

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

IASI monitoring team

08/08/2019 00:00:00 - 09/08/2019 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 08/08/2019 00:00:00 - 09/08/2019 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 08/08/2019 00:00:00 - 09/08/2019 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	455	e
L1 ENG PDUs	454	e
L1 ENG distinct GEPSGranule	440	a
L1 DPX PDUs (RM: IASI-HIRS)	454	e
L1 DPS Files (RM: OBS-CAL NWP based)	454	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1580	0	20190808101901.981	20190808113911.716
PX2 (135)	1580	0	20190808101901.981	20190808113911.716
PX3 (140)	1580	0	20190808101901.981	20190808113911.716
PX4 (145)	1580	0	20190808101901.981	20190808113911.716
IMG (150)	4556	0	20190808101901.981	20190808113911.716
VER (160)	3739	390	20190808101901.981	20190808115013.789
VER (160)	390	395	20190808115013.789	20190808115013.789
VER (160)	395	400	20190808115013.789	20190808115013.789
VER (160)	400	405	20190808115013.789	20190808115013.789
VER (160)	405	391	20190808115013.789	20190808115013.789
VER (160)	391	396	20190808115013.789	20190808115013.789
VER (160)	396	401	20190808115013.789	20190808115013.789
VER (160)	401	406	20190808115013.789	20190808115013.789
VER (160)	406	392	20190808115013.789	20190808115013.789
VER (160)	392	397	20190808115013.789	20190808115013.789
VER (160)	397	402	20190808115013.789	20190808115013.789
VER (160)	402	407	20190808115013.789	20190808115013.789

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	407	393	20190808115013.789	20190808115013.789
VER (160)	393	398	20190808115013.789	20190808115013.789
VER (160)	398	403	20190808115013.789	20190808115013.789
VER (160)	403	408	20190808115013.789	20190808115013.789
VER (160)	408	394	20190808115013.789	20190808115013.789
VER (160)	394	399	20190808115013.789	20190808115013.789
VER (160)	399	404	20190808115013.789	20190808115013.789
VER (160)	404	409	20190808115013.789	20190808115013.789
AUX (180)	743	0	20190808101854.415	20190808113918.419

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
08/08/2019 00:00:11	-	Normal operation
08/08/2019 11:11:07	Heater 2	Auxiliary ASE synchronised
08/08/2019 11:39:07	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	455	e
L1 ENG PDUs	454	e
L1 ENG distinct GEPSGranule	440	a
GQisFlagQual set (PX1)	99.53 %	-
GQisFlagQual set (PX2)	99.61 %	-
GQisFlagQual set (PX3)	99.61 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.56 %	-

