

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

07/07/2014 00:00:00 - 08/07/2014 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 07/07/2014 00:00:00 - 08/07/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 07/07/2014 00:00:00 - 08/07/2014 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)	7312	7314	20140707091053.425	20140707091053.855
PX1 (130)	7321	7323	20140707091055.370	20140707091055.800
PX1 (130)	7325	7415	20140707091056.233	20140707091120.233
PX1 (130)	7419	7421	20140707091121.097	20140707091121.530
PX1 (130)	1738	1740	20140707160301.379	20140707160301.813
PX1 (130)	16098	16100	20140707193228.919	20140707193229.352
PX1 (130)	16151	16153	20140707193243.403	20140707193243.841
PX2 (135)	7324	7415	20140707091056.019	20140707091120.233
PX2 (135)	16098	16100	20140707193228.919	20140707193229.352
PX2 (135)	16151	16153	20140707193243.403	20140707193243.841
PX3 (140)	7320	7322	20140707091055.151	20140707091055.585
PX3 (140)	7322	7324	20140707091055.585	20140707091056.019
PX3 (140)	7324	7414	20140707091056.019	20140707091120.015
PX3 (140)	16098	16100	20140707193228.919	20140707193229.352
PX3 (140)	16151	16153	20140707193243.403	20140707193243.841
PX4 (145)	7316	7318	20140707091054.288	20140707091054.722
PX4 (145)	7319	7321	20140707091054.937	20140707091055.370
PX4 (145)	7322	7413	20140707091055.585	20140707091119.800

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	7414	7416	20140707091120.015	20140707091120.448
PX4 (145)	16097	16099	20140707193228.704	20140707193229.134
PX4 (145)	16151	16153	20140707193243.403	20140707193243.841
IMG (150)	1736	1739	20140707091054.288	20140707091054.937
IMG (150)	1739	1742	20140707091054.937	20140707091055.585
IMG (150)	1743	1845	20140707091055.800	20140707091119.800
IMG (150)	1846	1848	20140707091120.015	20140707091120.448
IMG (150)	12781	12783	20140707193228.704	20140707193229.134
IMG (150)	12842	12845	20140707193243.188	20140707193243.841
VER (160)	1216	1232	20140707091049.530	20140707091121.530
VER (160)	1233	1235	20140707091121.530	20140707091121.530
VER (160)	2250	3668	20140707165521.472	20140707173345.480
VER (160)	3668	3673	20140707173345.480	20140707173345.480
VER (160)	3673	3678	20140707173345.480	20140707173345.480
VER (160)	3678	3683	20140707173345.480	20140707173345.480
VER (160)	3683	3688	20140707173345.480	20140707173345.480
VER (160)	3688	3669	20140707173345.480	20140707173345.480
VER (160)	3669	3674	20140707173345.480	20140707173345.480
VER (160)	3674	3679	20140707173345.480	20140707173345.480
VER (160)	3679	3684	20140707173345.480	20140707173345.480
VER (160)	3684	3689	20140707173345.480	20140707173345.480
VER (160)	3689	3670	20140707173345.480	20140707173345.480
VER (160)	3670	3675	20140707173345.480	20140707173345.480
VER (160)	3675	3680	20140707173345.480	20140707173345.480
VER (160)	3680	3685	20140707173345.480	20140707173345.480
VER (160)	3685	3690	20140707173345.480	20140707173345.480
VER (160)	3690	3671	20140707173345.480	20140707173345.480
VER (160)	3671	3676	20140707173345.480	20140707173345.480
VER (160)	3676	3681	20140707173345.480	20140707173345.480
VER (160)	3681	3686	20140707173345.480	20140707173345.480
VER (160)	3686	3691	20140707173345.480	20140707173345.480
VER (160)	3691	3672	20140707173345.480	20140707173345.480
VER (160)	3672	3677	20140707173345.480	20140707173345.480
VER (160)	3677	3682	20140707173345.480	20140707173345.480
VER (160)	3682	3687	20140707173345.480	20140707173345.480
VER (160)	3687	3692	20140707173345.480	20140707173345.480
AUX (180)	6796	6800	20140707091049.964	20140707091121.964

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/07/2014 00:00:15	-	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)	99.48 %	-
GQisFlagQual set (PX2)	99.55 %	-
GQisFlagQual set (PX3)	99.55 %	-
GQisFlagQual set (PX4)	99.52 %	-
GQisFlagQual set (all)	99.53 %	-

