**GEO Joint Task Workshop**

**GEO Alliances and Harmonization - November 11 and 12, 2009**

**Washington DC**

**Location:** National Academy of Sciences Building

2100 C St. NW

Washington, DC

**Objectives:**

**Joint Sessions**

Specific objectives for the symposium include

1. Set the context for the discussion of the workshop tasks and related activities.
2. Explore opportunities for the GEO tasks to collaborate and coordinate their efforts.

**Alliance Sessions**

Specific objectives for the workshop include:

1. Developing the understanding of what a data alliance is.
2. Introducing representatives of data centres to the opportunities within GEO regarding data alliances
3. Launching one or more experimental data centre alliances.

Outputs:

1. A workshop report that summarizes the potential contributions of different data centres to GEO data centre alliances.
2. Initiate at least one prototype data centre alliance.

**Harmonization Sessions**

Specific objectives for the workshop include:

1. Review the harmonization efforts underway by the Task Team, there organizations and programs, and other initiatives in the community.
2. Discuss the scope of the Task and potential for collaboration with other GEO tasks.

Outputs:

1. A revised, detailed work plan for GEO Task DA-09-01b.

**Workshop Agenda and Notes**

NOVEMBER 11

**Joint Alliance and Harmonization Session**

1. **Welcome: Opening Remarks (McDonald – Lawford)**
2. **USGEO Presentation ( Helen Wood)**

* GEO not a set of just meetings, is currently expanding throughout the world with actions
* Several examples are being provided, SERVIR, GEONETCast, etc. These products by themselves have no value; there must be data, capacity building, dissemination, etc.
* Federal Structure is currently aligned by thematic areas with requirements for earth observation under the umbrella of an integrated mechanism
* Interagency coordination- Working on data harmonization and data discovery through IEOS
* Internet Based architecture, an effort to educate ourselves
* Data Sharing-Open access to help with decision making=Data.gov. (Data.gov also looks for tax information, etc.)
* Sharing lessons learned to have a common approach for all kinds of information, ISO standards, IT, convergence of information may avoid confusion
* Half way point in the 10 year implementation plan, continue building on the foundations and looking forward to gain consensus on several issues
* Way forward- 9 societal benefit areas, capacity building, regional collaboration, GEOSS Americas and other emerging priorities

1. **The GEO Data Sharing Principles ( Ken McDonald)**
   * Objective is full and open access of data, metadata and products
   * GEO Task established to kickoff this issue. CODATA has the lead
   * Task endorsed in Bucharest
   * Task force ought to take the principles forward. The task force will develop guidelines for the plenary
   * Ideas in motion, to promote understanding between providers and users
   * Implications of data sharing principles affecting new technologies. Policies may need to evolve toward.
   * Interacting with GEO committees
   * Milestones to move forward are set
   * Success of GEO is contingent upon the implementation of principles
   * The process is relevant to the harmonization task we are developing
2. **ADC-Data Way Forward (George Percivall)**

* Data available through GCI and broader GEOSS. Influence the architecture implementation AIP-3
* General topics: global datasets, services for access, data sharing principles, data quality, information architecture
* Global datasets underway: Land Cover, Meteorological, Environmental, Geological. Common terminology
* Increase access services- If you know what you doing is intuitive but if you don’t is not intuitive. Most global dataset task sheets say nothing about making data available through services
* AIP-3 increase data access services and ensure services are correctly registered in the GEOSS catalogue
* **Lola Olsen** to volunteer to examine the ASTER GDEM via GCI as a case study
* Data sharing principles and implications. Considering existing practices, how do they fit into system of systems? Mechanisms for notifications are needed. Propagation of licenses need to be reviewed
* Licenses and registrations are needed. Providence: Agencies want to be acknowledged. Providence is also know as attribution
* Quality assurance. Use of data in a way that value added is known - Cal Val.
* Consider international standards such as Uncertainty Markup Language (UnCertML). Use social networking technologies for feedback
* Fusion with harmonized information architecture. Pulling things together for support. Data Harmonization task could be the starting point for the architecture project
* INSPIRE doing a great job for data harmonization.
* OGC reference model – Semantics of information and information processing
* ISO TC211 Info reference Model
* CEOS interoperability handbook. Terminology information. CEOS SEO Approach
* WMO/CEOS Database- Space Programme with several databases
* AIP-3 CFP Information Viewpoint- Draft underway

1. **Expectations of the Tasks and the Workshop (R. Lawford, T. Koike, K. McDonald)**
2. **Overview of Data Integration and Analysis System Task** 
   1. **Analysis of the Phase I Survey for DA-09-02a and plans for future surveys (Rick Lawford)**

