

CLIMATE COORDINATION DISCUSSION MEETING

1 February 2010
WMO, Geneva

MEETING MINUTES

1 Welcome

The World Meteorological Organization (WMO) and the Group on Earth Observations (GEO) welcomed the meeting to Geneva and to the WMO building. The Committee on Earth Observing Satellites (CEOS) members thanked both organizations for their assistance in setting up the venue and arrangements. A tour de table was organised for each participant to present her / himself (see Appendix 1).

2 Background

As convener of the meeting, Stephen Briggs recalled the process which had led to its being called. He also stressed the need to distinguish among the different organisations/mechanisms, which often are attended by same the individuals. Today's meeting was held under CEOS auspices and the goal was to address better coordination among CEOS Agencies in the identification of ECVs through a CEOS Climate Advisory Group to be established within the CEOS SIT. Specific recommendations from this Climate Coordination Discussion will be discussed at the CEOS-SIT-25, scheduled for April 13-14, 2010, in Tokyo, Japan. The discussions will focus on creation of a CEOS Climate Advisory Group and formulation of terms of reference for such a group.

An ad hoc discussion on the management of climate activities in CEOS had taken place around the previous CEOS plenary in Phuket, requested by Stephen. This had proposed investigating a more formal collaboration on climate among CEOS agencies, notably in the joint preparation and formulation of Fundamental Climate Data Records (FCDRs) and Essential Climate Variables (ECVs) (hereafter the term "ECVs" is taken to refer to all the above phraseology, i.e. FCDRs & ECVs).

At the meeting in Phuket, Stephen Briggs had introduced discussion by setting out the issues for consideration there as follows:

- There is a need to raise the profile of space and space agencies in climate;
- There is a need to analyse, ECV-by-ECV production of climate data for GCOS;
- Need to respond to new GCOS reports;
- Need to review relation to IPCC/UNFCCC etc;
- Overall, fulfil the CEOS responsibility assigned to it through e.g. GCOS, GEO T3 report – CEOS being "...the coordinator of the implementation of the satellite components of GCOS".

The discussion at the Geneva meeting focused on the second of these topics, that is the need for better coordination among CEOS Agencies in the production of ECVs. This has already been started for some ECVs for example through the Virtual Constellations (VC) but should be done more systematically. More coordination might be needed in addition to the work already done in the context of the Climate Societal Benefit Areas (SBA). Stephen recalled the wider context of discussion on climate and ECVs within and among CEOS, Coordination Group for Meteorological Satellites (CGMS), WMO Space Programme and GEO and emphasised that while in due course a broader coordination among all these bodies, which largely comprise the same key agencies, could profitably be foreseen, the current discussion would concentrate on the more narrow ambition to ensure coherence among CEOS agencies, and within the context of CEOS.

As introduction to this CEOS Climate Coordination Discussion meeting it was useful to report on the two set of meetings that were held the previous week.

3 Recent relevant meeting reports

Three meetings had taken place immediately before the Climate Coordination Discussion, namely the WMO CM-10 Consultation (Geneva) and, the CEOS Workshop on GEO Actions followed by a meeting to Review the new version of the GCOS Implementation Plan (GCOS-107) and to prepare the CEOS response to that Plan (Arlington, Virginia).

Regarding the **WMO CM-10**, Brent Smith recalled the main outcome of that meeting, which was to emphasise the need for better coordination among relevant space agencies, and their respective coordinating bodies, in the production of climate records and information. In particular the meeting called for improved coordination among CEOS, CGMS, GEO and the WMO Space Programme and their member Agencies as well as with the Global Climate Observing System (GCOS) and the World Class Research Programme (WCRP). It was recognised that CEOS has done a wonderful job on the satellite side. GEO has now to play a similar role with respect to in-situ data. QA4EO was mentioned as an example of such activities initiated by CEOS, and taken up now by GEO. The current meeting was seen as an opportunity to initiate this coordination process from the perspective of CEOS by in the first instance creating a body with responsibility to ensure coordination within CEOS and among its member agencies. A second major point from the CM-10 appreciated by all was the need to think in terms of combination of R&D and Operational missions and less in terms of a transition of R&D missions to operational status – at any given time there will be a combination of contributions from all types of missions and this should be recognized and built upon. This also requires that a proper gap analysis be correctly done. The Bates chart presented at CM-10 in connection with the Sustained, Coordinated Processing of Environmental Satellite Data for Climate Monitoring (SCOPE-CM) was then mentioned by Stephen Briggs as an example of what could be done. This approach needs to be extended to non-US missions, but is still incomplete as it doesn't indicate the expected capabilities / availabilities of the various missions. This type of approach is also dependent on the ECVs as each has a different set of requirements.

Improved coordination is needed in order to build an International vision and architecture.

