

CGMS AND GEO/GEOSS INTERACTIONS

(Submitted by WMO)

Summary and purpose of document

The present paper recalls the context of GEO, with reference to the GEO 10-year implementation plan for the development of a Global Earth Observation System of Systems (GEOSS) which is based upon the requirements in nine Societal Benefit Areas (SBA).

It indicates potential contributions from CGMS to GEO activities, while noting that CGMS is already contributing to GEOSS indirectly through its support to WMO programmes.

Appendix: Actions of Direct Relevance to CGMS and the WMO Space Programme within the GEO Work Plan

PROGRESS/ACTIVITY REPORT

Background

1. It should be recalled that CGMS, at its thirty-third session agreed that it should become a Participating Organization within the Group on Earth Observations. In so doing, CGMS expressed the desire that in participating in GEO that it would not be diverted from serving the primary purposes of CGMS. In particular, CGMS discussed a proposed working relationship between CGMS and GEO, based on the GEO 10-year implementation plan for the development of a Global Earth Observation System of Systems (GEOSS) which is based upon the requirements in nine Societal Benefit Areas (SBA), one of which is Weather. The GEO Secretariat has produced a work plan for 2006 which includes activities directly related to the Weather SBA including sections such as Architecture, and Data Management, Disasters, Water and Climate. CGMS has a clear opportunity to act as a mechanism in support of GEO objectives. The discussion agreed that the CGMS Secretariat should be prepared to support such an input regarding the following aspects of the plan:

- Which specific actions proposed would fall within the ambit of CGMS for implementation;
- Whether these specific actions are correctly stated;
- How, and in what time-scale, CGMS could address any of the specific actions.

2. It should be noted that WMO, as both a CGMS member and GEO Participating Organization, is already committed to meeting the needs of the Societal Benefit Areas for weather, water, climate and disasters. Indeed, WMO Members have already formally committed that the space-based sub-system of the GOS and that the WMO Information Service (including its component IGDDS) are components of the Global Earth Observation System of Systems (GEOSS). For the weather, water, climate and disaster SBAs in which WMO, as an organization, has responsibility within its mandate, the WMO Space Programme will be the coordinator for the space segment. Thus, CGMS, as the coordination group for meteorological satellites has a concomitant responsibility to GEO. In responding to WMO requirements, it is de facto responding to GEO requirements for the weather, water, climate and disasters SBAs.

Progress

3. It should be recalled that CGMS-33 agreed it should become a Participating Organization in GEO. Based on this agreement, the CGMS Secretariat wrote a letter of application to the GEO Secretariat. Unfortunately, at GEO-II, held in Geneva in November 2005, GEO Members deferred accepting the offer by CGMS due to a procedural issue between GTOS and a subsidiary group. It is anticipated that such confusion will not exist with the clear role CGMS has assumed for the space-based component of the GOS. In the case of GTOS, one of its subsidiary working groups applied at GEO-I for status as a Participating Organization. GEO decided against having multiple members from the same Participating Organization. Since CGMS is applying and not any of its individual Working Groups, there should be no such confusion.

4. The list of Actions within the GEO work plan, with direct relevance to CGMS is shown in the Appendix to this working paper.

5. GEO-III will be hosted by the German Government in Bonn, Germany, 28-29 November 2006 at which it is anticipated that CGMS will be accepted into GEO as a full Participating Organization responsible for the implementation of the GEO SBAs for weather, water, climate and disasters in response to WMO requirements.

**ACTIONS OF DIRECT RELEVANCE TO CGMS AND THE WMO SPACE PROGRAMME WITHIN THE GEO WORK PLAN
TASKS ARE EXTRACTED FROM VERSION 2 OF THE DRAFT 2007-2009 GEO WORK PLAN**

