

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

IASI monitoring team

13/05/2024 00:00:00 - 14/05/2024 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 13/05/2024 00:00:00 - 14/05/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 13/05/2024 00:00:00 - 14/05/2024 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	480	-
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)	-	-	-	-
PX2 (135)	-	-	-	-
PX3 (140)	-	-	-	-
PX4 (145)	-	-	-	-
IMG (150)	-	-	-	-
VER (160)	4606	4864	20240513013021.309	20240513013826.699
VER (160)	4864	4869	20240513013826.699	20240513013826.699
VER (160)	4869	4874	20240513013826.699	20240513013826.699
VER (160)	4874	4879	20240513013826.699	20240513013826.699
VER (160)	4879	4884	20240513013826.699	20240513013826.699
VER (160)	4884	4889	20240513013826.699	20240513013826.699
VER (160)	4889	4894	20240513013826.699	20240513013826.699
VER (160)	4894	4899	20240513013826.699	20240513013826.699
VER (160)	4899	4904	20240513013826.699	20240513013826.699
VER (160)	4904	4865	20240513013826.699	20240513013826.699
VER (160)	4865	4870	20240513013826.699	20240513013826.699
VER (160)	4870	4875	20240513013826.699	20240513013826.699
VER (160)	4875	4880	20240513013826.699	20240513013826.699
VER (160)	4880	4885	20240513013826.699	20240513013826.699

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	4885	4890	20240513013826.699	20240513013826.699
VER (160)	4890	4895	20240513013826.699	20240513013826.699
VER (160)	4895	4900	20240513013826.699	20240513013826.699
VER (160)	4900	4905	20240513013826.699	20240513013826.699
VER (160)	4905	4866	20240513013826.699	20240513013826.699
VER (160)	4866	4871	20240513013826.699	20240513013826.699
VER (160)	4871	4876	20240513013826.699	20240513013826.699
VER (160)	4876	4881	20240513013826.699	20240513013826.699
VER (160)	4881	4886	20240513013826.699	20240513013826.699
VER (160)	4886	4891	20240513013826.699	20240513013826.699
VER (160)	4891	4896	20240513013826.699	20240513013826.699
VER (160)	4896	4901	20240513013826.699	20240513013826.699
VER (160)	4901	4906	20240513013826.699	20240513013826.699
VER (160)	4906	4867	20240513013826.699	20240513013826.699
VER (160)	4867	4872	20240513013826.699	20240513013826.699
VER (160)	4872	4877	20240513013826.699	20240513013826.699
VER (160)	4877	4882	20240513013826.699	20240513013826.699
VER (160)	4882	4887	20240513013826.699	20240513013826.699
VER (160)	4887	4892	20240513013826.699	20240513013826.699
VER (160)	4892	4897	20240513013826.699	20240513013826.699
VER (160)	4897	4902	20240513013826.699	20240513013826.699
VER (160)	4902	4907	20240513013826.699	20240513013826.699
VER (160)	4907	4868	20240513013826.699	20240513013826.699
VER (160)	4868	4873	20240513013826.699	20240513013826.699
VER (160)	4873	4878	20240513013826.699	20240513013826.699
VER (160)	4878	4883	20240513013826.699	20240513013826.699
VER (160)	4883	4888	20240513013826.699	20240513013826.699
VER (160)	4888	4893	20240513013826.699	20240513013826.699
VER (160)	4893	4898	20240513013826.699	20240513013826.699
VER (160)	4898	4903	20240513013826.699	20240513013826.699
VER (160)	4903	4908	20240513013826.699	20240513013826.699
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
13/05/2024 00:00:02	-	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	480	-
GQisFlagQual set (PX1)	99.64 %	-
GQisFlagQual set (PX2)	99.73 %	-
GQisFlagQual set (PX3)	99.73 %	-
GQisFlagQual set (PX4)	99.66 %	-
GQisFlagQual set (all)	99.69 %	-

