2022

GSICS status and plans

Presented to CGMS-53 Plenary session, agenda item 5

Coordination Group for Meteorological Satellites

GSICS Global Space-based Inter-Calibration System

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GSICS Scope

The Global Space-based Inter-Calibration System (GSICS) is an international collaborative effort initiated in 2005 by the World Meteorological Organization (WMO) nd the oordination Group for Meteorological Satellites (CGMS) to 1-monitor, 2 -improve and 3-harmonize the quality of observations from operational weather and environmental satellites of the Global Observing System (GOS).

→ https://gsics.wmo.int/site/global-space-based-inter-calibration-system-gsics

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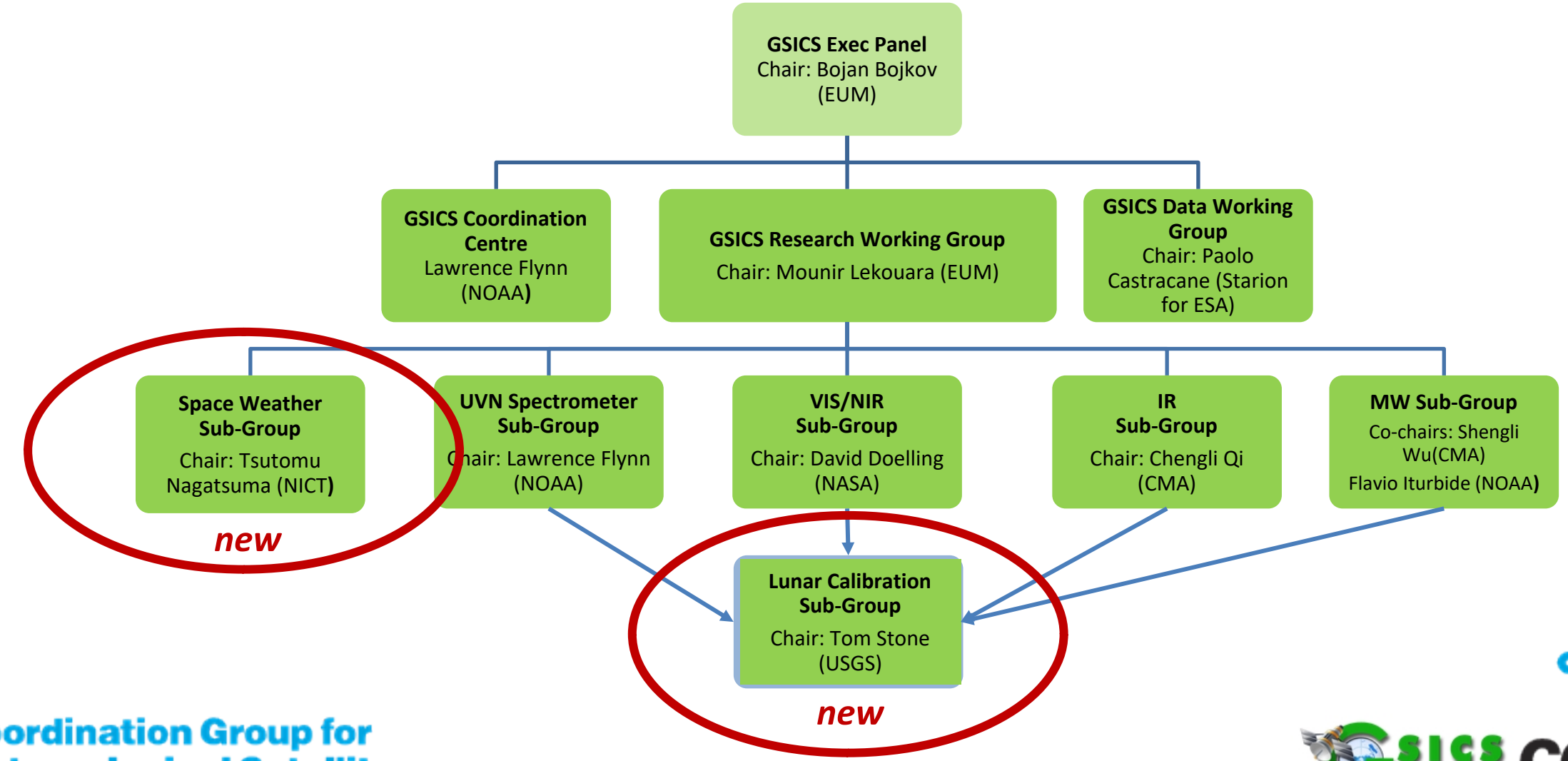
The GSICS Research Working Groups



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GSICS Cooperative Developments this last year

- As evidenced over the last year, GSICS provides a critical framework for satellite agencies to collaborate to develop community-agreed best practices, standard procedures and tools.

