

IASI L0 and L1 Daily Monitoring Report **Metop-B**

IASI monitoring team

18/01/2025 00:00:00 - 19/01/2025 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the Metop-B satellite retrieved from the IASI L0 and L1 ENG product (3 minutes data packet) for 18/01/2025 00:00:00 - 19/01/2025 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 18/01/2025 00:00:00 - 19/01/2025 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	465	-
L0 IASI PDUs	465	-
L1 ENG PDUs	460	e
L1 ENG distinct GEPSGranule	458	a
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	460	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1282	1309	20250118075706.770	20250118075714.122
PX1 (130)	2409	13101	20250118080207.954	20250118085354.351
PX2 (135)	1282	1308	20250118075706.770	20250118075713.907
PX2 (135)	2409	13100	20250118080207.954	20250118085354.137
PX3 (140)	1282	1309	20250118075706.770	20250118075714.122
PX3 (140)	2408	13100	20250118080207.735	20250118085354.137
PX4 (145)	1282	1306	20250118075706.770	20250118075713.474
PX4 (145)	1306	1308	20250118075713.474	20250118075713.907
PX4 (145)	2408	13100	20250118080207.735	20250118085354.137
IMG (150)	11766	11794	20250118075706.770	20250118075713.474
IMG (150)	13044	8836	20250118080207.735	20250118085354.137
VER (160)	13310	13314	20250118075706.770	20250118075714.770
VER (160)	13498	15356	20250118080202.762	20250118085354.570
AUX (180)	2620	2622	20250118075659.204	20250118075715.204
AUX (180)	2658	3030	20250118080203.196	20250118085611.214

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
18/01/2025 00:00:09	-	Normal operation
18/01/2025 00:01:45	Normal operation	Auxiliary ASE synchronised
18/01/2025 00:03:37	Auxiliary ASE synchronised	External calibration
18/01/2025 01:42:17	Normal operation	Auxiliary ASE synchronised
18/01/2025 01:44:09	Auxiliary ASE synchronised	External calibration
18/01/2025 05:03:37	Normal operation	Auxiliary ASE synchronised
18/01/2025 05:05:45	Auxiliary ASE synchronised	External calibration
18/01/2025 05:33:29	External calibration	Auxiliary ASE synchronised
18/01/2025 05:35:21	Auxiliary ASE synchronised	Normal operation
18/01/2025 06:44:25	Normal operation	Auxiliary ASE synchronised
18/01/2025 06:46:33	Auxiliary ASE synchronised	External calibration
18/01/2025 07:13:45	External calibration	Auxiliary ASE synchronised
18/01/2025 07:15:37	Auxiliary ASE synchronised	Normal operation
18/01/2025 08:56:09	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	465	-
L1 ENG PDUs	460	e
L1 ENG distinct GEPSGranule	458	a
GQisFlagQual set (PX1)	98.90 %	-
GQisFlagQual set (PX2)	99.29 %	-
GQisFlagQual set (PX3)	98.92 %	-
GQisFlagQual set (PX4)	99.37 %	-
GQisFlagQual set (all)	99.12 %	-

