

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

09/03/2016 00:00:00 - 10/03/2016 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 09/03/2016 00:00:00 - 10/03/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 09/03/2016 00:00:00 - 10/03/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	467	-
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)	14441	14443	20160309132734.927	20160309132735.360
PX1 (130)	14460	14462	20160309132740.548	20160309132740.981
PX1 (130)	14547	14549	20160309132803.899	20160309132804.333
PX1 (130)	14580	14582	20160309132812.548	20160309132812.981
PX1 (130)	14584	14586	20160309132813.415	20160309132813.845
PX1 (130)	14602	14604	20160309132818.817	20160309132819.251
PX1 (130)	14778	14780	20160309132904.438	20160309132904.872
PX1 (130)	14795	14797	20160309132909.626	20160309132910.059
PX1 (130)	15023	15025	20160309133011.032	20160309133011.462
PX1 (130)	15032	15034	20160309133012.977	20160309133013.411
PX1 (130)	15056	15058	20160309133019.680	20160309133020.114
PX1 (130)	15058	15060	20160309133020.114	20160309133020.544
PX1 (130)	15069	15071	20160309133022.493	20160309133022.922
PX1 (130)	15071	15073	20160309133022.922	20160309133023.356
PX1 (130)	15082	15084	20160309133026.817	20160309133027.247
PX1 (130)	15105	15107	20160309133031.790	20160309133032.219
PX1 (130)	15118	15120	20160309133036.110	20160309133036.544
PX1 (130)	15134	15136	20160309133039.571	20160309133040.004

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	15207	15209	20160309133059.895	20160309133100.329
PX2 (135)	14397	14399	20160309132723.903	20160309132724.333
PX2 (135)	14433	14435	20160309132733.196	20160309132733.630
PX2 (135)	14446	14448	20160309132736.009	20160309132736.442
PX2 (135)	14554	14556	20160309132805.415	20160309132805.845
PX2 (135)	14643	14645	20160309132829.196	20160309132829.630
PX2 (135)	14645	14647	20160309132829.630	20160309132830.063
PX2 (135)	14647	14649	20160309132830.063	20160309132830.493
PX2 (135)	14649	14651	20160309132830.493	20160309132830.927
PX2 (135)	14653	14655	20160309132831.360	20160309132831.790
PX2 (135)	14809	14811	20160309132912.653	20160309132913.087
PX2 (135)	15071	15073	20160309133022.922	20160309133023.356
PX2 (135)	15073	15075	20160309133023.356	20160309133023.790
PX2 (135)	15082	15084	20160309133026.817	20160309133027.247
PX2 (135)	15084	15086	20160309133027.247	20160309133027.680
PX2 (135)	15109	15111	20160309133032.653	20160309133033.086
PX2 (135)	15111	15113	20160309133033.086	20160309133035.032
PX2 (135)	15113	15115	20160309133035.032	20160309133035.465
PX2 (135)	15118	15120	20160309133036.110	20160309133036.544
PX2 (135)	15120	15122	20160309133036.544	20160309133036.977
PX2 (135)	15127	15129	20160309133038.059	20160309133038.489
PX2 (135)	15129	15131	20160309133038.489	20160309133038.922
PX2 (135)	15134	15136	20160309133039.571	20160309133040.004
PX3 (140)	14413	14415	20160309132727.360	20160309132727.794
PX3 (140)	14425	14427	20160309132731.470	20160309132731.899
PX3 (140)	14438	14440	20160309132734.278	20160309132734.712
PX3 (140)	14554	14556	20160309132805.415	20160309132805.845
PX3 (140)	14631	14633	20160309132825.087	20160309132827.036
PX3 (140)	14633	14635	20160309132827.036	20160309132827.466
PX3 (140)	14635	14637	20160309132827.466	20160309132827.899
PX3 (140)	14637	14639	20160309132827.899	20160309132828.333
PX3 (140)	14639	14641	20160309132828.333	20160309132828.762
PX3 (140)	14641	14643	20160309132828.762	20160309132829.196
PX3 (140)	14643	14645	20160309132829.196	20160309132829.630
PX3 (140)	14661	14663	20160309132833.087	20160309132835.032
PX3 (140)	14913	14915	20160309132941.192	20160309132941.626
PX3 (140)	15035	15037	20160309133013.626	20160309133014.059
PX3 (140)	15044	15046	20160309133015.571	20160309133016.004
PX3 (140)	15059	15061	20160309133020.329	20160309133020.762
PX3 (140)	15075	15077	20160309133023.790	20160309133024.219
PX3 (140)	15086	15088	20160309133027.680	20160309133028.114
PX3 (140)	15113	15115	20160309133035.032	20160309133035.465
PX3 (140)	15122	15124	20160309133036.977	20160309133037.411
PX3 (140)	15129	15131	20160309133038.489	20160309133038.922
PX4 (145)	14394	14396	20160309132723.251	20160309132723.684
PX4 (145)	14413	14415	20160309132727.360	20160309132727.794
PX4 (145)	14430	14432	20160309132732.552	20160309132732.981
PX4 (145)	14526	14528	20160309132757.845	20160309132758.278
PX4 (145)	14542	14544	20160309132802.821	20160309132803.251
PX4 (145)	14573	14575	20160309132811.036	20160309132811.470
PX4 (145)	14620	14622	20160309132822.712	20160309132823.141
PX4 (145)	14628	14630	20160309132824.442	20160309132824.872
PX4 (145)	14630	14632	20160309132824.872	20160309132826.817
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	14661	14663	20160309132833.087	20160309132835.032
PX4 (145)	15035	15037	20160309133013.626	20160309133014.059
PX4 (145)	15061	15063	20160309133020.762	20160309133021.192
PX4 (145)	15063	15065	20160309133021.192	20160309133021.626
IMG (150)	10606	10608	20160309132723.251	20160309132723.684
IMG (150)	10651	10653	20160309132733.630	20160309132734.063
IMG (150)	10656	10658	20160309132734.712	20160309132735.145
IMG (150)	10826	10828	20160309132814.712	20160309132815.141
IMG (150)	10830	10832	20160309132815.575	20160309132816.009
IMG (150)	10837	10839	20160309132817.091	20160309132817.735
IMG (150)	10848	10850	20160309132820.118	20160309132820.548
IMG (150)	10852	10854	20160309132820.981	20160309132821.415
IMG (150)	10854	10856	20160309132821.415	20160309132821.845
IMG (150)	10856	10858	20160309132821.845	20160309132822.278
IMG (150)	10925	10927	20160309132838.059	20160309132838.493
IMG (150)	11327	11329	20160309133012.762	20160309133013.192
IMG (150)	11350	11352	20160309133018.169	20160309133018.813
IMG (150)	11355	11357	20160309133019.465	20160309133019.895
IMG (150)	11363	11365	20160309133021.192	20160309133021.626
IMG (150)	11408	11410	20160309133031.571	20160309133032.004
IMG (150)	11456	11458	20160309133043.247	20160309133043.680
IMG (150)	11586	11588	20160309133113.516	20160309133114.165
VER (160)	11742	11745	20160309132809.087	20160309132817.091
VER (160)	11749	11752	20160309132825.087	20160309132825.087
VER (160)	11754	11757	20160309132833.087	20160309132833.087
VER (160)	11760	11762	20160309132841.087	20160309132841.087
VER (160)	11813	11815	20160309133009.087	20160309133009.087
VER (160)	11815	11817	20160309133009.087	20160309133009.087
VER (160)	11827	11829	20160309133025.086	20160309133033.086
VER (160)	11829	11832	20160309133033.086	20160309133033.086
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
09/03/2016 00:00:06	-	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	467	-
GQisFlagQual set (PX1)	99.61 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.62 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

