

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

IASI monitoring team

11/11/2023 00:00:00 - 12/11/2023 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 11/11/2023 00:00:00 - 12/11/2023 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 11/11/2023 00:00:00 - 12/11/2023 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	481	-
L0 IASI PDUs	480	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
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)	15354	0	20231111010859.964	20231111011302.554
PX2 (135)	15354	0	20231111010859.964	20231111011302.554
PX3 (140)	15354	0	20231111010859.964	20231111011302.554
PX4 (145)	15354	0	20231111010859.964	20231111011302.554
IMG (150)	16214	0	20231111010859.964	20231111011302.554
VER (160)	9324	1150	20231111010852.831	20231111014424.305
VER (160)	1150	1155	20231111014424.305	20231111014424.305
VER (160)	1155	1160	20231111014424.305	20231111014424.305
VER (160)	1160	1165	20231111014424.305	20231111014424.305
VER (160)	1165	1170	20231111014424.305	20231111014424.305
VER (160)	1170	1151	20231111014424.305	20231111014424.305
VER (160)	1151	1156	20231111014424.305	20231111014424.305
VER (160)	1156	1161	20231111014424.305	20231111014424.305
VER (160)	1161	1166	20231111014424.305	20231111014424.305
VER (160)	1166	1171	20231111014424.305	20231111014424.305
VER (160)	1171	1152	20231111014424.305	20231111014424.305
VER (160)	1152	1157	20231111014424.305	20231111014424.305
VER (160)	1157	1162	20231111014424.305	20231111014424.305
VER (160)	1162	1167	20231111014424.305	20231111014424.305

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1167	1172	20231111014424.305	20231111014424.305
VER (160)	1172	1153	20231111014424.305	20231111014424.305
VER (160)	1153	1158	20231111014424.305	20231111014424.305
VER (160)	1158	1163	20231111014424.305	20231111014424.305
VER (160)	1163	1168	20231111014424.305	20231111014424.305
VER (160)	1168	1173	20231111014424.305	20231111014424.305
VER (160)	1173	1154	20231111014424.305	20231111014424.305
VER (160)	1154	1159	20231111014424.305	20231111014424.305
VER (160)	1159	1164	20231111014424.305	20231111014424.305
VER (160)	1164	1169	20231111014424.305	20231111014424.305
VER (160)	1169	1174	20231111014424.305	20231111014424.305
AUX (180)	8406	0	20231111010853.261	20231111011309.257

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
11/11/2023 00:00:10	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
GQisFlagQual set (PX1)	99.67 %	-
GQisFlagQual set (PX2)	99.73 %	-
GQisFlagQual set (PX3)	99.74 %	-
GQisFlagQual set (PX4)	99.67 %	-
GQisFlagQual set (all)	99.70 %	-

