

ST-09-02

Promoting Awareness and Benefits of GEO in the Science and Technology Community

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- Brief Overview
- Activities
- Brief history
- Focus on
 - GEOSS Citation Standard
 - GEO Label
 - Compelling Examples
- Summary

More information at <http://www.geo-tasks.org/st0902>

Brief Overview

Task Goals:

Promoting awareness and benefits of GEOSS in the scientific and technological communities in order to **engage** the research community in GEO and GEOSS with the goal to **achieve breakthroughs in the understanding of the Earth's** changing environment and global integrated Earth system. The scientific community should collaborate within GEO to address interactions between the components of the global integrated Earth system, and connect natural and socioeconomic sciences.

Brief Overview

Motivation:

A strong engagement of the Science and Technology community in GEO and GEOSS would contribute to:

- (i) **Connect disciplines** to address the complex issues of the global integrated Earth system;
- (ii) **Improve interoperability** between global observing systems, modeling systems, and information systems;
- (iii) **Facilitate data sharing**, data archiving, data dissemination, and reanalysis;
- (iv) **Optimize recording** of observations, **assimilation** of data into models, and generation of **data products** to improve understanding of the global integrated Earth system for prediction of environmental phenomena;
- (v) **Enhance value** of global observations from individual observing systems through their integration in the societal benefit areas; and
- (vi) **Harmonize** well-calibrated, high-accuracy, stable, sustained in-situ and satellite observations of the same variable recorded by different sensors and different agencies.

Task Activities

Activity 1: Links with major scientific research enterprises

- 1.1 High-level list of major scientific research enterprises necessary for GEOSS
- 1.2 Identification of key organizations currently not linked to GEO and development of mechanisms for linkage to these organizations
- 1.3 Organize, support, initiate workshops to network the new organizations with relevant Task Team and CoPs in the different SBA.

Activity 2: Encourage scientists and technical experts to contribute to GEOSS

- 2.1 Getting GEOSS acknowledged among scientists; a GEOSS citation standard**
- 2.2 Develop concept for a "GEO label" related to the scientific relevance, quality, acceptance and societal needs for activities in support of GEOSS as an attractive incentive for involvement of the S&T communities.**
- 2.3 Increase relevance and benefits of GEOSS registries (GCI) for scientific communities through enhanced registration of relevant scientific data sets.

Activities

Activity 3: Outreach to diverse scientific and technological communities in order to make GEOSS more visible and attractive

3.1 Production of promotion material, including but not limited to scientific publications on GEOSS products and services

3.2 Support outreach of GEO Principals, Committee members and other delegates to S&T communities by the provision of a slide library (ppt)

3.3 Compile a set of compelling examples showing how GEOSS serves S&T communities in their work.

Activity 4: Specific efforts to contact universities and research laboratories with the goal to involve them in GEOSS activities.

4.1 Outreach to major university cooperation programs and research network.

4.2 Proactive collaboration between GEO Tasks and S&T activities at universities and labs.

4.3 Transition from research to operational.

Activities

Activity 5: Presence of GEO at major symposiums and other meetings on different levels.

- 5.1 Plenary presentations on GEO and GEOSS in relevant sessions at major science events
- 5.2 Organize specific session on GEOSS-related topics at major scientific meetings.
- 5.3 Side events at major scientific meetings.
- 5.4 Prospectus for a series of SBA-specific major conferences to be convened before 2015.

History

Activities:

- Task Definition Meeting: February 2009, Brussels
- Task Kick-Off meeting: July 27-28, 2009, Frascati, Italy
- Regular reports on status of activities to STC meetings
- Feedback/advice on activities from STC and STC Co-Chairs

Leads:

- IEEE and COSPAR;
- H.-P. Plag PoC (for IEEE)

Participation:

History



Work Area for
GEO Work Plan Tasks, CoPs, Committees, ...

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[STC Showcases](#)
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[Slide Library](#)
[Disaster SBA](#)
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Extended Task Sheet:

- [Task definition](#)
- [Motivation](#)
- [Status Output](#)
- [Status Activities](#)
- [Status Resources](#)
- [Planned Outputs](#)
- [Planned Activities](#)
- [Planned Resources](#)
- [Architecture](#)
- [User Engagement](#)
- [Science and Technology needs](#)
- [Capacity Building](#)
- [Participation](#)

Individual contributions:

- [CEOS \(James Yoder\): Report](#)
- [COSPAR \(Jean-Louis Fellous, Nadine Gobron\)](#)
- [Denmark \(Jun She\): Report](#)
- [EC \(Gilles Ollier, Vojko Bratina\): Report](#)
- [ESA \(Jerome Bequignon\): Report](#)
- [IAG/GGOS \(nn\): Report](#)
- [ICSU \(Gisbert Glaser\)](#)
- [IEEE \(Russell Lefevre, Hans-Peter Plag\): Report](#)
- [IIASA \(Michael Obersteiner\)](#)
- [UIC: Report](#)

