

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

26/03/2018 00:00:00 - 27/03/2018 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 26/03/2018 00:00:00 - 27/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 26/03/2018 00:00:00 - 27/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	480	-
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)	2184	2255	20180326005819.420	20180326005837.799
PX1 (130)	2466	2476	20180326005934.014	20180326005937.690
PX1 (130)	2680	2693	20180326010030.877	20180326010035.201
PX1 (130)	2895	2914	20180326010127.959	20180326010133.580
PX1 (130)	3105	3133	20180326010223.955	20180326010231.522
PX1 (130)	3322	3348	20180326010322.982	20180326010330.115
PX1 (130)	3543	3570	20180326010421.357	20180326010428.709
PX1 (130)	1552	1565	20180326130341.081	20180326130343.893
PX1 (130)	1705	1716	20180326130421.729	20180326130425.624
PX2 (135)	2184	2255	20180326005819.420	20180326005837.799
PX2 (135)	2466	2476	20180326005934.014	20180326005937.690
PX2 (135)	2680	2693	20180326010030.877	20180326010035.201
PX2 (135)	2895	2913	20180326010127.959	20180326010133.365
PX2 (135)	3105	3133	20180326010223.955	20180326010231.522
PX2 (135)	3322	3348	20180326010322.982	20180326010330.115
PX2 (135)	3543	3570	20180326010421.357	20180326010428.709
PX2 (135)	1551	1566	20180326130340.866	20180326130345.624
PX2 (135)	1630	1632	20180326130402.487	20180326130402.921

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	1705	1716	20180326130421.729	20180326130425.624
PX3 (140)	2184	2255	20180326005819.420	20180326005837.799
PX3 (140)	2466	2476	20180326005934.014	20180326005937.690
PX3 (140)	2680	2693	20180326010030.877	20180326010035.201
PX3 (140)	2895	2913	20180326010127.959	20180326010133.365
PX3 (140)	3105	3133	20180326010223.955	20180326010231.522
PX3 (140)	3321	3348	20180326010322.768	20180326010330.115
PX3 (140)	3543	3570	20180326010421.357	20180326010428.709
PX3 (140)	1551	1566	20180326130340.866	20180326130345.624
PX3 (140)	1635	1637	20180326130403.569	20180326130404.003
PX3 (140)	1705	1716	20180326130421.729	20180326130425.624
PX4 (145)	2184	2255	20180326005819.420	20180326005837.799
PX4 (145)	2466	2476	20180326005934.014	20180326005937.690
PX4 (145)	2680	2693	20180326010030.877	20180326010035.201
PX4 (145)	2895	2913	20180326010127.959	20180326010133.365
PX4 (145)	3105	3133	20180326010223.955	20180326010231.522
PX4 (145)	3321	3347	20180326010322.768	20180326010329.900
PX4 (145)	3543	3569	20180326010421.357	20180326010428.494
PX4 (145)	1551	1565	20180326130340.866	20180326130343.893
PX4 (145)	1621	1623	20180326130359.030	20180326130359.460
PX4 (145)	1705	1716	20180326130421.729	20180326130425.624
IMG (150)	4535	4615	20180326005819.206	20180326005837.799
IMG (150)	4853	4864	20180326005933.799	20180326005936.393
IMG (150)	5096	5112	20180326010030.877	20180326010034.987
IMG (150)	5339	5361	20180326010127.959	20180326010133.365
IMG (150)	5577	5609	20180326010223.955	20180326010231.522
IMG (150)	5825	5855	20180326010322.768	20180326010329.900
IMG (150)	6074	6105	20180326010421.143	20180326010428.494
IMG (150)	9279	9293	20180326130340.866	20180326130343.893
IMG (150)	9453	9464	20180326130421.729	20180326130424.323
VER (160)	3021	3032	20180326005815.963	20180326005839.963
VER (160)	3066	3068	20180326005927.963	20180326005934.014
VER (160)	3101	3107	20180326010023.959	20180326010039.959
VER (160)	3136	3142	20180326010119.959	20180326010135.959
VER (160)	3211	3217	20180326010319.955	20180326010335.955
VER (160)	3246	3252	20180326010415.955	20180326010431.951
VER (160)	13848	13850	20180326130359.893	20180326130359.893
VER (160)	13862	13864	20180326130415.893	20180326130421.729
AUX (180)	587	590	20180326005816.397	20180326005840.397
AUX (180)	603	605	20180326010024.393	20180326010040.393
AUX (180)	610	612	20180326010120.393	20180326010136.389
AUX (180)	625	627	20180326010320.385	20180326010336.385
AUX (180)	632	634	20180326010416.385	20180326010432.385

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
26/03/2018 00:00:13	-	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)	99.52 %	-
GQisFlagQual set (PX2)	99.58 %	-
GQisFlagQual set (PX3)	99.60 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.55 %	-

