

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

06/08/2015 00:00:00 - 07/08/2015 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 06/08/2015 00:00:00 - 07/08/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 06/08/2015 00:00:00 - 07/08/2015 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)	151	760	20150806221551.872	20150806221835.328
PX1 (130)	774	777	20150806221838.356	20150806221839.004
PX1 (130)	777	781	20150806221839.004	20150806221839.867
PX1 (130)	781	783	20150806221839.867	20150806221841.813
PX1 (130)	783	786	20150806221841.813	20150806221842.461
PX1 (130)	786	799	20150806221842.461	20150806221845.274
PX1 (130)	799	803	20150806221845.274	20150806221846.137
PX1 (130)	803	814	20150806221846.137	20150806221850.028
PX1 (130)	814	849	20150806221850.028	20150806221859.110
PX1 (130)	849	853	20150806221859.110	20150806221859.973
PX1 (130)	853	855	20150806221859.973	20150806221900.406
PX1 (130)	855	857	20150806221900.406	20150806221900.840
PX1 (130)	857	866	20150806221900.840	20150806221902.785
PX1 (130)	866	868	20150806221902.785	20150806221903.219
PX1 (130)	869	896	20150806221903.434	20150806221910.785
PX1 (130)	896	910	20150806221910.785	20150806221915.324
PX1 (130)	910	942	20150806221915.324	20150806221923.758
PX2 (135)	151	760	20150806221551.872	20150806221835.328

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	774	777	20150806221838.356	20150806221839.004
PX2 (135)	779	786	20150806221839.434	20150806221842.461
PX2 (135)	786	799	20150806221842.461	20150806221845.274
PX2 (135)	799	803	20150806221845.274	20150806221846.137
PX2 (135)	803	814	20150806221846.137	20150806221850.028
PX2 (135)	814	817	20150806221850.028	20150806221850.680
PX2 (135)	817	819	20150806221850.680	20150806221851.110
PX2 (135)	819	849	20150806221851.110	20150806221859.110
PX2 (135)	849	853	20150806221859.110	20150806221859.973
PX2 (135)	853	855	20150806221859.973	20150806221900.406
PX2 (135)	858	861	20150806221901.055	20150806221901.703
PX2 (135)	861	865	20150806221901.703	20150806221902.571
PX2 (135)	866	869	20150806221902.785	20150806221903.434
PX2 (135)	869	884	20150806221903.434	20150806221908.192
PX2 (135)	885	910	20150806221908.406	20150806221915.324
PX2 (135)	910	941	20150806221915.324	20150806221923.543
PX3 (140)	151	760	20150806221551.872	20150806221835.328
PX3 (140)	775	777	20150806221838.574	20150806221839.004
PX3 (140)	777	779	20150806221839.004	20150806221839.434
PX3 (140)	779	796	20150806221839.434	20150806221844.625
PX3 (140)	796	819	20150806221844.625	20150806221851.110
PX3 (140)	819	839	20150806221851.110	20150806221855.434
PX3 (140)	839	849	20150806221855.434	20150806221859.110
PX3 (140)	850	853	20150806221859.328	20150806221859.973
PX3 (140)	853	856	20150806221859.973	20150806221900.625
PX3 (140)	857	861	20150806221900.840	20150806221901.703
PX3 (140)	861	864	20150806221901.703	20150806221902.352
PX3 (140)	866	873	20150806221902.785	20150806221905.813
PX3 (140)	873	875	20150806221905.813	20150806221906.246
PX3 (140)	875	889	20150806221906.246	20150806221909.274
PX3 (140)	889	917	20150806221909.274	20150806221916.840
PX3 (140)	917	941	20150806221916.840	20150806221923.543
PX4 (145)	151	760	20150806221551.872	20150806221835.328
PX4 (145)	777	779	20150806221839.004	20150806221839.434
PX4 (145)	779	787	20150806221839.434	20150806221842.676
PX4 (145)	787	800	20150806221842.676	20150806221845.489
PX4 (145)	800	812	20150806221845.489	20150806221849.598
PX4 (145)	813	816	20150806221849.813	20150806221850.461
PX4 (145)	816	819	20150806221850.461	20150806221851.110
PX4 (145)	819	832	20150806221851.110	20150806221853.922
PX4 (145)	832	849	20150806221853.922	20150806221859.110
PX4 (145)	850	852	20150806221859.328	20150806221859.758
PX4 (145)	853	856	20150806221859.973	20150806221900.625
PX4 (145)	857	860	20150806221900.840	20150806221901.488
PX4 (145)	860	864	20150806221901.488	20150806221902.352
PX4 (145)	864	873	20150806221902.352	20150806221905.813
PX4 (145)	873	882	20150806221905.813	20150806221907.758
PX4 (145)	882	900	20150806221907.758	20150806221911.649
PX4 (145)	900	907	20150806221911.649	20150806221914.676
PX4 (145)	907	941	20150806221914.676	20150806221923.543
IMG (150)	2451	3144	20150806221551.872	20150806221835.328
IMG (150)	3157	3166	20150806221838.137	20150806221840.301
IMG (150)	3166	3175	20150806221840.301	20150806221842.676

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APID	Seq from	Seq to	Time from	Time to
IMG (150)	3176	3196	20150806221842.895	20150806221847.219
IMG (150)	3196	3201	20150806221847.219	20150806221848.516
IMG (150)	3202	3205	20150806221848.949	20150806221849.813
IMG (150)	3205	3234	20150806221849.813	20150806221856.301
IMG (150)	3235	3244	20150806221856.516	20150806221858.895
IMG (150)	3244	3248	20150806221858.895	20150806221859.758
IMG (150)	3248	3252	20150806221859.758	20150806221900.625
IMG (150)	3252	3254	20150806221900.625	20150806221901.055
IMG (150)	3254	3263	20150806221901.055	20150806221903.000
IMG (150)	3263	3282	20150806221903.000	20150806221907.758
IMG (150)	3282	3349	20150806221907.758	20150806221923.543
VER (160)	11077	11186	20150806221551.872	20150806221839.867
VER (160)	11186	11196	20150806221839.867	20150806221855.434
VER (160)	11196	11212	20150806221855.434	20150806221927.867
AUX (180)	8766	8788	20150806221544.305	20150806221840.301
AUX (180)	8788	8790	20150806221840.301	20150806221856.301
AUX (180)	8790	8794	20150806221856.301	20150806221928.297

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
06/08/2015 00:00:05	-	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)	99.42 %	-
GQisFlagQual set (PX2)	99.53 %	-
GQisFlagQual set (PX3)	99.59 %	-
GQisFlagQual set (PX4)	99.49 %	-
GQisFlagQual set (all)	99.51 %	-

