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

IASI monitoring team

01/08/2023 00:00:00 - 02/08/2023 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 01/08/2023 00:00:00 - 02/08/2023 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 01/08/2023 00:00:00 - 02/08/2023 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	479	-
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)	15781	15783	20230801083614.161	20230801083614.594
PX2 (135)	15781	15783	20230801083614.161	20230801083614.594
PX3 (140)	-	-	-	-
PX4 (145)	-	-	-	-
IMG (150)	-	-	-	-
VER (160)	8957	8959	20230801083610.485	20230801083618.485
AUX (180)	-	-	-	-

Table 2: L0 data gaps

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3 Instrument modes

Time	Transition from	Transition to
01/08/2023 00:00:08	-	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	479	-
GQisFlagQual set (PX1)	99.60 %	-
GQisFlagQual set (PX2)	99.68 %	-
GQisFlagQual set (PX3)	99.68 %	-
GQisFlagQual set (PX4)	99.60 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

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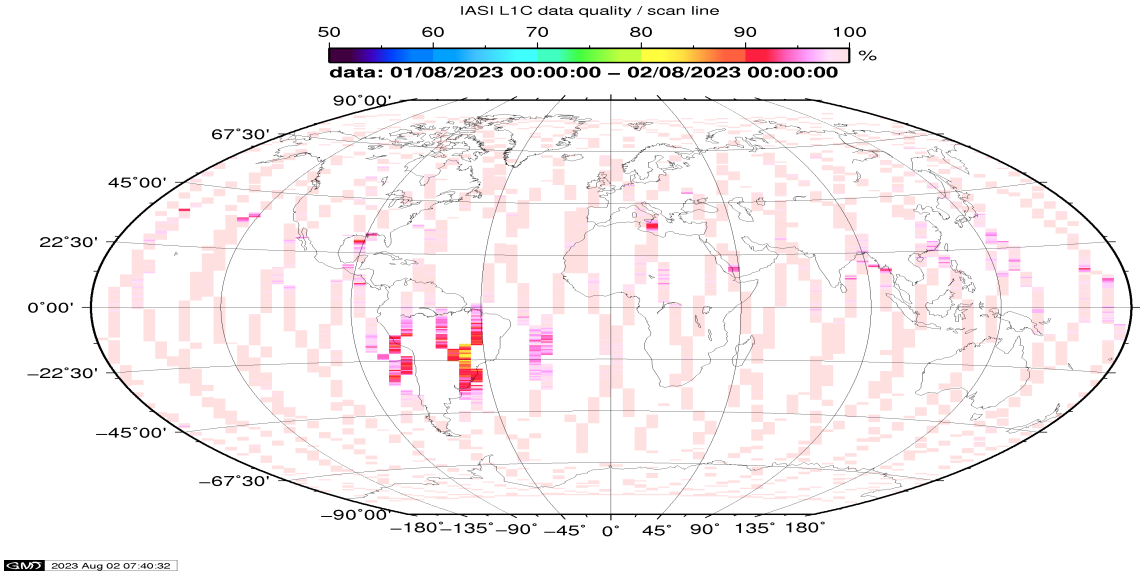

Figure 1: L1C data quality

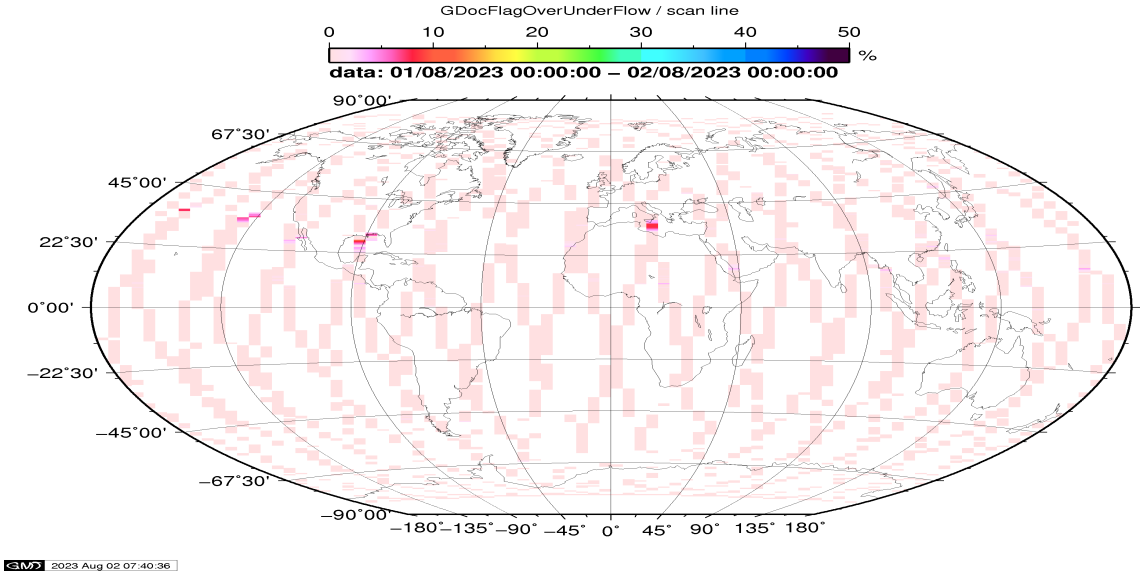

Figure 2: Flag of Over and Under Flows

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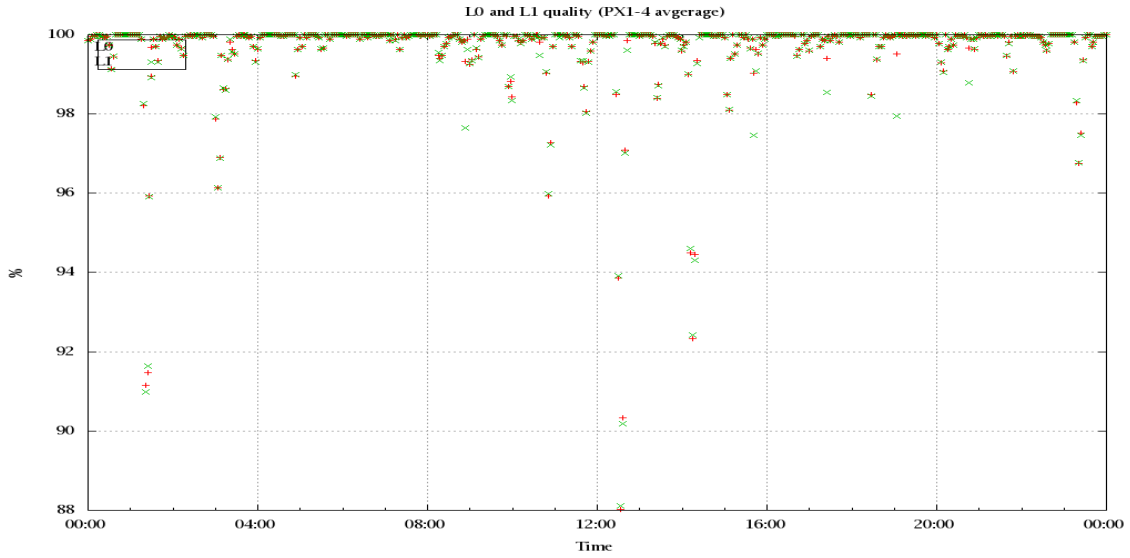