Table 4: Quality flags

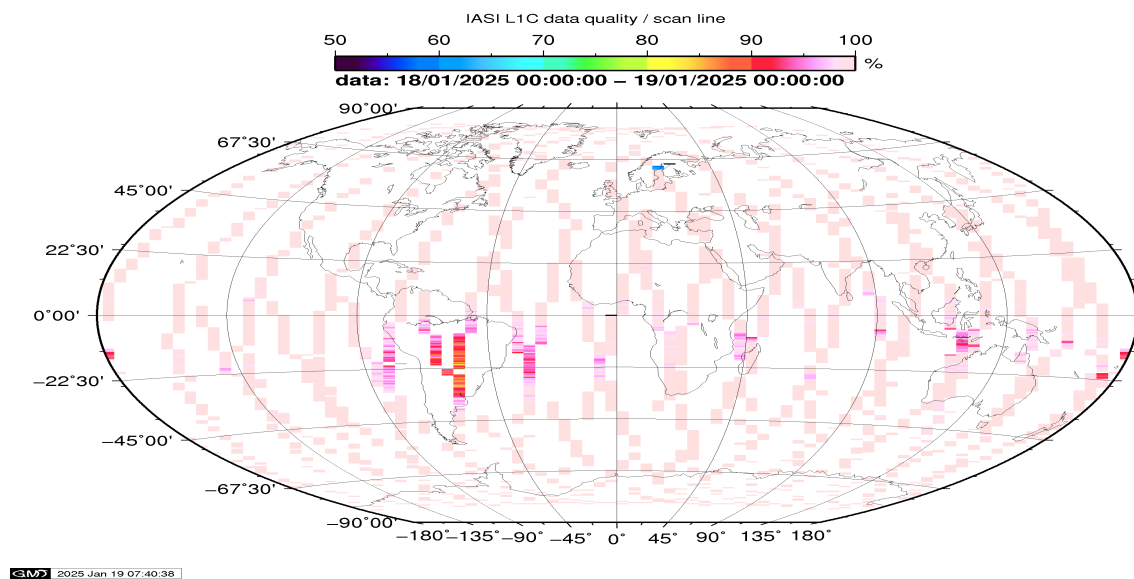


Figure 1: L1C data quality

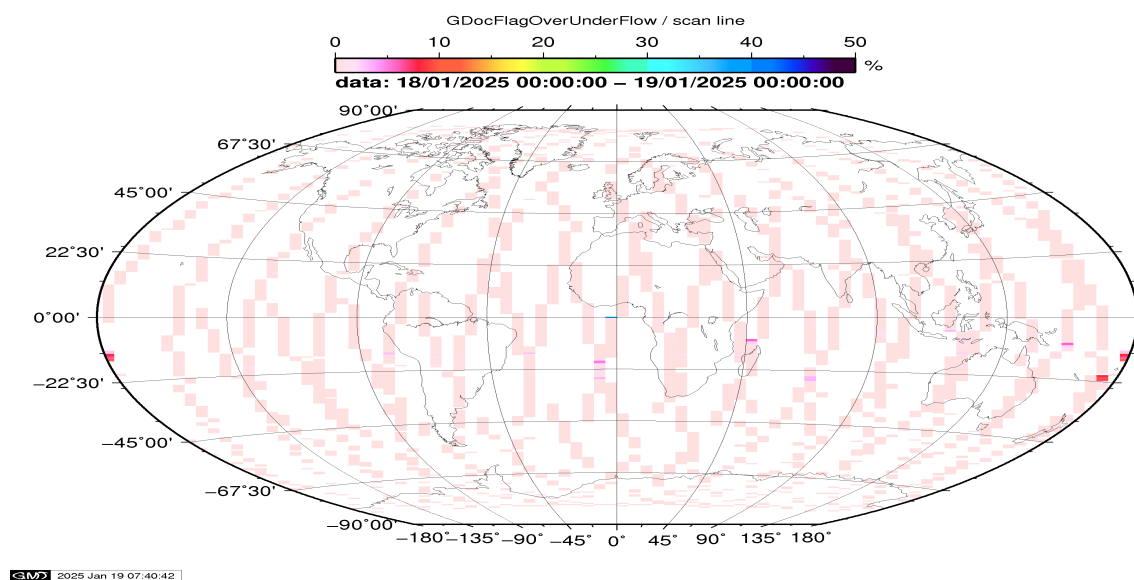


Figure 2: Flag of Over and Under Flows

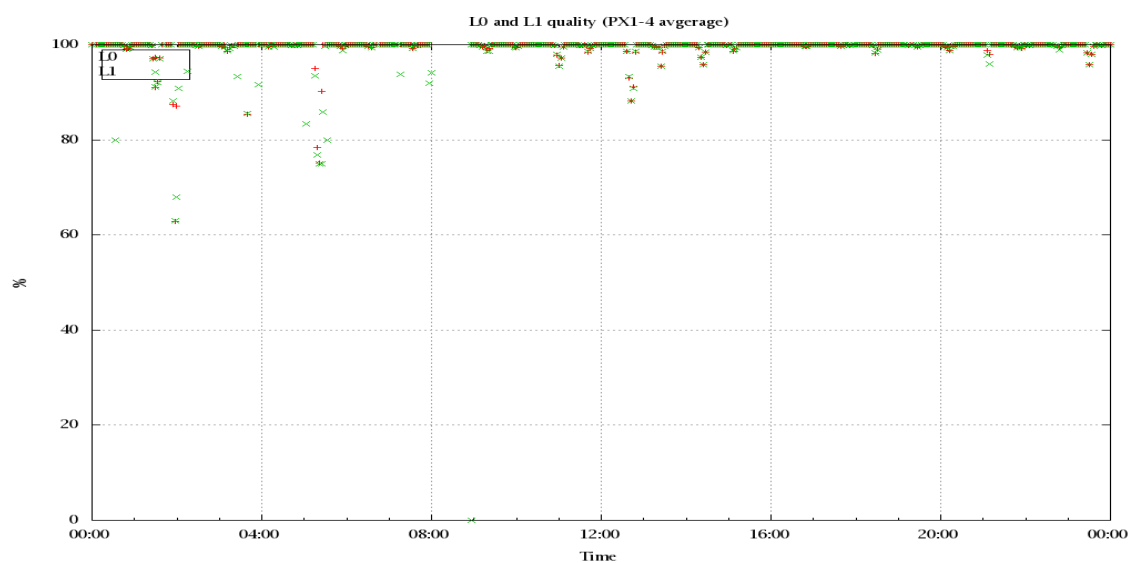


Figure 3: Level 0 and 1C overall quality

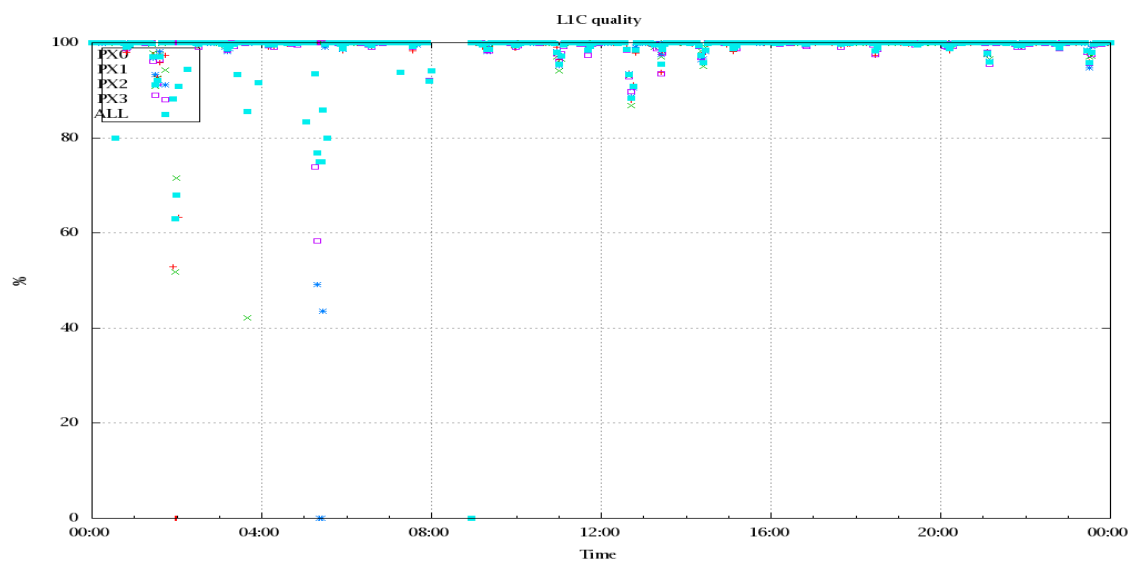


Figure 4: Level 1C quality

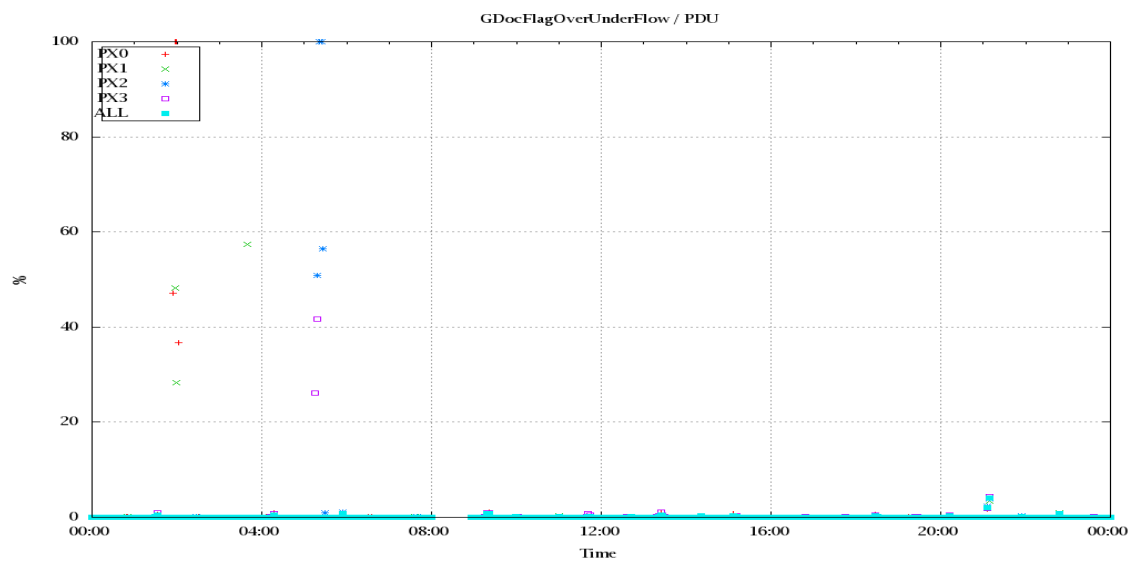


Figure 5: Timeseries of flag of Over and Under Flows

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 identification 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 radiative transfer model (RTM) is feed with co-located ECMWF profiles of T, water vapor and Ozone. Between March 2007 and the 18th of May 2010 RTIASI in Version 4.0 is used. After that date 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). In the following figures 28 to 34, the so-called radiance anomaly is shown. The radiance anomaly is defined as the difference between the quarter daily radiance average OBS-CAL (over all pixels and scan positions 10 to 20) and the average bias OBS-CAL (over all pixels and scan positions 10 to 20) of the last 30 days.

