

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

IASI monitoring team

06/04/2019 00:00:00 - 07/04/2019 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 06/04/2019 00:00:00 - 07/04/2019 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 06/04/2019 00:00:00 - 07/04/2019 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSSGranule	469	-
L1 DPX PDUs (RM: IASI-HIRS)	480	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	7030	7150	20190406080305.102	20190406080337.098
PX1 (130)	7581	7594	20190406080531.477	20190406080534.285
PX1 (130)	7763	7839	20190406080619.906	20190406080640.879
PX1 (130)	12739	12815	20190406094115.890	20190406094136.863
PX1 (130)	12815	12848	20190406094136.863	20190406094145.511
PX1 (130)	15273	15334	20190406095230.936	20190406095248.666
PX2 (135)	7030	7150	20190406080305.102	20190406080337.098
PX2 (135)	7580	7594	20190406080531.258	20190406080534.285
PX2 (135)	7762	7839	20190406080619.688	20190406080640.879
PX2 (135)	12739	12848	20190406094115.890	20190406094145.511
PX2 (135)	15273	15334	20190406095230.936	20190406095248.666
PX3 (140)	7030	7150	20190406080305.102	20190406080337.098
PX3 (140)	7580	7593	20190406080531.258	20190406080534.070
PX3 (140)	7762	7838	20190406080619.688	20190406080640.664
PX3 (140)	12739	12814	20190406094115.890	20190406094136.648
PX3 (140)	12814	12848	20190406094136.648	20190406094145.511
PX3 (140)	15273	15334	20190406095230.936	20190406095248.666
PX4 (145)	7029	7150	20190406080304.887	20190406080337.098
PX4 (145)	7580	7593	20190406080531.258	20190406080534.070
PX4 (145)	7762	7838	20190406080619.688	20190406080640.664

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	12739	12814	20190406094115.890	20190406094136.648
PX4 (145)	12814	12848	20190406094136.648	20190406094145.511
PX4 (145)	15273	15334	20190406095230.936	20190406095248.666
IMG (150)	15529	15665	20190406080304.887	20190406080336.883
IMG (150)	16152	16165	20190406080531.258	20190406080534.070
IMG (150)	16358	62	20190406080619.688	20190406080640.664
IMG (150)	7799	7886	20190406094115.890	20190406094136.648
IMG (150)	7886	7924	20190406094136.648	20190406094145.511
IMG (150)	10672	10738	20190406095232.014	20190406095247.366
VER (160)	14934	14955	20190406080302.938	20190406080342.938
VER (160)	15054	15070	20190406080614.934	20190406080646.934
VER (160)	2230	2251	20190406094110.917	20190406094150.917
VER (160)	2655	2664	20190406095230.936	20190406095232.014
AUX (180)	6220	6225	20190406080303.371	20190406080343.371
AUX (180)	6244	6248	20190406080615.363	20190406080647.363
AUX (180)	6956	6961	20190406094111.351	20190406094151.351
AUX (180)	7041	7043	20190406095231.370	20190406095247.366

Table 2: L0 data gaps

### 3 Instrument modes

Time	Transition from	Transition to
06/04/2019 00:00:12	-	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	469	-
GQisFlagQual set (PX1)	99.58 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

