

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

21/09/2017 00:00:00 - 22/09/2017 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 21/09/2017 00:00:00 - 22/09/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 21/09/2017 00:00:00 - 22/09/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	465	-
L1 ENG PDUs	461	-
L1 ENG distinct GEPSGranule	445	a
L1 DPX PDUs (RM: IASI-HIRS)	461	-
L1 DPS Files (RM: OBS-CAL NWP based)	461	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1287	0	20170921131103.649	20170921140209.383
PX2 (135)	1287	0	20170921131103.649	20170921140209.383
PX3 (140)	1287	0	20170921131103.649	20170921140209.383
PX4 (145)	1287	0	20170921131103.649	20170921140209.383
IMG (150)	15135	0	20170921131103.649	20170921140209.383
VER (160)	9188	0	20170921131103.649	20170921140215.652
VER (160)	916	2275	20170921142639.646	20170921150330.681
VER (160)	2275	2280	20170921150330.681	20170921150330.681
VER (160)	2280	2285	20170921150330.681	20170921150330.681
VER (160)	2285	2290	20170921150330.681	20170921150330.681
VER (160)	2290	2295	20170921150330.681	20170921150330.681
VER (160)	2295	2276	20170921150330.681	20170921150330.681
VER (160)	2276	2281	20170921150330.681	20170921150330.681
VER (160)	2281	2286	20170921150330.681	20170921150330.681
VER (160)	2286	2291	20170921150330.681	20170921150330.681
VER (160)	2291	2296	20170921150330.681	20170921150330.681
VER (160)	2296	2277	20170921150330.681	20170921150330.681
VER (160)	2277	2282	20170921150330.681	20170921150330.681

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	2282	2287	20170921150330.681	20170921150330.681
VER (160)	2287	2292	20170921150330.681	20170921150330.681
VER (160)	2292	2297	20170921150330.681	20170921150330.681
VER (160)	2297	2278	20170921150330.681	20170921150330.681
VER (160)	2278	2283	20170921150330.681	20170921150330.681
VER (160)	2283	2288	20170921150330.681	20170921150330.681
VER (160)	2288	2293	20170921150330.681	20170921150330.681
VER (160)	2293	2298	20170921150330.681	20170921150330.681
VER (160)	2298	2279	20170921150330.681	20170921150330.681
VER (160)	2279	2284	20170921150330.681	20170921150330.681
VER (160)	2284	2289	20170921150330.681	20170921150330.681
VER (160)	2289	2294	20170921150330.681	20170921150330.681
VER (160)	2294	2299	20170921150330.681	20170921150330.681
AUX (180)	11653	0	20170921131056.083	20170921140216.082

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
21/09/2017 00:05:09	-	Normal operation
21/09/2017 13:11:17	Normal operation	Auxiliary ASE synchronised
21/09/2017 13:12:21	Auxiliary ASE synchronised	Heater 2
21/09/2017 13:13:09	Heater 2	Heater 1 warm up
21/09/2017 13:14:13	Heater 1 warm up	Heater 2
21/09/2017 13:41:09	Heater 2	Auxiliary ASE synchronised
21/09/2017 14:02:13	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	465	-
L1 ENG PDUs	461	-
L1 ENG distinct GEPSGranule	445	a
GQisFlagQual set (PX1)	99.70 %	-
GQisFlagQual set (PX2)	99.73 %	-
GQisFlagQual set (PX3)	99.75 %	-
GQisFlagQual set (PX4)	99.67 %	-
GQisFlagQual set (all)	99.71 %	-

