

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

IASI monitoring team

15/10/2020 00:00:00 - 16/10/2020 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 15/10/2020 00:00:00 - 16/10/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 15/10/2020 00:00:00 - 16/10/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	459	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)	13280	13288	20201015115004.129	20201015115005.859
PX1 (130)	14874	14883	20201015115708.984	20201015115710.929
PX2 (135)	13280	13288	20201015115004.129	20201015115005.859
PX2 (135)	14873	14883	20201015115708.765	20201015115710.929
PX3 (140)	13280	13288	20201015115004.129	20201015115005.859
PX3 (140)	13312	13314	20201015115012.562	20201015115012.996
PX3 (140)	14873	14883	20201015115708.765	20201015115710.929
PX4 (145)	13280	13288	20201015115004.129	20201015115005.859
PX4 (145)	13314	13316	20201015115012.996	20201015115013.426
PX4 (145)	14873	14883	20201015115708.765	20201015115710.929
IMG (150)	5395	5404	20201015115003.914	20201015115005.859
IMG (150)	5434	5436	20201015115012.996	20201015115013.426
IMG (150)	5436	5438	20201015115013.426	20201015115013.859
IMG (150)	7183	7185	20201015115704.226	20201015115704.874
IMG (150)	7198	7200	20201015115708.116	20201015115708.550
IMG (150)	7201	7211	20201015115708.765	20201015115710.929
VER (160)	2788	2792	20201015115656.441	20201015115704.441
AUX (180)	-	-	-	-

Table 2: L0 data gaps



### 3 Instrument modes

Time	Transition from	Transition to
15/10/2020 00:00:05	-	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	459	a
GQisFlagQual set (PX1)	99.59 %	-
GQisFlagQual set (PX2)	99.68 %	-
GQisFlagQual set (PX3)	99.69 %	-
GQisFlagQual set (PX4)	99.59 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

