

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

10/10/2011 00:00:00 - 11/10/2011 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 10/10/2011 00:00:00 - 11/10/2011 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 10/10/2011 00:00:00 - 11/10/2011 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)	480	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	10447	10449	20111010015238.760	20111010015239.194
PX1 (130)	10449	10520	20111010015239.194	20111010015259.123
PX1 (130)	10520	10531	20111010015259.123	20111010015301.498
PX1 (130)	10562	10567	20111010015309.713	20111010015310.795
PX1 (130)	14768	14925	20111010032439.837	20111010032522.864
PX1 (130)	5527	5549	20111010035626.020	20111010035630.777
PX1 (130)	76	231	20111010071038.534	20111010071119.616
PX1 (130)	232	235	20111010071119.831	20111010071121.991
PX2 (135)	10447	10449	20111010015238.760	20111010015239.194
PX2 (135)	10449	10520	20111010015239.194	20111010015259.123
PX2 (135)	10520	10531	20111010015259.123	20111010015301.498
PX2 (135)	10562	10566	20111010015309.713	20111010015310.580
PX2 (135)	14768	14925	20111010032439.837	20111010032522.864
PX2 (135)	5527	5549	20111010035626.020	20111010035630.777
PX2 (135)	75	231	20111010071038.316	20111010071119.616
PX2 (135)	232	235	20111010071119.831	20111010071121.991
PX3 (140)	10447	10449	20111010015238.760	20111010015239.194
PX3 (140)	10449	10520	20111010015239.194	20111010015259.123

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	10520	10531	20111010015259.123	20111010015301.498
PX3 (140)	10562	10566	20111010015309.713	20111010015310.580
PX3 (140)	14768	14925	20111010032439.837	20111010032522.864
PX3 (140)	5527	5549	20111010035626.020	20111010035630.777
PX3 (140)	75	231	20111010071038.316	20111010071119.616
PX3 (140)	232	235	20111010071119.831	20111010071121.991
PX4 (145)	10446	10449	20111010015238.545	20111010015239.194
PX4 (145)	10449	10520	20111010015239.194	20111010015259.123
PX4 (145)	10520	10530	20111010015259.123	20111010015301.283
PX4 (145)	10562	10566	20111010015309.713	20111010015310.580
PX4 (145)	14768	14925	20111010032439.837	20111010032522.864
PX4 (145)	5527	5549	20111010035626.020	20111010035630.777
PX4 (145)	75	231	20111010071038.316	20111010071119.616
PX4 (145)	232	234	20111010071119.831	20111010071121.776
IMG (150)	15378	15380	20111010015238.545	20111010015238.975
IMG (150)	15380	15464	20111010015238.975	20111010015259.123
IMG (150)	15464	15474	20111010015259.123	20111010015301.283
IMG (150)	15509	15514	20111010015309.498	20111010015310.580
IMG (150)	6079	6257	20111010032440.919	20111010032522.864
IMG (150)	14174	14196	20111010035625.805	20111010035630.562
IMG (150)	14547	14723	20111010071038.316	20111010071119.616
IMG (150)	14724	14730	20111010071119.831	20111010071121.776
VER (160)	2114	2130	20111010015231.842	20111010015303.877
VER (160)	5569	5595	20111010032439.837	20111010032527.836
VER (160)	14039	14065	20111010071031.831	20111010071119.831
VER (160)	14066	14070	20111010071119.831	20111010071127.831
AUX (180)	13520	13524	20111010015232.276	20111010015304.311
AUX (180)	14211	14217	20111010032440.270	20111010032528.266
AUX (180)	15905	15912	20111010071032.265	20111010071128.265

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
10/10/2011 00:00:11	-	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)	99.33 %	-
GQisFlagQual set (PX2)	99.16 %	-
GQisFlagQual set (PX3)	99.24 %	-
GQisFlagQual set (PX4)	99.33 %	-
GQisFlagQual set (all)	99.27 %	-

