

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

IASI monitoring team

13/04/2022 00:00:00 - 14/04/2022 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 13/04/2022 00:00:00 - 14/04/2022 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 13/04/2022 00:00:00 - 14/04/2022 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	468	-
<b>L1 DPX PDUs (RM: IASI-HIRS)</b>	<b>0</b>	<b>e</b>
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	3019	0	20220413001232.689	20220413001514.412
PX2 (135)	3019	0	20220413001232.689	20220413001514.412
PX3 (140)	3019	0	20220413001232.689	20220413001514.412
PX4 (145)	2989	0	20220413001224.689	20220413001514.412
IMG (150)	6291	0	20220413001232.689	20220413001514.412
VER (160)	4097	1050	20220413001232.689	20220413004352.671
VER (160)	1050	1055	20220413004352.671	20220413004352.671
VER (160)	1055	1060	20220413004352.671	20220413004352.671
VER (160)	1060	1065	20220413004352.671	20220413004352.671
VER (160)	1065	1070	20220413004352.671	20220413004352.671
VER (160)	1070	1051	20220413004352.671	20220413004352.671
VER (160)	1051	1056	20220413004352.671	20220413004352.671
VER (160)	1056	1061	20220413004352.671	20220413004352.671
VER (160)	1061	1066	20220413004352.671	20220413004352.671
VER (160)	1066	1071	20220413004352.671	20220413004352.671
VER (160)	1071	1052	20220413004352.671	20220413004352.671
VER (160)	1052	1057	20220413004352.671	20220413004352.671
VER (160)	1057	1062	20220413004352.671	20220413004352.671
VER (160)	1062	1067	20220413004352.671	20220413004352.671

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1067	1072	20220413004352.671	20220413004352.671
VER (160)	1072	1053	20220413004352.671	20220413004352.671
VER (160)	1053	1058	20220413004352.671	20220413004352.671
VER (160)	1058	1063	20220413004352.671	20220413004352.671
VER (160)	1063	1068	20220413004352.671	20220413004352.671
VER (160)	1068	1073	20220413004352.671	20220413004352.671
VER (160)	1073	1054	20220413004352.671	20220413004352.671
VER (160)	1054	1059	20220413004352.671	20220413004352.671
VER (160)	1059	1064	20220413004352.671	20220413004352.671
VER (160)	1064	1069	20220413004352.671	20220413004352.671
VER (160)	1069	1074	20220413004352.671	20220413004352.671
AUX (180)	817	0	20220413001225.123	20220413001521.115

Table 2: L0 data gaps

### 3 Instrument modes

Time	Transition from	Transition to
13/04/2022 00:00:06	-	Normal operation
13/04/2022 02:28:38	Normal operation	Auxiliary ASE synchronised

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	468	-
GQisFlagQual set (PX1)	99.57 %	-
GQisFlagQual set (PX2)	99.61 %	-
GQisFlagQual set (PX3)	99.63 %	-
GQisFlagQual set (PX4)	99.55 %	-
GQisFlagQual set (all)	99.59 %	-

