

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

10/02/2014 00:00:00 - 11/02/2014 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-B satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 10/02/2014 00:00:00 - 11/02/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 10/02/2014 00:00:00 - 11/02/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	330	e
L0 IASI PDUs	326	e
L1 ENG PDUs	323	e
L1 ENG distinct GEPSGranule	323	a
L1 DPX PDUs (RM: IASI-HIRS)	277	e
L1 DPS Files (RM: OBS-CAL NWP based)	266	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	14758	2913	20140210003859.901	20140210021200.212
PX1 (130)	3590	9478	20140210021459.918	20140210035400.006
PX1 (130)	11506	16045	20140210040259.880	20140210053600.191
PX1 (130)	1009	1993	20140210054159.788	20140210081200.182
PX2 (135)	14758	2913	20140210003859.901	20140210021200.212
PX2 (135)	3590	9478	20140210021459.918	20140210035400.006
PX2 (135)	11506	16045	20140210040259.880	20140210053600.191
PX2 (135)	1009	1993	20140210054159.788	20140210081200.182
PX3 (140)	14758	2913	20140210003859.901	20140210021200.212
PX3 (140)	3590	9478	20140210021459.918	20140210035400.006
PX3 (140)	11506	16045	20140210040259.880	20140210053600.191
PX3 (140)	1009	1993	20140210054159.788	20140210081200.182
PX4 (145)	14758	2913	20140210003859.901	20140210021200.212
PX4 (145)	3590	9478	20140210021459.918	20140210035400.006
PX4 (145)	11506	16045	20140210040259.880	20140210053600.191
PX4 (145)	1009	1993	20140210054159.788	20140210081200.182

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	5399	12730	20140210003859.901	20140210021200.212
IMG (150)	13495	5971	20140210021459.918	20140210035400.006
IMG (150)	8267	15598	20140210040259.880	20140210053600.191
IMG (150)	742	6226	20140210054159.788	20140210081200.182
VER (160)	8785	12276	20140210003854.061	20140210021206.048
VER (160)	12385	16101	20140210021454.082	20140210035406.057
VER (160)	51	3542	20140210040254.044	20140210053606.031
VER (160)	3766	9392	20140210054158.057	20140210081206.018
AUX (180)	1755	2454	20140210003854.495	20140210021206.481
AUX (180)	2475	3219	20140210021454.516	20140210035406.490
AUX (180)	3285	3984	20140210040254.478	20140210053606.460
AUX (180)	4028	5154	20140210054158.491	20140210081206.452

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
10/02/2014 00:30:11	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	326	e
L1 ENG PDUs	323	e
L1 ENG distinct GEPSGranule	323	a
GQisFlagQual set (PX1)	99.40 %	-
GQisFlagQual set (PX2)	99.55 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

