WGISS DOCUMENT

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CEOS Working Group on Information Systems and Services

5-Year Plan

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Prepared by: WGISS Members

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Executive summary

This document presents the five-year plan of the Working Group on Information Systems and Services (WGISS) of CEOS. It provides a statement of the aims and objectives of the working group and gives an overview of the activities that WGISS undertakes in support of the Earth observation satellite missions and the related projects of CEOS members and associates. In particular, the WGISS activities include support for the CEOS Implementation Plan for Space-based Observations for GEOSS. The document will provide a current and visible record for communicating the activities of the working group, both within and beyond the CEOS community.

The high level goals for WGISS (taken from its Terms of Reference) are:

- Enable Earth observation data and information best practices and services to be more accessible and usable to data providers and data users world-wide through international coordination;
- Enhance the complementarity, interoperability and standardization of Earth observation data and information management and services with other types of geospatial data such as in-situ data;
- Foster easier exchange of Earth observation and related data and information to meet the requirements of users and data providers; and
- Foster the development of information best practices and services that facilitate access to and use space borne Earth observation data.

To achieve these goals and other objectives identified in its Terms of Reference, WGISS has divided its activities into two main areas:

1. Support for CEOS activities and GEOSS; covering

    a. Data and Information Management
    b. User Services and Applications Support

2. Knowledge exchange; covering

    a. WGISS Information Services
    b. Liaison activities
    c. Promotion

The detailed technical work of WGISS is carried out through Interest Groups and Projects. These were formerly organised under a subgroup structure, but in May 2012 it was agreed to simplify the organisation and remove this intermediate layer of organization. The Interest Groups aim to foster information exchange, discuss best practice and develop ideas for prototyping and demonstrations. Projects are more targeted activities with specific goals and a schedule for delivery and completion of their goal.

This Plan also describes the WGISS management process, including the schedule for its meetings, its reporting mechanisms, the WGISS document approval process and the process for the nomination of WGISS officials.

During JAXA's tenure as chair, WGISS themes for particular attention are to collaborate as appropriate with CEOS Working Groups and Virtual Constellations; to work closely with the CEOS-SEC and CEOS-SIT and maintain communication; and to stimulate technical discussion/coordination, confirming WGISS' reputation as technical experts of information and service systems. The WGISS challenge during this time is to start new collaborations with CEOS Working Groups and Virtual Constellations.

WGISS Five-Year Plan V15.0

1. Introduction

1.1 General

This document presents the five-year plan of the Working Group on Information Systems and Services (WGISS) of the Committee on Earth Observation Satellites (CEOS) [1]. It provides a statement of the aims and objectives of the working group and gives an overview of the activities that WGISS undertakes in support of the Earth observation satellite missions and the related projects of CEOS members and associates.

New activities, needs, challenges and initiatives arise regularly in the Earth remote sensing community, and both WGISS and its parent organization, CEOS, have extremely flexible structures that allow for rapid response. In particular, WGISS wishes to support GEO [2] and, in particular, the CEOS Implementation Plan for Space Based Observations for GEOSS [3]. Direct support to GEO Tasks [4] is also provided when possible.

The WGISS Five Year Plan will be updated annually to incorporate new activities and reflect changes to personnel, with a more comprehensive review every two years to correspond with the change of WGISS chair. The document will provide a current and visible record for communicating the activities of the working group, both within and beyond the CEOS community. WGISS members thus consider this plan to be a *living document*.

1.2 Overview and Contents

On the basis of the Mission Statement contained in the WGISS Terms of Reference (ToR) (Annex A), Section 2 of the document states the aims, objectives and scope for WGISS.

The general workplan developed to achieve these aims and objectives is outlined in Section 3.

To ensure that work proceeds and is reported with maximum efficiency, an organizational structure has been established. This is described in Section 4 followed by a description of the management structures and procedures required for WGISS to monitor and control its activities.

The final section provides a statement of the current chair reflecting their view and priorities on WGISS activities.

The annexes contain:

    A - Terms of Reference for WGISS

    B - Terms of References for the WGISS Chair and Vice-Chair

    C - Terms of Reference for Interest Group and Project Leaders

    D - List of Current and Completed Projects

    E - Directory of Office Holders and WGISS Representatives

A list of the completed and current interest groups and projects are given in Annex D and further details are contained in the companion *Interest Group and Project Register* document (available from the WGISS website [7]).

1.3 References

1. CEOS Website: http://www.ceos.org/

2. GEO Website: http://www.earthobservations.org/

3. CEOS Implementation Plan for Space Based Observations for GEOSS. 2007.

    http://www.ceos.org/images/PDFs/ceos_ipdraft_nov2007.pdf

4. GEO Workplan 2012-2015:

http://earthobservations.org/documents/work%20plan/GEO%202012-2015%20Work%20Plan_Rev1.pdf

5. LSI Portal: http://wgiss.ceos.org/lsip/

6. ACC Portal: http://wdc.dlr.de/acp/

7. CEOP: http://www.ceop.net/

8. International Directory Network: http://idn.ceos.org/

9. Climate Diagnostics: http://idn.ceos.org/CD

10. WGISS website: http://www.ceos.org/

11. WGCapD website: http://www.ceos.org/

12. WGCV website: http://www.ceos.org/

12. WGClimate website: http://www.ceos.org/

2. Aims, Objectives and Scope of WGISS

This section outlines the overall aims and objectives of WGISS and describes the scope for its work, expanding upon the Terms of Reference defined in Annex A.

2.1 CEOS Aims

International investment in Earth Observation (EO) satellite platforms and instruments and the associated ground segments is substantial. Since its establishment in 1984, CEOS has provided a key role for coordination of these investments to ensure full realization of this truly international activity and maximize the value of these investments through appropriate exchange and collaboration. To that end CEOS works to meet its primary objectives:

- To optimize the benefits of space borne Earth observations through cooperation of its members in mission planning and in the development of compatible data products, formats, services, applications, and policies;

- To aid both its members and the international user community by serving as the focal point for international coordination of space-related Earth observation activities, including those related to global change;

- To exchange policy and technical information to encourage complementarity and compatibility among space borne Earth observation systems currently in service or development, and the data received from them; issues of common interest across the spectrum of Earth observation satellite missions will be addressed.

Dozens of EO missions have been launched since the establishment of CEOS and many more are planned for launch in the coming years. Coordination in planning and policy for these missions is undertaken at the highest level within CEOS by the Plenary. In addition, CEOS has undertaken the development of a CEOS Implementation Plan [3] to address the space component of GEOSS [2].

