

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

IASI monitoring team

01/11/2021 00:00:00 - 02/11/2021 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 01/11/2021 00:00:00 - 02/11/2021 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 01/11/2021 00:00:00 - 02/11/2021 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	473	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	14704	14759	20211101224658.840	20211101224713.758
PX1 (130)	14779	14830	20211101224719.597	20211101224733.648
PX1 (130)	14854	14909	20211101224738.840	20211101224753.757
PX1 (130)	14929	14980	20211101224759.593	20211101224813.648
PX2 (135)	14704	14758	20211101224658.840	20211101224713.543
PX2 (135)	14779	14830	20211101224719.597	20211101224733.648
PX2 (135)	14854	14908	20211101224738.840	20211101224753.539
PX2 (135)	14929	14980	20211101224759.593	20211101224813.648
PX3 (140)	14704	14758	20211101224658.840	20211101224713.543
PX3 (140)	14778	14830	20211101224719.379	20211101224733.648
PX3 (140)	14854	14908	20211101224738.840	20211101224753.539
PX3 (140)	14929	14980	20211101224759.593	20211101224813.648
PX4 (145)	14704	14758	20211101224658.840	20211101224713.543
PX4 (145)	14778	14830	20211101224719.379	20211101224733.648
PX4 (145)	14854	14908	20211101224738.840	20211101224753.539
PX4 (145)	14929	14980	20211101224759.593	20211101224813.648
IMG (150)	7431	7490	20211101224659.922	20211101224713.543
IMG (150)	7514	7574	20211101224719.379	20211101224733.648
IMG (150)	7598	7660	20211101224738.840	20211101224753.539

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	7685	7744	20211101224759.593	20211101224813.648
VER (160)	7401	7407	20211101224658.840	20211101224714.840
VER (160)	7411	7422	20211101224714.840	20211101224738.840
VER (160)	7423	7432	20211101224738.840	20211101224754.836
VER (160)	7436	7447	20211101224754.836	20211101224818.839
AUX (180)	14565	14567	20211101224659.273	20211101224715.273
AUX (180)	14567	14572	20211101224715.273	20211101224755.269

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
01/11/2021 00:00:08	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	473	-
GQisFlagQual set (PX1)	99.59 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.67 %	-
GQisFlagQual set (PX4)	99.61 %	-
GQisFlagQual set (all)	99.63 %	-