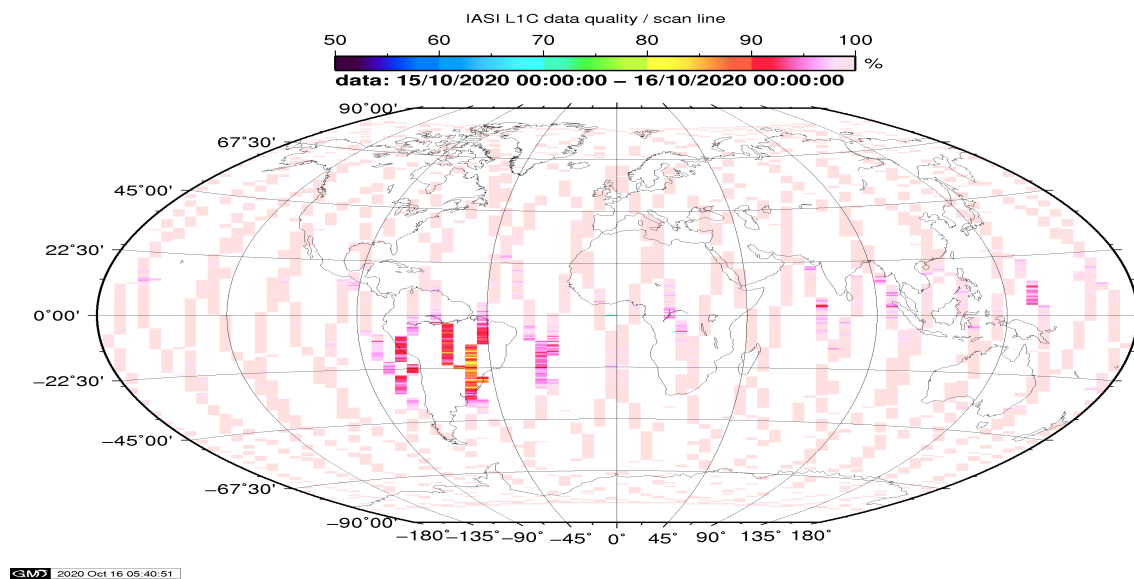


Figure 1: L1C data quality

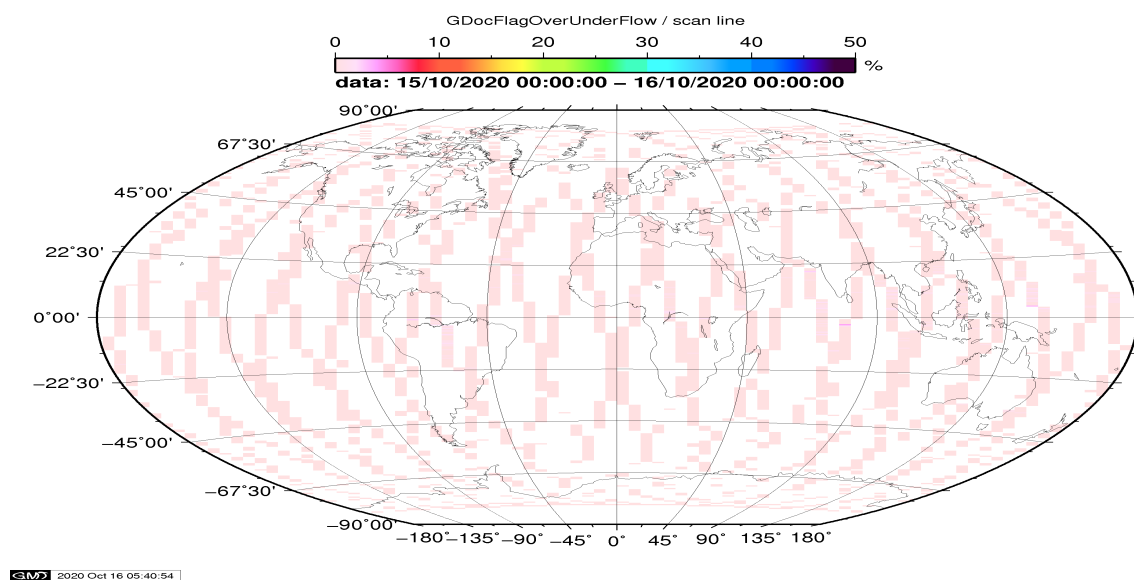


Figure 2: Flag of Over and Under Flows

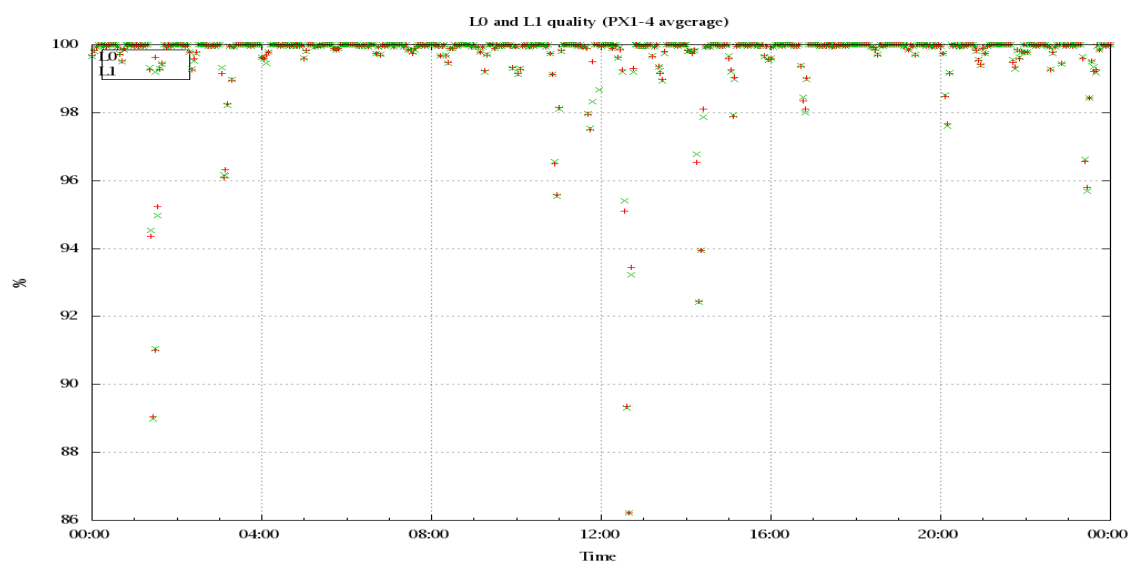


Figure 3: Level 0 and 1C overall quality

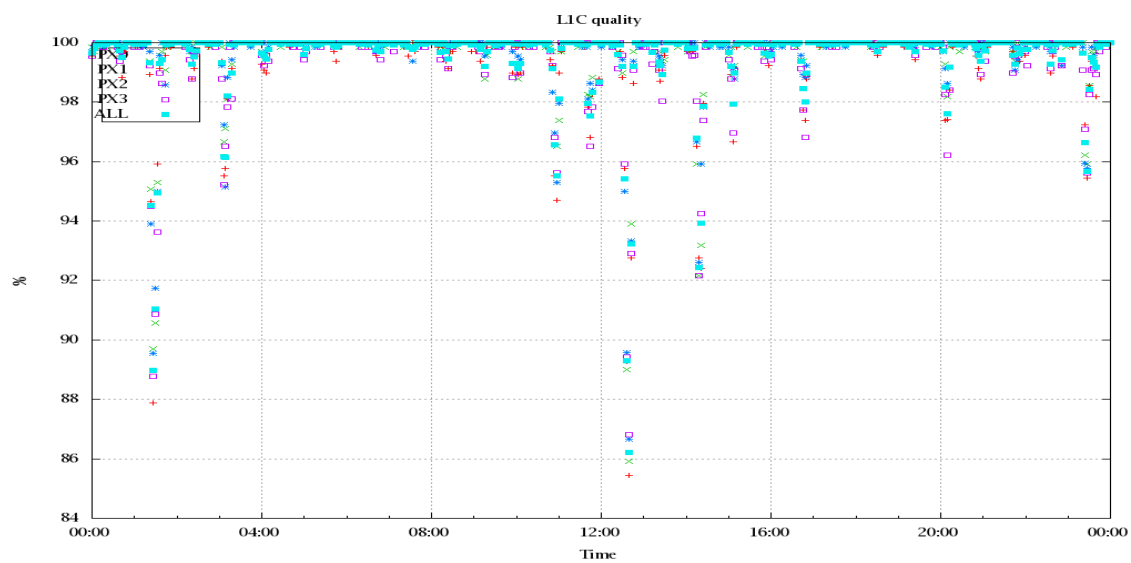