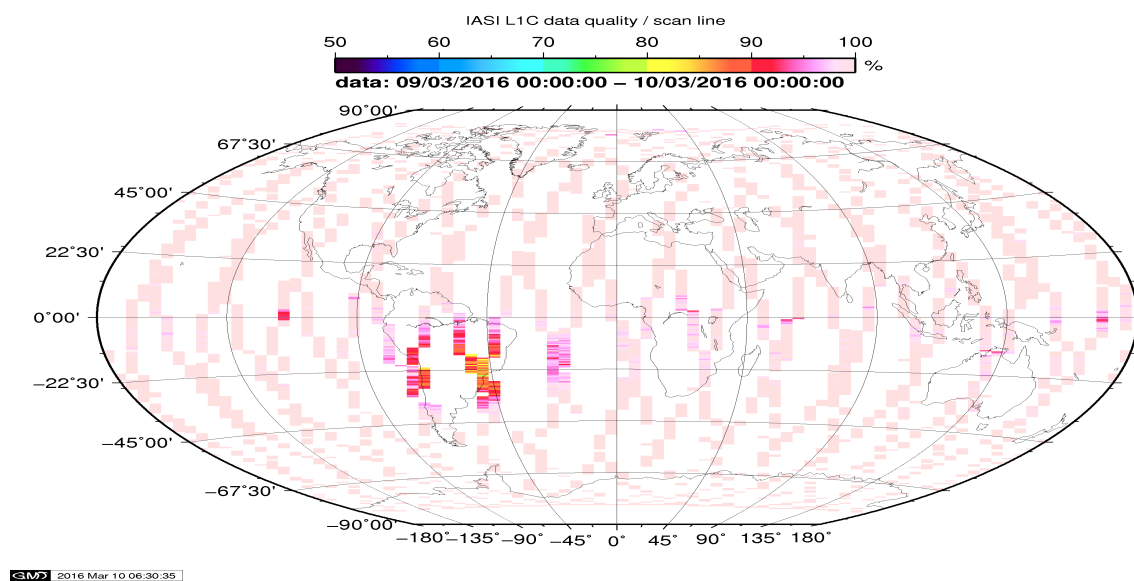


Figure 1: L1C data quality

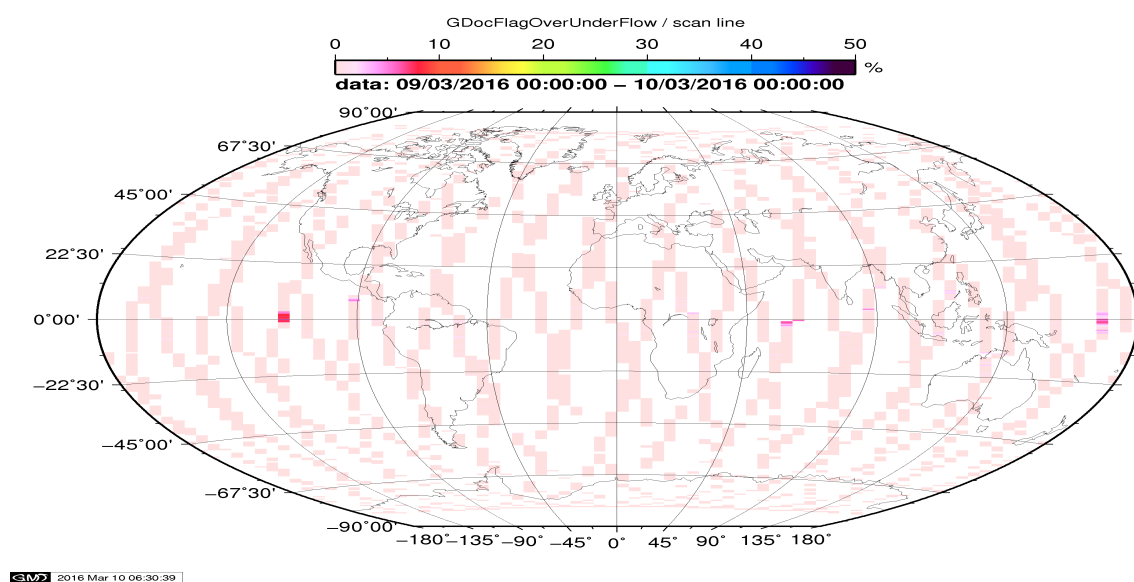


Figure 2: Flag of Over and Under Flows

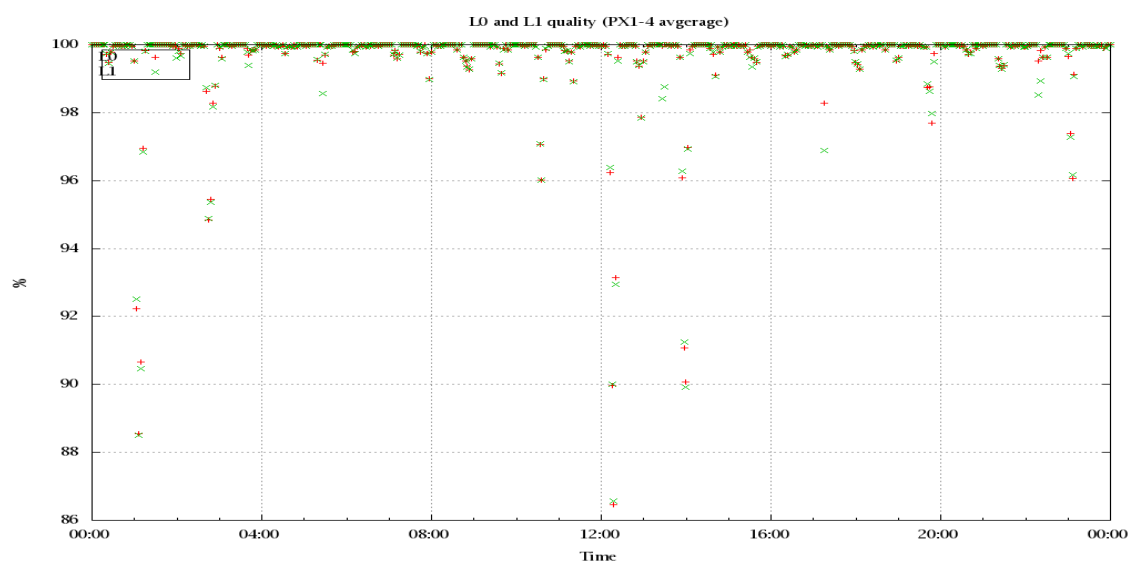


Figure 3: Level 0 and 1C overall quality

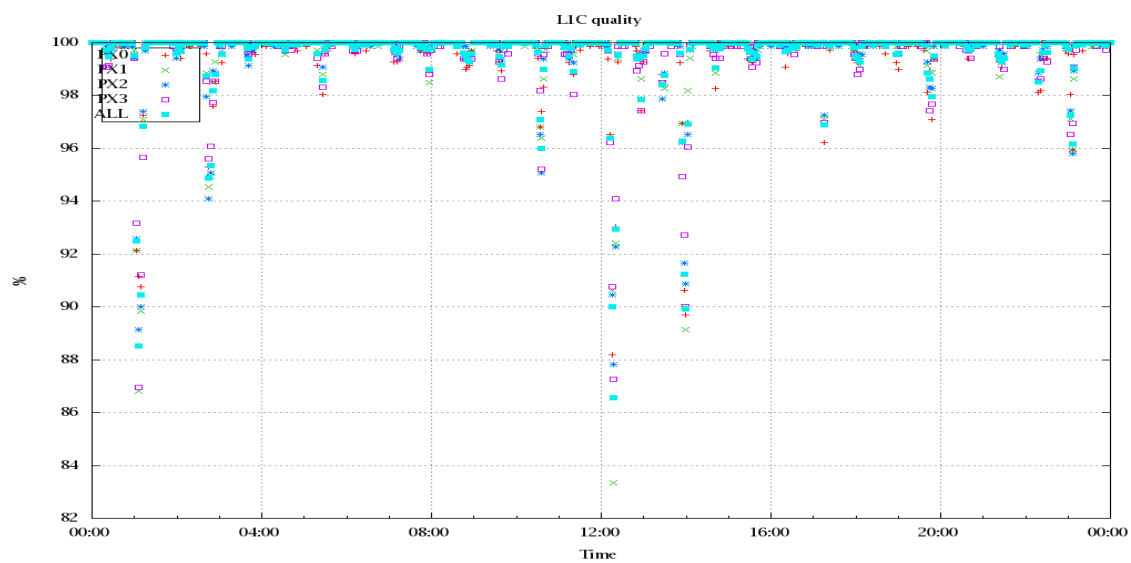


Figure 4: Level 1C quality

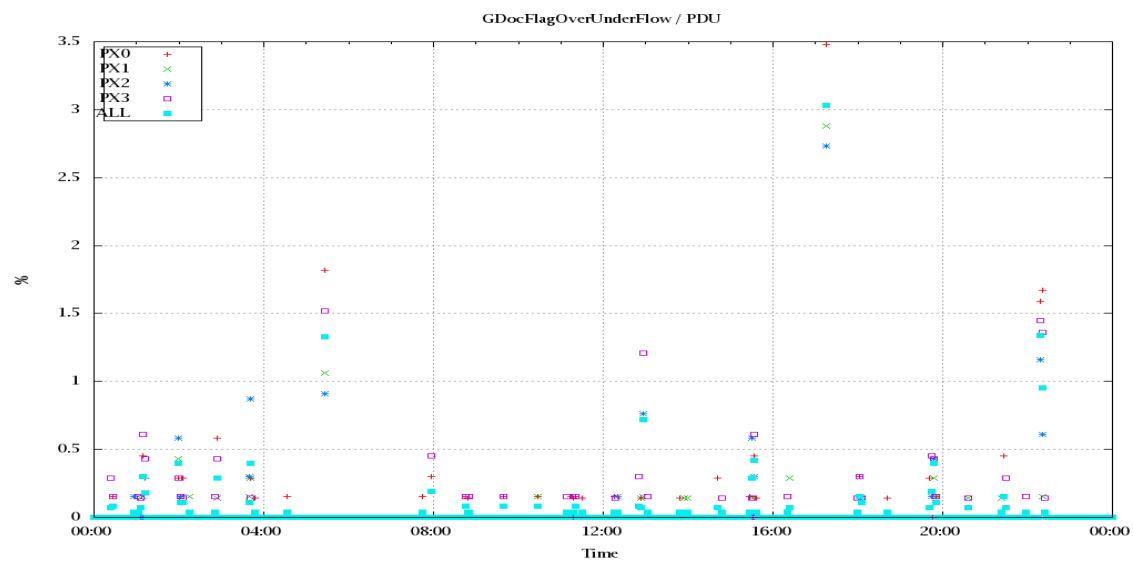


Figure 5: OverUnderFlowFlag timeseries

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.

