IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

10/02/2017 00:00:00 - 11/02/2017 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-A satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 10/02/2017 00:00:00 - 11/02/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 10/02/2017 00:00:00 - 11/02/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
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)	14101	14106	20170210112400.711	20170210112401.793
PX1 (130)	14106	14109	20170210112401.793	20170210112402.442
PX1 (130)	14127	14130	20170210112407.848	20170210112408.496
PX1 (130)	14131	14134	20170210112408.711	20170210112409.360
PX1 (130)	14136	14138	20170210112409.793	20170210112410.227
PX1 (130)	14156	14158	20170210112415.633	20170210112416.063
PX2 (135)	14101	14103	20170210112400.711	20170210112401.145
PX2 (135)	14103	14109	20170210112401.145	20170210112402.442
PX2 (135)	14127	14130	20170210112407.848	20170210112408.496
PX2 (135)	14132	14135	20170210112408.930	20170210112409.578
PX2 (135)	14136	14138	20170210112409.793	20170210112410.227
PX3 (140)	14101	14103	20170210112400.711	20170210112401.145
PX3 (140)	14105	14107	20170210112401.578	20170210112402.008
PX3 (140)	14126	14129	20170210112407.629	20170210112408.281
PX3 (140)	14132	14137	20170210112408.930	20170210112410.008
PX3 (140)	14145	14147	20170210112413.250	20170210112413.684
PX4 (145)	14101	14103	20170210112400.711	20170210112401.145
PX4 (145)	14103	14107	20170210112401.145	20170210112402.008

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	14107	14109	20170210112402.008	20170210112402.442
PX4 (145)	14126	14128	20170210112407.629	20170210112408.063
PX4 (145)	14129	14132	20170210112408.281	20170210112408.930
PX4 (145)	14132	14137	20170210112408.930	20170210112410.008
PX4 (145)	14145	14147	20170210112413.250	20170210112413.684
IMG (150)	14981	14989	20170210112400.711	20170210112402.442
IMG (150)	15013	15017	20170210112408.281	20170210112409.145
IMG (150)	15018	15021	20170210112409.360	20170210112410.008
IMG (150)	15022	15024	20170210112410.227	20170210112410.656
IMG (150)	15033	15035	20170210112413.250	20170210112413.684
IMG (150)	15043	15045	20170210112415.418	20170210112415.848
VER (160)	9438	9442	20170210112402.875	20170210112410.875
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
10/02/2017 00:00:10	-	Normal operation
10/02/2017 05:11:38	Normal operation	Auxiliary ASE synchronised
10/02/2017 05:13:46	Auxiliary ASE synchronised	External calibration
10/02/2017 09:07:38	External calibration	Auxiliary ASE synchronised
10/02/2017 09:09:46	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	481	-
GQisFlagQual set (PX1)	99.49 %	-
GQisFlagQual set (PX2)	99.48 %	-
GQisFlagQual set (PX3)	99.48 %	-
GQisFlagQual set (PX4)	99.52 %	-
GQisFlagQual set (all)	99.49 %	-

