IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

18/08/2015 00:00:00 - 19/08/2015 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 18/08/2015 00:00:00 - 19/08/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 18/08/2015 00:00:00 - 19/08/2015 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	454	e
L0 IASI PDUs	454	e
L1 ENG PDUs	451	e
L1 ENG distinct GEPSGranule	452	a
L1 DPX PDUs (RM: IASI-HIRS)	451	e
L1 DPS Files (RM: OBS-CAL NWP based)	451	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	5266	5268	20150818195548.366	20150818195548.799
PX1 (130)	5268	5295	20150818195548.799	20150818195556.151
PX1 (130)	5297	5299	20150818195556.580	20150818195557.014
PX1 (130)	5343	7980	20150818195609.553	20150818212041.771
PX2 (135)	10393	10395	20150818020619.875	20150818020620.309
PX2 (135)	5267	5293	20150818195548.580	20150818195555.717
PX2 (135)	5293	5295	20150818195555.717	20150818195556.151
PX2 (135)	5295	5297	20150818195556.151	20150818195556.580
PX2 (135)	5338	5340	20150818195608.471	20150818195608.905
PX2 (135)	5342	7980	20150818195609.338	20150818212041.771
PX3 (140)	5266	5294	20150818195548.366	20150818195555.932
PX3 (140)	5294	5296	20150818195555.932	20150818195556.366
PX3 (140)	5296	5298	20150818195556.366	20150818195556.799
PX3 (140)	5338	5340	20150818195608.471	20150818195608.905
PX3 (140)	5341	5343	20150818195609.123	20150818195609.553
PX3 (140)	5343	7979	20150818195609.553	20150818212041.556

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	5267	5294	20150818195548.580	20150818195555.932
PX4 (145)	5294	5296	20150818195555.932	20150818195556.366
PX4 (145)	5339	5341	20150818195608.690	20150818195609.123
PX4 (145)	5341	7979	20150818195609.123	20150818212041.556
IMG (150)	5567	5598	20150818195548.580	20150818195555.932
IMG (150)	5598	5600	20150818195555.932	20150818195556.366
IMG (150)	5655	10827	20150818195609.553	20150818212041.556
VER (160)	12666	12672	20150818195541.662	20150818195557.662
VER (160)	12681	15852	20150818195605.662	20150818212045.661
AUX (180)	12362	12364	20150818195542.096	20150818195558.096
AUX (180)	12365	13000	20150818195606.096	20150818212046.095

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
18/08/2015 00:00:13	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	454	e
L1 ENG PDUs	451	e
L1 ENG distinct GEPSGranule	452	a
GQisFlagQual set (PX1)	99.45 %	-
GQisFlagQual set (PX2)	99.42 %	-
GQisFlagQual set (PX3)	99.44 %	-
GQisFlagQual set (PX4)	99.44 %	-
GQisFlagQual set (all)	99.44 %	-

