

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

IASI monitoring team

19/07/2022 00:00:00 - 20/07/2022 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 19/07/2022 00:00:00 - 20/07/2022 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 19/07/2022 00:00:00 - 20/07/2022 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	474	-
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)	5900	5939	20220719091137.781	20220719091149.242
PX1 (130)	8522	8573	20220719141433.311	20220719141447.362
PX1 (130)	14738	14772	20220719155459.485	20220719155509.860
PX2 (135)	5900	5938	20220719091137.781	20220719091147.512
PX2 (135)	8522	8572	20220719141433.311	20220719141447.147
PX2 (135)	14738	14772	20220719155459.485	20220719155509.860
PX3 (140)	5900	5938	20220719091137.781	20220719091147.512
PX3 (140)	8522	8572	20220719141433.311	20220719141447.147
PX3 (140)	14738	14772	20220719155459.485	20220719155509.860
PX4 (145)	5900	5938	20220719091137.781	20220719091147.512
PX4 (145)	8521	8572	20220719141433.092	20220719141447.147
PX4 (145)	14738	14772	20220719155459.485	20220719155509.860
IMG (150)	4100	4143	20220719091137.567	20220719091147.512
IMG (150)	15810	15869	20220719141433.092	20220719141447.147
IMG (150)	8655	8696	20220719155459.485	20220719155509.645
VER (160)	1849	1855	20220719091131.512	20220719091147.512
VER (160)	13209	13220	20220719141427.471	20220719141451.471
VER (160)	592	601	20220719155459.485	20220719155515.485
AUX (180)	3645	3647	20220719091131.945	20220719091147.945
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
AUX (180)	5917	5920	20220719141427.905	20220719141451.905
AUX (180)	6670	6673	20220719155451.919	20220719155515.915

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
19/07/2022 00:00:09	-	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	474	-
GQisFlagQual set (PX1)	99.52 %	-
GQisFlagQual set (PX2)	99.60 %	-
GQisFlagQual set (PX3)	99.62 %	-
GQisFlagQual set (PX4)	99.53 %	-
GQisFlagQual set (all)	99.57 %	-

