

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

03/04/2014 00:00:00 - 04/04/2014 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 03/04/2014 00:00:00 - 04/04/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 03/04/2014 00:00:00 - 04/04/2014 00:00:00

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

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	3707	3715	20140403033510.339	20140403033513.577
PX1 (130)	3736	3740	20140403033518.120	20140403033520.499
PX1 (130)	3742	3750	20140403033520.929	20140403033522.659
PX1 (130)	3768	3776	20140403033528.065	20140403033529.796
PX2 (135)	3707	3714	20140403033510.339	20140403033513.362
PX2 (135)	3735	3739	20140403033517.905	20140403033520.284
PX2 (135)	3742	3750	20140403033520.929	20140403033522.659
PX2 (135)	3768	3776	20140403033528.065	20140403033529.796
PX3 (140)	3707	3714	20140403033510.339	20140403033513.362
PX3 (140)	3735	3739	20140403033517.905	20140403033520.284
PX3 (140)	3742	3750	20140403033520.929	20140403033522.659
PX3 (140)	3768	3775	20140403033528.065	20140403033529.581
PX4 (145)	3707	3714	20140403033510.339	20140403033513.362
PX4 (145)	3735	3739	20140403033517.905	20140403033520.284
PX4 (145)	3742	3750	20140403033520.929	20140403033522.659
PX4 (145)	3767	3775	20140403033526.335	20140403033529.581
IMG (150)	4891	4902	20140403033510.339	20140403033513.362
IMG (150)	4923	4931	20140403033517.905	20140403033520.284

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	4934	4942	20140403033520.929	20140403033522.659
IMG (150)	4963	4971	20140403033527.632	20140403033529.581
VER (160)	1483	1494	20140403033502.335	20140403033526.335
VER (160)	1494	1497	20140403033526.335	20140403033526.335
AUX (180)	295	298	20140403033502.769	20140403033526.769

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
03/04/2014 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	481	-
L1 ENG distinct GEPSGranule	481	-
GQisFlagQual set (PX1)	99.39 %	-
GQisFlagQual set (PX2)	99.52 %	-
GQisFlagQual set (PX3)	99.58 %	-
GQisFlagQual set (PX4)	99.49 %	-
GQisFlagQual set (all)	99.50 %	-

