

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

IASI monitoring team

10/04/2024 00:00:00 - 11/04/2024 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 10/04/2024 00:00:00 - 11/04/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 10/04/2024 00:00:00 - 11/04/2024 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSSGranule	476	-
L1 DPX PDUs (RM: IASI-HIRS)	1	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)	5765	5868	20240410030601.979	20240410030630.308
PX1 (130)	4979	4981	20240410135753.894	20240410135755.839
PX2 (135)	5765	5868	20240410030601.979	20240410030630.308
PX2 (135)	4979	4981	20240410135753.894	20240410135755.839
PX3 (140)	5765	5867	20240410030601.979	20240410030630.089
PX3 (140)	4979	4981	20240410135753.894	20240410135755.839
PX4 (145)	5765	5867	20240410030601.979	20240410030630.089
PX4 (145)	4979	4981	20240410135753.894	20240410135755.839
IMG (150)	8932	9047	20240410030603.062	20240410030630.089
IMG (150)	11315	11321	20240410135753.894	20240410135755.839
VER (160)	12225	12241	20240410030601.979	20240410030633.979
VER (160)	3900	3903	20240410135753.894	20240410135801.894
VER (160)	12010	13428	20240410173409.893	20240410181259.846
VER (160)	13428	13433	20240410181259.846	20240410181259.846
VER (160)	13433	13438	20240410181259.846	20240410181259.846
VER (160)	13438	13443	20240410181259.846	20240410181259.846
VER (160)	13443	13448	20240410181259.846	20240410181259.846
VER (160)	13448	13453	20240410181259.846	20240410181259.846
VER (160)	13453	13458	20240410181259.846	20240410181259.846

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	13458	13463	20240410181259.846	20240410181259.846
VER (160)	13463	13429	20240410181259.846	20240410181259.846
VER (160)	13429	13434	20240410181259.846	20240410181259.846
VER (160)	13434	13439	20240410181259.846	20240410181259.846
VER (160)	13439	13444	20240410181259.846	20240410181259.846
VER (160)	13444	13449	20240410181259.846	20240410181259.846
VER (160)	13449	13454	20240410181259.846	20240410181259.846
VER (160)	13454	13459	20240410181259.846	20240410181259.846
VER (160)	13459	13464	20240410181259.846	20240410181259.846
VER (160)	13464	13430	20240410181259.846	20240410181259.846
VER (160)	13430	13435	20240410181259.846	20240410181259.846
VER (160)	13435	13440	20240410181259.846	20240410181259.846
VER (160)	13440	13445	20240410181259.846	20240410181259.846
VER (160)	13445	13450	20240410181259.846	20240410181259.846
VER (160)	13450	13455	20240410181259.846	20240410181259.846
VER (160)	13455	13460	20240410181259.846	20240410181259.846
VER (160)	13460	13465	20240410181259.846	20240410181259.846
VER (160)	13465	13431	20240410181259.846	20240410181259.846
VER (160)	13431	13436	20240410181259.846	20240410181259.846
VER (160)	13436	13441	20240410181259.846	20240410181259.846
VER (160)	13441	13446	20240410181259.846	20240410181259.846
VER (160)	13446	13451	20240410181259.846	20240410181259.846
VER (160)	13451	13456	20240410181259.846	20240410181259.846
VER (160)	13456	13461	20240410181259.846	20240410181259.846
VER (160)	13461	13466	20240410181259.846	20240410181259.846
VER (160)	13466	13432	20240410181259.846	20240410181259.846
VER (160)	13432	13437	20240410181259.846	20240410181259.846
VER (160)	13437	13442	20240410181259.846	20240410181259.846
VER (160)	13442	13447	20240410181259.846	20240410181259.846
VER (160)	13447	13452	20240410181259.846	20240410181259.846
VER (160)	13452	13457	20240410181259.846	20240410181259.846
VER (160)	13457	13462	20240410181259.846	20240410181259.846
VER (160)	13462	13467	20240410181259.846	20240410181259.846
AUX (180)	8983	8987	20240410030602.413	20240410030634.413
AUX (180)	13871	13873	20240410135746.323	20240410135802.323

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
10/04/2024 00:00:07	-	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	476	-
GQisFlagQual set (PX1)	99.62 %	-
GQisFlagQual set (PX2)	99.70 %	-
GQisFlagQual set (PX3)	99.72 %	-
GQisFlagQual set (PX4)	99.62 %	-
GQisFlagQual set (all)	99.67 %	-