Figure 3: Level 0 and 1C overall quality

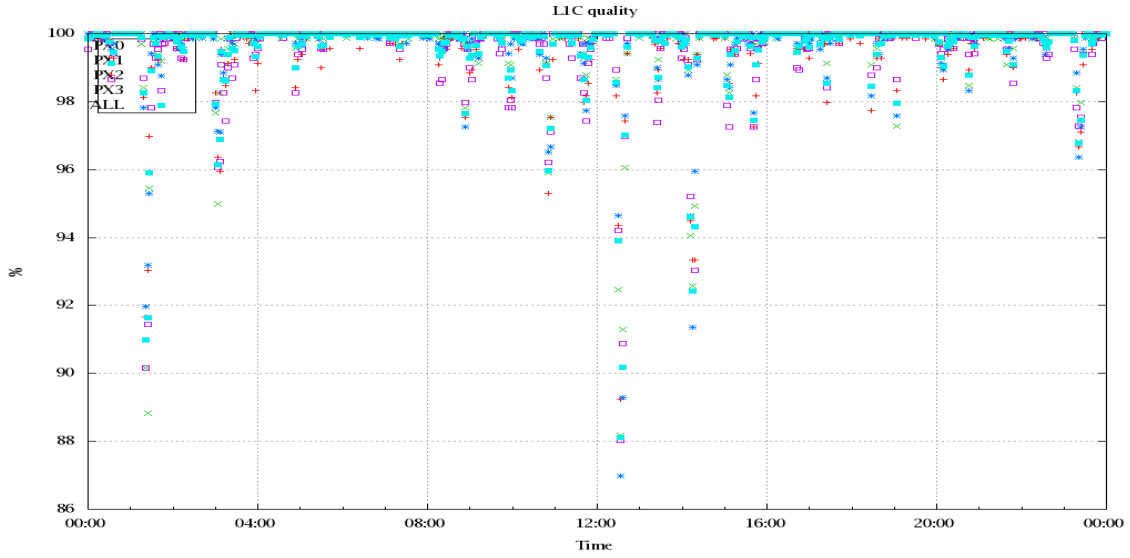

Figure 4: Level 1C quality

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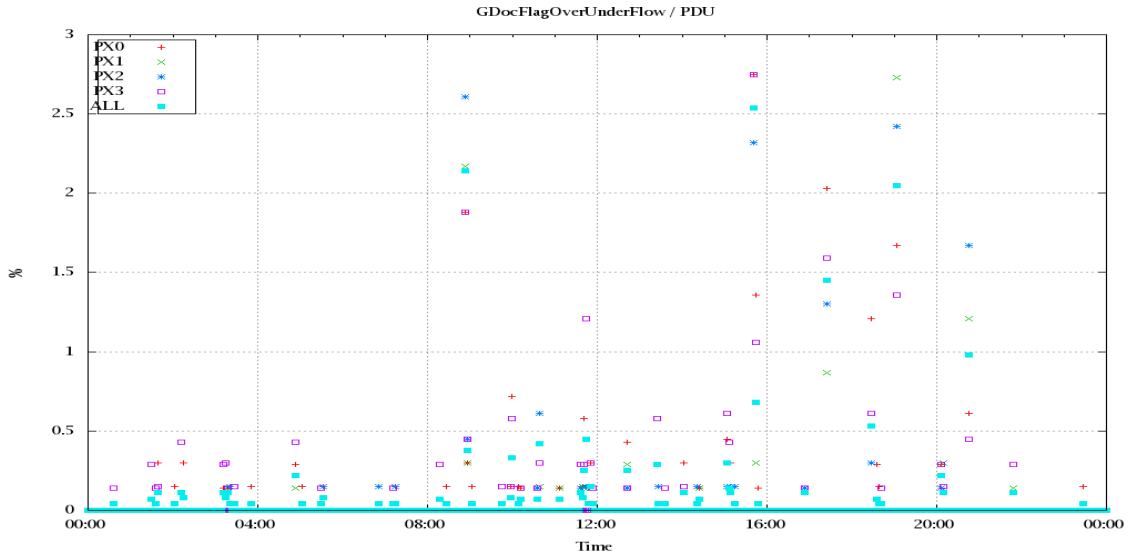

Figure 5: Timeseries of flag of Over and Under Flows

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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.

