

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

01/03/2018 00:00:00 - 02/03/2018 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 01/03/2018 00:00:00 - 02/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 01/03/2018 00:00:00 - 02/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	465	-
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)	3059	3061	20180301055330.740	20180301055331.174
PX1 (130)	11289	11293	20180301161238.779	20180301161239.642
PX1 (130)	11297	11300	20180301161240.505	20180301161241.158
PX1 (130)	11340	11343	20180301161252.834	20180301161253.478
PX1 (130)	11344	11475	20180301161253.697	20180301161328.072
PX1 (130)	11476	11478	20180301161328.291	20180301161328.724
PX1 (130)	11478	11480	20180301161328.724	20180301161329.154
PX1 (130)	11494	11496	20180301161333.693	20180301161334.126
PX2 (135)	11278	11280	20180301161234.884	20180301161236.834
PX2 (135)	11317	11319	20180301161246.345	20180301161246.779
PX2 (135)	11319	11321	20180301161246.779	20180301161247.209
PX2 (135)	11325	11328	20180301161248.076	20180301161248.724
PX2 (135)	11329	11331	20180301161248.939	20180301161249.373
PX2 (135)	11333	11337	20180301161249.806	20180301161250.670
PX2 (135)	11337	11339	20180301161250.670	20180301161251.103
PX2 (135)	11339	11341	20180301161251.103	20180301161253.048
PX2 (135)	11341	11475	20180301161253.048	20180301161328.072
PX2 (135)	11476	11478	20180301161328.291	20180301161328.724

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	11478	11480	20180301161328.724	20180301161329.154
PX2 (135)	11495	11499	20180301161333.912	20180301161334.775
PX2 (135)	11499	11501	20180301161334.775	20180301161335.209
PX3 (140)	11272	11275	20180301161233.588	20180301161234.236
PX3 (140)	11278	11280	20180301161234.884	20180301161236.834
PX3 (140)	11310	11312	20180301161244.830	20180301161245.263
PX3 (140)	11312	11314	20180301161245.263	20180301161245.697
PX3 (140)	11319	11321	20180301161246.779	20180301161247.209
PX3 (140)	11321	11323	20180301161247.209	20180301161247.642
PX3 (140)	11341	11475	20180301161253.048	20180301161328.072
PX3 (140)	11476	11478	20180301161328.291	20180301161328.724
PX3 (140)	11488	11490	20180301161330.884	20180301161332.830
PX4 (145)	11267	11269	20180301161232.509	20180301161232.939
PX4 (145)	11291	11293	20180301161239.209	20180301161239.642
PX4 (145)	11297	11299	20180301161240.505	20180301161240.939
PX4 (145)	11304	11306	20180301161242.021	20180301161242.455
PX4 (145)	11341	11475	20180301161253.048	20180301161328.072
PX4 (145)	11488	11490	20180301161330.884	20180301161332.830
IMG (150)	15754	15756	20180301055330.525	20180301055330.959
IMG (150)	9778	9780	20180301161234.884	20180301161235.537
IMG (150)	9780	9782	20180301161235.537	20180301161236.181
IMG (150)	9787	9789	20180301161237.478	20180301161237.912
IMG (150)	9795	9797	20180301161239.209	20180301161239.642
IMG (150)	9800	9802	20180301161240.291	20180301161240.724
IMG (150)	9847	9849	20180301161251.103	20180301161251.752
IMG (150)	9851	10003	20180301161252.400	20180301161328.072
IMG (150)	10003	10005	20180301161328.072	20180301161328.505
IMG (150)	10023	10027	20180301161333.048	20180301161333.912
VER (160)	14586	14588	20180301161227.103	20180301161235.103
VER (160)	14589	14591	20180301161235.103	20180301161235.103
VER (160)	14592	14594	20180301161243.103	20180301161243.103
VER (160)	14596	14601	20180301161243.103	20180301161251.103
VER (160)	14601	14623	20180301161251.103	20180301161331.099
AUX (180)	16010	16016	20180301161243.533	20180301161331.533

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
01/03/2018 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	465	-
GQisFlagQual set (PX1)	99.58 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