Table 4: Quality flags

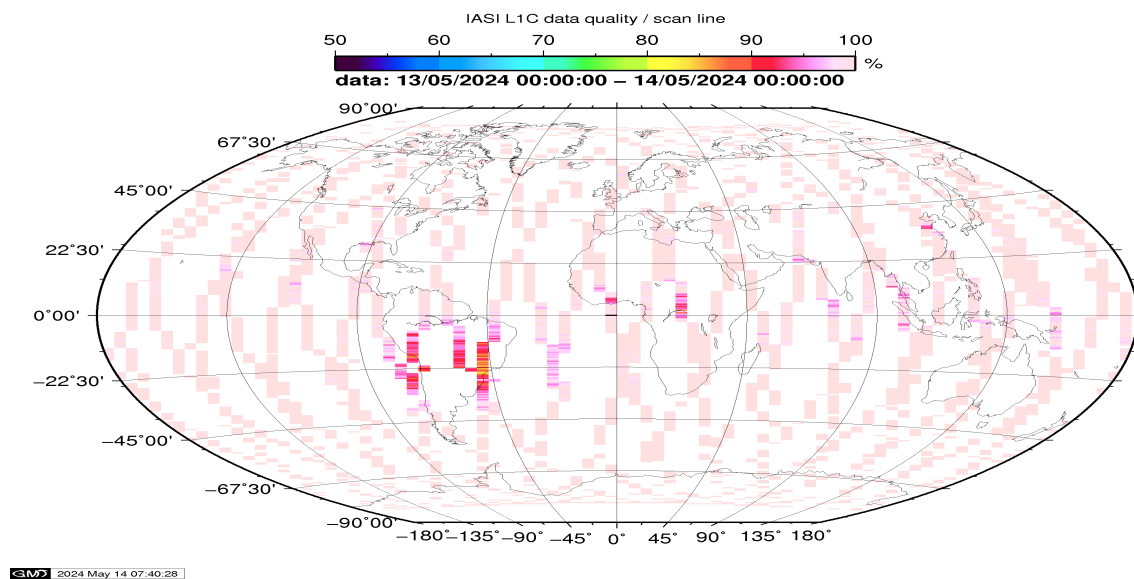


Figure 1: L1C data quality

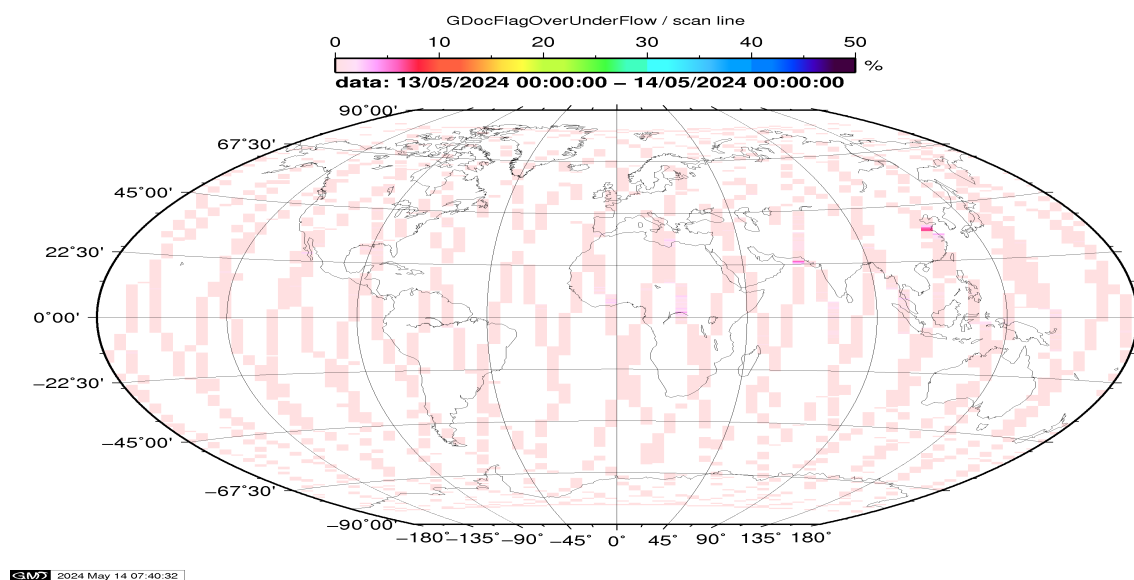


Figure 2: Flag of Over and Under Flows

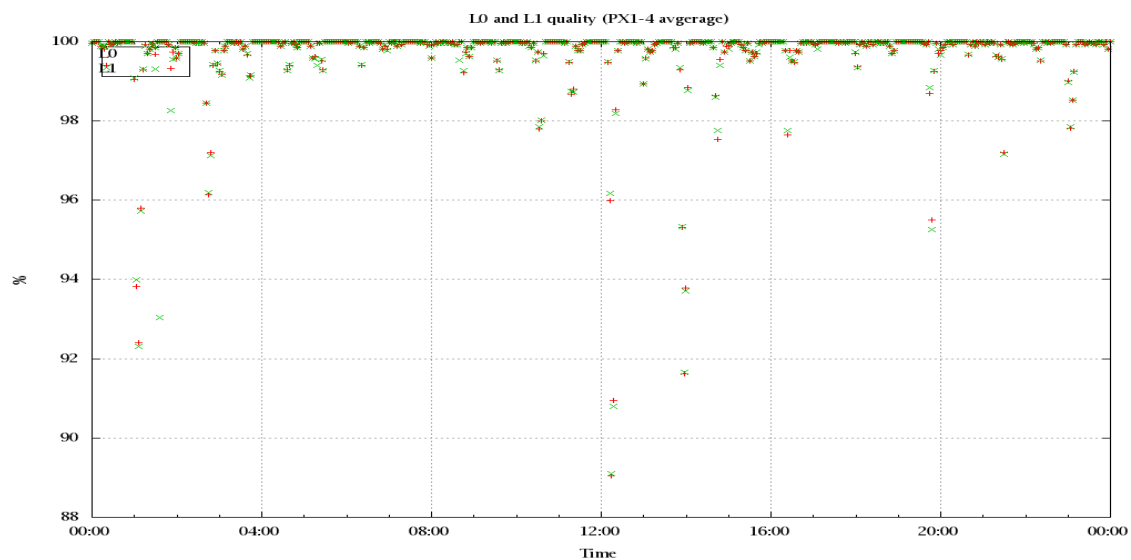


Figure 3: Level 0 and 1C overall quality

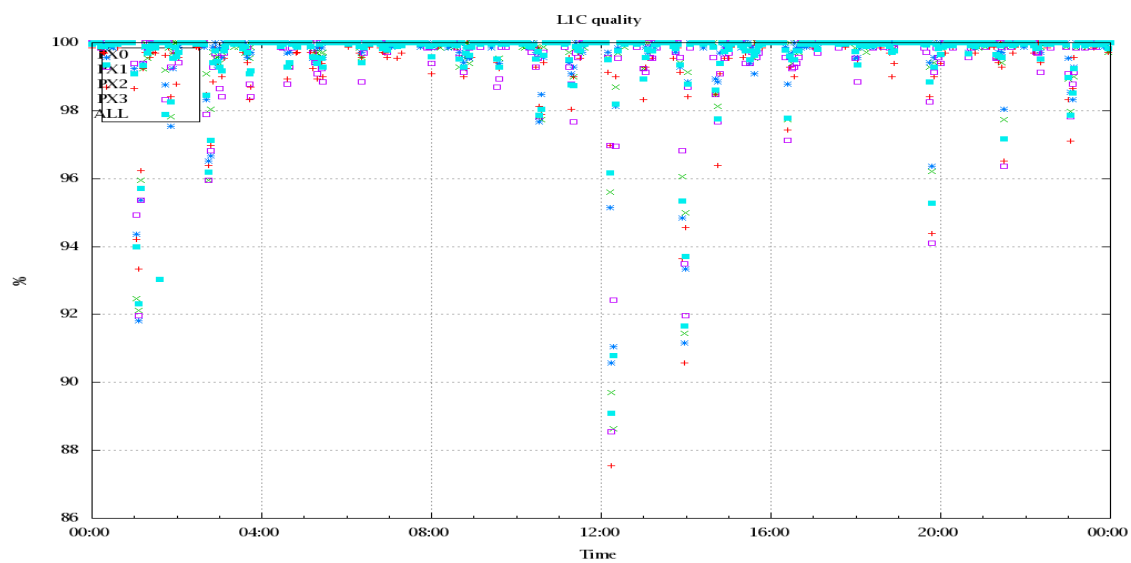


Figure 4: Level 1C quality

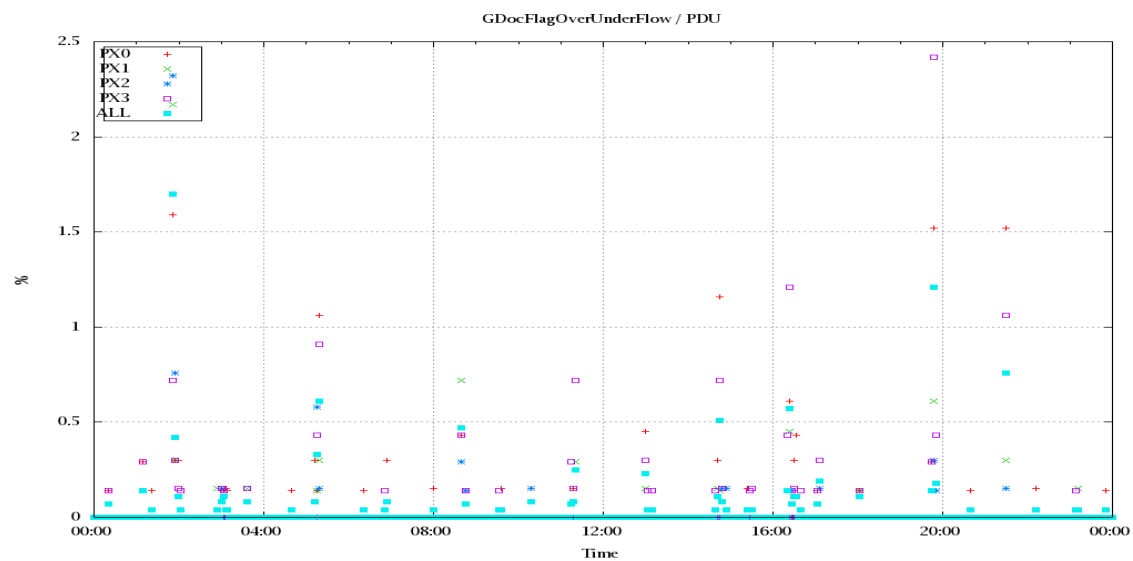


Figure 5: Timeseries of flag of Over and Under Flows

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 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.

