IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

05/10/2011 00:00:00 - 06/10/2011 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 05/10/2011 00:00:00 - 06/10/2011 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 05/10/2011 00:00:00 - 06/10/2011 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)	3755	3934	20111005083052.740	20111005083140.521
PX1 (130)	11652	11668	20111005173541.732	20111005173546.701
PX1 (130)	12251	12417	20111005173821.509	20111005173906.481
PX1 (130)	12556	12567	20111005173942.587	20111005173946.481
PX2 (135)	3755	3933	20111005083052.740	20111005083140.306
PX2 (135)	11652	11668	20111005173541.732	20111005173546.701
PX2 (135)	12251	12417	20111005173821.509	20111005173906.481
PX2 (135)	12556	12567	20111005173942.587	20111005173946.481
PX3 (140)	3755	3933	20111005083052.740	20111005083140.306
PX3 (140)	11652	11667	20111005173541.732	20111005173546.486
PX3 (140)	12251	12412	20111005173821.509	20111005173903.888
PX3 (140)	12412	12417	20111005173903.888	20111005173906.481
PX3 (140)	12556	12567	20111005173942.587	20111005173946.481
PX4 (145)	3755	3933	20111005083052.740	20111005083140.306
PX4 (145)	11652	11663	20111005173541.732	20111005173544.107
PX4 (145)	11663	11667	20111005173544.107	20111005173546.486
PX4 (145)	12251	12417	20111005173821.509	20111005173906.481
PX4 (145)	12556	12567	20111005173942.587	20111005173946.481

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	1243	1445	20111005083052.740	20111005083140.306
IMG (150)	9099	9119	20111005173541.513	20111005173546.486
IMG (150)	9778	9965	20111005173821.294	20111005173905.184
IMG (150)	10123	10135	20111005173942.372	20111005173945.184
VER (160)	9193	9224	20111005083048.845	20111005083144.845
VER (160)	13239	13245	20111005173536.755	20111005173552.755
VER (160)	13339	13369	20111005173816.751	20111005173903.888
VER (160)	13389	13391	20111005173936.751	20111005173942.587
AUX (180)	11659	11666	20111005083049.279	20111005083145.279
AUX (180)	15745	15747	20111005173537.189	20111005173553.189
AUX (180)	15765	15771	20111005173817.185	20111005173905.184

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
05/10/2011 00:00:12	-	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)	99.17 %	-
GQisFlagQual set (PX3)	99.26 %	-
GQisFlagQual set (PX4)	99.33 %	-
GQisFlagQual set (all)	99.27 %	-

