

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

24/03/2018 00:00:00 - 25/03/2018 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 24/03/2018 00:00:00 - 25/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 24/03/2018 00:00:00 - 25/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSSGranule	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)	4961	5013	20180324200301.950	20180324200316.220
PX1 (130)	7192	7214	20180324201257.824	20180324201302.582
PX1 (130)	7405	7432	20180324201354.472	20180324201401.824
PX1 (130)	7644	7648	20180324201458.293	20180324201459.156
PX1 (130)	7843	7868	20180324201550.398	20180324201557.316
PX1 (130)	8051	8090	20180324201645.964	20180324201655.910
PX1 (130)	8264	8303	20180324201742.613	20180324201754.070
PX2 (135)	4961	5013	20180324200301.950	20180324200316.220
PX2 (135)	7192	7214	20180324201257.824	20180324201302.582
PX2 (135)	7405	7432	20180324201354.472	20180324201401.824
PX2 (135)	7644	7648	20180324201458.293	20180324201459.156
PX2 (135)	7843	7868	20180324201550.398	20180324201557.316
PX2 (135)	8051	8090	20180324201645.964	20180324201655.910
PX2 (135)	8264	8303	20180324201742.613	20180324201754.070
PX3 (140)	4960	5013	20180324200301.735	20180324200316.220
PX3 (140)	7192	7214	20180324201257.824	20180324201302.582
PX3 (140)	7405	7432	20180324201354.472	20180324201401.824
PX3 (140)	7644	7648	20180324201458.293	20180324201459.156

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	7842	7868	20180324201550.183	20180324201557.316
PX3 (140)	8051	8090	20180324201645.964	20180324201655.910
PX3 (140)	8263	8303	20180324201742.394	20180324201754.070
PX4 (145)	4960	5013	20180324200301.735	20180324200316.220
PX4 (145)	7192	7214	20180324201257.824	20180324201302.582
PX4 (145)	7405	7432	20180324201354.472	20180324201401.824
PX4 (145)	7644	7648	20180324201458.293	20180324201459.156
PX4 (145)	7842	7868	20180324201550.183	20180324201557.316
PX4 (145)	8051	8089	20180324201645.964	20180324201655.691
PX4 (145)	8263	8303	20180324201742.394	20180324201754.070
IMG (150)	4404	4465	20180324200301.735	20180324200316.220
IMG (150)	6935	6958	20180324201257.391	20180324201302.582
IMG (150)	7177	7204	20180324201354.472	20180324201400.527
IMG (150)	7448	7451	20180324201458.293	20180324201458.941
IMG (150)	7670	7700	20180324201550.183	20180324201557.316
IMG (150)	7906	7949	20180324201645.746	20180324201655.691
IMG (150)	8147	8195	20180324201742.394	20180324201754.070
VER (160)	3482	3493	20180324200256.114	20180324200320.110
VER (160)	3892	3894	20180324201352.094	20180324201354.472
VER (160)	3962	3968	20180324201544.129	20180324201600.129
VER (160)	3997	4003	20180324201640.125	20180324201656.125
VER (160)	4032	4043	20180324201736.124	20180324201800.124
AUX (180)	3956	3959	20180324200256.544	20180324200320.544
AUX (180)	4052	4054	20180324201544.562	20180324201600.558
AUX (180)	4059	4061	20180324201640.558	20180324201656.558
AUX (180)	4066	4069	20180324201736.558	20180324201800.554

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
24/03/2018 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)	99.54 %	-
GQisFlagQual set (PX2)	99.64 %	-
GQisFlagQual set (PX3)	99.62 %	-
GQisFlagQual set (PX4)	99.54 %	-
GQisFlagQual set (all)	99.58 %	-