Table 4: Quality flags

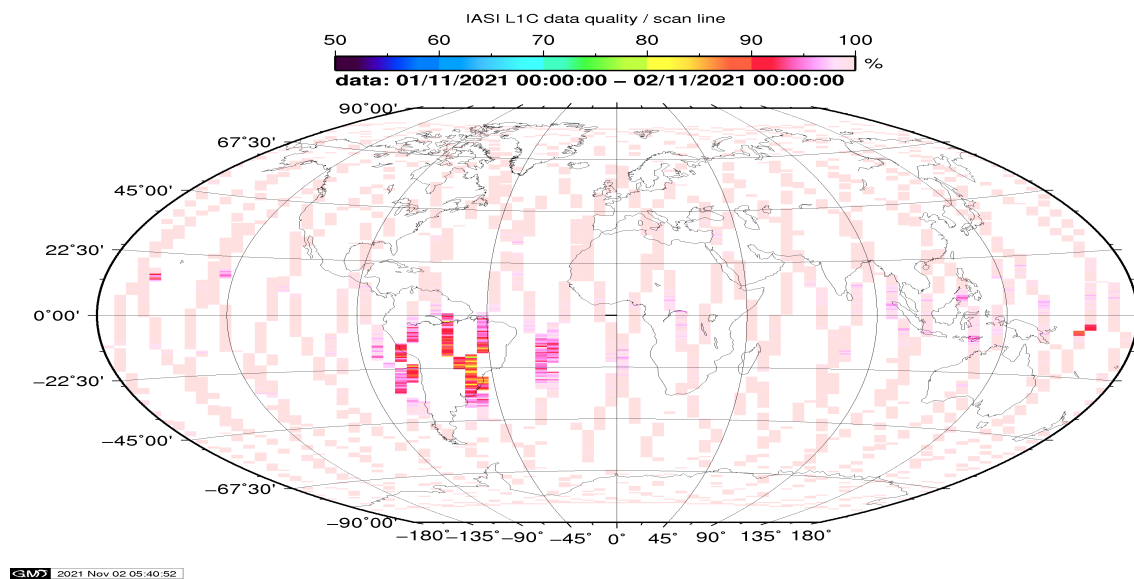


Figure 1: L1C data quality

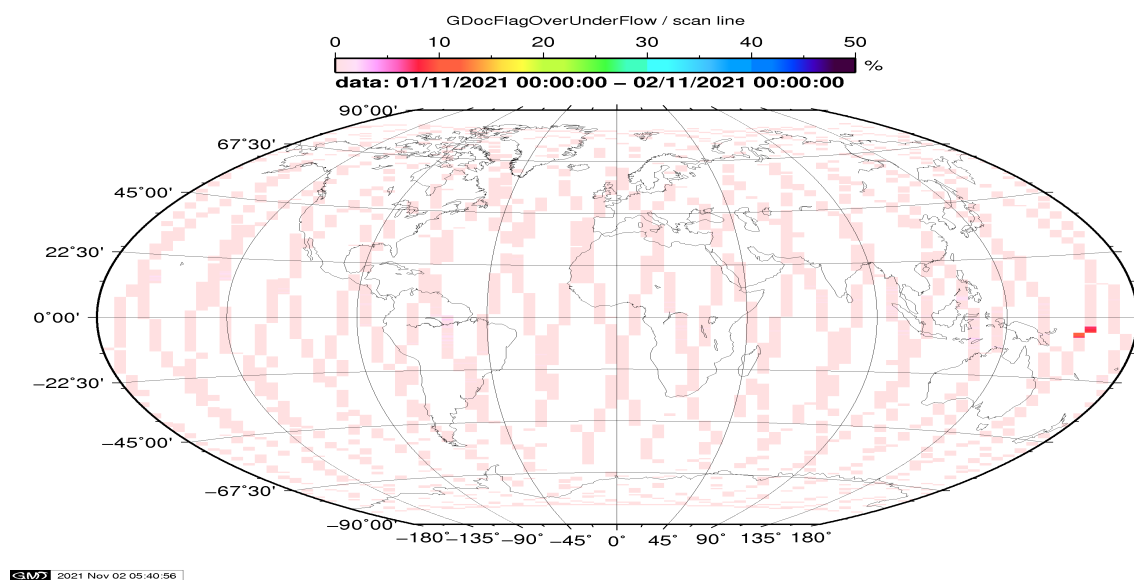


Figure 2: Flag of Over and Under Flows

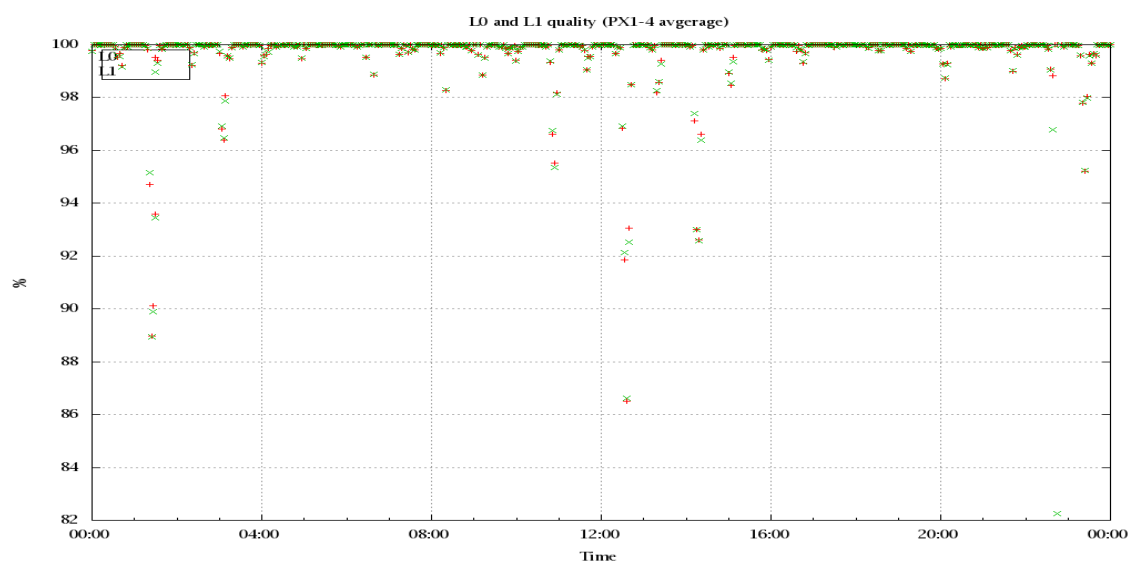


Figure 3: Level 0 and 1C overall quality

