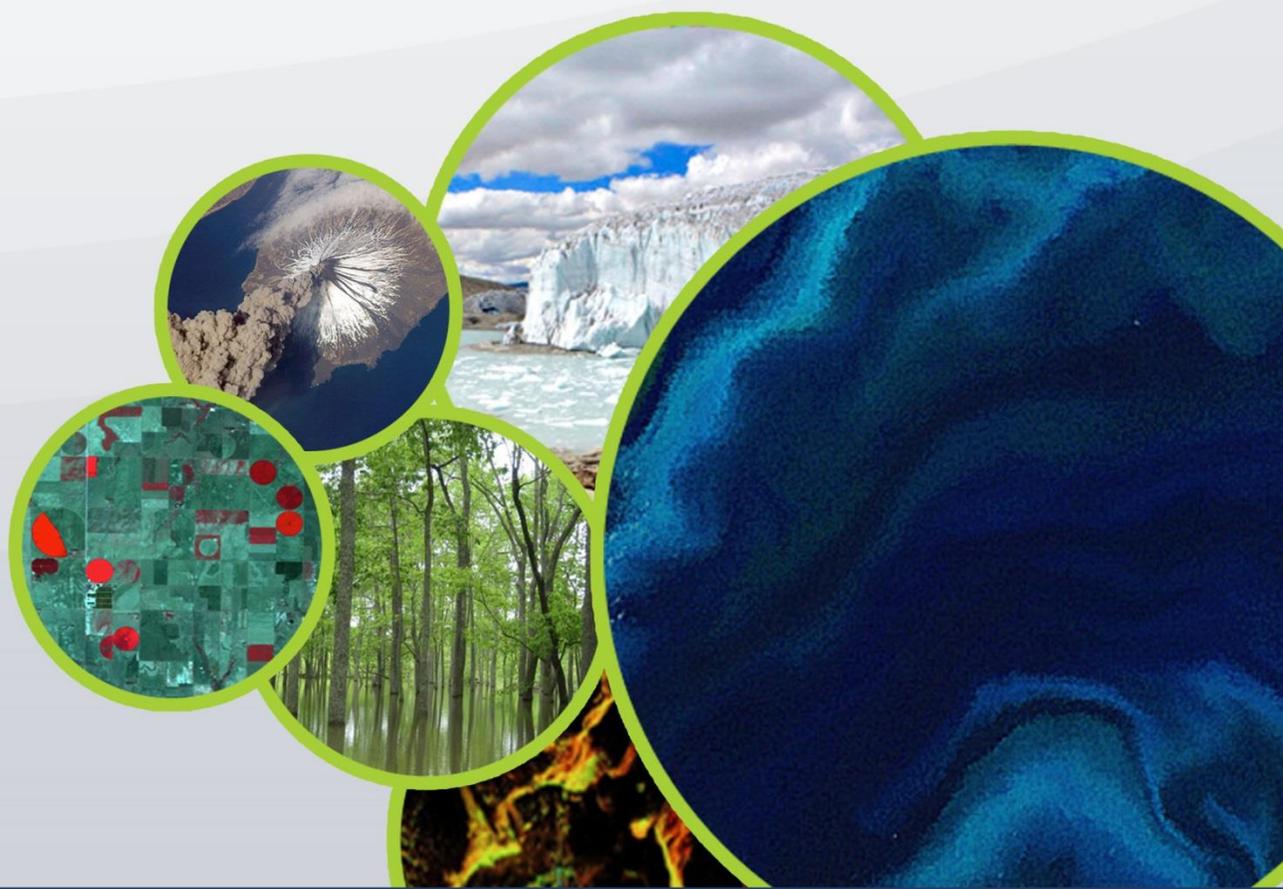




Committee on Earth Observation Satellites



CEOS 2015-2017 Work Plan

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1 Introduction and Overview

The *2015-2017 CEOS Work Plan* has been developed by the CEOS Executive Officer (CEO) under direction of the CEOS Chair (Japan Aerospace Exploration Agency [JAXA]), in consultation with the CEOS Strategic Implementation Team (SIT) Chair (Centre National d'Études Spatiales [CNES]), CEOS Secretariat (SEC), CEOS Working Groups (WG), CEOS Virtual Constellations (VC), CEOS Ad Hoc Teams, CEOS Agencies at large, and CEOS's external stakeholders. The purpose of this document is to set forth near-term objectives and deliverables designed to achieve the goals outlined in the *CEOS Strategic Guidance* document. It includes a description of CEOS activities to be executed in the current calendar year (2015), and summarizes anticipated activities for the subsequent two years (2016-2017). Additional documents contributing information to this plan are located on the CEOS website (<http://ceos.org/>) and include *The Tromsø Statement*, issued at the 28th CEOS Plenary Meeting held in 2014; the *2014-2016 CEOS Work Plan*; the terms of reference for the CEOS Virtual Constellations and Working Groups; and the document *2015 Deliverables in Support of the GEOSS* (Global Earth Observation System of Systems). This Work Plan will be revised annually; however, the priorities and activities outlined herein are expected to remain fairly consistent from year to year. CEOS will revise this Work Plan each year, as current activities are completed, planned activities are executed, and new initiatives are projected.

CEOS Mission Statement:

CEOS ensures international coordination of civil space-based Earth observation programs and promotes exchange of data to optimize societal benefit and inform decision making for securing a prosperous and sustainable future for humankind.

To this end, CEOS's primary objectives are:

- To optimize the benefits of space-based Earth observation through cooperation of CEOS Agencies in mission planning and in the development of compatible data products, formats, services, applications and policies
- To aid both CEOS Agencies and the international user community by, among other things, serving as the focal point for international coordination of space-based Earth observation activities, including the Group on Earth Observations and entities related to global change
- To exchange policy and technical information to encourage complementarity and compatibility among space-based Earth observation systems currently in service or development, and the data received from them, as well as address issues of common interest across the spectrum of Earth observation satellite missions

Achievement of these three objectives requires significant internal, interagency coordination, and external consultation and coordination of outputs to respond to the needs of key stakeholders. These stakeholders consist of national governments, including the Group of Eight (G8) and the Group of 20 (G20), the intergovernmental Group on Earth Observations (GEO), and organizations participating in treaties and global programs affiliated with the United Nations (UN)¹. CEOS works closely with these stakeholders and their constituent organizations to achieve common objectives.

¹ These treaties, international organizations, and international programs include the UN Framework Convention on Climate Change (UNFCCC), the UN Commission on Sustainable Development (UNCSD), the UN Office for Disaster Risk Reduction (UNISDR), the United Nations Convention to Combat Desertification, and the Convention on Biodiversity (CBD), among others.

2 CEOS Priorities

As decided at the 28th CEOS Plenary Meeting in Tromsø, Norway, 2014, CEOS Agencies will continue to enhance their cooperation to respond effectively to Earth observation users' needs by achieving integration across the full range of Earth observations, by closing important observational gaps, and by promoting the sharing of CEOS Agency data, and improving access to and use of such data. CEOS will support more effective societal decision making in the areas of climate monitoring and research; carbon observations, including observations to support the effective monitoring and management of the world's forested regions; water, including observations to support the effective monitoring and management of the world's water resources; food security; disaster risk management; ocean; biodiversity; capacity building; and data availability and access. A key focus will be on promoting the delivery of usable products into the hands of users, and ensuring the value that Earth observation from space data is providing across a range of societal benefit areas is communicated to policy makers, industry and other key stakeholders. Satellite mission coordination will be strengthened, particularly through GEOSS implementation and CEOS Virtual Constellation activities. CEOS Working Groups and Virtual Constellations will expand their technical and scientific coordination to support these priorities, and improve the overall level of complementarity and compatibility of CEOS Agencies' Earth observation and data management systems for societal benefit. CEOS will consider other requests from external stakeholders and determine what, if any, support is possible and appropriate. CEOS will also continue its outreach and communications efforts. As it executes these activities, CEOS will operate in accordance with the guidance provided in the *CEOS Governance and Processes* document regarding the organization's structure, processes, and stakeholder relations.

CEOS's internal and external coordination involve a considerable number of tasks supported by the full range of CEOS participants. This document is intended to provide overall guidance for CEOS on expected outcomes for CEOS and its stakeholders for 2015-2017. For 2015, the plan addresses CEOS initiatives at a general level. Specific details regarding support required to achieve these outcomes will be maintained by the respective responsible CEOS entities (e.g., CEOS Agencies, Working Groups, Virtual Constellations, Ad Hoc Teams), and reported as appropriate via updates to the online CEOS Action Tracking System.

For subsequent years (2016-2017) this document summarizes planned CEOS activities more broadly; details regarding these future activities will be established in forthcoming updates of this document, as the activities near implementation. It is understood that the Virtual Constellations, Working Groups, and Ad Hoc Teams may prepare separate, more detailed Work Plans that complement this overall guiding Work Plan.

3 Expected Outcomes for 2015-2017

The expected outcomes for 2015-2017 reflect the ongoing and emerging priorities of CEOS, as characterized by its internal decision making and external commitments. They are intended to focus on improved Earth observation (EO) systems coordination and enhanced data access for key global programs and initiatives.

The main outcomes are described for the following thematic areas for the period 2015-2017:

- 3.1. Climate Monitoring, Research, and Services
- 3.2. Carbon Observations, Including Forested Regions
- 3.3. Observations for Agriculture
- 3.4. Observations for Disasters
- 3.5. Observations for Water
- 3.6. Capacity Building, Data Access, Availability and Quality
- 3.7. Advancement of the CEOS Virtual Constellations
- 3.8. Support to Other Key Stakeholder Initiatives
- 3.9. Outreach to Key Stakeholders
- 3.10. Organizational Issues

The outcomes for each thematic area are summarized in tables that list the objectives/deliverables, including projected completion dates (indicated by quarter of the calendar year), background information, and responsible CEOS entities.

