

GRUAN Task Team on Satellites

A Task Team of AOPC Working Group on GRUAN (WG-GRUAN)

Terms of reference (ToR)

November 3, 2020

Background

The GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC) Working Group on the GCOS Reference Upper Air Network (GRUAN) was established in 2006 in recognition of the importance of initiating reference-quality observations of atmospheric column properties, in particular temperature and water vapour, from the surface into the stratosphere to enhance the monitoring and understanding of climate variability and change. A GRUAN Implementation Plan was published in July 2009 covering the period until 2013. At the second Implementation and Coordination Meeting held in Payerne, Switzerland in March 2010 the Working Group, Lead Centre and initial sites agreed to the instigation of a number of task teams.

Initially, satellite related work was covered within the ancillary measurement task team. With the number of satellite products as well as the instruments in orbit increasing, it was decided in September 2019 to create a dedicated task team on satellites. The initial wider focus of the ancillary measurement task team, namely

the definition of protocols, sampling strategies and required metadata for respective suites of ancillary ground and satellite measurements routinely collected and archived at GRUAN sites

was focussed on ground measurements only. The satellite part is taken over and extended within this task team on satellites. This task team will thus continue to closely cooperate with the ancillary measurement task team, but it will also tailor work more towards the use of GRUAN data for satellite instrument calibration and validation, as well as the use of satellite data to improve GRUAN products. This includes closer cooperation with relevant science working groups, such as e.g. the [International Science Working Groups \(ISWG\) under CGMS](#), or the [Global Space-based Inter-Calibration System \(GSICS\) under WMO](#).

The task team on satellites will also evaluate and document the potential of relevant satellite instrumentation as well as long-term data sets that are available. These shall be assessed and compiled utilizing best measurement practices as defined through associated measurement international expert team representation in this group. These assessments will, where applicable, include GRUAN developed metrology standards for uncertainty estimates and their application to improve the usability of satellite records.

Duties

Under the auspices of the WG-GRUAN the task team was established to:

- Interface with other expert teams (such as ISWG under CGMS, NWP centres, GSICS, etc.);
- Evaluate satellite products (including, if available, the uncertainty budget, taking into account GRUAN based metrology standards) and identify missing information where GRUAN products or standards could improve the quality;
- Inventory potential satellite instruments and satellite long term data sets (and interface with other GRUAN-Task Teams if needed);
- Identify and, if applicable, support planned campaigns for the validation of satellite products;

- Support the ancillary measurement task team in their routine collection and display of data from multiple platforms;
- Develop guidance on the type and number of data and associated metadata needed to be stored from the satellite instruments, as needed;
- Draw conclusions on the suitability of found satellite products and advise accordingly the GRUAN Task Team on Sites; and
- Report to WG-GRUAN on all above duties

Reporting and governance

- The task team shall be run by at least one and preferably two co-chairs and they should use as primary points of contact the co-chair of WG-GRUAN and Head of the GRUAN Lead Centre as deemed appropriate;
- The task team co-chairs shall report on a six-monthly basis in February and August to the WG-GRUAN a brief written progress report which will also be posted as part of official documentation relating to GRUAN. These reports will be discussed on a phone conference between WG-GRUAN the Lead Centre and all task teams with representation from at least one co-chair from this task team;
- At least one task team co-chair and potentially additional task team members shall attend, as deemed appropriate and affordable, the annual ICMs to report in person on progress;
- The task team will be expected to respond to all reasonable formal requests for advice from the WG-GRUAN, Lead Centre, other task teams or sites made on an ad-hoc basis in a timely manner. Guidance on what constitutes reasonable can be solicited from WG-GRUAN as required;
- As part of their inventory duty, the task team will be expected to interact with the GRUAN task team on Sites.

Operation

- The task team will largely coordinate by email and teleconference and take advantage of other meetings where a quorum is in attendance to undertake in person meetings. It is expected that teleconferences between all task team members will be undertaken at a minimum 6-monthly frequency;
- Task team chairs will seek funding for dedicated meetings if deemed appropriate;
- The task team will exist until such time as its duties are deemed to have been completed by the WG-GRUAN;
- Task team terms of reference and membership will be revised periodically, coincident with revisions to the WG-GRUAN ToR or if requested by either party, by the task team members in consultation with WG-GRUAN.