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

IASI monitoring team

24/03/2024 00:00:00 - 25/03/2024 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 24/03/2024 00:00:00 - 25/03/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2   Data quantity 24/03/2024 00:00:00 - 25/03/2024 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	479	-
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)	14991	14998	20240324062556.328	20240324062559.356
PX2 (135)	14991	14998	20240324062556.328	20240324062559.356
PX3 (140)	14991	14997	20240324062556.328	20240324062559.141
PX4 (145)	14991	14997	20240324062556.328	20240324062559.141
IMG (150)	10647	10657	20240324062556.328	20240324062559.141
VER (160)	5964	9760	20240324003220.350	20240324021442.411
VER (160)	9760	9765	20240324021442.411	20240324021442.411
VER (160)	9765	9770	20240324021442.411	20240324021442.411
VER (160)	9770	9775	20240324021442.411	20240324021442.411
VER (160)	9775	9780	20240324021442.411	20240324021442.411
VER (160)	9780	9785	20240324021442.411	20240324021442.411
VER (160)	9785	9790	20240324021442.411	20240324021442.411
VER (160)	9790	9795	20240324021442.411	20240324021442.411
VER (160)	9795	9761	20240324021442.411	20240324021442.411
VER (160)	9761	9766	20240324021442.411	20240324021442.411
VER (160)	9766	9771	20240324021442.411	20240324021442.411
VER (160)	9771	9776	20240324021442.411	20240324021442.411
VER (160)	9776	9781	20240324021442.411	20240324021442.411
VER (160)	9781	9786	20240324021442.411	20240324021442.411
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	9786	9791	20240324021442.411	20240324021442.411
VER (160)	9791	9796	20240324021442.411	20240324021442.411
VER (160)	9796	9762	20240324021442.411	20240324021442.411
VER (160)	9762	9767	20240324021442.411	20240324021442.411
VER (160)	9767	9772	20240324021442.411	20240324021442.411
VER (160)	9772	9777	20240324021442.411	20240324021442.411
VER (160)	9777	9782	20240324021442.411	20240324021442.411
VER (160)	9782	9787	20240324021442.411	20240324021442.411
VER (160)	9787	9792	20240324021442.411	20240324021442.411
VER (160)	9792	9797	20240324021442.411	20240324021442.411
VER (160)	9797	9763	20240324021442.411	20240324021442.411
VER (160)	9763	9768	20240324021442.411	20240324021442.411
VER (160)	9768	9773	20240324021442.411	20240324021442.411
VER (160)	9773	9778	20240324021442.411	20240324021442.411
VER (160)	9778	9783	20240324021442.411	20240324021442.411
VER (160)	9783	9788	20240324021442.411	20240324021442.411
VER (160)	9788	9793	20240324021442.411	20240324021442.411
VER (160)	9793	9798	20240324021442.411	20240324021442.411
VER (160)	9798	9764	20240324021442.411	20240324021442.411
VER (160)	9764	9769	20240324021442.411	20240324021442.411
VER (160)	9769	9774	20240324021442.411	20240324021442.411
VER (160)	9774	9779	20240324021442.411	20240324021442.411
VER (160)	9779	9784	20240324021442.411	20240324021442.411
VER (160)	9784	9789	20240324021442.411	20240324021442.411
VER (160)	9789	9794	20240324021442.411	20240324021442.411
VER (160)	9794	9799	20240324021442.411	20240324021442.411
VER (160)	2837	2841	20240324062556.328	20240324062604.328
AUX (180)	7105	7107	20240324062548.762	20240324062604.762

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
24/03/2024 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	479	-
GQisFlagQual set (PX1)	99.65 %	-
GQisFlagQual set (PX2)	99.71 %	-
GQisFlagQual set (PX3)	99.72 %	-
GQisFlagQual set (PX4)	99.64 %	-
GQisFlagQual set (all)	99.68 %	-

