

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

25/04/2017 00:00:00 - 26/04/2017 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 25/04/2017 00:00:00 - 26/04/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 25/04/2017 00:00:00 - 26/04/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	460	a
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)	12518	12520	20170425054236.783	20170425054237.212
PX1 (130)	12523	12536	20170425054239.376	20170425054242.185
PX1 (130)	12539	12541	20170425054242.834	20170425054243.267
PX2 (135)	12523	12530	20170425054239.376	20170425054240.888
PX2 (135)	12530	12536	20170425054240.888	20170425054242.185
PX2 (135)	12539	12541	20170425054242.834	20170425054243.267
PX3 (140)	12521	12534	20170425054237.431	20170425054241.755
PX3 (140)	12534	12536	20170425054241.755	20170425054242.185
PX3 (140)	12538	12540	20170425054242.619	20170425054243.052
PX4 (145)	12522	12530	20170425054237.646	20170425054240.888
PX4 (145)	12530	12532	20170425054240.888	20170425054241.322
PX4 (145)	12532	12535	20170425054241.322	20170425054241.970
PX4 (145)	12536	12538	20170425054242.185	20170425054242.619
PX4 (145)	12538	12540	20170425054242.619	20170425054243.052
PX4 (145)	12540	12542	20170425054243.052	20170425054243.482
IMG (150)	14241	14243	20170425054237.431	20170425054238.080
IMG (150)	14245	14249	20170425054238.728	20170425054239.810
IMG (150)	14249	14256	20170425054239.810	20170425054241.322

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	14256	14260	20170425054241.322	20170425054242.185
IMG (150)	14260	14262	20170425054242.185	20170425054242.619
IMG (150)	14263	14265	20170425054242.834	20170425054243.267
VER (160)	6383	6388	20170425054229.646	20170425054237.646
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
25/04/2017 00:00:11	-	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	460	a
GQisFlagQual set (PX1)	99.58 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.62 %	-

