

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

IASI monitoring team

16/05/2024 00:00:00 - 17/05/2024 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 16/05/2024 00:00:00 - 17/05/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 16/05/2024 00:00:00 - 17/05/2024 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	477	-
L0 IASI PDUs	477	-
L1 ENG PDUs	476	-
L1 ENG distinct GEPSGranule	477	-
<b>L1 DPX PDUs (RM: IASI-HIRS)</b>	<b>3</b>	<b>e</b>
L1 DPS Files (RM: OBS-CAL NWP based)	476	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	8721	9237	20240516182704.681	20240516182921.974
PX1 (130)	10506	13850	20240516183459.911	20240516184952.460
PX1 (130)	13930	13939	20240516185012.785	20240516185016.246
PX2 (135)	8720	9236	20240516182704.467	20240516182921.755
PX2 (135)	10506	13850	20240516183459.911	20240516184952.460
PX2 (135)	13930	13939	20240516185012.785	20240516185016.246
PX3 (140)	8720	9236	20240516182704.467	20240516182921.755
PX3 (140)	10506	13850	20240516183459.911	20240516184952.460
PX3 (140)	13930	13939	20240516185012.785	20240516185016.246
PX4 (145)	8720	9236	20240516182704.467	20240516182921.755
PX4 (145)	9347	9349	20240516182951.810	20240516182952.244
PX4 (145)	10506	13849	20240516183459.911	20240516184952.246
PX4 (145)	13930	13939	20240516185012.785	20240516185016.246
IMG (150)	5328	5912	20240516182704.467	20240516182921.755
IMG (150)	7349	11141	20240516183459.696	20240516184952.246
IMG (150)	11229	11243	20240516185012.570	20240516185016.246
VER (160)	8125	8211	20240516182700.787	20240516182924.783
VER (160)	8420	8981	20240516183452.774	20240516184956.785
VER (160)	8990	8996	20240516185004.789	20240516185020.785

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**Table 2 – continued from previous page**

<b>APID</b>	<b>Seq from</b>	<b>Seq to</b>	<b>Time from</b>	<b>Time to</b>
AUX (180)	11439	11457	20240516182701.221	20240516182925.216
AUX (180)	11498	11611	20240516183453.208	20240516184957.218
AUX (180)	11612	11614	20240516185005.218	20240516185021.218

Table 2: L0 data gaps

### 3 Instrument modes

Time	Transition from	Transition to
16/05/2024 00:00:02	-	Normal operation

Table 3: Instrument modes

### 4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	477	-
L1 ENG PDUs	476	-
L1 ENG distinct GEPSGranule	477	-
GQisFlagQual set (PX1)	99.54 %	-
GQisFlagQual set (PX2)	99.64 %	-
GQisFlagQual set (PX3)	99.62 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.59 %	-