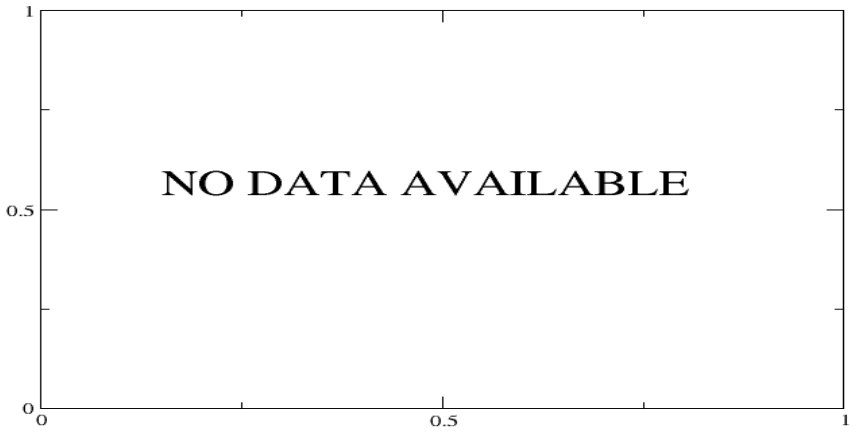

Figure 6: Average Radiance differences: OBS-CAL

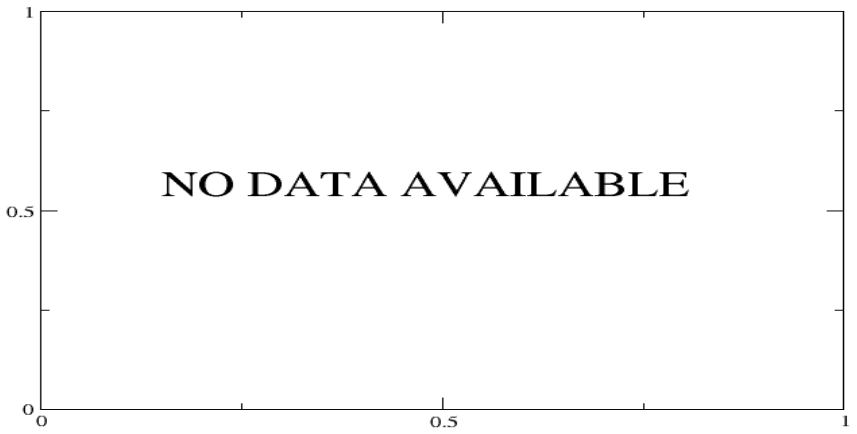

Figure 7: Standard Deviation of Radiance differences

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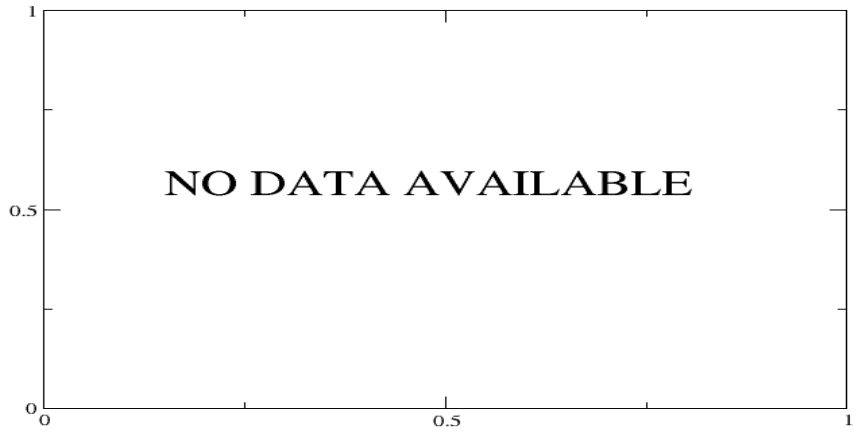

Figure 8: Average Radiance differences: OBS-CAL

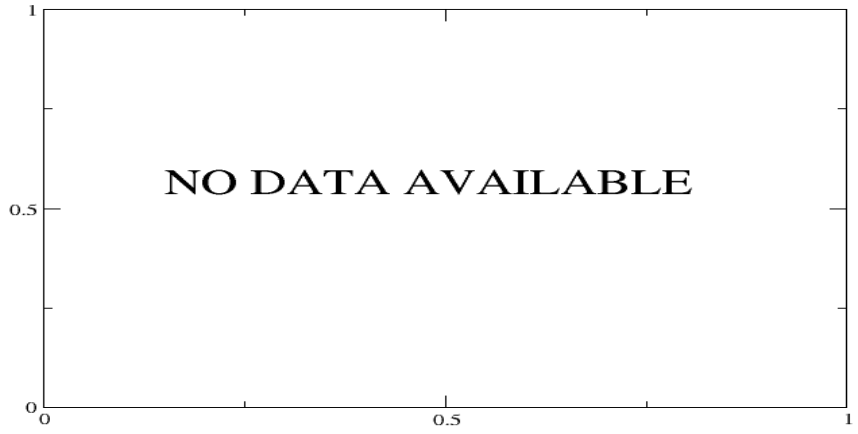

Figure 9: Standard Deviation of Radiance differences

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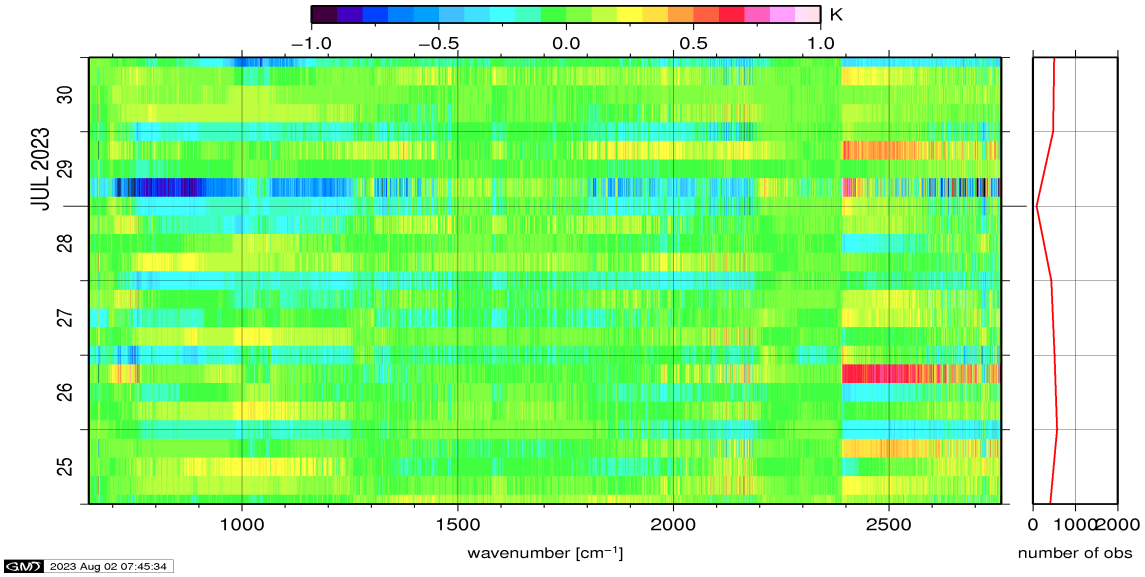

