

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

30/03/2018 00:00:00 - 31/03/2018 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 30/03/2018 00:00:00 - 31/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 30/03/2018 00:00:00 - 31/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	476	-
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)	1056	1130	20180330064958.747	20180330065019.286
PX1 (130)	2160	2357	20180330125859.245	20180330125950.916
PX1 (130)	6936	6981	20180330143301.388	20180330143314.146
PX1 (130)	7055	7106	20180330143333.173	20180330143347.228
PX1 (130)	7365	7400	20180330143455.333	20180330143505.927
PX1 (130)	7425	7495	20180330143511.333	20180330143531.009
PX1 (130)	12984	13170	20180330161243.672	20180330161332.969
PX1 (130)	3037	3086	20180330175409.702	20180330175421.807
PX1 (130)	3513	3609	20180330175615.319	20180330175642.127
PX1 (130)	15719	15763	20180330211609.687	20180330211620.710
PX2 (135)	1056	1129	20180330064958.747	20180330065019.071
PX2 (135)	2160	2357	20180330125859.245	20180330125950.916
PX2 (135)	6936	6981	20180330143301.388	20180330143314.146
PX2 (135)	7054	7105	20180330143332.959	20180330143347.013
PX2 (135)	7365	7400	20180330143455.333	20180330143505.927
PX2 (135)	7425	7495	20180330143511.333	20180330143531.009
PX2 (135)	12984	13170	20180330161243.672	20180330161332.969
PX2 (135)	3037	3085	20180330175409.702	20180330175421.592

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	3513	3609	20180330175615.319	20180330175642.127
PX2 (135)	15719	15763	20180330211609.687	20180330211620.710
PX3 (140)	1056	1129	20180330064958.747	20180330065019.071
PX3 (140)	2160	2357	20180330125859.245	20180330125950.916
PX3 (140)	6936	6981	20180330143301.388	20180330143314.146
PX3 (140)	7054	7105	20180330143332.959	20180330143347.013
PX3 (140)	7365	7400	20180330143455.333	20180330143505.927
PX3 (140)	7425	7494	20180330143511.333	20180330143530.790
PX3 (140)	12984	13170	20180330161243.672	20180330161332.969
PX3 (140)	3037	3085	20180330175409.702	20180330175421.592
PX3 (140)	3513	3609	20180330175615.319	20180330175642.127
PX3 (140)	15719	15762	20180330211609.687	20180330211620.496
PX4 (145)	1056	1129	20180330064958.747	20180330065019.071
PX4 (145)	2160	2357	20180330125859.245	20180330125950.916
PX4 (145)	6936	6981	20180330143301.388	20180330143314.146
PX4 (145)	7054	7105	20180330143332.959	20180330143347.013
PX4 (145)	7365	7400	20180330143455.333	20180330143505.927
PX4 (145)	7425	7494	20180330143511.333	20180330143530.790
PX4 (145)	12983	13170	20180330161243.457	20180330161332.969
PX4 (145)	3037	3085	20180330175409.702	20180330175421.592
PX4 (145)	3513	3609	20180330175615.319	20180330175642.127
PX4 (145)	15719	15762	20180330211609.687	20180330211620.496
IMG (150)	6531	6617	20180330064958.528	20180330065019.071
IMG (150)	2324	2544	20180330125859.245	20180330125950.702
IMG (150)	9919	9973	20180330143301.173	20180330143314.146
IMG (150)	10054	10113	20180330143332.959	20180330143347.013
IMG (150)	10405	10447	20180330143455.333	20180330143505.712
IMG (150)	10473	10554	20180330143511.333	20180330143530.790
IMG (150)	2575	2785	20180330161243.457	20180330161332.754
IMG (150)	12056	12109	20180330175409.483	20180330175421.592
IMG (150)	12593	12705	20180330175615.319	20180330175642.127
IMG (150)	14414	14462	20180330211609.468	20180330211620.496
VER (160)	2831	2836	20180330065019.286	20180330065019.286
VER (160)	2836	2841	20180330065019.286	20180330065019.286
VER (160)	2841	2832	20180330065019.286	20180330065019.286
VER (160)	2832	2837	20180330065019.286	20180330065019.286
VER (160)	2837	2842	20180330065019.286	20180330065019.286
VER (160)	2842	2833	20180330065019.286	20180330065019.286
VER (160)	2833	2838	20180330065019.286	20180330065019.286
VER (160)	2838	2843	20180330065019.286	20180330065019.286
VER (160)	2843	2834	20180330065019.286	20180330065019.286
VER (160)	2834	2839	20180330065019.286	20180330065019.286
VER (160)	2839	2844	20180330065019.286	20180330065019.286
VER (160)	2844	2835	20180330065019.286	20180330065019.286
VER (160)	2835	2840	20180330065019.286	20180330065019.286
VER (160)	2840	2845	20180330065019.286	20180330065019.286
VER (160)	286	317	20180330125855.350	20180330125951.350
VER (160)	3811	3822	20180330143255.338	20180330143319.337
VER (160)	3831	3842	20180330143327.337	20180330143351.337
VER (160)	3881	3892	20180330143447.333	20180330143511.333
VER (160)	3892	3907	20180330143511.333	20180330143535.333
VER (160)	7551	7582	20180330161239.348	20180330161335.348
VER (160)	11356	11362	20180330175407.323	20180330175423.323

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	11433	11452	20180330175615.319	20180330175647.319
VER (160)	2547	2553	20180330211607.304	20180330211623.304
AUX (180)	40	47	20180330125855.784	20180330125951.780
AUX (180)	745	748	20180330143255.767	20180330143319.767
AUX (180)	749	752	20180330143327.767	20180330143351.767
AUX (180)	759	765	20180330143447.767	20180330143535.763
AUX (180)	1493	1500	20180330161239.781	20180330161335.781
AUX (180)	2254	2256	20180330175407.756	20180330175423.756
AUX (180)	2269	2274	20180330175607.752	20180330175647.752
AUX (180)	3769	3771	20180330211607.738	20180330211623.738

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
30/03/2018 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	476	-
GQisFlagQual set (PX1)	99.51 %	-
GQisFlagQual set (PX2)	99.57 %	-
GQisFlagQual set (PX3)	99.58 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