Table 4: Quality flags

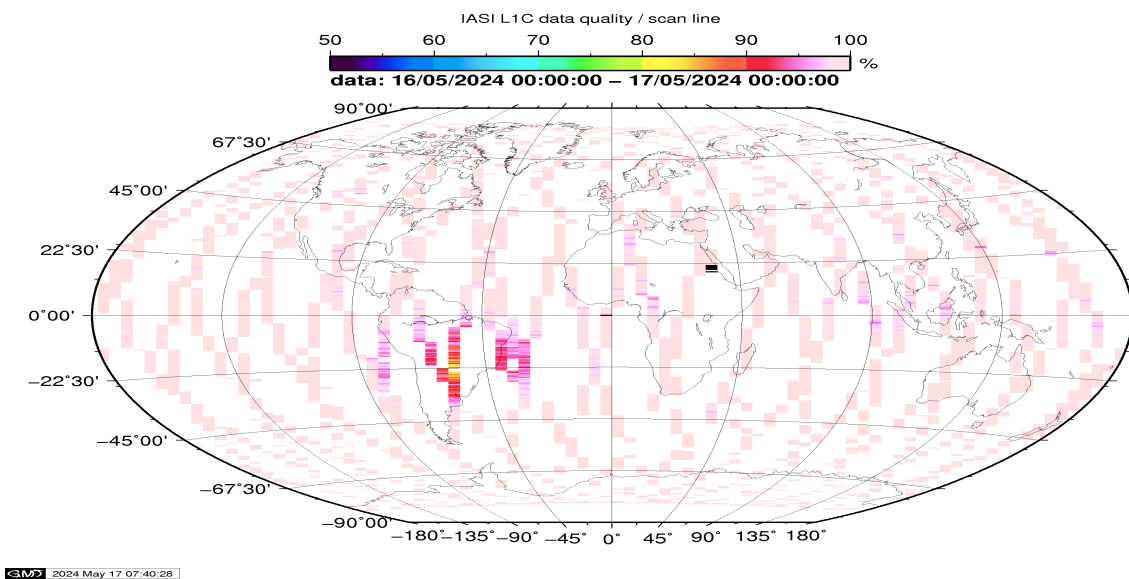


Figure 1: L1C data quality

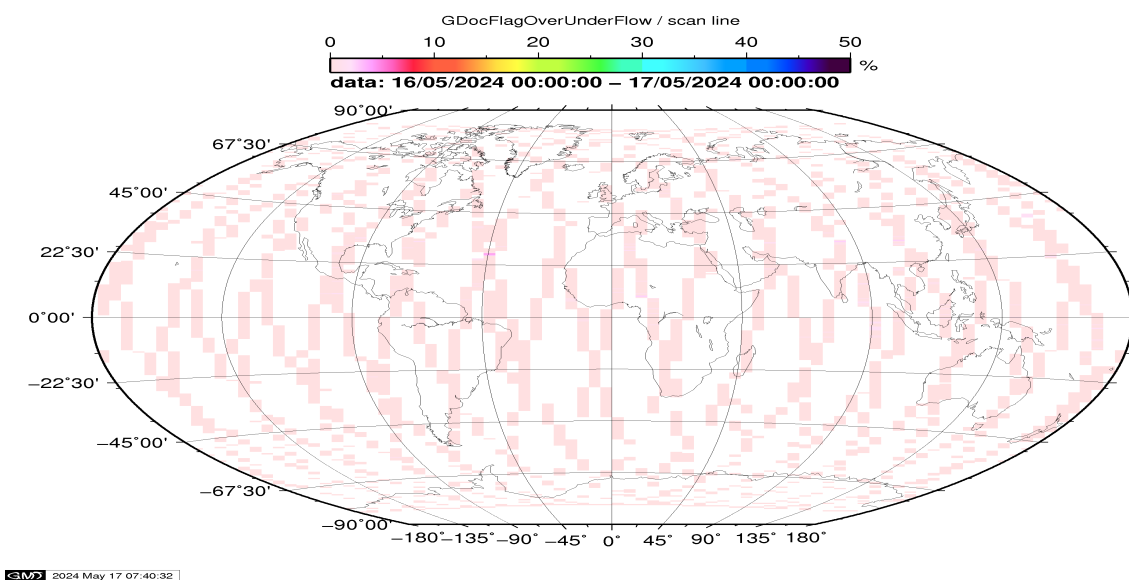


Figure 2: Flag of Over and Under Flows

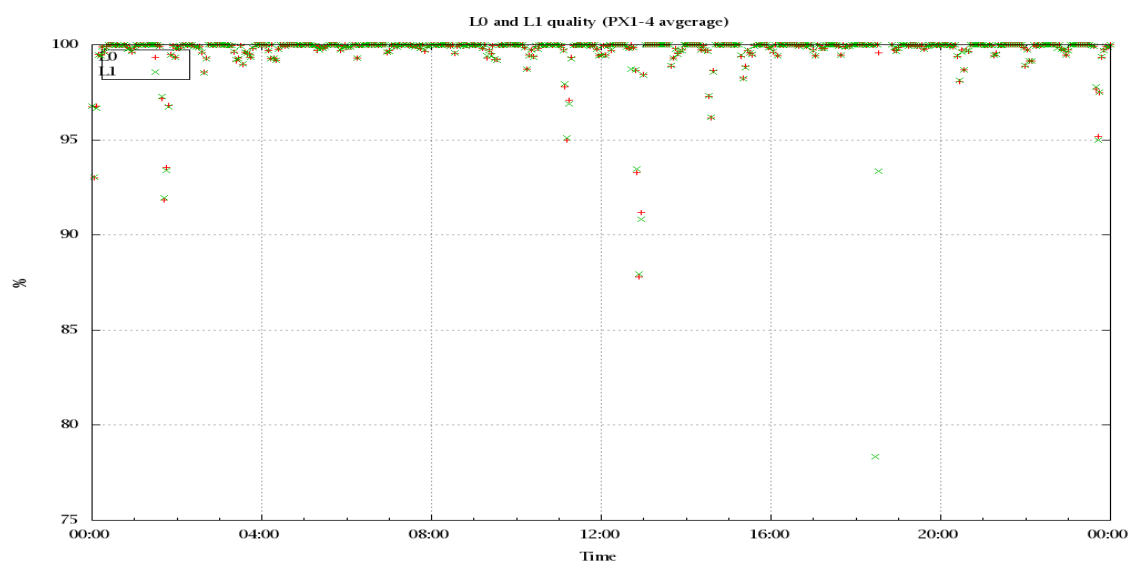


Figure 3: Level 0 and 1C overall quality