2.2 WGISS Objectives

(Repeated from the WGISS ToR (Annex A))

The overall objective of WGISS is to facilitate data and information management and services for users and data providers in dealing with global, regional and local issues. It will address in particular the description, access, retrieval, archiving, long-term preservation, discovery, utilization, and maintenance of space borne Earth observation data and supporting ancillary and auxiliary data and information, enabling improved operability and interconnectivity of information systems and services.

Specific goals are to:

- Enable Earth observation data and information best practices and services to be more accessible and usable to data providers and data users world-wide through international coordination;

- Enhance the complementarity, interoperability and standardization of Earth observation

data and information management and services with other types of geospatial data such as in-situ data;

- Foster easier exchange of Earth observation and related data and information to meet the requirements of users and data providers; and

- Foster the development of information best practices and services that use space borne Earth observation data.

To achieve these objectives and goals, WGISS will:

1. Synthesize and respond to the needs of users and data providers internationally. WGISS will in particular be responsive to the CEOS-endorsed GEO requirements and will maintain regular contact with the chair of CEOS SIT (Strategic Implementation Team) who has the overall responsibility for the day to day interaction with GEO and its subsidiary committees and secretariat as delegated by the CEOS chair.

2. Foster global interconnectivity and interoperability of Earth observation and related data and information systems and services.

3. Identify, influence and recommend best practices and standards for effective data management and interuse.

4. Support improvements in the quality, reliability and preservation of data, information and supporting systems and services.

5. Monitor and investigate developments of new technologies and encourage their use as appropriate.

6. Develop agreement on common terminology.

7. Foster on-going effective communications among CEOS agencies, Working Groups and other organizations such as ISO, ISPRS, OGC, CCSDS, ICSU and GSDI to facilitate cooperation and avoid unnecessary duplication of effort.

2.3 Scope

The scope of WGISS are those areas that facilitate more effective use of the investments made by its member agencies in Earth Observation data and the systems that manage that data. The value of those resources depends on the end user community, and how that community leverages these data systems to meet their needs. Therefore, WGISS is interested in those approaches and technologies that further the alignment of Earth Observation data and systems with their usage.

There are a number of significant challenges in this effort. Those challenges are driven by two primary factors: The data and systems are evolving at a very fast rate of change. The volume and complexity of Earth Observation data, and the information technologies that are available to Earth Observation data systems change rapidly. Secondly, the goals and applications of the user community are constantly transforming as there are increasing opportunities to explore potential societal benefit.

There are synergistic relationships between these drivers. As the data and systems mature, there are a larger number of, and more useful, tools at the disposal of the user community. And, as the user community grows in its vision, there are more demands for efficiencies and interoperability placed on the Earth Observation data systems.

WGISS works to provide a framework for addressing the needs of both data managers and service providers to better serve the users. As such, WGISS addresses all activities related to the capture, description, processing, access, discovery, retrieval, utilization, maintenance, archiving, preservation and exchange of space borne Earth Observation data and supporting ancillary data and information, enabling improved interoperability and interconnectivity of Earth observation information systems and services to its user communities, and combining space borne EO data with in-situ data.

To maximize the impact and benefit of WGISS activities, the group will coordinate with other CEOS groups, non-CEOS agencies and organizations, including governmental and non-governmental organizations that have interests, resources and networks supporting EO data development and exchange. This includes support for relevant tasks related to GEO/GEOSS and other pertinent organizations. This broad scope is intended to foster the close interdisciplinary coordination, and the focus and integration, which are necessary for WGISS to act as a forum that is capable of implementing practical solutions. This type of coordination and interaction is illustrated by the WGISS Virtual Constellation Interest Group conducted aimed at supporting the needs of the CEOS Virtual Constellation Study Teams [5].

The interconnectivity and interoperability of services are key factors in achieving WGISS objectives. WGISS activities will emphasize international coordination amongst CEOS and other relevant agencies in these areas to ensure the provision of accessible Earth observation services to data providers and data users worldwide.

WGISS will provide a forum for worldwide cooperation and management of compatibility in the practical application of protocols and interfaces, in which technical and administrative issues can be addressed, and where critical interactions between technical implementers can take place.

The scope of WGISS activities includes convening workshops, authoring papers, developing information technology infrastructure that increases the interconnectivity and reuse of key information software and services in use across the broad spectrum of EO communities. This can include the co-ordination of the development of global dataset products.

Current external organizations with specific overlapping interests to WGISS include the Group on Earth Observation (GEO), the International Society for Photogrammetry and Remote Sensing (ISPRS), the IEEE International Geoscience and Remote Sensing Symposium (IGARSS), International Council for Science (ICSU), and the Open Geospatial Consortium (OGC).

3. WGISS Work Plan

WGISS is a "best-efforts" organization with no central funding. The emphasis of the work plan is therefore dependent upon defining strategic goals, as well as practical and realistic steps that can be achieved with the resources made available by its members and associates towards meeting those goals

WGISS receives strategic direction and specific requests for work from CEOS Plenary and CEOS SIT. Much of this input concerns providing support for the implementation of the CEOS Implementation Plan for GEOSS [3]. In return, WGISS provides reports on progress in achieving its objectives and also provides recommendations to the Plenary and SIT to help guide them in their strategic decision-making.

WGISS also receives request for information and support from its liaison and other organisations, including requests to support the implementation of GEO Tasks [4]. In some cases, WGISS has been requested to lead certain GEO Tasks.

WGISS meetings focus on agreeing on how WGISS should respond to the various tasking and requests for support, balancing this call on its resources with the need to co-ordinate the activities of its own member agencies and organisations. This might include providing recommendations to create new interest groups or projects. The WGISS meetings also carry out monitoring, tracking, documenting, reviewing and providing feedback to on-going technical activities.

Based on the above, WGISS activities have been divided into two main areas.

3.1 Support for CEOS Plenary and GEOSS

WGISS takes strategic direction from the CEOS Plenary and from the CEOS Strategic Implementation Team (SIT). In recent years, this direction has been towards providing support for the execution of GEO Tasks [4] in support of the development of the Global Earth Observation System of System (GEOSS) [2]. This support has taken the form of support to CEOS for the implementation of the CEOS Implementation Plan Space Based Observations for GEOSS [3]; or more directly in support of specific GEO Tasks [4].

WGISS reports and obtains feedback on WGISS endeavours from the CEOS Plenary. It strives to help shape the work of WGISS towards meeting CEOS Plenary, SIT and Agency requirements.

This support can be further divided into two aspects, namely, a) Data and Information Management, which tends to be a more inwardly focussed activity of the Space Agencies and Associates; and b) User Services and Applications Support, which tends to focus on external interactions.