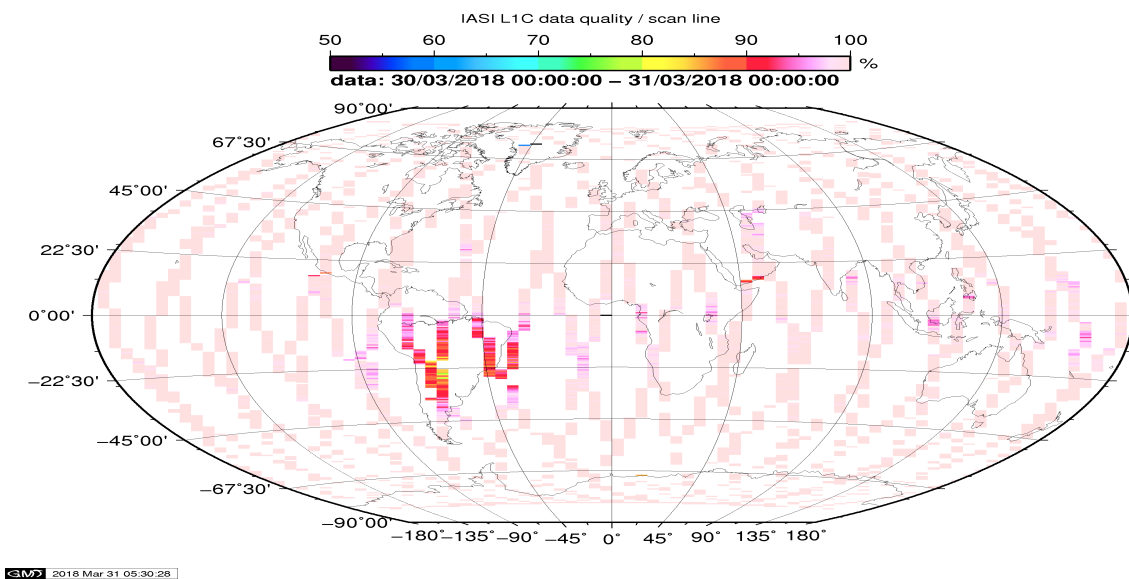


Figure 1: L1C data quality

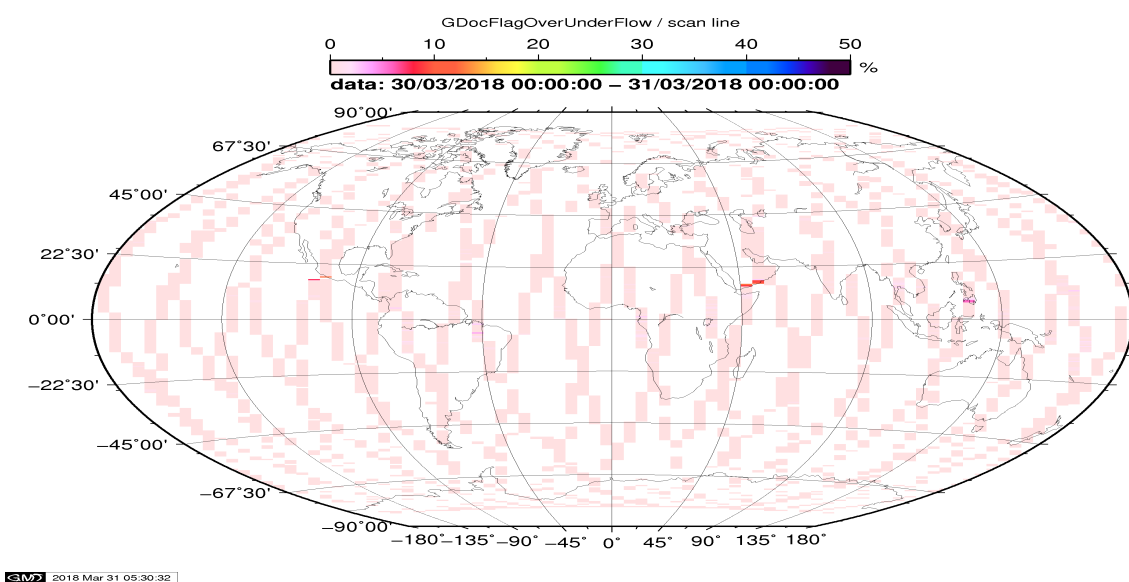


Figure 2: Flag of Over and Under Flows

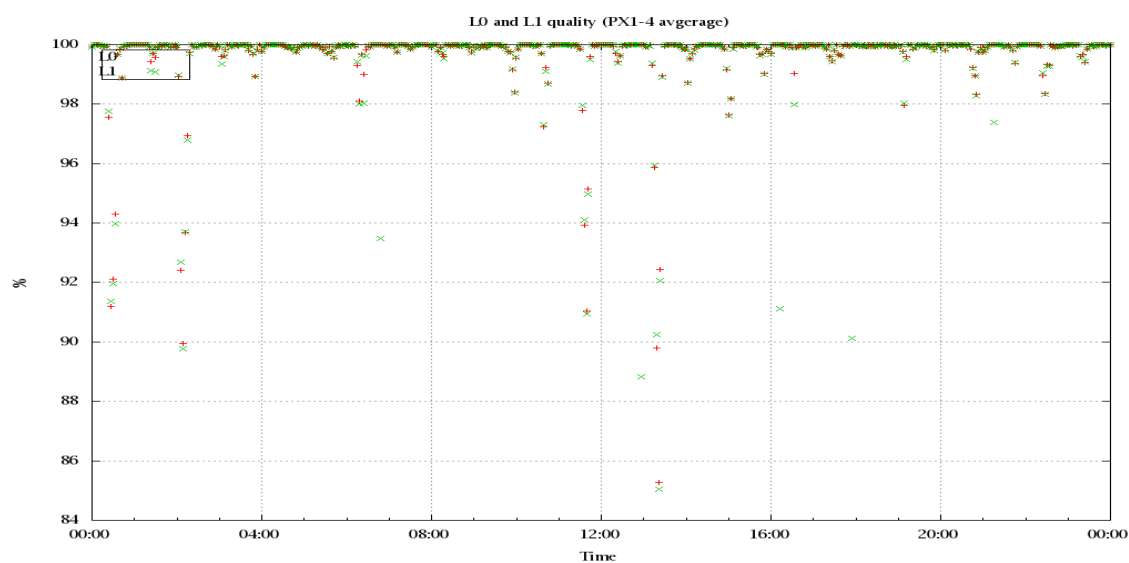


Figure 3: Level 0 and 1C overall quality

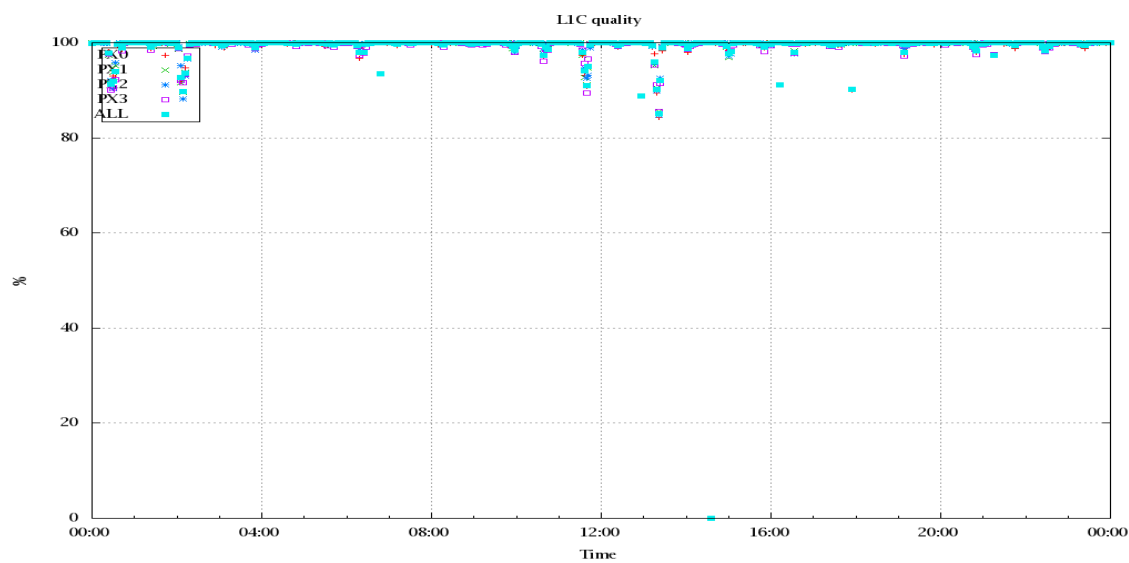


Figure 4: Level 1C quality

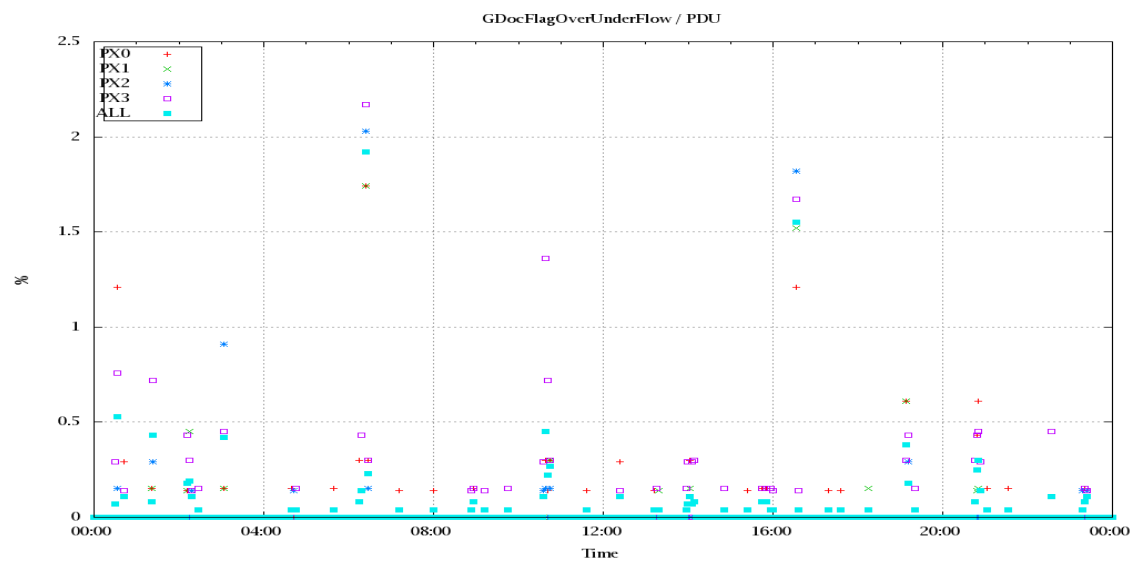


Figure 5: OverUnderFlowFlag timeseries

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.

