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

IASI monitoring team

16/03/2024 00:00:00 - 17/03/2024 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 16/03/2024 00:00:00 - 17/03/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 16/03/2024 00:00:00 - 17/03/2024 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	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)	4166	4171	20240316032700.247	20240316032701.329
PX1 (130)	12229	12232	20240316040250.709	20240316040251.361
PX1 (130)	3250	3252	20240316115240.296	20240316115240.729
PX1 (130)	3287	3289	20240316115249.811	20240316115250.245
PX1 (130)	12481	12511	20240316134631.203	20240316134639.203
PX2 (135)	4166	4171	20240316032700.247	20240316032701.329
PX2 (135)	12229	12232	20240316040250.709	20240316040251.361
PX2 (135)	3250	3252	20240316115240.296	20240316115240.729
PX2 (135)	12480	12511	20240316134630.989	20240316134639.203
PX3 (140)	4166	4171	20240316032700.247	20240316032701.329
PX3 (140)	12229	12232	20240316040250.709	20240316040251.361
PX3 (140)	3250	3252	20240316115240.296	20240316115240.729
PX3 (140)	12480	12510	20240316134630.989	20240316134638.988
PX4 (145)	4165	4170	20240316032700.032	20240316032701.114
PX4 (145)	12229	12232	20240316040250.709	20240316040251.361
PX4 (145)	3250	3252	20240316115240.296	20240316115240.729
PX4 (145)	12480	12510	20240316134630.989	20240316134638.988
IMG (150)	9301	9306	20240316032700.032	20240316032701.114
IMG (150)	2056	2059	20240316040250.498	20240316040251.142
Continued on next page				

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	7173	7175	20240316115240.081	20240316115240.514
IMG (150)	3436	3470	20240316134630.989	20240316134638.988
VER (160)	13344	13350	20240316134629.258	20240316134645.258
AUX (180)	5930	5932	20240316134629.692	20240316134645.692

Table 2: L0 data gaps

3   Instrument modes

Time	Transition from	Transition to
16/03/2024 00:00:10	-	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)	99.68 %	-
GQisFlagQual set (PX2)	99.73 %	-
GQisFlagQual set (PX3)	99.73 %	-
GQisFlagQual set (PX4)	99.67 %	-
GQisFlagQual set (all)	99.70 %	-

