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

IASI monitoring team

01/10/2024 00:00:00 - 02/10/2024 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 01/10/2024 00:00:00 - 02/10/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 01/10/2024 00:00:00 - 02/10/2024 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	480	-
L0 IASI PDUs	480	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	475	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	478	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	14762	15217	20241001154307.858	20241001154508.936
PX1 (130)	15384	15418	20241001154552.646	20241001154603.025
PX1 (130)	15444	15446	20241001154608.646	20241001154610.592
PX1 (130)	15451	15453	20241001154611.674	20241001154612.103
PX1 (130)	15458	15476	20241001154613.185	20241001154618.592
PX1 (130)	1981	2902	20241001155908.516	20241001160314.563
PX2 (135)	14762	15217	20241001154307.858	20241001154508.936
PX2 (135)	15383	15418	20241001154552.428	20241001154603.025
PX2 (135)	15437	15439	20241001154607.131	20241001154607.564
PX2 (135)	15444	15446	20241001154608.646	20241001154610.592
PX2 (135)	15453	15455	20241001154612.103	20241001154612.537
PX2 (135)	15458	15476	20241001154613.185	20241001154618.592
PX2 (135)	1981	2902	20241001155908.516	20241001160314.563
PX3 (140)	14762	15217	20241001154307.858	20241001154508.936
PX3 (140)	15383	15418	20241001154552.428	20241001154603.025
PX3 (140)	15446	15448	20241001154610.592	20241001154611.021
PX3 (140)	15458	15476	20241001154613.185	20241001154618.592
PX3 (140)	1981	2902	20241001155908.516	20241001160314.563
PX4 (145)	14762	15216	20241001154307.858	20241001154508.717

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	15383	15418	20241001154552.428	20241001154603.025
PX4 (145)	15439	15441	20241001154607.564	20241001154607.998
PX4 (145)	15453	15455	20241001154612.103	20241001154612.537
PX4 (145)	15455	15457	20241001154612.537	20241001154612.971
PX4 (145)	15458	15476	20241001154613.185	20241001154618.592
PX4 (145)	1981	2902	20241001155908.516	20241001160314.563
IMG (150)	1822	2336	20241001154307.858	20241001154508.717
IMG (150)	2523	2565	20241001154552.428	20241001154602.807
IMG (150)	2589	2591	20241001154607.998	20241001154608.428
IMG (150)	2600	2602	20241001154611.021	20241001154611.455
IMG (150)	2602	2604	20241001154611.455	20241001154611.889
IMG (150)	2607	2609	20241001154612.537	20241001154612.971
IMG (150)	2609	2628	20241001154612.971	20241001154617.295
IMG (150)	5904	6946	20241001155908.298	20241001160313.266
VER (160)	12644	12720	20241001154304.830	20241001154512.826
VER (160)	12749	12765	20241001154607.350	20241001154624.861
VER (160)	13244	13396	20241001155904.841	20241001155908.516
AUX (180)	9052	9068	20241001154305.264	20241001154513.260
AUX (180)	9074	9076	20241001154612.322	20241001154617.295
AUX (180)	9172	9203	20241001155905.274	20241001160313.266

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
01/10/2024 00:00:14	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	475	-
GQisFlagQual set (PX1)	99.66 %	-
GQisFlagQual set (PX2)	99.74 %	-
GQisFlagQual set (PX3)	99.72 %	-
GQisFlagQual set (PX4)	99.66 %	-
GQisFlagQual set (all)	99.69 %	-

