MINUTES v1.0

CEOS SIT TECHNICAL WORKSHOP 2025

10-11 September 2025

Executive Summary

1. Progress was reported on the implementation of the *CEOS AFOLU Roadmap V1.0* being led by the LSI-VC Forests and Biomass Subgroup. CEOS Agencies were invited to contribute to the portal of CEOS AFOLU success stories to communicate the impact of EO in national reporting activities.
2. A stocktake of CEOS country engagement activities highlighted the need for stronger awareness and linkages between CEOS and organisations engaging at the country level, such as GFOI and IPCC. The topic will be raised for further discussion at the 2025 CEOS Plenary.
3. The WGClimate Terms of Reference have been updated, for planned endorsement at the 2025 CEOS Plenary. WGClimate has prepared the Space Agency Statement for SBSTA-63. WGClimate shared updates on the GCOS ECV rationalisation activity and evolution of the ECV Inventory to the CDR Inventory.
4. The CEOS-CGMS UNFCCC Tiger Team was tasked to propose a plan for sustainment of its activities following the scheduled disbanding of the team at the end of 2026.
5. The *2025 CEOS Global Stocktake Strategy* was presented for SIT review ahead of its submission for the 2025 CEOS Plenary.
6. CEOS recognised that it should clarify its decision making processes to ensure that activities can be acceptably concluded even if consensus is not possible.
7. CEOS Agencies were invited to provide comments regarding the proposed *IPCC TFI Expert Meeting on the use of Atmospheric Observations in National Greenhouse Gas Inventories.*
8. A joint meeting between the CEOS GHG-TT and G3W will be considered following outcomes of the WMO Extraordinary Congress Meeting (20-23 October 2025).
9. The focus for the *Common Practices for Quantifying, Reporting, Validating, and Assessing Facility-Scale Methane Emission* now turns to promotion and adoption, and this includes continued engagement with UNEP IMEO, the Climate and Clean Air Coalition (CCAC), and Global Methane Pledge Champions.
10. The CEOS GHG Mission Portal has been updated in collaboration with IMEO to include a database of controlled release experiments to provide a public and shared repository of upcoming and past controlled release events, such that more agencies and users can make use of these events. CEOS Agencies were invited to review the beta database, begin submitting experiments, and sign up to the notification list.
11. DLR and ASI have been working with IMEO to organise acquisitions in support of IMEO objectives. CEOS and IMEO collaboration will continue for the IMEO Use Case Working Group.
12. The CEOS Interoperability Handbook V2.0 was presented for feedback, ahead of its final review at WGISS-60 (13-17 October 2025) and submission for 2025 CEOS Plenary endorsement.
13. The CEOS EO Glossary is now live on GitHub. WGISS will propose a structured management plan of the resource.
14. The WGCV Product Validation Platform is now live at ceos.org/pvp. CEOS Agencies were invited to review the platform and to consider contributions of data and opportunities to encourage commercial sector use.
15. The rationale for the future CEOS-ARD Strategy was presented alongside results of the 2025

community engagement campaign. CEOS Agencies were invited to share the CEOS-ARD survey with potentially interested parties both from space agencies and the commercial / other sectors. The campaign's findings will be presented at the 2025 CEOS Plenary (4-6 November; Bath, UK) in support of an action to begin development of the 2026 CEOS-ARD Strategy.

16. The *CEOS Aquatic Carbon Roadmap (ACR)* is currently being drafted and is planned to be completed in early 2026. The ACR team was asked to confirm the timeline (at CEOS Plenary) for the Roadmap's final presentation for CEOS Principal consideration.
17. The Canadian WildFireSat mission team (CSA, ECCC, and Natural Resources Canada) requested a side meeting at the 2025 CEOS Plenary to discuss the possibility of establishing a group under CEOS to better coordinate global EO-based wildfire monitoring efforts.
18. The JAXA SIT Chair Team trialled a common reporting format for the Virtual Constellations, aimed at achieving a consistent overview of the VCs. The format was well received, however the need to retain flexibility in reporting was emphasised.
19. AC-VC is developing the *Expanding Geostationary Monitoring of Atmospheric Composition* white paper, and this will be tracked for inclusion on the SIT-41 agenda.
20. *The Community Request on behalf of the CEOS SST-VC and COAST-VC supported by the GHRSST Science Team on the Proposed Coverage of Future Missions for Coastal Ocean Observations* was acknowledged and taken under advisement as a recommendation from the science community.
21. CEOS Agencies were requested to appoint a point of contact to the GEOGLAM LSI-VC Subgroup. GEOGLAM will work with WGCV LPV to scope a joint workshop on good practices for evapotranspiration validation. GEOGLAM is currently defining the EAVs to concretely embed satellite EO in decision making. Six initial variables have been selected to test the framework, including crop type, yield, irrigation, ET, and field boundaries. A stocktake and gap analysis process for each of these is ongoing and the result will be presented to the 2025 CEOS Plenary.
22. The UKSA CEOS Chair Team reported on the *Unlocking EO for the Public Sector* SIT Technical Workshop side meeting and will develop a findings paper for information at the 2025 CEOS Plenary.
23. The *CEOS in Schools* activity will be continued under the Australian 2026 CEOS Chair term. The "CEOS Youth Hub" – a dedicated platform for CEOS Agency educational content has been established on the CEOS website, further supporting the project's legacy in CEOS.
24. The 2026 CEOS Chair theme was presented: "Positioning CEOS for Success in a Rapidly Changing Context", which comprises two Focus Activities: 1) CEOS Support to Environmental Adaptation and Resilience and 2) Future CEOS-ARD Strategy.
25. The 40th CEOS Plenary will be held in Hobart, Tasmania, Australia from 3-6 November 2026.
26. The 2026-2027 NASA SIT Chair priorities were shared: 1) Planet Aqua – Seeing Earth's Water from Space, and 2) Connected Data for Community Resilience.
27. SIT-41 will be hosted from 14-16 April 2026 at the NASEM Beckman Center in Irvine, California, USA, and the 2026 SIT Technical Workshop will take place from 8-10 September 2026 at NASEM in Washington D.C., USA.
28. The Biodiversity Study Team has concluded that the CEOS Virtual Constellation (VC) approach, with its flexible membership, leadership transitions, and reporting was the preferred solution for sustainable support for biodiversity in CEOS. The BST Co-Leads requested that at the 2025 CEOS Plenary: 1) the BST be acknowledged for fulfilling its mandate, 2) a Biodiversity VC be agreed as the leading option for sustainable support; and 3) the BST's duration be extended to develop a Full Proposal for consideration at SIT-41 in April 2026.

Session Index

Wednesday, September 10th

Session 1: Welcome

1.1: Welcome

Presenter: Hironori Maejima (JAXA, SIT Chair), Osamu Ochiai (JAXA, SIT Chair Team) and Phil Evans (EUMETSAT) *[presentation]*

Main points:

- Osamu Ochiai welcomed participants to the meeting. International cooperation remains crucial to JAXA's EO strategy, noting EarthCARE (with ESA) and GOSAT-GW's contribution to the global GHG observing system.
- Hironori Maejima addressed the meeting remotely from Japan and thanked EUMETSAT for hosting this SIT Technical Workshop.
- Phil Evans welcomed everyone to EUMETSAT and Darmstadt. International collaboration and cooperation are at the core of EUMETSAT's mandate. Milestones of the last year include the successful launches of the MTG-I1, MTG-S1, and MetOp-SG-A1 satellites. The Sentinel-6B mission is also upcoming, securing continuity of reference ocean altimetry measurements.

Session 2: Agriculture, Forestry and Other Land Use (AFOLU)

2.1: Session Introduction

AFOLU has been a focus for the SIT Chair Team as a key component of the space agency contribution to the Global Stocktakes.

2.2: CEOS AFOLU Roadmap Implementation

Presenters: Takeo Tadono (JAXA, LSI-VC Co-Lead), Neha Hunka (ESA), Clement Albergel (ESA) *[presentation]*

Main points:

- The *CEOS Roadmap for Space-Based Support of AFOLU Emissions and Removals of Greenhouse Gases* (the CEOS AFOLU Roadmap) was endorsed at the 2023 CEOS Plenary, and its actions were finalised at SIT-40. The roadmap provides a framework for long-term coordination of agency programmes supporting societal needs for AFOLU-related information. Implementation of the AFOLU Roadmap is tracked by the LSI-VC Forests and Biomass Subgroup. A number of actions were reviewed.
- Under Action 0.3, various efforts are underway to support harmonisation of biomass maps. The Republic of Sudan has used GEDI and other CEOS Agency data sources to compile their national reports for the GST.
- Action 2.5 calls for CEOS support for GEO-TREES, including the expansion of Airborne Laser Scanning (ALS) sites across Europe and the U.S. GEO-TREES would benefit from active support to the integration of ground-truth data with higher level conservation products.
- Various roadmap actions relate to CEOS support for Global Forest Observations Initiative (GFOI) R&D, including the demonstration of uptake of biomass maps and integration within EO-based inventories. The GFOI R&D Component is currently undertaking a new survey on country needs for satellite data.
- The 2021 *CEOS GST Strategy* paper led to the development of the ESA-INPE Amazon Biomass Campaign, which recommended focused observation campaigns to understand GHG emission trends from natural sources.
- Progress and updates were shared on further actions, related to RAMONA, RECCAP 2, WorldCereal, FAO Land Classification, and wetlands projects. See the slides for full details.

Discussion

- John Remedios (UKSA, CEOS Chair Team) noted the exciting potential offered by integration of new Biomass and NISAR data. The biomass harmonisation activity is an important enabler and increases confidence in data. Country examples are critical to demonstrate impact.
- Clement Albergel (ESA) shared that the ESA CCI Biomass project is preparing to integrate data from the Biomass mission. Biomass will greatly enhance this long term record.
- Jonathon Ross (GA, LSI-VC Co-Lead) encouraged CEOS Agencies to look for additional opportunities to contribute to the AFOLU Roadmap actions and to identify experts to participate in the LSI-VC Forests and Biomass Subgroup.

2.3: CEOS and the Global Forest Observations Initiative (GFOI)

Presenter: Neha Hunka (ESA, CEOS GFOI Lead) *[presentation]*

Main points:

- The GFOI R&D Component facilitates international efforts and dialogues to bring EO data and research toward operational uptake by countries.
- Within the CEOS Global Stocktake Portal, GFOI/SilvaCarbon provided AFOLU success stories. Three additional contributions are planned by mid 2026.
- The GFOI Methods and Guidance Documentation (MGD) modules cover deforestation, accounting and estimation, biomass maps, and blue carbon initiatives. In October 2024, a GFOI R&D and MGD workshop was held in Potsdam, Germany, focusing on the informed use of biomass maps for Monitoring, Reporting and Verification (MRV).
- The GFOI community encourages ongoing CEOS support via the AFOLU Roadmap actions. Broader CEOS Agency participation in GFOI Plenaries and Workshops, and enhanced dialogue on user needs, data provision realities, and country-level assessments would be beneficial.
- GFOI is a mature activity within the GEO Work Programme and CEOS has been a strong supporter from inception.

Discussion

- Mark Dowell (EC) recommended links be made between the new Blue Carbon MGD of GFOI and the CEOS Aquatic Carbon Roadmap that is under development.
- Connections to the Tropical Forests Forever Facility in Brazil will be covered at the 2025 GFOI Plenary.

SIT-TW-2025-01	CEOS Agencies are invited to contribute to the portal of CEOS AFOLU success stories to communicate the impact of EO in national reporting activities. The SIT Chair team will circulate a request for inputs.	**December 2025**
	Rationale/Notes: The aim is to communicate the impact of agency EO data provision in national reporting activities via continuation of CEOS AFOLU success stories.	

2.4: Capacity Building and Country Engagement

Presenter: Stephen Ward (SIT Chair Team) *[presentation]*

Main points:

- The JAXA SIT Chair Team has prioritised country engagement, noting it was a headline finding of the Global Stocktake Lessons Learned study. JAXA has convened data impact teleconferences and, for example, worked closely with SilvaCarbon, which was central to CEOS country engagement efforts.

- The CEOS/CGMS WGClimate *Lessons Learned and Recommendations from Space Agencies' Support for the First Global Stocktake* highlighted the need for stronger relationships with COP delegates and enhanced country engagement. In response, WGClimate-22 (11-13 February 2025; Harwell, UK) featured a pilot session with national inventory compilers.
- The 2025 update of the CEOS Global Stocktake Strategy includes many recommendations related to country engagement across mitigation, adaptation, and 'means of implementation'.
- GFOI and IPCC are two avenues for increased impact of satellite data, and these have been a focus of the JAXA SIT Chair Team. As a founding member of GFOI since 2011, CEOS has access to a mature network of national practitioners motivated to adopt CEOS Agency data.