Table 4: Quality flags

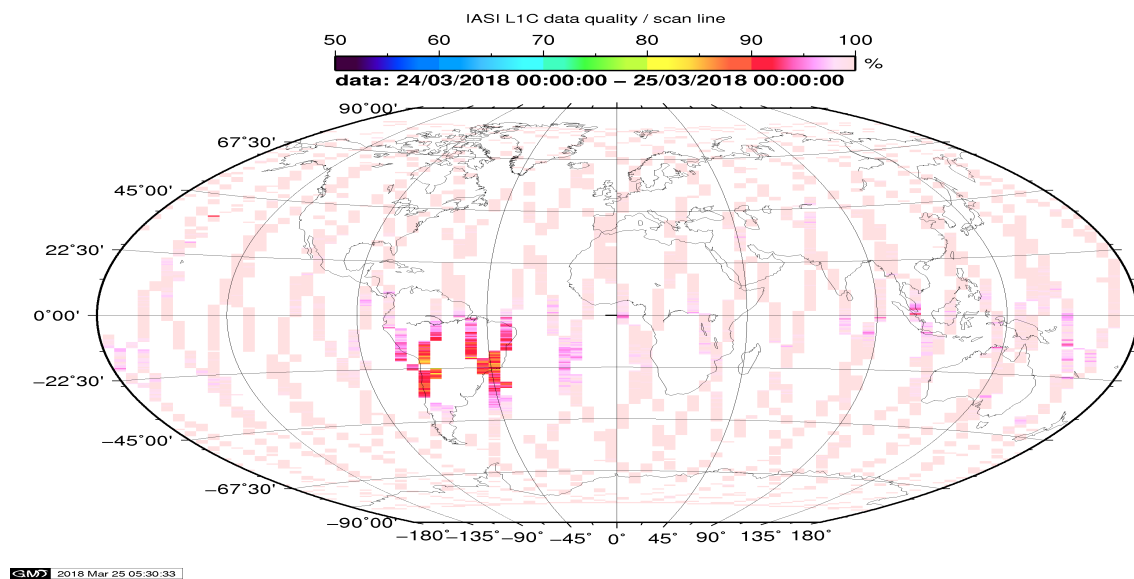


Figure 1: L1C data quality

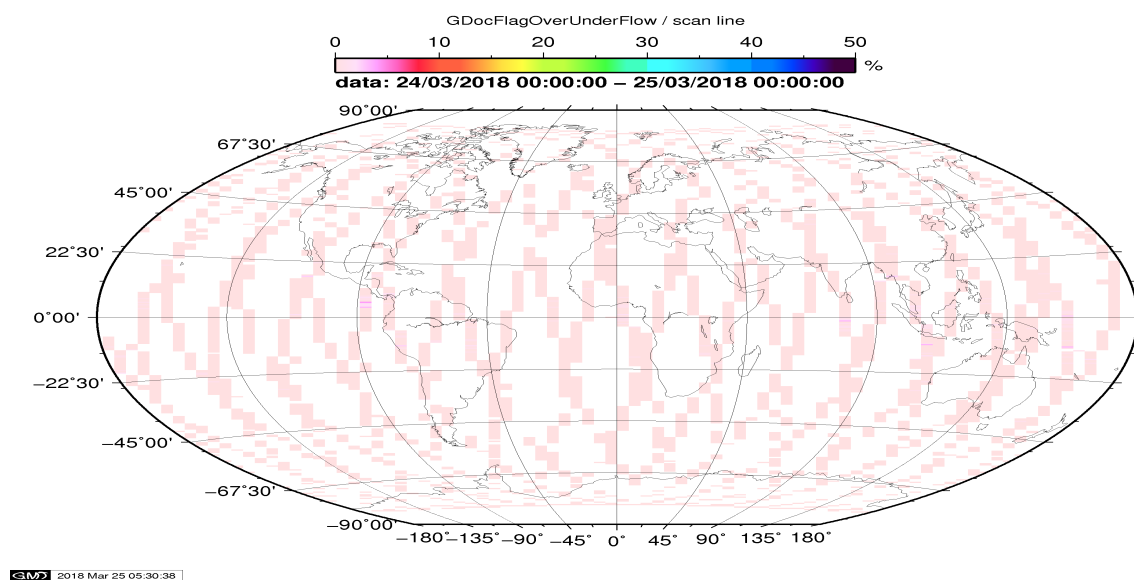


Figure 2: Flag of Over and Under Flows

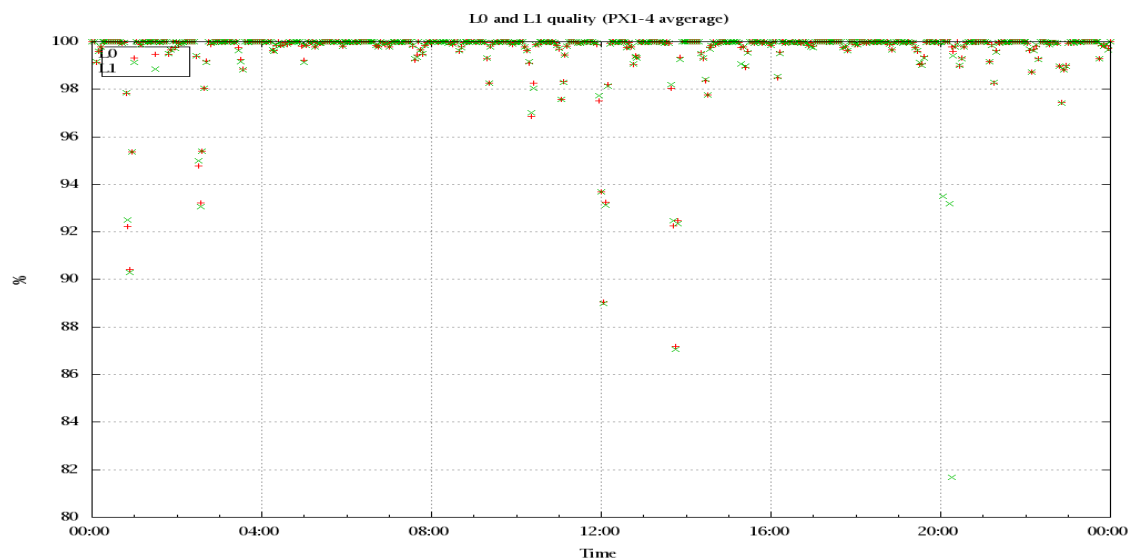


Figure 3: Level 0 and 1C overall quality

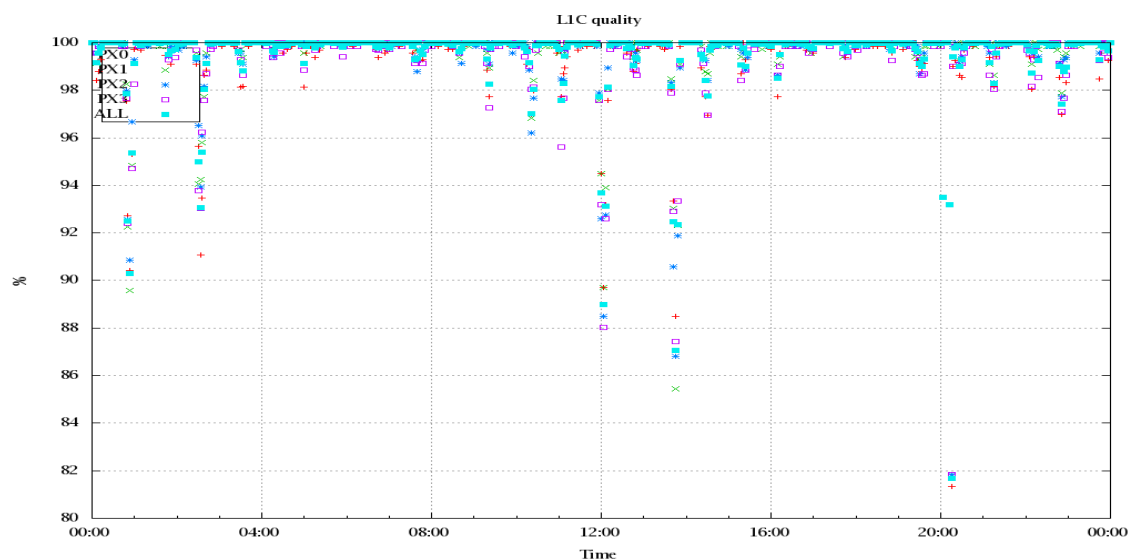


Figure 4: Level 1C quality

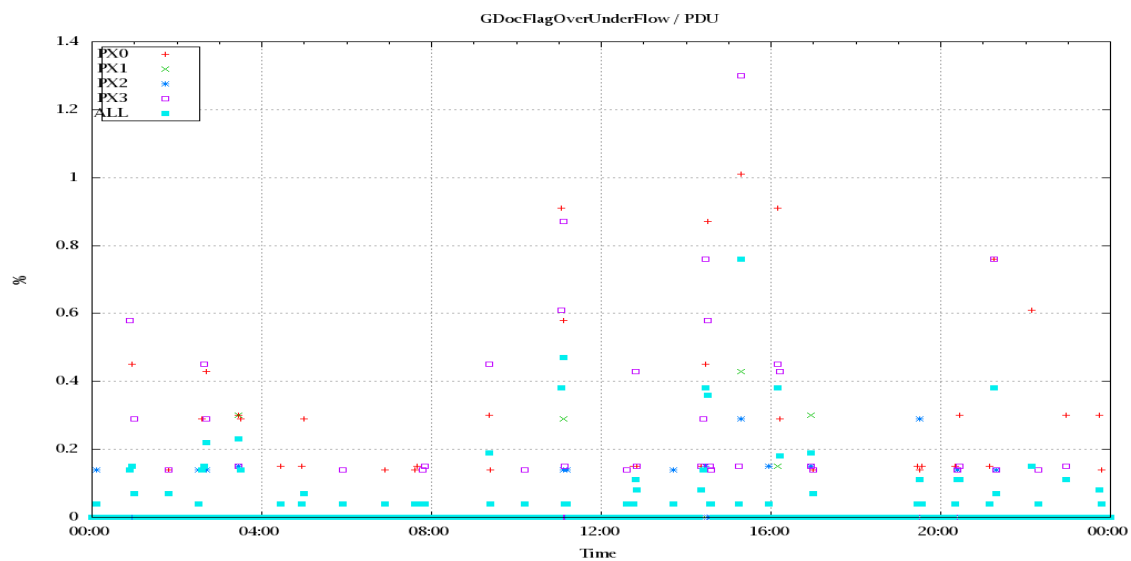


Figure 5: OverUnderFlowFlag timeseries

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.