Table 4: Quality flags

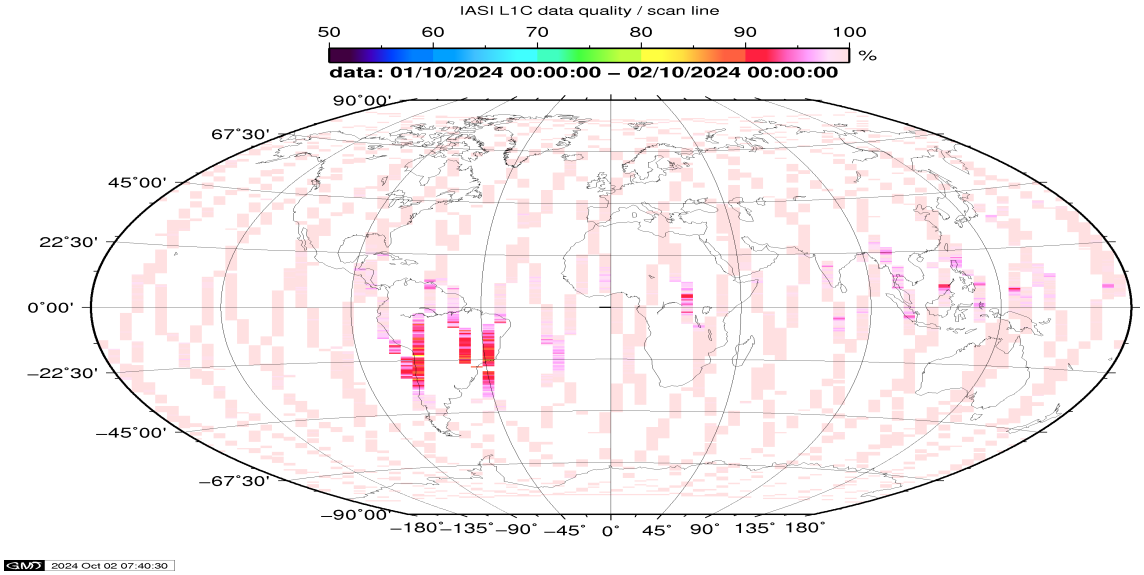

Figure 1: L1C data quality

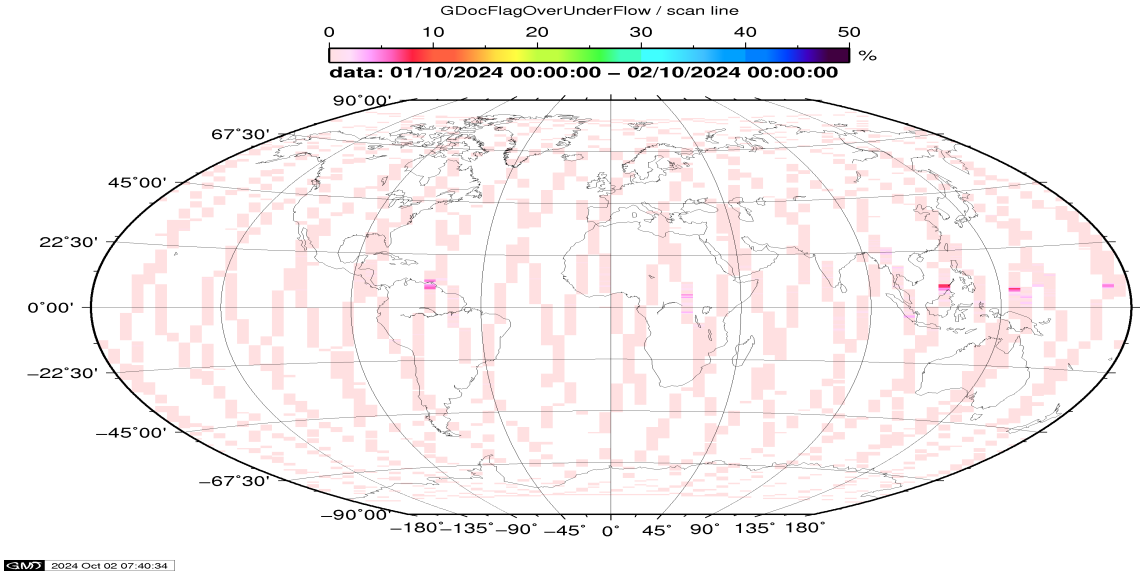

Figure 2: Flag of Over and Under Flows

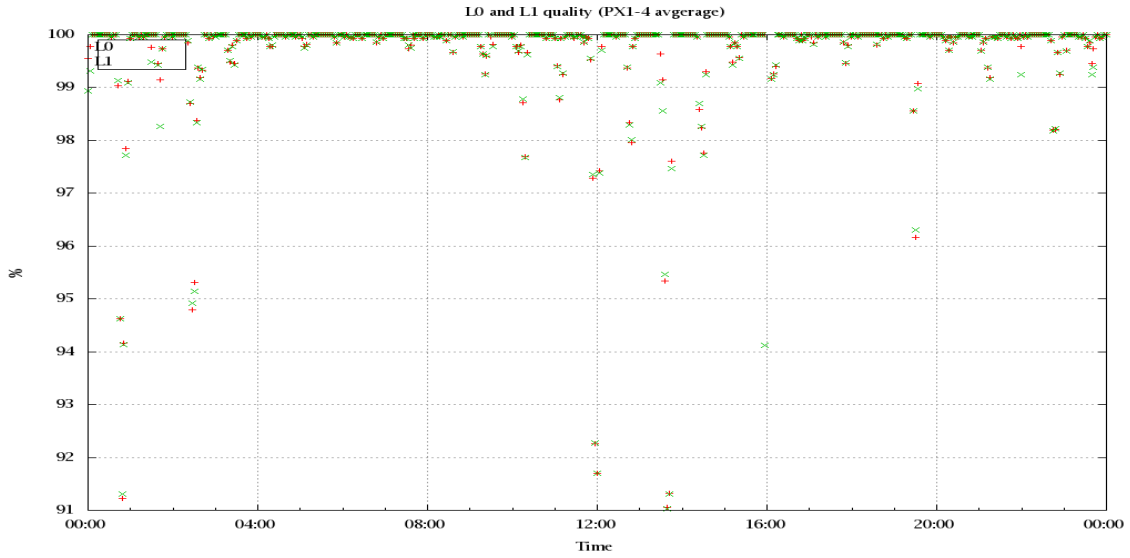

Figure 3: Level 0 and 1C overall quality

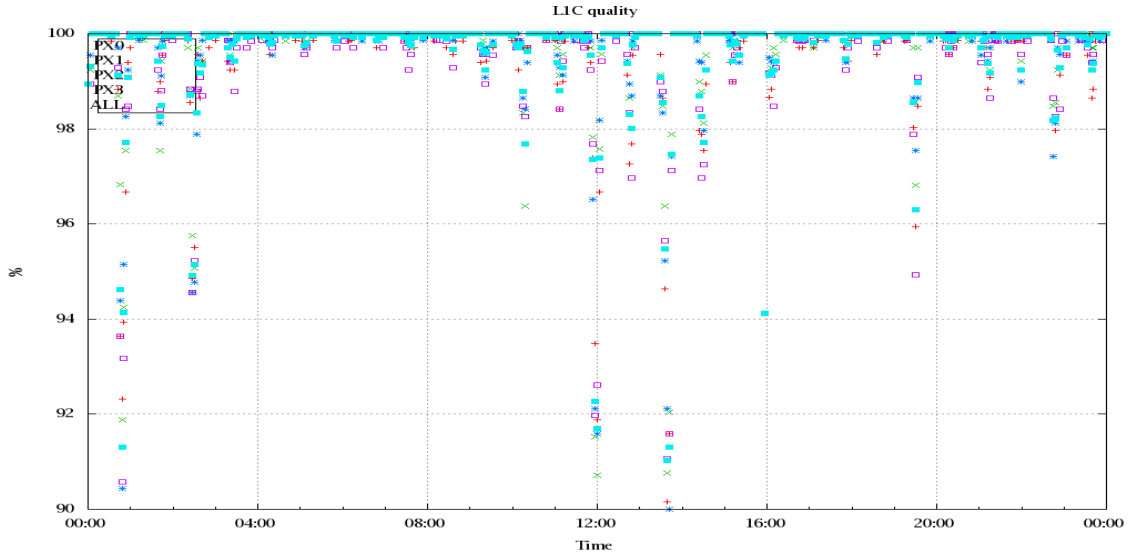

Figure 4: Level 1C quality

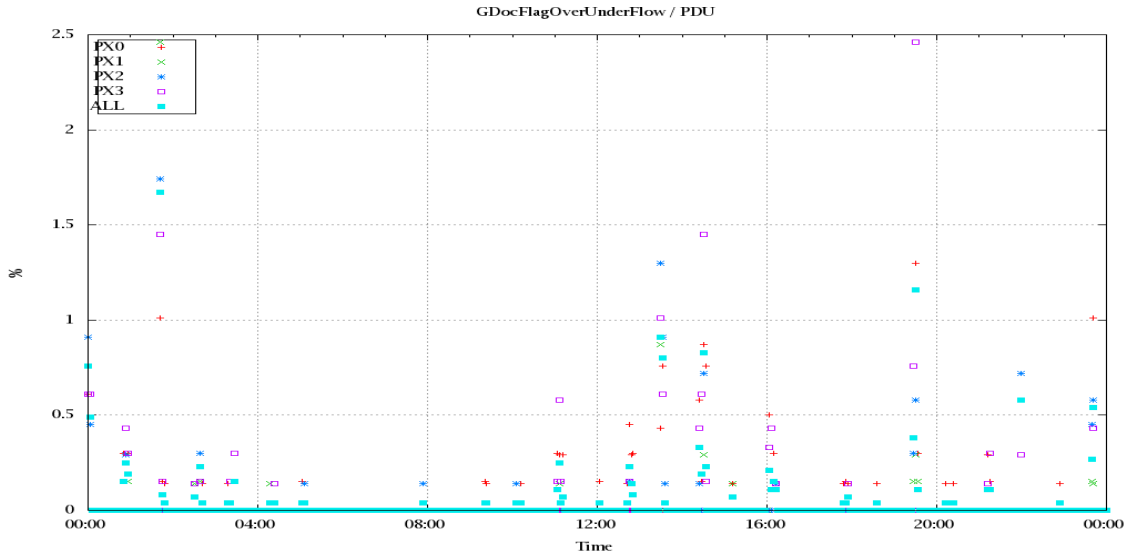

Figure 5: Timeseries of flag of Over and Under Flows

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.