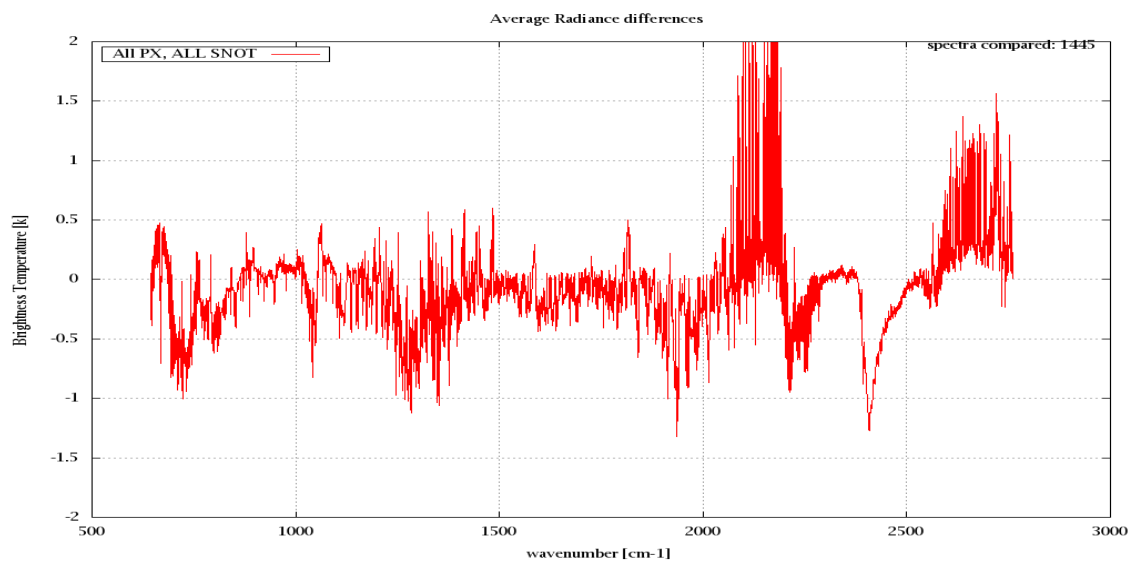


Figure 6: Average Radiance differences: OBS-CAL

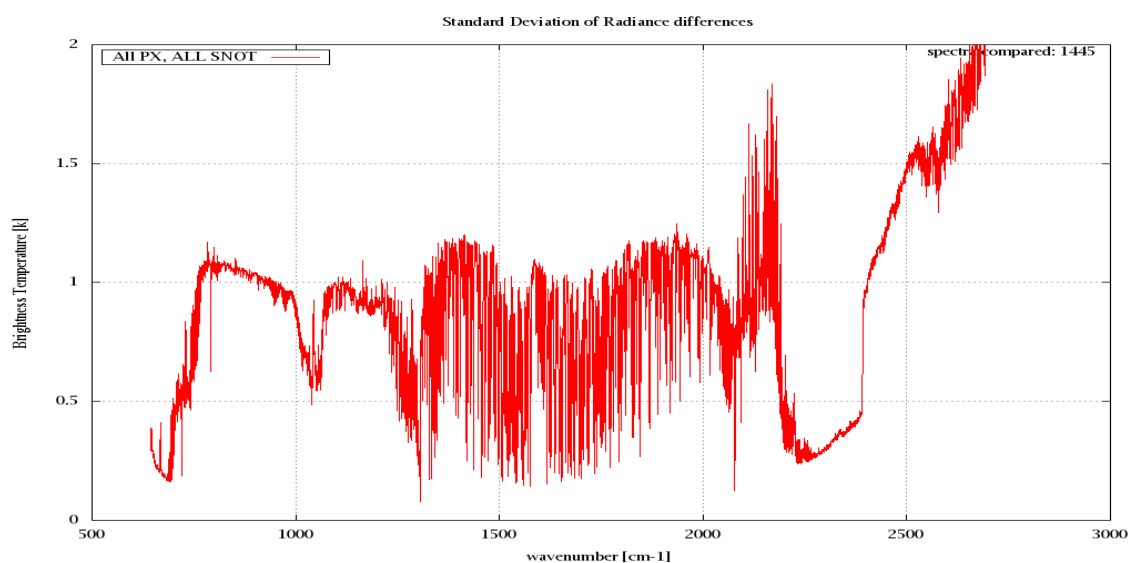


Figure 7: Standard Deviation of Radiance differences

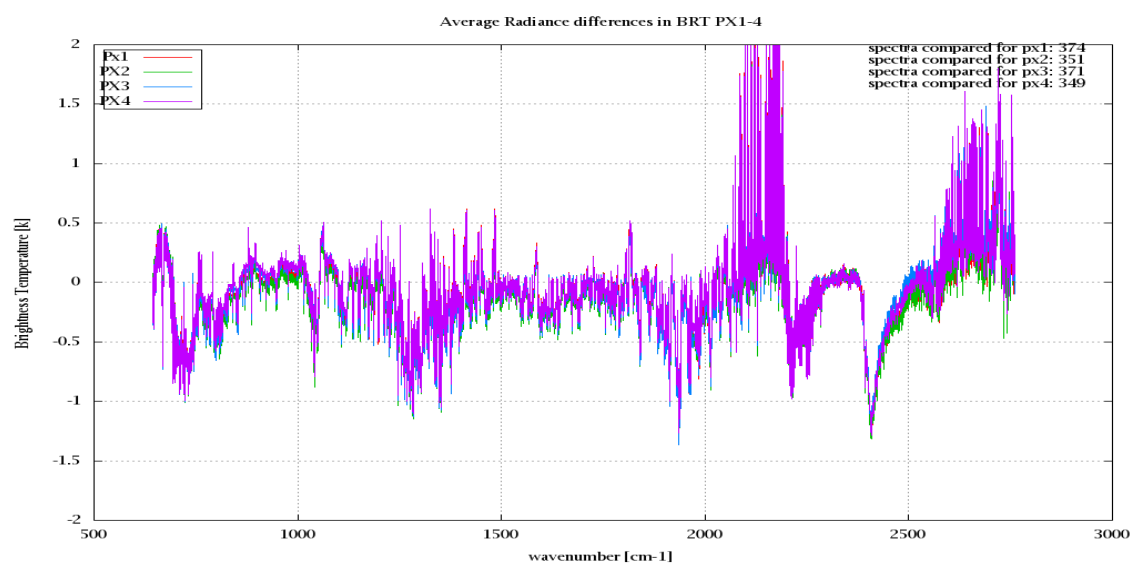


Figure 8: Average Radiance differences: OBS-CAL

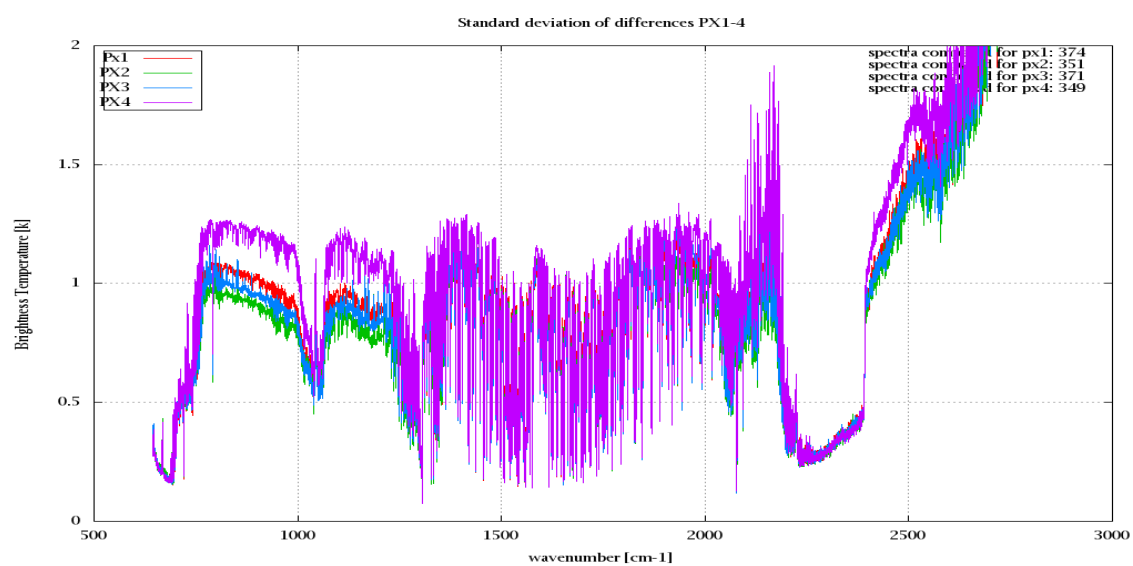


Figure 9: Standard Deviation of Radiance differences

