IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

26/07/2016 00:00:00 - 27/07/2016 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 26/07/2016 00:00:00 - 27/07/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 26/07/2016 00:00:00 - 27/07/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	446	e
L0 IASI PDUs	446	e
L1 ENG PDUs	445	e
L1 ENG distinct GEPSGranule	446	a
L1 DPX PDUs (RM: IASI-HIRS)	442	e
L1 DPS Files (RM: OBS-CAL NWP based)	445	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2346	10656	20160726025423.119	20160726044407.938
PX1 (130)	10656	10672	20160726044407.938	20160726044411.399
PX1 (130)	10680	10682	20160726044413.129	20160726044415.075
PX1 (130)	10683	10690	20160726044415.290	20160726044416.813
PX1 (130)	10690	10693	20160726044416.813	20160726044417.461
PX1 (130)	10693	10695	20160726044417.461	20160726044417.895
PX1 (130)	10699	10702	20160726044418.766	20160726044419.419
PX1 (130)	10706	10708	20160726044420.286	20160726044420.719
PX2 (135)	2346	10667	20160726025423.119	20160726044410.317
PX2 (135)	10667	10672	20160726044410.317	20160726044411.399
PX2 (135)	10680	10682	20160726044413.129	20160726044415.075
PX2 (135)	10683	10687	20160726044415.290	20160726044416.161
PX2 (135)	10687	10689	20160726044416.161	20160726044416.594
PX2 (135)	10690	10693	20160726044416.813	20160726044417.461
PX2 (135)	10706	10708	20160726044420.286	20160726044420.719
PX3 (140)	2345	10672	20160726025422.900	20160726044411.399

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	10680	10682	20160726044413.129	20160726044415.075
PX3 (140)	10685	10689	20160726044415.723	20160726044416.594
PX3 (140)	10690	10692	20160726044416.813	20160726044417.247
PX3 (140)	10695	10697	20160726044417.895	20160726044418.333
PX4 (145)	2345	10606	20160726025422.900	20160726044354.102
PX4 (145)	10606	10622	20160726044354.102	20160726044359.075
PX4 (145)	10622	10633	20160726044359.075	20160726044401.454
PX4 (145)	10633	10660	20160726044401.454	20160726044408.805
PX4 (145)	10660	10672	20160726044408.805	20160726044411.399
PX4 (145)	10680	10682	20160726044413.129	20160726044415.075
PX4 (145)	10685	10689	20160726044415.723	20160726044416.594
PX4 (145)	10689	10691	20160726044416.594	20160726044417.028
PX4 (145)	10695	10697	20160726044417.895	20160726044418.333
PX4 (145)	10701	10703	20160726044419.200	20160726044419.633
IMG (150)	12973	8207	20160726025422.900	20160726044411.184
IMG (150)	8217	8222	20160726044413.559	20160726044415.075
IMG (150)	8222	8225	20160726044415.075	20160726044415.723
IMG (150)	8225	8229	20160726044415.723	20160726044416.594
IMG (150)	8229	8231	20160726044416.594	20160726044417.028
IMG (150)	8232	8234	20160726044417.247	20160726044417.680
IMG (150)	8235	8237	20160726044417.895	20160726044418.333
IMG (150)	8238	8241	20160726044418.547	20160726044419.200
IMG (150)	8241	8243	20160726044419.200	20160726044419.633
IMG (150)	8245	8247	20160726044420.071	20160726044420.504
IMG (150)	8255	8257	20160726044422.895	20160726044423.329
VER (160)	1024	5140	20160726025421.173	20160726044413.129
AUX (180)	6752	7573	20160726025421.603	20160726044349.563
AUX (180)	7573	7576	20160726044349.563	20160726044413.559

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
26/07/2016 00:00:04	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	446	e
L1 ENG PDUs	445	e
L1 ENG distinct GEPSGranule	446	a
GQisFlagQual set (PX1)	99.40 %	-
GQisFlagQual set (PX2)	99.37 %	-
GQisFlagQual set (PX3)	99.38 %	-
GQisFlagQual set (PX4)	99.39 %	-
GQisFlagQual set (all)	99.39 %	-