Table 4: Quality flags

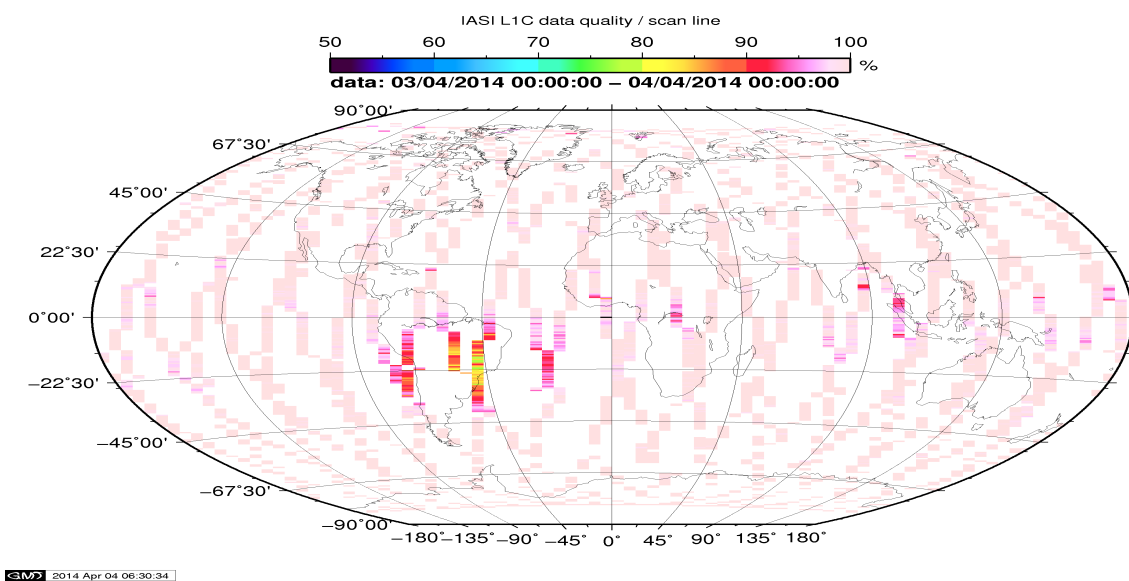


Figure 1: L1C data quality

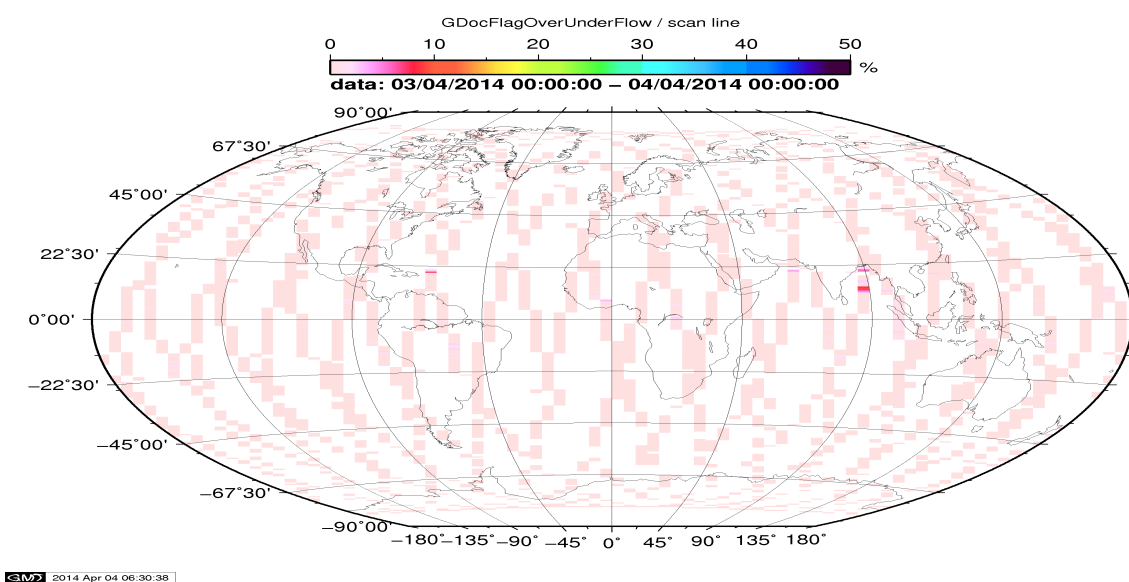


Figure 2: Flag of Over and Under Flows

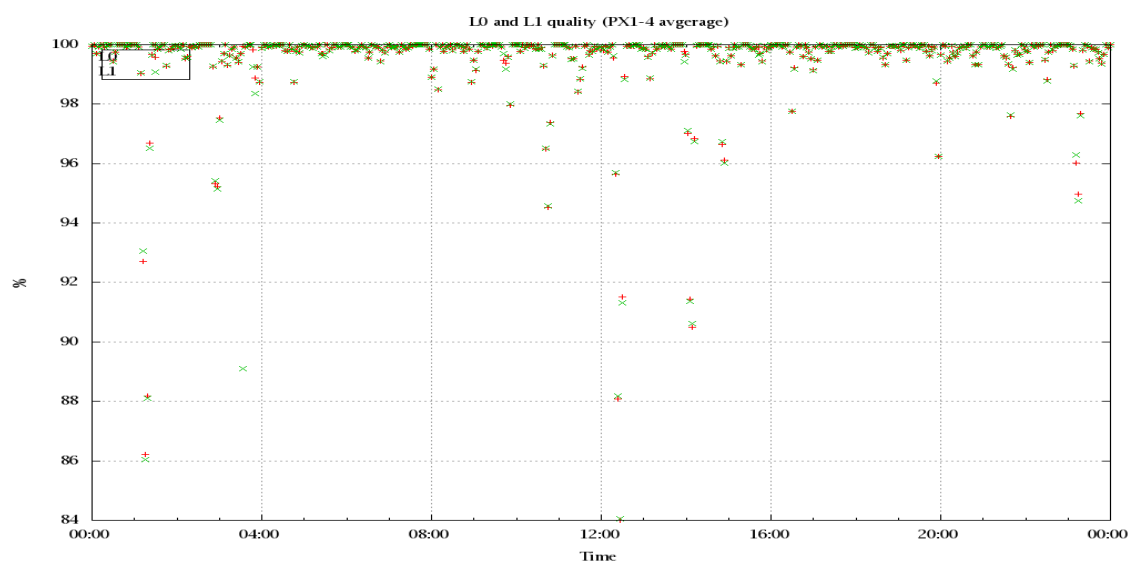


Figure 3: Level 0 and 1C overall quality

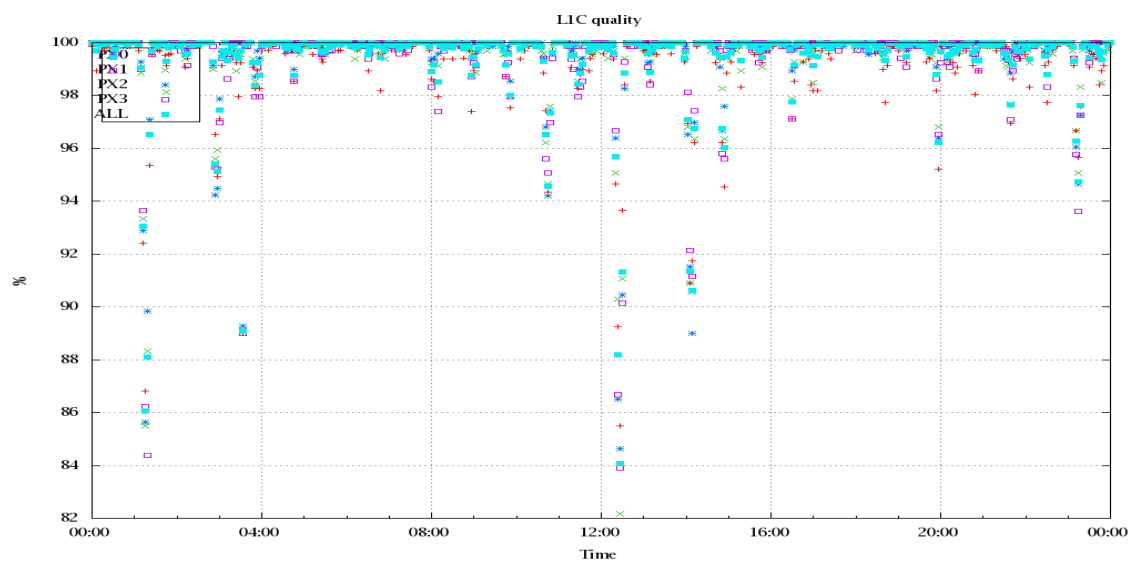


Figure 4: Level 1C quality

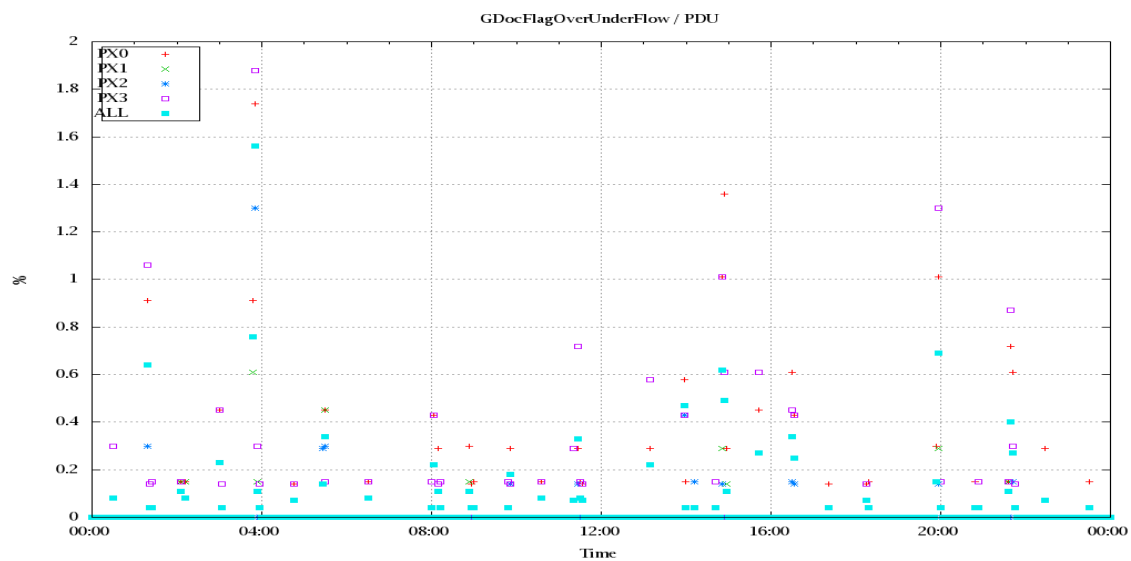


Figure 5: OverUnderFlowFlag timeseries

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.