Discussion

- Although the SilvaCarbon initiative has now concluded, its legacy and impact on country engagement continues, including through JAXA's work with Cambodia in support of forest biomass mapping.
- The WGClimate-22 national inventory discussions were very useful and should be replicated with other countries and regions.
- Jonathon Ross (GA, LSI-VC Co-lead) suggested the identification of case studies and champion countries. Neha Hunka (ESA) noted that the 34-country GFOI R&D survey will identify countries willing to increase uptake of EO-based approaches.

SIT-TW-2025-02	SIT Chair to raise further discussion on CEOS country engagement activities at CEOS Plenary.	**2025 CEOS Plenary**
	Rationale/Notes: The GST Lessons Learned review highlighted what we need to better connect with in-country users. GFOI, WGClimate, GHG-TT, and LSI-VC need to carry forward these actions after the conclusion of the JAXA SIT Chair term in a coordinated manner.	

Session 3: EO Data Impact

3.1: CEOS/CGMS Working Group on Climate (WGClimate) Report

Presenter: Wenying Su (NASA, WGClimate Chair) *[presentation]*

Main points:

- The CEOS/CGMS WGClimate has prepared a draft of the statement to be delivered on behalf of CEOS at SBSTA 63 at COP 30 (10-21 November 2025; Belém, Brazil).
- The WGClimate Terms of Reference have been updated to address evolving priorities, activities, and governance. The update will be planned for endorsement at the 2025 CEOS Plenary (4-6 November 2025; Bath, UK).
- In 2024 GCOS started a process aimed at the rationalisation of the list of Essential Climate Variables (ECVs). A GCOS Task Team was formed who worked to deliver a simpler, fairer, more consistent and more transparent set of ECVs. The effort proposed the removal of anthropogenic ECVs and introduction of four cross-panel ECVs (CH_4 and short lived GHGs, CO_2 and long lived GHG, and turbulent heat fluxes). The proposed reorganisation has reduced the ECV list from 55 to 42.
- The ECV Inventory has been rebranded as the Climate Data Record (CDR) Inventory (https://climatemonitoring.info/ecvinventory/) and aims to establish a new technical baseline to enhance discoverability and uptake of CDRs, with streamlined information for data analysis, access, and publication. Enhanced synergies with WMO OSCAR, the CEOS MIM Database, and WGISS systems are being explored.

Discussion

- Jörg Schulz (EUMETSAT) noted the opportunity to discuss the ECV rationalisation effort with GCOS at the WGClimate-24 meeting (February 2026).
- John Remedios (UKSA) noted that the 2024 BAMS State of the Climate report highlighted the value of using satellites to monitor super-extreme hotspots, and is a testament to CEOS Agency support for climate monitoring.

SIT-TW-2025-03	CEOS Agencies to provide feedback on the CEOS-CGMS Statement to SBSTA-63.	**3 October 2025**
	Rationale/Notes: Virtual endorsement by both CEOS and CGMS is targeted for mid-October. Feedback is needed by 3 October to allow this.	
SIT-TW-2025-04	CEOS Chair to facilitate a briefing and discussion on proposed changes to the WGClimate Terms of Reference at SEC-340.	**SEC-340**
	Rationale/Notes: It is important that CEOS leadership have an opportunity to provide feedback on the direction of the Working Group. The Terms of Reference also need endorsement from CGMS.	

3.2: CEOS-CGMS Tiger Team Update

Presenter: Vincent-Henri Peuch (ECMWF, WGClimate Vice Chair) *[presentation]*

Main points:

- The WGClimate-22 meeting (11-13 February 2025) established a Tiger Team dedicated to sustained engagement with UNFCCC, preparing for COP and Earth Information Day (EID), and to coordinate input to the 2025 update of the CEOS GST Strategy.
- On 30 April 2025, the Tiger Team and UNFCCC held a workshop to strengthen existing relationships and assess interest in participation across the UNFCCC workstreams. Specific engagement streams and points of contact were identified for the GST, adaptation, loss and damage, mitigation, capacity building, technology, transparency and GHG inventories, and climate finance.
- On 28 August 2025, WGClimate submitted a proposal for EID at COP 30, in line with the typical EID structure – including scene setting, the state of the climate and global observing system, world cafes/breakout sessions, and support to a poster session throughout the conference. Two speakers are proposed for the thematic sessions: one representing a provider and one a user of EO-based data and services.

Discussion

- Beth Greenaway (UKSA, CEOS Chair Team) noted the efficiency and inclusivity of the 'twin-telecon' Tiger Team meeting format, and that EID will highlight the impact of CEOS in addition to national contributions.

SIT-TW-2025-05	CEOS-CGMS UNFCCC Tiger Team to propose a plan for sustainment of its activities following the scheduled disbanding of the team at the end of 2026.	**2025 CEOS Plenary**
	Rationale/Notes: The Tiger Team was established at the WGClimate-22 meeting (11-13 February 2025) to support sustained engagement with UNFCCC, preparation for COP and Earth Information Day (EID), and to develop a comprehensive multi-year engagement strategy aligned with the phases of the GST process (Ref: WGClimate-22-24). The Tiger Team's efforts have been instrumental in ensuring a more proactive and coordinated representation of CEOS agency priorities and activities at UNFCCC COP and related events.	

3.3: CEOS Global Stocktake (GST) Strategy Issue 2

Presenter: David Crisp (SIT Chair Team) *[presentation]*

Main points:

- The CEOS SIT-40 meeting (8-10 April 2025; Fukuoka, Japan) issued the directive to update the 2021 CEOS GST Strategy. The 2021 strategy document focused on opportunities and requirements related to the goals of the Global Stocktake, rather than developing specific interfaces or products.
- The 2025 CEOS GST Strategy identifies the need to incorporate the GST Lessons Learned, accommodate a changing landscape, expand and balance focus to mitigation, adaptation, and means of implementation, while defining interfaces between CEOS and critical stakeholders.
- Three of the strategy's eight recommendations for adaptation are already being progressed by CEOS. Means of implementation have not been coordinated across CEOS, although individual agency contributions exist. The draft recommendations for mitigation, adaptation, and 'means of implementation' are referenced in the slides.

Discussion

- The SIT Vice Chair Team recommends that the decision for 2025 CEOS Plenary be to agree to publish the GST Strategy Issue 2 as a CEOS technical document, without 'endorsing' it, which implies consensus of all CEOS Agencies.
- CEOS should clarify its decision making processes to ensure that activities can be acceptably concluded even if consensus is not possible. Discussion on this point continued under item 7.10: Refining Virtual Constellation Reporting to CEOS Leadership.
- Mark Dowell (EC) noted that at least 3 or 4 of the adaptation recommendations are already starting within the CEOS/CGMS WGClimate and adaptation will also be a focus of the incoming 2026 CEOS Chair.

SIT-TW-2025-06	CEOS Agencies to review the CEOS GST Strategy Issue 2 and provide feedback prior to its submission to the 2025 CEOS Plenary.	**October 20**
	Rationale/Notes: The exact mode of acceptance (e.g., 'endorsement', other) of the document by CEOS will be discussed at CEOS SEC-340.	

3.4: CEOS Engagement with IPCC

Presenter: Stephen Ward (SIT Chair Team) *[presentation]*

Main points:

- The SIT Chair Team has engaged with the IPCC Task Force on National Greenhouse Gas Inventories (TFI) in multiple meetings during the JAXA SIT Chair term to explore the possibility of increased references to and adoption of EO in IPCC agreed practices. Current efforts aim to achieve stronger strategic alignment between CEOS and the IPCC and to increase the uptake of CEOS Agency data into the Emission Factors Database, building on the previous work of the biomass harmonisation team.
- The IPCC TFI Technical Support Unit (TSU) shared a draft proposal for an expert meeting to be held in 2026, dedicated to the use of atmospheric observations in national GHG inventories. CEOS Agency review and feedback is now sought to refine the proposal.

SIT-TW-2025-07	CEOS Agencies to provide comments and suggestions to the SIT Chair Team by COB 12 September 2025 regarding the proposed *IPCC TFI Expert Meeting on the use of Atmospheric Observations in National Greenhouse Gas Inventories* (Contingency expert meeting). The SIT Chair team will respond to IPCC TFI contacts in time for debate at	**12 September 2025**

	IPCC-63 (27-30 October, 2025).	
	Rationale/Notes: CEOS Agencies should consider: objectives and scope; attendees; presenters, and presentations; and ongoing carriage of the CEOS-IPCC relationship.	

Session 4: Atmospheric Observations

4.1: GHG Task Team Update

Presenter: Yasjka Meijer (ESA) *[presentation]*

Main points:

- The international constellation of GHG missions is expanding, with the recent successful launches of GOSAT-GW, Microcarb, and Sentinel-5 onboard MetOp-SG-A1.
- The CEOS GHG Roadmap Issue 2 was endorsed at the 2024 CEOS Plenary and was supplemented by an annex of 21 near-term actions covering eight thematic areas. These thematic areas focus on sensor and system development, constellation architectures, cal/val, flux inversion modelling, stakeholder engagement, and capacity building.
- Following the upcoming WMO Extraordinary Congress Meeting (20-23 October 2025; Geneva, Switzerland), Global Greenhouse Gas Watch (G3W) is expected to be integrated into the existing WMO infrastructures.
- A joint virtual meeting between G3W the GHG Task Team is being considered. The next GHG Task Team meeting will be held jointly with WGClimate in February 2026 in Harwell, UK.

Discussion

- Mikael Rattenborg (WMO) noted that G3W was always intended to be strongly linked to existing infrastructure for Numerical Weather Prediction (NWP). The WMO Extraordinary Congress will look at WMO's budget, priorities, and continuity in this context.
- Vincent-Henri Peuch (ECMWF, WGClimate Vice Chair) added that a distributed approach will now be proposed for G3W, rather than a dedicated effort/system as previously envisioned.

4.2: Common Practices for Quantifying, Reporting, Validating, and Assessing Facility-Scale Methane Emissions (Methane Best Practices) Implementation

Presenter: Paul Green (NPL) *[presentation]*

Main points:

- Space-based observations of CO_2 and CH_4 are increasingly being used to identify significant emitters and emission events, inform mitigation actions, and assess compliance with new rules (e.g., imminent EU laws, Global Methane Pledge, etc.). Common practices for reporting facility-scale methane emissions are needed to inform data producers of user expectations and to create trust in data. The *Common Practices for Quantifying, Reporting, Validating, and Assessing Facility-Scale Methane Emissions* (Methane Best Practices) have been written for this purpose. Version 1.0 of the Methane Best Practices was endorsed by CEOS and CGMS in August 2025, available at https://zenodo.org/records/17047789.
- Focus now turns to promotion and adoption, and this includes continued engagement with UNEP IMEO for implementation within the Methane Alert and Response System (MARS), the Climate and Clean Air Coalition (CCAC) and Global Methane Pledge Champions, and promotion at COP 30 (10-21 November 2025; Belém, Brazil).
- The CEOS AC-VC and GHG Task Team are discussing a second version of the document to expand to area fluxes (i.e., beyond facility-scale).

4.3: CEOS GHG Mission Portal

Presenter: Harvey Jones (SIT Chair Team) *[presentation]*

Main points:

- The CEOS GHG Portal is hosted at ceos.org/ghg and is built upon the CEOS MIM Database. It includes information of both public and private satellites measuring methane and carbon dioxide, categorised by facility-scale, wide area, and sounding capabilities. The portal also includes mission timelines and a section highlighting some case studies.
- The JAXA SIT Chair team has worked with UNEP's International Methane Emissions Observatory (IMEO) to develop a new database add-on for the GHG Portal in 2025 that documents methane controlled release experiments. The purpose is to provide a public and shared repository of upcoming and past controlled release events, such that more agencies and users can make use of these events, given that they intentionally release methane for the purpose of observation validation. A form has been established so that events can easily be added to the database, which once validated, are distributed to GHG mission managers and other relevant individuals via a mailing list.

Discussion

- Yasjka Meijer (ESA) thanked the JAXA SIT Chair Team for organising the controlled release database with IMEO. He urged CEOS Agencies to engage and maximise the value of these controlled releases by tasking acquisitions with as many missions as possible.
- Hiroshi Suto (JAXA, SIT Chair Team) noted the increasing relevance of geostationary GHG measurements and suggested featuring them in a future iteration of the portal.