Table 4: Quality flags

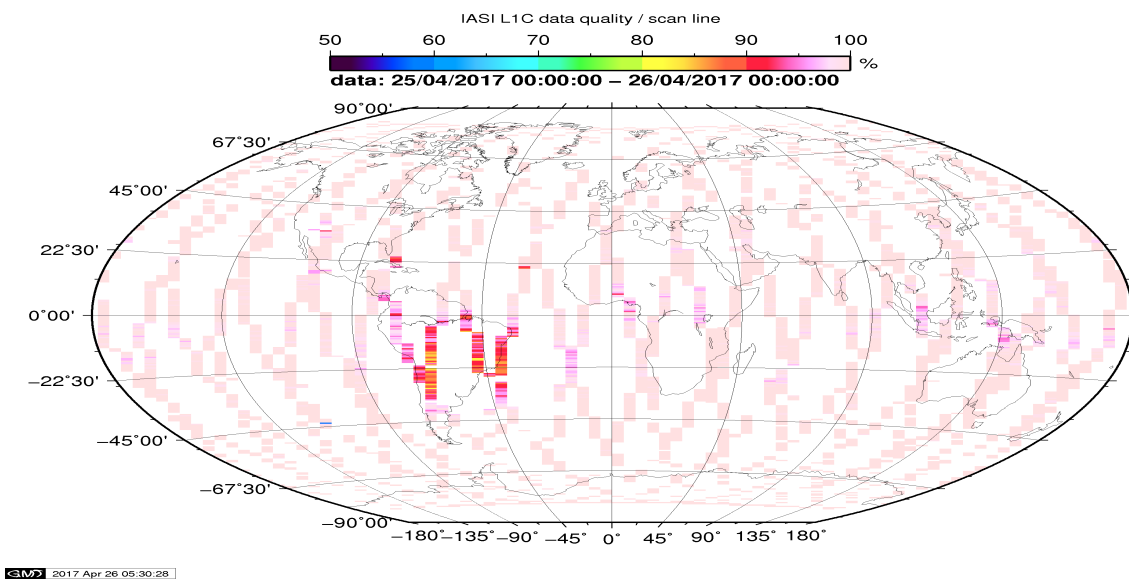


Figure 1: L1C data quality

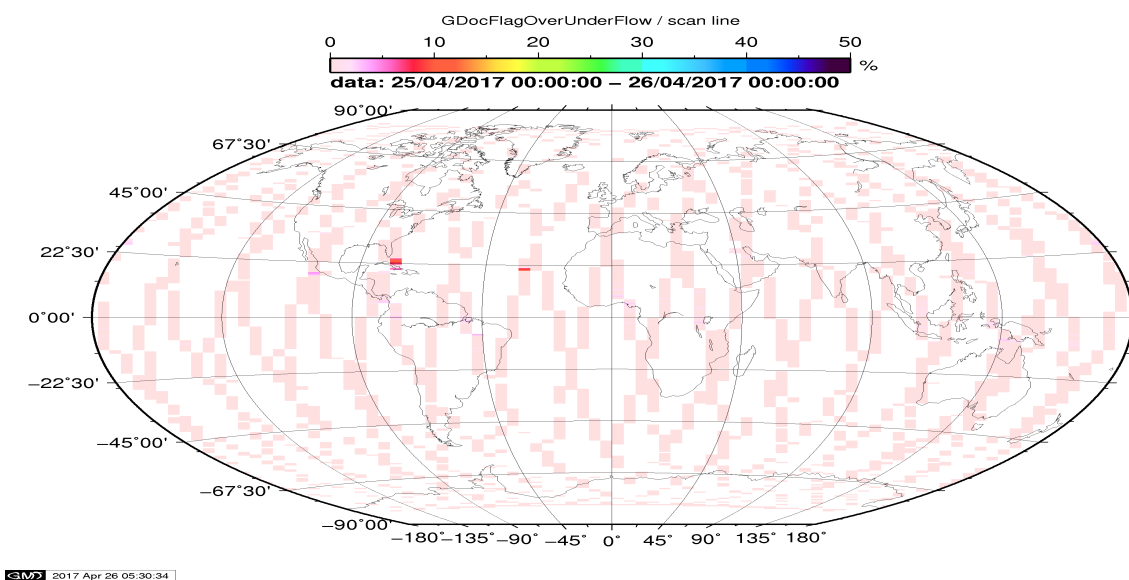


Figure 2: Flag of Over and Under Flows

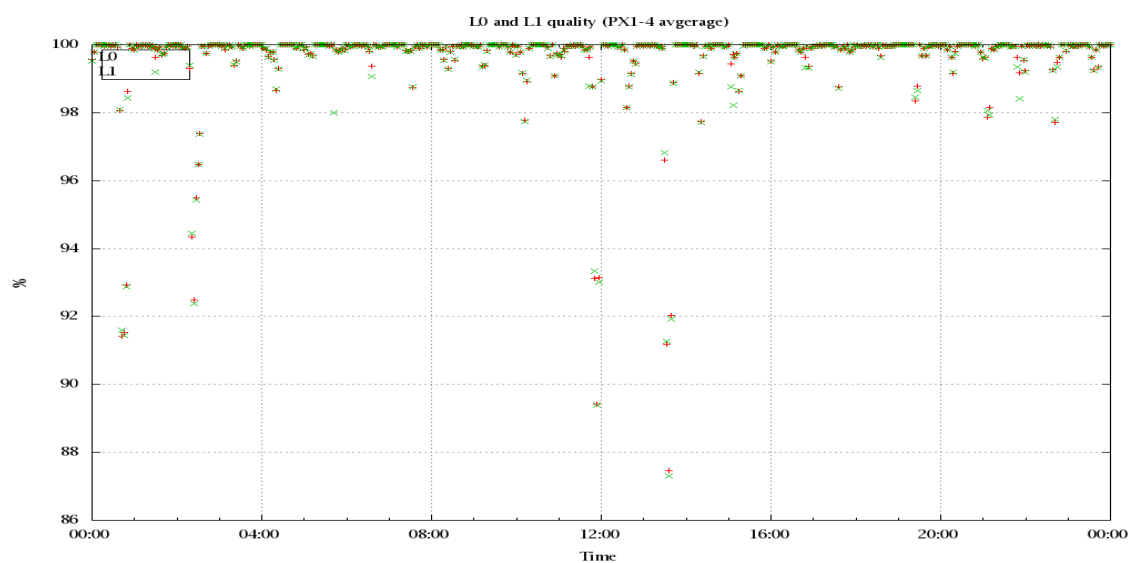


Figure 3: Level 0 and 1C overall quality

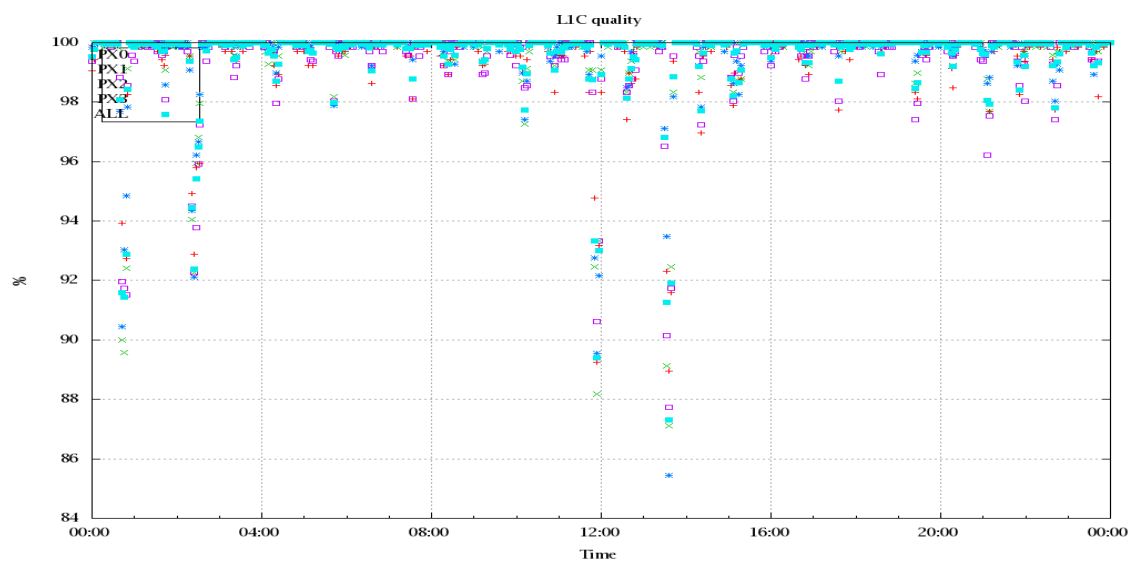


Figure 4: Level 1C quality

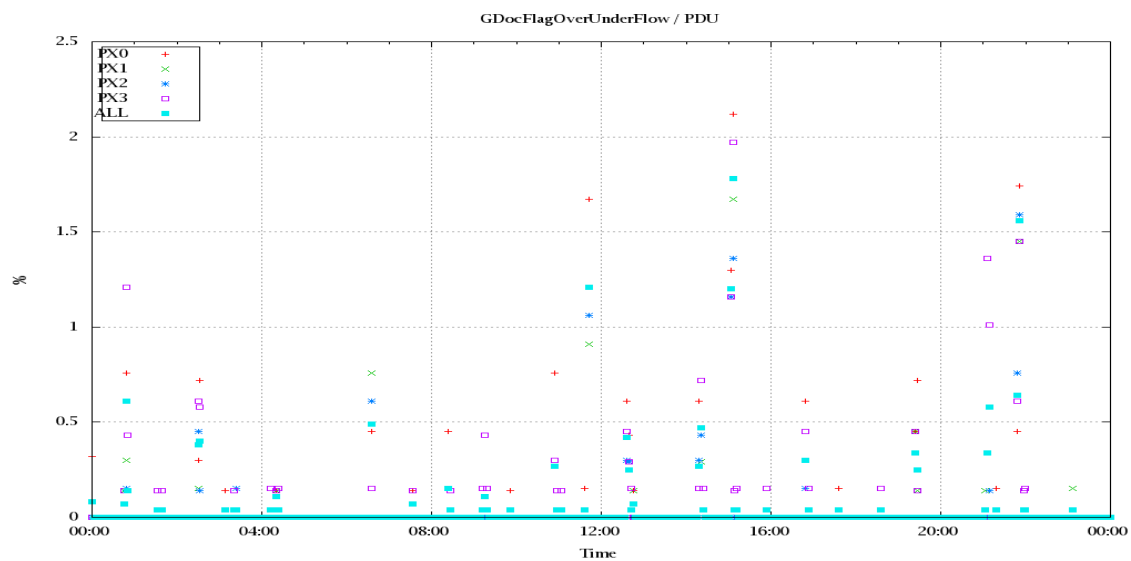


Figure 5: OverUnderFlowFlag timeseries

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.