Table 4: Quality flags

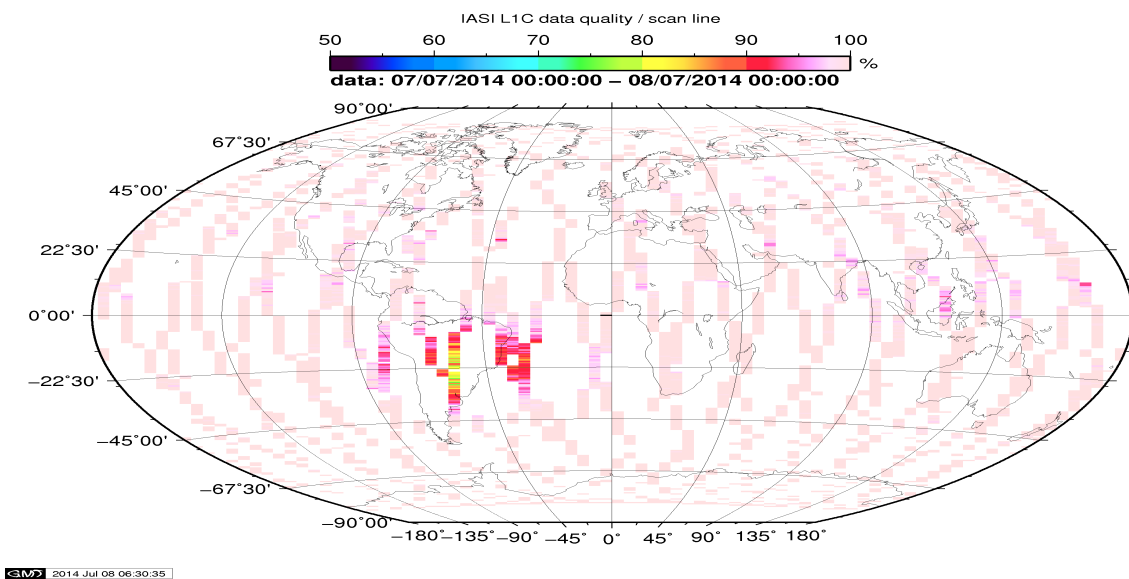


Figure 1: L1C data quality

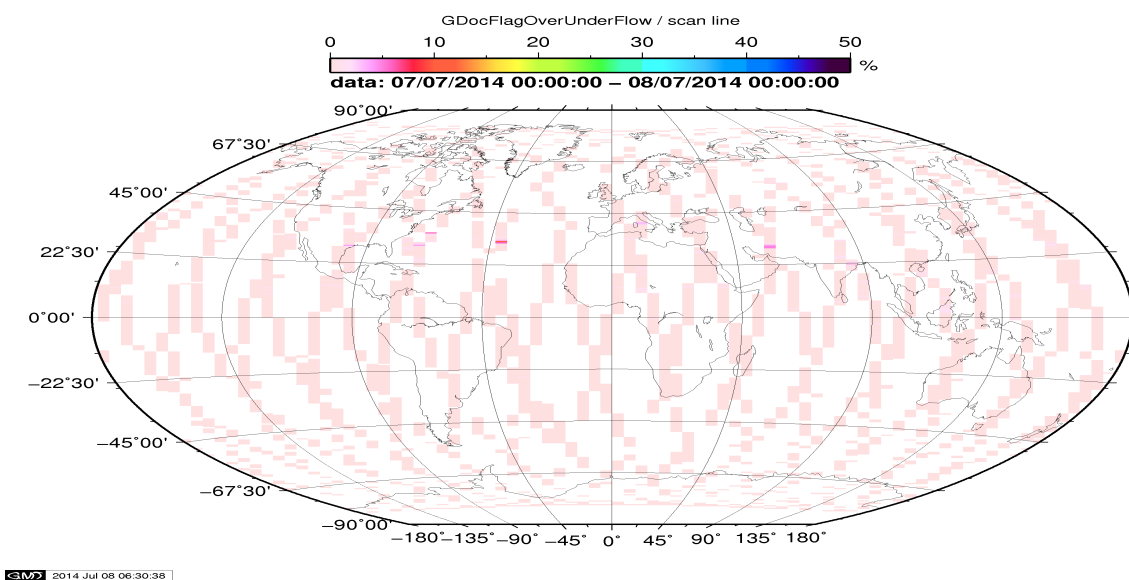


Figure 2: Flag of Over and Under Flows

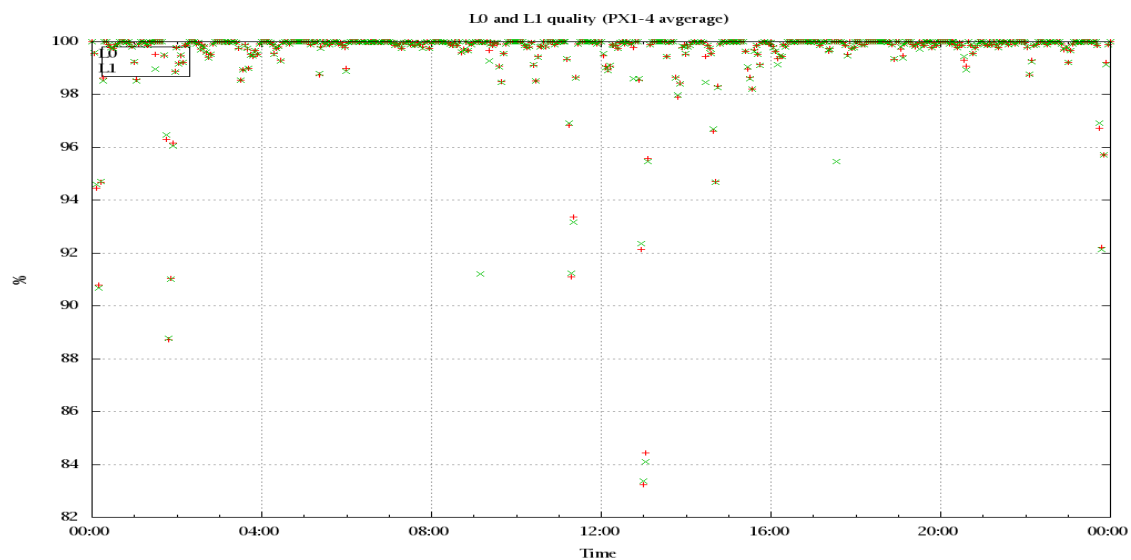


Figure 3: Level 0 and 1C overall quality

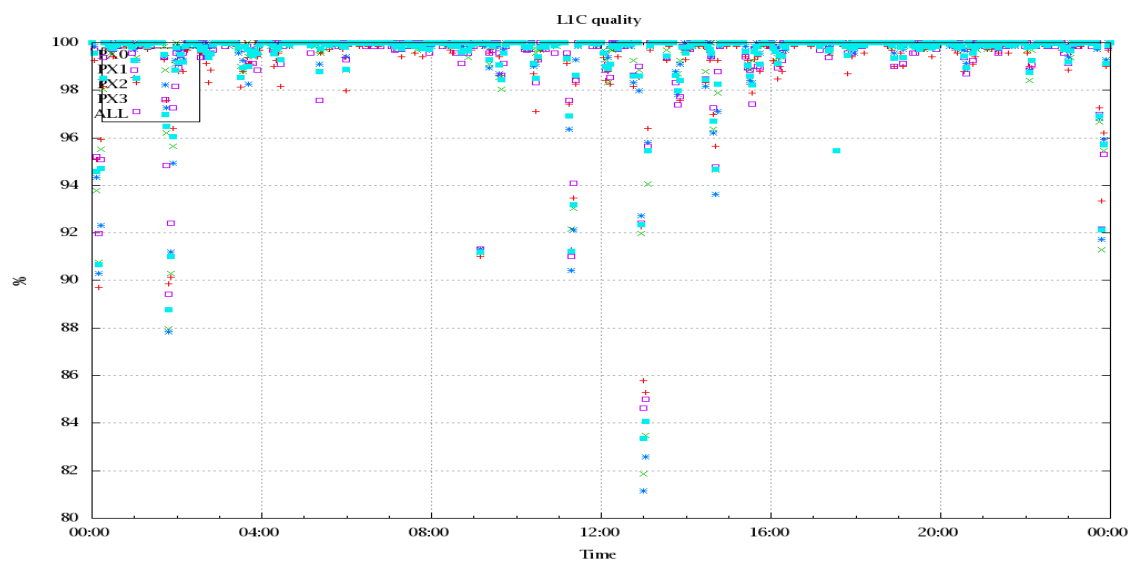


Figure 4: Level 1C quality

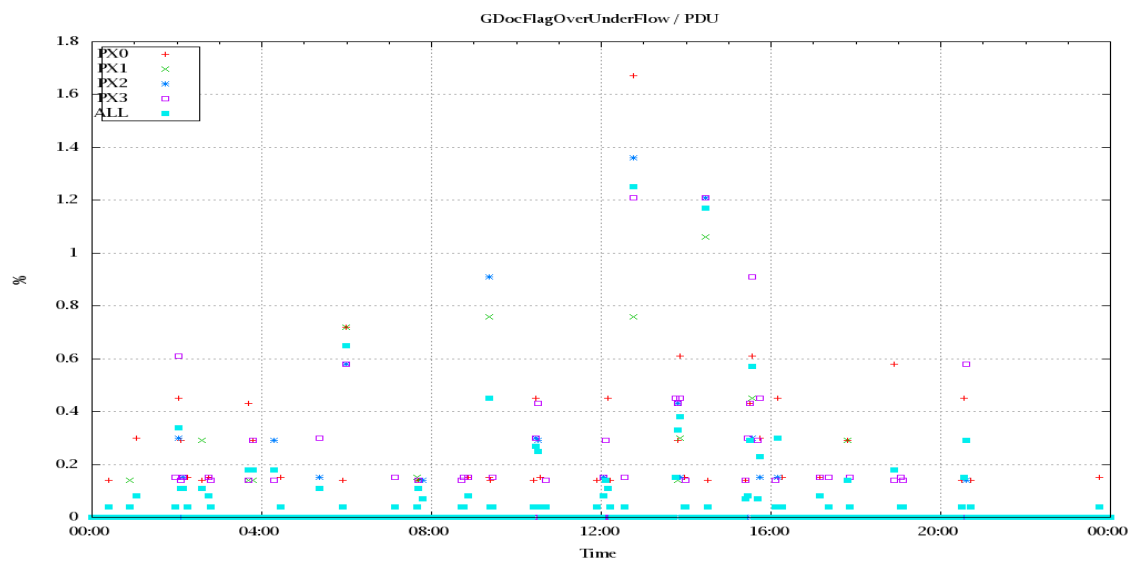


Figure 5: OverUnderFlowFlag timeseries

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.