Table 4: Quality flags

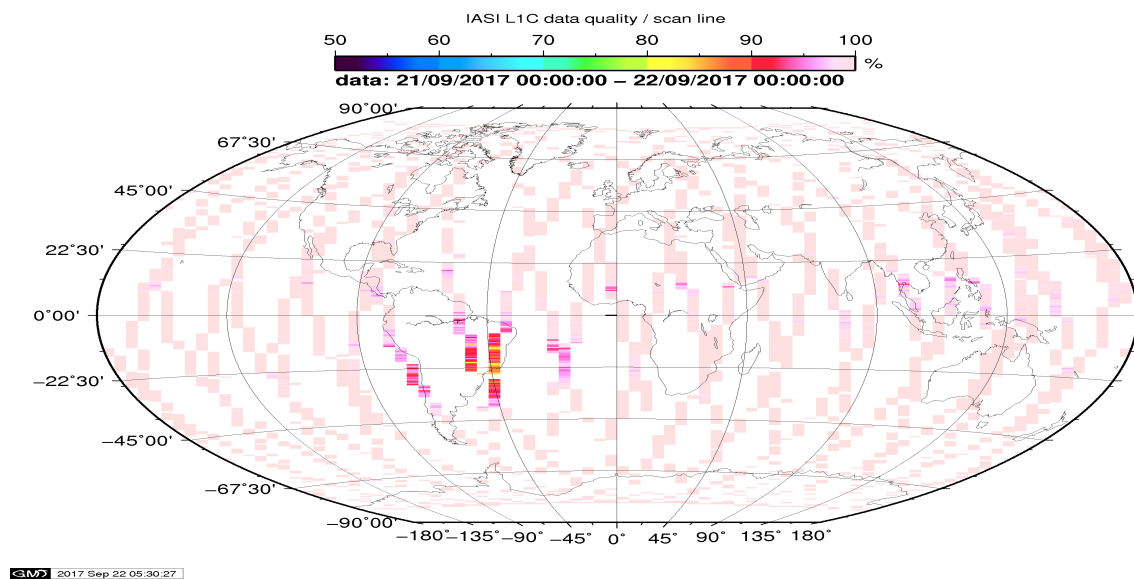


Figure 1: L1C data quality

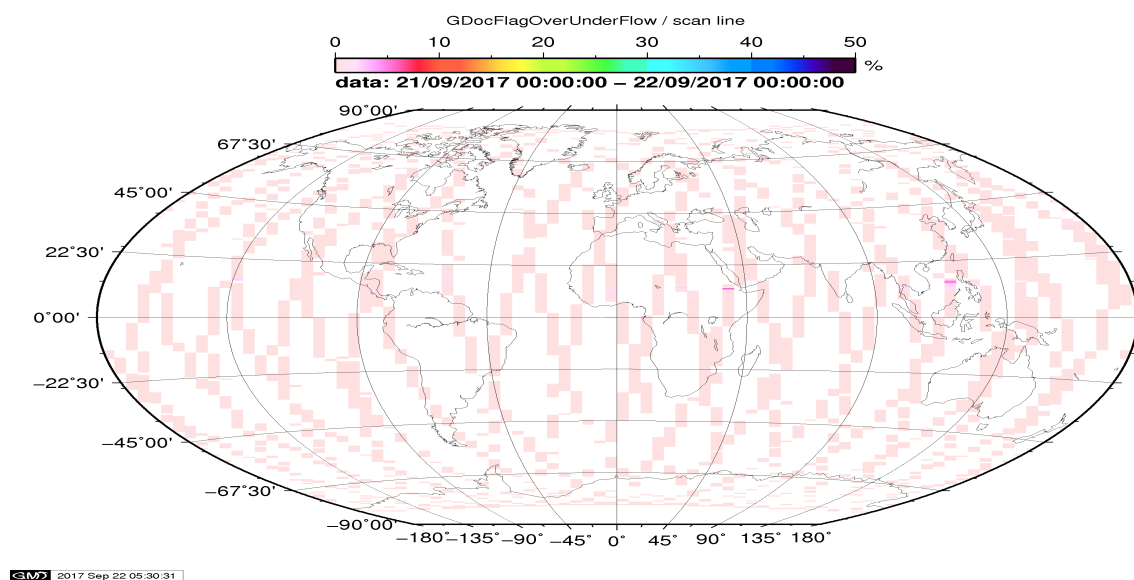


Figure 2: Flag of Over and Under Flows

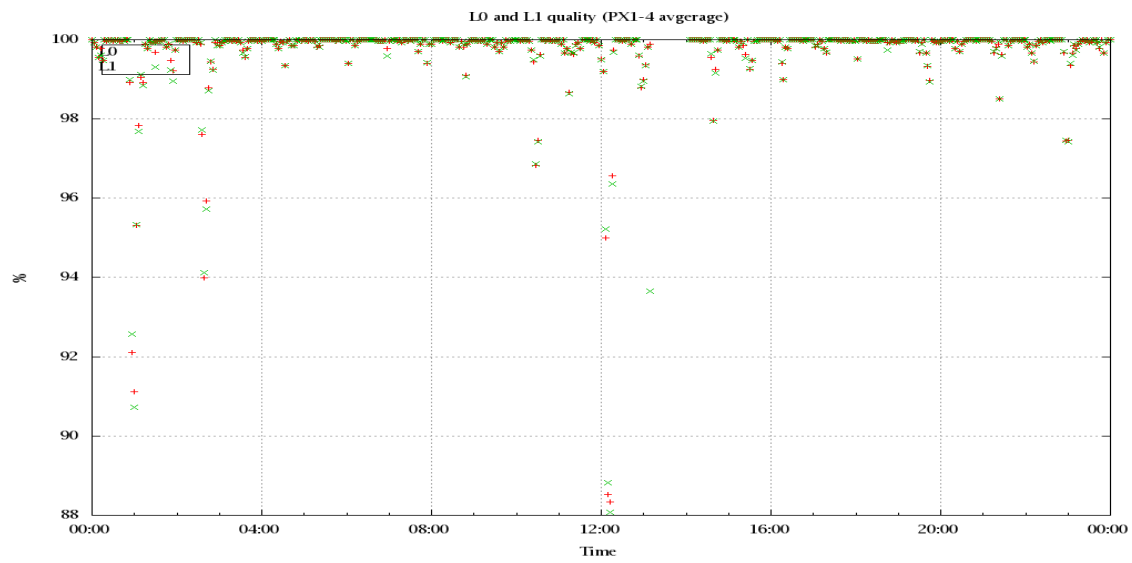


Figure 3: Level 0 and 1C overall quality

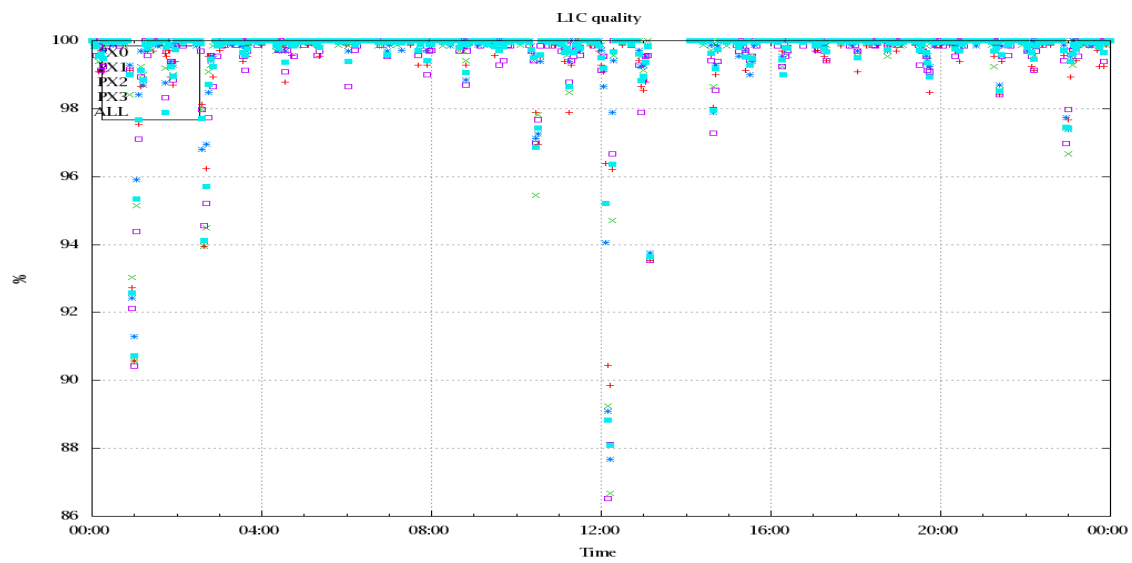


Figure 4: Level 1C quality

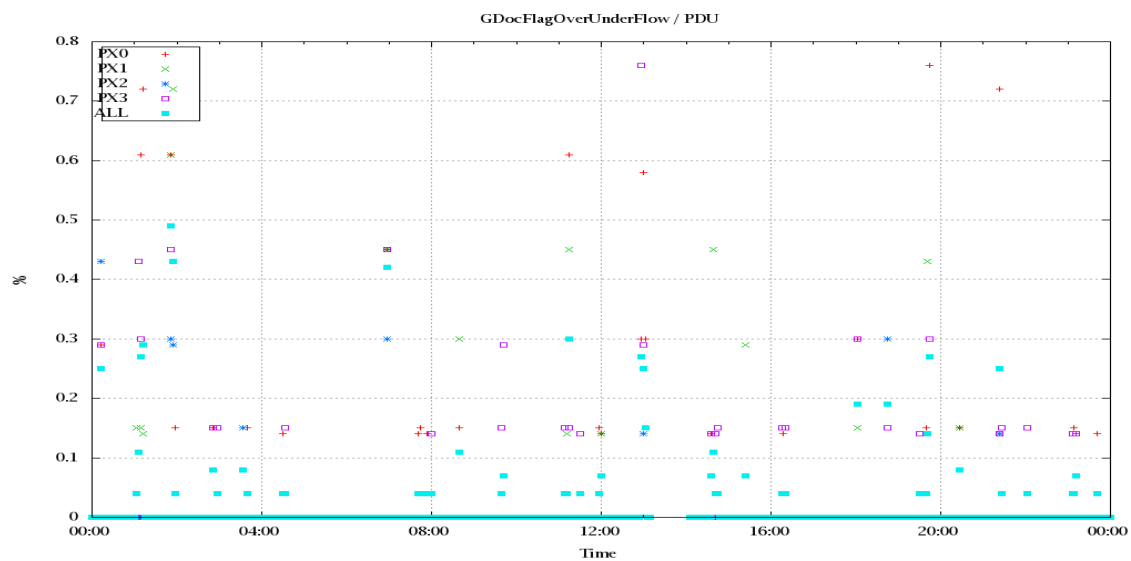


Figure 5: OverUnderFlowFlag timeseries

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.

