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**GCOS STEERING COMMITTEE**

**TWENTY-EIGHTH SESSION**

GCOS SC-28, 24–26 November 2020

Virtual Session

**Review of the current list of ECV**

The Steering Committee is asked to provide advice to the panels to ensure that an ECV, its products and their requirements to respond to the need of the climate data users.

**DRAFT DECISION (1)**

The Steering Committee decides that:

- a) when the GCOS expert panels review the ECV products they should ensure that they are relevant for GCOS mandate and produce a clear justification for the need of each product based on its relevance for climate monitoring and clear user-defined needs.
- b) the GCOS Secretariat involve the user community in reviewing the relevance of the ECV products for the needs of their communities.
- c) the GCOS Secretariat produce a list of essential ECV products, identified through a) and b) to be approved by the Steering Committee.
- d) requirements for the agreed ECV products will be included in the update of the GCOS IP and in the WMO OSCAR/Requirements.

Furthermore the Steering Committee reaffirms that an ECV and its products should:

- Be feasible and sustainable to measure;
- Have a clearly specified user need going beyond scientific curiosity;
- Number of ECV and products should be the minimum needed to meet user needs.
- Measure a significant part of the climate system;

The Steering Committee also decided that, where possible, requirements should be aligned with existing observing systems (e.g. for NWP) while noting the specific climate needs (e.g. accuracy, stability and historic time series). The Steering Committee also notes that differing requirements for different uses may be needed for a specific ECV.

## Background

1. One of the main activities of GCOS is to maintain and review the Essential Climate Variables (ECV) and their requirements. GCOS is currently preparing to produce a new Implementation Plan in 2022 which will contain revised ECV requirements.
2. In 2017, WMO/CBS and WIGOS requested GCOS to update the application area Climate Monitoring for which GCOS is responsible, and to consequently update the content of the OSCAR/Requirements<sup>1</sup> for this application area. GCOS will update OSCAR/Requirements with the latest requirements for ECV.
3. For each ECV, there may be several separate ECV products, identified as essential to fully define the ECV.
4. In consultation with their communities, a broader public consultation and the GCOS science panels, ECV Stewards have revised definitions and requirements for the ECV products. The requirements should reflect current needs and capabilities and should be the basis for long-term, systematic observations of the climate as discussed required by the UNFCCC and to meet the needs identified above.
5. Following the first consultation on the requirements that took place between January and February 2020, the ECV stewards are now in the process of addressing the comments from this consultation and updating the requirements for the ECV products accordingly. A final review will take place as part of the public review for the updated GCOS Implementation Plan in January and February 2022 and will be published later that year as part of the revised GCOS Implementation Plan. The OSCAR/Requirements for the Climate Monitoring Application Area will be updated with the requirements in the revised GCOS Implementation Plan.
6. The process of identifying ECV products has resulted in a significant increase of the number of these ECV products. There are now approximately 200 products and for each of them requirements need to be specified. However, it is unclear that all of these products truly meet the definitions of ECV (Feasible, Relevant and Cost-Effective). In addition, the increasing number of uses of each ECV leads to multiple requirements for each product. Therefore, it is proposed to review these products to identify a more streamlined list of products needed to meet user needs.

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<sup>1</sup> OSCAR/Requirements is the official repository of requirements for observation of physical variables in support of WMO Programmes and is organised by "Application Areas". There are 14 application areas: GCOS is responsible for one, Climate monitoring. For each application area there is a list of geophysical variables, defined in a technology-free manner, and for each of those requirements are defined for horizontal, vertical and temporal resolution; timeliness; uncertainty; stability. User requirements for observations are then compared with the capabilities of present and planned observing systems in the "Rolling Requirements Review" process.

7. There are a wide range of users of climate data. GCOS is intended to meet the needs of<sup>2</sup>:
- Climate System Monitoring, climate change detection and monitoring the impacts of and the response to climate change, especially in the terrestrial ecosystems and mean sea-level;
  - Data for application to national economic development;
  - Research towards improved understanding, modelling and prediction of the climate system.
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<sup>2</sup> Memorandum of Understanding between the World Meteorological Organization, the Intergovernmental Oceanographic Commission of the United Nations, Educational, Scientific and Cultural Organization, the United Nations Environment Programme and the International Council for Science. 1998