

Future of the EUM IR GSICS products

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Current EUMETSAT VIS-NIR GSICS products

Product Type	Algorithm Type	Data Position	Multi-Sp. Level	Relevant Instrument	Reference Instrument	Version	Data Start Date	Data End Date	Class/Status Info.
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Demissionary	Molinsol 7 MUV	IASIA	3	2008-09-18	2017-03-27	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Demissionary	Molinsol 7 MUV	IASIA	3	2008-09-01	2017-03-27	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Finalizer	Molinsol A-HPB	IASIA	3	2008-04-28	2021-06-10	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Finalizer	Molinsol A-HPB	IASIA	3	2008-09-13	2021-11-10	Data Info
Water Re-analysis Correction	GGI LEO-IR	EUMETSAT	Demissionary	MIC 1.301V90	IASIA	0	2008-09-01	2021-09-10	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 1.301V90	IASIA	3	2016-02-09	2021-11-18	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 1.301V90	IASIA	3	2016-02-09	2021-10-27	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 1.301V90	IASIA	1,3	2008-09-01	2021-03-03	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 1.301V90	IASIA	1	6/10/18	2020-07-01	Data Info
Water Re-analysis Correction	GGI LEO-IR	EUMETSAT	Demissionary	MIC 2.301V90	IASIA	0	2008-09-01	2021-09-10	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 2.301V90	IASIA	1	2008-09-01	2021-11-18	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 2.301V90	IASIA	1	12/09/18	Present	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 2.301V90	IASIA	1,3	2008-09-01	2021-11-18	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 2.301V90	IASIA	1	2013-01-10	Present	Data Info
Water Re-analysis Correction	GGI LEO-IR	EUMETSAT	Demissionary	MIC 3.301V90	IASIA	0	2012-09-13	2021-09-10	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 3.301V90	IASIA	1	2013-01-24	2021-11-18	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 3.301V90	IASIA	1	2016-02-09	Present	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 3.301V90	IASIA	1	2013-01-10	2021-11-18	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 3.301V90	IASIA	1	2013-01-10	Present	Data Info
Water Re-analysis Correction	GGI LEO-IR	EUMETSAT	Demissionary	MIC 4.301V90	IASIA	0	2018-09-08	2021-09-10	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 4.301V90	IASIA	0	3/9/2018	2021-11-18	Data Info
Near Real Time Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 4.301V90	IASIA	0	3/9/2018	Present	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 4.301V90	IASIA	1,3	6/10/18	2021-11-18	Data Info
Re-analysis Correction	GGI LEO-IR	EUMETSAT	Operational	MIC 4.301V90	IASIA	1	6/10/18	Present	Data Info



Inputs to the group discussion (1/2)

- EUMETSAT investigated the connections to our GSICS servers and could not identify any regular user.
- GSICS correction coefficients are stored in the operational SEVIRI L1 products. EUMETSAT has no knowledge of any user applying those.
- MTG-I1 FCI operational L1c are calibrated using MICMICS GEO-LEO (vs IASI-B/C) and monitored with GEO-LEO CrIS and GEO-GEO SEVIRI. **Strong GSICS impact on the EUMETSAT L1 operational calibration is acknowledged.**
- As agreed in the VIS-NIR group, when an agency identifies a radiometric bias in the L1, it **should correct it rather than provide a (separate) GSICS correction coefficients product**. Note that the radiometric biases that the GSICS correction is susceptible to efficiently correct is a very small subset of the type of radiometric errors our IR sensors are facing.
- In the NWP assimilation process, the IR channels are bias-corrected in a much more dynamic way than what the GSICS coefficients, computed over 30 days windows, can do.



- **For quality monitoring purposes**, EUMETSAT is about to deploy **MATRICS** (equivalent to NOAA STAR ICVS and CMA L1 monitoring system). This will feature all radiometric (and geometric) user-relevant live monitoring information. In their current form (correction coefficients files), the GSICS are not adapted to an efficient quality monitoring. The GSICS is a useful element of the monitoring.
- **GEO-ring**: EUMETSAT and NOAA (with JMA support) are producing a FCDR from all historical measurements from imagers in geostationary orbit that form the Geostationary Ring. With cross-calibrated mapped radiances and spectral band adjustment factors. **The GSICS methods will be employed**. L2 users needing cross-calibrated IR acquisitions (e.g. ISCCP) should rather use this type of well-controlled dataset.