Table 4: Quality flags

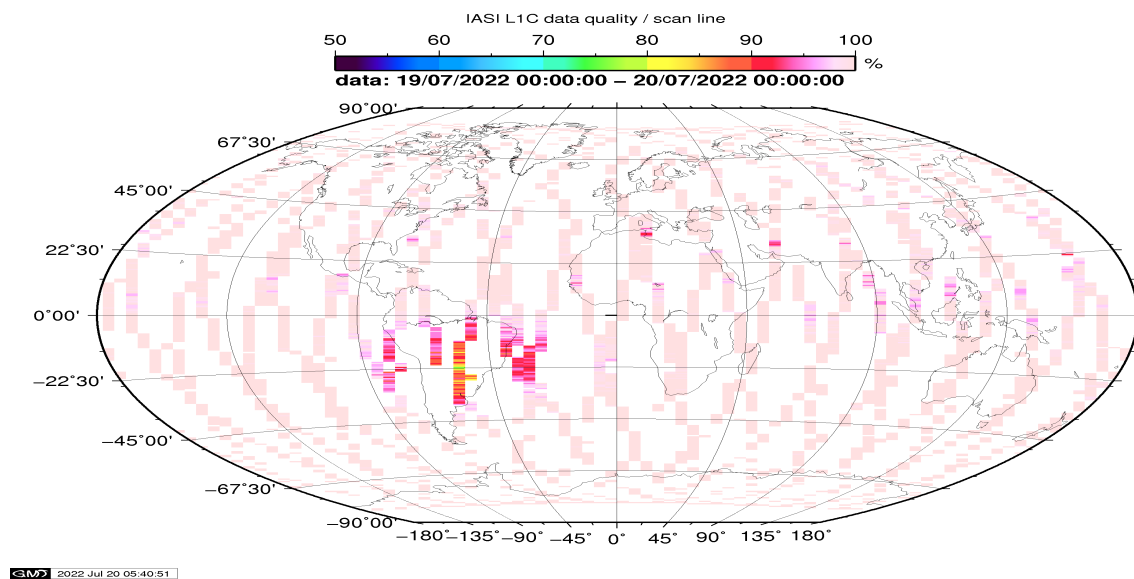


Figure 1: L1C data quality

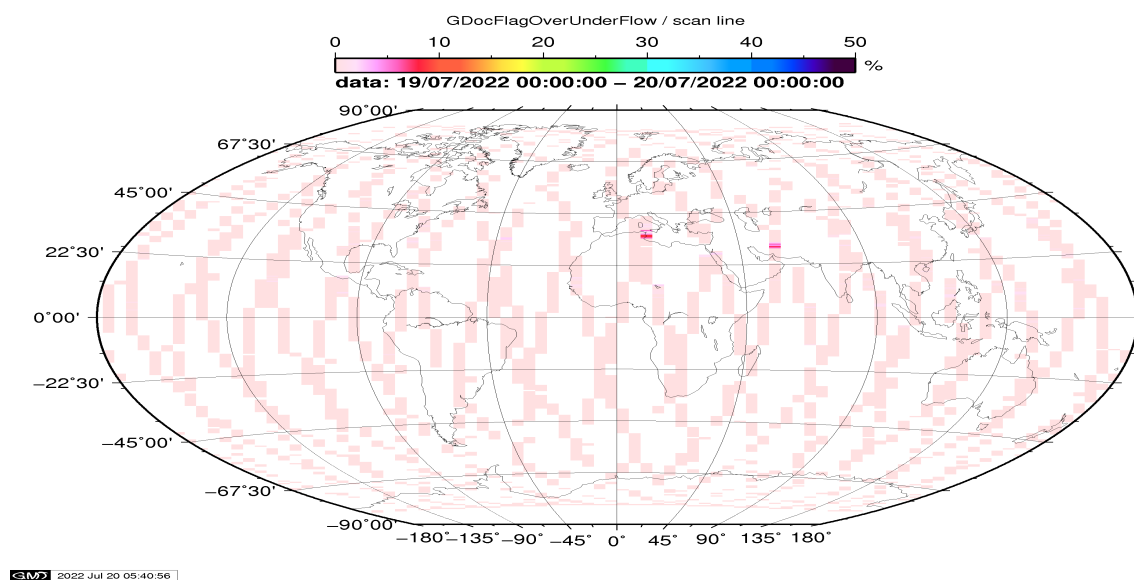


Figure 2: Flag of Over and Under Flows

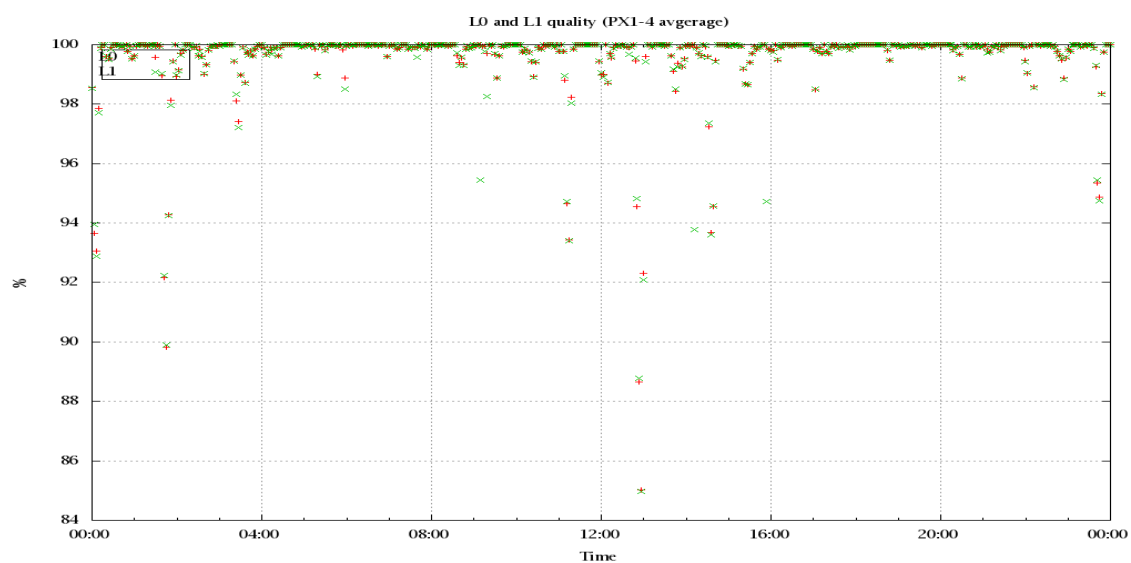


Figure 3: Level 0 and 1C overall quality