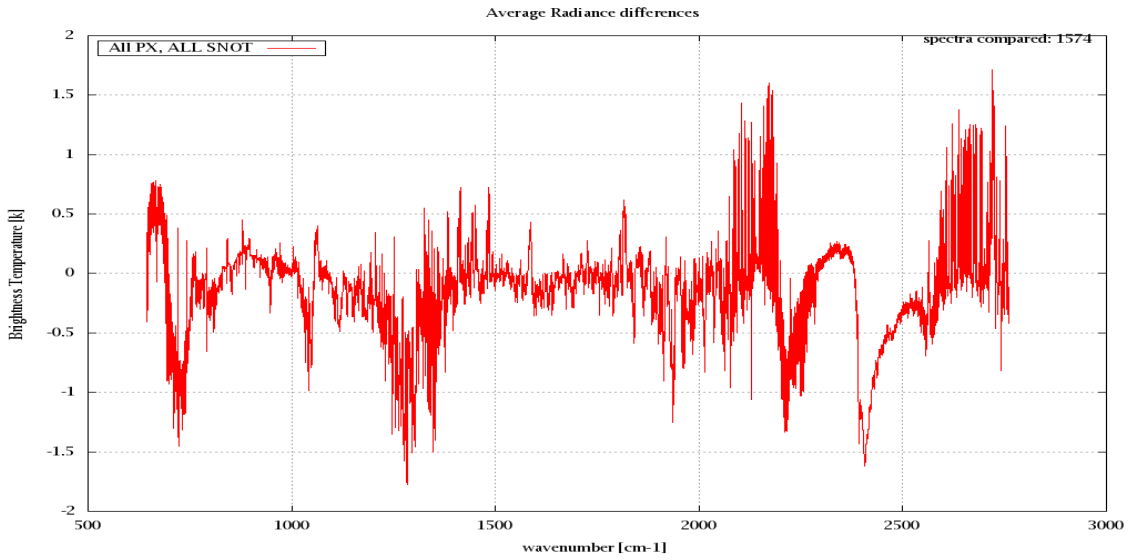

Figure 6: Average Radiance differences: OBS-CAL

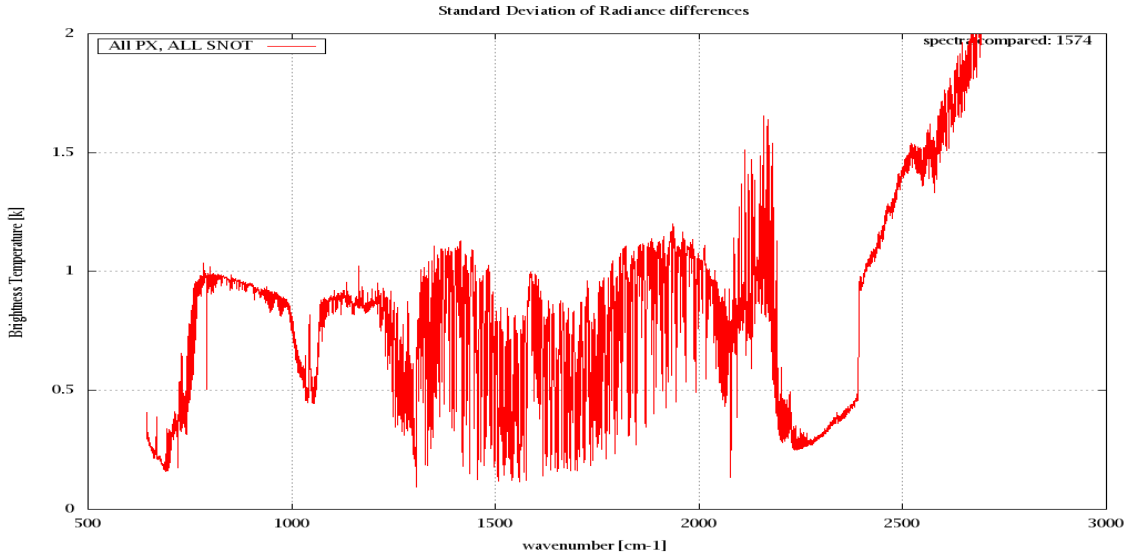

Figure 7: Standard Deviation of Radiance differences

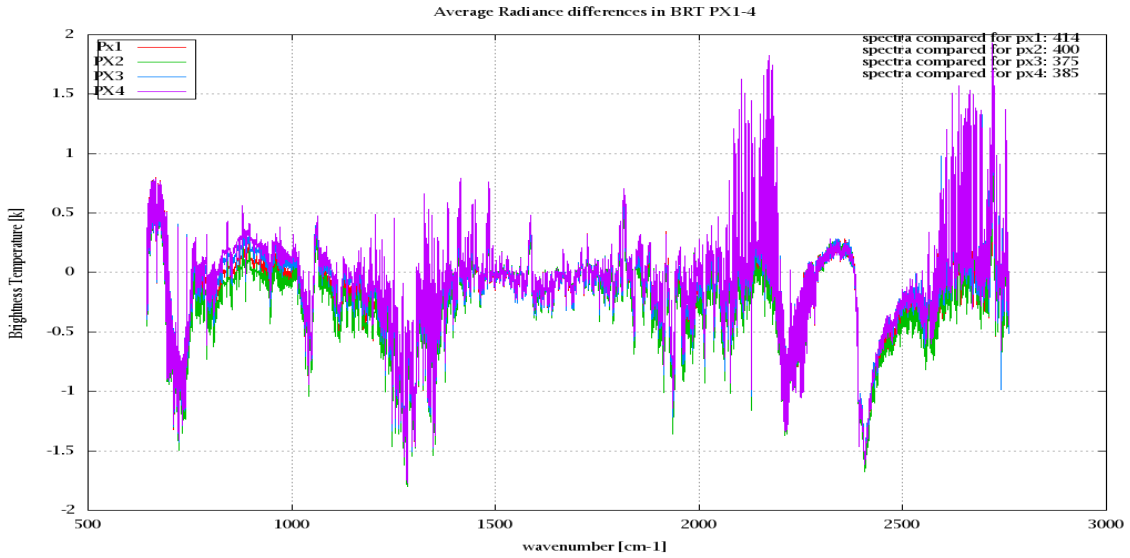

Figure 8: Average Radiance differences: OBS-CAL

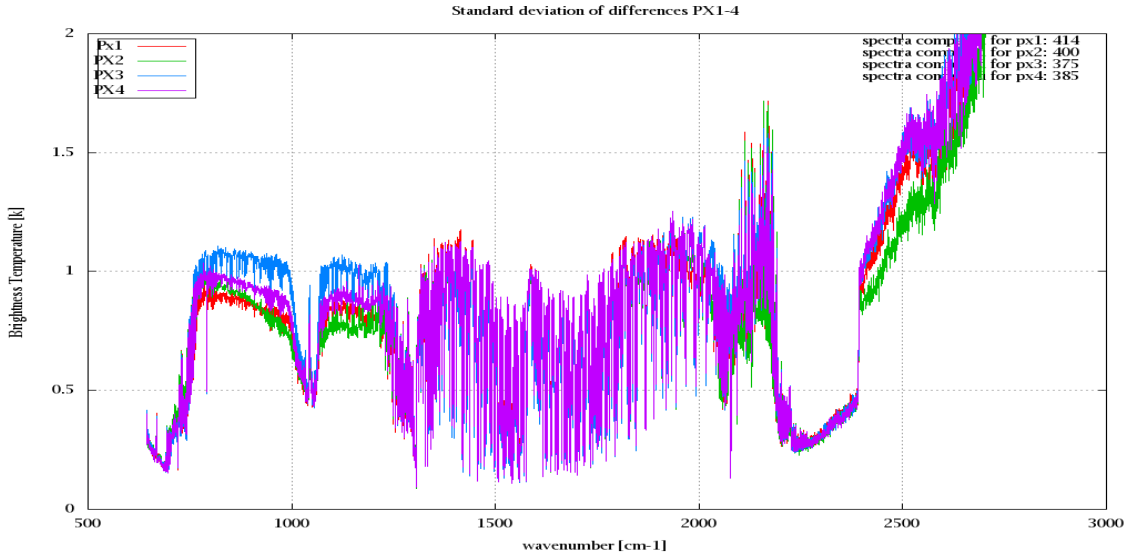

Figure 9: Standard Deviation of Radiance differences