Table 4: Quality flags

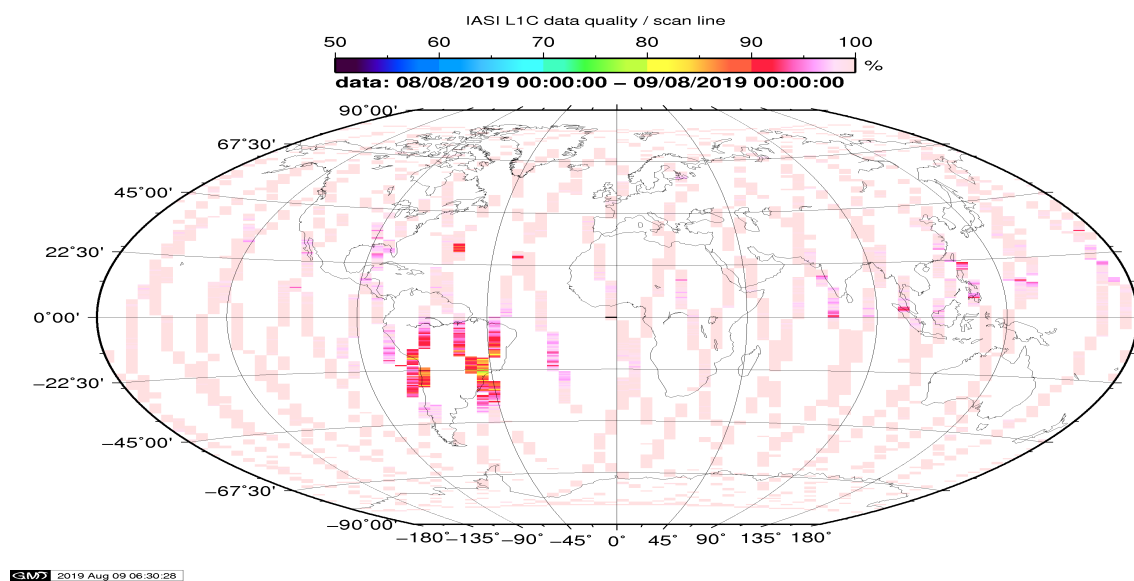


Figure 1: L1C data quality

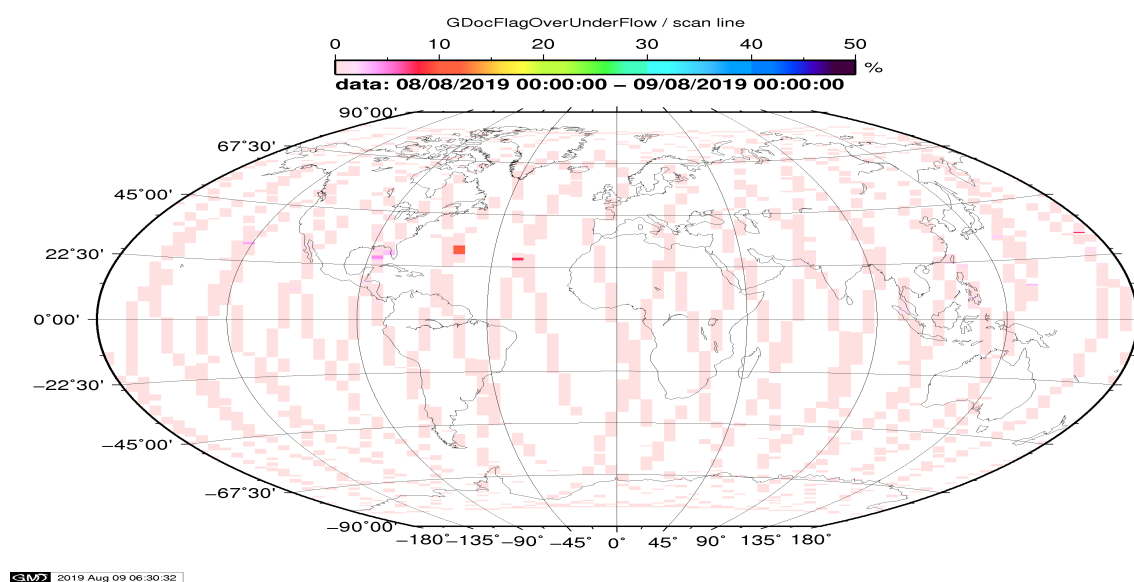


Figure 2: Flag of Over and Under Flows

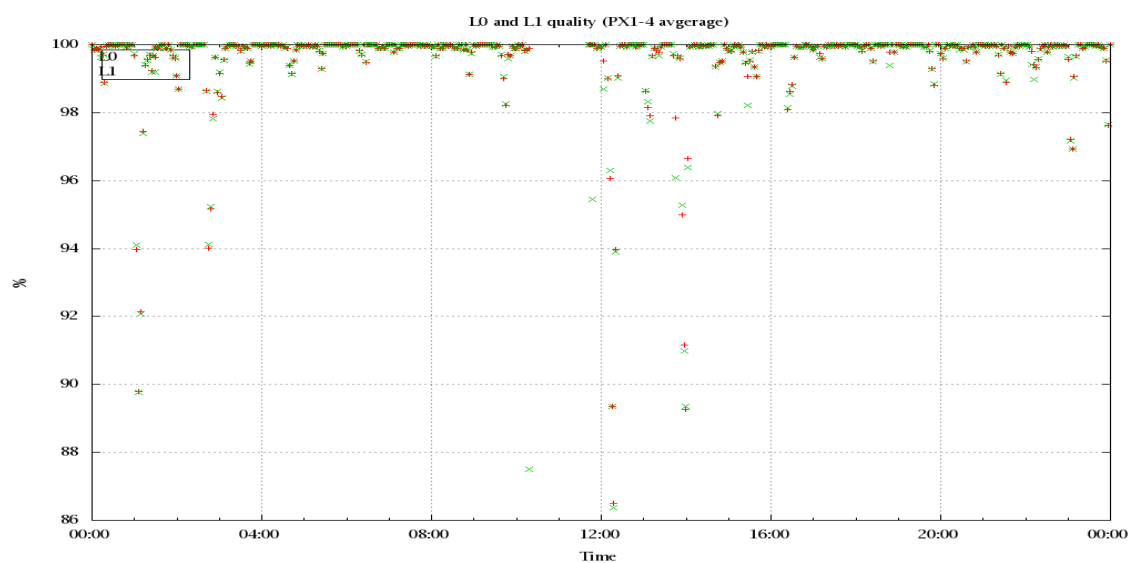


Figure 3: Level 0 and 1C overall quality

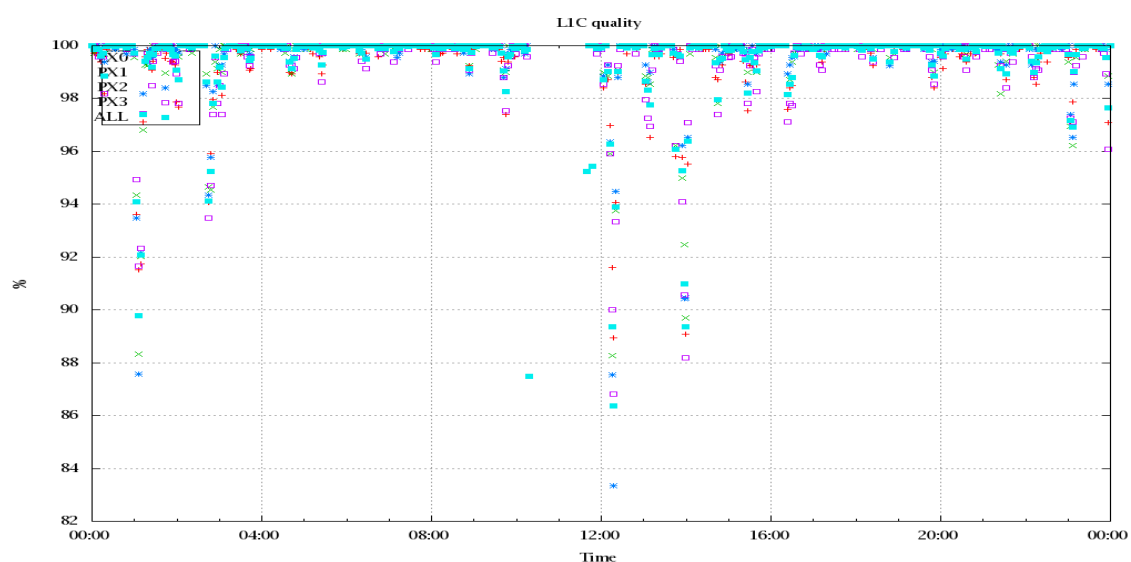


Figure 4: Level 1C quality

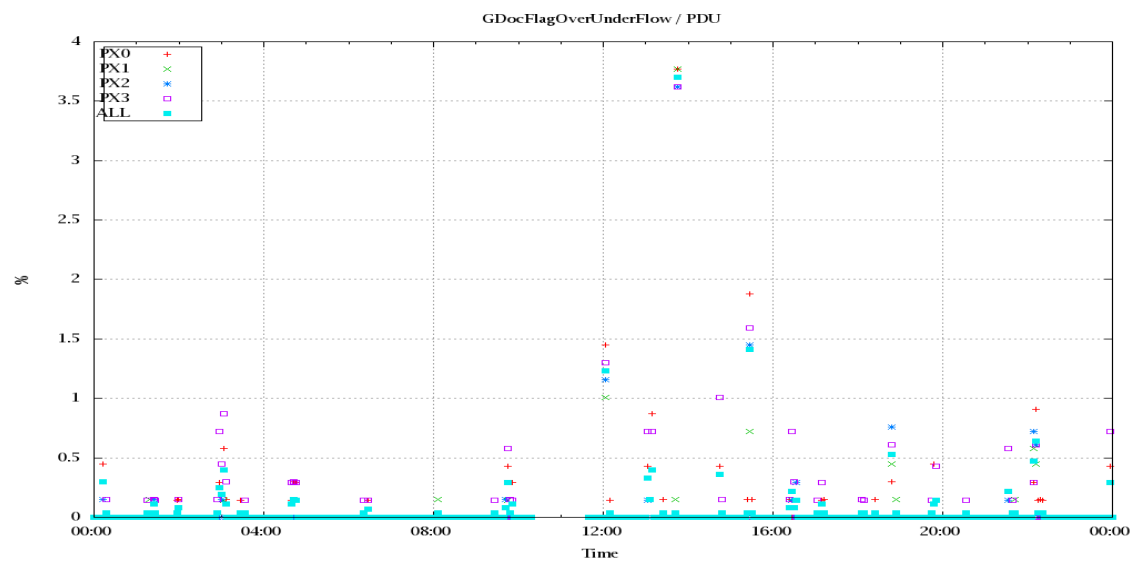


Figure 5: Timeseries of flag of Over and Under Flows

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.