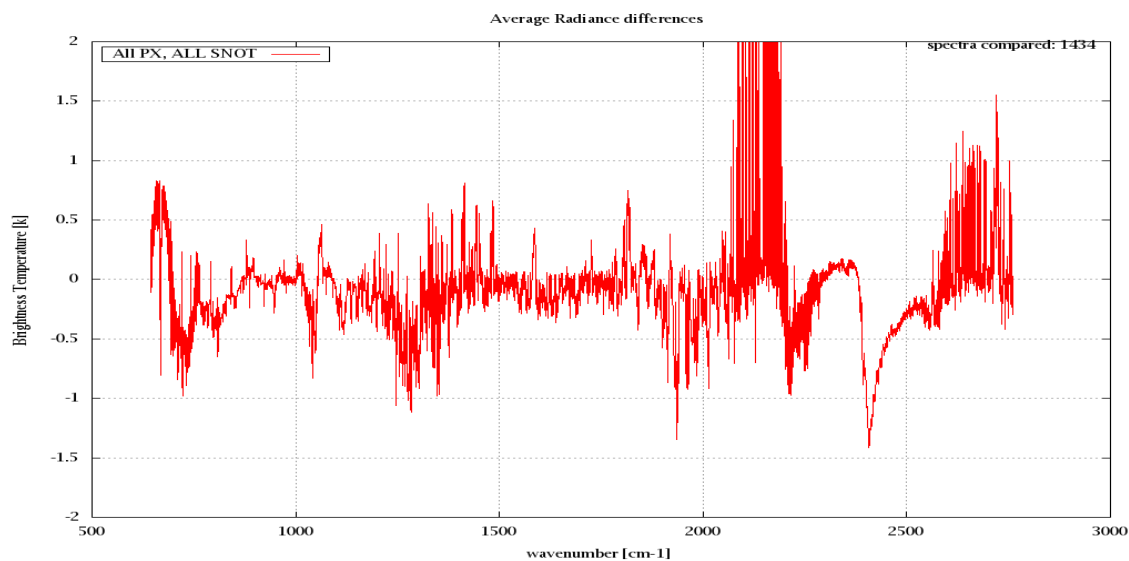


Figure 6: Average Radiance differences: OBS-CAL

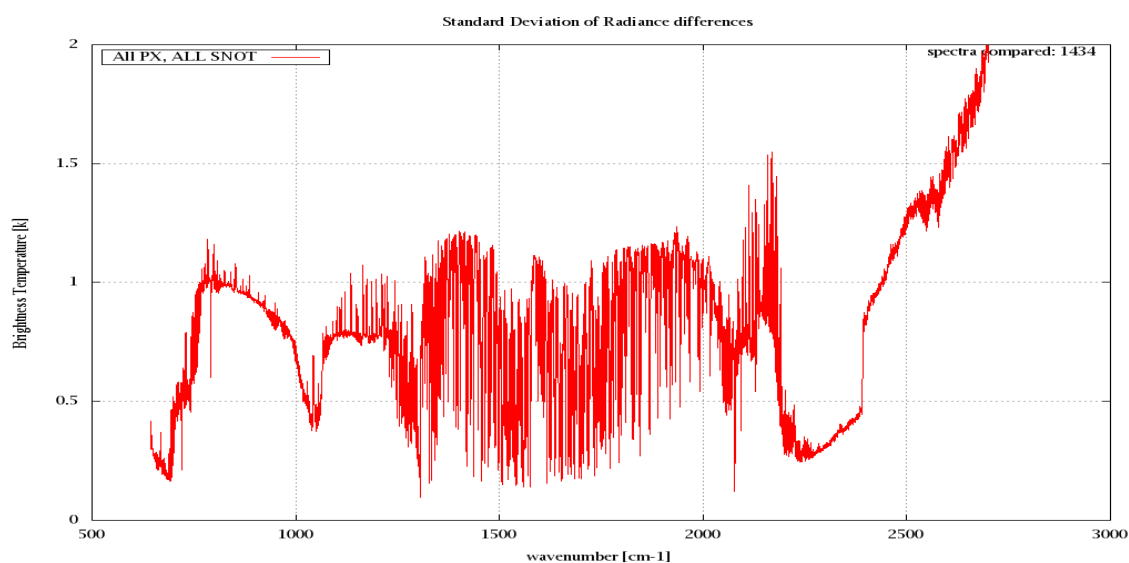


Figure 7: Standard Deviation of Radiance differences

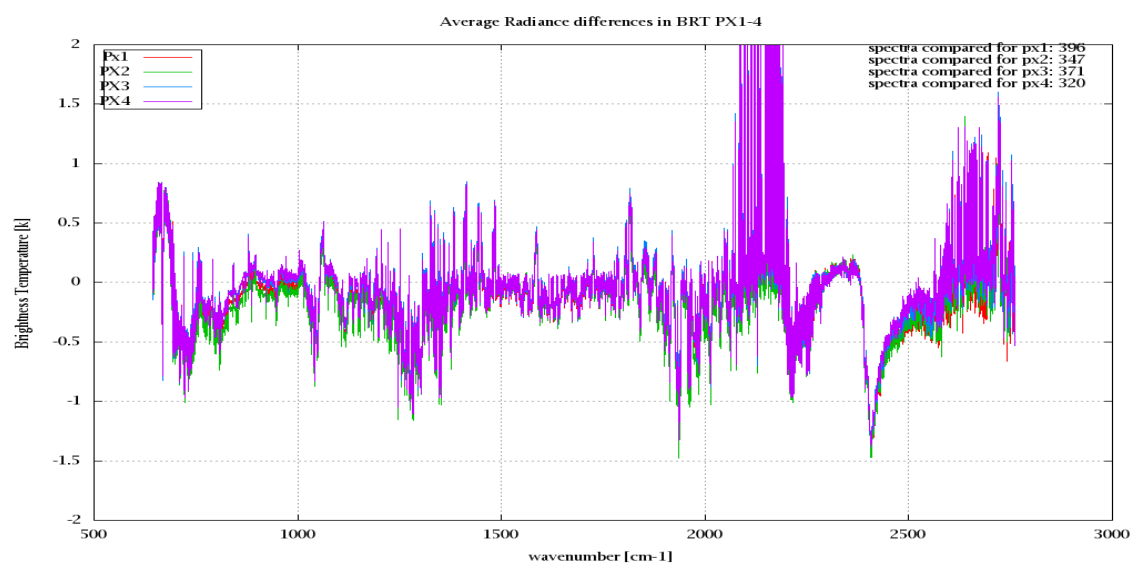


Figure 8: Average Radiance differences: OBS-CAL

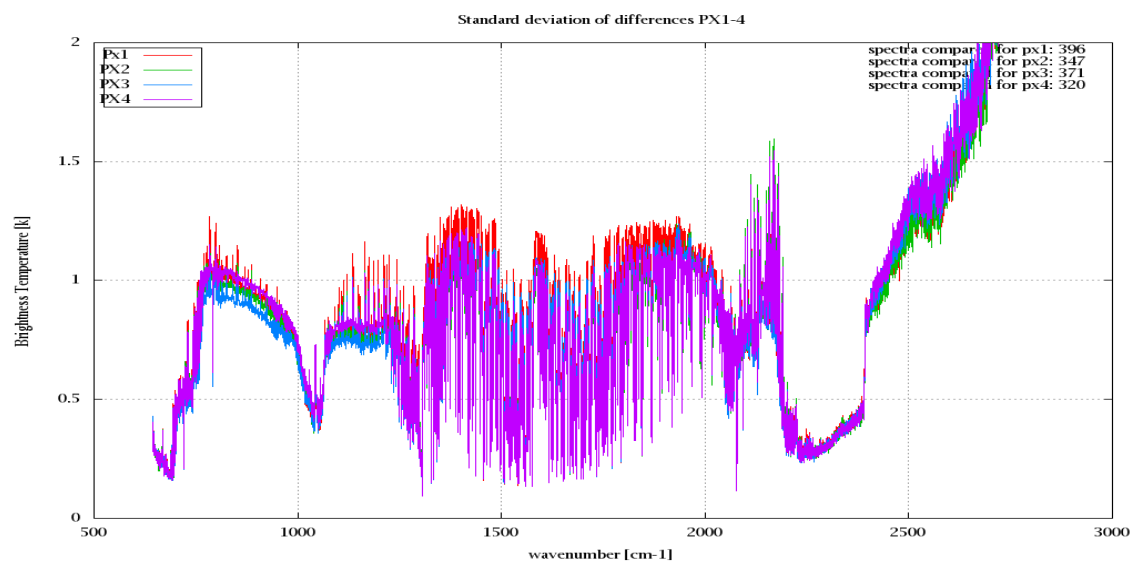


Figure 9: Standard Deviation of Radiance differences