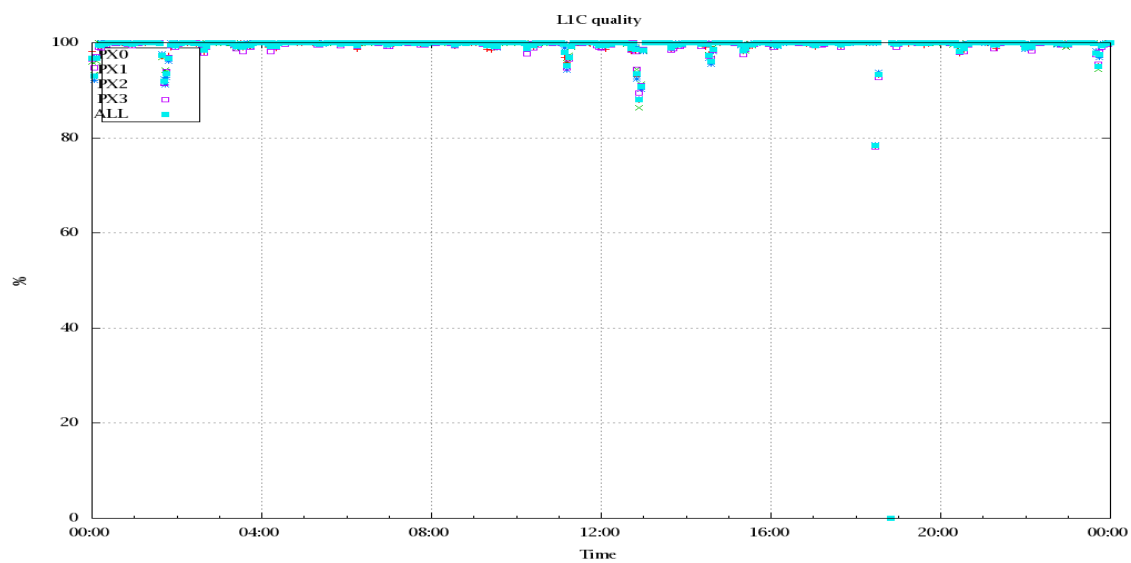


Figure 4: Level 1C quality

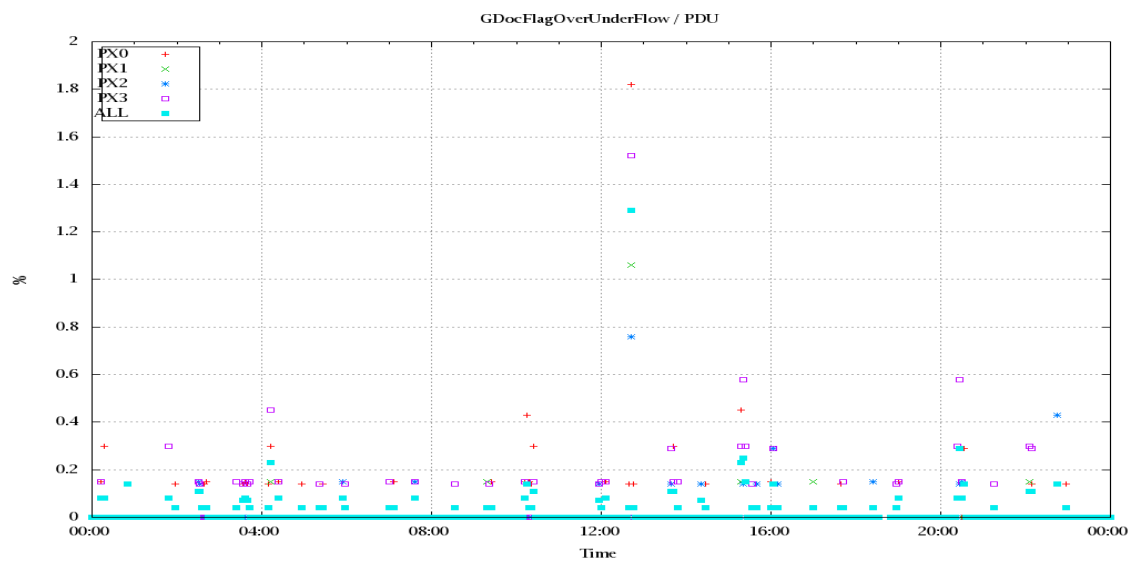


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

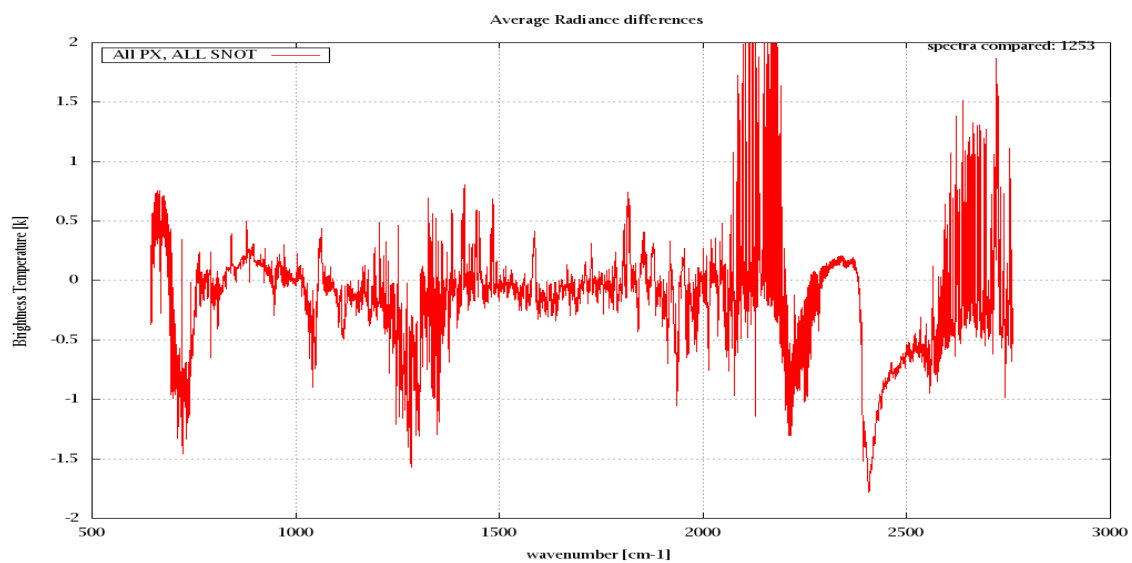


Figure 6: Average Radiance differences: OBS-CAL

