

IASI L0 and L1 Daily Monitoring Report Metop-B

IASI monitoring team

03/08/2018 00:00:00 - 04/08/2018 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 minute data packet) for 03/08/2018 00:00:00 - 04/08/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

Data extraction, calibration, processing and statistics are performed at EUMETSAT.

2 Data quantity 03/08/2018 00:00:00 - 04/08/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	466	-
L1 DPX PDUs (RM: IASI-HIRS)	401	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)	-	-	-	-
PX2 (135)	-	-	-	-
PX3 (140)	12846	12848	20180803151108.615	20180803151109.045
PX4 (145)	12113	12115	20180803000610.567	20180803000611.001
IMG (150)	8127	8129	20180803000122.107	20180803000122.540
VER (160)	7697	7725	20180803160325.501	20180803160413.500
VER (160)	7725	7730	20180803160413.500	20180803160450.036
VER (160)	7730	7735	20180803160450.036	20180803160450.036
VER (160)	7735	7740	20180803160450.036	20180803160450.036
VER (160)	7740	7745	20180803160450.036	20180803160450.036
VER (160)	7745	7726	20180803160450.036	20180803160450.036
VER (160)	7726	7731	20180803160450.036	20180803160450.036
VER (160)	7731	7736	20180803160450.036	20180803160450.036
VER (160)	7736	7741	20180803160450.036	20180803160450.036
VER (160)	7741	7746	20180803160450.036	20180803160450.036
VER (160)	7746	7727	20180803160450.036	20180803160450.036
VER (160)	7727	7732	20180803160450.036	20180803160450.036
VER (160)	7732	7737	20180803160450.036	20180803160450.036

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	7737	7742	20180803160450.036	20180803160450.036
VER (160)	7742	7747	20180803160450.036	20180803160450.036
VER (160)	7747	7728	20180803160450.036	20180803160450.036
VER (160)	7728	7733	20180803160450.036	20180803160450.036
VER (160)	7733	7738	20180803160450.036	20180803160450.036
VER (160)	7738	7743	20180803160450.036	20180803160450.036
VER (160)	7743	7748	20180803160450.036	20180803160450.036
VER (160)	7748	7729	20180803160450.036	20180803160450.036
VER (160)	7729	7734	20180803160450.036	20180803160450.036
VER (160)	7734	7739	20180803160450.036	20180803160450.036
VER (160)	7739	7744	20180803160450.036	20180803160450.036
VER (160)	7744	7749	20180803160450.036	20180803160450.036
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
03/08/2018 00:00:11	-	Normal operation
03/08/2018 05:10:51	Normal operation	Auxiliary ASE synchronised
03/08/2018 05:12:59	Auxiliary ASE synchronised	External calibration
03/08/2018 09:06:51	External calibration	Auxiliary ASE synchronised
03/08/2018 09:08:59	Auxiliary ASE synchronised	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	466	-
GQisFlagQual set (PX1)	99.51 %	-
GQisFlagQual set (PX2)	99.60 %	-
GQisFlagQual set (PX3)	99.60 %	-
GQisFlagQual set (PX4)	99.51 %	-
GQisFlagQual set (all)	99.55 %	-

