

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

IASI monitoring team

28/06/2023 00:00:00 - 29/06/2023 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 28/06/2023 00:00:00 - 29/06/2023 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 28/06/2023 00:00:00 - 29/06/2023 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	479	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	9116	0	20230628045415.360	20230628045705.082
PX1 (130)	13007	13009	20230628165229.975	20230628165230.405
PX2 (135)	9116	0	20230628045415.360	20230628045705.082
PX3 (140)	9086	0	20230628045407.360	20230628045705.082
PX4 (145)	9116	0	20230628045415.360	20230628045705.082
IMG (150)	7740	0	20230628045415.360	20230628045705.082
IMG (150)	1626	1628	20230628165229.756	20230628165230.190
VER (160)	10575	1100	20230628045415.360	20230628052707.486
VER (160)	1100	1105	20230628052707.486	20230628052707.486
VER (160)	1105	1110	20230628052707.486	20230628052707.486
VER (160)	1110	1115	20230628052707.486	20230628052707.486
VER (160)	1115	1120	20230628052707.486	20230628052707.486
VER (160)	1120	1101	20230628052707.486	20230628052707.486
VER (160)	1101	1106	20230628052707.486	20230628052707.486
VER (160)	1106	1111	20230628052707.486	20230628052707.486
VER (160)	1111	1116	20230628052707.486	20230628052707.486
VER (160)	1116	1121	20230628052707.486	20230628052707.486
VER (160)	1121	1102	20230628052707.486	20230628052707.486
VER (160)	1102	1107	20230628052707.486	20230628052707.486

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1107	1112	20230628052707.486	20230628052707.486
VER (160)	1112	1117	20230628052707.486	20230628052707.486
VER (160)	1117	1122	20230628052707.486	20230628052707.486
VER (160)	1122	1103	20230628052707.486	20230628052707.486
VER (160)	1103	1108	20230628052707.486	20230628052707.486
VER (160)	1108	1113	20230628052707.486	20230628052707.486
VER (160)	1113	1118	20230628052707.486	20230628052707.486
VER (160)	1118	1123	20230628052707.486	20230628052707.486
VER (160)	1123	1104	20230628052707.486	20230628052707.486
VER (160)	1104	1109	20230628052707.486	20230628052707.486
VER (160)	1109	1114	20230628052707.486	20230628052707.486
VER (160)	1114	1119	20230628052707.486	20230628052707.486
VER (160)	1119	1124	20230628052707.486	20230628052707.486
VER (160)	4830	4832	20230628070559.355	20230628070823.350
AUX (180)	11943	0	20230628045407.790	20230628045711.785

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
28/06/2023 00:00:12	-	Normal operation
28/06/2023 07:06:20	Normal operation	Auxiliary ASE synchronised
28/06/2023 07:08:12	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	479	-
GQisFlagQual set (PX1)	99.61 %	-
GQisFlagQual set (PX2)	99.67 %	-
GQisFlagQual set (PX3)	99.69 %	-
GQisFlagQual set (PX4)	99.59 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

