IASI L0 and L1 Weekly Monitoring Report

IASI monitoring team

13/01/2025 00:00:00 - 20/01/2025 00:00:00 (Week 03)

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the Metop-C satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 13/01/2025 00:00:00 - 20/01/2025 00:00:00 .

The monitoring data are extracted on PDU basis.

Data extraction, calibration, processing and statictics are performed at EUMETSAT.

2 Data quantity 13/01/2025 00:00:00 - 20/01/2025 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	3361	-
L0 IASI PDUs	3361	-
L1 ENG PDUs	3345	-
L1 ENG distinct GEPSGranule	3307	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	3345	-

Table 1: Data quantity

APID	Packet type	Packets lost
-	-	-

Table 2: L0 packet losses

3 Instrument modes

Time	Transition from	Transition to
13/01/2025 00:00:02	-	Normal operation
15/01/2025 08:55:46	External calibration	Auxiliary ASE synchronised
15/01/2025 08:57:38	Auxiliary ASE synchronised	Normal operation
17/01/2025 11:52:02	Normal operation	Auxiliary ASE synchronised
17/01/2025 11:54:10	Auxiliary ASE synchronised	External calibration
17/01/2025 12:14:58	External calibration	Auxiliary ASE synchronised
17/01/2025 12:16:50	Auxiliary ASE synchronised	Normal operation
17/01/2025 13:32:02	Normal operation	Auxiliary ASE synchronised
17/01/2025 13:33:54	Auxiliary ASE synchronised	External calibration
17/01/2025 13:57:38	External calibration	Auxiliary ASE synchronised
17/01/2025 13:59:46	Auxiliary ASE synchronised	Normal operation
17/01/2025 15:11:46	Normal operation	Auxiliary ASE synchronised
17/01/2025 15:13:38	Auxiliary ASE synchronised	External calibration
17/01/2025 15:41:54	External calibration	Auxiliary ASE synchronised
17/01/2025 15:43:46	Auxiliary ASE synchronised	Normal operation
17/01/2025 16:51:14	Normal operation	Auxiliary ASE synchronised
17/01/2025 16:53:06	Auxiliary ASE synchronised	External calibration
17/01/2025 17:22:10	External calibration	Auxiliary ASE synchronised
17/01/2025 17:24:02	Auxiliary ASE synchronised	Normal operation
17/01/2025 18:30:42	Normal operation	Auxiliary ASE synchronised
17/01/2025 18:32:34	Auxiliary ASE synchronised	External calibration
17/01/2025 19:01:54	External calibration	Auxiliary ASE synchronised
17/01/2025 19:03:46	Auxiliary ASE synchronised	Normal operation
17/01/2025 20:10:10	Normal operation	Auxiliary ASE synchronised
17/01/2025 20:12:02	Auxiliary ASE synchronised	External calibration
17/01/2025 20:41:22	External calibration	Auxiliary ASE synchronised
17/01/2025 20:43:30	Auxiliary ASE synchronised	Normal operation
17/01/2025 21:49:22	Normal operation	Auxiliary ASE synchronised
17/01/2025 21:51:30	Auxiliary ASE synchronised	External calibration
17/01/2025 22:20:50	External calibration	Auxiliary ASE synchronised
17/01/2025 22:22:58	Auxiliary ASE synchronised	Normal operation
17/01/2025 23:28:50	Normal operation	Auxiliary ASE synchronised
17/01/2025 23:30:58	Auxiliary ASE synchronised	External calibration
18/01/2025 00:00:18	External calibration	Auxiliary ASE synchronised
18/01/2025 00:02:26	Auxiliary ASE synchronised	Normal operation
18/01/2025 01:08:34	Normal operation	Auxiliary ASE synchronised
18/01/2025 01:10:26	Auxiliary ASE synchronised	External calibration
18/01/2025 01:39:46	External calibration	Auxiliary ASE synchronised
18/01/2025 01:41:54	Auxiliary ASE synchronised	Normal operation
18/01/2025 04:28:02	Normal operation	Auxiliary ASE synchronised
18/01/2025 04:30:10	Auxiliary ASE synchronised	External calibration
18/01/2025 05:00:50	Auxiliary ASE synchronised	Normal operation
18/01/2025 06:08:02	Normal operation	Auxiliary ASE synchronised
18/01/2025 06:10:10	Auxiliary ASE synchronised	External calibration
18/01/2025 07:48:18	Normal operation	Auxiliary ASE synchronised
18/01/2025 07:50:10	Auxiliary ASE synchronised	External calibration
18/01/2025 09:28:34	Normal operation	Auxiliary ASE synchronised
18/01/2025 09:30:42	Auxiliary ASE synchronised	External calibration
18/01/2025 11:09:06	Normal operation	Auxiliary ASE synchronised
18/01/2025 11:10:58	Auxiliary ASE synchronised	External calibration
18/01/2025 12:49:38	Normal operation	Auxiliary ASE synchronised
18/01/2025 12:51:46	Auxiliary ASE synchronised	External calibration

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Table 3 – continued from previous page

Time	Transition from	Transition to

Table 3: Instrument modes

4 L0 and L1 Data Quality

Day	L0 quality	L1 quality	L0 PDUs	L1 PDUs
13/01/2025	99.68 %	99.67 %	480	479
14/01/2025	99.67 %	99.66 %	480	480
15/01/2025	99.64 %	99.63 %	480	479
16/01/2025	99.68 %	99.67 %	480	480
17/01/2025	98.89 %	97.32 %	480	475
18/01/2025	98.83 %	96.81 %	480	472
19/01/2025	99.66 %	99.65 %	480	480