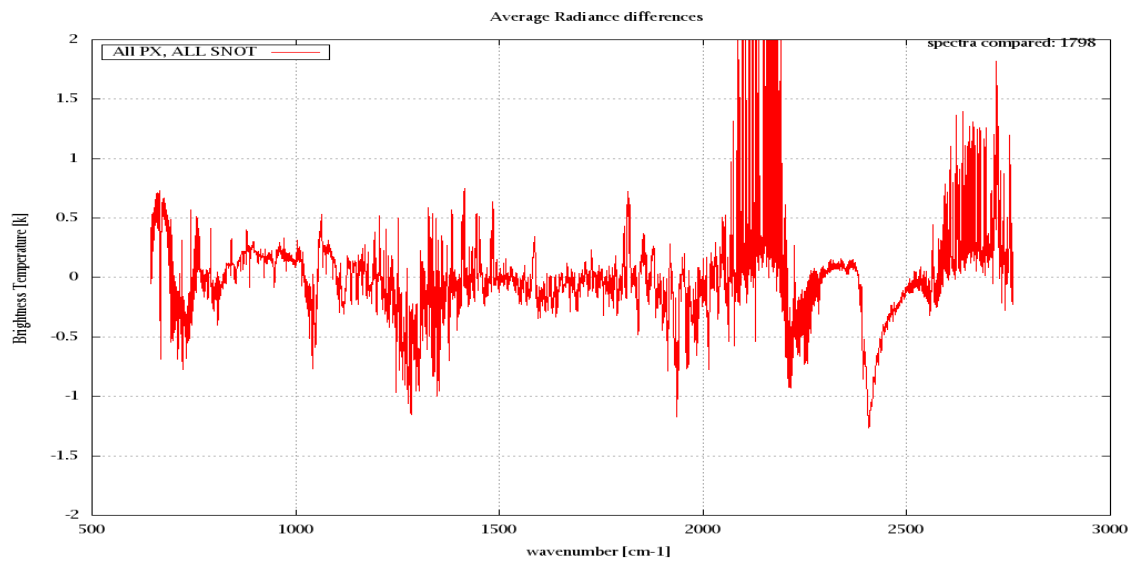


Figure 6: Average Radiance differences: OBS-CAL

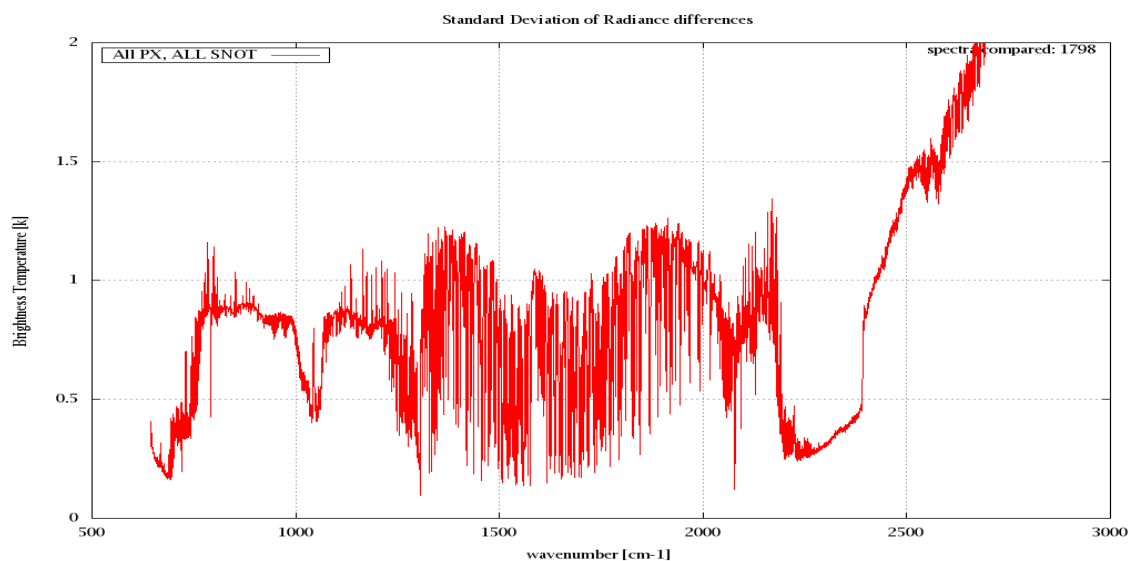


Figure 7: Standard Deviation of Radiance differences

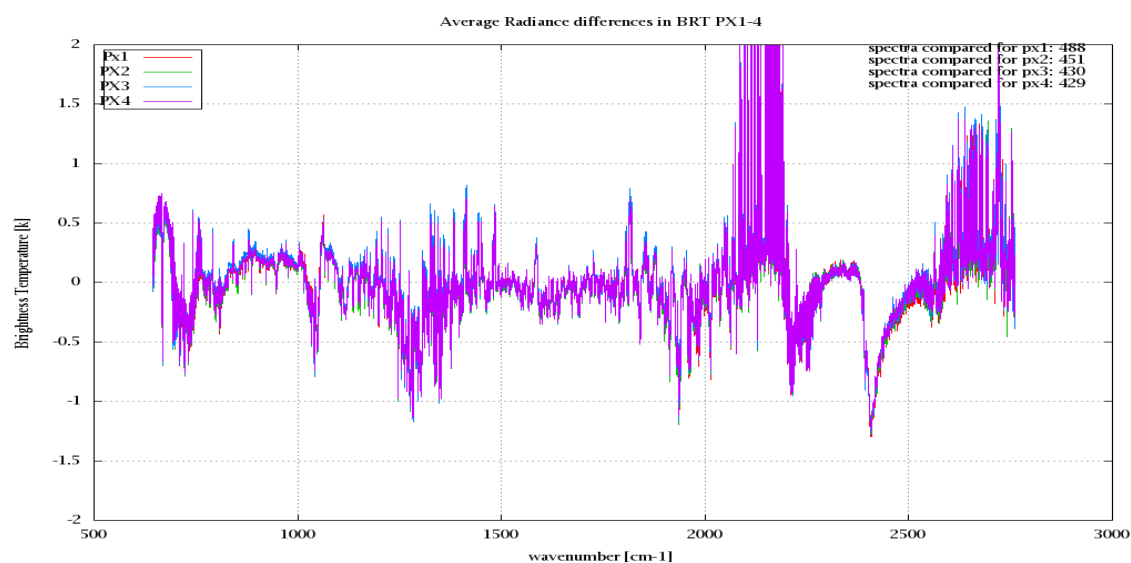


Figure 8: Average Radiance differences: OBS-CAL

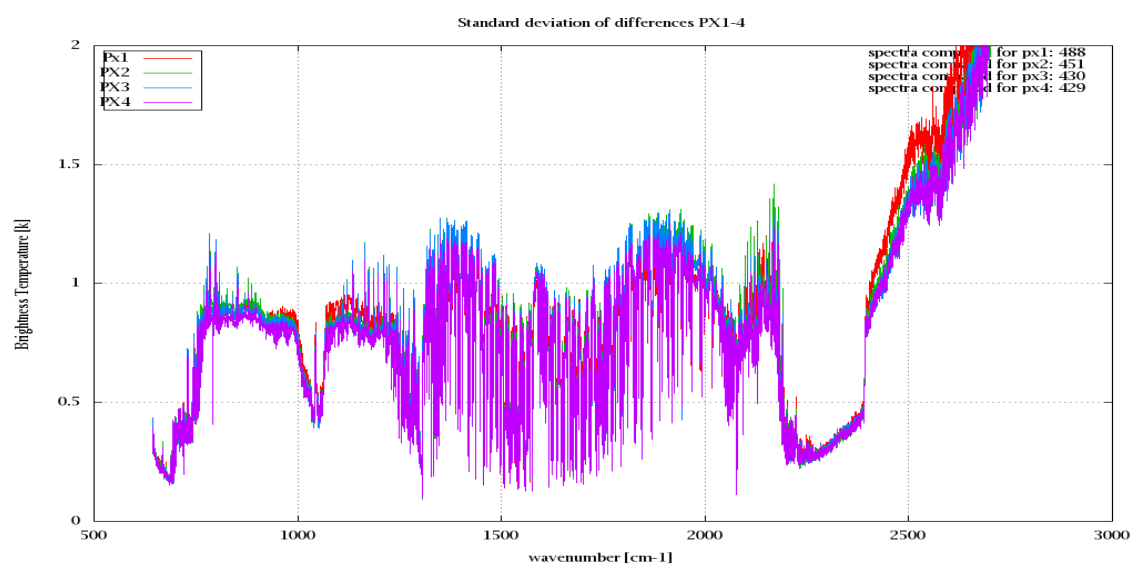


Figure 9: Standard Deviation of Radiance differences

