

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

30/06/2011 00:00:00 - 01/07/2011 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 30/06/2011 00:00:00 - 01/07/2011 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 30/06/2011 00:00:00 - 01/07/2011 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)	1096	1115	20110630000626.810	20110630000632.431
PX1 (130)	3282	3287	20110630035436.530	20110630035439.124
PX1 (130)	3316	3337	20110630035445.397	20110630035451.448
PX1 (130)	3337	3339	20110630035451.448	20110630035451.881
PX1 (130)	3498	3500	20110630035535.342	20110630035535.772
PX1 (130)	5754	5762	20110630134808.976	20110630134810.703
PX1 (130)	13484	13641	20110630142229.280	20110630142312.307
PX2 (135)	1096	1115	20110630000626.810	20110630000632.431
PX2 (135)	3281	3287	20110630035436.315	20110630035439.124
PX2 (135)	3316	3337	20110630035445.397	20110630035451.448
PX2 (135)	3498	3500	20110630035535.342	20110630035535.772
PX2 (135)	5754	5762	20110630134808.976	20110630134810.703
PX2 (135)	13484	13641	20110630142229.280	20110630142312.307
PX2 (135)	13641	13643	20110630142312.307	20110630142312.737
PX3 (140)	1095	1115	20110630000626.591	20110630000632.431
PX3 (140)	3282	3287	20110630035436.530	20110630035439.124
PX3 (140)	3316	3337	20110630035445.397	20110630035451.448
PX3 (140)	3338	3340	20110630035451.663	20110630035452.096

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	3498	3500	20110630035535.342	20110630035535.772
PX3 (140)	5754	5762	20110630134808.976	20110630134810.703
PX3 (140)	13484	13641	20110630142229.280	20110630142312.307
PX4 (145)	1095	1115	20110630000626.591	20110630000632.431
PX4 (145)	3282	3287	20110630035436.530	20110630035439.124
PX4 (145)	3316	3336	20110630035445.397	20110630035451.233
PX4 (145)	3338	3340	20110630035451.663	20110630035452.096
PX4 (145)	5753	5762	20110630134808.761	20110630134810.703
PX4 (145)	13484	13641	20110630142229.280	20110630142312.307
IMG (150)	13947	13970	20110630000626.591	20110630000632.213
IMG (150)	972	974	20110630033233.936	20110630033234.369
IMG (150)	6594	6599	20110630035436.530	20110630035437.827
IMG (150)	6632	6658	20110630035445.397	20110630035451.663
IMG (150)	6841	6843	20110630035535.124	20110630035535.557
IMG (150)	10490	10498	20110630134808.976	20110630134810.703
IMG (150)	2864	3045	20110630142229.280	20110630142312.307
VER (160)	11972	11978	20110630000621.404	20110630000637.404
VER (160)	4143	4147	20110630035429.397	20110630035436.530
VER (160)	4151	4153	20110630035445.397	20110630035445.397
VER (160)	11304	11335	20110630142221.280	20110630142317.280
AUX (180)	15500	15502	20110630000621.834	20110630000637.834
AUX (180)	5536	5543	20110630142221.713	20110630142317.709

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
30/06/2011 00:00:00	-	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)	99.25 %	-
GQisFlagQual set (PX2)	99.07 %	-
GQisFlagQual set (PX3)	99.15 %	-
GQisFlagQual set (PX4)	99.32 %	-
GQisFlagQual set (all)	99.20 %	-

