IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

04/09/2010 00:00:00 - 05/09/2010 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 04/09/2010 00:00:00 - 05/09/2010 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 04/09/2010 00:00:00 - 05/09/2010 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	467	-
L0 IASI PDUs	181	e
L1 ENG PDUs	179	e
L1 ENG distinct GEPSGranule	179	a
L1 DPX PDUs (RM: IASI-HIRS)	178	e
L1 DPS Files (RM: OBS-CAL NWP based)	179	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	351	10751	20100904164530.150	20100904173143.984
PX1 (130)	10751	10760	20100904173143.984	20100904173145.929
PX1 (130)	10781	10783	20100904173151.984	20100904173152.417
PX2 (135)	351	10750	20100904164530.150	20100904173143.769
PX2 (135)	10751	10753	20100904173143.984	20100904173144.417
PX2 (135)	10753	10756	20100904173144.417	20100904173145.066
PX2 (135)	10756	10759	20100904173145.066	20100904173145.714
PX2 (135)	10781	10783	20100904173151.984	20100904173152.417
PX3 (140)	351	10749	20100904164530.150	20100904173143.550
PX3 (140)	10749	10753	20100904173143.550	20100904173144.417
PX3 (140)	10753	10759	20100904173144.417	20100904173145.714
PX3 (140)	10781	10783	20100904173151.984	20100904173152.417
PX3 (140)	10786	10788	20100904173153.066	20100904173153.499
PX4 (145)	351	10749	20100904164530.150	20100904173143.550
PX4 (145)	10749	10751	20100904173143.550	20100904173143.984
PX4 (145)	10751	10759	20100904173143.984	20100904173145.714
PX4 (145)	10786	10788	20100904173153.066	20100904173153.499
IMG (150)	4763	174	20100904164530.150	20100904173145.500

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	5514	7250	20100904164522.150	20100904173146.148
AUX (180)	1102	1450	20100904164522.584	20100904173146.578

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
04/09/2010 00:07:09	-	Heater 2
04/09/2010 13:47:09	Heater 2	Auxiliary ASE synchronised
04/09/2010 14:18:21	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	181	e
L1 ENG PDUs	179	e
L1 ENG distinct GEPSGranule	179	a
GQisFlagQual set (PX1)	99.57 %	-
GQisFlagQual set (PX2)	99.46 %	-
GQisFlagQual set (PX3)	99.51 %	-
GQisFlagQual set (PX4)	99.61 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