Table 4: Quality flags

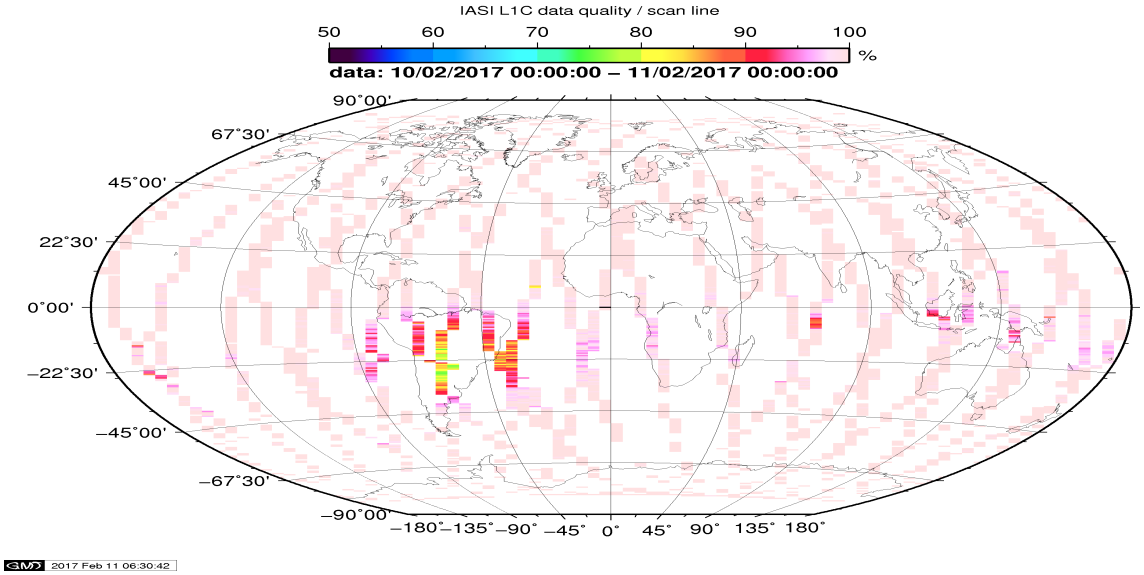

Figure 1: L1C data quality

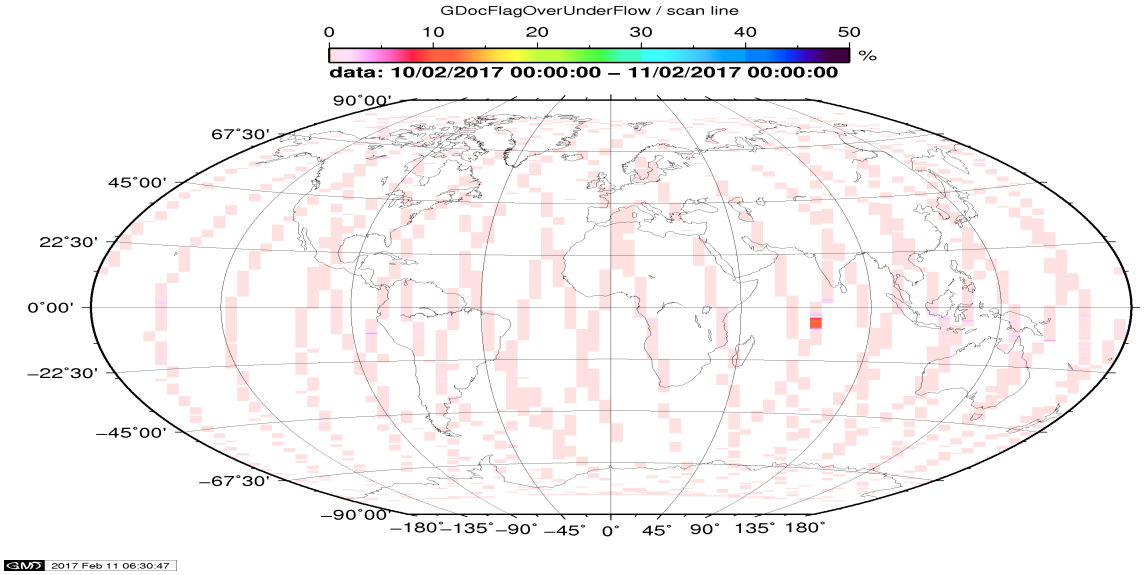

Figure 2: Flag of Over and Under Flows

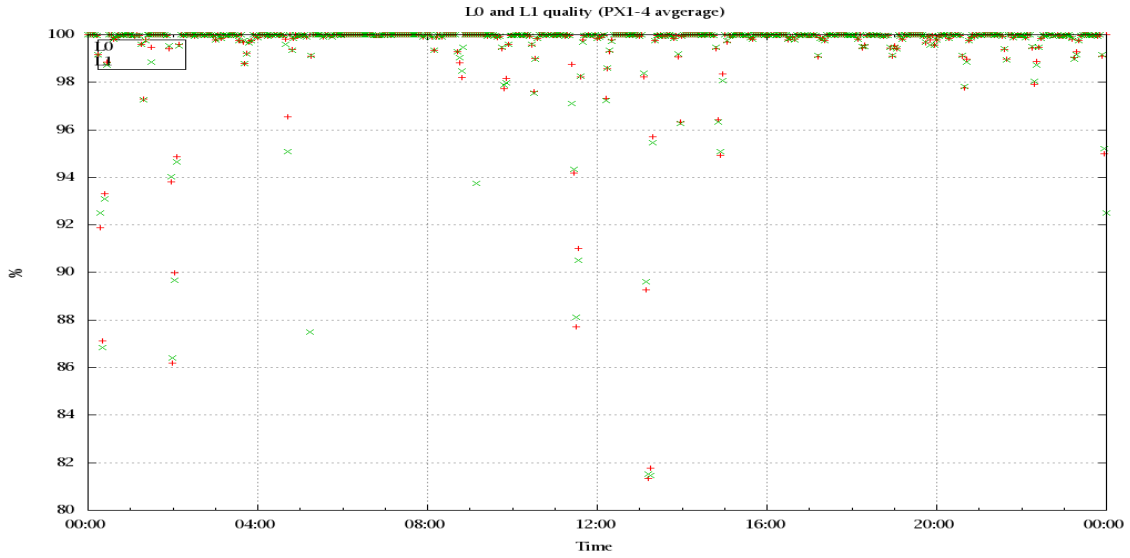

Figure 3: Level 0 and 1C overall quality

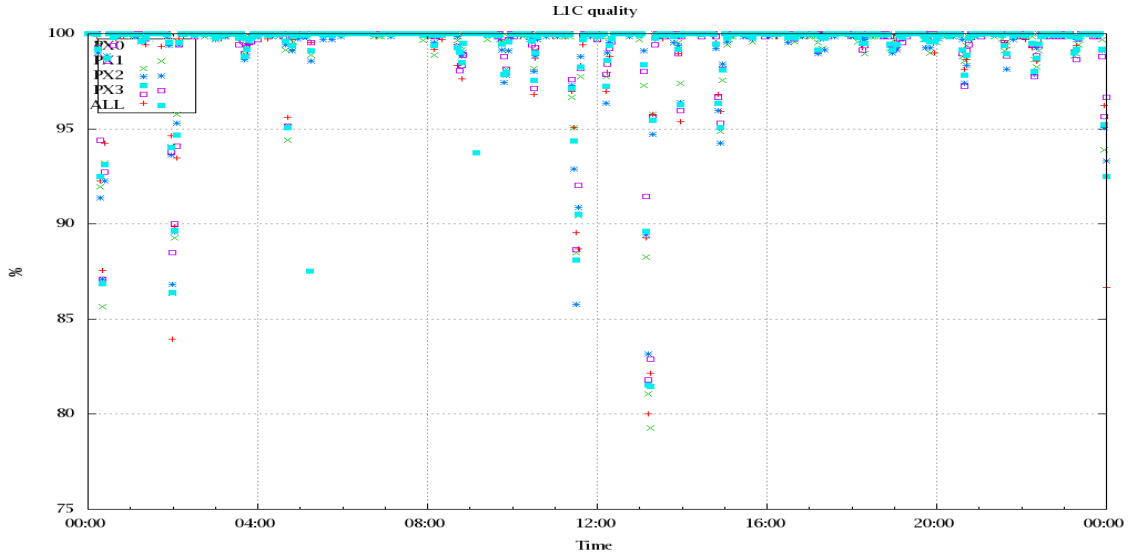

Figure 4: Level 1C quality

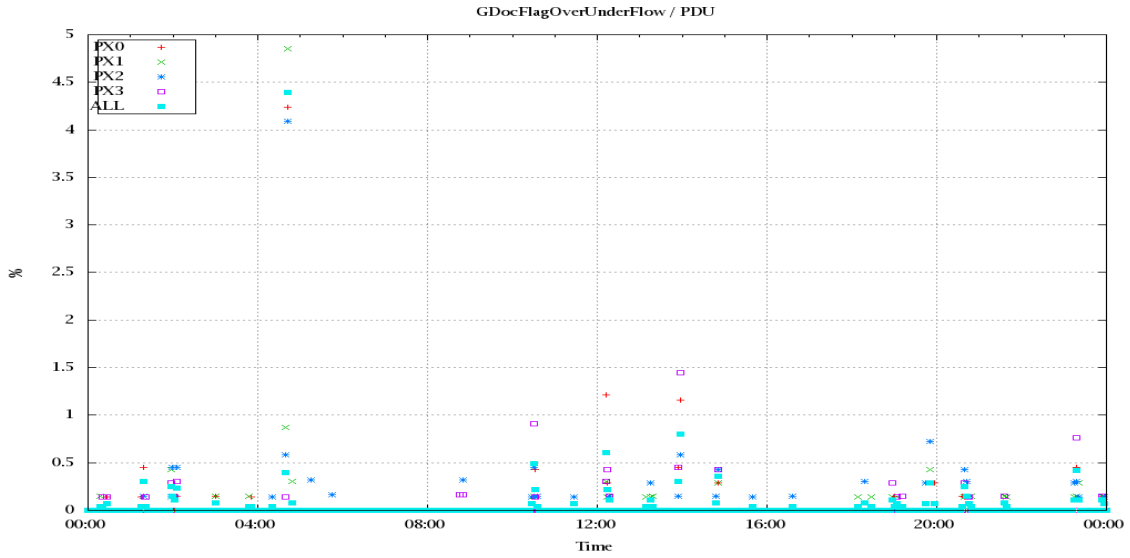

Figure 5: OverUnderFlowFlag timeseries

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 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,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.

