

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

IASI monitoring team

13/07/2020 00:00:00 - 14/07/2020 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 13/07/2020 00:00:00 - 14/07/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 13/07/2020 00:00:00 - 14/07/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	460	a
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)	14077	14079	20200713025206.335	20200713025206.769
PX1 (130)	15026	15028	20200713025618.436	20200713025618.870
PX1 (130)	15031	15033	20200713025619.518	20200713025619.952
PX1 (130)	15034	15036	20200713025620.167	20200713025622.112
PX1 (130)	15057	15060	20200713025626.655	20200713025627.304
PX1 (130)	15119	15121	20200713025643.085	20200713025643.518
PX1 (130)	16007	16009	20200713030040.522	20200713030040.952
PX1 (130)	16009	16082	20200713030040.952	20200713030059.764
PX1 (130)	2728	2730	20200713031427.739	20200713031428.173
PX2 (135)	15026	15028	20200713025618.436	20200713025618.870
PX2 (135)	15031	15034	20200713025619.518	20200713025620.167
PX2 (135)	15043	15045	20200713025623.628	20200713025624.057
PX2 (135)	16006	16009	20200713030040.307	20200713030040.952
PX2 (135)	16009	16011	20200713030040.952	20200713030041.385
PX2 (135)	16011	16013	20200713030041.385	20200713030041.819
PX2 (135)	16013	16082	20200713030041.819	20200713030059.764
PX3 (140)	14091	14093	20200713025209.363	20200713025209.796
PX3 (140)	15032	15034	20200713025619.733	20200713025620.167
PX3 (140)	15050	15052	20200713025625.140	20200713025625.573

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	15086	15088	20200713025634.436	20200713025634.870
PX3 (140)	15099	15101	20200713025638.761	20200713025639.194
PX3 (140)	16004	16006	20200713030039.873	20200713030040.307
PX3 (140)	16006	16008	20200713030040.307	20200713030040.737
PX3 (140)	16009	16011	20200713030040.952	20200713030041.385
PX3 (140)	16012	16078	20200713030041.604	20200713030058.901
PX3 (140)	16078	16081	20200713030058.901	20200713030059.549
PX3 (140)	16083	16085	20200713030059.979	20200713030100.413
PX4 (145)	15053	15055	20200713025625.788	20200713025626.222
PX4 (145)	15056	15058	20200713025626.436	20200713025626.870
PX4 (145)	15068	15070	20200713025630.546	20200713025630.979
PX4 (145)	15099	15101	20200713025638.761	20200713025639.194
PX4 (145)	15135	15137	20200713025648.057	20200713025648.491
PX4 (145)	16007	16009	20200713030040.522	20200713030040.952
PX4 (145)	16009	16012	20200713030040.952	20200713030041.604
PX4 (145)	16012	16015	20200713030041.604	20200713030042.252
PX4 (145)	16017	16074	20200713030042.682	20200713030058.034
PX4 (145)	16074	16081	20200713030058.034	20200713030059.549
PX4 (145)	16084	16086	20200713030100.198	20200713030102.143
IMG (150)	7861	7863	20200713025612.382	20200713025613.034
IMG (150)	7911	7913	20200713025624.491	20200713025624.925
IMG (150)	7918	7920	20200713025626.007	20200713025626.436
IMG (150)	7923	7925	20200713025627.085	20200713025627.518
IMG (150)	7931	7933	20200713025629.034	20200713025629.679
IMG (150)	8996	8998	20200713030039.873	20200713030040.307
IMG (150)	9001	9080	20200713030040.952	20200713030059.330
IMG (150)	9080	9083	20200713030059.330	20200713030059.979
VER (160)	3533	3545	20200713030036.413	20200713030100.413
VER (160)	3545	3547	20200713030100.413	20200713030100.413
AUX (180)	10535	10538	20200713030036.846	20200713030100.846

Table 2: L0 data gaps

### 3 Instrument modes

Time	Transition from	Transition to
13/07/2020 00:00:01	-	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	460	a
GQisFlagQual set (PX1)	99.52 %	-
GQisFlagQual set (PX2)	99.61 %	-
GQisFlagQual set (PX3)	99.64 %	-
GQisFlagQual set (PX4)	99.52 %	-
GQisFlagQual set (all)	99.57 %	-