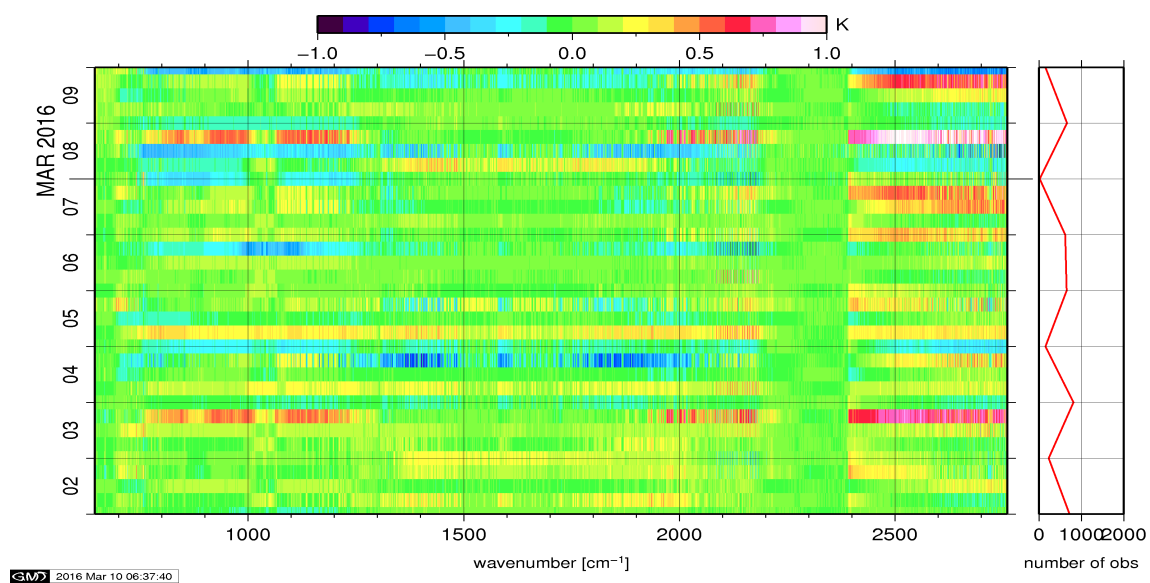


Figure 10: Radiance Anomaly in BRT: All Channels

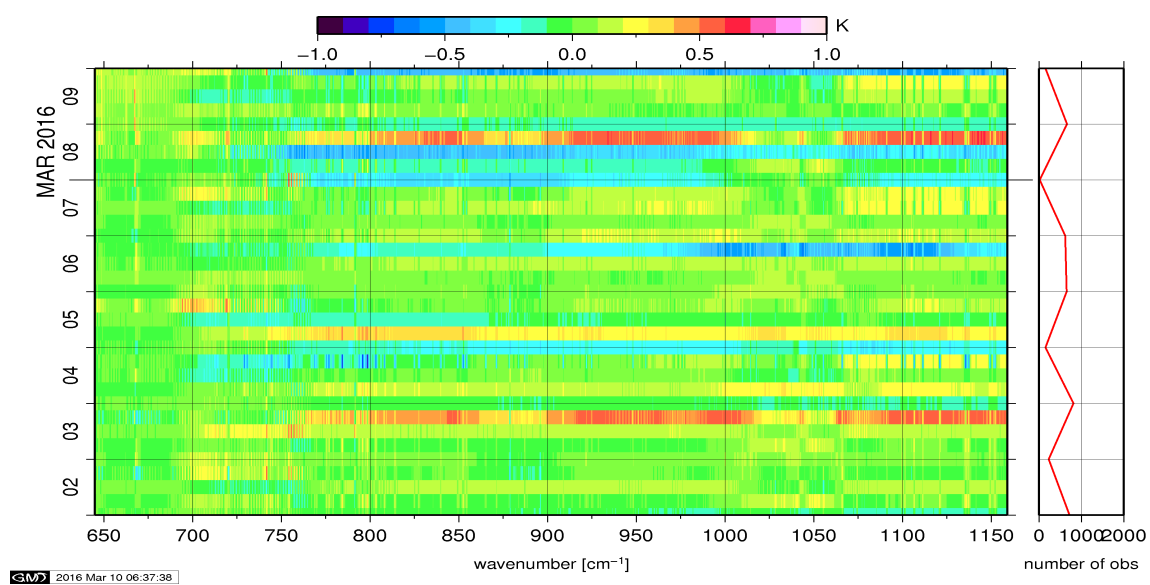


Figure 11: Radiance Anomaly in BRT: IASI Band 1

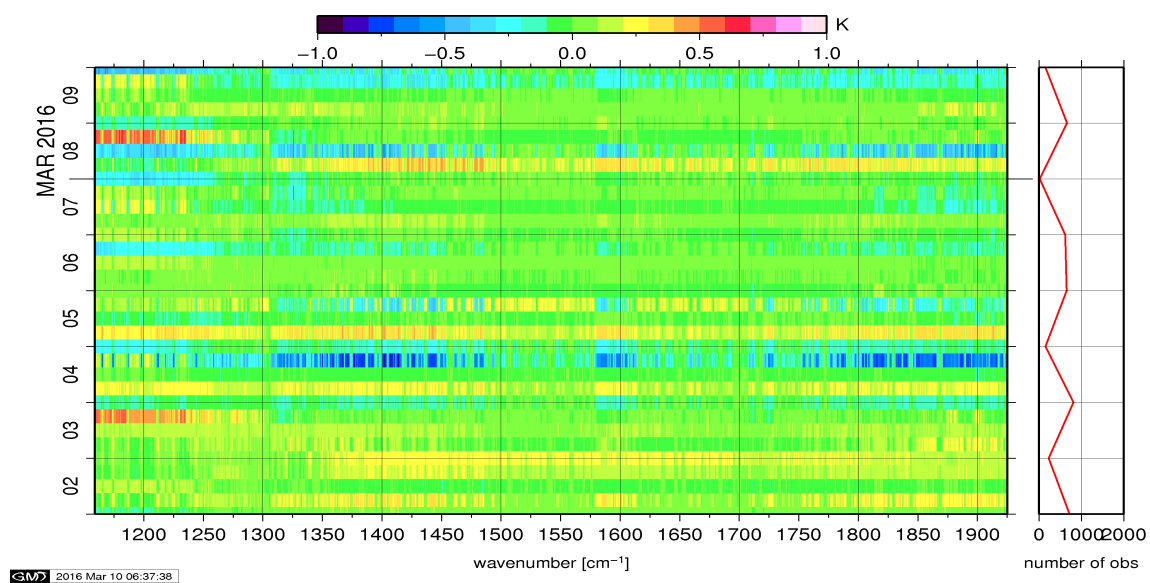


Figure 12: Radiance Anomaly in BRT: IASI Band 2

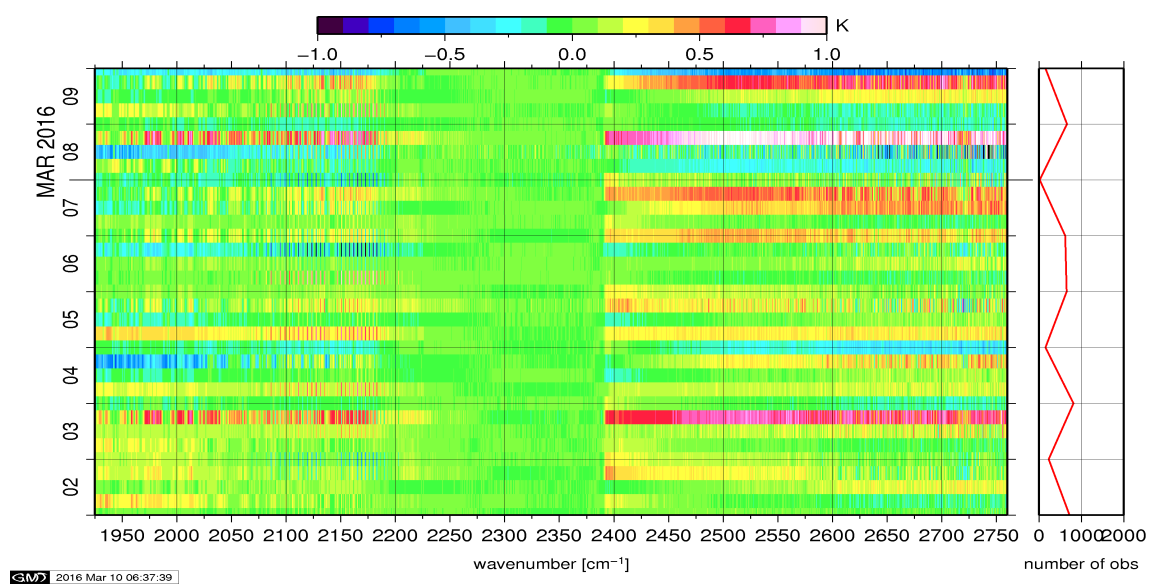


