Climate Working Group – developments since ITSC-24

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Climate Working Group: Scope / Objectives

Continue to improve the management, integrity, quantity, quality and collaboration of climate products:

- Identify and track issues (within domain) requiring escalation through CGMS and/or agencies.
- Act as forum for exchange
- Identify key area for future R&D
- Identify areas which would benefit from collaboration
- Foster best practice in development and stewardship of climate relevant datasets
- Act as a focal point for supporting climate relevant instrument requirements / specifications

Interim Climate WG meeting

- Took place on 25 June 2024 with 11 participants

- Update on open actions and recommendations from ITSC-24 and earlier meetings, status updates provided by WG team
- No (major) new topics discussed during meeting

- Following slides show update on status of actions since ITSC-24

Status of actions since last meeting (ITSC-24)

Global Observing System design

Action Climate-1 (ITSC-22) on Heikki Pohjola: Provide information on the status of information about FCDRs in OSCAR to the Climate WG. This information will also be added to the Climate WG webpage.

Status at ITSC-25: ongoing

Development work related to OSCAR/Space continues. The Joint Working Group Climate has been involved. The inclusion of information on FCDRs in OSCAR will be one the upcoming developments.

The respective information will be added to the Climate WG webpage

Status of actions since last meeting (ITSC-24)

Impact on reanalysis

Action Climate-1 (ITSC-23) on Bill Bell: Bill Bell to report at the next meeting (Climate WG meeting at ITSC-24) about the plans at ECMWF and progress to-date concerning impact studies on losing different satellite sensors for assimilation in a reanalysis

Status at ITSC-24: closed

Bill has given a presentation in the Climate WG meeting, covering the rationale for data denial experiments at ECMWF to establish the mean state uncertainties in the ERA6 reanalysis, and to identify high quality sensors which could, in principle, be withheld from the reanalysis to validate the estimated uncertainties.

New Action at ITSC-24 (CWG-ITSC24-1) on Bill Bell: To make the presentation on the preparations for ERA6 available on the webpage (either Climate WG subpage or main conference page).

Status at ITSC-25: ongoing

Status of actions since last meeting (ITSC-24)

Architecture for climate monitoring from space

Foster the implementation of the architecture for climate monitoring from space by strengthening the analysis of use cases for climate data records to increase usage in climate services and science

Recommendation Climate-1 to meteorological satellite agencies and other providers of CDRs: To provide updates to CWG / CGMS on the status of their current activities relating to user uptake and impacts of CDRs. This type of activities is seen as important for uptake of the products by users and it is recommended to consider development of similar activities to the above mentioned in case there are no such activities yet.

Input from Interim Meeting:

- EUMETSAT reprocessed data to be used in ERA6
- Cheng-Zhi Zhou (NOAA) described a new version of mean-layer temperature datasets from MW observations & invited feedback from users; also a recent publication on stratospheric trends in temperature & stratospheric temperature trends from AIRS. -> Bill Bell to contact Cheng-Zhi on possible comparison of trends with those from ERA5

Status of actions since last meeting (ITSC-24)

Continuity of passive MW imager observations

Recommendation Climate-2 to space agencies: To note the link between (on the one hand) a tendency to small satellite technology, potentially entailing compromised calibration capabilities and (on the other hand the scientific case for independent on-orbit calibration missions, such as CLARREO.

Input from Interim Meeting:

- Absolute calibration is key for climate applications & is an important long-term goal and aspiration.
- Group discussed idea of having one very good calibration source and cross-calibrating everything else relative to it.
- Calibration for e.g. IASI and CriS are excellent for climate applications (close to 0.1 K), more problems at other frequencies; group noted lack of formal climate missions.
- Group sees lack of big vision for stability/accuracy in LEO in US
- Small sat: calibration accuracy & stability might be weaker than for larger operational LEO missions

Status of actions since last meeting (ITSC-24)

Role of GSICS in ensuring quality of long-term satellite records for CDRs

Recommendation Climate-3 to GSICS: Extend the calibration and harmonisation activities to historic sensors to support climate applications, including CDR / ECV production and reanalysis

Input from Interim Meeting:

- Cheng-Zhi Zhou is member of MW sub-Group: MW sub group working on it, most work concentrates on current sensors, but some members also looking at historic sensors
- Martin Burgdorf reported that work is ongoing to extend calibration activities to earlier MW sensors (AMSU-B, ATMS at 183 GHz,…) with the moon as target as part of GSICS, method can be extended to small sat as well -> *provided material will be presented at Climate WG meeting on Saturday*
- At NASA activities in IR range (AIRS, IASI), absolute calibration is key

Status of actions since last meeting (ITSC-24)

Long term stewardship of climate records

Recommendation Climate-4 to satellite providers to catalogue available data and supporting information for all FCDRs/CDRs and establish infrastructure and procedures to sustain this over decadal timescales, make information available to users

Action Climate-4: establish status and plans for long-term stewardship of L0, FCDRs and CDRs and all relevant metadata and documentation at respective agencies The following group members will provide information on this task:

- **Peng Zhang** for CMA (FY-series)
- **Timo Hanschmann** for EUMETSAT (Meteosat and Metop programmes) ,
- **Joe Taylor** for CrIS in NOAA and identify relevant poc for wider NOAA data records.

Status at ITSC-25: ongoing

Status of actions since last meeting (ITSC-24)

Status update, mainly from Interim Meeting:

EUMETSAT:

- EUMETSAT Meteosat data archive all required information, MFG FCDR released, MSG SEVIRI FCDR processing ongoing,
- access to information often limited by contractual restrictions, users asked to contact EUMETSAT to get access to restricted information

NOAA/NASA:

- No major update from US side, NASA/NOAA joint effort for CrIS, several CDRs available in NCEI

CMA

- Peng Zhang moved jobs (not involved with satellite data anymore), new point of contact for Climate WG: XIAN Di

- Agenda item at upcoming WG meeting: identify risks what is not covered for FCDRs and CDRs