Table 4: Quality flags

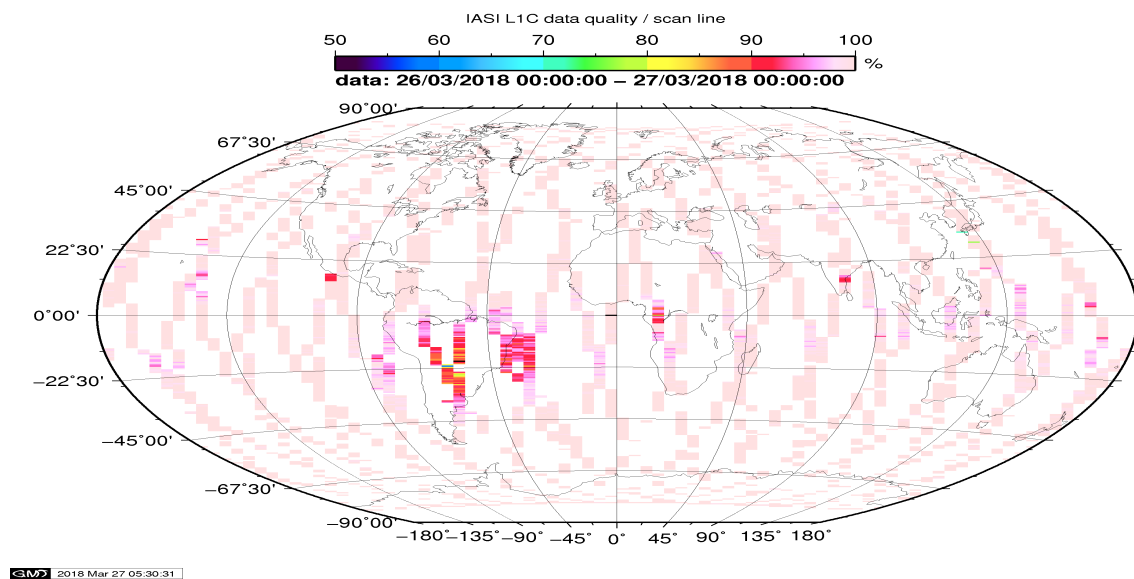


Figure 1: L1C data quality

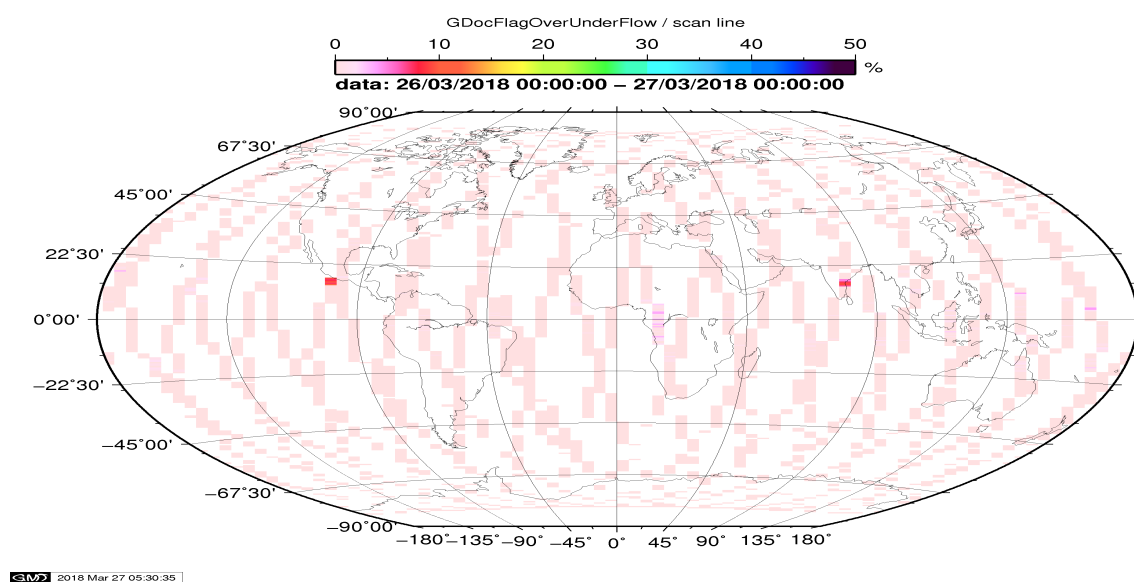


Figure 2: Flag of Over and Under Flows

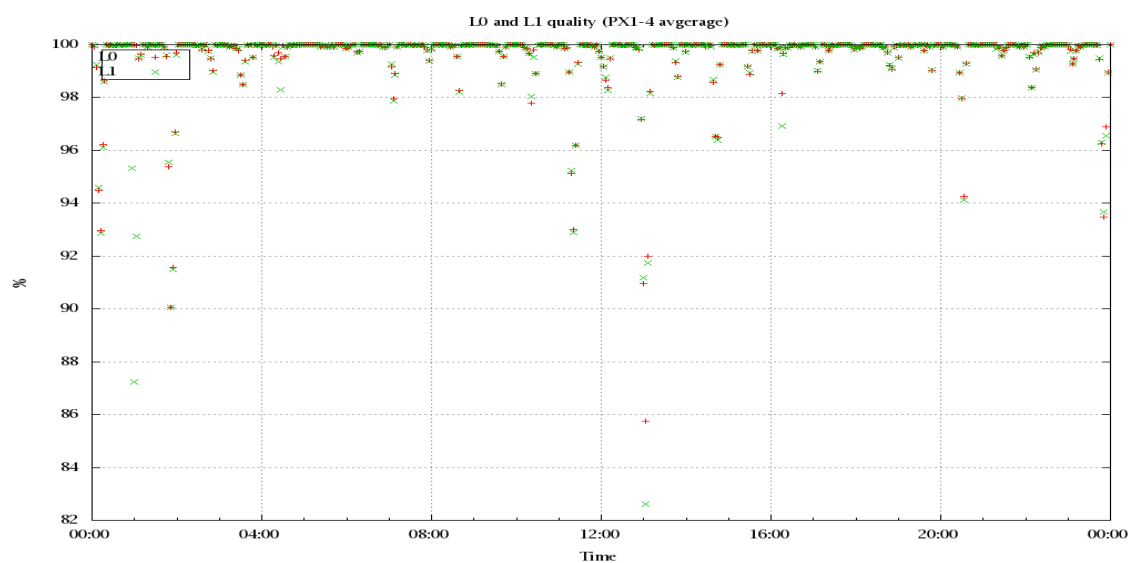


Figure 3: Level 0 and 1C overall quality

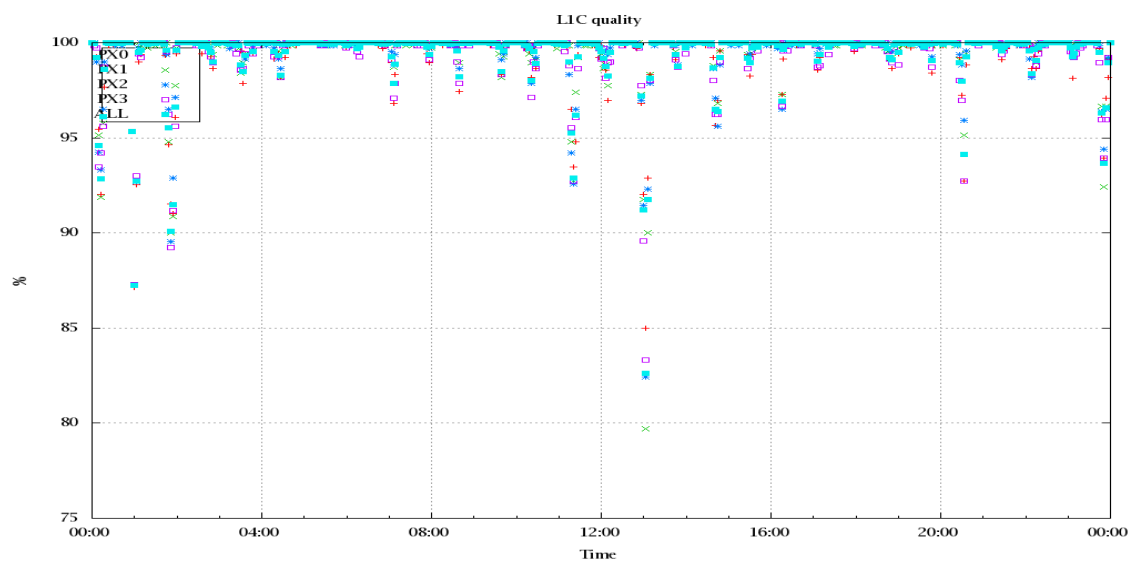


Figure 4: Level 1C quality

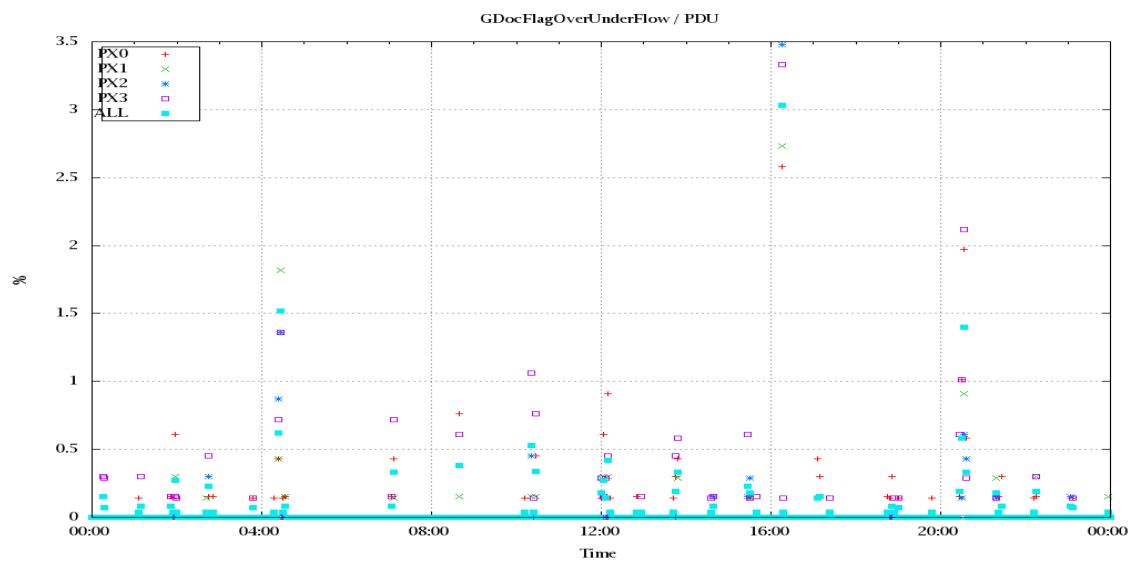


Figure 5: OverUnderFlowFlag timeseries

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.

