

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

IASI monitoring team

25/03/2025 00:00:00 - 26/03/2025 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 25/03/2025 00:00:00 - 26/03/2025 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 25/03/2025 00:00:00 - 26/03/2025 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	480	-
L0 IASI PDUs	480	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	476	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2681	2684	20250325224921.648	20250325224923.812
PX1 (130)	2698	2851	20250325224926.839	20250325225007.484
PX1 (130)	2852	3854	20250325225007.699	20250325225435.800
PX1 (130)	3880	3884	20250325225441.421	20250325225443.800
PX2 (135)	2681	2684	20250325224921.648	20250325224923.812
PX2 (135)	2698	2852	20250325224926.839	20250325225007.699
PX2 (135)	2852	3854	20250325225007.699	20250325225435.800
PX2 (135)	3880	3884	20250325225441.421	20250325225443.800
PX3 (140)	2681	2684	20250325224921.648	20250325224923.812
PX3 (140)	2698	2851	20250325224926.839	20250325225007.484
PX3 (140)	2851	3854	20250325225007.484	20250325225435.800
PX3 (140)	3879	3884	20250325225441.206	20250325225443.800
PX4 (145)	2681	2684	20250325224921.648	20250325224923.812
PX4 (145)	2698	2851	20250325224926.839	20250325225007.484
PX4 (145)	2851	3854	20250325225007.484	20250325225435.800
PX4 (145)	3879	3884	20250325225441.206	20250325225443.800
IMG (150)	5908	5912	20250325224921.433	20250325224922.515
IMG (150)	5930	6103	20250325224926.839	20250325225007.484
IMG (150)	6103	7238	20250325225007.484	20250325225434.503
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	7267	7272	20250325225441.206	20250325225442.503
VER (160)	12232	12237	20250325224914.081	20250325224921.648
VER (160)	12237	12429	20250325224921.648	20250325225007.699
VER (160)	12432	12436	20250325225007.699	20250325225441.421
AUX (180)	8999	9038	20250325224922.515	20250325225434.503

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
25/03/2025 00:00:00	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	476	-
GQisFlagQual set (PX1)	99.67 %	-
GQisFlagQual set (PX2)	99.74 %	-
GQisFlagQual set (PX3)	99.74 %	-
GQisFlagQual set (PX4)	99.67 %	-
GQisFlagQual set (all)	99.71 %	-