Table 4: Quality flags

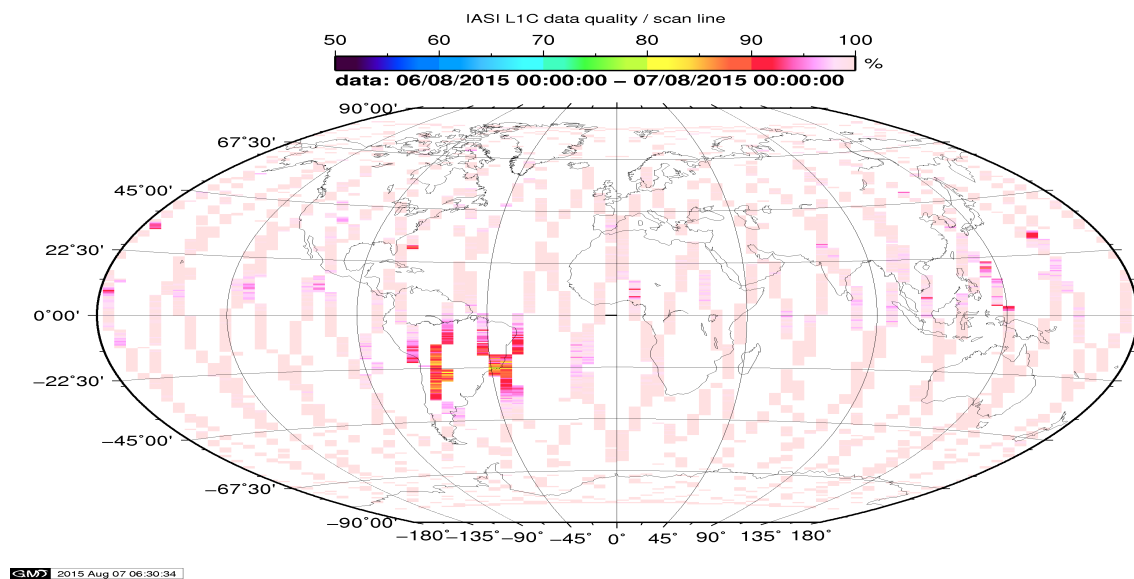


Figure 1: L1C data quality

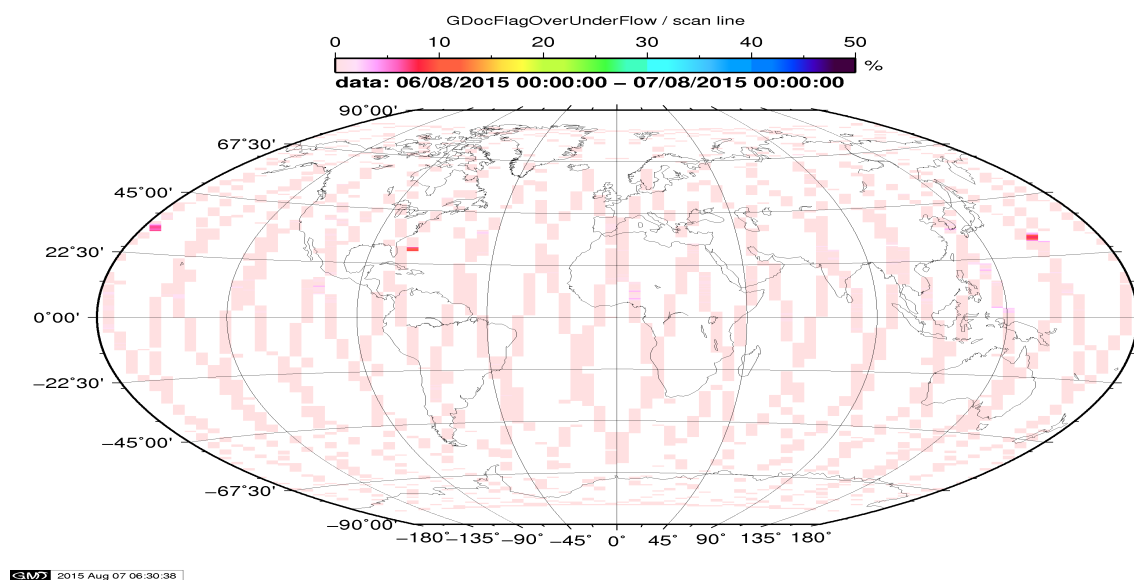


Figure 2: Flag of Over and Under Flows

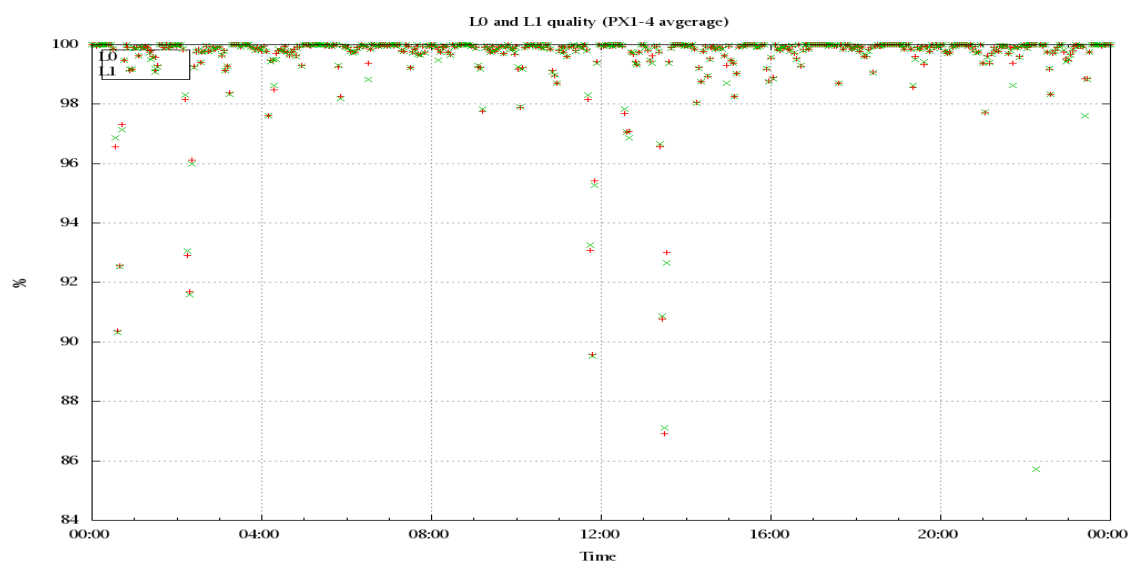


Figure 3: Level 0 and 1C overall quality

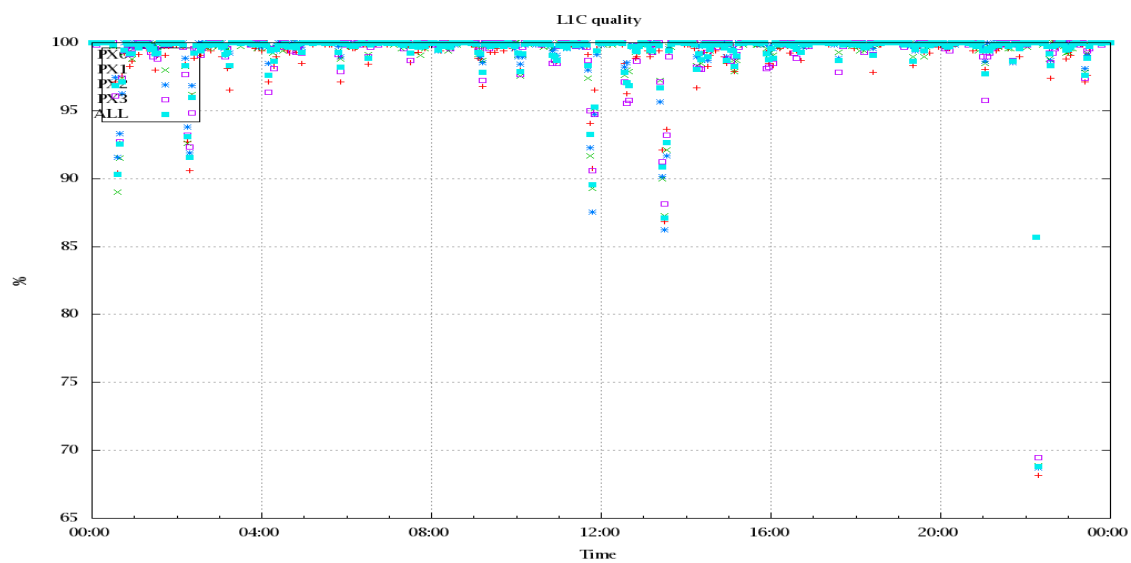


Figure 4: Level 1C quality

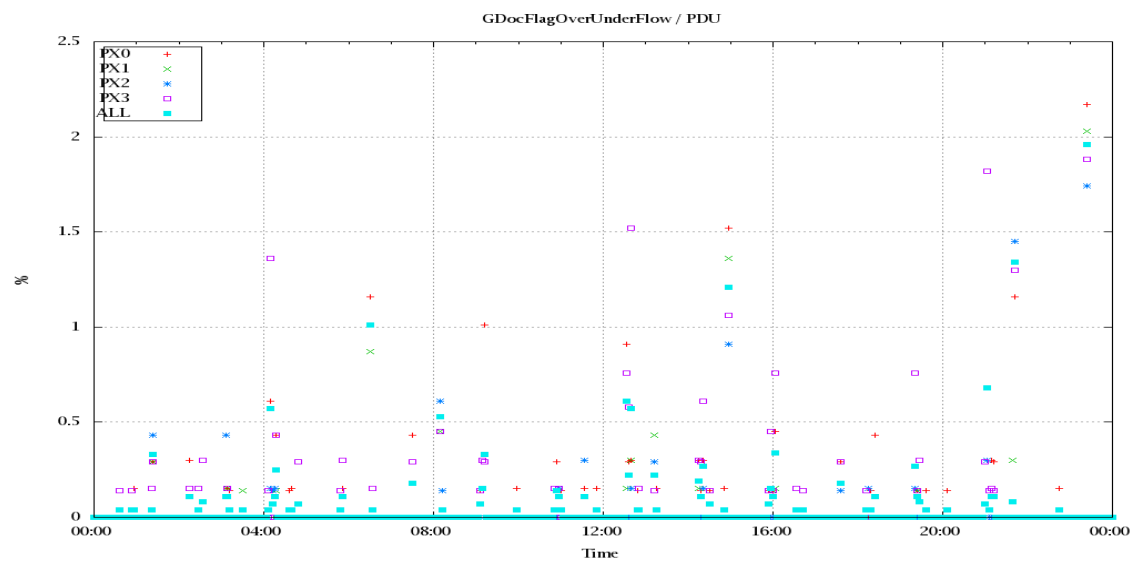


Figure 5: OverUnderFlowFlag timeseries

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.

