

WCRP Grand Challenge on Near-Term Climate Prediction

A.A. Scaife and Y. Kushnir (CO-LEADS),
R. Arritt (CORDEX), G. Balsamo (GEWEX), G. Boer (DCPP), F. Doblas-Reyes
(WMAC,WGSIP,DCPP,DCVP), E. Hawkins (CLIVAR),
M. Kimoto (JSC,DCPP,DCVP), A. Kumar (S2S,ET-OPSL), D. Matei,
K. Matthes (SPARC), W. Müller (DCPP), T. O’Kane,
J. Perlwitz (SPARC,WMAC), S. Power (DCVP), M. Raphael (PCPI),
A. Shimpo (CCL), D. Smith (DCPP), B. Wu

WMO Liaisons:

R.K. Kolli (WMO/WCAS), F. Lucio (WMO/GFCS), A. Harou (WMO/DPFS),
M. Rixen (WCRP)

WCRP Secretariat support:

M. Tuma and M. Sparrow

Aims and Objectives

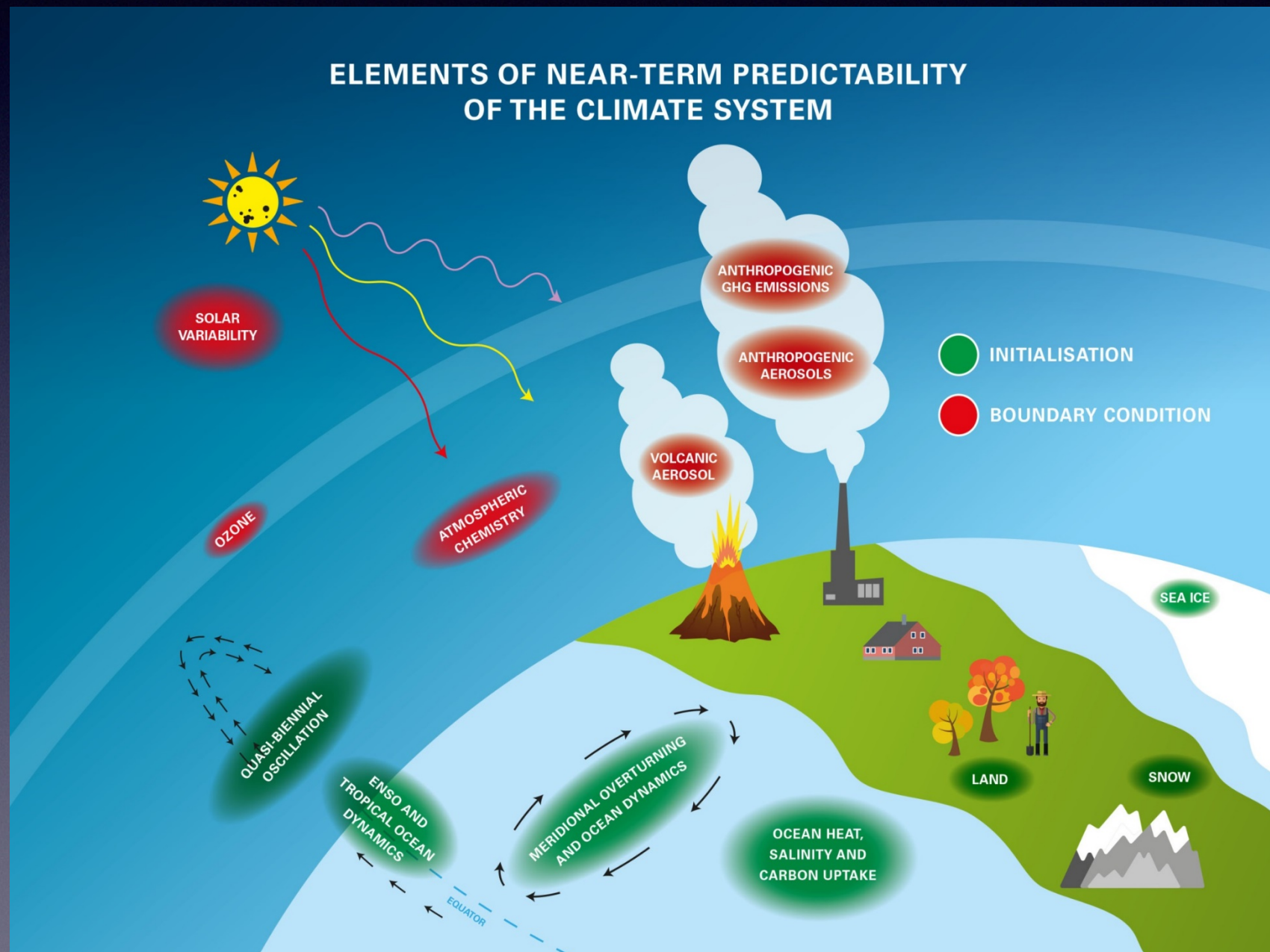
- Bridge the gap between seasonal forecasting and IPCC-style century-scale climate projections
- WCRP-organized team teleconferences every ~6 weeks to discuss pertinent issues & progress
- Defined and agreed objectives for this Grand Challenge:
 - ***Promote & provide new knowledge of climate mechanisms and climate forecasting systems***
 - ***Produce standards, verification methods and guidance for near-term predictions***
 - ***Promote & support the establishment of operational decadal predictions under WMO***
 - ***Initiate & issue real-time “Global Annual to Decadal Climate Update” each year***