SIT-TW-2025-08	CEOS Agencies to review the beta database of controlled release experiments on the CEOS GHG Portal and provide any feedback to the JAXA SIT Chair Team. GHG mission managers and other relevant individuals are asked to sign up to controlled release notifications by sending an email to: controlled-release-database+subscribe@googlegroups.com and to submit details of controlled release experiments here: https://airtable.com/apphCiY4iwGxjHS4A/paglzCSssHxohyhMx/form	**2025 CEOS Plenary**
	Rationale/Notes: CEOS agencies need to both share details of controlled release experiments they plan / are aware of as well as sign up to receive notifications so that the value of controlled release experiments can be maximised.	

4.4: International Methane Emissions Observatory (IMEO) Collaboration

Presenters: Yasjka Meijer (ESA), Albrecht von Bargen (DLR), Laura Candela (ASI) *[presentation]*

Main points:

- The EnMAP (DLR) and PRISMA (ASI) missions have been identified as key sources of methane information to support IMEO's priority tasking areas of interest. DLR and ASI have been working with IMEO to organise acquisitions in support of IMEO objectives.
- Yasjka reported on the IMEO Use Case Working Group, which aims to produce detailed use cases of source sectors and stakeholder needs, connected to EO capabilities. A kick-off meeting for the revitalised Working group was held on 11 March 2025, and a community workshop in early 2026 is being considered.
- Next steps for IMEO collaboration include proceeding with the Use Case Working Group to develop initial use cases, encouraging adoption of the Methane Best Practices, maintaining and

expanding participation in the GHG Portal Controlled Release Database, and continuing to work with agencies on tip-and-cue data access and support.

Discussion

- Beth Greenaway (UKSA, CEOS Chair Team) shared that IMEO recently acquired tasking rights for the GHGSat mission, which could lead to some relevant case studies.

Session 5: Interoperability and Data Quality

5.1: CEOS Interoperability Handbook Update (v2.0)

Presenters: Tom Sohre (USGS, WGISS Chair), Nitant Dube (ISRO, WGISS Vice Chair) *[presentation]*

Main points:

- The CEOS Interoperability Handbook V2.0 aims to provide guidance to organisations developing interoperable data and services and help them measure their maturity. The document is being developed within WGISS and is targeted for endorsement at the 2025 CEOS Plenary. It is centred around interoperability 'factors', covering: quality, vocabulary, architecture, interfaces, and policy. These factors link to various groups and activities across CEOS.
- Each factor lists a number of recommendations, which together aim to consolidate activities within CEOS. A summary of the handbook's recommendations is available in the slides.
- WGISS is currently exploring the development of interoperability demonstrators to trial implementation of the Handbook. These demonstrators include the study into interoperability of surface reflectance ARD (with WGCV), 'Decision Ready Data' with WGDisasters, and 'EOPnP' – the development of plug-and-play modules to demonstrate interoperability best practices.

Discussion

- There is a possibility of confusion with introduction of the term 'decision-ready' alongside existing 'analysis-ready' data and this should be considered carefully. The topic will be discussed further at the WGISS-60 meeting (13-17 October 2025; Oberpfaffenhofen, Germany).
- Jonathon Ross (GA, LSI-VC Co-Lead) thanked WGISS and the CEOS groups involved in producing this important and high quality document. As the CEOS-ARD Oversight Group looks towards the future evolution of CEOS-ARD, the Interoperability Handbook and its recommendations will be central and critical to those discussions.
- The Interoperability Demonstrators should evidence how following the recommendations save effort and reduce burden for both data providers and users.
- Tim Stryker (USGS) emphasised that interoperability is the foundation for better EO data exploitation. Coordinating missions and their data increases ease in uptake of products and tools. Hosting and developing the handbook on GitHub is a great way to encourage external engagement.
- Marie-Claire Greening (ESA) congratulated Tom and Nitant on completing this complex piece of work that will be foundational for CEOS.

SIT-TW-2025-09	Feedback on the Interoperability Handbook v2.0 should be communicated to the WGISS Vice Chair, Nitant Dube, by 30 September 2025 so comments can be considered during WGISS-60 (13-17 October 2025).	**30 September 2025**
	Rationale/Notes: Documents for decision at CEOS Plenary are due by October 21. WGISS-60 provides a final opportunity to refine the Interoperability Handbook v2.0 before its submission for CEOS Plenary.	

5.2: CEOS Common Dictionary

Presenter: Dominik Weckmueller (EC) *[presentation]*

Main points:

- A paper published by the CEOS Terminology Task Team in 2024 identified the prevalence of circular and inconsistent terminology definitions within Earth observation. The new CEOS EO Glossary provides a holistic ontology of terms through parent-child relations, the inclusion of multiple definitions per term, and a tagging system for different types of terms (base, core, controversial, and high impact).
- The Glossary is hosted freely on GitHub with a webpage set up for easy access and contribution, and adheres to the vocabulary recommendations of the CEOS Interoperability Handbook V2.0.
- The workflow for submitting new terms to the glossary encourages open community discussion, and is detailed in the given slides.
- The development of a structured plan for the glossary's oversight was proposed. It would define its management, the cadence for discussing and adding new terms, ways to encourage organisations to engage, and processes to handle conflicts.

Discussion

- Mark Dowell (EC) noted that this activity began 18 months ago within the European Commission's Knowledge Centre on Earth Observation (KCEO) and was shared with CEOS as user interest and development grew, particularly for the Interoperability Handbook. The glossary complements the standardised product / variable taxonomy used by NASA's Global Change Master Directory (GCMD).
- Jonathon Ross (GA, LSI-VC Co-Lead) noted the importance and value of the glossary, particularly to support interoperability. The future CEOS-ARD Strategy should ensure that terms defined within the CEOS-ARD Framework and Specifications are completely aligned.
- David Borges (CEOS SEO) noted that the SEO manages the CEOS Organisational GitHub account, and that membership will be granted to all CEOS members who request it.
- Peter Strobl (EC) recalled discussions from the WGISS-58 Meeting (15-18 October 2024; Sioux Falls, South Dakota) that proposed creating videos to illustrate use of the glossary. Dominik has started creating these (here).

SIT-TW-2025-10	WGISS to work with EC-JRC KCEO colleagues to propose a structured plan for management of the CEOS Common Dictionary on the CEOS Organisational GitHub, consistent with principles of the Vocabulary (Semantics) factor of the Interoperability Handbook.	**SIT-41**
	Rationale/Notes: A framework is needed to cover things like how often terms should be discussed and merged, what to do in case of conflicts, managing contributors, etc.	

5.3: CEOS WGCV Product Validation Platform

Presenter: Nigel Fox (NPL, WGCV Infrared and Visible Optical Sensors (IVOS) Subgroup Chair) *[presentation]*

Main points:

- The need for a CEOS Product Validation Platform (PVP) came out of the CEOS New Space Task Team's recognition of the value of providing a source for interoperable global satellite reference imagery. PVP references three instrumented and pseudo-invariant radiometric calibration sites, plus sites for spatial and image quality assessment.

- The PVP hosts services that provide information on mission performance. The Radiometric Validation AnaLytics Tool (RadVAL) was recently released, providing users with actionable information on the performance of their products and sensors against common references.
- The PVP stores reference imagery in a Comparison Imagery Database, hosted by the UK EO Data Hub.
- Next steps include interactions with CEOS Agency and commercial missions to encourage the delivery of imagery over the reference sites, updates to the PVP website, refinement of the 'virtual reference' concept, and exploring broadening of the PVP to include other validation services.

SIT-TW-2025-11	CEOS Agencies to review the WGCV Product Validation Platform (ceos.org/pvp) and consider contributions of data (both historic and current) and opportunities to connect with partners in the commercial sector to encourage use of and contributions to the platform.	**VH-RODA 2025**
	Rationale/Notes: The WGCV PVP primarily needs reference imagery from CEOS Agencies to underpin the ability to compare and validate other sources of data.	

Discussion

- The PVP is a good role for CEOS and a service to the community. It strengthens CEOS connections with commercial EO data providers and supports users as a useful benchmarking tool. The JACIE 2026 forum should feature the CEOS PVP.
- Nigel noted that Cody Anderson (USGS, WGCV Chair) initiated the activity for a selection of sites as a team effort under WGCV. As well as JACIE, VH-RODA is another upcoming event that should be used to encourage participation in the platform.
- Jonathon Ross (GA, LSI-VC Co-Lead) acknowledged NPL and UKSA for their efforts on the PVP.

5.4: Future of CEOS Analysis Ready Data

Presenters: Ferran Gascon (ESA, CEOS-ARD Oversight Group Lead), Matt Steventon (CEOS-ARD Secretariat) *[presentation]*

Main points:

- CEOS-ARD has brought about a significant paradigm shift in the EO community towards making data more transparent and easier to use. It provides a foundation for improved interoperability and serves as a benchmark for data providers.
- Since 2016, nine CEOS-ARD Product Family Specifications (PFS) have been developed for surface reflectance, surface temperature, aquatic reflectance, Synthetic Aperture Radar (SAR; multiple modes), and nighttime lights surface radiance. New PFS are currently in development for Multi-source Mosaic and VHR SAR products, and an update to the Surface Temperature PFS was agreed at the LSI-VC-18 meeting.
- 2025 has been a pivotal year for community and commercial sector engagement. To understand the evolving user base and technological landscape, a community engagement campaign was undertaken in 2025 to gather feedback. This included a survey which has received over 110 responses. Preliminary findings highlighted the need for enhanced metadata specifications, ongoing quality assurance, introduction of fitness for purpose metrics, increased support to scientific and environmental applications, and tools for CEOS-ARD compliance assessments, among many others. Responses also noted the need for increased commercial relevance, reducing risks and realising opportunities related to AI/ML, establishing measurand consistency, aligning with software ecosystems, ARD standards, and increased training and outreach.
- The campaign's findings will be presented at the 2025 CEOS Plenary (4-6 November; Bath, UK) in support of an action to begin development of the 2026 CEOS-ARD Strategy.

Discussion

- Jonathon Ross (GA, LSI-VC Co-Lead) thanked the CEOS-ARD Oversight Group for its leadership and evidence-based approach to developing the new Strategy. The CEOS-ARD Strategy is mandated to be updated every two years, and the changing landscape makes clear it is imperative. Agencies and the commercial sector are looking to CEOS to create a robust Framework and Specifications. The survey also considered value-adders, i.e., those who can take advantage of ARD to produce tailored products and information. The 2026 CEOS Chair will support the Oversight Group with the update of the Strategy as one of their headline priorities.
- Tim Stryker (USGS) reaffirmed USGS' support for CEOS-ARD, emphasising both the benefits it provides to users and the connections and interoperability it fosters between government and commercial EO systems. He confirmed that USGS will continue to support its further development and expansion through the CEOS-ARD Strategy update. The team's active outreach efforts through conferences like LPS, IGARSS, VH-RODA, JACIE and the survey strengthens the CEOS-ARD initiative and will surely improve awareness and uptake.