Figure 4: Level 1C quality

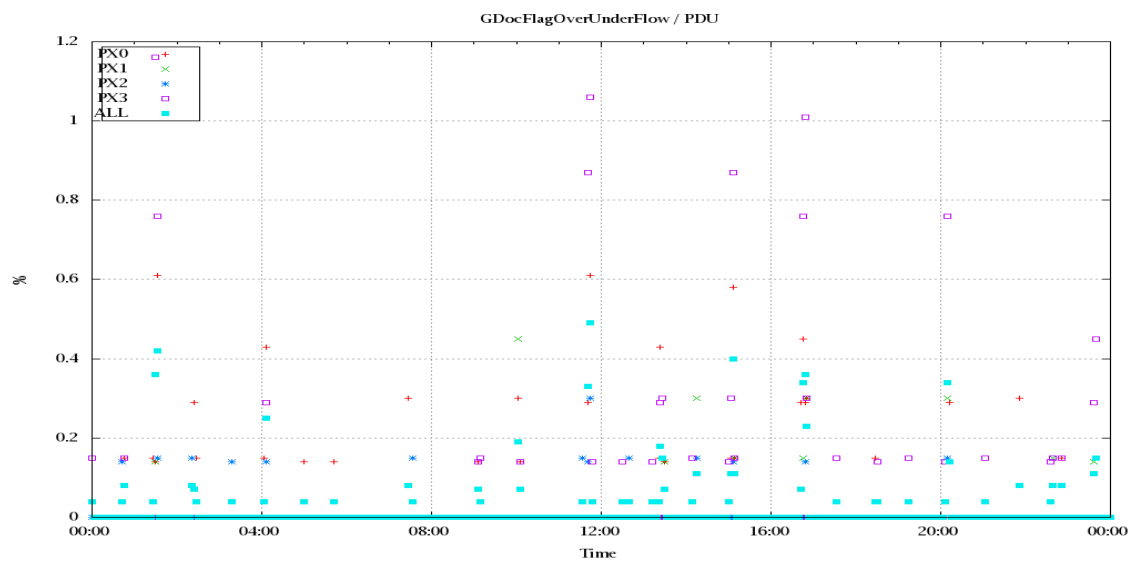


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

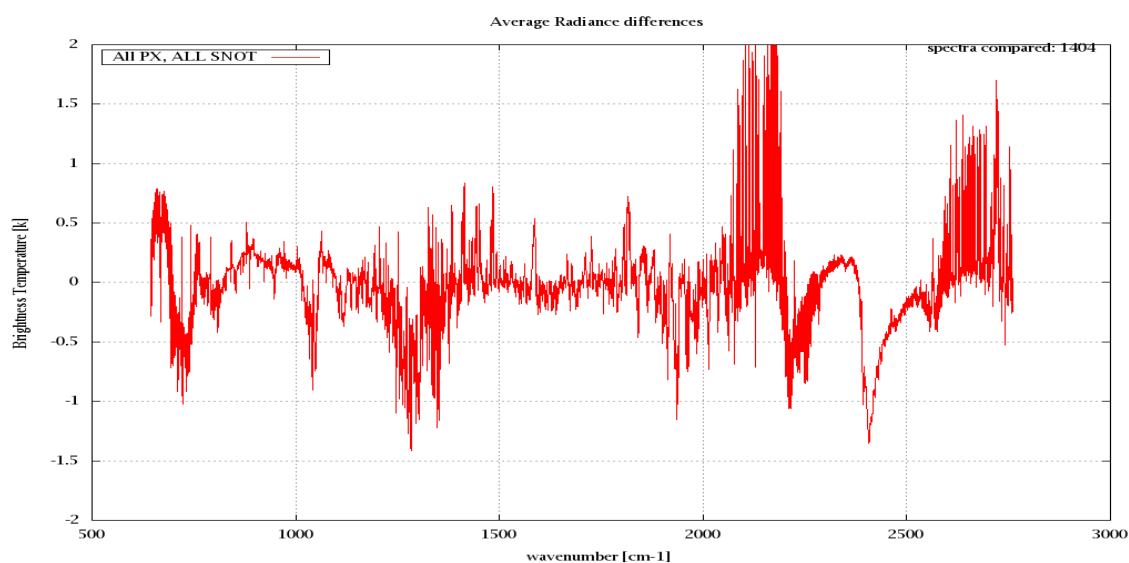


Figure 6: Average Radiance differences: OBS-CAL

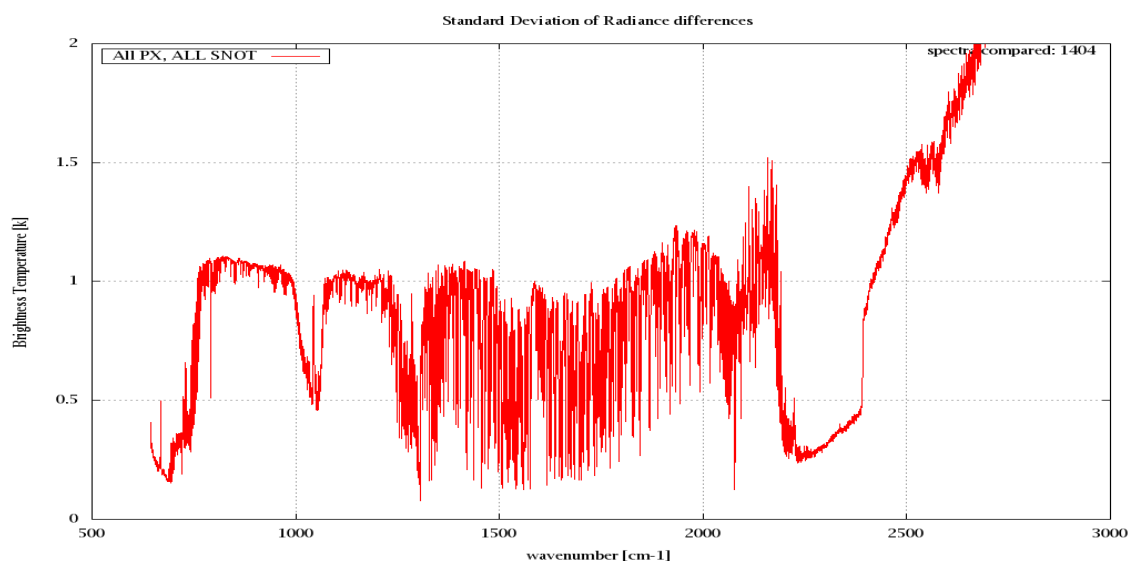