Figure 10: Radiance Anomaly in BT: All Channels

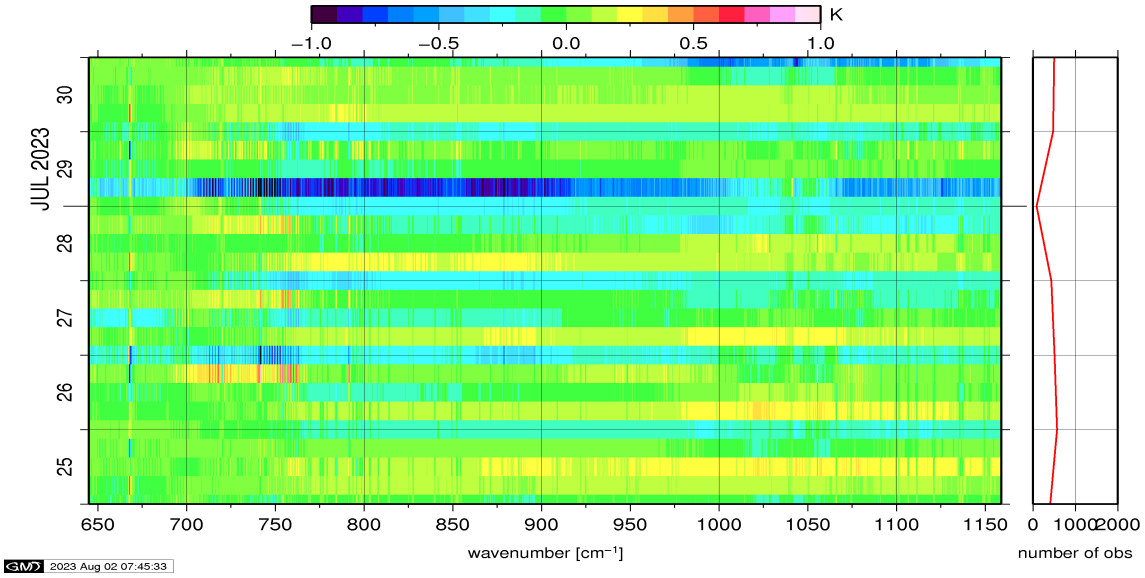

Figure 11: Radiance Anomaly in BT: IASI Band 1

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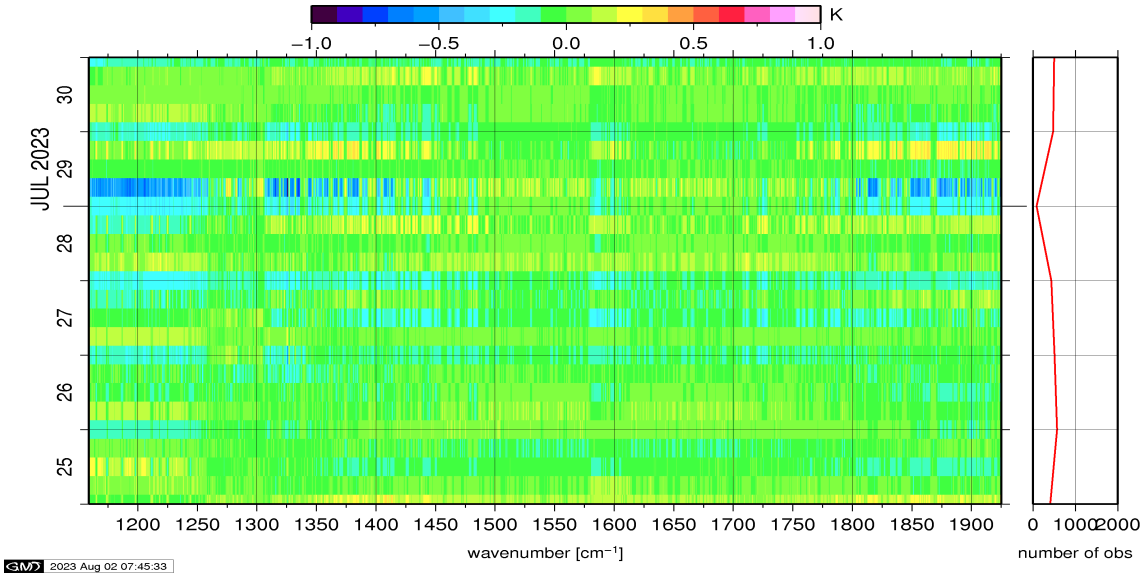