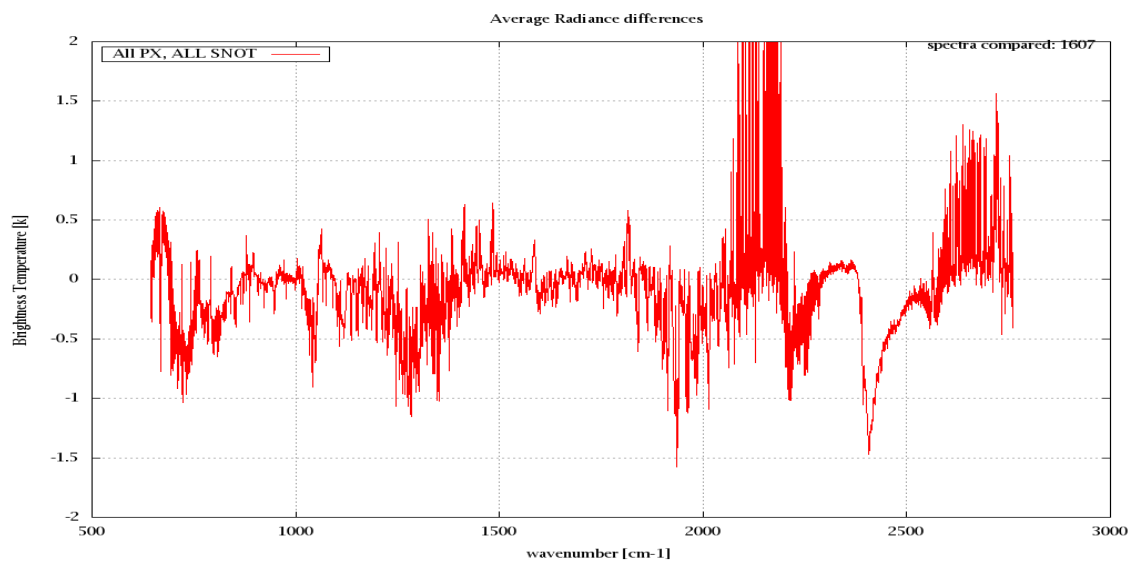


Figure 6: Average Radiance differences: OBS-CAL

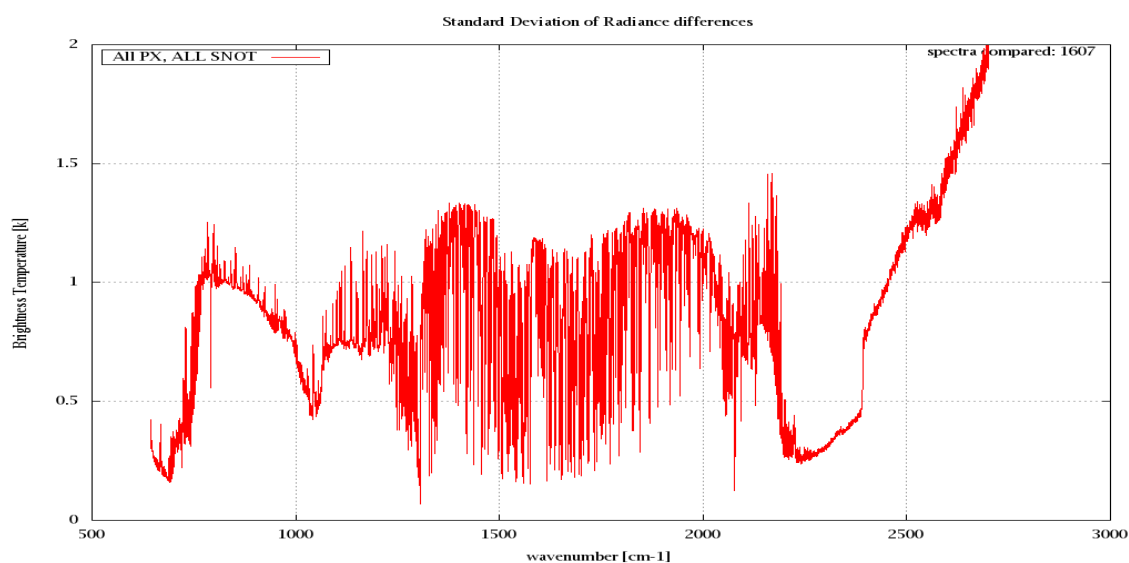


Figure 7: Standard Deviation of Radiance differences

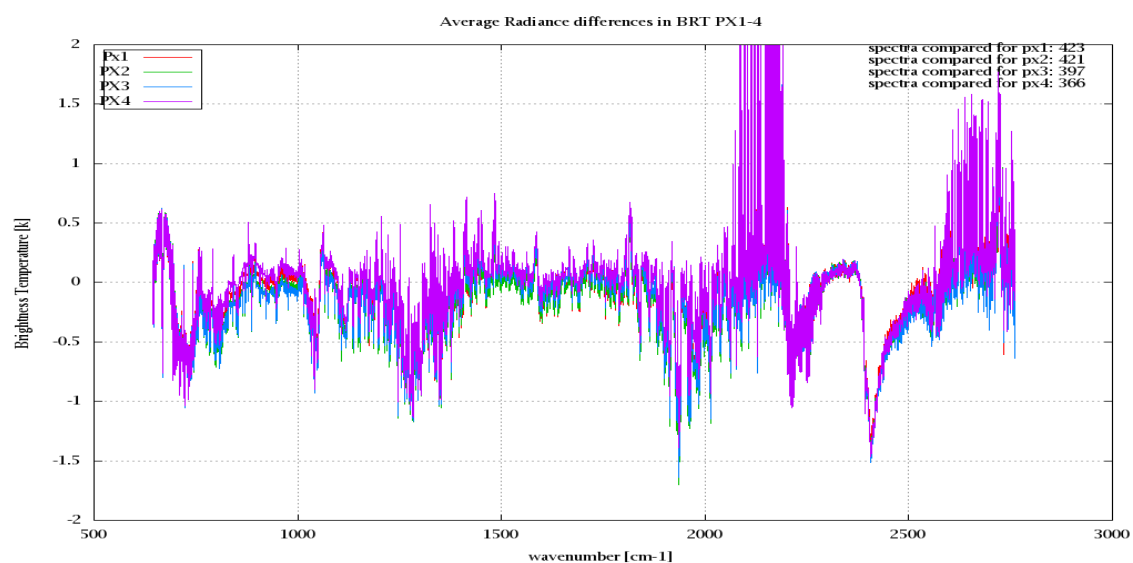


Figure 8: Average Radiance differences: OBS-CAL

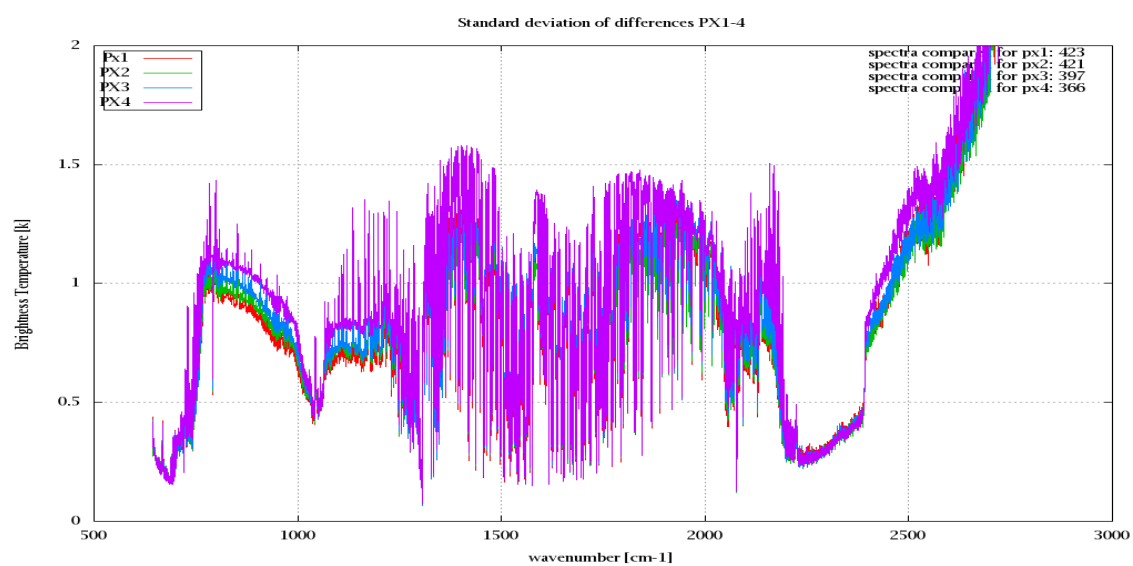


Figure 9: Standard Deviation of Radiance differences