Table 4: Quality flags

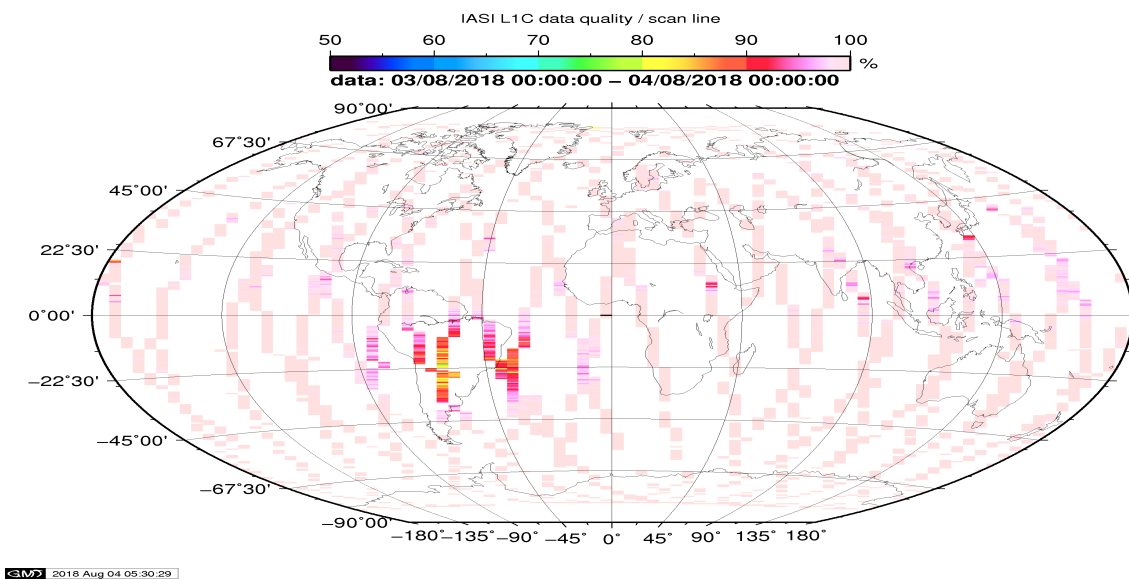


Figure 1: L1C data quality

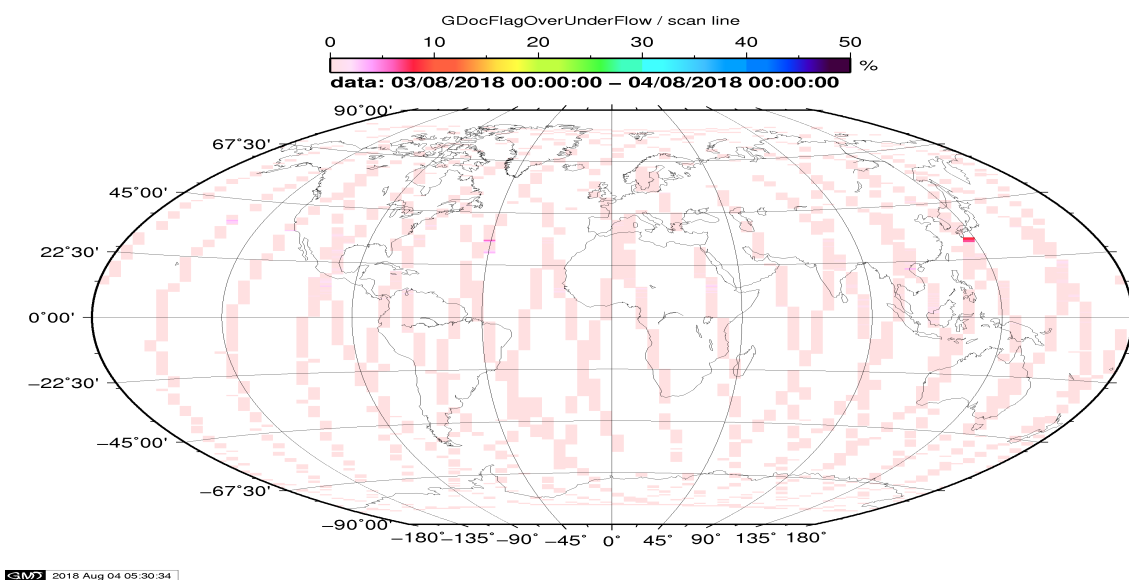


Figure 2: Flag of Over and Under Flows

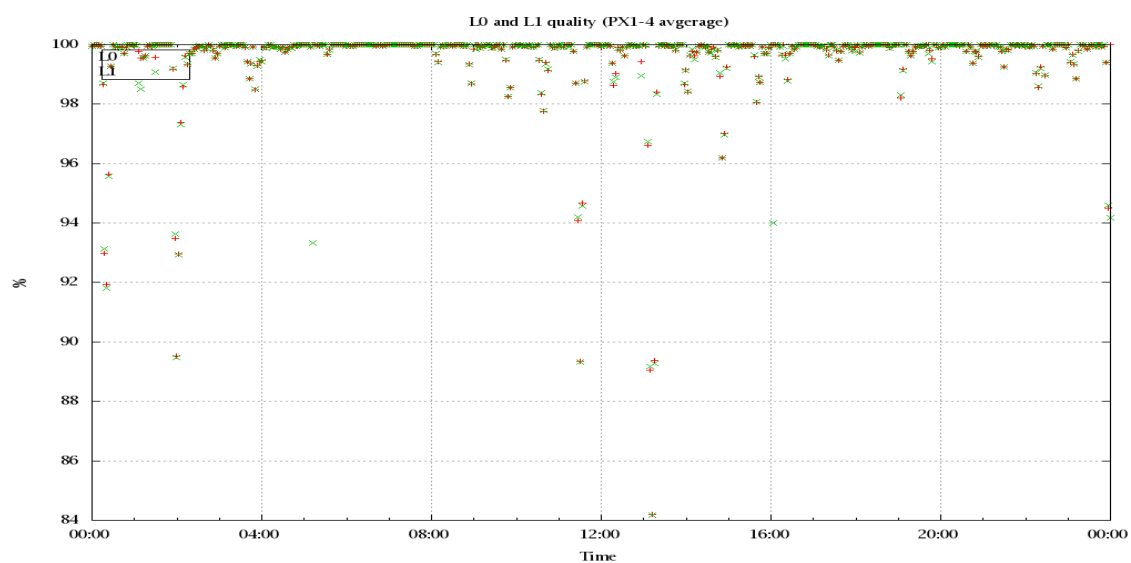


Figure 3: Level 0 and 1C overall quality

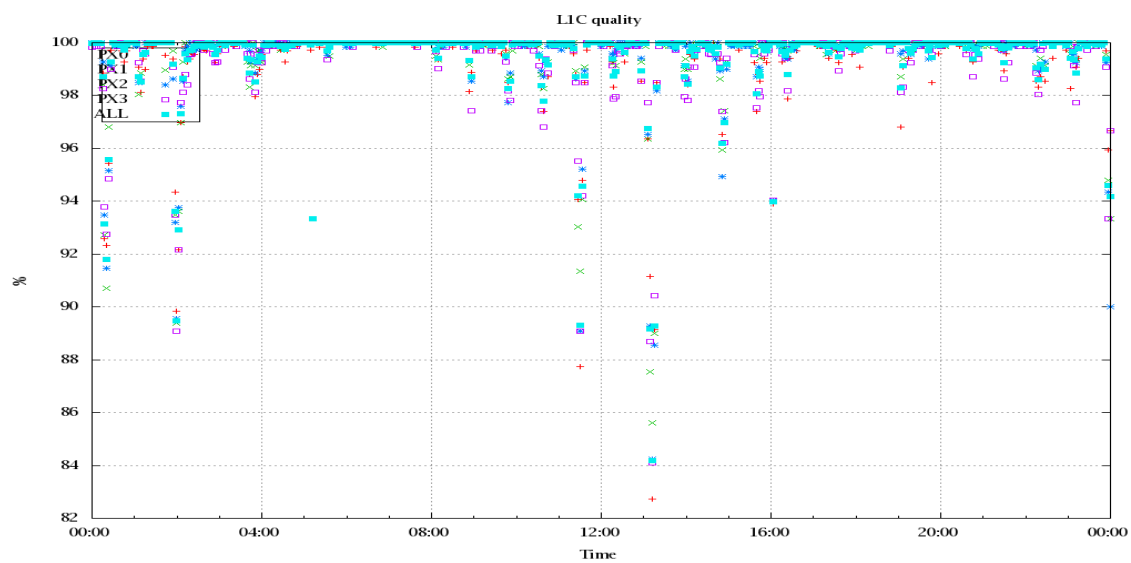


Figure 4: Level 1C quality

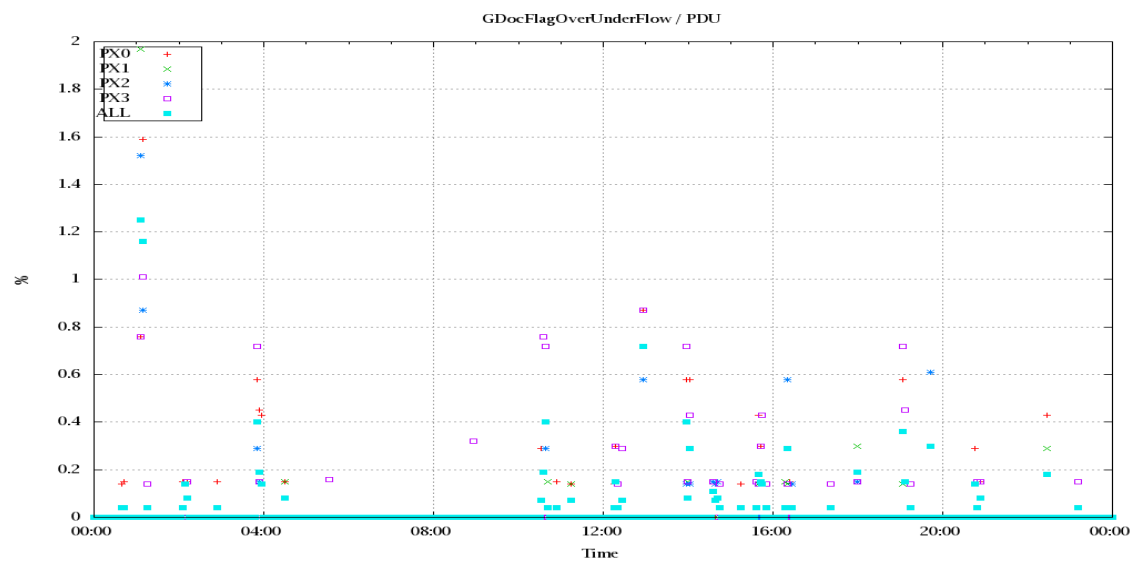


Figure 5: OverUnderFlowFlag timeseries

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,WV, and Ozon. 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 10 to 16 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 pixel and scan position 10 to 20) and the average bias OBS-CAL (over all pixel and scan position 10 to 20) of the last 30 days.

