

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

06/06/2014 00:00:00 - 07/06/2014 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 06/06/2014 00:00:00 - 07/06/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 06/06/2014 00:00:00 - 07/06/2014 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)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	12353	12355	20140606010321.982	20140606010322.412
PX1 (130)	5452	5525	20140606233612.985	20140606233633.309
PX1 (130)	5526	5529	20140606233633.524	20140606233634.172
PX1 (130)	5532	5538	20140606233634.825	20140606233636.122
PX1 (130)	5539	5571	20140606233636.336	20140606233644.770
PX1 (130)	5572	5610	20140606233644.985	20140606233656.227
PX1 (130)	5610	5620	20140606233656.227	20140606233658.387
PX1 (130)	5620	5650	20140606233658.387	20140606233706.407
PX1 (130)	5659	5661	20140606233708.360	20140606233708.793
PX1 (130)	5662	5698	20140606233709.012	20140606233719.832
PX1 (130)	5698	5700	20140606233719.832	20140606233720.266
PX1 (130)	5701	5704	20140606233720.481	20140606233721.129
PX1 (130)	5706	5730	20140606233721.563	20140606233728.262
PX1 (130)	5736	5739	20140606233729.559	20140606233730.211
PX1 (130)	5747	5749	20140606233731.938	20140606233732.371
PX1 (130)	5749	5751	20140606233732.371	20140606233732.805
PX1 (130)	5752	5760	20140606233733.020	20140606233736.262
PX1 (130)	5763	5766	20140606233736.911	20140606233737.563

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	5779	5784	20140606233740.371	20140606233742.965
PX1 (130)	5794	5810	20140606233745.129	20140606233748.586
PX1 (130)	5812	5834	20140606233749.020	20140606233755.289
PX1 (130)	5837	5850	20140606233755.938	20140606233800.262
PX1 (130)	5861	5898	20140606233802.641	20140606233812.157
PX1 (130)	5898	5910	20140606233812.157	20140606233816.262
PX1 (130)	5912	6071	20140606233816.696	20140606233858.641
PX1 (130)	7221	7344	20140606234404.792	20140606234438.956
PX2 (135)	12159	12161	20140606010230.955	20140606010231.389
PX2 (135)	5452	5525	20140606233612.985	20140606233633.309
PX2 (135)	5532	5535	20140606233634.825	20140606233635.469
PX2 (135)	5535	5539	20140606233635.469	20140606233636.336
PX2 (135)	5539	5571	20140606233636.336	20140606233644.770
PX2 (135)	5572	5611	20140606233644.985	20140606233656.446
PX2 (135)	5612	5619	20140606233656.661	20140606233658.172
PX2 (135)	5620	5650	20140606233658.387	20140606233706.407
PX2 (135)	5662	5697	20140606233709.012	20140606233719.614
PX2 (135)	5706	5730	20140606233721.563	20140606233728.262
PX2 (135)	5734	5736	20140606233729.129	20140606233729.559
PX2 (135)	5736	5739	20140606233729.559	20140606233730.211
PX2 (135)	5752	5759	20140606233733.020	20140606233736.047
PX2 (135)	5763	5767	20140606233736.911	20140606233737.778
PX2 (135)	5779	5784	20140606233740.371	20140606233742.965
PX2 (135)	5794	5810	20140606233745.129	20140606233748.586
PX2 (135)	5812	5835	20140606233749.020	20140606233755.504
PX2 (135)	5837	5850	20140606233755.938	20140606233800.262
PX2 (135)	5861	5897	20140606233802.641	20140606233811.938
PX2 (135)	5897	5910	20140606233811.938	20140606233816.262
PX2 (135)	5912	6071	20140606233816.696	20140606233858.641
PX2 (135)	7221	7344	20140606234404.792	20140606234438.956
PX3 (140)	5364	5366	20140606233550.930	20140606233551.364
PX3 (140)	5452	5524	20140606233612.985	20140606233633.094
PX3 (140)	5532	5535	20140606233634.825	20140606233635.469
PX3 (140)	5535	5570	20140606233635.469	20140606233644.551
PX3 (140)	5572	5611	20140606233644.985	20140606233656.446
PX3 (140)	5611	5619	20140606233656.446	20140606233658.172
PX3 (140)	5619	5646	20140606233658.172	20140606233705.536
PX3 (140)	5646	5648	20140606233705.536	20140606233705.969
PX3 (140)	5662	5697	20140606233709.012	20140606233719.614
PX3 (140)	5705	5730	20140606233721.344	20140606233728.262
PX3 (140)	5736	5739	20140606233729.559	20140606233730.211
PX3 (140)	5752	5759	20140606233733.020	20140606233736.047
PX3 (140)	5761	5763	20140606233736.481	20140606233736.911
PX3 (140)	5763	5767	20140606233736.911	20140606233737.778
PX3 (140)	5779	5784	20140606233740.371	20140606233742.965
PX3 (140)	5785	5787	20140606233743.184	20140606233743.614
PX3 (140)	5794	5810	20140606233745.129	20140606233748.586
PX3 (140)	5812	5833	20140606233749.020	20140606233755.075
PX3 (140)	5837	5850	20140606233755.938	20140606233800.262
PX3 (140)	5851	5853	20140606233800.481	20140606233800.910
PX3 (140)	5854	5856	20140606233801.125	20140606233801.559
PX3 (140)	5860	5897	20140606233802.426	20140606233811.938
PX3 (140)	5898	5910	20140606233812.157	20140606233816.262

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	5912	6071	20140606233816.696	20140606233858.641
PX3 (140)	7221	7344	20140606234404.792	20140606234438.956
PX4 (145)	5364	5366	20140606233550.930	20140606233551.364
PX4 (145)	5452	5524	20140606233612.985	20140606233633.094
PX4 (145)	5531	5535	20140606233634.606	20140606233635.469
PX4 (145)	5535	5570	20140606233635.469	20140606233644.551
PX4 (145)	5572	5610	20140606233644.985	20140606233656.227
PX4 (145)	5610	5618	20140606233656.227	20140606233657.957
PX4 (145)	5620	5646	20140606233658.387	20140606233705.536
PX4 (145)	5646	5648	20140606233705.536	20140606233705.969
PX4 (145)	5662	5697	20140606233709.012	20140606233719.614
PX4 (145)	5704	5730	20140606233721.129	20140606233728.262
PX4 (145)	5735	5739	20140606233729.344	20140606233730.211
PX4 (145)	5752	5759	20140606233733.020	20140606233736.047
PX4 (145)	5763	5765	20140606233736.911	20140606233737.344
PX4 (145)	5779	5783	20140606233740.371	20140606233742.750
PX4 (145)	5794	5810	20140606233745.129	20140606233748.586
PX4 (145)	5812	5833	20140606233749.020	20140606233755.075
PX4 (145)	5836	5850	20140606233755.723	20140606233800.262
PX4 (145)	5851	5853	20140606233800.481	20140606233800.910
PX4 (145)	5860	5897	20140606233802.426	20140606233811.938
PX4 (145)	5898	5910	20140606233812.157	20140606233816.262
PX4 (145)	5912	6071	20140606233816.696	20140606233858.641
PX4 (145)	7221	7344	20140606234404.792	20140606234438.956
IMG (150)	5668	5749	20140606233614.067	20140606233633.094
IMG (150)	5757	5763	20140606233634.825	20140606233636.122
IMG (150)	5763	5800	20140606233636.122	20140606233644.770
IMG (150)	5801	5849	20140606233644.985	20140606233656.661
IMG (150)	5849	5855	20140606233656.661	20140606233657.957
IMG (150)	5857	5887	20140606233658.387	20140606233705.536
IMG (150)	5887	5889	20140606233705.536	20140606233705.969
IMG (150)	5906	5946	20140606233710.098	20140606233719.614
IMG (150)	5946	5948	20140606233719.614	20140606233720.047
IMG (150)	5951	5983	20140606233720.696	20140606233728.262
IMG (150)	5988	5992	20140606233729.344	20140606233730.211
IMG (150)	5995	5997	20140606233730.856	20140606233731.289
IMG (150)	6001	6003	20140606233732.157	20140606233732.586
IMG (150)	6005	6016	20140606233733.020	20140606233736.047
IMG (150)	6019	6022	20140606233736.696	20140606233737.344
IMG (150)	6035	6041	20140606233740.157	20140606233741.668
IMG (150)	6042	6044	20140606233742.102	20140606233742.750
IMG (150)	6054	6071	20140606233744.910	20140606233748.586
IMG (150)	6073	6097	20140606233749.020	20140606233754.860
IMG (150)	6101	6119	20140606233755.723	20140606233800.262
IMG (150)	6120	6122	20140606233800.481	20140606233800.910
IMG (150)	6122	6124	20140606233800.910	20140606233801.344
IMG (150)	6128	6170	20140606233802.207	20140606233811.938
IMG (150)	6170	6187	20140606233811.938	20140606233816.262
IMG (150)	6189	6367	20140606233816.696	20140606233858.422
IMG (150)	7669	7813	20140606234404.577	20140606234438.956
VER (160)	4385	4417	20140606233612.985	20140606233709.012
VER (160)	4420	4440	20140606233709.012	20140606233740.371
VER (160)	4441	4448	20140606233749.020	20140606233755.938

