IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

29/03/2018 00:00:00 - 30/03/2018 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 29/03/2018 00:00:00 - 30/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 29/03/2018 00:00:00 - 30/03/2018 00:00:00

Product Type	**Number**	**Action**
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	479	-
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)	1746	1752	20180329063642.564	20180329063643.861
PX1 (130)	1956	1976	20180329063738.564	20180329063742.888
PX1 (130)	2183	2193	20180329063838.240	20180329063841.912
PX1 (130)	2377	2415	20180329063930.775	20180329063940.505
PX1 (130)	2600	2635	20180329064029.583	20180329064038.665
PX1 (130)	2798	2850	20180329064122.990	20180329064137.259
PX1 (130)	3236	3291	20180329064318.880	20180329064333.794
PX1 (130)	6024	6232	20180329103410.527	20180329103506.089
PX2 (135)	1746	1752	20180329063642.564	20180329063643.861
PX2 (135)	1956	1976	20180329063738.564	20180329063742.888
PX2 (135)	2182	2193	20180329063838.021	20180329063841.912
PX2 (135)	2377	2414	20180329063930.775	20180329063940.290
PX2 (135)	2599	2635	20180329064029.369	20180329064038.665
PX2 (135)	2798	2850	20180329064122.990	20180329064137.259
PX2 (135)	3236	3291	20180329064318.880	20180329064333.794
PX2 (135)	6024	6232	20180329103410.527	20180329103506.089
PX3 (140)	1746	1752	20180329063642.564	20180329063643.861
PX3 (140)	1956	1975	20180329063738.564	20180329063742.670

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	2182	2192	20180329063838.021	20180329063841.697
PX3 (140)	2377	2414	20180329063930.775	20180329063940.290
PX3 (140)	2599	2635	20180329064029.369	20180329064038.665
PX3 (140)	2798	2850	20180329064122.990	20180329064137.259
PX3 (140)	3236	3291	20180329064318.880	20180329064333.794
PX3 (140)	6023	6232	20180329103410.308	20180329103506.089
PX4 (145)	1746	1752	20180329063642.564	20180329063643.861
PX4 (145)	1956	1975	20180329063738.564	20180329063742.670
PX4 (145)	2182	2192	20180329063838.021	20180329063841.697
PX4 (145)	2376	2414	20180329063930.560	20180329063940.290
PX4 (145)	2599	2635	20180329064029.369	20180329064038.665
PX4 (145)	2797	2850	20180329064122.775	20180329064137.259
PX4 (145)	3236	3291	20180329064318.880	20180329064333.794
PX4 (145)	6023	6231	20180329103410.308	20180329103505.875
IMG (150)	12777	12783	20180329063642.349	20180329063643.646
IMG (150)	13016	13035	20180329063738.564	20180329063742.670
IMG (150)	13270	13284	20180329063838.021	20180329063841.697
IMG (150)	13492	13534	20180329063930.560	20180329063940.290
IMG (150)	13743	13782	20180329064029.369	20180329064038.451
IMG (150)	13969	14026	20180329064122.775	20180329064135.962
IMG (150)	14463	14527	20180329064318.661	20180329064333.794
IMG (150)	7795	8031	20180329103410.308	20180329103505.875
VER (160)	13941	13947	20180329063831.533	20180329063847.533
VER (160)	13976	13982	20180329063927.533	20180329063943.533
VER (160)	14011	14017	20180329064023.533	20180329064039.533
VER (160)	14046	14055	20180329064119.529	20180329064122.990
VER (160)	14116	14127	20180329064311.528	20180329064335.525
VER (160)	6393	6398	20180329103506.089	20180329103506.089
VER (160)	6398	6403	20180329103506.089	20180329103506.089
VER (160)	6403	6408	20180329103506.089	20180329103506.089
VER (160)	6408	6413	20180329103506.089	20180329103506.089
VER (160)	6413	6418	20180329103506.089	20180329103506.089
VER (160)	6418	6423	20180329103506.089	20180329103506.089
VER (160)	6423	6394	20180329103506.089	20180329103506.089
VER (160)	6394	6399	20180329103506.089	20180329103506.089
VER (160)	6399	6404	20180329103506.089	20180329103506.089
VER (160)	6404	6409	20180329103506.089	20180329103506.089
VER (160)	6409	6414	20180329103506.089	20180329103506.089
VER (160)	6414	6419	20180329103506.089	20180329103506.089
VER (160)	6419	6424	20180329103506.089	20180329103506.089
VER (160)	6424	6395	20180329103506.089	20180329103506.089
VER (160)	6395	6400	20180329103506.089	20180329103506.089
VER (160)	6400	6405	20180329103506.089	20180329103506.089
VER (160)	6405	6410	20180329103506.089	20180329103506.089
VER (160)	6410	6415	20180329103506.089	20180329103506.089
VER (160)	6415	6420	20180329103506.089	20180329103506.089
VER (160)	6420	6425	20180329103506.089	20180329103506.089
VER (160)	6425	6396	20180329103506.089	20180329103506.089
VER (160)	6396	6401	20180329103506.089	20180329103506.089
VER (160)	6401	6406	20180329103506.089	20180329103506.089
VER (160)	6406	6411	20180329103506.089	20180329103506.089
VER (160)	6411	6416	20180329103506.089	20180329103506.089
VER (160)	6416	6421	20180329103506.089	20180329103506.089

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	6421	6426	20180329103506.089	20180329103506.089
VER (160)	6426	6397	20180329103506.089	20180329103506.089
VER (160)	6397	6402	20180329103506.089	20180329103506.089
VER (160)	6402	6407	20180329103506.089	20180329103506.089
VER (160)	6407	6412	20180329103506.089	20180329103506.089
VER (160)	6412	6417	20180329103506.089	20180329103506.089
VER (160)	6417	6422	20180329103506.089	20180329103506.089
VER (160)	6422	6427	20180329103506.089	20180329103506.089
AUX (180)	2771	2773	20180329063831.966	20180329063847.966
AUX (180)	2778	2780	20180329063927.966	20180329063943.966
AUX (180)	2785	2787	20180329064023.962	20180329064039.962
AUX (180)	2792	2794	20180329064119.962	20180329064135.962
AUX (180)	2806	2809	20180329064311.958	20180329064335.958

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
29/03/2018 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	479	-
GQisFlagQual set (PX1)	99.51 %	-
GQisFlagQual set (PX2)	99.60 %	-
GQisFlagQual set (PX3)	99.58 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.55 %	-

