

Review of outcome of WCC-3

Working Session 6: Climate Observations

(Submitted by Adrian Simmons)

Summary and Purpose of Document

This document summarizes the preparation and outcome of Working Session 6, Climate Observations, of the expert segment of WCC-3.

ACTION PROPOSED

For comment.

1 Introduction

The three-day expert segment of WCC-3 comprised a set of plenary morning sessions and parallel afternoon sessions. The essential role and needs for observations of the climate system were emphasized in many of the presentations and discussions and reflected in the summary call of the Conference for a major strengthening of “the Global Climate Observing System and all its components and associated activities; and provision of free and unrestricted exchange and access to climate data” as an essential element of a global framework for climate services.

Detailed consideration was given to climate observations in the sixth of twelve half-afternoon “working sessions.”

2 Preparation and organisation of Working Session 6

A common set of guidelines was provided for the preparation of each working session. It entailed preparation and review of white papers on needs and capabilities, and preparation of a summary text based on them. The summary text was intended for discussion and agreement during the session, and subsequent incorporation in the Conference Statement.

The white papers for the session on climate observations were prepared by Mike Manton on needs and by Tom Karl and Howard Diamond on capabilities, with the assistance in each case of a number of listed co-authors. The papers were reviewed by the Theme Leader, Adrian Simmons, working in collaboration with the Responsible Person for the session, Stefan Rösner. The summary text was drawn up by the Theme Leader, and reviewed in turn by the others involved in the preparatory process. The white papers can be accessed at http://www.wcc3.org/sessions.php?session_list=WS-6

The session itself was organised by the Session Chair, Carolin Richter, in collaboration with the Theme Leader and Responsible Person. It comprised presentation of the white papers, brief opening remarks by a panel of discussants, and comments from the floor with responses from the discussants.

Alan Belward presented the white paper on needs on behalf of Mike Manton, who was unable to attend. Tom Karl presented the paper on capabilities. Their presentations can be viewed at http://www.wcc3.org/wcc3docs/pdf/WS6_WP_needs.pdf and http://www.wcc3.org/wcc3docs/pdf/WS6_Karl_Capabilities.pdf.

The 120 or so attendees of the session were each provided with a copy of the draft summary text. They were invited to make comments on it either during the discussion or in verbal or written remarks immediately following the session.

Sections 3 and 4 below summarise the inputs to the discussion session from the panel and floor respectively, as recorded by the members of the Secretariat who acted as rapporteurs for the session: Stephan Bojinski, Miroslav Ondras and Bill Westermeyer. Section 5 outlines how the text for the Conference Statement (reproduced in Annex A) was finalised.

3 Discussion Session - panel input

Gabriela Seiz highlighted two areas of progress with regard to GCOS: the active response by space agencies, through CEOS, to meeting climate needs, and better infrastructure of international data centres. She identified three areas where support for climate observations could be improved: better national and regional coordination, more focus on regional implementation and support to the GCOS Cooperation Mechanism, and attention to new and evolving ECVs, such as soil moisture and carbon fluxes. She also stressed the importance of observations for helping meet both the adaptation and the mitigation needs of the UNFCCC.

Jochem Marotzke stressed the immediate need for climate data and information, given that decadal models require observational datasets for past times for hindcasting, a method to establish and assess forecast skills. The need for observational climate data was not always immediately obvious. For example, today's global climate models all directly or indirectly benefit from ocean profile data (temperature, salinity) from the 1970s – data which were at the time only of interest to physical oceanographers. He concluded that observational strategies should not fall into the “short-term perspective trap.”

Ed Harrison emphasized the importance of sustained global ocean observations, which were fundamentally dependent on national efforts. National observational datasets at all scales were critical for an observing system to be sustained. For example, local measurement of sea-level change is critical to effectively inform adaptation decisions. The need for sustained systems also becomes apparent in the needs of the insurance business, where historical statistics of variability are needed.

Anthony Nyong stressed the need to create a demand for climate services from national policymakers, e.g. by stressing that the current disconnect between development agendas and climate variability/change may reverse progress in economic development. This would bring about demand and funding for observing systems and service delivery. Regional champions need to be identified and empowered to develop climate risk management strategies. Regional actors, e.g. banks, need access to all relevant climate information to take informed decisions. He quoted the example of ClimDev Africa, where AfDB was playing a championing investment role, but where additional partnerships were needed.

4 Discussion session - comments from floor

The following points and queries were raised in response to an invitation for comments from attendees of the session.

Justin Ahanhanzo (GOOS-Africa Coordinator) requested clarification on whether observations of the oceans, including coasts, were included in ‘climate’ observations. He advocated better integration of open-ocean and coastal observations. The latter were critical to assessment, for example, of coastal erosion in West Africa and the associated risk of storm surges.

Linda Moodie (USA) strongly advocated free and unrestricted access to all observational datasets, with data provided only at the cost of reproduction.

Qamar-Uz-Zaman Chaudhry (Pakistan) highlighted the existence of large climate-relevant datasets in developing countries that were in need of rescue. He seconded Ms Moodie's point on free access to data and said that data should be treated as a global public good.