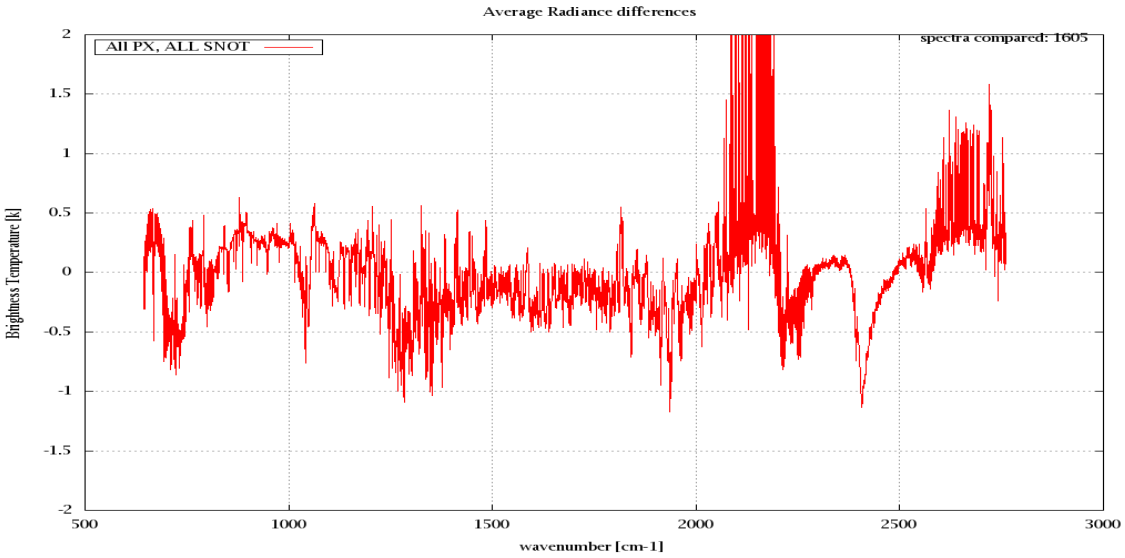

Figure 6: Average Radiance differences: OBS-CAL

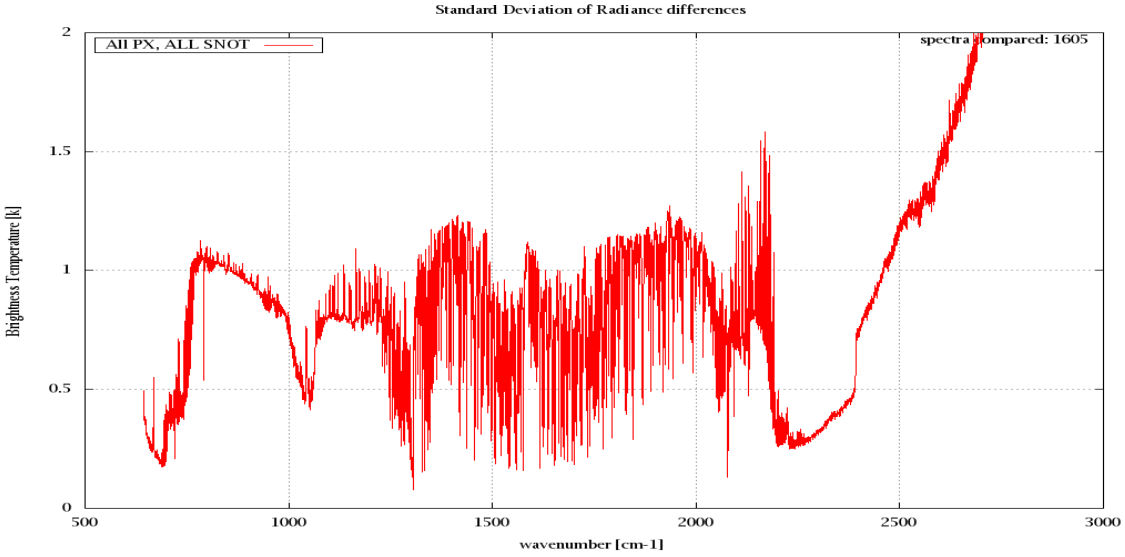

Figure 7: Standard Deviation of Radiance differences

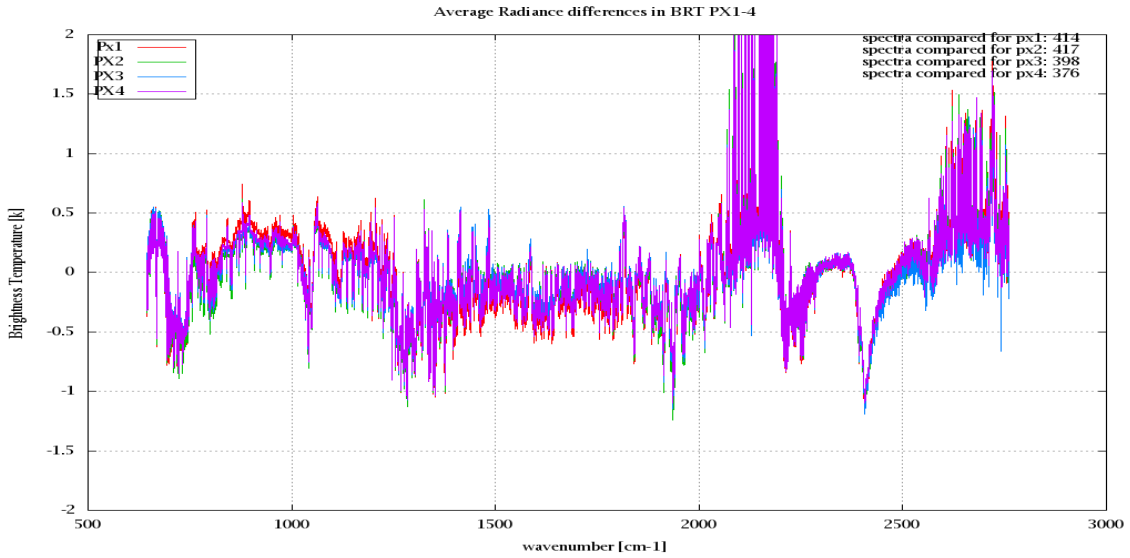

Figure 8: Average Radiance differences: OBS-CAL

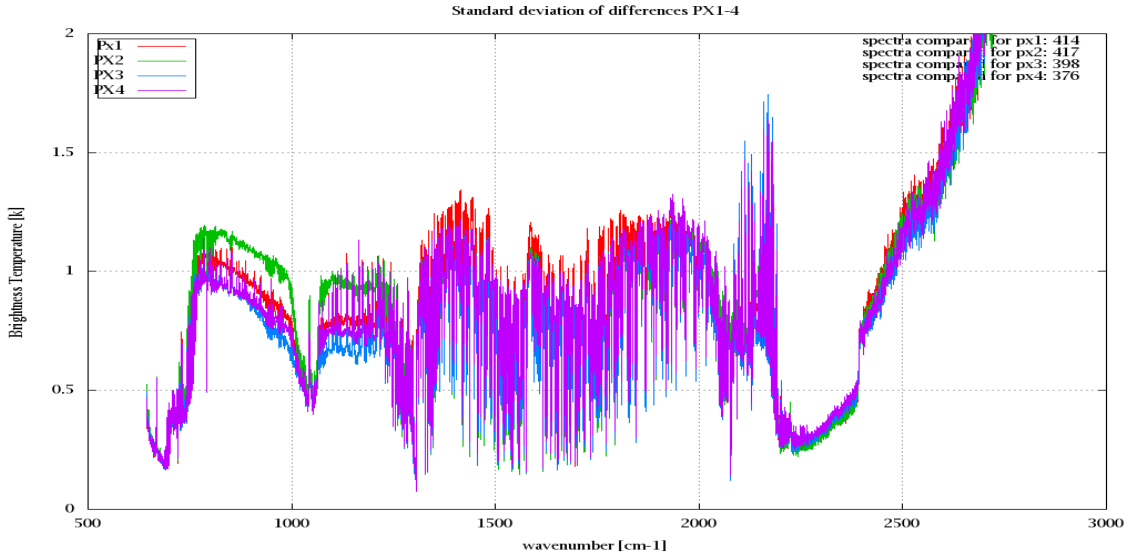

Figure 9: Standard Deviation of Radiance differences