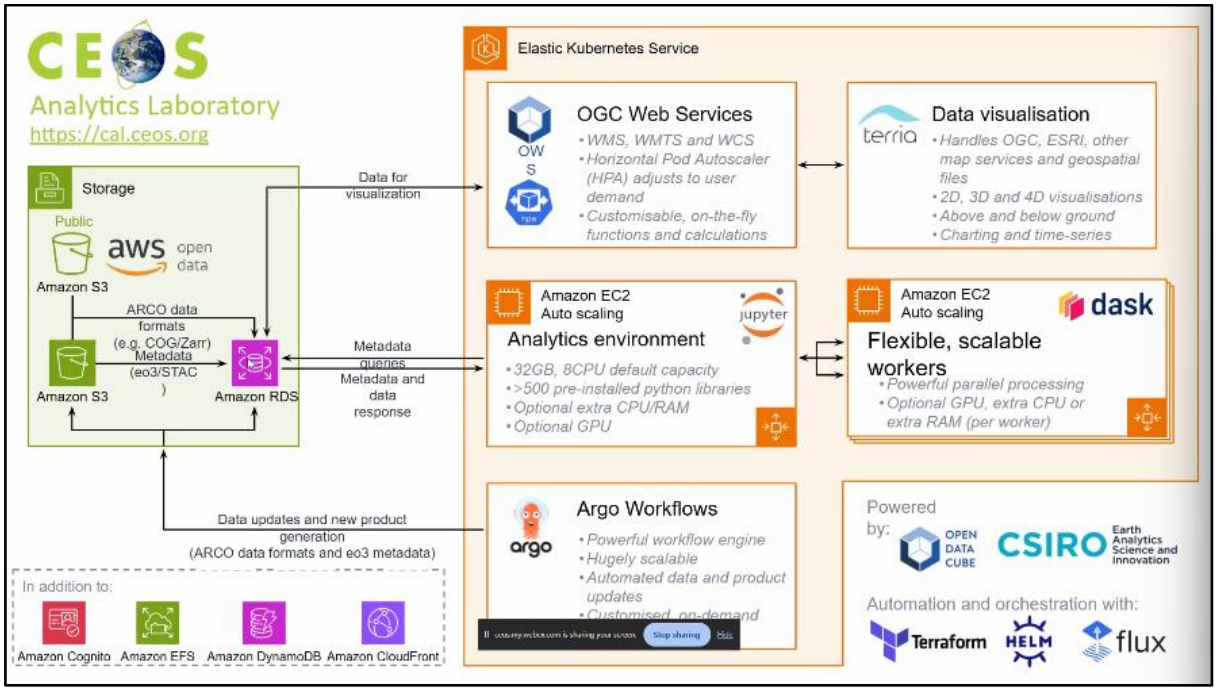
SIT-TW-2025-12	CEOS Agencies to share ceos.org/ard/survey with potentially interested parties both from space agencies and the commercial / other sectors.	**CEOS Plenary 2025**
	Rationale/Notes: Additional responses are welcome to help shape the future of CEOS-ARD concept note for CEOS Plenary.	

5.5: CEOS Analytics Lab

Presenter: David Borges (CEOS SEO) *[presentation]*

Main points:

- The CEOS Analytics Lab (CAL) is built upon the Open Data Cube and CSIRO's Earth Analytics Science and Innovation Hub. The CEOS SEO provides CAL to the CEOS community as a free computational resource for projects and pilots.



- Recently introduced features include a centralised dashboard, JupyterLab styling and options, and a new custom environment for WGCV SAR and SARCalNet users.
- The SEO evaluated an opportunity for commercial SAR access through NASA's Commercial Satellite Data Acquisition (CSDA) program. A test was made over GA's Queensland Corner

Reflector Array, overlaying ICEYE and Umbra data. CEOS-ARD product levels and formats are desired for this data, which is being raised through CEOS-ARD Oversight Group and LSI-VC engagements with the NASA CSDA team.

- A case study for CAL was conducted using ALOS-2 data for forested wetland inundation mapping, fully leveraging the CAL cloud-based environment. JAXA has made the global archive of CEOS-ARD compliant ALOS-2 ScanSAR data available through the AWS open data registry, enabling CAL to access data directly from the cloud. This has greatly enhanced the CAL workflow for global wetland monitoring. Aligning data specifications with the CEOS Interoperability Handbook's recommendations (specifically around .zip compression of data) was transformational. The resulting forested wetland inundation mapping dataset will be available under CC BY 4.0 license from Q1 2026.

Discussion

- Tim Stryker (USGS) thanked Dave and the SEO Team for their creative, collaborative, and responsive efforts to the needs of CEOS colleagues, including provision of the CAL.

Session 6: Other Thematic Topics

6.1: Aquatic Carbon Roadmap Update

Presenter: Marie-Helene Rio (ESA) *[presentation]*

Main points:

- The *CEOS Aquatic Carbon Roadmap* (ACR) began development following the 2023 CEOS Plenary and is being led by ESA, NASA, and JAXA, with 20 contributors from the CEOS OCR-VC, IOCCG, and scientific communities. A consolidated draft will be presented at the 2025 CEOS Plenary ahead of its anticipated completion in early 2026.
- The roadmap team delivered an insight session at the 2025 ESA Living Planet Symposium, highlighting the ACR as a key integrated contribution to the Global Stocktakes. The session also featured presentations from the CEOS GST Strategy and the GHG and AFOLU Roadmaps. Seed questions focused on identifying priority topics at the roadmap interfaces, including how to get the roadmaps into the hands of stakeholders, metrics for the global carbon stocktake, barriers to engagement, and cross-boundary use cases. The meeting highlighted the importance of *in situ* observations and collaboration between communities, gap filling and the role of CEOS, and the delivery of reliable ocean carbon datasets.
- The UN Ocean Conference declared blue carbon to be included in Nationally Determined Contributions (NDCs), bringing new stakeholders for carbon products and stronger country engagement. This supports the increased community responsibility to deliver reliable ocean carbon datasets for carbon reporting and the aim to fully understand the carbon cycle.

SIT-TW-2025-13	OCR-VC Leads to confirm the timeline for presentation of the final Aquatic Carbon Roadmap for CEOS Principal consideration.	**CEOS Plenary 2025**
	Rationale/Notes: The timeline has shifted to allow for additional review by the 2025 International Ocean Colour Science Meeting Darmstadt, Germany, 1-4 December 2025. Clarification of the timeline for the CEOS endorsement process would be helpful.	

6.2: Update on Canada's WildfireSat Mission Expansion

Presenter: Joshua Johnston (Natural Resources Canada; WildFireSat Principal Investigator) *[presentation]*

Main points:

- The WildFireSat mission has recently been expanded into a public global EO mission and will provide free-and-open data. The WildFireSat mission team hopes to establish a group under CEOS to better coordinate global EO-based wildfire monitoring efforts. Membership would comprise space agencies, product developers, and commercial/philanthropic NGO missions, as necessary.
- Canada is developing the WildFireSat mission to provide global fire monitoring data. The WGDisasters Wildfire Pilot was instrumental. The Pilot aimed to provide a comprehensive gap analysis for active fire EO and identified instability in global monitoring capabilities, sustained limitation in revisit capacity, despite a recent explosion of active fire EO usage. These findings were an essential part of Canada's rationale for the WildFireSat mission expansion within the Kananaskis Wildfire Charter signed at the G7 Leaders Meeting in June 2025.

Discussion

- Marie-Claire Greening (ESA) acknowledged the effort of the WGDisasters Wildfire Pilot and considered the prospective new CEOS group as a good follow-on and opportunity to bring in new partners. Josh added that the hope is that the group will promote better and sustained connections between upstream (EO) and downstream (end user) communities.
- Jonathon Ross (GA, LSI-VC Co-Lead) congratulated the Canadian Government on the announcement and its commitment to international coordination. The recent LSI-VC-18 meeting (3-5 September 2025; Ispra, Italy) actioned an update of the CEOS-ARD Surface Temperature specification, in collaboration with a majority of thermal EO satellite operators. Fire products might be appropriate 'higher-level' ARD products derived from surface temperature data and/or a qualifying metric to adopt in the surface temperature specification (i.e., a fitness for purpose indicator for 'fire detection').
- The importance of the commercial sector for wildfire monitoring was highlighted, as well as the need for better coordination and independent product validation.
- Julie Robinson (NASA) noted that the activity is well aligned with the incoming NASA SIT Chair priorities and supported the idea.

SIT-TW-2025-14	CSA and Environment and Climate Change Canada (ECCC) to work with Natural Resources Canada to organise a side meeting at CEOS Plenary to discuss the possibility of establishing a group under CEOS to coordinate global EO-based wildfire monitoring.	**CEOS Plenary 2025**
	<u>Rationale/Notes:</u> At the G7 Leaders Meeting in June 2024, the Prime Minister of Canada announced the signing of the Kananaskis Wildfire Charter. The WildFireSat Mission was expanded from Canadian to global scope. The G7 announcement also included a mandate to improve global coordination and provided funds to support it.	

Thursday, September 11th

Session 7: Virtual Constellations: State of the Global Observing System

7.1: Session Introduction

Presenter: Osamu Ochiai (JAXA, SIT Chair Team)

In this session the SIT Chair invited all CEOS Virtual Constellations (VCs) to give a brief 10-15 minute presentation, with content following a prescribed template. VCs were asked to use three slides only, one slide providing a visual timeline of all missions relevant to the Virtual Constellation, one slide covering key planning / coordination notes for SIT and CEOS agency awareness, and one slide focusing on thematic products and applications.

The session concluded with a discussion on how CEOS might introduce more systematic and consistent VC reporting, giving regular overviews of gaps and opportunities.

7.2: Atmospheric Composition (AC-VC)

Presenter: Ben Veihelmann (ESA) *[presentation]*

Main points:

- Emma Knowland (NASA) has joined AC-VC as a new Co-Lead, replacing Barry Lefer (NASA).
- New GHG missions, including GOSAT-GW, MicroCarb, and Sentinel-5, have recently launched. There is concern over the potential ending of OCO-2 and OCO-3, as their continuation is important for maintaining long-term ECV records overlapping with GOSAT-GW and CO2M.
- MTG-S1 and MetOp-SG-A1 will provide continuity to the long record of space-based atmospheric composition data, alongside the geostationary air quality constellation. Continued operations of Sentinel-5P are needed, in complement with Sentinel-5. Continuity for the TEMPO instrument will be lost over North America due to the reduced scope of GeoXO ACX.
- Highlighted interest in developing more operational GHG validation infrastructure with long-term funding, with plans to initiate a Level 2 intercomparison exercise for total column data.
- The AC-VC CEOS Work Plan activity on harmonisation of satellite products for tropospheric ozone (VC-20-01) is complete, with peer reviewed publications and the upcoming Phase-II Tropospheric Ozone Assessment Report (TOAR). TOAR-III ideas are being developed, including wildfire impacts and predictions of O_3, geostationary observations of diurnal cycles, and policy-relevant outcomes of ozone precursor measurements.
- The AC-VC White Paper *"Enhancing the role of satellites in PM2.5 monitoring"* is at a consolidated draft stage. AC-VC has developed recommendations for ground-based network evolution, to share with the European Environment Agency (EEA) and the Global Atmosphere Watch (GAW) Programme of WMO.
- A white paper "*Expanding geostationary monitoring of atmospheric composition"* is in development. The paper shares an approach to provide continuous, wide-area coverage over the Global South in complement to the existing constellation.

Discussion

- It was noted that if a white paper is being prepared for presentation to CEOS Plenary it would be prudent to have a draft shared well in advance, including for discussion at this SIT Technical Workshop. This white paper hasn't been reviewed outside of the VC to date. The incoming SIT Chair will track the open and actively developing white paper and consider agenda time at SIT-41 (April 2026).

7.3: Sea Surface Temperature (SST-VC)

Presenter: Misako Kachi (JAXA) *[presentation]*

Main points:

- Timelines of current and planned SST observations from low-Earth and geostationary orbits were shared. The LEO timeline showed infrared and microwave imagers operating from 2020 - 2028, including the recent launches of GOSAT-GW and HY-2E. Gaps in microwave SST observations are foreseen beyond 2032. The timeline for geostationary IR imagers was shared, categorised by their regions of coverage, with no gaps in IR coverage beyond 2030 foreseen.
- The GHRSST Data Specification (GDS) describes metadata specifications for Level 2, 3, and 4 SST products in a common format adopted by 20 agencies and used for over 150 datasets annually. The specification facilitates interoperability between datasets. GDS Version 3 is planned to include ultra-high SST (sub 100 m) and sea ice surface temperature. There is interest in CEOS-ARD compliance and cloud optimisation.
- Issues engaging with satellite operators to test and validate ultra-high resolution SST measurements were reported, in the context of analysing value and resolving coastal issues. The GHRSST26 Meeting (16-20 June 2025; Copenhagen, Denmark) was joined by the commercial sector, who shared their interest in providing UHR SST from their satellites. The need for better coordination between parameter-focused and area-focused CEOS VCs was noted.

Discussion

- Jonathon Ross (GA, LSI-VC Co-Lead) suggested that adopting the work that has been done with the GSD to the CEOS-ARD Framework could be an efficient way to capitalise on work already done and avoid duplication and inconsistencies.

7.4: Land Surface Imaging (LSI-VC)

Presenter: Takeo Tadono (JAXA) *[presentation]*

Main points:

- Summaries of current and planned missions compliant with, or developing, CEOS-ARD for Surface Reflectance and SAR Normalised Radar Backscatter (NRB) were presented, as well as timelines of coverage for GFOI and biomass. 2025 planning highlights include the start of ALOS-4 data distribution and the successful launches of Biomass and NISAR. CEOS-ARD self-assessments are being considered or developed for SAOCOM-1 and SABIA-Mar (CONAE), THEOS (GISTDA), and Kompsat-6 and -7 (KARI), among others.
- LSI-VC plans to develop a recommendation for Discrete Global Grid System (DGGS).
- Issues raised by LSI-VC and its subgroups included the need for long-term time series and SAR data to support land degradation neutrality, extending CEOS Agency support to the AFOLU Roadmap activities, mapping Essential Agriculture Variables to existing agency products, and closer collaboration with the Ramsar convention / wetlands community.
- The active participation of both CEOS Agencies and the commercial sector in LSI-VC and CEOS-ARD was reviewed.