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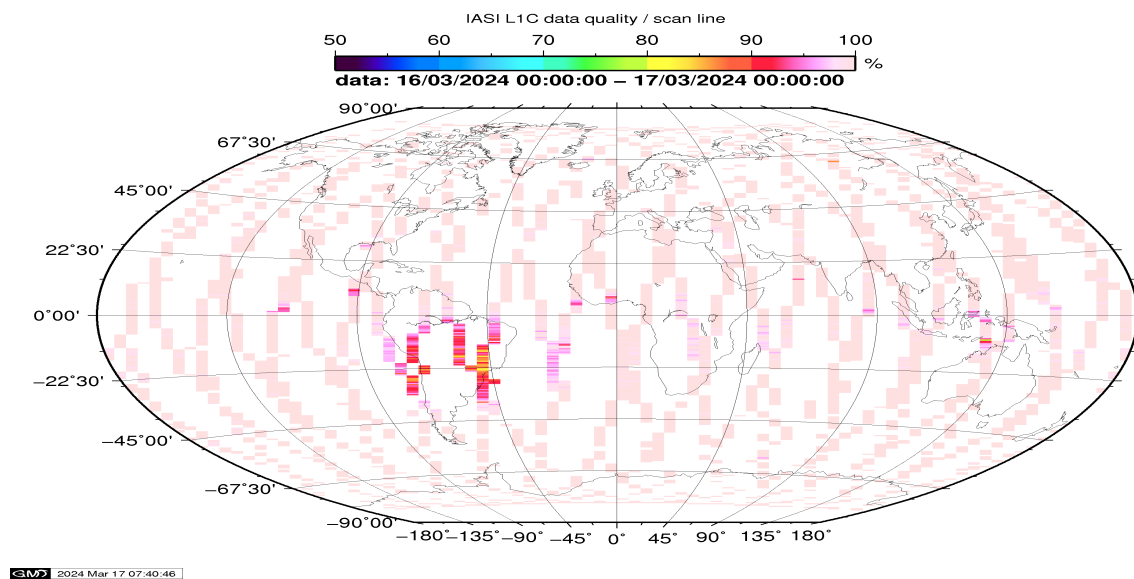
Figure 1: L1C data quality
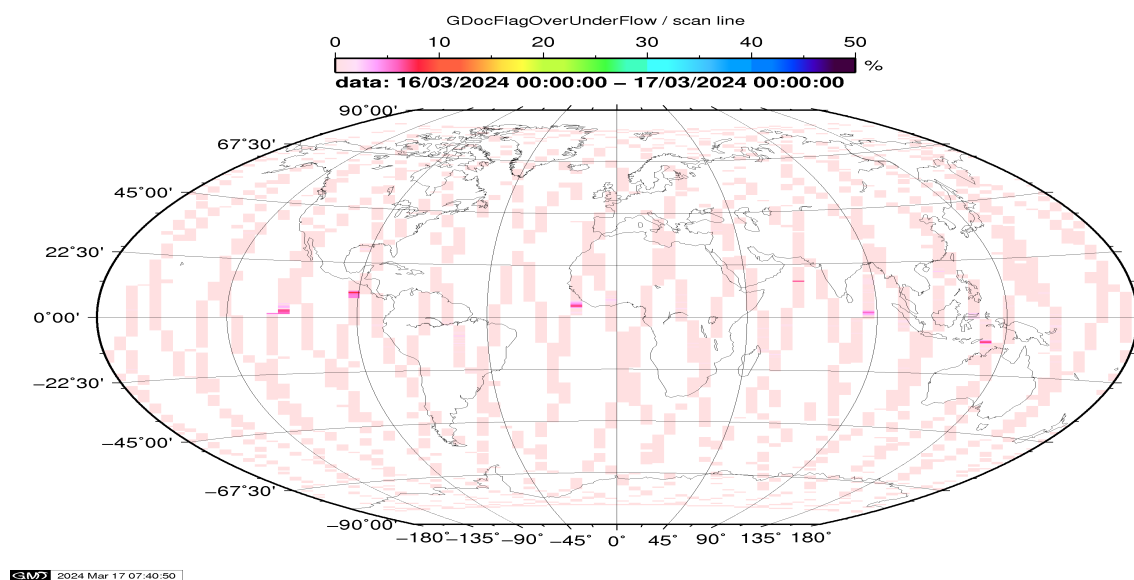
Figure 2: Flag of Over and Under Flows
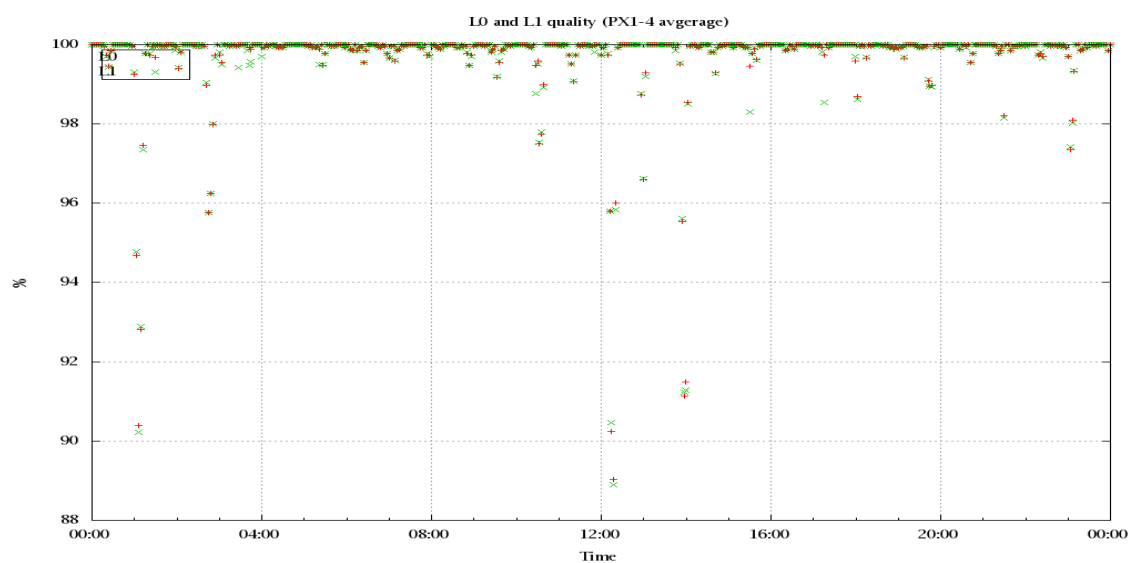
Figure 3: Level 0 and 1C overall quality
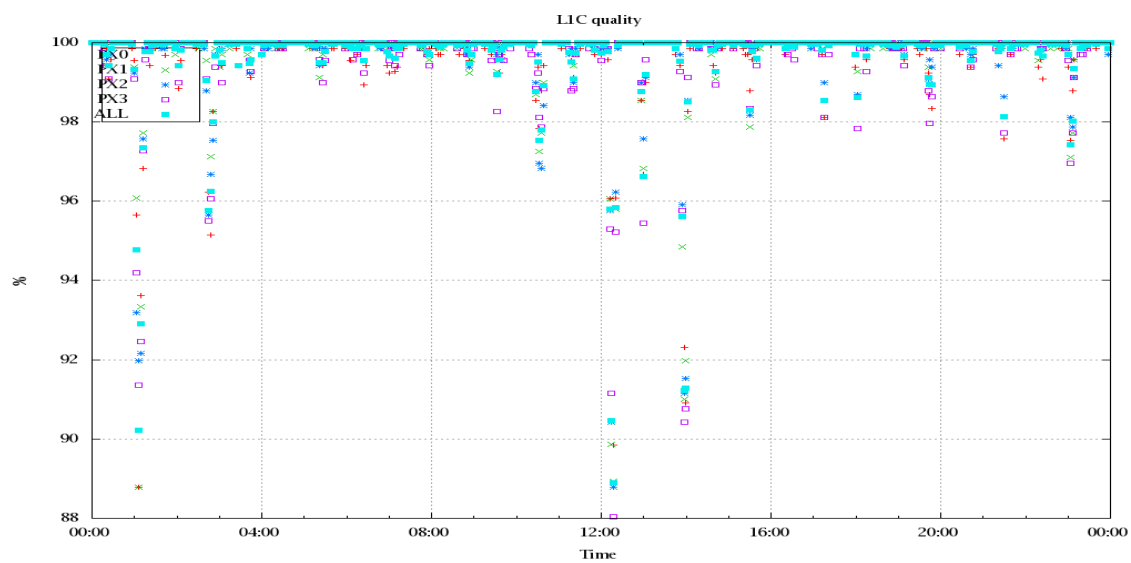
Figure 4: Level 1C quality
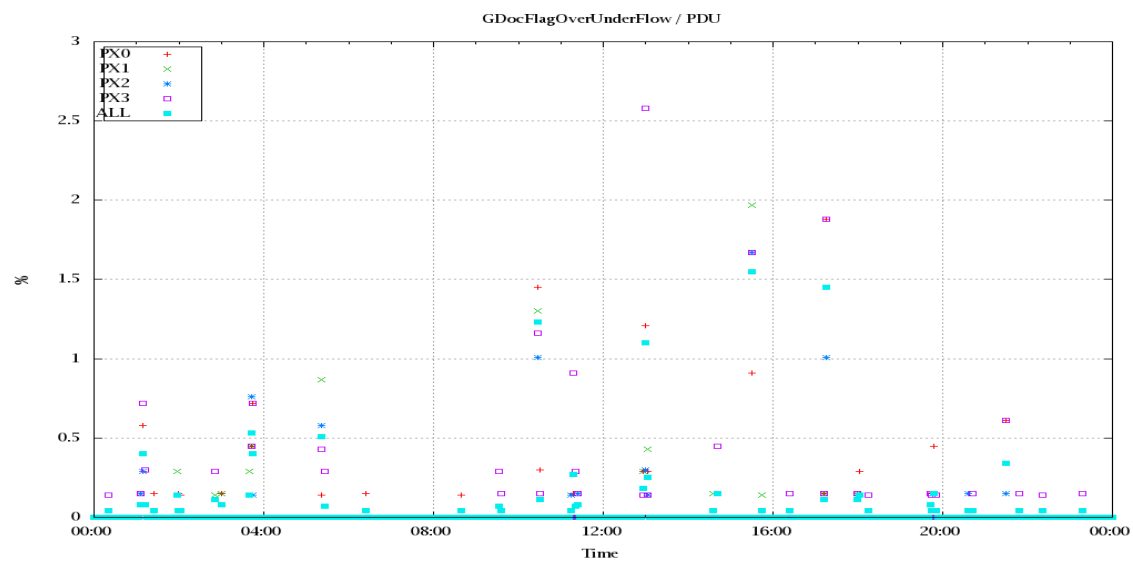
Figure 5: Timeseries of flag of Over and Under Flows