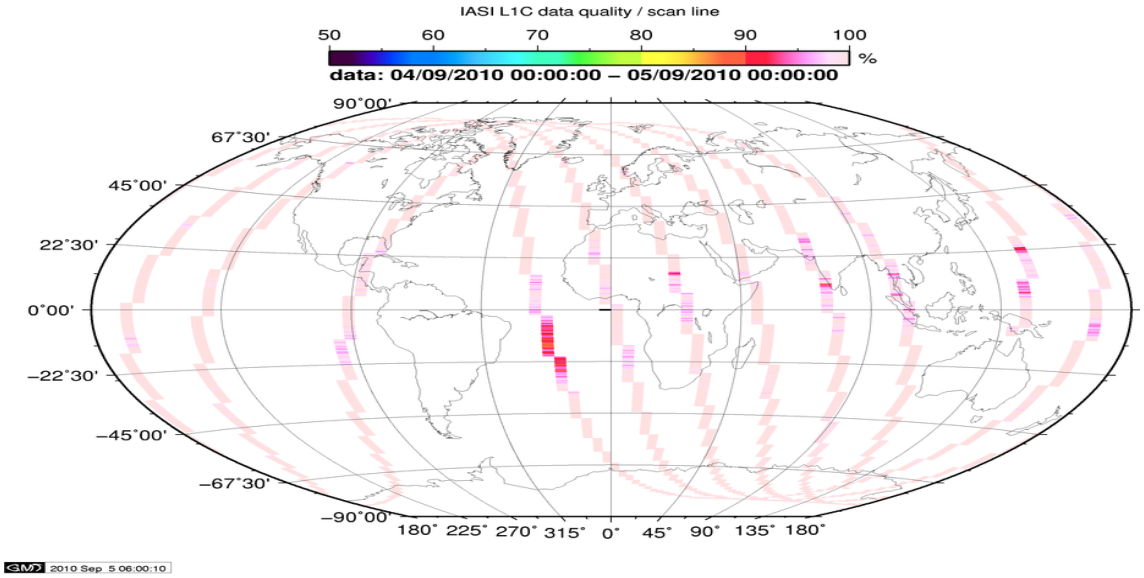

Figure 1: L1C data quality

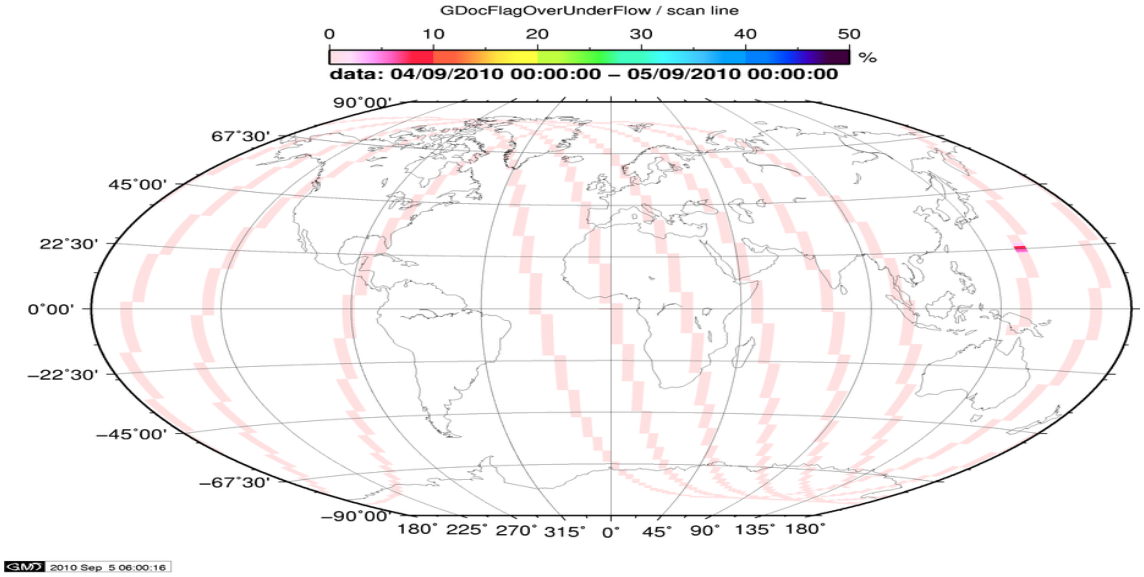

Figure 2: Flag of Over and Under Flows

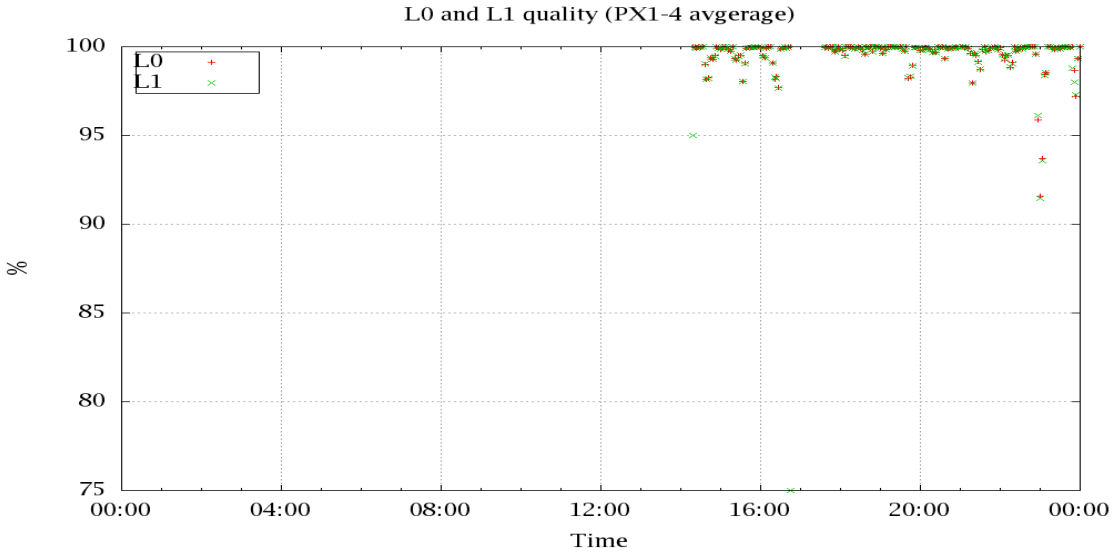

Figure 3: Level 0 and 1C overall quality

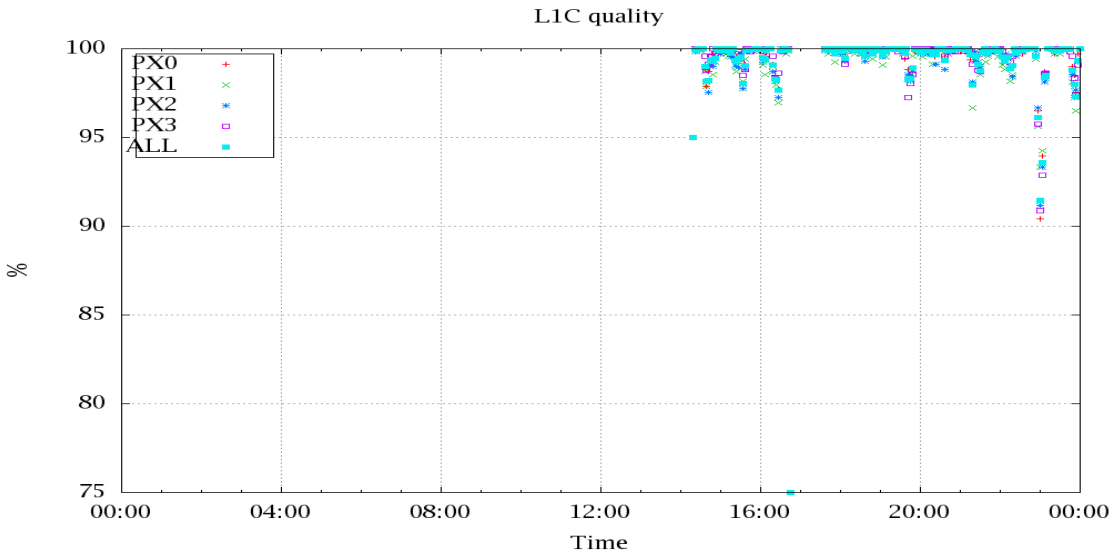

Figure 4: Level 1C quality

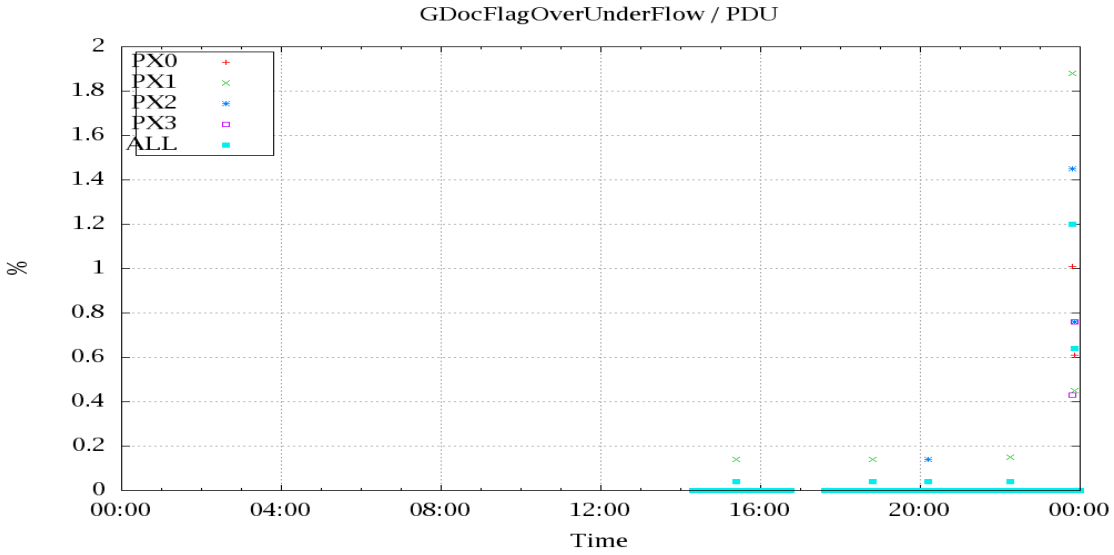

Figure 5: OverUnderFlowFlag timeseries

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.