Table 4: Quality flags

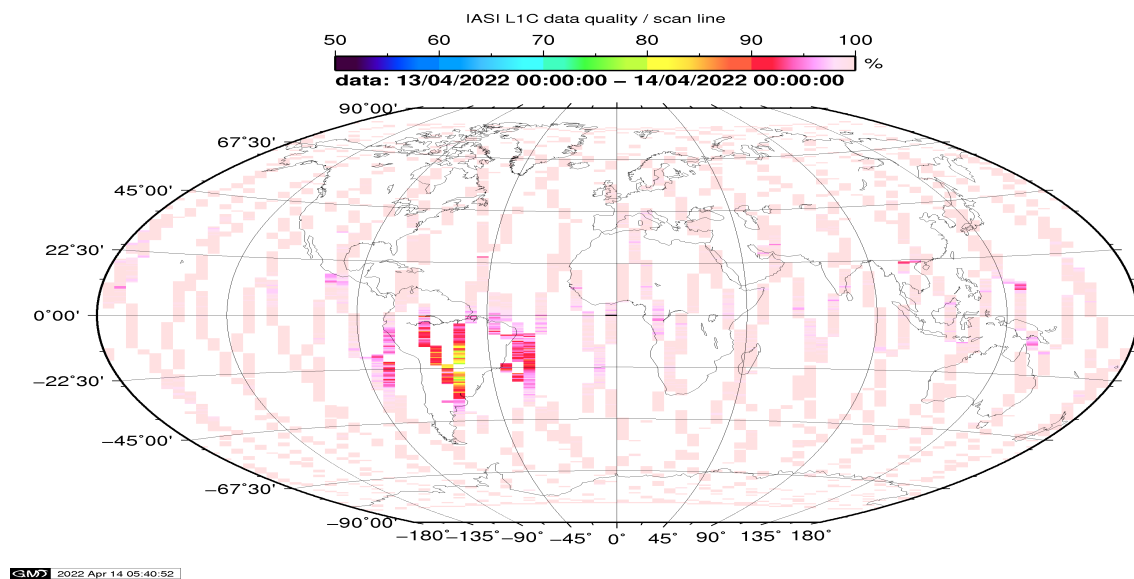


Figure 1: L1C data quality

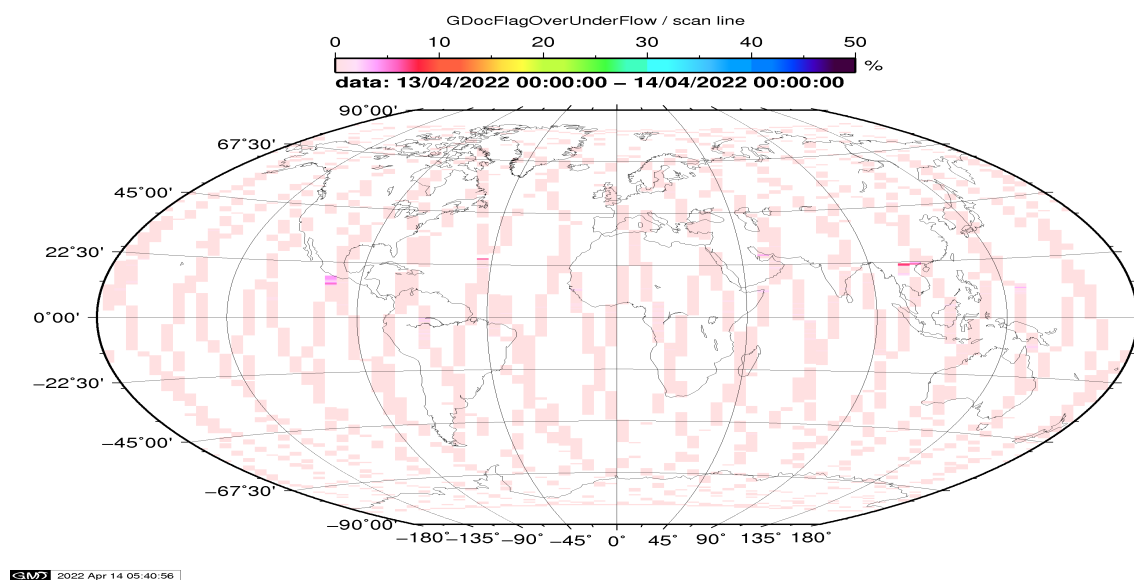


Figure 2: Flag of Over and Under Flows

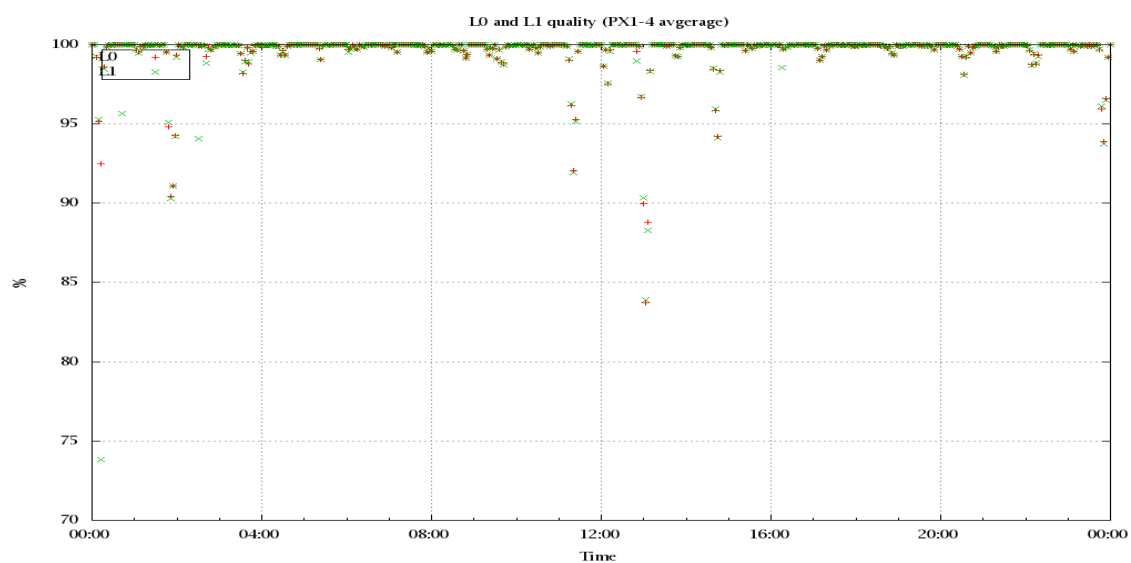


Figure 3: Level 0 and 1C overall quality