Table 4: Quality flags
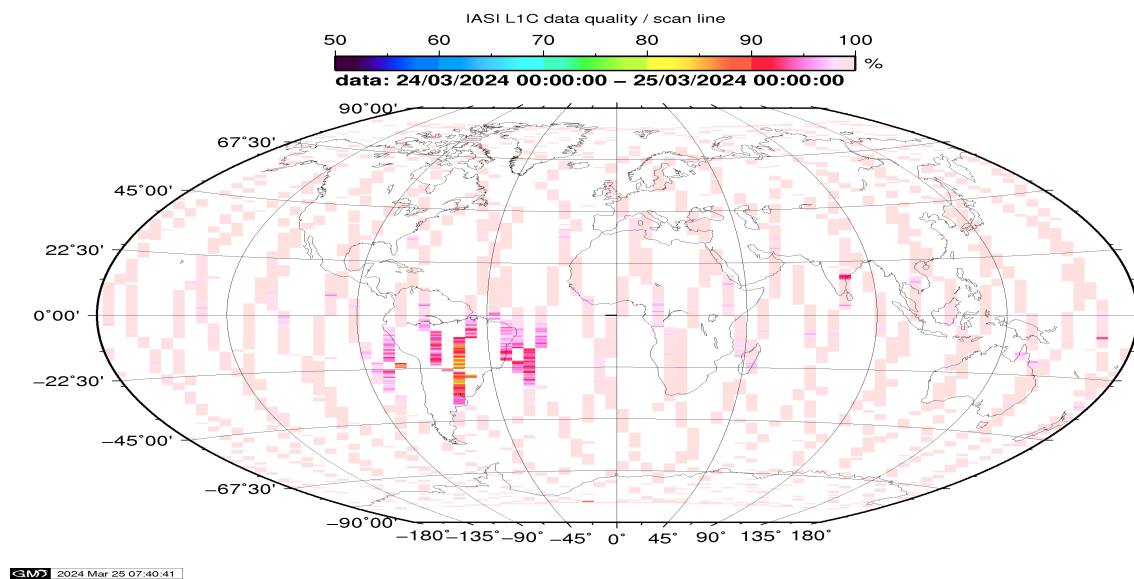
Figure 1: L1C data quality
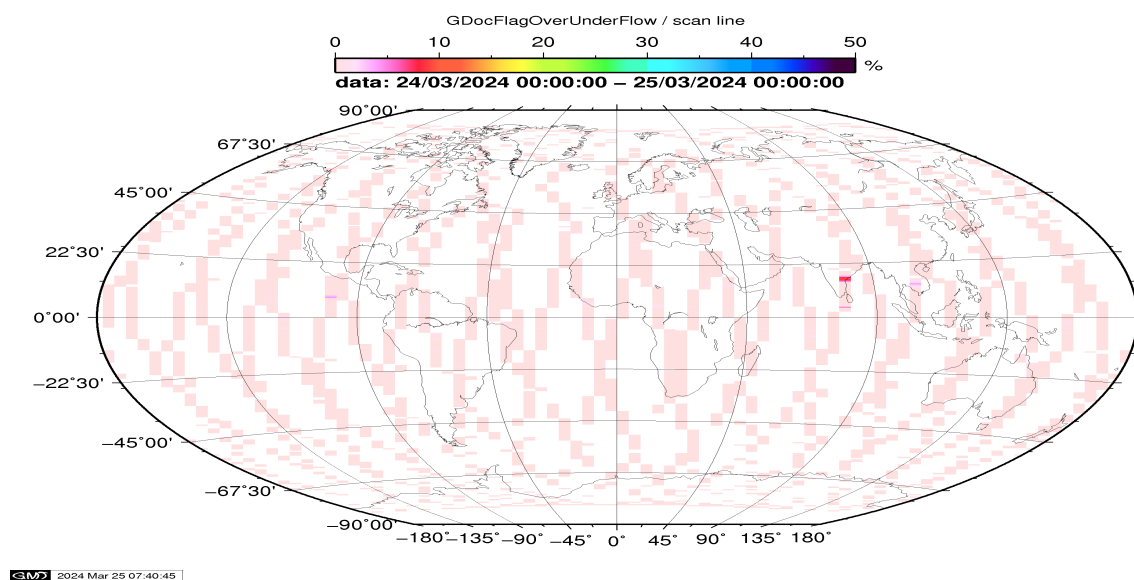
Figure 2: Flag of Over and Under Flows
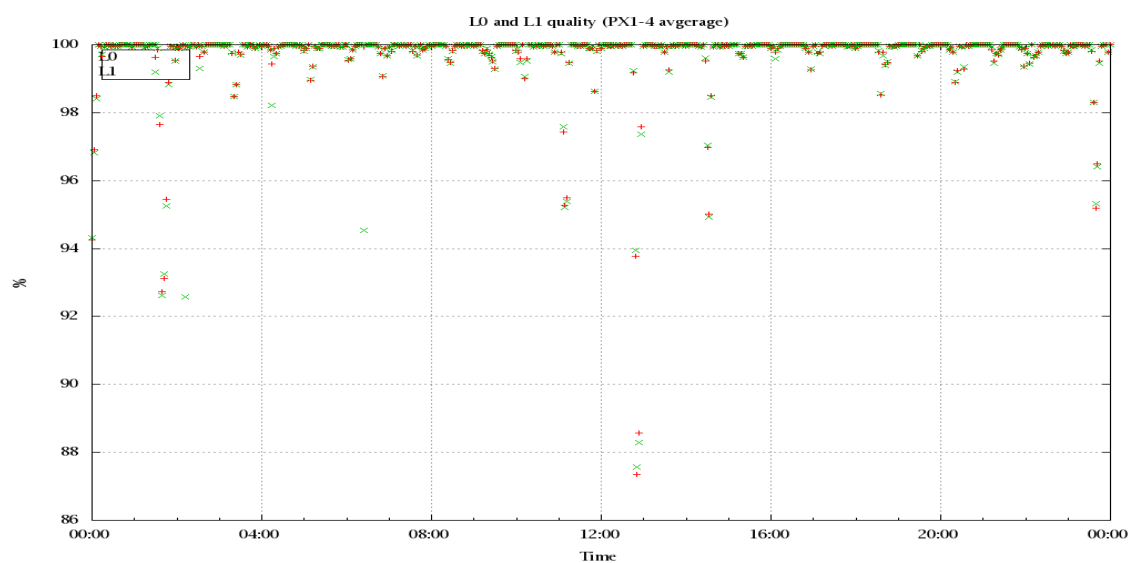
Figure 3: Level 0 and 1C overall quality
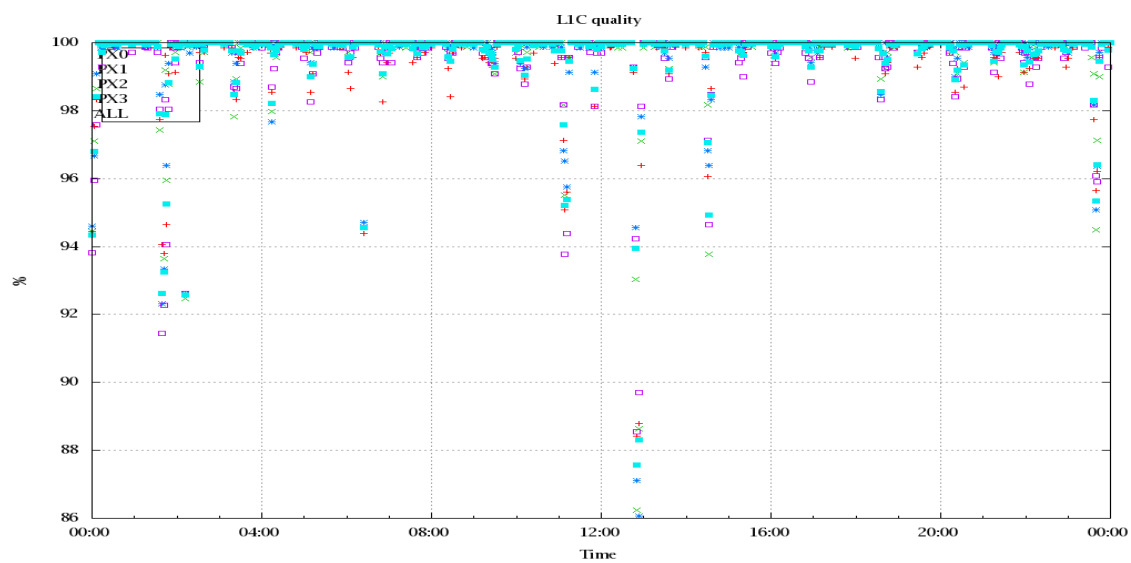
Figure 4: Level 1C quality
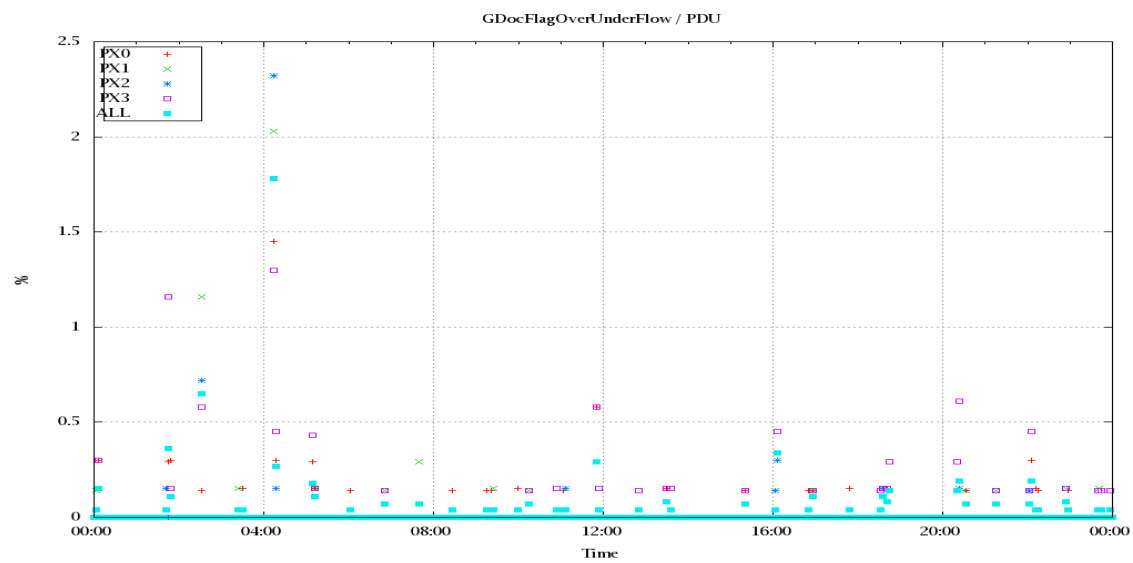
Figure 5: Timeseries of flag of Over and Under Flows