Table 4: Quality flags

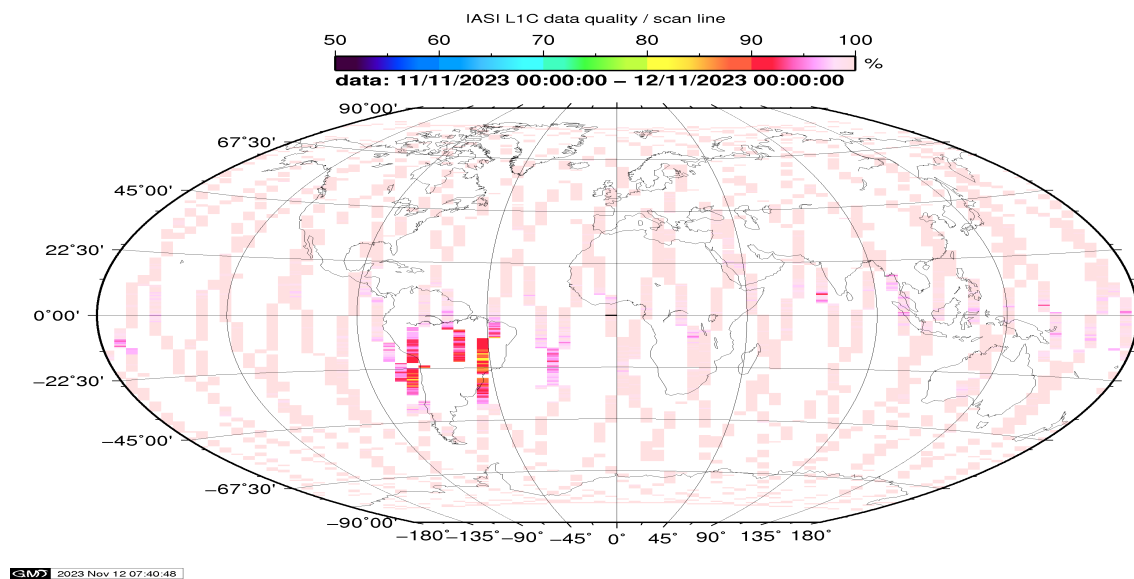


Figure 1: L1C data quality

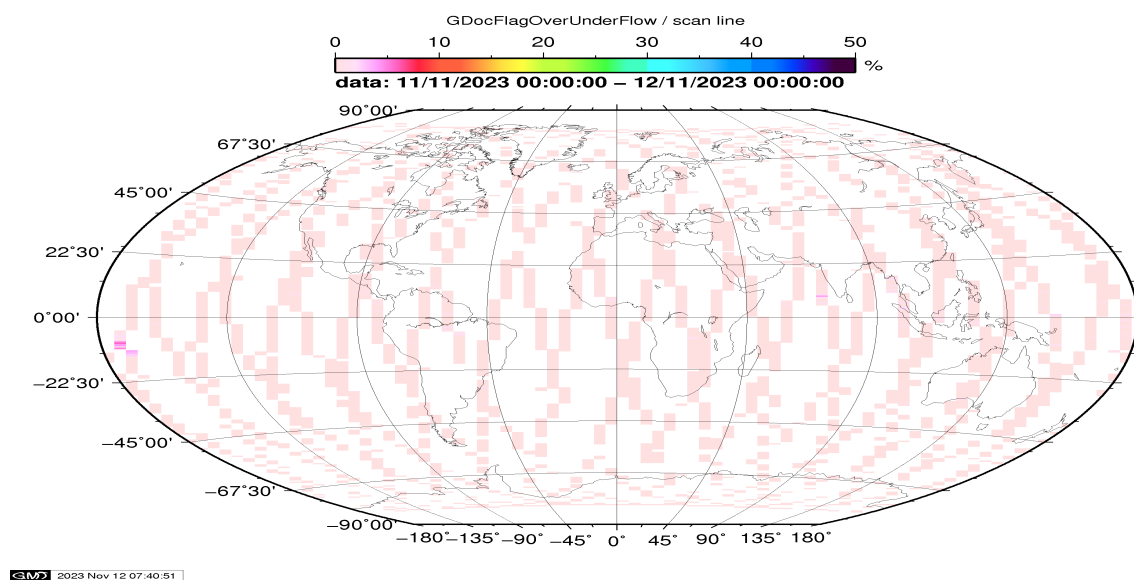


Figure 2: Flag of Over and Under Flows

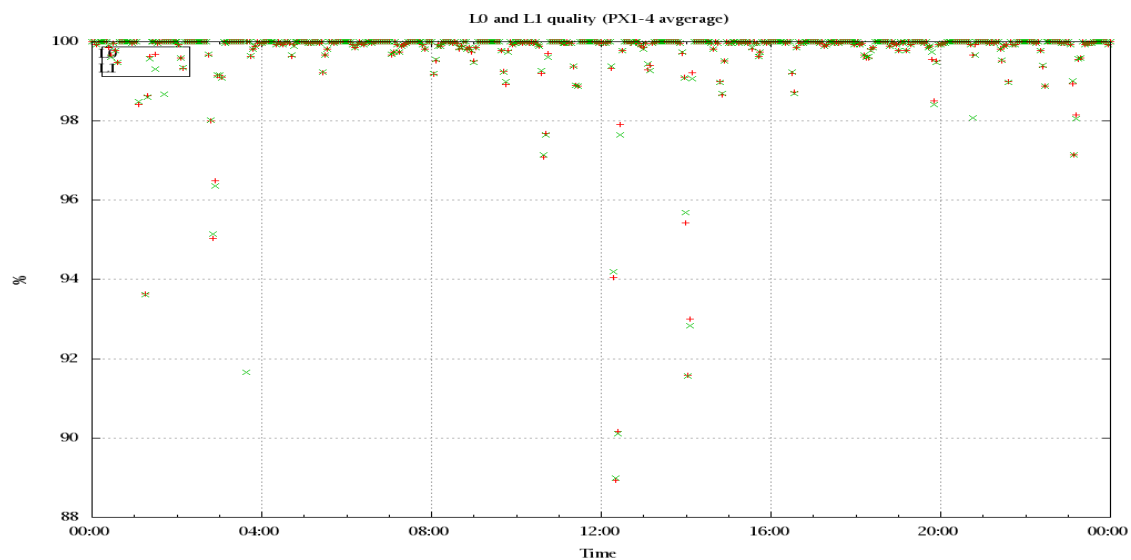


Figure 3: Level 0 and 1C overall quality

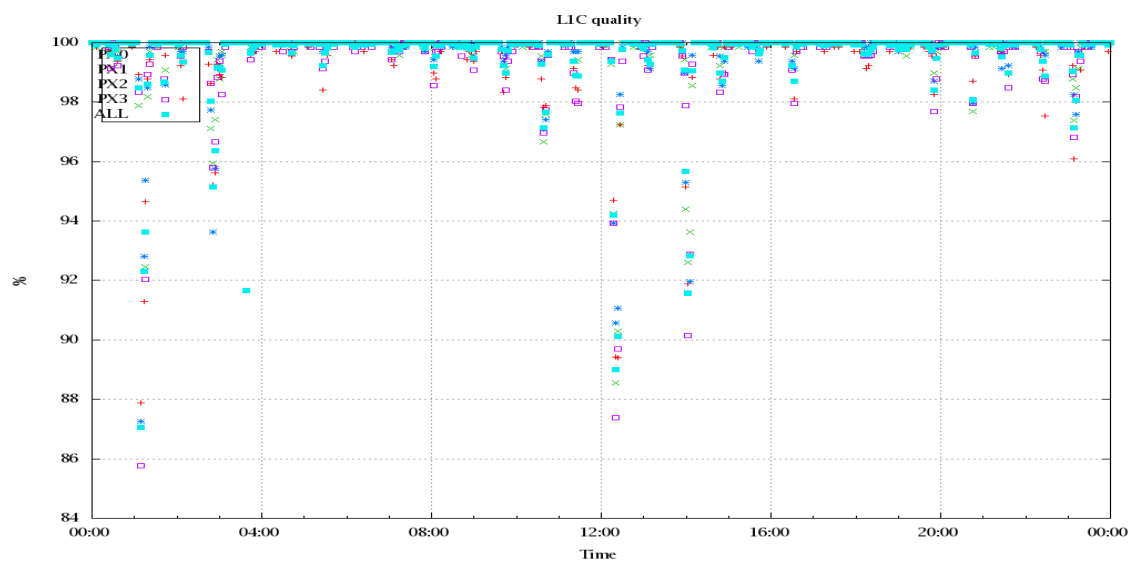


Figure 4: Level 1C quality

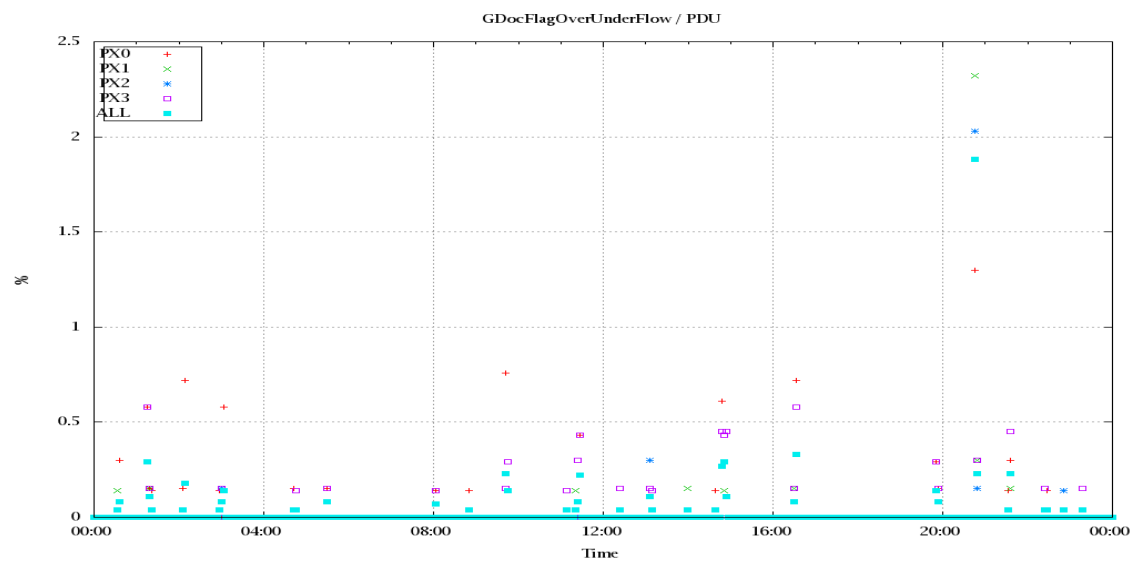


Figure 5: Timeseries of flag of Over and Under Flows

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 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.