Table 4: Quality flags

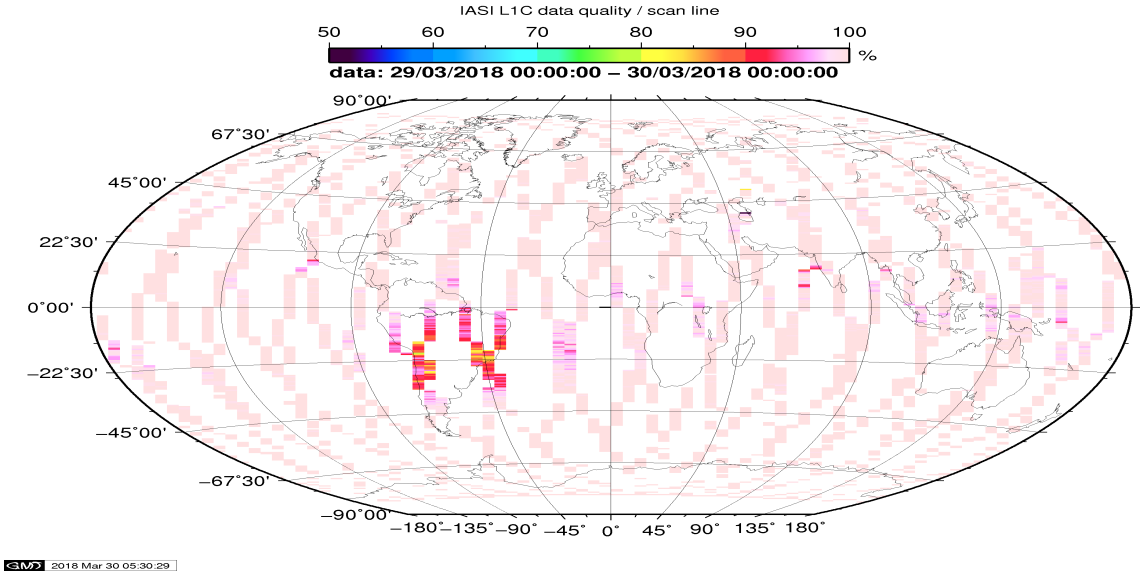

Figure 1: L1C data quality

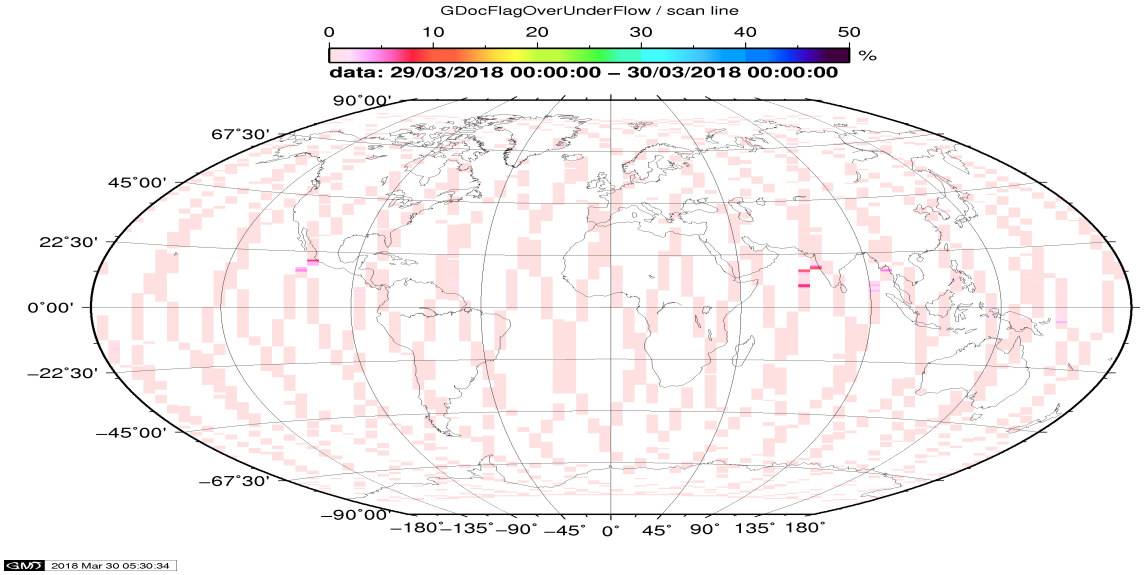

Figure 2: Flag of Over and Under Flows

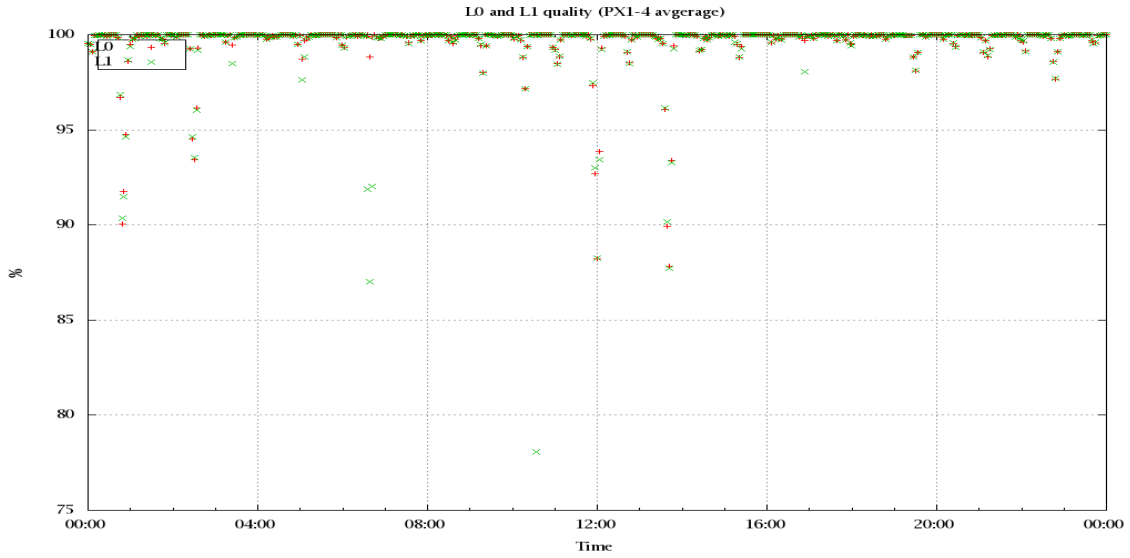

Figure 3: Level 0 and 1C overall quality

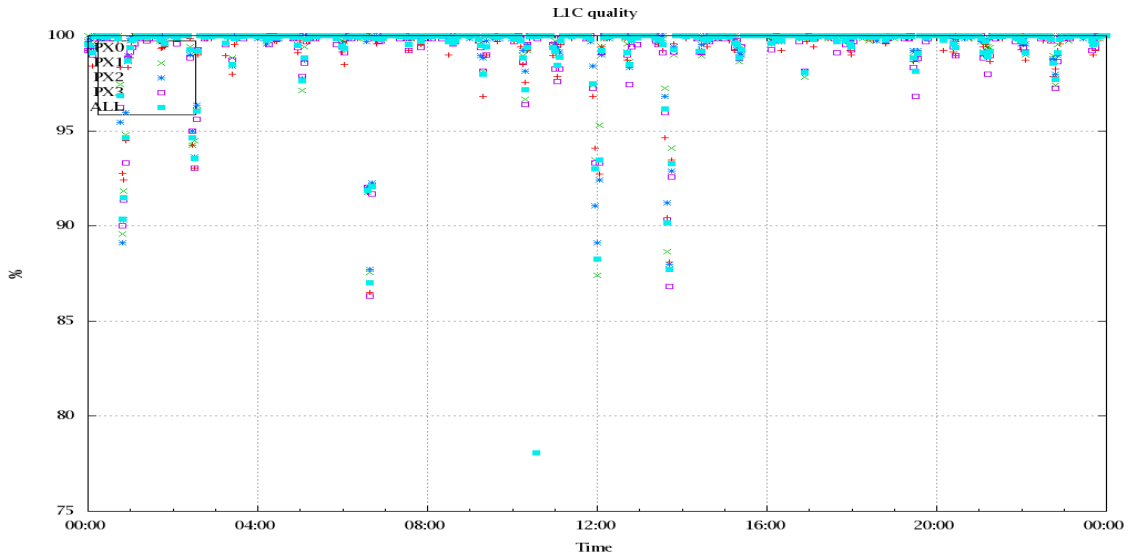

Figure 4: Level 1C quality

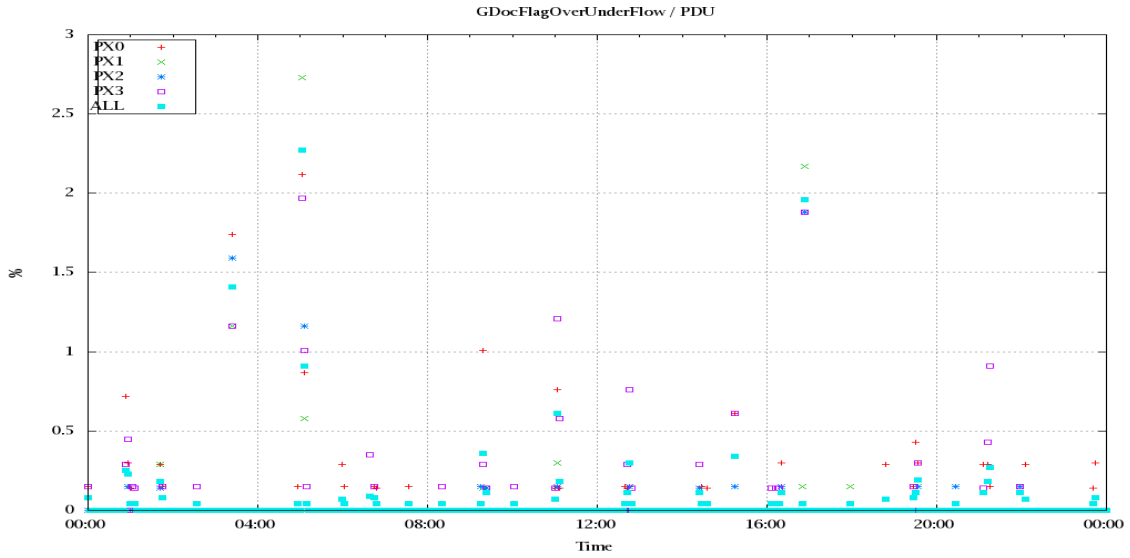

Figure 5: OverUnderFlowFlag timeseries

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 indentification 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.