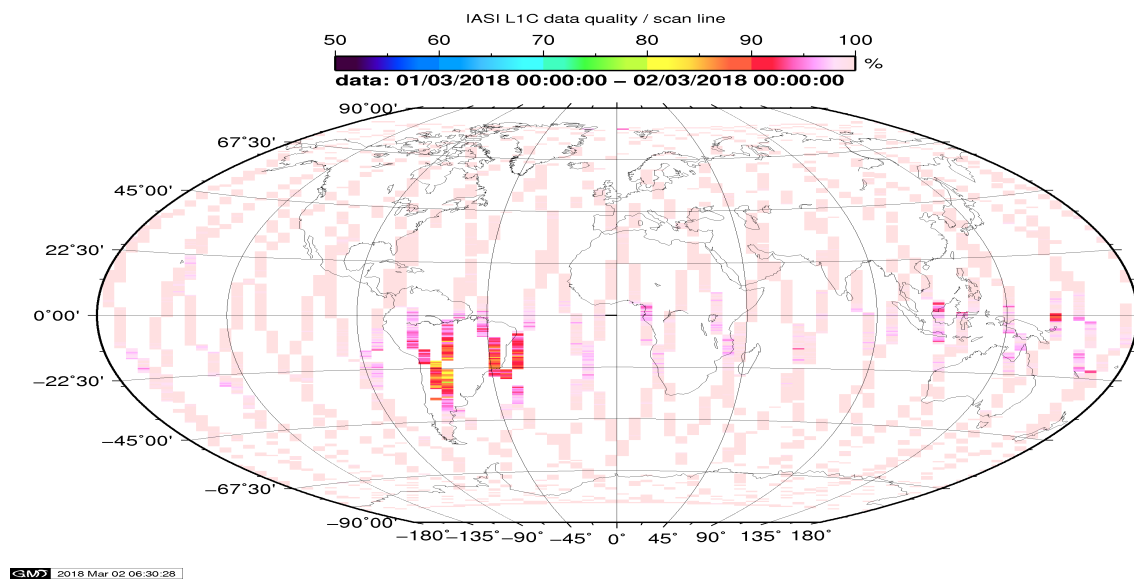


Figure 1: L1C data quality

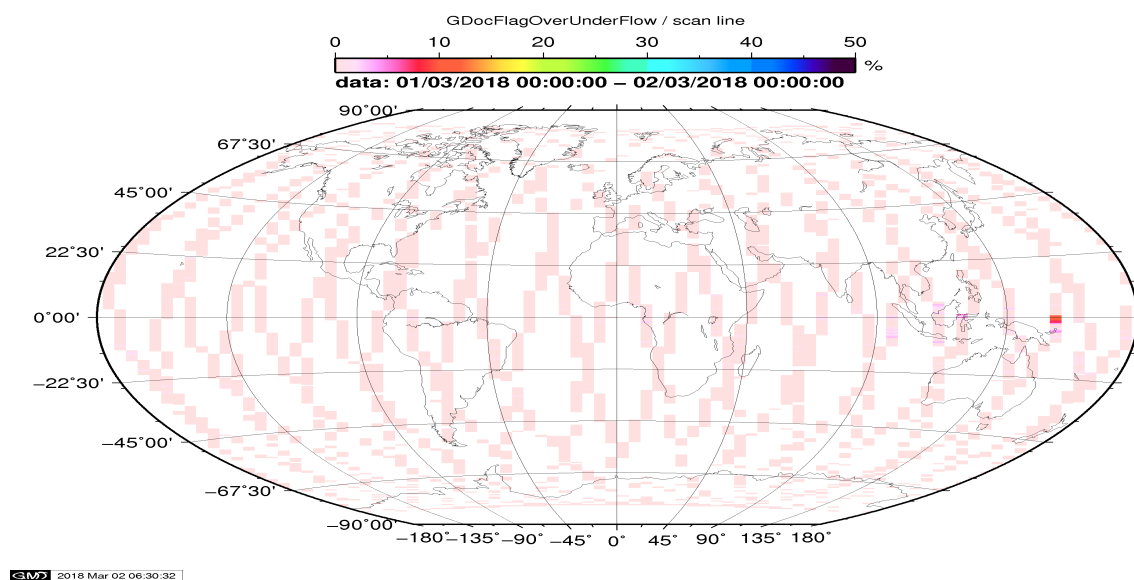


Figure 2: Flag of Over and Under Flows

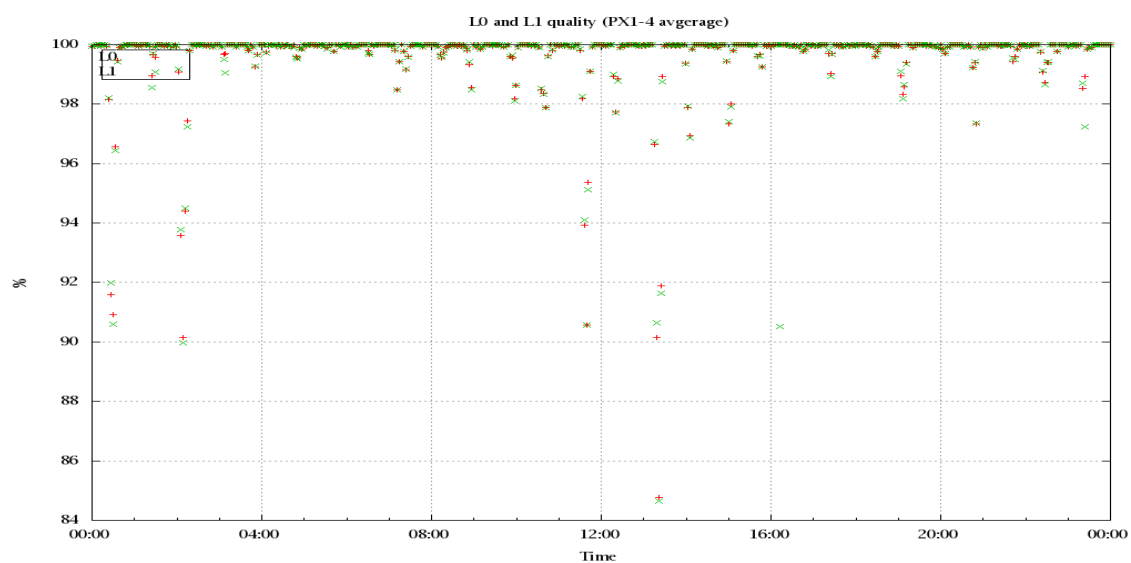


Figure 3: Level 0 and 1C overall quality

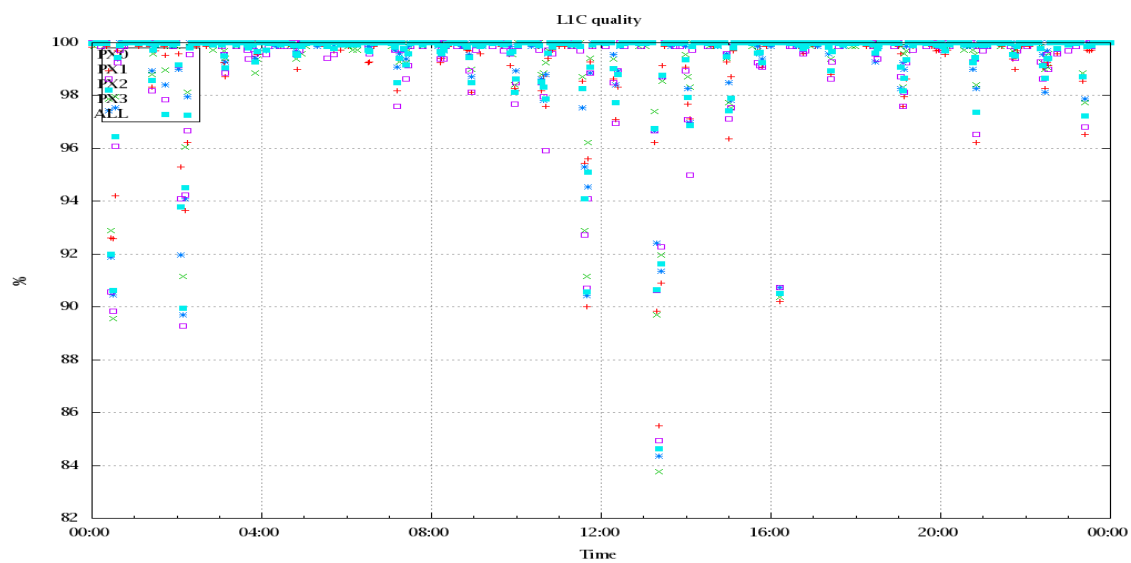


Figure 4: Level 1C quality

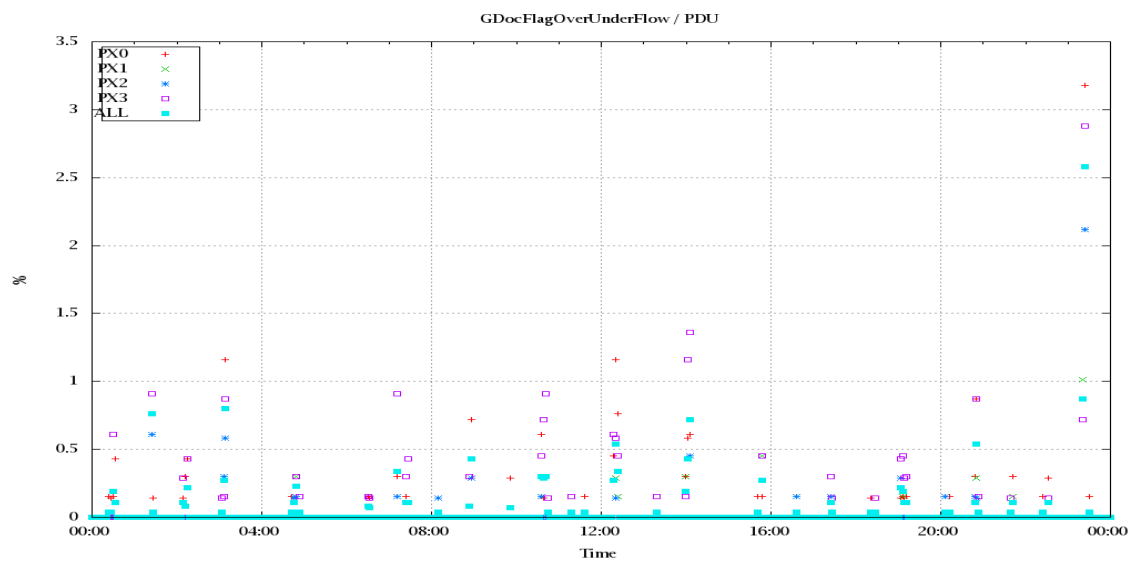


Figure 5: OverUnderFlowFlag timeseries

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.