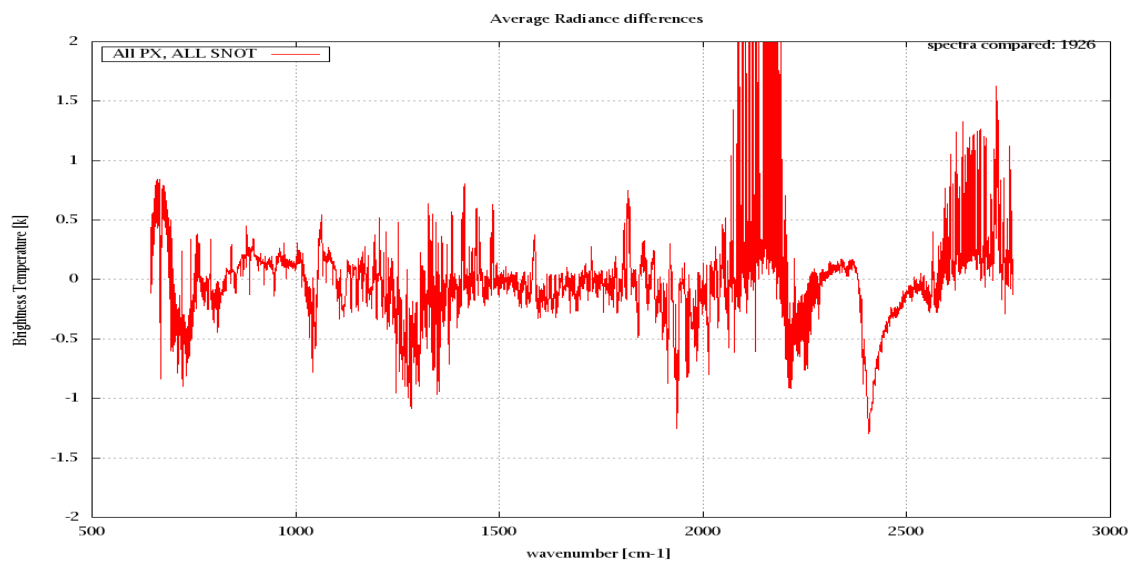


Figure 6: Average Radiance differences: OBS-CAL

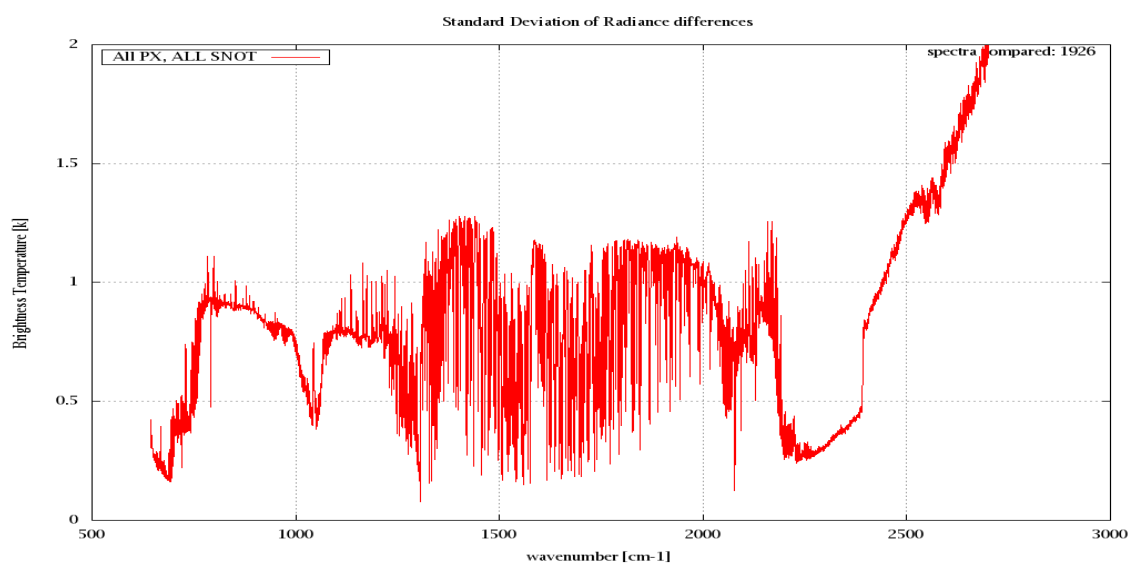


Figure 7: Standard Deviation of Radiance differences

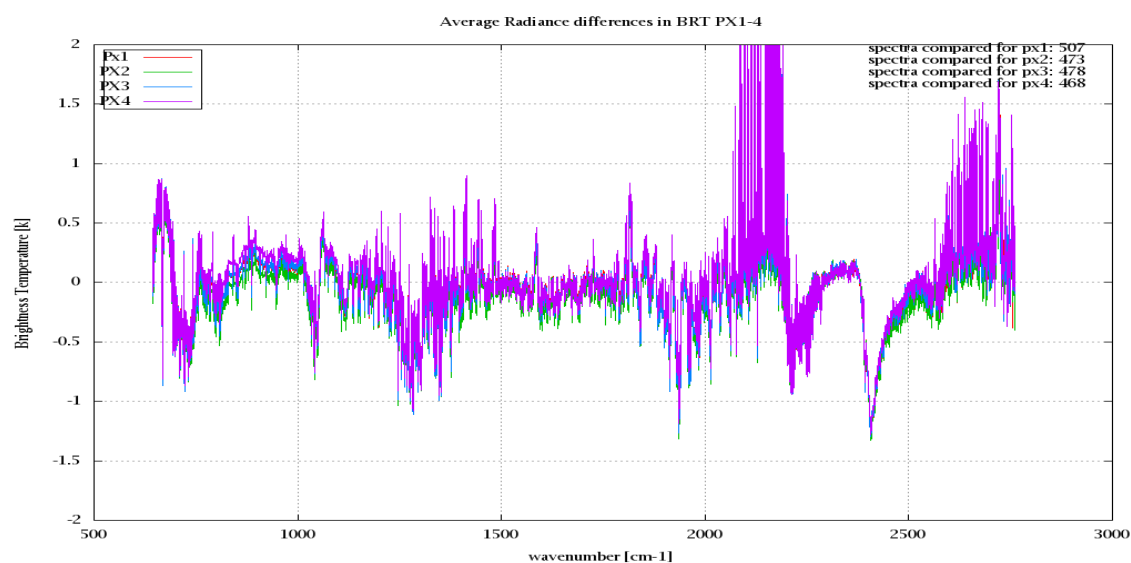


Figure 8: Average Radiance differences: OBS-CAL

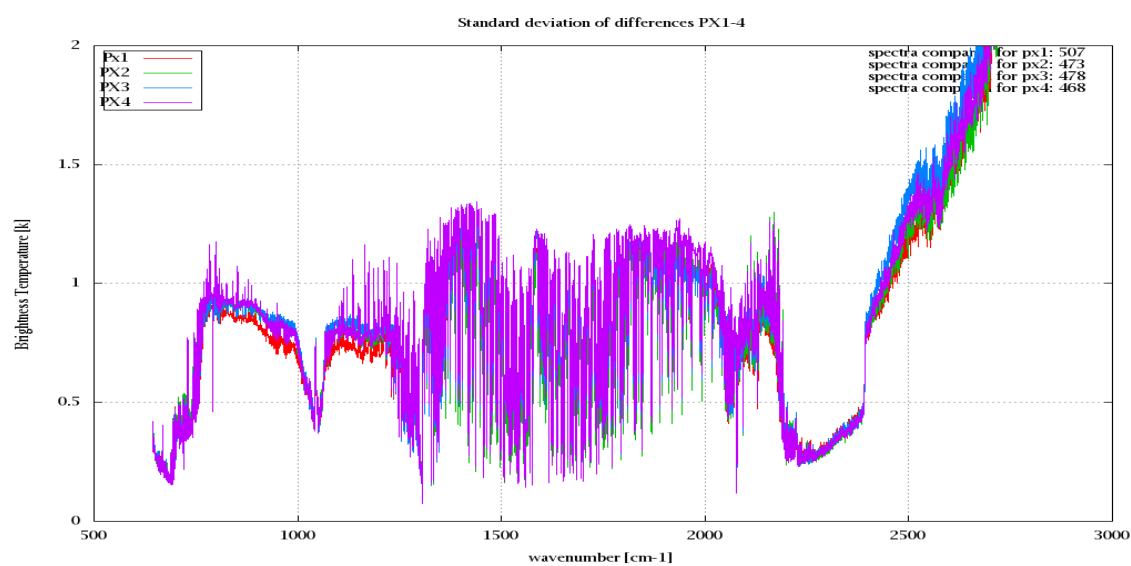


Figure 9: Standard Deviation of Radiance differences