Table 4: Quality flags

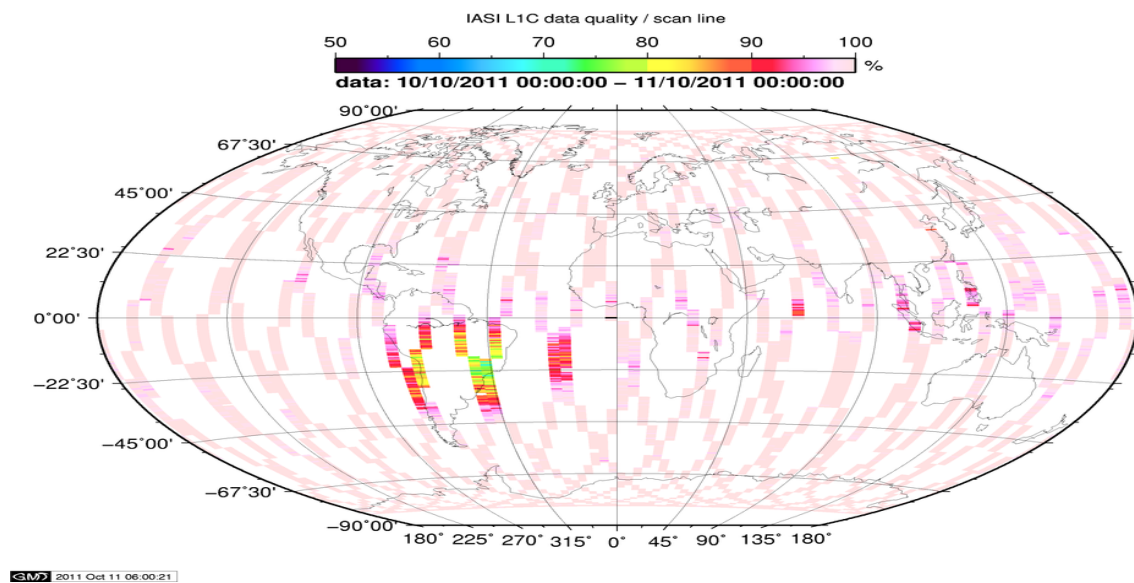


Figure 1: L1C data quality

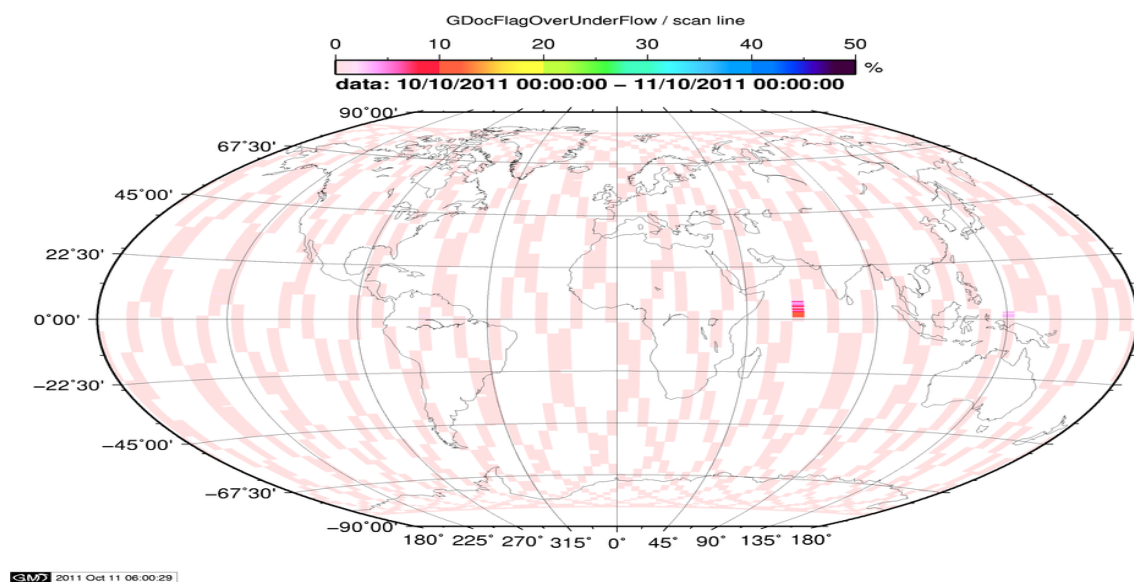


Figure 2: Flag of Over and Under Flows

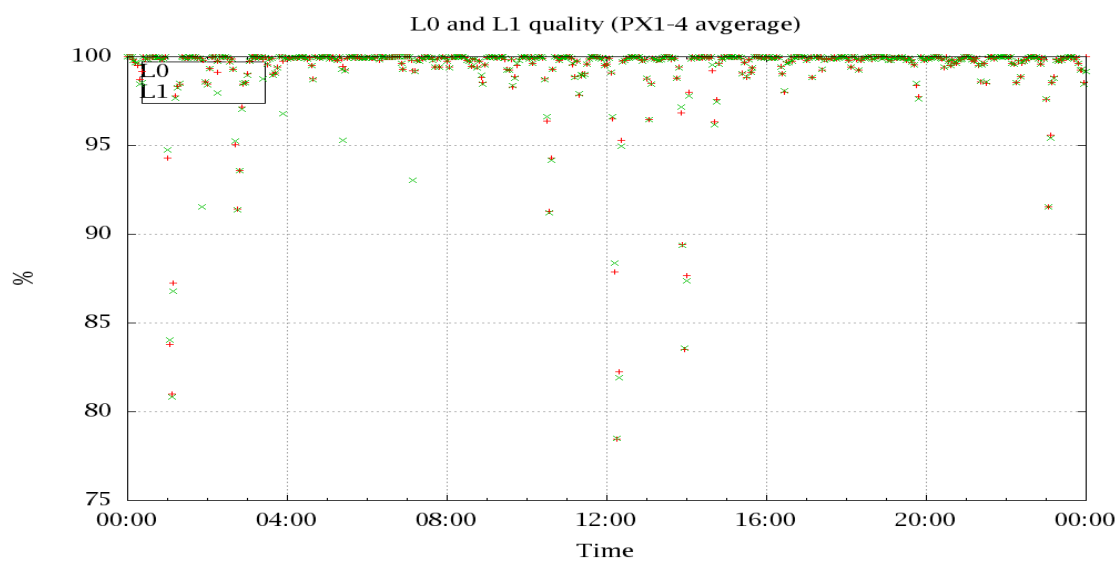


Figure 3: Level 0 and 1C overall quality

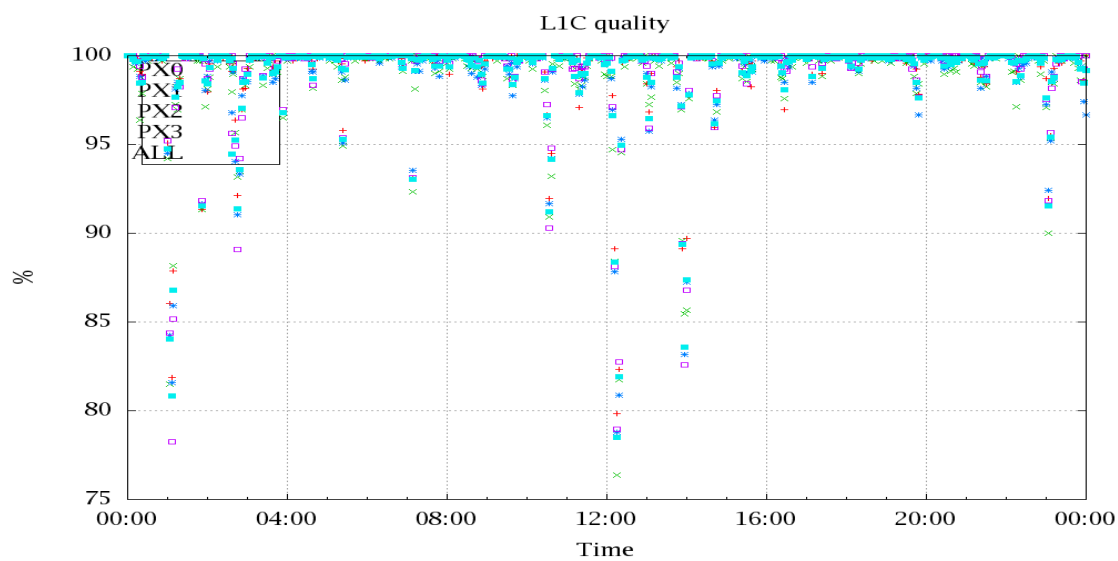


Figure 4: Level 1C quality

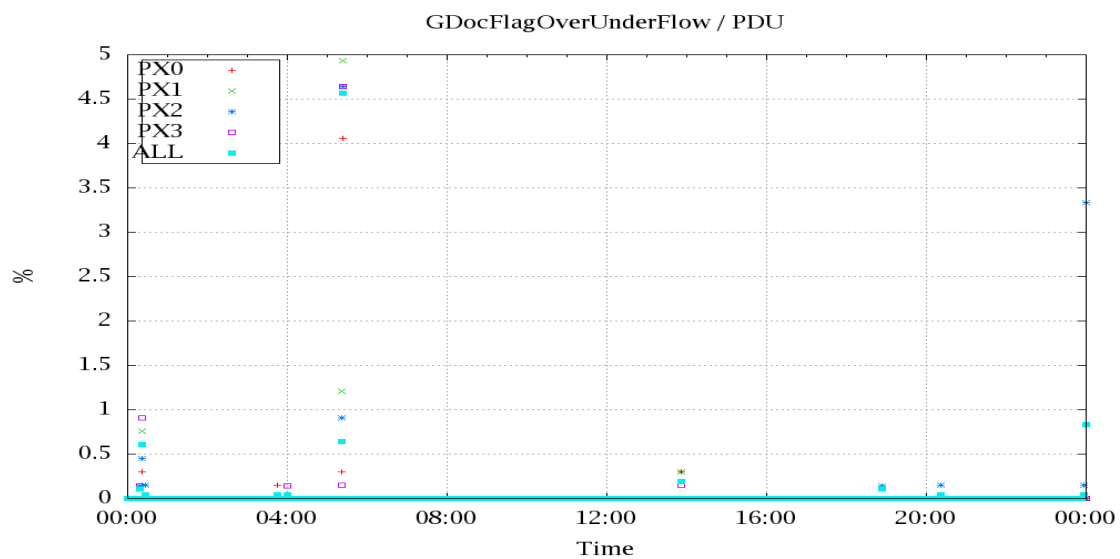


Figure 5: OverUnderFlowFlag timeseries

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.