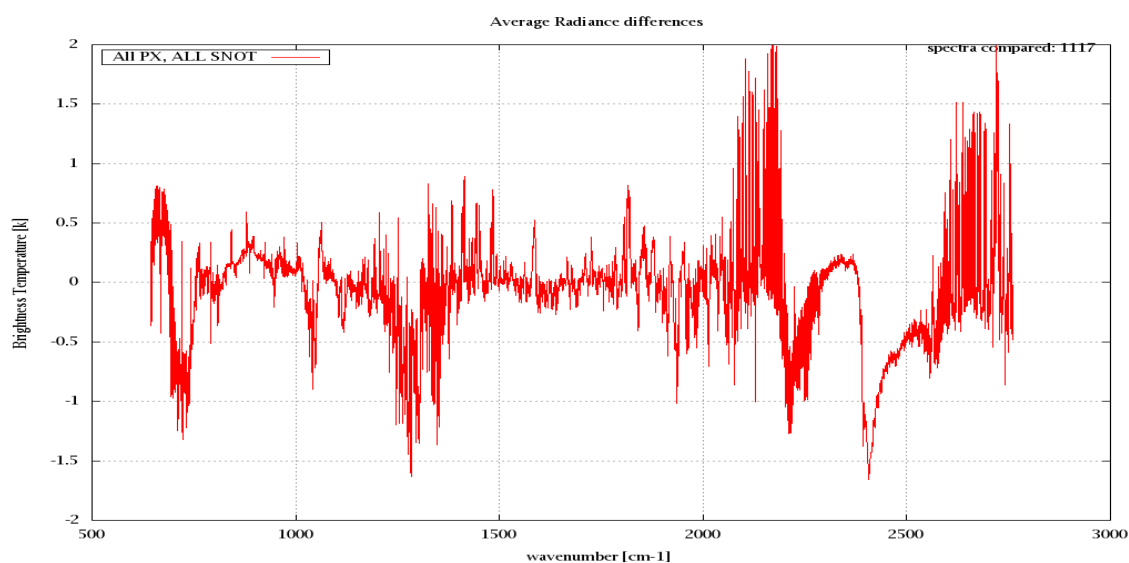


Figure 6: Average Radiance differences: OBS-CAL

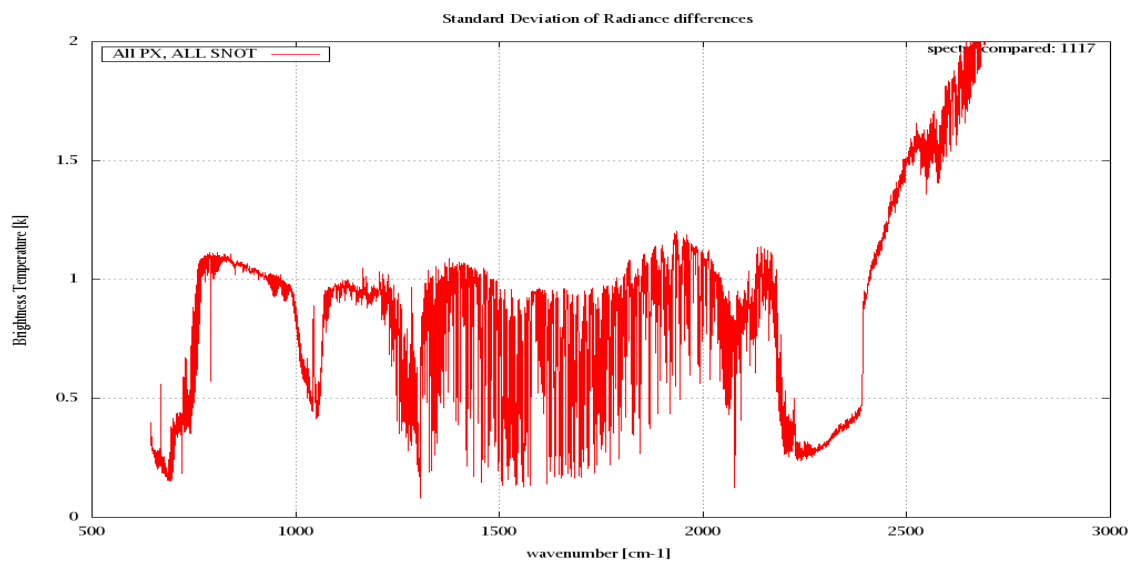


Figure 7: Standard Deviation of Radiance differences

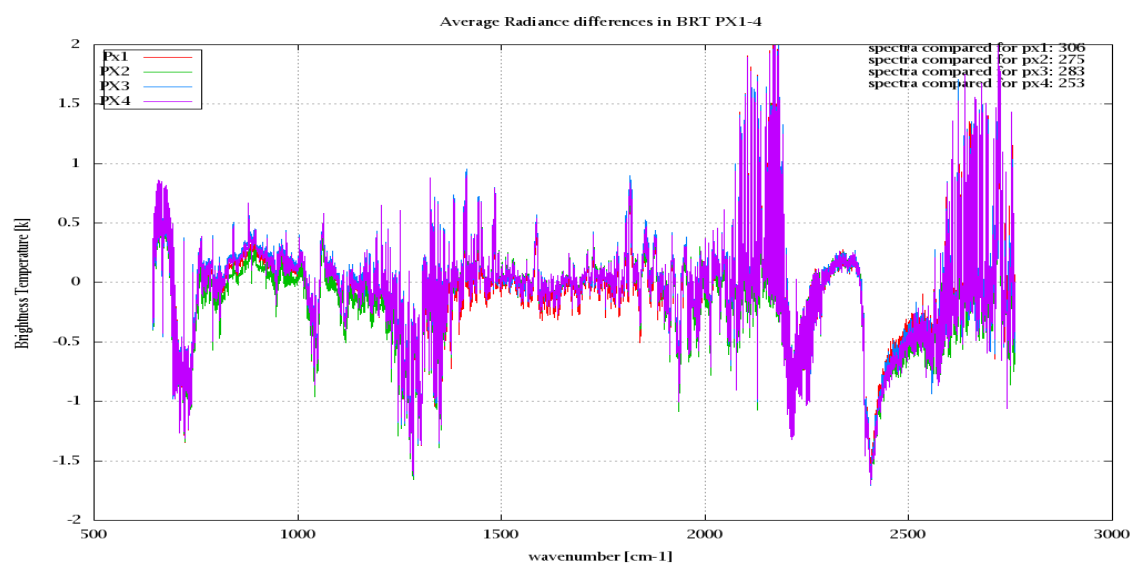


Figure 8: Average Radiance differences: OBS-CAL

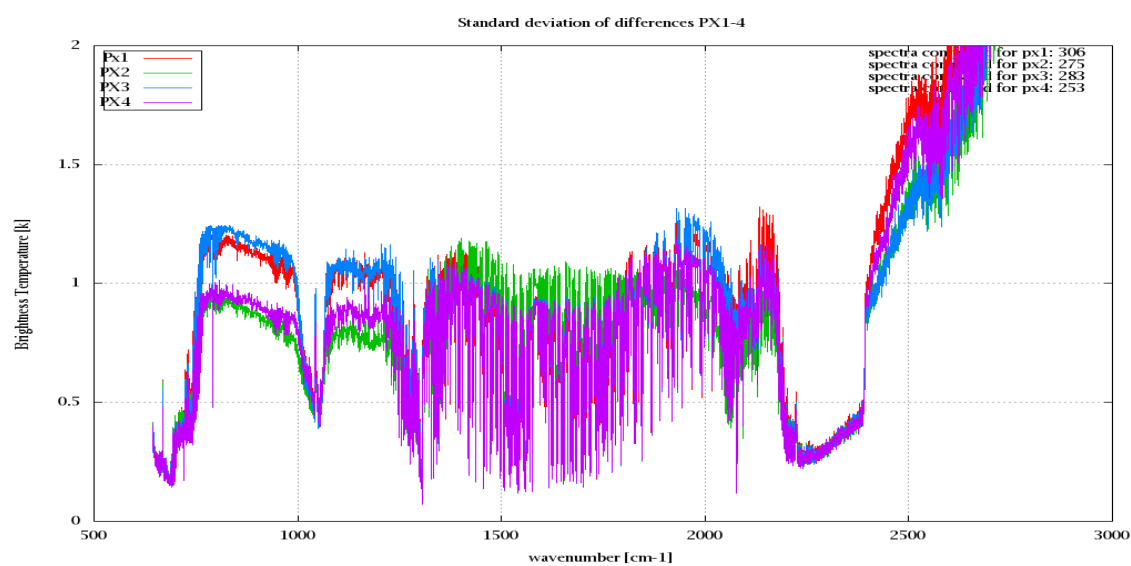


Figure 9: Standard Deviation of Radiance differences

