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COMMISSION**  
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METEOROLOGICAL  
ORGANIZATION**

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ENVIRONMENT  
PROGRAMME**

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Scientific Steering Committee (GSSC-IX)**

Paris, France, 6 – 8 March 2006

**REPORT ON OCEAN COMMUNITY CONTRIBUTIONS TO AND BENEFITS FROM GEO**

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**Summary and Purpose of Document**

This document reports on

- (a) overview of GEO initiation and its current activities;
  - (b) review on contributions and actions toward GEO/GEOSS made by ocean-related programmes and organizations, under the coordination of IOC;
  - (c) proposed actions for further commitment regarding GEO/GEOSS
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**Annex I:** Participation of Ocean Community to the implementation of tasks in 2006 GEO Work Plan (as proposed to GEO, January 2006)

**Related document/Background Information:**

(Meeting Documents)

- 6.7.2 Chlorophyll Pilot Project Pre-Planning Meeting Report
- 7.3.1 Proposed GOOS-POGO "Gap Analysis"
- 7.3.2 GEO Coastal Zone Community of practice

(Background Information)

GEO 2006 Work Plan version 3 (GEO 0204-3):

[http://earthobservations.org/docs/GEO-II/GEO\\_0204-3\\_060109.pdf](http://earthobservations.org/docs/GEO-II/GEO_0204-3_060109.pdf)



## BACKGROUND / OVERVIEW

1. The World Summit on Sustainable Development (Johannesburg, 2002) Plan of Implementation, and G8 ministers' meeting (Evian, 2003) highlighted the urgent need for coordinated observations relating to the state of the Earth and called on countries to enhance current observational networks, including ocean observations from the high seas, the coastal zone and space.

2. In response to this call, and through considerable efforts made by nations and international/intergovernmental/regional organizations with interest of Earth Observations, the intergovernmental Group on Earth Observations (GEO) was formally established in 2005. The mission of GEO is to build the Global Earth Observation System of Systems (GEOSS), in order to:

*“... realize a future wherein decisions and actions for the benefit of human kind are informed via coordinated, comprehensive, and sustained Earth observations . . . The purpose of GEOSS is . . . to improve monitoring of the state of the Earth, increase understanding of Earth processes, and enhance prediction of the behaviour of the Earth system.” (GEOSS 10-Year Implementation Plan)*

This vision and purpose, articulated in the GEOSS 10-Year Implementation Plan, represents the consolidation of a broad scientific and political consensus: the assessment of the state of the Earth requires continuous and coordinated observation of our planet at all scales.

3. To fulfil user requirements among various societal benefit areas through coordinated Earth Observations, it was identified potential **socio-economic benefits in the nine areas** targeted by the GEOSS development, including: (1) disasters; (2) human health; (3) energy resources; (4) climate variability and change; (5) water-resource management; (6) weather; (7) ecosystems; (8) agriculture and combating desertification; and (9) biodiversity. The **GEOSS 10-Year Implementation Plan** was endorsed as the basis for further development and for establishing a GEOSS, which supports implementation of actions called for in GCOS-92 and the relevant IGOS-P Theme Reports.

4. In 2006, GEO is to begin implementation of the 10-Year Implementation Plan, through implementing the **Annual Work Plan** (see paragraphs 6 to 7 below). It addresses primarily the two-year targets of the 10-Year Plan with the understanding that many of these two-year targets were designed as first steps in support of the subsequent six-year and ten-year targets. In prescribing them, for each societal benefit area, the Plan identified tasks to: (i) engage with users; (ii) define or improve requirements; and (iii) expand availability and use of relevant Earth observation data, metadata, and products.

## GEO: ORGANIZATION AND ACTIVITIES

5. By January 2006, 60 countries and European Commission, and 43 participating organizations comprise GEO membership. GEO is organized with its structure including Plenary body, Executive Committee, and four standing committees including Capacity Building and Outreach; Architecture and Data, Science and Technology, and User Interface, plus a Working Group on Tsunami (c.f. under discussion to evolve into a All Hazards Committee in the future). The GEO Secretariat is located in the WMO Headquarters in Geneva, by WMO's offer for space and general services.