Table 4: Quality flags

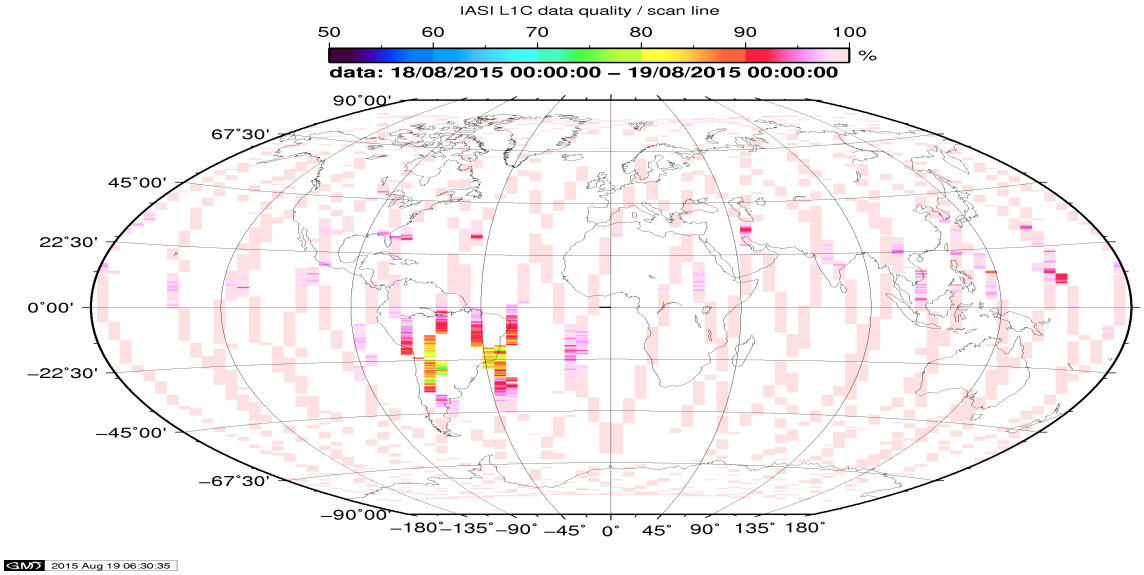

Figure 1: L1C data quality

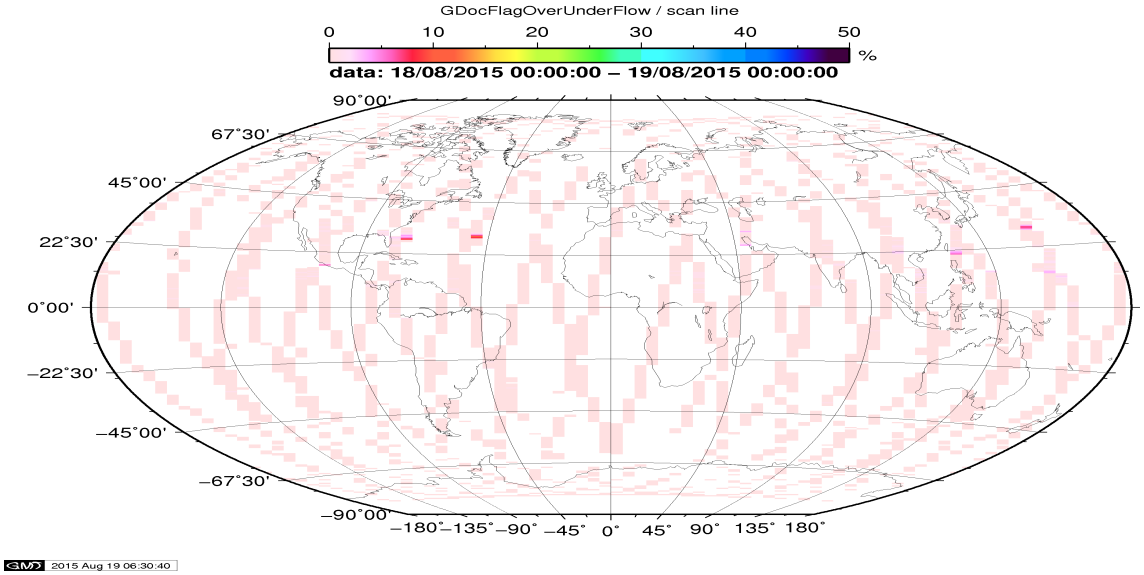

Figure 2: Flag of Over and Under Flows

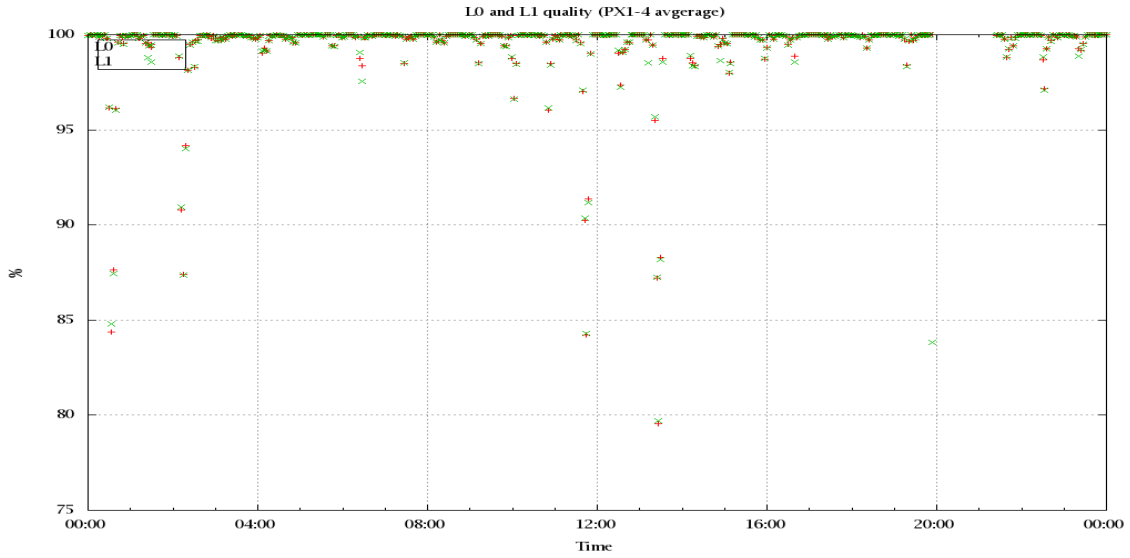

Figure 3: Level 0 and 1C overall quality

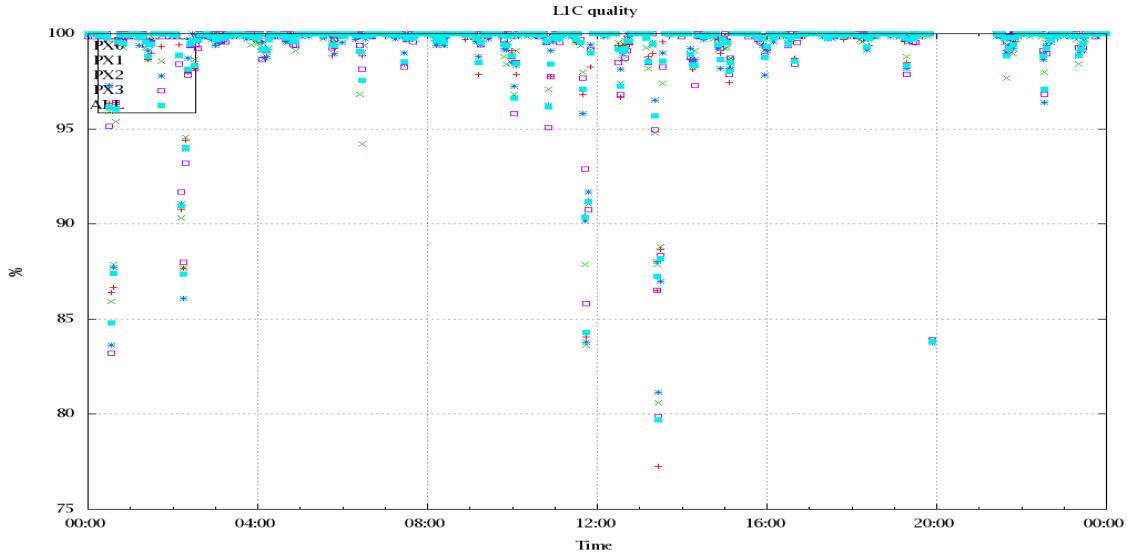

Figure 4: Level 1C quality

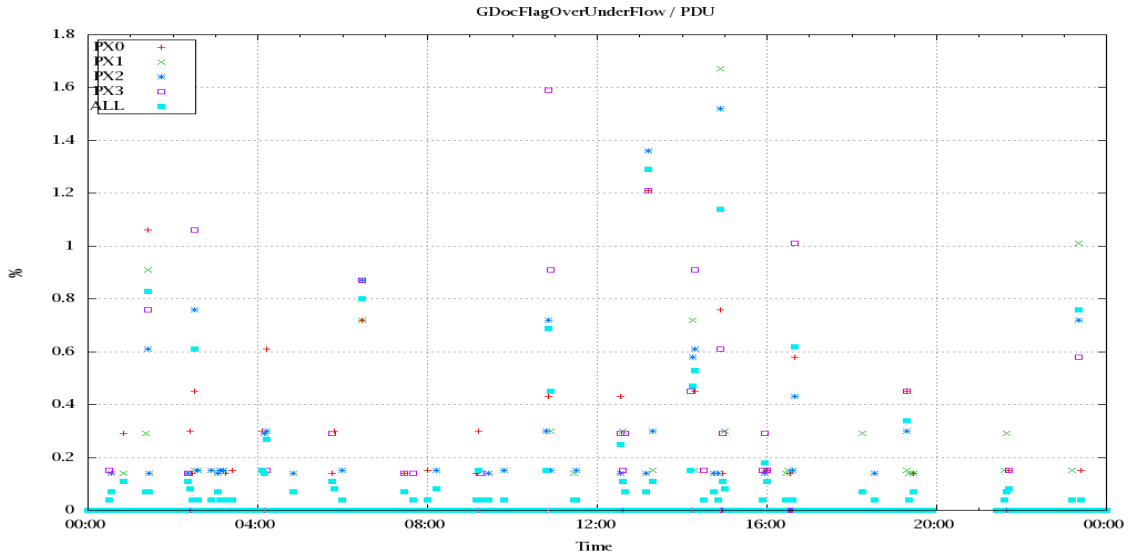

Figure 5: OverUnderFlowFlag timeseries

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.