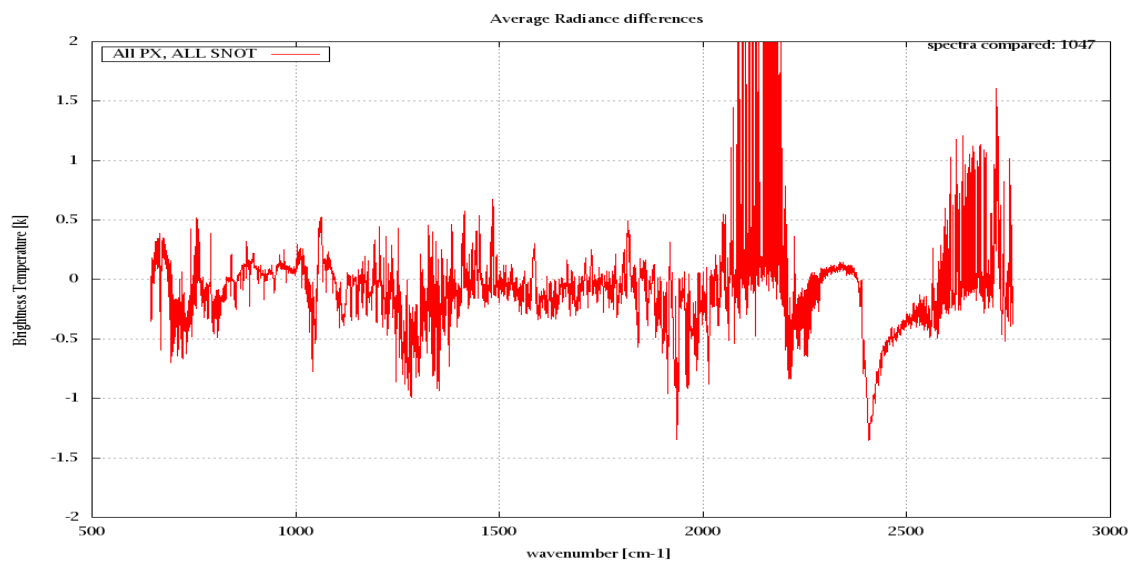


Figure 6: Average Radiance differences: OBS-CAL

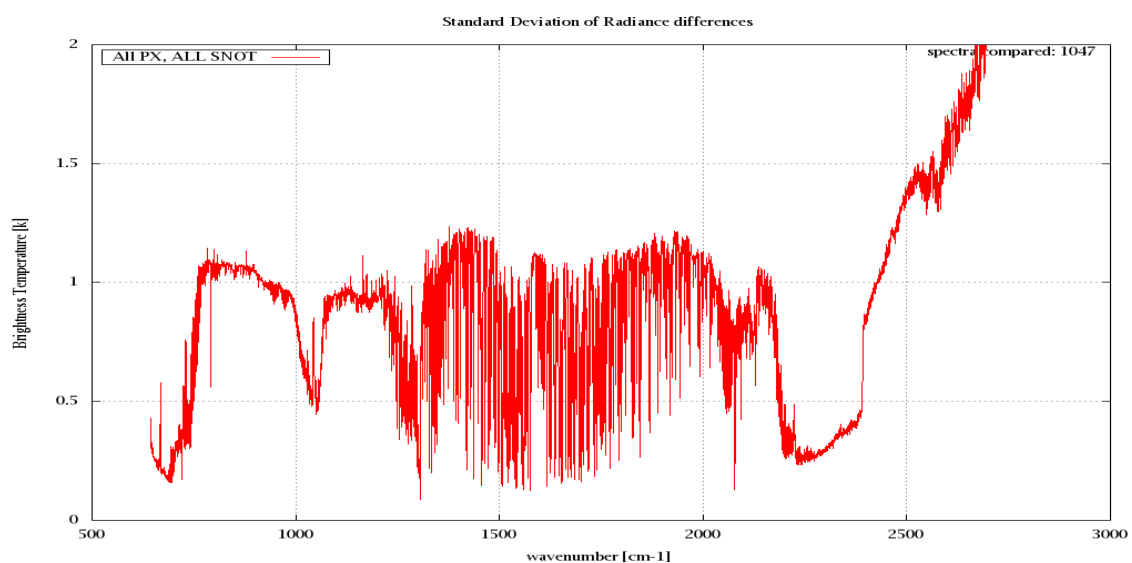


Figure 7: Standard Deviation of Radiance differences

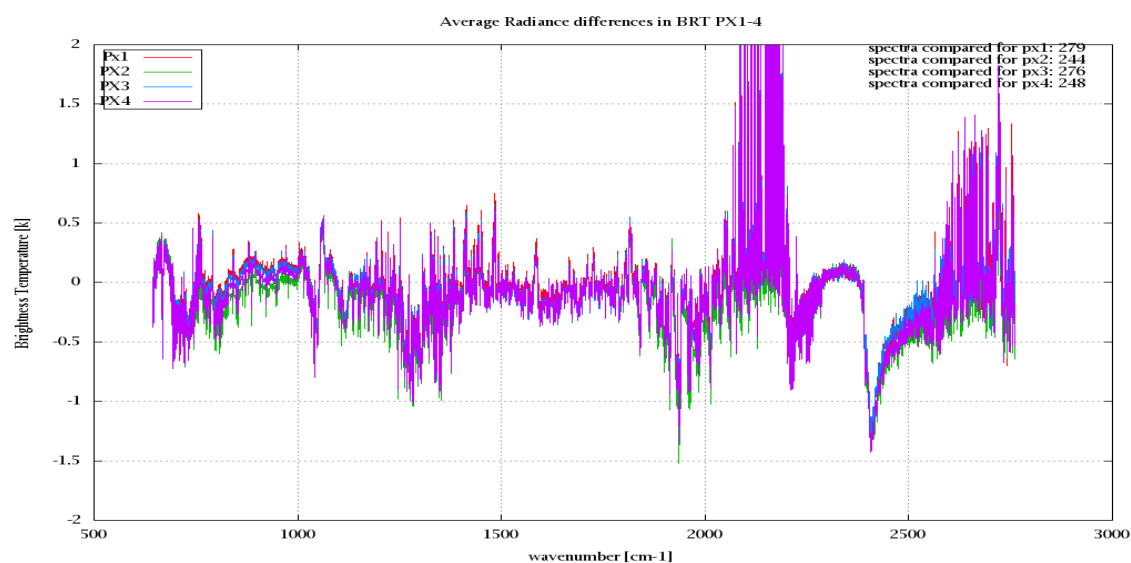


Figure 8: Average Radiance differences: OBS-CAL

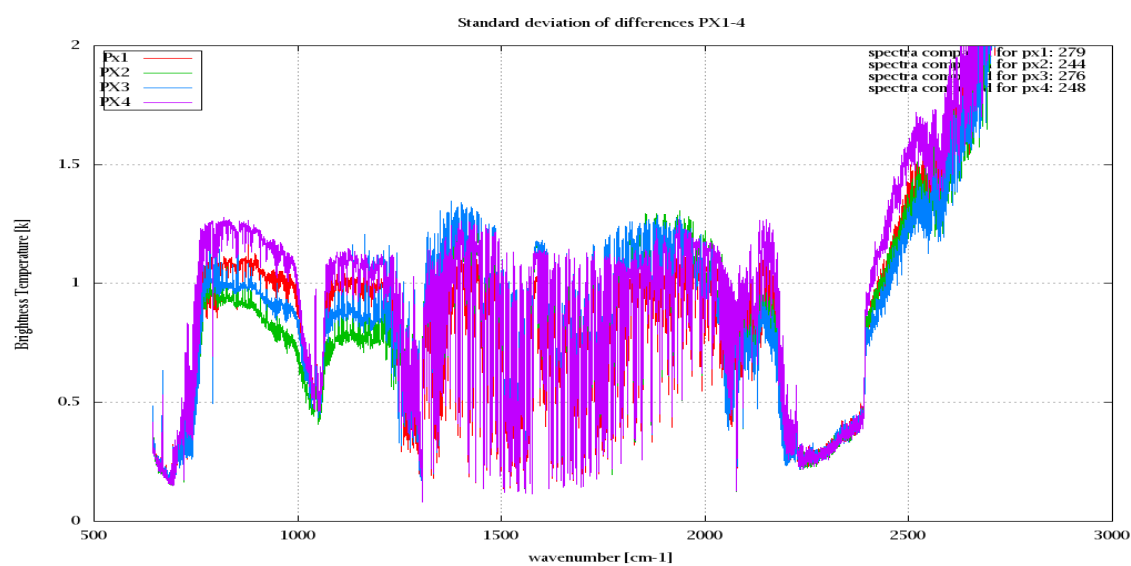


Figure 9: Standard Deviation of Radiance differences