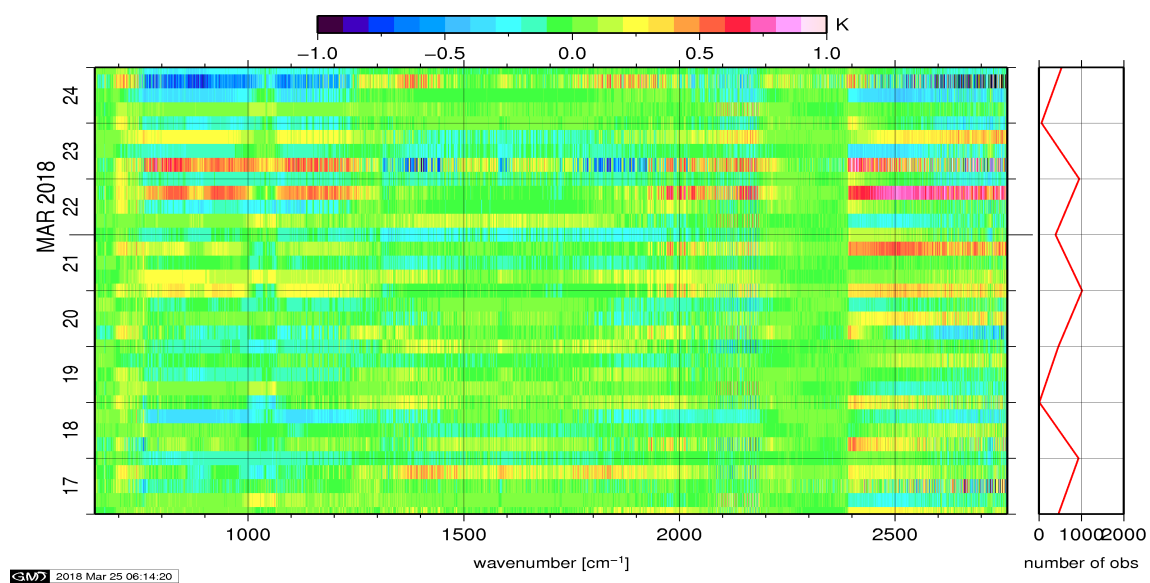


Figure 10: Radiance Anomaly in BRT: All Channels

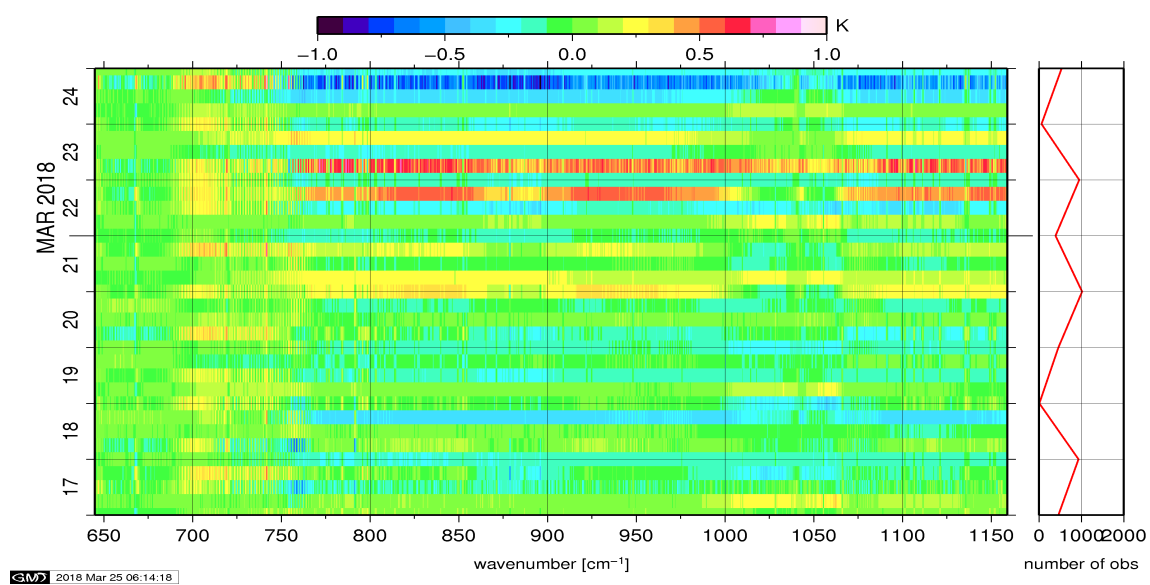


Figure 11: Radiance Anomaly in BRT: IASI Band 1

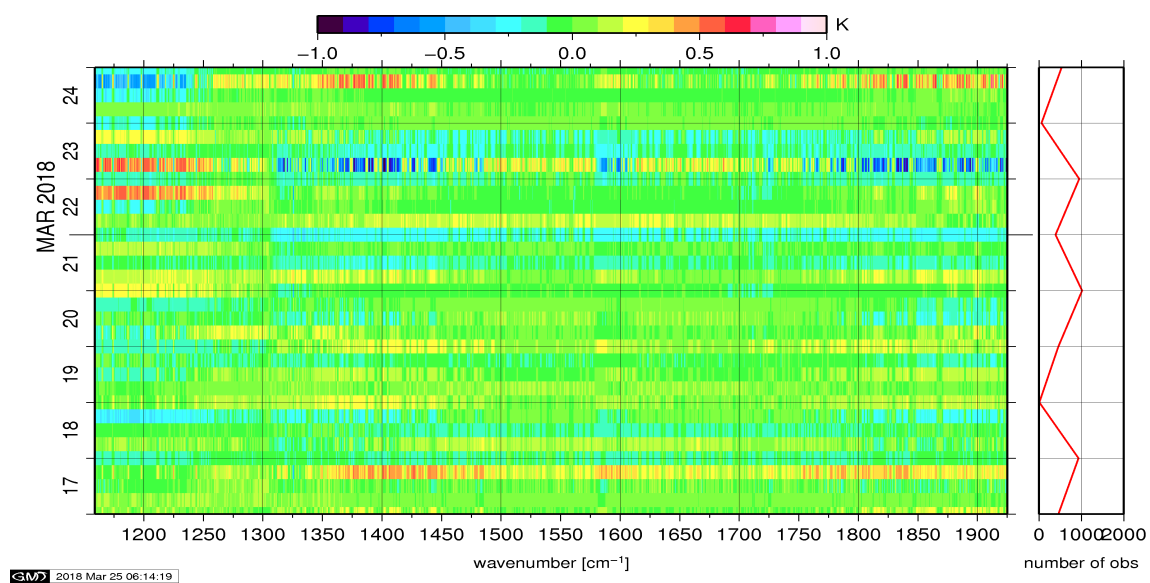


Figure 12: Radiance Anomaly in BRT: IASI Band 2

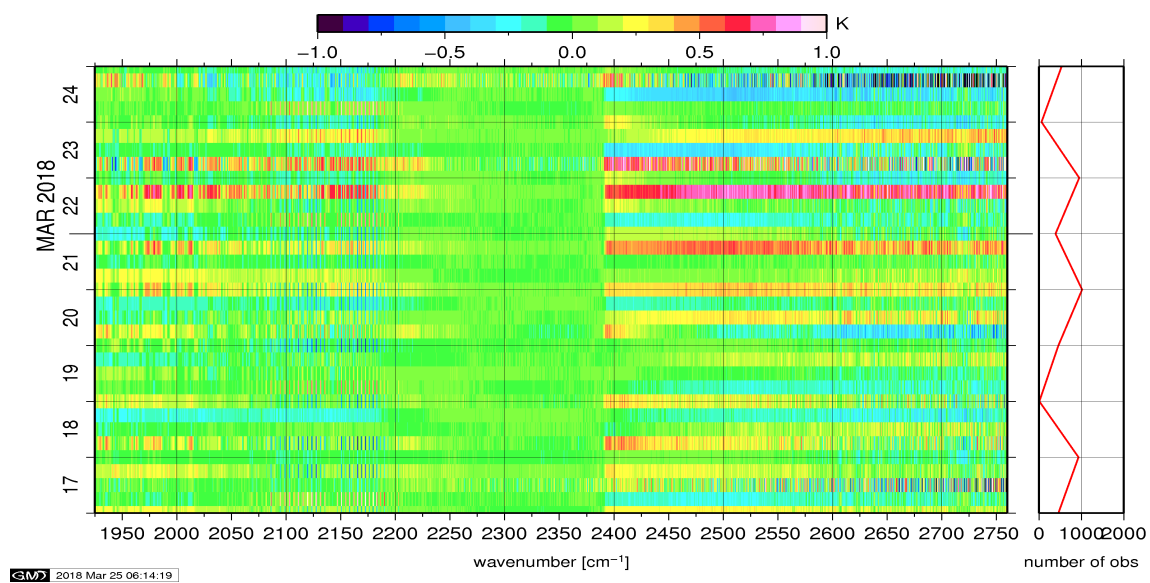