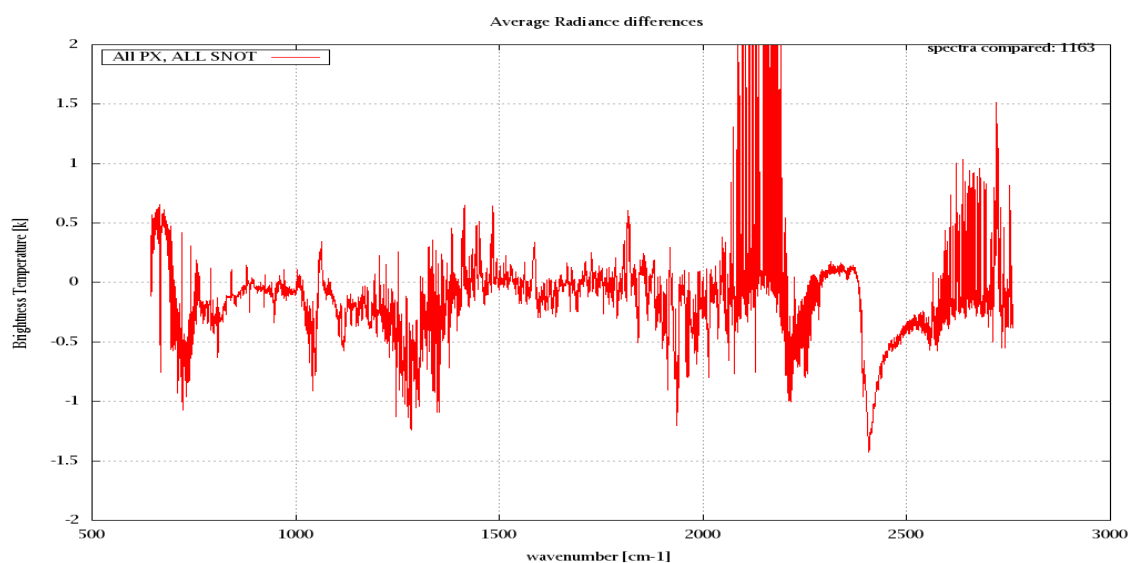


Figure 6: Average Radiance differences: OBS-CAL

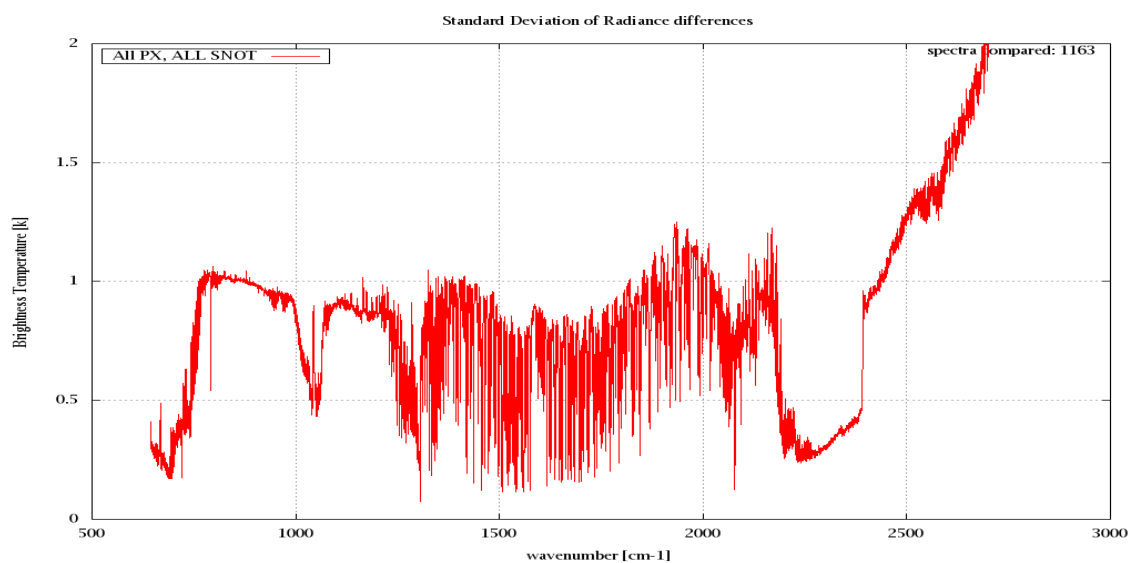


Figure 7: Standard Deviation of Radiance differences

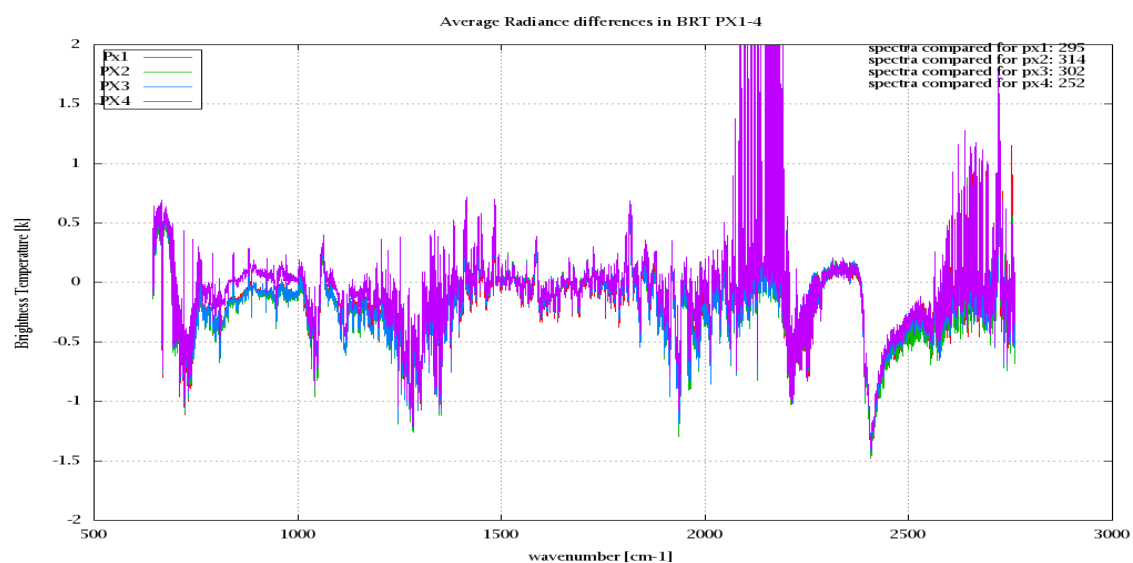


Figure 8: Average Radiance differences: OBS-CAL

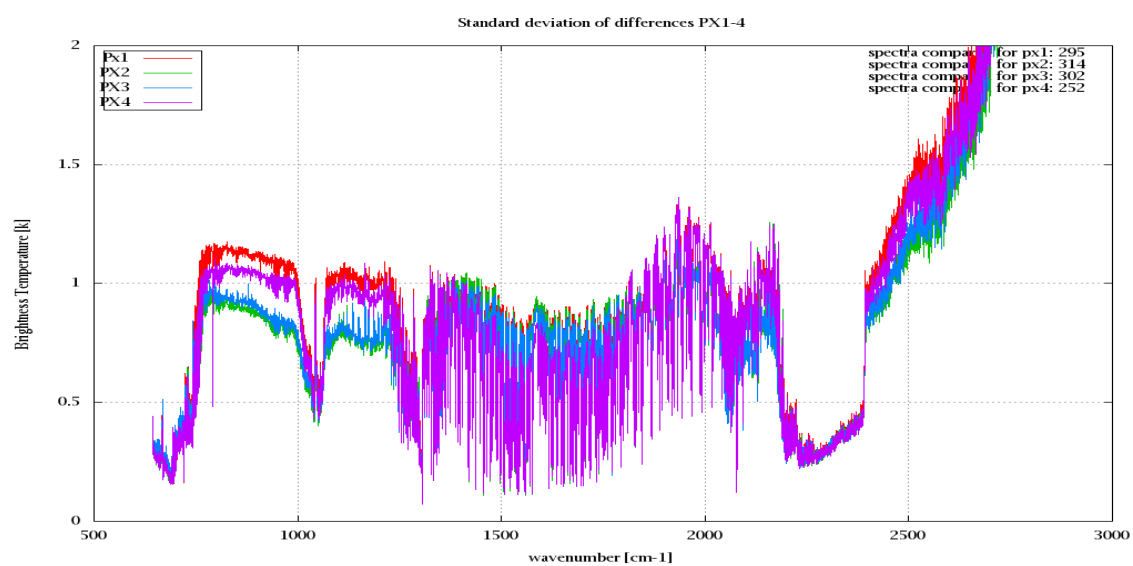


Figure 9: Standard Deviation of Radiance differences

