Minutes and Actions of the 25th Meeting of the Joint CEOS-CGMS Working Group on Climate (WGClimate-25)

23 October, 2026
Virtual

Participants

CMA	Sijie Chen, Lin Chen
CSA	Marcus Dejmek
DLR	Albrecht von Bargen
EC-JRC	Mark Dowell
ECMWF	Vincent-Henri Peuch (Vice-Chair)
ESA	Susanne Mecklenburg
EUMETSAT	Frank Kaspar, Alexandra Nunes
GCOS	Antonio Bombelli, Belén Martín
GEOSEC	Rui Kotani
ISRO	MV Ramana
JAXA	Kazuhisa Tanada, Misako Kachi
NASA	Wenying Su (Chair)
NOSA	Ann Mari Fjaeraa
Secretariat	Libby Rose, Matt Steventon
USGS	Kimberly Casey
UKSA	Gareth Thomas
Uni Leicester	Darren Ghent

Actions

ACTION ID	DESCRIPTION	DUE
WGClimate-25-01	Vincent-Henri Peuch to connect with Heather regarding whether questions will be solicited for the World Cafes at COP-31.	**Due: ASAP**
WGClimate-25-02	Libby Rose to set up a shared spreadsheet to coordinate WGClimate event attendance and meeting opportunities for COP-31. **COMPLETE**	**Due: ASAP**

WGClimate-25-03	Vincent-Henri Peuch to confirm with Heather Maesko about the possibility of Osamu Ochiai delivering the Earth Information Day presentation remotely. **COMPLETE - Heather has confirmed a video is okay.**	**Due: ASAP**
WGClimate-25-04	Incoming WGClimate Chair to consider how best to provide briefing information to national delegations for future UNFCCC COPs, noting that the last minute preparation makes the development of a formal brief difficult.	**Due: WGClimate-26**
WGClimate-25-05	Vincent-Henri Peuch to prepare a few bullet points for CEOS Agencies about COP-31 key messages, such that they might be communicated to negotiators.	**Due: CEOS Plenary 2026**
WGClimate-25-06	WGClimate members to provide Alexandra Nunes with details of where to best look for information on their existing CDRs (data repositories etc.).	**Due: Dec 2026**
DECISION	To collect information on planned CDRs, the CDR Inventory Team will issue requests to WGClimate members and identified points of contact at regular intervals, either annually or biannually. Other updates can be sent to the CDR Inventory Team at any time.	
DECISION	The CDR Inventory will include non-GCOS variables by request. Any requests should be passed to WGClimate for review.	
WGClimate-25-07	Mark Dowell to ask Claire Mcintosh to review the CMIP variables in the typology mapping - ensuring the ocean, land and cryosphere variables are included.	**Due: Dec 2026**
WGClimate-25-08	Belén Martín to share with Alexandra Nunes the new list of ECVs and ECV Quantities (including the mapping to current ECVs and ECV Products), to begin working out the transition in the CDR Inventory.	**Due: Dec 2026**
WGClimate-25-09	CDR Inventory Team to implement the ECV typology mapping as outlined, mapping to the level of ECV Products.	**Due: Dec 2026**
WGClimate-25-10	Vincent-Henri Peuch to confirm the dates for WGClimate-26 / GHG-TT-08, to be hosted by ECMWF in Bonn, Germany.	**Due: Nov 2026**

Minutes

1. Welcome & Review of Agenda

Wenying Su (NASA, WGClimate Chair) welcomed everyone to the meeting, being held just two weeks before the CEOS Plenary. COP31 will be held the week after, so this is a very timely meeting for final preparations.

Wenying reviewed the agenda, no further changes were requested.