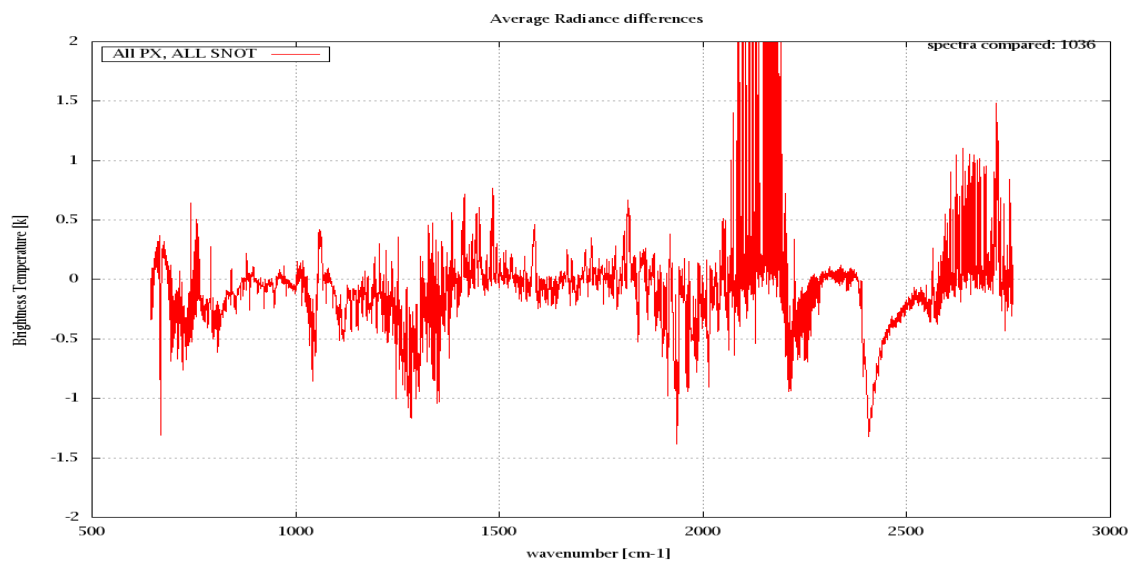


Figure 6: Average Radiance differences: OBS-CAL

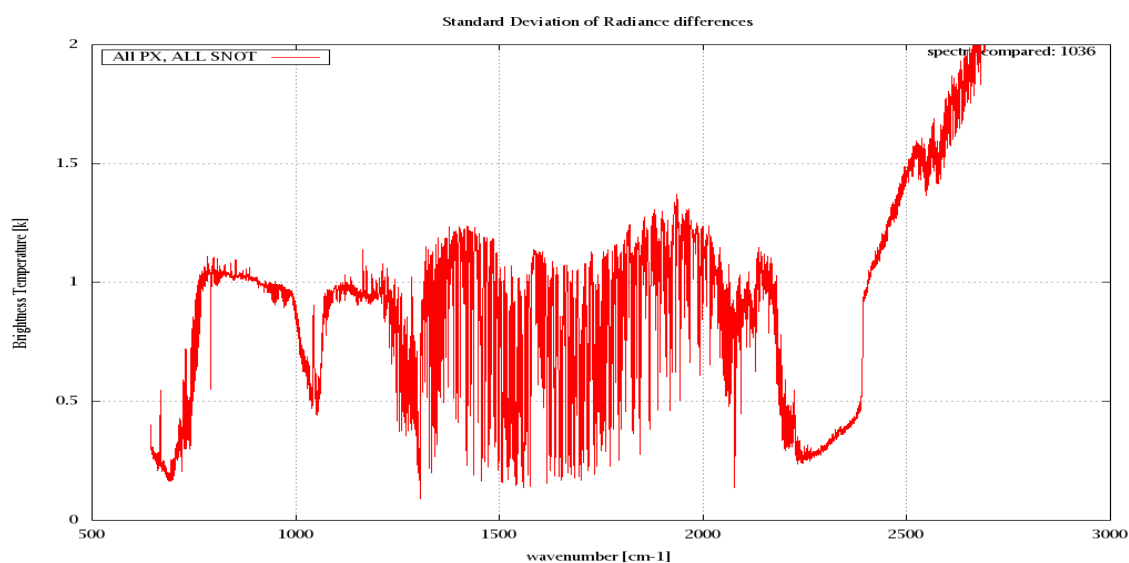


Figure 7: Standard Deviation of Radiance differences

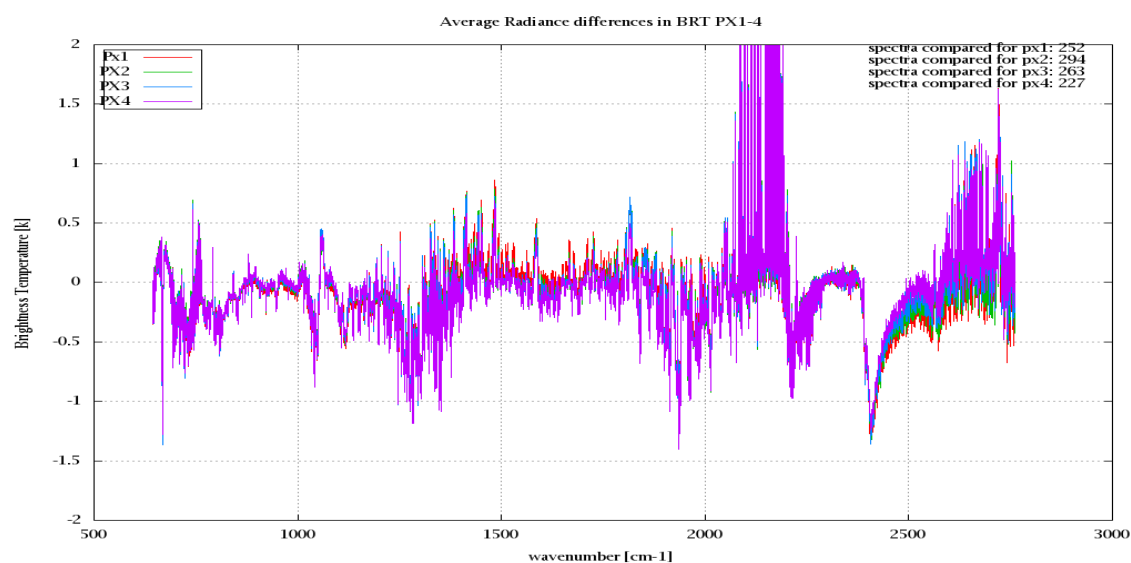


Figure 8: Average Radiance differences: OBS-CAL

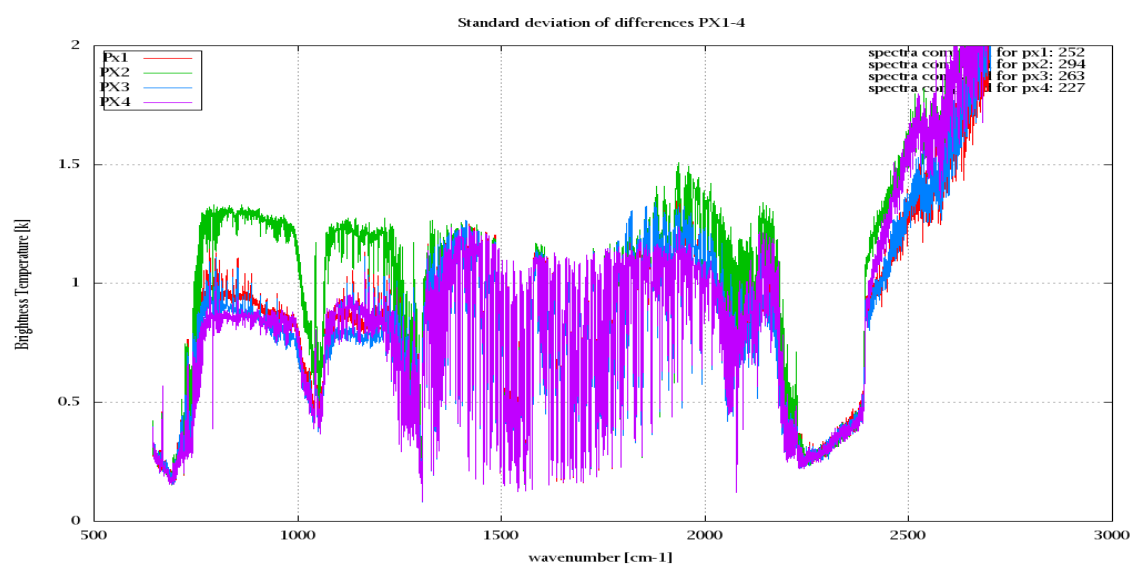


Figure 9: Standard Deviation of Radiance differences