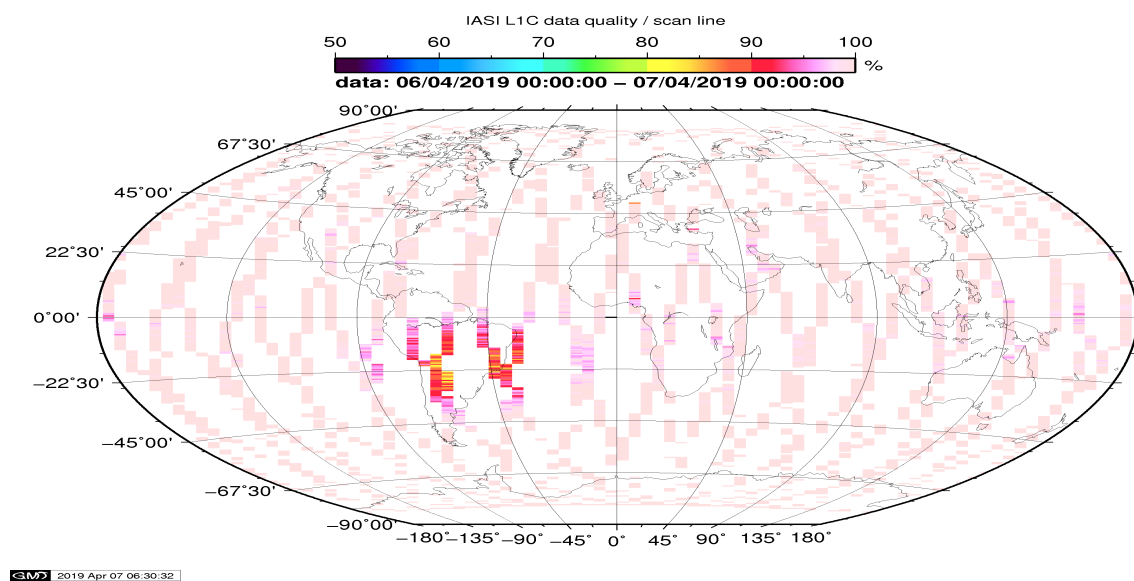


Figure 1: L1C data quality

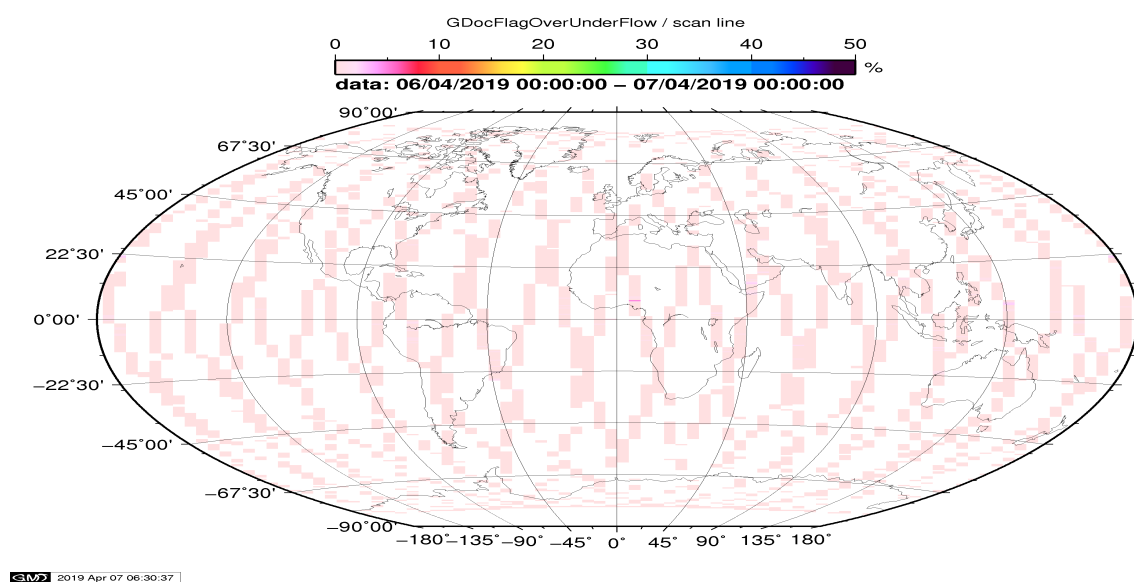


Figure 2: Flag of Over and Under Flows

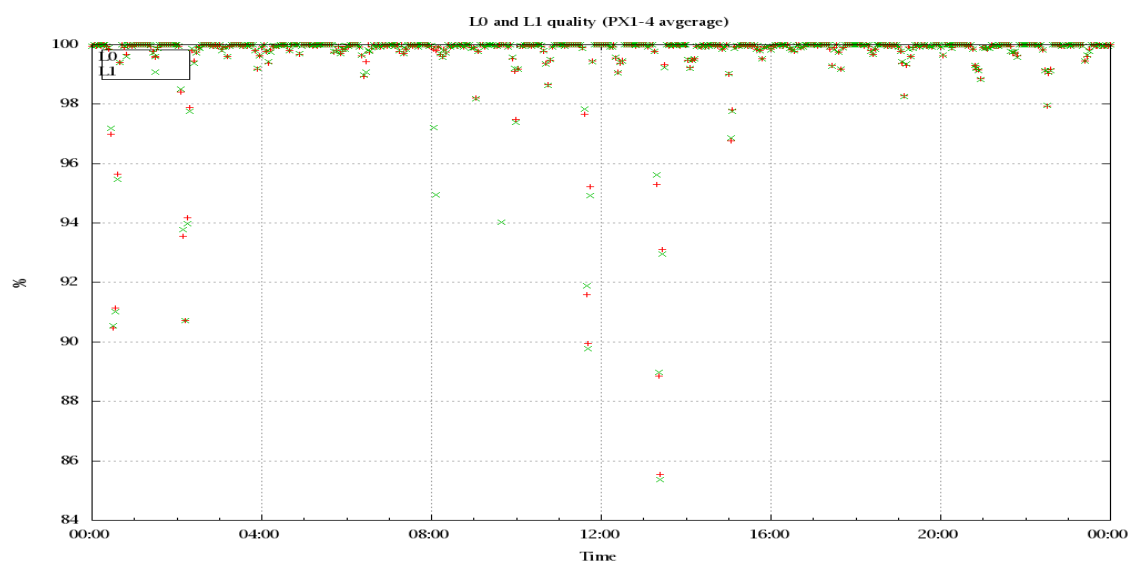


Figure 3: Level 0 and 1C overall quality

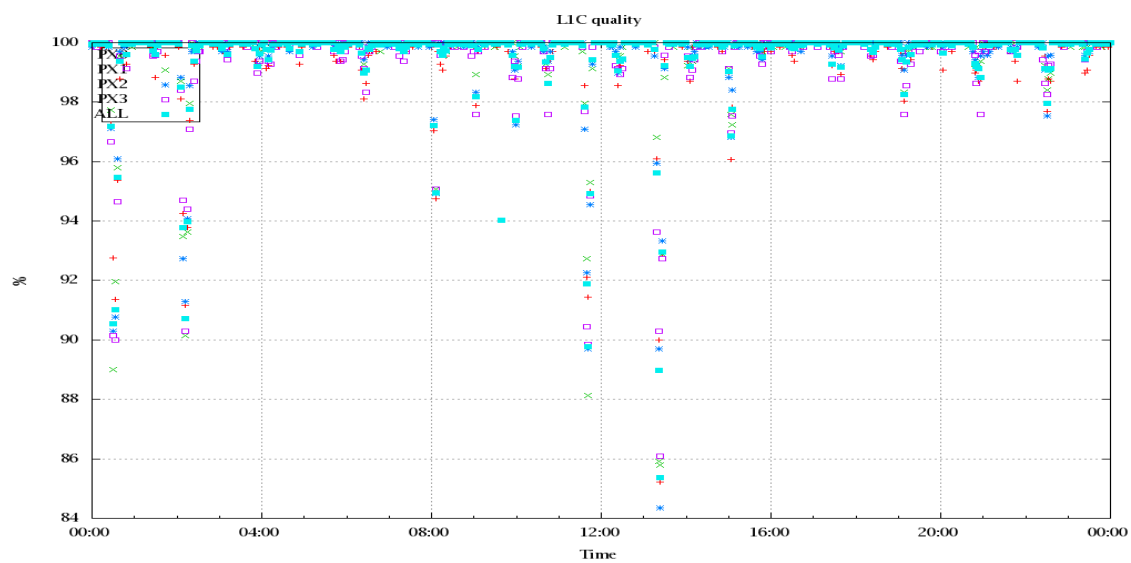