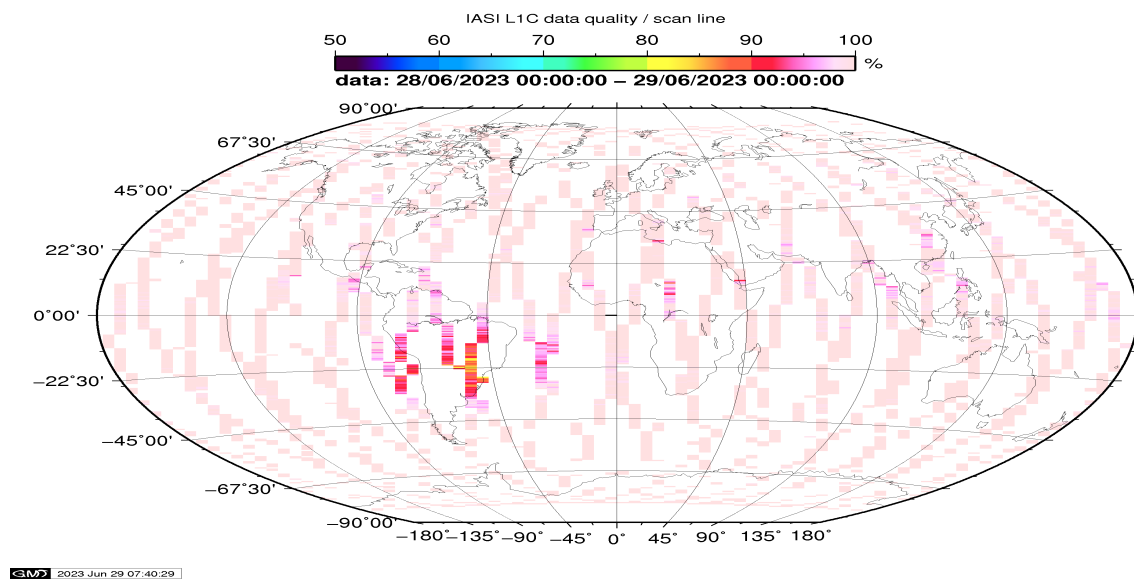


Figure 1: L1C data quality

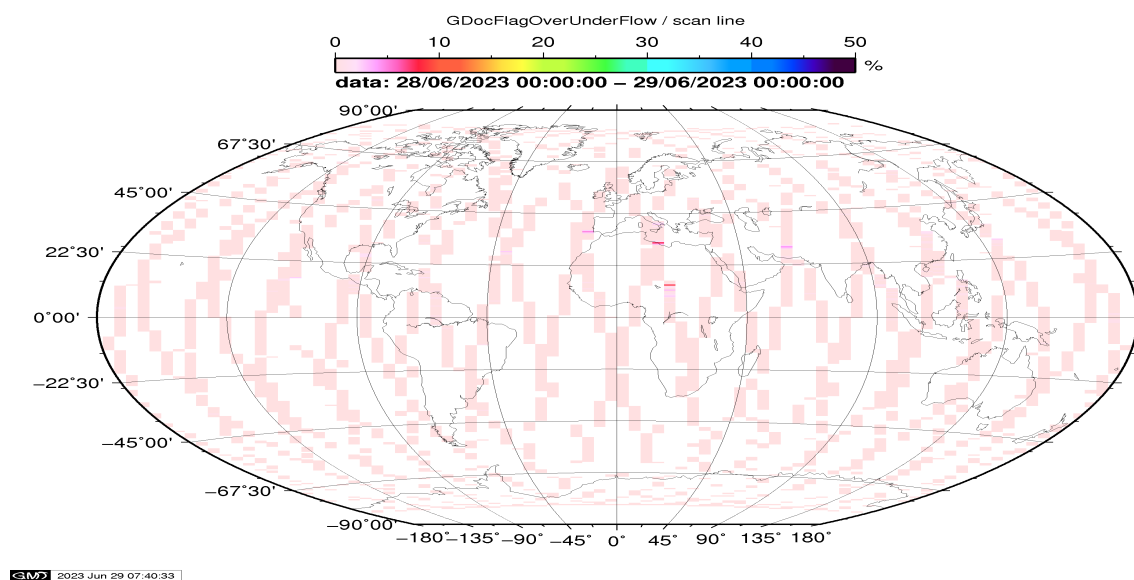


Figure 2: Flag of Over and Under Flows

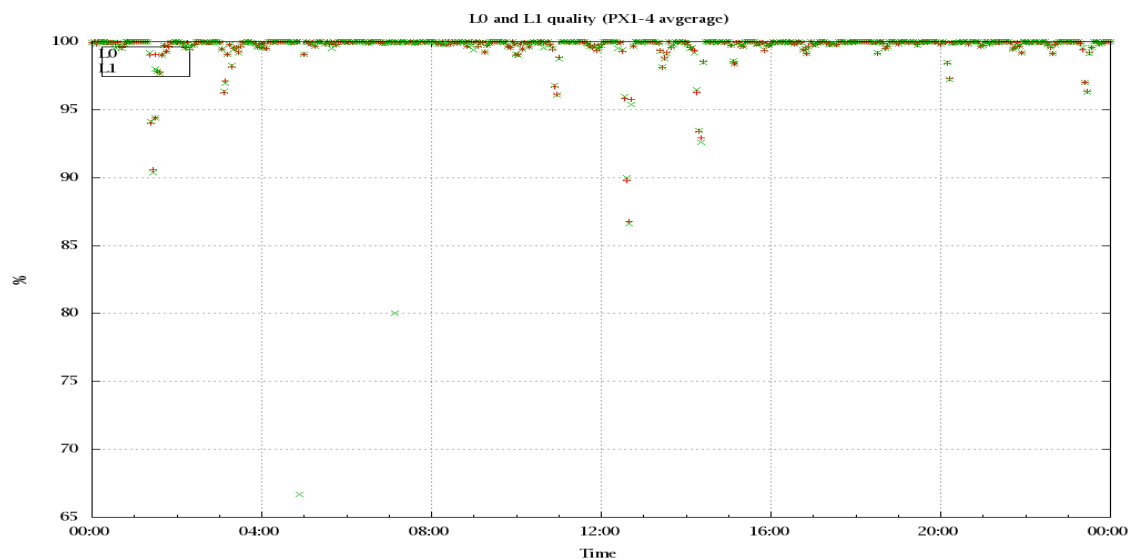


Figure 3: Level 0 and 1C overall quality