Table 4: Quality flags

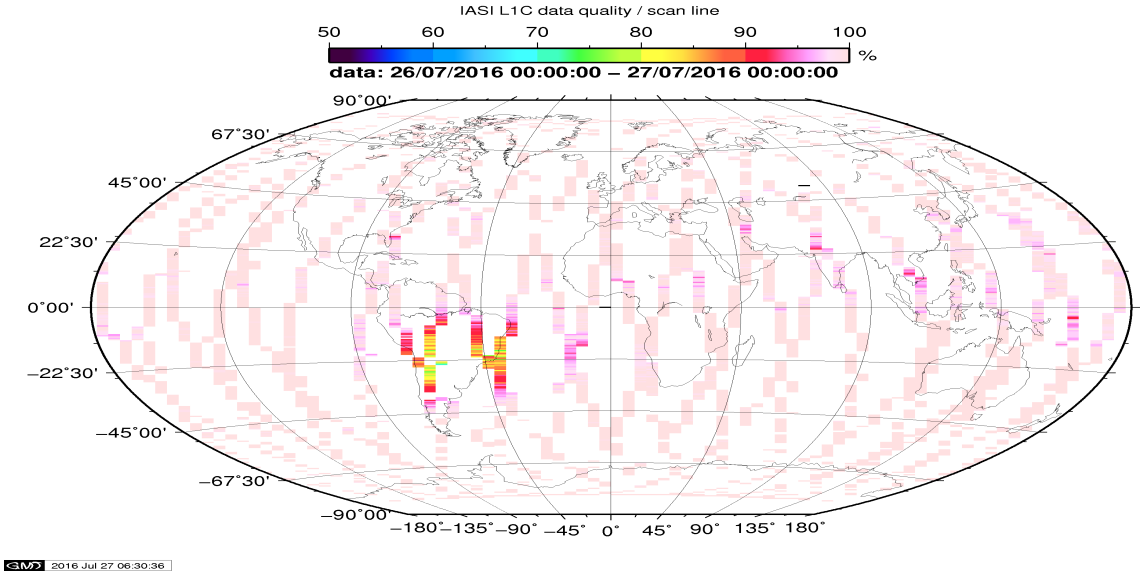

Figure 1: L1C data quality

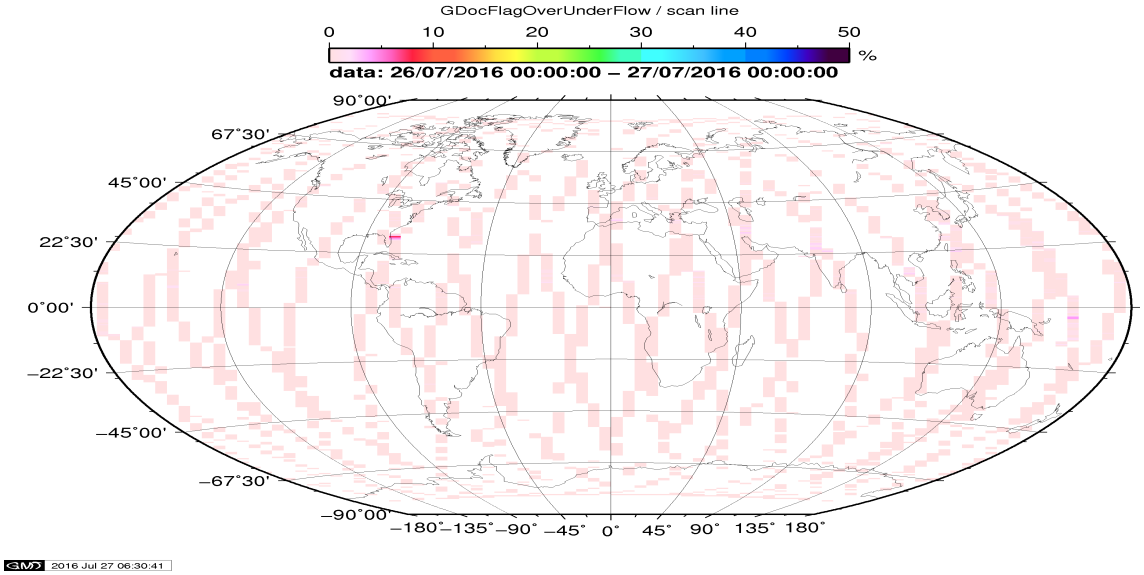

Figure 2: Flag of Over and Under Flows

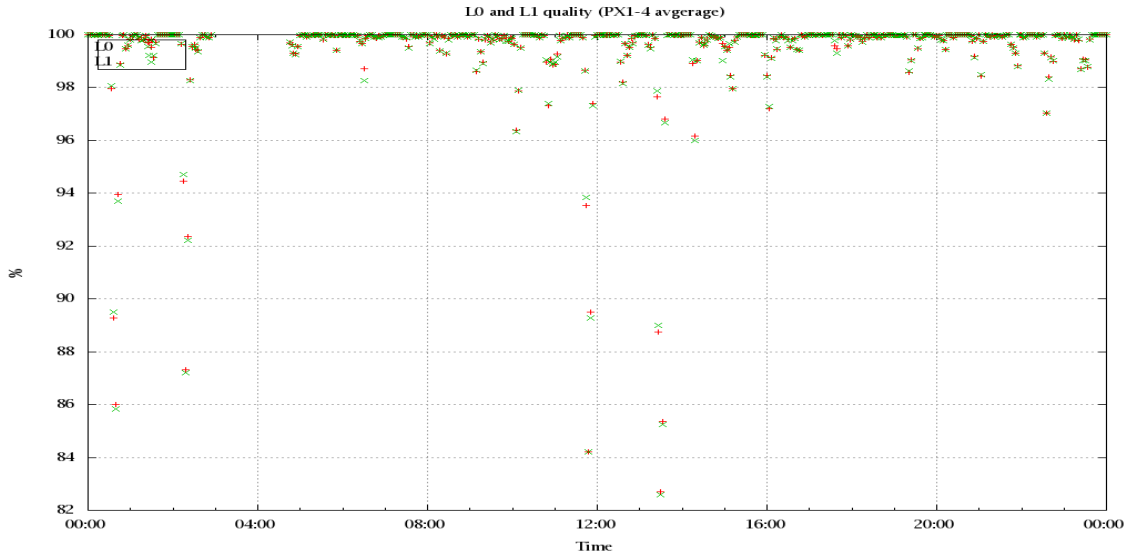

Figure 3: Level 0 and 1C overall quality

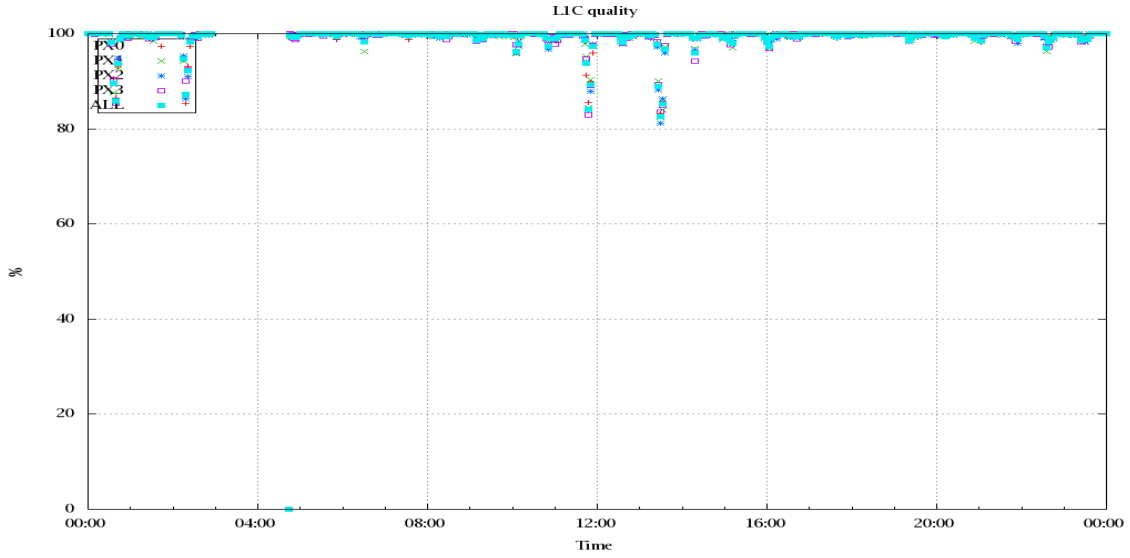

Figure 4: Level 1C quality

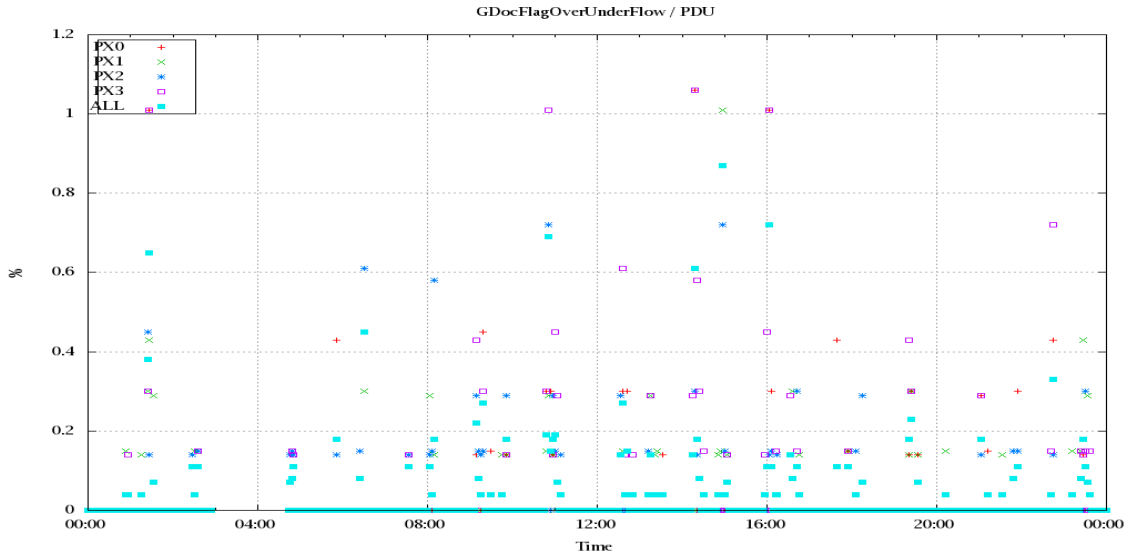

Figure 5: OverUnderFlowFlag timeseries

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.