Table 4: Quality flags

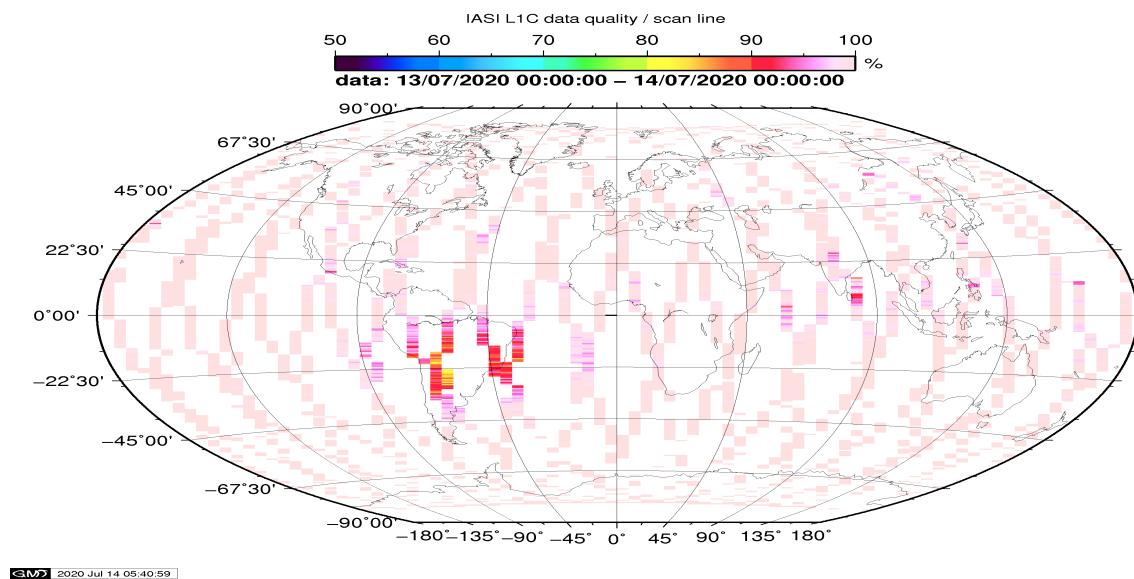


Figure 1: L1C data quality

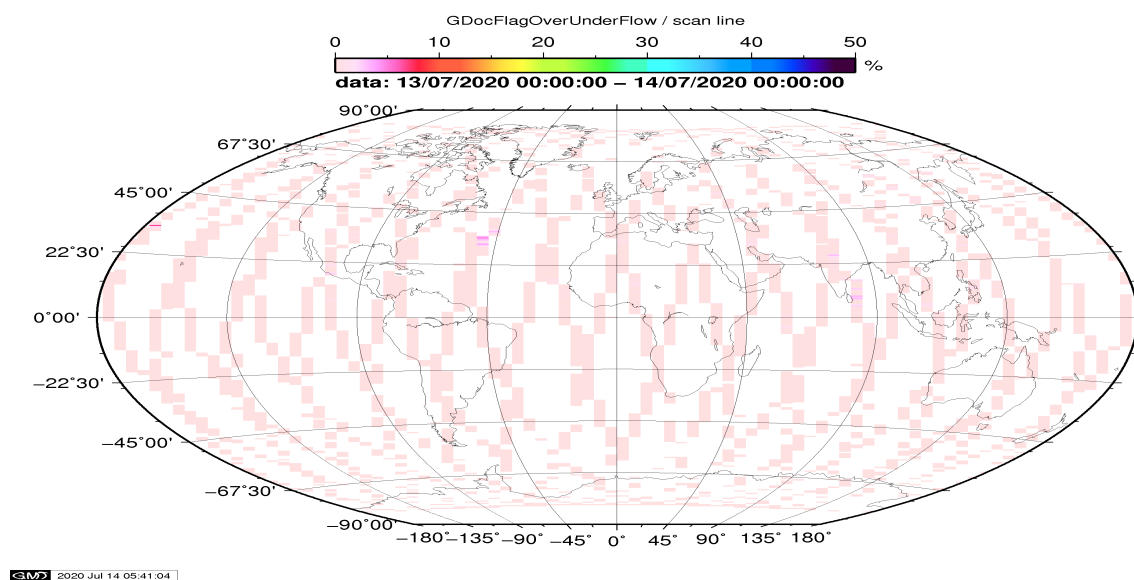


Figure 2: Flag of Over and Under Flows

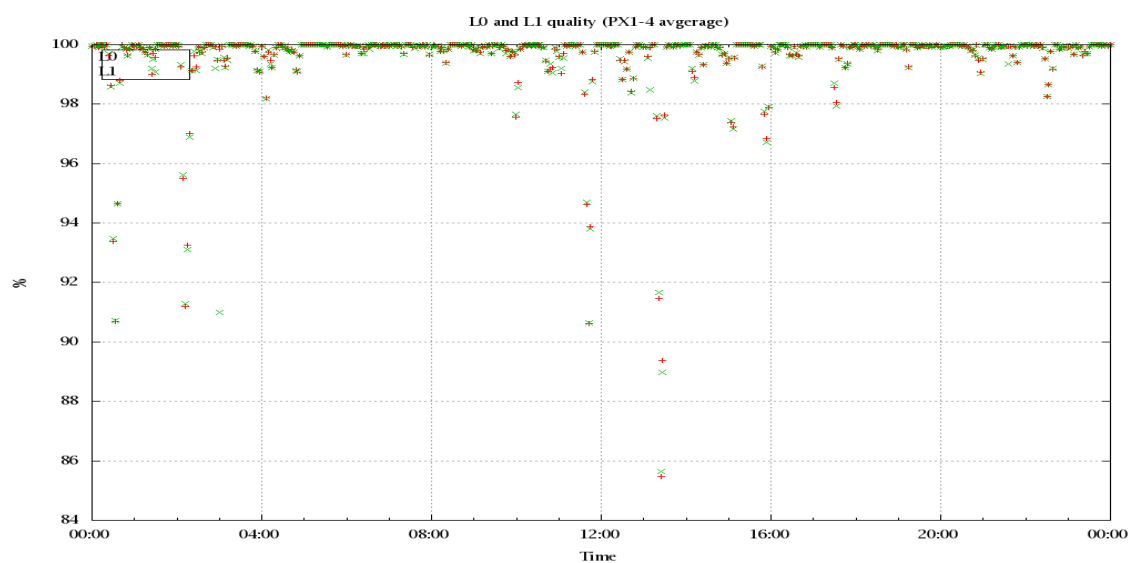


Figure 3: Level 0 and 1C overall quality

