IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

10/06/2014 00:00:00 - 11/06/2014 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 10/06/2014 00:00:00 - 11/06/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 10/06/2014 00:00:00 - 11/06/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	447	e
L0 IASI PDUs	447	e
L1 ENG PDUs	446	e
L1 ENG distinct GEPSGranule	447	a
L1 DPX PDUs (RM: IASI-HIRS)	446	e
L1 DPS Files (RM: OBS-CAL NWP based)	446	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	9697	9699	20140610091352.574	20140610091353.004
PX1 (130)	9700	9704	20140610091353.223	20140610091354.086
PX1 (130)	9704	9767	20140610091354.086	20140610091410.734
PX1 (130)	9767	9770	20140610091410.734	20140610091411.383
PX1 (130)	9770	9772	20140610091411.383	20140610091411.816
PX1 (130)	14751	5414	20140610191851.922	20140610210300.152
PX2 (135)	9682	9684	20140610091347.816	20140610091348.250
PX2 (135)	9701	9703	20140610091353.437	20140610091353.871
PX2 (135)	9704	9706	20140610091354.086	20140610091354.519
PX2 (135)	9706	9711	20140610091354.519	20140610091355.602
PX2 (135)	9711	9769	20140610091355.602	20140610091411.168
PX2 (135)	14750	5414	20140610191851.703	20140610210300.152
PX3 (140)	9668	9670	20140610091344.789	20140610091345.223
PX3 (140)	9699	9701	20140610091353.004	20140610091353.437
PX3 (140)	9704	9707	20140610091354.086	20140610091354.734
PX3 (140)	9707	9766	20140610091354.734	20140610091410.519

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	9766	9770	20140610091410.519	20140610091411.383
PX3 (140)	9771	9773	20140610091411.601	20140610091412.031
PX3 (140)	14750	5414	20140610191851.703	20140610210300.152
PX4 (145)	9686	9688	20140610091350.195	20140610091350.629
PX4 (145)	9700	9704	20140610091353.223	20140610091354.086
PX4 (145)	9705	9768	20140610091354.305	20140610091410.953
PX4 (145)	14750	5414	20140610191851.703	20140610210300.152
IMG (150)	9389	9391	20140610091353.223	20140610091353.656
IMG (150)	9391	9393	20140610091353.656	20140610091354.086
IMG (150)	9393	9395	20140610091354.086	20140610091354.519
IMG (150)	9395	9397	20140610091354.519	20140610091354.953
IMG (150)	9397	9465	20140610091354.953	20140610091410.953
IMG (150)	9466	9468	20140610091411.168	20140610091411.601
IMG (150)	16203	9991	20140610191851.703	20140610210300.152
VER (160)	11350	11352	20140610033100.299	20140610033108.299
VER (160)	7817	7819	20140610091348.250	20140610091348.250
VER (160)	7821	7832	20140610091348.250	20140610091412.250
VER (160)	14122	1644	20140610191844.137	20140610210300.152
AUX (180)	8113	8116	20140610091348.680	20140610091412.684
AUX (180)	12650	13432	20140610191844.570	20140610210300.581

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
10/06/2014 00:00:11	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	447	e
L1 ENG PDUs	446	e
L1 ENG distinct GEPSGranule	447	a
GQisFlagQual set (PX1)	99.37 %	-
GQisFlagQual set (PX2)	99.28 %	-
GQisFlagQual set (PX3)	99.40 %	-
GQisFlagQual set (PX4)	99.43 %	-
GQisFlagQual set (all)	99.37 %	-

