

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

28/03/2018 00:00:00 - 29/03/2018 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 28/03/2018 00:00:00 - 29/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 28/03/2018 00:00:00 - 29/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	478	-
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)	12693	12702	20180328131306.016	20180328131307.965
PX1 (130)	12721	12723	20180328131313.586	20180328131314.020
PX1 (130)	12726	12750	20180328131314.664	20180328131321.367
PX1 (130)	9587	9622	20180328152454.730	20180328152505.328
PX1 (130)	10491	10503	20180328152855.624	20180328152859.734
PX1 (130)	10927	10942	20180328153052.597	20180328153057.355
PX1 (130)	11134	11152	20180328153147.944	20180328153153.351
PX1 (130)	11354	11371	20180328153246.104	20180328153251.296
PX1 (130)	11541	11591	20180328153335.620	20180328153349.456
PX1 (130)	11778	11812	20180328153438.968	20180328153449.346
PX1 (130)	11986	12028	20180328153534.534	20180328153546.643
PX2 (135)	12693	12702	20180328131306.016	20180328131307.965
PX2 (135)	12721	12723	20180328131313.586	20180328131314.020
PX2 (135)	12726	12750	20180328131314.664	20180328131321.367
PX2 (135)	9587	9622	20180328152454.730	20180328152505.328
PX2 (135)	10491	10503	20180328152855.624	20180328152859.734
PX2 (135)	10926	10942	20180328153052.378	20180328153057.355
PX2 (135)	11133	11152	20180328153147.729	20180328153153.351

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	11354	11370	20180328153246.104	20180328153251.081
PX2 (135)	11541	11591	20180328153335.620	20180328153349.456
PX2 (135)	11778	11812	20180328153438.968	20180328153449.346
PX2 (135)	11986	12028	20180328153534.534	20180328153546.643
PX3 (140)	12693	12702	20180328131306.016	20180328131307.965
PX3 (140)	12723	12725	20180328131314.020	20180328131314.449
PX3 (140)	12726	12750	20180328131314.664	20180328131321.367
PX3 (140)	9587	9622	20180328152454.730	20180328152505.328
PX3 (140)	10491	10503	20180328152855.624	20180328152859.734
PX3 (140)	10926	10942	20180328153052.378	20180328153057.355
PX3 (140)	11133	11152	20180328153147.729	20180328153153.351
PX3 (140)	11354	11370	20180328153246.104	20180328153251.081
PX3 (140)	11541	11591	20180328153335.620	20180328153349.456
PX3 (140)	11778	11812	20180328153438.968	20180328153449.346
PX3 (140)	11986	12028	20180328153534.534	20180328153546.643
PX4 (145)	12693	12702	20180328131306.016	20180328131307.965
PX4 (145)	12723	12725	20180328131314.020	20180328131314.449
PX4 (145)	12726	12750	20180328131314.664	20180328131321.367
PX4 (145)	9587	9622	20180328152454.730	20180328152505.328
PX4 (145)	10491	10503	20180328152855.624	20180328152859.734
PX4 (145)	10926	10942	20180328153052.378	20180328153057.355
PX4 (145)	11133	11152	20180328153147.729	20180328153153.351
PX4 (145)	11354	11370	20180328153246.104	20180328153251.081
PX4 (145)	11541	11591	20180328153335.620	20180328153349.456
PX4 (145)	11778	11812	20180328153438.968	20180328153449.346
PX4 (145)	11986	12028	20180328153534.534	20180328153546.643
IMG (150)	8800	8809	20180328131305.801	20180328131307.746
IMG (150)	8830	8832	20180328131312.719	20180328131313.367
IMG (150)	8837	8862	20180328131314.449	20180328131320.070
IMG (150)	9646	9690	20180328152454.515	20180328152505.328
IMG (150)	10433	10436	20180328152759.628	20180328152800.710
IMG (150)	10673	10686	20180328152856.277	20180328152859.519
IMG (150)	11166	11182	20180328153052.378	20180328153056.058
IMG (150)	11401	11420	20180328153147.729	20180328153152.054
IMG (150)	11650	11670	20180328153246.104	20180328153251.081
IMG (150)	11861	11919	20180328153335.620	20180328153349.456
IMG (150)	12129	12168	20180328153438.753	20180328153448.050
IMG (150)	12365	12416	20180328153534.319	20180328153546.643
VER (160)	7506	7515	20180328131311.637	20180328131327.637
VER (160)	12444	12455	20180328152447.597	20180328152511.593
VER (160)	12560	12565	20180328152759.628	20180328152807.628
VER (160)	12669	12671	20180328153047.624	20180328153052.597
VER (160)	12704	12707	20180328153143.620	20180328153147.944
VER (160)	12739	12745	20180328153239.620	20180328153255.620
VER (160)	12772	12780	20180328153335.620	20180328153351.620
VER (160)	12809	12816	20180328153431.616	20180328153438.968
VER (160)	12844	12855	20180328153527.616	20180328153551.612
AUX (180)	12302	12305	20180328152448.031	20180328152512.027
AUX (180)	12325	12327	20180328152752.062	20180328152808.058
AUX (180)	12361	12363	20180328153240.054	20180328153256.050
AUX (180)	12367	12370	20180328153328.050	20180328153352.050
AUX (180)	12375	12377	20180328153432.050	20180328153448.050
AUX (180)	12382	12385	20180328153528.049	20180328153552.046
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
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Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
28/03/2018 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	478	-
GQisFlagQual set (PX1)	99.53 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.60 %	-
GQisFlagQual set (PX4)	99.53 %	-
GQisFlagQual set (all)	99.56 %	-

