

ГЛОБАЛЬНАЯ СИСТЕМА
НАБЛЮДЕНИЙ ЗА КЛИМАТОМ
НЕУСТААННО СЛЕДИМ ЗА КЛИМАТОМ

SYSTÈME MONDIAL
D'OBSERVATION DU CLIMAT
NOUS VEILLONS SUR LE CLIMAT

النظام العالمي
لرصد المناخ
لنضع المناخ نصب أعيننا

全球气候观测系统
密切监视气候

SISTEMA MUNDIAL
DE OBSERVACION DEL CLIMA
SIEMPRE VIGILANDO EL CLIMA

GLOBAL CLIMATE
OBSERVING SYSTEM
KEEPING WATCH OVER OUR CLIMATE



GCOS UPDATE

Caterina Tassone – GCOS Secretariat

GRUAN ICM-15

Bern, 11th March 2024



GCOS – Global Climate Observing System

GCOS promotes the enhancement of global climate observations and monitors their performance.

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 promotes the free and open availability of climate data to all, and defines the Essential Climate Variables (ECV), monitors how well they are observed, and advocates for improvements, and supports the collection and distribution of the resulting data.

GCOS regularly reviews the state of the global climate observation, published as the GCOS status report every 5-6 years, and identifies gaps in observing systems and capabilities, which are addressed through the GCOS implementation plan, also published every 5-6 years

GCOS Sponsors

WMO

IOC of UNESCO

UNEP

ISC

GCOS Steering Committee

Atmospheric
Observation Panel
for Climate (AOPC)

Terrestrial
Observation Panel
for Climate (TOPC)

Ocean Observations
Physics and Climate
Panel (OOPC)

GOOS

GOOS
Biogeochemistry

GOOS Biology and
Ecosystems

AOPC:

Assess the current state of the atmospheric component of the global observing system for climate, and identifying its gaps and inadequacies

Networks reporting to GCOS/AOPC:

Reference Networks: GRUAN, (GSRN)

Baseline Networks: GUAN, GSN

GCOS – New Leadership



New Director of the GCOS Secretariat

Mr Nir Stav

Previous Executive Director of the
Israeli Meteorological Service



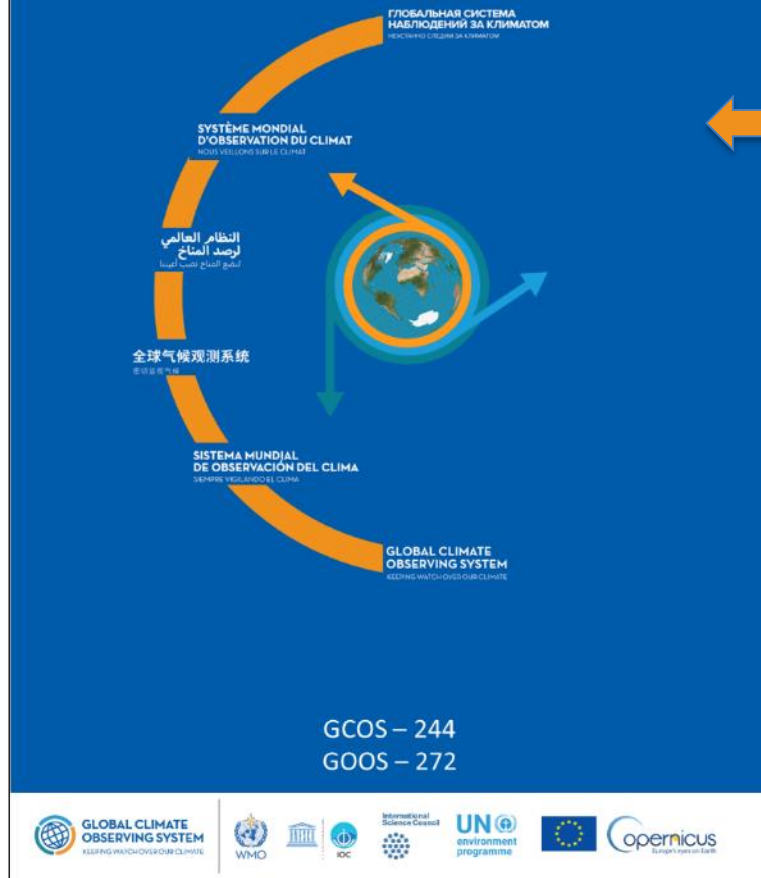
New Chair of GCOS Steering Committee

Ms Thelma Krug

INPE, National Institute for Space Research of Brazil
Previous vice-chair of IPCC