Table 4: Quality overview

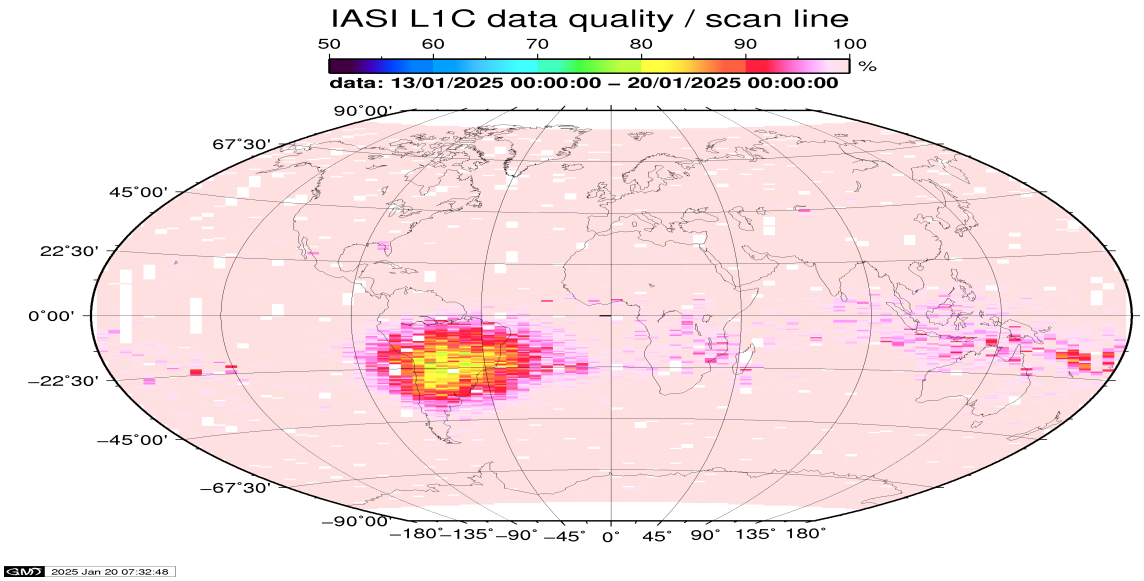

Figure 1: L1C data quality

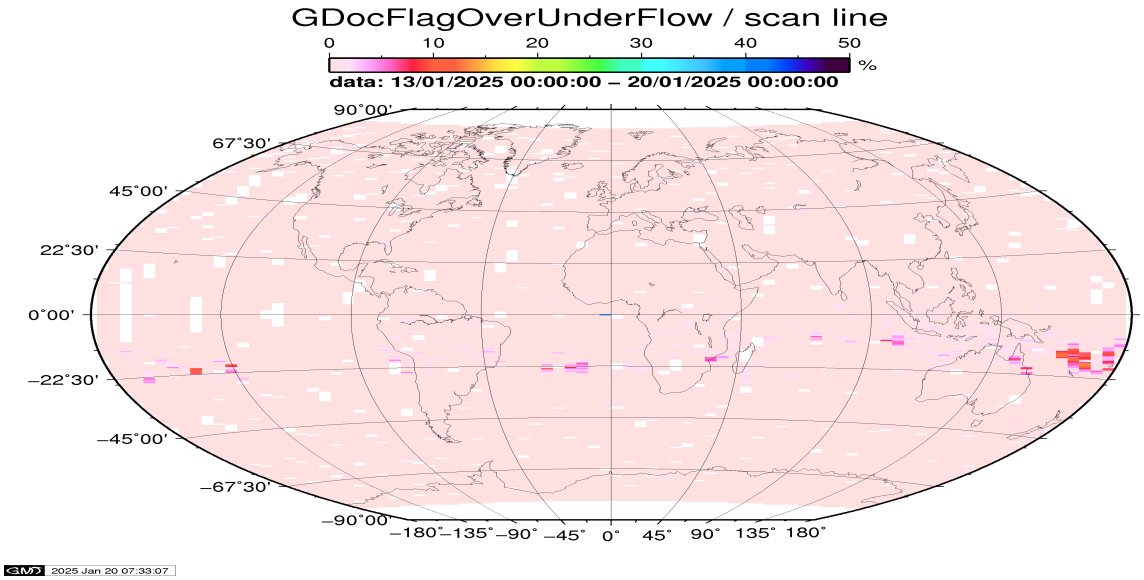

Figure 2: Flag of Over and Under Flows

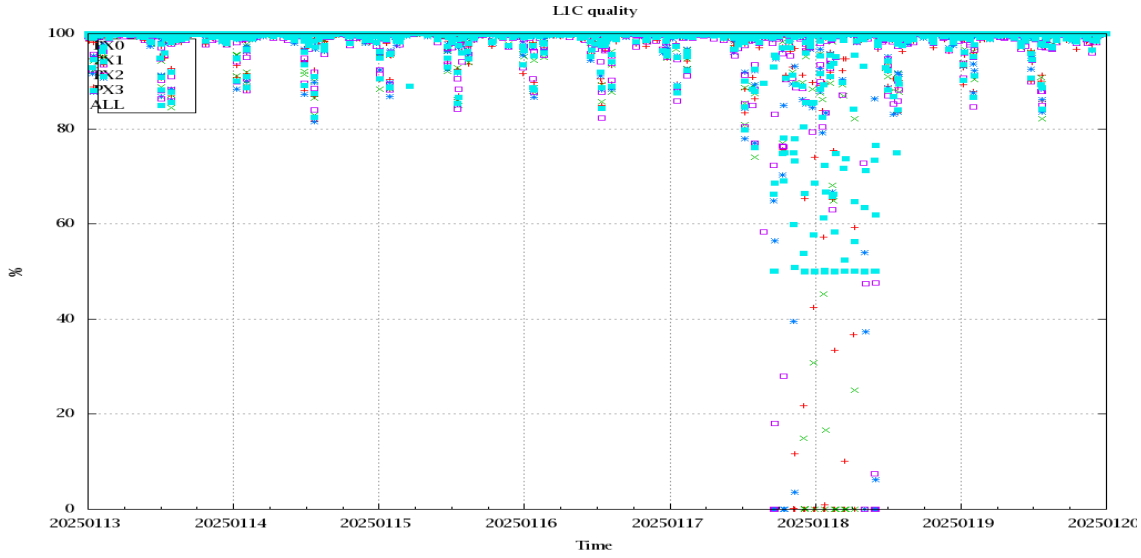

Figure 3: Level 1C quality

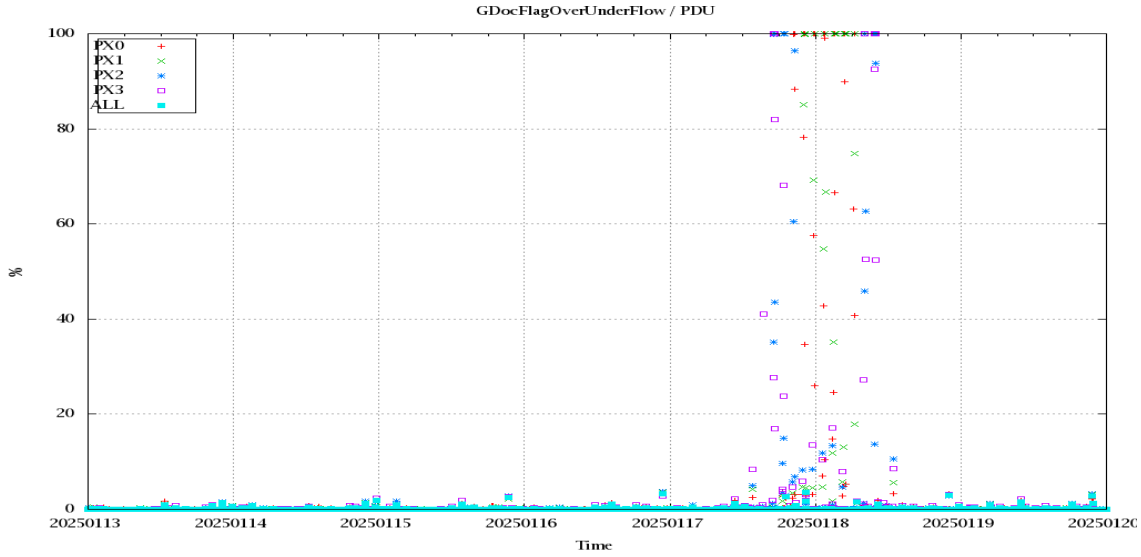

Figure 4: OverUnderFlowFlag timeseries

5 Radiance monitoring based on NWP

The radiance monitoring compares the IASI measurements (L1C-eps-products) obtained under clear sky situation over sea with modeled radiances. Cloud indentification is based on cloud flag of co-located AVHRR L1B data in addition to information from the IASI L1C clustering analysis here only homogenous situations are taken into account (99.0 percent in first class). A ratiative transfer model (RTM) is fed with co-located ECMWF profiles of T,WV, and Ozon. Between March 2007 and the 18th of May 2010 RTIASI in Version 4.0 is used. After the 18th of May 2010 the RTTOV model in V9.3 is used. Information about the SST is obtained from the AVHRR L1B or taken from AVHRR scenes analysis (CGS only).