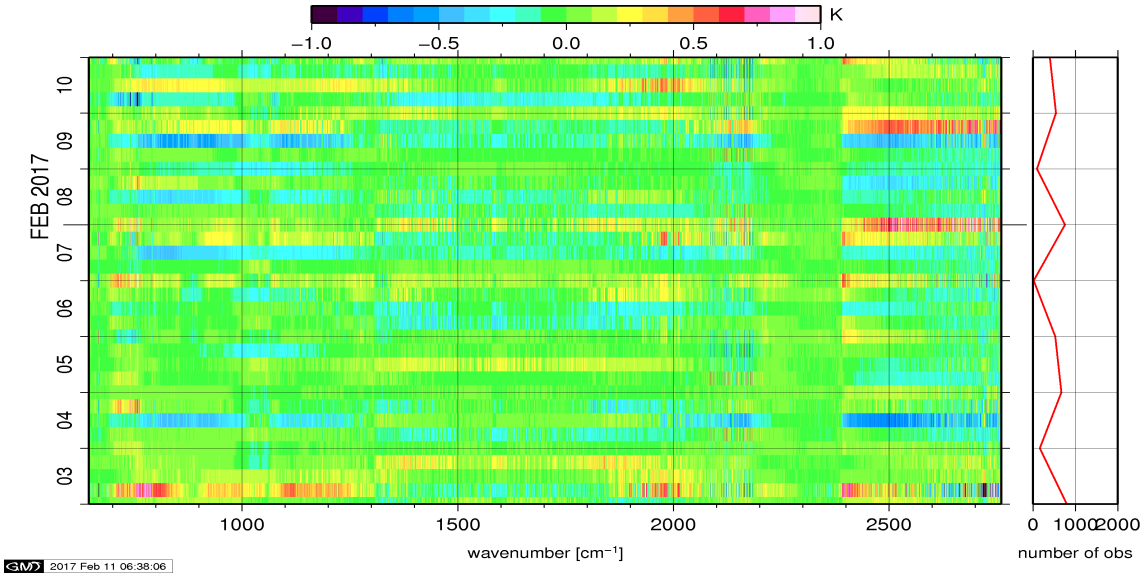

Figure 10: Radiance Anomaly in BRT: All Channels

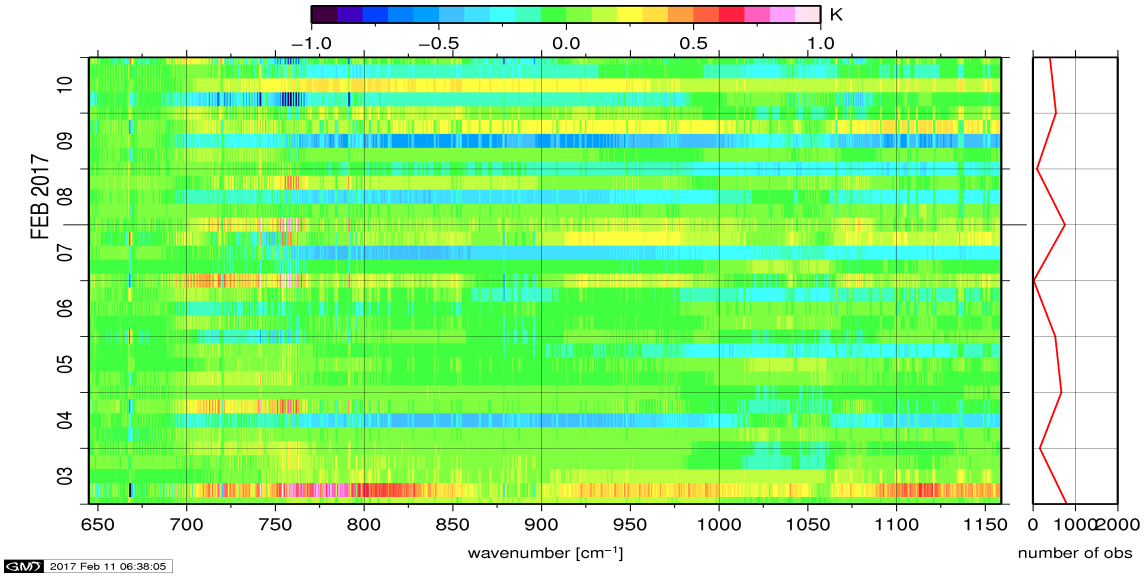

Figure 11: Radiance Anomaly in BRT: IASI Band 1

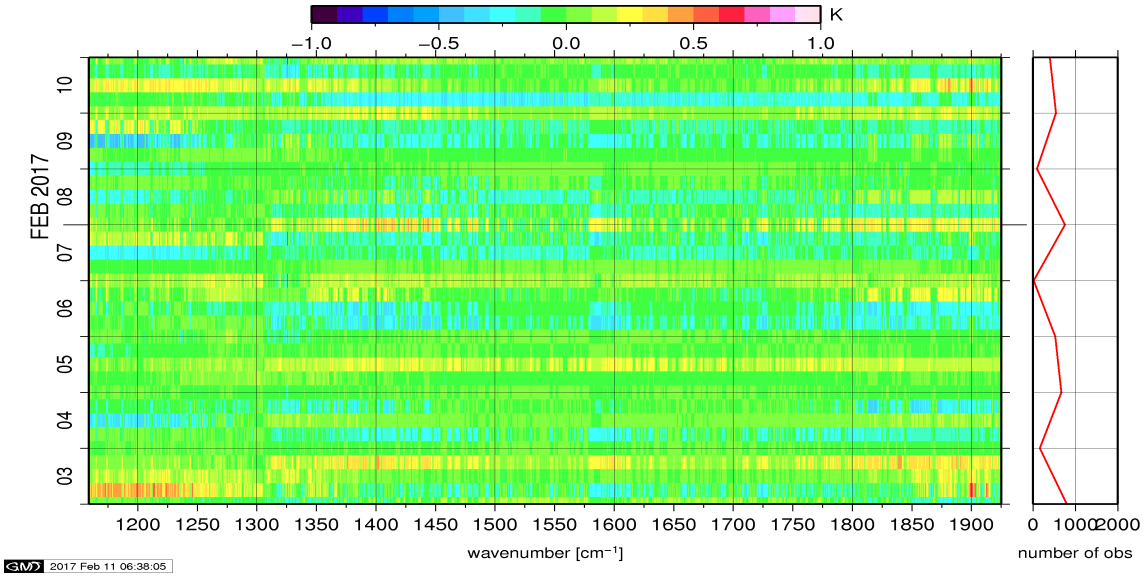

Figure 12: Radiance Anomaly in BRT: IASI Band 2

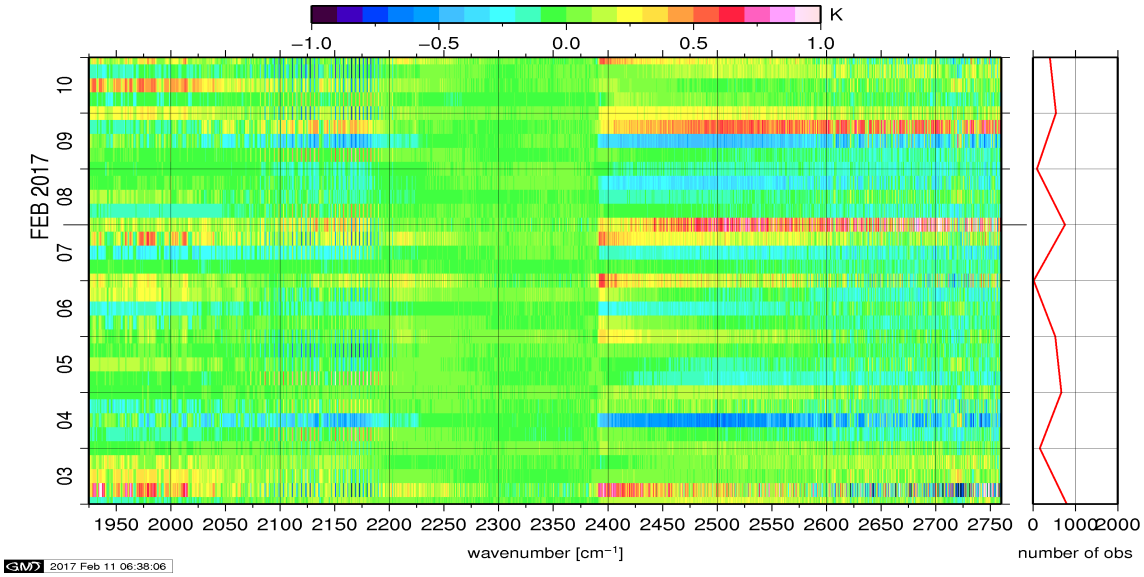

Figure 13: Radiance Anomaly in BRT: IASI Band 3