Figure 13: Radiance Anomaly in BRT: IASI Band 3

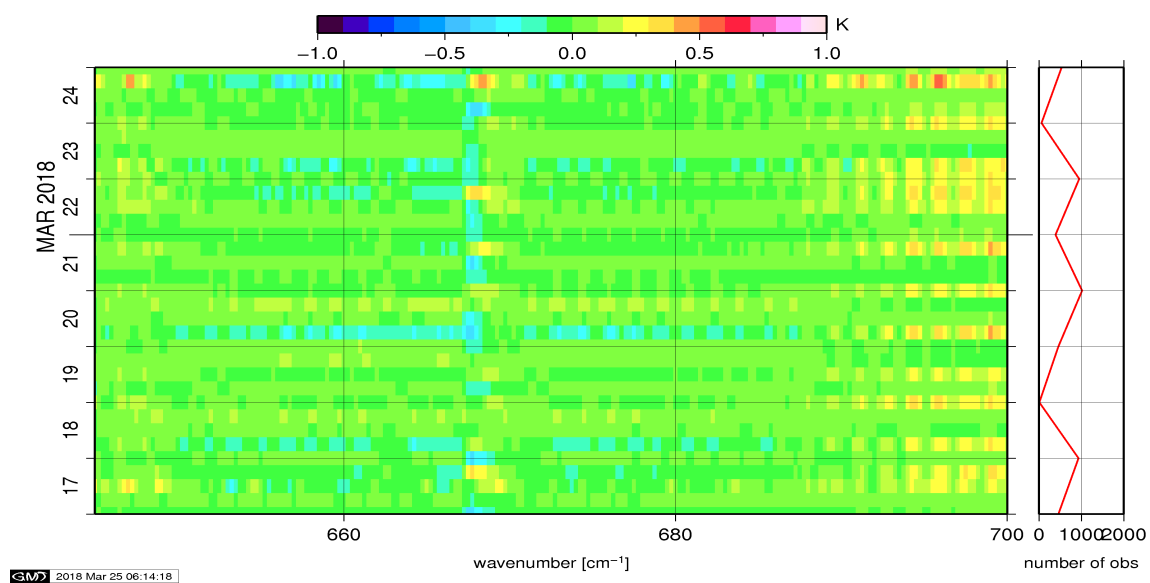


Figure 14: Radiance Anomaly in BRT: CO2 14

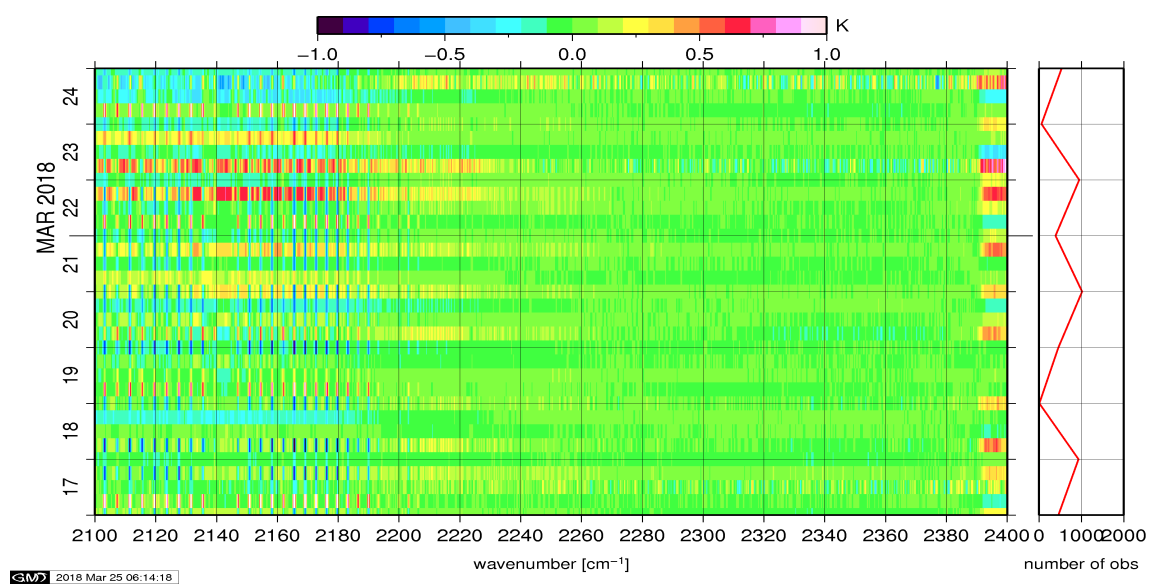


Figure 15: Radiance Anomaly in BRT: CO2 4.3

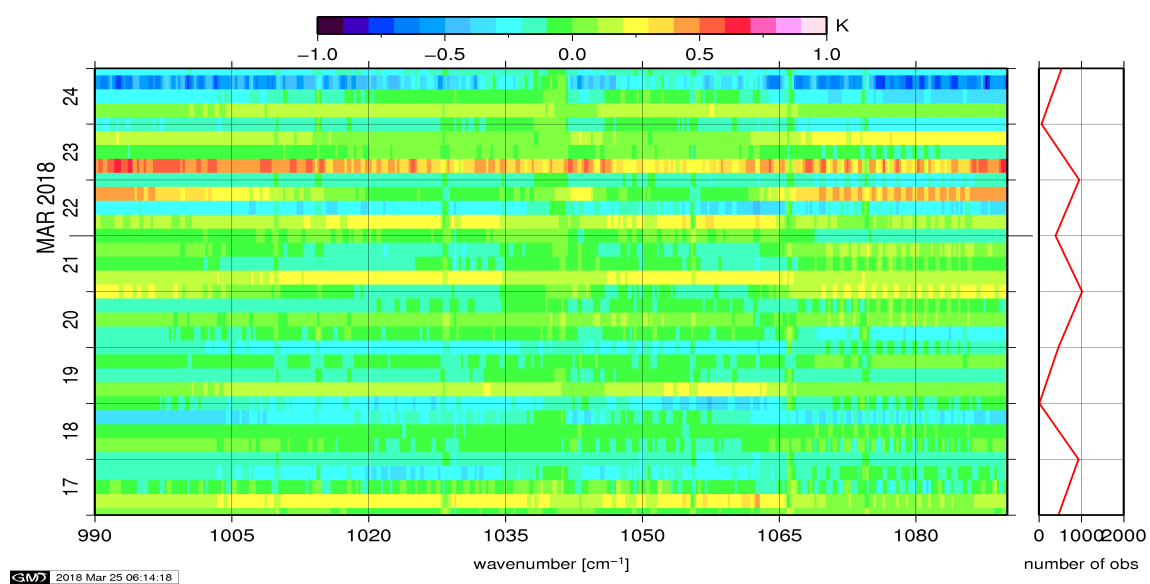


Figure 16: Radiance Anomaly in BRT: O3

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.