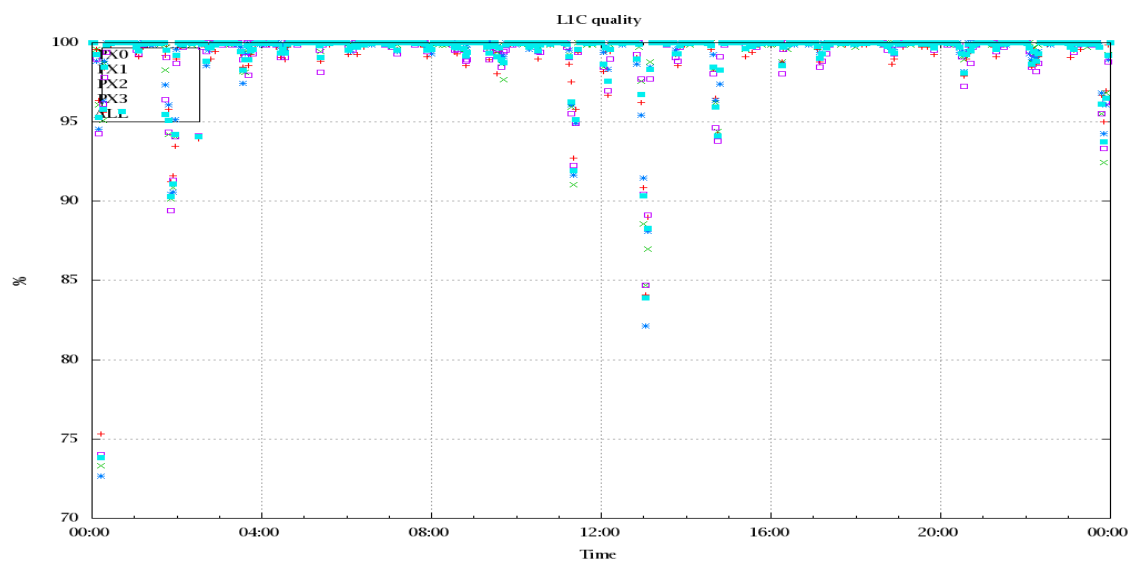


Figure 4: Level 1C quality

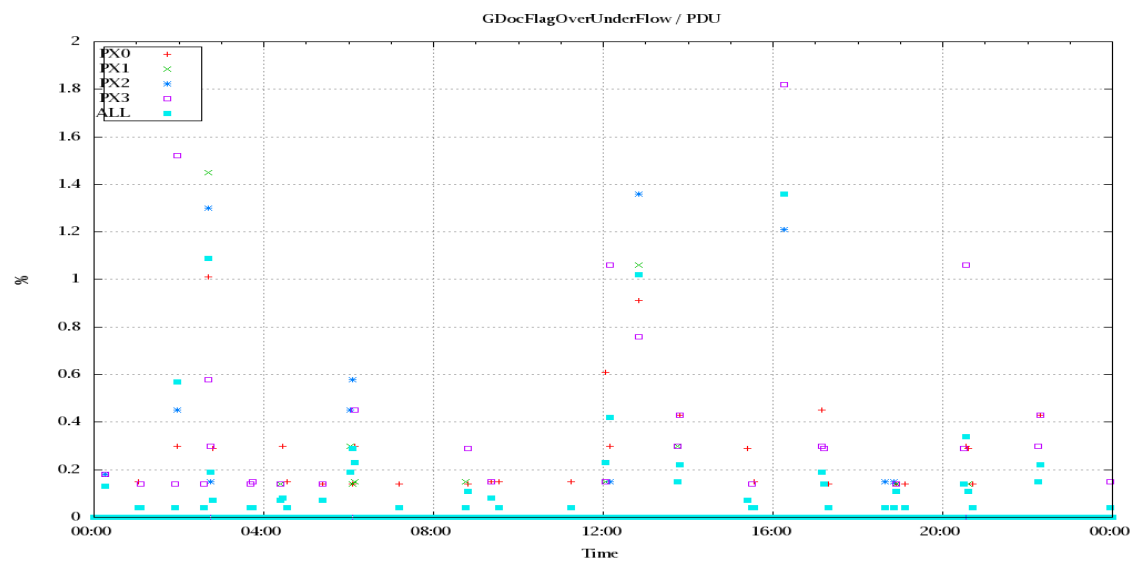


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

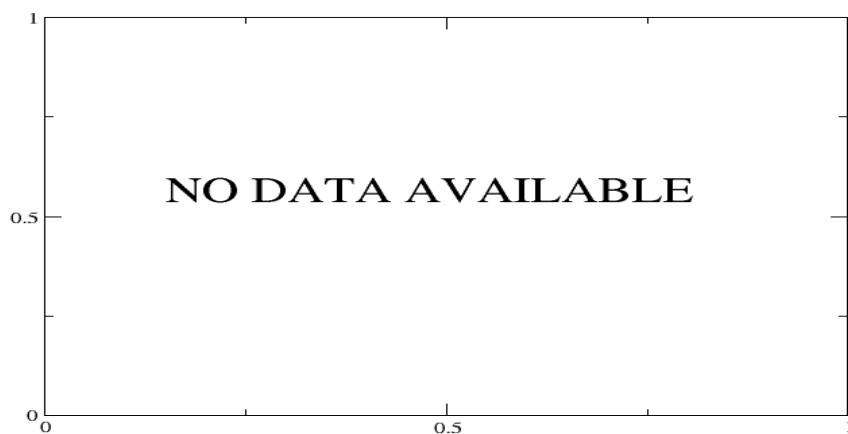


Figure 6: Average Radiance differences: OBS-CAL