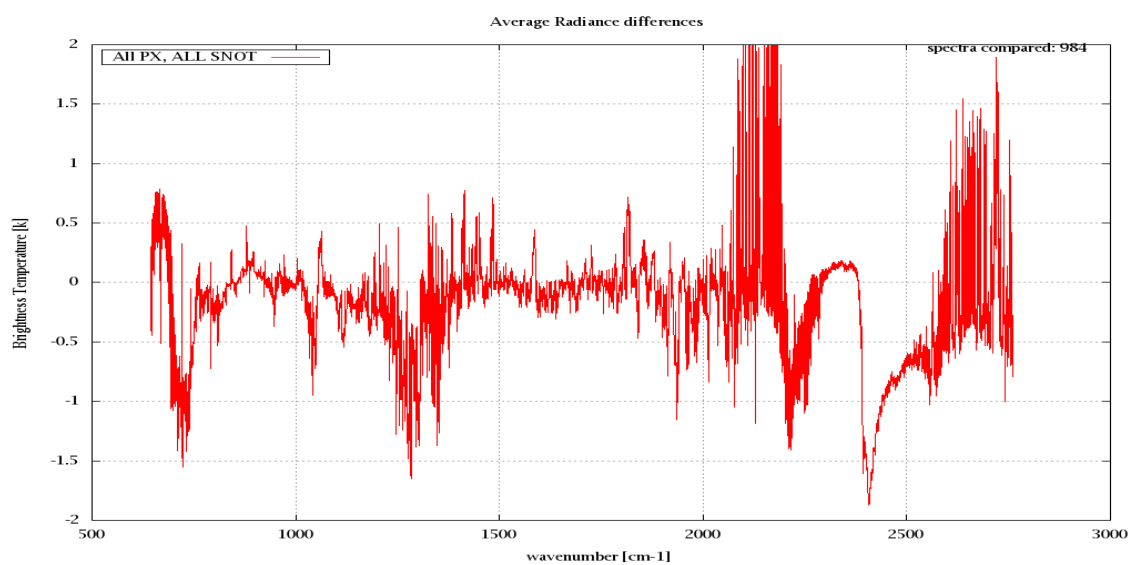


Figure 6: Average Radiance differences: OBS-CAL

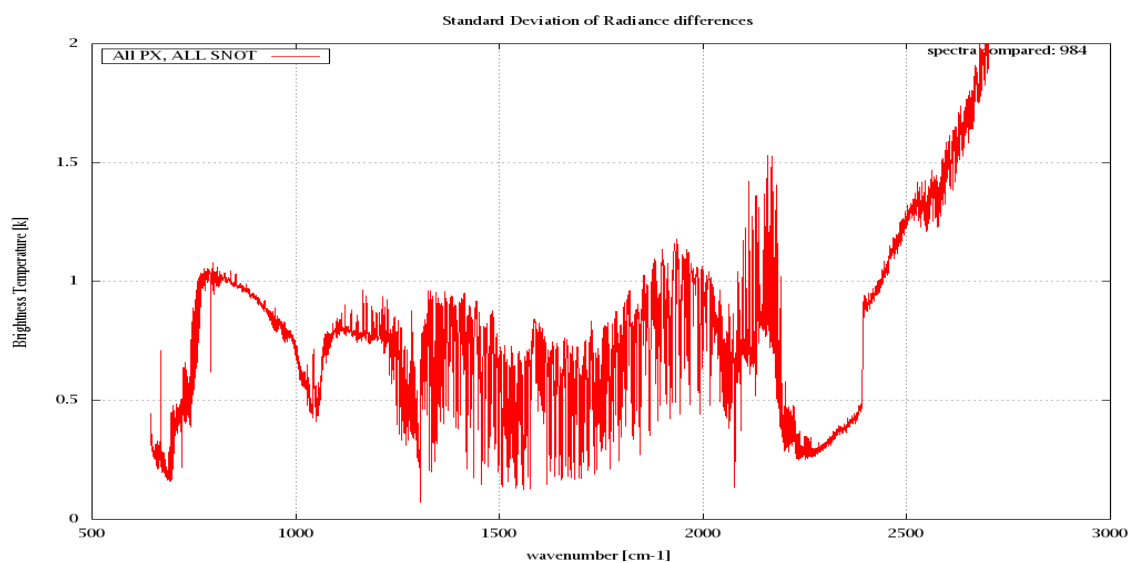


Figure 7: Standard Deviation of Radiance differences

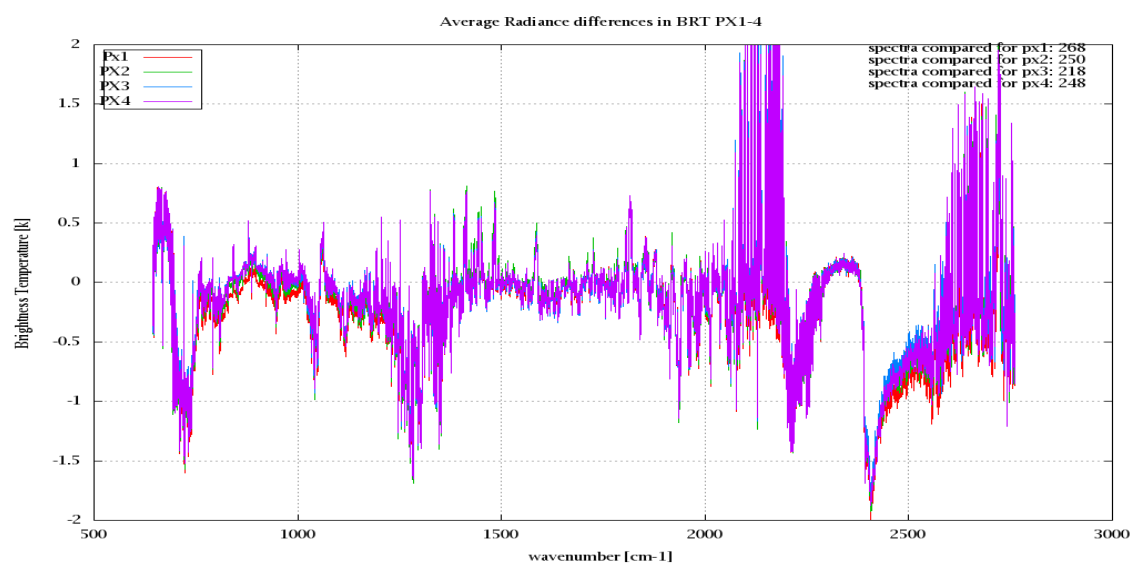


Figure 8: Average Radiance differences: OBS-CAL

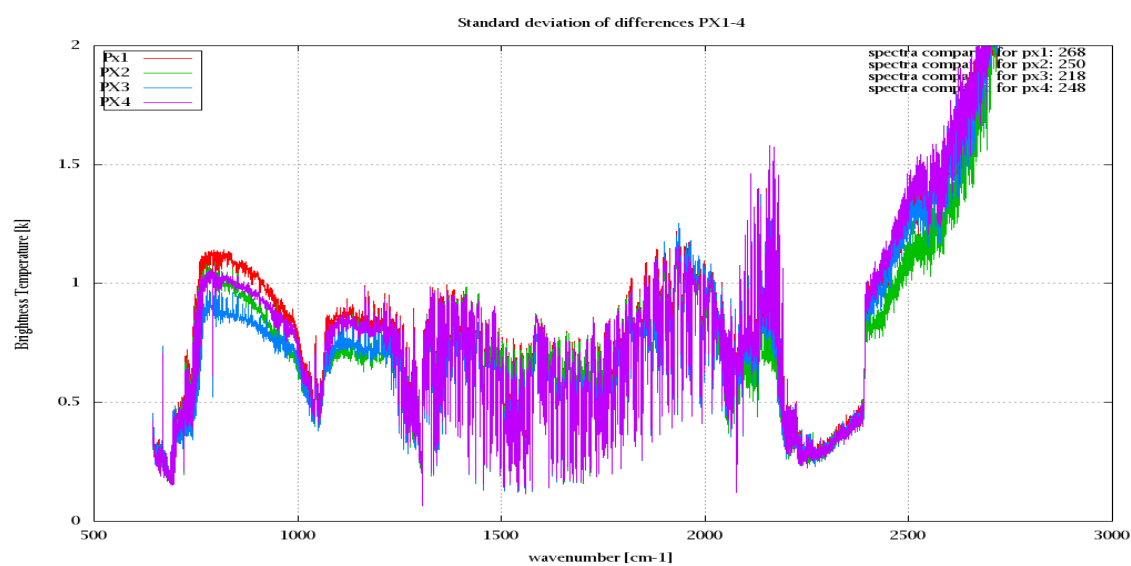


Figure 9: Standard Deviation of Radiance differences