6. GEO annual Work Plan is an evolutionary document to be a reference to its activities. It identifies the organizational activities of GEO Secretariats, including:

- Define relationships with coordinating mechanisms, programmes, associations, and activities
- Harmonize Earth observation planning and prepare future Work Plans
- Mobilize resources (national/regional/international)
- Expand participation in GEO
- Explore the relationship with industry

- Explore the link with socio-economic policymakers
- Engage with the global scientific research and technological community

7. A total of 96 tasks have been identified for 2006 Work Plan. In this document, specific tasks by each societal benefit area were detailed, with indication of GEO Members and Participating Organizations leading/participating in the implementation of each task. GEO Member Countries and Participating Organizations have been requested to provide input to complete and complement the Work Plan and Budget, by early April 2006.

## **CONTRIBUTIONS AND ACTIONS BY IOC AND RELATED PROGRAMMES/ORGANIZATIONS**

### *Approval/Endorsement by Governing Bodies*

8. **IOC** had adopted Resolution EC-XXXVII.2 (June 2004), followed by IOC XXIII-2 (June 2005), both of which endorsed the concept of GEOSS and supported its implementation to the maximum extent possible within the IOC mandate. It also stressed the need of recognition for GOOS in GEOSS. The IOC XXIII-2 indicated financial implication of 20,000 USD per year from regular budget, for GEO-related activities.

9. **I-GOOS** endorsed the concept of GEOSS and expressed its support for the 10-Year Implementation Plan in its seventh session (March 2005). It further agreed to the statement requesting GEO to formally recognize the GOOS as providing the marine components of GEOSS.

10. **JCOMM** adopted the Recommendation 13 in its second session (JCOMM-II, September 2005), encouraging Members/Member States become actively involved in the planning and implementation of GEOSS at the national and international levels, and invited GEO to recognize JCOMM as a key implementation mechanism for oceanographic and marine meteorological components of Earth Observation, providing global, intergovernmental coordination of implementation activities and regulatory and guidance material for operational oceanography and marine meteorology.

11. **POGO** indicated its willingness to contribute to implementation, coordination and capacity building for ocean observation, with strong link to IOC, and urged the members of GEO to give high priority to essential ocean observing activities, in the Yokohama Declaration (November 2003) made in its fifth meeting. Furthermore, the Brest Communiqué, which was prepared at the sixth meeting of POGO, reaffirmed the commitment of POGO to work with GEO in promoting sustained ocean observations, and called for strong scientific inputs in the development of GEOSS.

12. **WMO** adopted WMO Resolution 18 (EC-LVII) on GEOSS affirmed the WMO full support to the GEO process and the resulting GEOSS. The WMO Secretary-General was requested to keep GEO Members fully informed of WMO long-term experience in operational observing and telecommunication systems and service provision and of its capacity to provide effective leadership in the implementation and operation of several key components of GEOSS.

### *Participation in GEOSS Planning/Implementation*

13. Significant contribution to the overall GEO process, especially the emphasis put on the value of existing observing systems such as GOOS, has been made by the ocean-related organizations and programmes. In close cooperation with POGO, the IOC and WMO provided expert advice in drafting the 10-Year Implementation Plan and annual Work Plan focusing on enhancing the capacity of existing ocean observation systems. Continuous actions are detailed in paragraphs 17 to 20 below.

14. To follow up the Communiqué at the Third Earth Observation Summit (EOS III: Brussels, 2005), the Working Group on Tsunami Activities was established and seeks for ways to support the coordinating activities of the IOC/UNESCO and other national, regional, and international initiatives to realize effective warning and mitigation systems for natural hazards, as an integral part of a multi-hazard approach supported by GEOSS. As a co-chair of this Working Group, IOC plays a leading role in this activity to maximize

synergies in the future through close collaboration/coordination among various national/international activities for post-tsunami activities. In close coordination with relevant national/regional mechanisms, IOC also provides technical advice and global coordination in this domain.