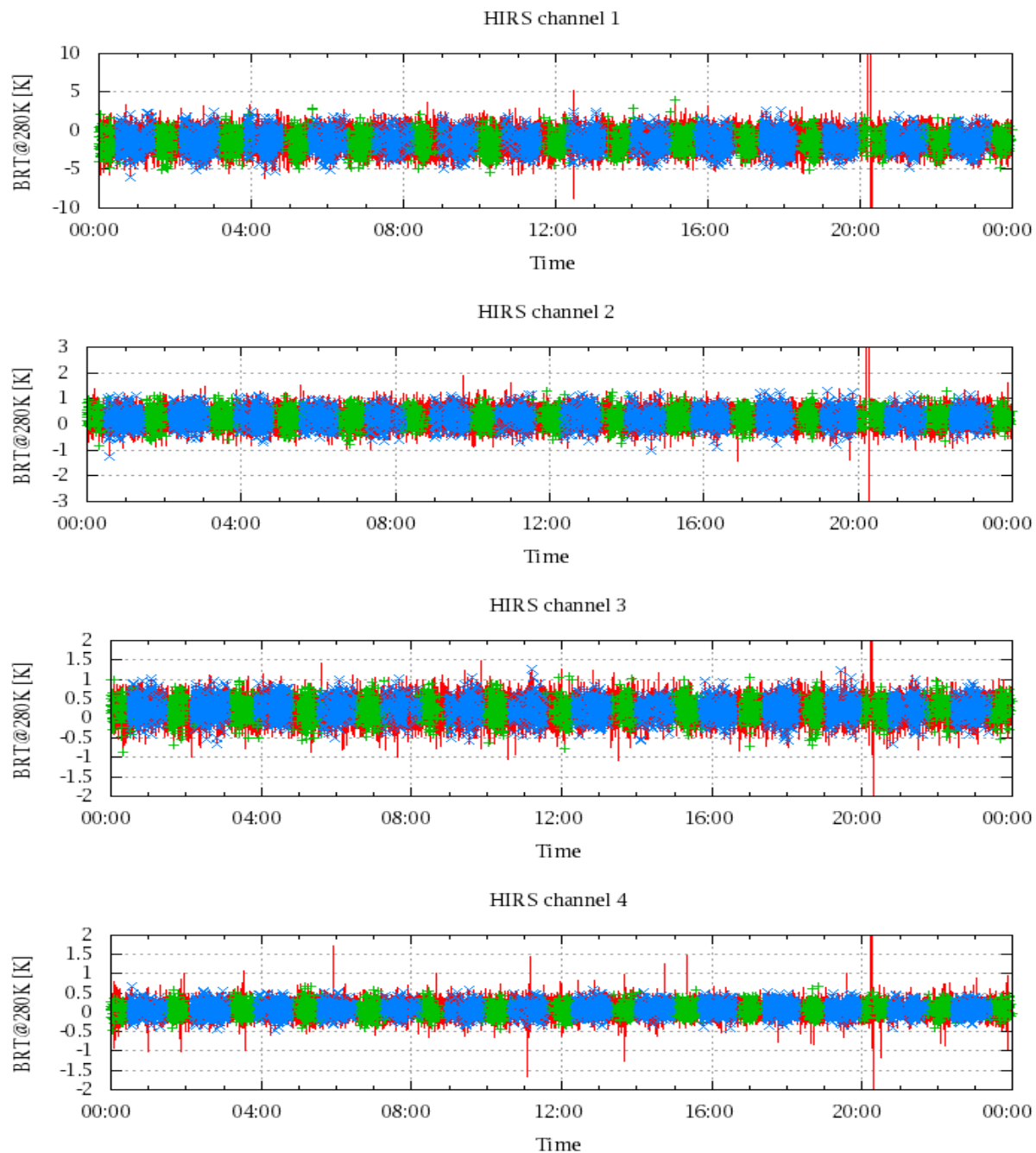


Figure 17: Radiance Differences in BRT

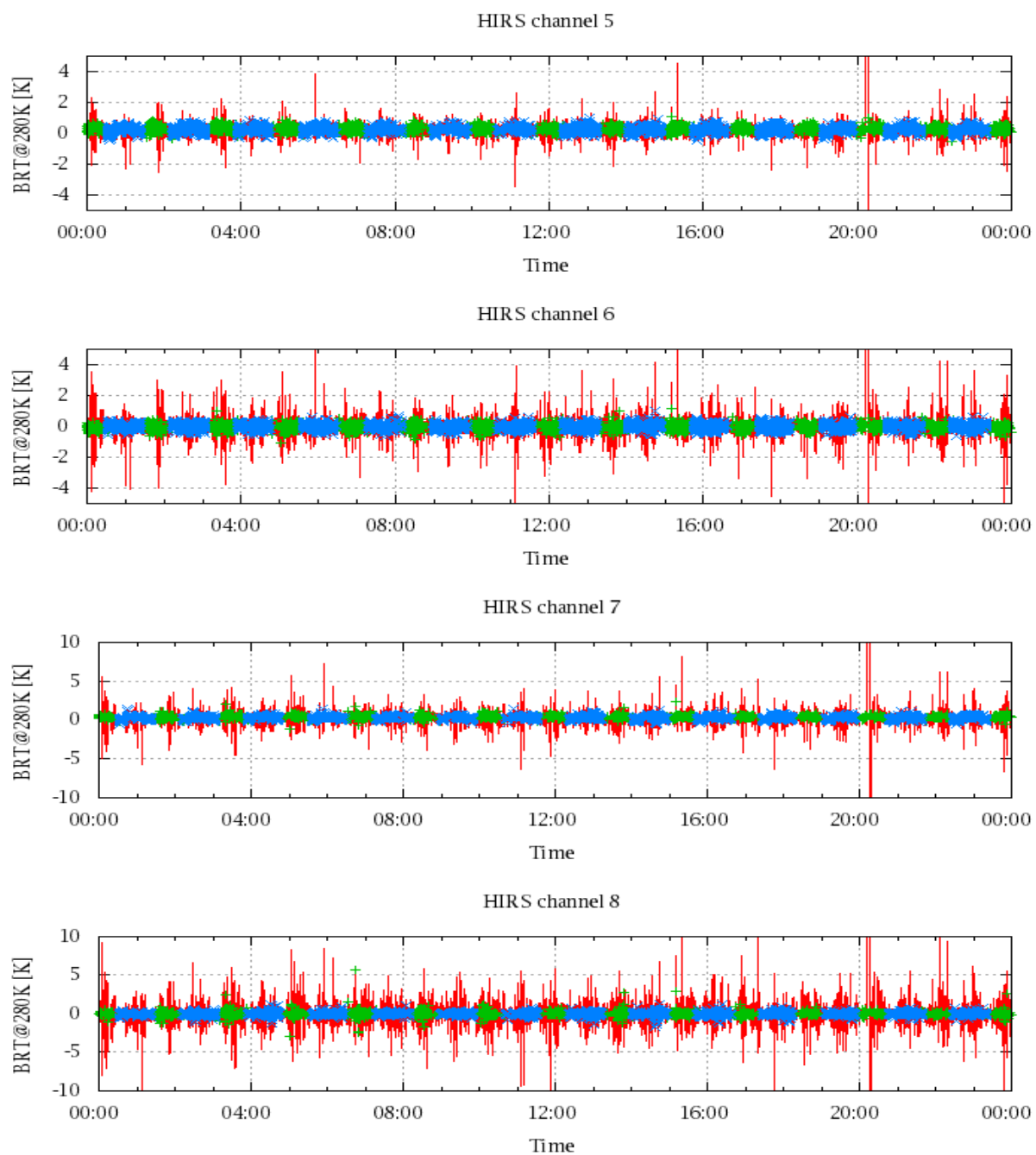