Regarding the **Arlington meetings**, Mitch Goldberg reported on the progress made on providing comments to GCOS on the latest revision of its Implementation Plan (GCOS IP) and in the preparation of a CEOS response to that document, as an update to the CEOS Response to the previous version of the GCOS IP and to the more detailed Satellite Supplement prepared also by GCOS. Comments on the current GCOS IP are due by February 9th, while the CEOS response is in preparation on a timescale of end-2010. A team was created including leads from CEOS virtual constellations and working groups to prepare that response with the objective to have consensual actions within CEOS and to obtain community consensus through engagement of constellations, working groups and with other scientific communities. A first step at the Arlington meeting was to identify the key players likely to contribute to a CEOS response to the GCOS IP actions. P. Lecomte reminded that a much larger team was consulted back in 2006, more than 50 people contributed to the response, and insisted on the necessity to have a wide contribution, even from people not directly linked to CEOS to support the preparation of that new response. A starting point for creating this team should be the people listed in the annex of the 2006 CEOS response to GCOS IP.

S. Bojinski clarified that the satellite supplement, which includes identified target requirements, would be updated, if needed. This would not take much longer than a few weeks, and the supplement could be out at almost the same time as the IP. The IP has to be ready this summer, in time to be sent for review in advance of COP-16. An updated satellite supplement is important since it provides the target requirements (accuracy and stability) of what needs to be produced, will address the new ECVs, and hence provides important information on the level of effort.

It was noted that the GCOS target requirements (for ECVs) are given with a long-term objective and are therefore in some cases not currently achievable. It is therefore important that the response to these requirements includes a level of expected accuracy that can be compared to the GCOS requirement.

4 Summary of the Climate Coordination Discussion

A detailed report of all comments is not intended here and only main points and outcomes are summarized.

Many helpful and constructive points were raised by all participants. The importance of improved coordination among agencies was accepted by all and a rapid agreement was reached on the main topic given to the group in its charge from CEOS Plenary, viz, the need for a more formal process to ensure coordination on production of ECVs.

It was agreed that setting up a CEOS Virtual Constellation for each ECV would not help to get a coordinated approach as that would create too many groups. It was recognized that different approaches for different ECVs are acceptable but that it is necessary to coordinate such approaches. It also requires to identification of which ECVs are not “covered”, and who are the Points of Contacts and the key players for each ECV.

It was noted that there are no existing plans on how space agencies will contribute to the ECVs. Therefore, a CEOS Climate Advisory Group should be formed and an ECV Work Plan should be created. Leads, datasets should be included in an ECV Work Plan. For example, the ESA Climate Change Initiative (CCI) (covering algorithms, QC, etc..) is a 150 page document.

The plan should for example recognize that some ECVs are addressed under SCOPE-CM, others in the CCI by ESA, others are not addressed and indeed it may not be possible to target some at present – ocean salinity, for example. etc... Some may be complete, some not. The 2006 GCOS Supplement does give indications on the relevant international groups involved in the generation and inter-comparison of ECVs, but its objective is not to be such a plan. In order to have a clear picture, such a global plan is needed.

This ECV Work Plan must also include information on how the ECVs are going to be produced. For example, SMOS has been launched and soil moisture products shall be ready in 2011. But there is no information on how the Soil Moisture ECV should be produced. It shall also indicate which target is achievable by when. A First response must identify what can be done now and indicate plans on what needs to be done in the future. A good vision on the missions planned until 2015 exists, and this can be translated into the ECVs Work Plan.

This work plan cannot describe every single step, but needs commitment from the Agencies.

The European Community has already done some work similar to this. The lessons learned are:

- At end of the process, a spreadsheet was produced but did not address the gap analysis at product level.
- This process covered only Europe (lead and contributing agencies to each ECVs). At CEOS level, many agencies are involved.
- A costing was not feasible (from mission, to products, to finally costing was too long a process)
- A report agency-per-agency was not useful, this report should have been ECV per ECV.
- R&D instead of R2D was already raised during that process.

It was suggested that the progress reports from the various ECV leads could also be shaped, some as adequacy report for example.

It was recognized that important contributions can be provided by operational entities including the China Meteorological Administration (CMA), Japan Meteorological Agency (JMA) etc. and that various working

groups exist, for example in CGMS. It was also recognised that a unique coordination mechanism should be put in place

The role of the CEOS Climate Advisory Group was discussed. It was agreed that it should be a forum for discussion on climate coordination (as during this meeting), as there is often no time at SIT meetings. It should highlight, oversee, review the coordinated activities. It should organize, by experts outside this group, reviews of the progress on the ECVs. SCOPE-CM with its five pilot projects has put in place a similar mechanism which has proved to be useful. It is important that the people doing the work should be distinct from the people reviewing it.

The CEOS Climate Advisory Group should routinely review progress and highlight problems. The SIT is the appropriate body to raise the various issues; this group should prepare the work for the SIT, and propose the potential involvement from scientists. It should also ensure consistency and arbitrate between technical aspects/ requirements, across the ECVs. To provide high level guidance, for example, at the level of CEOS it should verify that the ECVs are calibrated, validated, properly documented, and multi-agency. It should also analyse the impact of the work on the future evolution of the characteristics of the systems put into operation.

