

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

20/03/2018 00:00:00 - 21/03/2018 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 20/03/2018 00:00:00 - 21/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 20/03/2018 00:00:00 - 21/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	468	-
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)	4147	4219	20180320075838.539	20180320075858.645
PX1 (130)	14025	14086	20180320182504.655	20180320182522.381
PX1 (130)	14946	14962	20180320182910.701	20180320182915.674
PX2 (135)	4147	4219	20180320075838.539	20180320075858.645
PX2 (135)	14025	14086	20180320182504.655	20180320182522.381
PX2 (135)	14946	14962	20180320182910.701	20180320182915.674
PX3 (140)	4147	4219	20180320075838.539	20180320075858.645
PX3 (140)	14025	14086	20180320182504.655	20180320182522.381
PX3 (140)	14946	14962	20180320182910.701	20180320182915.674
PX4 (145)	4147	4219	20180320075838.539	20180320075858.645
PX4 (145)	14025	14086	20180320182504.655	20180320182522.381
PX4 (145)	14946	14962	20180320182910.701	20180320182915.674
IMG (150)	5667	5751	20180320075838.539	20180320075858.645
IMG (150)	1569	1641	20180320182504.655	20180320182521.952
IMG (150)	2613	2633	20180320182910.483	20180320182915.455
VER (160)	6077	6093	20180320075832.700	20180320075904.700
VER (160)	13183	13199	20180320182456.651	20180320182528.651
VER (160)	13338	13344	20180320182904.647	20180320182920.647

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
AUX (180)	4475	4479	20180320075833.133	20180320075905.129
AUX (180)	9173	9177	20180320182457.084	20180320182529.084
AUX (180)	9204	9206	20180320182905.080	20180320182921.080

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
20/03/2018 00:00:14	-	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	468	-
GQisFlagQual set (PX1)	99.58 %	-
GQisFlagQual set (PX2)	99.64 %	-
GQisFlagQual set (PX3)	99.64 %	-
GQisFlagQual set (PX4)	99.59 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