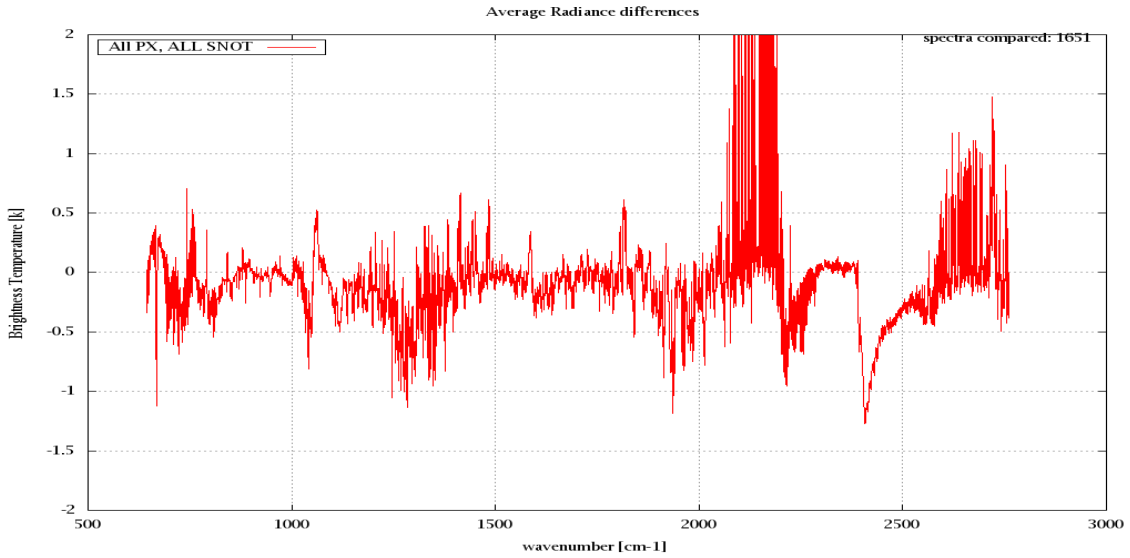

Figure 6: Average Radiance differences: OBS-CAL

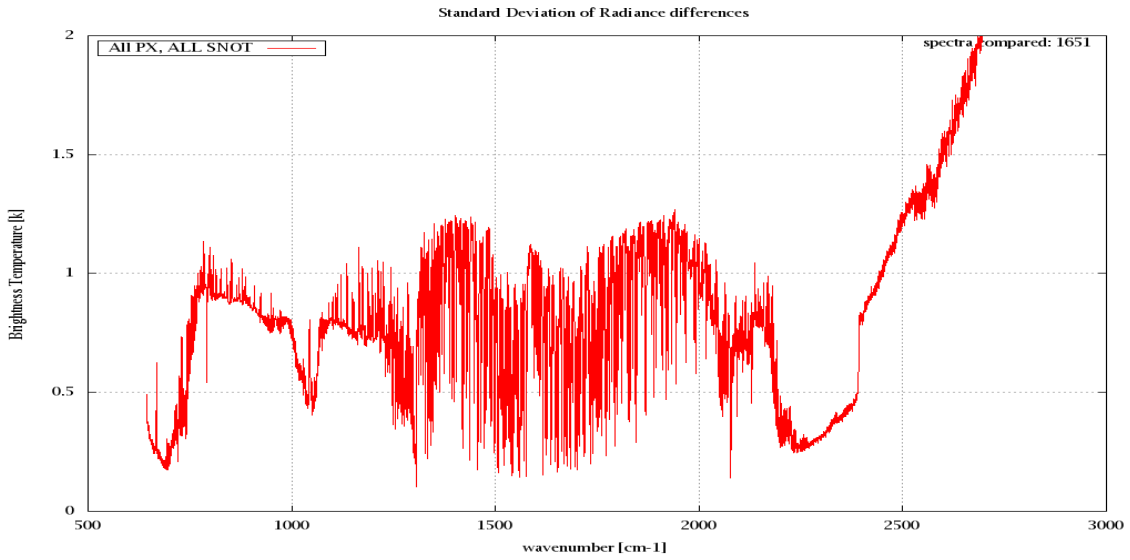

Figure 7: Standard Deviation of Radiance differences

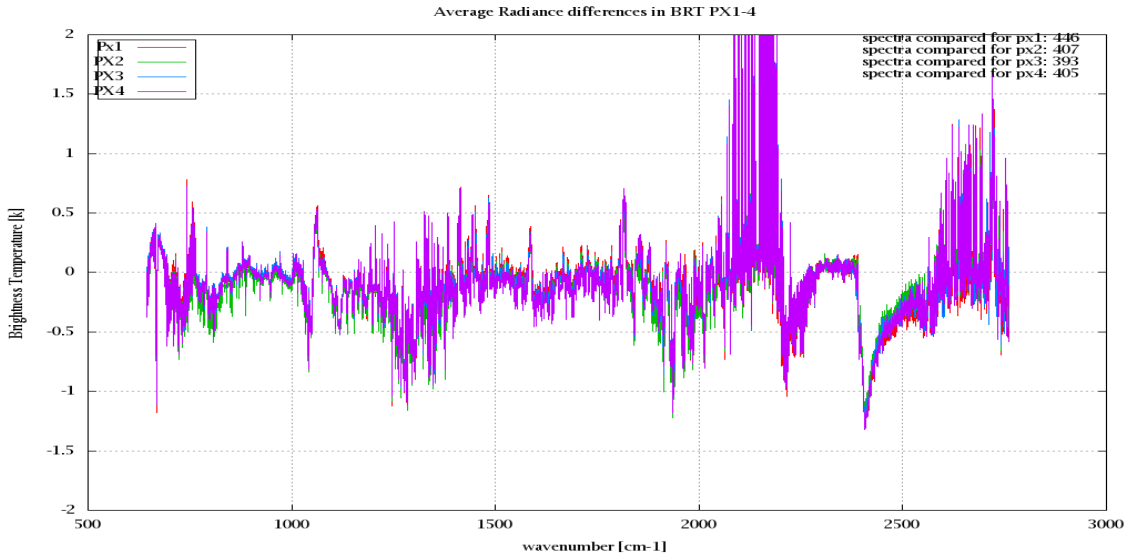

Figure 8: Average Radiance differences: OBS-CAL

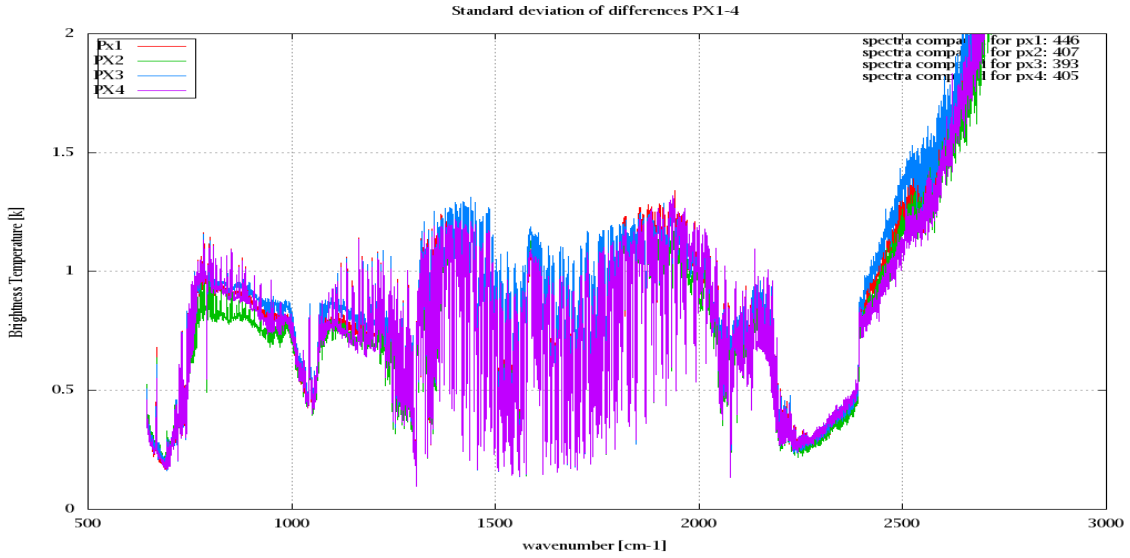

Figure 9: Standard Deviation of Radiance differences