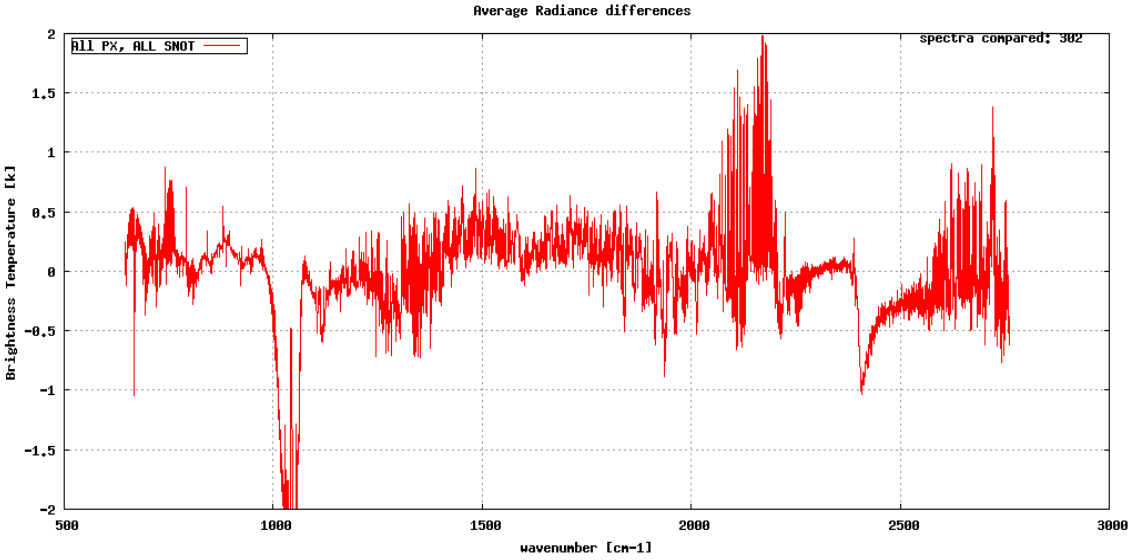

Figure 6: Average Radiance differences: OBS-CAL

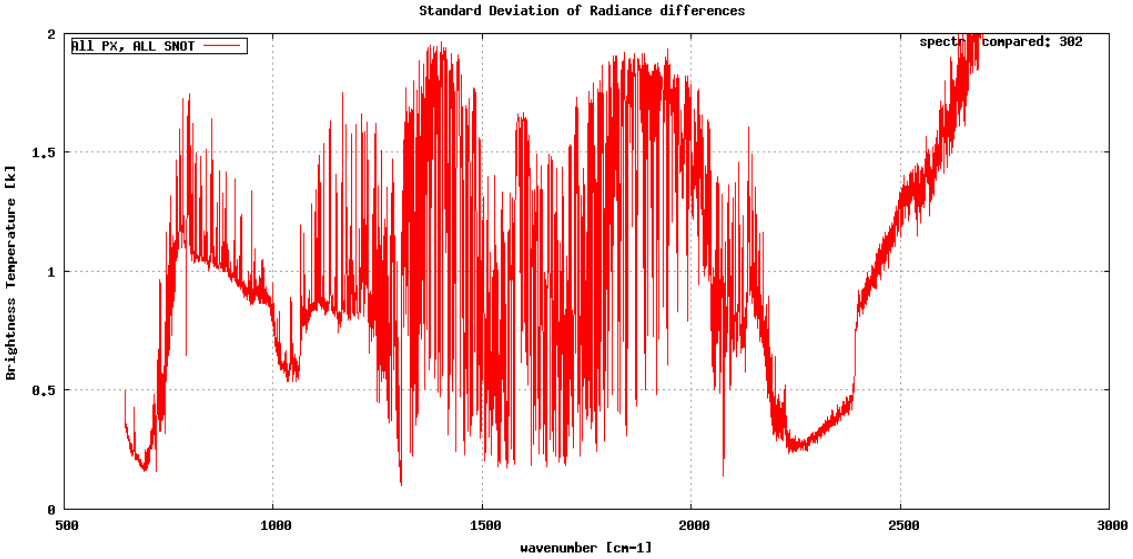

Figure 7: Standard Deviation of Radiance differences

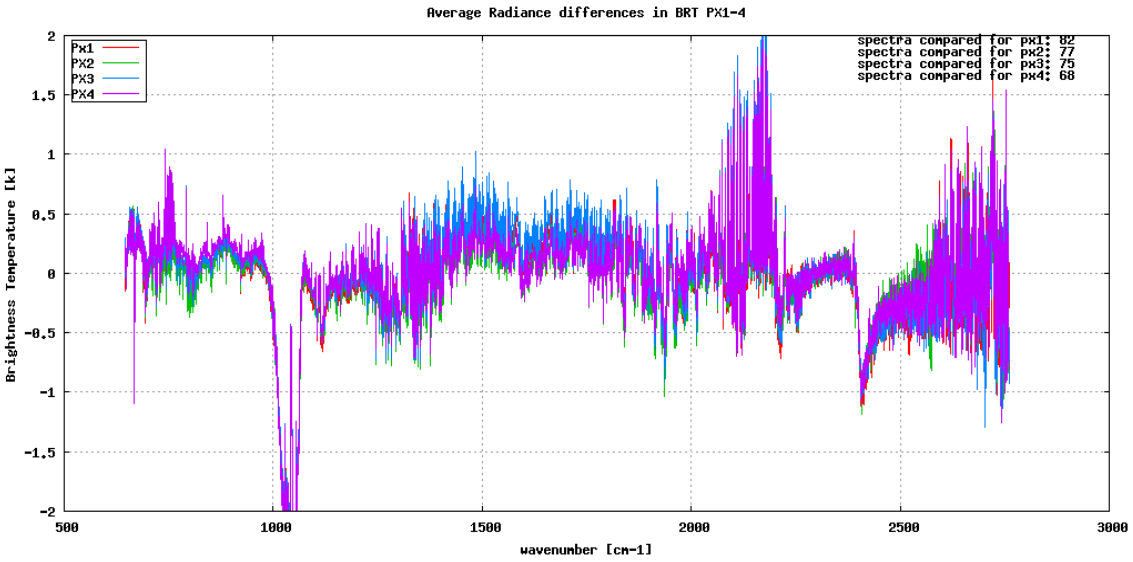

Figure 8: Average Radiance differences: OBS-CAL

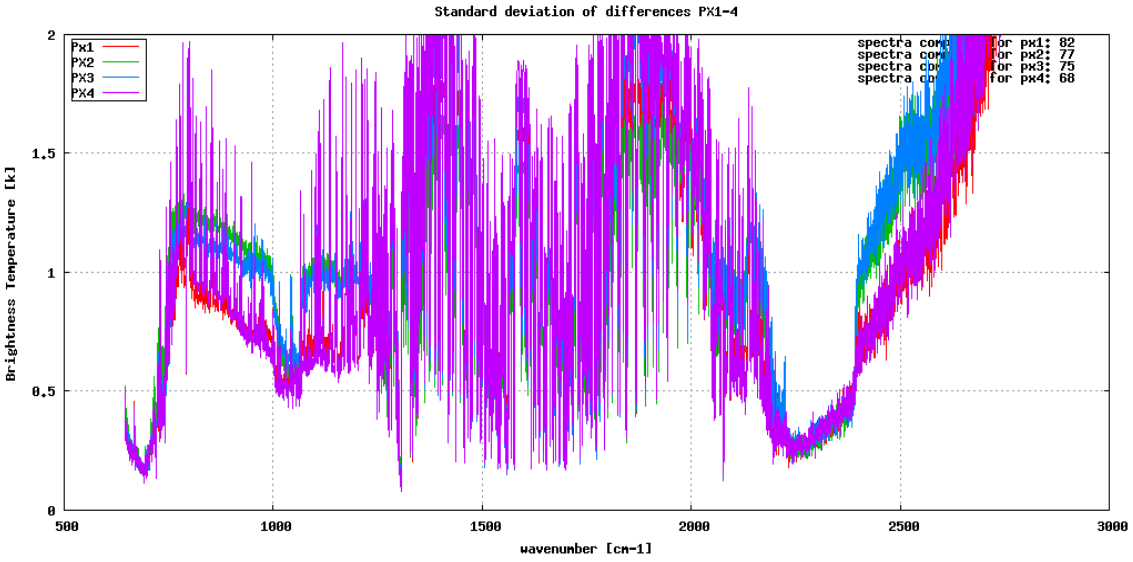

Figure 9: Standard Deviation of Radiance differences