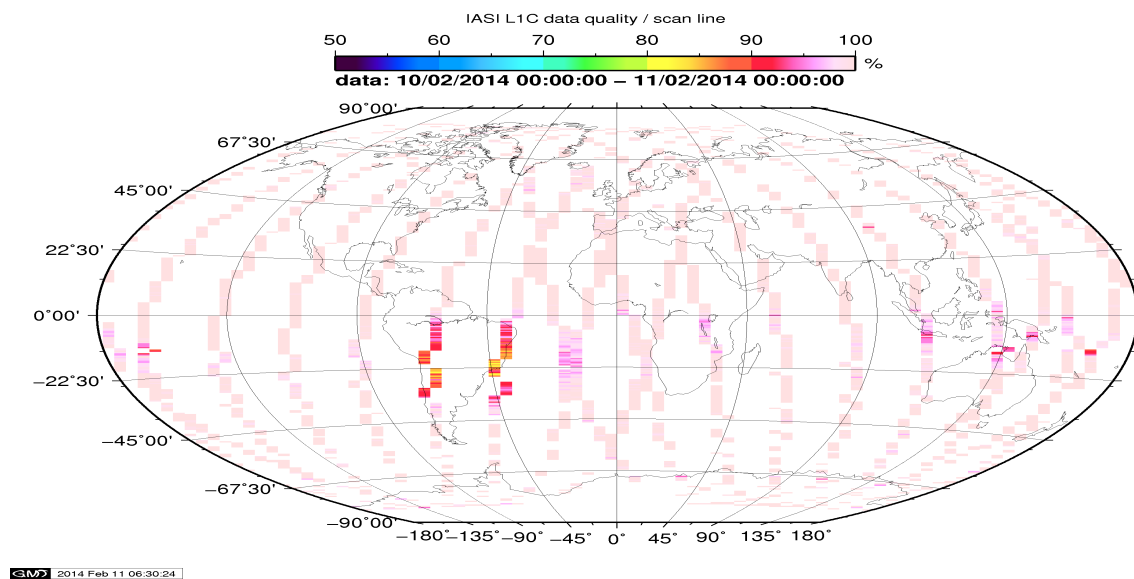


Figure 1: L1C data quality

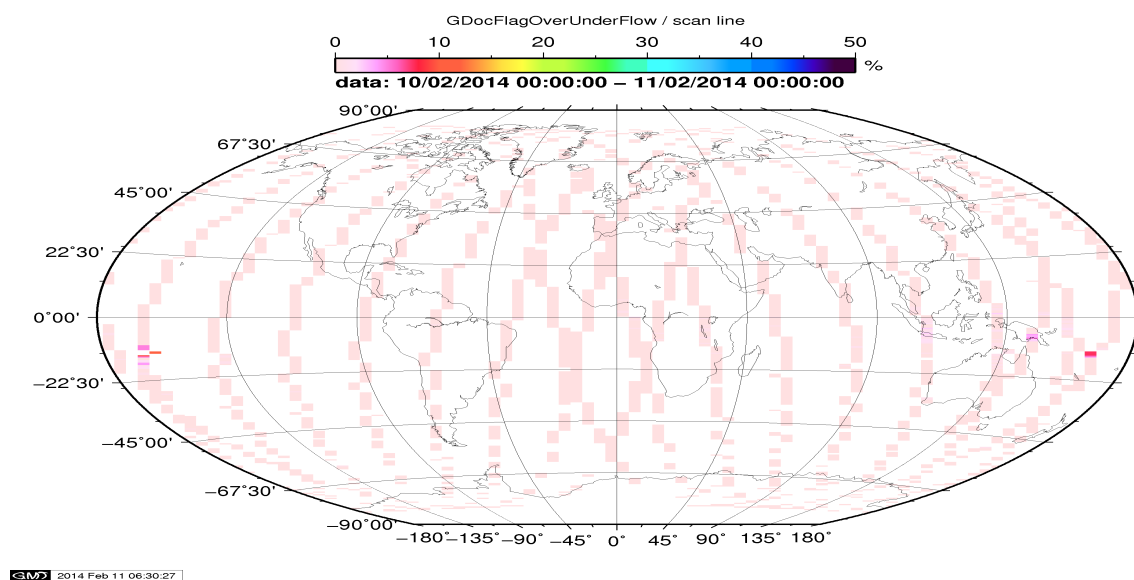


Figure 2: Flag of Over and Under Flows

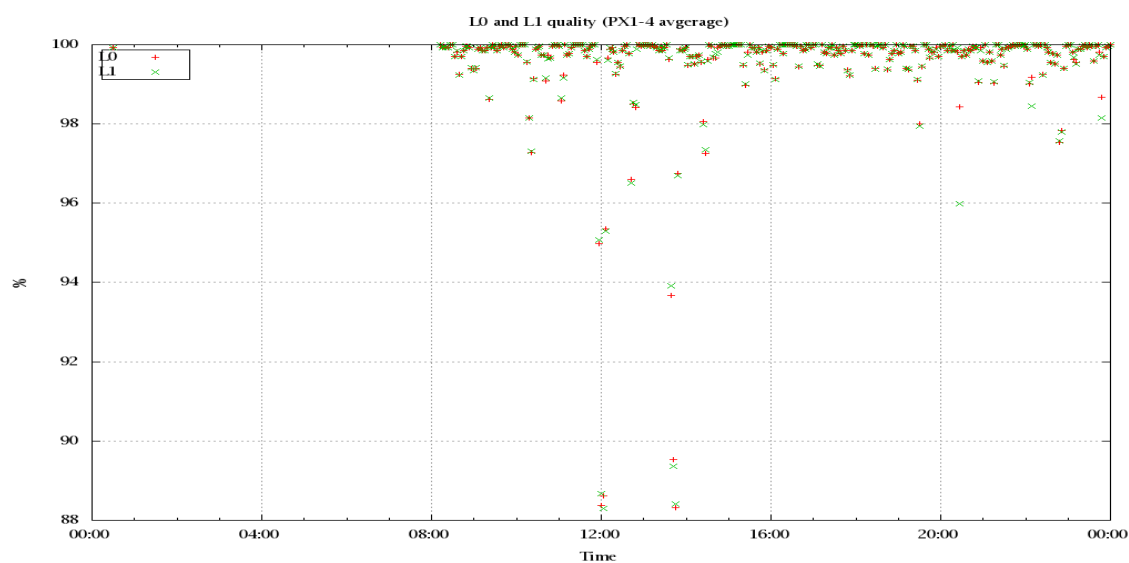


Figure 3: Level 0 and 1C overall quality

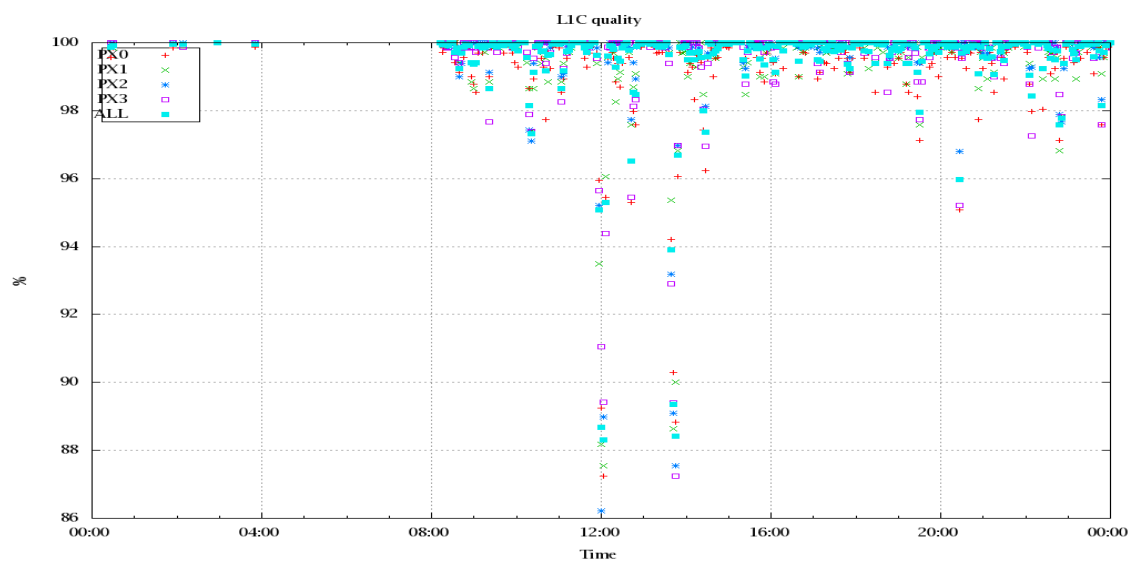


Figure 4: Level 1C quality

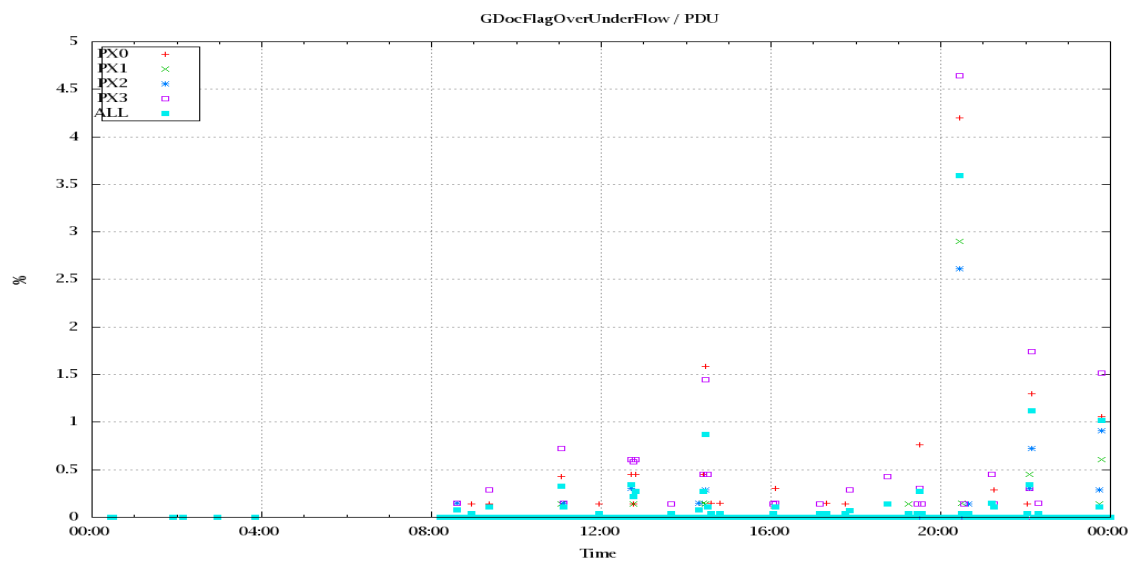


Figure 5: OverUnderFlowFlag timeseries

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 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.