Table 4: Quality flags

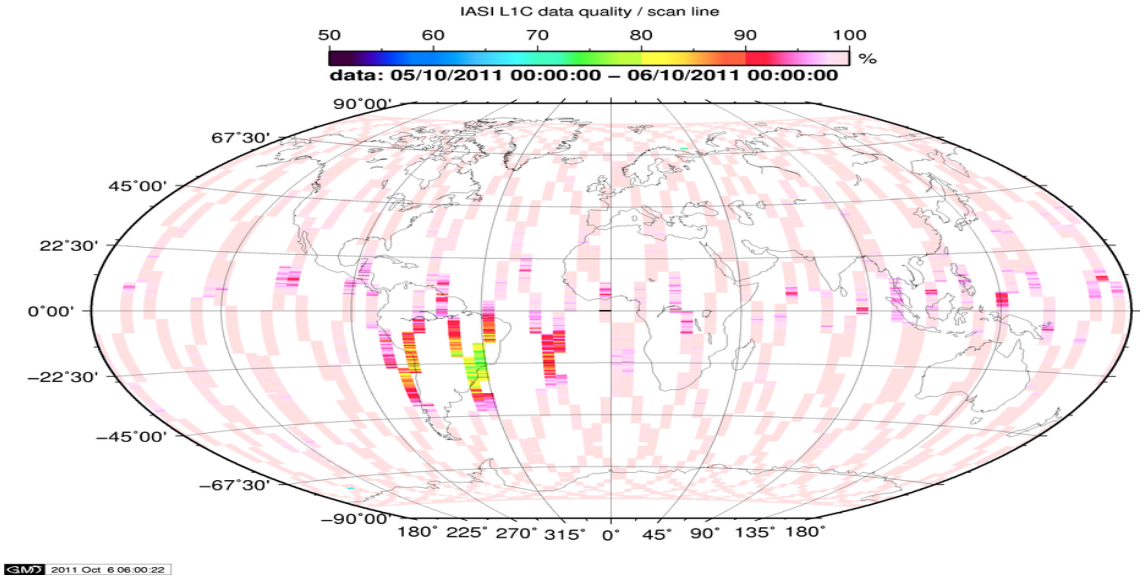

Figure 1: L1C data quality

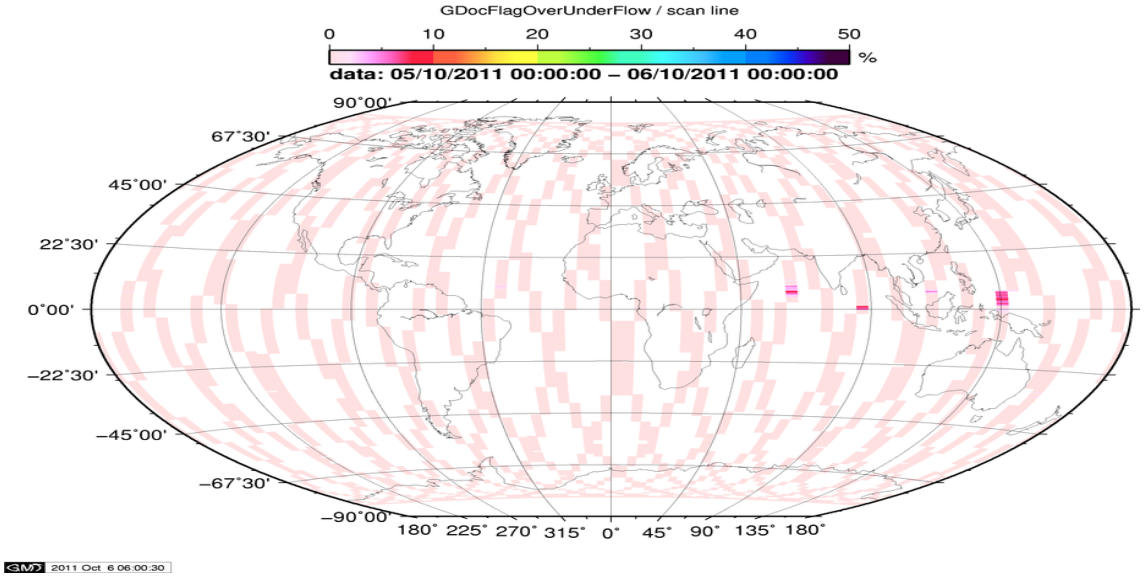

Figure 2: Flag of Over and Under Flows

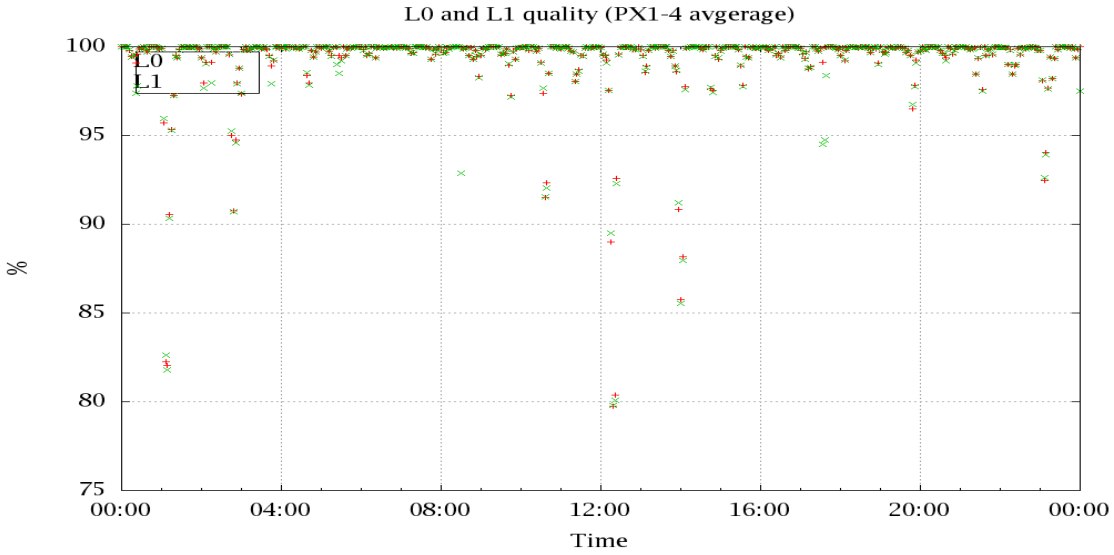

Figure 3: Level 0 and 1C overall quality

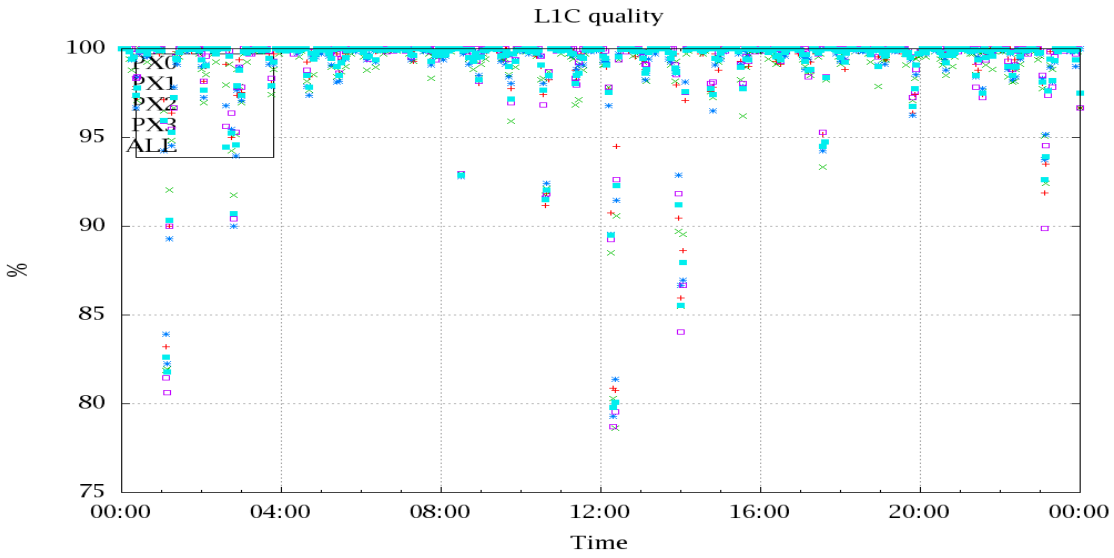

Figure 4: Level 1C quality

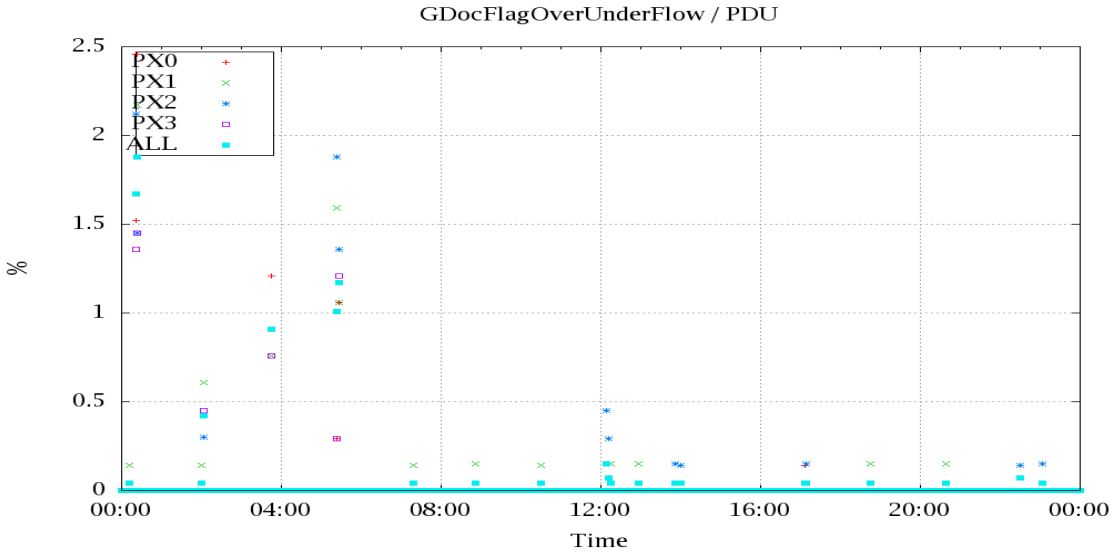

Figure 5: OverUnderFlowFlag timeseries

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 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.