Table 4: Quality flags

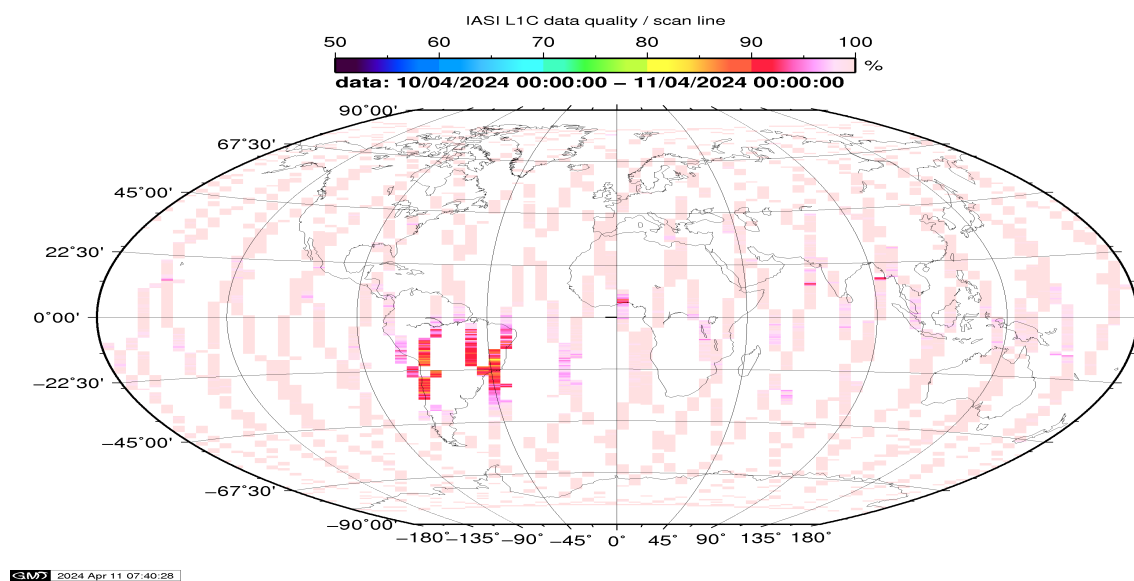


Figure 1: L1C data quality

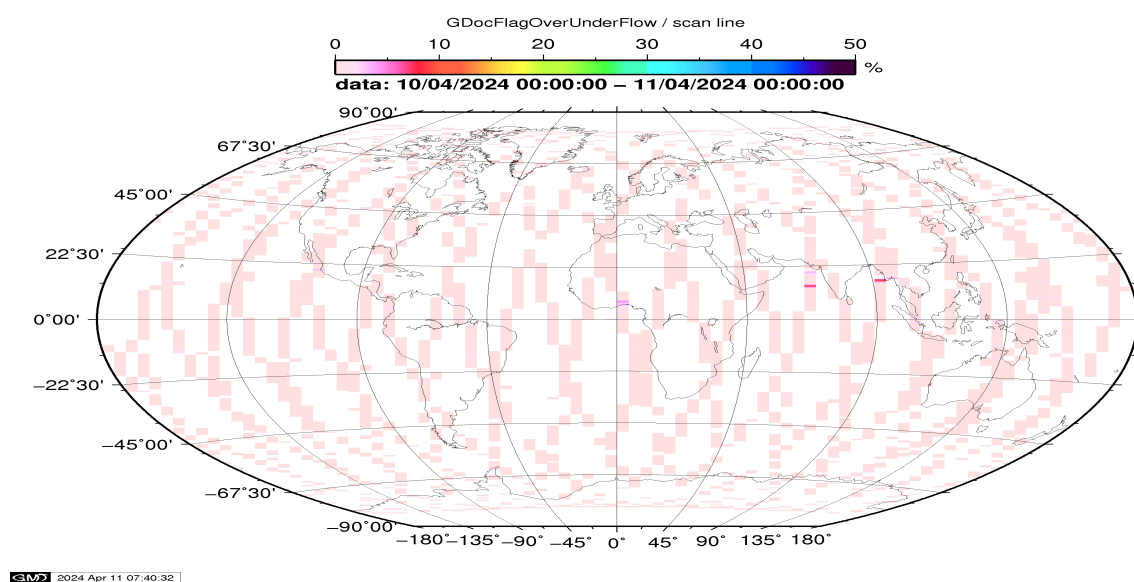


Figure 2: Flag of Over and Under Flows

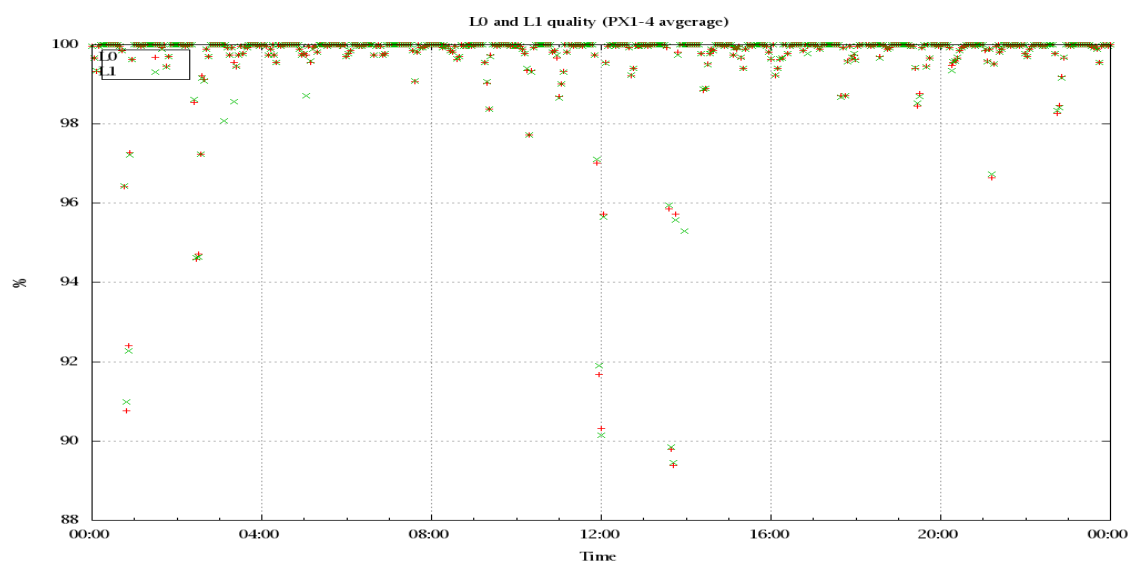


Figure 3: Level 0 and 1C overall quality

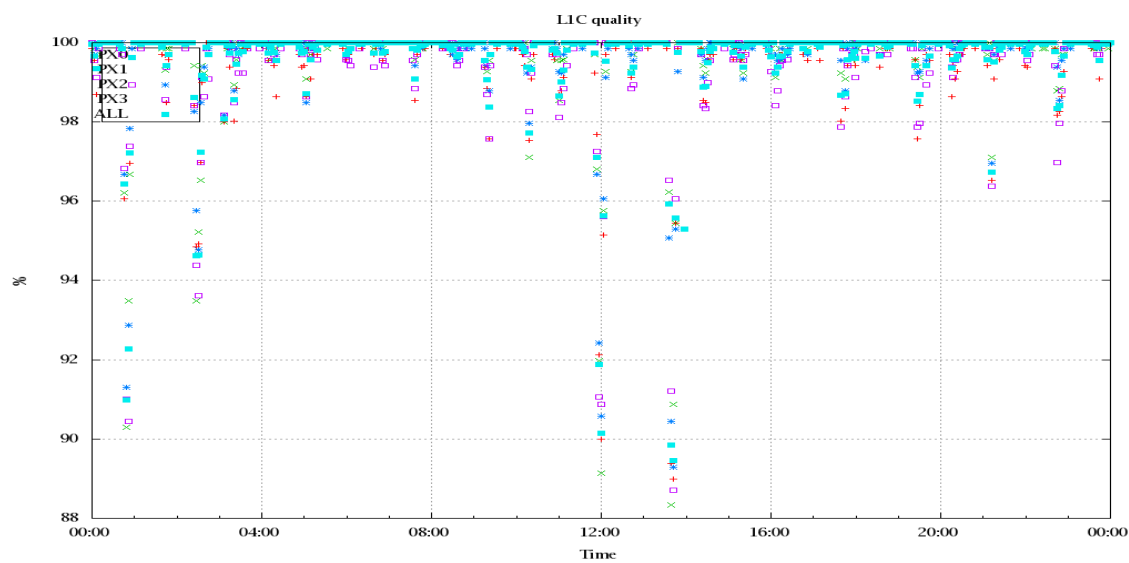


Figure 4: Level 1C quality

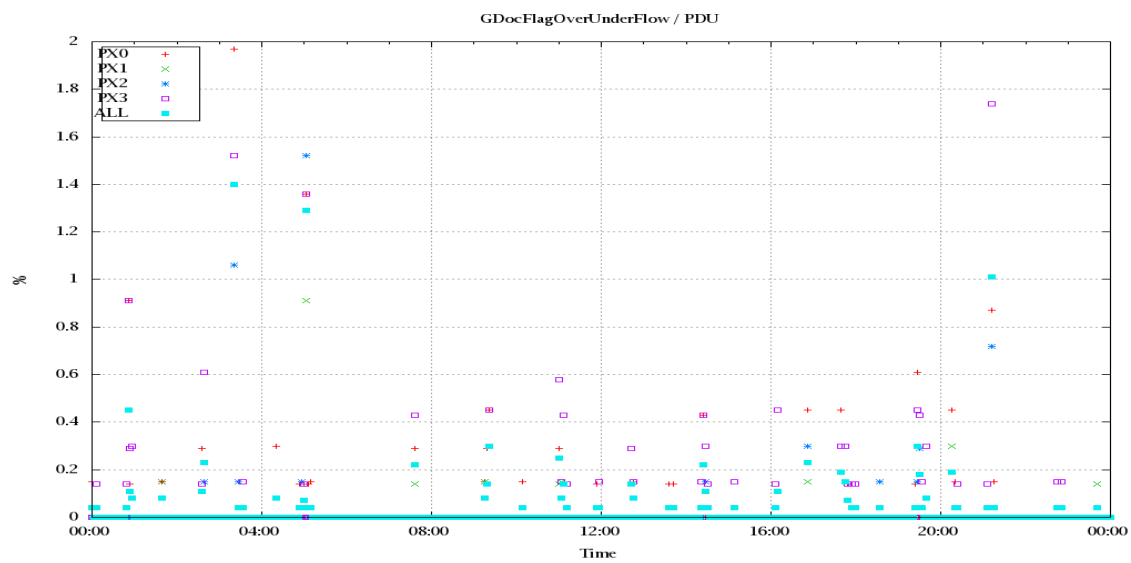


Figure 5: Timeseries of flag of Over and Under Flows

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.