Table 4: Quality flags

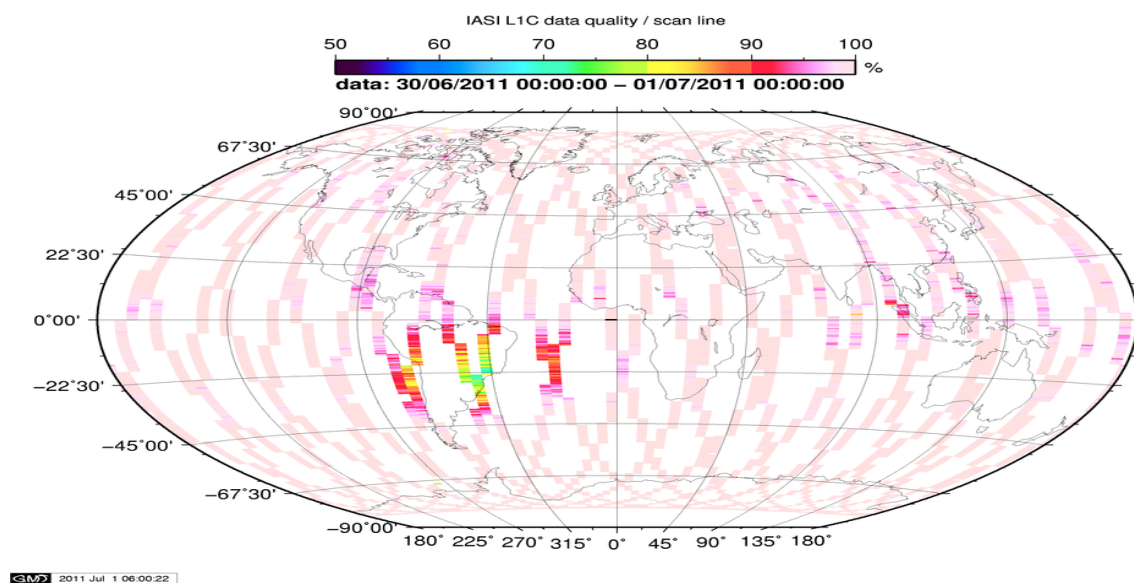


Figure 1: L1C data quality

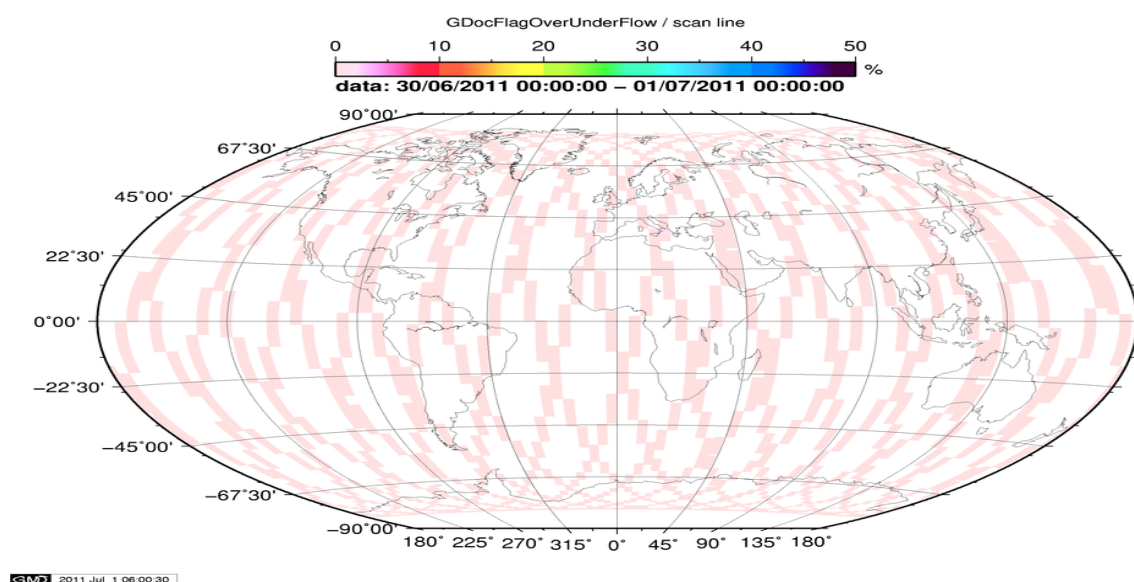


Figure 2: Flag of Over and Under Flows

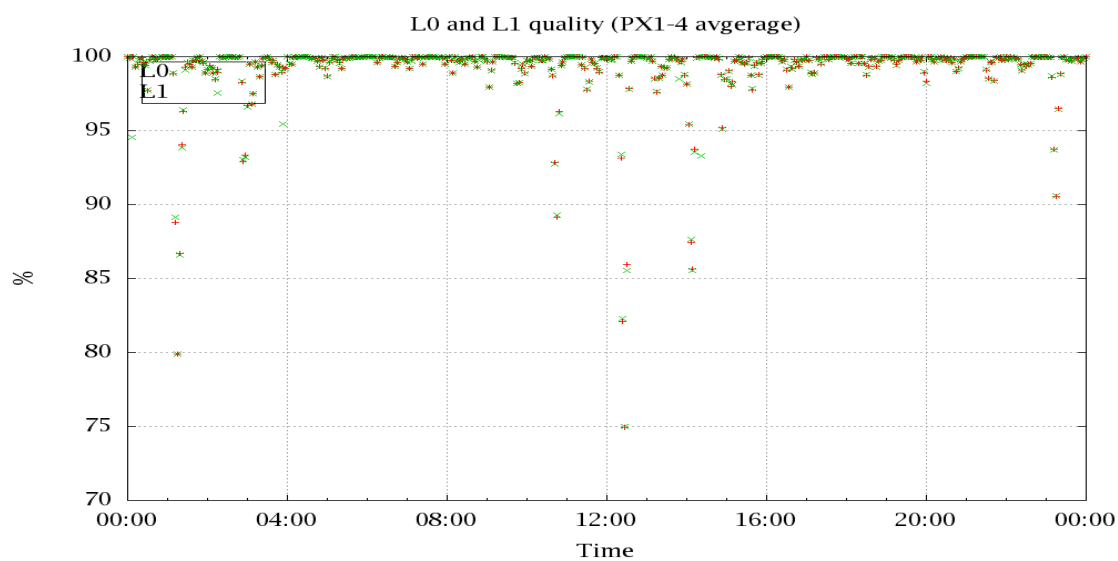


Figure 3: Level 0 and 1C overall quality

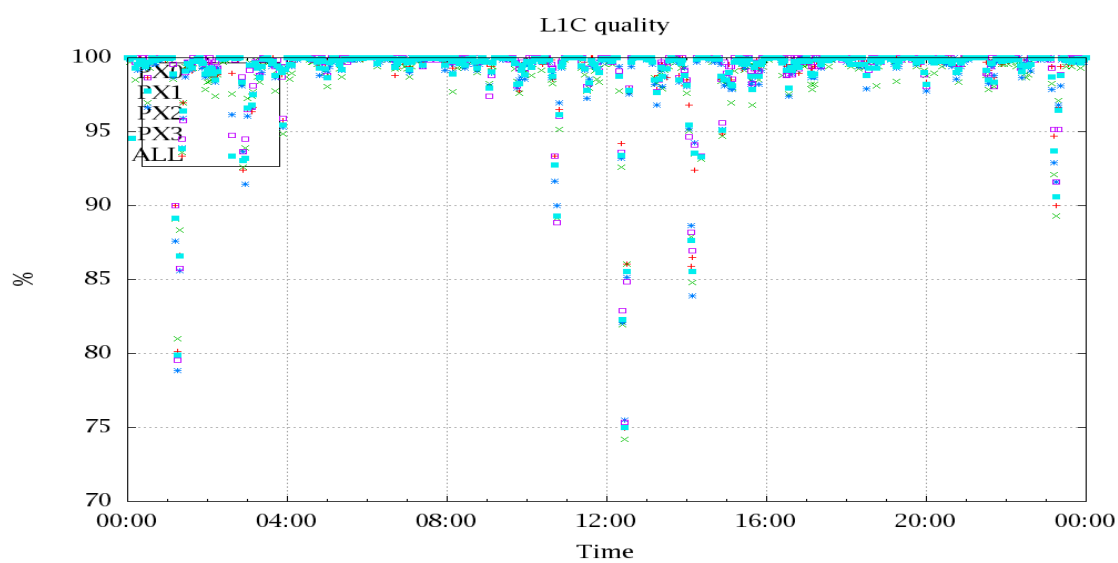


Figure 4: Level 1C quality

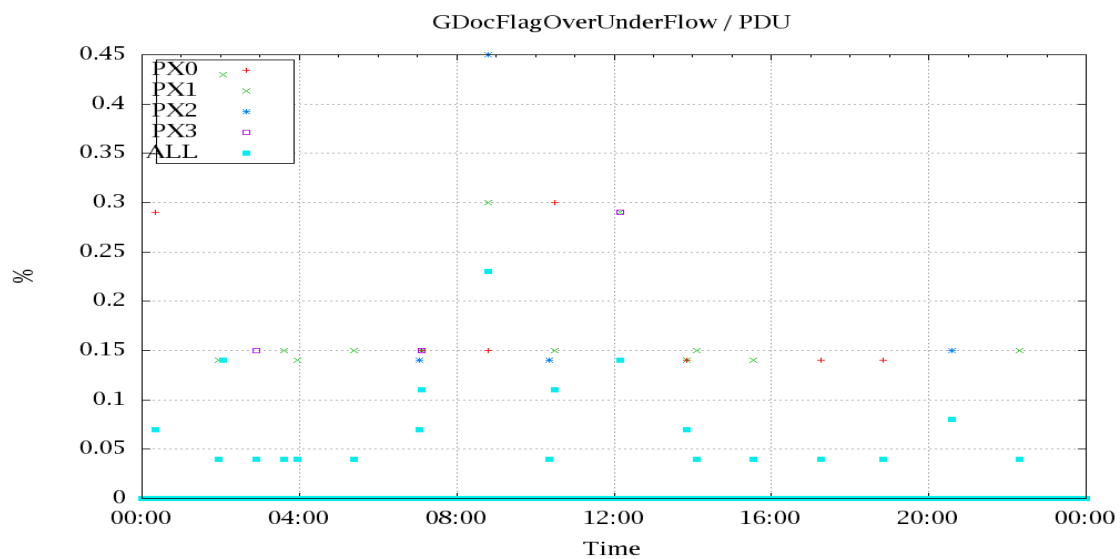


Figure 5: OverUnderFlowFlag timeseries

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.