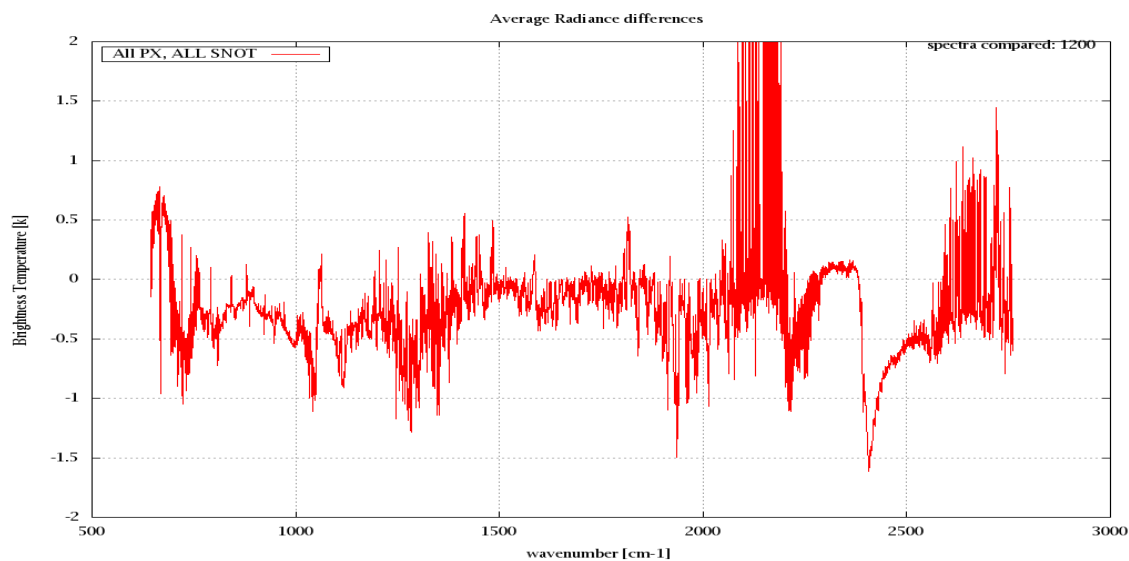


Figure 6: Average Radiance differences: OBS-CAL

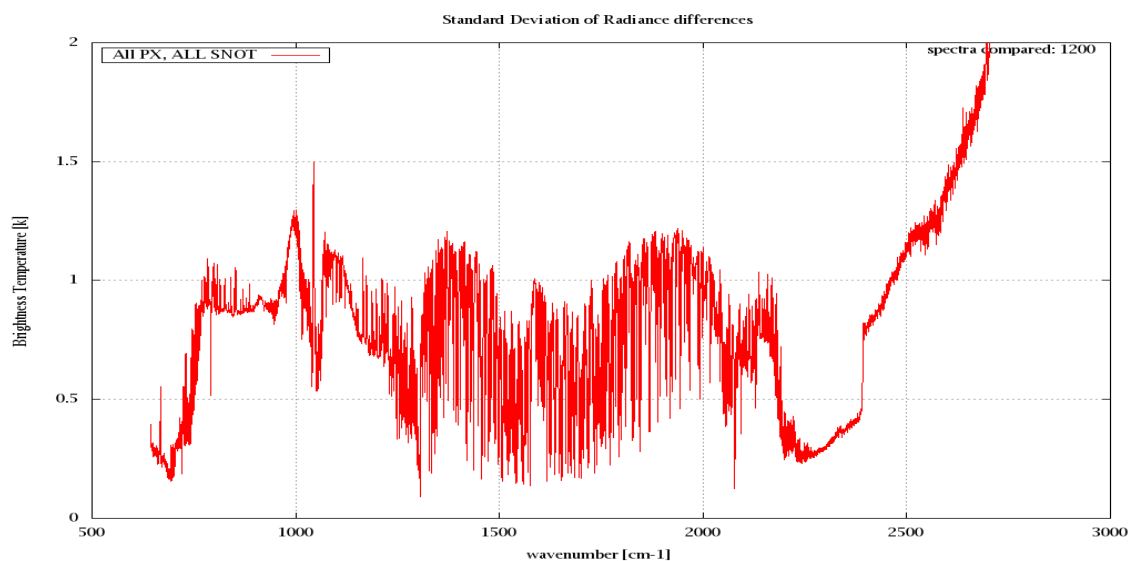


Figure 7: Standard Deviation of Radiance differences

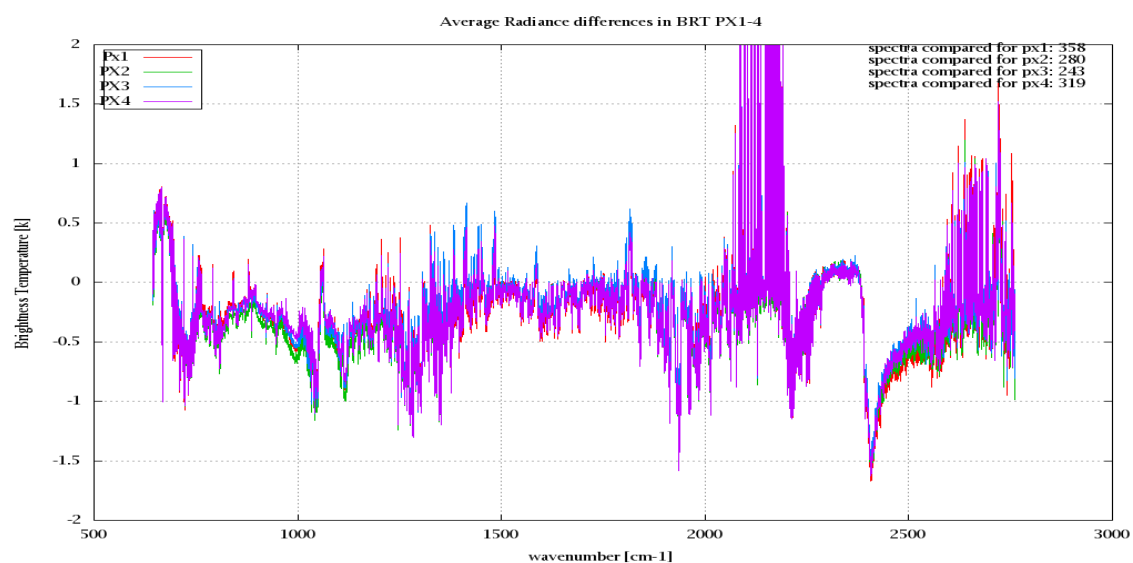


Figure 8: Average Radiance differences: OBS-CAL

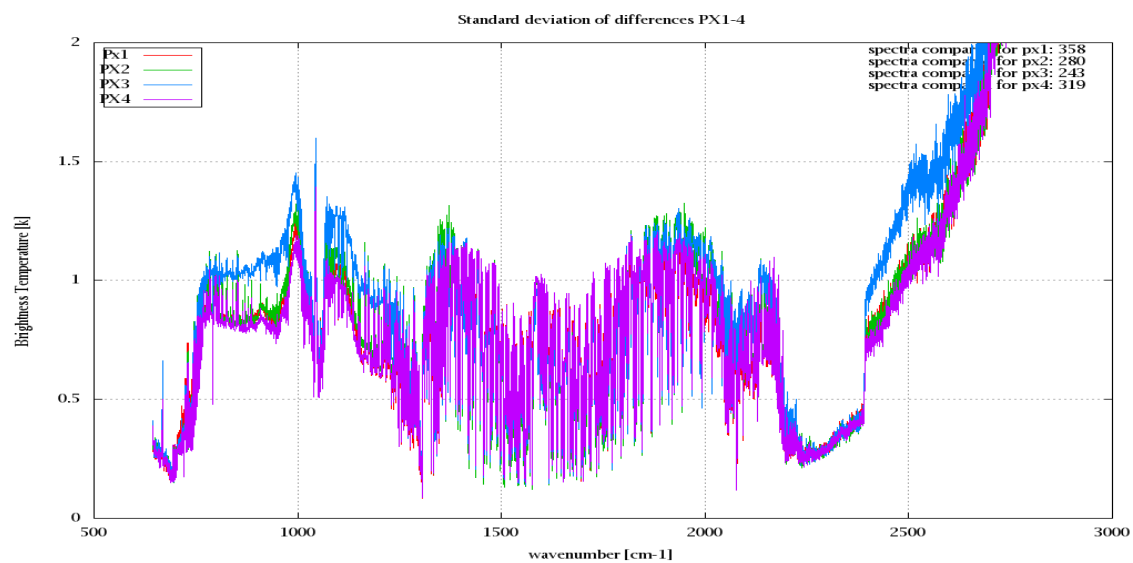


Figure 9: Standard Deviation of Radiance differences

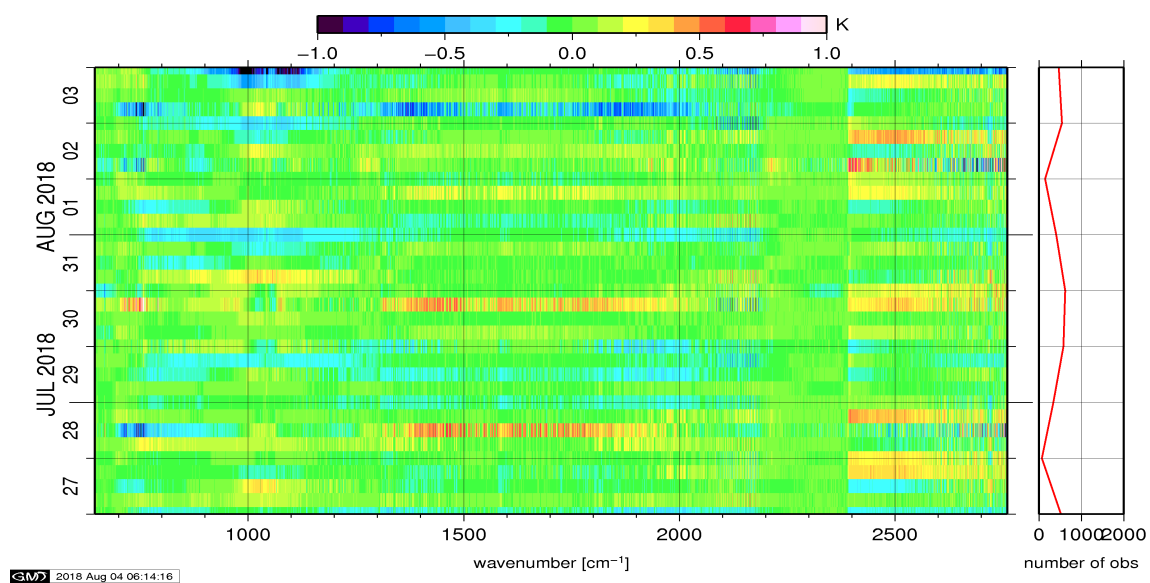