Figure 12: Radiance Anomaly in BT: IASI Band 2

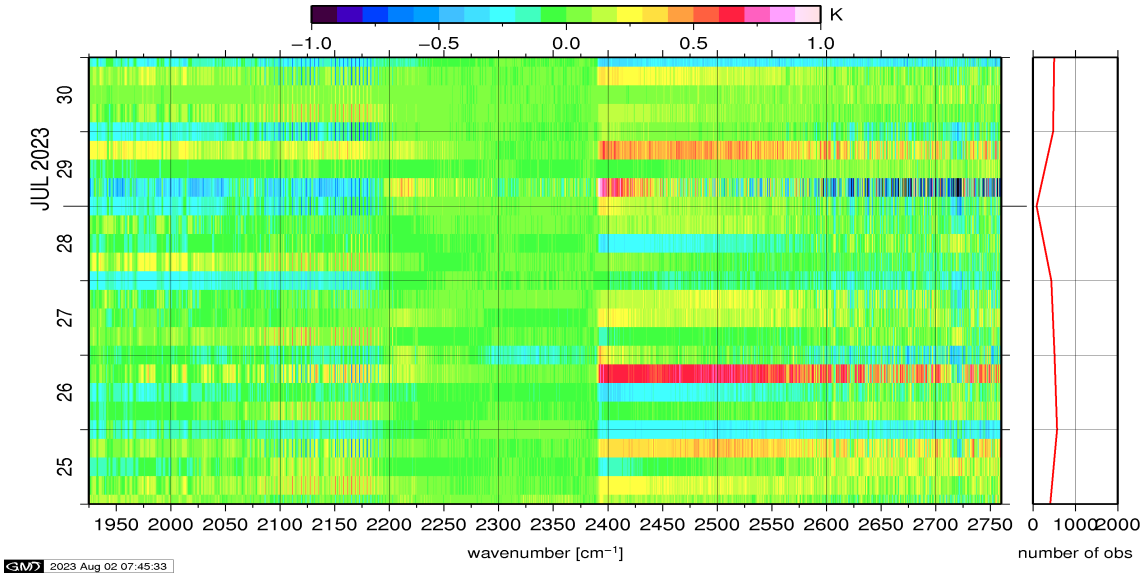

Figure 13: Radiance Anomaly in BT: IASI Band 3

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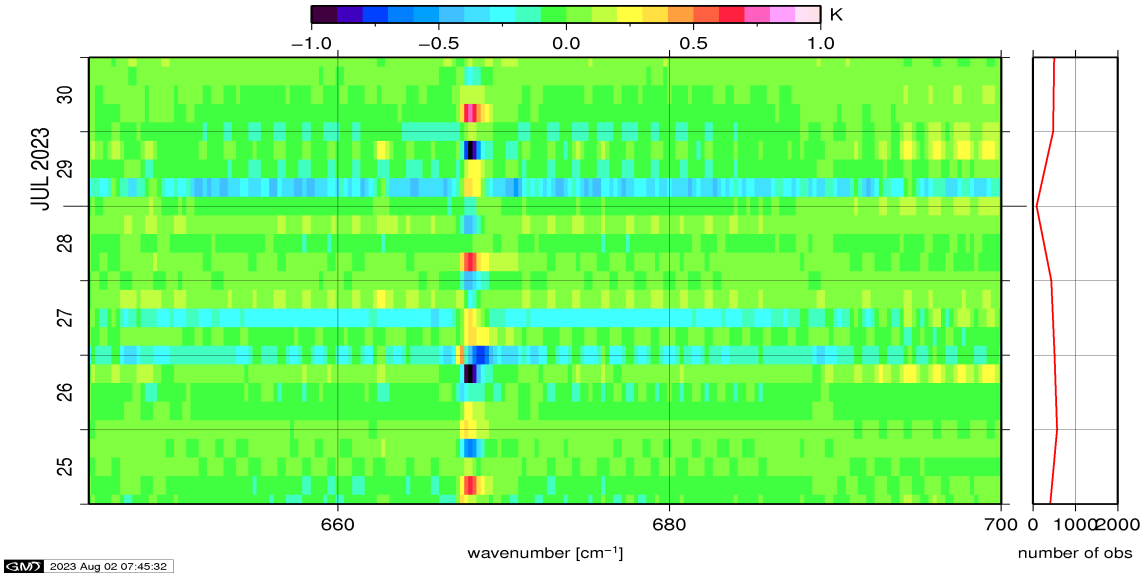

Figure 14: Radiance Anomaly in BT: CO2 14

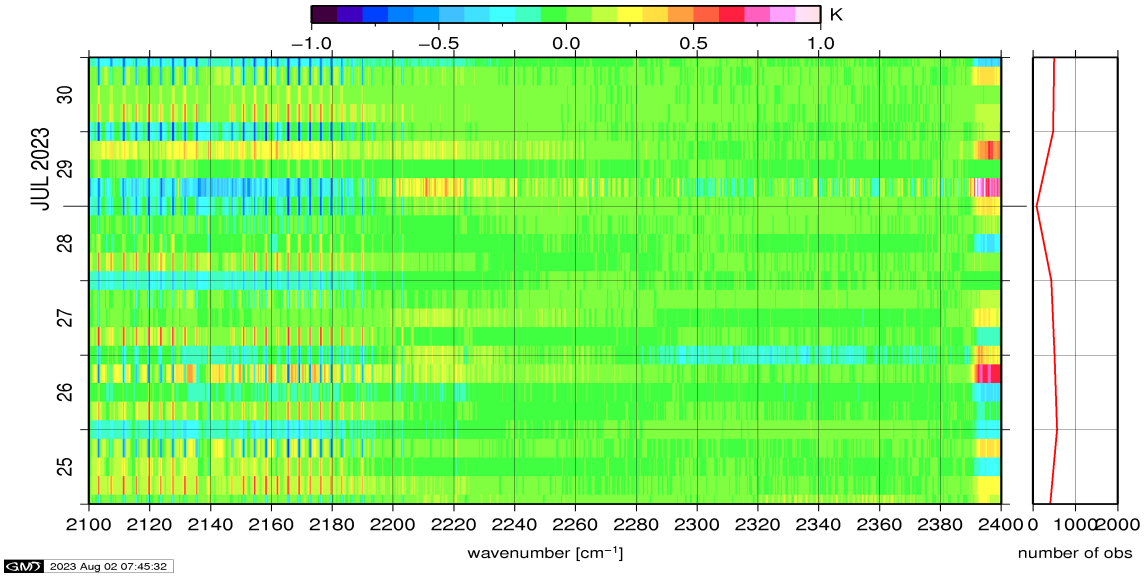

Figure 15: Radiance Anomaly in BT: CO2 4.3

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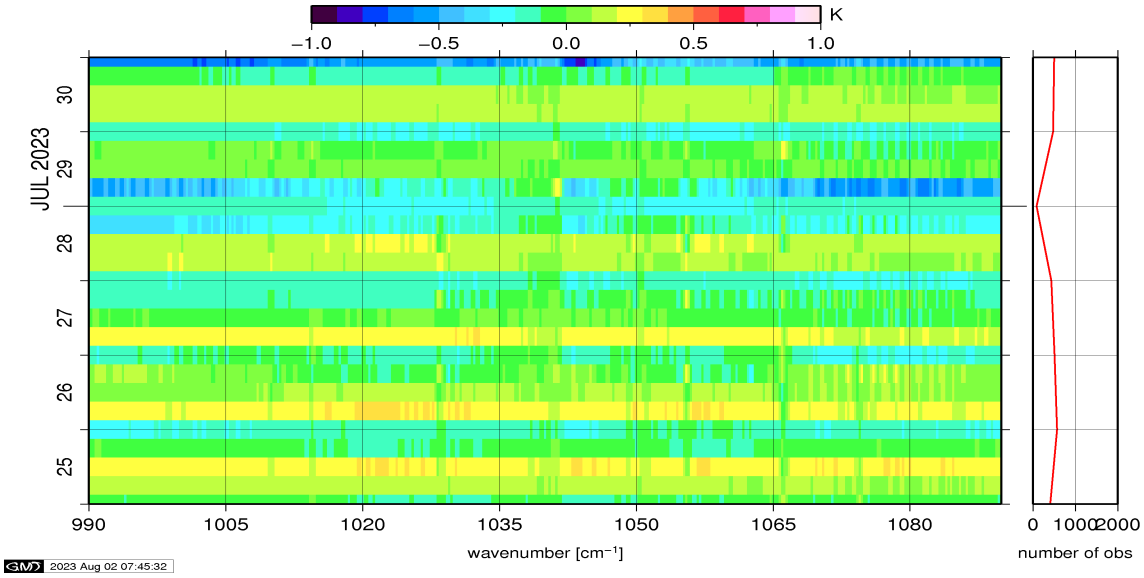

Figure 16: Radiance Anomaly in BT: O3

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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.