Figure 7: Standard Deviation of Radiance differences

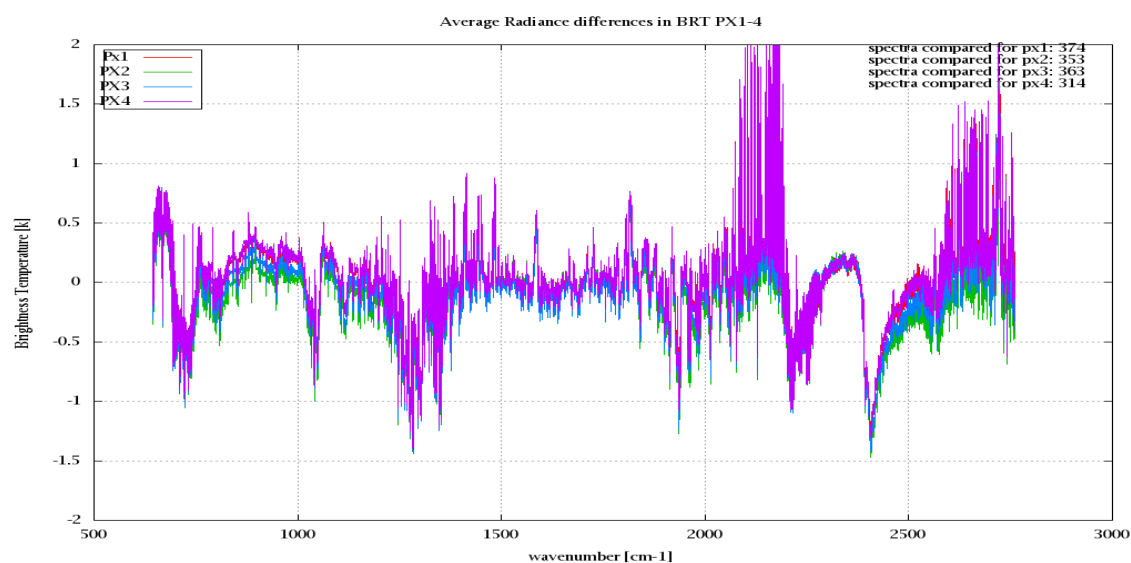


Figure 8: Average Radiance differences: OBS-CAL

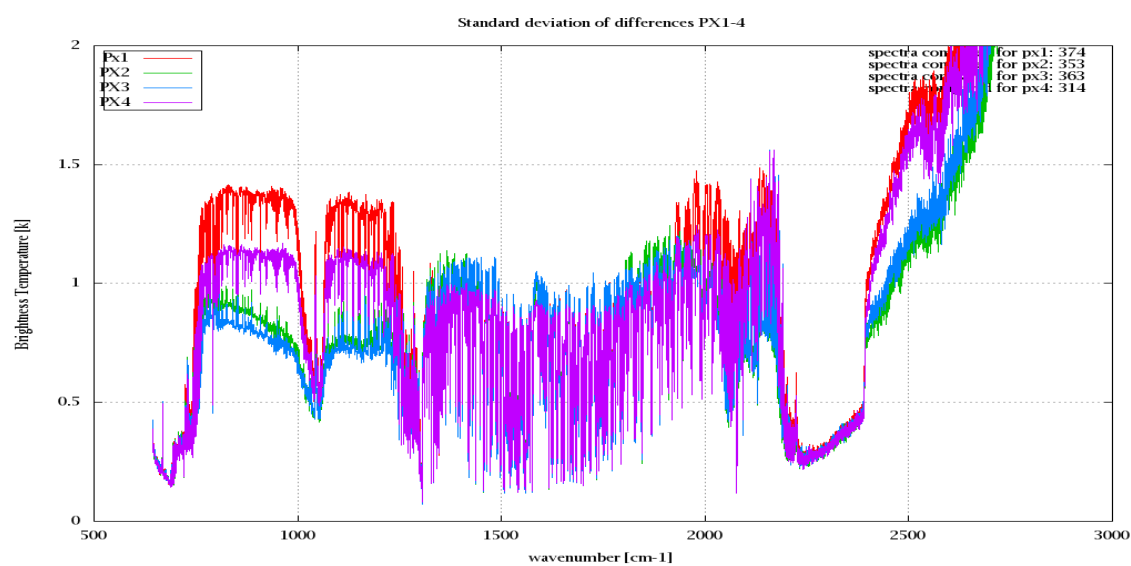


Figure 9: Standard Deviation of Radiance differences