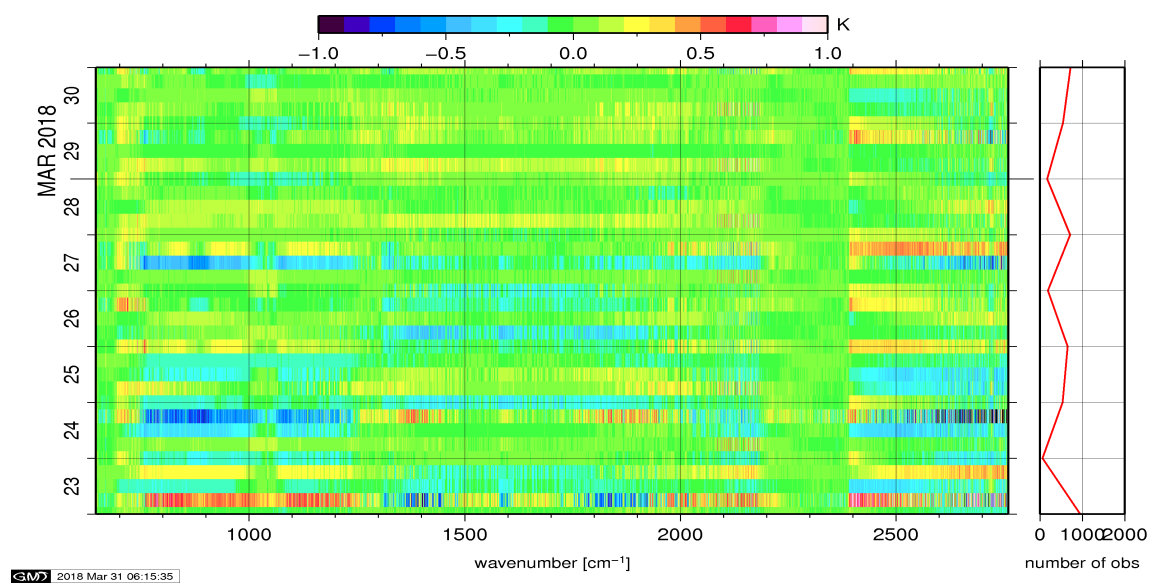


Figure 10: Radiance Anomaly in BRT: All Channels

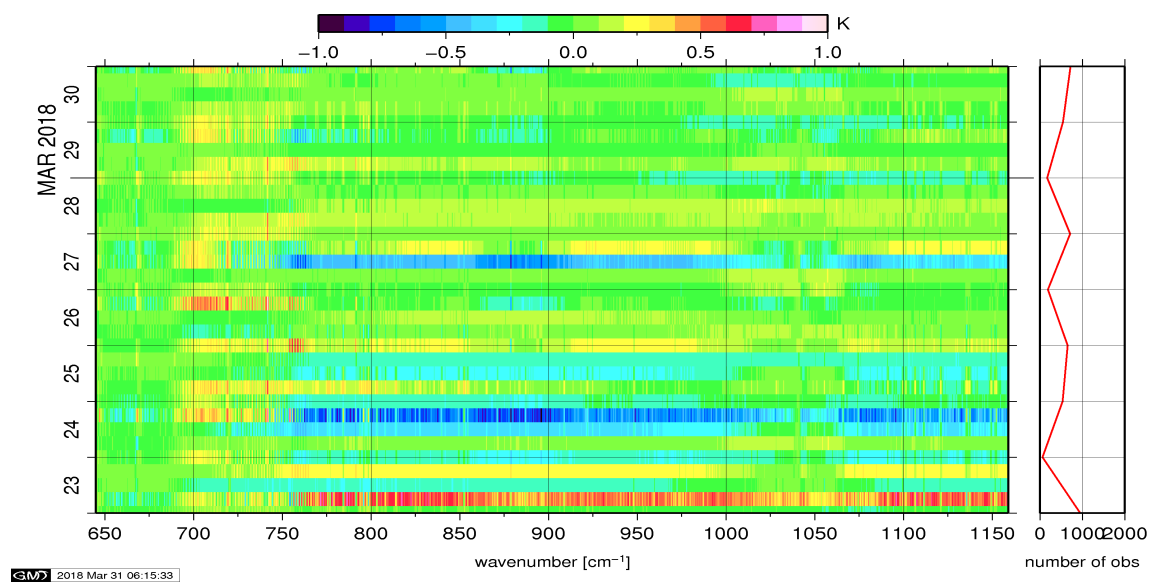


Figure 11: Radiance Anomaly in BRT: IASI Band 1

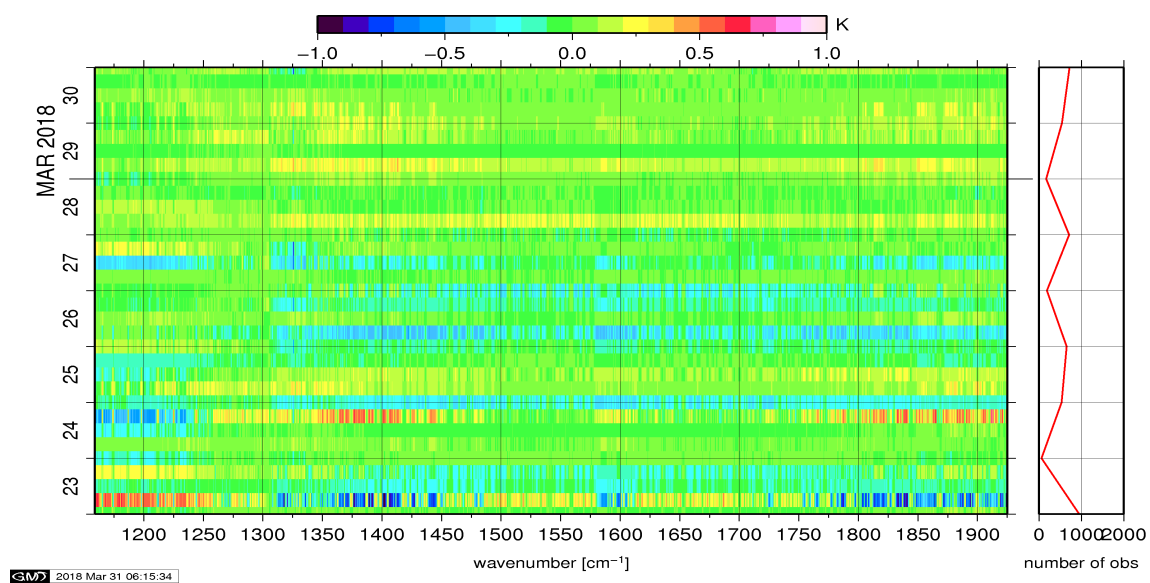


Figure 12: Radiance Anomaly in BRT: IASI Band 2

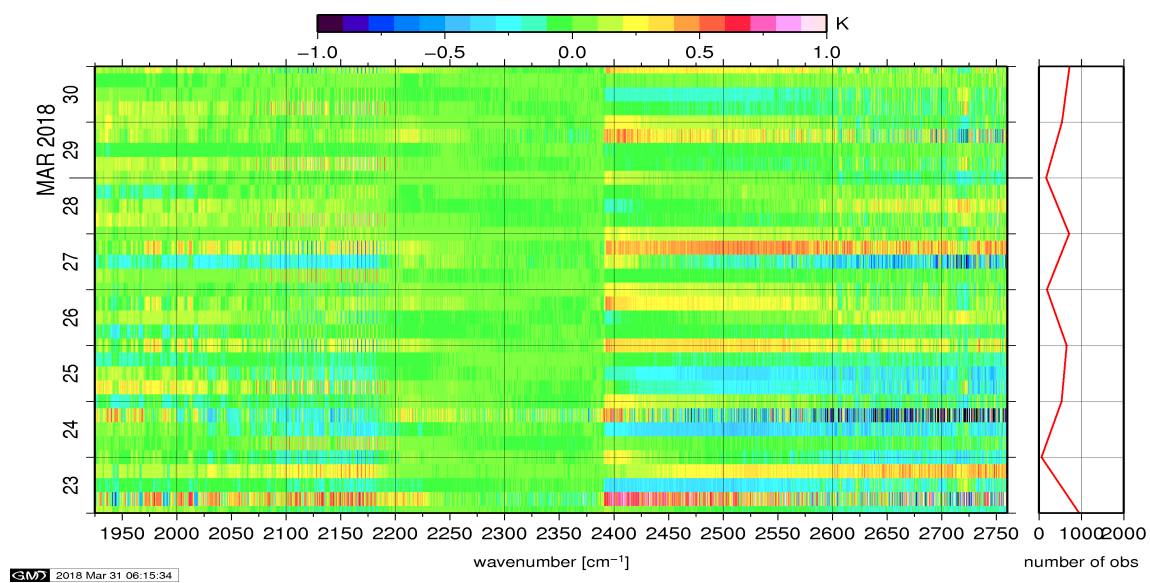