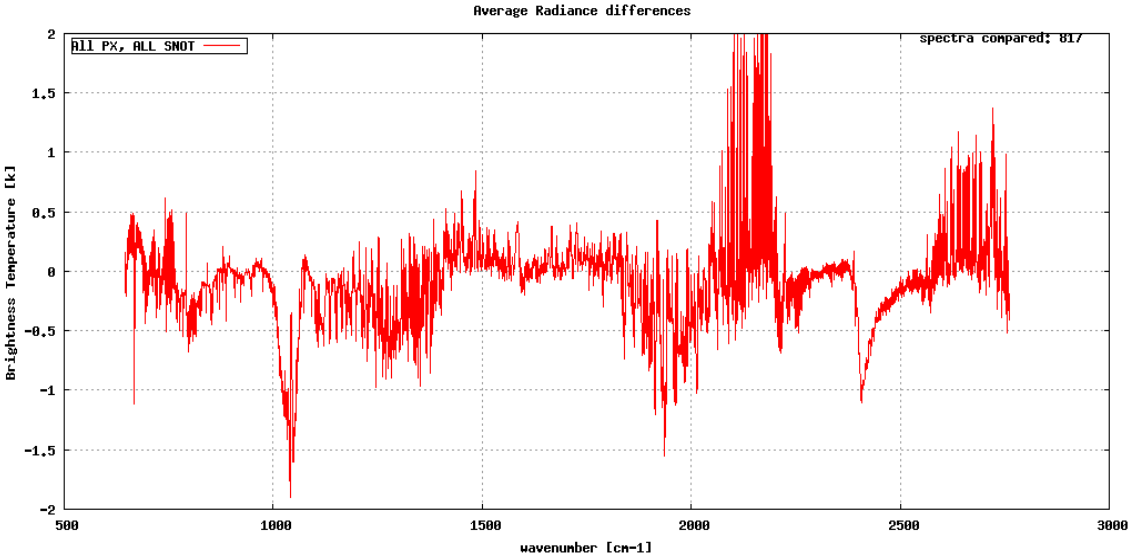

Figure 6: Average Radiance differences: OBS-CAL

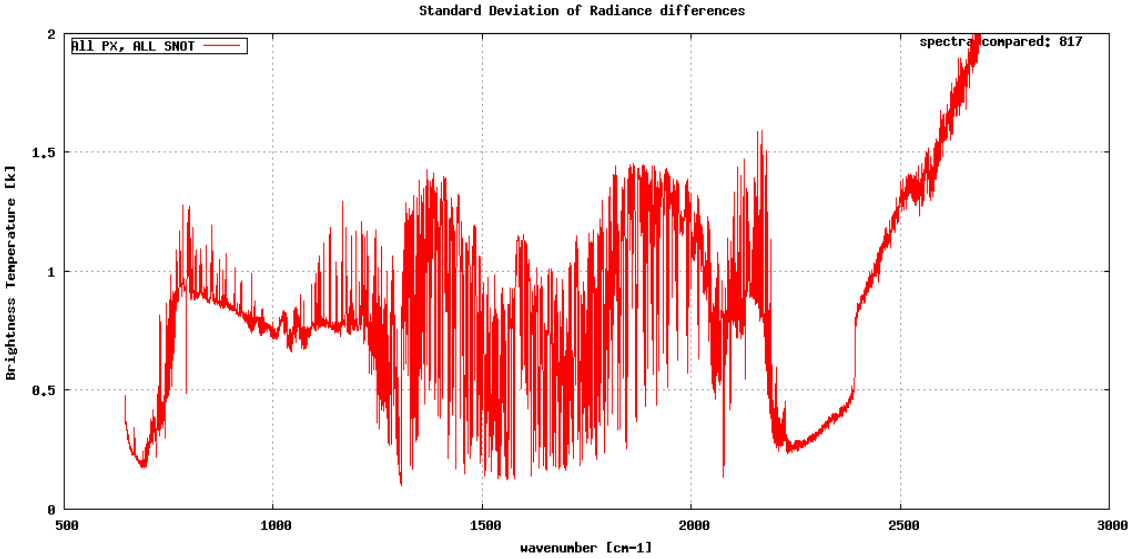

Figure 7: Standard Deviation of Radiance differences

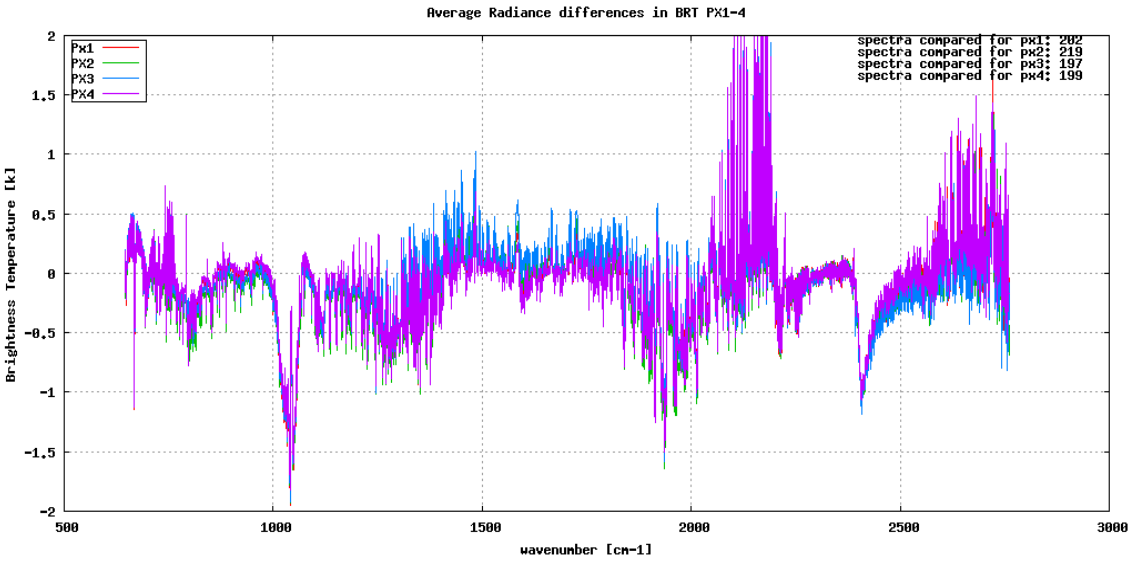

Figure 8: Average Radiance differences: OBS-CAL

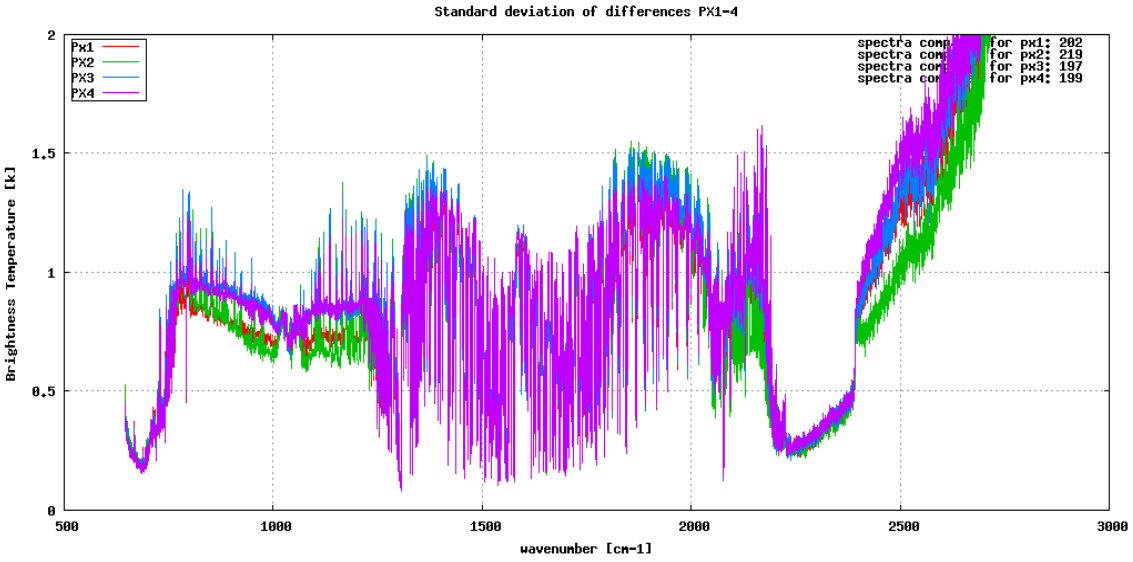

Figure 9: Standard Deviation of Radiance differences