Table 4: Quality flags

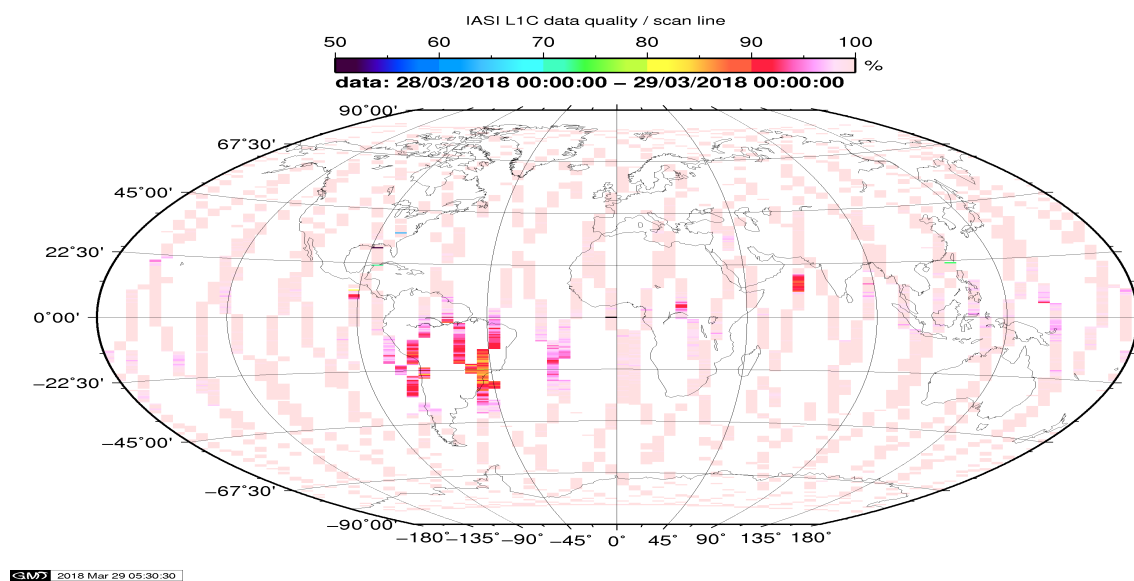


Figure 1: L1C data quality

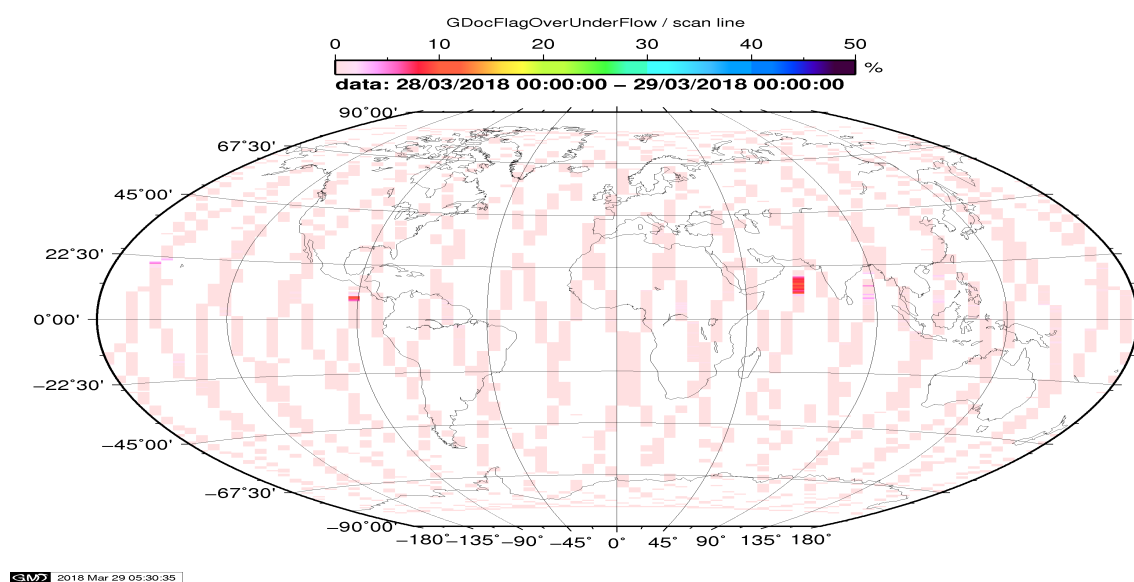


Figure 2: Flag of Over and Under Flows

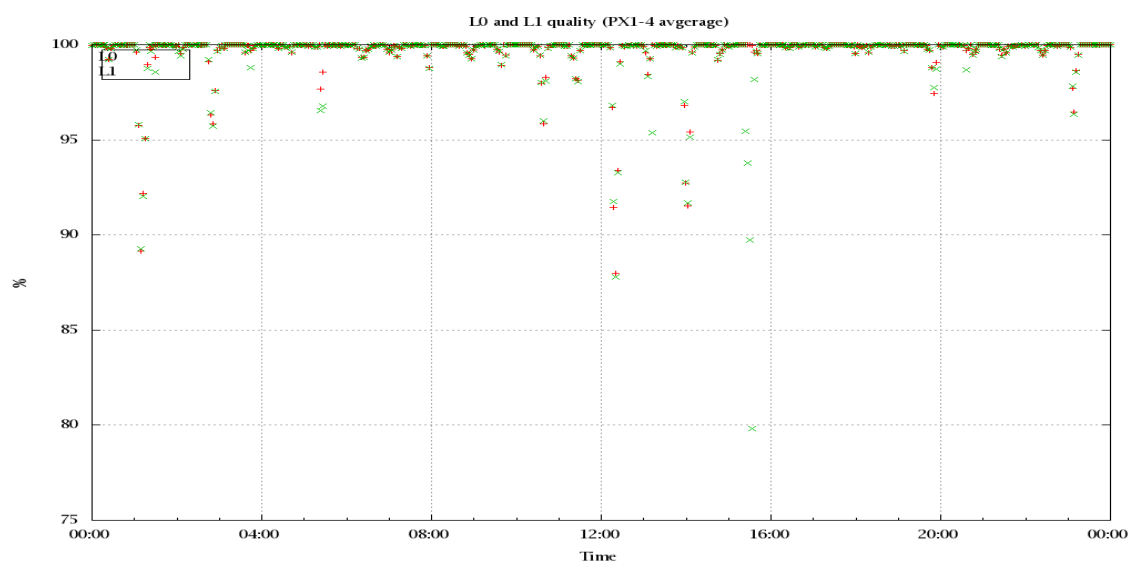


Figure 3: Level 0 and 1C overall quality

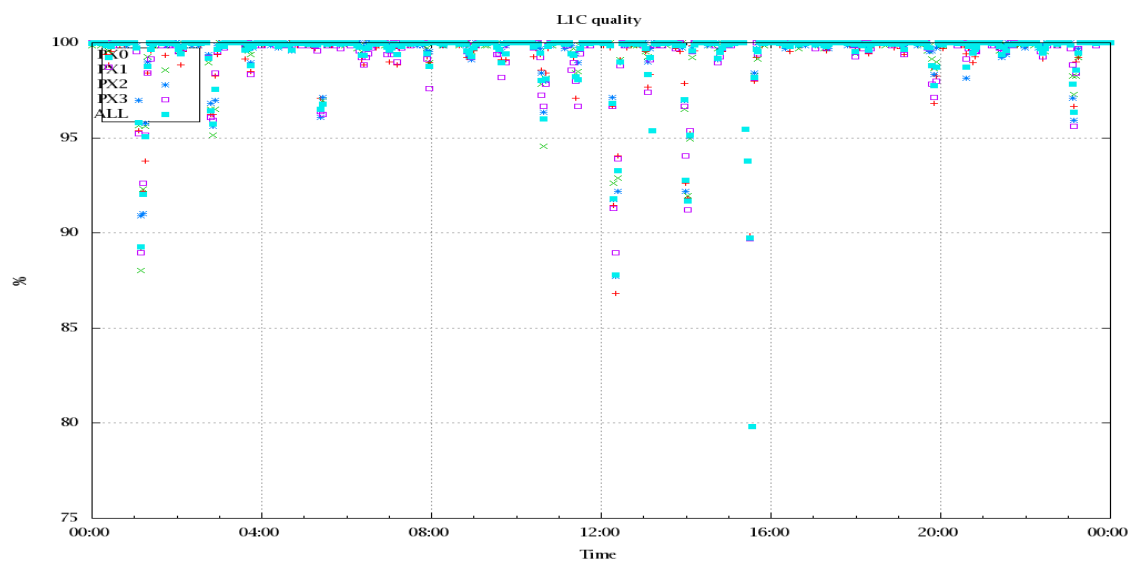


Figure 4: Level 1C quality

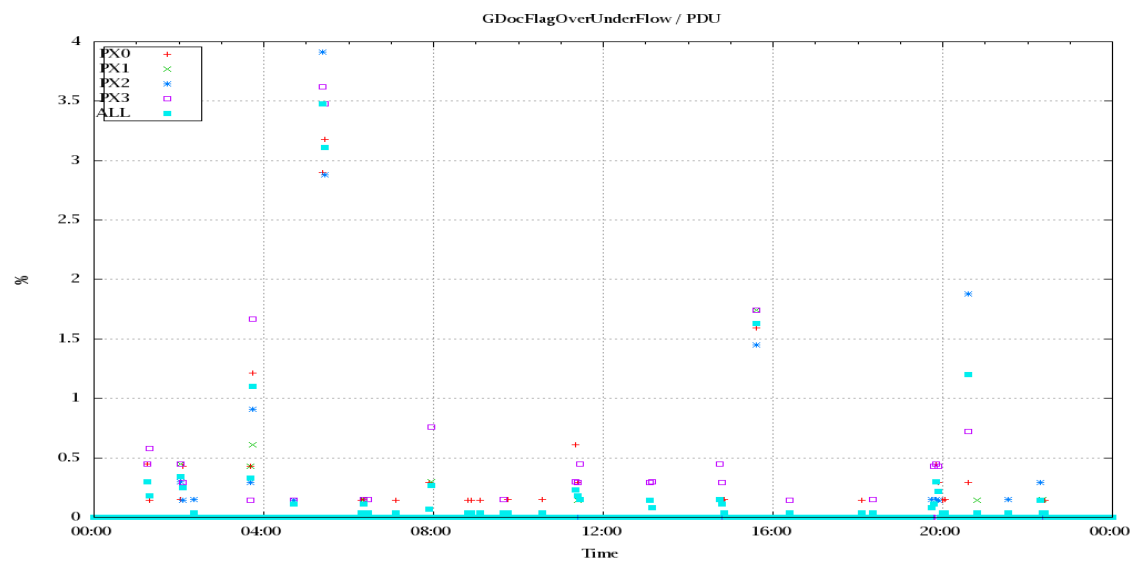


Figure 5: OverUnderFlowFlag timeseries

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.

