30th GCOS Steering Committee

7-8 December 2022

TOPC
Terrestrial Observation Panel for Climate

Thelma Krug, Chair

GCOS • WCRP

TOPC

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2022 Activities

- Transition phase: new TOPC officer started on June
- 2022 GCOS-IP: contribution to the IP document, the terrestrial ECVs requirements and the review process
- GATT – GCOS Adaptation Task Team: case study on wild fire
- FAO: first contacts with FAO to re-initiate mutual collaboration on TOPC (FAO, through the GTOS Programme, was a TOPC sponsor)
- GEO: Antonio Bombelli nominated member of the GEO Climate Change Working Group
- GTN-H: meetings to assess the relationships with GTN-H and WMO
- Contribution to the WMO GHG Monitoring Initiative
- TOPC Panel membership renewal (optimization of members' number and expertise)
- TOPC Survey

2022 Activities

Participation in Meetings

- WMO Workshop “The case for a coordinated Global Greenhouse Gas (GHG) Monitoring Infrastructure”, 10-12 May 2022, WMO HQ, Geneva
- IPCC Expert Meeting on Use of Atmospheric Observation Data in Emission Inventories, 5-7 September 2022, WMO HQ, Geneva
- Joint Workshop of CEOS AFOLU Roadmap Team and GCOS-TOPC, 12 September 2022, ESA ESRIN, Frascati, Italy
- GCOS 2nd Climate Observation Conference, 17-19 October 2022, Darmstadt, Germany
- Extraordinary GTN-H Panel Session (10th Panel Session - part II), 20 October 2022, Darmstadt, Germany
- ESA CCI Colocation meeting, 26-27 October 2022, ESA-ESRIN, Frascati, Italy
- …various TOPC online meetings

Future Work

- Strengthen the relationships with GCW for the cryosphere related ECVs
- Consolidate the collaboration with FAO (considering also the GFOI initiative)
- Consolidate the collaboration with GEO, especially in the frame of the Climate Change Working Group
- Strengthen and formalize (when possible) the relationships with the GTNs, the Global Terrestrial Networks
- Clarify the relationships and respective roles between TOPC, GTN-H and WMO
- Finalize the TOPC membership renewal
- Define the TOPC Workplan, aligned with the 2022 GCOS-IP
- 1st new TOPC in presence meeting (jointly with other panels)

Future Work – Relevant GCOS-IP Actions

IP Action	Relevant Activity
A1: Ensure necessary levels of long-term funding support for in situ networks, from observations to data delivery	Undertake an assessment of current levels of funding support for global in situ networks delivering relevant in situ ECV data, including cal/val measurements, and identify those in situ networks with immediate or short-term problems around adequacy and sustainability of funding. Identify entities that can provide support.
A2: Address gaps in satellite observations likely to occur in the near future	Urgent actions are needed to ensure continuity of the following satellite observations: • Altimetry in the polar regions • Gravimetry missions • Biomass measurements • Global scale ice surface elevation
B1: Development of reference networks (in situ and satellite Fiducial Reference Measurement (FRM) programs)	Relevant ECVs: Biomass, Fire, FAPAR and LAI
B9. Improve estimates of latent and sensible heat fluxes and wind stress	Improve and extend in situ measurements needed to estimate surface fluxes, with the objectives of improving accuracy and better defining the uncertainties of those measurements and calculated fluxes.
Action C1 Develop monitoring standards, guidance and best practices for each ECV	Review existing monitoring standards, guidance and best practices for each ECV, ensuring these reflect current state-of-the-art. Maintain a repository of this guidance for ECVs.

Future Work – Relevant GCOS-IP Actions

IP Action	Relevant Activity
C5: ECV-specific satellite data processing method improvements	Generate timely permafrost, land cover change, burnt area, and fire severity/burning efficiency products from high resolution data satellite observations (e.g. Sentinel1/-2 and Landsat). Produce harmonised and validated Above Ground Biomass (AGB) and change datasets from different satellite data streams, for enhancing biomass estimation at global and (sub-national) levels. Ensure that the Bidirectional Reflectance Distribution Function (BRDF) parameters are provided together with surface albedo. Improve consistency of the inter-dependent land products.
D1. Define governance and requirements for Global Climate Data Centres	Draft requirements for the activities of Global Climate Data Centres and identify the relevant internationally agreed standards.
D2. Ensure Global Data Centres exist for all in situ observations of ECVs	Identify ECVs for which adequate global centres do not exist or are insufficiently supported and facilitate and support the creation or improvement of global data centres for these ECVs.
D4: Create a facility to access co-located in situ cal/val observations and satellite data for quality assurance of satellite products	Improve access to co-located satellite and reference quality in situ observations, as well as tools for evaluation purposes. This facility will use data from reference networks and FRM programs for a broad range of ECVs for cal/val of satellite programs
F1: Responding to user needs for higher resolution, near real time data	Improve biomass, land cover, land surface temperature, and fire data with sub-annual observations and improved local detail and quality.
F5 Develop an Integrated Operational Global GHG Monitoring System	Improve and coordinate measurements of relevant ECVs at anthropogenic emissions hotspots (large cities, powerplants) to support emission monitoring and the validation of tropospheric measurements by satellites.

Thank you

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