(WA-01-C3: INFORMATION SERVICE FOR COLD REGION)

GEOCold Regions

DOCUMENT

(FOR DISSCUSSION)

AT

POLAR SPACE TASK GROUP
(PSTG)

MEETING

PARIS

GROUP ON
EARTH OBSERVATIONS

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GROUP ON EARTH OBSERVATIONS

GEO Cold Regions

(WA-01-C3: Information for Cold Regions services)

References

◆ **For the Polar Space Task Group (PSTG)**
(Space segment of the Cold Regions application communities)

1. Extend the satellite/data coordination to the middle-high latitude of mountain glacier, snow, and other parameters, Andes, Center Asia, European Alps, and the Third Pole areas.
2. Adjust the difference between the in-situ measurements, satellite measurements and model output(assimilation), call for the high resolution of satellite data.
3. Address the mapping for the cold regions Sensitive/Essential indicators and their seasonal phonologies (high time resolution)over the high latitude areas, e.gwater (Cryosphere), ecosystem, biodiversity (EBVs), environment and other variables.
4. Provide the monitoring of Cold Regions engineering applications

◆ **References:**

1. GEO 2012-2015 Work Plan (Rev2) (http://www.earthobservations.org/documents/work%20plan/GEO%202012-2015%20Work%20Plan_Rev2.pdf)
2. Online GEO Work Plan and Component Online Sheet (http://www.earthobservations.org/geoss_imp.php, select the WA-01-C3 Item)
3. GEO 2012-2015 Work Plan Implementation Report, Task Assessment (2012.11) (http://www.earthobservations.org/documents/geo_ix/06_GEO%202012-2015%20Work%20Plan%20Implementation%20Report_Task%20Assessment.pdf)
4. GEOSS Implementation 2012 Highlights (2012) : Cold Region Monitoring (Page 19) (http://www.earthobservations.org/documents/geo_ix/20111122_geoss_implementation_highlights.pdf)
5. SAON Boarding Meeting Online Documents and Presentations (2012) (Doc No.49 and Doc No. 58)(http://www.arcticobserving.org/board/board-meetings/133)
6. The ECPORS Report and Presentations from GEO Cold Regions (http://www.wmo.int/pages/prog/www/WIGOS_6_EC_PORS/)

◆ **Annex:**

Appendix 1:GEO and GEOSS

All documents and presentations can be found via GEO Cold Regions FTP sites:Hftp://ftp.earthobservations.org/GEO_Cold_Regions/

GROUP ON EARTH OBSERVATIONS (GEO) COLD REGIONS
(WA-01-C3: INFORMATION SERVICE FOR COLD REGION)

1. GEO Cold Region motivationsand visions

The**GEO Cold Region**idea keeps the "**Cold Region**" as the observation target area, which relatesstrongly to frozen waterin its various forms, associated with influence of Water (Cryosphere), Ecosystem, Biodiversity, Health, Energy, Disaster, Climate, Weather and Agriculture issues. Most of these issues are relevant to the GEOSS nine Societal Benefit Areas and therein the implementation of 26 associated tasks. Cold Region has its cross cutting nature in the GEOSS framework.