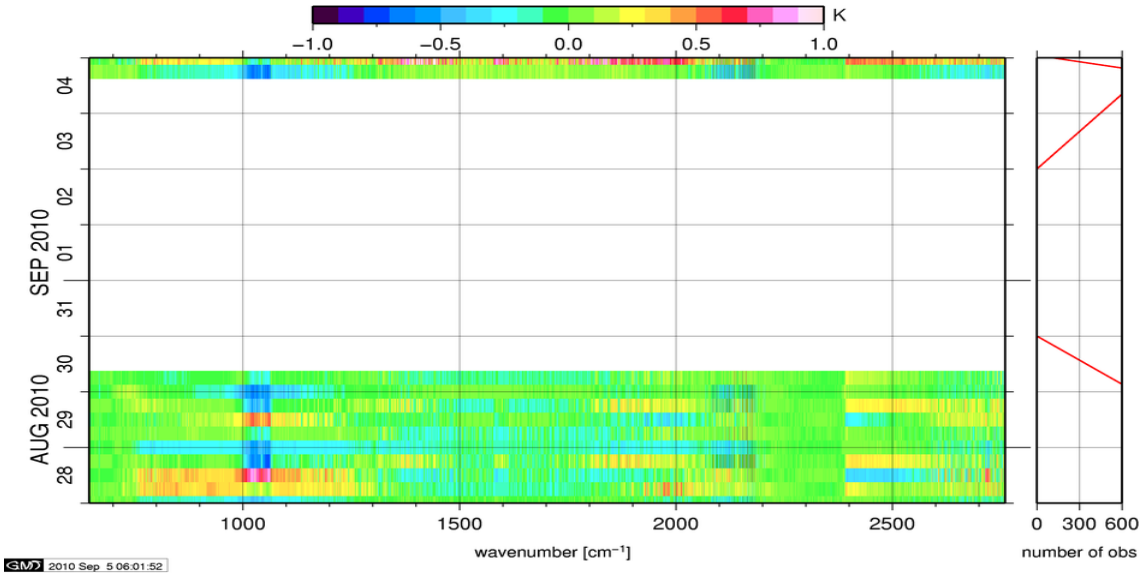

Figure 10: Radiance Anomaly in BRT: All Channels

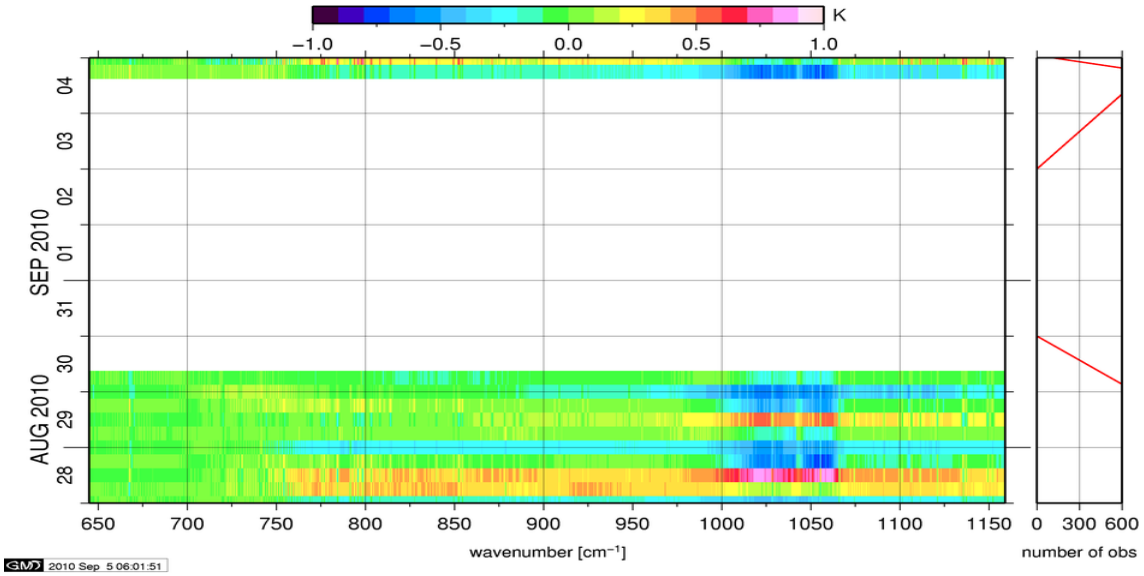

Figure 11: Radiance Anomaly in BRT: IASI Band 1

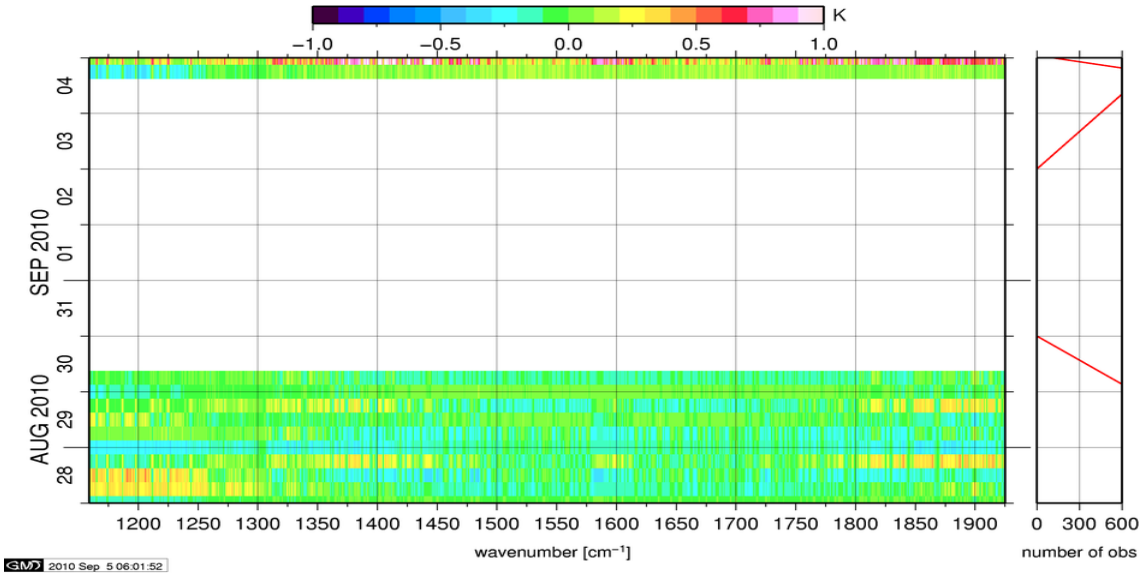

Figure 12: Radiance Anomaly in BRT: IASI Band 2

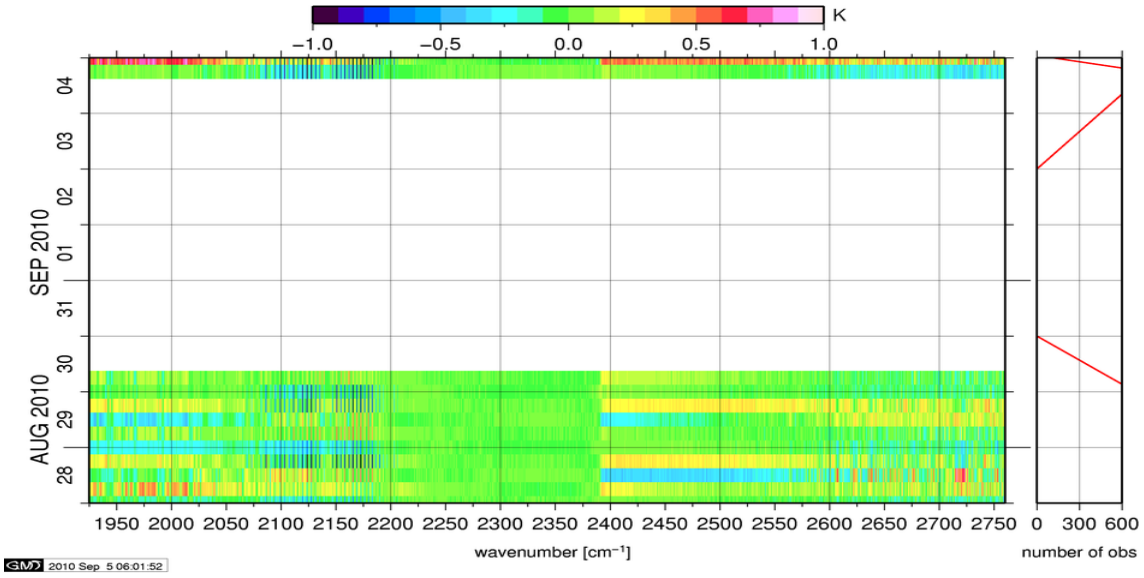