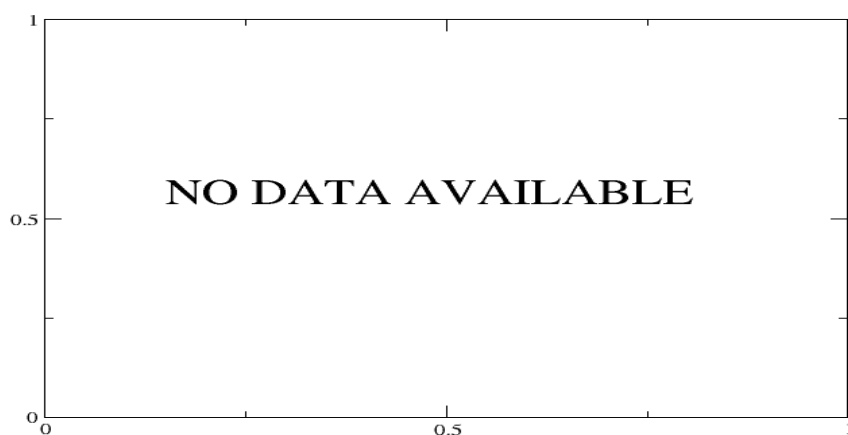


Figure 7: Standard Deviation of Radiance differences

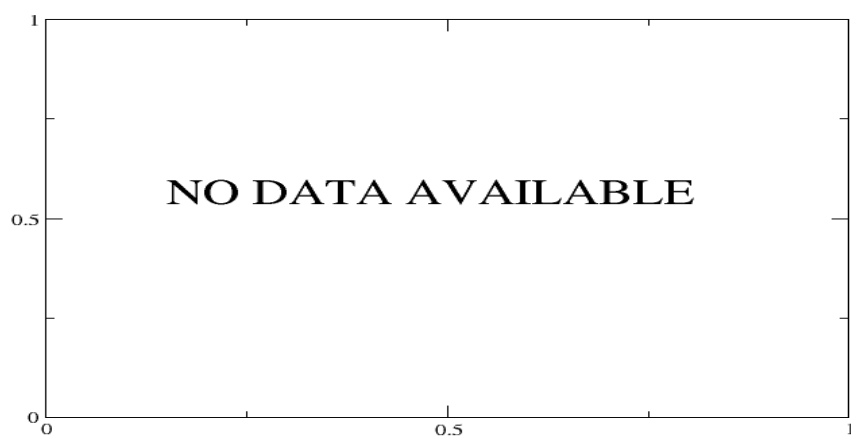


Figure 8: Average Radiance differences: OBS-CAL

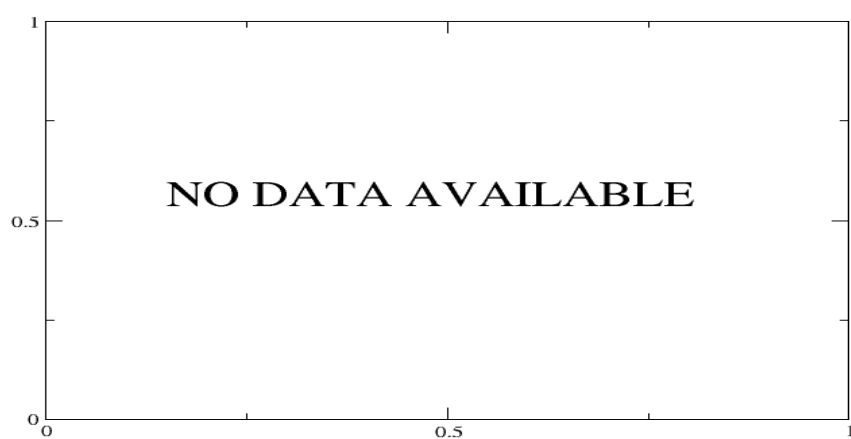


Figure 9: Standard Deviation of Radiance differences



