

Group on Earth Observations – GEO

SBA and Transverse Area Reports to the User Interface Committee



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GEO Societal Benefit Areas

1. Reduction and Prevention of **Disasters**
2. Human Health
3. Energy Management
4. Climate Change
5. Water Management
6. Weather Forecasting
7. Ecosystem
8. Agriculture
9. Biodiversity



DISASTERS GEO Point of Contact:
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Group on
Earth Observations

Disasters SBA

Activities, User engagement and 2007 events

G. Rum, GEO Secretariat










- Implementation of a Multi-hazard/ Multi-risk approach
- Emergency Response is not enough, need to address all phases of the Risk Management Cycle
- Risk Assessment and Management provisions are an integral part of Sustainable Development planning and implementation. Direct implication is that Disaster SBA relies, in all pre and post crisis phases of Risk Management, on information/products developed under other SBA's



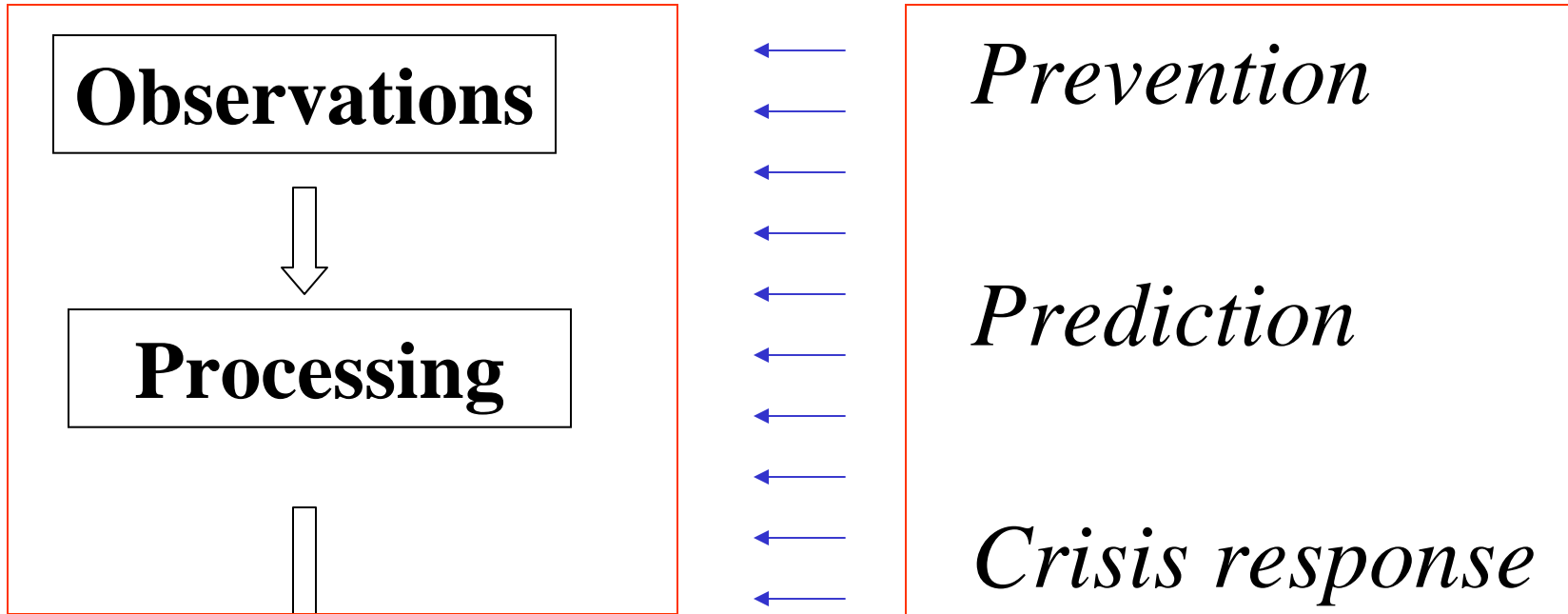


Three types of activities are foreseen

1. Consolidation and implementation of the multi-hazard/multi-risk approach to systematically address all Hazards, defining requirements for Observation Systems, Models, Decision Support tools, Products/ Services (Basic, Intermediate and Final) and Supporting Infrastructure (Communications, Data Share)
2. "End to end pilot projects", to implement agreed prototype operational capabilities at different geographic levels, addressing also issues related to Overall coordination (Structure, funding,etc) and Regional coordination mechanisms (Data acquisition, Infrastructure, Data exchange, Operational agreements,)
3. "Specific initiatives", to complete definition and start implementation of specific GEOSS aspects/elements

DI-06-02	Seismographic Networks Improvement and Coordination	
DI-06-03	Integration of InSAR Technology	
DI-06-04	Implementation of a Tsunami Early Warning System at Global Level	
DI-06-07	Multi-hazard Zonation and Maps	
DI-06-08	Multi-hazard Approach Definition and Progressive Implementation	 
DI-06-09	Use of Satellites for Risk Management	
DI-06-13	Implementation of a Fire Warning System at Global Level	
DI-07-01	Risk Management for Floods	

Systematic Approach  Pilot Projects  Specific initiative 



**Information
Dissemination**

	Prevention	Prediction	Crisis Response
Observations	All elements of the matrix well covered		
Processing			