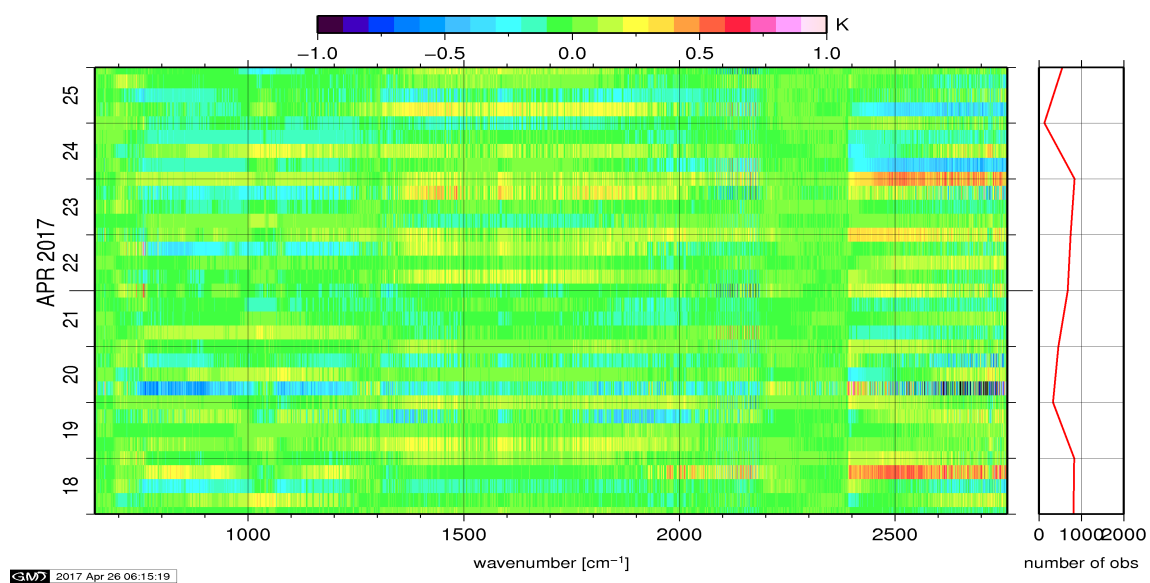


Figure 10: Radiance Anomaly in BRT: All Channels

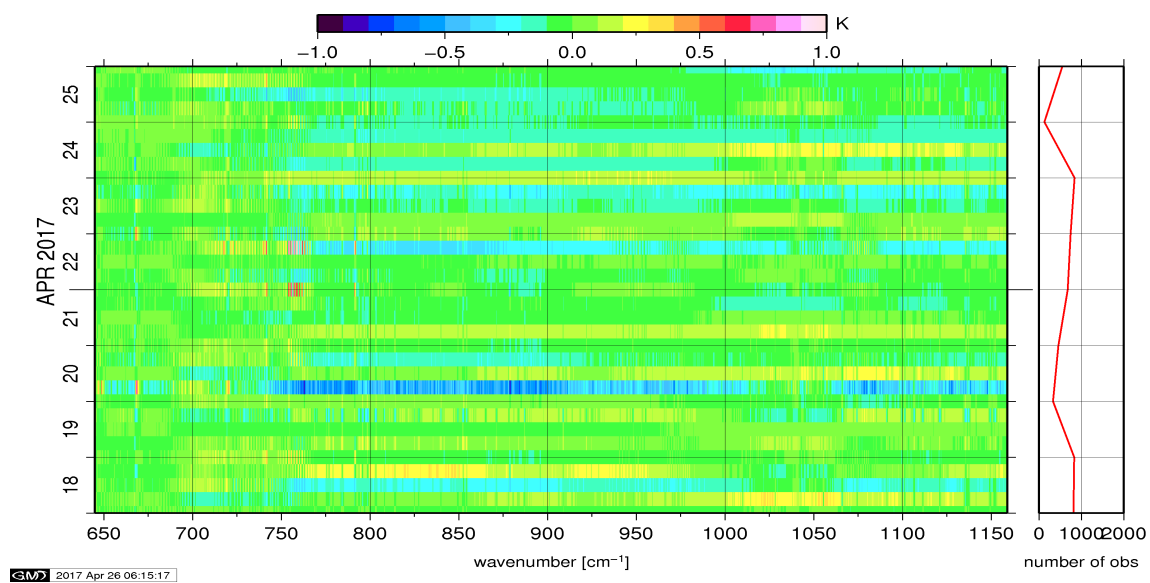


Figure 11: Radiance Anomaly in BRT: IASI Band 1

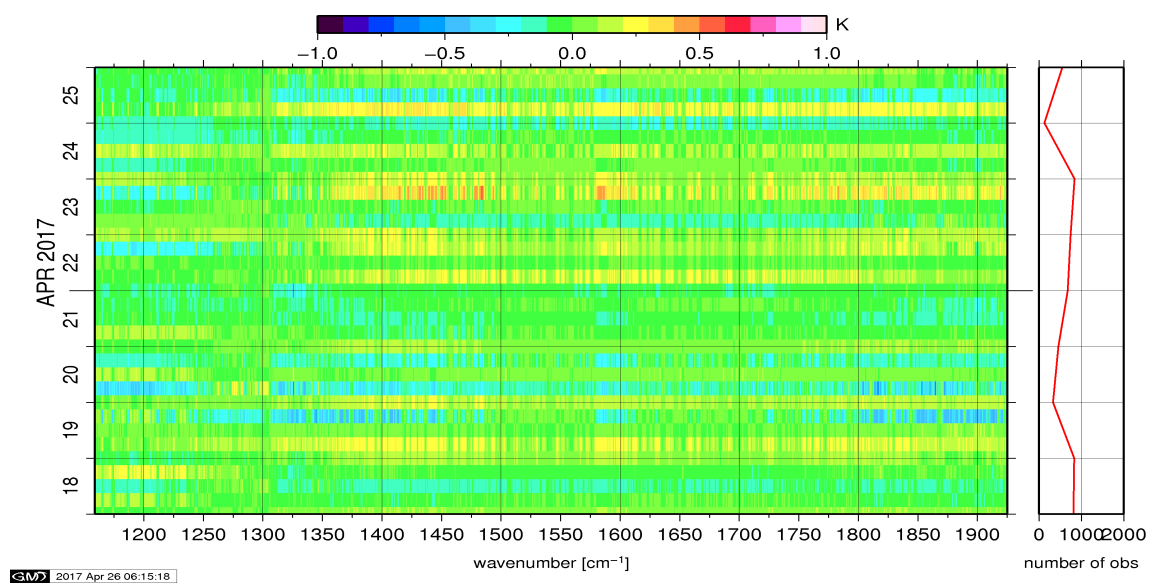


Figure 12: Radiance Anomaly in BRT: IASI Band 2

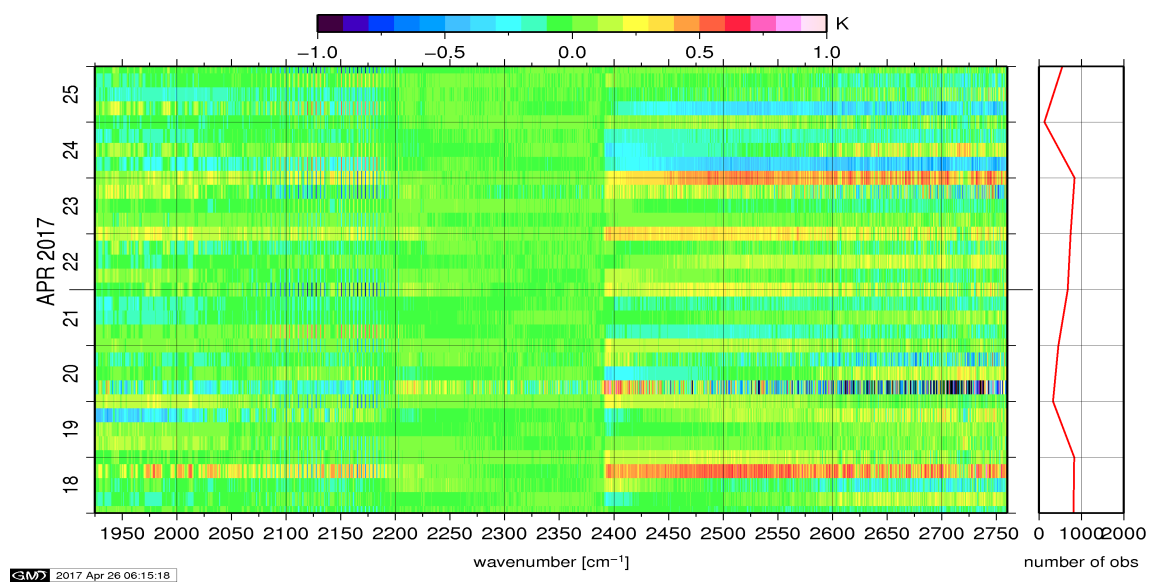


