

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

23/02/2018 00:00:00 - 24/02/2018 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 23/02/2018 00:00:00 - 24/02/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 23/02/2018 00:00:00 - 24/02/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSSGranule	463	-
L1 DPX PDUs (RM: IASI-HIRS)	478	-
L1 DPS Files (RM: OBS-CAL NWP based)	478	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	594	809	20180223100832.207	20180223100929.289
PX1 (130)	4259	4474	20180223113738.148	20180223113835.230
PX1 (130)	1405	1590	20180223135035.004	20180223135125.597
PX1 (130)	4828	5010	20180223151838.027	20180223151926.457
PX1 (130)	9467	9652	20180223165202.988	20180223165253.582
PX1 (130)	13052	13257	20180223182048.605	20180223182143.519
PX1 (130)	10719	10932	20180223203603.836	20180223203701.996
PX1 (130)	8785	8955	20180223214017.674	20180223214103.510
PX2 (135)	594	808	20180223100832.207	20180223100929.074
PX2 (135)	4259	4474	20180223113738.148	20180223113835.230
PX2 (135)	1405	1590	20180223135035.004	20180223135125.597
PX2 (135)	4828	5010	20180223151838.027	20180223151926.457
PX2 (135)	9467	9652	20180223165202.988	20180223165253.582
PX2 (135)	13052	13256	20180223182048.605	20180223182143.305
PX2 (135)	10719	10932	20180223203603.836	20180223203701.996
PX2 (135)	8785	8955	20180223214017.674	20180223214103.510
PX3 (140)	594	808	20180223100832.207	20180223100929.074
PX3 (140)	4259	4474	20180223113738.148	20180223113835.230

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	1404	1590	20180223135034.789	20180223135125.597
PX3 (140)	4828	5010	20180223151838.027	20180223151926.457
PX3 (140)	9466	9652	20180223165202.769	20180223165253.582
PX3 (140)	13052	13256	20180223182048.605	20180223182143.305
PX3 (140)	10719	10932	20180223203603.836	20180223203701.996
PX3 (140)	8784	8955	20180223214017.455	20180223214103.510
PX4 (145)	594	808	20180223100832.207	20180223100929.074
PX4 (145)	4259	4474	20180223113738.148	20180223113835.230
PX4 (145)	1404	1590	20180223135034.789	20180223135125.597
PX4 (145)	4828	5010	20180223151838.027	20180223151926.457
PX4 (145)	9466	9652	20180223165202.769	20180223165253.582
PX4 (145)	13052	13256	20180223182048.605	20180223182143.305
PX4 (145)	10719	10931	20180223203603.836	20180223203701.781
PX4 (145)	8784	8955	20180223214017.455	20180223214103.510
IMG (150)	7501	7744	20180223100831.992	20180223100929.074
IMG (150)	13839	14082	20180223113738.148	20180223113835.230
IMG (150)	14972	15182	20180223135034.789	20180223135124.301
IMG (150)	4656	4862	20180223151838.027	20180223151926.457
IMG (150)	12094	12304	20180223165202.769	20180223165252.285
IMG (150)	1960	2192	20180223182048.605	20180223182143.305
IMG (150)	3683	3927	20180223203603.836	20180223203701.781
IMG (150)	3676	3871	20180223214017.455	20180223214103.510
VER (160)	4616	4652	20180223100827.883	20180223100931.882
VER (160)	7956	7992	20180223113731.879	20180223113835.875
VER (160)	12941	12972	20180223135027.871	20180223135035.004
VER (160)	16246	16277	20180223151835.867	20180223151931.863
VER (160)	3362	3395	20180223165155.851	20180223165202.988
VER (160)	6692	6728	20180223182043.848	20180223182147.844
VER (160)	11764	11803	20180223203603.836	20180223203707.832
VER (160)	14172	14203	20180223214011.834	20180223214107.834
AUX (180)	14014	14022	20180223100828.316	20180223100932.316
AUX (180)	14682	14690	20180223113732.312	20180223113836.308
AUX (180)	15679	15686	20180223135028.305	20180223135124.301
AUX (180)	16340	16347	20180223151836.297	20180223151932.297
AUX (180)	656	663	20180223165156.285	20180223165252.285
AUX (180)	1322	1330	20180223182044.277	20180223182148.277
AUX (180)	2336	2345	20180223203556.265	20180223203708.265
AUX (180)	2818	2825	20180223214012.268	20180223214108.268

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
23/02/2018 00:00:01	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	463	-
GQisFlagQual set (PX1)	99.51 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.57 %	-
GQisFlagQual set (PX4)	99.51 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

