



GCOS STEERING COMMITTEE

THIRTIETH SESSION

GCOS SC-30, 7–8 December 2022

Virtual Session

Earth's Climate Cycles

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The Steering Committee is asked to decide on the way forward for the work related to the Earth's climate cycles and cooperation with WCRP on this subject.

DRAFT DECISION (4)

The Steering Committee decides that

1. GCOS Secretariat works with WMO/Climate Services to explore the adoption of additional climate indicators, such as the earth energy imbalance or covering new domains (e.g. biosphere).
2. GCOS Secretariat organizes a workshop on Earth Cycles jointly with WCRP and asks Han Dolman, Karina von Schuckmann and Wouter Dorigo to develop the aims and objectives of this workshop from a GCOS perspective.
3. The workshop on Earth Cycles should consider how the current set of Climate Indicators reflect the changing earth cycles and whether any additional indicators are needed.

Summary:

GCOS setup three teams to produce papers that considered how well the three climate cycles of carbon, energy and water could be closed. These papers have been peer-reviewed and published. The gaps and deficiencies identified were considered in the latest GCOS Status Report and Implementation Plan.

In the 2022 GCOS Implementation Plan, Action B10, *Identify gaps in the climate observing system to monitor the global energy, water and carbon cycles*, asks that the cycles work continues with the aim of using the analysis of how well these cycles are observed to guide improvements to the observing system.

In discussion with the GCOS Chair Han Dolman, WCRP has indicated that it would like to hold a joint workshop on the climate cycles with GCOS.

An ad hoc GCOS group, convened by the GCOS chair, was asked to consider implementing GCOS IP action B10 and a potential GCOS/WCRP Joint Workshop. They noted that:

- While it would be difficult to organise a joint workshop at short notice this would be a good opportunity to involve WCRP
- Any joint workshop should have clear goals and a specific GCOS related outcome. The aim of workshop still needs to be developed.
- The workshop should aim to develop a shared perspective on areas of greatest uncertainty in understanding and monitoring of climate cycles and highlight actions for improvement. A small group including Han Dolman, Karina von Schuckmann and Wouter Dorigo, volunteered to develop the aim of the workshop.
- The ad hoc group should develop plans for a formal task team to:
 - Ensure that the GCOS IP Action B10 is implemented,
 - highlight areas where observations should be improved,
 - Develop a vision of how it links into UNFCCC Global Stocktake, the IPCC AR7, and its relationship with WCRP.
 - Aim to update the 3 cycles papers.

This decision aims at implementing these ideas.