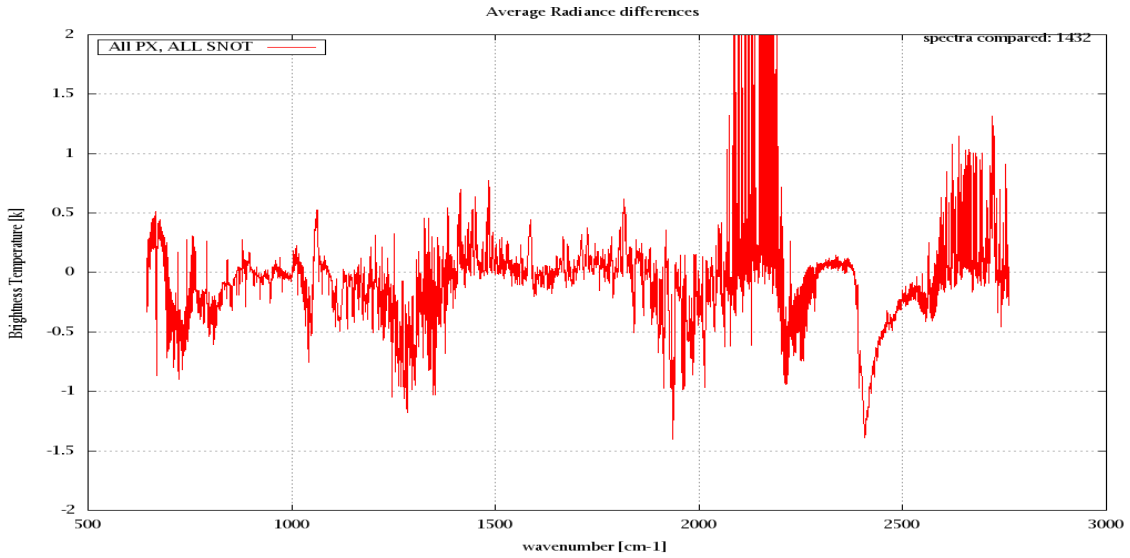

Figure 6: Average Radiance differences: OBS-CAL

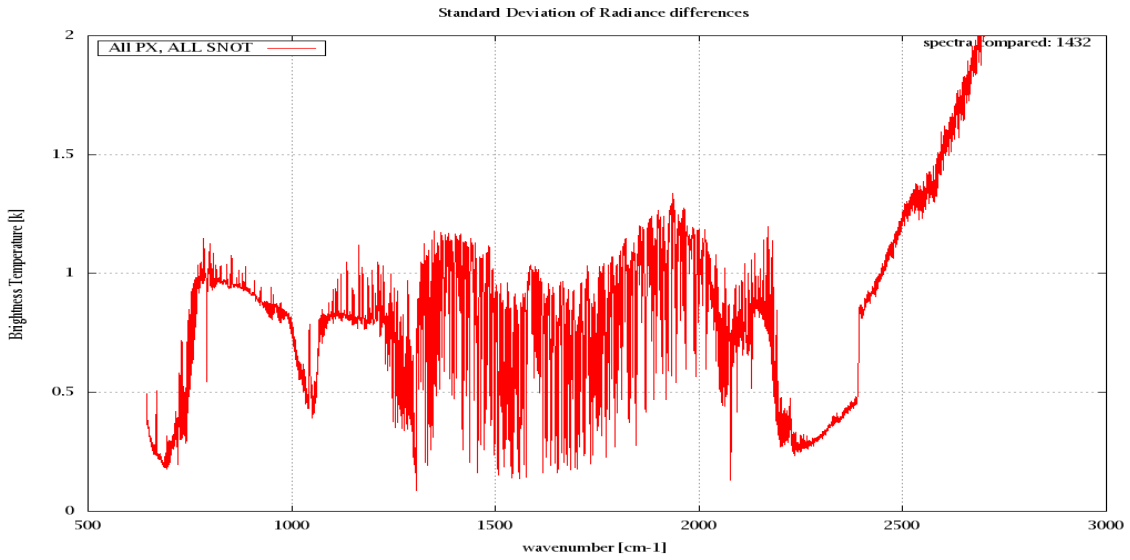

Figure 7: Standard Deviation of Radiance differences

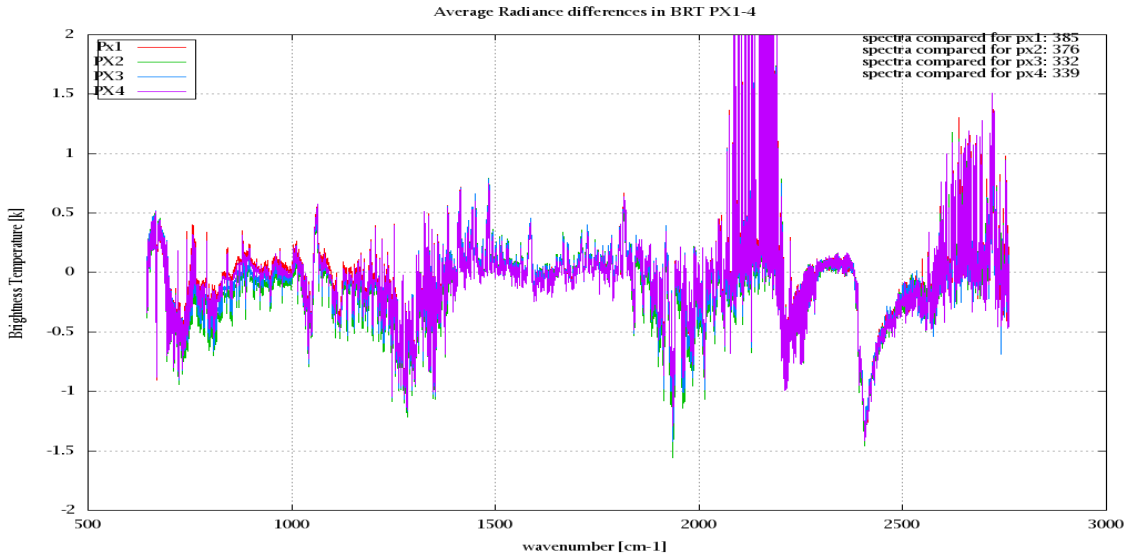

Figure 8: Average Radiance differences: OBS-CAL

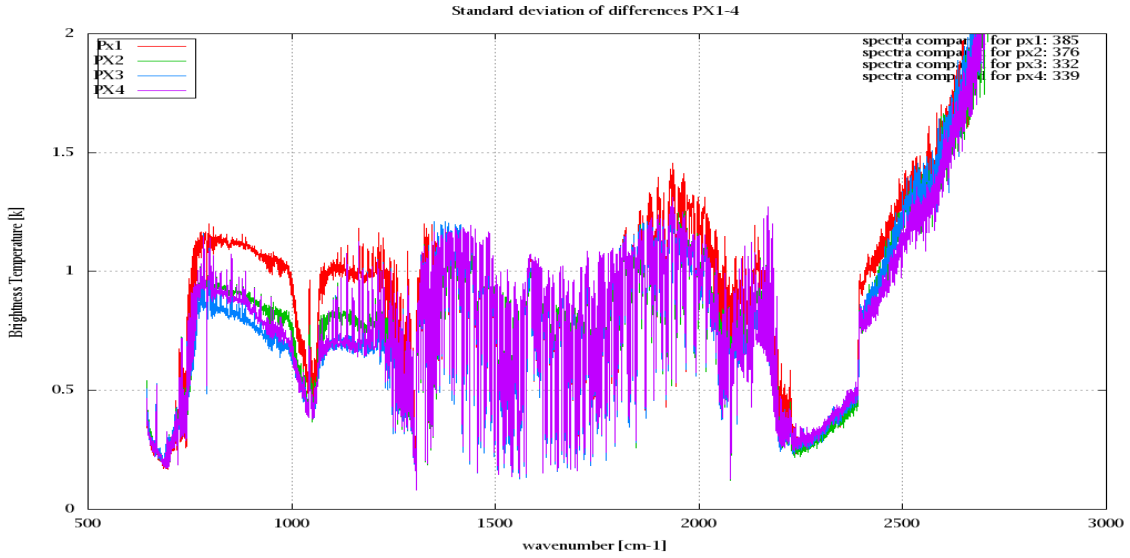

Figure 9: Standard Deviation of Radiance differences