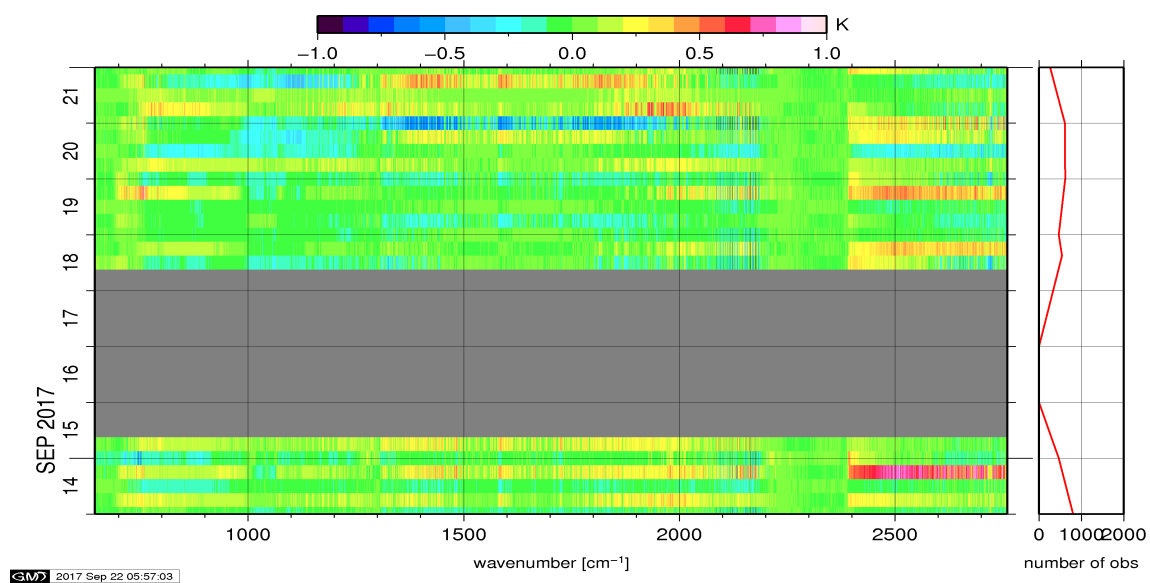


Figure 10: Radiance Anomaly in BRT: All Channels

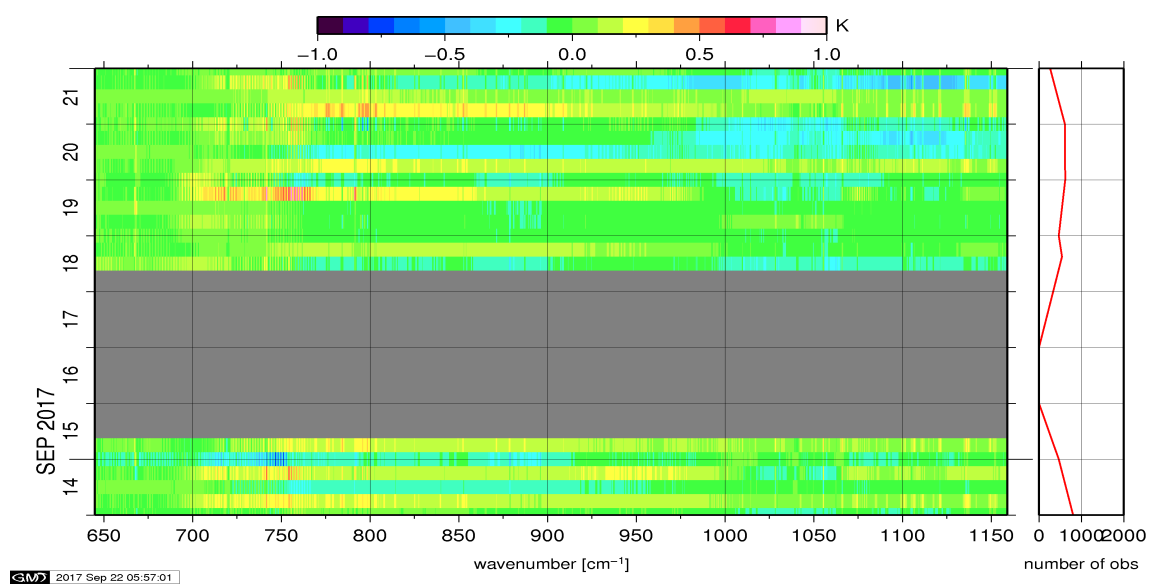


Figure 11: Radiance Anomaly in BRT: IASI Band 1

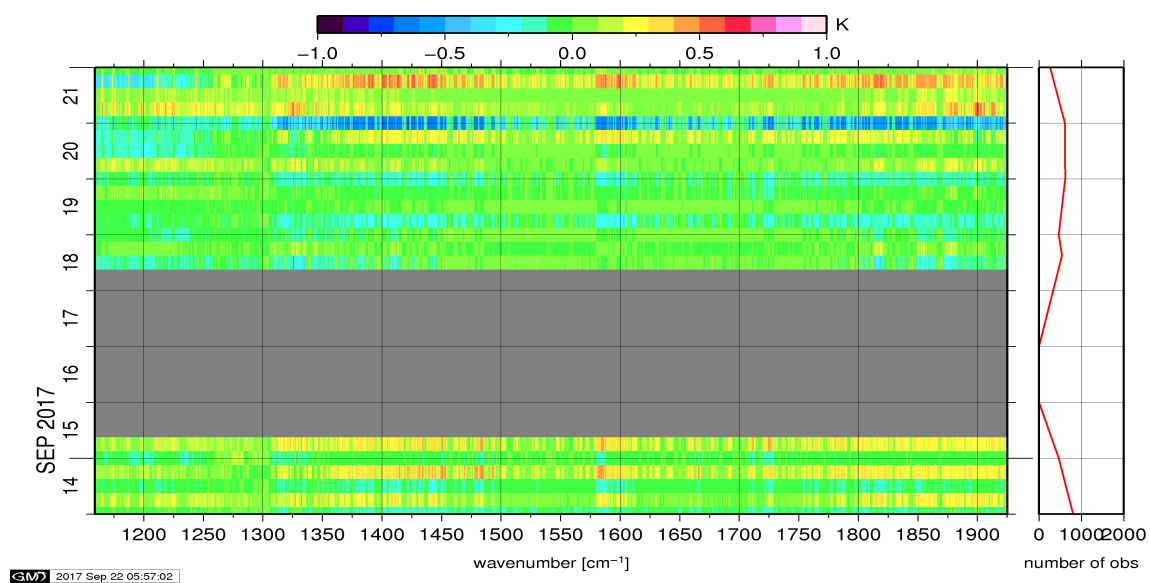


Figure 12: Radiance Anomaly in BRT: IASI Band 2

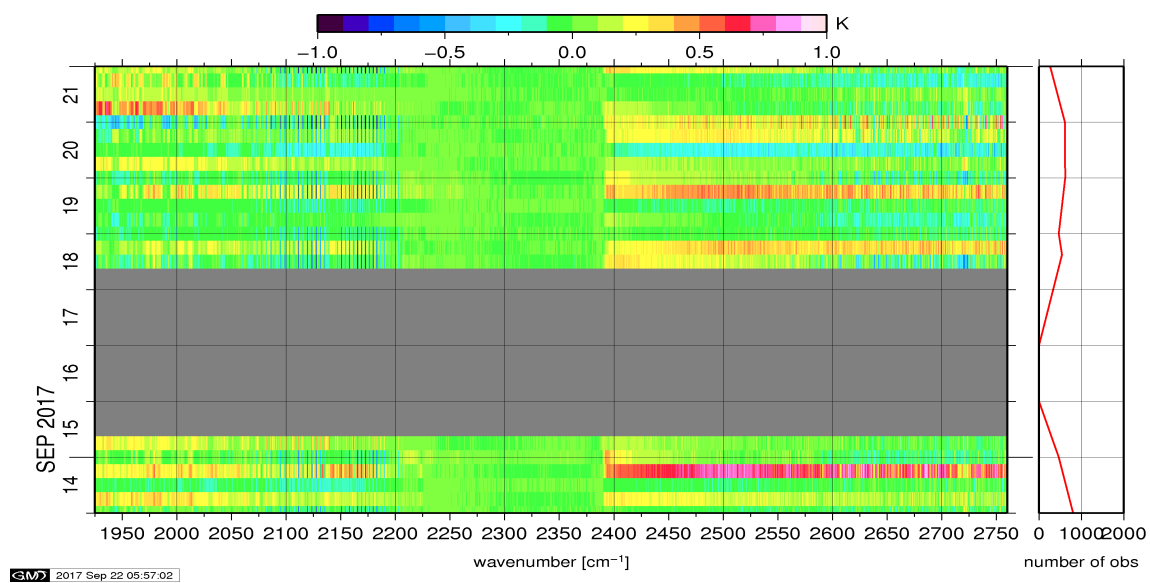