- The effort has been distributed across agencies to refine the calibration and inter-calibration methods of interest (e.g. desert calibration/inter-calibration, imager-hyperspectral inter-calibration) and to establish the uncertainties. It was agreed that the agencies will further seek to share relevant code and satellite data (e.g. lunar acquisitions) in support of the data quality monitoring.

- 26 quarterly GSICS sub-group web meetings were held in the last year, as well as the annual and Executive Panel (EP) meetings in Changchun (China) last week.

- Joint CEOS WGCV – CGMS GSICS pre-flight calibration WS took place in ESA/ESTEC (NL) on 19-22 November 2024.

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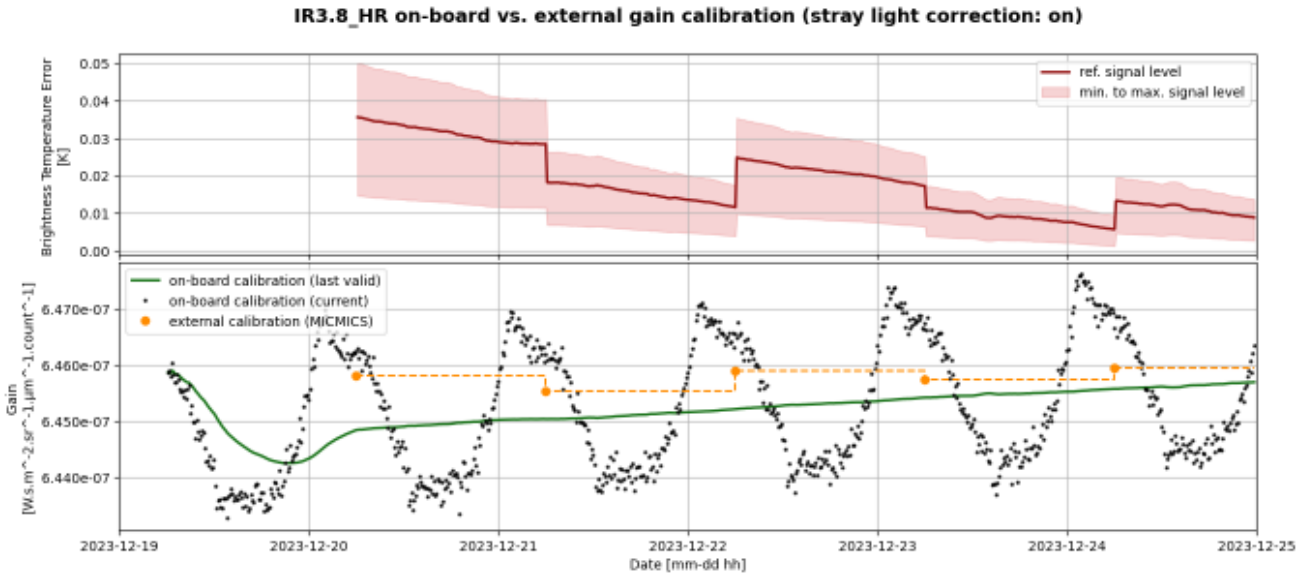
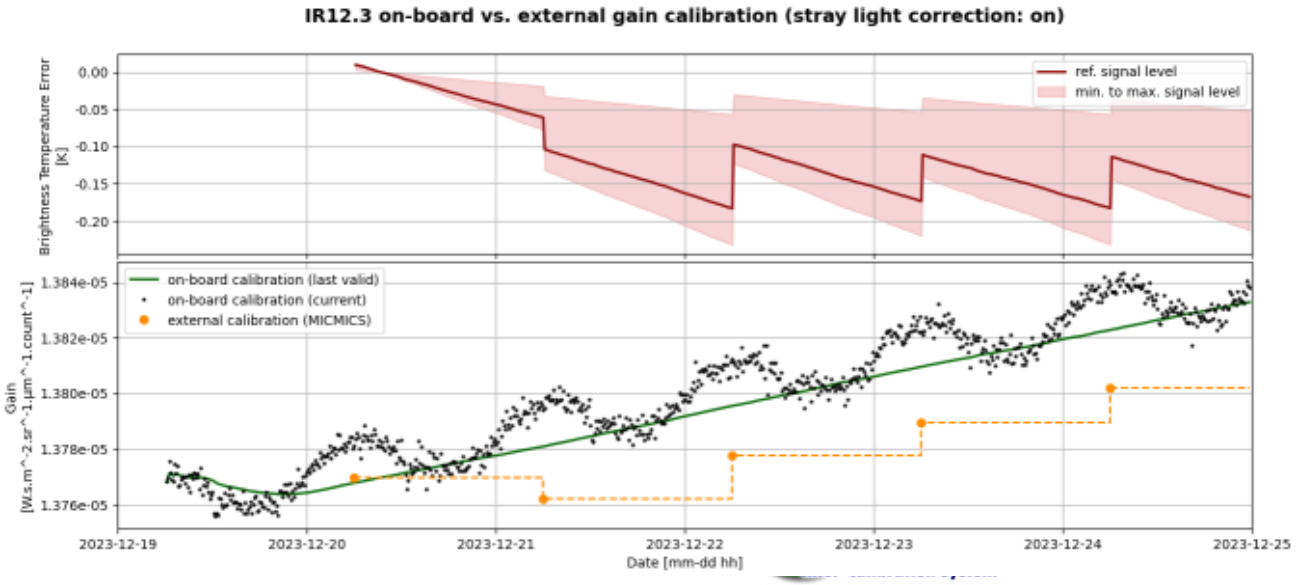
GSICS Benefits – some examples