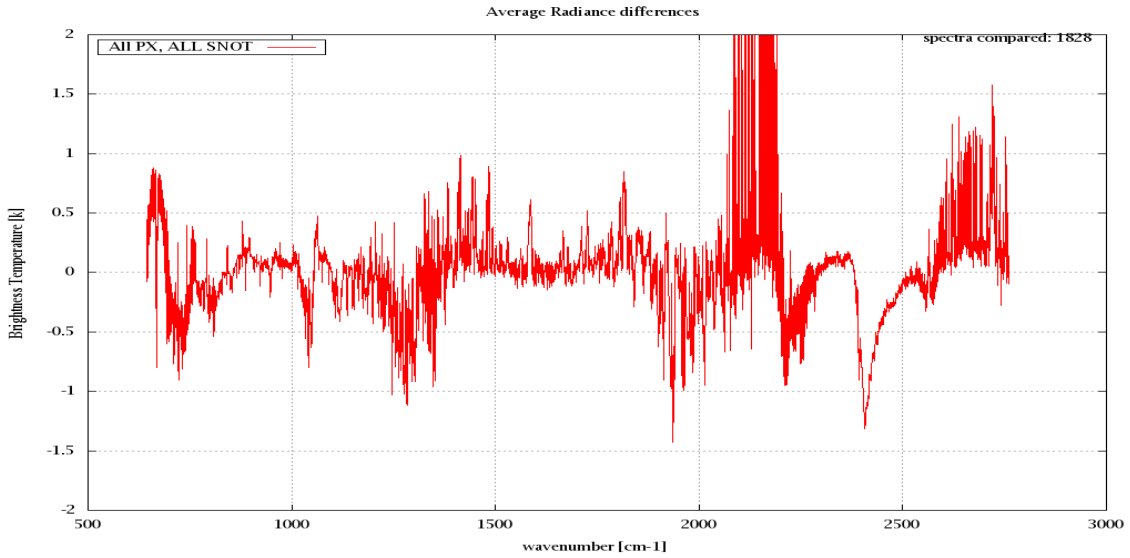

Figure 6: Average Radiance differences: OBS-CAL

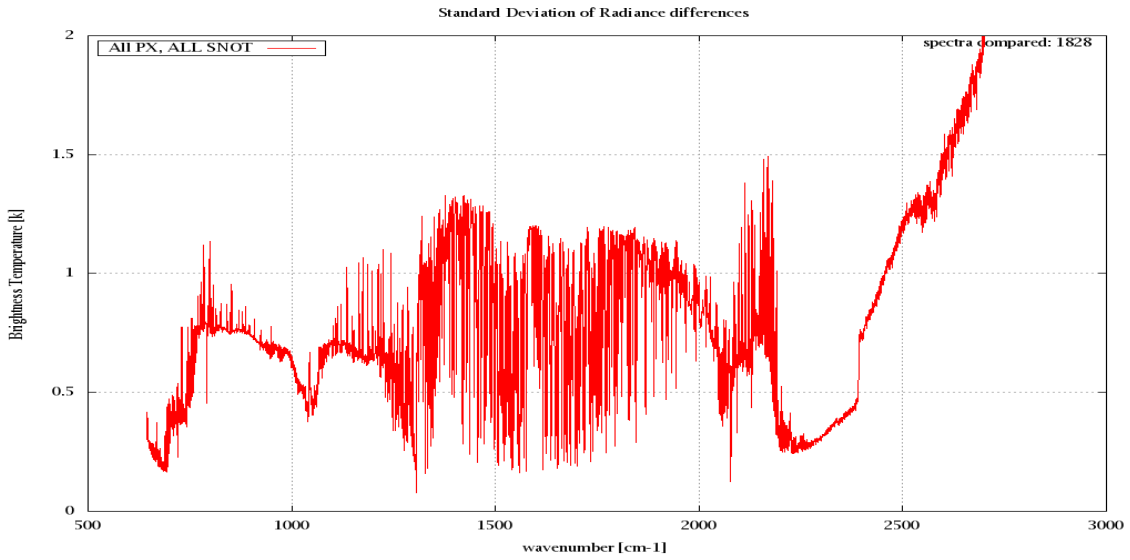

Figure 7: Standard Deviation of Radiance differences

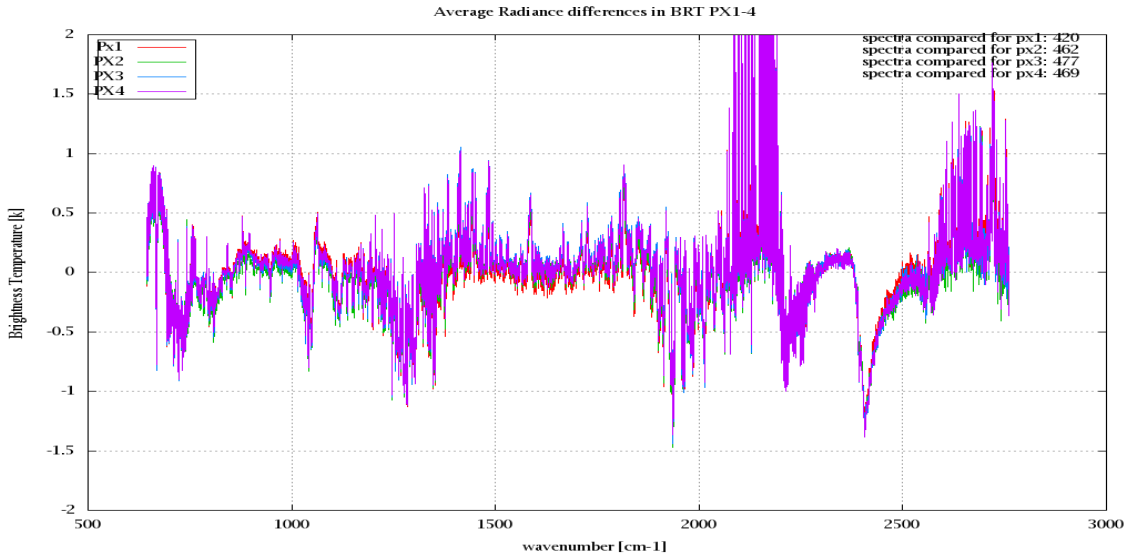

Figure 8: Average Radiance differences: OBS-CAL

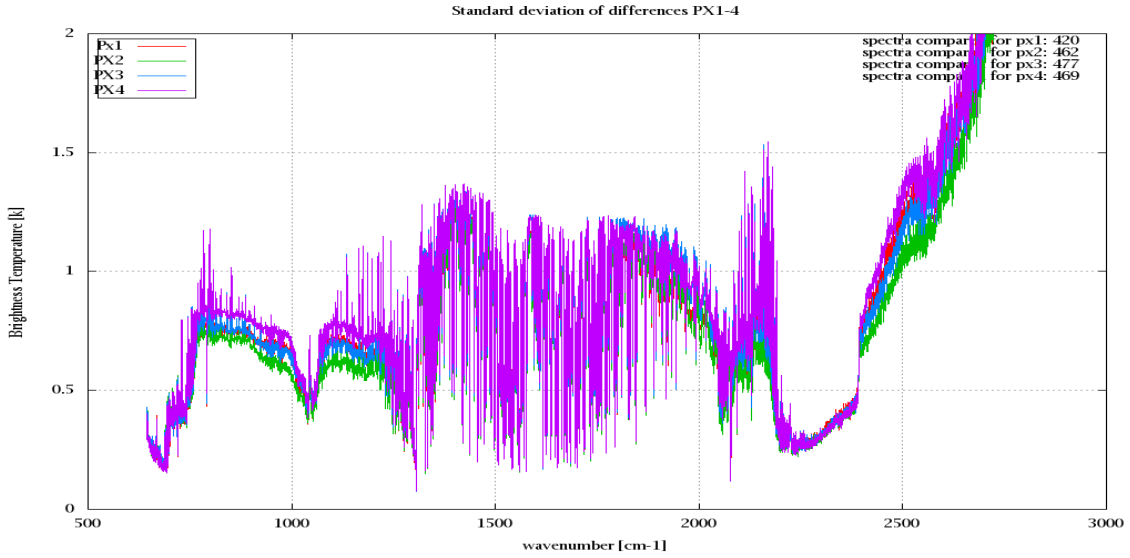

Figure 9: Standard Deviation of Radiance differences