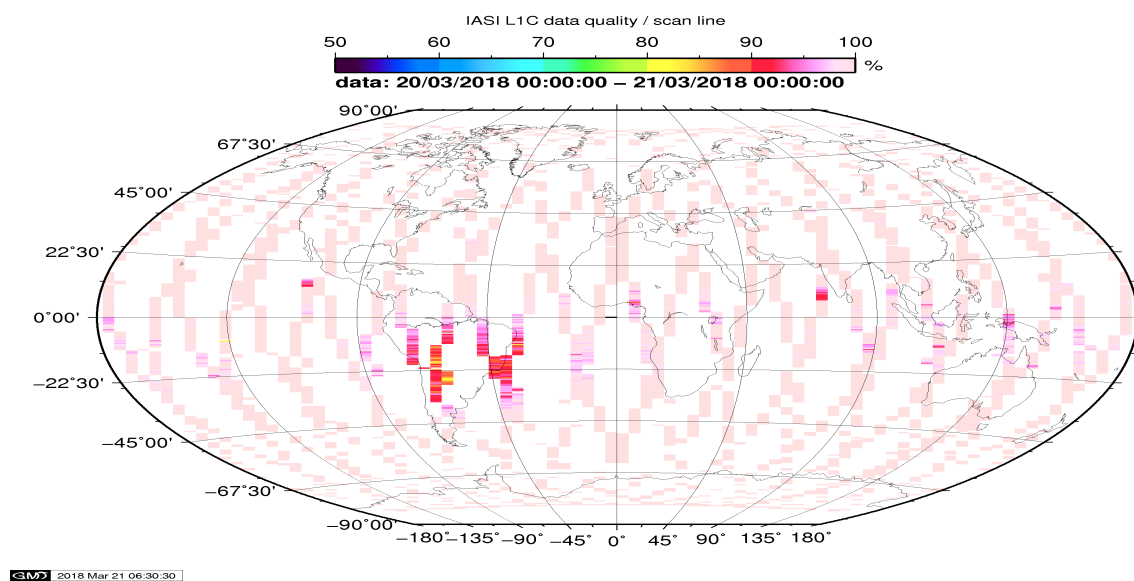


Figure 1: L1C data quality

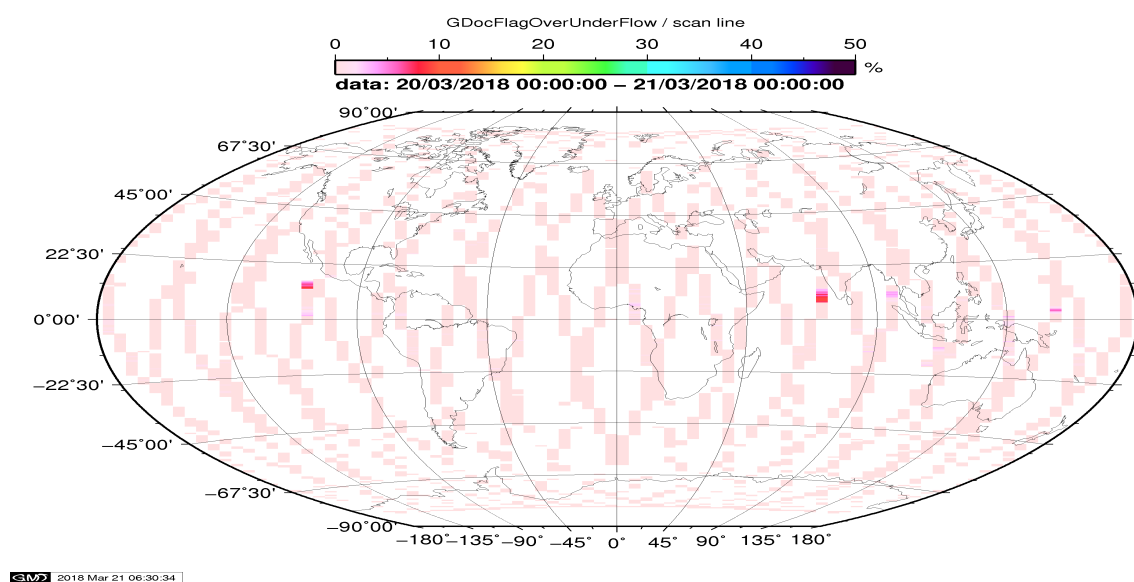


Figure 2: Flag of Over and Under Flows

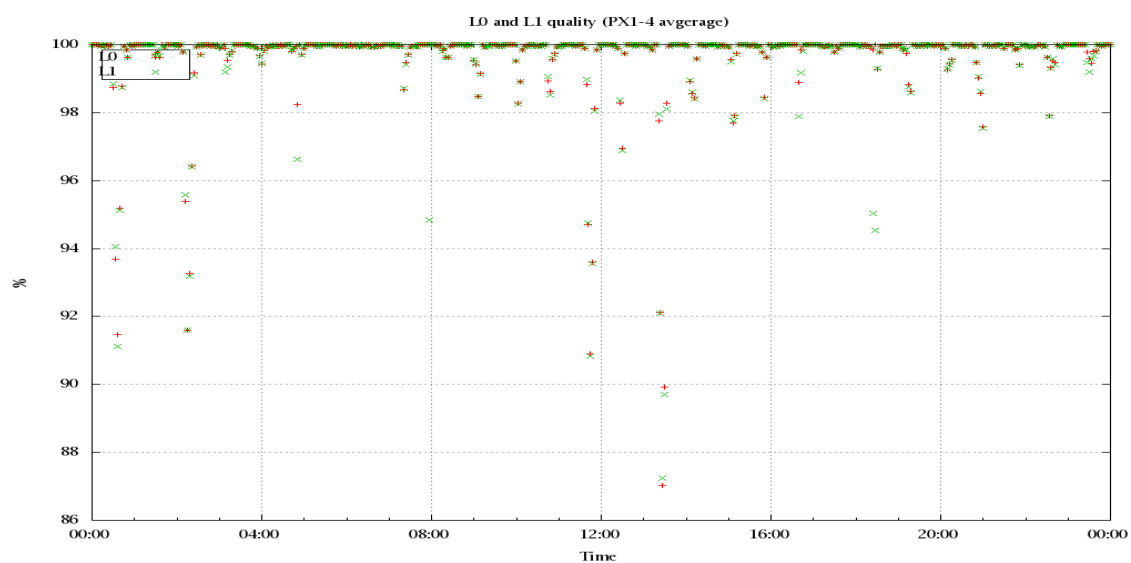


Figure 3: Level 0 and 1C overall quality

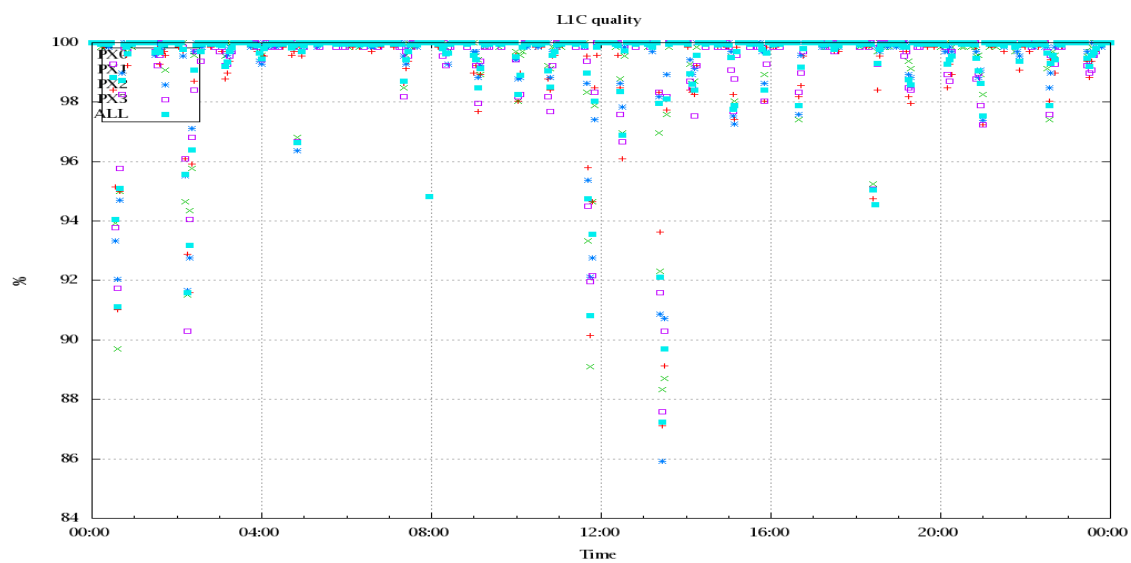


Figure 4: Level 1C quality

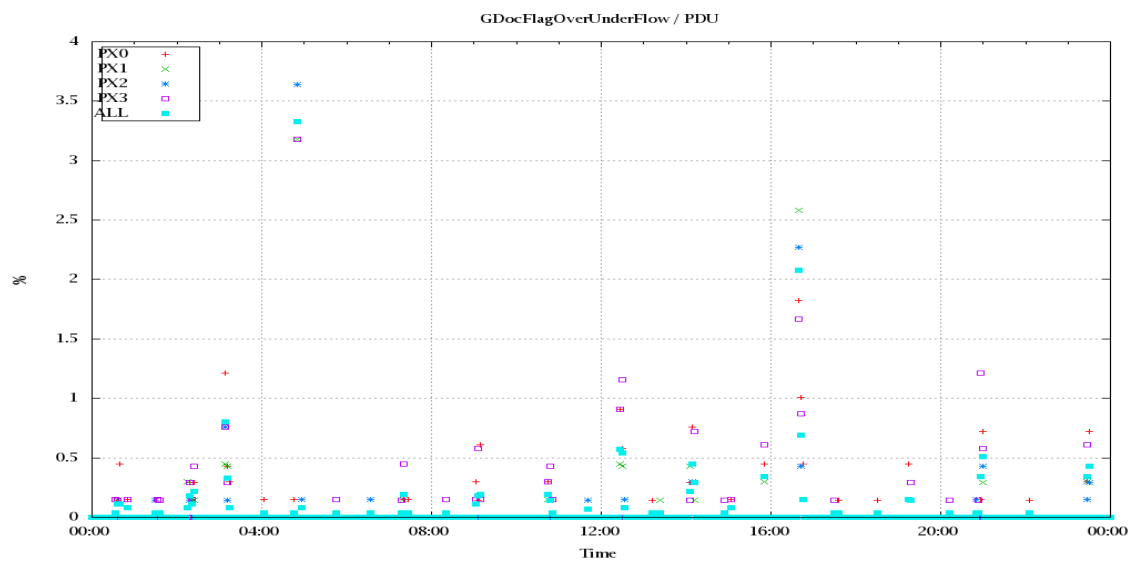


Figure 5: OverUnderFlowFlag timeseries

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.