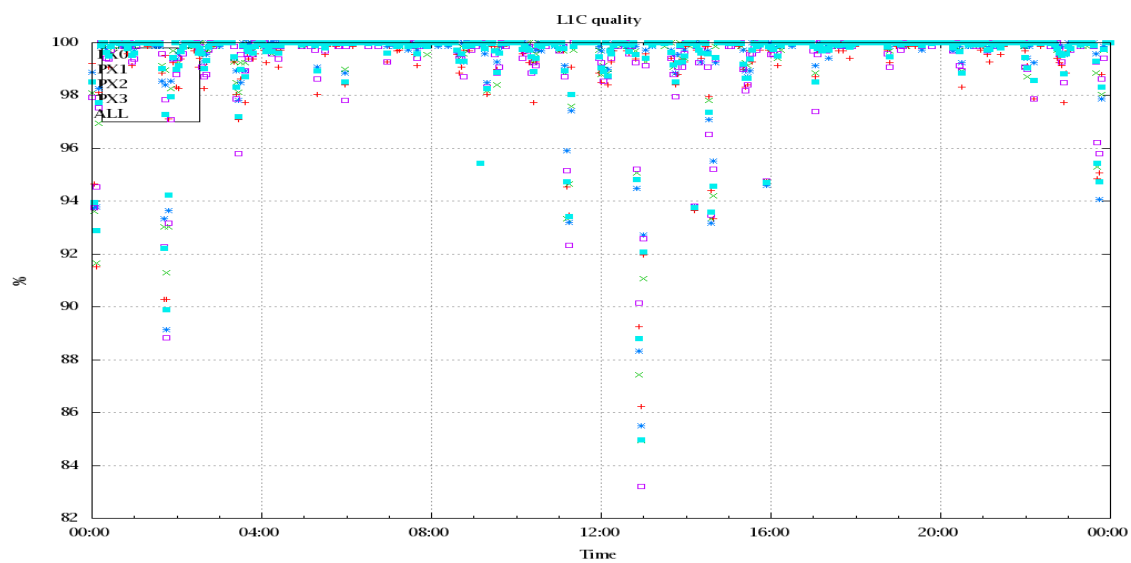


Figure 4: Level 1C quality

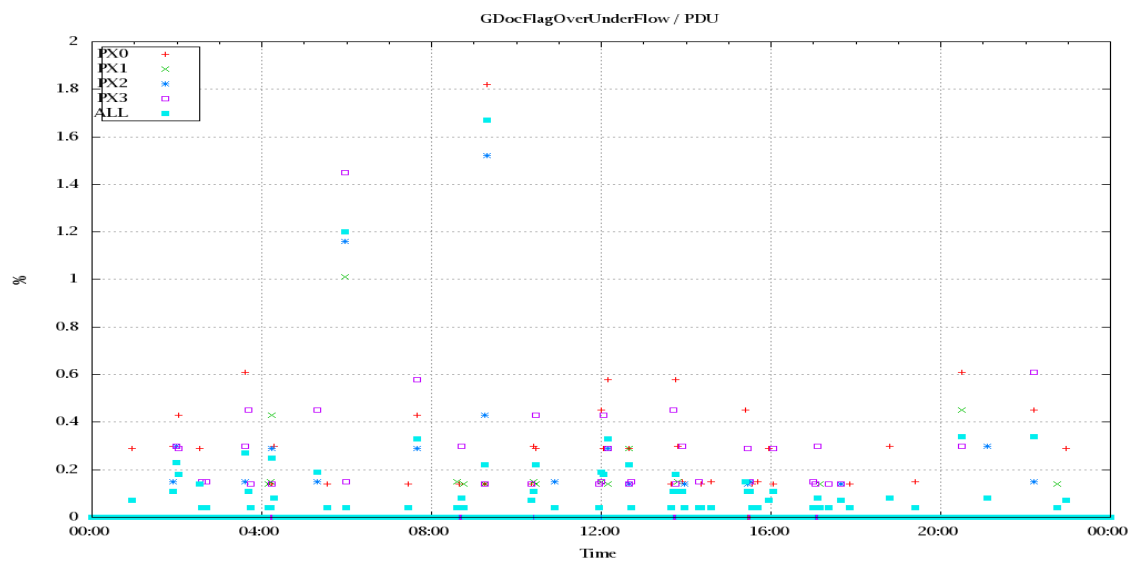


Figure 5: Timeseries of flag of Over and Under Flows

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.