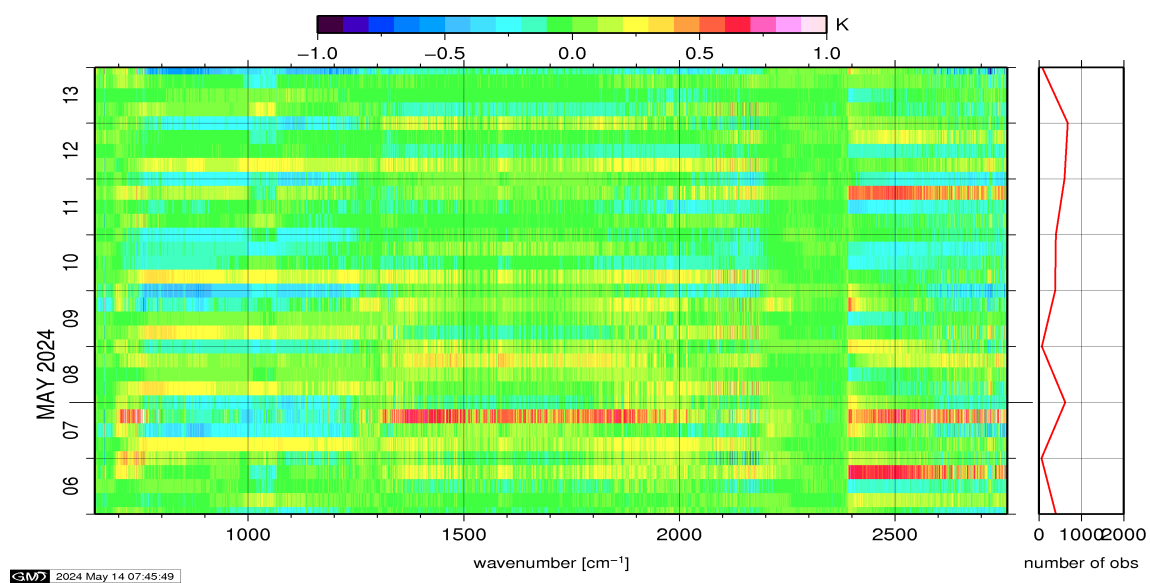


Figure 10: Radiance Anomaly in BT: All Channels

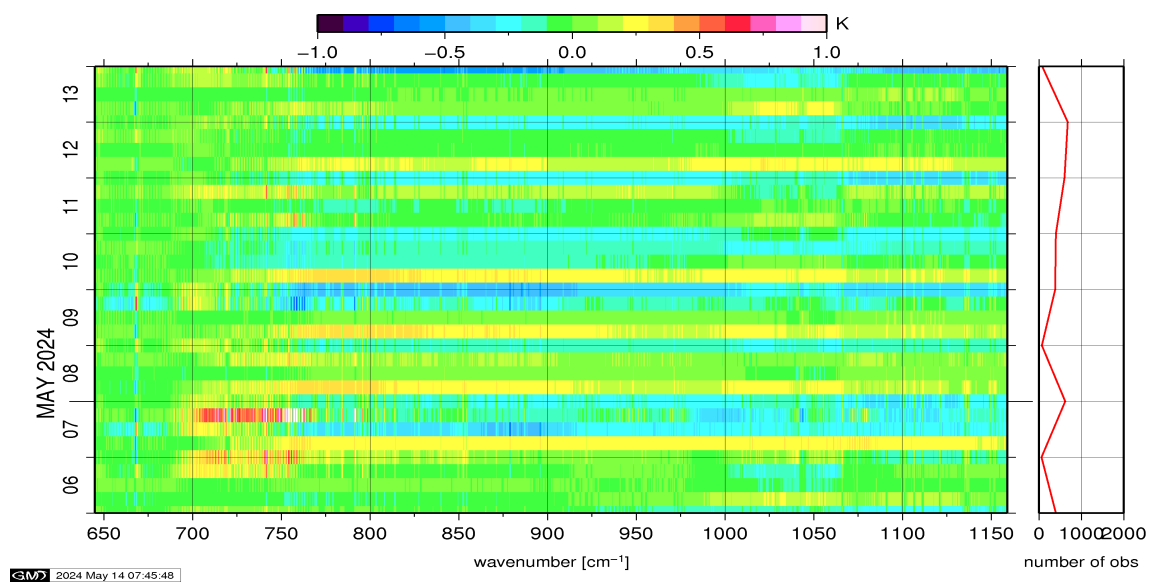


Figure 11: Radiance Anomaly in BT: IASI Band 1

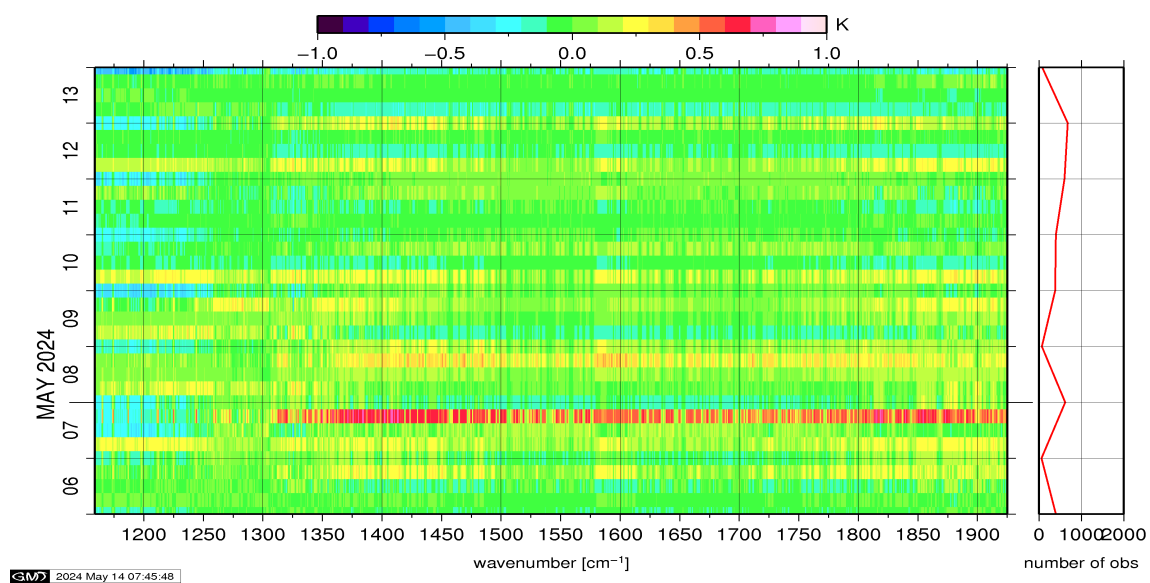


Figure 12: Radiance Anomaly in BT: IASI Band 2

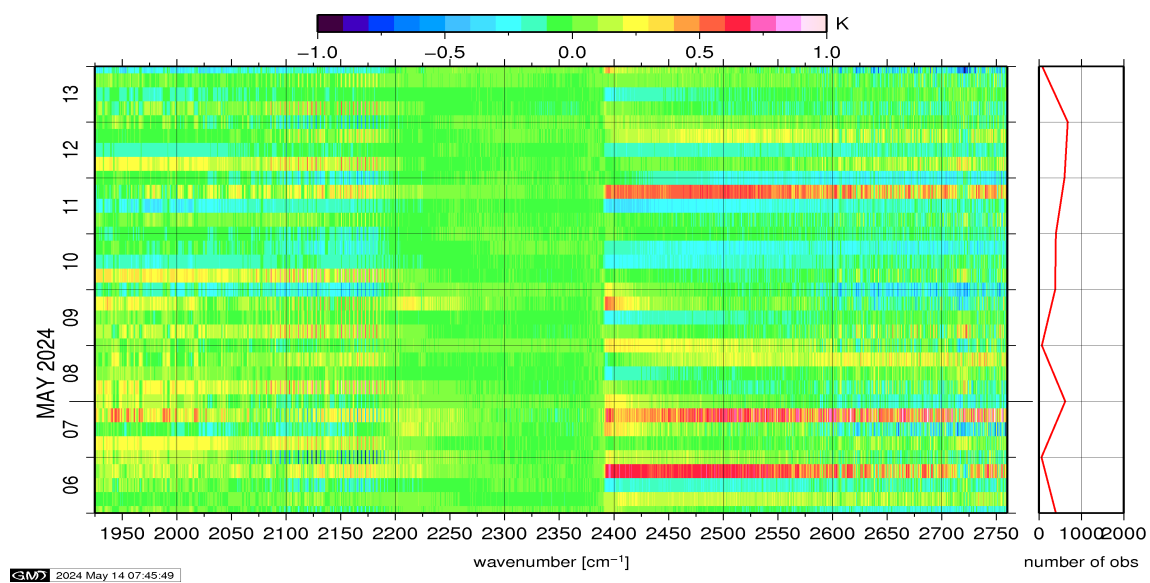