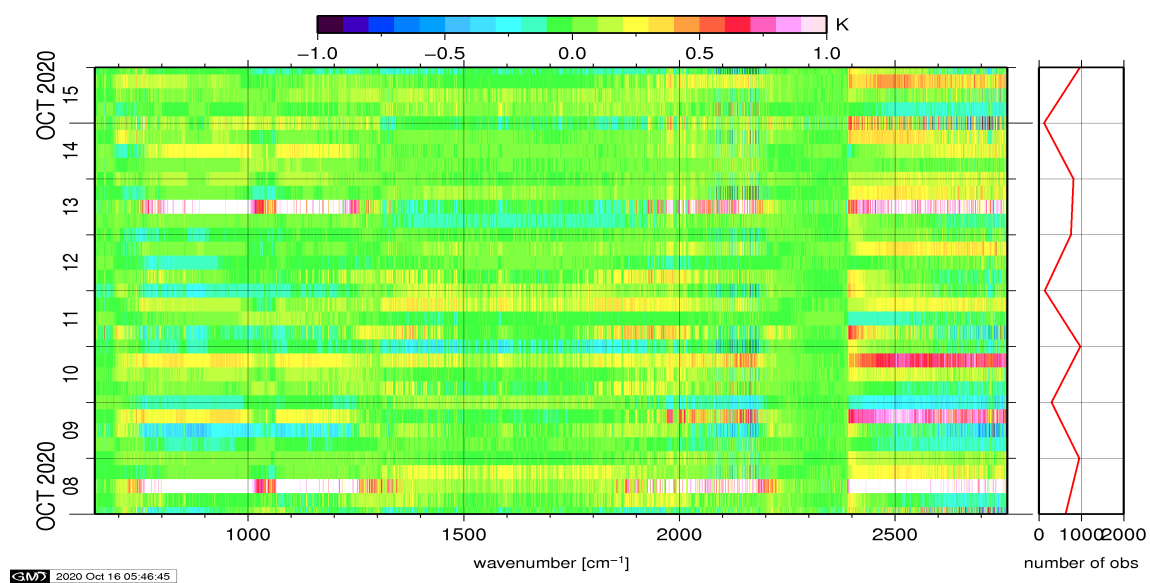


Figure 10: Radiance Anomaly in BT: All Channels

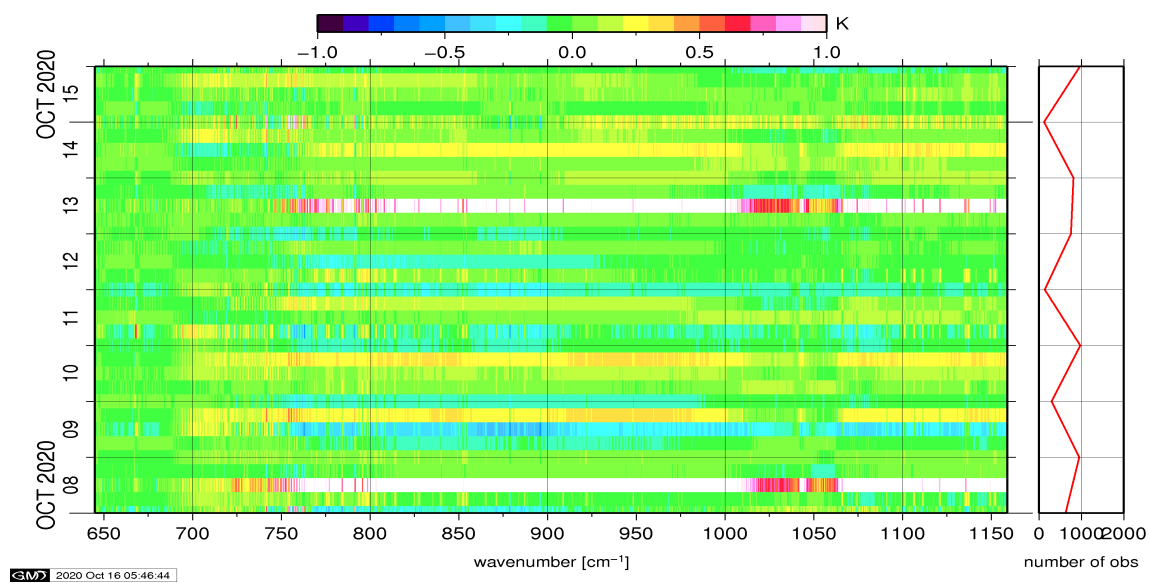


Figure 11: Radiance Anomaly in BT: IASI Band 1

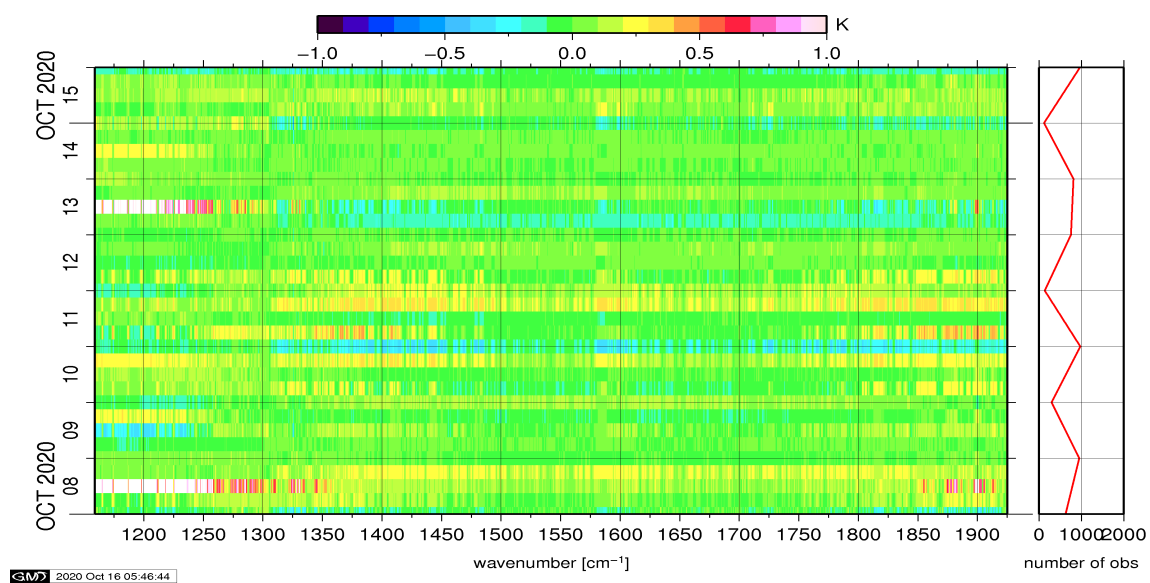


Figure 12: Radiance Anomaly in BT: IASI Band 2