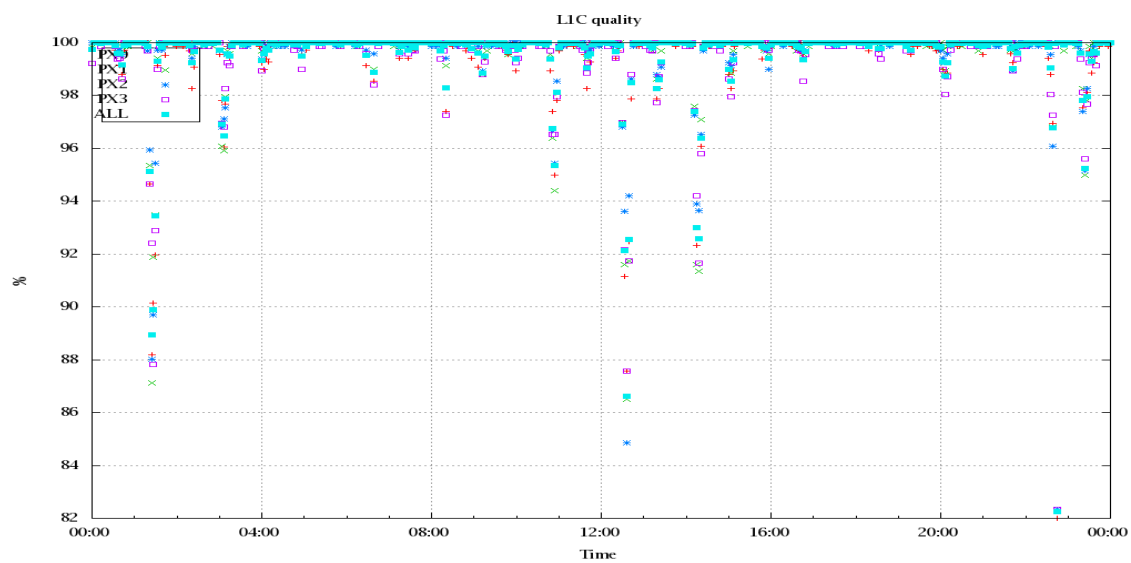


Figure 4: Level 1C quality

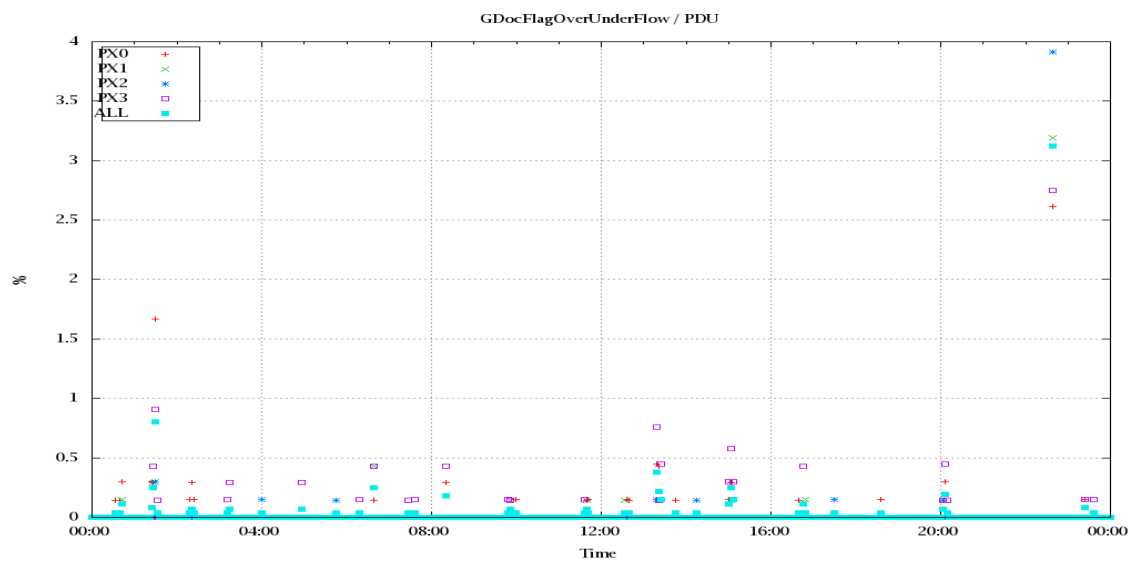


Figure 5: Timeseries of flag of Over and Under Flows

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.