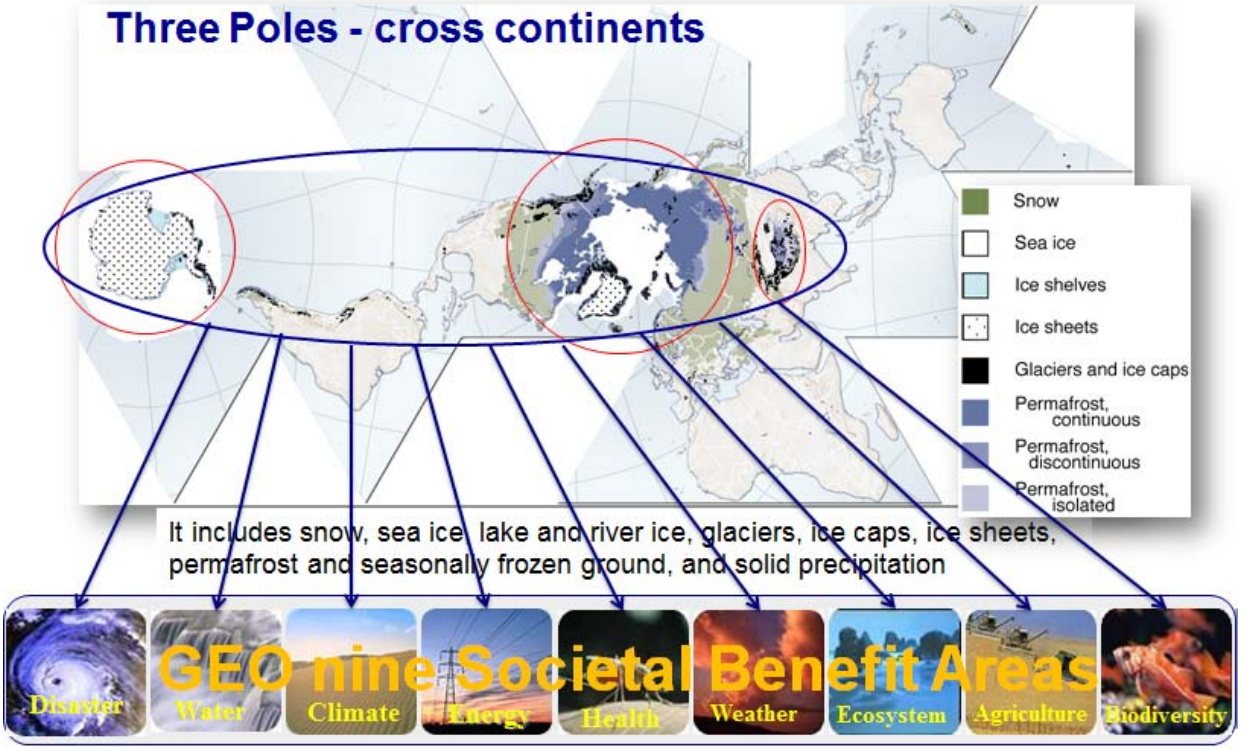

Fig1. The GEO Cold Region Observation Target Areas

The motivations and visionsof GEO Cold Regions activities are to

1) Recognize that Cold Region is the most fragile ecosystem in the world, which not only includes the South and North Poles, but also the Third Pole (Tibetan Plateau) and Mountain Regions(alpine);

2) Implement the observation strategy and provide a proactive framework for the development of information and related services for the “Future Earth” research initiative and to assess the sustainable development ability addressed in Rio+20;
3) Provide spatially Cross Continent Observation Coordination and Cross Cutting Application Domain Observation Synergy based on the scientific oriented driving;
4) Fulfil the observation gap in the far and hard-to-reach cold region by satellite and in-situ data through the global platform of GEO;
5) Strengthen thepartnerships with policy-makers, stakeholders, and funders over the cold region ecological, environmental and engineering fields;
6) Facilitate the national infrastructure and capacity building as a whole effort in cold region from GEO Members and POs.

2. The GEO Cold Regions in GEOSS Work Plan

The GEO Cold Regions (currently WA-01-C3) are now developing through a number of activities, including mainly:

- **Observations and Information**
  - Conduct a distributed cyber(e)-infrastructure to collect, manage, publish and share polar research results and implement multi-disciplinary interoperability following a Brokering approach, supportingSCAR data policy and in accordance with European and international standards, including GEO/GEOSS, INSPIRE.
  - Fully aware of all the cryosphere projects applied for at 20 of INTERACT's 44 research stations, with the INTERACT’s infrastructure project which base in northern Europe, Russia, US, Canada, Greenland, Iceland, the Faroe Islands and Scotland, and to build capacity for research and monitoring in the European Arctic and beyond, and is offering access to numerous research stations through the Transnational Access program.INTERACTis also offering metadata and some datasets and possibilities for additional observations required by GEO.
  - Implement the information services for Cold Regions, for example, the CryoClimCryospheric climate monitoring.Provide the parameter data product and tools/systems/modelsto the GEO DataCORE.
  - Provide the polar station observation and satellite data coordination through appropriate national,regional and global systems and centres (Validation and Calibration).