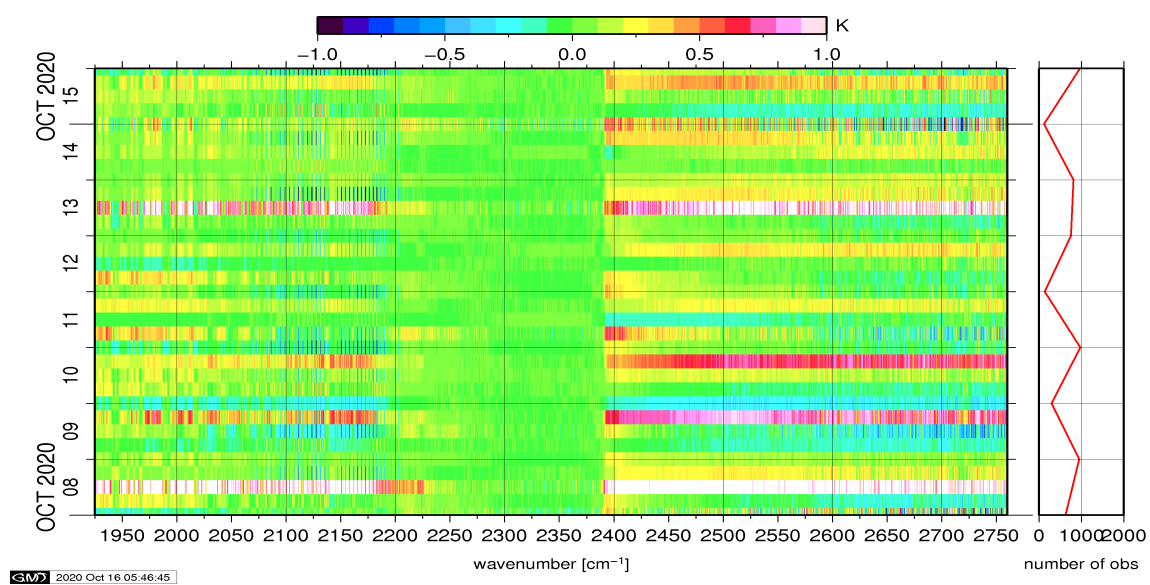


Figure 13: Radiance Anomaly in BT: IASI Band 3

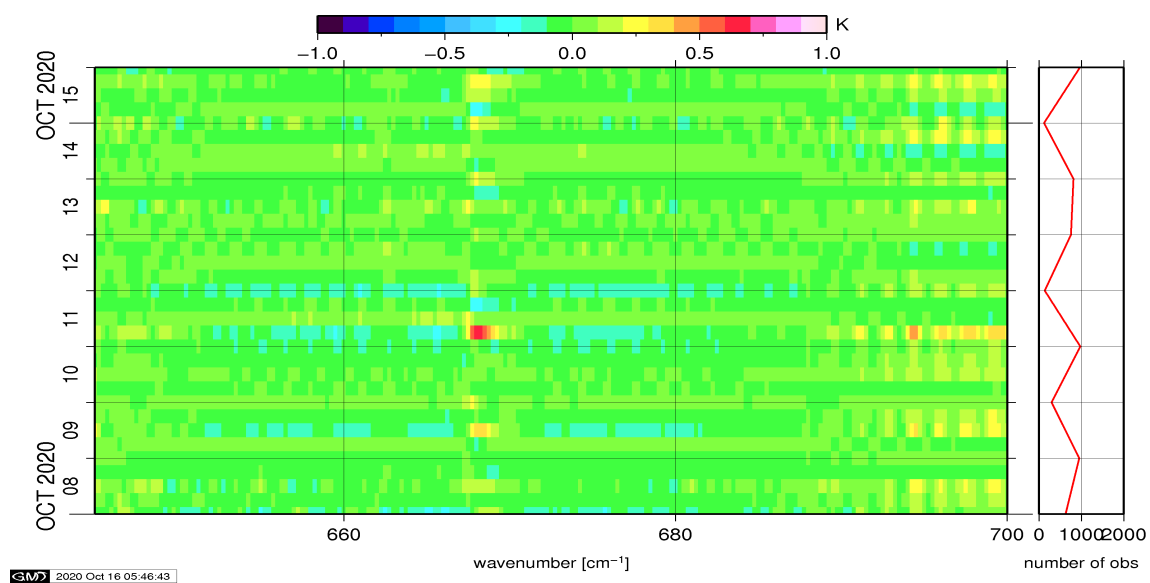


Figure 14: Radiance Anomaly in BT: CO2 14

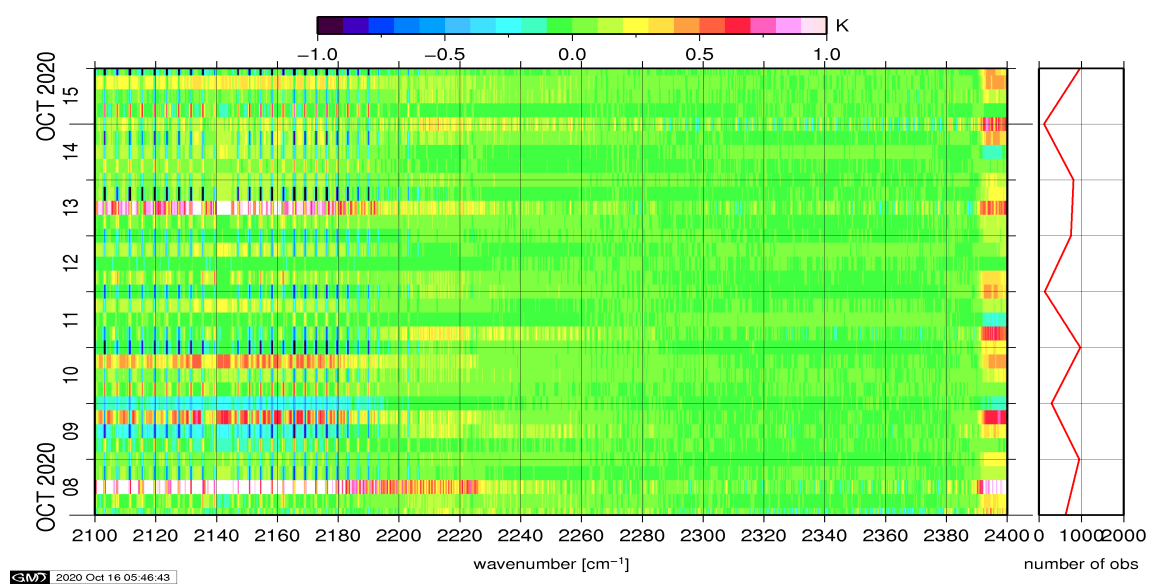


Figure 15: Radiance Anomaly in BT: CO2 4.3