Figure 13: Radiance Anomaly in BRT: IASI Band 3

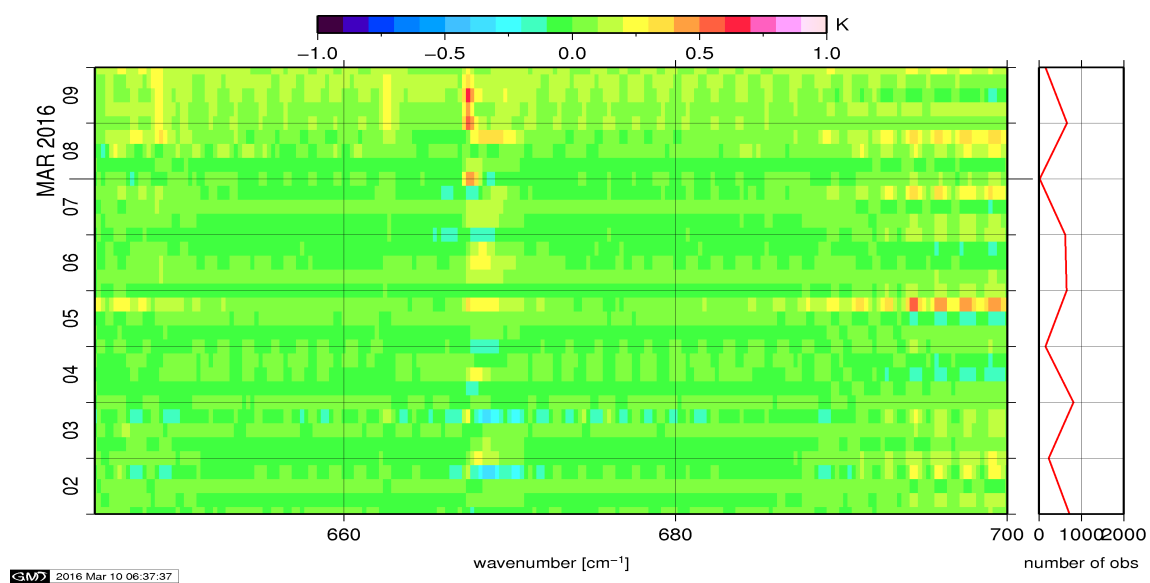


Figure 14: Radiance Anomaly in BRT: CO2 14

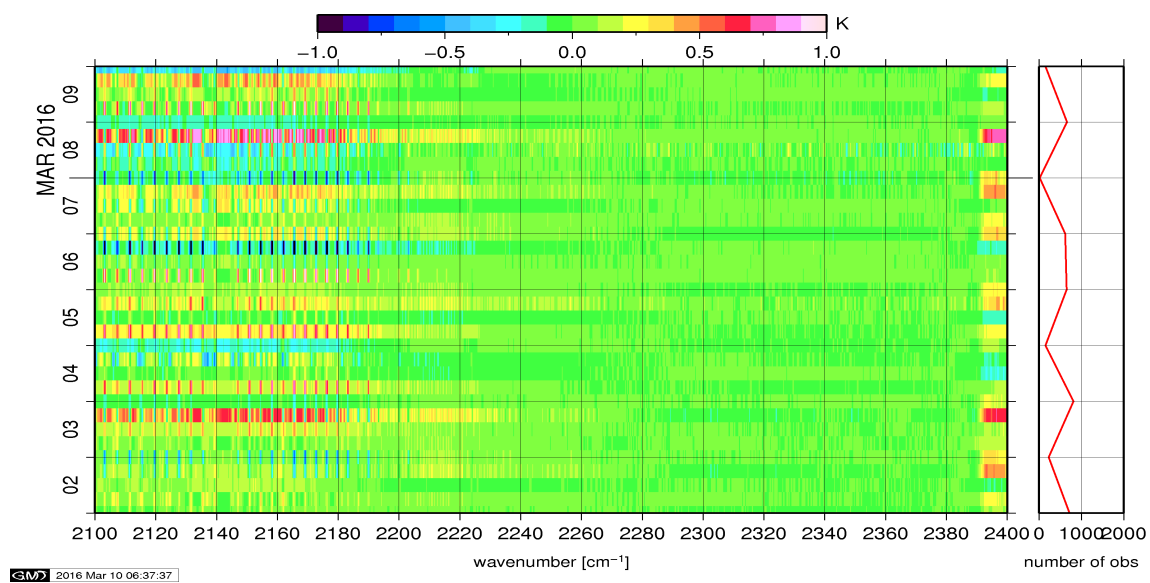


Figure 15: Radiance Anomaly in BRT: CO2 4.3

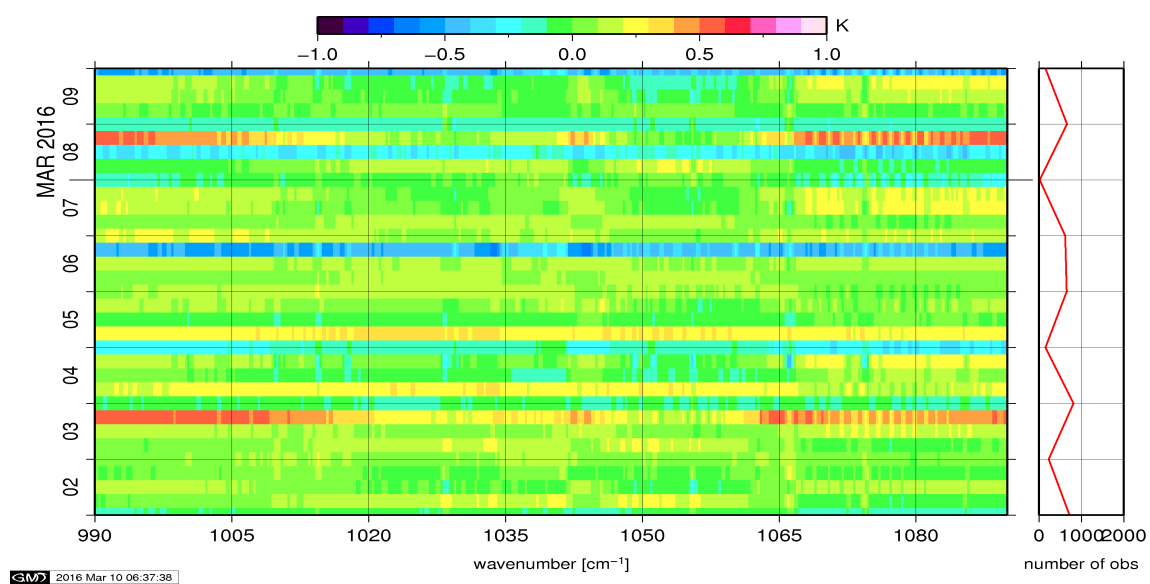


Figure 16: Radiance Anomaly in BRT: O3

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.