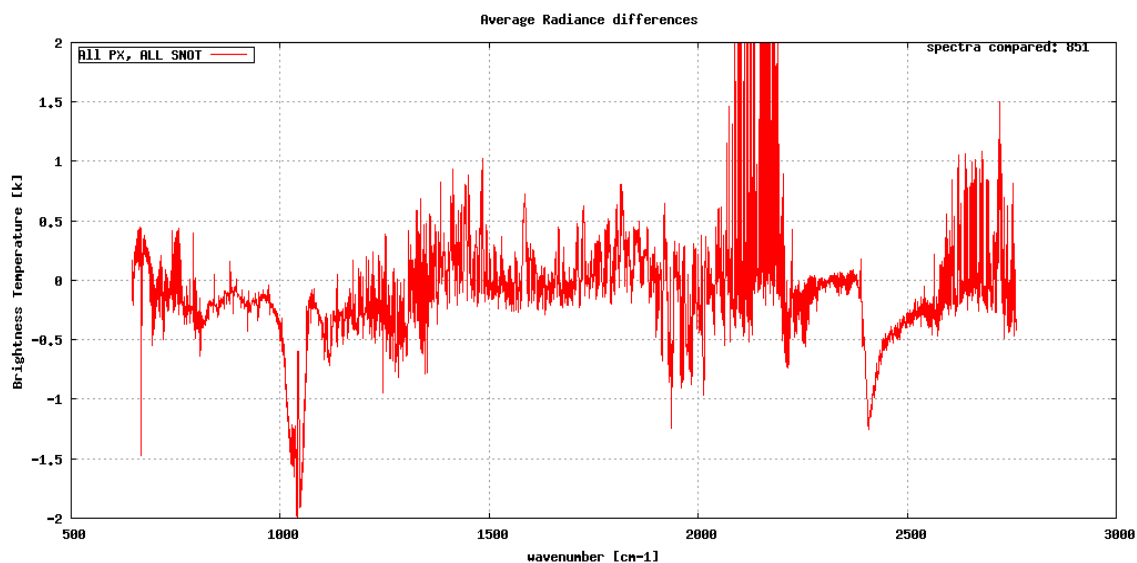


Figure 6: Average Radiance differences: OBS-CAL

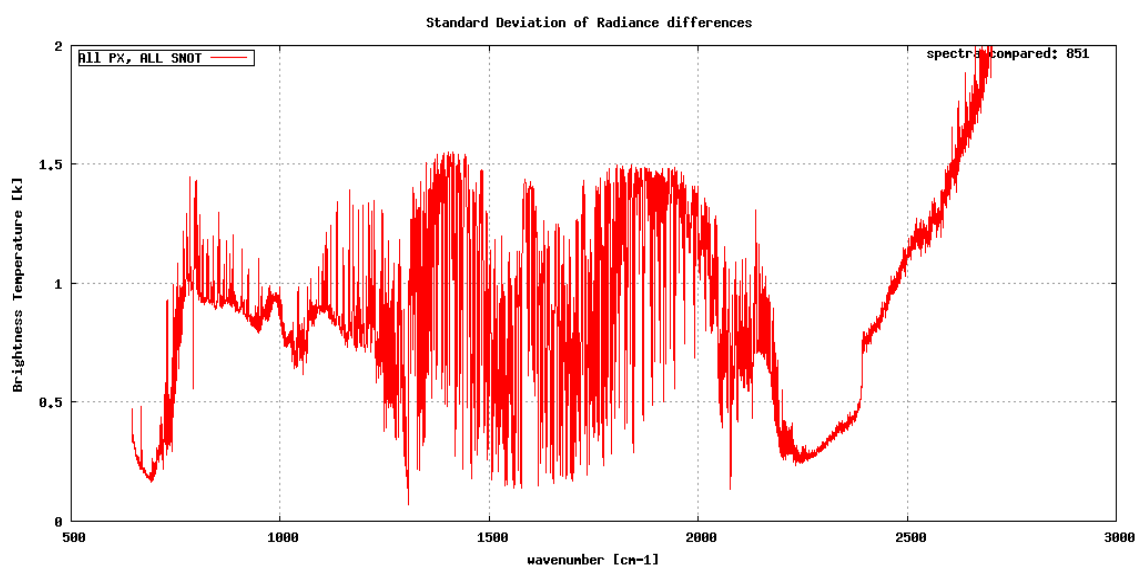


Figure 7: Standard Deviation of Radiance differences

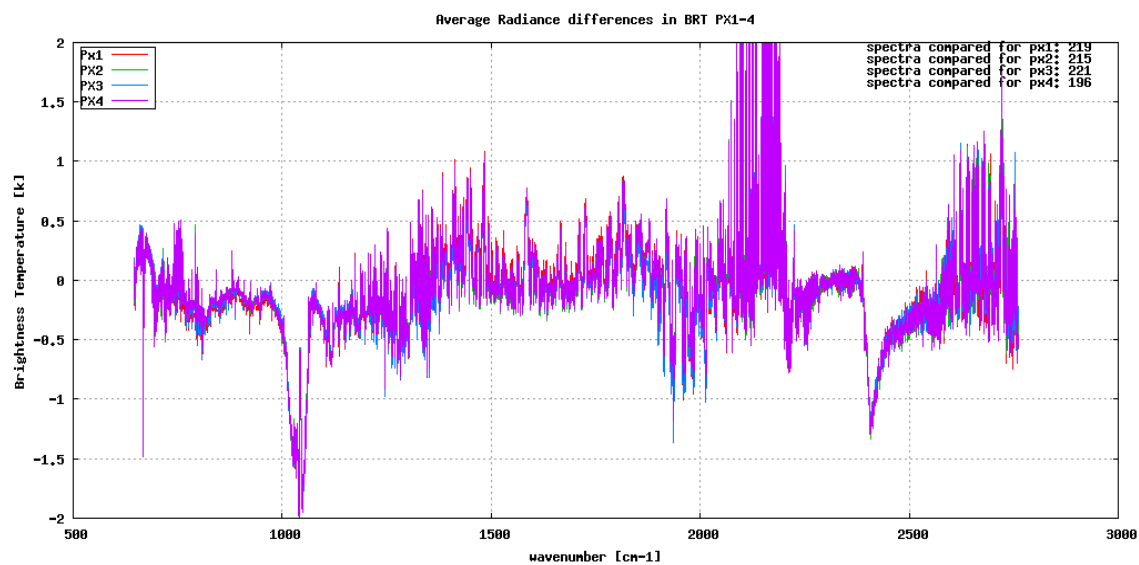


Figure 8: Average Radiance differences: OBS-CAL

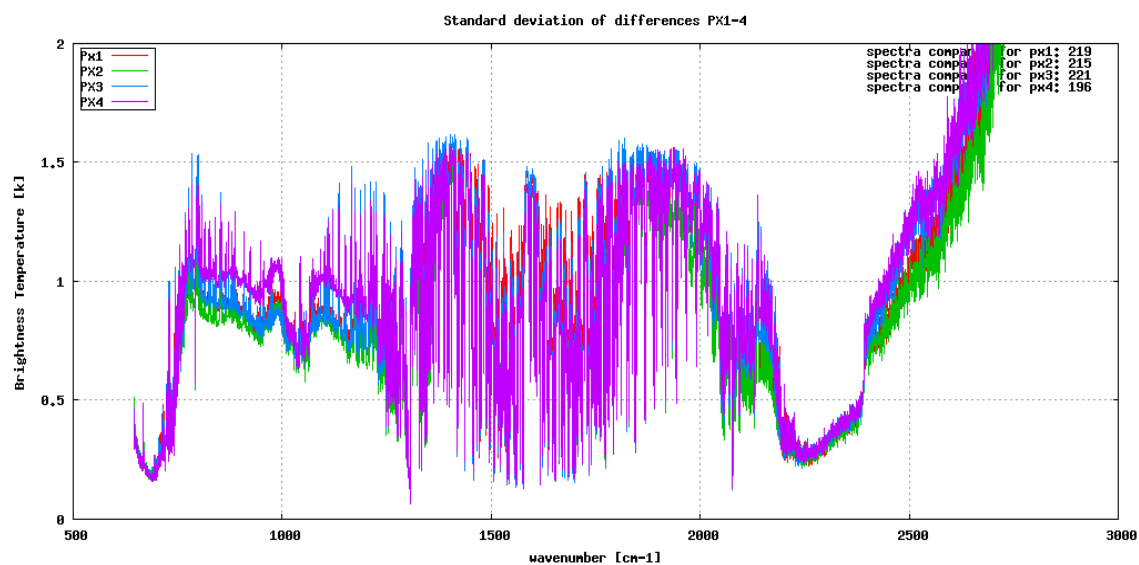


Figure 9: Standard Deviation of Radiance differences