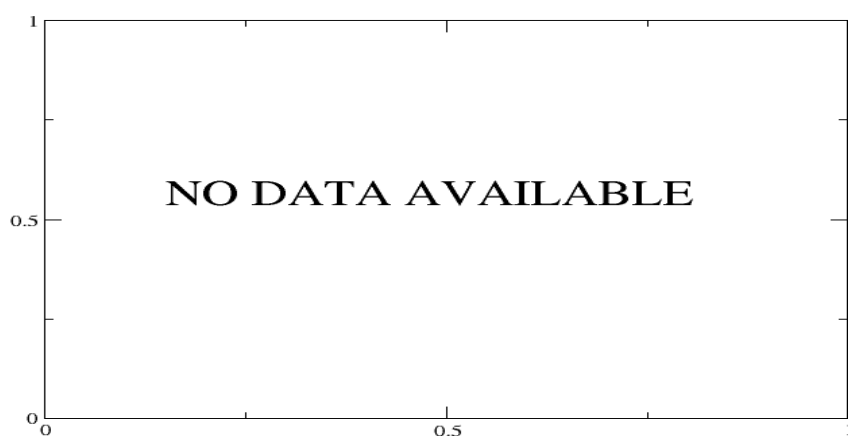


Figure 6: Average Radiance differences: OBS-CAL

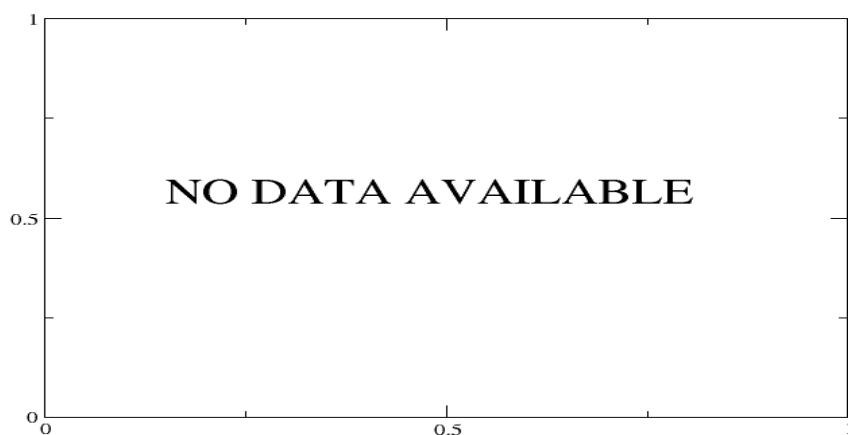


Figure 7: Standard Deviation of Radiance differences



Figure 8: Average Radiance differences: OBS-CAL



Figure 9: Standard Deviation of Radiance differences

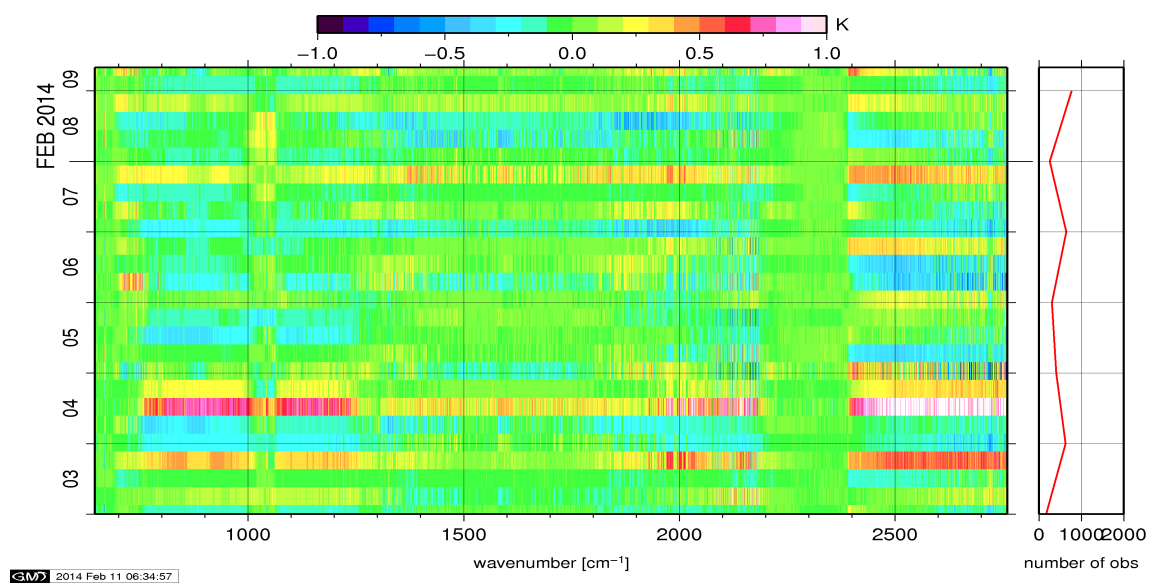