CEOS operates on a best-efforts basis. Responsible CEOS entities are expected to accomplish the objectives and deliverables identified in this document to the best of their abilities, but there is no formal commitment to achieve the projected completion date.

3.1 Climate Monitoring, Research, and Services

CEOS is committed to monitoring climate from space through the coordinated planning, production, improvement and availability of space-based climate data records on a global scale.

- I. **Coordinate development of Climate Data Records (CDRs) and related datasets addressing Essential Climate Variables (ECVs) established by the Global Climate Observing System (GCOS).**

2015-2017: In 2014, the CEOS/Coordination Group for Meteorological Satellites (CEOS/CGMS) Working Group on Climate (Joint WGClimate) released the first version of an inventory of Essential Climate Variables. The Joint WGClimate will now use this inventory to undertake a gap analysis and will then subsequently develop a coordinated action plan to address the identified gaps and opportunities. Guidelines for ECV assessments of both process and scientific metrics will also be developed to support the gap analysis and subsequent development of the action plan. The ECV assessment guidelines will be applied in collaboration with the CEOS Virtual Constellations.

Once a first version of the gap analysis and action plan have been delivered, the ECV inventory will be further developed with additional records, leading to new versions of the gap analysis and associated action plan to further optimize ECV coverage and depth. This update cycle is anticipated to start in 2016. Linkages will also be put in place between the

ECV inventory and the *GCOS Implementation Plan 2010* reporting. In addition, an effort is underway to collaborate with the in-situ community.

II. Continue cooperation with GEO, GCOS, the World Meteorological Organization (WMO), and the CGMS in the development of a space-based system to support climate change information and adaptation.

2015-2017: CEOS Agencies will continue to cooperate with GEO, GCOS, WMO, and CGMS by implementing Agency actions to achieve the socio-economic benefits described in the *CEOS-CGMS-WMO Strategy Towards an Architecture for Climate Monitoring from Space*, with emphasis on the strategy’s Applications and Decision-Making pillars. CEOS will consider how to address and contribute to the WMO’s Global Framework for Climate Services (GFCS). CEOS will also broaden CEOS/CGMS reporting to the UN Framework Convention on Climate Change (UNFCCC) Subsidiary Body for Scientific and Technological Advice-Research and Systematic Observation (SBSTA-RSO) in collaboration with GCOS. This reporting should include not only CEOS and CGMS support to the GCOS Implementation Plan, but also CEOS contributions to the Global Forest Observations Initiative (GFOI) and *GEO Carbon Strategy*, together with any relevant CGMS-specific contributions.

Completion of the ECV inventory, gap analysis, and action plan will allow CEOS to provide continuous feedback to climate monitoring and research efforts. These actions will allow CEOS to be prepared to respond to the GCOS Adequacy Report/Satellite Supplement (or equivalent), when published by GCOS.

Climate Monitoring, Research, and Services Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CMRS-2: Gap analysis (first version)	Q2 2015	Building on the initial release of the ECV inventory and progress to date, the reference process for the gap analysis will be finalized (including guidelines for ECV assessments), and the necessary tools to support the implementation of this process developed. The gap analysis activities will commence once the reference process for the gap analysis and supporting tools are available.	Joint WGClimate with support from VCs and SEO
CMRS-3: Action plan (first version)	Q3 2015	Once the gap analysis has been completed, a coordinated action plan will be developed to: <ul style="list-style-type: none"> • Create the conditions for delivering further climate data records from existing observational data by targeting processing gaps/shortfalls/opportunities (e.g., cross-calibration, reprocessing) • Optimize the planning of future satellite missions and constellations to expand existing and planned climate data records, in terms of both coverage and record length, and to address gaps with respect to GCOS requirements 	Joint WGClimate with support from VCs

Climate Monitoring, Research, and Services Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CMRS-4: Case studies linking CDRs to societal applications and informed policy decisions	Q1 2015	To provide a connection between the availability of climate data records and the socio-economic benefits that could accrue, particularly from a policy-making perspective, case studies will be performed to characterize the link between the <i>capability to make informed policy decisions</i> and the <i>availability of climate data record information</i> . These case studies will make use of the CEOS-CGMS-WMO climate monitoring architecture and are expected to involve drilling down within the Applications and Decision-making pillars of the architecture. One of the case studies will be in an application area of the Global Framework for Climate Services (GFCS).	Joint WGClimate
CMRS-7: CEOS Response to the GCOS IP and Satellite Supplement for submission (via GCOS) to COP-21	Q2 2015	The draft CEOS response to the GCOS IP and Satellite Supplement will be presented for endorsement at SIT-30 in Spring 2015. Following endorsement, it will be integrated into the GCOS Progress Report in August/September 2015 for submission to COP-21.	Joint WGClimate
CMRS-10 : CEOS-CGMS Report on Progress to SBSTA-43	Q3 2015	The Subsidiary Body on Scientific and Technological Advice – Research and Systematic Observations (SBSTA-RSO) has requested an updated progress report for COP-21/SBSTA-43 to coincide with the end meeting for the current UNFCCC. A document ready for review and approval will be complete by end Q2 2015, for finalization by end September 2015.	Joint WGClimate
CMRS-8: Incorporation of in situ data holdings within the ECV inventory	Q4 2015	To extend the benefits of the infrastructure of the ECV inventory to climate-relevant in situ data holdings, the feasibility of incorporating such information within the scope of the ECV inventory was assessed. Information will be included, but database analysis and follow-up will not be undertaken within CEOS.	Joint WGClimate
CMRS-9: Update of ECV inventory, gap analysis and action plan (Version 2)	Q2 2015 to Q4 2016	Once the first full cycle has been completed (see CMRS-2 to CMRS-3), resulting in Version 1 of the ECV inventory, gap analysis and action plan, a new cycle will be triggered by the availability of an updated ECV inventory, leading to Version 2 of these deliverables. It is noted that the anticipated release of a new climate change treaty may require adaptation of future work plan activities in this area.	Joint WGClimate with support from VCs

Climate Monitoring, Research, and Services Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CMRS-11: Analysis report on implications of new climate change treaty	Q1 2017 to Q4 2018	Any new treaty will likely have implications for the work of WGClimate. The analysis report will consider changes to ECV inventory, gap analysis, and action plan based upon new GCOS Implementation Plan and new UNFCCC treaty. The report will also assess implications for WGClimate for relations with GCOS and UNFCCC, and present recommendations for consideration by Plenary.	Joint WGClimate

3.2 Carbon Observations, Including Forested Regions

- I. **Coordinate space-based observations to support the effective monitoring and management of the world’s forested regions to support any future international climate agreement and support the Space Data Component of the GEO Global Forest Observations Initiative (GFOI).**

2015: Through its Ad Hoc Space Data Coordination Group (SDCG) for GFOI, CEOS is developing and coordinating the implementation of strategies for the provision of satellite observations in support of the development of national forest monitoring and measurement, reporting, and verification (MRV) systems.

In 2015, The SDCG will build on previous activity by continuing to implement the first element of the CEOS Space Data Strategy for GFOI—the *Global Baseline Data Acquisition Strategy for GFOI, endorsed by CEOS in 2013 and updated in 2014*. The SDCG will also continue to work to update the strategy to reflect new data stream availability.

The SDCG will also work to implement the *Space Data Services Strategy for GFOI, endorsed by CEOS in 2014*. Through this strategy, SDCG seeks to provide a coordinated strategy for national data acquisition that will accommodate countries that have specific technical requirements, or heritage and experience with working with a particular EO data source or type. The SDCG will continue to work with several countries to develop pilot data services, with regular reports to be provided.

Finally, in 2015 the SDCG will conclude the development of an acquisition strategy in support of GFOI R&D objectives, to be presented for endorsement.

2016-2017: The SDCG will deliver annual implementation updates to the *Global Baseline Data Acquisition Strategy for GFOI* and the *Space Data Services Strategy for GFOI* at the annual SIT meetings. The SDCG will continue to coordinate expanded coverage of the *Global Baseline Data Acquisition Strategy for GFOI*, culminating in global coverage in the 2016-2017 timeframe.

- II. **Progress implementation of the CEOS Strategy for Carbon Observations from Space**

2015: In 2014, CEOS endorsed the *CEOS Strategy for Carbon Observations from Space* in response to the *GEO Carbon Strategy*. The CEOS strategy addresses the three domains—

atmospheric, oceanic and terrestrial—and their interfaces, and identified a number of recommended actions to be completed by space agencies.

At the 28th CEOS Plenary Meeting, CEOS determined the tasks it will undertake in response to the recommended actions of the *CEOS Strategy for Carbon Observations from Space*, and has allocated these tasks to the relevant CEOS Entities who will, under the guidance of the SIT Chair, implement them through 2015 and beyond. These actions represent a comprehensive response covering:

- Mission coordination and development activities.
- Calibration/validation activities.
- Product development activities.

2016-2017: CEOS will continue to implement the actions determined in response to the recommendations in the *CEOS Strategy for Carbon Observations from Space*.