*UN Interagency Coordination*

15. FAO; IOC; UNESCO; UNEP, and WMO, with participation by ICSU, established the UN Interagency Coordination and Planning Committee for GEO/GEOSS (ICPC) in June 2005, in view of the value of existing observing systems under UN framework in GEOSS framework, and improve / rationalize their structures and activities as appropriate.

16. In its joint statement to GEO, the ICPC called to strengthen the role of UN Agencies in the Work Plan by enhancing interaction between the GEO Secretariat and the UN Agencies, particularly in the area of Capacity Building and technical development.

**OCEAN COMMUNITY COORDINATION TOWARD GEO/GEOSS**

17. It was felt there was a need of strong representation for Ocean in GEO, and better coordination in the interaction of ocean-related international bodies with GEO. During the second meeting of GEO (December 2005), it was decided and informed that IOC be the formal ‘ocean voice’ in GEO, supported by POGO, GOOS, and JCOMM.

18. For better coordination in providing input to GEOSS Work Plan, a mailing list of experts and representatives of relevant organizations/programmes - was set up to share the information and continue discussion online for the ongoing issues: [ocean-united@jcommops.org](mailto:ocean-united@jcommops.org). Participants of this discussion group are to:

- Share information on GEO-related activities and plans within their programmes;
- Contribute to GEO through consolidated and integrated input, under the coordination by IOC;
- Provide a direct link to each programme/organization, to concrete activities within the GEO framework.

19. The experts participating in this discussion group has been:

- (i) Identifying relevant Tasks to be led by Ocean Programmes/Organizations such as IOC, POGO, GOOS, WMO/MMOP and/or JCOMM in 2006 Work Plan of GEO, and interact with the GEO Secretariat to revise the WP as appropriate (see the annex to this document);
- (ii) Emphasizing the goals and objectives of GOOS as related to the oceans as an integral part of GEOSS, and implementation of GOOS satisfying GEOSS requirements. For this purpose, a gap analysis - focusing on the coastal needs - was prepared and led by Tom Malone (GOOS and POGO), supported by I-GOOS and JCOMM. It was submitted to GEO in January, to be incorporated in the 2006 WP, with assuring its priority (see paragraph 20 below, as well as relevant meeting document);
- (iii) Working more actively in the GEO Committees, particularly noting the importance of the activity of the Committee on Architecture and Data. It also was decided to ensure that experts from ocean community be represented in each Committee, as following:

Committee/ Working Group	Members from ocean community
Architecture and Data:	Bob Keeley (Canada) Peter Pissierssens (IOC/IODE) Lesley Rickards (POGO) Mary Altalo (GOOS)

<b>Committee/ Working Group</b>	<b>Members from ocean community</b>
Capacity Building	Robert Weller (GOOS and POGO) Shubha Sathyendranath (POGO)
Science and Technology	Robert Weller (GOOS and POGO, co-chair)
User Interface	Tom Malone (GOOS and POGO, co-chair) Mary Altalo (GOOS)
Tsunami	Patricio Bernal (IOC, co-chair) Francois Gerard (GOOS) Thorkild Aarup (IOC) Bernardo Aliaga (IOC) Boram Lee (IOC) Masahiro Yamamoto (IOC)

20. A consolidated input from Ocean Community to 2006 Work Plan has been provided to GEO Secretariat. Indicating tasks to be led and/or contributed by ocean-related bodies (see annex to this document), including IOC, GOOS, JCOMM and POGO, the Ocean Community offered GEO to take the lead for two tasks, including:

- (i) AR-06-07, *“Produce an inventory of existing in-situ observation networks (including airborne), beginning with the networks of GEO Members and Participating Organizations, and associate them with societal benefit areas as appropriate”*: a proposal on the “gap analysis” of GEOSS against GOOS, as detailed in the relevant document.
- (ii) EC-06-07, *“Build upon existing initiatives (e.g. ANTARES in South America for oceans and GOF-C-GOLD regional networks for terrestrial domains) to develop a global network of organization-networks for ecosystems, and coordinate workshops to strengthen observing capacity in developing countries”*: a proposal on a pilot project by GOOS Coastal Panel, on chlorophyll observation through satellite ocean colour observations, as proposed by GSC-8 and reproduced in the relevant document.