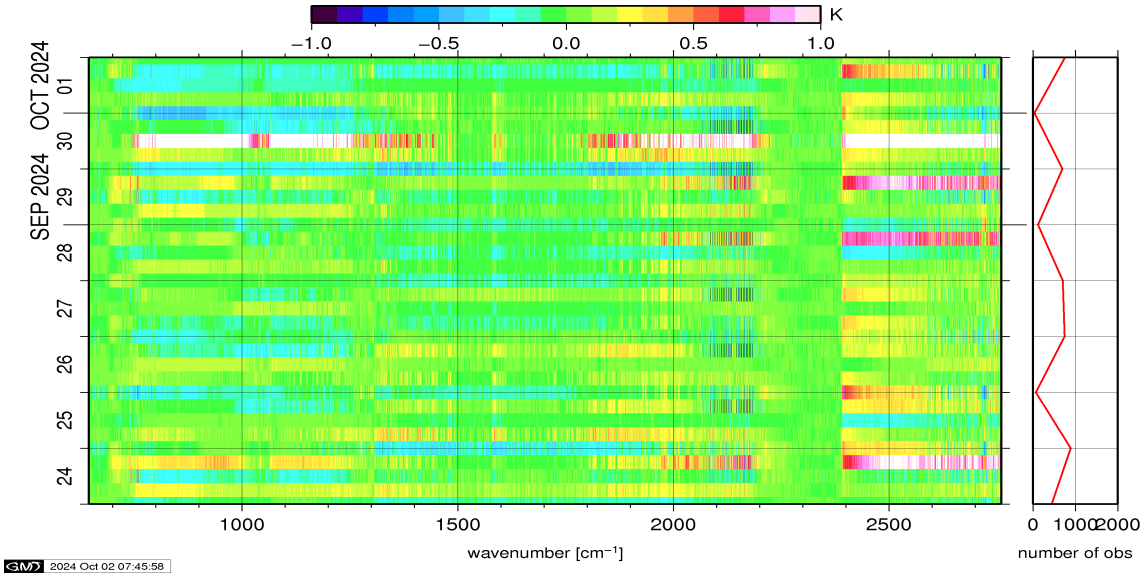

Figure 10: Radiance Anomaly in BT: All Channels

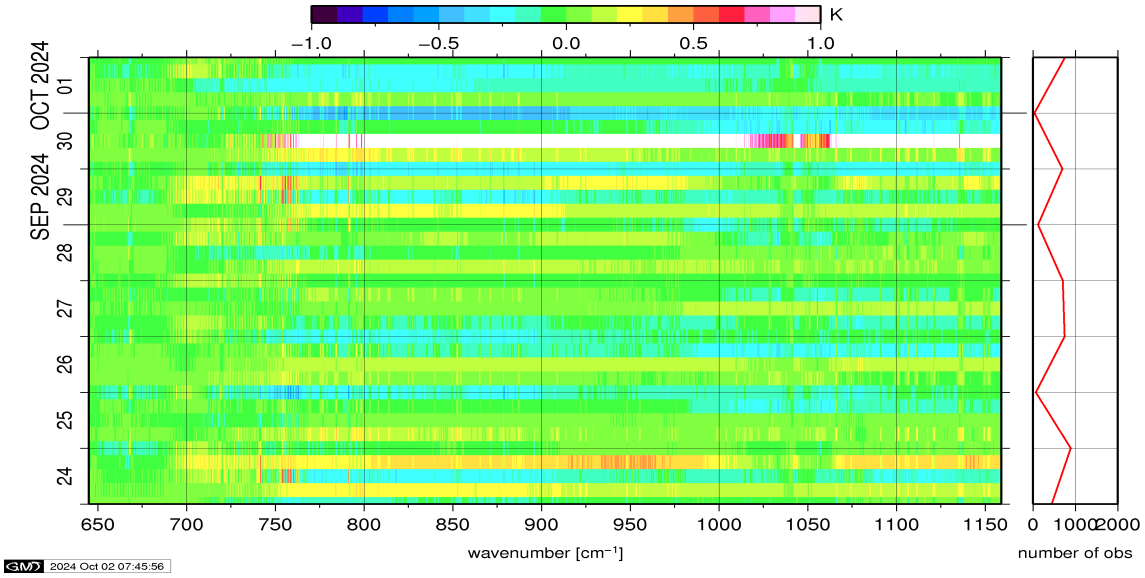

Figure 11: Radiance Anomaly in BT: IASI Band 1

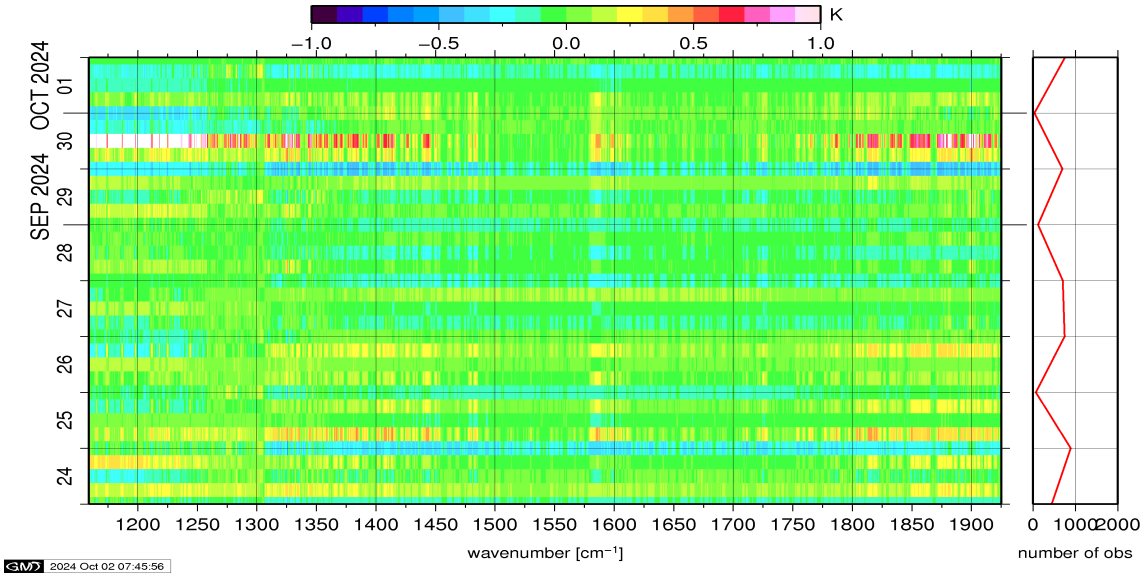

Figure 12: Radiance Anomaly in BT: IASI Band 2

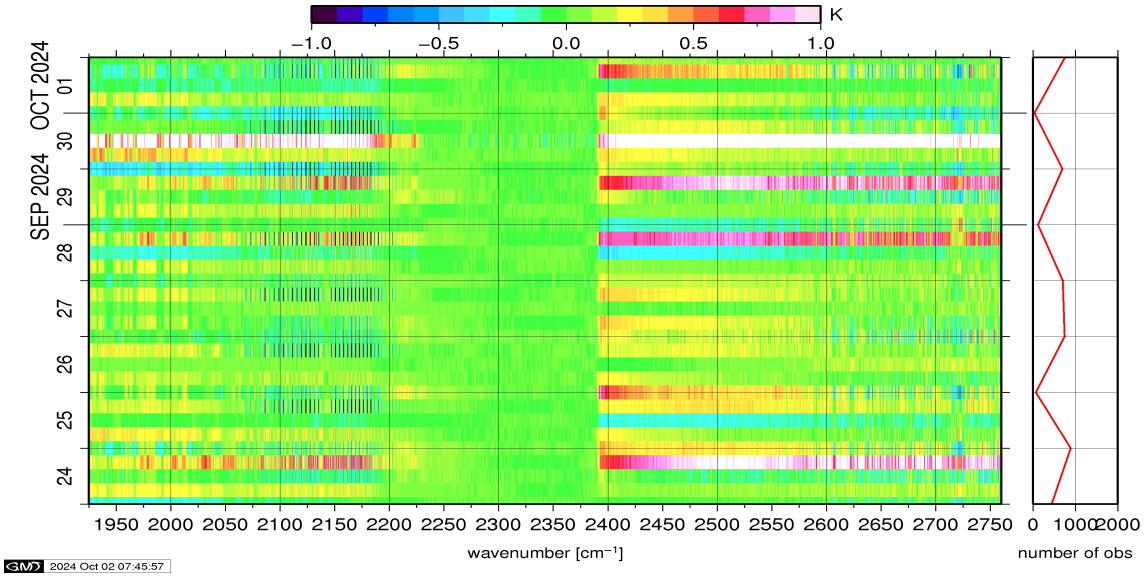