Figure 13: Radiance Anomaly in BRT: IASI Band 3

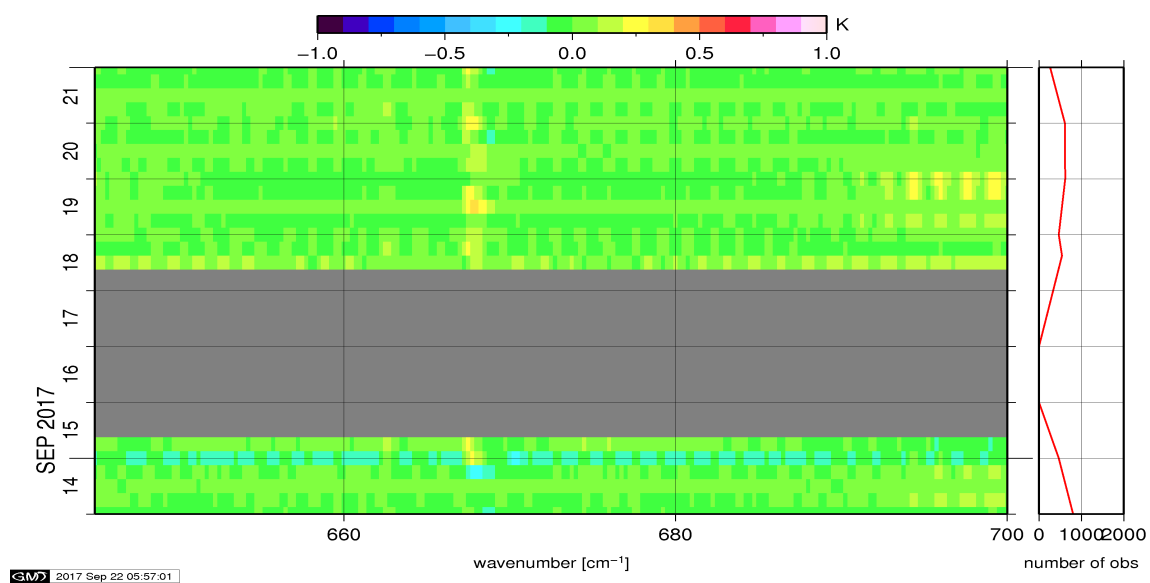


Figure 14: Radiance Anomaly in BRT: CO2 14

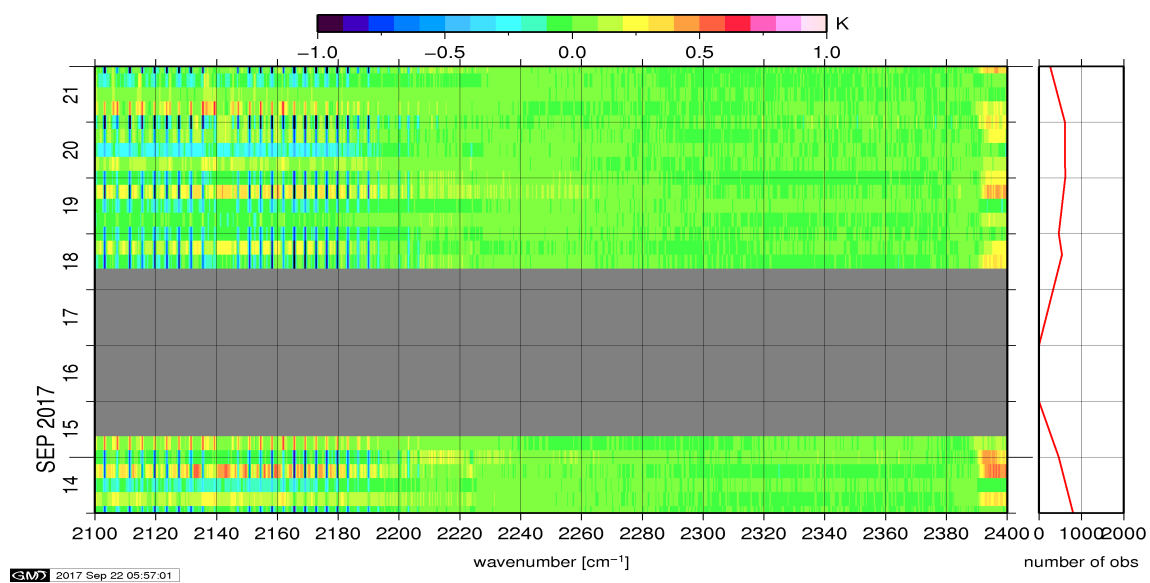


Figure 15: Radiance Anomaly in BRT: CO2 4.3

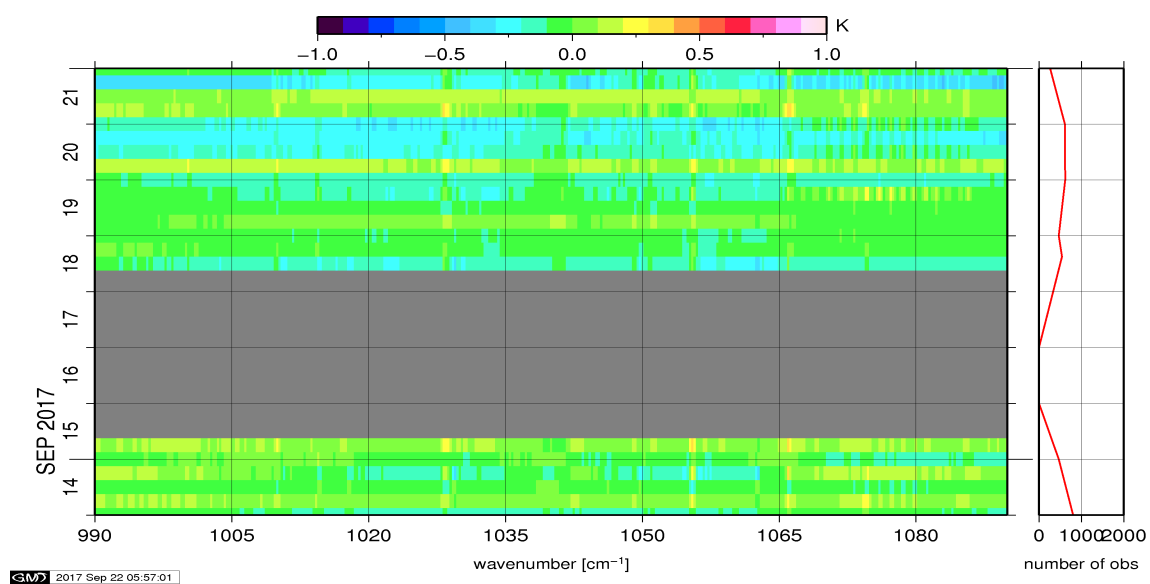


Figure 16: Radiance Anomaly in BRT: O3

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.