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 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 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.
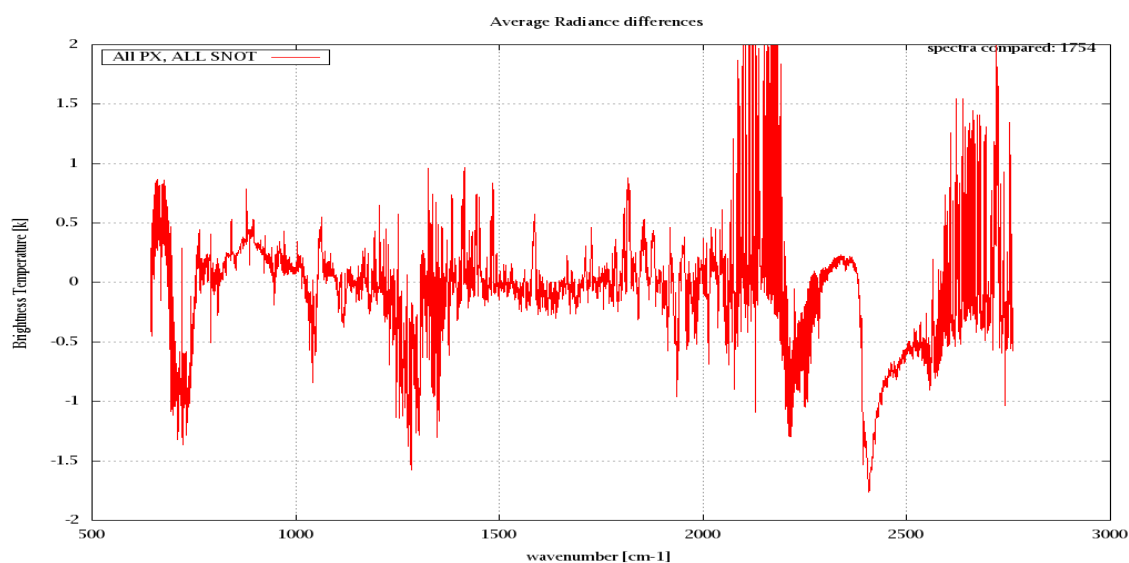
Figure 6: Average Radiance differences: OBS-CAL
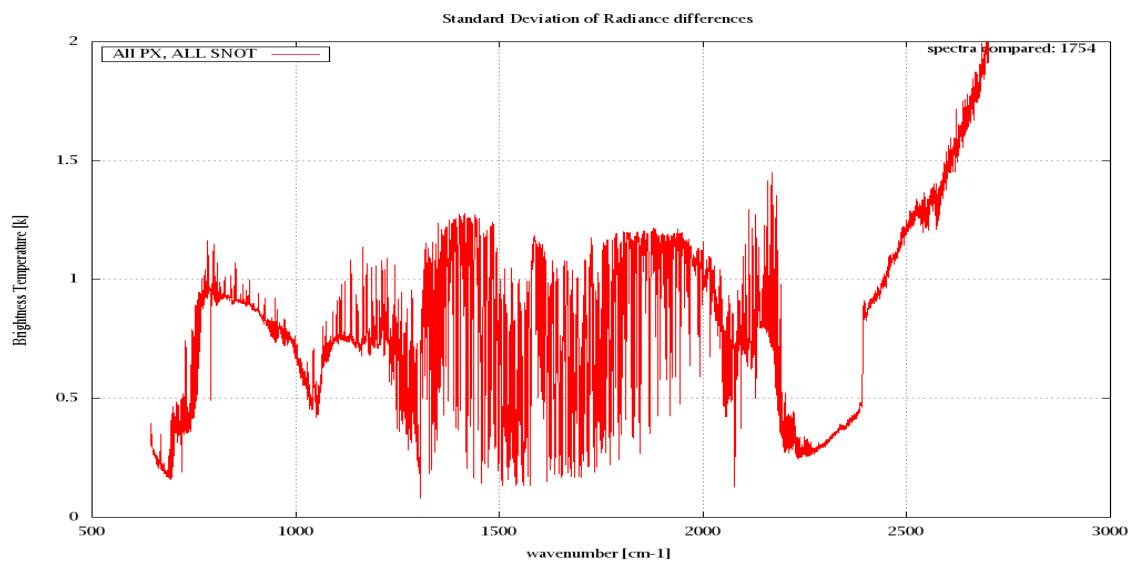
Figure 7: Standard Deviation of Radiance differences
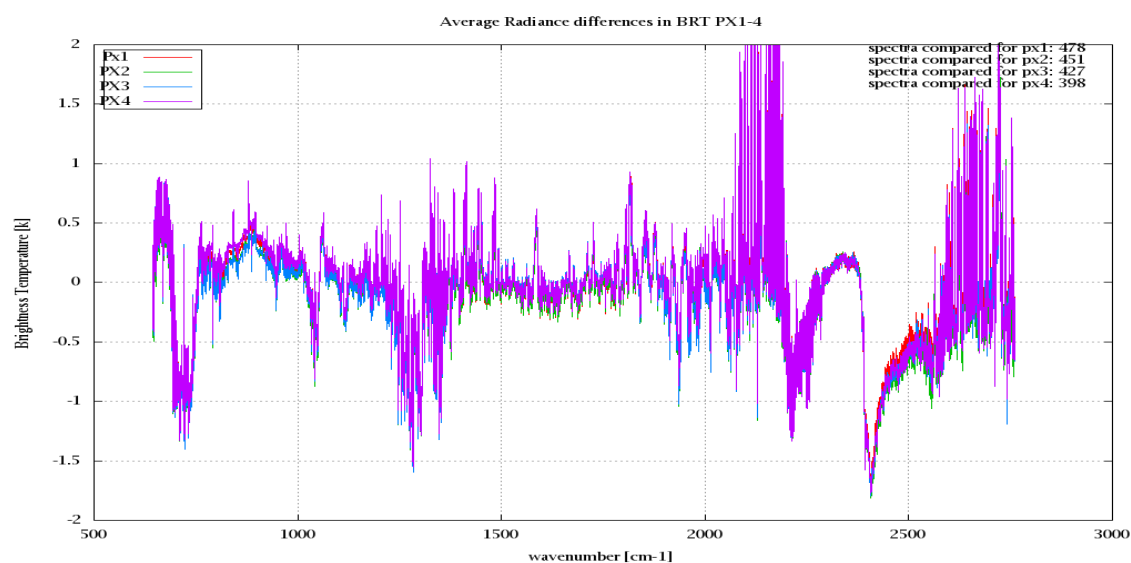
Figure 8: Average Radiance differences: OBS-CAL
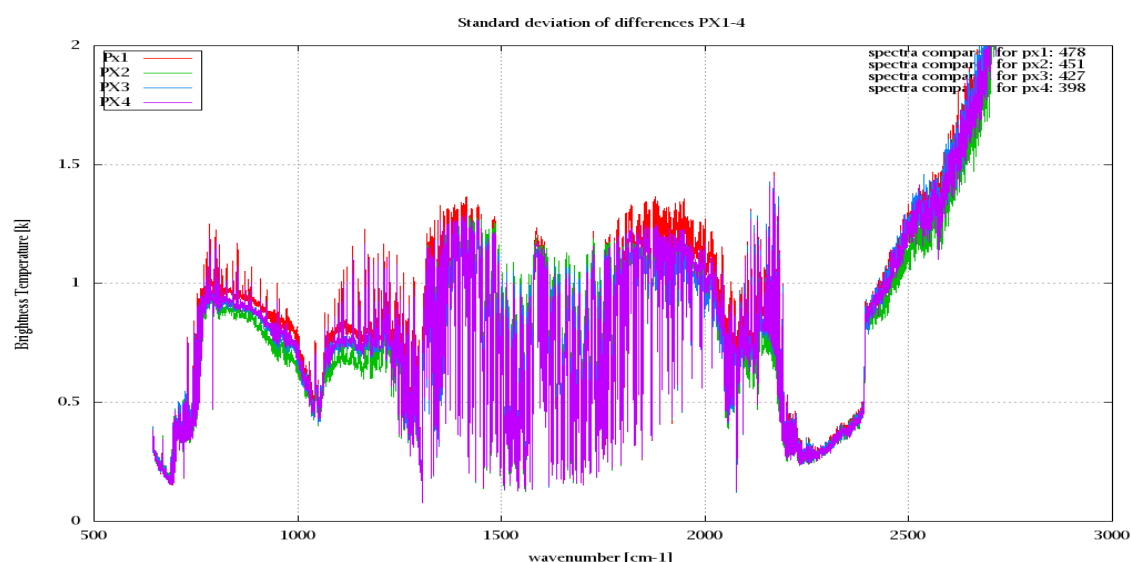