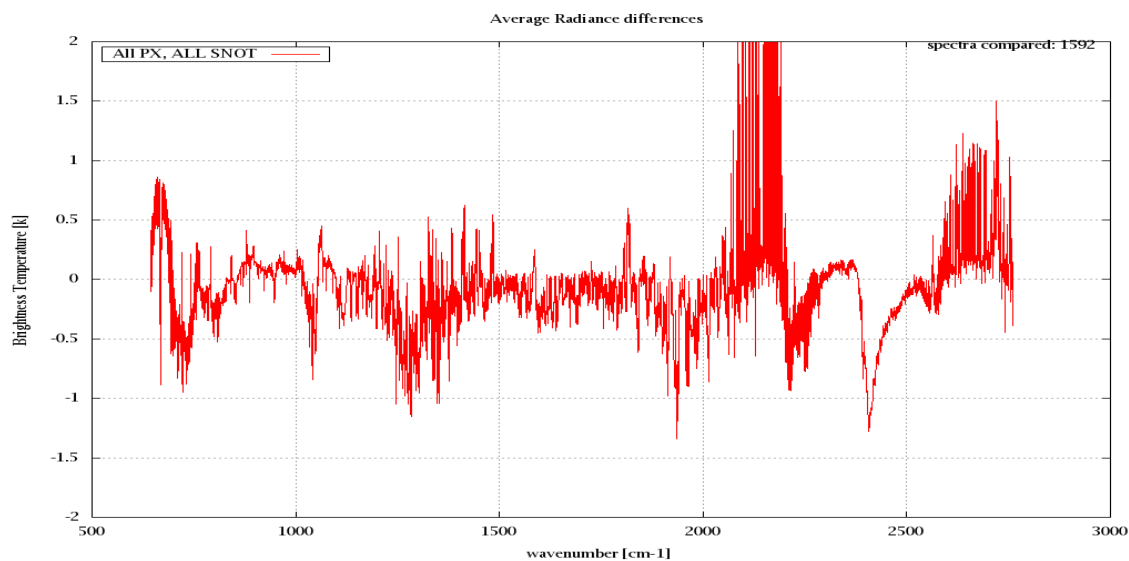


Figure 6: Average Radiance differences: OBS-CAL

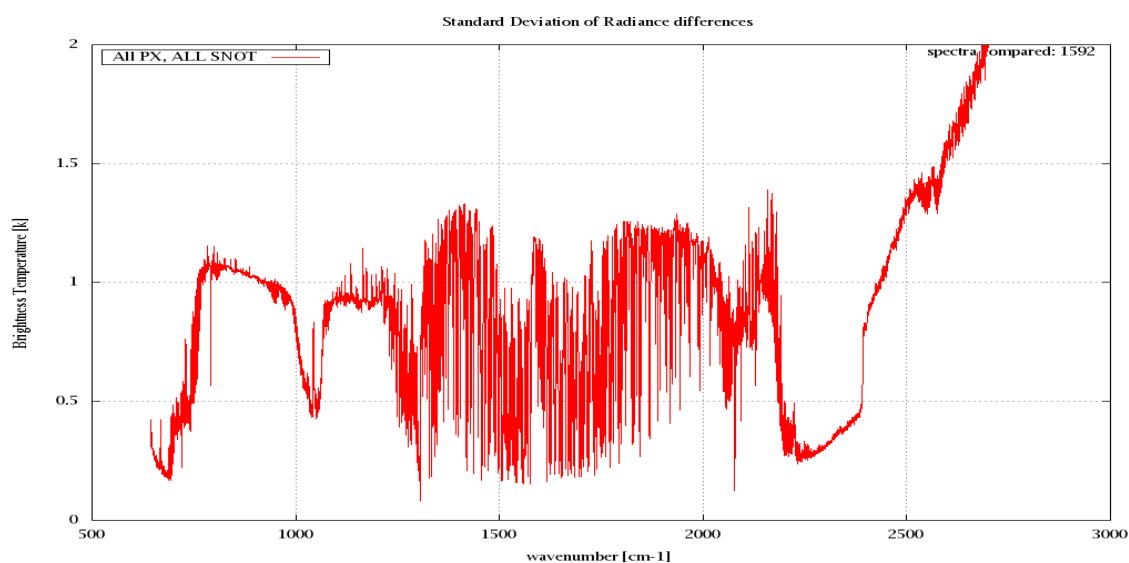


Figure 7: Standard Deviation of Radiance differences

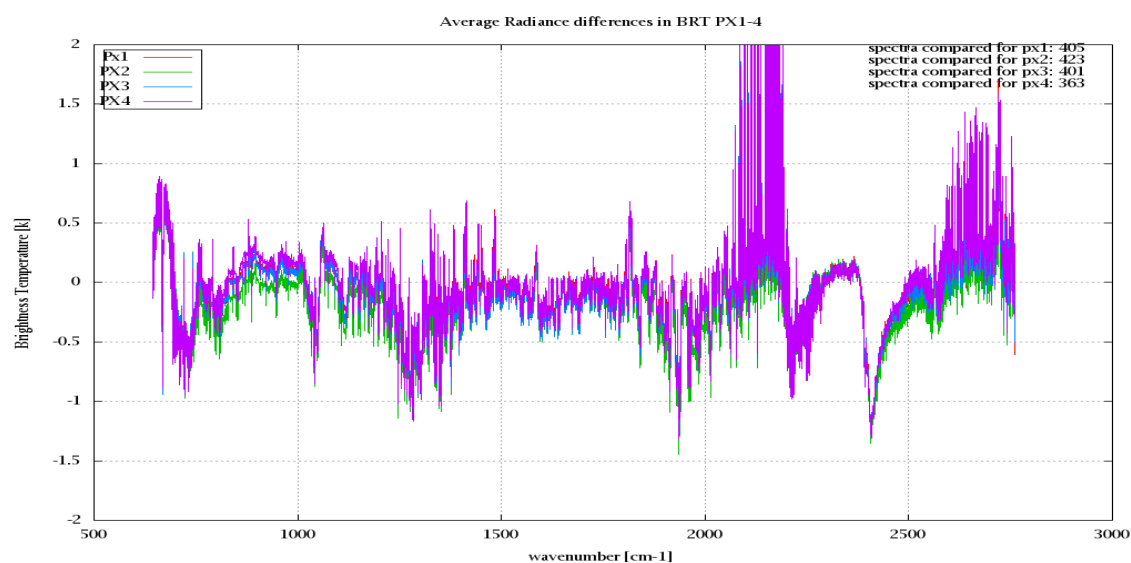


Figure 8: Average Radiance differences: OBS-CAL

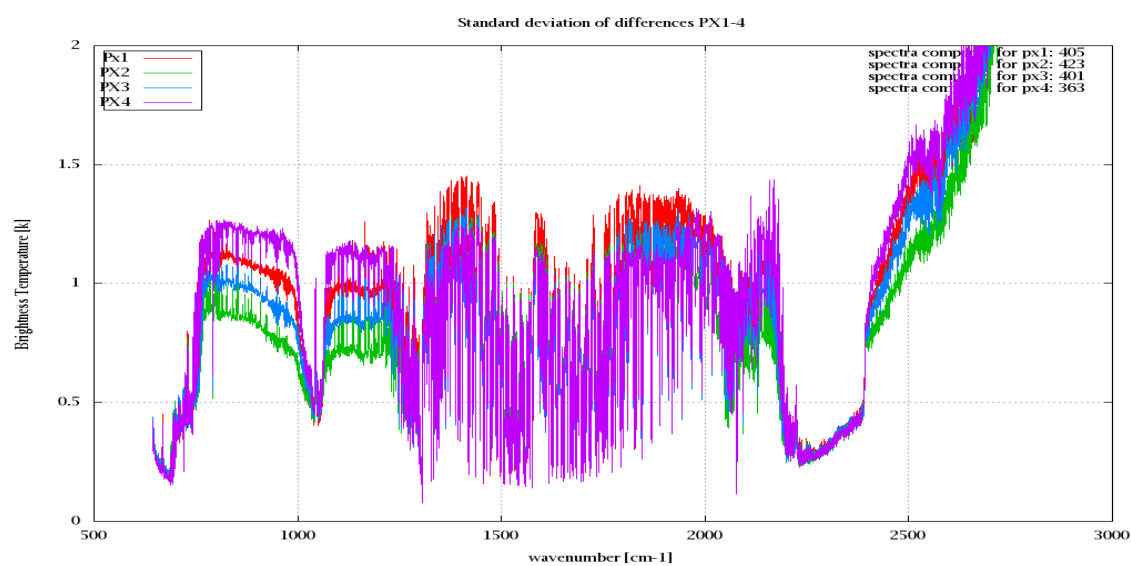


Figure 9: Standard Deviation of Radiance differences

