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

IASI monitoring team

16/10/2020 00:00:00 - 17/10/2020 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 16/10/2020 00:00:00 - 17/10/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2　Data quantity 16/10/2020 00:00:00 - 17/10/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	462	-
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)	4508	4510	20201016052319.910	20201016052320.339
PX2 (135)	-	-	-	-
PX3 (140)	-	-	-	-
PX4 (145)	-	-	-	-
IMG (150)	-	-	-	-
VER (160)	11218	12396	20201016061536.362	20201016064741.746
VER (160)	12396	12401	20201016064741.746	20201016064741.746
VER (160)	12401	12406	20201016064741.746	20201016064741.746
VER (160)	12406	12411	20201016064741.746	20201016064741.746
VER (160)	12411	12416	20201016064741.746	20201016064741.746
VER (160)	12416	12397	20201016064741.746	20201016064741.746
VER (160)	12397	12402	20201016064741.746	20201016064741.746
VER (160)	12402	12407	20201016064741.746	20201016064741.746
VER (160)	12407	12412	20201016064741.746	20201016064741.746
VER (160)	12412	12417	20201016064741.746	20201016064741.746
VER (160)	12417	12398	20201016064741.746	20201016064741.746
VER (160)	12398	12403	20201016064741.746	20201016064741.746
VER (160)	12403	12408	20201016064741.746	20201016064741.746
VER (160)	12408	12413	20201016064741.746	20201016064741.746
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	12413	12418	20201016064741.746	20201016064741.746
VER (160)	12418	12399	20201016064741.746	20201016064741.746
VER (160)	12399	12404	20201016064741.746	20201016064741.746
VER (160)	12404	12409	20201016064741.746	20201016064741.746
VER (160)	12409	12414	20201016064741.746	20201016064741.746
VER (160)	12414	12419	20201016064741.746	20201016064741.746
VER (160)	12419	12400	20201016064741.746	20201016064741.746
VER (160)	12400	12405	20201016064741.746	20201016064741.746
VER (160)	12405	12410	20201016064741.746	20201016064741.746
VER (160)	12410	12415	20201016064741.746	20201016064741.746
VER (160)	12415	12420	20201016064741.746	20201016064741.746
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
16/10/2020 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	462	-
GQisFlagQual set (PX1)	99.59 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.68 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.63 %	-