Figure 18: Radiance Differences in BRT

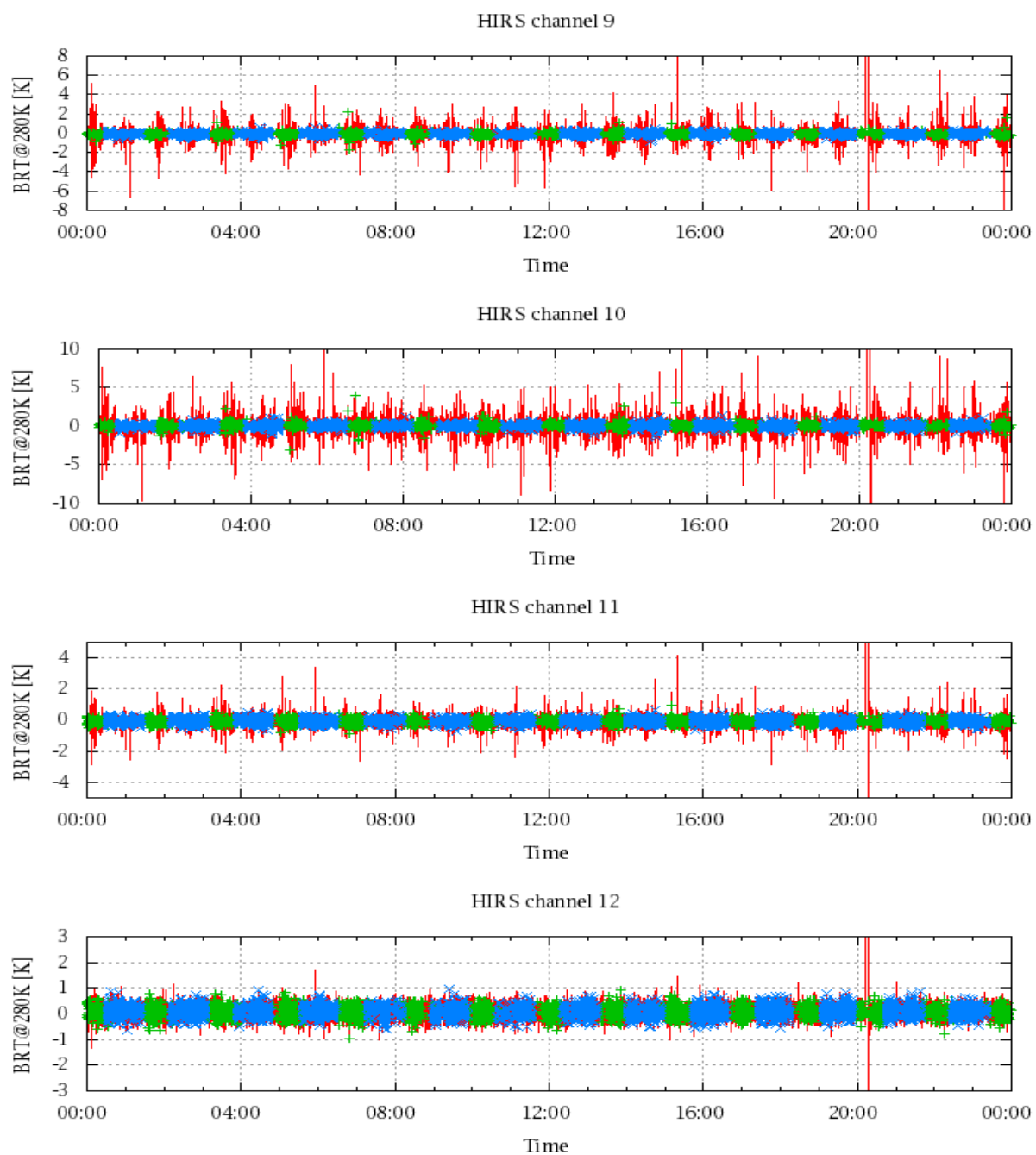


Figure 19: Radiance Differences in BRT

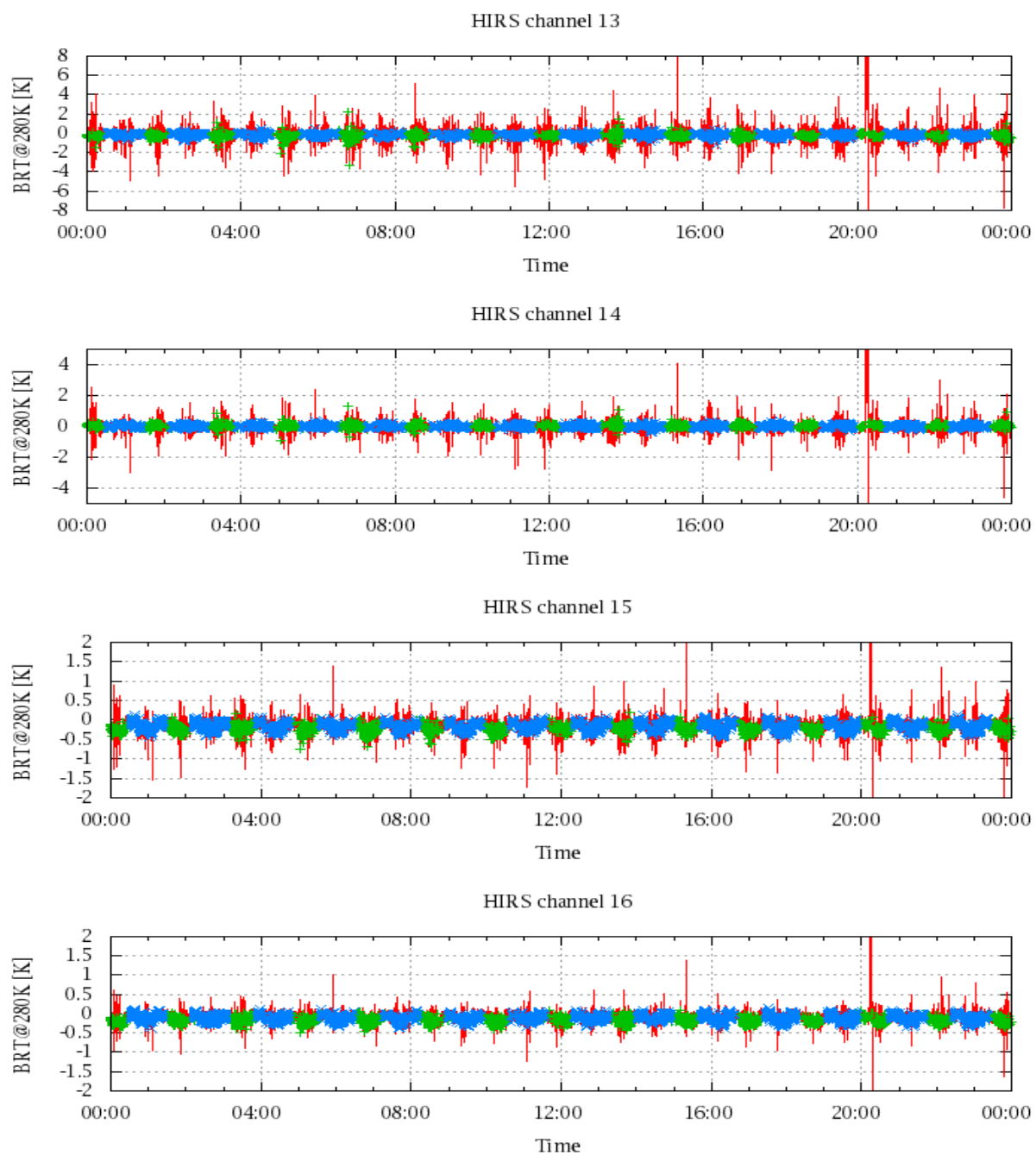