Figure 13: Radiance Anomaly in BRT: IASI Band 3

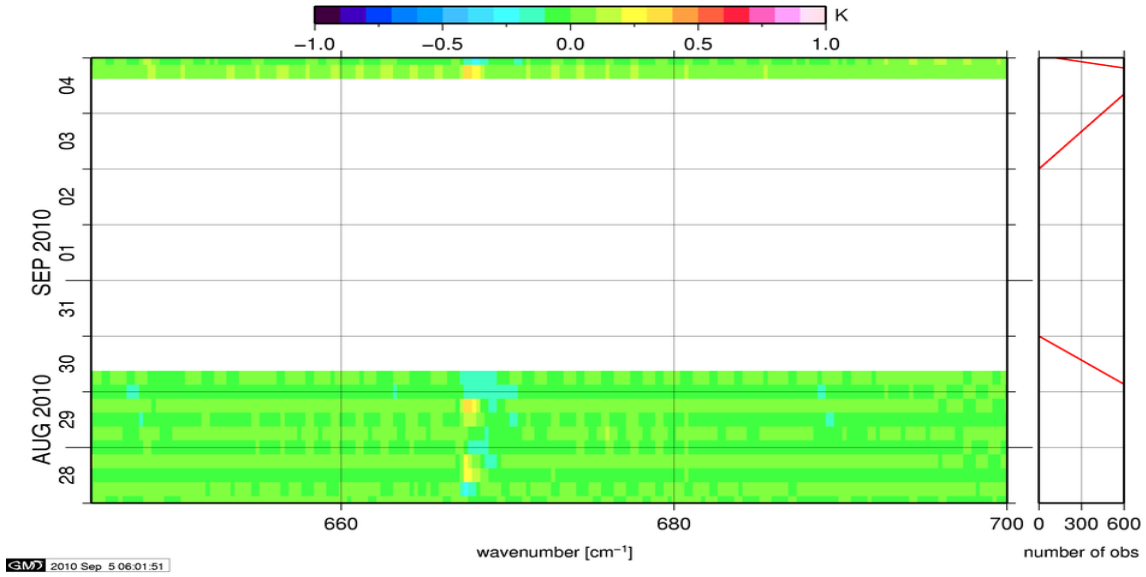

Figure 14: Radiance Anomaly in BRT: CO2 14

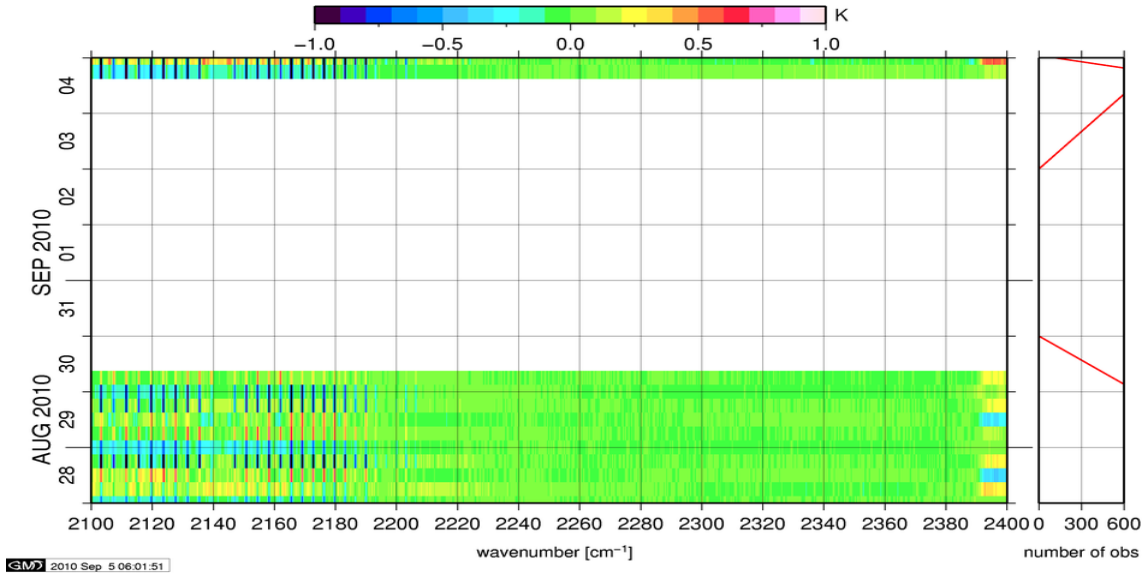

Figure 15: Radiance Anomaly in BRT: CO2 4.3

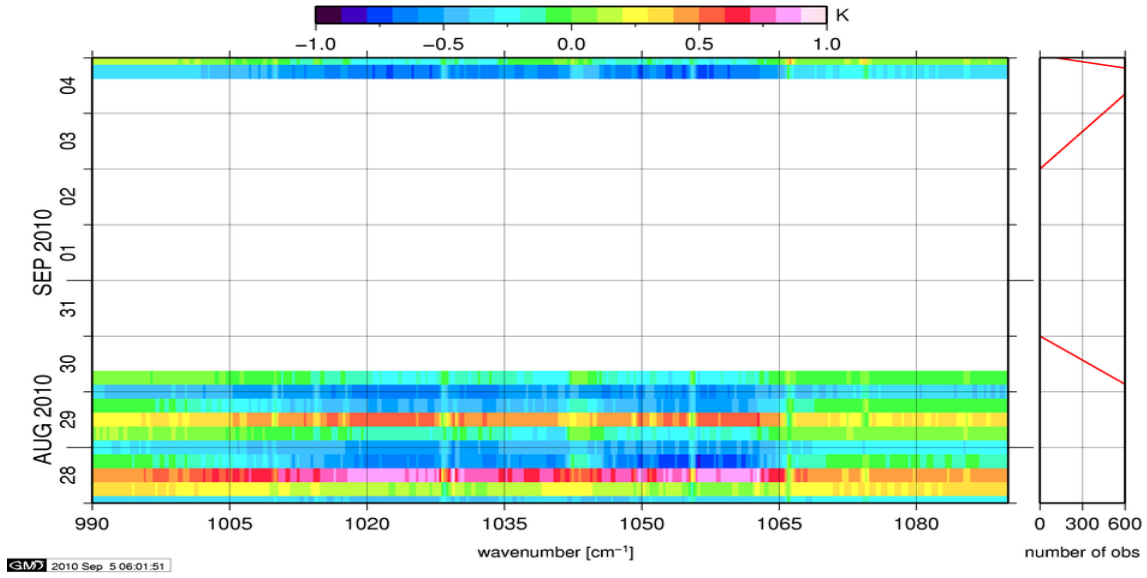

Figure 16: Radiance Anomaly in BRT: O3

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.