Carbon Observations, Including Forested Regions Objectives/Deliverables: 2014-2016			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CARB-3: Strategy on supply of data in support of GFOI R&D activities	Q2 2015	At the SDCG-5 meeting in 2014, it was confirmed that a strategy was required for the third element of the <i>CEOS Space Data Strategy for GFOI</i> , and that endorsement should be sought at SIT-30.	SDCG for GFOI
CARB-4: CEOS delivery of coordinated land surface observations for GFOI countries	Q2 2015	CEOS will acquire coordinated land surface observations for GFOI countries in accordance with the endorsed strategies. This activity will also include support for the delivery of a Data Services Pilot Project for Kenya, which is being developed in part with the support of the CEOS SEO; the pilot will test data storage, processing, and archive search/discovery tools.	SDCG for GFOI With SEO
CARB-5: Updated <i>Global Baseline Data Acquisition Strategy for GFOI</i> and <i>Space Data Services Strategy for GFOI</i>	Q1 2016	Element-1 (data acquisition strategy) and Element-2 (data services) will require annual updates to reflect changes in space data assets and national implementation plans. It is expected that GFOI will reach full operational status in 2016-2017.	SDCG for GFOI
CARB-8: Implementation of agreed actions in response to <i>CEOS Strategy for Carbon Observations from Space</i>	Q4 2015 (Short-term actions) Q4 2017 (Mid term actions)	At SIT-29, the Ad-Hoc Carbon Strategy Implementation Study Team was established to determine the most appropriate way to implement the recommended actions of the <i>CEOS Strategy for Carbon Observations from Space</i> , including the identification of tasks and the most appropriate CEOS Entities to take them forward. The results of this study were endorsed at the 28 th CEOS Plenary and are now ready for implementation. Given the cross-cutting nature of the agreed CEOS tasks, the SIT Chair was determined to be the best placed CEOS Entity to oversee implementation.	VCs and WGs (with oversight by SIT Chair)

3.3 Observations for Agriculture

- I. **Develop and implement a data acquisition strategy to provide satellite observations that will facilitate the monitoring of agricultural production in support of the GEO Global Agricultural Monitoring (GEOGLAM) initiative.**

2015: GEOGLAM aims to enhance agricultural production estimates through the use of Earth observations, and to address concerns raised by the G20 Agricultural Ministers about market volatility for the world's major crops. Through the CEOS Ad Hoc Working Group on GEOGLAM, CEOS has developed, and continues to coordinate the implementation of, strategies for the provision of satellite observations to GEOGLAM. The GEOGLAM implementation plan utilizes a phased approach to expand its efforts over a growing list of countries, increase the scope of the program, add datasets, and build capacity toward an operational program in ~2017.

At the 28th CEOS Plenary Meeting, CEOS endorsed an updated *CEOS Acquisition Strategy for GEOGLAM*, describing how CEOS Agencies will coordinate their relevant Earth observing satellite systems to acquire data to support information requirements arising from GEOGLAM. This strategy identifies three different types of data streams (Core, Contributing and Future) and follows a simplified two-phase (Development and Operational) approach. This strategy will guide the work of the CEOS Ad Hoc Working Group on GEOGLAM in 2015.

In addition to its work implementing the endorsed strategy, the CEOS Ad Hoc Working Group on GEOGLAM will continue working with GEOGLAM to define their space data requirements, identify potential CEOS inputs, and track/report on the application of data provided by CEOS agencies. The CEOS Ad Hoc Working Group on GEOGLAM will also continue to monitor updates to the overarching GEOGLAM implementation plan, including Asia rice crop team requirements for SAR, expected in early 2015, and advise the broader CEOS community on appropriate responses.

Through the CEOS Systems Engineering Office (SEO), CEOS will work with GEOGLAM (to deliver two data services prototype projects and investigate common data sharing policies. In addition, the SEO will support the Asia rice crop team to undertake bench mark tests to improve data and information accessibility improvement in the context of the network last mile problem.

2016-2017: GEOGLAM will continue to expand its efforts by increasing the number of supported countries, expanding its use of mission data by utilizing new mission datasets (i.e. optical and radar), continuing development of sampling strategies, and continuing to investigate methods for data management and distribution. The CEOS Ad Hoc Working Group on GEOGLAM will further update the *CEOS Acquisition Strategy for GEOGLAM* to reflect the expansion of effort and changes to data supply arrangements.

- II. **Continue support to the Joint Experiments on Crop Assessment and Monitoring (JECAM) initiative.**

2015-2017: JECAM was initiated in 2009 by the GEO Agriculture Monitoring Community of Practice (CoP) to enhance collaborative international research on agriculture through use of remotely-sensed EO. In 2011, CEOS initiated efforts to supply JECAM users with relevant

remote sensing data through a coordinated Earth observations from space data acquisition program involving CEOS Agencies and commercial data providers. CEOS Agencies will continue data acquisitions for support to JECAM research at selected sites for both Northern Hemisphere and Southern Hemisphere growing seasons. It is expected that these acquisitions will continue at least through the end of 2016, and be described in an annual report. CEOS Agencies will continue to liaise with the JECAM Project Office as it continues its research and development support for the GEOGLAM initiative.

Observations for Agriculture Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
AGRI-2: JECAM Annual Report	Annually Q2	GEOGLAM utilises JECAM to develop and operationalize its monitoring techniques, including sampling approaches; allow countries to build capacity to collect and process Earth observation data from CEOS; and allow time to validate and incorporate results into decision-making processes. An annual report of the JECAM efforts will summarize the results of the project and its relevance to GEOGLAM.	CEOS Ad Hoc Working Group on GEOGLAM
AGRI-4: Acquisition Strategy for GEOGLAM	Annually Q4	<p>The CEOS Acquisition Strategy for GEOGLAM identifies how CEOS Agencies will coordinate their relevant Earth observing satellite systems to acquire data to support information requirements arising from GEOGLAM.</p> <p>Annual updates to this document include the addition of new mission datasets, updates to primary and contributing datasets, updates to sampling approaches, adjustments to the strategy that improve GEOGLAM coverage, and updates to country coverage.</p> <p>In addition, this updated strategy will reflect changes to the <i>GEOGLAM Implementation Plan</i>, and will include an update on progress of new programs and missions with relevance to GEOGLAM.</p> <p>An interim report of the updated strategy will be presented at the annual SIT meeting. The final updated strategy will be presented for endorsement at the annual CEOS Plenary Meeting.</p>	CEOS Ad Hoc Working Group on GEOGLAM

Observations for Agriculture Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
AGRI-5: Data Services Prototypes and Lessons Learnt Report	Q4 2015	<p>Acquisition of observations is a key enabler of the success of GEOGLAM. Implementation of appropriate IT systems to enable that data to be processed and analysed to produce actionable products is also critical, and has historically presented a range of challenges, particularly when the goal is implementation of operational systems.</p> <p>Two prototype projects, one supporting JECAM and the other AsiaRICE, will be implemented to explore different approaches to addressing these challenges. Lessons learned will be reported at the CEOS Plenary Meeting.</p>	SEO
AGRI-6: Common Data Sharing Strategy for JECAM	Q2 2015	<p>Access to restricted (non-open) and open datasets is critical to the success of JECAM, and the support of CEOS Agencies to these projects is greatly appreciated.</p> <p>Work will be undertaken to identify opportunities for streamlining data licensing and data sharing to facilitate JECAM projects.</p> <p>Progress will be reported at SIT-30.</p>	SEO

3.4 Observations for Disasters

CEOS is committed to supporting disaster risk management in the context of the Millennium Development Goals (and forthcoming Sustainable Development Goals) and the post-2015 Hyogo Framework for Action, and enhancing the contribution of space-based Earth observations in support of Disaster Risk Reduction. CEOS representatives will work closely with key stakeholders (e.g. GEO, UN agencies, donor institutions like ADB, World Bank GFDRR, scientific community, national resource management agencies, civil protections, local decision makers and others) to foster the use of satellite EO data. Within this broader goal, CEOS representatives will ensure appropriate recognition of the use of space-based EO within the post-2015 Post-Hyogo Framework for Action (HFA2) (see 3.4, section II). The disaster-related activities described below will serve that goal.

I. Strengthen support to the disaster management community through the sustained coordination of disaster-related activities undertaken by CEOS Agencies.

2015: Thematic Pilots: CEOS Agencies, through the Working Group on Disasters (WGDisasters), will continue to respond to the three Disaster Risk Management (DRM) pilots defined in the 2013 *CEOS Disaster Risk Management Observation Strategy*: floods, seismic hazards, and volcanoes. WGDisasters will also continue development of a proposal to start a fourth pilot on Landslides.

Specific EO requirements have been identified for each pilot, in close cooperation with representatives from the user communities (stakeholders, scientists, civil protection organizations, local authorities, resources management national authorities, etc.). Through WGDIsasters, CEOS Agencies will provide data for other entities to develop new end products and services to better deliver flood-related information (floods), map active faults at global scale (seismic hazards), and operationally monitor active volcanoes for large scale eruptions (volcanoes).

Both the seismic hazard and the volcanoes pilots also have regional and local objectives that are directly related to the ongoing Geohazard Supersites and Natural Laboratories GEO initiative (see 3.4, section III).

Recovery Observatory: CEOS Agencies will also continue implementation of a Disaster Recovery Observatory with the goal of ensuring readiness for a one-time demonstration in the 2015-2016 time period. The main objective of the Recovery Observatory is to provide all types of data (e.g. satellite, airborne, in-situ, model outputs) free of charge to non-profit organisations for reconstruction purposes, over several years. The information system infrastructure that will support the Recovery Observatory will be implemented through a joint WGISS and WGDIsasters activity. An Oversight Team composed of several key stakeholders such as UNDP, World Bank, Red Cross, UNOSAT and UNISDR will assess the various future catastrophes and will decide together on the opportunity to trigger the Recovery Observatory for one of those major events.