Figure 13: Radiance Anomaly in BT: IASI Band 3

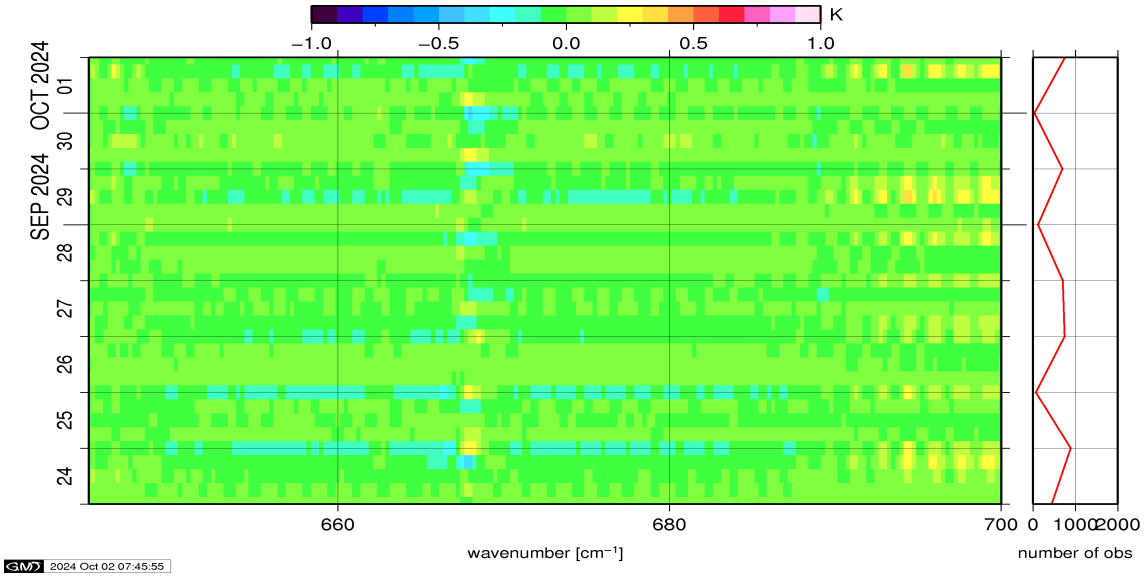

Figure 14: Radiance Anomaly in BT: CO2 14

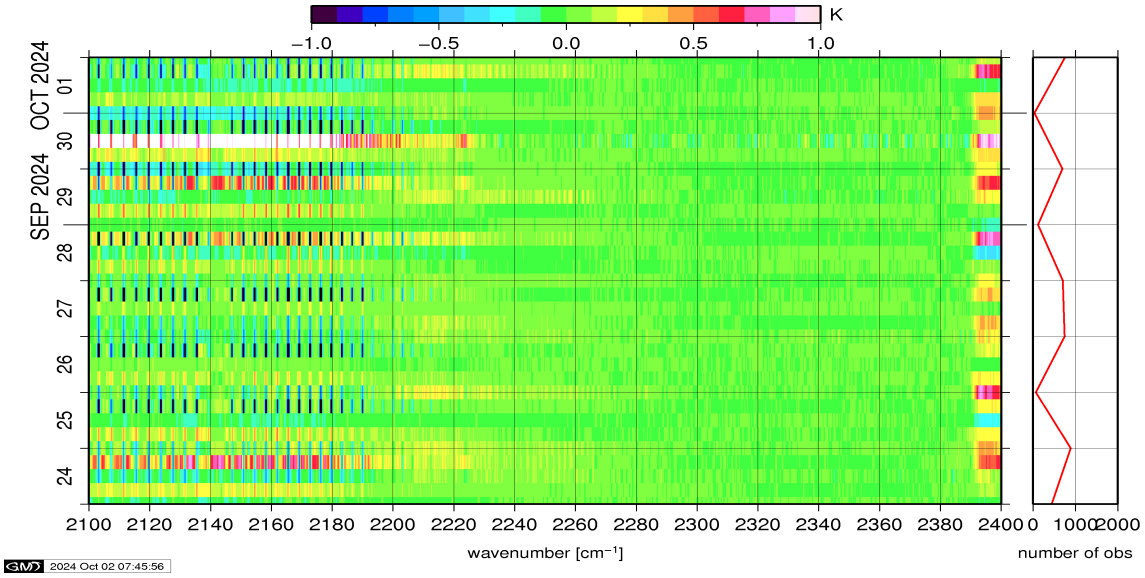

Figure 15: Radiance Anomaly in BT: CO2 4.3

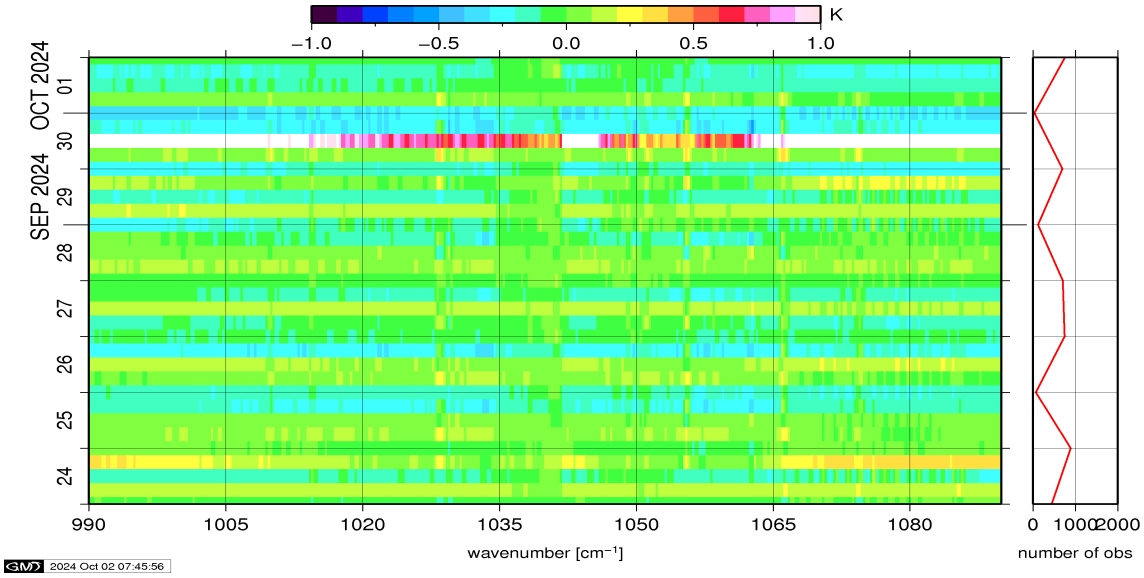

Figure 16: Radiance Anomaly in BT: O3

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.