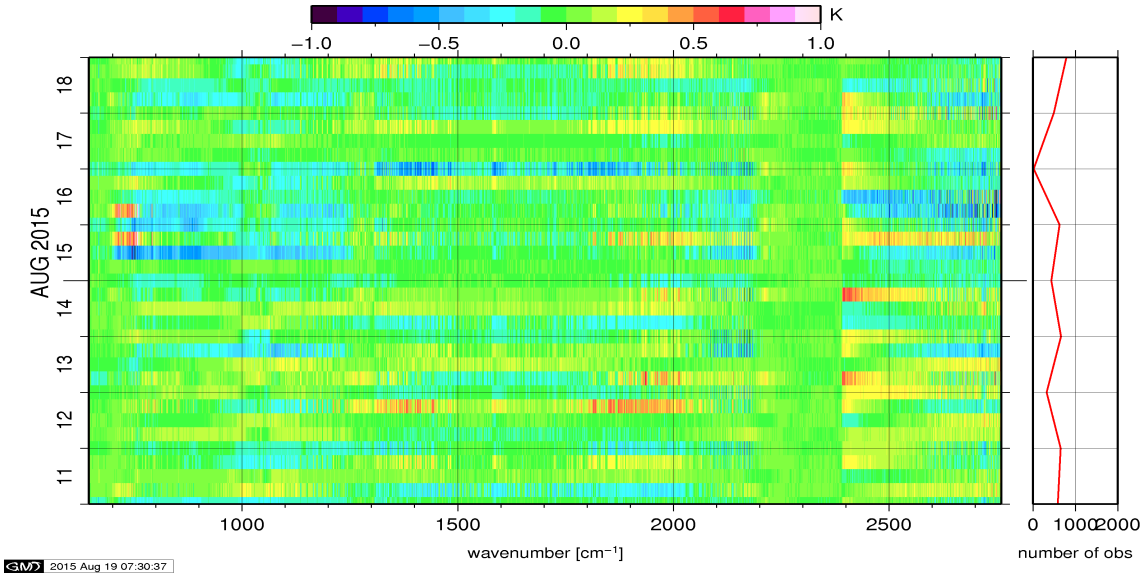

Figure 10: Radiance Anomaly in BRT: All Channels

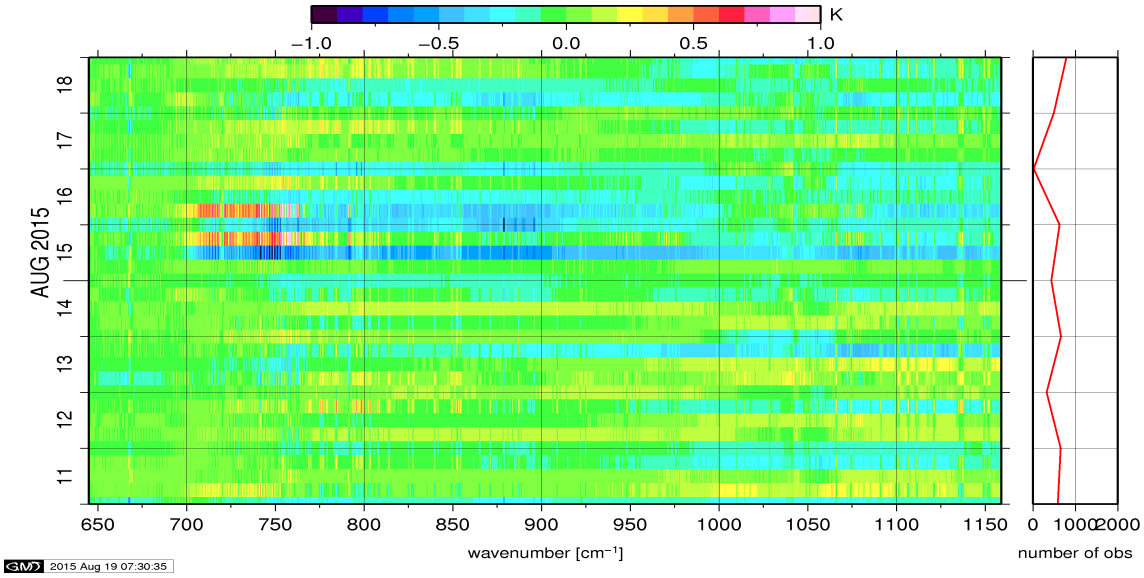

Figure 11: Radiance Anomaly in BRT: IASI Band 1

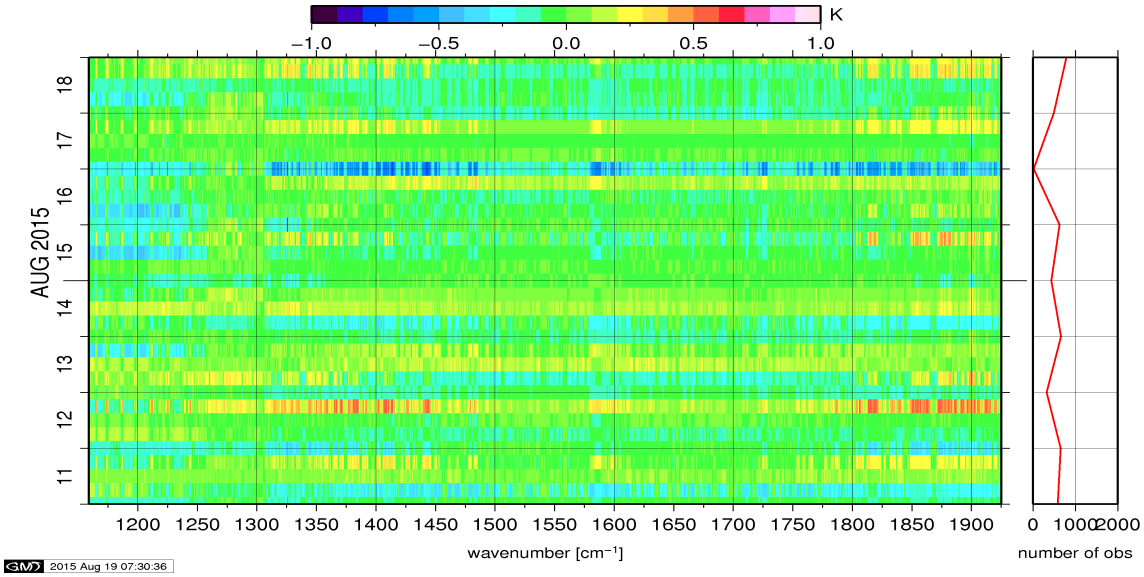

Figure 12: Radiance Anomaly in BRT: IASI Band 2

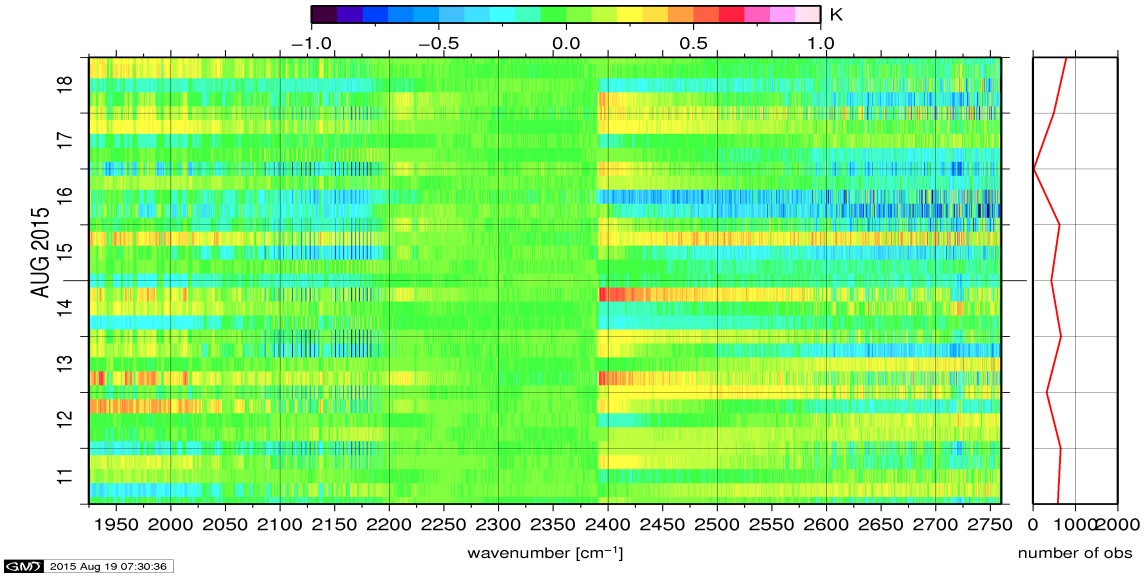