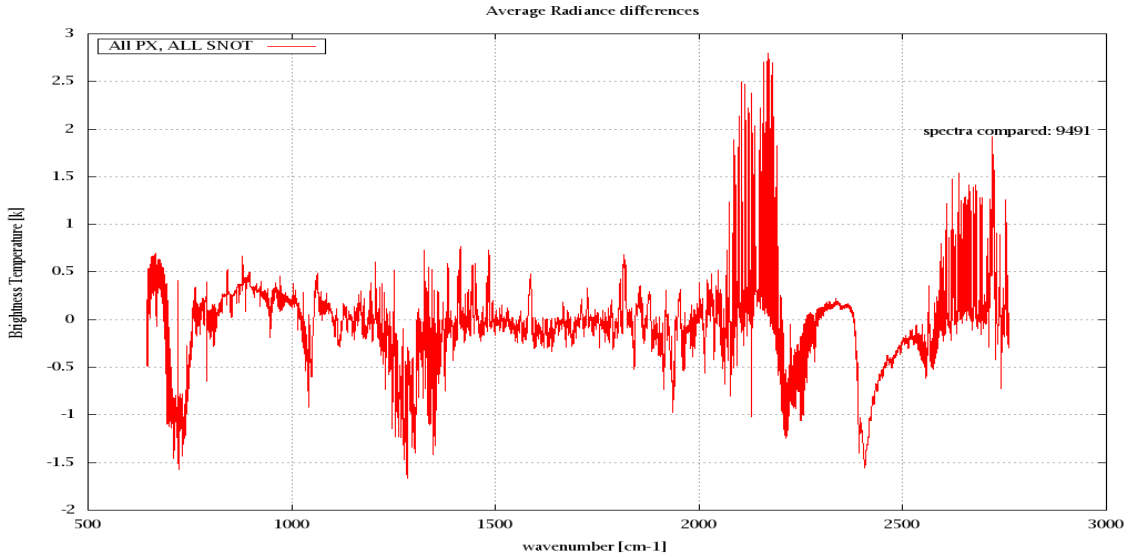

Figure 5: Average radiance differences: OBS-CAL

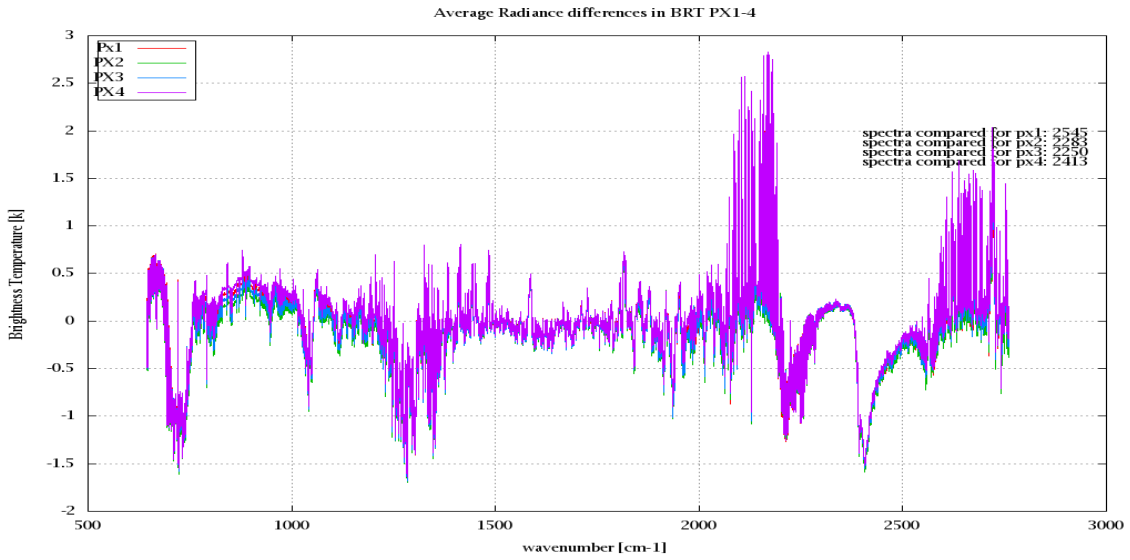

Figure 6: Average radiance differences: OBS-CAL

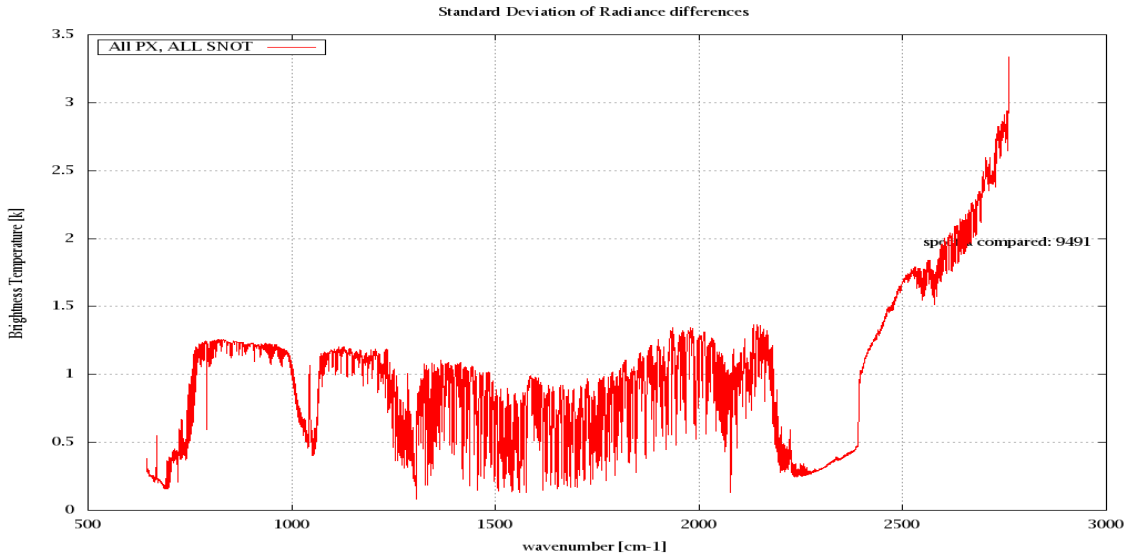

Figure 7: Standard deviation of radiance differences

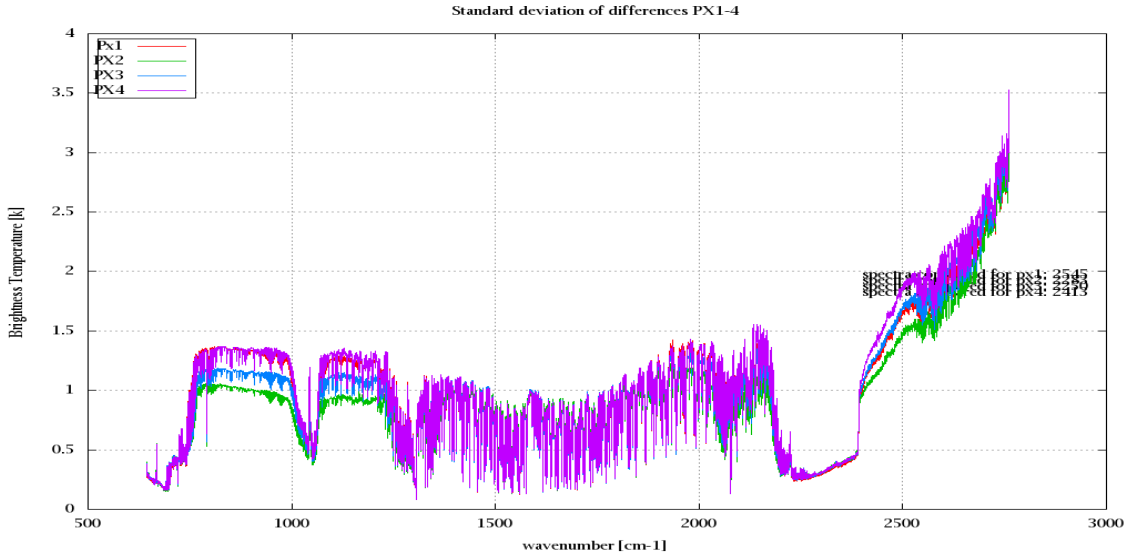