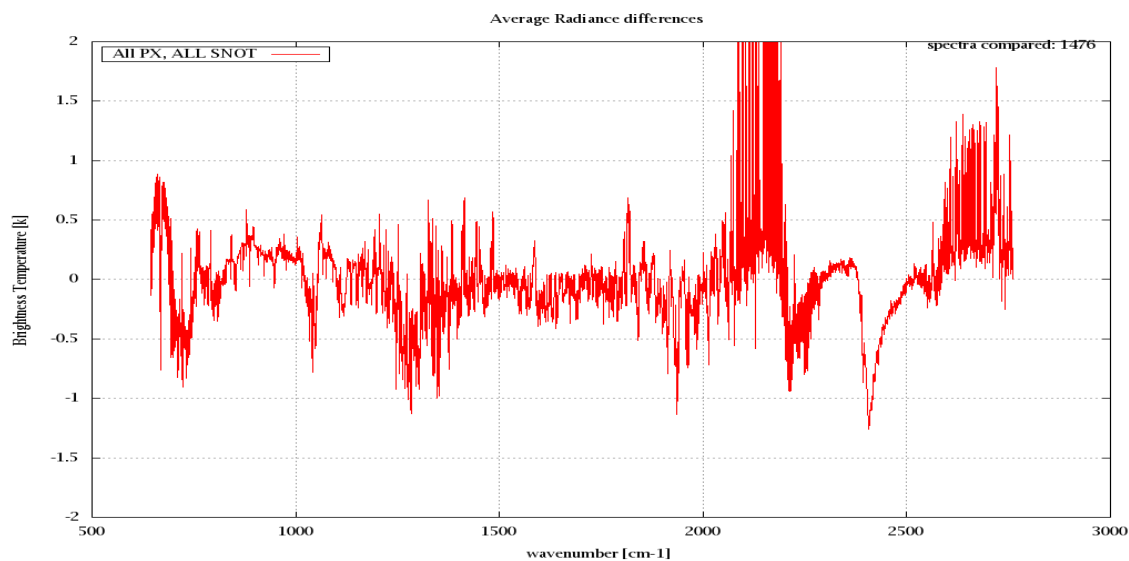


Figure 6: Average Radiance differences: OBS-CAL

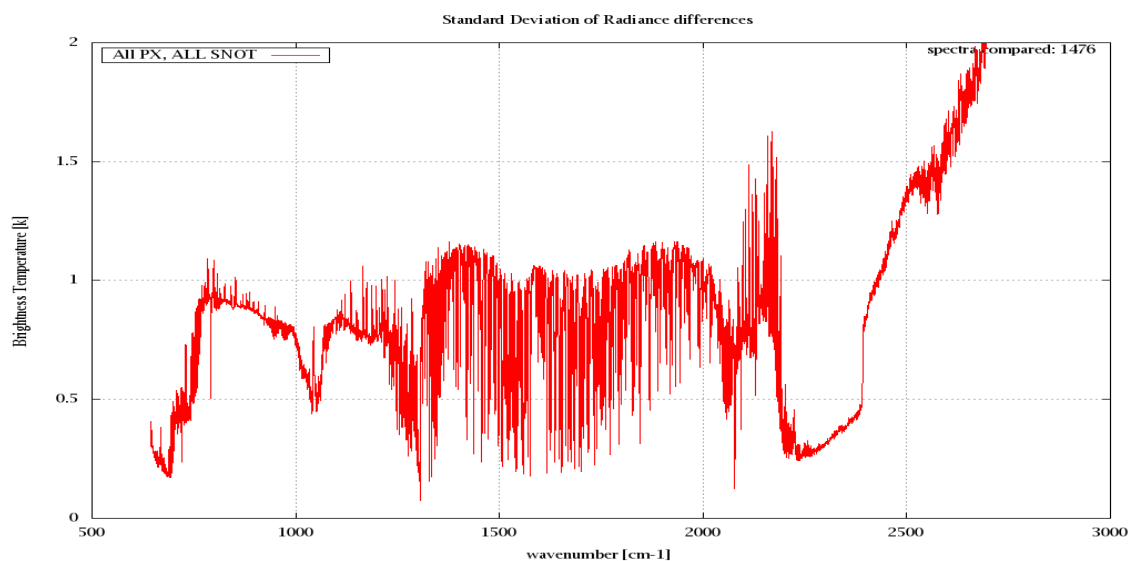


Figure 7: Standard Deviation of Radiance differences

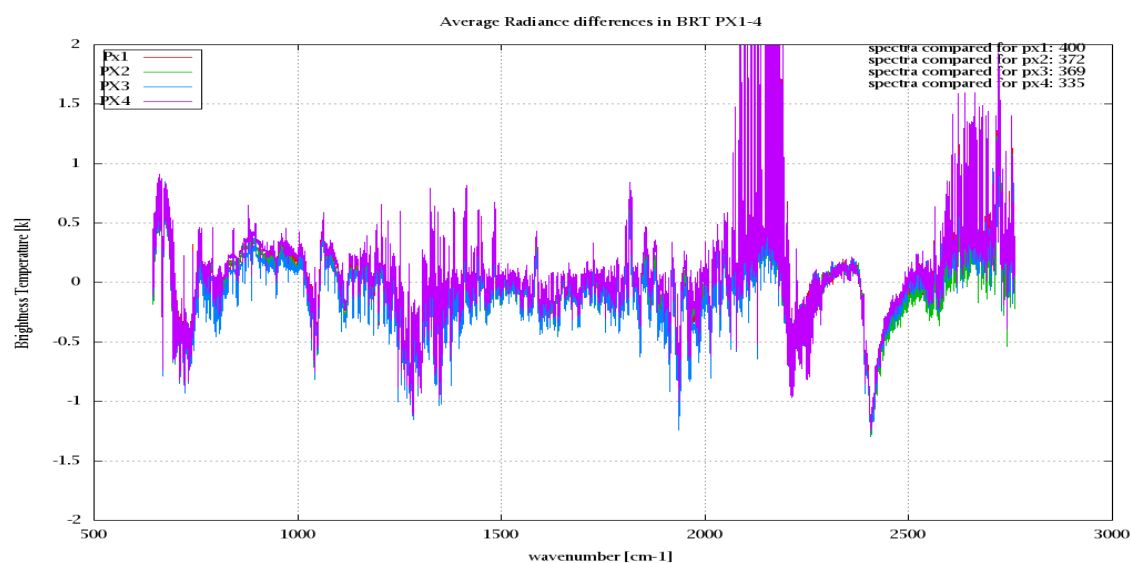


Figure 8: Average Radiance differences: OBS-CAL

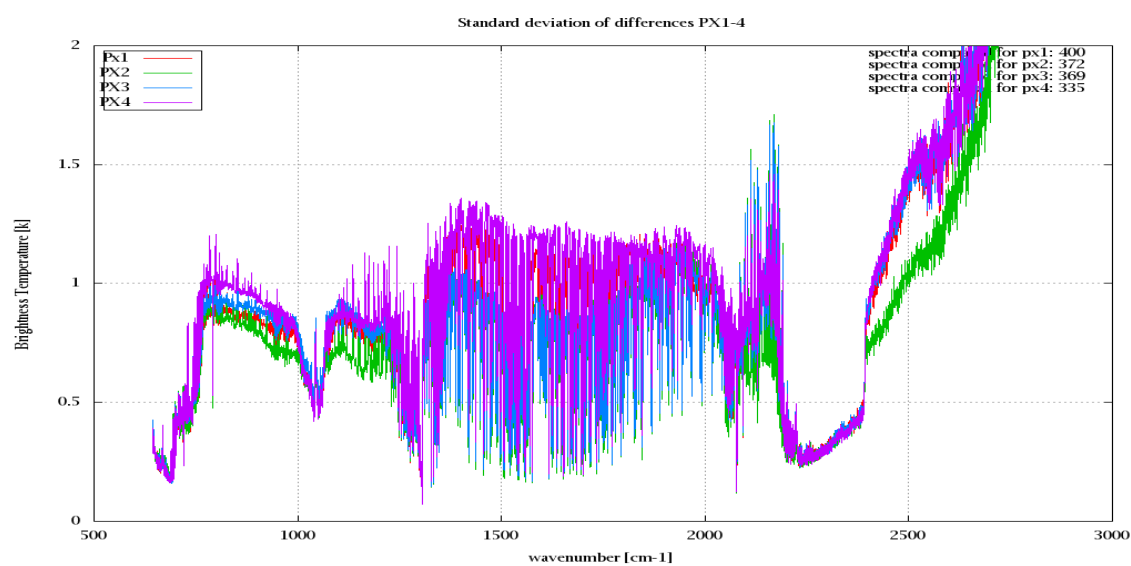


Figure 9: Standard Deviation of Radiance differences