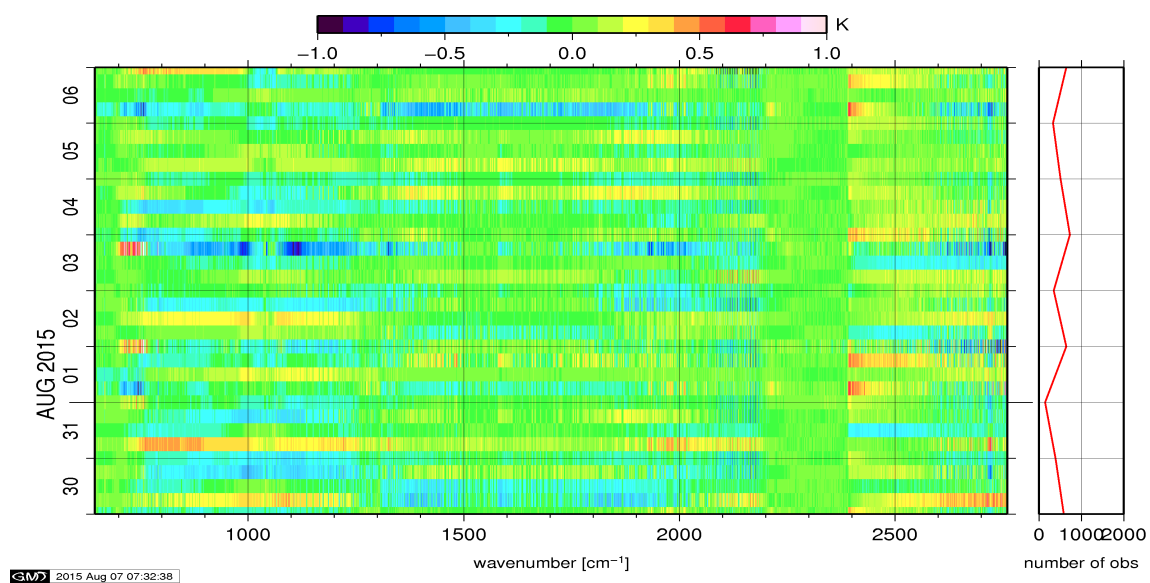


Figure 10: Radiance Anomaly in BRT: All Channels

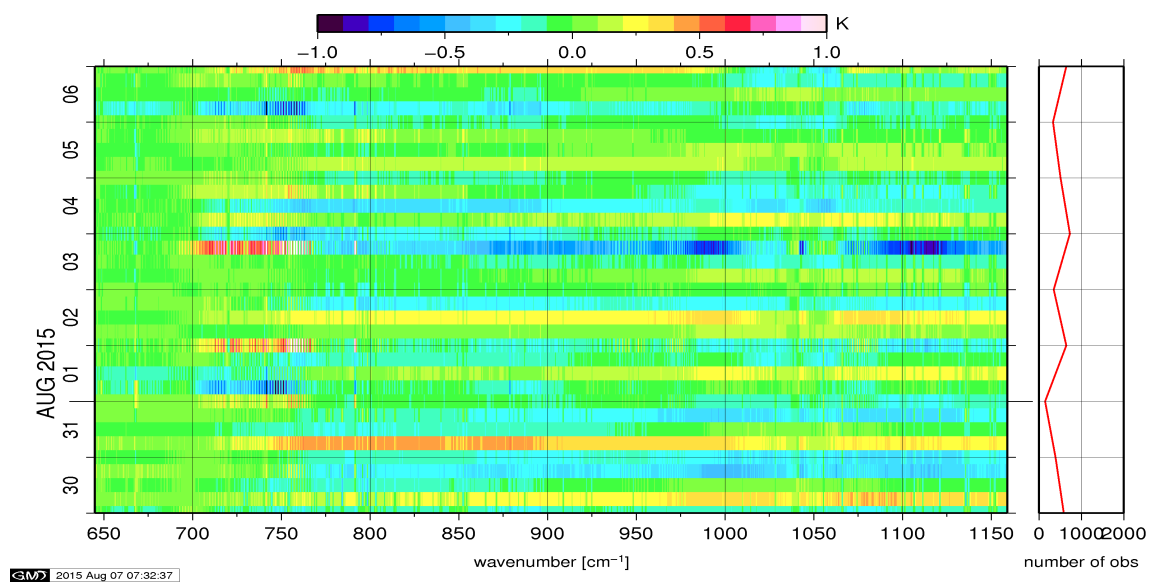


Figure 11: Radiance Anomaly in BRT: IASI Band 1

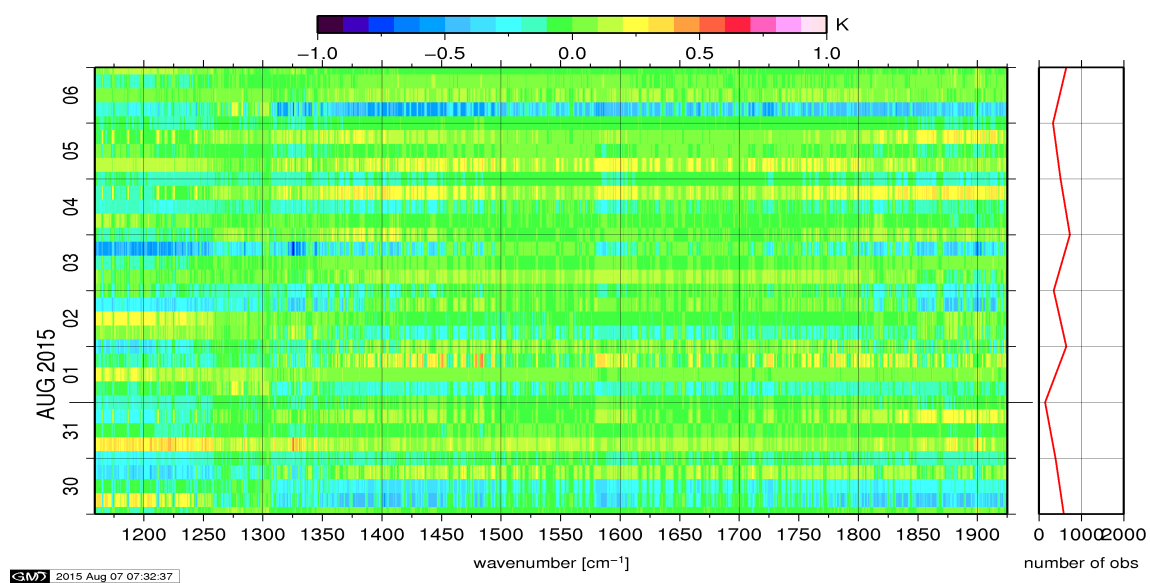


Figure 12: Radiance Anomaly in BRT: IASI Band 2

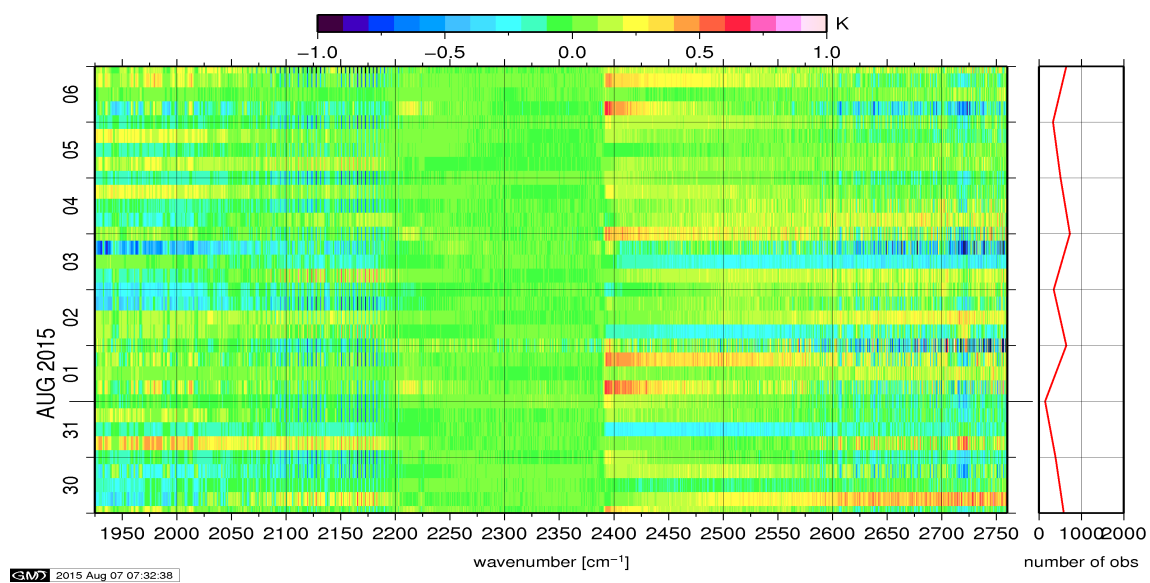


