GCOS
Global Climate Observing System

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GCOS works towards **climate observations** being **enhanced** and **sustained** into the future, to provide the evidence needed to understand and predict the evolution of the climate, to guide mitigation and adaptation measures, to assess risks and enable attribution of climatic events to underlie causes, and to underpin climate services.

**GCOS = Climate Observations enabling climate science and services and supporting policy**
GCOS – Global Climate Observing System

Established in 1992 to address the UNFCCC systematic observation agenda

Guided by 3 panels of experts: AOPC, OOPC, TOPC

GCOS is a Co-Sponsored Programme:
- WMO
- IOC - UNESCO
- UNEP
- ISC

Additional contributors: EU Commission, US State Dept., NOAA, Germany, EUMETSAT

Governed by a Steering Committee and supported by a Secretariat

a Chair led by a Director

Atmospheric Observation Panel for Climate (AOPC)
Ocean Observations Physics and Climate Panel (OOPC)
Terrestrial Observation Panel for Climate (TOPC)
GCOS: an integrated system

GCOS does not make observations itself, it is a system of systems integrating the contribution from a wide range of (in situ and space-based) organizations, networks and data centres.

Satellite observations are coordinated by the Joint CEOS/CGMS Working Group on Climate.

Examples of national and regional networks:
- eLTER
- ICOS
- AmeriFlux
- TERN

Examples of global networks associated with GCOS:
- WMO related networks (GSN, GUAN, GRUAN) and programmes, like GAW (atmospheric composition) and GCW (cryosphere)
- a number of different ocean climate-related networks, in collaboration with GOOS

Examples of national and regional networks:
- WCRP
- JSC Session 2024 (JSC-45)
GCOS Reporting

Identify what we need to measure (ECVs) and their observational requirements

~ 5 years cycle

GCOS Status Report

The global Climate Observing System 2021: The GCOS Status Report

GCOS Implementation Plan

The 2022 GCOS Implementation Plan

GCOS ECVs Requirements

The 2022 GCOS ECVs Requirements

Assess if the status of the observing system for climate meets those requirements

Propose actions to address gaps and improve the observing system for climate

WCRP JSC Session 2024 (JSC-45)
GCOS is acknowledged as the leading independent reference in defining requirements for climate observations.

GCOS developed and implemented the concept of Essential Climate Variables (ECVs), widely endorsed by the scientific and observational communities.

ECVs are physical, chemical or biological variables that critically contribute to the characterization of climate.
Joint sponsorships of GCOS panels

- Earth Cycles
- GEWEX
- CLIVAR
- Hydrology
- WCRP Open Science Conference, Kigali, 2023
Thanks

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