Figure 4: Level 1C quality

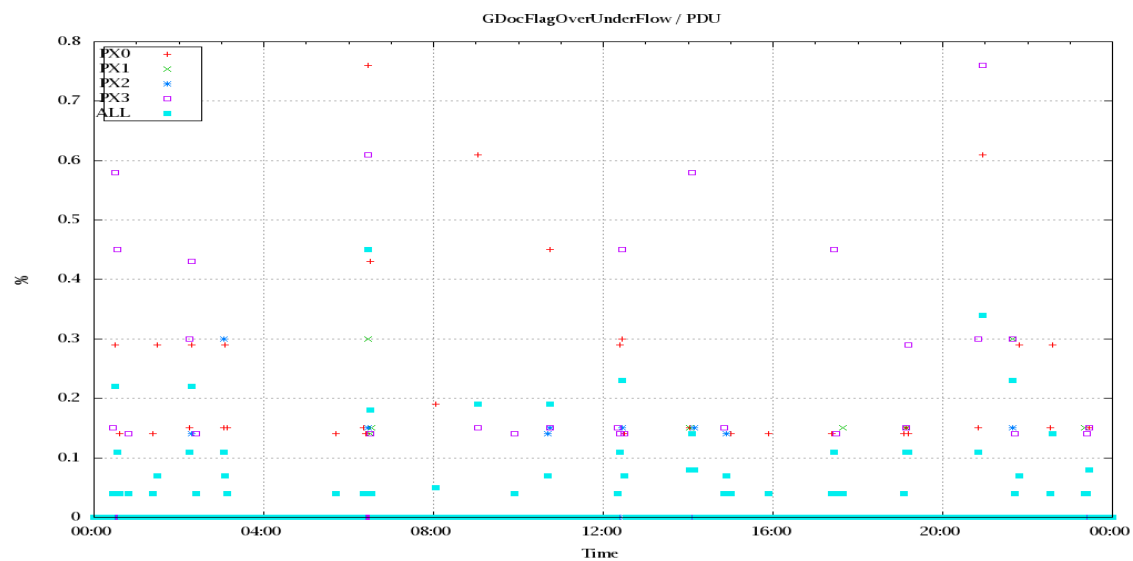


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

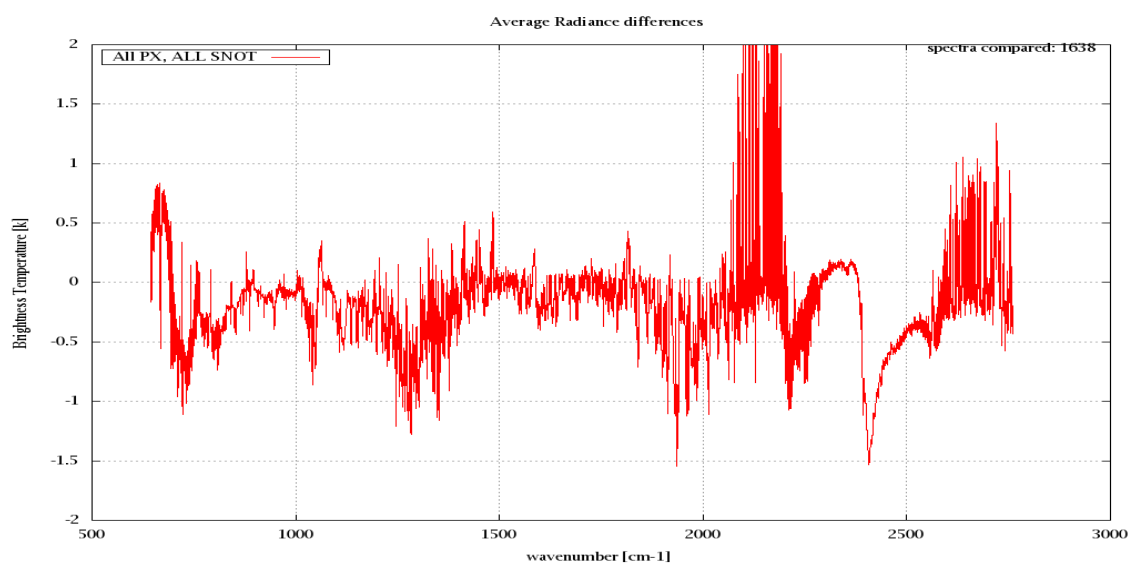


Figure 6: Average Radiance differences: OBS-CAL

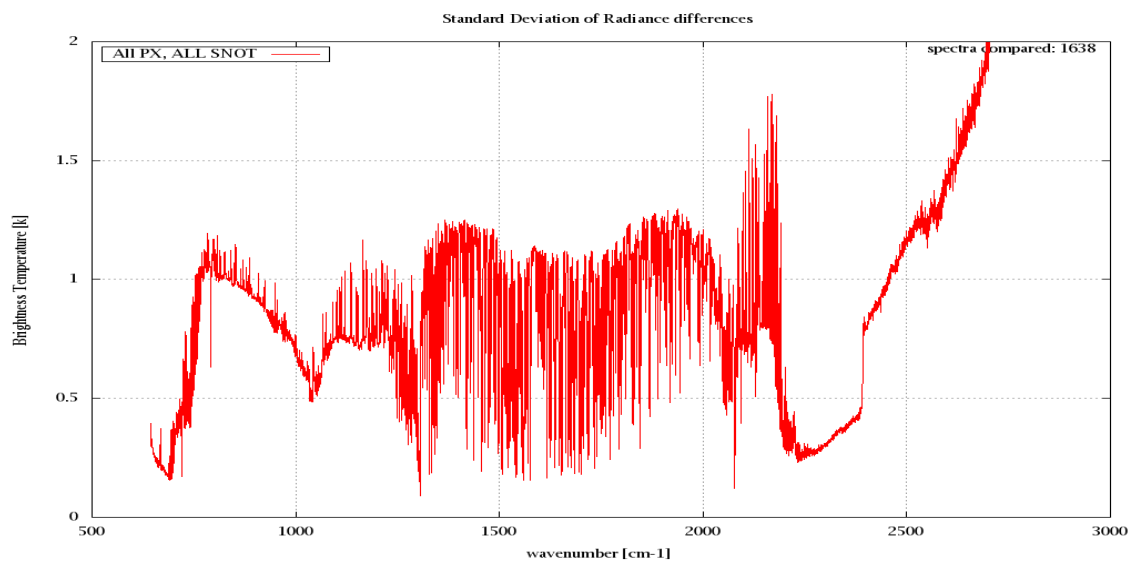