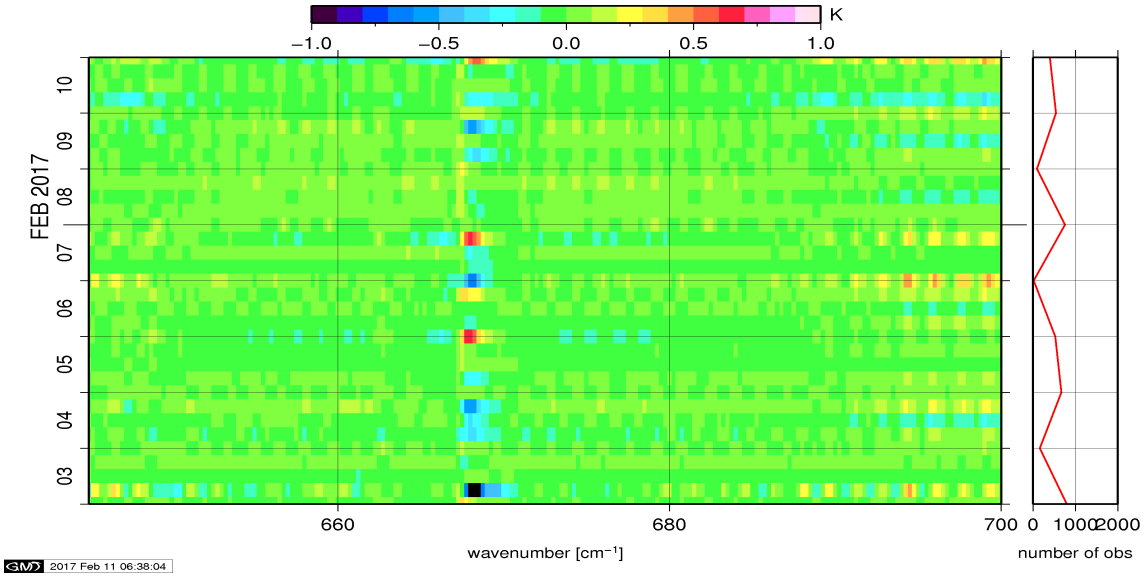

Figure 14: Radiance Anomaly in BRT: CO2 14

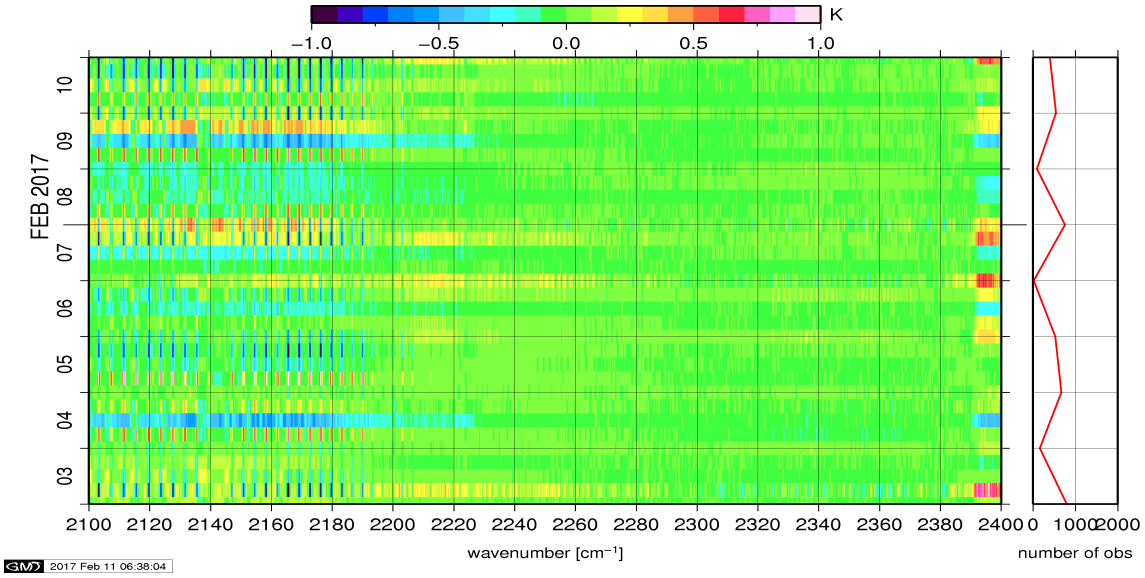

Figure 15: Radiance Anomaly in BRT: CO2 4.3

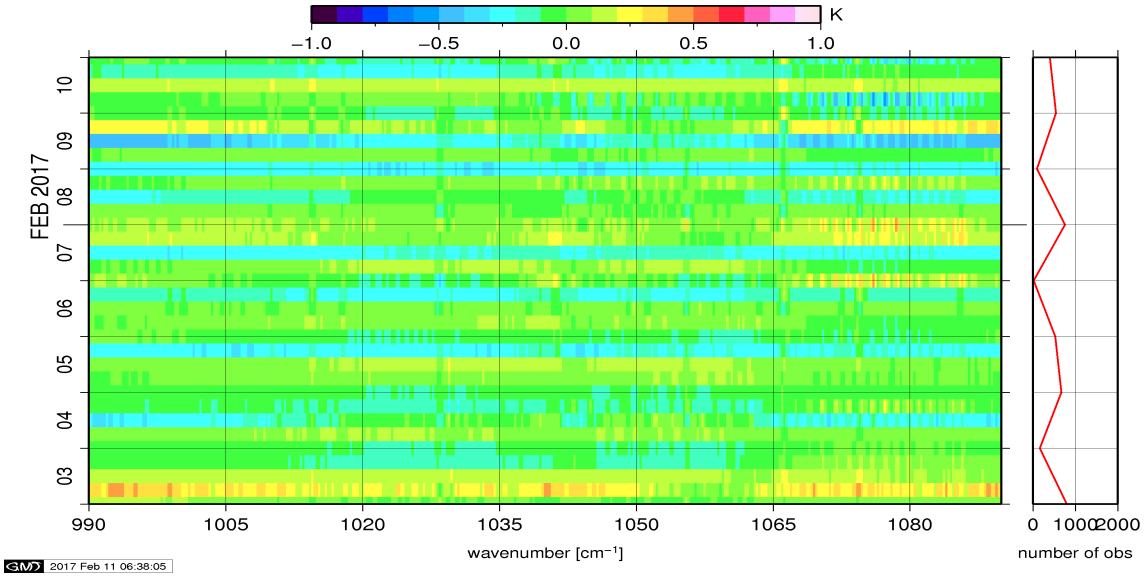

Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparision Channel 1-19

The radiance comparision 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.