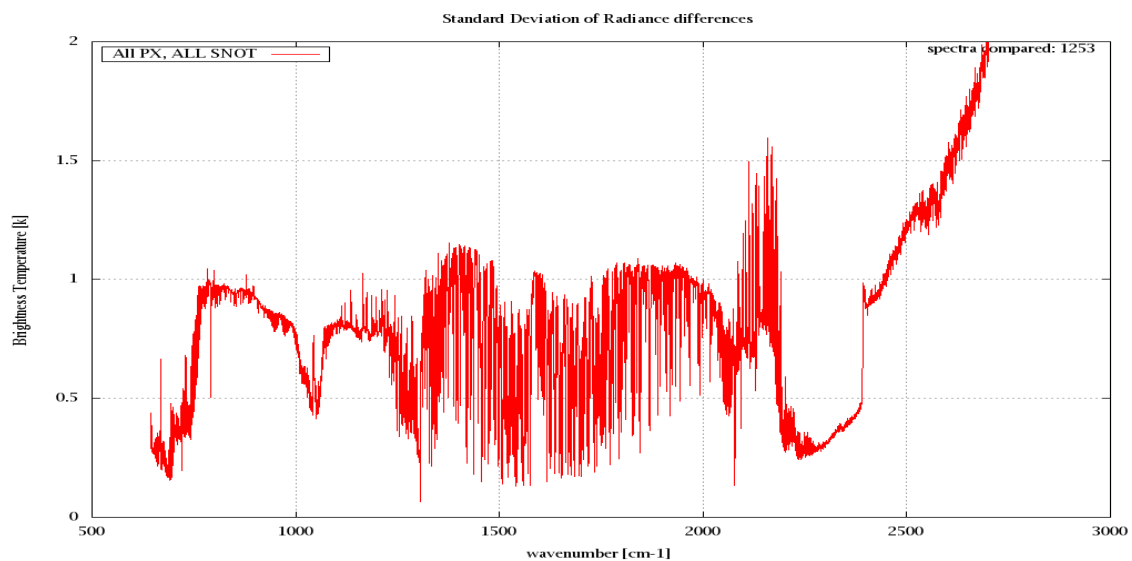


Figure 7: Standard Deviation of Radiance differences

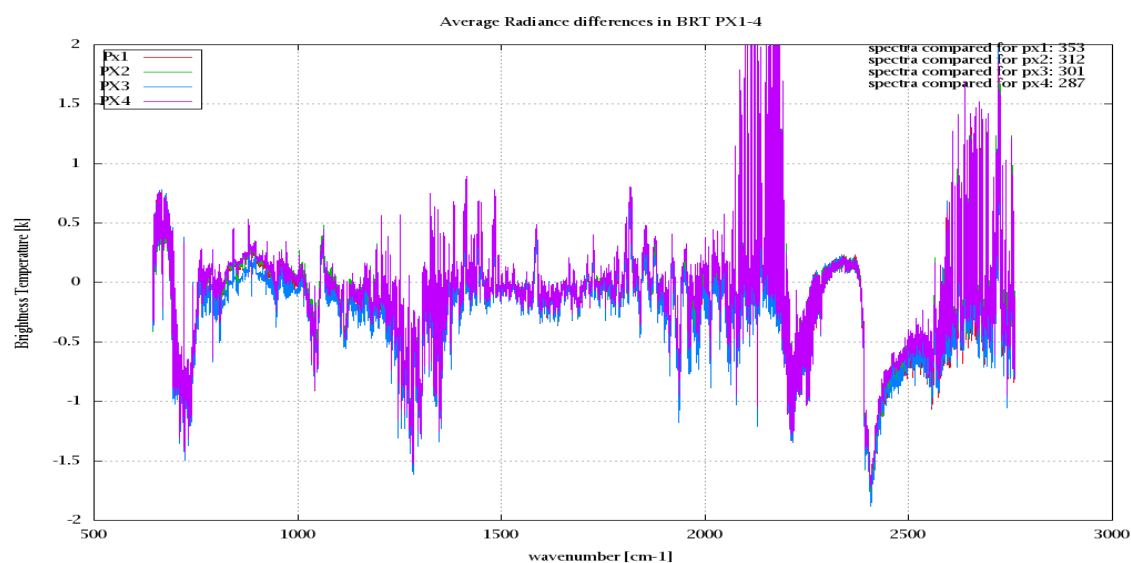


Figure 8: Average Radiance differences: OBS-CAL

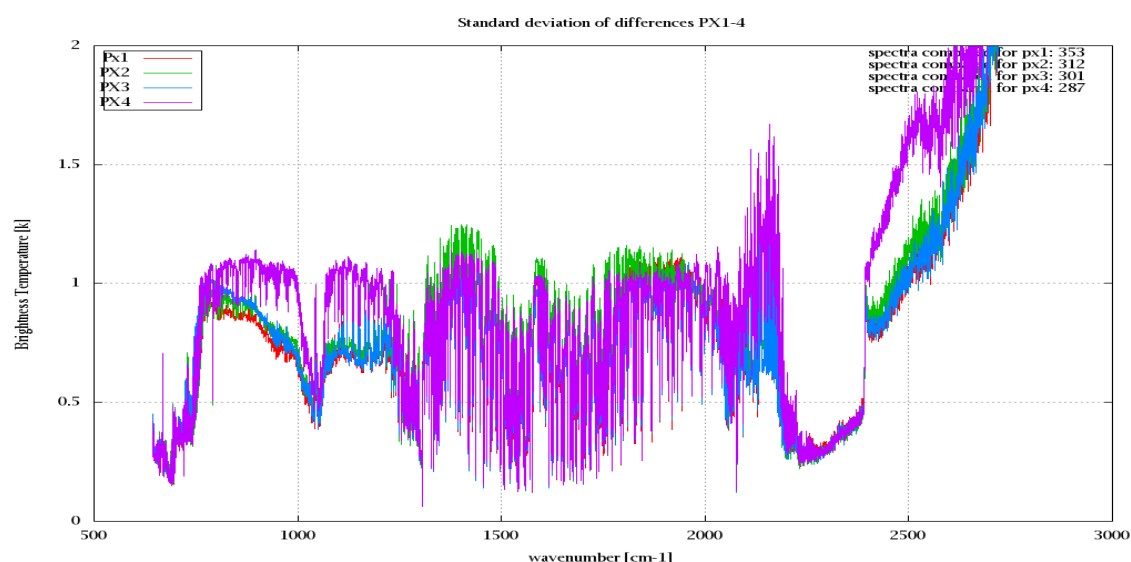


Figure 9: Standard Deviation of Radiance differences