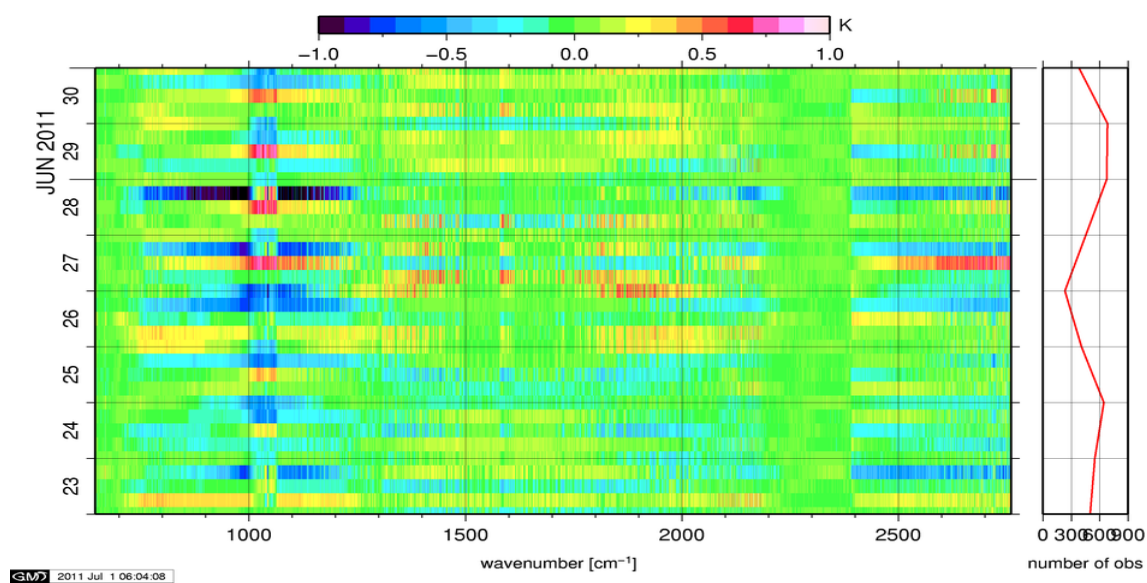


Figure 10: Radiance Anomaly in BRT: All Channels

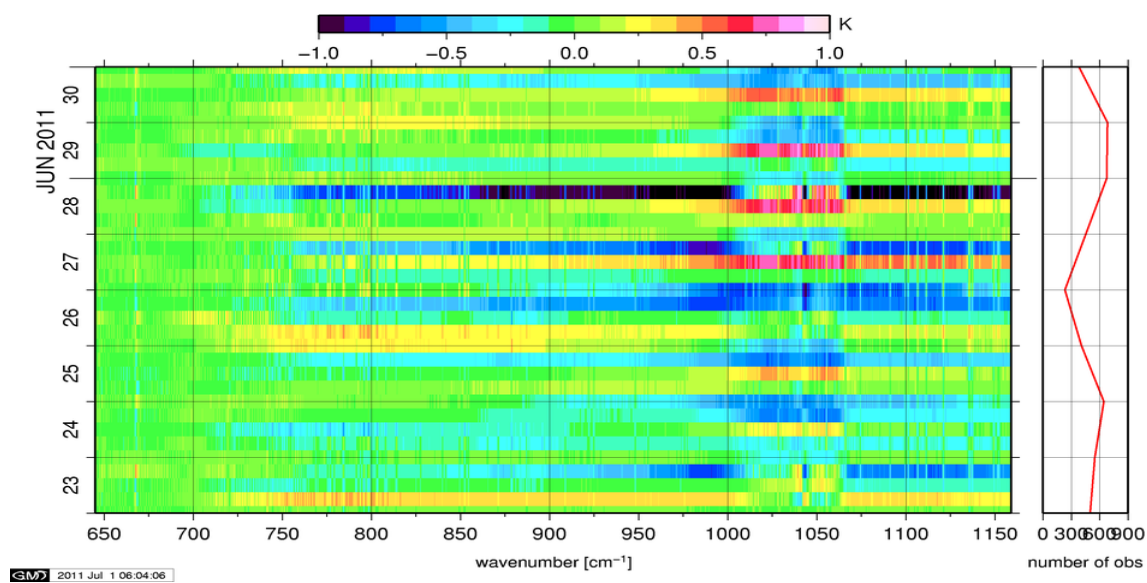


Figure 11: Radiance Anomaly in BRT: IASI Band 1

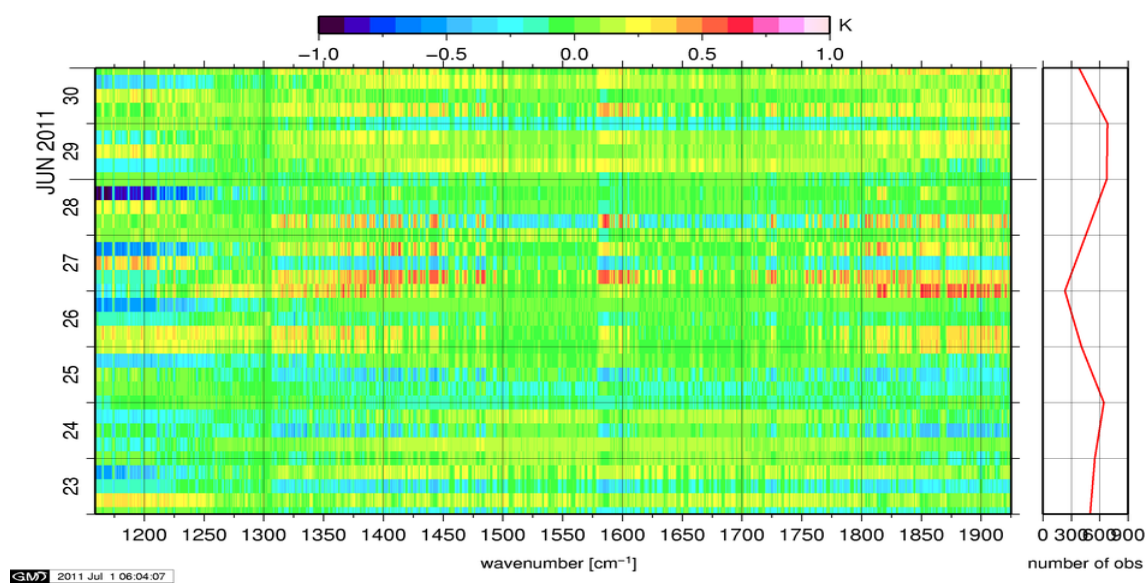


Figure 12: Radiance Anomaly in BRT: IASI Band 2

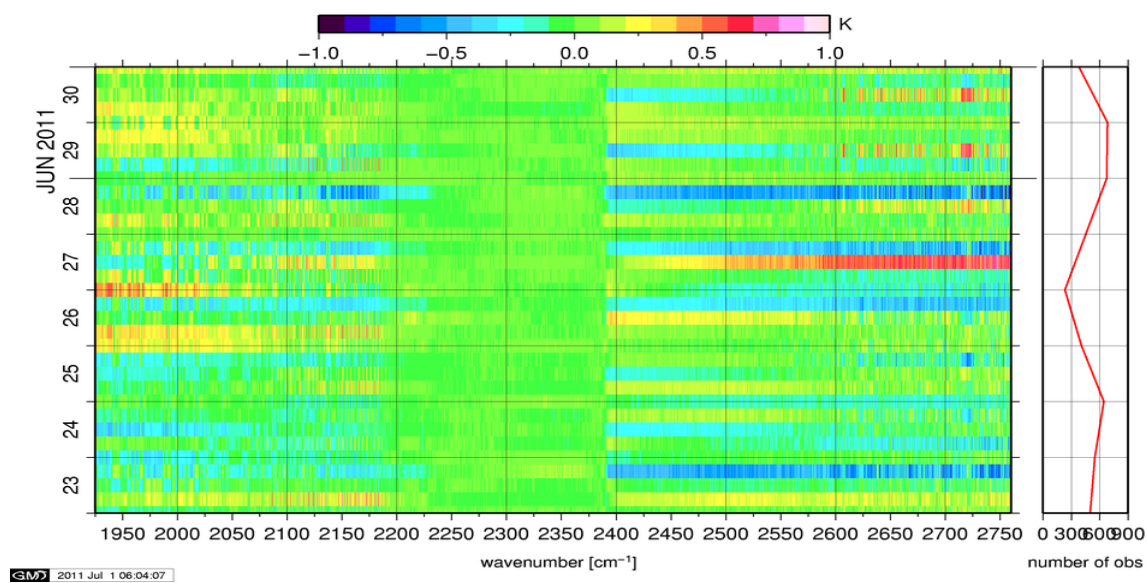