Table 4: Quality flags

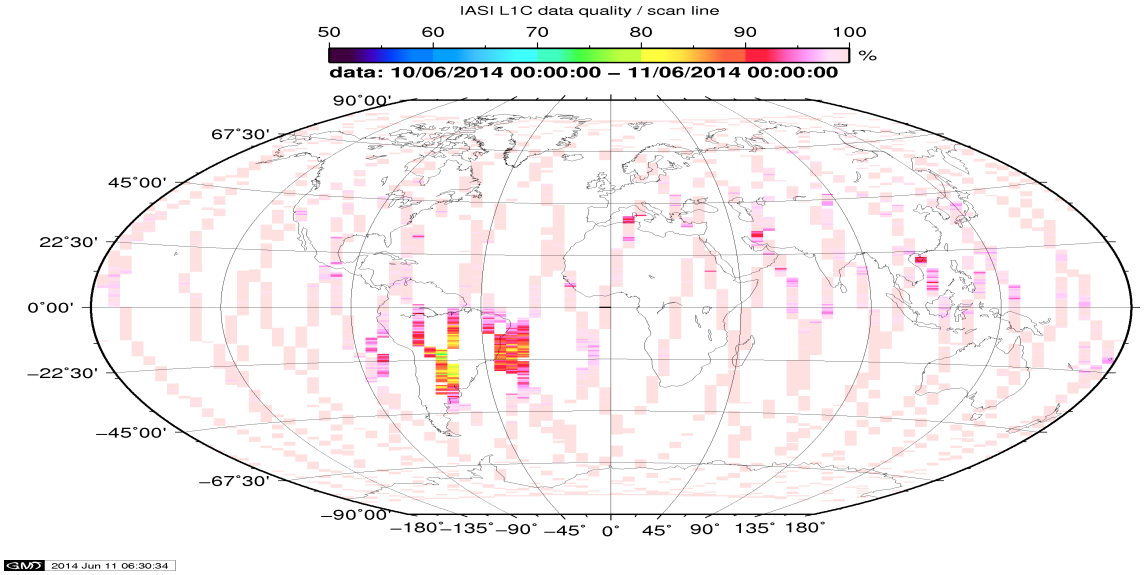

Figure 1: L1C data quality

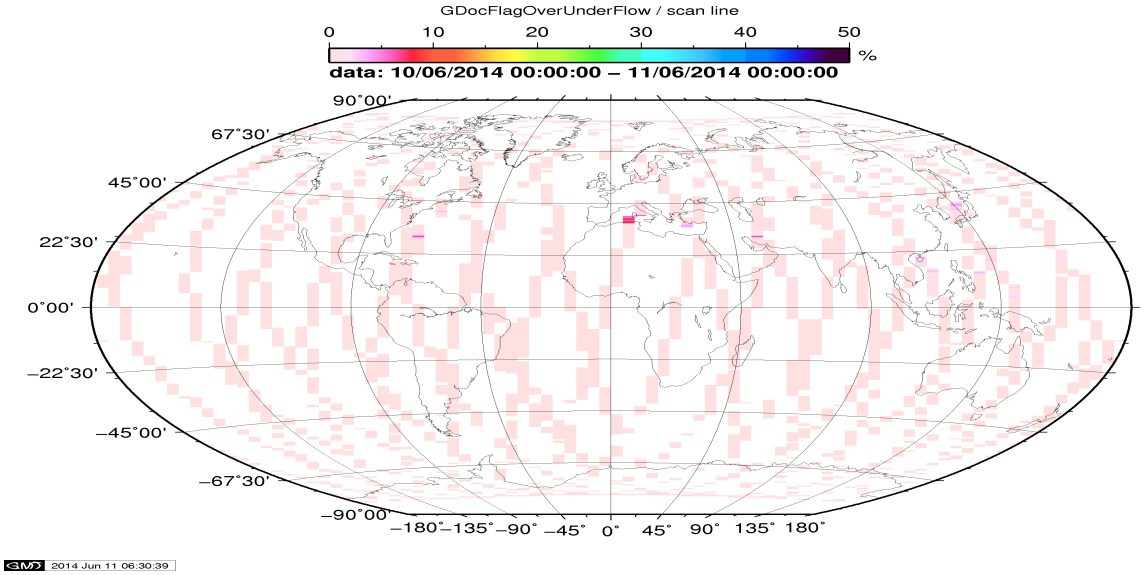

Figure 2: Flag of Over and Under Flows

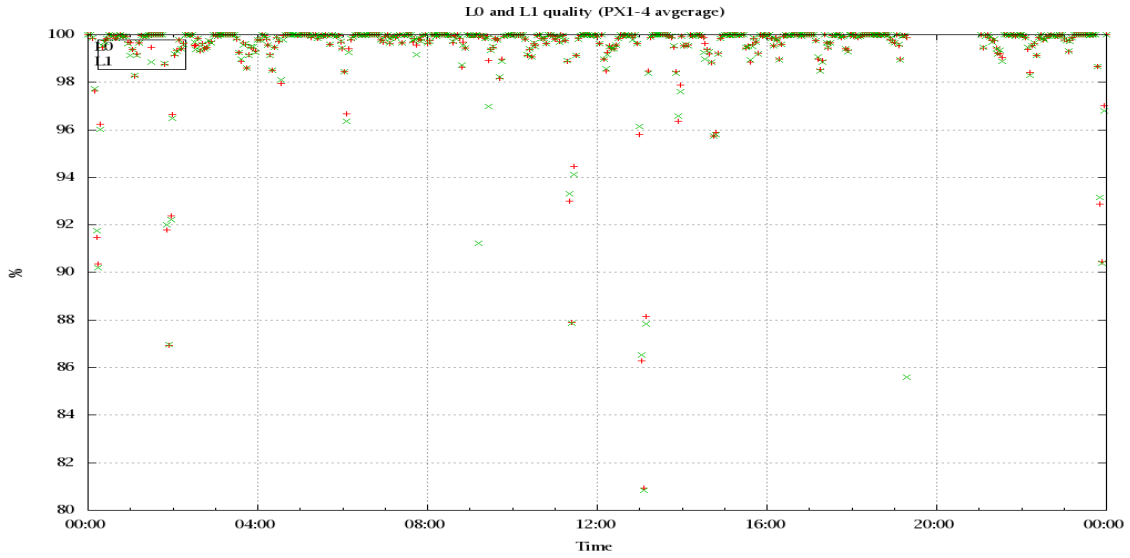

Figure 3: Level 0 and 1C overall quality

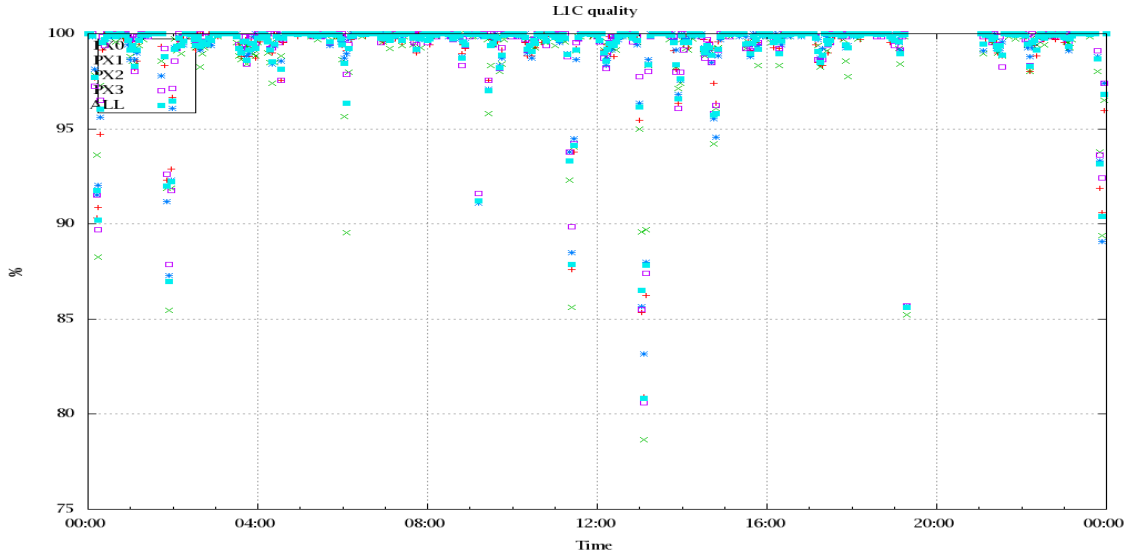

Figure 4: Level 1C quality

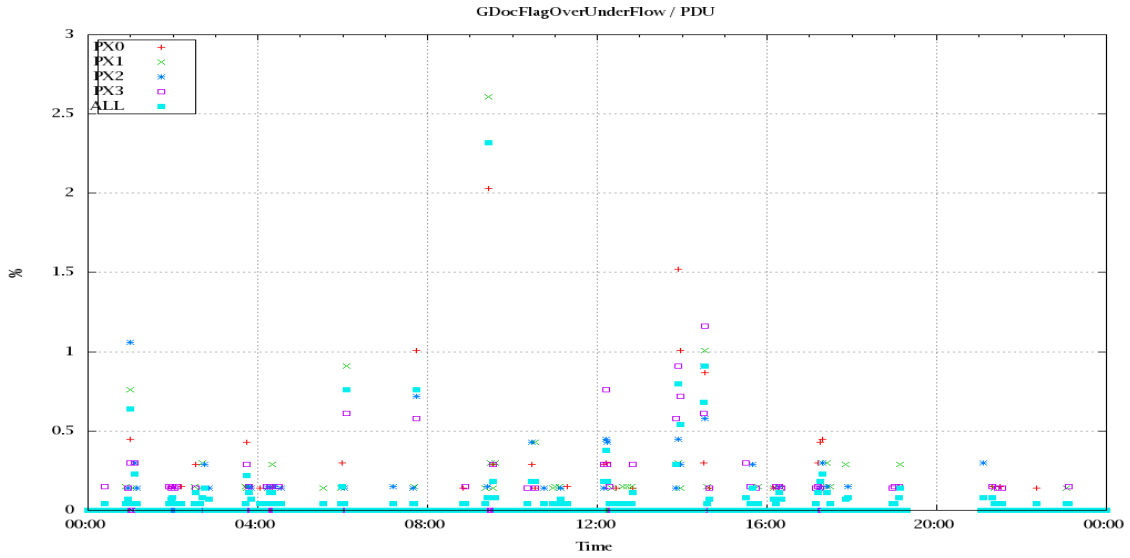

Figure 5: OverUnderFlowFlag timeseries

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.