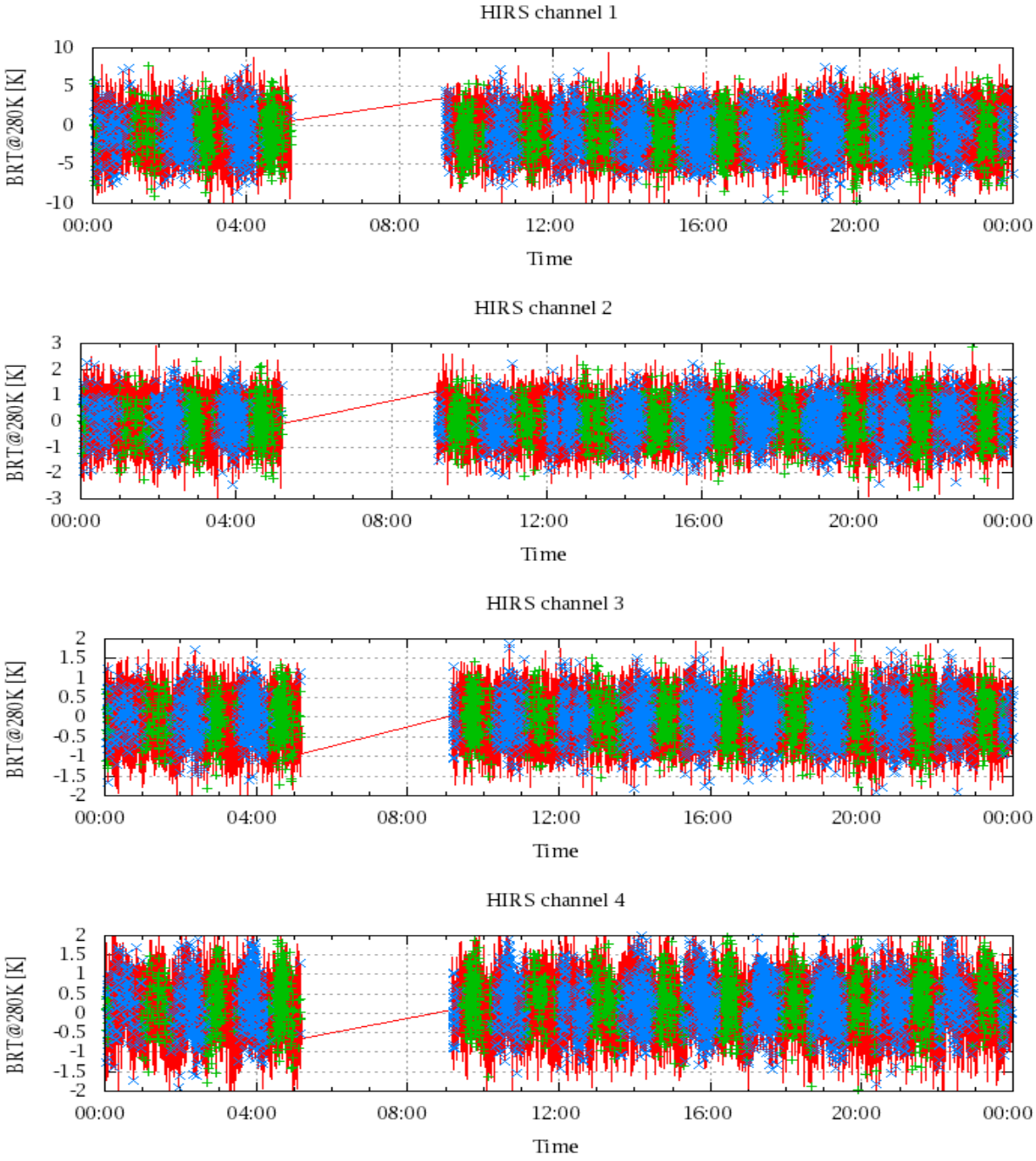

Figure 17: Radiance Differences in BRT

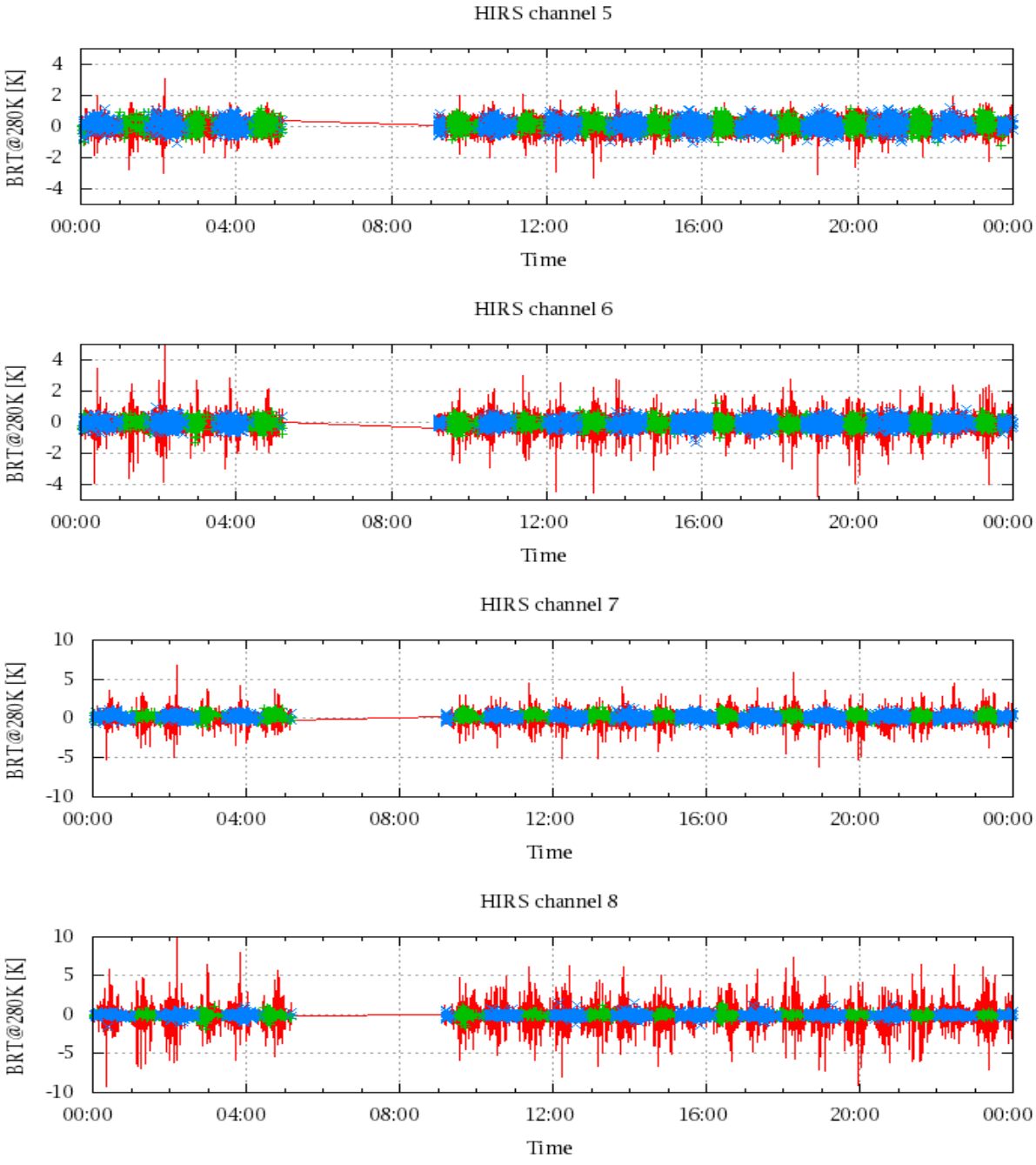