Figure 13: Radiance Anomaly in BRT: IASI Band 3

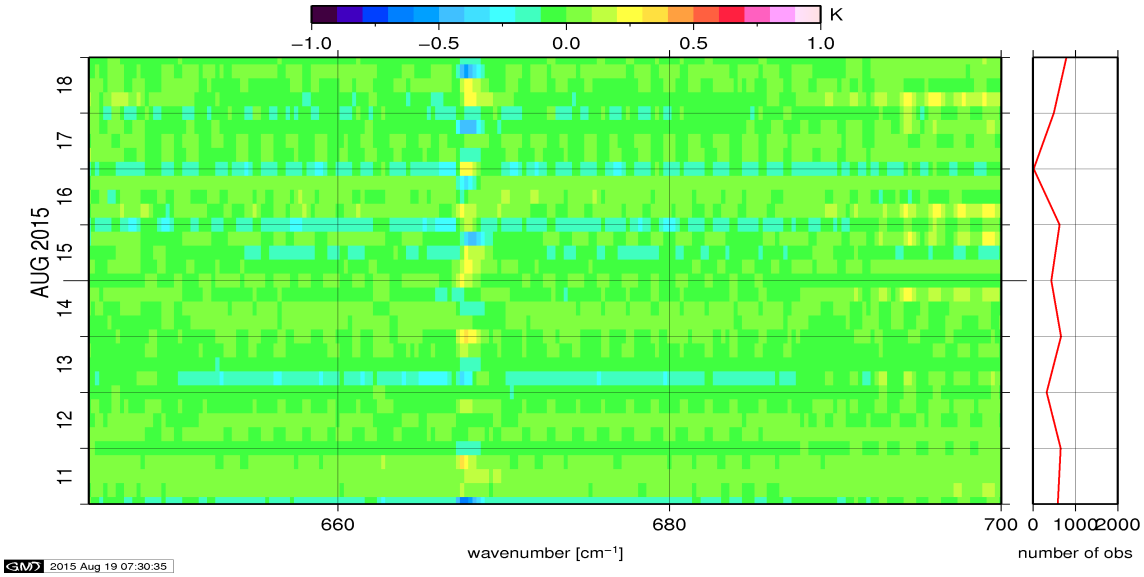

Figure 14: Radiance Anomaly in BRT: CO2 14

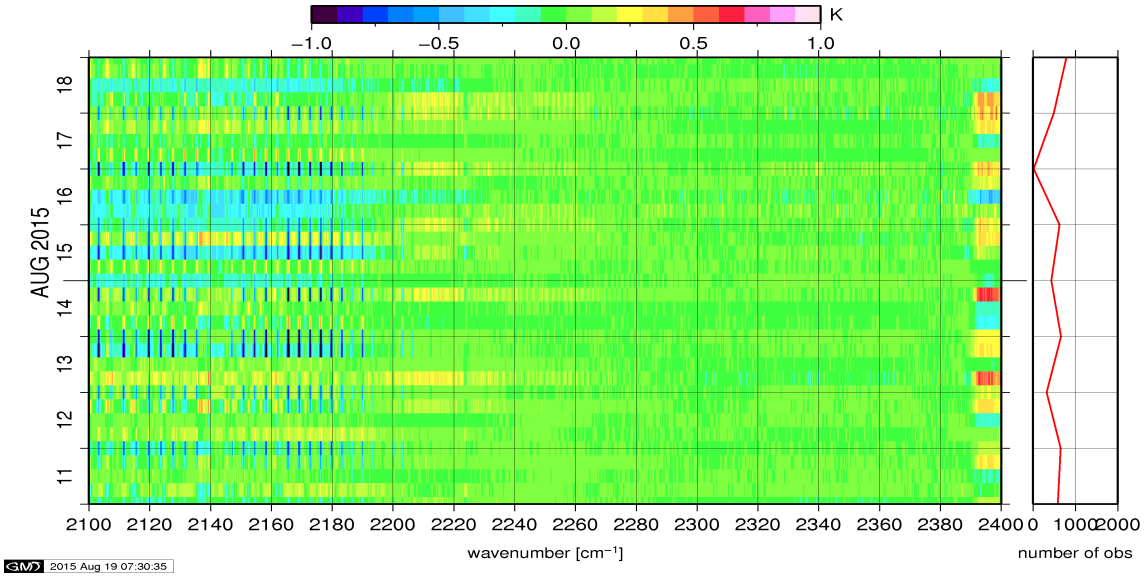

Figure 15: Radiance Anomaly in BRT: CO2 4.3

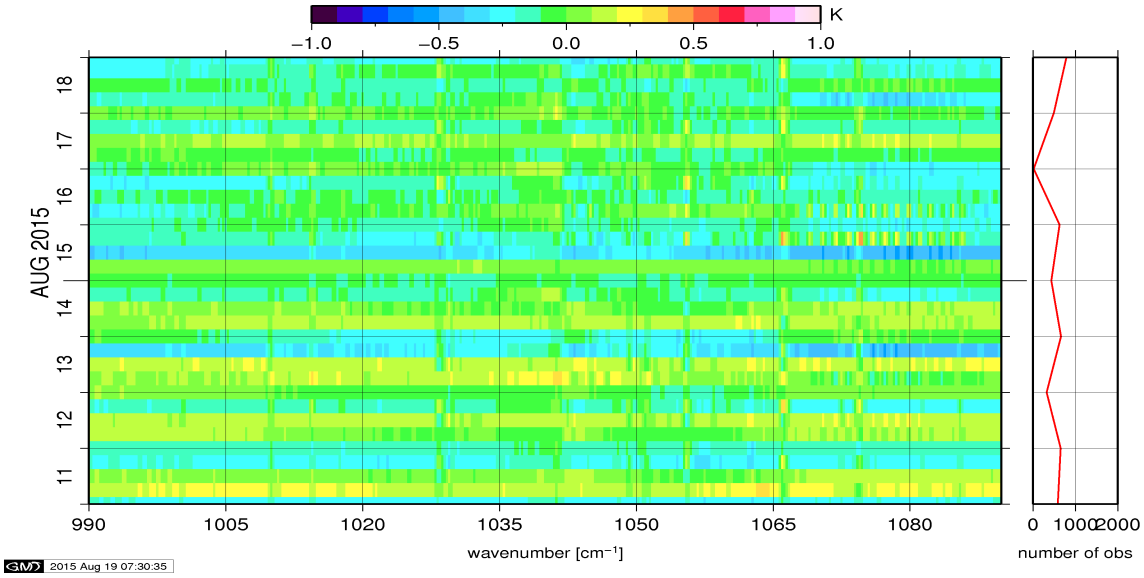

Figure 16: Radiance Anomaly in BRT: O3

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.