Table 4: Quality flags

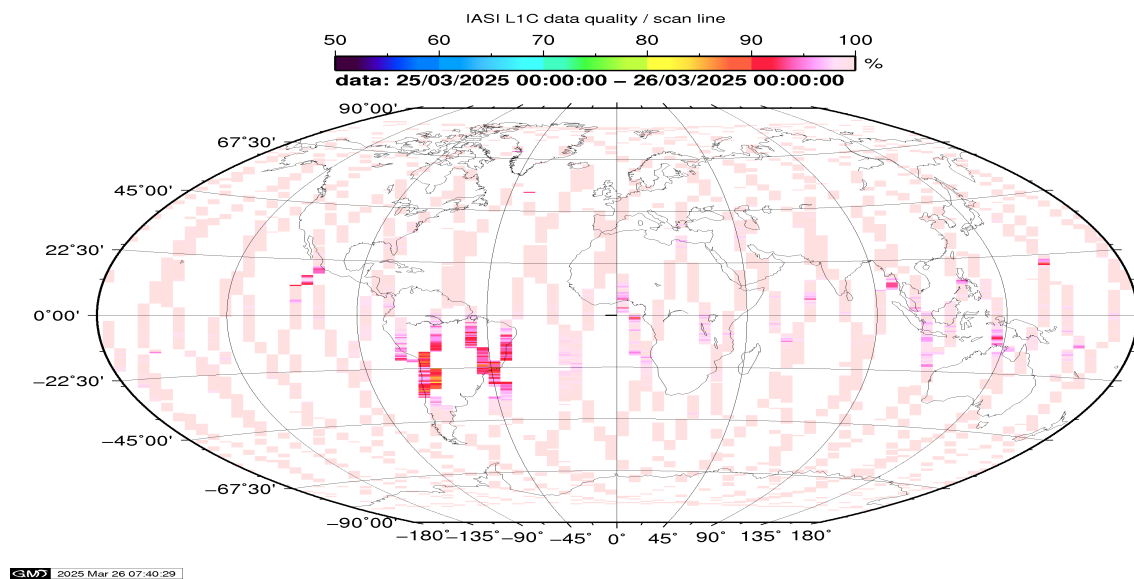


Figure 1: L1C data quality

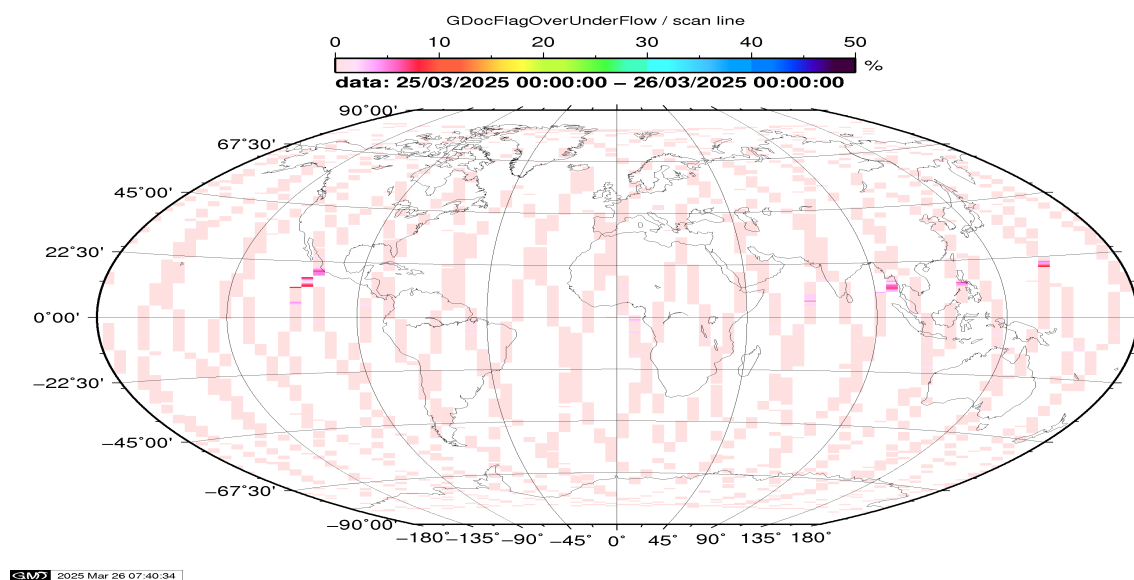


Figure 2: Flag of Over and Under Flows

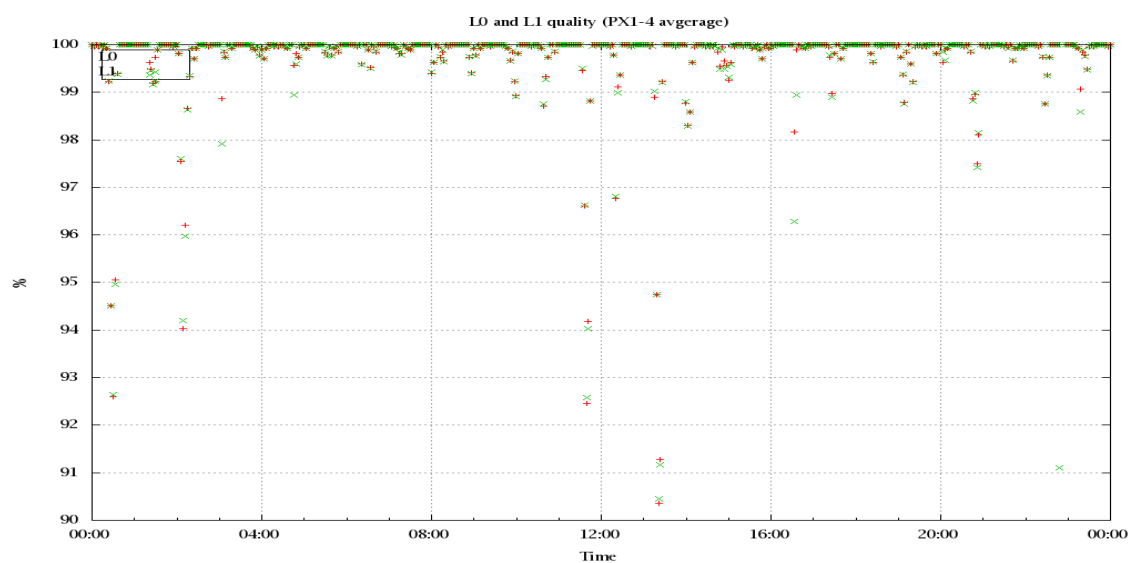


Figure 3: Level 0 and 1C overall quality

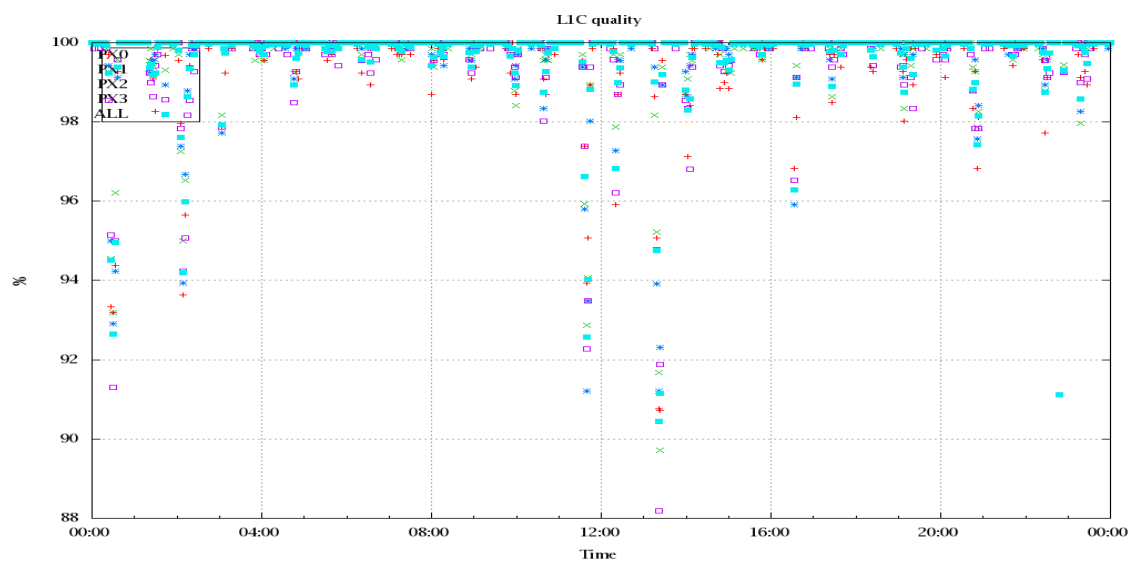


Figure 4: Level 1C quality

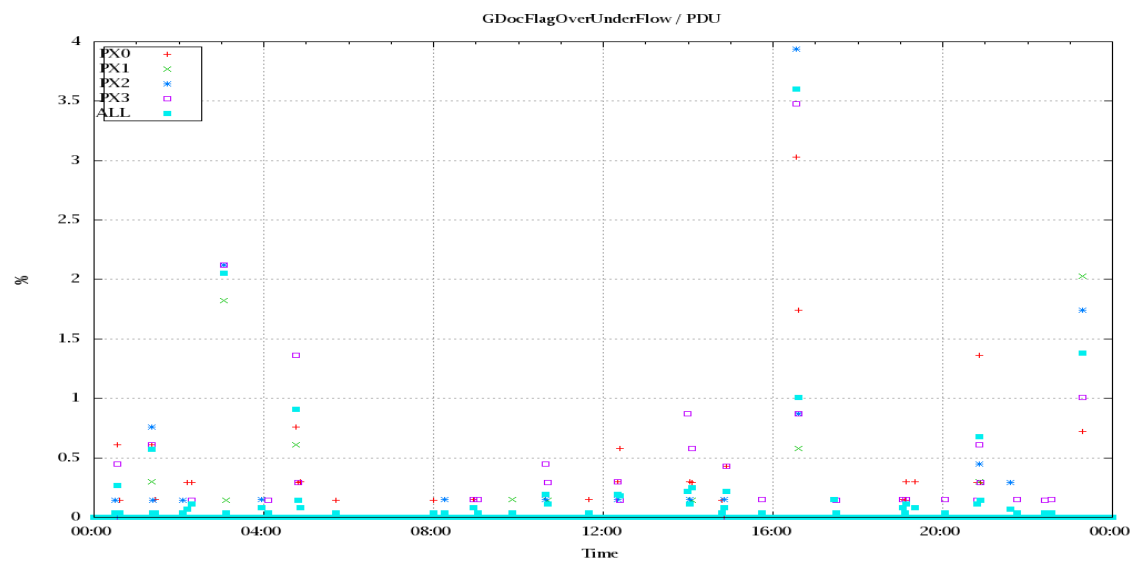


Figure 5: Timeseries of flag of Over and Under Flows

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.