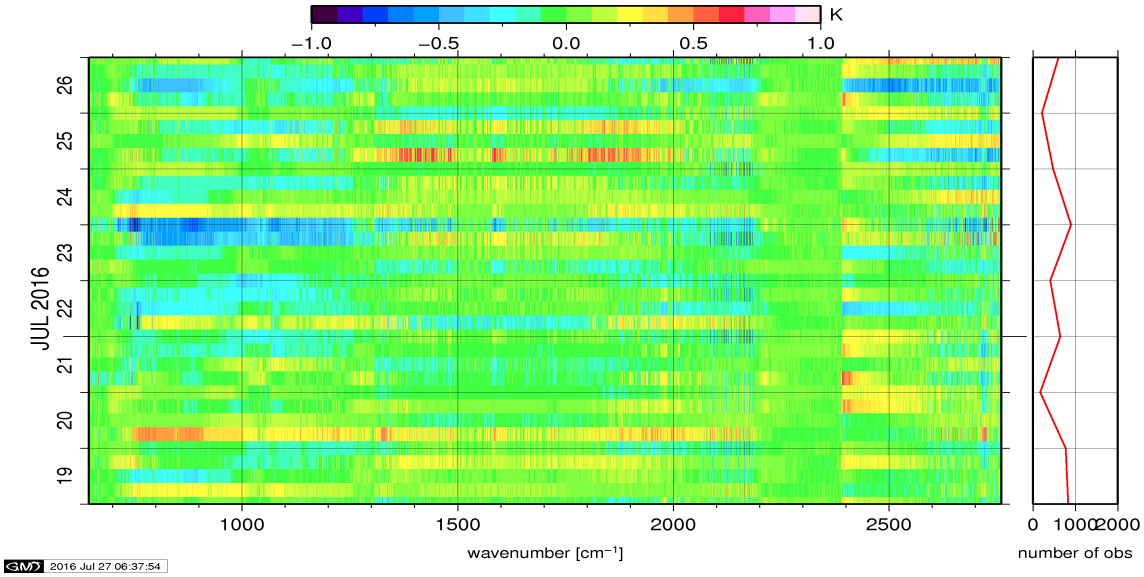

Figure 10: Radiance Anomaly in BRT: All Channels

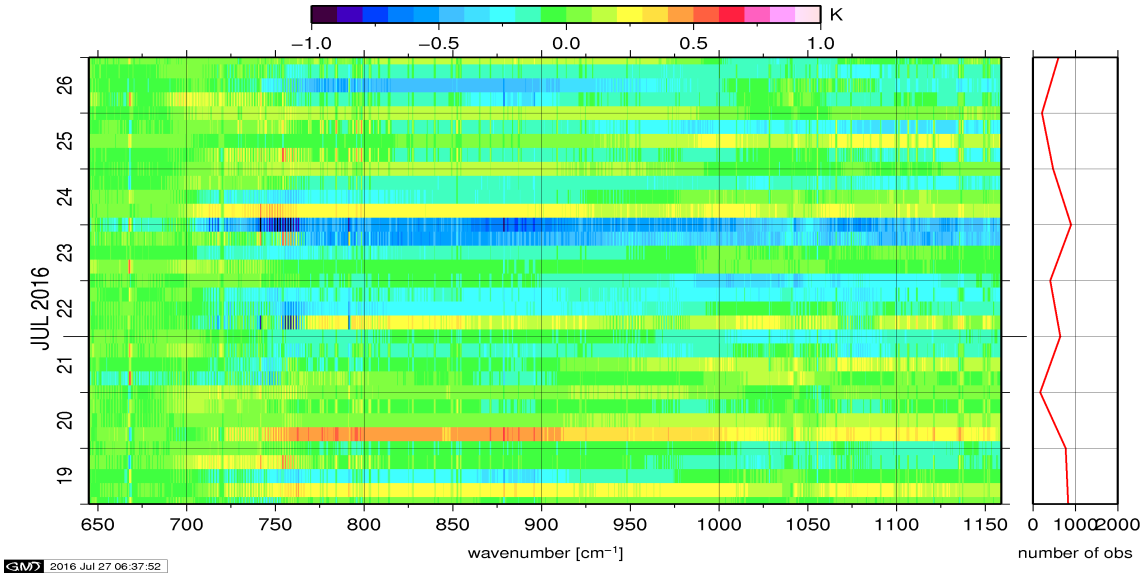

Figure 11: Radiance Anomaly in BRT: IASI Band 1

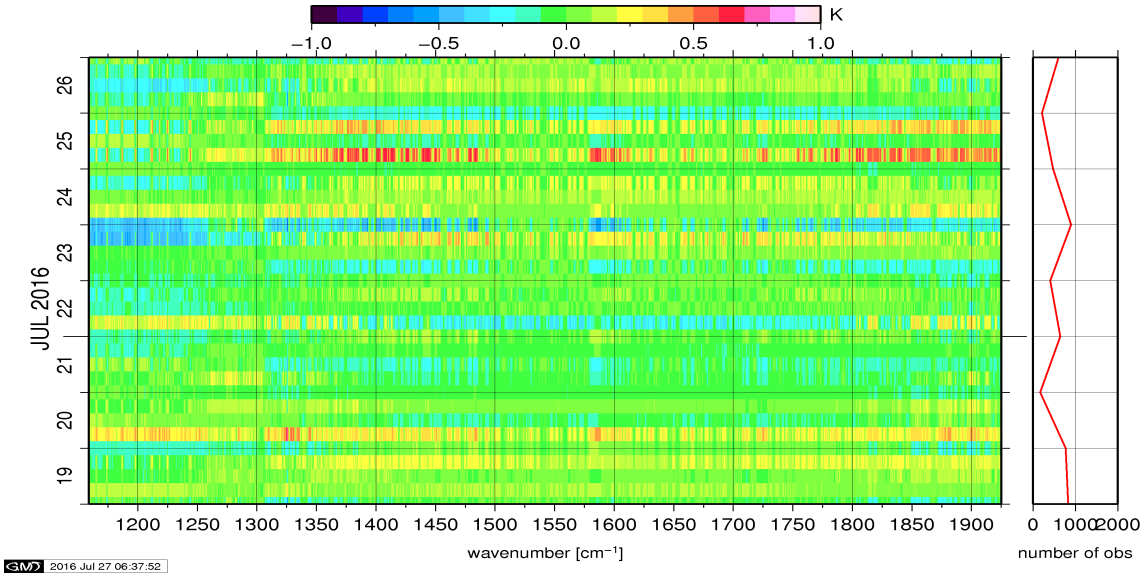

Figure 12: Radiance Anomaly in BRT: IASI Band 2

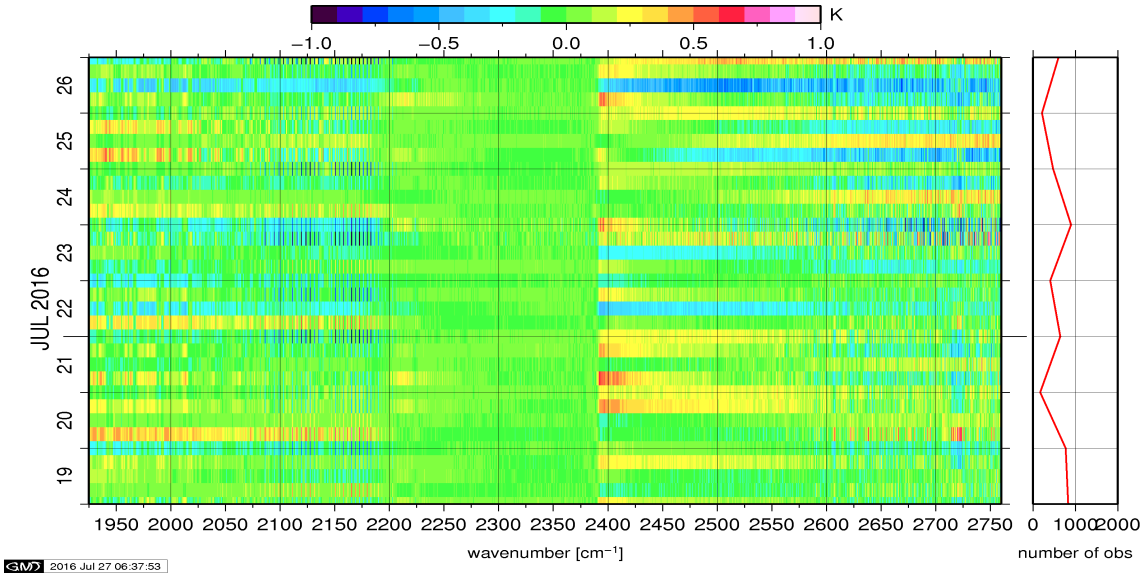