Figure 13: Radiance Anomaly in BRT: IASI Band 3

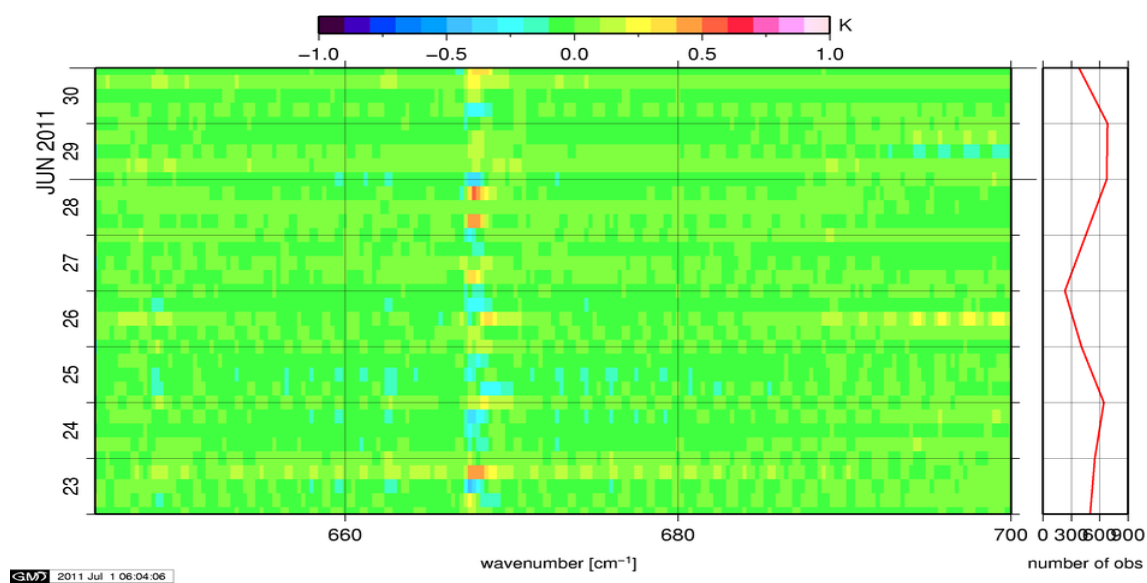


Figure 14: Radiance Anomaly in BRT: CO2 14

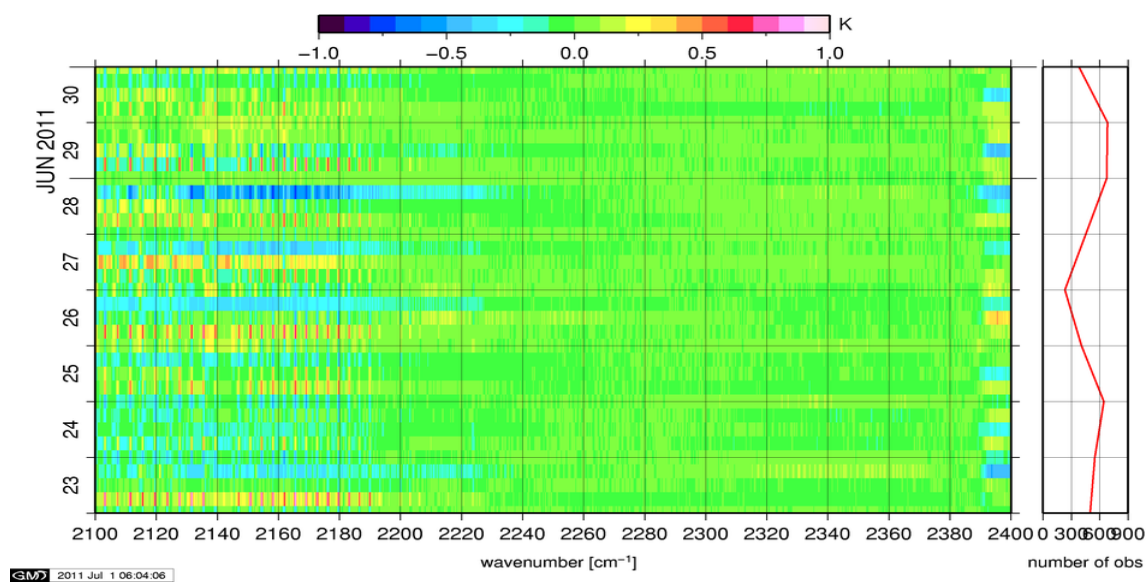


Figure 15: Radiance Anomaly in BRT: CO2 4.3

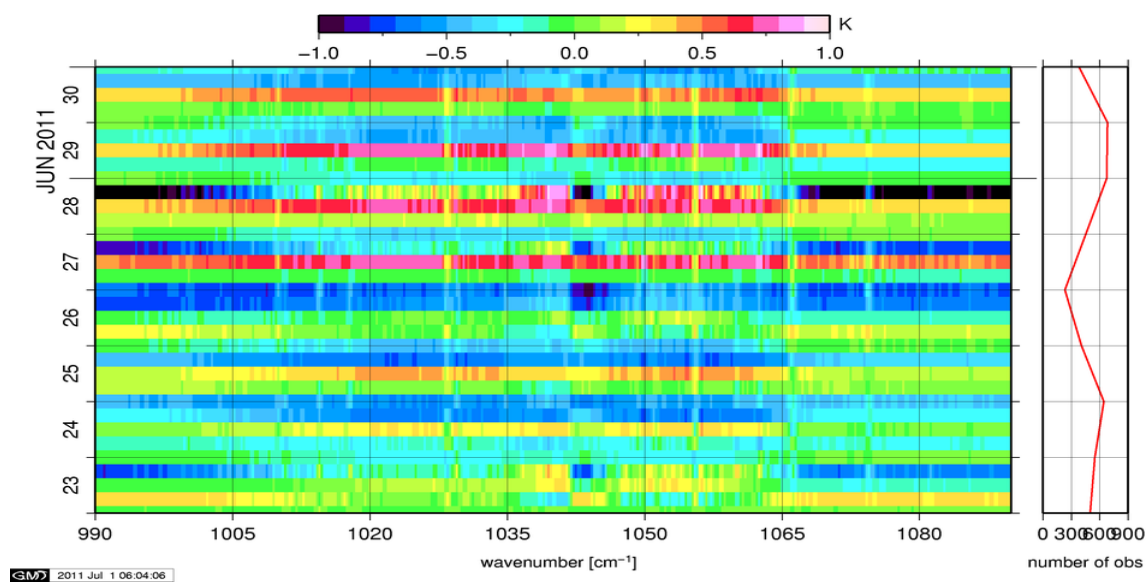


Figure 16: Radiance Anomaly in BRT: O3

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.