2. Action Review

Libby Rose (WGClimate Secretariat) reviewed actions from WGClimate-24. *[presentation]*

- *24-04: Mark Dowell to request the GCOS ECV Task Team share a draft of the requirements protocol document with WGClimate.*
    - The writing team for the ECV rationalisation is now working on a paper. New rationalised ECVs will be proposed for endorsement and then the process will be considered completed. Attention would then turn to working on the new requirements.
    - There was a suggestion from WGClimate-25 that the ECV Task Team would develop a prescribed protocol for the update on the ECVs, which would be used across the panels. This was in response to concerns that from a space agency perspective that requirements are applied differently across the panels, and a prescribed process and protocol was requested.
    - Preparation for the Status Report and High Level Action Plan has been the focus for the last six months, and as such, the ECV rationalisation has taken a backseat.
- The action as it is written will be closed, especially as the Task Team doesn't exist anymore.
- Some protocols were established at the start of the rationalisation process, but these were mostly focused on the definitions of the ECVs.
- *24-05: EC to share lessons learned in connecting with users, through a small pilot of all GHG aspects addressed by KCEO, NCPs and EUSPA. Report outcomes of pilot study to WGClimate-25.*
    - Remains open and EC still intends to do this. Will report at WGClimate-26.
- *24-09: WGClimate to explore organising an event/hackathon with WCRP for testing interoperability of CDRs - supporting the Architecture recommendations of the CEOS Interoperability Handbook.*

    - Propose that a hackathon be held to cover this around WGClimate-26, if the location of Bonn is convenient for the World Climate Research Programme (WCRP) representatives.

- *<u>24-13:</u> Vincent-Henri Peuch to create a policy brief and/or fact sheet, to be shared via CEOS/CGMS Agencies with the national UNFCCC negotiators ahead of UNFCCC COP31.*
    - This won't be done for this year, given some last minute time pressures. The action will be closed, but some thought needs to be given as to how to do this in future years as it remains a good idea, however preparation for COP is always a moving target so developing a detailed brief in advance is difficult.
- *<u>24-21:</u> EC-JRC to assess the feasibility of extracting information on the use of satellite data in the National Inventory Reports published by UNFCCC Parties.*
    - The feasibility of this action will first be assessed. The action will remain open with the aim of having progress to report at WGClimate-26.

3. UNFCCC COP-31 Coordination

Vincent-Henri Peuch (ECMWF, WGClimate Vice Chair) reported:

- The workshop with UNFCCC originally intended for September 2026 will now be held alongside WGClimate-26 in February 2027.
- COP-31 is focused on moving toward action. Accommodation capacity in Antalya is good, so many participants are able to join, which has allowed lots of side events to be planned.
- Earth Information Day (EID) planning is under way. EID will be held on Monday 9 November, 15:00-18:00 local time. Virtual participation is available for registered participants.
- EID will include a Plenary session, then short video presentations followed by World Cafe stations.
- WGClimate made a submission for EID themes and topics.
- The overarching theme for Earth Information Day is *'From Observations to Applications'.*
- CEOS/CGMS have been allocated a slot together with GEO for a seven minute presentation, under the title *'New observation capabilities and remaining gaps, including regional advances'*. The CEOS Secretariat has recommended JAXA present this slot as per the agreement from 2025. Osamu Ochiai will present remotely.
- Coordinating with WMO, GEO and GCOS colleagues to ensure coordinated messaging across the plenary presentations.

- UNFCCC shared a request for submission of 2 minute videos, and have selected nine. Videos selected include from Japan, ECMWF, ESA, Australian Antarctic Program, WMO and WCRP.
- A proposal was submitted for the EO Handbook video to be included, however it wasn't selected. UNFCCC has offered to highlight the EOHB on the webpage instead.
- Aim is to issue takeaways from each World Cafe station which will go into the summary report.
- The videos are intended as two minutes 'pitches' ahead of detailed discussions in the World Cafes. Wenying recalled that previously questions had been solicited for the world cafe sessions. Vincent-Henri can connect with Heather to ask how this will be handled this year.

WGClimate-25-01	Vincent-Henri Peuch to connect with Heather regarding whether questions will be solicited for the World Cafes at COP-31.	**Due: ASAP**

- UNFCCC RSO colleagues have acknowledged that the Earth Information Day is getting shorter.
- Antonio Bombelli (GCOS) noted that GCOS is organising a side event with UNFCCC, on Tuesday, 10 November at 14:30-15:30, on the state of the global climate observations. This will be another opportunity to present messaging about GCOS status, repeating the messages from EID. GCOS is trying to mobilise partnerships and investments, to fill gaps and support its activities. The idea is to invite a Minister or other high level representative on the stage and endorse a call to action for sustainment.
- There will be a joint GCOS / GOOS presentation at EID. Some of the main gaps identified in the GCOS Status Report concern the oceans.
- UNFCCC encourages everyone to share their presentations by the end of next week.
- Regarding the reducing length of EID, Mark recognised the mitigation offered by the GCOS side event. However, EID is a mandated event, meaning that outcomes of the discussions can then be taken into account in negotiations. The scope of EID should not be further reduced by UNFCCC in future years, since this limits opportunities to input to the formal process.
- Frank noted that EUMETSAT hasn't been present at previous EIDs and COP, but they do have good connections with the Turkish meteorology service, to whom they have offered support. There will be many events at the Turkish pavilion. It might make sense to feature EUMETSAT wildfire products.

