

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

IASI monitoring team

03/07/2024 00:00:00 - 04/07/2024 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 03/07/2024 00:00:00 - 04/07/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 03/07/2024 00:00:00 - 04/07/2024 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	466	-
L0 IASI PDUs	466	-
L1 ENG PDUs	465	-
L1 ENG distinct GEPSGranule	462	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	465	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	3514	14251	20240703132421.753	20240703141205.092
PX1 (130)	9510	9634	20240703150349.727	20240703150424.106
PX1 (130)	9802	9846	20240703150507.996	20240703150520.536
PX1 (130)	9872	9874	20240703150527.668	20240703150528.102
PX1 (130)	9895	9897	20240703150532.645	20240703150533.075
PX2 (135)	3514	14251	20240703132421.753	20240703141205.092
PX2 (135)	9510	9634	20240703150349.727	20240703150424.106
PX2 (135)	9802	9846	20240703150507.996	20240703150520.536
PX2 (135)	9881	9883	20240703150529.618	20240703150530.051
PX2 (135)	9888	9890	20240703150531.129	20240703150531.563
PX3 (140)	3514	14251	20240703132421.753	20240703141205.092
PX3 (140)	9510	9634	20240703150349.727	20240703150424.106
PX3 (140)	9802	9846	20240703150507.996	20240703150520.536
PX3 (140)	9874	9876	20240703150528.102	20240703150528.535
PX3 (140)	9881	9883	20240703150529.618	20240703150530.051
PX3 (140)	9897	9899	20240703150533.075	20240703150533.508
PX4 (145)	3514	14251	20240703132421.753	20240703141205.092
PX4 (145)	9510	9634	20240703150349.727	20240703150424.106
PX4 (145)	9802	9845	20240703150507.996	20240703150520.321

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	9890	9892	20240703150531.563	20240703150531.993
IMG (150)	117	12287	20240703132421.534	20240703141205.092
IMG (150)	9098	9242	20240703150349.727	20240703150424.106
IMG (150)	9429	9481	20240703150507.778	20240703150520.321
IMG (150)	9509	9511	20240703150526.805	20240703150527.453
IMG (150)	9516	9518	20240703150528.535	20240703150528.969
IMG (150)	9523	9525	20240703150530.051	20240703150530.481
IMG (150)	9525	9527	20240703150530.481	20240703150530.914
IMG (150)	9532	9534	20240703150531.993	20240703150532.426
IMG (150)	9539	9541	20240703150533.508	20240703150534.157
VER (160)	16316	1723	20240703132413.749	20240703141205.744
VER (160)	3665	3688	20240703150349.727	20240703150429.727
VER (160)	3712	3723	20240703150501.723	20240703150525.727
VER (160)	3723	3728	20240703150525.727	20240703150533.723
AUX (180)	3246	3605	20240703132414.183	20240703141206.174
AUX (180)	3992	3998	20240703150342.161	20240703150430.157
AUX (180)	4003	4005	20240703150525.727	20240703150526.157

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
03/07/2024 00:00:11	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	466	-
L1 ENG PDUs	465	-
L1 ENG distinct GEPSGranule	462	-
GQisFlagQual set (PX1)	99.57 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