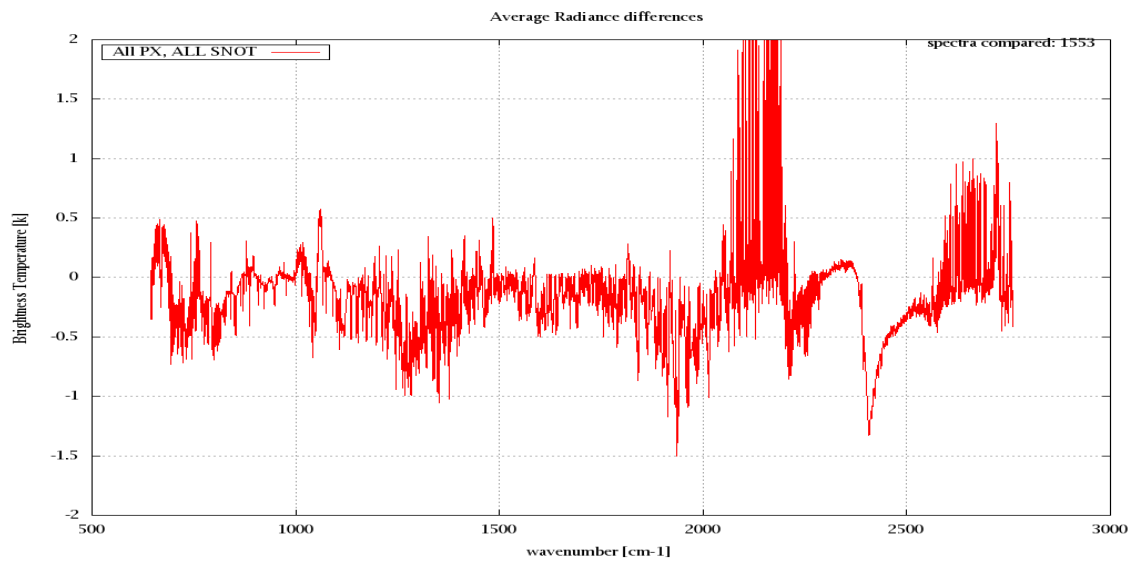


Figure 6: Average Radiance differences: OBS-CAL

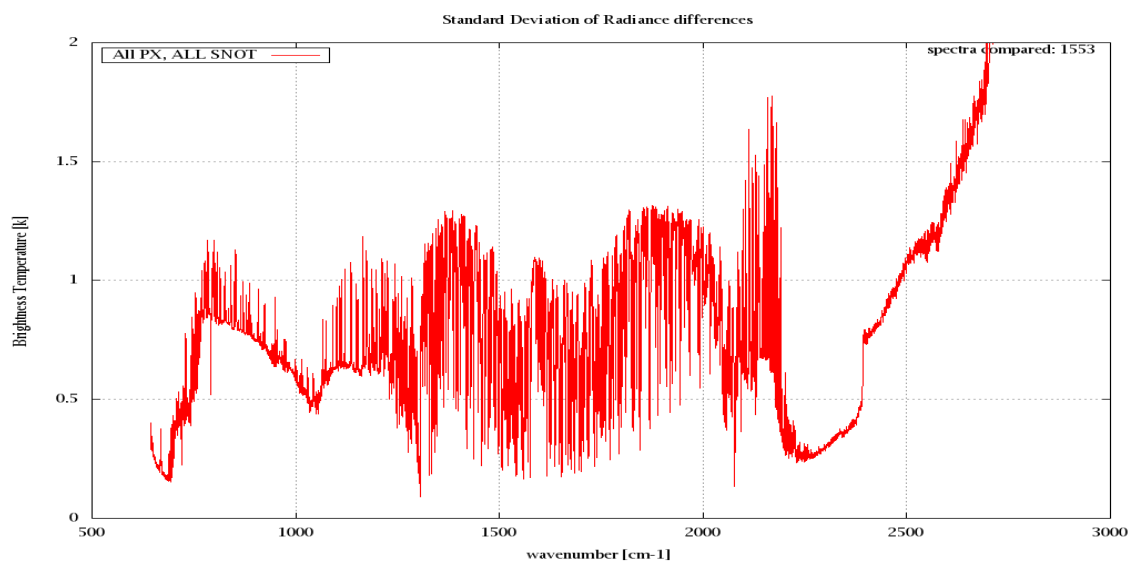


Figure 7: Standard Deviation of Radiance differences

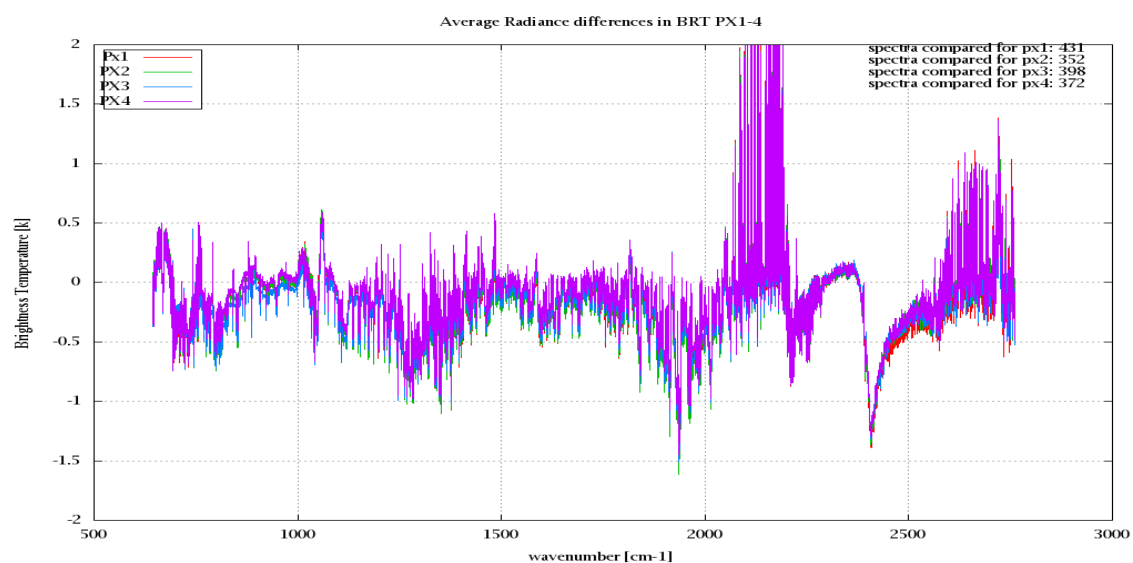


Figure 8: Average Radiance differences: OBS-CAL