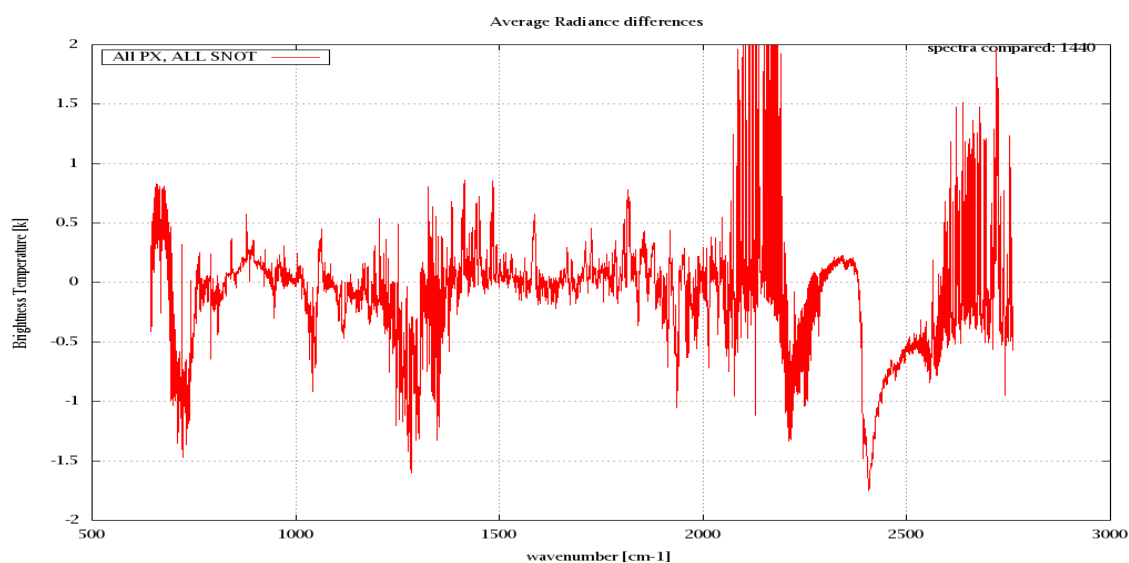


Figure 6: Average Radiance differences: OBS-CAL

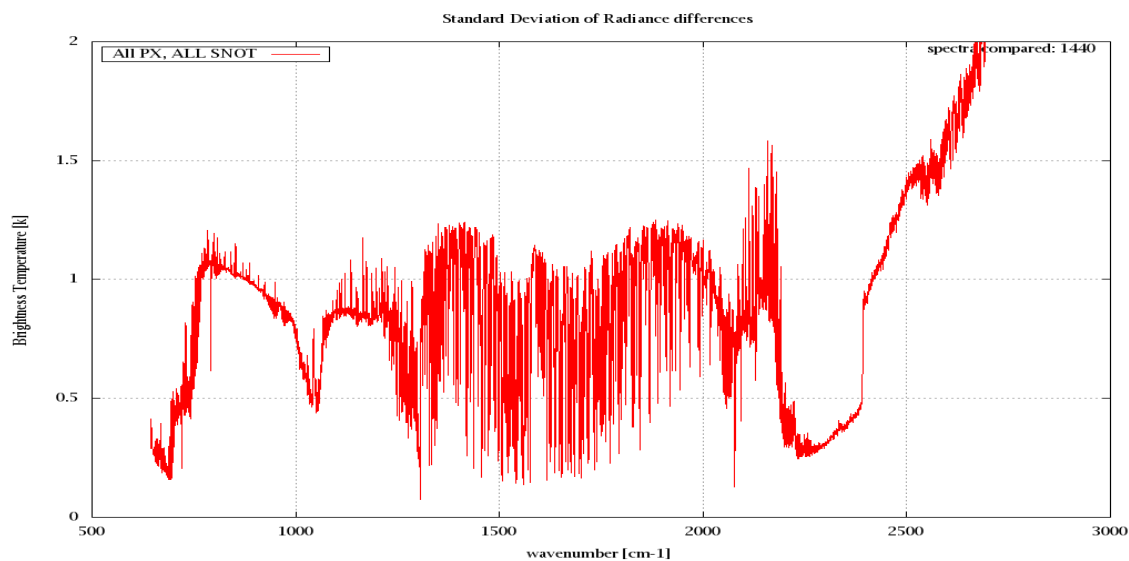


Figure 7: Standard Deviation of Radiance differences

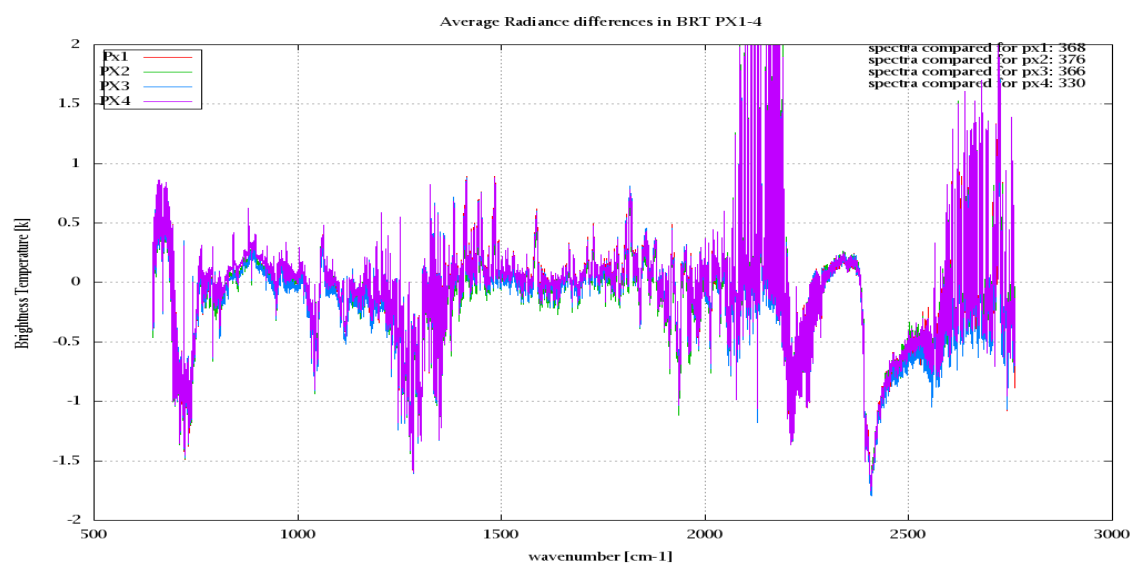


Figure 8: Average Radiance differences: OBS-CAL