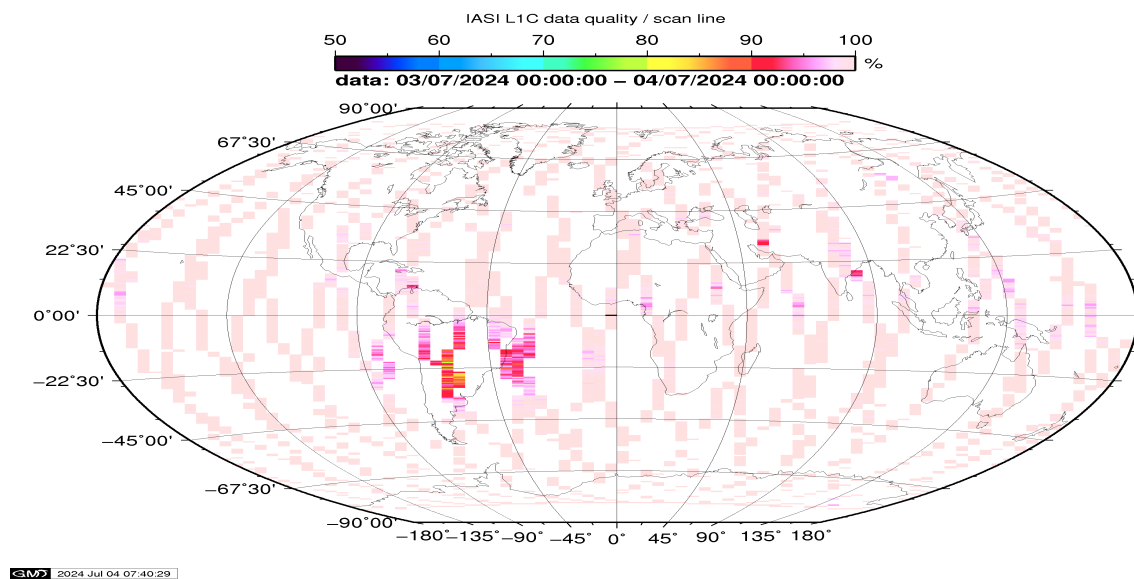


Figure 1: L1C data quality

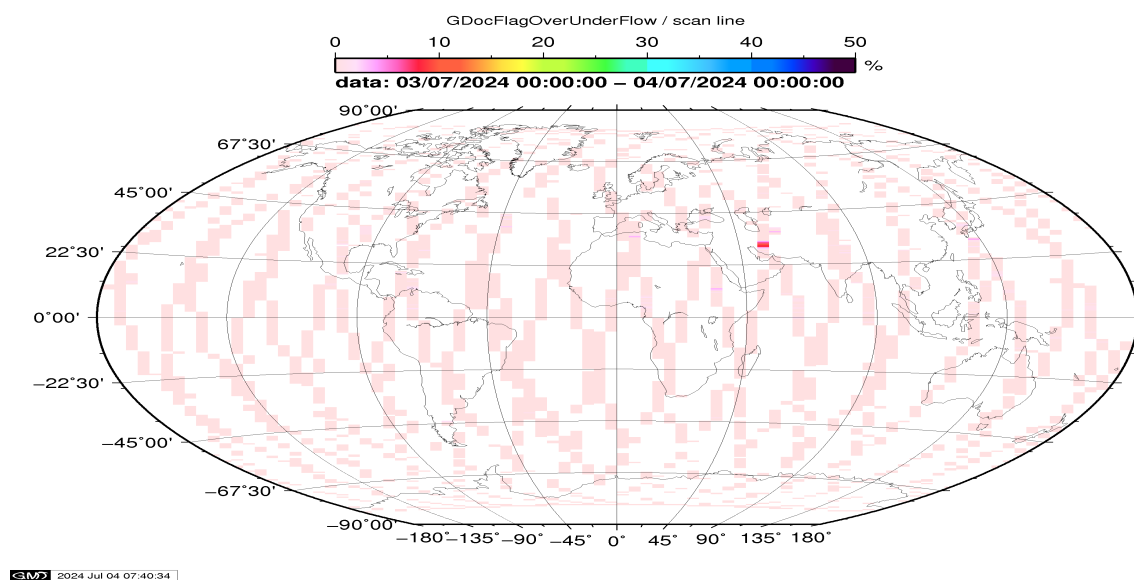


Figure 2: Flag of Over and Under Flows

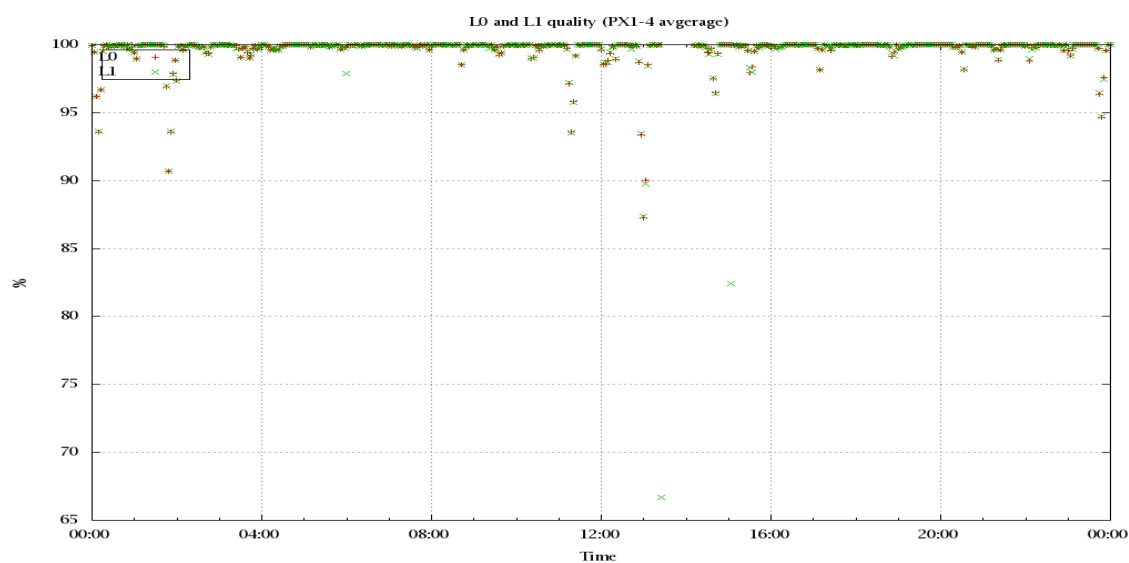


Figure 3: Level 0 and 1C overall quality

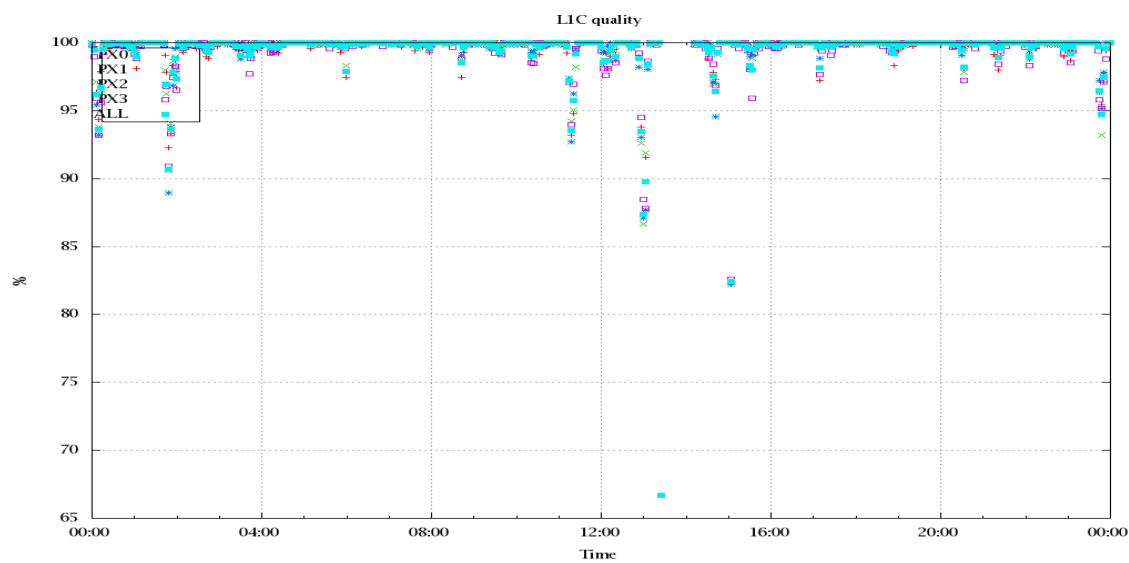


Figure 4: Level 1C quality

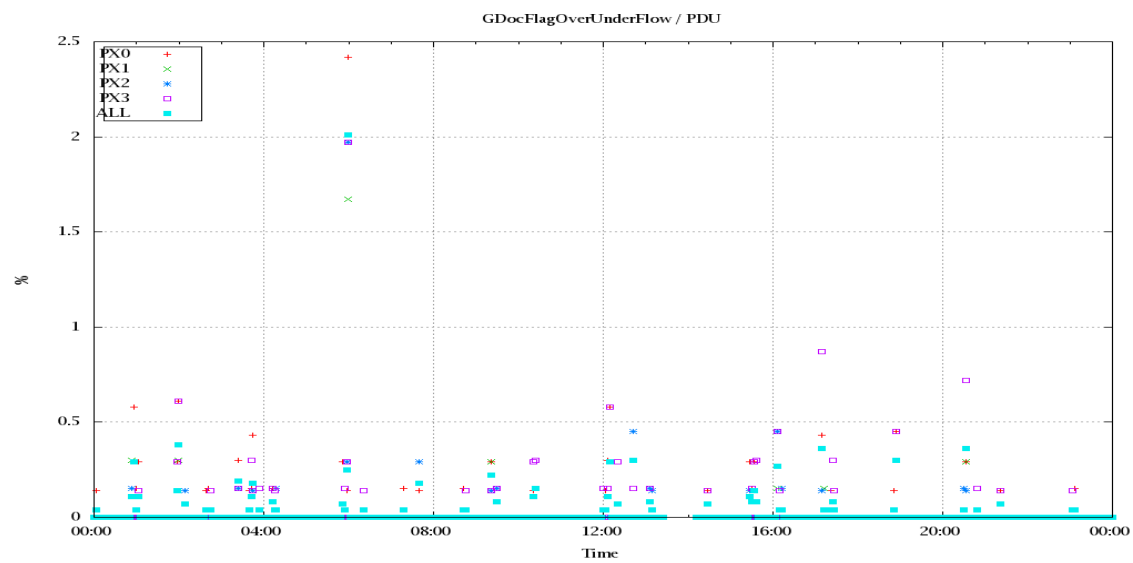


Figure 5: Timeseries of flag of Over and Under Flows

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.