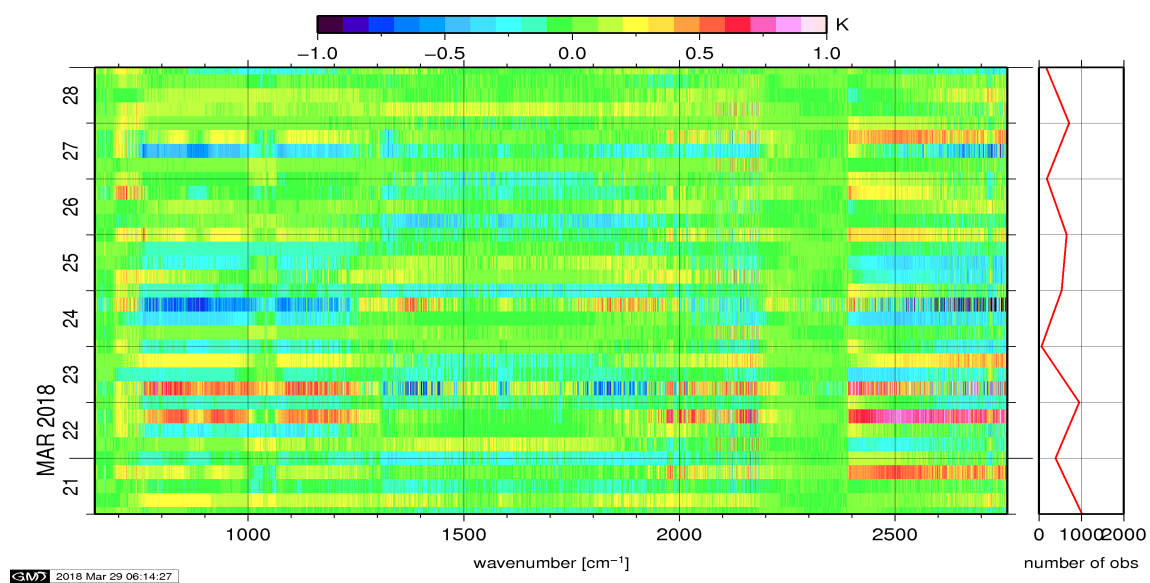


Figure 10: Radiance Anomaly in BRT: All Channels

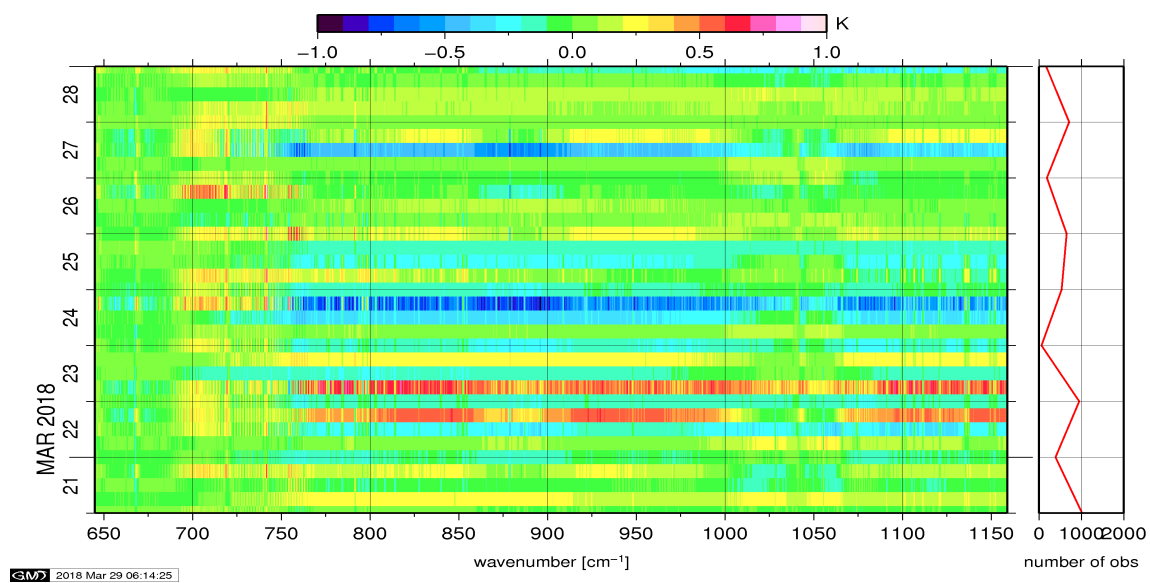


Figure 11: Radiance Anomaly in BRT: IASI Band 1

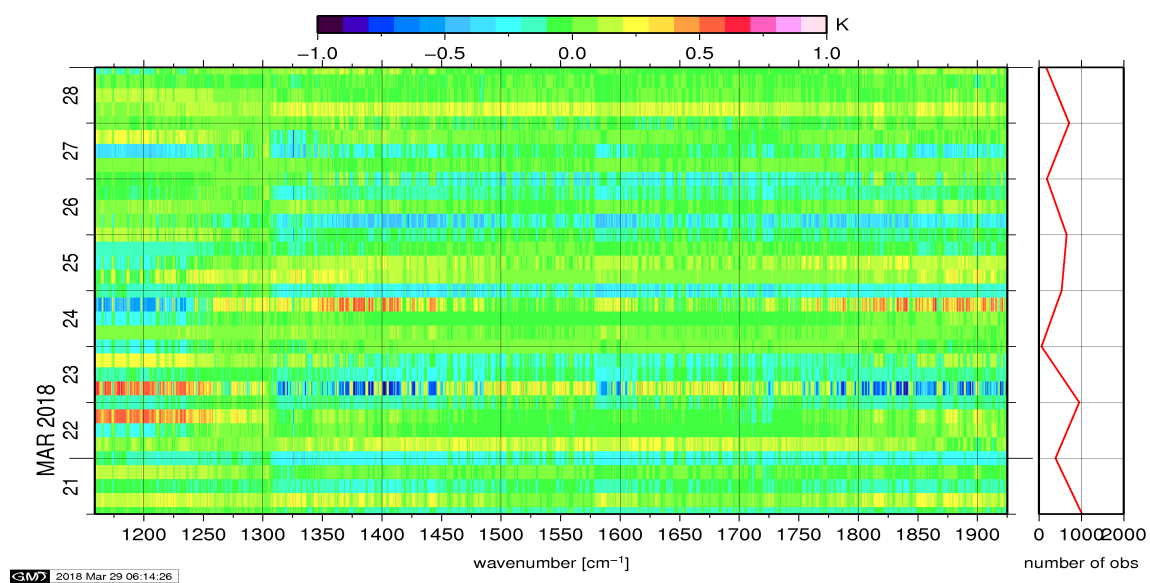


Figure 12: Radiance Anomaly in BRT: IASI Band 2

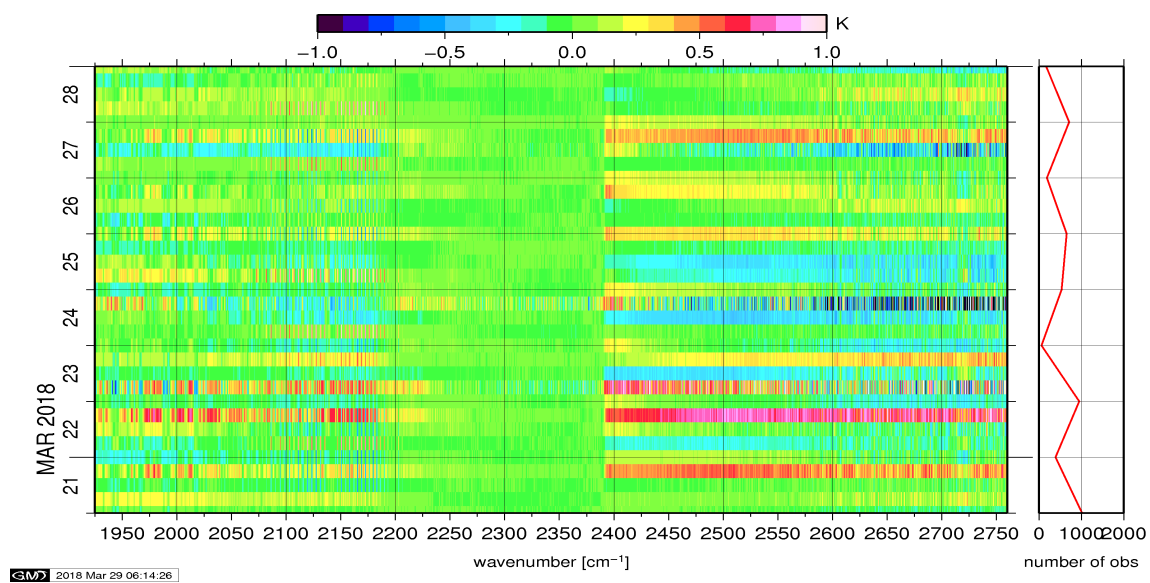


