



GEOSS At Work for  
Science & Technology



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## The GEO Process for the Identification, Reviewing, Documentation, and Promotion of Compelling Examples That Show GEOSS at Work for Science and Technology: Compiling a GEOSS Portfolio for Science and Technology

*prepared by*

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*with input from Task team members and the EGIDA Project*

### PREAMBLE

*This document summarizes the process for the development of the GEOSS Portfolio for Science and Technology as developed by GEO Task Teams with contributions of the European project EGIDA. A previous version of the document constituted Part A of Deliverable D3.4 of the EGIDA project. Part B describes the application of the process to European national and regional activities.*

### 1 INTRODUCTION

The GEOSS Portfolio for Science and Technology features examples of GEO activities, projects, and Work Plan Tasks that demonstrate the benefits of GEOSS for science and technology (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. This portfolio shows how the products accessible through the GEOSS Common Infrastructure (GCI) works for S&T communities.

GEOSS has a reciprocal relationship with the S&T communities. GEOSS needs input from these communities, and they can benefit from GEOSS. GEOSS depends on input from science and S&T in order to evolve in response to rapidly expanding user needs. GEOSS is a unique source of Earth observation data and related products essential for research in all nine of the Societal Benefit Areas (SBAs) of Earth observations. The technological challenges posed by the implementation of GEOSS stimulates technology development in many technology communities. The GEOSS Portfolio aims to demonstrate this bidirectional relationship between GEOSS and S&T communities.

The Road Map of the GEO Science and Technology Committee (STC) includes a number of activity focused on engaging relevant S&T communities in GEOSS. One of these activities aims to promote awareness and benefits of GEOSS in S&T communities with the goal to achieve breakthroughs in the understanding of the Earth's changing environment and the global integrated Earth system. One goal is to encourage the scientific community to collaborate within GEO to address interactions between the

components of the global integrated Earth system, and to connect natural and socioeconomic sciences. Until the end of 2011, the development and compilation of the GEOSS Portfolio for Science and Technology was in the responsibility of the GEO Work Plan Task ST-09-02. Since January 2012, the new Task ID-03 “Science and Technology in GEOSS” is responsible for the Portfolio.

The Portfolio includes examples showing how GEOSS serves S&T communities in their work with the goal to stimulate broader involvement of S&T communities in GEOSS, both as users and contributors. This GEOSS portfolio intends to illustrate the broad range of benefits S&T communities might have by relating to GEOSS, be it as credited and valued contributors, users who benefit from the data sharing, or individuals and groups benefiting from stronger links to end users.

Representative examples for the portfolio have been identified in cooperation with GEO Tasks. Proposed examples have been reviewed based on a pre-defined review form and a quantitative rating system. The examples selected for inclusion in the portfolio demonstrate a wide range of benefits of GEOSS for S&T communities, including tools for discovery of data and products, improved accessibility, new data sets and services, and a better link to end users.

Submissions of proposals for additional examples to complement those currently in the portfolio are being sought. Proposals for new examples will be reviewed by the ID-03 Task team on a continuous basis. Proposals should be prepared using the template reproduced in Appendix A1. Proposers should consider the Review Criteria given in Appendix A2. These criteria are used by the ID-03 team. Successful proposers will be invited to submit as a first contribution a two-page story following the included in Appendix A3.

This process paper describes the process used to identify candidate compelling examples, review these, and include successful candidates in the portfolio.

## 2 IDENTIFICATION OF CANDIDATE EXAMPLES

Initial identification of examples has been by opportunity. An initial set of six proposals was identified by the ST-09-02 Task team. Additional proposals were solicited from those groups who had submitted proposals for showcases for the Ministerial Summit in 2010. Moreover, the GEOSS Portfolio web page includes an open call for proposals. Proposals should be submitted using a proposal template available on the GEOSS Portfolio web page (see Appendix A1). Submitted proposals are reviewed continuously as they come in.