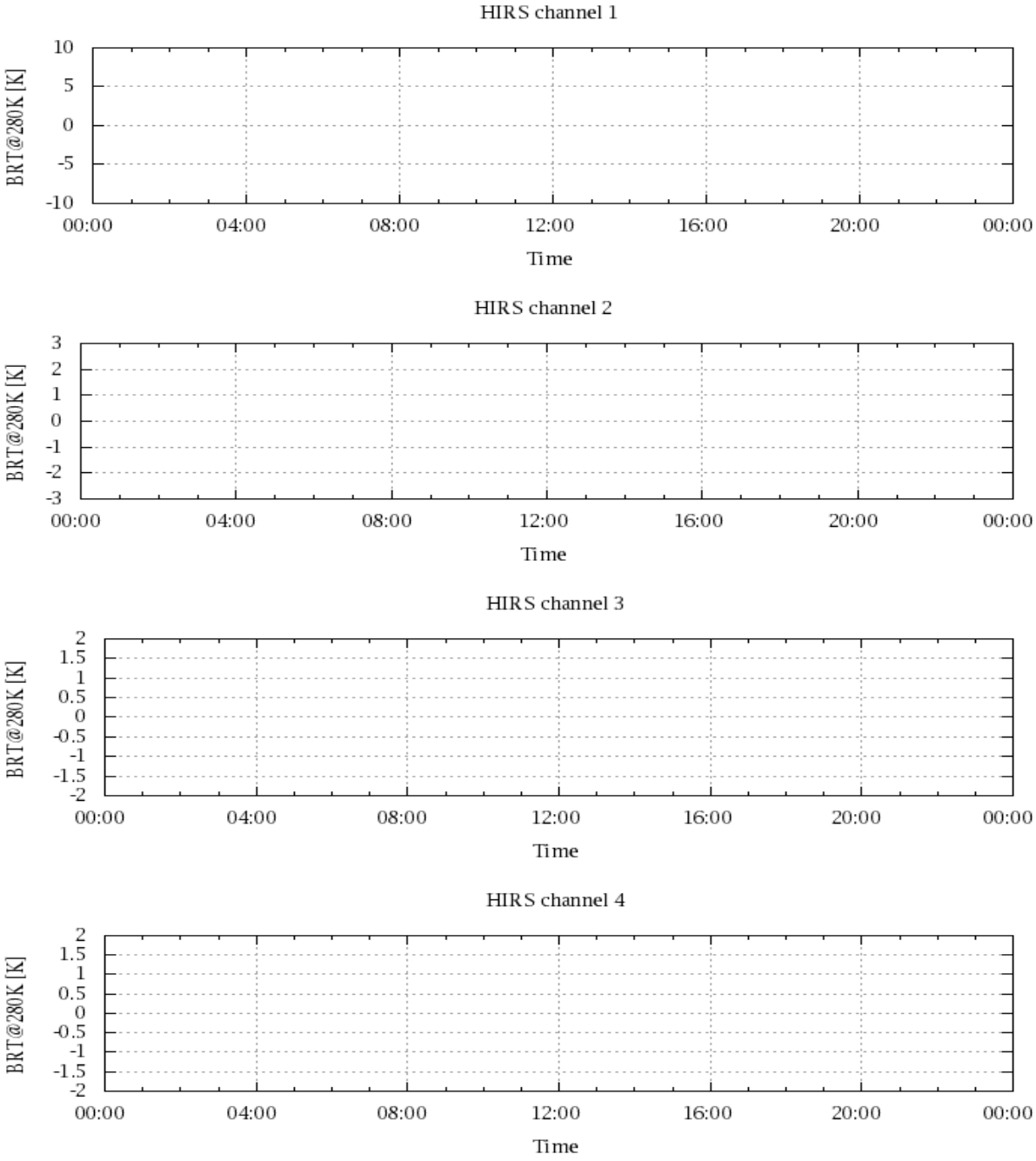

Figure 17: Radiance Differences in BT

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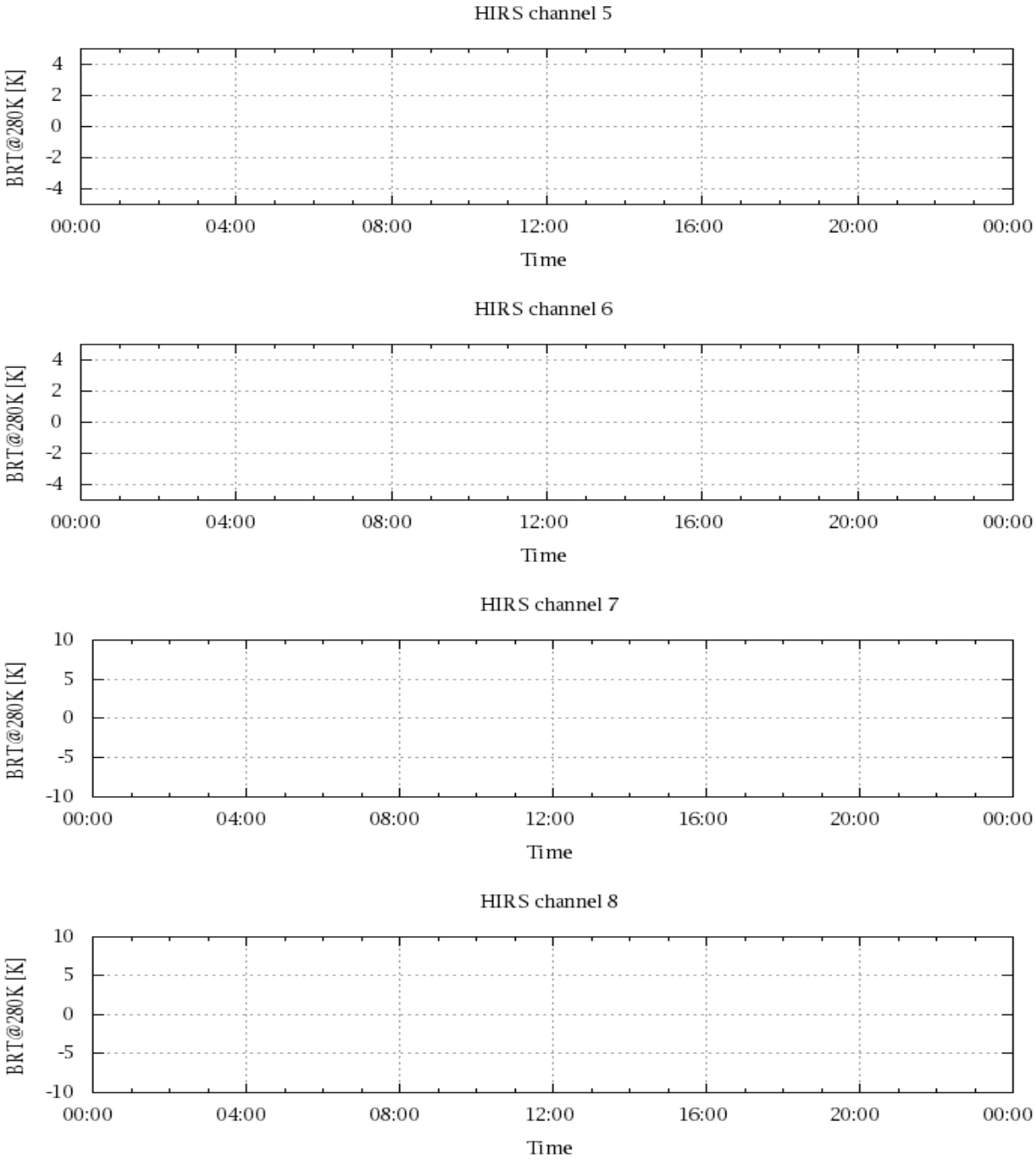