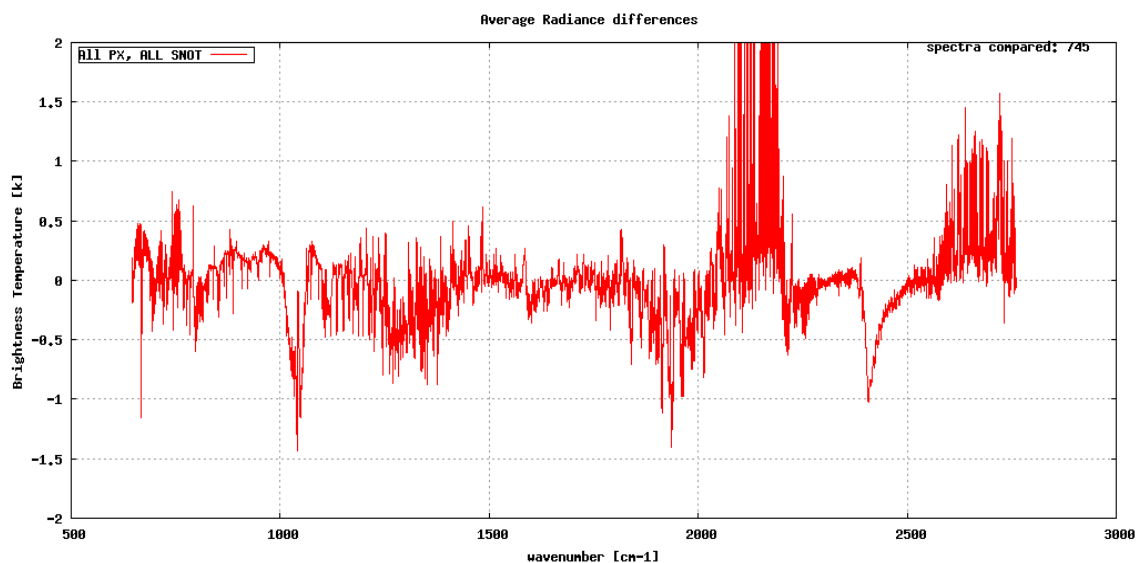


Figure 6: Average Radiance differences: OBS-CAL

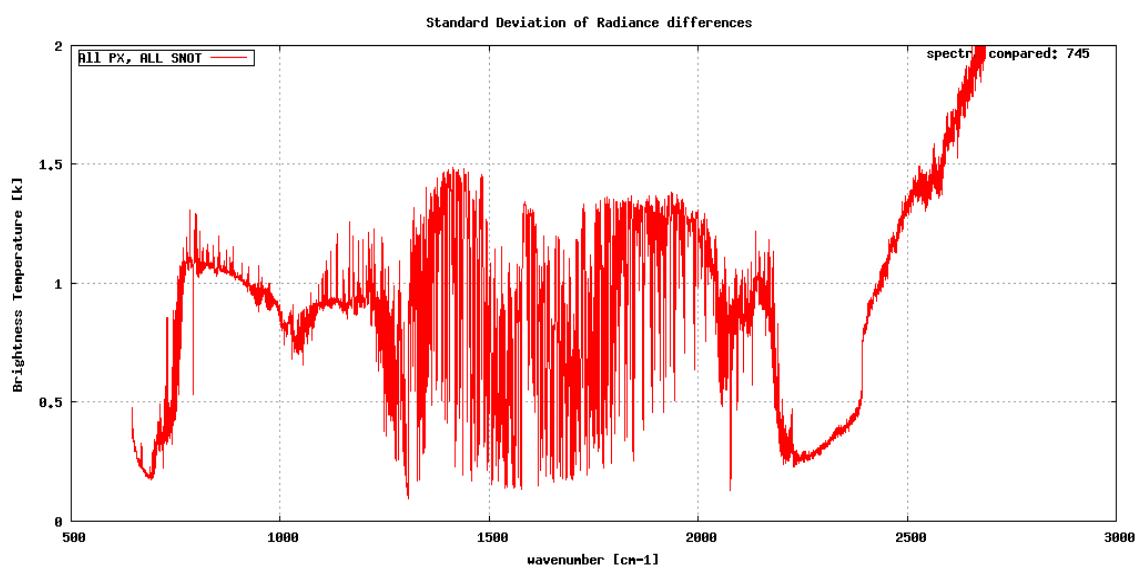


Figure 7: Standard Deviation of Radiance differences

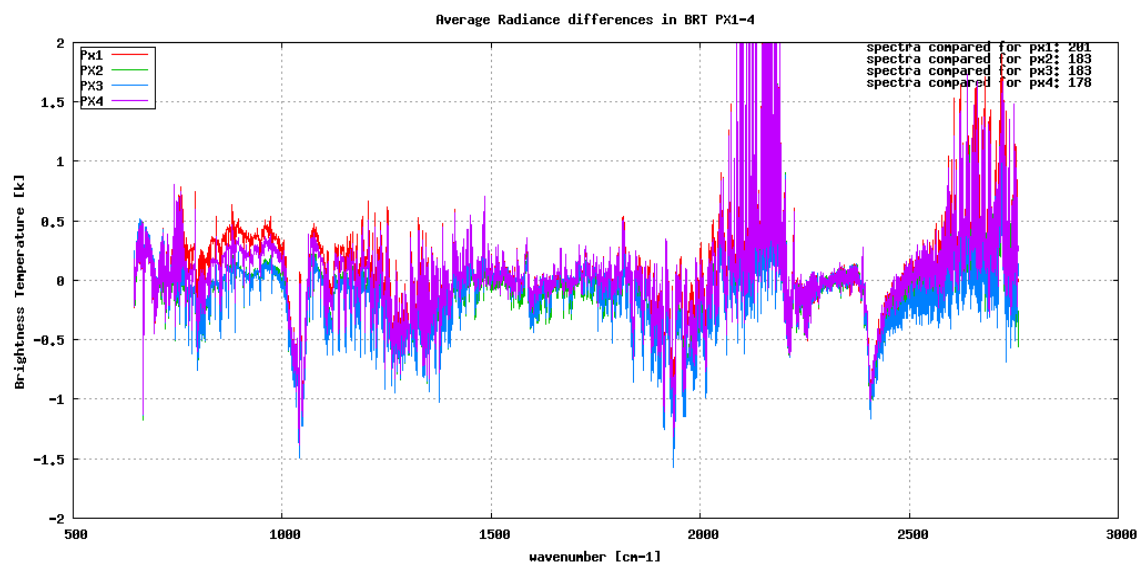


Figure 8: Average Radiance differences: OBS-CAL

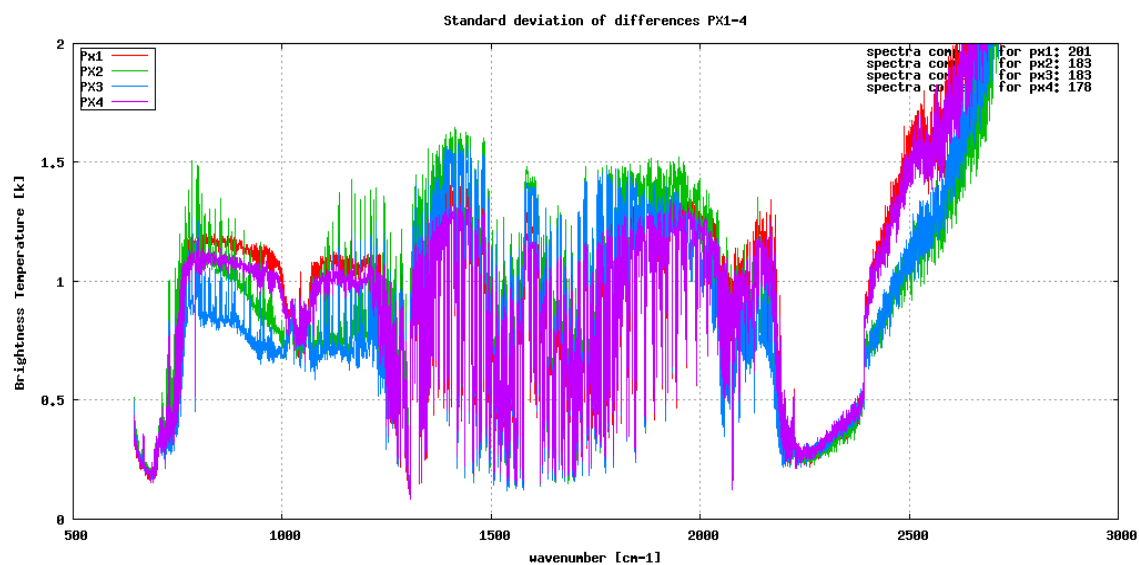


Figure 9: Standard Deviation of Radiance differences

