

GCOS Welcome and Update

14th BSRN Science and Review Workshop (Canberra, Australia)

26th April 2016

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- **GCOS Update**
- **GCOS Cooperation Mechanism (GCM)**
- **Key points for BSRN**

What does GCOS do?

The vision of GCOS is that all users have access to the climate observations, data records and information which they require to address pressing climate-related concerns. GCOS users include individuals, national and international organizations, institutions and agencies. The role of GCOS is to work with partners to ensure the sustained provision of reliable physical, chemical and biological observations and data records for the total climate system – across the atmospheric, oceanic and terrestrial domains, including hydrological and carbon cycles and the cryosphere.

Driving the Global Climate Observation Agenda

Identify/Review Essential Climate Variables (ECVs) through science panels

Regular review of how these ECV are observed

Develop plans to ensure continuity and improvement of observations

- **GCOS follows a 3 phase approach driven by users**
- **2015 Status Report started the 3rd assessment cycle with a new Implementation Plan due in 2016 for UNFCCC COP 22**

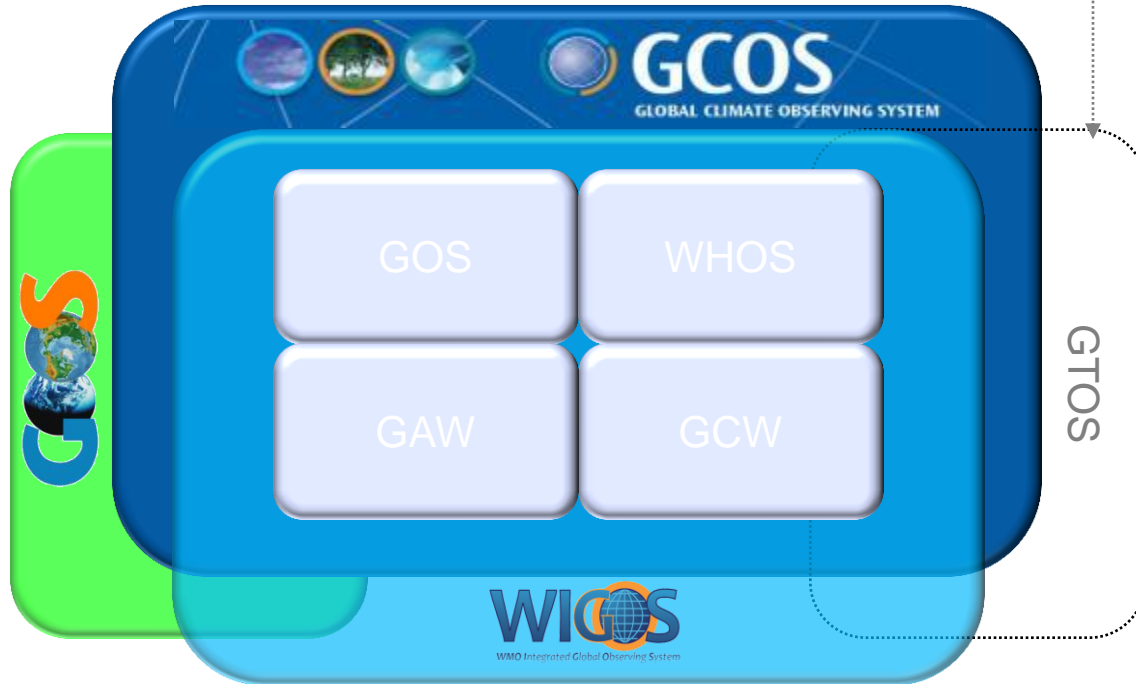
(1st cycle:
1995-1998)