- Promote the integration with integrated atmospheric and climatic observation and modeling data from a network of high-altitude mountain stations in the Alps, Himalaya-Karakoram, Rwenzori and Andes in the framework of the Ev-K2-CNR SHARE program and the national Italian project NextData.
- CAFFs provide the Arctic Biodiversity Data Service (www.abds.is)
- Coordinated Asia-European long-term Observing system of Qinghai–Tibet Plateau hydro-metOeorological processes and the Asian-monsoon systEm with Ground satellite Image data and numerical Simulations (CEOP AEGIS)

➢ **Coordination and Programs**

- Build a polar data catalogue through integrated observation and modeling data from the broadrange of “International Polar Year” research activities, for example: CAFF/CBMP data -http://www.polardata.ca/.
- As a component of the Global Cryosphere Watch (GCW) portal, establish a CryosphereConstellation of Portals by linking existing and proposed portals of cryospheric information.
- Support the development of sustained and coordinated pan- Arctic observing and data sharingsystems that serve societal needs. Improve the networking among existing observing systems andsites to create pan- Arctic observing networks (CAFF and INTERACT pan-Arctic observation networks). Promote the implementation of the Sustainable Arctic Observation Network (SAON).
- Integrate the Svalbard Integrated Arctic Earth Observing System (SIOS) and the CryoClim Cryospheric climate monitoring service into GEOSS.
- Implementation the Third Pole Environment program and Mountain ecosystem observations.
- And other individuals (with GEO volunteer mechanism) who are interested in this Cold Region efforts.

The main participants (with a list of 68 people) are

- Canada, China, Denmark, EC, Finland, Germany, India, Italy, Japan, Norway, Spain, UK, USA,SAON, ICIMOD, WMO
- Other Task Contributionfrom Ecosystem, Biodiversity, Water and Climateand etc.

3. Strategy plan and coordination regimes for GEO Cold Regions

The GEO Cold Regions builds on the GEOSS Broker system and work with the exiting efforts, fully leverage the GEOSS Common Interface (GCI) infrastructure,

- The GEO Cold Region Coordination regimes are to,
  - Institutionally, to build on the exiting efforts all over the world
  - Cutting Cross the multidisciplinarydomains:Cryosphere, Ecology, Biology, Environment, Hydrology, and Climatology.
  - Hierarchy architecture: Observation Implementation(infrastructure), Coordination(system building) and GEO Cold Region (system of systems), and Capacity Building.
  - Response to the efforts from the GEO Members and POs,
  - Address the GEOSS 2015 strategyaim and beyond (Post 2015).
  - Fully take advantage of the exiting efforts and GEO volunteer mechanism, which encourage more individual experts and activities involved in global efforts.

Appendix 1:

GEO and GEOSS

The Group on Earth Observations (GEO) is an **intergovernmental organization**, which has 88Government Members and European Commission, in addition, 67 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations, coordinating efforts to build a **Global Earth Observation System of Systems (GEOSS)**.

GEO was launched in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialized countries. These high-level meetings recognized that **international collaboration** is essential for exploiting the growing potential of **Earth observations** to support decision making in an increasinglycomplex and environmentally stressed world.

GEO is a voluntary partnership of governments and international organizations. It provides a framework within which these partners can develop new projects and coordinate their strategies and investments.GEO is constructing GEOSS on the basis of a 10-Year Implementation Plan for the period 2005 to 2015. The Plan defines a vision statement for GEOSS, its purpose and scope, expected benefits, and the nine "Societal Benefit Areas" of disasters, health, energy, climate, water, weather, ecosystems, agriculture and biodiversity.