Figure 10: Radiance Anomaly in BRT: All Channels

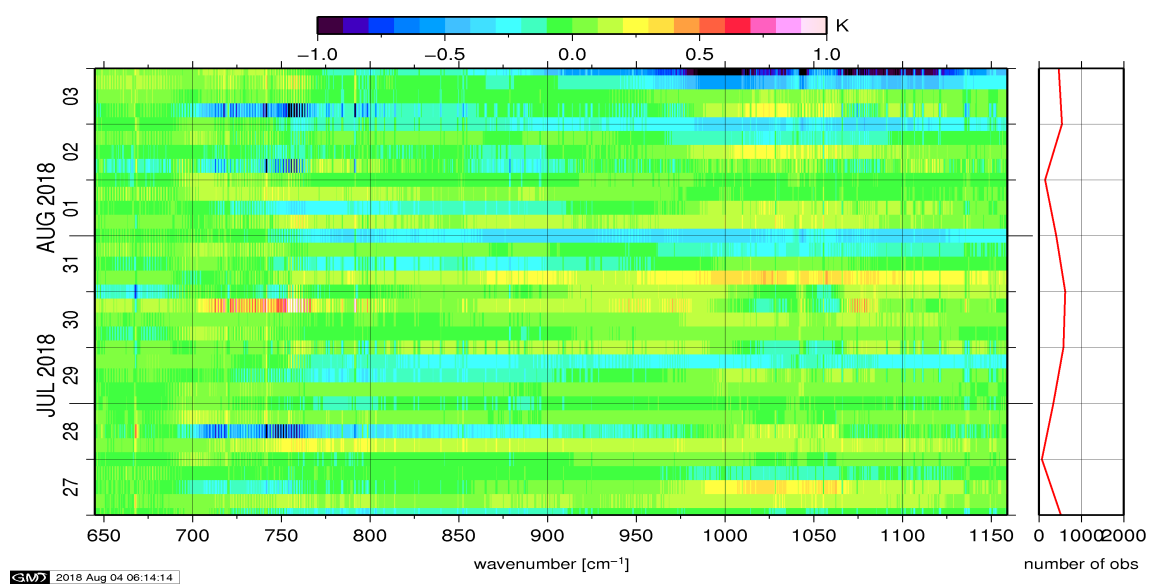


Figure 11: Radiance Anomaly in BRT: IASI Band 1

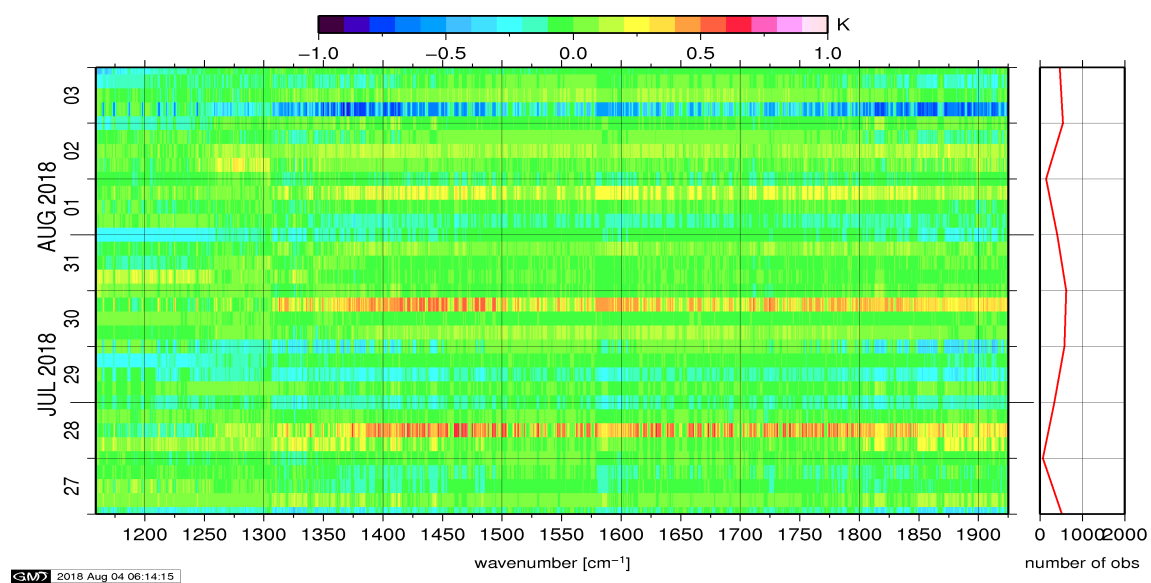


Figure 12: Radiance Anomaly in BRT: IASI Band 2

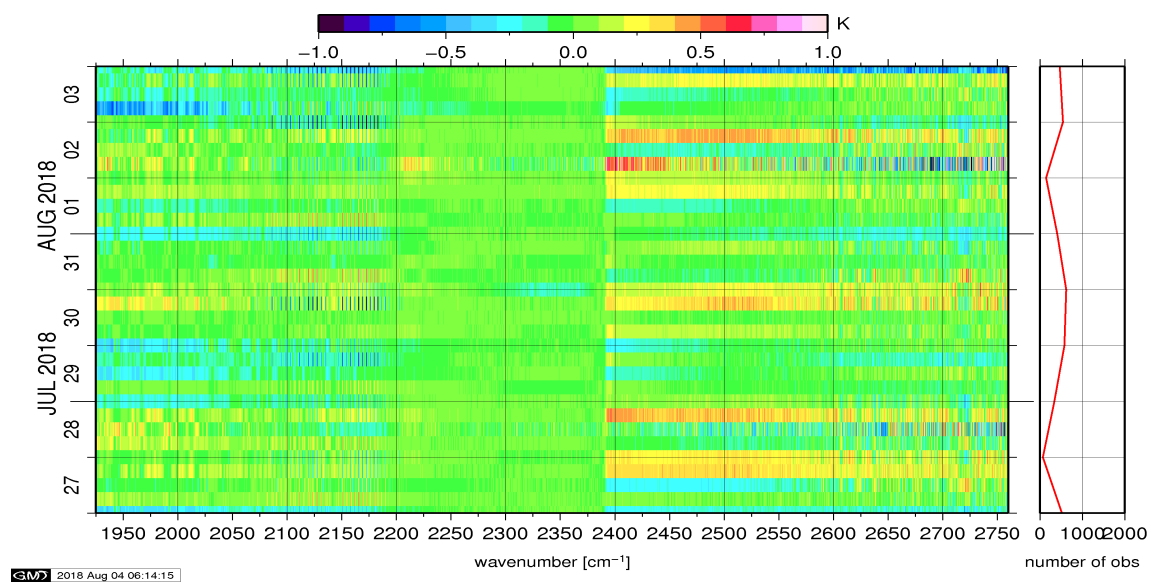


Figure 13: Radiance Anomaly in BRT: IASI Band 3

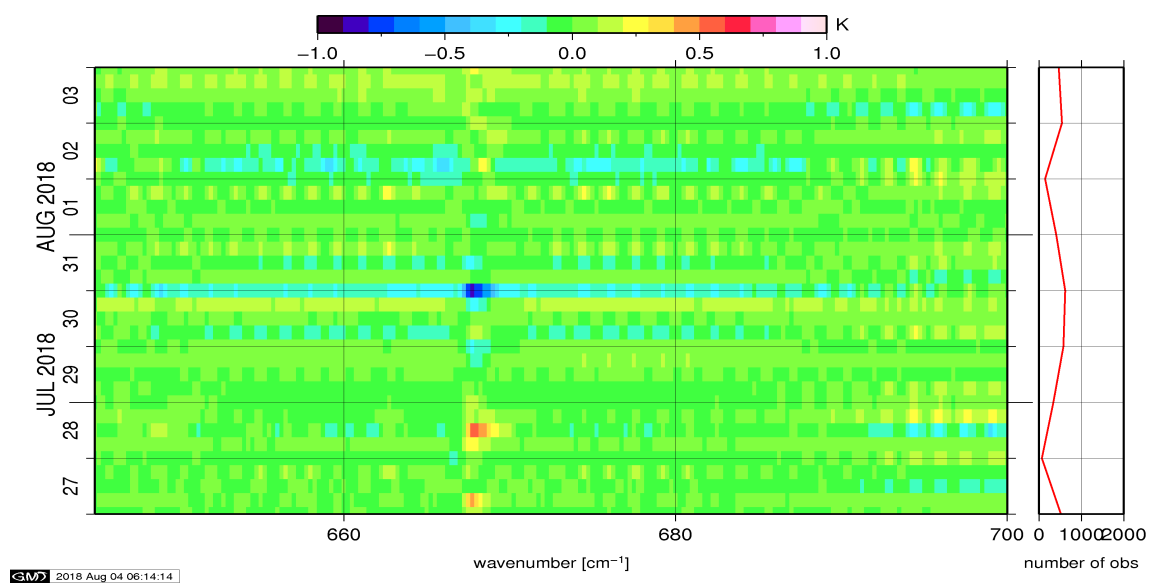


