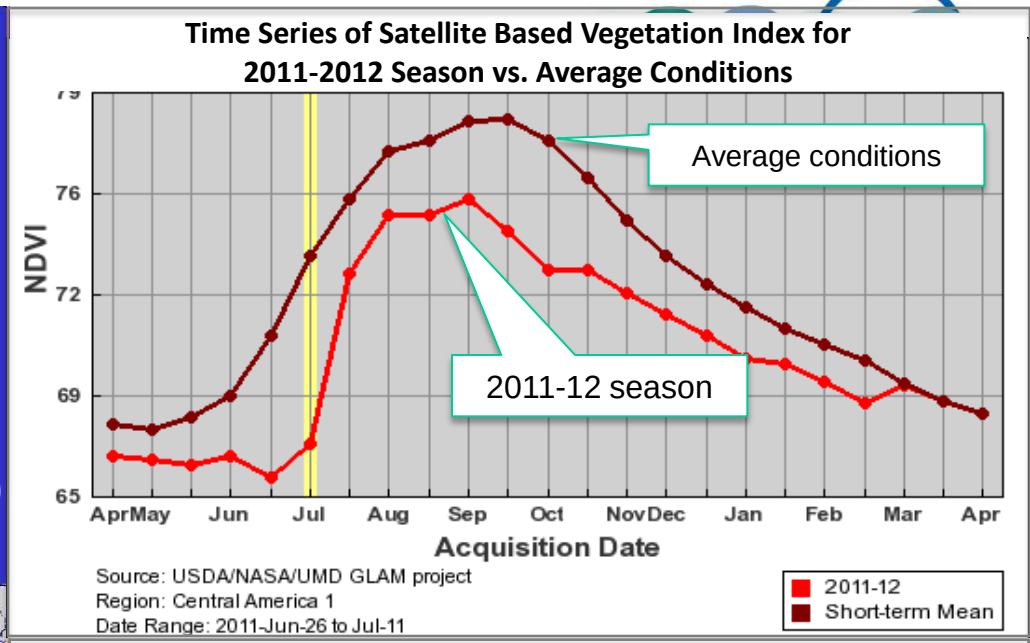
GEOGLAM is a coordination initiative, aiming at providing key information on Agricultural production using Earth Observations through:

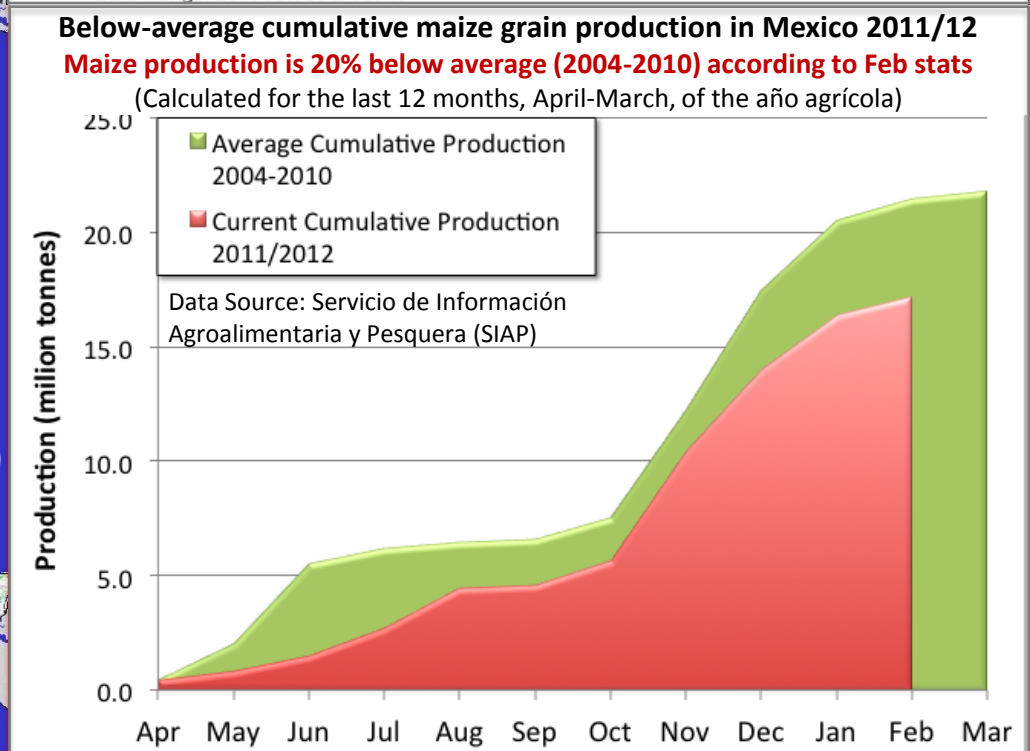
- **supporting, strengthening and articulating existing efforts and**
- **developing capacities and awareness at national, regional and global levels**
- **providing coordinated input to the Agricultural Market Info. System (AMIS)**