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.
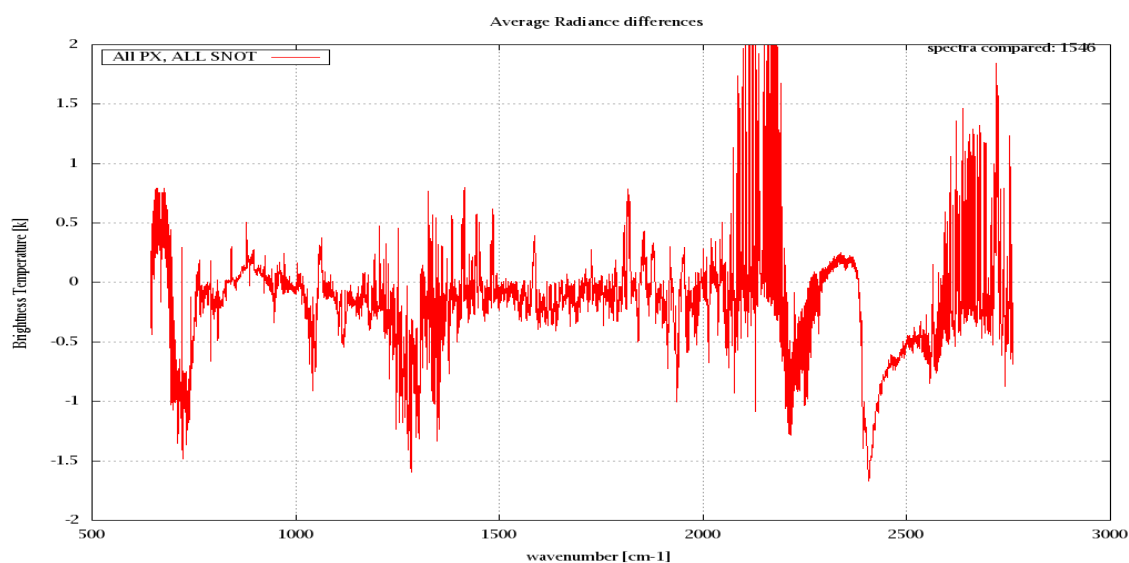
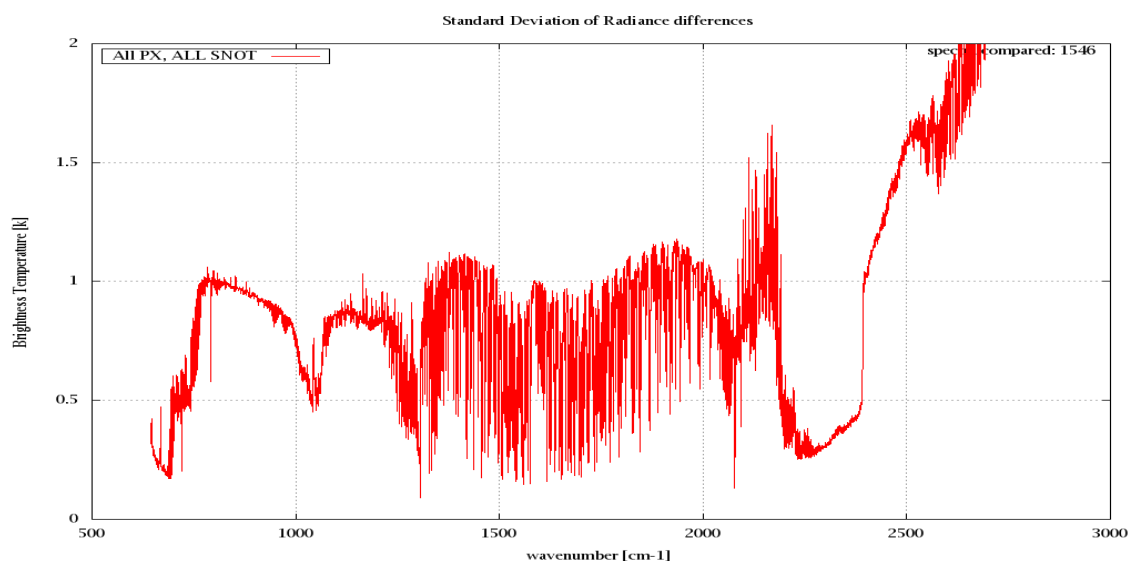Figure 6: Average Radiance differences: OBS-CAL

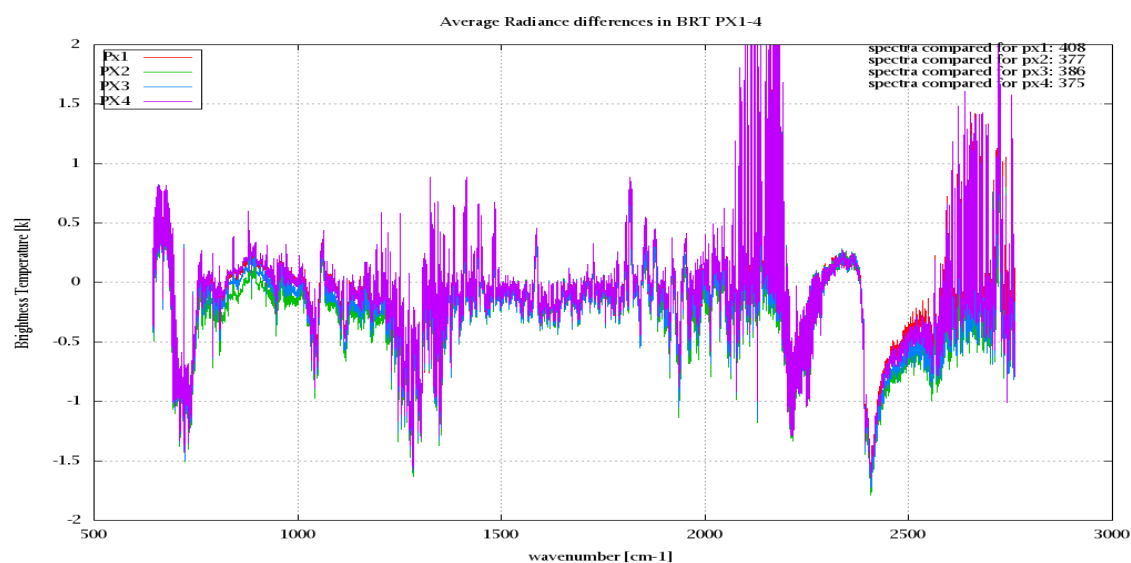Figure 7: Standard Deviation of Radiance differences
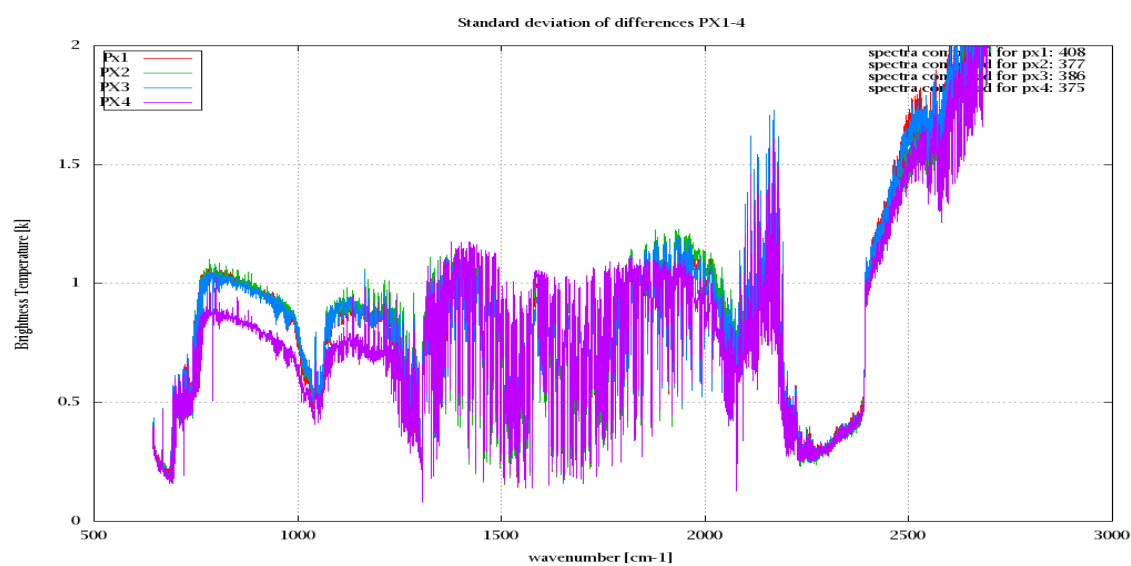
Figure 8: Average Radiance differences: OBS-CAL