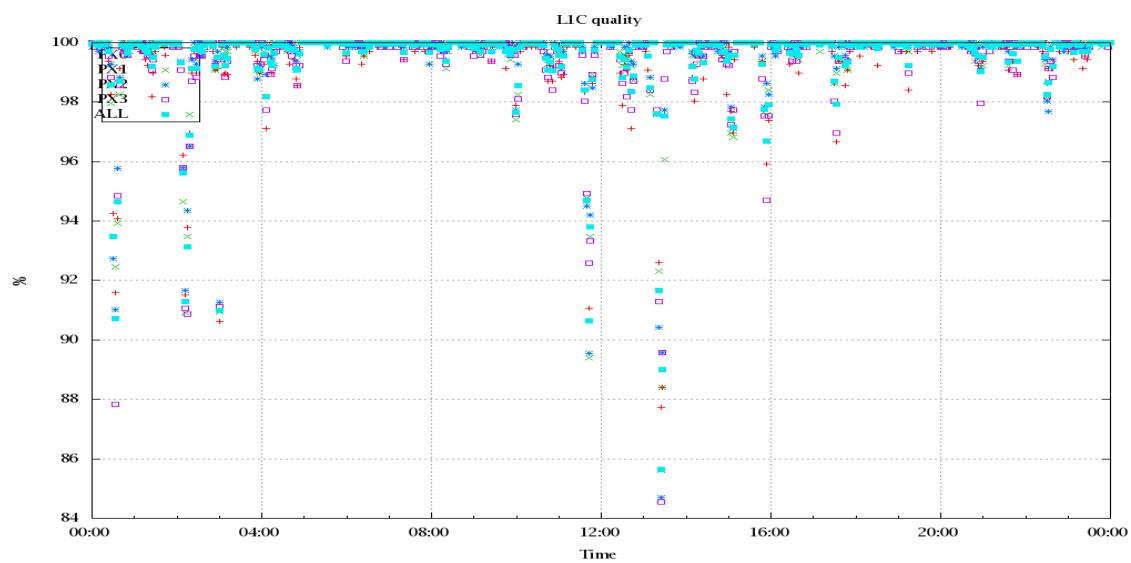


Figure 4: Level 1C quality

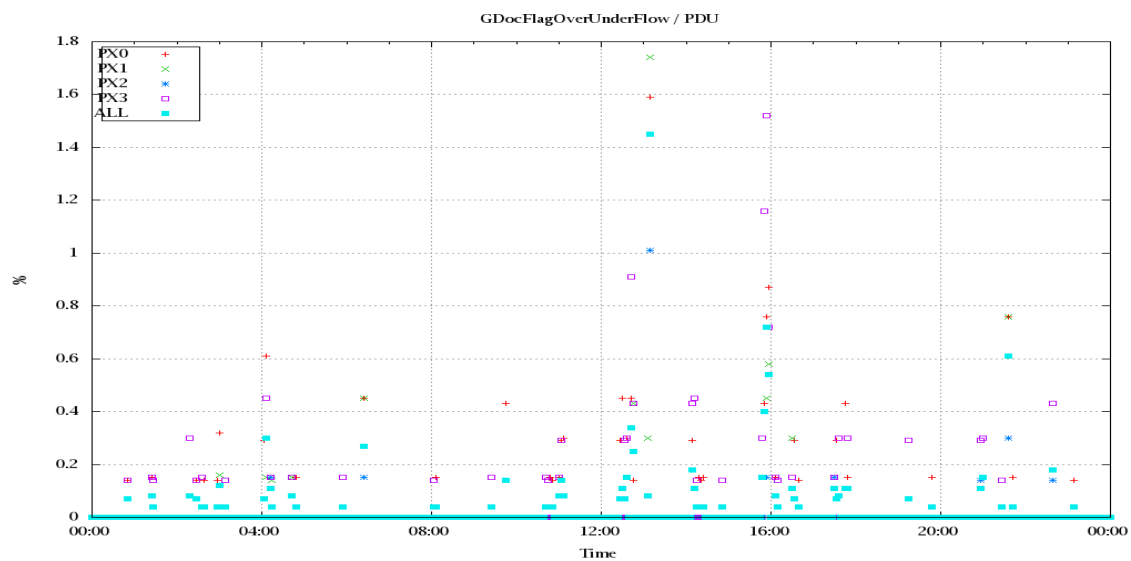


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

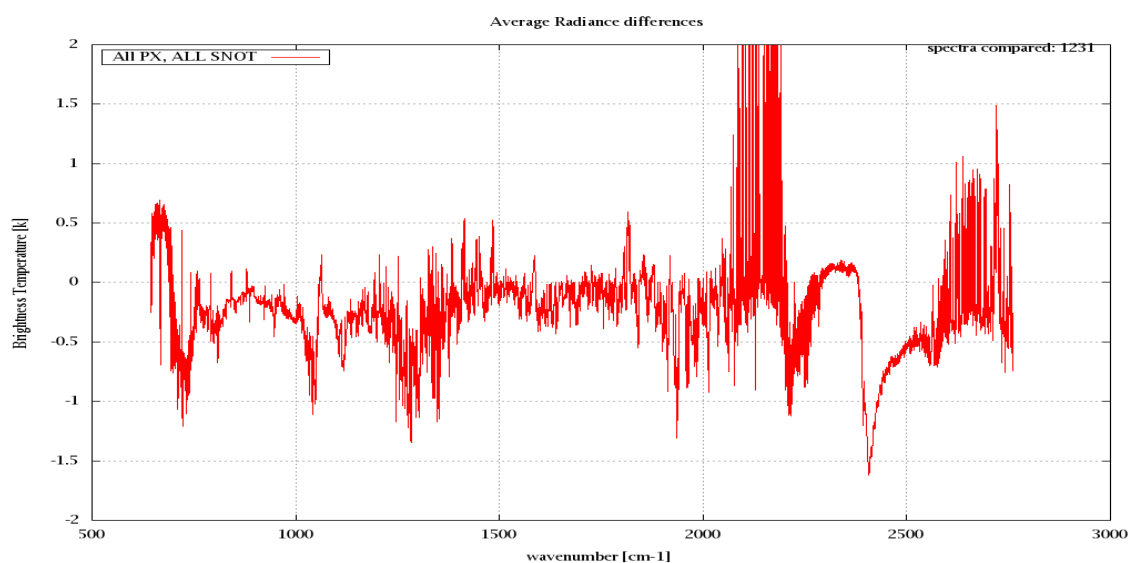


Figure 6: Average Radiance differences: OBS-CAL

