

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

02/08/2014 00:00:00 - 03/08/2014 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 02/08/2014 00:00:00 - 03/08/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 02/08/2014 00:00:00 - 03/08/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	480	-
L1 DPX PDUs (RM: IASI-HIRS)	478	-
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	9468	9470	20140802171810.114	20140802171810.548
PX1 (130)	9474	9479	20140802171811.419	20140802171812.505
PX1 (130)	9479	9481	20140802171812.505	20140802171812.938
PX1 (130)	9481	9483	20140802171812.938	20140802171813.372
PX1 (130)	9483	9486	20140802171813.372	20140802171814.024
PX1 (130)	9486	9491	20140802171814.024	20140802171815.110
PX1 (130)	9491	10760	20140802171815.110	20140802172354.578
PX1 (130)	10761	10766	20140802172354.793	20140802172355.875
PX1 (130)	10766	10773	20140802172355.875	20140802172357.387
PX1 (130)	10774	10779	20140802172357.606	20140802172358.684
PX1 (130)	10779	10782	20140802172358.684	20140802172359.332
PX1 (130)	10784	10786	20140802172359.766	20140802172400.199
PX1 (130)	10796	10798	20140802172403.871	20140802172404.305
PX2 (135)	9455	9457	20140802171805.790	20140802171806.224
PX2 (135)	9468	9470	20140802171810.114	20140802171810.548
PX2 (135)	9471	9473	20140802171810.767	20140802171811.200
PX2 (135)	9474	9477	20140802171811.419	20140802171812.071
PX2 (135)	9478	9484	20140802171812.286	20140802171813.591

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	9484	9486	20140802171813.591	20140802171814.024
PX2 (135)	9486	9488	20140802171814.024	20140802171814.458
PX2 (135)	9488	10758	20140802171814.458	20140802172354.145
PX2 (135)	10761	10763	20140802172354.793	20140802172355.223
PX2 (135)	10763	10774	20140802172355.223	20140802172357.606
PX2 (135)	10775	10777	20140802172357.820	20140802172358.250
PX2 (135)	10778	10780	20140802172358.469	20140802172358.902
PX2 (135)	10780	10782	20140802172358.902	20140802172359.332
PX2 (135)	10782	10785	20140802172359.332	20140802172359.981
PX2 (135)	10799	10801	20140802172404.524	20140802172404.953
PX2 (135)	10810	10812	20140802172406.899	20140802172407.332
PX3 (140)	9472	9475	20140802171810.981	20140802171811.634
PX3 (140)	9475	9477	20140802171811.634	20140802171812.071
PX3 (140)	9478	9484	20140802171812.286	20140802171813.591
PX3 (140)	9485	10756	20140802171813.806	20140802172352.199
PX3 (140)	10756	10758	20140802172352.199	20140802172354.145
PX3 (140)	10758	10761	20140802172354.145	20140802172354.793
PX3 (140)	10761	10765	20140802172354.793	20140802172355.656
PX3 (140)	10765	10772	20140802172355.656	20140802172357.172
PX3 (140)	10773	10779	20140802172357.387	20140802172358.684
PX3 (140)	10781	10783	20140802172359.117	20140802172359.547
PX3 (140)	10783	10785	20140802172359.547	20140802172359.981
PX3 (140)	10785	10787	20140802172359.981	20140802172400.414
PX3 (140)	10798	10800	20140802172404.305	20140802172404.738
PX3 (140)	10804	10806	20140802172405.602	20140802172406.035
PX4 (145)	9469	9471	20140802171810.333	20140802171810.767
PX4 (145)	9472	9475	20140802171810.981	20140802171811.634
PX4 (145)	9477	9479	20140802171812.071	20140802171812.505
PX4 (145)	9480	9484	20140802171812.720	20140802171813.591
PX4 (145)	9484	9488	20140802171813.591	20140802171814.458
PX4 (145)	9488	10758	20140802171814.458	20140802172354.145
PX4 (145)	10762	10769	20140802172355.008	20140802172356.524
PX4 (145)	10769	10773	20140802172356.524	20140802172357.387
PX4 (145)	10773	10779	20140802172357.387	20140802172358.684
PX4 (145)	10779	10787	20140802172358.684	20140802172400.414
PX4 (145)	10788	10790	20140802172402.145	20140802172402.574
PX4 (145)	10790	10792	20140802172402.574	20140802172403.008
PX4 (145)	10795	10797	20140802172403.656	20140802172404.090
PX4 (145)	10797	10799	20140802172404.090	20140802172404.524
IMG (150)	2868	2870	20140802171809.685	20140802171810.333
IMG (150)	2874	2876	20140802171811.200	20140802171811.634
IMG (150)	2876	2878	20140802171811.634	20140802171812.071
IMG (150)	2881	2884	20140802171812.720	20140802171813.372
IMG (150)	2885	4326	20140802171813.591	20140802172352.414
IMG (150)	4326	4328	20140802172352.414	20140802172353.063
IMG (150)	4330	4333	20140802172353.711	20140802172354.578
IMG (150)	4336	4338	20140802172355.223	20140802172355.656
IMG (150)	4338	4343	20140802172355.656	20140802172356.738
IMG (150)	4343	4346	20140802172356.738	20140802172357.387
IMG (150)	4348	4350	20140802172357.820	20140802172358.250
IMG (150)	4350	4353	20140802172358.250	20140802172358.902
IMG (150)	4356	4361	20140802172359.547	20140802172400.848
IMG (150)	4361	4363	20140802172400.848	20140802172401.496

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APID	Seq from	Seq to	Time from	Time to
IMG (150)	4367	4369	20140802172402.574	20140802172403.008
VER (160)	4061	4063	20140802171808.388	20140802171808.388
VER (160)	4063	4065	20140802171808.388	20140802171808.388
VER (160)	4065	4280	20140802171808.388	20140802172352.414
VER (160)	4282	4285	20140802172400.414	20140802172400.414
AUX (180)	10637	10680	20140802171808.817	20140802172352.848

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
02/08/2014 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	480	-
GQisFlagQual set (PX1)	99.46 %	-
GQisFlagQual set (PX2)	99.39 %	-
GQisFlagQual set (PX3)	99.47 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.45 %	-

