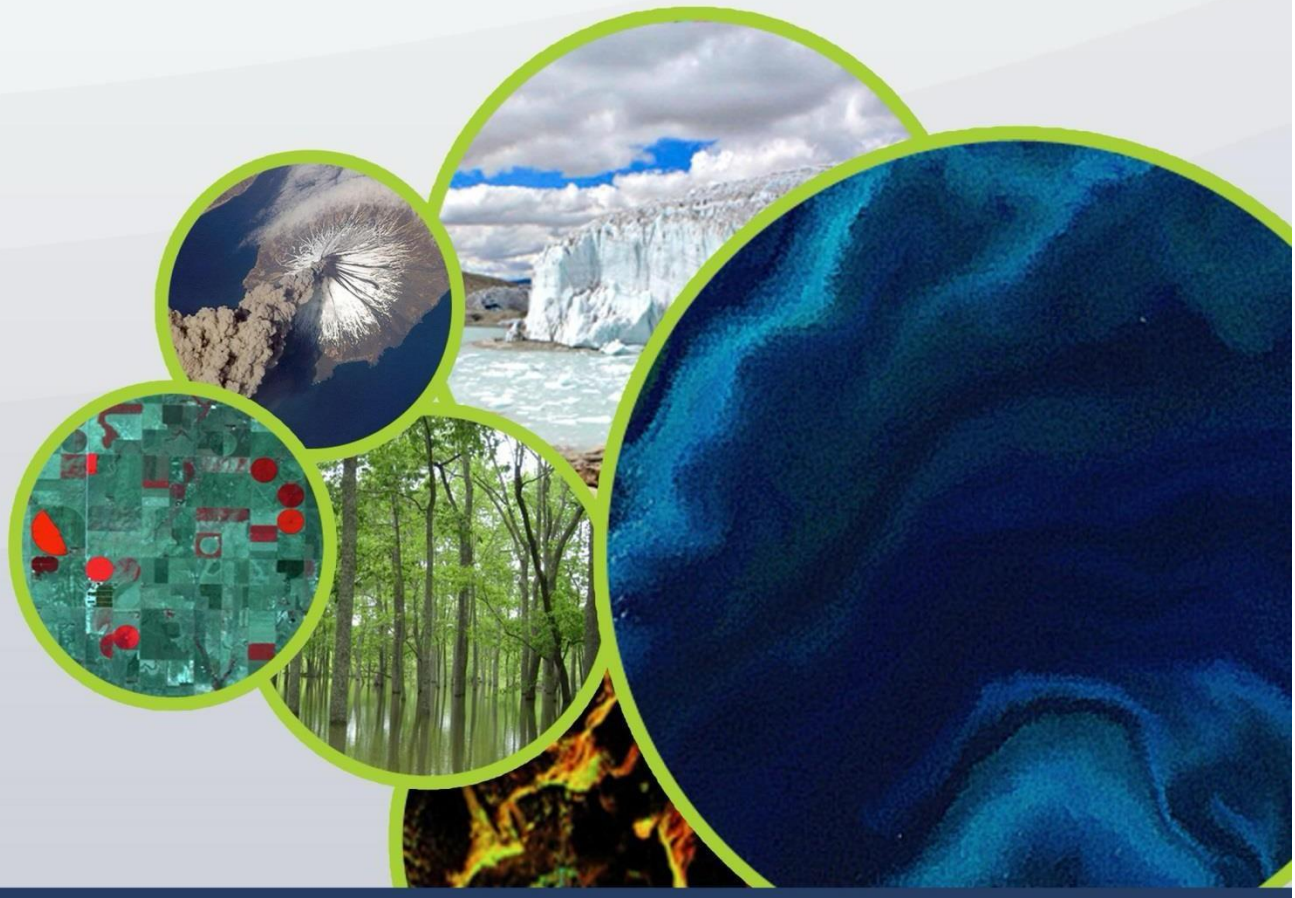
Committee on Earth Observation Satellites



2026–2028 Work Plan

v1.2 April 2nd, 2026

Contents

1 Introduction and Overview

The **CEOS 2026–2028 Work Plan** was developed by the CEOS Executive Officer (CEO), under the direction of Team Australia (the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Geoscience Australia (GA), and the Bureau of Meteorology (BoM)) as the CEOS Chair for 2026, in consultation with the National Aeronautics and Space Administration (NASA) as the CEOS Strategic Implementation Team (SIT) Chair, the CEOS Secretariat (SEC), CEOS Working Groups (WGs), CEOS Virtual Constellations (VCs), the CEOS Systems Engineering Office (SEO), CEOS Agencies at large, and external stakeholders. The CEOS Work Plan sets forth near-term actions to achieve the goals outlined in the CEOS Strategic Guidance document, in full alignment with CEOS's mission.

1.1 CEOS Mission

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.

The primary objectives of CEOS are:

- To optimise the benefits of space-based Earth observation through the cooperation of CEOS Agencies in mission planning and 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 (GEO) and other entities related to global activities that have an environmental or socioeconomic impact.
- 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 to 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 aspects are reflected in the annually updated CEOS Work Plan.

1.2 About this Work Plan

The 2026–2028 CEOS Work Plan provides a description of activities scheduled for 2026 and provides a forward-looking summary of anticipated endeavours for 2027 and 2028, some of which are multi-year efforts. In that regard the Work Plan documents the unique value that CEOS international coordination delivers to the remote sensing community, stakeholders, and data users. The Work Plan is an integral part of the transparency and accountability of CEOS to itself, partner organisations, and stakeholders.

Two characteristics of CEOS particularly influence the Work Plan cycle. First, the very nature of CEOS as a "best-efforts" collaborative organisation necessitates the periodic re-examination of CEOS activities to ensure their continued relevance and to be mindful of the demand on its collective and individual resources. Thus, the CEOS Work Plan undergoes an annual review that includes updates to reflect progress, integrate new initiatives, and adapt to evolving global priorities. Beyond this annual update, CEOS agencies, Working Groups, Virtual Constellations, and ad hoc Teams are expected to communicate progress on activities and changes throughout the year. New tasks can therefore be acknowledged and incorporated into the next edition of the Work Plan in an efficient way. In that regard, the CEOS Work Plan is a companion document to the CEOS Deliverables Online Tracking Tool (accessible via https://ceos.org/tracking/), which provides additional information and is updated throughout the year. Further resources, including previous Work Plans and thematic observation strategies adopted by CEOS, can be accessed via the CEOS website (https://ceos.org/).

Secondly, the leadership rotations bring the Chair themes and SIT Chair priorities every year and every two years, respectively, while ensuring continuity and monitoring of existing activities identified in the previous Work Plan. The CEOS Chair themes define a broad thematic focus for its year-long leadership, serving as a platform to connect CEOS agencies and entities around strategically relevant issues. The priorities of the SIT Chair serve as specific areas of strategic focus during its two-year term, driving technical coordination and integration efforts, in support of the CEOS Chair. In view of that, the current Work Plan highlights a selection of outcomes of the last CEOS plenary, then introduces the CEOS leadership priorities and finally details the projected outcomes for the upcoming years.

2 2025 Plenary Highlights

As 2025 CEOS Chair, the United Kingdom Space Agency (UKSA) hosted the 39th CEOS Plenary in Bath, United Kingdom on 4–6 November 2025 (minutes). As CEOS Strategic Implementation Team Chair (SIT Chair) for 2024 and 2025, the Japan Aerospace Exploration Agency (JAXA) chaired the SIT-40 meeting in Fukuoka, Japan on 8–10 April 2025 (minutes), and the CEOS SIT Technical Workshop in Darmstadt, Germany on 9–11 September 2025 (minutes). Together, UKSA and JAXA garnered support for CEOS to undertake priority activities between November 2024 and November 2025. The CEOS collective produced outputs that were endorsed at principal-level meetings in 2025. As examples, CEOS:

- Endorsed CSIRO as 2026 CEOS Chair, with support from Geoscience Australia and the Bureau of Meteorology. CEOS also endorsed the Norwegian Space Agency (NOSA) as 2027 CEOS Chair.
- Endorsed and welcomed the Philippine Space Agency (PhilSA) as a CEOS Member, and the African Space Agency (AfSA) and Hellenic Space Center (HSC) as CEOS Associates.
- Endorsed the *CEOS Interoperability Handbook v2.0*, developed by the CEOS Working Group on Information Systems and Services (WGISS).
- Extended the term of the Biodiversity Study Team through to SIT-41 in order to complete the Full Proposal for a Biodiversity Virtual Constellation.

Throughout 2025, UKSA, as the CEOS Chair, sought to ensure the continued focus of the CEOS community on the agreed priorities, as listed above. Further specific focus was placed on *Unlocking EO for Society*. This was pursued through four headline areas:

1. *Unlocking EO for public services*. This effort culminated in a findings paper summarising CEOS Agency challenges and insights to bridge gaps between satellite EO data and public services.
2. *Unlocking EO for the UNFCCC Global Stocktake.* This entailed a concerted effort to encourage sustained action on the recommendations of the CEOS Global Stocktake (GST) Lessons Learned Study.
3. *Unlocking EO for the Global Methane Pledge*. This entailed support to the CEOS Greenhouse Gas Task Team (GHG TT) in preparing best practices for facility-scale space-based methane measurements.
4. *CEOS In Schools*. This saw the implementation of a programme focused on the engagement of students throughout 2025, and concluding with the first CEOS Youth Summit in Bath, United Kingdom. The outcomes were summarised in a review paper, whilst the CEOS Youth Hub was created to collect educational EO material. The 2026 Chair will continue this effort.

Throughout 2024 and 2025, JAXA, as CEOS SIT Chair, worked on a number of priorities:

- Prioritising “EO Data Impact” during their leadership term, JAXA strengthened engagement with the Intergovernmental Panel on Climate Change (IPCC) and UNFCCC, led an update to the CEOS GST Strategy Portal, and finalised the Agriculture, Forestry, and Other Land Use (AFOLU) Roadmap.
- The JAXA SIT Chair Team’s GHG Observation Priority included the provision of the CEOS GHG Portal, coordination of the CEOS Greenhouse Gas Roadmap v2.0 and Methane Common Practices, and support to UNEP’s International Methane Emissions Observatory (IMEO) Working Group revitalisation, data supply for IMEO Methane Alert and Response System (MARS), and controlled release collaboration.

The 39th CEOS Plenary marked the 41st year of CEOS, which since its establishment in 1984, has greatly advanced international coordination on satellite Earth observation and now comprises 35 Members and 32 Associate Members. CEOS today is recognised as the authoritative source for satellite EO matters, thereby supporting and further informing policy and decision makers worldwide.

3 CEOS Leadership Themes and Priorities

3.1 2026 CEOS Chair Themes

The 2025 CEOS Plenary welcomed "Team Australia" – composed of the CSIRO (Australia's national science agency), Geoscience Australia and the Bureau of Meteorology – as the 2026 CEOS Chair. The headline theme of Australia's 2026 Chair period is "Positioning for success in a rapidly changing context". Under this theme, Team Australia will bring environmental adaptation and resilience into focus, supported by a new CEOS Handbook that will be produced and published by ESA for presentation at COP31 in November 2026. The 2026 CEOS Handbook will outline the role and value of satellite Earth observations in supporting adaptation to, and resilience in the face of, environmental change; An internal product detailing a collation of challenges and opportunities that support Principals to consider strategic topics on adaptation and resilience will also be delivered. The second theme will aim to increase the impact and ambition of the CEOS Analysis Ready Data (ARD) strategy; interoperable, trusted, easy-to-use ARD is a key enabler of greater CEOS impact. The Future ARD Strategy will aim to expand access to high-quality Earth observation datasets, promote consistency across platforms, and accelerate the adoption of ARD in diverse applications, empowering users worldwide to make informed decisions based on reliable satellite-derived EO data. In addition, three highlight topics will be delivered during the Chair year: an Antarctica Plenary Experience, two joint CEOS Chair and SIT Chair Water Quality Workshops at SIT-41 and SIT-TW, and the continuation of a "CEOS in Schools" programme.

3.2 2026–2028 SIT Chair Priorities

The 2025 CEOS Plenary welcomed NASA as SIT Chair for the period 2026–2028. Two interconnected priorities will mark the focus of the NASA SIT Chair term. The first, "*Water Planet – Seeing Earth's Water from Space*", aims to strengthen Earth observation capabilities to address water related challenges through integrated, multispectral data and user-driven solutions. Anticipated outcomes and deliverables, including the joint CEOS Chair-SIT Chair Water Quality Workshop, are further detailed in the Observations for Water (4.4) section of the Work Plan below.

The second priority, "*Connected Data for Community Resilience*", seeks to enhance data interoperability and enable actionable information to support resilience at global, regional, and local scales. Anticipated outcomes and deliverables are integrated throughout the Work Plan as the SIT Chair works with CEOS entities to energise and advance specific, resilience-related capabilities.

4 Projected Outcomes 2026–2028

The projected outcomes in the 2026–2028 time frame reflect ongoing and emerging focus areas within CEOS, in consideration of CEOS internal decision making, resources, and existing stakeholder commitments. They emphasise improved Earth observation systems coordination and enhanced data access for key global programmes and initiatives involving the following thematic areas:

4.1 Observations for Climate Research and Services

4.2 Observations for Agriculture

4.3 Observations for Disasters

4.4 Observations for Water

4.5 Observations in Support of Sustainable Development

4.6 Data Quality

4.7 Data Discovery, Access, Preservation, Usability and Exploitation: Approaches, Systems, Tools and Technologies

4.8 Capacity Building and Data Democracy

4.9 Advancement of the CEOS Virtual Constellations

4.10 Support to Other Key Stakeholder Initiatives

4.11 CEOS Services

The projected outcomes for each of these areas are summarised in short introductory paragraphs that list the objectives / deliverables to be pursued in the three-year period of the Work Plan. A table indicating Objective / Deliverable Number, Title, Projected Completion Date (indicated by quarter of the calendar year), and Responsible CEOS Entity(ies) concludes each section.

CEOS operates on a best-efforts basis. Responsible CEOS entities are expected to accomplish their 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. While CEOS operates collaboratively, individual member involvement in specific objectives and deliverables varies according to each Agency's priorities and available resources.

4.1 Observations for Climate Research and Services

Space-based data provide critical observations for climate research and services. CEOS works with a number of stakeholders in this domain to provide the necessary observations to support climate monitoring and policy reporting requirements. In particular, accurate, timely and well-structured carbon observations are critical for international climate frameworks, including the Paris Climate Agreement. In 2025, CEOS produced a series of recommendations to prepare observations for the second Global Stocktake of the Paris Climate Agreement (GST2), some of which have been incorporated as deliverables across the 2026–2028 CEOS Work Plan.

4.1.1 WGClimate Core Activities

CEOS and the Coordination Group for Meteorological Satellites (CGMS) collaborate through the Joint CEOS/CGMS Working Group on Climate (WGClimate) to facilitate climate measurements, science, and observations from space. This is pursued through coordinated planning to improve the sustained availability of space-based climate data records. These activities focus on implementation of the *Strategy Towards an Architecture for Climate Monitoring from Space* (hereafter referred to as the Architecture) developed and endorsed by CEOS, CGMS, and the World Meteorological Organization (WMO).