Figure 18: Radiance Differences in BT

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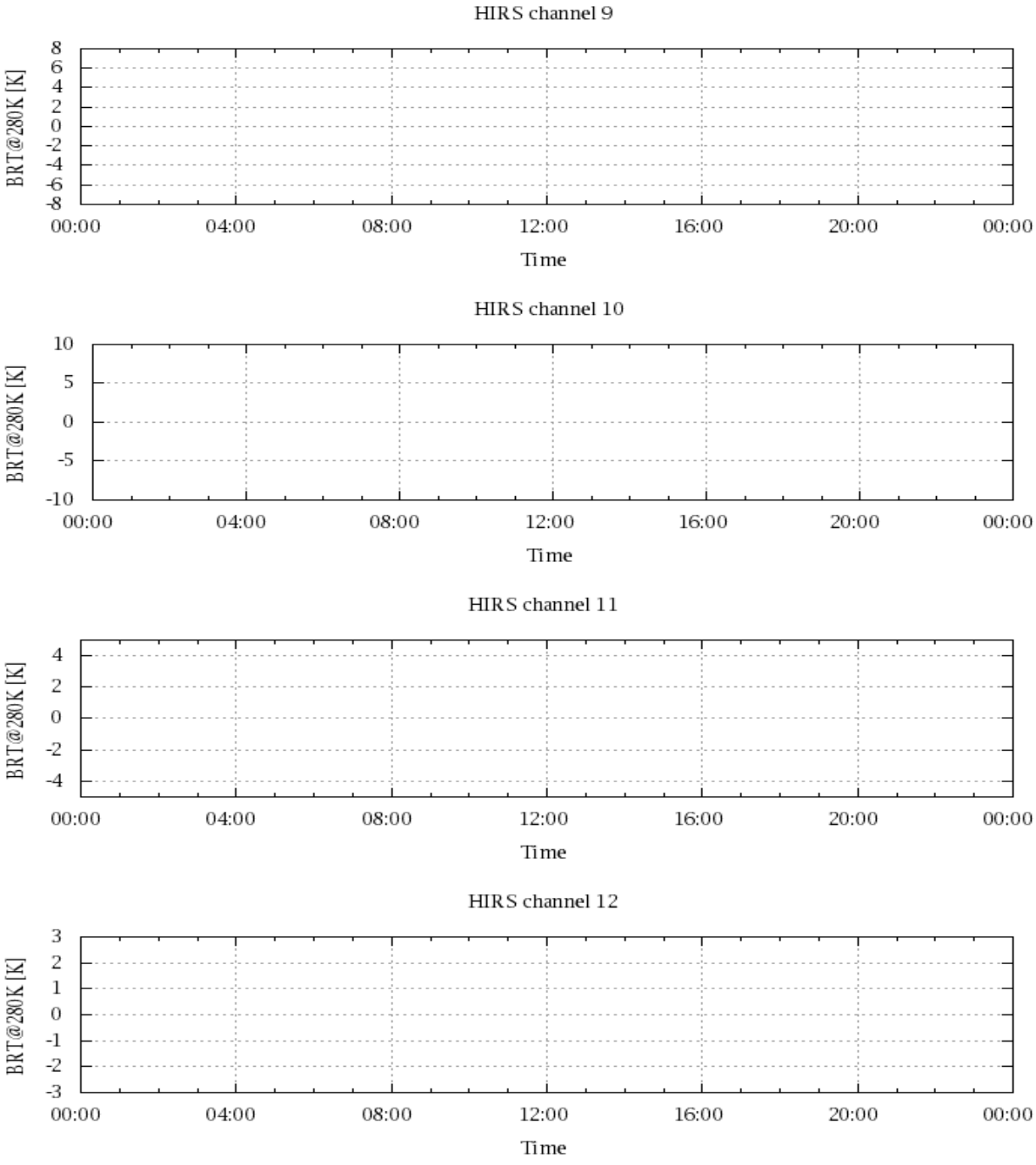