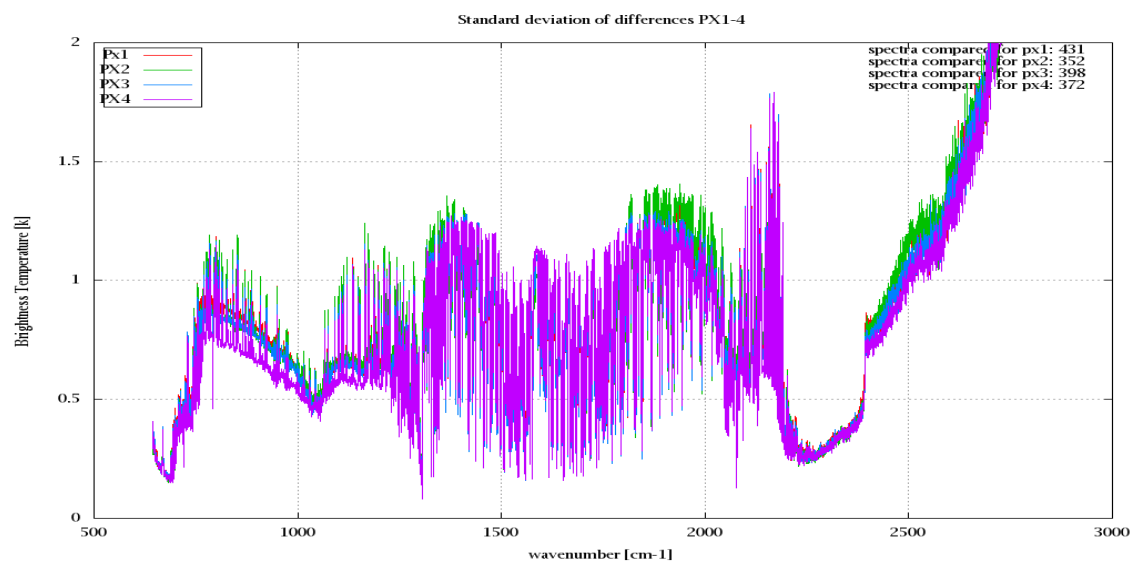


Figure 9: Standard Deviation of Radiance differences

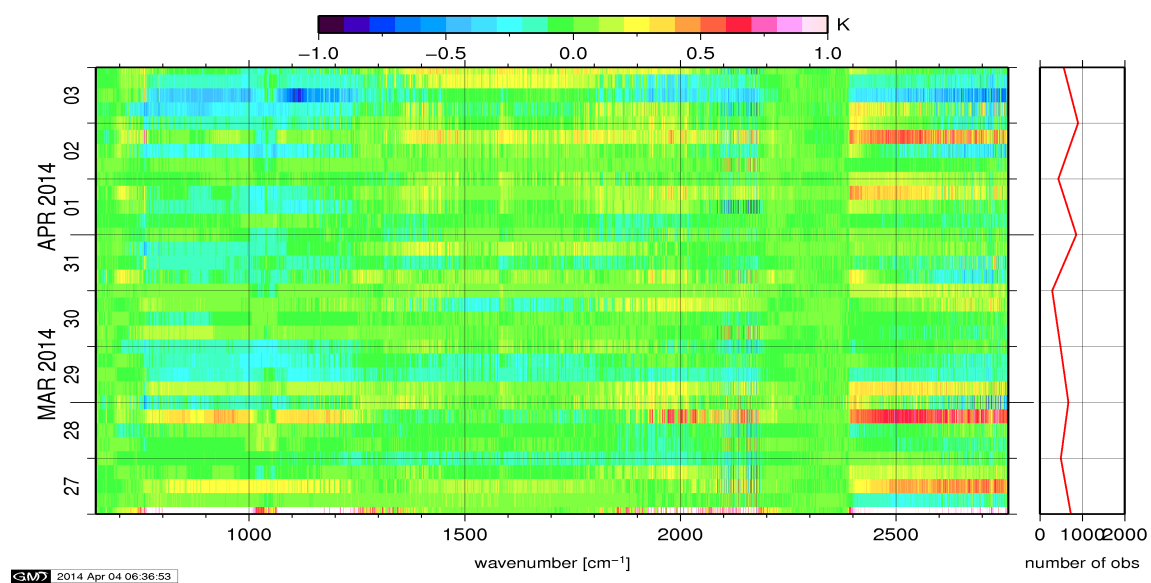


Figure 10: Radiance Anomaly in BRT: All Channels

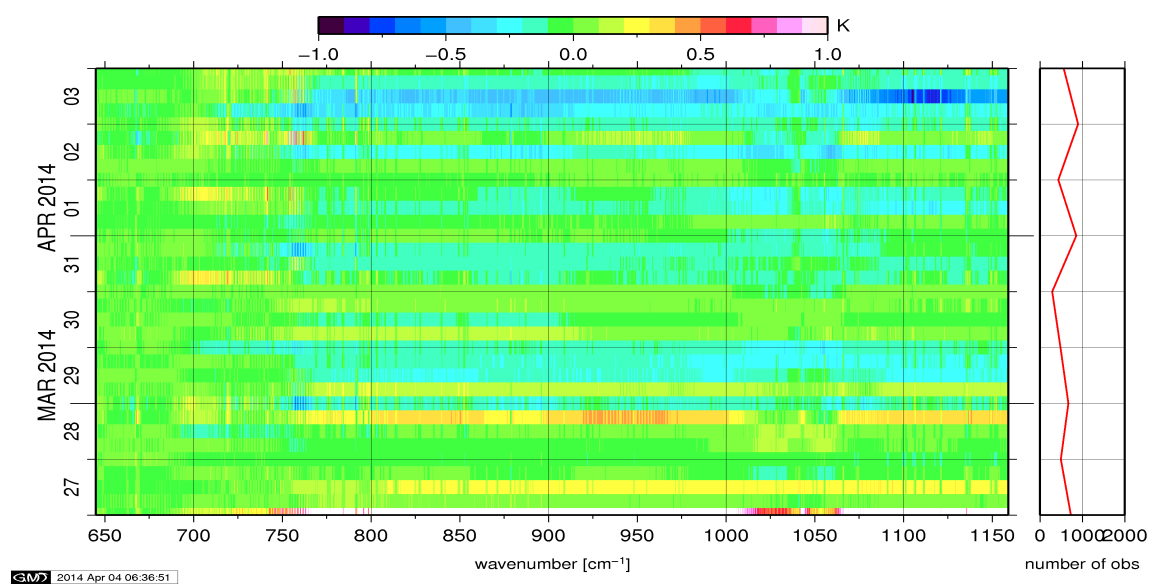