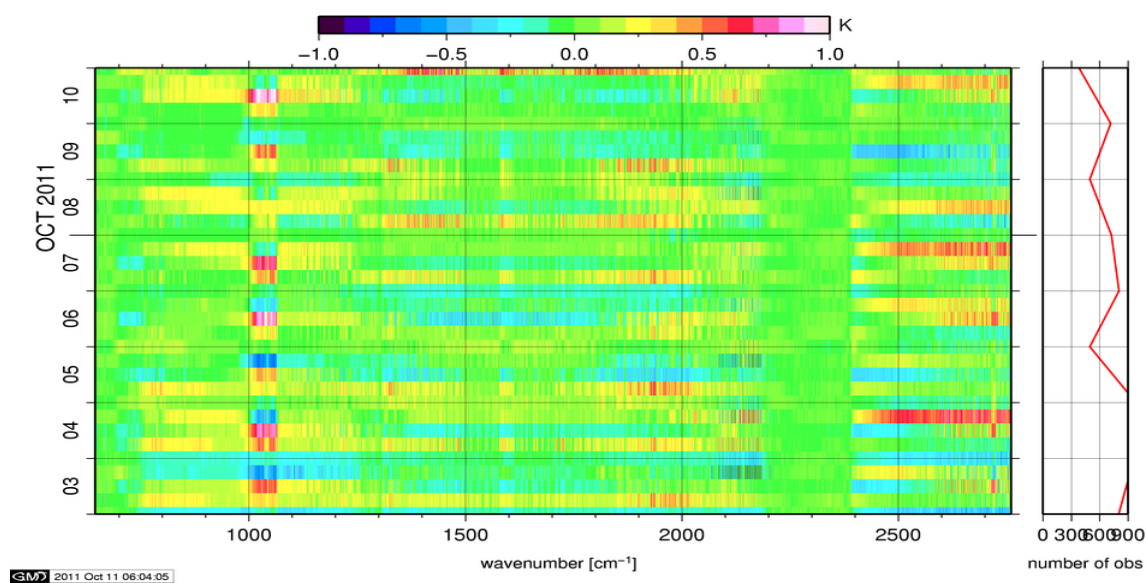


Figure 10: Radiance Anomaly in BRT: All Channels

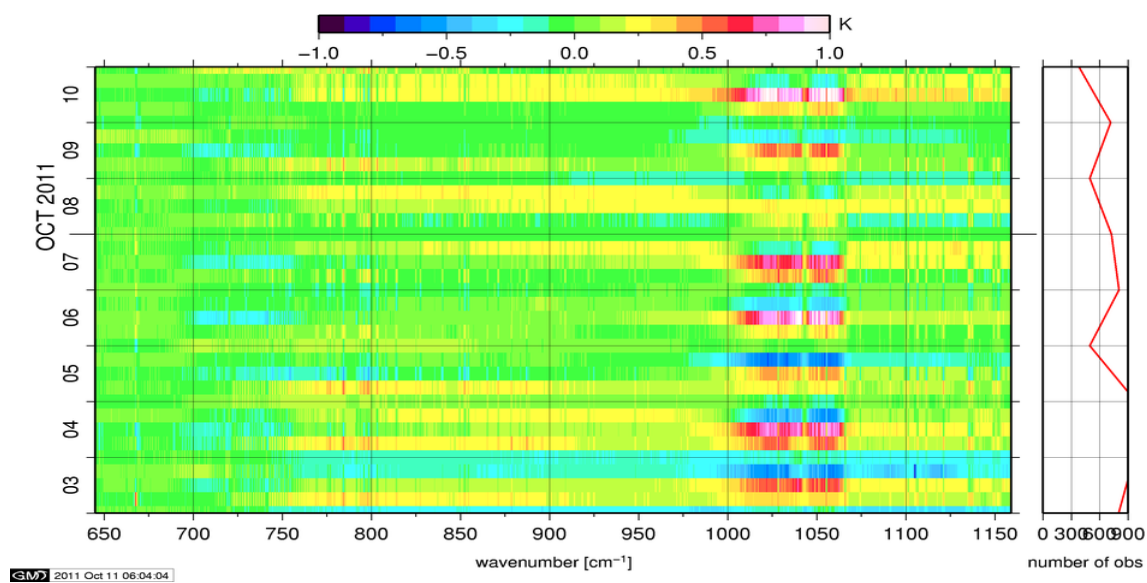


Figure 11: Radiance Anomaly in BRT: IASI Band 1

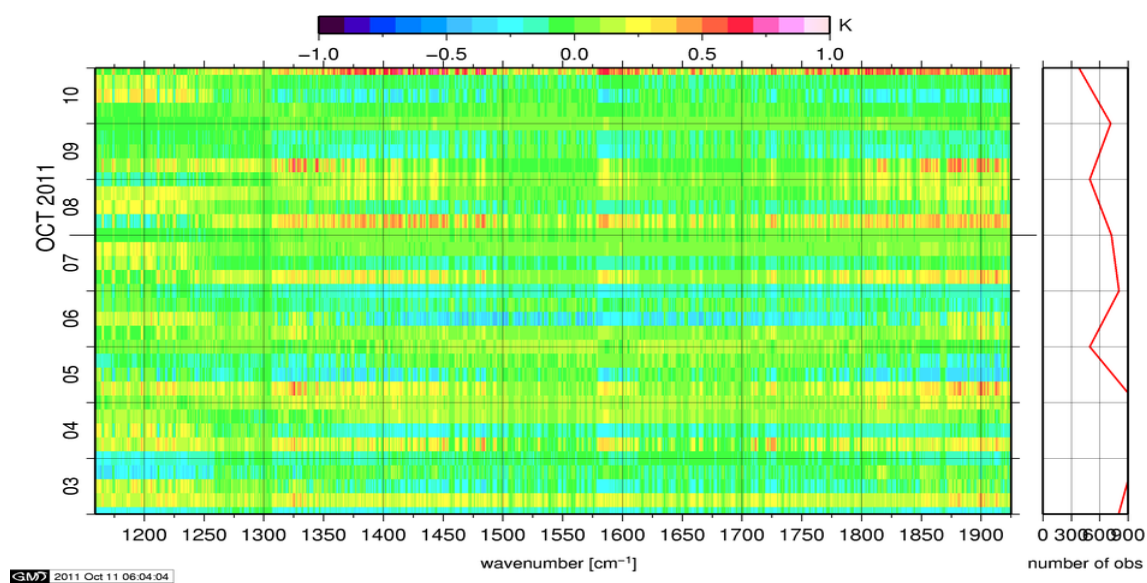


Figure 12: Radiance Anomaly in BRT: IASI Band 2

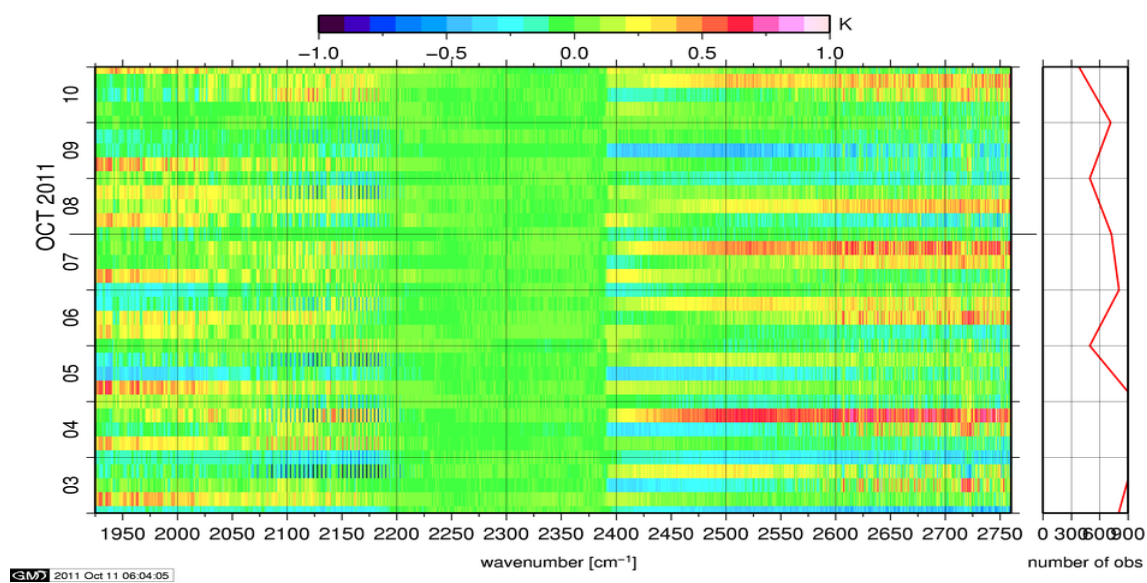