The Vision for GEOSS"***is to realize a future wherein decisions and actions for the benefit of humankind are informed via coordinated, comprehensive and sustained Earth observations and information***".

GEOSS will yield a broad range of societal benefits, notably:

- Reducing loss of life and property from natural and human-induced disasters;
- Understanding environmental factors affecting human health and well-being,
- Improving the management of energy resources,
- Understanding, assessing, predicting, mitigating, and adapting to climate variability and change,
- Improving water resource management through better understanding of the water cycle,
- Improving weather information, forecasting and warning,
- Improving the management and protection of terrestrial, coastal and marine ecosystems,
- Supporting sustainable agriculture and combating desertification, and
- Understanding, monitoring and conserving biodiversity.

GEO Governance

GEO is governed by a **Plenary** consisting of all Members and Participating Organizations. It is the GEO's primary decision-making body.The GEO Plenary meets at least once annually at the level of **senior officials** and periodicallyat the **ministeriallevel**. The Plenary held its first meeting in May 2005 in Geneva. Members take decisions at the Plenary by consensus.

An **Executive Committee** oversees GEO activities when the Plenary is not in session. The Committee consists of 13 representatives elected from the five GEO regions, including three each from the Americas and Europe, four from Asia, two from Africa, and one from the

Commonwealth of Independent States. The Committee is also responsible for guiding the Secretariat. The GEO Members elect four Co-Chairs who preside over both the Plenary and the Executive Committee.

How GEOSS?

Work Plan 2012-2015

To achieve this vision, GEO Members and Participating Organisations are contributing resources from their respective Earth monitoring systems to GEOSS and interlinking these systems so that they work better together. They are developing common practices and standards to make it possible to pool information, and they are promoting the full and open sharing and dissemination of their data, metadata and products.

The 2012-2015 Work Plan reflects the conclusions of the GEO Plenary (VII and VIII), **BeijingMinisterial Declaration**, and Mid-Term, Second, and Third Evaluations of GEOSS. It is structured tobuild a user-driven GEOSS and therefore engage users, especially those in developing countries. GEO Work Plan has a 3-Part Structure (Infrastructure, Institutions and Development, and Social Benefit Areas), including26 Tasks**.**

Post-2015 Working Group

The Post-2015 Working Group will assess options and scenarios for the next phase of GEOSSimplementation, including the scope of activities, institutional arrangements, internal governance andresourcing of GEO.The Working Group will consider the findings of the Mid-Term Evaluation that waspresented to the GEO-VII Plenary. It will produce recommendations under the guidance of the Plenarythat **will be forwarded to the GEO-X Plenary and 2013 Ministerial Summit** for decisions.

Why Participate?

The GEO Work Plan provides a flexible action-oriented framework for developing new projectswithin and across areas, and coordinating strategies and investments. Benefits and opportunitiesinclude inter-alia: fostering networking and partnerships (new contacts and collaborations); launchingregional and/or global initiatives (e.g. GEOBON, GEOGLAM); providing access to data (makingmore data available); enlarging user-bases (users grow in numbers and diversity); developing andmaintaining capacity (participants build on complementarity); increasing visibility and high-levelsupport (e.g. through the GEO Website, Newsletter, Plenary, Ministerial); and leveraging funding foractivities (funding mechanisms value contributions to GEOSS implementation, like the European 7thFramework Programme).

Update

Every year, the GEO Secretariat prepares an update of the 2012-2015 Work Plan based onconsultations with GEO Members and Participating Organizations and recommendations from thethree Implementation Boards. These recommendations derive from the actual work of the**Implementation Boards** to (i) assess Strategic Target completion progress; (ii) actively coordinateactivities across Tasks; and (iii) advise on Task issues of technical and non-technical nature. Theupdate process allows for adjustments and introduction of new activities. The Work Plan updateissubmitted to the **GEO Plenary** for acceptance as a living document.