Table 4: Quality flags

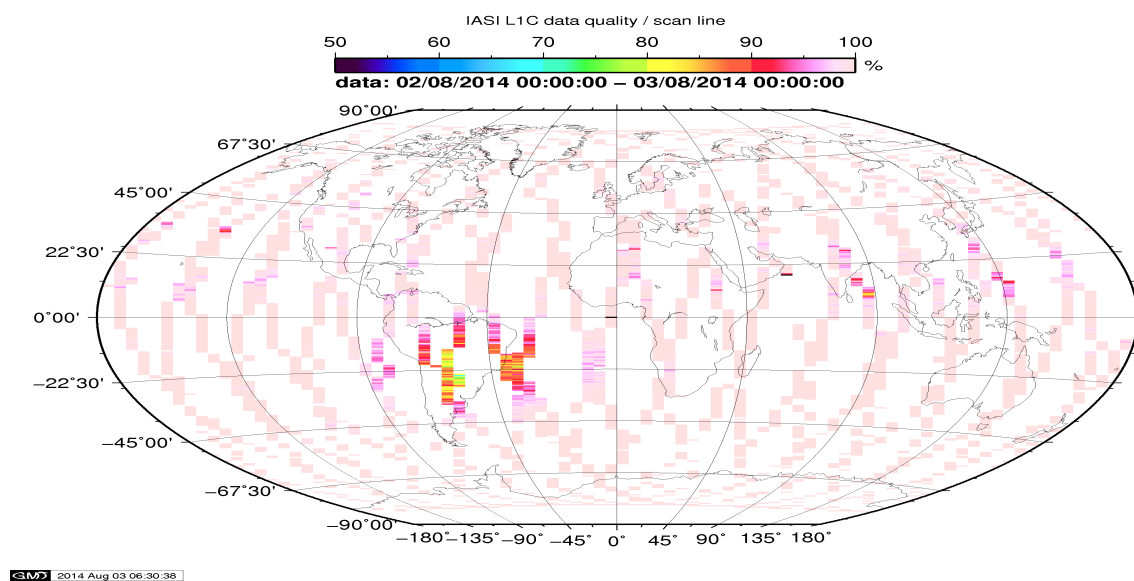


Figure 1: L1C data quality

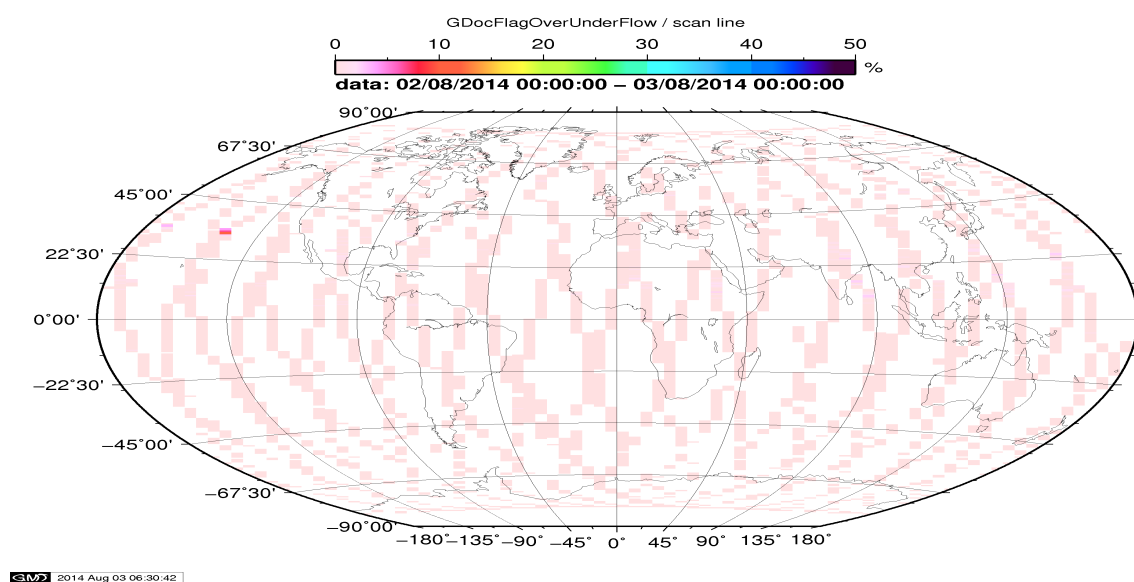


Figure 2: Flag of Over and Under Flows

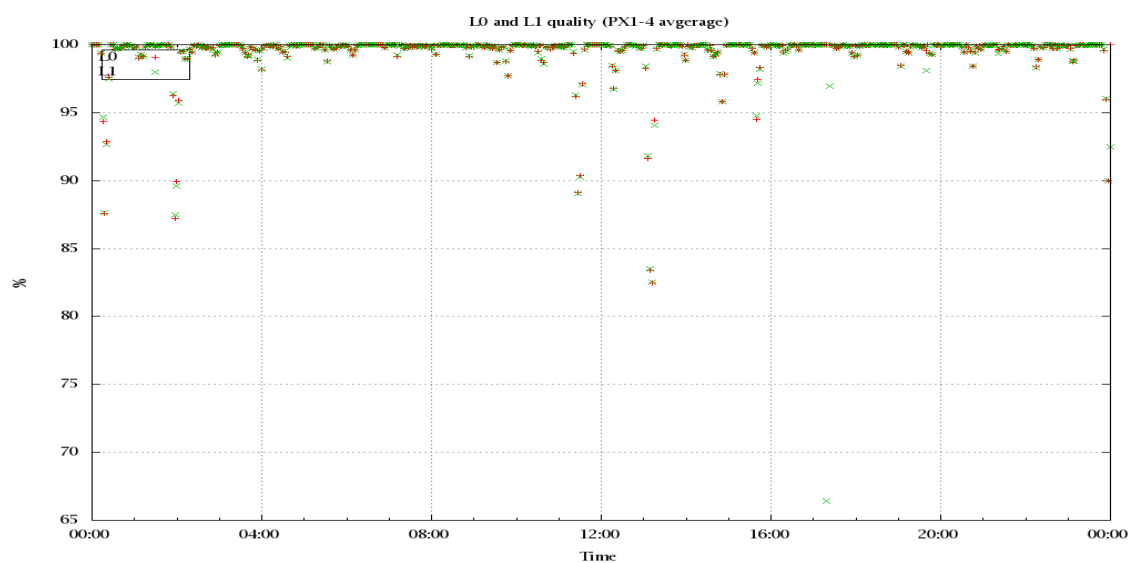


Figure 3: Level 0 and 1C overall quality

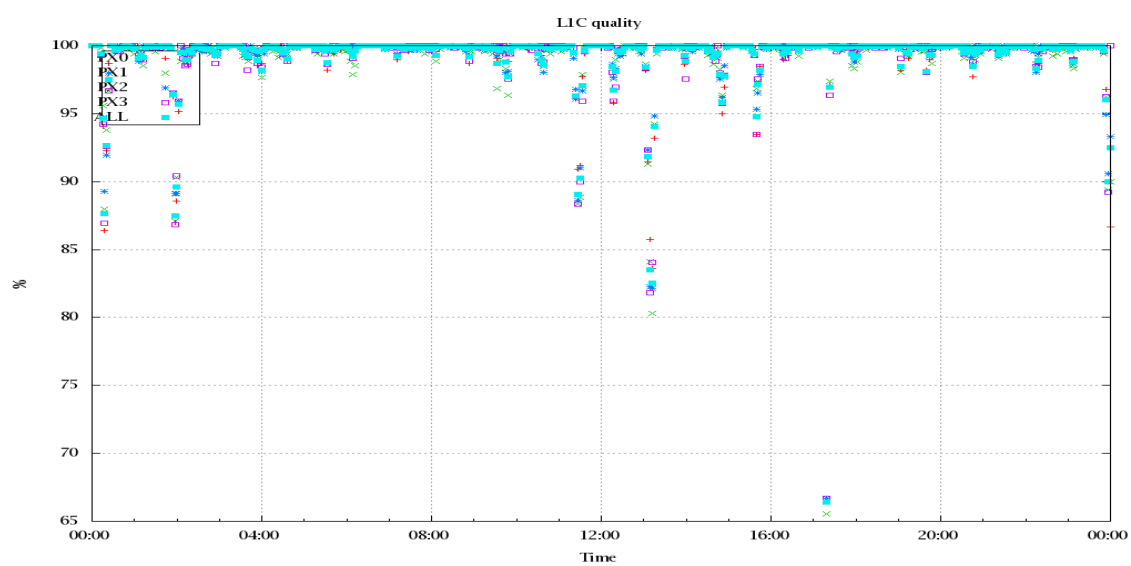


Figure 4: Level 1C quality

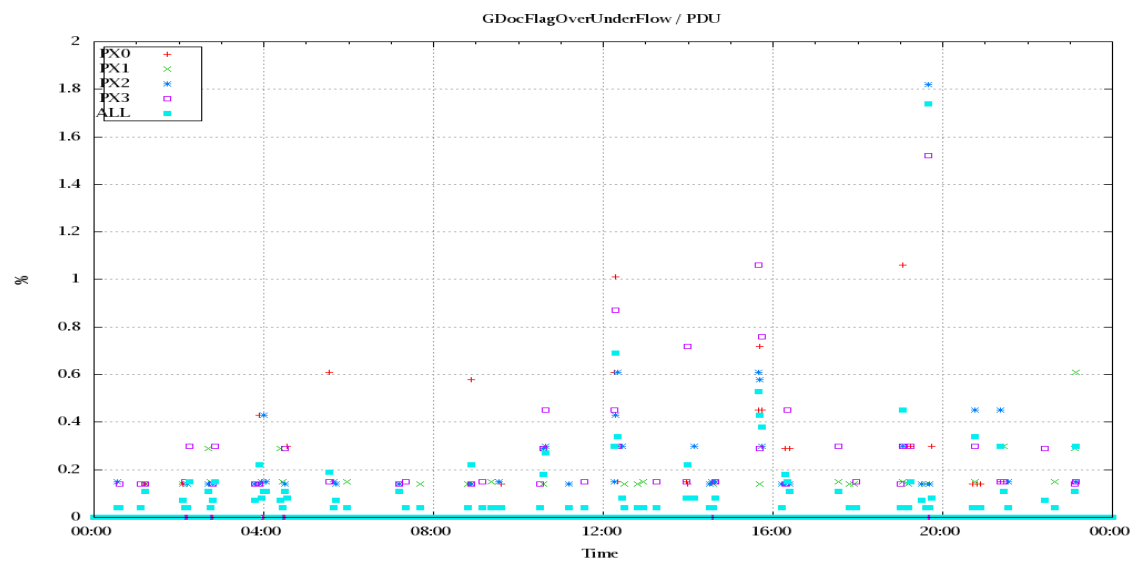


Figure 5: OverUnderFlowFlag timeseries

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.