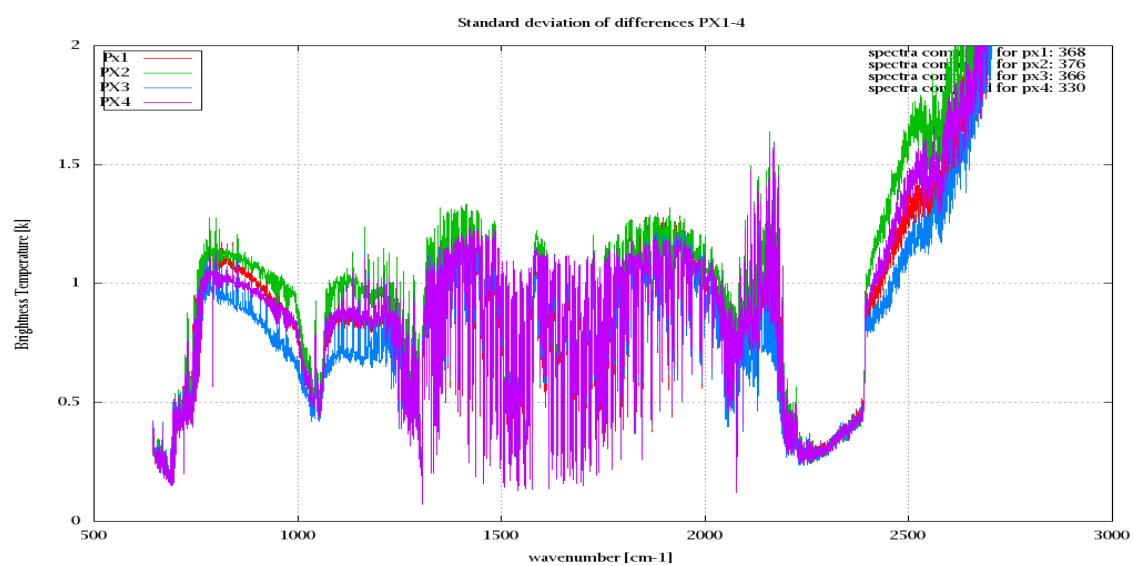


Figure 9: Standard Deviation of Radiance differences

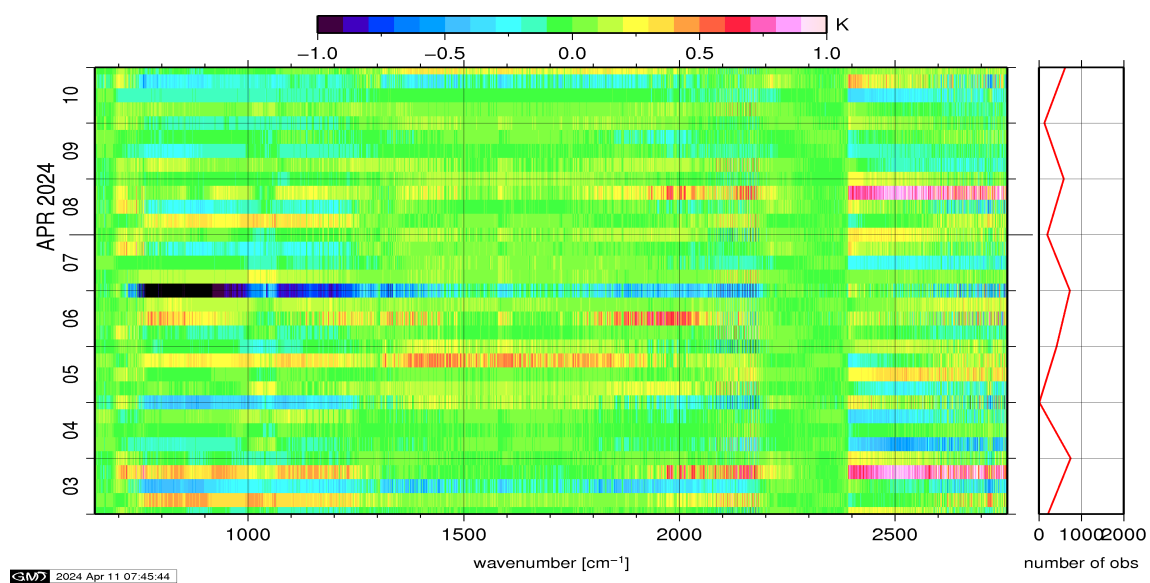


Figure 10: Radiance Anomaly in BT: All Channels

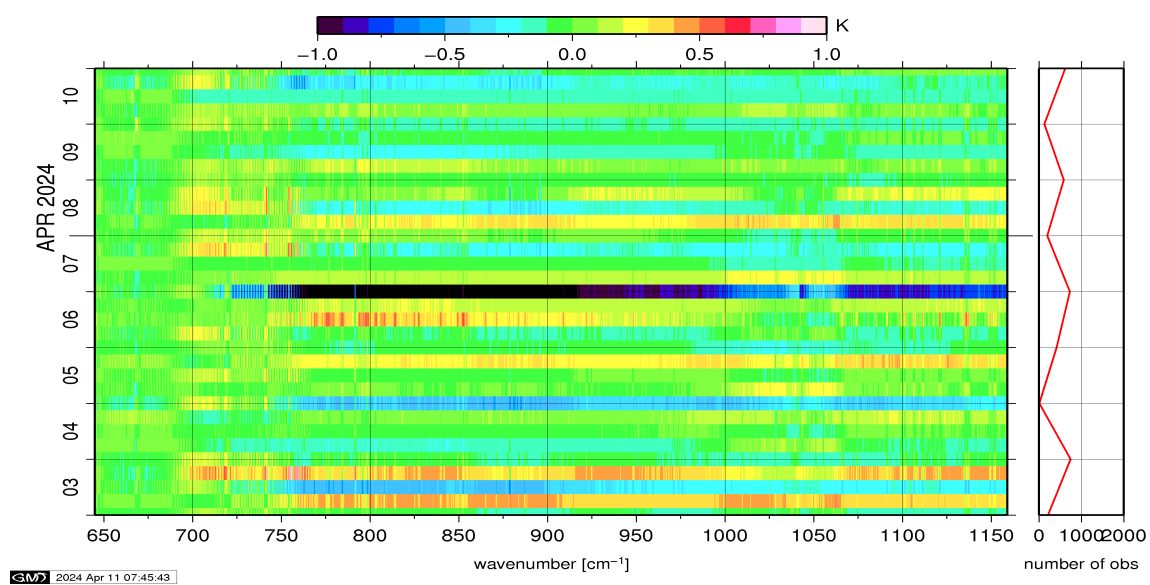