Jim Salinger (New Zealand) raised the point of how best to establish a global agreement to sustain observations in the oceans. In response, Tom Karl and Ed Harrison mentioned the example of Argo and surface drifters, which were demonstrating the willingness of countries to (i) work outside national waters, and (ii) allow access to data acquired in exclusive economic zones. Technology to exchange data from ocean platforms was working and being constantly improved. When asked about the need to profile the entire ocean column, Ed Harrison felt this was probably necessary for temperature and salinity but still a research question that needs answering. Jochem Marotzke added that full ocean profiles were needed in order to model the meridional overturning circulation.

Pavel Negedlik (Slovakia) suggested that good quality of data should be consistent worldwide, and for that reason, traceability to international standards and procedures should

be applied at each station. He also mentioned that when considering new ECVs, phenological measurements should be taken into account.

Barry Goodison (Canada) highlighted current substantial observation gaps in the polar regions, noting the importance of the cryosphere for climate prediction and projections. He also identified the need for the research community to follow standards and guidelines, even if their observation programmes are based on short-term funding.

Rodney Martinez (Ecuador) stressed the need to better use past data, for example through integrated proposals to governments in the regions which would include (i) scientific action plans, (ii) data rescue, and (iii) demonstration of socio-economic benefits of observing system programmes.

Tim Oke (Canada), supported by written comments by Sue Grimmond (UK) and Gerald Mills (Ireland), emphasized the need for climate observations from urban areas and suggested better recognition of building and operating urban observing networks according to the WMO Guide to Instrument and Methods of Observation No. 8.

Mohamed Boulahya (France) issued a plea for support of implementation of the Regional Action Plans and to the implementation of ClimDev Africa. Similar programmes should be established in other regions. More support by additional donors was needed to that end.

Howard Diamond (USA) stressed the need for a strong high-level statement in support of GCOS to come out of WCC-3.

John Zillman (GCOS SC) noted that implementing GCOS means implementing the climate-relevant components of GOOS, GOS, GAW and GTOS to meet their climate needs and objectives.

Erica Key (USA) enquired on the way satellite-based observations were meeting the needs of the climate community. The panel responded by giving the example of the CEOS response to GCOS and agencies increasingly being aware of these needs. It stressed the need to assess the resilience of existing and planned satellite missions against failure. Multiple observations were usually needed.

Nathan Bindoff (Australia) identified timeliness of data delivery as a key point to stress from this working session.

5 Contribution to Conference Statement

A small number of written and verbal comments on the draft contribution to the conference statement were received immediately following the session. They were reviewed together with the points raised in discussion, by a writing team comprising the Session Chair, the Responsible Person, the Theme Leader and the rapporteurs. The text on the essential role of climate observations was finalised by the writing team and scrutinised (with no significant modification) at a joint meeting of the leaders of all sessions. The final text is reproduced on the following page as Annex A of this document.

Annex A

WS-6 input to WCC-3 Conference Statement

4.1 The essential role of climate observations

61. Long-term observation of the atmosphere, land and ocean is vital for all countries, and must be funded for the public good as economies and societies become increasingly affected by climate variability and change. The climate-relevant components of the various global, regional and national observing networks that have been incorporated under the auspices of the GCOS since 1991 have provided most of the data used for climate analysis, prediction and change-detection. They have demonstrated that warming of the global climate system is unequivocal and have provided information on climate patterns and trends at regional and national scale.
62. The networks must be strengthened and sustained in order to monitor climate variability and change, and to evaluate the effectiveness of the policies implemented to mitigate change. Observations are needed to support improvement of climate models, to initialise and enable effective use of model predictions to decades ahead and to guide the use of models for longer-term scenario-based projections. Observations are needed to assess social and economic vulnerabilities and develop the many actions that must be taken to adapt to climate variability and unavoidable change. They must be recognised as essential public goods where the value of global availability of data exceeds any economic or strategic value of withholding national data.
63. Full implementation of GCOS is essential for supporting both the adaptation and the mitigation objectives of the UNFCCC, and for ensuring that all countries will be able to manage their response to climate variations and change through the 21st Century.
64. The observational experts at the Conference accordingly agreed on the following recommendations:
 - *Long-term sustenance of observing systems.* The established in-situ and space-based components of GCOS should be sustained and operated with continued attention to data quality and application of the GCOS Climate Monitoring Principles (4.1.a);
 - *Improvement of operation and planning.* The operation and planning of observing systems should be improved, so as better to identify deficiencies, achieve resilience, and assure reliable and timely delivery of good-quality data, traceable to international standards (4.1.b);
 - *Enhancement of observing systems.* Enhancements to observing systems should be implemented wherever feasible, filling gaps in spatial coverage and in the range of variables measured, improving measurement accuracy and frequency where needed, increasing use of operational platforms for satellite sensors, ensuring adequate monitoring of urban and coastal conditions, and establishing key high-quality reference networks (4.1.c);
 - *Improvement of data services.* Improvements should be made to the rescue, exchange, archiving and cataloguing of data, and to the recalibration, reprocessing and reanalysis of long-term records, working towards full and unrestricted access to data and products (4.1.d);
 - *Observations for adaptation planning.* All countries should give high priority to the observational needs for adaptation planning, identifying their needs in National Adaptation Programs of Action where applicable (4.1.e); and
 - *Regional implementation of GCOS.* Developed countries should commit to assist developing countries to maintain and strengthen their observing networks through support for updating, refining and, most importantly, implementing the GCOS Regional Action Plans and other regional observational and service initiatives such as ClimDev Africa, GOOS Africa, and Pacific Islands GCOS (4.1.f).