

Draft TOPC-22 Report

The COVID-19 pandemic resulted in the meeting that was due to be held at the Joint Research Center of the European Commission in Ispra, Italy, 17–19 March 2020 being postponed. In order to discuss most urgent topics (see agenda in Annex 1), two videoconferences took place 19 and 20 March. Other topics have been postponed until a physical meeting is possible again, tentatively during the week 7–11 September 2020.

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1. Welcome

Thelma Krug welcomed all participants and introduced herself as new TOPC chair. She thanked all participants for joining the videoconferences and expressed her regret that it was not possible to get to know each other face-to-face at the moment. She assured the participants that a presential meeting was still planned in order to discuss other topics, for example observations both for adaptation and of adaptation. She further explained that one of her main goals during her chairing of the panel is to bring GCOS and particularly TOPC closer to the IPCC and that she plans a joint session of GCOS and TOPC at the next UNFCCC COP in her other role as IPCC Vice Chair.

Simon Eggleston from the GCOS Secretariat explained that the postponed meeting might take place during the week 7–11 September 2020. Most urgently now would be, however, to start working on the Status Report of the Global Climate Observing System that is due in 2021. He also explained that Anthony Rea was not able to join at the first teleconference but was available to join the second day.

2. WMO and GCOS

(This topic was postponed to the second videoconference on 20/03.)

Anthony Rea, Director of WMO's infrastructure department thanked Thelma for the invitation. He reassured TOPC that WMO is highly committed to strengthen GCOS as a co-sponsored programme since it has been very successful. WMO is committed to the panels as they are, will further collaborate with Copernicus and other external partners, and will support the Climate Observations Conference that is planned for 2021.

GCOS will work in the future closer with the infrastructure commission and he explained that a study group will be implemented to explore a more integrated way of working for GCOS. A new chair for the Steering Committee, which will continue working, will be identified jointly with the other co-sponsors.

The chair thanked Anthony for his clear words and expressed her hope that the reform will bring the expected improvements. Responding to a question, Anthony explained that the study group will consist of a maximum of 20 people with members from the current Steering Committee, the panel chairs, the future Steering Committee chair, but also experts from the community that uses the requirements like from NMHSs. He suggested that TOPC and the panels in general should be involved in the selection process and propose candidates that can be nominated. Anthony offered to work with the GCOS secretariat on this.

3. Status Report

Documents

- [Link to presentation](#)
- [Link to planned Structure of status report](#)
- [Link to information sheets for status report](#)

Simon Eggleston presented the current plans for the status report and the expected input from TOPC. ECV Stewards are asked to fill out information sheets for ECVs until June 2020 in order to allow for an extensive consolidation and review process. The final report is planned to be delivered in July 2021.

During the following discussion it was clarified that the assessments of the observing systems for individual ECV and ECV products will be integrated over all platforms, satellite and in-situ. This means that the assessment is of all the available datasets as a whole not individual datasets or networks. The report should also cover reanalysis and model output, if it is relevant for users. ECV Stewards do not need to ensure that the information sheets are filled out completely homogeneously since the secretariat and a core writing team will later bring all information into the desired format.

Action 1

The TOPC secretariat and the chair will identify and propose candidates for the WMO GCOS Study Group as suggested by Anthony Rea.

4. GCOS Surface Reference Network (GSRN)

Documents

- [Link to presentation](#)
- [Link to GSRN report \(GCOS-226\)](#)

Caterina Tassone presented the status of the planned GCOS Surface Reference Network (GSRN). GCOS and the WMO Integrated Global Observing System (WIGOS) both recommend that networks should be part of a tiered system: reference, baseline and comprehensive networks. The reference tier for upper-air observations is covered by GRUAN (GCOS Reference Upper-Air Network). For the surface observations, an AOPC/TOPC task team was established to work on a potential GCOS global surface reference network (GSRN), that will measure a range of atmospheric (surface) and terrestrial ECVs. The task team produced a report (GCOS-226) that provides a proposal for the establishment of a GCOS Surface Reference Network. This network will provide Improved long-term accuracy, stability and comparability of observations and aims to achieve simultaneous high-quality observations of many ECVs. In the initial phase of implementation, the network will measure the 6 atmospheric ECVs (temperature, precipitation, pressure, wind speed and direction (10 m), relative humidity and surface radiation). TOPC should suggest the initial set of terrestrial ECVs that can be measured at reference standards and to identify existing networks that can start contributing to the GSRN.