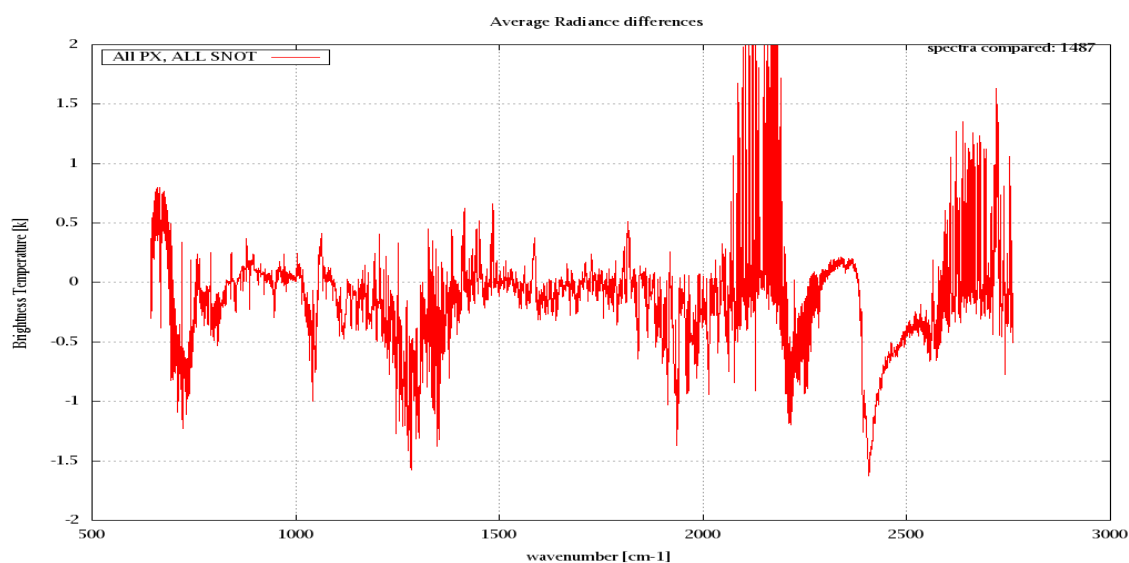


Figure 6: Average Radiance differences: OBS-CAL

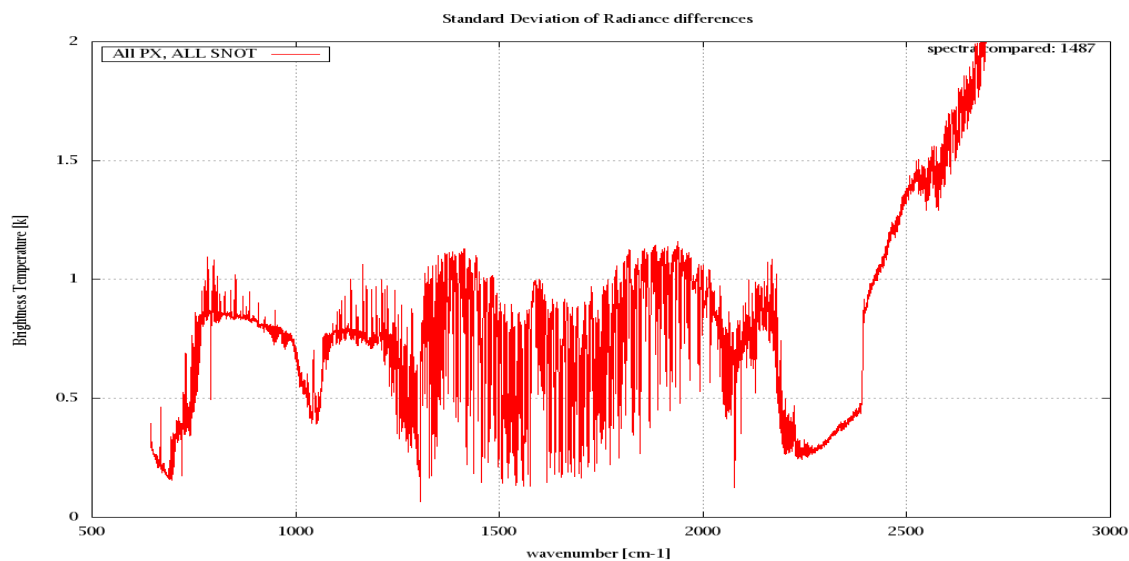


Figure 7: Standard Deviation of Radiance differences

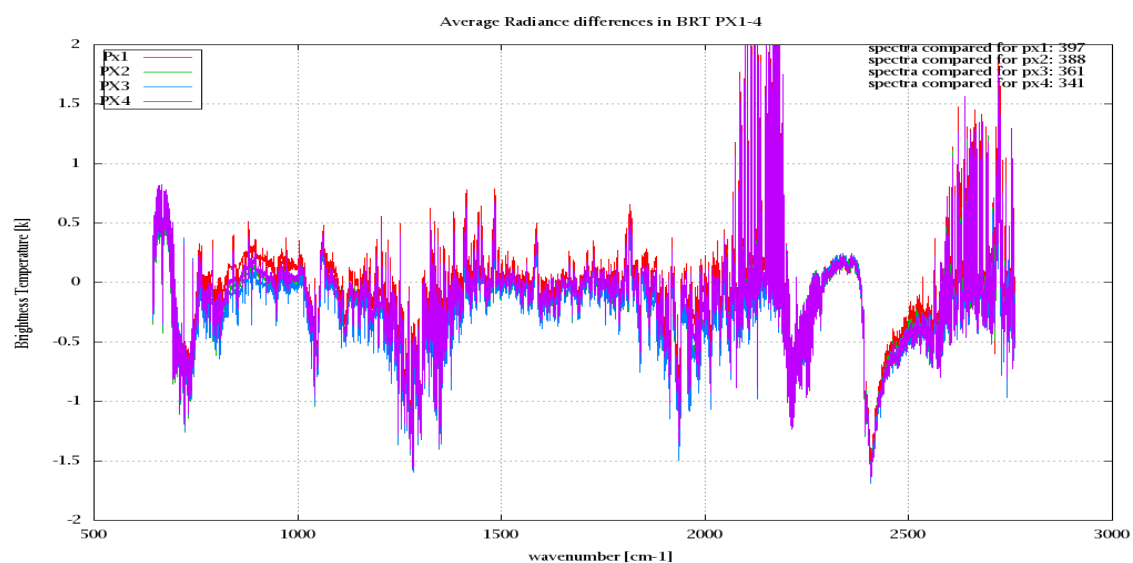