Figure 13: Radiance Anomaly in BRT: IASI Band 3

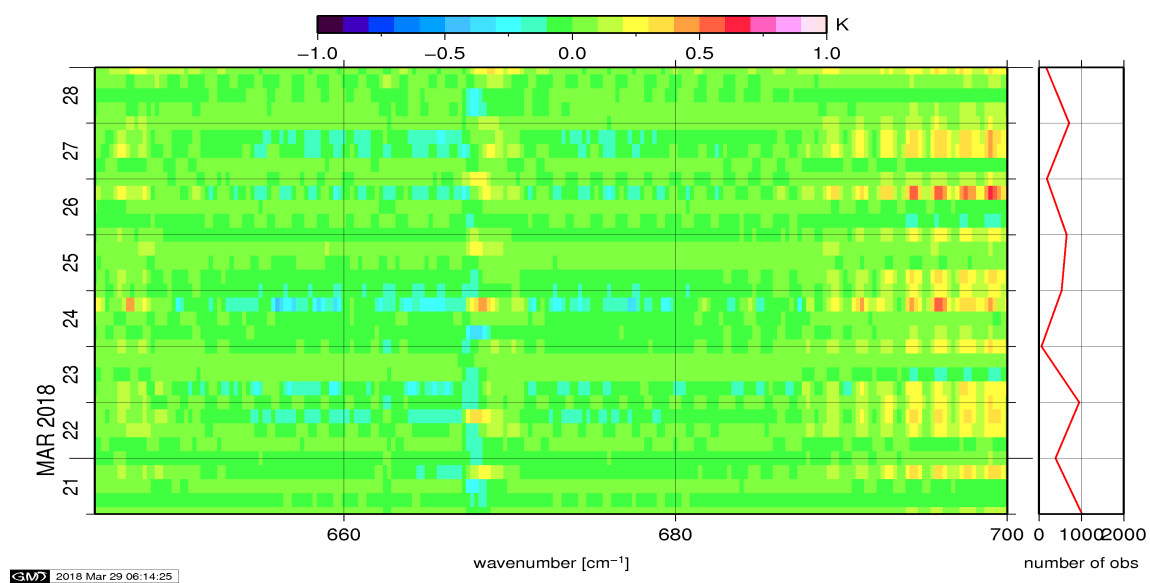


Figure 14: Radiance Anomaly in BRT: CO2 14

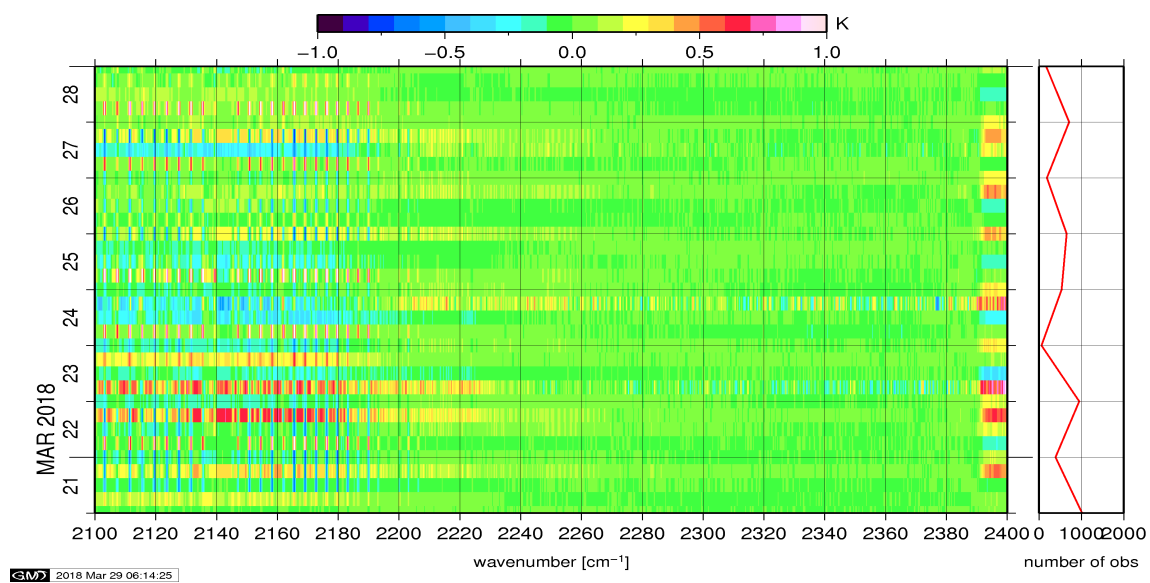


Figure 15: Radiance Anomaly in BRT: CO2 4.3

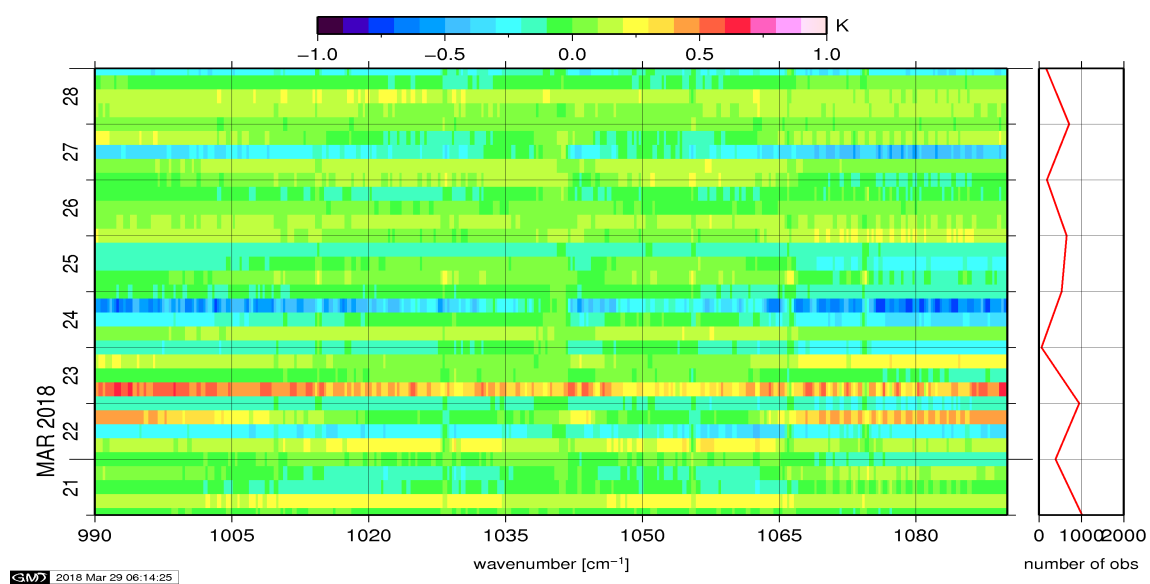


Figure 16: Radiance Anomaly in BRT: O3

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.