- The CEOS-CGMS statement to SBSTA-65 will be delivered by Christian Hauglie-Hanssen (NOSA, 2027 CEOS Chair) at the opening session of SBSTA. The themes include adaptation and resilience, greenhouse gas observations, economic impact, and aquatic observations. The full text has been shared with UNFCCC earlier this week, and a shorter version is being prepared for Christian to make the speech.
- Still not sure when the opening of SBSTA will happen - UNFCCC RSO colleagues are not sure if it will conflict with EID.
- There are many side events at COP-31, and WGClimate should aim to share information on the various events members attend. Vincent-Henri recommended that all attending should highlight the EO Handbook, noting the truly global nature of the handbook.

WGClimate-25-02	Libby Rose to set up a shared spreadsheet to coordinate WGClimate event attendance and meeting opportunities for COP-31. **COMPLETE**	**Due: ASAP**

- Ann Mari Fjaeraa (NOSA) noted the Nordic Pavillion is also interested in supporting CEOS work. They will have copies of the new EO Handbook and some CEOS flyers.
- Mark noted that creating a briefing is always hard due to the moving nature of the event and negotiations, however it would be helpful to extract 4-5 key bullets from the SBSTA Statement and EID inputs, which can be provided at CEOS Plenary to be transferred to the negotiating teams.
- Rui Kotani (GEO SEC) is still working on the key messages for GEO, likely focused around the GEO Data Knowledge Hub. The GEO in situ strategy complements what CEOS can provide. GEO has also supported the EO Handbook, so welcomes that being a focus of the EID presentation.
- Attendees for COP31 include:
    - GCOS: Albert Fischer (WMO, GCOS Director), Thelma Krug (GCOS Chair) and Peter Thorne (Deputy Chair)
    - ESA: Simonetta Cheli D/EOP (10-12 November), Clement Albergel, Paul Fisher and Susanne Mecklenburg (8-17 November).
    - NOSA: Christian Hauglie-Hanssen, Ann Mari Fjaeraa
    - ECMWF: Vincent-Henri Peuch
    - NCEO/UKSA: John Remedios

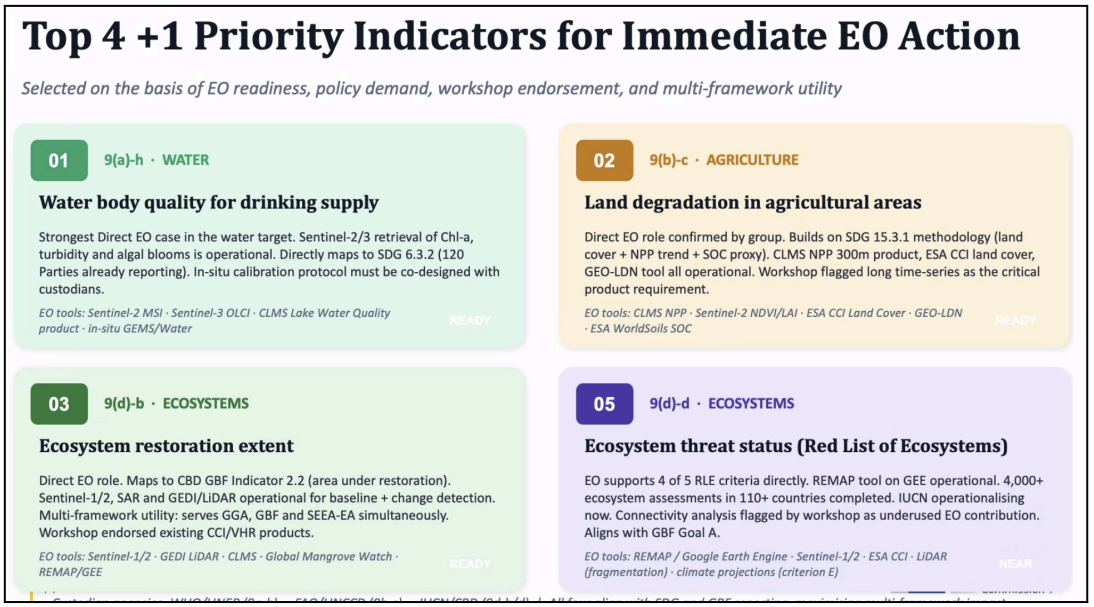
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WGClimate-25-05	Vincent-Henri Peuch to prepare a few bullet points for CEOS Agencies about COP-31 key messages, such that they might be communicated to negotiators.	**Due: CEOS Plenary 2026**