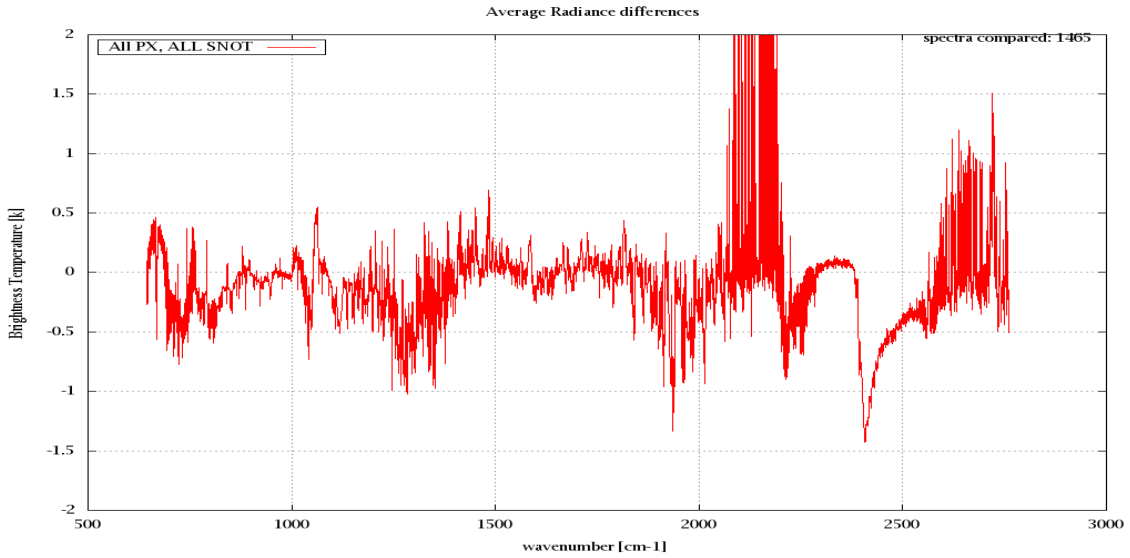

Figure 6: Average Radiance differences: OBS-CAL

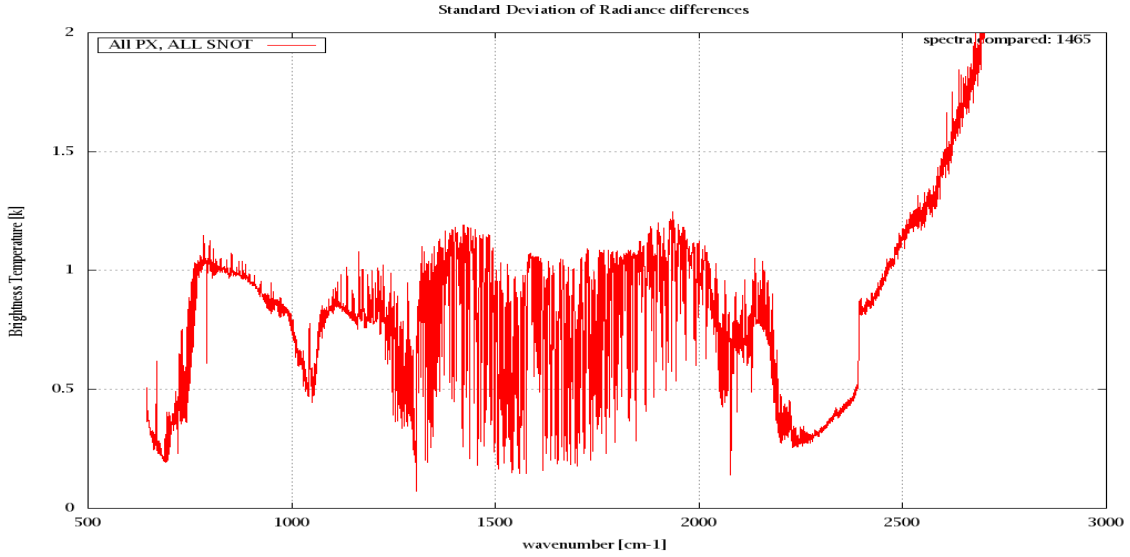

Figure 7: Standard Deviation of Radiance differences

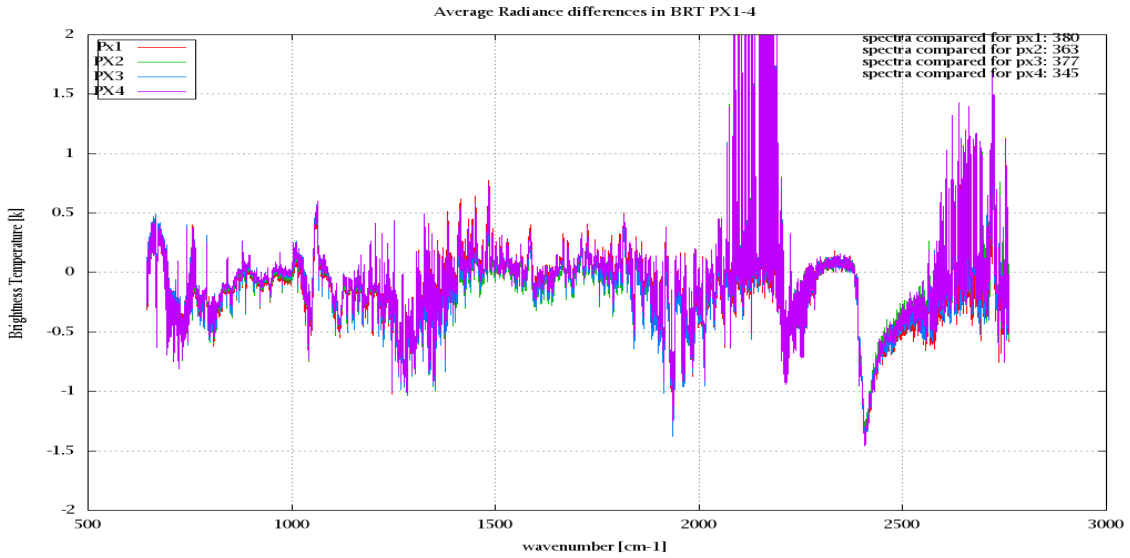

Figure 8: Average Radiance differences: OBS-CAL

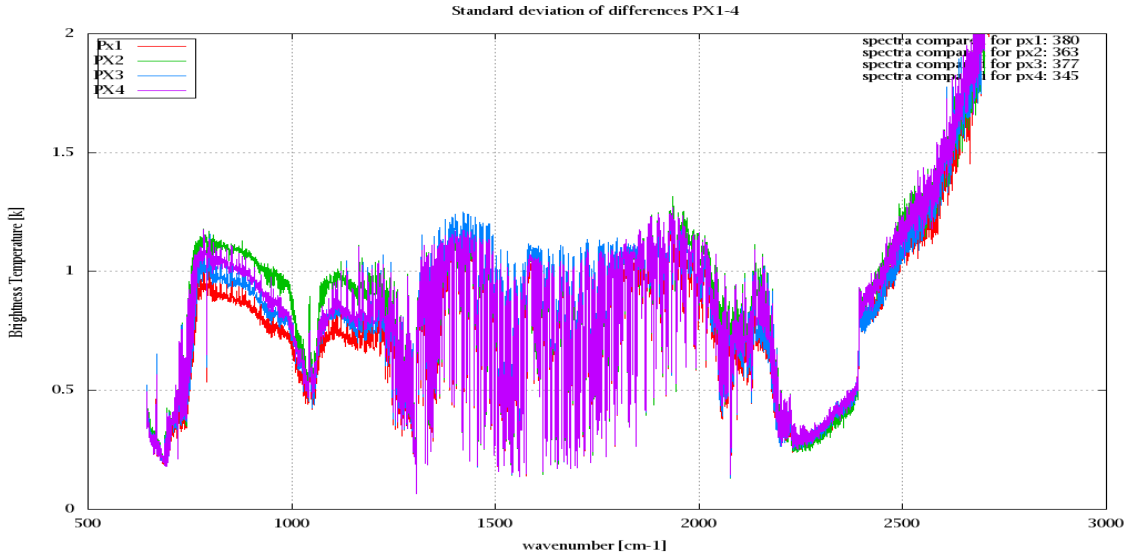

Figure 9: Standard Deviation of Radiance differences