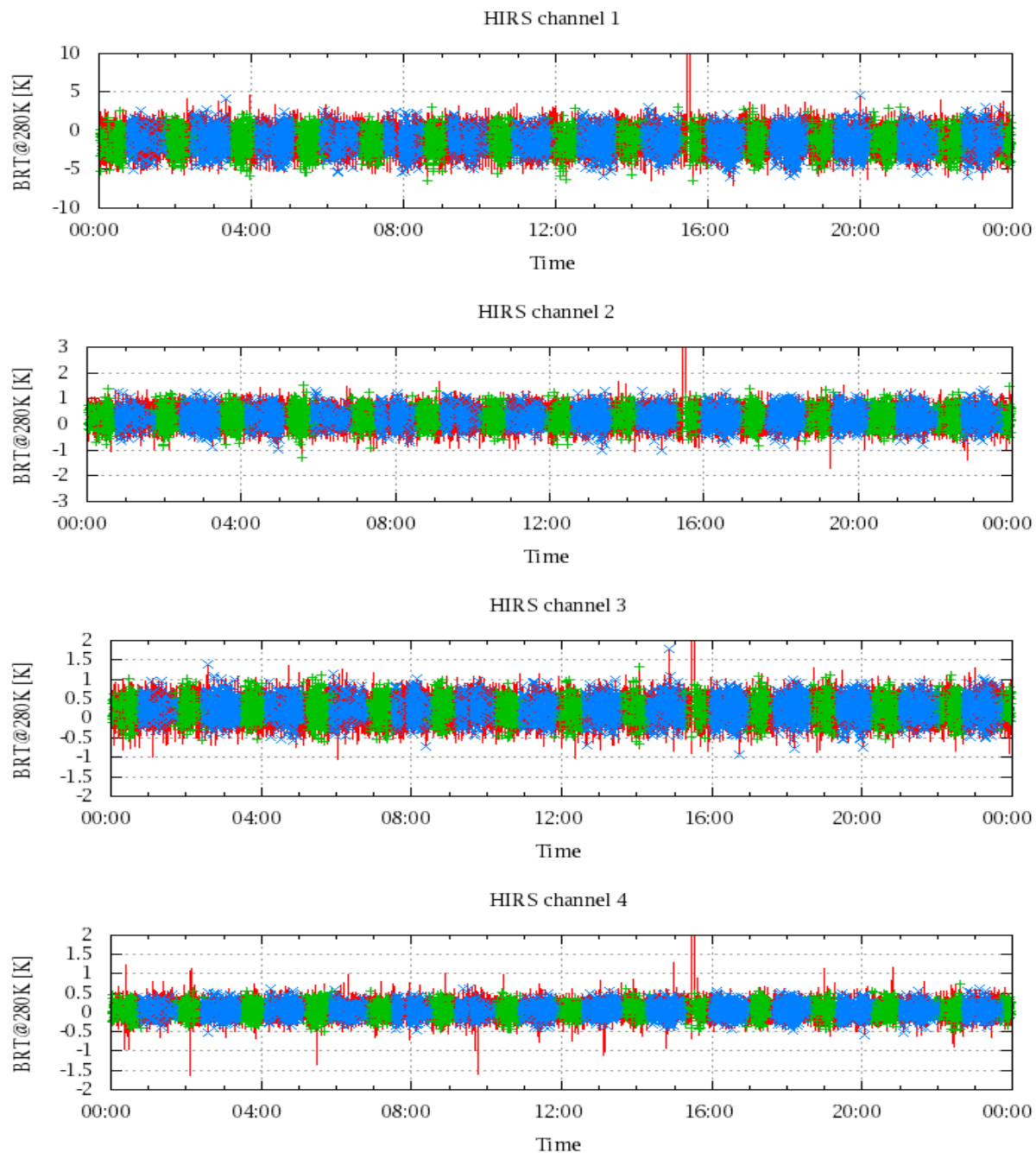


Figure 17: Radiance Differences in BRT

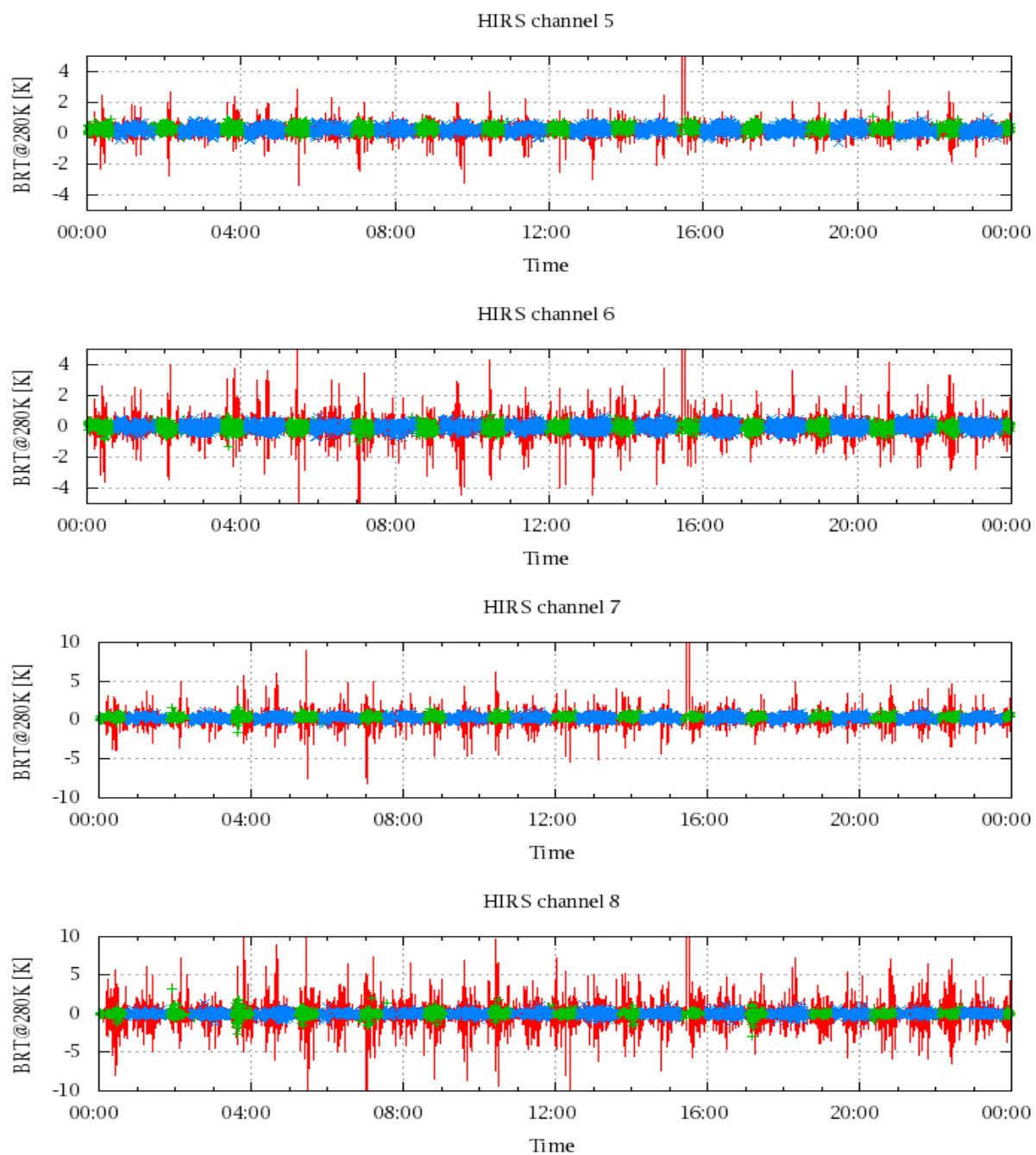