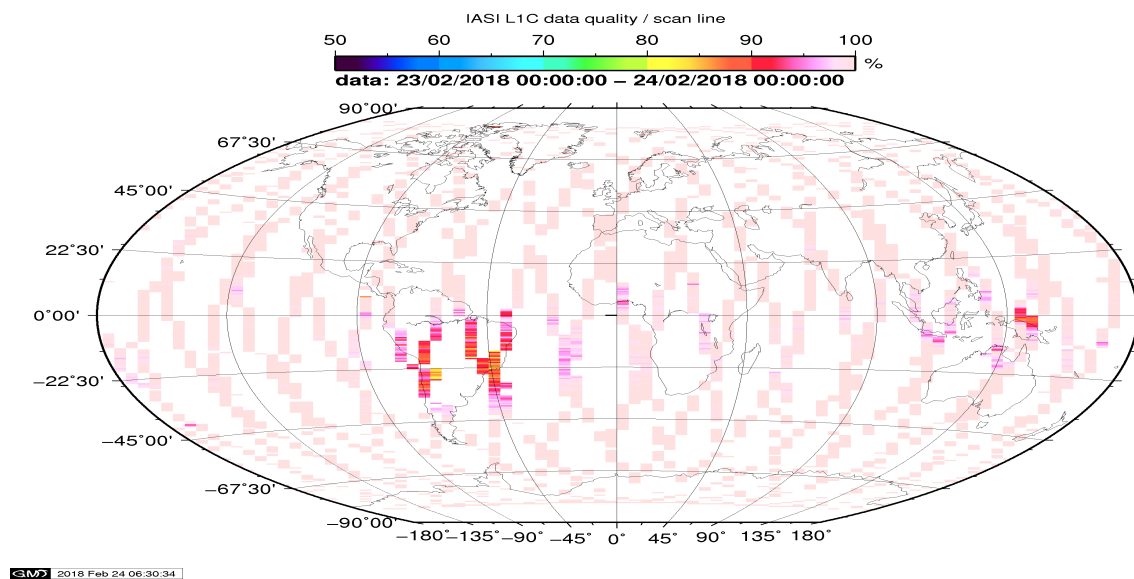


Figure 1: L1C data quality

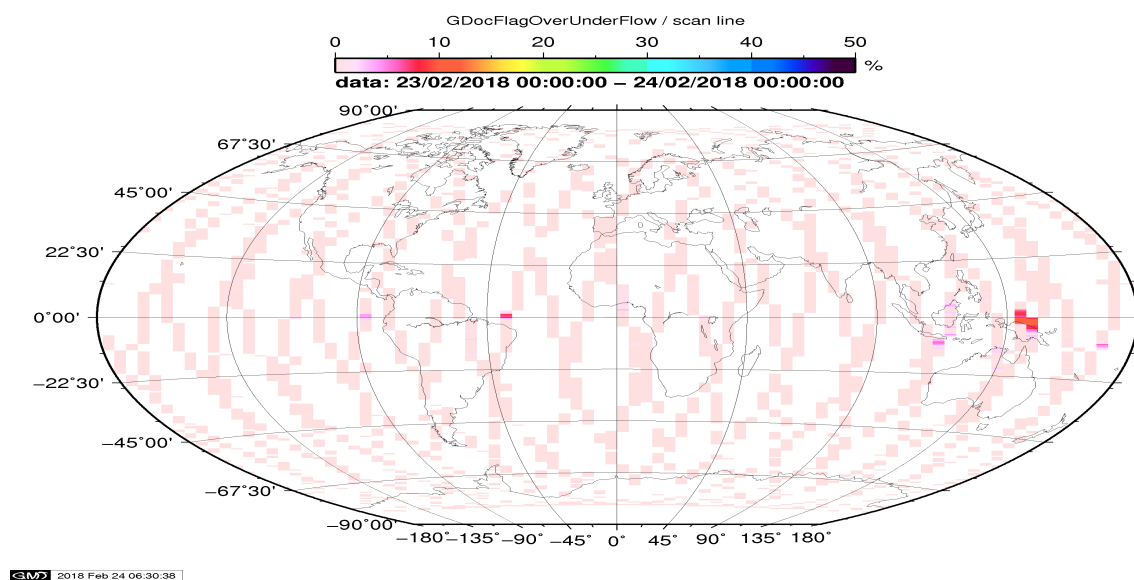


Figure 2: Flag of Over and Under Flows

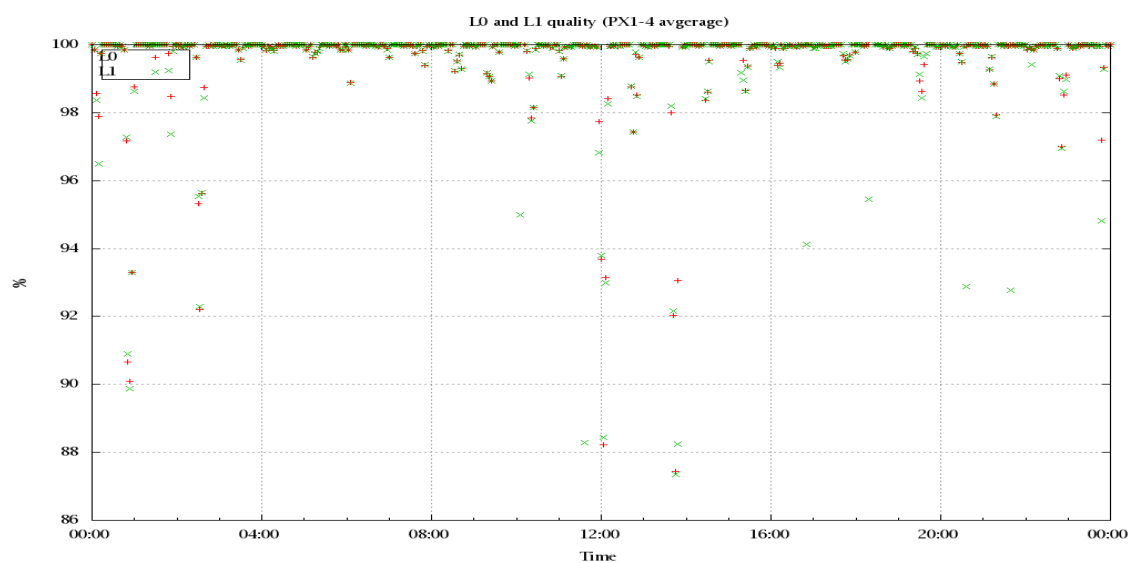


Figure 3: Level 0 and 1C overall quality

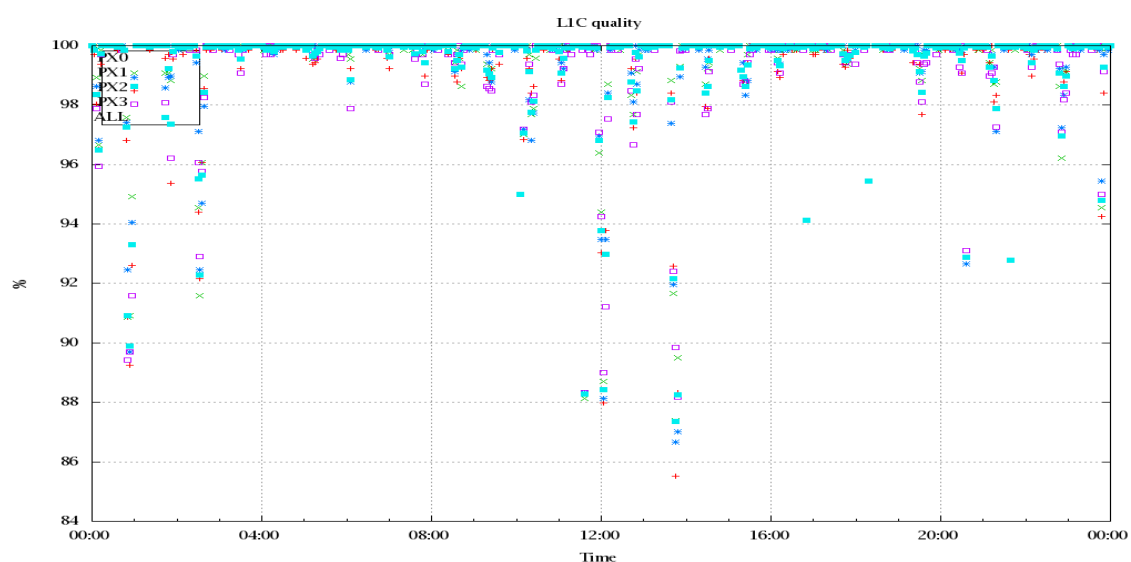


Figure 4: Level 1C quality

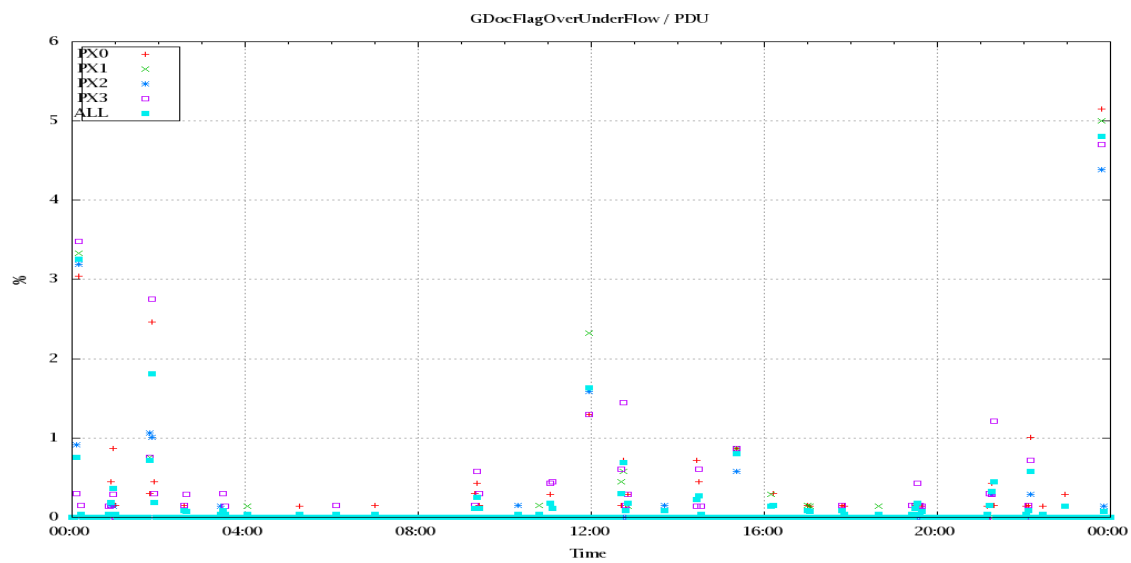


Figure 5: OverUnderFlowFlag timeseries

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.