Figure 14: Radiance Anomaly in BRT: CO2 14

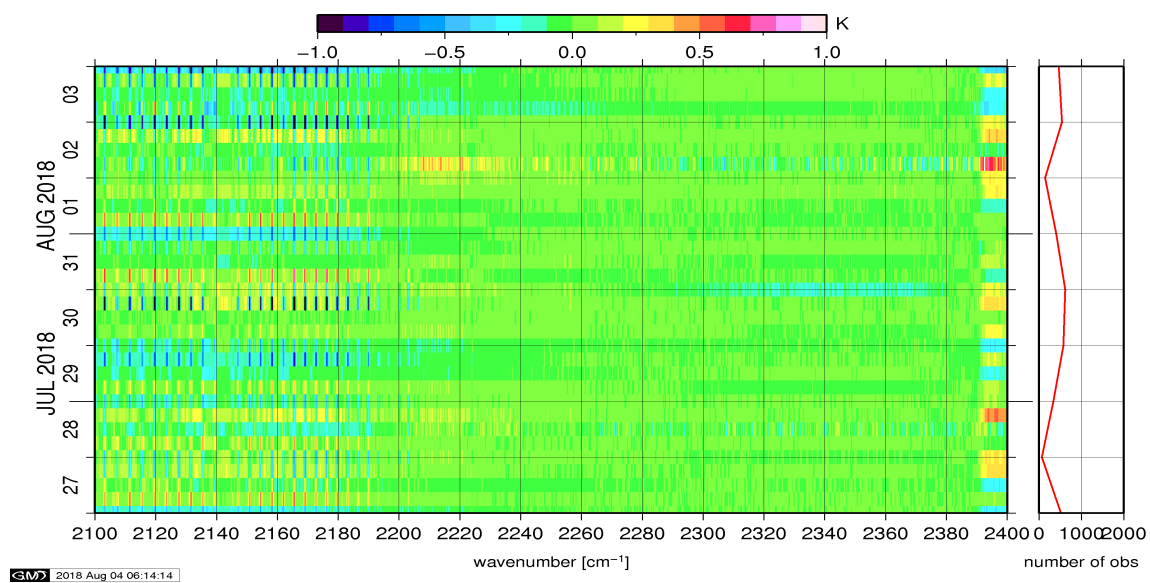


Figure 15: Radiance Anomaly in BRT: CO2 4.3

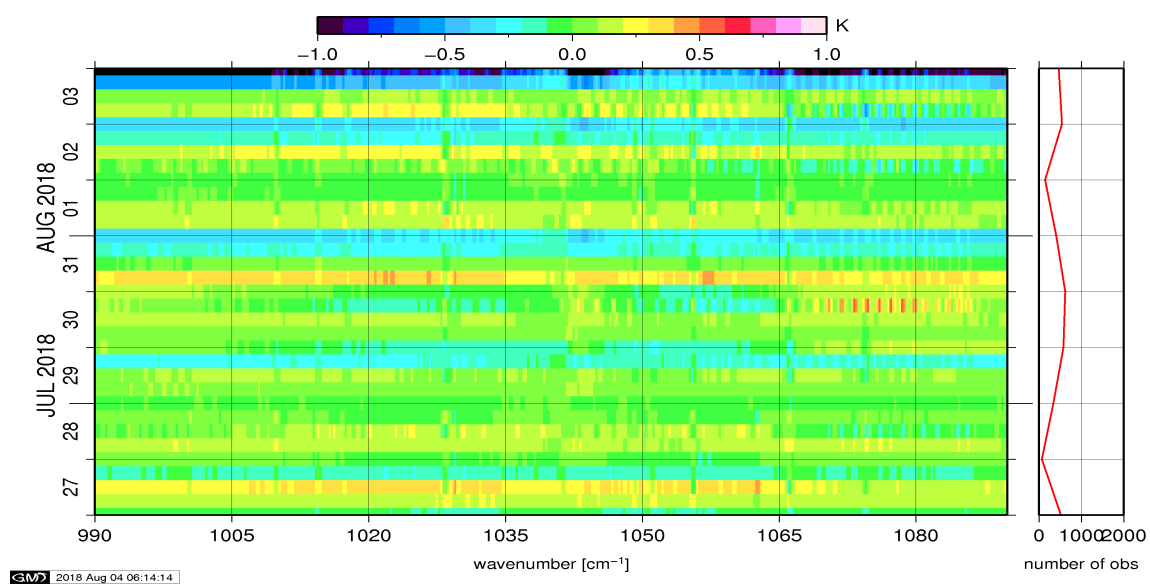


Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison of IASI and HIRS/4 on-board MetOp is performed on all pixel 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 temperature. 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.