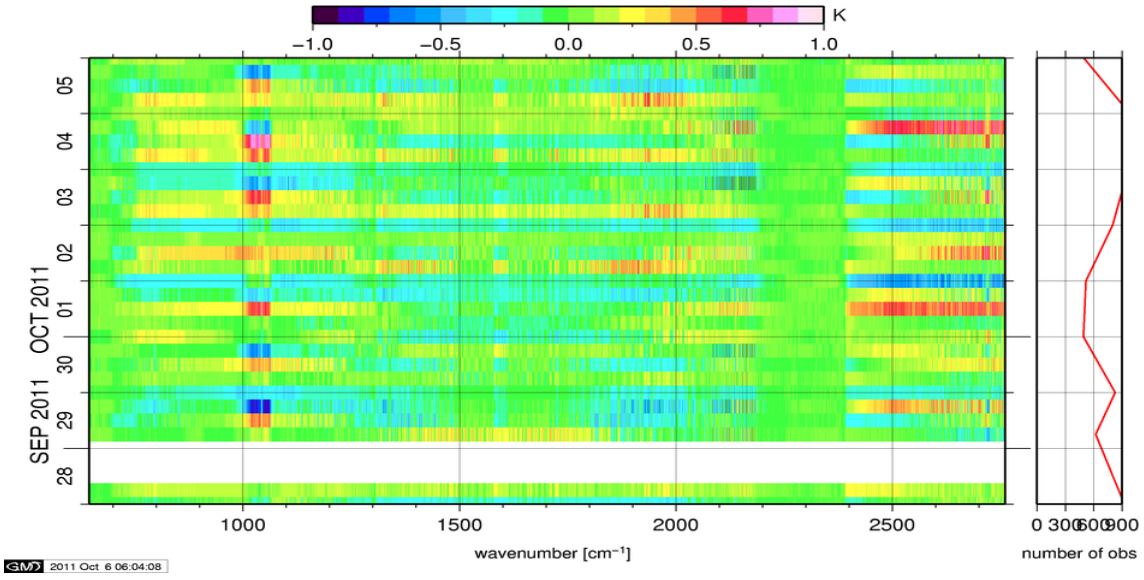

Figure 10: Radiance Anomaly in BRT: All Channels

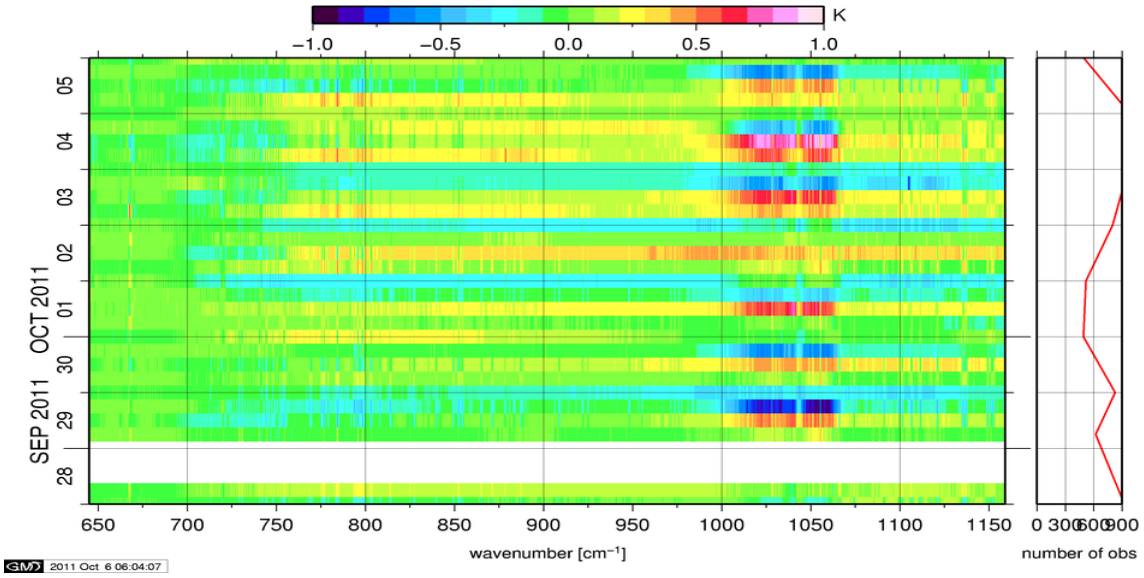

Figure 11: Radiance Anomaly in BRT: IASI Band 1

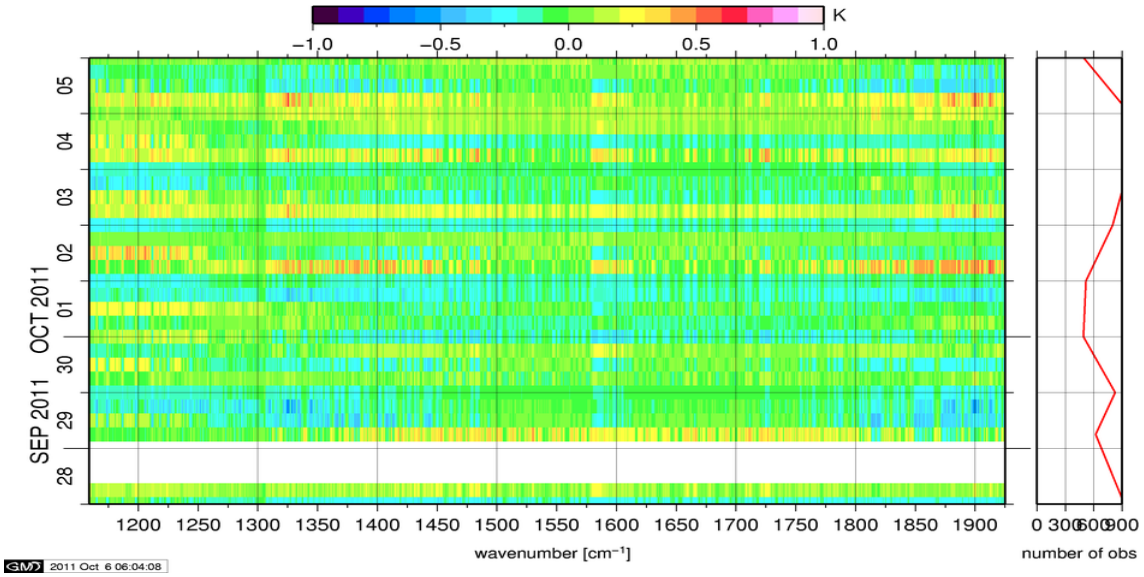

Figure 12: Radiance Anomaly in BRT: IASI Band 2

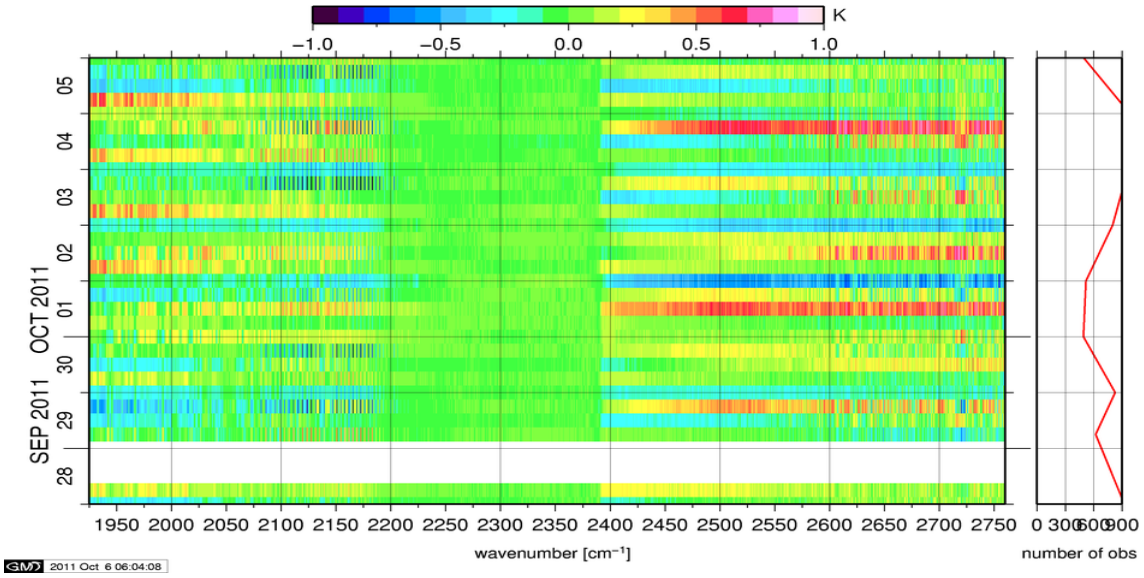