3.1.1 Data and Information Management

WGISS members have a great deal of experience in data and information management issues, and the technology that supports these issues. WGISS exploits this knowledge for the benefit of all by producing recommendations and guidelines (e.g. the CEOS Interoperability Handbook) concerned with all aspects of data and information management. The scope includes the acquisition of data; archive maintenance and purging (utilizing objective appraisal methods); the

appropriate use of standards, the auxiliary data and procedures used in product generation; the use of compatible data formats; maximizing data interoperability; the quality aspects of service provision; the use of standard software tools and the use of agreed upon terminology.

The continuing increase in the possible sources of EO data and the extensive need for interoperability for data from different sources and origins emphasizes further the need for harmony in this aspect of EO. Hence a major objective is to facilitate the use and interoperability of data without complications resulting from its form or origin. This interoperability of data can facilitate the generation of global composites of data from different sources, prototyped by WGISS in collaboration with international scientific programs. Examples include the WGISS activity in support of the Coordinated Energy and Water Cycle Observations Project (CEOP) within GEWEX [6].

The issues addressed within WGISS relate to the lifecycle management, stewardship of archives, data formats, auxiliary data requirements, and data packaging. The CEOS Superstructure Format was an early attempt to standardize the format of EO data products. The more recent emphasis is towards exploiting the Internet related developments in markup languages (such as XML) to describe data in a machine-readable way, rather than attempt to squeeze data into a pre-defined format. WGISS has defined a common conceptual data model to provide a common language of the information entities with the Earth Observation System community. Defining the semantic content of data products is also a focus of consideration.

Close contact is maintained with the activities of the Consultative Committee on Space Data Systems (CCSDS) Missions Operations and Information Management Services (MOIMS) Area (concerned with information interchange over space and time). CCSDS is a part of the International Standards Organization (ISO) and WGISS is able to both influence their recommendations and exploit the resulting international standards.

3.1.2 User Services and Applications Support

WGISS coordinates the provision of a range of global services and support for EO applications.

WGISS pursues the development of global services for users of Earth observation and related non-satellite data, through coordination of infrastructure development and encouraging the development of services based on international standards. The wider utilization of EO data is supported through:

- wider and easier access for users, assisting users to locate and utilize data and to collaborate with other users;

- coordination in the provision of distributed capabilities to users (e.g. for computing, data search, data caching and temporary storage, and cooperative tools);

- interoperability of user services such as guide, directory, inventory, order, browse;

- Support, as appropriate, for GEOSS activities (e.g. GEOSS societal benefit areas).

Agencies continue to develop their own data and information systems, with particular features and functions determined by their particular needs and schedule. WGISS aims to facilitate the provision of coordinated access to all services available on all systems, providing the user with a seamless global view of all resources that are available for the application in question.

This aspect of WGISS activity is primarily internet related. Specific issues include data

discovery, inventory search, data retrieval, data processing and visualization. The scope includes information exchange protocols in addition to metadata standards and formatting.

Close contact is maintained with ISO TC211 (Geographic Information) and the Open Geospatial Consortium (OGC) who work on the test-bed prototype activities to help formulate the requirements for standards. Again WGISS is able to participate in the prototyping activities and influence the standards making process.

Emerging Data Services Technologies

WGISS constantly follows and evaluates new technologies that may prove applicable to EO endeavours. Grid technologies, web services, semantic web, sensor web and ontologies are a few of the emerging technologies that could prove useful to CEOS EO needs.

3.2 Knowledge Exchange

An important aspect of the WGISS activities is to ensure that the information it generates is made easily available to interested parties; and to ensure that it receives relevant information from related organisations in a timely and efficient manner. WGISS will ensure that its activities are coordinated across CEOS and adequately promoted.

To address these issues, WGISS has established 1) WGISS Information Services, 2) liaisons (points of contact) with related organisations and 3) promotional activities. The following sections provide more detail.

3.2.1 WGISS Information Services

WGISS manages and populates a website [7] dedicated to storing, and providing access to information on all past and current WGISS activities. It contains information on how WGISS is organised and provides access to all WGISS produced documents including most presentations given at WGISS meetings (starting with WGISS 22).

WGISS also provides infrastructure and information services to assist with CEOS internal organization. It provides the information resource for anyone to find out more about CEOS, its activities and its members and associates.

3.2.2 Liaison activities

As the work of WGISS becomes more outward looking, collaborative links with organizations working in related fields becomes ever more important.

Organisations of particular interest are given below, and the points of contact within WGISS for each of these organisations are identified in Appendix F. The liaison activities of these PoCs includes reporting on recent developments at WGISS meetings; and, if necessary, attending meetings of the liaison organizations to report on WGISS activities to glean information on the latest developments.

- Group on Earth Observation (GEO)
- Consultative Committee for Space Data Systems (CCSDS)
- Global Map Project

- Global Spatial Data Infrastructure
- ICSU / Committee on Data
- ISO/TC211
- Open Geospatial Consortium (OGC)
- International Society for Digital Earth (ISDE) (&CEODE)
- ICSU/ International Research for Disaster Reduction (IRDR)

3.2.3 Promotion

WGISS aims to ensure that the standards and initiatives recommended by WGISS are employed by the EO community. To this end, it reports on its achievements to the CEOS Plenary and through CEOS publications including annual reports, yearbooks, list servers, and web sites.

The objective of promotion is also to provide an integrating function, allowing the achievements of the various objectives to be presented in context, thus providing a system view of WGISS recommendations and guidelines for Earth Observation.

To increase the impact and benefit of WGISS activities, promotion extends to non-CEOS countries and organizations, non-governmental organizations, commercial enterprises, and data users and providers in developing countries.

WGISS works to promote its activities to a wide audience through:

1) the production and distribution of publicity material,
2) the production and presentation of papers at conferences, seminars and workshops, and
3) the creation of highly visible demonstrations projects in support of, for example, GEO Tasks and presentations to CEOS Plenary.

WGISS also recognises the need to promote the output of its work within its own agencies and organisations in order to ensure the adoption of results and recommendations; and to ensure continued funding WGISS activities.

WGISS also works with the CEOS Working Group on Capacity Building and Data Democracy (WGCapD) [8] to assist in facilitating information access for education, capacity building and Data Democracy activities.

WGISS also seeks opportunities to work with other CEOS Working groups, Societal Benefit Area teams, and Virtual Constellation groups.