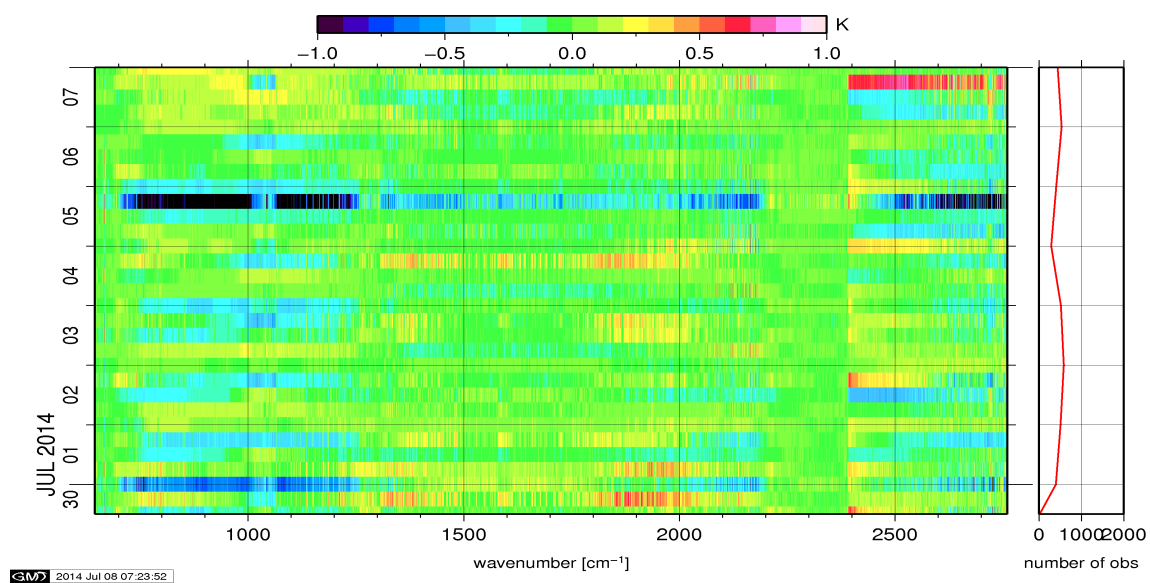


Figure 10: Radiance Anomaly in BRT: All Channels

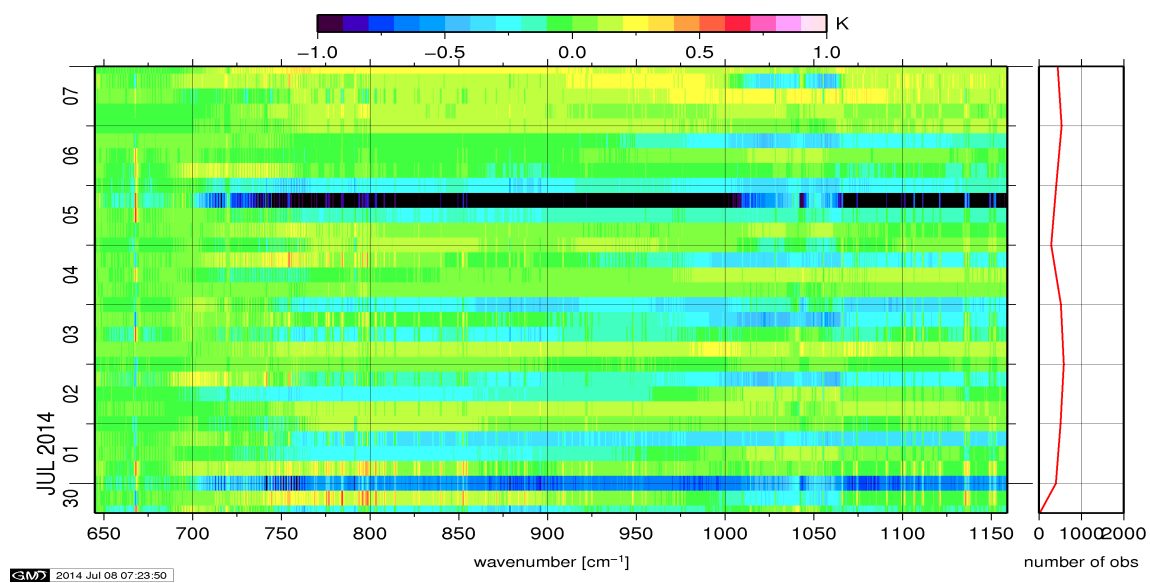


Figure 11: Radiance Anomaly in BRT: IASI Band 1

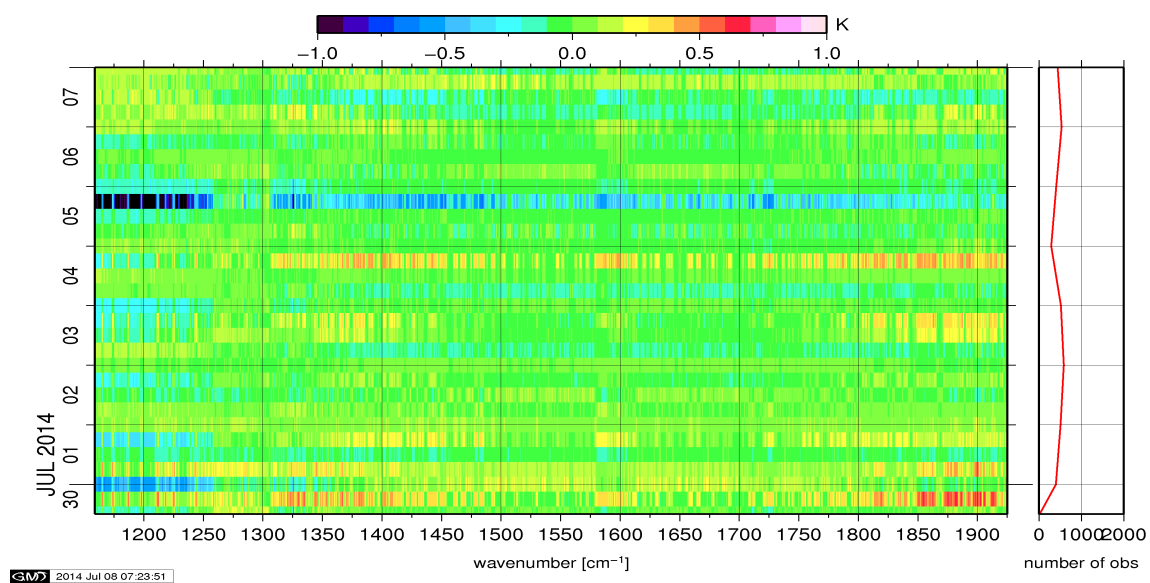


Figure 12: Radiance Anomaly in BRT: IASI Band 2

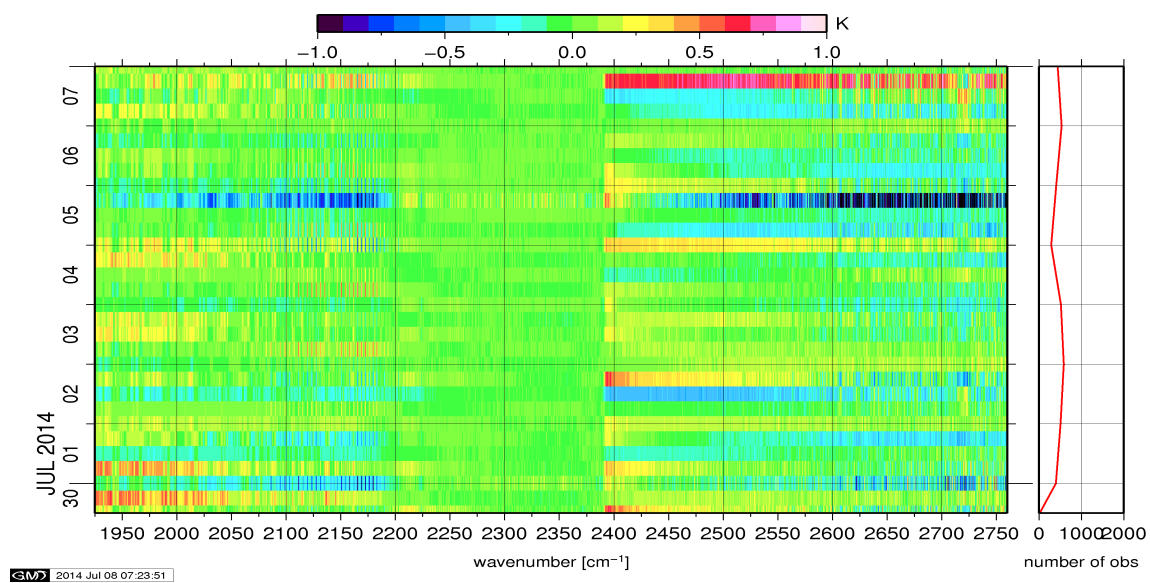