As part of its sustained annual activities, WGClimate will:

- Deliver the annual Space Agency Statement to the UNFCCC Subsidiary Body of Scientific and Technological Advice (UNFCCC/SBSTA). The Statement aims to highlight knowledge gained from sustained Earth observations and is provided to the next CEOS Chair Team for submission to the SBSTA meeting at the Conference of the Parties (COP). WGClimate will also provide a summary version for oral presentation at SBSTA opening session.

- Contribute, in collaboration with other organisations, the themes and presentations for Earth Information Day, a mandated event at the COP.

- Populate, maintain, and analyse the Climate Data Records (CDR) Inventory: cdrinventory.climatemonitoring.info (formerly known as the Essential Climate Variable (ECV) Inventory). The CDR Inventory includes existing and planned CDRs. The Inventory is currently provided for CEOS and CGMS by EUMETSAT and the European Commission.

During 2026, WGClimate will also:

- Update the Space Agency Response to the 2022 GCOS Implementation Plan thus providing the most up-to-date input for the next GCOS Status Report that will be published in 2027.

- Develop a new typology interface for the Climate Data Records (CDR) Inventory to enhance discoverability.

- Conduct a one-year consultation with the community to determine if it is possible to converge on the definition of Climate Data Records (CDR), including the characteristics of the variants, such as Fundamental Climate Data Records (FCDRs) and Interim Climate Data Records (ICDRs). The study is expected to also assess the use of metadata standards and develop a roadmap for integrating all CDR types into the CDR Inventory. This absorbs actions #2018-01 and #2018-05 from the Coordinated Action Plan.

- Work with GCOS to make the GCOS ECV rationalisation process useful for satellite data records and ensure compatibility with the CDR Inventory. WGClimate met jointly with the GCOS Panels in February 2026, to prepare the GCOS status report and next GCOS Implementation Plan including promoting new ways of deriving application related needs/requirements. This absorbs actions #2018-07, #2024-01, #2024-02, and #2024-04 from the 2024 Coordinated Action Plan.

For 2027–2028, significant outputs beyond the annual activities listed above will include:

- Exploring the feasibility of establishing regional satellite data experts to advise national inventory compilers on the utilities of satellite data, in collaboration with UNFCCC and IPCC TFI.

- Developing a mapping between EO products (ECVs and other datasets) and relevant adaptation indicators.

- Engaging with GEO to create guidance supporting the integration of Earth observation data and information into resilience and adaptation efforts across selected thematic areas.

- In consultation with GCOS, perform a gap analysis for the Sea Level and Earth Radiation Budget ECVs.

- Establish an inventory for Fundamental Climate Data Records (FCDRs), building on the CDR Inventory.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
CMRS-24-01	Update and align WGClimate website instances (CEOS, CGMS, climatemonitoring.info)	2026 Q2	WGClimate
CMRS-24-04	Conduct consultation to converge on definition for Climate Data Records (CDRs) and its variants	2026 Q4	WGClimate
CMRS-25-01	Expanding the utility of the CDR Inventory	2026 Q2	WGClimate
CMRS-25-03	Support for GCOS ECV rationalisation process	2026 Q2	WGClimate
CMRS-26-01	Update the Space Agency Response to the 2022 GCOS Implementation Plan	2026 Q2	WGClimate
CMRS-26-02	Regional satellite data experts for national inventory compilers	2026 Q4	WGClimate
CMRS-26-03	Mapping EO products to Adaptation Indicators	2026 Q4	WGClimate
CMRS-26-04	Guidance for EO data for resilience and adaptation efforts	2027 Q2	WGClimate

CMRS-26-05	Gap Analysis for Sea Level	2028 Q4	WGClimate
CMRS-26-06	Gap Analysis for Earth Radiation Budget	2028 Q4	WGClimate
CMRS-26-07	Fundamental (Climate) Data Record Inventory	2027 Q2	WGClimate

4.1.2 Observations for Carbon

In 2014, CEOS endorsed the **CEOS Strategy for Carbon Observations from Space** in response to the GEO Carbon Strategy. The Strategy addressed three domains – atmospheric, oceanic, terrestrial – and their interfaces and identified a number of recommended actions to be completed by CEOS Agencies. In 2018, the CEOS white paper "A Constellation Architecture for Carbon Dioxide and Methane Observations from Space" was completed. In 2019, the first issue of the Greenhouse Gas Roadmap to implement the constellation was published, followed by Issue 2 in 2024. This was supplemented by the Agriculture, Forestry, and Other Land Use (AFOLU) Roadmap published in 2023. The third element, the Aquatic Carbon Roadmap, will be published in 2026.

4.1.2.1 Greenhouse Gases

The implementation of the Greenhouse Gas Roadmap, and its associated Actions Annex (also referred to as 'Annex C'), is led by the WGClimate Greenhouse Gas Task Team (GHG-TT). The Actions Annex, maintained as an online spreadsheet, contains a comprehensive view of both long and short term actions defined across eight thematic areas:

1. Fostering Stakeholder Engagement
2. Sensor Development and Constellation Architectures
3. System Development
4. Best Practices
5. Calibration and Level 1 Products
6. Level 2 Products and Validation
7. Flux Inversion Modelling and Validation
8. Capacity Building

In addition, the GHG-TT is coordinating CEOS's support for the Global Stocktake, and a number of activities defined below were identified as actions following the 2025 CEOS Global Stocktake Strategy.

In 2026, the GHG-TT will:

- Stimulate uptake of the database of controlled release experiments
- Promote and continue to develop the GHG Calibration Portal
- Develop Best Practices for Facility Scale Methane measurements, following on from the Common Practices developed in 2025.
- Support IMEO in developing use cases highlighting the use of satellite data to curb methane emissions
- Ensure IMEO has access to the data required
- Promote the adoption of methane common practices by IMEO MARS
- Establish GHG Cal/Val Supersites

In 2027–2028, the GHG-TT will:

- Develop Common Practices for Area Flux Methane measurements, followed by Best Practices
- Develop Common Practices for Facility Scale Carbon Dioxide measurements, followed by Best Practices
- Work with WMO to define the space-based data requirements for Global Greenhouse Gas Watch (G3W)
- Organise a National Greenhouse Gas Inventory Compiler regional workshop in Asia
- Identify GHG datasets that meet the latency requirements for monthly top-down flux budgets
- Develop evaluation and validation strategies for GHG concentrations and fluxes
- Describe and outline a tip-and-cue system for methane observations
- Identify candidate approaches for higher-resolution inversions
- Develop multi-scale integration methods that leverage both plume and area-mapper data.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
CARB-26-08	Stimulate uptake of the controlled release database	2026 Q3	GHG Task Team
CARB-26-09	Promotion and Development of the GHG Calibration Portal	2026 Q4	GHG Task Team
CARB-26-10	Best Practices for Facility Scale Methane measurements	2026 Q4	GHG Task Team
CARB-26-11	IMEO Use Cases	2026 Q4	GHG Task Team

CARB-26-12	Data supply for IMEO	2026 Q4	GHG Task Team
CARB-26-13	Adoption of methane common practices by IMEO MARS	2026 Q4	GHG Task Team
CARB-26-14	Common Practices for Area Flux Methane measurements	2027 Q2	GHG Task Team
CARB-26-15	Space-based data requirements for G3W	2027 Q2	GHG Task Team
CARB-26-16	National Greenhouse Gas Inventory Compiler regional workshop - Asia	2027 Q2	GHG Task Team
CARB-26-17	Monthly top-down flux budgets	2027 Q4	GHG Task Team AC-VC
CARB-26-18	Evaluation and validation strategies for GHG concentrations	2027 Q4	GHG Task Team AC-VC
CARB-26-19	Evaluation and validation strategies for GHG fluxes	2028 Q4	GHG Task Team AC-VC
CARB-26-20	Tip-and-cue system for methane observations	2027 Q4	GHG Task Team AC-VC
CARB-26-21	Best Practices for Area Flux Methane measurements	2028 Q2	GHG Task Team
CARB-26-22	High resolution GHG inversions	2028 Q4	GHG Task Team AC-VC
CARB-26-23	Multi-scale GHG integration methods	2028 Q4	GHG Task Team AC-VC
CARB-26-24	Common Practices for Facility Scale Carbon Dioxide measurements	2028 Q4	GHG Task Team
CARB-26-05	GHG Cal/Val Supersites	2026 Q4	GHG Task Team

4.1.2.2 Agriculture, Forestry, and Other Land Use (AFOLU)

The CEOS AFOLU Roadmap defines the observing system required to address the AFOLU information needs of society. The implementation of the AFOLU Roadmap is delegated to the LSI-VC Forests & Biomass Subgroup, with support from the LSI-VC GEOGLAM Subgroup. LSI-VC GEOGLAM's work is detailed further in the Observations for Agriculture section (4.2) of this Work Plan.

In **2026–2027**, the LSI-VC Forests & Biomass subgroup will, among other things:

- Refine and simplify the AFOLU Roadmap actions and provide a clearer prioritisation and timeline for implementation.
- Compile a comprehensive stocktake of CEOS Agency efforts that support the ambition of the AFOLU Roadmap. A CEOS AFOLU Portal – an informational website that will serve as a means to catalogue these activities, is envisioned. Similar to the CEOS GST Portal, the AFOLU website will document relevant datasets, activities, and tools of CEOS agencies. The aim is to create, over time, a comprehensive picture of CEOS agency contributions to AFOLU.

- Work with GFOI Capacity Building partners to accelerate the policy relevance and application of new generation of Above Ground Biomass measurement missions, through strong communications, education, and interchange between GFOI countries and space data providers. This includes continued advocacy for the CEOS Biomass Protocol.

- Develop guidance regarding the differences, advantages, and disadvantages of biomass maps from missions like GEDI, NISAR, and BIOMASS.

These and other activities (e.g., ongoing contributions to GEO-TREES, CEOS-ARD efforts, etc.) will be undertaken to further develop CEOS data products and associated user guidance material in support of national and global level reporting. Ultimately, the aim is to take steps to increase the uptake and impact of EO on these processes, working closely with partners including GFOI and GEOGLAM.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
CARB-26-03	CEOS AFOLU Portal	2026 Q4	LSI-VC F&B Team
CARB-26-04	Refinement of the CEOS AFOLU Roadmap actions	2026 Q4	LSI-VC F&B Team
CARB-20-05	Support and encourage space data uptake in GFOI countries	2027 Q4	LSI-VC F&B Team
CARB-26-01	Alignment of space-based biomass products with user needs in a consistent manner from CEOS agencies	2028 Q4	LSI-VC F&B Team
CARB-19-03	CEOS Contribution to the Early Warning Module for GFOI	2027 Q4	LSI-VC F&B Team
CARB-26-02	Biomass satellite capabilities guide and promotion of space-based forest biomass measurements for GFOI countries	2027 Q4	LSI-VC F&B Team
CARB-26-05	Exploratory groundwork for a CEOS-ARD specification for Lidar	2027 Q4	LSI-VC F&B Team
CARB-26-06	GST2 prototype products and guidance	2027 Q4	LSI-VC F&B Team
CARB-26-07	CEOS contribution to GEO-TREES	2028 Q4	LSI-VC F&B Team

4.1.2.3 Aquatic Carbon

The development of the Aquatic Carbon Roadmap has been delegated to the Ocean Colour Radiometry Virtual Constellation (OCR-VC). The draft roadmap was shared with the 2025 CEOS Plenary, followed by review by the international community at the Ocean Carbon From Space Workshop (November 2025) and International Ocean Colour Science Meeting (December 2025). The Roadmap has been delivered to CEOS Principals for endorsement at SIT-41, in April 2026. Following potential endorsement, the team will start working on the implementation of its provisions. A detailed description of the planned activities and relative deliverables can be found in section 3.9 (Advancement of the CEOS Virtual Constellations).

The Ocean Colour Radiometry Virtual Constellation (OCR-VC) advances critical monitoring and forecasting capabilities for Earth's aquatic ecosystems across three strategic domains: climate, carbon cycle management, and water quality assessment. The development of an Aquatic Carbon Roadmap has been delegated to the OCR-VC, which will be a priority activity in the coming years. Concurrently, OCR-VC will advance the CEOS Analysis Ready Data (CEOS-ARD) Aquatic Reflectance Product Family Specification to encompass comprehensive water type coverage, including coastal and open ocean environments. See also section 4.9.6.

2026 Strategic Priorities

The Aquatic Carbon Roadmap has been delivered to CEOS Principals for endorsement at SIT-41, in April 2026. Following potential endorsement of the Aquatic Carbon Roadmap, OCR-VC will transition to execution phase with emphasis on stakeholder engagement and communication strategies. ESA is also convening a high-level Coastal Blue Carbon User Consultation (April 8-10, 2026, ESRIN, Italy) to align stakeholders with Roadmap initiatives. The team will establish a prioritised execution framework, categorising initiatives by implementation horizon (near-, mid-, and long-term) with defined success metrics. A peer-reviewed publication will articulate key recommendations and implementation pathways to the broader scientific community.

2027–2028 Outlook

The focus will shift to executing near-term Roadmap recommendations while documenting goals for a coordinated, multi-mission framework for calibration and validation activities, including System Vicarious Calibration infrastructure and standardised bio-optical measurement protocols.

All OCR-VC initiatives directly support and enable the International Network for Sensor Intercomparison and Uncertainty Assessment for Ocean Colour Radiometry (INSITU-OCR), strengthening the foundation for global aquatic ecosystem monitoring capabilities.

4.2 Observations for Agriculture

4.2.1 Background

Since its establishment by the G20 Agriculture Ministers in 2011, GEOGLAM has provided global leadership in satellite-based agricultural monitoring, convening an international Community of Practice to improve the quality, transparency, timeliness, and relevance of crop information for food security, markets, trade, sustainability, disaster risk reduction, and climate action. Through its operational activities – including the GEOGLAM Crop Monitor for AMIS, the Crop Monitor for Early Warning, and the emerging Global Crop Monitor – GEOGLAM has expanded its national, regional, and global policy relevance.

As a result of this sustained leadership, GEOGLAM's Community of Practice and Secretariat receive regular

requests to apply their expertise across scales – from local to global – and across domains including agricultural statistics, sustainability reporting, climate adaptation and mitigation, and disaster risk reduction. This growing demand represents a strategic opportunity to further strengthen the quality, accessibility, and sustained adoption of CEOS agency data, with agencies working in close partnership with GEOGLAM to address challenges related to space data access and operational uptake.