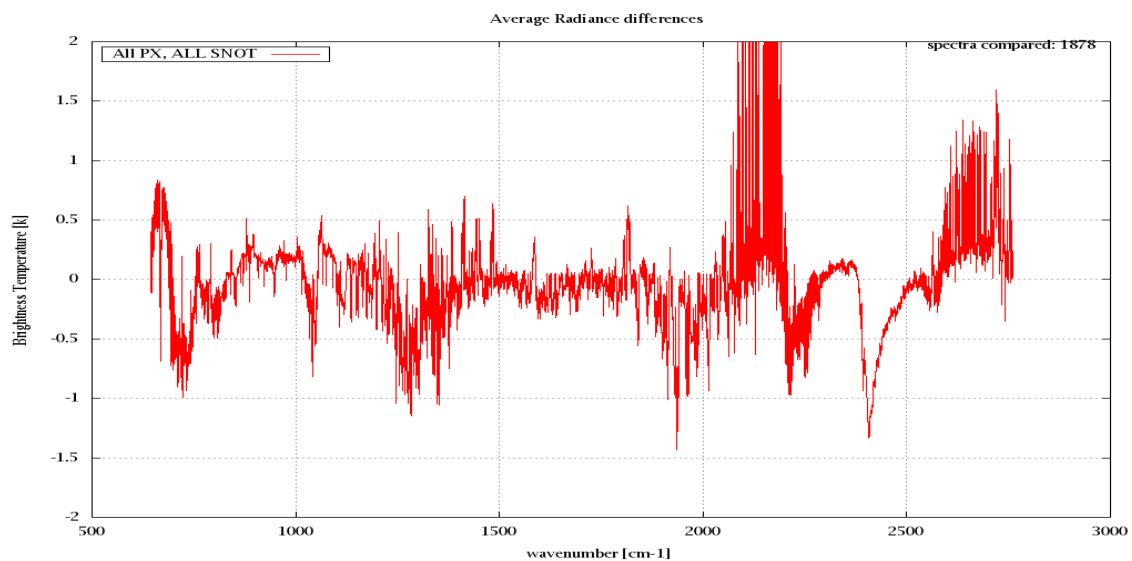


Figure 6: Average Radiance differences: OBS-CAL

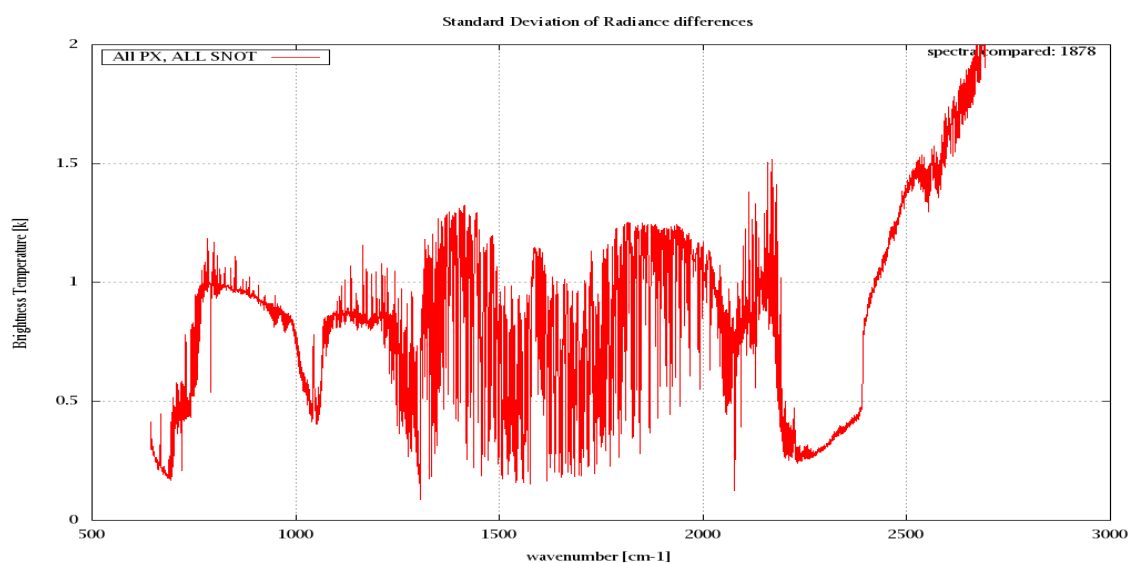


Figure 7: Standard Deviation of Radiance differences

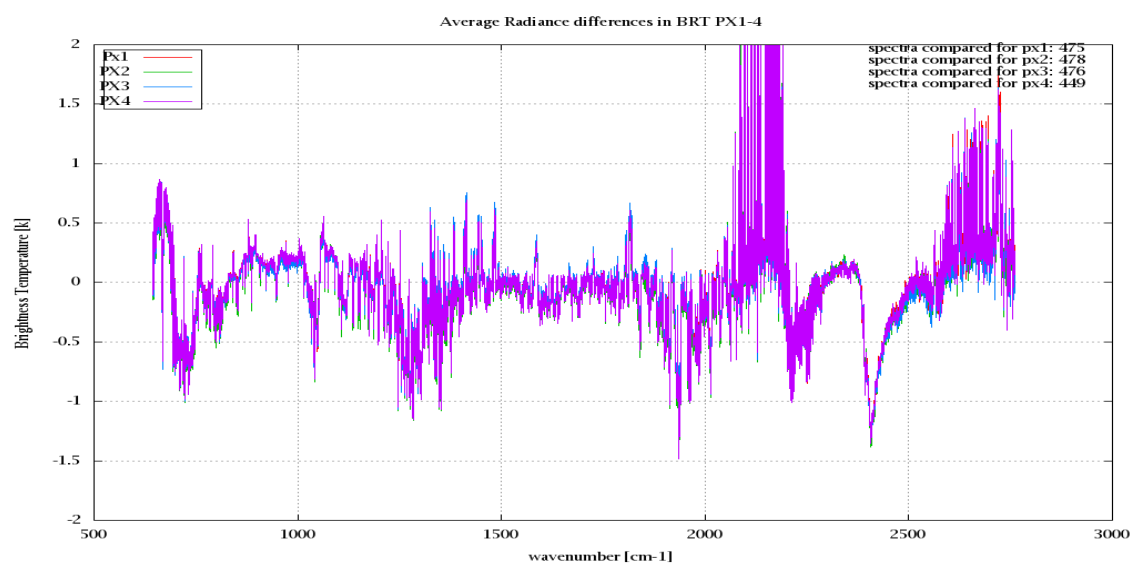


Figure 8: Average Radiance differences: OBS-CAL

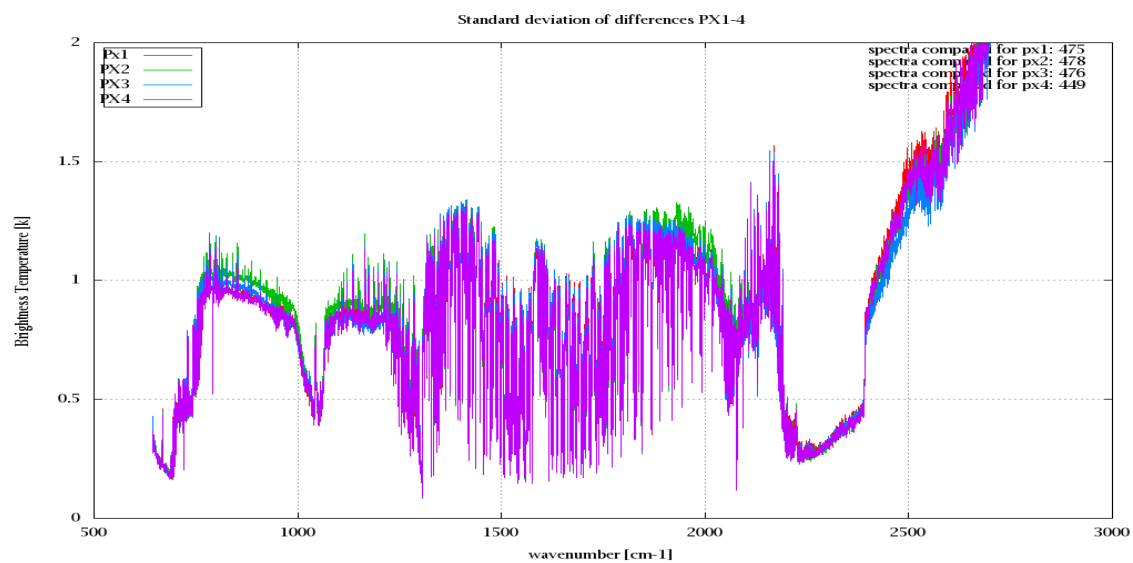


Figure 9: Standard Deviation of Radiance differences