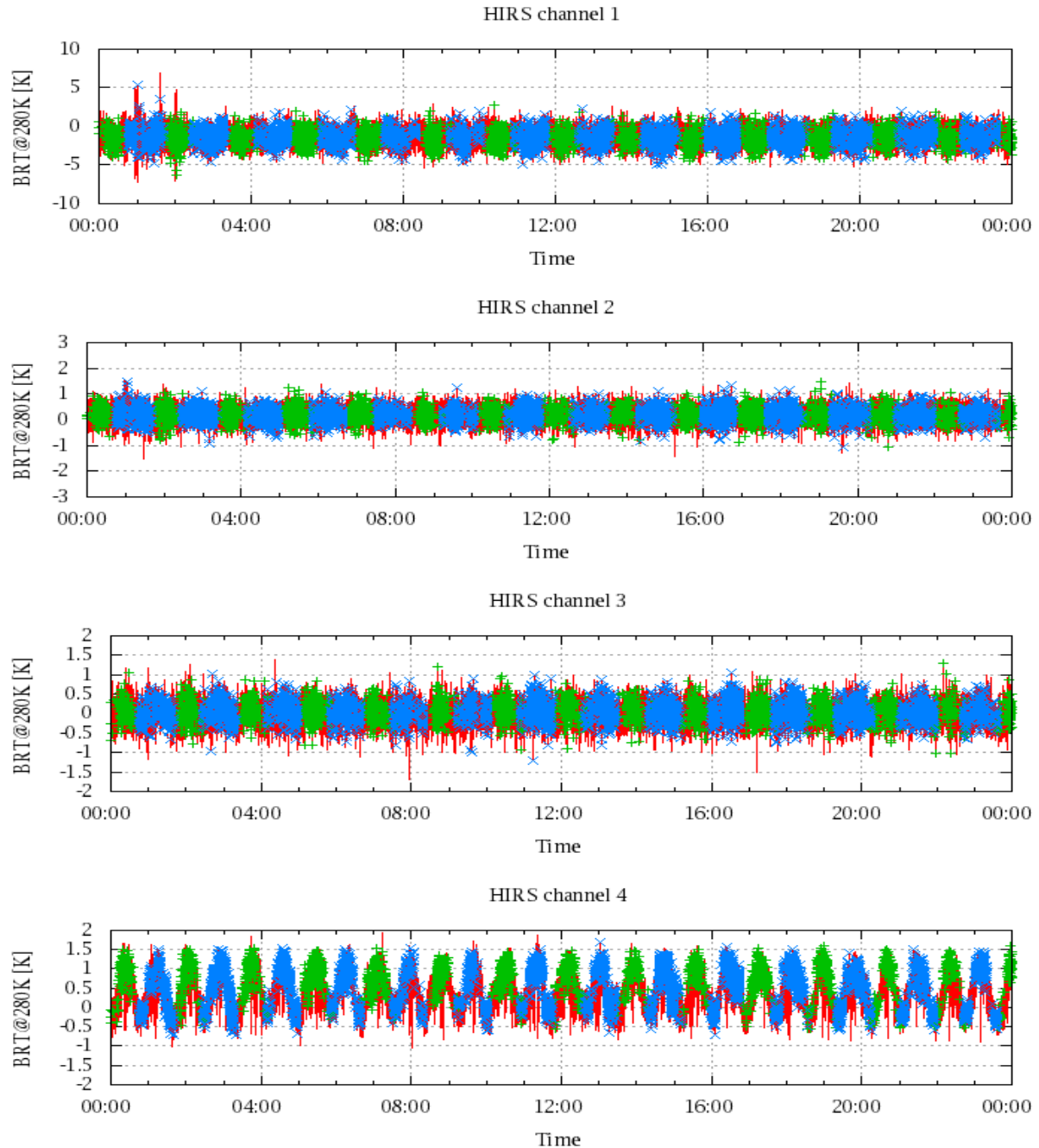


Figure 17: Radiance Differences in BRT

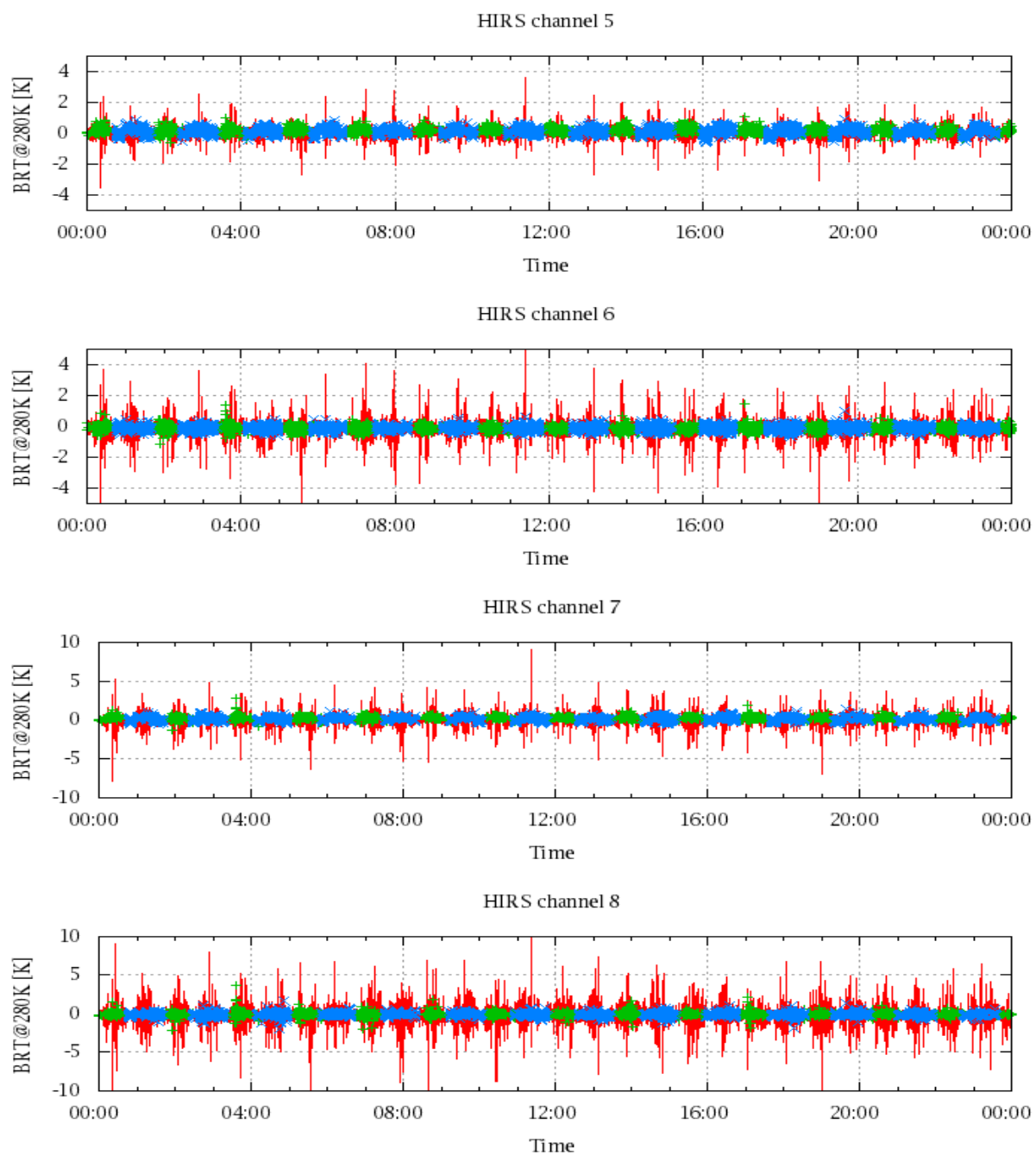