4.2.2 GEOGLAM's goals vis-à-vis CEOS

1. Document satellite data and ground observation requirements relevant to GEOGLAM's Essential Agricultural Variables (EAVs) and community requirements;
    a. Identify each agency's current and planned contribution to EAVs – spanning research and development to tool development to operational product provision;
    b. Identify current and planned capabilities and gaps in satellite observations relevant to generating the EAVs;
    c. Develop methods and coordinate individual agency research and development efforts;
2. Identify opportunities for (and address challenges related to) easing access to and utilisation of (multi-mission) satellite data in the production of EAVs, particularly in the era of distributed or cloud computing;
3. Collaborate on "good practices" for validating EAVs;
    a. Develop guidelines for the collection of calibration and validation data for EAVs;
4. Maximise opportunistic joint efforts around capacity development for using satellite data for agriculture assessment and monitoring;

Specific tasks related to these goals include:

· Conducting a Stocktake and Gap Analysis of Essential Agriculture Variables (EAVs)

· Supporting GEOGLAM in Developing a Prioritisation Plan for CEOS related to the EAVs

· GEOGLAM and LSI-VC WG Cal-Val LPV co-organising a workshop on good practices for ET validation

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
AGRI-26-01	Conduct a stocktake and gap analysis of Essential Agricultural Variables (EAVs)	2026 Q4	LSI-VC GEOGLAM Subgroup
AGRI-26-02	Develop a GEOGLAM Prioritisation Plan	2026 Q4	LSI-VC GEOGLAM Subgroup
AGRI-26-03	Hold a Workshop on Evapotranspiration Validation	2026 Q2	LSI-VC GEOGLAM Subgroup

4.3 Observations for Disasters

The CEOS Working Group on Disasters (WGDisasters) ensures the sustained coordination of disaster-related activities undertaken by CEOS Agencies and acts as an interface between CEOS and the community of stakeholders and data users involved in risk management and disaster risk reduction.

Increased impacts of global climate change bring more frequent and extreme hydrometeorological events, often leading to consequences such as landslides, flooding, drought, wildfires, or rising sea levels. These hazards and other traditional non-climate hazards such as volcanoes present enhanced opportunities for the EO community to demonstrate the unique scope and reach of satellites in support of the full cycle of risk management.

The primary objectives of the WGDisasters are:

- To promote new scientific advancements in disaster and risk sciences
- To support the efforts of Disaster Risk Management authorities in protecting lives and safeguarding property through satellite-based EO and science-based analyses
- To foster increased use of EO in support of disaster risk management (DRM)
- To support the implementation of the *United Nations Sendai Framework for Disaster Risk Reduction 2015–2030* (focusing on its Priority 1 "Understanding Risk")
- To raise the awareness of politicians, decision makers, and major stakeholders (e.g., GEO, UN Agencies, donor institutions like the Asian Development Bank, World Bank/Global Fund for Disaster Risk Reduction, scientific communities, national resource management agencies, civil protection agencies, local decision makers, and others) of the benefits of using satellite EO in all phases of Disaster Risk Management.

In 2026, WGDisasters will 1) support the ongoing work of international initiatives such as GEO, 2) strive to increase the awareness of decision makers of the critical role of satellite EO, and 3) reinforce the messaging around the necessity of enhanced satellite EO programmes to better address Disaster Risk Management (DRM) needs. WGDisasters has highlighted the importance of moving from technical demonstrations to sustained application of EO for improved risk management. This is demonstrated by the approval by the 2023 CEOS Plenary of two activities born of CEOS WGDisasters demonstrators: G-VEWERS (Global Volcano Early Warning and Eruption Response from Space) and the pre-operational CEOS Recovery Observatory. The move toward a more permanent effort regarding volcano monitoring and value-added information provision for disaster recovery is a significant step forward.

- Recovery Observatory (RO) – The RO aims to establish 2–4 Recovery Observatories (ROs) globally each year and create synergies with the "International Charter on Space and Major Disasters". The Recovery

Observatory was recently recognised by the UN General Assembly in the framework of the Space 2030 Agenda as "a means to increase the contribution of satellite data to recovery from natural disasters" and to contribute to Sendai Framework priority 4: Build Back Better. WGDisasters intends to build on this recognition by engaging new partners to support this critical phase of risk management. Building on the beneficial interaction with the International Charter on Space and Major Disasters, the Pre-operational RO aims at a) ensuring access to Charter imagery during activations; b) assessing the value of increased coordination with Charter activations to address longer-term challenges; c) coordinating the provision of value adding resources to raise awareness about RO and Charter capabilities.

- G-VEWERS – Carrying on from the activities of 2025, an incremental approach for scalable global monitoring will be implemented to ensure risk reduction and improved volcano response over quiescent, restless and erupting volcanoes with yearly, weekly, and daily observations, respectively.

- New Seismic Risk initiative: started in 2025, the initiative will proceed finalising data requests over agreed AOI (Latin American and Caribbean – LAC). Specific efforts will be devoted to engaging organisations and scientific teams working on selected test areas, in synergy with the EU LAC Digital Alliance and the Copernicus LAC initiative. This initiative focuses on analysing risk and ensuring preparedness for major events in the future.

In 2025, a final report was issued on the Wildfire Pilot and the Tonga Preparedness Pilot, and in 2026 the Flood Pilot and Pre-operational RO will issue their final reports.

Moreover, new initiatives are under development concerning Drought, Landslides, Biodiversity and Wildfire fuel. These will be developed in 2026. In this regard, Drought and Landslide pilots could include and provide support to the SIT Chair's priority 1 (on the Earth water cycle) and SIT Chair priority 2 (resilience).

This flurry of new activity reflects the vibrant dynamic within the WG, which has seen a growth in members over the last two years with new organisations taking up active roles or expressing interest in WGDisasters activities, e.g. ISRO, VSC, UN WFP, RCMRD, POLSA, Malaysian Space Agency, HSA, PhilSA, ROSA, and AfSA.

WGDisasters will also continue to support the GEO Geohazard Supersites and Natural Laboratories initiative (GSNL) with data. The GSNL aims to improve the monitoring and management of seismic and volcanic hazards, providing access to new EO data and capacities, especially in developing countries, e.g., in the Africa, Latin America and Caribbean (LAC) regions. Periodic reports will be submitted by the Supersites for evaluation and verification of progress.

Another notable GEO activity concerns the Earth Observations for Disaster Risk Management (EO4DRM) initiative. The WG Disasters demonstrators previously mentioned fall under this scope. EO4DRM has several key thematic demonstrators reaching maturity; each demonstrator presents specific sustainability challenges and requires a dedicated approach.

Finally, WGDisasters will discuss and evaluate to provide contribution to the CEOS Global Stocktake Strategy (GST) recommendations included in this CEOS Work Plan, with a focus on refining space-based observations, derived products, and delivery systems to inform disaster preparedness.

SIT Chair Priority 2: Connected Data for Community Resilience

Through a coordinated approach among SIT Chair, GSNL, WGISS and WGDisasters, a new concept of Interoperability Demonstrator will be exploited to support SIT Chair priority 2 on "Connected Data for Community Resilience", further seeking synergies with the CEOS ARD initiative. Additionally, incorporating input from CEOS members and partners, including WGDisasters, the SIT Chair will produce a comprehensive impact assessment of key existing resilience-related activities. This work identifies opportunities for further demonstrations and enhanced data interoperability. The SIT Chair will host side meetings and a workshop, including WGDisasters, for its final deliverable of a Resilience Findings report to guide future CEOS resilience-focused actions and applications.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
DIS-20-02	GSNL New Vision Report	2026 Q4	WGDisasters
DIS-24-01	G-VEWERS	2030 Q4	WGDisasters
DIS-24-02	Pre-operational RO	2026 Q4	WGDisasters
DIS-24-04	Data provision to the GEO GSNL initiative	2030 Q4	WGDisasters
DIS-24-05	GEO-GSNL contribution to the WGDisasters	2030 Q4	WGDisasters
DIS-26-01	New Seismic Risk Initiative	2028 Q4	WGDisasters

4.4 Observations for Water

4.4.1 SIT Chair Priority #1, Water Planet: Seeing Earth's Water from Space

Water is fundamental to life on Earth, yet global water resources face unprecedented challenges due to increasing pressures from human activity, population growth, and the intensification of water-related extremes such as droughts and floods. Addressing these challenges requires innovative, data-driven solutions supported by Earth observation (EO) capabilities. Satellite observations provide invaluable insights into the global water cycle, enabling monitoring of changes over time and informing strategies for improved water management across varied domains, from freshwater ecosystems to coastal waters.

The NASA SIT Chair's Water Planet priority leverages the capabilities of past, present, and future planned missions alongside collaborative efforts within CEOS to deliver tailored water data solutions globally. By integrating multiplatform, multispectral data and adopting user-focused approaches, CEOS will accelerate efforts to deliver impactful water science, support decision-making processes, and bolster resilience to water-related hazards worldwide. The 2026–2027 SIT Chair will work closely with the 2026 CEOS Chair and related CEOS entities to advance the following outcomes during its two-year term.

Coordinated Water Observations

The aim is to strengthen cross-agency coordination to promote the acquisition, integration, and delivery of diverse water-related data through a multisource, integrated approach to improve understanding of the global water cycle and deliver impactful water solutions through collective efforts. Moreover, the SIT Chair will provide coordination opportunities and programming for EO water observations and applications in coordination with the CEOS Chair. Strategic activities that would be a valuable contribution include:

- **Co-host a Water Quality Workshop** (CEOS Chair and SIT Chair) at SIT-41 (April 13th, 2026) and CEOS-TW 2026, focused on strengthening the use of Earth observation data for water quality management across interconnected freshwater and coastal ecosystems, addressing critical challenges, identifying key opportunities, and defining a shared vision for CEOS to enable scalable and impactful Earth observation research and applications. The workshop will convene representatives from CEOS agencies, Virtual Constellations, Working Groups and other entities, as well as invited experts. The event offers an opportunity for collaboration on advancing actionable, scalable solutions through a catchment-to-coast observatory approach.

- Prioritise the development of **best practice guidance on combining multiplatform, multispectral observations** to support water science and management applications.

- Identify opportunities for interoperability and ensuring continuity between sensors and water datasets, addressing user uncertainties around selecting EO water products based on observational priorities.

Accessible and Interoperable Water Data Products

The objective is to promote accessible, ready-to-use water data products while advancing interoperability of water observations for broader applications. In light of the recent proliferation of missions, data streams, and associated water products from CEOS Agency missions, users often express uncertainty about which products are appropriate for their research and applications, as well as how to gain access to them. Interoperability and continuity between sensors are consistently referenced as having utmost importance for both freshwater resource management and nearshore coastal water quality management. Additional opportunities for CEOS to foster collaboration increasing utilisation of EO data will be explored. The recommended approach is for CEOS to consider them as items of value to the water management community.

- Explore expansion of the **CEOS Analysis Ready Data (CEOS-ARD) framework to accommodate for higher-level water products** addressing Essential Water Variables (EWV) and other thematic needs.

- Perform a **CEOS-ARD self-assessment** for emerging missions such as NASA PACE and SWOT water products, providing clarity for users about their data applications. The CEOS-ARD Oversight Group

should maintain open lines of communication with the water cycle (terrestrial hydrology and aquatic/nearshore water quality) science and applications community.

- **Develop a CEOS-ARD Water Thematic Appendix** within the updated CEOS-ARD Strategy, providing guidance on which data sources and space-agency funded products are suitable for specific water science and management use cases.

User-centred Solutions for Water Challenges

- Co-develop **guidance for scaling and transitioning EO data into actionable water solutions** to better support impactful, water resilience-building efforts across regions and sectors.

- Align and **promote EO driven tools such as early warning/forecasting systems for water challenges**: droughts, floods, declining groundwater, reduced streamflow, and degraded water quality, while emphasising CEOS's collective strength in delivering impact.

Evaluate the Impact and Value of Earth observations for Water

Evaluate the benefits and value of leveraging EO data for water science and solutions, highlighting measurable impacts on water and resilience building across regions. Strategic activities should include:

- **Select use cases for evaluation of EO data impact on water-related resilience-building efforts**, including disaster management scenarios and resource optimisation studies.

- **Assess the benefits of EO-based solutions for water challenges** ensuring that CEOS outputs support actionable decisions.

- **Apply EO data water examples to the Data Value Chain to illustrate impact across CEOS value areas**

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
WAT-26-01	Co-hosting a Water Quality Workshop	2026 Q4	CEOS Chair SIT Chair

4.4.2 COAST-VC and Water

The Coastal Observations Applications Services and Tools Virtual Constellation (COAST-VC) prioritises product development and refinement work within coastal regions. In partnership with external entities such as CoastPredict (a UN Ocean Decade Programme), IOCCG (International Ocean Color Coordinating Group), Space4Ocean Alliance, GEO AquaWatch, and GEO BluePlanet, COAST will engage with coastal user networks and support and facilitate delivery of new Essential Coastal Variables via satellite data inputs, including enabling technical and operational recommendations from the coastal user perspective. Coastal observations support the UN Ocean Decade, in which COAST is an endorsed contribution. In order to jointly

catalyse the design of new coastal products, CEOS COAST is willing to interact with external partners like the UN Ocean Decade and others to more equitably promote the access and availability of oceanic and coastal satellite data alongside in situ data. On a timeline mutually agreed, CEOS COAST will collaborate with other CEOS entities on beneficial activities within the coastal ocean realm including: to improve the quality of coastal data products as demonstrated within identified pilot regions, to provide science-based mission planning advice on coverage and seasonal sampling strategies in the dynamic coastal realm, and to engage with identified stakeholder communities to offer feedback on COAST products, services and tools.

Deliverables related to the above activities are detailed in sections 4.9.8 and 4.10.1.

4.4.3 OCR-VC and Water

As discussed in section 4.1.2, the development of the Aquatic Carbon Roadmap has been delegated to the Ocean Colour Radiometry Virtual Constellation (OCR-VC). Following earlier drafts (at the 2025 CEOS Plenary) and reviews by the international community in 2025, the Roadmap has been delivered to CEOS Principals for endorsement at SIT-41, in April 2026. Following potential approval, the team will start working on the implementation of its provisions. A detailed description of the planned activities and relative deliverables can be found in sections 4.1.2.3 (Projected Outcomes 2026–2028) and 4.9.6 (Advancement of the CEOS Virtual Constellations).

4.4.4 OSVW-VC and Water

A partnership between COAST-VC and the Ocean Surface Vector Wind Virtual Constellation (OSVW-VC) creates a powerful synergy by linking the driving wind stress to the physical and biological response of the coastal ocean. By integrating high-resolution wind vectors into coastal waves and circulation models, this partnership can deliver cross-calibrated, sub-10km wind products tailored specifically for the land-sea interface, where traditional scatterometry often faces contamination. ISRO's EOS-06 (Oceansat-3) mission along with other international scatterometer mission will be instrumental in this effort. Moreover, ISRO's SAR missions like EOS 04 (C-band) and NISAR (L and S band) provide high resolution wind product. High-resolution EOS06 scatterometer data, when combined with SAR-derived wind fields, can provide the precise atmospheric forcing required for CoastPredict models to accurately forecast storm surges and coastal inundation. Furthermore, CEOS expertise in multi-sensor fusion will help deliver validated Essential Coastal Variables (ECVs) – specifically sea state and surface stress – serving as a key contribution to the UN Ocean Decade by bridging the gap between global open-ocean observations and the specialised needs of regional stakeholder communities.

Activities to be carried out in 2026–28 include:

- Generation of Coast-Specific Wind Atlas: A high-resolution (5km) dataset merging scatterometer winds from missions like EOS-06 and ASCAT with SAR-derived winds to support coastal engineering

and erosion studies by March 2028.

- Pilot Study for Vulnerable Coasts: Technical assessments from specific regions (such as the North Indian Ocean coastline) demonstrating how improved wind accuracy directly enhances coastal flood inundation maps by March 2028.
- Refining Oceansat-3 wind products based on the operational requirements of coastal management agencies, GEO BluePlanet and AquaWatch by end of 2027.