Figure 18: Radiance Differences in BRT

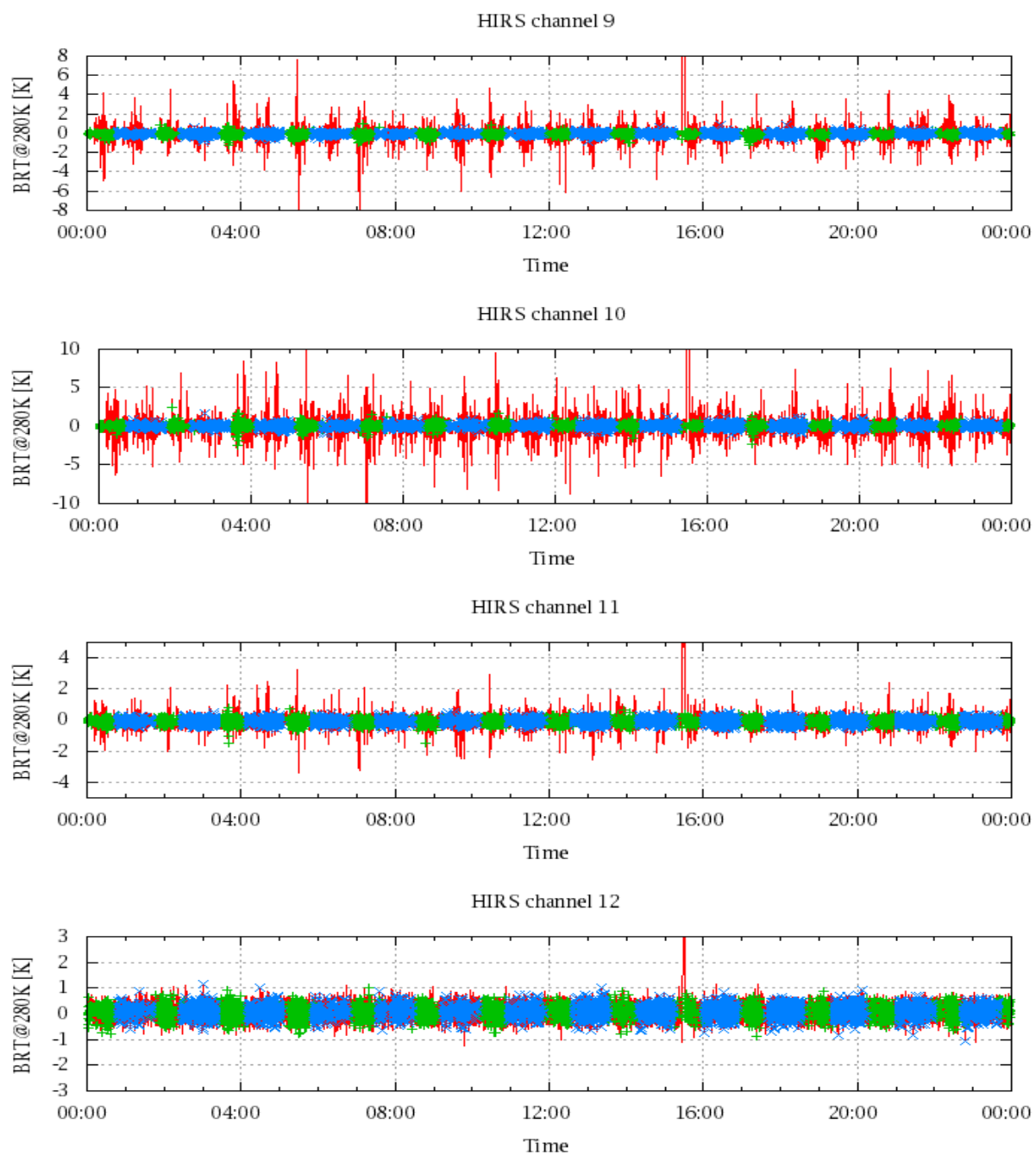


Figure 19: Radiance Differences in BRT

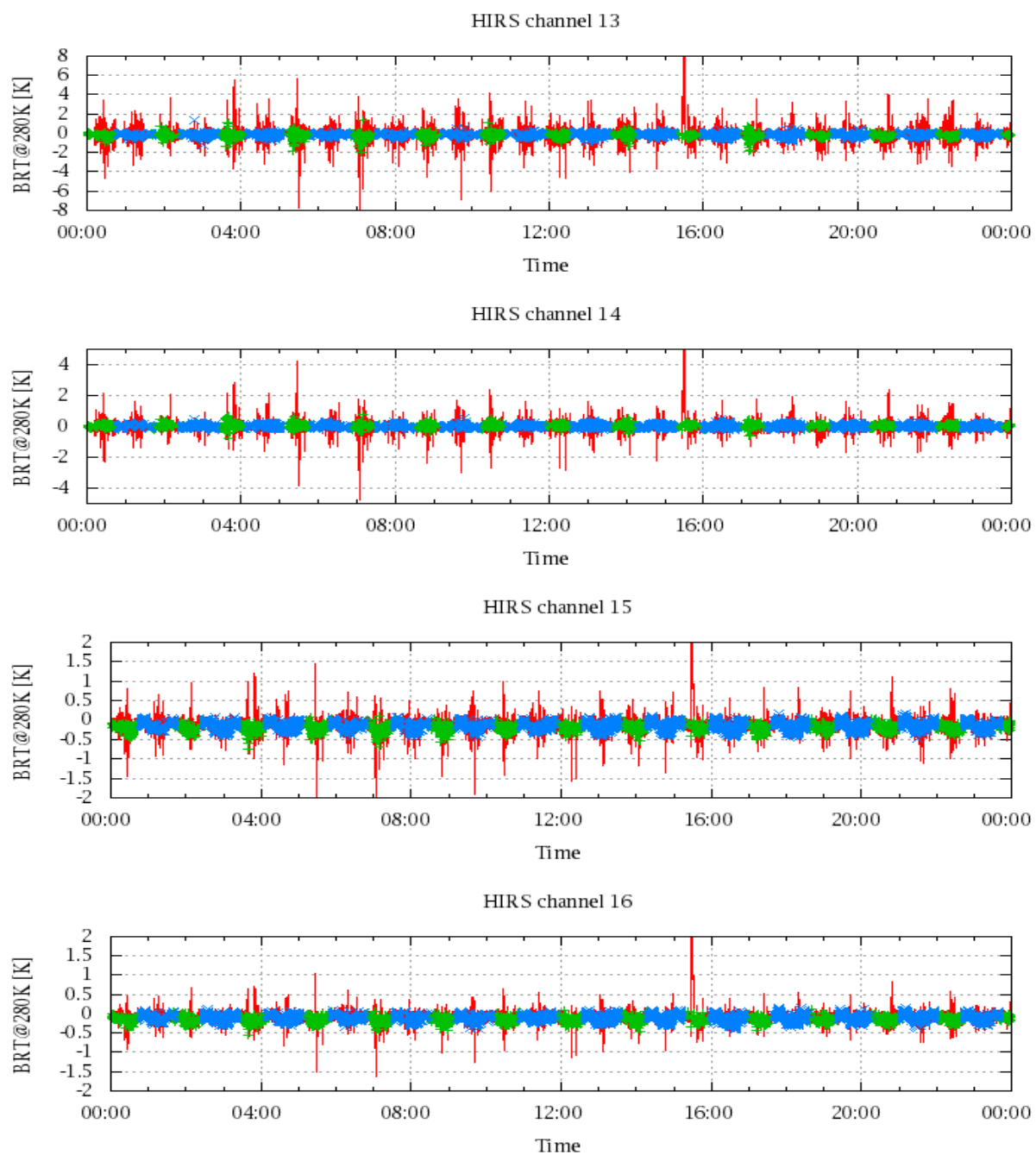