Table 4: Quality flags
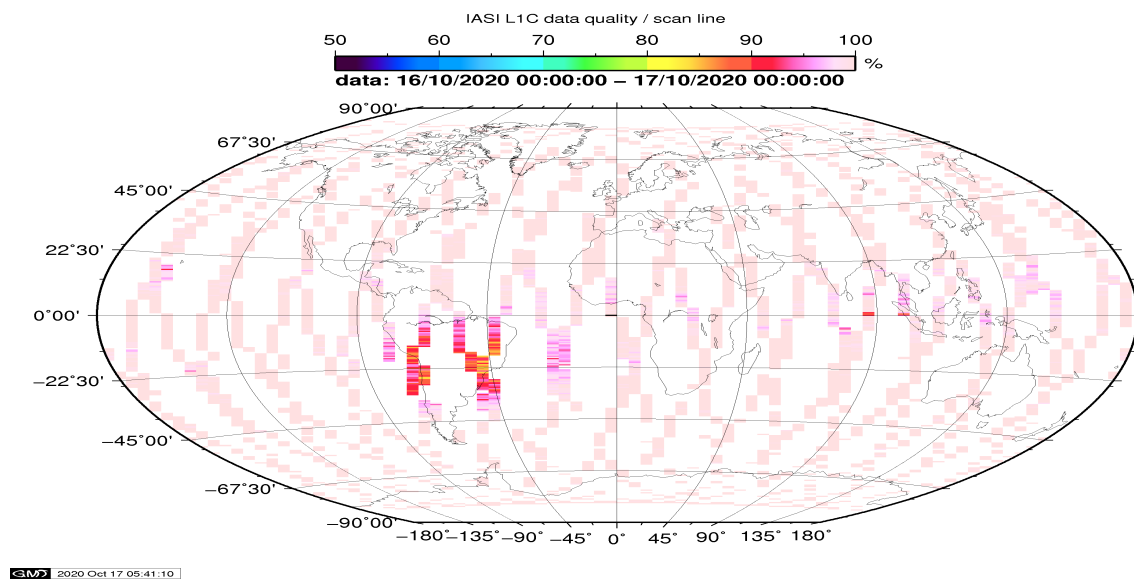
Figure 1: L1C data quality
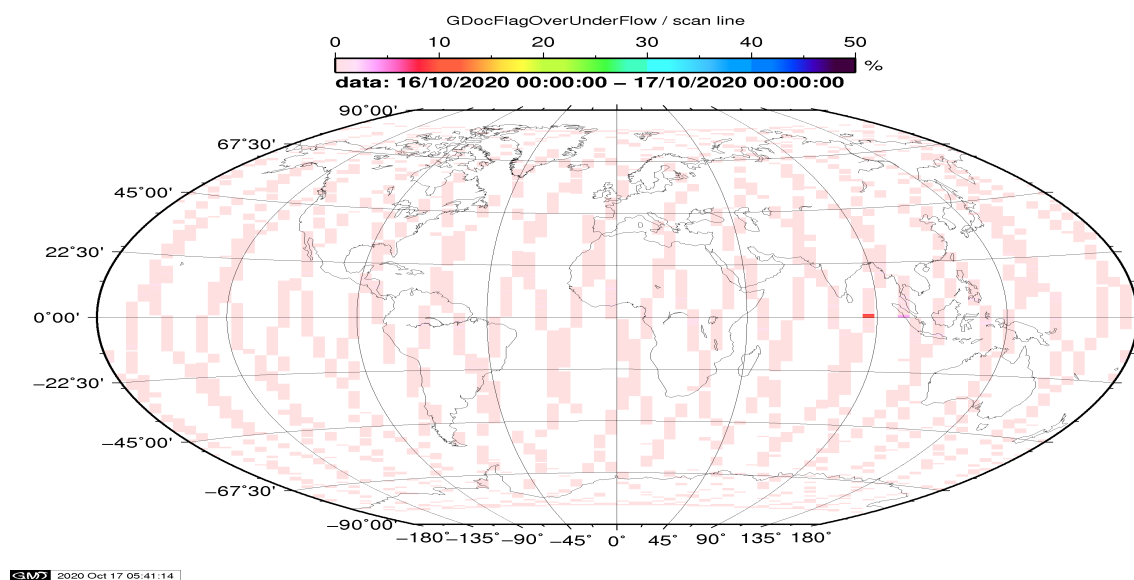
Figure 2: Flag of Over and Under Flows
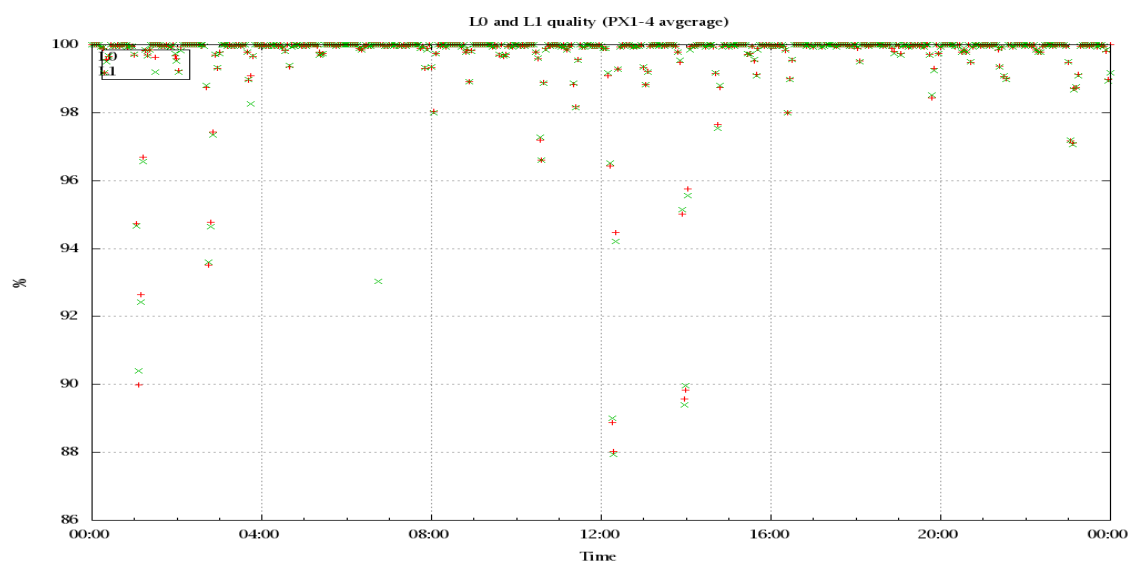
Figure 3: Level 0 and 1C overall quality
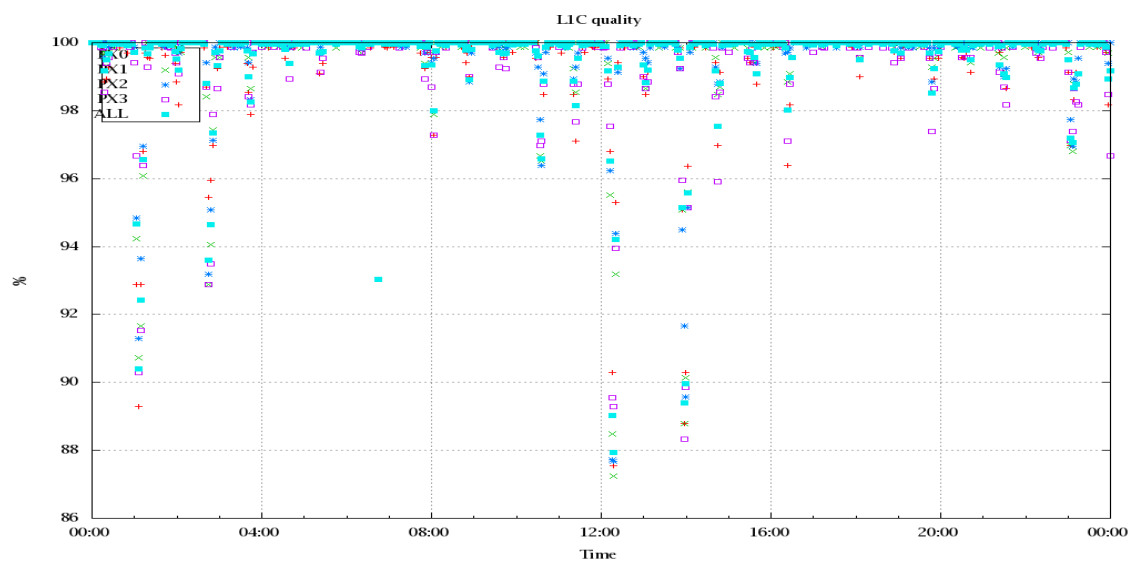
Figure 4: Level 1C quality
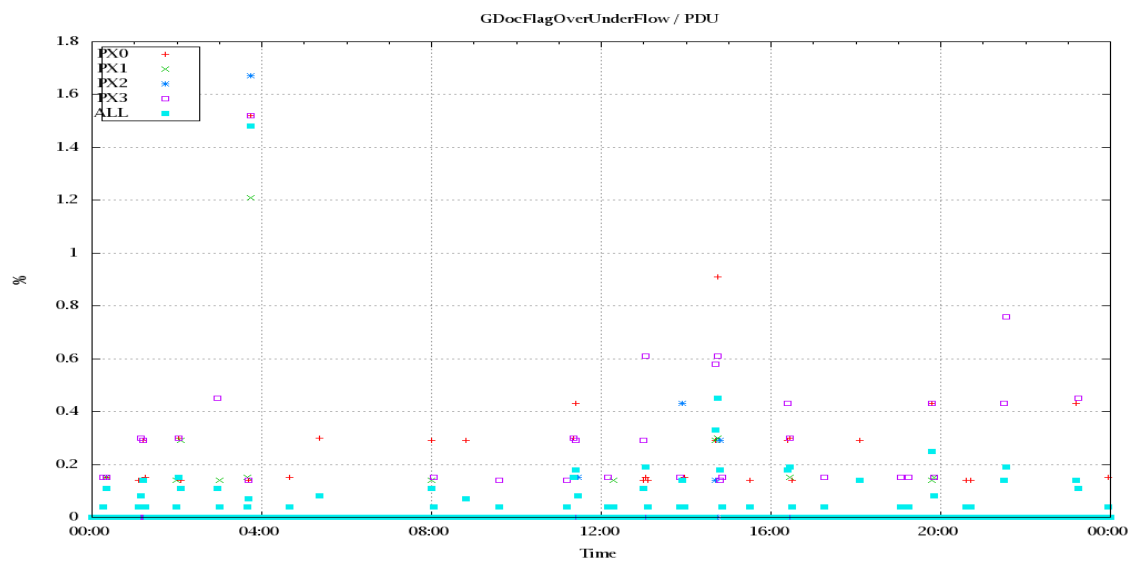
Figure 5: Timeseries of flag of Over and Under Flows