Figure 13: Radiance Anomaly in BRT: IASI Band 3

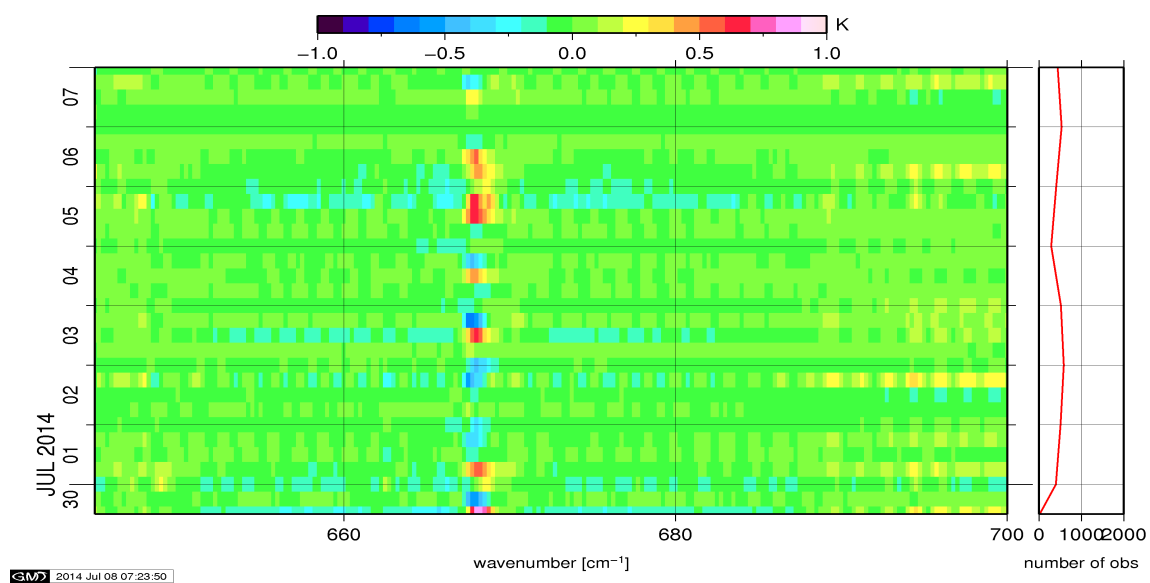


Figure 14: Radiance Anomaly in BRT: CO2 14

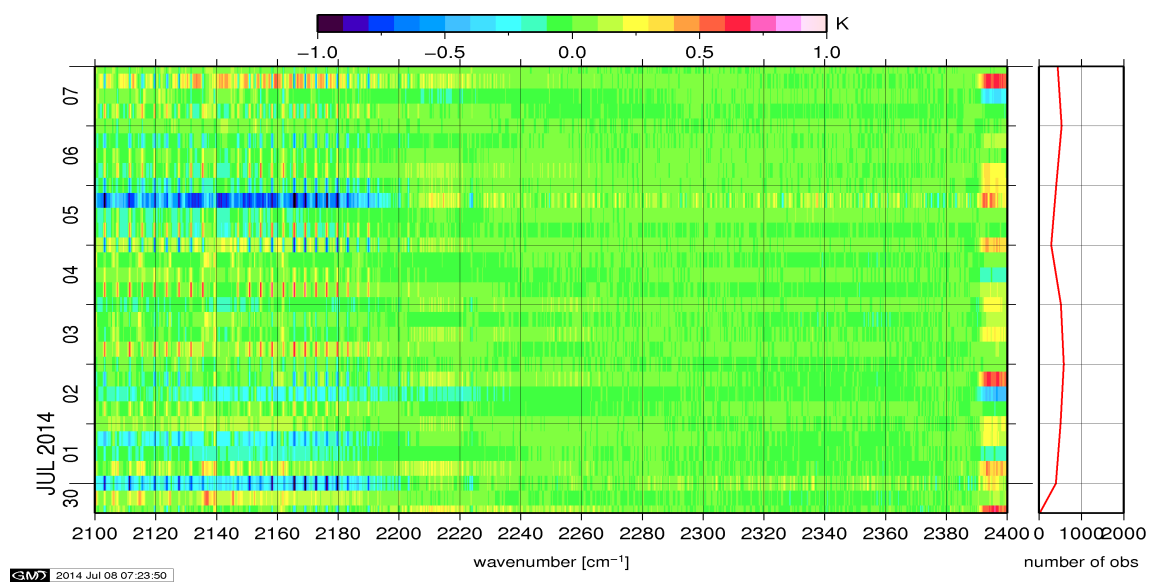


Figure 15: Radiance Anomaly in BRT: CO2 4.3

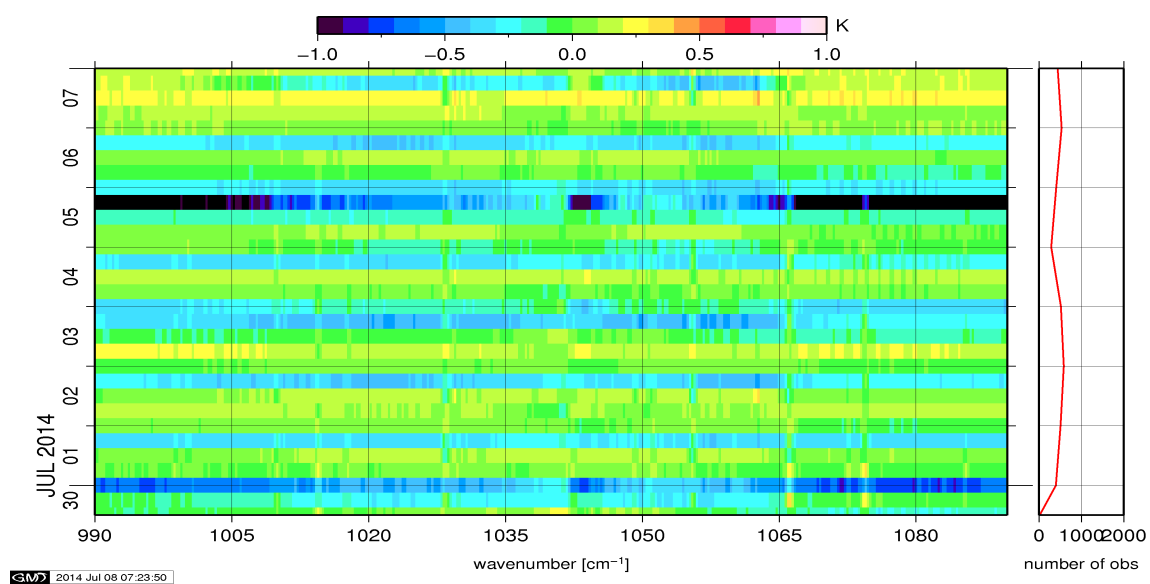


Figure 16: Radiance Anomaly in BRT: O3

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.