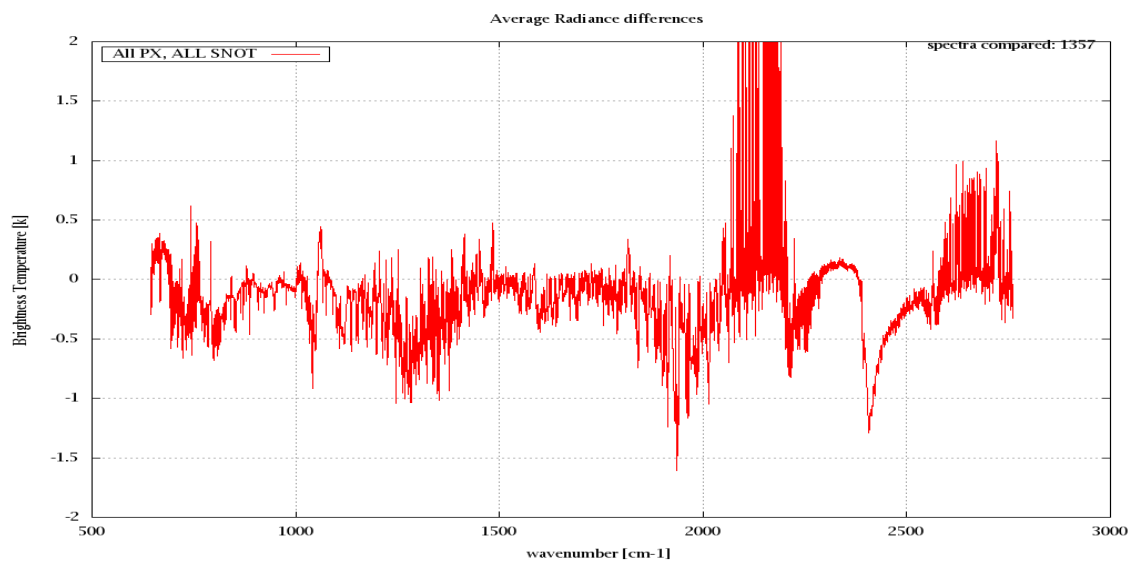


Figure 6: Average Radiance differences: OBS-CAL

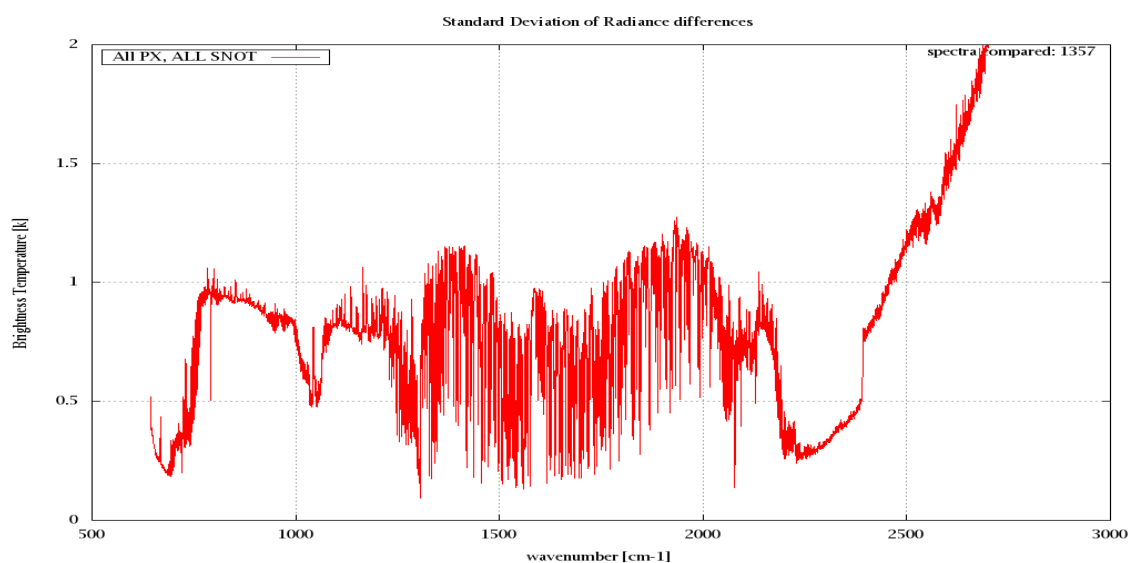


Figure 7: Standard Deviation of Radiance differences

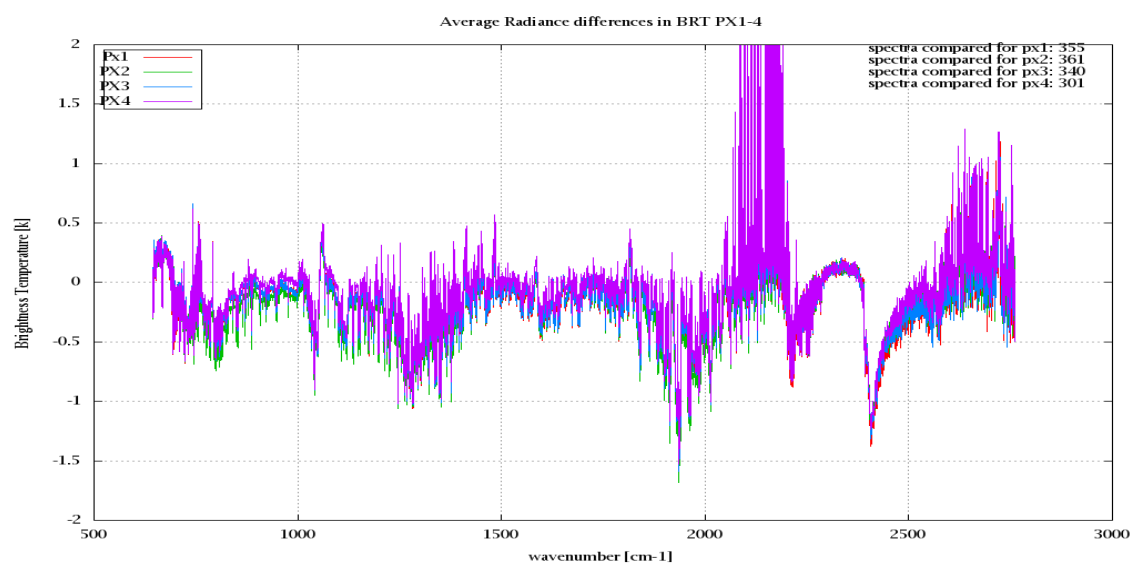


Figure 8: Average Radiance differences: OBS-CAL

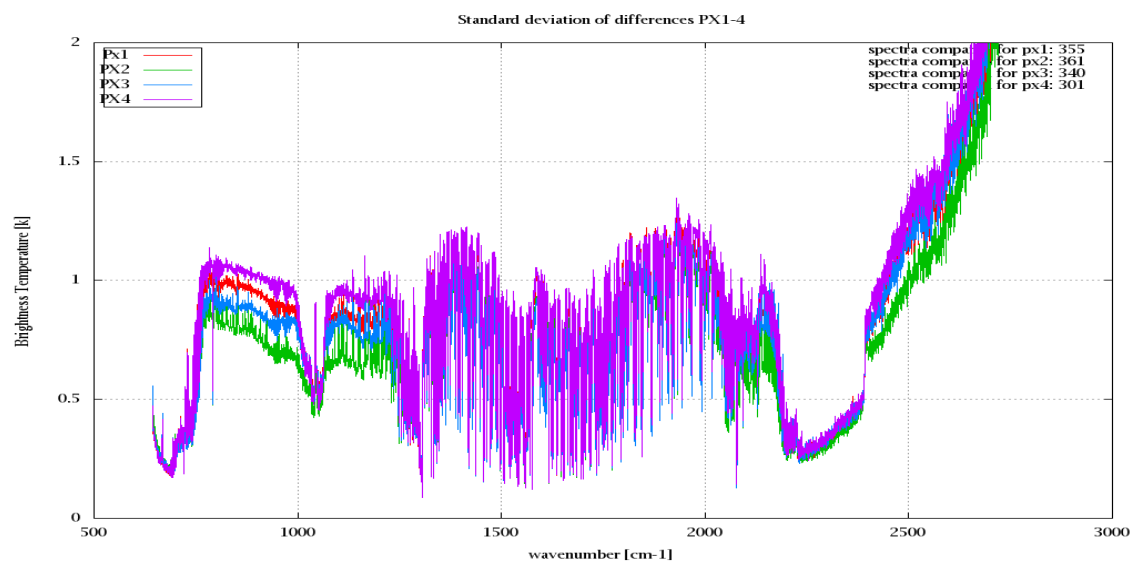


Figure 9: Standard Deviation of Radiance differences