Figure 8: Average Radiance differences: OBS-CAL

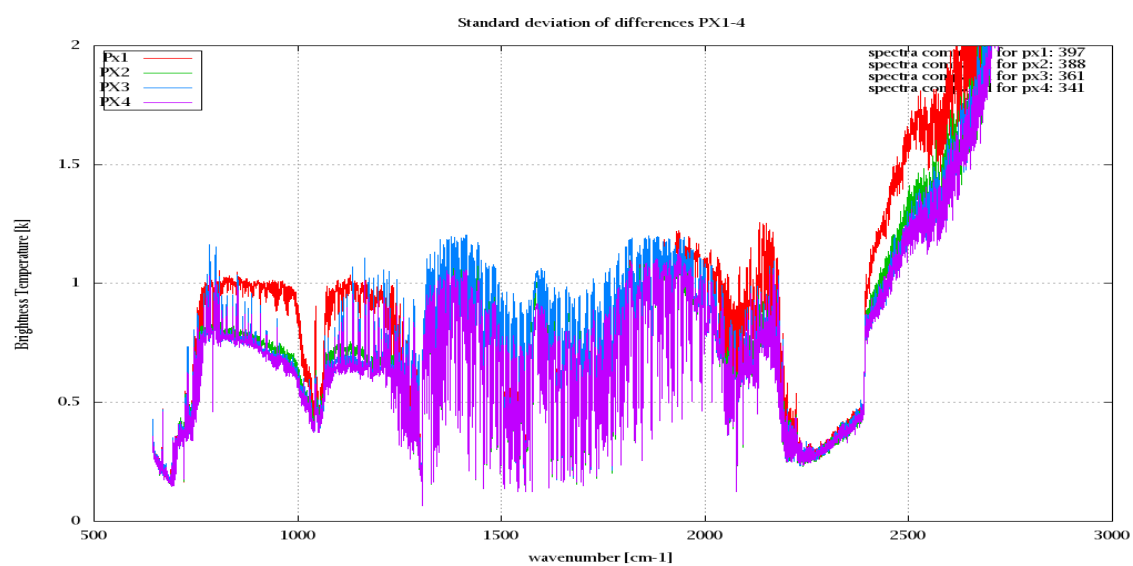


Figure 9: Standard Deviation of Radiance differences

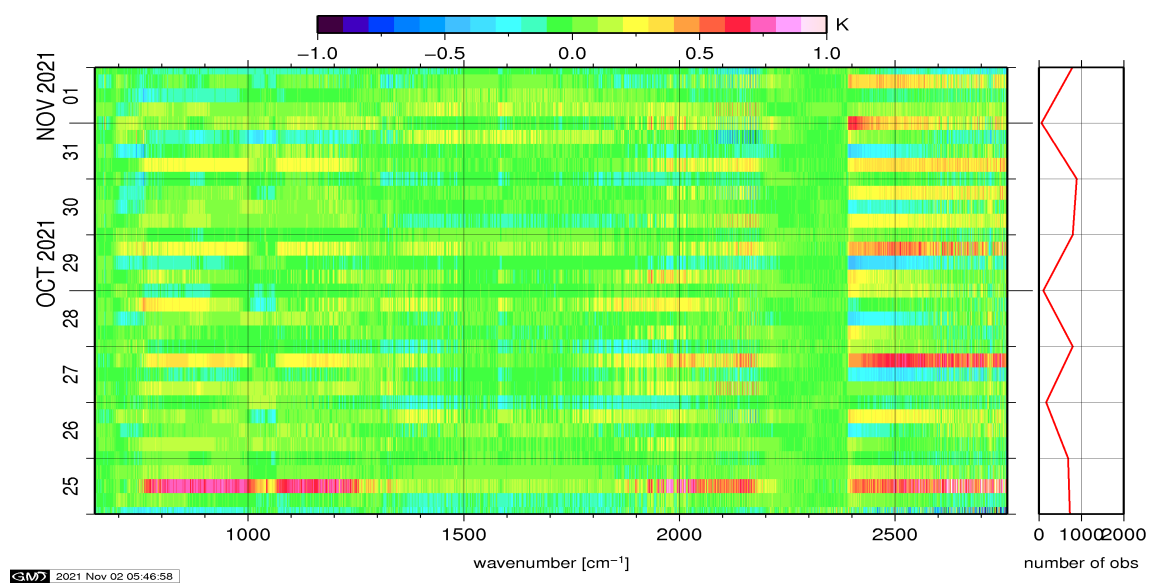


Figure 10: Radiance Anomaly in BT: All Channels

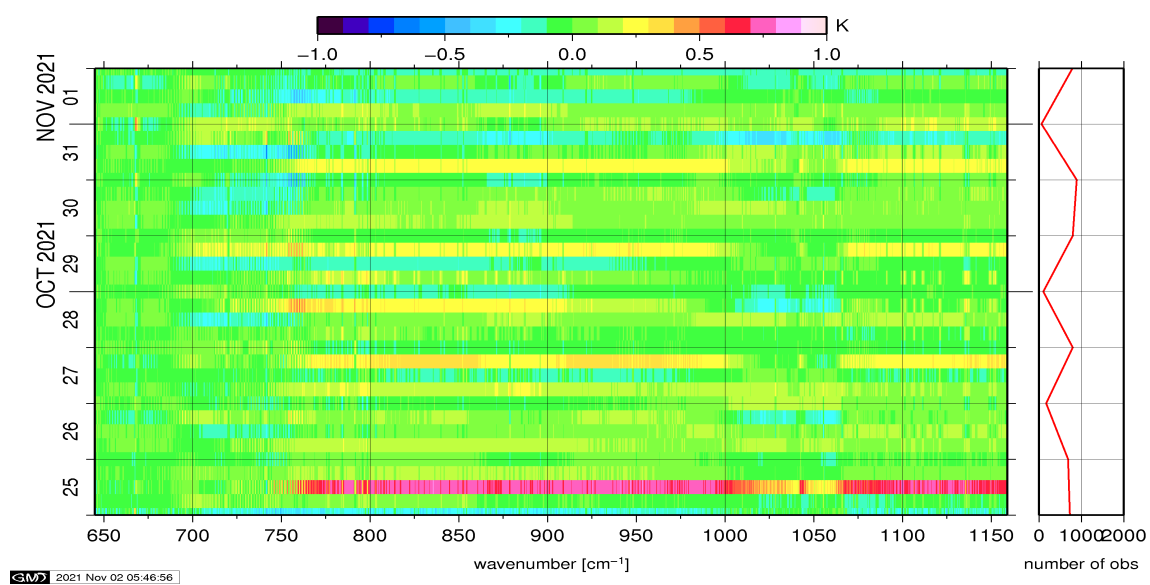