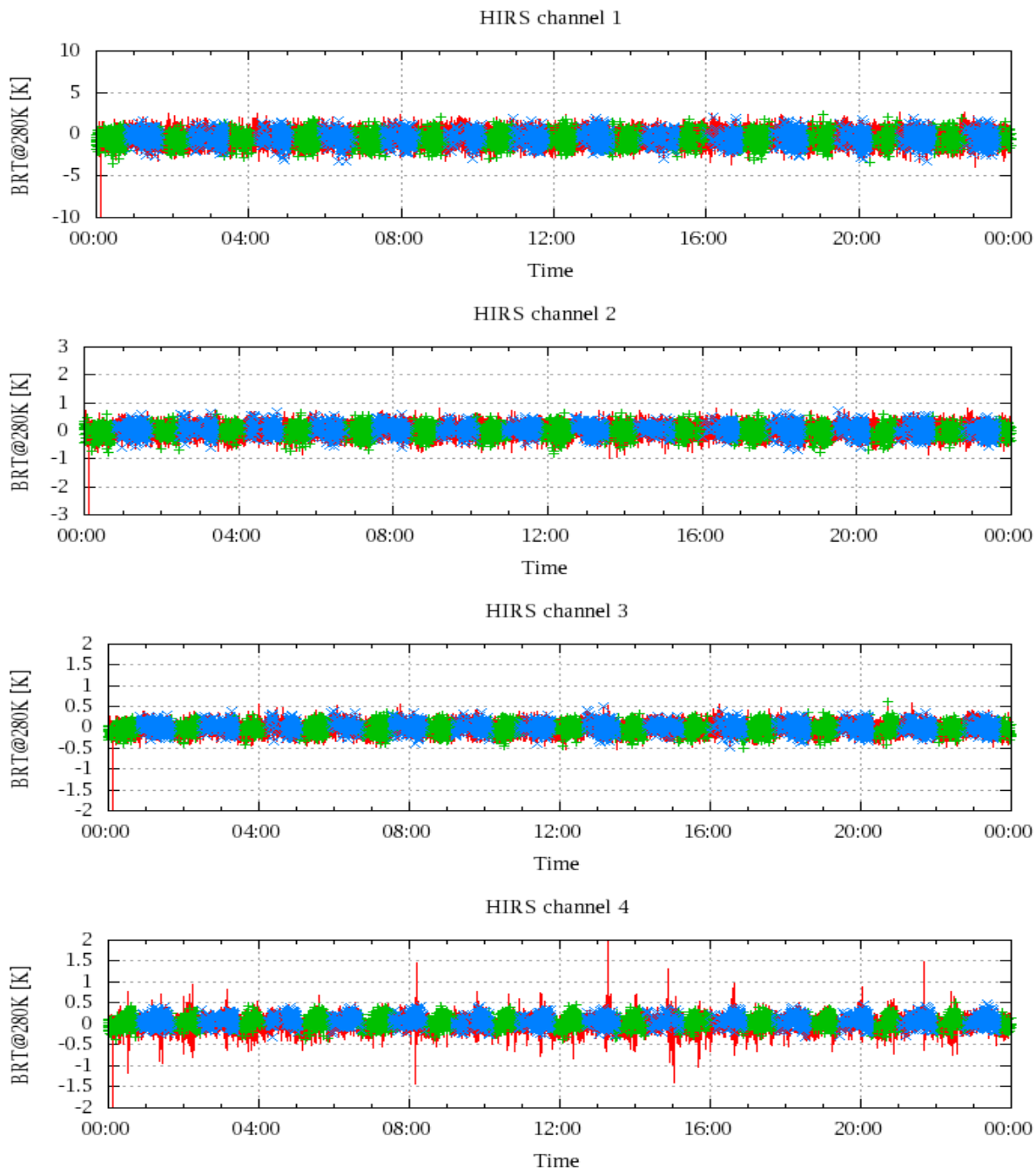


Figure 17: Radiance Differences in BRT

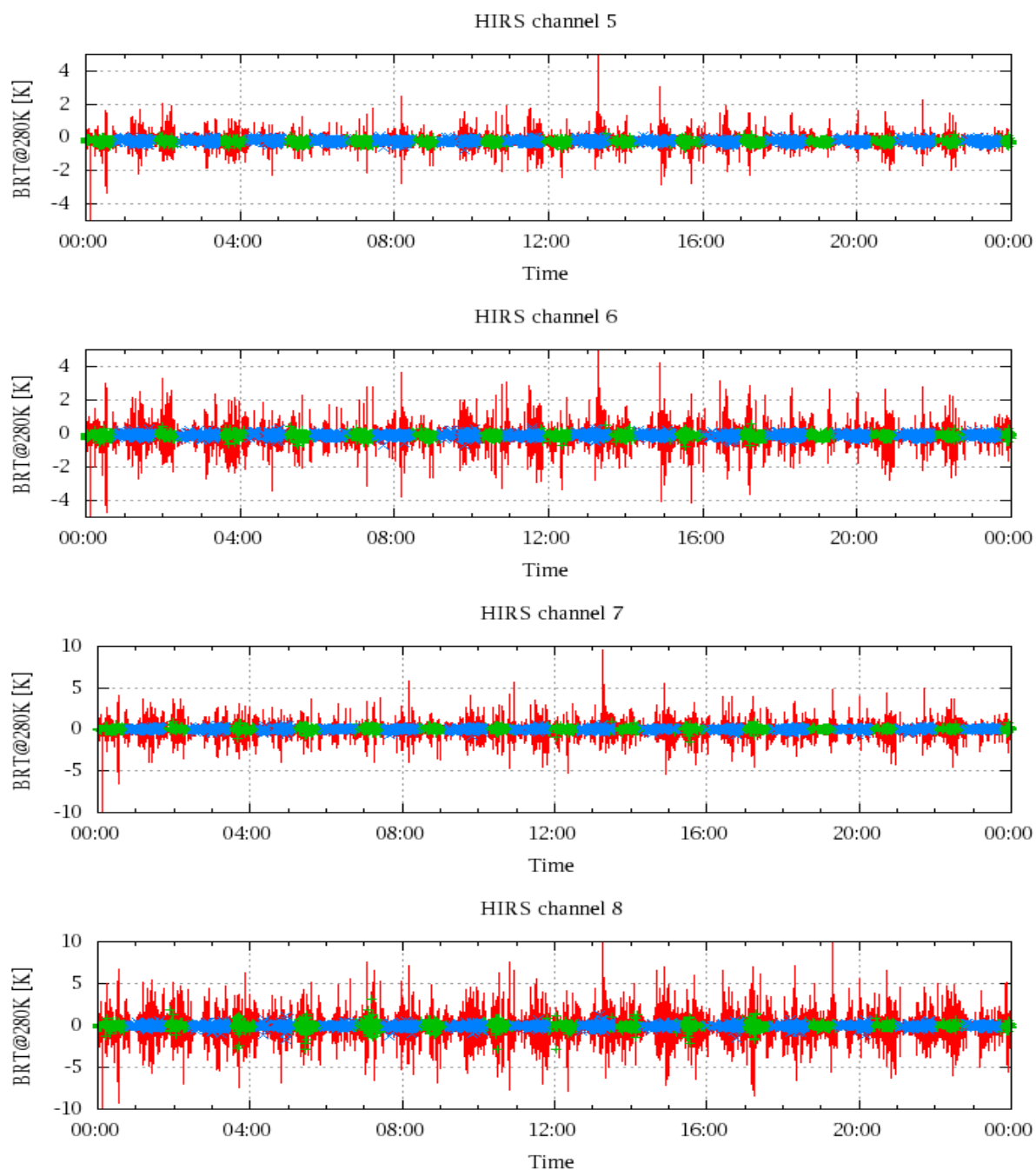