Figure 11: Radiance Anomaly in BT: IASI Band 1

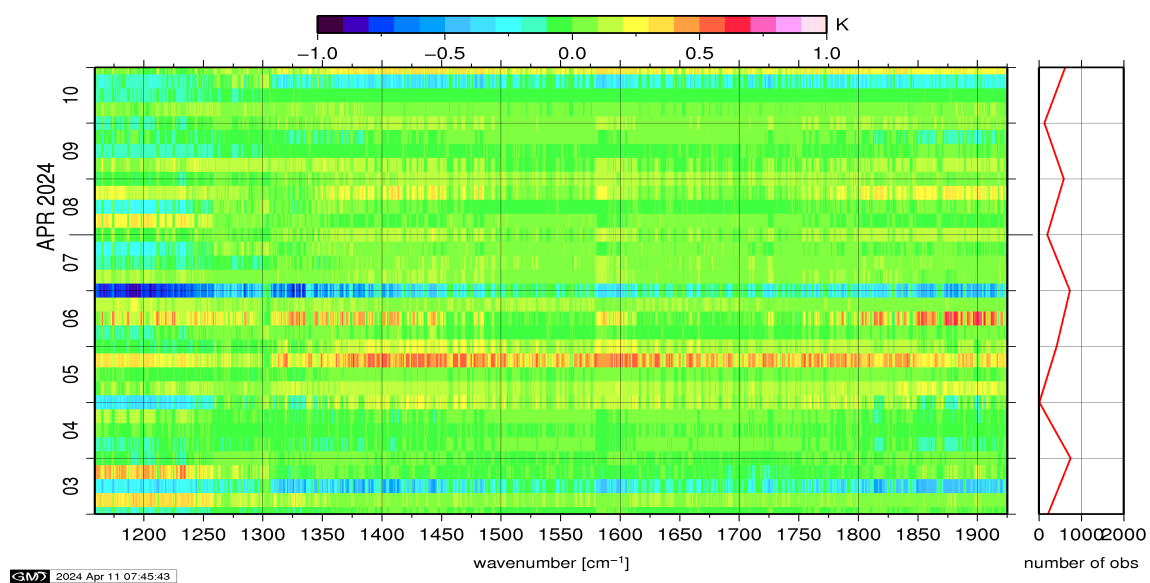


Figure 12: Radiance Anomaly in BT: IASI Band 2

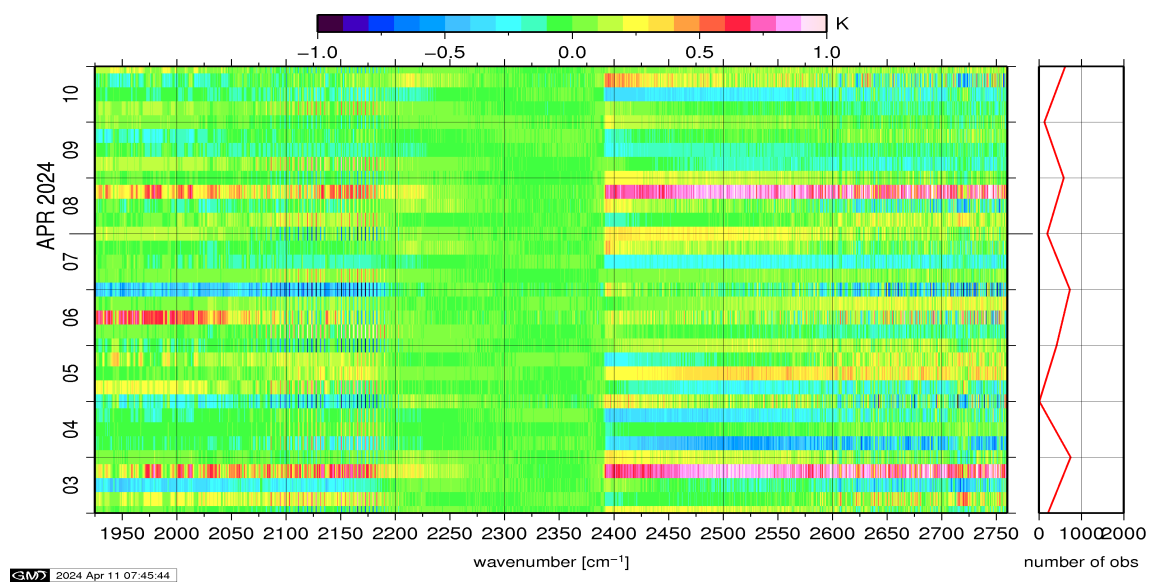


Figure 13: Radiance Anomaly in BT: IASI Band 3

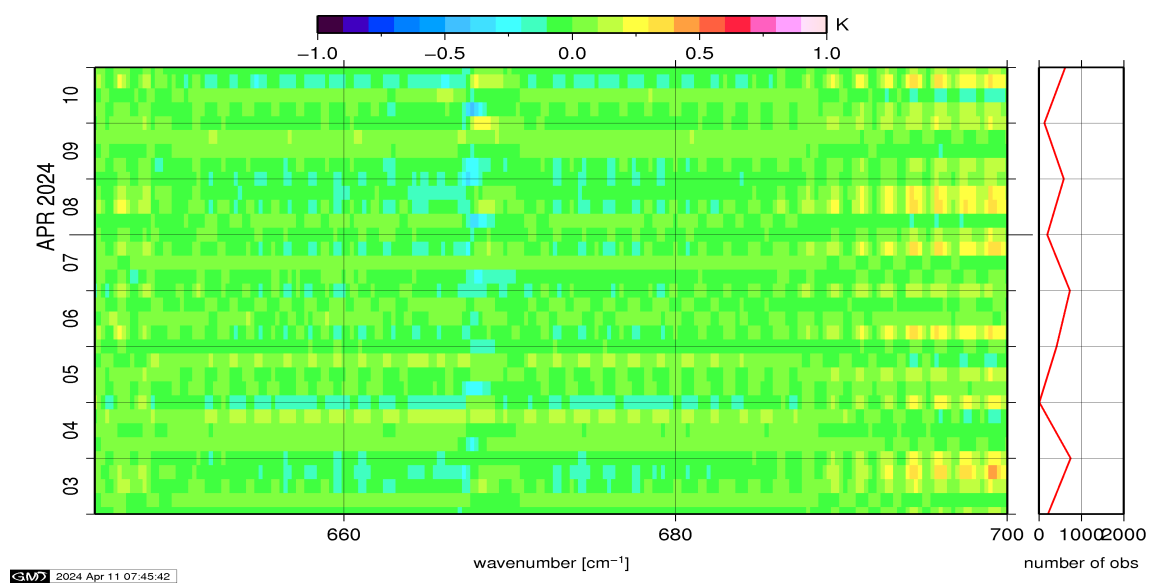