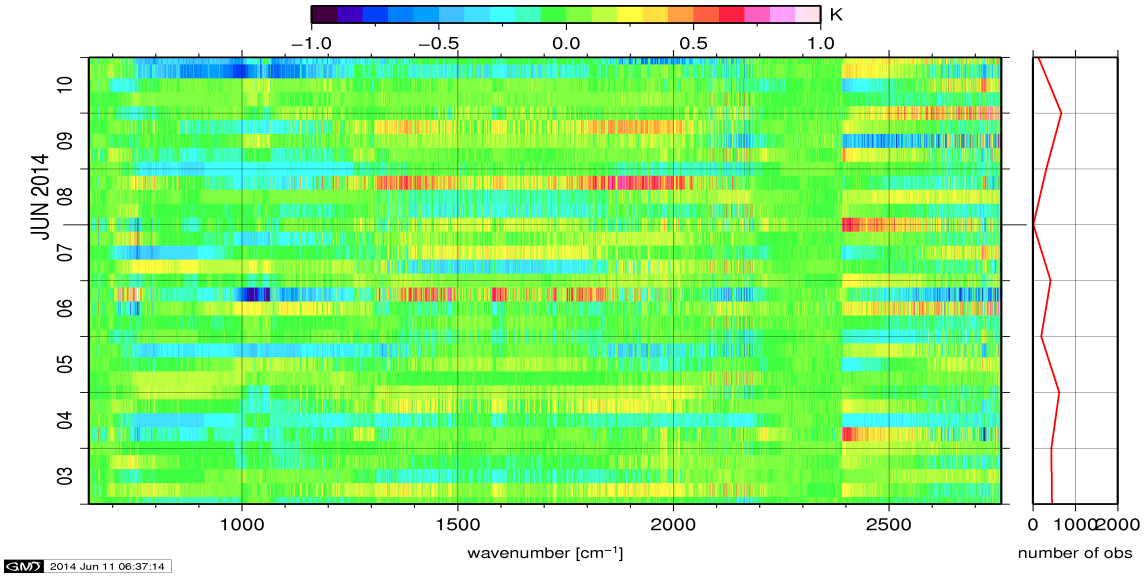

Figure 10: Radiance Anomaly in BRT: All Channels

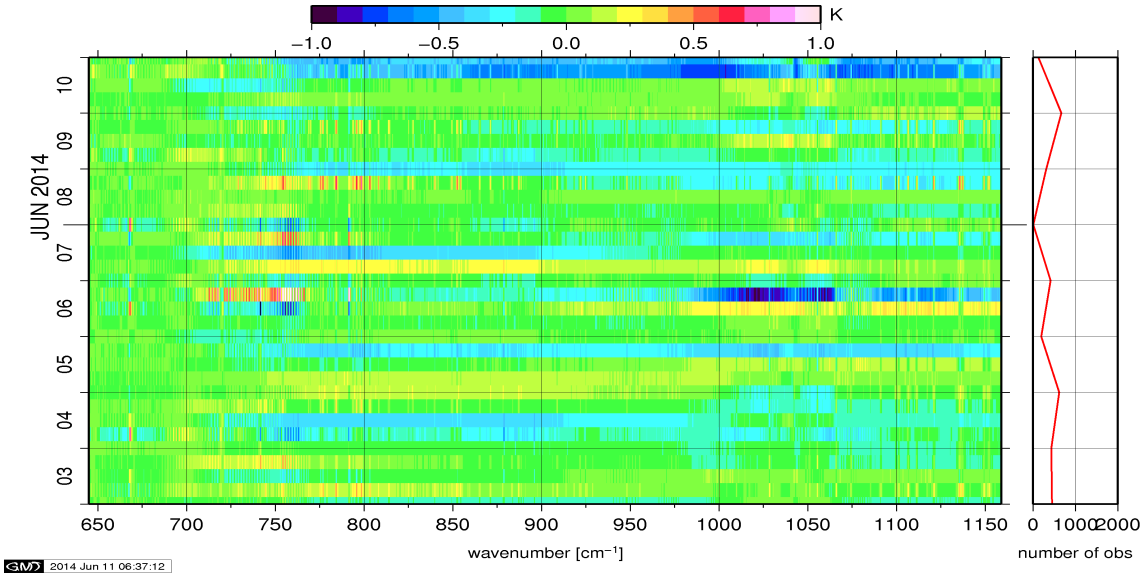

Figure 11: Radiance Anomaly in BRT: IASI Band 1

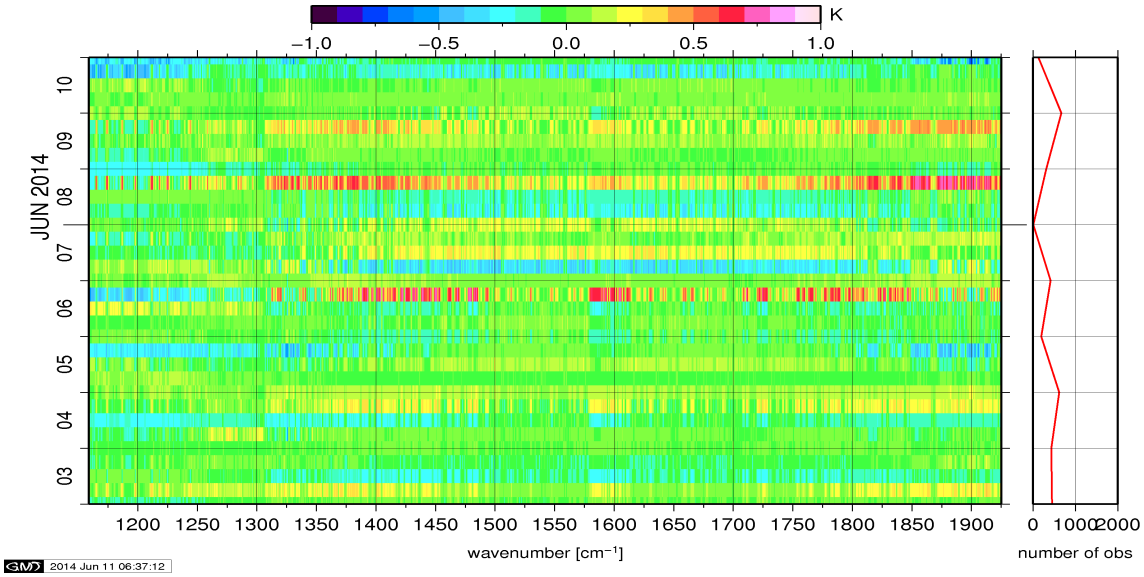

Figure 12: Radiance Anomaly in BRT: IASI Band 2

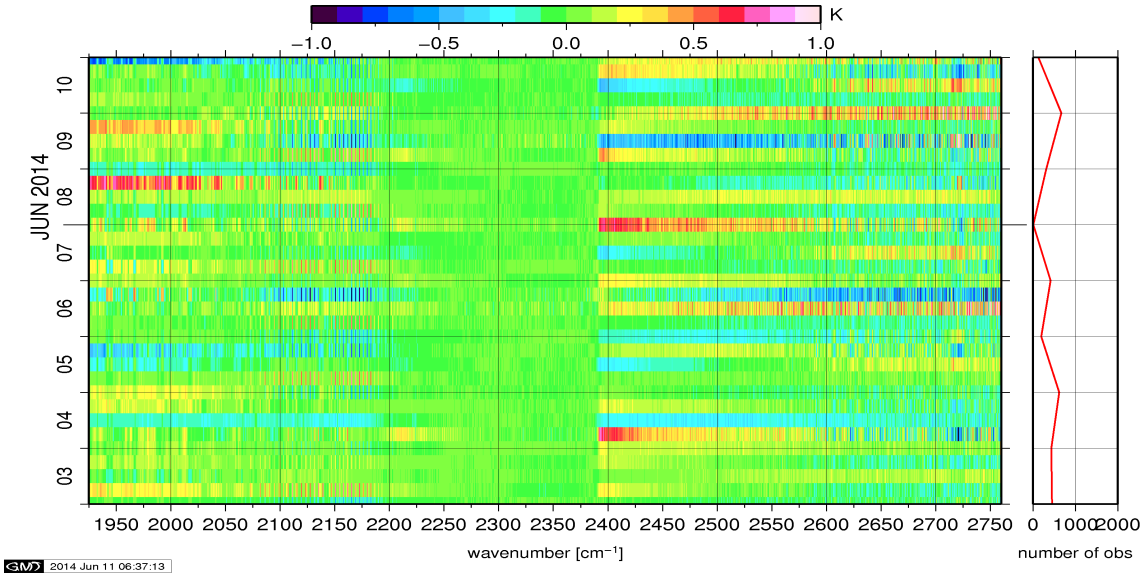