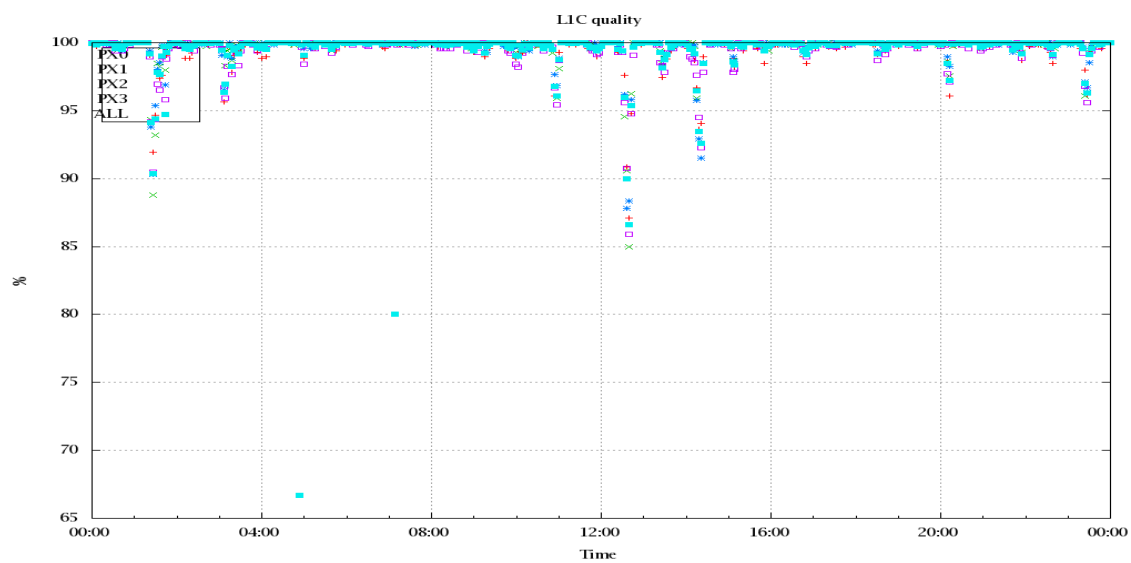


Figure 4: Level 1C quality

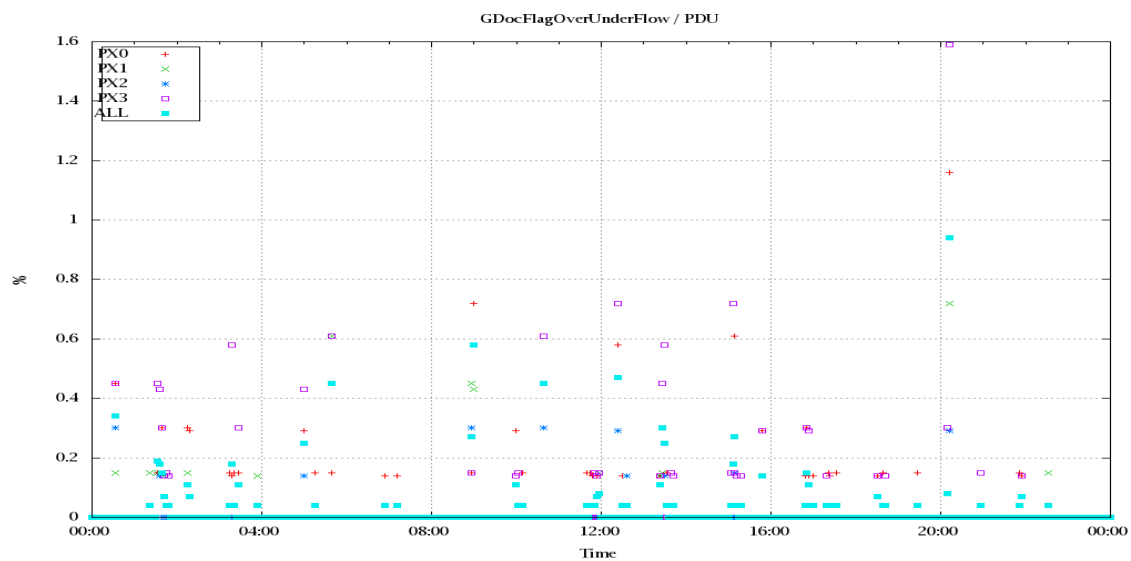


Figure 5: Timeseries of flag of Over and Under Flows

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.