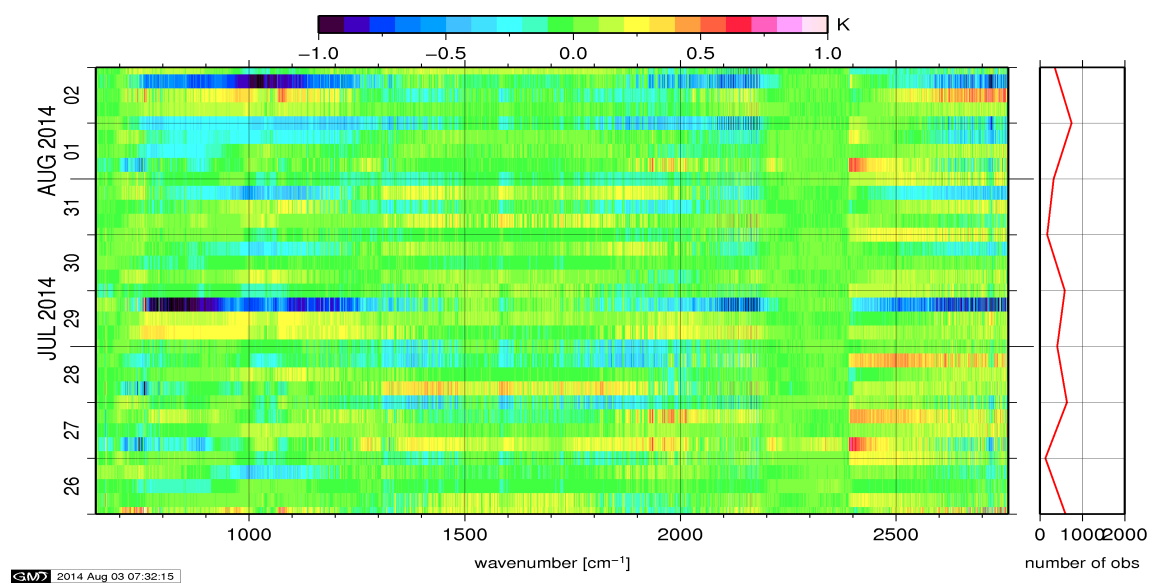


Figure 10: Radiance Anomaly in BRT: All Channels

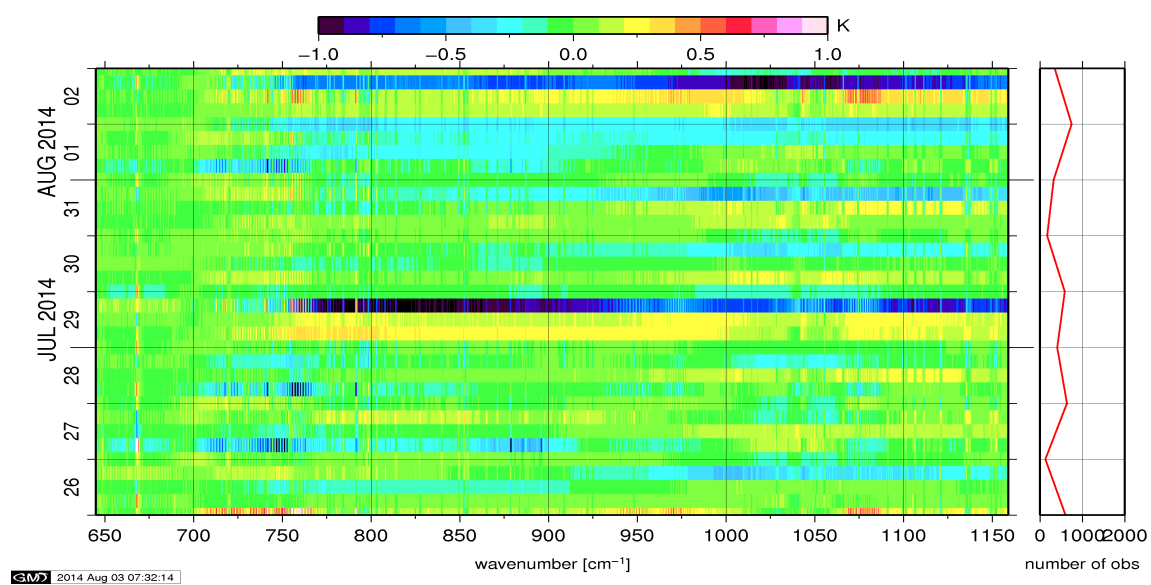


Figure 11: Radiance Anomaly in BRT: IASI Band 1

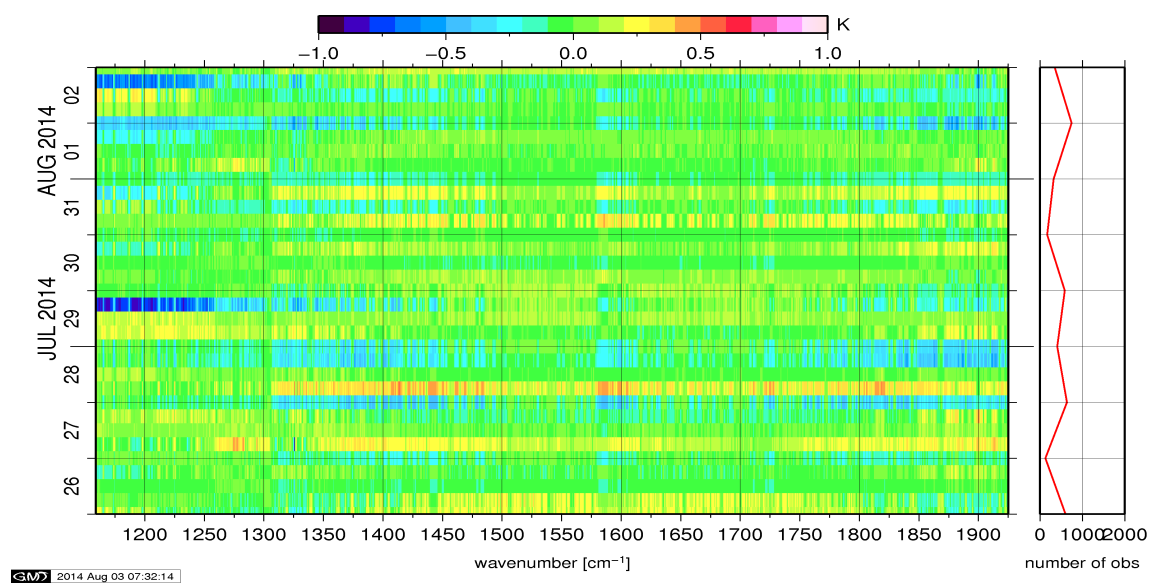


Figure 12: Radiance Anomaly in BRT: IASI Band 2

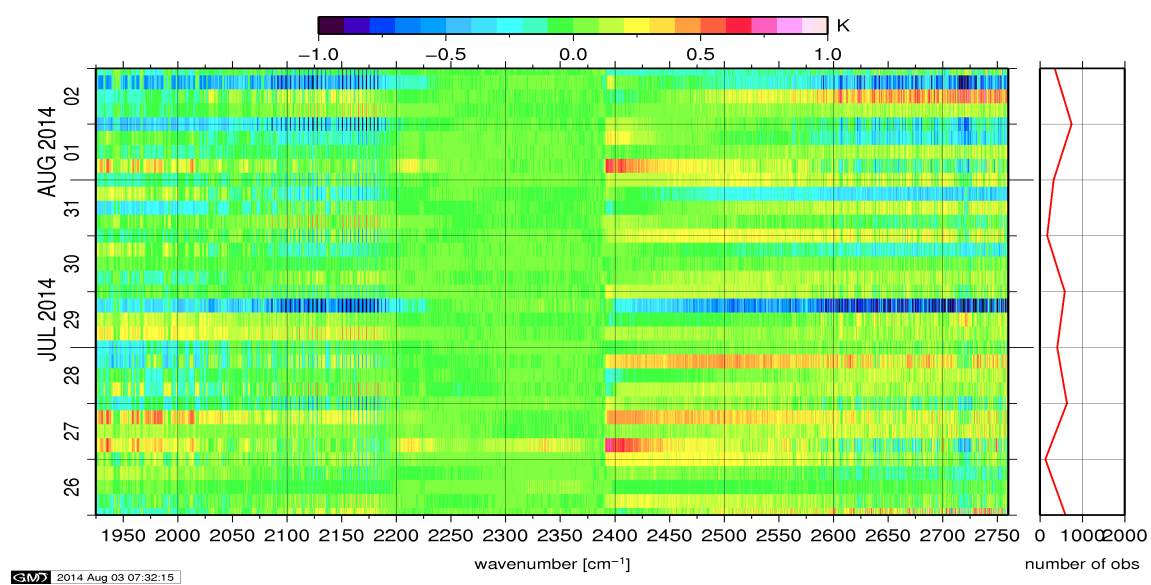