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	4448	4486	20140606233755.938	20140606233901.020
VER (160)	4675	4701	20140606234357.007	20140606234445.007
AUX (180)	4149	4156	20140606233613.419	20140606233709.446
AUX (180)	4156	4160	20140606233709.446	20140606233741.453
AUX (180)	4160	4170	20140606233741.453	20140606233901.449
AUX (180)	4207	4213	20140606234357.441	20140606234445.441

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
06/06/2014 00:00:12	-	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)	99.46 %	-
GQisFlagQual set (PX2)	99.43 %	-
GQisFlagQual set (PX3)	99.47 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

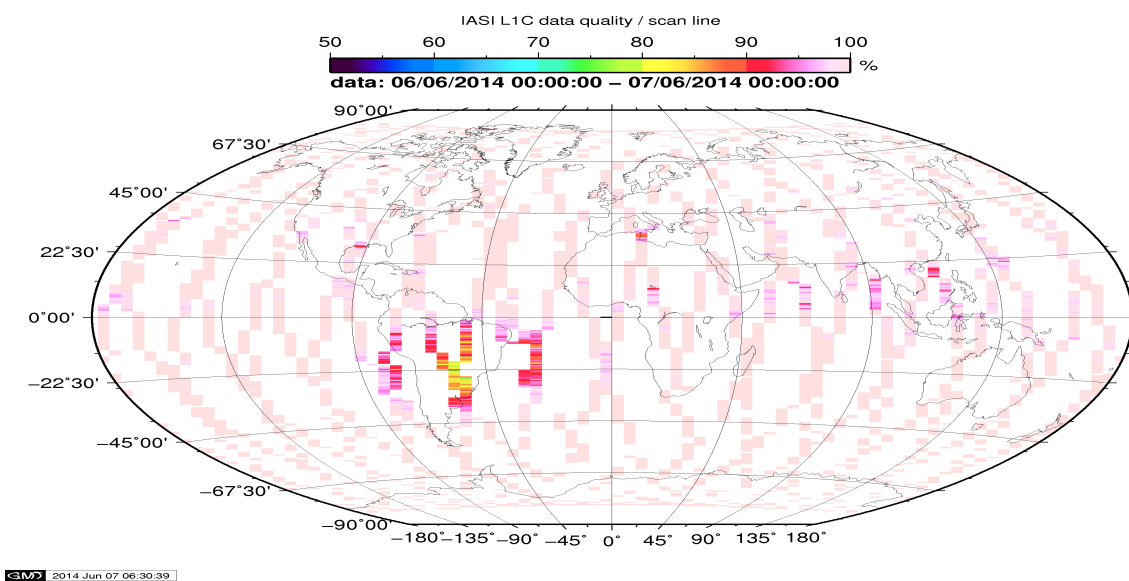


Figure 1: L1C data quality

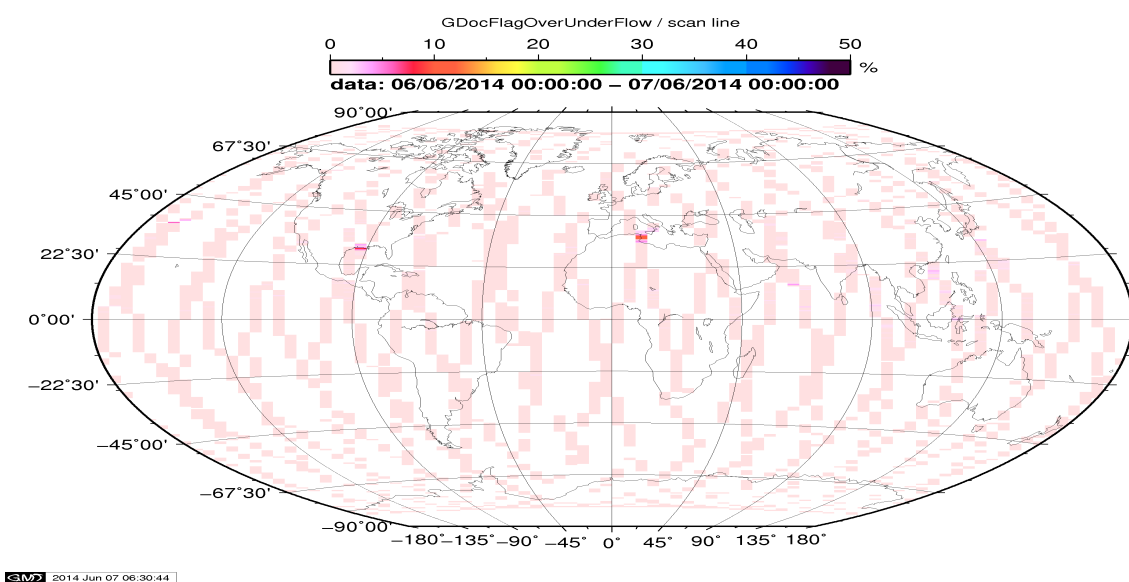


Figure 2: Flag of Over and Under Flows

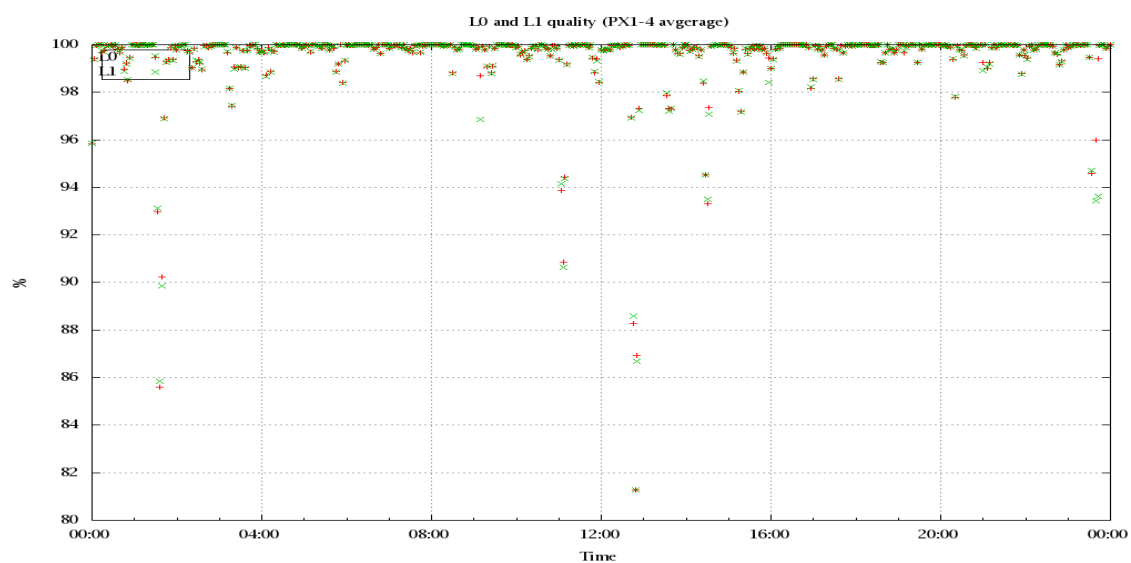


Figure 3: Level 0 and 1C overall quality

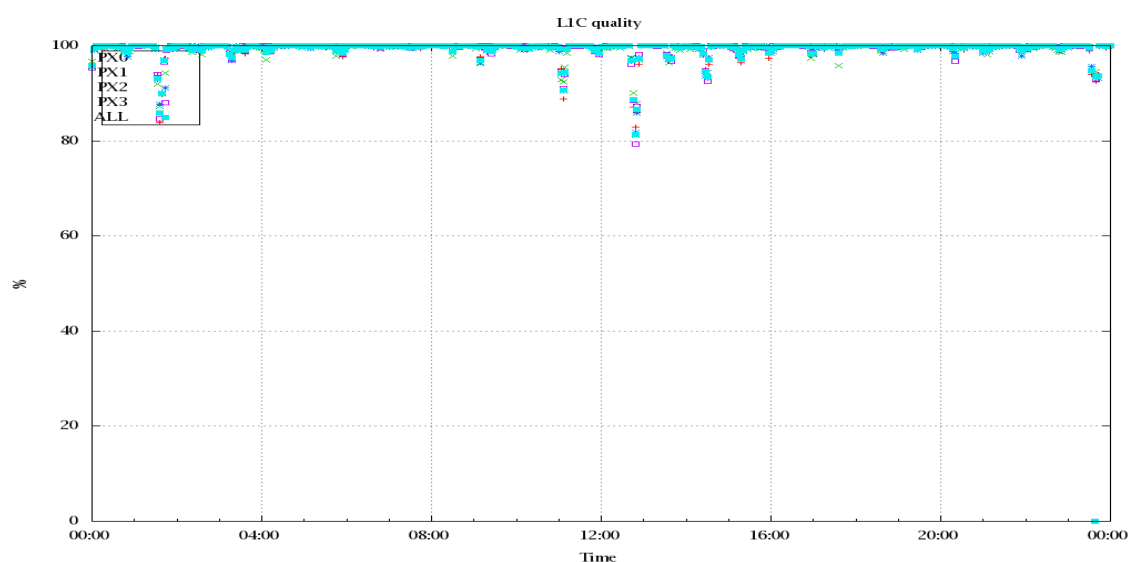


Figure 4: Level 1C quality

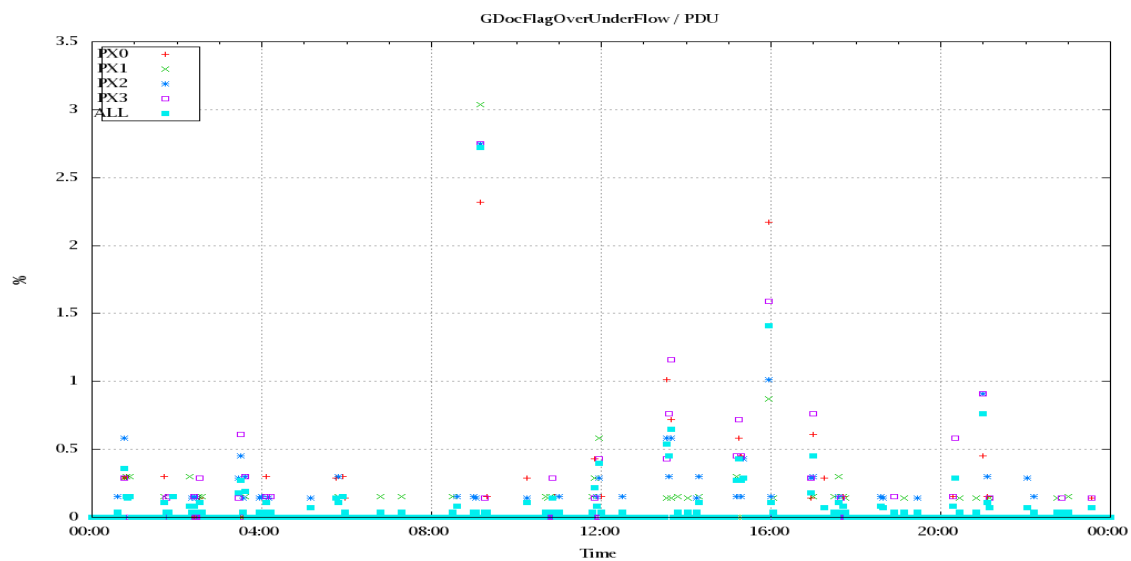


Figure 5: OverUnderFlowFlag timeseries

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.

