

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

IASI monitoring team

14/09/2020 00:00:00 - 15/09/2020 00:00:00

## 1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the Metop-A satellite retrieved from the IASI L0 and L1 ENG product (3 minutes data packet) for 14/09/2020 00:00:00 - 15/09/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 14/09/2020 00:00:00 - 15/09/2020 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
<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)	15687	15695	20200914075233.656	20200914075236.898
PX1 (130)	2647	2656	20200914152420.847	20200914152422.793
PX1 (130)	2677	2679	20200914152428.844	20200914152429.277
PX1 (130)	2684	2713	20200914152430.359	20200914152438.140
PX1 (130)	4716	4718	20200914191159.195	20200914191159.625
PX1 (130)	4718	4720	20200914191159.625	20200914191200.058
PX2 (135)	15687	15695	20200914075233.656	20200914075236.898
PX2 (135)	15718	15720	20200914075243.387	20200914075243.816
PX2 (135)	2647	2656	20200914152420.847	20200914152422.793
PX2 (135)	2684	2712	20200914152430.359	20200914152437.926
PX3 (140)	15687	15695	20200914075233.656	20200914075236.898
PX3 (140)	15714	15716	20200914075241.008	20200914075241.437
PX3 (140)	2647	2655	20200914152420.847	20200914152422.574
PX3 (140)	2679	2681	20200914152429.277	20200914152429.711
PX3 (140)	2684	2712	20200914152430.359	20200914152437.926
PX4 (145)	15687	15695	20200914075233.656	20200914075236.898
PX4 (145)	2647	2655	20200914152420.847	20200914152422.574
PX4 (145)	2684	2712	20200914152430.359	20200914152437.926
IMG (150)	15663	15675	20200914075233.656	20200914075236.898

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**Table 2 – continued from previous page**

<b>APID</b>	<b>Seq from</b>	<b>Seq to</b>	<b>Time from</b>	<b>Time to</b>
IMG (150)	16178	16187	20200914152420.629	20200914152422.574
IMG (150)	16210	16212	20200914152428.195	20200914152428.629
IMG (150)	16217	16219	20200914152429.711	20200914152430.140
IMG (150)	16220	16252	20200914152430.359	20200914152437.926
IMG (150)	8693	8695	20200914191159.410	20200914191159.844
IMG (150)	8696	8698	20200914191200.058	20200914191200.492
VER (160)	12345	12348	20200914075241.656	20200914075249.656
VER (160)	12903	12909	20200914152425.601	20200914152441.601
AUX (180)	15671	15673	20200914152426.035	20200914152442.035

Table 2: L0 data gaps

### 3 Instrument modes

Time	Transition from	Transition to
14/09/2020 00:00:28	-	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	481	-
GQisFlagQual set (PX1)	99.44 %	-
GQisFlagQual set (PX2)	99.41 %	-
GQisFlagQual set (PX3)	99.43 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.44 %	-