Figure 13: Radiance Anomaly in BRT: IASI Band 3

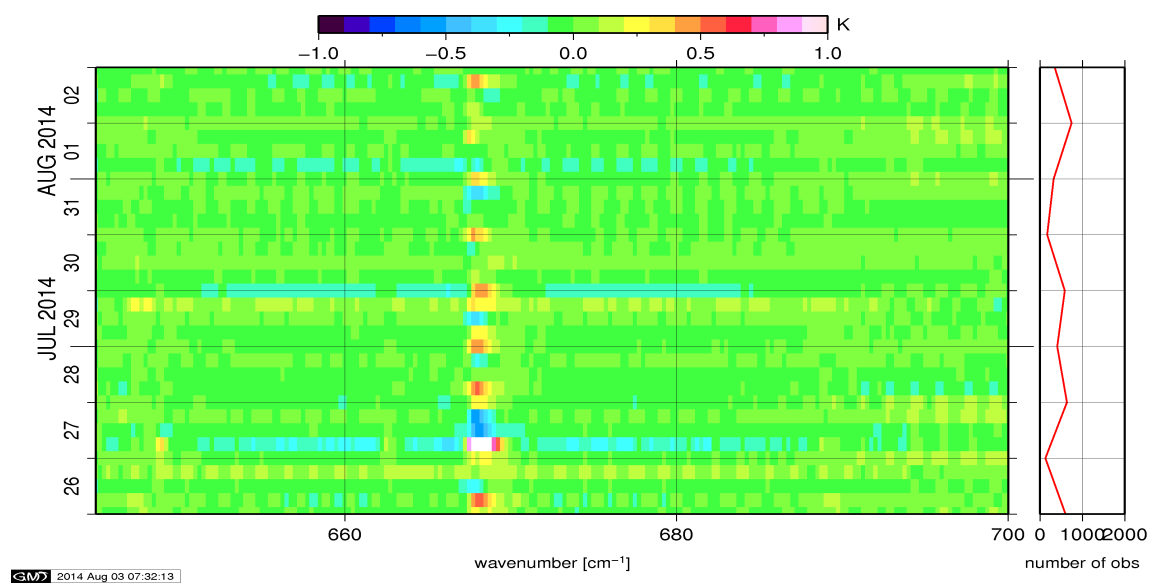


Figure 14: Radiance Anomaly in BRT: CO2 14

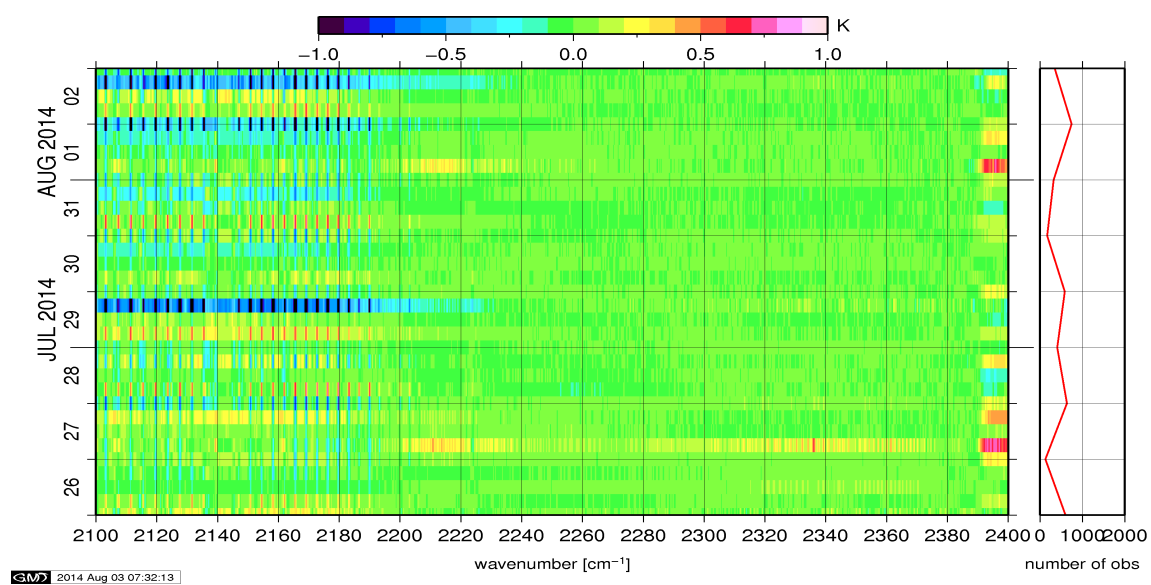


Figure 15: Radiance Anomaly in BRT: CO2 4.3

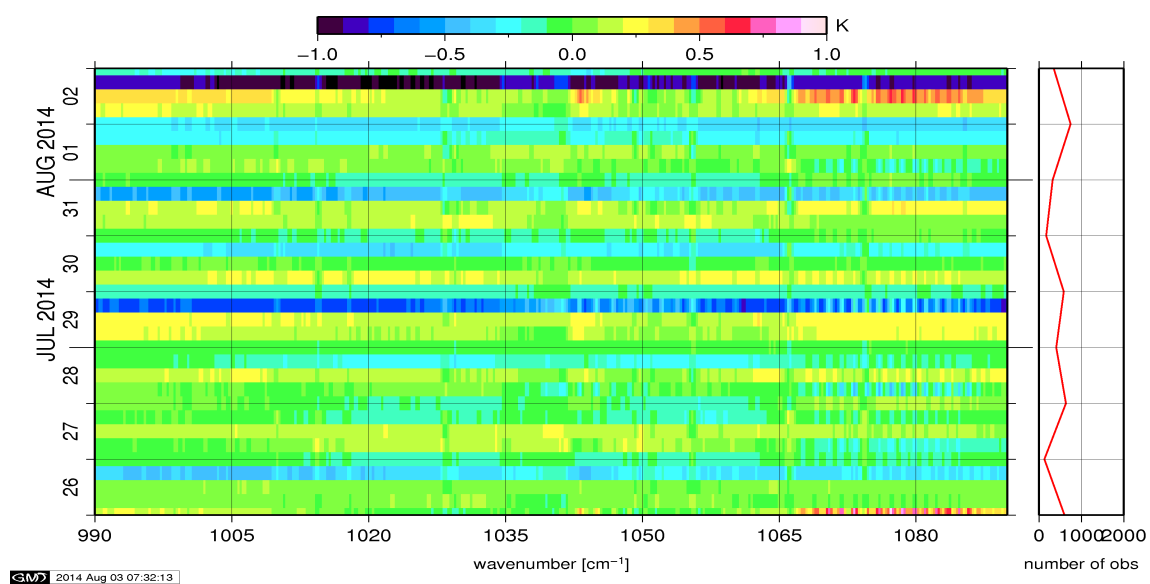


Figure 16: Radiance Anomaly in BRT: O3

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.