Figure 13: Radiance Anomaly in BRT: IASI Band 3

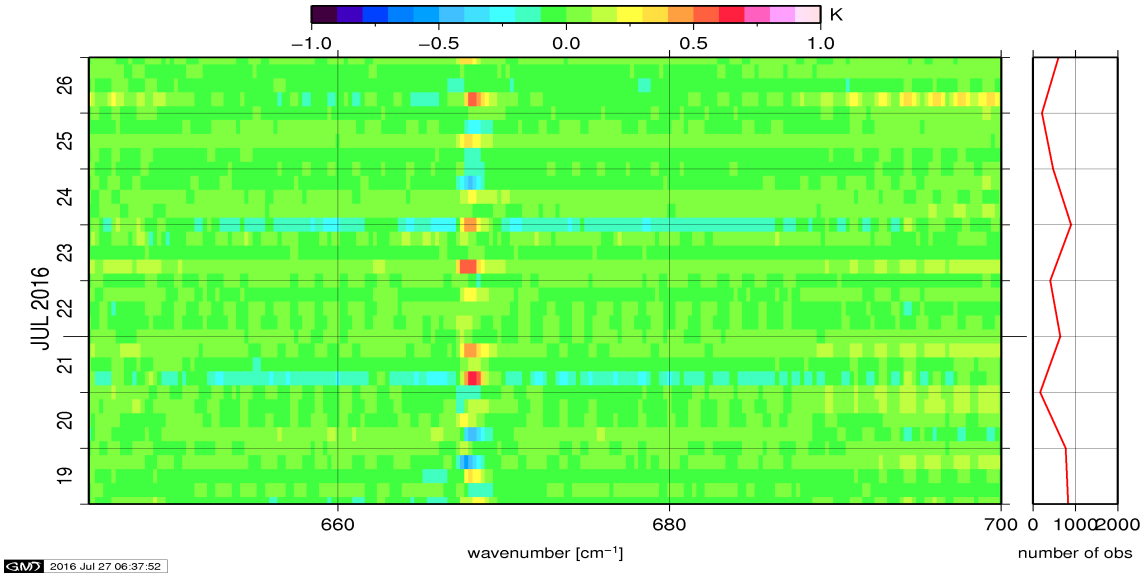

Figure 14: Radiance Anomaly in BRT: CO2 14

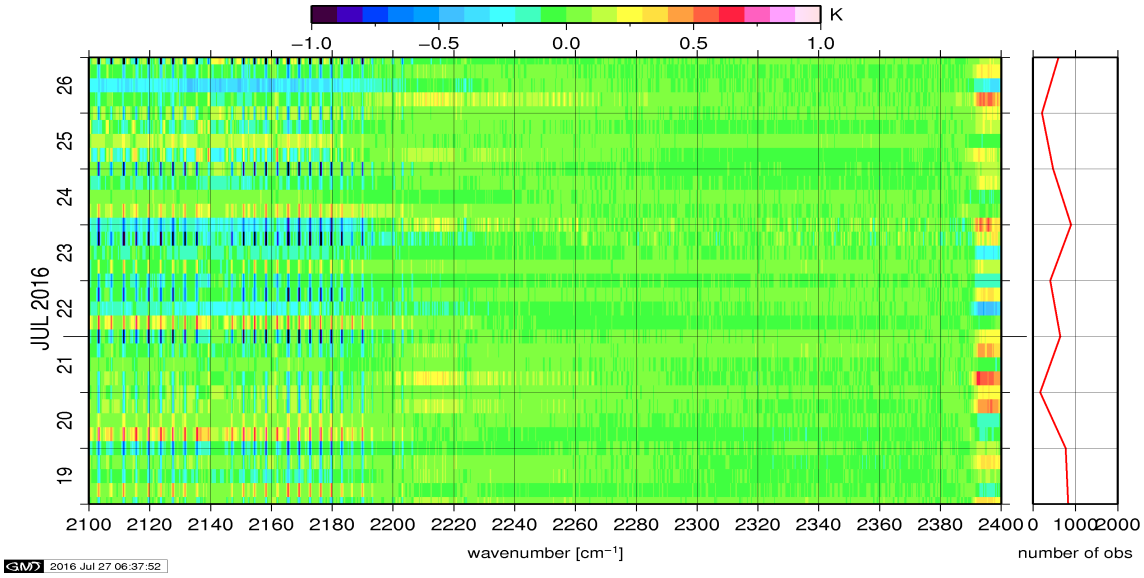

Figure 15: Radiance Anomaly in BRT: CO2 4.3

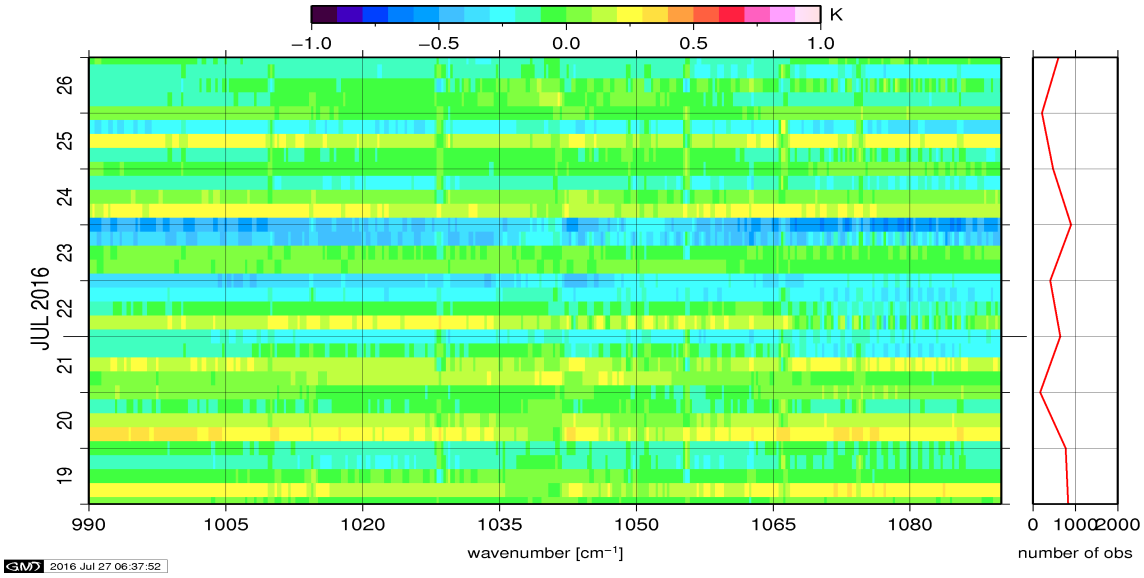

Figure 16: Radiance Anomaly in BRT: O3

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.