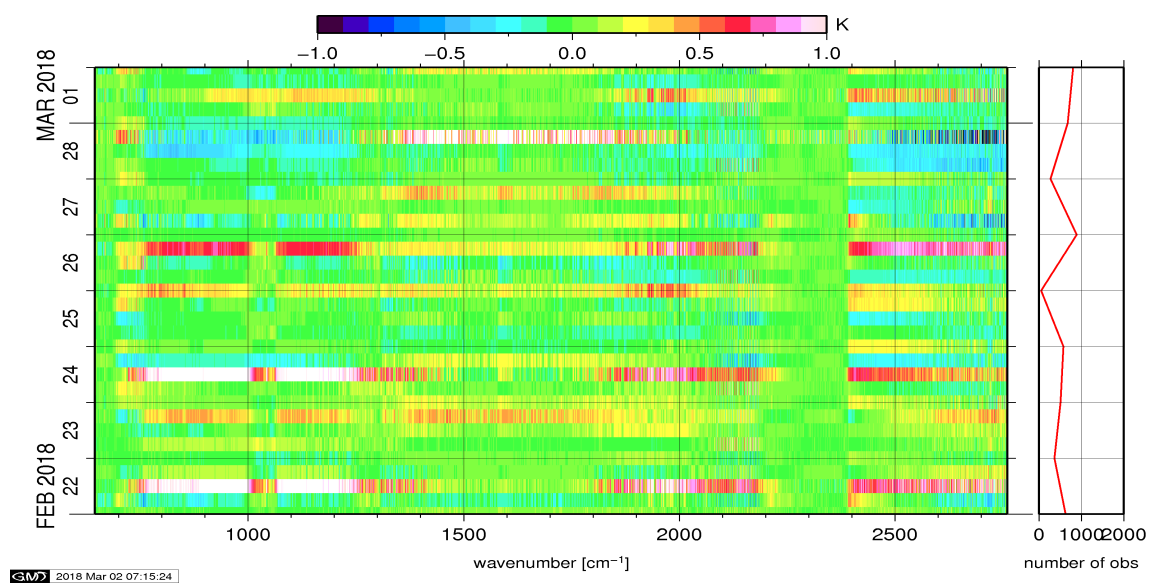


Figure 10: Radiance Anomaly in BRT: All Channels

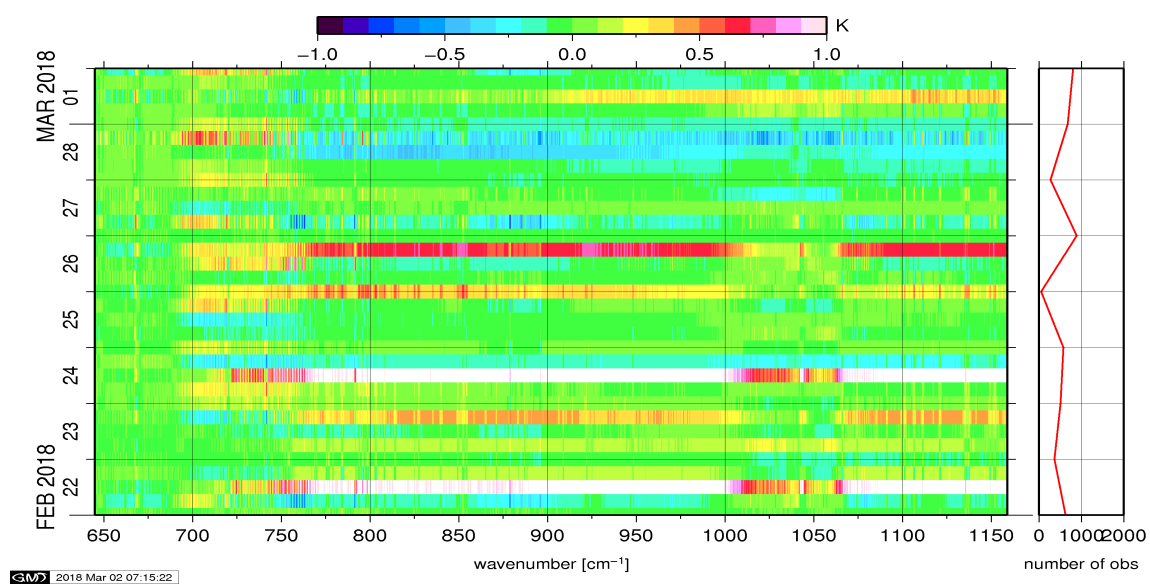


Figure 11: Radiance Anomaly in BRT: IASI Band 1

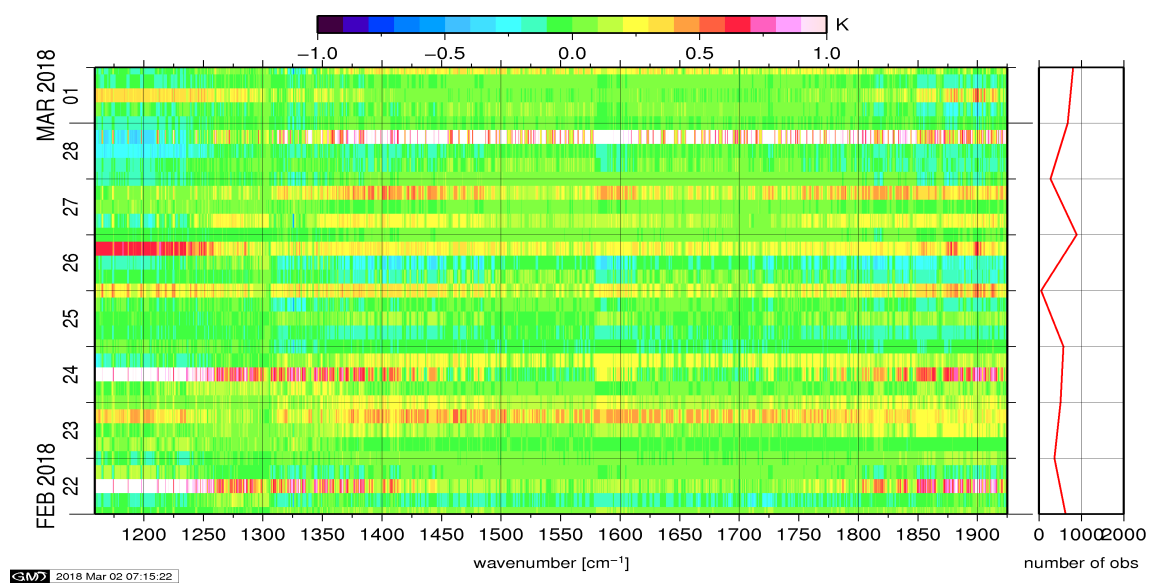


Figure 12: Radiance Anomaly in BRT: IASI Band 2

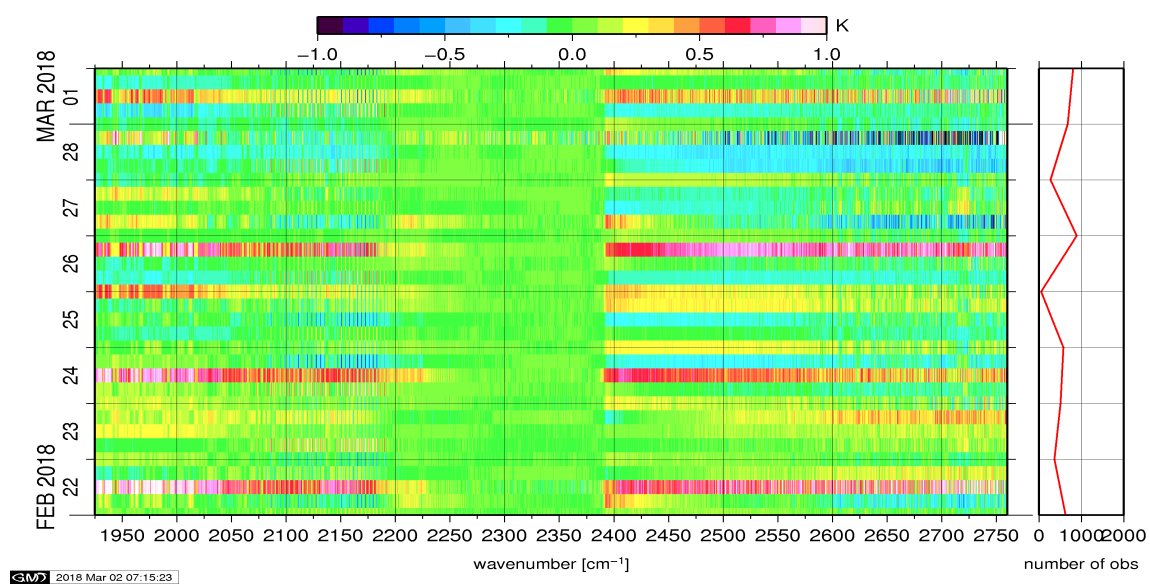