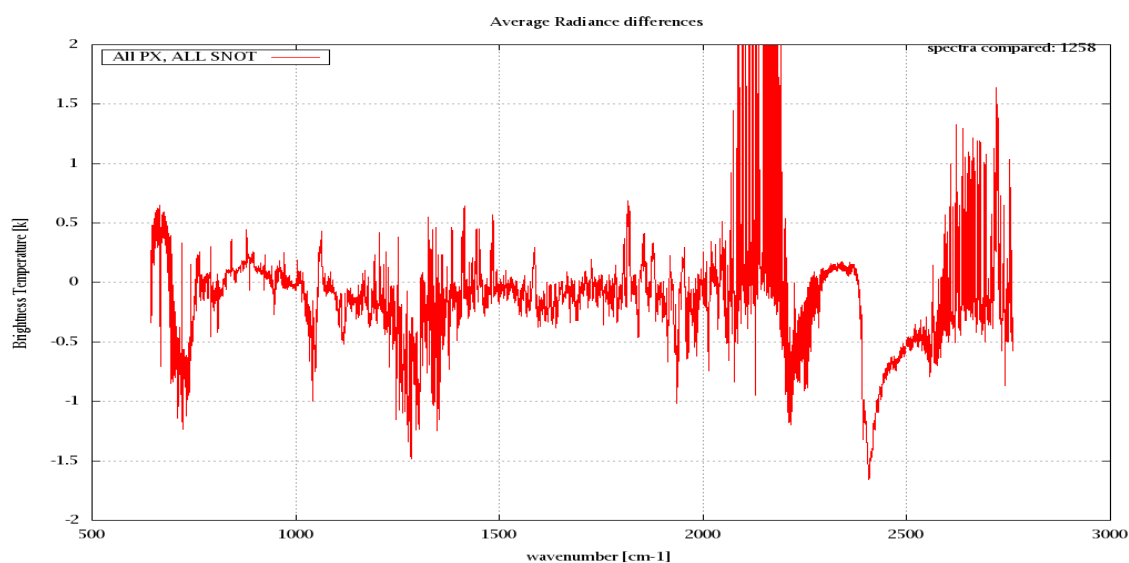


Figure 6: Average Radiance differences: OBS-CAL

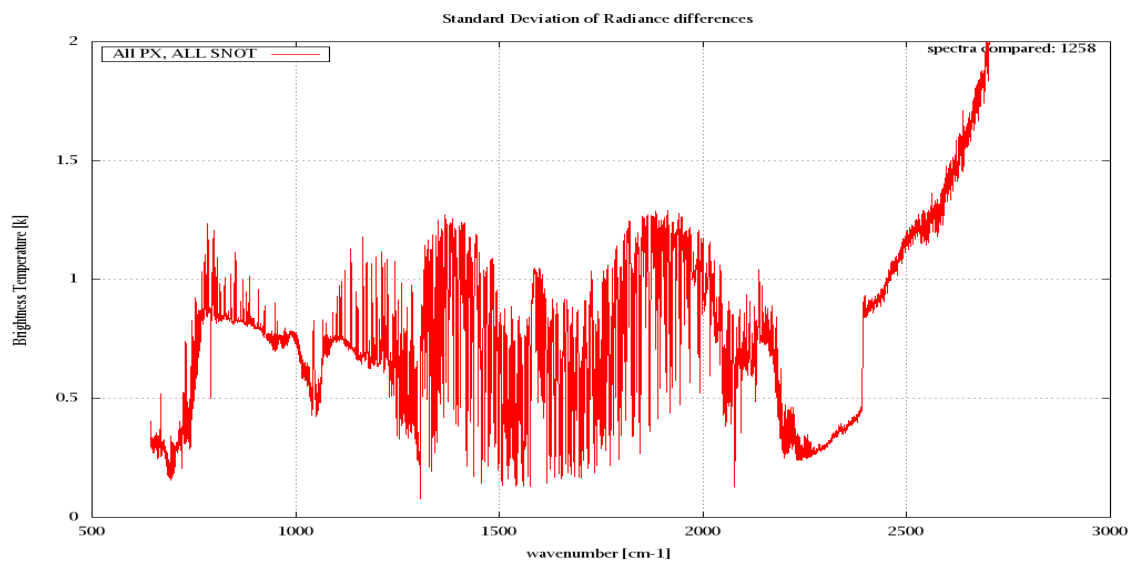


Figure 7: Standard Deviation of Radiance differences

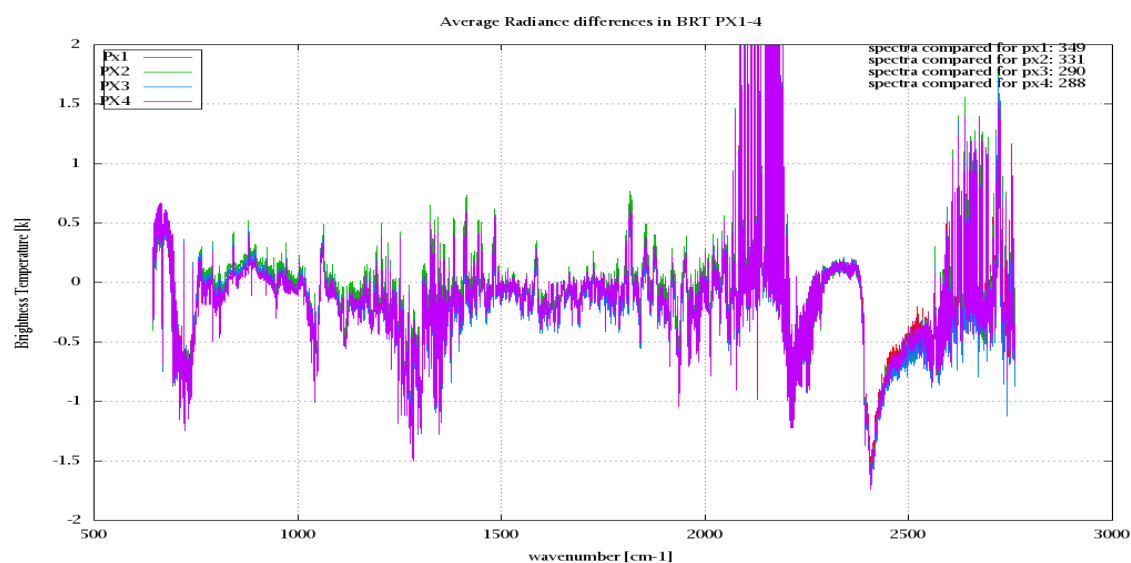