## **ACTION PROPOSED**

21. The Committee is invited to

- (i) Review the activities with regard to GEO/GEOSS, and take this information into account in the relevant discussion;
- (ii) Support/endorse the ongoing coordination within the Ocean Community, and seek for ways to strengthen it;
- (iii) Consider how GOOS and other ocean-related programs/organizations would efficiently communicate with and contribute to GEO/GEOSS, particularly in reinforcing its strength to GEO through its expertise, facilities and infrastructure already existing, and;
- (iv) Seek ways to maximize synergies in future activities with GEO standing committees and working group, as well as with its secretariat, particularly in the context of the realization/implementation of pilot projects proposed to GEO for 2006 Work Plan.

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ARCHITECTURE & DATA COMMITTEE (32 Tasks)				
Societal Benefit / Transverse Area	WORK PLAN TASK	LEAD ORGANIZATION(S) (point of contact)	CONTRIBUTING ORGANIZATION(S) (point of contact)	CONTRIBUTING USER(S) (point of contact)
DISASTERS	DI-06-01		IOC (Keith Alverson k.alverson@unesco.org)	GOOS (Keith Alverson k.alverson@unesco.org)
	DI-06-02		IOC (Masahiro Yamamoto m.yamamoto@unesco.org)	
	DI-06-04		IOC (Ulrich Wolf u.wolf@unesco.org)	
	DI-06-11			
	DI-06-13			
CLIMATE	CL-06-02			
WATER	WA-06-04			
	WA-06-05		GOOS, POGO (Keith Alverson k.alverson@unesco.org)	GOOS, IGOS Ocean Theme, JCOMM (Mike Johnson mike.johnson@noaa.gov)
WEATHER	WE-06-01			
	WE-06-02			
	WE-06-04			
AGRICULTURE	AG-06-04			
BIODIVERSITY	BI-06-05			CoML (Ron O'Dor rodor@coreocean.org)
ARCHITECTURE	AR-06-01			
	AR-06-02			
	AR-06-03			
	AR-06-04		GOOS (John Field jgfield@pop.uct.ac.za)	
	AR-06-05			
	AR-06-06			
	AR-06-07	POGO (Tom Malone t.malone@ocean.us)	GOOS, POGO (Tom Malone t.malone@ocean.us), JCOMM through JCOMMOPS	
	AR-06-08		GOOS, POGO, JCOMM (Tom Malone t.malone@ocean.us)	
	AR-06-09			
	AR-06-10			
	AR-06-11			
DATA MANAGEMENT	DA-06-01			

	<b>DA-06-02</b>		<b>JCOMM, POGO</b> (Robert Keeley keeley@meds-sdmm.dfo-mpo.gc.ca, Lesley Rickards ljr@bodc.ac.uk)	
	DA-06-04			
	DA-06-05			
	DA-06-06			
	<b>DA-06-07</b>		<b>JCOMM, POGO</b> (Robert Keeley keeley@meds-sdmm.dfo-mpo.gc.ca, Lesley Rickards ljr@bodc.ac.uk)	
	DA-06-08			
	<b>DA-06-09</b>		<b>JCOMM, POGO</b> (Robert Keeley keeley@meds-sdmm.dfo-mpo.gc.ca, Lesley Rickards ljr@bodc.ac.uk)	
<b>USER INTERFACE COMMITTEE (24 Tasks)</b>				
<b>Societal Benefit / Transverse Area</b>	<b>WORK PLAN TASK</b>	<b>LEAD ORGANIZATION(S) (point of contact)</b>	<b>CONTRIBUTING ORGANIZATION(S) (point of contact)</b>	<b>CONTRIBUTING USER(S) (point of contact)</b>
DISASTERS	<b>DI-06-05</b>		<b>IOC</b> (Dmitri Travin d.travin@unesco.org, Julian Barbieri j.barbieri@unesco.org)	
	<b>DI-06-06</b>		<b>IOC</b> (Laura Kong l.kong@unesco.org)	
	DI-06-07			
	<b>DI-06-08</b>		<b>IOC, JCOMM</b> (Patricio Bernal p.bernal@unesco.org, Boram Lee b.lee@unesco.org)	<b>JCOMM</b> (Boram Lee b.lee@unesco.org)
	DI-06-09			
	DI-06-10			
HEALTH	HE-06-02			
	HE-06-03			
	HE-06-04			
ENERGY	EN-06-02			
	EN-06-03			
	EN-06-04			
	EN-06-05			
	EN-06-06			
CLIMATE	CL-06-03			
	<b>CL-06-04</b>	<b>GOOS</b> (Francois Gerard francois.gerard@meteo.fr)	<b>JCOMM, POGO</b>	