Figure 18: Radiance Differences in BRT

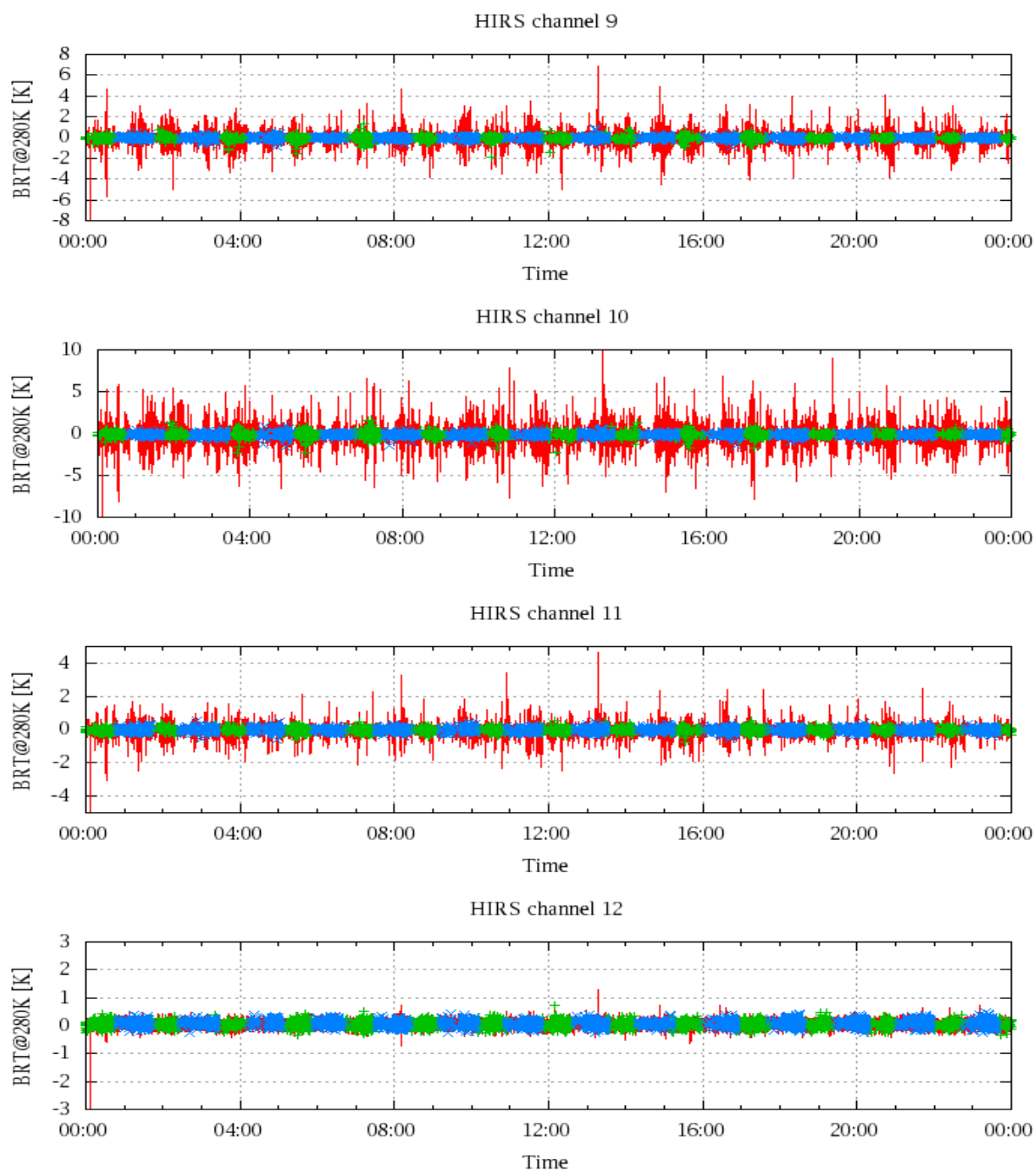


Figure 19: Radiance Differences in BRT

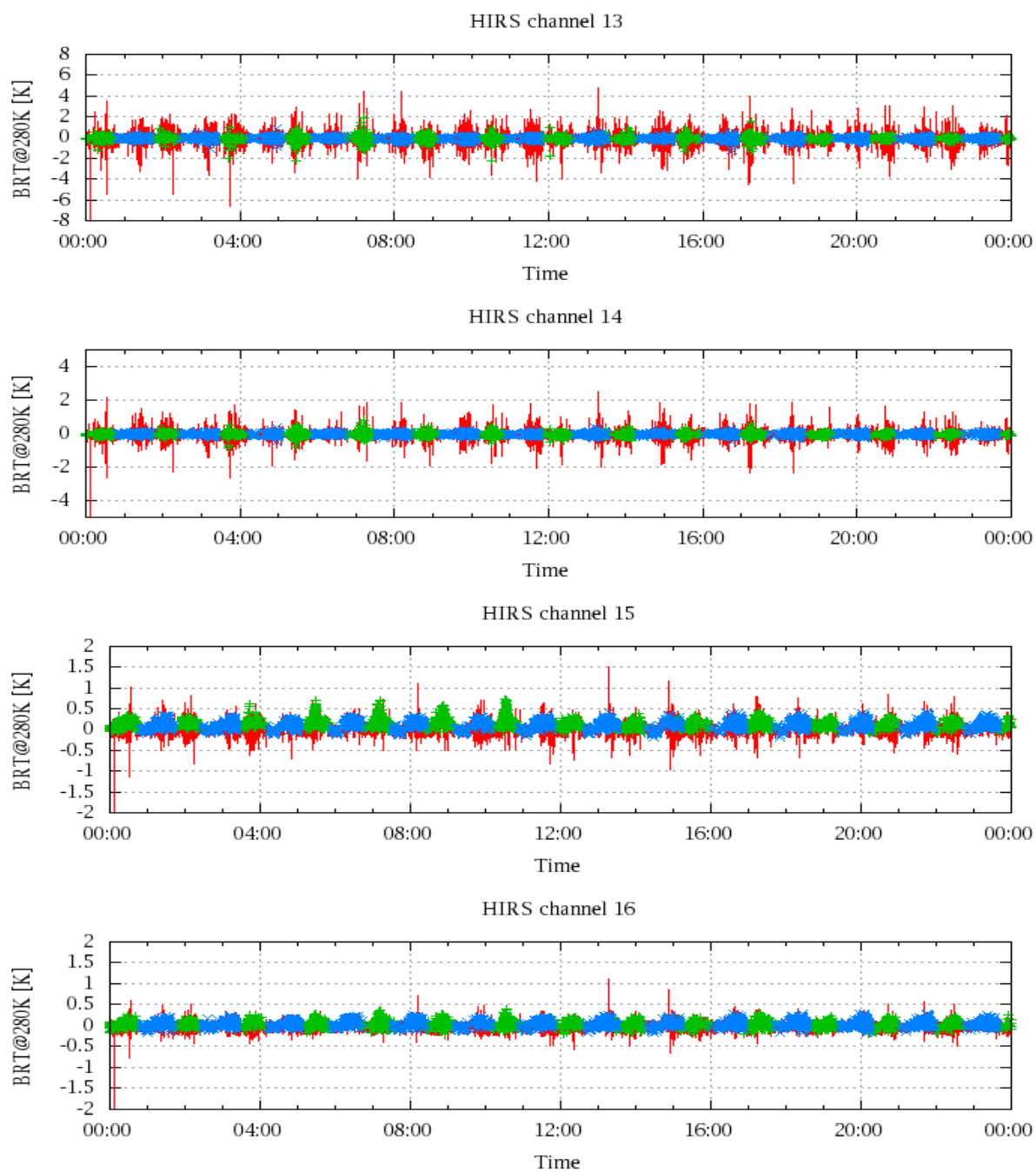


