



GROUP ON  
EARTH OBSERVATIONS

## GEO-VIII

16-17 November 2011

Report of the Architecture and Data Committee (ADC)

Document 19

For information



## Report of the Architecture and Data Committee (ADC)

### 1 EXECUTIVE SUMMARY

In 2011, data and services registered in the GEOSS Common Infrastructure (GCI) for the GEO community increased rapidly, as did user accesses of the GCI. On the other hand, there were clear requests for continued enhancement such as further improvement of the user interface, implementation of transverse data discovery and direct download of datasets. In addition, the ADC reviewed the Monitoring and Evaluation Report on Architecture and Data Management Report and recommendations for consideration in identifying additional enhancements.

The ADC completed a “Sprint to Plenary” (StP) prototyping activity of new GCI development in response to the requests, and the achievements will be demonstrated at the Plenary meeting. The newly prototyped GCI capabilities will be gradually operationalized in 2012. In addition, the ADC will add quantitative measures for milestones on infrastructure development to the GEO 2012-2015 Work Plan, support gap analysis between available and required resources, develop a communication plan on GEOSS capability, and expand upon an Action Plan through collaboration with other committees and implementation bodies.

### 2 STRATEGIC TARGETS FOR ARCHITECTURE AND DATA MANAGEMENT (ADM)

The ADC is leading activities to achieve the following strategic targets for Architecture and Data Management (ADM)

- **Target for Architecture**

Achieve sustained operation, continuity and interoperability of existing and new systems that provide essential environmental observations and information, including the GEOSS Common Infrastructure, that facilitates access to, and use of, these observations and information;

- **Target for Data Management**

Provide a shared, easily accessible, timely, sustained stream of comprehensive data of documented quality, as well as metadata and information products, for informed decision-making.

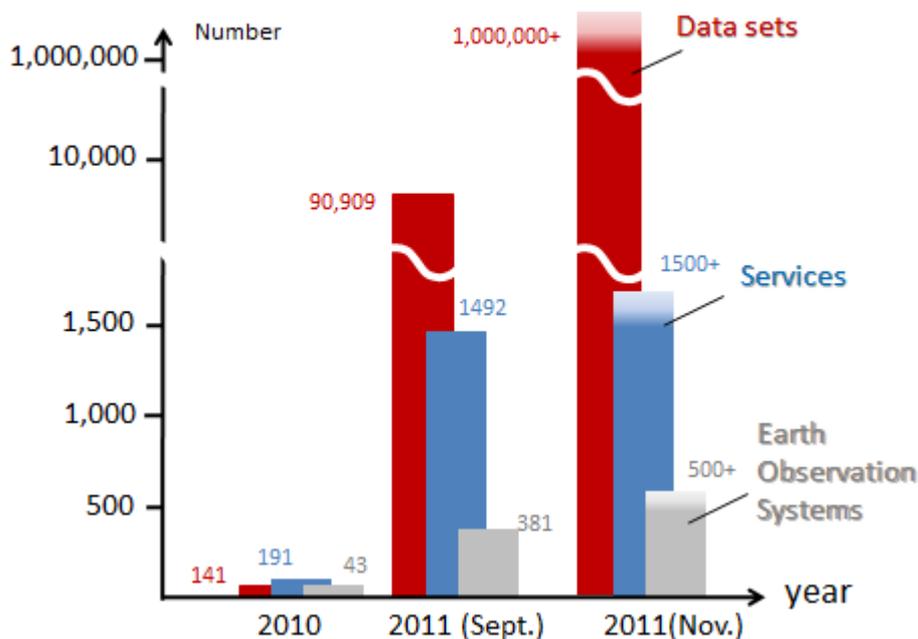
The GCI is the central hub for data discovery and sharing in GEOSS, connecting a number of Earth observation systems and diversified users in Societal Benefit Areas (SBA). Performance of data provision services through GCI can be assessed in terms of Completeness of functions, Sustainability, Operational availability and Content availability as defined in the “GEOSS Evaluation of Architecture and Data Management” (June 2011).