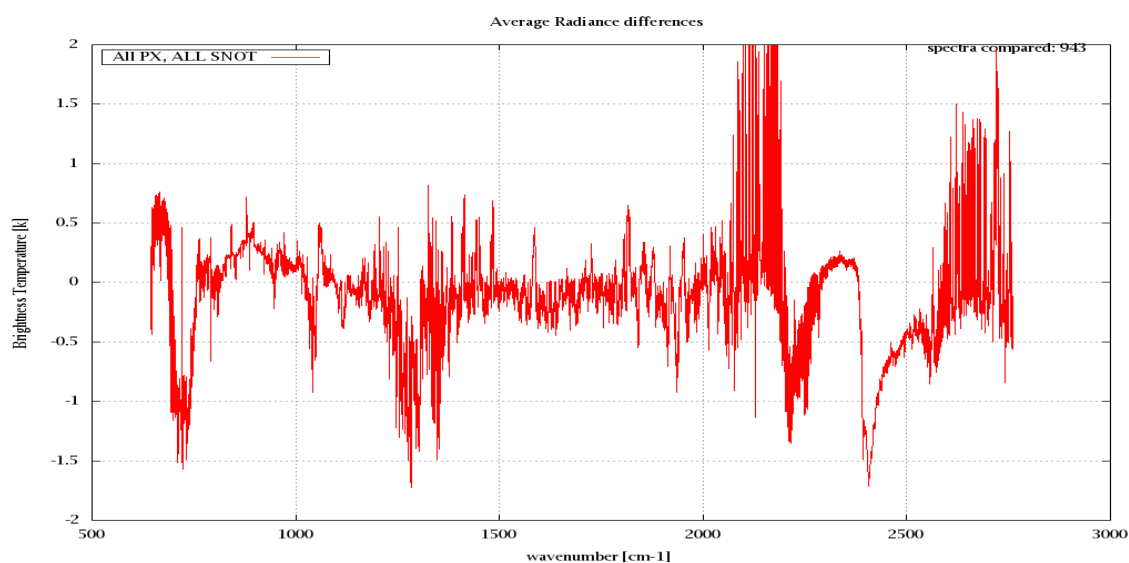


Figure 6: Average Radiance differences: OBS-CAL

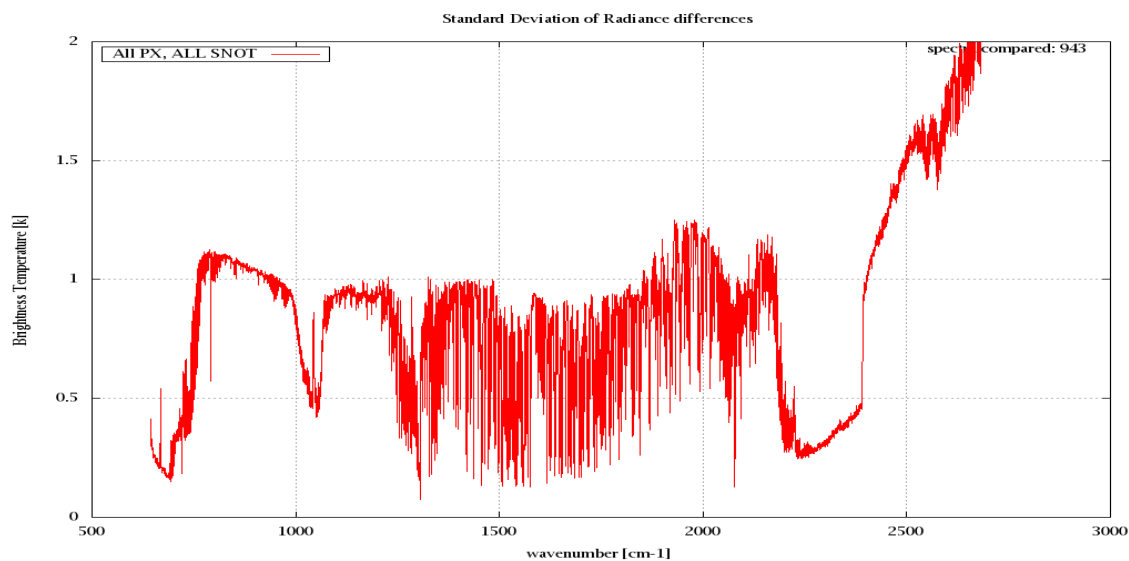


Figure 7: Standard Deviation of Radiance differences

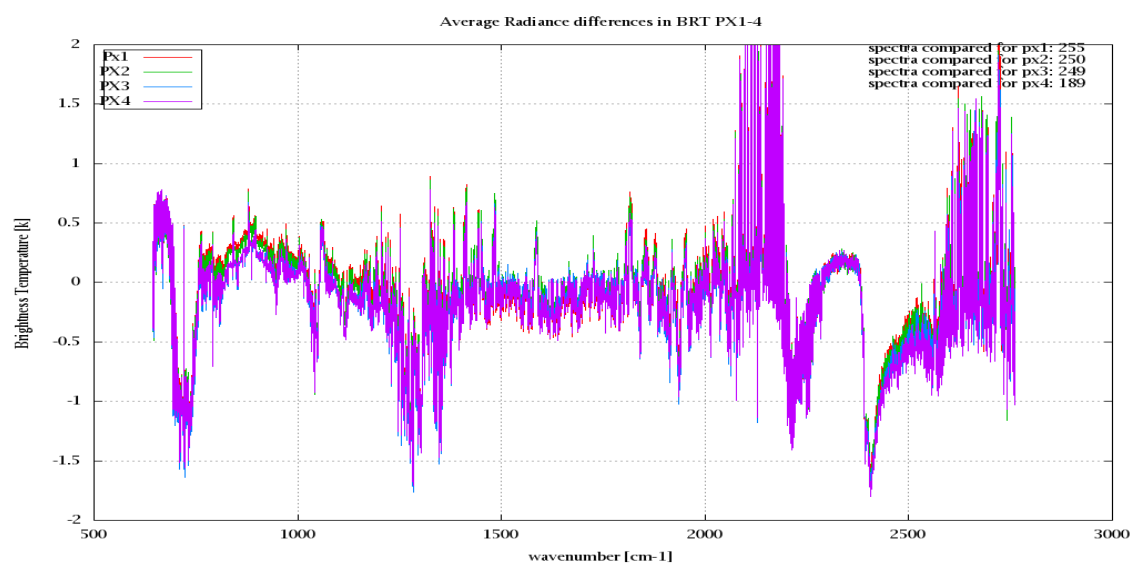


Figure 8: Average Radiance differences: OBS-CAL

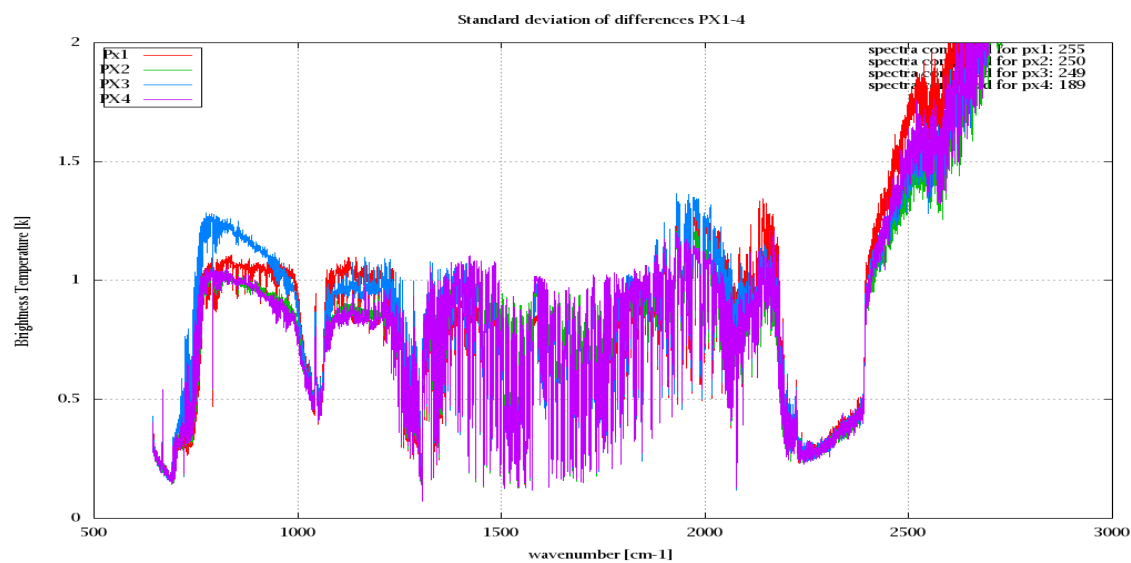


