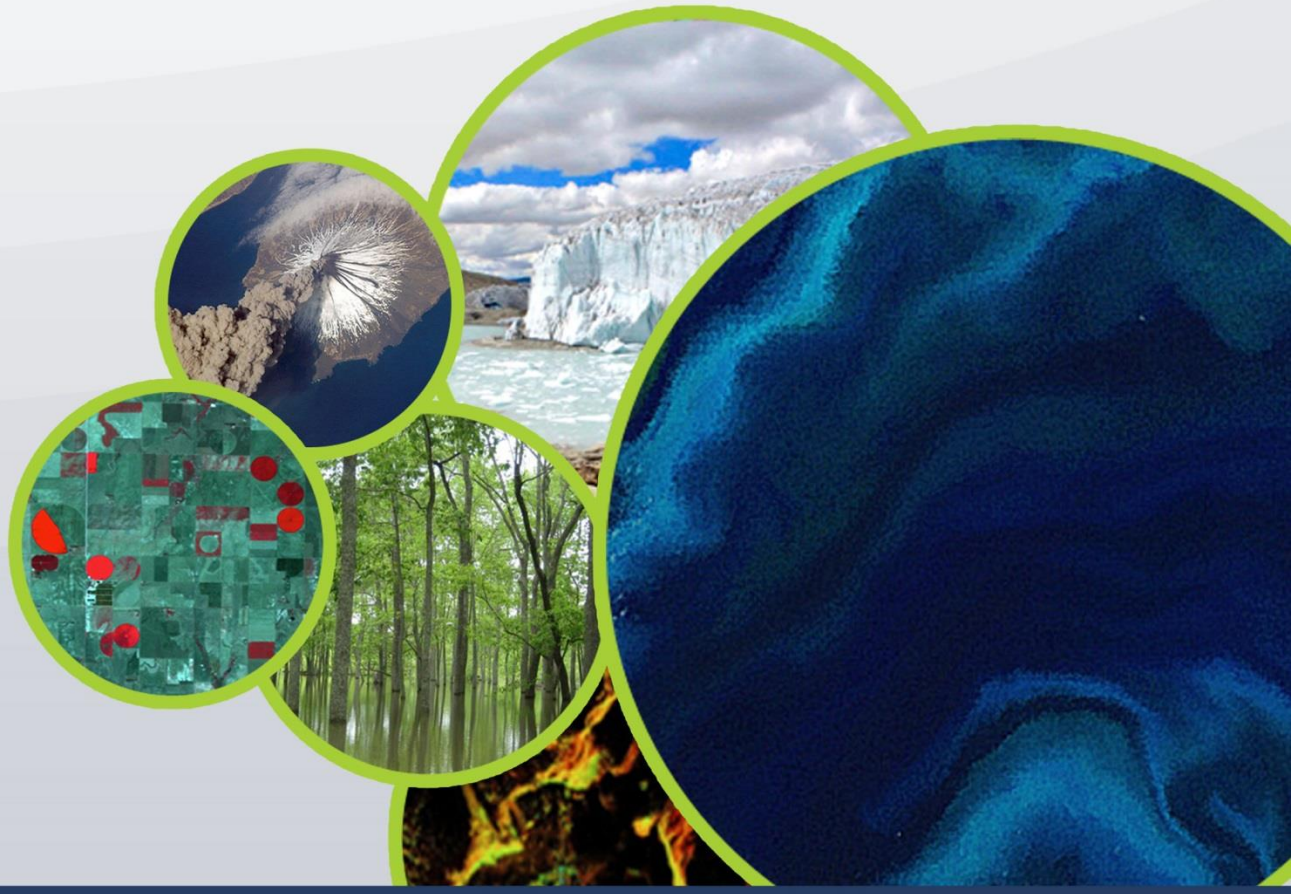
Committee on Earth Observation Satellites



2016-2018 Work Plan

March 2016

Contents

1 Introduction and Overview

The *2016-2018 CEOS Work Plan* has been developed by the CEOS Executive Officer (CEO) under direction of the CEOS Chair (Commonwealth Industry and Scientific Research Organisation [CSIRO]), in consultation with the CEOS Strategic Implementation Team (SIT) Chair (European Space Agency [ESA]), CEOS Secretariat (SEC), CEOS Working Groups (WG), CEOS Virtual Constellations (VC), CEOS Ad Hoc Teams, the CEOS Systems Engineering Office (SEO), 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 (2016), and summarizes anticipated activities for the subsequent two years (2017-2018). Additional documents contributing information to this plan are located on the CEOS website (http://ceos.org/) and include: *The Kyoto Statement*, issued at the 29th CEOS Plenary Meeting held in 2015; the *2015-2017 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 and 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].

[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

This Work Plan has been developed in the context of long-term CEOS priorities as described in the CEOS Governing Documents and specific priorities discussed at the 29th CEOS Plenary Meeting held in Kyoto, Japan in 2015.

At this Plenary meeting, CEOS Agencies affirmed their intent to work together to:

- Ensure that climate observation requirements identified by the Global Climate Observing System (GCOS) – including implications arising from the COP-21 meeting in 2015 – are addressed.
- Ensure, in the context of the *Sendai Framework for Disaster Risk Reduction 2015-2030*, that CEOS Agency data are made available in support of disaster risk reduction and that CEOS continues engagement with UN agencies and authorities.
- Ensure that space-based Earth observations support the success of the next decade of the Group on Earth Observations (GEO), and that CEOS engagement in GEO governance and leadership is enhanced.
- Proactively engage in global discussions on the critical challenges that face society, such as the achievement of the *Global Goals for Sustainable Development*.

CEOS Agencies also agreed on the need to explore two key areas in detail during 2016:

- Non-meteorological Applications for Next Generation Geostationary Satellites.
- Future Data Access & Analysis Architectures.

CEOS Agencies also affirmed their intention to 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 continue to 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. 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 2016-2018.