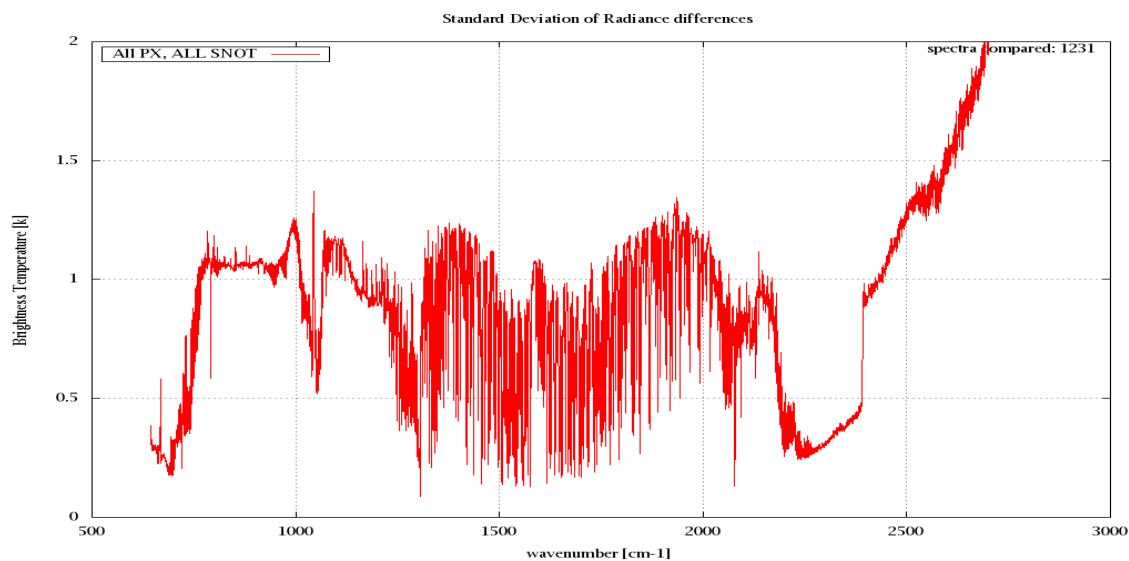


Figure 7: Standard Deviation of Radiance differences

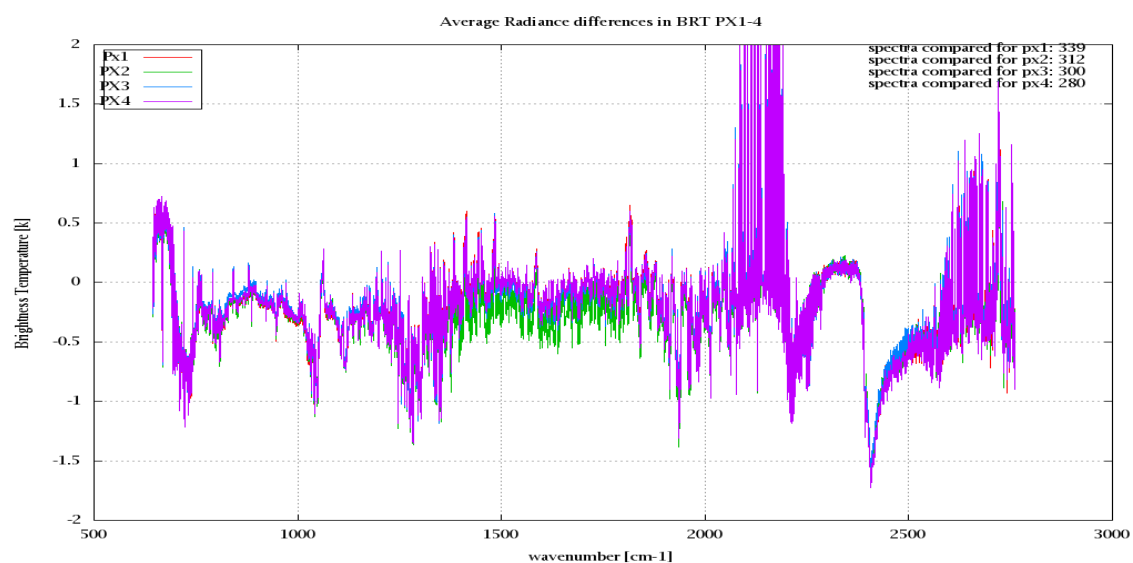


Figure 8: Average Radiance differences: OBS-CAL

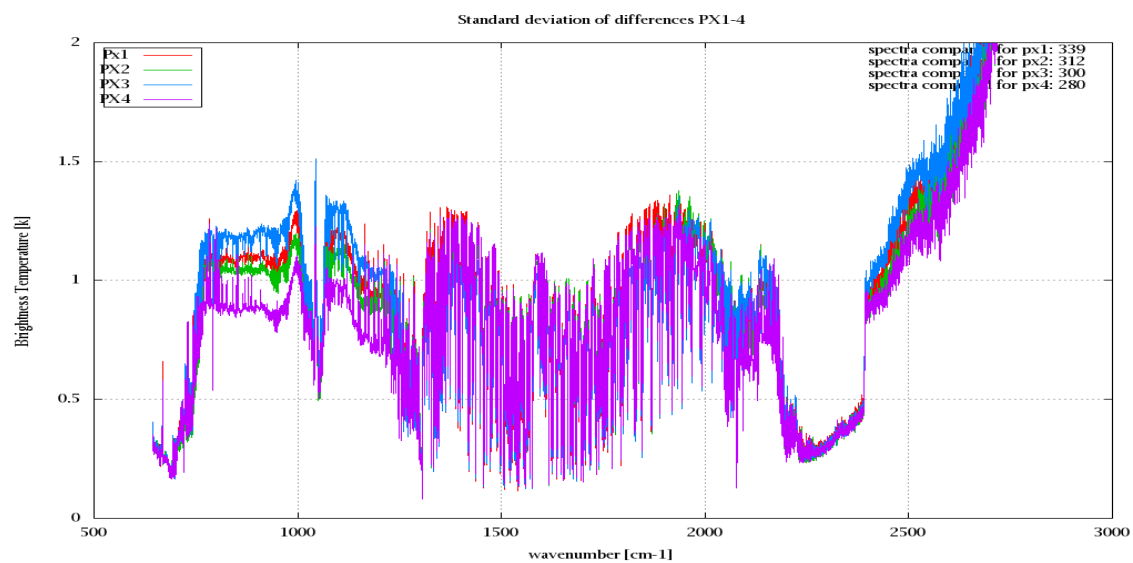


Figure 9: Standard Deviation of Radiance differences