4. WGISS Organization

4.1 Organization Overview

In May 2012, WGISS simplified its structure and removed the intermediate subgroup management structure. As before, the main technical work in WGISS is carried out in Interest Groups and Projects (IG/P), operating as self-managed activities. The IG/P will now report directly to the WGISS Executive, rather than through Subgroup Chairs.

The following figure illustrates the current structure of WGISS.

Figure 4-1. WGISS organization

WGISS delegates will tend to focus on strategic and monitoring issues while most of the detailed technical work of WGISS is carried out within the IG/P. The IG/P processes are described below in Section 4.4.

This structure has been designed to ensure that WGISS activities are efficiently coordinated in line with the directions and requirements of the Plenary. The structure facilitates "top-down" strategic planning and coordination as well as "bottom-up" dissemination of project results and discussion of future projects and requirements.

4.2 WGISS Roles

WGISS is coordinated under the direction of a chair supported by a secretariat provided by the chair's organization. The chair is responsible for organizing meetings of the WGISS, producing minutes or notes of those meetings, monitoring actions and reporting to CEOS Plenary and to the CEOS SIT.

It is the responsibility of the chair to take account of the direction and requirements of the Plenary and SIT, to introduce appropriate external partner agendas (e.g. CEOS Virtual Constellation Study Teams) relevant to WGISS work, to hear from IG/P Leaders concerning

recommendations of technical strategic direction and progress of technical implementations and demonstrations, to plan and coordinate appropriately, and to provide "top-down" guidance of WGISS activities.

The vice-chair role is to assess the extent to which provider agency needs are being addressed by WGISS and the extent to which their requirements are being met. The WGISS vice-chair will serve in an ad-hoc WGISS membership role, seeking to involve all CEOS members and associates in WGISS activities. The vice-chair will also coordinate the establishment of future WGISS meetings and serve as chair at functions that the WGISS chair is unable to attend. The WGISS vice-chair becomes the chair after two years.

Given the need to closely co-ordinate WGISS activities with other organisations, Liaison Points of Contact (PoCs) are identified from within WGISS Members to provide an interface to these external organisations and to report at WGISS Meetings.

Relevant external organisations and their current PoCs are given In Appendix F.

4.3 Interest Groups and Projects (IG/P)

The technical work in WGISS is carried out through a mixture of Interest Groups and Projects. Interest groups aim to foster information exchange, discuss best practice and develop ideas for prototyping and demonstrations. Projects are more targeted activities with specific goals and a schedule for delivery.

The Interest Groups and Projects are organised and managed by Leaders who volunteer for the role subject to approval by WGISS and the relevant IG/P members.

The IG/P creates a Profile for their activities and these can be inspected via the WGISS Website. A Profile Template is provided in Appendix D.

Interest Groups

- Web Exploration   Andrew Mitchell, NASA
- Data Stewardship   John Faundeen, USGS
- Virtual Constellations   John Faundeen, USGS

Projects

- Water Portal Project   Satoko Miura, JAXA
- CEOS WGISS Integrated Catalogue   Martin Yapur, NOAA, Yonsook Enloe, NASA
- GEOSS Architecture for Disasters and
  Risk Assessments Project (GA.4.Disasters) Karen Moe, NASA, Sergii Skakun, NSAU

Infrastructure Projects

- International Directory Network (IDN)   Lola Olsen, NASA
- WGISS Infrastructure Services (WISP)   Martin Yapur, NOAA

4.6 Interest Group and Project Procedures

To ensure that the purpose of a WGISS interest group or project (IG/P) is clear, that the work being carried out in each is adequately monitored and the results widely disseminated, a series of simple procedures are used:

- proposal initiated through completing a profile template;

- subsequent adoption to be agreed at WGISS meeting;

- set-up and documentation, including an interest group or project plan as needed;

- reporting and on-going review;

- completion review with a final report and updated profile.

Each WGISS IG/P Profile will include a description of how the IG/P aligns with the WGISS vision and will advance WGISS objectives as well as the strategy for success.

Proposal and adoption: Before an IG/P is undertaken, it will be presented to WGISS for adoption. When adopted, the identified IG/P lead will then take responsibility for the set-up and initiation of the activity. A profile template should be completed which outlines the IG/P objectives, a work plan schedule, goals, project champion for projects, details of participants and their roles, a list of deliverables, and a rough outline of the required resources. For projects, the template should include a statement of the delivery goals of the project and a target date for completion. The template will be submitted to the WGISS chair who will make the recommendation for creation to WGISS.

If an IG/P is reviewed and is not immediately adopted it will be placed on a candidate list, subject to further development and refinement before subsequent review. All IG/P on the candidate list will be reviewed at each WGISS meeting and adopted for execution, removed or carried forward to the next meeting as appropriate.

The contents of the WGISS home page, the Interest Group/Project Register, the templates, project plans, if needed, home pages will be updated as agreed at WGISS meetings and any addition, removal or changes of the status of IG/P will be recorded in the WGISS meeting notes.

Set-up: After adoption of an IG/P as current, the IG/P leader will initiate the various communication and information systems available in support of the IG/P (e.g. register the IG/P description with the home page, establish e-mail distribution lists, etc.). Each IG/P should make best use of the support available from the information services established by WGISS to assist IG/P management and communications. A project Plan is required to fully document the expected work of projects.

Reporting and on-going review: IG/P leaders will report on the progress of IG/P at each WGISS meeting, and the status and direction of each will be reviewed, and any adjustments that are necessary will be agreed upon. It is the responsibility of the WGISS Chair and Vice-Chair to ensure that templates of IG/Ps are updated on the basis of the status agreed at WGISS meetings, and that updated descriptions are incorporated into the IG/P Register as appropriate. IG/P Profiles will be reviewed at least annually.

Completion review: Upon completion of each IG/P or major milestone, the IG/P leader will produce a short written assessment summarizing the activity against the original plan, its success against the objective, and whether there are any lessons to be learned for the future. These reviews may be appended to the WGISS report to the Plenary and will be made available on the WGISS Web site.

Closure: Upon the termination of an IG/P due to completing its work, the Profile will be updated to include achievements and the location of any material generated during the course of its work.

5. Management

5.1 General

All activities of the WGISS will be aimed at achieving the objectives defined in this WGISS 5-Year Plan. Work at all levels will be the subject of an appropriate plan defining the work to be done and the outputs expected, and the progress of all work will be monitored by reporting against the plan.

5.2 WGISS Exec

General WGISS management issues will be addressed by an executive committee (WGISS Exec) made up of the WGISS chair, vice-chair, secretariat, and the leaders of the IG/P teams. The WGISS Exec will hold regular teleconferences (approximately monthly) to facilitate the smooth operation of WGISS.