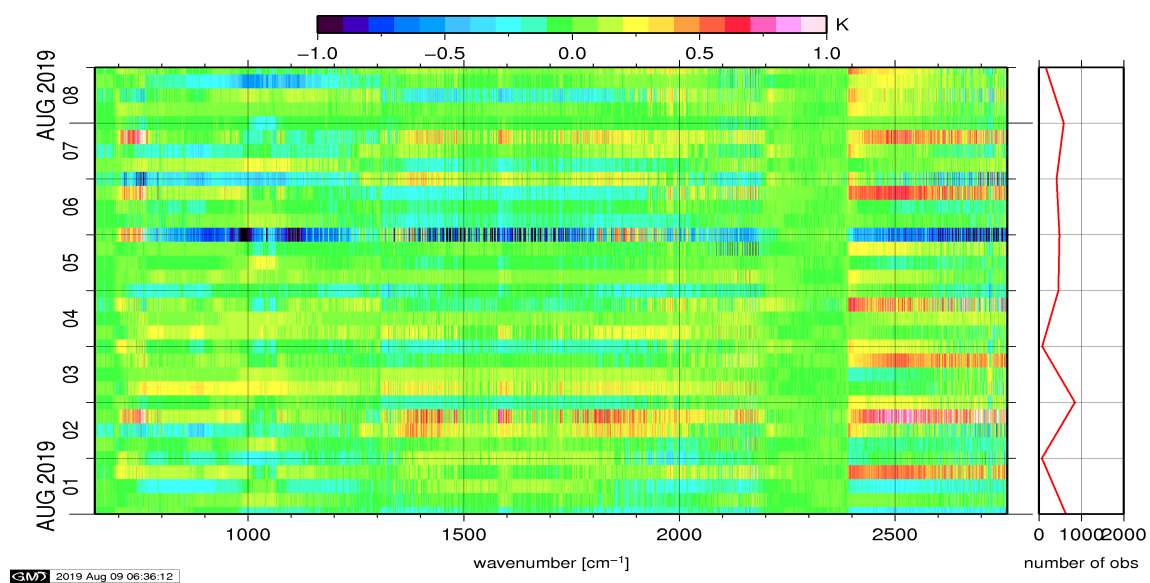


Figure 10: Radiance Anomaly in BT: All Channels

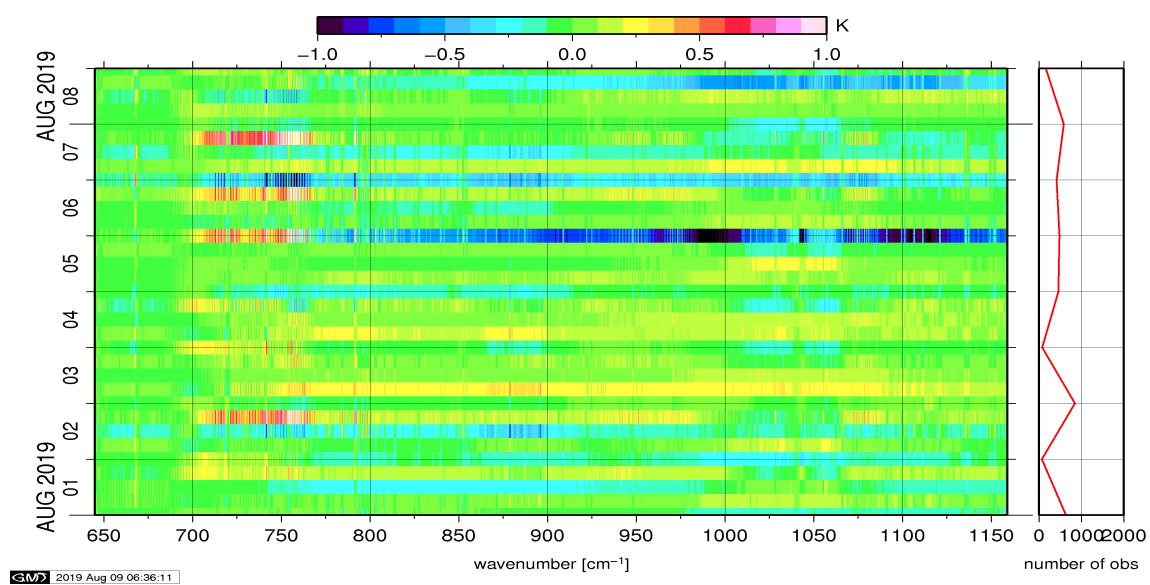


Figure 11: Radiance Anomaly in BT: IASI Band 1

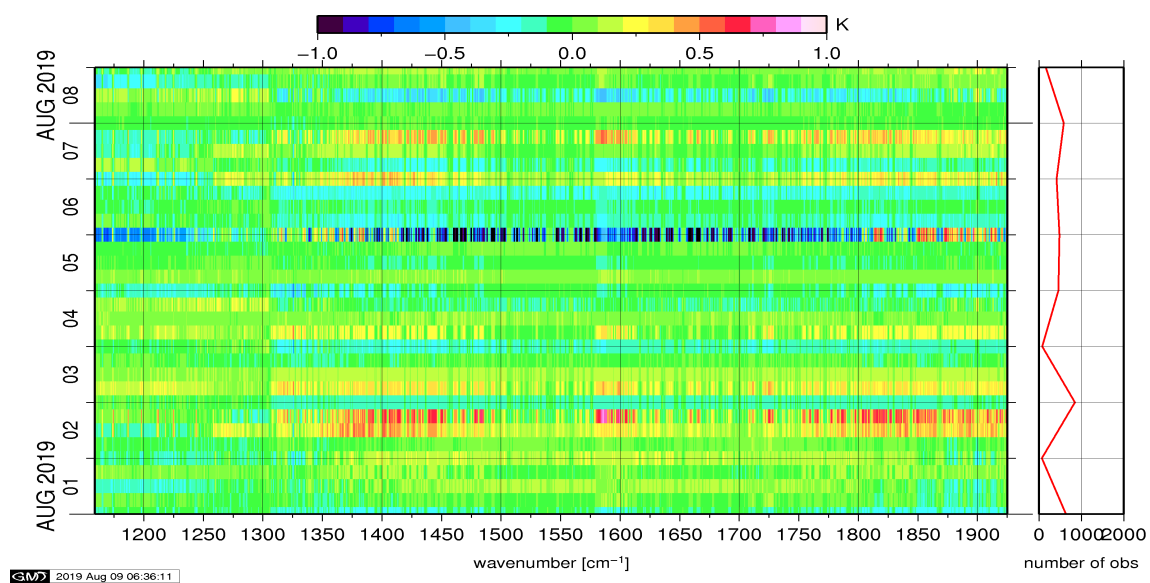


Figure 12: Radiance Anomaly in BT: IASI Band 2

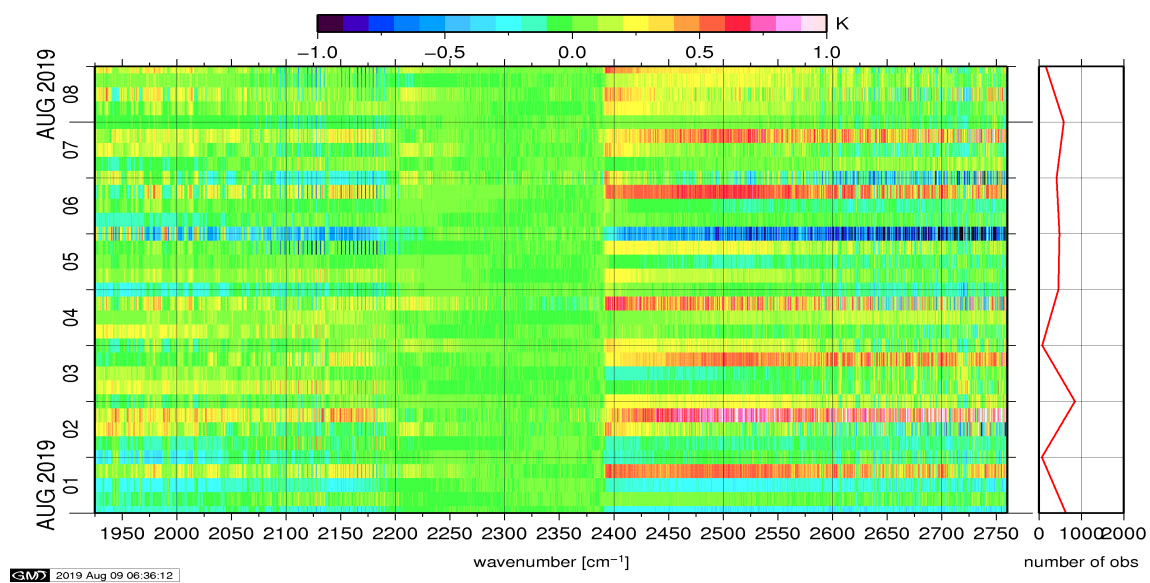