Figure 7: Standard Deviation of Radiance differences

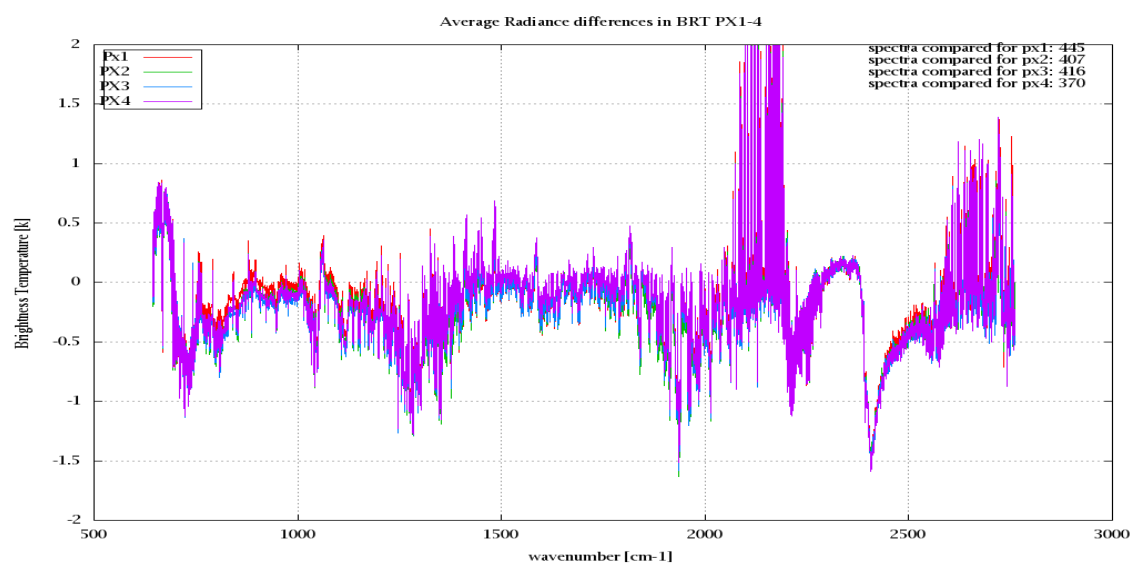


Figure 8: Average Radiance differences: OBS-CAL

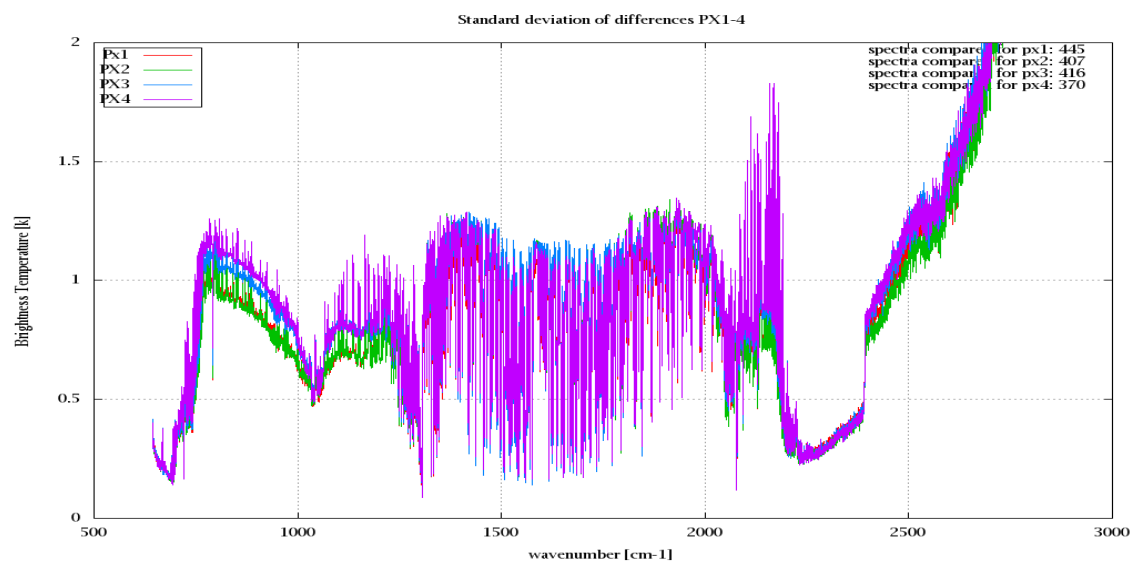


Figure 9: Standard Deviation of Radiance differences