Figure 13: Radiance Anomaly in BRT: IASI Band 3

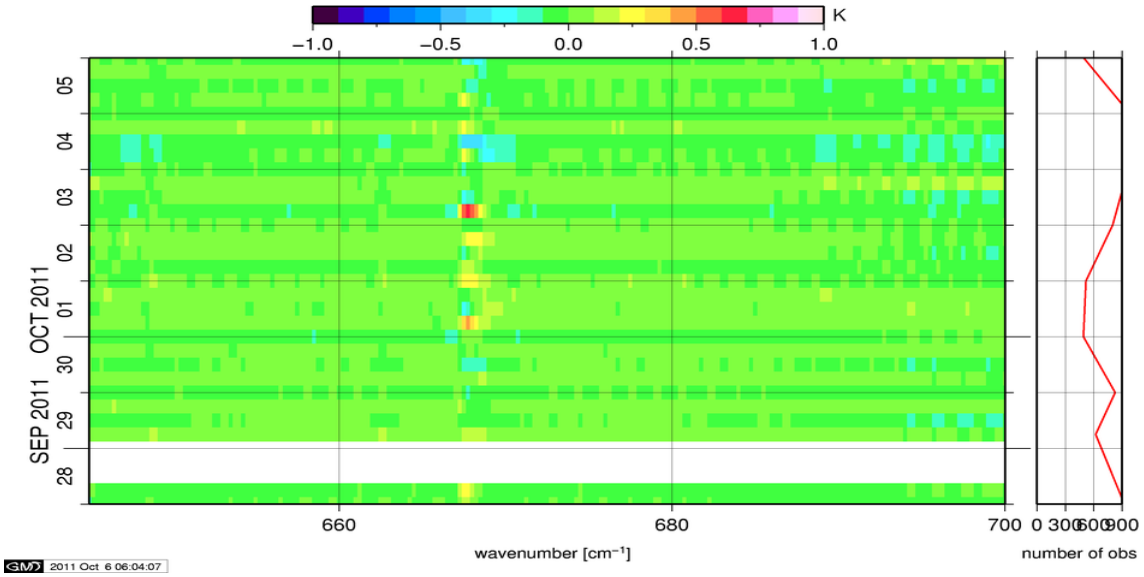

Figure 14: Radiance Anomaly in BRT: CO2 14

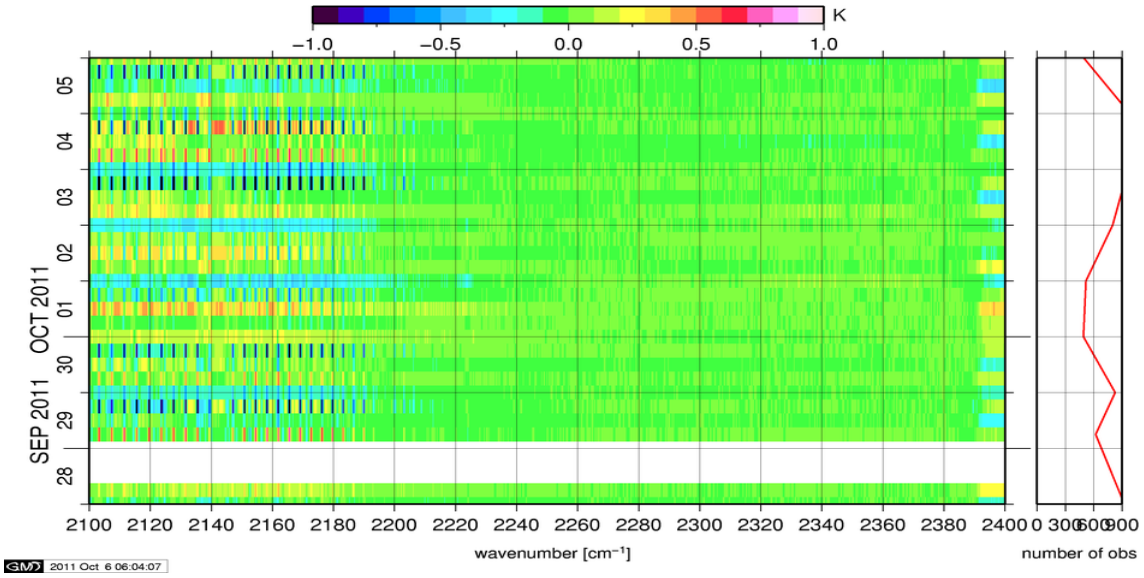

Figure 15: Radiance Anomaly in BRT: CO2 4.3

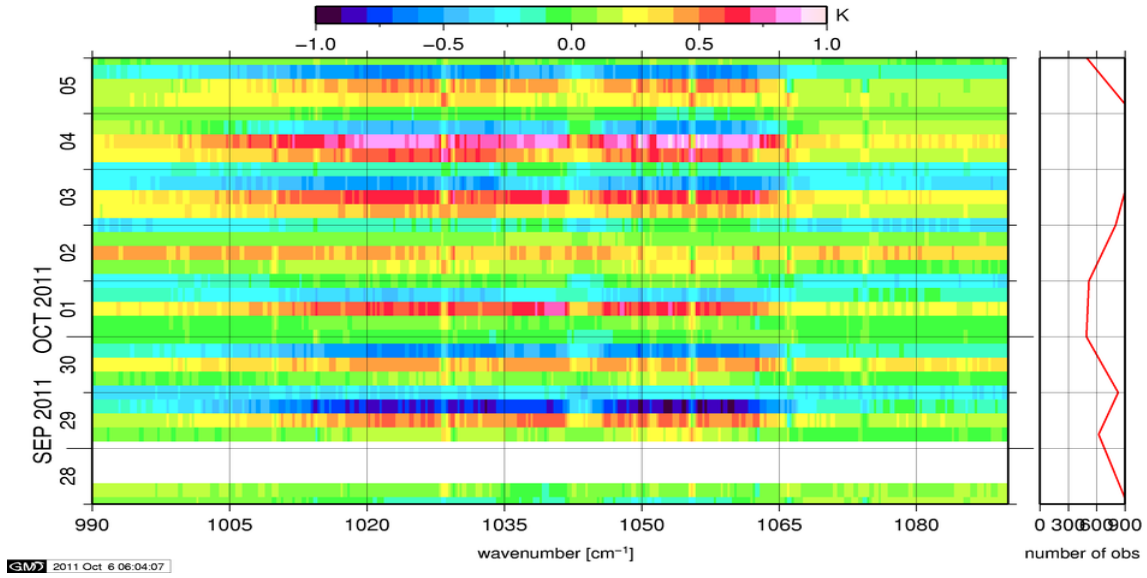

Figure 16: Radiance Anomaly in BRT: O3

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.