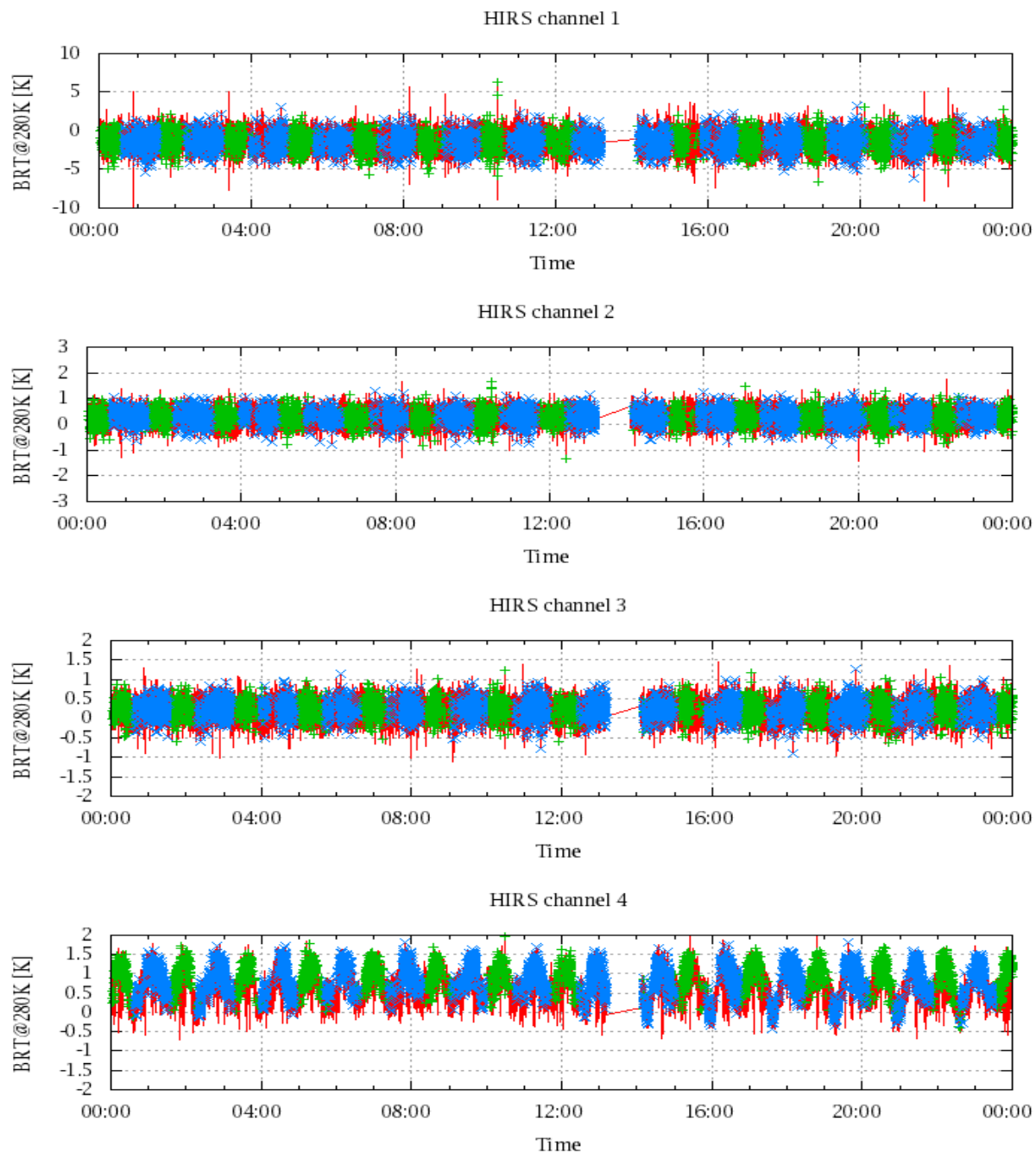


Figure 17: Radiance Differences in BRT

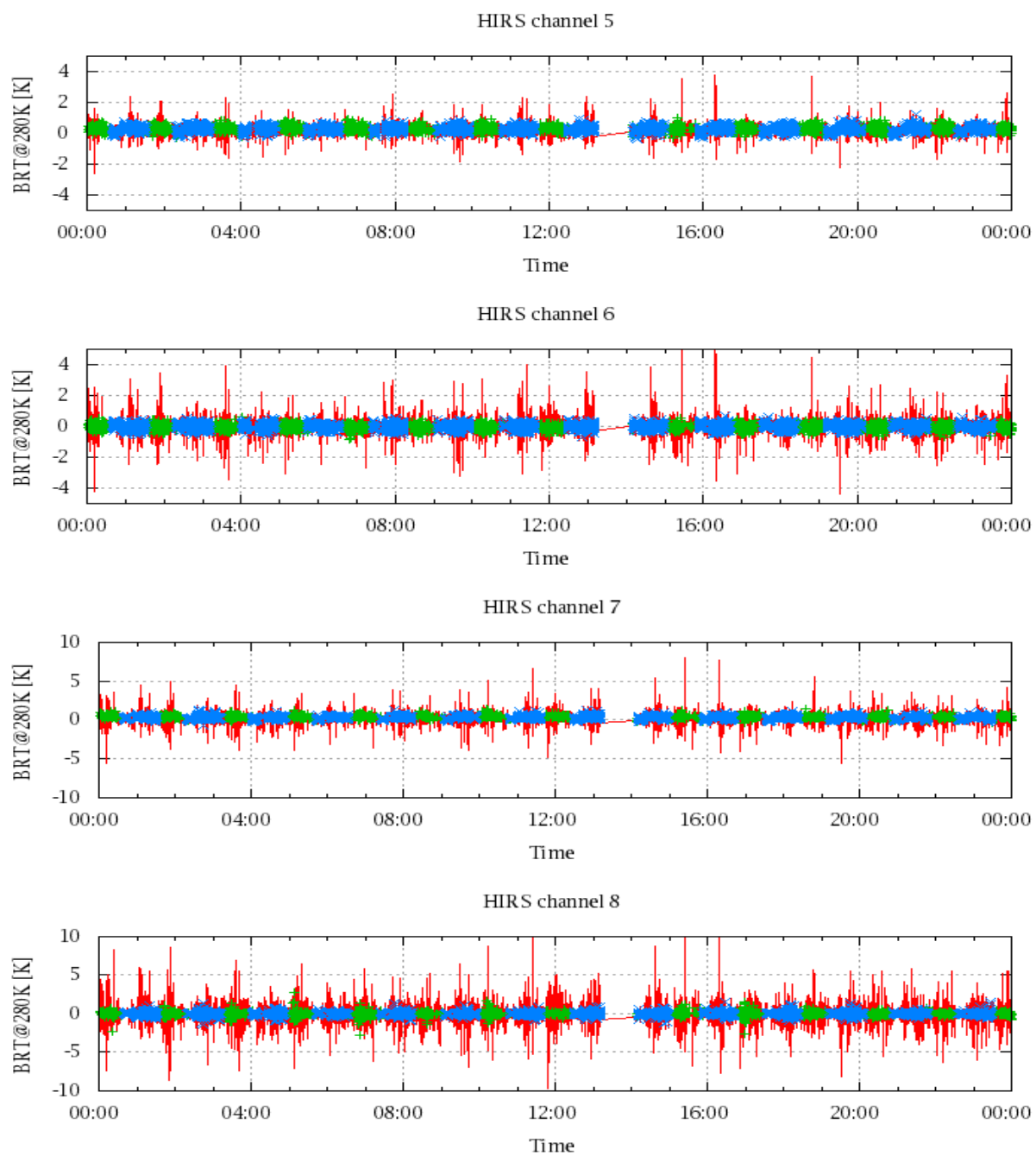