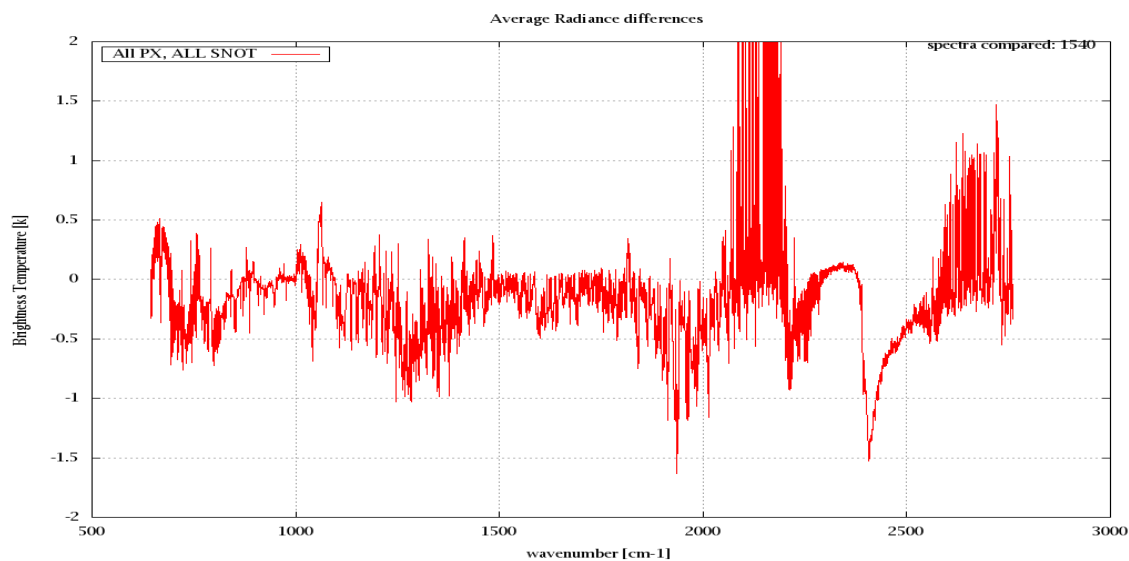


Figure 6: Average Radiance differences: OBS-CAL

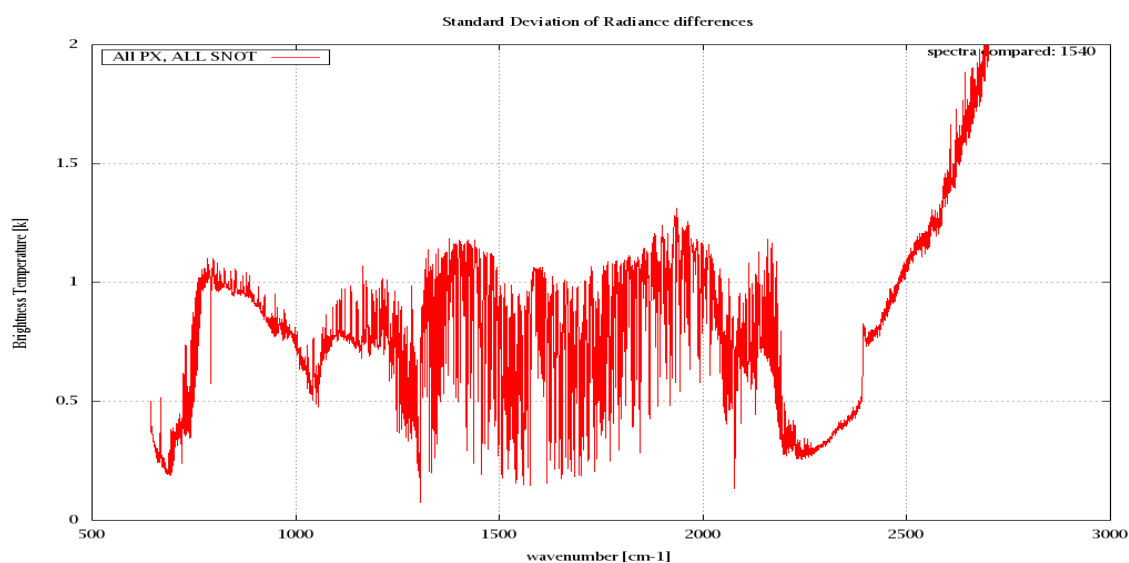


Figure 7: Standard Deviation of Radiance differences

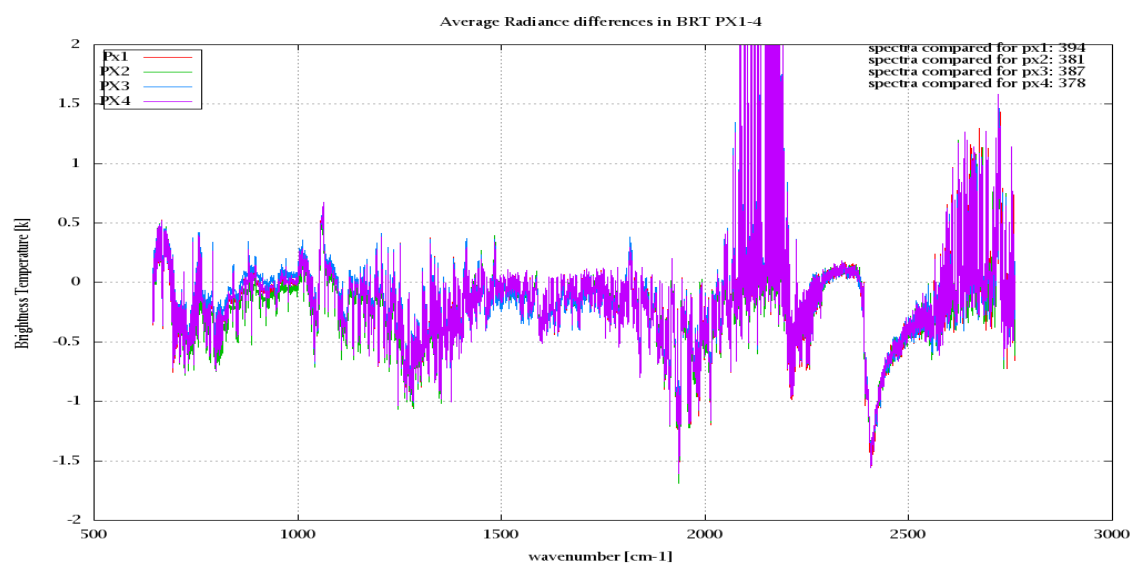


Figure 8: Average Radiance differences: OBS-CAL

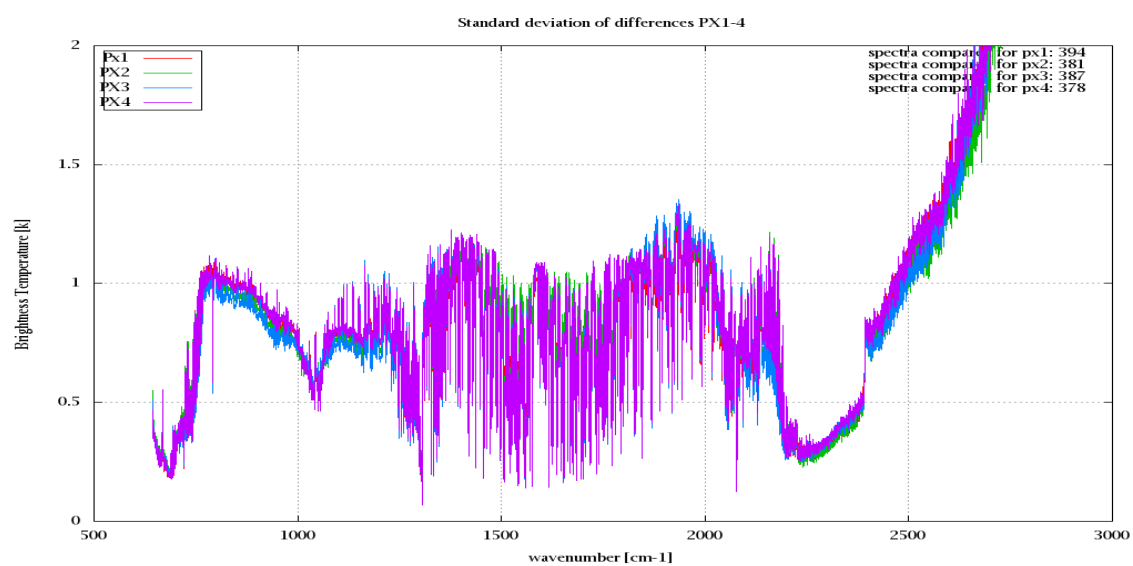


Figure 9: Standard Deviation of Radiance differences