Table 4: Quality flags

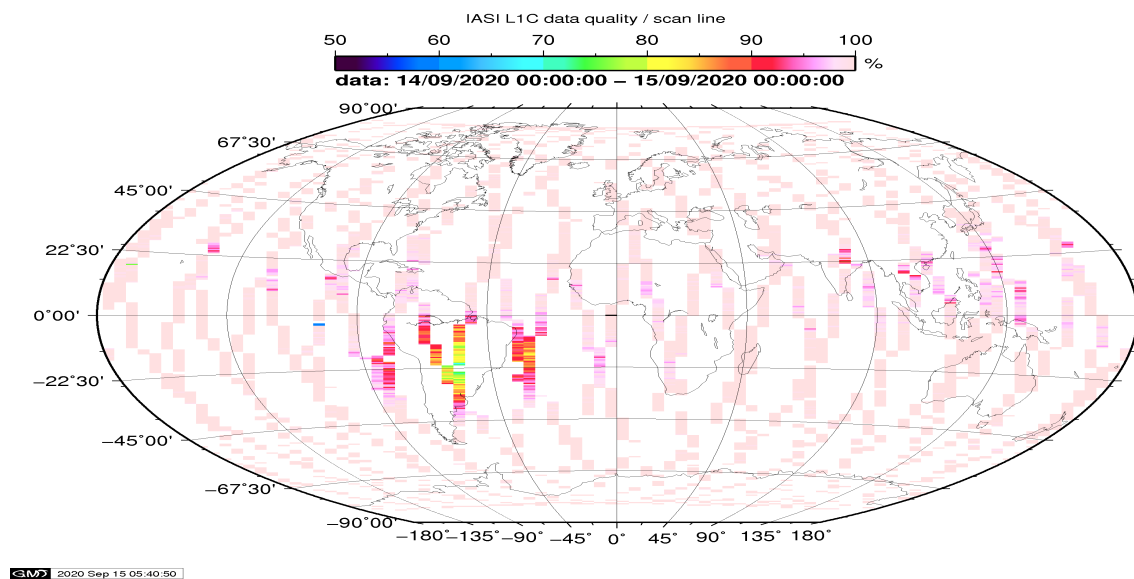


Figure 1: L1C data quality

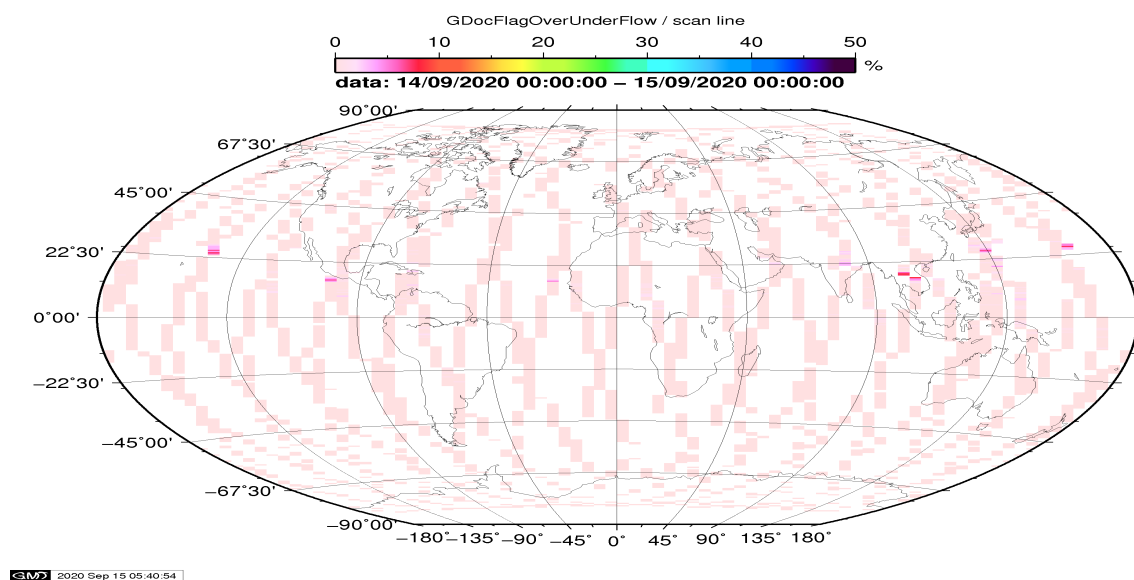


Figure 2: Flag of Over and Under Flows

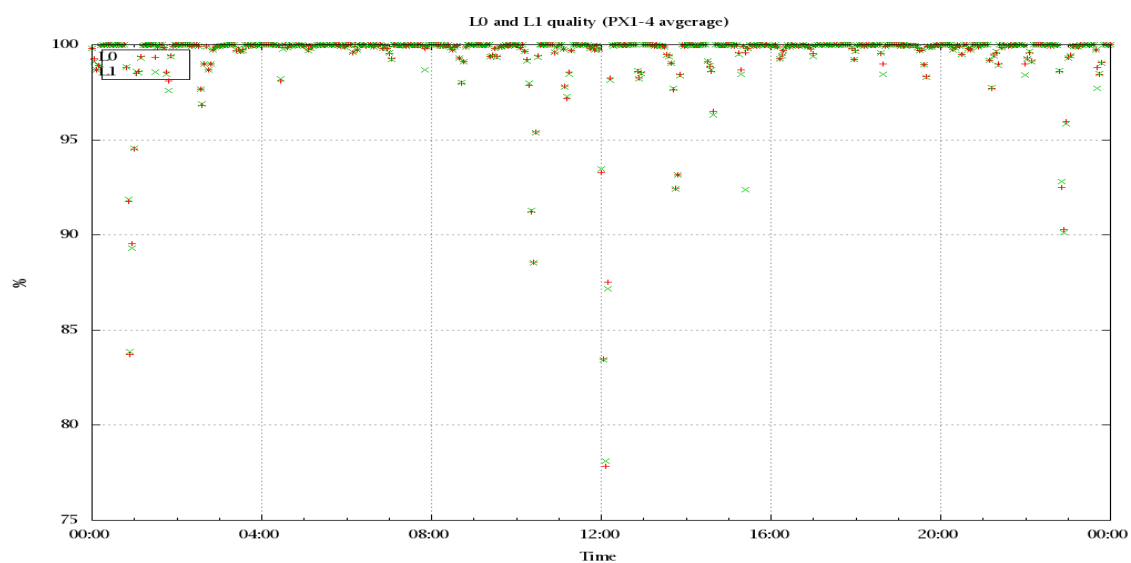


Figure 3: Level 0 and 1C overall quality