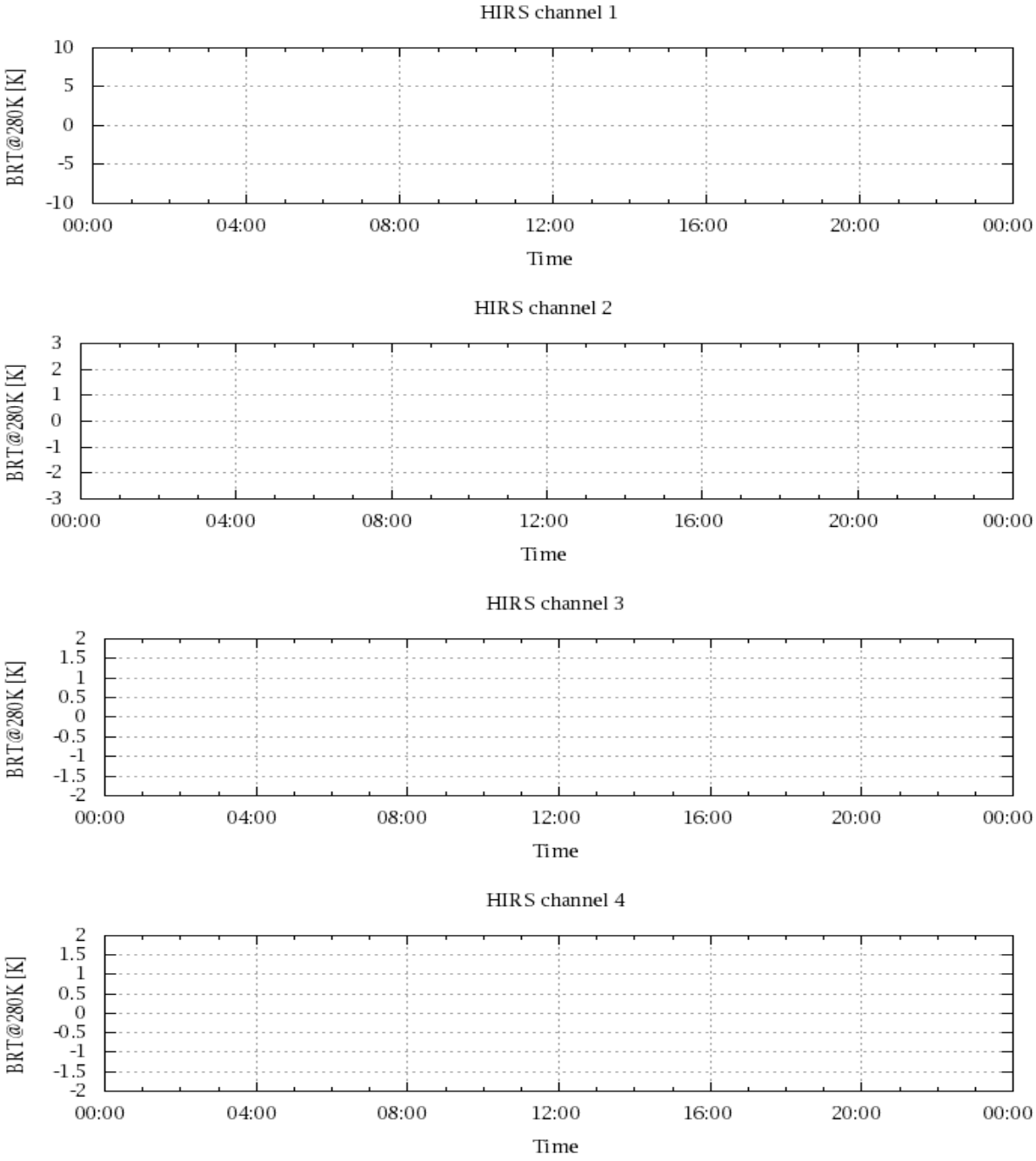

Figure 17: Radiance Differences in BT

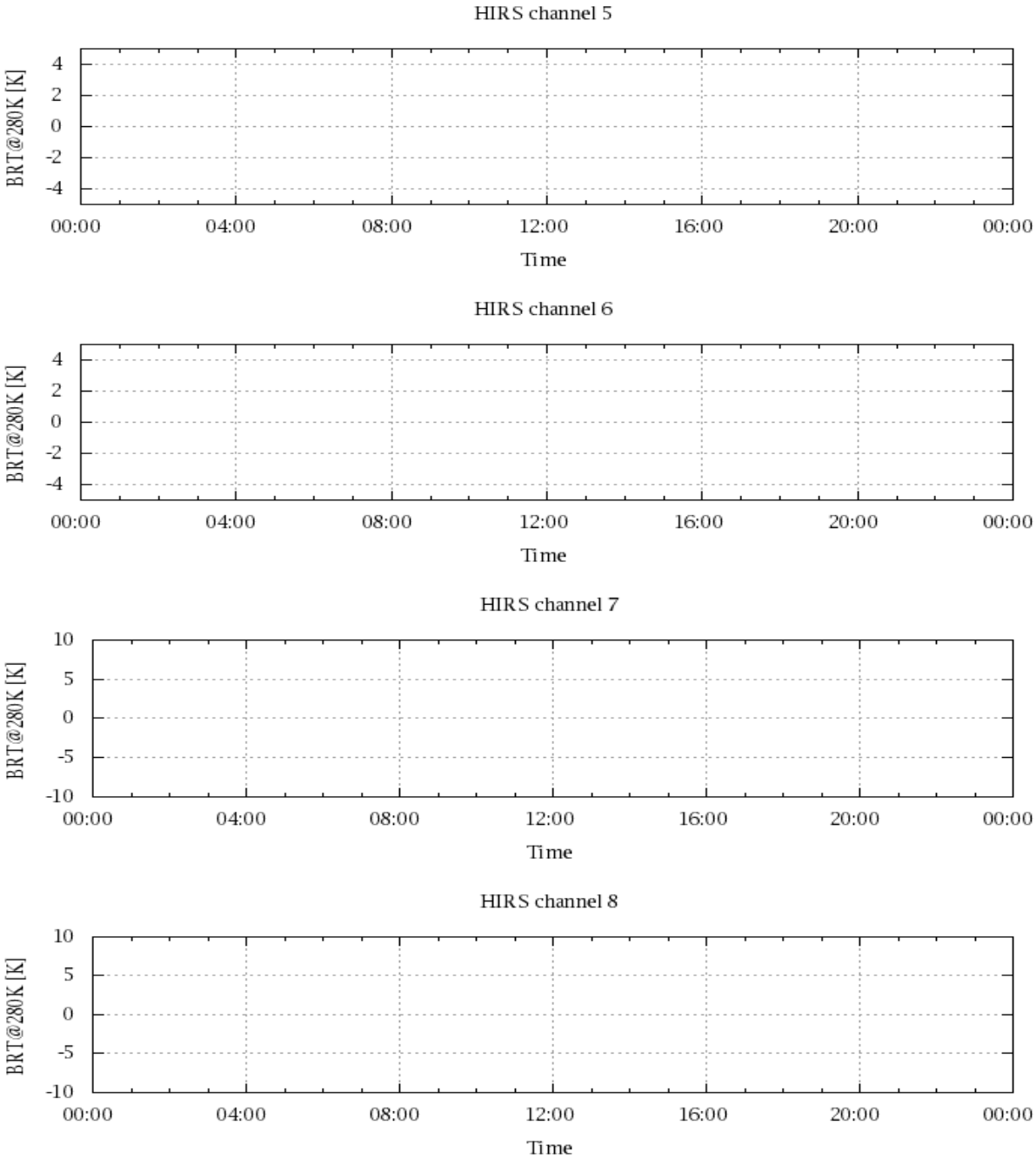