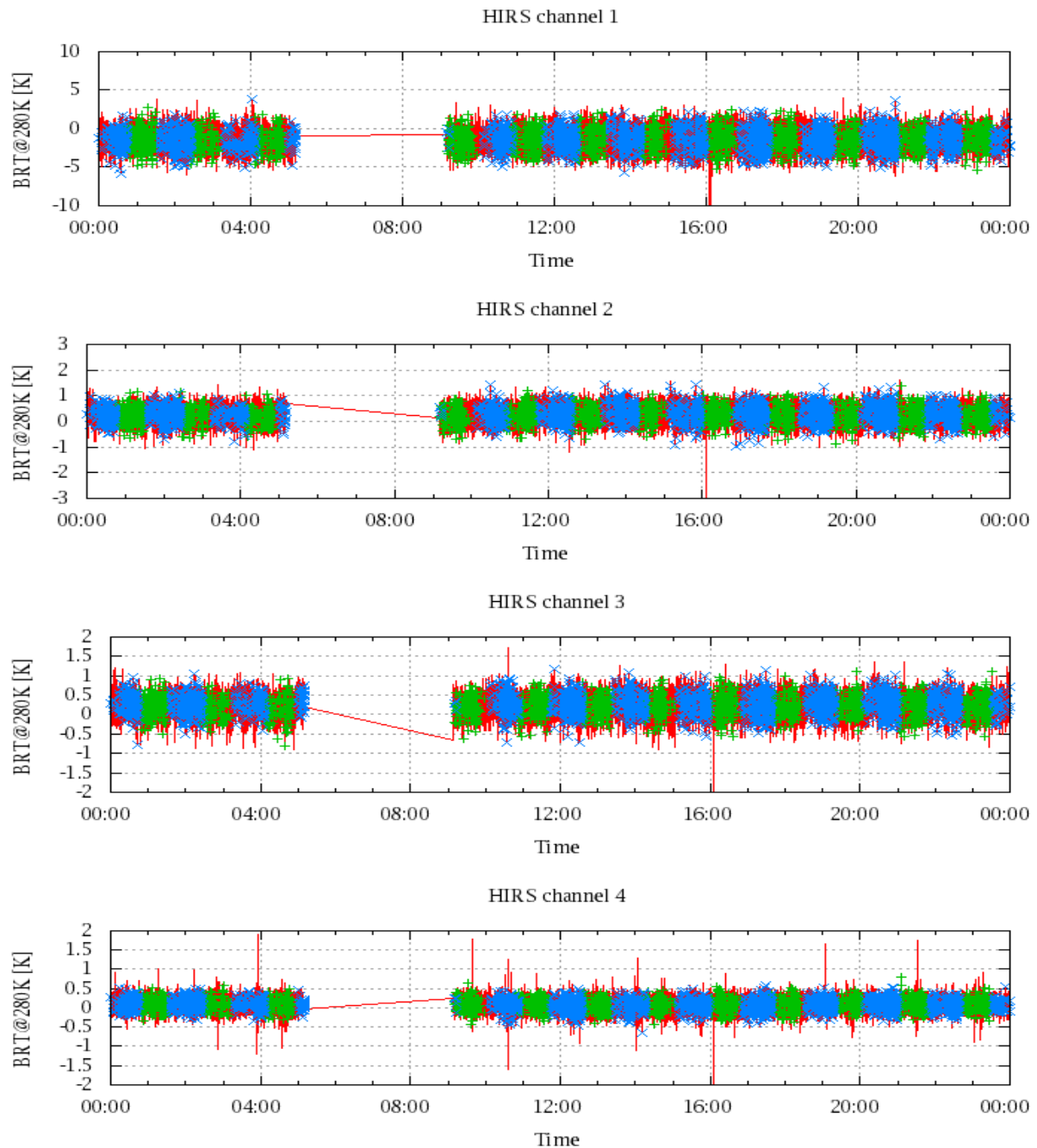


Figure 17: Radiance Differences in BRT

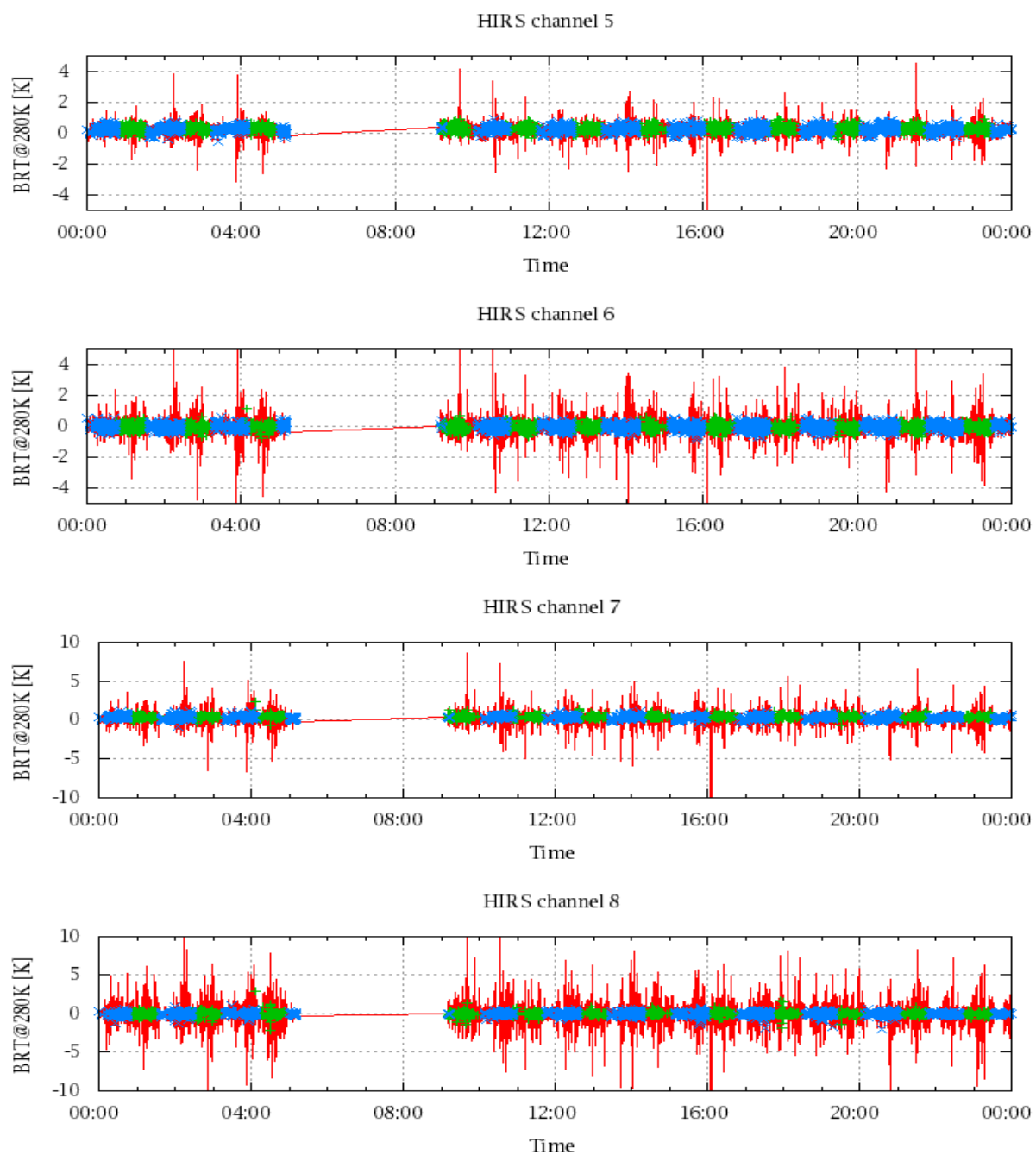