Discussion

- David Borges (CEOS SEO) proposed a SIT-41 agenda item to feature the LSI-VC DGGS recommendation. Jonathon Ross (GA, LSI-VC Co-Lead) noted that the recommendation will be an important collaboration with WGISS and reference the Interoperability Handbook.
- Marc Paganini (ESA, Biodiversity Study Team Co-Lead) noted that the Biodiversity Study Team reached out to Ramsar during its stakeholder assessment. Collaboration with the convention is a key part of the work of the BST.

7.5: Ocean Colour Radiometry (OCR-VC)

Presenter: Ewa Kwiatkowska (EUMETSAT) *[presentation]*

Main points:

- The timeline of OCR missions presented highlighted the operational recurrent missions from the 2010s, new and upcoming hyperspectral missions in the 2020s, and pioneering geostationary missions from 2010 onwards. Application advancements in OCR include coverage of coastal and inland waters, algal blooms, ecosystem health, biodiversity, aquatic carbon, and water quality. There are no plans for a geostationary ring of OCR satellites yet.
- OCR-VC is leading the development of the CEOS Aquatic Carbon Roadmap.
- The VC contributed to Version 2 of the CEOS-ARD Aquatic Reflectance PFS, released in May 2025, as well as papers for system vicarious calibration, *in situ* protocols, FRMs for ocean colour, as well as IOCCG training and scholarships.
- The 2025 IOCCG Meeting will take place in Darmstadt from 1-4 December. The IOCCG Working Groups cover benthic reflectances, primary production, water types, and lidar applications, and the IOCCG Task Forces cover marine litter and debris, hyperspectral and carbon observations.
- Issues for OCR include the potential loss of GEO-XO's ocean colour sensor, the need to ensure continuity of hyperspectral and long-term time series measurements, and sustained support for high-quality *in situ* FRMs. Vulnerabilities in funding for system vicarious calibration infrastructures highlight the importance of coordinated *in situ* cal/val and the provision of end-to-end uncertainty budgets for OCR products.
- Agencies are able to develop water quality data products, but EO is not frequently used by reporting agencies and the commercial sector. Understanding the roadblocks to EO uptake is critical.

Discussion

- Osamu Ochiai (JAXA, SIT Chair Team) asked if OCR-VC has considered an economical value chain for OCR products. Ewa noted that the Aquatic Carbon Roadmap team is considering this, particularly to create examples of value in connection to land interfaces and atmospheric uptake of CO_2.
- Jonathon Ross (GA, LSI-VC Co-Lead) noted that these products are currently being applied to support efforts around a major algal bloom in South Australia.
- The planned 2026 CEOS Chair water quality workshop should certainly feature OCR-VC.

7.6: Ocean Surface Topography (OST-VC)

Presenter: Estelle Obligis (EUMETSAT) *[presentation]*

Main points:

- The current constellation of altimetry missions was shared, with 11 in flight and 11 planned. Sentinel-6B was sent to the Vandenberg Space Force Base on 18 August, for a planned launch on 16 November 2025. The mission will provide continuity for the mean sea level record started in 1992 by TOPEX/Poseidon.
- Further mission updates include the extended operations of AltiKa, CRYOSAT, Jason-3, and CFOSAT missions, and the upcoming launches of Sentinel-3C in Q3 2026 and HY-2E and HY-2F in 2026. CRISTAL and the next generation Sentinel-3 and Sentinel-6 missions are under procurement and development. Sentinel-6C was identified in the EC Copernicus Long Term scenario, but there is a contribution risk to the mission.
- Upcoming Ocean Surface Topography Science Team (OSTST) meetings will take place on 16 November 2025 (coinciding with the launch of Sentinel-6B) and 22-26 June 2026.
- The key role of Chinese missions, particularly the HY2 series, in measuring ocean surface topography was noted, and Chinese participation in OST-VC is welcomed.

7.7: Ocean Surface Vector Wind (OSVW-VC)

Presenter: Stefanie Linow (EUMETSAT) *[presentation]*

Main points:

- A timeline of operational and planned scatterometer missions was presented, including C- and Ku-band systems and conically scanning K-band instruments. Strong spatial and temporal coverage currently exists, and continuity of OSVW observations is expected into the 2040s, with several missions planned – notably the EPS-SG SCA launch in 2026, which will enhance high-wind capability.
- Coverage across the diurnal cycle is being achieved, with additional sampling from drifting orbits in the HY-2 series continuing into the 2030s.
- OSVW-VC maintains coordination through the International Ocean Vector Winds Science Team (IOVWST), although international attendance has become more challenging.
- OSVW observations deliver high societal impact, particularly for monitoring extreme winds such as tropical cyclones, and routine observations provide strong benefits for NWP and time series. Complementarity with other instruments (e.g., SAR and microwave radiometers) should continue to be explored.

7.8: Precipitation (P-VC)

Presenter: Chris Kidd (NASA) *[presentation]*

Main points:

- A timeline was presented of current and planned precipitation missions, with primary missions covering frequencies from 10-183 GHz. Operational missions include FY-3, Suomi-NPP, NOAA-20 & 21, JPSS-3 & 4, and MetOp-SG.
- Planning highlights included the availability of agency products in HDF/netCDF format, with new products being developed based upon AI/ML. A CEOS-ARD PFS for precipitation is being considered, aligning with existing products in ARD-type formats.
- Potential gaps in precipitation product availability were noted, with core sensors expected to operate only until 2030. After the retirement of GPM (DPR EOL 2031), new missions are anticipated but will be dominated by sounding instruments less capable of measuring surface precipitation, with no replacement precipitation radar currently planned.
- Critical gaps include the likely absence of low-inclination radars and suitable low-frequency radiometers, highlighting the need for coordination to sustain a core set of precipitation-capable agency missions. Commercial contributions remain supplementary, and any reduction in accuracy of satellite precipitation estimates would have significant impacts, from natural hazard mitigation to water resource planning.

Discussion

- Osamu Ochiai (JAXA, SIT Chair Team) noted that JAXA is committed to continue the GPM and PMM missions for precipitation and disaster monitoring.
- To ensure operational radar continuity, Jörg Schulz (EUMETSAT) stressed the importance of legacy missions and ongoing calibration of passive microwave retrievals.

7.9: Coastal Observations Applications Services and Tools (COAST-VC)

Presenter: Paul DiGiacomo (NOAA) *[presentation]*

Main points:

- A summary was shared of current and planned activities across SAR, atmospheric, microwave radiometer, altimeters, multispectral, and hyperspectral instruments. Higher resolution instruments are needed to make coastal observations, and they rely on ocean colour, topography, scatterometry, land surface, and SAR measurements.
- Progress was shared on the Coastal Application Knowledge Hub (AKH), which recently introduced improved intertidal bathymetry from GA, and NOAA's marsh mapping tools.

- COAST-VC is collaborating with CoastPredict (co-chairing an AGU 2025 session), IOCCG, GOOS, and OCR-VC on outreach, and with SST-VC on a joint recommendation statement. Contributions were also made to the CEOS Biodiversity Study Team, Interoperability Handbook v2.0, Aquatic Carbon Roadmap, and the CEOS-ARD Oversight Group.
- COAST-VC welcomed discussion on the future of the COAST AKH as CEOS considers how to manage final VC products. An open call for VC membership was shared, including expert support for gap analyses. Expressions of interest were welcomed for future COAST-VC Co-Leads, following NOAA's transition back to membership status in alignment with the proposed timeline.

Discussion

- Osamu Ochiai (JAXA, SIT Chair Team) commended COAST-VC's broad collaborations across CEOS.
- Julie Robinson (NASA) thanked Paul for his commitment to COAST-VC and shared that NASA looks forward to participation in the VC.

7.10: Refining Virtual Constellation Reporting to CEOS Leadership

Presenter: Yuko Nakamura (JAXA, SIT Chair Team) *[presentation]*

Main points:

- CEOS lacks consistency in reporting from the Virtual Constellations on the state of the observing system to both CEOS leadership and the community. Greater consistency would clarify reporting and strengthen CEOS coordination.
- The CEOS Thematic Observation Coordination Page made a start but more is needed, perhaps through consistent reporting templates at regular meetings, constellation overviews and timelines through the CEOS MIM Database, CEOS website enhancements, etc. The CEOS GHG Portal could be a model for dedicated VC pages built on the MIM Database.

Discussion

- Beth Greenaway (UKSA, CEOS Chair Team) supported the assessment and overview, noting that consistent reporting will help CEOS be more collectively in tune with missions, gaps, and requirements.
- Mark Dowell (EC) noted the need to accommodate the different scopes of VCs. There are some that are thematic, while others focus on a specific technology. He highlighted the value of links to international science groups but stressed that the delivery of outputs between them and CEOS needs clarification.
- Marie-Claire Greening (ESA) supported common approaches for the VCs, as long as the content reported is useful in the CEOS context and allows VCs to retain flexibility.
- Julie Robinson (NASA) noted that the streamlined reporting for this SIT Technical Workshop was quick to digest and an effective standardisation. She emphasised that while the approach shouldn't constrain the VCs, consistency is valuable.
- Chris Kidd (NASA, P-VC Co-Lead) noted that the VC reporting format provided a useful summary of activities but cautioned against being too prescriptive given their varied goals and capabilities.
- Misako Kachi (JAXA, SST-VC Co-Lead) agreed to use the given format, although further modifications to the mission timelines are needed.
- Ben Veihelmann (ESA, AC-VC Co-Lead) noted that the reporting suggestions for highlights and issues were clear, though generating charts to cover all missions is difficult for some VCs like AC-VC, given the scope of their work.

A Community Request on behalf of the CEOS Sea Surface Temperature (SST) and Coastal Observations, Applications, Services and Tools (COAST) Virtual Constellations supported by the GHRSST Science Team on the Recommended Coverage of Future Missions for Coastal Ocean Observations *[document]*

- Yuko Nakamura (JAXA, SIT Chair Team) provided background on the joint statement, which was originally presented to the 2024 SIT Technical Workshop. This revised statement recommends delivery of coastal Sea Surface Temperature data in GHRSST format and within 100 km of coasts as an objective for future TIR missions.
- It was noted that CEOS is a best efforts organisation and it is unreasonable to ask agencies to change mission specifications or state that efforts are not meeting community expectations. Recommendations are welcomed but they should not impose requirements on missions. The document serves only as a consideration and recommendations from the scientific community for future mission planning.
- Marie-Claire Greening (ESA) noted that the recommendation has already been shared for Principal consideration and need not be presented again at 2025 CEOS Plenary, outside of a mention for information in the Virtual Constellation synthesis report of the SIT Chair Team.
- This document has highlighted the need to refine the definition of CEOS 'endorsement.' Documents for CEOS endorsement shouldn't impose requirements on individual agencies mission planning. CEOS should clarify an approach whereby documents can be delivered to CEOS leadership for acknowledgement and perhaps CEOS publication as a recommendation, without seeking consensus or endorsement.
- Mark Dowell (EC) noted that VCs report to the SIT Chair and should be dealt with at that level.
- Mary Ann Kutny (NOAA) noted that presentation to the SIT Technical Workshop is a means for acknowledgement of the recommendation, and it does not need additional CEOS Plenary consideration.

SIT-TW-2025-15	SEO team to reflect on the Virtual Constellation reports to the 2025 SIT Technical Workshop and take steps to introduce more consistency in VC representation on the CEOS website, including by publishing consistent timelines based on the MIM Database, etc.	**SIT-41**
	Rationale/Notes: Introducing more consistency on the CEOS website would be a good first step towards increased reporting consistency.	
SIT-TW-2025-16	Incoming CEOS Chair team to work with the CEO, incoming SIT Chair Team and SEO to provide clarification on the processes and possible outcomes for CEOS Agencies and groups bringing recommendations and documents to CEOS SIT and Plenary seeking recognition, publication, or endorsement of their outputs.	**SIT-41**
	Rationale/Notes: Seek to have a clear short list of categories for SIT and Plenary (e.g., for information, recommendation, publication, endorsement, etc.) and the meaning of each.	

