

3RD GCOS JOINT PANELS MEETING, ECMWF, BONN, GERMANY, 26-30 JUNE 2023

Cross Panel Group "Earth cycles"

Session 1: Tuesday 27 June - 09:00-10:30

Session 2: Thursday 29 June - 11:00-13:00

Lead(s): Experts participating in the WCRP/GCOS workshop (Paris, 22-23 June 2023)

Chair(s): Sabrina Speich

Secretariat Support: Caterina Tassone

Background

GCOS IP Action B10: Identify gaps in the climate observing system to monitor the global energy, water and carbon cycles. The activities identified in this actions are:

1. Continue to periodically review observations of the Earth's energy, water, carbon cycles to identify gaps and areas of high uncertainty.
2. Review consistency of the underlying observations.
3. Develop plans to address the gaps identified in (1), if feasible

Background Material:

In 2018 GCOS started assessments for these cycles, identifying possible gaps and inconsistencies in existing observation systems. Three papers were published:

- [Heat stored in the Earth system 1960–2020: where does the energy go?](#)
- [Closing the Water Cycle from Observations across Scales](#)
- [How Well Do We Understand the Land-Ocean-Atmosphere Carbon Cycle?](#)

WCRP and GCOS have organized a workshop on Earth's energy, water and carbon cycles and budgets (Paris on the 22-23rd June). The overall aim of the workshop is to assess the current state of knowledge of the Earth's key cycles of water, carbon and energy, both with a view to identifying gaps in our understanding and in our observations. The interactions and feedback between the cycles are also going to be addressed.

Expected Outcomes

In Bonn: Identify gaps that can be addressed and produce a plan on how to move forward (task team with members from 3 panels?). The plan should include the regular assessment and identifying/addressing the gaps.

Longer term: Regular assessment produced; some of the gaps addressed

Running of the session

- Presentation of outcome and actions from the WCRP/GCOS workshop. Depending on this, identify GCOS possible role in addressing these actions.
- There is a set of questions that can be asked for each cycle:
 - Are the observations sufficient to assess the cycle? if yes: how and how often assessment is needed. (activity 1 of Action B10); if no or only partially: is the gap in the capability (technology not sufficiently advanced) or is the gap due to lack of funds, management etc? Which of these gaps would be possible to address and have the biggest impact? Develop plans to address those gaps. (Activity 3 of Action B10).

Prepare report back to plenary (2 slides) showing the results of the discussion against the expected outcomes, and the commitments from the panels, with actions along a timeline and assigned responsibilities.