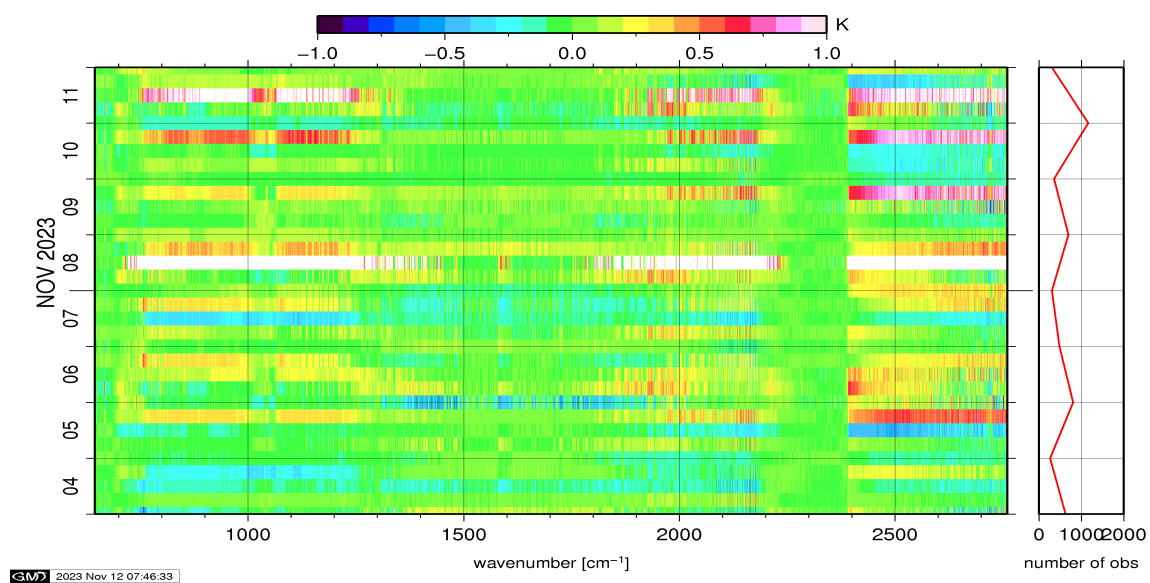


Figure 10: Radiance Anomaly in BT: All Channels

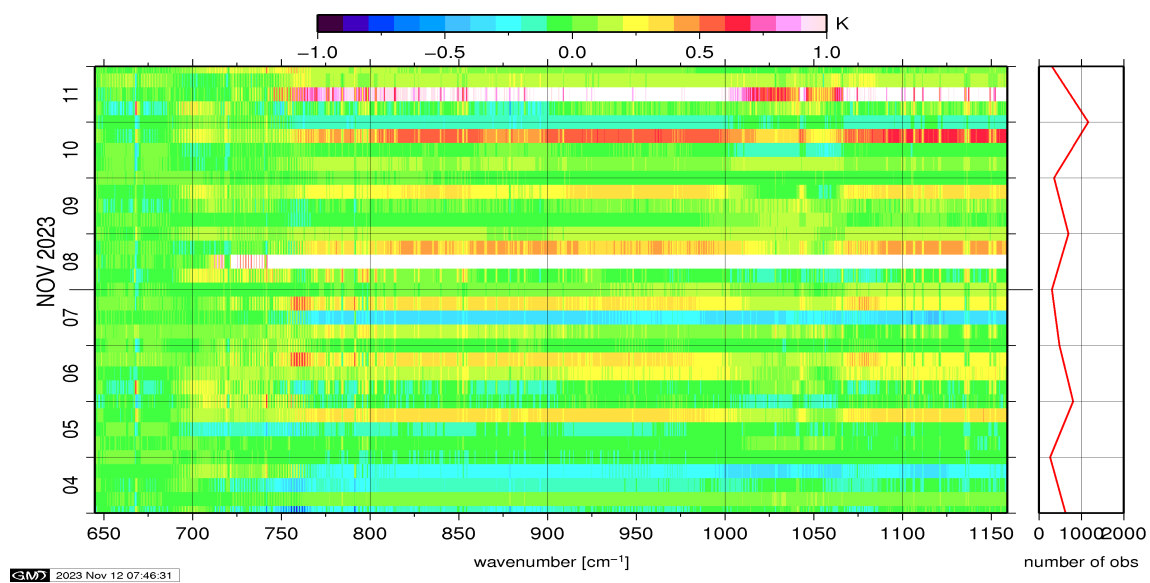


Figure 11: Radiance Anomaly in BT: IASI Band 1

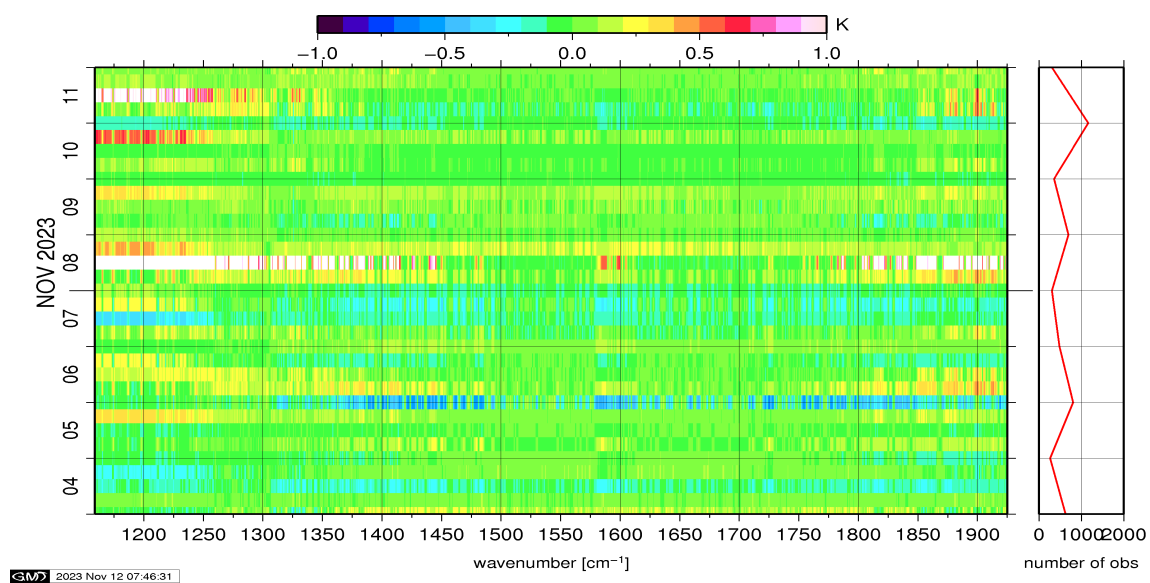


Figure 12: Radiance Anomaly in BT: IASI Band 2

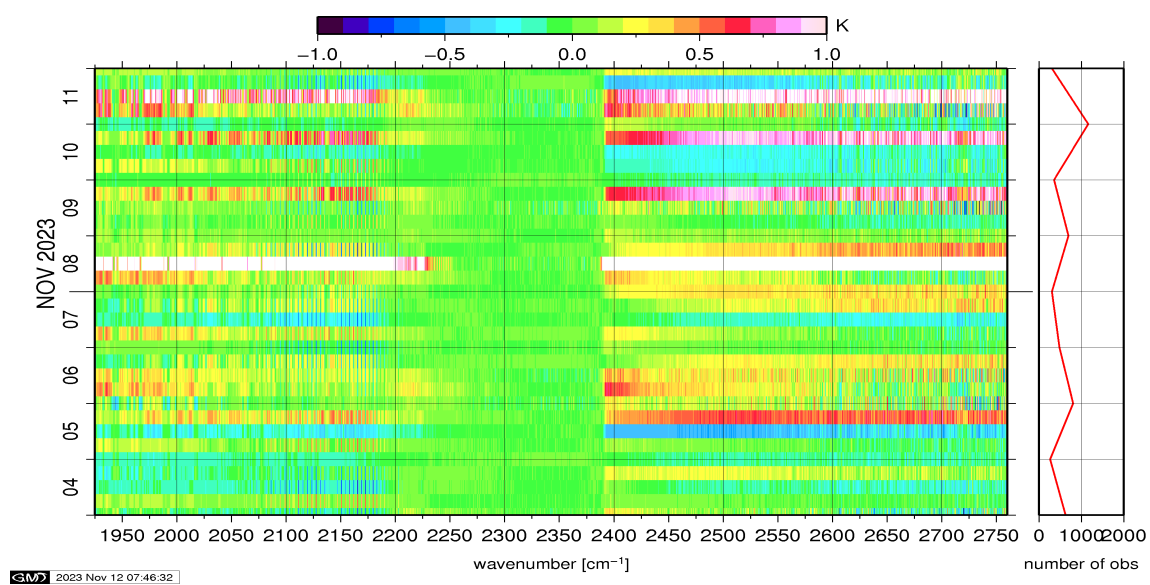