Following a HW failure on the MTG-I1 (Met-12) FCI detected in January 2024, the instrument resumed observation mode in May 2024 without the on-board calibration acquisitions.

Since then, the anomaly is well mitigated by the use of the MICMICS implementation of the **GSICS** GEO-LEO (inter-calibration with Metop-B/C IASI) to estimate the FCI IR gains.

This is a clear example of the GSICS cooperation benefiting the quality and lifetime of a key operational mission.





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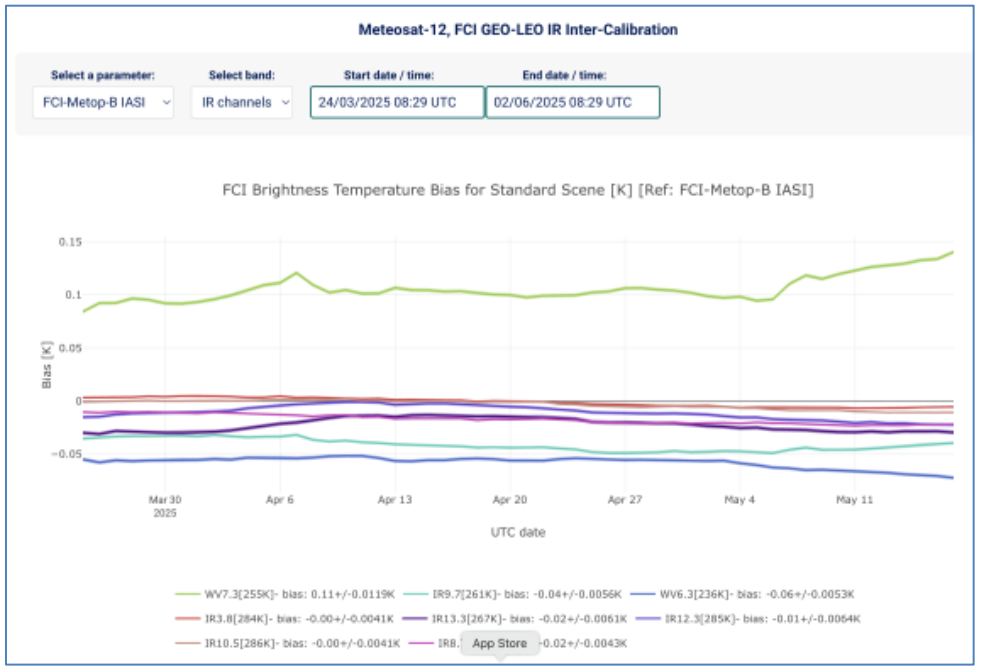
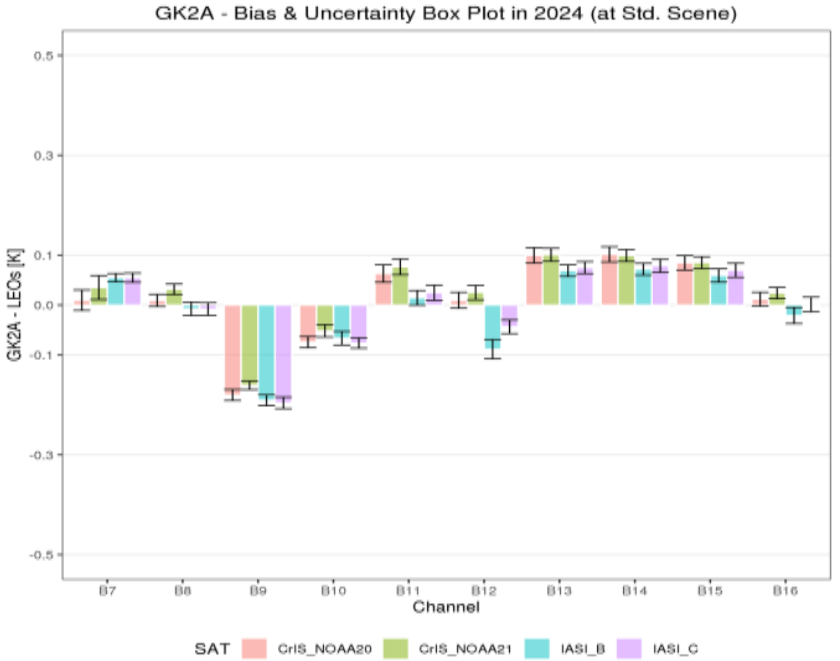
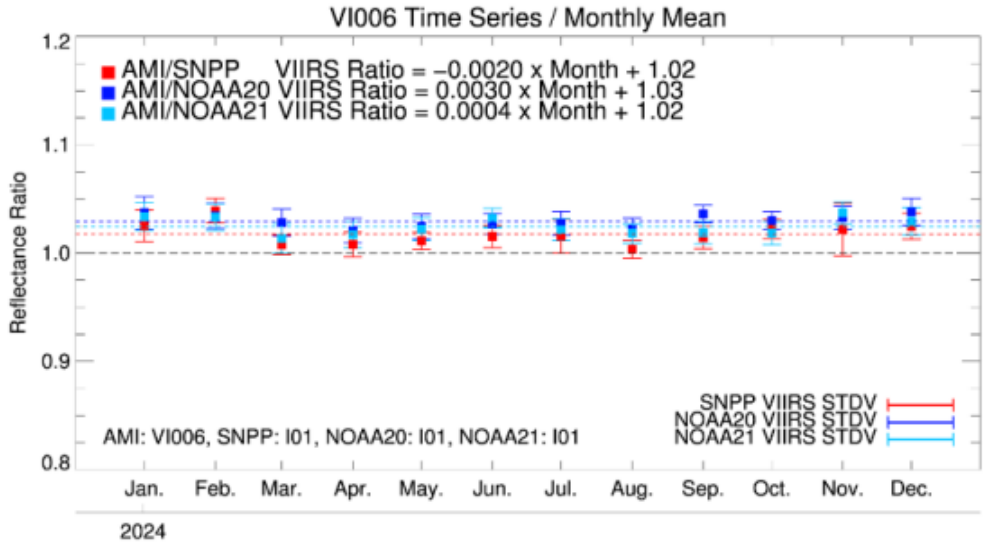
GSICS Benefits – some examples (ii)