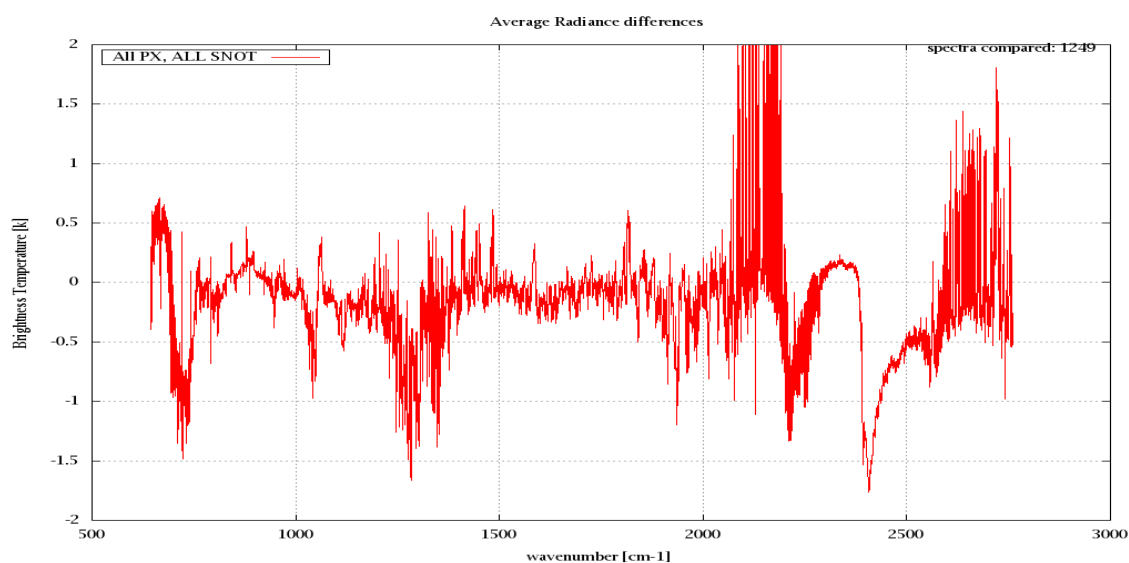


Figure 6: Average Radiance differences: OBS-CAL

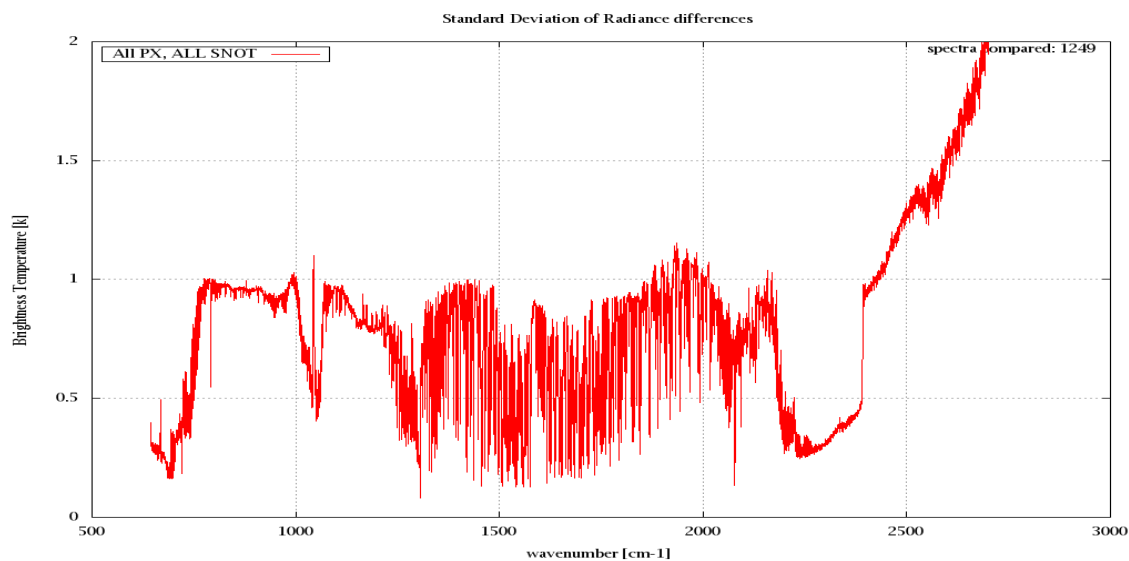


Figure 7: Standard Deviation of Radiance differences

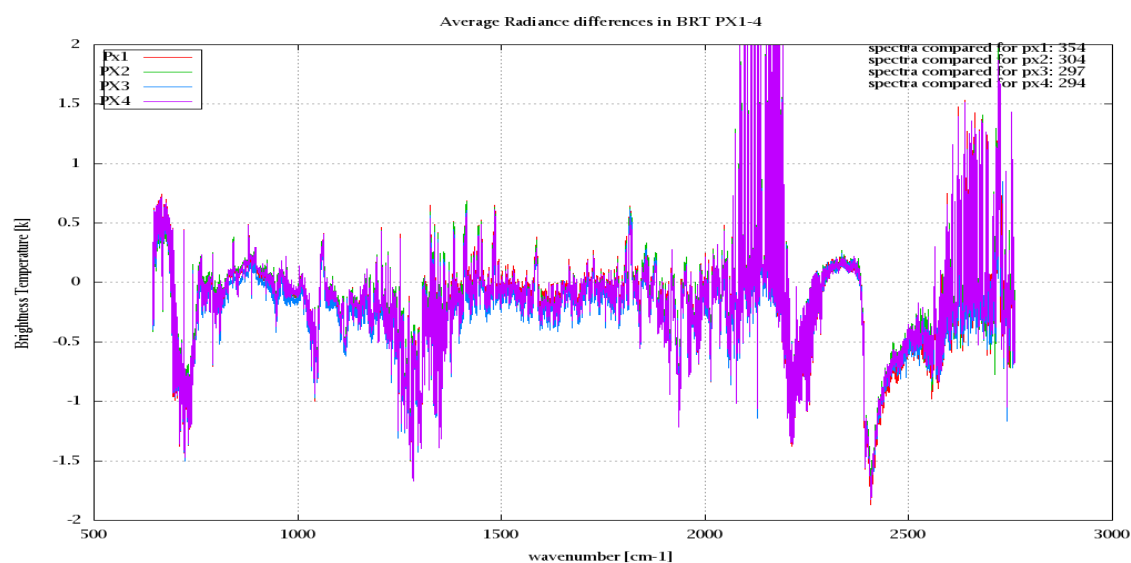


Figure 8: Average Radiance differences: OBS-CAL

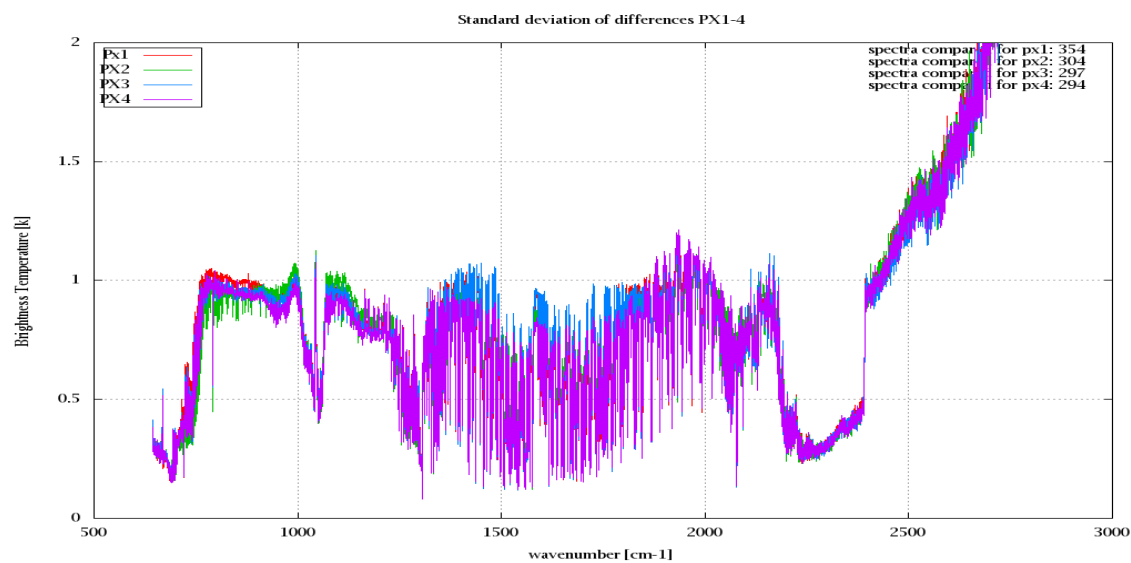


Figure 9: Standard Deviation of Radiance differences