The greatest barrier to achieving the strategic goals from an ADC perspective is the limited implementation of the agreed upon interoperability arrangements (standards) and the limited degree to which content (data sets and services) are being registered so that they can be accessed by a broad community through GCI. It is anticipated that the GCI enhancements demonstrated at the GEO Plenary will encourage growth in provision and use of data. In addition, the new broker function and expanded standards registration recently incorporated into the GCI will greatly improve interoperability.

### 3 PRESENT STATUS OF ARCHITECTURE AND DATA MANAGEMENT

As shown in the figure below, as of September 2011, 90,909 data products, 1,492 services and 381 Earth observation systems were registered and the numbers have grown drastically since 2010. The registered resources can be accessed through the GEOSS Web Portal (GWP). “Sprint to Plenary” (StP) project, described in the next section, is making much more resources accessible through GWP.

**Growth of Registered/Accessible Resources**



On the other hand, there is room for further improvement in areas such as data discovery and direct download of data sets. “GEOSS Evaluation of Architecture and Data Management” (June 2011) pointed out various issues with the GCI. They include usability problems such as “User interface is difficult to use”, “Data may exist but is difficult to find”, “Current technology is not deployed for data discovery” and resource registration problems like “No uniform, consistent way that data are registered, stored and accessed”. In addition, planning and management problems with ADM activities such as “No systematic gap analysis has yet been conducted to measure the discrepancy between what GEOSS can provide and what SBA users require” and “No clear evidence has been shown that the ADM Strategic Targets will be met by 2015” were also identified. Insufficient communication on GEOSS capabilities and a need for raising awareness on the GEOSS Data Sharing Action Plan to accelerate the registration of resources by GEO members are communication problems that require close collaboration among the committees. Based on the above issues twelve recommendations have been made which are being studied by the ADC.

### 4 ADC ACHIEVEMENTS IN 2011

ADC achievements in 2011 are summarized below and include the improvement of data/service discovery, facilitation of registering and retrieving items in the GEOSS Data CORE and an analysis of GCI uses for the further improvement of the GCI.

- Discovery and download of broader and more heterogeneous data sets was implemented and tested by prototyping a new GCI through a “Sprint to Plenary” (StP) activity. By connecting existing data sharing systems (i.e. EuroGEOSS and GENESI DEC/FedEO) with the GCI,

transverse data discovery from data catalogues outside of GEOSS registries (supported by the broker functionality and the Earth Observation Common Vocabulary (EOCV)) and direct download of data sets has been realized. The achievements will be demonstrated at the Plenary meeting. To accelerate StP activities the Architecture Implementation Pilot-4 (AIP-4) demonstrated capabilities for direct access of Earth Observation (EO) data sets and mediated components for transverse data discovery. The Standards Interoperability Forum (SIF) provided GEOSS users with an on-line tutorial on resource registration in the GCI and on uses of registered resources. As a result of StP, as of Sept. 2011, EO datasets accessible through the new GCI prototype cover 117 of the 146 critical EO parameters listed in the October, 2010 report “Critical Earth Observation Priorities”(GEO Task USS-09-01a);

- Analysis of GCI uses including registration and discovery of resources was conducted by the SIF to provide a sound basis for further improvement of the GCI. The results of the analysis will be published as an “Interoperability Assessment White Paper”.

## **5 NEXT STEPS FOR 2012**

ADC actions for 2012 are summarized as follows:

- Operationalize the achievements of the StP to improve the GCI.
- Elaborate on the GEO 2012-2015 Work Plan by establishing milestones with quantitative indicators on achievement levels for the ADM strategic targets.
- Support the following activities through collaboration with the other committees/implementation bodies.
  - Improve task reporting methods for quantitative progress evaluation;
  - Conduct analysis of resource gaps between what SBA users need and what GEOSS can provide. The ADC can provide information on available resources from the Component and Service Registry (CSR) and on user requirements from the User Requirements Registry (URR);
  - Develop a communication plan for GEOSS capabilities;
  - Raise awareness among GEO members on the GEOSS Data Sharing Action Plan.