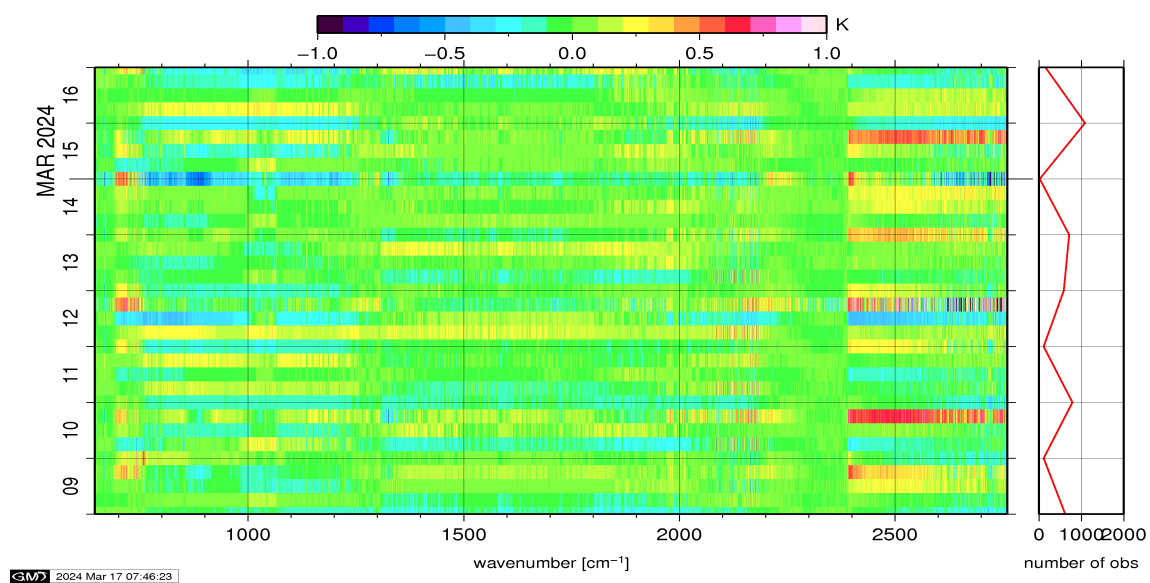Figure 9: Standard Deviation of Radiance differences

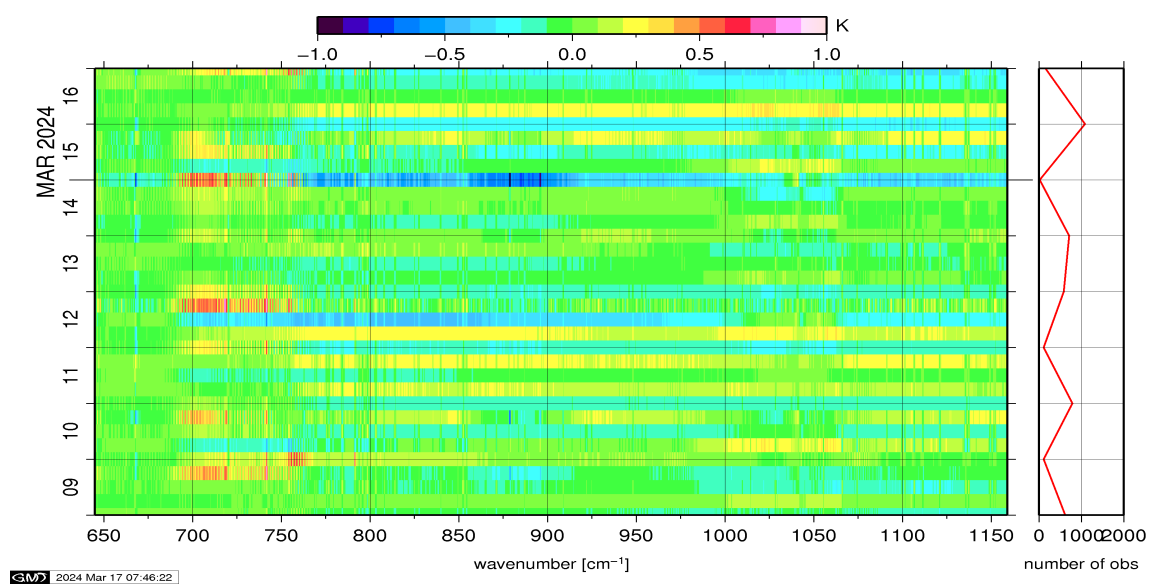Figure 10: Radiance Anomaly in BT: All Channels
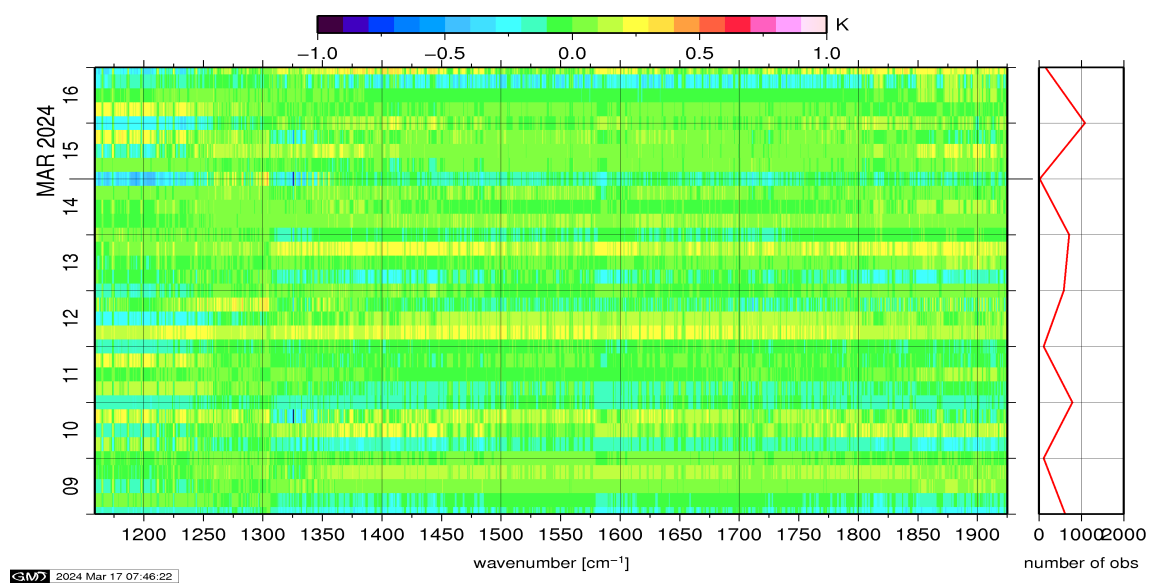