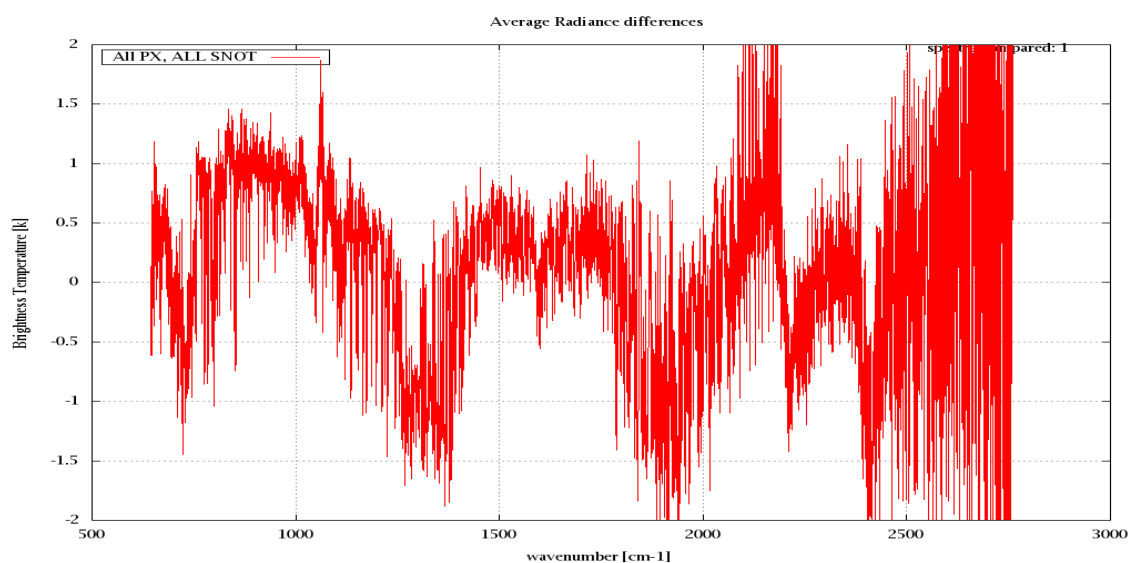


Figure 6: Average Radiance differences: OBS-CAL

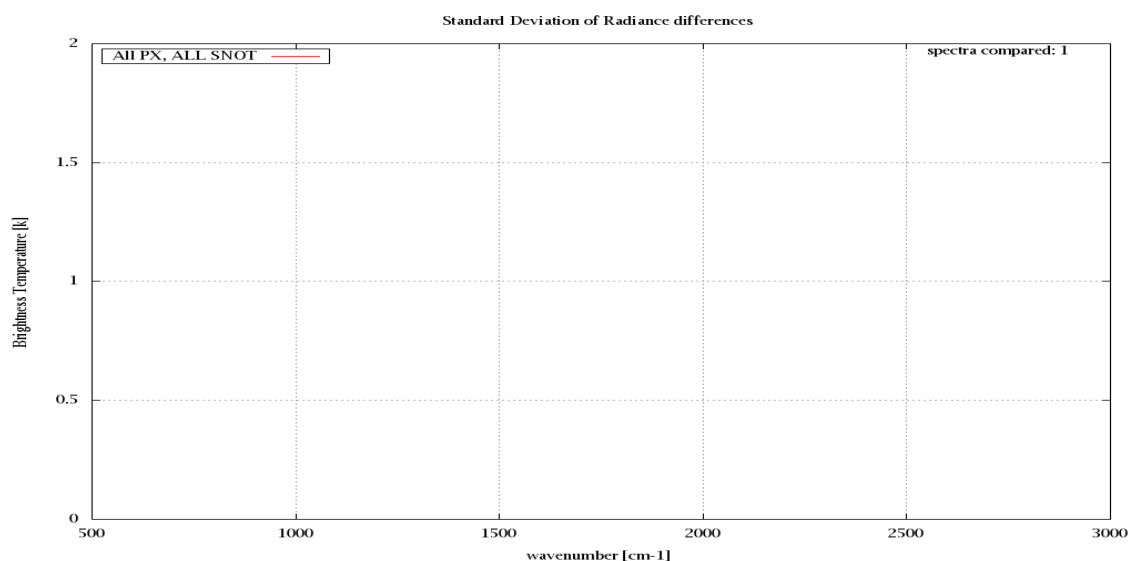


Figure 7: Standard Deviation of Radiance differences

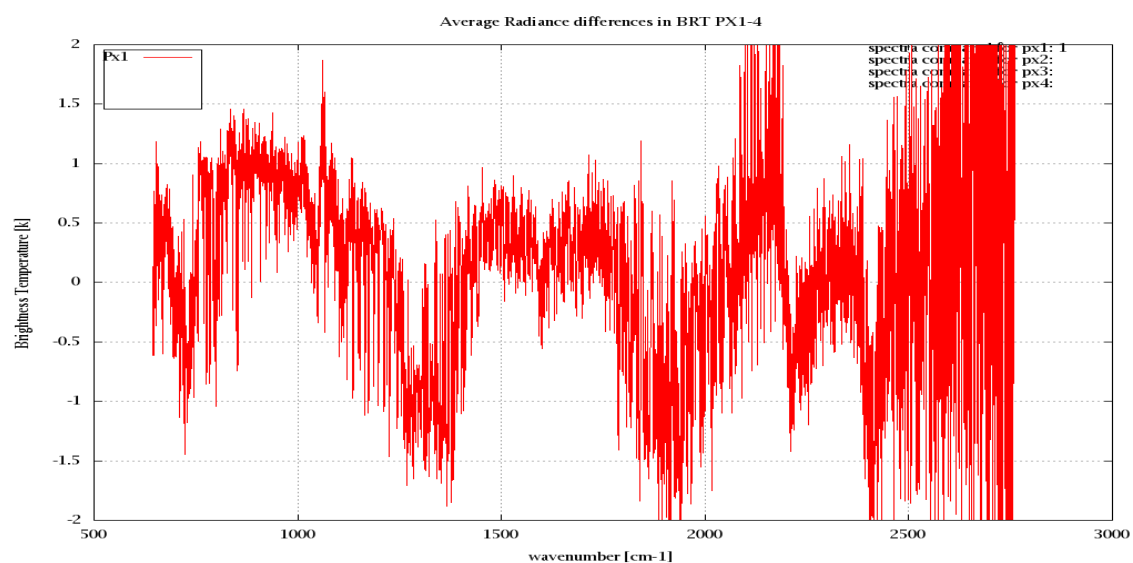