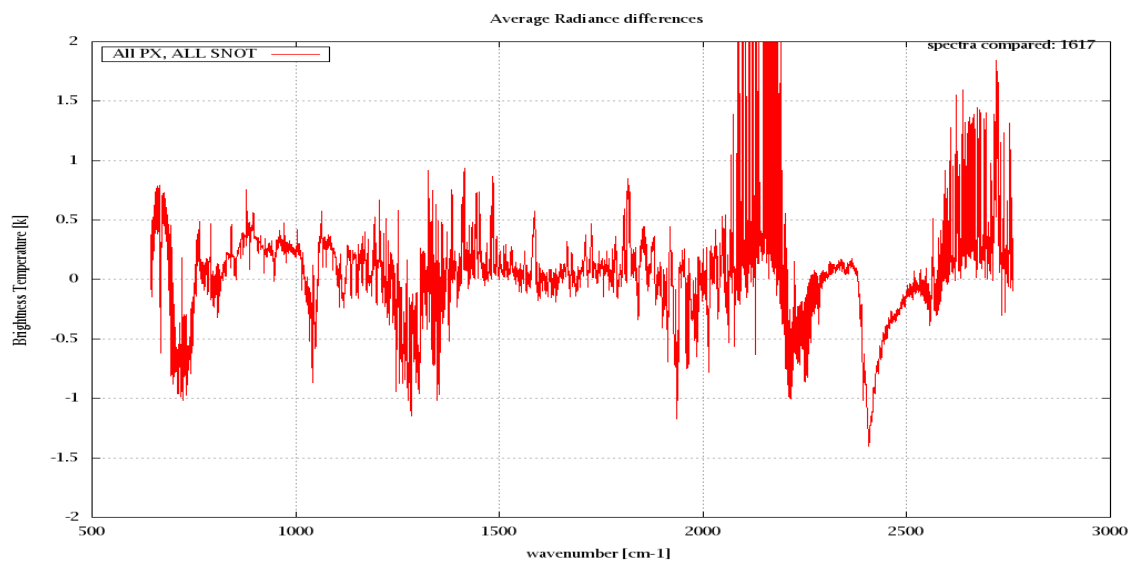


Figure 6: Average Radiance differences: OBS-CAL

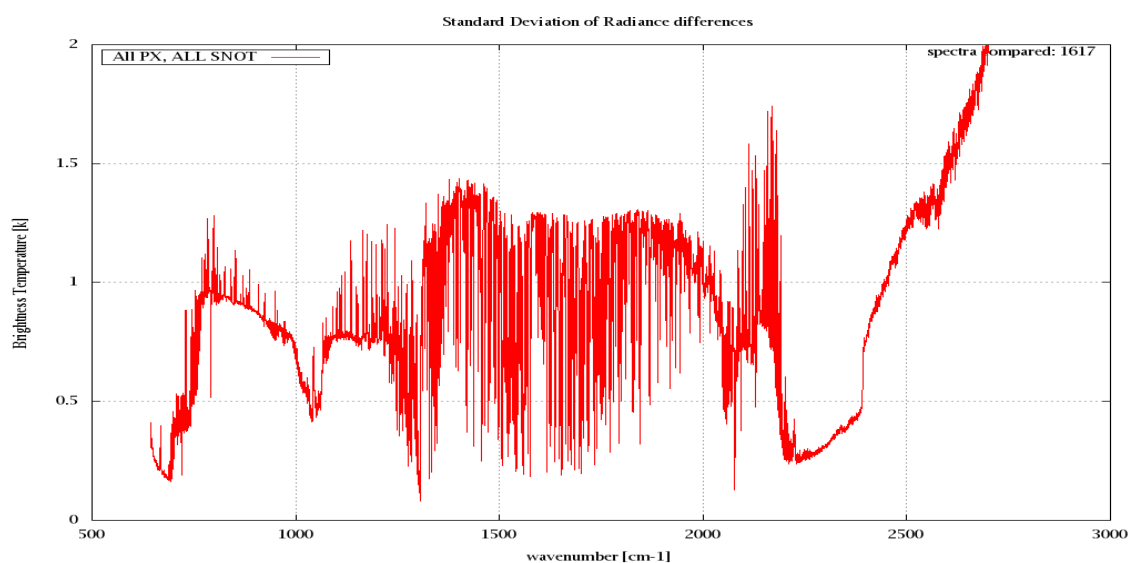


Figure 7: Standard Deviation of Radiance differences

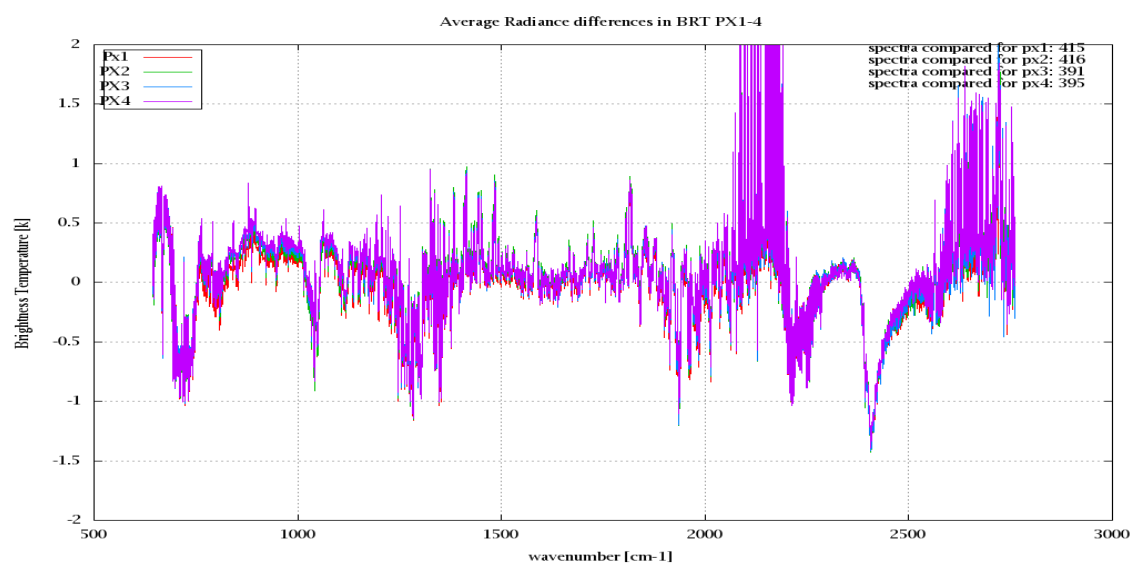


Figure 8: Average Radiance differences: OBS-CAL

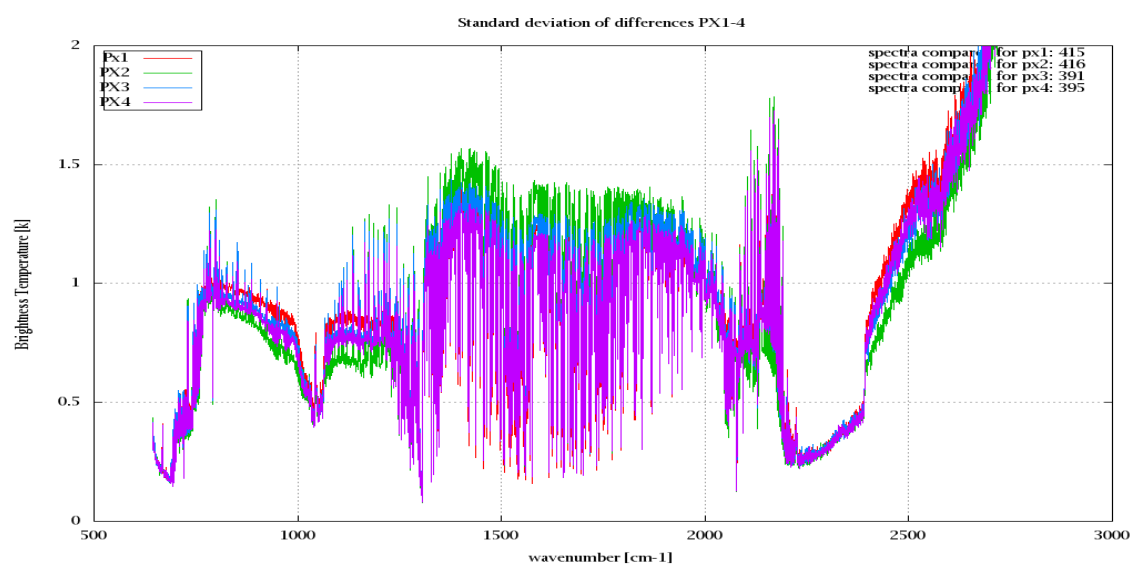


Figure 9: Standard Deviation of Radiance differences