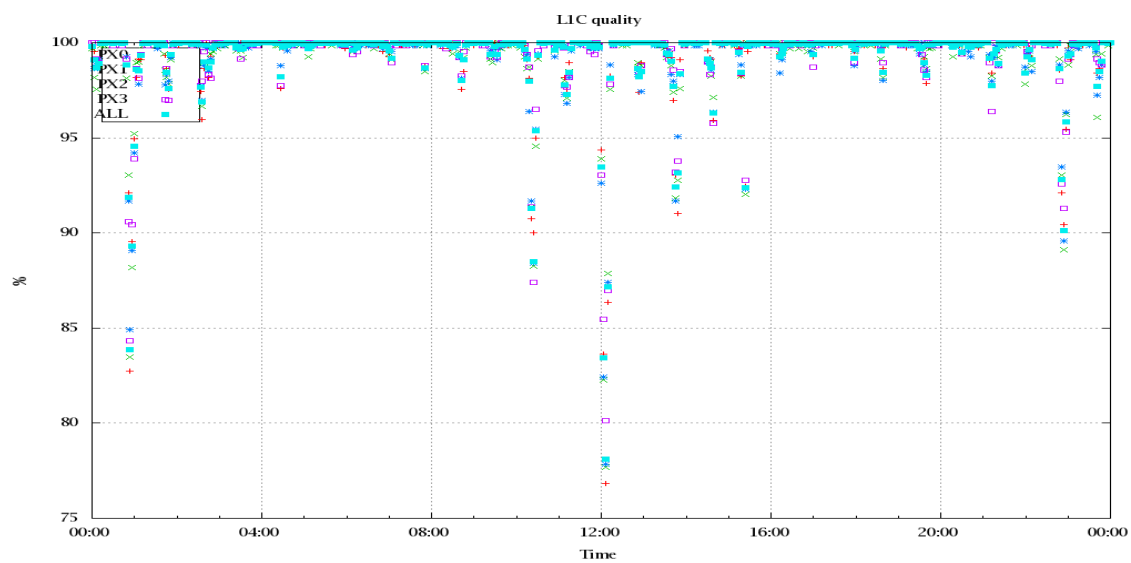


Figure 4: Level 1C quality

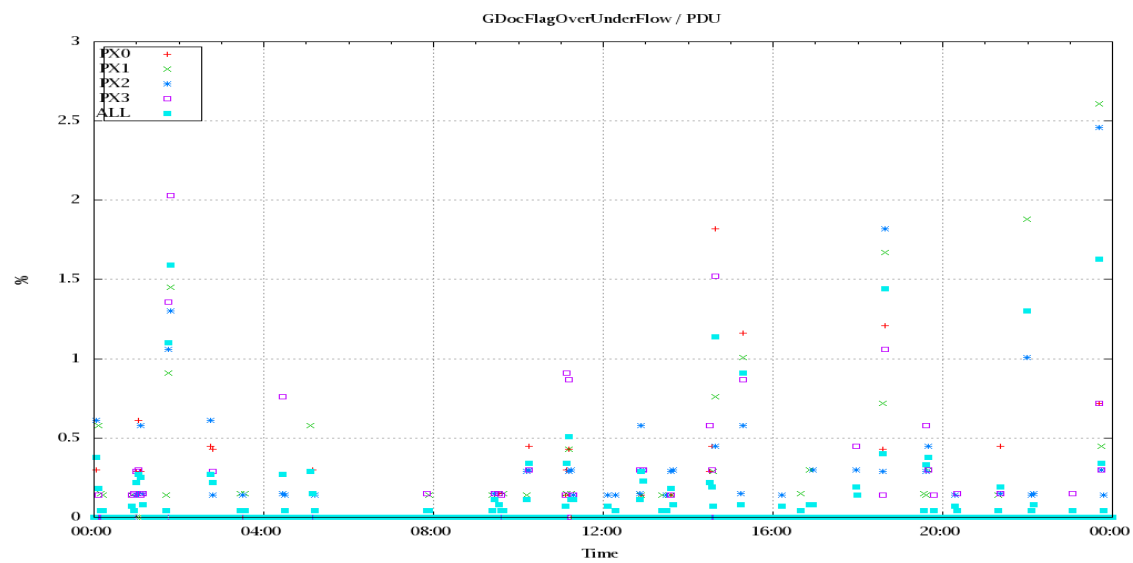


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

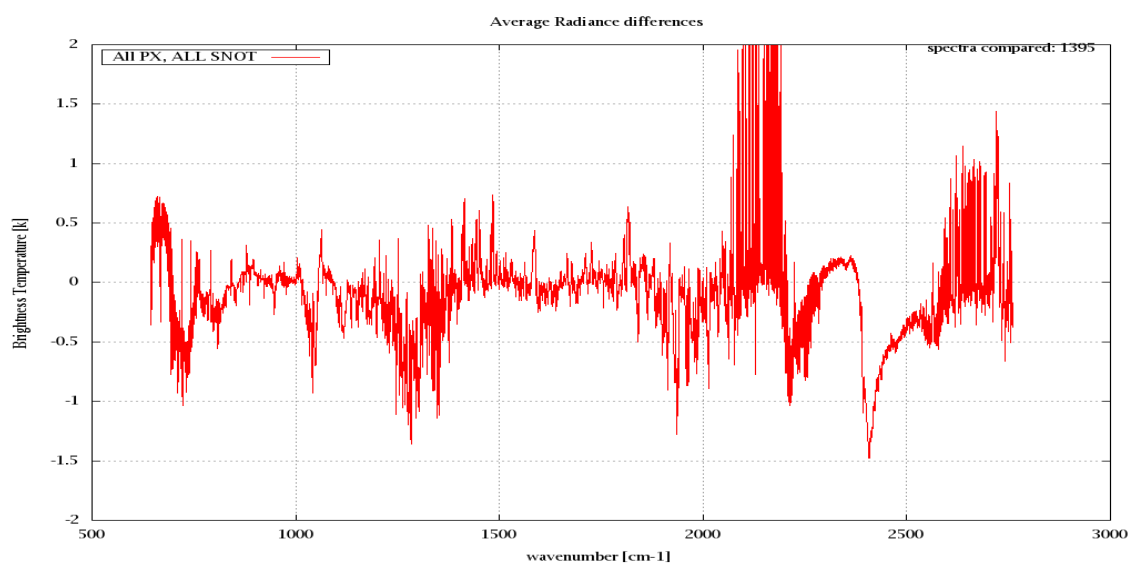


Figure 6: Average Radiance differences: OBS-CAL