Figure 20: Radiance Differences in BRT

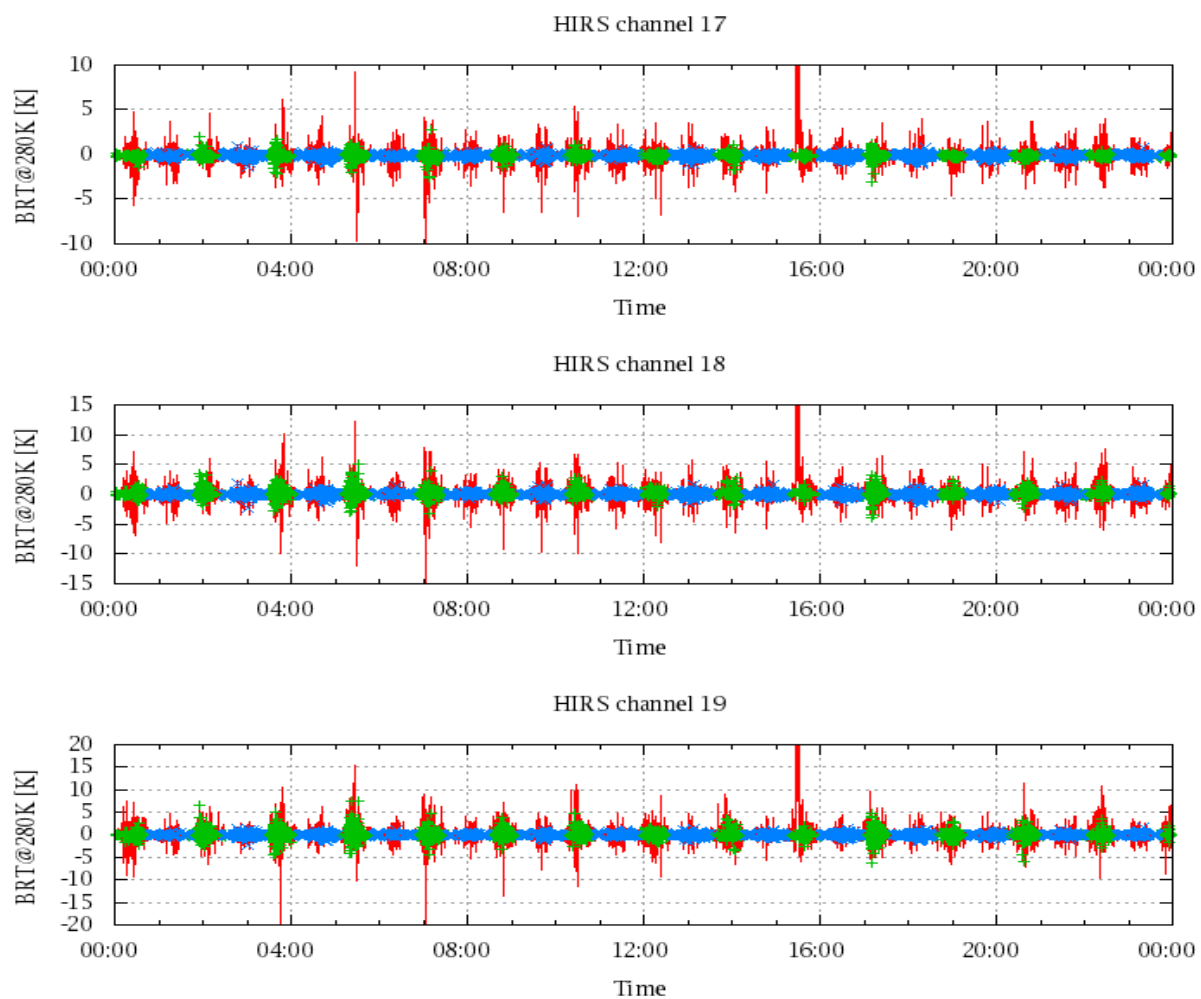


Figure 21: Radinace Differences in BRT