* Activities – Global and National Data Centers – data management approaches and coordination
* Inventories of data centres and alliances are expected
* Survey went out to 11 centres with successful response
* Progress made at the global level
* Lessons learned: inconsistency among responses and lack of common understanding. Significant differences between old and new centres
* Alliances and beyond: Alliances-Interoperability-Integration
* Expected products include a comprehensive database, a pilot data centre ICSU data services
* \* Alliance is a social interaction, has a vision and people working on common projects – common platforms as elements for GEOSS.
* Need to know the parameters we want to enhance within the project
  1. **Perspectives on Data Centre Alliances (Toshio Koike)**
* Create knowledge to share throughout the world
* Acknowledge difficulties of sharing data and benefits of disseminating information
* GEOSS meanings: Classification of Services, Common Infrastructure
* Water management in Africa case (Framework for African Water Cycle Coordination Initiative)
* Social benefits have not been achieved yet. We need to develop integration and analysis capabilities with an end to end approach
  1. **DIAS: Japan’s contribution to GEOSS (Prof. Koike-Masahiko Nagai)**
* DIAS: Data Integration and Analysis System – Coordination of environmental scientific information, data infrastructure, creation of knowledge and generation of socio-economic benefits
* Driving evolution and enabling revolution
* Tackling a large volume of earth observations data and the increase of diversity
* Data management and fusion: syntax interoperability, a prototype of data integration and analysis. Making connection among discipline through ontology
* Supporting metadata design and data association. Data Grid and best practices as well.

1. **Overview of the GEO Harmonization Task (Ken McDonald)**

* CEOS-WGISS leading the task
* Current Task Participants
* Current Status: GCI Architecture is well planned and underway
* WGISS is undertaking additional steps. Also exploring clearinghouse requirements
* Focusing on harmonization but also GCI, SIF, AIP, Alliance
  1. **WGISS Harmonization activities (Yonsook Enloe)**
* Established at last CEOS WGISS (DA 09-1b Task) – WGISS Architecture and Data Contributions (WADC)
* Assessing current capabilities in Earth Observation data and services. Initial testing of GCI capabilities
* WADC concentrating on EO users and testing 3 GEO portals. Looking for system capabilities to enable data discovery and consistent results
* WGISS common inventory search criteria
* CEOS WGISS Integrated Catalog (CWIC) to provide search capabilities for satellite data
* CWIC currently forming a design team from NOAA, NASA, USGS, JAXA and looking for European participation
* Hoping to show results in one year
  1. **INSPIRE (Max Craglia)**
* Specific European contributions: Annex I, Annex II, Annex III. All are primarily environmental but also starting with social science.
* Data specification development: Finding a minimum common denominator
* Which level of interoperability is just right? Simple or complex, drawing the line is difficult
* Interoperability of data is the starting point (and with INSPIRE is aiming towards)
* Services for access to data and information – 23 languages
* Solutions in multilingual context
* European Thematic Data Centres for access to information and data products
* Supporting GEOSS data principles. Establishing deadlines for Metadata unification in 2010 and 2012
* Metadata Editor to create MD compliant with INSPIRE
  1. **Australian Geospatial Interoperability Initiatives (John Hockaday)**
* ANZLIC: Australian and New Zealand spatial information Council
* Need to work internationally and is looking for intergovernmental initiatives and partnerships
* Investigating relevant profiles and standards and applying rules for selecting elements following international standards
* Rules adopted to develop metadata profiles
* Schematron to implement ISO19115
* Current profiles endorsed by ANZLIC
* Many problems to overcome: Educate people about metadata, understand potential of inheritance
  1. **WMO/WIS (Eliot Christian)**
* WMO Obs. Sys database
* Implementation of WIS in two parallel parts: a) continued consolidation of data and extension of services
* Types of Centres
* WIS focusing on interoperability and opportunities
* WMO developed consensus on how to achieve this architecture
* Observing and Data Exchange Systems or production centres -DCPC’s
* World Hydrological Cycle Observing System (WHYCOS)-
* World Climate Program – Data available for international exchange
* WIS and the different systems: WWW GOS, GAW, WHYCOS, WCP, GCOS, GOOS, GTOS
* Discovery access and retrieval catalogue using ISO 23950
* Standardized Metadata- Several ISO standards
* WIS reference documents <http://www.wmo.int/pages/prog/www/WIS/ref_docs_en.html>
* The system will be fully demonstrated in 2011