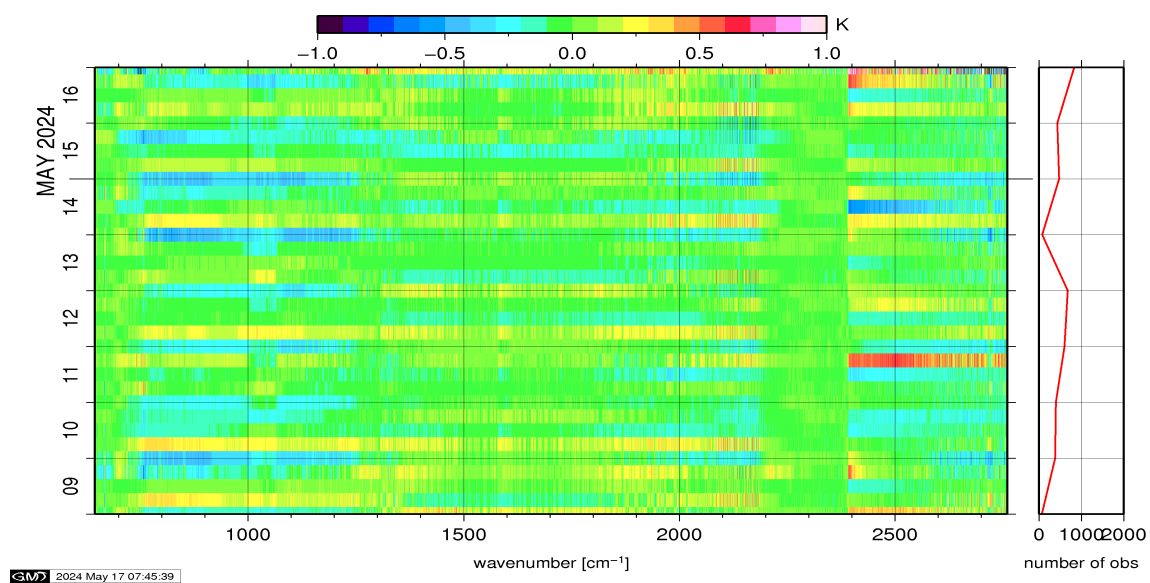


Figure 10: Radiance Anomaly in BT: All Channels

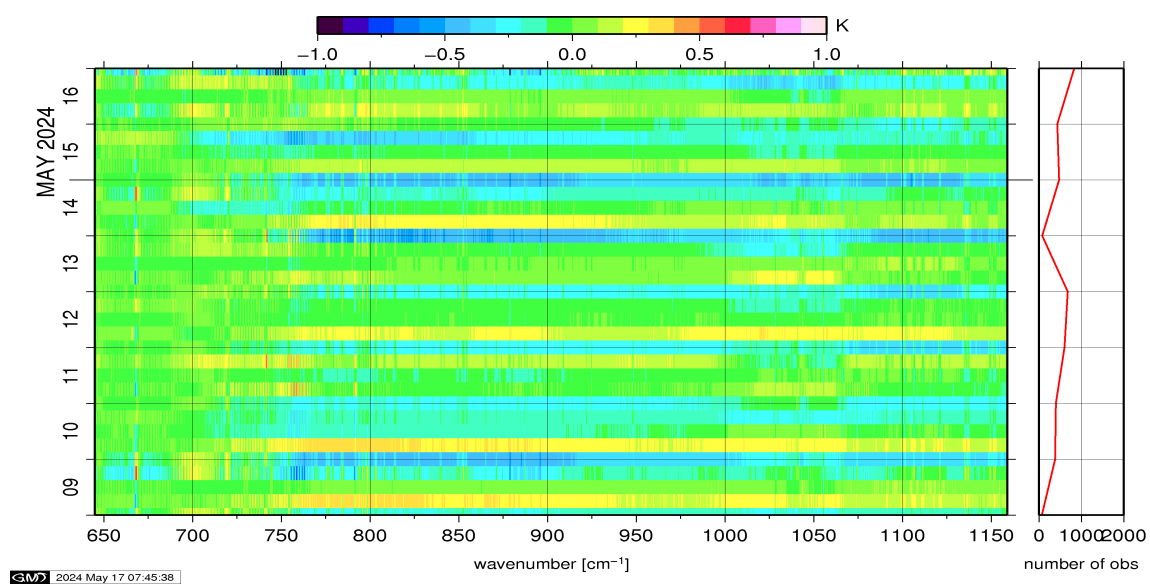


Figure 11: Radiance Anomaly in BT: IASI Band 1

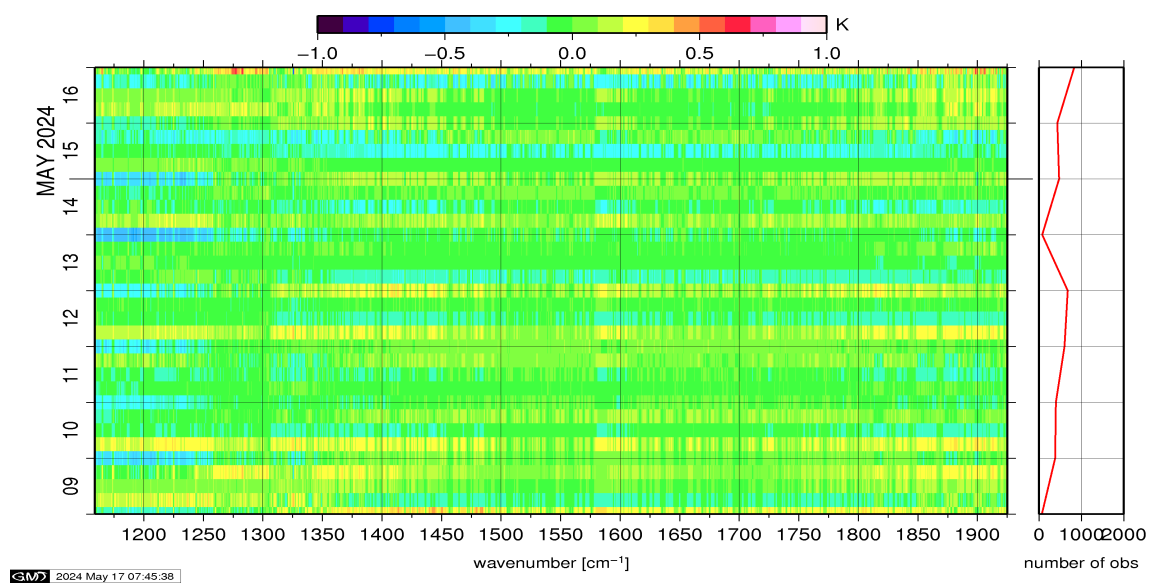


Figure 12: Radiance Anomaly in BT: IASI Band 2