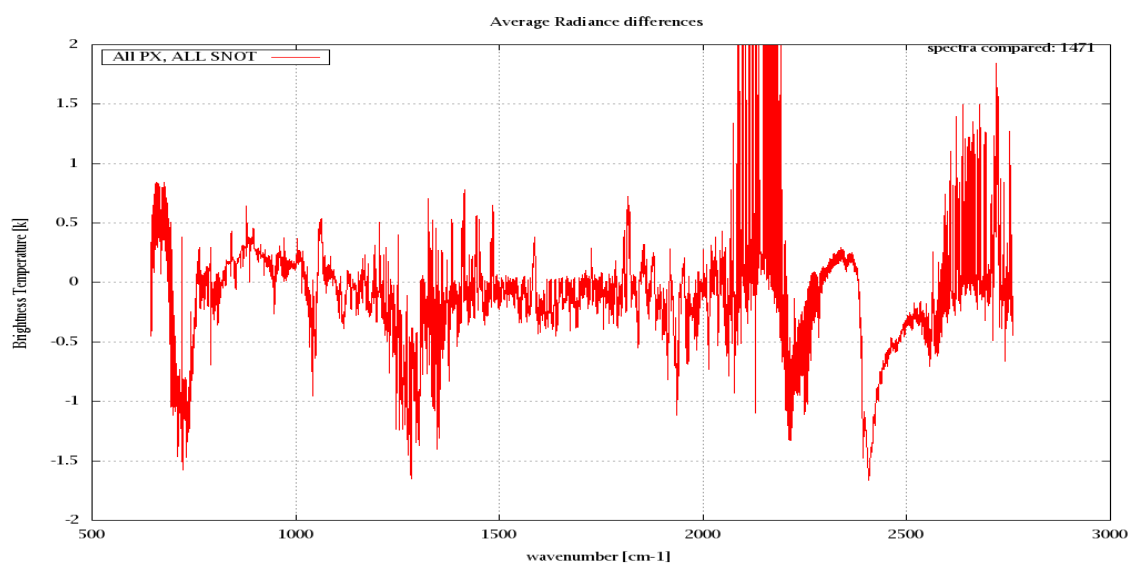


Figure 6: Average Radiance differences: OBS-CAL

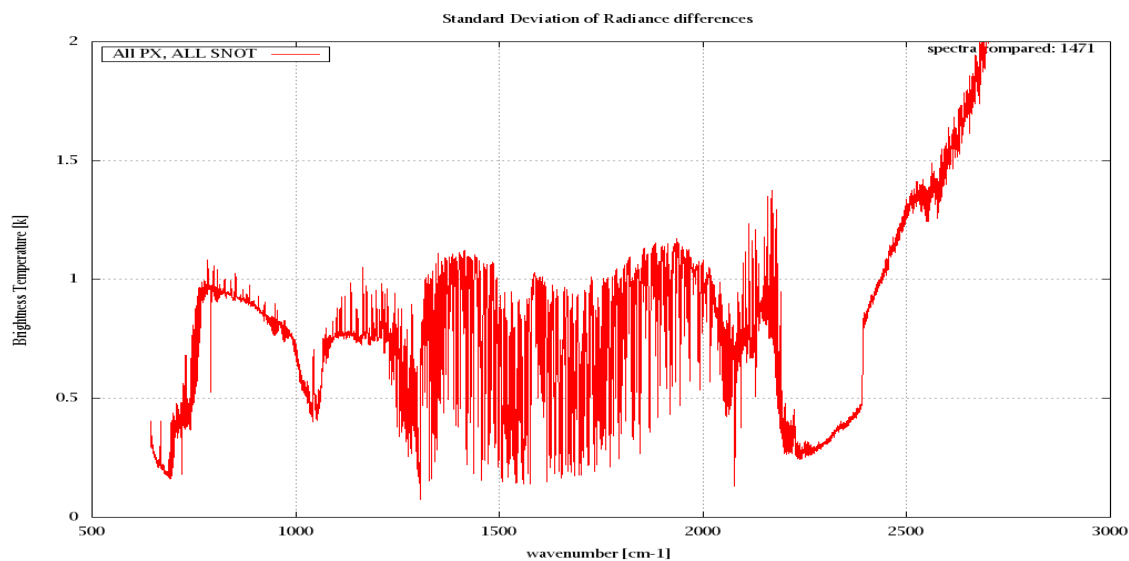


Figure 7: Standard Deviation of Radiance differences

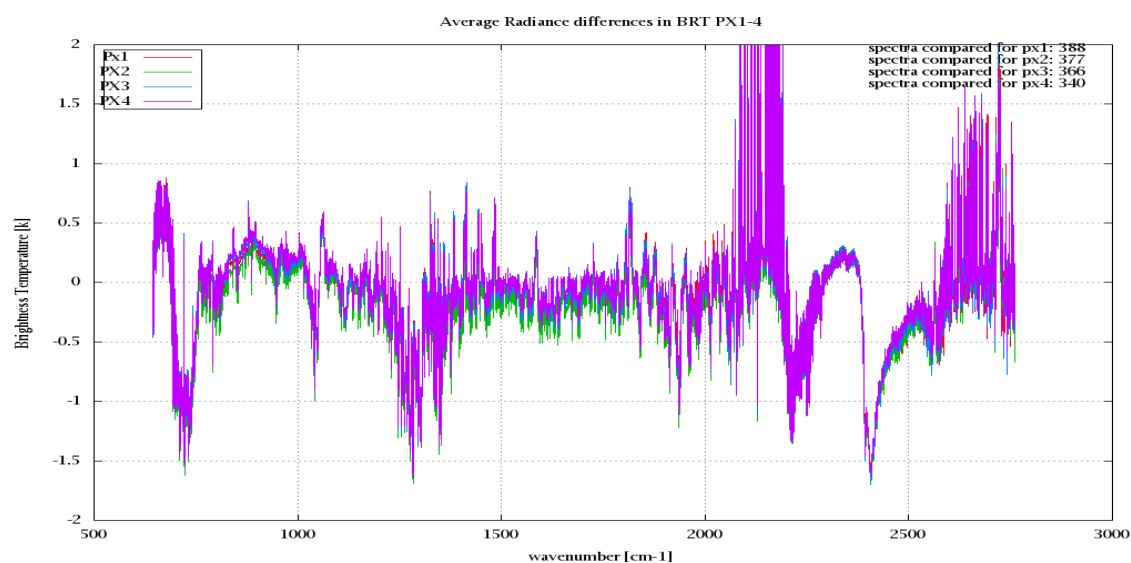


Figure 8: Average Radiance differences: OBS-CAL

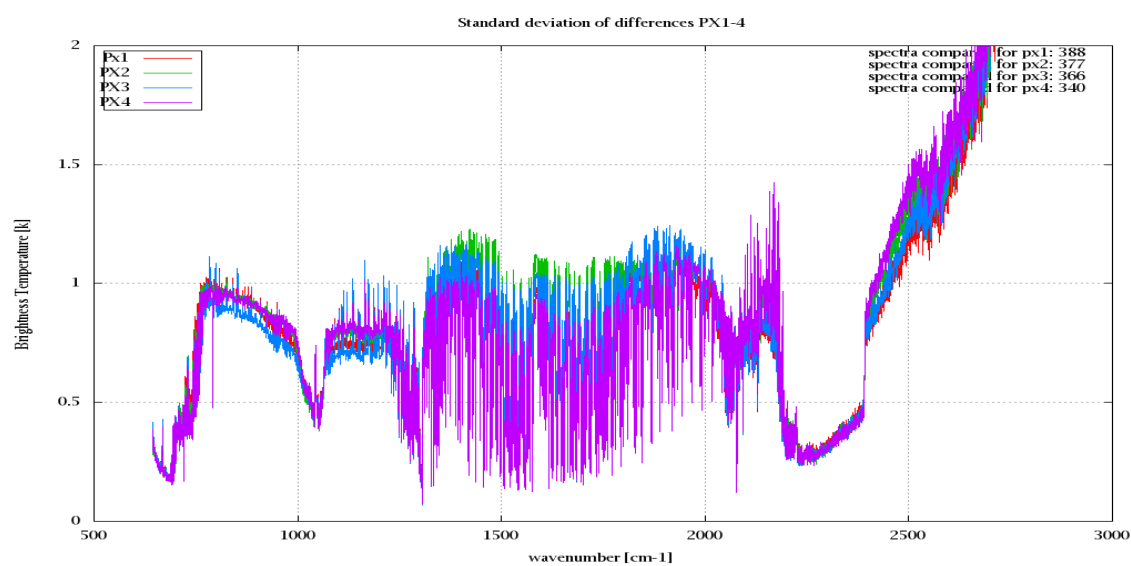


Figure 9: Standard Deviation of Radiance differences