Figure 13: Radiance Anomaly in BRT: IASI Band 3

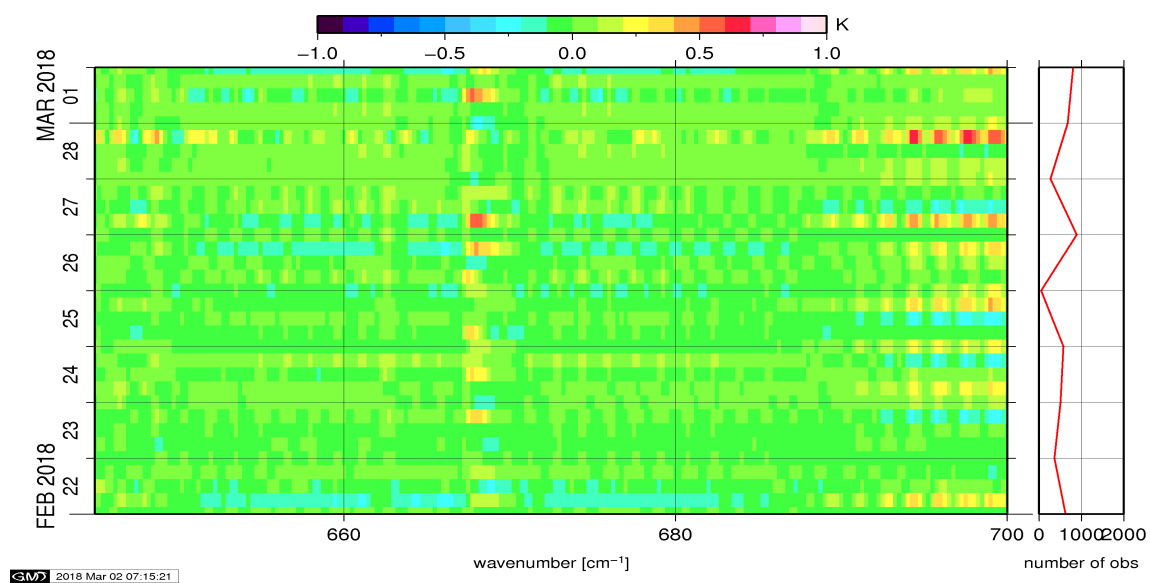


Figure 14: Radiance Anomaly in BRT: CO2 14

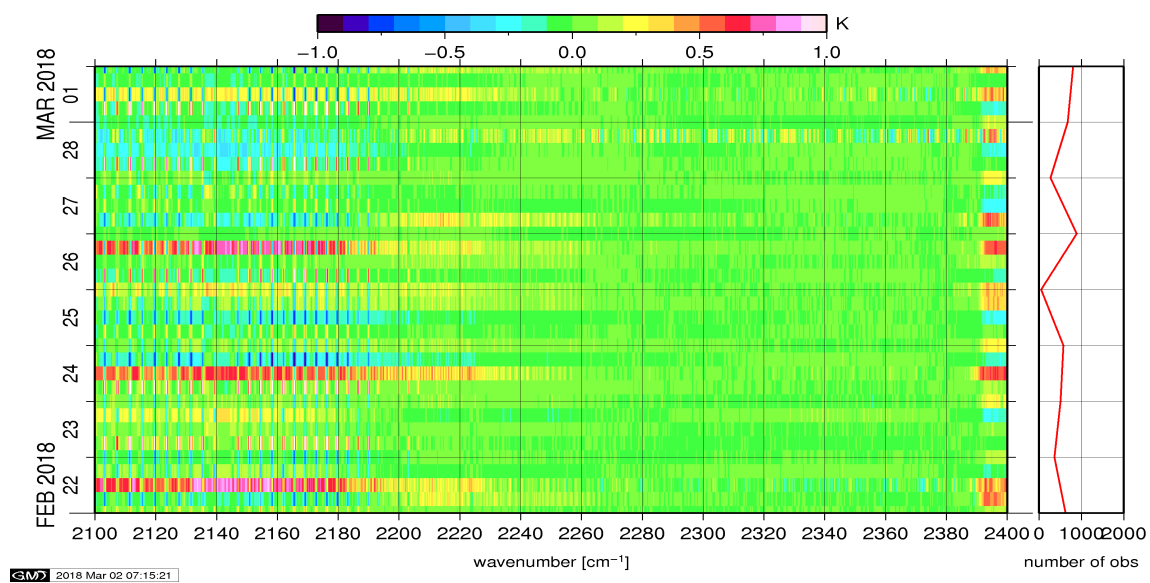


Figure 15: Radiance Anomaly in BRT: CO2 4.3

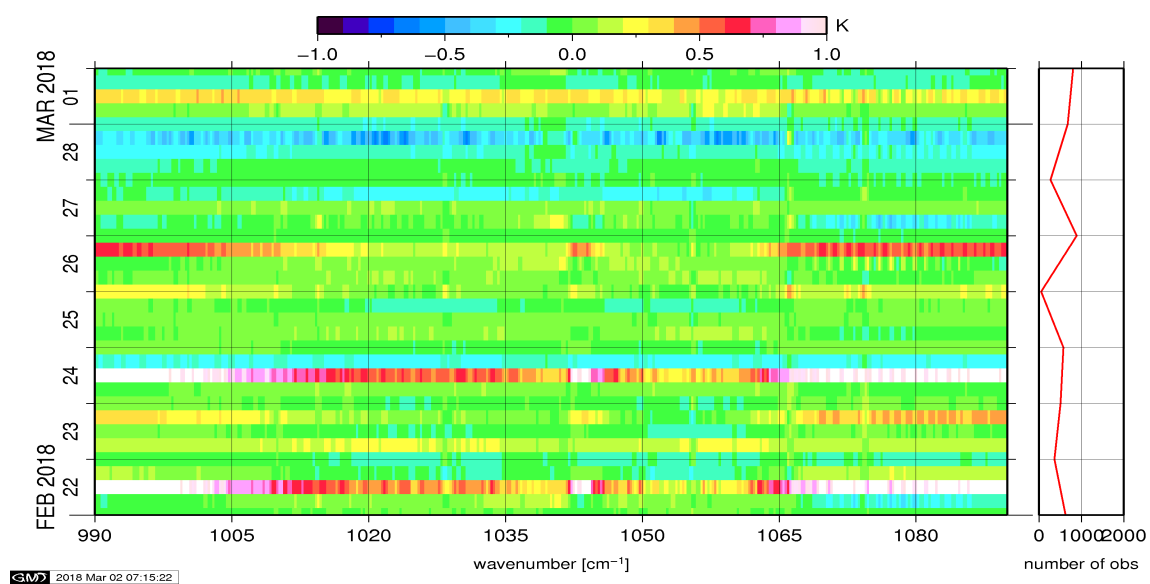


Figure 16: Radiance Anomaly in BRT: O3

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.