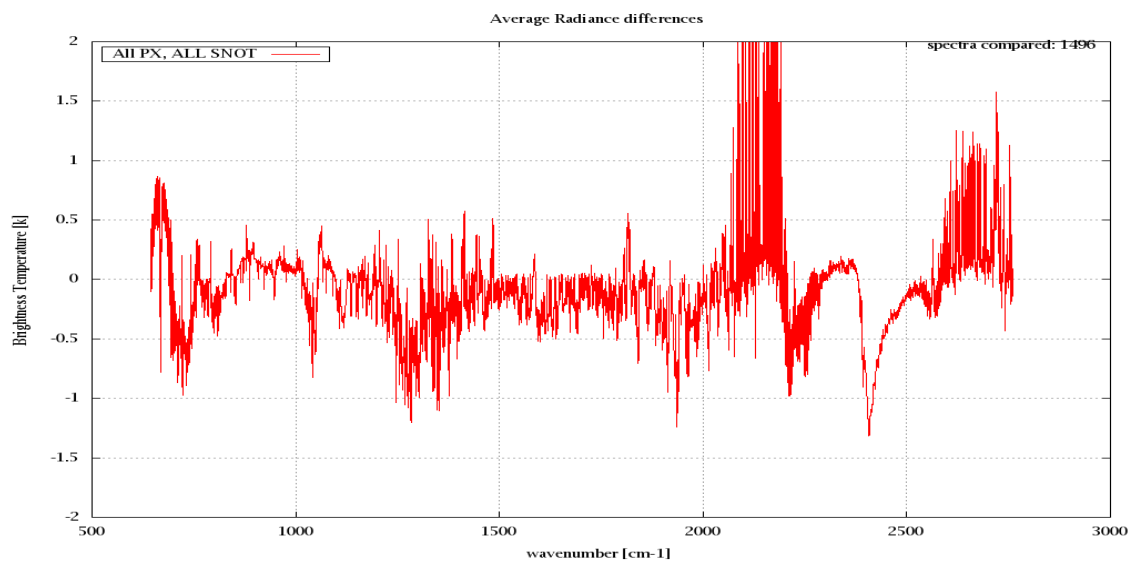


Figure 6: Average Radiance differences: OBS-CAL

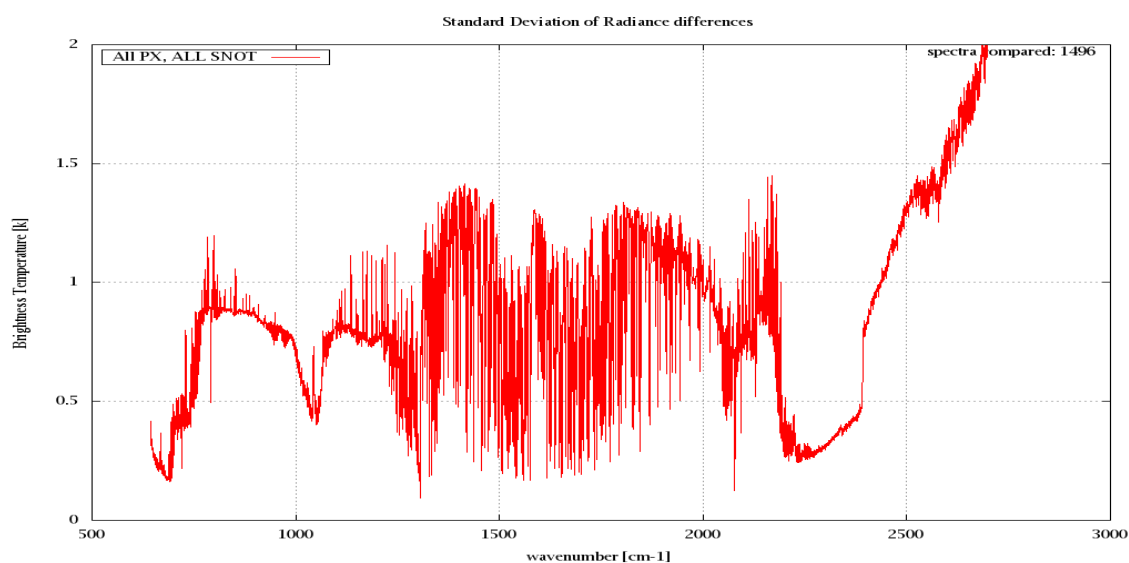


Figure 7: Standard Deviation of Radiance differences

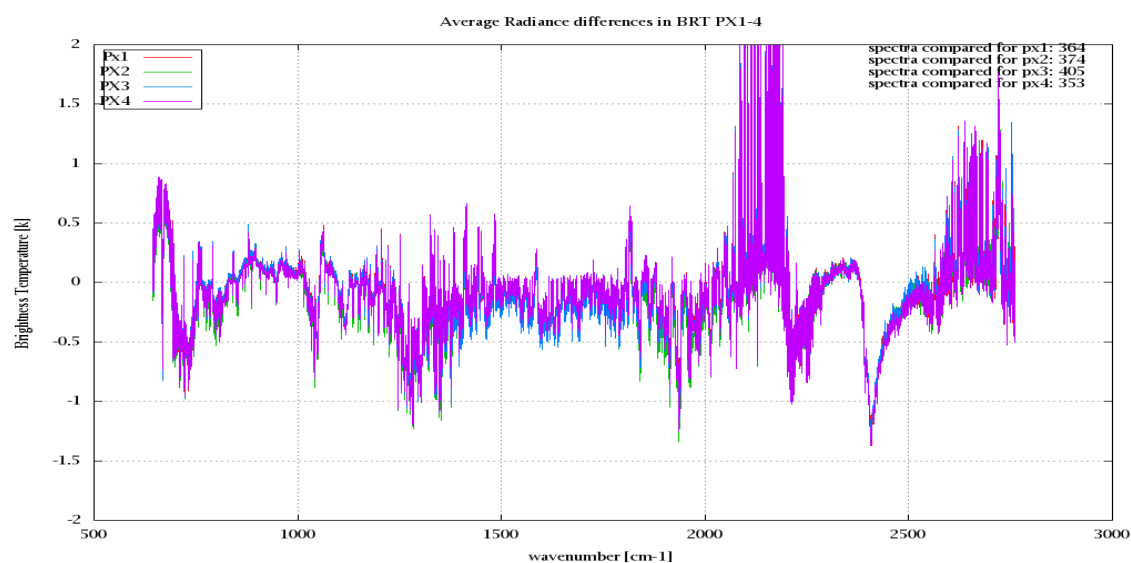


Figure 8: Average Radiance differences: OBS-CAL

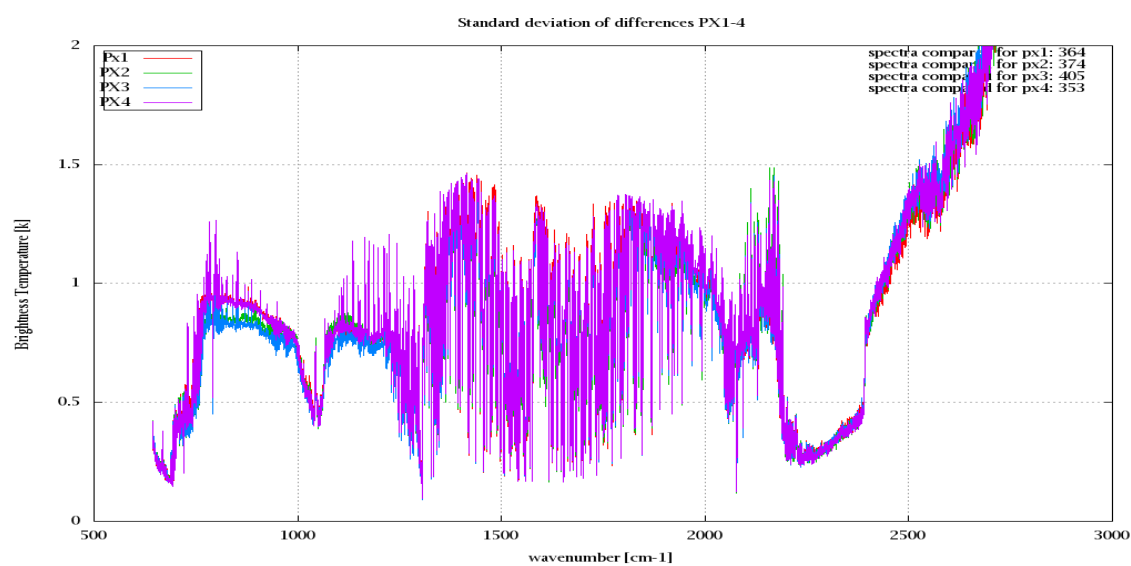


Figure 9: Standard Deviation of Radiance differences