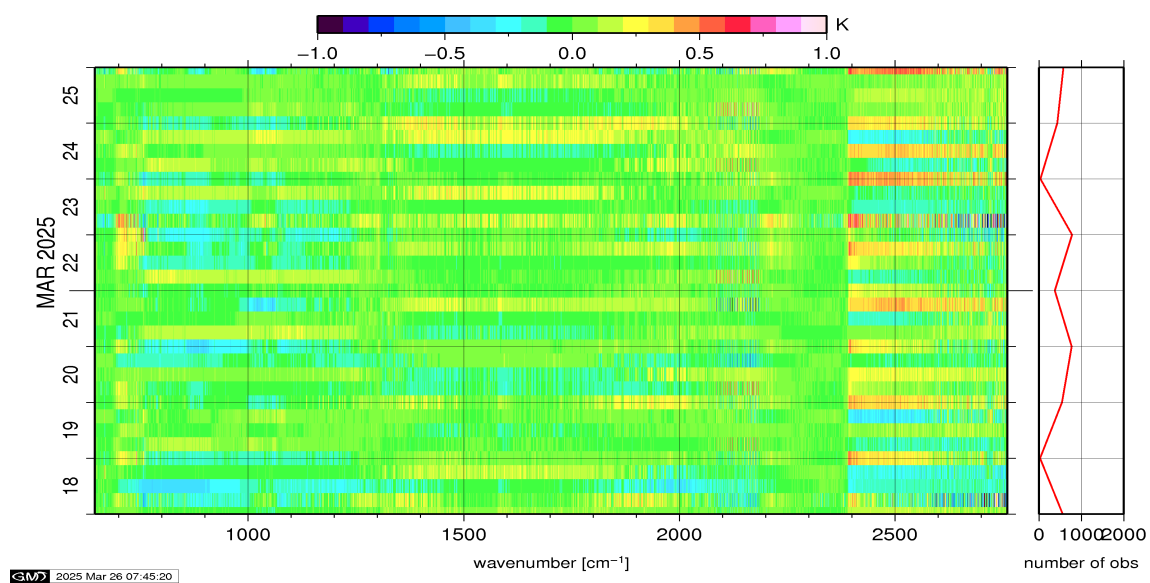


Figure 10: Radiance Anomaly in BT: All Channels

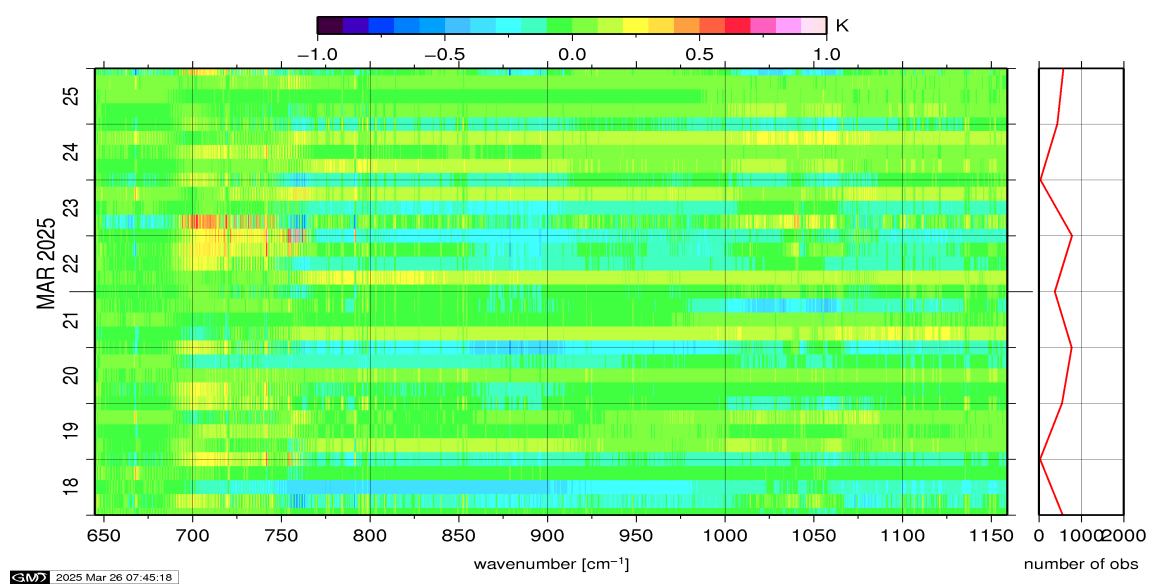


Figure 11: Radiance Anomaly in BT: IASI Band 1

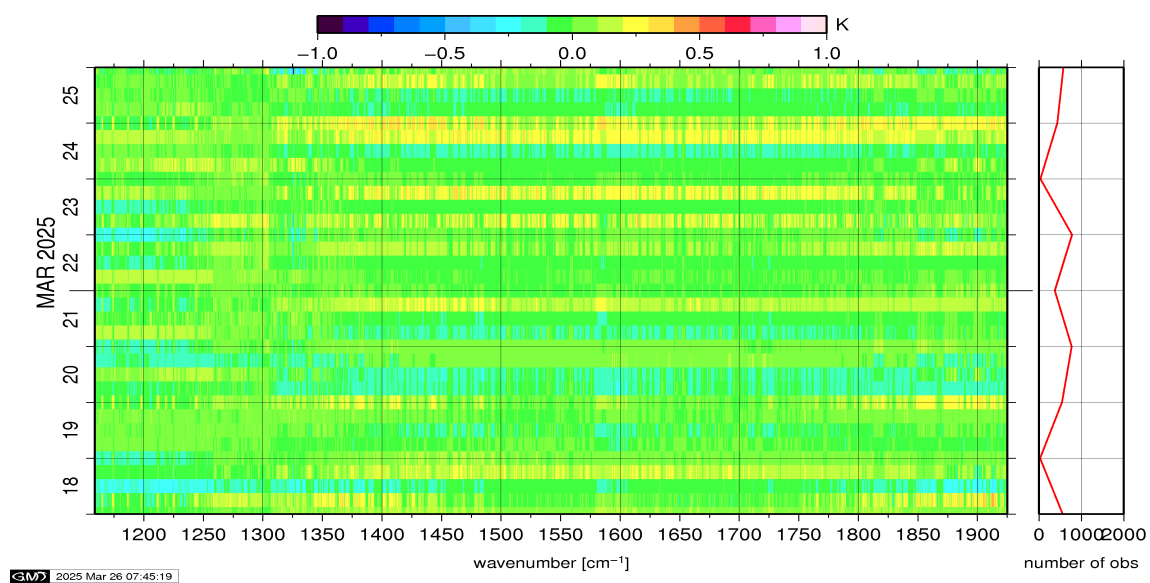


Figure 12: Radiance Anomaly in BT: IASI Band 2

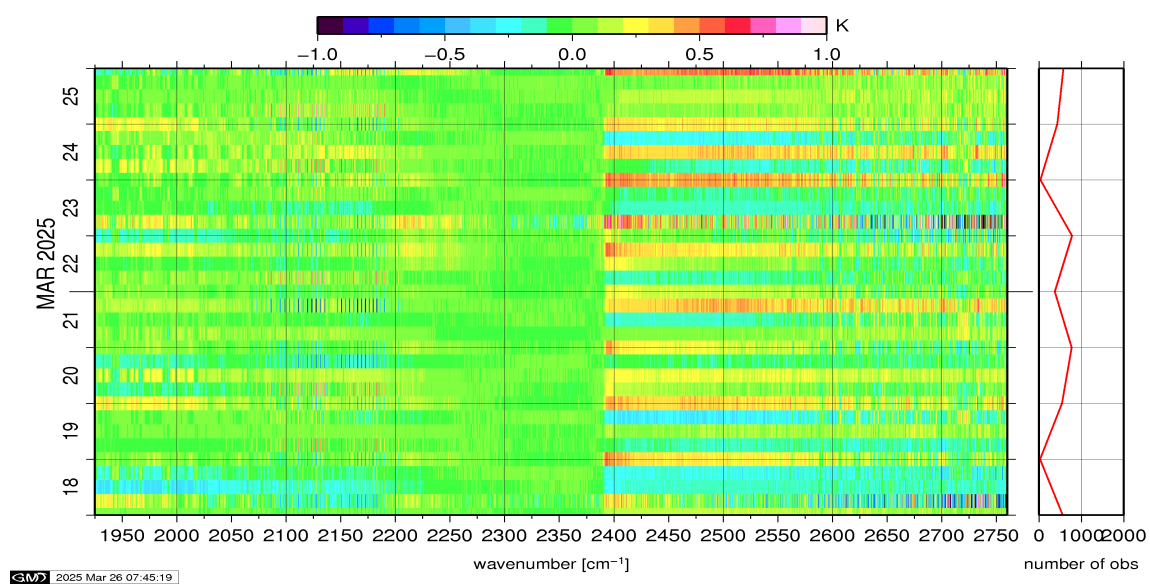