Figure 11: Radiance Anomaly in BRT: IASI Band 1

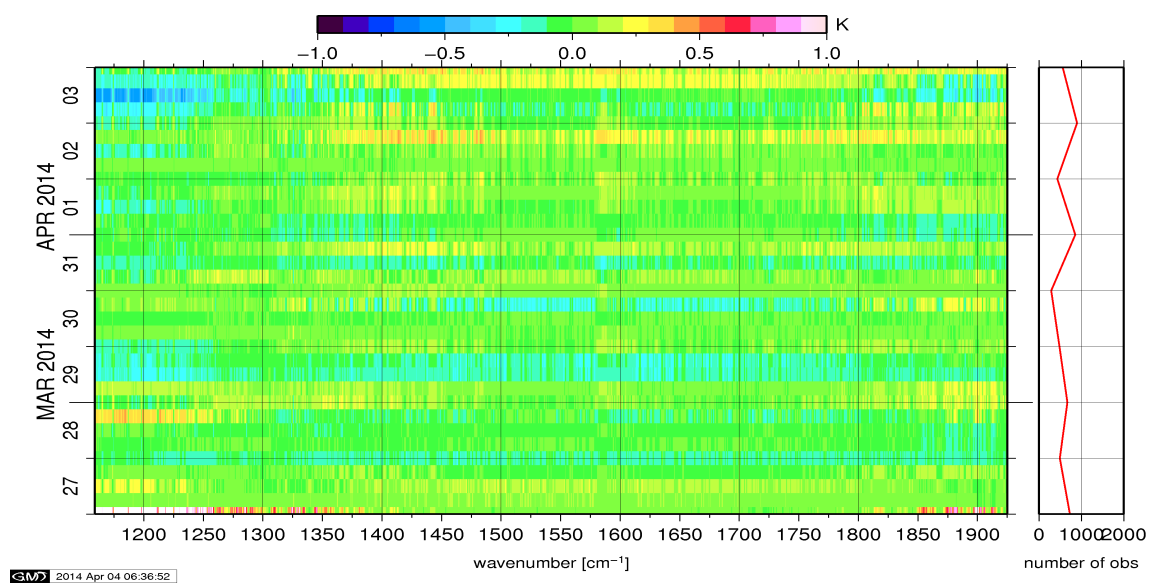


Figure 12: Radiance Anomaly in BRT: IASI Band 2

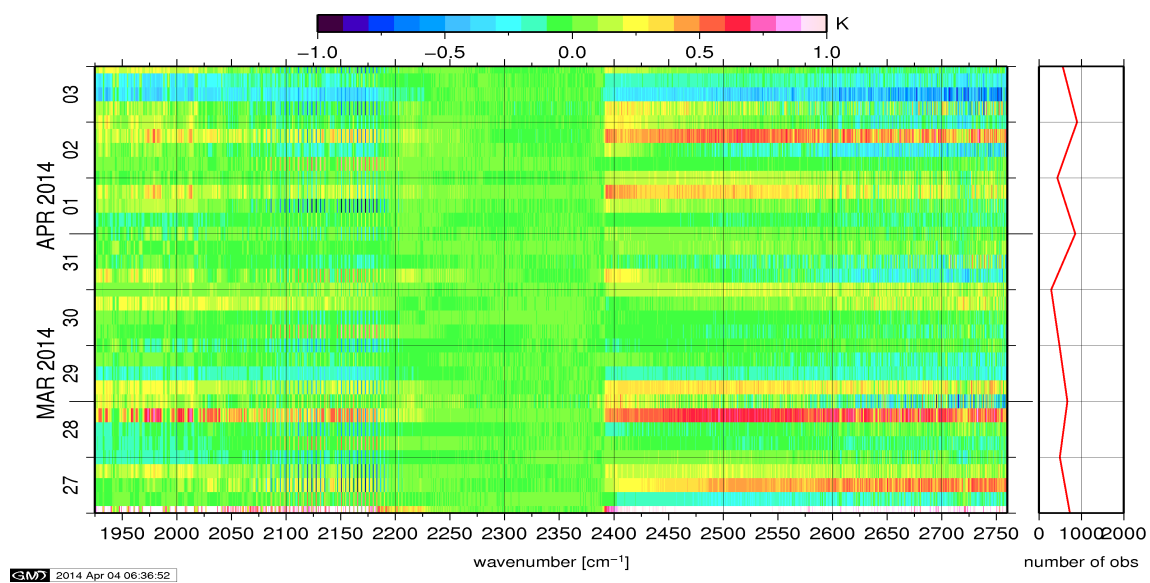


Figure 13: Radiance Anomaly in BRT: IASI Band 3

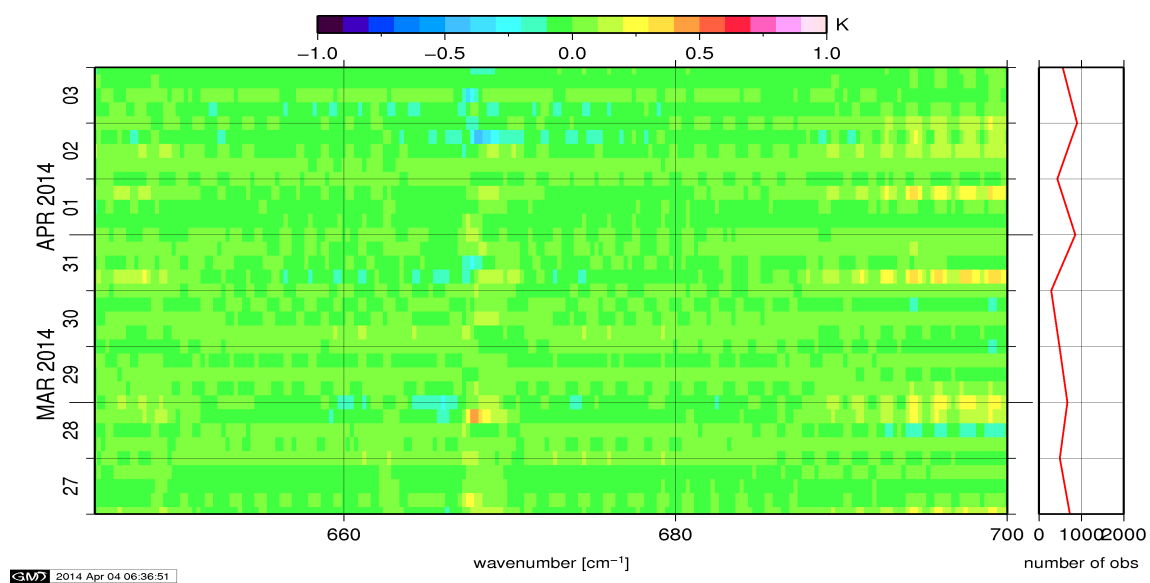