WGDIsasters will also survey potential institutional donors to study the possibility of supporting catastrophes subsequent to the one catastrophic event which CEOS is currently planning to support, and the sustainability of the activities for 2016 onwards (e.g., operational hazard monitoring systems).

2016-2017: CEOS will continue the DRM Pilot and Disaster Recovery Observatory activities until completion of the activities in 2016, producing concrete outcomes with advertised feedback from users collected continuously to better support space agencies' requests to play an improved and critical role in DRM. Some of the activities to be conducted during this period will be related to capacity building, and will be undertaken in collaboration with WGCapD. In 2016, WGDIsasters will prepare a report describing follow-on actions for 2017 and beyond, for consideration by CEOS Plenary.

II. Ensure that the importance of Earth observations from space is emphasized at the UN 2015 World Conference on Disaster Risk Reduction and in the post-2015 Framework for Actions (HFA2).

2015: CEOS will also actively participate in the 3rd UN World Conference on Disaster Risk Reduction (WCDRR – 14-18 March, Sendai, Japan) and will closely cooperate with major stakeholders such as the UN Office for Disaster Risk Reduction (UNISDR) and Japanese officials involved in the preparation of the 2015 WCDRR. CEOS, through WGDIsasters, will then consider what follow-up actions should be taken to ensure effective CEOS support for the post-2015 Framework for Action to be endorsed at WCDRR.

2016-2017: CEOS Agencies, coordinated through the WGDisasters, will work with the DRR communities and major stakeholders to explore how they can prepare and implement a plan of action to address priorities indicated in the HFA2, targeted at the most important needs of the user communities and in line with the HFA2 priorities that are relevant for the EO satellite community.

III. Continue support to the GEO Geohazards Supersites and Natural Laboratories Initiative.

2015: The GEO Geohazards Supersites and Natural Laboratories (GSNL) Initiative aims to improve our knowledge of geophysical processes posing geohazards, with an initial focus on earthquakes and volcanoes. The effort is led by a global partnership of scientists and satellite and in situ data providers (multi-sensor interferometric synthetic aperture radar [InSAR], seismic, Global Positioning System [GPS], etc.) and is compiling comprehensive data sets for a few selected sites of high priority intended to be used in research to support increased understanding of the hazards.

In 2013 and 2014, CEOS officially endorsed Hawaii, Iceland, Turkey (Marmara Sea/North Anatolian Fault Zone), Italy (Mt. Etna Volcano and Mt. Vesuvius/Campi Flegreii), New Zealand and Ecuador (Cotopaxi, Tungurahua volcanoes) to receive coordinated space-based EO data acquisitions. A key priority for 2015 will be ensuring the data needs for these Permanent supersites are met. The Data Coordination Team will continue to assess incoming requests from the scientific community to increase the number of both permanent and event Supersites and, in case of positive assessment, will provide the related satellite data to the Supersites scientific teams.

A draft proposal concerning the establishment of a Natural Laboratory in South-East Asia has been received by CEOS. Following consolidation of the proposal by the scientific community, WGDisasters will engage with CEOS Agencies to determine whether this proposal can feasibly be supported.

The WGDisasters will continue to operate and develop the Data Coordination Team, which supports other activities, including the GSNL, by providing a single point of contact through which to request and access data from space agencies.

2016-2017: In complement to—or as part of—the current CEOS DRM Pilots related to the GSNL initiative, CEOS Agencies will also regularly monitor the use of space data by scientific community involved in GSNL and will assess the potential extension of the number of sites supported by CEOS Agencies. Event Supersites, which are agreed and supported for a limited time immediately following a major disaster, will be considered and supported as approved during this time frame.

IV. Continue management and coordination of GEO Disaster Task and Components

Since the inception of GEO, CEOS has been leading (or co-leading) several GEO Disaster Tasks and Components as identified in the various GEO Work Plan. It will be the case again in 2015, for the last year of the current GEO era (2005-2015).

2015: CEOS will ensure the role of GEO Disaster Task DI-01 is fulfilled and will continue to provide leadership to the DI-01-C3 component on “Regional End-to-End Systems” and DI-

01-C5 “Foster utilization of Earth observation remote sensing data for all phases of Disaster Risk Management.

2016-2017: At this stage, it is not possible to identify any management role related to Disasters as the GEO Work Plan for that period might be significantly changed with respect to previous versions, after the 2015 GEO Ministerial.

Observations for Disasters Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
DIS-4: 15-Year Plan (2015-2030) addressing top priority arising in the post-2015 Framework for Action (HFA2)	Q4 2016	<p>Develop a long-term CEOS plan (2015-2030) to address top priority HFA2 needs. The plan will be prepared in close cooperation with the major stakeholders involved in DRR including donor agencies, and with key representatives of the DRR user community.</p> <p>An outline of the plan will be presented for consideration at SIT-31, with a final version submitted for endorsement at the 30th CEOS Plenary Meeting.</p> <p>For Sendai, CEOS and a group of key international stakeholders will issue a White Paper on "Earth Observation and Space-based applications contribution to Disaster Risk Reduction", describing the most urgent needs in disaster risk management with the resources available.</p>	WGDisasters

Observations for Disasters Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
DIS-7: Implementation of Endorsed Strategy for participation in the 2015 WCDRR	Q1 2015	<p>The 3rd UN World Conference on Disaster Risk Reduction (WCDRR) will establish the future international framework for disaster risk reduction, following from the Hyogo Framework for Action.</p> <p>For Sendai, CEOS and a group of key international stakeholders will establish a partnership to prepare a White Paper on "Earth Observation and Space-based applications contribution to Disaster Risk Reduction" (see DIS-4).</p> <p>CEOS will have a significant presence at the meeting, with the intention of ensuring the key role that Earth observations from space play in the DRR cycle is recognized. This presence will include a Working Session prepared jointly with other partners including several UN Agencies and an exhibition.</p> <p>CEOS will also develop and distribute a special edition of the CEOS EO Handbook that provides a decision maker-friendly explanation of the value of satellite EO to DRR. Currently 2300 copies are foreseen to be distributed ahead of the conference (to 300 key DRM actors) and 2000 during the Sendai conference.</p> <p>A report on participation and stakeholder feedback received will be presented at SIT-30.</p>	WGDisasters
DIS-9: Readiness of Recovery Observatory for Activation	Q1 2015	Development work on the Recovery Observatory will be progressed to the point where the IT system, processes and procedures are in 'cold storage' ready for activation at the appropriate time.	WGDisasters in collaboration with WGISS

Observations for Disasters Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
DIS-10: Implementation of Data Acquisition Plan in support to DRM pilots, data coordination for GNSL supersites	Q4 2015	<p>A strategic data acquisition plan in response to the floods, seismic hazards, and volcanoes pilots' EO requirements was endorsed at SIT-29. Implementation of this plan will support the progress of the pilots. Data acquisition to support the GNSL will also be progressed.</p> <p>Potential proposals for new GSNL activities (i.e. new Permanent & Event Supersites) aiming at expanding the objectives of the current pilots will be assessed by the Data Coordination Team and the various pilot teams in due time. The assessment will be done following the procedures endorsed by CEOS.</p> <p>The status of implementation of the plan, and of the pilots and supersites being supported, will be reported at SIT-30 and at the 29th CEOS Plenary Meeting.</p>	WGDisasters
DIS-11: Proposal for a landslides DRM pilot	Q4 2015	<p>Some interest has emerged in expanding the suite of DRM pilots to include landslides, with potential synergies with the existing Seismic Hazards pilot identified by stakeholders and CEOS Agencies. The proposal will be consolidated internally. If enough Space Agencies are interested to support this new pilot, then WGDisasters will prepare a submission, for consideration by CEOS Plenary, about this issue.</p> <p>The proposal will consider the ability of CEOS Agencies to participate, and address the need to ensure focus and maximize use of CEOS Agency resources.</p>	WGDisasters
DIS-12: Report on survey of donors for post-2016 operation of a Recovery Observatory	Q4 2015	<p>WGDisasters will develop a survey of potential institutional donors to study the possible inclusion of additional hazards and the sustainability of Recovery Observatory activities for 2016 onwards.</p> <p>The findings of this survey will be presented in a lessons learnt report to the 29th CEOS Plenary Meeting to enable timely consideration by CEOS Agencies.</p>	WGDisasters

Observations for Disasters Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
DIS-13: Report on follow-on actions to DRM Pilots	Q4 2016	<p>The DRM Pilots are expected to provide important insights into where, and how, Earth observations from space can support the Disaster Risk Reduction community. A report will be prepared to summarise the learnings from these pilots, and to recommend pathways forward. In particular the report will focus on the elements necessary to the sustainability of operational solutions beyond 2017.</p> <p>The report will be complementary to the 15-Year Plan to be developed as CEOS’ response to the post-2015 Framework for Action, and will be presented concurrently at the 30th CEOS Plenary Meeting.</p>	WGDisasters
DIS-14: Ensure the proper coordination of the GEO Disaster Task and of the C3 and C5 components.	Q4 2015	<p>CEOS will ensure the role of GEO Disaster Task DI-01 is fulfilled and will continue to provide leadership to the DI-01-C3 component on “Regional End-to-End Systems” and DI-01-C5 “Foster utilization of Earth observation remote sensing data for all phases of Disaster Risk Management”.</p> <p>In that roles, the persons identified will have in particular to closely monitor the progress of the Task and two Components and regularly report on the status of the related activities to the GEO community at the milestones specified by the GEO Secretariat.</p>	NOAA, ESA, NASA

3.5 Observations for Water

I. Provide integrated CEOS input to the GEO Water Implementation Plan

2015: Planning and coordination of space agency support to global initiatives for monitoring of water resources will be a key focus over coming years. The GEOSS Water Strategy, which was released in January 2014, provides guidance for the development of observational water programs for the period 2015-2025. It was adopted as a relevant guiding document for CEOS planning at the 28th CEOS Plenary Meeting, and its recommendations cover:

- Enhancing User Engagement.
- Expanding data acquisition strategies.
- Advancing satellite data acquisition.
- Strengthening in-situ data acquisition.
- Encouraging and conducting research and product development.