During the discussion, TOPC members pointed out that the reference network can learn from existing networks like ICOS, the Copernicus validation network and Fluxnet. It was also mentioned that soil temperature and soil moisture are currently not measured together at many stations and such a network could improve this situation.

Document

- [Link to presentation](#)

Werner Kutsch presented ICOS and other partner networks and concluded that many relevant ECVs are already measured within the network infrastructure of ICOS and its partner networks.

Following a discussion, it was agreed that this information and also Copernicus standards should feed into the task teams work. Werner volunteered to join the task team once they continue their work. In the meantime, TOPC will continue to consolidate on candidate ECV that could be prioritized for GSRN and possible stations to be included in the initial phase of the GSRN. Current candidates for ECVs are soil moisture and soil temperature.

Action 2	TOPC will also ensure adequate representation at the upcoming meetings of the GSRN task team.
Action 3	TOPC will consolidate a priority list of suitable ECV candidates to be added to the GSRN list of variables and clarify if reference quality measurements of these variables can be made. This can be done via the TOPC online forum and will be discussed at a teleconference at the end of April to be prepared by the secretariat.
Action 4	Nadine Gobron and Werner Kutsch will share the discussed information about existing networks and standards with the task team.

5. Biosphere Climate Indicator

Document	<ul style="list-style-type: none"> • Link to presentation of Martin Herold • Link to presentation of Werner Kutsch (last two slides)
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Martin Herold presented some challenges to identify a biosphere indicator that could be added to the GCOS global climate indicators. Suitable candidates could be vegetation phenology with a regional focus, e.g. boreal/temperate regions; the extent and fragmentation of forest ecosystems; carbon storage in terrestrial ecosystems; or a composite index showing extremes/anomalies. During the discussion it became clear, that for the indicators, attribution to climate change is a challenge and that the indicator has to focus on natural systems. Another major challenge is a global representation. It was also mentioned that for some ecosystems, the availability of factor is the main issue for ecosystems: some indicators only make sense in some regions e.g. changes in phenology in boreal and temperate regions but not the tropics respond to climate change. In regard of the carbon storage indicator, it was recognized that it is largely model derived, but could be very useful, as an indicator of mitigation and, possibly, adaptation as well.

Finally, it was decided to create a small team and focus on the feasibility of an indicator for vegetation phenology or carbon storage and fluxes. Martin Herold, Nadine Gobron and Werner Kutsch volunteered for this task and will prepare input for the planned TOPC meeting.

Action 5	Martin Herold, Nadine Gobron and Werner Kutsch will work with the support of the secretariat on a consolidated suggestion for a biosphere indicator based on vegetation phenology, carbon storage and fluxes. This will be presented for discussion during the planned TOPC meeting
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6. Land Use in Coastal Areas

Document | • [Link to presentation \(last two slides\)](#)

Martin Herold presented land use/cover products that could be used to monitor coastal zones. During the discussion it became clear that further information from the ocean community is necessary to continue the work. It was decided to establish a discussion with relevant experts from the ocean community. Martin Herold and Nadine Gobron will be involved. It was also discussed that a high-resolution coastal land cover product could be used to monitor coastal adaptation and therefore the task team on observations for and of adaptation should be included in the discussion.

Action 6

Martin Herold and Nadine Gobron supported by the secretariat will discuss with experts from the ocean community their specific needs of data in coastal areas. Nigel Tapper as chair of the adaptation task team will be included in the discussion as well.

7. Global Terrestrial Networks

Document | • [Link to presentation](#)

Stephan Dietrich presented the Global Terrestrial networks and specifically how their collaboration could be improved. He suggested that the new GTN-H website (<https://www.gtn-h.info/>) could also host information from other GTNs and could be used as a joint platform since all current GTNs are directly related to water. He also invited all GTNs to the GTN-H meetings, so this could be a platform for exchange and coordination as well. He concluded that the awareness for the “trademark” GTN should be raised.