DI-06-02	Seismographic Networks	Observations requirements Data distribution, Networks improvement and coordination
DI-06-03	InSAR Technology	Evaluation of InSAR products and definition of specific requirements
DI-06-04	Tsunami Early Warning	Definition of Priorities and support for Early Warning System implementation
DI-06-07	Multi-hazard Zonation	Hazard mapping requirements (scientific/technical and inventory)
DI-06-08	Multi-hazard Approach	End to end User Requirements for Risk Management (Civil protection)
DI-06-09	Satellites for Risk Management	User Requirements definition and collection. UN SPIDER program recently approved may constitute the operational tool
DI-06-13	Wildland Fire Early Warning	Assessment of available products and tools and their inclusion into Regional/national systems
DI-07-01	Floods	Common approach, Shared observations, for multinational basins

4 th International Wildland Fire Conference	Sevilla, Spain	13-17 May	
First session of the Global Platform for Disaster Risk Reduction	Geneva, Switzerland	05-07 June	
Workshop on Natural and Human-induced Hazards and Disasters in Africa	Kampala, Uganda	21-22 July	■
Role of the National Hydrological and Meteorological Services in prevention and mitigation of natural hazards impact	Chisinau, Moldova	08-09 October	■
International Workshop on Operational Fire Weather Systems: Technical Applications and Institutional Arrangements in West Africa	Accra, Ghana	29-31 October	■
3rd IGOS Geohazards Workshop	Frascati, Italy	06-08 November	■

Directly related to GEO ■

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HUMAN HEALTH GEO Point of Contact:
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Health

Major Events

2007 WMO/TF HTAP GEO Workshop on Integrated Observations for Assessing Hemispheric Transport of Air Pollution (Geneva, January 2007)

Issue of User Engagement highlighted

2007 WMO/TF HTAP GEO Sand and Dust Storm Warning System Workshop (Barcelona, September 2007)

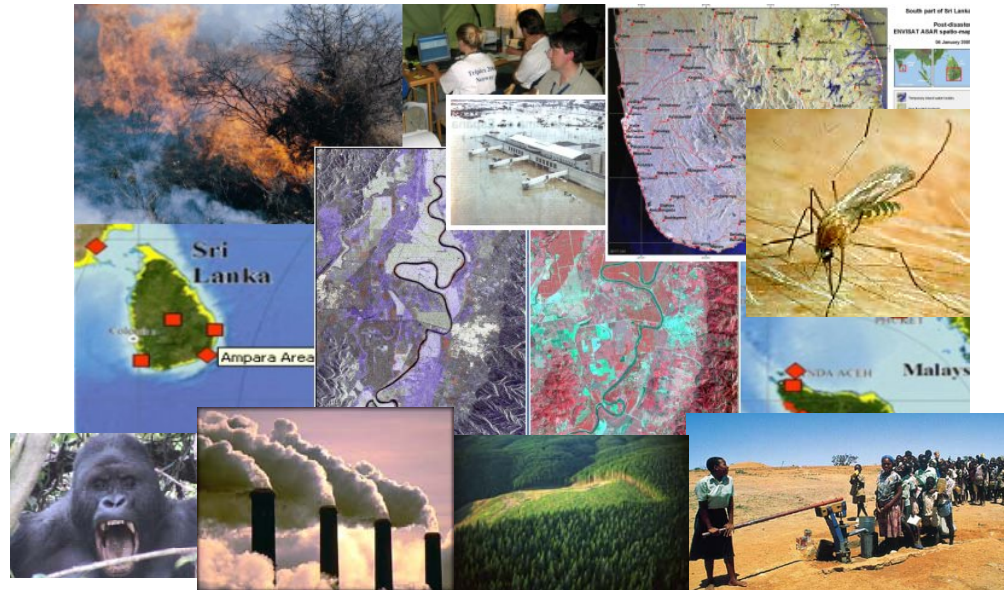
Strong focus on User issues, particularly in Health

2007 WHO GEO Health Workshop (venue and date TBD)

To be finalised when WHO joins GEO

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ENERGY Point of Contact:
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ENERGY

User Engagement & Workshops

See Presentations by

- **Ellsworth LeDrew** (POC & Lead of Task EN-06-04)
- **Thierry Ranchin** (Co-Chair Energy Community of Practice)

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CLIMATE Point of Contact:
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CLIMATE

User Engagement & Workshops

- **3rd International WCRP International Conference on Reanalyses**, hosted by the Japanese Meteorological Agency, Tokyo, 28Jan-1Feb 08
- **GEO Workshop on Legacy Aspects of IPY**, planned for October 2007
- **WCRP/THORPEX Session on Weather/Climate Prediction**, European Meteorological Society Conference, 1-5 Oct 2007 in Madrid

CL-07-01

A collaboration among THORPEX, WCRP & IGBP

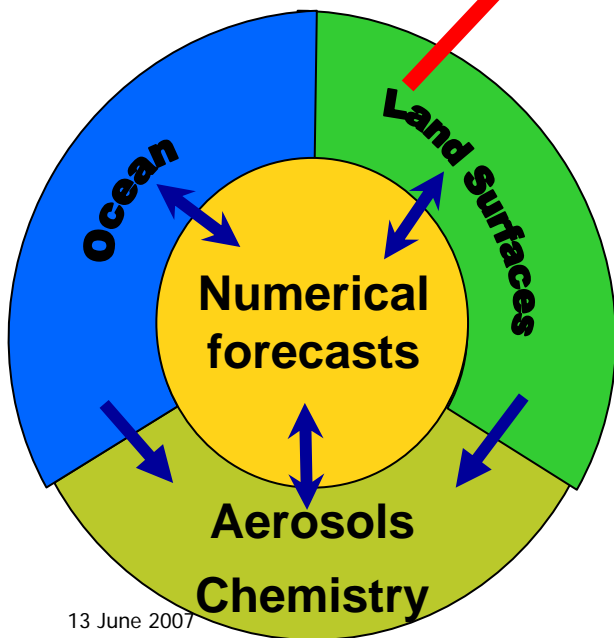
Decision Makers

Early Warning Systems, Advice, ...