Figure 13: Radiance Anomaly in BRT: IASI Band 3

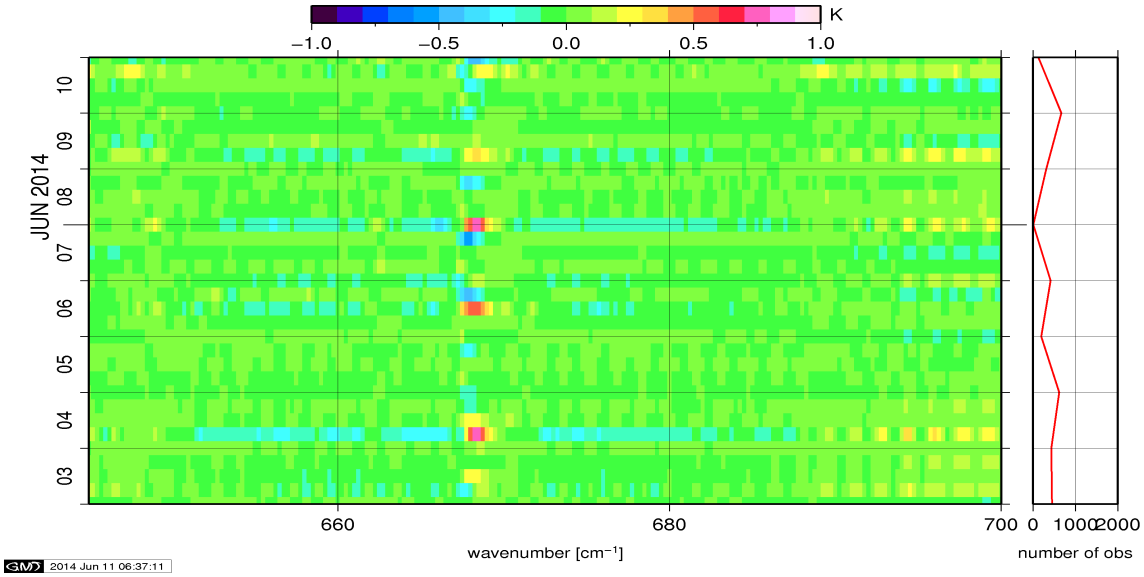

Figure 14: Radiance Anomaly in BRT: CO2 14

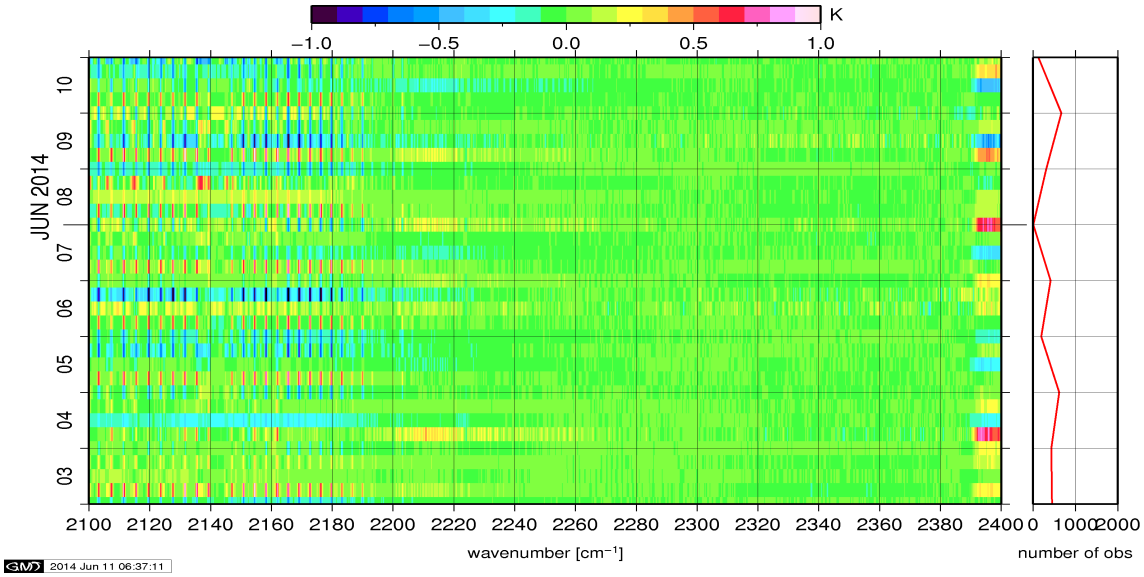

Figure 15: Radiance Anomaly in BRT: CO2 4.3

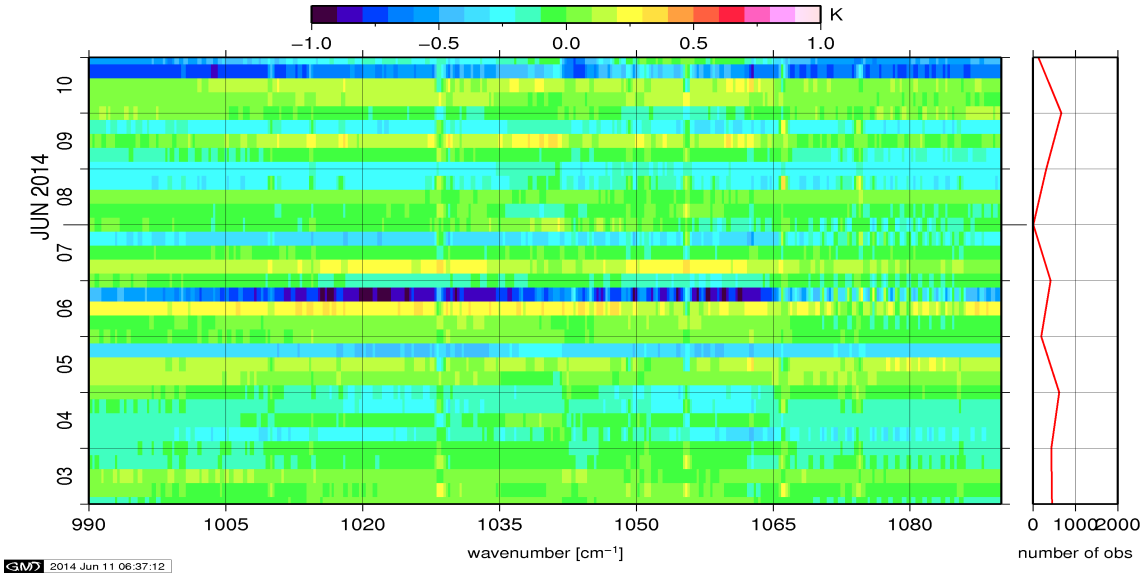

Figure 16: Radiance Anomaly in BRT: O3

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.