For 2016, 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 (2017-2018) 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 2016-2018

The expected outcomes for 2016-2018 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 2016-2018:

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 and the Coordination Group for Meteorological Satellites (CGMS) have committed to work together, through the Joint CEOS/CGMS Working Group on Climate, to monitor climate from space through the coordinated planning, production, improvement and availability of space-based climate data records on a global scale. This work is focused towards implementation of the *Strategy Towards an Architecture for Climate Monitoring from Space* endorsed by CEOS, CGMS and the World Meteorological Organization (WMO). The following sections summarize activity from the perspective of CEOS's contributions to the joint effort, as well as CEOS-specific activities in the climate domain.

A key focus of work during the 2016-2018 period will be to contribute to the definition and implementation of the new *Global Climate Observing System Implementation Plan* (GCOS-IP) that is under development, and the associated *Satellite Supplement*. Space agencies will then work together to develop a comprehensive and integrated response to the new GCOS-IP and *Satellite Supplement*.

This work will be underpinned by ongoing efforts to create an up-to-date and comprehensive Essential Climate Variable Inventory that identifies data gaps and opportunities for improvement along the climate information value chain, as well as efforts to communicate progress of the satellite coordination community within the United Nations system and more broadly.

I. Continue cooperation with GEO, GCOS, WMO, and the CGMS in the development of a space-based system to support climate change information and adaptation.

2016-2018: 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).

This coordination will be supported by development and promotion of case studies, and development and maintenance of a Joint CEOS/CGMS WGClimate presence on the CEOS website that provides the single authoritative location for information about the Working Group's activities.

II. Continued implementation of the Architecture for Climate Monitoring from Space

2016-2017: Following on from successful delivery of the first inventory of Essential Climate Variables completed in 2015, the Joint WGClimate will complete a second iteration during the 2016-2017 period.

This will involve: collecting updated information from data providers on Climate Data Record holdings; incorporating updated information in the ECV Inventory; quality control, to verify completeness and consistency of the ECV Inventory contents, as well as to critically analyse the relevance of the various records; generating a coordinated action plan to address gaps/opportunities; and communicating the results on completion of the cycle. A key element of the work will be reviewing the compliance of satellite missions

and products with the GCOS Climate Monitoring Principles and with the *Guideline for the Generation of Datasets and Products meeting GCOS Requirements*.

Building on lessons learnt from the first iteration, this iteration will focus on achieving buy-in from Climate Data Record programme managers and will employ a strictly limited time window for updates by record providers.

This activity will be complemented by hosting of a computerised ECV inventory and development of further ECV inventory capabilities. The ECV Inventory will be located on the Joint CEOS/CGMS Working Group on Climate web presence to ensure accessibility.

2018: Following completion of a full update cycle during 2016-2017, in 2018 a further update cycle will commence, aimed at further improving the currency, quality and completeness of available information. This cycle will build on lessons learnt from the 2016-2017 cycle, and is expected to take into consideration the new GCOS-IP.

III. Continued strong engagement with UNFCCC/SBSTA and GCOS processes

2016-2018: The Joint CEOS/CGMS Working Group on Climate ensures the planning and development of a coordinated space agency response to climate information needs through its relations with GCOS and the Subsidiary Body for Scientific and Technological Advice (SBSTA). The group will continue these strong linkages during 2016-2018, including:

- being an active contributor to the pending revision of the new GCOS IP and the development of a comprehensive space agency response.
- Providing, on request, updates on progress in implementation of the Architecture for Climate Monitoring from Space to both GCOS and SBSTA.

Climate Monitoring, Research, and Services Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
Information dissemination and communication			
CMRS-12: Establishment of a WGClimate website	Q3 2017	The website will provide the single authoritative location for Joint CEOS/CGMS WGClimate-related information including the Climate Monitoring Architecture definition and the ECV Inventory, and will be used as the working area for members from both CGMS and CEOS. This will include development of enhanced tools to increase the efficiency and utility of the ECV Inventory. A first version of the website shall be made available in Dec 2016.	WGClimate

Climate Monitoring, Research, and Services Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CMRS-13: Development and Promotion of Case Studies	Q3 2017	Previous work, supervised by the EC JRC and WMO, has already produced WMO 1192 *Case Studies for Establishing an Architecture for Climate Monitoring from Space*. The possibility exists for further involvement by an expanded team. The output of previous and potential future work is to be supported by the dedicated Joint CEOS/CGMS WGClimate website to be established as CMRS-12.	WGClimate
Delivery of a second iteration of the Essential Climate Variable Inventory			
CMRS-14: Collection, incorporation and quality control of new & updated information from data providers.	Q3 2016	For the purposes of this iteration, the set of questionnaires using for data collection during the first iteration will be re-used. The announcement of the process to request updates to the inventory records was made at the 29th CEOS Plenary Meeting.	WGClimate
CMRS-15: Gap analysis	Q1 2017	Several teams will perform the cycle 2 gap analysis in parallel, with the work organized by thematic area. To ensure consistency of approach across the full inventory, the gap analysis work of the individual teams will be overseen/coordinated by ESA and USGS.	WGClimate
CMRS-16: Action plan	Q4 2017	The action plan will identified agreed actions that CEOS and CGMS Members and Associates intend to take to address priority gaps. The action plan will be endorsed and released to the CEOS community at CEOS-31 in Rapid City.	WGClimate
Commencement of the third iteration of the Essential Climate Variable inventory			
CMRS-17: Collection, incorporation and quality control of new & updated information from data providers.	Q3 2018	It is expected that the third iteration will enhance the questionnaire, and potentially the inventory structure, to accommodate for example: The new GCOS IP (expected to be available at the end of 2016); any requirements stemming from C3S; and experiences from applicable projects.	WGClimate
Engagement with GCOS			

Climate Monitoring, Research, and Services Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CMRS-18: Supporting development of the new GCOS IP	Q4 2016	The forthcoming new GCOS Implementation Plan, requested at SBSTA-37, is expected in December 2016. CEOS, through the Joint Working Group on Climate, will engage closely with this process to assure coordinated input from the satellite Earth observation community. In consideration of the potential to whether the *Satellite Supplement* can be published in parallel with the new IP, will collaborate with the GCOS Secretariat to explore this possibility.	WGClimate
CMRS-19: Joint CEOS/CGMS response to the new GCOS IP	Q4 2017	The new GCOS IP is expected to be available at the end of 2016, but it is not clear at the moment if this delivery will include an updated *Satellite Supplement*. Assuming the GCOS IP delivery will include the *Satellite Supplement*, this will mean that a response to the new GCOS IP will be required by the end of 2017. Reflecting the partnership, this document will be developed jointly by CEOS and CGMS.	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 international climate agreements and support the Space Data Component of the GEO Global Forest Observations Initiative (GFOI).