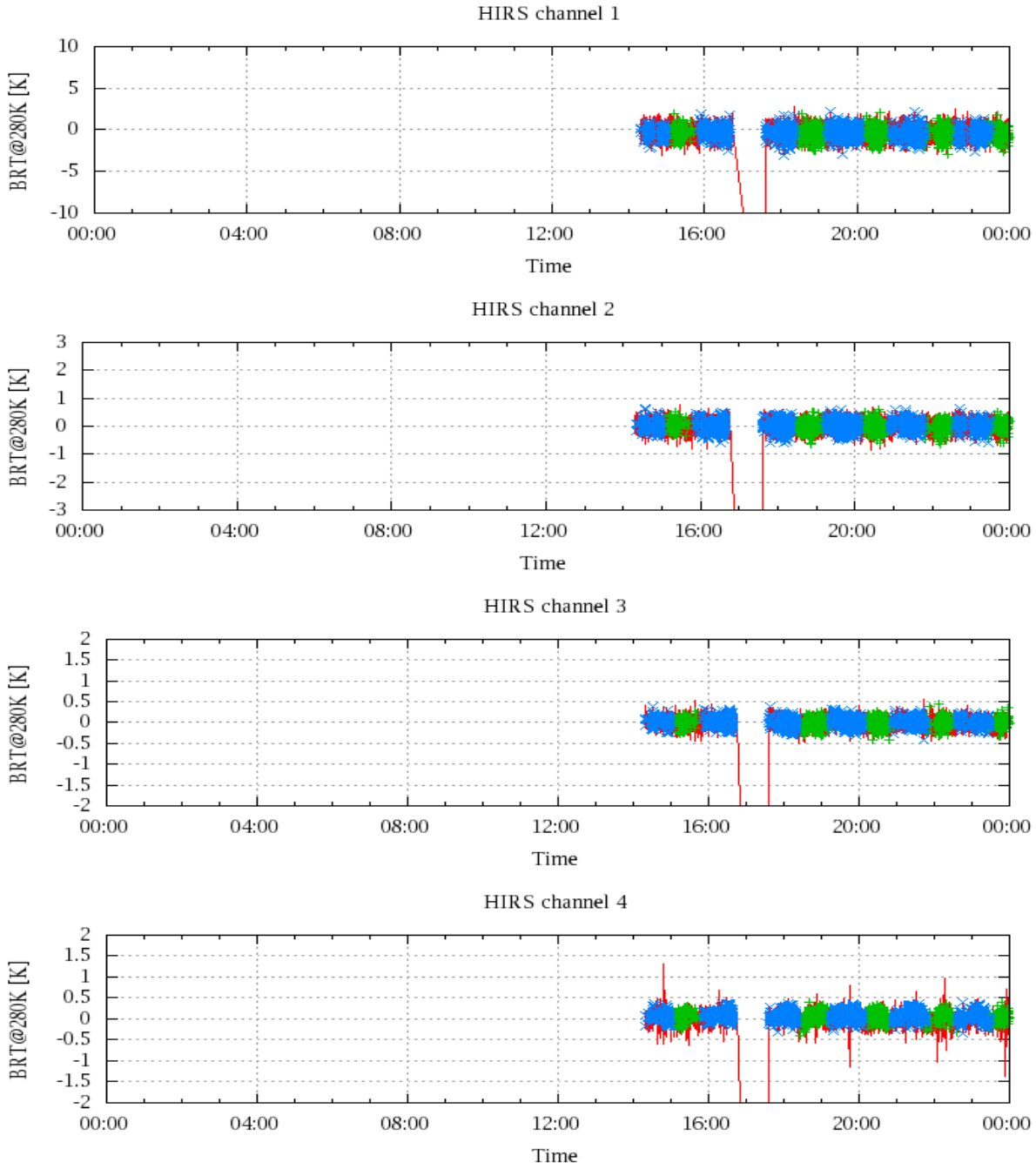

Figure 17: Radiance Differences in BRT

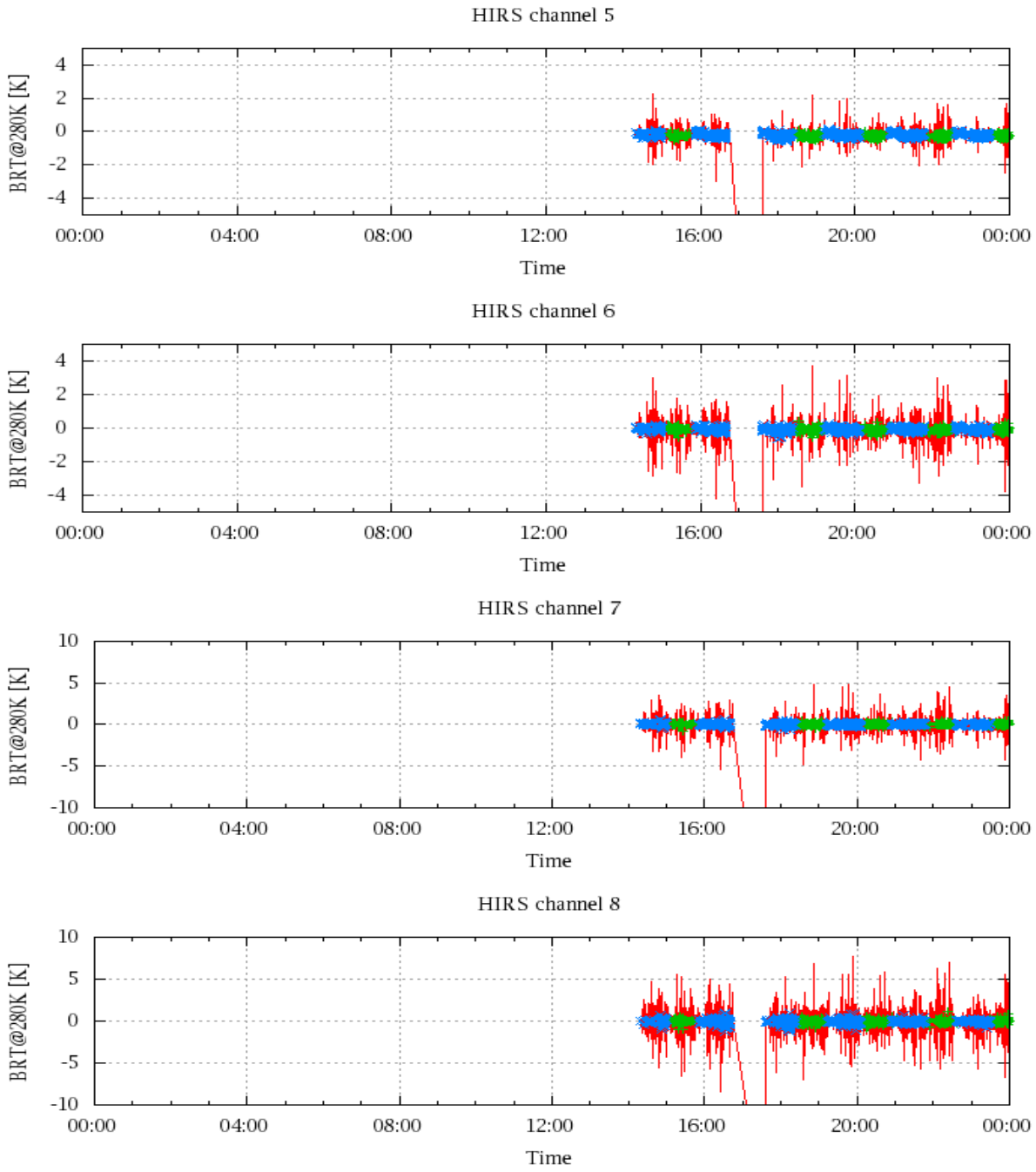