Soliciting proposals more or less on an ad hoc basis has led to a portfolio that does not cover all SBAs. Therefore, a more systematic procedure for the identification of suitable candidate activities and the solicitation of proposals has been developed.

The process for identification of candidates for compelling examples has four parallel avenues:

(1) Open call on the GEOSS Portfolio web page: The GEOSS Portfolio web page at [http://www.geo-tasks.org/geoss\\_portfolio](http://www.geo-tasks.org/geoss_portfolio) includes an open call for proposals. Proposals submitted in response to this call are reviewed continuously.

(2) Annual review of task sheets: The ID-03 Task team conducts a review of the GEO Task Sheets annually in order to identify tasks that have a focus on S&T issues and that have achieved a level of maturity required for a compelling example. Invitations to submit a proposal are issued to those tasks identified in the review as candidates.

(3) Review of GEOSS Workshops and GEOSS-related sessions: Annually, the programs of GEOSS Workshops and GEOSS sessions at major S&T conferences is reviewed to identify presentations that relate to potential candidates for compelling examples. The authors of these presentations are contacted in order to discuss a proposal.

(4) Analysis of Communities of Practice outputs and specific national and regional GEOSS-related projects: GEO Communities of Practice are contacted annually in order to identify candidates for compelling examples. Regionally, initiatives are promoted that review national and regional GEOSS-related projects in order to identify potential candidates. These initiatives should provide a list of candidates to ID-03 or motivate relevant groups to submit proposals to ID-03. The EGIDA project has been applying this approach extensively to European projects aiming at the implementation of GEOSS. A list of candidates has been identified, and these candidates will be invited to submit proposals for compelling examples. A similar process should also be applied to other geographical regions.

### 3 REVIEWING PROPOSALS

Proposals are reviewed by the ID-03 Task team. For each proposal, the Editor-in-Chief invites at least three reviews choosing the reviewers according to the topic of the example. The reviewers are asked to complete the review form (see Appendix A2). In this form, for each of seven criteria, the reviewers are asked to assign a rating on a scale from 0 to 5. For each review, a rating is computed using weights of 0.25, 0.15, 0.10, 0.10, 0.10, 0.15, 0.15 for the seven review criteria. The overall rating is computed as the mean of the three or more individual reviews.

Proposals that have a rating of less than 3.5 are rejected. Proposals with a rating of 3.5 or higher are invited to provide input for the documentation of the example.

### 4 DOCUMENTATION OF ACCEPTED EXAMPLES

The compelling examples accepted after review constitute the basis of the GEOSS Portfolio demonstrating the benefits of GEOSS for S&T communities. As GEOSS is evolving, this portfolio will change and expand, and so will the individual pieces in the portfolio. Publication of the portfolio therefore is adjustable and to a large extent living. The core of the Portfolio is a web page at [http://www.geo-tasks.org/geoss\\_portfolio](http://www.geo-tasks.org/geoss_portfolio), which gives access to the individual examples. The entry page provides information on the motivation and goals of the portfolio, and a separate page provides more background on the relevance of a well-developed relation between GEOSS and S&T communities. For each SBA as well as cross-cutting themes, an overview is given on the available examples in the portfolio. For each example, a brief story is included both as a web page and as a two-page leaflet. For most examples, slide shows complete the documentation. For some examples, videos are a valuable addition. Links to the external pages maintained by the teams behind the examples are also provided.

The production of additional videos should be considered for those examples, for which currently no videos are available. Once the portfolio has reached a representative coverage, it is planned to complement this living portfolio with a snapshot in form of a book.

For each accepted proposal, the proposers are asked to provide the two-page story documenting the example. For that, the guidelines reproduced in Appendix A3 are provided to the proposal authors. In

order to facilitate the promotion of the Portfolio, the proposer of compelling examples should include a list of existing and/or planned outreach material such as images, videos, graphics, animations etc. The necessary permits for use of such material should be given explicitly. A list of names of experts, senior as well as early career personnel, that are given authority, and are able and willing to present the example in an understandable way, or being interviewed, should be included.