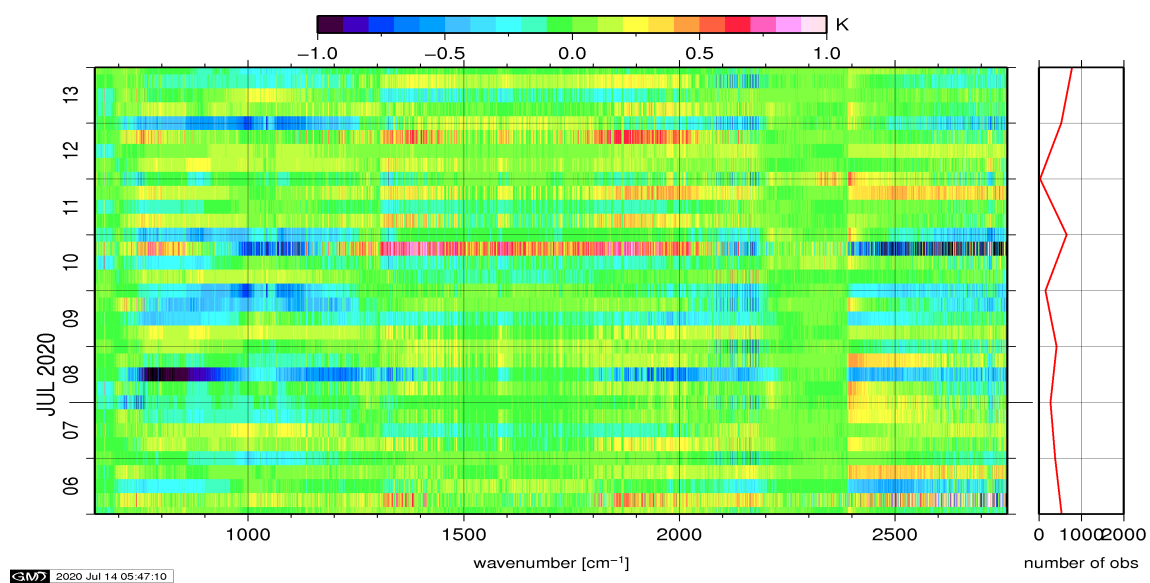


Figure 10: Radiance Anomaly in BT: All Channels

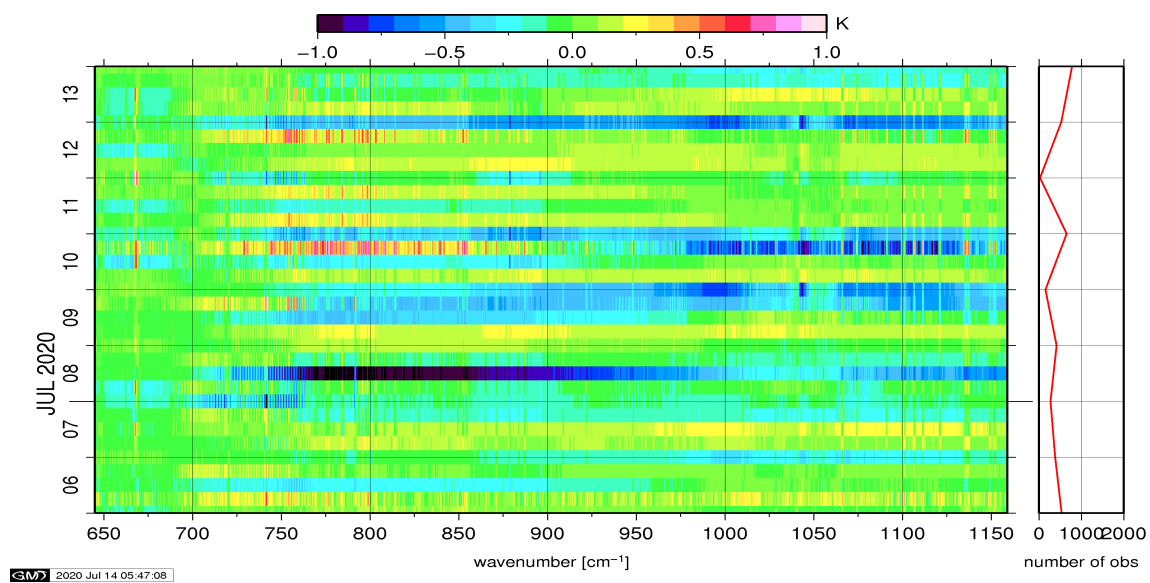


Figure 11: Radiance Anomaly in BT: IASI Band 1

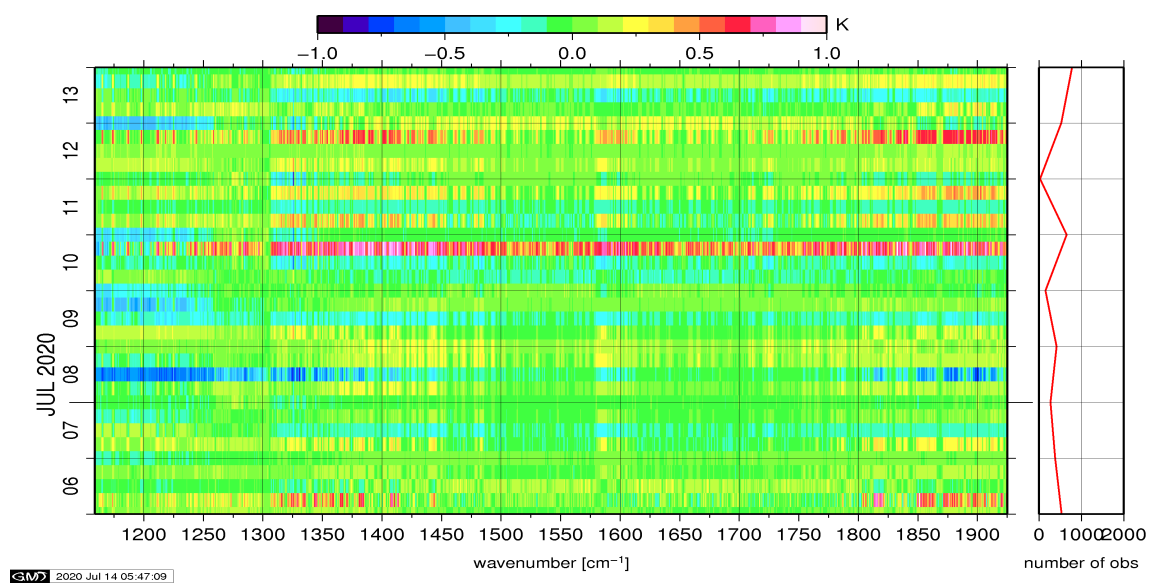


Figure 12: Radiance Anomaly in BT: IASI Band 2