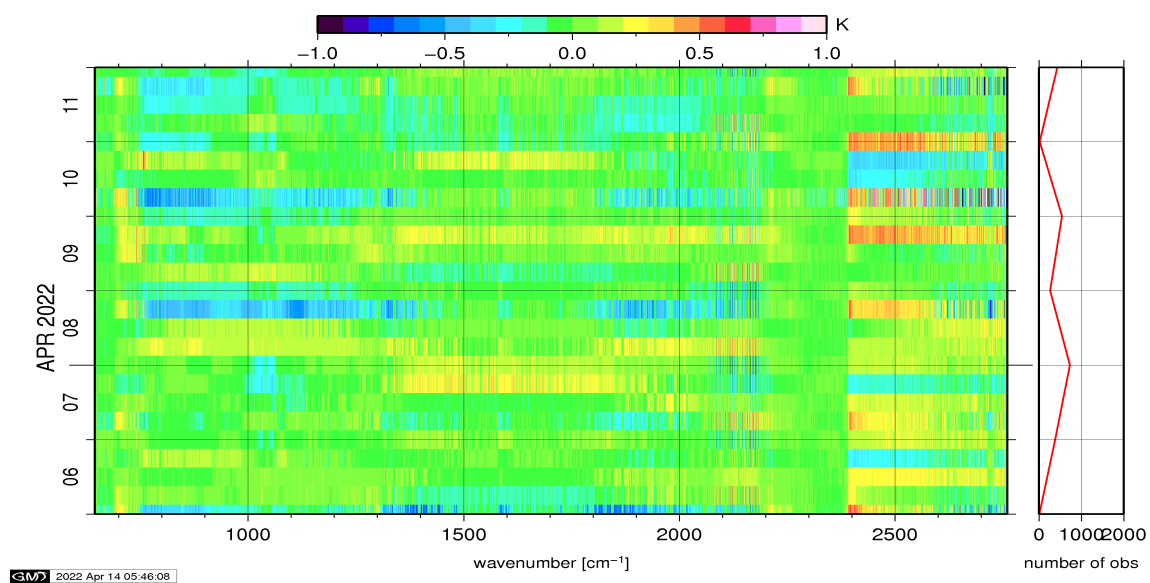


Figure 10: Radiance Anomaly in BT: All Channels

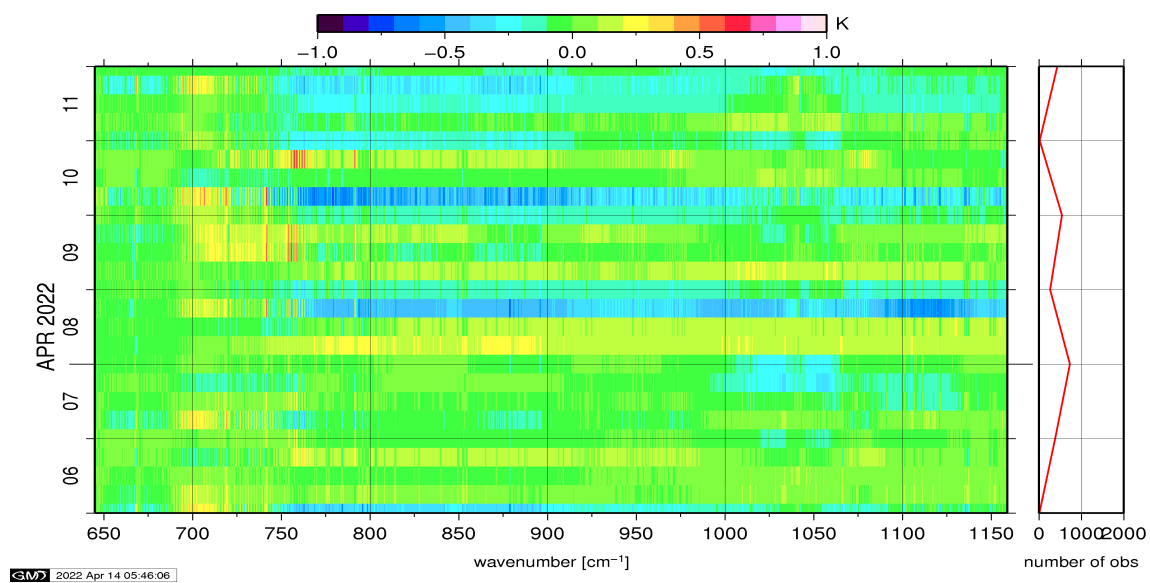


Figure 11: Radiance Anomaly in BT: IASI Band 1

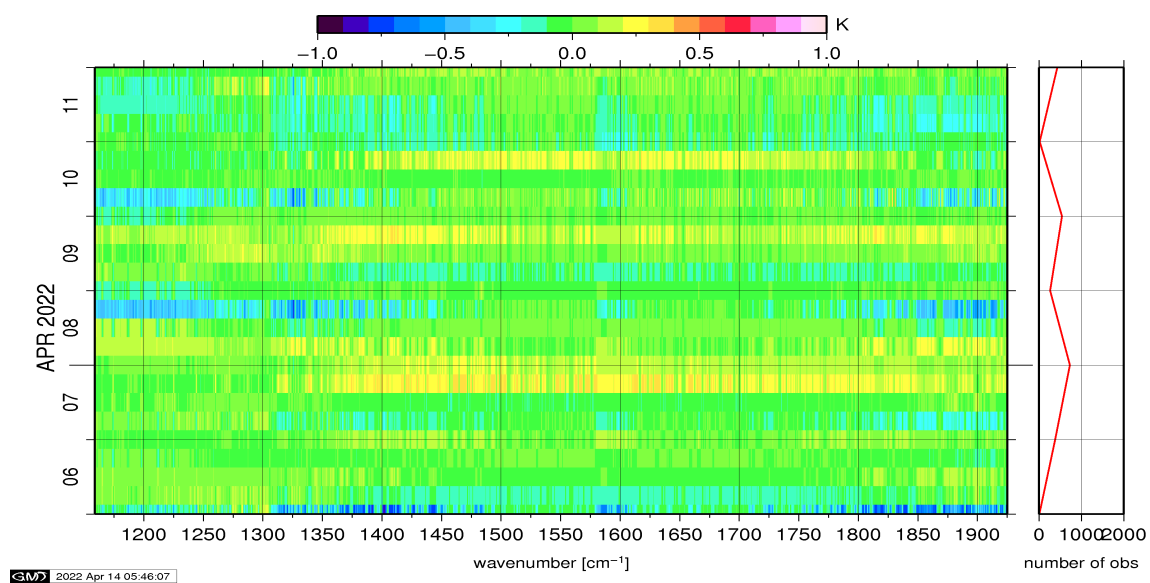


Figure 12: Radiance Anomaly in BT: IASI Band 2