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History

Activities:

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Leads:

- IEEE new co-lead with COSPAR and IAG;
- H.-P. Plag PoC (for IEEE)

Participation:

Documentation: GEO Task Sheet and <http://www.geo-tasks.org/st0902>

Resources:

- In 2009 and most of 2010: no dedicated resources
- Since July 2010: dedicated resources available from EPA
- Now EGIDA with Task 3: Support for ST-09-02

GEOSS Citation Standard (2.1)

Sub-Activity 2.1 (Roadmap Activity 2a; a GEOSS citation standard):

(Roadmap 2a) Getting GEOSS acknowledged: In the scientific community in particular, recognition and renown are important currencies. In order to increase the attractiveness of GEO and GEOSS for scientists, their contributions must be acknowledged visibly when others use it to their benefit. A GEOSS citation standard will be proposed by the end of 2009 and its use will be promoted thereafter.

- Broad issue of data citation and data review;
- Issue recognized and discussed by many organizations;
- GEOSS Citation Standard should be consistent with general development;

GEOSS Citation Standard (2.1)

EOS

EOS, TRANSACTIONS, AMERICAN GEOPHYSICAL UNION

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Data Citation and Peer Review

A scientific publication is fundamentally an argument consisting of a set of ideas and expectations supported by observations and calculations that serve as evidence of its veracity. An argument without evidence is only a set of assertions. Consider the difference between the statement "The hairy woodpecker population is declining in the northwest region of the United States" and the statement "Hairy woodpecker populations in the northwest region of the United States have declined by 11% between 1992 and 2003, according to data from the Institute for Bird Populations (<http://www.birdpop.org/>)." Both or neither of these statements could be true, but only the second one can be verified. Scientific papers do, of course, present specific data points as evidence for their arguments, but how well do papers guide readers to the body of those data, where the data's integrity can be further examined? In practice, a chasm may lie across the path of a reviewer seeking the source data of a scientific argument.

The collective text that describes scientific knowledge, consisting of peer-reviewed publications connected by citations, is

Federation of Earth Science Information Partners and AGU's Earth and Space Science Informatics Focus Group have sponsored data publication conference sessions, working groups, and discussion fora including a town hall meeting at the 2009 AGU Fall Meeting (see http://wiki.esipfed.org/index.php/Interagency_Data_Stewardship/2009AGUTownHall). As a result, some best practices and critical research needs are beginning to emerge, and scientists are collectively calling for greater attention to these practices and needs.

Lack of a Consistent Method for Data Citation

The scientific method and the credibility of science rely on full transparency and explicit references to both methods and data. These require that science data be open and available without undue and proprietary restriction. However, a consistent, rigorous approach to data citation is lacking.

Data citation has been described in the literature [e.g., Klump *et al.*, 2006; Costello, 2009], and some journal editors have

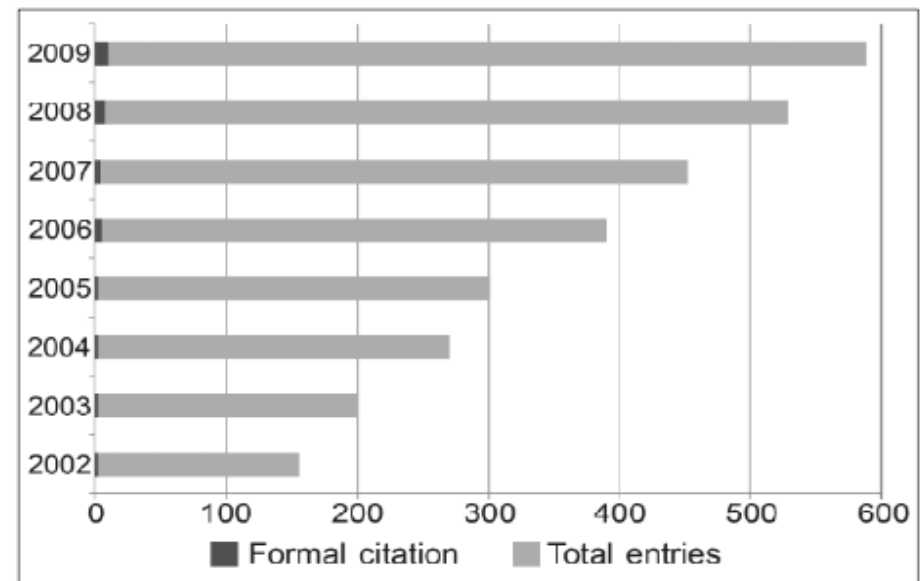


Fig 1. The National Snow and Ice Data Center distributes a variety of different snow cover products derived from the Moderate Resolution Imaging Spectroradiometer (MODIS). The results of a quick analysis of how many scientific papers mention use of "MODIS snow cover data" (according to Google Scholar™) and how often the data sets themselves are formally cited show a huge disparity, illustrating the infrequency of proper data citation in practice. Moreover,