Examples right of KMA inter-calibration monitoring of GK2A AMI with IASI/CrIS for IR and VIIRS for VIS-NIR.

All agencies are doing the same analyses and GSICS is working on the standardization of the reporting (e.g. http://matrics.eumetsat.int below).







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GSICS 2025 annual meeting outcome

- GSICS EP agreed to shift efforts from the generation of GSICS inter-calibration coefficient products, commonly known as the “GSCIS corrections”, to the operational monitoring of the radiometric performances. The inter-calibration between sensors, or with reference sensors, is essential to detect and address radiometric anomalies, but the GSICS algorithms and methodologies also includes vicarious, on-board calibration monitoring, feedback from L2 etc.

- Agreed way-forward to report on the quality monitoring on the GSICS wiki and in the annual State of the Observing System (SOS) report.

To be considered by CGMS:

- For endorsement, the primary focus of GSICS is the development of methodologies and tools for the operational monitoring and improvement of the radiometric calibration performances by the member agencies.

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To be considered by CGMS:

- Close cooperation with, and feedback from the Working Group II International Working Groups are strongly encouraged → User feedback is essential to improve level-1 and future instrument design.
- Some activities such as Space Weather and the Moon still have a strong R&D need → To achieve those in a timely fashion, CGMS contributing agencies are encouraged to support those new sub-group activities.
- *Recent budgetary developments in the United States will impact the activities of the GSICS Coordination Center (GCC), in particular the day-to-day GSICS support activities and the hosting of the GSICS web and wiki (the later used by the Working Groups and Sub-groups), by late Summer 2025 → CGMS contributing organisations may be required to help mitigate the loss of the GCC support in the next years.*

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Thank you!

Next annual meeting will be hosted by the National Research Council of Canada, 23-27 March 2026, in Ottawa.

NB: Commercial satellite data providers will be invited by WMO.

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