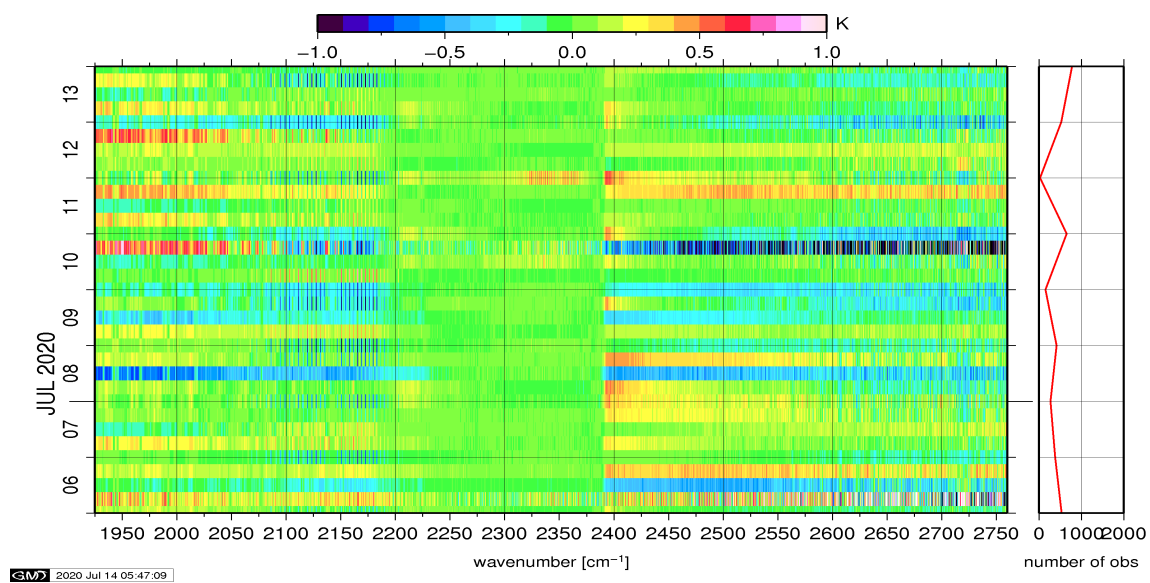


Figure 13: Radiance Anomaly in BT: IASI Band 3

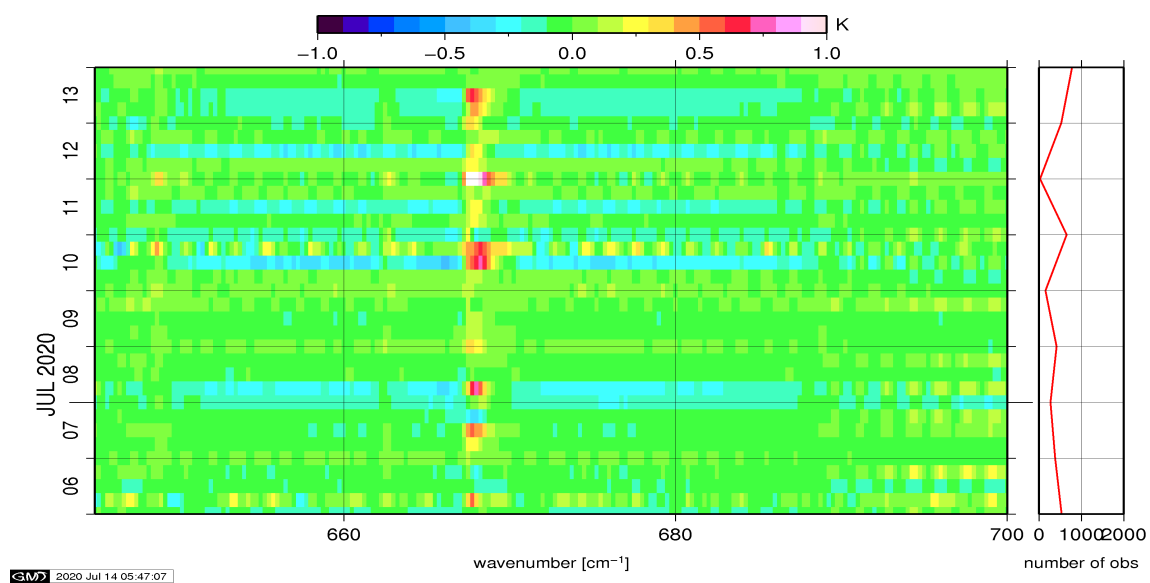


Figure 14: Radiance Anomaly in BT: CO2 14

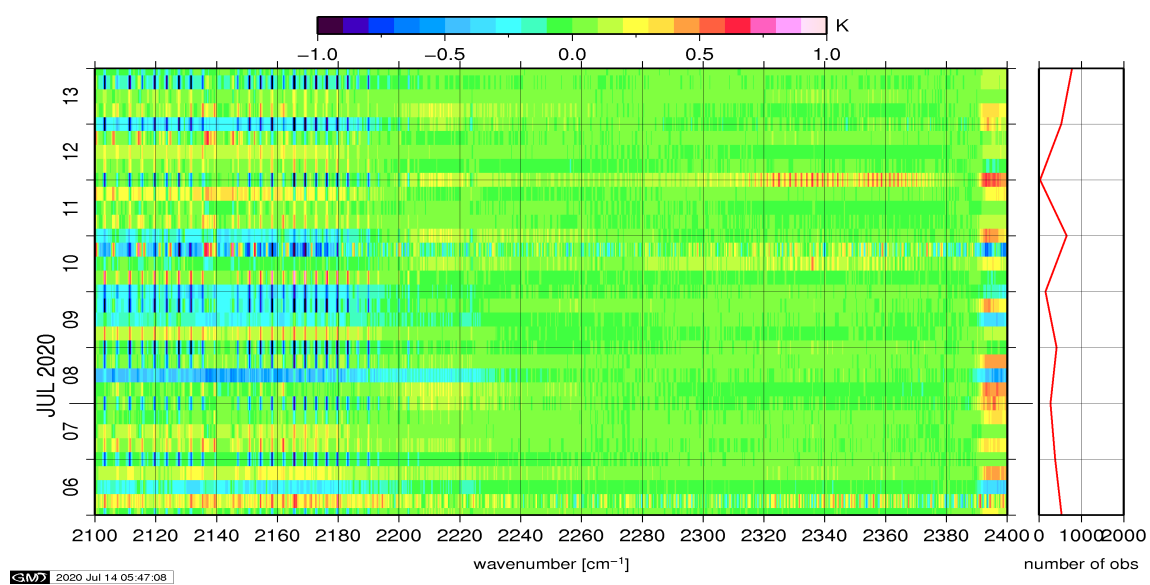


Figure 15: Radiance Anomaly in BT: CO2 4.3