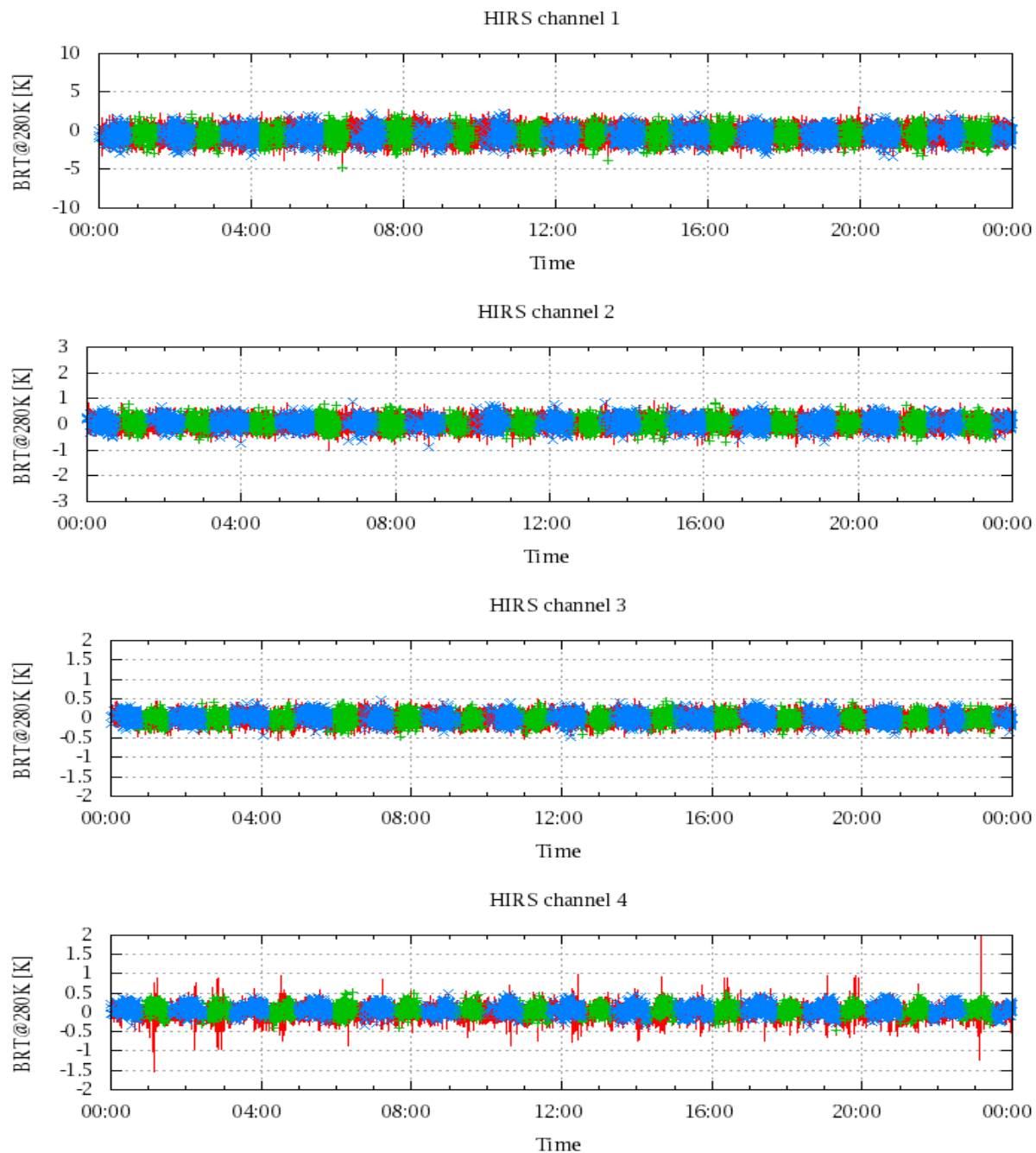


Figure 17: Radiance Differences in BRT

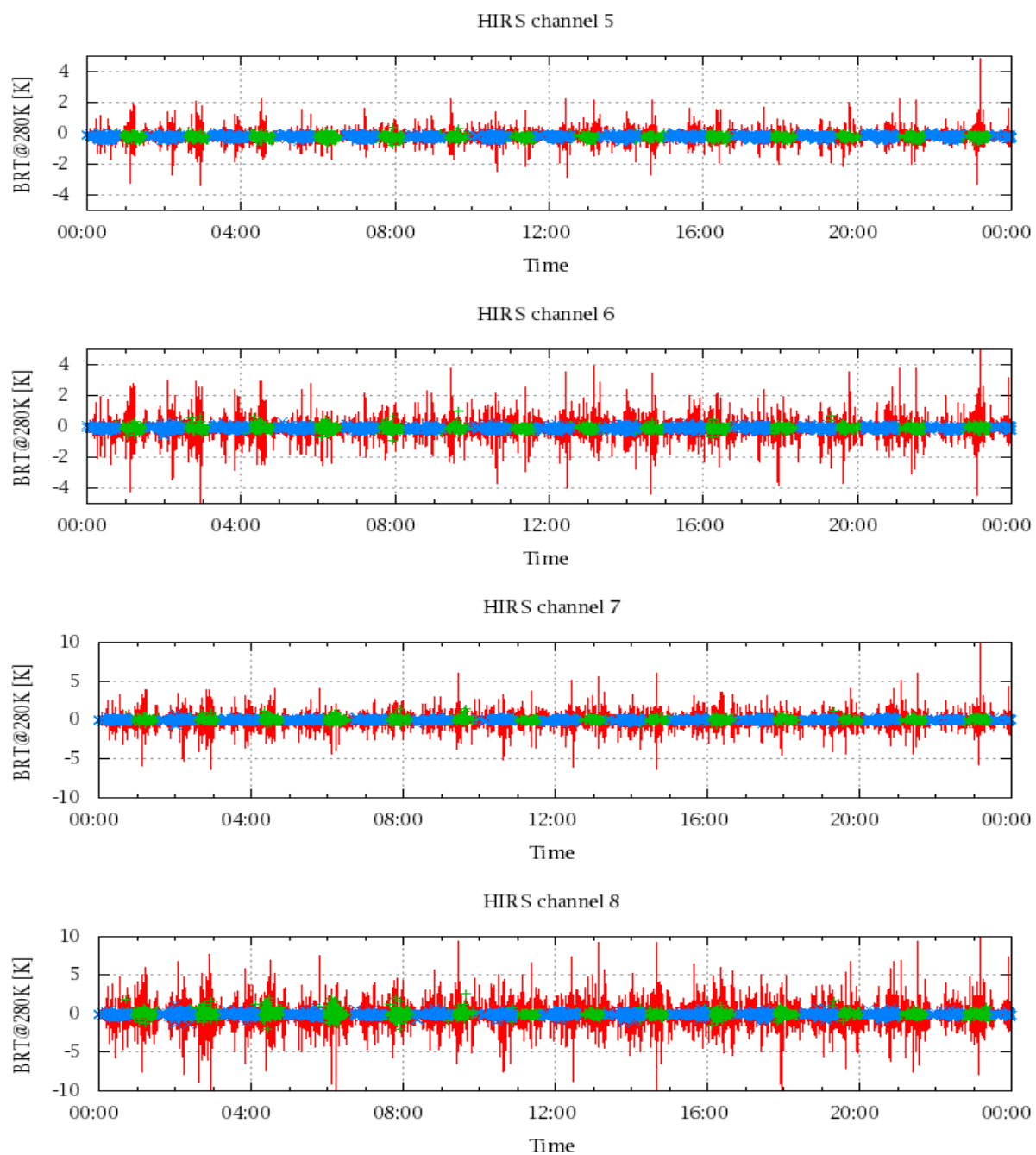