Figure 13: Radiance Anomaly in BRT: IASI Band 3

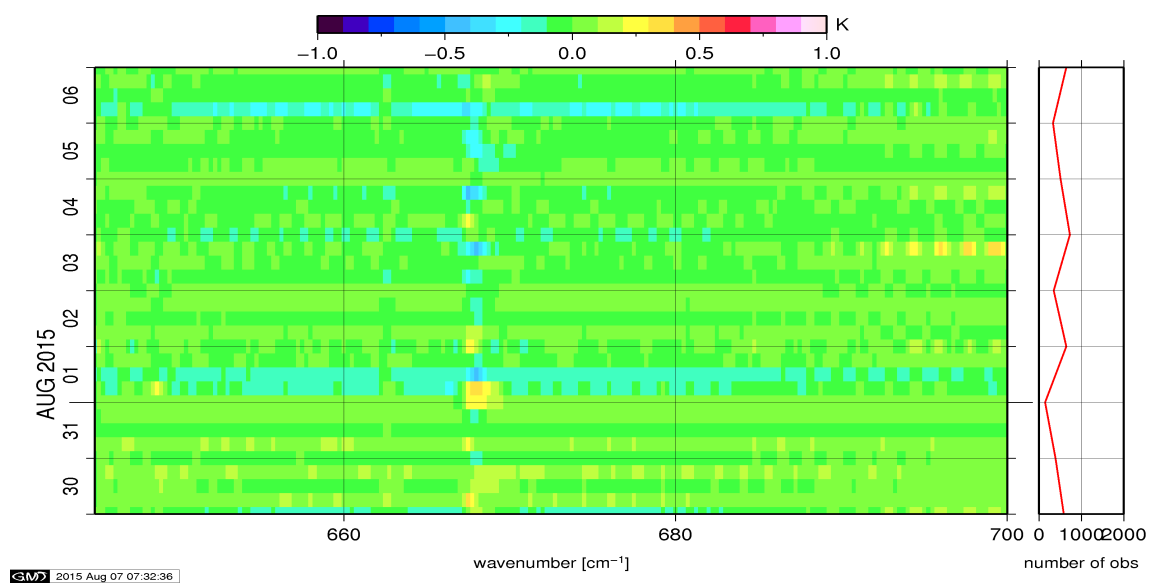


Figure 14: Radiance Anomaly in BRT: CO2 14

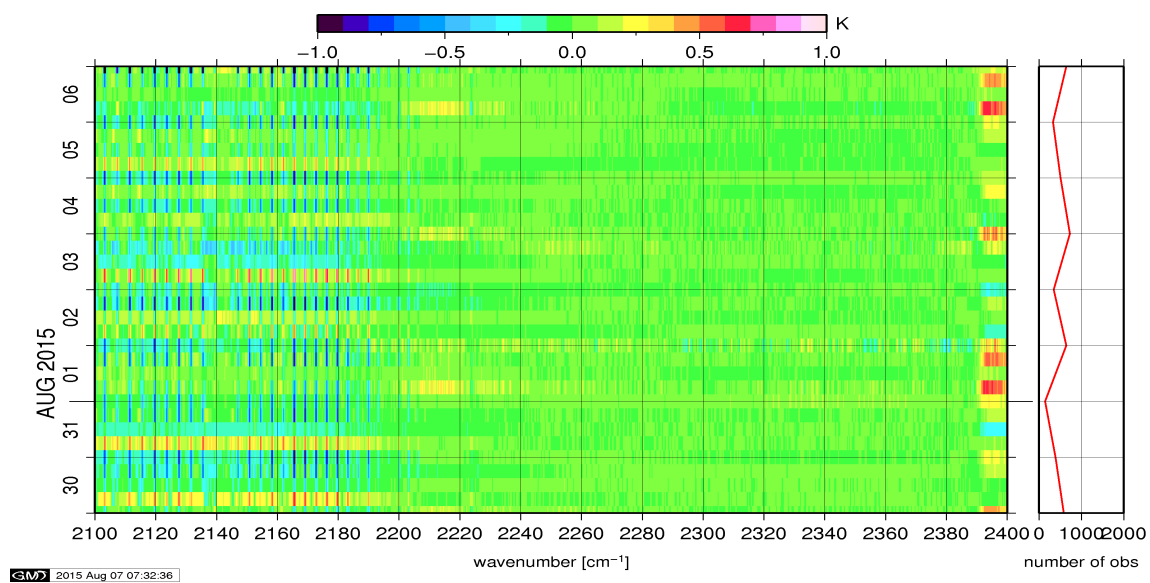


Figure 15: Radiance Anomaly in BRT: CO2 4.3

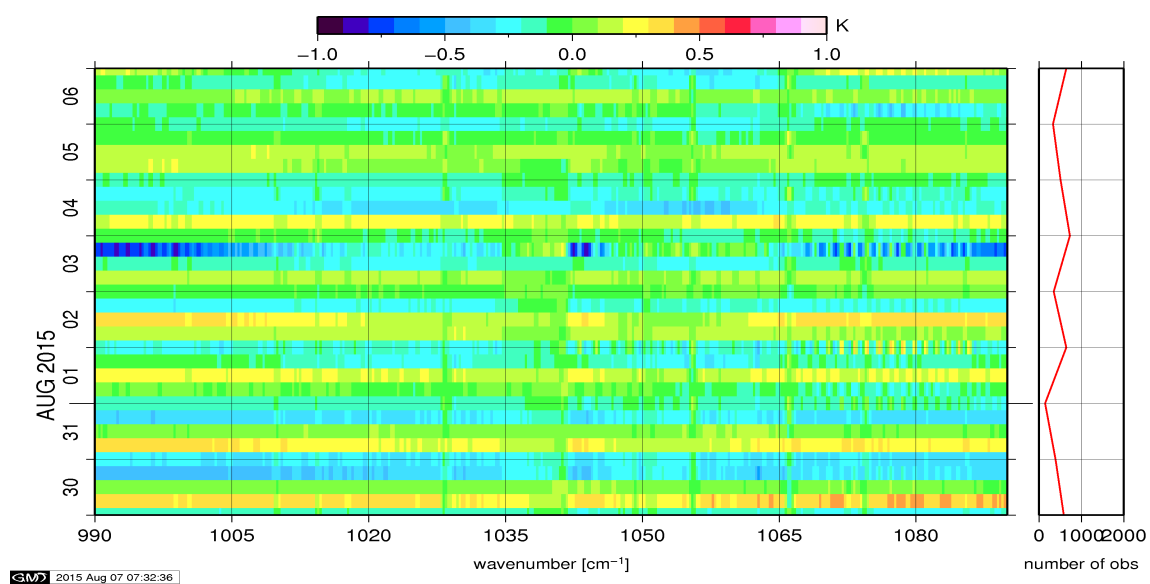


Figure 16: Radiance Anomaly in BRT: O3

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.