Figure 13: Radiance Anomaly in BT: IASI Band 3

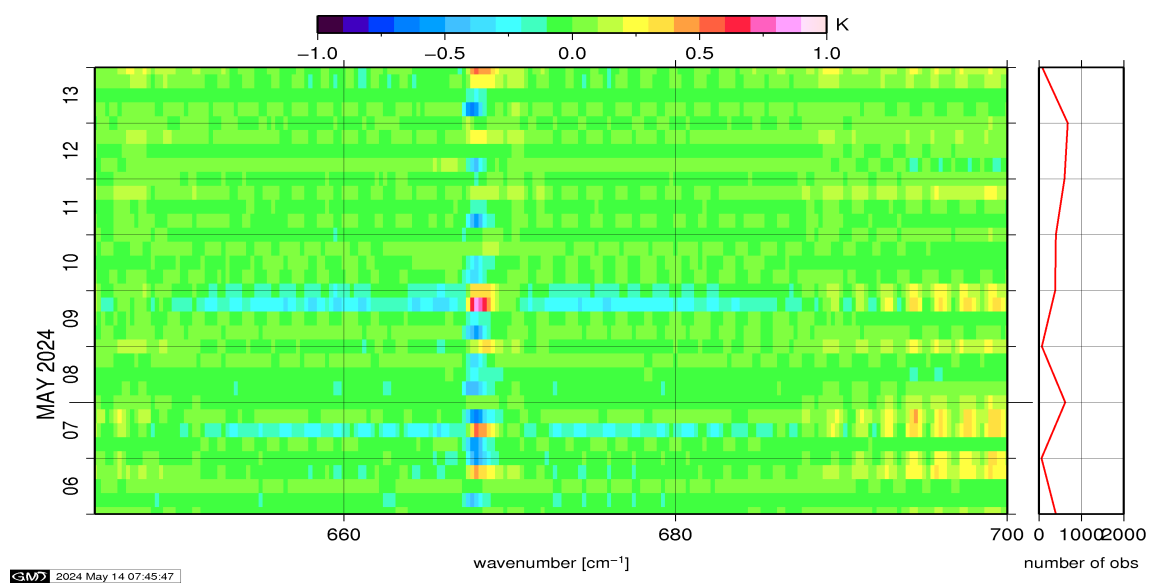


Figure 14: Radiance Anomaly in BT: CO2 14

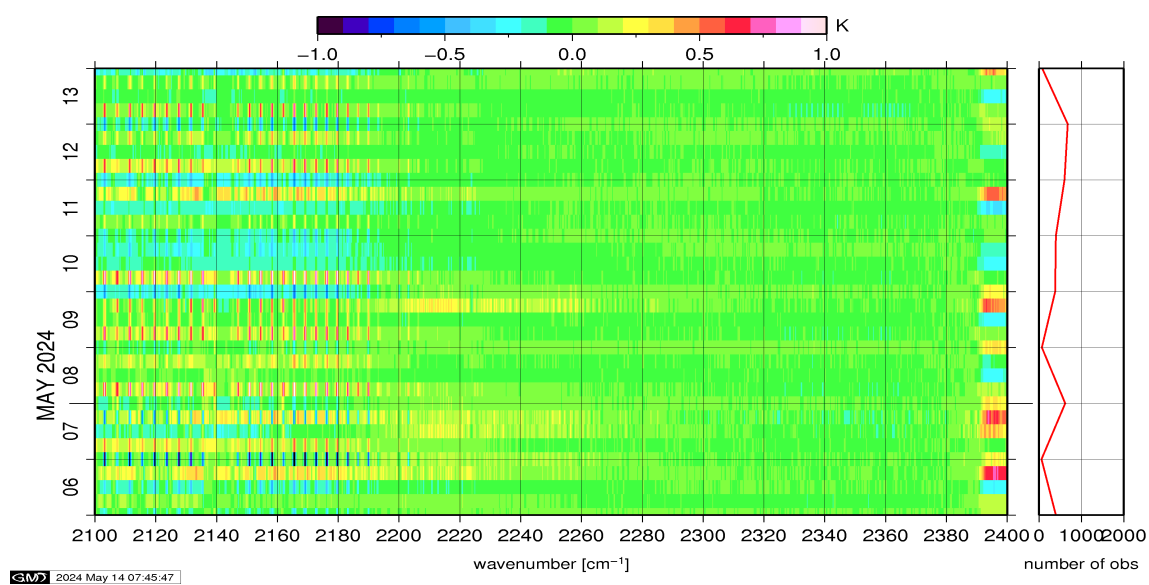


Figure 15: Radiance Anomaly in BT: CO2 4.3

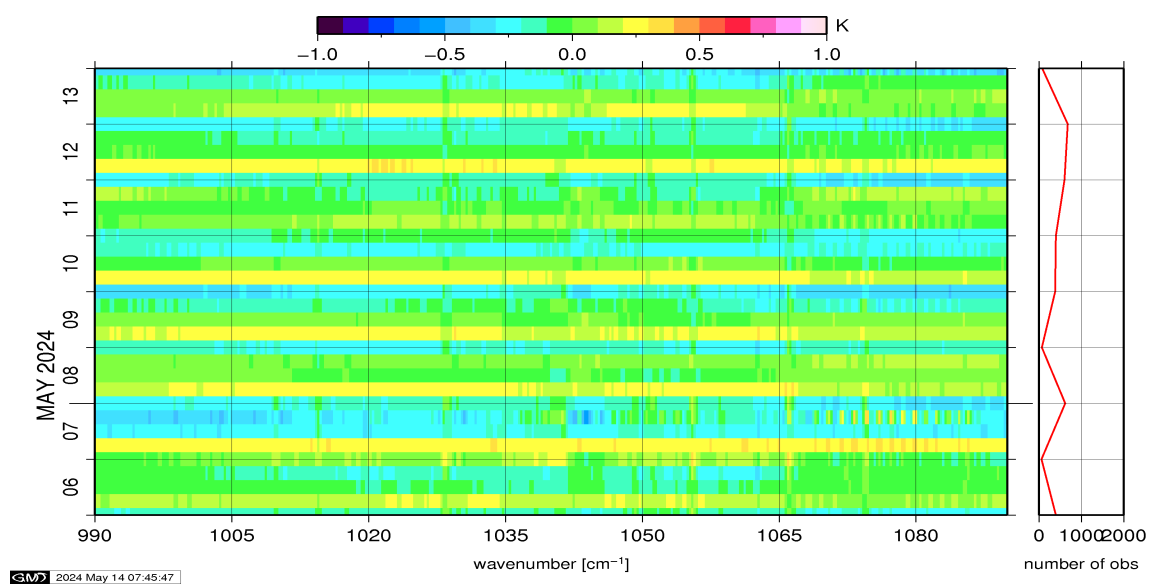


Figure 16: Radiance Anomaly in BT: O3

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.