Figure 10: Radiance Anomaly in BRT: All Channels

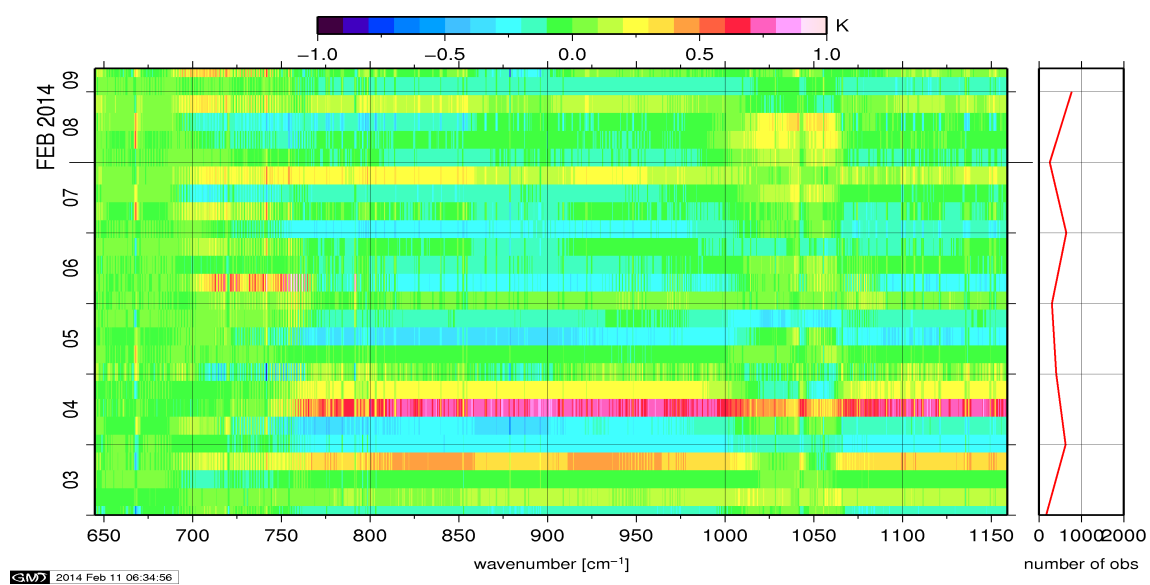


Figure 11: Radiance Anomaly in BRT: IASI Band 1

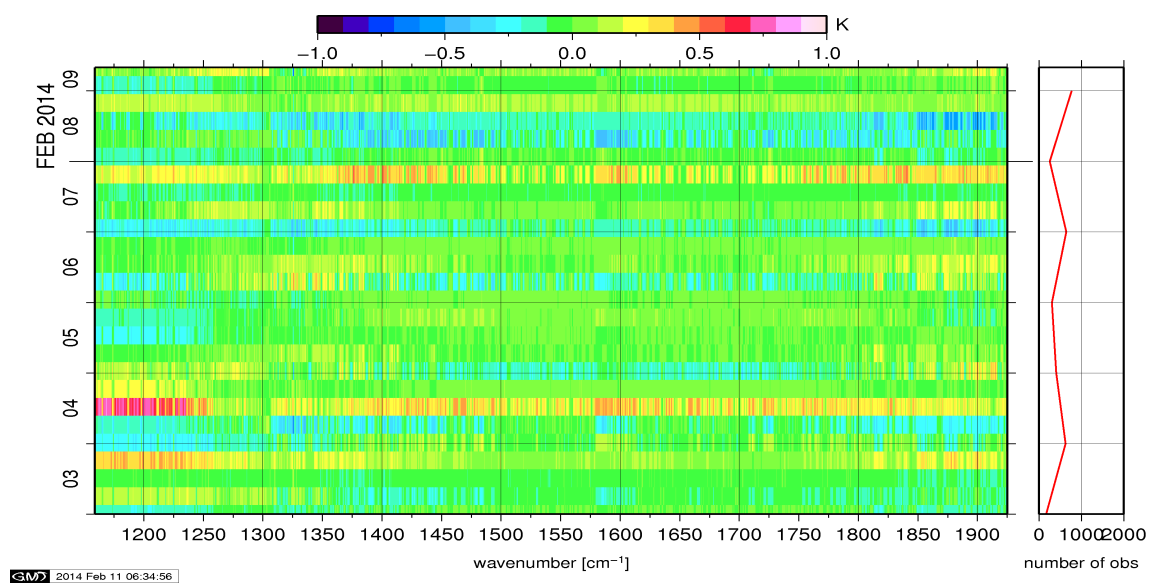


Figure 12: Radiance Anomaly in BRT: IASI Band 2

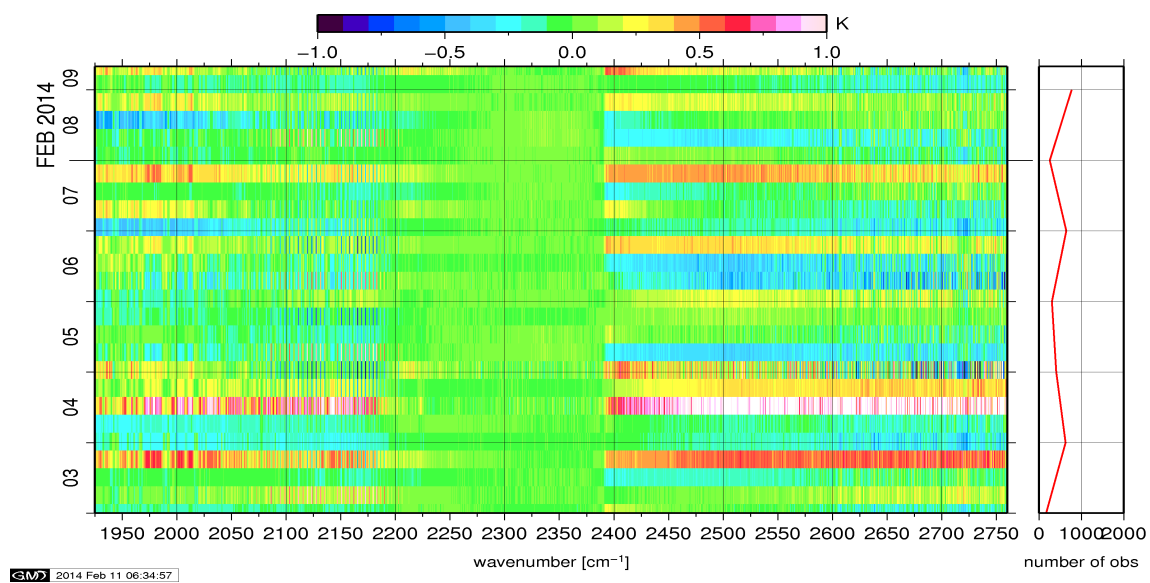


Figure 13: Radiance Anomaly in BRT: IASI Band 3