Figure 8: Standard deviation of radiance differences per pixel

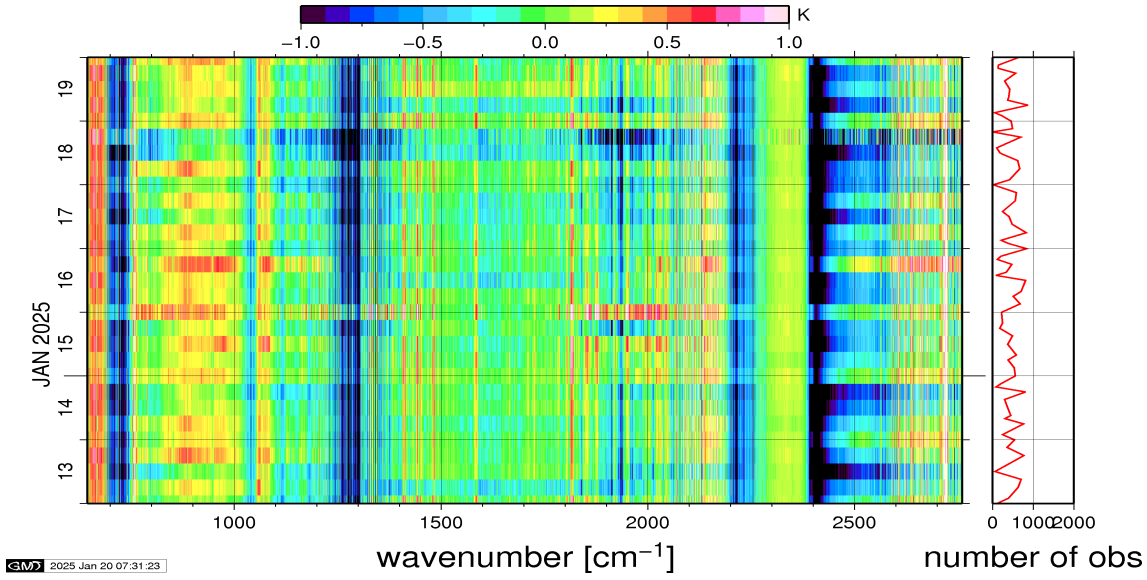

Figure 9: Radiance bias in BRT: All Channels

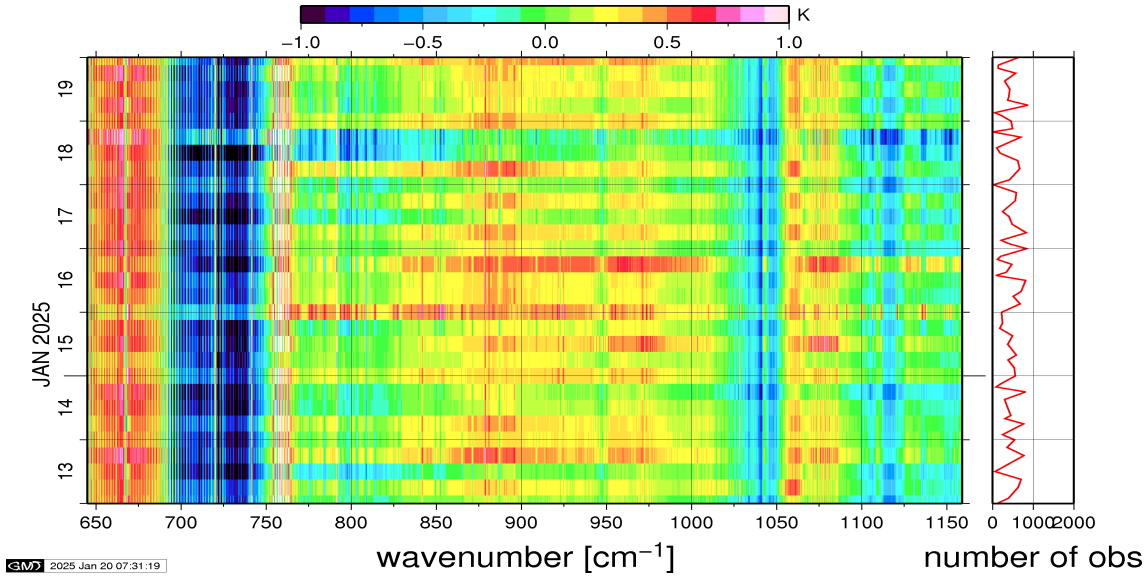

Figure 10: Radiance bias in BRT: IASI Band 1

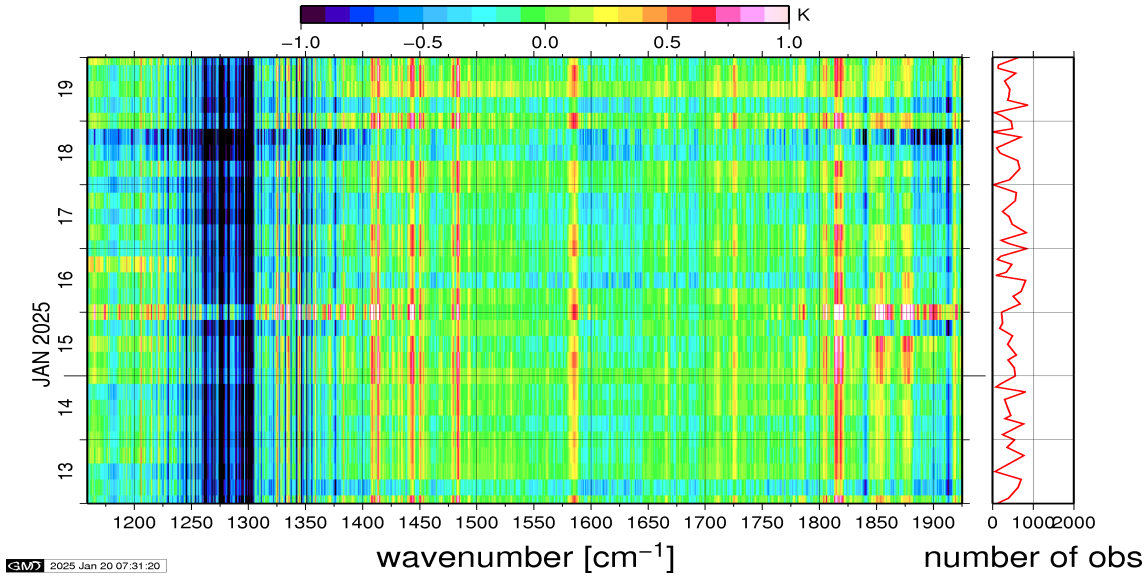

Figure 11: Radiance bias in BRT: IASI Band 2