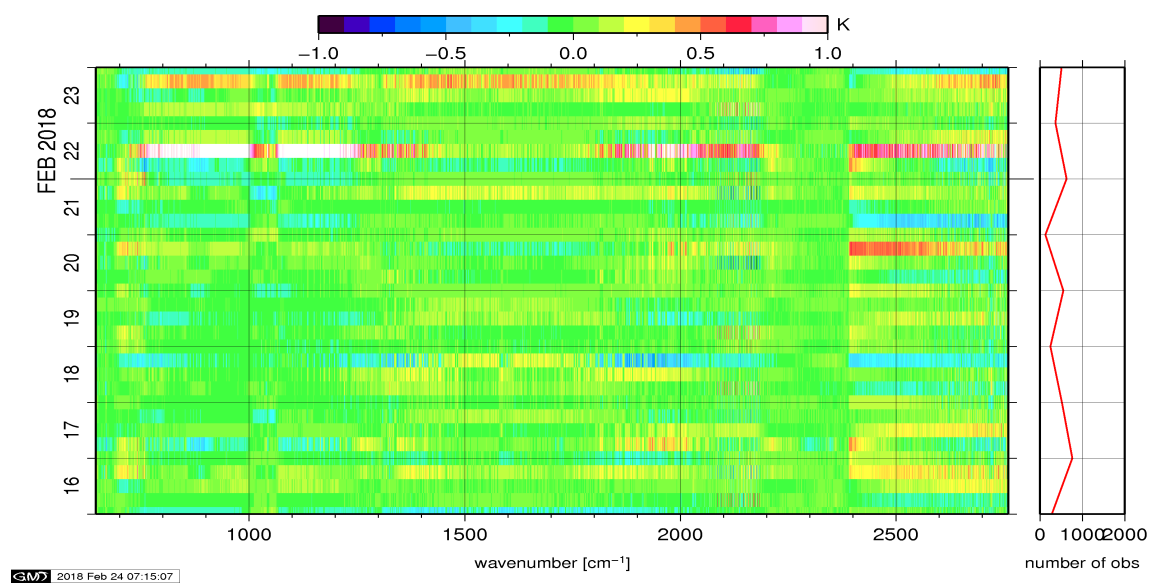


Figure 10: Radiance Anomaly in BRT: All Channels

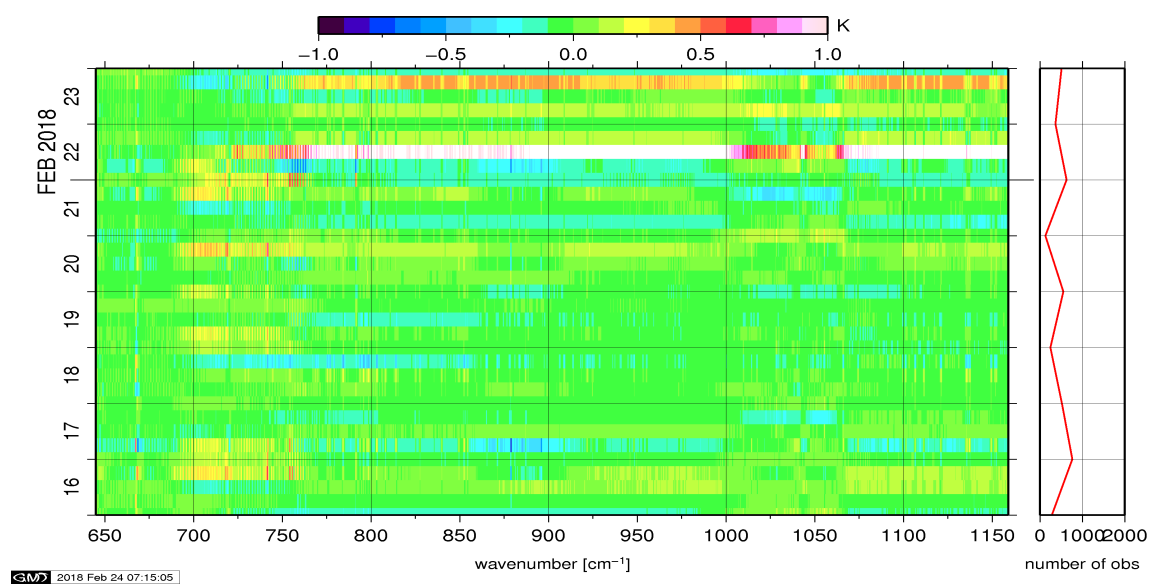


Figure 11: Radiance Anomaly in BRT: IASI Band 1

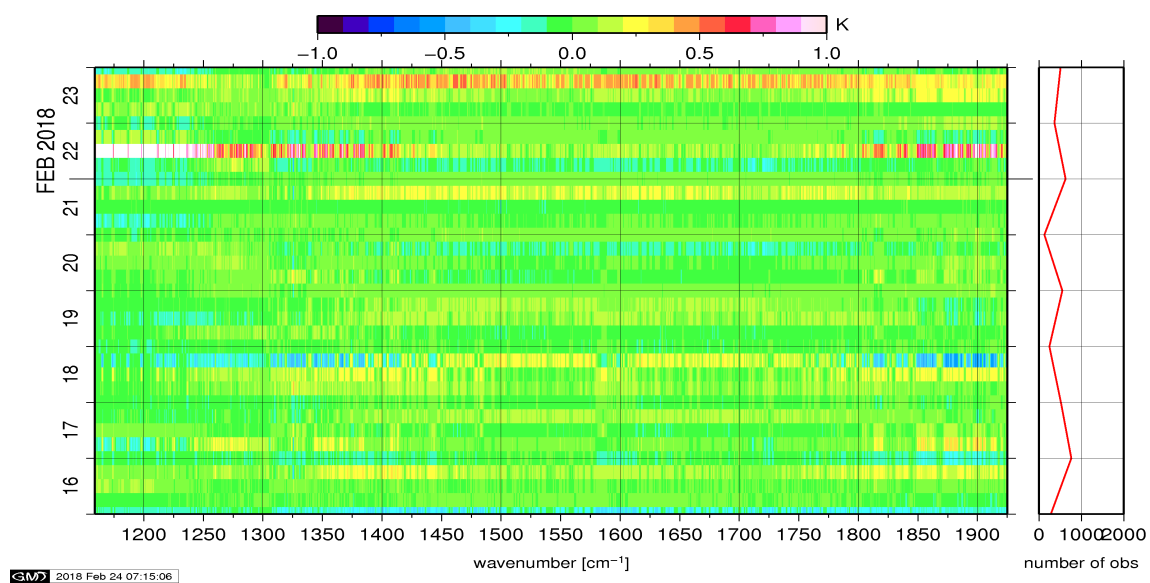


Figure 12: Radiance Anomaly in BRT: IASI Band 2

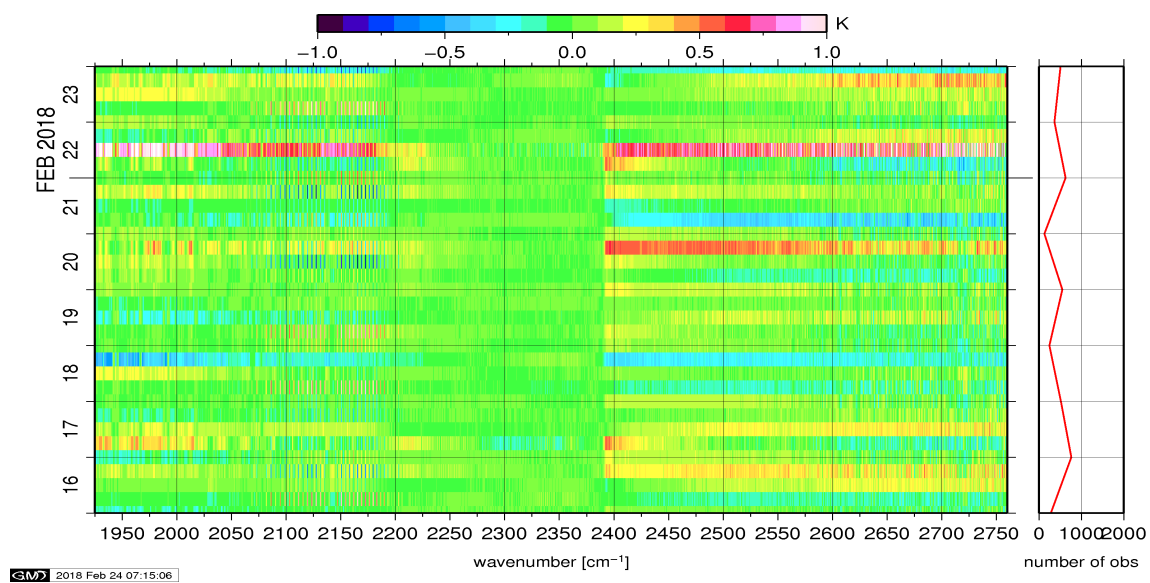