Successes and planned activities

- White paper ***re-written for Nature Climate Change*** and about to be submitted
- Facilitating the collection of ***real-time decadal predictions***: a ***WMO Lead Centre for Annual-to-Decadal Climate Prediction (LC-ADCP)*** and ***Global Producing Centres for Annual-to-Decadal Climate Predictions (GPC-ADCP)*** are now endorsed and criteria included in the GDPFS manual, applications for GPC status can now be considered.
- Established the content of a “***Global Annual to Decadal Climate Update***” with input from the CBS/CCI Expert Team and GFCS (Global Framework for Climate Services)
- GC-NTCP’s offers to UNFCCC Global Stocktake process and input to the ***IPCC 1.5° special report***...

GC Paper

A draft **white paper**, led by co-chairs (Kushnir et al) with active contributions from the 17 members of the international team – to be submitted shortly outlining GC aims



Establishment of WMO recognised centres for Annual to Decadal Predictions

WMO Lead Centre for Annual-to-Decadal Climate Prediction [Edit content](#)

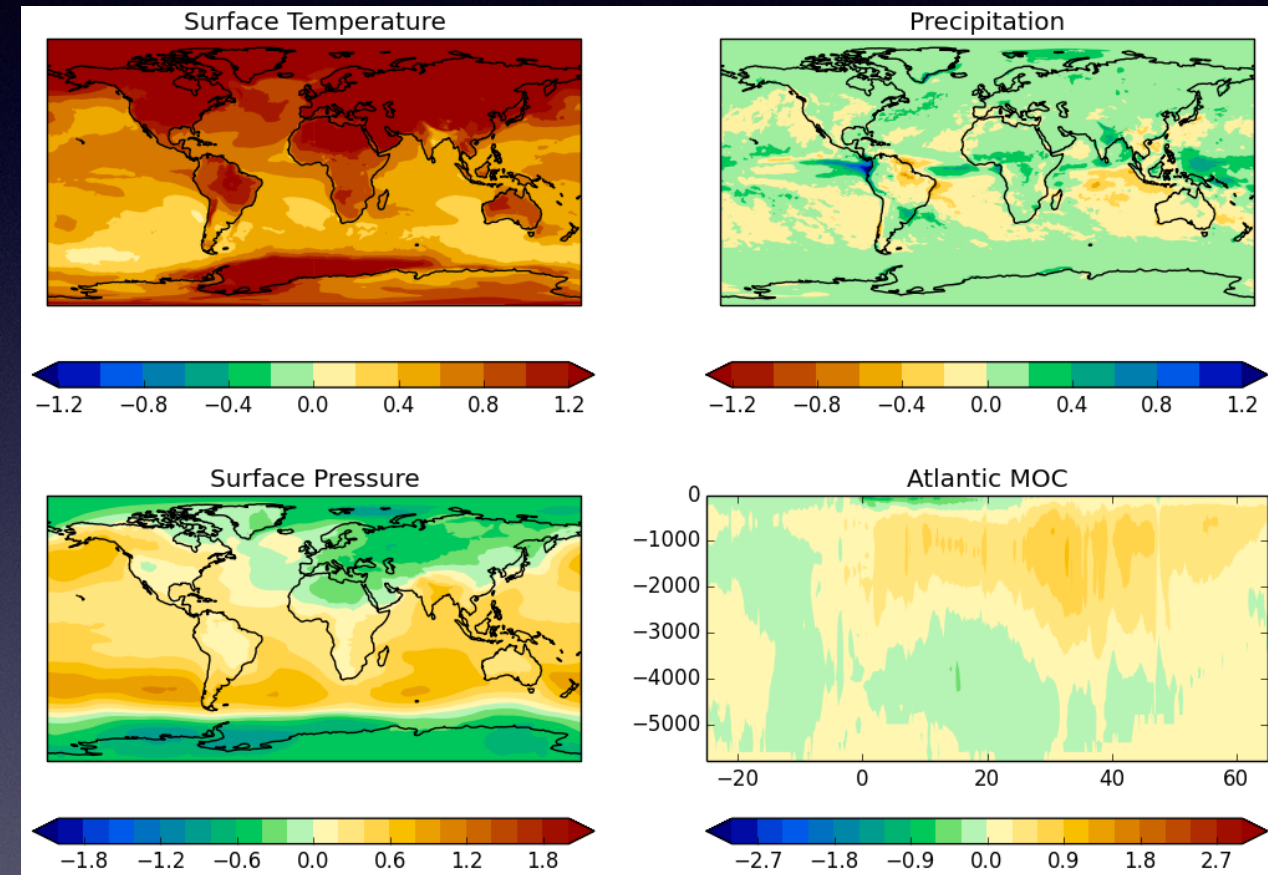
The Met Office is a designated Lead Centre for annual-to-decadal climate prediction. The Met Office collects and provides hindcasts, forecasts and verification data from a number contributing centres worldwide.