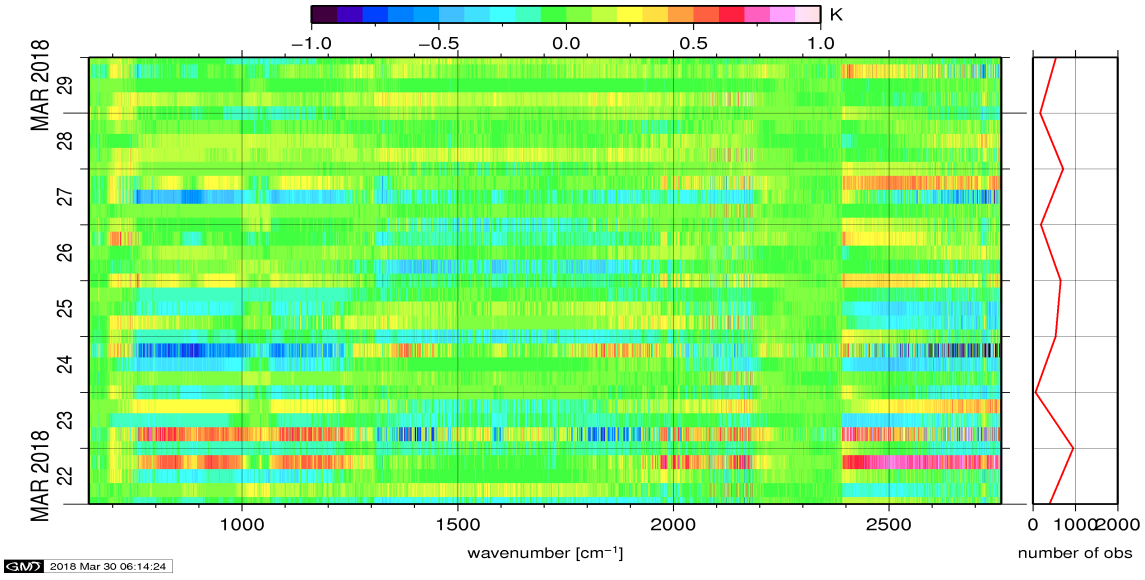

Figure 10: Radiance Anomaly in BRT: All Channels

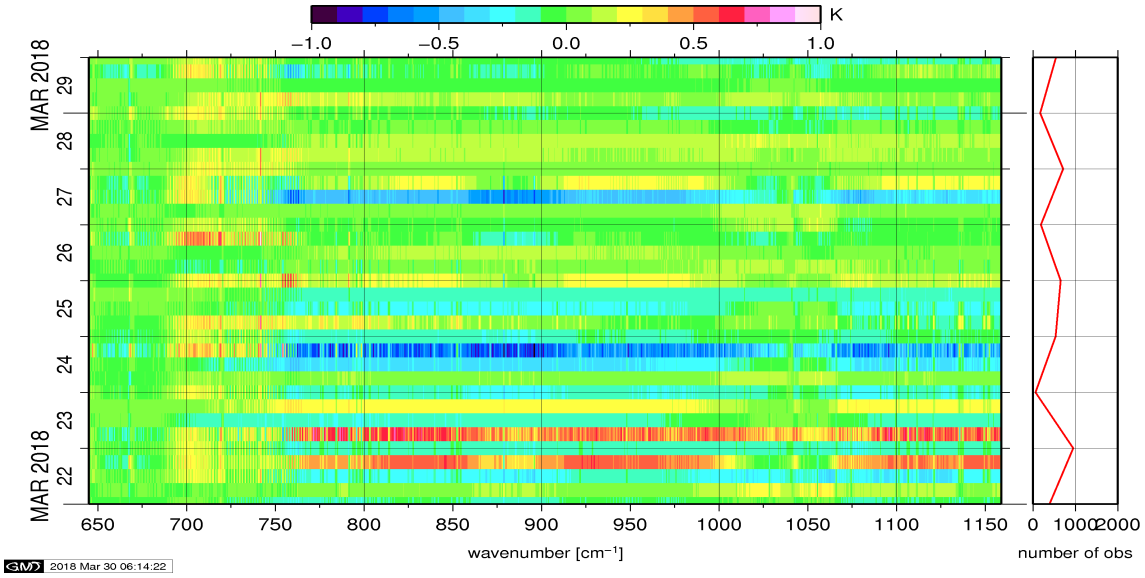

Figure 11: Radiance Anomaly in BRT: IASI Band 1

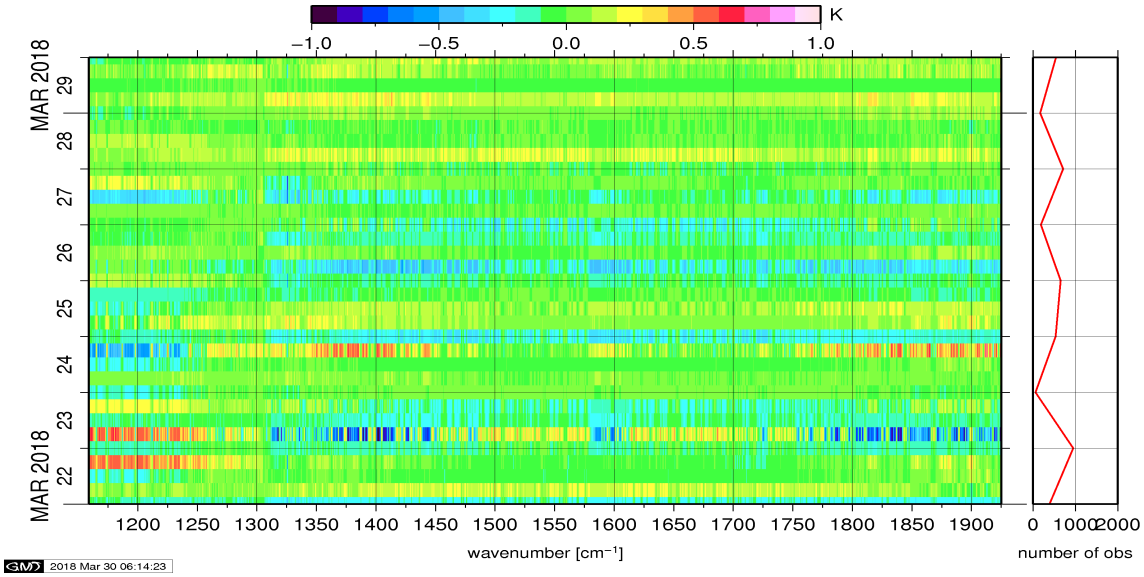

Figure 12: Radiance Anomaly in BRT: IASI Band 2

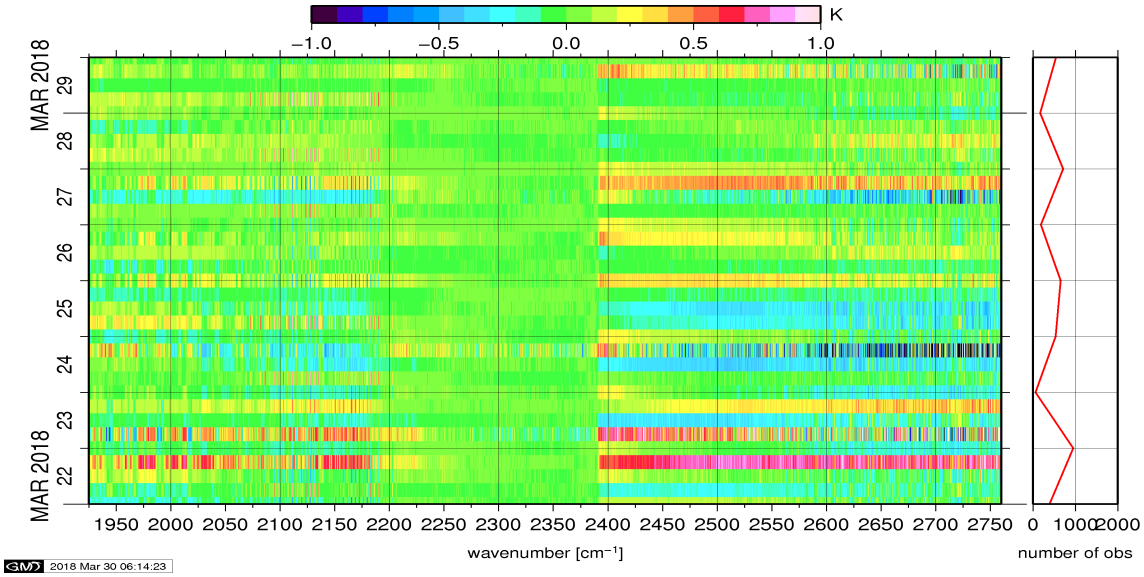

Figure 13: Radiance Anomaly in BRT: IASI Band 3