Once the two-page story is received, the web page is created by ID-03 and in most cases, a slide show is also prepared. The proposal authors are asked to comment on the web page and slide show and to edit these pieces, if necessary.

## 5 PROMOTION OF THE PORTFOLIO

A process for promotion of the portfolio is under development. The outreach plan developed by the EGIDA project will specifically address the promotion of the GEOSS Portfolio for Science and Technology.

The portfolio provides a basis for promotion material that can be distributed at scientific conferences or sent out to science organizations.

Promotion of the GEOSS Portfolio will be along five main avenues:

- (1) Regular updates on the portfolio in GEO and GEO-related newsletters;
- (2) Presentations of the GEOSS Portfolio at major science and technology conference;
- (3) Publications of the GEOSS Portfolio in newsletters or appropriate journals of major scientific enterprises;
- (4) Introduction of the portfolio through contributions to blogs? and other web media;
- (5) Publication of slide shows or videos introducing the portfolio on web media such as YouTube.
- (6) Establish social media pages that allows direct interaction with the audience/readership (Linkedin, Twitter, Facebook, Weibo (CN) and others)

The EGIDA project is expected to contribute to the promotion of the GEOSS Portfolio.

## ACKNOWLEDGMENTS

The initial development of the GEOSS Portfolio and the Process Paper was supported by the United States Environmental Protection Agency (EPA) through a contract to the Science Consulting Group (SCGCorp) and a sub-contract to the University of Nevada, Reno. The further population of the Portfolio is currently supported by the EGIDA Project, which is funded by the European Commission.

## APPENDIX

A1 TEMPLATE FOR PROPOSAL SUBMISSION

A2 REVIEW FORM

A3 GUIDELINES FOR EXAMPLE DOCUMENTATION

## A1 TEMPLATE FOR PROPOSAL SUBMISSION

**GEO Task ID-03, Activity 3.3: Showing GEOSS at work  
Examples of how GEOSS serves S&T communities in their work****Author:****SBA(s)/Overarching activity:****GEO Work Plan Task(s):****Title of Example:****Contact person for the example** (*including e-mail address*):**Description of Example** (*max. 200 words*):**Science and Technology communities involved** (*max. 100 words*):**Added Value of GEOSS for S&T communities** (*max. 200 words*):**Relation to motivation of ID-03:**

- Connect disciplines to address the complex issues of the global integrated Earth system;
- Improve interoperability between global observing systems, modeling systems, and information systems;
- Facilitate data sharing, data archiving, data dissemination, and reanalysis;
- 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;
- Enhance value of global observations from individual observing systems through their integration in the societal benefit areas; and
- Harmonize well-calibrated, high-accuracy, stable, sustained in-situ and satellite observations of the same variable recorded by different sensors and different agencies.

Comments (*max. 50 words*):**Relation to the STC Paper** \*) (*max. 200 words*):

\*) Reference: GEO Science and Technology Committee, 2007: The Role of Science and Technology in GEOSS. Available at [http://www.earthobservations.org/documents/committees/stc/the\\_role\\_of\\_science\\_and\\_technology\\_in\\_geoss.pdf](http://www.earthobservations.org/documents/committees/stc/the_role_of_science_and_technology_in_geoss.pdf)

A2 REVIEW FORM

Review Form for Compelling Examples (CEs) Demonstrating the Benefits of  
GEOSS for Science and Technology Communities

**Proposal Title:**

**Corresponding author:**

*Rate all questions on a scale from 0 to 5 with 0 corresponding to "not all", and 5 corresponding to "Perfectly."*

**1. To what extent does the CE relate to S&T issues?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:

**2. To what extent does the CE demonstrated the added value of GEOSS for S&T communities?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:

**3. To what extent are S&T communities involved in the activity displayed in the CE?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:

**4. Do these S&T communities benefit and get added value out of the CE?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:

**5. To what extent does the CE relate to the goals of ID-03?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:

**6. To what extent does the CE address issues and perspectives developed in the STC Paper?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:

**7. Does the proposed example qualify as a CE in the sense of that it is a compelling example that demonstrate the value of GEOSS for science and technology communities?**

Rating 0\_\_1\_\_2\_\_3\_\_4\_\_5\_\_

Explain:



### A3 GUIDELINES FOR EXAMPLE DOCUMENTATION

#### **Guidelines for the preparation of one to two-page stories for the "Compelling Examples" illustrating how GEOSS works for Science and Technology Communities**

The brief stories for handouts to be made available at the STC booth during the exhibition co-located with the Ministerial Summit and the GEO-VII Plenary in Beijing should address and answer a number of questions relevant to the objectives of the STC Road Map, the STC, and GEOSS. We would like to see the following questions considered:

- What is the societal problem/issue addressed by the activity?
- What did the activity do/is the activity doing to address the problem, and what is the societal impact of the activity?
- Who (organizations, institutions) did/does it?
- What are the specific Science and Technology (S&T) components of the activity or how does it relate to S&T?
- What S&T communities were/are involved and how did they and other S&T communities benefit?
- How does the activity relate to specific S&T issues identified by the STC as summarized in the ID-03 Tasks Motivation<sup>1)</sup> and the Science Paper<sup>2)</sup> of the STC?
- What is the added value of GEOSS for the activity and for the S&T communities involved?
- To what extent is the activity leading to sustained operations that would continue to benefit S&T communities?

The layout details of the stories are left to the authors. However, it would be good to include the GEO logo in the header of pages. It is also recommended to have the title of the activity centered with a letter size of 13 pts. Other (unnumbered) headings derived from the above questions should use a letter size of 12 pts and text bodies of 11 pts. Do not hesitate to include figures illustrating key aspects of the activity. In structuring the text, it is recommended to use headings that clearly point to the questions above. It should also be considered to highlight key features/aspects, for example, through short statements in boxes, with different fonts/colors/backgrounds, or through an offset into the page margins.

The text should either be one full page or two full pages. Do not produce a story that has, for example, 1.2 pages. Please, note that two-page stories will be printed double sided (on one sheet of paper). You should consider to group topics that belong together on one side.

If figures are included, then the captions should be short and make clear what aspect of the text the figure relates to. Please, include information on a contact person for the activity, and, if available, a URL for a web page with more information. The authors are also asked to consider submission of other material useful for the documentation of the compelling example, including but not limited to slides, a slide shows, and video(s). Permits to use copyrighted material should be given where applicable.

Contact person(s) for the compelling example should be listed. Names of experts who can provide further information and are willing to answer questions should be provided.

If there are questions, please, contact Hans-Peter Plag at [hpplag@unr.edu](mailto:hpplag@unr.edu). The pdf files with the final document should also be sent to Hans-Peter Plag.

1) The ID-03 Task motivation includes:

- Connect disciplines to address the complex issues of the global integrated Earth system;
- Improve interoperability between global observing systems, modeling systems, and information systems;
- Facilitate data sharing, data archiving, data dissemination, and reanalysis;

- 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;
- Enhance value of global observations from individual observing systems through their integration in the societal benefit areas;
- Harmonize well-calibrated, high-accuracy, stable, sustained in-situ and satellite observations of the same variable recorded by different sensors and different agencies.

2) Reference: GEO Science and Technology Committee, 2007: The Role of Science and Technology in GEOSS. Available at [http://www.earthobservations.org/documents/committees/stc/the\\_role\\_of\\_science\\_and\\_technology\\_in\\_geoss.pdf](http://www.earthobservations.org/documents/committees/stc/the_role_of_science_and_technology_in_geoss.pdf).