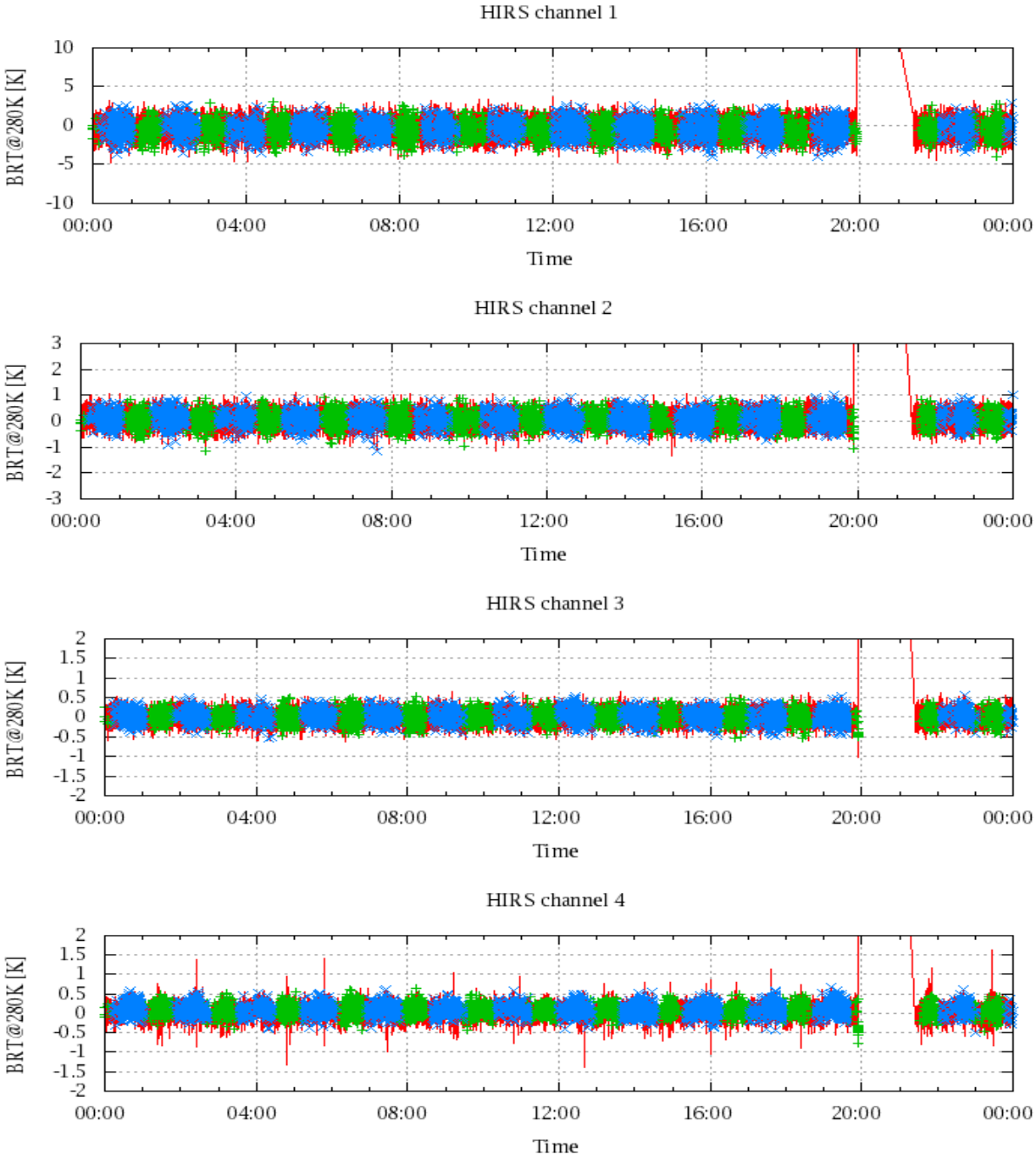

Figure 17: Radiance Differences in BRT

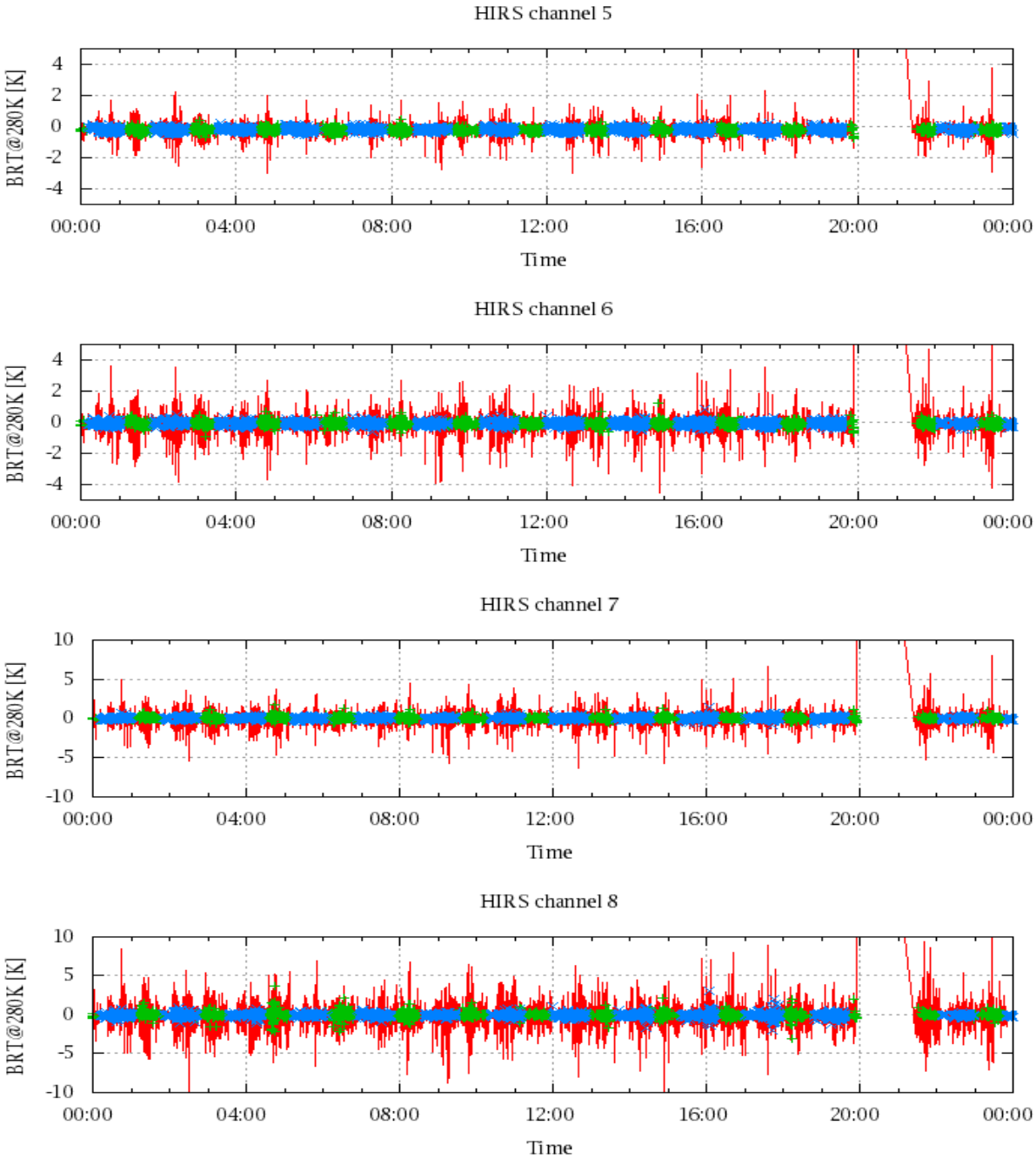