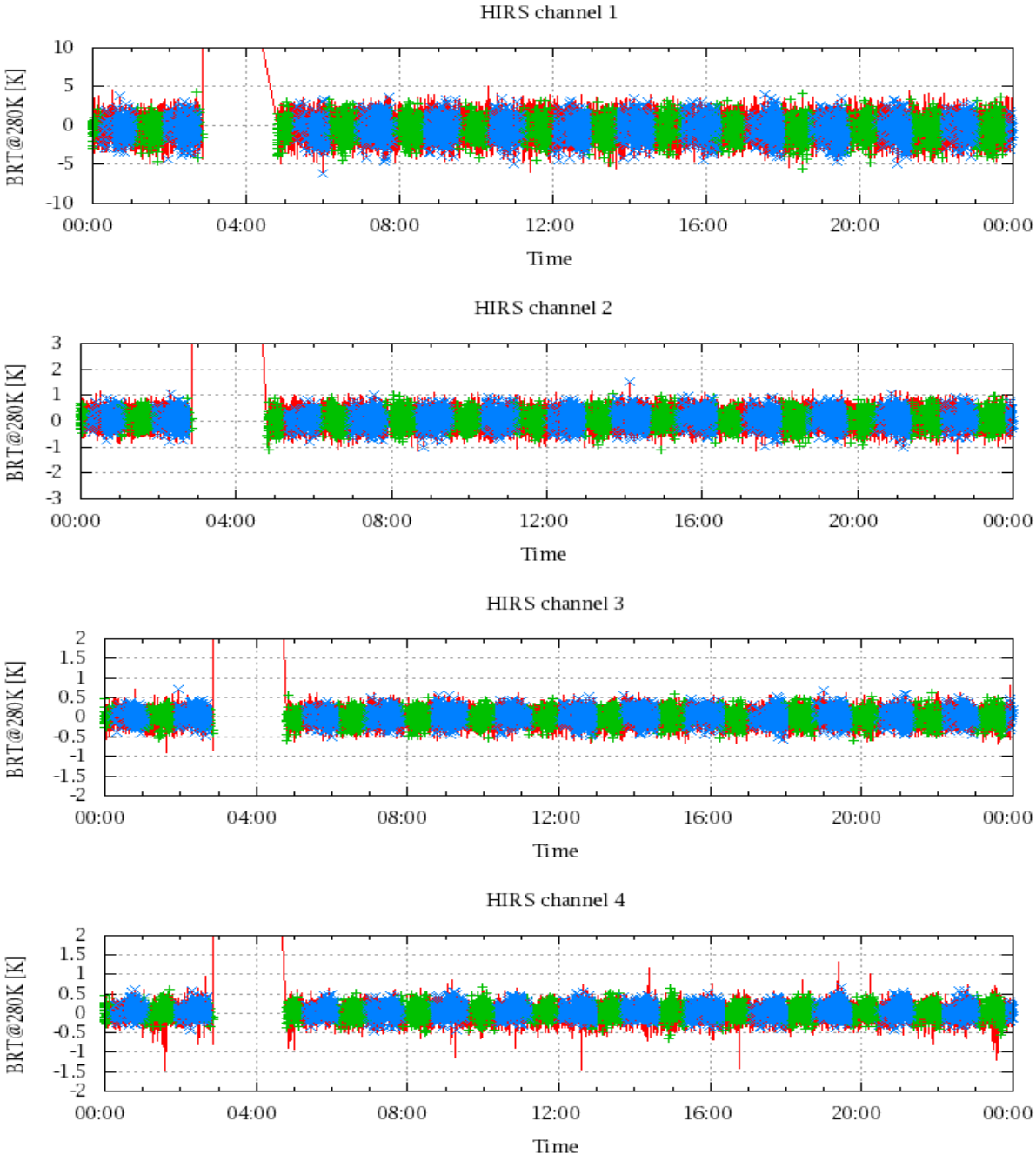

Figure 17: Radiance Differences in BRT

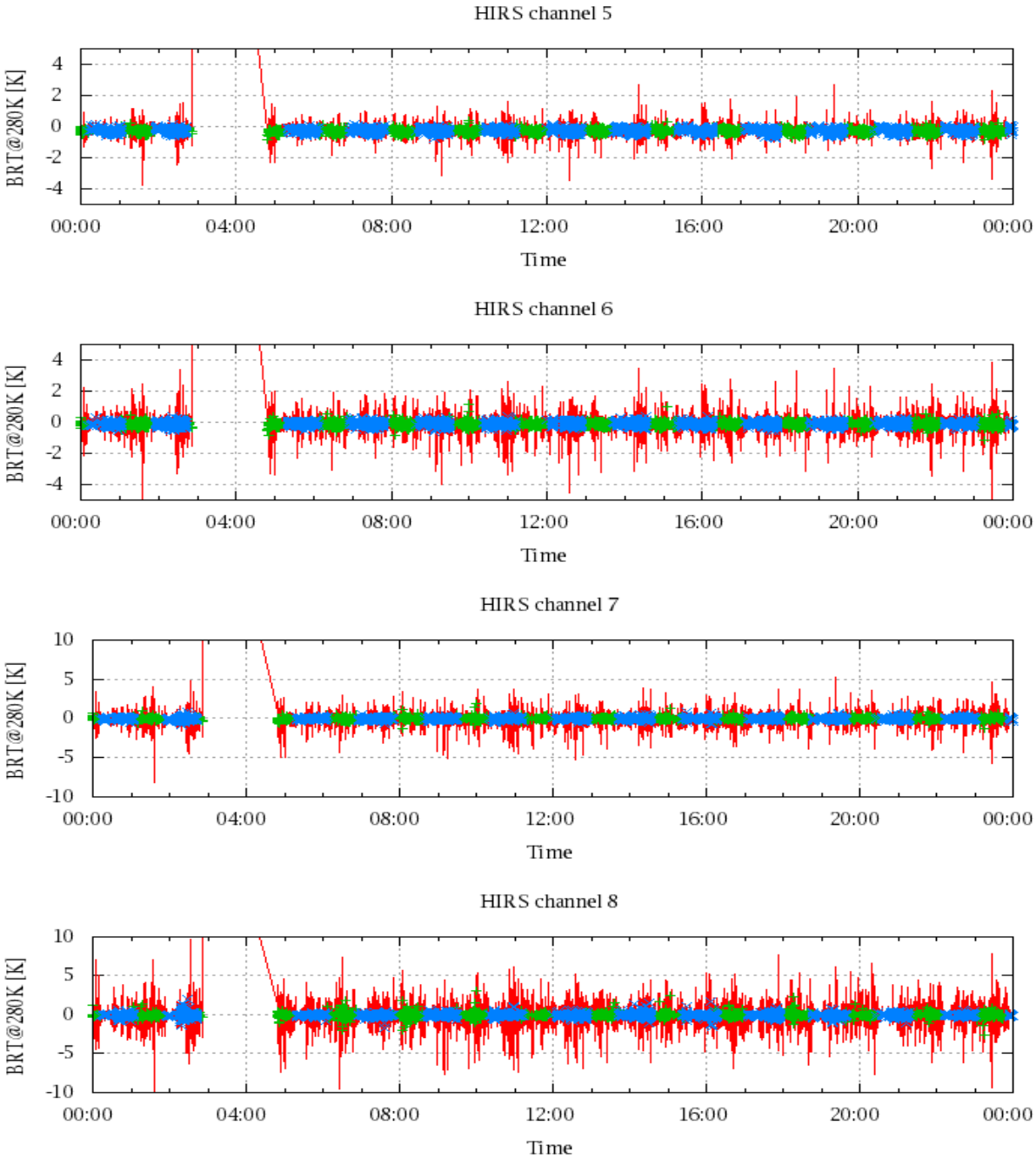