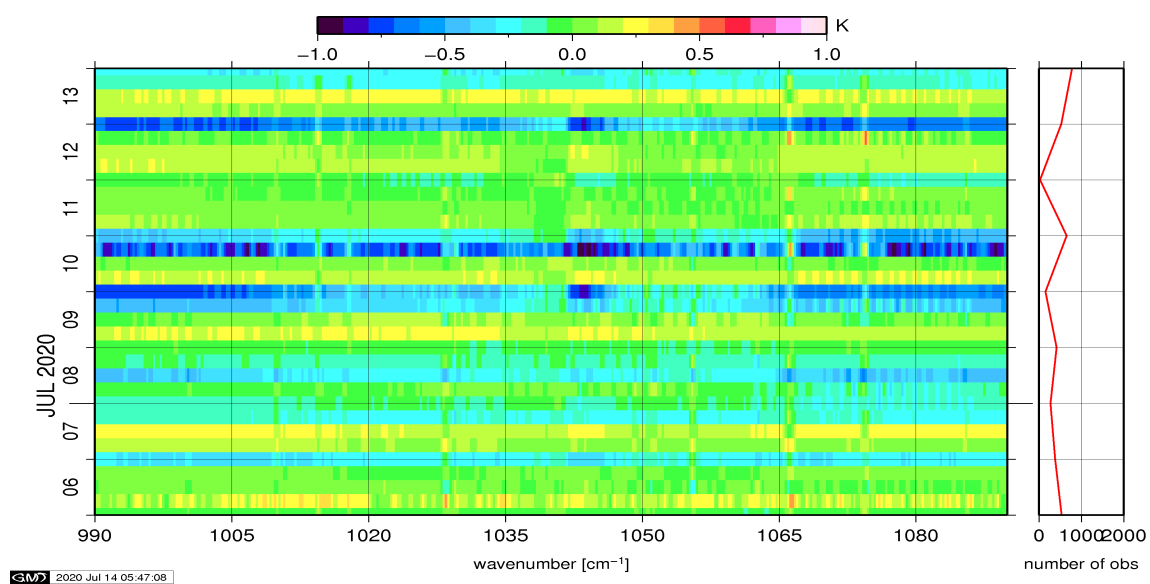


Figure 16: Radiance Anomaly in BT: O3

## 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.

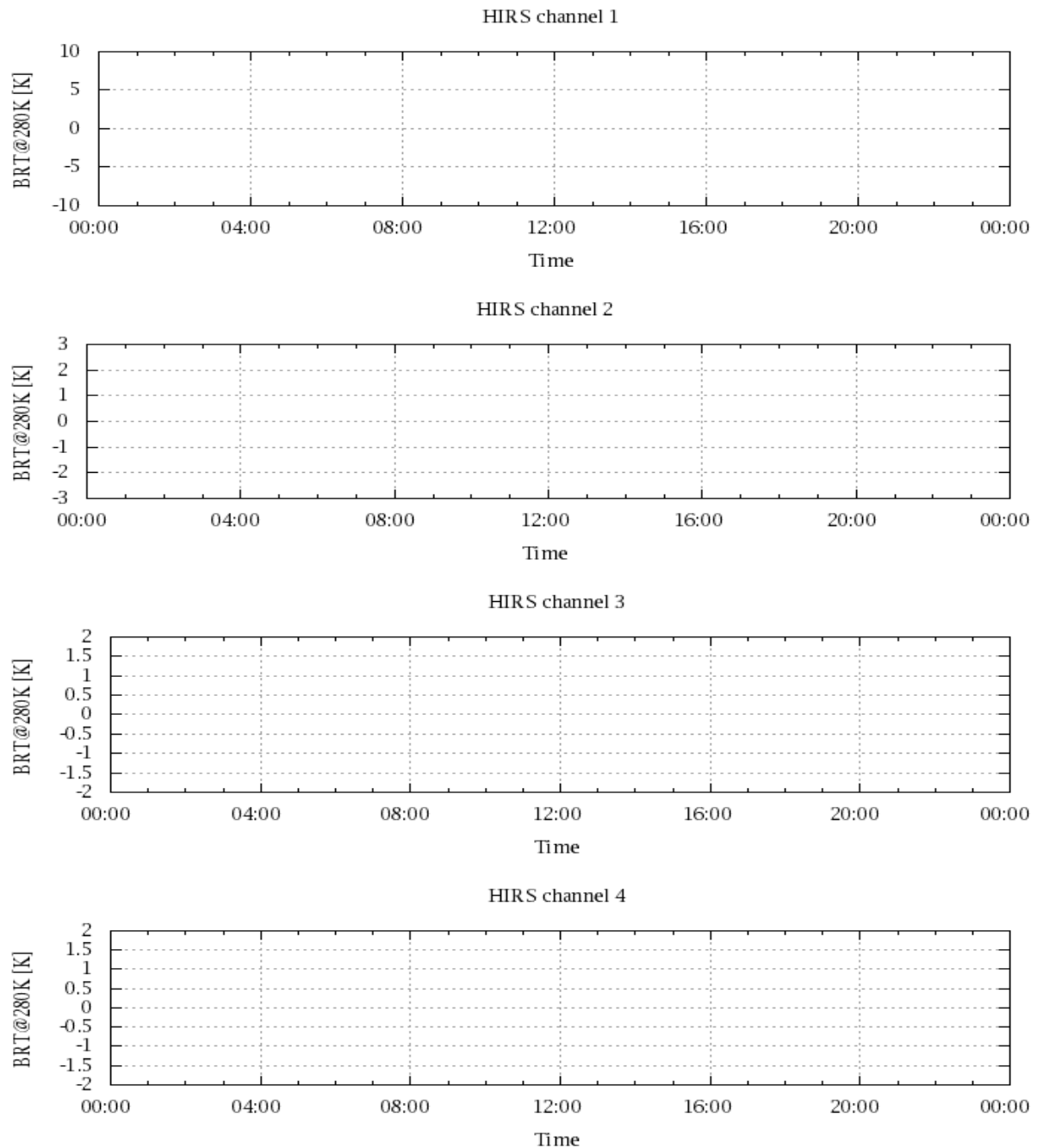


Figure 17: Radiance Differences in BT

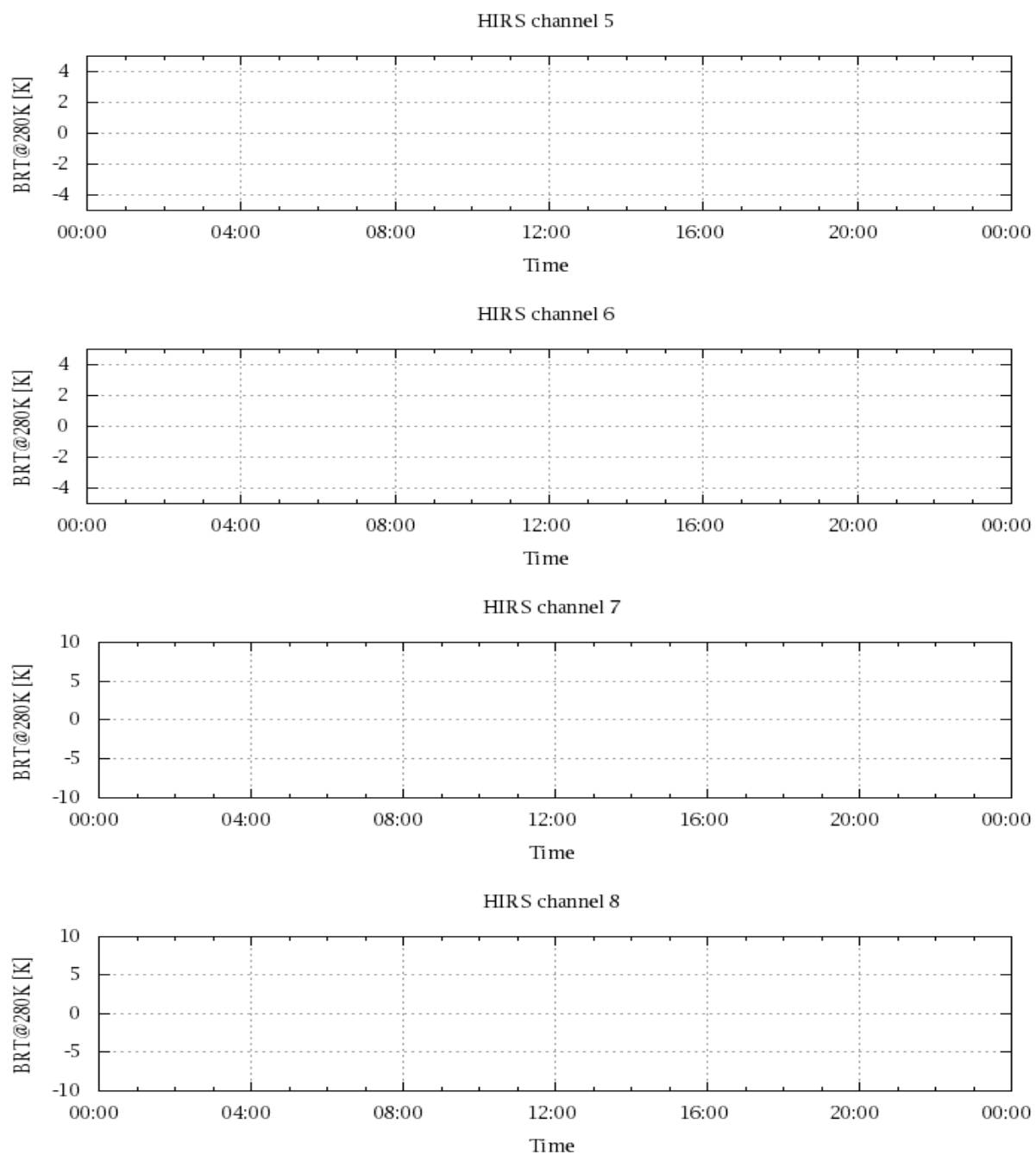