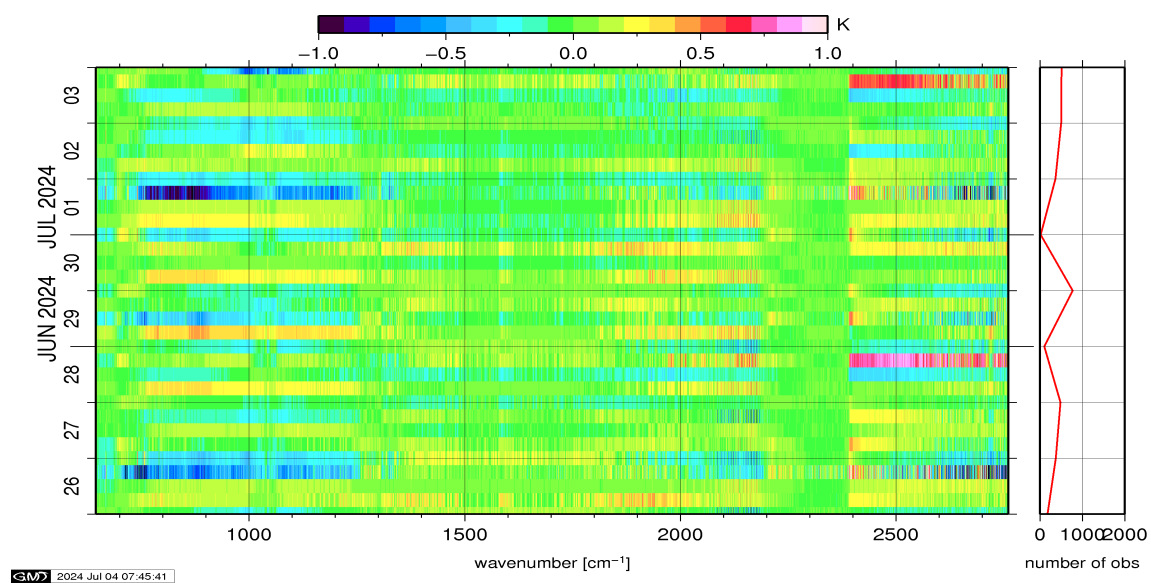


Figure 10: Radiance Anomaly in BT: All Channels

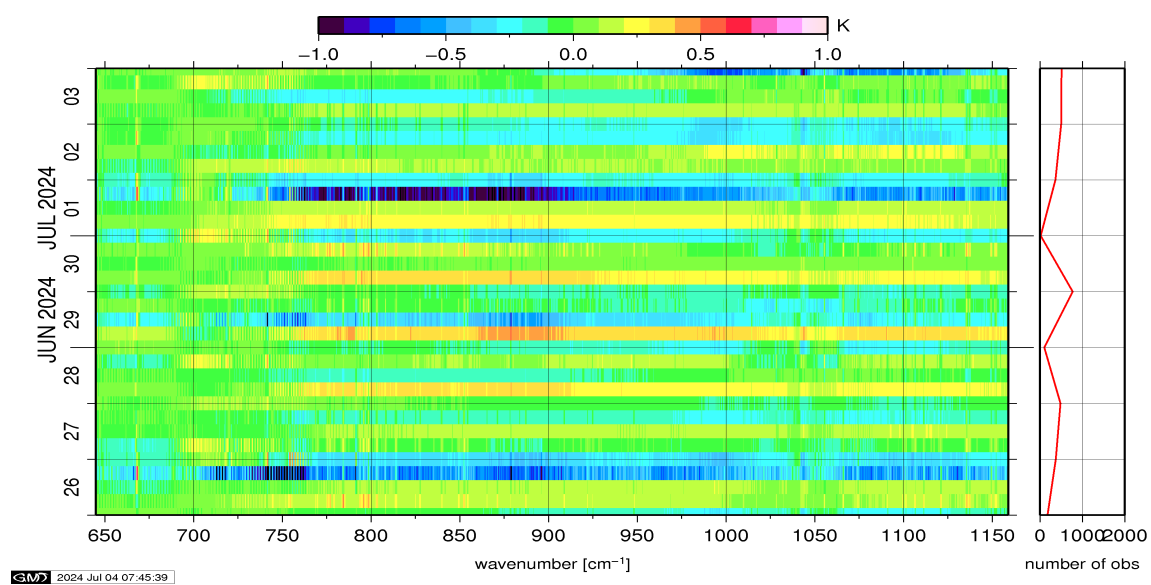


Figure 11: Radiance Anomaly in BT: IASI Band 1

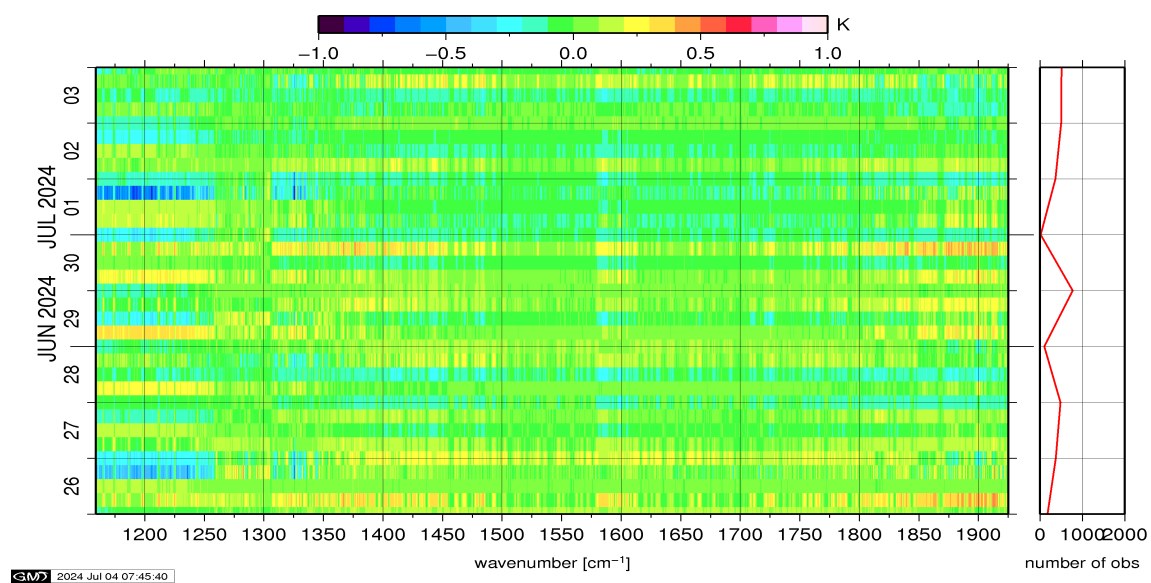


Figure 12: Radiance Anomaly in BT: IASI Band 2

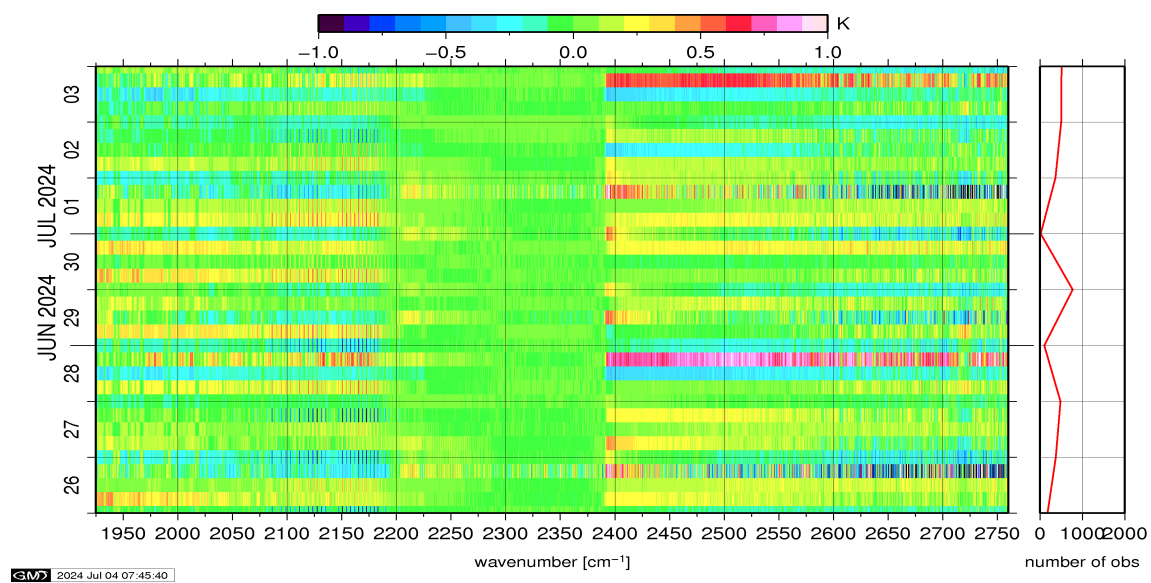