Figure 13: Radiance Anomaly in BT: IASI Band 3

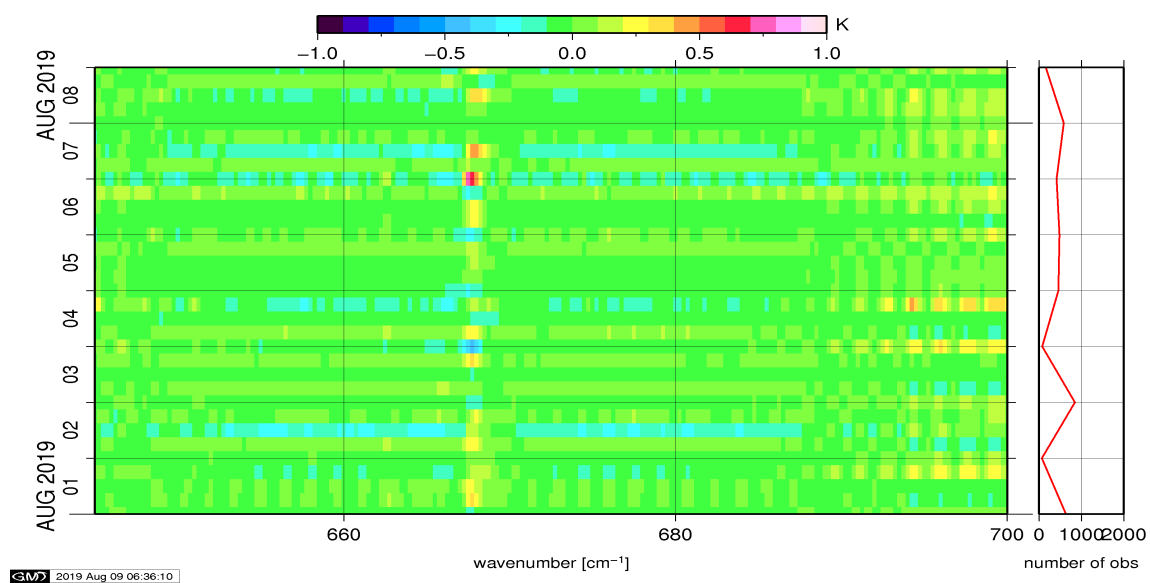


Figure 14: Radiance Anomaly in BT: CO2 14

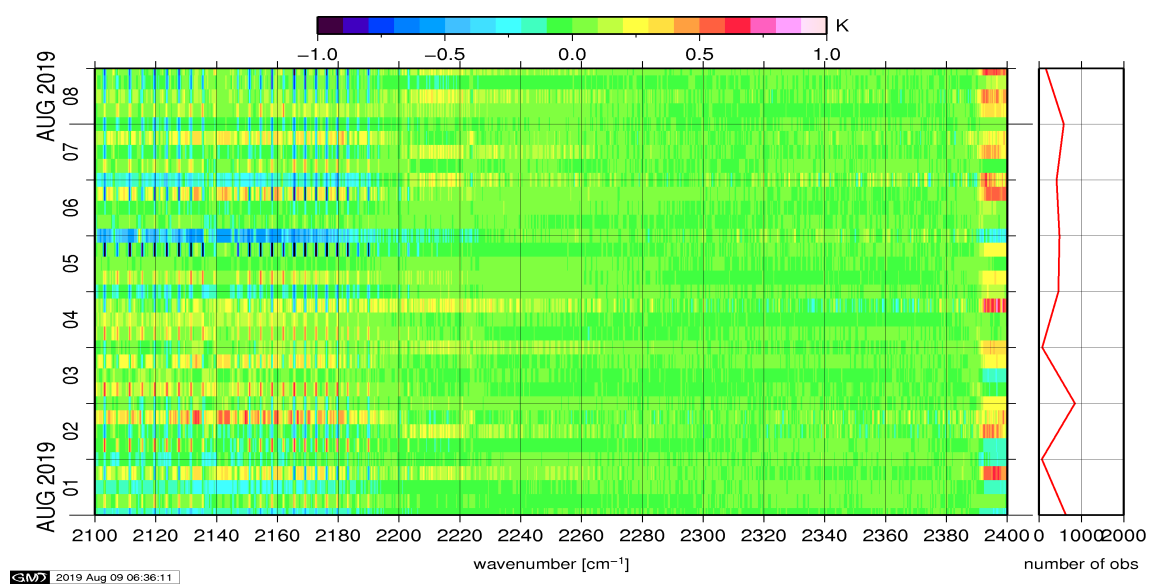


Figure 15: Radiance Anomaly in BT: CO2 4.3

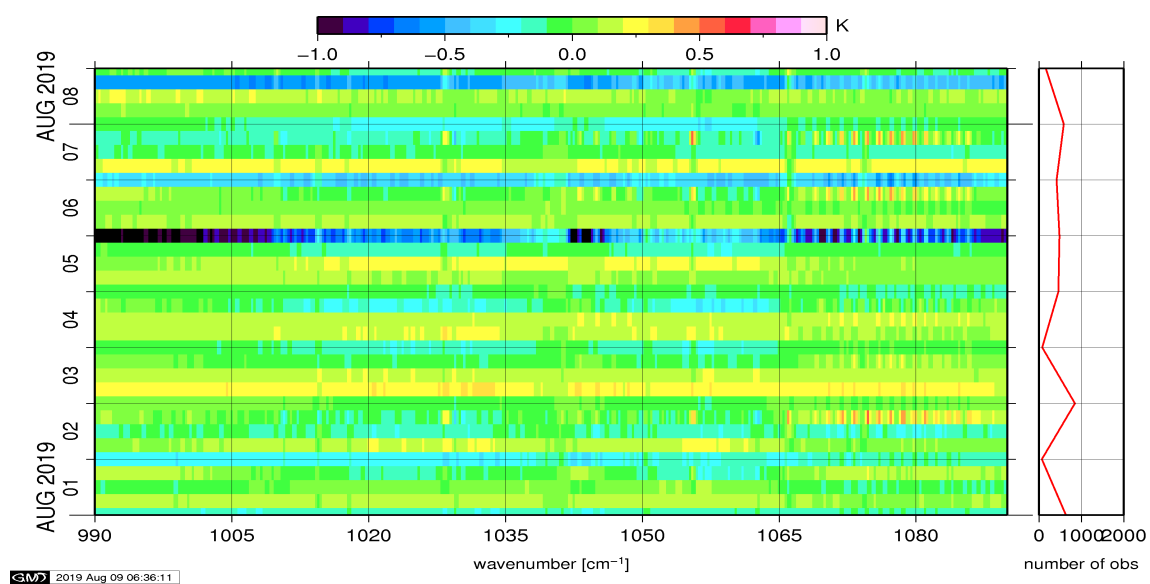


Figure 16: Radiance Anomaly in BT: O3

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.