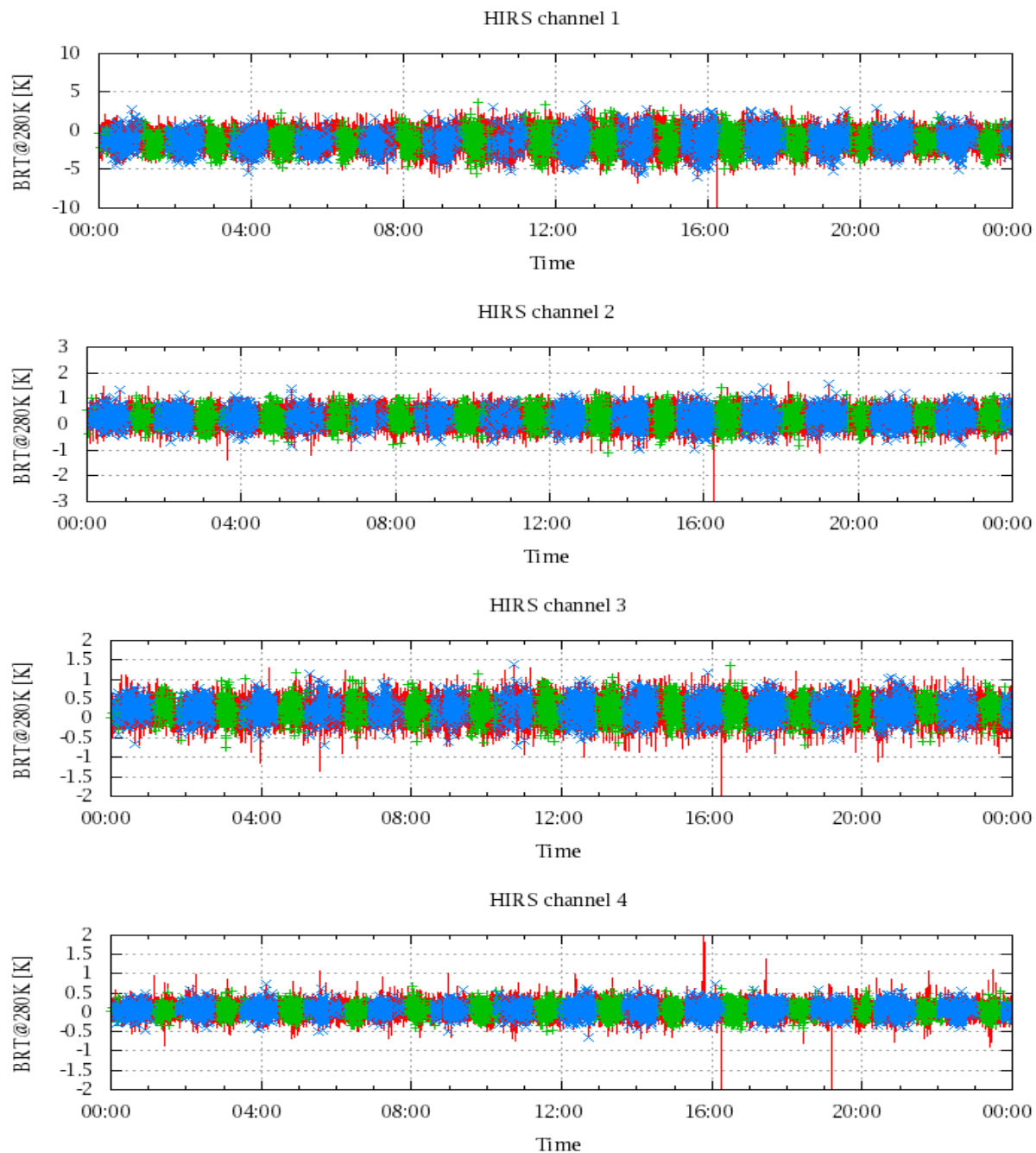


Figure 17: Radiance Differences in BRT

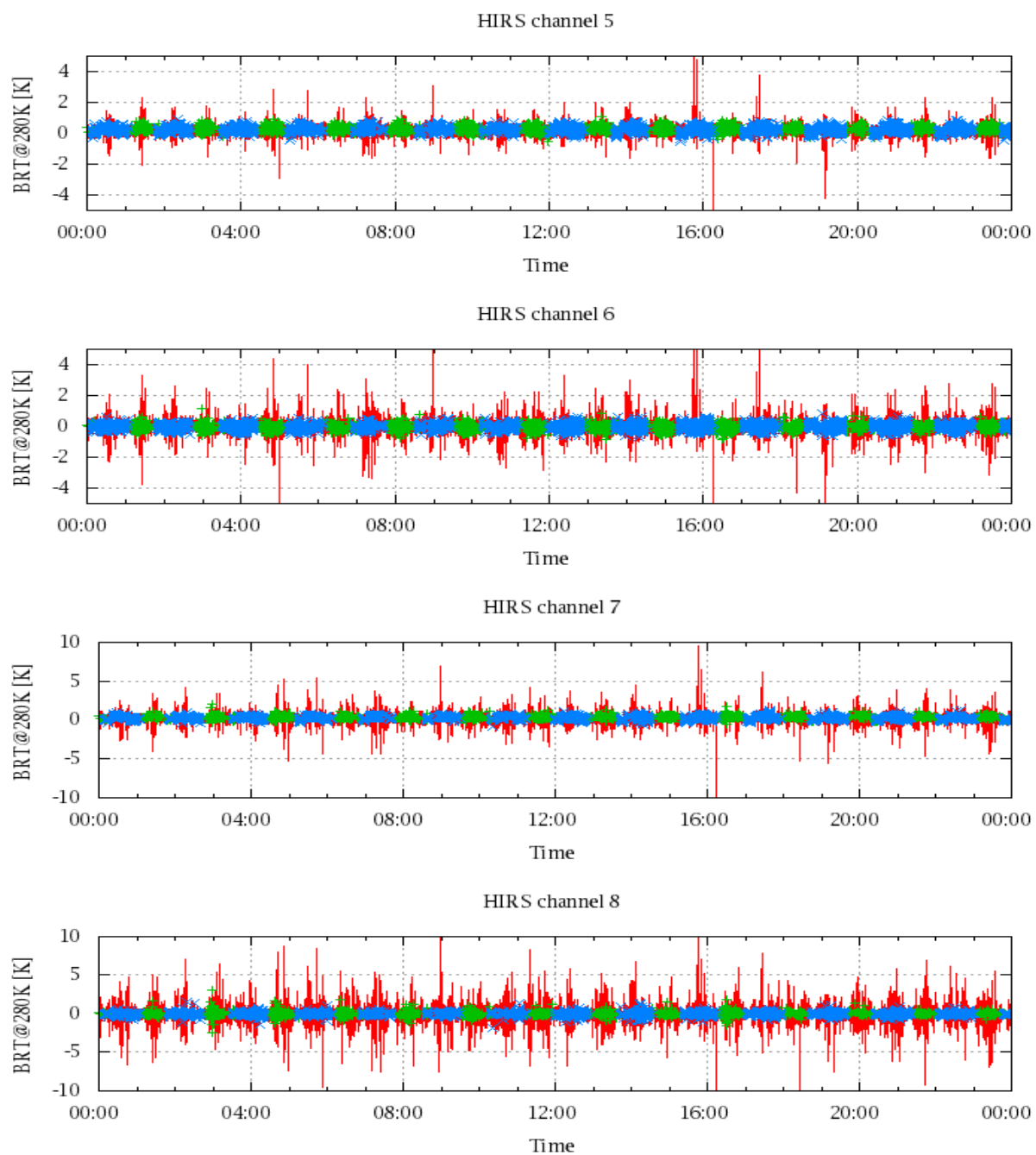