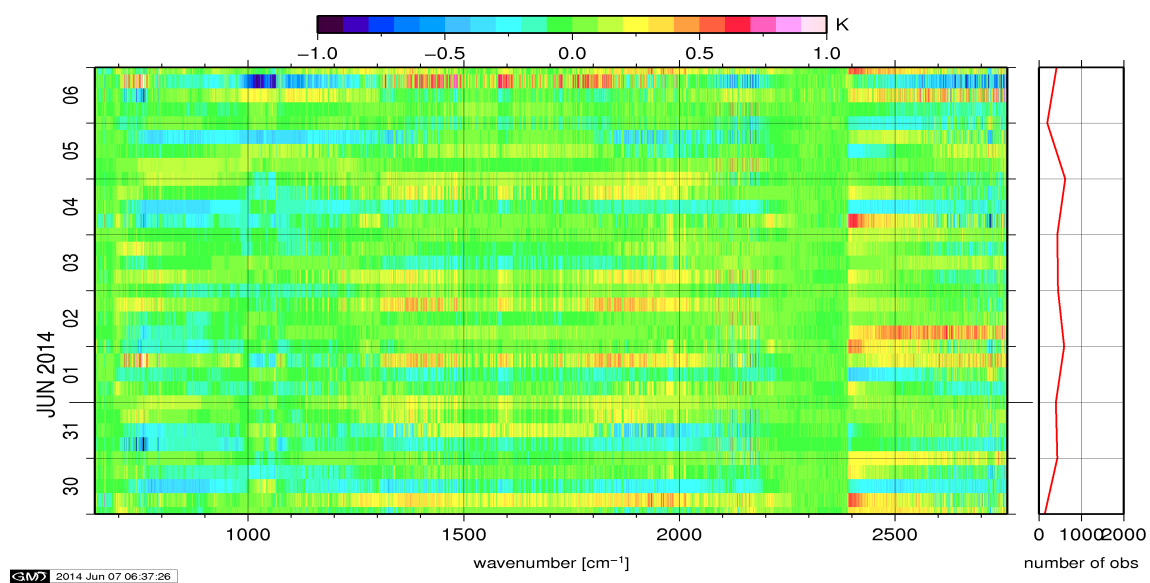


Figure 10: Radiance Anomaly in BRT: All Channels

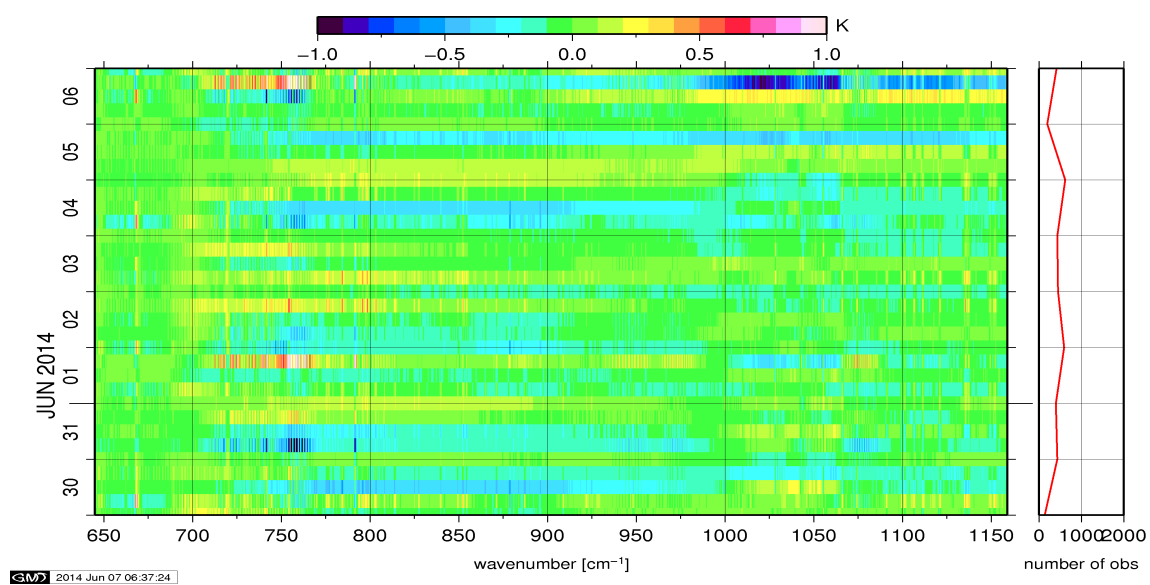


Figure 11: Radiance Anomaly in BRT: IASI Band 1

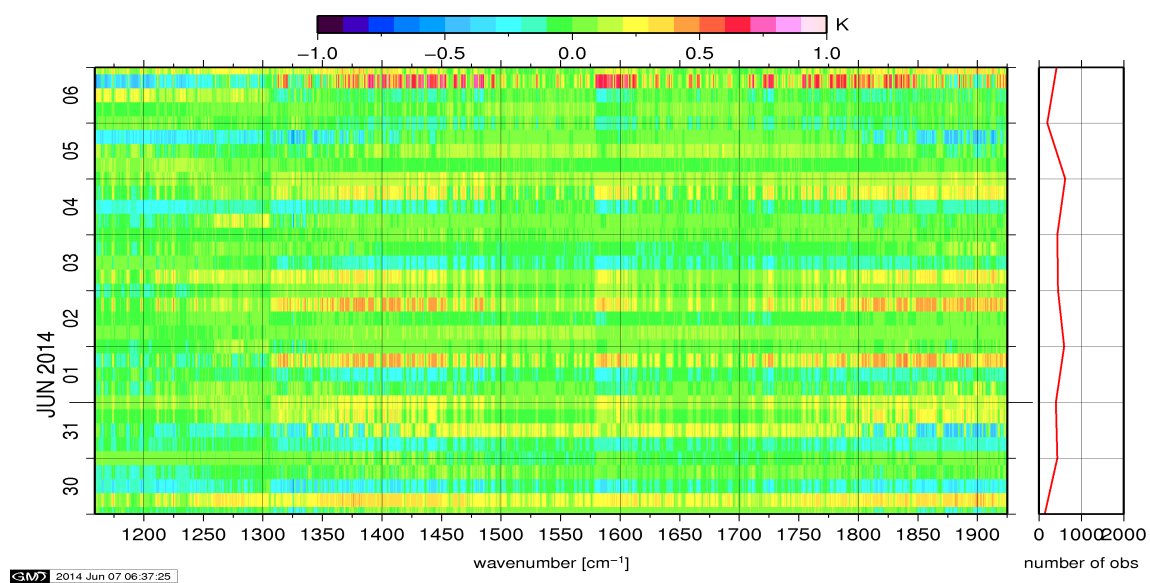


Figure 12: Radiance Anomaly in BRT: IASI Band 2

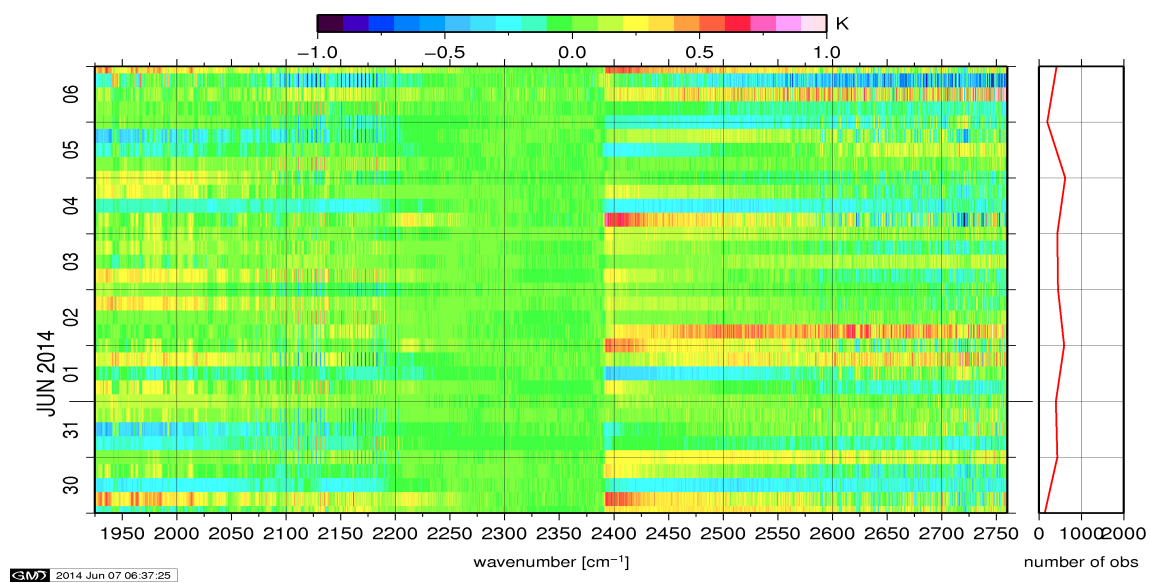