4. **Adaptation Indicators**

Mark Dowell (EC-JRC) reported:

- The Global Goal on Adaptation (GGA) indicators are critical links between observations and policy. The indicator framework facilitates an organised response as space agencies.
- The EC Knowledge Centre on Earth Observation (KCEO) has done an initial assessment of the indicators to start the discussions, with a focus on the alignment of global products with the indicator needs. This activity builds off past experience with the SDG indicators. A short list of 18 GGA indicators which can be addressed by EO to a strong degree have been identified.
- A workshop was held in Harwell, UK in June 2026, bringing together a wide variety of stakeholders across the research, policy and end user communities. The list of 100 expert-proposed indicators was used for the initial assessment, due to the extra detail they contained.
- It will be important to maintain linkages to existing frameworks and ensure that the relevance of EO is not oversold, noting what is not possible or currently operationally available.
- EO can provide a lot of information on hazards, but can also inform outcome indicators. EO has unique value in providing contextual information for many of the indicators.
- Once the indicators were accepted in Belen at COP-30, there was a two year window to assess the feasibility of producing the indicators.
- Co-design will be critical to uptake of EO. Space agencies need to work closely with countries and parties and seek to identify champion users.

- The implementation and reporting model is still TBD. The custodian agencies model used by the SDGs could potentially be adopted by the GGA.
- Both National Adaptation Plans (NAPs) and the GGA framework provide entry points for EO and we should ensure cross-engagement.



- The UNFCCC Secretariat has produced a technical paper for COP-31 about the indicators, which references EO in a number of places.
- JRC is working on a Policy brief on GGA indicators, likely to be published early next year. ESA will work on a scientific publication.
- Looking for 3-4 agencies to start working on the pilot indicators. Albrecht noted DLR would be happy to contribute.

5. CDR & F(C)DR Inventory Update

Alexandra Nunes (EUMETSAT) reported:

- The CDR Inventory is live at cdrinventory.climatemonitoring.info.
- Currently working on closing false gaps, with 40 of 42 ECVs now addressed. The two not addressed are anthropogenic water use, which will remain a gap, and Marine Habitat Properties, which is being investigated - noting the Global Mangrove Watch dataset.
- Lots of improvements have been made on the user interface and user experience. Analysis tools are being tested and deployed, which will support gap analysis activities.
- Awaiting inputs on the applications-based typology. Will develop entry-level filter options based on connections between applications.

- Preparing iframes to display the CDR Inventory on the CEOS and CGMS websites, which will match the styles of both websites.
- Exploratory work is ongoing regarding AI tooling for the CDR Inventory.
- For existing CDRs, the team is collecting information from online sources, and providing this to agencies for review and confirmation. Requesting support from Agencies to provide information on where best to look for information on existing CDRs to help streamline this process.

WGClimate-25-06	WGClimate members to provide Alexandra Nunes with details of where to best look for information on their existing CDRs (data repositories etc.).	**Due: Dec 2026**

- Information on planned CDRs is not generally made public, so it can be hard online. Wenying recalled that when the CDR Inventory was initiated, each agency nominated a point of contact to provide official inputs. We can use a similar approach here, in addition to the agency representatives in WGClimate. There would likely need to be a regular call for inputs to gather latest plans. Perhaps it could also be a regular item on WGClimate meeting agendas.

DECISION	To collect information on planned CDRs, the CDR Inventory Team will issue requests to WGClimate members and identified points of contact at regular intervals, either annually or biannually. Other updates can be sent to the CDR Inventory Team at any time.