Figure 18: Radiance Differences in BRT

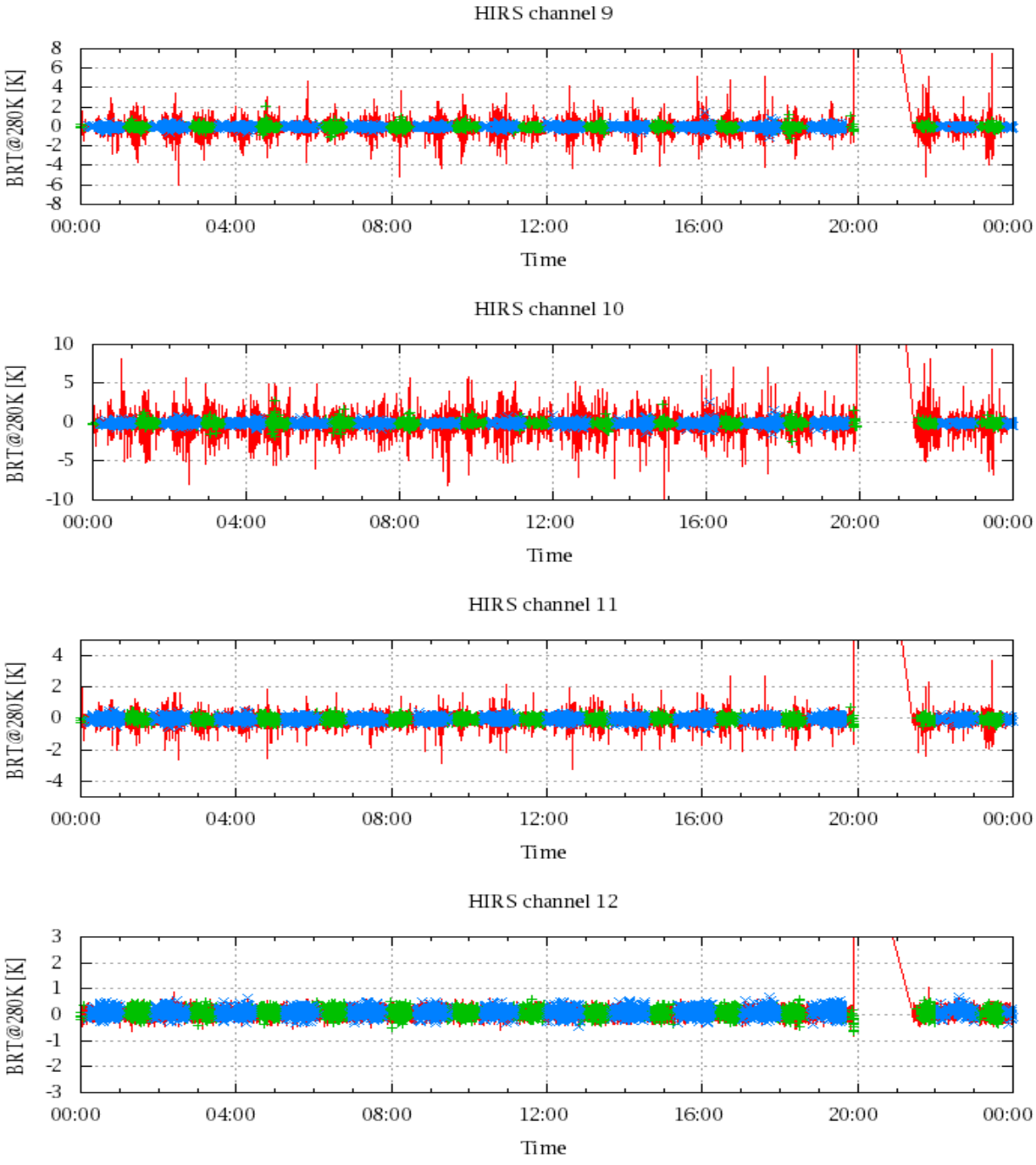

Figure 19: Radiance Differences in BRT

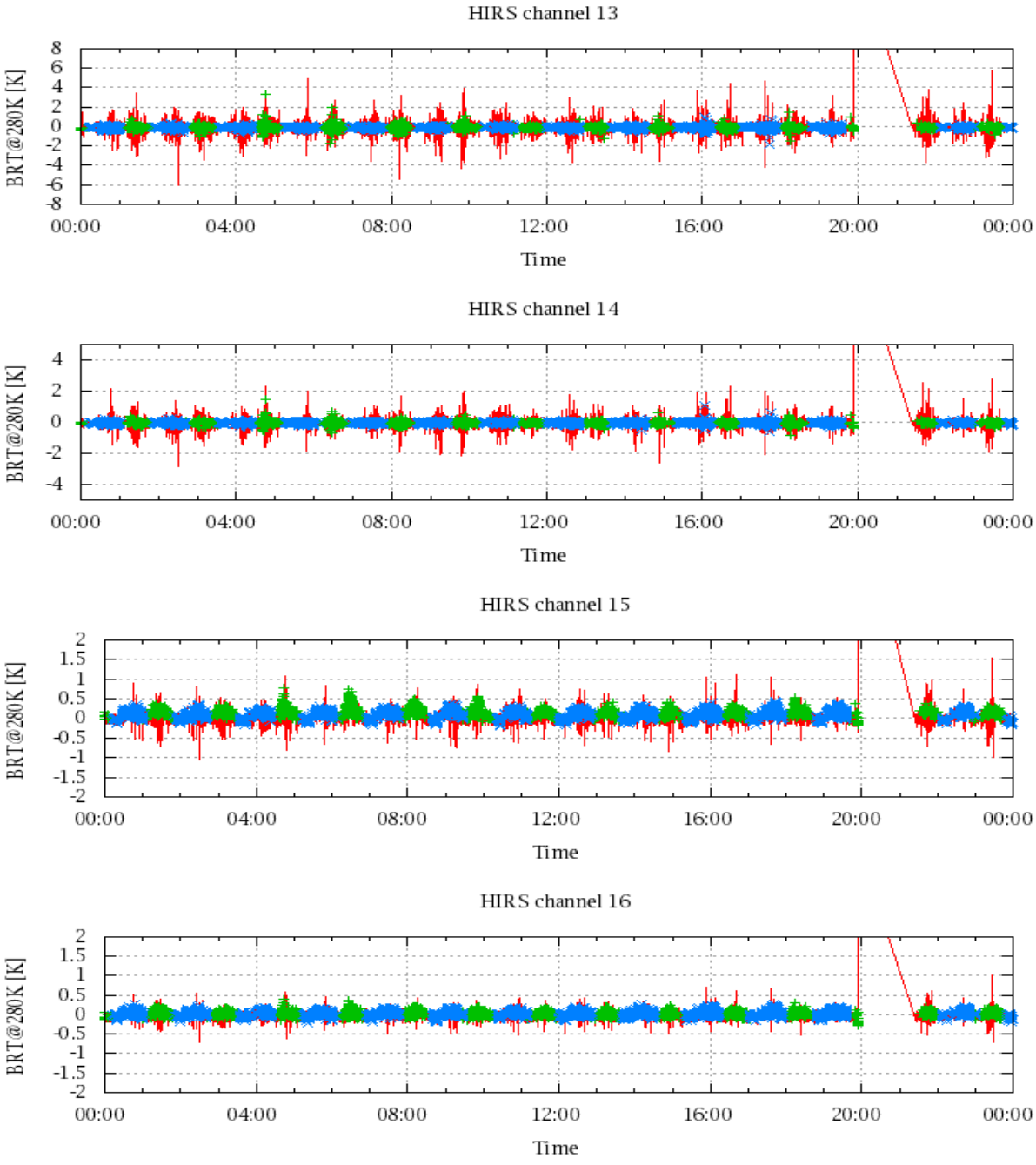