Figure 13: Radiance Anomaly in BRT: IASI Band 3

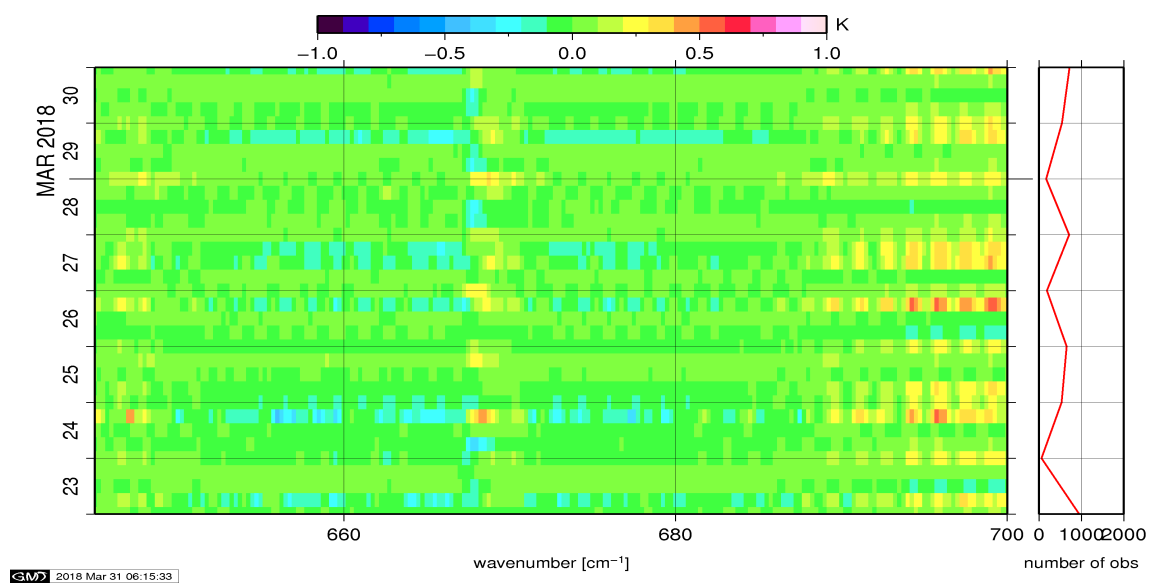


Figure 14: Radiance Anomaly in BRT: CO2 14

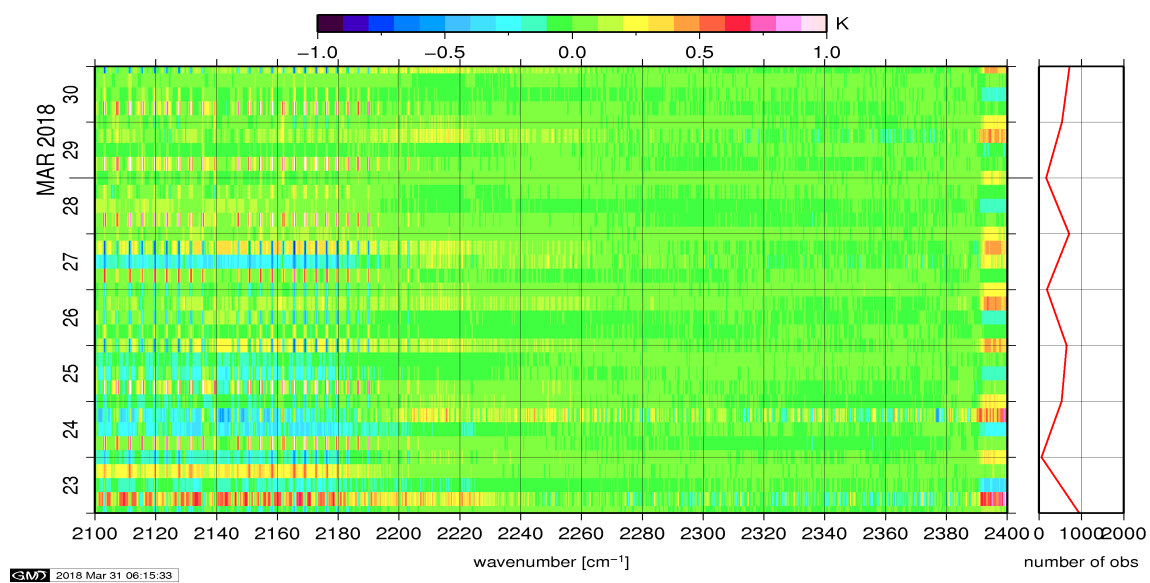


Figure 15: Radiance Anomaly in BRT: CO2 4.3

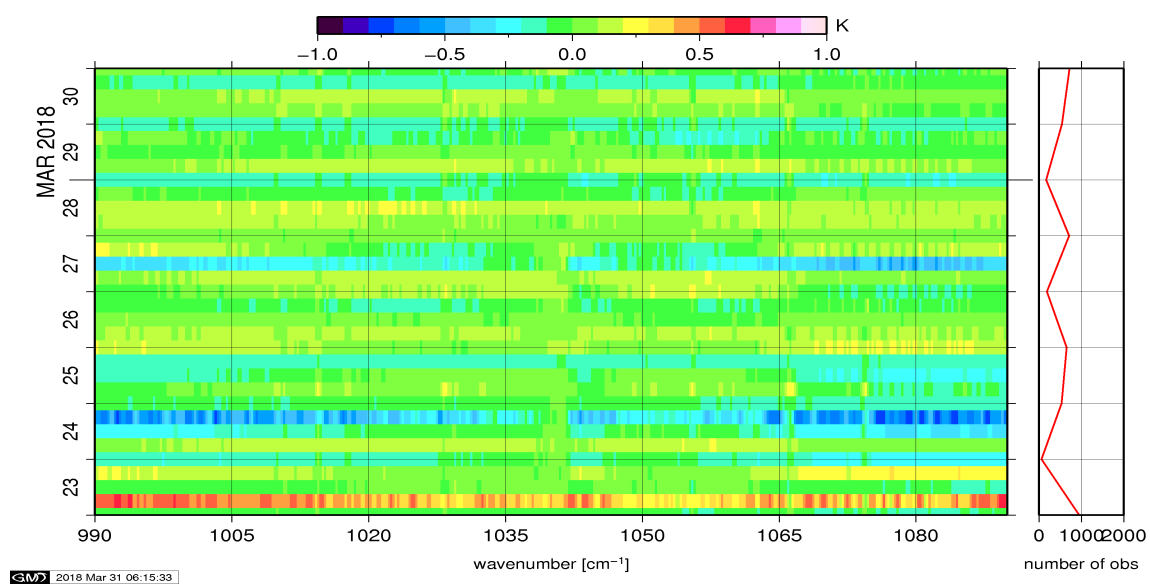


Figure 16: Radiance Anomaly in BRT: O3

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.