Figure 13: Radiance Anomaly in BT: IASI Band 3

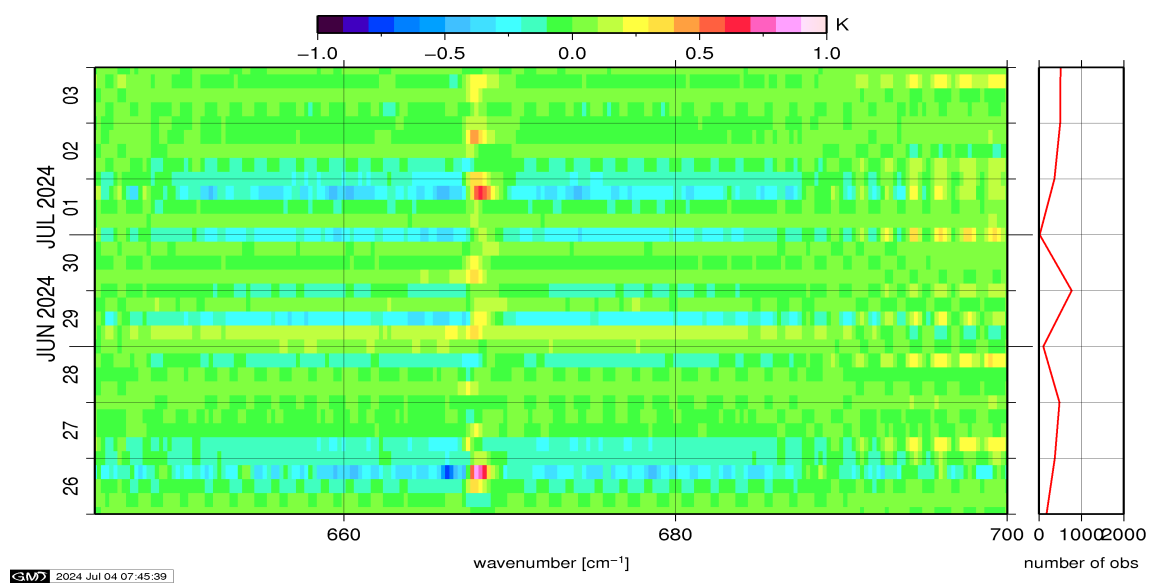


Figure 14: Radiance Anomaly in BT: CO2 14

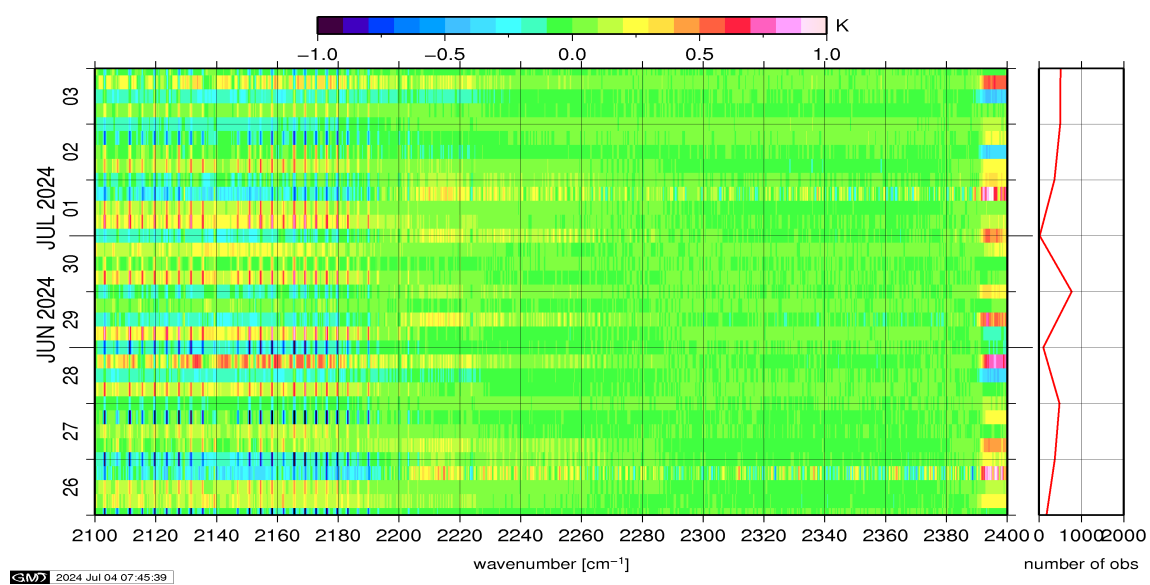


Figure 15: Radiance Anomaly in BT: CO2 4.3

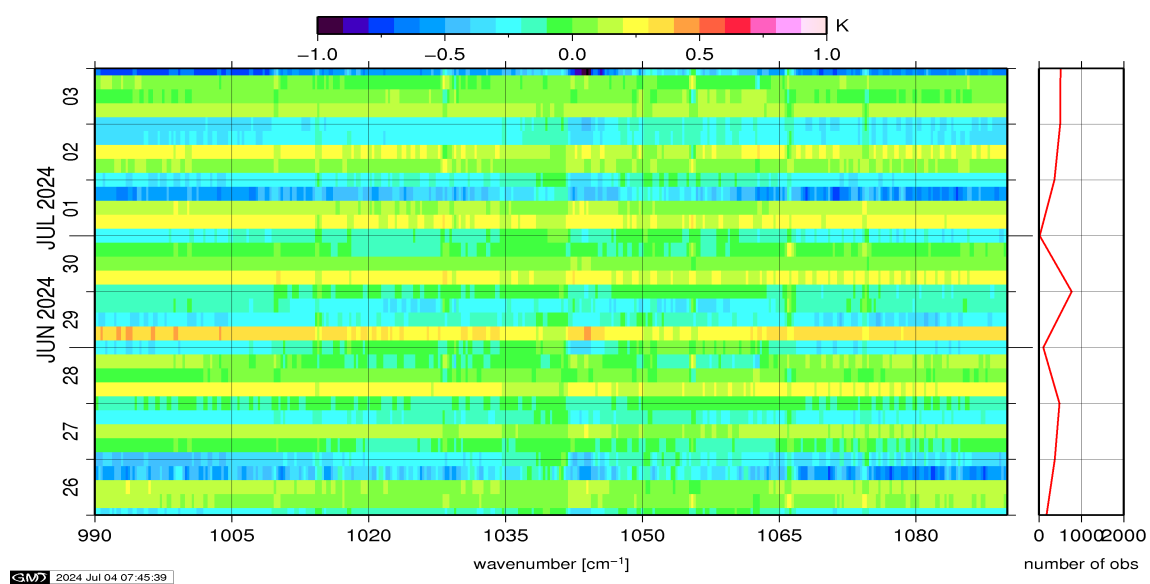


Figure 16: Radiance Anomaly in BT: O3

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.