4.4.5 P-VC and Water

CEOS, through the CEOS Precipitation Virtual Constellation (P-VC) supports to the sustained and systematic coordination and utilisation of capabilities to observe, measure and validate global precipitation. This, as described in detail in section 4.9.3 supports a wide range of applications from the prediction of high-impact weather events (hurricanes, floods, droughts) to the management of freshwater resources and the interconnectivity with the Earth System.

4.4.6 SST-VC and Water

CEOS, through the Sea Surface Temperature Virtual Constellation (SST-VC) and collaboration with member organisations and the Group for High Resolution Sea Surface Temperature (GHRSST) continues to produce and provide sea surface temperature (SST) and related parameters. These outputs support a wide range of science and applications areas. More detail is provided in section 4.9.4.

4.4.7 SDG CG and Water

As part of ongoing activities, closely related to the topic of “Observations for Water”, the CEOS SDG Coordination Group will continue renewing EO Support Sheets, including SDG 6.6.1 (Change in the extent of water-related ecosystems over time) and SDG 14.1.1a (Index of Coastal Eutrophication). SDG 6.6.1 focuses on tracking changes in the extent, quantity, and in some cases quality of inland and coastal water-related ecosystems using global and national EO datasets, while SDG 14.1.1a directly addresses monitoring eutrophication potential in coastal waters using satellite ocean-colour–derived chlorophyll a within EEZs. Together, the renewed support sheet documents globally available EO data and products that can help countries and regional bodies identify areas for further investigation and assess the effectiveness of water and nutrient management activities, while also clearly flagging remaining gaps (especially limited in situ data and the need for regionally tuned, higher-resolution products in nearshore and inland waters) to guide future implementation and mission evolution.

4.5 Observations in Support of Sustainable Development

The objective of CEOS Sustainable Development Goals Coordination Group (SDG CG), is to coordinate SDG-related deliverables and Work Plan activities by liaising with working groups and virtual constellations across CEOS. The Deliverable leads organise their technical capacity and support for each SDG topic by mobilising the appropriate experts (internal and external to CEOS) and linking with ‘’SDG-related" GEO Work Programme activities.

The SDG CG supports U.N. Custodian Agencies and other strategic SDG stakeholders by helping articulate satellite data requirements and availability, and by promoting the effective and consistent use of Earth Observation, CEOS Agency data, tools, and guidance in SDG monitoring and reporting. To that end, the SDG CG liaises with other CEOS groups (Working Group Capacity Development, CEOS-ARD OG, Interoperability Handbook, etc.) to harness CEOS collective expertise and maximise usefulness of CEOS Agency data and benefits for the SDG stakeholder community. The SDG CG also maintains active awareness of relevant GEO activities (including EO4SDG) in the framework of the implementation of the GEO Post-2025 Strategy as well as evolving U.N. processes that may influence SDG indicator methods and reporting frameworks. In that regard, the SDG CG plays a critical role as the coordinating body to ensure CEOS provides satellite data expertise to stakeholders including UN Custodian Agencies (e.g. UNEP on water extent, UNCCD on land degradation, etc.),

For 2026–2028, the SDG CG will focus on maintaining and improving practical EO guidance products and targeted external engagement where CEOS technical expertise can have the highest impact. Current efforts prioritise support to SDG indicators where EO can provide clear, actionable contributions, while remaining responsive to strategic opportunities aligned with CEOS priorities.

In practice this means that SDG CG will continue to focus its activities on four SDG indicators: 6.6.1. on the extent of water-related ecosystems, 11.3.1 on urbanisation, 14.1.1a on coastal eutrophication/marine pollution and 15.3.1 on land degradation and explore ways of supporting other Indicators related to current CEOS Priorities (e.g. Climate, Greenhouse Gas).

Additionally, through the already established practice of monthly meetings, the SDG CG will continuously discuss their progress and plans, confirming the critical role for a coordinating body to ensure CEOS provides satellite data expertise to stakeholders including UN Custodian Agencies (e.g. UNEP on water extent, UNCCD on land degradation, etc.), and in particular the Group on Earth Observation (GEO) which is now transitioning to implementation of the GEO Post-2025 Strategy.

Key priorities for this period include:

- **Operational Guidance:** Building on the template harmonisation and updates completed in the previous cycle, the SDG CG will continue to ensure that the EO Support Sheets remain accurate, consistent, and useful technical resource to SDG stakeholders. Following review of items conducted in

2025, the SDG CG will incorporate the new iteration of updates into the Work Plan deliverables for 2026 as applicable, and maintain a process to refresh content as new missions, tools, resources, and methodological updates emerge.

- **Strategic UN Engagement:** The SDG CG with support of the CEOS CEO team will provide ongoing support to CEOS engagement with the UNSC IAEG-SDGs and UN-GGIM WGGI, including follow-up and responses to UN-GGIM requests as appropriate and responding to the UNOOSA Space4SDGs call for input. This will reflect the goal of achieving strategic inclusion of EO in SDG and reporting frameworks through 2030

- **Coordination with EO4SDG:** Maintain coordination with GEO/EO4SDG activities to ensure CEOS contributions remain aligned, visible, and responsive to stakeholder needs, including awareness of governance and leadership transitions and opportunities for joint activities.

- **Capacity Building:** In coordination with ESA and interested partners, the SDG CG will progress inclusion of SDG-focused MOOCs/webinars in the Work Plan as communicated at the 39th Plenary in Bath, UK. The intent is to directly link EO applications to SDG reporting needs and strengthen uptake through established CEOS and WGCapD channels. Preparation of the material for the pilot course is targeted for 2026, subject to confirmation of scope, ownership, and resourcing.

- **Cross Domain Synergies:** Strengthening coordination with the Biodiversity Virtual Constellation (post-April 2026 confirmation pending) to identify shared indicators and datasets, while continuing to leverage internal CEOS reporting to maximise the impact of SDG-relevant work across all Working Groups and Virtual Constellations.

- **Partnership development and outreach:** Progressively strengthen partnerships with UN agencies and other SDG stakeholders and explore opportunities to engage development banks and universities where these partnerships can amplify uptake of EO for SDG monitoring and reporting.

Additionally, the SDG CG will continue regular coordination (e.g., monthly meetings) to track progress, manage dependencies across deliverables, and surface opportunities for cross-CEOS collaboration. The group will contribute to CEOS communications by keeping SDG-related web content and messaging current, and by promoting relevant CEOS activities through established CEOS communication channels.

Through these activities, the SDG CG will ensure that Earth observations are recognised as a foundational data source for the current SDG framework and the post-2030 global policy agenda.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
SDG-24-01	EO Support Sheet for SDG Indicator 6.6.1 (Water) Annual Update	2026 Q3	SDG CG
SDG-25-01	EO Support Sheet for SDG Indicator 11.3.1 (Urbanisation) Annual Update	2026 Q4	SDG CG GEO Secretariat

SDG-25-02	EO Support Sheet for SDG Indicator 14.1.1 (Marine Pollution) Annual Update	2026 Q4	SDG CG CEO
SDG-25-03	EO Support Sheet for SDG Indicator 15.3.1 (Land Degradation) Annual Update	2026 Q4	SDG CG
SDG-25-04	UNSC IAEG-SDGs / UN-GGIM WGGI Engagement	2026 Q3	SDG CG
SDG-26-01	Report on coordination with ESA and other stakeholders on the status of SDG MOOC material preparation	2026 Q4	SDG CG

4.6 Data Quality

The CEOS Working Group on Calibration and Validation (WGCV) continues to evaluate and recommend best practices for the characterisation/calibration of satellite-based sensors, and the validation of satellite-based EO data products. The results of this work are the calibration and validation building blocks for data and tools that underpin the work of the Virtual Constellations and other Working Groups. For these underpinning activities, different tasks are focused within subgroups focused on specific areas of interest. The WGCV supports six Subgroups that operate as individual entities and focus on specific technical areas related to calibration and validation as follows:

- Atmospheric Composition (ACSG)
- Infrared Visible Optical Sensors (IVOS)
- Land Product Validation (LPV)
- Microwave Sensors (MSSG)
- Synthetic Aperture Radar (SAR)
- Terrain Mapping (TMSG)

The foreseen activities for the coming period are described against the objectives of the WGCV.

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

2026–2028: The calibration of missions in the thermal infrared domain is becoming increasingly important, with several CEOS Agencies working on future missions in this area. This includes SBG (Surface Biology and Geology) (NASA), Copernicus LSTM (Land Surface Temperature Monitoring) (ESA/COM) and TRISHNA

(CNES/ISRO). A team of experts from the IVOS and LPV subgroups is conducting a study to determine the necessary characteristics of sites and their instrumentation to produce a derived brightness temperature signal at top of atmosphere with the highest possible accuracy while minimising any associated uncertainties. The team has also identified an inventory of potential sites that fulfil or could fulfil these criteria and provide a roadmap toward the establishment of what is being called TIRCalNet, following the past example of RadCalNet. The first progress meeting was held in January 2024 with CNES and JPL, the partnering agencies. They have committed to providing input data to the study from La Crau and Lake Tahoe sites respectively. There will be several deliverables during the study that will take approximately 18 to 24 months depending on progress and data availability. The most relevant deliverable would be the final report, constituting the roadmap towards an operational TIRCalNet, expected in 2026.

In the context of Synthetic Aperture Radar (SAR), the SARCalNet initiative aims to promote standardised SAR calibration and facilitate the harmonised implementation of cal/val tasks by a broad SAR community. It is crucial to have a network of curated calibration sites for SAR and well-established cal/val procedures. A team representing many SAR mission agencies has been working on documents to establish the requirements for SARCalNet. These documents include guidelines for artificial and natural targets; recommended minimum analysis of the imagery; as well as a handbook describing SARCalNet submission protocols and procedures. A subcommittee of users will actively curate the reference target submissions and produce an annual summary report. The WGCV SAR subgroup have completed the establishment and initialisation of the SARCalNet site, where registered users can access information on user-submitted artificial and natural SAR calibration targets. WGCV will continue to support the development of SARCalNet through regularly reviewing submissions and ensuring the document library is kept up to date.

There is a growing number of public and commercial providers offering high-resolution space-borne Earth observation data. To effectively utilise this data, it is important to understand its characteristics, calibration methods, and quality and technical capabilities. Interoperability between satellites and products will expand opportunities for global applications including agriculture, assessment of the water cycle, forest and vegetation monitoring, pollution monitoring, and climate. Data can be used together only if it is sufficiently characterised, therefore, harmonisation of calibration and validation approaches is fundamental. The WGCV will continue supporting New Space through its active participation in VH-RODA and JACIE workshops, as well as direct involvement through its various subgroup initiatives.

In 2026, WGCV will conduct a second round of pilot assessments for assessing cal/val measurements as Fiducial Reference Measurements (FRMs) based on the FRM assessment framework that has been developed and is made available on the CEOS Cal/Val Portal. FRM measurements should ideally have documented SI traceability (e.g., via round-robin characterisation and regular pre- and post-deployment calibration of instruments) using metrology standards or community recognised best practices. The uncertainty budget for all FRM instruments, and derived measurements, must be available and maintained. FRM measurement protocols, procedures and community-wide management practices like measurement, processing, archive, documents, etc. are defined, published and adhered to by FRM

instrument deployments. The second FRM Assessment Framework exercise plans to update and develop Maturity Matrices from PGN, FRM4DOAS, RadCalNet, NDACC, FRM4Drones, CREGARS, and FRM4SM. The results of the pilot assessments will be discussed at the 2026 and 2027 WGCV Plenary meetings and will be published on the CEOS Cal/Val Portal.

The WGCV will continue to provide a framework for performing intercomparison exercises. The intercomparison frameworks have demonstrated to be successful and useful.

- ACIX – intercomparison of atmospheric correction scheme – is evolving towards hyperspectral using PRISMA and EnMap data.
- CMIX – Cloud Masking scheme intercomparison – is progressing with improvement in the validation approach using the SkyCam – ground-based sky camera network for validation on satellite-derived cloud masks.
- DEMIX – DEM intercomparison and impact on orthorectification process - has produced four peer-reviewed publications, a new 'DEMIX tiling' system, and a processing platform. A comprehensive final report was delivered in early 2025.
- SRIX4VEG – Intercomparison of Surface reflectance for vegetation – following the completion of the SRIX4VEG II campaign held in Australia in March 2024, the FRM4Veg team created a community-agreed best practice protocol for UAV-based surface reflectance, endorsed by WGCV in January 2025.
- Supported by the ACTRIS-CREGARS Research Infrastructure and under the auspices of the Network for the Detection of Atmospheric Composition Change (NDACC) the Third Cabauw Intercomparison of DOAS-like Instruments (Differential Optical Absorption Spectroscopy) with external referee (CINDI-3) took place in the Netherlands from May-June 2024 with community-wide field intercomparison and certification of MAX-DOAS instruments.
- The CEOS Product Validation Platform (PVP) was developed in response to the new space community's request for a common method to demonstrate sensor performance. It aims to encourage CEOS Agencies to regularly collect and freely share L1 satellite imagery and metadata against common 'CEOS reference' sites. The platform is being developed by NPL and hosted on the UK Earth Observation Data Hub (EODH). WGCV aims to create a 'virtual reference' that combines comparisons over different references to facilitate interoperability and harmonisation between sensors.
- GCPIX – Ground Control Point Intercomparison eXercise – proposed in the CEOS New Space White Paper, the activity aims to establish a reference for geometry and image quality Cal/Val via a GCP Database. The exercise was kicked off in April 2025.
- GRGIX – Global Reference Grid Intercomparison eXercise – aims to conduct a systematic grid intercomparison and benchmarking with a taxonomy and database of global grids.

WGCV is developing a guidance document for improving the consistency of surface reflectance products with the aim of enhancing interoperable use. The Surface Reflectance Quality and Consistency team is conducting a review of surface reflectance literature to evaluate community approaches and develop consensus recommendations. High-quality, radiometrically accurate, and temporally stable surface reflectance is essential to ensure measurand consistency across sensors, platforms, and missions. Consistency in the quality of surface reflectance enables seamless integration of multi-source observations, supports robust time-series analysis, and ensures that observed spatial and temporal variability reflects true surface change rather than sensor or processing-induced artefacts.

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

A joint task team between WGCV and GSICS has been established to coordinate and ensure interoperability of the forthcoming SI-Traceable Satellites (SITSats). SITSats are envisioned to be the foundation for a future 'international climate and calibration observatory' and this new generation of explicitly designed satellites will help enable a new epoch in climate quality observations of the Earth. The joint task team will build on the workshop "SI-Traceable Space- based Climate Observing System: a CEOS and GSICS Workshop" held in London in September 2019, which assessed the benefits and requirements of a space-based climate observing system, summarising current measurement capabilities, climate-based needs, and future implementation plans.