Task Number	Description	Status
DI-06-01	Encourage in-situ and space agencies to (i) systematically record data over coastal regions subject to tsunami risk, and (ii) archive data in a form easily accessible to all countries.	Closed To be merged into DI-06-04 and DI-06-05
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DI-06-03	Integration of InSAR technology Support the improved integration of InSAR (Interferometric Synthetic Aperture Radar) technology for disaster warning and prediction.	To be continued It will also include integration of GPS networks data.
DI-06-04	Implementation of a Tsunami Early Warning System at global level Promote and facilitate free and unrestricted exchange of all Earth observation data relevant to Tsunami Early Warning Systems. New Title: "Support the IOC Implementation Plan, through (i) promotion and facilitation of free and unrestricted exchange of all Earth observation data relevant to Tsunami Early Warning Systems (ii) contribution in terms of GEO developed operational capabilities (iii) definition and implementation of standards"	To be continued This task now includes all the activities related to the implementation of a Tsunami Early Warning System at global level, including activities from tasks DI-06-01 and DI-06-06. The IOC Implementation Plan will be the programmatic reference for task implementation. JCOMM will be included in the contributing Organizations.
DI-06-09	Use of satellites for Risk Management Expand the use of meteorological geostationary satellites for the management of non-weather related hazards. New Title: " With reference to a multi-hazard approach, define and facilitate implementation of a virtual constellation for risk management"	To be continued The scope of the task was reviewed in order to take into account related 6-years targets. In coordination with AR-07-P3 (virtual constellations) the main objective would be to identify a virtual constellation for risk management.
DI-06-10	Initiate and maintain a dialogue between GEO, the Board of the International Charter on Space and major Disasters and relevant UN agencies to identify mechanisms for strengthening the scope and mandate of the Charter.	To be continued as an ongoing supporting activity

Task Number	Description	Status
DI-06-11	Explore possibilities for the development of an international charter on telecommunication systems and disasters, building upon the experience of the International Charter on Space and Major Disasters.	To be continued as an ongoing supporting activity
CL-06-02	<p>Key data from satellite systems</p> <p>Establish actions securing the provision of key data for climate studies and forecasting from satellite systems.</p>	<p>To be continued</p> <p>Related activities will include: Promote vis-à-vis satellite agencies and policy-makers the implementation of actions proposed to respond to GCOS requirements for key climate data (a list of these actions will be presented at UNFCCC COP-12 in November 2006).</p>
WA-06-01	Organize workshops on water observations, encompassing space-based, airborne, and in-situ observing systems, and focusing on (i) water quality, including fresh, estuarine, and marine water quality, (ii) ground water, (iii) precipitation, soil moisture, surface water, and (iv) hydrological ensemble-based prediction and new observing techniques and products.	To be completed in 2006
WE-06-02	<p>Space-based Global Observing System</p> <p>Advocate a stable and improved space-based Global Observing System (GOS) including operational geostationary and polar components. Support WMO efforts related to (i) increased spatial and temporal resolution for geostationary imagers and sounders and (ii) a broader availability of polar Doppler wind profiles for initial operational testing.</p>	To be continued
WE-06-04	Support the development of Advanced Dissemination Methods (ADMs) within an operational Integrated Global Data Dissemination Service (IGDDS), as a component of WMO Information System (WIS) and a contribution of the WMO Space Programme to GEONETCast.	<p>Closed</p> <p>To be implemented through AR-07-P1</p>
AR-06-01	Establish and maintain a process for reaching interoperability arrangements, informed by ongoing dialogue with major international programmes and consortia. That process is to be sensitive to technology and accessibility disparities among GEO Members and Participating Organizations, and must include mechanisms for upgrading arrangements.	<p>Closed</p> <p>Grouped into AR-07-P1</p>
AR-06-02	Produce practical strategic and tactical guidance document on how to converge disparate systems to a higher degree of collaboration and interoperability under GEOSS including its roadmap and using existing efforts wherever possible.	<p>Closed</p> <p>Grouped into AR-07-P1</p>