5.3 WGISS Meetings

The WGISS meets twice per year. WGISS members are defined as representatives from CEOS agencies and associates. Approximately every two years, WGISS meets jointly with the CEOS Working Group on Calibration and Validation (WGCV) [9]. Opportunities to meet jointly with other CEOS working groups, Societal Benefit Area teams, and Virtual Constellation groups are also desired.

IG/P Leaders will report on interest group recommendations and on the progression of projects against schedules and any other highlights.

WGISS will receive reports from members and associates to maintain awareness of relevant developments within their organizations.

Liaison PoCs will usually provide a short report prior to WGISS meetings, or provide a presentation at the meeting.

The local host is also offered the opportunity to convene a half-day workshop on a topic of their choice.

5.4 Interest Group and Project Meetings

The work of the Interest Groups and Projects will mainly be progressed through teleconferences and ad-hoc meetings convened as required. IG/P Leaders will report progress at WGISS meetings and more extended IG/P sessions may be held during the WGISS meetings to promote information exchange and more extended discussion on specific topics.

An Interest Group or Project may also request to convene a more focussed half-day or one-day workshop during the WGISS meeting on a specific topic. These workshops are where the IG/P will facilitate broader discussions with goals of deeper collaboration with in-person meetings, or to request information from the WGISS and look for feedback on further activities.

IG/P Leaders maintain their sections of the Interest Group/Project Register, proposing revisions as needed, taking into account direction from WGISS and the CEOS Plenary and the SIT.

New Interest Groups and Projects will be responsible for creating a profile (and project plan as necessary). All interest groups and projects will carry forward profiles and keep them up to date.

The exchange of information among members and associates is invited and encouraged at all meetings and a reasonable amount of time will be allowed on the agenda to facilitate this. Each interest group and project will report directly to WGISS. A list of the current and closed interest groups (and earlier pre-2008 activities termed Tasks) is given in Annex E.

5.6 Reporting

The WGISS chair will be responsible for preparing the annual report to Plenary and reporting to the chair of SIT as required. The annual report will be circulated to all WGISS members for comment prior to issue. The report will be based on the result of reports provided by the vice-chair, and IG/P leaders and the deliberative decisions taken at the previous WGISS meetings. It will make recommendations and report progress against the WGISS Five Year Plan and any significant changes.

The WGISS vice-chair will report on the extent to which the output of WGISS is being used in the implementation of systems and services by the provider members and associates and the status of membership initiatives including future meeting opportunities. These reports will form inputs to the WGISS annual report.

The WGISS chair will also be responsible for briefing the members of WGISS regarding any inputs from Plenary or other outside bodies. Such inputs will be discussed at WGISS meetings and suitable responses developed. This will include the monitoring of and reporting upon relevant programs performed outside of CEOS (such as GEO, etc.) that may impact upon WGISS work.

The IG/P Leaders will be responsible for reporting the progress of their activities at each WGISS meeting. Similarly, they will be responsible for informing the members and associates of their IG/P regarding the outcome of the WGISS or Plenary meetings. Projects responding to the GEOSS Work Plan are also tracked in the CEOS-GEO Action Tracking System, a responsibility of the Project Leaders.

The WGISS Chair will be responsible for applying the agreed WGISS reporting procedures, ensuring that all minutes or notes, interest group and project templates and project plans, action lists, calls for information, etc., are posted as required on the relevant WGISS information systems in a timely fashion.

5.7 Resourcing

All activities of WGISS and its Interest Groups or Projects are funded by its members and associates. Each participant is responsible for seeking and obtaining support and funding from his or her organization. Each participant then undertakes activities on a "best efforts" basis. Through the set procedures for each activity, WGISS aims to focus the contribution of each participant and to maximize the benefit of the activity to each member or associate involved. Similarly, the review procedures for each activity will provide a record of the benefits to the contributing agencies, thus justifying funding and securing continued participation.

The set procedures aim to communicate to potential participants what the results will be, when they can be expected, and how much resource will be required to achieve them. Participants in

each activity will be asked by the leader to confirm, as far as possible, the level of support that they can contribute to the activity.

5.8 WGISS Document Approval Process

1. Following review by the potential participants, the document will be sent to the WGISS chair with a covering note describing the context, which includes a request for a decision.

2. The WGISS chair will distribute the document and the covering note to WGISS members and associates approximately two months before the decision is expected.

3. If a WGISS member or associate does not support the document, he/she should provide the reason(s) in writing by the due date.

4. If there are no objections, the chair will inform WGISS that the document has been accepted and that it can be formally issued as a CEOS WGISS document and commended to CEOS members and associates and others for their respective decisions and actions.

5. If there are objections, those with objections will work with the interest group or project leader to resolve these objections; if not resolved, the issue will be discussed at the next WGISS meeting and a decision made then.

5.9 Nomination of WGISS Officials

The following rules are applied to cover the nomination of a new WGISS Exec member in the event that they leave before the normal conclusion of their term. These rules cover the WGISS chair and vice-chair, and interest groups/project lead. The candidates for WGISS chair and vice-chair are handled at the CEOS level as there are budgetary implications to the acceptance of those positions. For other positions CEOS is informed, but formal support is not required. The following rules for nomination in the event of early departure are followed:

In the case of a:
- **departing WGISS chair or vice-chair:** the agency of the member holding the post has the right to propose a replacement for the departing member. The reason for adopting this rule is that the agency has agreed to provide resources to support the WGISS chair/vice-chair. If there is no agency proposal then the rules used for the "*departing interest group or /project leader*" are applied;
- **departing interest group or project leader:** An open discussion within the interest group or project seeks to determine a mutually agreeable candidate coming from within the interest group/project membership. If no candidate is identified within the interest group/project then the WGISS chair will work to identify a nominee.

6. Views and Priorities of Current Chair

During JAXA's tenure as chair, WGISS themes for particular attention are:

- Work closely with and collaborate as appropriate with CEOS Working Groups and Virtual Constellations.

- Work closely with the CEOS-SEC and CEOS-SIT and keep "two-way" communications.

- Continue and stimulate technical discussion/coordination, and confirm WGISS' reputation as technical experts of information and service systems

The WGISS challenge during this time is to start new collaborations with CEOS Working Groups and/or Virtual Constellations.