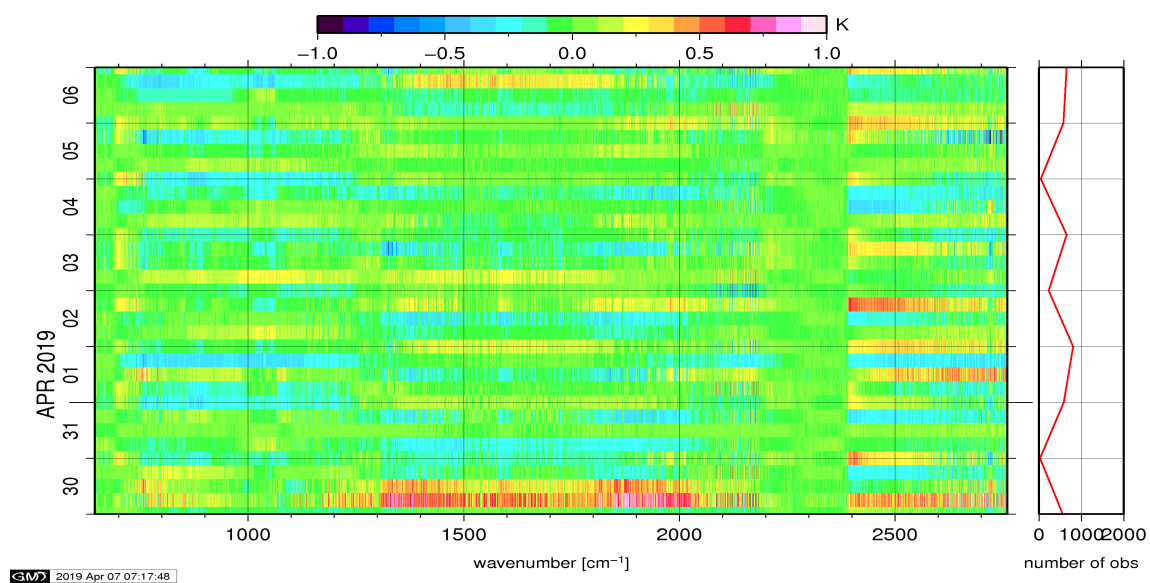


Figure 10: Radiance Anomaly in BT: All Channels

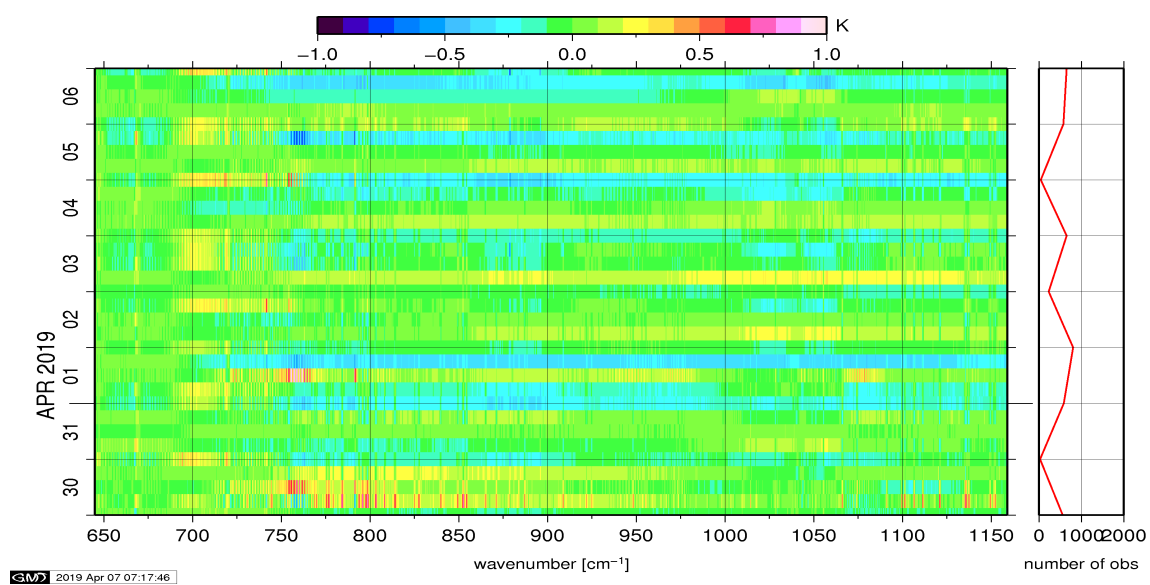


Figure 11: Radiance Anomaly in BT: IASI Band 1

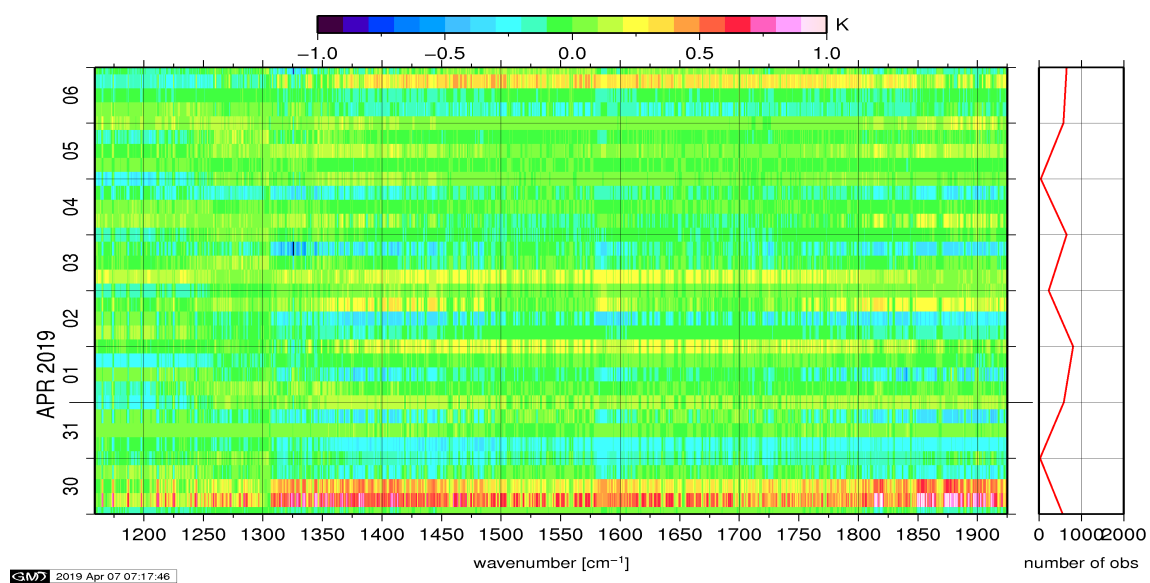


Figure 12: Radiance Anomaly in BT: IASI Band 2