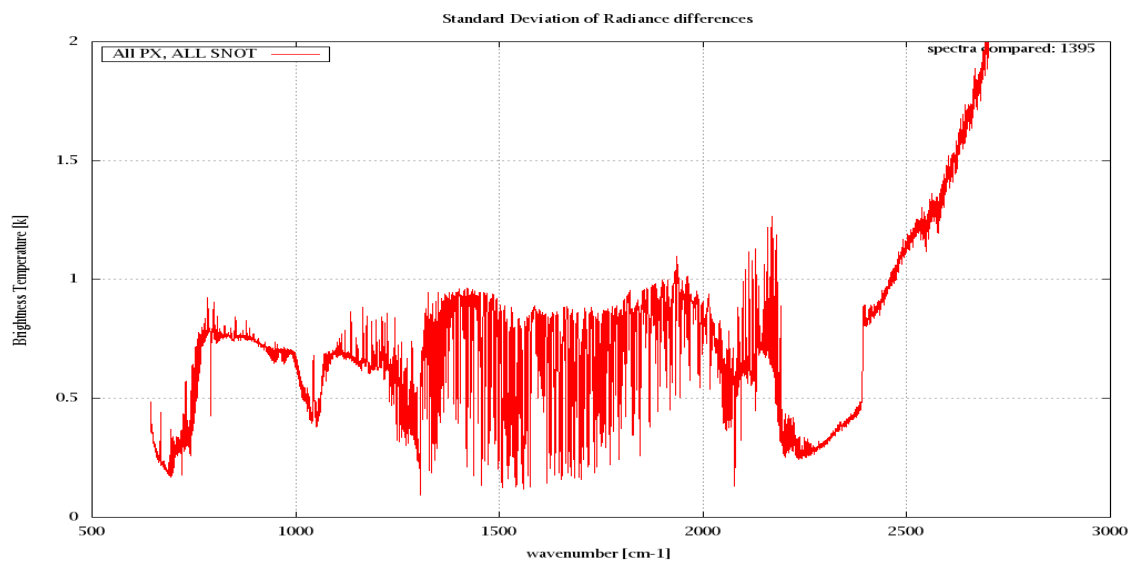


Figure 7: Standard Deviation of Radiance differences

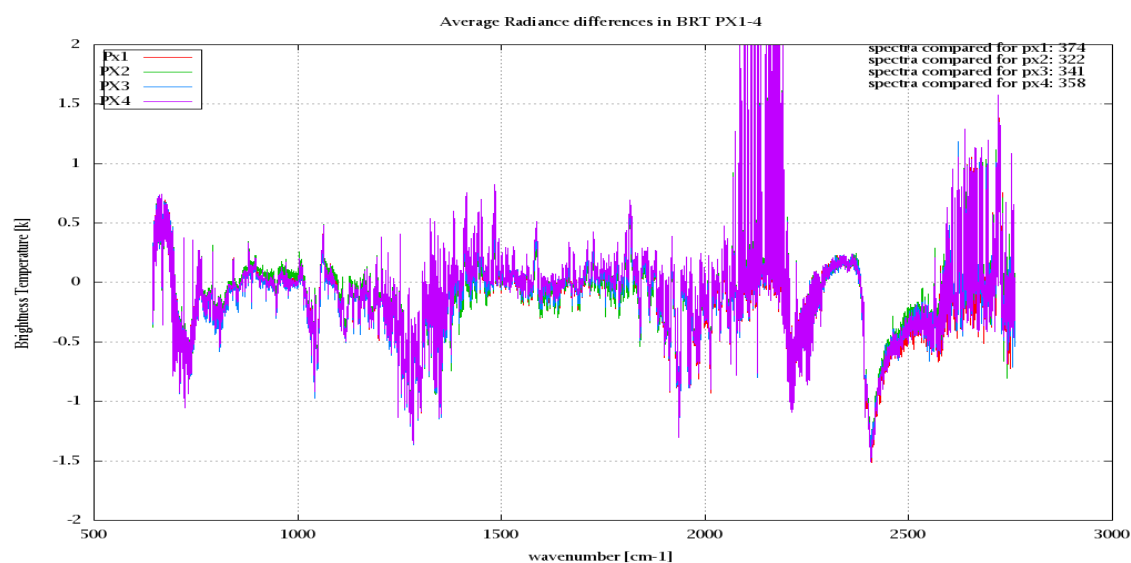


Figure 8: Average Radiance differences: OBS-CAL

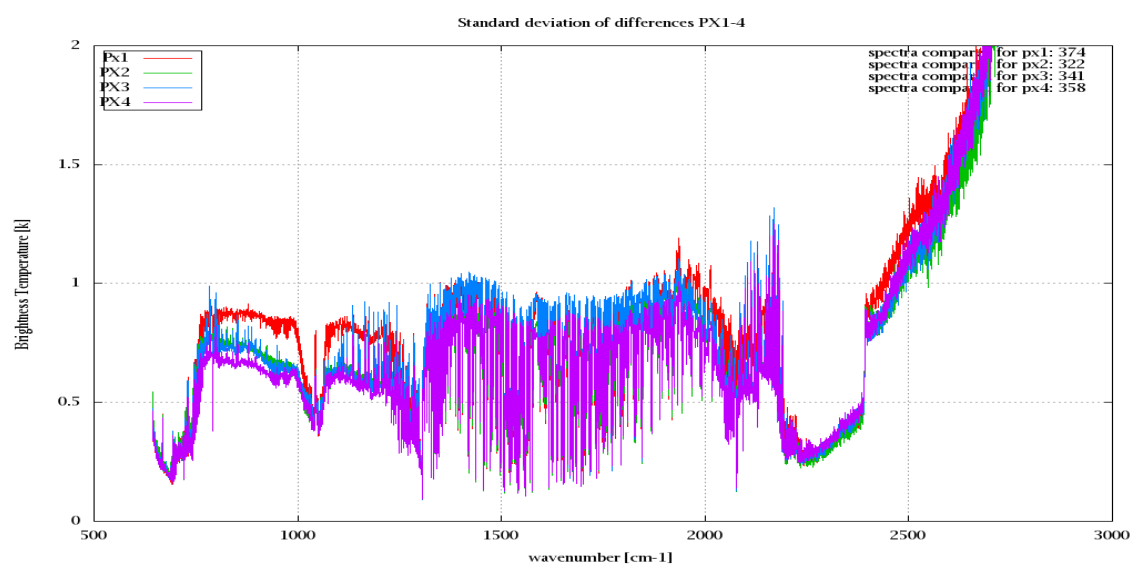


Figure 9: Standard Deviation of Radiance differences