Figure 8: Average Radiance differences: OBS-CAL

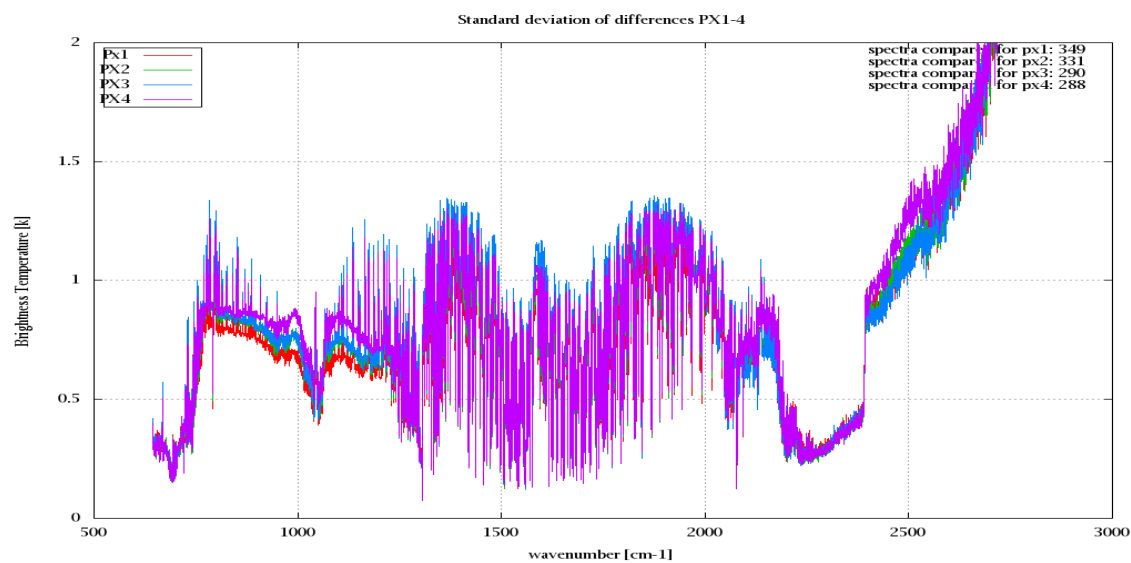


Figure 9: Standard Deviation of Radiance differences

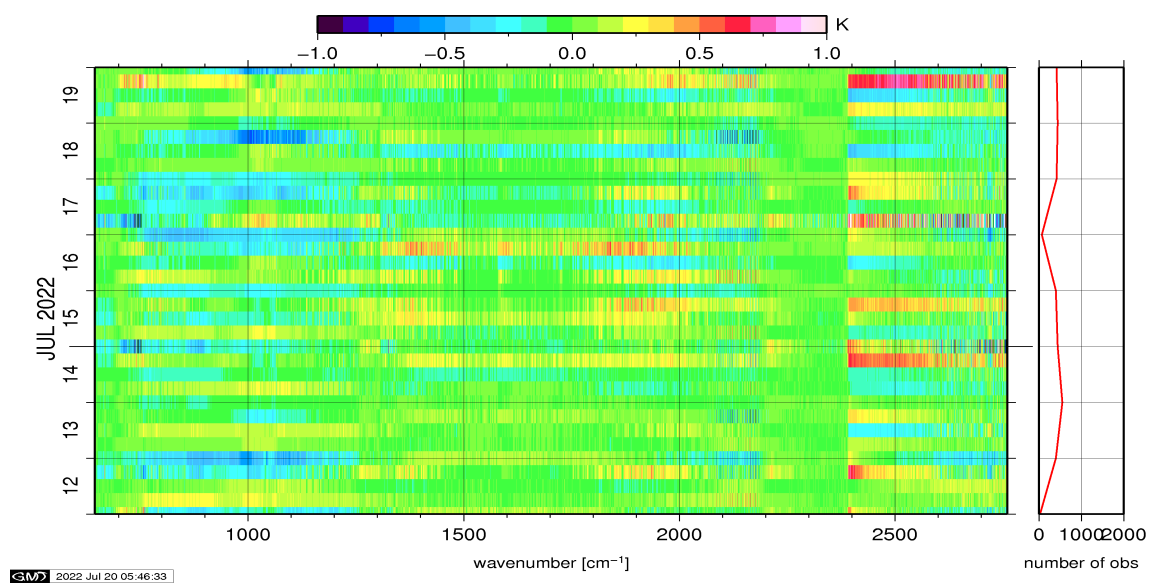


Figure 10: Radiance Anomaly in BT: All Channels

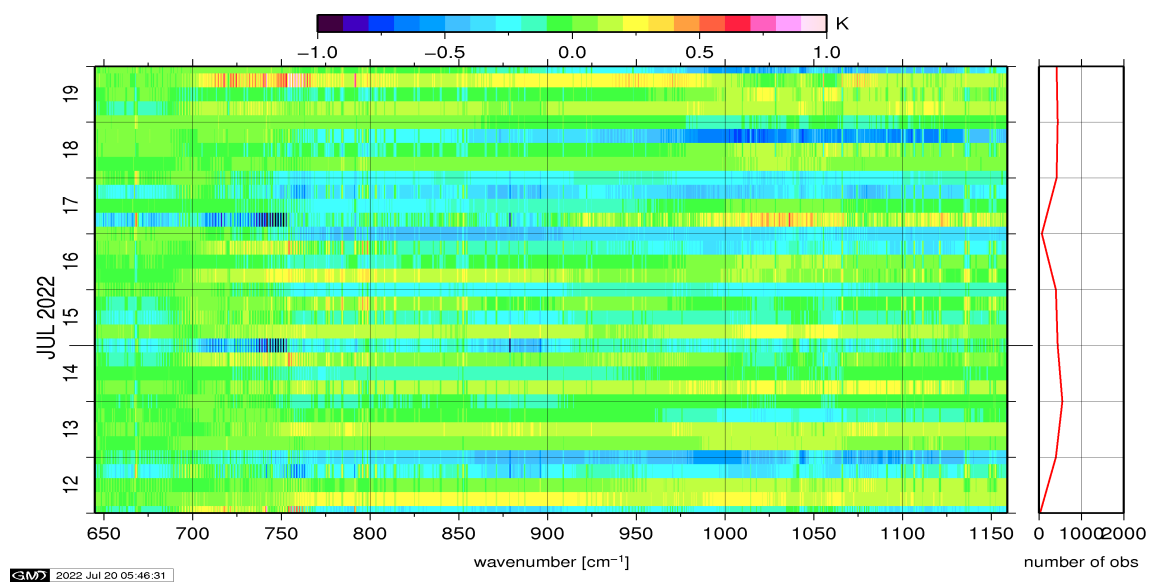