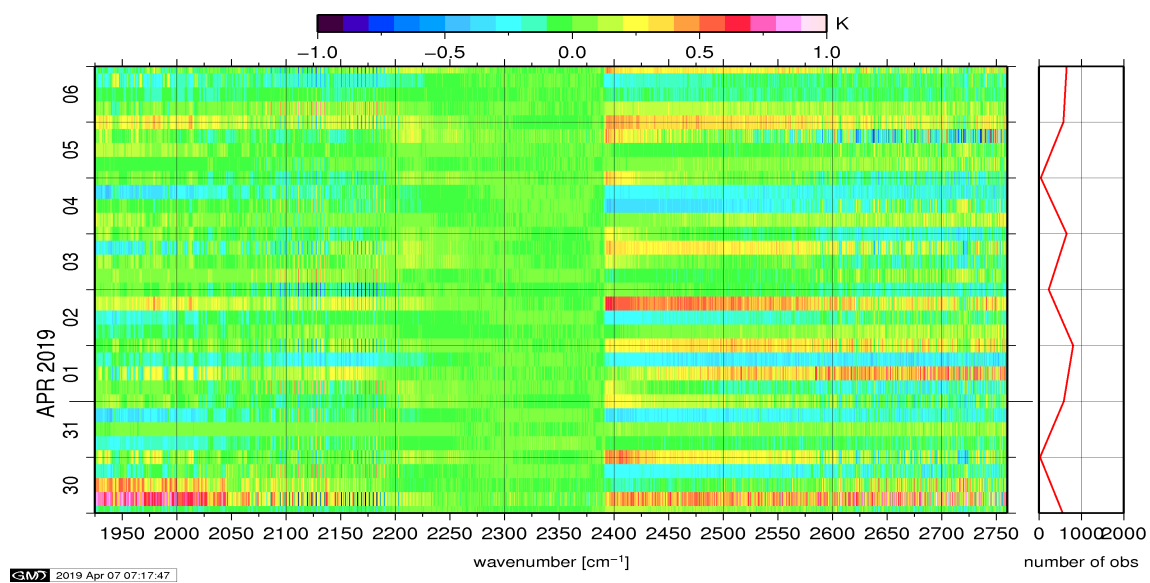


Figure 13: Radiance Anomaly in BT: IASI Band 3

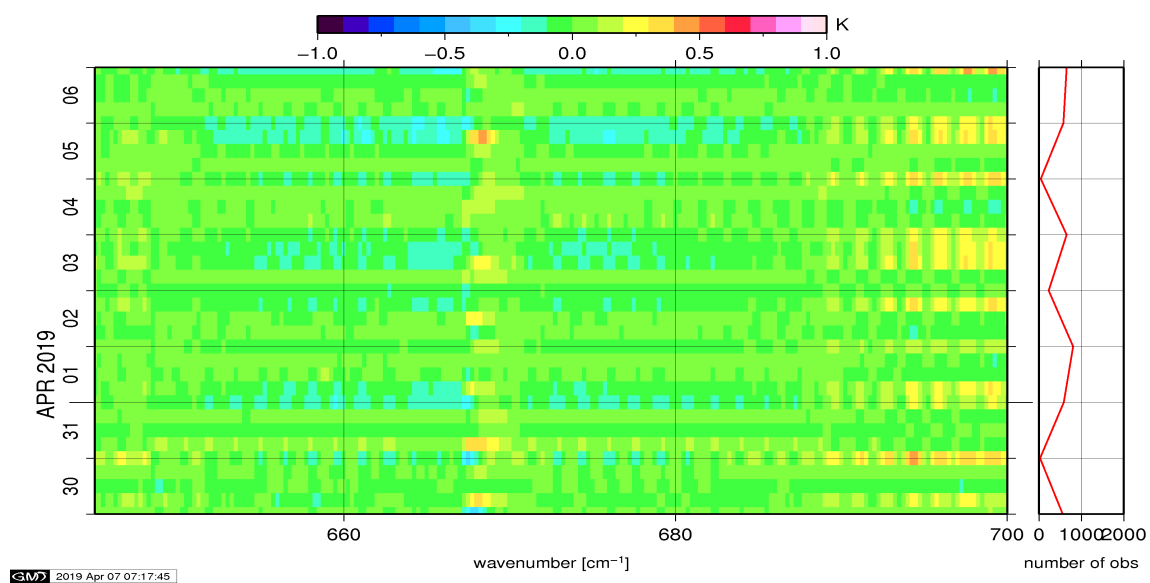


Figure 14: Radiance Anomaly in BT: CO2 14

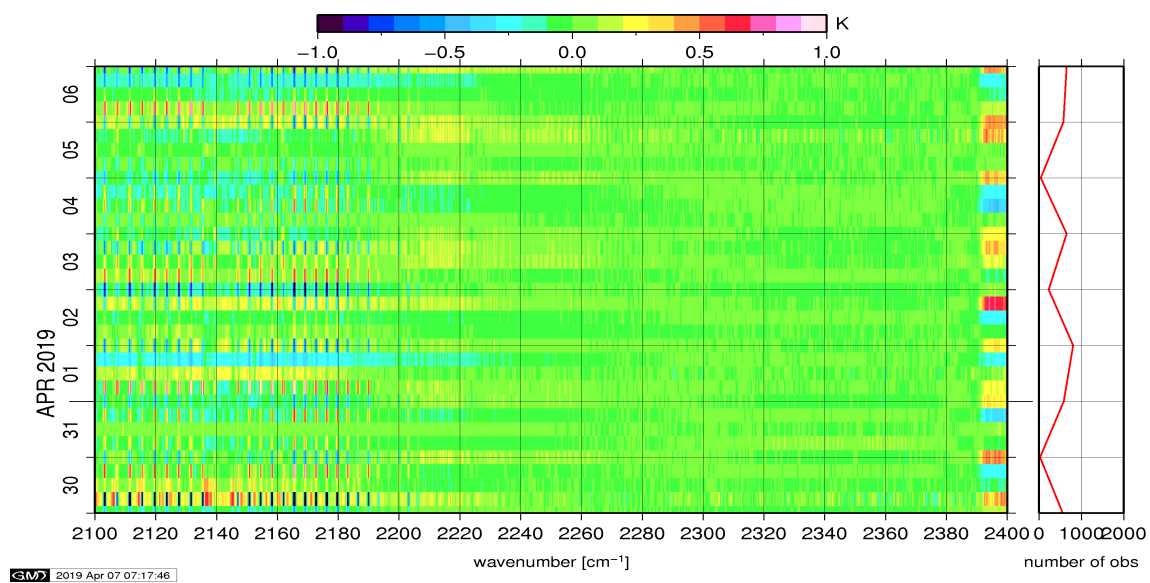


Figure 15: Radiance Anomaly in BT: CO2 4.3