Figure 13: Radiance Anomaly in BT: IASI Band 3

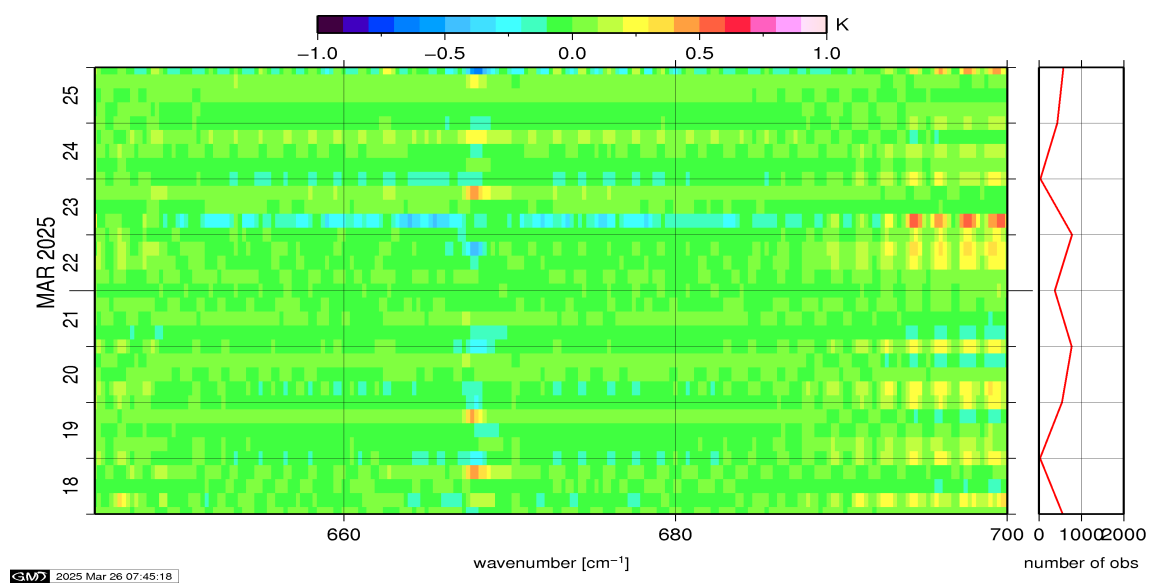


Figure 14: Radiance Anomaly in BT: CO2 14

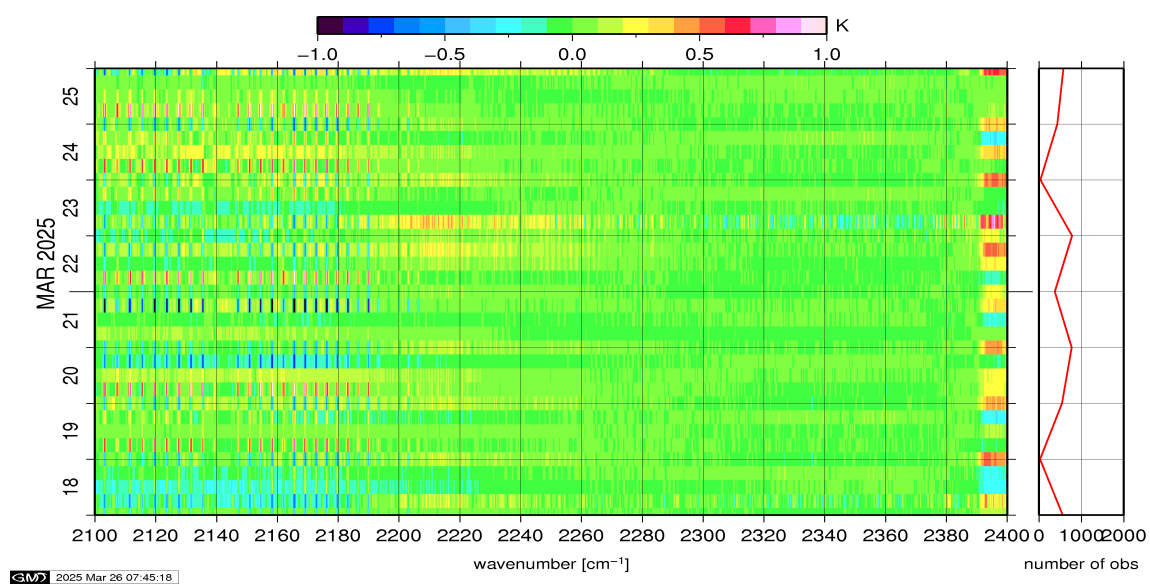


Figure 15: Radiance Anomaly in BT: CO2 4.3

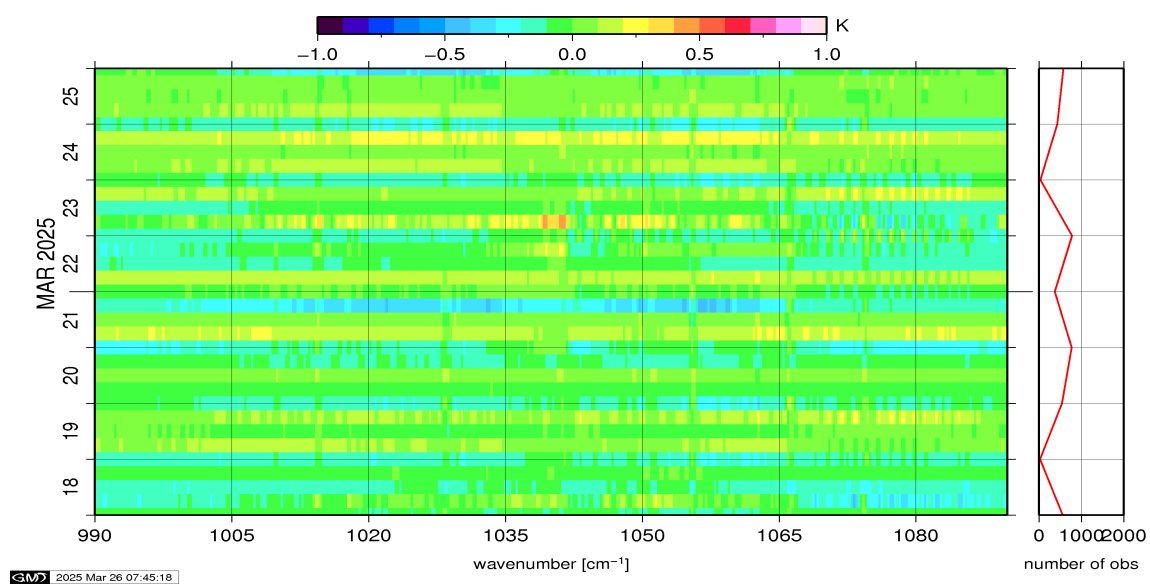


Figure 16: Radiance Anomaly in BT: O3

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.