2016: Through its Ad-Hoc Space Data Coordination Group (SDCG) for GFOI, CEOS is developing and coordinating the implementation of *the CEOS Strategy for Space Data for GFOI (endorsed by CEOS Plenary 2011)* for the provision of satellite observations in support of the development of national forest monitoring and measurement, reporting, and verification (MRV) systems.

In 2016, 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 in 2013 and updated in 2015. 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 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 based on a new Data Cube architecture, including Kenya and Columbia, with regular reports to be provided.

The SDCG will also commence work to implement the *Strategy for Satellite Data in support of GFOI R&D* endorsed at the 29th CEOS Plenary.

2017-2018: 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 2016-2017 (with the launch of the second of the European Commission's Sentinel-2 units).

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

2016: 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.

The focus in early 2016 will be on defining, for each of the identified tasks, concrete steps to be implemented in the 2016-2017 timeframe to secure Plenary support for the required resources from CEOS Agencies. In the latter part of 2016, the focus will move towards implementing these concrete steps while assuring cross-Entity coordination.

CEOS will also engage with efforts within GEO to define a possible Carbon Flagship.

2017-2018: 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: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CARB-4: CEOS delivery of coordinated land surface observations for GFOI countries	Q2 2016	CEOS will acquire coordinated land surface observations for GFOI countries in accordance with the endorsed strategies.	SDCG for GFOI

Carbon Observations, Including Forested Regions Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CARB-5: Updated *Global Baseline Data Acquisition Strategy for GFOI*, *Space Data Services Strategy for GFOI*, and *Strategy for Satellite Data in support of GFOI R&D*	Q4 2016	Element-1 (data acquisition strategy), Element-2 (data services) and Element-3 (R&D) will require annual updates to reflect changes in space data assets and national implementation plans. It is expected that GFOI will reach full operational capability after 2017.	SDCG for GFOI
CARB-9: GFOI Data Services Pilot Projects for Kenya and Colombia	Q4 2016	This activity includes support for the delivery of Data Services Pilot Projects for Kenya and Colombia. These projects, based on the Data Cube architecture, are being developed by the SEO with support from the SDCG for GFOI and WGISS. The first phases of these prototypes were delivered in late 2015. Advances in 2016 will include integration of more datasets using analysis-ready data products, addition of more features to the reference user interface, testing of various deployment approaches (local, cloud, data hub), and evaluation of feedback from in-country use of the prototypes.	SEO (with support from SDCG for GFOI and WGISS)
CARB-10: SDCG Global Data Flows Study	Q4 2016	A study of global data flows is to be completed by the SDCG for GFOI. The objective of this study is to explore - for a well-defined and bounded practical application scenario, namely a years worth of global forest observations data from the GFOI core optical data streams to the relevant countries – pros and cons of different architectures, technical elements, and implementation of data storage, handling, and processing tools to support the full list of GFOI countries. It will be useful to have numerical evidence for a practical example such as GFOI in order to inform the broader work of the CEOS Chair (CSIRO)-led ad hoc team looking at Future Data Architectures. Factors to be specified, defined and considered include: national requirements, data volumes, bandwidth, processing capacity, “analysis ready” data products, Data Cube storage architectures, national infrastructure, costs and technical capacity.	SDCG for GFOI (with support from SEO)

Carbon Observations, Including Forested Regions Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CARB-11: Development of a GFOI Space Data Portal	Q2 2016	As a part of SDCG's support for GFOI, a GFOI Space Data Portal will be developed (initial version) in time for the SDCG-9 meeting, and accompanying GFOI Open Forum. The purpose will be to provide prospective users of satellite EO with some high-level information about the use of EO for forest monitoring. Topics to be covered will include: the role of remote sensing in National Forest Monitoring Systems, suitable data types, data access portals, how to apply data, tools, and tutorials/resources. The portal will include links to the GFOI MGD Portal, and vice versa.	SDCG for GFOI (with support from SEO)
CARB-8: Implementation of agreed actions in response to *CEOS Strategy for Carbon Observations from Space*	Q4 2016 (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 *CEOS Strategy for Carbon Observations from Space*, including the identification of tasks and the most appropriate CEOS Entities to take them forward. The results of this study were endorsed at the 28th CEOS Plenary and are now being implemented.	VCs and WGs (with oversight by SIT Chair and coordination by CEOS Carbon Expert (EC))
CARB-12: Support for definition of a potential GEO Carbon Flagship	Q4 2016	CEOS, through the Joint CEOS/CGMS WGClimate, will participate in the team defining a potential GEO Flagship around carbon, ensuring that due consideration is given to the role of space-based Earth observation. Discussion of potential CEOS commitments to implementation of the Flagship will be discussed at the SIT Technical Workshop with endorsement to be sought at the 30th CEOS Plenary Meeting prior to the GEO-XIII Plenary at which endorsement of the Flagship is expected to be sought.	WGClimate

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.

2016: 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.

At the 29th CEOS Plenary Meeting, CEOS endorsed the *CEOS Strategic Response to GEOGLAM Requirements*, describing how CEOS Agencies will coordinate to support information requirements arising from GEOGLAM. This strategy will guide the work of the CEOS Ad Hoc Working Group on GEOGLAM in 2016.

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 team requirements and the Rangelands and Pasture Productivity Programme (RAPP), and advise the broader CEOS community on appropriate responses. A key focus will be potential practical (sustainable) operational use of CEOS data, especially SAR, for rice crop monitoring in Asia. The CEOS Ad Hoc Working Group on GEOGLAM will consult with Asia-RiCE team to upscale target area from one province to major rice crop area (wall-to-wall country-wide) in selected countries.