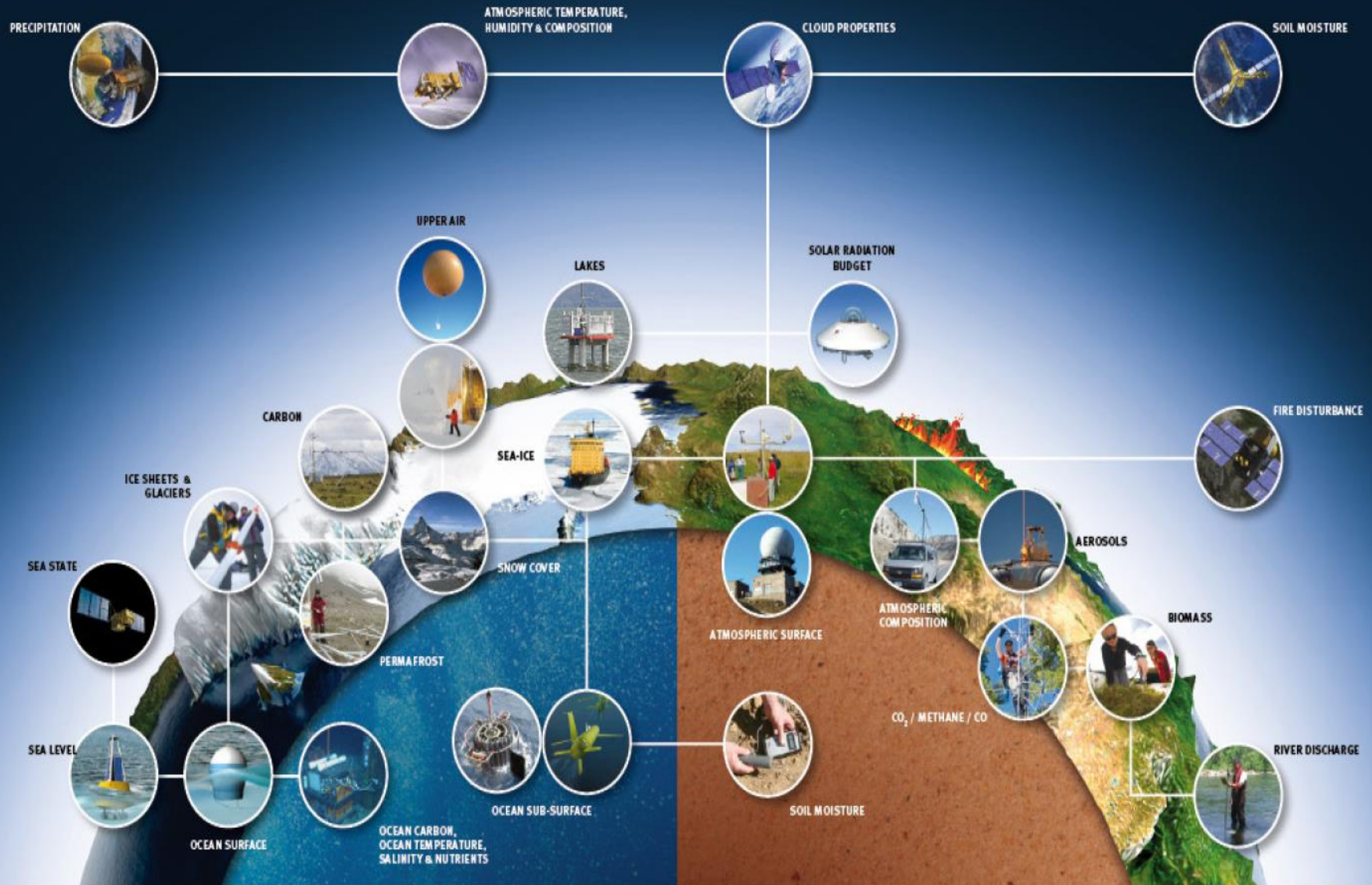
(2nd cycle:
2003-2004-2010)

(3rd cycle: 2015-2016)



ICSU
International Council for Science





3 Science Panels

- **3 Science Panels for Atmosphere, Land and Oceans:**
 - Capture requirements for users of climate observations.
 - Identify & review Essential Climate Variables (ECV) and their specification
 - Review adequacy of networks to measure & exchange data
 - Give recommendations for the new Implementation Plan
 - Advocating sustained networks, open data access, and future evolution
 - Coordinate with other observing systems