By M. A. Parson, R. Duerr, J.-B. Minster

GEOSS Citation Standard (2.1)

Sub-Activity 2.1 (Roadmap Activity 2a; a GEOSS citation standard):

(Roadmap 2a) Getting GEOSS acknowledged: In the scientific community in particular, recognition and renown are important currencies. In order to increase the attractiveness of GEO and GEOSS for scientists, their contributions must be acknowledged visibly when others use it to their benefit. A GEOSS citation standard will be proposed by the end of 2009 and its use will be promoted thereafter.

- Broad issue of data citation and data review;
 - Issue recognized and discussed by many organizations;
 - GEOSS Citation Standard should be consistent with general development;
- Draft concept will be discussed at Task Team Meeting ...

GEO Label (2.2)

Sub-Activity 2.2 (Roadmap Activity 2b; establishing a “GEO label”):

(Roadmap 2b) Establishing a “GEO label”. Develop a concept for a “GEO label” related to the scientific relevance, quality, acceptance and societal needs for activities in support of GEOSS as an attractive incentive for involvement of the S&T communities. A draft concept will be proposed in early 2010 liaising with existing major Earth observation data providers.

- Discussion at Kick-off meeting resulted in request for advice from STC Co-Chairs;
- STC-Co-Chairs' Guideline: two aspects:
 - objective: quality-related
 - subjective: relevance and acceptance-related
- Inherently related to data review:
 - quality assurance more responsibility of provider;
 - peer-review more responsibility of publisher;
 - fit-for-usage is an important criteria; depends on application
 - many more considerations (see Parsons et al., 2010)

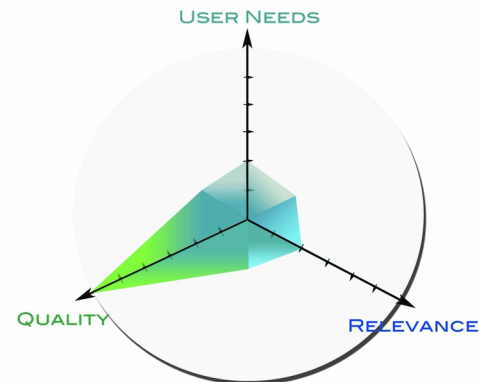
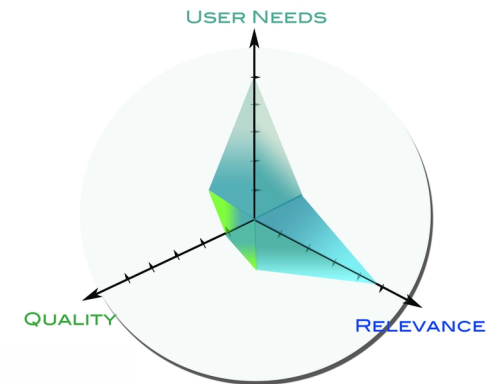
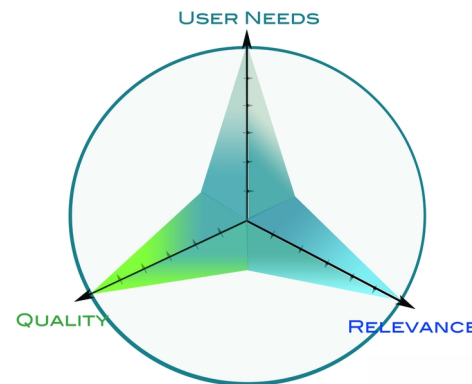
Initial draft concept under discussion on ST-09-02 Task Team

GEO Label (2.2)

Initial draft concept under discussion on ST-09-02 Task Team:

- three-faceted label:

- quality, based on QA4EO (objective criteria)
- relevance/acceptance: based on user feedback (subjective)
- user needs: based on (objective) fit with (subjective) user needs in the GEO User Requirement Registry (URR)



Compelling Examples (3.3)

Sub-Activity 3.3 (Roadmap activity Showing GEOSS at work: compelling examples):

(Roadmap 2d) Showing GEOSS at work. Support broader involvement of S&T communities by a set of compelling examples showing how GEOSS serves S&T communities in their work. Suitable examples will be identified in cooperation with GEO Tasks and the provision of the examples through the tasks will be promoted. The examples will be accessible through the GEO web page and/or the GEO portals and publicized in reports and at conferences. This activity will strongly feed into the preparations for the Ministerial in 2010.