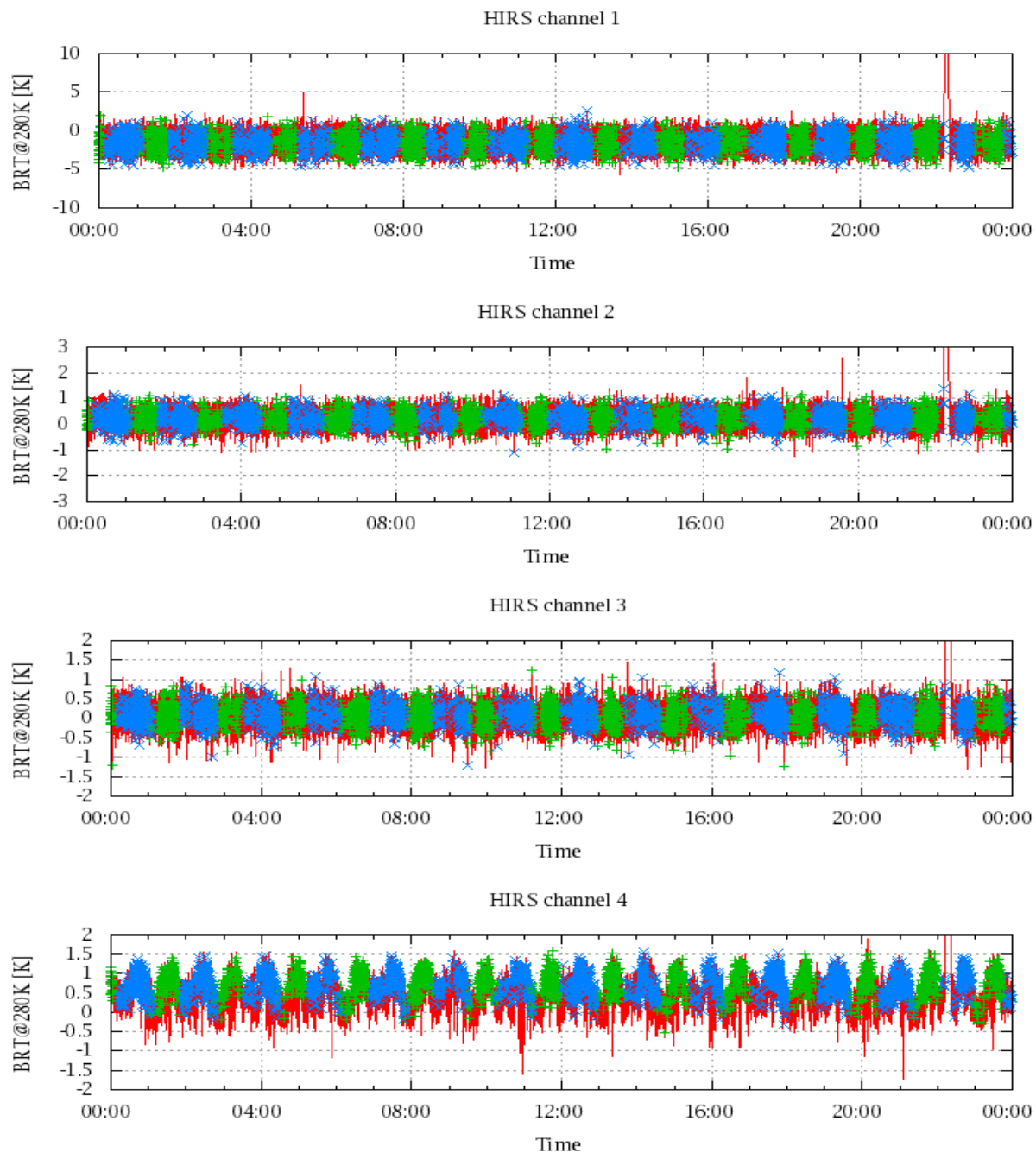


Figure 17: Radiance Differences in BRT

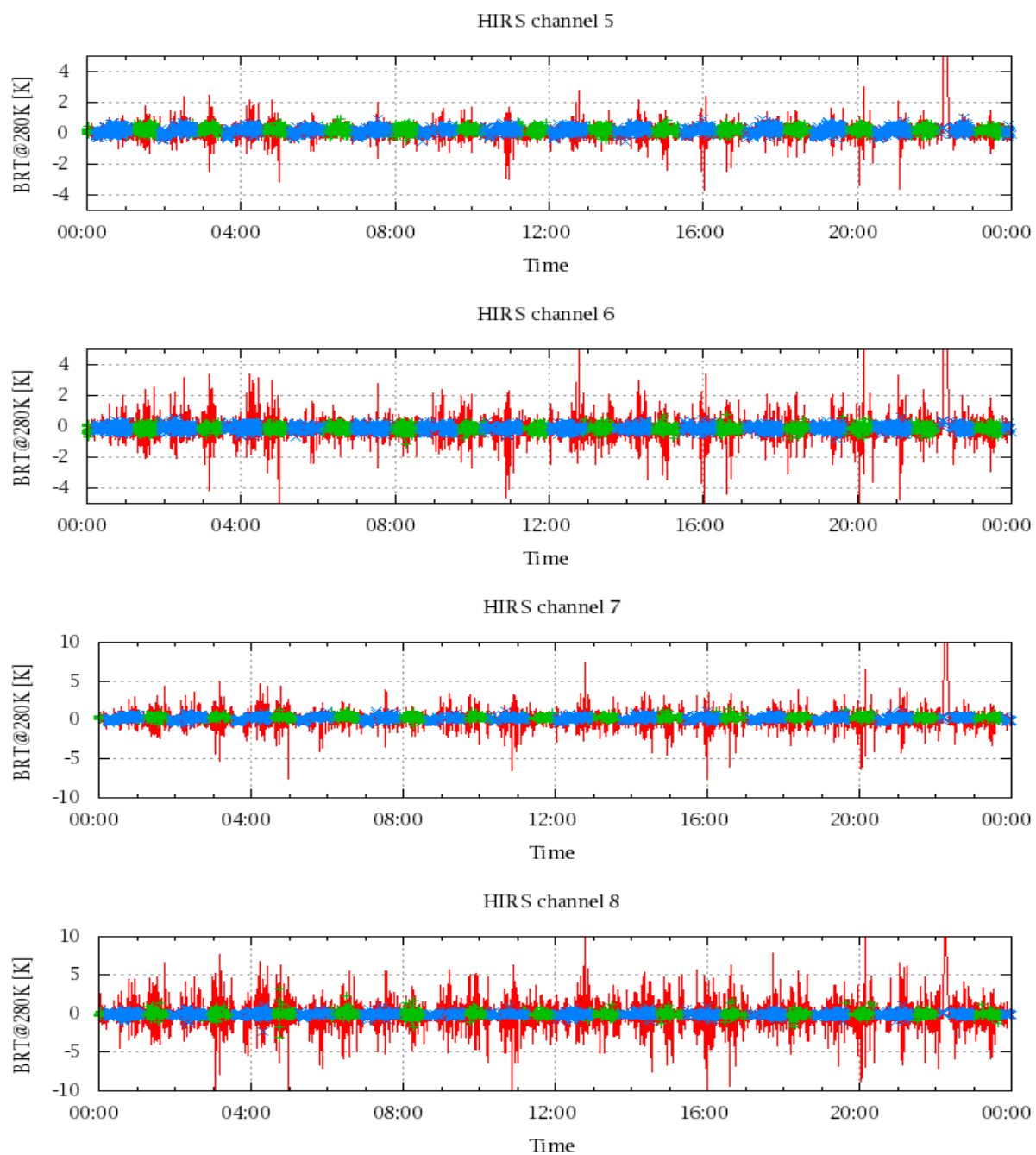