Figure 13: Radiance Anomaly in BT: IASI Band 3

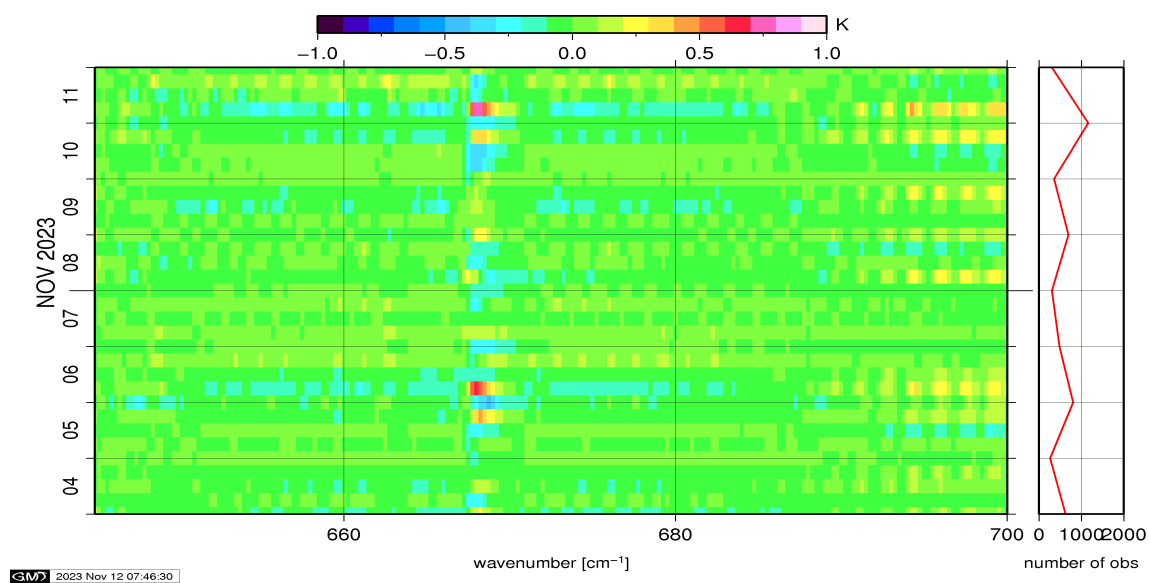


Figure 14: Radiance Anomaly in BT: CO2 14

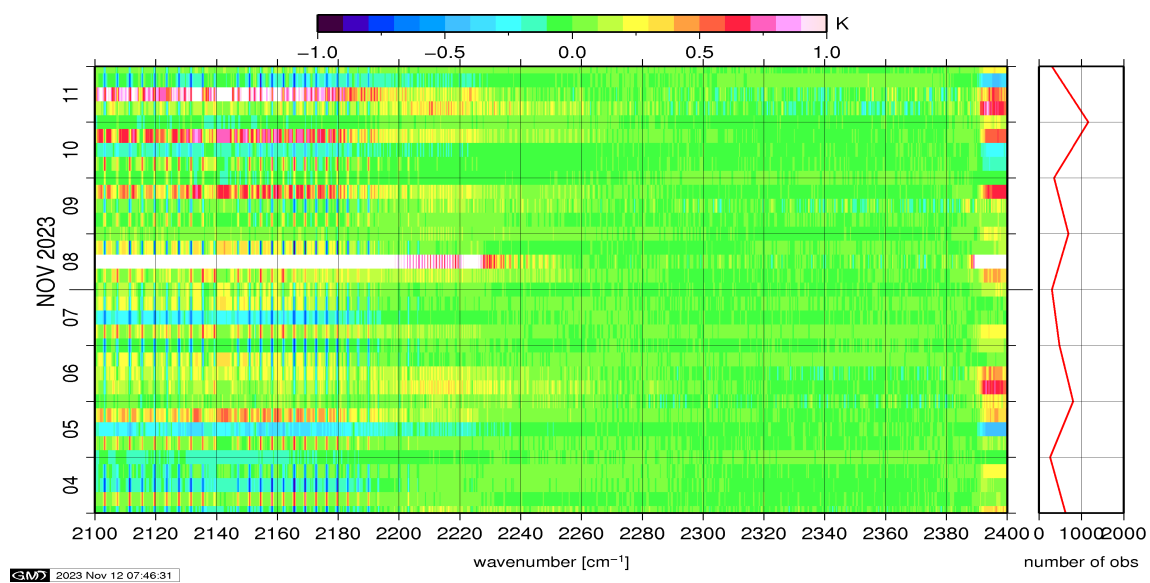


Figure 15: Radiance Anomaly in BT: CO2 4.3

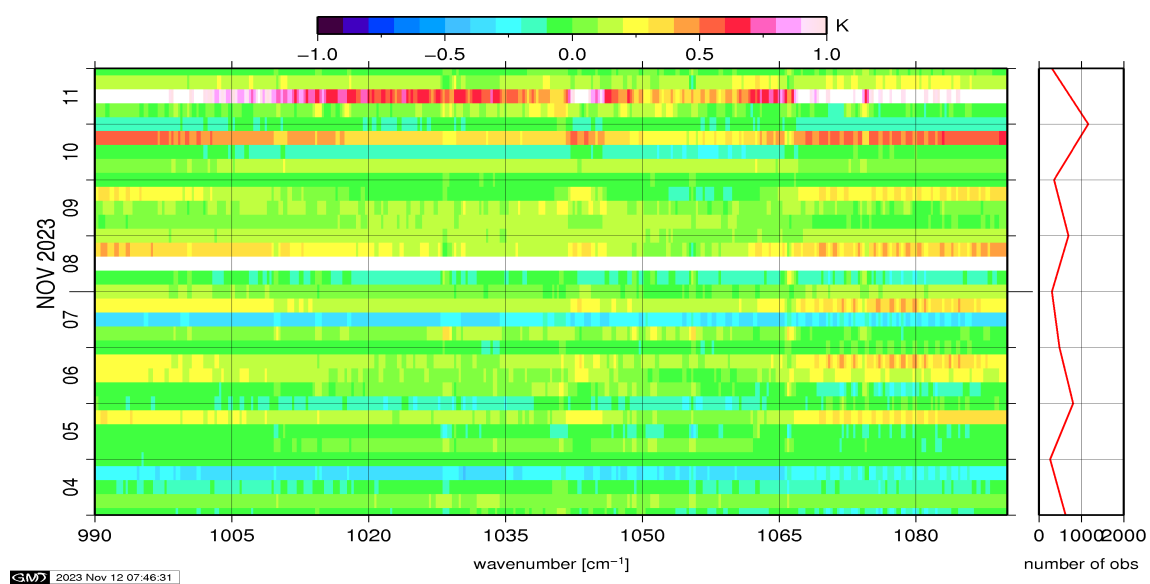


Figure 16: Radiance Anomaly in BT: O3

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.