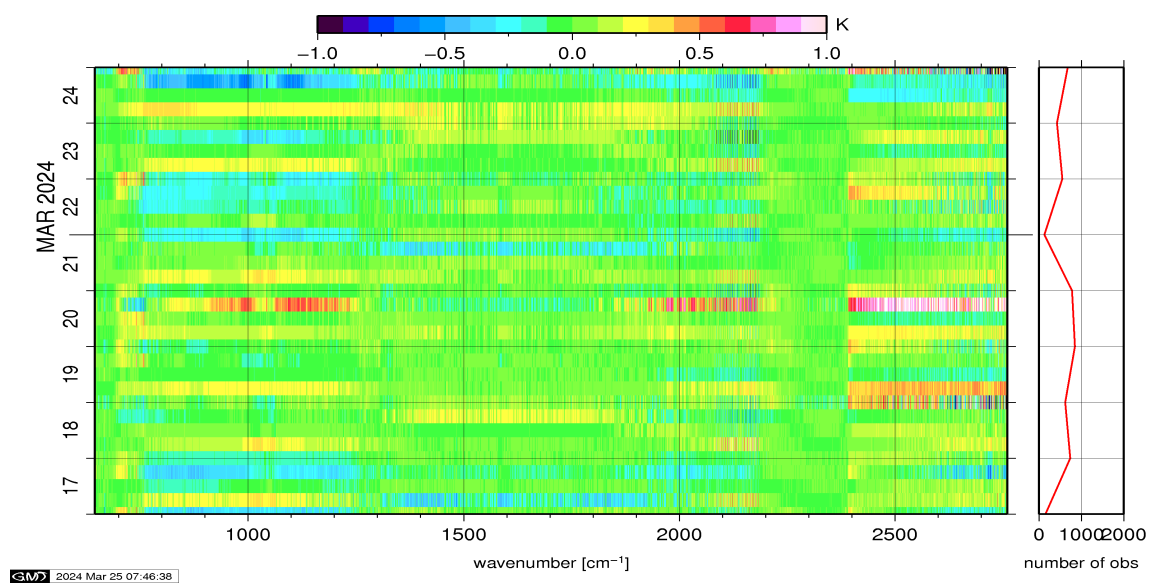Figure 9: Standard Deviation of Radiance differences

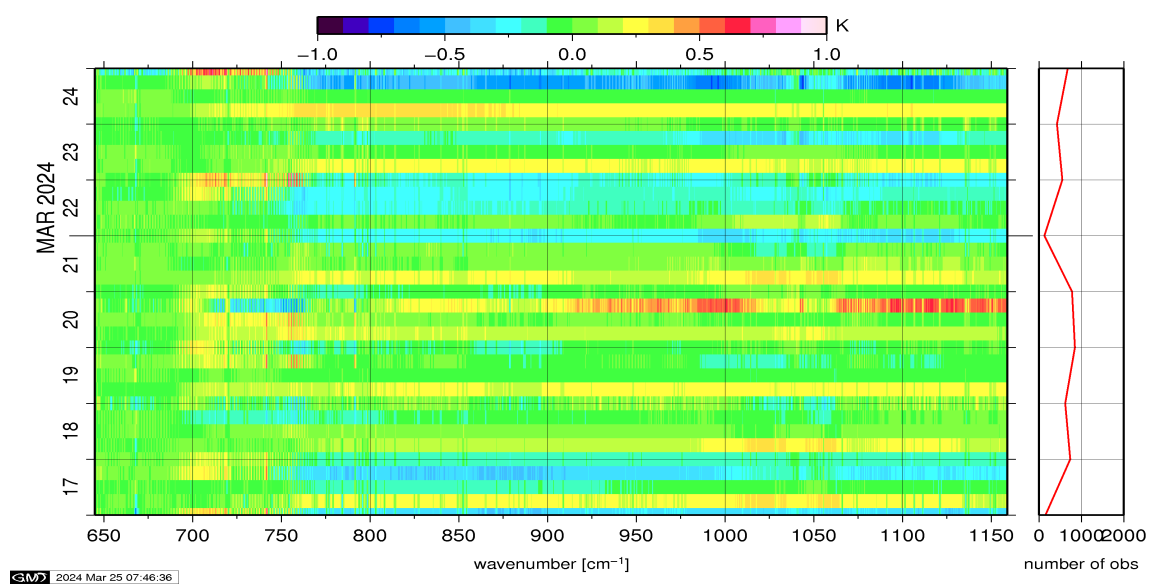Figure 10: Radiance Anomaly in BT: All Channels

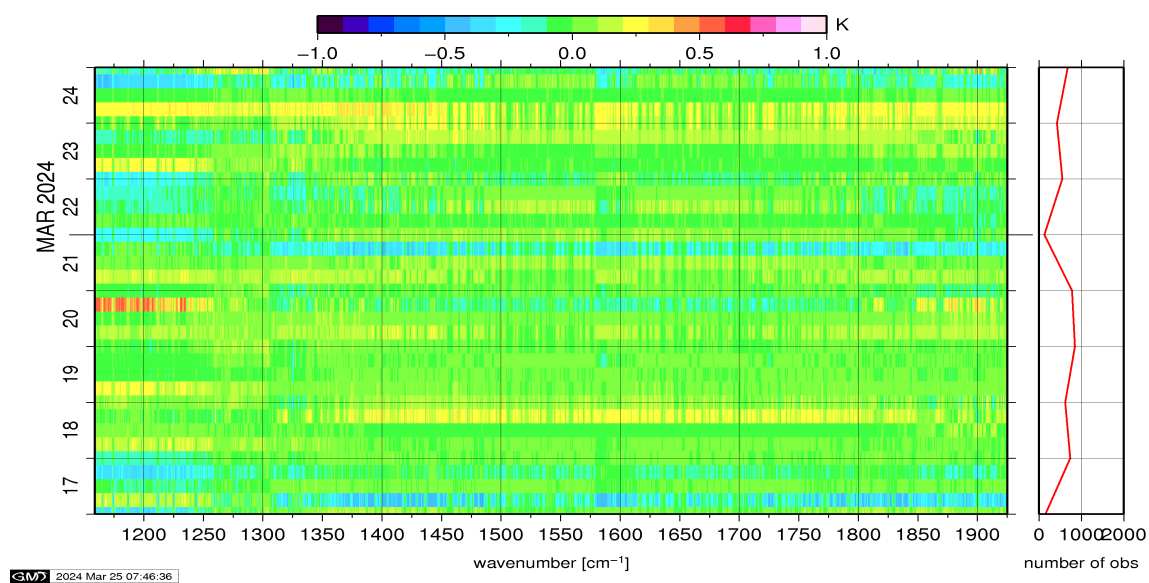Figure 11: Radiance Anomaly in BT: IASI Band 1