Figure 13: Radiance Anomaly in BRT: IASI Band 3

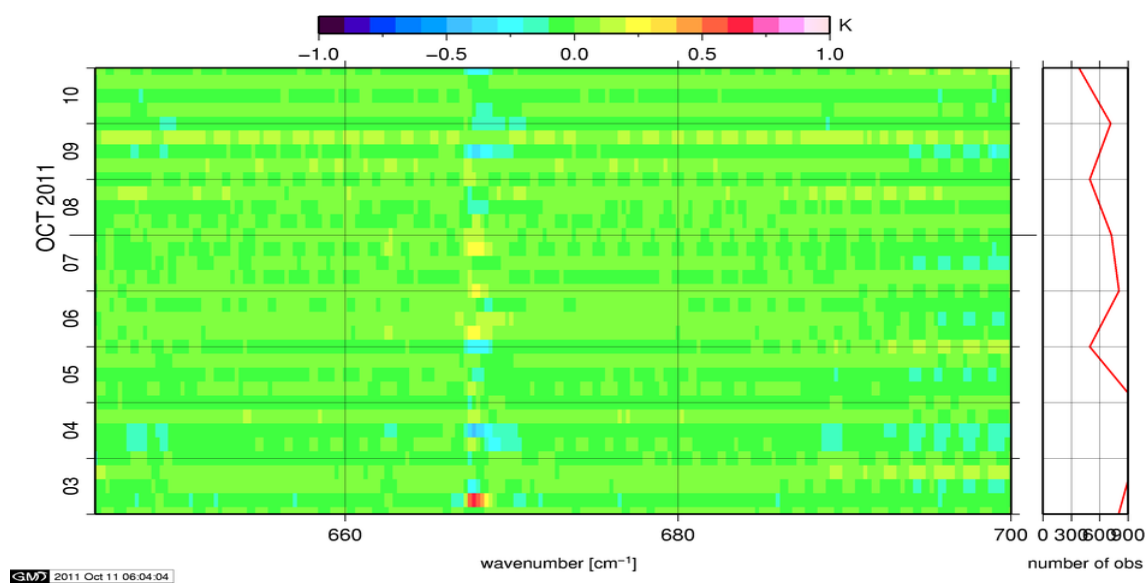


Figure 14: Radiance Anomaly in BRT: CO2 14

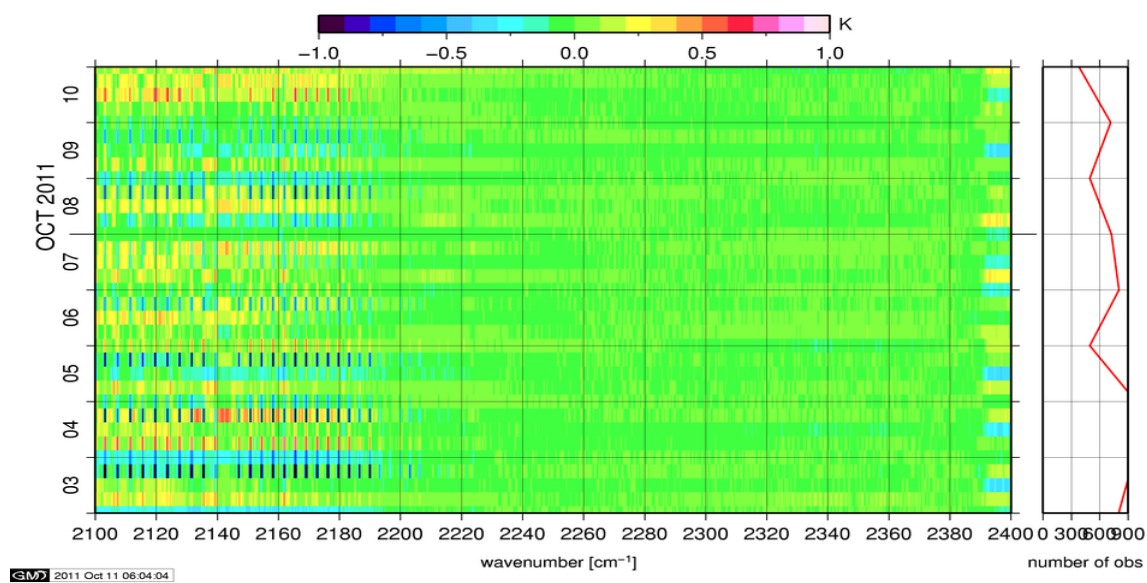


Figure 15: Radiance Anomaly in BRT: CO2 4.3

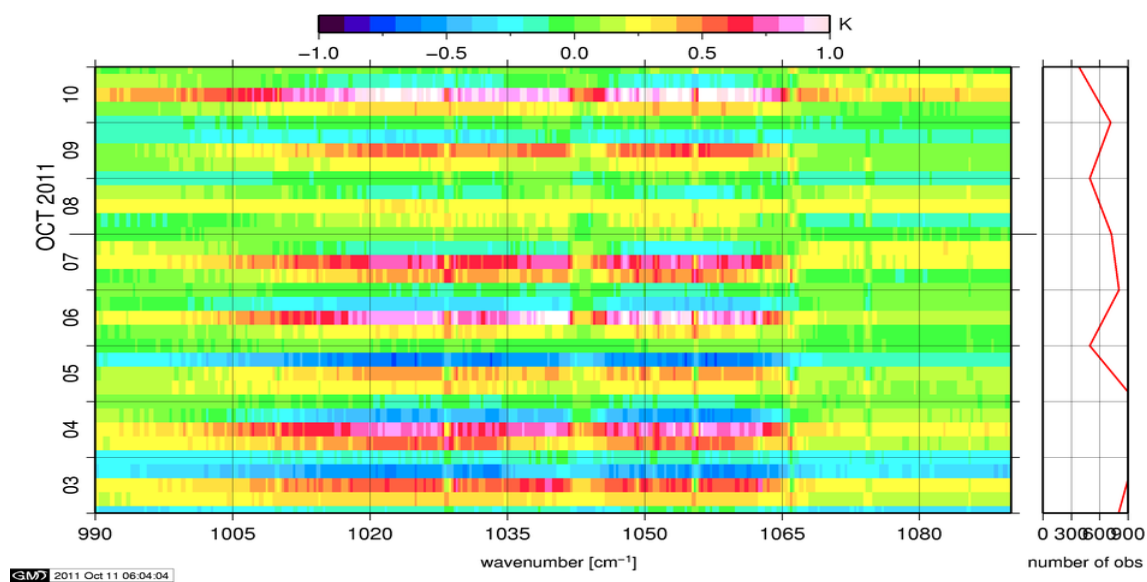


Figure 16: Radiance Anomaly in BRT: O3

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.