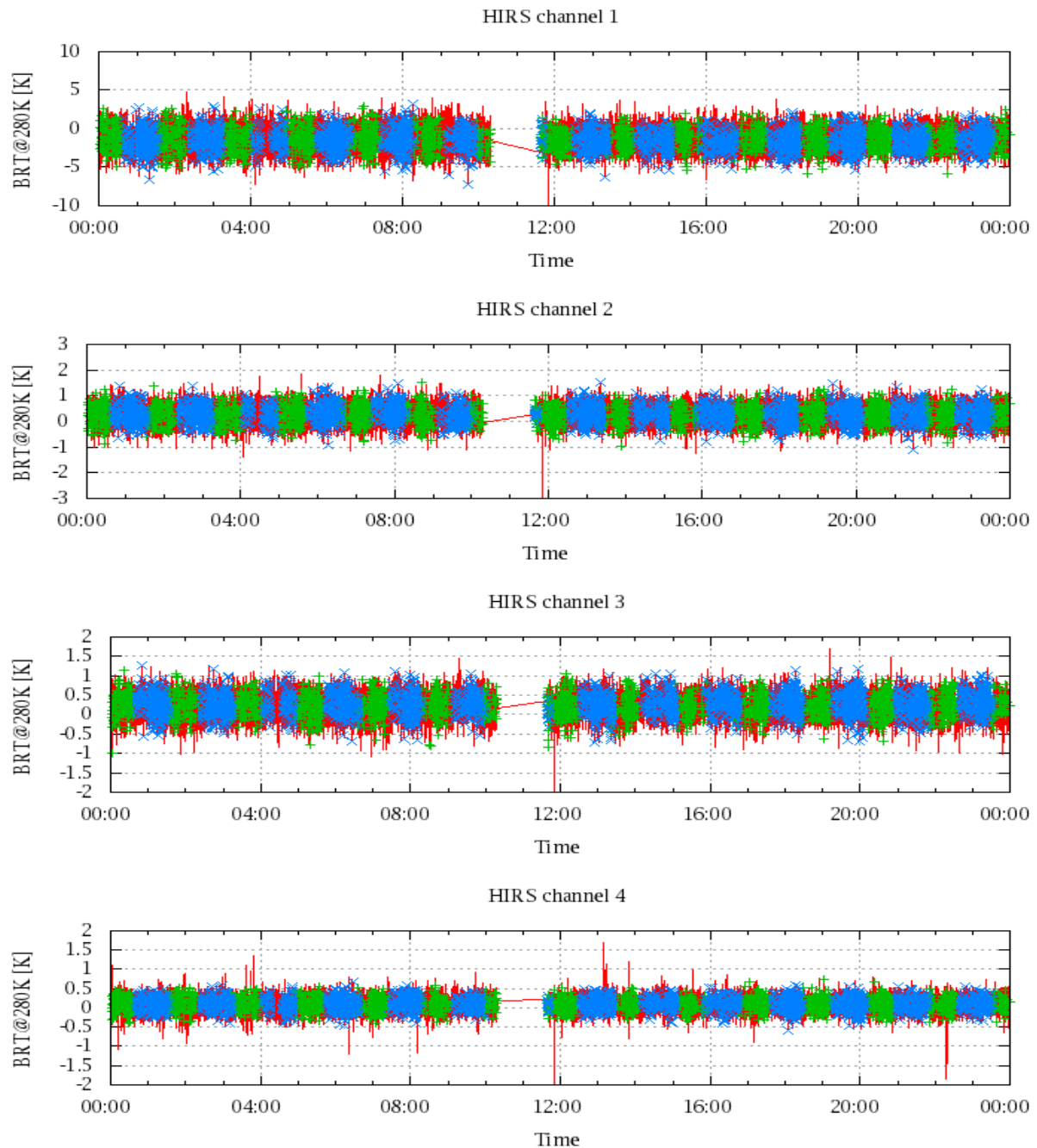


Figure 17: Radiance Differences in BT

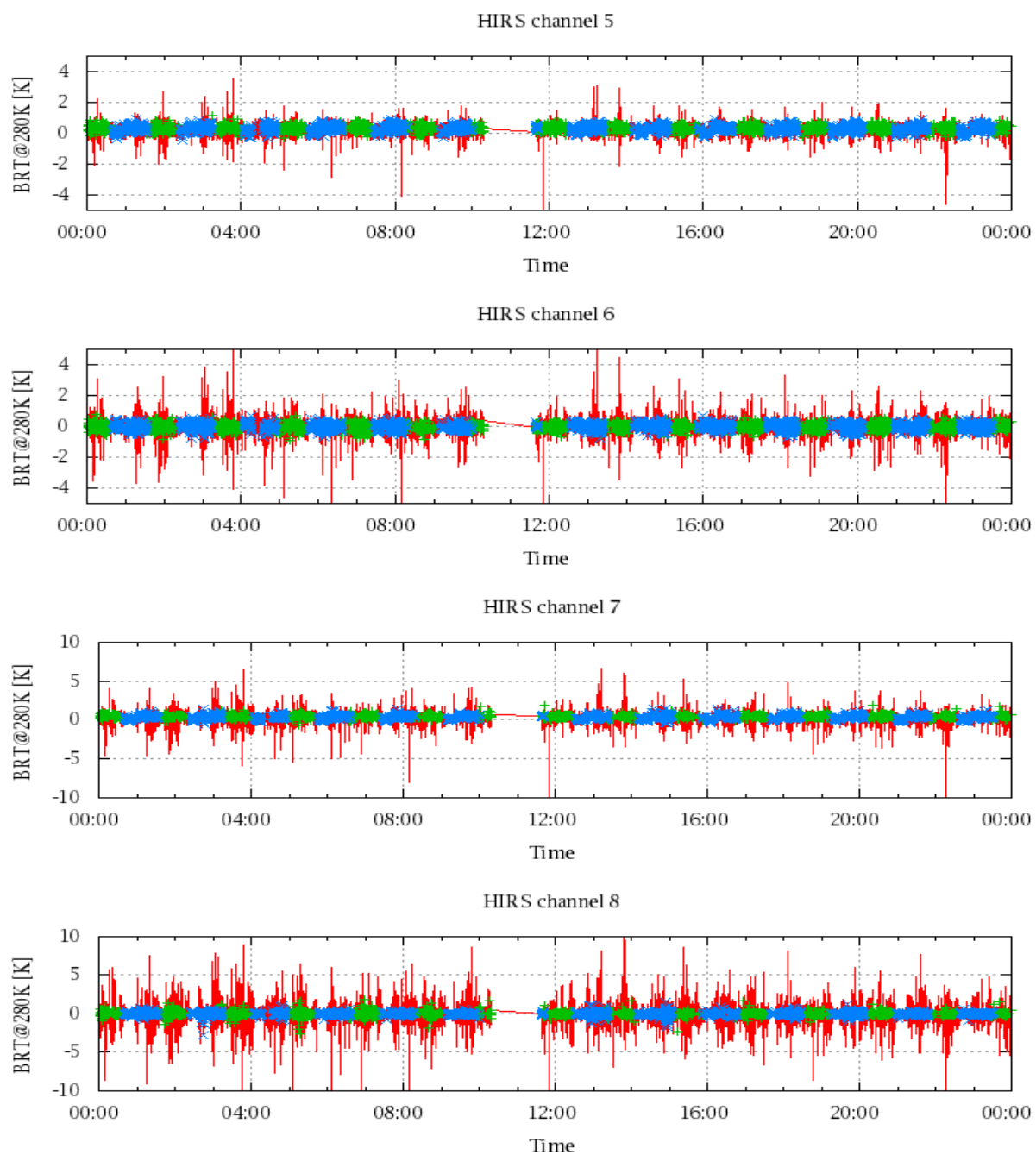