- Facilitating data sharing and common standards.

The GEOSS Water Strategy includes a number of recommendations that deal with Earth observation satellites and related data and activities. An Implementation Plan for this strategy is being developed and in 2015 CEOS will develop an integrated set of input to this process outlining how CEOS it can contribute to implementation of the GEOSS Water Strategy.

2016-17: Pending GEO endorsement of the GEOSS Water Implementation Plan, CEOS will work to implement the agreed actions and will report progress accordingly.

Observations for Water Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
WAT-1: Development of a CEOS response to the <i>GEOSS Water Strategy</i> .	Q4 2015	<p>The <i>GEOSS Water Strategy</i> includes a number of recommendations that deal with satellites. In 2015, CEOS will assess the feasibility of CEOS Agencies to contribute to the development of the <i>GEOSS Water Implementation Plan</i>, and to define the potential CEOS contribution to the implementation of the <i>GEOSS Water Strategy</i>.</p> <p>The establishment of an ad-hoc Initial Study Team to progress this work was agreed at the 28th CEOS Plenary Meeting, with an initial report to be provided at SIT-30.</p>	Ad-Hoc Water Strategy Implementation Study Team

3.6 Capacity Building, Data Access, Availability and Quality

I. Advance CEOS Data Democracy activities.

2015: The Working Group for Capacity Building and Data Democracy (WGCapD) will build upon the CEOS Data Democracy Initiative in an effort to increase the capacity of institutions in less developed countries so they may use EO data to achieve sustainable development. Support for GEO capacity building activities will be an important focus.

A key focus for 2014 will be continuing the Digital Elevation Model (DEM) workshops, capitalizing in particular on the significant decision by the United States Government to make the Shuttle Radar Topography Mission data more widely available.

Other key actions will include (1) providing practical EO education for students and teachers; (2) organizing e-learning courses on remote sensing technologies for university educators in developing countries; (3) populating the Capacity Building Portal (www.geocab.org), hosted by the Earth Observation for Economic Empowerment (EOPOWER) project, and increasing the awareness of the Capacity Building Inventory; (4) planning the implementation of the TerraSAR-X add-on for Digital Elevation Measurement (TanDEM-X) Edu Project, that aims at increasing awareness of TanDEM-X data among university students participating in scientific projects for disaster management and hydrological modeling (the synthetic aperture radar [SAR] data shall be available in 2015); and (5) supporting the CEOS DRM Pilots as the liaison for capacity building activities. A key

emphasis will be in restructuring activities in response to stakeholder and participant feedback.

A key focus area for 2015 will include expanding outreach through the WGCapD newsletter and mailing list, and development of webinars in collaboration with other CEOS Entities.

2016-2017: Continue updating and improving the Capacity Building Portal, provision of workshops, development of webinars, e-learning courses and other materials, and support other CEOS entities.

II. Continue to support the development and operationalization of the GEOSS Common Infrastructure (GCI) and its CEOS-related elements.

2015: Through the Working Group on Information Systems and Services (WGISS), CEOS Agencies will foster the implementation and enhancement of the GCI through continued development and coordination of tools that improve discovery, interoperability, and access to satellite data. Such tools include the CEOS WGISS Integrated Catalogue (CWIC), the International Directory Network (IDN), the Heterogeneous Missions Accessibility (HMA), and the Federated Earth Observation (FedEO) protocol-based system.

WGISS will also support adoption of the *CEOS OpenSearch Best Practices* document with the aim of connecting as many CEOS Agencies as possible into the federated system. WGISS will also work with the SEO to explore opportunities to integrate systems such as COVE, HMA, IDN and the EO Handbook database to streamline data management processes and improve consistency.

In 2015, WGISS will build on its success in tackling accessibility of metadata and leverage its exploratory research into the challenges of dealing with ‘big data’ to focus on architectures for promoting accessibility of the underpinning data itself. WGISS will work with the SEO, leveraging off planned pilot projects for GFOI and GEOGLAM to explore issues around space data distribution, management and processing more generally. WGISS will make recommendations to SEO by the 29th CEOS Plenary Meeting on options for how activities that target an operational state, such as GFOI and GEOGLAM, may be sustainably supported by CEOS and CEOS Agencies in the future.

WGISS will also continue its core activity of promoting and exchanging technical information and lessons-learned experience about current and trending data system technologies/services impacting CEOS Agencies, with the aim of preparing CEOS and CEOS Agencies for the future.

2016-2017: WGISS will support data access for the CEOS Virtual Constellations, Working Groups, and GCI through the use of the CEOS OpenSearch protocol, which will make CWIC and FedEO accessible from external clients such as the GCI. WGISS will also ensure that the IDN will be used as a dataset registration system for CEOS Agencies.

III. Coordinate the development of suitable methodologies for the on-ground characterization of satellite-based EO sensors, the calibration of EO missions, and the validation of satellite-based Level 1 and Level 2 products.

2015-2017: The Working Group on Calibration and Validation (WGCV) will continuously carry out contributions to the calibration of satellite-based sensors and the validation of satellite-based Earth observation data products. The results of this work are the building blocks for the other VCs and WGs in terms of calibration and validation. For these broad applications, different tasks are focused in several sub-groups dealing with specific areas of interest. Three sub-groups serve, in particular, the calibration of sensors and their link to international acknowledged standards. Another three sub-groups are related to topical subjects concerning validation of data products.

WGCV will continuously maintain the CEOS Cal/Val portal, including the activities of its sub-groups. The Cal/Val portal will provide users with information about achievements in calibration and validation and the Cal/Val supersites.

IV. Continue the cooperation with other CEOS elements in supporting the generation of well-calibrated and validated data records.

2015-2017: The Working Group on Calibration and Validation (WGCV) will continue to intensify and structure its original goals to align with the needs of new challenges arising within CEOS. With the implementation of Joint WGClimat, the CEOS response to the *GEO Carbon Strategy*, and the further implementation of Virtual Constellations, there is a high demand for WGCV support, specifically oriented to the needs of those groups. To serve these needs, the WGCV will continue to implement a customer-oriented approach based on the current organizational structure by offering WGCV capabilities internally to those CEOS entities. As a first step WGCV will summarize its current capabilities in a gap analysis, subsequently followed by the identification of opportunities for cooperation on a working level with the other CEOS Working Groups and Virtual Constellations. Once those opportunities are systematically summarized, cooperation can be concretely intensified and specific measures aligning with the needs and goals of the Virtual Constellations and Working Groups identified.

V. Continue cooperation with GEO, Global Space-based Inter-calibration System (GSICS), and WMO and ground-based networks in the provision of high quality EO data products.

2015-2017: WGCV will continue its work with the GEO Secretariat, including work on the GEO Tasks, mainly by extension of its leadership in Quality Assurance for Earth Observations (QA4EO) to encourage widespread adoption of QA4EO Principles within future and, where possible, current CEOS activities. WGCV will extend the showcase repository to address science and data product provider community needs, ideally by covering Level 1 Atmosphere, Terrestrial, and Ocean “compartments.” The development of calibration infrastructure and comparison campaigns within the frame of WGCV will also be used to follow and promote QA4EO Principles and best practices.

WGCV will strengthen its cooperation with GSICS in the topic of sensor calibration. WGCV will first summarize its current capabilities, and then identify opportunities for cooperation. Once those opportunities are identified, a working-level framework will be established to coordinate the relevant activities with GSICS.

WGCV will also strengthen its cooperation with WMO and ground-based networks in terms of broadening the base for calibration and validation. Cooperation with representatives of networks will be deepened, especially with dedicated presence during WGCV meetings.

VI. Maintain the Missions, Instruments and Measurements (MIM) database as a key tool to enhance understanding of Earth observations from space missions and data.

2015-2017: The CEOS Database (a.k.a., the Missions, Instruments and Measurements, or MIM) is the only official consolidated statement of CEOS Agency programs and plans. Each year, the database will be updated based on survey inputs provided by all CEOS Agencies to reflect the current status of CEOS Agency missions and instruments. The European Space Agency (ESA) and the SEO have developed a number of analysis and visualization tools to apply this information in support of gap assessments, and the database is used by the SEO as the basis for missions, instruments and measurements references in the ECV Inventory.

Together, these resources represent the cornerstone of CEOS’s capability to undertake informed coordination decisions. CEOS will continue development of these resources each year, with a particular focus on engaging them for ECV development and observational gap analyses. New enhancements for advanced search capabilities will be added, as well as links to other CEOS resources (e.g., CEOS Visualization Environment [COVE], CWIC, IDN) or to external information systems, such as WMO’s Observing Systems Capability Analysis and Review Tool (OSCAR) and the Global Change Information System (GCIS, <http://data.globalchange.gov/lexicon/ceos>).

In 2015, the ESA CEOS Database team will continue work on the development and promotion of new tools for the community to discover and browse the information contained in the MIM, and discover and browse ECV record metadata contained in the ECV Inventory. This effort will be conducted in coordination with the SEO, WGClimate, and other interested members of the CEOS community. In this way, the CEOS database team is a user of the ECV Inventory, which will continue to be hosted, maintained, curated, and developed by WGClimate, in partnership with the SEO.