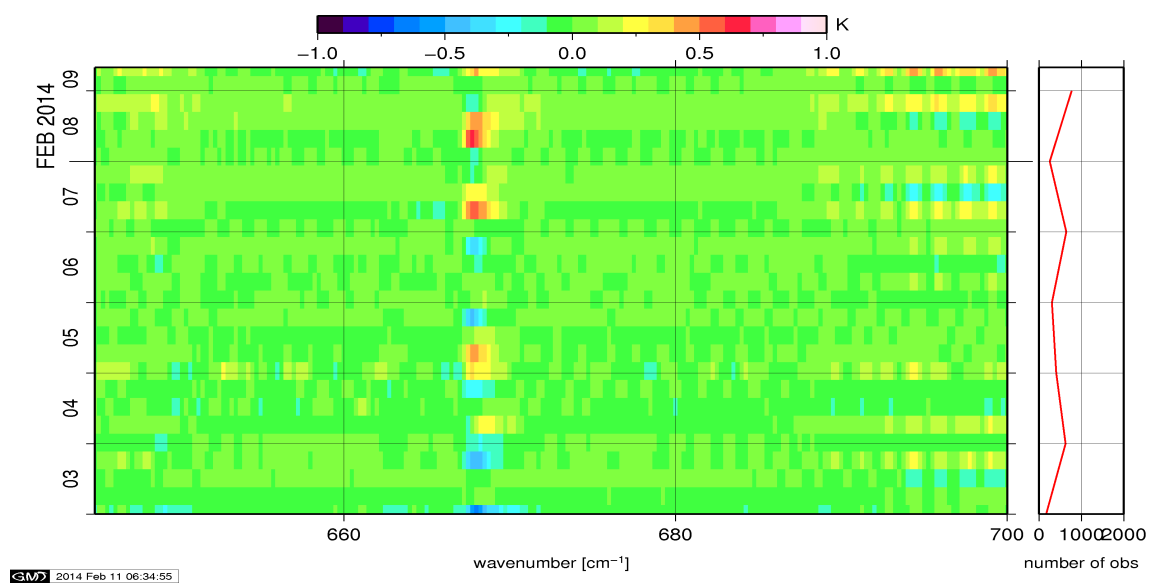


Figure 14: Radiance Anomaly in BRT: CO2 14

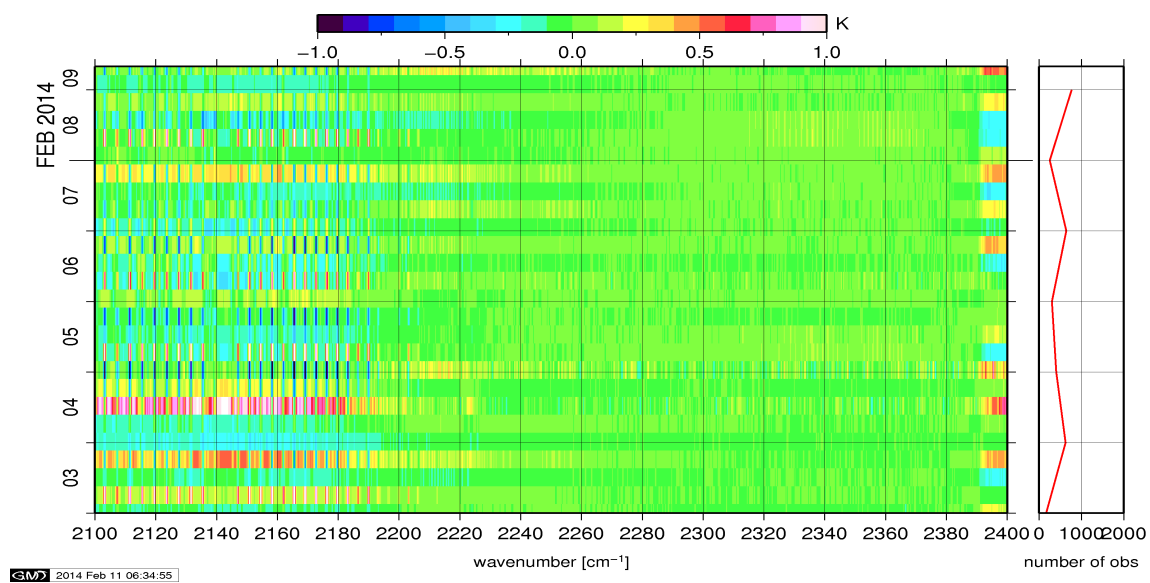


Figure 15: Radiance Anomaly in BRT: CO2 4.3

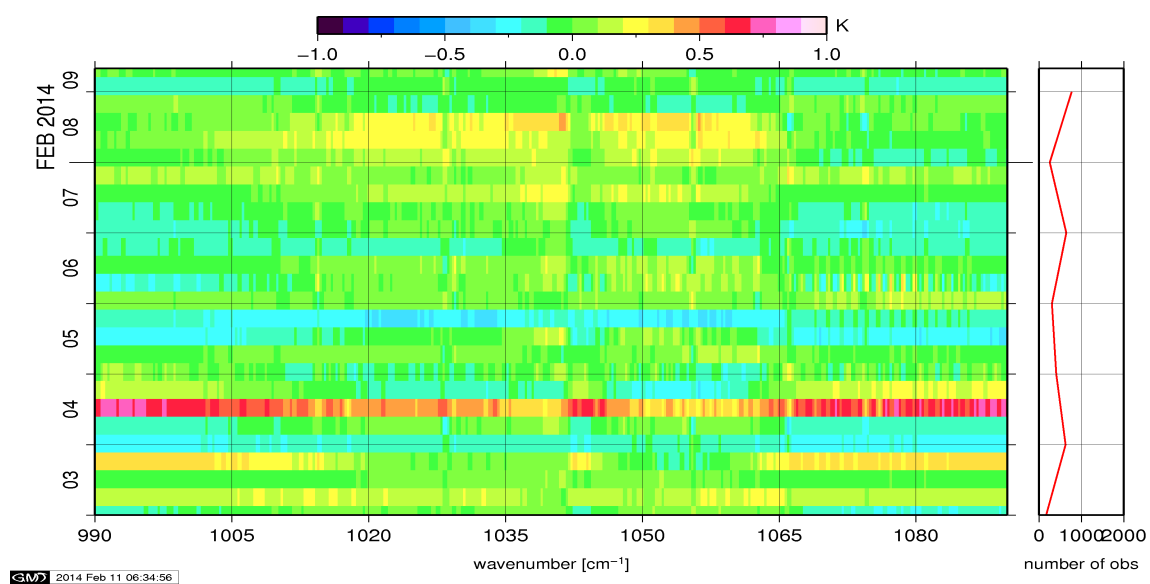


Figure 16: Radiance Anomaly in BRT: O3

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.