Figure 8: Average Radiance differences: OBS-CAL

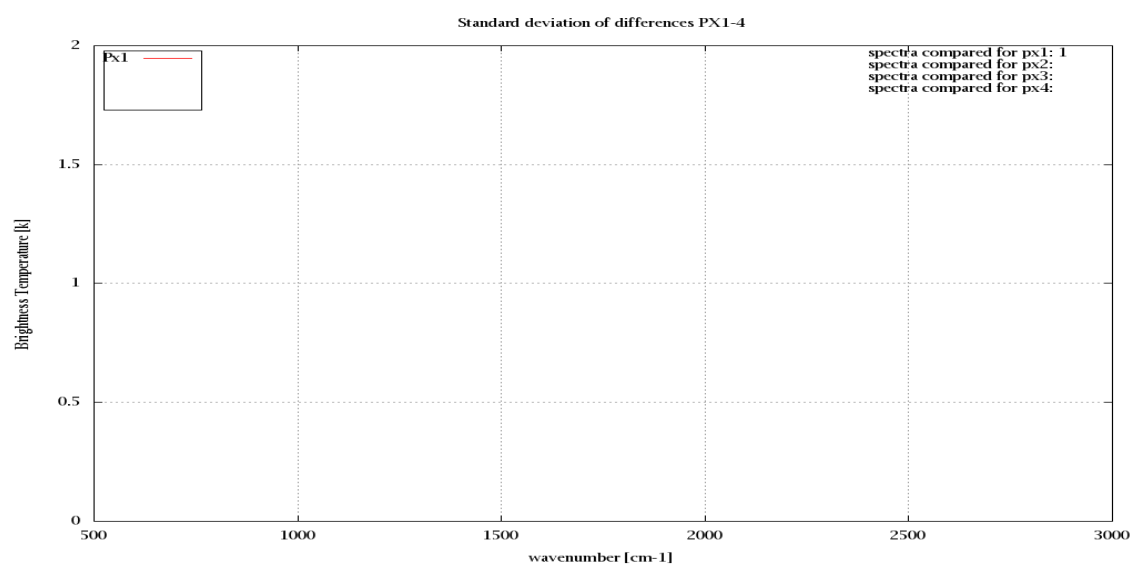


Figure 9: Standard Deviation of Radiance differences

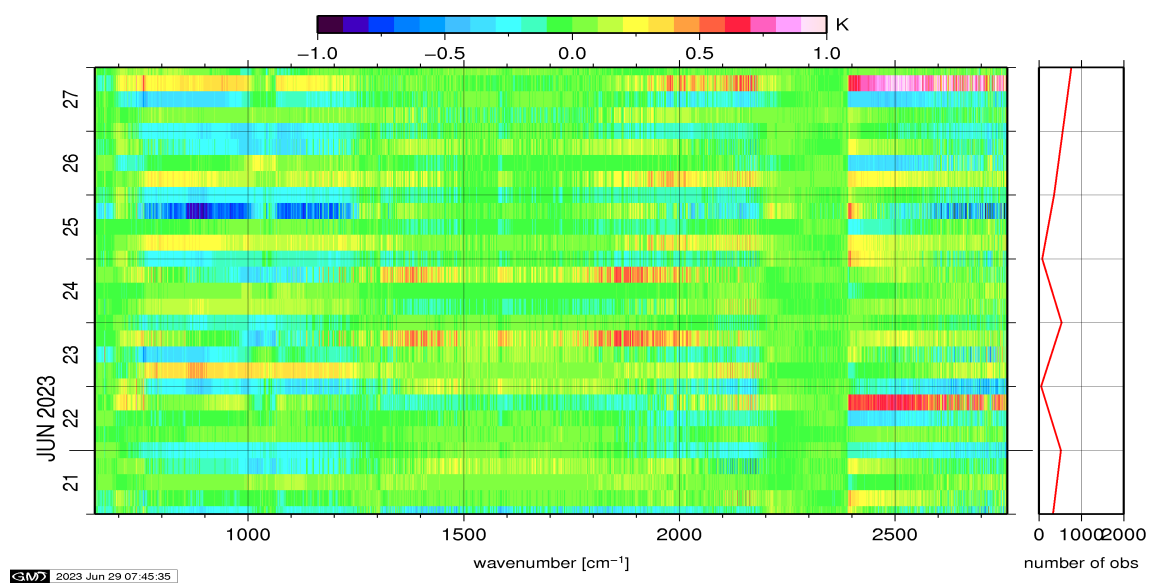


Figure 10: Radiance Anomaly in BT: All Channels

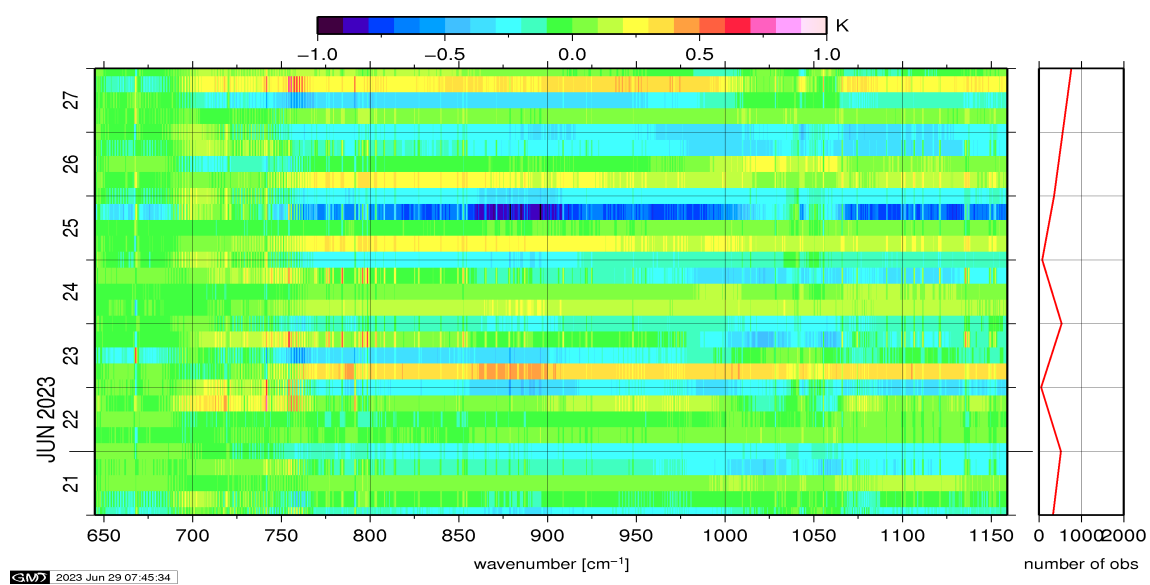