Through the CEOS Systems Engineering Office (SEO), CEOS will continue to work with GEOGLAM to deliver data services prototype projects and investigate common data sharing policies. In addition, the SEO will continue to support the Asia-RiCE team to undertake bench mark tests to improve data and information accessibility.

2017-2018: 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 Strategic Response to GEOGLAM Requirements* 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.

2016-2018: 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 2017, 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: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
AGRI-4: *CEOS Strategic Response to GEOGLAM Requirements*	Annually Q4	The *CEOS Strategic Response to GEOGLAM Requirements* identifies how CEOS Agencies will coordinate their relevant Earth observing satellite systems to acquire data to support information requirements arising from GEOGLAM. 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. In addition, this task will include updates to the Scope Document, which reflects the high-level plans for the Ad-Hoc GEOGLAM team and addresses new requirements evolving from the Rangelands (RAPP) project and upscaling of SAR coverage in support of Asia-RiCE (eventual goal: national coverage) .. 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.	CEOS Ad Hoc Working Group on GEOGLAM
AGRI-5: GEOGLAM Data Services Prototypes	Q4 2016	Acquisition of observations is a key enabler of the success of GEOGLAM. Implementation of appropriate data services systems to enable such 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. Two prototype projects, one supporting JECAM and the other Asia-RiCE, are being implemented to explore different approaches to addressing these challenges. Lessons learned will be reported at the CEOS Plenary Meeting.	SEO

3.4 Observations for Disasters

CEOS is committed to supporting disaster risk management in the context of the *2030 Agenda for Sustainable Development* and the *Sendai Framework for Disaster Risk Reduction 2015-2030*, 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 the Asian Development Bank, World Bank Global Fund for Disaster Risk Reduction, scientific community, national resource management agencies, civil protection agencies, local decision makers and others) to foster

the use of satellite EO data. 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.

2016: 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 commence work to implement a fourth pilot, on Landslides, as endorsed at the 29th CEOS Plenary Meeting.

Specific Earth Observation (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 potentially active volcanoes (volcanoes).

WGDisasters will also begin to prepare a report describing follow-on actions recommended once the initial term of the thematic pilots concludes in 2017, for consideration by Plenary. The multi-hazard landslide pilot will have only begun in 2016 and will have only preliminary follow-on actions recommended in the report.

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 to ensure readiness to activate the Disaster Recovery Observatory for a one-time demonstration in the 2016-2017 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 has been 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 has been established to assess the various future catastrophes and will decide together on the opportunity to trigger the Recovery Observatory for one of those major events, in accordance with the endorsed triggering procedure.

WGDisasters will continue to engage potential institutional donors on 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 2017 onwards (e.g., operational hazard monitoring systems).

2017-2018: CEOS will continue the DRM Pilot and Disaster Recovery Observatory activities until completion of the activities in 2017, 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.

II. Support implementation of a coordinated approach, convened through the Group on Earth Observations, to implementation of priority recommendations in the Sendai Framework for Disaster Risk Reduction 2015-2030 (GEO-DARMA)

GEO-DARMA, a CEOS-lead and supported initiative in the frame of the intergovernmental Group on Earth Observations (GEO), aims to address priorities of the Sendai Framework for Disaster Risk Reduction 2015-2030 using Earth observations (EO).

GEO-DARMA (Data Access for Risk Management) will facilitate the sustained provision of accurate EO-based risk information products and services to national and local decision-makers in political and socio-economic sectors, to implement disaster risk reduction and resilience measures, during all disaster risk management phases, whenever those products and services require satellite EO combined with other sources of data (in-situ ground observations, socio-economic, model outputs).

The broad goal is to define and implement end-to-end solutions that respond to the real needs of the user community. Space EO technology presents new opportunities in this area of work; the challenge is matching such capabilities to those end users most in need. The goal is to establish an inclusive, comprehensive process to address local Disaster Risk Reduction (DRR) requirements by using EO technologies efficiently. Long-term outcomes of GEO-DARMA are to foster the use of EO data and EO-based risk information by end-users (e.g. civil protection agencies, and other agencies and ministries at the national level) and to increase awareness within donor agencies of the value of space solutions.

2016: A Concept Phase will focus on the identification of regional priorities. This phase will select the regions to start with and the regional Institutions (ideally 2 or 3 per region) with whom to partner. The role of space agencies will be to assess those regional priorities at high level to see whether satellite EO could contribute, and define a series of projects that could realistically address the priorities within the frame of available resources and for which external stakeholders are willing to contribute. The WGDisasters Data Coordination Team will play a key role to identify the satellite resources that could be made available without affecting the on-going activities of WGDisasters.

2017-2018: A Prototyping ('pilot') Phase will be implemented based on the results of the Concept phase. The Pilot projects to be implemented will depend on the regional priorities identified. To ensure alignment with CEOS Agency capacity, detailed proposals will be developed for each potential Pilot project, with each proposal identifying the CEOS and external resources necessary for the implementation. The proposals will be presented to CEOS (Plenary and/or SIT as appropriate) for endorsement in order to secure approval to proceed to implementation.

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

2016-2017: 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 Navigation Satellite Systems [GNSS], 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.

The benefits expected from the initiative are not only related to the production of new science, but also to the increase of knowledge transfer and capacity building, and to the promotion of a more efficient use of information resources (data, models, procedures, research products, etc.).

CEOS has 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 2016 will be ensuring the data needs for these permanent supersites are met. The WGDisasters 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.

WGDisasters will continue to convene discussions between CEOS Agencies on the potential to support a Natural Laboratory in South-East Asia. A San Andreas Fault (USA) supersite proposal will be reviewed, and new supersite proposals for Gulf of Corinth fault zone (Central Greece) and Straits of Messina (Italy) will be elaborated.

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.

2018: 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 the 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.