SEAMLESS WEATHER AND CLIMATE PREDICTION

Short and Medium Range Seasonal-Interannual
 Decadal Climate Change

Models & Observations





Group on
Earth Observations

White (Green) Paper 2

A revolution in climate & weather prediction

**Target: Government Chief Scientists,
National Academies, Heads of Funding Bodies**

Writing Team: Brian Hoskins, Mel Shapiro, Shukla, John Mitchell,
IGBP nominee



USER ENGAGEMENT Activities

On

US-07-02: “Millennium Development Goals”

US-07-03: “Environmental Risk Management”

See also Presentation by

Stephan Bojinski (GCOS)

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WATER GEO Point of Contact:
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WATER

Goals

Observational systems, data assimilation, prediction systems and decision support capabilities are integrated into a system of systems that supports integrated water management.

Main Themes

- Improved global water quality monitoring for drinking water and recreation.
- Improved in situ monitoring systems for water resource management, especially in developing countries.
- Interoperability of observing systems, and standardization of metadata for data sharing and broad global water cycle data integration system.
- Hydrological ensemble forecasts in water resource-management.
- New or better satellite techniques for water storage determination.



WATER

Major Events

- World Water Forum, Mexico City, 16-22 March 2006
- World Water Week, Stockholm, 21-27 August 2006
- GEO-EEA Coastal Water Workshop, Helsinki, 16-17 November, 2006
- GEO Water Quality Workshop, Geneva, March 2007

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WEATHER GEO Point of Contact:
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Weather

Objectives: Improving weather information, forecasting and warning

The weather observations encompassed by GEOSS are based on the requirements for timely short- and medium-term forecasts. GEOSS can help fill critical gaps in the observation of—for example—wind and humidity profiles, precipitation, and data collection over ocean areas; extend the use of dynamic sampling methods globally; improve the initialization of forecasts; and increase the capacity in developing countries to deliver essential observations and use forecast products.

Weather

Objectives: Improving weather information, forecasting and warning

GEO Activities focus on:

- **Advocate an improved surface-based and space-based global observing system for weather, and facilitate access to weather data for the other SBAs**
- **Facilitate the development and maintenance of a prototype global operational multi-model ensemble prediction systems incorporating easily accessible database. Develop advanced data assimilation systems for operational use**
- **Co-organize a series of regional NWP capacity building workshops**
- **Demonstrate advanced nowcasting and mesoscale EPS products to promote technology transfer, capacity building and establish effective connection between research, operational use and end users to benefit society.**



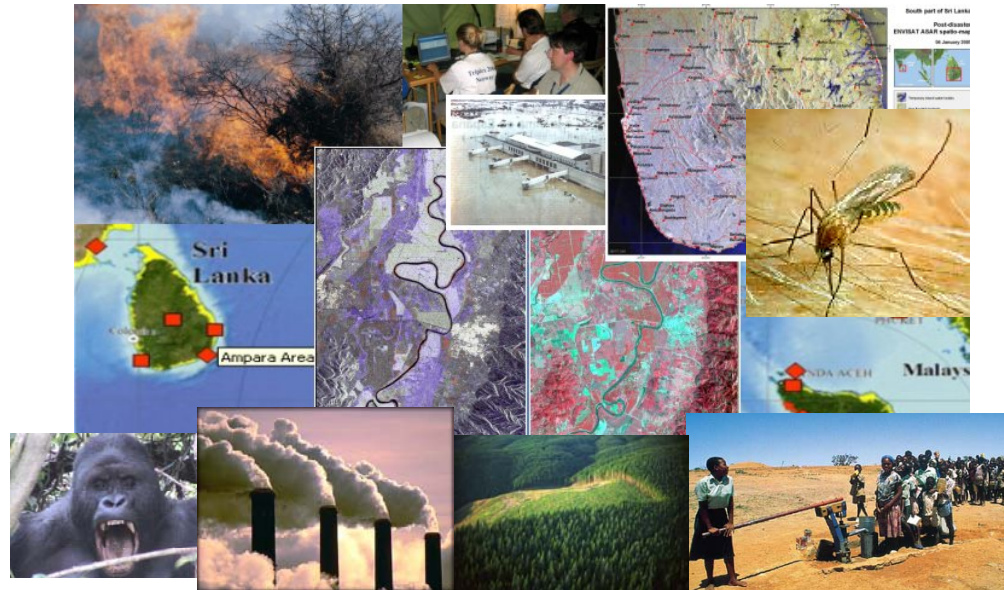
Weather

2007 GEO Workshops

- **Workshop covering developments in TIGGE and TIGGE-LAM to be held in association with the European Meteorological Society in Quarter 3 2007.**
- **Beijing Olympic weather project participants workshop is planned for Sep. in Qing Dao or Beijing, China**
- **NWP training workshops are being planned by Korea for April in Seoul, by Spain for Oct. in Santa Cruz, and by US in Botswana or South Africa.**

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ECOSYSTEMS GEO Point of Contact:
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GEO Ecosystems

Objective: to improve the management and protection of terrestrial, coastal and marine resources

Goals:

- Initiation of a global carbon observing system (IGCO; EC-06-07)
- Development and mapping of global operational scheme for ecosystems classification (EC-06-02)
- Historical Ecosystem Data Inventory, Collection and Capture
- Harmonization of ecosystems observing methods
- Improving tools for space-based and *in-situ* ecosystems observations