Figure 14: Radiance Anomaly in BT: CO2 14

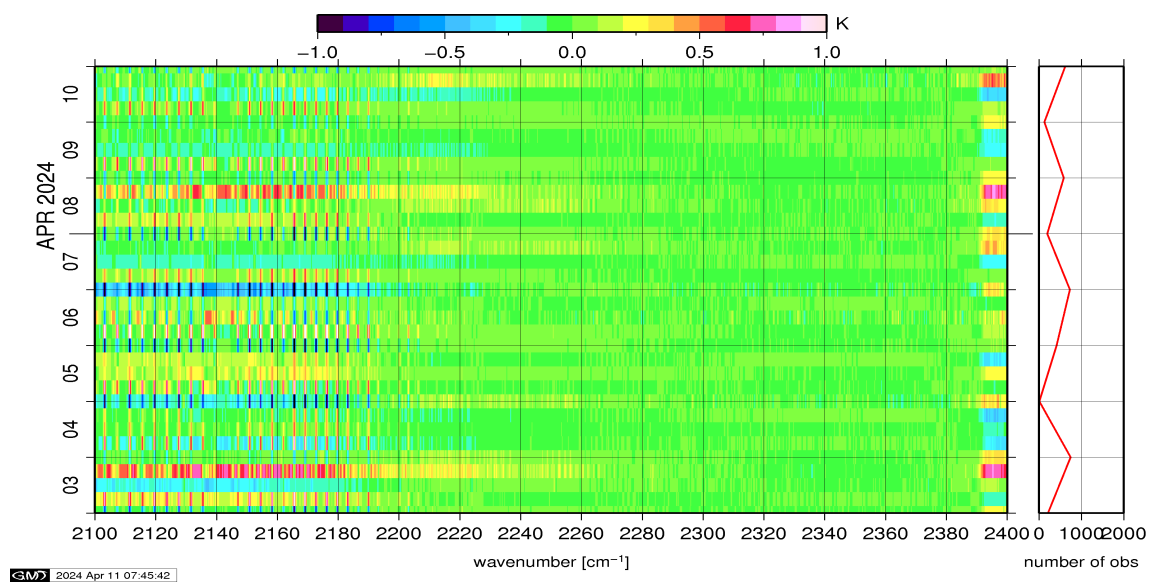


Figure 15: Radiance Anomaly in BT: CO2 4.3

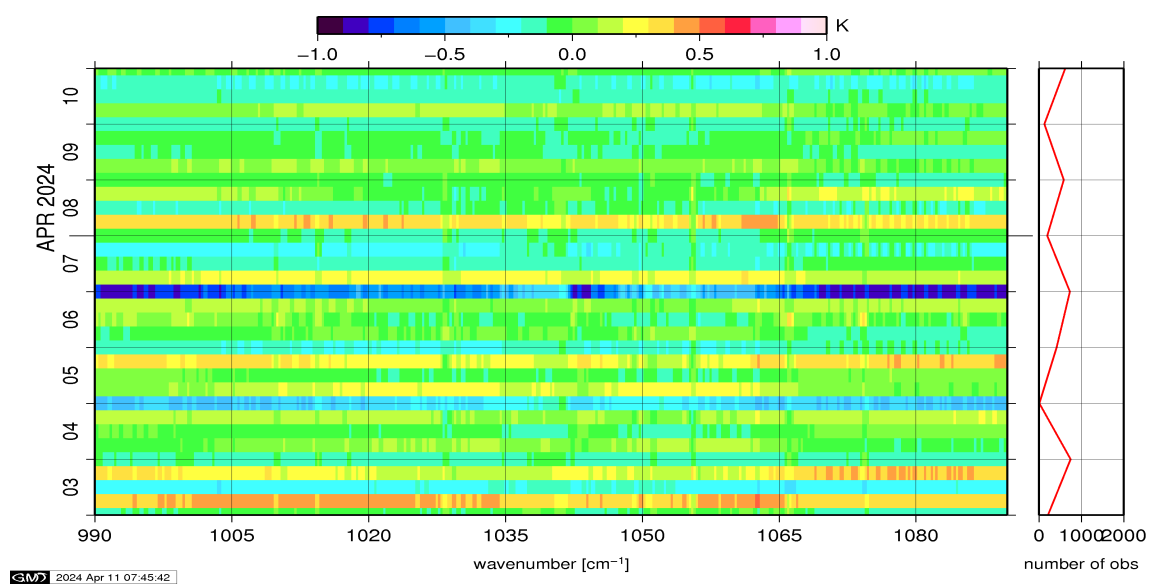


Figure 16: Radiance Anomaly in BT: O3

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.