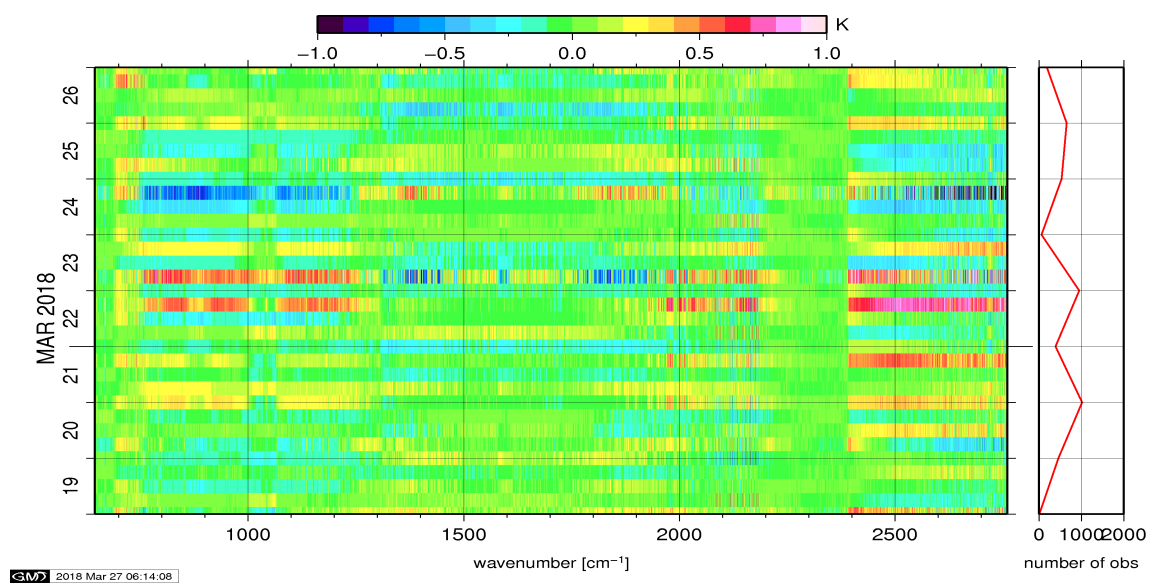


Figure 10: Radiance Anomaly in BRT: All Channels

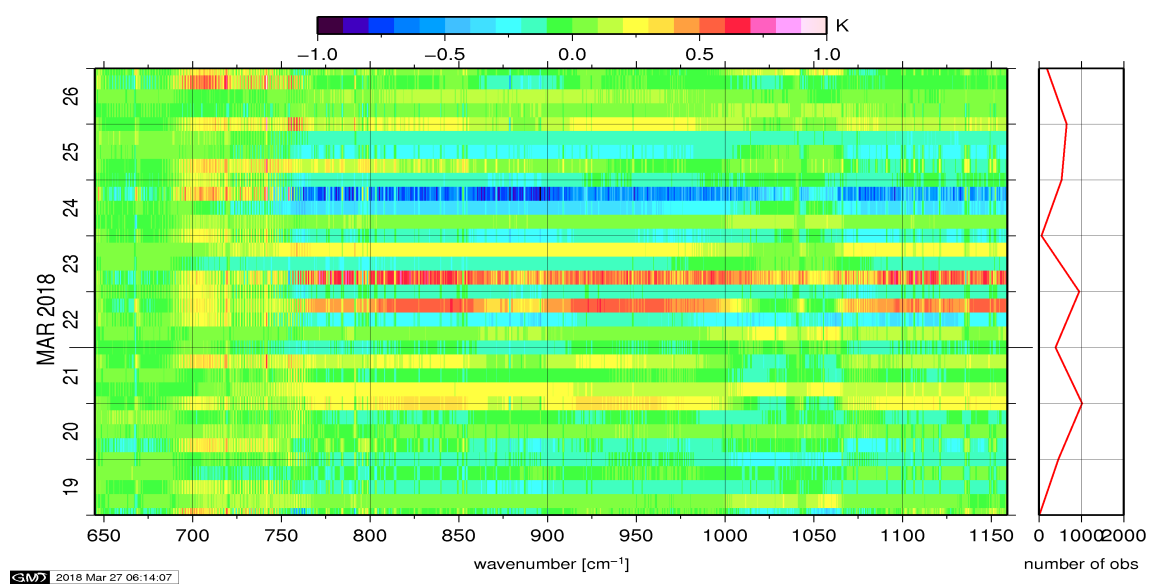


Figure 11: Radiance Anomaly in BRT: IASI Band 1

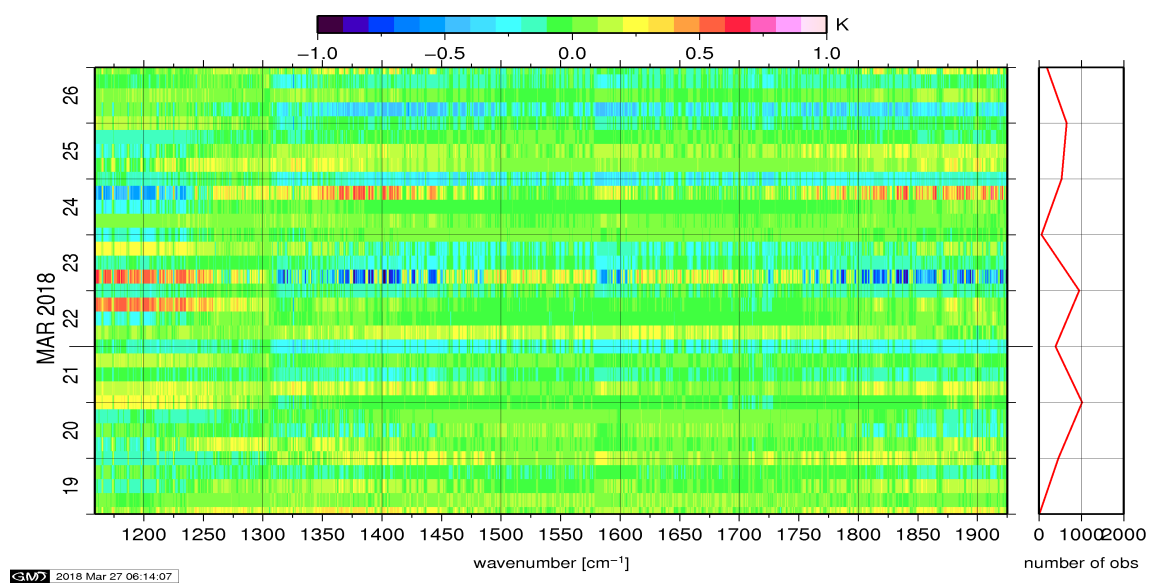


Figure 12: Radiance Anomaly in BRT: IASI Band 2

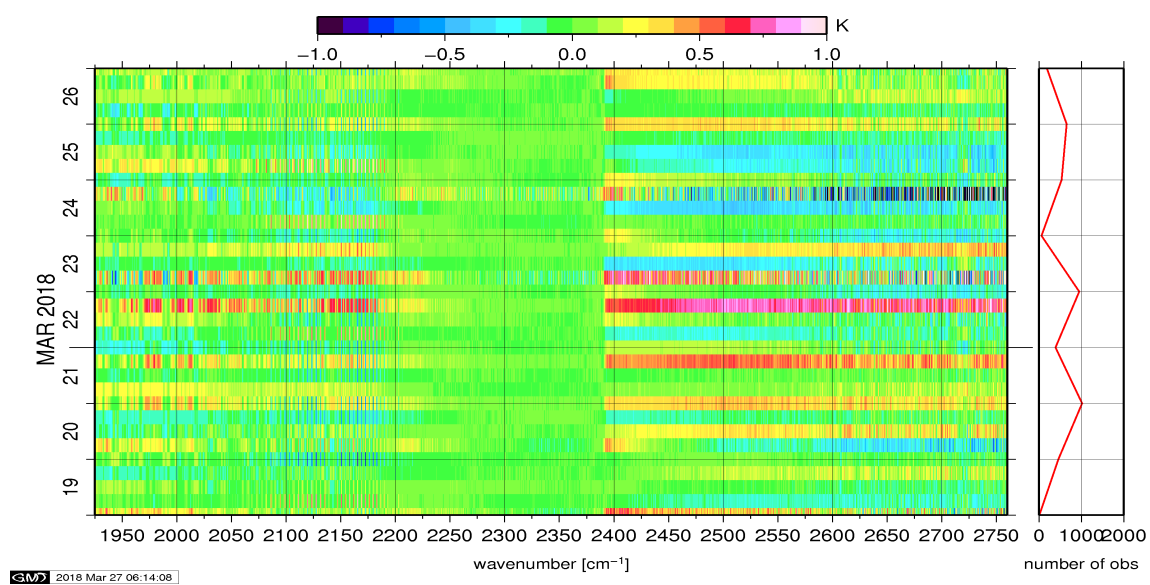