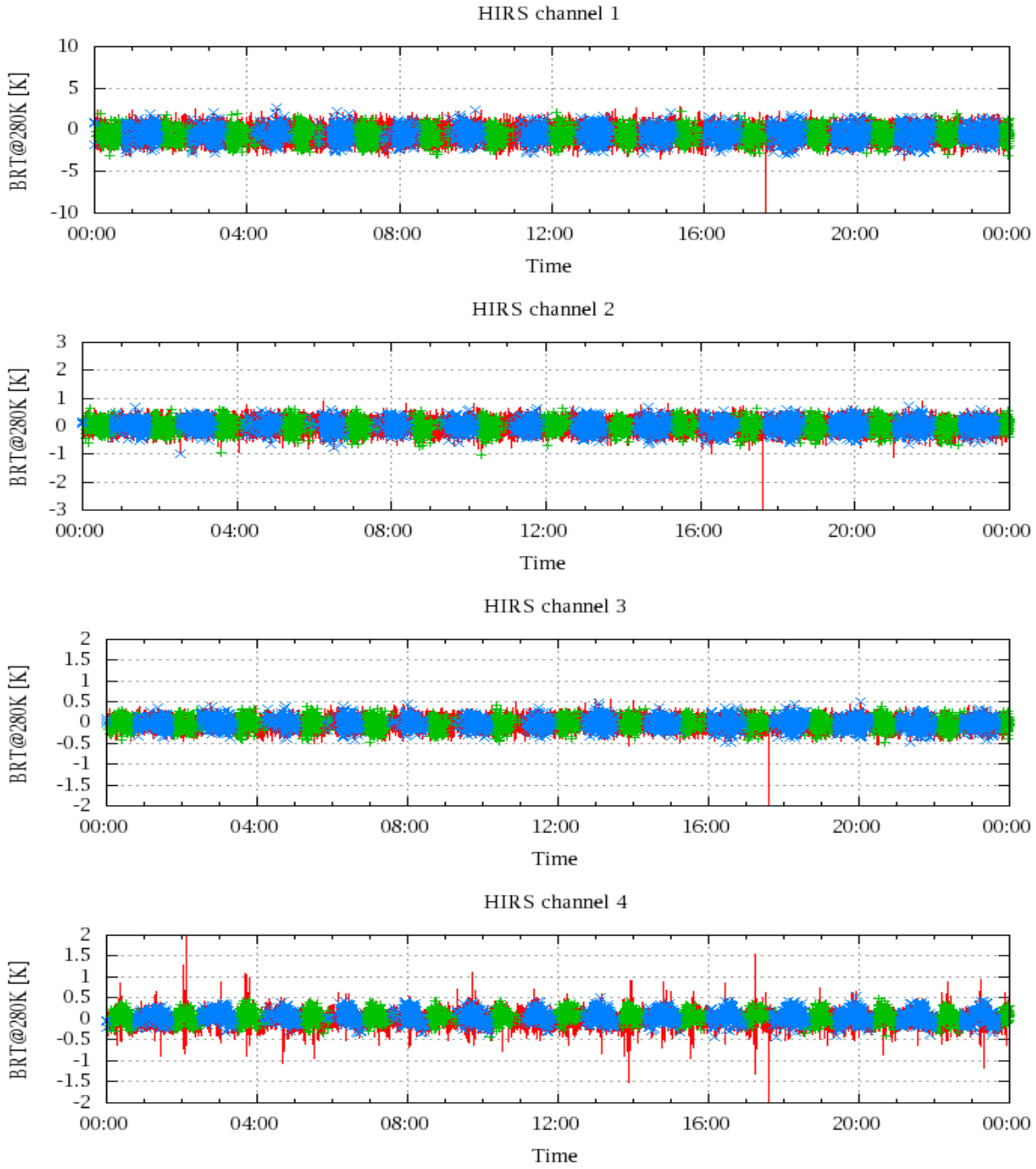

Figure 17: Radiance Differences in BRT

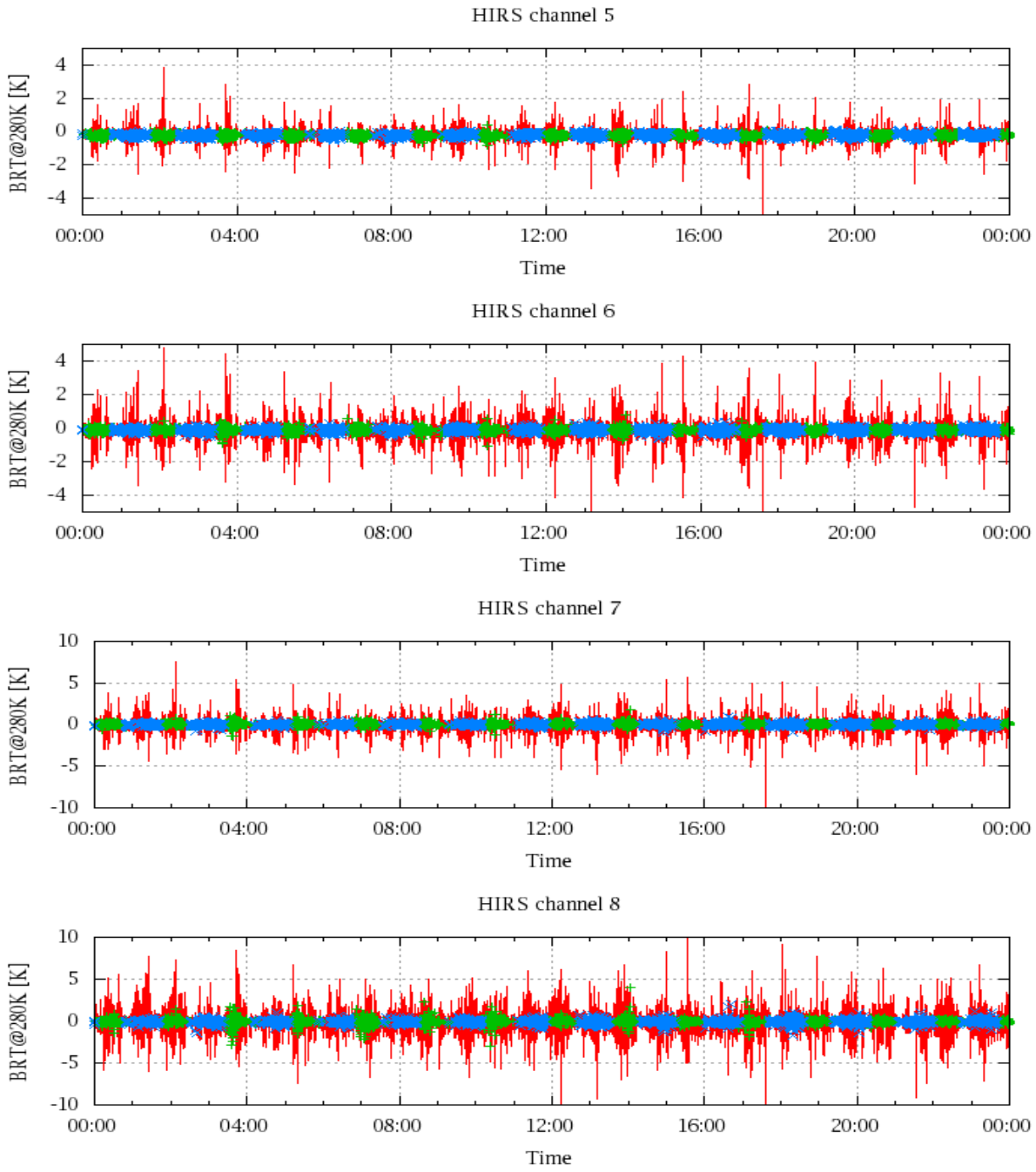