- Agreed some time ago to open the inventory to non-GCOS variables. However, it is unclear what variables should be included. For any variables included, the objective would be to make the database complete.
- The FCDR inventory is progressing as well, with the alpha release planned by the end of October. A beta release is planned for May 2027.
- The CDR and FCDR inventories are interlinked, and any tools developed will be included in both.
- Mark agreed with the proposal to request all agencies to provide the entry points for their product catalogues, along with the idea of annual or biannual requests to agencies for updates on the planned CDRs.
- Wenying noted there might be linkages to the work of WGISS. The harmonisation of metadata would be a particularly useful task.
- ESA and C3S have done some analysis on cross-linkages between the science and operational datasets and have developed methods for these mappings, which may be useful for the CDR Inventory.

- Mark suggested being reactive regarding the inclusion of non-GCOS variables. If a request arises, WGClimate can discuss it, ad hoc. Alexandra agreed and will share requests to WGClimate for discussion and review.

DECISION	The CDR Inventory will include non-GCOS variables by request. Any requests should be passed to WGClimate for review.

6. ECV Typology Mapping

Mark Dowell (EC-JRC) reported:

- The objective is to provide an improved method of discovery for climate data records, mapped to ECVs.
- Mark has reviewed the initial mapping document. Comments pointed to concerns that we were trying to be a bit too exhaustive.
- Now in a place to take the typology and map to CDRs in the Inventory. Items that don't have any data records might not warrant inclusion.
- Regarding the Coupled Model Intercomparison Project (CMIP) performance variables, it is mostly focused on the atmospheric model at the moment. An expert more familiar with the CMIP community is needed to understand the mapping of other variables.

WGClimate-25-07	Mark Dowell to ask Claire Mcintosh to review the CMIP variables in the typology mapping - ensuring the ocean, land and cryosphere variables are included.	**Due: Dec 2026**

- Alexandra and the team can take the current version and start the implementation, aiming to have it online in 2027.
- The typology will need to be transposed onto the rationalised GCOS ECVs so we are ready for the next implementation plan.
- Mark envisions the typology being put on the CEOS GitHub to make it publicly discoverable and reviewable, and consistent with other CEOS resources on the repository, such as the terminology work.
- Could consider extending to other data producing communities, e.g., reanalysis.
- The CDR inventory tools are in place to implement this. It will take some time to develop the landing page with the tree structure, but the team can have something ready in the coming weeks.
- Can map to ECVs or ECV products. The goal is to get to the level of ECV products, but this is also changing with the ECV rationalisation underway. Mark suggests leaving it at the level of the ECV for now.

- Mark suggested a more aesthetically pleasing front end might be useful to reach new users. Once the proof of concept is done, we can look at beautifying.
- Belen supported the idea of the typology and flagged GCOS availability and interest in helping.
- The ECV Quantities will be ~90% the same as the current ECV Products, so can map already to ECV Products and the transition to Quantities shouldn't be too hard.
- GCOS will be working on guidelines for the ECV requirements shortly, similar to what was done for the definition of the ECVs themselves. There will be a meeting in Spring next year, bringing together ESA, Copernicus and EUMETSAT (hoping to host in Bern) to define, among other things, the guidance documents.

WGClimate-25-08	Belén Martín to share with Alexandra Nunes the new list of ECVs and ECV Quantities (including the mapping to current ECVs and ECV Products), to begin working out the transition in the CDR Inventory.	**Due: Dec 2026**
WGClimate-25-09	CDR Inventory Team to implement the ECV typology mapping as outlined, mapping to the level of ECV Products.	**Due: Dec 2026**

7. GCOS Update

Susanne Mecklenburg (ESA) reported:

- GCOS has prepared the 2027 Status Report and High Priority Action Plan (HPAP). Susanne and Frank Kaspar (EUMETSAT) are supporting the writing team as WGClimate representatives.
- Have been working over the last six months to develop the documents, and the documents are now out for public review. Comments are due 27 November 2026.
- Documents will be submitted to UNFCCC in early 2027.
- The first five of the actions in the HPAP are the most critical:
    - Essential ocean observations
    - Gaps in basic atmospheric observations
    - Safeguard global climate data repositories - consistent quality
    - Continuous monitoring of key atmospheric components (earth energy imbalance)
    - Freshwater observations in climate-vulnerable, water-stressed basins
- WGClimate will provide consolidated feedback.