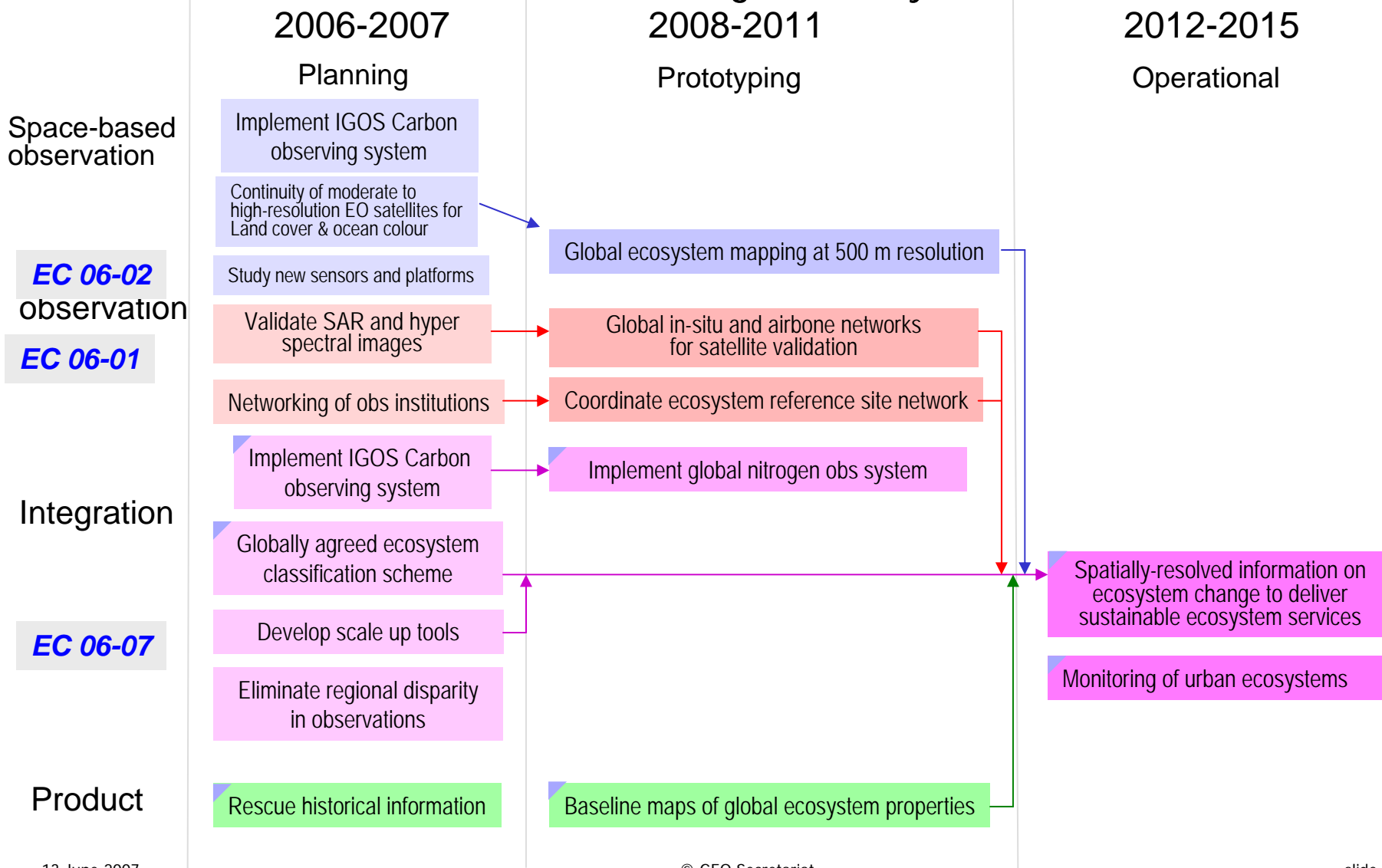


GEO Ecosystems

Goals (cont.):

- GEO Ecosystems Observation Network (GEOECONET; EC-07-01)
- Regional Networks for Ecosystems (EC-06-07)
- Development of a global sampling frame for ecosystems
- AR-07-02: GEOSS Architecture Implementation Pilot Interactive Data Access and Analysis System
- Global Land Cover (DA-07-03)
- Forest Monitoring (AG-06-04)

GEOSS IP Targets - Ecosystem



GEO Ecosystems

Major Events

- Ecosystem Classification Working Group Meeting
Asuncion Paraguay, 9-13 October 2006
- Freshwater Ecosystem Classification Working Group Meeting
Arlington Virginia USA, December 2006
- Marine Ecosystem Classification Working Group Meeting
2007, venue TBD
- Global Forest Monitoring Symposium, 2008

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GEO Agriculture

Objective: To increase food security through the utilization of Earth observations and to increase the utility of Earth observations to the agriculture, forestry, fisheries, and aquaculture sectors

Goals:

- Agricultural and fisheries
- Advanced weather and climate ensemble forecasting for food supply
- New applications for Earth observation data
- Key land cover datasets and data products for the agricultural, and fisheries sectors



