WORLD METEOROLOGICAL ORGANIZATION

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The Global Climate Observing System (GCOS) is the main source of requirements and definitions for monitoring our changing climate. It was established in 1992 by the World Meteorological Organization (WMO), the Intergovernmental Oceanographic Commission of UNESCO (IOC), the United Nations Environment Programme (UNEP) and the International Science Council (ISC) to coordinate global climate observations and facilitate their development and improvement. GCOS has since then identified and updated a set of variables, called Essential Climate Variables (ECV), that, when observed, provide the necessary information to understand, model, and predict climate and to underpin actions on mitigation and adaptation for all countries.

Observations are also required to support parties in setting and evaluating their Nationally Determined Contributions (NDCs) and to inform the Global Stocktake (GST) under the Paris agreement.

GCOS publishes regular status reports describing the status of the global observing system, followed by implementation plans which address the gaps identified in the status reports. The last GCOS Status Report was published in 2021 and was welcomed at the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA). The Implementation plan presents the requirements for all Essential Climate Variables and their products, which have been developed by GCOS expert panels, in turn informed by the wider community.

Following the decision of UNFCCC (Decision 19/CP.22 and Draft conclusions proposed by the Chair FCCC/SBSTA/2019/L.15), GCOS is in the process of finalising its next Implementation Plan, addressing the gaps identified in the previous GCOS Status Report, and taking into consideration other reports of relevance, such as the most recent IPCC reports. The Implementation Plan has been prepared in consultation with the GCOS experts and a writing team. The entire report has been subject to public review and will be published in October 2022. It will be followed by the GCOS Climate Conference (October 2022), that will consider how to make progress on the actions presented in the Implementation Plan and will prepare a Conference Statement for consideration at COP27.

GCOS continues to advocate for the sustained, systematic observation of the climate. The actions in this plan address both sustainability issues that may arise in the near future and improvements that should be implemented. Actions in the plan encompass several separate activities, which involve several domains (e.g., terrestrial, atmospheric and ocean).

The thematic basis for the actions follows the priority areas identified by GCOS for activities in the next 5-10 years. They represent focus areas that are necessary to advance the ability to make, curate, process and exploit observations in service to society as part of the value chain. The themes are:

1) Ensuring the sustainability of key existing observation programs;
2) Filling data gaps in current observing capabilities, as gaps identified in the Status Report;
3) improving data utility and ensuring the overall quality of the information obtained by observations;
4) Improving data management including data sharing, data curation, data provision and data rescue;
5) Engaging with countries and linking national efforts into the global system; and
6) Addressing emerging needs from users including those related to adaptation and mitigation.

Within the sixth theme, the plan calls for the development of an Integrated Operational Global GHG Monitoring System, which will complement existing methodologies focusing on the estimates of anthropogenic emissions by providing comprehensive, quantitative data on natural sources and sinks of greenhouse gases. This will help substantially advance our understanding of the carbon cycle, thereby strengthening the scientific basis for mitigation action taken by the Parties to the Paris Agreement.