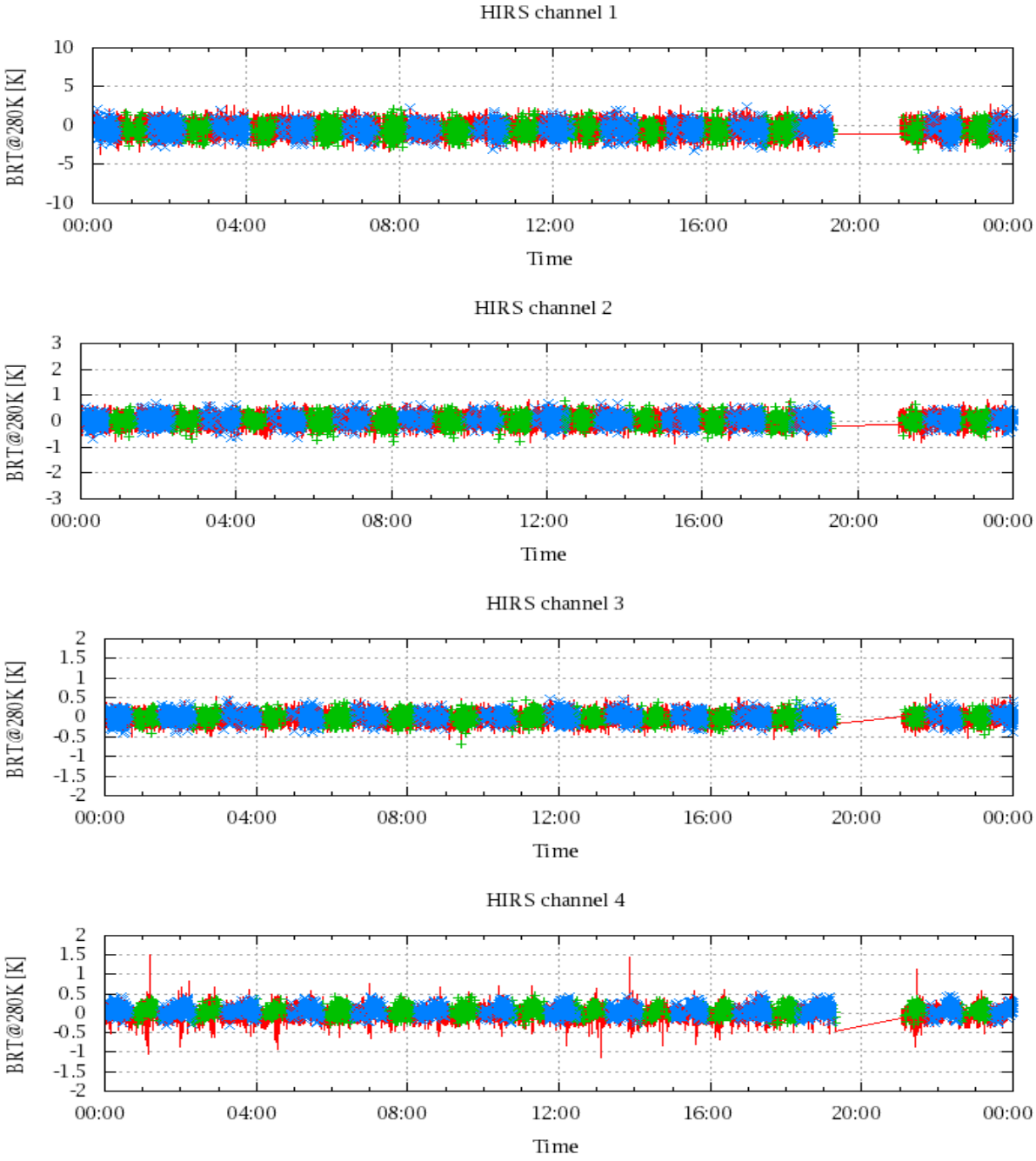

Figure 17: Radiance Differences in BRT

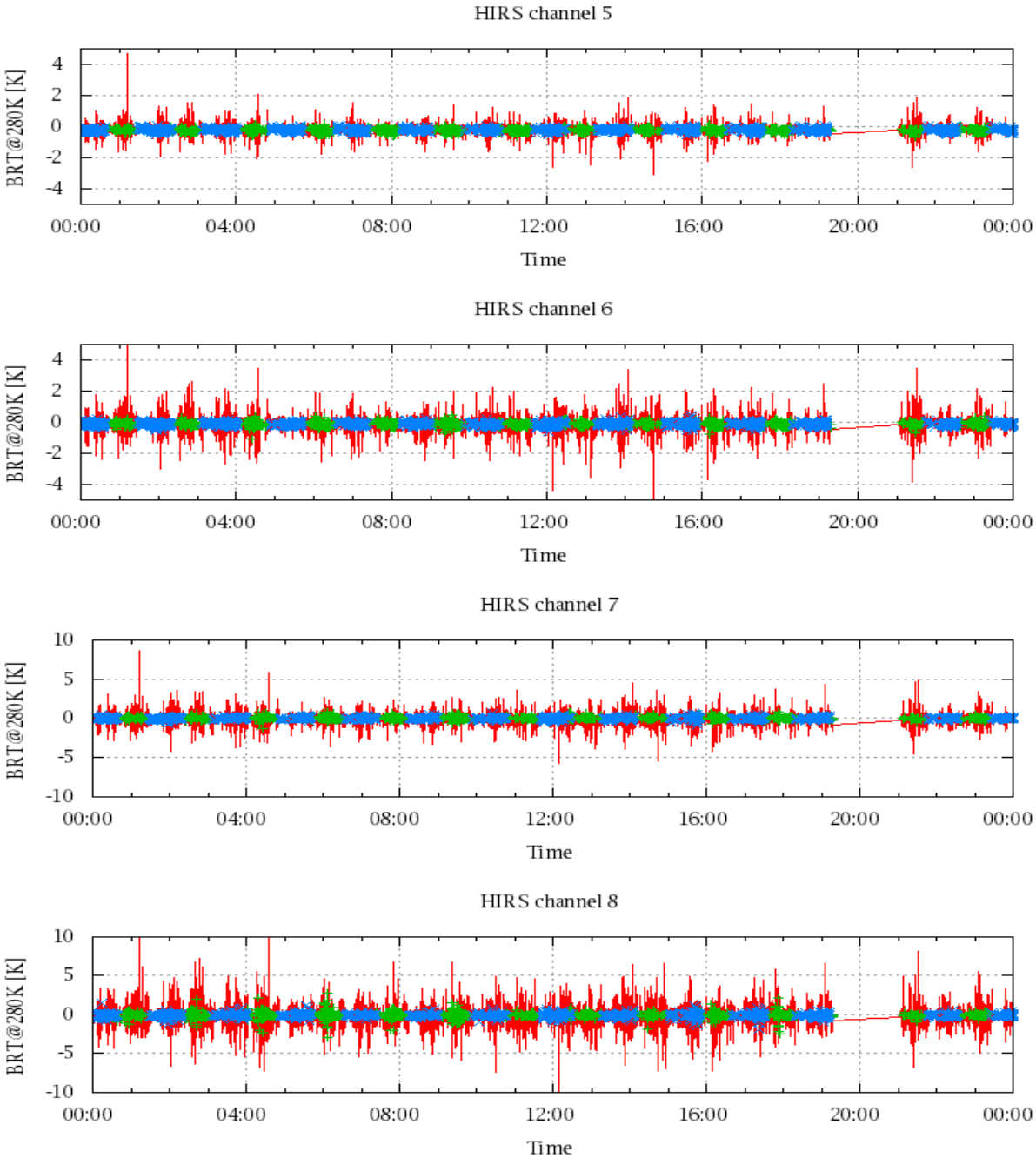