Figure 13: Radiance Anomaly in BRT: IASI Band 3

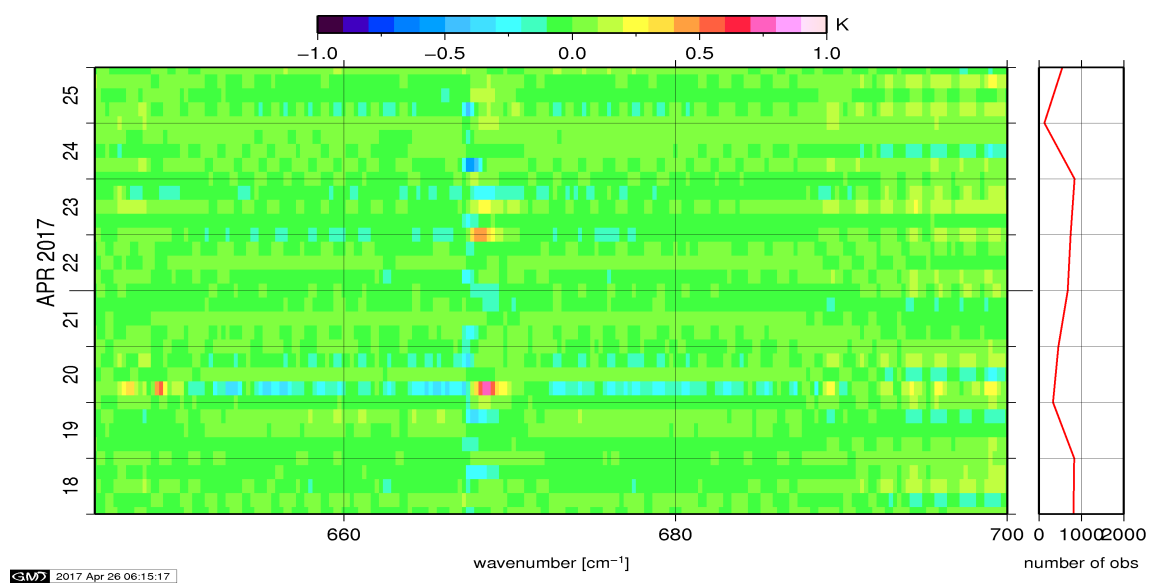


Figure 14: Radiance Anomaly in BRT: CO2 14

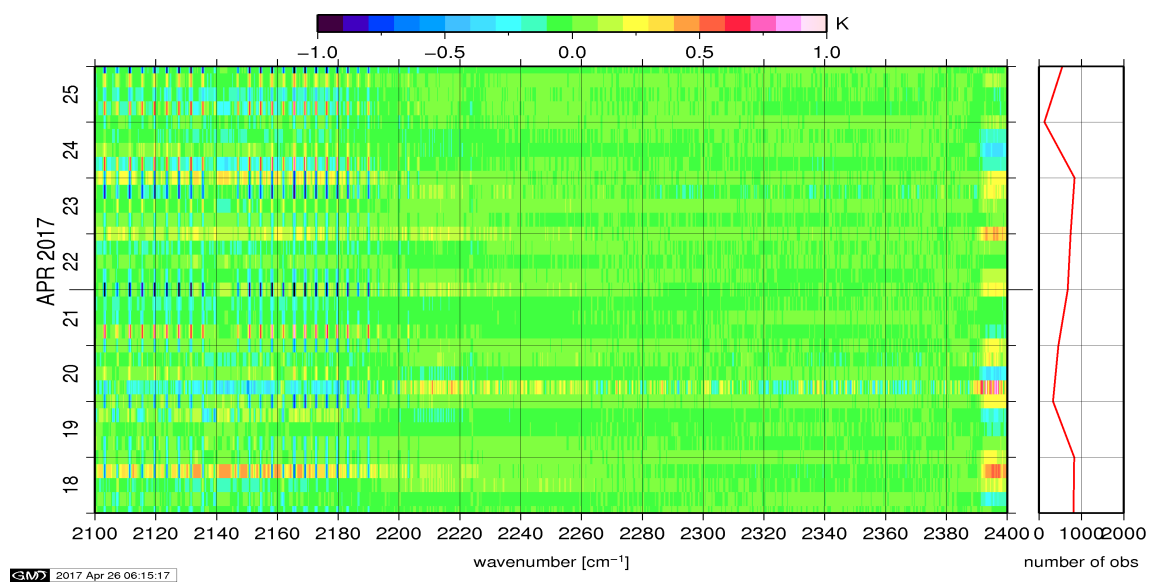


Figure 15: Radiance Anomaly in BRT: CO2 4.3

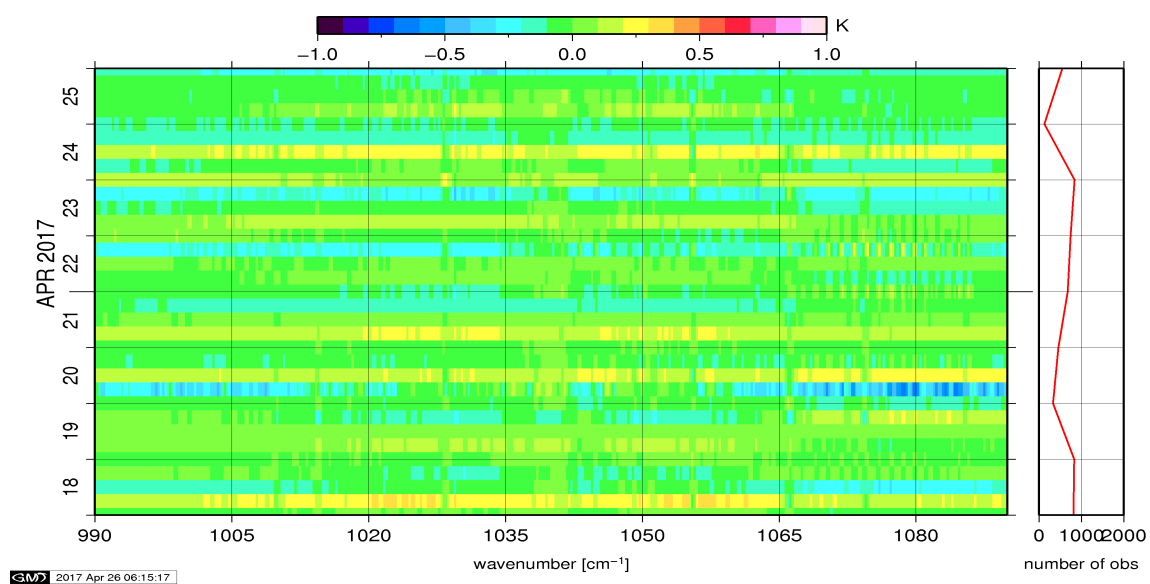


Figure 16: Radiance Anomaly in BRT: O3

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.