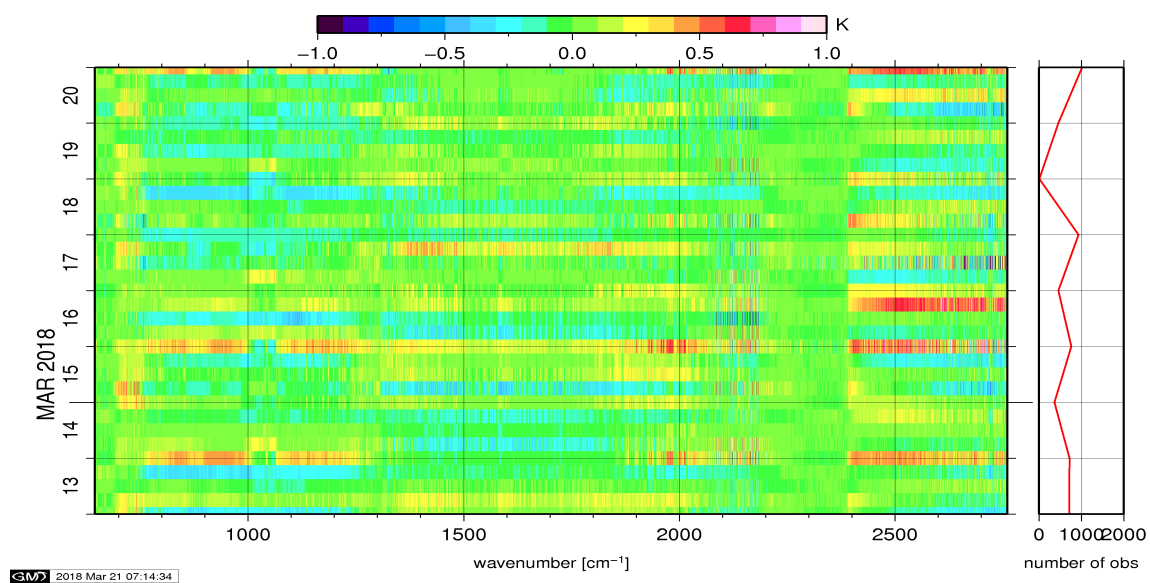


Figure 10: Radiance Anomaly in BRT: All Channels

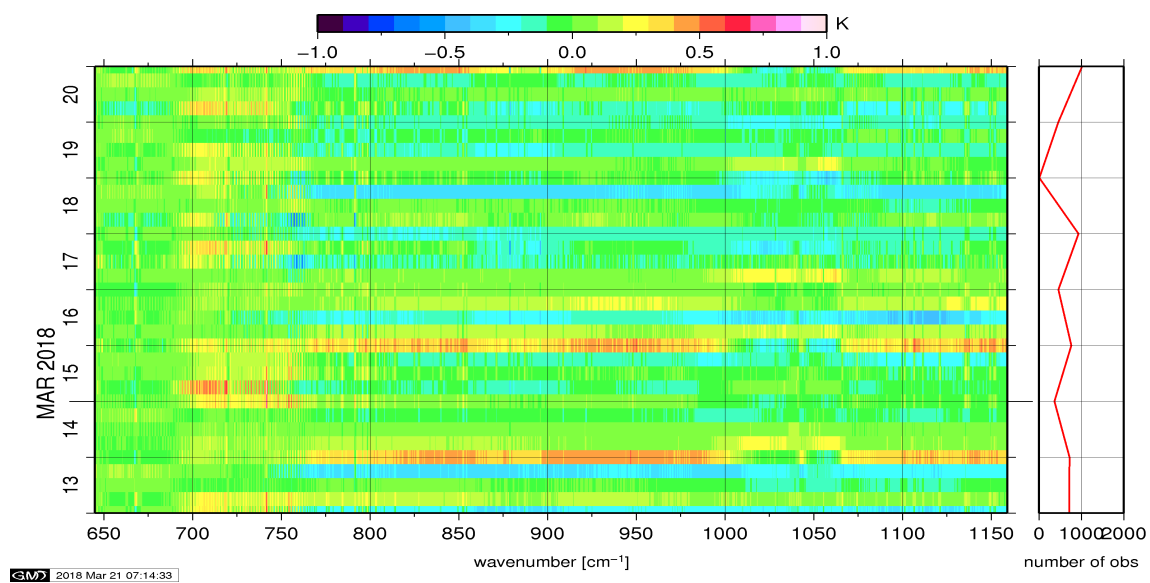


Figure 11: Radiance Anomaly in BRT: IASI Band 1

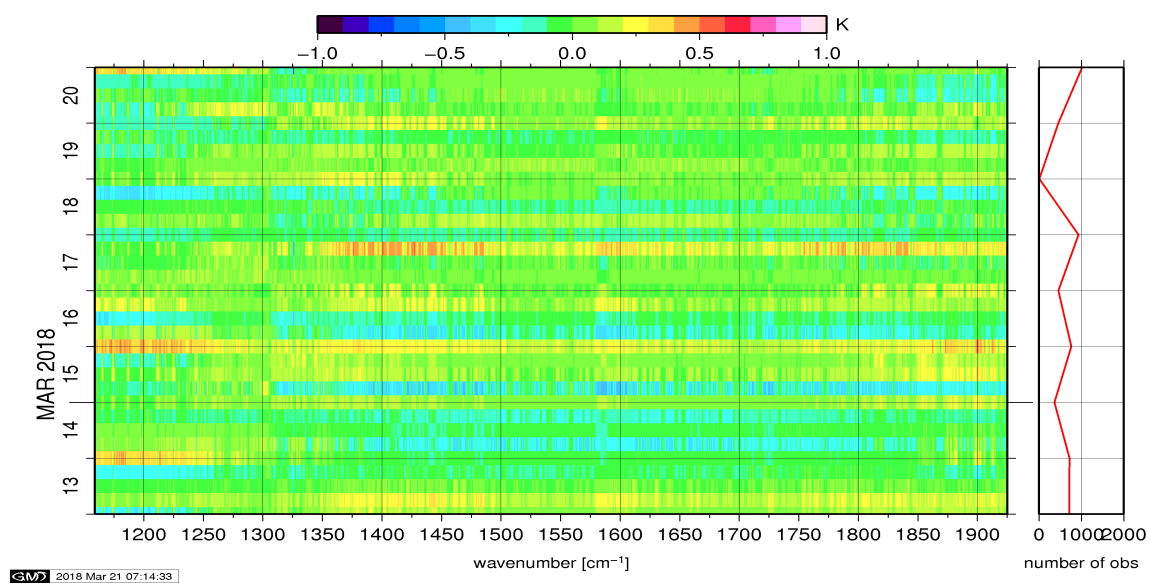


Figure 12: Radiance Anomaly in BRT: IASI Band 2

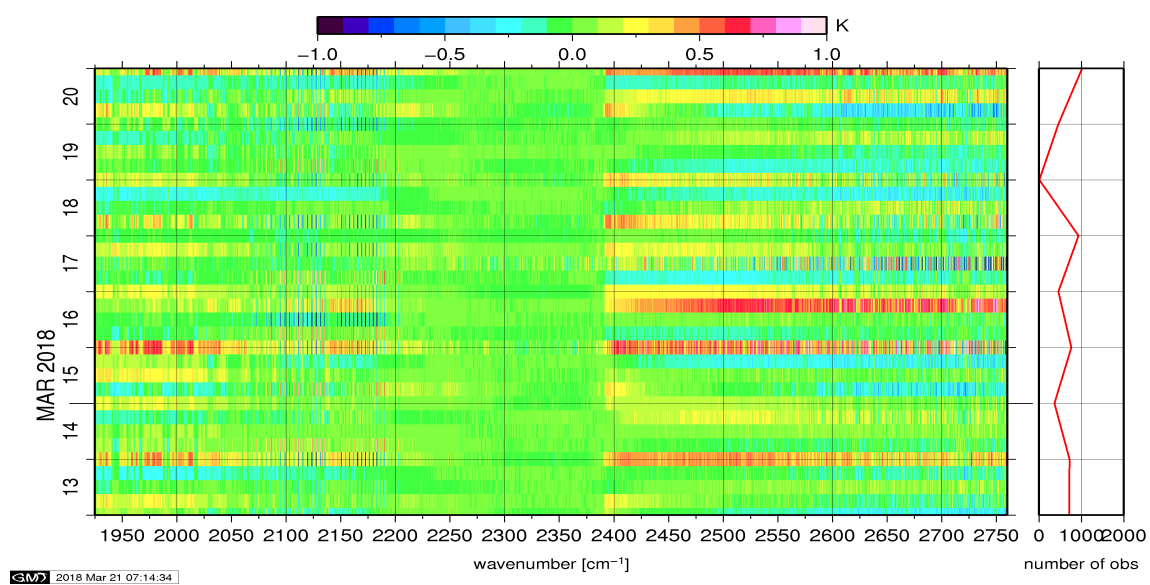