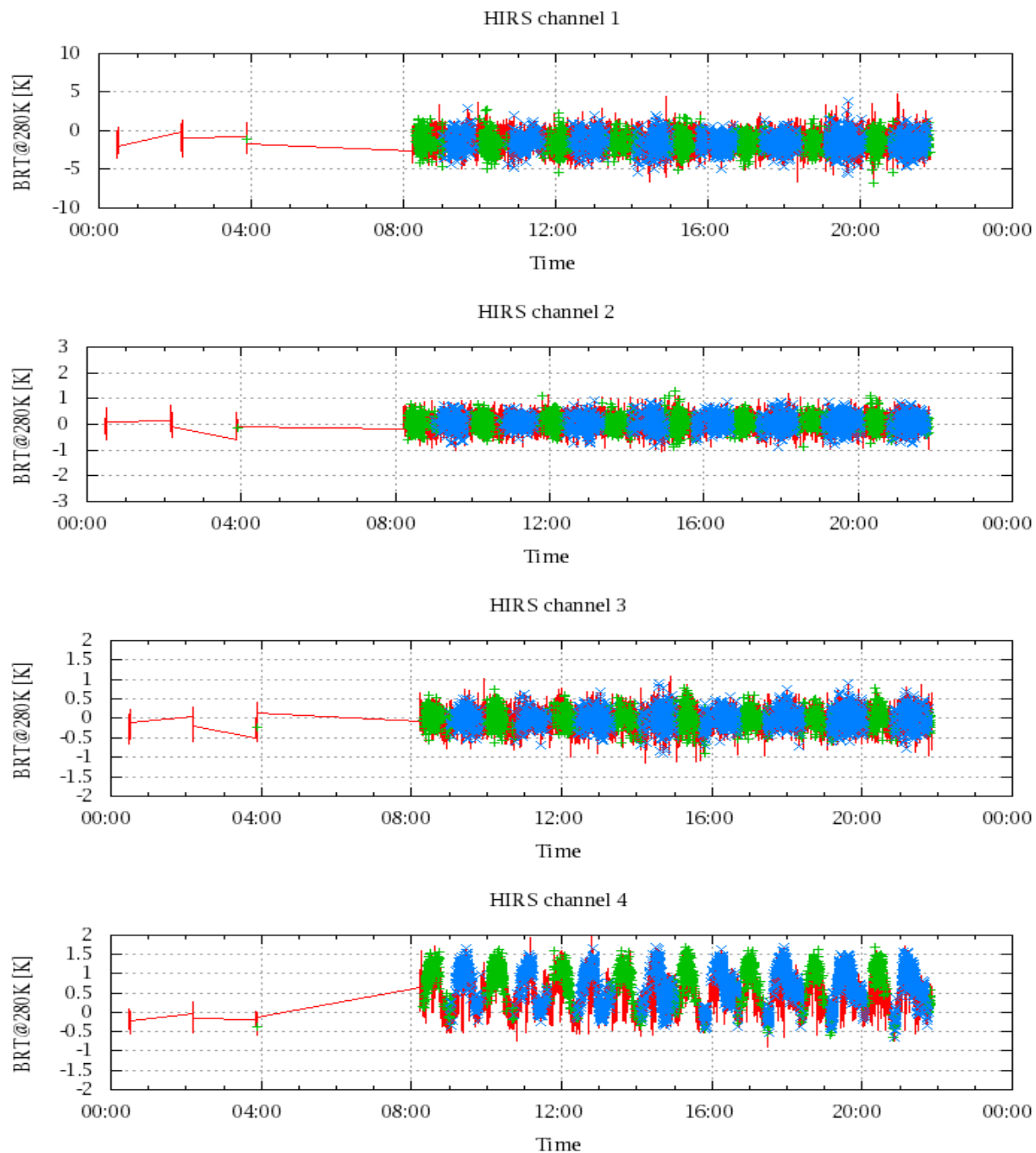


Figure 17: Radiance Differences in BRT

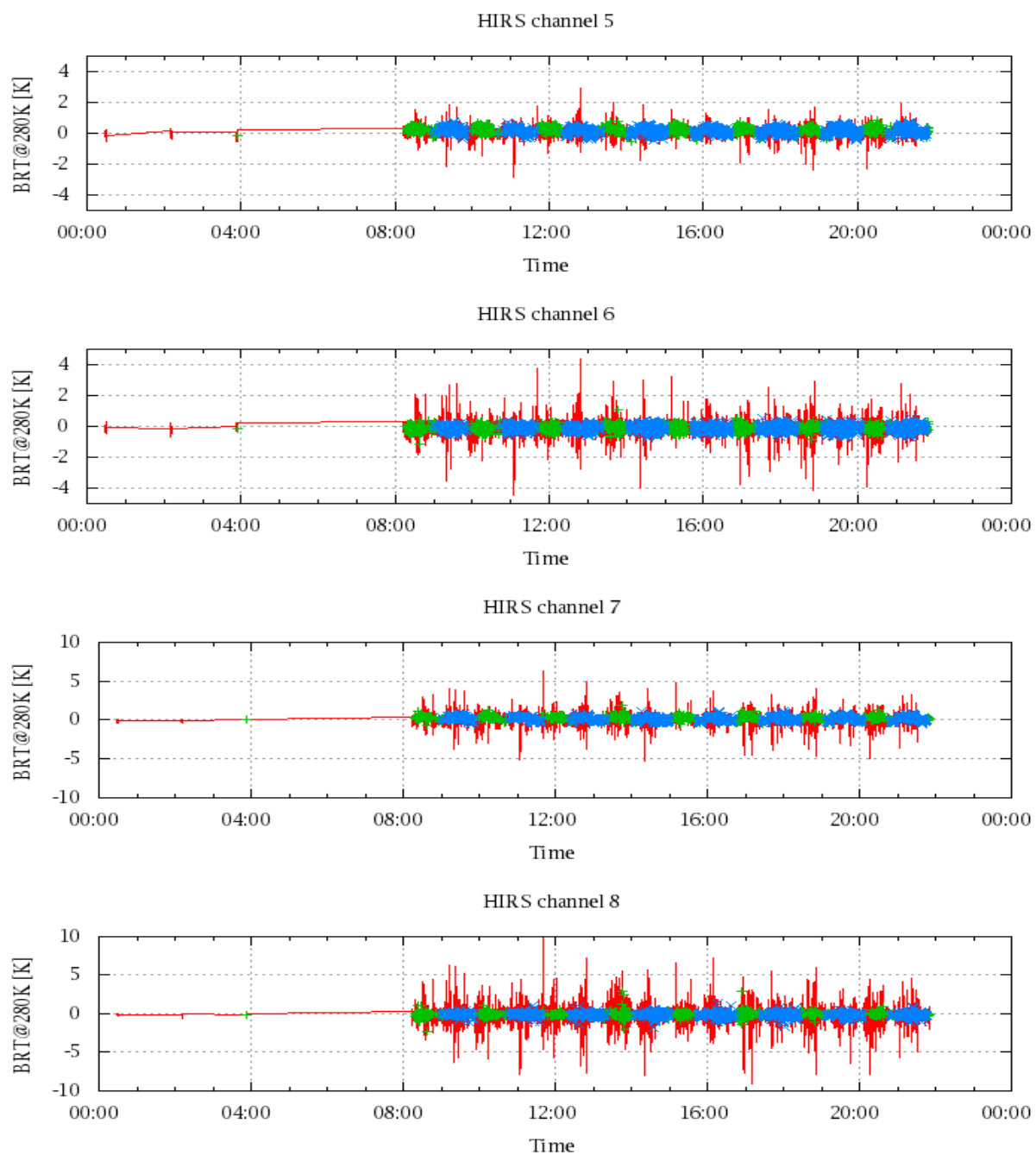