7. Acronyms and Abbreviations

ASI	Agenzia Spaziale Italiana
CAS	China Academy of Sciences
CAST	Center for Applied Special Technology
CCSDS	Consultative Committee on Space Data Systems
CEOP	Coordinated Energy and Water Cycle Observation project
CEOS	Committee on Earth Observation Satellites
CNES	Centre national d'études spatiales
CODATA	Committee on Data
CONAE	Comision Nacional de Actividades Espaciales
CSA	Canada Space Agency
CSIRO	Australian Commonwealth Scientific and Industrial Research Organisation
CSIR	Council of Scientific and Industrial Research
DLR	German Aerospace Center
EO	Earth Observation
ESA	European Space Agency
EUMETSAT	European Meteorological Satellite
GCOS	Global Climate Observing System
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GEWEX	Global Energy and Water Cycle Experiment
GFZ	German Research Centre for Geosciences
GISTDA	Geo-Informatics Space Technology Development Agency
GSDI	Global Spatial Data Infrastructure Association
ICSU	International Council of Scientific Unions
IG/P	Interest Groups and Projects
IDN	International Directory Network
INPE	National Institute for Space Research
ISO	International Standards Organisation
TC20/SC13	Technical Committee 20 / Sub-Committee 13 (of ISO)
ISPRS	International Society for Photogrammetry and Remote Sensing
ISRO	Indian Space Research Organisation
ISPRS	International Society for Photogrammetry and Remote Sensing
JAXA	Japan Aerospace Exploration Agency
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
NGDC	National Geophysical Data Center
NRSCC	National Remote Sensing Center of China
NSAU	National Space Agency of Ukraine
OGC	Open Geospatial Consortium
ROSHYDROMET	Russia's Federal Service for Hydrometeorology and Environmental Monitoring
SCAR	Scientific Committee on Antarctic Research
SIT	Strategic Implementation Team
SNSB	Swedish National Space Board
ToR	Terms of Reference
UKSA	United Kingdom Space Agency
UNEP	United Nations Environment Programme
UNOOSA	United Nations Office for Outer Space Affairs
USGS	United States Geological Survey
WGCapD	Working Group on Capacity Building and Data Democracy
WGCV	Working Group on Calibration and Validation

Annex A - WGISS Terms of Reference

Mission Statement

Recognizing the importance of global users, the WGISS will stimulate, coordinate and monitor initiatives, thereby enabling users at a global, regional and local level to exploit more effectively, and benefit from, data generated by Earth observing satellites and other sources.

Membership

Membership is open to all CEOS agencies and associates. Delegations may include experts from non-member organisations who have relevant expertise to contribute to the objectives of the WGISS.

Objectives

The overall objective of WGISS is to facilitate data and information management and services for users and data providers in dealing with global, regional and local issues. It will address in particular the description, access, retrieval, archiving, long-term preservation, utilization, and maintenance of spaceborne Earth observation data and supporting ancillary and auxiliary data and information, enabling improved operability and interconnectivity of information systems and services.

Specific goals are to:

- Enable Earth observation data and information best practices and services to be more accessible and usable to data providers and data users world-wide through international coordination;

- Enhance the complementarity, interoperability and standardization of Earth observation data and information management and services with other types of geospatial data such as in-situ data;

- Foster easier exchange of Earth observation and related data and information to meet the requirements of users and data providers; and

- Foster the development of information best practices and services that use spaceborne Earth observation data.

To achieve these objectives and goals, WGISS will:

1. Synthesize and respond to the needs of users and data providers internationally. WGISS will in particular be responsive to the requirements of the Group on Earth Observation (GEO) and to this end will maintain regular contact with the chair of CEOS SIT (Strategic Implementation Team) who has the overall responsibility for the day to day contact with GEO and its subsidiary committees and secretariat as delegated by the CEOS chair.

2. Foster global interconnectivity and interoperability of Earth observation and related data and information systems and services.

3. Identify, influence and recommend best practices and standards for effective data management and interuse.

4. Support improvements in the quality, reliability and preservation of data, information

and supporting systems and services.

5. Monitor and investigate developments of new technologies and encourage their use as appropriate.

6. Develop an agreement on common terminology.

7. Foster ongoing effective communications among CEOS agencies, Working Groups and other organizations such as ISO, ISPRS, OGC, CCSDS, ICSU and GSDI to facilitate cooperation and avoid unnecessary duplication of effort.

Implementation

Strategies and activities to meet the objectives and goals stated above will be fully defined via a five year plan to be submitted to CEOS Plenary for endorsement, and for subsequent annual updates. WGISS chair will report to each CEOS Plenary, and to the chair of CEOS SIT, on its progress and plans for review and guidance- bringing forward recommendations and proposals as appropriate.

Structure and Procedures

The WGISS will normally meet twice per year, rotating the meeting venue among its membership or locations conducive to WGISS goals. At each meeting, the time, place and host for the next meeting will be established.

A WGISS chair and vice-chair will be designated by the CEOS Plenary and will rotate among WGISS members every two years. The designated vice-chair will assume the chair after two years, and a replacement vice-chair will be designated by Plenary.

For each meeting the chair of WGISS will prepare the agenda and distribute notes and actions.

Each CEOS agency is invited to designate a point-of-contact for WGISS correspondence and representation; otherwise correspondence will be addressed to the agency's main point-of-contact with CEOS.

The WGISS will coordinate its work with other CEOS working groups, the Virtual Constellations, the Societal Benefit Areas, and in particular with the CEOS SIT who will be invited to send a representative to WGISS meetings to foster the coordination.

The WGISS may propose modifications to these Terms of Reference, and such modifications will be submitted to CEOS Plenary for approval.

Annex B - WGISS Chair & Vice-Chair Terms of Reference

The WGISS Officers comprise of the WGISS chair, vice-chair, Secretariat and IG/P Leaders. Together they form the WGISS Executive.

The WGISS chair and vice-chair change every two years, effective on the date of the CEOS Plenary. The vice-chair becomes the chair, and a new vice-chair is elected.

Annex B.1 WGISS Chair Terms of Reference

- In conjunction with the vice-chair, provide general direction (based on CEOS Plenary and SIT priorities) for WGISS.

- Provide the interface to the CEOS Plenary by:

  - o preparing and delivering the annual WGISS report at the Plenary meeting;

  - o reporting to CEOS SIT when needed;

  - o attending both the CEOS Secretariat and the CEOS SIT teleconferences;

  - o briefing WGISS on the Plenary meeting and on the Plenary priorities for WGISS as well as on the SIT meetings and teleconferences;

  - o preparing WGISS input for the CEOS Newsletter and similar documents.

- Secure secretariat support for WGISS.

- Be the overall coordinator and Point of Contact for GEO issues within WGISS.

- Provide initial liaison Point of Contact with other CEOS Working Groups.