Figure 20: Radiance Differences in BRT

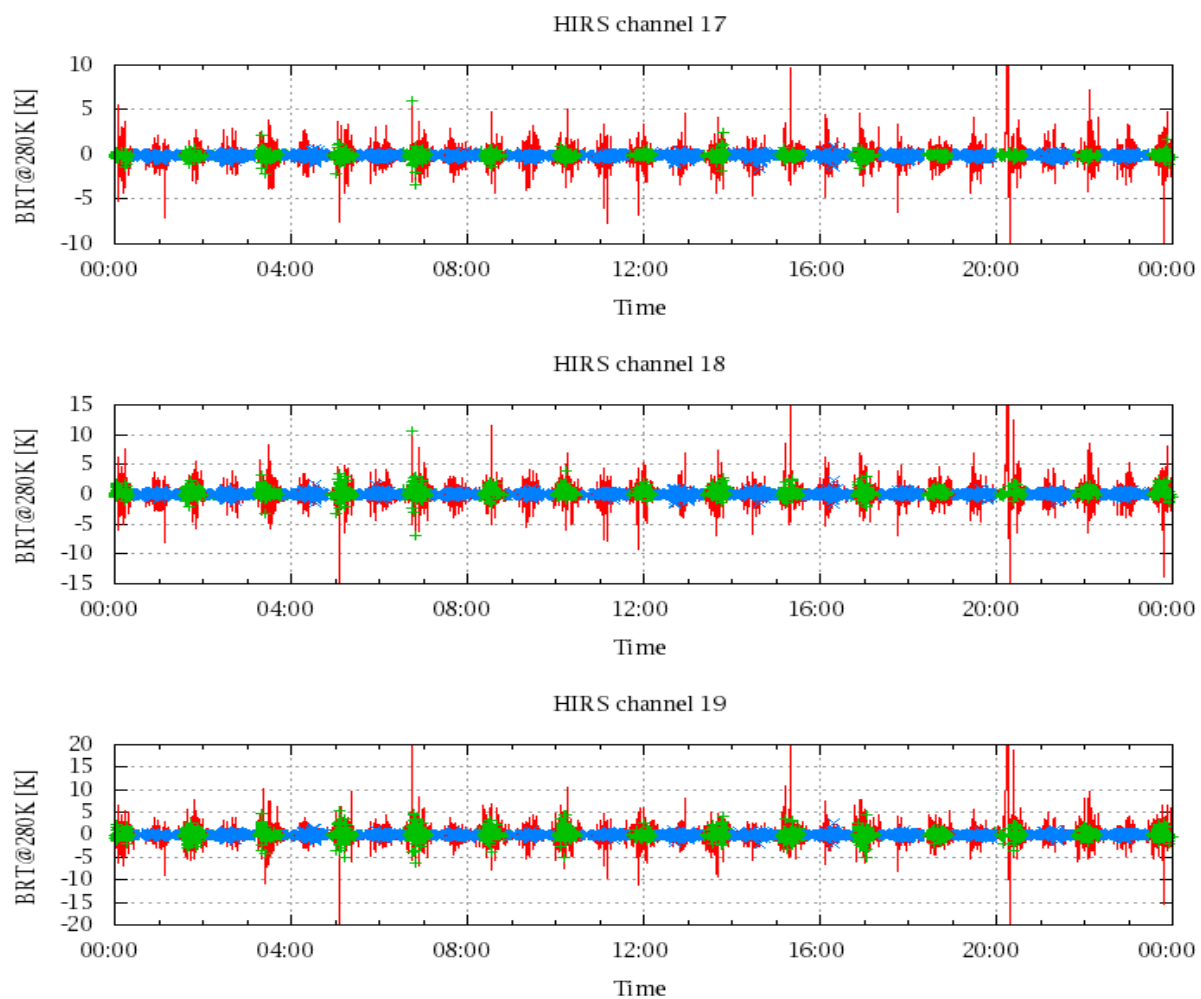


Figure 21: Radinace Differences in BRT