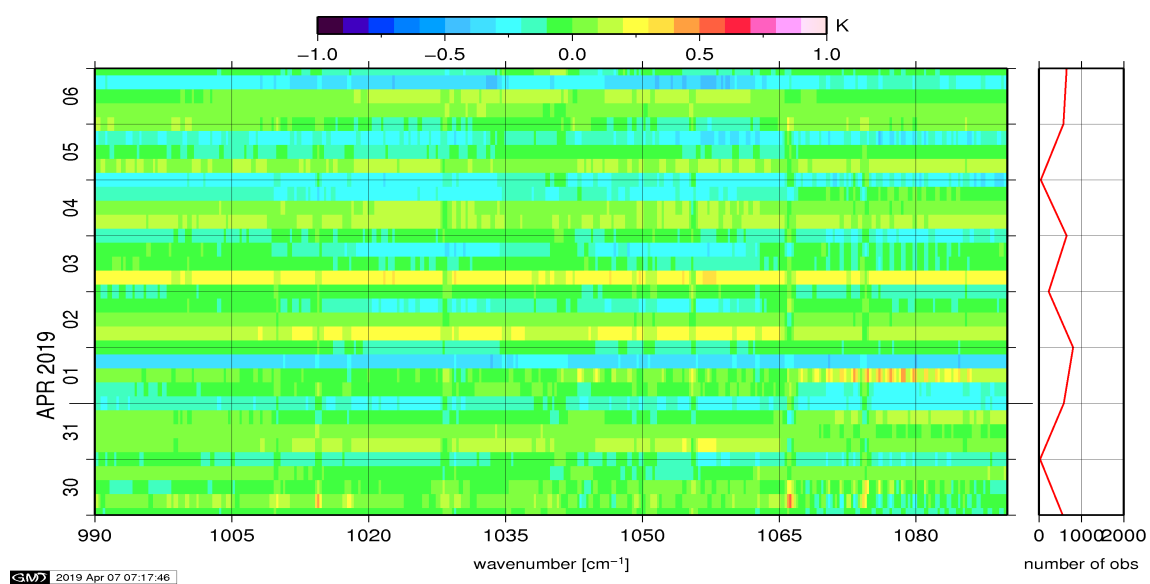


Figure 16: Radiance Anomaly in BT: O3

## 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.

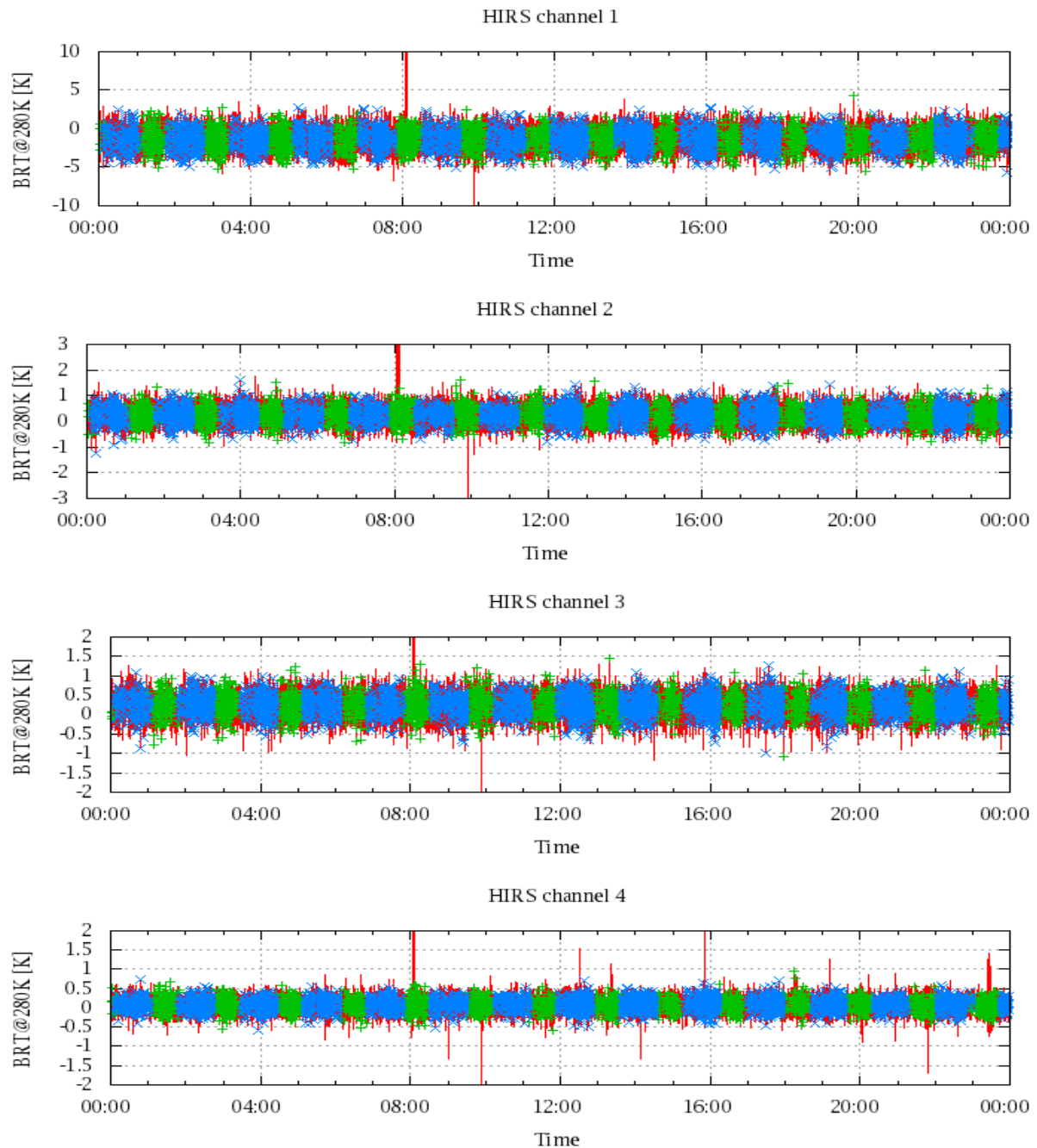


Figure 17: Radiance Differences in BT

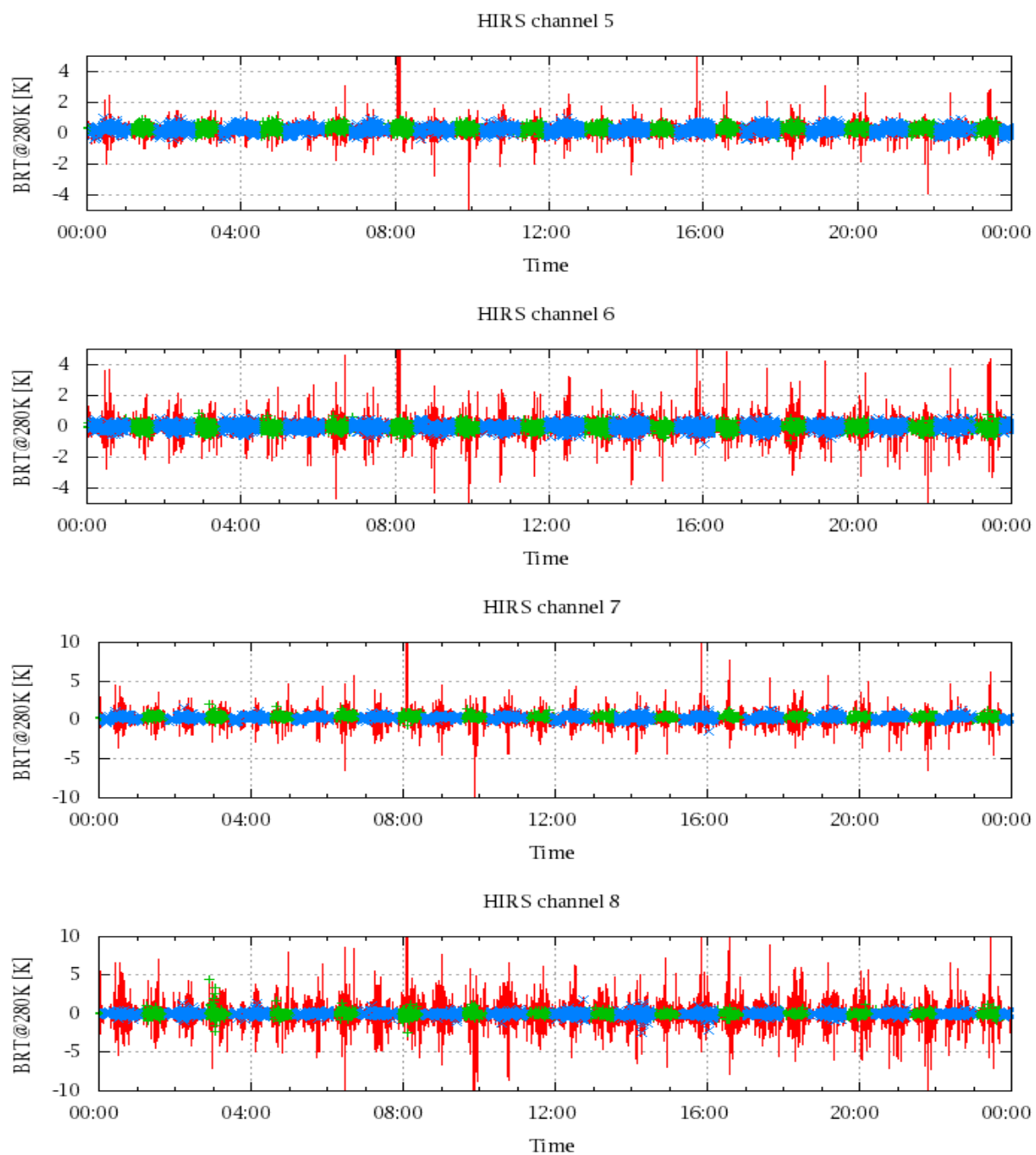