It was agreed that the GTNs should be part of the network section of the new GCOS status report and in order to find ways for an improved collaboration, a videoconference for all GTNs and the TOPC chair will be arranged by the secretariat.

During the discussion, Philippe Schoeneich reported that the website provider of the GTN-P database went bankrupt in March and that the continuation of the database is currently endangered. The website is still mirrored by the Alfred Wegener Institute in Potsdam but new data cannot be currently added. The steering committee of GTN-P will meet the following week to discuss the issue and find a solution. Hiroyuki Enomoto offered to discuss the issue also during the arctic summit week, hosted by Iceland, since the permafrost community is meeting there as well. TOPC and specifically GTN-H offered to help to find a solution, since the German government might be interested in helping in the medium- or even long-term to ensure the continuation of the Permafrost database.

For soil moisture, the situation is currently unclear. The funding for ESA to host the soil moisture network at the Technical university Vienna will soon end and Germany showed interest in hosting and establishing a Global Terrestrial Network for Soil Moisture.

Action 7 | The secretariat will arrange a videoconference with the GTNs in order to improve

	the collaboration
Action 8	Philippe Schoeneich will update TOPC on the outcome of the GTN-P steering committee meeting and how TOPC or GTN-H could contribute in finding a solution for the database

8. Total Water Storage Change

Document | • [Link to presentation](#)

Andreas Güntner presented an overview of the observation product “Total Water Storage Change” (TWS), which includes groundwater, soil moisture, lakes, river storage, ice and snow as well as reservoirs. It is used to monitor hydrological changes on the continents and to close the terrestrial water balance. TWS is monitored via the Gravity Recovery and Climate Experiment (GRACE) satellite constellation and, since 2018, by the GRACE Follow-on.

During the discussion TOPC expressed strong interest and it was decided that Andreas Güntner will prepare a more detailed summary of the current status of the observations of TWS to be sure it fulfils the ECV conditions of being relevant, feasible and cost effective. If it is endorsed at the next TOPC meeting, it will be suggested to the GCOS SC as new ECV.

Action 9	The secretariat will support Andreas Güntner and his community in preparing a document for the planned TOPC meeting.
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9. ECV Requirements Public Consultation

Document | • [Link to statistical overview](#)
 • [Link to preliminary statistic per ECV product](#)
 • [Link to document for introducing Rock Glacier Kinematics](#)

Valentin Aich presented an overview of the contributions to the public consultation on the ECV Requirements. 98 of a total of 262 posts have been submitted for terrestrial ECP products, and 1589 pages visits. It was agreed that the secretariat will share all comments with the relevant ECV Stewards once the contributions for the status report are collected in June 2020.

Philippe Schoeneich shortly introduced a document from the International Permafrost Association (IPA) Action Group on Rock Glaciers, that propose Rock Glacier Kinematics as new ECV product for the ECV Permafrost. It was agreed to discuss this during the next TOPC meeting. There are still open questions which the secretariat will discuss with Philippe Schoeneich.

Action 10	The secretariat will clarify open questions with Philippe Schoeneich regarding the requirements for permafrost products.
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10.Closing

Thelma Krug thanked all participants for participating in both videoconferences. She expressed her hope that the next meeting will be face to face but was also happy that the two videoconferences were so constructive.

Annex 1: TOPC -22 Agenda of Videoconferences

Telecon 19 March 2020 10:00 UTC (11:00 Geneva time)

- 1) Welcome – Thelma Krug (Chair)
 – Simon Eggleston (Secretariat)
- 2) WMO and GCOS – Anthony Rea (Director, Infrastructure
 Department)
- 3) Status Report
 Presentation and discussion of GCOS's plans and next steps, and allocation of tasks.
 - a. Presentation – Simon Eggleston
 - b. Discussion – Thelma Krug, All
 - c. Allocation of responsibilities
- 4) GCOS Surface Reference Network – Caterina Tassone
 Explanation and discussion on how should TOPC be involved?