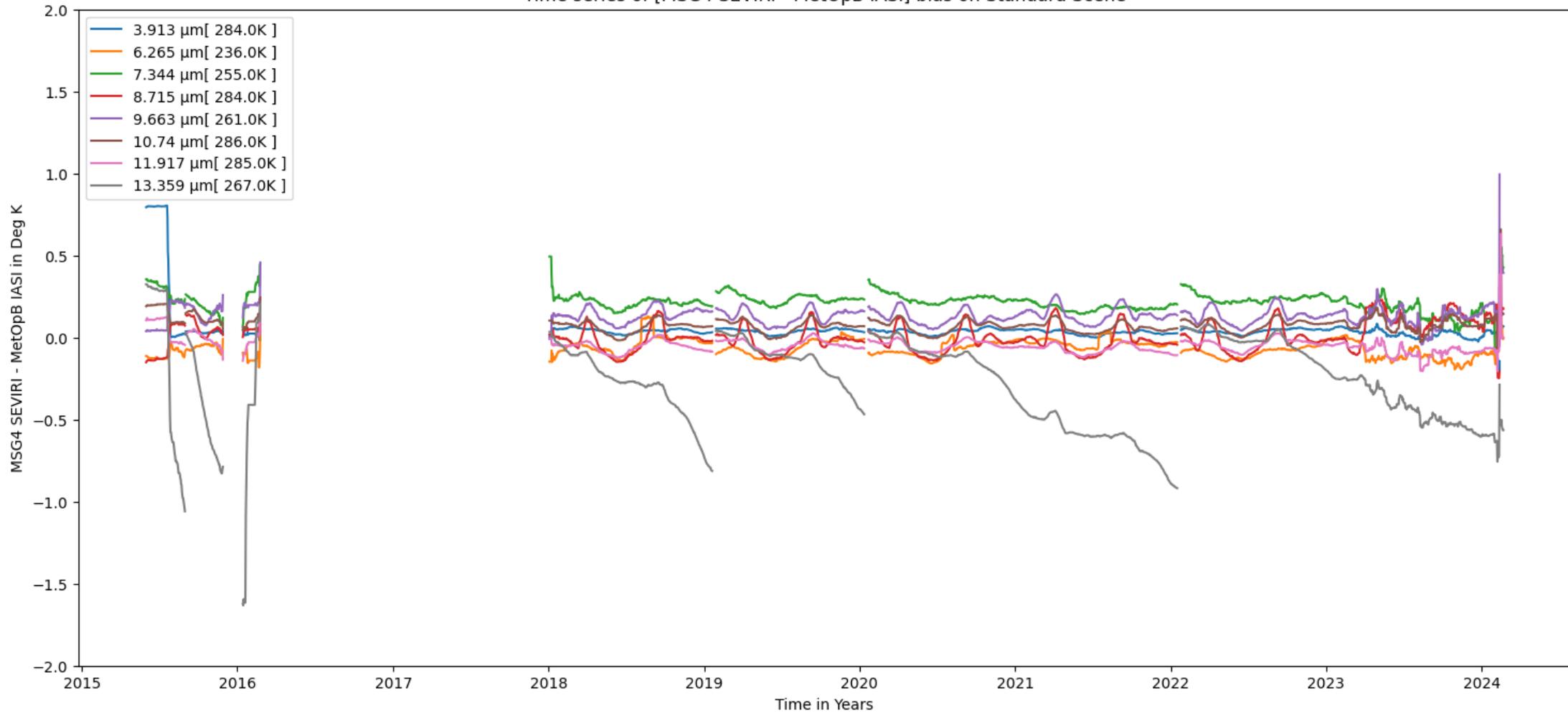
EUMETSAT is considering discontinuing its GSICS IR coefficient files products.



- **EPS IASI and Sentinel-3 SLSTR**: excellent calibration of the IR bands, no need of a separate correction dataset.
- **MTG-I1 FCI**: the IR bands are calibrated with the MICMICS implementation of an enhanced version of the GSICS GEO-LEO algorithm. Thus MTG-I1 is precisely aligned with IASI, and thus does not require a separate correction.
- **Recurrent FCI models and all SEVIRI**: the GSICS correction coefficients aim at compensating the impact of icing.



Time series of [MSG4 SEVIRI - MetOpB IASI] bias on Standard Scene



- In between decontaminations, and due to the gradual accumulation of water ice on the cold window, the IR13.3 band (mainly) is affected in several ways:
 1. The throughput is reduced, but the black-body acquisitions allow to adapt the radiometric gain accordingly.
 2. NEdT increases because of the throughput reduction.
 3. The SRF is modified (see [Hewison paper](#)), with consequences on the black-body radiance calculation and on the utilization of the L1c radiances by the users.

The SEVIRI GSICS correction coefficients are a very imperfect way to correct for the SRF evolutions (hence they have no users).

- It is likely feasible to dynamically estimate the IR13.3 SRF and provide it to users (as is done for Sentinel-3 OLCI). Users have historically been reluctant to consider dynamic SRFs, in particular NWP. BUT: the SRF evolution is deterministic as it is a function of the water ice layer thickness on the cold window. So we would be able to pre-process the SRF time series, and associated RTTOV coefficients. The monitoring functions would then determine for the present time, which index to use in the SRF (or RTTOV) pre-processed time-series.

EUMETSAT is considering discontinuing its SEVIRI GSICS IR coefficient files products in favour of a dynamic SRF estimation.



Thank you!
Questions are welcome.