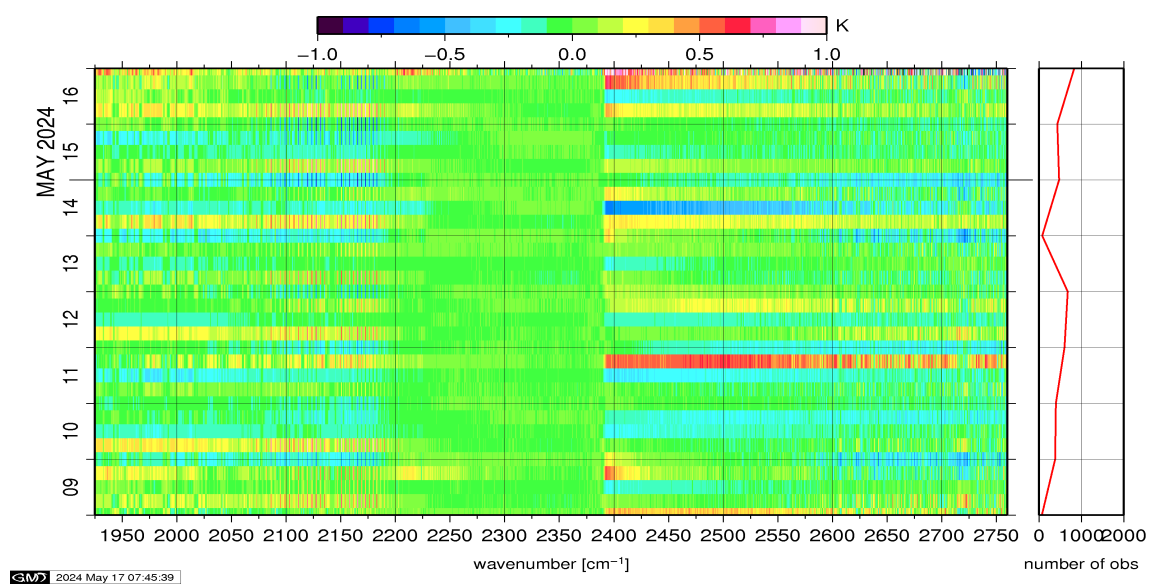


Figure 13: Radiance Anomaly in BT: IASI Band 3

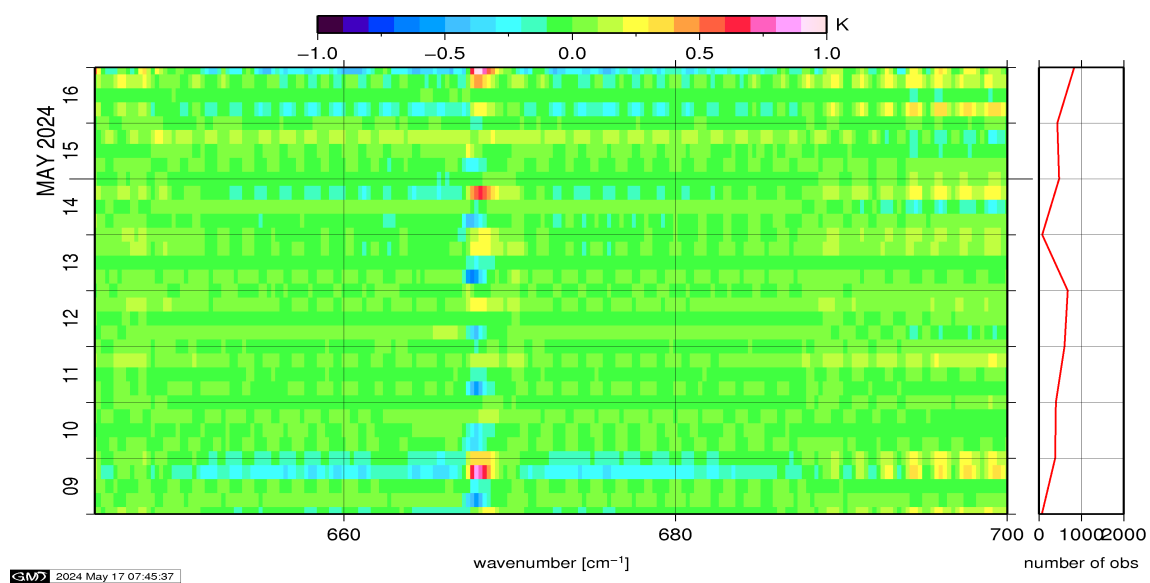


Figure 14: Radiance Anomaly in BT: CO2 14

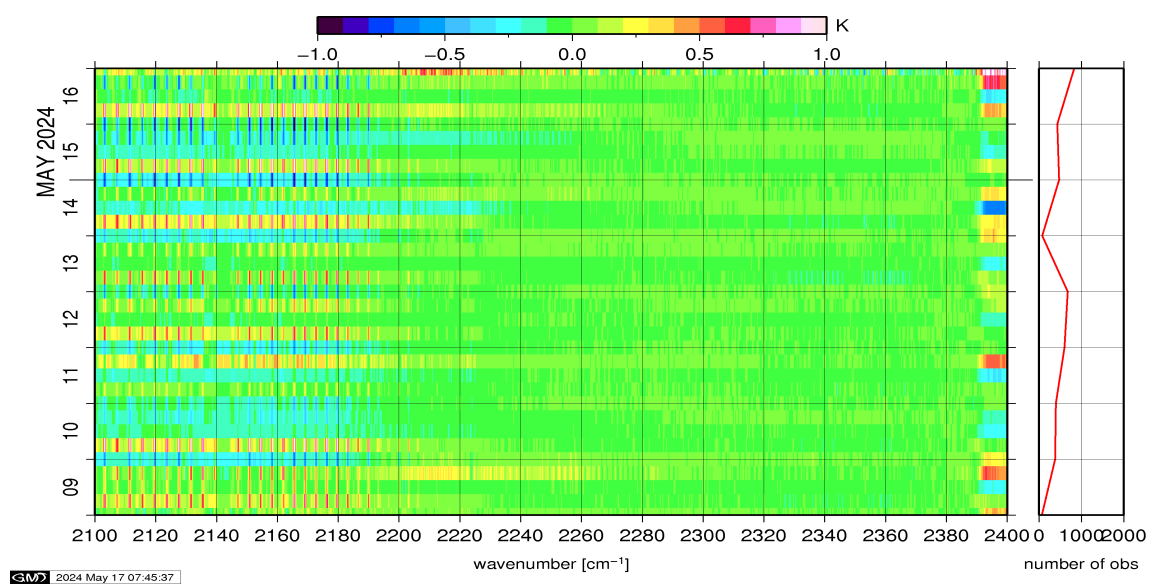


Figure 15: Radiance Anomaly in BT: CO2 4.3