Telecon 20 March 2020 10:00 UTC (11:00 Geneva time) REVISED

- 1) WMO and GCOS – Anthony Rea (Director, Infrastructure
 Department)
- 2) GCOS Surface Reference Network – continued; Werner Kutsch
- 3) Biosphere Indicator – Martin Herold
 Can an indicator (similar to the other physical indicators) be developed and what are the
 possibilities?
- 4) Land Use in Coastal Areas – Martin Herold
 Following a request from the OOCF to do more in the coastal zone, can we monitor changes
 to the coastline and coastal land use?
- 5) Global Terrestrial Networks – Stephan Dietrich

How can the collaboration of the Global Terrestrial Networks be improved?

- 6) Total Water Storage Change – Andreas Güntner, Claudia Ruz Vargas

Should this be a new ECV or Climate Indicator?

- 7) ECV Requirements Public Consultation – Valentin Aich, Philippe Schoeneich
 Overview on participation, questions regarding Permafrost

Postponed meeting (possibly in week of September 7-11)

These are issues where face-to-face discussions will be beneficial

- 1) Reports from the networks.
- 2) Review of the IP actions
- 3) Discussions about the outcomes of the consultation on ECV requirements
- 4) Adaptation: report and next steps
- 5) Status Report

Annex 2: List of Participants

Thursday, 19/03

1. Thelma Krug (chair)
2. Alice Andral
3. Andreas Güntner
4. Claudia Ruz Vargas
5. Darren Ghent
6. Emilio Chuvieco
7. Hiroyuki Enomoto
8. Huilin Li
9. Michel Rixen
10. Nadine Gobron
11. Nigel Tapper
12. Philippe Schoeneich
13. Stephan Dietrich
14. Ulrich Looser
15. Wolfgang Wagner
16. Werner Kutsch
17. Caterina Tassone (secretariat)
18. Simon Eggleston (secretariat)
19. Valentin Aich (secretariat)

Friday, 20/03

- Thelma Krug (chair)
- Alice Andral
- Andreas Güntner
- Anthony Rea
- Claudia Ruz Vargas
- Martin Herold
- Hiroyuki Enomoto
- Hulin Li
- Michel Rixen
- Nadine Gobron
- Nigel Tapper
- Philippe Schoeneich
- Stephan Dietrich
- Ulrich Looser
- Werner Kutsch
- Wouter Dorigo
- Caterina Tassone (secretariat)
- Simon Eggleston (secretariat)
- Valentin Aich (secretariat)

Annex 3: Actions

Action 1	The TOPC secretariat and the chair will identify and propose candidates for the WMO GCOS Study Group as suggested by Anthony Rea.	Secretariat, Thelma Krug
Action 2	TOPC will also ensure adequate representation at the upcoming meetings of the GSRN task team.	Secretariat, All
Action 3	TOPC will consolidate a priority list of suitable ECV candidates to be added to the GSRN list of variables and clarify if measurements of these variables can be made on a reference level. This can be done via the TOPC online forum and will be discussed at a teleconference at the end of April to be prepared by the secretariat.	All
Action 4	Nadine Gobron and Werner Kutsch will share the discussed information about existing networks and standards with the GSRN task team.	Nadine Gobron, Werner Kutsch
Action 5	Martin Herold, Nadine Gobron and Werner Kutsch will work with the support of the secretariat on a consolidated suggestion for a biosphere indicator based on vegetation phenology and carbon storage/fluxes. This will be presented and decided during the planned TOPC meeting.	Secretariat, Martin Herold, Nadine Gobron, Werner Kutsch
Action 6	The secretariat will bring Martin Herold and Nadine Gobron with relevant experts from the ocean community in contact in order to discuss specific needs. Nigel Tapper as chair of the adaptation task team will be included in the discussion as well.	Secretariat, Martin Herold, Nadine Gobron, Nigel Tapper
Action 7	The secretariat will arrange a videoconference for all GTNs in order to improve the collaboration.	Secretariat, GTNs
Action 8	Philippe Schoeneich will update TOPC on the outcome of the GTN-P steering committee meeting and how TOPC or GTN-H could contribute in finding a solution for the database .	Philippe Schoeneich, GTN- H
Action 9	The secretariat will support Andreas Güntner and his community in preparing a document for the planned TOPC meeting.	Andreas Güntner, Secretariat
Action 10	The secretariat will clarify open questions with Philippe Schoeneich regarding the requirements for permafrost products.	Philippe Schoeneich, Secretariat