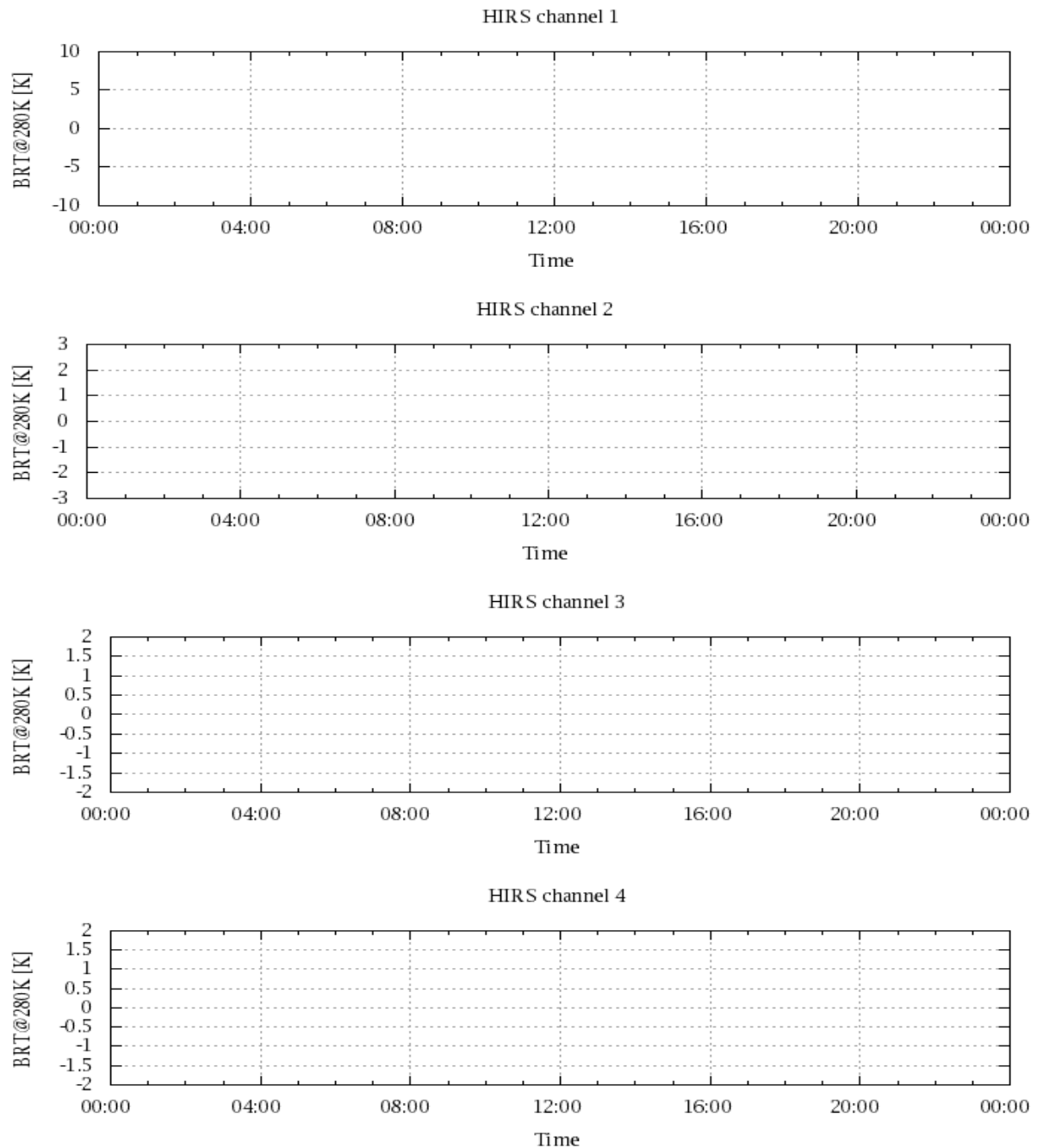


Figure 17: Radiance Differences in BT

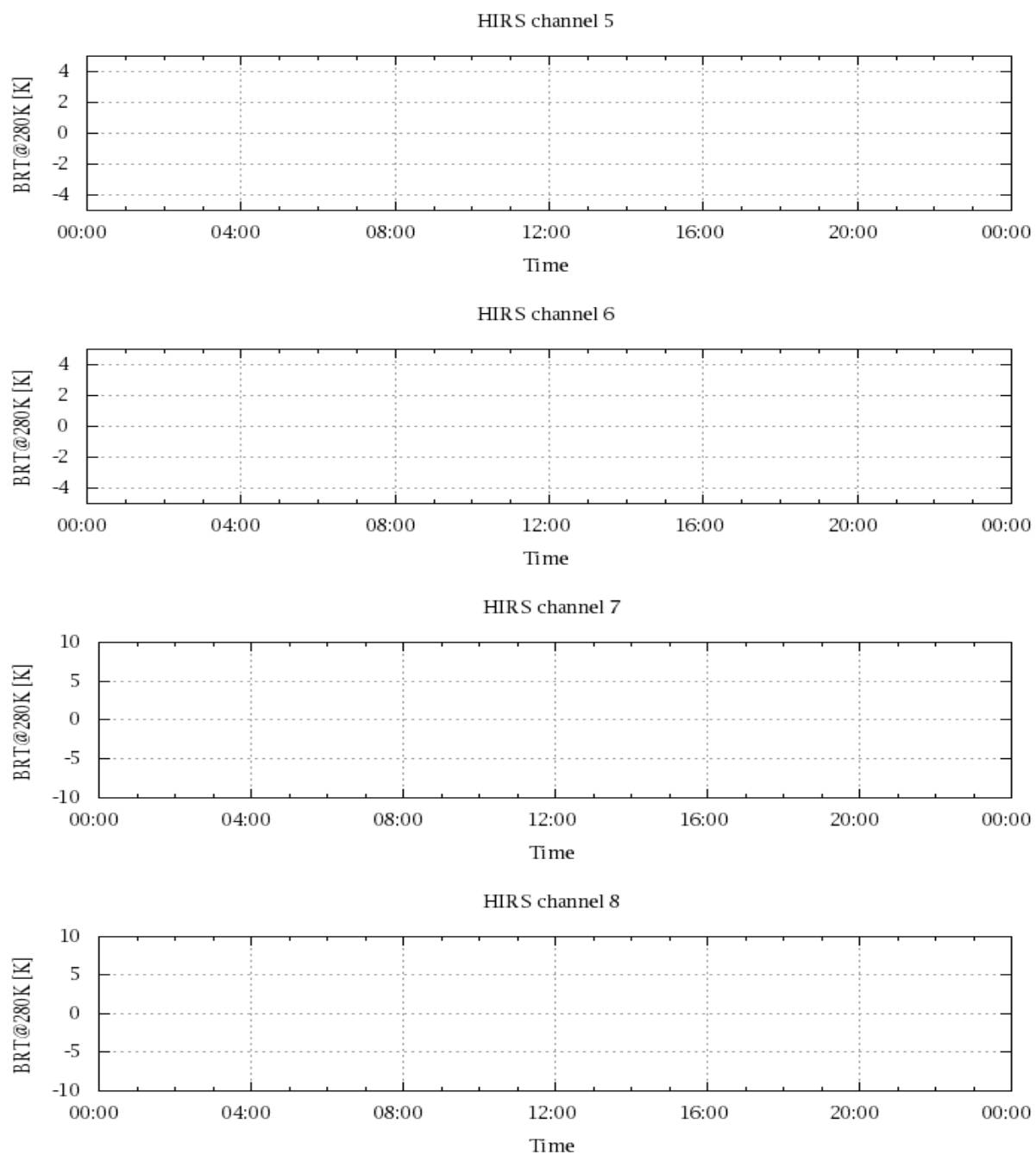