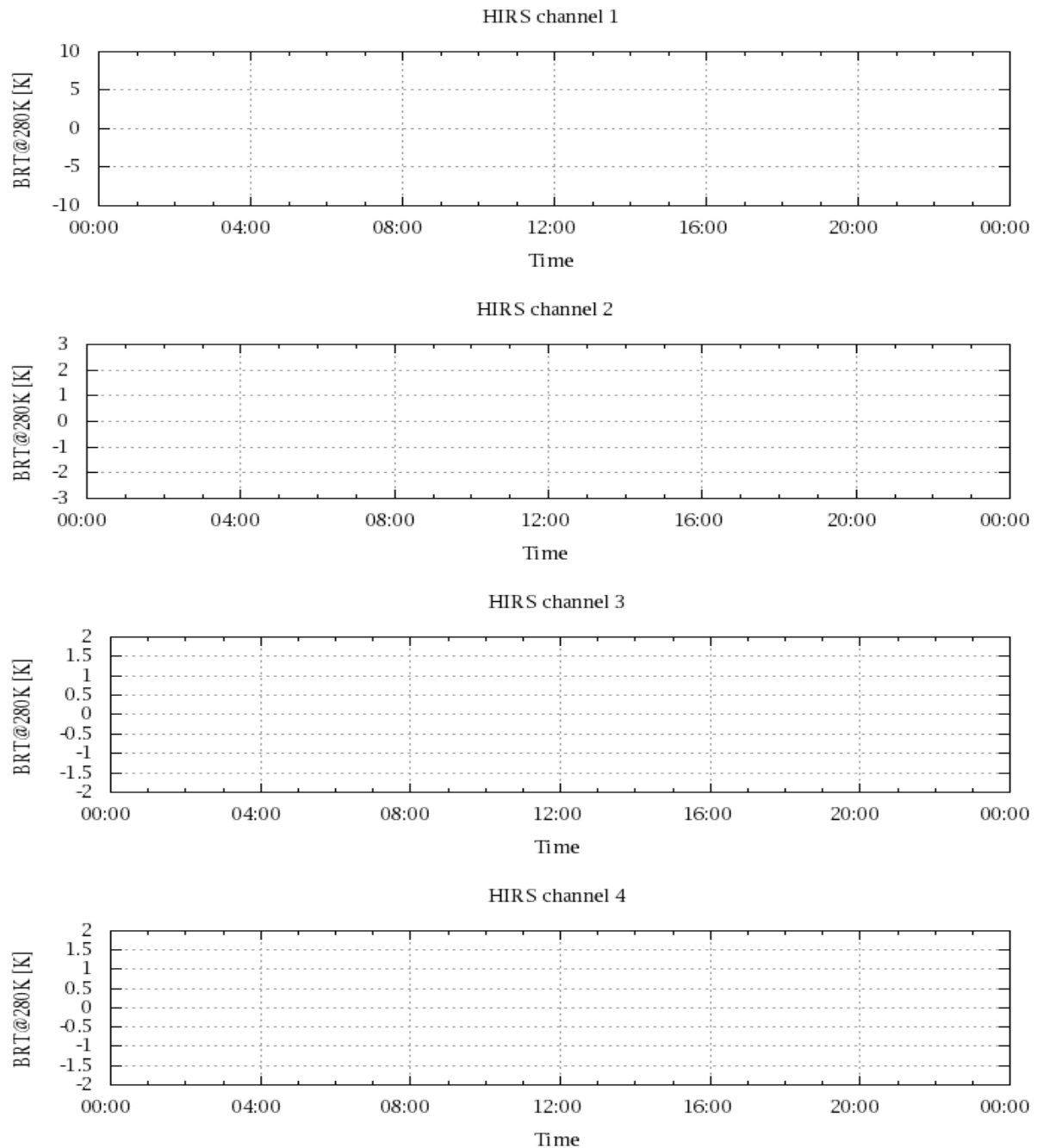


Figure 17: Radiance Differences in BT

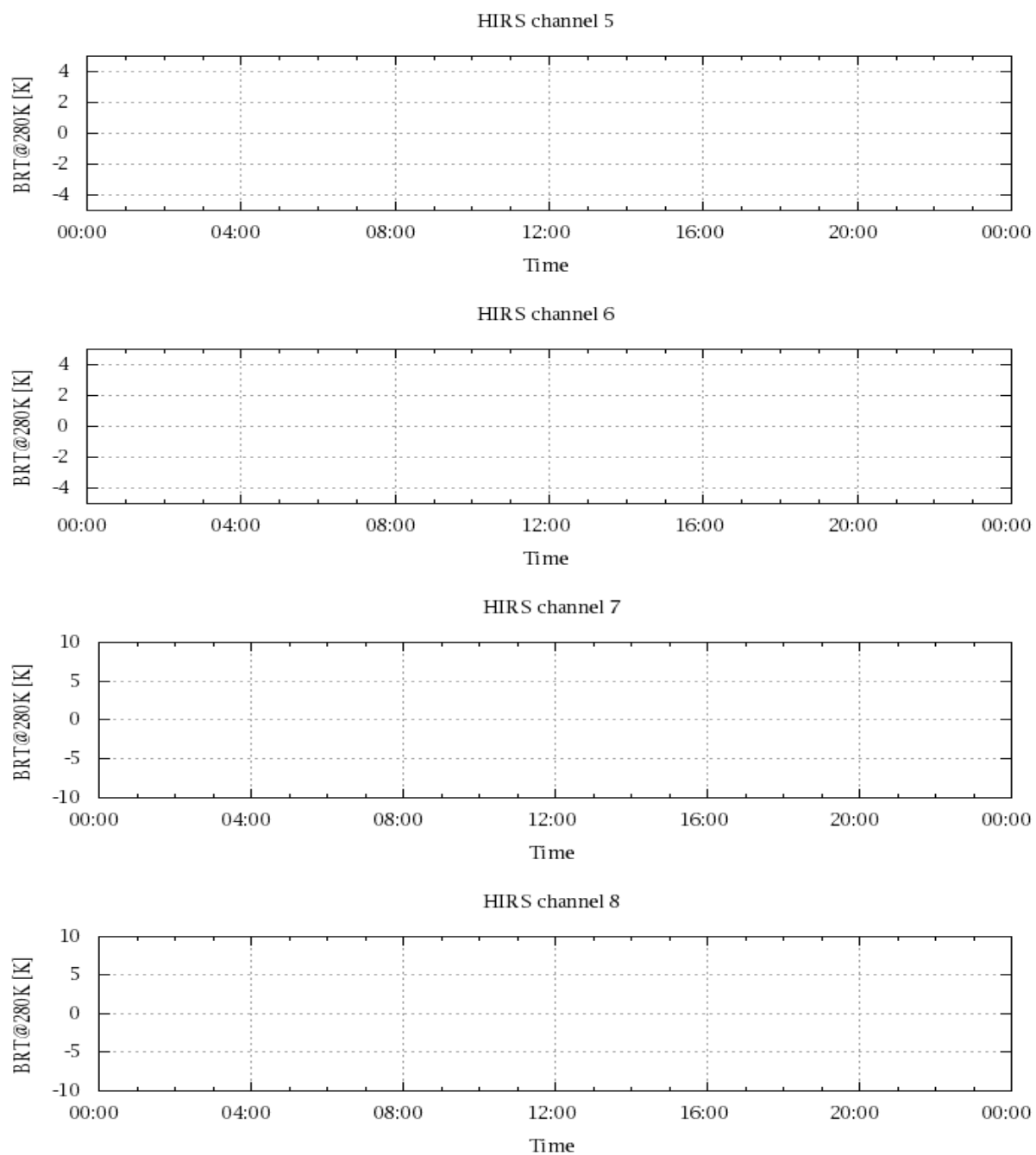