7.11: Utilising the CEOS Missions, Instruments, Measurements (MIM) Database for Improved Virtual Constellation Observation Continuity Reporting

Presenter: Marie-Claire Greening (ESA) *[presentation]*

Main points:

- The CEOS MIM Database has been supported by ESA since the 1990s and it is the official consolidated statement of the programmes and plans of CEOS Agencies. It is a foundational tool for mission planning and measurement continuity analysis and is updated annually through a comprehensive survey of CEOS Agencies. All information is agency-verified, containing mission, instrument, and measurement specifications.
- The CEOS MIM Database is well positioned to provide a basis for improved and more consistent reporting from the VCs on mission timelines, gap analyses, etc. Some examples were shown. Many

of the timelines presented by VCs at this SIT Technical Workshop were generated from the MIM Database using the Python Notebook functionality of the MIM Database. The Database team is open to working with the VCs to improve the generation of products to suit their needs.

- The results of this year's annual update survey will be published in October 2025.

Discussion

- Julie Robinson (NASA) congratulated the MIM Database team on maintaining the database and implementing new features that could support consistency in VC reporting. The database is an important resource for developing these reports and leveraging it would mean that such reporting could be achieved without introducing a significant amount of new work for the VCs. Julie thanked ESA for providing this resource and commended it as incredibly helpful.

Session 8: Other Thematic Working Group and Virtual Constellation Topics

8.1: OST-VC White Paper on a Coordinated International Satellite Altimetry Virtual Constellation

Presenter: Estelle Obligis (EUMETSAT) *[presentation]*

Main points:

- *The Future of Spaceborne Altimetry* White Paper was published in 1992, which formed a basis for CEOS to gather user requirements for an ocean surface topography satellite constellation. This led to the publication of "*The Next 15 years of Satellite Altimetry"* white paper in 2009. All high level requirements from these papers have been successfully implemented.
- The new document being developed provides an inventory of current and emerging user needs and gaps in the current international constellation. Within this paper, 'needs' replace 'requirements,' noting it is up to agencies to define their formal mission requirements. The editorial team comprises EUMETSAT and CNES, with contributions from OST-VC members and altimetry community experts.
- Needs are segmented for all altimetry applications, plus transversal activities like cal/val, data, and user service components. An important conclusion of the document is a table of application needs for timeliness, resolution, and coverage. Most issues relate to limited spatio-temporal sampling of altimetry observations.
- The continuation of tri-decadal time series of reference altimetry needs to be ensured, along with recognition of the under-developed sea state and surface current domains, and poor coverage of polar areas. Further highlights feature the importance of *in situ* reference data for cal/val and opportunities for higher level synergy products. International collaboration remains key, as most altimetry missions have been multi-national and multi-institutional.
- The final draft of the paper was delivered to CEOS in July 2025 and will be presented to the 2025 CEOS Plenary as a recommendation from the science community.

Discussion

- Jonathon Ross (GA, LSI-VC Co-Lead) recommended investigating the United Nations Global Geodetic Centre of Excellence (UN-GGCE) report on risks to the geodetic supply chain, which represents a key infrastructure for operational satellite altimetry continuity.

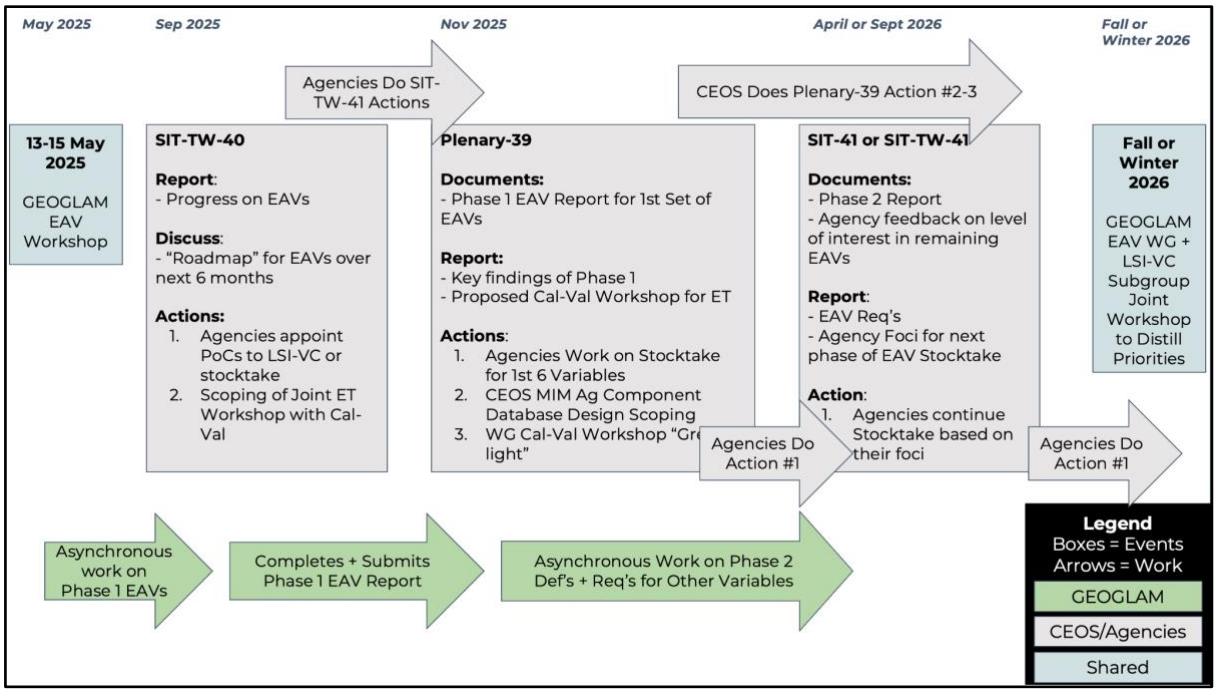
SIT-TW-2025-17	Jonathon Ross (Geoscience Australia) to circulate the UN-GGIM report: *"How weaknesses in the global geodesy supply chain could have catastrophic impacts on critical infrastructure and national economies"*.	**19 September 2025**
	Rationale/Notes: The report highlights current risks to the geodetic supply chain including potential ramifications for CEOS Agencies.	

8.2: Essential Agricultural Variables (EAVs) for the Group on Earth Observations Global Agricultural Monitoring Initiative (GEOGLAM)

Presenter: Sven Gilliams (GEOGLAM) *[presentation]*

Main points:

- Continue to welcome CEOS Agency experts to join the GEOGLAM LSI-VC Subgroup.
- The WGCV Land Product Validation (LPV) Subgroup asked GEOGLAM to scope a workshop on evapotranspiration (ET) validation best practices.
- A summary of the GEOGLAM essential agriculture variable (EAV) Workshop (13-15 May 2025; Ispra, Italy) was presented.
- GEOGLAM is currently defining the EAVs to concretely embed satellite EO in decision making. Six initial variables have been selected to test the framework, including crop type, yield, irrigation, ET, and field boundaries. A stocktake and gap analysis process for each of these is ongoing and the result will be presented to the 2025 CEOS Plenary.
- The forward plan is as follows:



Discussion

- Jonathon Ross (GA, LSI-VC Co-Lead) expressed GA's support to GEOGLAM and its comprehensive view on agriculture.
- Sven noted that GEOGLAM's recent workshop focused on what variables are key for agricultural monitoring and policy reporting. GEOGLAM and convened experts are responsible for defining the EAVs. GEOGLAM has G20 support, which will hopefully be re-endorsed this year, and this provides some political authority.

SIT-TW-2025-18	CEOS agencies are asked to formally appoint a point of contact to the GEOGLAM LSI-VC Subgroup.	**2025 CEOS Plenary**
	Rationale/Notes: CEOS Agencies currently confirmed are ESA, ISRO, CSIRO, SANSA, Geoscience Australia, CONAE. Historically engaged agencies without a formal point of contact identified: NASA, DLR, CSA, JAXA, UKSA, USGS, NOAA, CNES. Short-term actions will be to support assessment of the first six EAVs.	

SIT-TW-2025-19	WGCV Chair is asked to work with the WGCV Land Product Validation subgroup and GEOGLAM points of contact to scope a Joint Workshop on Good Practices for Evapotranspiration Validation.	**2025 CEOS Plenary**
	Rationale/Notes: UN FAO (ET and Irrigated Cropland Lead Steward) has offered to host. The plan is to report the workshop proposal at the 2025 CEOS Plenary.	

8.3: Working Group on Capacity Building and Data Democracy (WGCapD) Updates

Presenter: Dan Matsapola (SANSA, WGCapD Chair) *[presentation]*

Main points:

- Christoph Aubrecht (ESA) is nominated to serve as the next WGCapD Vice Chair. If endorsed by CEOS Plenary, Christoph will undertake a one-year Vice Chair term in 2026 and will take on the Chair role for 2027-2028. Dan has agreed to extend his Chair term for an additional year to cover the withdrawal of AEM's Vice Chair earlier this year. WGCapD is now actively looking for a new Vice Chair for 2027-2028.
- WGCapD members are working to execute 12 CEOS Work Plan Deliverables for 2025 and 27 in 2026, including those to increase Copernicus data uptake in Africa, provide training for hyperspectral and SAR data, and develop guidance for conducting capacity needs assessments.
- WGCapD aims to shift from producing one-time joint training sessions to sustained long-term collaborations. Capacity building will focus on engaging underrepresented communities, promoting cross-cutting CEOS deliverables, engaging more CEOS members, capacity development for decision makers, and the use of AI tools and best practices.
- EOTEC DevNet grew out of WGCapD, which recognised the need to incorporate EO training beyond CEOS members. It has grown significantly and serves as an important connection between UNOOSA, WMO, VLab, GEO, and CEOS. EOTEC DevNet COP meetings have featured over 1500 participants with spotlight sessions on government, private sector, international agency, and NGO capacity building and research. The EOTEC DevNet 2026-2027 Strategy was shared; feedback from the CEOS community is welcome.

Discussion

- Marie-Claire Greening (ESA) thanked Dan and SANSA for continuing the WGCapD Chair role for an extra year to support Christoph.

Session 9: Other Business

9.1: CEOS Systems Engineering Office (SEO) Report

Presenter: David Borges (CEOS SEO) *[presentation]*

Main points:

- Some CEOS members have reported issues receiving email traffic through the CEOS mailing lists, due to protection systems in mail providers. The SEO is troubleshooting this issue with the current mailing list provider.
- The SEO has been approached by CEOS groups in search of a process to acquire Digital Object Identifiers (DOI) for published documentation. A CEOS DOI Process Paper will be proposed for approval, either at the 2025 CEOS Plenary or SIT-41 (April 2026).
- The SEO introduced an organisational GitHub account for CEOS. Key governance decisions are needed to establish ownership criteria, membership standards, and team structure. The SEO is drafting a CEOS GitHub Organisational Governance document and welcomed inputs.
- COVELib is an open-source Python library that captures the functionality of CEOS COVE. It is available on the CEOS GitHub.

- Appreciation was extended to ESA for hosting the CEOS Booth at ESA's Living Planet Symposium 2025 (23-27 June; Vienna, Austria), ensuring CEOS had a physical footprint at a highly valuable EO event.
- A summary of CEOS news articles published over the last year was shared. CEOS members were encouraged to share content for promotion by the CEOS Communications Team.

Discussion

- Beth Greenaway (UKSA, CEOS Chair Team) commended the SEO's work and agreed that a CEOS DOI process is needed. She suggested the proposal be presented to the CEOS Plenary this year. Existing CEOS-approved documents will receive DOIs, working backwards through historical CEOS publications. New documents will receive DOIs after they are approved by CEOS.
- Beth also noted that there will be a dedicated CEOS Plenary session to highlight and acknowledge the substantial efforts that contribute to the routine functioning of CEOS as well as ongoing services provided by CEOS to the international Earth observation community, of which the SEO is a key contributor.