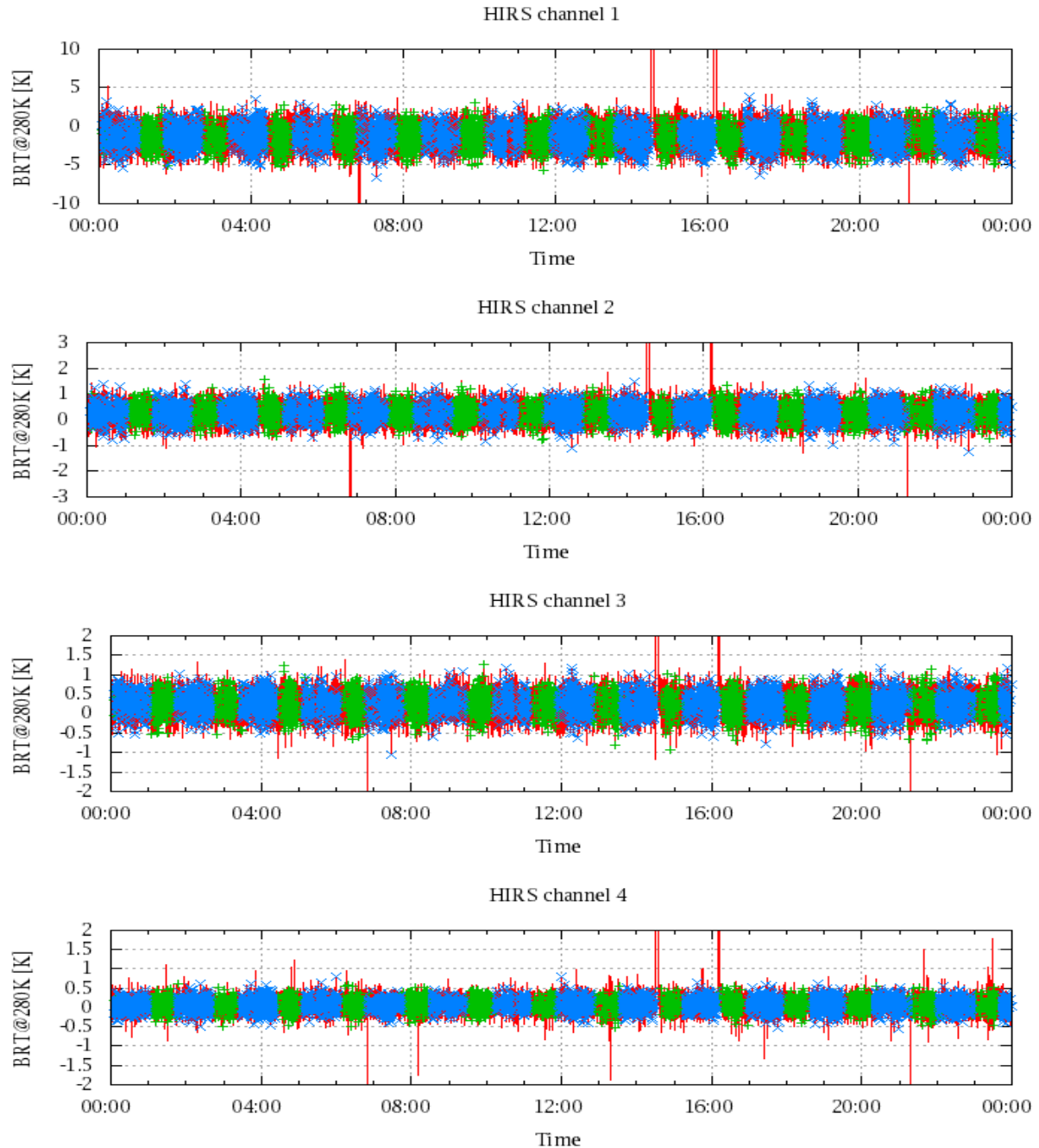


Figure 17: Radiance Differences in BRT

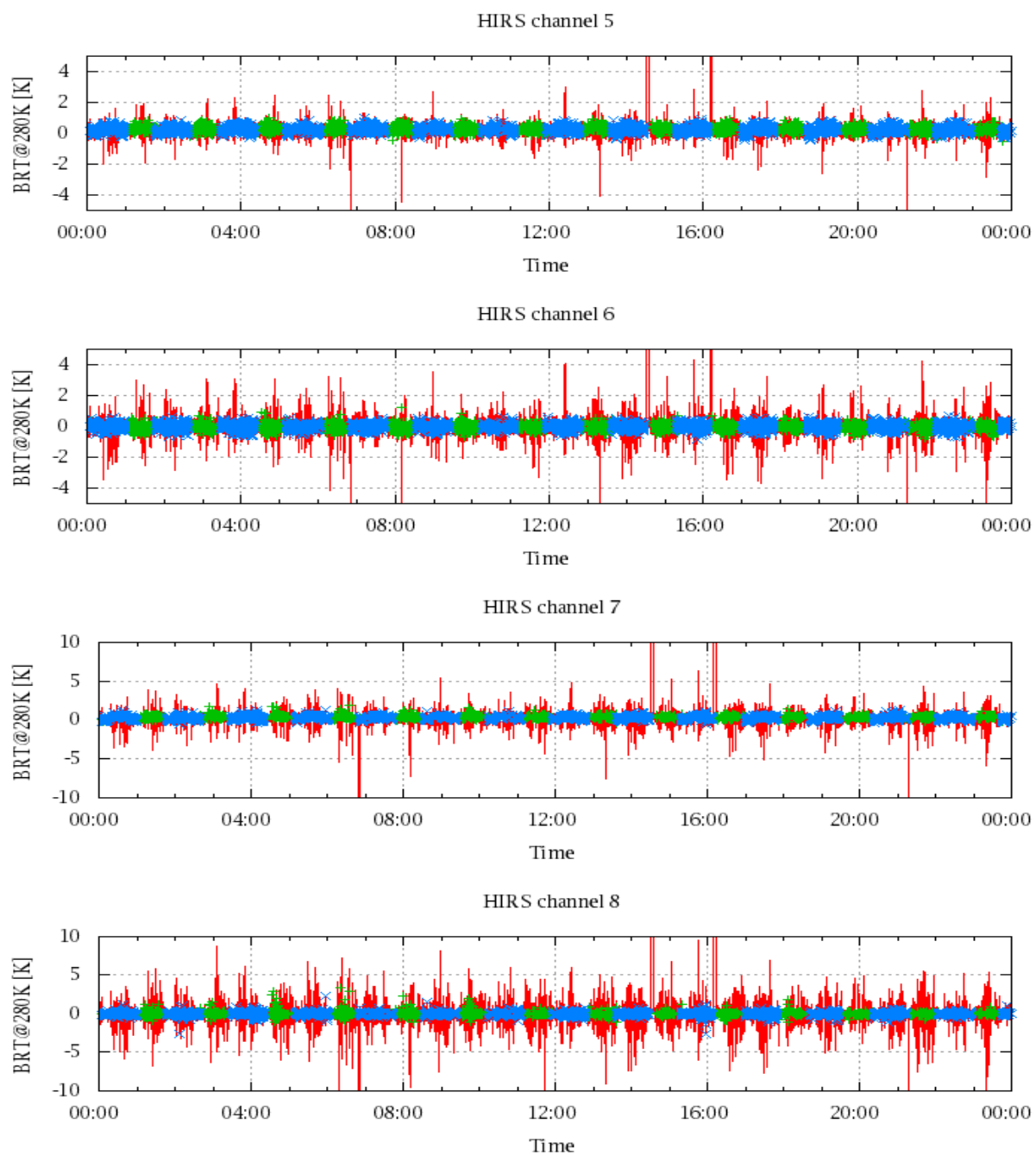