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 indentification 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.
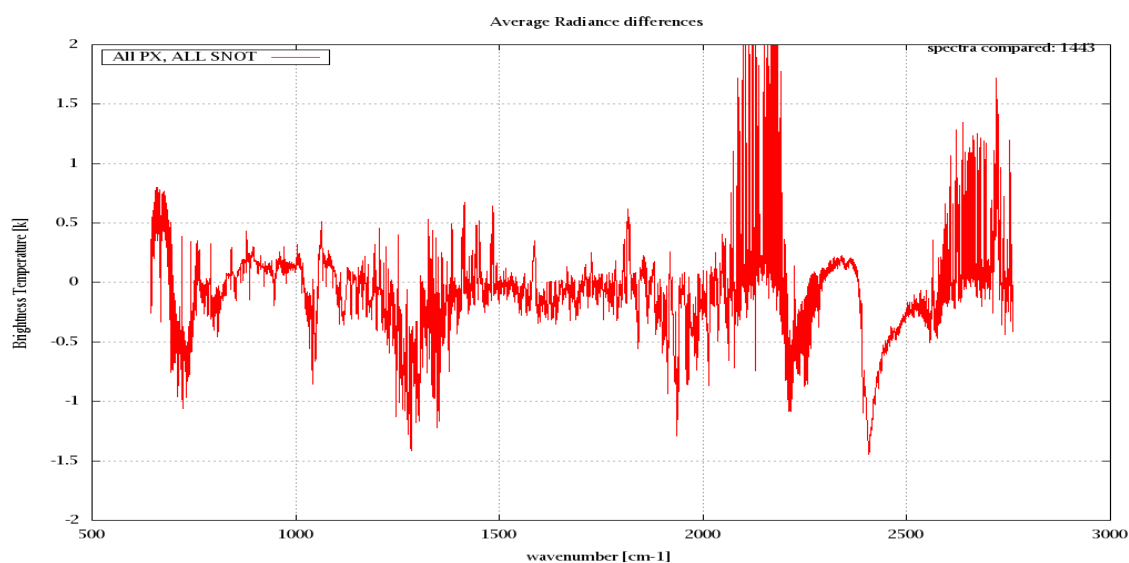
Figure 6: Average Radiance differences: OBS-CAL
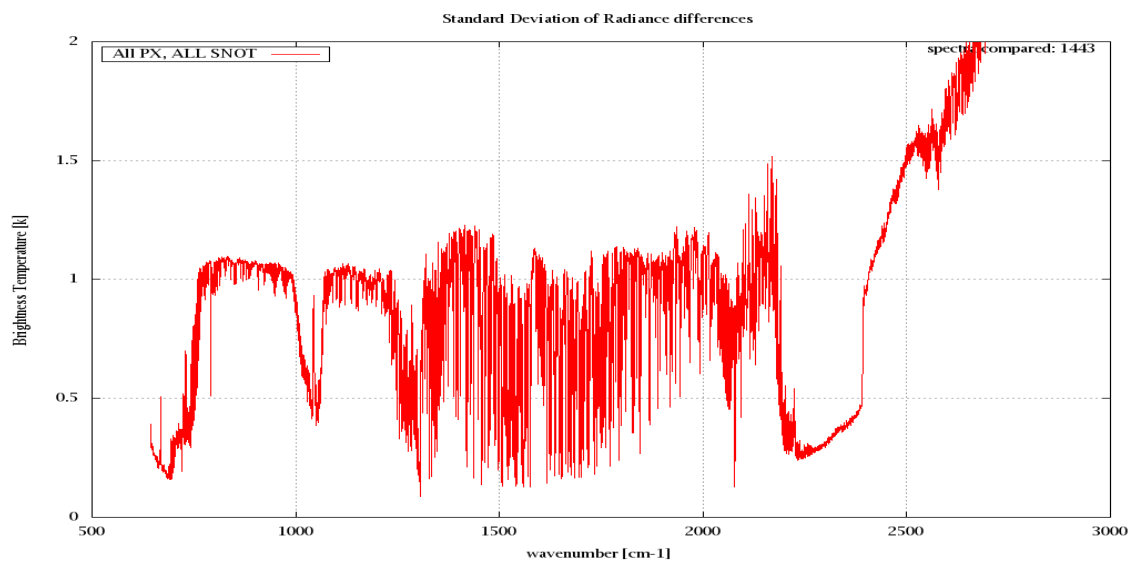
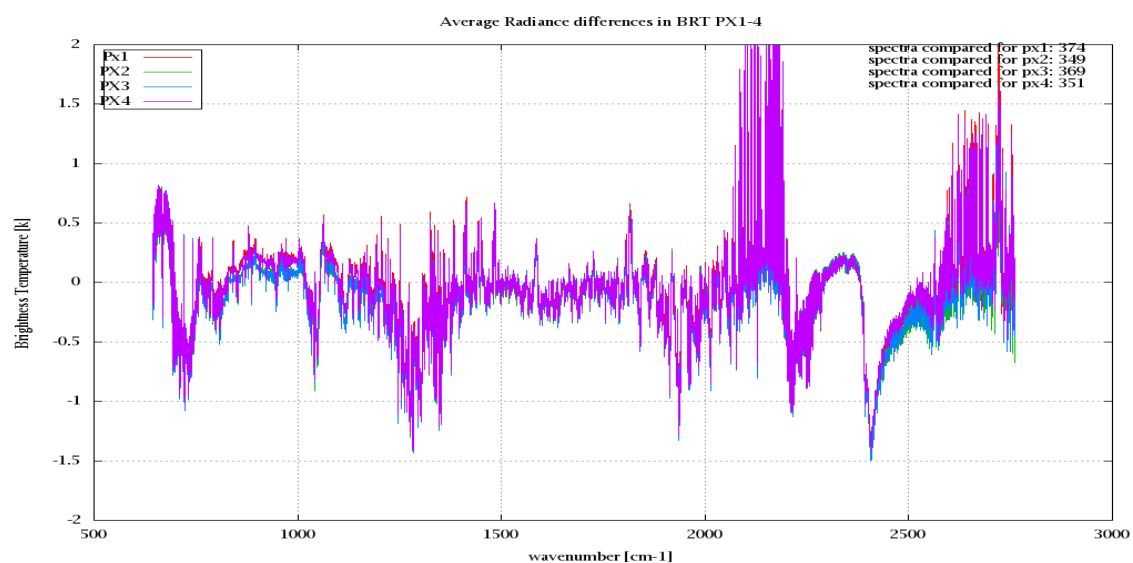Figure 7: Standard Deviation of Radiance differences
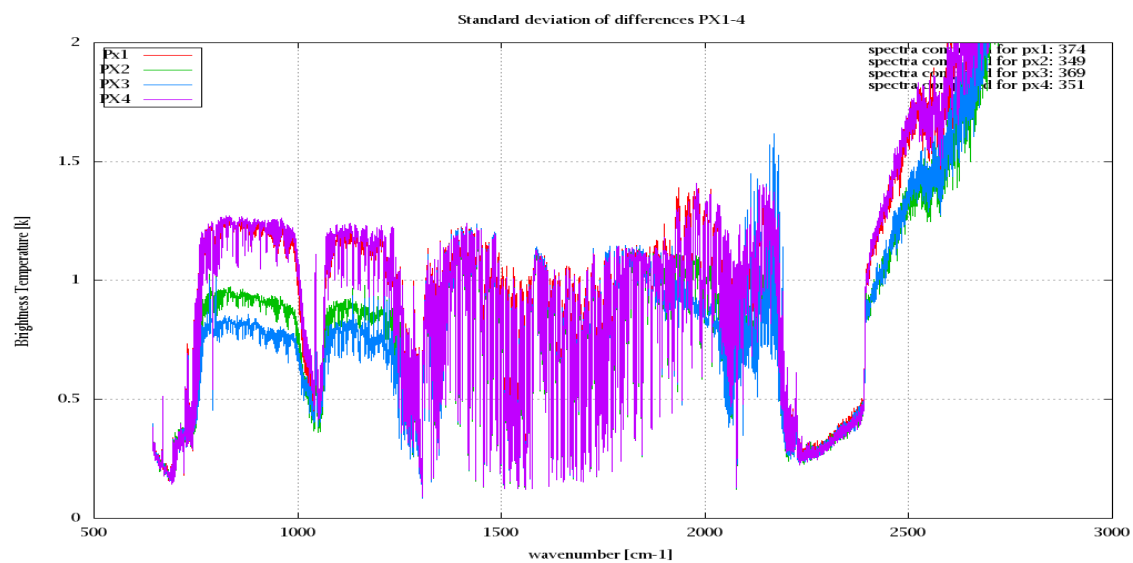
Figure 8: Average Radiance differences: OBS-CAL