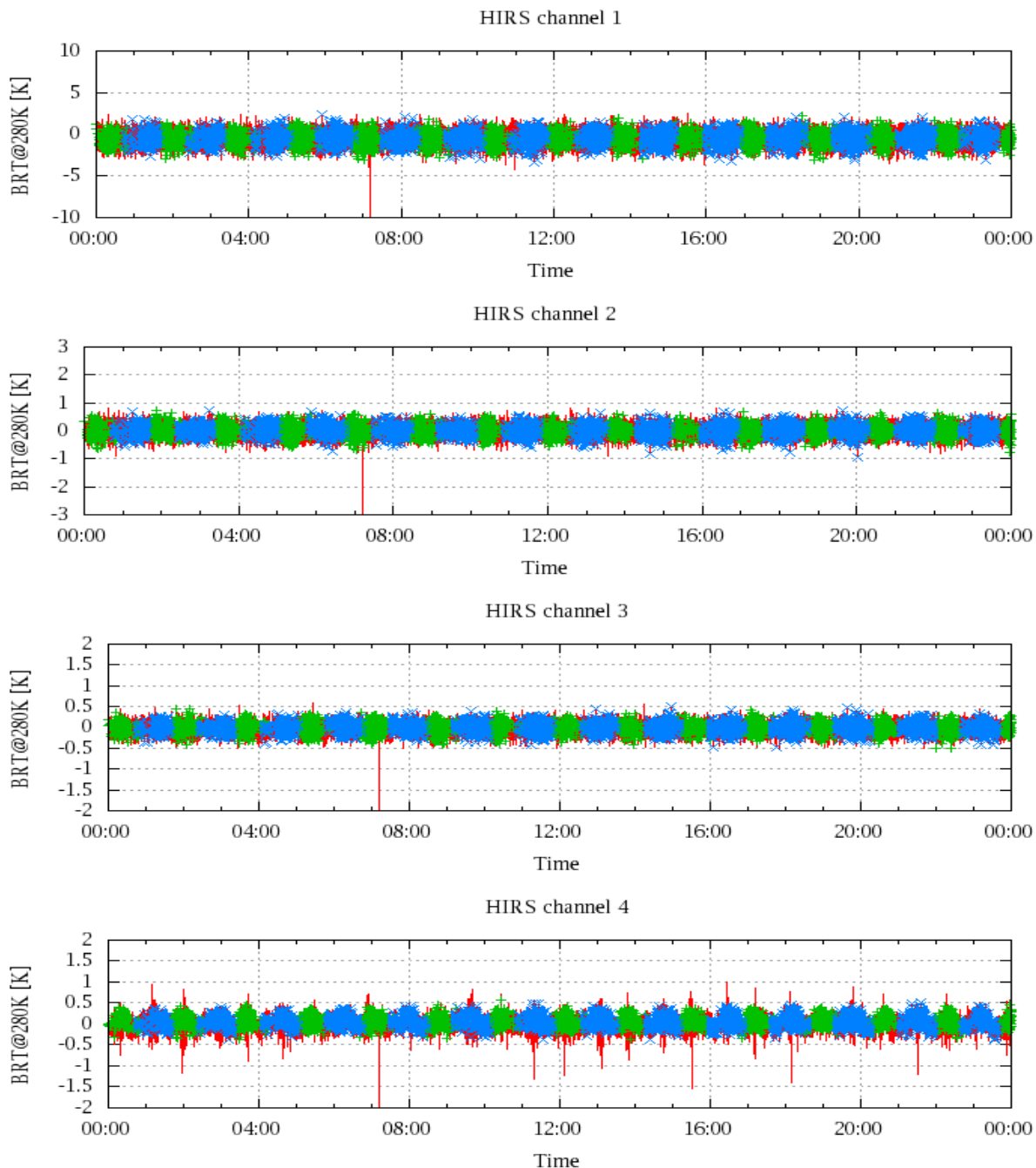


Figure 17: Radiance Differences in BRT

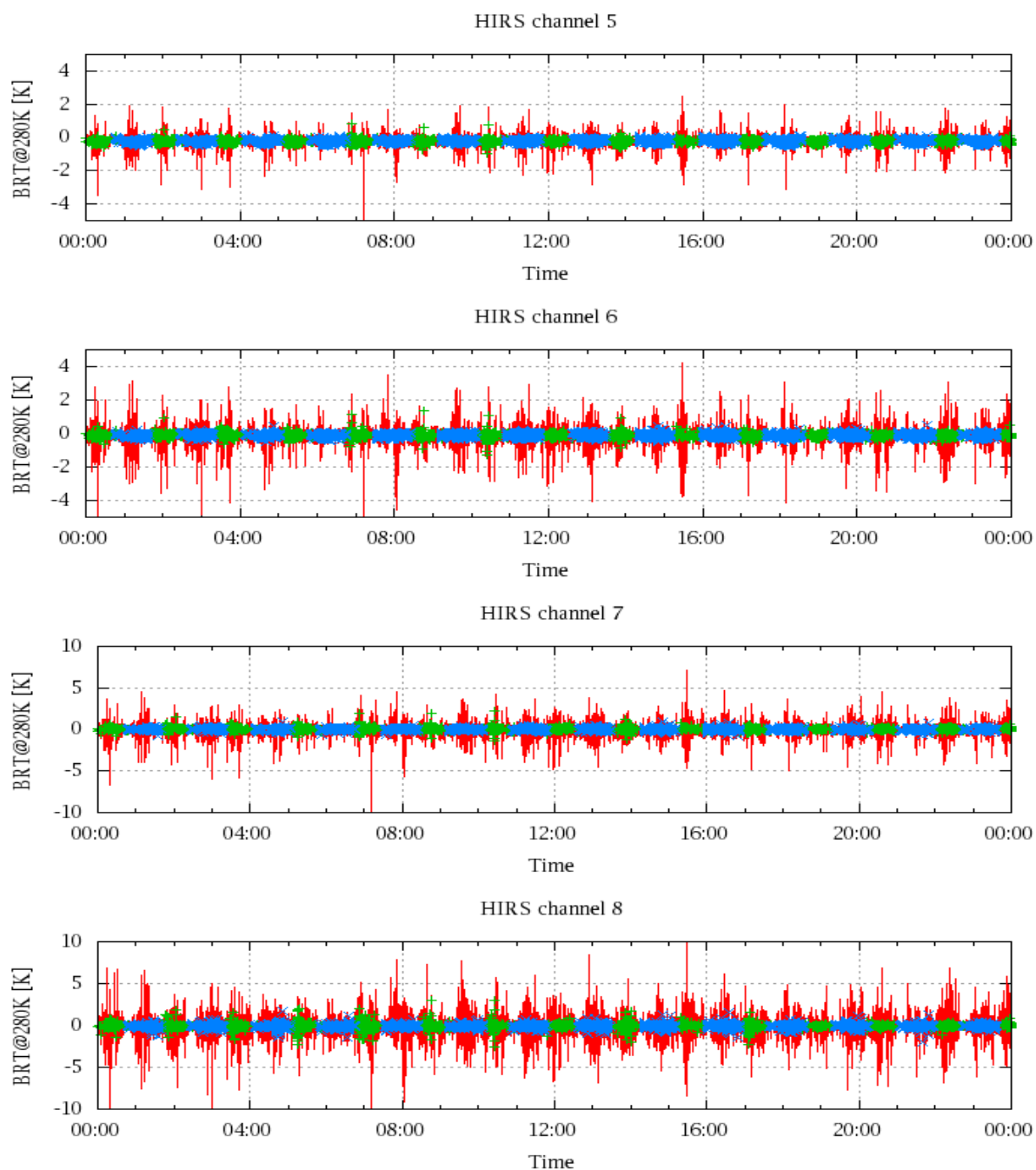