Figure 18: Radiance Differences in BRT

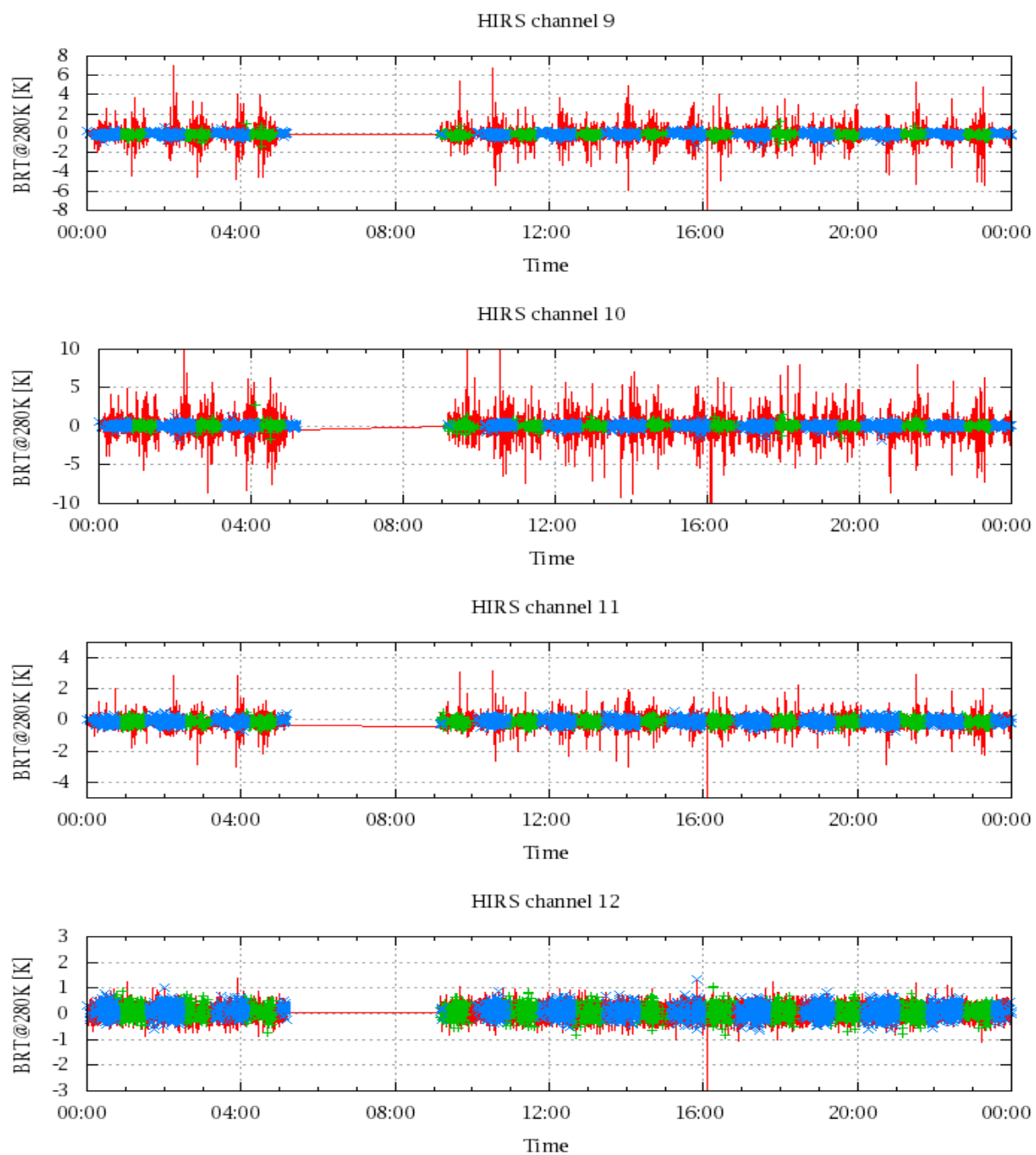


Figure 19: Radiance Differences in BRT

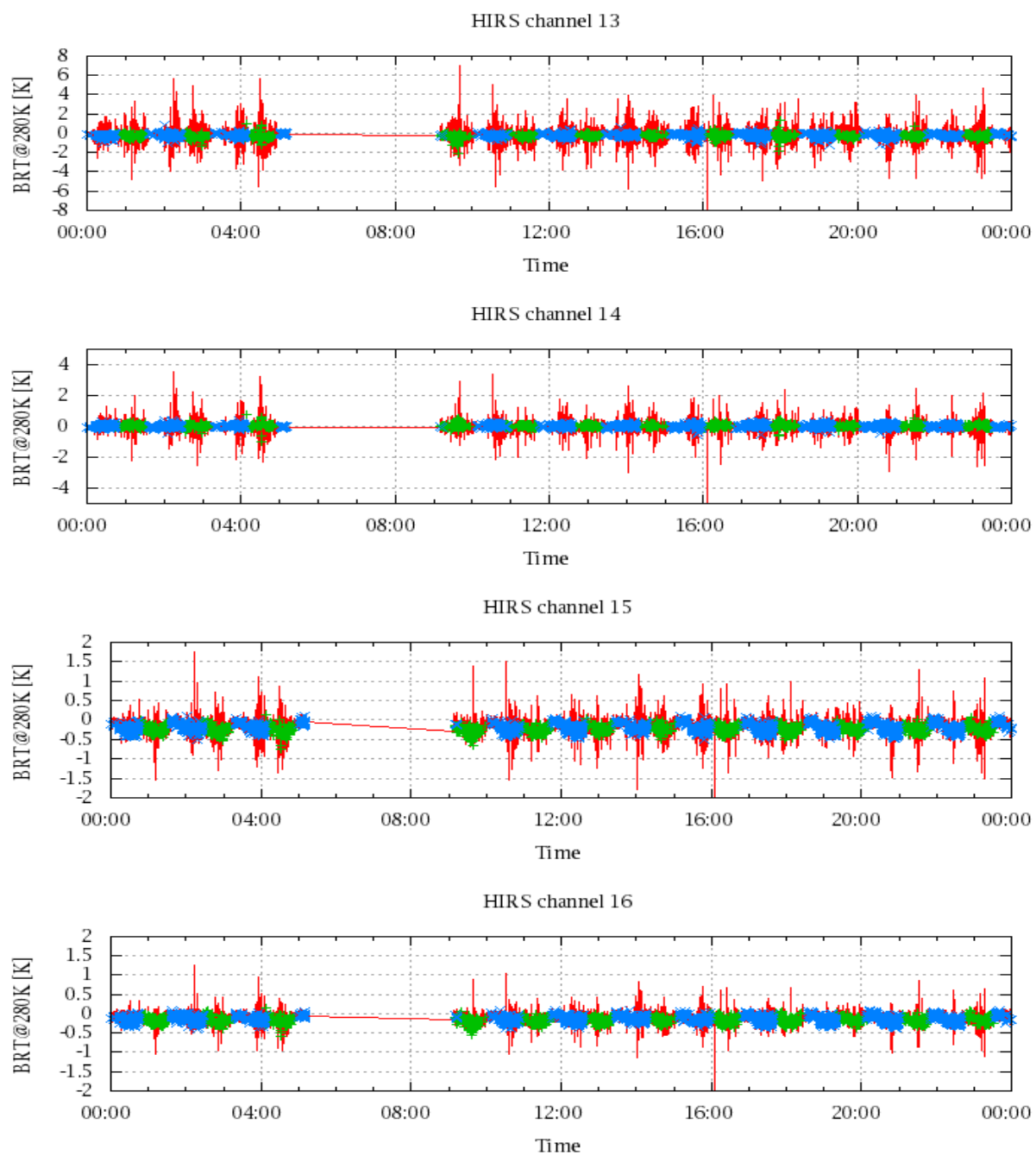