Figure 11: Radiance Anomaly in BT: IASI Band 1

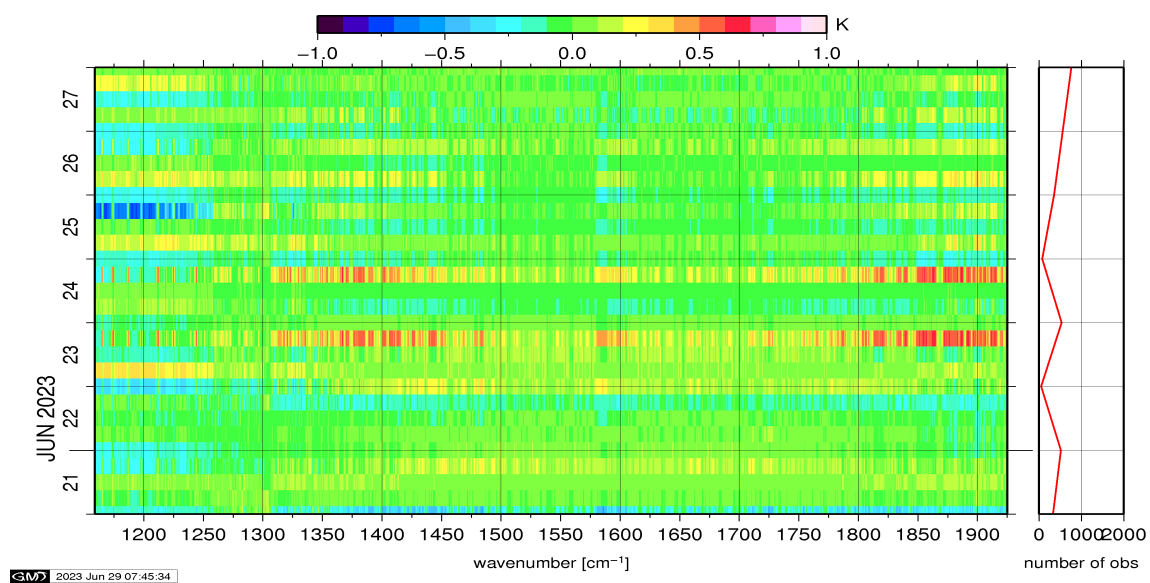


Figure 12: Radiance Anomaly in BT: IASI Band 2

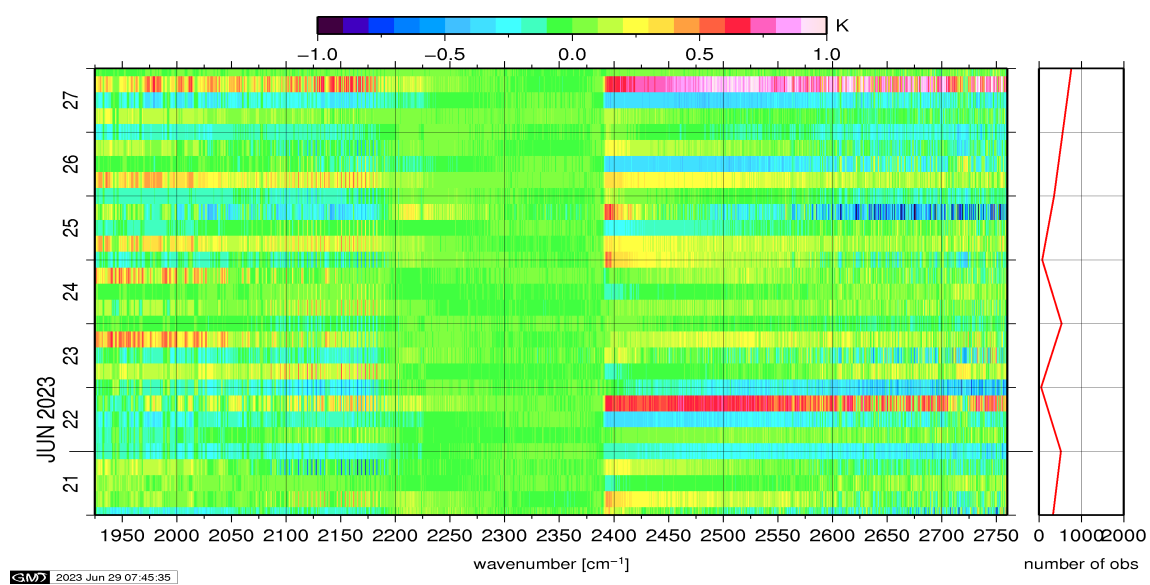


Figure 13: Radiance Anomaly in BT: IASI Band 3