Figure 18: Radiance Differences in BRT

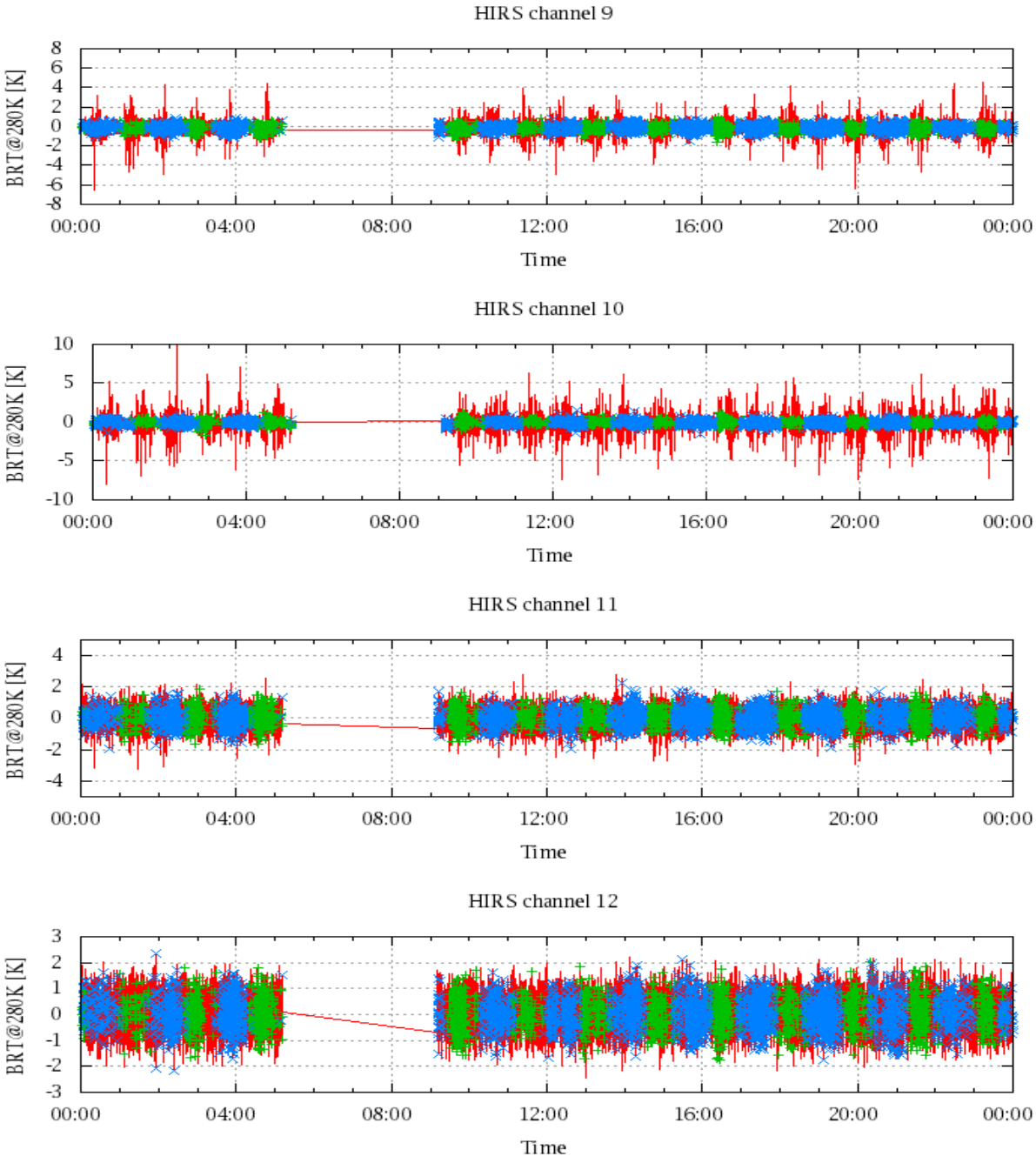

Figure 19: Radiance Differences in BRT

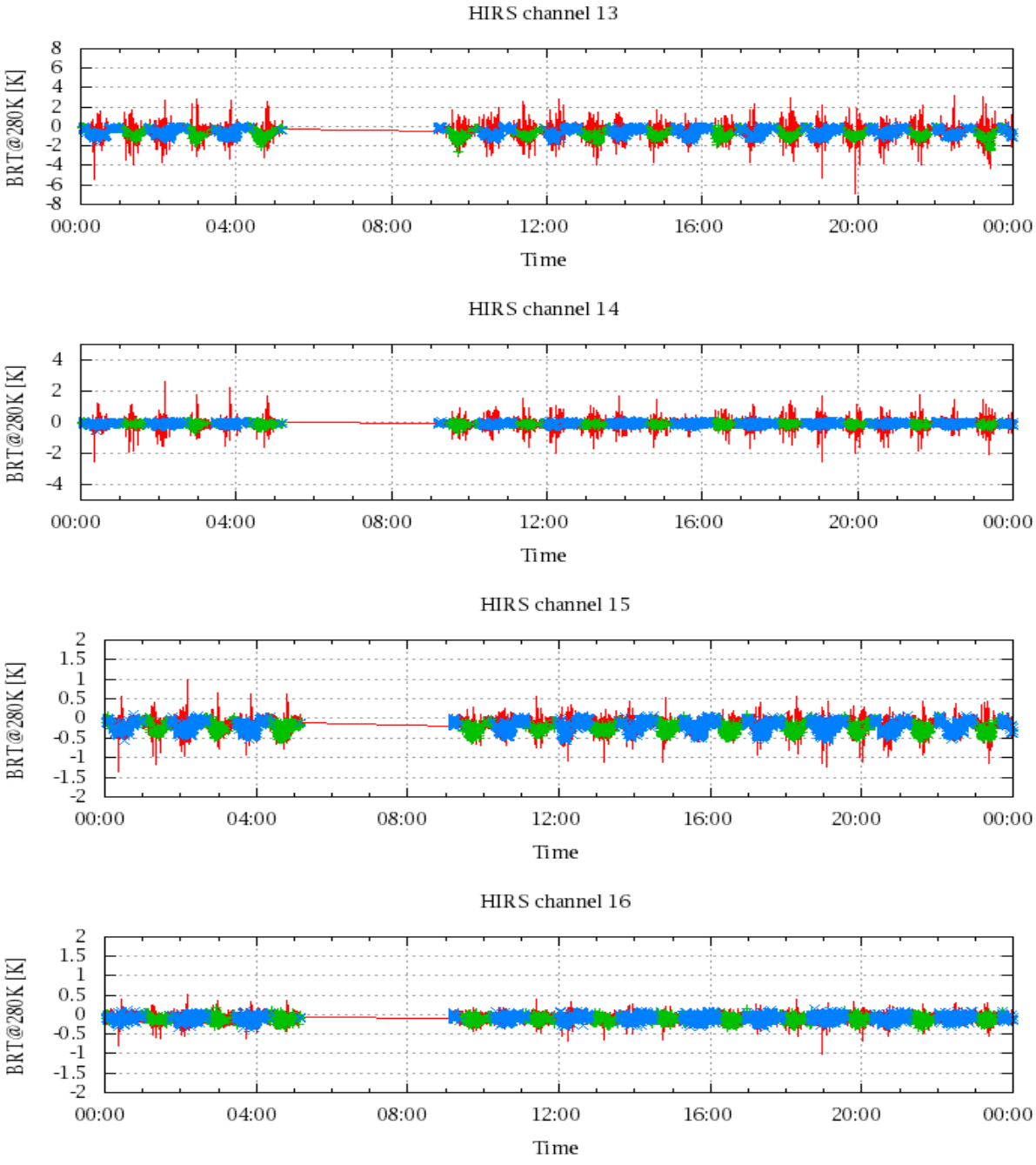