Figure 11: Radiance Anomaly in BT: IASI Band 1

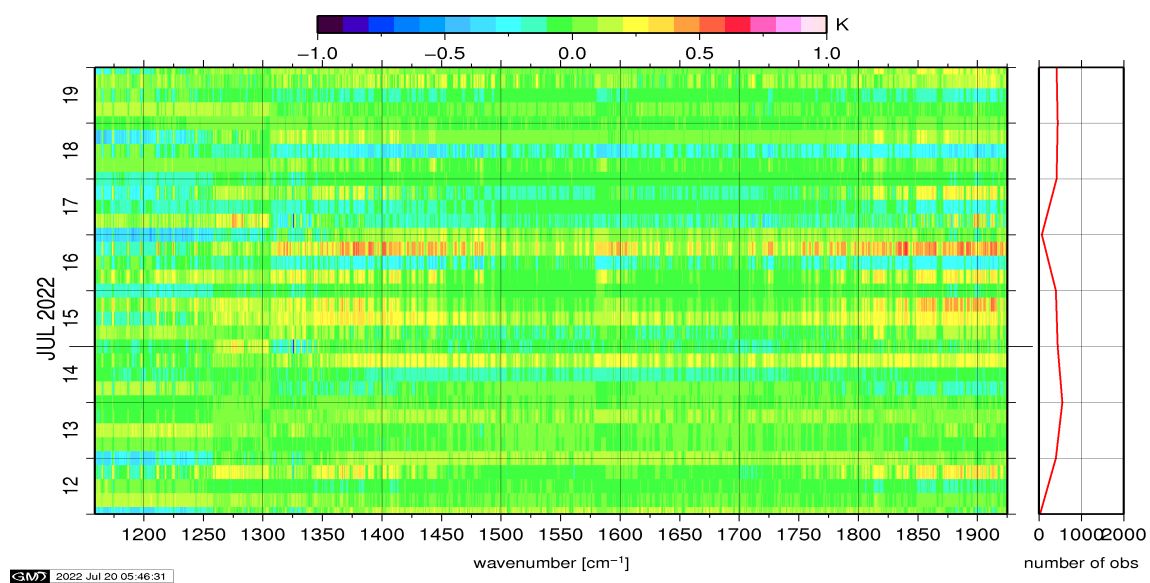


Figure 12: Radiance Anomaly in BT: IASI Band 2

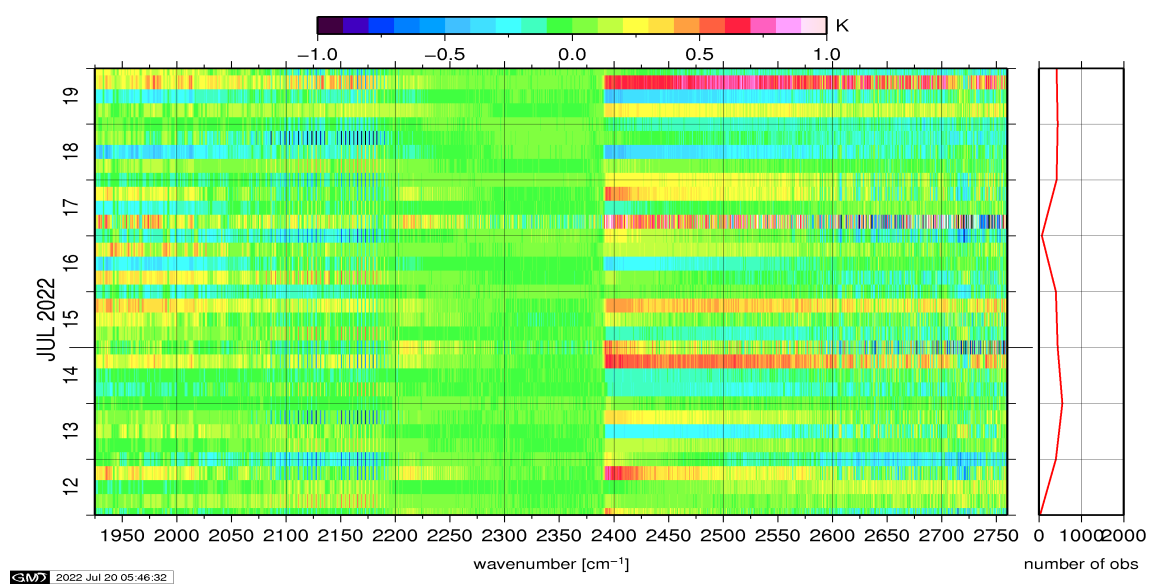


Figure 13: Radiance Anomaly in BT: IASI Band 3