Figure 18: Radiance Differences in BRT

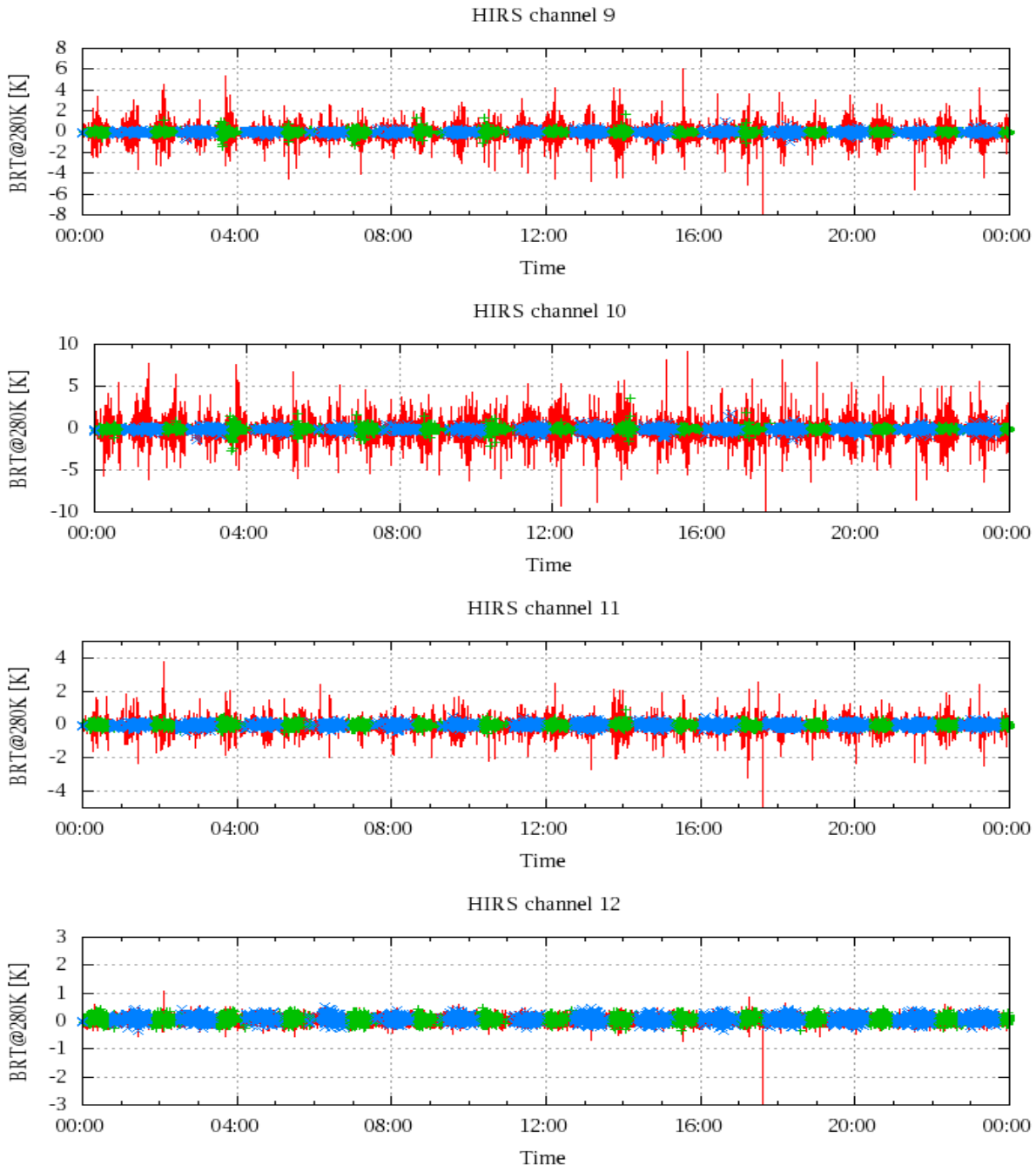

Figure 19: Radiance Differences in BRT

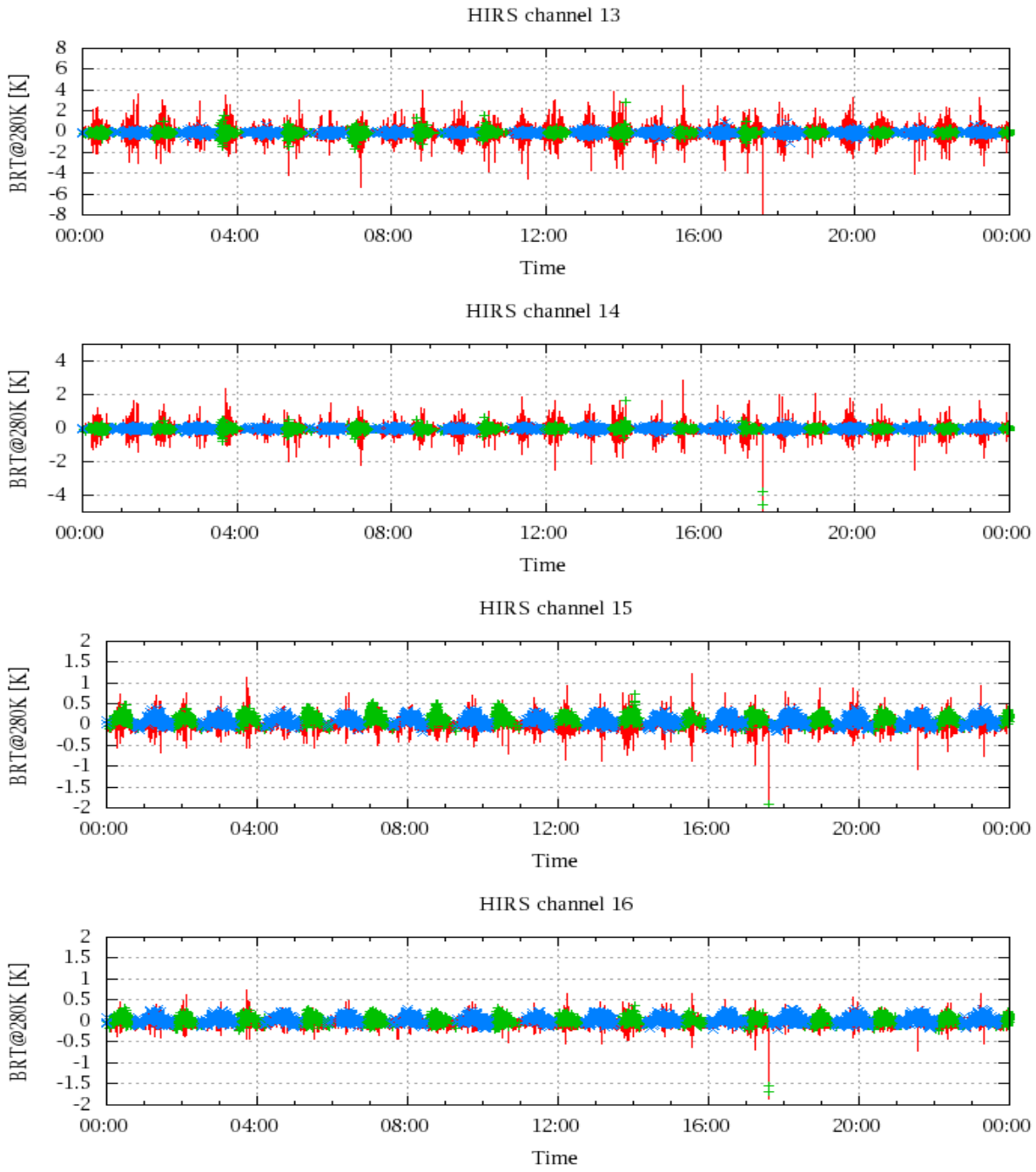