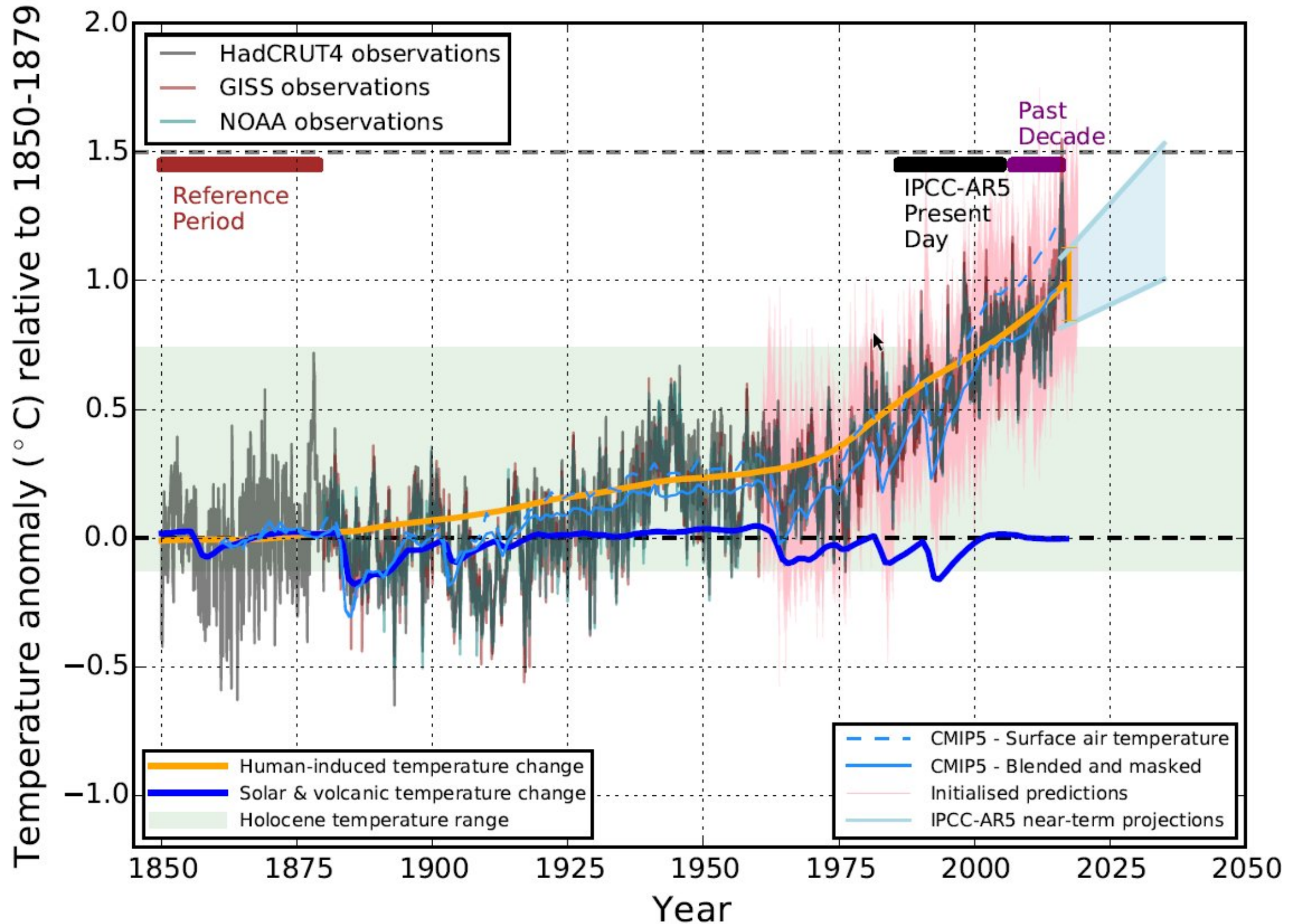
The contributing prediction systems [are](#) from a number of different prediction centres worldwide. The prediction from each institute as anomaly from 1971-2000 is shown below, alongside an average of all the models. When possible, observations for the period of the forecast are also shown. Please use the drop-down menus below to explore the data.

Content of a “Global Annual to Decadal Climate Update”

- 1-page executive summary
- Current observations
- Indices: global SAT, AMV, AMOC, PDV, etc.
- Maps: Multi-model mean SAT, precip, SLP, etc.
Year 1, 1-5, ...
- Skill: verification of previous forecasts



Exceeding 1.5°C



Partners for GC implementation



- 19 international members of the group; CLIVAR and SPARC core projects, with membership from CLIC and GEWEX, as well as CORDEX
- Expert team members/liaisons from the CBS/CCI Expert Team (IPET-OPSLs), GFCS and other relevant WMO departments.

Overarching Scientific Objectives

v.5.2

O1. Understanding the climate system

Identify and constrain key processes that critically determine the reservoirs and flows of energy and water – and carbon, aerosols, salt, and other constituents – within and between the components of the Earth System.

O2. Determining predictability on weekly to decadal timescales

Quantify the uncertainties and predictabilities inherent in weekly to decadal time scales of the climate system.

O3. Determining projectability on decadal to centennial timescales

Quantify the sensitivities and emergent constraints inherent in the changing climate system.

O4. Connecting climate science to policy and decision making

Improve the generation and use of decision relevant climate information and knowledge about the evolving Earth system, across space and time scales, to natural variability and climate change.