9.2: Earth Observation for the Public Sector

Presenter: Niall Bradshaw (UKSA, CEOS Chair Team) *[presentation]*

Main points:

- The 2025 SIT Technical Workshop side meeting *"EO For The Public Sector"* aimed to explore existing national level systems used to bring EO data to policy and service professionals to create efficiencies, stimulate growth, and impact lives.
- Experiences and perspectives were shared by GA, JAXA, EC, UKSA, UK-Defra, and ASI. Discussion centred around success stories and lessons learned, challenges and barriers, and opportunities for greater EO usage.
- GA shared key successes from the Digital Earth Australia programme, policy and societal benefits, and cross government engagement. Challenges highlighted included data integration across stakeholders.
- JAXA shared success stories from environmental, disaster, and agriculture-related case studies, and public-policy interfaces underpinned by satellite data. Challenges included communication with local governments.
- UKSA shared successes of user uptake across the UK, and the challenges associated with rigid government procurement, limited evidence bases for EO, and difficulties integrating space-based data into existing systems. Opportunities were found in the establishment of adoption pathways to ease long-term government commitment.
- EC highlighted the strong legal basis for EO embedded in the EU and Copernicus programme, and shared policy deep-dive assessments and the challenges in translating qualitative needs.
- The CEOS Chair Team will draw together its findings into a paper for the 2025 CEOS Plenary. Additional contributions from the CEOS community are welcomed.

Discussion

- Jonathon Ross (GA, LSI-VC Co-Lead) congratulated UKSA on this effort, and recognised the challenge of spurring uptake, even for extremely impactful EO data. The policy development and regulation context have many factors. Patience and sustained effort are required to realise impact.

9.3: Continuity of the *"CEOS In Schools"* Initiative

Presenter: Patrick Gibson (UKSA, CEOS Chair Team) *[presentation]*

Main points:

- The *CEOS in Schools* program conducted a pilot activity in CEOS to inspire low cost and repeatable global youth collaboration in EO and provide a platform for youth to engage with CEOS Principals.
- Teachers participating in the programme highlighted a need to make it easier to find teaching materials related to EO. This has led to creation of the "CEOS Youth Hub" – a dedicated platform for CEOS Agency educational content on the CEOS website, supporting the project's legacy in CEOS.
- Two CEOS in Schools webinars were attended by 125 students across six countries. The webinars were focused on *EO for the Urban Environment* and *EO for Biodiversity*. Students also developed EO posters which will feature at the 2025 CEOS Plenary venue.
- Some challenges associated with the program included onboarding and coordination between CEOS Agencies and schools, finding facilitators for webinars and break-out rooms, establishing engagement early in the program, and finding a cohort of international students balanced across suitable time zones.
- The 2026 CEOS Chair Team will seek to provide continuity for the programme, and there are ongoing discussions with WGCapD regarding longer-term sustainment options.
- A summary of the *CEOS in Schools* pilot will be presented to the 2025 CEOS Plenary for information.

Discussion

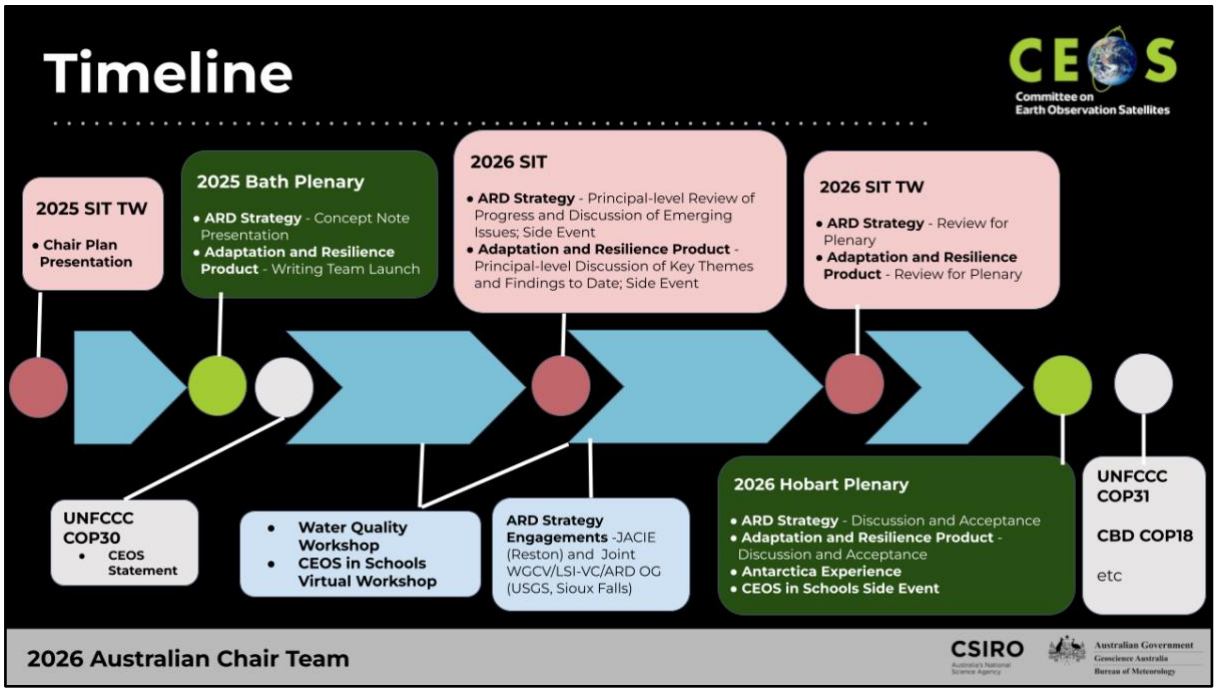
- Yuko Nakamura (JAXA, SIT Chair Team) expressed appreciation for the CEOS Chair team's initiative to include schools in CEOS activities, creating an opportunity to inspire students.
- Clement Albergel shared a link to ESA's Climate for Schools programme: https://climate.esa.int/en/educate/climate-for-schools/

9.4 2026 CEOS Chair Themes

Jonathon Ross (GA, 2026 CEOS Chair Team) *[presentation]*

Main points:

- The 2026 CEOS Chair Team comprises staff from GA, CSIRO, and the Australian Bureau of Meteorology (Team Australia).
- Two "Focus Activities" under the headline theme of *"Positioning CEOS for Success in a Rapidly Changing Context"* were presented:
  - CEOS Support to Environmental Adaptation and Resilience: Prepare information products that support Principals at the 2026 Plenary to strategically consider the role CEOS is playing, and can play, in supporting societal adaptation and resilience in the face of environmental change
  - Future CEOS-ARD Strategy: Provide additional capacity and attention to support the CEOS-ARD Oversight Group in their effort to prepare the next iteration of the CEOS-ARD Strategy ready for the 2026 CEOS Plenary.
- Other "Highlight Topics" for the 2026 CEOS Chair year are: Antarctica Plenary Experience, Water Quality Workshops (aligned with incoming SIT Chair priorities), and CEOS in Schools Sessions (providing continuity of UKSA CEOS Chair efforts).
- The 40th CEOS Plenary will be held in Hobart, Tasmania, from 3-6 November 2026.
- A 2026 CEOS Chair term timeline was shared:



9.5: 2026-2027 SIT Chair Priorities

Presenter: Julie Robinson (NASA, SIT Vice Chair Team) *[presentation]*

Main points:

- The NASA SIT Chair's first priority, 'Planet Aqua' aims to transform understanding of Earth's water cycle. Key outcomes include coordinating multisensor products for water; enhancing development, dissemination, and interoperability of water products; co-developing solutions to improve water management and predict water related hazards; and assessing socio-economic impacts. Main deliverables include best practice guidelines on combining optical and SAR data for water variables, utilising CEOS-ARD for the water strategy and implementation plan and use cases to highlight socio-economic benefit.
- Priority two, 'Connected data for community resilience', aims to develop understanding of the CEOS value chain in the context of user community requirements. Key outcomes are to understand end user requirements to build community resilience, review and optimise the CEOS value chain, advance interoperability efforts towards data fusion, and improve capabilities to deliver actionable information to empower communities. Main deliverables are the CEOS Value Chain product, a community resilience interoperability demonstrator and use cases, and a Resilience Roadmap document.
- SIT-41 will be held from 14-16 April 2026, hosted by NASEM in the Beckman Center at Irvine, California. SIT Technical Workshop 2026 will be held from 8-10 September at NASEM National Academy of Sciences Building in Washington, DC.

9.6: Leadership Changes at the 2025 CEOS Plenary

Beth Greenaway (UKSA, CEOS Chair Team) *[presentation]*

Main points:

- High-level CEOS leadership changes at 2025 CEOS Plenary were reviewed, including the incoming 'Team Australia' 2026 CEOS Chair, NOSA's nomination for 2027 CEOS Chair, and the NASA 2026-2027 SIT Chair.
- At the 2025 CEOS Plenary, the SIT Vice Chair role will become vacant; nominations from all CEOS Agencies are welcome.

- The CEOS Executive Officer role will be continued by the Evenflow team following the departure of Steven Ramage.
- Working Group leadership changes were reviewed, including the nominations received for the incoming 2026 Vice Chair roles for WGISS (Damiano Guerrucci, ESA)), WGDisasters (Antonio Montuori, ASI)), and WGCapD (Christoph Aubrecht, ESA).

9.7: Proposal for the sustained presence of the topic of biodiversity within CEOS

Biodiversity Study Team Co-Leads: Shaun Levick (CSIRO), Marc Paganini (ESA), and Gary Geller (NASA, remote) *[presentation]*

Main points:

- The Biodiversity Study Team was established at the 2024 CEOS Plenary following the delivery of the Ecosystem Extent Task Team's (EETT) white paper and biodiversity demonstrators' conclusions. The BST was given a mandate to assess options for sustainable support for biodiversity in CEOS and to make a recommendation at the 2025 CEOS Plenary.
- Following the group's user needs and stakeholder assessment, the BST concluded that the CEOS Virtual Constellation (VC) approach, with its flexible membership, leadership transitions, and reporting was the preferred solution. A proposal for establishment of a Biodiversity VC will be presented initially at the 2025 CEOS Plenary (Initial Proposal) and at SIT-41 (Final Proposal), consistent with the VC Process Paper. The final proposal at SIT-41 will include a Terms of Reference and Implementation Plan.
- The B-VC would represent a multiple property/domain based VC, as outlined in the CEOS Virtual Constellation Process paper.
- The proposed B-VC Mission Statement was shared: *Advance biodiversity understanding, monitoring, and conservation for the benefit of society, by strengthening the community's use of space-based Earth Observation and data products.*
- The B-VC objectives are to maximise impact, engage users, and leverage CEOS collective capabilities and resources. Activities will include the identification of gaps in biodiversity observations and data products; enhance data processing, tools, and existing biodiversity demonstrators; implement capacity building initiatives; increase community engagement; and coordinate with the GEO BON Global Biodiversity Observing System (GBiOS).
- Documents submitted for review at the 2025 SIT Technical Workshop were:
  - Recommendation for a CEOS Biodiversity Virtual Constellation (v1.2)
  - Initial Proposal and Terms of Reference for B-VC (v1.4)
  - Draft Implementation Plan for the B-VC (v1.1)
- The BST Co-Leads requested that at the 2025 CEOS Plenary: 1) the BST be acknowledged for fulfilling its mandate, 2) a Biodiversity VC be agreed as the leading option for sustainable support; and 3) the BST's duration be extended to develop a Full Proposal for consideration at SIT-41 in April 2026.

Discussion

- Beth Greenaway (UKSA) shared the importance of visibility of biodiversity in CEOS and supported presentation of the Initial Proposal to the 2025 CEOS Plenary.
- Julie Robinson (NASA) commended the approach and scientific rigour of the BST, which has increased our collective awareness and connection to other stakeholders in the biodiversity community. NASA is in favour of the progress towards a Biodiversity VC.
- Jonathon Ross (GA, LSI-VC Co-Lead) noted the need to interface with other VCs and mission managers. The Terms of Reference should state that observation needs from B-VC need to factor into mission planning activities in other VCs.

- Osamu Ochiai (JAXA, SIT Chair Team) supported the BST's proposed way forward.

Session 10: Closing Session

10.1: Review of Actions and Decisions

Matthew Steventon (SIT Chair Team) reviewed the draft actions of the meeting.

10.2: 2025 CEOS Plenary Update

Beth Greenaway (UKSA, CEOS Chair Team) recalled that the 39th CEOS Plenary will be hosted by UKSA on 4-6 November 2025 in Bath, United Kingdom. A final call for registrations and side meeting requests was made, to be submitted as soon as possible, and no later than Friday, 19 September.