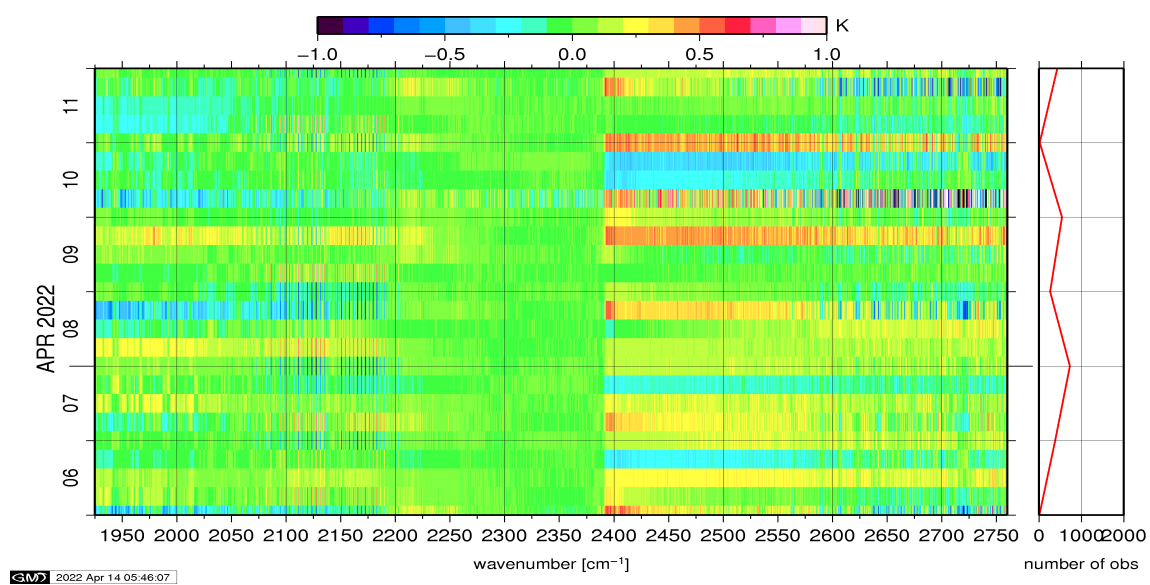


Figure 13: Radiance Anomaly in BT: IASI Band 3

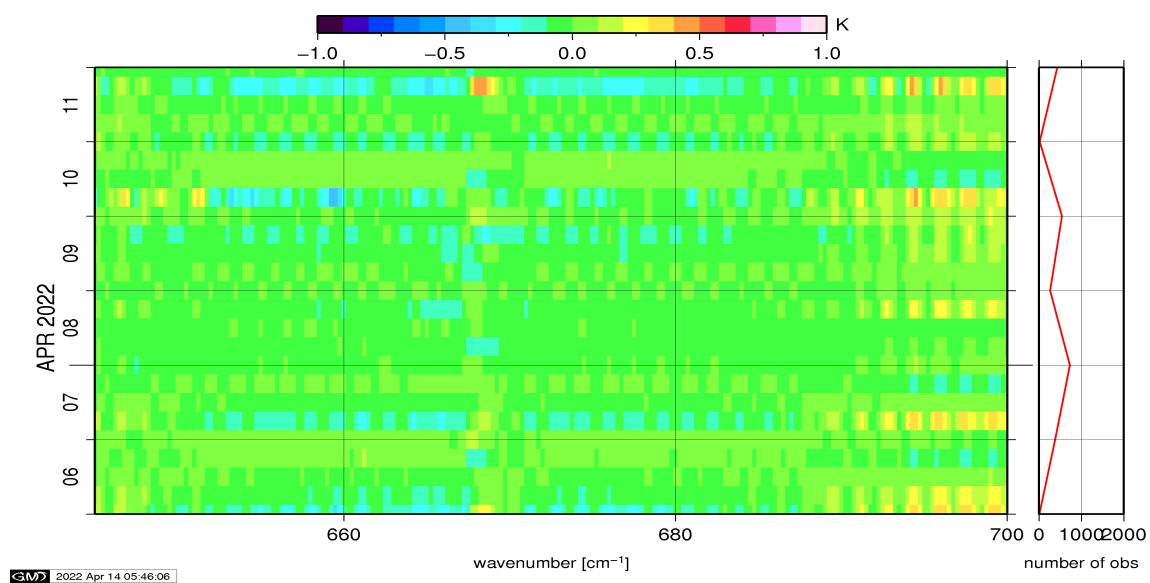


Figure 14: Radiance Anomaly in BT: CO2 14

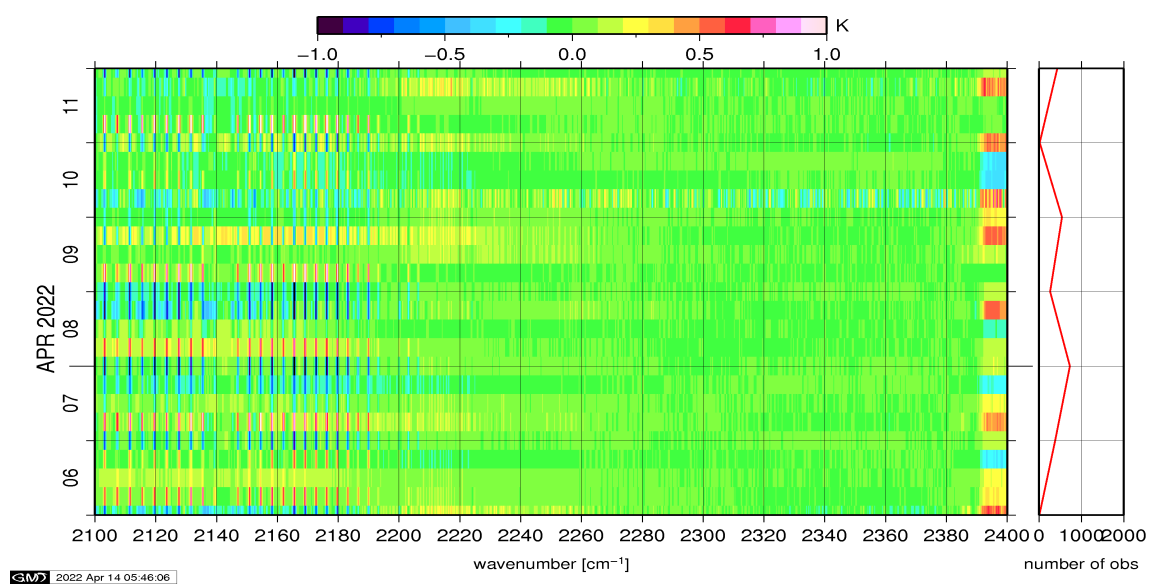


Figure 15: Radiance Anomaly in BT: CO2 4.3