Figure 18: Radiance Differences in BRT

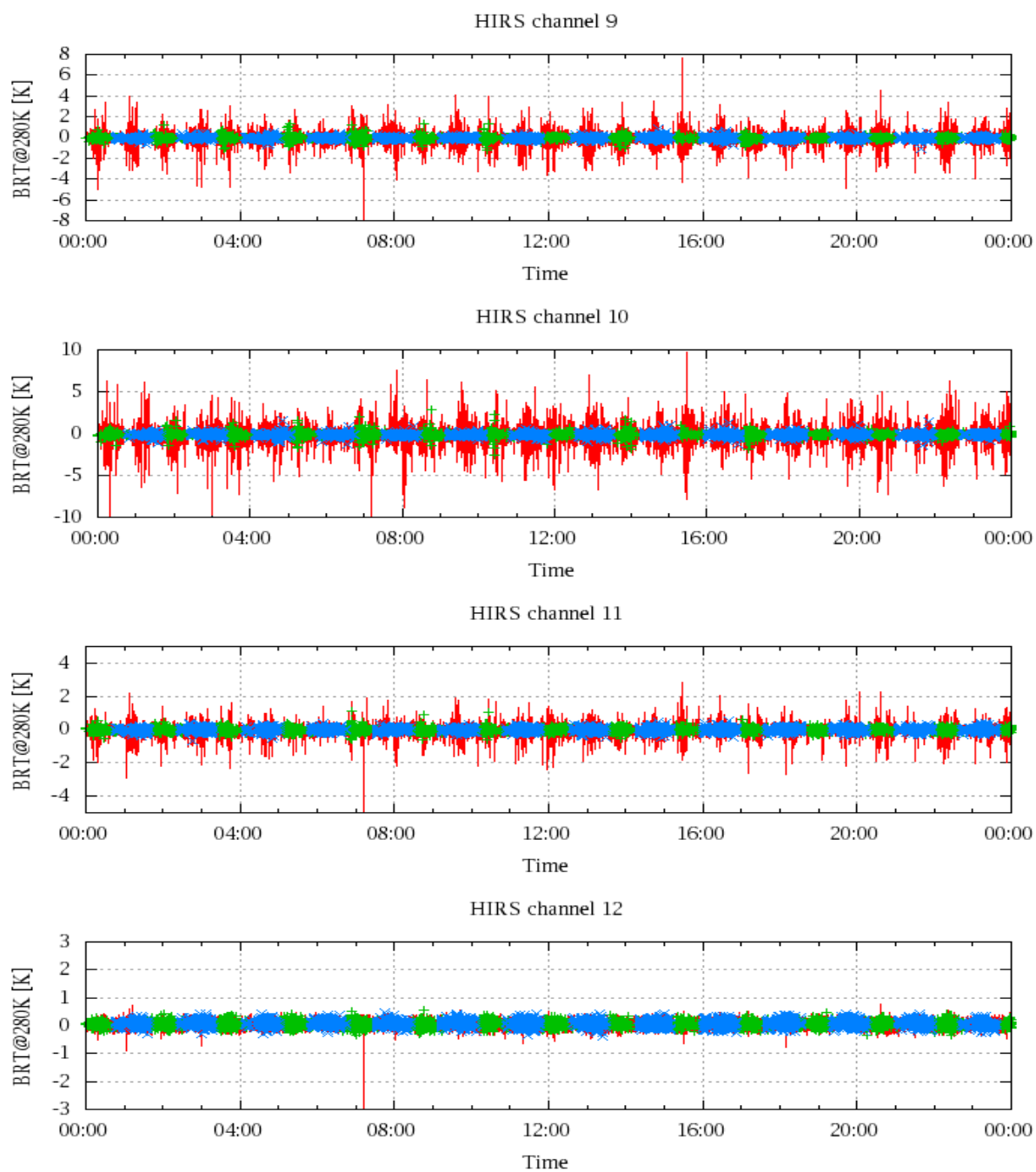


Figure 19: Radiance Differences in BRT

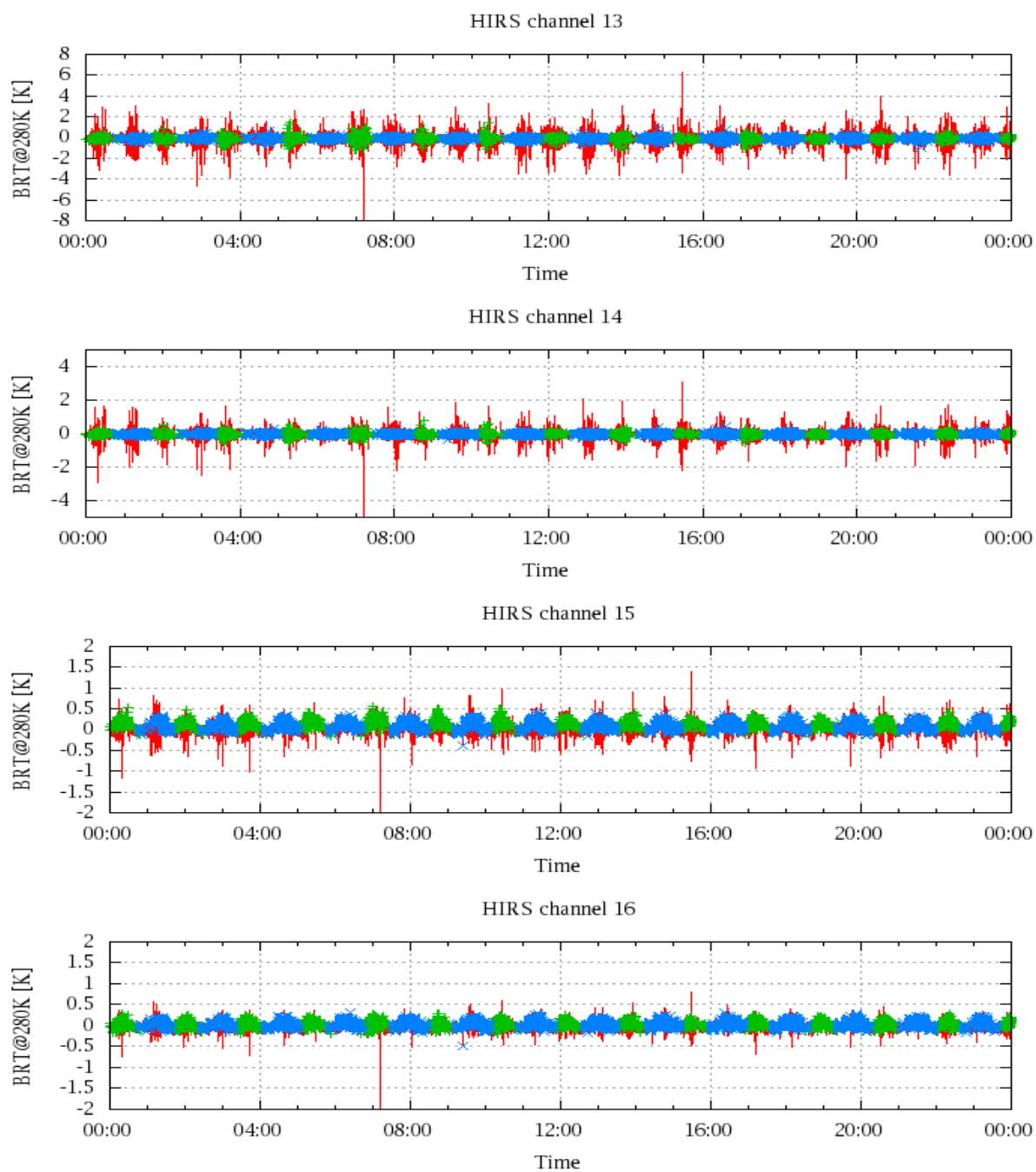