Figure 13: Radiance Anomaly in BRT: IASI Band 3

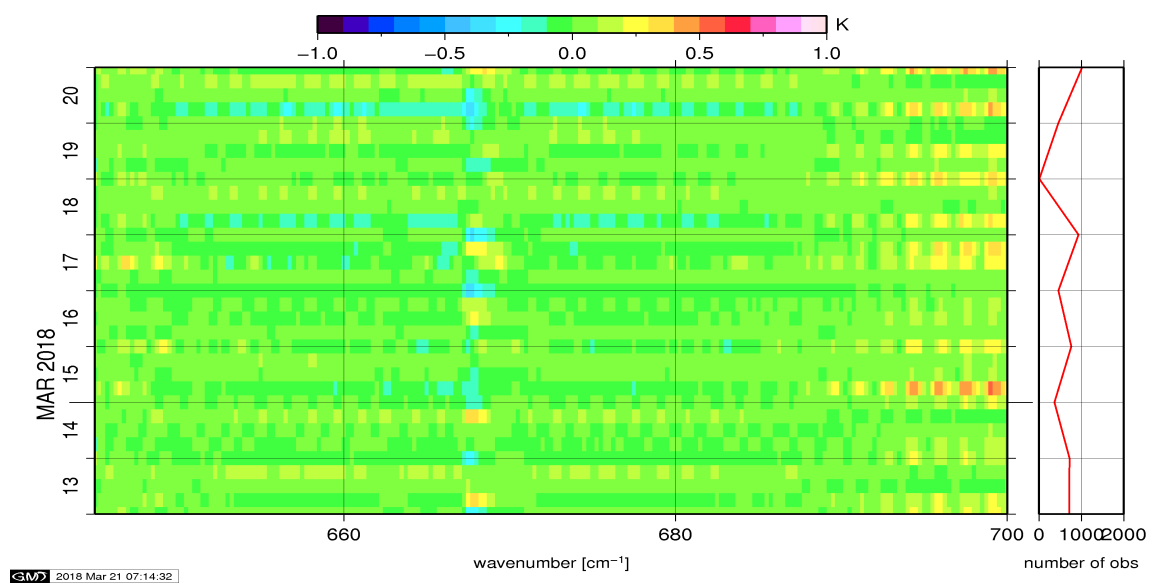


Figure 14: Radiance Anomaly in BRT: CO2 14

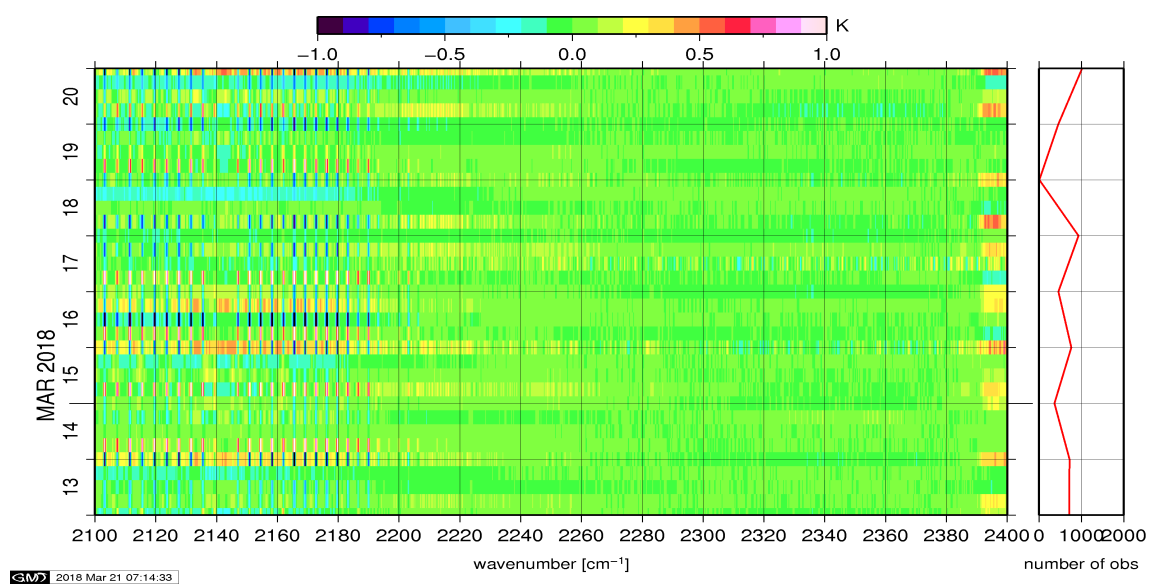


Figure 15: Radiance Anomaly in BRT: CO2 4.3

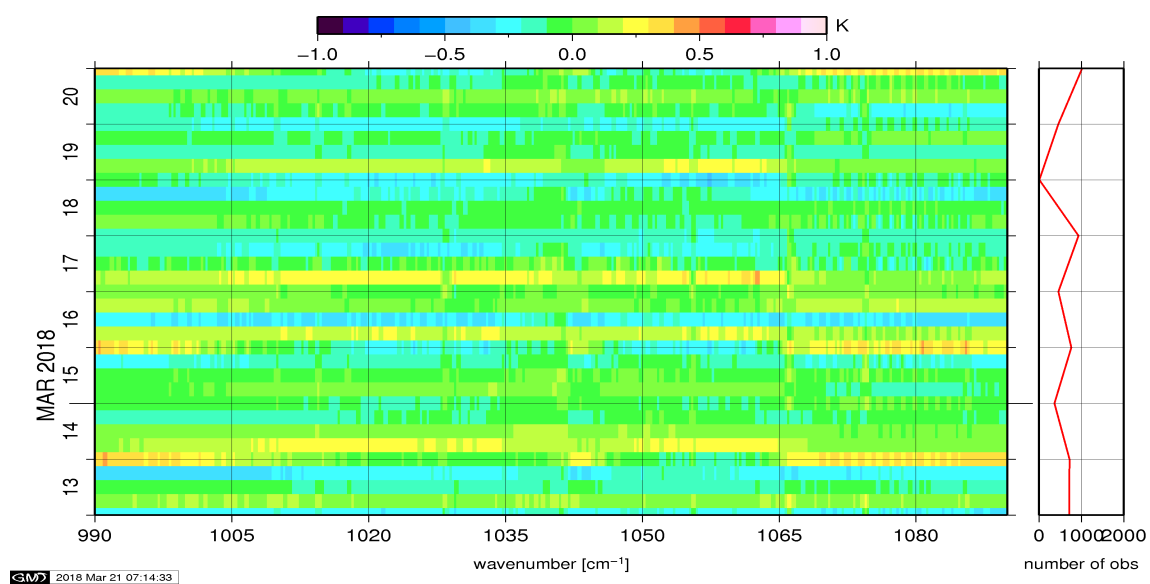


Figure 16: Radiance Anomaly in BRT: O3

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.