Figure 18: Radiance Differences in BT

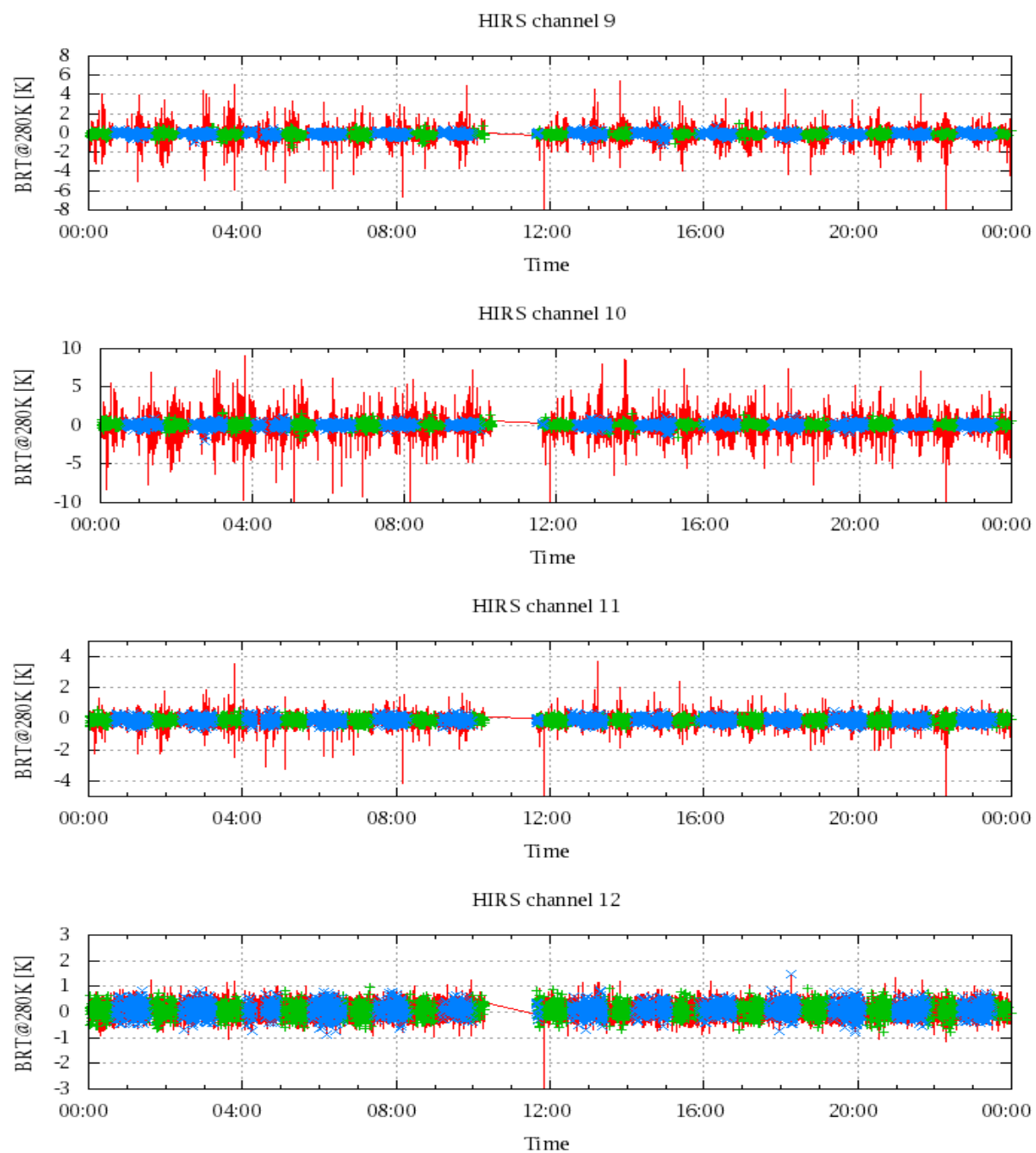


Figure 19: Radiance Differences in BT

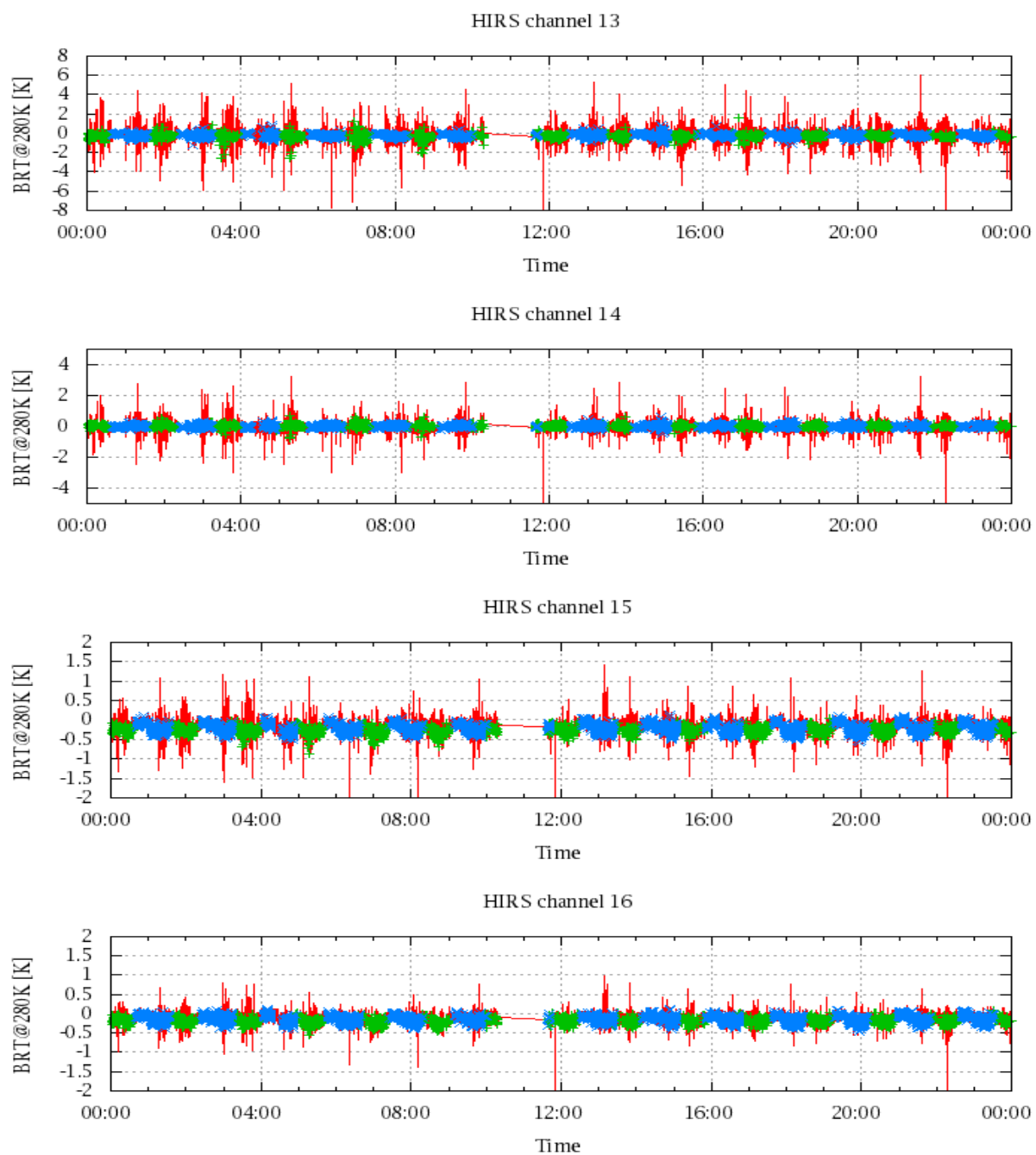