WGCV will continue working with the GEO Secretariat, including work to support relevant GEO activities, mainly by encouraging the widespread adoption of quality assurance principles. The development of calibration and validation infrastructure and comparison campaigns within the frame of WGCV will be used to promote these principles and best practices. WGCV will continue to foster cooperation with WMO, ground-based networks, and CEOS WGs and VCs through dedicated presence during WGCV meetings and by reaching out to science users and data product providers in the atmosphere, terrestrial, and ocean communities.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
CV-17-01	L1 top-of-atmosphere interoperability	2026 Q4	WGCV
CV-23-01	Develop an FRM Assessment Framework	2026 Q2	EC ESA
CV-23-03	TIRCALNET: Establishment of initial TIRCalNet processes and network initiation	2026 Q4	WGCV IVOS Subgroup WGCV LPV Subgroup
CV-23-04	Conduct a GCP Intercomparison Exercise	2026 Q4	WGCV TMSG
CV-23-05	Retrieval and validation of high winds with combined active-passive microwave measurements	2026 Q2	WGCV MSSG
CV-23-06	Retrieval and validation of sea surface atmospheric pressure with microwave remote sensing	2026 Q2	WGCV MSSG

CV-24-03	Good Practices Protocol on Vegetation Indices	2026 Q3	WGCV LPV
CV-25-01	Conduct a second FRM Assessment Framework exercise	2026 Q2	WGCV
CV-25-02	Develop a white paper for the Quality and consistency of land surface reflectance in the solar reflective region	2026 Q2	WGCV
CV-26-01	Provide data quality inputs to the 2026 CEOS-ARD Strategy	2026 Q3	WGCV
CV-26-02	Develop a Guide to Pre-flight Calibration and Characterisation of Optical Satellite Sensors	2026 Q2	WGCV
CV-26-03	Provide a list of Land Product Validation Supersites	2026 Q1	WGCV LPV
CV-26-04	Develop an updated product validation protocol on Leaf Area Index (LAI)	2027 Q4	WGCV LPV WGCV LPV Biogeophysical Focus Group
CV-26-05	Develop a product validation protocol on Fire Burnt Area	2026 Q3	WGCV LPV WGCV LPV Fire Focus Group
CV-26-06	Develop a product validation protocol on evapotranspiration	2026 Q4	WGCV LPV WGCV LPV ET Focus Group
CV-26-07	Create a SITSat webpage on the Cal/Val Portal	2026 Q4	WGCV SITSat Task Team
CV-26-08	Conduct a Global Reference Grid Intercomparison Exercise (GRGIX)	2027 Q4	WGCV TMSG

4.7 Data Discovery, Access, Preservation, Usability and Exploitation: Approaches, Systems, Tools and Technologies

The Working Group on Information Systems and Services (WGISS) promotes collaboration in the development of systems and services that manage and supply Earth observation data. WGISS addresses the internal management of EO data, the creation of information systems and the delivery of interoperable services. The activities and expertise of WGISS span the full range of the information life cycle, from the requirements and metadata definition for the initial ingestion of satellite data into archives and the incorporation of derived information into end-user applications. The highlights of 2025 include the endorsement of the CEOS Interoperability Handbook 2.0, the release of a white paper on EO Data Collections and management and the release of an AI/ML white paper. WGISS activities are broadly divided into four areas: Data Interoperability and Use, Data Preservation and Stewardship, Data Discovery and Access, and Technology Exploration Interest Groups. The Work plan of each of these interest groups is summarised below.

Data Interoperability and Use Interest Group (DIIG): In 2026, DIIG will develop the Interoperability Maturity Matrix based on the recommendations in the Interoperability Handbook. The Maturity Matrix will help users measure data and service interoperability and monitor implementation within the

organisation. During 2027 and 2028, Interoperability Demonstrators will be developed along with CEOS working groups and virtual constellations. These demonstrators will help end users understand the barriers to implementing interoperability and serve as use cases to increase the interoperability of data and services.

Data Preservation and Stewardship Interest Group (DSIG): In 2026, DSIG will work on the EO Data Citation Guidelines, which will identify the core components to include when citing data. Citing data properly is essential for ensuring transparency, reproducibility, and giving appropriate credit to data creators. During 2027 and 2028, DSIG will develop EO Data Provenance Guidelines. These guidelines will help data providers document the history of the data, including information on the origin of the data content, changes undergone, ancillary data used, algorithm versions, and custodian details.

Data Discovery and Access Interest Group (DAIG): In 2026, DAIG will continue to integrate new/ existing data from CEOS member agencies with the WGISS-connected data assets. DAIG will help develop standardised STAC-based interfaces to increase the visibility/accessibility of EO data. Collaboration with LSI-VC for guidelines development for the discovery of ARD is in progress. Guidelines for the discovery of Climate Data Records (CDR) with WGClimate will be initiated. In 2026, DAIG will develop a White Paper on Federated Authentication and Authorisation to provide seamless access to data across different organisations. The paper is expected to be finalised early in 2027, but work will continue in 2028 with the analysis of policy and intergovernmental implications on federated identity implementation.

Technology Exploration Interest Group (TEIG): In 2026 and 2027, TEIG will develop a white paper on "Digital Twins". This white paper will highlight the existing applications of Digital Twins in the Earth Observation domain, technological limitations, use cases and future technology roadmaps. During 2027 and 2028, TEIG plans to work on evolving technologies, including, Quantum computing and sensing, Neuromorphic Imaging and computing, and AI-enabled Edge computing.

SIT Chair Priority 2: Connected Data for Community Resilience

In line with Priority 2, the SIT Chair will support ongoing CEOS interoperability activities, specifically, the evolution of the Interoperability Framework, Handbook, Maturity Matrix, and interoperability demonstrators. NASA SIT Chair, supported by the SEO, will contribute to the CEOS-ARD Strategy 2026 with resilience-related components and supports ongoing civil/commercial space calibration/validation and data quality standards collaboration. There are two key deliverables focused on connected data. 1) The SIT Chair will work with WGISS and partners to identify and deliver a Resilience Interoperability Demonstrator that integrates ongoing efforts across WGISS, WGDisasters, the CEOS-ARD Oversight Group, and SEO. 2) The SIT Chair, in collaboration with CEOS members, will develop an updated Data Value Chain and apply EO water and resilience examples to the Data Value Chain to illustrate impact across CEOS value areas.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
DATA-26-01	EO Data Citation Guidelines	2026 Q4	WGISS
DATA-26-02	Interoperability Maturity Matrix	2026 Q4	WGISS
DATA-26-03	EO Data Provenance Guidelines	2027 Q4	WGISS
DATA-26-04	White Paper on Federated Authentication and Authorisation Access	2027 Q1	WGISS
DATA-26-05	White Paper of Digital Twins	2027 Q3	WGISS
DATA-26-06	Interoperability Demonstrator on Supersites	2027 Q4	WGISS WGDisasters SEO

4.8 Capacity Building and Data Democracy

The CEOS Working Group for Capacity Building and Data Democracy (WGCapD) focuses and consolidates CEOS efforts towards providing Earth observation awareness raising, capacity building, education and training in multiple formats. WGCapD also promotes wider and easier access to EO data and derived analytical application instruments (focus on open access systems and improved data dissemination capabilities), aiming at adoption of relevant technologies by end users. In 2026 the WGCapD will continue to strengthen its efforts in support of the global disaster, climate and sustainability agendas.

2026–2028: WGCapD will continue to address a global need for the identification and coordination of the world's diverse and often disparate capacity building and training resources related to satellite Earth observations – and assess the different components of capacity development beyond traditional training approaches.

WGCapD categorises its work into support for geographic (e.g. global, regional, national) and thematic (e.g. disaster, climate) activities:

i. For **global work**:

- Focus on online learning through tools and approaches such as Massive Open Online Courses (MOOCs), webinars, challenges and blended e-learning approaches.
- Collect and consolidate WGCapD-produced and related relevant resources on capacity building and training as well as broader knowledge exchange efforts.
- Strengthening inclusiveness and support to underrepresented communities.

ii. For **regional work**:

- Focus on support to regional EO-related capacity building initiatives.

- Support trainings and other relevant capacity building efforts in conjunction with regional stakeholders (incl. societies and multi-national institutions/associations).
- Leverage single-agency regional activities as possible.

iii. For **national work**:

- Support national training where fitting and where applicable beyond the national scope.
- Strengthen our understanding of national needs in different thematic areas and associated recurrent and transferrable demand across geographies.

iv. For **thematic domains**:

- Enablers, with a focus on sharing of best practices and resources, convening key stakeholders, and addressing user needs.
- Coordination with relevant CEOS working groups and other entities, including the SIT Chair on Priorities 1 and 2. In this context, WGCapD will support alignment and cross-linkages, while the capacity-building ambitions and activities remain led by the respective WGs/entities most notably:
  - **WGClimate / GHG-TT:** providing methodological guidance (best practices), workshops for national inventory compilers, promotion of technical tools, and support to stakeholder uptake of satellite-based GHG data.
  - **AFOLU:** strengthening user understanding of biomass data, facilitating knowledge exchange, and improving access to structured information resources.
  - **GEOGLAM:** promoting joint initiatives that help countries use satellite data for agricultural assessment and monitoring.
  - **SDG CG:** planning SDG-focused MOOCs/webinars to build skills in applying EO data for SDG reporting, with pilot materials targeted for 2026.
  - **OCR-VC:** continuing capacity-building efforts in 2026 with new resources and user training.
  - **Biodiversity ST:** working with WGCapD to strengthen skills and capacity in the biodiversity community for effective use of EO-based products.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
Global Deliverables GEO to strengthen AmeriGEO and AfriGEO through training contributions at their respective meetings / workshops.			
CB-25-05	EU Polar Science week school Lab	2026 Q3	WGCapD
CB-25-06	Arctic Methane and Permafrost Challenge (AMPAC)	2026 Q4	WGCapD
CB-25-08	PUMAS	2026 Q4	WGCapD
CB-25-09	SELPER	2026 Q3	WGCapD
CB-25-10	ESA Training on EO for Forestry	2026 Q4	WGCapD
CB-25-11	Hyperspectral Remote Sensing	2026 Q4	WGCapD
CB-25-12	COBRA- Polarimetry	2026 Q4	WGCapD
CB-25-15	Living Planet Symposium School Lab	2026 Q2	WGCapD
CB-25-17	PECS-BiDS Training Course	2026 Q3	WGCapD
CB-25-18	12th Trans-Atlantic Training (TAT-12)	2026 Q3	WGCapD
CB-25-19	COBRA-InSAR	2026 Q3	WGCapD
CB-25-20	SAR-Based Applications for Forestry, ONLINE	2026 Q4	WGCapD
CB-26-01	UN/UNU-INWEH/CEOS Training on Resilience and Humanitarian Aid	2026 Q2	WGCapD
CB-26-02	New Space training through the AESPP Africa-Europe Space Partnership Programme	2026 Q4	WGCapD
National Deliverables			
CB-22-12	EOTEC DevNet Multi-Stakeholder Network Analysis	2026 Q1	EOTEC DevNet WGCapD
Regional Deliverables			
CB-24-03	Engage & empower South African youth to use EO for Economic Empowerment	2026 Q4	WGCapD

4.9 Advancement of the CEOS Virtual Constellations

4.9.1 AC-VC

The CEOS Atmospheric Composition Virtual Constellation (AC-VC) exists to sustain a systematic capability to provide essential observations of atmospheric composition from space. Key objectives include coordination of the collection and delivery of data to improve predictive capabilities for changes in the ozone layer, to monitor air quality, and to monitor climate forcing associated with changes in atmospheric composition.

AC-VC is supporting WGClimate and GHG Task Team in the implementation of the updated GHG Roadmap issue 2.0, which was endorsed at the 2024 CEOS Plenary. AC-VC keeps track of the status and stimulates progress related to satellite sensors, atmospheric products, surface flux estimation capabilities, and

validation infrastructure. Activities in 2026 include Level-2 intercomparisons, validation for recently launched and upcoming wide-field missions (e.g., GOSAT-GW and Sentinel-5, and CO2M, respectively), and the elaboration of Best Practices for generating, reporting, validating, and assessing the quality of facility-scale methane emissions.

The harmonisation of tropospheric ozone datasets is completed with peer-reviewed publications in the Phase-II Tropospheric Ozone Assessment Report (TOAR) Community Special Issue and the upcoming issue of Phase-II Tropospheric Ozone Assessment Report (ACP/AMT/BG/GMD inter-journal). Action VC-20-01 (Tropospheric ozone dataset validation and harmonisation) is now closed. Phase-III TOAR ideas are being formulated, such as geostationary observations of the diurnal cycle, AI-based prediction of surface ozone, and the impacts of wildfires on ozone. These ideas will be discussed at this year's AC-VC annual meeting.

AC-VC pursues the coordination of calibration and validation of missions with air quality observation capabilities, following related whitepapers. The validation and harmonisation of products from the air quality missions in orbit in particular TEMPO, GEMS and S5P/TROPOMI is progressing well. The ESA/DLR PEGASOS project, in which the consistency of GEMS and S5P products is assessed, has been extended to also cover TEMPO products. A joint ESA-EUMETSAT Announcement of Opportunity led to a variety of proposals supporting the Cal/Val of products from Sentinel-4 and Sentinel-5 which were launched in summer 2025.

The action VC-25-05 (PM2.5 roadmap), pursuing the recommendations from the PM2.5 whitepaper and a presentation of use cases, is nearly complete. A consolidated draft is planned for the end of 2026. A review article on vertical distribution information from satellite is in progress and is expected to be submitted for peer-review by spring 2026.

A new whitepaper, "Expanding geostationary monitoring of atmospheric composition", beyond GEMS, TEMPO, and the recently launched Sentinel-4, is underway, with a consolidated draft expected at Plenary 2026. This will address the new challenges associated with the geostationary perspective, aim to assess and establish the consistency of data products, and enhance the impact of the individual missions as elements of a constellation.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-25-05	PM2.5 Roadmap	2026 Q4	AC-VC
VC-25-06	Expanding the Geostationary Atmospheric Composition Constellation: Toward Global Coverage	2026 Q1	AC-VC

4.9.2 LSI-VC

The CEOS Land Surface Imaging Virtual Constellation (LSI-VC) is guided by a vision of sensor-agnostic land surface data from all missions, achieving observations that enable users to characterise change on the

Earth's surface through time.

LSI-VC championed the concept of CEOS Analysis Ready Data (CEOS-ARD) and continues to develop specifications for land surface products. In 2026, LSI-VC will work closely with the CEOS-ARD Oversight Group and other CEOS entities to define the 2026 CEOS-ARD Strategy to address findings from the *Future of CEOS-ARD* campaign run throughout 2025. Substantial community feedback was gathered and this needs to be reflected in the forward strategy for CEOS-ARD.

LSI-VC continues to engage with the commercial sector on CEOS-ARD and other land surface imaging topics and continues its work on land surface imaging gap and requirement analyses.

The LSI-VC Forests & Biomass Subgroup, with support from the LSI-VC GEOGLAM Subgroup are responsible for the implementation of the CEOS AFOLU Roadmap (more information in section 4.1.2), which aims to ensure the implementation of the observing system required to address the AFOLU information needs of society.

The LSI-VC GEOGLAM (Agriculture) subgroup has a focus on the Essential Agriculture Variables (EAVs) and in 2026 will continue the stocktake of CEOS Agency contributions against the needs of the EAVs (see more information in section 4.2). The LSI-VC GEOGLAM subgroup will also hold a workshop in collaboration with the WGCV LPV subgroup on *Good Practices for Evapotranspiration Validation*.