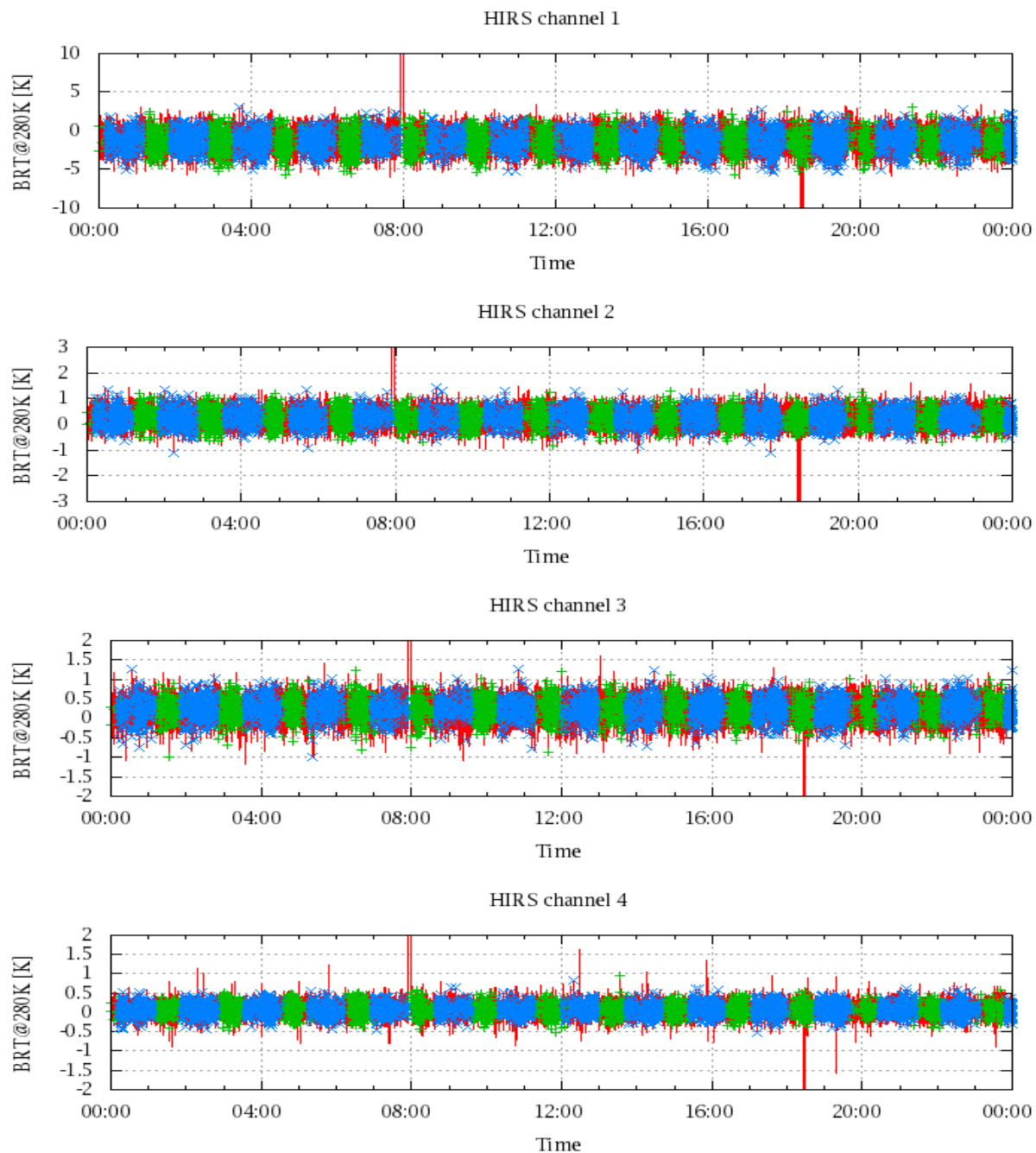


Figure 17: Radiance Differences in BRT

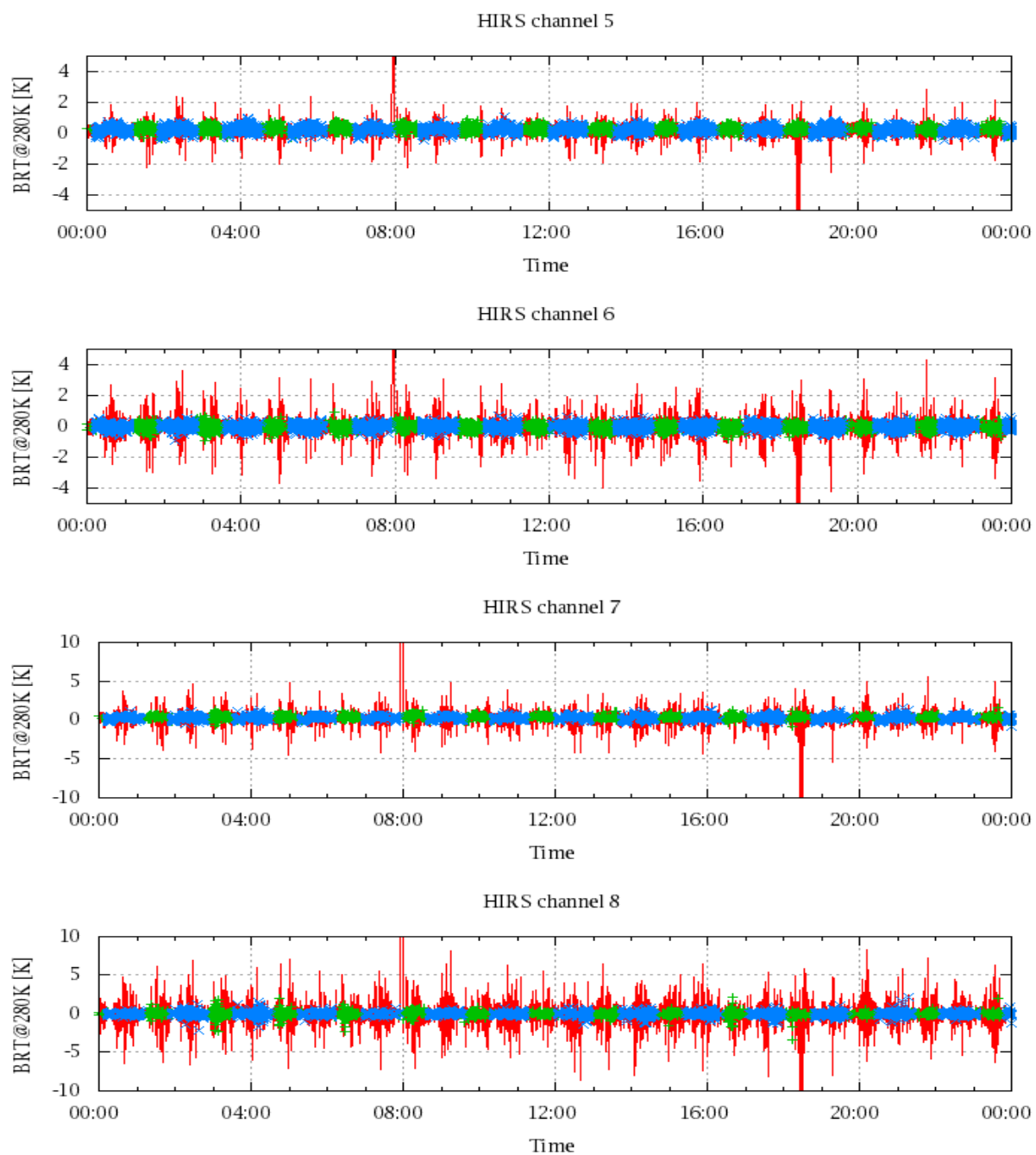