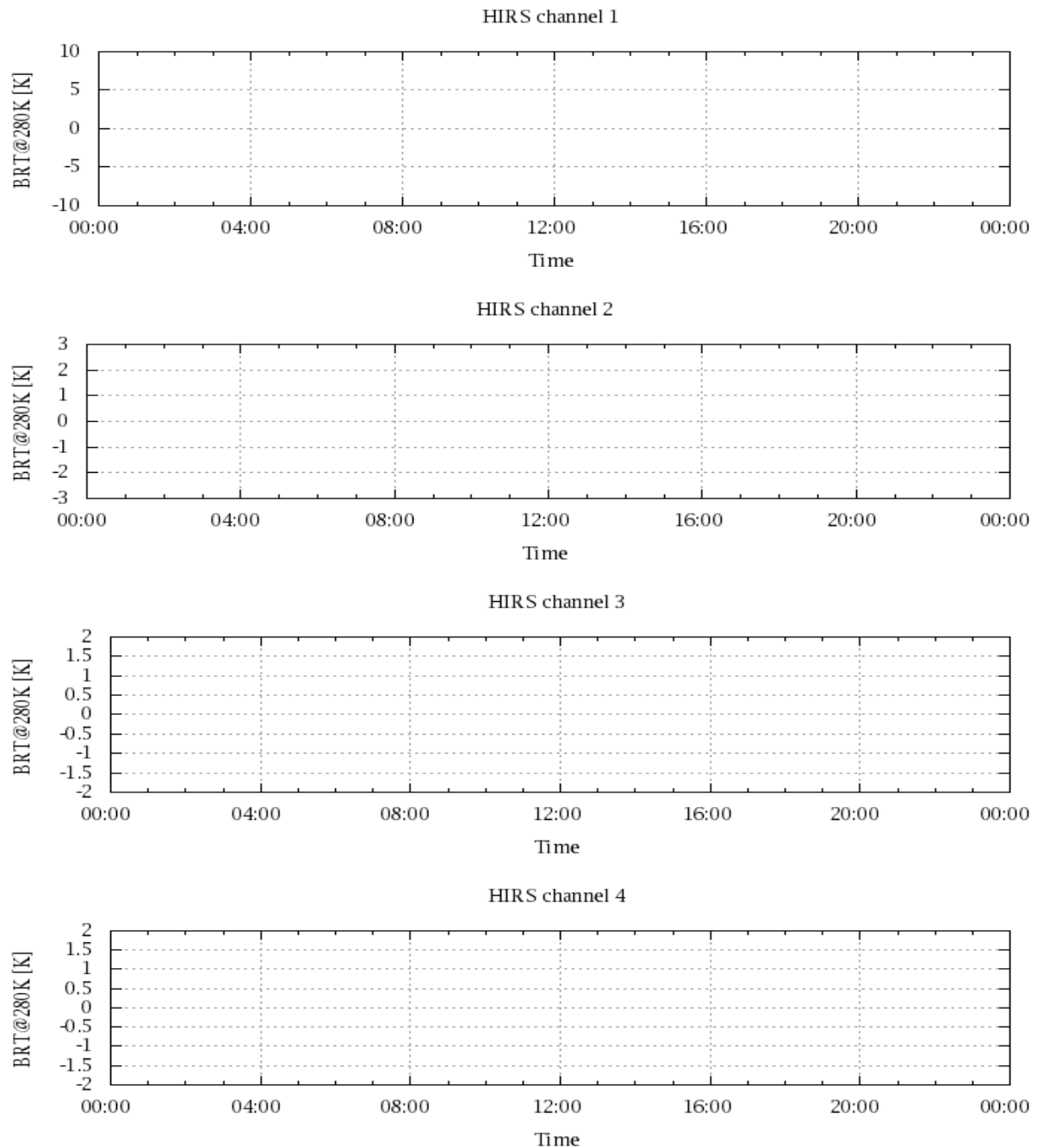


Figure 17: Radiance Differences in BT

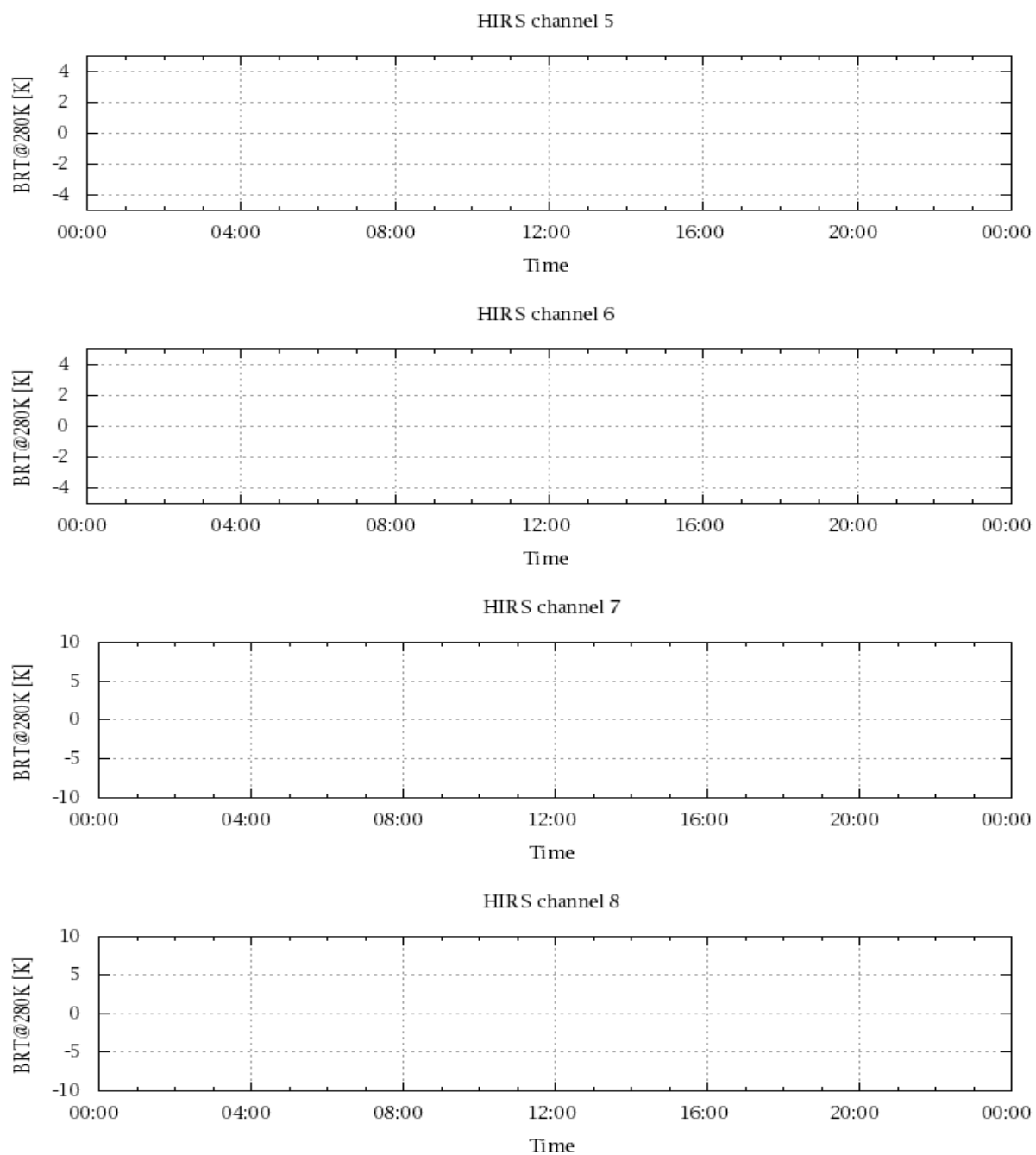