Figure 13: Radiance Anomaly in BRT: IASI Band 3

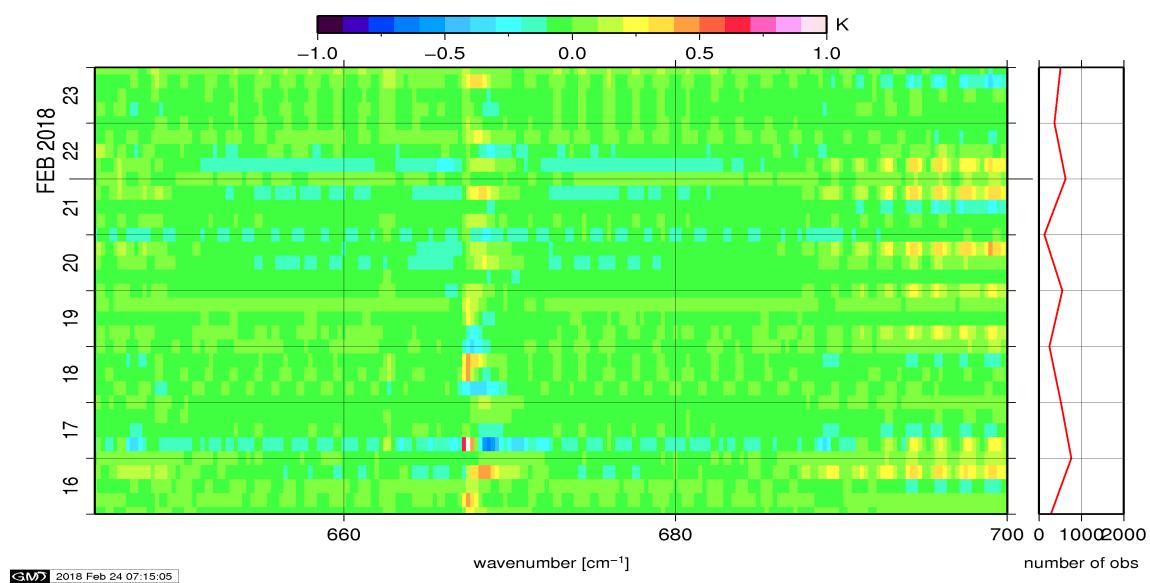


Figure 14: Radiance Anomaly in BRT: CO2 14

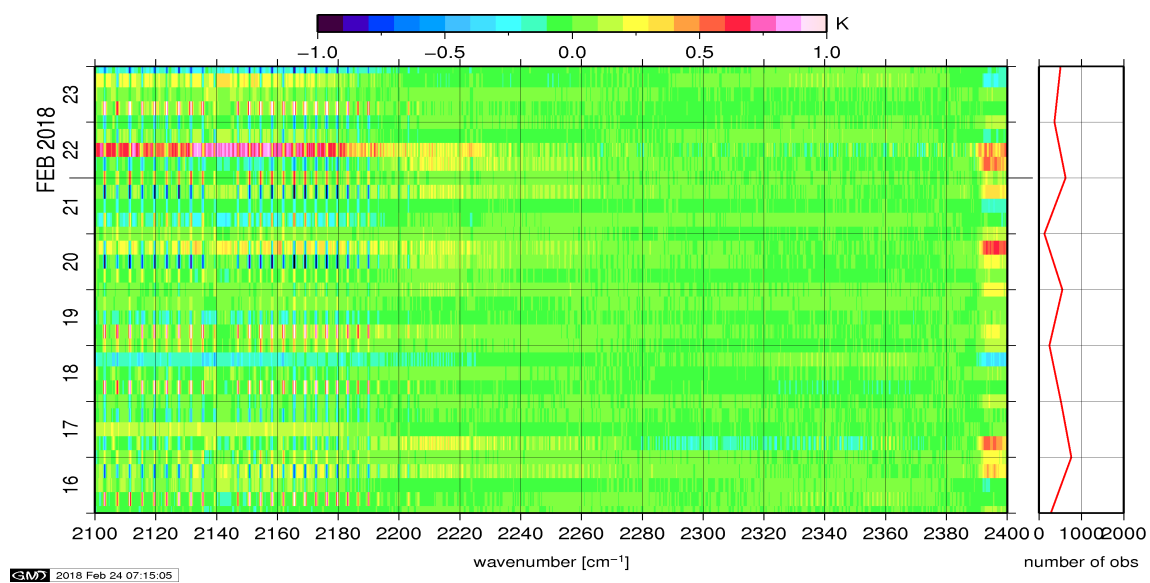


Figure 15: Radiance Anomaly in BRT: CO2 4.3

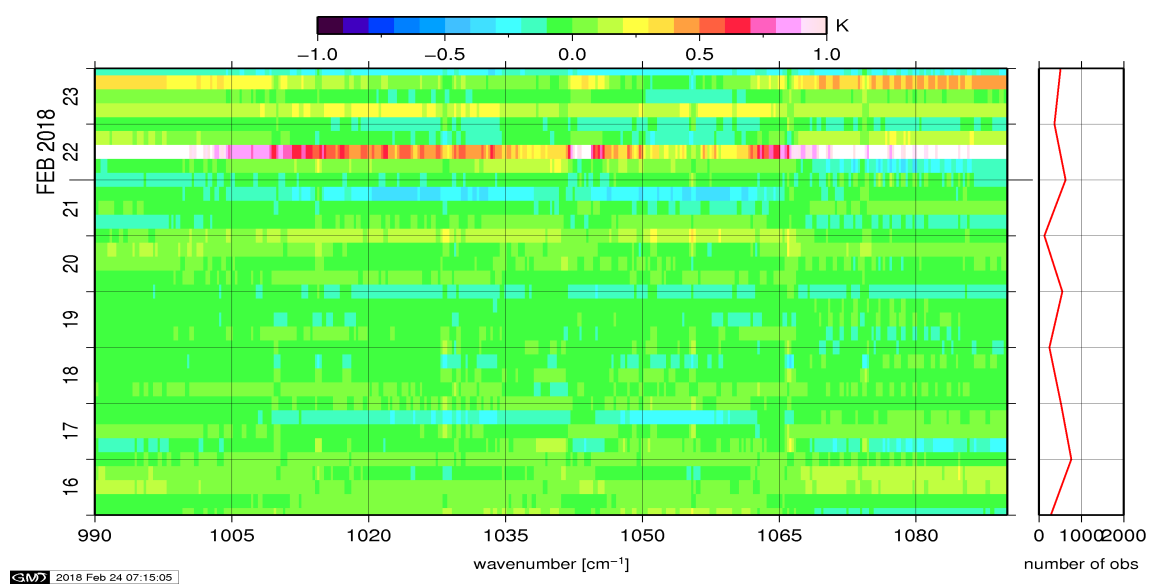


Figure 16: Radiance Anomaly in BRT: O3

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.