Figure 18: Radiance Differences in BRT

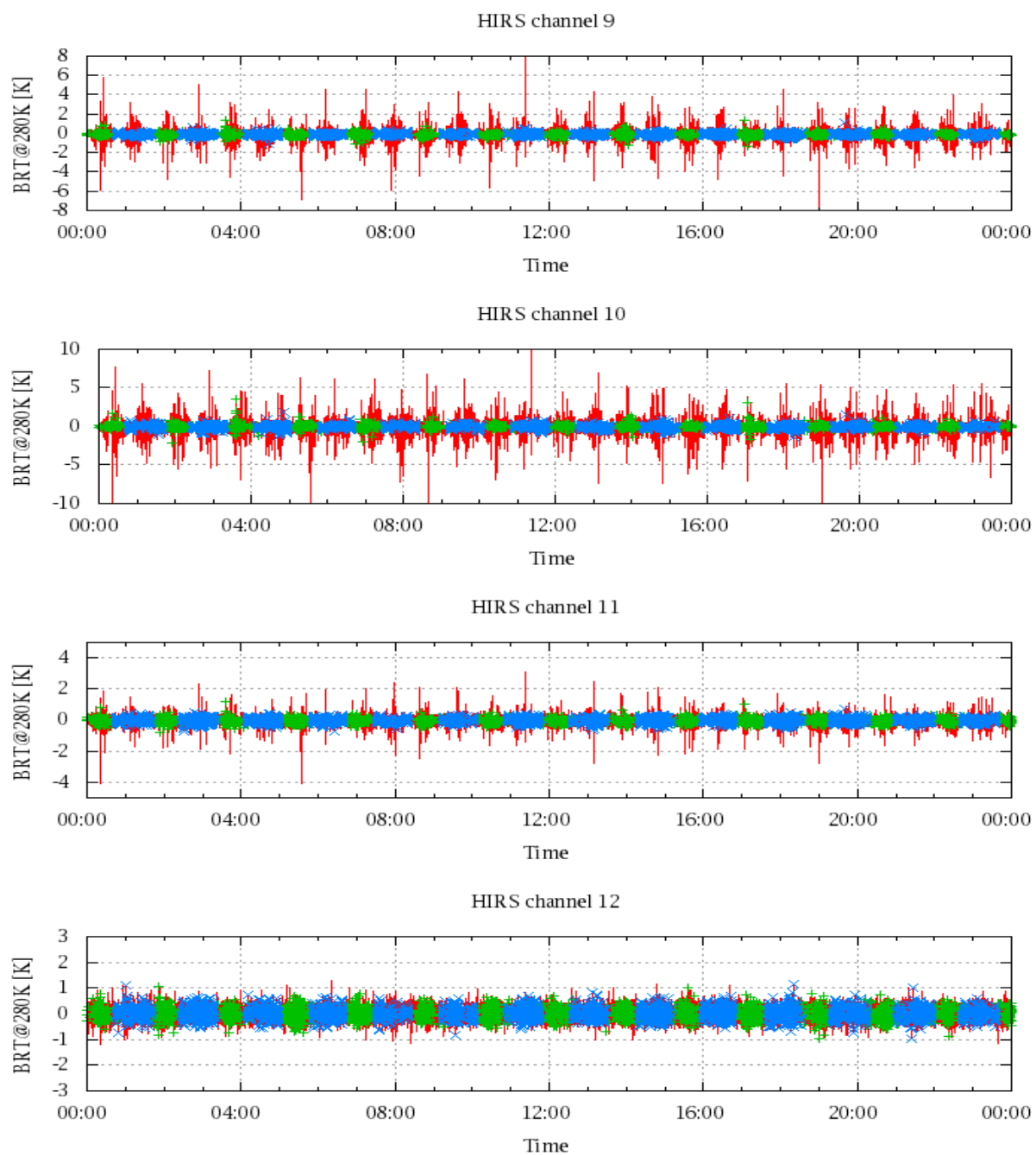


Figure 19: Radiance Differences in BRT

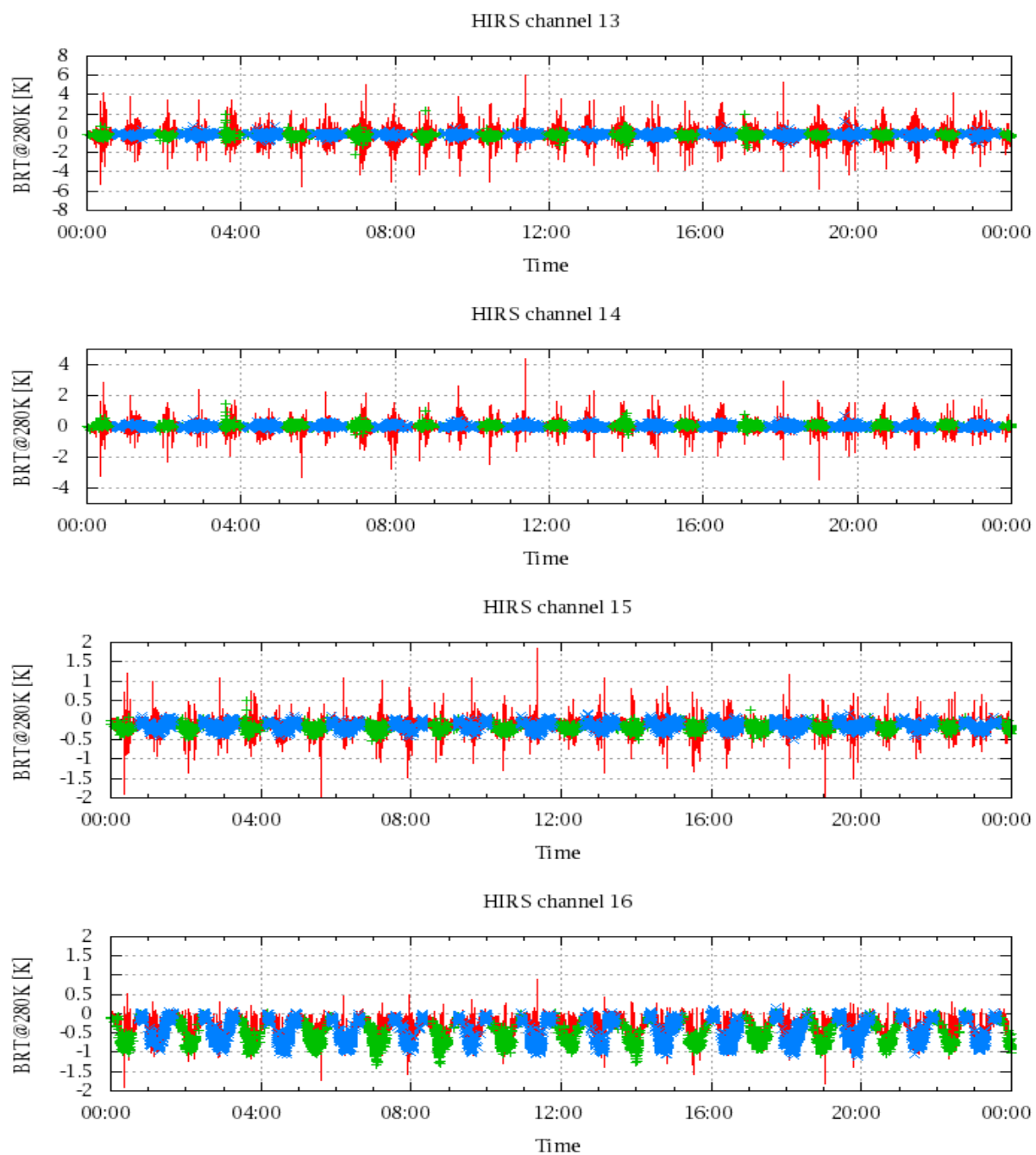