GEO Agriculture

Continuing Tasks

AG-06-01: GEOSS Agriculture Strategic Plan

AG-06-02: Data Utilization in Aquaculture

AG-06-04: Forest Mapping and Change Monitoring

AG-06-07: Training Modules for Agriculture



GEO Agriculture

New Tasks

AG-07-01: Improving Measurements of Biomass

AG-07-02: Agricultural Risk Management

AG-07-03: Operational Agricultural Monitoring System

AR-07-02: GEOSS Architecture Implementation Pilot



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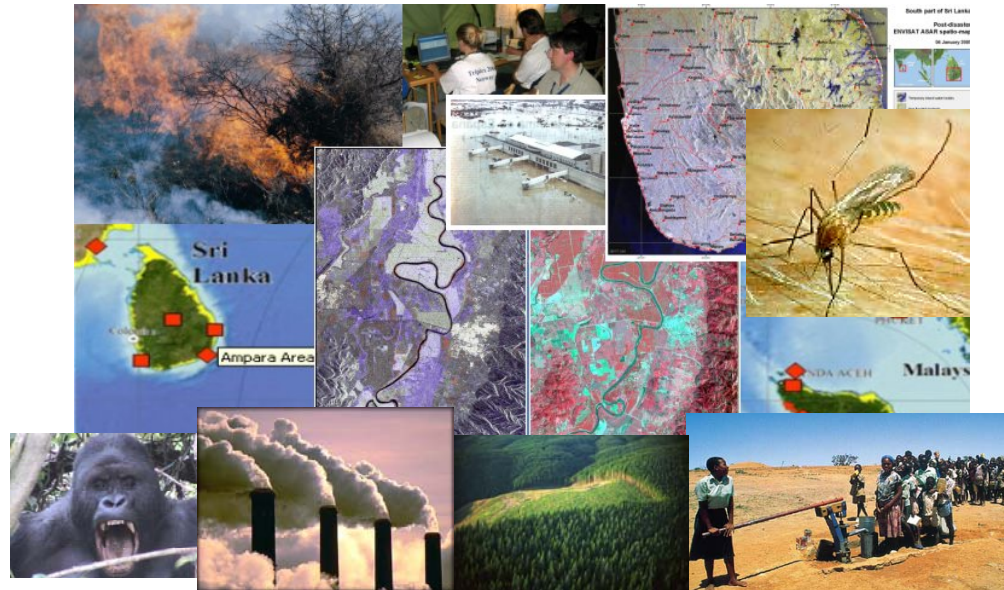
GEO Agriculture

Major Events:

- **Global Forest Monitoring Symposium, 2008**

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GEO Biodiversity

Objective: Understanding, monitoring and conserving biodiversity. Issues include the condition and extent of ecosystems, distribution and status of species, and genetic diversity in key populations.

Goals:

- GEO Biodiversity Observation Network (GEOBIONET, EC-07-01)
- Invasive Species Monitoring Network (BI-07-02)
- Specimen Data Collection (BI-06-03)
- Data Collection Protocols
- Protected Areas Mapping and Monitoring
- AR-07-02: GEOSS Architecture Implementation Pilot Interactive Data Access and Analysis System