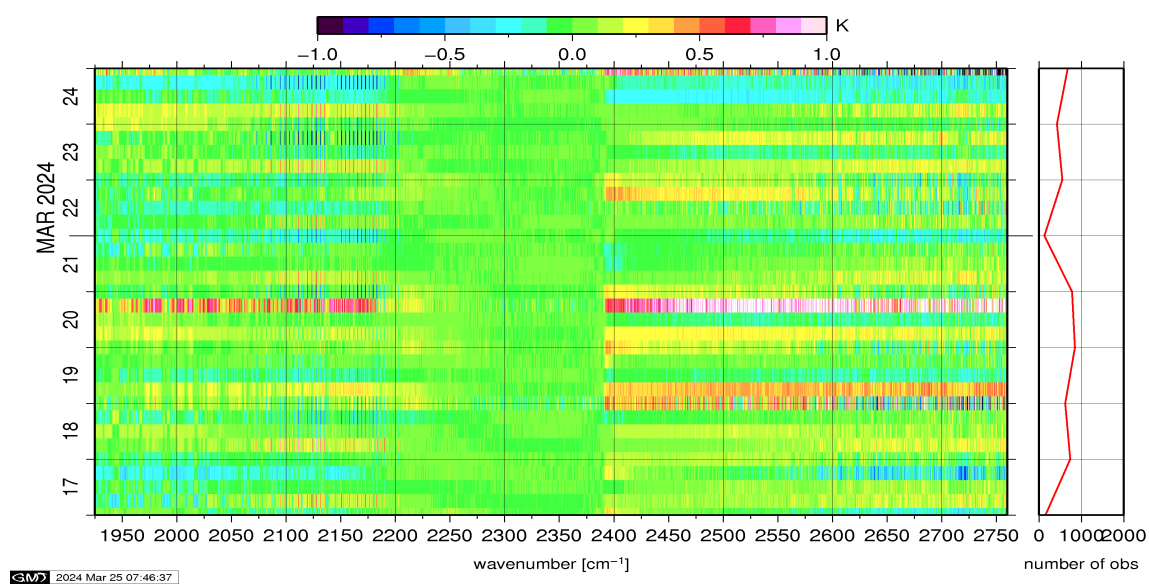Figure 12: Radiance Anomaly in BT: IASI Band 2
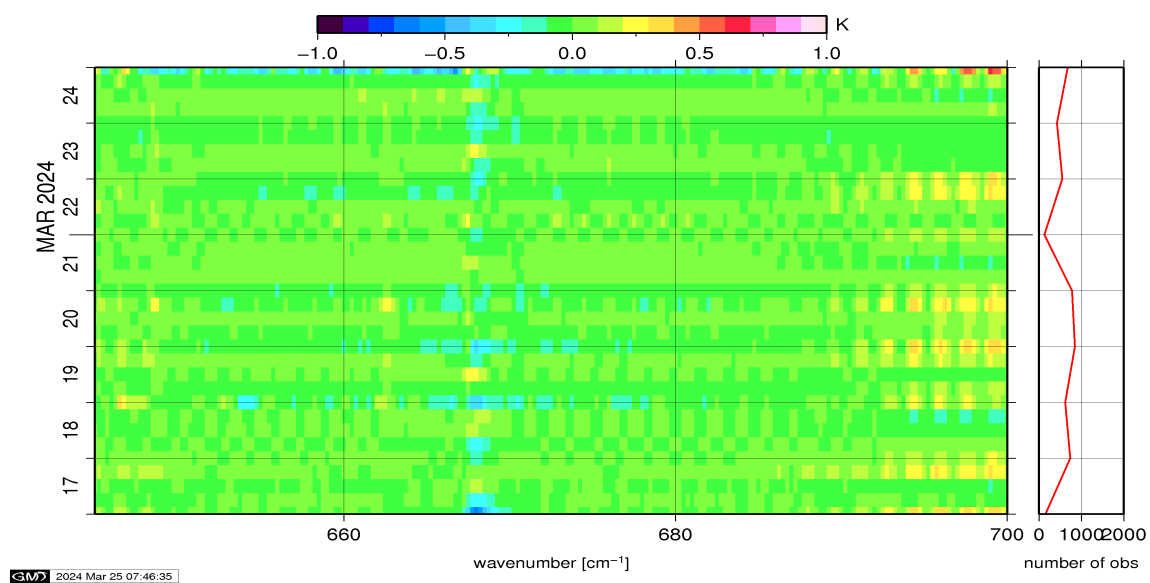