Figure 11: Radiance Anomaly in BT: IASI Band 1

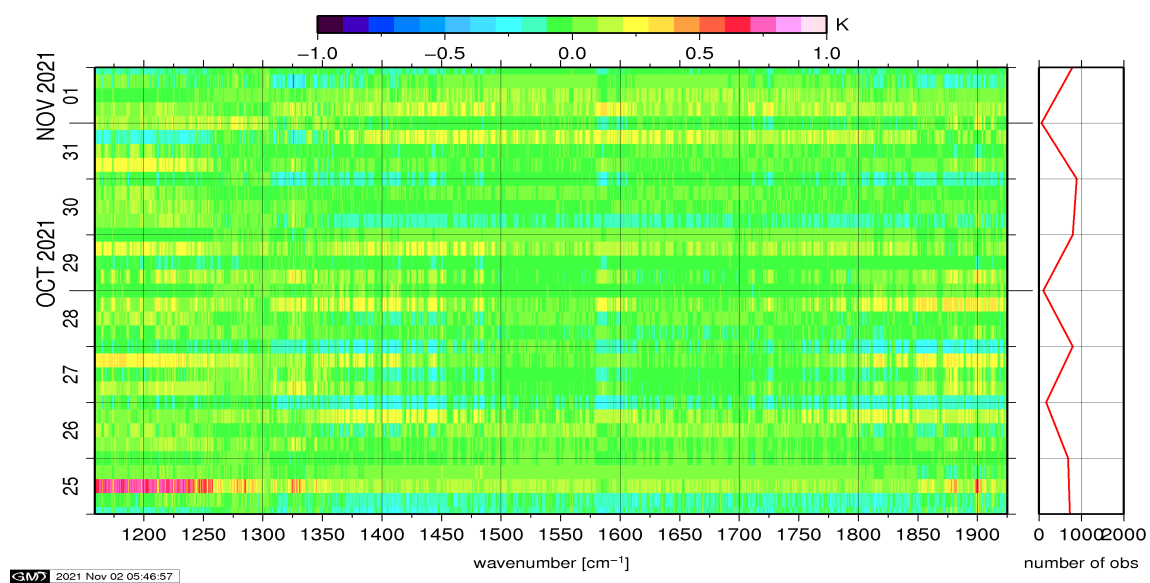


Figure 12: Radiance Anomaly in BT: IASI Band 2

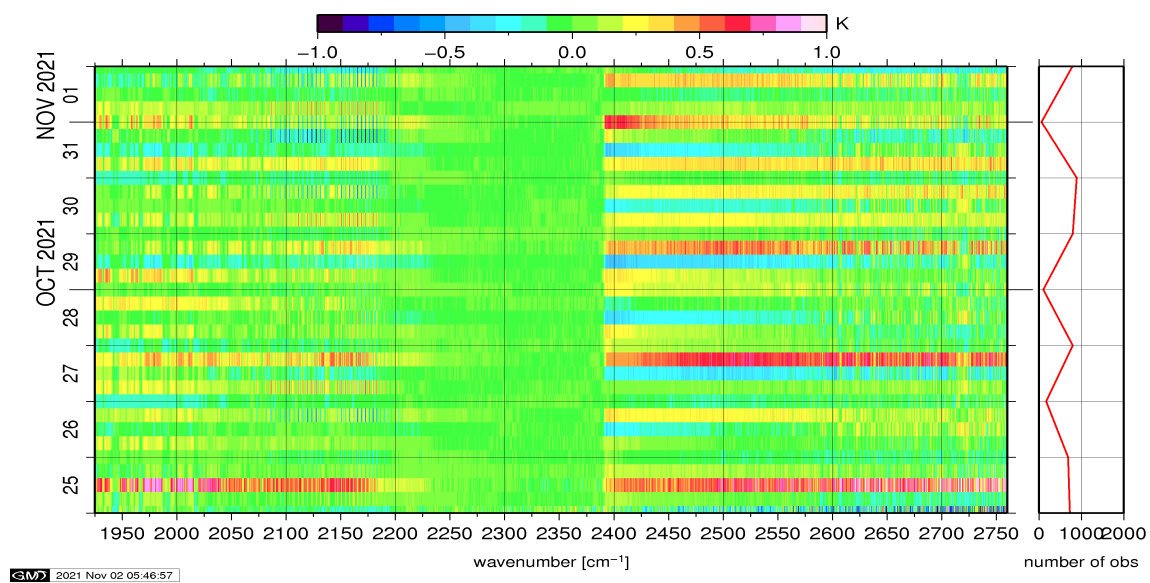


Figure 13: Radiance Anomaly in BT: IASI Band 3