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CB-1: Digital Elevation Model (DEM) workshops	Q4 2015	Pursuit of Shuttle Radar Topography Mission (SRTM) 30m data, including a proposed workshop in Nepal.	WGCapD
CB-2: Provide practical EO education for students and teachers	Q4 2016	WGCapD members will target major Earth observation and other relevant conferences and workshops and provide training sessions for students and teachers. This effort will also include demonstrations of the value of Earth observation.	WGCapD
CB-3: E-learning courses on remote sensing technologies	Q4 2016	Organize e-learning courses for university educators in developing countries; follow-up to initial e-learning pilot for select African countries in 2013.	WGCapD

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CB-4: Capacity Building Portal	Q2 2015	Populate the Capacity Building Portal, hosted by the Earth Observation for Economic Empowerment (EOPOWER) project; portal aims at increasing the awareness of the Capacity Building Inventory across CEOS and GEO. See GEONetCab site at http://www.geonetcab.eu/).	WGCapD
CB-5: Implement the TanDEM-X Edu Project	Q3 2016	Plan for the implementation of the TanDEM-X EduProject, which aims at increasing awareness of TanDEM-X data among university students participating in scientific projects for disaster management and hydrological modeling (dependent on SAR data being made available in 2015). A status report on planning will be provided at SIT-30.	WGCapD
CB-6: Capacity building for DRM	Q4 2016	WGCapD will designate a representative for each of the three CEOS DRM pilots to determine how to best support WGDisasters with its capacity building activities.	WGCapD with support from WGDisasters
CB-7: Release of newsletters and mail-outs	Q4 2015	WGCapD will significantly increase its communication through key channels such as its newsletter and mailing list, including promotion of appropriate material and activity of other CEOS Entities.	WGCapD
CB-8: Strategy for Digital Elevation Model (DEM) workshops	Q4 2015	The announcement that SRTM Data will be made more globally available by the United States Government is a major step forward for use of Earth observations from space, making it easier to provide tools and materials to enable end-users to engage with DEM data. WGCapD will develop an overarching strategy for capacity building workshops around this significant dataset. The strategy will be prepared for consideration by the 29 th CEOS Plenary Meeting.	WGCapD
CB-9: Development and release of webinars	Q4 2015	A series of webinars will be developed, drawing on presentations and materials already under development by other CEOS Entities. These webinars will be made easily available through the CEOS website, with the intent of sharing information with a broader audience.	WGCapD
CB-10: CEOS Database update survey and release of online version	Survey Q2 annually, release Q4 annually	CEOS Agencies to provide resources to support their responses to the update survey issued in the April-May timeframe; release of the updated CEOS Database will be online prior to the annual CEOS Plenary Meeting.	ESA, with support from SEO and CEOS Agencies

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CB-11: Provision of ECV Inventory Tools	Q4 2015 (dependent on CMRS-3 and release of ECV Inventory)	Release of tools to support the discovery and browsing of ECV datasets recorded in the ECV Inventory.	ESA, with support from SEO, Joint WGClimate, and other CEOS Agencies
DATA-2: Full representation of CEOS Agency datasets in the IDN and accessible via CWIC/OpenSearch	Q4 2015	As the IDN contains OpenSearch endpoints for data access and is also the link with GCI, it is essential that all CEOS Agencies keep information on the data up-to-date in the IDN.	WGISS
DATA-3: Assessment of Technical Architectures for Supporting Operational Programs	Q4 2015	<p>CEOS has made considerable progress in coordinating data acquisition to support important stakeholder initiatives, a number of which have a goal of becoming operational over the coming years.</p> <p>The challenges of routinely processing and analyzing full archives of data to produce operational products are very different to those of producing one-off example products. Traditional ‘clip and ship’ approaches are proving not to work. This presents a significant ‘big data’ challenge for both the user communities and the space agencies who wish to support them, but whose programs must also be sustainable.</p> <p>In response to this strategic challenge, WGISS will propose recommendations to SEO for exploring options for how international activities that target an operational state, such as GFOI and GEOGLAM, may be sustainably supported by CEOS and CEOS Agencies into the future. A number of pilot projects are underway that will provide important learnings. These recommendations will be a key input into broader discussions on governance, finance and management.</p>	WGISS In collaboration with SEO
DATA-4: Development of the Recovery Observatory Infrastructure	End Q2 2015	In cooperation with WG Disasters, WGISS will develop and make available the Recovery Observatory infrastructure (see Section 3.5 for details). Version 2 will be available end in Q1 2015 and Version 3 (final) will be available end of Q2 2015.	WGISS (with WGDisasters)
DATA-5: CEOS Data Stewardship Best Practices Guideline documents	Q4 2015	Two documents dedicated to CEOS best practices in the domain of Data Stewardship will be issued by WGISS : <ul style="list-style-type: none"> - <i>Persistent Identifier Best Practice</i> document - <i>EO Data Preservation Workflow</i> document 	WGISS

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
DATA-6: Linking WGs and VCs to Information Systems and Services Resources	Q4 2015	In order to provide a support to the CEOS Working Groups and Virtual Constellations, but also to SEO, WGISS will develop a web page containing a list of best practice documents and opensource software. These will be material directly usable by VCs and WGs for their work related to Information Systems and Services.	WGISS
CV-1: Cal/Val portal WGCV update	Q4 2015	Subsequent inclusion or linkage of sub-group websites with the CEOS Cal/Val portal, including an update of sub-group websites. Cal/Val portal will then serve as the WGCV entry point, where all recent achievements shall be included.	WGCV
CV-2: Website for SAR calibration sites and targets	Q3 2015	Establish and maintain a website for SAR calibration sites including both natural and man-made targets. Characterize natural targets in different frequency bands.	WGCV
CV-3: Workshop on state of the art for pre-flight calibration techniques	Q1 2016	Hold an open-invitation workshop to discuss and promote best practices on pre-flight and onboard calibration of sensors, initially focusing on optical.	WGCV
CV-4: WGCV self-analysis for capabilities to serve VC and WGs needs	Q4 2016	WGCV will analyze its capabilities, given the new demands of the VCs and WGs. Based on the analysis, WGCV will tailor its specific opportunities on the working level and communicate the results in a report.	WGCV
CV-5: GSICS cooperation	Q4 2014 to Q4 2016	Cooperation with GSICS in specific domains of sensor calibration, especially sensor inter-calibration. This work includes the analysis of opportunities for cooperation with GSICS, including identification of concrete topical fields. Based on that internal analysis a cooperative arrangement with GSICS shall be implemented. This arrangement will be communicated to the CEOS Plenary for approval, and will be described in the WGCV Work Plan.	WGCV
CV-6: Inter-calibration of ground-based networks	Q4 2016	Inter-calibration of air quality ground-based networks in cooperation with WMO/Global Atmosphere Watch (GAW) and Network for the Detection of Atmospheric Composition Change (NDACC), supporting the validation of atmospheric sensor data products.	WGCV
CV-7: Coordinated set-up of ground-based networks in supporting validation of air quality products	Q4 2016	Planning and characterization of air quality ground-based network in cooperation with NDACC, AERONET/PHOTONS (AERosol RObotic NETwork/PHOTométrie pour le Traitement Opérationnel de Normalisation Satellitaire).	WGCV with support from AC-VC

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
CV-8: Sea Surface Temperature (SST) & Land Surface Temperature (LST) Comparison Campaign Plan	Q4 2016	Set up a multi-agency comparison project to ensure international consistency in post-launch Cal/Val of satellite-derived Earth surface temperatures for climate data records. This effort includes (a) implementation of a laboratory campaign for radiometers and black bodies, and (b) initiation of ocean-based SST and land-based LST comparison campaigns, both supported by a White Paper which includes the plan for the project and costing.	WGCV with support from SST-VC
CV-9: Radiometric Calibration Network (RADCALNET)	Q1 2015 to Q4 2016	Establish an automated network via a multi-agency project, including coordination infrastructure, and land-based test-sites for post-launch traceable calibration of sensor radiometric gain, initially for <50 m resolution sensors. Progress will follow the developed project plan.	WGCV
CV-10: Potential and fitness checks for TanDEM-X DEM products	Q1 2015 to Q4 2016	The proof of the TanDEM-X DEM products is essential for many applications within CEOS and includes (a) an analysis of intermediate TanDEM-X products with respect to accuracy, completeness, and quality for CEOS test sites in Europe, demonstrating its potential in the United Kingdom (UK) for the improvement of very high resolution landslip mapping; (b) a follow-up study for final TanDEM-X DEM products over nine globally spread CEOS test sites and test areas over the UK; and (c) a “Fitness for Purpose” of TanDEM-X products assessment for geo-radiometric correction of high resolution optical imagery (Sentinel-2) and of SAR data from Sentinel-1.	WGCV
CV-11: Validation of terrestrial ECV products	Q1 2015 – Q4 2016	The validation of terrestrial ECV products is in line with activities carried out in WGCV-Land Product Validation (LPV). The validation of ECVs covered within WGCV-LPV shall be strengthened. This includes (a) an update of validation stage, (b) ECV-specific synthesis of a state-of-the-art validation approach for each terrestrial variable with corresponding references and protocols, (c) ECV-specific identification of a golden standard for validation, and (d) continuation of development of ECV-specific validation protocols, including a community review process and updates. Results of each step will be made public via the WGCV-LPV website and finally the Cal/Val portal.	WGCV
CV-12: Evaluation of validation supersites and new validation approaches	Q2 2015	Evaluation of well-characterized supersites with data continuity prospects for validation purposes that allow for testing of products, algorithms, and validation strategies through radiative transfer modeling.	WGCV

3.7 Advancement of the CEOS Virtual Constellations

I. Characterize the Virtual Constellations in the context of both the development of the space segment for GEOSS and of the multitude of outcomes and deliverables that CEOS seeks to provide for GEO and other users and frameworks.