- In conjunction with the vice-chair, identify a candidate to be recommended to the CEOS Plenary as the next WGISS vice-chair.

- In conjunction with the vice-chair, secretariat, local host and the IG/P Leaders, prepare the agenda for the WGISS meetings.

- Chair the WGISS meeting.

- In conjunction with the vice-chair and IG/P Leaders, prepare papers and other documents in support of WGISS outreach.

- In conjunction with the vice-chair, ensure that the profile of IG/Ps is maintained up to date.

Annex B.2 WGISS Vice-Chair Terms of Reference

- In conjunction with the chair, provide general direction (based on Plenary and SIT priorities) for WGISS.

- Assist the chair in the interface with the CEOS Plenary by attending meetings/teleconferences in her/his absence and by providing input for the CEOS Newsletter and related documents.

- In conjunction with the chair, identify a candidate to be recommended to the CEOS Plenary as the next WGISS vice-chair.

- In conjunction with WGISS chair, secure host for future WGISS meetings and utilize these meetings as outreach activities by alternating locations geographically and strategically by including new agencies or ones that have not been active recently.

- Engage less active agencies to encourage participation and the development of new projects.

- In conjunction with the Chair and IG/P leaders, prepare papers and other documents in support of WGISS outreach.

- In conjunction with the Chair, ensure that the profile of IG/Ps is maintained up to date.

Annex C –Interest Group/Project (IG/P) Leader Terms of Reference

- Provide direction and leadership for activities.

- Convene ad-hoc IG/P meetings and teleconferences as required.

- Prepare short activity report at each WGISS meeting.

- Prepare and maintain profile and/or project plans.

- Maintain interest group/project-specific list server, mailing lists, and website (in co-operation with the WISP).

- Contribute to the preparation of the overall WGISS meeting agenda.

- Prepare IG/P agenda and speakers for IG/P session at WGISS meetings (if required).

- IG/P shall be open to all members and associates of CEOS. The IG/P may invite guest participation from non-CEOS organizations by decision of the IG/P members.

Annex D – IG/P Profile Template

It is suggested that the following headings be used when creating a "Profile" for WGISS Interest Groups and Projects.

1. Title

2. Last updated:

3. Overall purpose

4. Points of Contact

5. Activity Partners (Agency or Associates)

6. Objectives

7. Latest Developments

8. Additional Information covering for example, Milestones, Meetings, Implementation Plan.

It should be noted that if the profile is for a WGISS project it should include a plan and target completion date.

Annex E - List of Current and Completed Interest Groups and Projects

(includes previously entitled Tasks and old subgroup names)

ID	Owner	Status	Name	Leader	Comment
1	WGISS	Closed	1996 Plenary Demo	John Lilleyman, CSIRO	
2	WGISS	Closed	Developing countries CD-ROM	Jeff Kingwell, CSIRO	Superceded by 2a
2a	WGISS	Closed	Developing Countries CD-ROM Extension	Jean-Pierre Antikidis, CNES	
3	WGISS	Closed	Ocean Color	John Withrow, IOC	
4	Data	Closed	AVHRR 1km	Jeffrey Eidenshink, USGS	merged into Global Datasets (32)
5	WGISS	Closed	CEOS InfoSys	Luigi Fusco, ESA	merged into CII (29)
6	**Applications**	**Open**	**IDN**	**Lola Olsen, NASA**	
7	Access	Closed	CINTEX/CINTOP	Yonsook Enloe, NASA	superceded by CEOS CINTEX (30)
8	Access	Closed	Catalogue Interoperability Protocol Definition	Richard Goebel, EC/JRC	superceded by CEOS CINTEX (30)
9	Access	Closed	Browse	Osamu Ochiai, NASDA	superceded by Guidelines (31)
10	Access	Closed	Catalog Guidelines	Brian Thomas, BNSC/EOC	superceded by Guidelines (31)
11	Access	Closed	Yellow Pages and Information Infrastructure	Shinichi Sobue, NASDA	merged into CII (29)
12	Data	Closed	Global Land One Kilometre base Elevation	David Hastings, NOAA	merged into Global Datasets (32)
13	Data	Closed	Auxiliary Data Reference and Guide	Brian Thomas, BNSC/EOC	superceded by Guidelines (31)
14	Data	Closed	Global Mapping and Visualization	Mike Botts, NASA/U. Alabama	superceded by GM Book (39)
15	Data	Closed	Format Guidelines	Wyn Cudlip BNSC/QinetiQ	superceded by Guidelines (31)
16	Data	Closed	Archive	Kengo Aizawa, JAXA	
17	Network	Closed	Network Performance Measurement	Andy Germain, NASA	merged into Networks (37)
18	Access	Closed	WWW	Clive Best, EC/JRC	superceded by Eogeo (38)
19	WGISS	Closed	Hazards and Emergency Response	Lou Walter, NASA	superceded by CEOS ad-hoc WG
20	Network	Closed	Network Architecture	Dieter Sundermann, DLR	merged into Networks (37)
21	Network	Closed	Network Resource Planning & Coordination	Dieter Sundermann, DLR	merged into Networks (37)
22	Network	Closed	Network Security	Dick desJardins, NASA/NREN	merged into Networks (37)
23	WGISS	Closed	WGISS Strategy	Peter Churchill, EC/JRC	
24	WGISS	Closed	Information Locator Service	Thomas Ruwwe, DLR	
25	Data	Closed	Data Interoperability	Wyn Cudlip BNSC/QINETIQ	superceded by Data Services(33)
26	Network	Closed	CEOSnet Next Generation Prototyping	Dick desJardins, NASA	merged into Networks (37)

