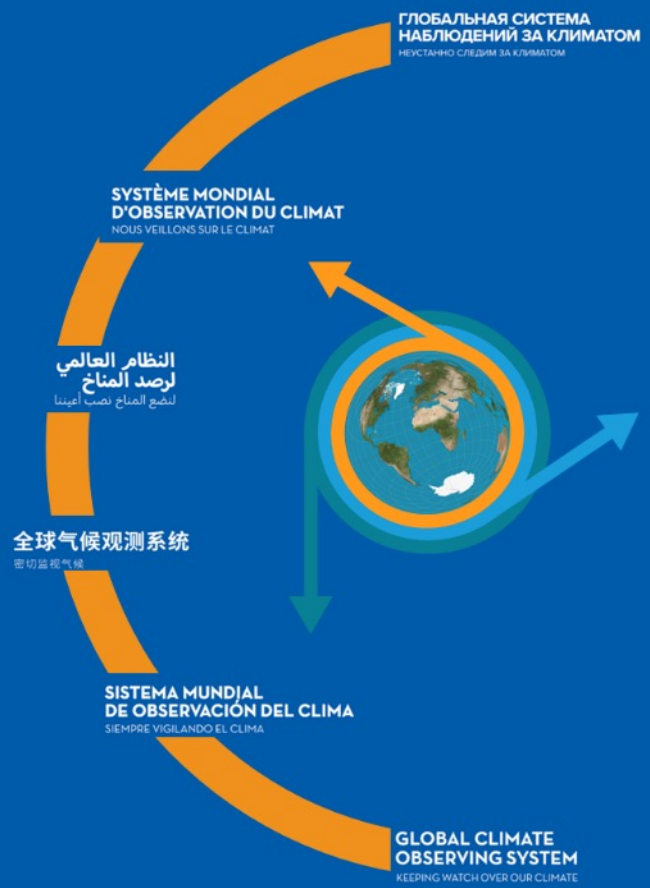


GCOS
Global Climate Observing System

45th Session of the WCRP
Joint Scientific Committee
30 May 2024

A. Bombelli, GCOS Secretariat

GLOBAL CLIMATE OBSERVING SYSTEM
KEEPING WATCH OVER OUR CLIMATE

WMO

unesco
Intergovernmental Oceanographic Commission

International Science Council

UN environment programme

Supported by the European Union

opernicus
Europe's eyes on Earth

GCOS – Global Climate Observing System

GLOBAL CLIMATE OBSERVING SYSTEM

KEEPING WATCH OVER OUR CLIMATE

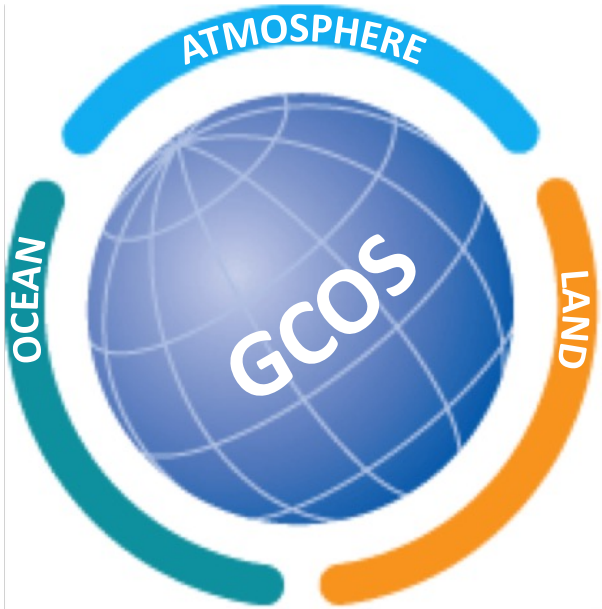
AOPC

OOPC

TOPC

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



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GCOS – Global Climate Observing System