Figure 18: Radiance Differences in BRT

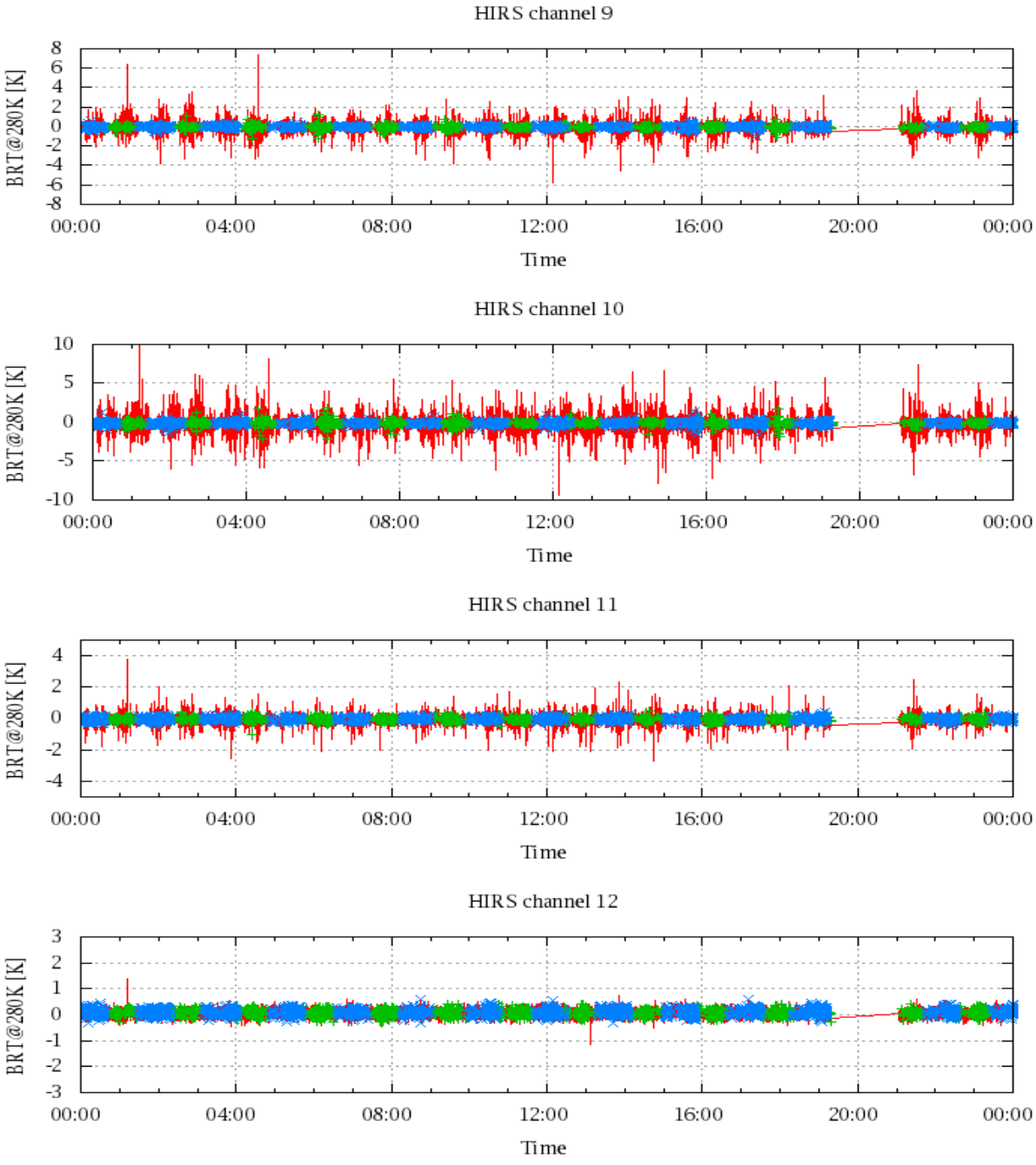

Figure 19: Radiance Differences in BRT

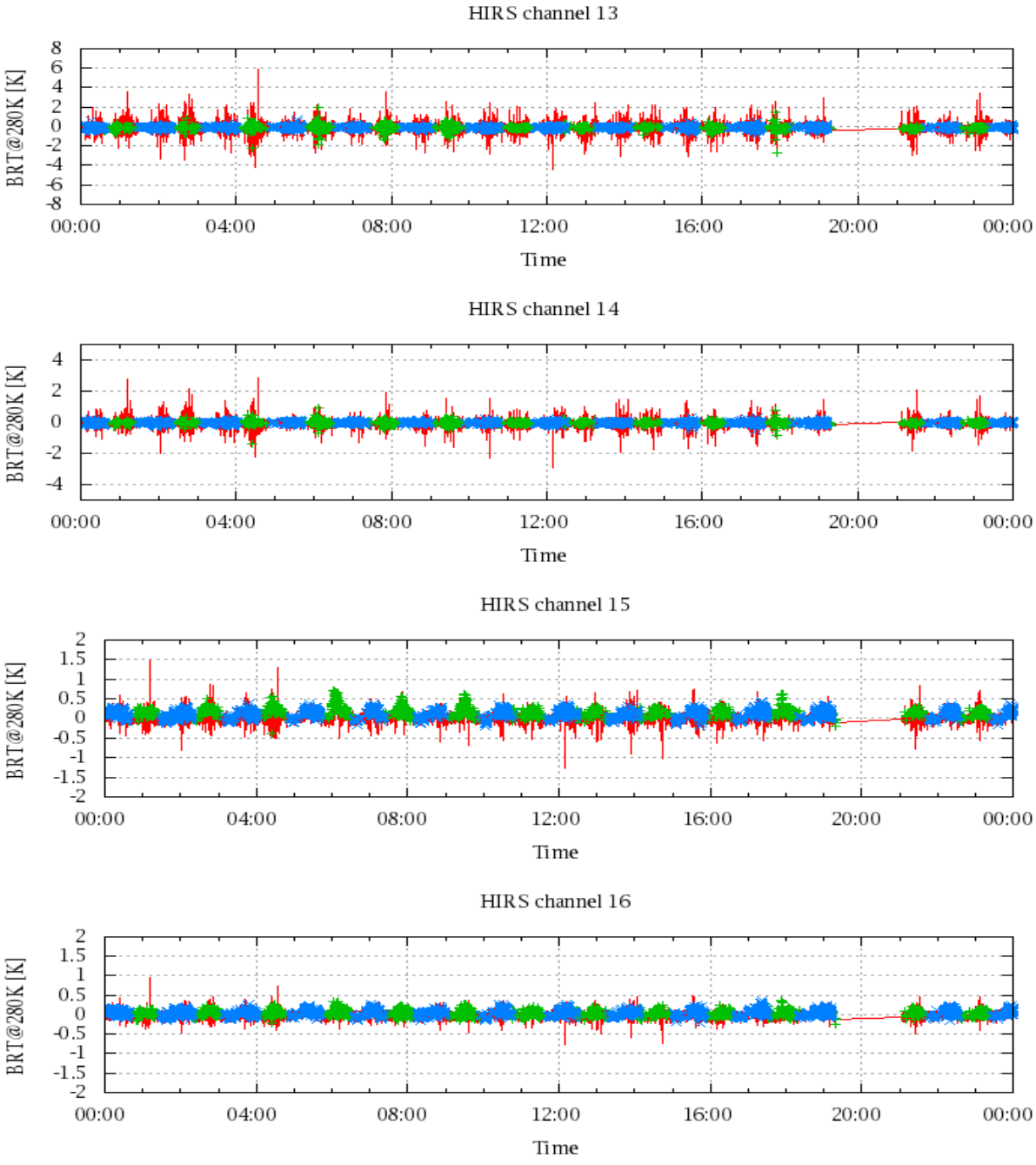