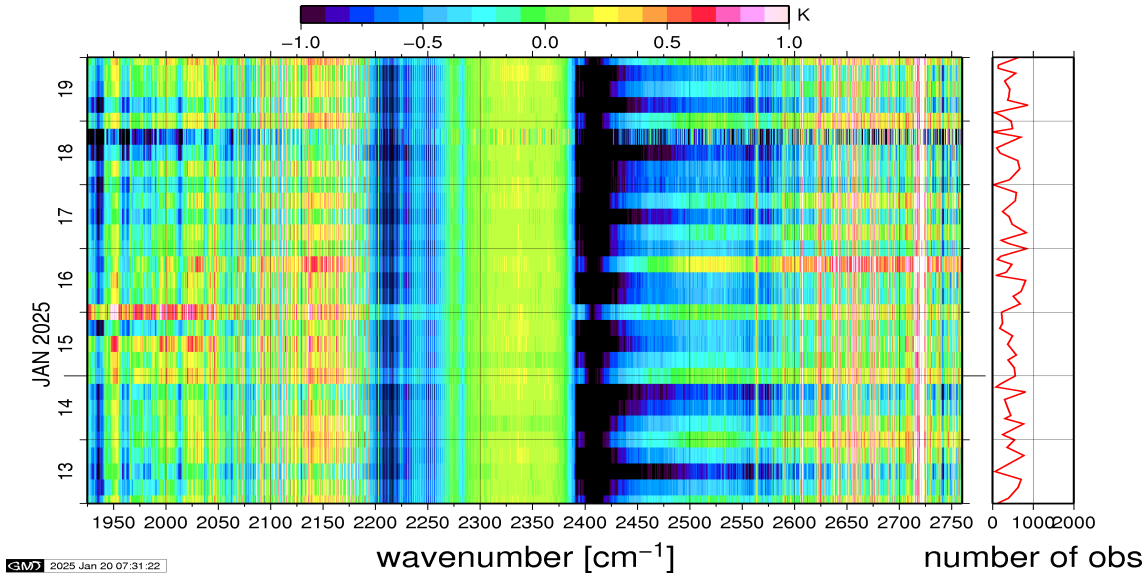

Figure 12: Radiance bias in BRT: IASI Band 3

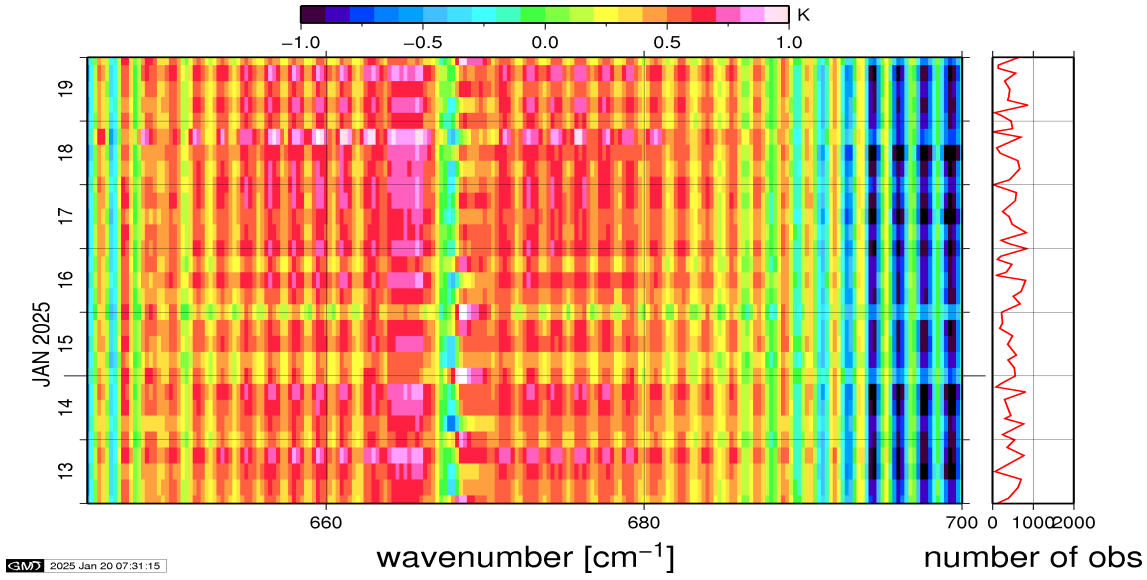

Figure 13: Radiance bias in BRT: CO2 14

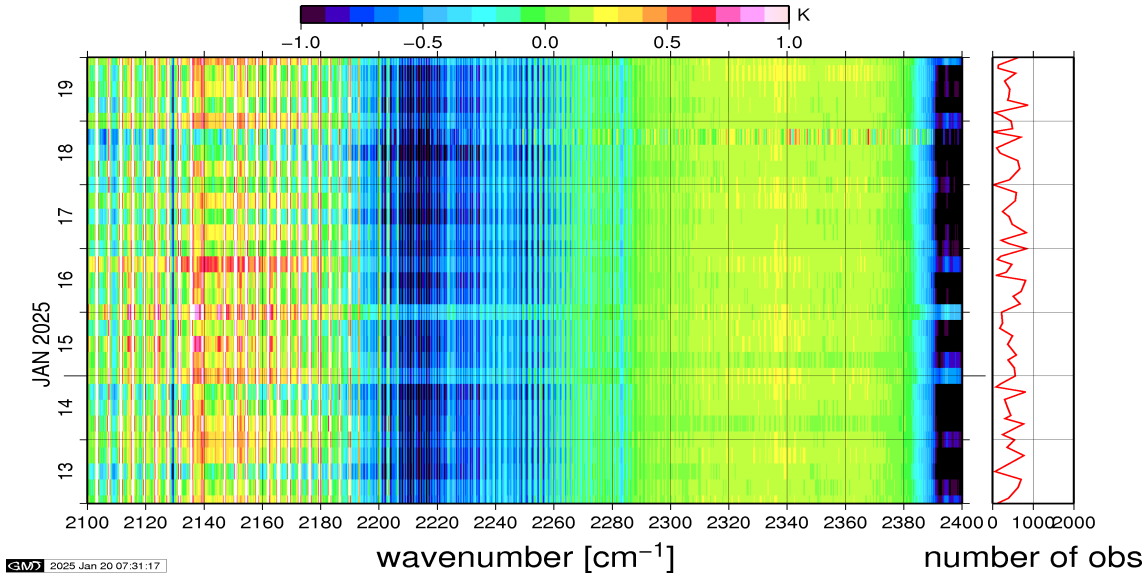

Figure 14: Radiance bias in BRT: CO2 4.3

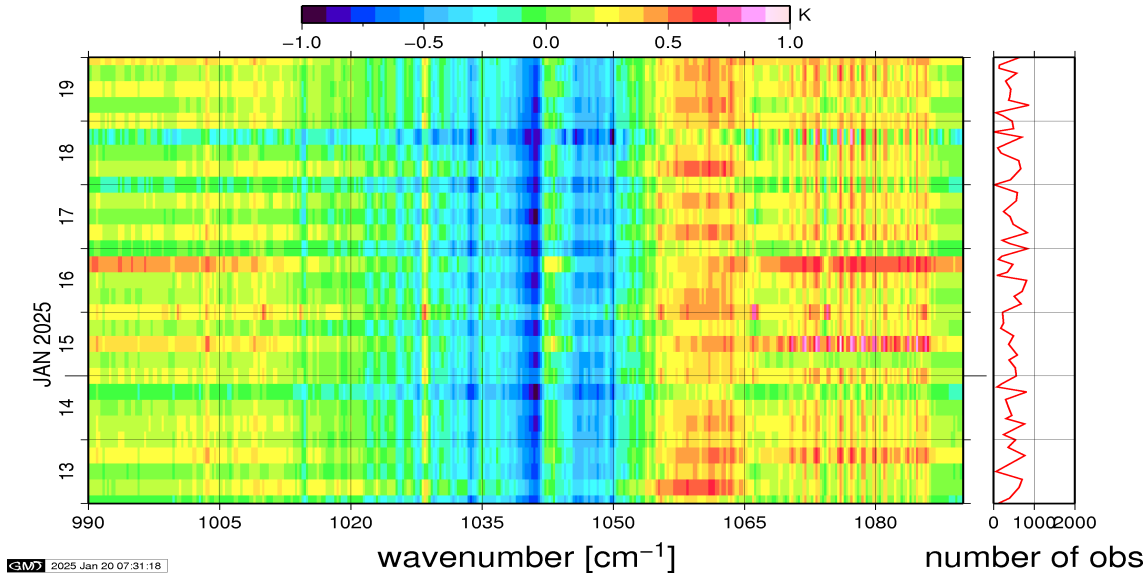

Figure 15: Radiance bias in BRT: O3

6 IASI-HIRS radiance comparision Channel 1-19

The radiance comparision of IASI and HIRS/4 on-board Metop-C is performed on all pixel with distances smaller than 3 km between IASI and HIRS. The radiance differences IASI - HIRS are given in brightness temperatures at 280K reference temperature.