Figure 9: Standard Deviation of Radiance differences

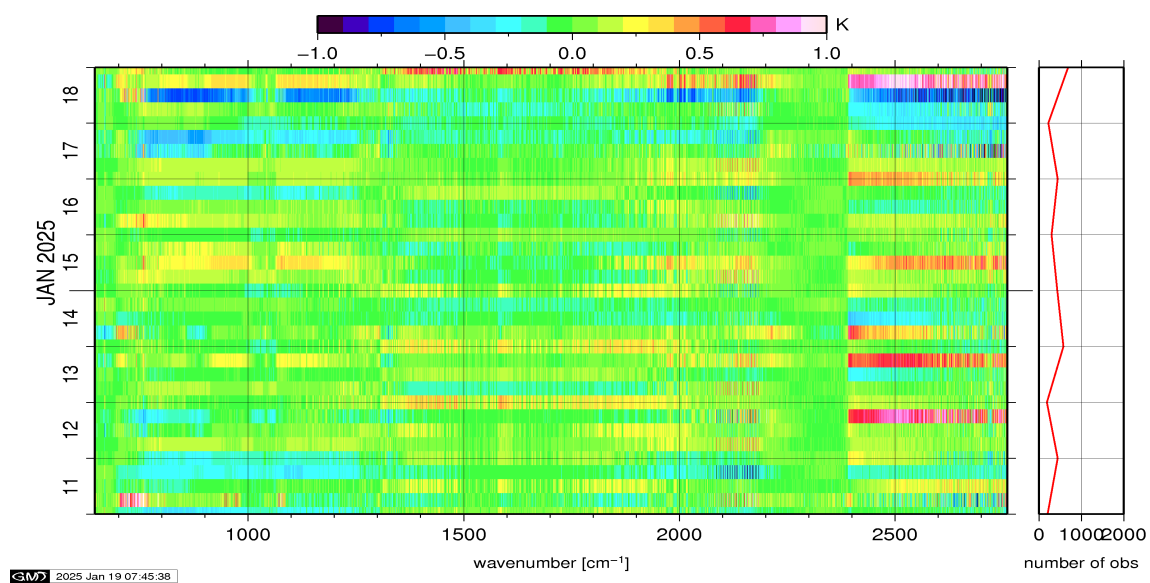


Figure 10: Radiance Anomaly in BT: All Channels

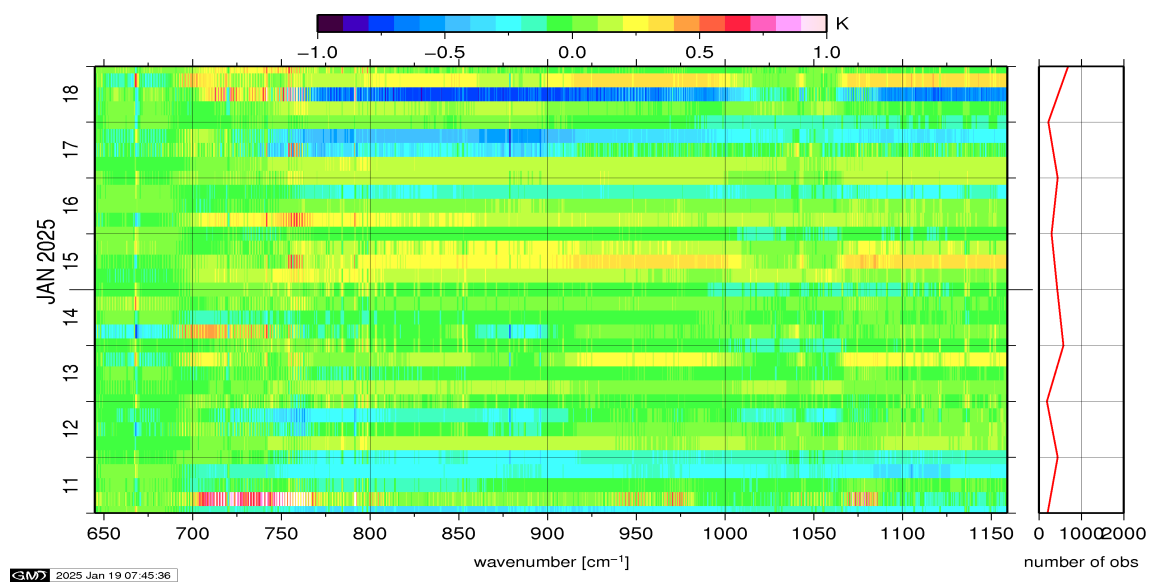


Figure 11: Radiance Anomaly in BT: IASI Band 1

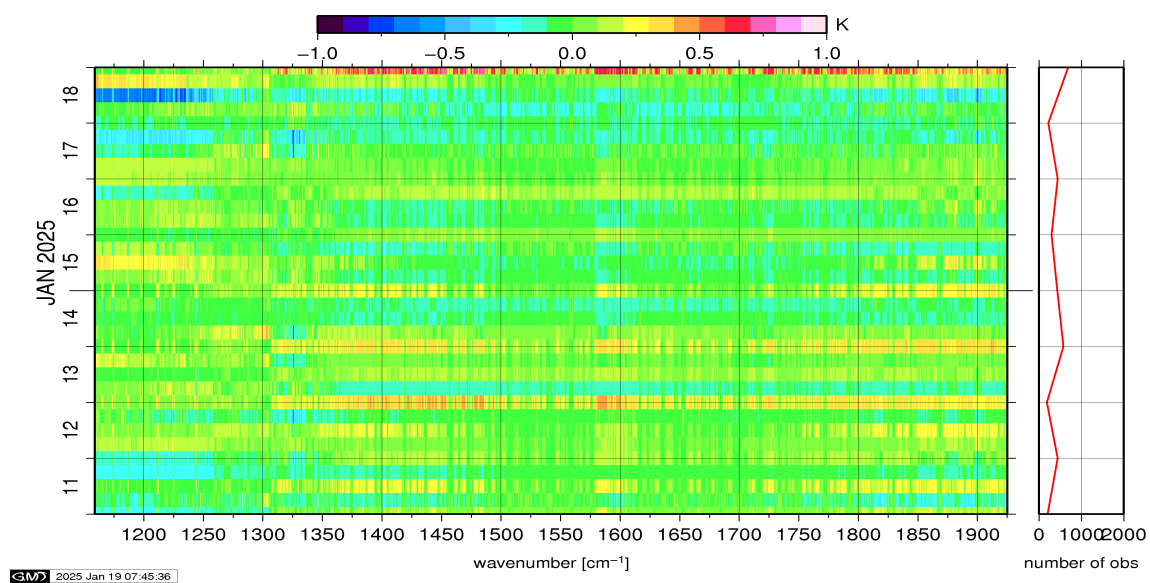


Figure 12: Radiance Anomaly in BT: IASI Band 2