Figure 20: Radiance Differences in BRT

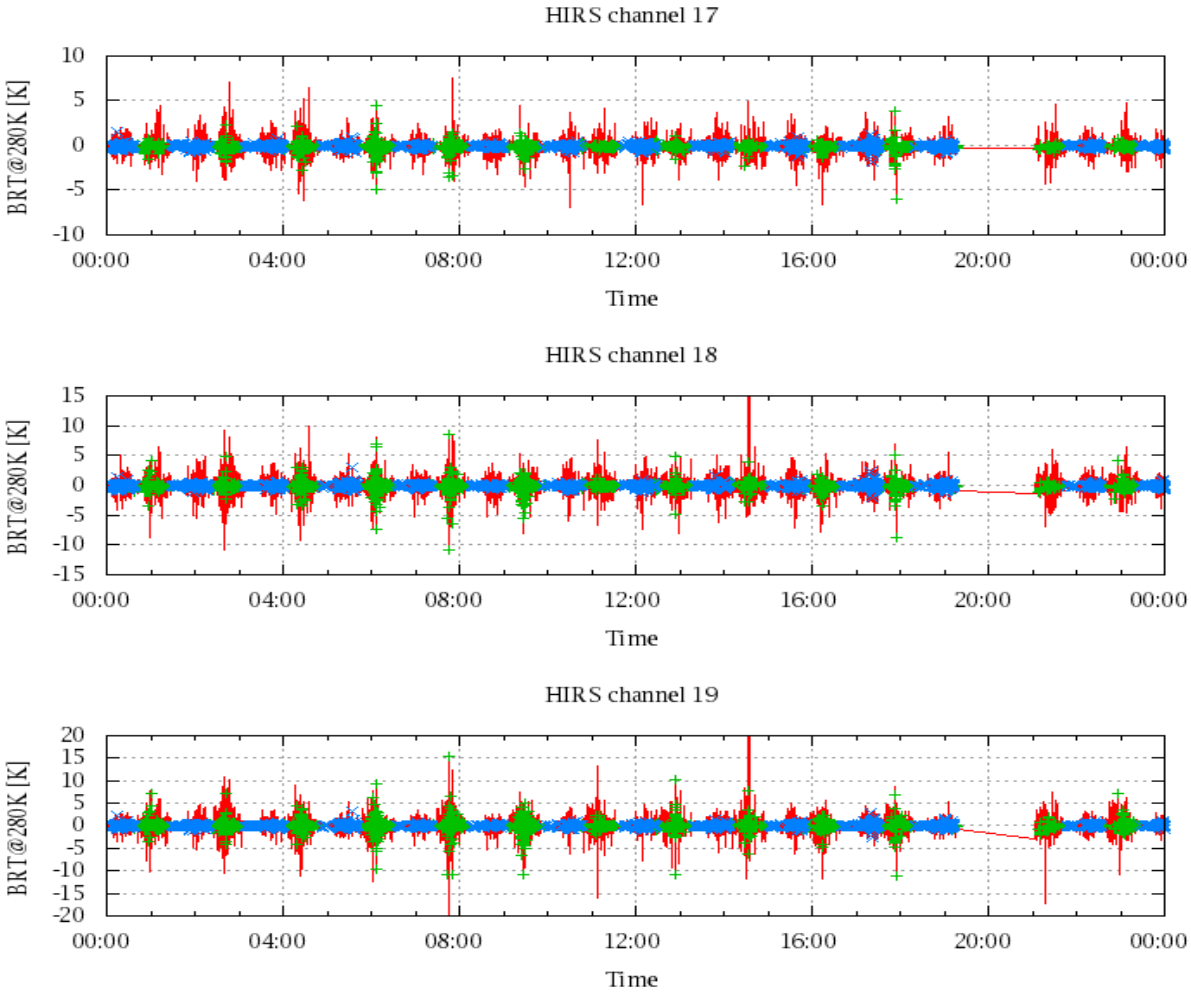

Figure 21: Radinace Differences in BRT