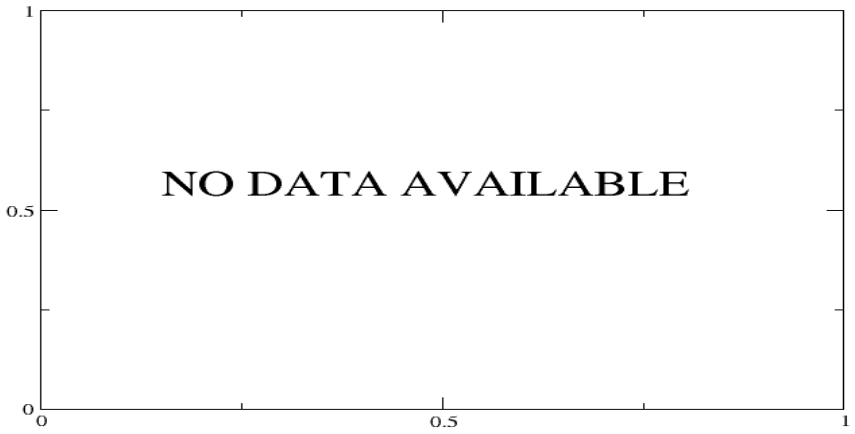

Figure 16: Radiance Differences in BRT 1h Average

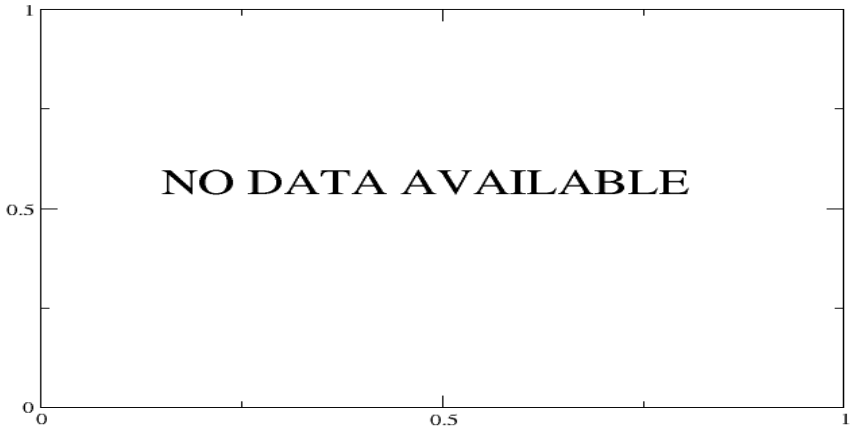

Figure 17: Standard Deviation of Radiance Differences 1h Average

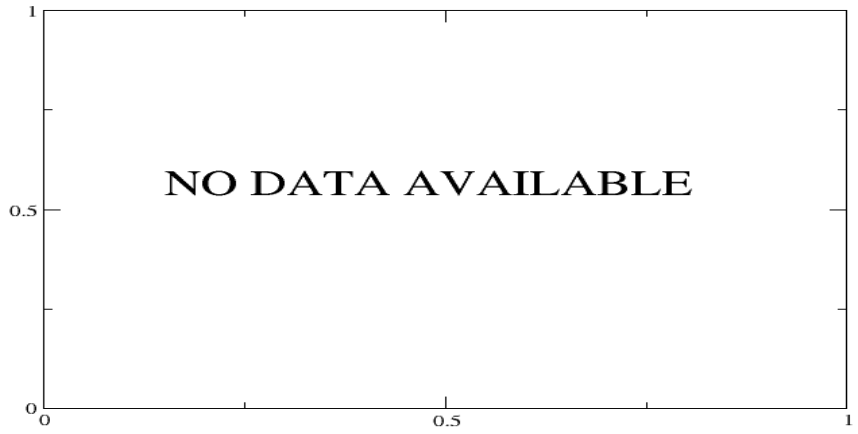

Figure 18: Radiance Differences in BRT 1h Average - Clear Sky

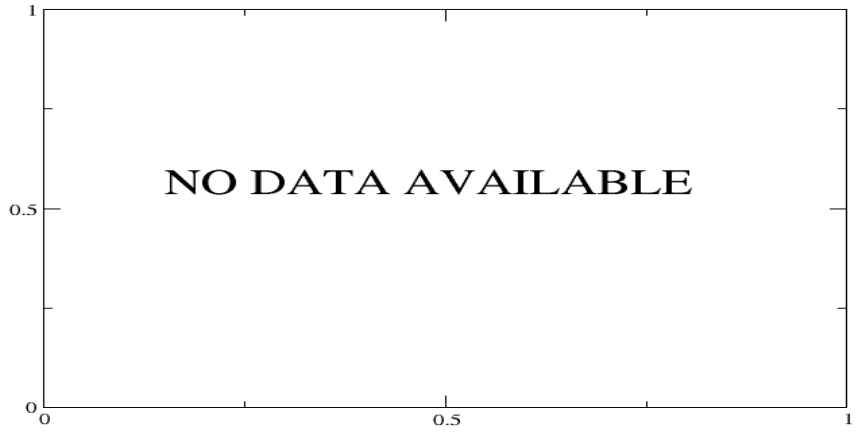

Figure 19: Standard Deviation of Radiance Differences 1h Average - Clear Sky