Depicting the 2011-12 Drought in Mexico with Satellite Observations

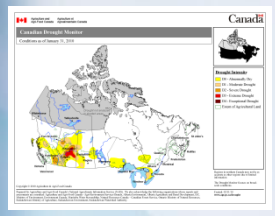


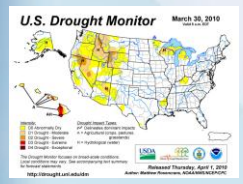


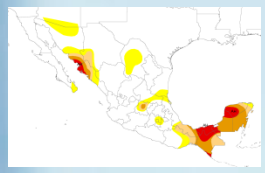


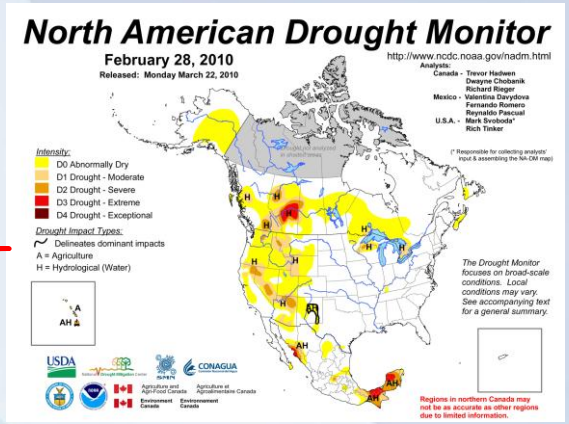


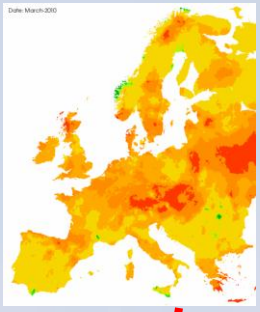
Global Drought Monitor –
An Integration of Continental / Regional Drought Monitors