Figure 13: Radiance Anomaly in BRT: IASI Band 3

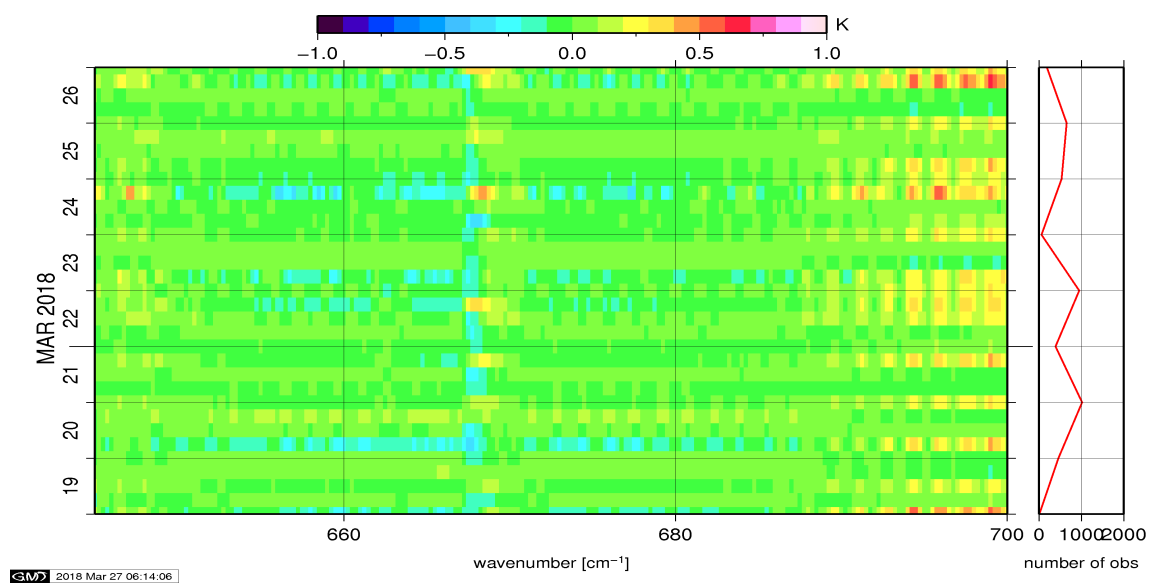


Figure 14: Radiance Anomaly in BRT: CO2 14

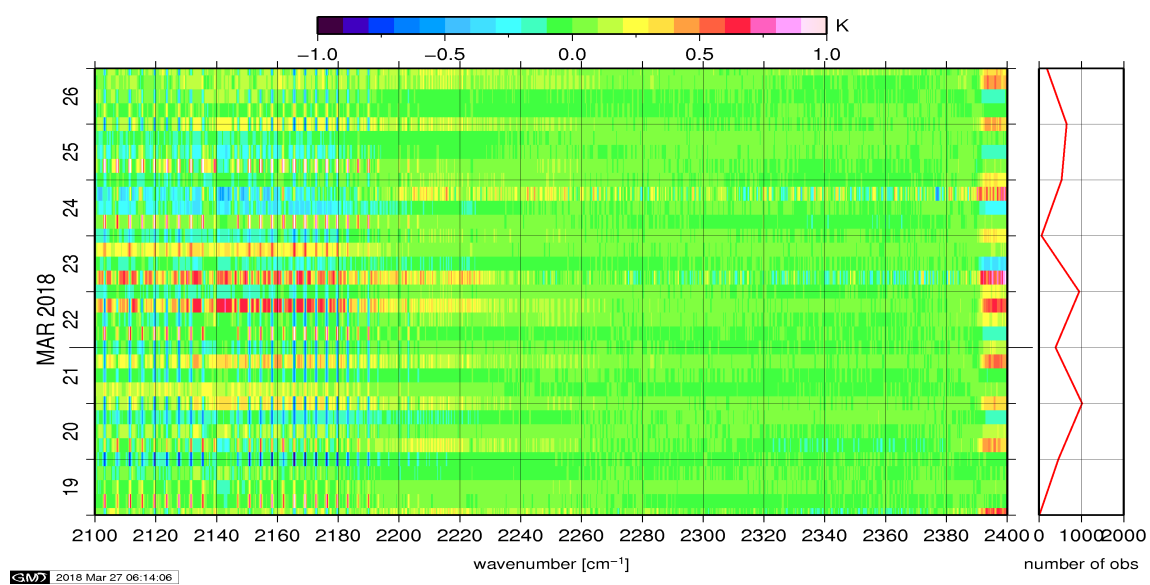


Figure 15: Radiance Anomaly in BRT: CO2 4.3

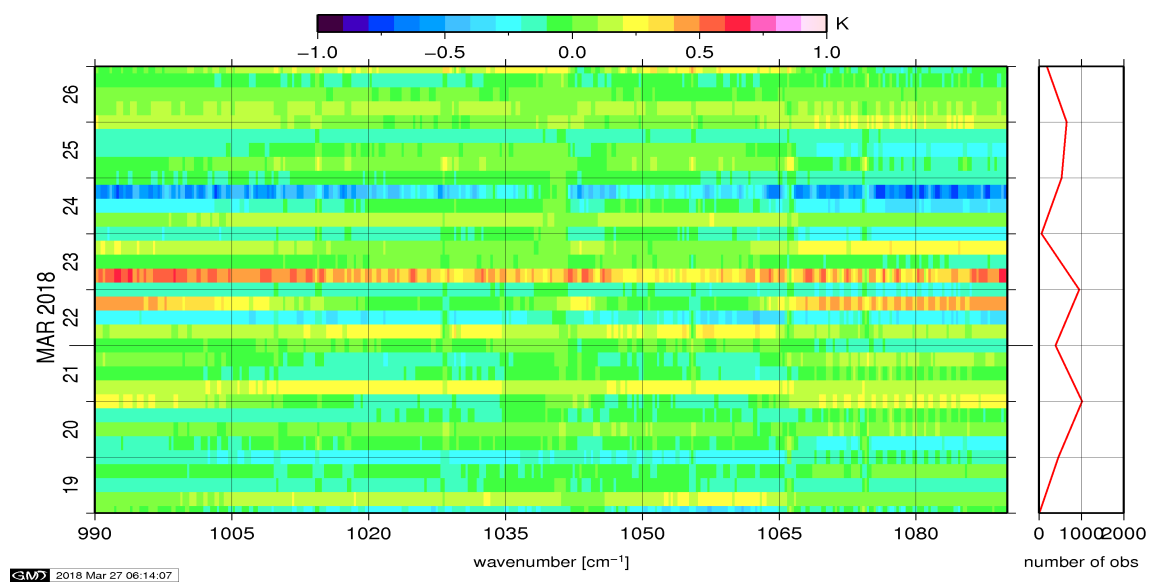


Figure 16: Radiance Anomaly in BRT: O3

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.