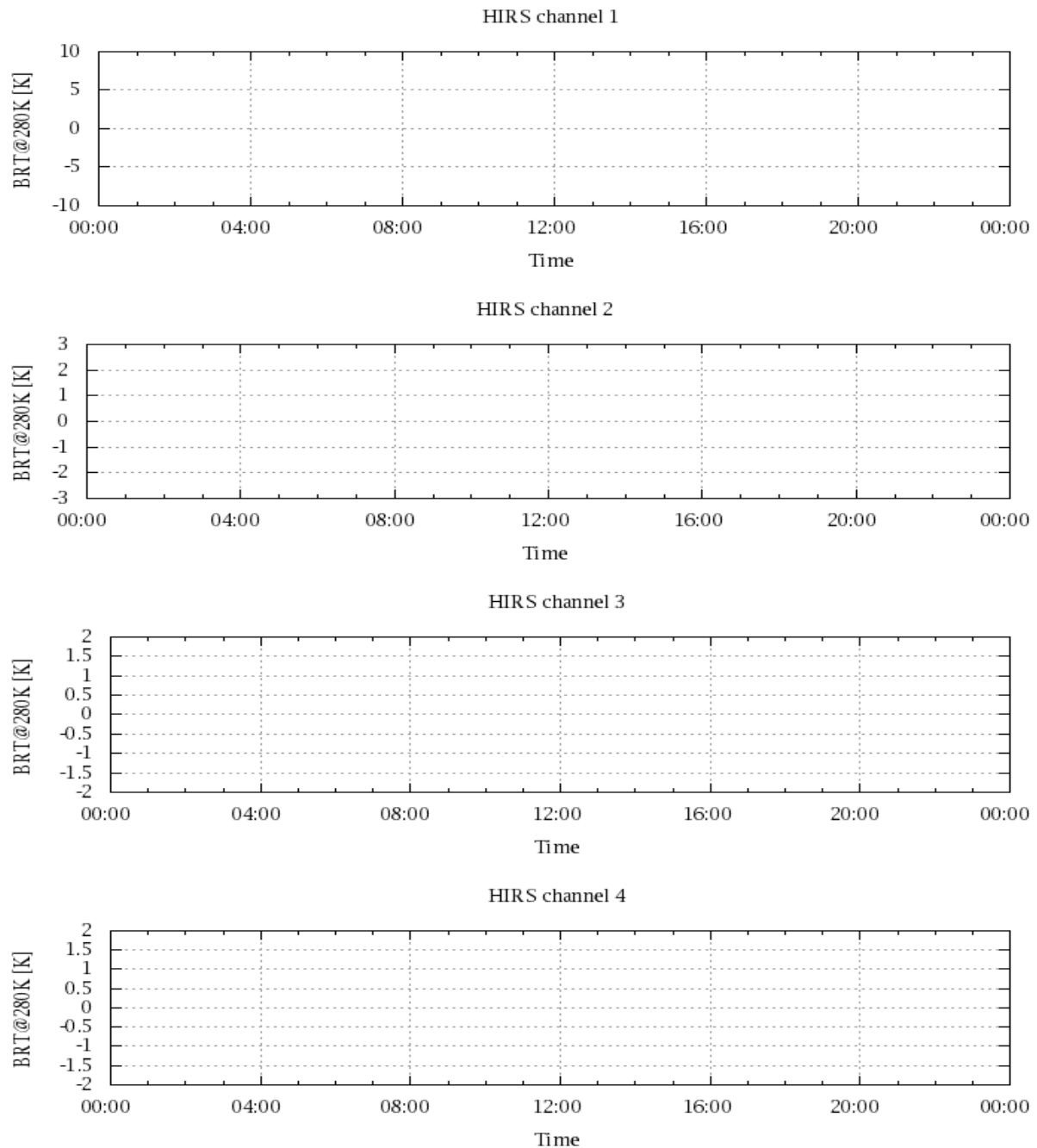


Figure 17: Radiance Differences in BT

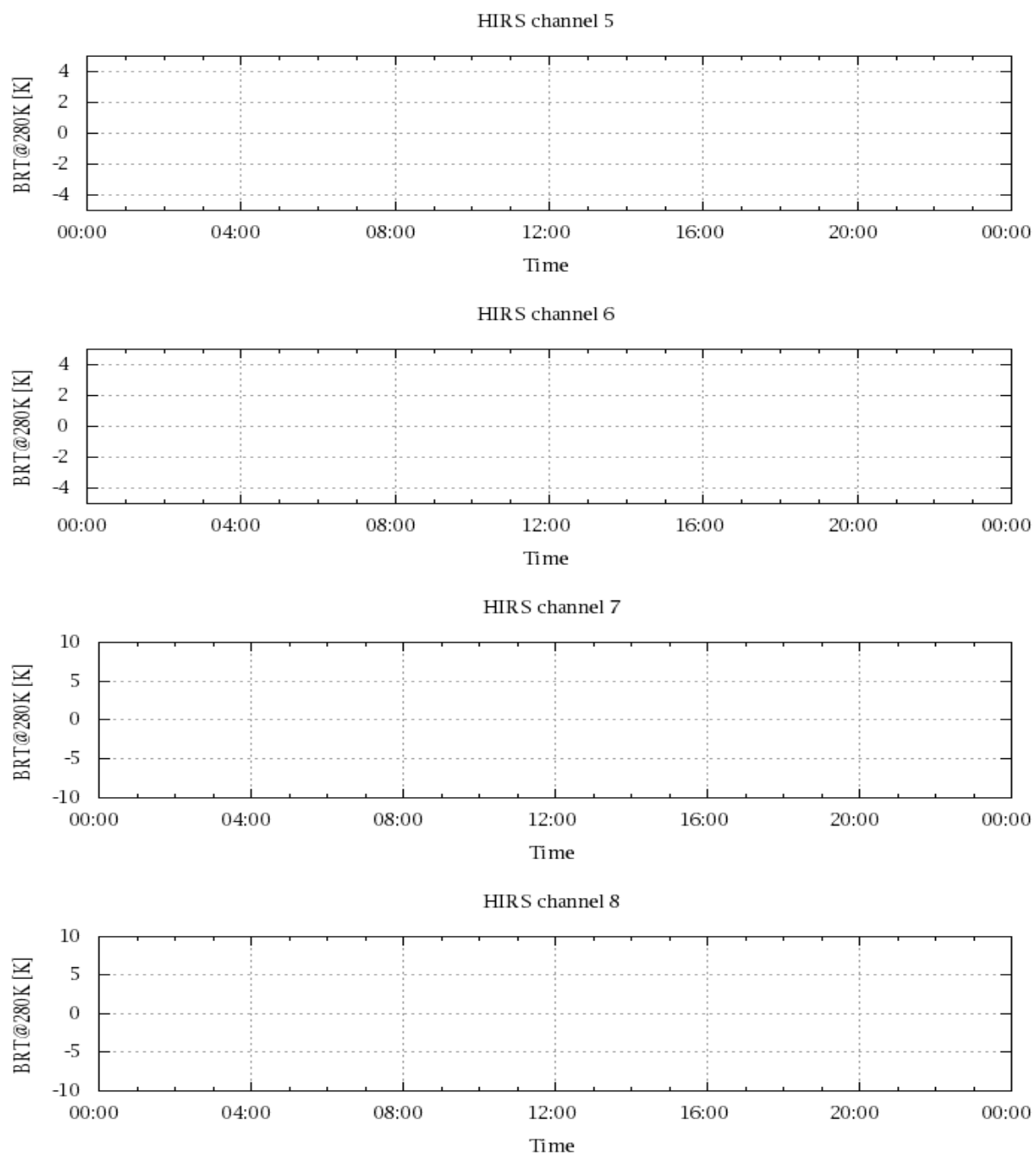