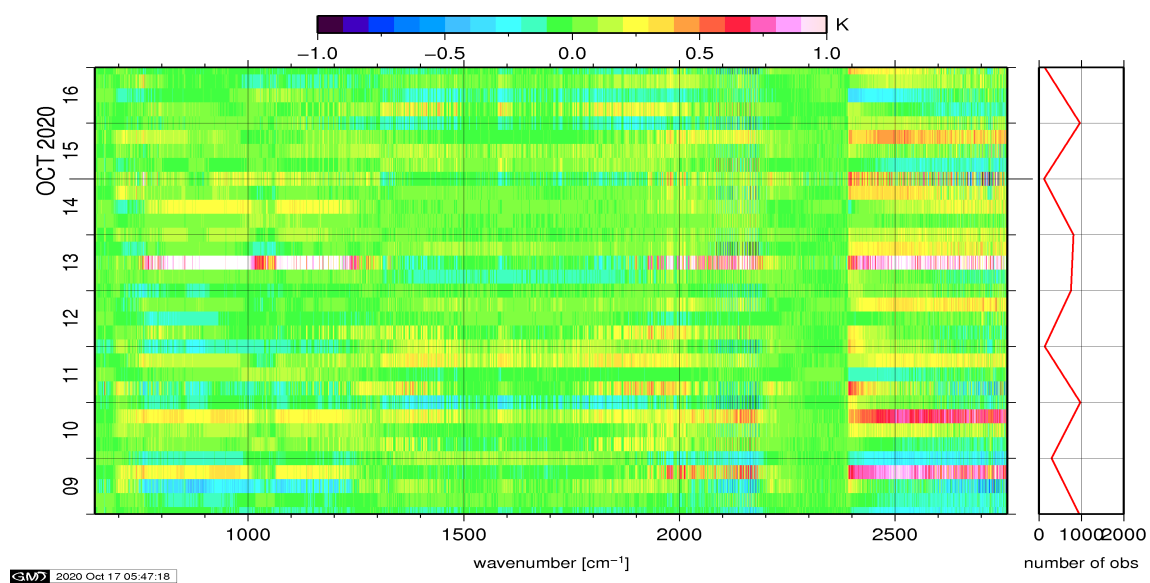Figure 9: Standard Deviation of Radiance differences
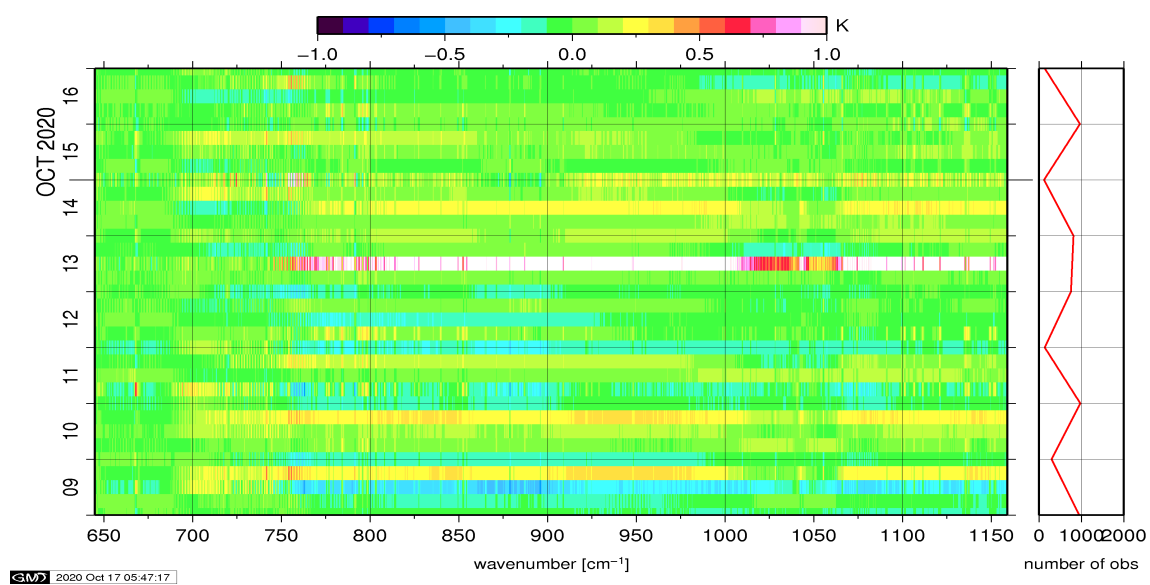
Figure 10: Radiance Anomaly in BT: All Channels

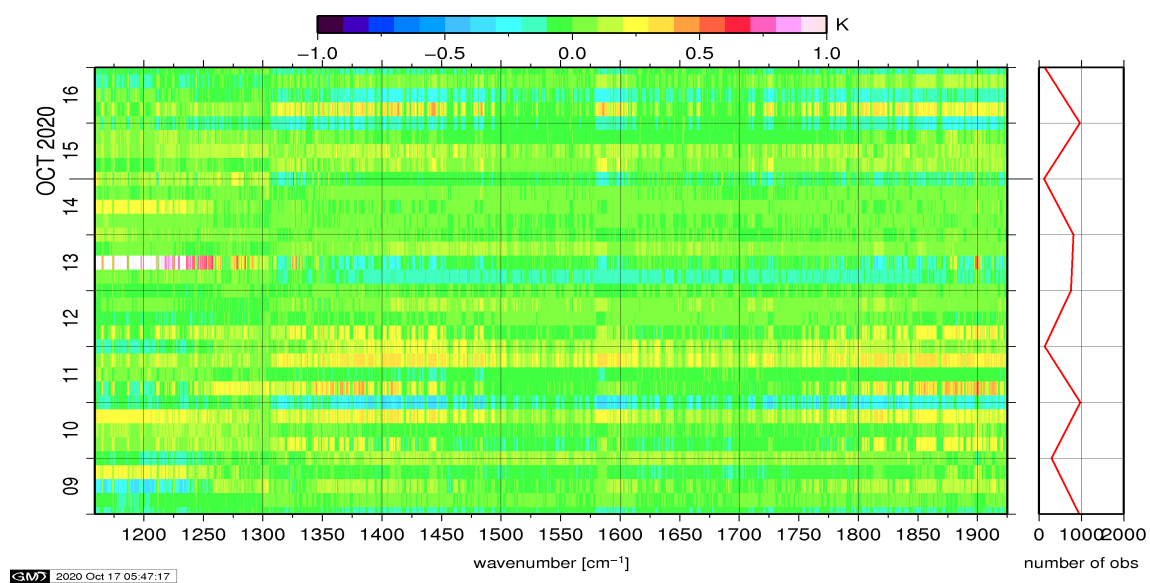Figure 11: Radiance Anomaly in BT: IASI Band 1