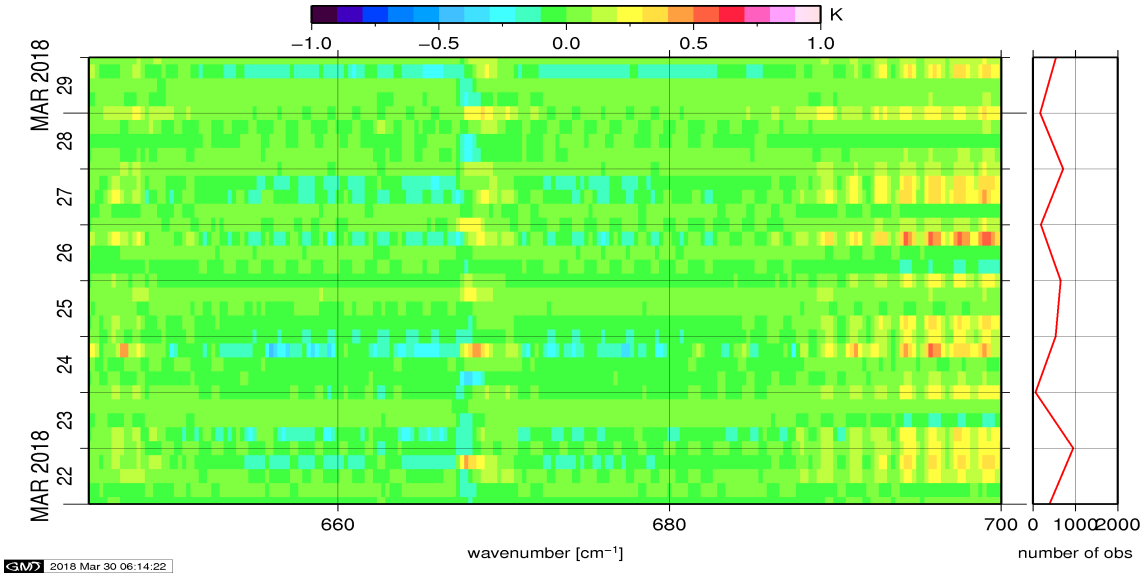

Figure 14: Radiance Anomaly in BRT: CO2 14

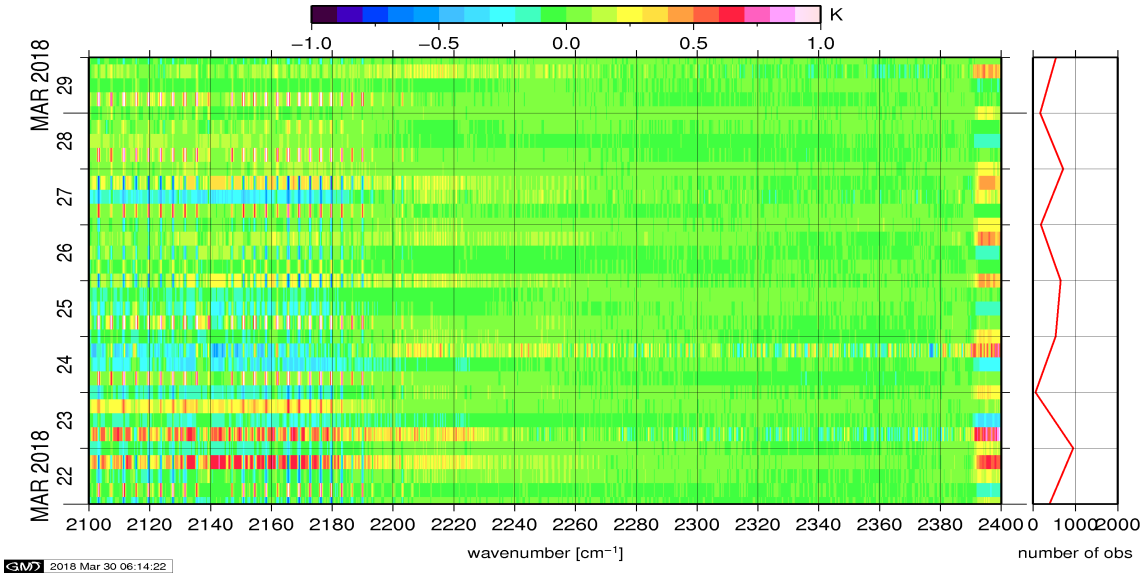

Figure 15: Radiance Anomaly in BRT: CO2 4.3

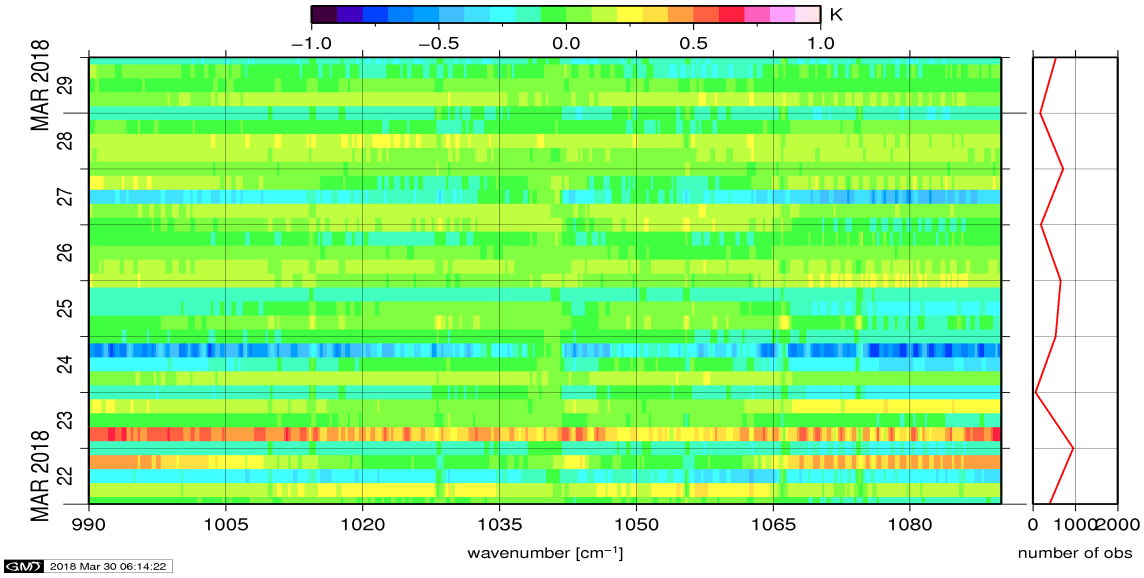

Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparision Channel 1-19

The radiance comparision 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.