GLOBAL CLIMATE OBSERVING SYSTEM

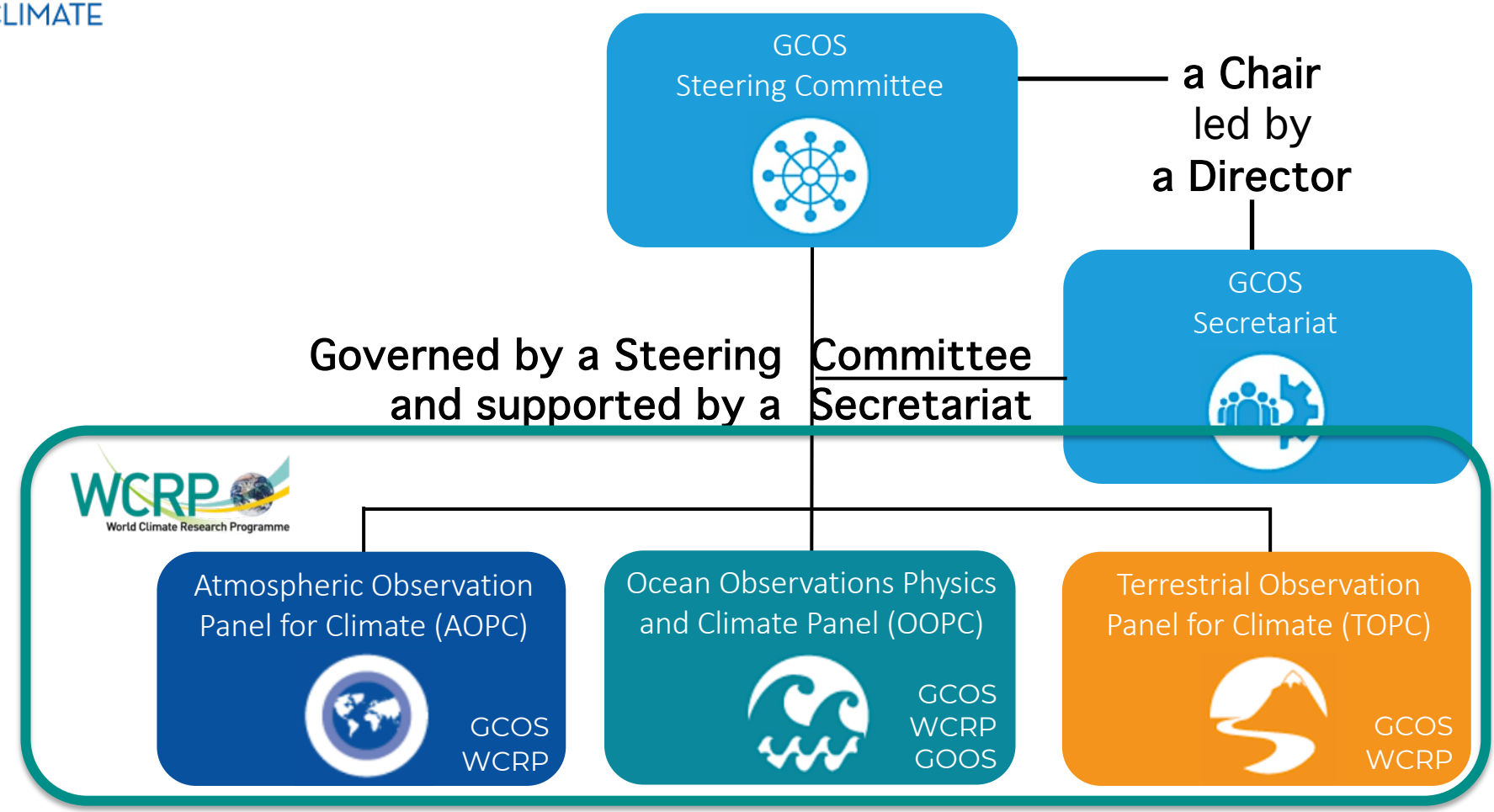
KEEPING WATCH OVER OUR CLIMATE

Established in 1992
to address the UNFCCC
systematic observation agenda

GCOS is a Co-Sponsored Programme:

- WMO
- IOC - UNESCO
- UNEP
- ISC

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



Guided by 3 panels of experts: AOPC, OOPC, 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

NATIONAL GCOS

WMO related networks (GSN, GUAN, GRUAN) and programmes, like GAW (atmospheric composition) and GCW (cryosphere

GAW

a number of different ocean climate-related networks, in collaboration with GOOS

GOOS

Global Organizations, Networks and Data Centres for specific terrestrial ECV

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

Examples of global networks associated with GCOS

GTN-P Global Terrestrial Network for Permafrost

GTN-H

GTN-G

GOFC-GOLD Global Observation of Forest and Land Cover Dynamics

HYDROLARE

WRMC-BSRN World Radiation Monitoring Center- Baseline Surface Radiation Network

Examples of national and regional networks

eLTER

ICOS Integrated Carbon Observation System

AMERIFLUX

tern Ecosystem Research Infrastructure

Supported by the European Union

Copernicus Europe's eyes on Earth

NOAA

GRDC

WCRP World Climate Research Programme

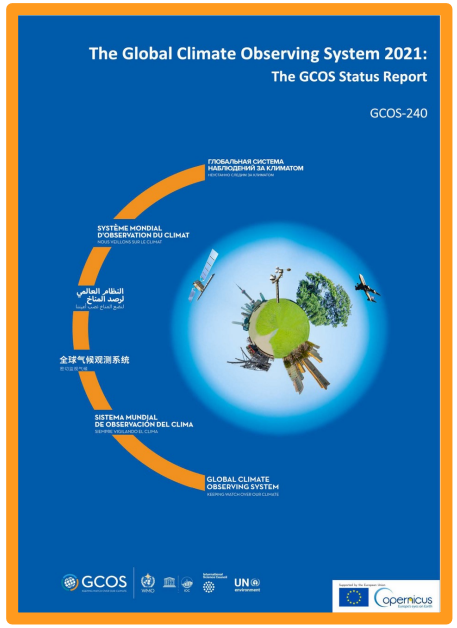
GLOBAL PRECIPITATION CLIMATOLOGY CENTRE

and a wide range of other partners who support GCOS, host data centres, do research, etc.

GCOS | WMO | unesco | International Science Council | UN environment programme

GCOS Reporting UNFCCC

GCOS Status Report



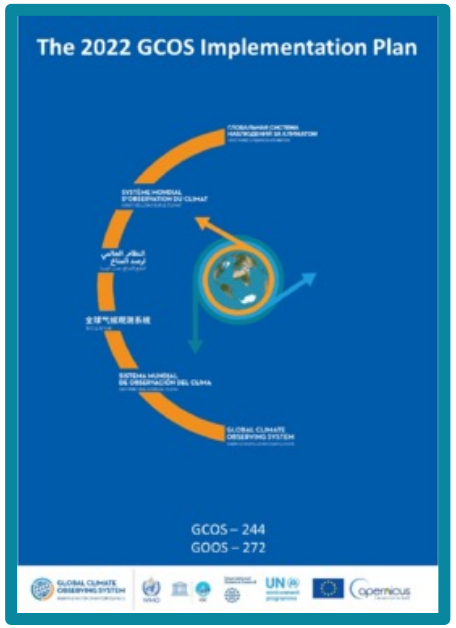
Assess if the status of the observing system for climate meets those requirements