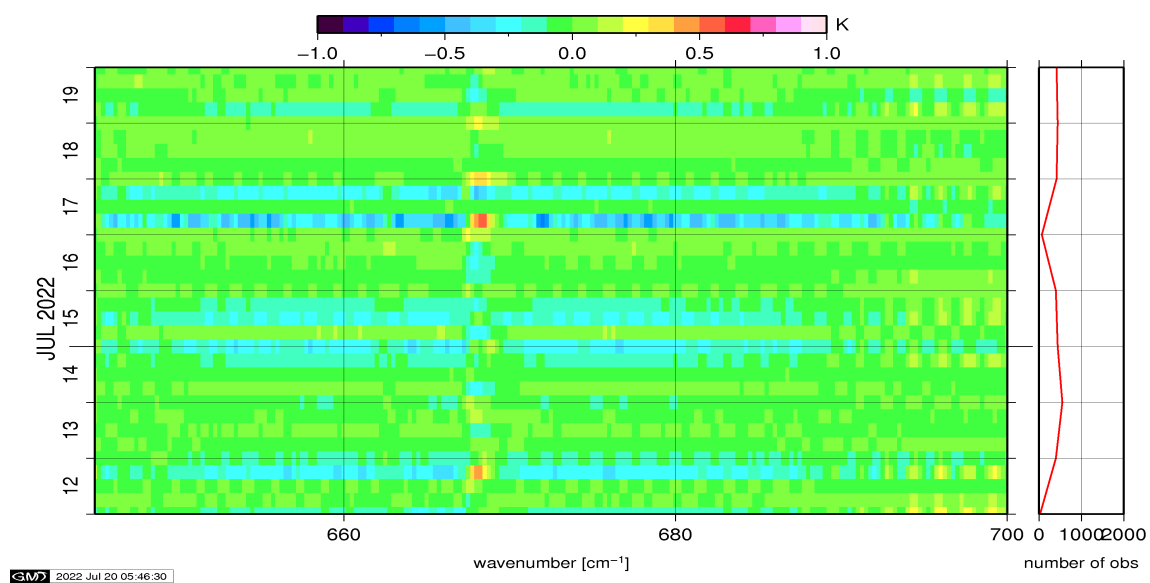


Figure 14: Radiance Anomaly in BT: CO2 14

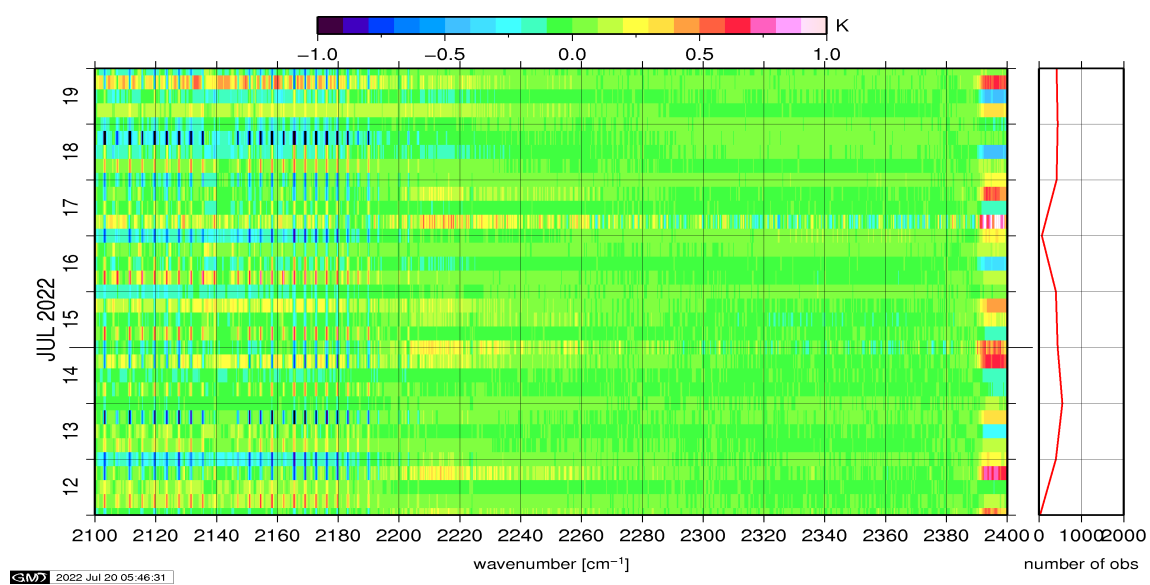


Figure 15: Radiance Anomaly in BT: CO2 4.3

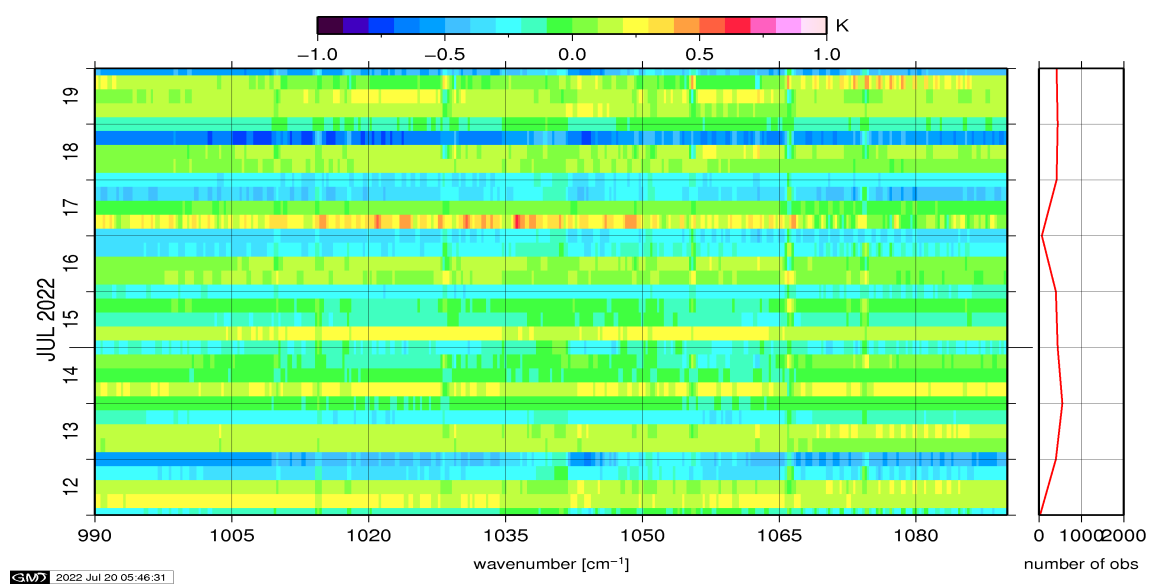


Figure 16: Radiance Anomaly in BT: O3