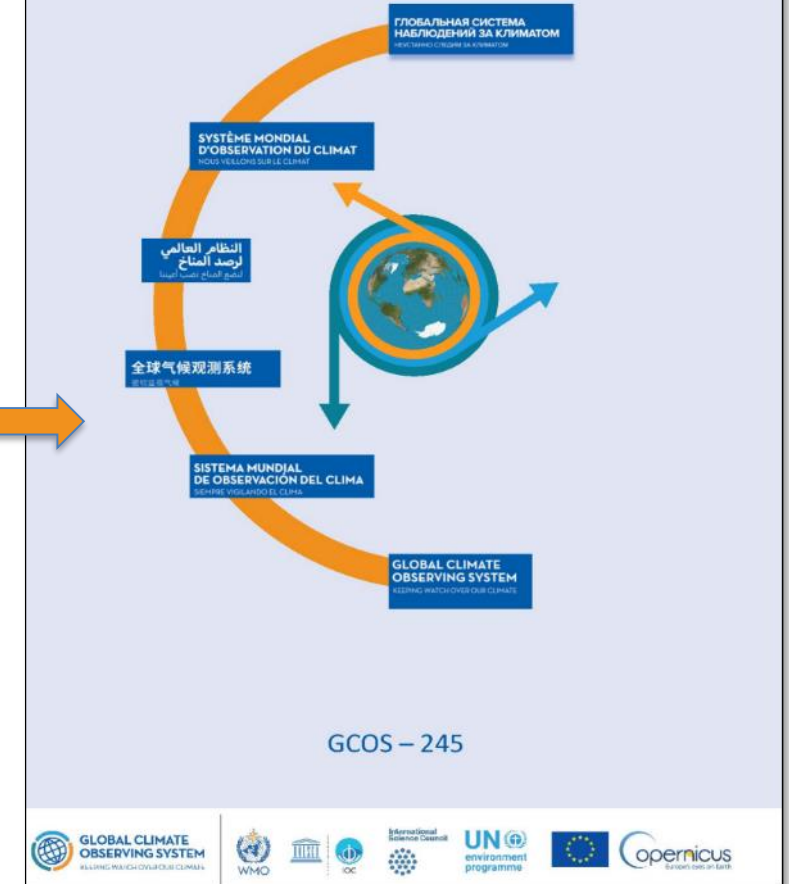
The GCOS Implementation Plan and ECVs Requirements