Figure 18: Radiance Differences in BT

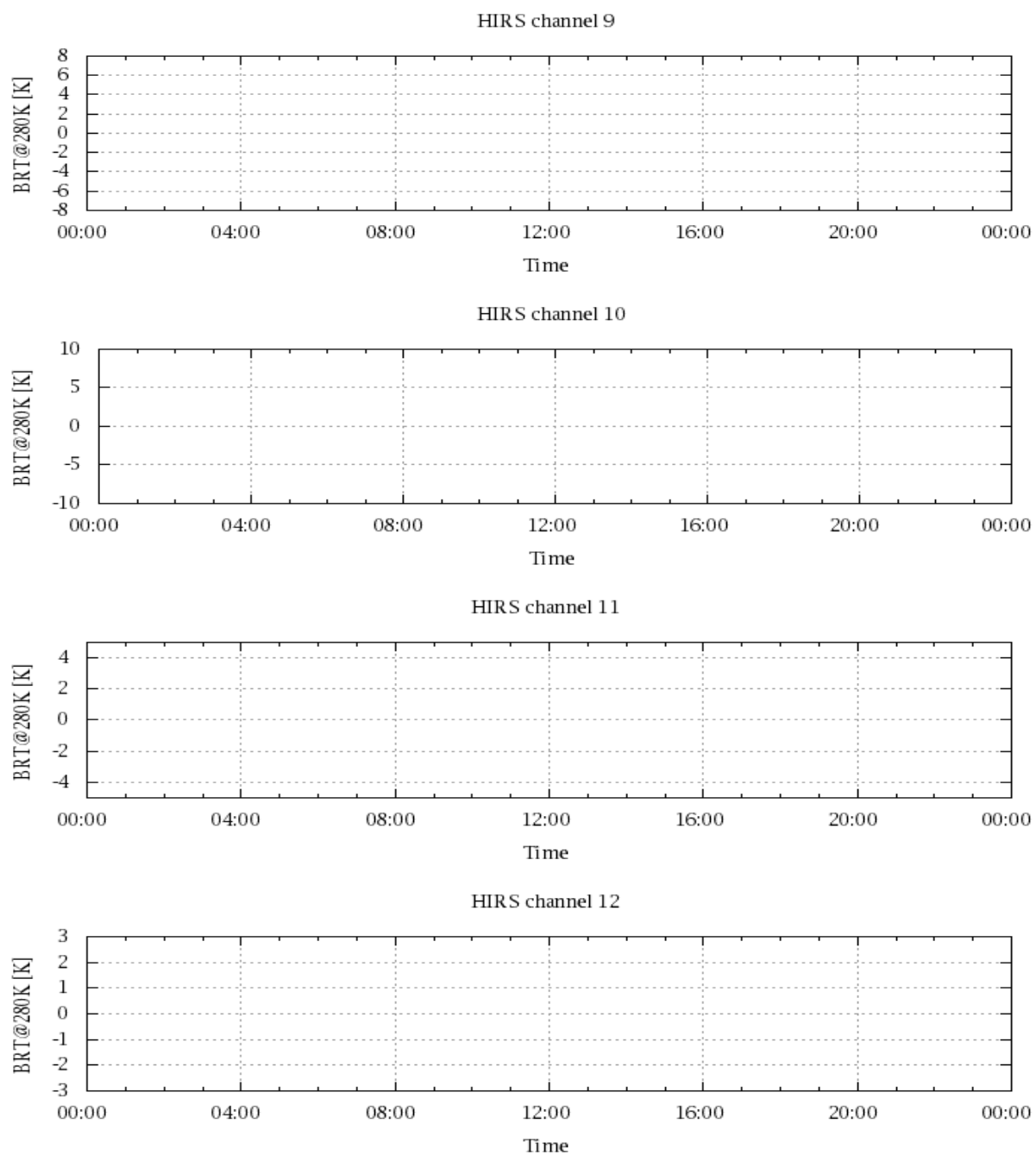


Figure 19: Radiance Differences in BT

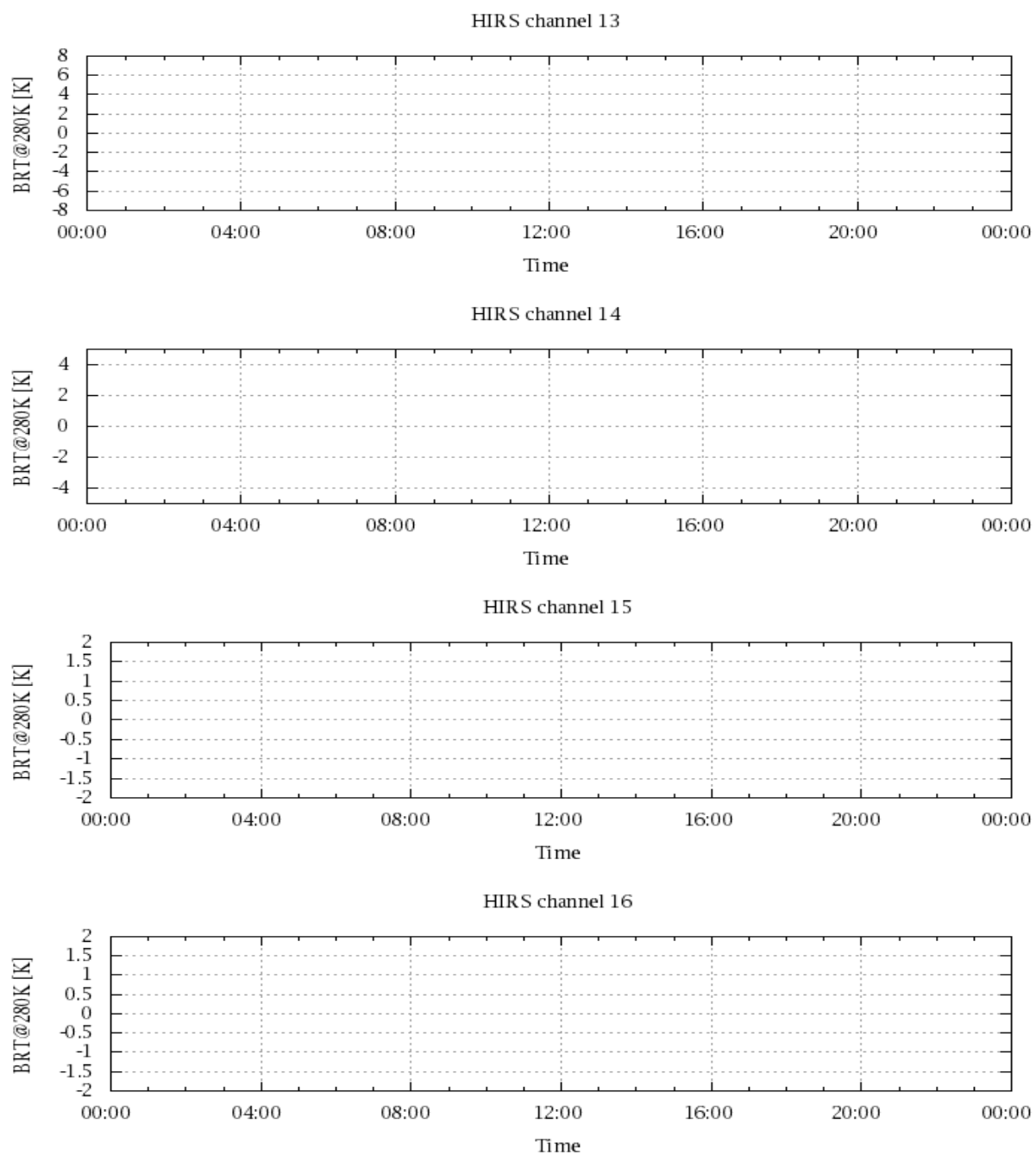