Figure 11: Radiance Anomaly in BT: IASI Band 1

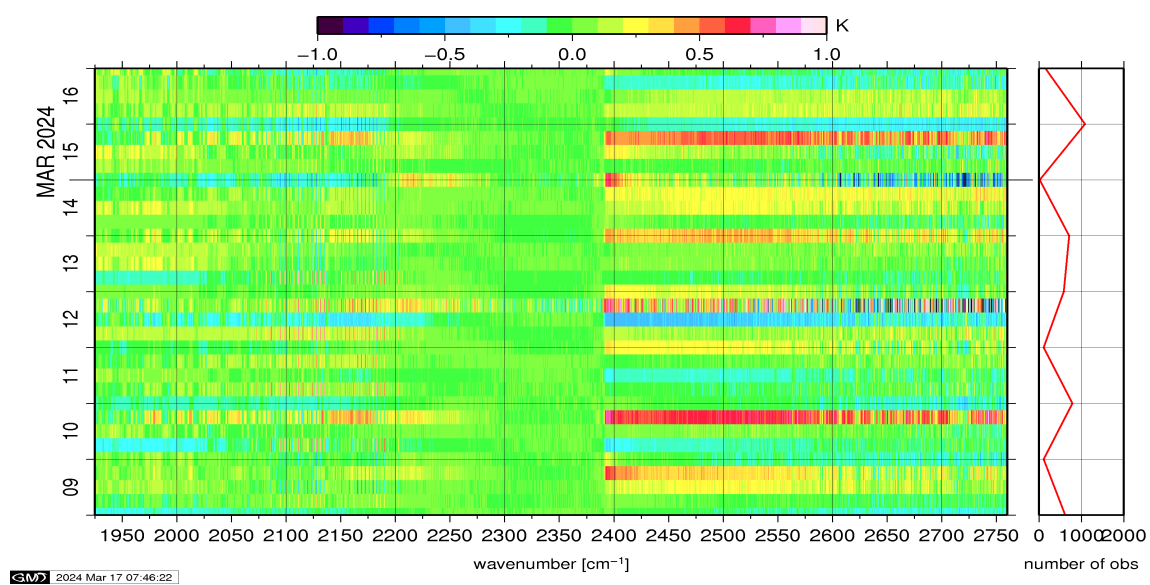Figure 12: Radiance Anomaly in BT: IASI Band 2

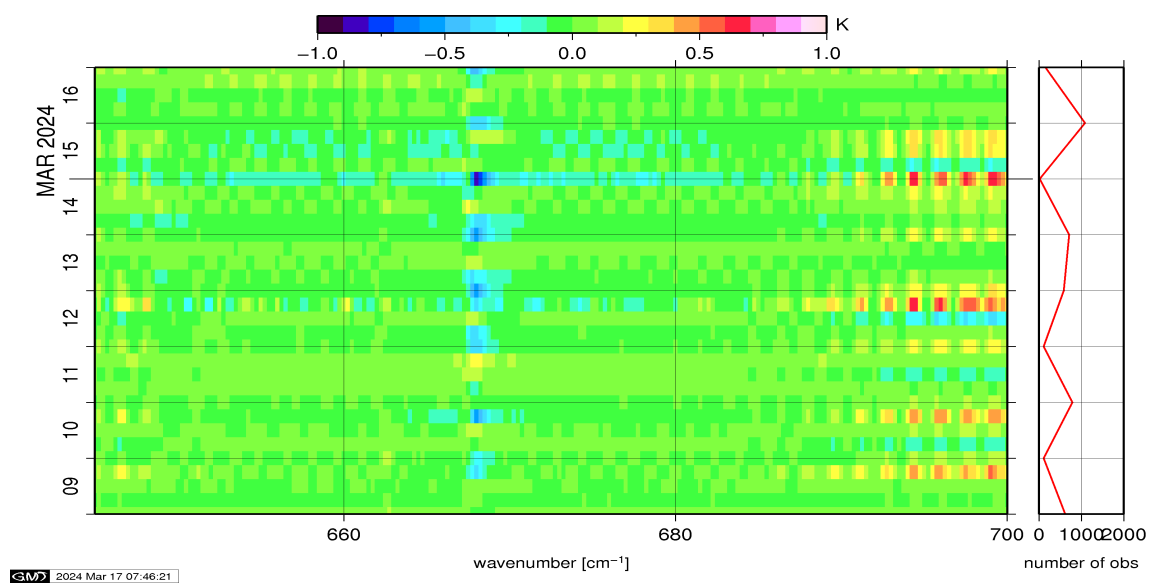Figure 13: Radiance Anomaly in BT: IASI Band 3

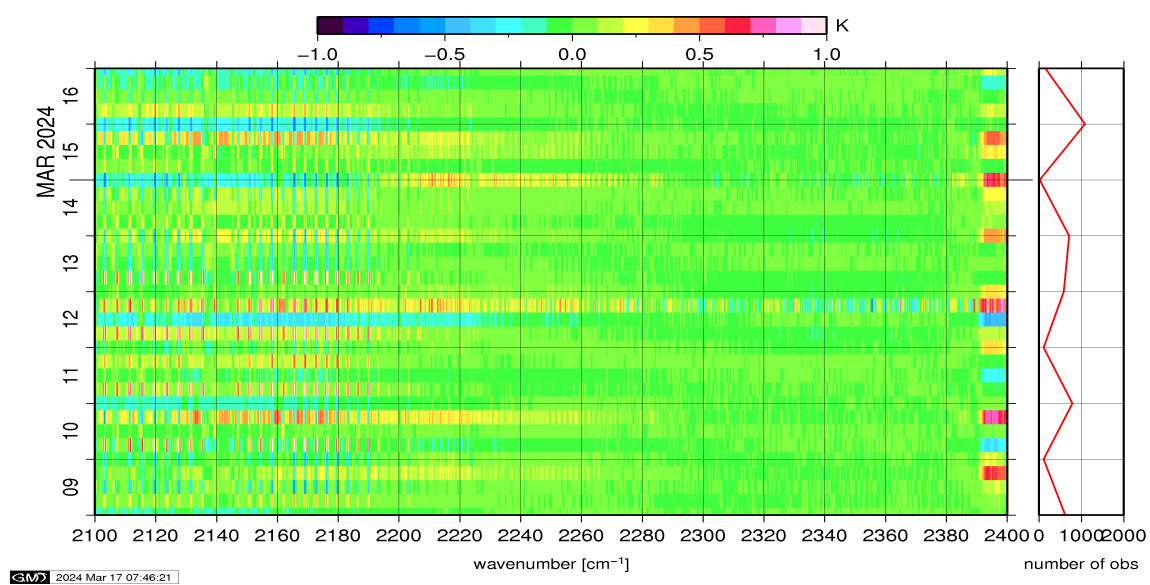Figure 14: Radiance Anomaly in BT: CO2 14