Figure 18: Radiance Differences in BRT

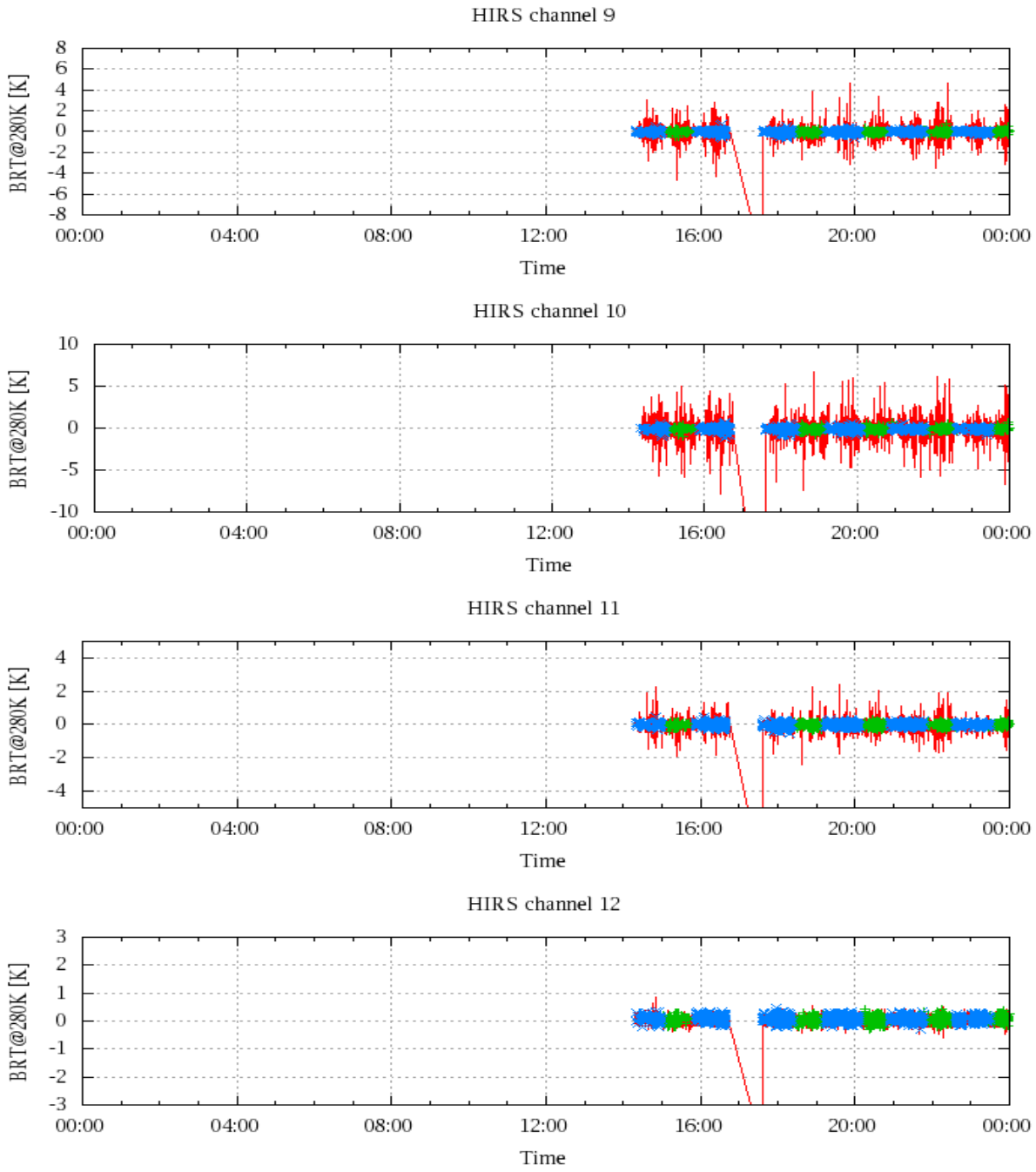

Figure 19: Radiance Differences in BRT

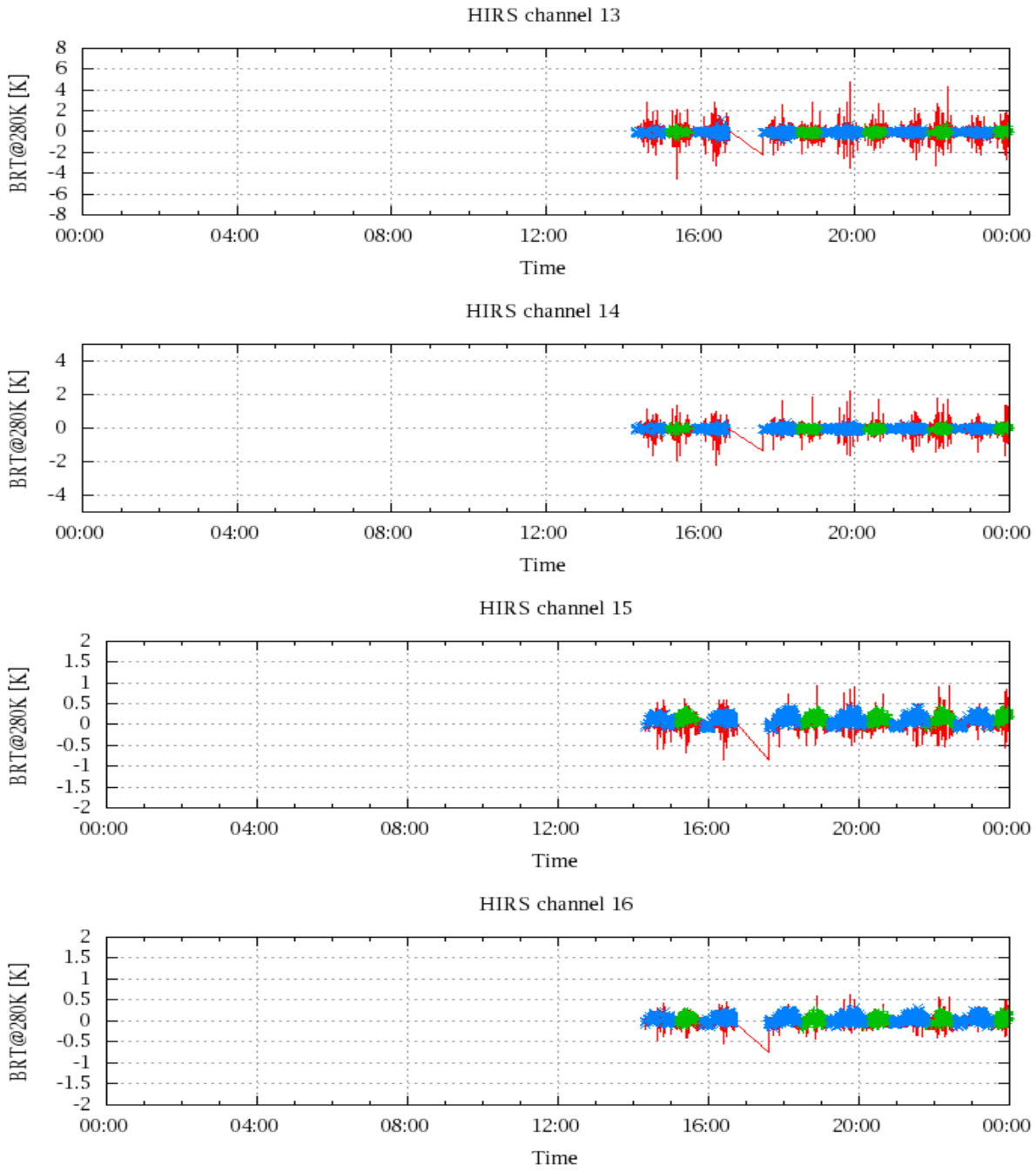