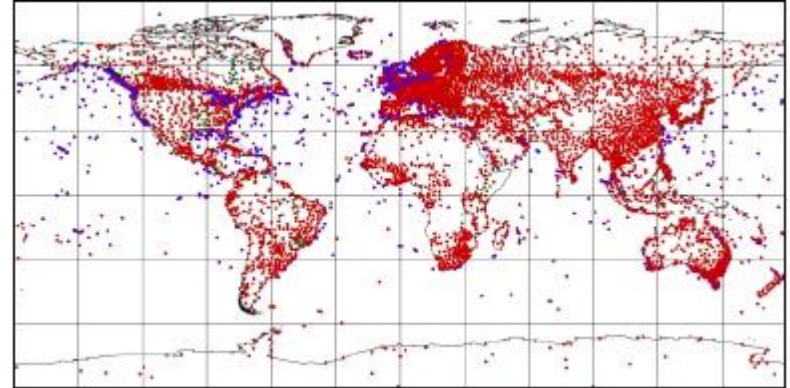


GCOS Cooperation Mechanism (GCM)

GCOS/GCM is concerned with ...

The observations:

- what is measured, how is it measured, where is it measured, how is the measurement sustained, etc.



Data transmission:

- what is transmitted, with what time delay, in what code

Data management (including data rescue):

- archiving and access to raw data, metadata, and data products
- recovery and rehabilitation of past data



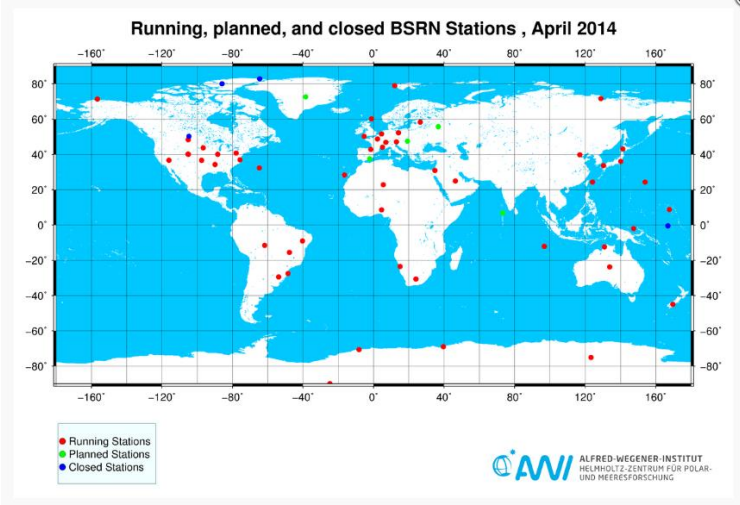
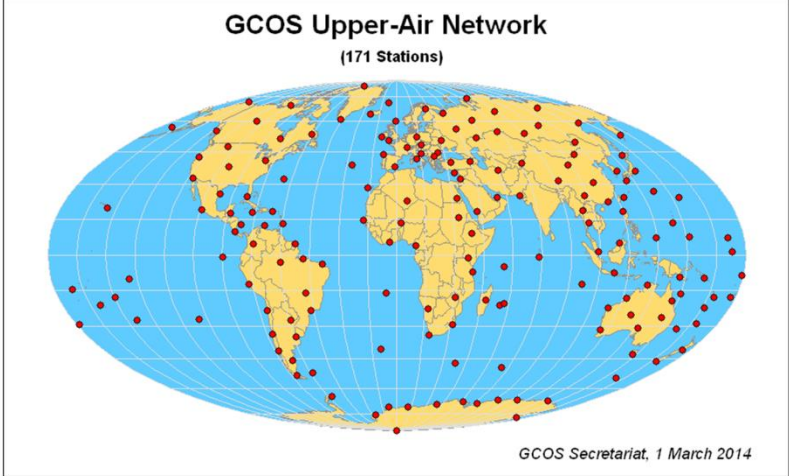
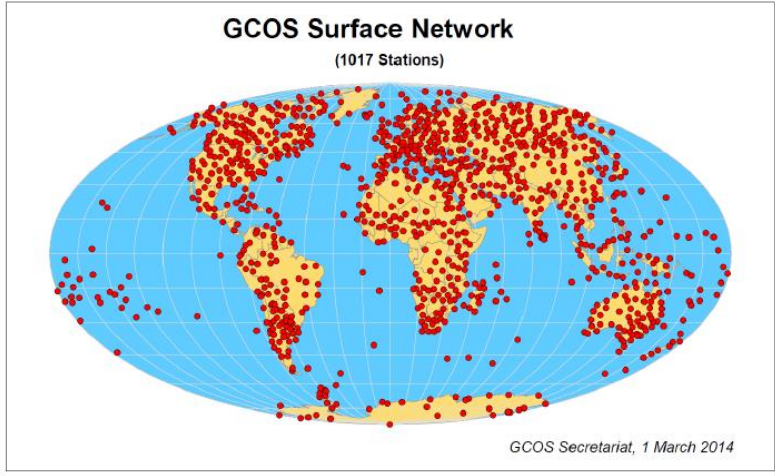
Data and products:

- Fundamental records, including recalibration and homogenisation
- Satellite retrievals, gridded fields from *in situ* and remotely-sensed measurements, etc.

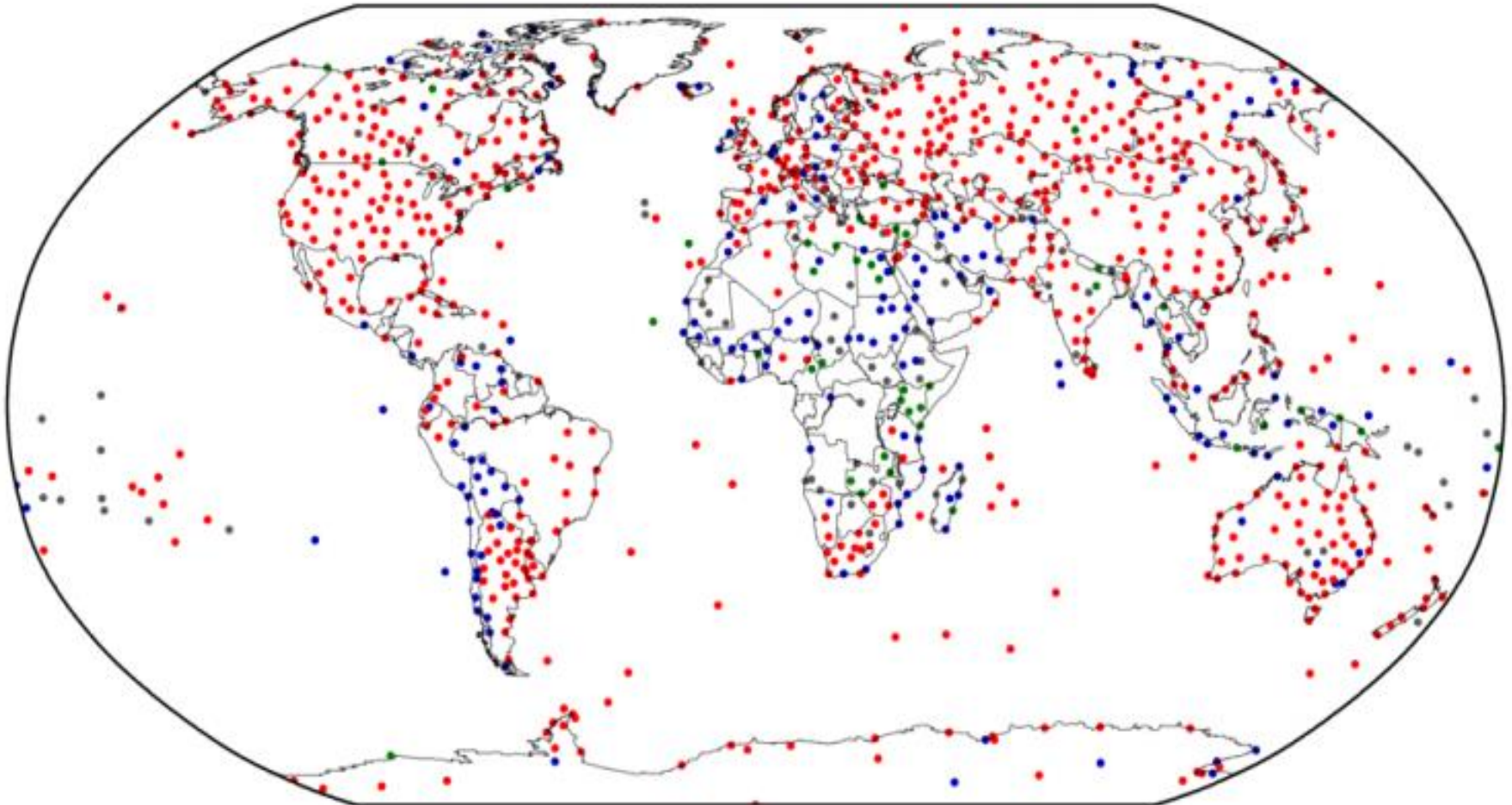
GCOS Cooperation Mechanism (GCM)