It should monitor that the GCOS guidelines for the generation of climate datasets and products (GCOS-128) are followed, review the concept of Maturity Index, and monitor the timeline for each ECV. It should rely on GCOS for the requirements; for research it shall find support from the various groups (e.g. WCRP).

It was proposed that this should be a group of people, working on behalf of CEOS, that could act as an advisory body to CEOS on how to fulfil its responsibility. It should comprise 6 to 8 individuals with enough experience to review what is done. It was noted that with such a small group some agencies might feel under-represented. To avoid that, the members should be nominated by CEOS with enough collective vision, and act as a steering Committee.

It was observed that the GCOS Implementation Plan does not indicate priorities or the accuracy requirements between the various ECVs. It was recognised that the production of the ECVs requires an important effort from the agencies in term of resources, but that they cannot afford to say that they do not have the resources. The generation of the work plan might facilitate the agencies to ensure the necessary resources.

It was also observed that a big effort is necessary to initiate the ECV generation process. This situation should improve in the future when the ECV production would become more operational. Today the priority between the ECVs is given, at agency level, by a criterion of feasibility, which doesn't take into account any priority from GCOS. It was also noted that there was no priority given by the people involved in the assimilation as they need all ECVs.

In order to collect input to prepare the work plan, it was proposed to send to the agencies, a questionnaire about their activities on the ECVs. It was observed that the CEOS Systems Engineering Office (SEO) could provide help, and that this questionnaire and its responses should remain separated from the CEOS Mission, Instruments, and Measurements (MIM) Database. One of the first actions of the CEOS Climate Advisory Group would be to prepare and send such a questionnaire, possibly together with the MIM questionnaire (same mailing list), and to organize and document the analysis of the responses.

Another role for this group would be to monitor the accuracy between the various ECVs and to compare them with the GCOS requirements as set in the GCOS IP.

In order to avoid a multiplication of various groups within CEOS, it has been recommended that this group have a fixed term, typically three years, to be extended if deemed necessary.

It has been recognised that GCOS and WCRP shall be observers to these activities and that the Research community needs to be fully engaged in the overall process.

In conclusion, it was agreed that Work Plans and commitments by Agencies are needed to support the development and the evaluation of the ECVs. A good example would be to ask the Virtual Constellations to prepare Work Plans to develop ECVs, aligned with the plans of the Agencies, this would also allow for a better coordination of the reporting that should be more coherent if done at the ECV level rather than at Agency level.

M. Dowell proposed the OCR-VC team to act as a pilot for an ECV evaluation team to report on the Ocean Color ECV.

5 Outcome

The draft TOR to propose the creation of a CEOS Climate Advisory Group (see Appendix 2) were agreed.

A report of the meeting will be sent out via the SIT Chair by end of February, so Agencies can come prepared with potential candidates for nominations to SIT-25 if the proposal to create this CEOS Climate Advisory Group is approved.

List of Participants

1. Makoto Kajii (JAXA, SIT Chair)
2. Osamu Ochai (JAXA)
3. Stephen Briggs (ESA) (Convenor)
4. Pascal Lecomte (ESA)
5. Evangelina Oriol-Pibernat (ESA)
6. Barbara Ryan (WMO)
7. Azusa Sakamoto (WMO/JAXA)
8. Paul Counet (EUMETSAT)
9. Shelley Stover (NASA)
10. Eric Lindstrom (NASA)
11. Stephen Ballard (NASA)
12. Mark Dowell (EC/JRC and OCR-VC)
13. Mitch Goldberg (NOAA)
14. Brent Smith (NOAA)
15. Michael D. Tanner (GEO Secretariat)
16. Carolin Richter (GCOS)
17. Stephan Bojinski (GCOS)

Apologies were received from Klaus Schmidt (DLR) and Mike Freilich (NASA).

CEOS Climate Advisory Group

It is proposed to create a CEOS Climate Advisory Group to provide advice to the Strategic Implementation Team (SIT) and CEOS Agencies. The CEOS Climate Advisory Group will :

- review, on behalf of CEOS SIT, the generation of FCDRs and derived ECV satellite products by Member Space Agencies,
- identify multi-agency implementation teams for each product and review their actions
- ensure that a coherent implementation plan exists for each product,
- ensure coordination of climate product generation with other relevant international initiatives,
- make recommendations to above teams and receive recommendations from them, for transmission to the SIT,
- ensure compliance of satellite products with GCOS Climate Monitoring Principles and with the “Guideline for the Generation of Satellite-based Datasets and Products meeting GCOS Requirements” (GCOS-128), and
- undertake any other relevant activities as instructed by CEOS/SIT Chair..

The CEOS Climate Advisory Group shall comprise 6-8 members, nominated by CEOS Agencies so as to cover the technical scope of work, plus representatives of GCOS and WCRP as observers, and shall meet annually, about one month before SIT. It shall report bi-annually to SIT.

The Chair of the CEOS Climate Advisory Group is nominated by the SIT Chair, who will also decide on membership.

An initial lifetime of three years of the group is proposed, with extension foreseen. It will be supported by the CEOS Climate SBA Coordinator and the CEOS Systems Engineering Office.