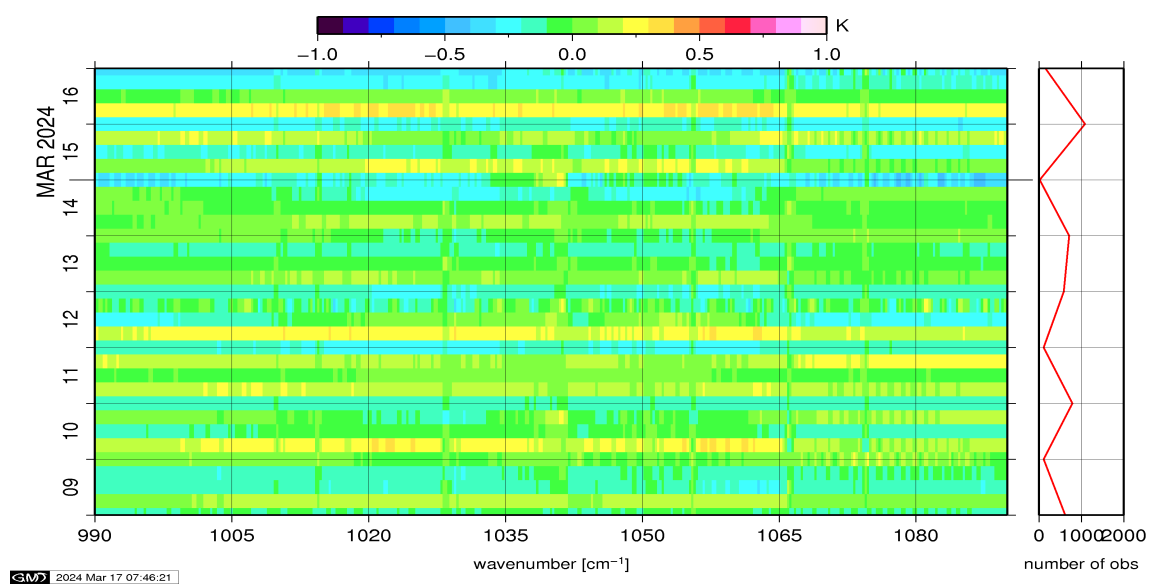Figure 15: Radiance Anomaly in BT: CO2 4.3

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.
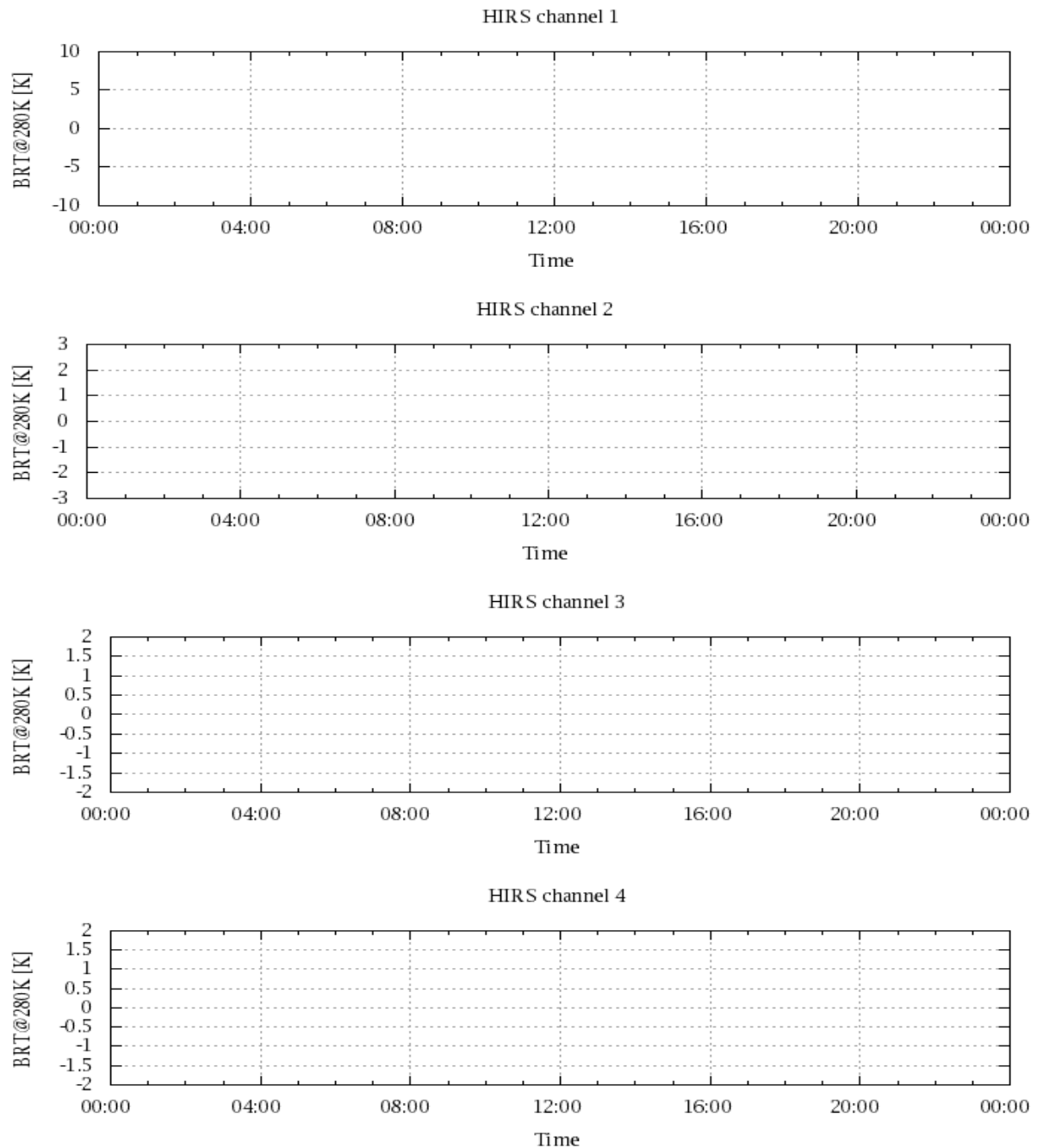