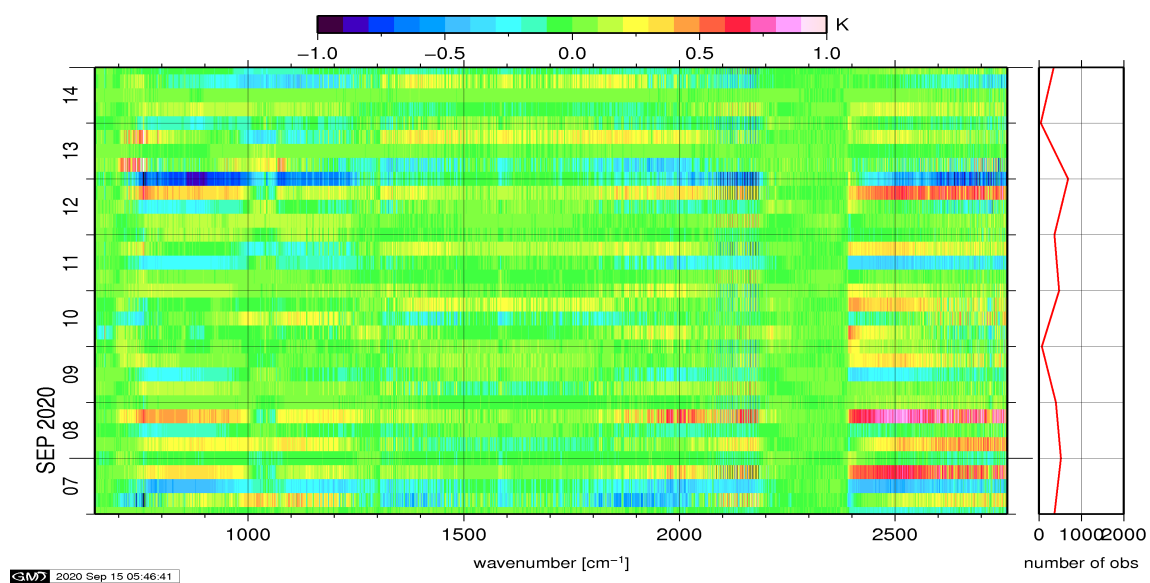


Figure 10: Radiance Anomaly in BT: All Channels

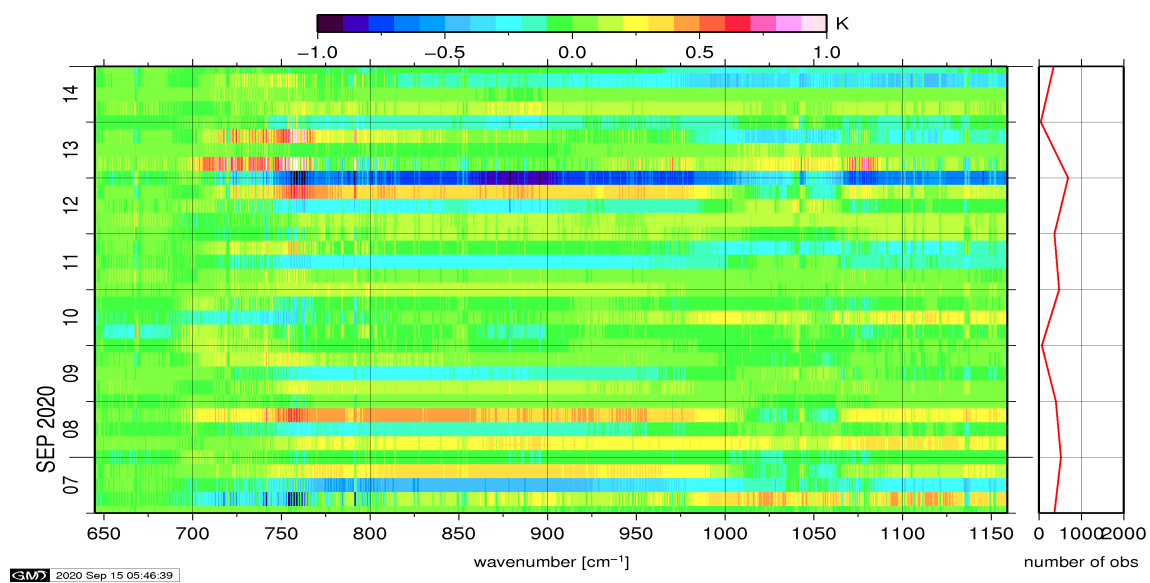


Figure 11: Radiance Anomaly in BT: IASI Band 1

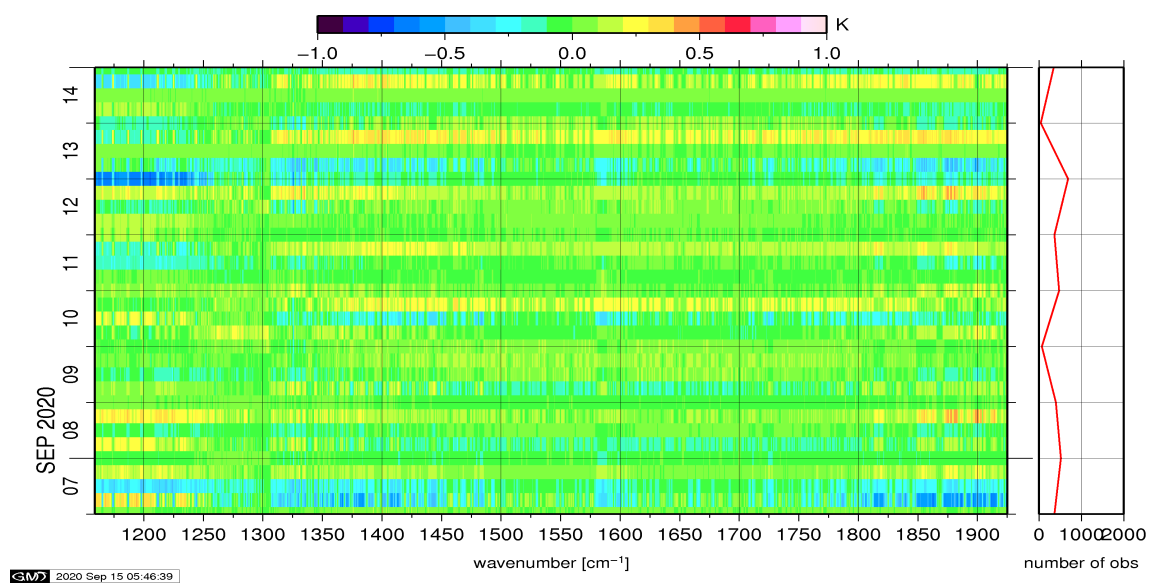


Figure 12: Radiance Anomaly in BT: IASI Band 2