Figure 13: Radiance Anomaly in BRT: IASI Band 3

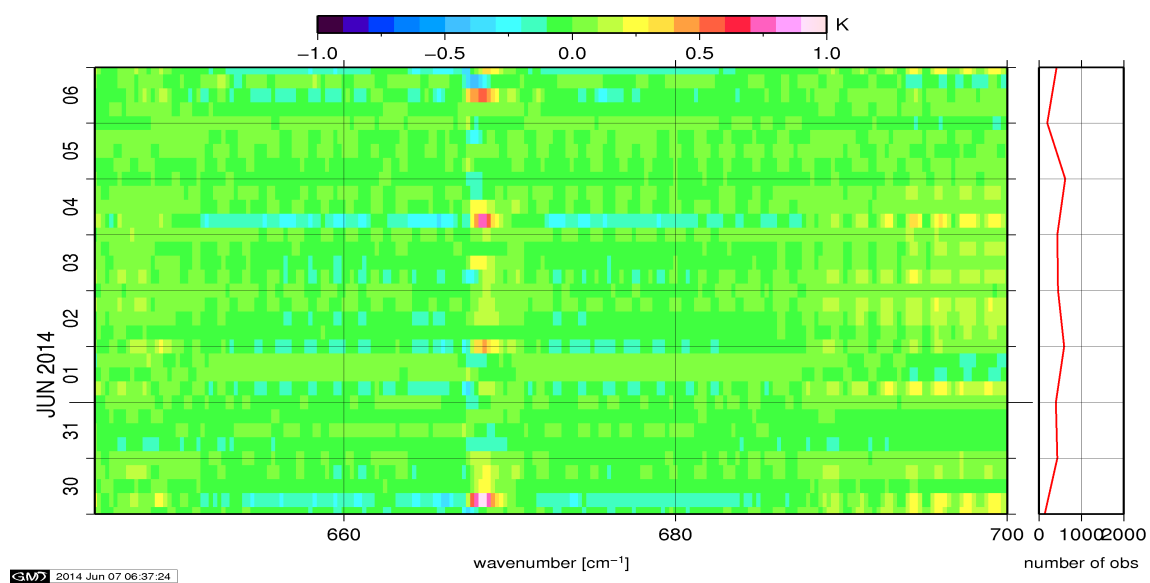


Figure 14: Radiance Anomaly in BRT: CO2 14

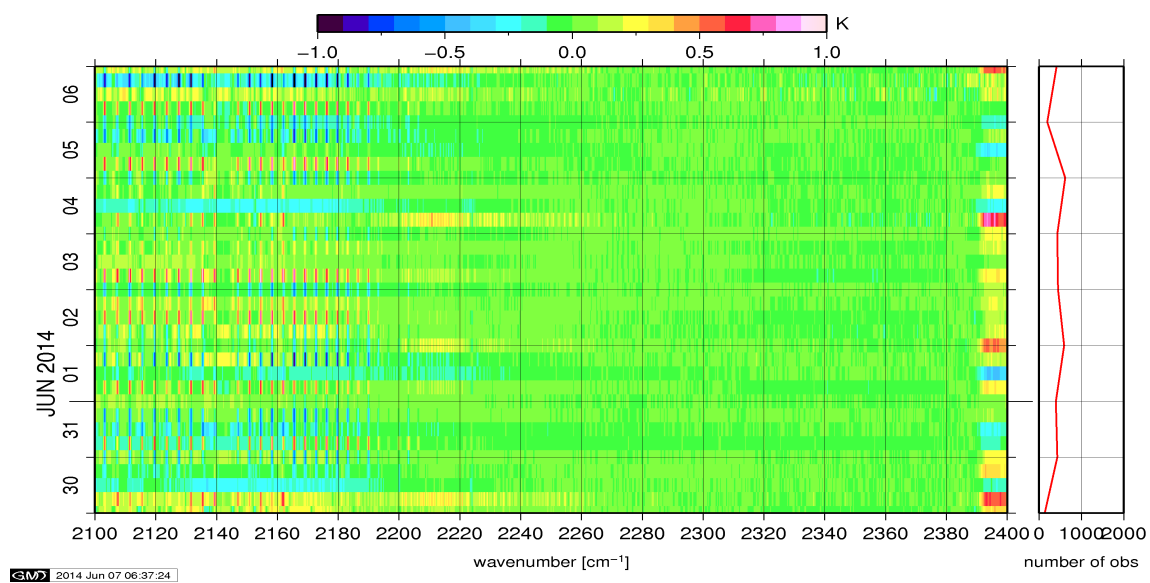


Figure 15: Radiance Anomaly in BRT: CO2 4.3

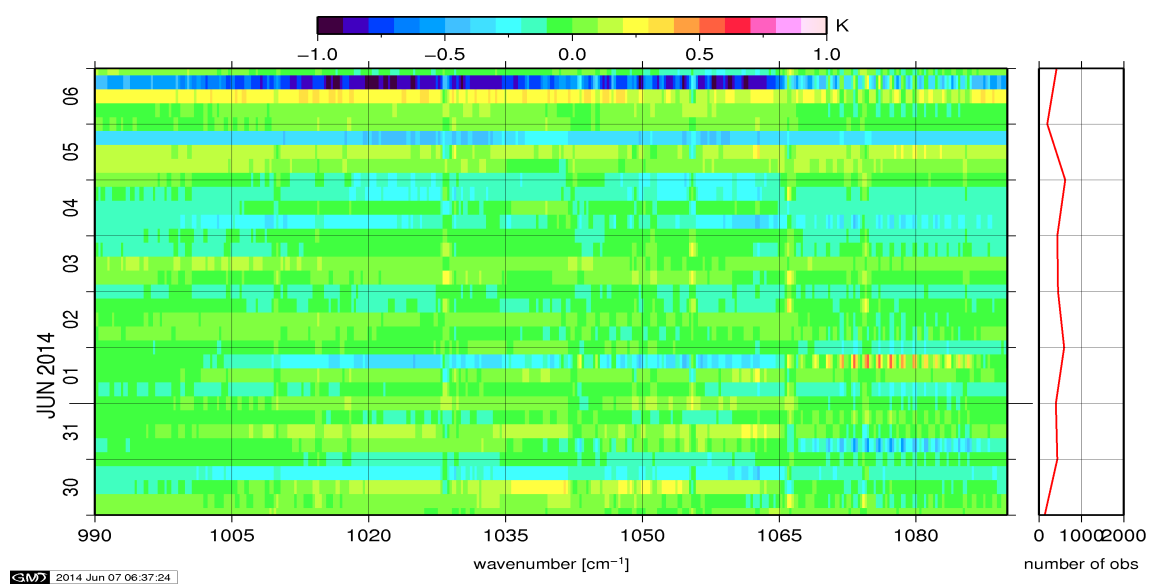


Figure 16: Radiance Anomaly in BRT: O3

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.