≃ 5 years cycle

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

GCOS ECVs Requirements

GCOS Implementation Plan

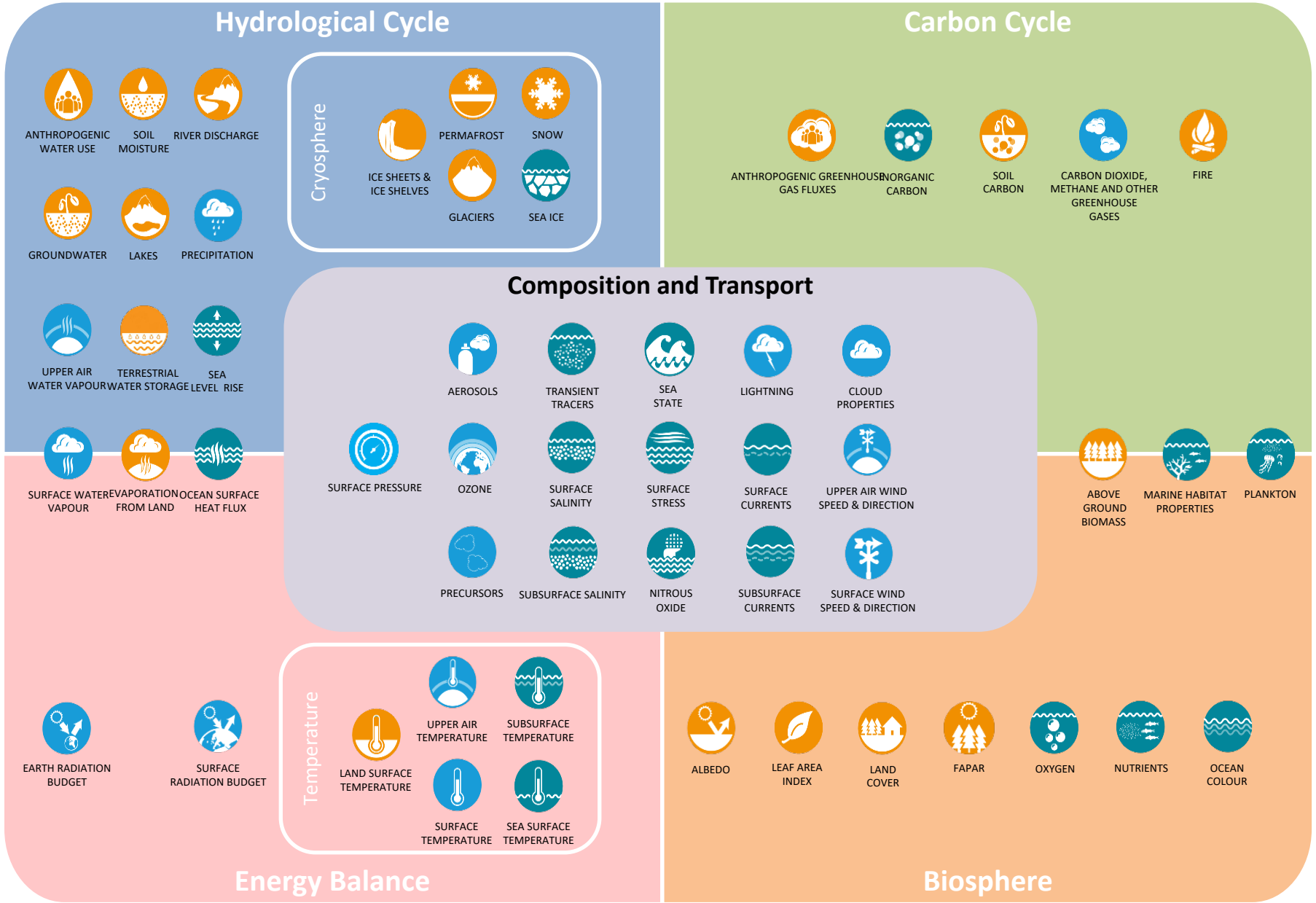


Propose actions to address gaps and improve the observing system for climate

GCOS WMO unesco Intergovernmental Oceanographic Commission International Science Council UN environment programme

GCOS – Essential Climate Variables: 55 ECVs

- 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**



Atmosphere (AOPC) | Ocean (OOPC) | Land (TOPC)

GCOS | WMO

GCOS & WCRP

GLOBAL CLIMATE OBSERVING SYSTEM
KEEPING WATCH OVER OUR CLIMATE

WCRP World Climate Research Programme

- **Joint sponsorships of GCOS panels**
- **Earth Cycles**
- **GEWEX**
- **CLIVAR**
- **Hydrology**
- **WCRP Open Science Conference, Kigali, 2023**

Thanks

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