2015-2017: Ensure that the Virtual Constellations (VCs)—Atmospheric Composition (AC-VC), Land Surface Imaging (LSI-VC), Ocean Colour Radiometry (OCR-VC), Ocean Surface Topography (OST-VC), Ocean Surface Vector Wind (OSVW-VC), Precipitation (P-VC), Sea Surface Temperature (SST-VC)—are accomplishing the outcomes and deliverables associated with the activities documented in the *CEOS Virtual Constellations Process Paper* and their respective terms of reference.

Advancement of the CEOS Virtual Constellations: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
VC-1: List of Relevant Datasets from VCs	Q4 2015	Each VC will provide WGISS with a list of relevant datasets that its respective constellation members desire to access. WGISS will work with CEOS data providers to ensure search and accessibility (when possible) of these datasets are available so as to ensure coverage of all datasets required by VCs.	VCs with support from WGISS
VC-2: Total ozone dataset validation and harmonization	Q4 2015	Total ozone measurements from multiple sensors are being considered by AC-VC. The separate long-term American and European total ozone data sets (with clear error characterization) are already proving valuable to the user community. An effort to combine European/American datasets is in progress, with the goal to produce a long-term ozone data set for the atmospheric modeling community. There is a need to develop common validation protocols and extend the process to other ozone datasets (e.g., Chinese FY3 observations). Discussions are scheduled for ACC-11 meeting scheduled for April 2015.	AC-VC
VC-3: Share geostationary air quality mission pre-launch calibration plans, instrument characterization/calibration databases, and Level 1-b data in a common format to allow application of common algorithms to all datasets	Q2 2015	Three geostationary instruments to monitor air quality are scheduled to fly late in this decade: Sentinel 4, Tropospheric Emissions: Monitoring of Pollution (TEMPO), and Geostationary Environment Monitoring Spectrometer (GEMS). Community efforts are exploiting synergies among the instruments to enhance their value for science and decision support by developing common calibration and validation techniques and developing standard constellation products based on the community-developed white paper http://ceos.org/images/ACC/AC_Geo_Position_Paper_v4.pdf , which was endorsed at SIT-26.	AC-VC

Advancement of the CEOS Virtual Constellations: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
VC-5: Coordination of algorithm development and calibration/validation support for the greenhouse gas constellation	Q2 2015	Multiple instruments to measure atmospheric greenhouse gases are planned or under development in addition to the Greenhouse gases Observing SATellite (GOSAT) in the coming years. To enhance the value of these measurements, the AC-VC is coordinating algorithm development, calibration/validation support, and other activities consistent with the actions recommended in the <i>CEOS Strategy For Carbon Observations from Space</i> .	AC-VC
VC-6: Vision and plan for an essential OCR-Virtual Constellation space segment (Polar and GEO)	Q4 2016	The objective is a plan to meet goals identified in the OCR-VC terms of reference. Data continuity needs to be assured, including data quality assessments and comparisons of existing and upcoming (as well as previous) sensors and mitigation of launch delays, maintenance of critical cal/val and quality assurance activities, general implementation of minimum ocean color mission requirements, and new and improved products. Key gaps will still exist, e.g., lack of next generation R&D missions to expand observing capabilities and scientific knowledge, likewise additional geostationary ocean color platforms.	OCR-VC
VC-7: Catalog of Cal/Val infrastructure and activities	Q2 2015	This effort will help in identifying risks and needs for advancement and will promote calibration efforts by CEOS Agencies.	OCR-VC
VC-8: Action Plan for GEO Blue Planet Components	Q4 2015	The OCR-VC, in accordance with OCR-VC Terms of Reference, will support the implementation of the GEO Blue Planet Task and will develop an action plan for GEO Blue Planet Components delivered.	OCR-VC
VC-9: Implementation of the International Network for Sensor InTercomparison and Uncertainty Assessment for Ocean Colour Radiometry (INSITU-OCR)	Q1 2015	Implementation of the International Network for Sensor InTercomparison and Uncertainty Assessment for Ocean Colour Radiometry (INSITU-OCR), including recommendations of the INSITU-OCR White Paper (www.ioccg.org/groups/INSITU-OCR_White-Paper.pdf) and establishment of the INSITU-OCR office.	OCR-VC
VC-10: Recommend the creation of a GEO Water Quality Community of Practice	Q2 2015	An emerging thrust for the OCR-VC is in the area of remote sensing of coastal and inland water quality. A related International Ocean Colour Coordinating Group (IOCCG) Working Group (Earth Observations in Support of Global Water Quality Monitoring) has recently been established. The OCR-VC recommends the creation of a GEO Water Quality Community of Practice, which would significantly expand upon the IOCCG working group and bring together data providers and users to significantly advance the utilization of satellite observations in support of water quality monitoring in both developed and developing nations.	OCR-VC

Advancement of the CEOS Virtual Constellations: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
VC-11: Updated OST CEOS Constellation User Requirements Document (URD)	Q3 2015	Update will encompass SAR Mode Altimetry.	OST-VC
VC-12: Catalog of Cal/Val infrastructure	Q2 2015	This catalog will help with Cal/Val planning and promote agency coordination. A major interest of the OST-VC is the sustainability of critical Cal/Val elements.	OST-VC
VC-13: Reprocessing strategy for TOPEX/Jason-1 missions	Q4 2017	TOPEX/Poseidon mission ended in 2006, after 13 years of operation. Although updated products have been generated to align with current standards, a full reprocessing has been long in feasibility study. The Jason-1 mission ended operations in 2013. Final reprocessing is planned by CNES and NASA. Extensive validation of results will be required before release.	OST-VC
VC-14: Vision for an OSVW Constellation	Q4 2016	White Paper describing and justifying the oceanography and climate requirements for an OSVW constellation.	OSVW-VC
VC-15: OSVW Standards and Metrics	Q4 2016	Standards and metrics for OSVW services and products, including standard Cal/Val methods.	OSVW-VC
VC-16: P-VC Data Portal and links to CEOS Water Portal	Q1 2015	Completion of Phase 2 of the P-VC Data Portal providing free and open availability of precipitation products in support of CEOS-GEO Actions WA-01-C1_3 and WA-01-C1_4.	P-VC
VC-17: Support to ECV precipitation parameters	Q4 2016	Precipitation ECV support: Provide the CEOS Response to GCOS Action A-8; ensure continuity of satellite precipitation products through five deliverables.	P-VC
VC-18: Programs for improvement of global precipitation products	Q4 2016	Precipitation products (with respect to algorithm development, outputs, and user requirements) using multi-satellite and multi-agency data through coordination between Precipitation Constellation (PC) partners.	P-VC
VC-19: Documented plan for the SST Virtual Constellation	Q4 2015	Building on Donlon, et al (2010) <i>Successes and Challenges for the Modern Sea Surface Temperature Observing System</i> , the SST-VC will describe and justify the requirements and design for the modern virtual constellation for SST. This description of an optimal SST constellation will prove useful to CEOS Agencies in planning and implementing a globally coordinated and cost-effective observing capability for SST.	SST-VC

Advancement of the CEOS Virtual Constellations: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
VC-20: Revised Terms of Reference for LSI-VC	Q2 2015	<p>A 2014 study concluded that the environment in which the LSI-VC operates has changed and that the LSI-VC 's focus should be sharpened towards coordination of current and future land imaging space assets, and on the distribution of fundamental non domain-specific data products.</p> <p>These recommendations were endorsed at the 28th CEOS Plenary Meeting, and revised Terms of Reference and proposed objectives/deliverables are to be developed by the LSI-VC.</p>	LSI-VC

3.8 Support to Other Key Stakeholder Initiatives

I. Continue CEOS contributions and maintain leadership role in the GEO Blue Planet Task.

2015: As multi-sensor oceanographic satellite observations continue to be successfully transitioned from research into routine and sustained operations supporting a diverse suite of research and applications, there are significant opportunities to support the components and associated priority actions identified in the GEO Blue Planet Task. The Ocean Colour Radiometry, Ocean Surface Topography, Ocean Surface Vector Wind, and Sea Surface Temperature VCs will play a role in the sustainment/continuation/harmonization of essential ocean variables to develop coordinated, multi-sensor ocean products. Individual VCs will likewise continue to identify their own specific contributions to the various Blue Planet Components.

In May, a second Blue Planet Symposium is scheduled to be held and CEOS and CEOS Agencies will have a key role in the planning and execution of the symposium. The symposium will focus on the Asia-Pacific/Indo-Pacific region, operational oceanography, user engagement, and linking observations to societal benefits areas, particularly in coastal environments and Small Island Developing States.

2016-2017: CEOS may develop experimental and operational data, products, and services to explore optimal utility of developing a collocated, readily accessible dataset package with fit-for-purpose latency for applied, industrial, and research uses.

II. Further develop CEOS contributions to meet biodiversity observation requirements.

2015: The CEOS Biodiversity Expert will work with CEOS Agencies in close consultation with the GEO Biodiversity Observation Network (GEO BON) to better define biodiversity and conservation user requirements and assess related CEOS Agencies' observation capabilities in support of the 2020 targets for the Convention on Biodiversity (CBD). Using an approach similar to that which was implemented for ECVs, CEOS will consult with GEO BON and CBD representatives to better define CBD-related Essential Biodiversity Variables (EBVs) that may be supported by space-based EO. CEOS representatives will participate in ongoing data provider/user community consultations on this topic to assess the potential level of CEOS support, and make appropriate recommendations to CEOS leadership.