Figure 18: Radiance Differences in BT

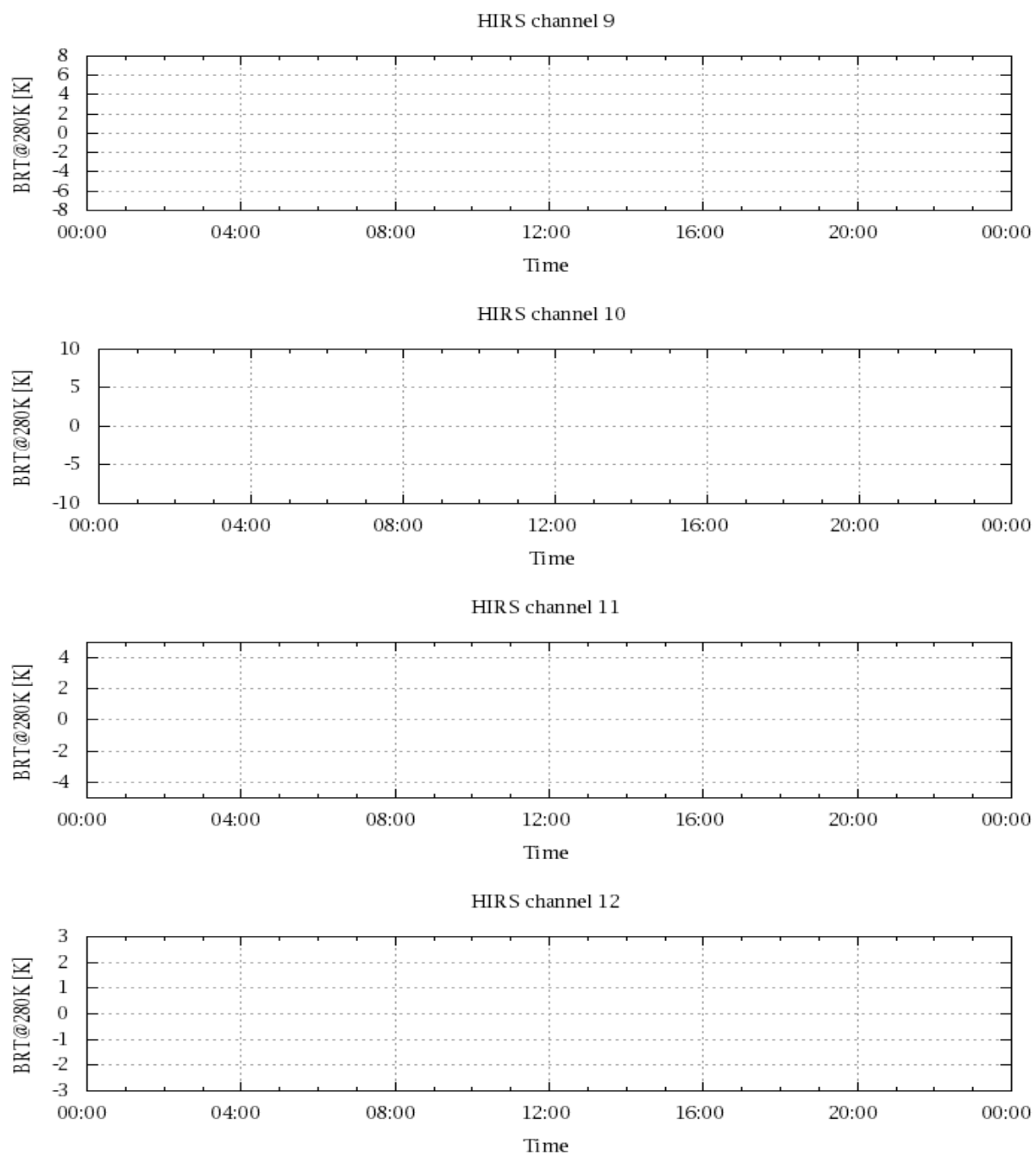


Figure 19: Radiance Differences in BT

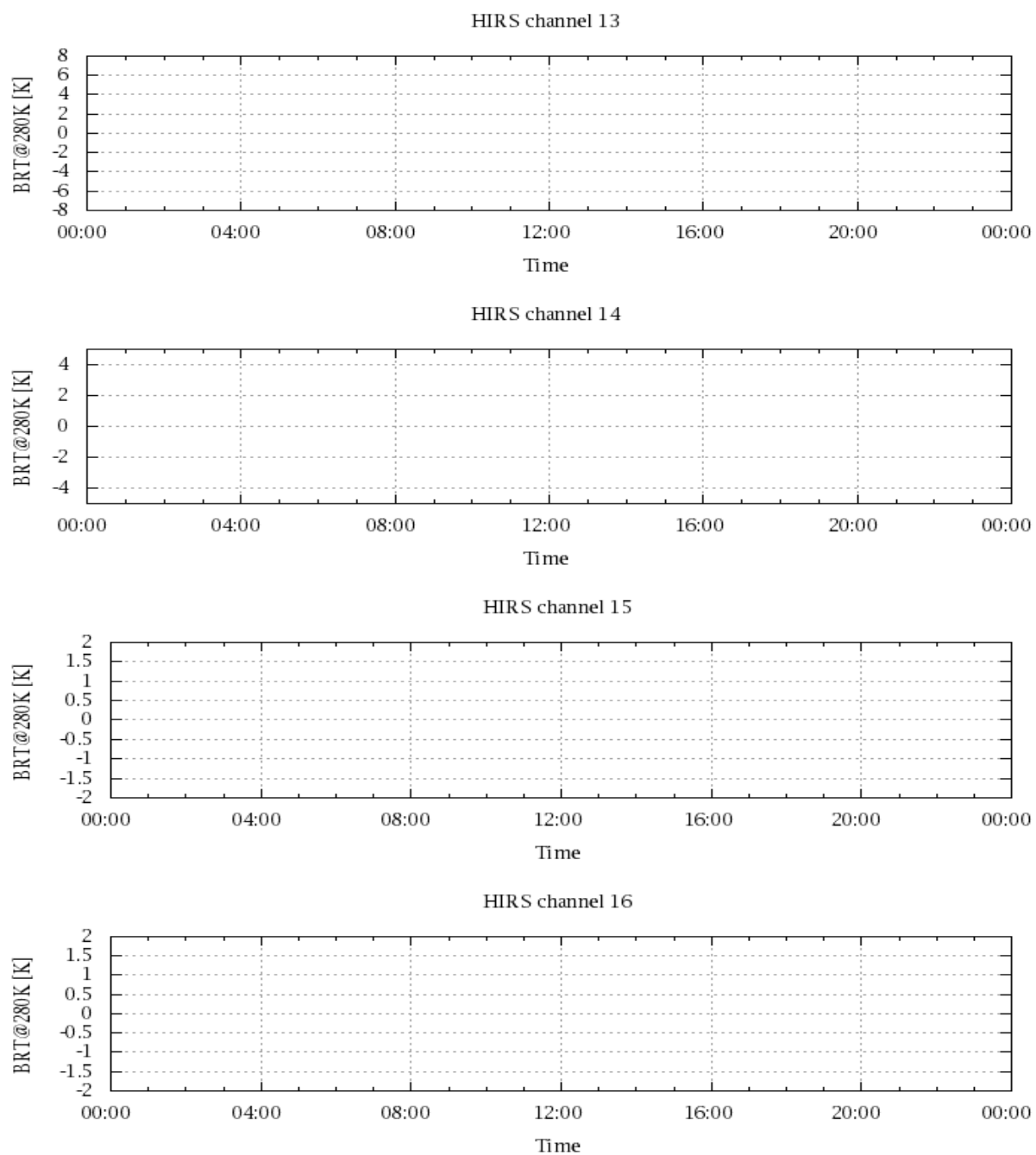