Figure 18: Radiance Differences in BRT

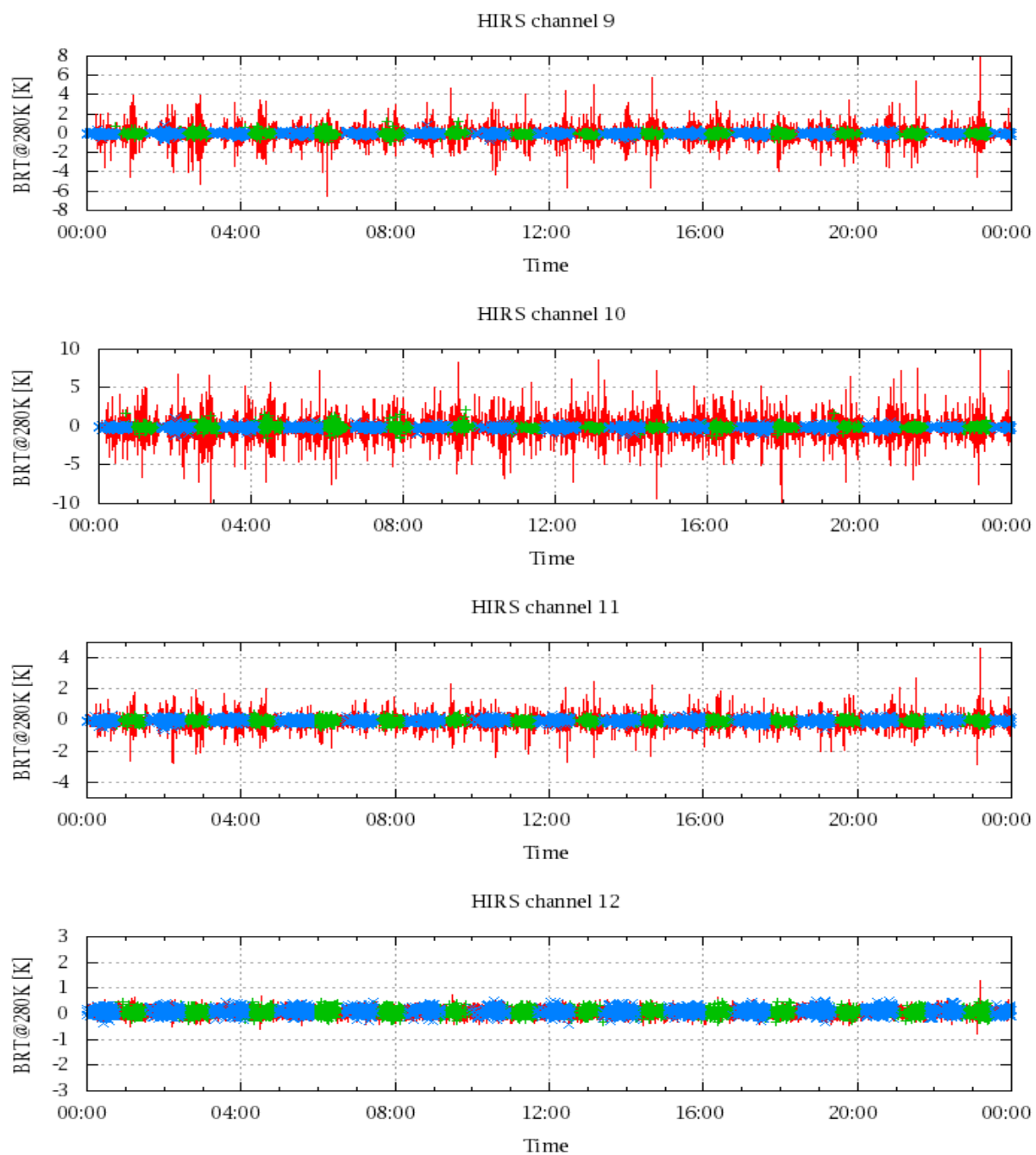


Figure 19: Radiance Differences in BRT

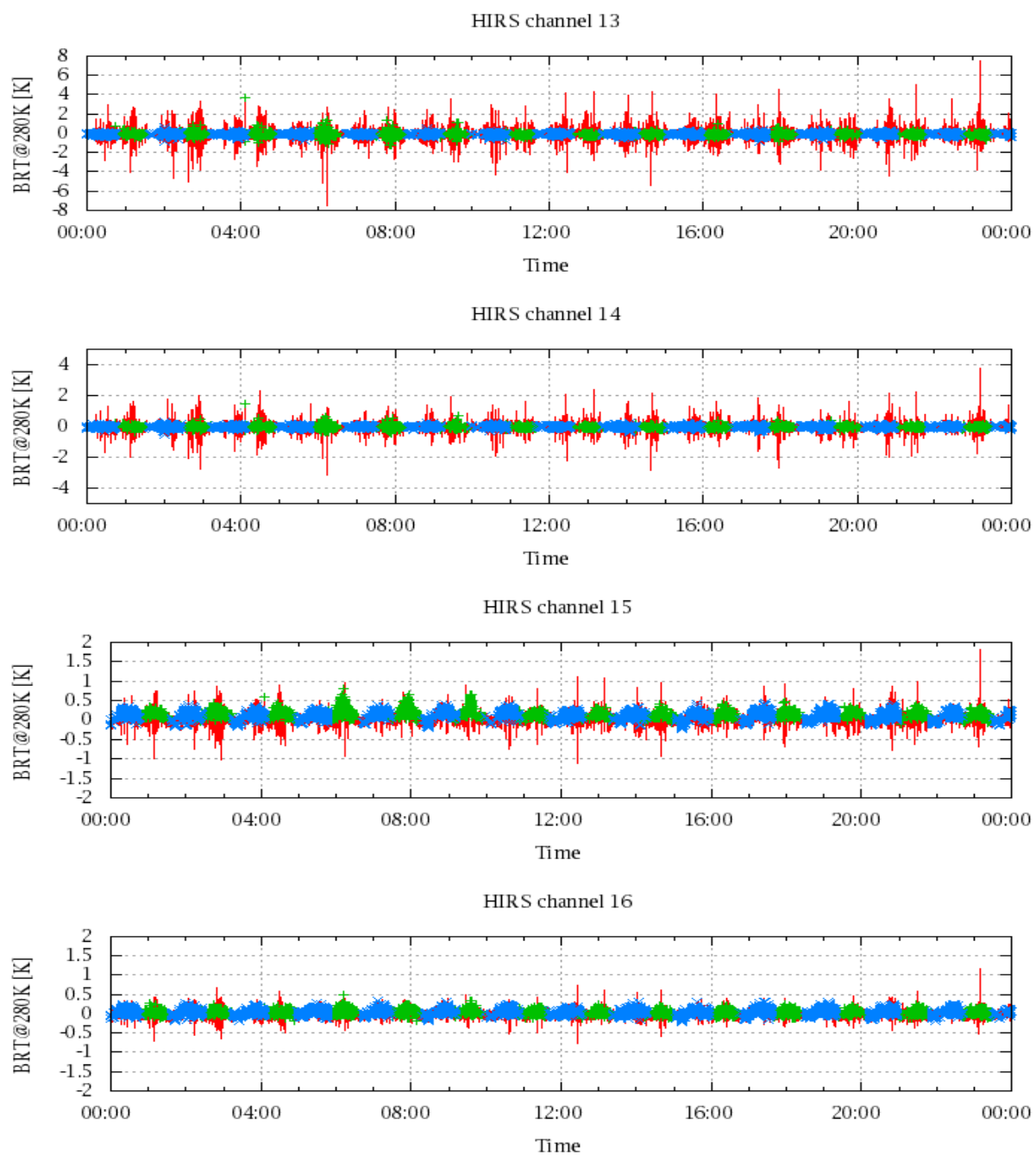