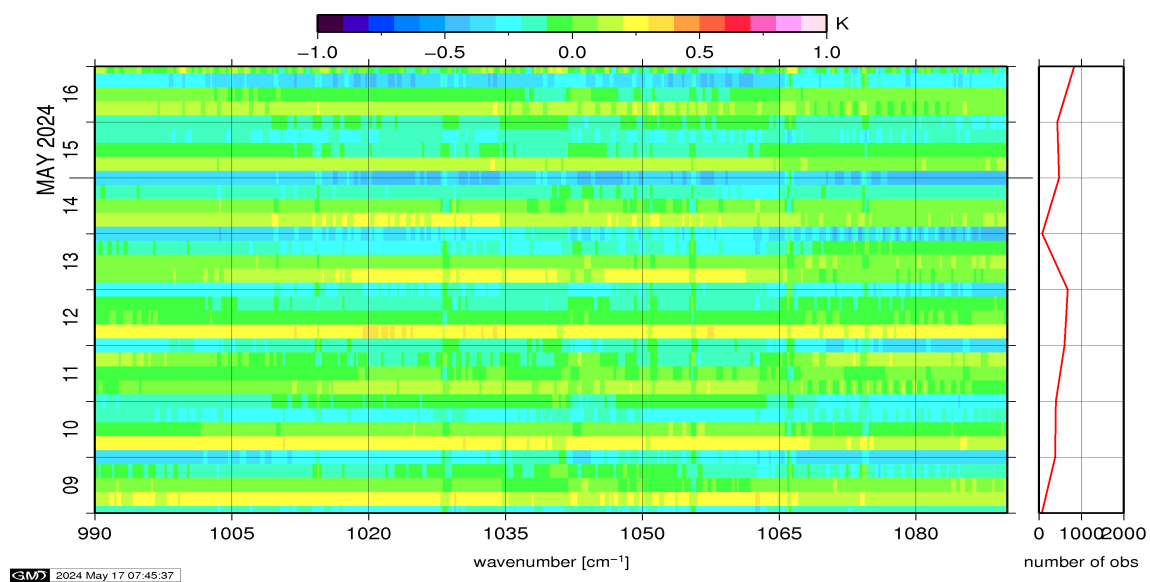


Figure 16: Radiance Anomaly in BT: O3

## 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.

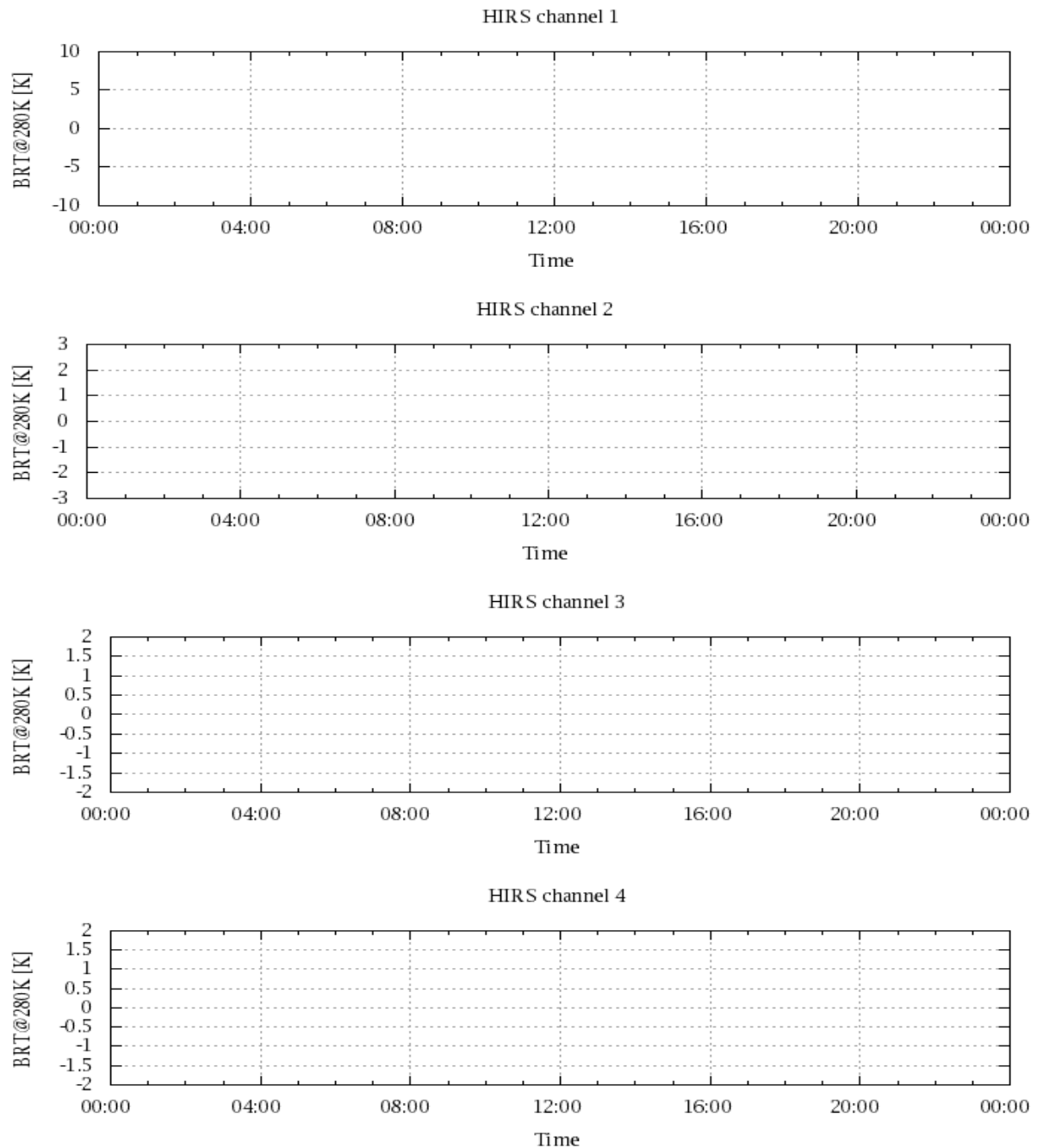


Figure 17: Radiance Differences in BT

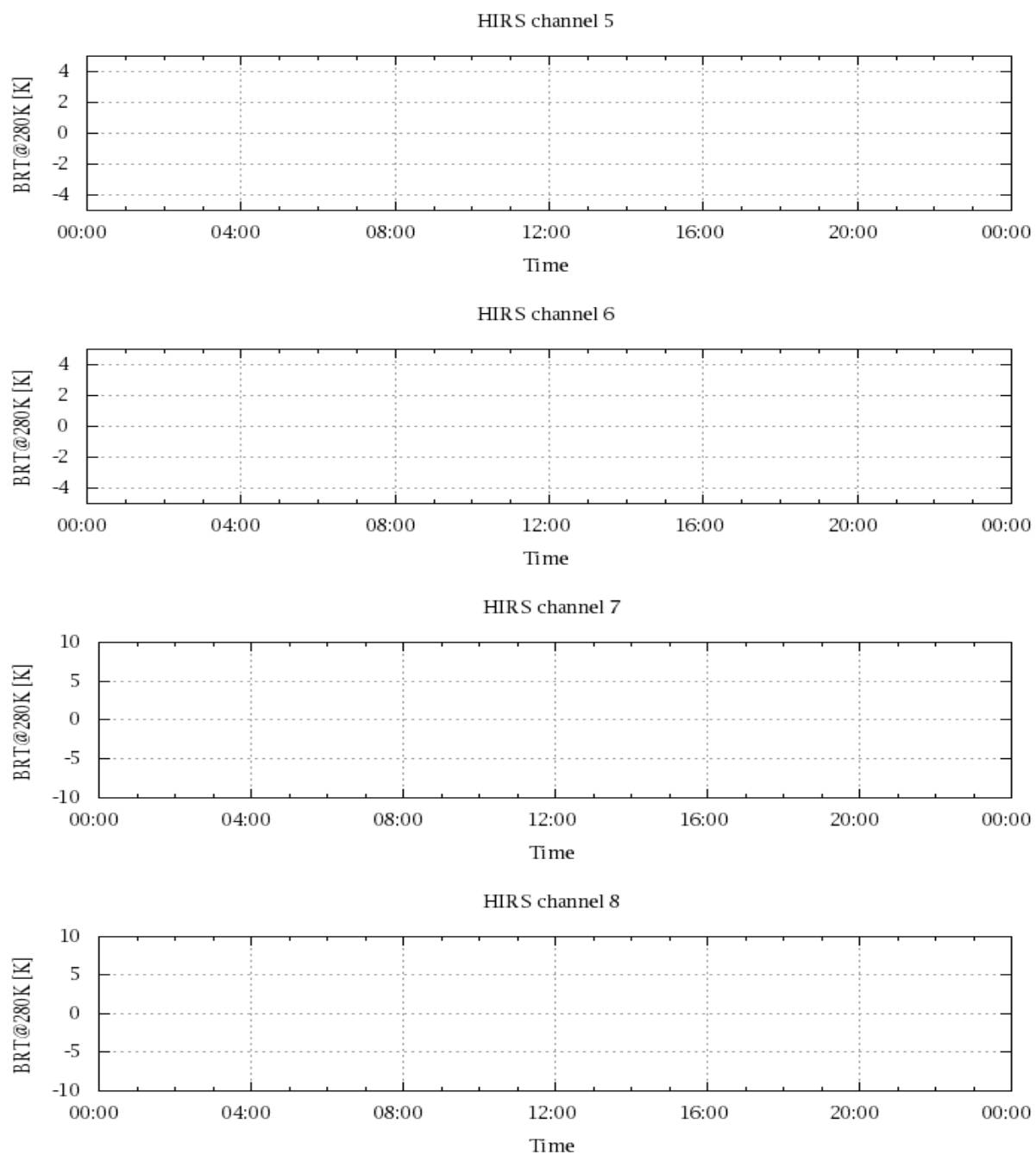