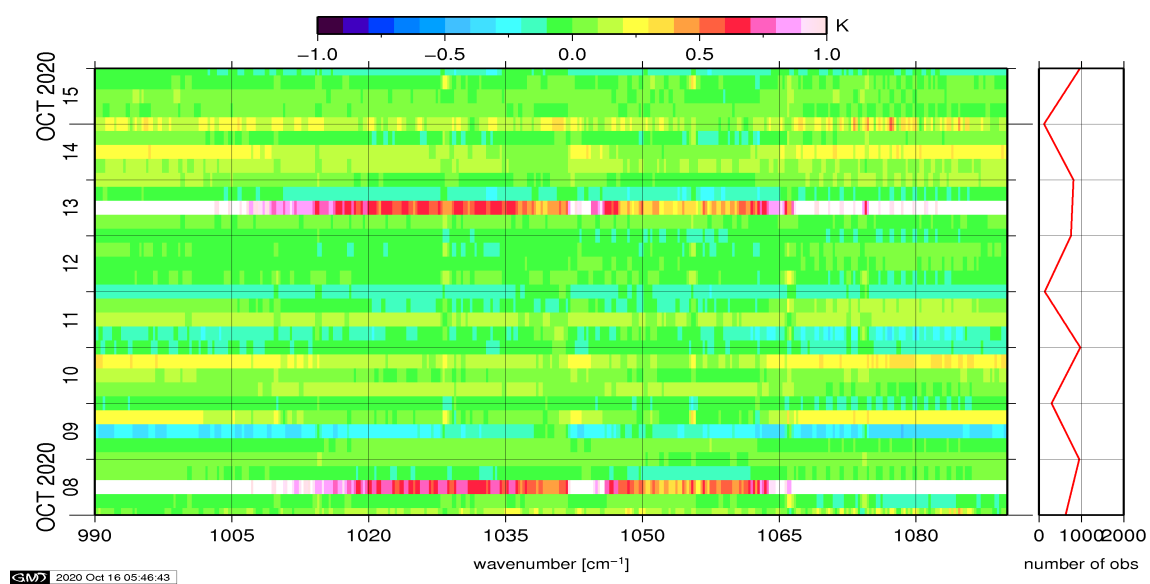


Figure 16: Radiance Anomaly in BT: O3

## 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.

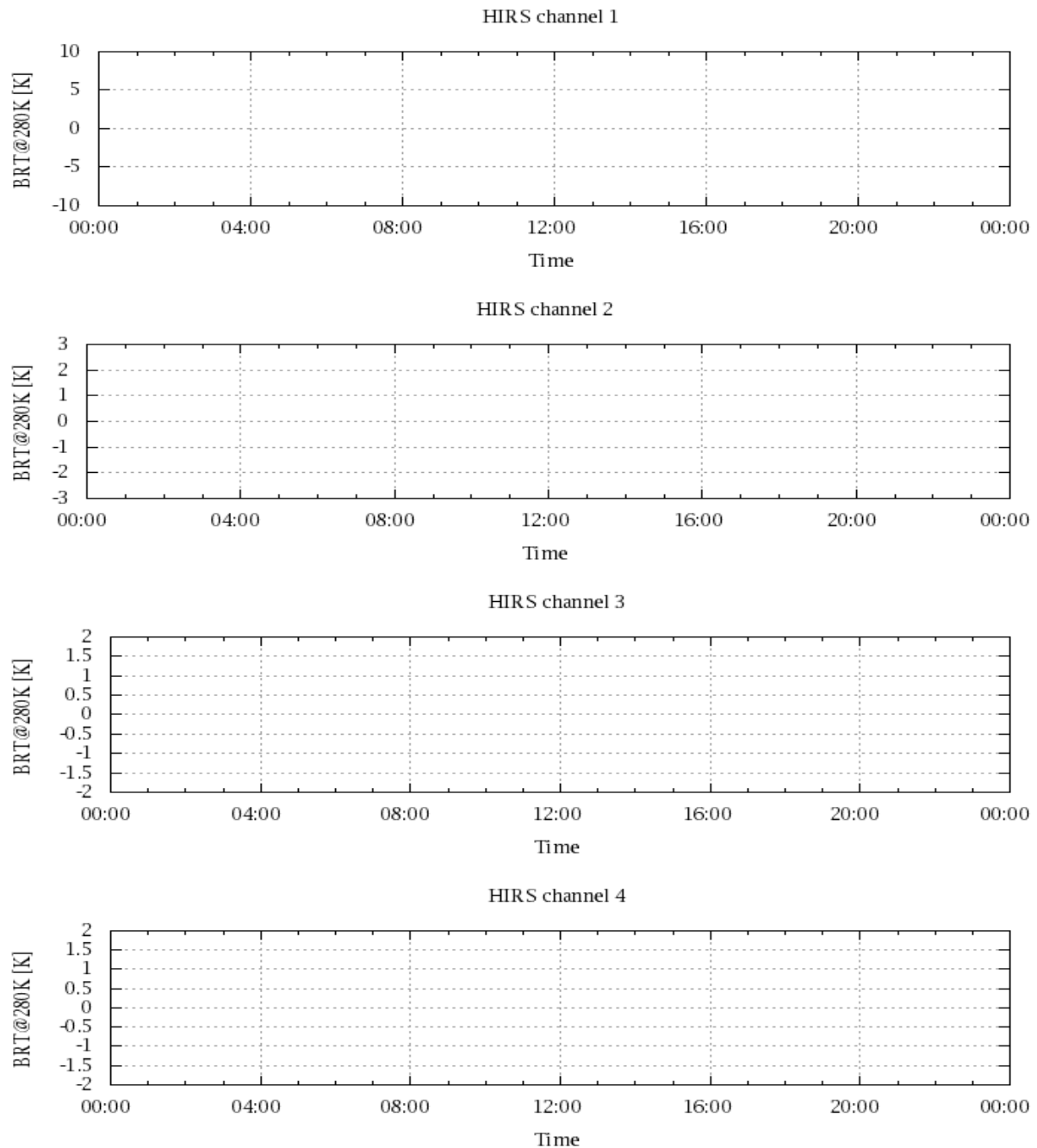


Figure 17: Radiance Differences in BT

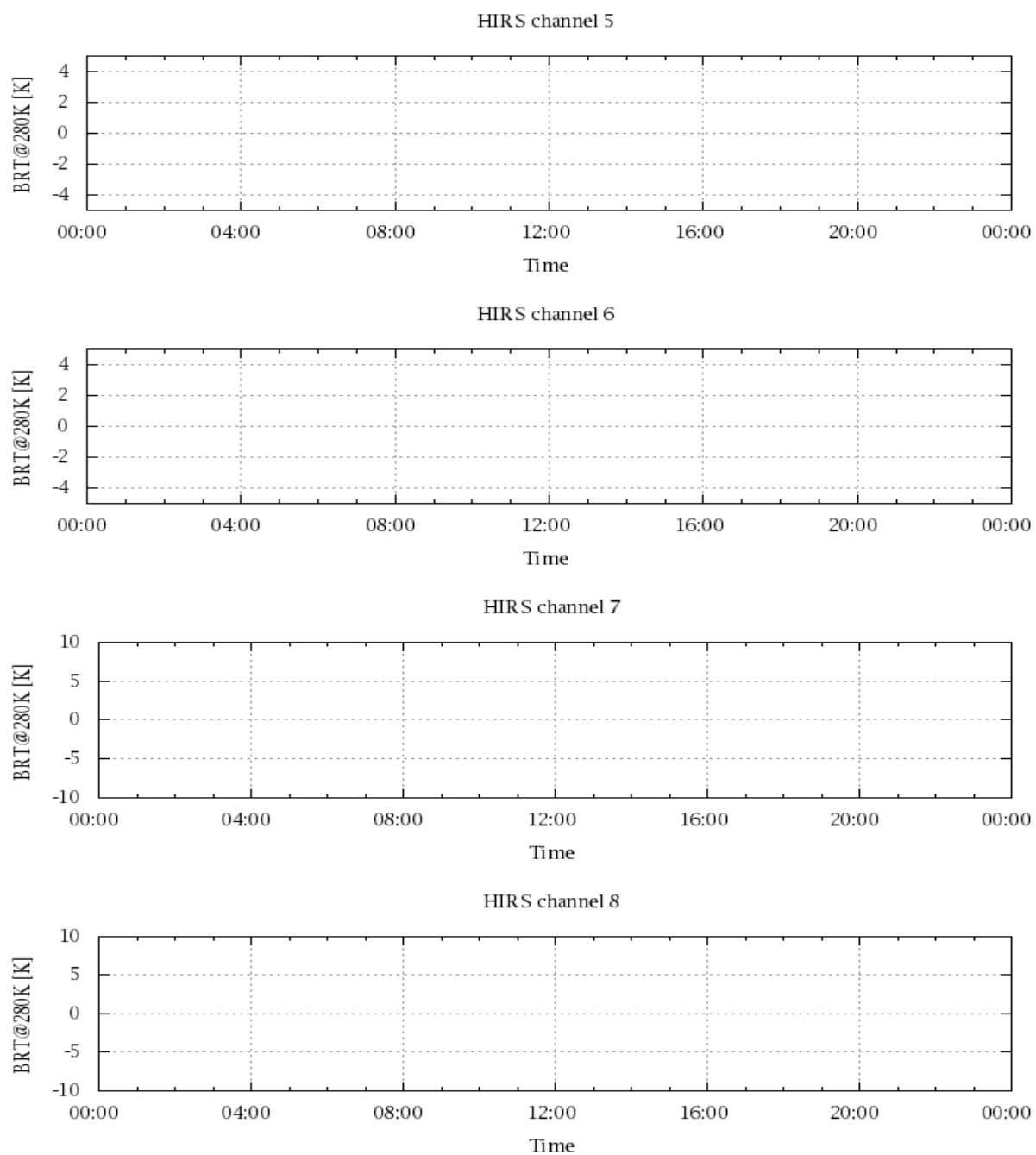