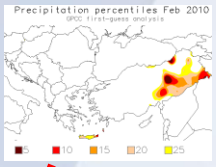


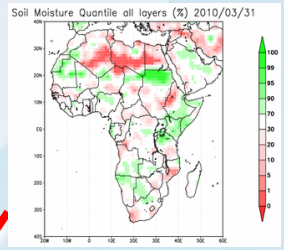


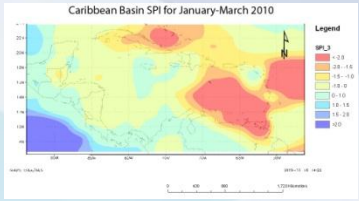


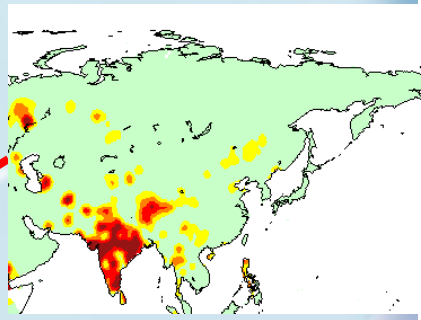


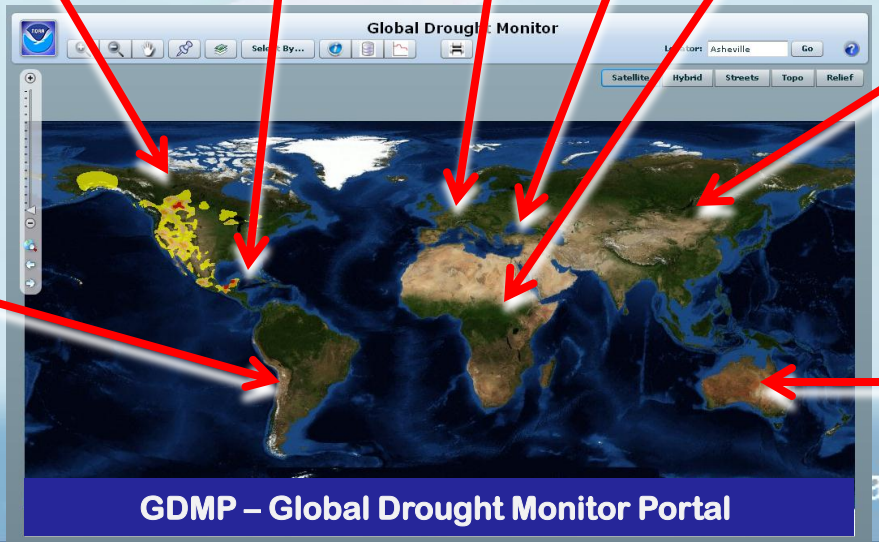


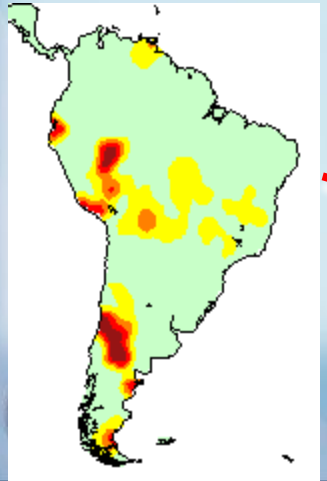


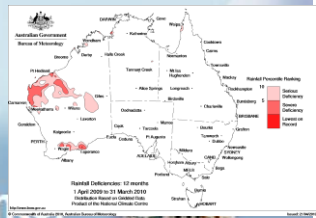




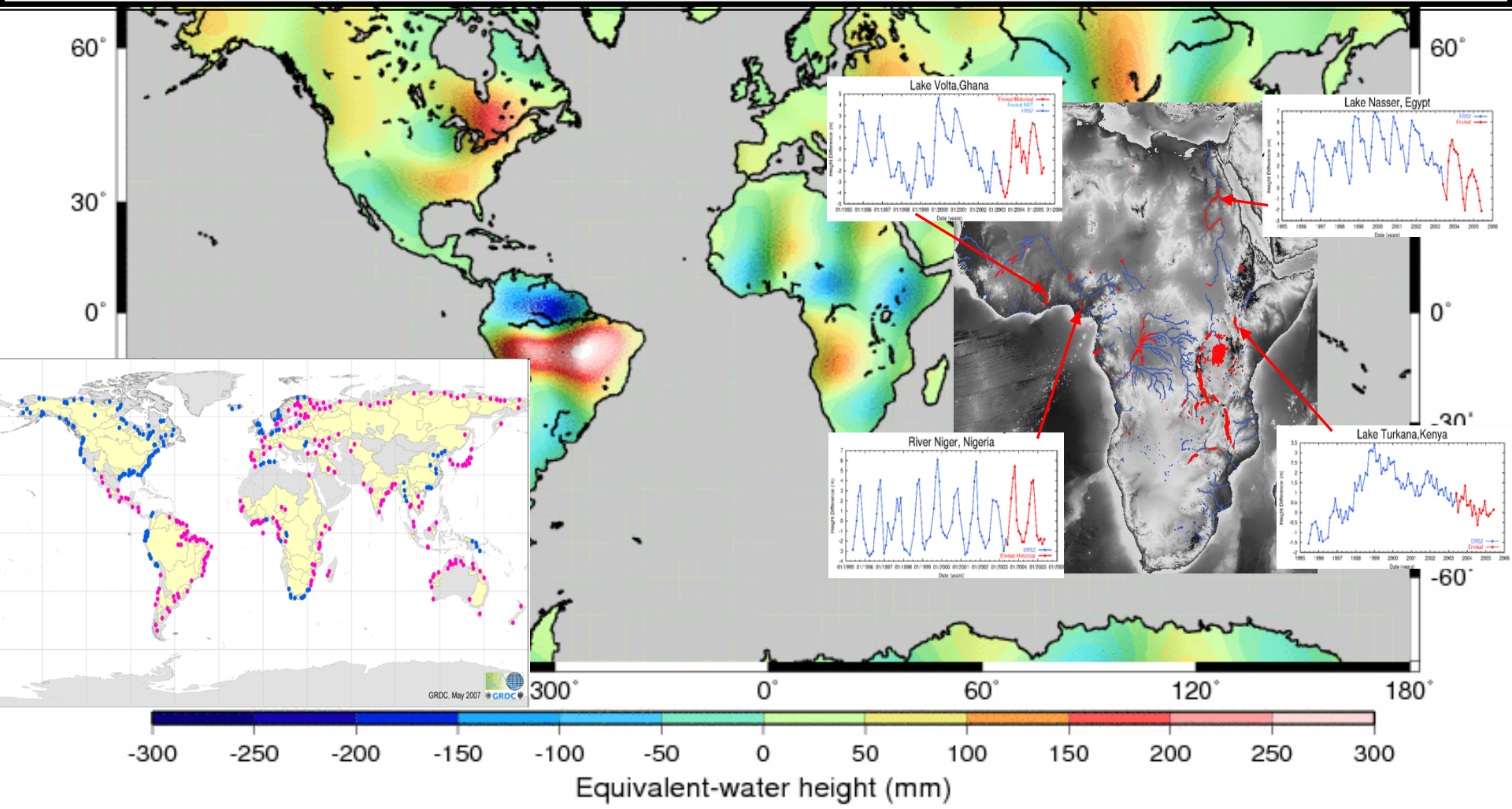








The complete understanding and management of the continental water cycle can be significantly improved through the combination of observations from various disciplines, nations and agencies: gravity field changes measured by the GRACE (NASA/DLR) satellite reflecting the redistribution of subsurface water masses stored on continents; level of lakes and rivers measured by altimetry satellites Jason (CNES/NASA/EUMETSAT/NOAA) and Envisat (ESA); and observations from networks of in-situ water discharge/run-off stations.