Figure 18: Radiance Differences in BT

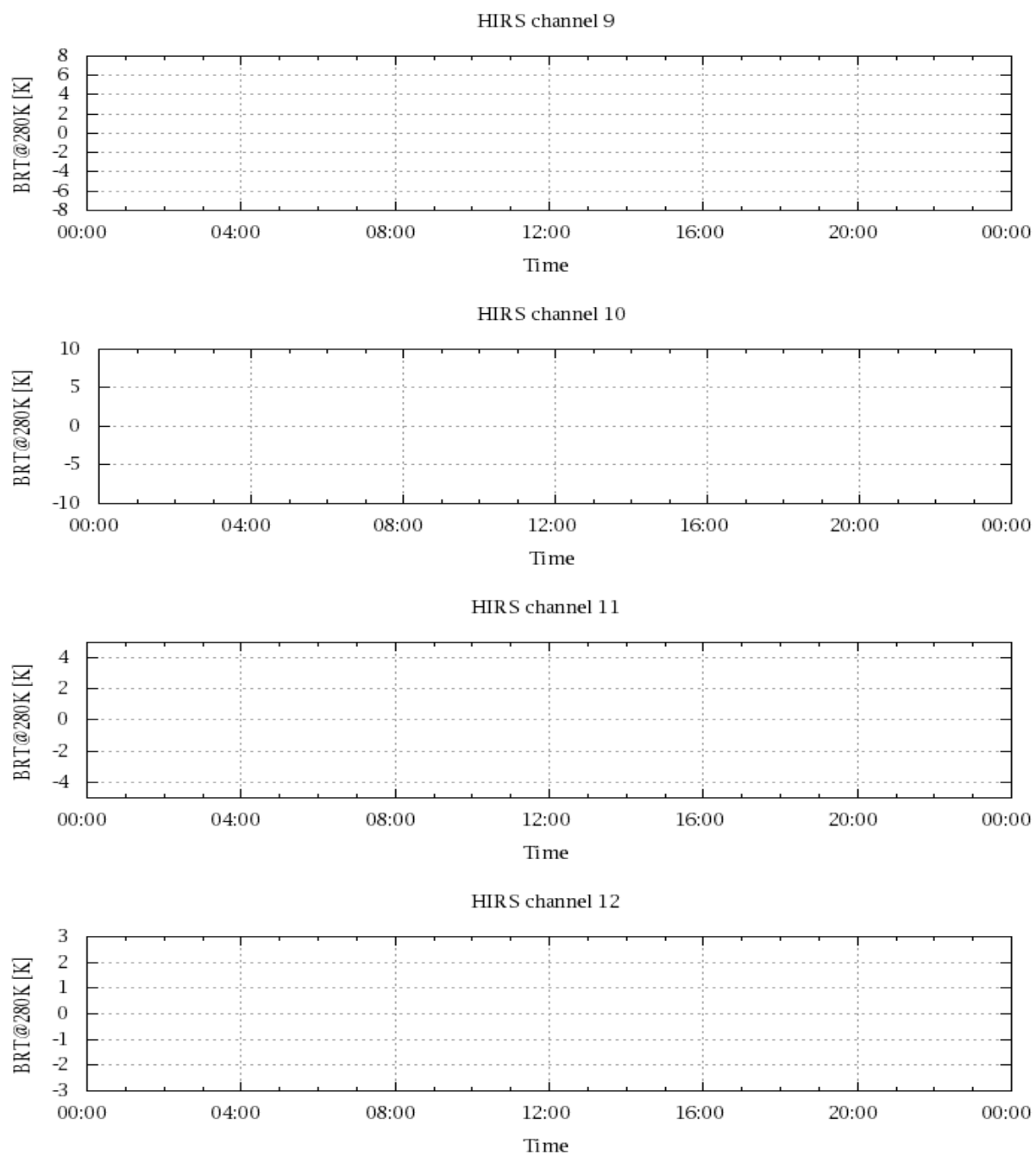


Figure 19: Radiance Differences in BT

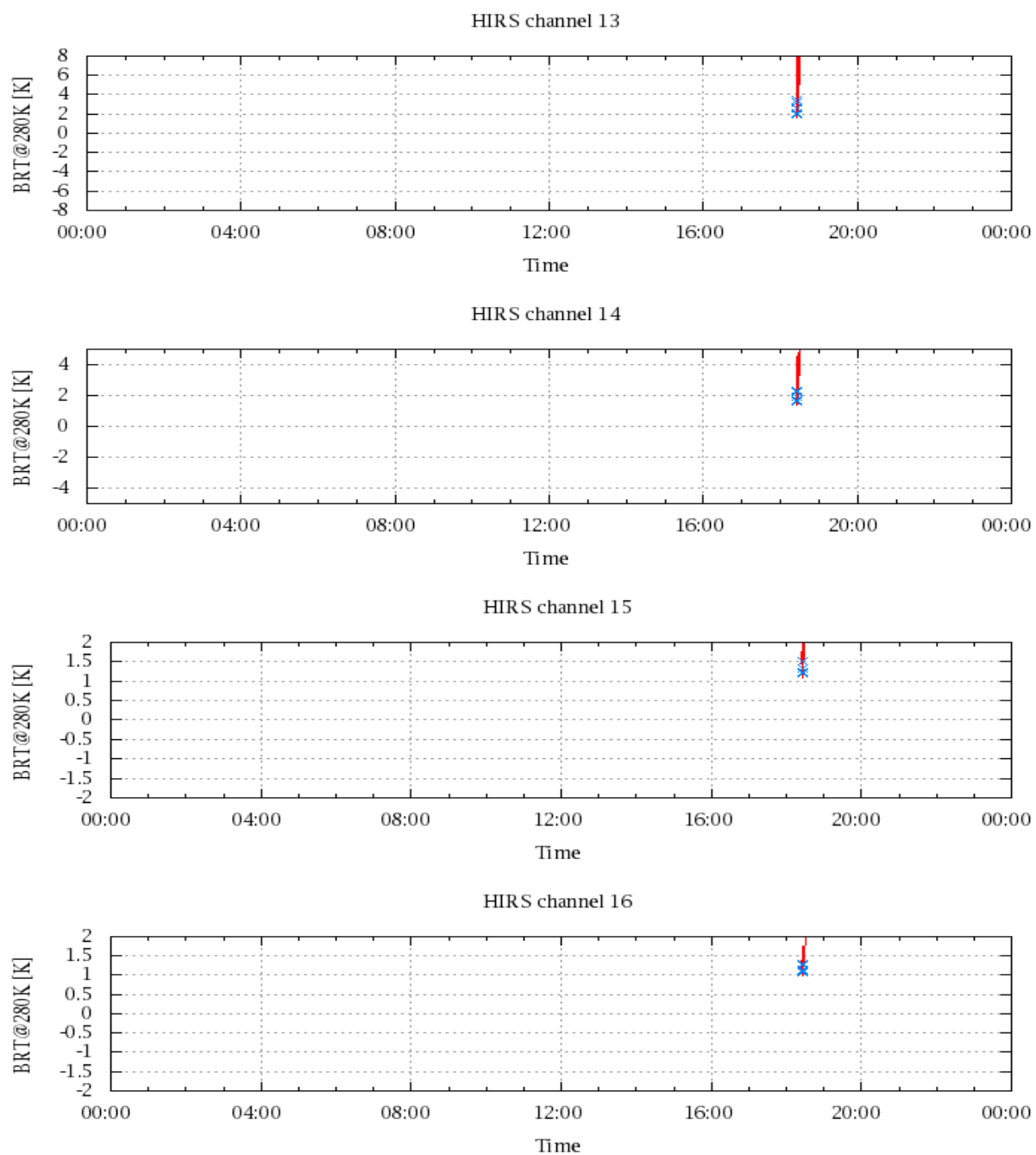


Figure 20: Radiance Differences in BT



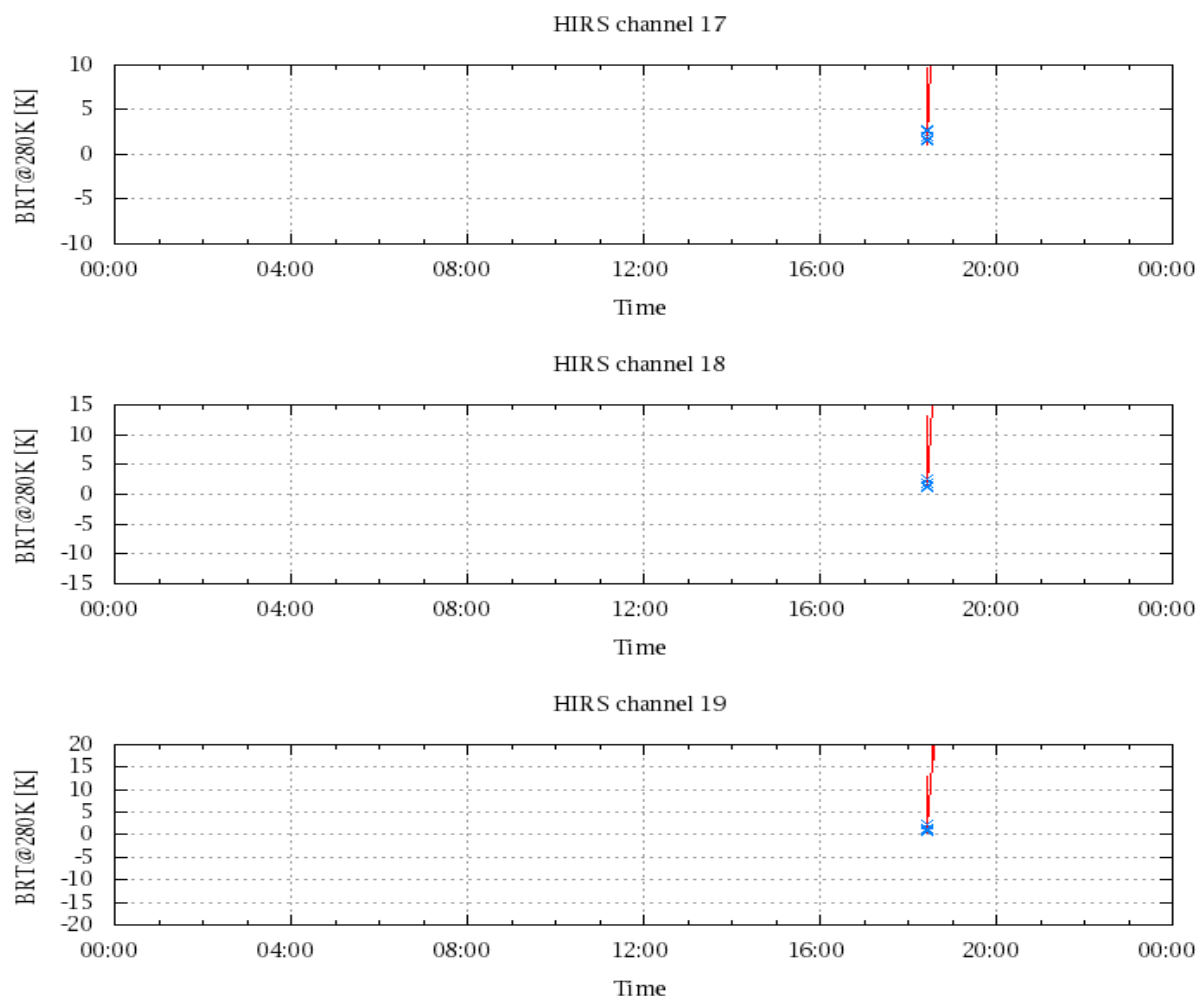


Figure 21: Radinace Differences in BT