Figure 18: Radiance Differences in BT

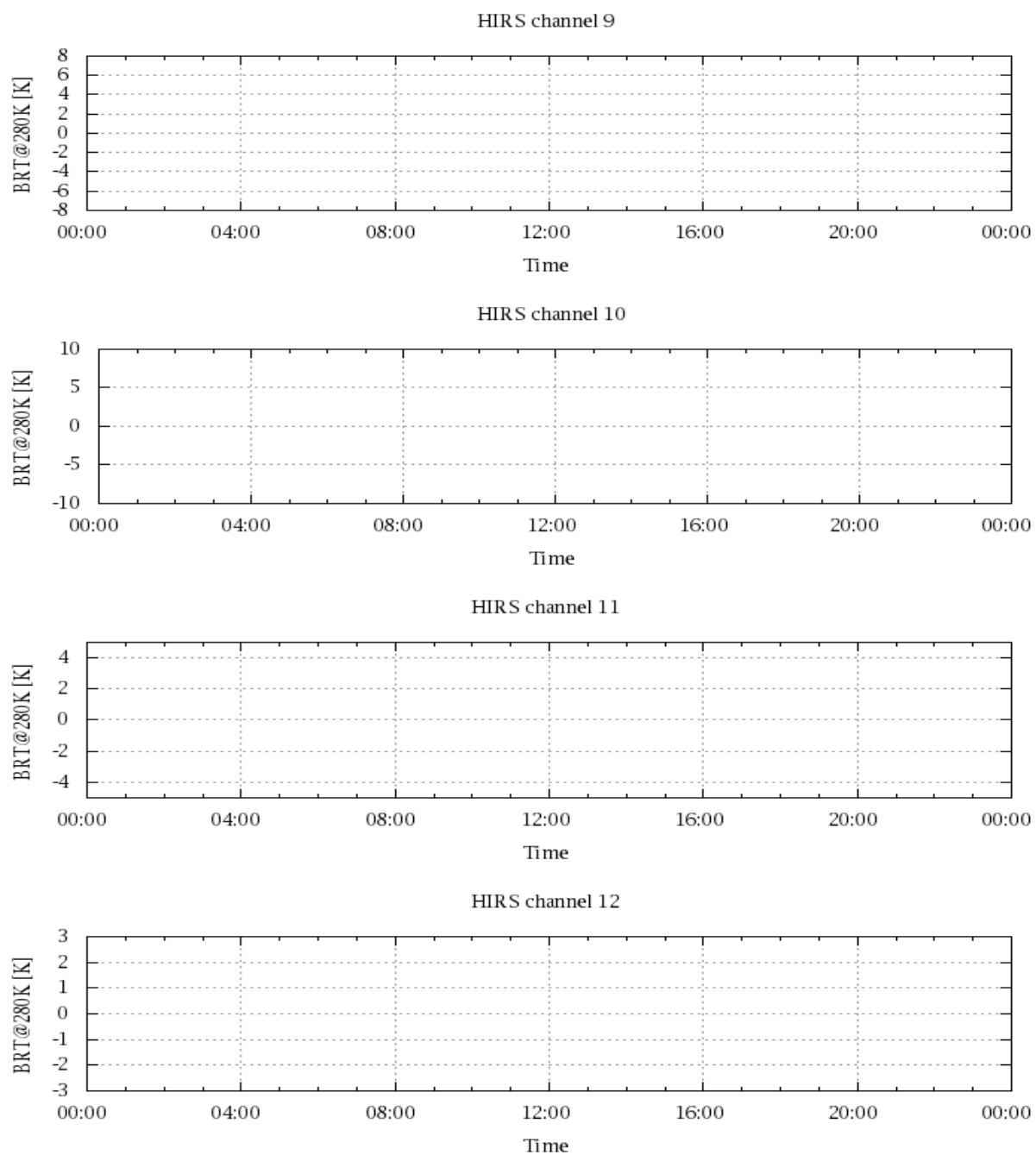


Figure 19: Radiance Differences in BT

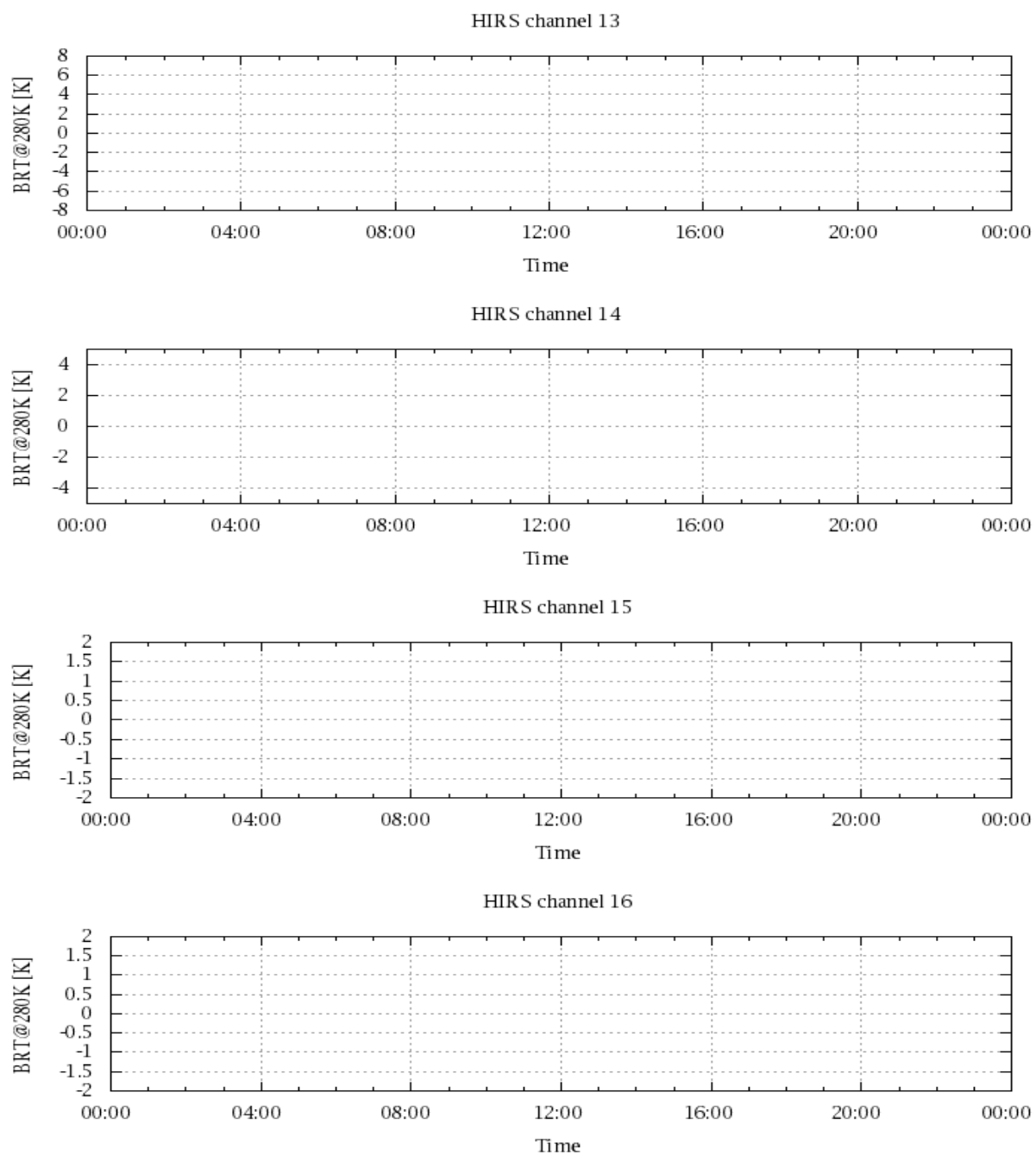