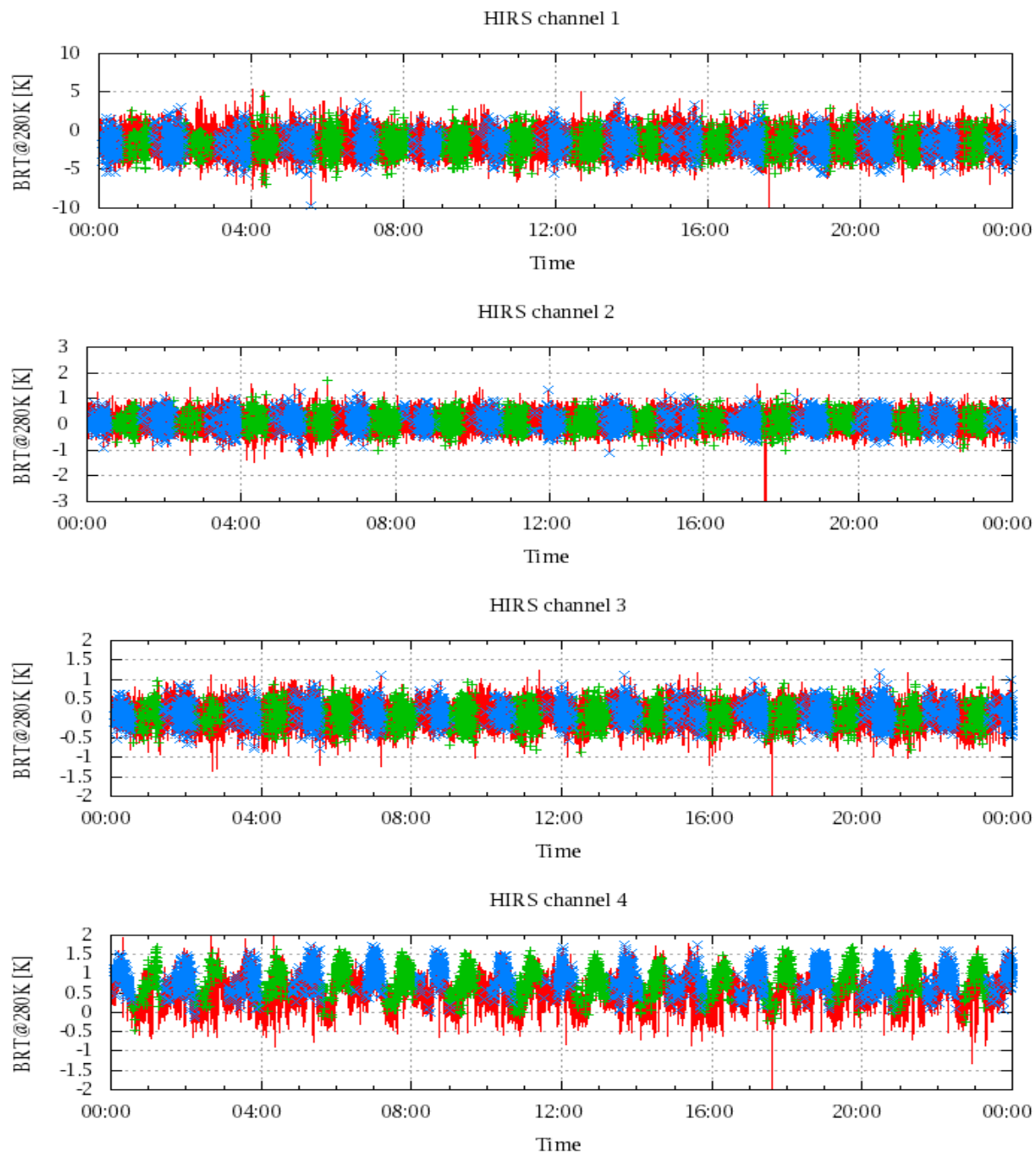


Figure 17: Radiance Differences in BRT

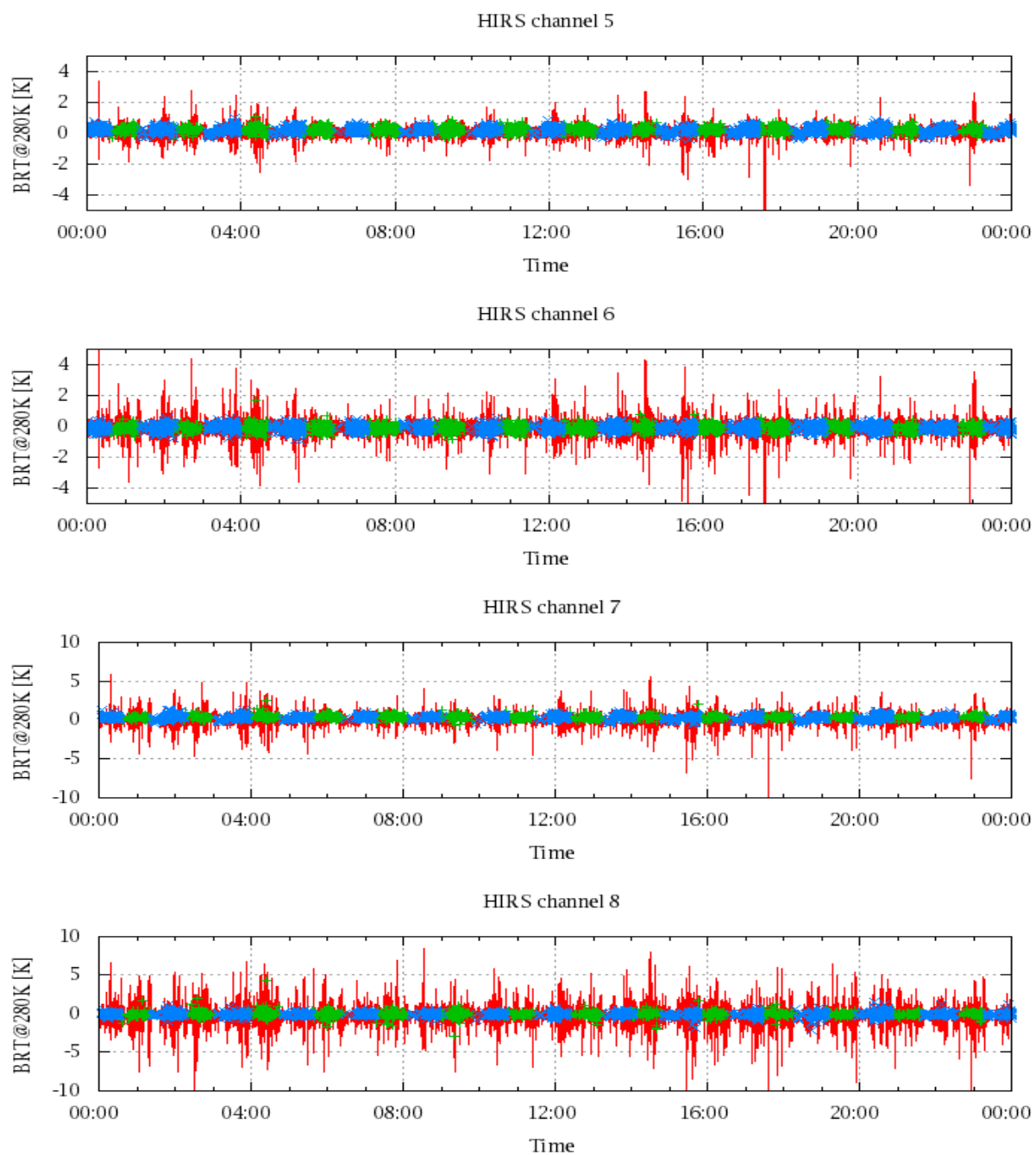