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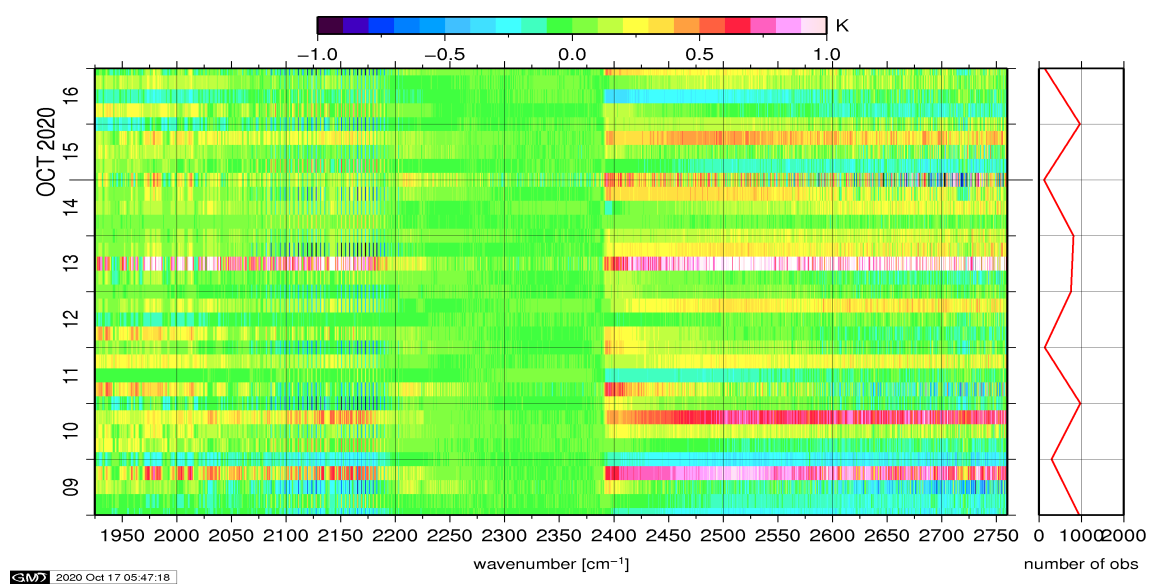Figure 12: Radiance Anomaly in BT: IASI Band 2
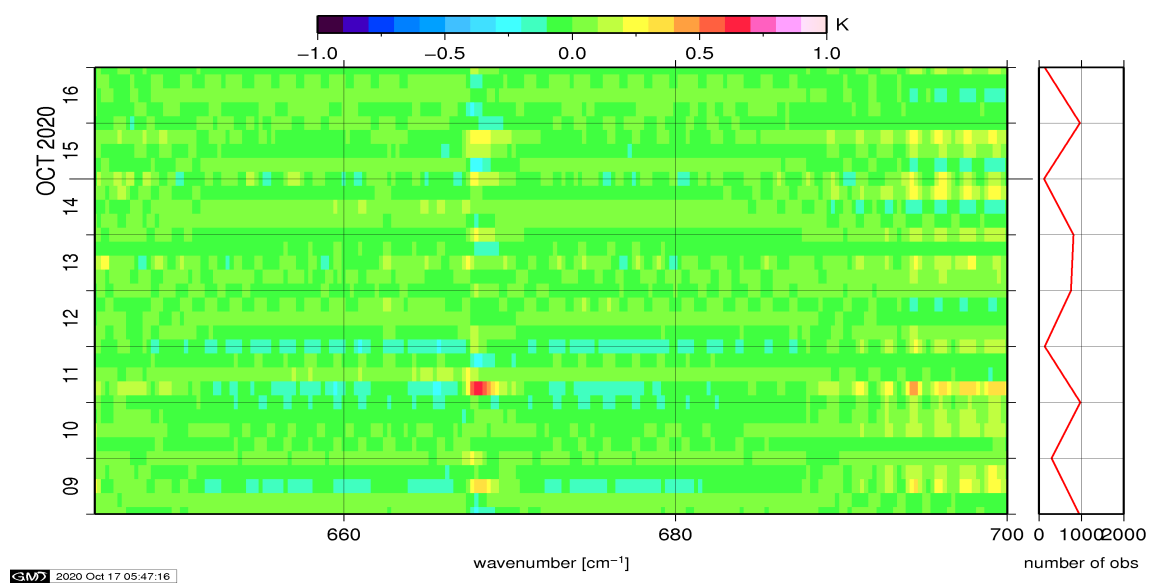

Figure 13: Radiance Anomaly in BT: IASI Band 3

Figure 14: Radiance Anomaly in BT: CO2 14

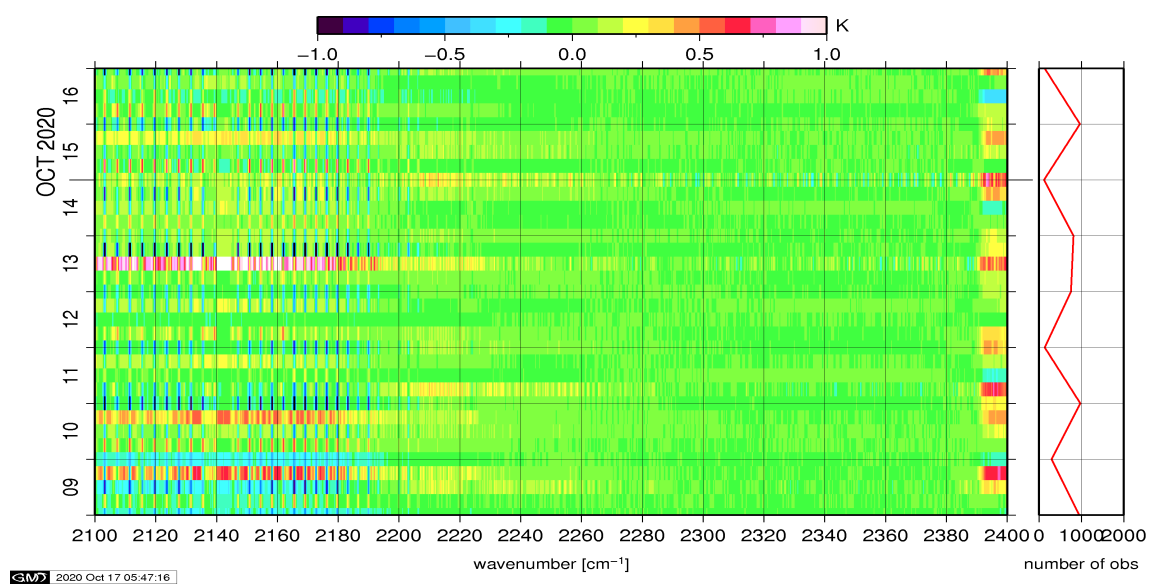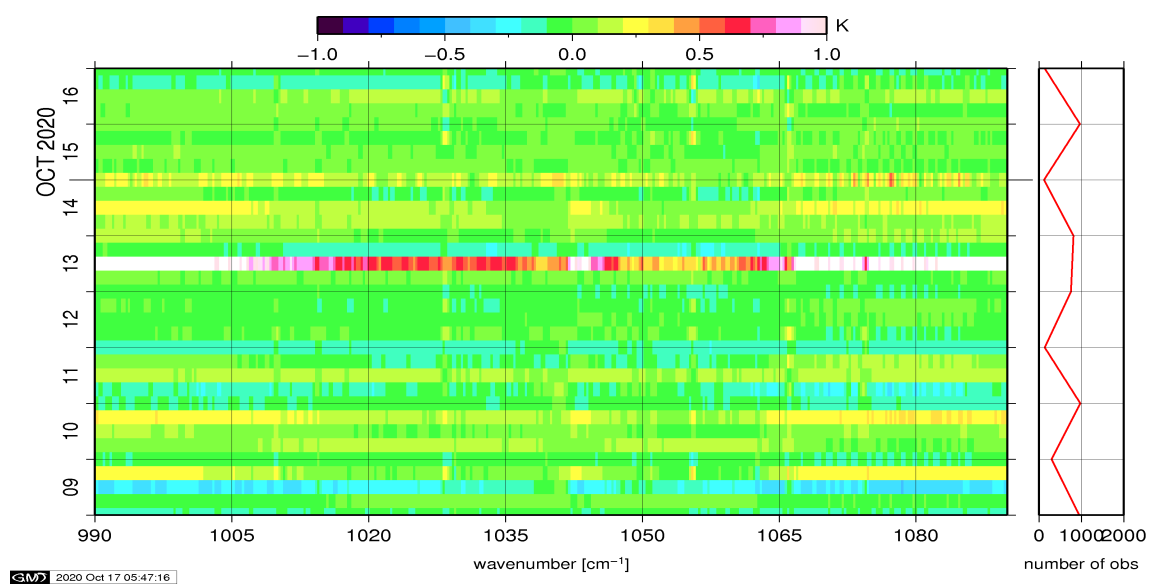Figure 15: Radiance Anomaly in BT: CO2 4.3