Figure 20: Radiance Differences in BT

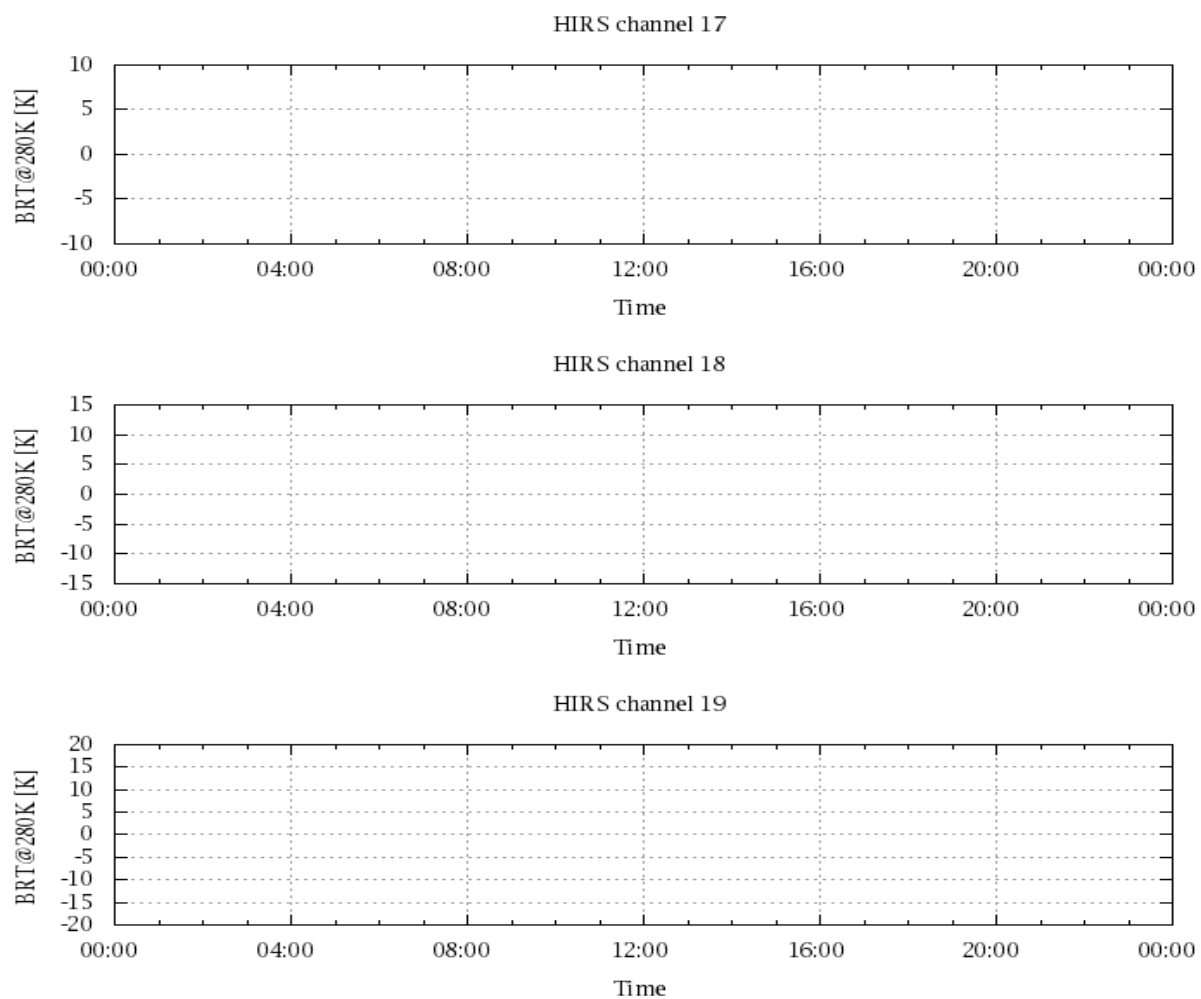


Figure 21: Radinace Differences in BT