Observations for Disasters Objectives/Deliverables: 2016-2018			
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 2016	A strategic data acquisition plan in response to the floods, seismic hazards, and volcanoes pilots' EO requirements was endorsed at SIT-29. This plan will be updated to reflect the landslides pilot endorsed at the 29th CEOS Plenary Meeting. Potential proposals for new GSNL activities (i.e. new permanent & event Supersites) aiming at	WGDisasters

Observations for Disasters Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
		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. The status of implementation of the plan, and of the pilots and supersites being supported, will be reported at SIT-31 and at the 30th CEOS Plenary Meeting.	
DIS-12: Report on survey of donors for post-2016 operation of a Recovery Observatory	Q4 2017	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. The survey will commence after the triggering of the Recovery Observatory. The findings of this survey will be presented in a lessons learnt report to Plenary to enable timely consideration by CEOS Agencies.	WGDisasters
DIS-13: Report on follow-on actions to DRM Pilots	Q4 2017	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.	WGDisasters
DIS-15: Support for GEO-DARMA identification of major hazards and DRR issues for each selected region	Q4 2017	During this period GEO-DARMA will seek independent identification of disaster risk management priorities at regional level (e.g. most prevalent hazards and most severe impact; hurdles in implementing effective DRR and resilience measures in the region) by authoritative Regional Institutions, in line with the priorities from the *Sendai Framework for Disaster Risk Reduction 2015-2030*. The accomplishment of the task will require the active support of major stakeholders in the field of disaster risk management at global, regional and national level on order to implement a series of pilot projects.	WGDisasters

3.5 Observations for Water

I. Implement the CEOS Strategy for Water Observations from Space

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 currently being developed, and will include input from CEOS and other relevant groups.

In 2015, CEOS established the Water Strategy Implementation Study Team (WSIST) and developed the CEOS Response to the GEOSS Water Strategy Recommendations which contain proposed actions for the recommendations, including Water Constellation Feasibility Study. The 29th CEOS Plenary endorsed the CEOS Response, the *CEOS Strategy for Water Observations from Space*, and also agreed to extend the WSIST for one year to implement the Feasibility Study and other agreed actions.

2016: Candidates for leadership of the extended WSIST will be identified. The WSIST will implement the Water Constellation Feasibility Study and other proposed actions contained in the *CEOS Strategy for Water Observations from Space*. It will be essential to have a solid foundation of community-validated requirements to inform space infrastructure analysis and to make best use of existing requirement work (e.g. post-GPM study, GCOS ECV). Strong user community participation should be arranged, and the Study should also:

- Establish a full understanding of current and planned capabilities – including the impact of next-generation geostationary satellites;
- Postulate benefits from different levels of coordination (orbits, co-flights, new capabilities, GEO-LEO synergies, etc.); and
- Perform a ROM comparison of status quo cost-capability versus several (simple) model scenarios for a 'Water Constellation'. Progress will be reported at SIT-31 and the final report will be made at the 30th CEOS Plenary Meeting.

2017-18: 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: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
WAT-2: Implementation of the Water Constellation Feasibility Study and other proposed actions contained in the CEOS Strategy for Water Observations from Space	Q4 2016	In 2016, the extended CEOS Water Strategy Implementation Study Team (WSIST) will implement the Water Constellation Feasibility Study and other proposed actions contained in the CEOS Strategy for Water Observations from Space.	WSIST with P-VC, LSI-VC, SEO

3.6 Capacity Building, Data Access, Availability and Quality

I. Advance CEOS Data Democracy activities.

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.

The Working Group will be guided by the following four objectives:

- Increase access to data, products, and tools and ability to use them through targeted training workshops;
- Build awareness of new mission datasets, and how to use them within the context of existing datasets;
- Support CEOS WGs and VCs on their own capacity building initiatives.
- Improving communications and coordination between Agency and WG/VC/WGCapD capacity building and education activities as well as related international activities such as the GEOCAB Portal. This will include close collaboration UNOOSA and other UN agencies to support needs in emerging space agencies.

2016: The key focus will be to increase access to data, products, and tools and ability to use them through targeted training workshops. In this regard, two SAR data access and basic processing training workshops are planned. The first one will take place in Zambia and another one in Gabon.

Other key outputs will include:

- Continuing practical EO education for students and teachers;
- Organizing Webinar and Interactive Online Hands-on Sessions focused on Disasters Risk Management and other themes
- Populating the GEOCAB Portal (www.geocab.org), increasing the awareness of the CEOS related Capacity Building contributions;
- Collaborating with GEO in the strengthening of AfriGEOSS and AmeriGEOSS.

Other key focus areas for 2016 will include expanding outreach through the WGCapD newsletter and mailing list, and development of webinars in collaboration with other CEOS WGs and VCs.

2017-2018: A key focus will be capacity building on space data-related geospatial technologies and their applications in G-governance. This topic is of interest to many developing countries in which there is a strong drive to apply geospatial technology to many actions including resources management, urban master planning, traffic and pollution flow control. Other activities will include planning the implementation of SAR training workshops in developing countries and executing a CEOS capacity building survey with relevant stakeholders and participants.

II. Explore potential for CEOS Agencies to leverage future data architectures to unlock the value of space Earth observations

2016: Space agencies are convinced as to the potential of satellite Earth observations as an information source in support of many sectors of government and industry. The agencies would concede, however, that the major obstacles faced by potential users of such 'big data' have not been fully addressed. Many key users have not had the financial or technical capacity required to exploit the data using traditional techniques.

New technologies, such as cloud computing, and new approaches to data preparation and pre-processing, have the potential to significantly lower the technical barriers to exploitation of space data and ensure more societal benefit can be delivered from space agency investments, particularly as the need for regional and global solutions to cross-cutting 'big challenges' increases.

In 2016, as an initiative of the CEOS Chair, CSIRO, CEOS will study how such technologies can be used to support CEOS's strategic objectives. The initiative will be cross-cutting and draw in specialist expertise from across CEOS, particularly from WGISS, WGCV, LSI-VC and the SEO.

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

2016: 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) initiative, and the Federated Earth Observation (FedEO) protocol-based system.

WGISS will also support adoption of supported WGISS standards (e.g. OGC CSW 2.0.2 and *CEOS OpenSearch Best Practices*) 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.

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.