Figure 18: Radiance Differences in BRT

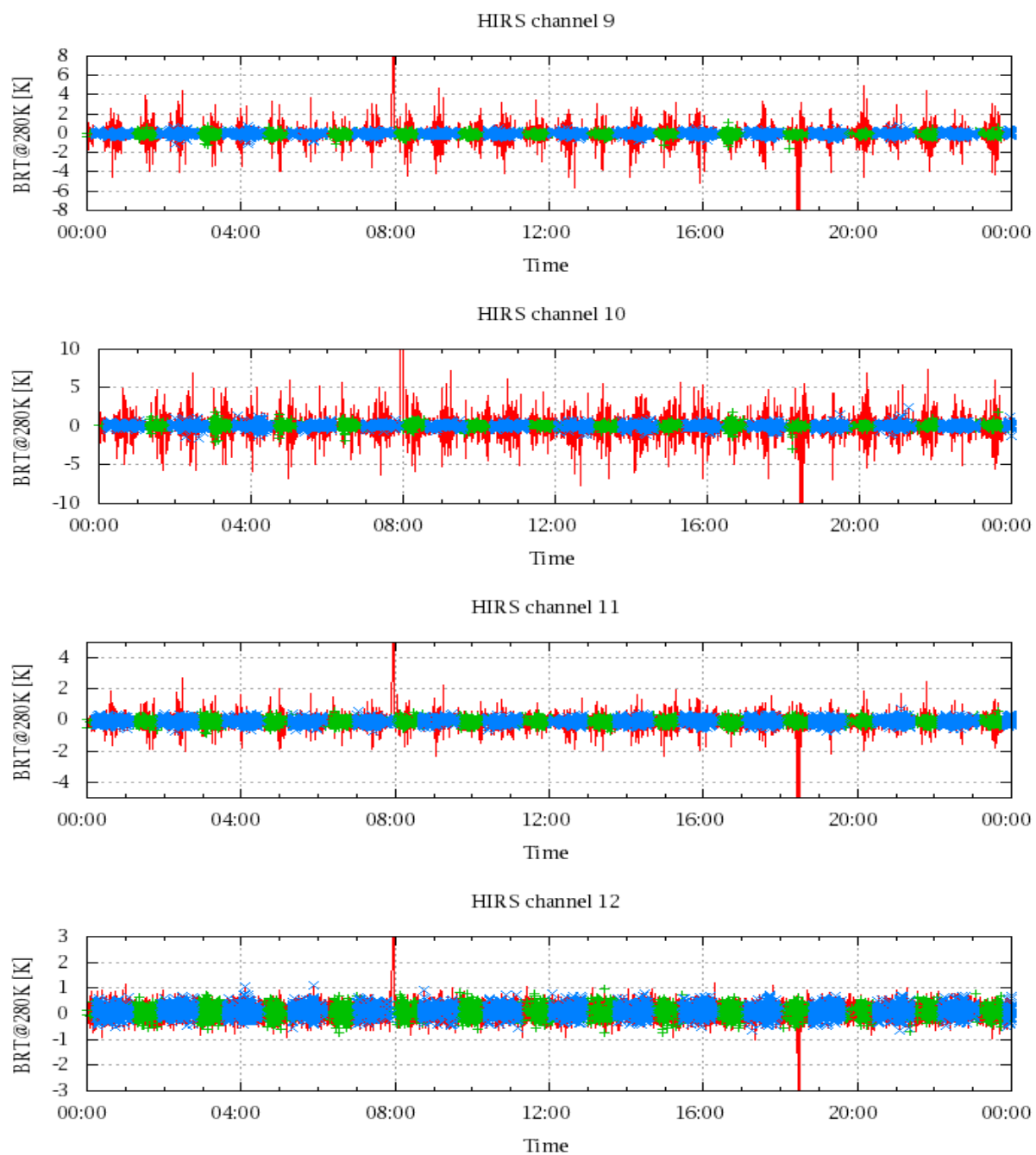


Figure 19: Radiance Differences in BRT

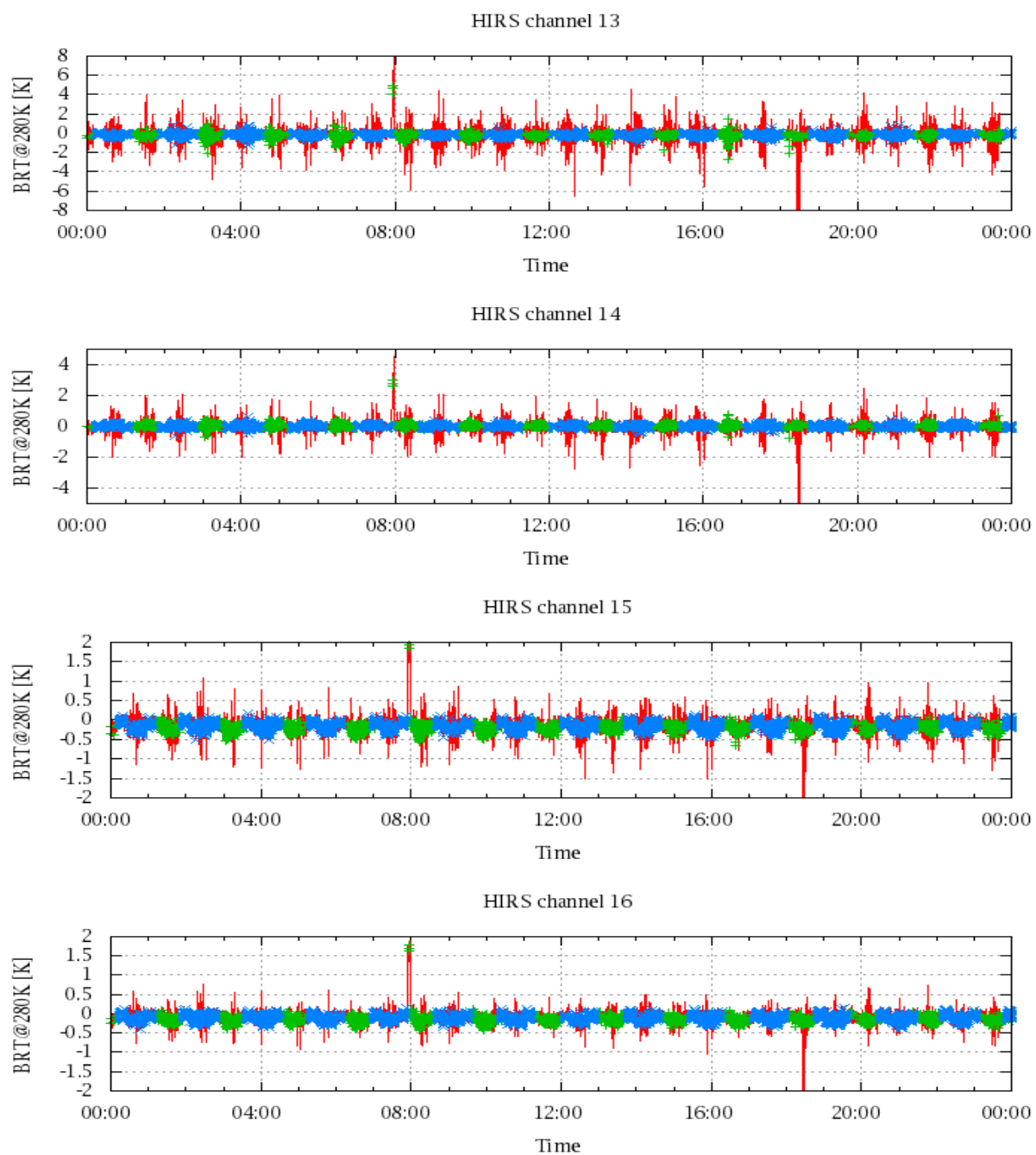