Figure 18: Radiance Differences in BT

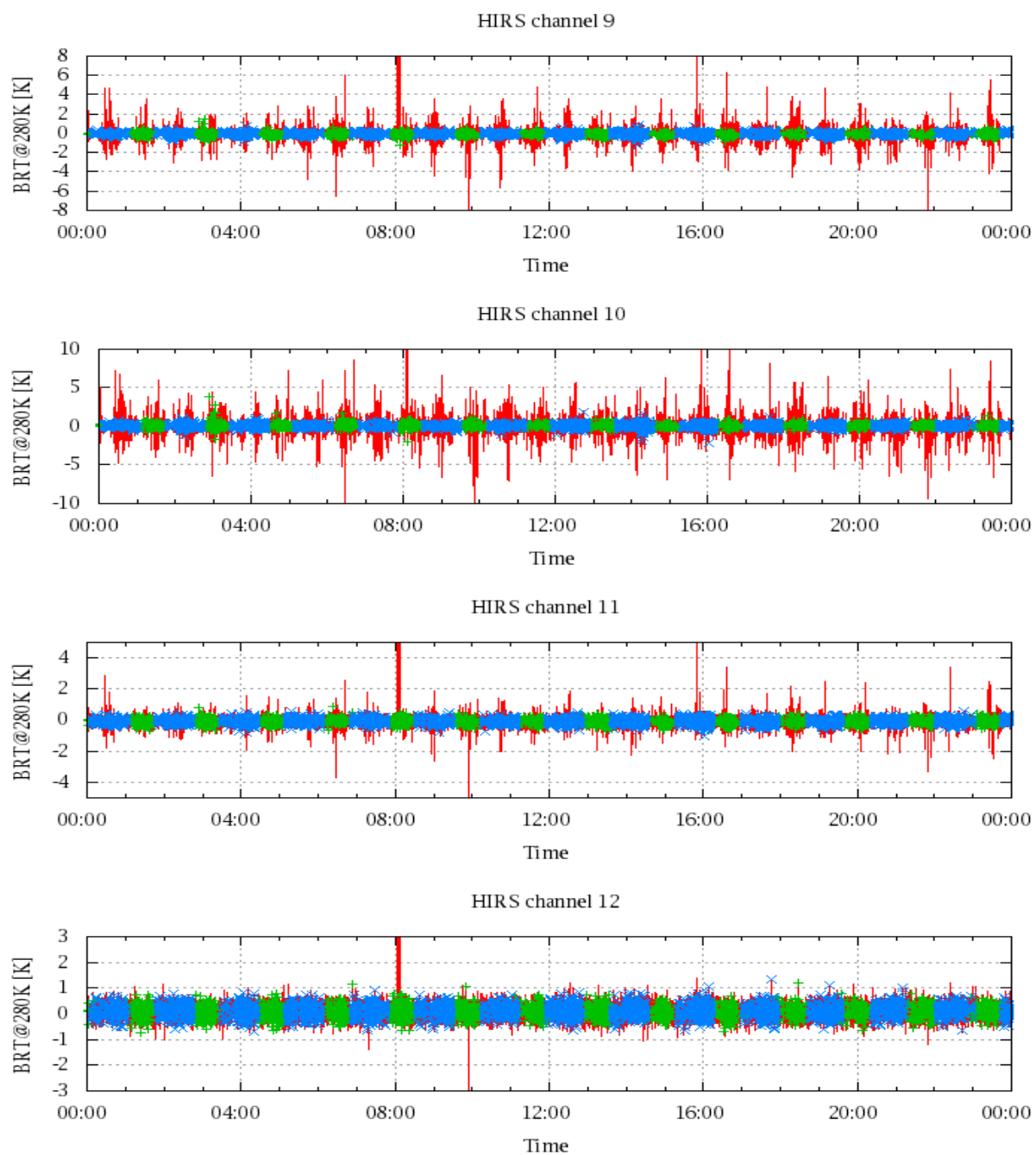


Figure 19: Radiance Differences in BT

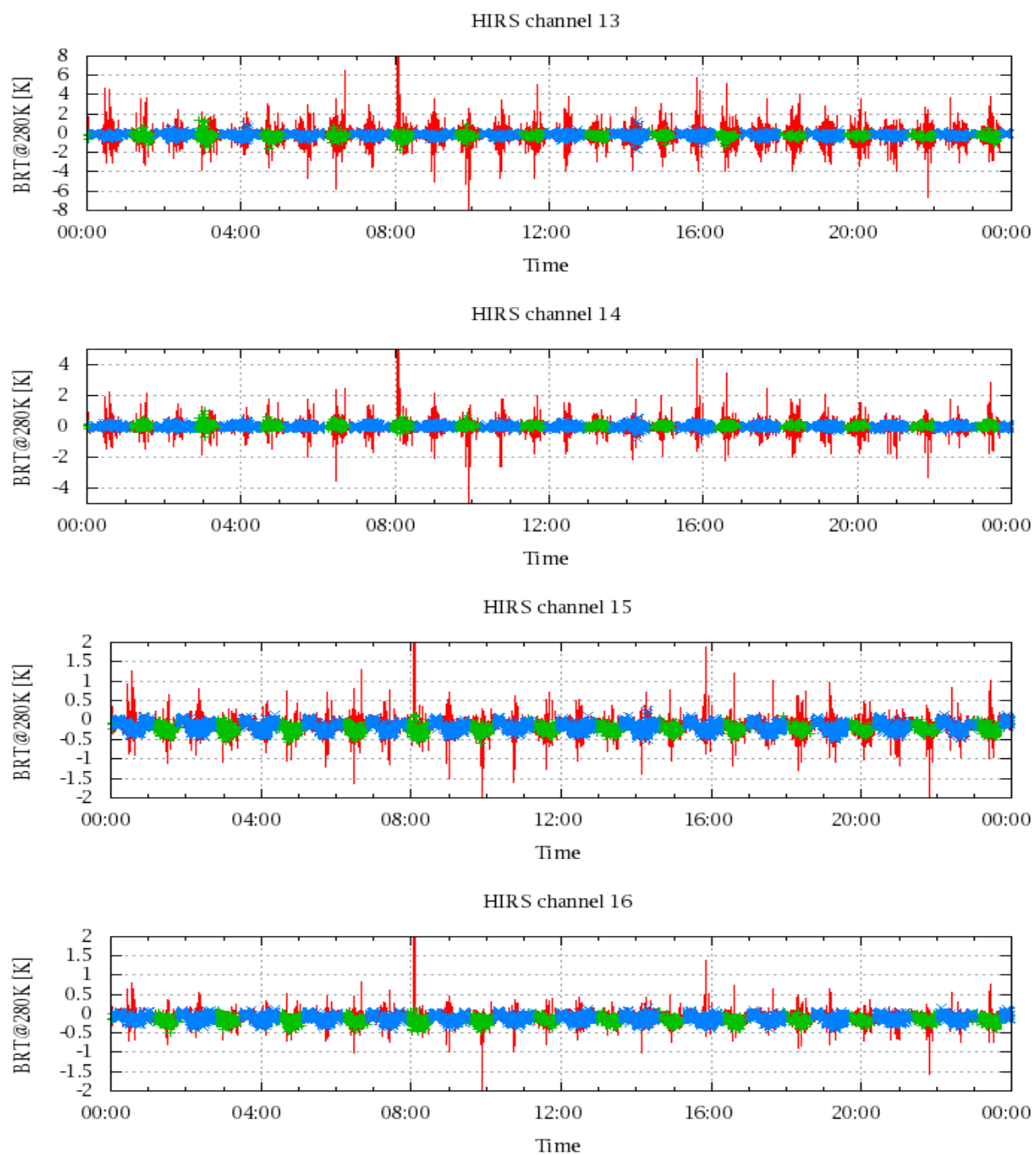


Figure 20: Radiance Differences in BT



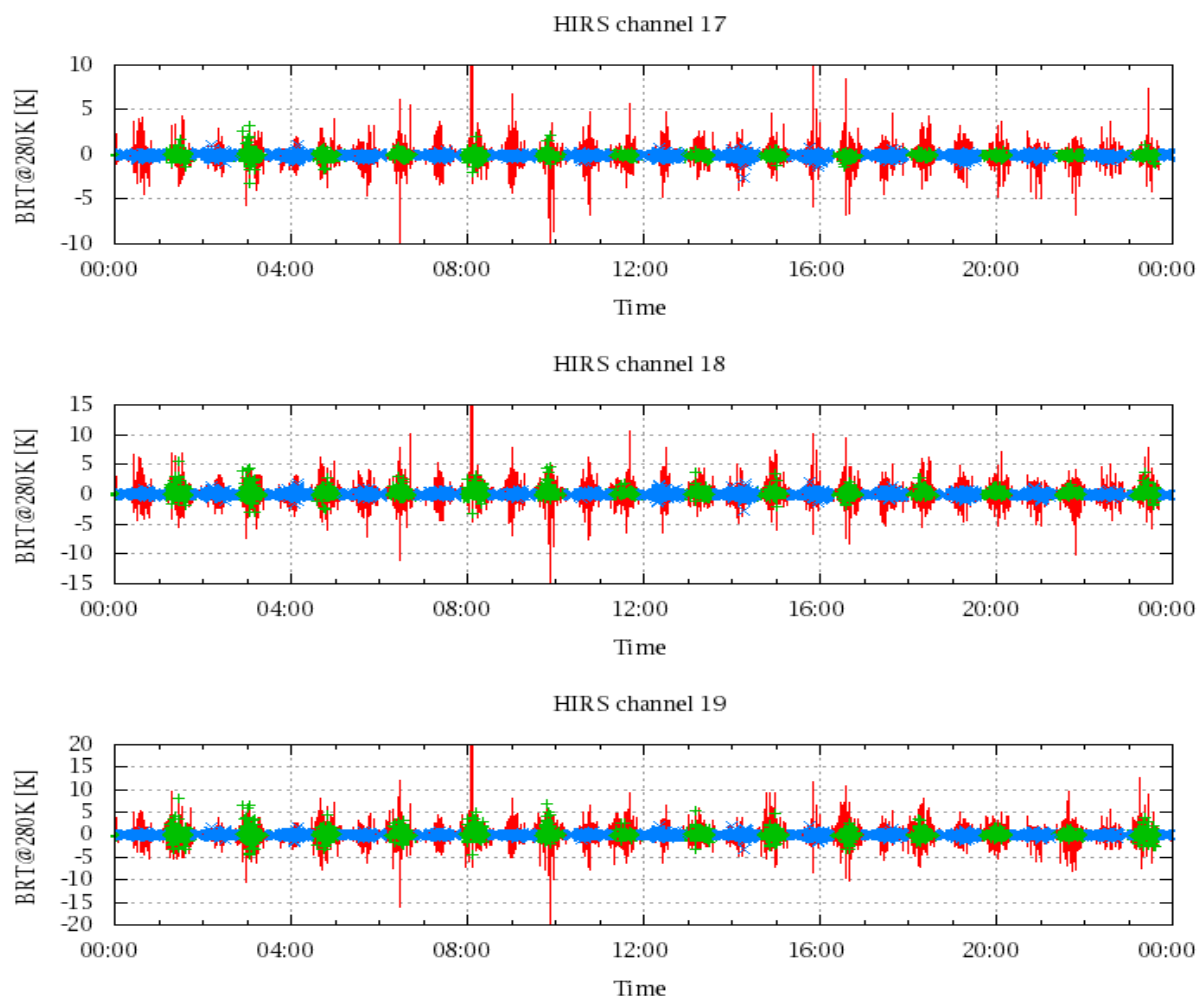


Figure 21: Radinace Differences in BT