Figure 18: Radiance Differences in BT

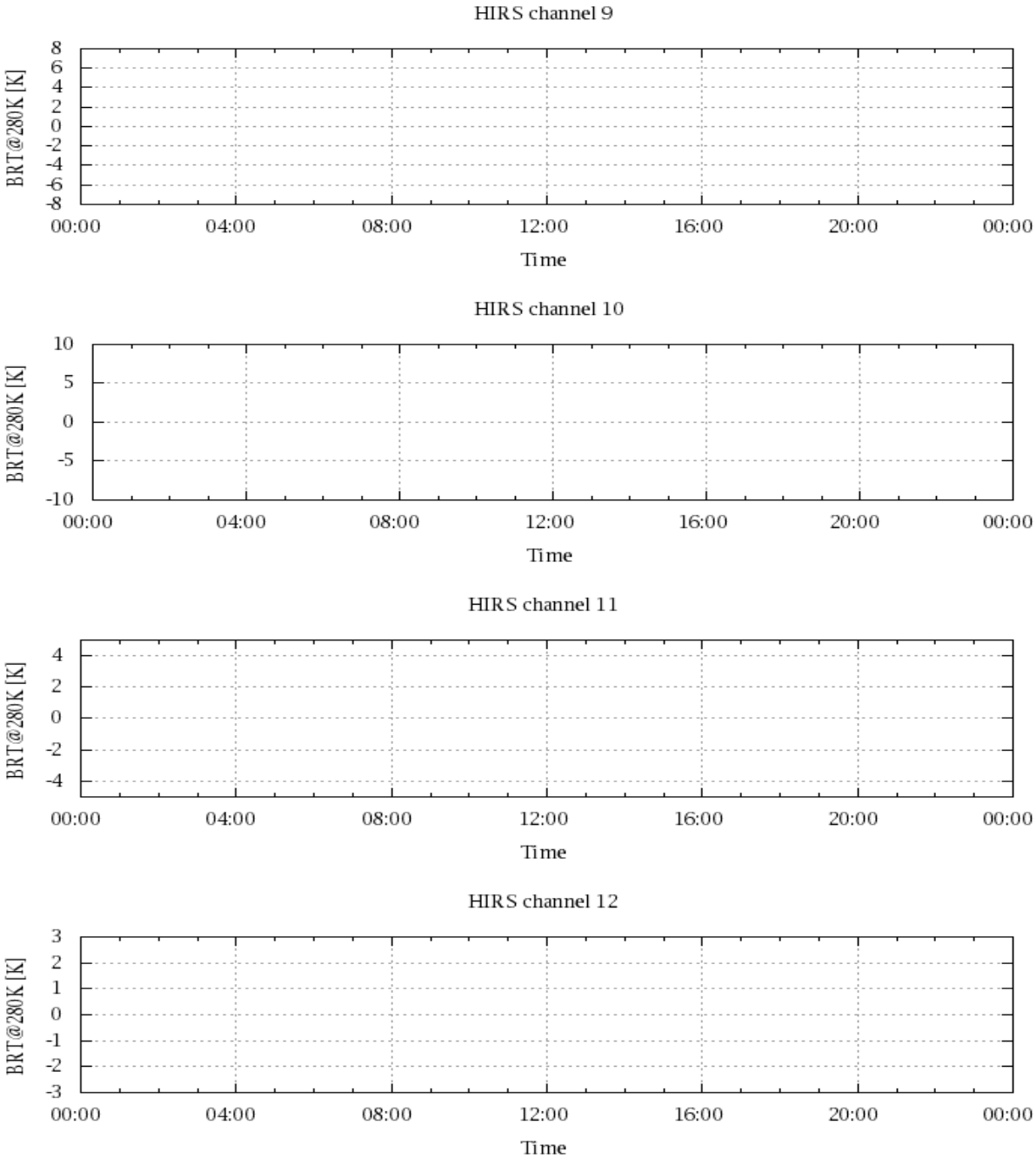

Figure 19: Radiance Differences in BT

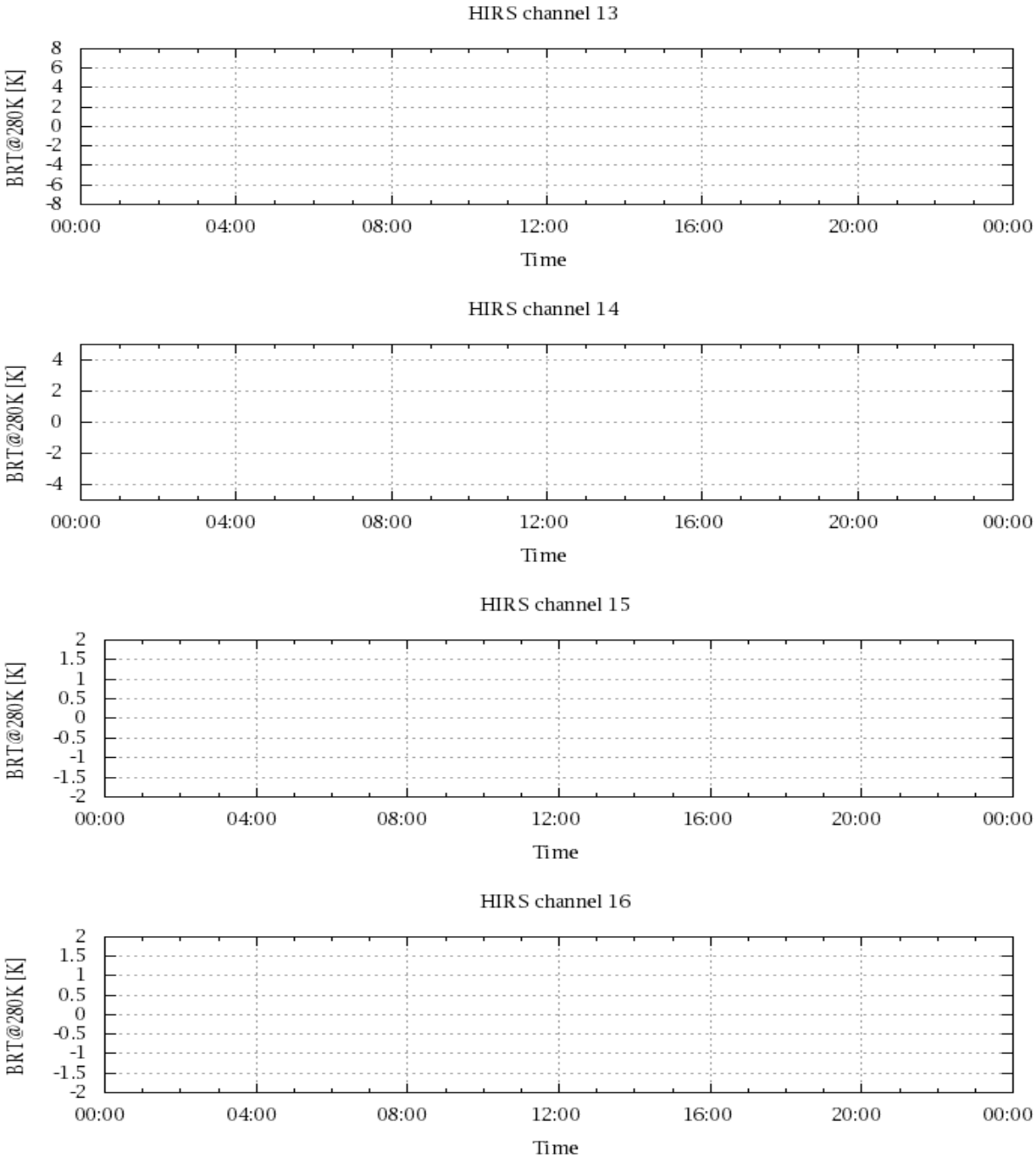