	<b>CL-06-05</b>		<b>JCOMM</b> (Peter Dexter P.Dexter@bom.gov.au, Vasily Smolyanitsky vms@aari.ru)	
	<b>CL-06-06</b>	<b>GOOS</b> (Albert Fischer a.fischer@unesco.org)	<b>JCOMM</b> (Scott Woodruff Scott.D.Woodruff@noaa.gov)	<b>GCOS, GOOS</b> (Albert Fischer a.fischer@unesco.org)
WATER	<b>WA-06-01</b>		<b>GOOS</b> (Paul DiGiacomo Paul.M.Digiacom@jpl.nasa.gov)	
	WA-06-03			
AGRICULTURE	AG-06-01			
USER ENGAGEMENT	US-06-01			
	US-06-02			
	US-06-03			
	EN-06-01			
<b>SCIENCE &amp; TECHNOLOGY COMMITTEE (20 Tasks)</b>				
Societal Benefit / Transverse Area	WORK PLAN TASK	LEAD ORGANIZATION(S) (point of contact)	CONTRIBUTING ORGANIZATION(S) (point of contact)	CONTRIBUTING USER(S)
				(point of contact)
DISASTERS	DI-06-03			
HEALTH	HE-06-01			
ENERGY	EN-06-01			
CLIMATE	CL-06-01			
WATER	WA-06-02			
WEATHER	WE-06-03			
ECOSYSTEMS	<b>EC-06-01</b>		<b>IOC</b> (Roger Dargaville r.dargaville@unesco.org)	<b>IGOS</b>
	EC-06-02			
	<b>EC-06-03</b>		<b>GOOS</b> (Francois Gerard francois.gerard@meteo.fr)	
	EC-06-04			
	EC-06-05			
	EC-06-06			
AGRICULTURE	<b>AG-06-02</b>		<b>GOOS</b> (Tom Malone t.malone@ocean.us)	<b>GOOS</b>
	AG-06-03			
	AG-06-05			
BIODIVERSITY	BI-06-01			

	<b>BI-06-02</b>		<b>CoML</b> (Ron O'Dor rodor@coreocean.org)	
	<b>BI-06-03</b>		<b>CoML</b> (Ron O'Dor rodor@coreocean.org)	
	BI-06-04			
DATA MANAGEMENT	DA-06-03			
<b>CAPACITY BUILDING &amp; OUTREACH COMMITTEE (19 Tasks)</b>				
<b>Societal Benefit / Transverse Area</b>	<b>WORK PLAN TASK</b>	<b>LEAD ORGANIZATION(S) (point of contact)</b>	<b>CONTRIBUTING ORGANIZATION(S) (point of contact)</b>	<b>CONTRIBUTING USER(S) (point of contact)</b>
DISASTERS	DI-06-12			
	DI-06-14			
HEALTH	HE-06-05			
WATER	WA-06-06			
	WA-06-07			
WEATHER	WE-06-05			
ECOSYSTEMS	<b>EC-06-07</b>	<b>POGO</b> (Shubha Sathyendranath shubha@dal.ca)	<b>GOOS</b> (John Field jgfield@pop.uct.ac.za)	
AGRICULTURE	AG-06-06			
	AG-06-07			
CAPACITY BUILDING	<b>CB-06-01</b>		<b>POGO</b> (Shubha Sathyendranath shubha@dal.ca)	
	CB-06-02			
	CB-06-03			
OUTREACH	OR-06-01			
	OR-06-02			
	OR-06-03			
	OR-06-04			
	OR-06-05			
	OR-06-06			
	OR-06-07			