Figure 14: Radiance Anomaly in BRT: CO2 14

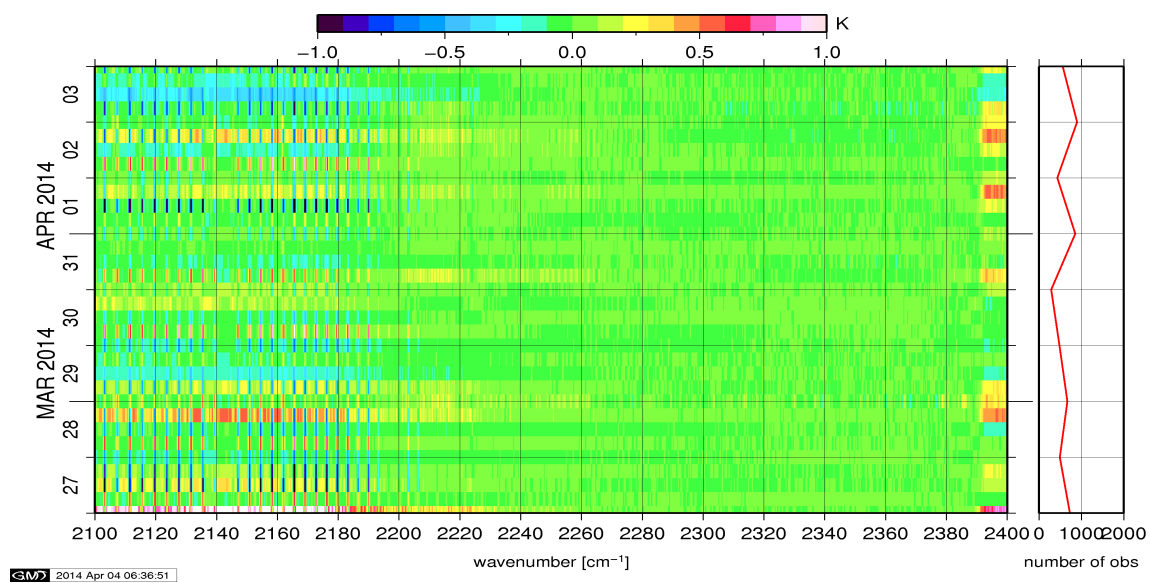


Figure 15: Radiance Anomaly in BRT: CO2 4.3

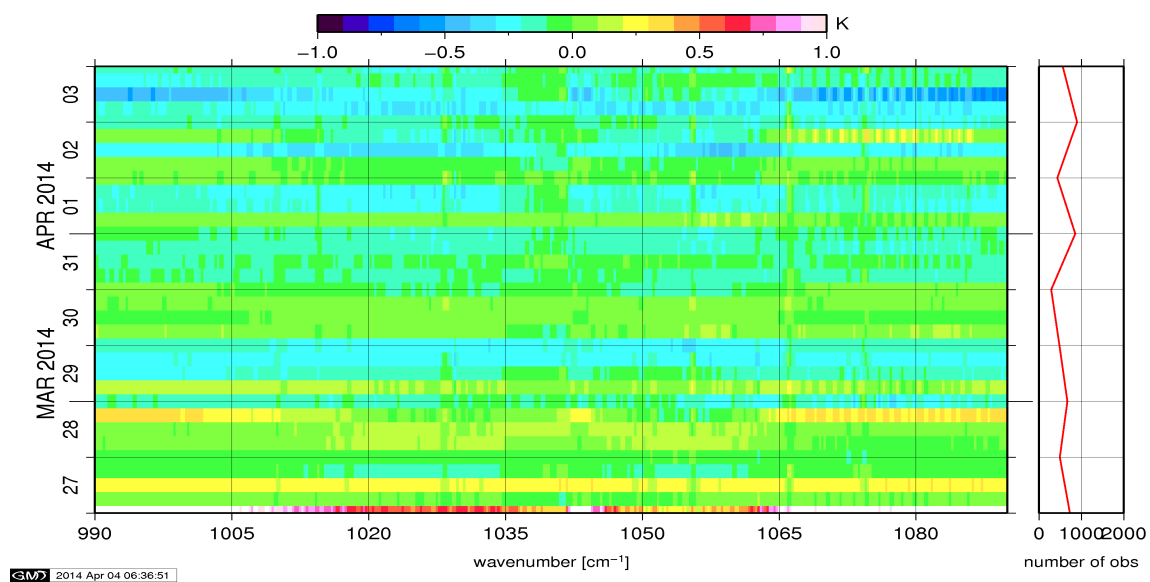


Figure 16: Radiance Anomaly in BRT: O3

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.