Figure 20: Radiance Differences in BT

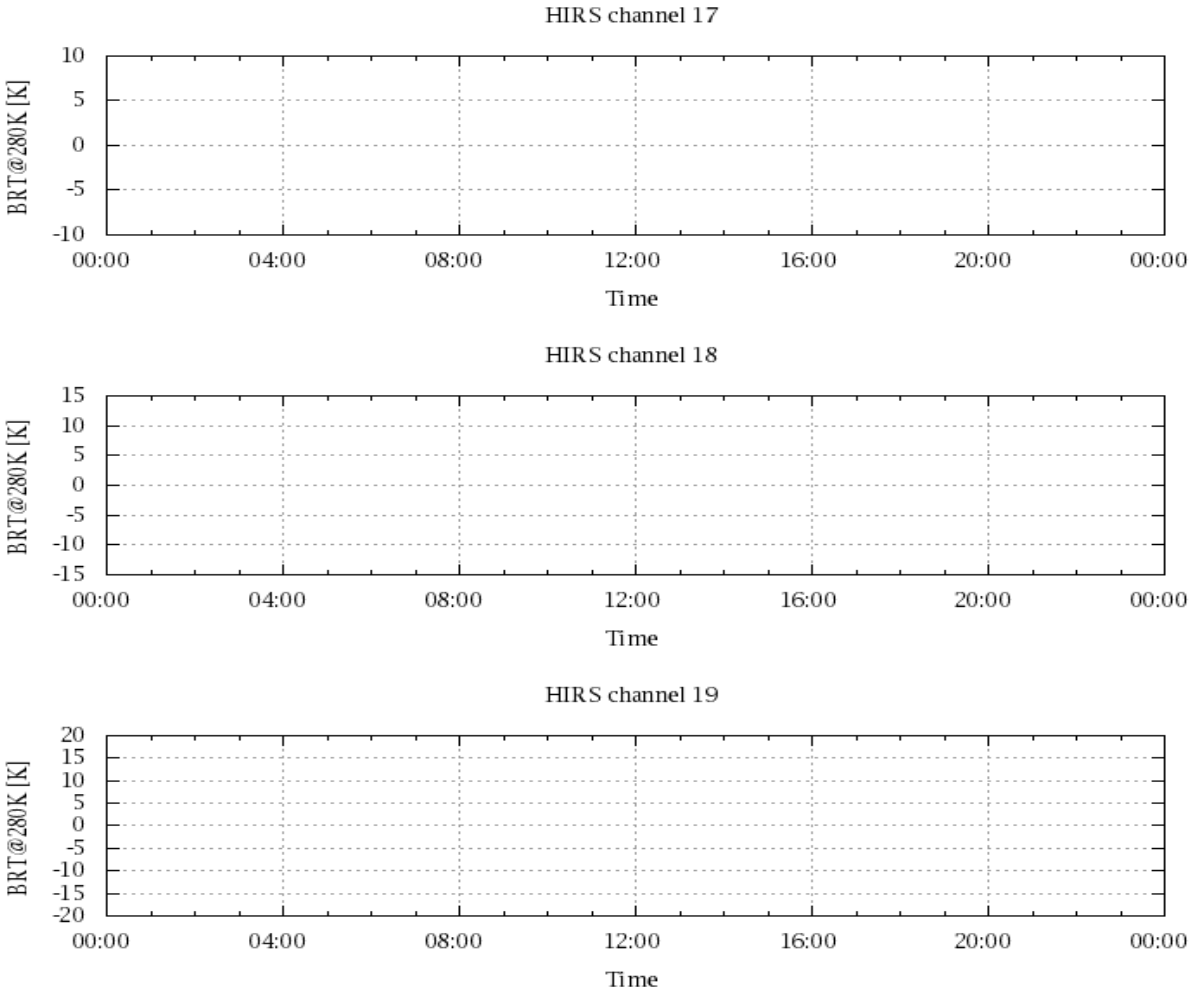

Figure 21: Radinace Differences in BT