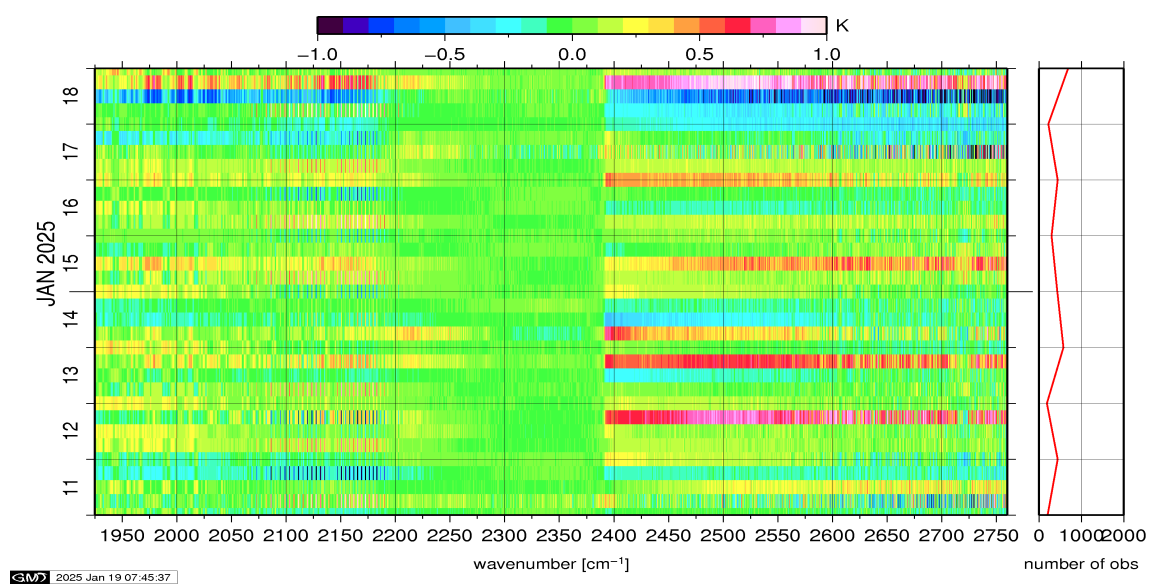


Figure 13: Radiance Anomaly in BT: IASI Band 3

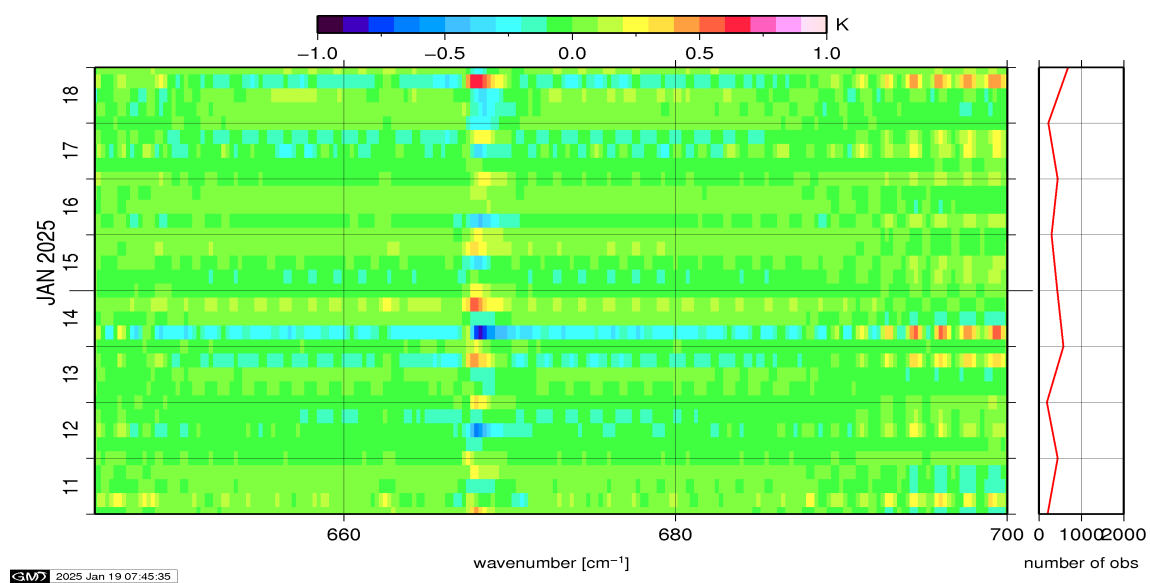


Figure 14: Radiance Anomaly in BT: CO2 14

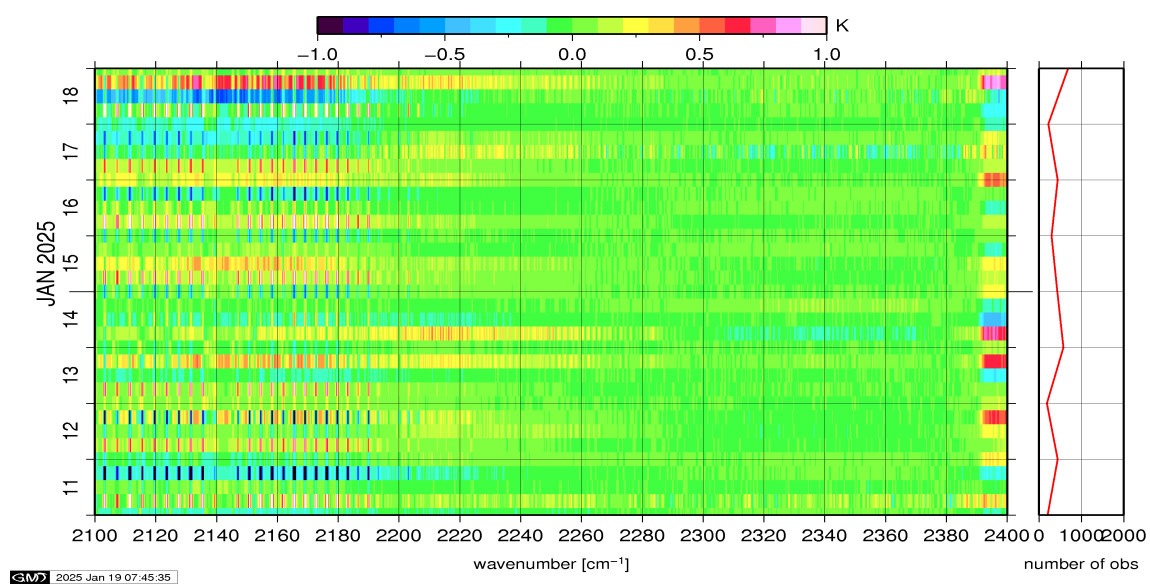


Figure 15: Radiance Anomaly in BT: CO2 4.3

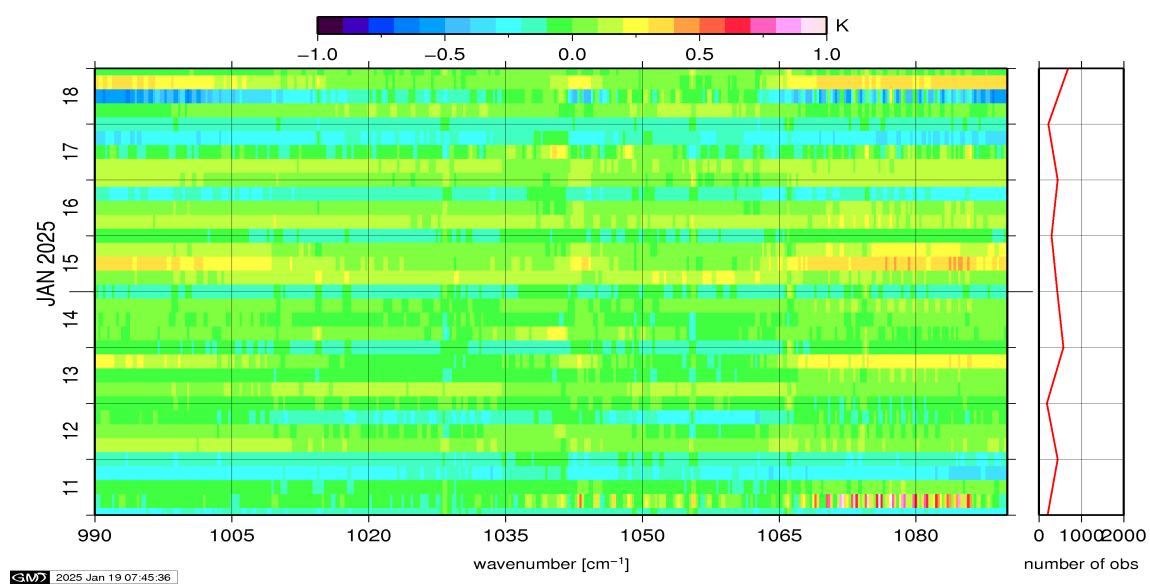


Figure 16: Radiance Anomaly in BT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison of IASI and HIRS/4 on-board Metop is performed on all pixels with distances smaller than 3 km between IASI and HIRS. All sky conditions are covered. The radiance differences IASI - HIRS are given in brightness temperatures at 280K reference NeDT. All conditions (clear, cloudy, day and night) are given in red in the following figures. The clear sky conditions at night are given in green and the clear sky cases during daylight are displayed in blue.



Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT



Figure 20: Radiance Differences in BT



Figure 21: Radinace Differences in BT