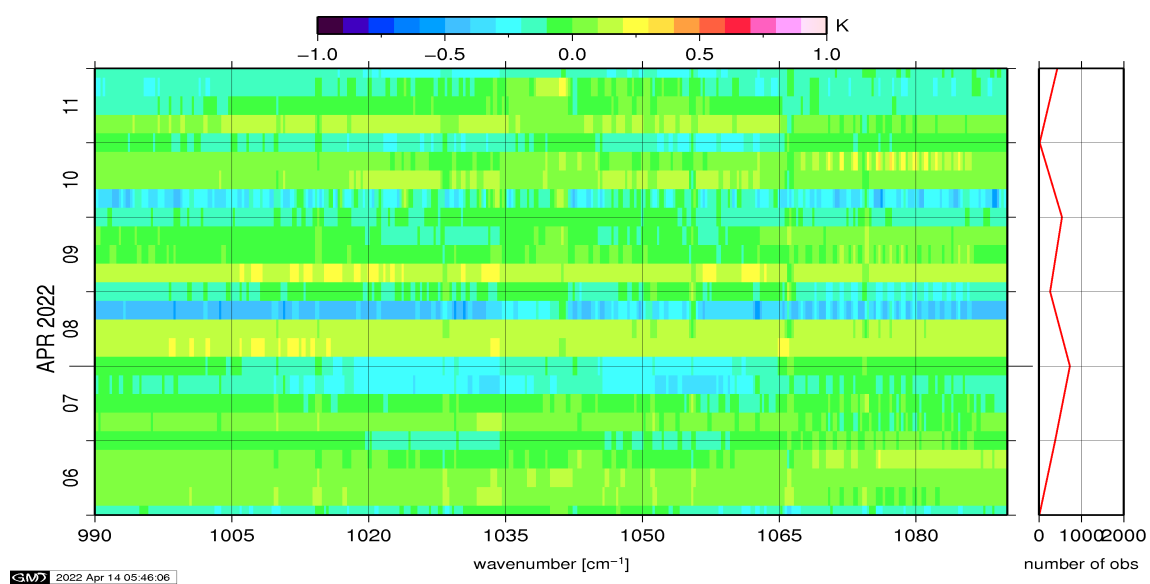


Figure 16: Radiance Anomaly in BT: O3

## 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.

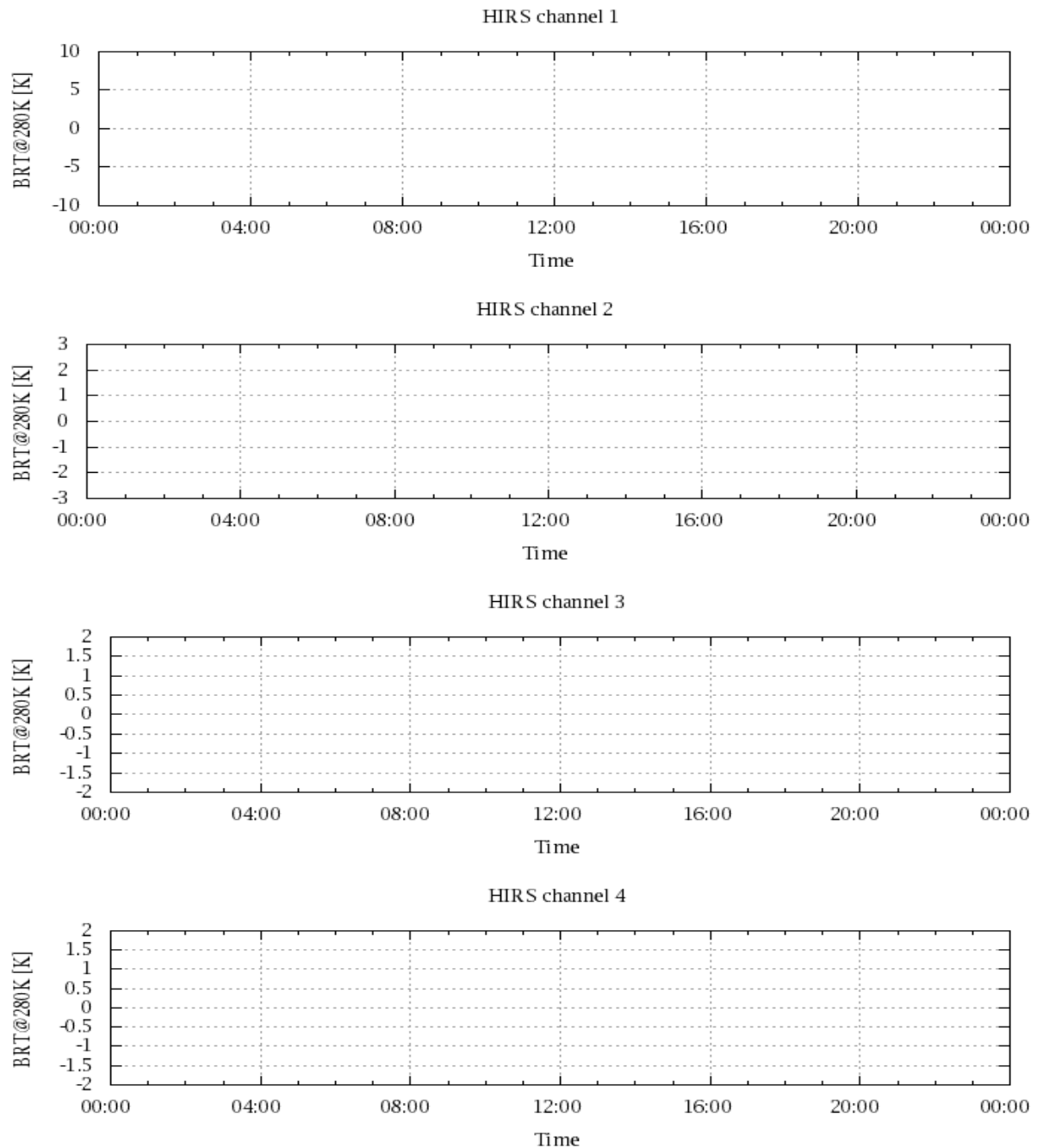


Figure 17: Radiance Differences in BT

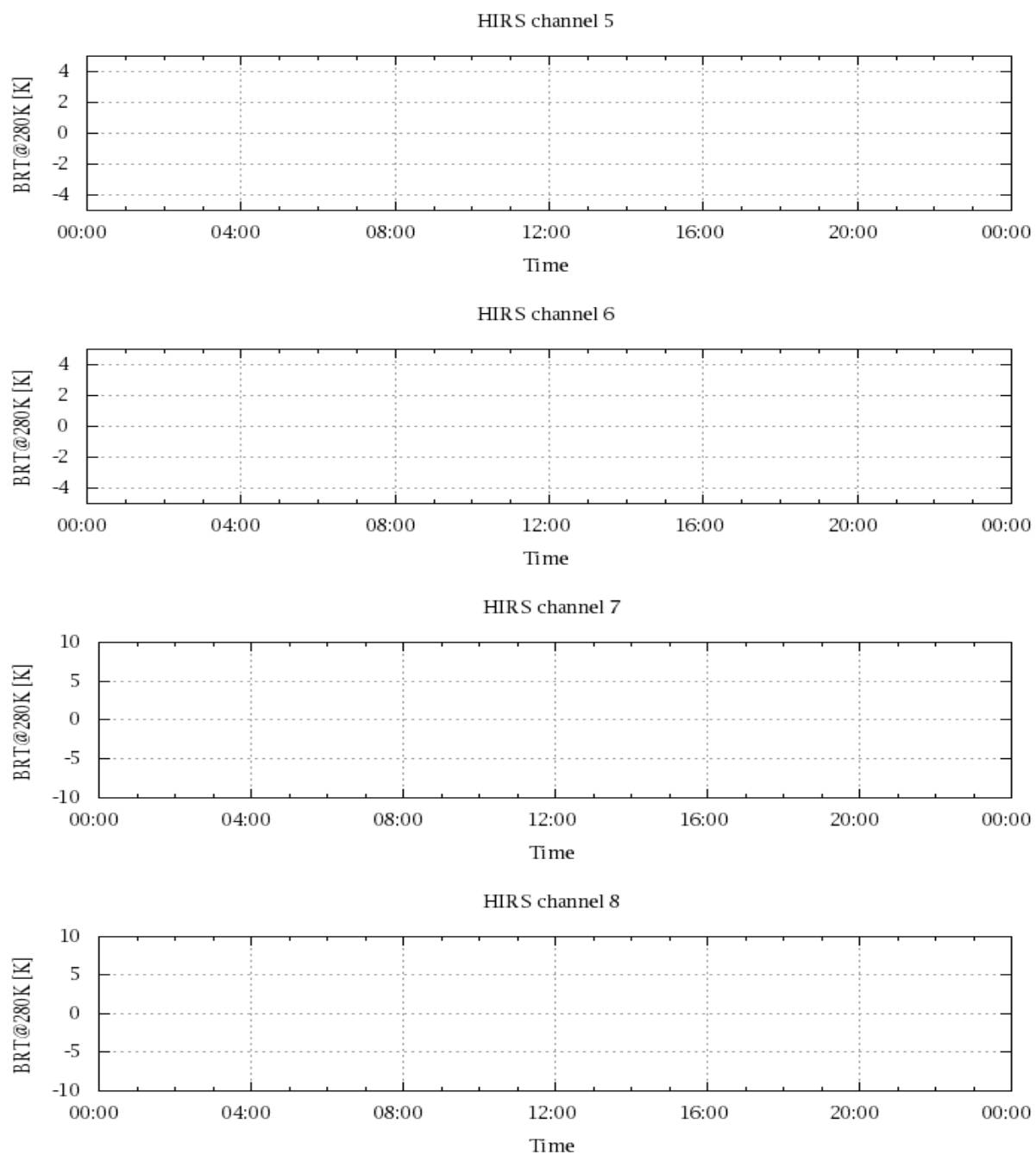