The 2022 GCOS Implementation Plan



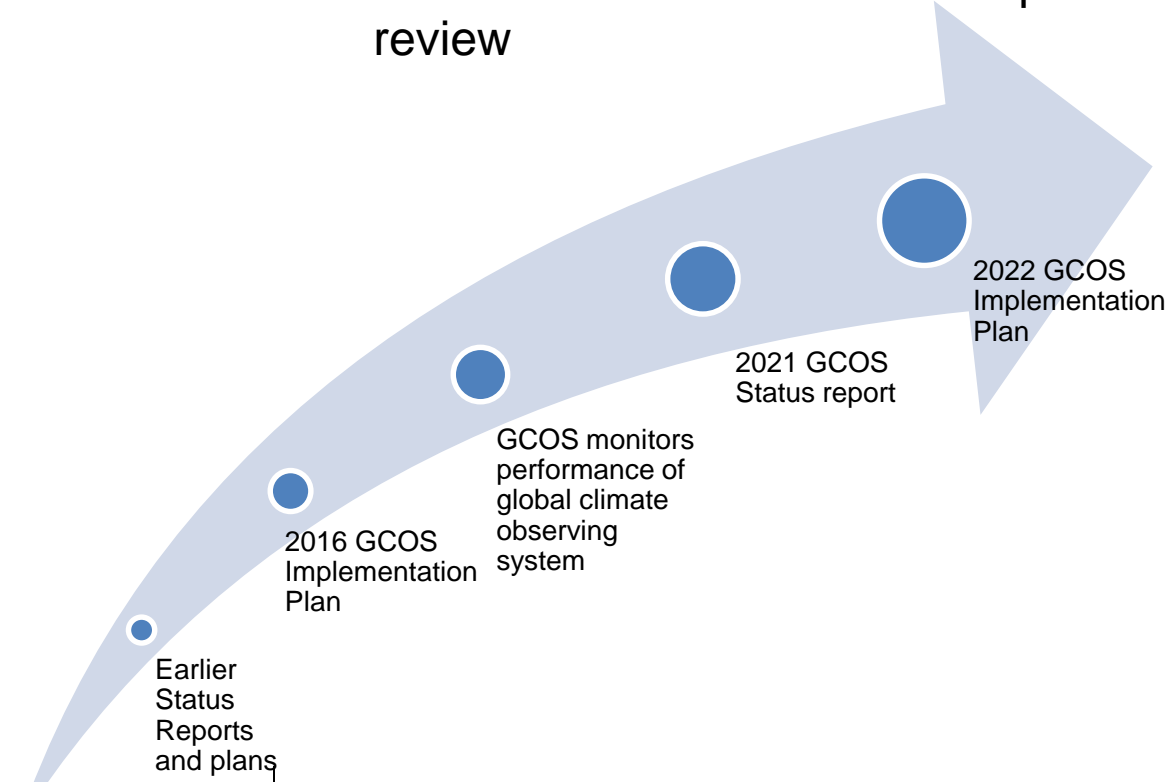
- Published every \cong 5 years
- Submitted to UNFCCC
- Actions for addressing gaps and improvements of a fit for purpose Global Climate Observing System
- Published jointly with the 2022 GCOS IP
- Provides the observational requirements for 55 ECVs (and more ECV products)