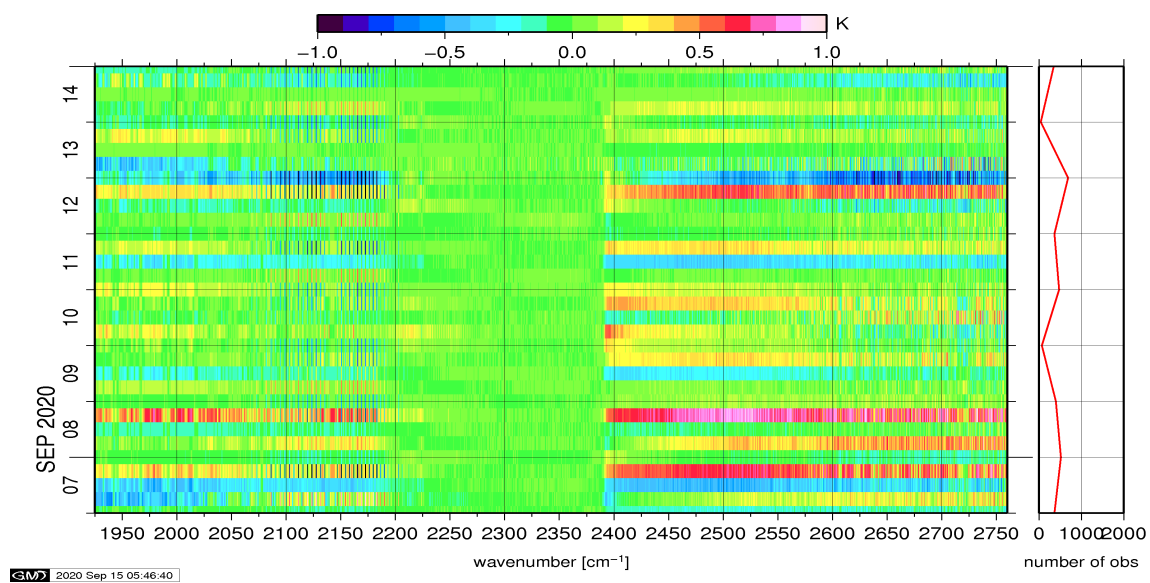


Figure 13: Radiance Anomaly in BT: IASI Band 3

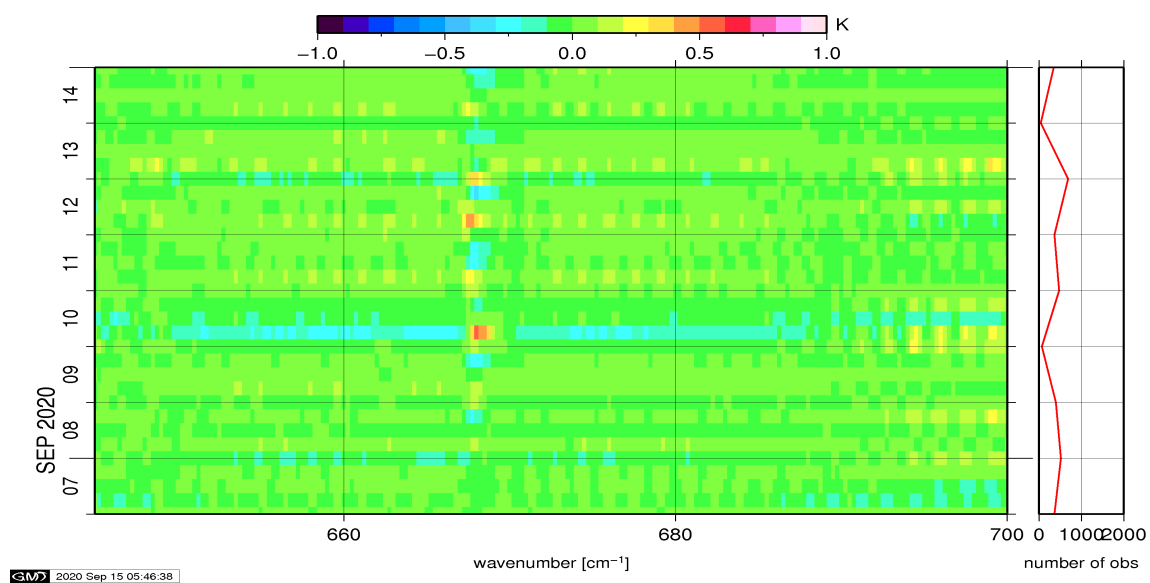


Figure 14: Radiance Anomaly in BT: CO2 14

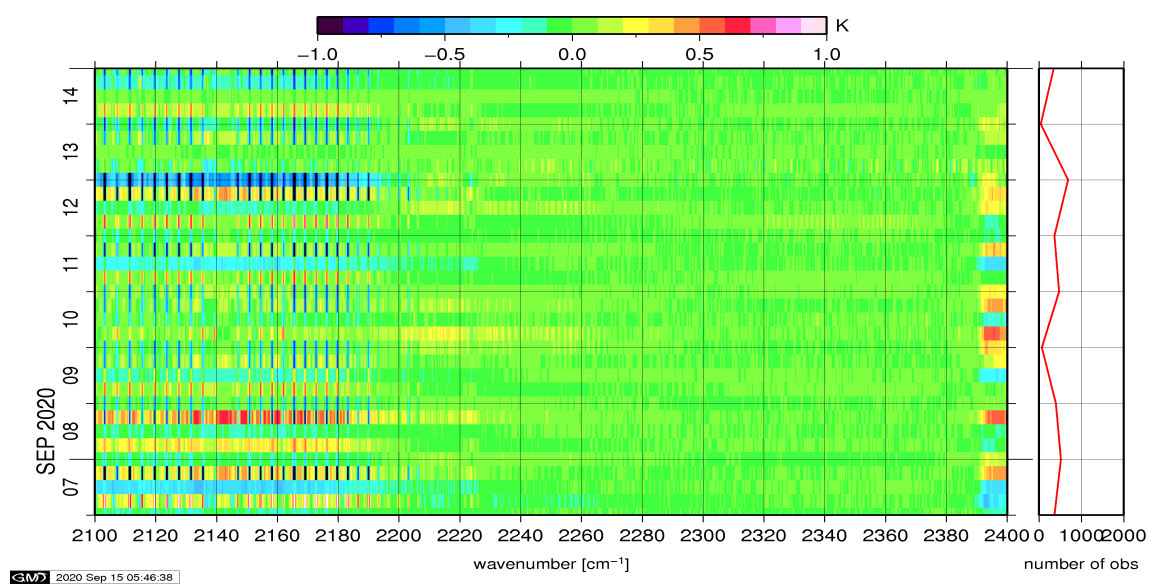


Figure 15: Radiance Anomaly in BT: CO2 4.3