Figure 20: Radiance Differences in BRT

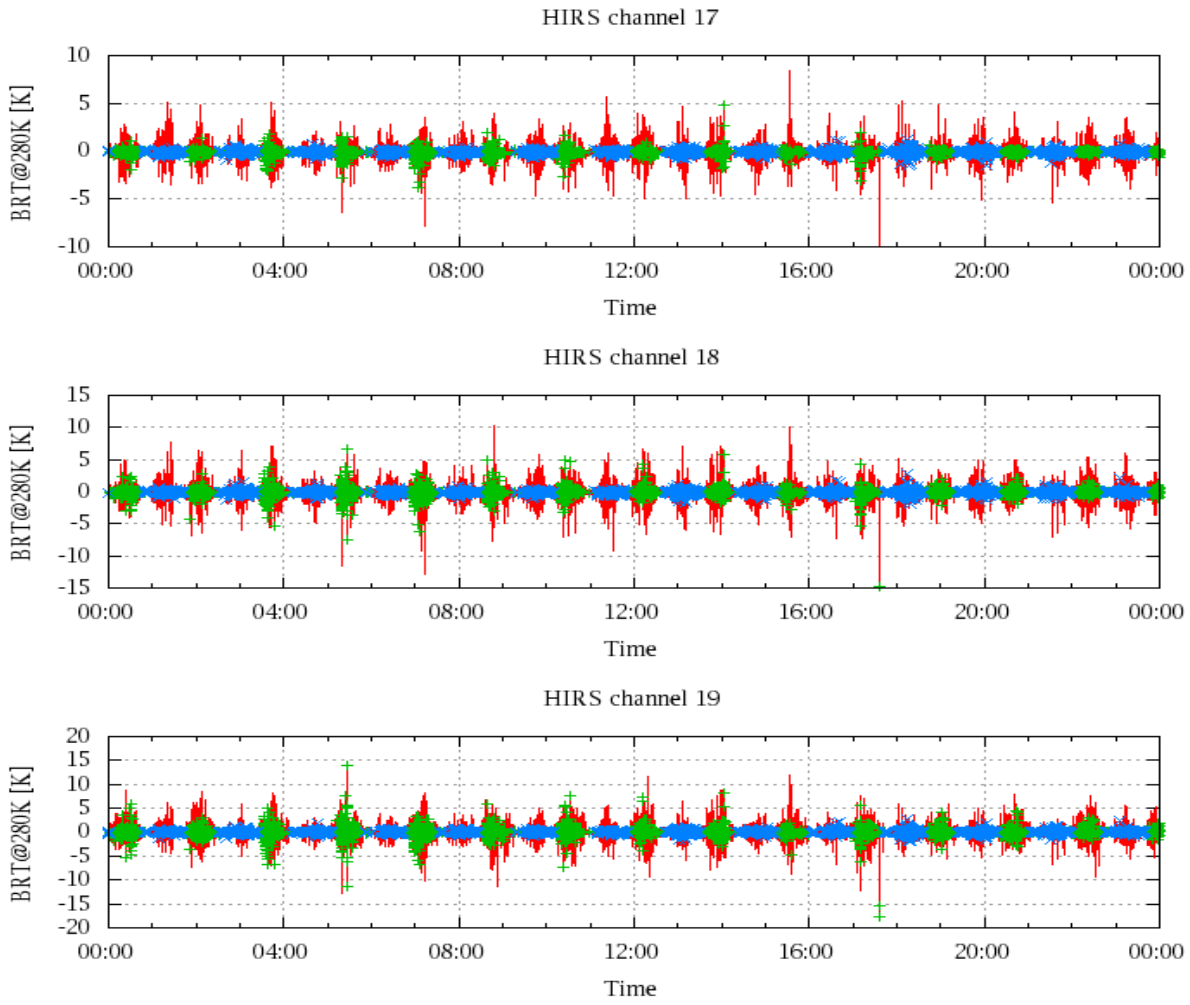

Figure 21: Radinace Differences in BRT