Figure 20: Radiance Differences in BRT

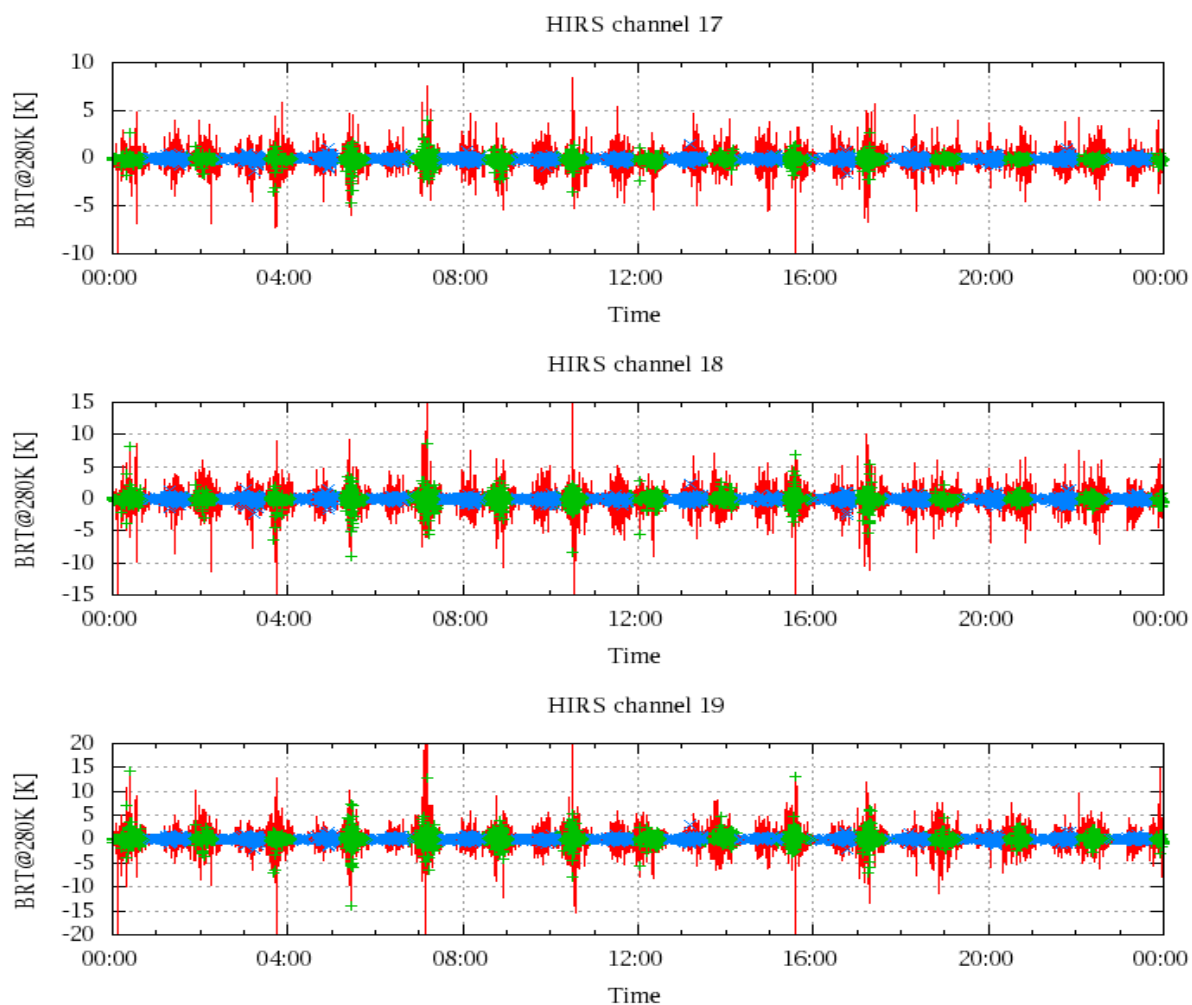


Figure 21: Radinace Differences in BRT