The 2022 GCOS ECVs Requirements

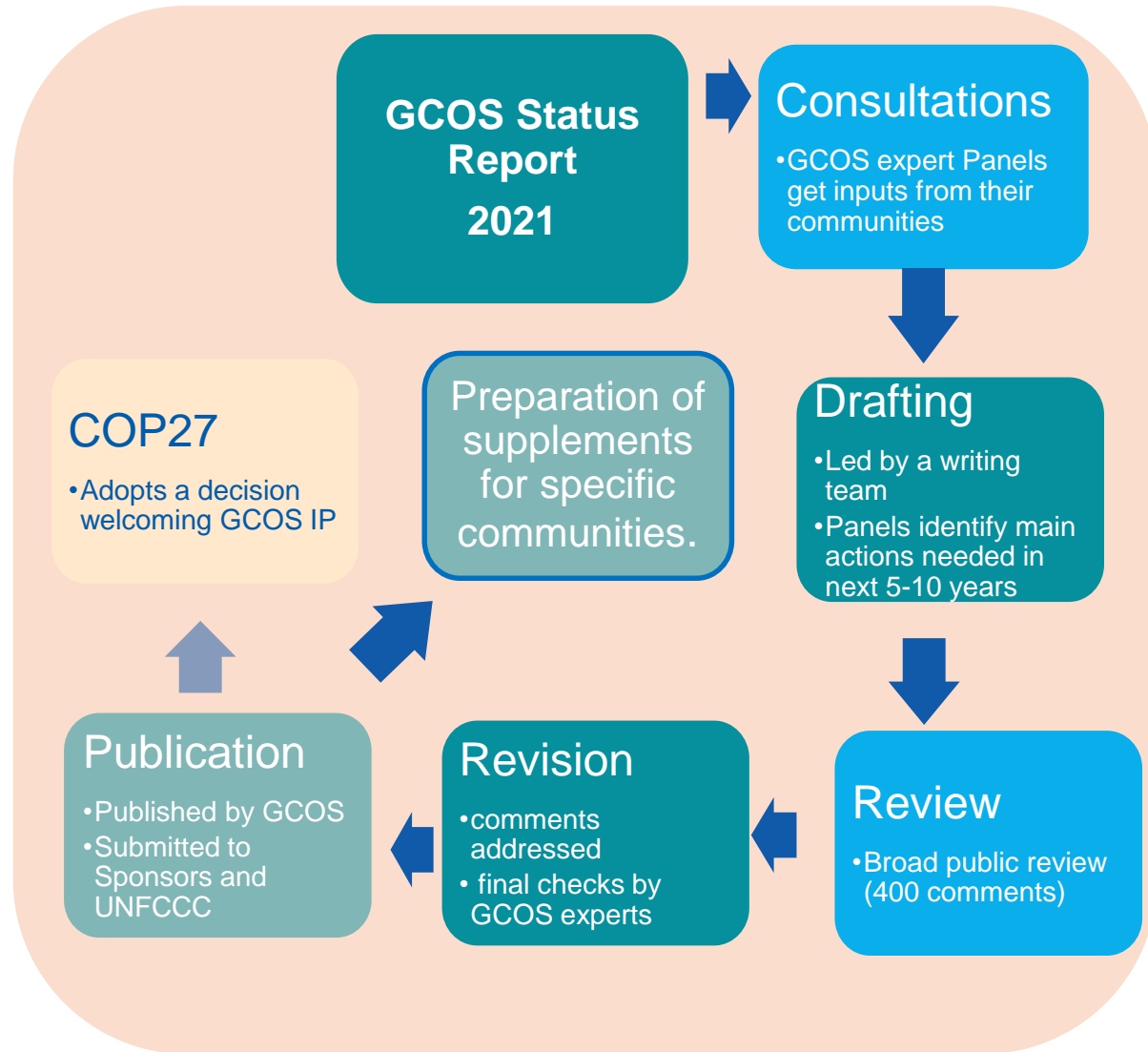


Producing GCOS Implementation Plan

GCOS has a 5-year cycle of monitoring the climate observing system → GCOS Status Reports → GCOS Implementation Plans based on extensive consultation and public review



2022 GCOS Implementation Plan



Theme B – Filling Data Gaps

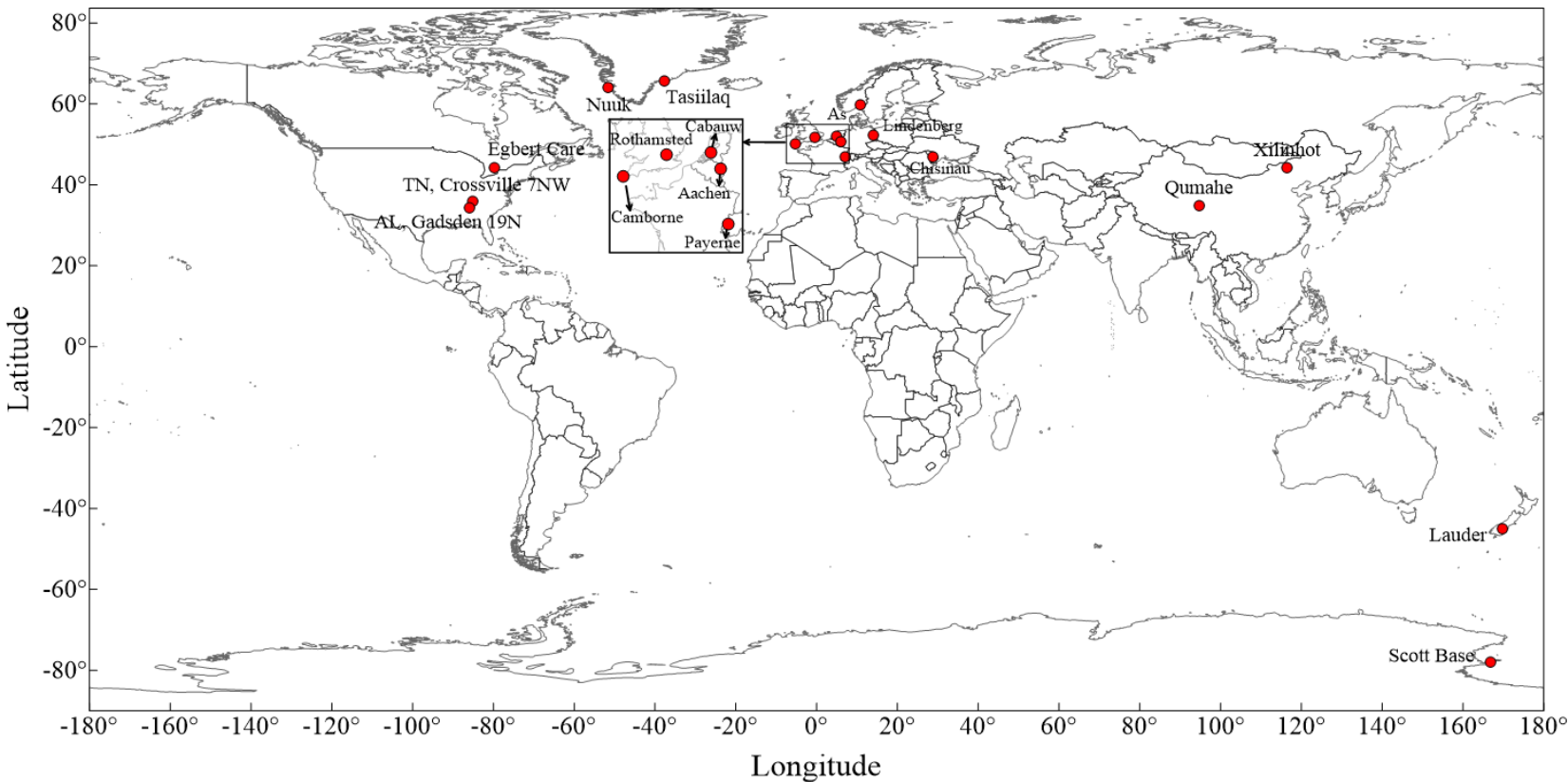
Action B1: Development of reference networks (in situ and satellite Fiducial Reference Measurement (FRM) programs)