Figure 20: Radiance Differences in BRT

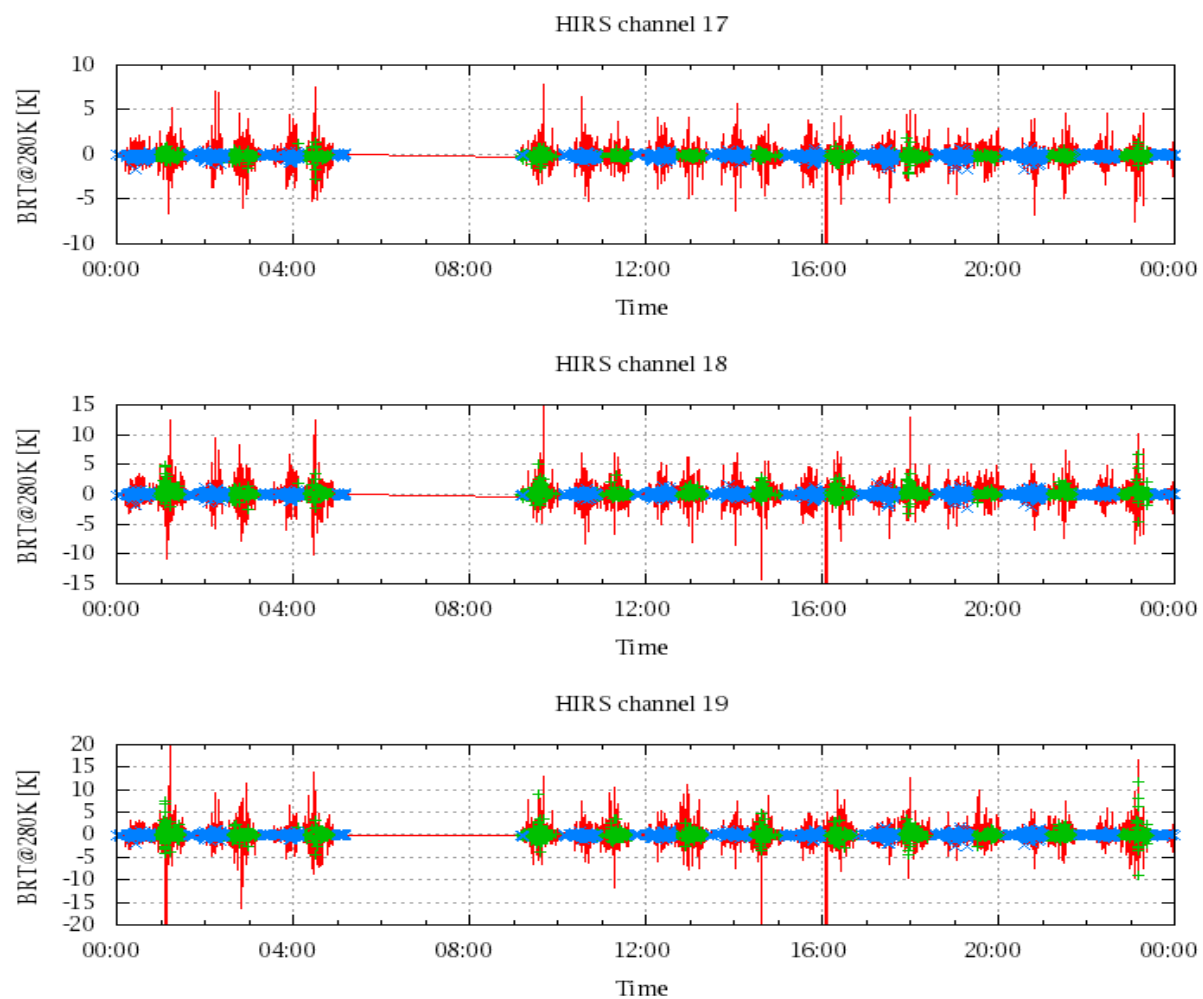


Figure 21: Radinace Differences in BRT