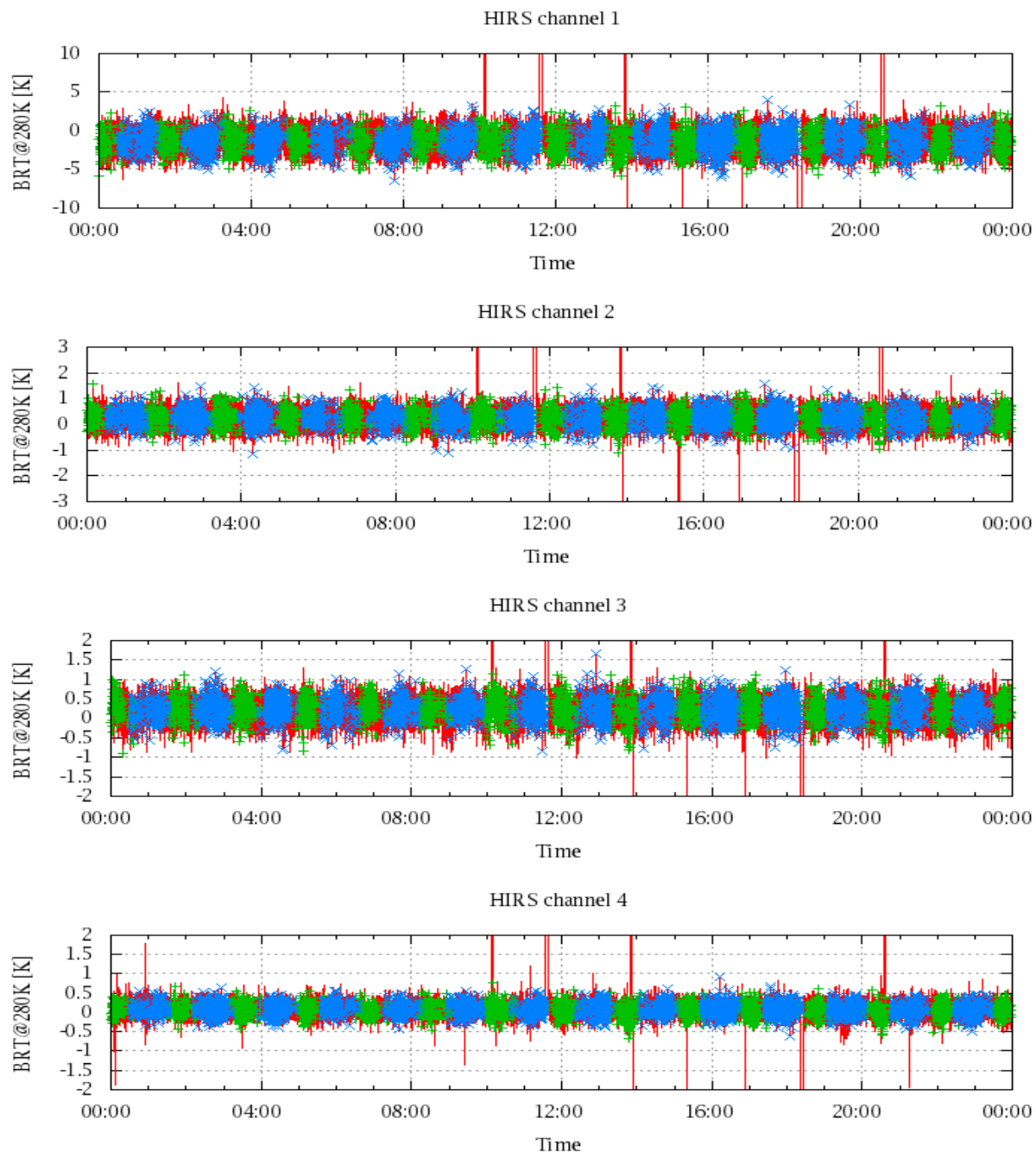


Figure 17: Radiance Differences in BRT

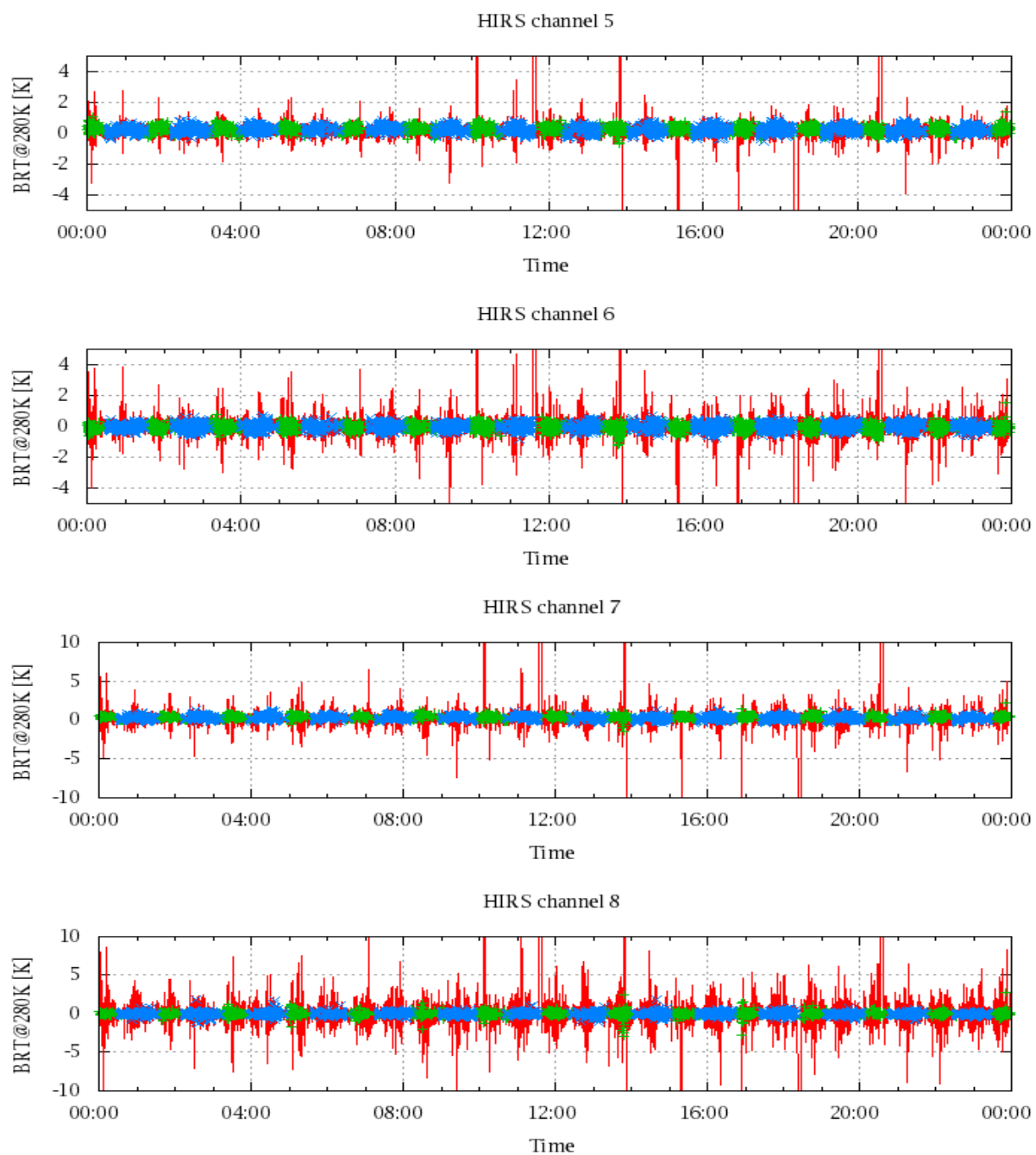