Figure 18: Radiance Differences in BRT

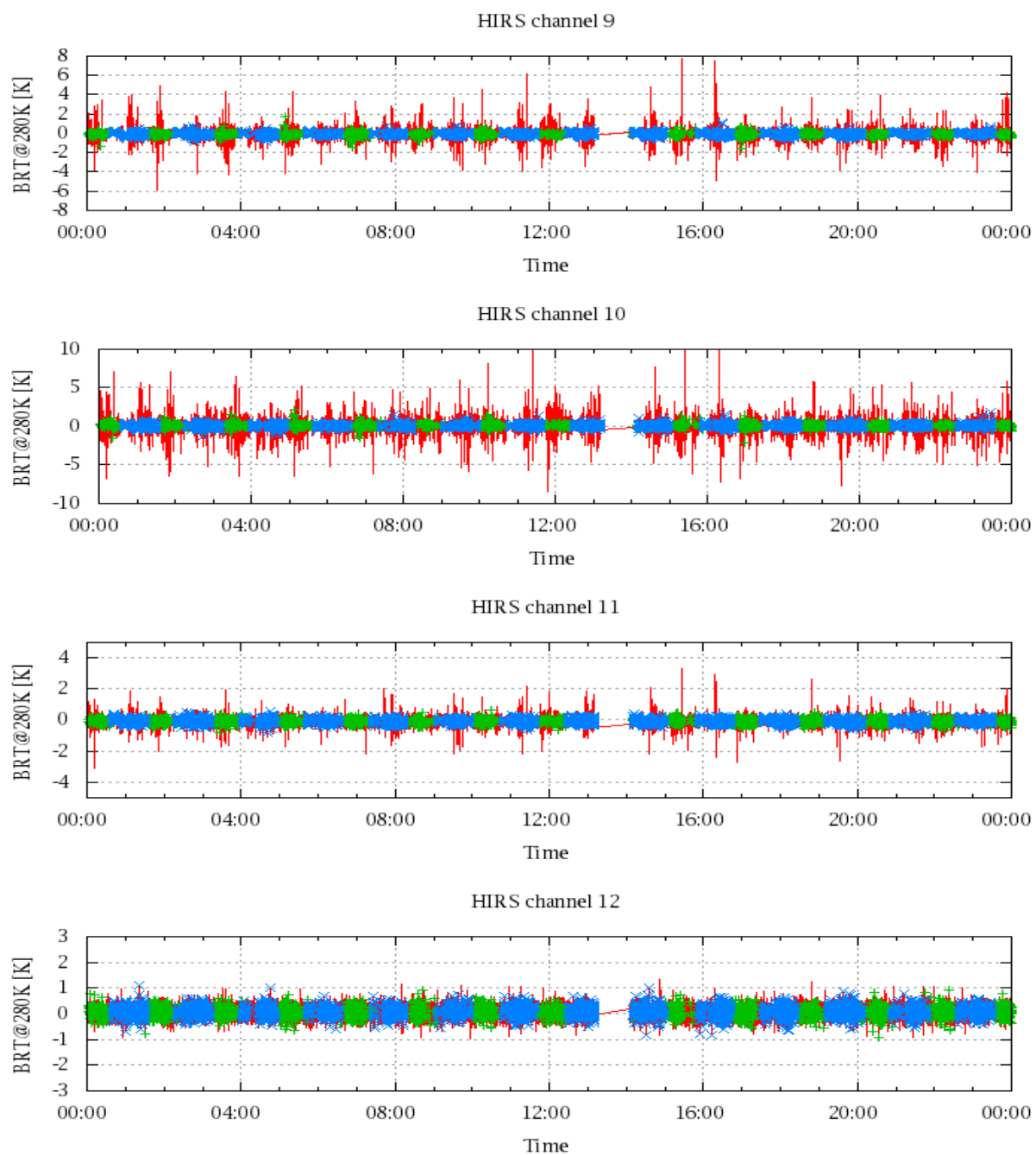


Figure 19: Radiance Differences in BRT

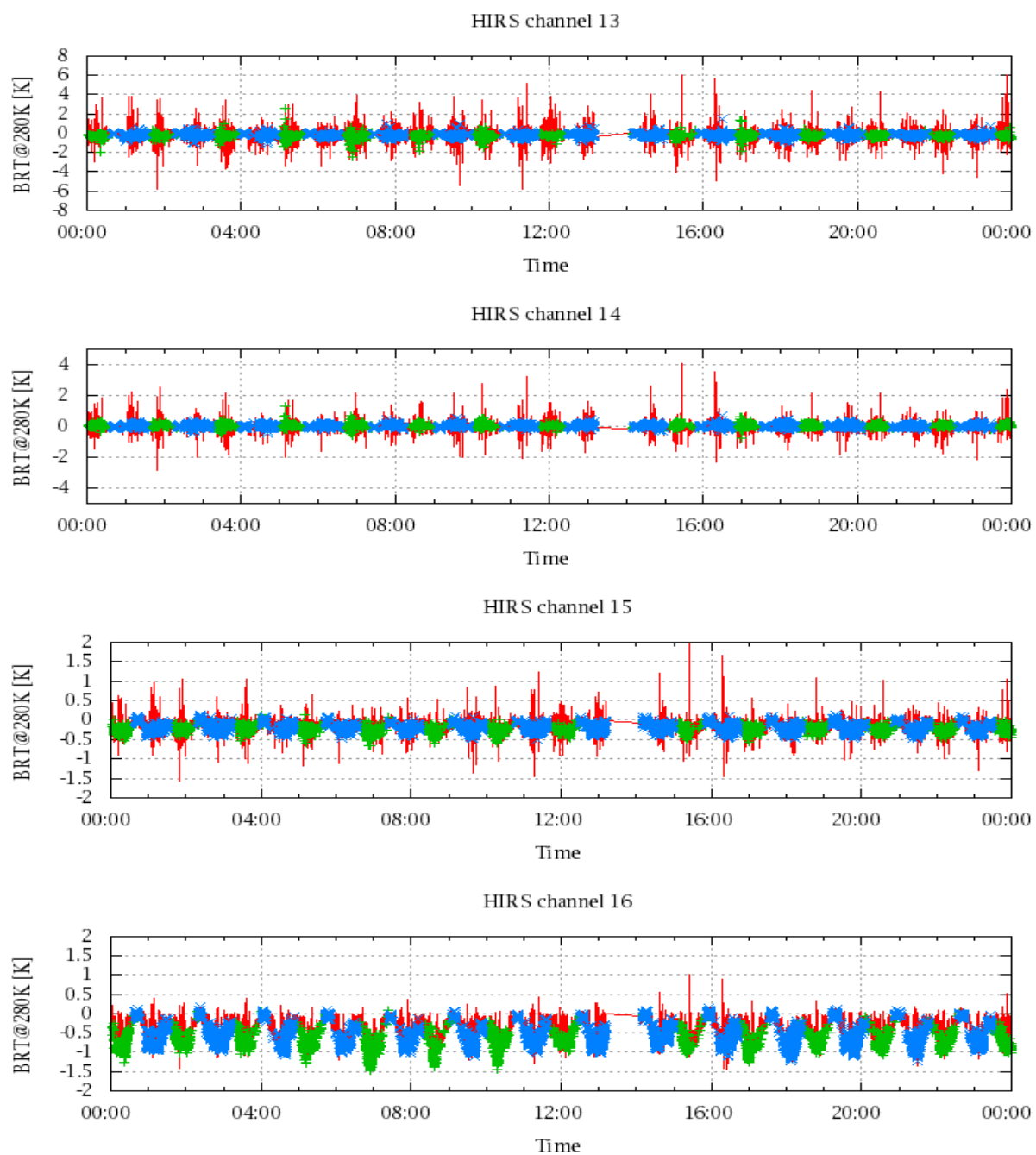