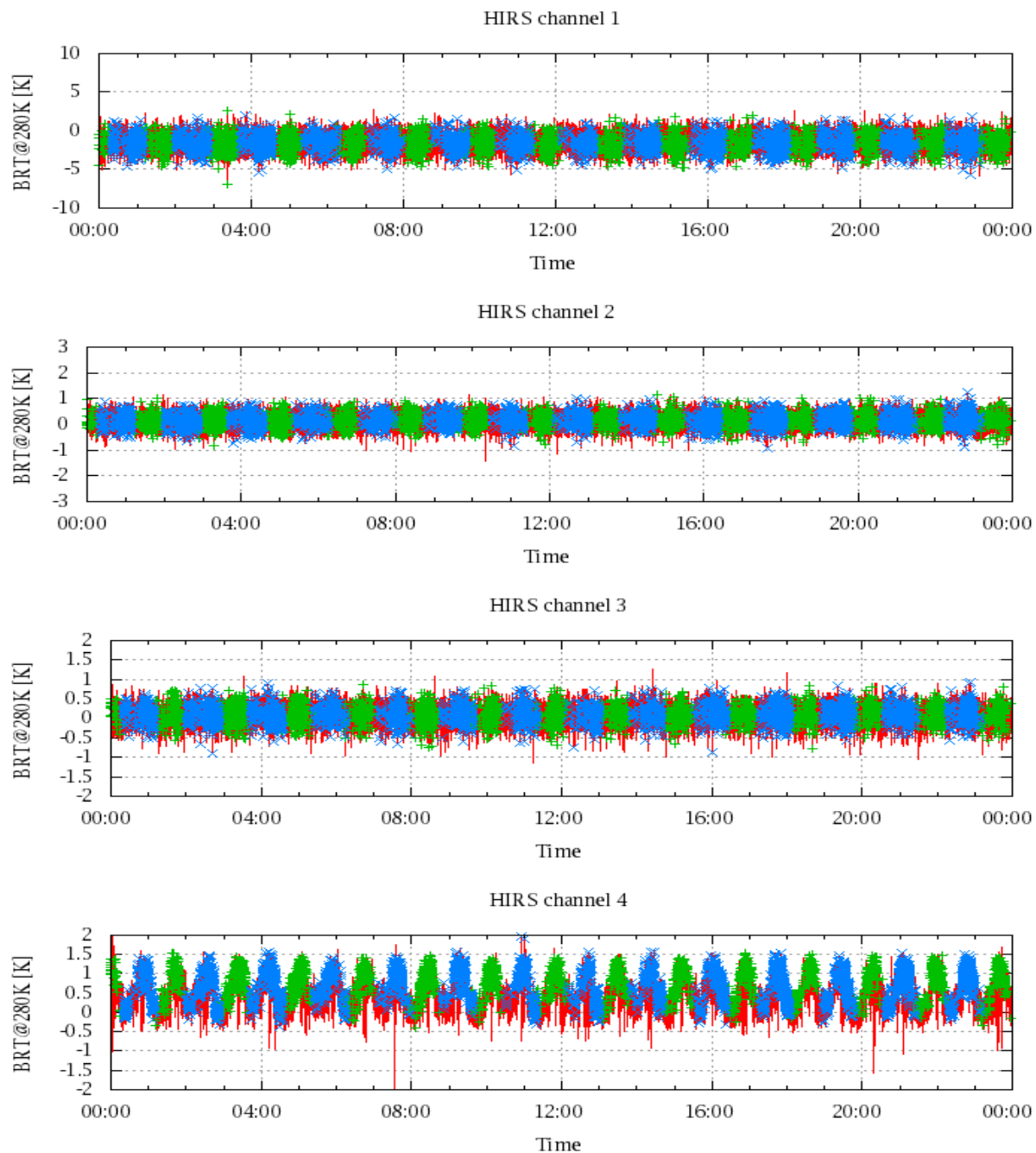


Figure 17: Radiance Differences in BRT

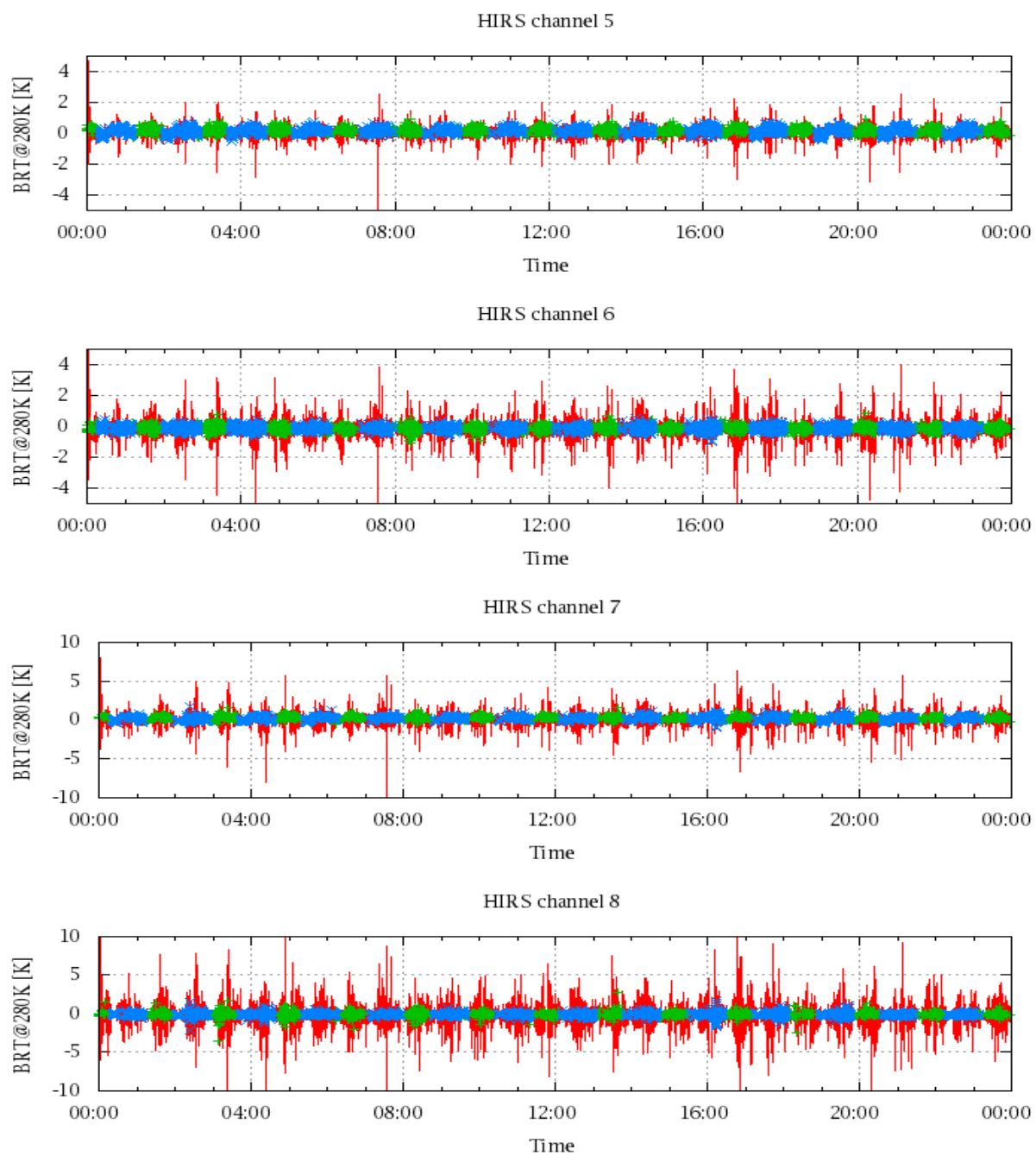