2017-2018: WGISS will support data access for the CEOS Virtual Constellations, Working Groups, and GCI through the use of the supported WGISS standards (e.g. OGC CSW 2.0.2 and *CEOS OpenSearch Best Practices*, 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.

IV. 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.

2016-2018: 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.

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

2016-2018: The Working Group on Calibration and Validation (WGCV) will continue to intensify and structure its goals to align with the needs and new challenges arising within CEOS. With the implementation of the Joint CEOS/CGMS WGClimate, 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 WGs and the VCs. Once those opportunities are systematically summarized, cooperation can be concretely intensified and specific measures aligning with the needs and goals of the VCs and WGs identified.

VI. 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.

2016-2018: WGCV will continue its work with the GEO Secretariat, including work to support relevant GEO activities, 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.

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

2016-2018: 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 2016, the ESA CEOS Database team will continue work on the development and promotion of new tools for, and in collaboration and coordination with, the community to discover and browse the information contained in the MIM, including content on GCOS, carbon, water, and other CEOS thematic activities.

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CB-4: Contribute to Capacity Building Portal (GeocabPortal)	Ongoing	Populate the Capacity Building Portal. This portal aims at increasing the awareness of the Capacity Building Inventory across CEOS and GEO. See GEONetCab site at http://www.geonetcab.eu/).	WGCapD

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CB-10: CEOS Database update survey and release of online version	Survey Q2, release Q4	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 CEOS Agencies
CB-11: Build awareness and demonstrate the value and applications targeting teachers, students and practitioners in major conferences	On going	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 on the value of Earth observation.	WGCapD
CB-12: Build awareness of new CEOS missions and datasets	Ongoing	Within the context of support to CEOS/GEO projects, Using webinars, the CEOS Website, newsletters, listerves , social media, etc. to improve access to new CEOS Agency missions and datasets.	WGCapD
CB-13: Continue exploration and provision of appropriate E-learning courses in relevant applications	Ongoing	Explore new approaches to delivering online capacity building for a wide variety of users, e.g. university educators, practitioners, and policy makers in developing countries. This will include follow-up to initial e-learning pilot for select African countries in 2013 and 2015.	WGCapD
CB-14: Create a planning document for the release of newsletters and mail-outs	Q3 2016	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-15: Survey of CEOS capacity building activities and a task report on capacity Building in CEOS including best practices in capacity building	Q4 2016	A report highlighting key points, areas of consolidation and suggestions and best practices in capacity building will be produced. Part of this information will be obtained from a CB Summit to be held in conjunction with the WGCapD Annual Meeting scheduled for March 2016.	WGCapD
CB-16: SRTM- Training Workshops	Q3 2017	Two more SRTM in Disaster Management training workshops are anticipated: one in Asia and another in Africa.	WGCapD
CB-17: SAR Training Workshops	Q4 2016	CEOS Agencies continue to release SAR data. WGCapD will provide 2 SAR (data access, awareness and processing) workshops in developing countries.	WGCapD

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CB-18: Capacity building pilot activity on geospatial technologies and their application in G-Governance	Q1 2017	There is an identified need for capacity building for use of EO-derived information in governance. This knowledge is needed to support many GEO related actions including resources management, urban master planning, traffic and pollution flow control.	WGCapD
CB-19: Promote the role of space-based EO in meeting the challenges of the *2030 Agenda for Sustainable Development*	Ongoing	CEOS is engaging with activities to define the framework that will be used to track progress towards the Global Goals for Sustainable Development, with the aim of ensuring the value of space-based Earth observation is understood and realized. Close collaboration with GEO, including through GEO Initiative GI-18, will be ensured.	DCEO WGCapD
CB-20 Provide CB support to regional GEO initiatives	Ongoing	Includes ongoing support to AfriGEOSS, additional support to AmeriGEOSS and engagement with GEOSS-AP and the developing Asia-Oceania GEOSS initiative.	WGCapD
DATA-2: Full representation of CEOS Agency datasets in the IDN and accessible via supported WGISS standards	Q4 2016	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-7: Study on future data architectures	Q4 2016	The study, delivering on an initiative of the 2016 CEOS Chair, will examine: • Relevant initiatives and plans being undertaken by CEOS and related agencies. • Lessons from early prototype activities underway with the governments of Kenya and Columbia. • Key issues and opportunities resulting from trends towards Big Data, Analysis Ready Data, etc. The study will make recommendations on the way forward for CEOS and its Agencies, including in relation to standardization, interoperability, and how CEOS priorities might benefit from their implementation. Status report at SIT-31.	Ad-Hoc Team on Future Data Architectures in collaboration with SEO, WGISS, LSI-VC, WGCV

Capacity Building, Data Access, Availability and Quality Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
CV-1: Update of general WGCV website to enhance better communication across CEOS and users	Q2 2016	Re-organization of WGCV website concept which includes on one side the entry on the CEOS portal, the CEOS CalVal portal, and the different subgroup web-sites in order to achieve a better outreach and communication strategy.	WGCV
CV-3: Workshop on state of the art for pre-flight calibration techniques	Q1 2017	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	Q2 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	Q2 2016	Cooperation with GSICS in specific domains of sensor calibration, especially sensor inter-calibration. This arrangement will be communicated to the CEOS Plenary for approval, and will be described in the WGCV Work Plan.	WGCV
CV-9: Radiometric Calibration Network (RADCALNET)	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-12: Evaluation of validation supersites and new validation approaches	Q2 2016	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
CV-13: Intercomparison of atmospheric correction models	Q4 2018	The WGCV task team "Atmospheric correction" will carry out several comparison measures between models and report about their findings including recommendations with respect to EO applications.	WGCV
CV-14: Report on application of approaches for cloud masking	Q4 2018	The WGCV task team "Cloud masking" will research different cloud masking approaches for different sensors and spectral areas in order to deliver a report about their findings including recommendations for the applications of cloud masking in EO applications.	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.

2016-2018: 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 and implementation plans.