Figure 19: Radiance Differences in BT

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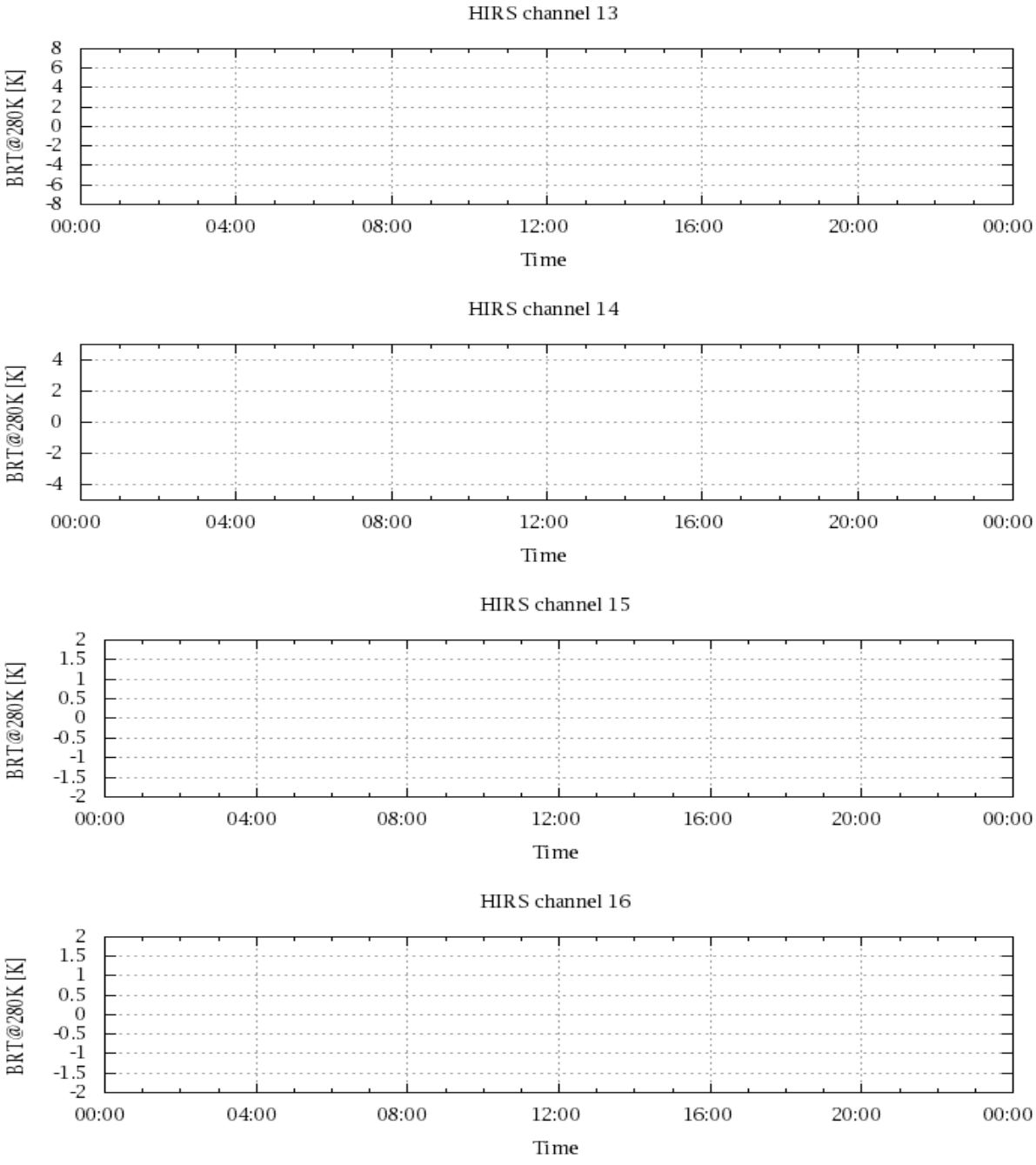

Figure 20: Radiance Differences in BT

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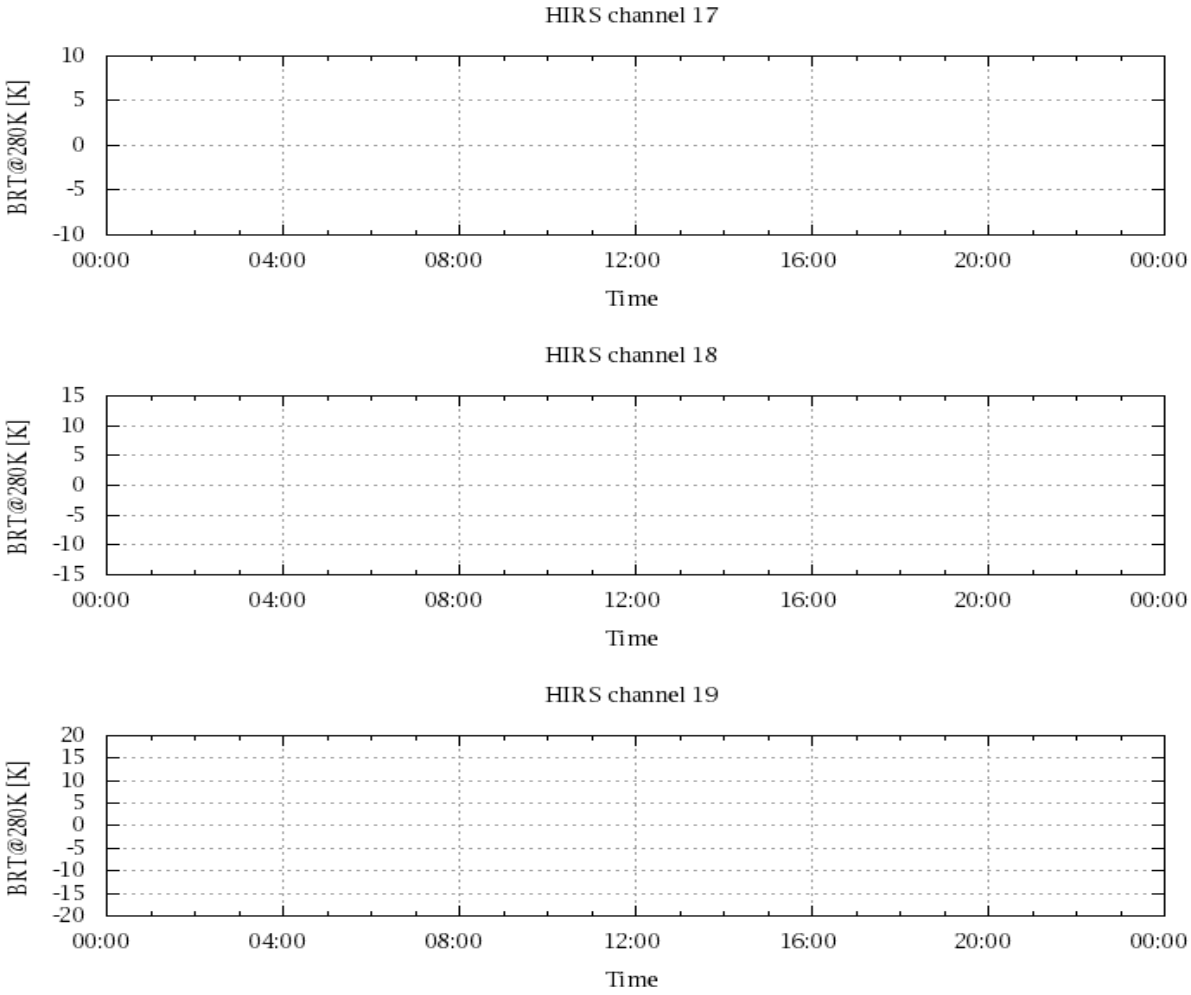

Figure 21: Radinace Differences in BT

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