In 2026, LSI-VC welcomed a new subgroup on wildfires (LSI-VC Wildfire Subgroup), as the response to Canada's ambition of realising the vision of an international wildfire EO Coordination Working Group in CEOS. 2026 will focus on mobilising this subgroup and defining an initial work plan.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-22-04	Mission continuity timelines for land domain CEOS-ARD PFS	2026 Q4	LSI-VC
VC-23-05	CEOS-ARD Impact Case Studies	2027 Q4	CEOS-ARD OG LSI-VC
VC-23-06	CEOS-ARD in the Cloud	2028 Q4	CEOS-ARD OG LSI-VC WGISS
VC-23-08	CEOS Representation to the Open Geospatial Consortium (OGC) Analysis Ready Data (ARD) Standards Working Group (SWG)	2028 Q4	CEOS-ARD OG LSI-VC SEO WGCV WGISS
VC-23-09	CEOS-ARD Community Building	2028 Q4	CEOS-ARD OG LSI-VC
VC-23-11	LSI-VC Response to the Observation Requirements of the CEOS AFOLU Roadmap	2028 Q4	LSI-VC LSI-VC GEOGLAM Team LSI-VC F&B Team
VC-24-01	CEOS-ARD Strategy 2024 Implementation	2026 Q4	CEOS-ARD OG LSI-VC
VC-24-03	CEOS-ARD STAC Extension (Optical)	2027 Q4	LSI-VC

VC-24-08	Coordination with Agency PoCs, incl. tasking of new polarimetric observations and requests for archived data	2027 Q1	LSI-VC
VC-25-01	Modularisation of the CEOS-ARD PFS Requirements	2026 Q4	CEOS-ARD Oversight LSI-VC
VC-25-04	CEOS Response to GEOGLAM EAVs	2026 Q4	LSI-VC
VC-25-27	CEOS-ARD Framework update for EAVs and other higher-level products	2026 Q4	CEOS-ARD OG, LSI-VC
VC-26-05	Unlocking Commercial EO Archives for Public Good	2027 Q4	LSI-VC
VC-26-06	Updated Surface Temperature CEOS-ARD Product Family Specification (PFS)	2026 Q4	LSI-VC

4.9.3 P-VC

The CEOS Precipitation Virtual Constellation (P-VC) exists to sustain and enhance a systematic capability to observe, measure and validate global precipitation. These observations are essential to understand the distribution and characteristics of precipitation, its role in the hydrological/water cycle, and its impact on the climate system. Importantly, accurate and timely knowledge of global precipitation is needed to improve the prediction of high-impact weather events such as hurricanes, floods, droughts and landslides, as well as the management of freshwater resources and the interconnectivity with the Earth System (for example, crop yields and fire susceptibility). The spatial and temporal variability of precipitation necessitates the utilisation of data from multiple sensors on multiple satellites to ensure sufficient observations are available to provide representative sampling across the range of scales (spatially and temporally) as required by the research, operational and application-driven user communities.

The P-VC has the following strategic objectives to address this aim:

1. Provide a coordination mechanism to harmonise precipitation-capable satellite systems, data collection, processing and delivery, retrieval algorithms, and calibration/validation infrastructures,

2. Serve as a programmatic point of contact for precipitation measurements, addressing issues which go beyond the individual mission programmes,

3. Coordinate activities to develop and improve the knowledge and understanding of precipitation (rainfall and snowfall) processes, the distribution of precipitation and the changes in precipitation over time on a global basis, and

4. Support and engage the scientific and operational user communities.

Notable recent and forthcoming updates to the P-VC are the launch of the AMSR3 instrument on the JAXA GOSAT-GW observatory, which continues the AMSR series and launched on June 29, 2025. Looking forward, the first of the EUMETSAT Metop-SG-B series satellites is slated to launch in 2026, which will carry the Microwave Imager (MWI) and Ice Cloud Imager (ICI) instruments. NOAA is set to launch the QuickSounder in 2026 and JPSS-4 in 2027. Additionally, NASA is scheduled to launch the INvestigation of

Convective UpdraftS (INCUS) mission in 2027 and the Polarised Submillimeter Ice-cloud Radiometer (PolSIR) in 2028. Core to the objectives of P-VC will be the continued coordination on shared data utilisation and exploitation through these next missions.

Multiple partners are investigating the integration of data from commercial sources into the P-VC pipeline. P-VC will discuss methods to investigate and quantify the utility these data.

In July 2026, the International Precipitation Working Group (IPWG) meeting will be held in Poland. The objective of this workshop is to review current satellite products and recommend future directions to national and international agencies, like the P-VC. P-VC will continue to ensure that there is alignment between CGMS/IPWG & CEOS in terms of spaceborne precipitation measurements.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-25-11	CMORPH2 reprocessing	2027 Q2	P-VC
VC-25-12	GOSAT-GW AMSR3 Snowfall Rate	2026 Q4	P-VC
VC-25-14	GPCP v4.0 release	2026 Q3	P -VC
VC-25-15	NASA Precipitation Processing System (PPS) V08 product release (L1 and L2)	2026 Q2	P -VC
VC-25-16	NASA Precipitation Processing System (PPS) V08 product release (L3 - IMERG)	2026 Q3	P -VC
VC-25-17	Analysis Ready Data for Precipitation: product family specifications	2026 Q2	P -VC
VC-25-21	Release of AMSR3 data	2026 Q3	P -VC
VC-25-22	GPM Dual frequency Precipitation Data reprocessing	2026 Q1	P -VC
VC-25-23	Release of new version of GSMaP precipitation products	2026 Q2	P -VC
VC-26-20	GPM GMI reprocessing	2026 Q1	P -VC

4.9.4 SST-VC

The Sea Surface Temperature Virtual Constellation (SST-VC), in collaboration with member organisations and the Group for High Resolution Sea Surface Temperature (GHRSST), continues to produce and provide sea surface temperature (SST) and related parameters by the past and current GEO TIR imagers, LEO TIR imagers, and LEO microwave imagers in the GHRSST Data Specification (GDS) format. New and upcoming missions that have capability to observe SST, including ultra-high resolution TIR imager, are recommended to process and distribute their SST products in GDS format. Those single satellite-based SST products (L2

and L3) are essential inputs for daily (or less daily) multi-satellite merged SST products (L4) developed by the meteorological agencies to be used as boundary conditions for their numerical weather predictions. Those L2, L3, and L4 SST products are easily accessed via GHRSST Data Centres and widely used in various science and application areas. SST-VC continues dialogue and collaboration with other related VC and team, such as COAST-VC and Biodiversity Study Team, for effective use of currently existing SST data and requirements for future observation/products.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-26-19	Dialogue with COAST-VC and Biodiversity Study Team	2028 Q4	SST-VC

4.9.5 OST-VC

The goal of the CEOS Ocean Surface Topography Virtual Constellation (OST-VC) is to implement a sustained, systematic capability to observe the surface topography of global oceans. OST-VC links CEOS Agencies, the Ocean Surface Topography Science Team (OSTST) and the altimetry user community. It is suited to discuss constellation-wide programmatic issues and high-level constellation user requirements. A key achievement in 2025 was the delivery of the OST-VC community white paper "*A Coordinated International Satellite Altimetry Virtual Constellation: Toward 2050*".

The Ocean Surface Topography Science Team meeting will be organised by EUMETSAT and CNES in Germany from 22-26 June 2026. Experts from around the world will gather to discuss the performance of current satellite altimetry constellations for all applications, open oceans, coastal areas, polar seas, and inland waters. We will take this opportunity to organise a meeting with the OST-VC members.

In 2026, a large part of the community will be interested and involved in the commissioning of the Copernicus Sentinel-6B mission, which was launched in November 2025.

OST-VC activities will continue in 2027–2028 with support for in-flight mission operations and preparation for future missions.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-26-15	Report of the Ocean Surface Topography Science Team Meeting, 22-26 June 2026, Wiesbaden, Germany	2026 Q4	OST-VC

4.9.6 OCR-VC

The focus of the CEOS Ocean Colour Radiometry Virtual Constellation (OCR-VC) is the monitoring and forecasting of Earth's living aquatic environments. OCR provides information in three major application areas: climate, carbon, and water quality.

OCR-VC activities for 2026 will focus on the implementation of the Aquatic Carbon Roadmap following

endorsement. Initial activities will centre around executing recommendations linked to communication and stakeholder engagement. ESA has organised a Coastal Blue Carbon User Consultation Meeting (8-10 April 2026 in ESRIN, Frascati, Italy) to further socialise Roadmap activities, and in parallel a peer-reviewed short paper will be written, summarising the Roadmap's actionable recommendations and pathways. In 2026, the team will also work on consolidating the timeline for the execution of the Roadmap, identify priorities and their horizon (short term, mid-term, long-term), and define associated metrics of success.

The OCR-VC will continue to contribute to the Aquatic Reflectance Product Family Specification for CEOS-ARD to extend it to all water types including seas and open oceans. Finally, in 2026, capacity building will continue to provide new resources and training to users.

OCR-VC activities for 2027–2028 will include the implementation of the Aquatic Carbon Roadmap short-term recommendations and the continuation of developing a coordinated multi-mission basis for OCR cal/val, including System Vicarious Calibration (SVC) infrastructures and protocols for bio-optical in situ measurements,

All OCR-VC activities and deliverables support the implementation of the International Network for Sensor InTercomparison and Uncertainty Assessment for Ocean Colour Radiometry (INSITU- OCR).

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-14-09	Implementation of the International Network for Sensor InTercomparison and Uncertainty Assessment for Ocean Colour Radiometry (INSITU-OCR)	2026 Q4	OCR-VC
VC-20-26	System Vicarious Calibration (SVC) infrastructures in support of Climate-quality OCR data records	2026 Q4	OCR-VC
VC-20-27	Development of protocols for bio-optical in situ measurements	2026 Q4	OCR-VC
VC-23-01	Aquatic Carbon Roadmap	2026 Q1	OCR-VC
VC-26-10	Aquatic Carbon Roadmap	2026 Q2	OCR-VC
VC-26-11	Coastal Blue Carbon User Consultation Meeting	2026 Q2	OCR-VC
VC-26-12	Peer-reviewed short paper on the Aquatic Carbon Roadmap	2026 Q3	OCR-VC
VC-26-13	ACR Timeline	2026 Q4	OCR-VC
VC-26-14	ACR Recommendations implementation	2028 Q4	OCR-VC

4.9.7 OSVW-VC

The Ocean Surface Vector Wind - Virtual Constellation (OSVW-VC) is one of the focal points within CEOS for the coordination of space-based scatterometry and other payloads providing wind. The OSVW-VC provides essential data for understanding the air-sea interface, which is a critical component of the Earth's climate system. OSVW information supports three major application areas: weather forecasting, oceanographic modelling, and climate research for long-term trend analysis of ocean-atmosphere exchange.

OSVW-VC activities till now focused on strengthening the international virtual constellation by ensuring data continuity and inter-calibration between current missions, such as EOS-06 (OceanSat-3), METOP-B/C (ASCAT-B/C) and HY-2 series, and NISAR. Recent activities involving and benefitting OSVW-VC include

- Advancing coordination for the development of a coordinated multi-mission global wind product to improve temporal resolution, particularly for capturing high-frequency extreme weather events.
- Coordination for synthesising feedback from the International Ocean Vector Winds Science Team (IOVWST) to refine user requirements for next generation scatterometers.
- CEOS FRM (Fiducial Reference Measurements) for in situ wind observations, ensuring that buoy data and ship-based observations used for validation meet rigorous international quality standards.

All recent OSVW-VC activities and deliverables directly support the implementation of the Global Observing System and provide the high-quality datasets necessary for the UN Ocean Decade initiatives. In 2026, the Indian Space Research Organisation (ISRO) will work towards Oceansat-3A (EOS-10) to be launched mid of the year (tentative) to ensure continuity of Ku band ocean surface wind vector data. EOS-10 will be similar to EOS-06 which is operational right now. It will have a sun synchronous orbit at 1200hrs equator passing time. Payload wise it will have a scatterometer, OCM and SSTM like EOS06. It will however carry a new payload Millimetre wave Atmospheric Temperature and Humidity Sounder (MATHS).

Also in 2026, the second satellite of the EUMETSAT Polar System - Second Generation (EPS-SG) system will be launched. EPS-SG is EUMETSAT's contribution to the NOAA-EUMETSAT Joint Polar System and will continue and expand observations provided by the Metop satellites in the mid-morning orbit. EPS-SG consists of six satellites in total; three optical imaging and sounding satellites (EPS Metop-SGA) and three microwave imaging and sounding satellites (EPS Metop-SGB) deployed in pairs and each satellite with a seven-year design lifetime.

The EPS Metop-SGB satellite will carry the next-generation C-band scatterometer, SCA, which will ensure continuity with the ASCAT mission and at the same time provide additional high-winds capabilities and a wider swath. Like its predecessor, SCA will be absolutely calibrated using ground-based transponders.

The Metop-SGB platform will also host the Microwave Imager (MWI) which will contribute towards

improving precipitation estimates and will provide observations of sea surface wind speeds.

Both the upcoming EOS-10 and Metop-SGB missions will contribute to a unique insight into air-sea interaction processes and continue to provide global wind products for near-realtime applications. They will provide the continuity required for long-term climate data records of ocean surface wind observations.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-26-16	Generation of Coast-Specific Wind Atlas	2028 Q1	OSVW-VC
VC-26-17	Pilot Study for Vulnerable Coasts	2028 Q1	OSVW-VC
VC-26-18	Refinement of Oceansat-3 wind products	2027 Q4	OSVW-VC

4.9.8 COAST-VC

This coastal-focused VC will help bridge land and aquatic observations within CEOS, and given its cross-cutting nature, it will continue to integrate across multiple CEOS entities and domains, both thematic and technical. COAST will leverage the CEOS Analysis Ready Data (CEOS-ARD) framework; develop interoperability demonstrators with WGISS; best practices arising from WGCapD and others on stakeholder engagement and co-design; and to the extent feasible, utilise the CEOS Systems Engineering Office Analytics Lab for product development. COAST leadership will collaboratively identify and acquire the necessary resources (human, Information Technology capacity, et al.) from CEOS members to successfully execute product development and provide open user access.

In 2026–28, COAST VC has opportunities to collaborate with other CEOS entities to advance mutual projects within the coastal realm. Specifically, In late 2025 COAST-VC commenced leading a CEOS-wide coastal data gap analysis effort, which will likely result in a summary informational report to CEOS SIT delivered in Q2 of 2027. A detailed white paper on gap analysis, present capabilities, cal/val, interoperability for a few selected pilot sites is planned in 2027–2028. At the discretion of CEOS leadership, this white paper or the initial gap analysis report may be a contribution to the Space4Ocean Alliance. COAST plans to release at least one polar product by 2028 and expand the delivery or improvement of satellite-derived coastal Blue Carbon products, and biogeochemical products (e.g. primary productivity, phytoplankton size class) within 1km of the land-sea interface, in additional COAST-VC pilot region(s) through 2026. The reconvened cross-agency satellite-derived bathymetry focus team within COAST-VC has a goal of enabling collaborative capacity for multiplatform/multisensor approaches within an existing GitHub workspace in 2026 and to perform a quality analysis of each approach for the COAST-VC pilot regions (Bay of Bengal is an optimal start).