- The GCM was established to identify and make the most effective use of resources available for improving climate observing systems in developing countries, particularly to enable them to collect, exchange, and utilize data on a continuing basis in pursuance of the UNFCCC.

GSN – GUAN - BSRN



GSN, No. months reporting (201501 to 201512), RED=12, BLUE=6 to 11, GREEN=1 to 5, GRAY=0



GCM projects (2016 +)



Key points for BSRN

Operations Manual & Instrument Specification

BSRN Operations Manual

WMO CIMO Guide

The image shows a page from the WMO CIMO Guide, titled "MINIMUM REQUIREMENTS OF MEASUREMENT UNCERTAINTY FOR INSTRUMENTS AS A COMPONENT OF THE BSRN NETWORK". It includes a table of target measurement uncertainties and a list of instrument requirements.

Quantity	BSRN Target Measurement Uncertainty		
	1992	1997 Target	2004 Target
Basic BSRN Station			
Direct Solar Radiation			
Global Solar Radiation	10 W/m ²	2% or 2 W/m ²	0.5% or 1.5 W/m ²
Global Solar Infrared Radiation	15 W/m ²	2% or 1.5 W/m ²	2% or 1.5 W/m ²
Expanded Global Radiation	30 W/m ²	5% or 1.5 W/m ²	2% or 1.5 W/m ²
Diffused Solar Radiation	15 W/m ²	5% or 1.5 W/m ²	2% or 1.5 W/m ²
Scattering Infrared Radiation	30 W/m ²	5%	5%

1. INSTRUMENT REQUIREMENTS
 (a) - TWO (02) UNITS OF PRECISION PYRANOMETERS and
 (b) - ONE (01) UNIT OF PYRANOMETER FOR DIFFUSE RADIATION - SPECIFICATIONS:
 ISO class: 9060 (Secondary Standard) - Using CIMO guide High Quality Spec:
 1.1 Response Time (95 per cent response): ≤ 1.5 s
 1.2 Zero Offset: ≤ 7 W/m² (response to 200 W/m² net thermal radiation (ventilated)
 1.3 Zero Offset: ≤ 2 W/m² (response to 5 W/m² change in ambient temperature)
 1.4 Stability (change per year: percentage of full scale): ≤ 0.8
 1.5 Directional Response: ≤ 10 W/m²
 1.6 Temperature Response: $\leq 2\%$
 1.7 Non-Linearity: $\leq 0.5\%$
 1.8 Spectral Selectivity: $\leq 2\%$
 1.9 Tilt Response: $\leq 0.5\%$
 1.10 Cable length: 10m (minimum)
 1.11 Target measurement uncertainty (global solar radiation): $\leq 2\%$ (or 5 W/m²)
 1.12 Target measurement uncertainty (diffuse solar radiation): $\leq 4\%$ (or 5 W/m²)
 1.13 Field of View: 2 π sr
 1.14 The pyranometer body temperature should be continually monitored, plus

2016 GCOS Implementation Plan

Date	Milestone
2013-2015	Preparatory work in 2013 – 2015 (GCOS panel meetings and three workshops with GFCS/UNFCCC/IPCC; Publication of Status Report)
15 November 2015	Draft Table of Contents submitted to COP21
2-4 February 2016	First Writing Team meeting: Detailed outline & writing assignments
2-4 March 2016	Open GCOS Conference: collect community views
April 2016	GCOS panel meetings finalize their draft chapters
24-26 May 2016	2nd Writing Team meeting: completes draft
June 2016	Limited review (including WMO, Technical Commissions and RAs)
July 2016	Public review (6 weeks)
September 2016	Final version approved by GCOS SC-24
October 2016	Final plan submitted to COP22



THANKYOU

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