Advancement of the CEOS Virtual Constellations: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
VC-1: List of Relevant Datasets from VCs	Q4 2016	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 2017	Production of peer-reviewed papers on nadir profile intercomparisons and of long term (1979-now) combined total ozone data sets.	AC-VC
VC-3: Air quality constellation coordination	Q2 2017	Prepare document on calibration needs for the AQ Constellation.	AC-VC
VC-5: Greenhouse gas constellation coordination	Ongoing	Continued coordination for the GHG Constellation following Action Items as defined in the CEOS-Strategy-for-Carbon-Observations-from-Space report	AC-VC
VC-8: Action Plan for GEO Blue Planet Components	Q2 2016	The OCR-VC, in accordance with OCR-VC Terms of Reference, will support the implementation of the GEO Blue Planet Task and is developing 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)	Q4 2016	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. Implementation is following a modular approach.	OCR-VC

Advancement of the CEOS Virtual Constellations: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
VC-21: Support the GEO Water Quality Community of Practice	Ongoing	The area of remote sensing of coastal and inland water quality remains a priority for OCR-VC. Following the CEOS-supported establishment of a GEO Water Quality Community of Practice, the OVR-VC is working to develop implementation plans describing concrete support CEOS can provide in support of that group. Initial plans will be presented for discussion at SIT-31. A related International Ocean Colour Coordinating Group (IOCCG) Working Group (Earth Observations in Support of Global Water Quality Monitoring) has 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
VC-11: Updated OST CEOS Constellation User Requirements Document (URD)	Q2 2016	Update will be presented at SIT-31.	OST-VC
VC-12: Catalog of Cal/Val infrastructure	Q2 2016	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

Advancement of the CEOS Virtual Constellations: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
VC-14: Vision for an OSVW Constellation	Q4 2016	White Paper describing and justifying the oceanography and climate requirements for an OSVW constellation. The International Ocean Vector Winds Science Team (IOVWST) meeting held in 205 strongly recommended: (1) at least three scatterometers in orbits designed to roughly meet the WMO requirements, and, (2) one instrument in a non-sun-synchronous orbit to help with the diurnal cycle, better sampling at mid-latitudes, and to improve inter-calibration. It has been proposed that a User Requirements Document. An interim report will be presented to CEOS at SIT-31, and a more in-depth analysis will be prepared for the next IOVWST meeting to be held in Q2 2016.	OSVW-VC
VC-15: OSVW Standards and Metrics	Q4 2016	Standards and metrics for OSVW services and products, including standard Cal/Val methods. Cal/Val methods will be addressed by the IOVWST Climate Working Group	OSVW-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 Virtual Constellation (P-VC) partners.	P-VC
VC-22: Response to precipitation-related aspects of CEOS Strategy for Water Observations from Space	Q4 2016	Support to implementation of the *CEOS Strategy for Water Observations from Space* in relation to recommendations C2, C3, C4, and C5.	P-VC
VC-19: Documented plan for the SST Virtual Constellation	Q2 2016	Building on Donlon, et al (2010) *Successes and Challenges for the Modern Sea Surface Temperature Observing System,* 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: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
VC-23: Identify gaps in/opportunities for acquisition-planning in support of the CEOS Carbon Strategy	Q2 2017	In support of the CEOS Carbon Strategy, LSI-VC will analyze validated land carbon observation requirements and identify the gaps in and opportunities for optimization across CEOS Agency missions. A status report will be provided at SIT-31.	LSI-VC with WGClimate and SEO
VC-24: Define intercomparable Analysis-Ready Data (ARD) products within the context of land surface imaging	Q4 2016	Agreement on the key definitions of Analysis Ready Data (ARD). In general terms ARD are ready for use without the need for instrument-specific, pass-specific, or spacecraft-specific corrections. ARD greatly lower the barriers to using land surface imaging data and make downstream chains more robust. A status report will be provided at the 2016 SIT Technical Workshop.	LSI-VC with WGCV and SEO
VC-25: Increase the visibility of land surface imaging data holdings	Q4 2016	Significant progress has already been made to improve the visibility of CEOS Agency data through existing tools such as The CEOS-WGISS Integrated Catalog (CWIC) and the Federated Earth Observation Missions Pilot (FedEO). The LSI-VC will work with WGISS to list relevant datasets to ensure visibility through CWIC etc. *Note: Although aligned to VC-1, this activity will involve a specific additional effort over a defined period so is included as a separate objective/deliverable.*	LSI-VC with WGISS and SEO
VC-26: Pilot approaches to conducting integrated assessments of gaps/opportunities in asset usage	Q4 2017	The LSI-VC will, building on the work for land carbon, develop and pilot an approach to analyzing multiple sets of domain-specific requirements and identifying gaps/opportunities for optimization. This effort will integrate validated requirements for forestry, carbon, climate, and agriculture and identify potential continuity issues for land surface observations from space via CEOS Agency assets.	LSI-VC and SEO with Ad-Hoc Teams for GFOI, GEOGLAM and WGDisasters
VC-27: Develop a roadmap for the routine production of intercomparable ARD	Q4 2017	Building on the agreed definitions of ARD, LSI-VC will develop a roadmap for how interested CEOS Agency missions and programs can start processing land surface imaging data with geometrically and radiometrically intercomparable surface reflectance, surface temperature, and analogous radar products.	LSI-VC with WGCV and SEO

Advancement of the CEOS Virtual Constellations: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
VC-28: Establishing enhanced collaboration on wetlands and inland waterway monitoring	Q4 2017	LSI-VC will take initial steps to identify and coordinate CEOS Agency efforts to develop and harmonize wetlands and inland waterway satellite observations and the non-domain specific products required for the development of wetland and inland waterway data products.	LSI-VC with WGCV

3.8 Support to Other Key Stakeholder Initiatives

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

2016: 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 Initiative. 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 2017, a third 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 presents an opportunity to gather momentum from across the ocean observing community.

2017-2018: CEOS will continue to 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.

2016: 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. This will build on work completed in 2015 to outline initial remote sensing EBVs. 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.

2017-2018: The CEOS Biodiversity activity will continue working on defining remote sensing EBVs as part of the overall EBV framework, in close collaboration with GEO BON.