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.
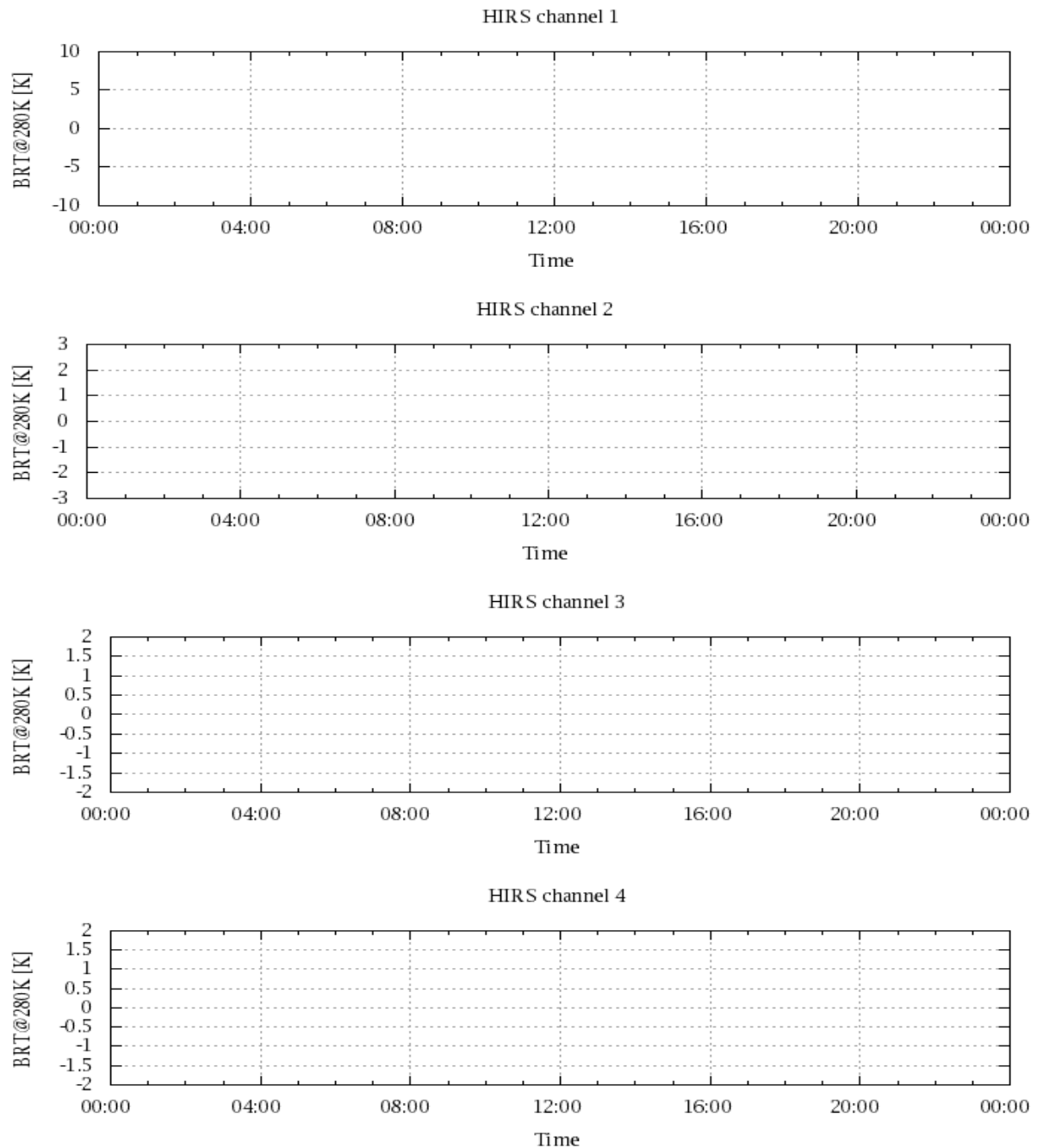