- Mark noted the terrestrial biosphere isn't mentioned in the list of high priority actions, recognising there are currently a lot of discussions around the linkage between the different conventions. Terrestrial biosphere is the overlap between UNFCCC, UNCBD and UNCCD.
- Quantification of the budget for the freshwater action seems low. Setting up comprehensive water quality monitoring would need significant funding. Belén clarified the budget is just for a pilot, for three basins. Not realistic to ask for something at global scale.
- From the terrestrial panel, GCOS didn't get the same sense of urgency for the biosphere actions. There was nothing particularly new or urgent.
- In the review, WGClimate can focus on the Status Report and HPAP, the Technical Report has the detailed justification.

8. GHG-TT Update

Libby Rose provided a summary from the recent GHG-TT meeting on behalf of Yasjka Meijer *[presentation]*.

- Good progress on the GHG Roadmap actions, across all eight thematic areas. Only four actions remain not started.
- A draft paper highlighting the usefulness of multispectral imagers for methane detection has been prepared in collaboration with IMEO, and is currently under review by GHG-TT.
- Hiroshi Tanimoto is working with NIES colleagues to add a satellite component to the 2027 edition of the Workshop on GHG Inventories in Asia (WGIA). This would complement the workshop held in February 2025 in Harwell with European Inventory compilers.
- Work is commencing on the second version of the methane best practices, incorporating lessons learnt from the assessment of GHGSat and CarbonMapper against the first version. A workshop will be held 18-20 January 2027 at UK NPL.
- The annual Railroad Valley campaign was held 15-24 June 2026, with 8 instruments participating, including newly launched GOSAT-GW and MicroCARB.
- The validation network requirements developed for CO2M will be distilled into general requirements for operational ground-based GHG validation networks.
- A 'GHG Target Broker' system has been proposed, to optimise target selection across missions. The pilot phase would involve using GOSAT-GW focus mode, and TANGO when it launches.

- The GST Study Team Report is set to be acknowledged by CEOS. GHG-TT proposes to organise a call with action stakeholders from across CEOS in the coming months.
- GHG-TT is starting to develop objectives for the joint WGClimate-26 and GHG-TT-08 meeting in February 2027.

9. CEOS Plenary

The Working Group reports at CEOS Plenary are structured as a 5 minutes report (one slide), accompanied by a written report. Vincent-Henri Peuch will represent WGClimate.

Mark Dowell suggested that the methane best practices be added to the slide, as this is where WGClimate interacts most with the private sector.

Susanne Mecklenburg's nomination for WGClimate Vice Chair for 2027-2028 and Chair for 2029-2030 will be presented under a separate item, together with the WGCapD and WGCV nomination.

Libby Rose (WGClimate Secretariat) noted other opportunities on the Plenary agenda where WGClimate can contribute:

- The CEOS Executive Officer will present an overall 'CEOS Success' presentation in item 1.5. WGClimate has provided inputs for this item, including a quote from GCOS.
- Item 4.6 is a 60 minute session around environmental adaptation and resilience, including the EO Handbook. The CEOS Chair Team has developed a discussion paper titled '*CEOS Support for Environmental Adaptation and Resilience in a Changing Global Environment*', which is aimed to facilitate a discussion on this topic at Plenary.

Wenying Su will rotate out of the WGClimate Chair role at CEOS Plenary. WGClimate thanked her for her leadership over the last two years.

10. WGClimate-26 Announcement

Vincent-Henri Peuch (ECMWF, WGClimate Vice-Chair) announced that WGClimate-26 and GHG-TT-08 will be hosted by ECMWF in Bonn, Germany, the week of 15 February 2026. The location of Bonn is convenient to meet jointly with UNFCCC as well. For 2028, WGClimate should aim to meet somewhere outside of Europe. After COP-31, Vincent-Henri will confirm dates with UNFCCC and aim to issue the registration form before the end of November.

WGClimate-25-10	Vincent-Henri Peuch to confirm the dates for WGClimate-26 / GHG-TT-08, to be hosted by ECMWF in Bonn, Germany.	**Due: Nov 2027**