

GCOS Status Report 2021

GCOS Secretariat



**GLOBAL CLIMATE
OBSERVING SYSTEM**

KEEPING WATCH OVER OUR CLIMATE



WMO



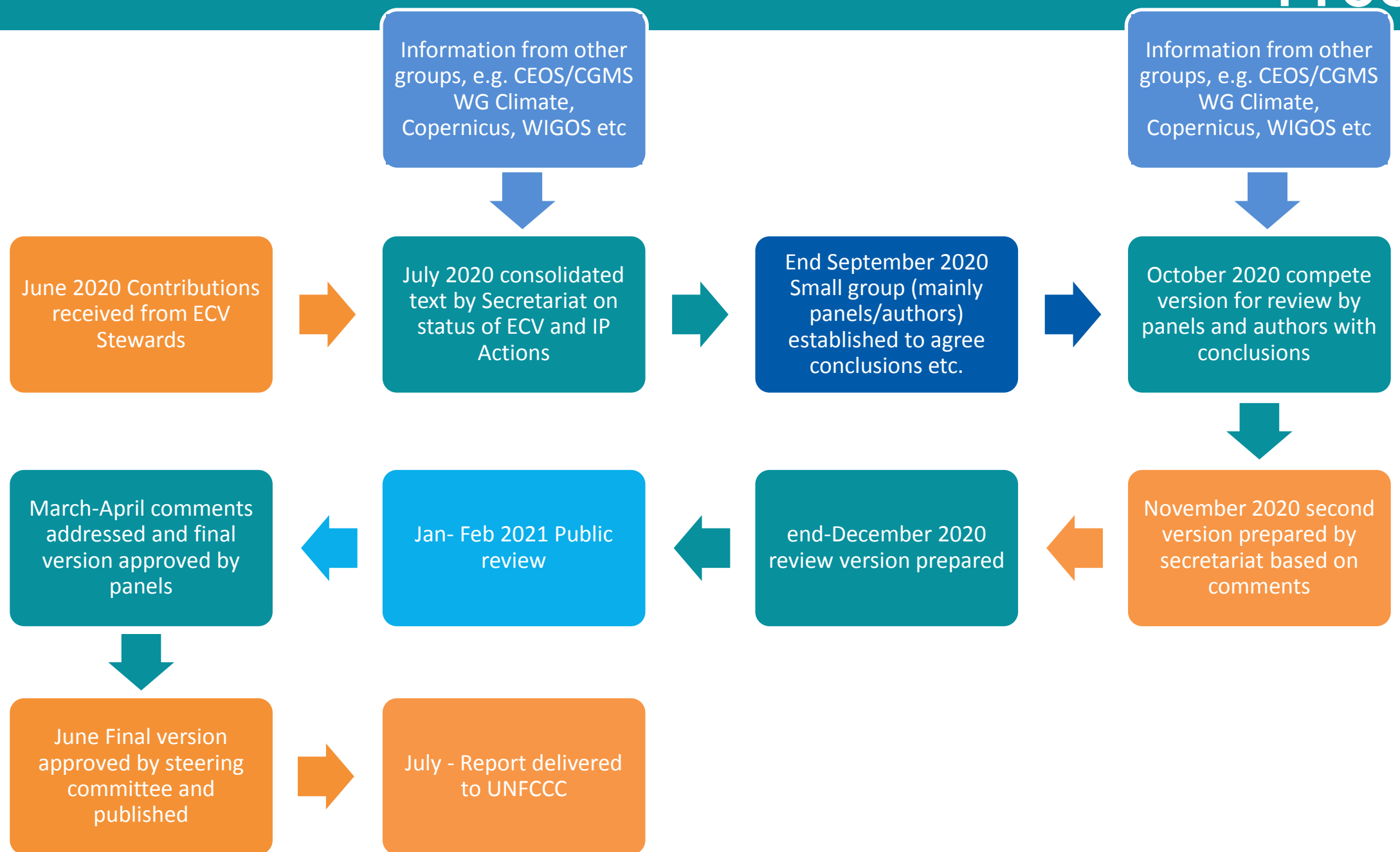
IOC

International
Science Council



- Timing constrained by need to report as part of the UNFCCC Global Stocktake in 2023 i.e.
 - Status Report 2021
 - Update to Implementation Plan and ECV Requirements in 2022
- These reports will:
 - Be much shorter more concise documents
 - Be based on existing work by ECV Stewards and IP Action Rapporteurs
 - With secretariat combining contributions and coordinating reviews (internal and public)
- Approach:
 - Ask ECV Stewards to complete data sheets (later in presentation)
 - Simultaneously, agree report outline with Panel Co-Chairs
 - Ask outside groups for inputs as well e.g. WGClimate, Copernicus, WIGOS etc.
 - Small group from panels and users to compile and agree conclusions and assessments
 - Two reviews: by panels and by public
 - Approval by panels in 2021 and final approval in mid-2021

Process



FOREWORD

EXECUTIVE SUMMARY 2

1. INTRODUCTION

2. STATUS OF THE GCOS ESSENTIAL CLIMATE VARIABLES

2.1. Status of ECV

2.1.1. Atmospheric

2.1.2. Ocean ECV

2.1.3. Terrestrial ECV

3. STATUS OF THE OBSERVING NETWORKS

3.1. Satellite Observations

3.2. GCOS Networks

4. STATUS OF THE IMPLEMENTATION OF ACTIONS FROM THE 2016 IMPLEMENTATION PLAN

5. OBSERVATIONS OF AND FOR ADAPTATION, AND EXTREMES

6. OBSERVATIONS OF THE EARTH SYSTEM CLIMATE CYCLES

7. CONCLUSIONS (structure tbc)

6.1. Principal Findings

Annexes: Glossary, Contributors and Reviewers of this report

Assessment of Status of Observations of ECV

- *Adequacy of the Observing System* and *Data Stewardship* will be addressed
- For each
 - rating 5-step rating from *very good* to *poor*.
 - a short (>120 character reason/summary)
- A longer discussion should be given in the text about the ECV (up to one page)