Figure 18: Radiance Differences in BRT

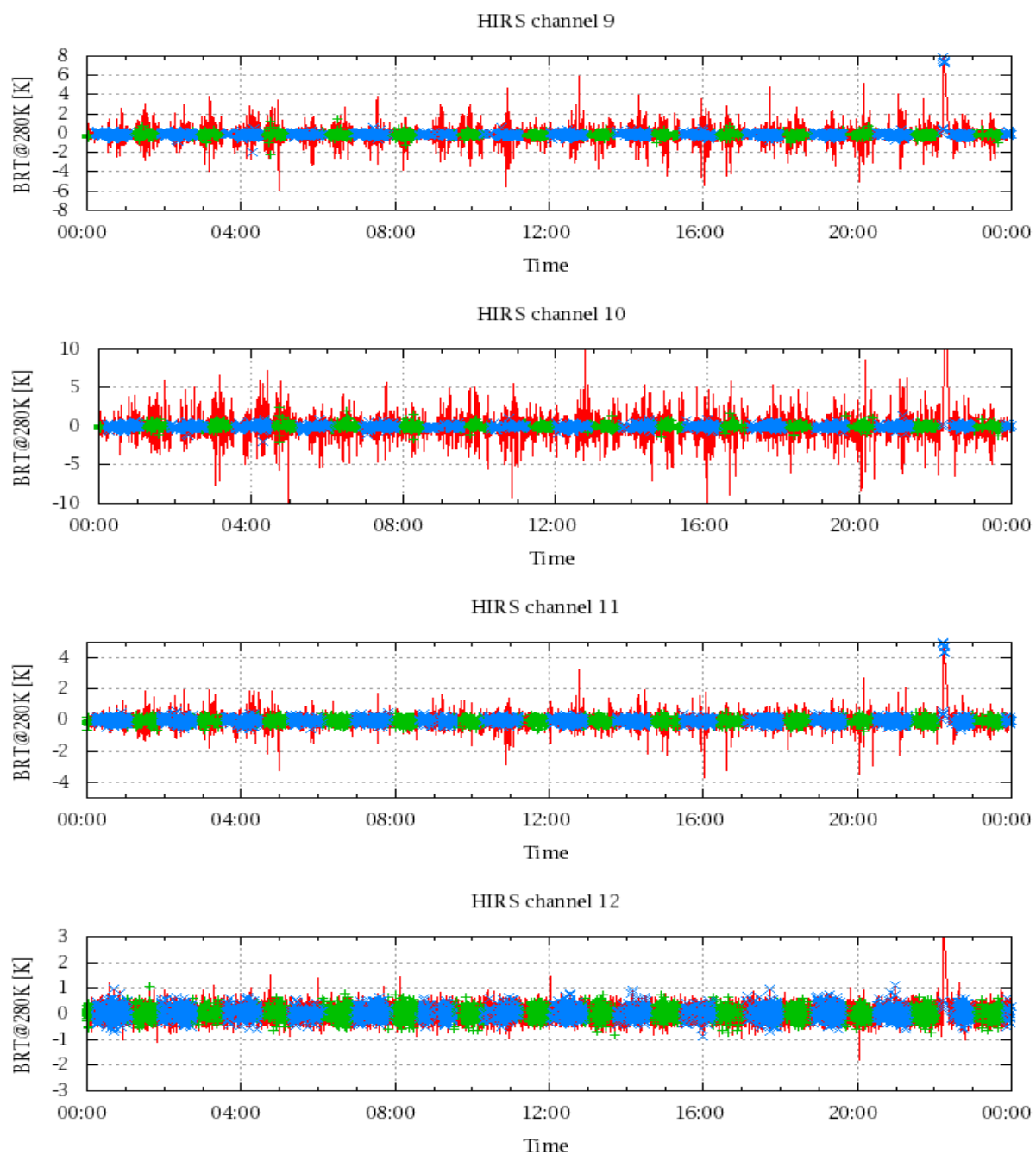


Figure 19: Radiance Differences in BRT

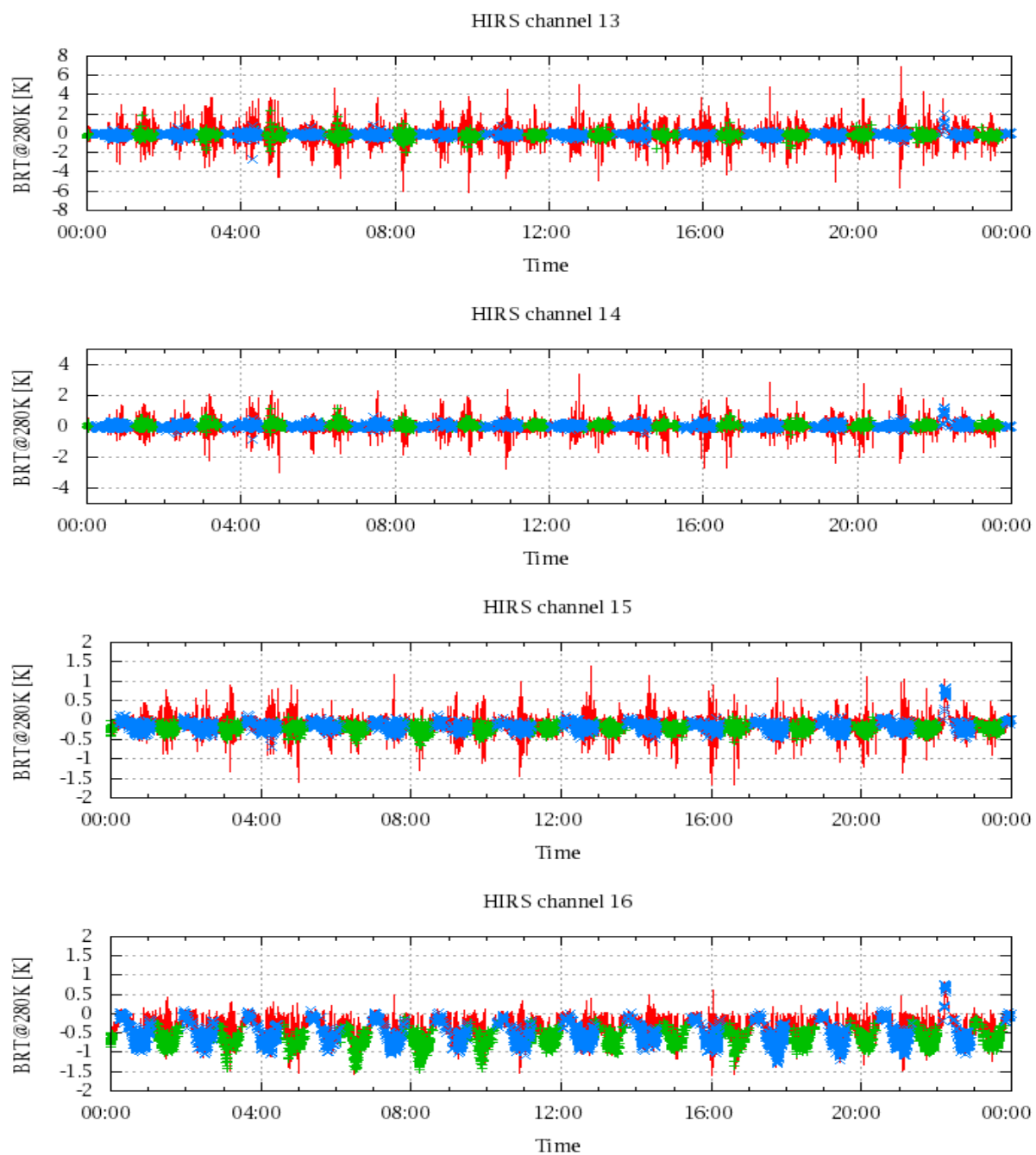