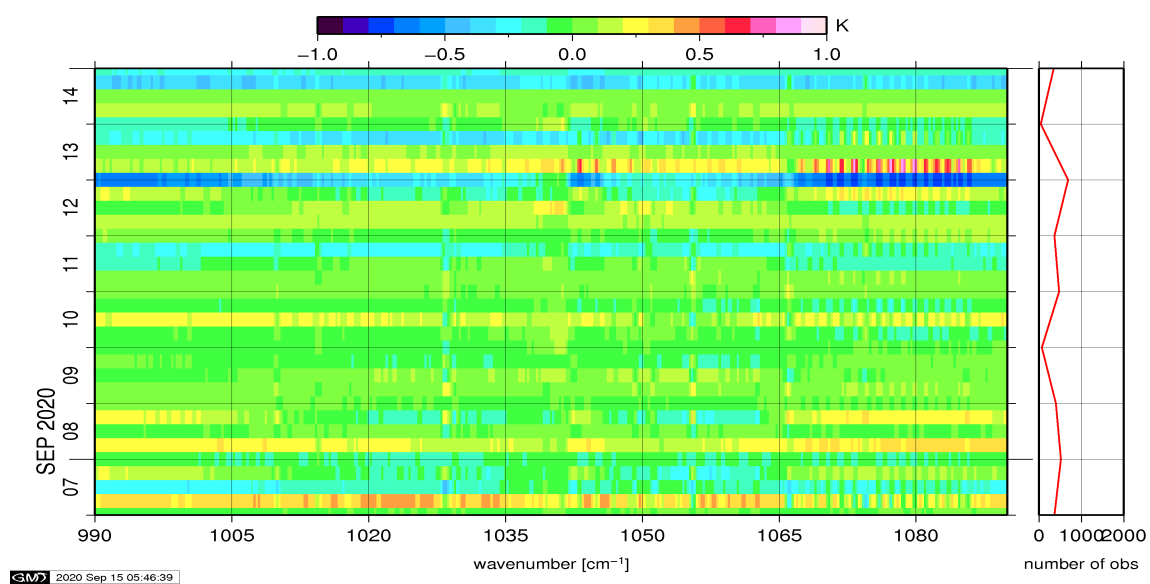


Figure 16: Radiance Anomaly in BT: O3

## 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.

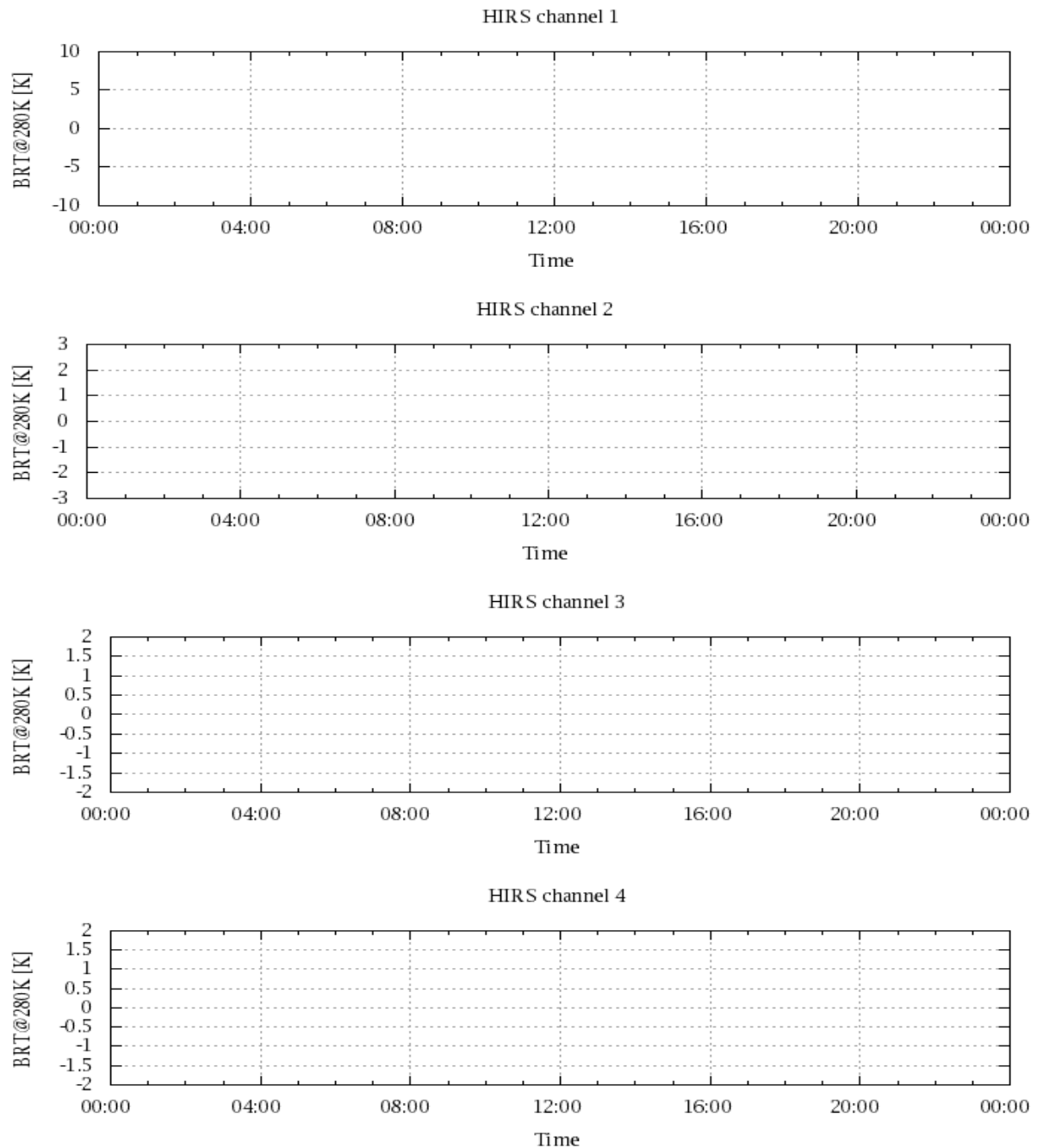


Figure 17: Radiance Differences in BT

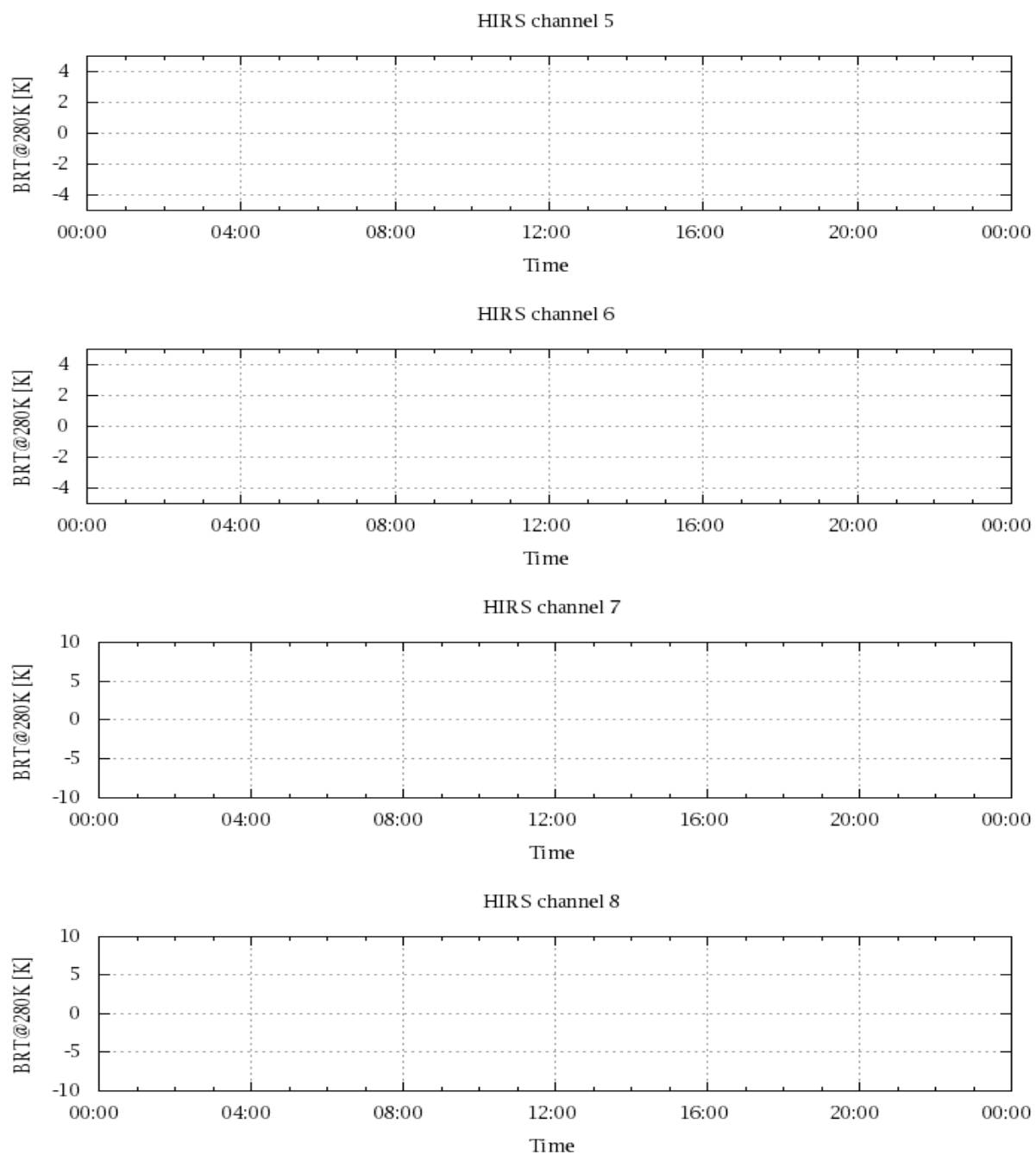