Planning

Prototyping

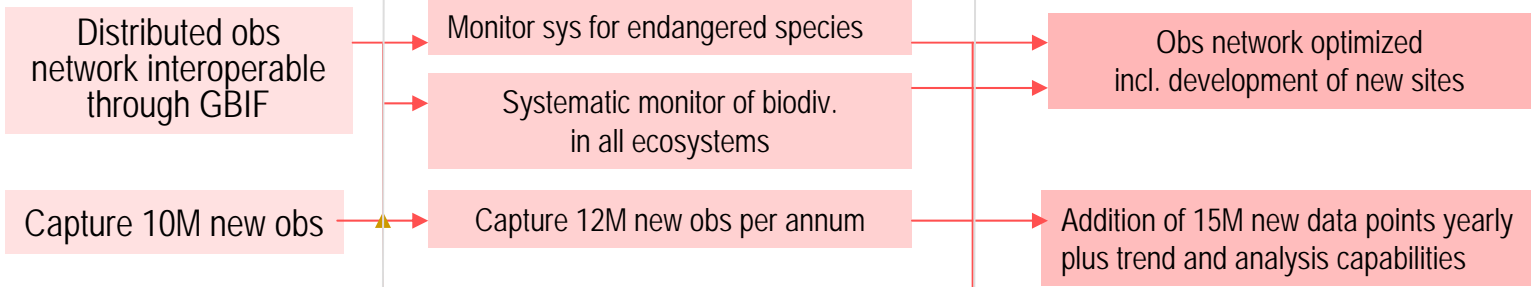
Operational

None identified

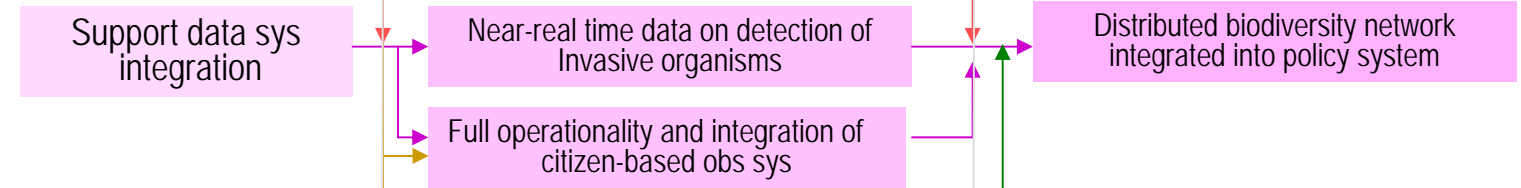
BI 06-01

In-situ observation

BI 06-03



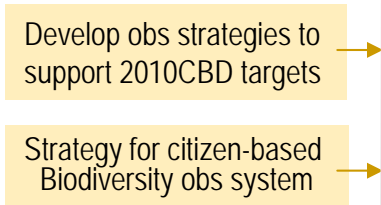
Integration



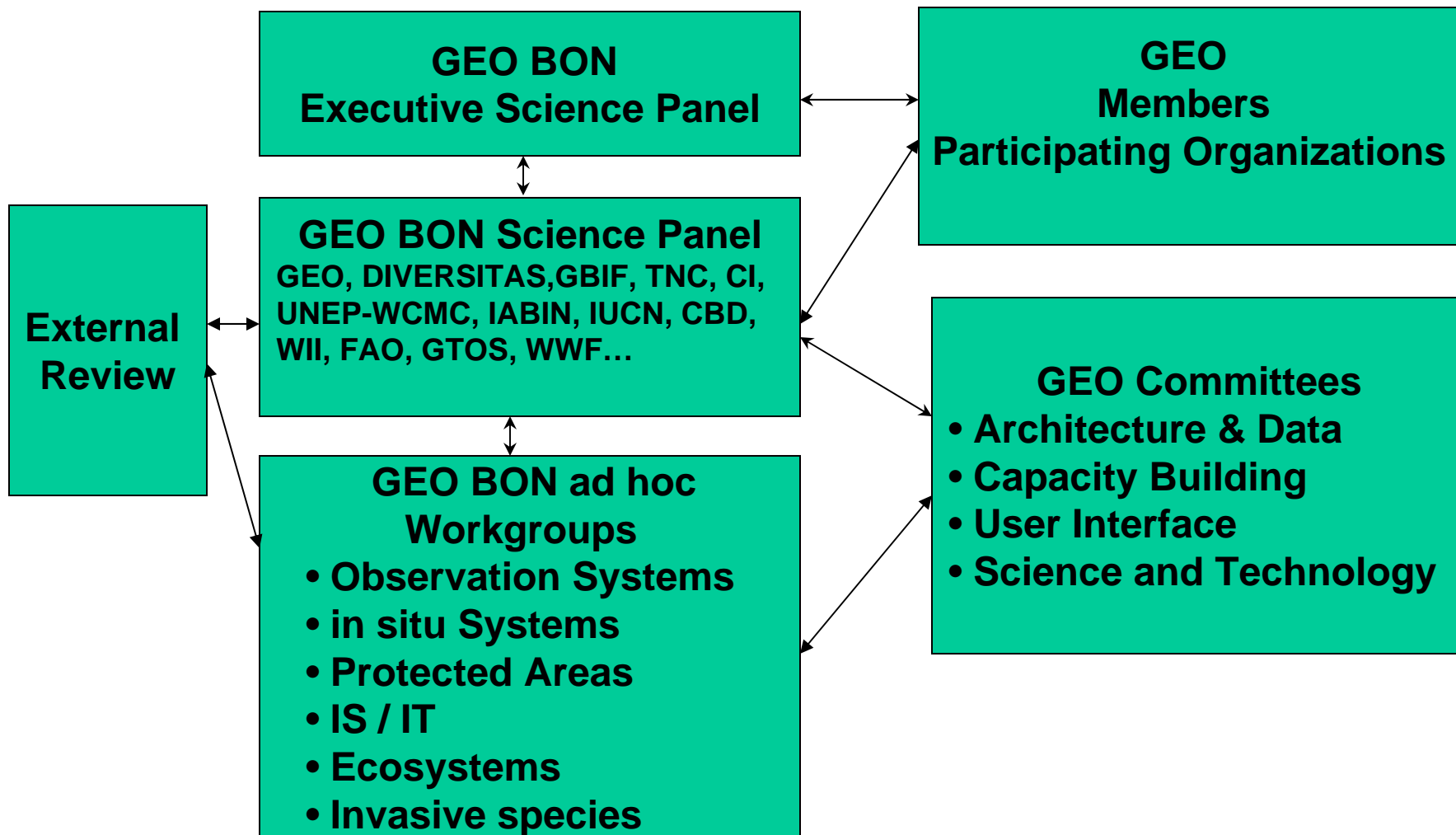
Product

Timely data and info for policy makers

Strategic plan



GEO Biodiversity Observation Network



GEO Biodiversity

Major Events:

- GBIF Species Data Workshop, Geneva, 23-25 October 2006
- User Requirements for Biodiversity; (DIVERSITAS, GEO, GBIF, GTOS); Geneva, 23-25 October 2006
- Invasive Species Monitoring Network Workshop, 2007, venue TBD
- GEO Biodiversity Observation Network Planning Meeting, 2007, venue TBD
- Biodiversity and Ecosystems Interoperability Workshop, 2007



GEO Architecture and Data Management

- Provide and update GEOSS strategic and tactical guidance documents to GEO Members and Participating Organizations to promote understanding of the high level strategic and tactical approaches to GEOSS implementation. Elaborate the GEOSS architecture including development of practical use cases, that will be mainly derived from UIC input. (AR-07-01)
- The GEOSS Architecture using a GEOSS Web Portal and a GEOSS Clearinghouse search facility to access services through GEOSS Interoperability Arrangements in support of the SBAs. (AR-07-02)
- Establish a comprehensive GEOSS database of user requirements concerning georeferencing and geodetic reference frames by identifying, describing and establishing links to relevant user communities in the SBAs and conducting appropriate surveys. (AR-07-03)
- Upgrade and demonstrate WMO Information System (WIS) as one operational exemplar of the GEOSS architecture implementation process providing improvements for multiple SBAs. (AR-07-04)