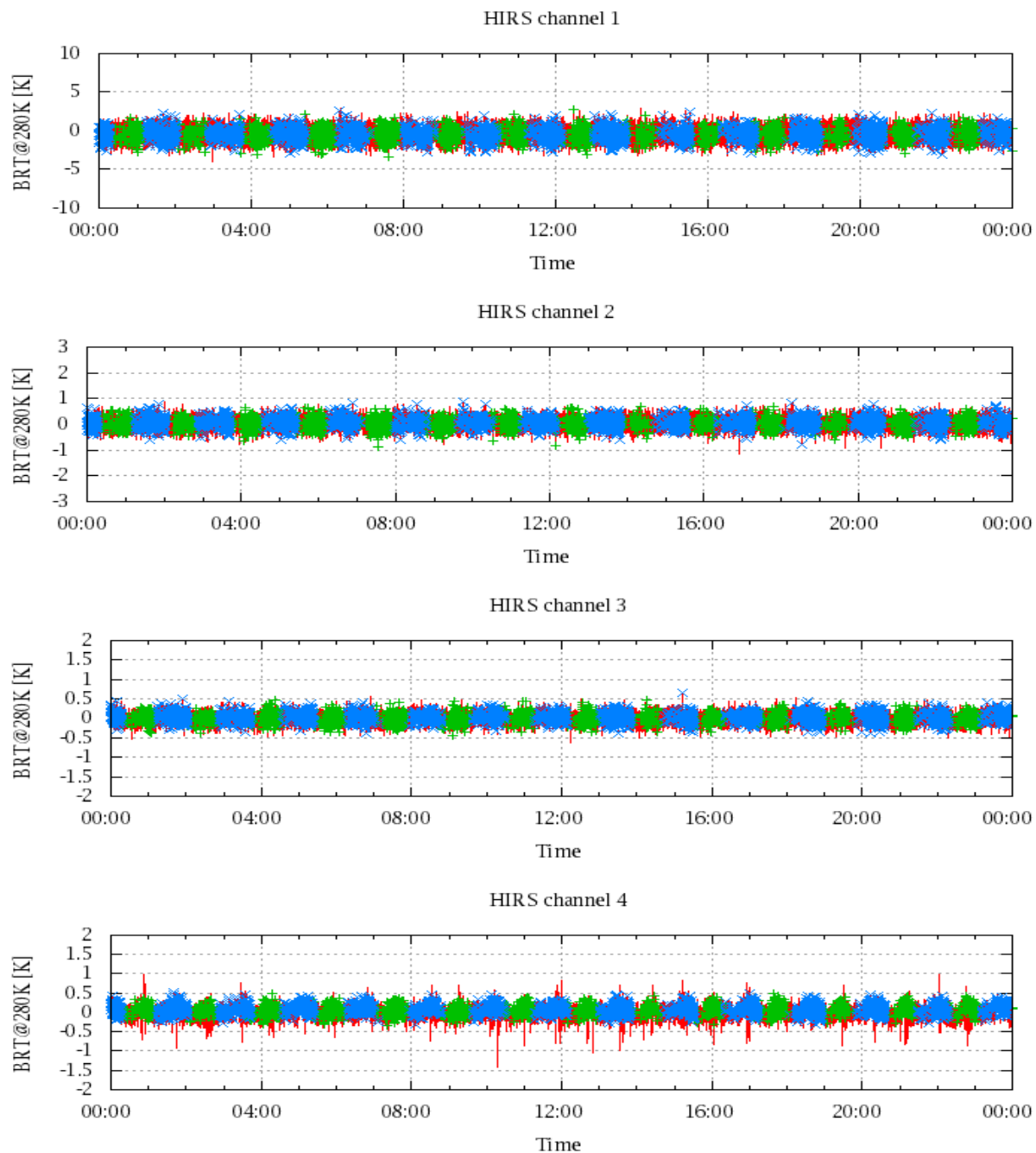


Figure 17: Radiance Differences in BRT

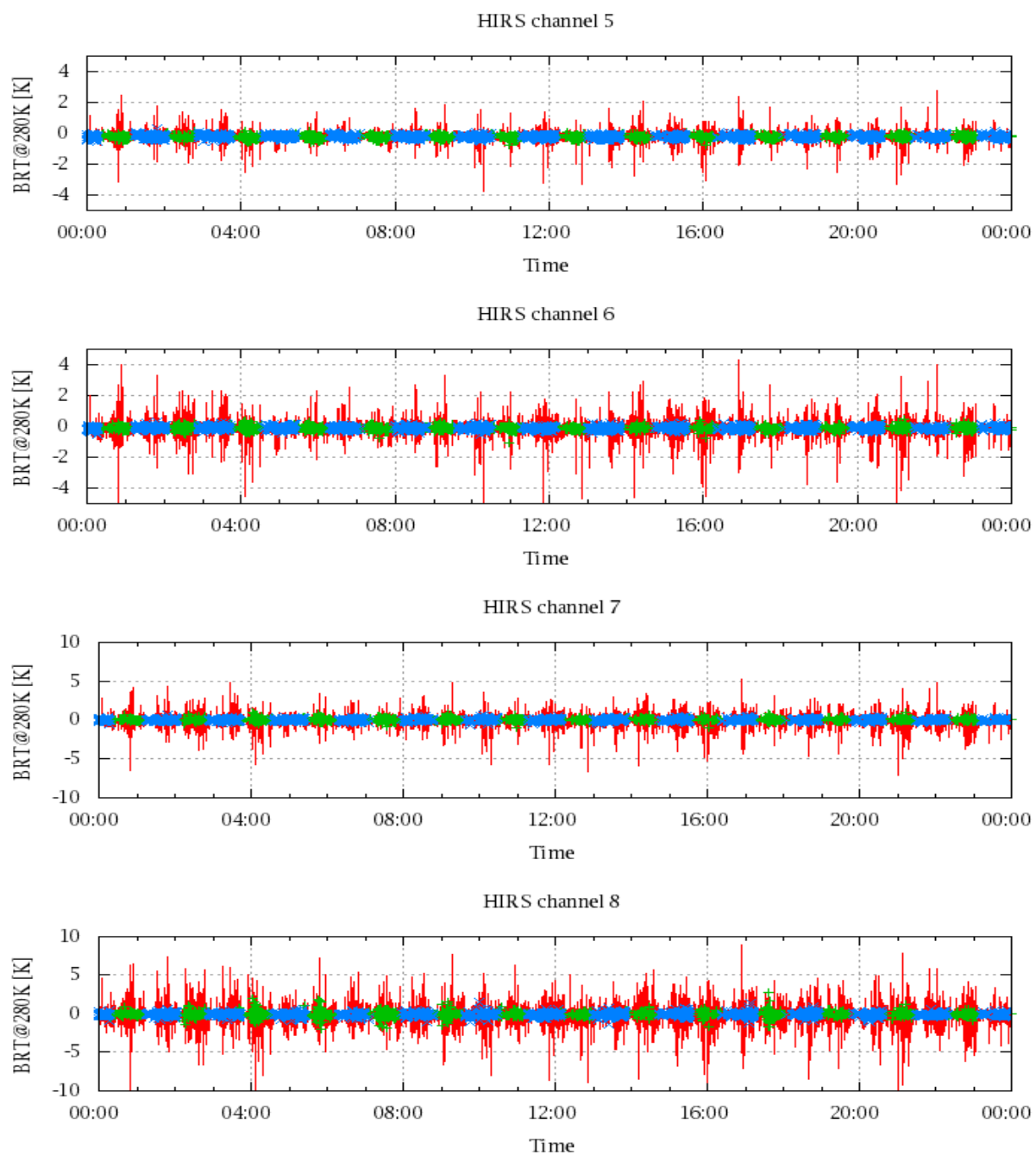


Figure 18: Radiance Differences in BRT

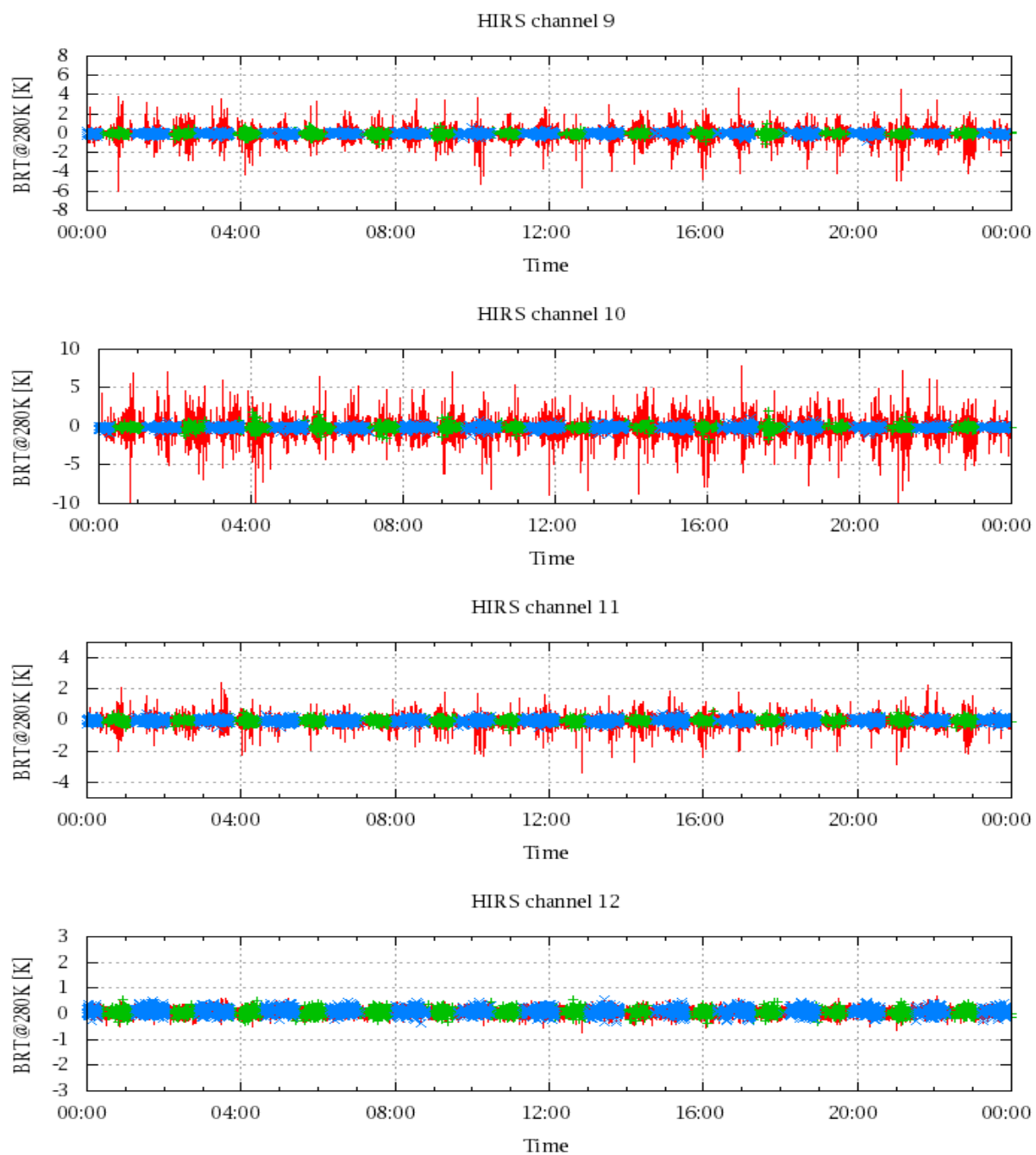