During this process, it will work with CEOS Agencies to characterize the remote sensing EBV requirements and begin steps towards developing an acquisition plan. Participants will also initiate and engage in various workshops and symposia to increase the visibility of remote sensing for biodiversity related applications and target different user groups (e.g., practitioners, decision makers) to assess their needs for remote sensing application. A list of remote sensing product priorities for different EBVs and user groups will be assembled.

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

2016: 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 continue to 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, snow cover, permafrost and floating ice often considered as indicators of climate change impacts, will also be monitored at high resolution.

2017-2018: 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, in conjunction with 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, in conjunction with PSTG, will develop observation strategies to avoid observational gaps over polar regions.

IV. Exploitation of data from next-generation geostationary satellites to support regional and global challenges

2016: The deployment over the next few years of a constellation of advanced geostationary (GEO) satellites, with their improved spectral, spatial and temporal resolution sensors, opens up a world of new possibilities for continuous monitoring of the high-temporal dynamics of the land, oceans and atmosphere, addressing a broad range of societal challenges, particularly in combination with moderate resolution low Earth orbit (LEO) observing satellites.

The nature of the data presents great potential for CEOS to make a significant 'step change' in the levels of support it can provide to key stakeholder initiatives, such as the *2030 Agenda for Sustainable Development*, *Sendai Framework for Disaster Risk Reduction 2015-2030*, Global Climate Observing System, and others.

CEOS will, as an initiative of the 2016 CEOS Chair, study how the capabilities of these new satellite missions can be fully exploited and what they key issues are that will need to be addressed.

Support to Other Key Stakeholder Objectives/Deliverables: 2016-2018			
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 (NOAA)
BP-2: Support the 3rd Blue Planet Symposium	Q2 2017	CEOS will support and coordinate activities for the 3rd Blue Planet Symposium, which comes at an important time in the early stages of the second decade of GEO.	CEOS Blue Planet Expert (NOAA)
BON-3: CEOS response to GEO-BON identified biodiversity observation requirements	Q4 2017	Following an international workshop in 2015, 10 remote sensing Essential Biodiversity Variables were identified for consideration: species occurrence, plant traits (e.g., specific leaf area, leaf N content), ecosystem distribution, fragmentation and heterogeneity, land cover, vegetation height, fire occurrence, vegetation phenology, primary productivity and leaf area index, and inundation. These are currently being reviewed by GEOBON with the wider biodiversity community and EO requirements are being identiifed. These requirements will first be presented to CEOS, after which a CEOS response can be developed.	CEOS Biodiversity Experts (DLR and NASA)
BON-4: Increase the visibility of remote sensing for biodiversity related application	Q4 2016	Initiate and participate in symposia to continue building a community base for biodiversity and conservation remote sensing, focusing on EBVs and exploring links to other CEOS activities.	CEOS Biodiversity Experts (DLR and NASA)
POL-1: Annual Status Report	Q4 2016	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)

Support to Other Key Stakeholder Objectives/Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
NG-1: Study on exploitation of next generation geostationary satellites to support non-meteorological applications	Q4 2016	The study, a 2016 CEOS Chair initiative endorsed at the 29th CEOS Plenary Meeting, will: • Identify future mission and instrument plans of relevance; • Inventory non-meteorological algorithm and application initiatives; • Assess and prioritize the applications and algorithms for CEOS coordination, having regard to key stakeholder priorities; • report on lessons from existing collaborations in this area; • identify key issues and opportunities. Recommendations from the study will be presented at the 30th CEOS Plenary meeting for consideration by CEOS Agencies.	Ad-hoc Team for Non-Met Applications of Next-Generation GEO Satellites

3.9 Outreach to Key Stakeholders

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

2016-2018: 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 2017 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

2016-2018: 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.

III. Publish the CEOS Newsletter.

2016-2018: 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

2016: Building on the Applications report presented at the 29th CEOS Plenary Meeting, CEOS will Agencies will continue to share their national approaches to EO data exploitation and build on their common interests all along the supply chain.

V. Promote the use of satellite data in the 2030 Agenda for Sustainable Development

2016: CEOS Agencies will define the best way forward to raise the awareness of statistical offices to increase the use of space-based EO data in Global Goals for Sustainable Development monitoring; to support the GEO initiative on this topic and to increase the capacity of users to use space-based EO for progress monitoring.

VI. Promote the CEOS Data Cube infrastructure for improved utilization of the growing volume of satellite data

2016: CEOS Agencies will support the development of an Open Source Data Cube infrastructure based on Analysis-Ready Data products. These tools will allow increased utilization of satellite data for developed and developing nations in support of many applications.

Outreach to Key Stakeholders: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
OUT-1: CEOS awareness and promotional material delivered at key meetings	Ongoing	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
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: 5 CEOS engagement in *2030 Agenda for Sustainable Development*	Q4 2016	A plan and way forward will be developed regarding CEOS engagement in the *2030 Agenda for Sustainable Development*.	CEOS Chair
OUT-6: Data Cube infrastructure development	Q4 2016	This activity includes all efforts concerning the development of a general CEOS Data Cube infrastructure. The task will be supported by the SEO, CSIRO, GA and USGS. The architecture will be based on past advancements in Australia with an intention to create a global infrastructure. Developments in 2016 will include completion of the first Version-2 release and advancement of several key prototype projects (Kenya and Colombia). The task will report at the 2016 SIT and CEOS Plenary meetings on the status of this multi-agency project and a summary of key open-source components released for public access.	SEO with support from CSIRO, GA, WGISS, LSI-VC, USGS, ESA

3.10 Organizational Matters

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

2016: 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.

One area where consistency is important, is in the structure and content of the Terms of Reference of Working Groups. In 2015, CEOS commenced work to translate the current Working Group Terms of Reference into the new format, taking the opportunity to refresh them where appropriate. In 2016, CEOS Working Groups will complete this task.

Organizational Issues Deliverables: 2016-2018			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible CEOS Entity**
ORG-7: Refreshed Terms of Reference for Working Groups	Q4 2016	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. A status update will be provided by each Working Group at SIT-31.	Working Groups with support from 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.