Task Number	Description	Status
AR-06-04	Establish a process for GEO Members and Participating Organizations to commit component systems to GEOSS, and advocate specific initial commitments of contributed systems and other components, including agreement to accept GEOSS interoperability specifications as defined to date, and allowing for growth.	Closed Grouped into AR-07-P1
AR-06-09	High Resolution Multispectral Imager Continuity Advocate establishing continuity for near real-time, 30-m (or better) resolution, multi-spectral remote-sensing coverage everywhere on the Earth's surface, including support for the launch of a Landsat-equivalent follow-on mission.	To be continued
AR-06-10	GPM Mission Implementation Advocate and facilitate the timely implementation of the Global Precipitation Measurement (GPM) mission and encourage more nations to contribute to the GPM constellation	To be continued
AR-06-11	Radio Frequency Protection Prepare a series of appropriate advocacy activities, including representations to the International Telecommunication Union. For example, evaluation of challenges presented by the industrial development of automobile anti-collision radar and the implications for the use of radio frequencies essential for tropospheric sounding. New Title: "Assess the potential impact of interference on Earth Observations applications and in particular Satellite measurements necessary for the GEOSS and prepare a series of appropriate advocacy activities, including representations to the International Telecommunication Union (ITU) and other bodies in charge of frequency management. In particular, the case of passive bands, essential for Earth observations, will be monitor with the highest care (For example, evaluation of challenges presented by the automotive short-range radars (SRR 24 GHz) applications and their implications)."	To be continued
DA-06-01	GEOSS Data Sharing Principles Invite experts to identify steps required to further the practical application of the agreed GEOSS data sharing principles.	To be continued
DA-06-02	GEOSS Quality Assurance Strategy Develop a GEO data quality assurance strategy, beginning with space-based observations and evaluating expansion to in-situ observations, taking account of existing work in this arena.	To be continued

Task Number	Description	Status
DA-06-06	<p>Spatial Data Infrastructures</p> <p>Advocate use of existing Spatial Data Infrastructure components as institutional and technical precedents, where appropriate, including standard protocols and interoperable system interfaces, among other components.</p>	<p>To be continued</p>
CB-06-04	<p>GEO-NETCast</p> <p>GEO-NETCast, an operational service delivering data and products based on the use of communication satellites</p> <p>New Title: "GEO-NETCast, a real-time data dissemination system - in support of the GEO societal benefit areas - by which environmental /in situ/, airborne, and space-based observations, products, and services are transmitted to users through satellites."</p>	<p>To be continued</p> <p>It is expected that the world wide satellite dissemination aspects will be covered in near future. GEO-NETCast needs to:</p> <p>⌚③ ⌚③ ⌚③ ⌚③ ⌚③</p> <p>Continue coordination with and receive input from user community</p> <p>Develop linkages to other dissemination methods as part of the overall GEOSS architecture</p> <p>Identify other infrastructure contributors to expand geographical coverage and build a global system</p> <p>Incorporate data and product contributions to serve all GEO societal benefit areas, which will likely require expanding bandwidth capacity</p> <p>Secure additional resources to evolve from the demonstration phase into a fully operational, global GEO-NETCast system</p> <p>Where infrastructure contributions are not yet in place, the strategy is to establish GEO-NETCast on a demonstration basis, then evolve to the full operational system</p>

NEW TASKS PROPOSED FOR 2007-2009

WA-07-P2: Satellite Water Measurements

Develop an operational mechanism to provide water level observations in rivers, lakes/reservoirs and estuaries from satellite altimetry to support the upgrade of deficient run-off water gauge networks. Combine different types of satellite data that are relevant for water measurements (quantity and quality) with in-situ observations for better accuracy and global coverage. Produce an implementation plan for a broad global water cycle data integration system that combines in-situ, satellite data and model outputs.

AR-07-P1: Interoperability arrangements for GEOSS

This task has four purposes:

- Coordinate the core architectural principles in GEOSS, which have been initiated in AR-06-01, AR-06-02, AR-06-03 and AR-06-04;
- Advocate commitments of new systems to the architecture of GEOSS, such as Sentinel Asia, GEONET, and WIS in the early operational phase of GEOSS, and ensure proper implementation;
- Test interoperability arrangements on newly contributed systems;
- Contribute additional architectural components to GEOSS.

AR-07-P3: Virtual Constellations

Advocate virtual constellation space observations following the "CEOS constellation concept" for better temporal, spatial, and spectral resolution and related data management and dissemination. Space agencies and related organizations should consider the development of space and ground segments for such constellation concepts in the mission planning phase. Addressing objectives of all SBAs and filling gaps between them must be duly taken into account. This task would include a broad array of active and passive sensor systems operating over broad spectral, spatial and temporal coverage and resolutions, possibly considering specific cases such as constellations of SAR systems or micro satellites for a range of Earth observation applications. In addition, a robust verification and validation program including both spatial and radiometric elements is needed to ensure the accuracy and integration of a diverse collection of sensor systems. The UN registration of space objects in accordance with the Registration Convention (1975) shall be taken into account. This task includes relevant synergies with AR-06-09 and DI-06-09.