Figure 20: Radiance Differences in BRT

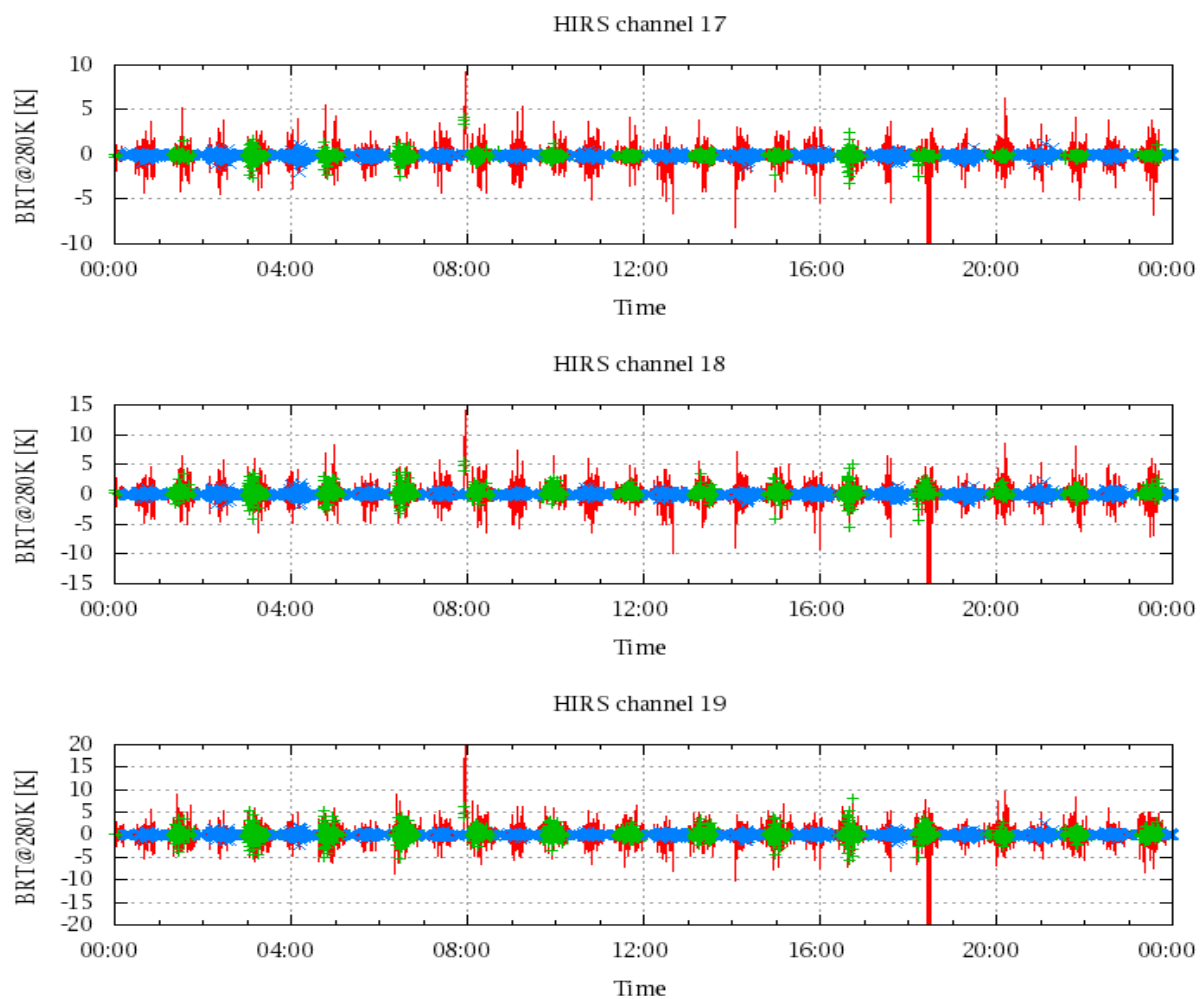


Figure 21: Radinace Differences in BRT