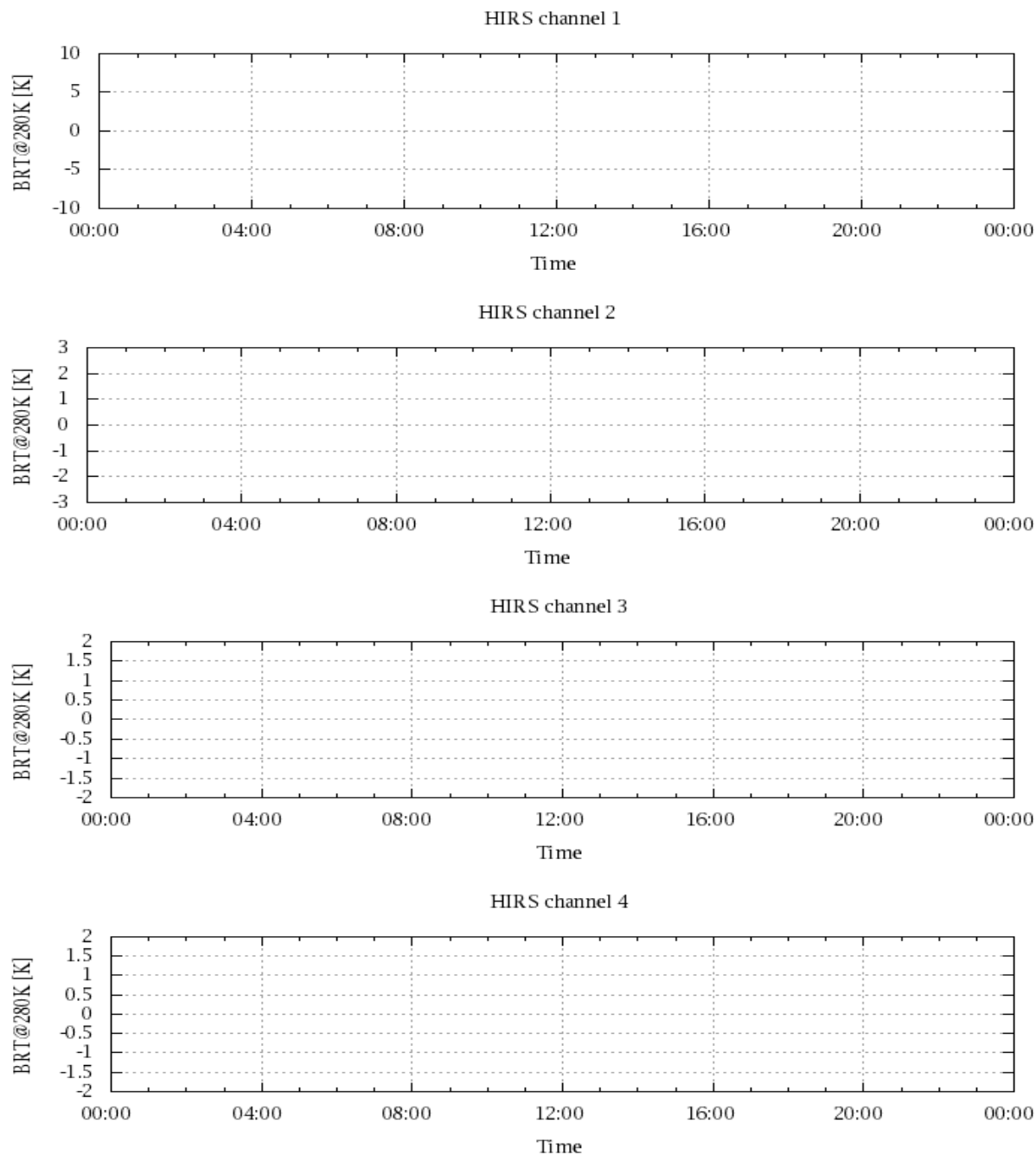


Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT

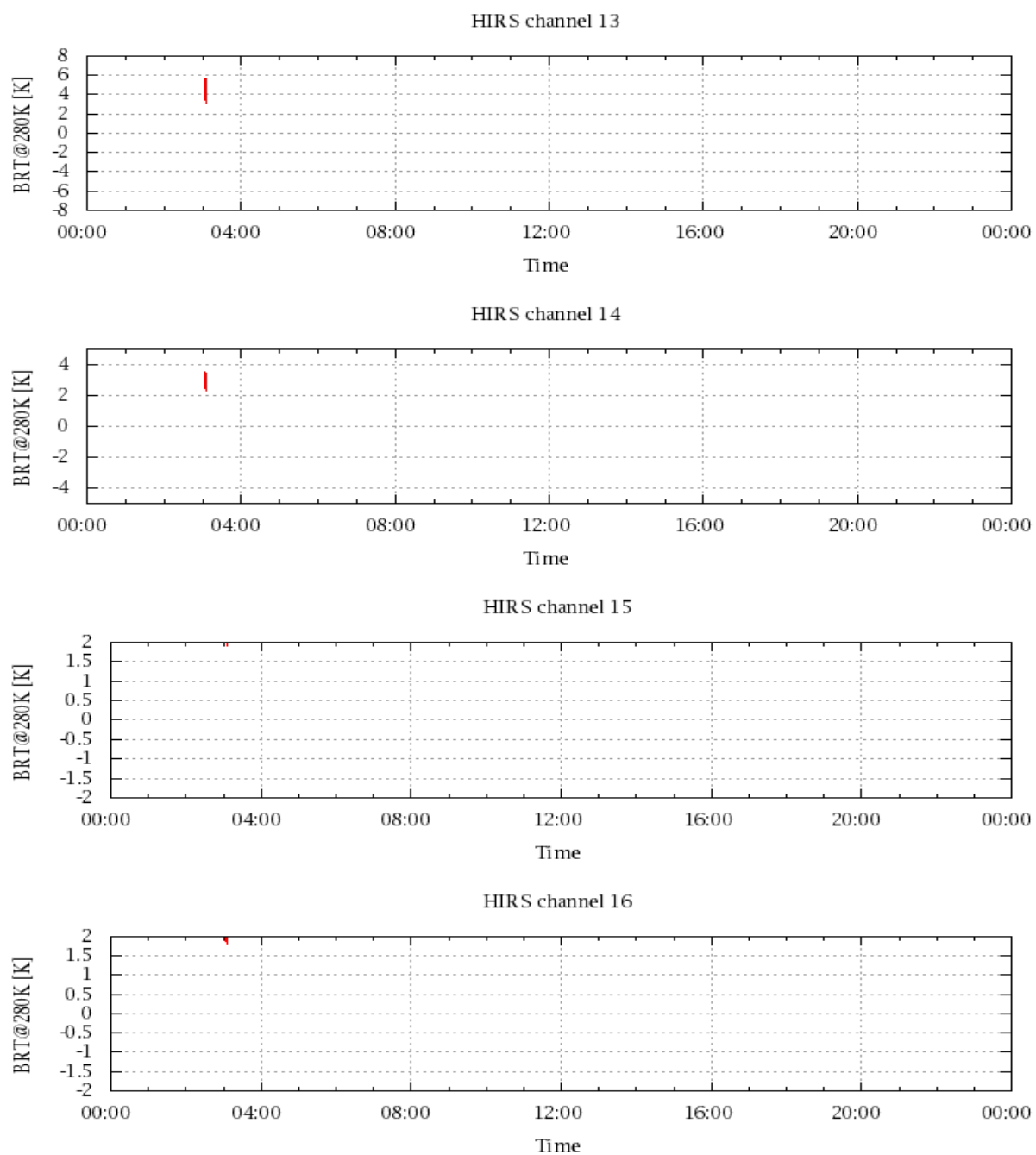