Figure 18: Radiance Differences in BT

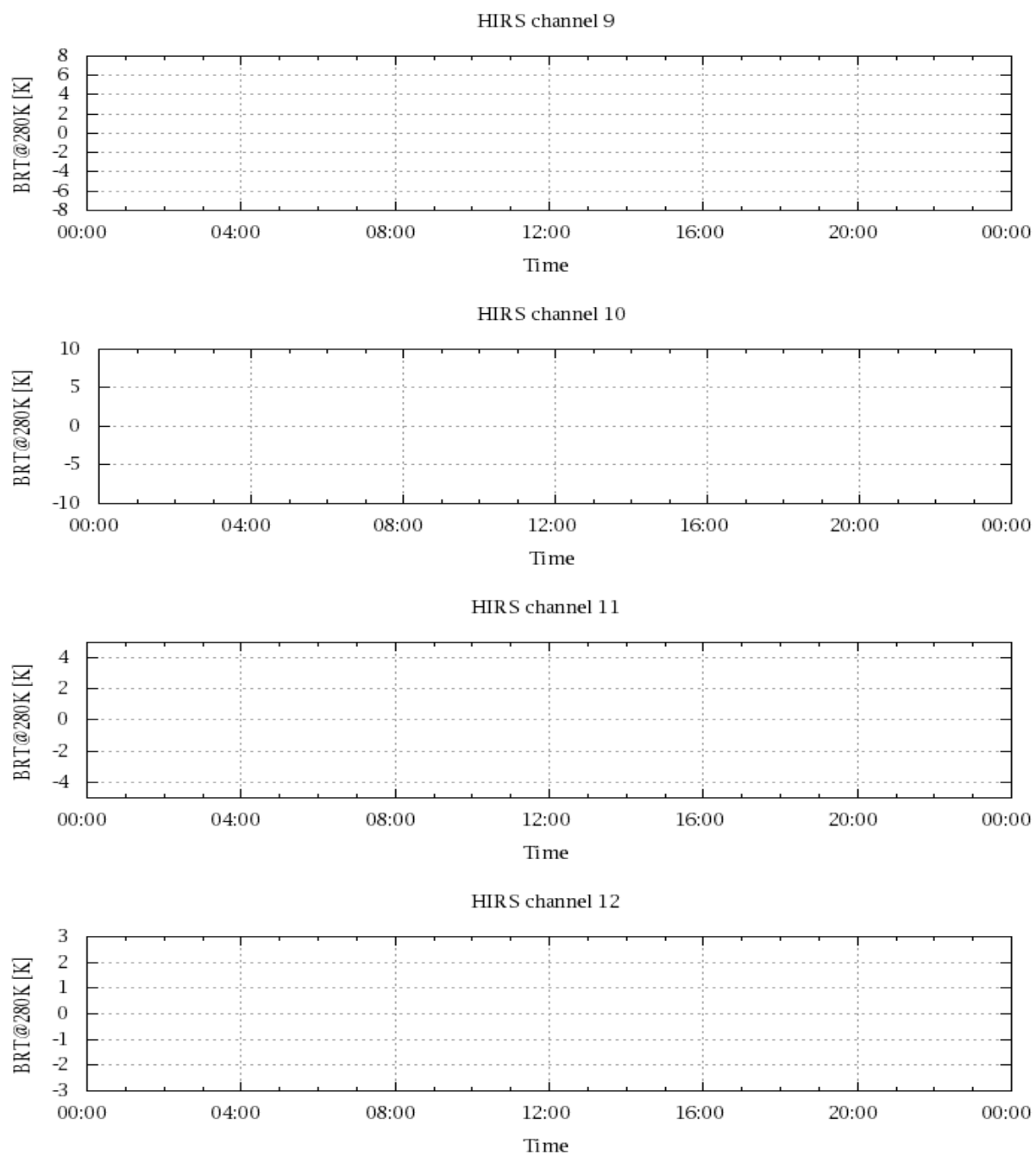


Figure 19: Radiance Differences in BT

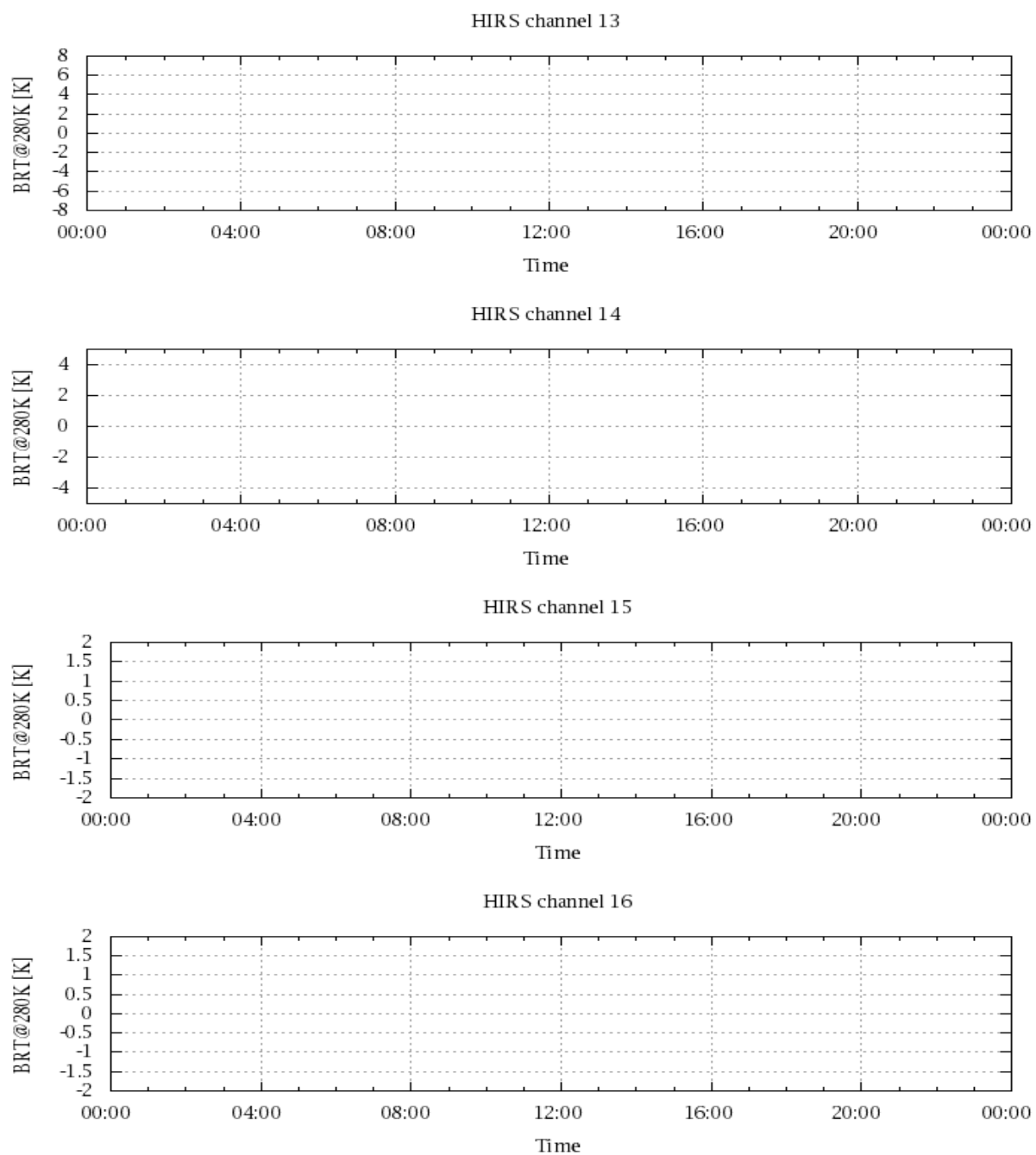


Figure 20: Radiance Differences in BT



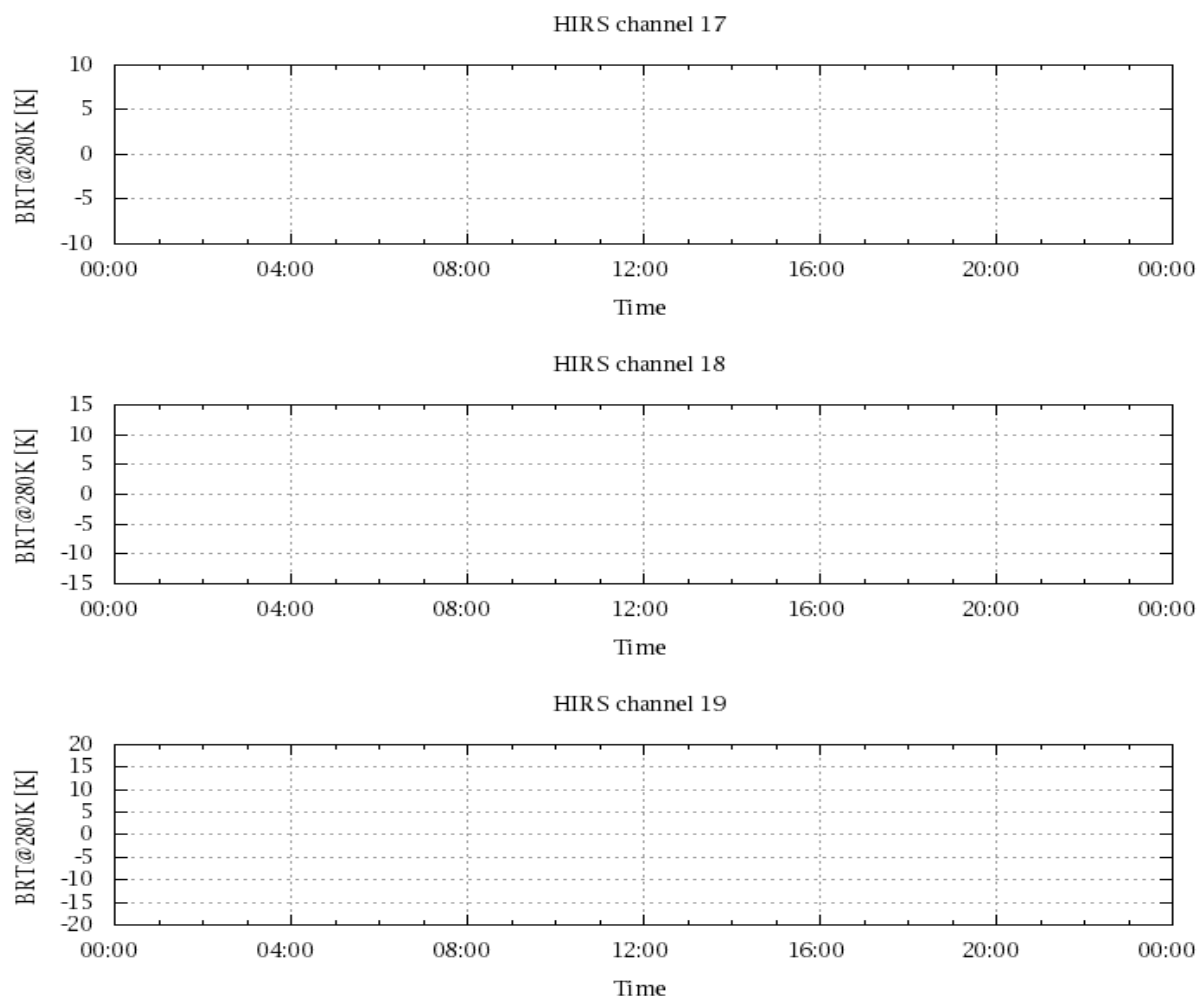


Figure 21: Radinace Differences in BT