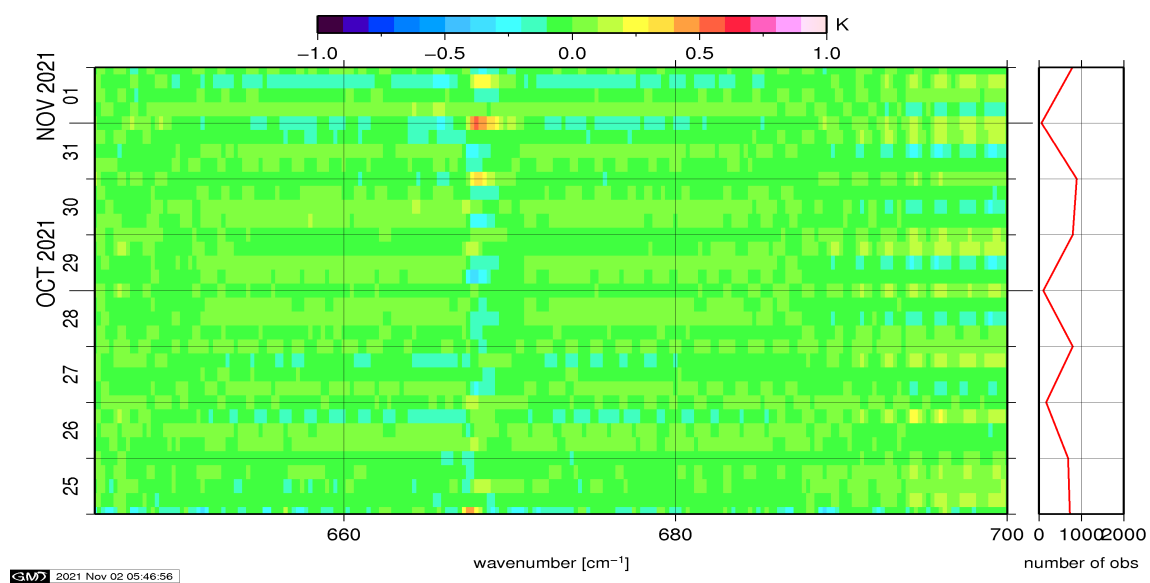


Figure 14: Radiance Anomaly in BT: CO2 14

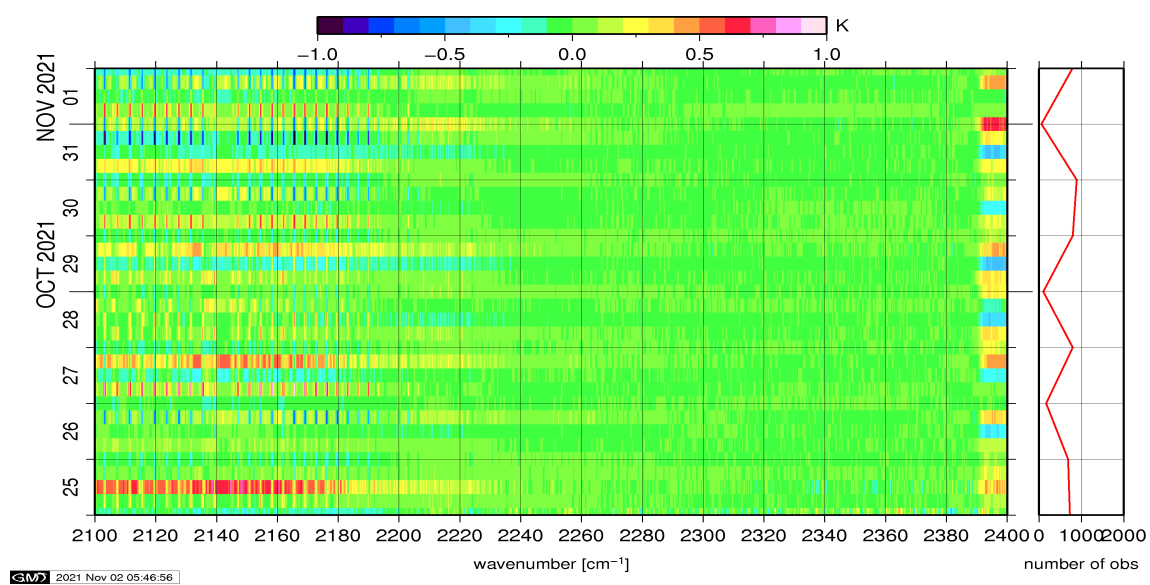


Figure 15: Radiance Anomaly in BT: CO2 4.3

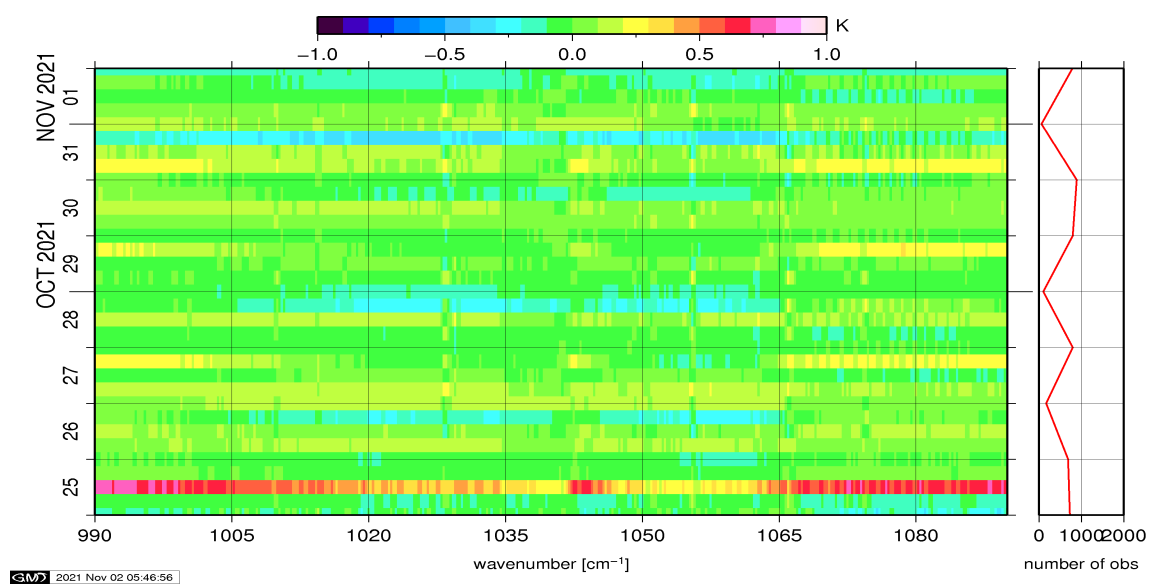


Figure 16: Radiance Anomaly in BT: O3