Figure 18: Radiance Differences in BRT

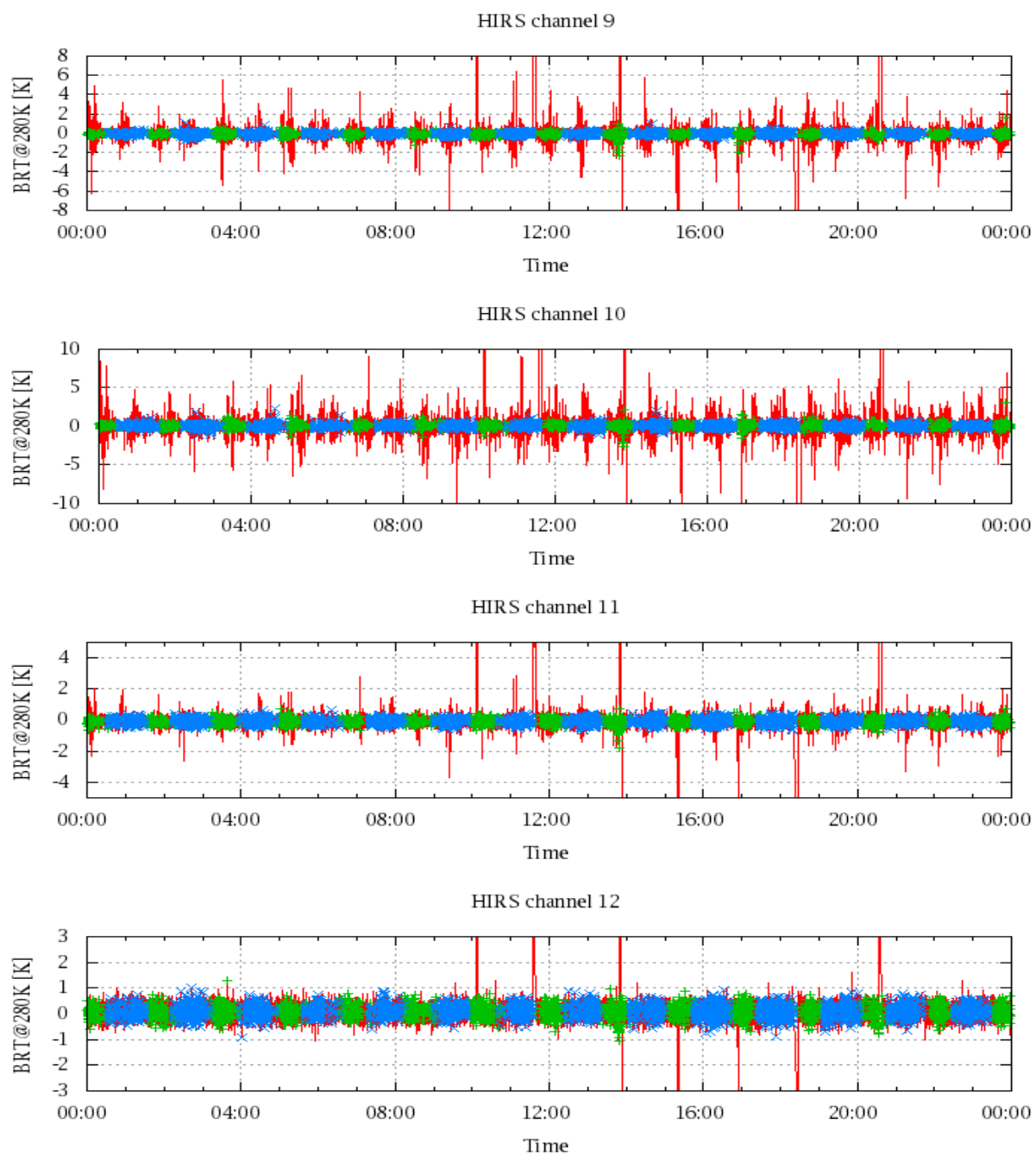


Figure 19: Radiance Differences in BRT

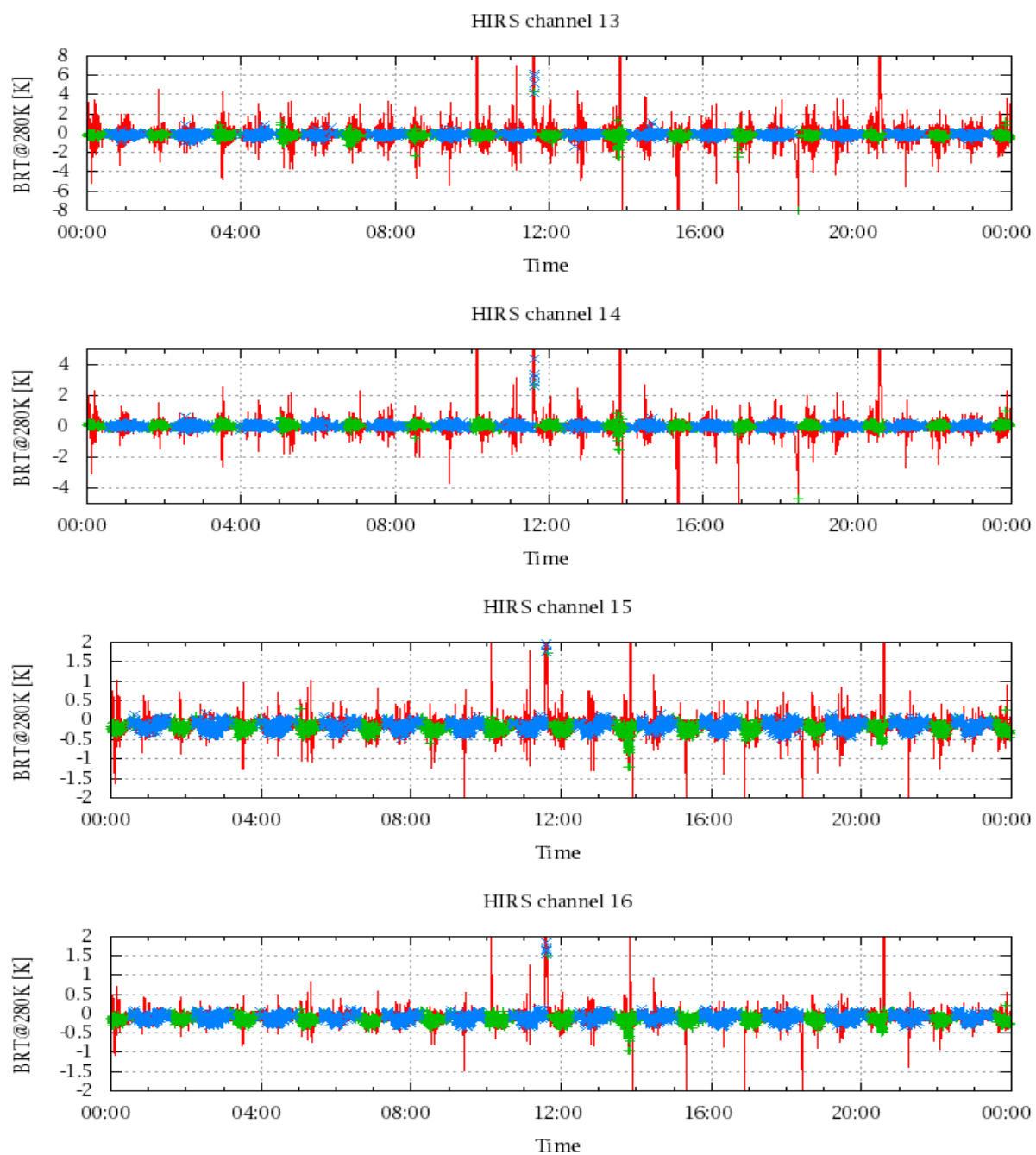