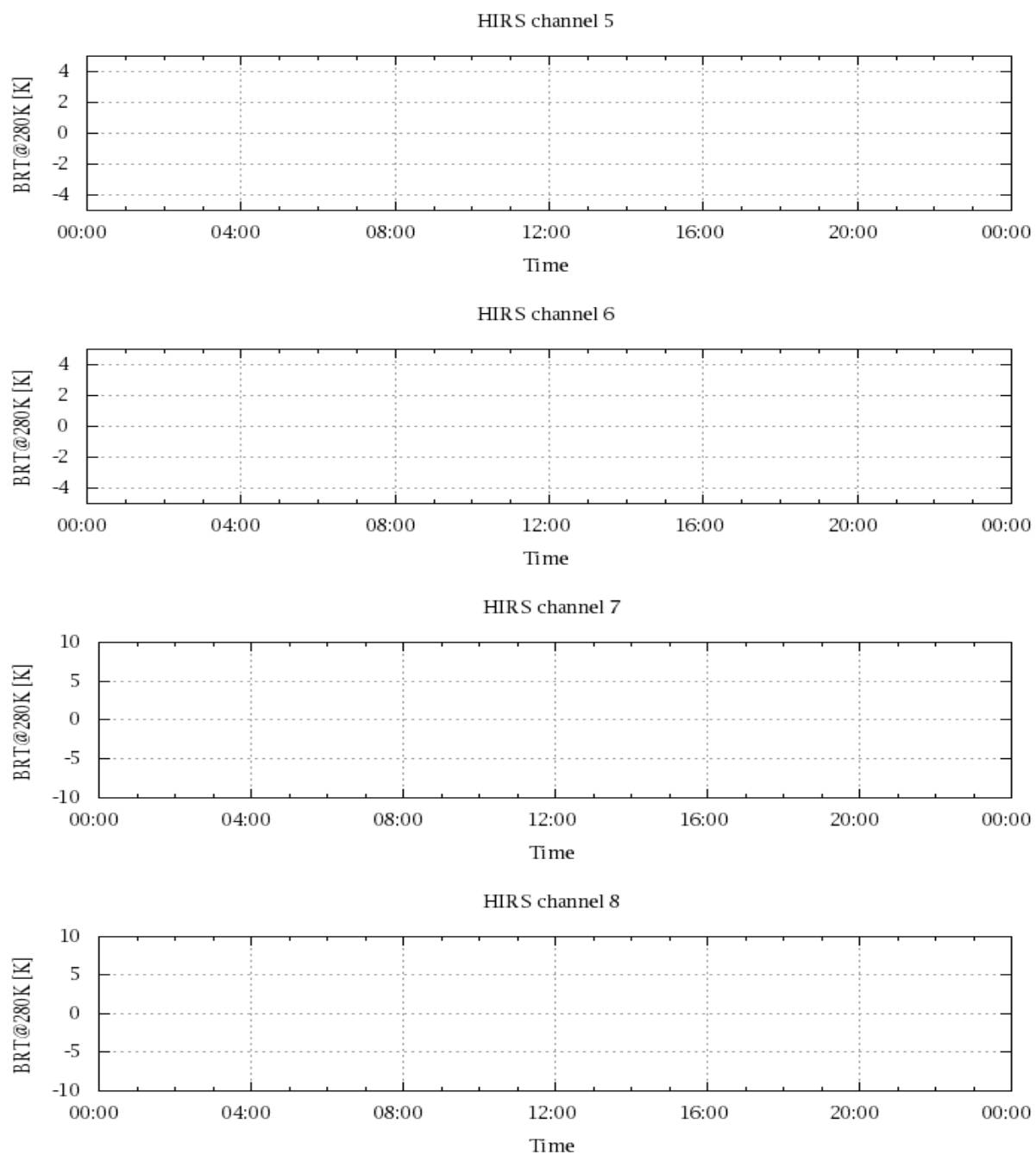Figure 17: Radiance Differences in BT

HIRS channel 5

HIRS channel 6

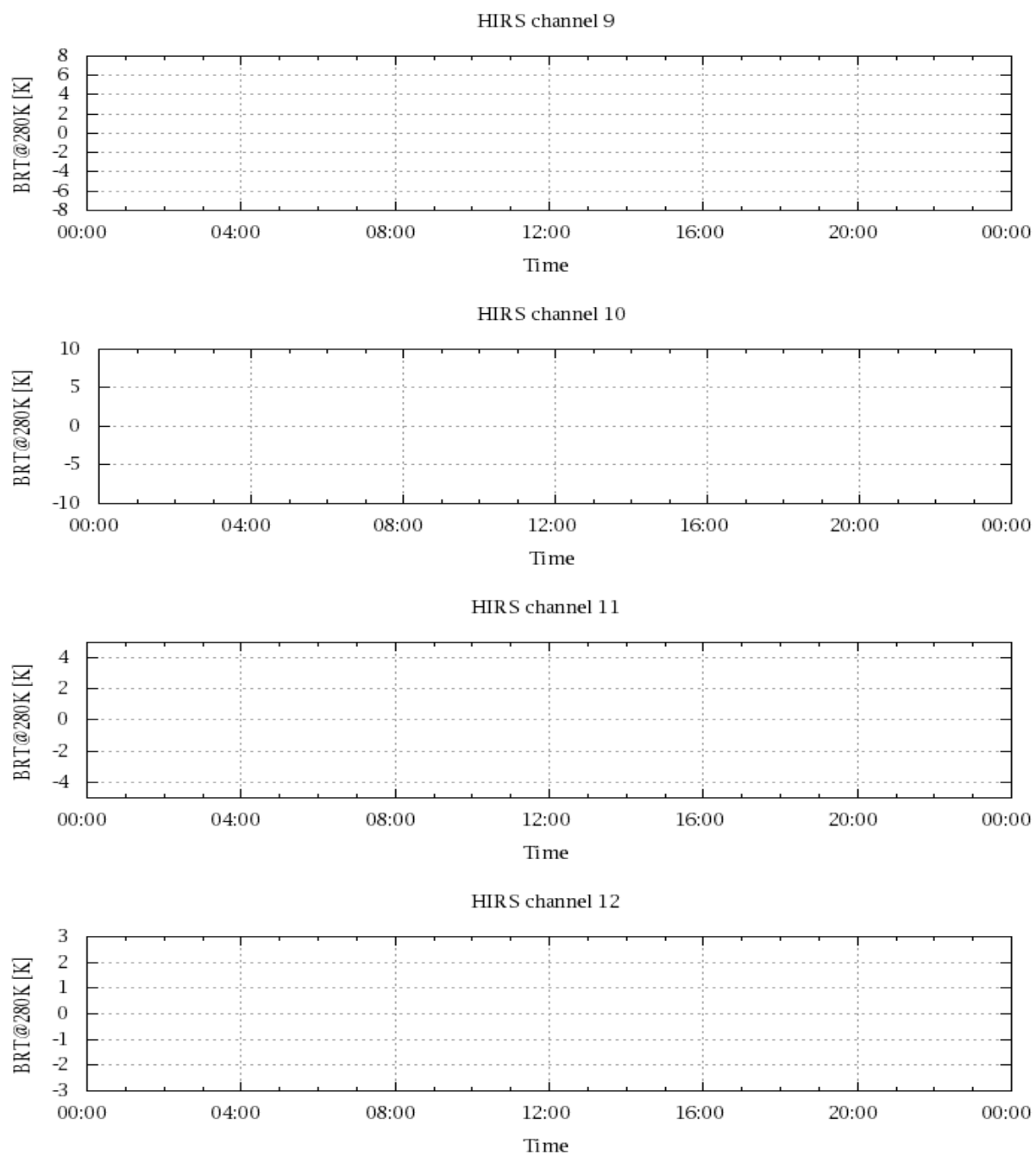HIRS channel 7

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

European Organisation for the Exploitation of Meteorological Satellites

HIRS channel 13

HIRS channel 14

HIRS channel 15