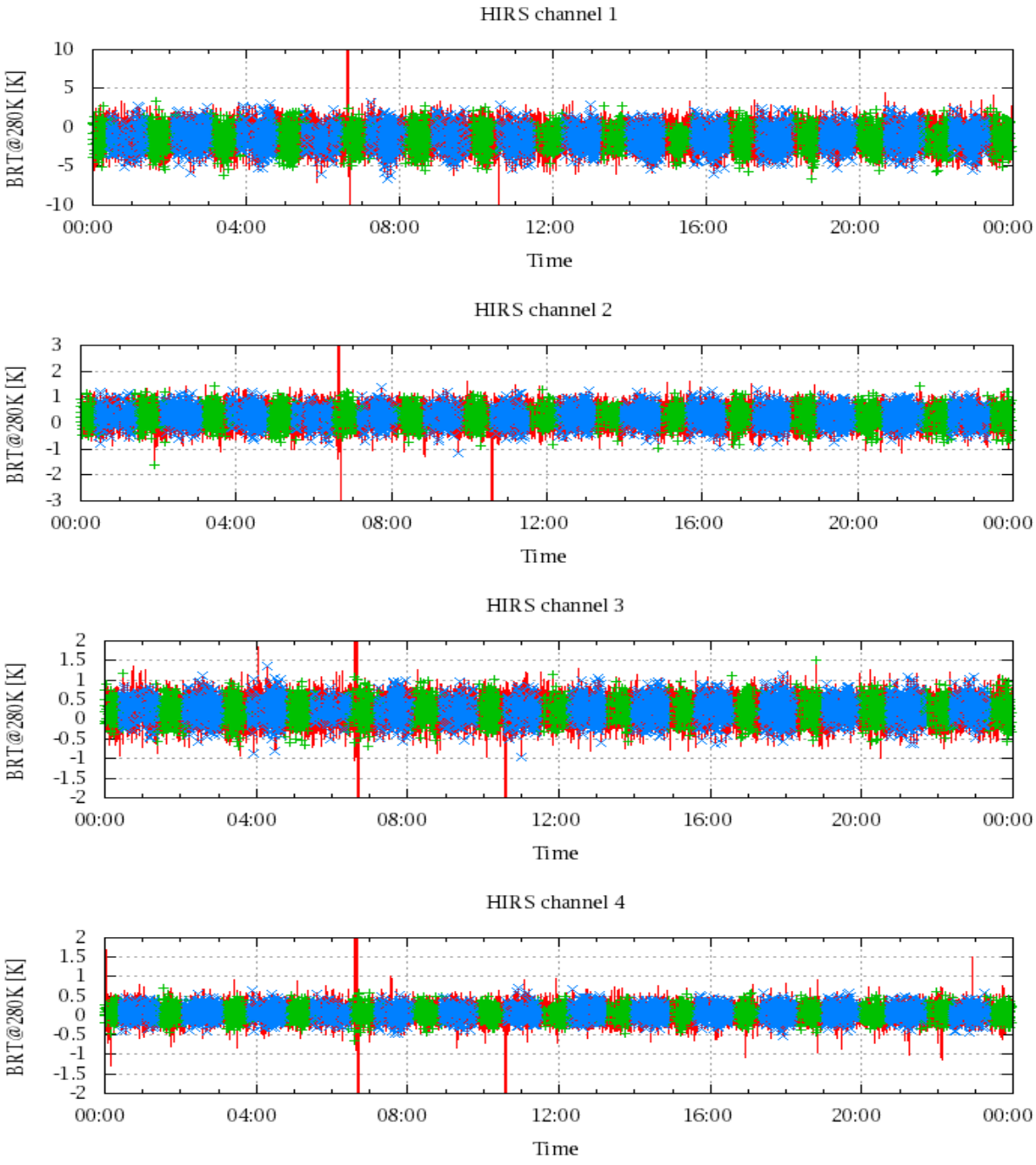

Figure 17: Radiance Differences in BRT

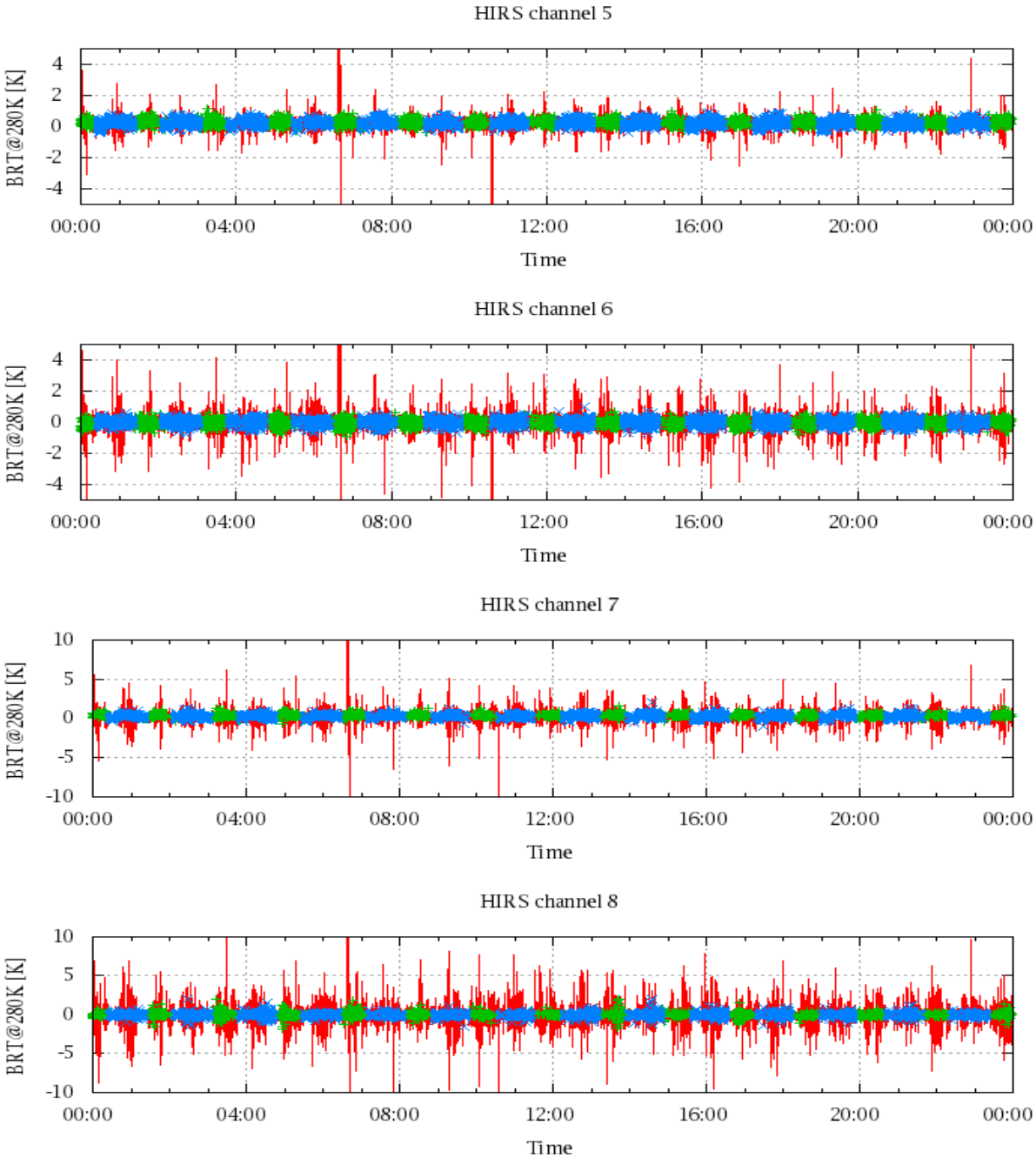