Figure 18: Radiance Differences in BRT

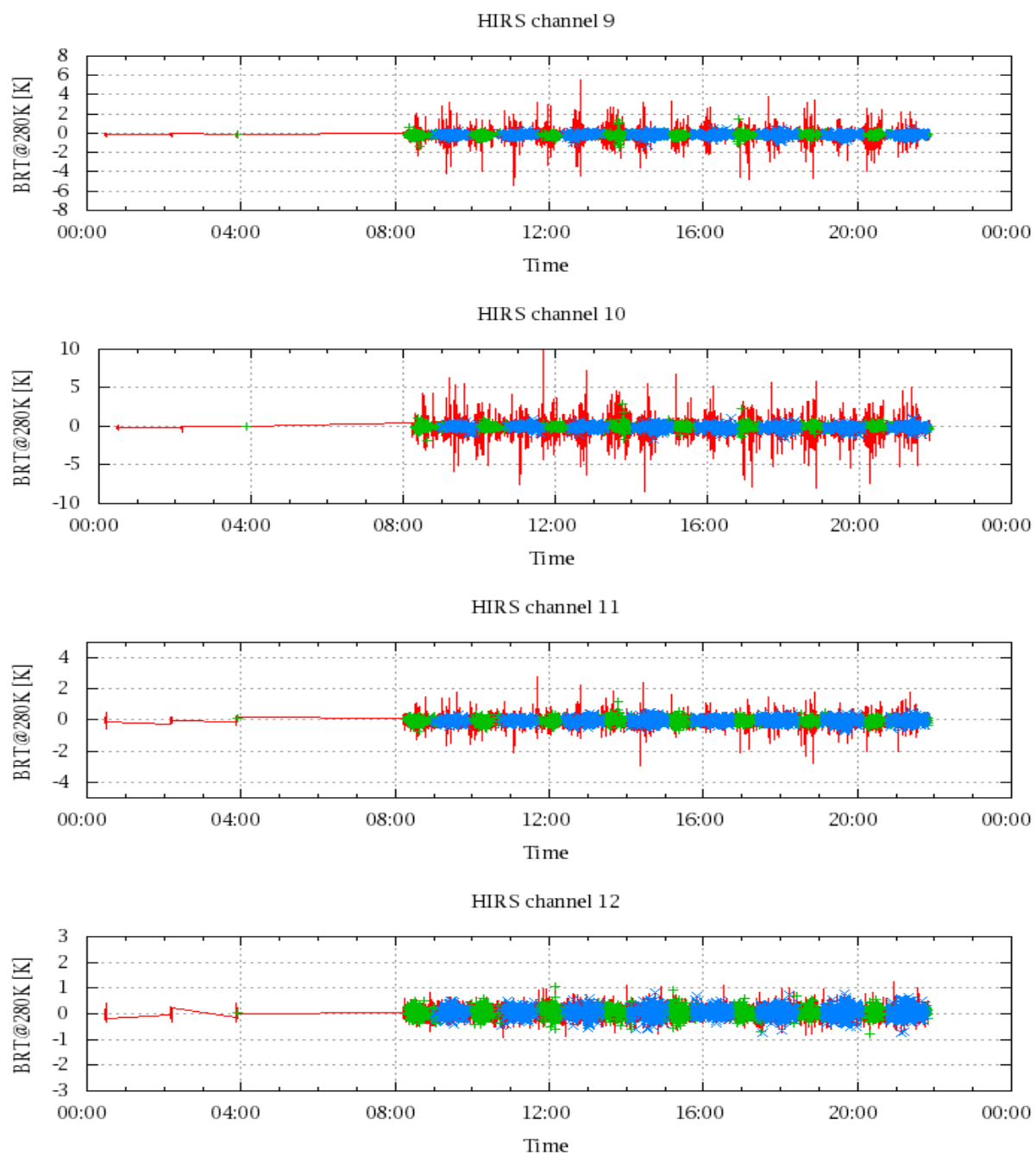


Figure 19: Radiance Differences in BRT

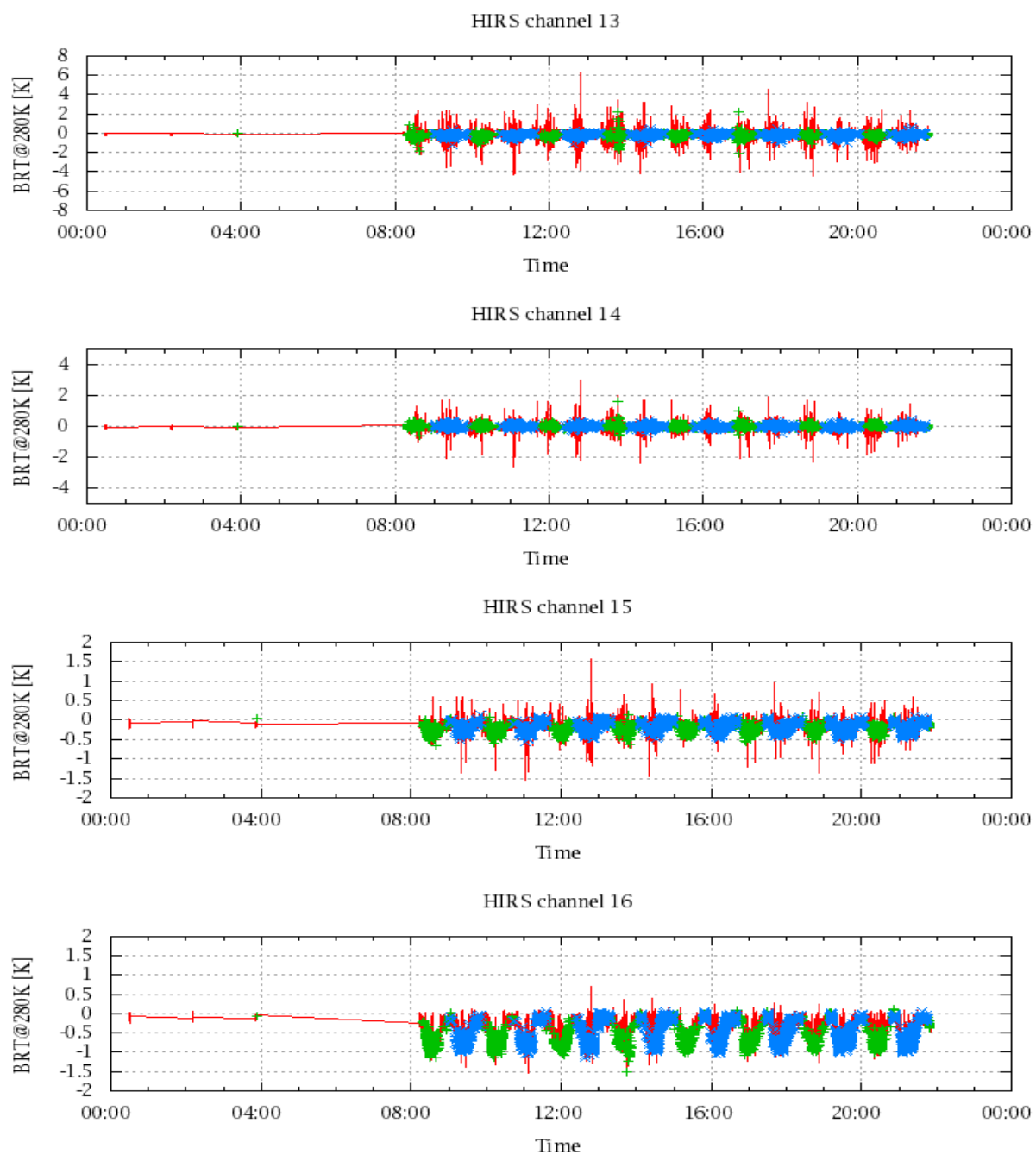