Figure 20: Radiance Differences in BT

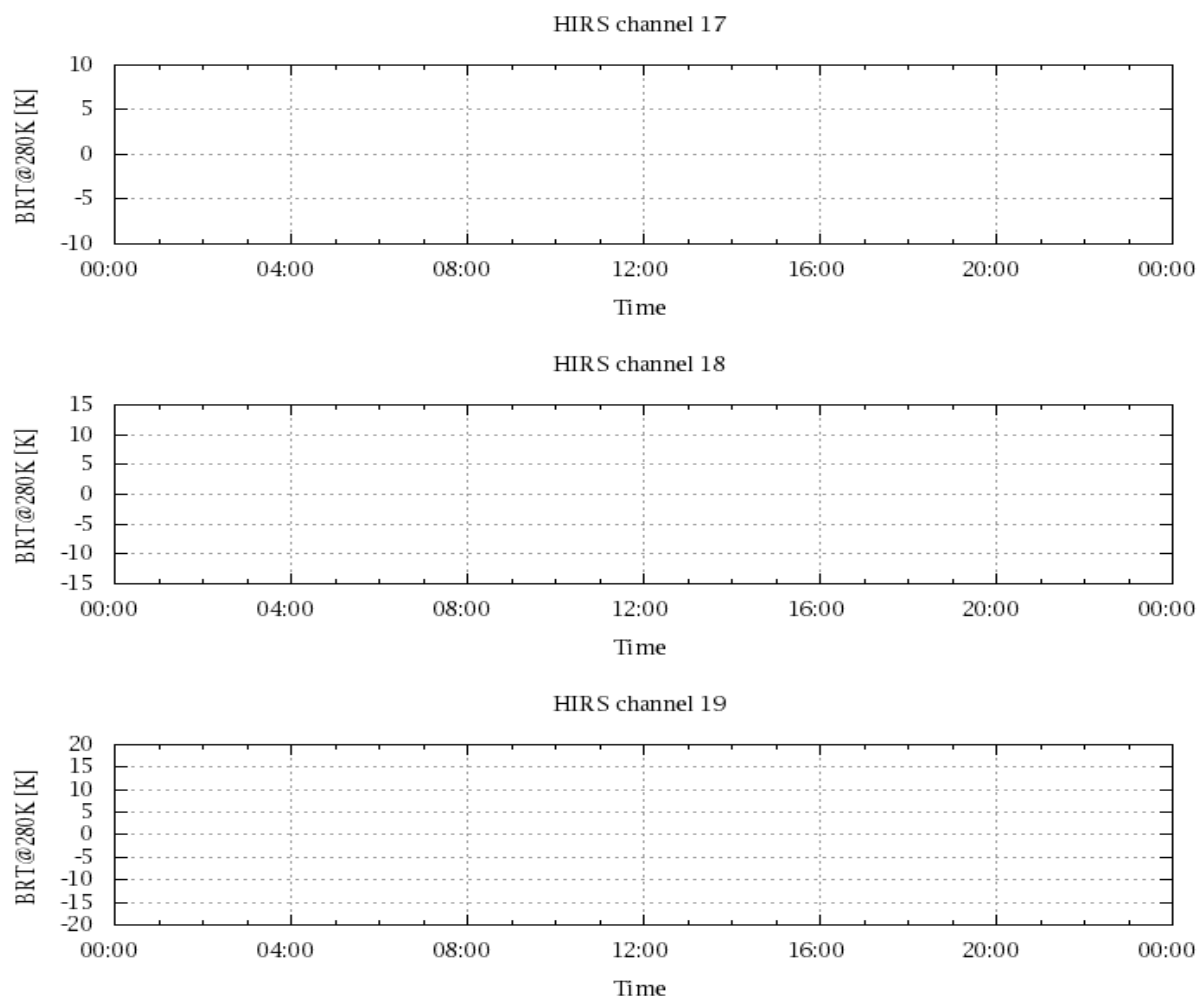


Figure 21: Radinace Differences in BT