2016-2017: The CEOS Biodiversity activity will engage in various workshops and symposia to increase the visibility of remote sensing for biodiversity related application. Moreover the different user groups (e.g., practitioners, decision makers) will be targeted concerning their different needs for remote sensing application. Lists of remote sensing product priorities for different EBVs and user groups will be assembled. A joint funding proposal for innovative application of remote sensing for biodiversity research will be pursued to enable provision of a range of relevant products and services.

III. Continue dialogue on enhanced CEOS-level coordination to support improved research and monitoring of the Earth’s Polar Regions.

2015: CEOS Agencies will maintain a dialogue with GEO, CGMS, and the World Meteorological Organization (WMO) on their respective interests and coordination initiatives relating to polar observations. CEOS Agencies will consider the best means to interact with the WMO Polar Space Task Group (PSTG) to facilitate acquisition and distribution of fundamental satellite datasets for the development of specific information products for polar research and applications (e.g., cryospheric, atmospheric, etc.). CEOS will identify a more formal mechanism to interact with the PSTG. CEOS will support continued data acquisition to ensure the full coverage and monitoring of the ice sheets. Fast-flowing glaciers, often considered as indicators of climate change impacts, will also be monitored at high resolution.

2016-2017: CEOS Agencies will continue to maintain a dialogue with GEO, CGMS, and the WMO on their respective interests and coordination initiatives relating to polar observations. CEOS and PSTG will continue to facilitate acquisition and distribution of fundamental satellite datasets for the development of specific information products for polar research and applications (e.g., cryospheric, atmospheric, etc.). CEOS Agencies will support the development of key science products under their own respective science programs. The PSTG, charged with prioritizing requirements, engaging in a dialogue with polar science authorities, and supporting the development of satellite sensor derived products for cryospheric research and applications, will encourage formal submission of science requirements documents from the cryosphere communities (permafrost, sea ice, snow cover, etc.). CEOS and PSTG will develop observation strategies to avoid observational gaps over polar regions.

Support to Other Key Stakeholder Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity

Support to Other Key Stakeholder Objectives/Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
BP-1: Compilation of ocean variables into coordinated dataset packages	Q4 2016	Coordination of essential ocean variables into single package deliveries, with fit-for-purpose latency for research and applications. The four ocean VCs (in coordination with the Blue Planet committee) will play a role in the sustainment/continuation/harmonization of essential ocean variables. What does CEOS need to do differently in the future to support this project? How can CEOS support "integration" of activities across VCs and individual missions? What are the achievable spatial-temporal scales and appropriate latencies for multi-variable packages?	CEOS Blue Planet Expert (NASA)
BP-2: Support the 2 nd Blue Planet Symposium	Q2 2015	CEOS will support and coordinate activities for the 2 nd Blue Planet Symposium, which will focus on the Asia-Pacific/Indo-Pacific region, operational oceanography, user engagement, and linking observations to societal benefits areas, particularly in coastal environments and Small Island Developing States.	CEOS Blue Planet Expert (NASA)
BON-1: Further define biodiversity variables that may be supported by space-based observations	Q2 2015	Consult with biodiversity community representatives (GEO BON, CBD, Conservation Remote Sensing Network [CRSnet], etc.) to better define relevant spaceborne parameters (e.g., for EBVs).	CEOS Biodiversity Experts (Deutsches Zentrum für Luft- und Raumfahrt [DLR] and NASA)
BON-2: Continue to define biodiversity variables that may be supported by space-based observations and engage international community in coordinating biodiversity/conservation initiatives	Q4 2015	Review and improve list of relevant space-borne variables, to include marine systems as well on top of terrestrial applications. Hold joint sessions with biodiversity/conservation community at international conferences (e.g., International Symposium on Remote Sensing of Environment. [ISRSE]). Coordinate different biodiversity/conservation initiatives related to EO (Cambridge Conservation Initiative [CCI], CRSnet, GEO BON). List of future needed parameters.	CEOS Biodiversity Experts (DLR and NASA)
BON-3: Increase the visibility of remote sensing for biodiversity related application	Q4 2016	Joint symposium with all initiatives, exploring links to other CEOS activities. Develop joint forum/data archive and define processing chains.	CEOS Biodiversity Experts (DLR and NASA)
POL-1: Annual Status Report	Q4 2015	Facilitate communication between PSTG and CEOS through provision of an annual status report on polar activities and develop a formal collaboration approach with PSTG.	CEOS Polar Expert (CSA)

3.9 Outreach to Key Stakeholders

I. Engage, attend, be strategically involved (where appropriate), report on CEOS achievements, and present at key meetings.

2015-2017: CEOS desires to increase and improve the connections between CEOS and its stakeholders during deliverable development. CEOS leadership and the national delegations of CEOS Agencies will expand links with stakeholders to inform ministers of CEOS Earth observation products and coordination efforts and to enlist appropriate G20/G8 support for enhanced Earth observation coordination. CEOS should highlight CEOS achievements in global change monitoring and the significance of long-term satellite observation capabilities in statements at key high-level meetings.

Key 2015 meetings identified for CEOS liaison include the GEO Ministerial Summit (November 2015), the UN Framework Convention on Climate Change 21st Conference of the Parties (COP-21, November 2015), and the 3rd World Conference on Disaster Risk Reduction (WCDRR, March 2015).

Key 2016 meetings will be identified as they are announced, and the CEOS SEC will develop strategic plans to ensure CEOS is positioned to participate as appropriate.

II. Maintain the CEOS Website and enhance currency and relevance of content

CEOS released a new website, with a modern user interface and updated appearance, in 2014. CEOS, with coordination through the SEO, will build on the “content management” approach underpinning this new website to promote more up-to-date and relevant information for users. New features for document management and meeting registration will be enhanced and rolled out to make CEOS activity more efficient and effective.

III. Publish the CEOS Newsletter.

2015-2017: CEOS, through contributions of JAXA, will continue the publication of this valuable, long-standing communication tool. It will be issued twice per year.

IV. Highlight the value of Earth observations from space in delivering societal benefit

2015: Building on previous successful reports, CEOS will develop a special report on applications of Earth observations from space and their impact in the community. This report will be targeted at policymakers, international organisations, donors and industry. The report will be published in time for distribution at the 29th CEOS Plenary Meeting and subsequent important meetings.

Outreach to Key Stakeholders: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
OUT-1: CEOS awareness and promotional material delivered at key meetings	N/A	The CEOS calendar will be used to confirm CEOS representation at key international and stakeholder meetings, as updated throughout the three-year term.	CEOS Chair with support from CEO, SIT Chair and CEOS SEC

Outreach to Key Stakeholders: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
OUT-2: CEOS Newsletter	Q1 and Q3 of each year	Call for information input in December and June; newsletters released in February and August.	JAXA, with support from CEOS Agencies
OUT-4: EO handbook	Q1 2015 (WCDDR), and Q4 2015 (Climate TBC)	The EO Handbook presents the main capabilities of satellite Earth observations, their applications and an overview of present and planned programs. Print and online versions of the EO Handbook will be released in 2015. A special edition will be released to coincide with the 3 rd World Conference on Disaster Risk Reduction, at which the role and importance of EOS will be highlighted. A special Climate version, targeted towards the UNFCCC OP-21 meeting, will be considered for development.	ESA
OUT-7: Special Data Applications Report	Q4 2015	The report will highlight applications of Earth observation from space and their impact in the community.	CEOS Chair

3.10 Organizational Issues

I. Updated and refreshed Terms of Reference for CEOS Working Groups

2015: CEOS has completed the development of its complete set of Guiding Documents, which provide a comprehensive description of CEOS priorities and processes and will enhance consistency amongst the various CEOS entities in key areas, while retaining flexibility for those entities to organize themselves as appropriate. In 2015, CEOS will undertake an informal review of its progress towards implementation of the Guiding Documents.

One area where consistency is important, is in the structure and content of the Terms of Reference of some Working Groups. In 2015, CEOS will work to translate the current Working Group Terms of Reference into the new format, taking the opportunity to refresh them where appropriate.

Organizational Issues Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
ORG-4: Document Management System	Q2 2015	In accordance with the plans and designs endorsed at the 28 th CEOS Plenary Meeting, the SEO will implement a CEOS Document Management System. The SEO will provide training documentation, a CEOS Document Cover Page, and a CEOS File Naming Convention to CEOS by SIT-30.	SEO and CEO Team

Organizational Issues Deliverables: 2015-2017			
Objective/Deliverable	Projected Completion Date	Background Information	Responsible CEOS Entity
ORG-7: Refreshed Terms of Reference for Working Groups	Q4 2015	As a result of the updated Governing Documents, work is required to reformat/translate existing Terms of Reference into the new structure to ensure consistency.	Working Groups with support from CEO
ORG-8: Assessment of implementation of Guiding Documents	Q4 2015	The CEOS Guiding Documents provide a strong reference point for CEOS operations. A brief report will be prepared to assess the extent to which CEOS is complying with the new CEOS Guiding Documents, and presented at the 29 th CEOS Plenary Meeting.	CEO

This CEOS Work Plan will be updated annually by the CEO under the guidance of the CEOS Chair, and in consultation with the CEOS Strategic Implementation Team Chair, CEOS Secretariat, CEOS Working Groups, Virtual Constellations, Ad Hoc Teams, the CEOS membership at large, and CEOS’s external stakeholders. This document shall be consistent with and mutually supporting of other CEOS guiding documents.