GEO Architecture and Data Management

- Guidelines on GEO Data Sharing Principles are under preparation and prepared for input to the Summit Declaration (DA-06-01)
- A GEOSS Quality Assurance Strategy is being furthered, a GEO Cal/Val Web Portal was established, a related Workshop is planned for Oct. 2007 (DA-06-02)
- From a user point of view a globally available high resolution DEM is of importance to all SBAs. Support by UIC is sought in this area. (DA-07-01)
- The Sensor Web Enablement for In-Situ Network Facilitation will need the support of UIC to encourage in-Situ networks to follow the SensorWeb approach (e.g. Sensor ML) (DA-07-04)

GEO Architecture and Data Management

- **Major Events:**
 - GEO Web Portal and Clearinghouse Call For Participation(CFP) kick-off meeting, May 17-18 2007, ESA/ESRIN
 - 4th Architecture and Data Committee meeting, May 14-15 2007, Univ. Of Tokyo
 - 5th Architecture and Data Committee meeting, September 12-13 2007, Washington DC area
 - Data Quality assurance Workshop, October 2007, at the GEO Secretariat

GEO Architecture

Continuing Tasks

AR-06-11: Radio Frequency Protection

New Tasks

AR-07-01: Enabling Deployment of a GEOSS Architecture

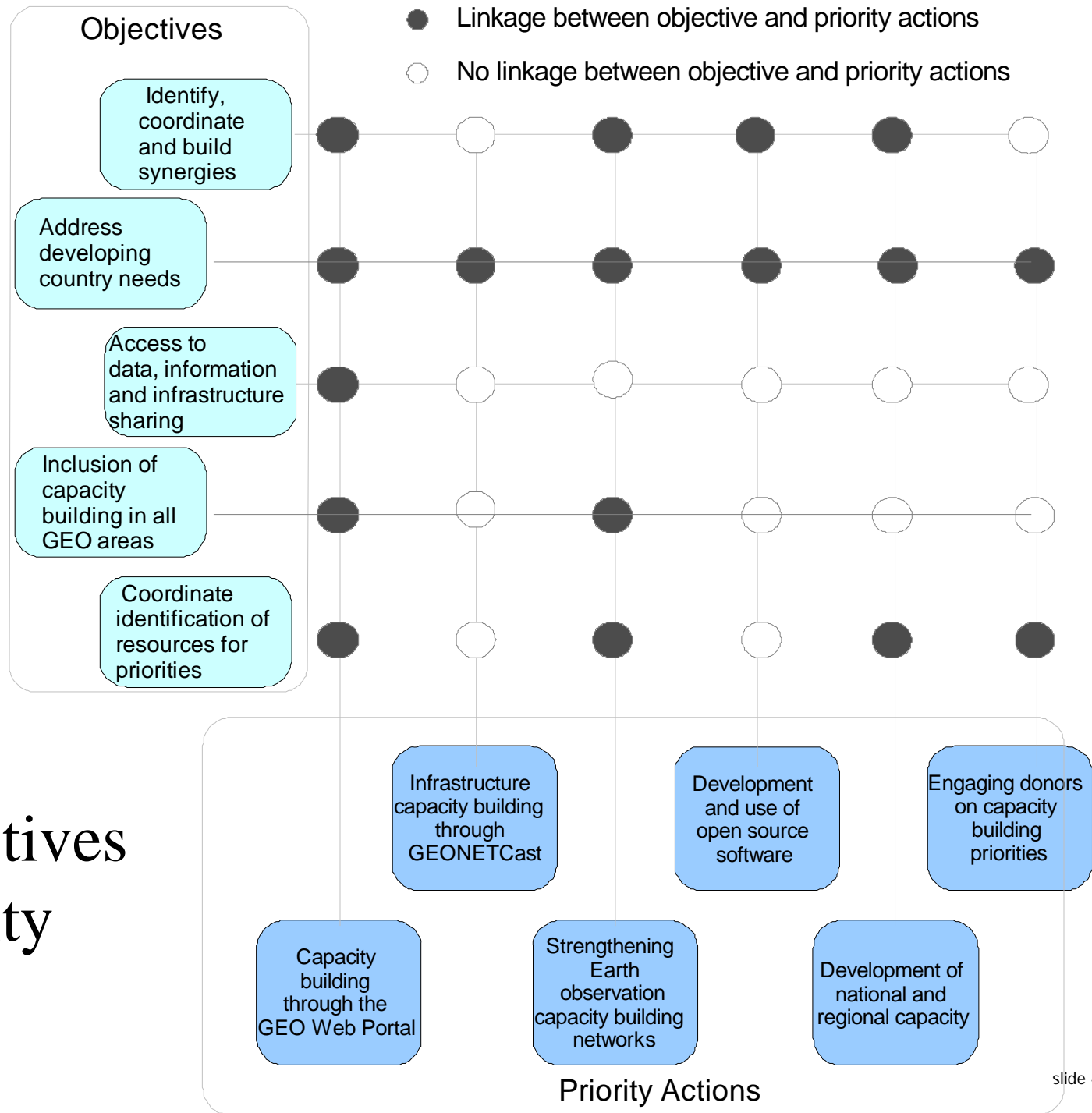
AR-07-02: GEOSS Architecture Implementation Pilot

AR-07-03: Global Geodetic Reference Frames

AR-07-04: WIS – GEOSS Operational Exemplar

GEO Capacity Building

- **Human capacity building** refers to the education and training of individuals to be aware of, access, use and develop Earth observation data and products.
- **Institutional capacity building** is focused on developing and fostering an environment for the use of Earth observations to enhance decision making. This includes building policies, programs and organizational structures in governments and organizations aimed at enhancing the understanding of the value of Earth observation data and products.
- **Infrastructure capacity building** is related to the hardware, software and other technology required to access, use and develop Earth observation data and products for decision making.