Figure 18: Radiance Differences in BRT

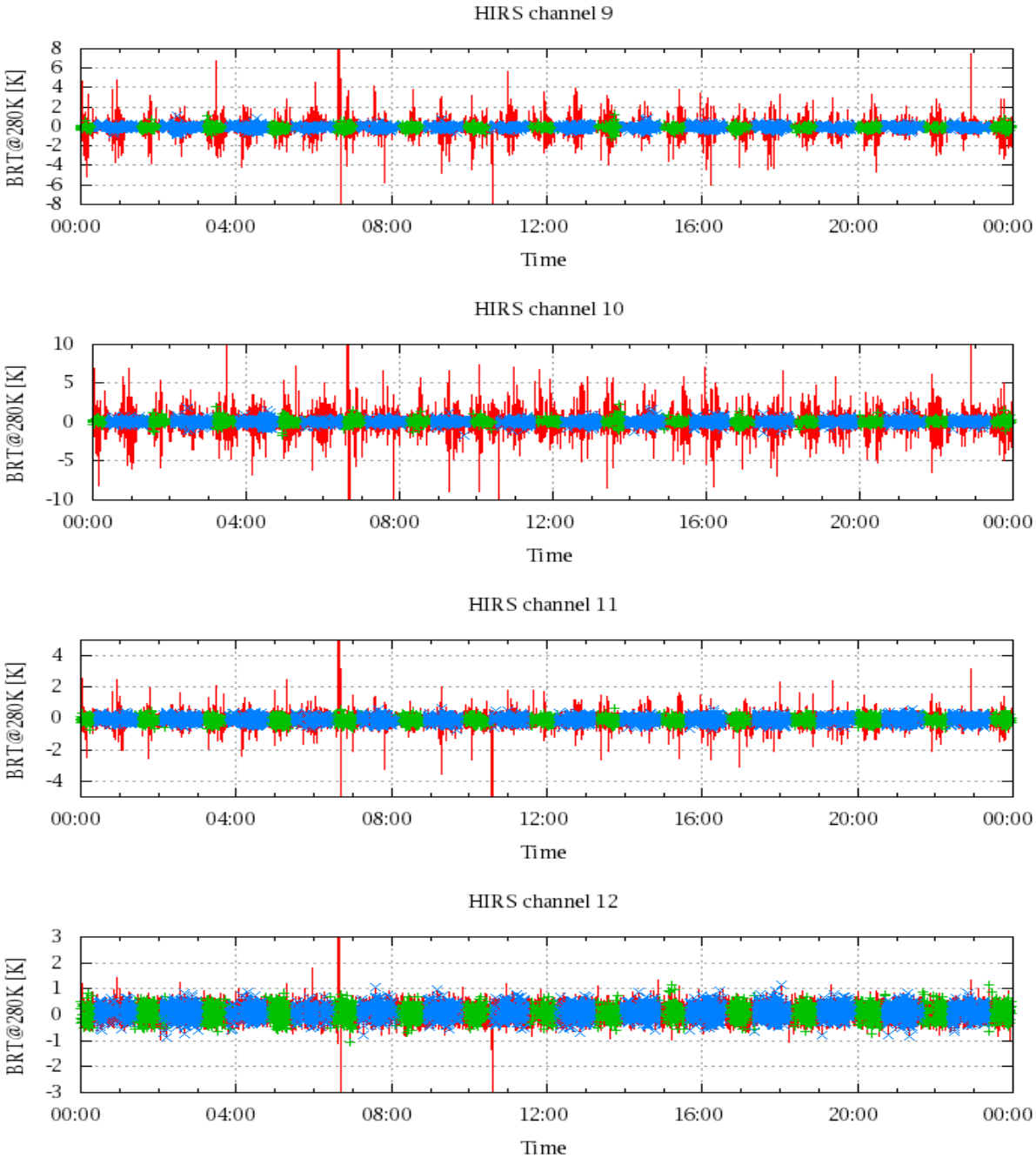

Figure 19: Radiance Differences in BRT

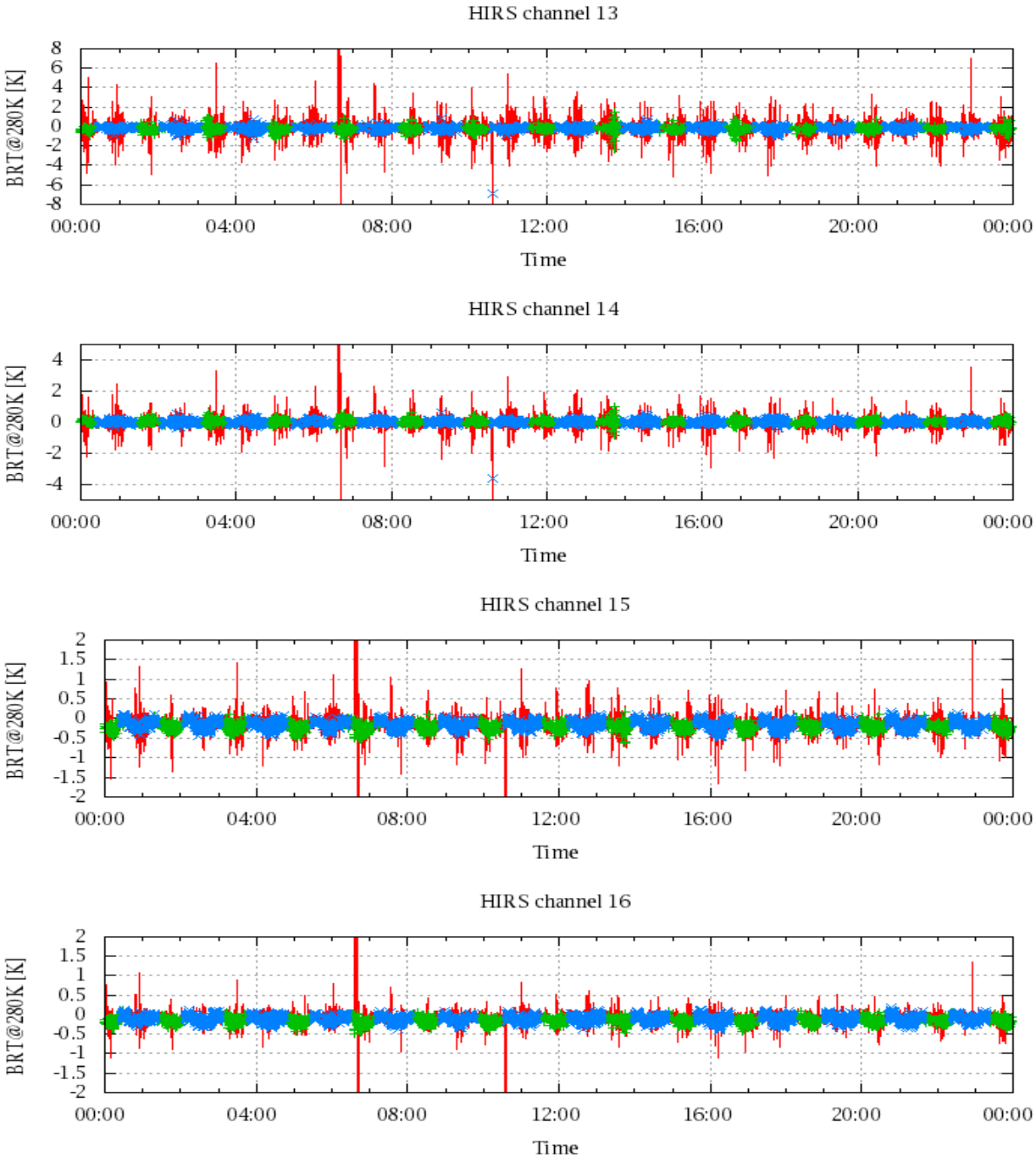