HIRS channel 16
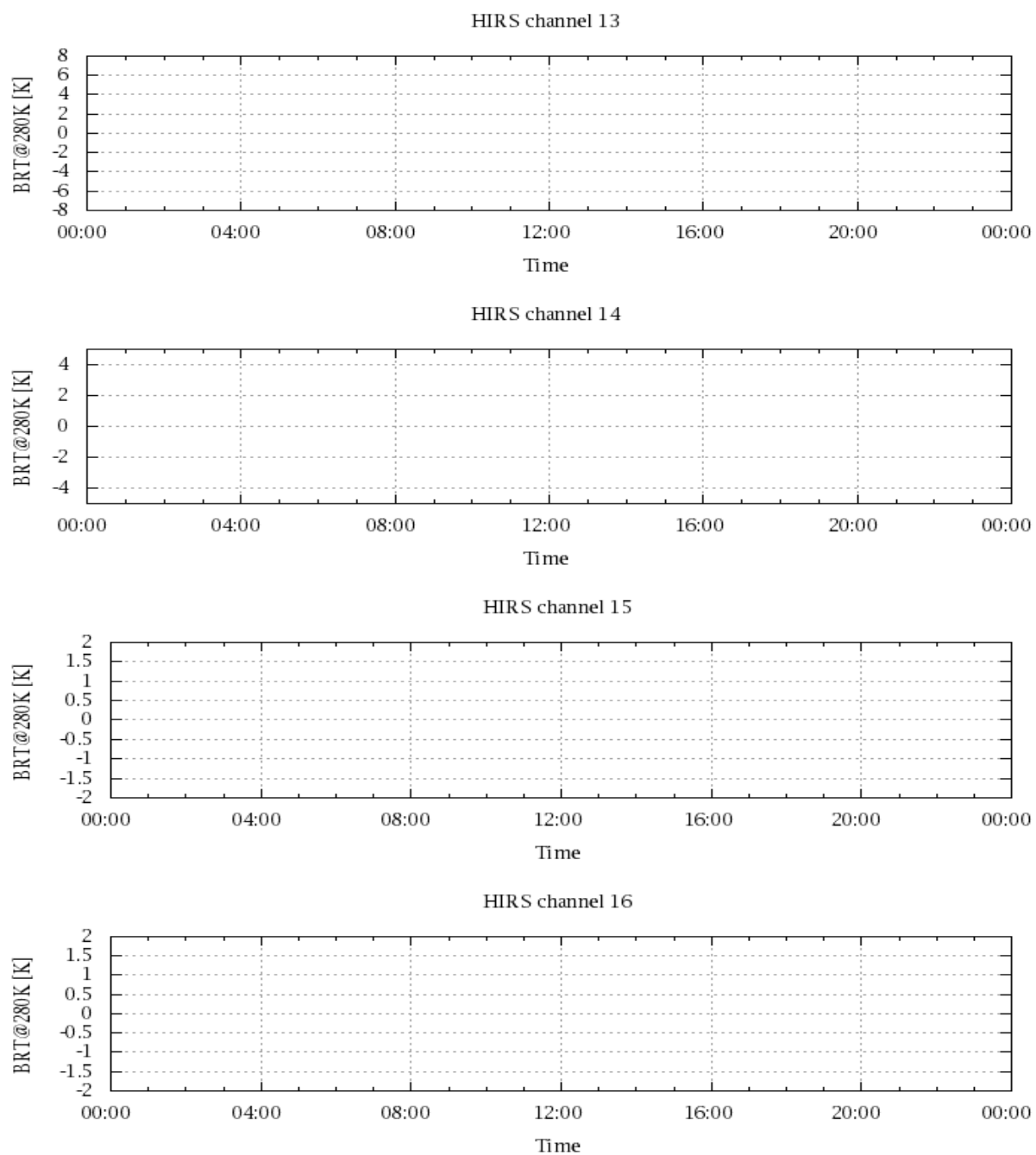
Figure 20: Radiance Differences in BT

HIRS channel 17

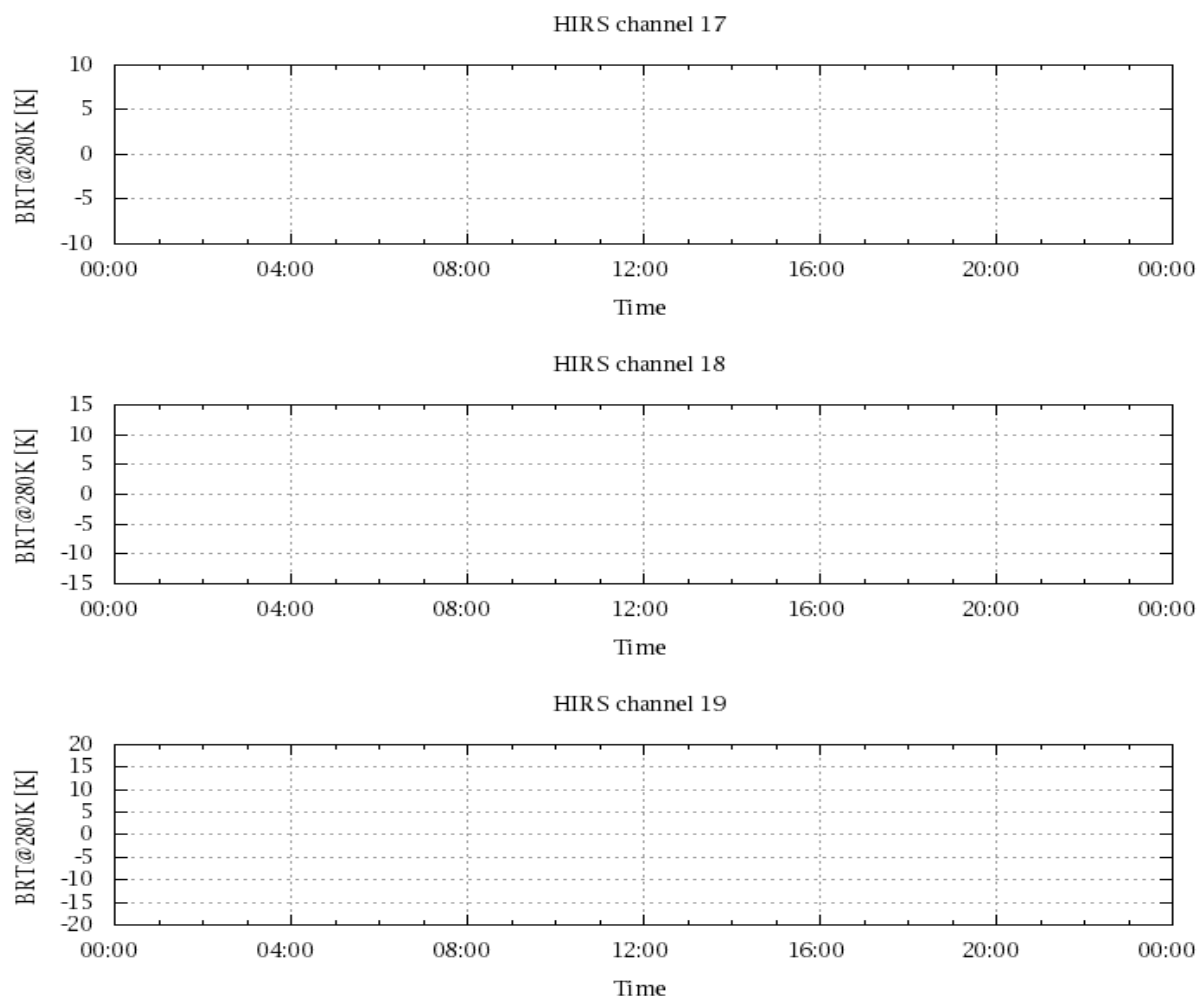BRT@280K [K]

HIRS channel 18

BRT@280K [K]

HIRS channel 19

BRT@280K [K]

Figure 21: Radinace Differences in BT

European Organisation for the Exploitation of Meteorological Satellites