Figure 18: Radiance Differences in BRT

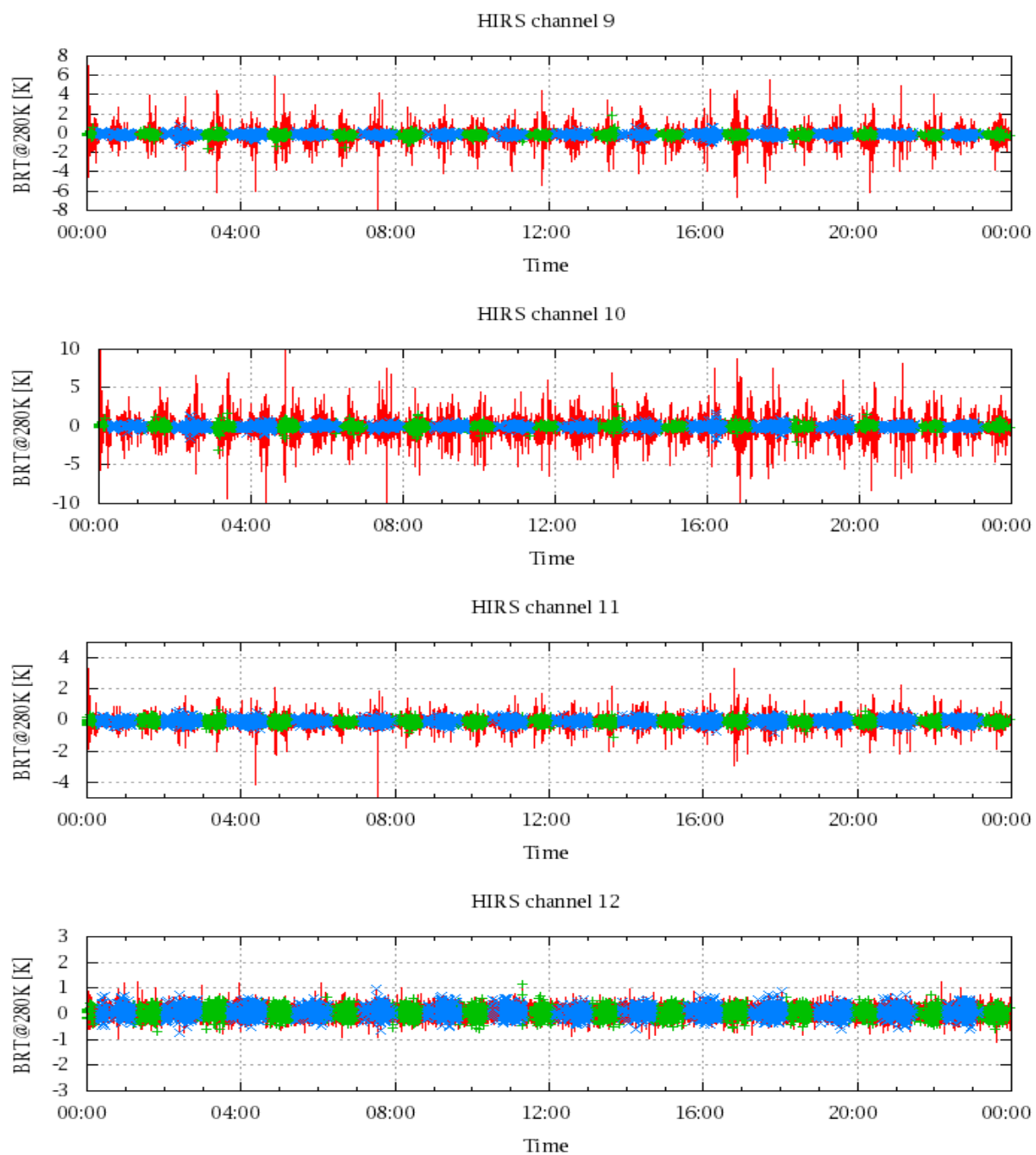


Figure 19: Radiance Differences in BRT

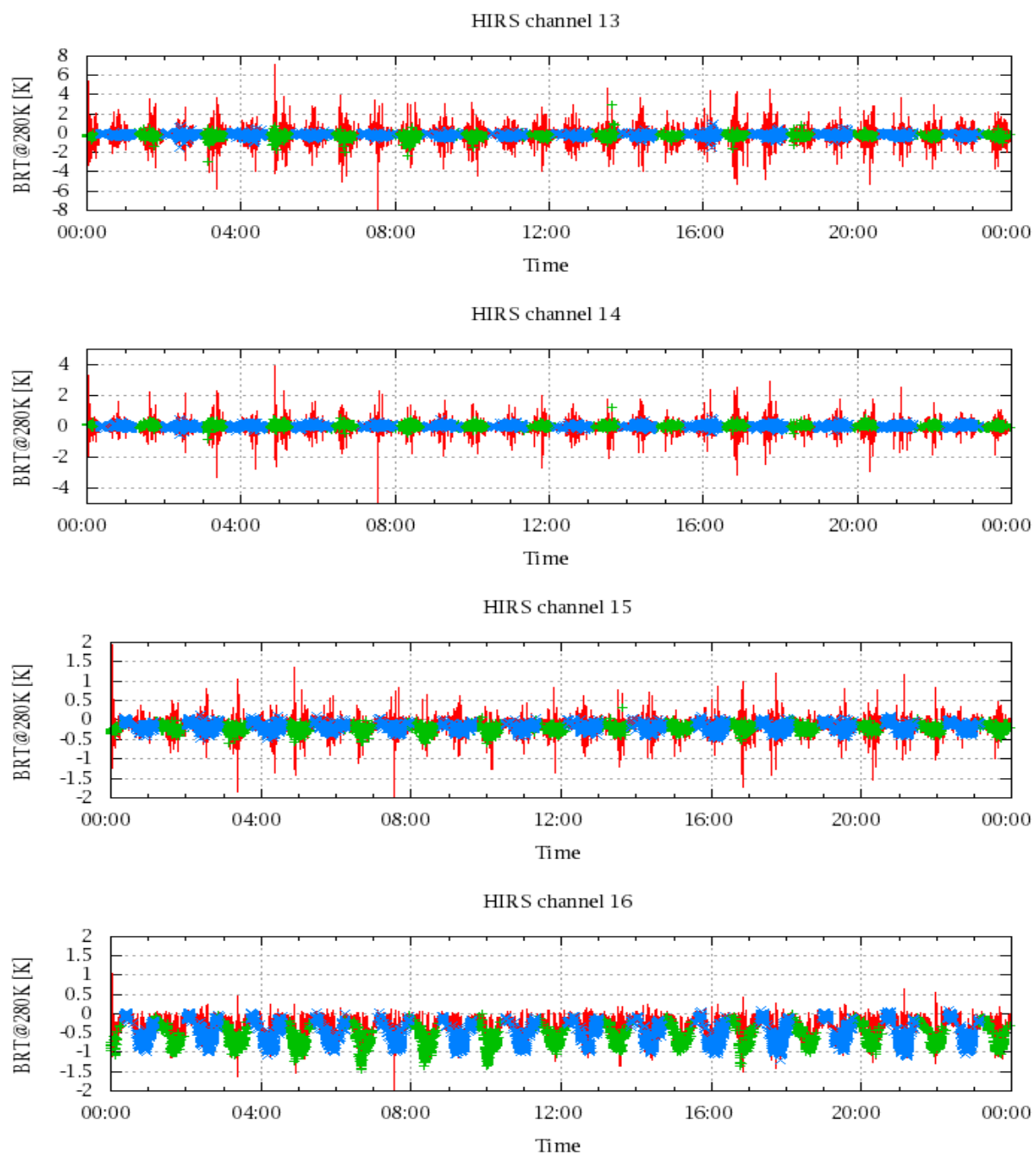