Figure 20: Radiance Differences in BRT

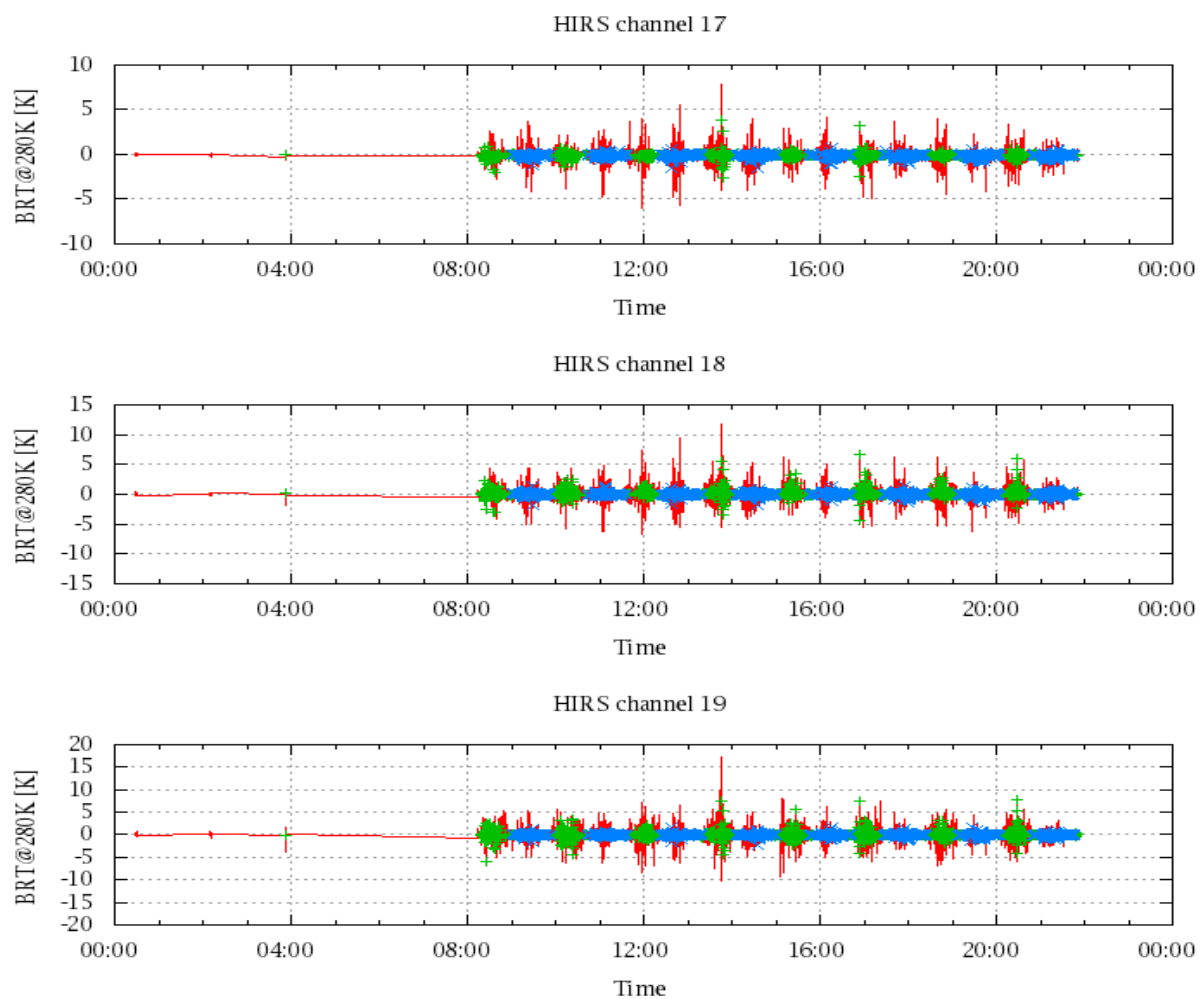


Figure 21: Radinace Differences in BRT