Activities	<ol style="list-style-type: none">1. Continue development of GRUAN.2. Implement the GSRN.3. Better align the satellite FRM program to the reference tier of tiered networks and enhance / expand FRM to fill gaps in satellite cal/val.4. Develop further the concept of a reference network tier across all earth observation domains.5. Establish a long-term space-based reference calibration system to enhance the quality and traceability of earth observations. The following measurables are to be considered: high-resolution spectral radiances in the reflected solar (RS) and infrared (IR) wave bands, as well as GNSS radio occultations.
Implementers	<ol style="list-style-type: none">1. Lead Centre (DWD), GCOS, WMO, NMHS.2. GCOS, Lead Centre (CMA), WMO, NMHS.4. GCOS, WMO, NMHS, Research organizations.
Means of assessing progress	<ol style="list-style-type: none">1. Number of certified GRUAN stations and geographical distribution of stations; number of data products; data usage measured through citations.2. Operational GSRN (for an initial set of stations focussing on temperature and precipitation).4. Inventory of (potential for) global reference networks across atmosphere, ocean and terrestrial.

- In person meeting at Lindenberg between GRUAN LC, GRUAN co-chairs and GCOS Secretariat (Dec. 2023) and regular online meeting – Actions from ICM-14; specific governance tasks; preparation of ICM-15
- GCOS Secr. facilitated online meetings of GRAUN Task Teams

Action B1 - GSRN

- Beginning of the implementation of GSRN (Pilot) (Temperature and Precipitation)
- 17 stations were selected