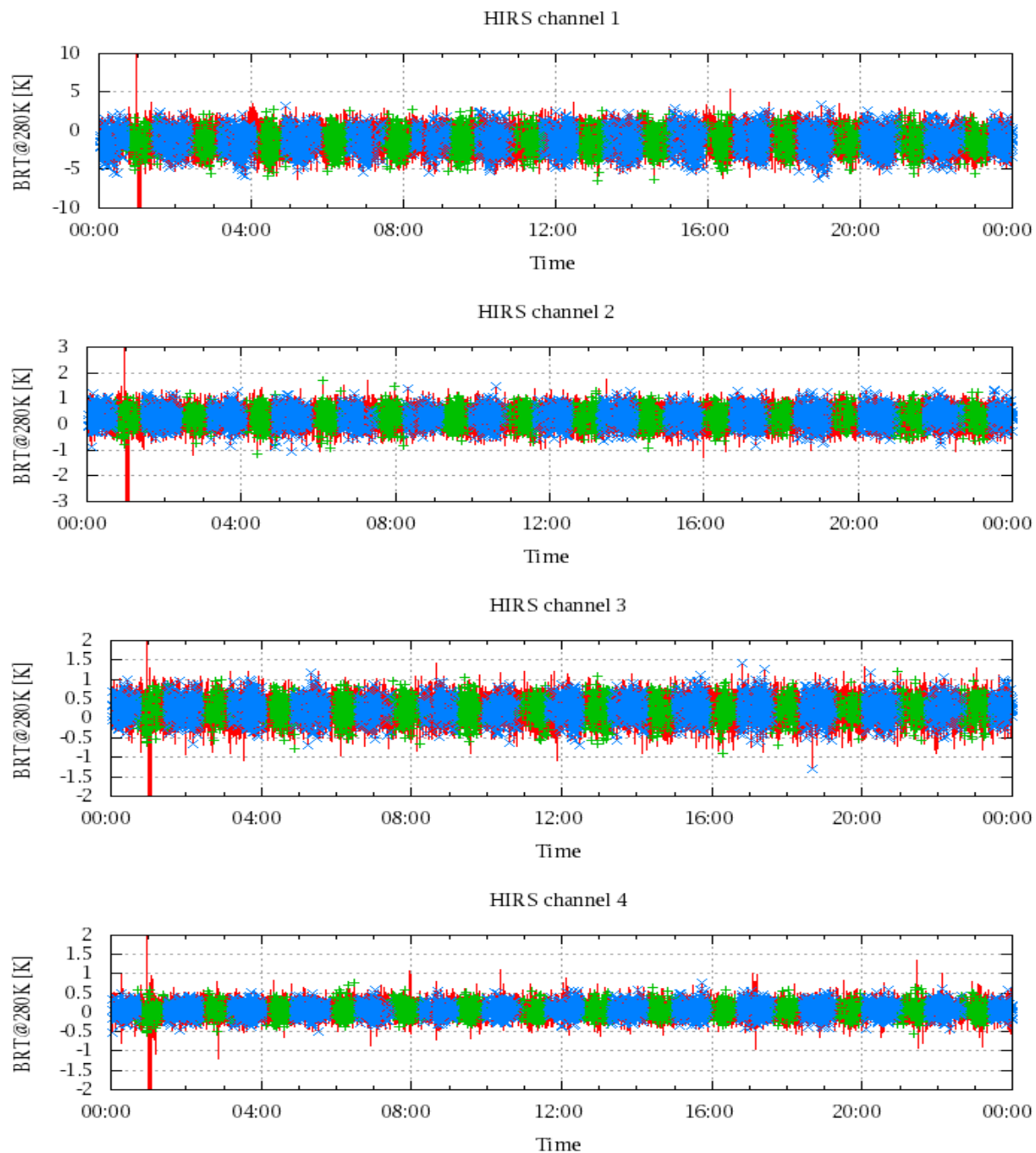


Figure 17: Radiance Differences in BRT

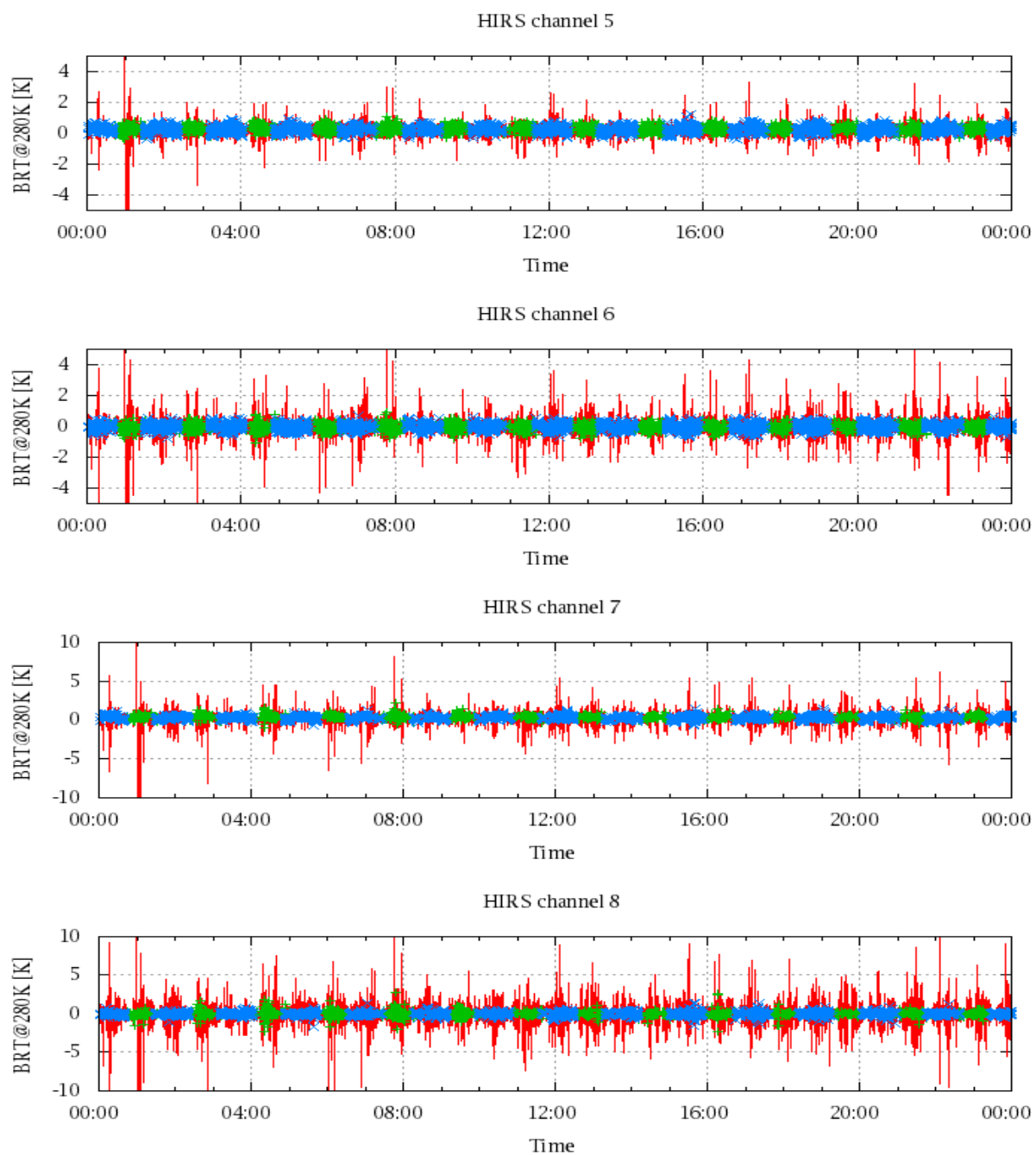