Figure 18: Radiance Differences in BRT

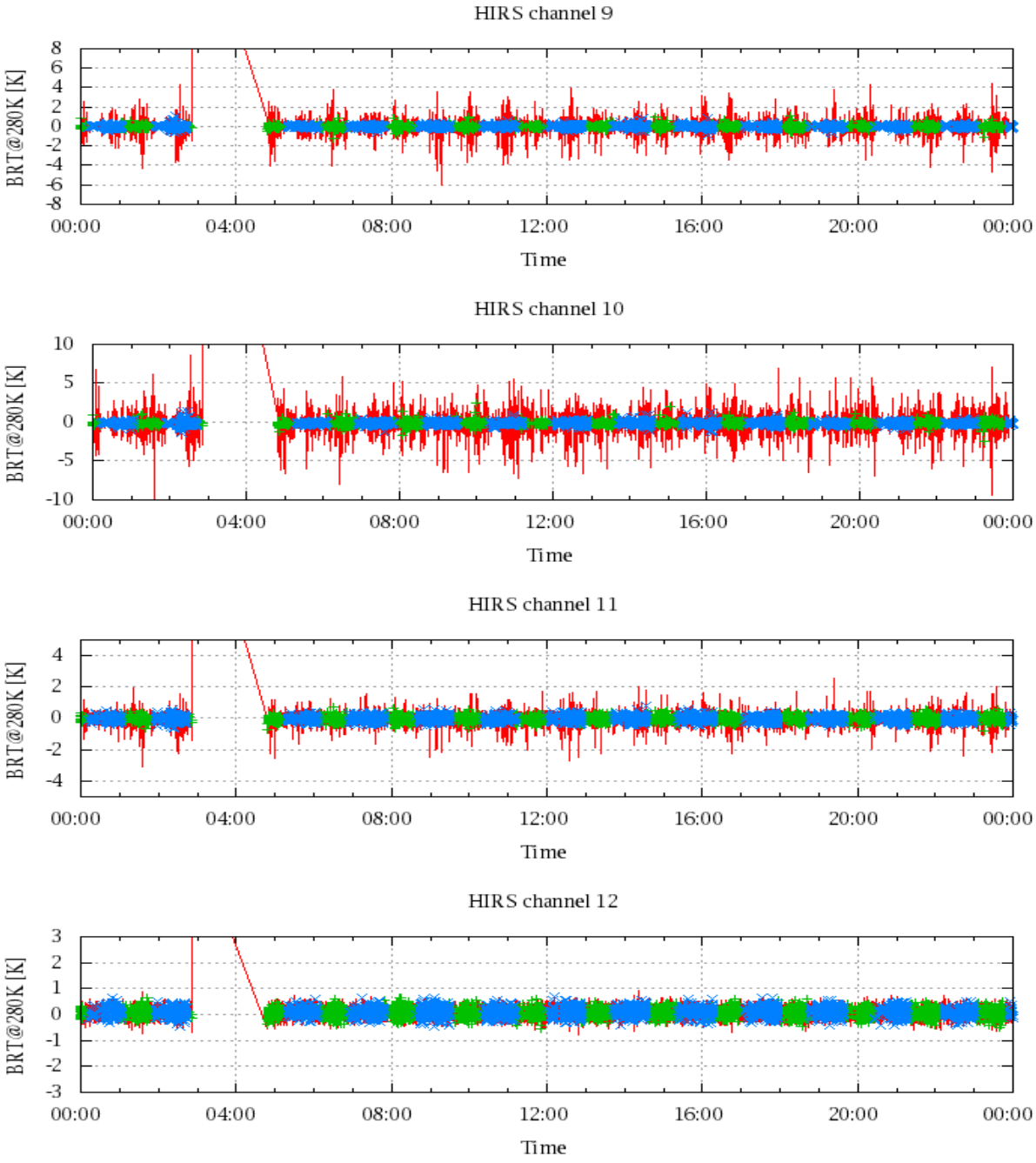

Figure 19: Radiance Differences in BRT

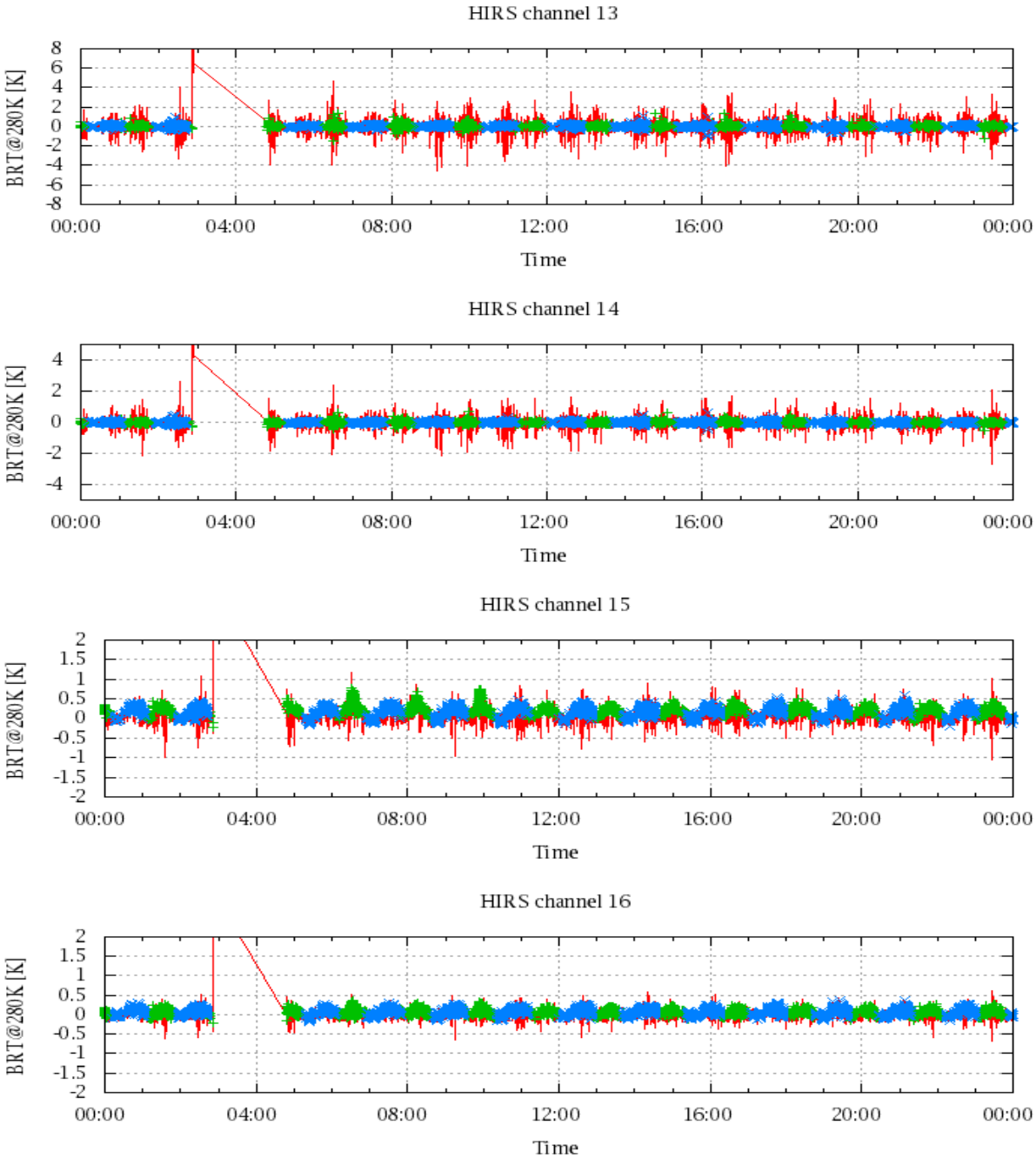