27	Data	Closed	CEOS/IGBP High Res. Satellite Data Project	Gerard Szejwach, IGBP	
28	Network	Closed	Network Resource Planning & Coordination	Vacant	merged into Networks (37)
29	WGISS	Closed	CEOS Information Infrastructure	Jeff Smith, NASA	
30	Technology & Services	Closed	CEOS Interoperable Catalogue System	Jolyon Martin, ESA	Renamed from CEOS CINTEX Extensions.
31	Data	Closed	Guidelines		superceded by WGISS TE (35)
32	Applications	Closed	Global Datasets Interest Group	Wyn Cudlip, UKSA / Lorant Czaran, UN	Closed at WGISS 33
33	Technology & Services	Closed	Data Services	Shinobu Kawahito, JAXA	To be replaced with new Data management Interest Group
34	WGISS	Closed	GOIN Evolution	Takashi Moriyama, NASDA	
35	WGISS	Closed	WGISS Test Environment	Mick Wilson (UNEP)	
36	WGISS	Closed	WGISS GOFC Test Facility	Yonsook Enloe, NASA	
37	Technology & Services	Closed	Network	Jeff Smith (NASA)	
38	Projects & Applications	Closed	EOGEO Workshop	Allan Doyle, EOGEO / Clive Best, EC/JRC	
39	Projects & Applications	Closed	Global Mapping Book	Wyn Cudlip, BNSC/QinetiQ	
40	Technology	Closed	Grid Interest Group	Andrii Shelestov (NASU)	Closed At WGISS 33. Activities subsumed into new Technology Exploration IG (56)
41	Projects & Applications	Closed	WTF CEOP	Satoko Miura, JAXA	
42	Projects & Applications	Closed	WTF Core Test Sites	John Faundeen (USGS) and Lyndon Oleson (USGS)	
43	Projects & Applications	Closed	Oil Spill Drift Prediction Project	Ivan Petiteville, ESA	
44	Projects & Applications	Closed	CEOS EO Data Portal Project	Lorant Czaran, UN & Wyn Cudlip, BNSC/QinetiQ	
45	Projects & Applications	Closed	World Summit on Sustainable Development	Yonsook Enloe	
46	WGISS	Open	WGISS Infrastructure Services Project	Martin Yapur, NOAA	
47	WGISS	Closed	Data Utilisation	Chuang Liu (NRSCC); Lorant Czaran (UN)	Closure announced at 21st CEOS Plenary (Nov. 2007)
48	Applications	Open	GA.4.Disasters - GEOSS Architecture for Disasters and Risk Assessment Project	Karen Moe (NASA) and Sergii Skakun (NSAU)	
49	Applications	Closed	Land Surface Imaging Interest Group	John Faundeen, USGS	Closed At WGISS 33. Activities subsumed into new Virtual Constellations IG (57)
50	Applications	Closed	Atmospheric Composition Interest Group	Stefan Falke, NASA	Closed At WGISS 33. Activities subsumed into new Virtual Constellations IG (57)
51	Technology	Closed	Sensor Web Interest Group	Karen Moe, NASA	Closed At WGISS 33. Activities subsumed into new Technology Exploration IG (56)

52	Technology	Closed	Web Services Interest Group	Andrew Mitchell, NASA	Closed At WGISS 33. Activities subsumed into new Technology Exploration IG (56)
53	Technology	Open	CWIC - CEOS WGISS Integrated Catalogue Project	Martin Yapur, NOAA Yonsook Enloe, NASA	Renamed from WADC –WGISS Architecture Data Contributions Project at WGISS 33
54	Technology	Open	Data Stewardship Interest Group	John Faundeen, USGS	
55	Applications	Open	Water Portal Project	Satoko Miura, JAXA	
56		Open	Technology Exploration Interest Group	Andrew Mitchell, NASA	
57		Open	Virtual Constellations Interest Group	John Faundeen, USGS	
58					
59					
60					

Owner column indicates whether WGISS or subgroup level project.
Access, Data, and Network indicates old subgroup Structure.
Later subgroup Structure: Technology Subgroup and Applications Subgroup.
Subgroup structure removed at WGISS 33 – May 2012)

Annex F - Directory of Office Holders, Liaison PoCs & WGISS Representatives

Annex F.1 Office holders

WGISS	**Agency**	**Country**	Name	Contact details
Chair	JAXA	Japan	Satoko Miura	Tel: 81 50 3362 3072 Fax: 81 29 868 5987 miura.satoko@jaxa.jp
Vice-Chair	CNES	France	Richard Moreno	Tel: 33 561 28 25 36 Fax: 33 561 28 19 20 richard.moreno@cnes.fr
WGISS Secretary	JAXA	USA	Michelle Piepgrass	Tel: 513 465 4932 michelle.piepgrass@ameritech.net

(updated following WGISS-34, September 2012)

Annex F.2 Liaison Point of Contacts (PoCs)

Mandatory	Organization	Name
Yes	Group on Earth Observation (GEO)	WGISS chair
No	Consultative Committee for Space Data Systems (CCSDS)	Wyn Cudlip
No	Global Map Project	Lorant Czaran
No	Global Spatial Data Infrastructure	Gabor Remetey-Fülöpp
No	ICSU / Committee on Data	Chuang Liu
No	To ISO/TC211	Lorant Czaran
No	From ISO/TC211	Liping Di
No	Open Geospatial Consortium (OGC)	Martin Yapur
No	International Society for Digital Earth (ISDE) (&CEODE)	Lizhe Wang
No	ESSI/AGU, EGU	Bernd Ritschel
No	ICSU/ International Research for Disaster Reduction (IRDR)	

(updated following WGISS 34, September 2012)

Annex F.3 Representative List

(updated Sept 27, 2012)

Country	Agency	Name	Contact details	Notes
China	CAS	Chuang Liu	lchuang@igsnrr.ac.cn	
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Canada	CCRS	Yanmei Wu	yanmei.wu@nrcan.gc.ca	
France	CNES	Richard Moreno	richard.moreno@cnes.fr	
China	CRESDA	Wang Zhigang	Kevinwang2000@163.com	
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Germany	DLR	Bernhard Buckl	bernhard.buckl@dlr.de	
Germany	GFZ	Bernd Ritschel	rit@gfz-potsdam.de	
	ESA	Ivan Petiteville	Ivan.Petiteville@esa.int	
	GCOS	Carolin Richter	crichter@wmo.int	
Thailand	GISTDA	Preesan Rakwatin	preesan@gistda.or.th	
	GSDI	Gabor Remetey	gabor.remetey@gmail.com	
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India	ISRO	Nitant Dube	nitant@sac.isro.gov.in	
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Japan	JAXA/RESTEC	Yoshiyuki Kudo	y_kudo@restec.or.jp	
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USA	NASA	Brian Killough	brian.e.killough@nasa.gov	SEO
USA	NOAA	Martin Yapur	martin.yapur@noaa.gov	
USA	NOAA	Kerry Sawyer	kerry.sawyer@noaa.gov	DCEO
China	NRSCC	Liu Dingsheng	dsliu@ceode.ac.cn	
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Ukraine	NSAU	Andrii Shelestov	andrii.shelestov@gmail.com	
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The Netherlands	NSO	Joost Carpay	j.carpay@spaceoffice.nl	
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UK	UKSA	Ruth Boumphrey	ruth.boumphrey@ukspaceagency.bis.gsi.gov.uk	
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USA	USGS	John Faundeen	faundeen@usgs.gov	