Figure 18: Radiance Differences in BRT

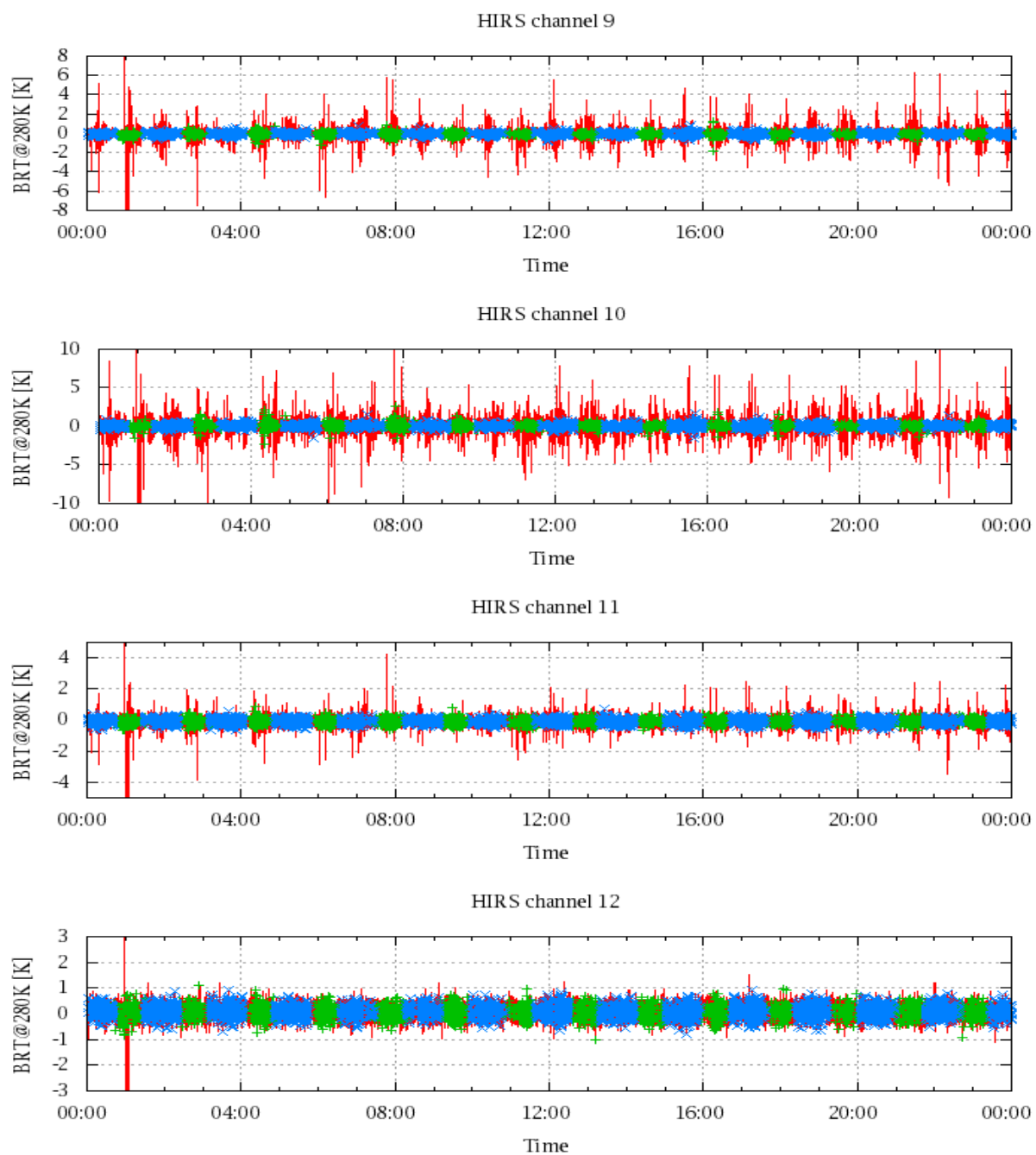


Figure 19: Radiance Differences in BRT

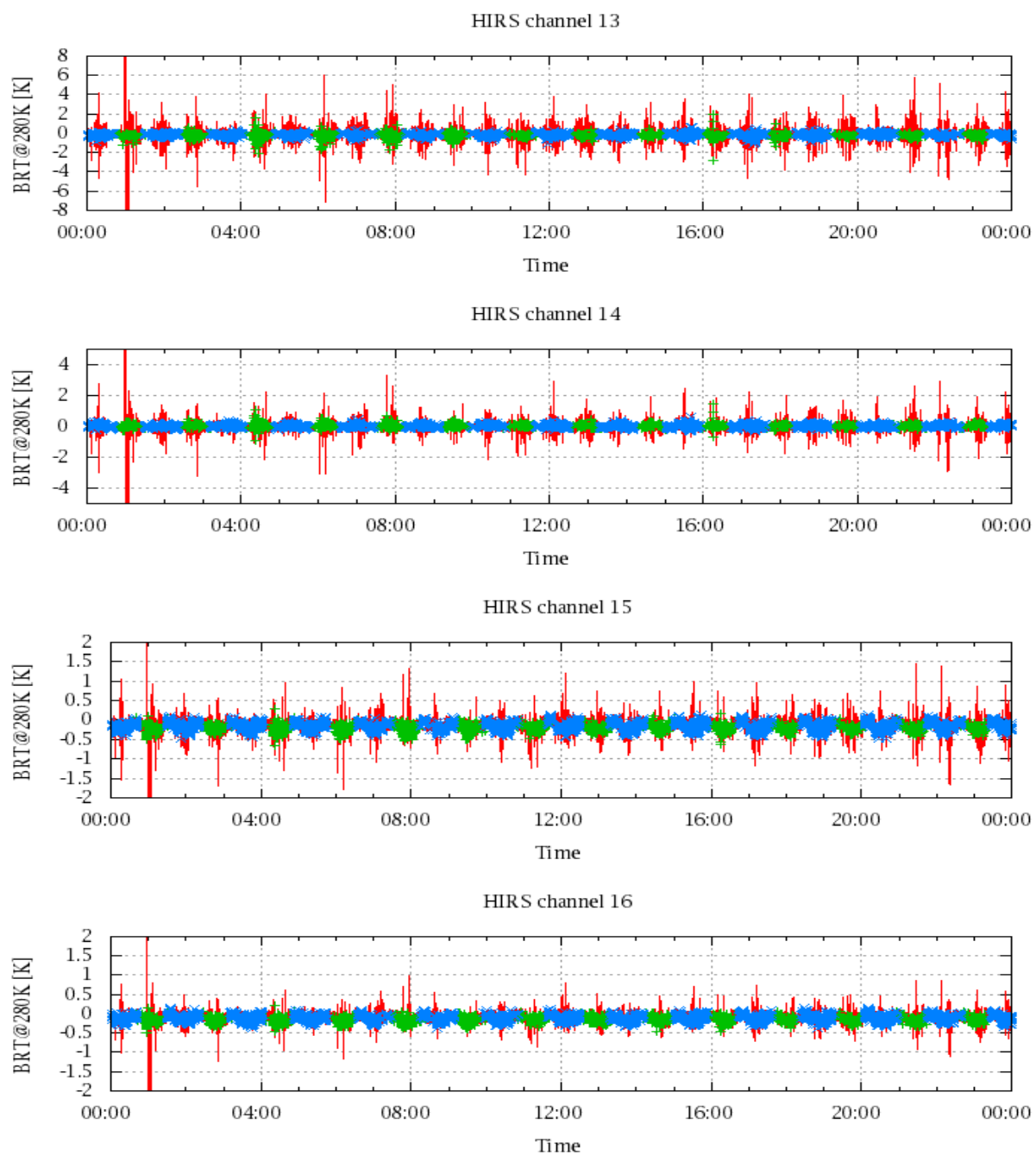