Figure 20: Radiance Differences in BT

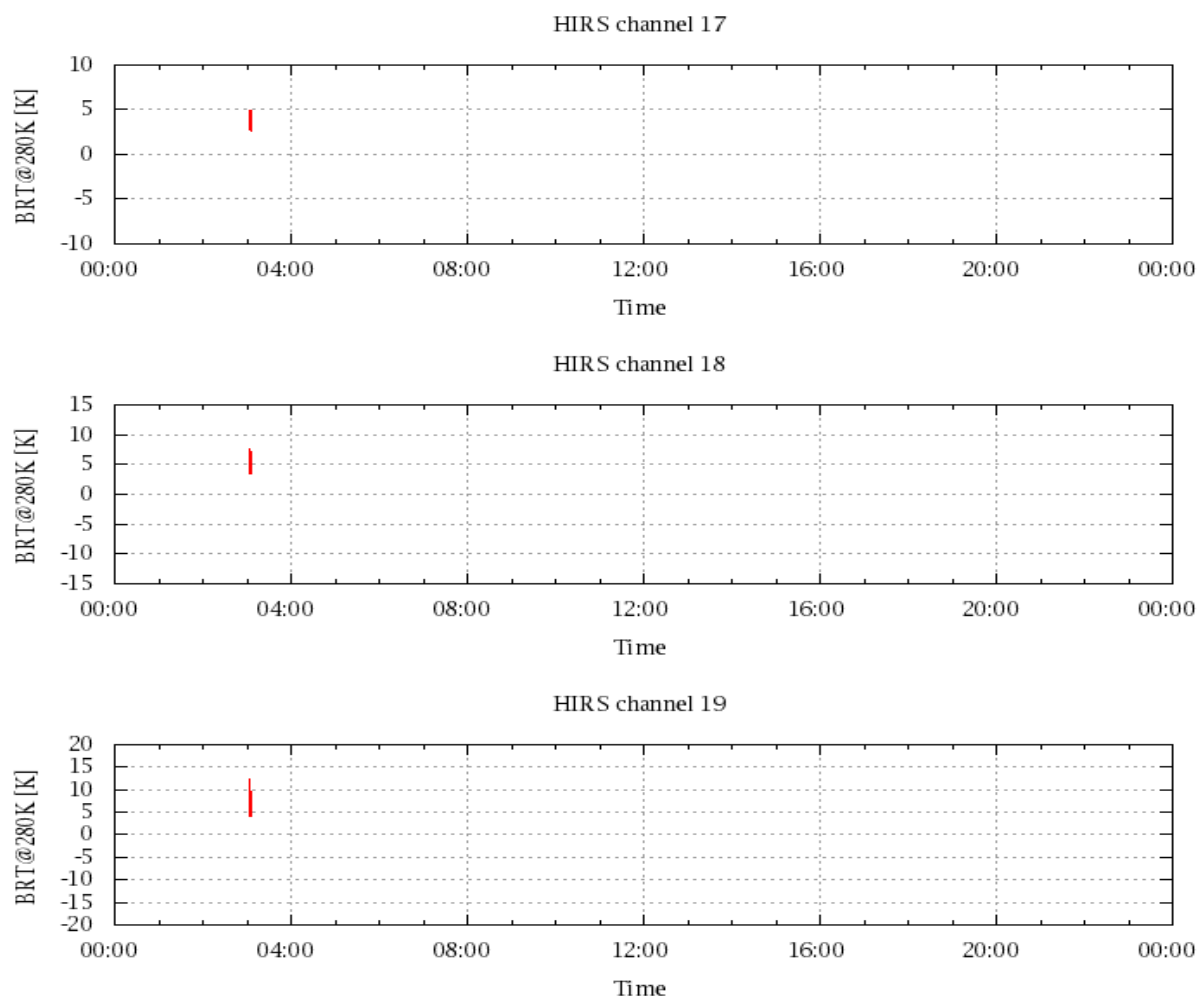


Figure 21: Radinace Differences in BT