Figure 20: Radiance Differences in BRT

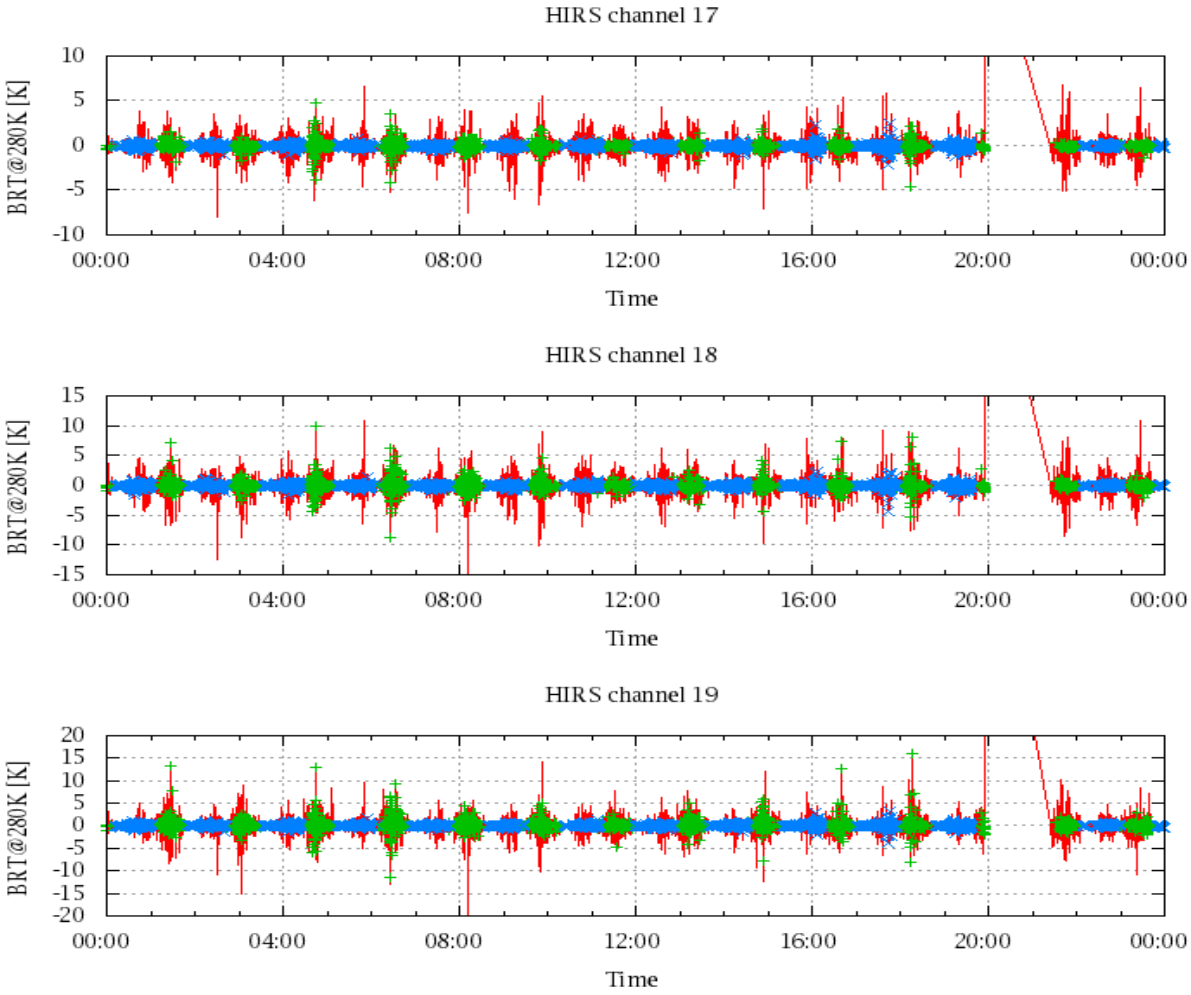

Figure 21: Radinace Differences in BRT