Figure 13: Radiance Anomaly in BT: IASI Band 3

Figure 14: Radiance Anomaly in BT: CO2 14

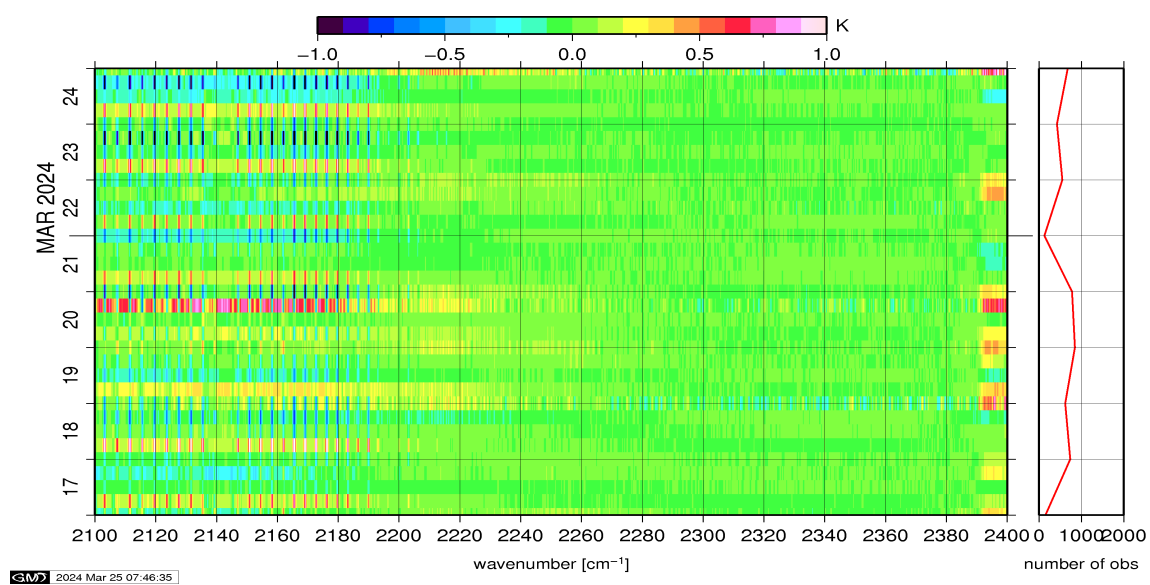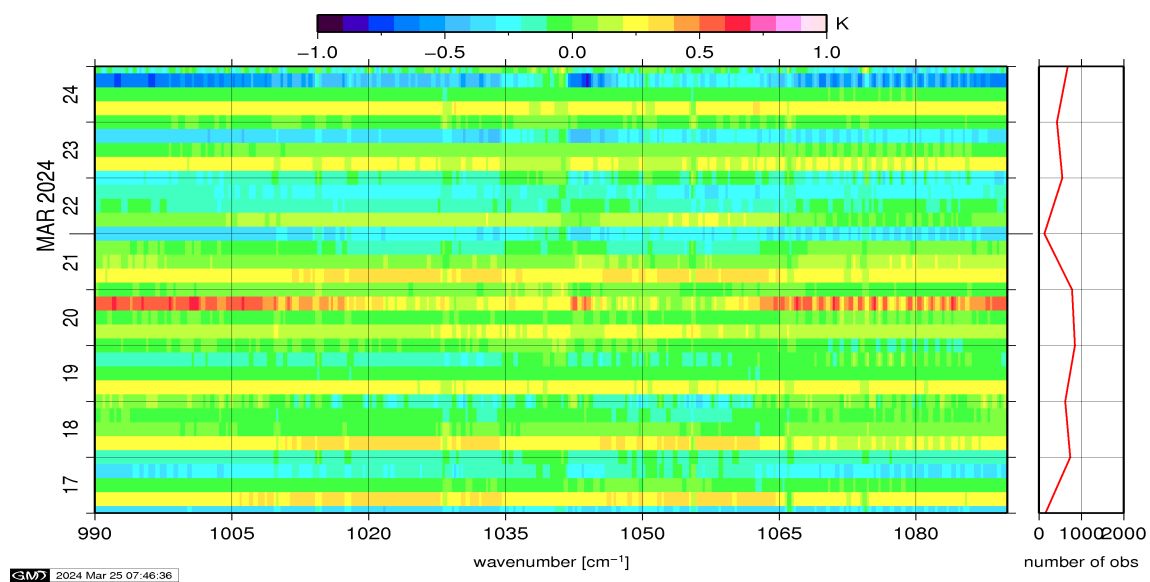Figure 15: Radiance Anomaly in BT: CO2 4.3

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.
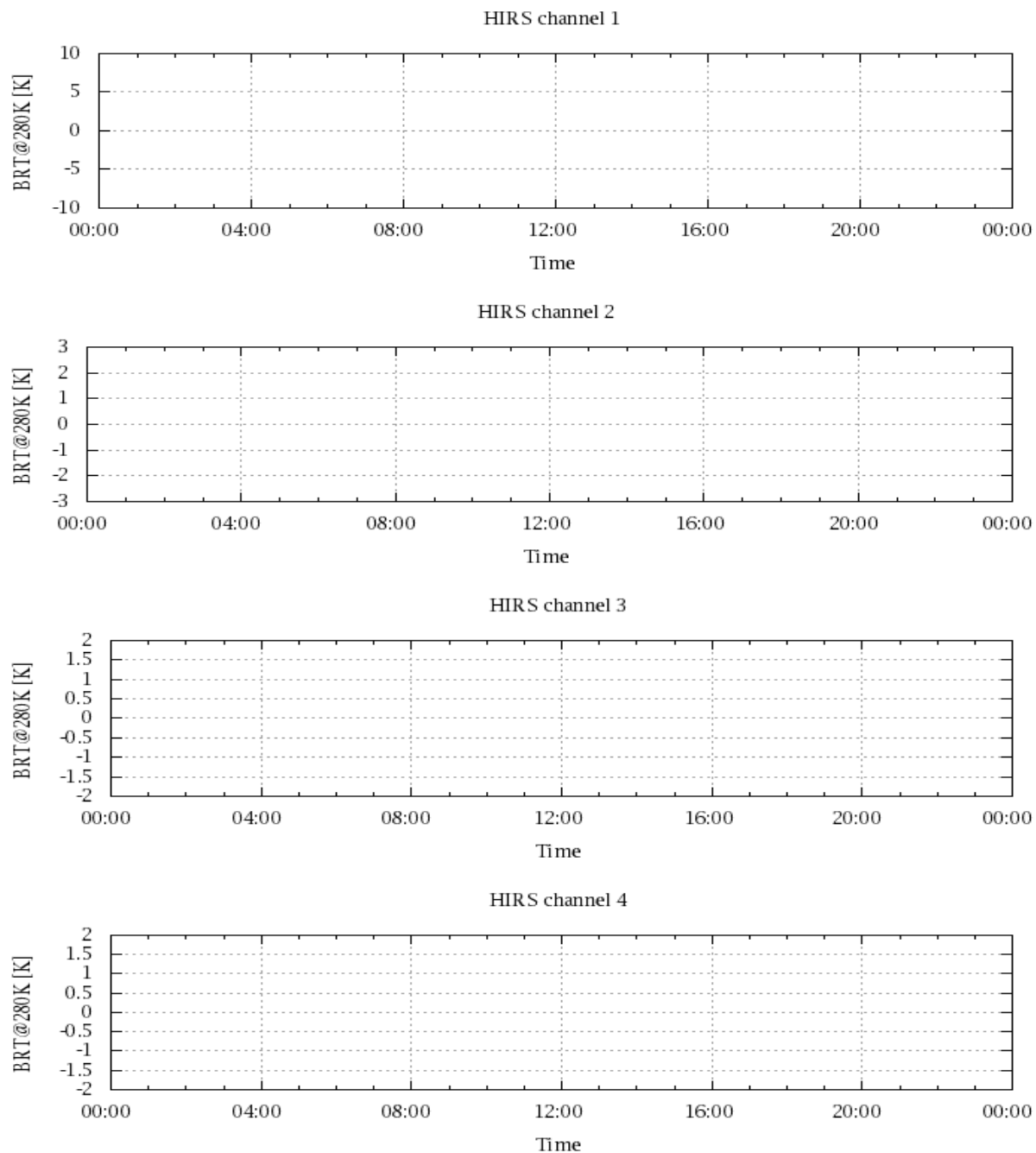