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Geohazards Supersites

A **portal** for optimizing the data acquisition strategy and sharing of preliminary information amongst scientists.

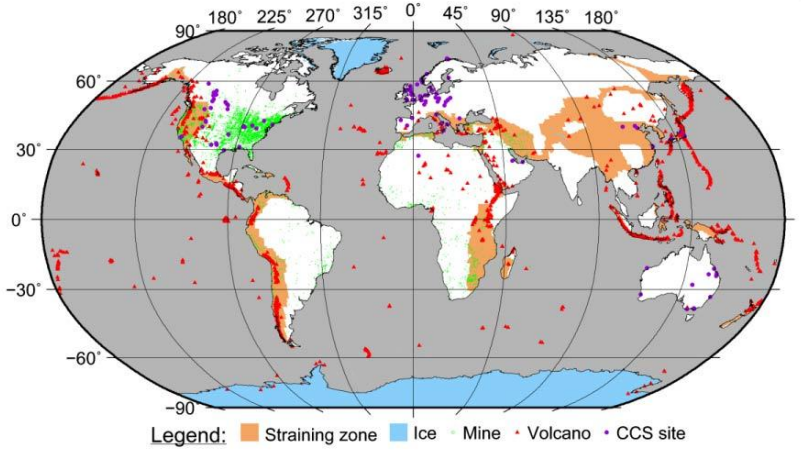
Pooling Satellite imagery and terrestrial in-situ data for earthquake and volcano studies.

There are 3 different level of sites:

- **Supersite** ➔ **all data**
- **Event Supersite** ➔ **all data in case of large scale event**
- **Natural Laboratories** ➔ **Global Network of Natural Laboratories**

Providing online access to historic multi-sensor radar data sets

1 Million ERS/Envisat frames, under investigation.



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GEO BON
GEO Biodiversity Observation Network

Recent Accomplishments:

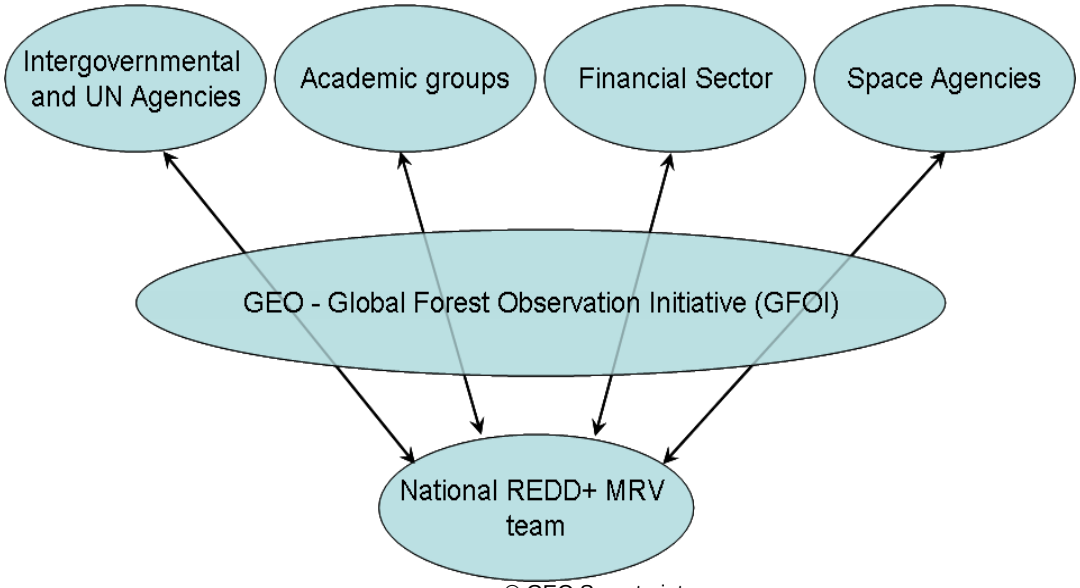
GEO BON submitted an "Assessment of the Adequacy of Existing Observation Capabilities for the CBD 2020 Targets" to the CBD's Ad Technical Expert Group Meeting on Indicators for the Strategic Plan for Biodiversity 2011-2020.

GEO BON is preparing a list of Essential Biodiversity Variables (EBV's) required for meeting the 2020 Targets.

The Global Forest Observations Initiative

Will serve as a platform to link national needs with providers of observations, technical & scientific knowledge as well as of financial resources.

The mission of the GFOI is to support countries in the implementation of the monitoring component of national MRV systems for REDD+.



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Example of capacity building:

Regional Technical Workshops on Forest carbon monitoring in the Americas (2011-2012)

Objective: training on data and methods for mapping and monitoring forests and modeling carbon emissions, in the frame of REDD+ implementation.

Participating countries: Colombia, Ecuador, Guyana, Mexico, Peru

Technical Advisors: CONAFOR and COLPOS (Mexico), Canada Forest Service, Dept Climate Change (Australia), Woods Hole RC; CSIRO; Wageningen University, USGS/Dept of State, Univ. of South Dakota, Univ. of Maryland, FAO.

Sponsors: Global Carbon Project, Carnegie Institution of Washington, Moore Foundation, US SilvaCarbon, , Dept Climate Change (Australia), Norway, Moore Foundation

- 1st Workshop August 15-19 2011 Lima, Peru

Topic LANDSAT Land Cover Mapping Methodologies and MODIS Imagery processing for Land Use Monitoring

- 2nd Workshop September 19-22 2011 Sioux Falls, South Dakota, USA

Topic: Developing Consistent GEO Forest Information Products from Time-series Mid-resolution Optical Data

Regional Technical Workshops on Forest carbon monitoring in the Americas (2011-2012) (cont.)

- 3rd Workshop October 10-11 Toluca Mexico

Topic: Integration of In-situ Forest Information, Remote Sensing Data and Carbon Models

- 4th Workshop March 5-9 2012 Bogota Colombia

Topic: Wide-area, Optical and Multi-Frequency Radar Data Integration and Processing for GEO Forest Products

- 5th Workshop June 04-08 Quito Ecuador

Topic: Exchange of Experiences on Forest Degradation Mapping and Monitoring: Selected Case Studies

- 6th Global Workshop August 27 -31, 2012 Costa Rica

Topic: IPCC GPG-compliant Modeling Approaches for National-Scale Land-Surface Carbon Accounting

- 7th Workshop September 24 – October 05, 2012 Chiapas – Mexico

Topic: Forest Inventories with low cost methodologies. Combining field work, data processing, and satellite data.

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Thank you!

earthobservations.org

evolden@geosec.org