Figure 20: Radiance Differences in BRT

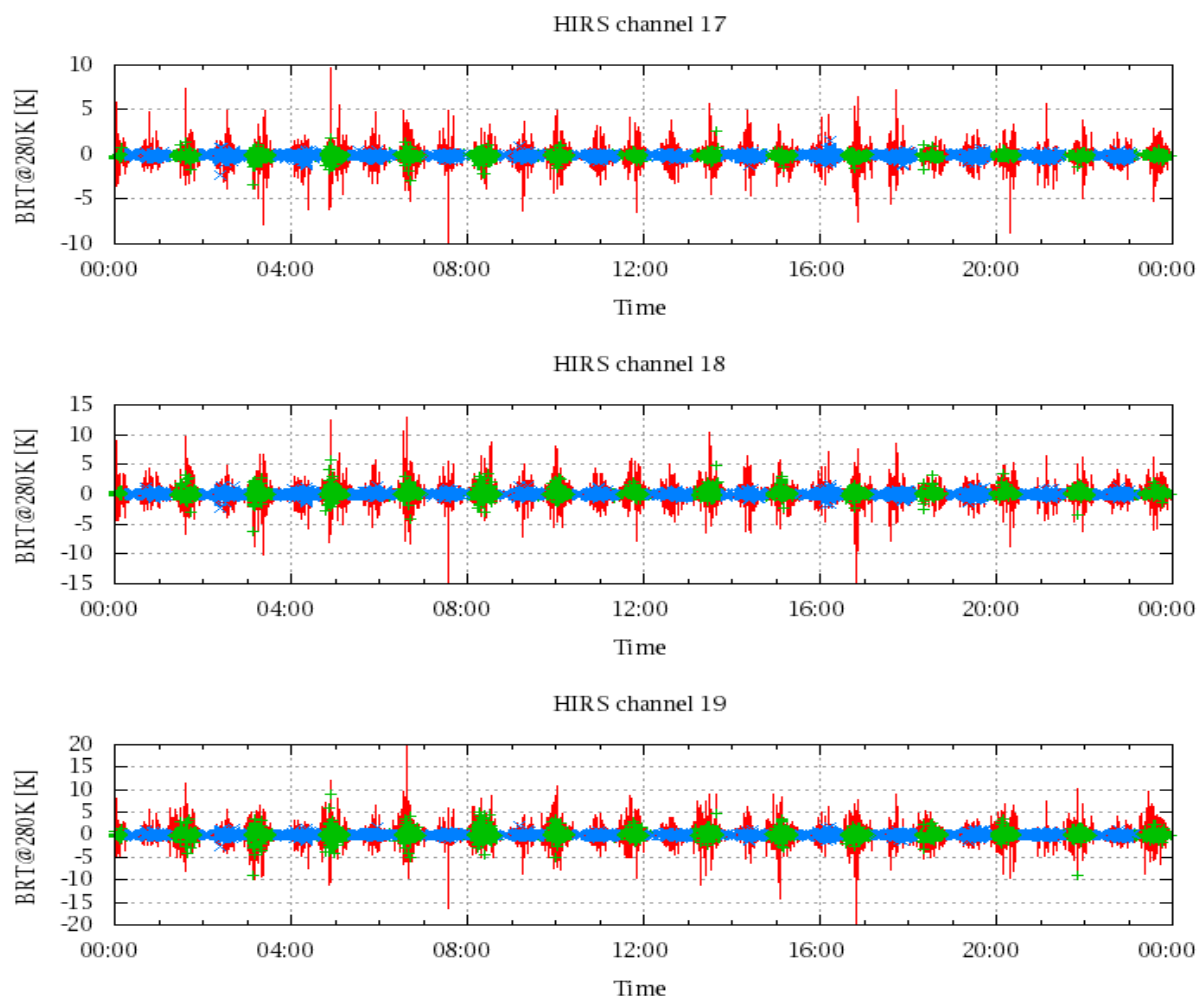


Figure 21: Radinace Differences in BRT