Figure 18: Radiance Differences in BT

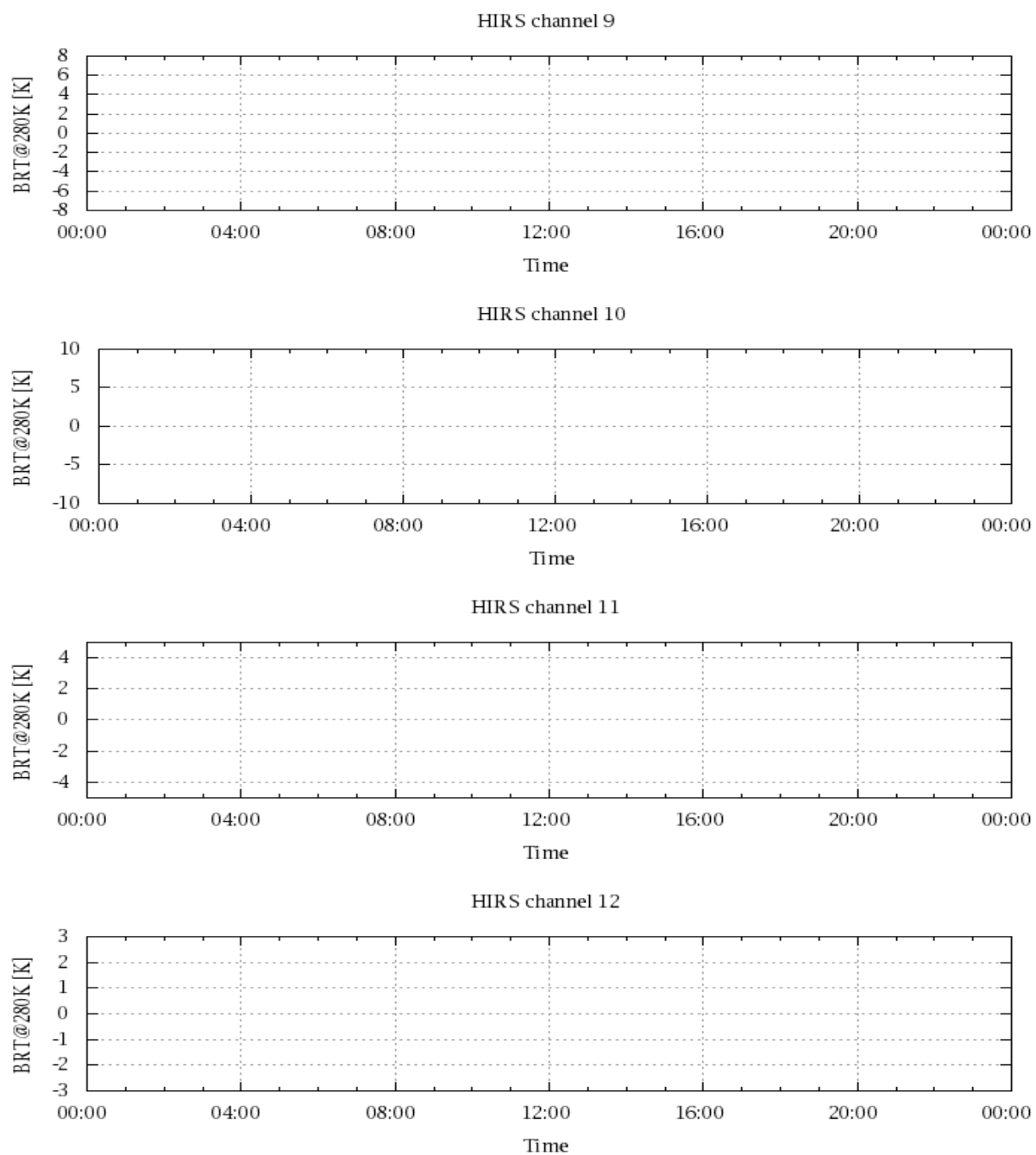


Figure 19: Radiance Differences in BT

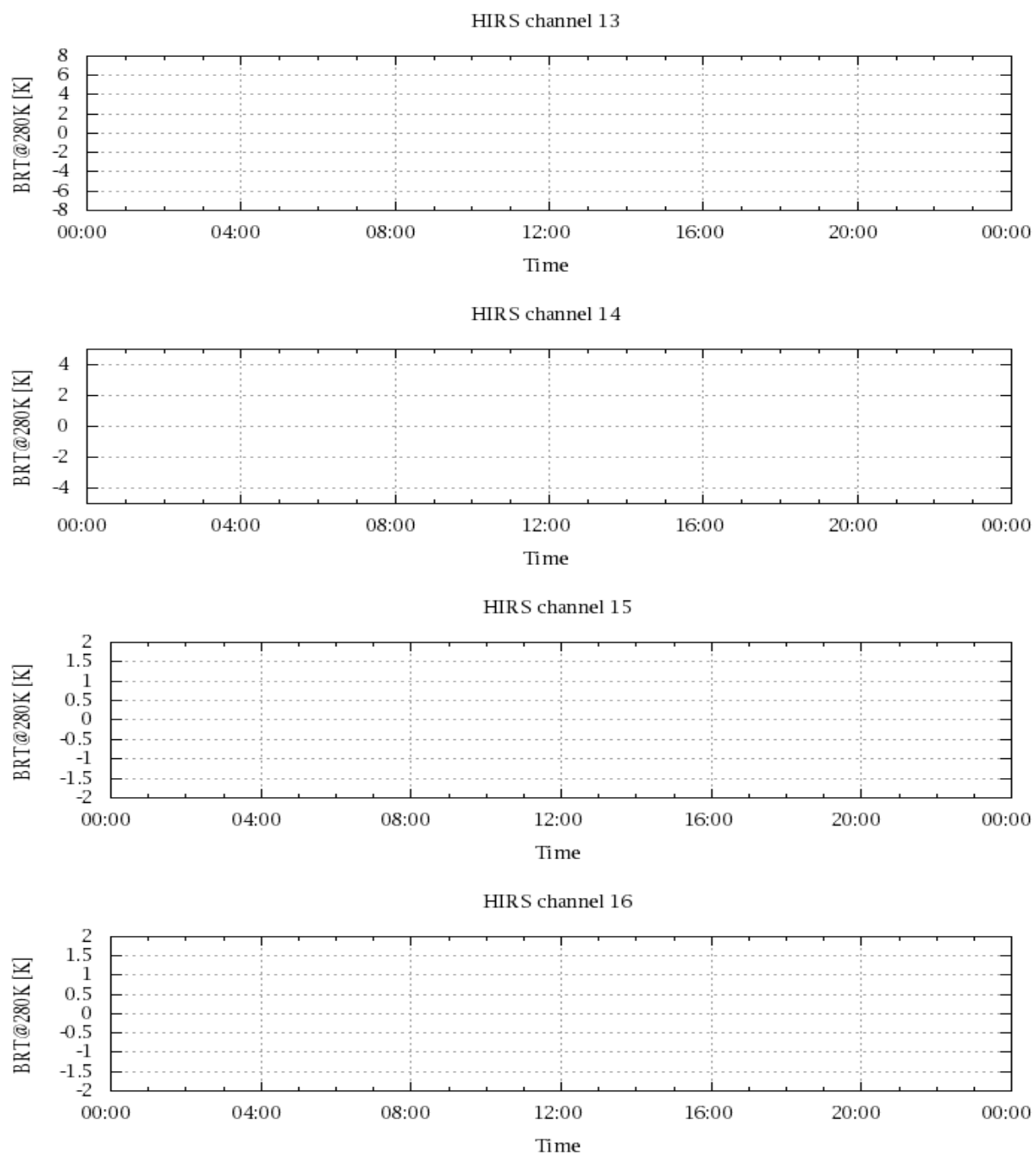


Figure 20: Radiance Differences in BT

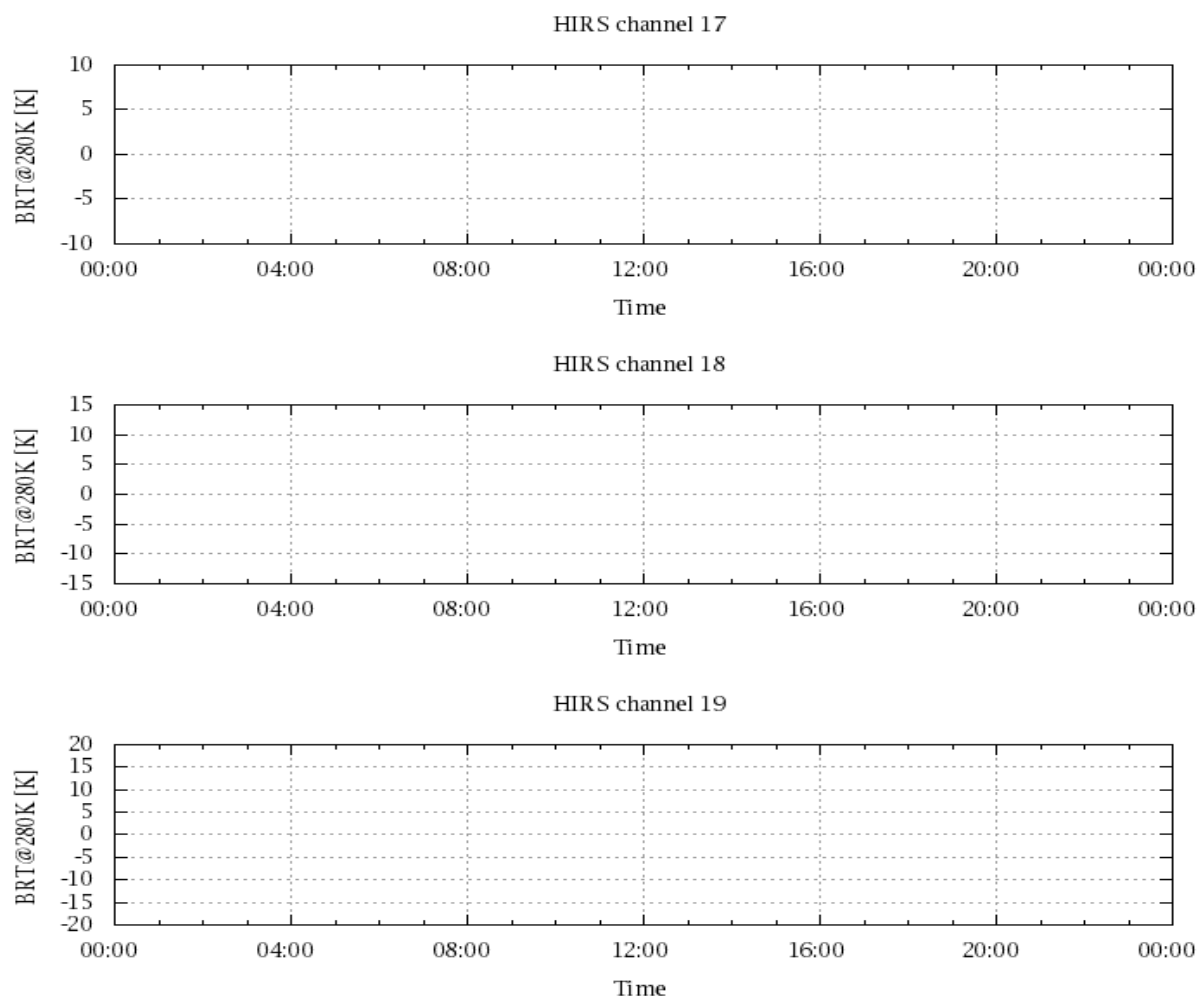


Figure 21: Radinace Differences in BT