Initial proposals from Task Team Members: four proposals

Invitations to Showcase authors and selected presenters at GEOSS Sessions:

- 33 invitations,
- 13 proposals (in total),
- 7 SBAs,
- 3 cross-cutting proposals










- 12 proposals reviewed; 1 still under review.
- 8 accepted;
- one-page stories and other material requested.

Compelling Examples (3.3)

Water: Assessments	Pilot Projects for Improved Water Discovery and Quality
Climate:	(1) Capacity building of operational oceanography and climate adaptation (2) Year of Tropical Convection (YOTC)
Ecosystems:	enviroGRIDS Building Capacity for a Black Sea Catchment Observation and Assessment System supporting Sustainable Development
Biodiversity:	Protected Areas Monitoring Pilot
Agriculture: towards	The Harmonized World Soil Database (HWSD) as a first step a Global Soil Information System
Health:	Using Earth Observations to Benefit Health
Cross-cutting:	EuroSITES : European Observatory Network

Compelling Examples (3.3)

Publication of Compelling Examples: Central Entry web page with links to individual CE pages:

   <p>home GEO Portal</p>	
<p>GEOSS and S&T Disasters Climate Weather Water Health Agriculture Biodiversity Ecosystems Energy Cross-Cutting</p>	
<p>Compelling Examples Showing GEOSS at Work for Science and Technology Communities Version 0.1 (September 16, 2010)</p> <p>Welcome to the Compelling Examples (CEs) Page. These CEs demonstrate the benefit of GEOSS for S&T communities. GEOSS provides access to many services, data sets and products of value for scientists, researchers and developers. In many cases, new research is enabled and would not be possible without access to the Earth observation products accessible through the GEO portal. The CEs show how the products accessible through the GEOSS Common Infrastructure (GCI) works for S&T communities.</p>	<p>The following CEs are currently available:</p> <ul style="list-style-type: none"> • Disaster: ... • Climate: ... • Weather: ... • Water: ... • Health: ... • Agriculture: ... • Biodiversity: ...
   <p>home GEO Portal</p>	
<p>GEOSS and S&T Disasters Climate Weather Water Health Agriculture Biodiversity Ecosystems Energy Cross-Cutting</p>	
<p>GEOSS and Science and Technology</p> <p>GEOSS has a bidirectional relation to science and technology. On the one hand, GEOSS depends on input from S&T communities and can not evolve to meet rapidly increasing user needs without this input. On the other hand, GEOSS is a unique source of Earth observation data and related products essential for research</p>	<p>Why Compelling Examples? How were the CEs identified? Do we want more CEs?</p>
   <p>home GEO Portal</p>	
<p>GEOSS and S&T Disasters Climate Weather Water Health Agriculture Biodiversity Ecosystems Energy Cross-Cutting</p>	
<p>Disasters: Reducing ...</p> <p>GEOSS provides access to a number of services, data sets and products in support of risk management and disaster reduction.</p>	<p>CEs in the Disaster SBA:</p> <ul style="list-style-type: none"> • OneGeology and OneGeology-Europe: ...

Compelling Examples (3.3)

Publication of Compelling Examples: Central Entry web page with links to individual CE pages:

The screenshot shows a SeaMonkey browser window displaying the GEOSS Compelling Examples website. The browser's address bar shows the URL <http://www.earthobservationsl.org>. The website features a prominent header with the GEO logo (Group on Earth Observations) and the text "Compelling EXAMPLES" and "GEOSS at Work...". A navigation menu on the left lists various categories: GEOSS and S&T, Disasters (highlighted), Climate, Weather, Water, Health, Agriculture, Diversity, Ecosystems, Energy, and Cross-Cutting. The main content area is titled "CEs in Disaster SBA:" and includes a section for "CE1" titled "Compelling Examples Showing GEOSS at Work for Science and Technology Communities Version 0.1 (September 16, 2010)". The text for CE1 reads: "Welcome to the Compelling Examples (CEs) Page. These CEs demonstrate the benefit of GEOSS for S&T communities. GEOSS provides access to many services, data sets and products of value for scientists, researchers and developers. In many cases, now research is enabled and would not be possible without access to the Earth observation products accessible through the GEO portal. The CEs show how the products accessible through the GEOSS Common Infrastructure (GCI) works for S&T communities." To the right of the main content, there are sections for "events" and "news". The "news" section contains a quote: "A first set of CEs has been selected after review by the ST-09-02 Task team. See the list of selected CEs ...". The footer of the page includes the copyright notice: "© 2010 Group on Earth Observation. All Rights Reserved." The browser's taskbar at the bottom shows the Start button, several open applications, and the system clock displaying 10:11 PM.

Design study by SCG

Summary

Considerable progress has been made for some activities:

- supplementary contributions from EGIDA need to be coordinated

Some activities are stalled and urgently need resources:

- EGIDA could take a lead