Figure 17: Radiance Differences in BT

HIRS channel 5

HIRS channel 6
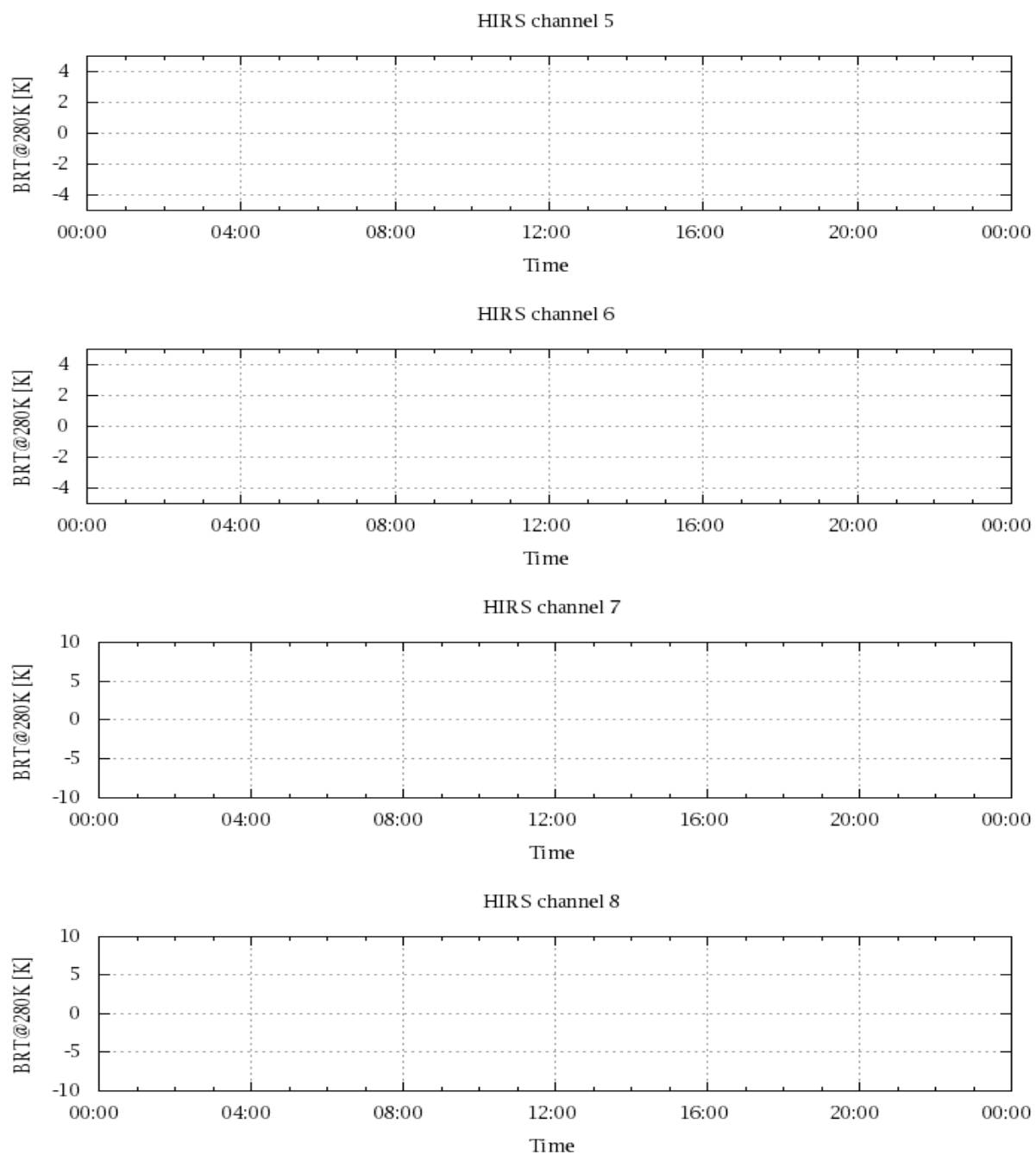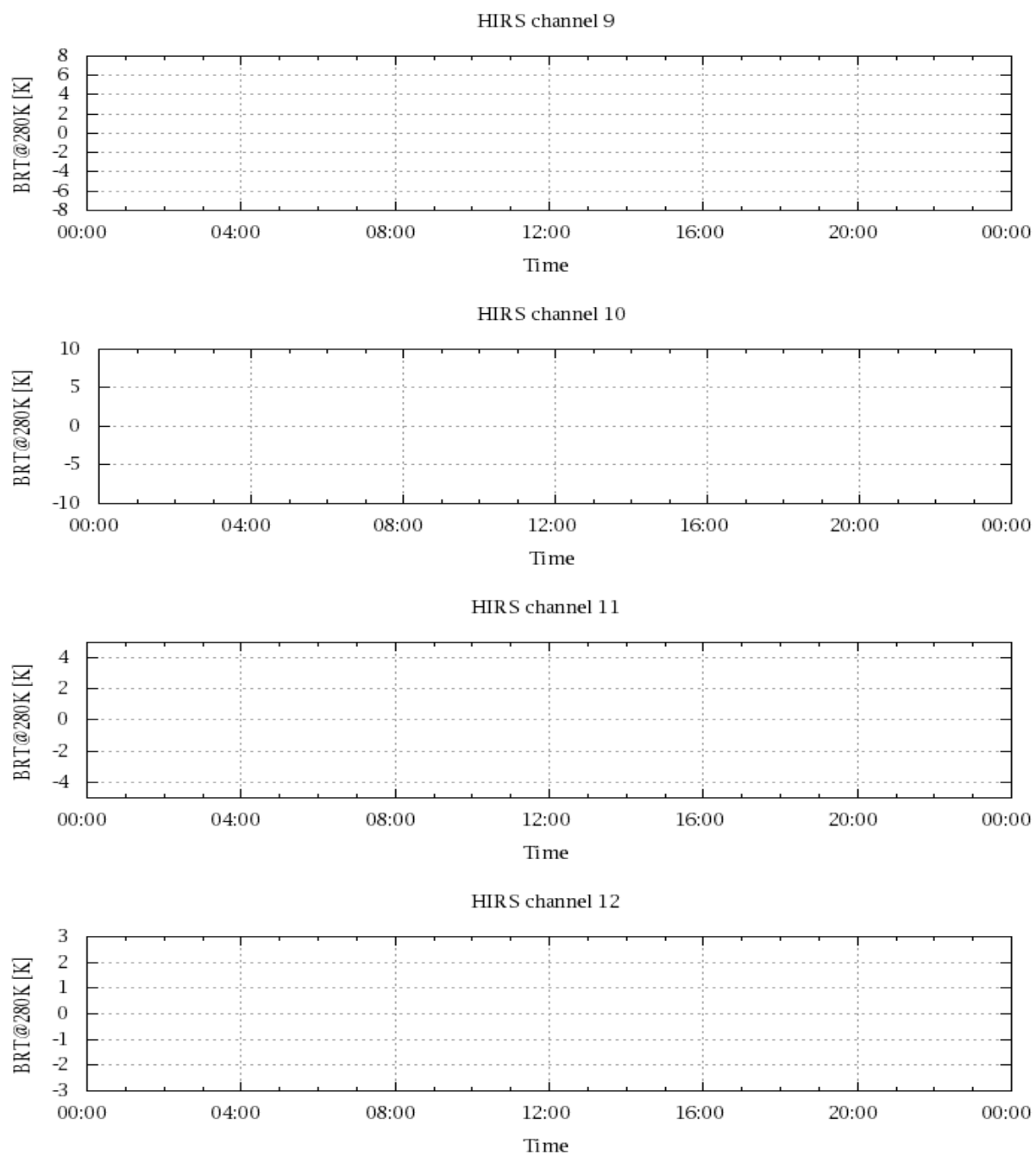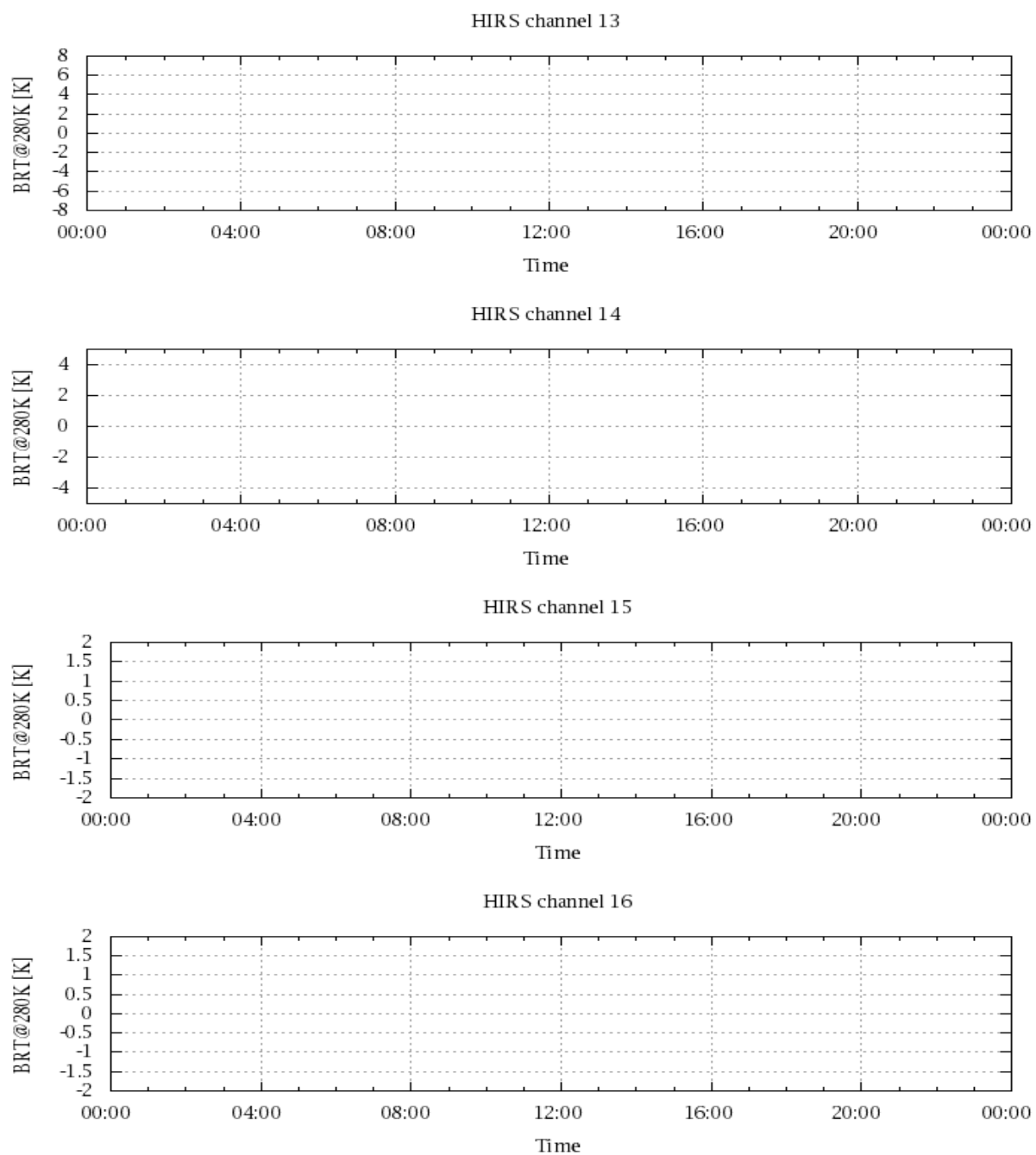
HIRS channel 7