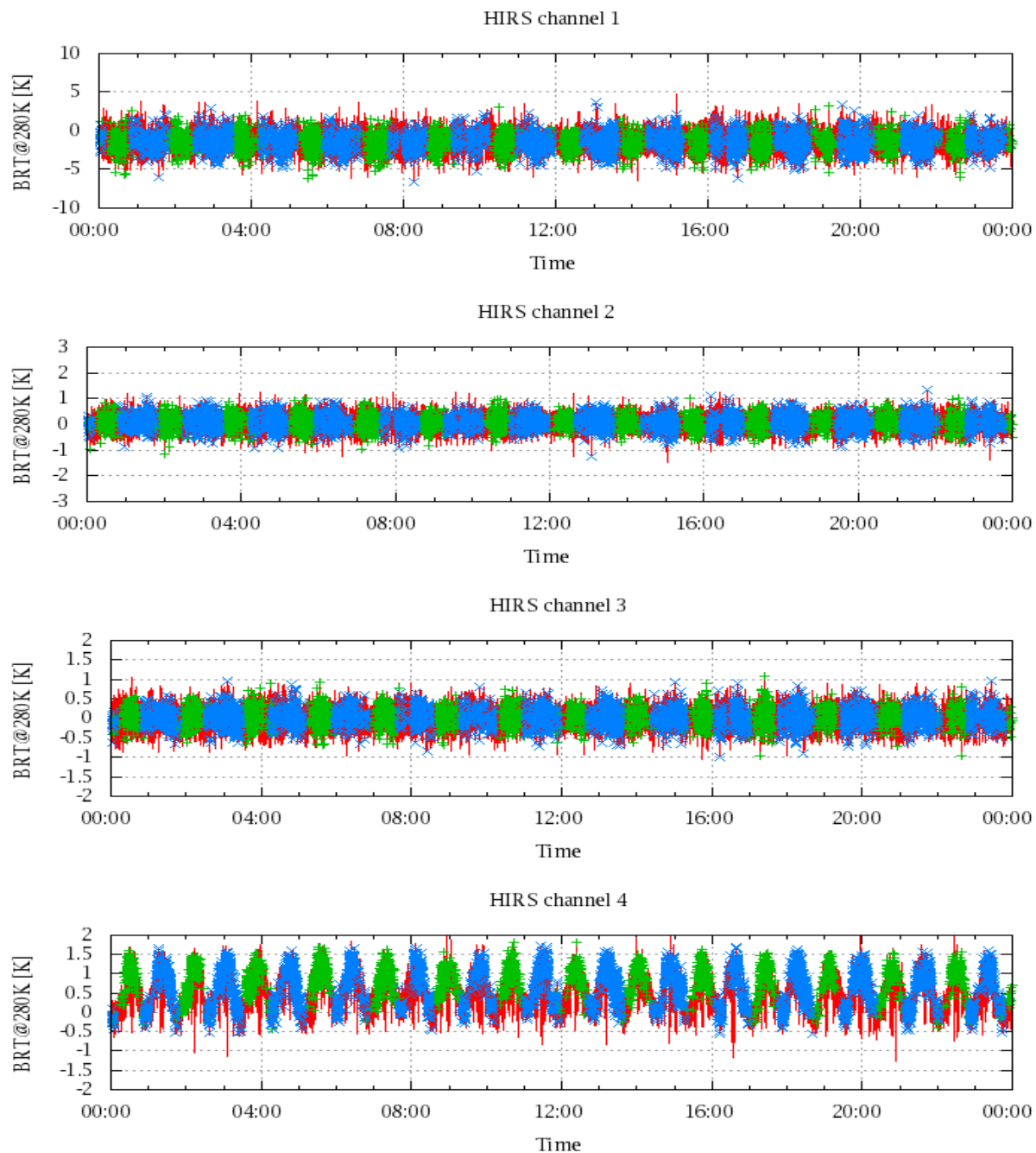


Figure 17: Radiance Differences in BRT

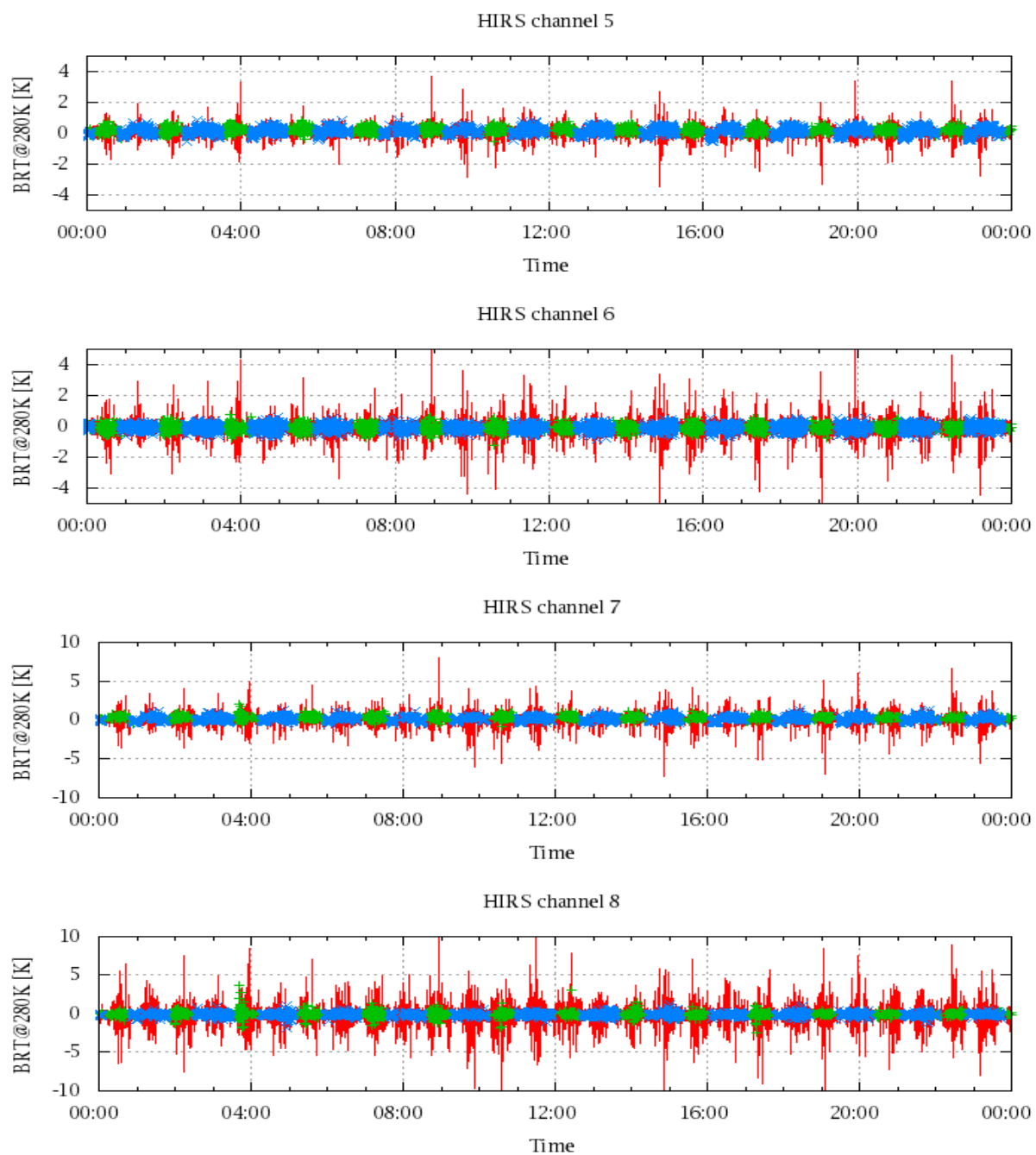