Figure 20: Radiance Differences in BRT

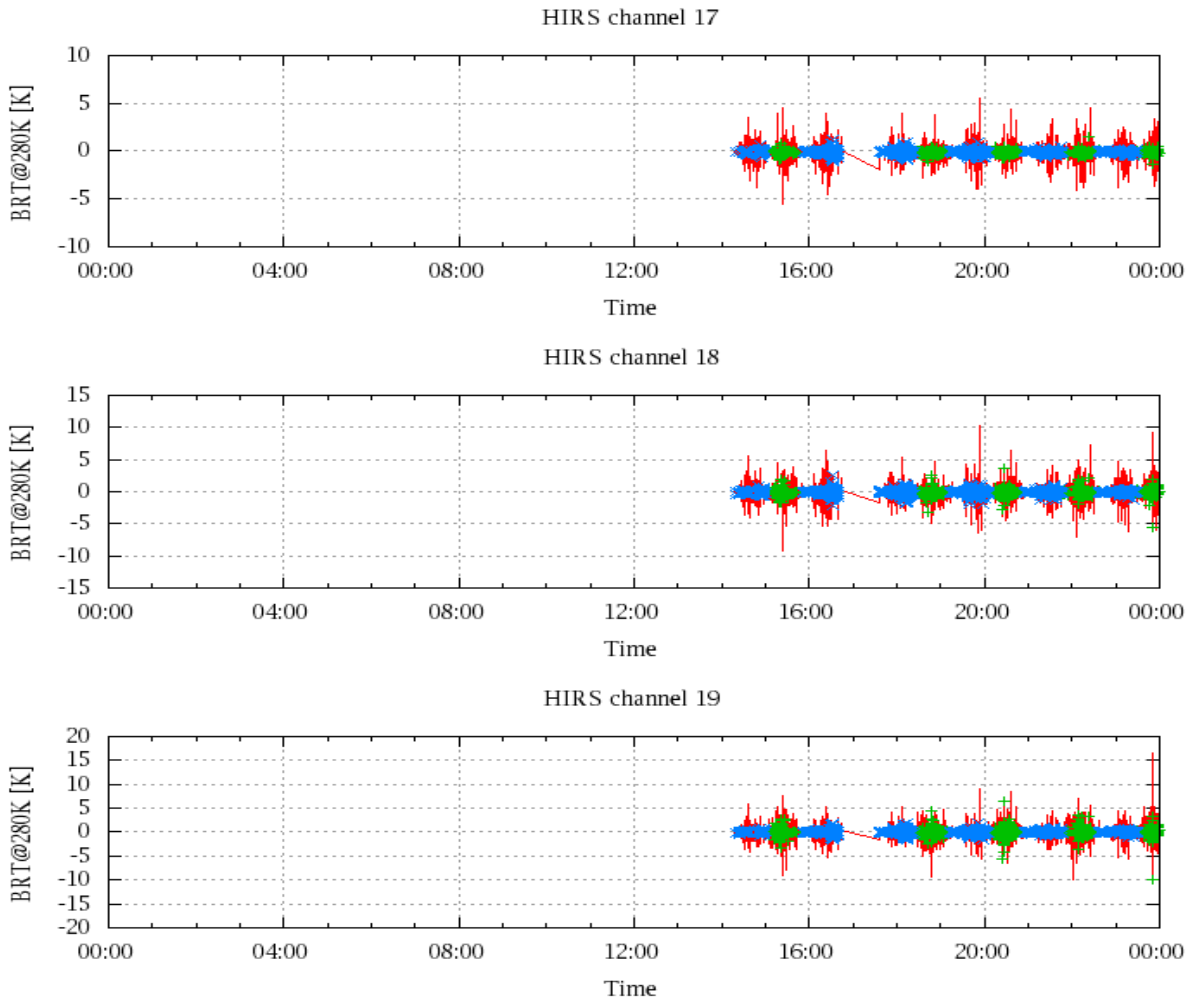

Figure 21: Radinace Differences in BRT