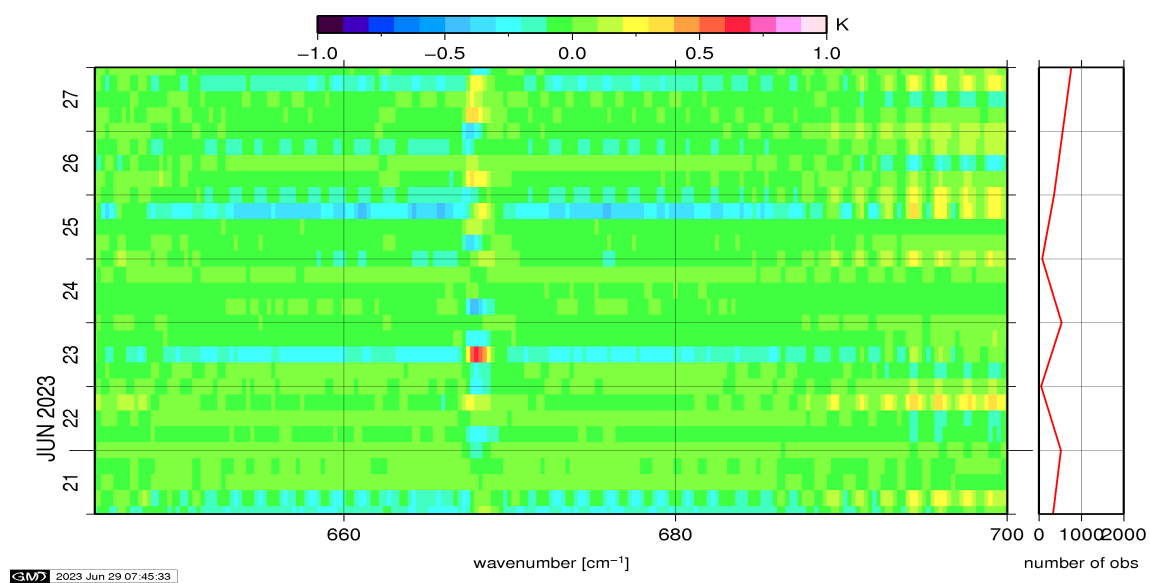


Figure 14: Radiance Anomaly in BT: CO2 14

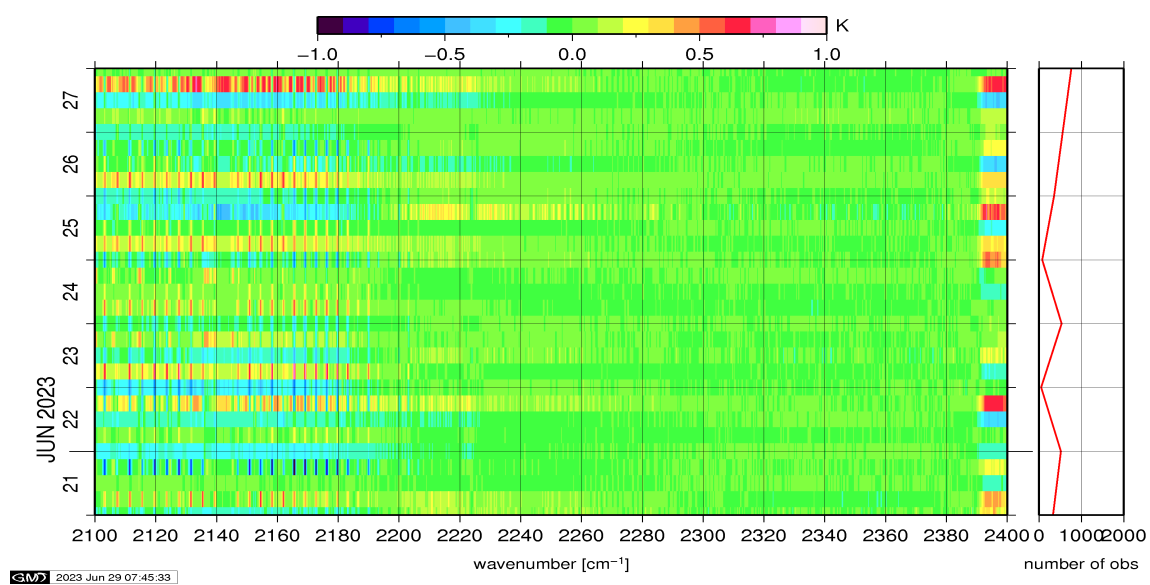


Figure 15: Radiance Anomaly in BT: CO2 4.3

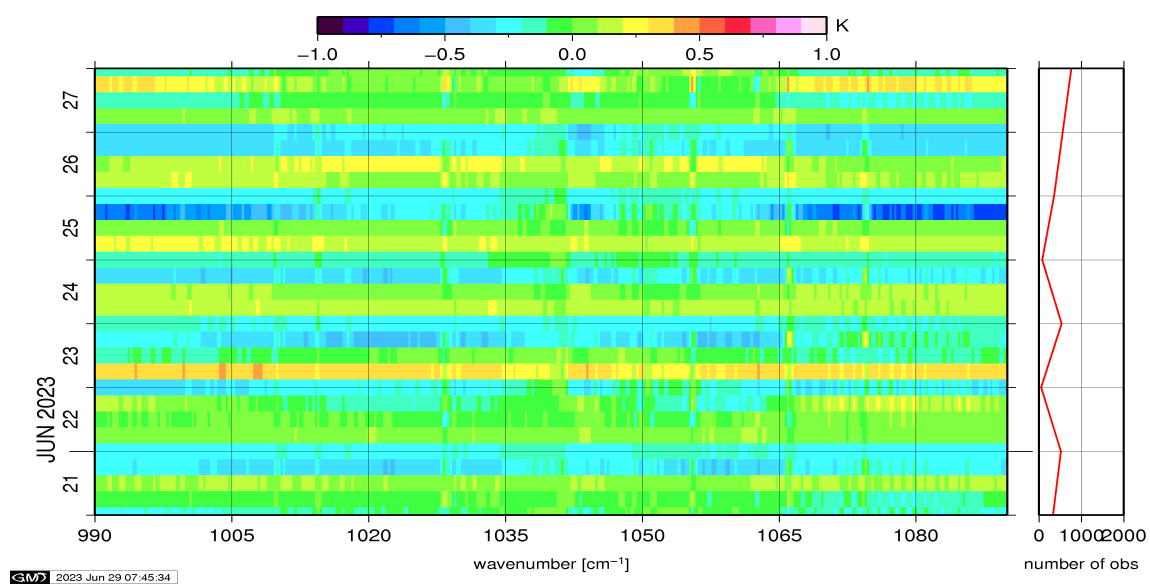


Figure 16: Radiance Anomaly in BT: O3