Figure 18: Radiance Differences in BT

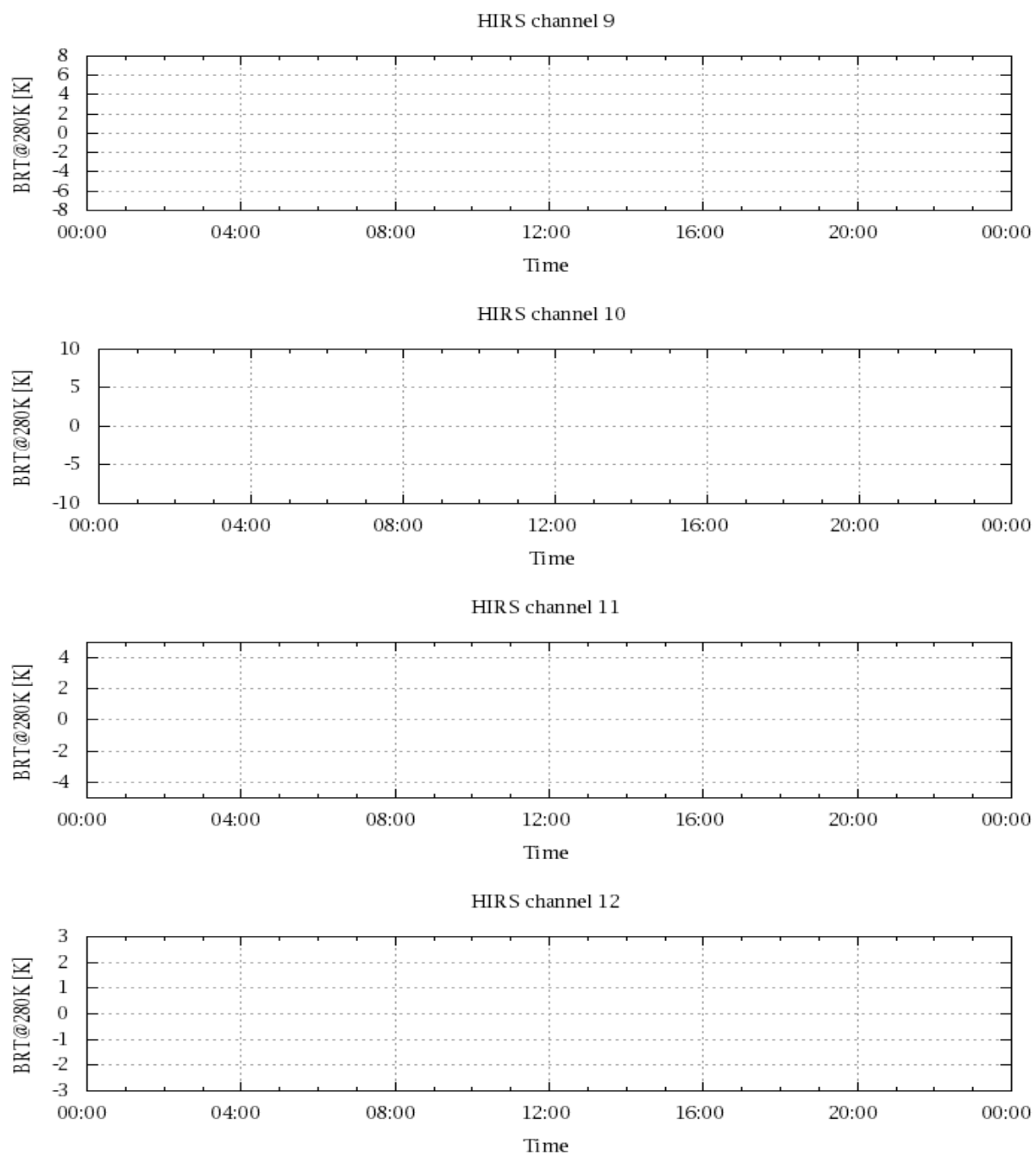


Figure 19: Radiance Differences in BT

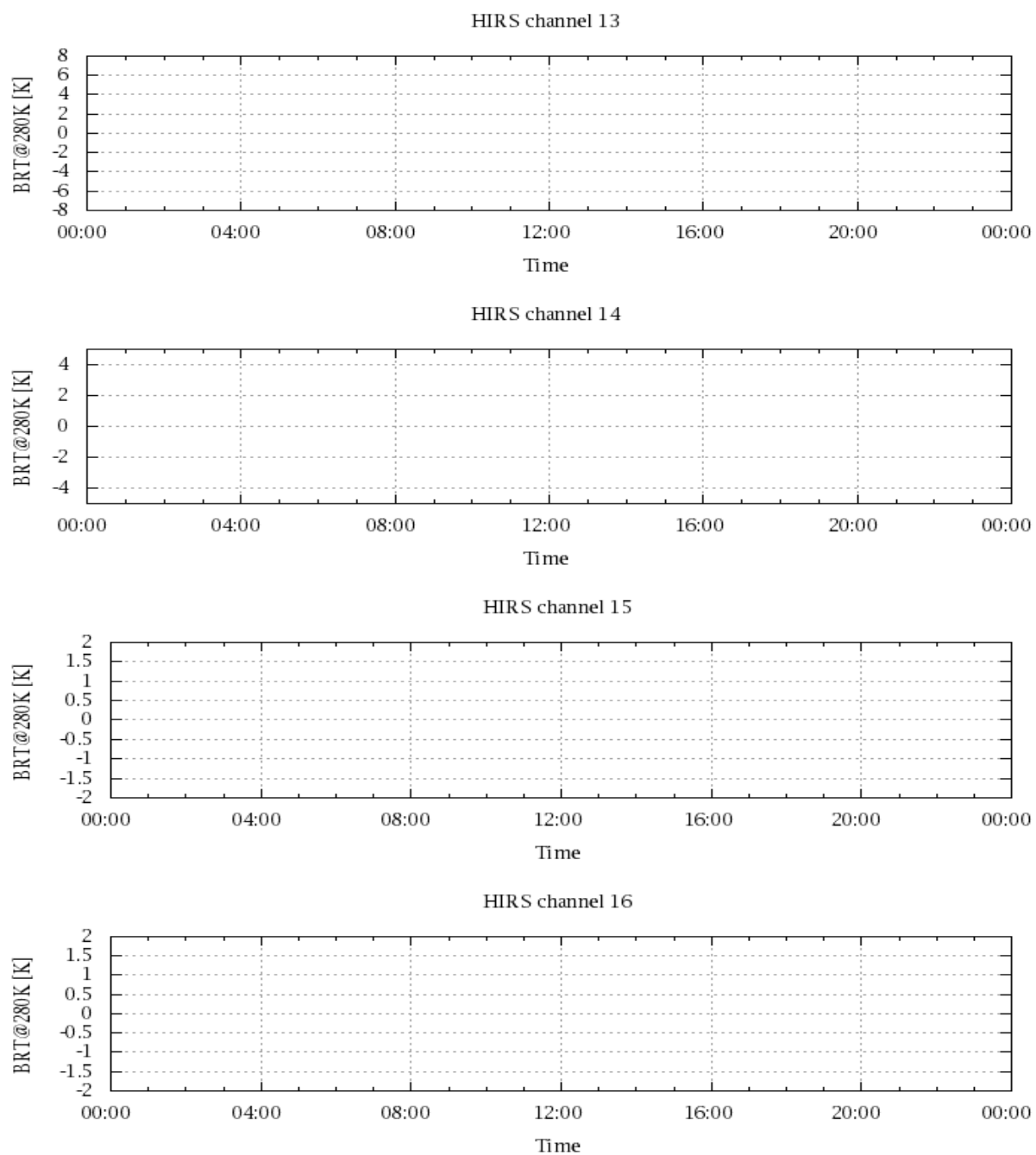


Figure 20: Radiance Differences in BT



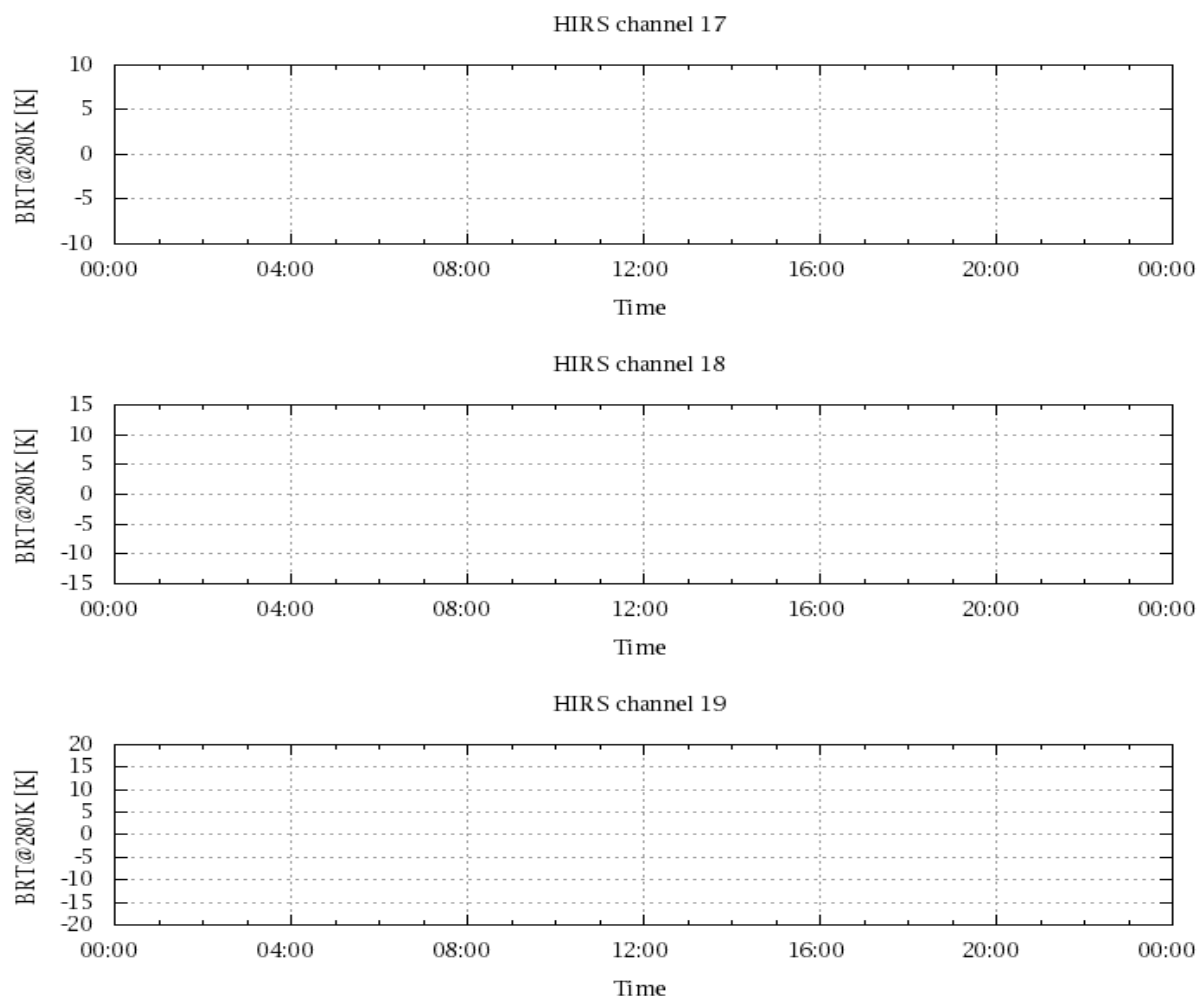


Figure 21: Radinace Differences in BT