Figure 18: Radiance Differences in BRT

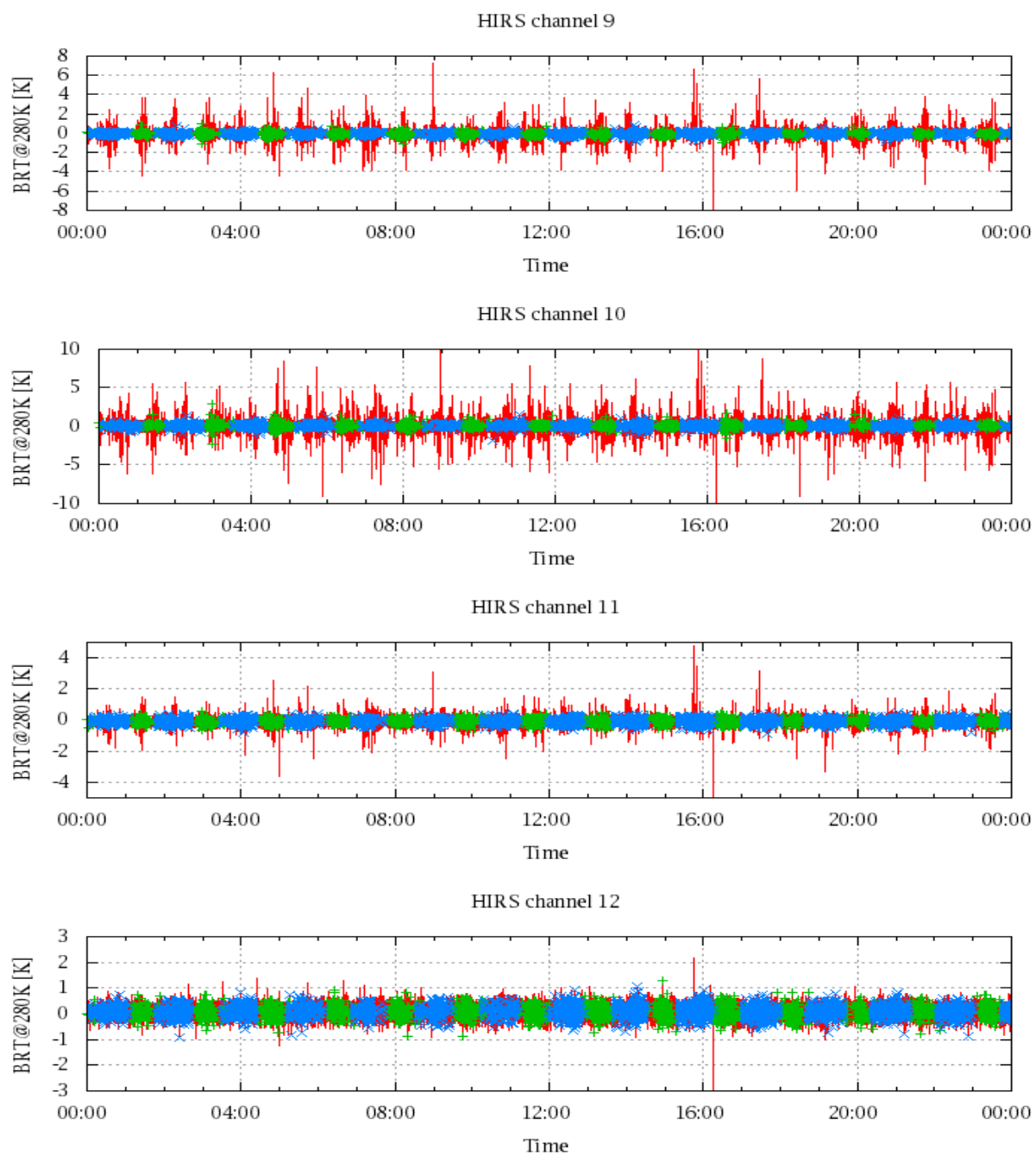


Figure 19: Radiance Differences in BRT

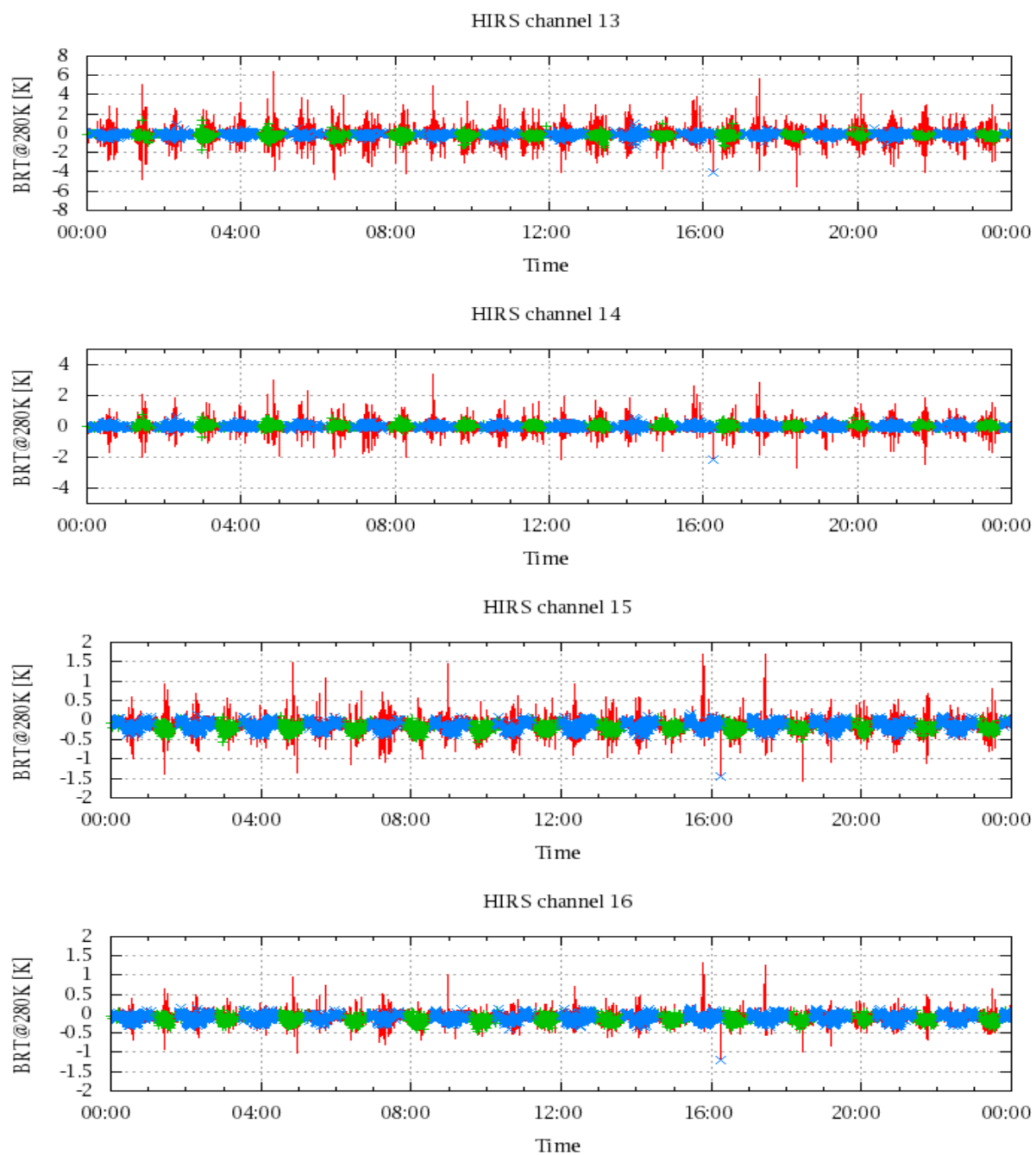