10.3: Thank you to Christine Bognar

Led by Marie-Claire Greening (ESA) on behalf of CEOS

Main points:

- Christine Bognar has recently retired from NASA. Christine was a staunch supporter of CEOS and the importance of international collaboration and was a key person behind the ongoing success and strength of the organisation.
- Christine was commended by the SIT Technical Workshop participants for her support and participation throughout CEOS leadership meetings since 2011, including her involvement in the CEOS self-study under Michael Frielich's NASA SIT Chair term.
- Christine thanked her CEOS and NASA Earth Science Division friends. She noted that understanding different perspectives and possibilities for international coordination is what makes CEOS so effective.
- Osamu Ochiai (JAXA), Beth Greenaway (UKSA), Poramet Thuwakham (GISTDA), Mary-Ann Kutny (NOAA), Paul Counet (EUMETSAT), Klaus Schmidt (DLR), Jonathon Ross (GA), Tim Stryker (USGS), and Stephen Ward (SIT Chair Team) added their thanks and best wishes for Christine.

10.4: Closing Remarks

Presenter: Osamu Ochiai (JAXA, SIT Chair Team)

Main points:

- Osamu thanked participants for attending and contributing to the SIT Technical Workshop and for their ongoing efforts. The JAXA SIT Chair Team looks forward to the 2025 CEOS Plenary and thanked EUMETSAT for hosting this Technical Workshop on behalf of JAXA.

APPENDIX A: Attendees

** = virtual participation*

Agency/Organization	Name	Agency/Organization	Name
ASI	Laura Candela	JAXA	Mariko Harada
CEOS Executive Office	Steven Ramage	JAXA	Matt Steventon
CEOS Executive Office	Lefteris Mamais	JAXA	Misako Kachi
CNES	Hugo Fourner*	JAXA	Osamu Ochiai
CONAE	Marcelo Uriburu Quirno*	JAXA	Satoshi Uenuma*
CSA	Frederic Fournier*	JAXA	Stephen Ward
CSIRO	Shaun Levick	JAXA	Takeo Tadono
DLR	Albrecht Von Bargen	JAXA	Teppei Sato*
EC	Dominik Weckmüller*	JAXA	Toshi Kamei
EC	Camilla Bertoglio*	JAXA	Yuko Nakamura
EC	Mark Dowell	NASA	Chris Kidd
EC	Peter Strobl*	NASA	David Borges
ECMWF	Vincent-Henri Peuch	NASA	Emma Knowland*
ESA	Ben Veihelmann*	NASA	Julie Robinson
ESA	Christoph Aubrecht*	NASA	Laura Lorenzoni*
ESA	Clement Albergel	NASA	Michelle Hanssen
ESA	Ferran Gascon	NASA	Sid Boukabara
ESA	Frank Martin Seifert*	NASA	Wenying Su
ESA	Marie-Claire Greening	NASA	Yoseline Angel*
ESA	Marie-Helene Rio*	NIES	Hiroshi Tanimoto*
ESA	Marc Paganini	NOAA	Adria Schwarber
ESA	Neha Hunka	NOAA	James Donnellon
ESA	Yasjka Meijer	NOAA	Jeff Privette*
EUMETSAT	Beatriz Fornos	NOAA	Mary Ann Kutny
EUMETSAT	Estelle Obligis	NOAA	Shobha Kondragunta*
EUMETSAT	Ewa Kwiatkowska	NPL	Nigel Fox*
EUMETSAT	Jörg Schulz	NPL	Paul Green
EUMETSAT	Phil Evans	NRCan	Joshua Johnston
EUMETSAT	Robert Husband	UKSA	Beth Greenaway
EUMETSAT	Ruediger Lang*	UKSA	Harvey Jones
EUMETSAT	Simon Eliott	UKSA	Niall Bradshaw
EUMETSAT	Sylwia Miechurska	UKSA	Patrick Gibson
EUMETSAT	Stefanie Linow	UKSA	Shaneigh Turner
GA	Jonathon Ross	UKSA/NCEO	John Remedios
GA	Maggie Arnold	UKSA/NCEO	Svetlana Zolotikova
GISTDA	Phasaporn Aroonjaroensuk	UNOOSA	Jorge Del Rio Vera*
GISTDA	Poramet Thuwakham	USGS	Evan Neuwirth*
ISRO	Nitant Dube*	USGS	Sally Roberts*
JAXA SIT Chair Team	David Crisp	USGS	Tim Stryker*
JAXA SIT Chair Team	Hiroshi Suto	USGS	Tom Sohre*
JAXA	Hironori Maejima*	WMO	Mikael Rattenborg
JAXA	Ake Rosenqvist*		

APPENDIX B: Actions Record

SIT-TW-2025-01	CEOS Agencies are invited to contribute to the portal of CEOS AFOLU success stories to communicate the impact of EO in national reporting activities. The SIT Chair team will circulate a request for inputs.	**December 2025**
	Rationale/Notes: The aim is to communicate the impact of agency EO data provision in national reporting activities via continuation of CEOS AFOLU success stories.	
SIT-TW-2025-02	SIT Chair to raise further discussion on CEOS country engagement activities at CEOS Plenary.	**2025 CEOS Plenary**
	Rationale/Notes: The GST Lessons Learned review highlighted what we need to better connect with in-country users. GFOI, WGClimate, GHG-TT, and LSI-VC need to carry forward these actions after the conclusion of the JAXA SIT Chair term in a coordinated manner.	
SIT-TW-2025-03	CEOS Agencies to provide feedback on the CEOS-CGMS Statement to SBSTA-63.	**3 October 2025**
	Rationale/Notes: Virtual endorsement by both CEOS and CGMS is targeted for mid-October. Feedback is needed by 3 October to allow this.	
SIT-TW-2025-04	CEOS Chair to facilitate a briefing and discussion on proposed changes to the WGClimate Terms of Reference at SEC-340.	**SEC-340**
	Rationale/Notes: It is important that CEOS leadership have an opportunity to provide feedback on the direction of the Working Group. The Terms of Reference also need endorsement from CGMS.	
SIT-TW-2025-05	CEOS-CGMS UNFCCC Tiger Team to propose a plan for sustainment of its activities following the scheduled disbanding of the team at the end of 2026.	**2025 CEOS Plenary**
	Rationale/Notes: The Tiger Team was established at the WGClimate-22 meeting (11-13 February 2025) to support sustained engagement with UNFCCC, preparation for COP and Earth Information Day (EID), and to develop a comprehensive multi-year engagement strategy aligned with the phases of the GST process (Ref: WGClimate-22-24). The Tiger Team's efforts have been instrumental in ensuring a more proactive and coordinated representation of CEOS agency priorities and activities at UNFCCC COP and related events.	
SIT-TW-2025-06	CEOS Agencies to review the CEOS GST Strategy Issue 2 and provide feedback prior to its submission to the 2025 CEOS Plenary.	**October 20**
	Rationale/Notes: The exact mode of acceptance (e.g., 'endorsement', other) of the document by CEOS will be discussed at CEOS SEC-340.	
SIT-TW-2025-07	CEOS Agencies to provide comments and suggestions to the SIT Chair Team by COB 12 September 2025 regarding the proposed *IPCC TFI Expert Meeting on the use of Atmospheric Observations in National Greenhouse Gas Inventories* (Contingency expert meeting). The SIT Chair team will respond to IPCC TFI contacts in time for debate at IPCC-63 (27-30 October, 2025).	**12 September 2025**
	Rationale/Notes: CEOS Agencies should consider: objectives and scope; attendees;	

	presenters, and presentations; and ongoing carriage of the CEOS-IPCC relationship.	
SIT-TW-2025-08	CEOS Agencies to review the beta database of controlled release experiments on the CEOS GHG Portal and provide any feedback to the JAXA SIT Chair Team. GHG mission managers and other relevant individuals are asked to sign up to controlled release notifications by sending an email to: controlled-release-database+subscribe@googlegroups.com and to submit details of controlled release experiments here: https://airtable.com/apphCiY4iwGxjHS4A/paglzCSssHxohyhMx/form	**2025 CEOS Plenary**
	Rationale/Notes: CEOS agencies need to both share details of controlled release experiments they plan / are aware of as well as sign up to receive notifications so that the value of controlled release experiments can be maximised.	
SIT-TW-2025-09	Feedback on the Interoperability Handbook v2.0 should be communicated to the WGISS Vice Chair, Nitant Dube, by 30 September 2025 so comments can be considered during WGISS-60 (13-17 October 2025).	**30 September 2025**
	Rationale/Notes: Documents for decision at CEOS Plenary are due by October 21. WGISS-60 provides a final opportunity to refine the Interoperability Handbook v2.0 before its submission for CEOS Plenary.	
SIT-TW-2025-10	WGISS to work with EC-JRC KCEO colleagues to propose a structured plan for management of the CEOS Common Dictionary on the CEOS Organisational GitHub, consistent with principles of the Vocabulary (Semantics) factor of the Interoperability Handbook.	**SIT-41**
	Rationale/Notes: A framework is needed to cover things like how often terms should be discussed and merged, what to do in case of conflicts, managing contributors, etc.	
SIT-TW-2025-11	CEOS Agencies to review the WGCV Product Validation Platform (ceos.org/pvp) and consider contributions of data (both historic and current) and opportunities to connect with partners in the commercial sector to encourage use of and contributions to the platform.	**VH-RODA 2025**
	Rationale/Notes: The WGCV PVP primarily needs reference imagery from CEOS Agencies to underpin the ability to compare and validate other sources of data.	
SIT-TW-2025-12	CEOS Agencies to share ceos.org/ard/survey with potentially interested parties both from space agencies and the commercial / other sectors.	**CEOS Plenary 2025**
	Rationale/Notes: Additional responses are welcome to help shape the future of CEOS-ARD concept note for CEOS Plenary.	
SIT-TW-2025-13	OCR-VC Leads to confirm the timeline for presentation of the final Aquatic Carbon Roadmap for CEOS Principal consideration.	**CEOS Plenary 2025**
	Rationale/Notes: The timeline has shifted to allow for additional review by the 2025 International Ocean Colour Science Meeting Darmstadt, Germany, 1-4 December 2025. Clarification of the timeline for the CEOS endorsement process would be helpful.	
SIT-TW-2025-14	CSA and Environment and Climate Change Canada (ECCC) to work with Natural Resources Canada to organise a side meeting at CEOS Plenary to discuss the possibility of establishing a group under CEOS to	**CEOS Plenary 2025**

	coordinate global EO-based wildfire monitoring.	
	Rationale/Notes: At the G7 Leaders Meeting in June 2024, the Prime Minister of Canada announced the signing of the Kananaskis Wildfire Charter. The WildFireSat Mission was expanded from Canadian to global scope. The G7 announcement also included a mandate to improve global coordination and provided funds to support it.	
SIT-TW-2025-15	SEO team to reflect on the Virtual Constellation reports to the 2025 SIT Technical Workshop and take steps to introduce more consistency in VC representation on the CEOS website, including by publishing consistent timelines based on the MIM Database, etc.	**SIT-41**
	Rationale/Notes: Introducing more consistency on the CEOS website would be a good first step towards increased reporting consistency.	
SIT-TW-2025-16	Incoming CEOS Chair team to work with the CEO, incoming SIT Chair Team and SEO to provide clarification on the processes and possible outcomes for CEOS Agencies and groups bringing recommendations and documents to CEOS SIT and Plenary seeking recognition, publication, or endorsement of their outputs.	**SIT-41**
	Rationale/Notes: Seek to have a clear short list of categories for SIT and Plenary (e.g., for information, recommendation, publication, endorsement, etc.) and the meaning of each.	
SIT-TW-2025-17	Jonathon Ross (Geoscience Australia) to circulate the UN-GGIM report: *"How weaknesses in the global geodesy supply chain could have catastrophic impacts on critical infrastructure and national economies"*.	**19 September 2025**
	Rationale/Notes: The report highlights current risks to the geodetic supply chain including potential ramifications for CEOS Agencies.	
SIT-TW-2025-18	CEOS agencies are asked to formally appoint a point of contact to the GEOGLAM LSI-VC Subgroup.	**2025 CEOS Plenary**
	Rationale/Notes: CEOS Agencies currently confirmed are ESA, ISRO, CSIRO, SANSA, Geoscience Australia, CONAE. Historically engaged agencies without a formal point of contact identified: NASA, DLR, CSA, JAXA, UKSA, USGS, NOAA, CNES. Short-term actions will be to support assessment of the first six EAVs.	
SIT-TW-2025-19	WGCV Chair is asked to work with the WGCV Land Product Validation subgroup and GEOGLAM points of contact to scope a Joint Workshop on Good Practices for Evapotranspiration Validation.	**2025 CEOS Plenary**
	Rationale/Notes: UN FAO (ET and Irrigated Cropland Lead Steward) has offered to host. The plan is to report the workshop proposal at the 2025 CEOS Plenary.	