Figure 18: Radiance Differences in BT

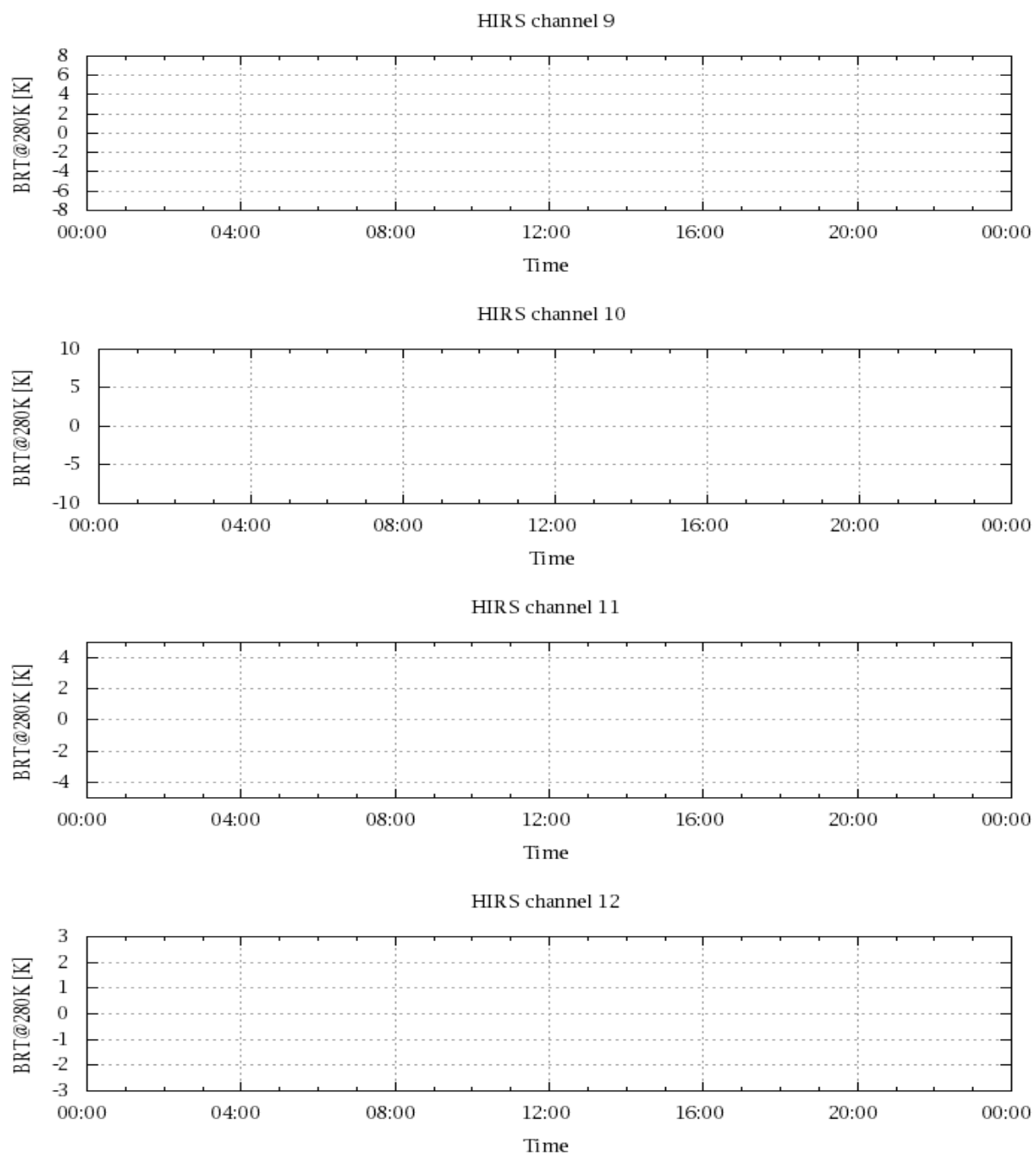


Figure 19: Radiance Differences in BT

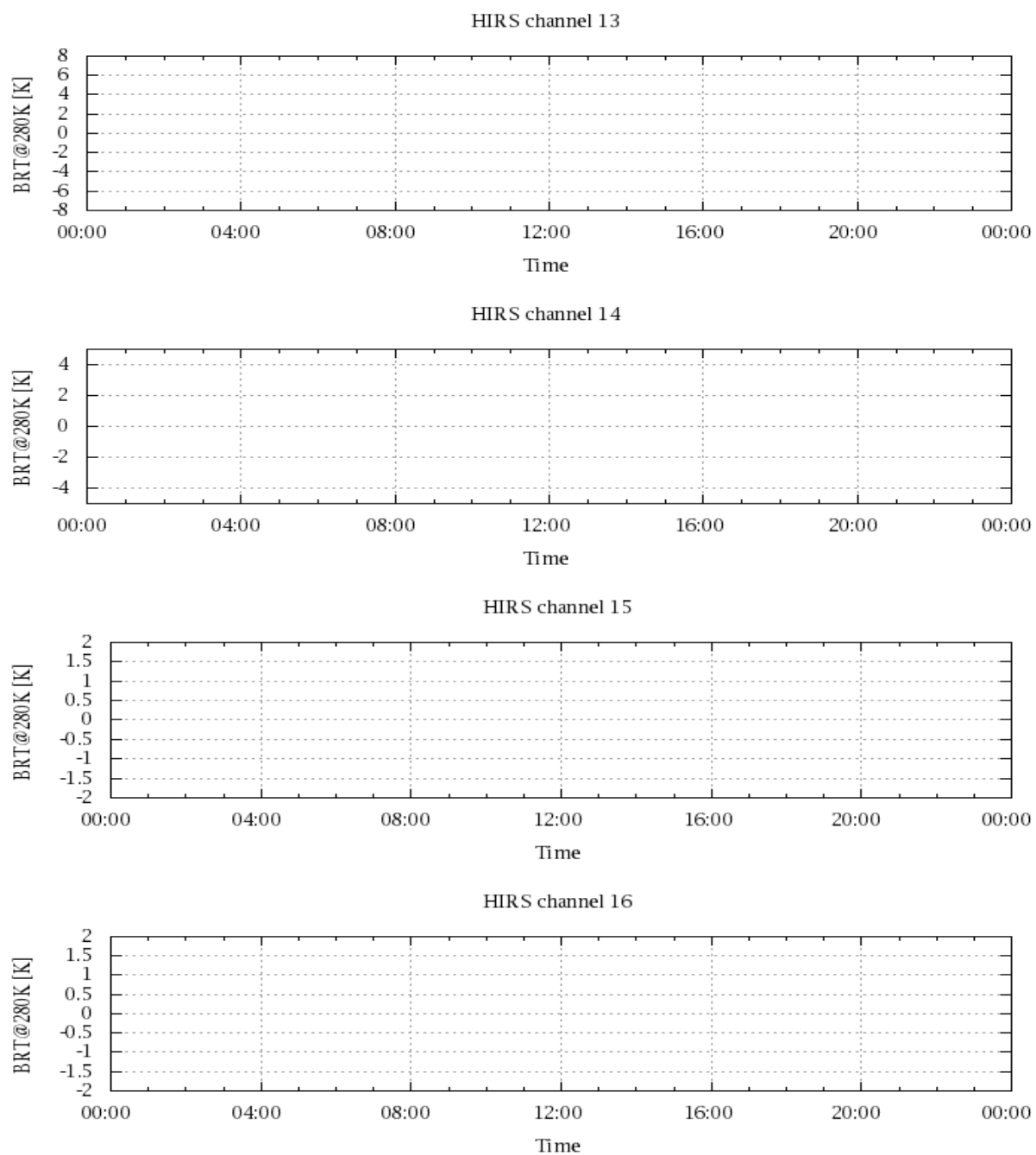