Figure 18: Radiance Differences in BRT

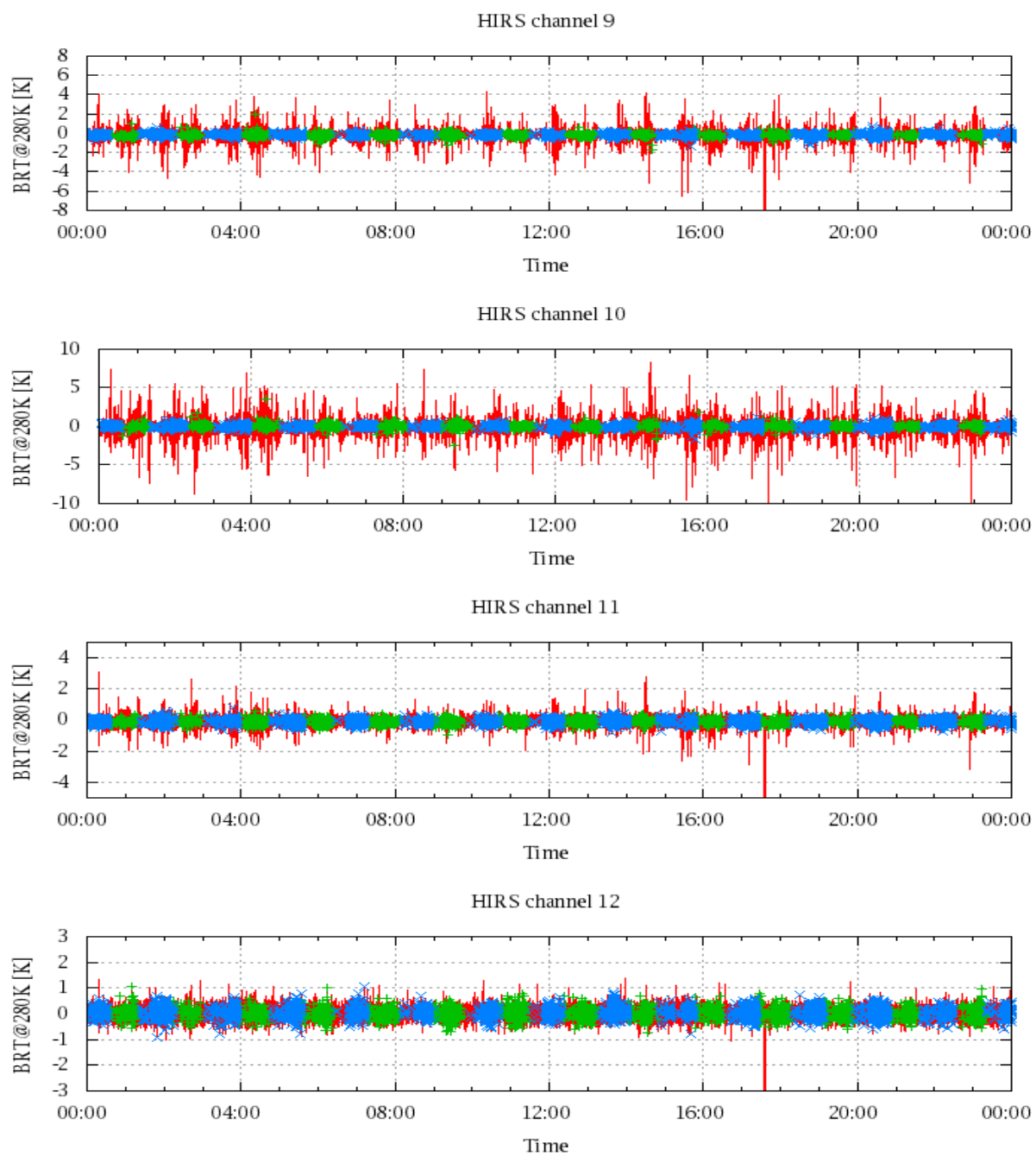


Figure 19: Radiance Differences in BRT

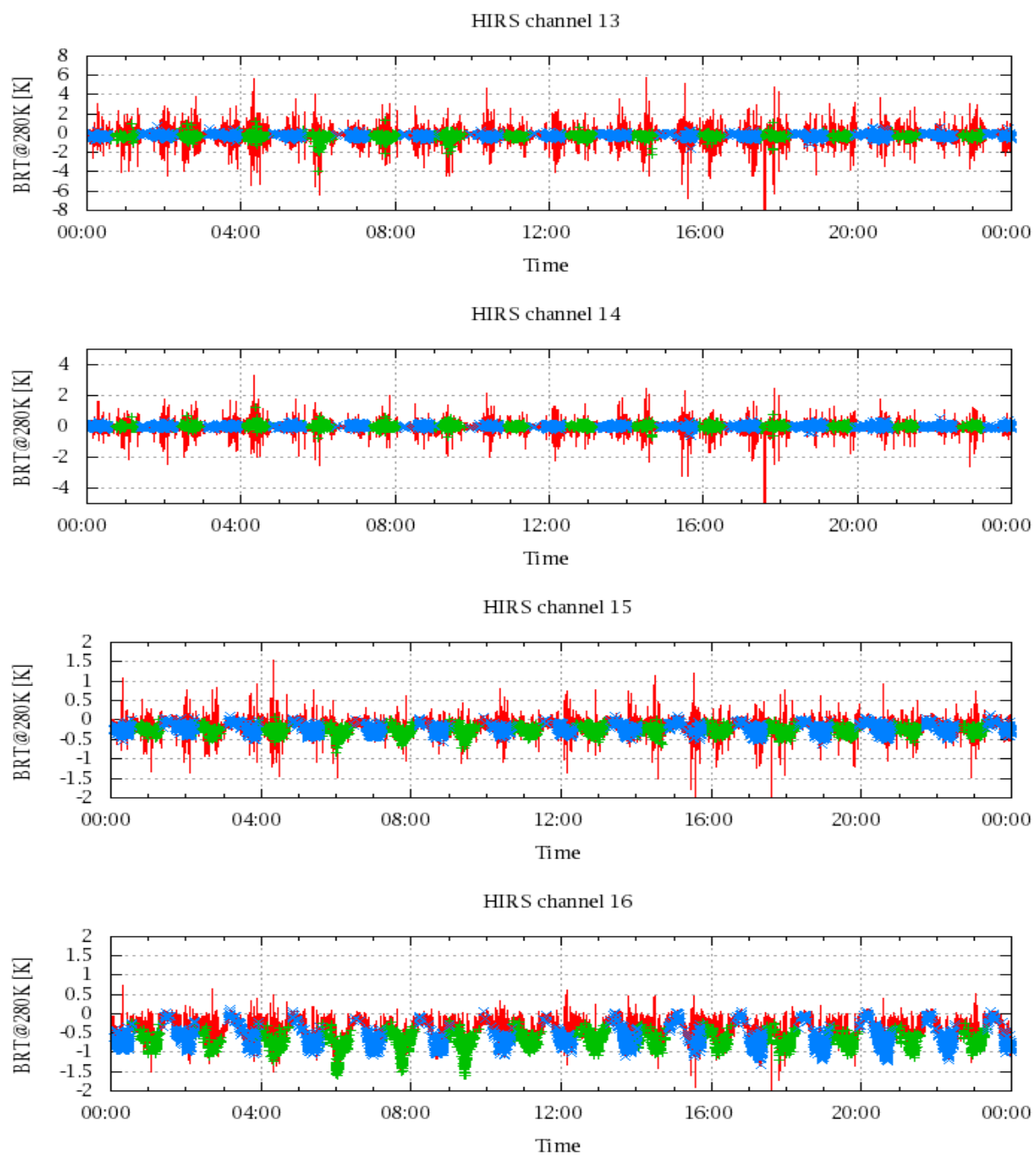