Figure 20: Radiance Differences in BRT

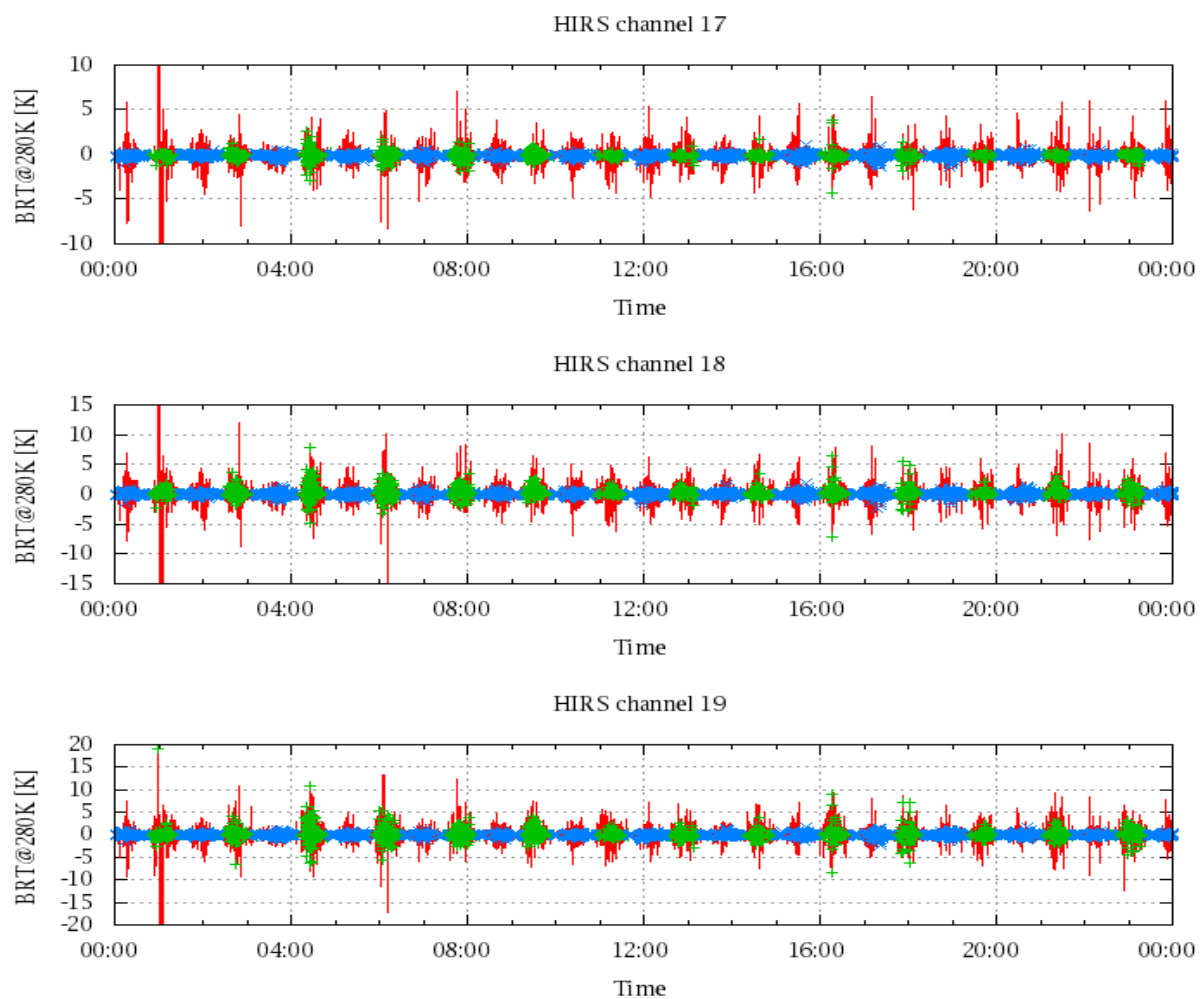


Figure 21: Radinace Differences in BRT