Figure 20: Radiance Differences in BT

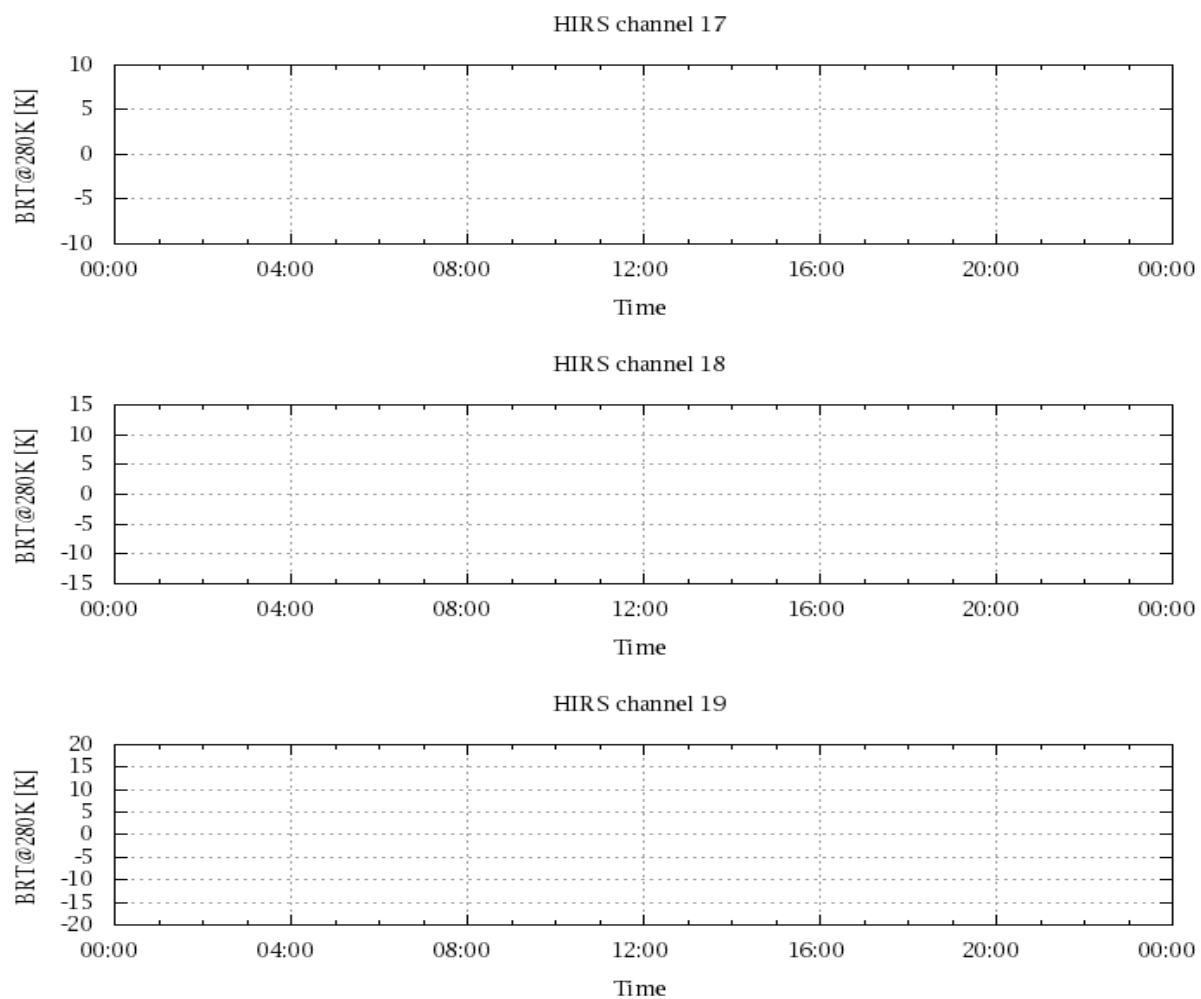


Figure 21: Radinace Differences in BT