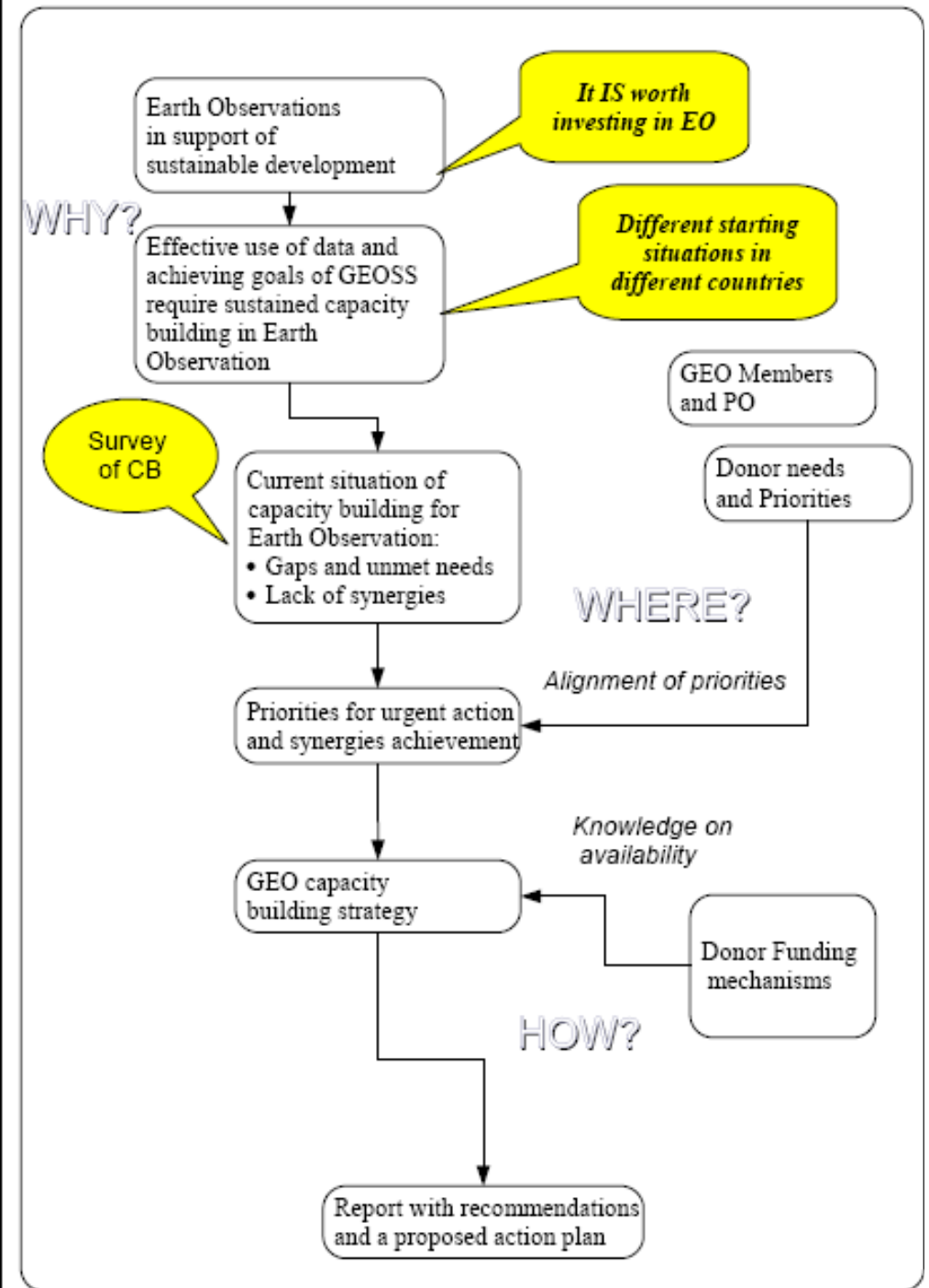


CB Objectives and Priority actions

"GEO CB-Donor Symposium"

[CB0701a]

10-11 September 07
Seville, Spain





Symposium Objectives

- Highlight capacity building activities at all scales (national, regional and global).
- Connecting EO needs of countries with Donor priorities
- Highlight GEO process in support of sustainable development.
- Highlight successes and gaps
- Engage Donor community in a sustained partnership in support of EO CB



Identification of User Needs Critical to determine CB Gaps

- Survey of CB activities ongoing [CB0701b]



Capacity Building: GEONETCast

GEO activity focus on:

- Incorporating data and product contributions from multiple sources to serve all GEO societal benefit areas
- Promoting and monitoring a formal commitment arrangement to ensure a reliable operational system. Such as operators standards, continuity and back-up issues, the cost of satellite communications and the day to day management of each sector of the globe to be addressed.
- Preparation of framework agreements with Data Providers, addressing, for example, cost sharing, data policy, user registration, quality of service, duration.
- Identify a mechanism (i.e. through a GEONETCast Mission planning group) to provide actual inputs for GEONETCast daily operations

Capacity Building: GEONETCast

2007 GEO Workshop (TBD)

- 2nd GEONETCast participants meeting in Sep or Oct, China (TBD)
- European data provider and user forum, Spring 2007 (TBD)
- Americas data provider and user workshop, associated with the ISRSE Conference, June 2007
- Asian data provider and user workshop (TBD)
- Initial operational capability demonstration, Earth Observation Summit-IV, November 2007