1. **Presentation on SIF (Steve Browdy)** 
   * Standard Interoperability Forum is developing a set of recommendations on standards and interoperability as a result of listening and learning form others within and outside of GEOSS.
   * Semantic Interoperability as an example is meaningful to pursue interoperability
   * Developing a Controlled vocabulary and internal recommendations to GEOSS. Establish outreach programs
   * SIF roles
   * Collaboration at various levels, AIP Harmonization, Data Integration and Analysis, Ontology
   * Working on metadata and semantic interoperability
   * Planning the usage of GEOSS resources for automation and publishing

Discussion

Scope of related GEO Tasks

Coordination/Collaboration of efforts

**Alliance Session**

Overview of Data Centres and their plans/potential to contribute to a Data Centre Alliance

1. **GIOVANNI (Greg Leptoukh)**

* Reducing the time to find data
* End to end for comprehensive data systems
* GIOVANNI can use any data format
* Product lineage
* Provenance for intercomparison
* Importance of capturing scientific knowledge, Changing provenance, how to…

1. **GENESI-DR (Luigi Fusco)**

* Federation of repositories with centralized discovery service for seamless and controlled access to heterogeneous data
* Standardisation: Flexibility and scalability or architecture
* GENESI-DR demonstrated successfully an infrastructure for discovery and access of data
* Implemented with open-standard interface and using OGC approved Open Search
* 12 sites in Europe and ~ 50 data providers
* Collaborating with GRID and research infrastructures, EC GEO/GMES and International environmental Programmes
* Using a metadata model based on INSPIRE
* [**http://portal.genesi-dr.eu**](http://portal.genesi-dr.eu)

1. **Global Terrestrial Network Hydrology (Balasz Fekete)**

* City College of New York project to establish a new approach for alliances and harmonization
* Links existing networks and systems for integrated observations of the global water cycle

1. **Coordinated Energy and Water Cycle Observation Project (Prof. Koike)**

* **CEOP –GEWEX** Convergence of Observations A prototype of the Water Cycle Observation System of Systems
* Functional data collections and Functional services
* CEOP dataset evaluates multiple scheme and physical processes
* Lesson learned: Need to keep flexibility

Discussion:

Tools developed by ADC and GEO that can encourage convergence

Information needed to enable identify potential alliances

Implementation of Alliances (Possibly to include a recommendation for an alliance)

 Way forward:

Draft plan for one or more Data Alliances and the implementation of a prototype data alliance

Development of a task plan for the next year

**Harmonization Session**

Discussion of topics and activities underway (discussion leads)

GEOSS way forward (George Percivall)

**System of systems domain model (Michael Burnett)**

* System of systems, data package
* Service Package
* Some fine tuning is needed, precision with the service package with “other” resources is urged
* How do we align this model with WMO and others.
* More iterations needed
* Alliance and Data Centers will play a key role for outreach and will serve as good test for the concept
* \*Model is well received and attendees provide valuable suggestions. CSISS (Liping and Yuqi) to review Michael B. domain model

**Metadata (Ted Habermann)**

* Harmonization of data and metadata
* How do we bring data and metadata together
* Data providers need to provide high quality netCDF files
* THREDDS Metadata
* Collection of granules at NCAR-Format description X-link to the file
* Metadata content is independent of the standards

**Joint Alliance and Harmonization Session**

Summary of the reports from:

The Alliance Session

**The Harmonization Session**

* Domain Model development
  + Develop domain model further
  + Work with 2 Alliance data centers (can one data center rep a system that will become part of CWIC like ESRIN or JAXA)?
  + Can the domain model relationships be applied to the GEO CSR registries?
* Information Model for inventory search
  + Start with v0.1 draft inventory search criteria and develop to v1.0 after iteration with CWIC partners
  + Publish information model for inventory search criteria (v1.0) to SIF as a special arrangement
* AIP-3 participation – what kind of participation in AIP3 would make sense?
* CWIC model for grouping similar data and information – will this model work for other communities?
* Get additional information about INSPIRE and WIS for further discussion on how we can work with those systems
* Engineering reports from AIP-2 – for deeper understanding of the GCI and its capabilities and identifying the weak areas that need future harmonization
* New telecon time? Would 7am ET work for the current participants?

Discussion

* Develop a plan of action for the next year
* Coordinate times for meetings (several time zones to sort out)

Discussion of issues of common interest:

Contributions of harmonization to a data centre alliance

Steps to include harmonization issues into the DA-09-02a surveys

Links between ADC and other GEO activities and the Harmonization and Alliance Tasks

Potential for combining the subtasks

* \* Post the presentations and announce the link