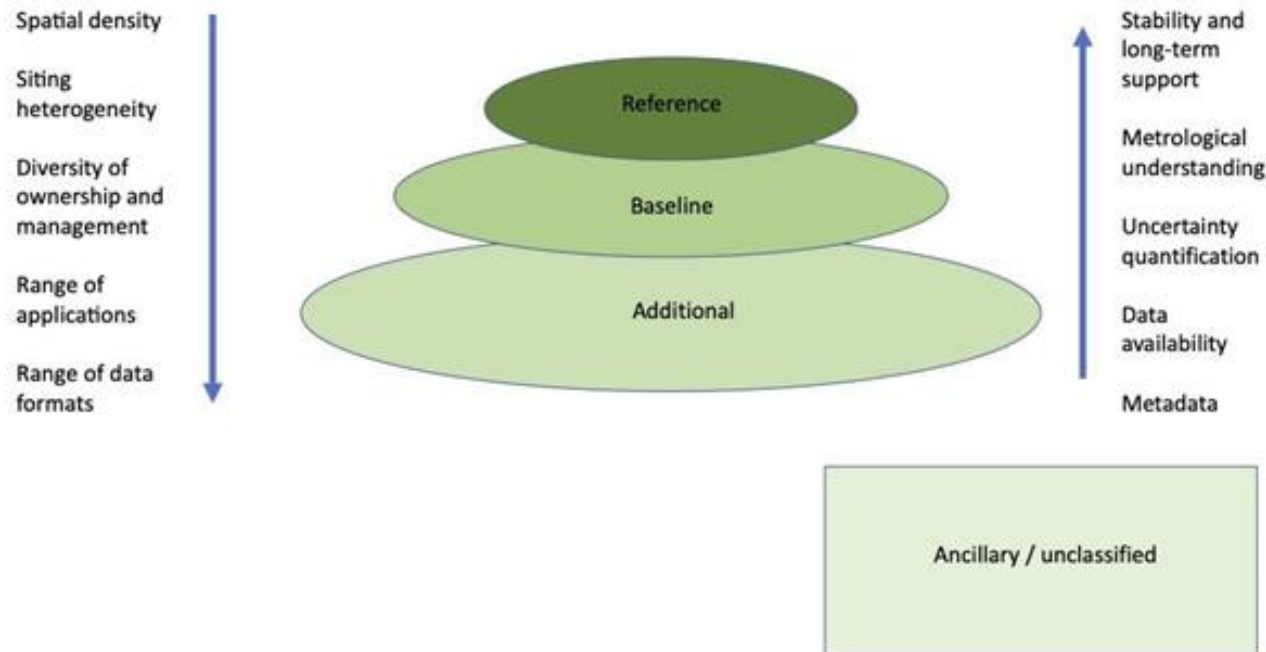


GSRN Ref No.	Station Name	Country
01	Egbert CARE	CANADA
02	TN, Crossville 7NW	USA
03	AL, Gadsden 19N	USA
04	Cabauw	THE NETHERLANDS
05	Chisinau	Republic of Moldova
06	As	NORWAY
07	Aachen	Germany
08	Lindenberg	Germany
09	Camborne	UK
10	Rothamsted	UK
11	Qumahe	China
12	Xilinhot	China
13	Payerne	Switzerland
14	Scott Base	New Zealand
15	Lauder	New Zealand
16	Nuuk	Denmark
17	Tasiilag	Denmark

Action B1 – Tiered Networks

Workshop on the Development of a Tiered Network Approach – Geneva - 24-26 October 2023

Generic concept about tiered networks (approved at INFCOM-2)



Purpose: propose an approach for the tiering of observing networks, in order to specify the purpose and classify the quality and characteristics of observing networks **within and across domains**, and to provide a hierarchy of data usage in support of user application areas.

Action B1 – Tiered Networks

The aims of this workshop were to:

- clarify the requirements and objectives of the tiered networks;
- propose a mechanism and process to consult, develop and agree upon a set of criteria to assign candidate networks to appropriate tiers;

Several communities were represented: atmospheric composition, hydrology, cryosphere, satellite, NWP, climate, biosphere, ocean..

Conclusion:

Update of the original concept note to take into account the suitability concept:

- single matrix for scoring, based on the information quality assessment
- series of filters, differing depending on the needs of each application area, that will be applied to the underlying matrix and that will provide a “suitability” score for the specific application area on top of the “quality” score.

Other GCOS activities

- **Joint Panel Meeting (June 2023):** The GCOS Secretariat organized a joint panel meeting with the three GCOS panels in Bonn, hosted by ECMWF. The aim of the meeting was to start addressing selected cross-cutting actions from the Implementation Plan.
- **ECV Rationalization:** refine the current definitions of ECV and ECV product, clarifying the process and requirements to include new variables in the list, and a critical review of the current list in view of the above.
- **Climate Data Centers:** GCOS is undertaking promotion, and facilitation of the establishment and maintenance of data repositories with open access to all climate data; definition of requirements for climate data centers
- **Earth cycle (workshop in 2023 jointly with WCRP):** periodic review of observations of the Earth's energy, water, carbon cycles to identify gaps and areas of high uncertainty
- **Adaptation, collaboration with WMO, WGClimate, UNFCCC...**

Thank you



Supported by the European Union