Figure 20: Radiance Differences in BRT

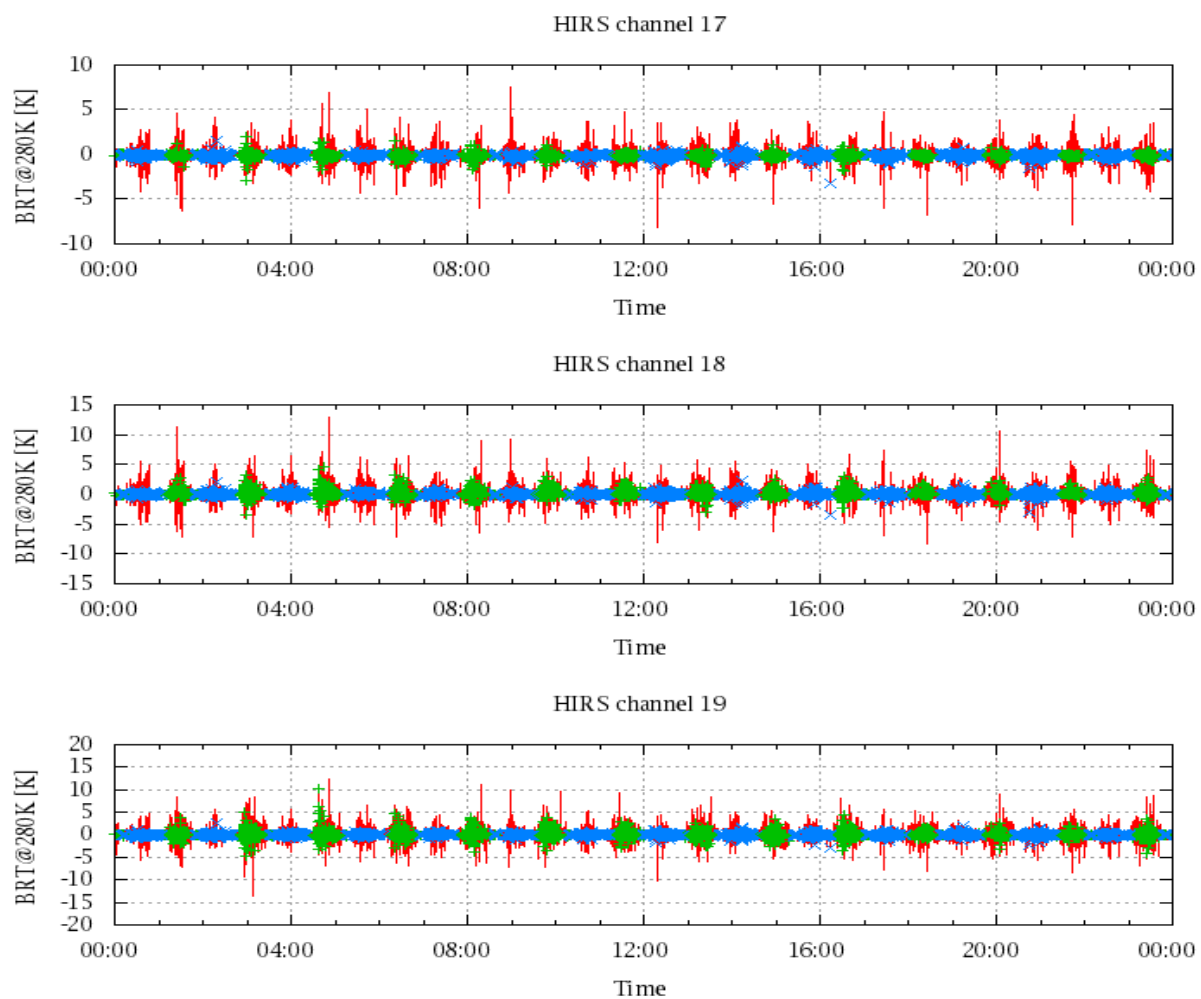


Figure 21: Radinace Differences in BRT