Figure 20: Radiance Differences in BRT

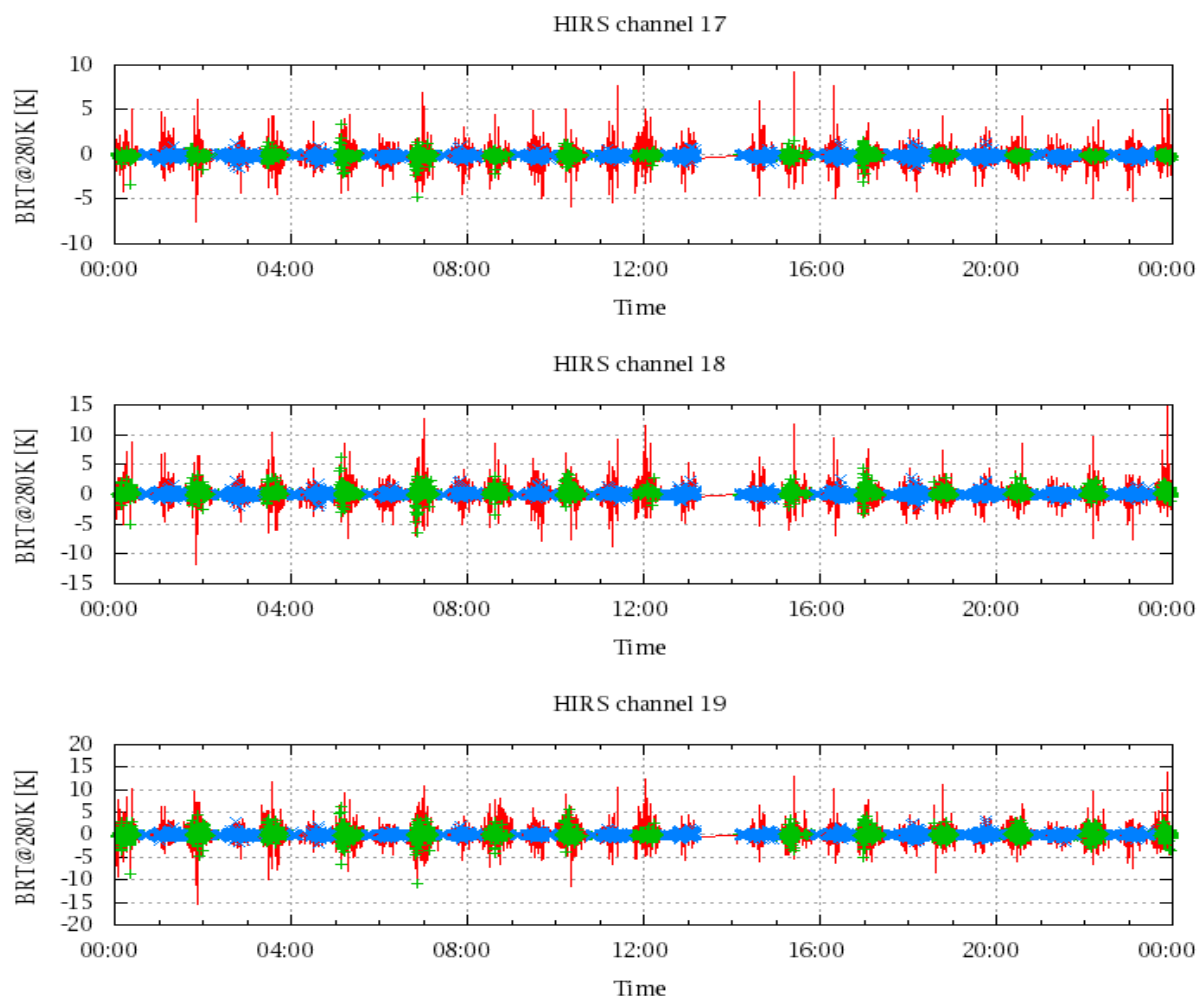


Figure 21: Radinace Differences in BRT