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-25-07	Deliver or improve OceanSat 3/1-derived coastal Blue Carbon products in at least 3 COAST-VC pilot regions (e.g. Bay of Bengal, W African Coast and Chesapeake Bay)	2026 Q4	COAST-VC
VC-25-08	Deliver or improve satellite derived biogeochemical products (e.g. primary productivity, phytoplankton size class) within 1km of the land-sea interface (GCOS 2022 Implementation Plan) in one, or more, COAST-VC pilot region(s)	2026 Q2	COAST-VC
VC-26-01	COAST-VC led coastal Gap Analysis	2027 Q2	COAST-VC External partners
VC-26-02	COAST-VC Coastal Arctic Product(s)	2028 Q4	COAST-VC

In addition to the deliverables presented for each VC in the preceding sections, a number of cross-cutting deliverables are foreseen for the upcoming period as detailed below.

Number	Objective/Deliverable Title	Projected Completion	Responsible CEOS Entity(ies)
VC-23-13	CEOS-ARD Assessment Peer Reviews	2028 Q4	CEOS-ARD OG WGCV All VCs
VC-25-03	Greenhouse Gas Flux CEOS-ARD Product Family Specification	2027 Q4	GHG TT CEOS-ARD Oversight Group
VC-26-03	CEOS-ARD Strategy 2026	2026 Q4	CEOS-ARD Oversight Group
VC-26-04	CEOS-ARD Building Blocks in Github	2026 Q4	SEO
VC-26-07	CEOS-ARD Framework Update	2026 Q4	CEOS-ARD Oversight Group
VC-26-08	Multi-source SAR Backscatter PFS	2026 Q2	CEOS-ARD SAR Subgroup
VC-26-09	CEOS-ARD Discoverability and Accessibility Metadata Guidance	2026 Q3	CEOS-ARD Oversight Group WGISS (DAIG)

4.10 Support to Other Key Stakeholder Initiatives

4.10.1 CEOS Contributions to UN Ocean Decade and Leadership in the GEO Blue Planet Initiative

2026–27: CEOS Agencies will continue to develop and distribute experimental and operational data, products and services, undertaken within the COAST-VC, including CEOS contributions to the UN Ocean Decade (IOC) and compiling a coastal gap analysis report informing the Space4Ocean Alliance. COAST-VC activities include linkages with GEO Blue Planet and ensure regular links with the International Ocean Colour Coordinating Group (IOCCG), and likewise continue operational satellite oceanography activities (EUMETSAT, NOAA) to facilitate distributed access to collocated, synergistic datasets with fit-for-purpose latency, quality, coverage and content for applied, commercial and research use.

4.10.2 CEOS Engagement in Biodiversity

As a forum for national and international organisations focused on space-based EO, CEOS is uniquely positioned to explore how data products from EO missions can support the needs of the biodiversity community. CEOS biodiversity activities encourage and coordinate member and associate member activities that advance the measurement, monitoring, and understanding of biodiversity from space.

In December 2022, the Parties to the Convention on Biological Diversity (CBD) adopted the Kunming-Montreal Global Biodiversity Framework (KMGBF), which identifies the CBD's Goals and Targets for the next decade and beyond. Measuring progress towards many of these targets will require the use of space-based Earth observations, and the KMGBF Monitoring Framework identifies specific indicators for this purpose. Although the KMGBF does not define all the information needed to assess and protect biodiversity, it provides a policy context that CEOS can use when evaluating options for an enduring contribution to biodiversity.

Given the importance of the KMGBF, the Canadian Space Agency made biodiversity a priority during its tenure as 2024 CEOS Chair, leading to the formation of the Biodiversity Study Team (BST). The BST was tasked with assessing options and developing recommendations for sustained CEOS engagement in biodiversity. Through consultations with key biodiversity organisations[2] and existing CEOS entities, the BST assessed end user needs and opportunities to leverage and coordinate existing CEOS activities. The outcomes of this work were presented at the 2025 Plenary, with a recommendation that CEOS establish a Biodiversity Virtual Constellation (B-VC). In the first part of 2026, the BST will finalise its proposal for a B-VC, including its Terms of Reference and an Implementation Plan, and submit these for formal approval at CEOS's April 2026 SIT meeting.

2026

If the BST's proposal for a Virtual Constellation is approved, its initial focus will be on developing the foundational infrastructure for activities that increase the impact of CEOS Agency data and services for biodiversity users. This foundation will have several interrelated components and, as a result, is expected to be developed iteratively. Steps to developing these components include:

- **Confirm team membership**. The B-VC team will consist of members supported by their CEOS Agencies (and entities) as well as members from any outside organisations that may participate to share specific expertise. It will be important to have active members from other CEOS Working Groups and Virtual Constellations to ensure the B-VC is able to leverage their expertise (as discussed in the B-VC Implementation Plan).

[2]These organisations included, among others: GEO BON (GEO Biodiversity Observation Network); IPBES (Inter-governmental Platform on Biodiversity and Ecosystem Service); Ramsar Convention on Wetlands; TNFD (Taskforce on Nature-related Financial Disclosures); UNCCD (UN Convention to Combat Desertification); UNSEEA (UN System of Environmental-Economic Accounting)

- **Identify and prioritise B-VC activities**. The Implementation Plan identifies six activity categories (summarised below) that the work is expected to fall into. The specific activities will depend in part on CEOS Agency guidance and resources as well as B-VC member expertise. The CEOS Deliverable Database will be updated accordingly.

- **Identify member roles.** Member expertise will be aligned with their roles in B-VC activities such as the designated B-VC Point of Contact for an end user organisation.

- **Outreach to end user organisations.** Once the B-VC is formally established it can formally connect with end user organisations, provide them with appropriate Points of Contact, and discuss potential activities and contributions. The GOOS Biology and Ecosystems (BioEco) Panel that develops Essential Ocean Variables relevant to the B-VC is a good example and is expected to be a priority.

- **Identify and address foundational gaps.** As these components evolve and the B-VC begins its initial activities, adjustments will likely be required. This will be an ongoing process and a core element of an adaptive management approach.

2027–2028

The Biodiversity Virtual Constellation Implementation Plan identifies six categories of activities that the B-VC's work is expected to fall into.

- **Identify gaps in data products and the mechanisms to address them.** This is a multi-step process that starts with prioritising products identified by users as missing. Prioritisation balances user benefits against the costs of product development and generation. Gaps are known to exist within the Essential Biodiversity Variables, the Essential Ocean Variables, and indicators defined under various international conventions.

- **Identify gaps in utilisation tools and the mechanisms to address them.** Utilisation tools are software applications that help users interpret data products and apply them to their specific problem areas. Examples include visualisation tools for mapping or for analysing temporal trends.

- **Demonstrators.** The CEOS Ecosystem Extent Task Team developed three demonstration systems to show the value of EO for biodiversity understanding and monitoring, two of which will continue. Beyond their illustrative role, these systems provide a strong framework for developing and testing new products and tools and for engaging users. Building on this approach, the B-VC will adopt the "demonstrator" concept to support its other activities and will actively seek additional geographic or thematic areas where such prototype systems can add value. At the same time, work on two of the original systems is expected to continue beyond 2026, as follows:

    Costa Rica Forests (CNES, France): The project is integrating multi-source remote sensing data (optical, radar, and LiDAR) to strengthen its ecological indicator products, notably by

leveraging Sentinel-1 radar data. Data from ESA's BIOMASS mission will be integrated and challenges related to clouds, atmospheric correction, and tropical seasonality will continue to be addressed.

Great Western Woodlands (CSIRO, Australia): Ecosystem extent mapping results using fused optical and SAR products will be submitted for publication and a richer time series of L-band data (ALOS-2 from JAXA) will be explored for its potential to further discriminate among age classes. UAV-LiDAR data from 2025 will be processed to canopy height and above ground woody biomass metrics for the cal/val of newly available P-band datasets (BIOMASS from ESA). Additionally, in situ field will be optimised for ingestion into the EASI Data Cube for the training and validation of Deep Learning models, whose usage continues.

- **Capacity Building.** Many end users and organisations lack skills, supporting frameworks, and infrastructure needed to utilise EO-based products, even though such products provide essential information relevant to achieving their biodiversity goals. In conjunction with the B-VC's other activities it will work with WGCapD to facilitate increased capacity within the biodiversity user community.

- **Community engagement.** Increasing utilisation of EO requires closer and ongoing ties with the biodiversity community. To facilitate this, informational webinars and brochures will be developed, as well as EO-themed sessions at conferences.

- **Coordination with GEO BON and its Global Biodiversity Observing System (GBiOS) concept.** GBiOS is GEO BON's concept for a global biodiversity observing system that combines in situ data, space-based EO, models, and expertise to facilitate biodiversity monitoring for societal benefit.

4.10.3 CEOS and the Commercial Earth Observation Sector

The evolution of the global commercial Earth observation (EO) sector and the value of commercial and institutional data integration is a strategic topic for CEOS. The European Space Agency (ESA), as the 2022-2023 CEOS SIT Chair, established the New Space Task Team (NSTT) in December 2022 with the intent to submit recommendations regarding the potential role of CEOS in supporting and collaborating with the commercial EO sector. A White Paper and summary memo were produced and endorsed at the 2023 CEOS Plenary, and the work of the NSTT concluded. In January 2025, a new page was created on the public CEOS website to clarify opportunities for commercial sector engagement across CEOS.

Increasingly, CEOS Members, Associates, and priority stakeholders are integrating both civil and commercial Earth observation (EO) data to optimise societal benefit and inform decision making. To this end, the strategic priorities of CEOS affirm that it must remain a forward thinking and adaptive participant in the Earth observing community. As the world increasingly seeks to use and integrate high-quality civil

and commercial space data at multiple spatial, spectral, and temporal scales, CEOS seeks commercial space sector engagement that is mutually beneficial and capable of expanding global impact.

2026–2027: It is anticipated that demand for solutions that seamlessly integrate civil and commercial data sources will increase in the coming years. Therefore, multiple groups across CEOS will continue to address this strategic topic, including CEOS-ARD Oversight Group, LSI-VC, Systems Engineering Office, WGISS (including Interoperability Framework/Handbook activities), WGCV, NASA SIT Chair in support of Priority 2, and others.

4.10.4 Digital Earth Initiatives Engagement

The global Digital Earth movement is a collaborative international effort to make Earth observation data and products openly accessible, analysis ready, and actionable for decision-making at national, regional, and global scales. Flagship programmes including Digital Earth Australia, Digital Earth Africa, Digital Earth Pacific, and Digital Earth Americas exemplify this approach by transforming vast archives of disparate satellite data into consistent, interoperable data products tailored for specific regional needs. Driven by end user demand, existing products support agriculture, water management, disaster risk reduction, etc.

Digital Earth Pacific enables decision-making for the Pacific Peoples using Earth observation at scale to address specific sectors such as food security and disasters. Digital Earth Americas is helping to build a resilient and prosperous Americas through better access and efficient use of Earth observation data with three goals: use Earth observation data to help measure societal impact of a changing region, enable economic growth and commercial opportunity, and inspire communities.

CEOS supports these initiatives across multiple regions by serving in advisory roles on various steering and technical committees, providing unified access to all national, civil, space agencies, and supporting the technical development of foundational open source science software such as the Open Data Cube.

4.11 CEOS Services

4.11.1 WGISS Connected Data Assets

The Working Group on Information Systems and Services (WGISS) promotes collaboration in the development of systems and services that manage and supply Earth observation data. WGISS is supporting services for full representation and accessibility of CEOS Agencies' datasets through Standards and Connected Data Assets Infrastructure (i.e., International Directory Network [IDN], CEOS WGISS Integrated Catalogue [CWIC], and Federated EO Gateway [FedEO]). IDN contains CEOS agencies' OpenSearch and/or STAC endpoints for earth observation data discovery and access, and is also the CEOS Data Collections access point for the GEOSS Platform. WGISS collaborates with CEOS agencies and their data providers to adopt standards and integrate new and existing collections, including Analysis Ready Data (ARD) and

Climate Data Records (CDR), within the Connected Data Assets Infrastructure, thereby enhancing the discoverability of CEOS datasets.

Responsible CEOS Entity: WGISS

4.11.2 Calibration Networks

4.11.2.1 RadCalNet

The CEOS WGCV Radiometric Calibration Network (RadCalNet) service provides all satellite operators (agencies and commercial) with access to free and open SI-traceable Top-of-Atmosphere (TOA) spectrally-resolved reflectances every 30 minutes to aid in the post-launch radiometric calibration and validation of optical imaging sensor data (www.radcalnet.org). This is an essential pre-requisite to achieving sensor-to-sensor harmonisation and subsequent data interoperability. RadCalNet provides the means to derive and correct for biases between sensors in a robust and consistent manner resulting in the information needed to assign the quality metrics increasingly required for many Analysis Ready Data (ARD) products.

Following an initial developmental period with four sites, and an opening to the community in 2018, a fifth site was added (July 2020) following a peer review of the site against the membership criteria. The RadCalNet documentation and procedures will be periodically updated both at individual sites and at network level to account for improvements in technology, methodology and feedback from users. Whilst continuing to expand the range and number of users, CEOS anticipates and encourages membership of new sites. With a number of sites currently under submission and review additional sites will increase the geographical and temporal availability of data while providing different spectral radiometric properties. The continued improvements by WGCV's RadCalNet Working Group to RadCalNet processing and distribution, evaluation of test site protocols and hardware, and new test sites will facilitate the evaluation of a range of new sensor characteristics expected in the coming years.

4.11.2.2 SARCalNet

The CEOS SAR Calibration Network (SARCalNet) was established within the CEOS WGCV SAR Subgroup to respond to the need of standardised Cal/Val practices and of a curated network of reference data. SARCalNet hosts a database that allows for consistent dissemination of reliable and standardised information about SAR calibration sites and targets. The initiative also provides documentation of requirements for calibrations target and image analysis, sample datasets, tools, and a comprehensive glossary of SAR terminology.

The SARCalNet Database contains information on submitted SAR calibration sites, comprising both natural and artificial targets. As of 2026, the database features over 240 calibration targets across 38 calibration sites and ten countries. The SARCalNet website, sarcalnet.org, contains more information including site self-assessment and submission criteria.

4.11.2.3 TIRCalNet

The WGCV Infrared, Visible, and Optical Sensor (IVOS) Subgroup is developing a Thermal Infrared Top-of-Atmosphere Calibration Network (TIRCalNet), aiming to collect surface temperature, emissivity, and atmospheric data necessary for the simulation of observations by TIR optical sensors and verify their radiometric calibration. Increasing the number of match-ups between in-situ measurements and space sensor observations will enable the reduction of overall uncertainties and efforts of individual agencies. TIRCalNet also aims to support the establishment of the Global Earth Observation System of Systems by providing measurements to verify the radiometric consistency between EO Space sensors.

Responsible CEOS Entity: WGCV

4.11.3 CEOS-ARD Assessment Peer Reviews

The CEOS-ARD Peer Review team is responsible for reviewing data provider self-assessments against the CEOS-ARD specifications and ultimately approves the compliance of datasets. This is a critical CEOS service that upholds the integrity of the CEOS-ARD framework. The CEOS-ARD Peer Review team operates under the banner of the CEOS Working Group on Calibration and Validation and is currently led by individuals from the European Space Agency and Geoscience Australia.