Figure 20: Radiance Differences in BRT

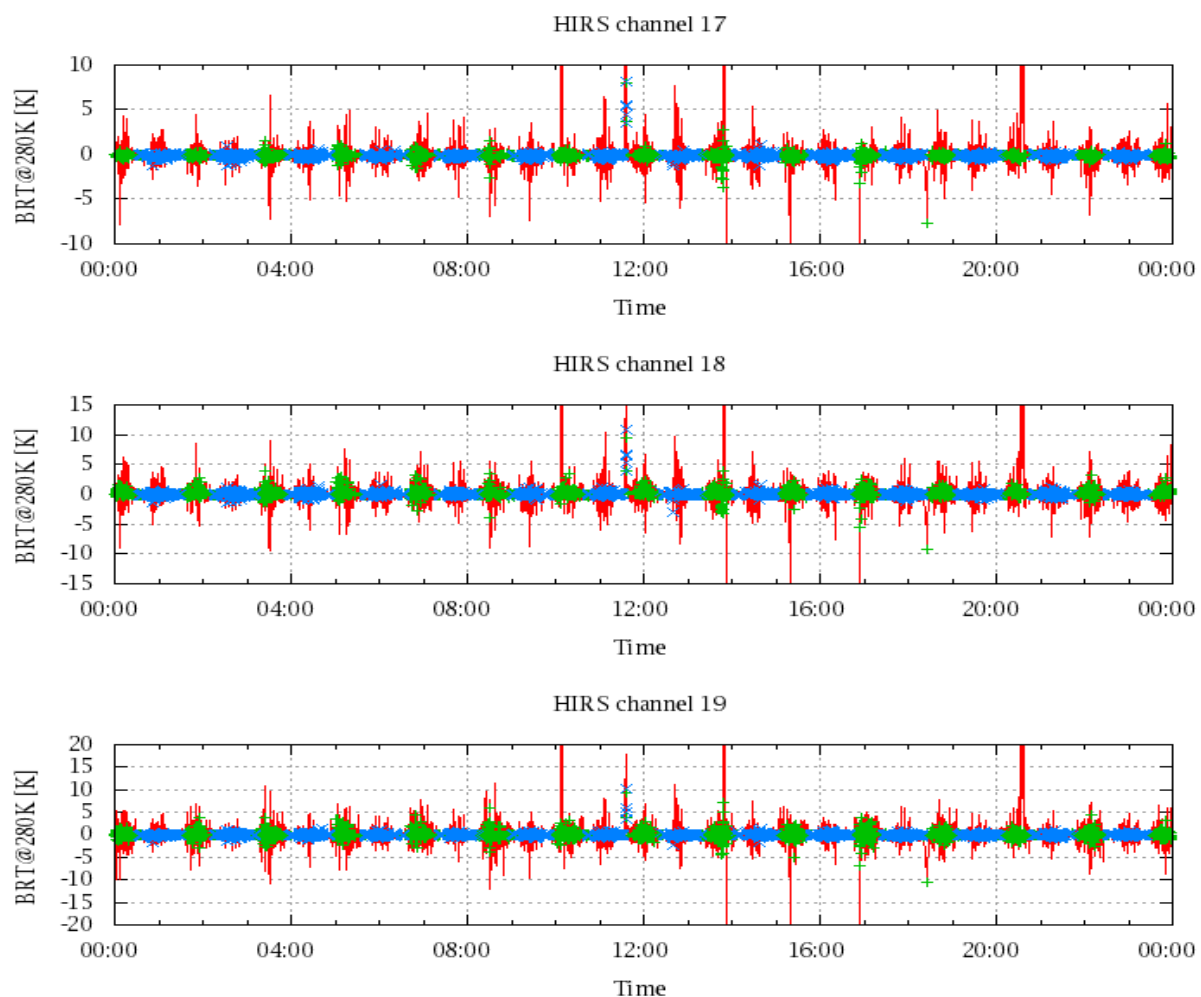


Figure 21: Radiances Differences in BRT