Figure 20: Radiance Differences in BT

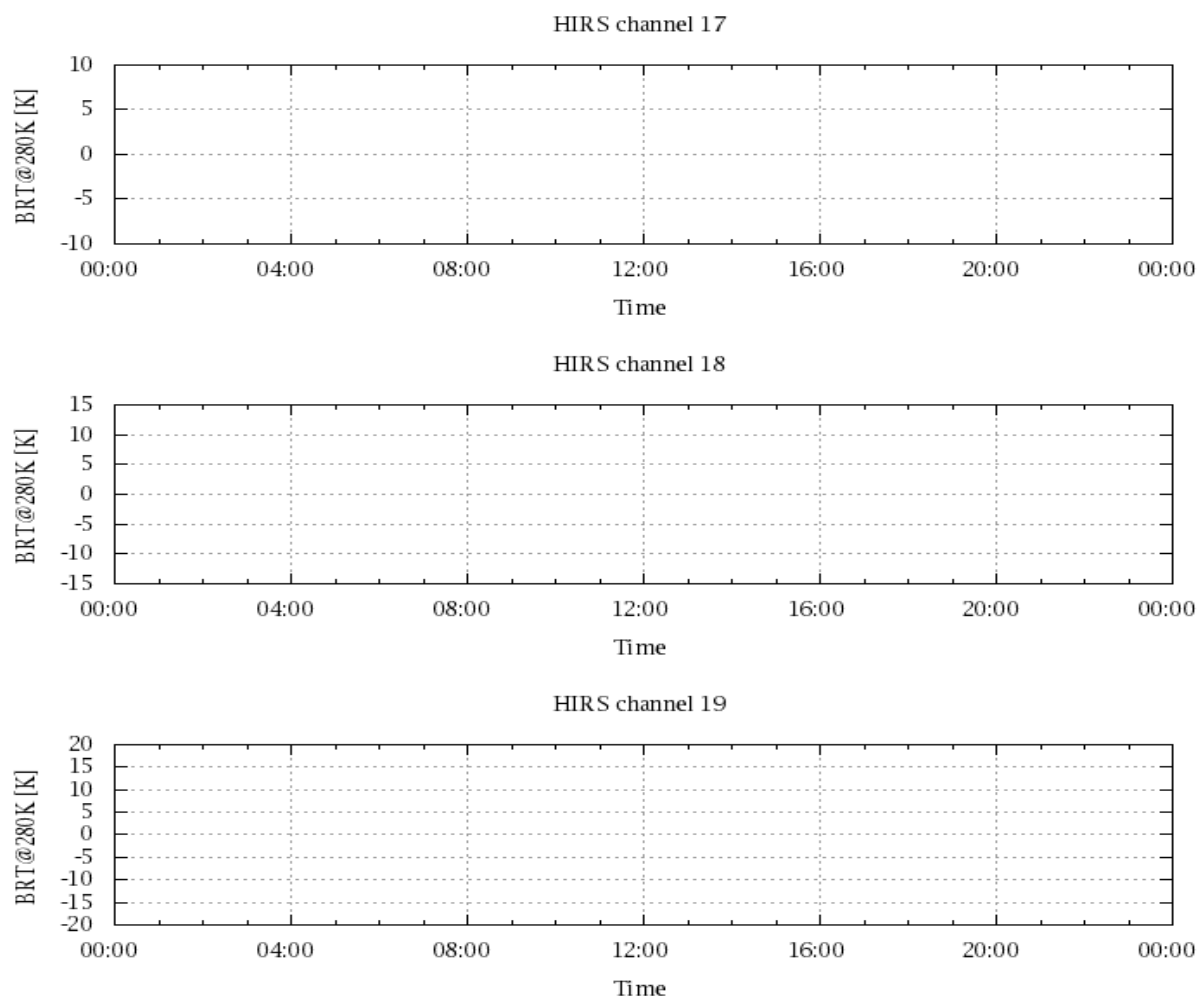


Figure 21: Radinace Differences in BT