Responsible CEOS Entity: WGCV and CEOS-ARD Oversight Group

4.11.4 Missions, Instruments & Measurements (MIM) Database

The CEOS Database, also known as the Missions, Instruments, Measurements, and Datasets Database, or CEOS MIM, is the only official consolidated statement of CEOS Agency EO satellite-based programmes and plans. The Database represents the cornerstone of CEOS capabilities to undertake informed coordination decisions. Each year, the Database will be updated based on survey inputs provided by all CEOS Agencies to reflect the status and plans for CEOS Agency missions and instruments. In addition, there will be minor quarterly updates focused on changes in mission status (e.g. launches, end of life). These quarterly updates will serve as input to community reporting and also help to keep the Database current.

The Database is an open resource serving CEOS, its Members and Associates, and the broader EO community. The European Space Agency (ESA) has developed and maintains the Database and a website (database.eohandbook.com), which enables community access to the information. In addition, the CEOS SEO has developed analysis and visualisation tools (COVE, etc) that use the MIM and that support gap assessments. The information contained within the MIM is shared openly with community members via the website, with exports in other formats available on request, and contributes to the information backbone supporting several ongoing community resources.

CEOS will continue development of these resources each year, adding and updating functionality with a

particular focus on engaging them for observational gap analyses, coordination of observations, and the development of data products (e.g. CDRs, ARD, etc). Where possible, links and mappings to other CEOS and community resources will be established and published, where appropriate, in consultation with community leaders, including COVE, FedEO, CWIC, the IDN, external information systems, such as WMO's Observing Systems Capability Analysis and Review Tool (OSCAR), the Global Change Information System (GCIS), the EO Portal, JACIE, SATCAT/NORAD tracking information, and others. Over time, efforts will be made to increase the reach and utility of the information by making it available in machine readable formats (e.g. CSV, JSON, API, etc), to support transparent access and downstream use (subject to resourcing).

The ESA CEOS MIM Database team will continue to lead the activity, and work on the development and promotion of new tools for, and in collaboration and coordination with, other CEOS Members and Associates, and the community. These efforts will seek to make maximum use of the information contained in the Database, in support of satellite-derived EO data products and standards as defined by CEOS priorities and activities.

Responsible CEOS Entity: ESA

4.11.5 CEOS Communications

Effectively communicating the work of CEOS both externally and internally is critical to the CEOS Mission. The CEOS Communications Team, led by the SEO, maintains a biennial CEOS Communications Strategy, the next edition of which has been presented for endorsement by CEOS Principals at SIT-41, in April 2026.

A number of platforms and modes are used by the CEOS Communications Team to spread messages to the community, including:

- The social media channels, primarily LinkedIn (https://www.linkedin.com/company/ceosdotorg), provide broad reach. Posts are made around 1-2 times per week, highlighting recent news, meetings and publications from CEOS.
- The CEOS Communications Quarterly Revisit is an email newsletter distributed at the start of each quarter highlighting newsletter and blog articles from the previous quarter, as well as updates from the MIM Database, and upcoming meetings and training events.
- The CEOS Blog (ceos.org/news) hosts news on the CEOS website, with a particular focus on communications for people external to CEOS.
- Exhibition Booths are regularly hosted at community events such as VH-RODA, JACIE, IGARSS, GEO Global Forum and Living Planet Symposium. The CEOS Communications Team provides print and digital materials to support exhibition booths.

CEOS Website and other Core Services

The CEOS website is critical for CEOS functions, as it hosts information and materials on all activities. The SEO will continue to provide and maintain this service, including website hosting, content management services, and regular review of all pages. Improvements and adjustments can also be made upon request from the CEOS community.

Additionally, the SEO also provides a number of other core services for CEOS, including the deliverables tracker, training calendar, video conferencing services, and mailing list servers.

Responsible CEOS Entity: SEO

4.11.6 CEOS Newsletter

The CEOS Newsletter is published by JAXA on behalf of CEOS. Since August 1993 it has provided regular updates on the activities of CEOS, its agencies, Working Groups, Virtual Constellations, and Ad Hoc Teams. CEOS Newsletter articles are now posted once a month on the webpage http://ceos-newsletter.org/ An annual newsletter is issued once a year.

Responsible CEOS Entity: JAXA

4.11.7 SEO Tools

4.11.7.1 CEOS Visualisation Environment (COVE)

The SEO will develop COVELib, an open-source Python package which allows users to analyze satellite coverage, revisits, coincidences, and to identify past/future imaging opportunities based on projected satellite positions. This library expands on the functionality provided by the CEOS COVE website (also operated by the CEOS SEO) by allowing users to customise and expand analyses beyond the curated set of algorithms provided by COVE. COVELib is designed to be flexible and composable, making it easy to integrate COVELib into existing workflows and to create novel analyses. The library leverages popular Data Science tools to ensure compatibility with a wide array of existing platforms and libraries, and as an open-source library, it encourages repeatable, open science and collaboration within the EO community.

4.11.7.2 CEOS EO-GPT

EO-GPT is a prototype AI system that enables natural language queries for complex Earth observation analysis by generating transparent and reproducible Python code. Earth observation satellites produce vast quantities of data about our planet, but extracting meaningful insights typically requires specialised expertise in remote sensing, geospatial analysis, and programming. EO-GPT aims to bridge this gap, allowing users to ask questions like "show me how vegetation changed after the fire" without writing code themselves, while still producing scripts they can inspect, modify, and share.

Prototyped capabilities include burn severity assessment, water quality monitoring, and temporal change detection for comparing conditions before and after events such as wildfires. An interactive map interface allows users to define areas of interest visually and see results in geographic context, while an automated repair mechanism diagnoses and corrects common code failures, improving reliability for users without programming backgrounds.

The system is being developed with the intention of open source release, enabling the Earth observation community to extend, adapt, and integrate its capabilities into diverse contexts.

4.11.7.3 CEOS Analytics Lab (CAL)

The CEOS Analytics Lab is a platform designed to meet the challenges of a cloud based, data centric approach to Earth observations. It is an evolution and response to the CEOS Earth Analytics Interoperability Lab proposal, developed by CEOS WGISS and SEO in 2020. From expanding CEOS-ARD activities, increasing WGISS Interoperability Framework maturity, to supporting commercial sector engagement, the CEOS Analytics Lab has been established to support the CEOS community. Current utilisation includes the Ecosystem Extent Task Team, COAST Virtual Constellation, and WGDisasters Flood Pilot. The CEOS Analytics Lab is freely and openly available for use by all CEOS Members and Associate Members. This access is possible due to contributions from CSIRO, Adolfo Ibáñez University, AWS, and the CEOS SEO.

The CAL utilises Open Data Cube (ODC) open source technology, which was pioneered by members of CEOS includes Australia and SEO. CEOS continues to support the ODC global community as well as the network of national and organisational Data Cube implementations found around the world, geospatial standards and technology continue to evolve.

4.11.7.4 CEOS Organisational GitHub Management

The CEOS GitHub organisation provides a collaborative platform for working groups, virtual constellations, and ad-hoc teams to develop technical documentation, specifications, and software. It complements existing tools by offering version control, structured contribution workflows, and long-term management capabilities particularly suited to technical content requiring community input and iterative development. The platform is open to outside contributors, enabling the broader Earth observation community to participate in CEOS technical work through standard open-source collaboration practices.

A governance framework was established in December 2025, defining organisational structure, membership requirements, and contribution policies. Repositories with permissive licensing for software and documentation ensure CEOS work remains freely accessible and reusable. The SEO manages organisational administration and provides onboarding support and training resources to lower technical barriers for participation.

Responsible CEOS Entity: SEO

4.11.8 Strategic Engagement & Representation

CEOS desires to increase and improve the connections with and amongst its stakeholders during deliverable development and delivery. 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/G7 support for enhanced Earth observation coordination. CEOS will strive to showcase its achievements in appropriate international fora and high-level meetings, highlighting the outputs produced across the various CEOS activities and underlining the significance of long-term satellite observation capabilities.

Responsible CEOS Entity: CEOS Chair, SIT Chair, CEO, All CEOS Agencies and Entities

This CEOS Work Plan will be updated annually by the CEOS Executive Officer (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 external stakeholders. This document shall be consistent with and mutually supporting of other CEOS guiding documents.

5 Annex

5.1 Acronym List

Acronym	Description
AC-VC	Atmospheric Composition Virtual Constellation
ACIX	Atmospheric Correction Intercomparison Exercise
AFOLU	Agriculture, Forestry, and Other Land Use
AfSA	African Space Agency
AI	Artificial Intelligence
AI/ML	Artificial Intelligence / Machine Learning
AMIS	Agricultural Market Information System
AMPAC	Arctic Methane and Permafrost Challenge
AOI	Area of Interest
ARD	Analysis Ready Data
ASCAT	Advanced Scatterometer
B-VC	Biodiversity Virtual Constellation
BIOMASS	ESA Forest Biomass Mission
BoM	Bureau of Meteorology (Australia)
BST	Biodiversity Study Team
CAL	CEOS Analytics Lab
CBD	Convention on Biological Diversity
CDR	Climate Data Record
CEO	CEOS Executive Officer
CEOS	Committee on Earth Observation Satellites
CGMS	Coordination Group for Meteorological Satellites
CMIX	Cloud Mask Intercomparison Exercise
CNES	Centre National d'Études Spatiales
COAST-VC	Coastal Observations Applications Services and Tools Virtual Constellation
COP	Conference of the Parties
COVE	CEOS Visualisation Environment
COVELib	CEOS Visualisation Environment Library
CWIC	CEOS WGISS Integrated Catalogue
DAIG	Data Access and Information Group
DEM	Digital Elevation Model
DEMIX	Digital Elevation Model Intercomparison Exercise
DIIG	Data Interoperability Interest Group
DLR	German Aerospace Center
DOAS	Differential Optical Absorption Spectroscopy

DRM	Disaster Risk Management
DSIG	Data Stewardship Interest Group
EAV	Essential Agricultural Variable
ECV	Essential Climate Variable
EO	Earth Observation
EO4DRM	Earth Observation for Disaster Risk Management
EO4SDG	Earth Observation for Sustainable Development Goals
EOS	Earth Observation Satellite
EO-GPT	Earth Observation Generative Pre-trained Transformer
ESA	European Space Agency
ESRIN	ESA Earth Observation Centre
ET	Evapotranspiration
EU	European Union
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
FedEO	Federated Earth Observation Gateway
FRM	Fiducial Reference Measurement
G3W	Global Greenhouse Gas Watch
GA	Geoscience Australia
GCP	Ground Control Point
GCOS	Global Climate Observing System
GHG	Greenhouse Gas
GHRSST	Group for High Resolution Sea Surface Temperature
GEO	Group on Earth Observations
GEOGLAM	Group on Earth Observations Global Agricultural Monitoring Initiative
GEOSS	Global Earth Observation System of Systems
GFOI	Global Forest Observations Initiative
GHG-TT	Greenhouse Gas Task Team
GSICS	Global Space-based Inter-Calibration System
GSNL	GEO Supersites and Natural Laboratories
G-VEWERS	Global Volcano Early Warning and Eruption Response System
IAEG-SDGs	Inter-Agency Expert Group on Sustainable Development Goals
ICI	Ice Cloud Imager
ICDR	Interim Climate Data Record
IDN	International Directory Network
IMEO	International Methane Emissions Observatory
INCUS	INvestigation of Convective Updrafts
INSITU-OCR	In Situ Ocean Colour Radiometry Network
IOCCG	International Ocean Colour Coordinating Group
IPCC	Intergovernmental Panel on Climate Change
IPWG	International Precipitation Working Group

ISRO	Indian Space Research Organisation
IVOS	Infrared Visible Optical Sensors Subgroup
JAXA	Japan Aerospace Exploration Agency
JPL	Jet Propulsion Laboratory
KMGBF	Kunming-Montreal Global Biodiversity Framework
LAI	Leaf Area Index
LAC	Latin America and Caribbean
LEO	Low Earth Orbit
LPV	Land Product Validation
LSTM	Land Surface Temperature Monitoring Mission
MARS	Methane Alert and Response System
MATHS	Microwave Atmospheric Temperature and Humidity Sounder
MIM	Missions, Instruments and Measurements Database
MOOC	Massive Open Online Course
MSSG	Microwave Sensors Subgroup
MWI	Microwave Imager
NASA	National Aeronautics and Space Administration
NDACC	Network for Detection of Atmospheric Composition Change
NISAR	NASA-ISRO Synthetic Aperture Radar Mission
NOAA	National Oceanic and Atmospheric Administration
NOSA	Norwegian Space Agency
NSTT	New Space Task Team
OCR-VC	Ocean Colour Radiometry Virtual Constellation
ODC	Open Data Cube
OGC	Open Geospatial Consortium
OSCAR	Observing Systems Capability Analysis and Review Tool
OST-VC	Ocean Surface Topography Virtual Constellation
OSVW-VC	Ocean Surface Vector Wind Virtual Constellation
PACE	Plankton, Aerosol, Cloud, ocean Ecosystem Mission
P-VC	Precipitation Virtual Constellation
PM2.5	Fine Particulate Matter <2.5µm
PolSIR	Polarised Submillimetre Ice-cloud Radiometer
PoC	Point of Contact
PPS	Precipitation Processing System
PUMAS	Polar User Mentorship and Support
PVP	Product Validation Platform
RadCalNet	Radiometric Calibration Network
RO	Recovery Observatory
SAR	Synthetic Aperture Radar
SARCalNet	SAR Calibration Network

SBSTA	Subsidiary Body for Scientific and Technological Advice
SDGs	Sustainable Development Goals
SDG CG	Sustainable Development Goals Coordination Group
SEC	CEOS Secretariat
SEO	Systems Engineering Office
SIT	Strategic Implementation Team
SITSat	SI-Traceable Satellite
SST	Sea Surface Temperature
SST-VC	Sea Surface Temperature Virtual Constellation
STAC	SpatioTemporal Asset Catalog
SVC	System Vicarious Calibration
SWG	Standards Working Group
SWOT	Surface Water and Ocean Topography Mission
TEIG	Technology Exploration Interest Group
TEMPO	Tropospheric Emissions Monitoring of Pollution
TIR	Thermal Infrared
TIRCalNet	Thermal Infrared Calibration Network
TMSG	Terrain Mapping Subgroup
TOA	Top of Atmosphere
TOAR	Tropospheric Ozone Assessment Report
TRISHNA	Thermal Infrared Mission
UAV	Unmanned Aerial Vehicle
UKSA	United Kingdom Space Agency
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNOOSA	United Nations Office for Outer Space Affairs
UNU-INWEH	United Nations University Institute for Water, Environment and Health
VC	Virtual Constellation
VH-RODA	Very High-Resolution Radar and Optical Data Assessment
WG	Working Group
WGCapD	Working Group on Capacity Development
WGClimate	Working Group on Climate
WGCV	Working Group on Calibration and Validation
WGDisasters	Working Group on Disasters
WGISS	Working Group on Information Systems and Services
WMO	World Meteorological Organization