Figure 20: Radiance Differences in BRT

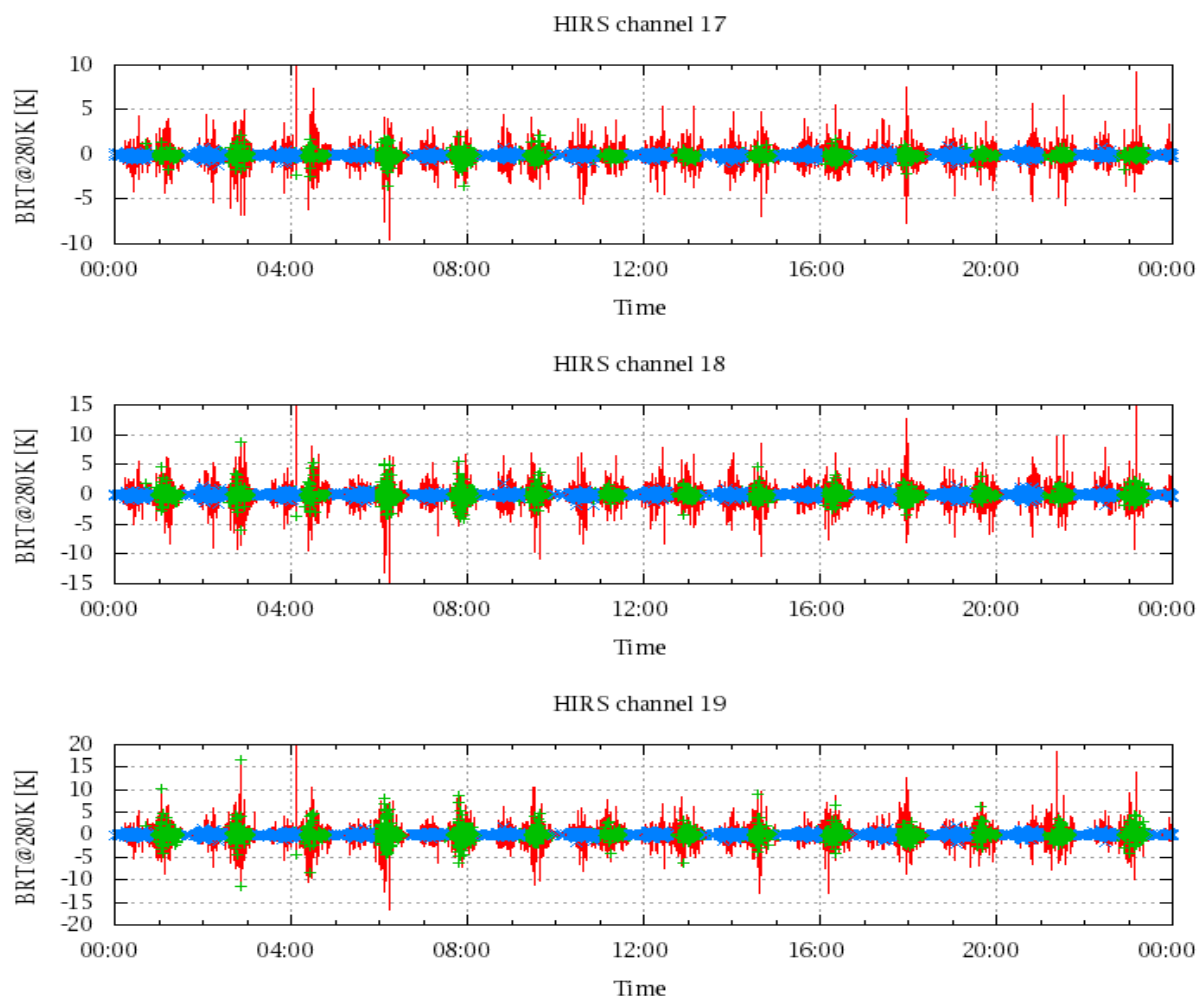


Figure 21: Radinace Differences in BRT