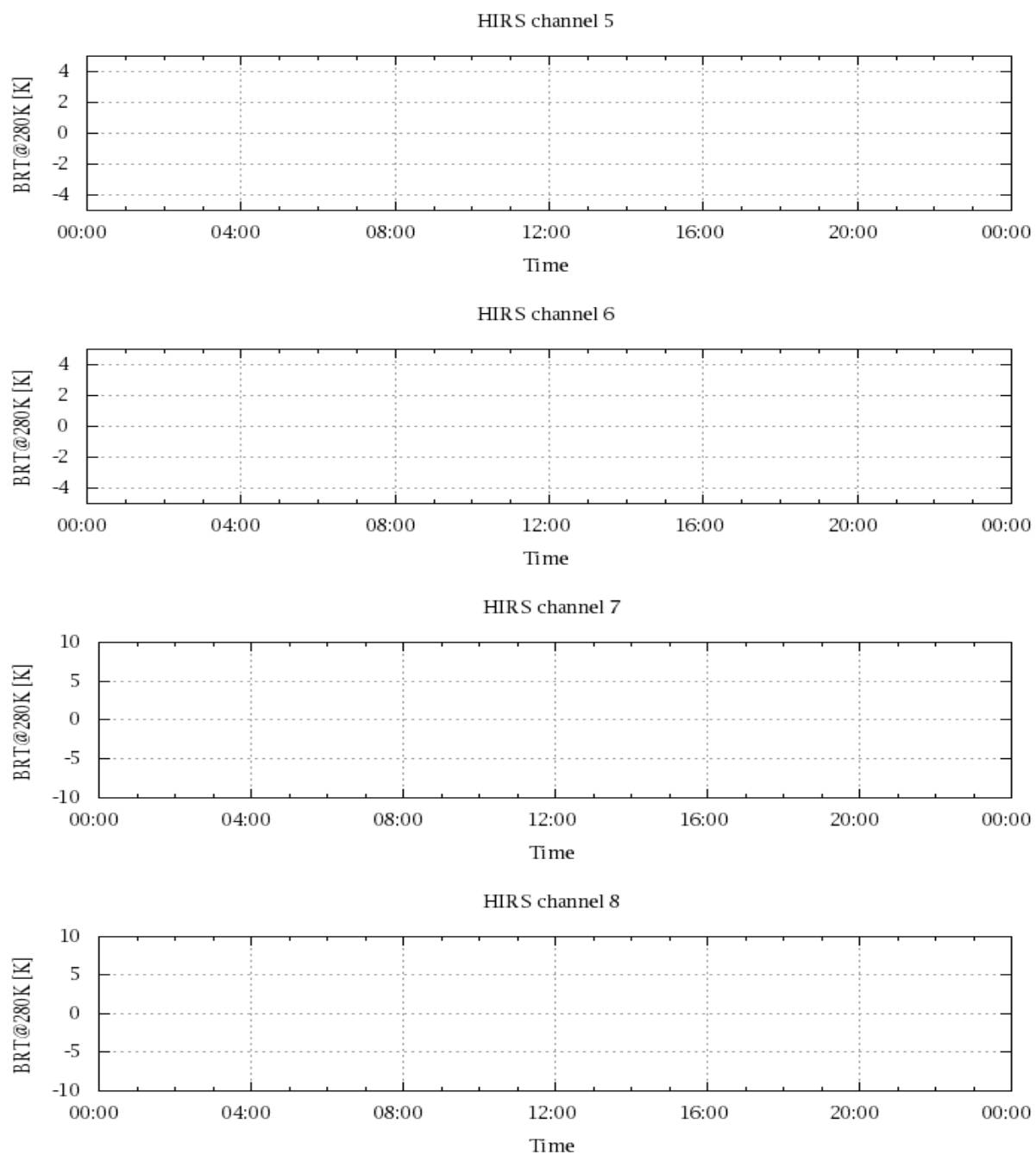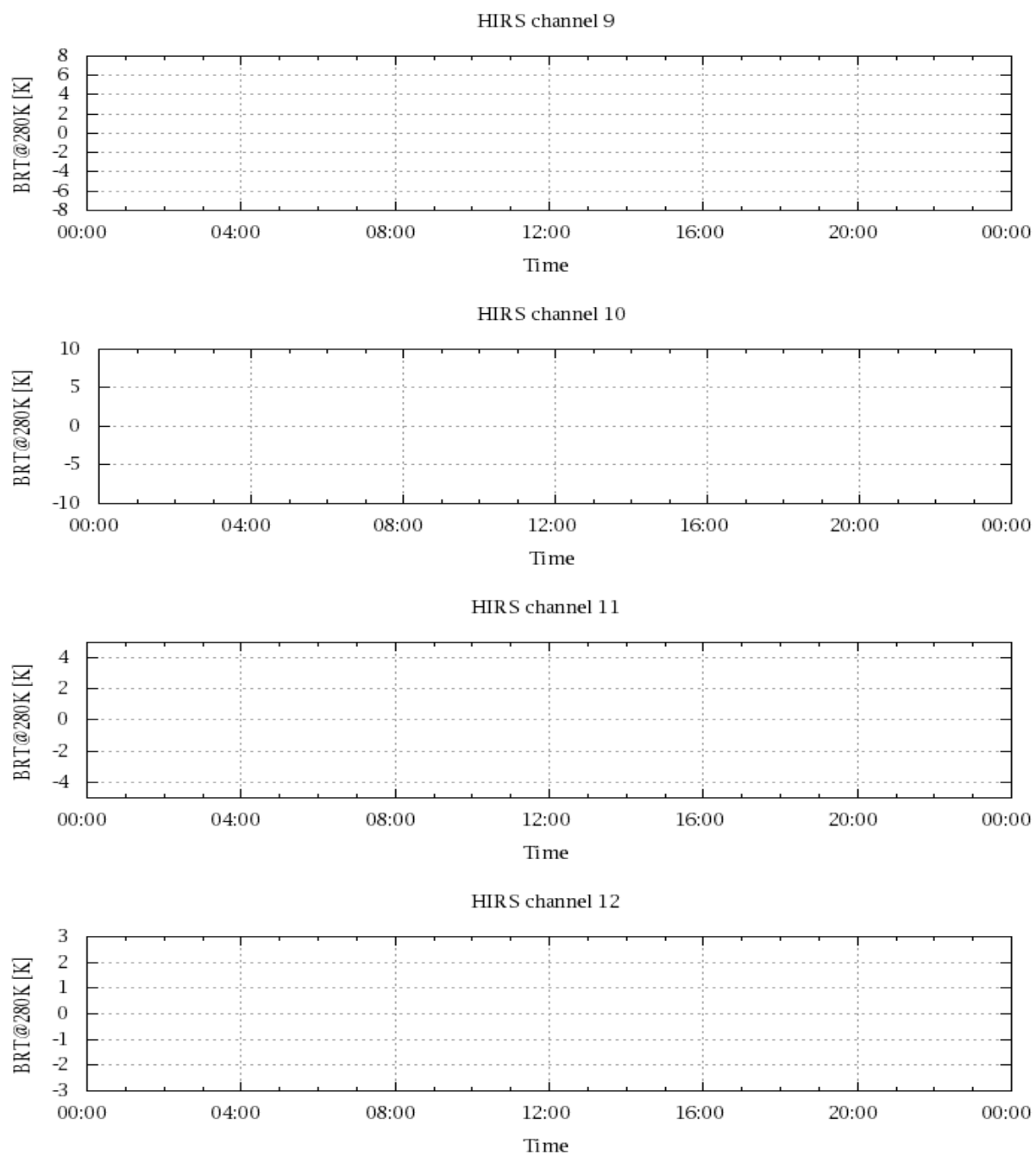Figure 17: Radiance Differences in BT