Figure 20: Radiance Differences in BT

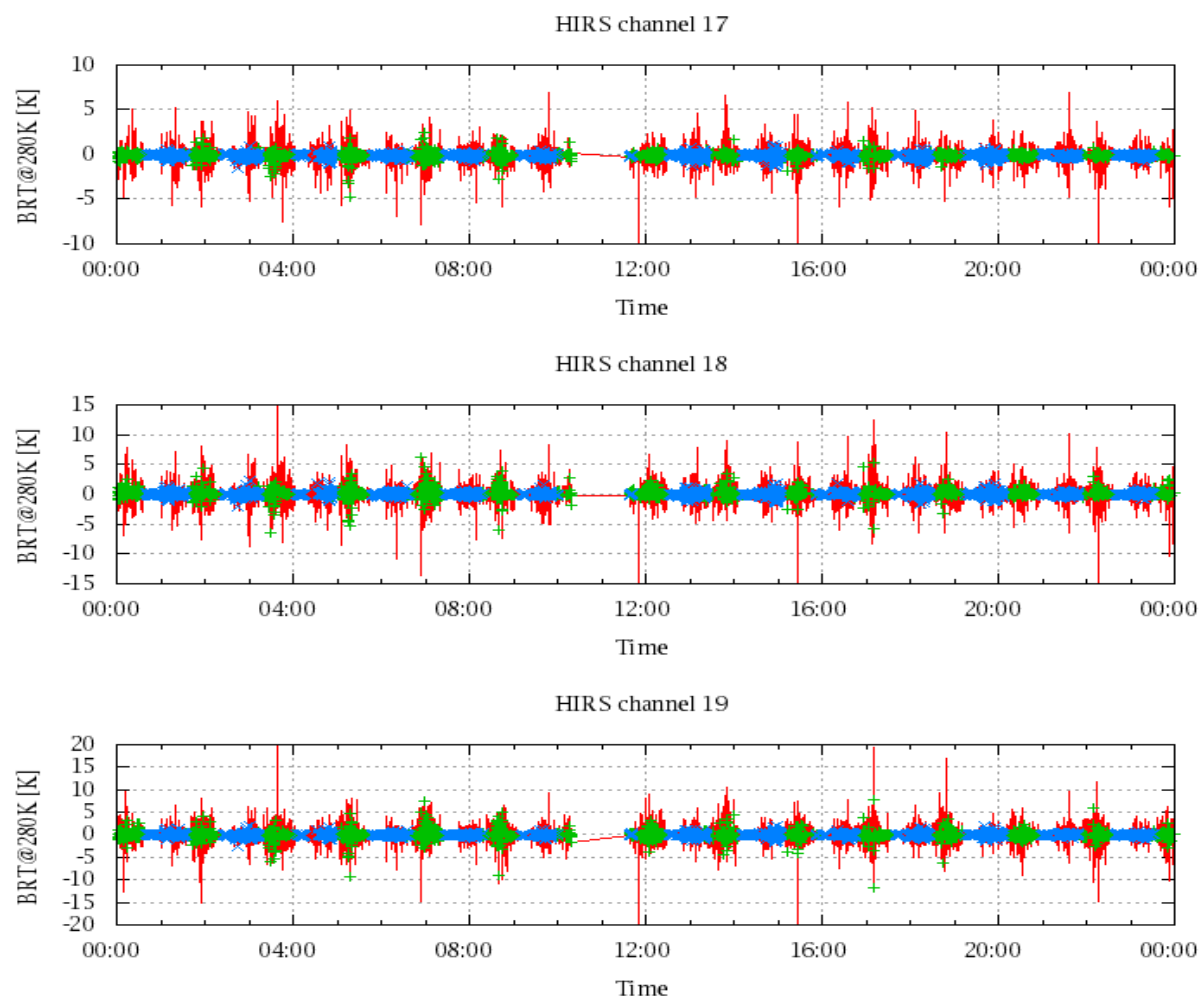


Figure 21: Radinace Differences in BT