Figure 18: Radiance Differences in BRT

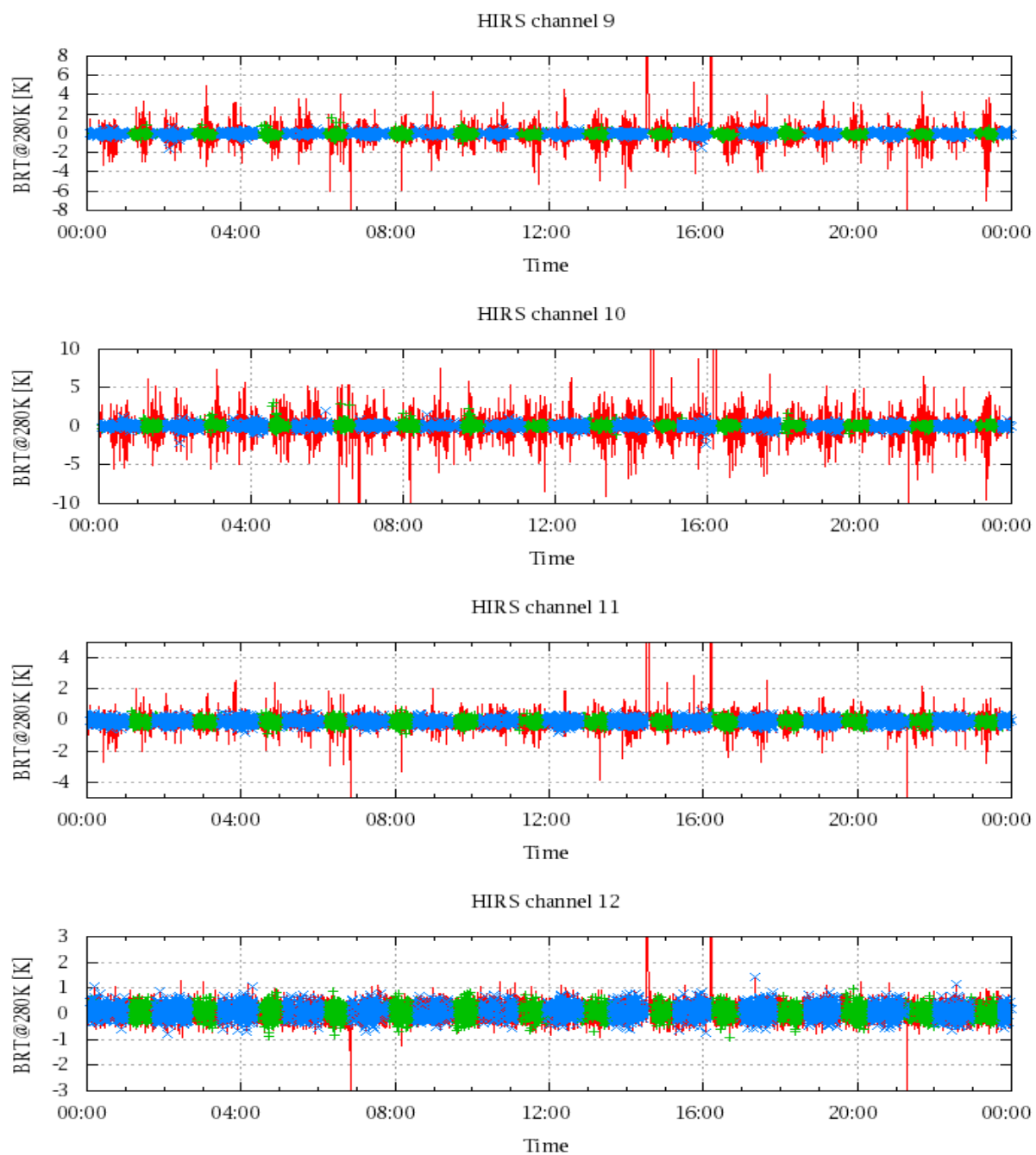


Figure 19: Radiance Differences in BRT

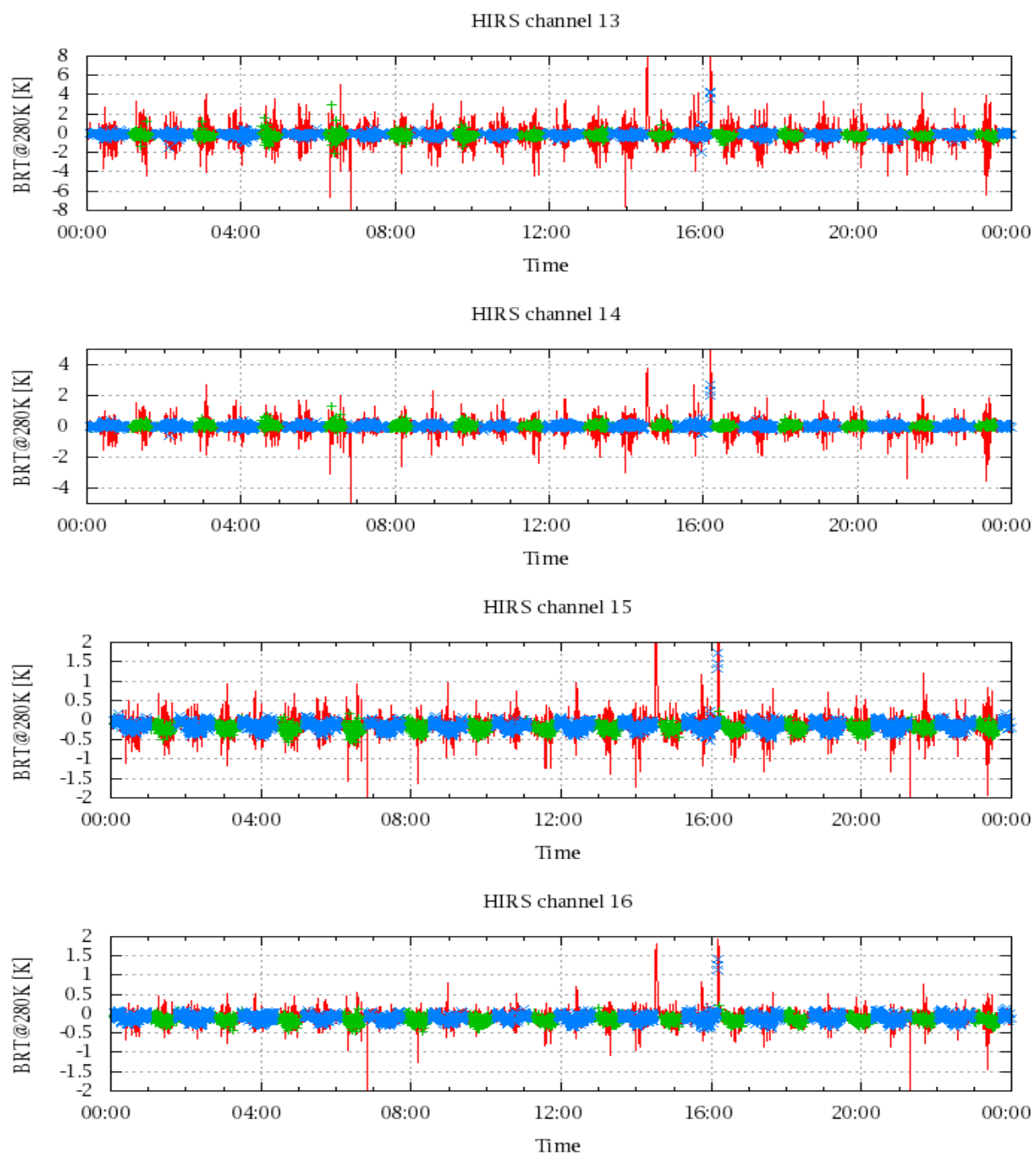