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.

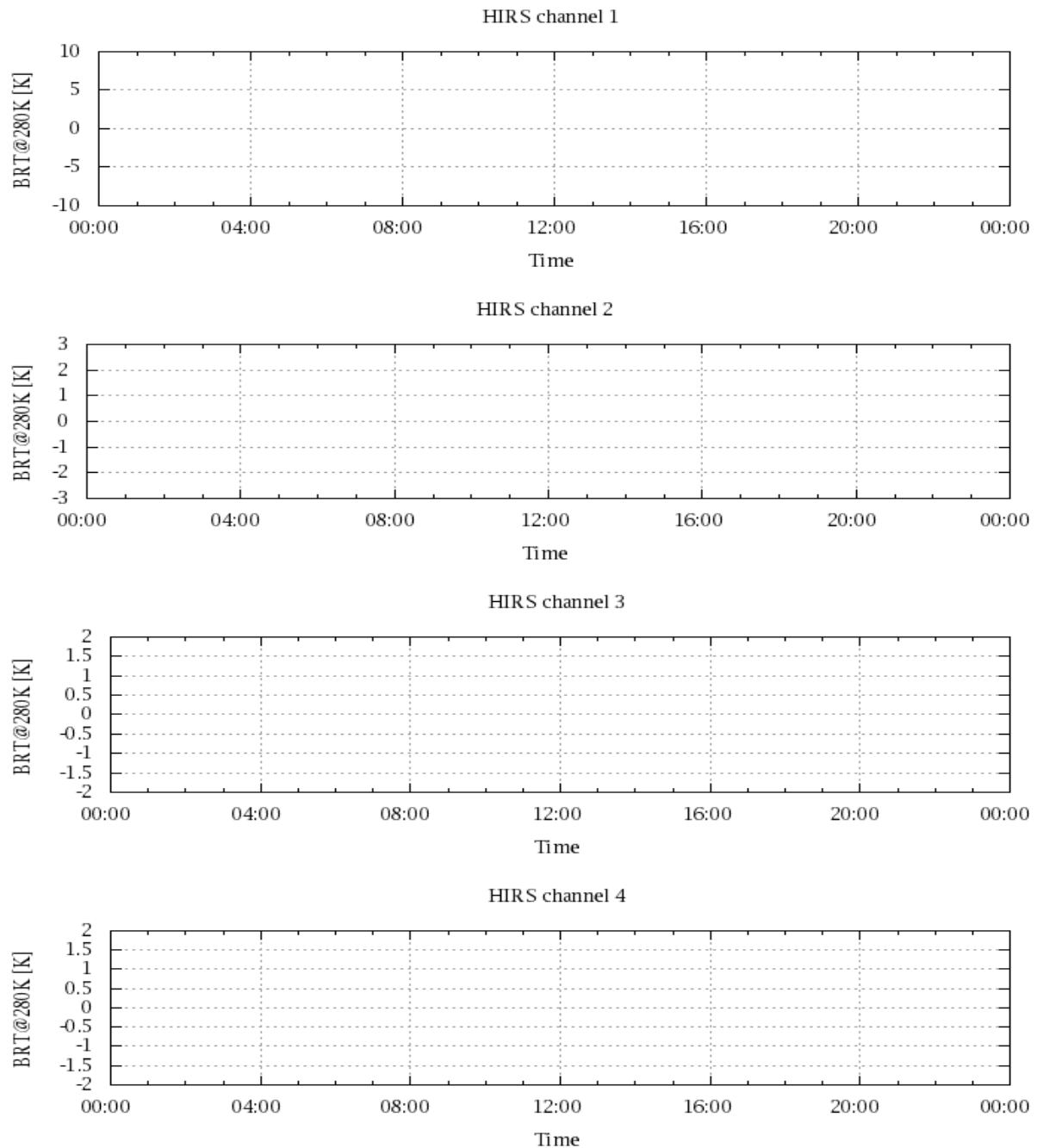


Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT



Figure 20: Radiance Differences in BT



Figure 21: Radinace Differences in BT