HIRS channel 5

HIRS channel 6

HIRS channel 7

HIRS channel 8

Figure 18: Radiance Differences in BT

HIRS channel 9

HIRS channel 10

HIRS channel 11

HIRS channel 12

Figure 19: Radiance Differences in BT

HIRS channel 13

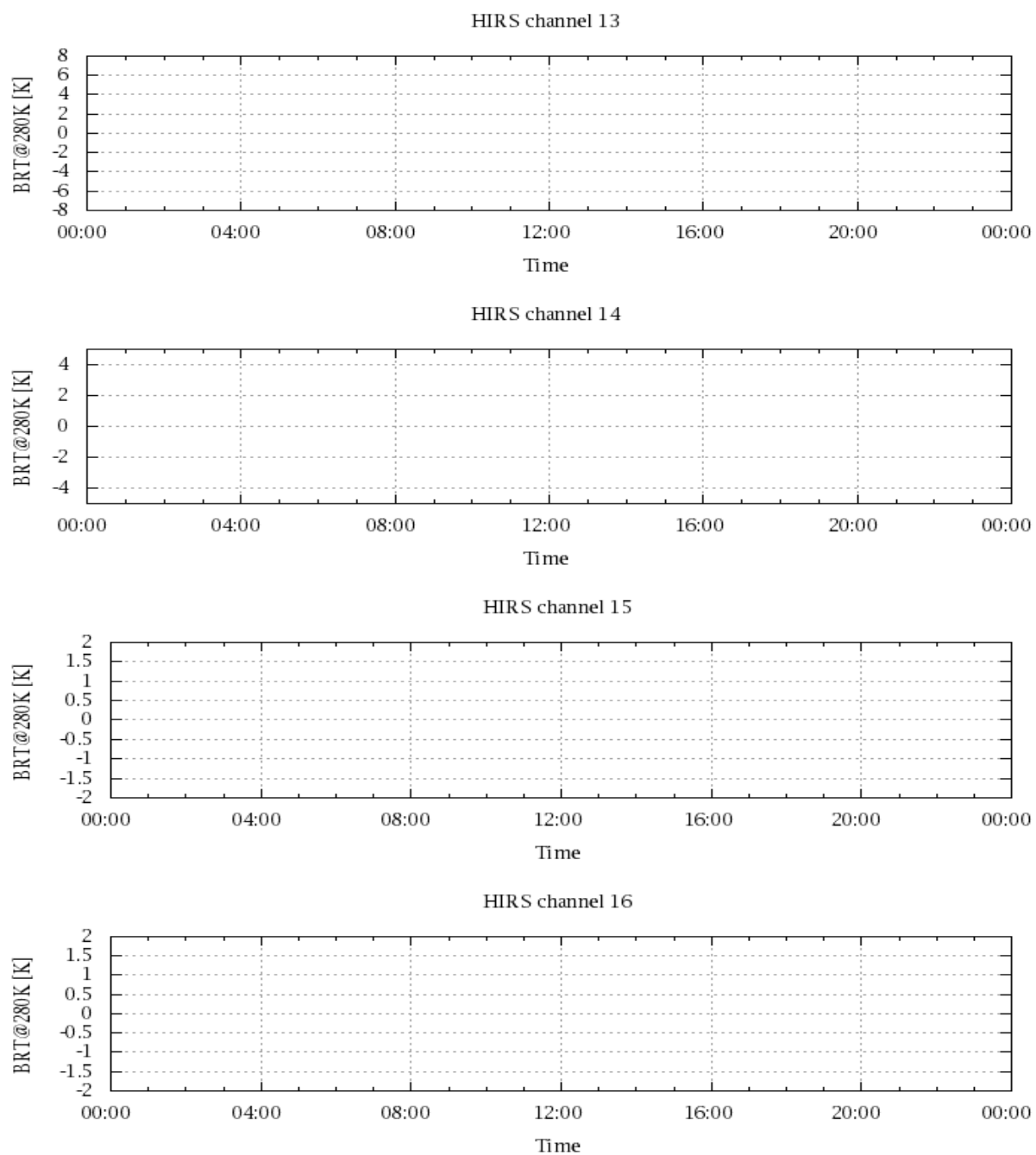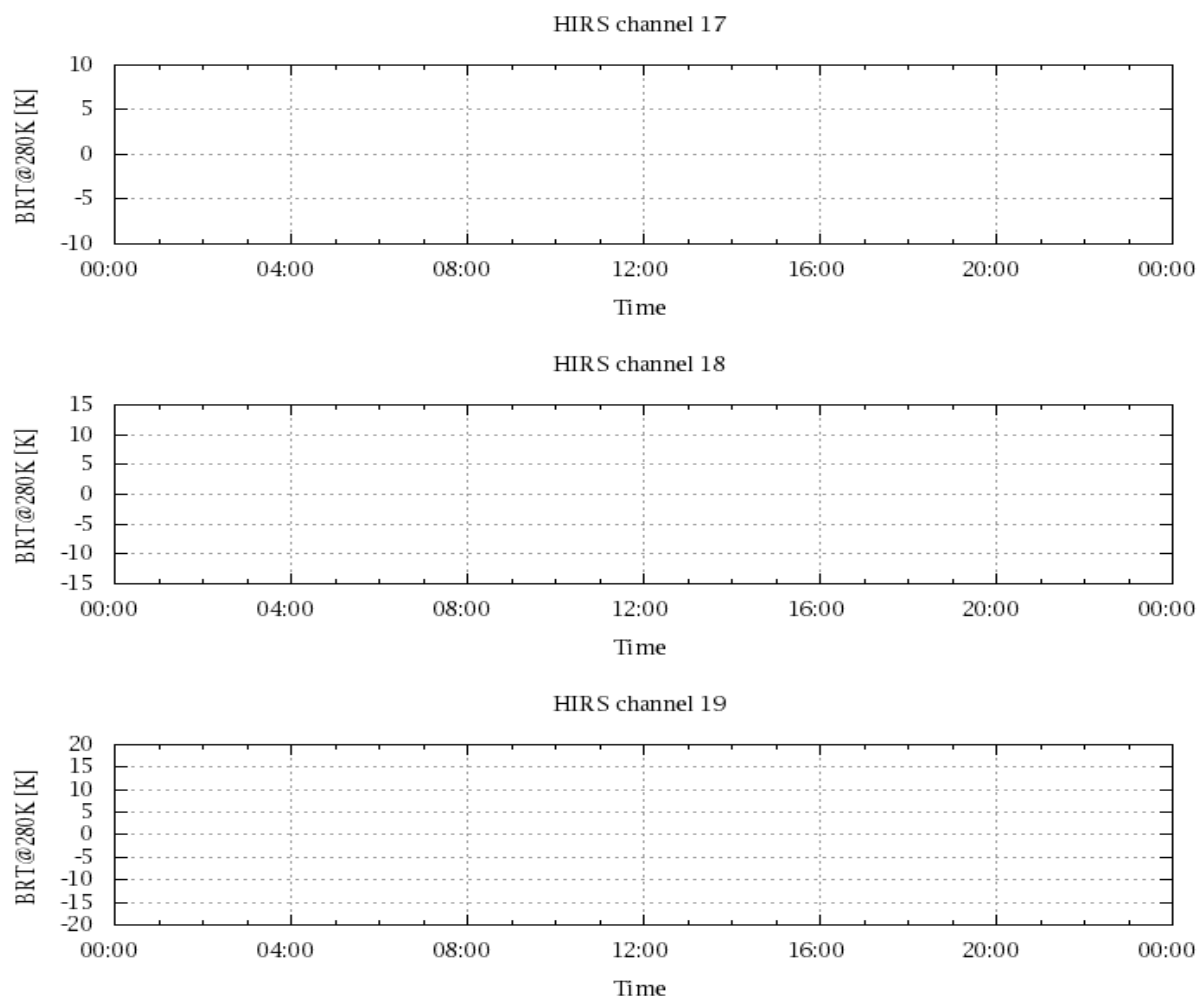HIRS channel 14

HIRS channel 15

HIRS channel 16

Figure 20: Radiance Differences in BT

Figure 21: Radinace Differences in BT

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