Figure 20: Radiance Differences in BRT

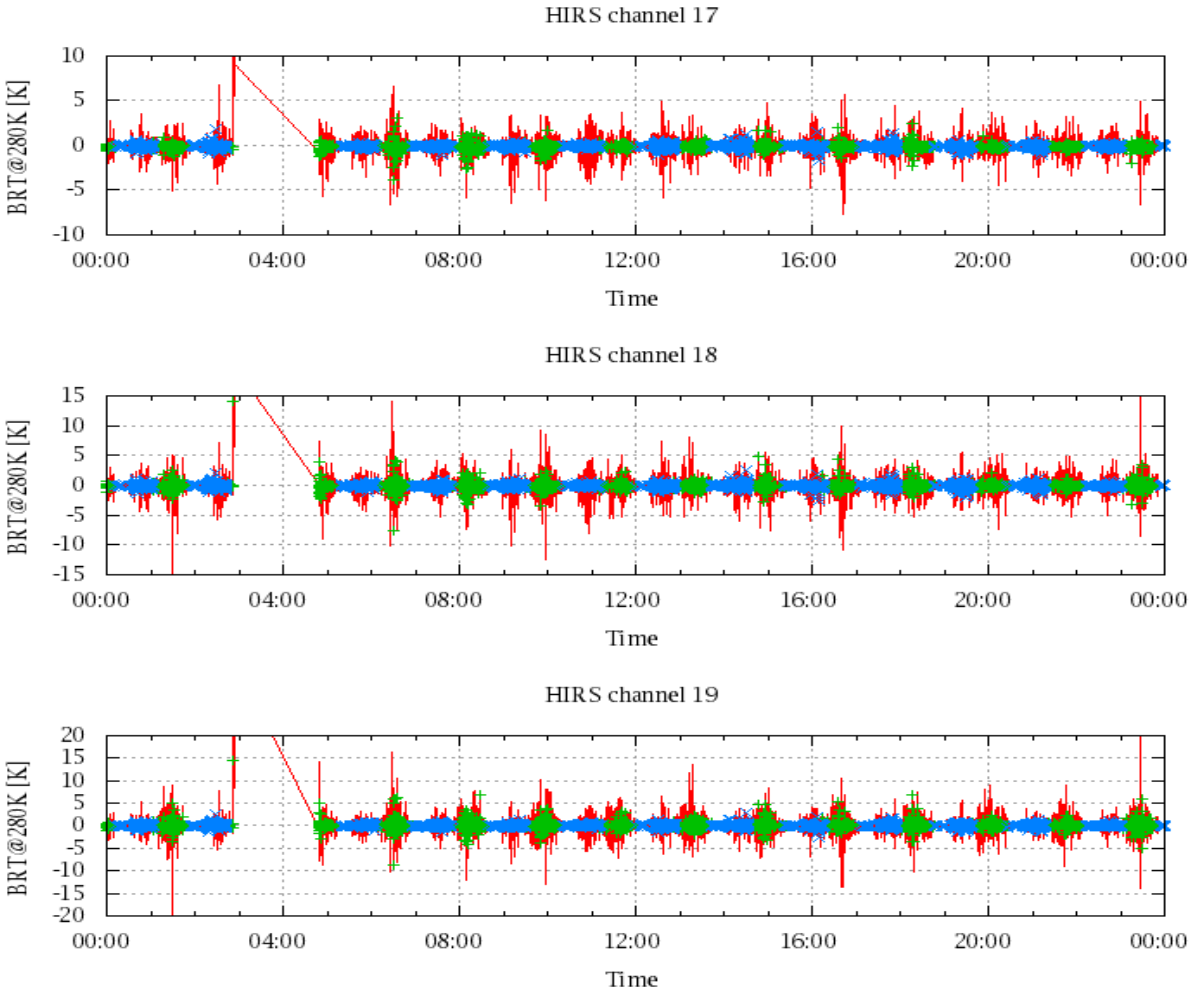

Figure 21: Radinace Differences in BRT