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.

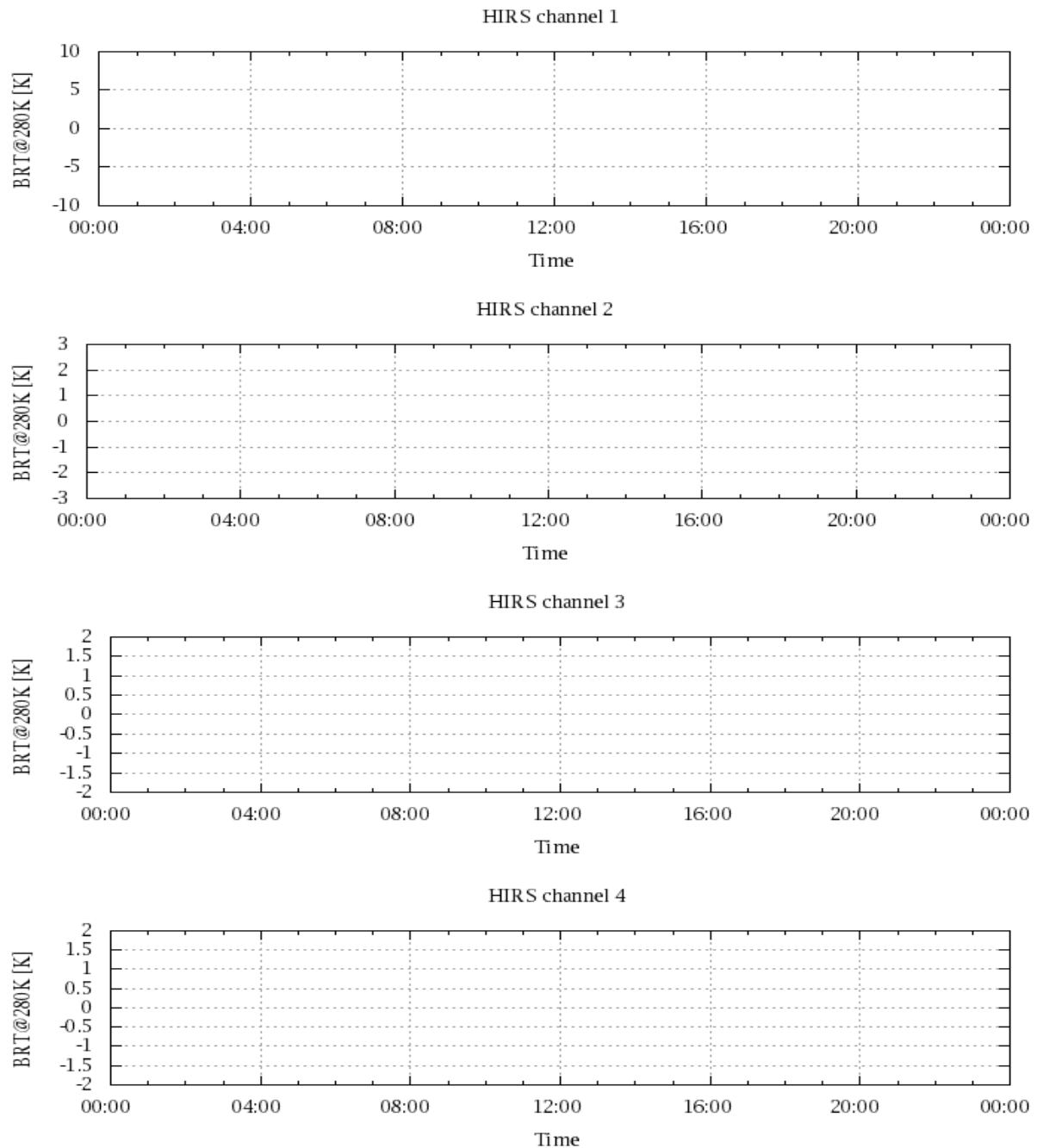


Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT



Figure 20: Radiance Differences in BT



Figure 21: Radinace Differences in BT