

Terms of Reference: Joint CEOS WGCV / GSICS SITSat Task Team

DRAFT

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Background

With the emergence of a number of SI-Traceable Satellite missions (SITSats) the CEOS WGCV has considered the need for a group to coordinate on issues of common interest and to foster mutual benefits. SITSats have great potential to increase the accuracy of climate and other Earth observation records and can also serve as high quality references for both CEOS Agency missions and the commercial sector – including ‘New Space’. Both of these topics are headline priorities for CEOS and the ESA SIT Chair. The WGCV has proposed the establishment of a joint Task Team with the Global Space-based Intercalibration System (GSICS) which will include representatives from agencies operating, developing and utilising these missions, and others as interested, as a means to promote dialogue and coordination.

These Terms of Reference have been written to formalise the purpose, tasks, organisation, membership and reporting mechanism for the Task Team.

Definition

A SITSat is a satellite-based sensor which can provide and verifiably-evidence, in a fully open and transparent manner, all significant contributions to the uncertainty of its measurements, **traceable to the international system of units, SI**, at the location and time from where they are made. In addition, this uncertainty must be at a level that is considered by the community to be of **‘Fiducial reference’** quality, i.e. that for a defined spectral domain/application it can be considered ‘state-of-the-art’ and able to unequivocally serve as a **reference** for similar measurements from other sensors. Typically a SITSat might be expected to have a measurement uncertainty of one half that of its peers.

Note: if used as a reference, the method used to compare with other sensors and its associated uncertainty to SI, should also be fully documented and evidenced.

Purpose of the Joint CEOS WGCV / GSICS SITSat Task Team

The Joint CEOS WGCV / GSICS SITSat Task Team (hereafter referred to as the SITSat Task Team) will work on collaborative activities, discuss future developments, mission coordination, new technologies and spectral domains, interoperability topics, and generally serve as a forum for international coordination on SITSat missions, aiming to build an integrated system approach to their development and utilisation.

The SITSat Task Team will build on the findings of the workshop *“SI-Traceable Space-based Climate Observing System: a CEOS and GSICS Workshop”* hosted by the UK space agency at the National Physical Laboratory in London in September 2019. The goal of the workshop was to assess the benefits and requirements of a space-based climate observing system, summarising current measurement capabilities, climate-based needs, and future implementation plans, together with recommendations in a published [report](#).

Objectives

Specifically, the SITSat Task Team will:

1. Establish clear definitions of what constitutes a SITSat and minimal requirements needed to evidence this status.

2. Serve as a forum for agencies developing/planning SITSat missions to share experiences and knowledge.
3. Discuss collaboration opportunities, joint cal/val activities, campaigns, data sharing, etc.
4. Provide an opportunity for mission coordination, gap analyses, efficient tasking, acquisition planning, etc.
5. Facilitate coordination on technical topics, reporting of uncertainty and traceability information, interoperability, methods of dissemination, etc.
6. Aim for a systems-based approach, rather than having missions being developed and operated in isolation, along the lines of a CEOS Virtual Constellation.

Organisation and Reporting

The SITSat Task Team will be led jointly by the CEOS WGCV and GSICS specifically to ensure optimal exploitation and collaboration opportunities. The joint leads for the SITSat Task Team will provide regular reports to WGCV and GSICS teleconferences and meetings as appropriate.