Figure 20: Radiance Differences in BRT

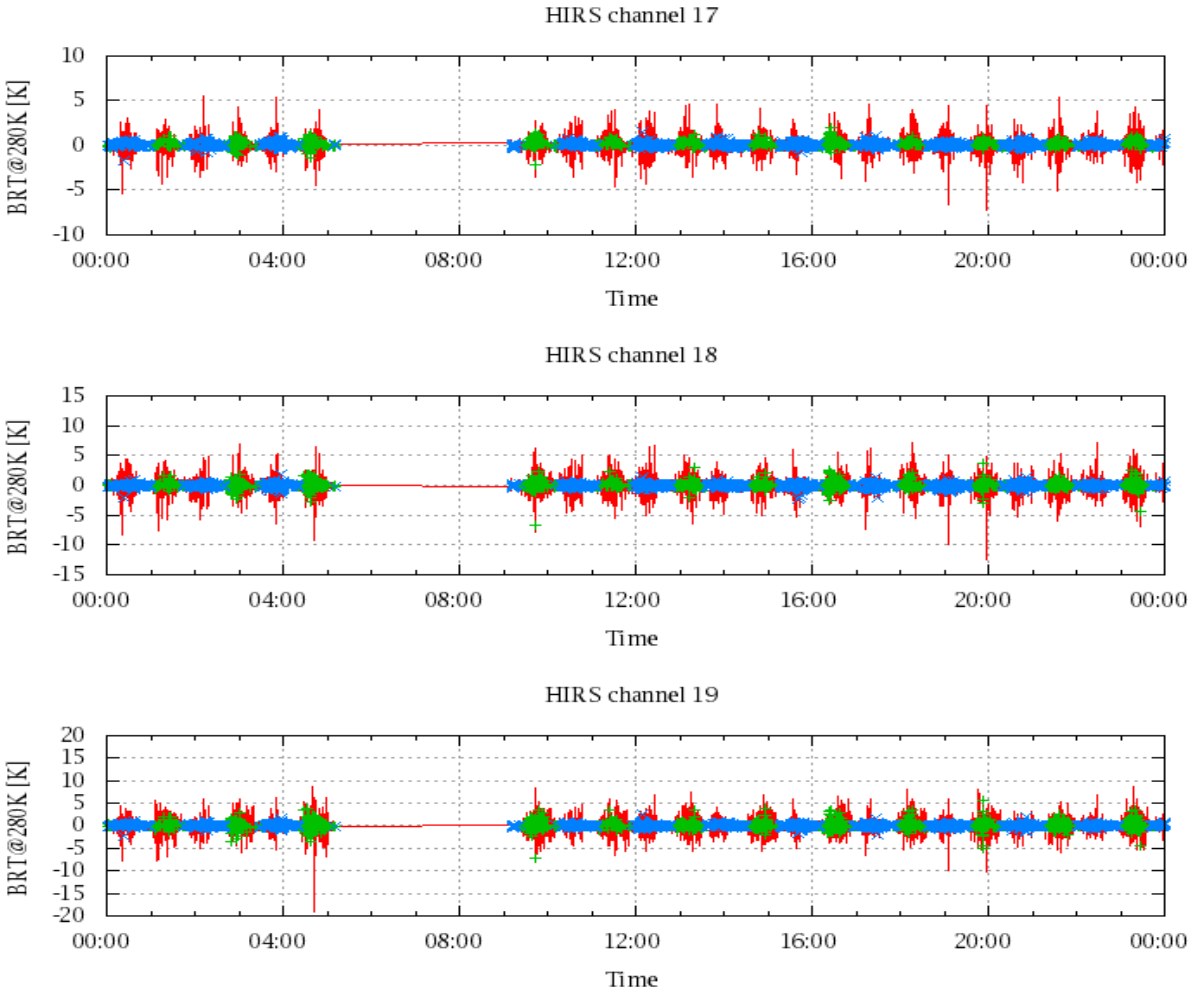

Figure 21: Radinace Differences in BRT