Figure 20: Radiance Differences in BRT

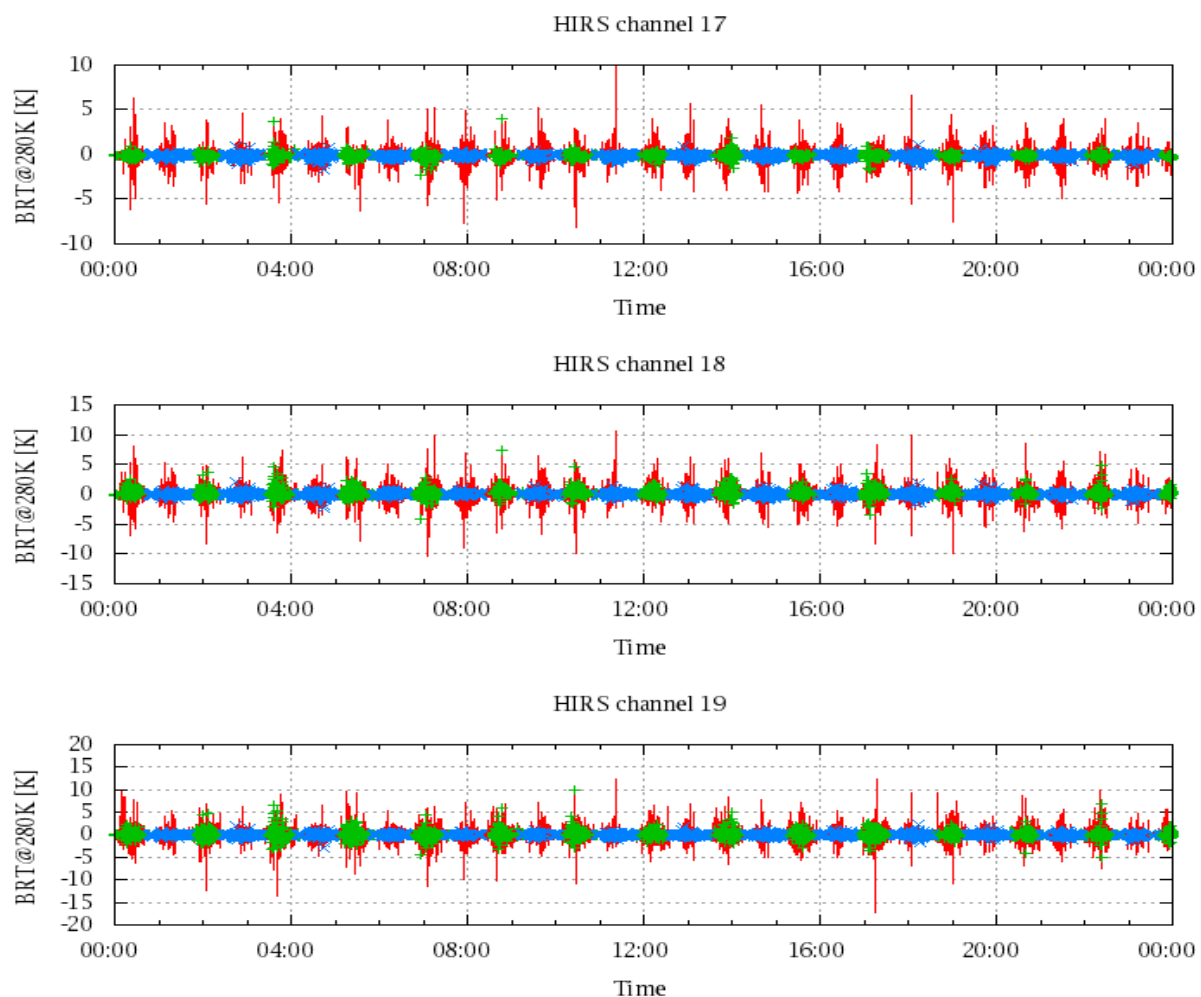


Figure 21: Radinace Differences in BRT