HIRS channel 8

Figure 18: Radiance Differences in BT

Figure 19: Radiance Differences in BT

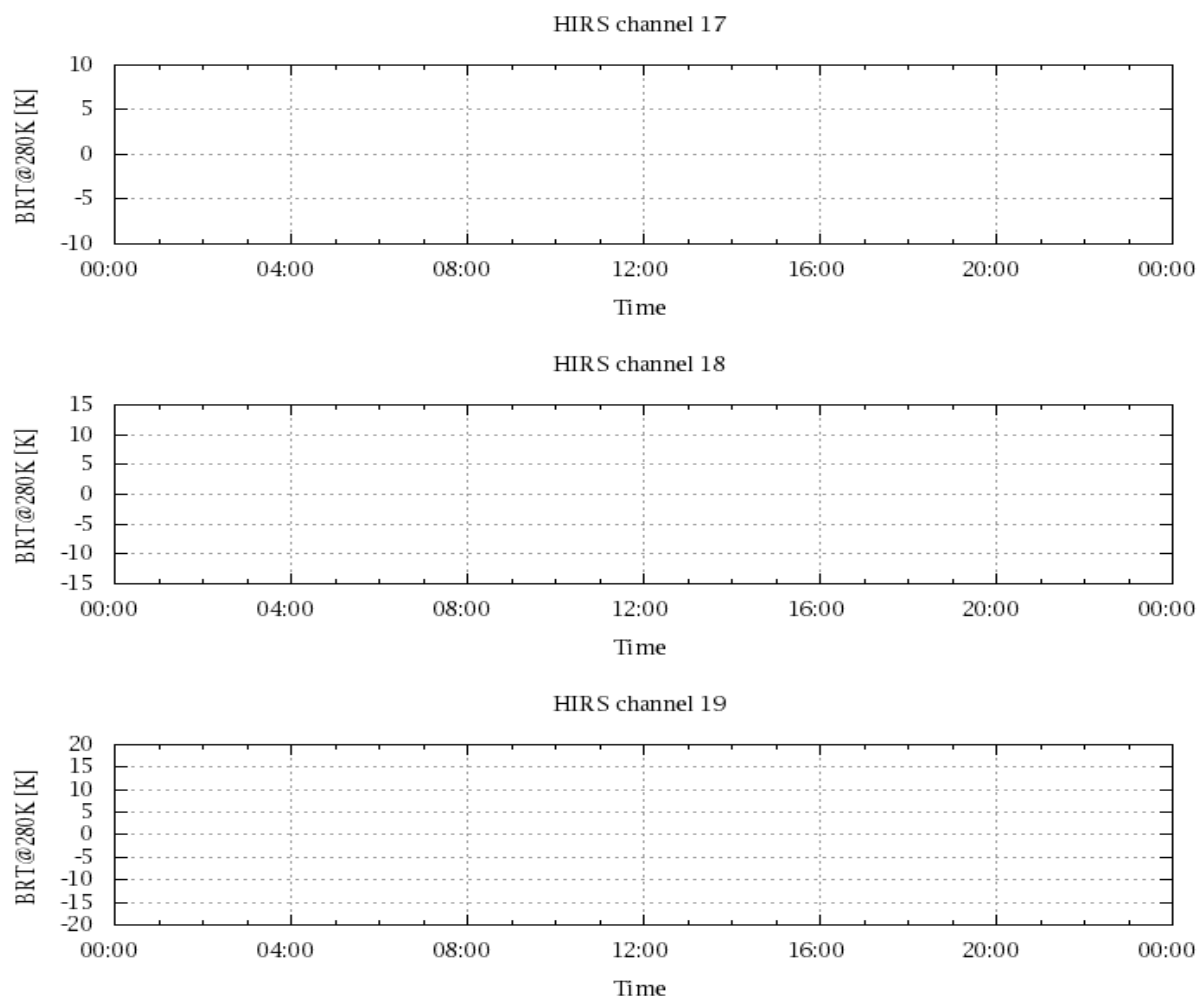Figure 20: Radiance Differences in BT

HIRS channel 17

HIRS channel 18

HIRS channel 19

Figure 21: Radinace Differences in BT