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.

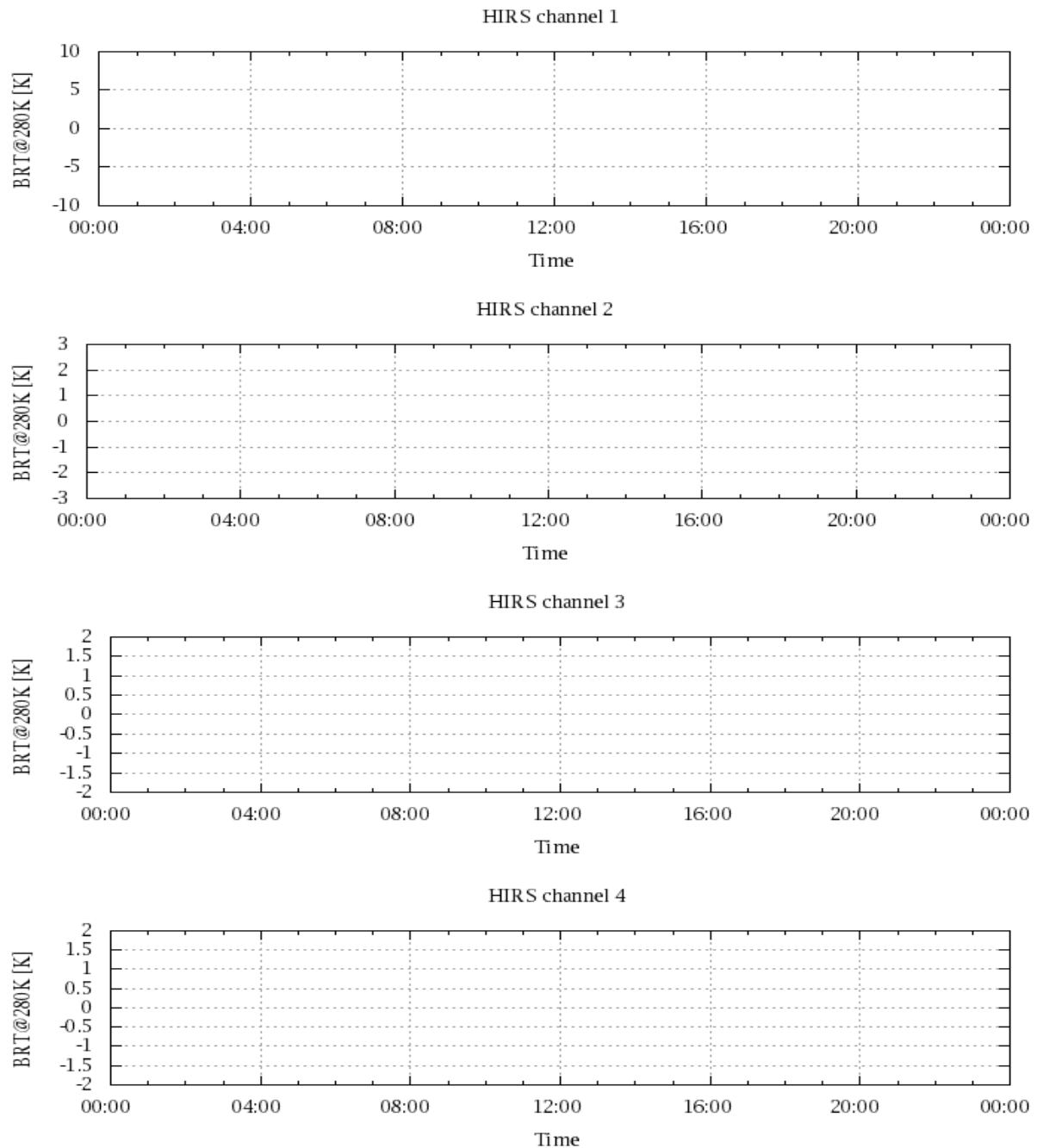


Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT



Figure 20: Radiance Differences in BT



Figure 21: Radinace Differences in BT