Figure 20: Radiance Differences in BRT

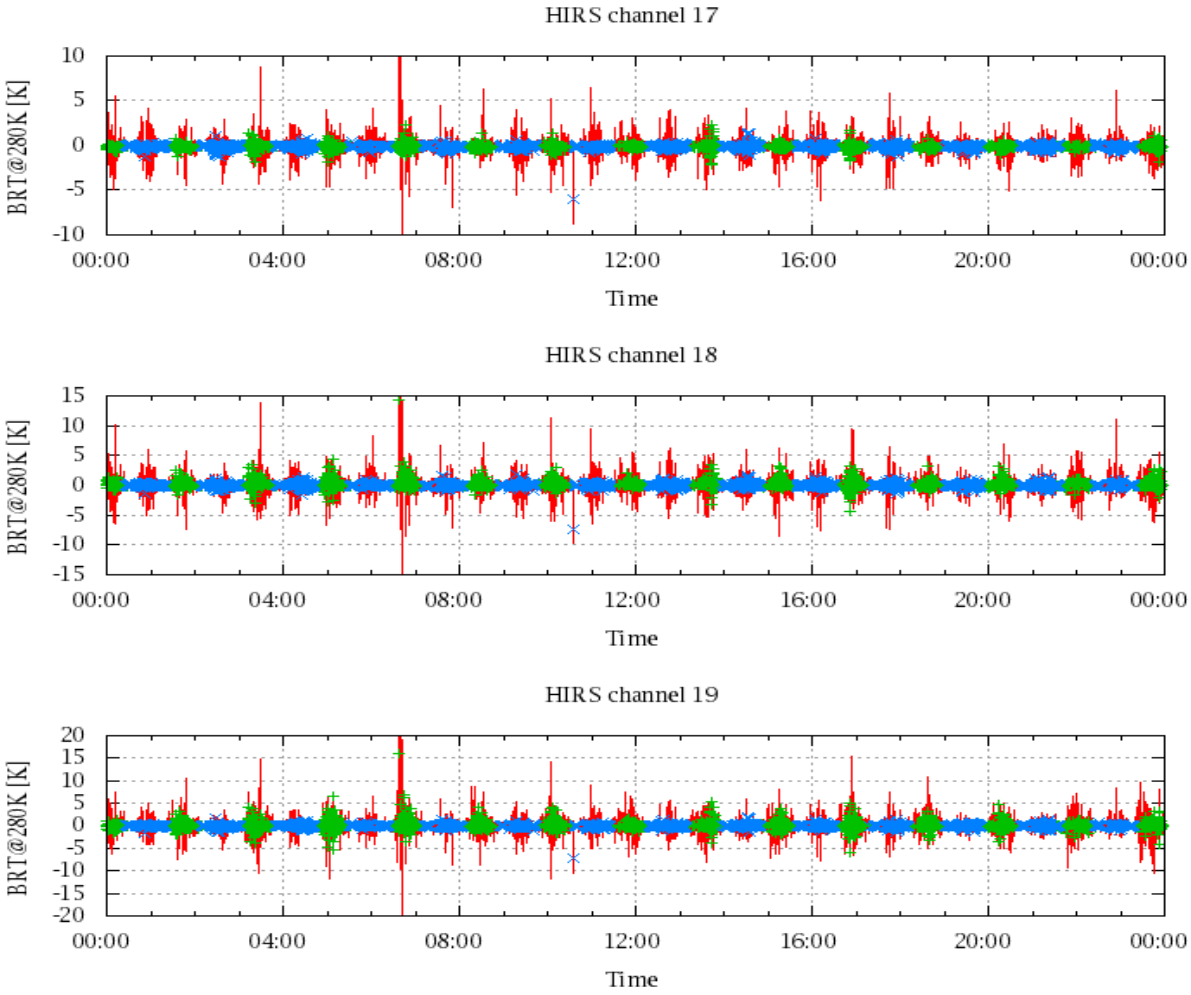

Figure 21: Radinace Differences in BRT