Figure 20: Radiance Differences in BRT

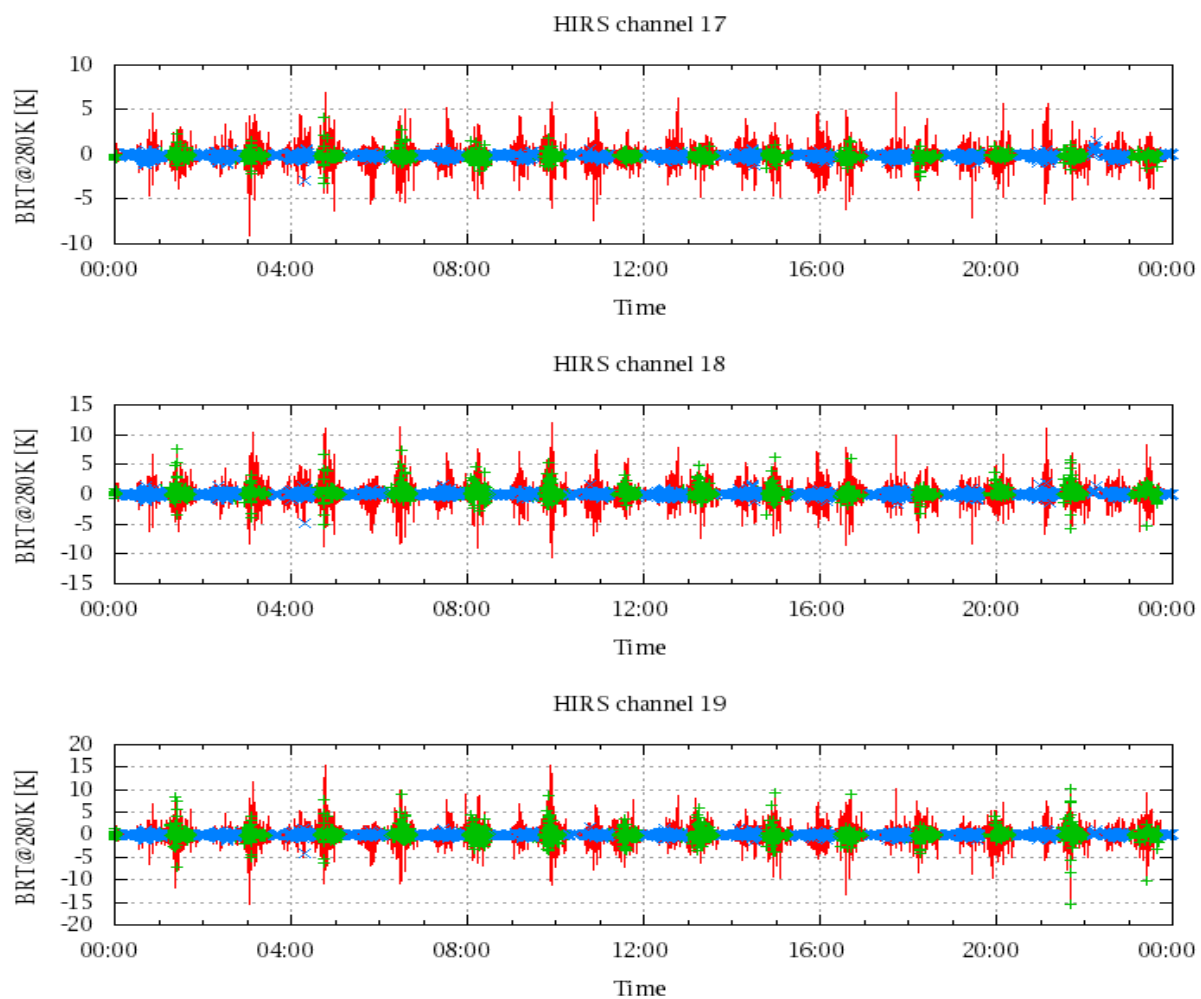


Figure 21: Radinace Differences in BRT