Figure 20: Radiance Differences in BRT

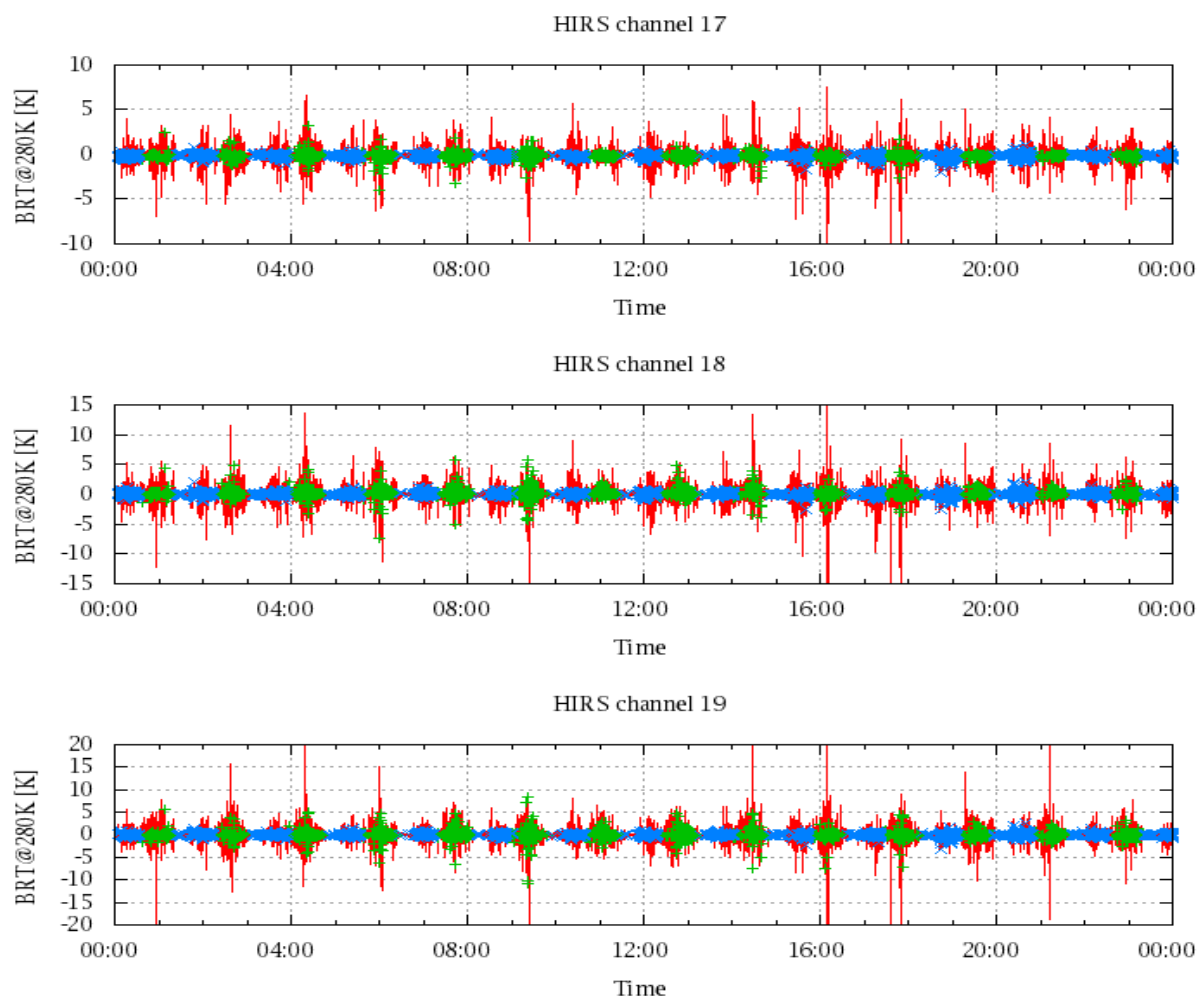


Figure 21: Radinace Differences in BRT