Figure 20: Radiance Differences in BRT

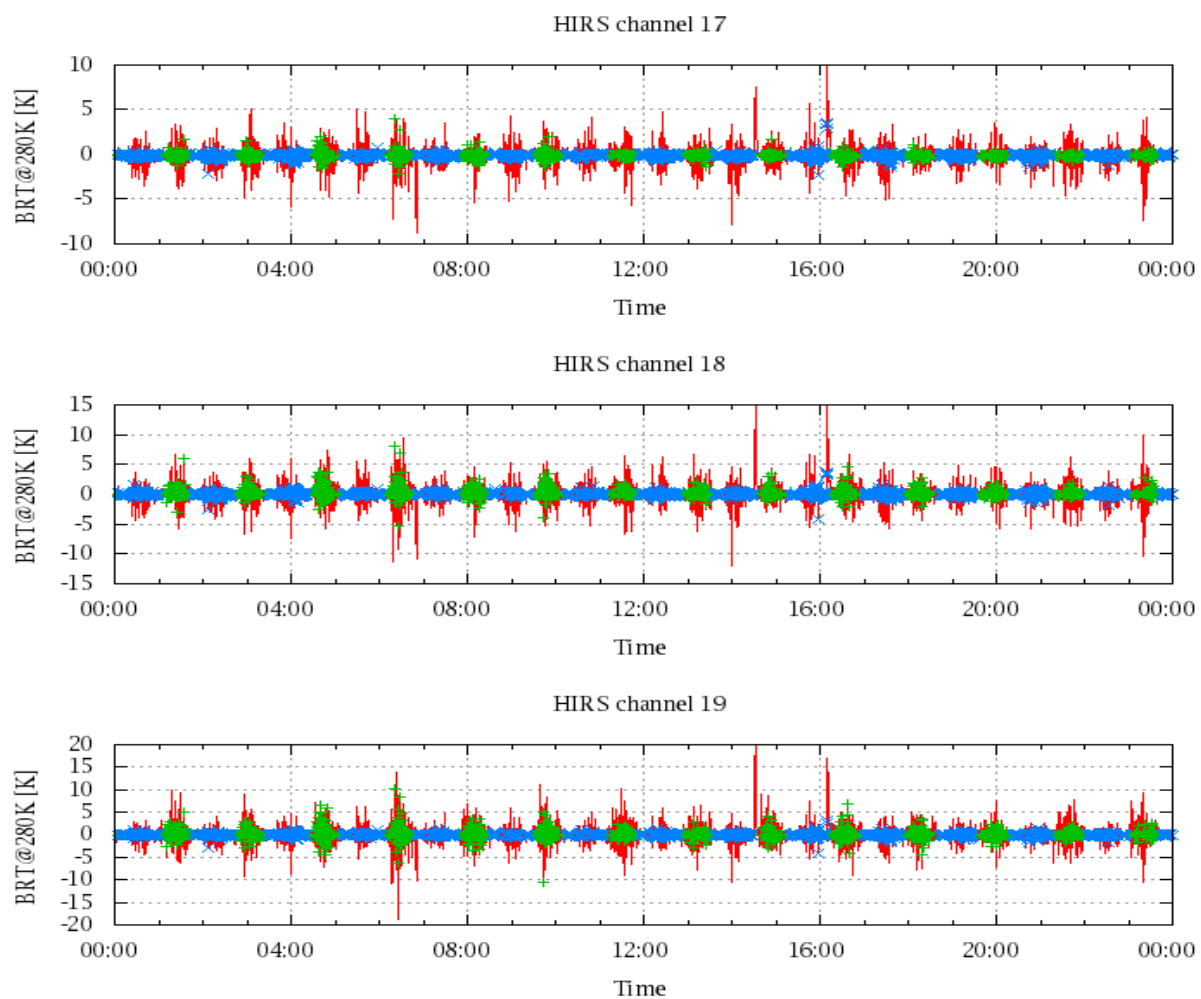


Figure 21: Radinace Differences in BRT