Figure 19: Radiance Differences in BRT

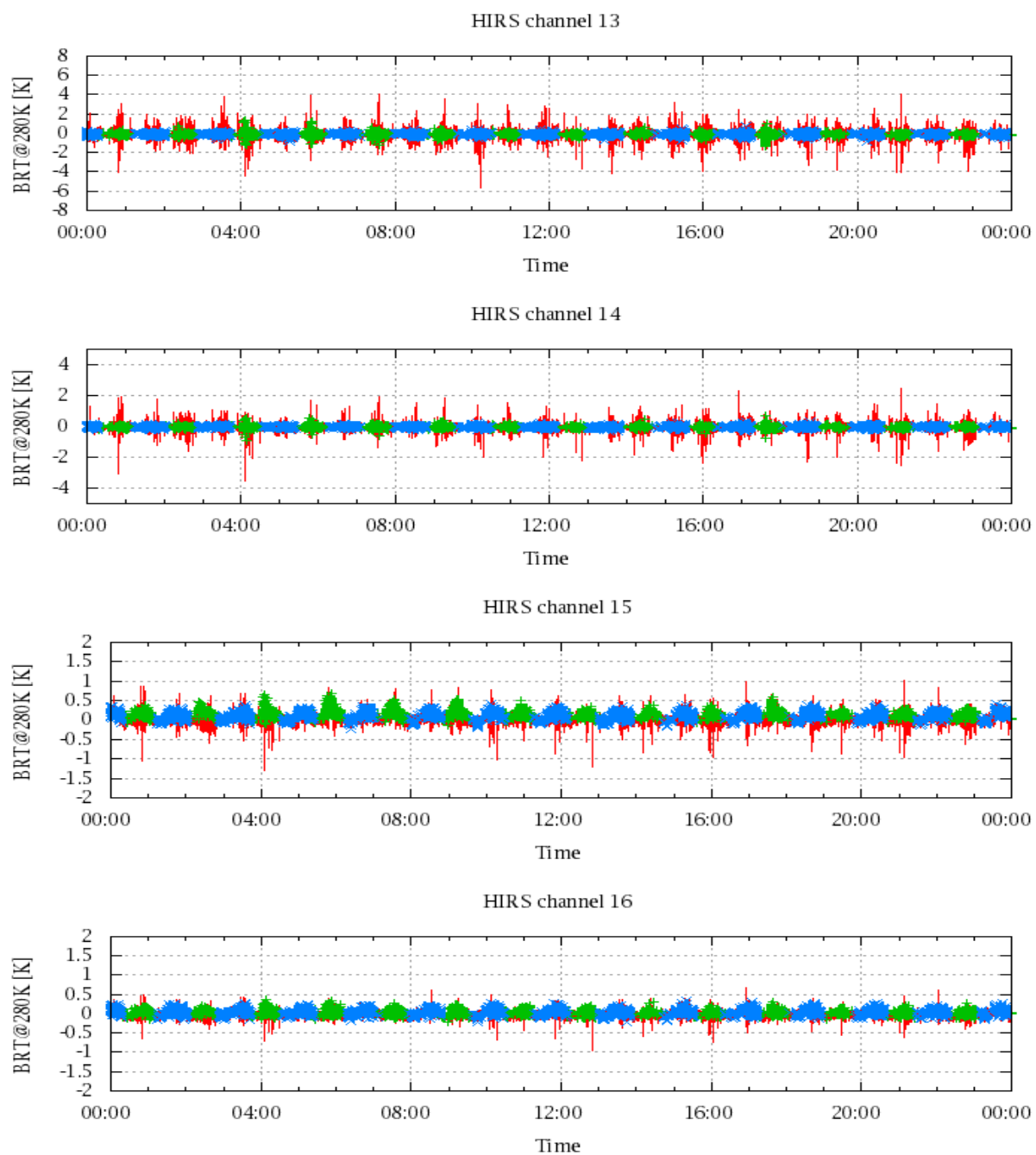


Figure 20: Radiance Differences in BRT

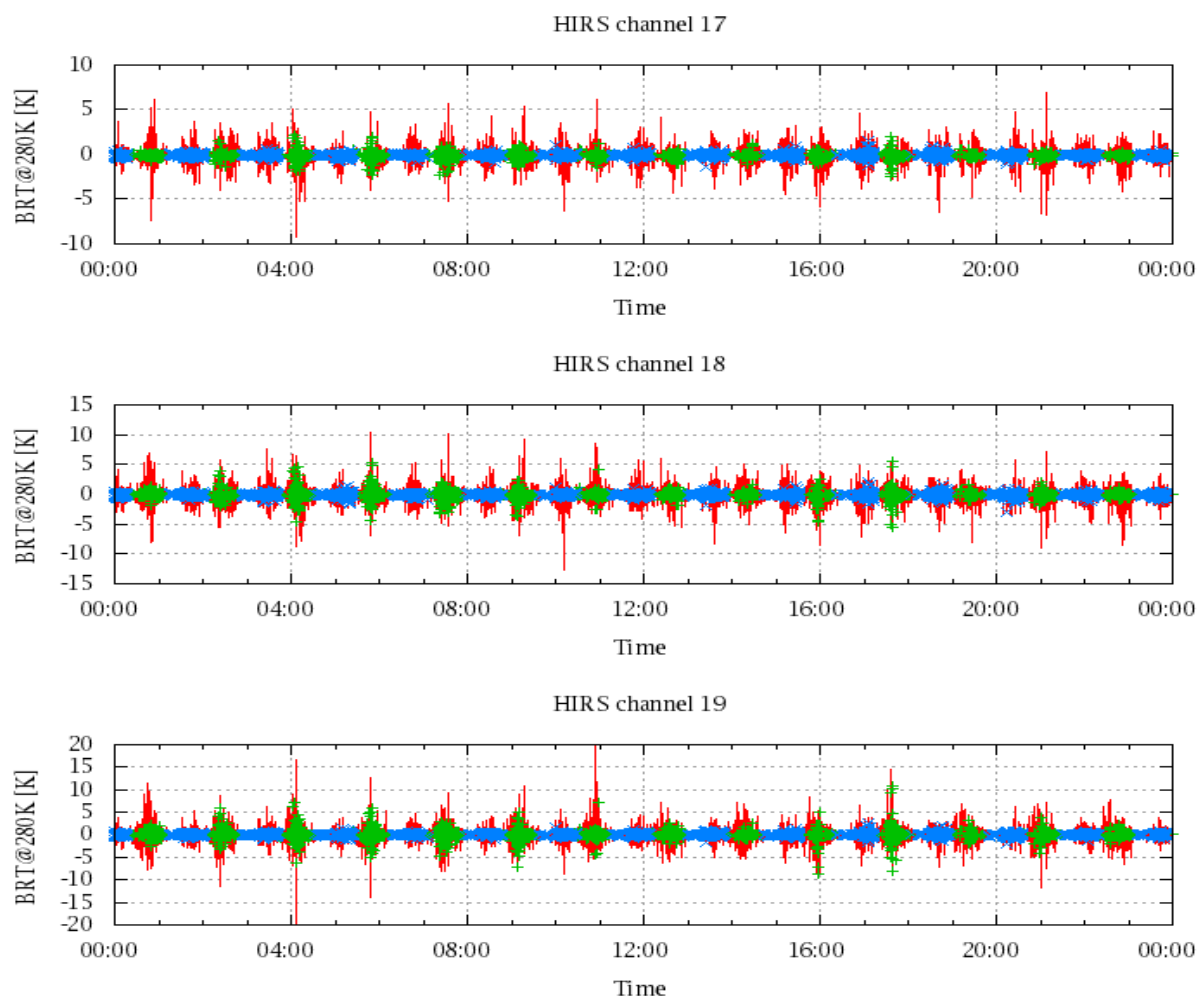


Figure 21: Radinace Differences in BRT