Figure 20: Radiance Differences in BRT

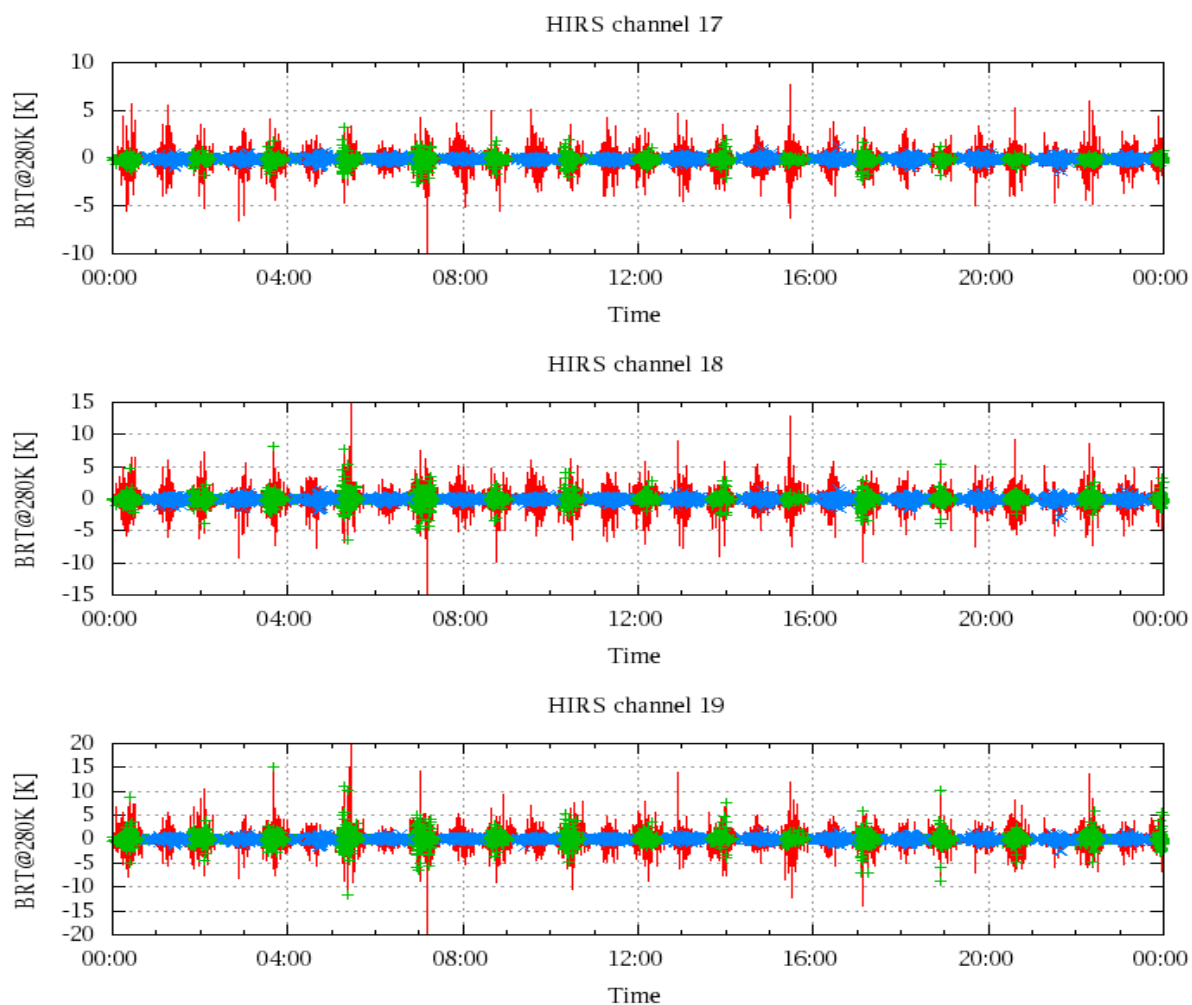


Figure 21: Radinace Differences in BRT