Adequacy of the Observational System

- The ability of the observational system to produce adequate datasets for users: Does the observation system produce adequate datasets that meet the GCOS requirements?
 - *Very Good*: Meets requirements.
 - *Good*: Generally meets requirements, provides reliable global trends.
 - *Medium*: Does not meet requirements: while observations are useful and reliable from a user's perspective, they have significant issues at a regional level.
 - *Low*: Can only produce datasets with limited reliability from a user's perspective at global and regional levels.
 - *Poor*: Do not meet requirements and does not provide reliable trends.

- Covers all aspects of data stewardship including availability, discoverability and archiving: Is the data freely available, discoverable, accessible with QA/QC and adequate metadata?
 - *Very Good*: Data available worldwide, with high standards of data stewardship
 - *Good*: Data available but not meeting the highest standards of data stewardship.
 - *Medium*: Most regions have available data but there may be stewardship issues, however the data are useful and reliable from a user's perspective
 - *Low*: Some data is available but of limited utility
 - *Poor*: Useful data is not available at a global or regional level.

Table showing status of Observations of ECV

| ECV | | Adequacy of the Observational System (the ability of the observational system to produce adequate datasets for users). | Availability and Stewardship (availability, discoverability and stewardship) |
|----------------------|--------------------|--|--|
| Temperature | | Yes | Yes |
| Precipitation | | High Quality | Gaps |
| ... | | ... | ... |
| River discharge | | High Quality | Much data is not exchanged |
| Above-ground Biomass | | Not accurate enough - new satellite missions underway to address this. This is some text and a | Global coverage from satellites |
| Lakes | Lake colour | Under Development | Under Development |
| | All other products | Measurements of good quality | Not all data exchanged |

Assessment of status of Actions in the last IP

- A 5-step classifications have been proposed assessing progress on actions:
 1. Complete.
 2. Progress on track.
 3. Underway with significant progress
 4. Started but little progress
 5. Little or no progress
- Is a class for actions that are now redundant/superseded needed?

Table showing status Actions in the last IP

| Action | | Comment |
|--------|---|---|
| G1 | Guidance and best practice for adaptation observations | Task Team on Observations for Adaptation convened and reported to Steering Committee. Work continues. |
| G2 | Specification of high-resolution data | Depends on outcome of adaptation task team (G1). |
| G3 | Development of indicators of climate change | Done. Used in WMO Statement on Climate Change |
| G4 | Indicators for Adaptation and Risk | Depends on outcome of adaptation task team (G1). |
| G5 | Explore how ECV data can contribute to: a) The Ramsar Convention; b) the Sendai Framework for Disaster Risk Reduction; c) other MEAs. | Pending outcome of adaptation related work (G1) |
| G6 | Assisting Developing Countries to maintain or renovate climate observation systems and to improve climate observations networks | Done. Work limited by available funds. |
| G7 | GCOS Coordinator | Not all countries identify a GCOS Coordinator |
| G8 | Regional Workshops | Done - one workshop annually. Work limited by available funds. Planning on continuing annually |
| G9 | Communications strategy | Done but implementation pending WMO reorganisation |
| G10 | Maintain ECV Requirements | Underway - an on-going activity |
| G11 | Review of CDR availability | Available via ECV Inventory form EUMETSAT |
| G12 | Gap-analysis of CDR | Underway - an on-going activity |
| G13 | Review of ECV observation networks | Underway - an on-going activity |
| G14 | Maintain and Improve Coordination | Underway - an on-going activity |

Data table for ECV Stewards

| Item | | Status |
|--|-------------|--------|
| ECV Name | | |
| ECV Products covered by this sheet (group as much as possible) | | |
| Adequacy of the Observational System Assessment | Class (1-5) | |
| | short text | |
| Availability and Stewardship Assessment | Class (1-5) | |
| | short text | |
| Networks | | |
| Satellites | | |
| Models, Reanalysis etc. | | |
| Extremes | | |
| Adaptation | | |
| Discussion One-page (max) | | |
| Other information (e.g. Networks, Satellites, reanalysis, models etc.) | | |

Instructions

- Where possible, group ECV Products together in order to minimise the number of sheets to be completed
- In general, ECV are global products and the coverage should be global, or wherever applicable
- Where the product delivered to the is the output of a model or reanalysis the assessment should consider if the observations are sufficient to support accurate outputs from these models or reanalysis.
- Add text on the networks and satellites below if additional information is needed
- Data collected by the ECV should provide most of the information needed.
- Both numeric assessments should be accompanied by a short (max 90 character) description.
- The longer text “Description” is important as it will provide the justification for the assessment of the ECV above. This will be published but may not be included in a short version of the report. Highlighting issues, gaps and deficiencies. Note if there are some applications where the available observations are inadequate.
- Extremes - Highlight if the observations are adequate to capture extreme events, if there are an issue for this ECV
- Adaptation - Identify if the ECV can be used to support or monitor adaptation, or any improvements needed
- “Resolution” means the resolution of data needed by users. In the existing ECV requirements the resolution is not always specified in this way (e.g. Surface Temperature is given as “site”) so expert judgement is needed to determine if the resolution is adequate (e.g. for surface temperature the specifications of GBON provide a guide).

Thank you



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