Figure 18: Radiance Differences in BT

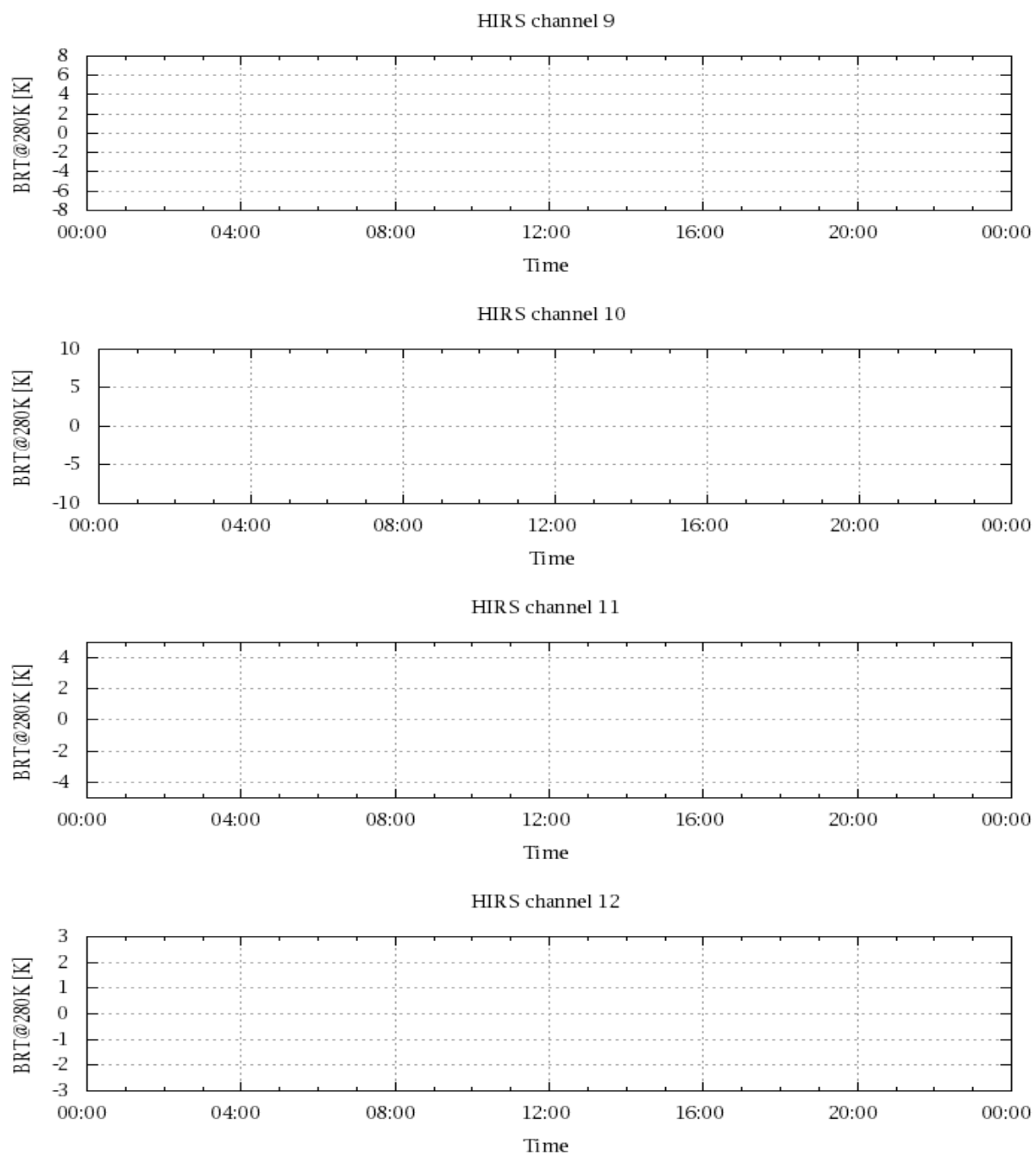


Figure 19: Radiance Differences in BT

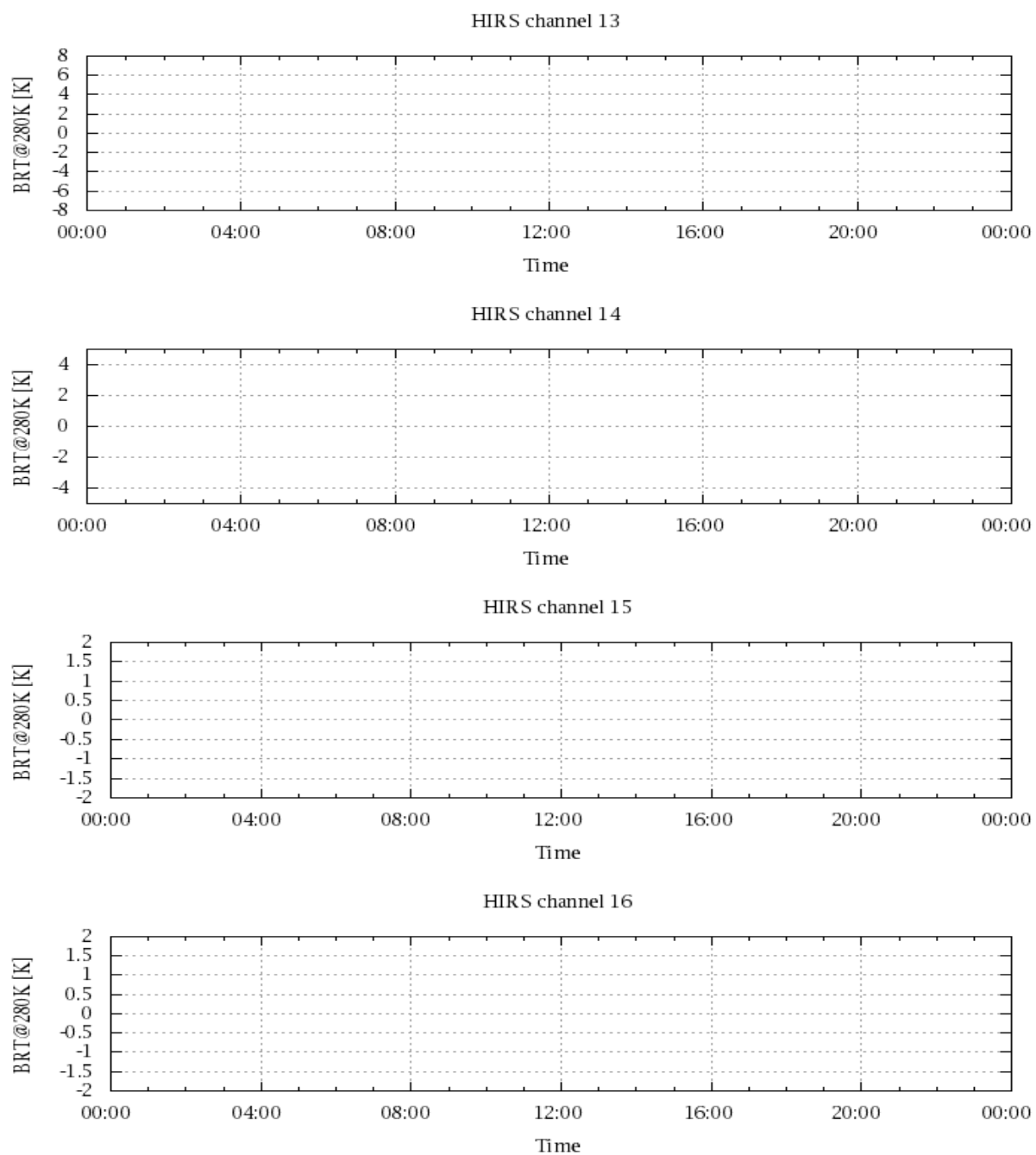


Figure 20: Radiance Differences in BT



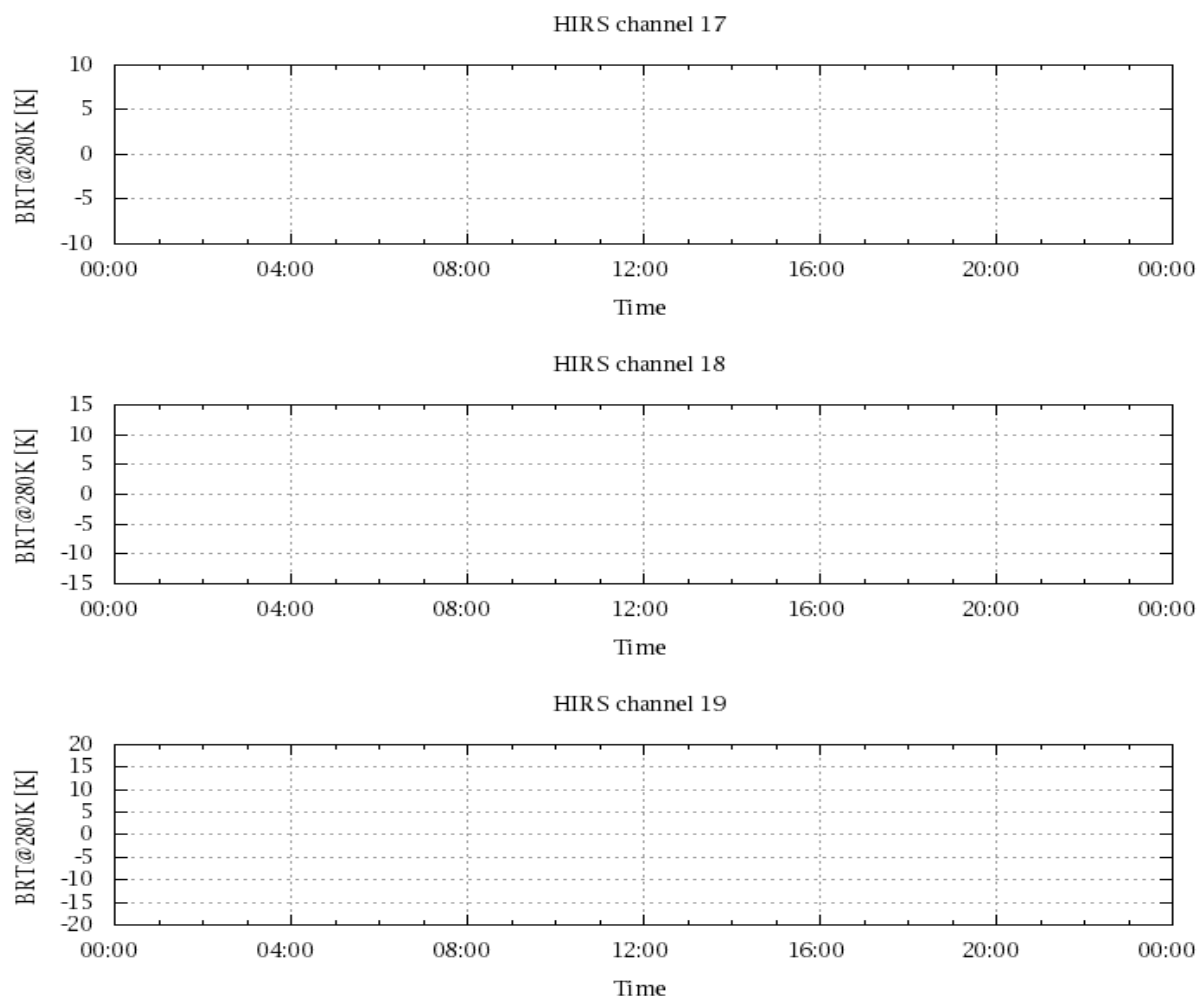


Figure 21: Radinace Differences in BT