Figure 18: Radiance Differences in BRT

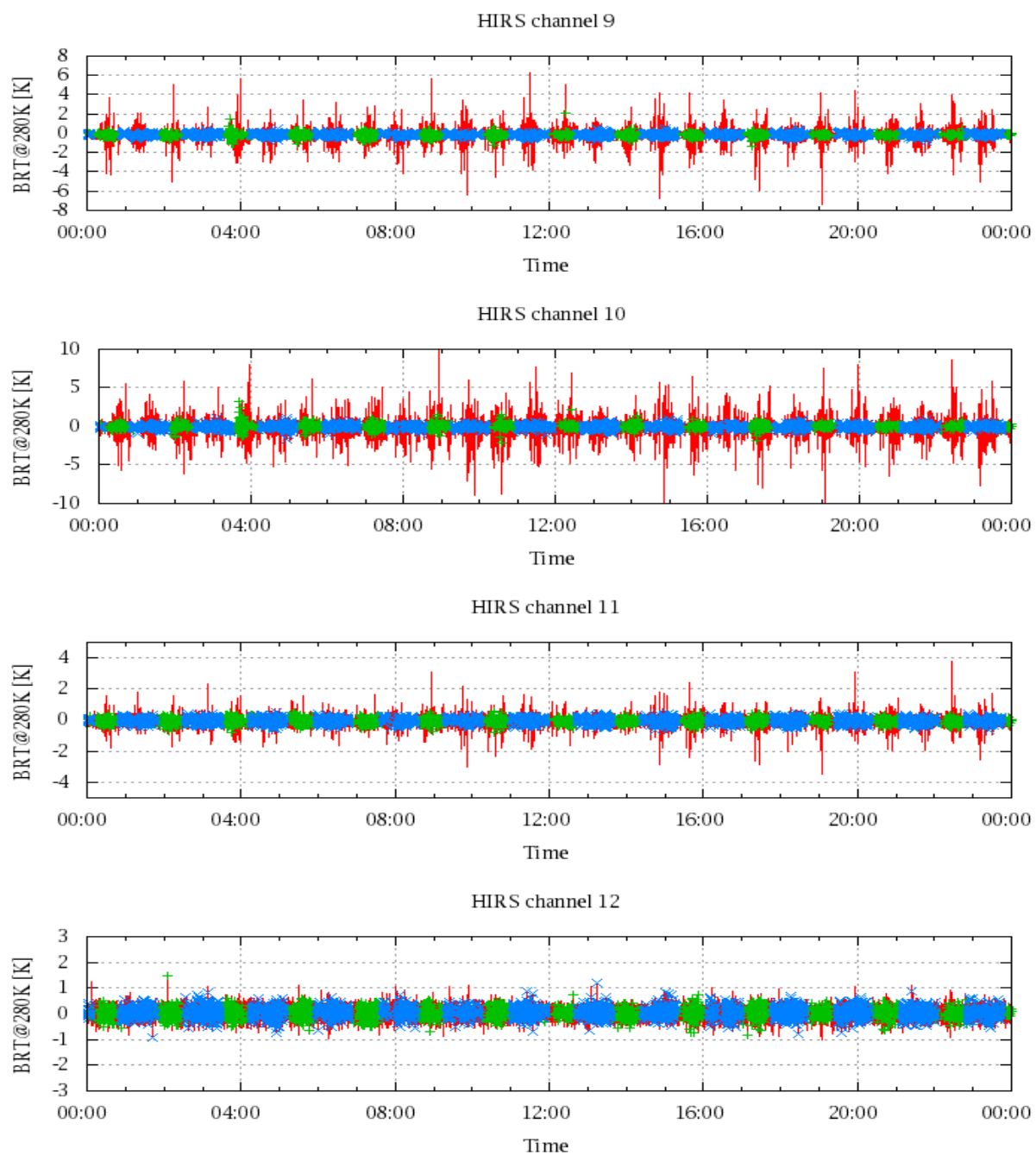


Figure 19: Radiance Differences in BRT

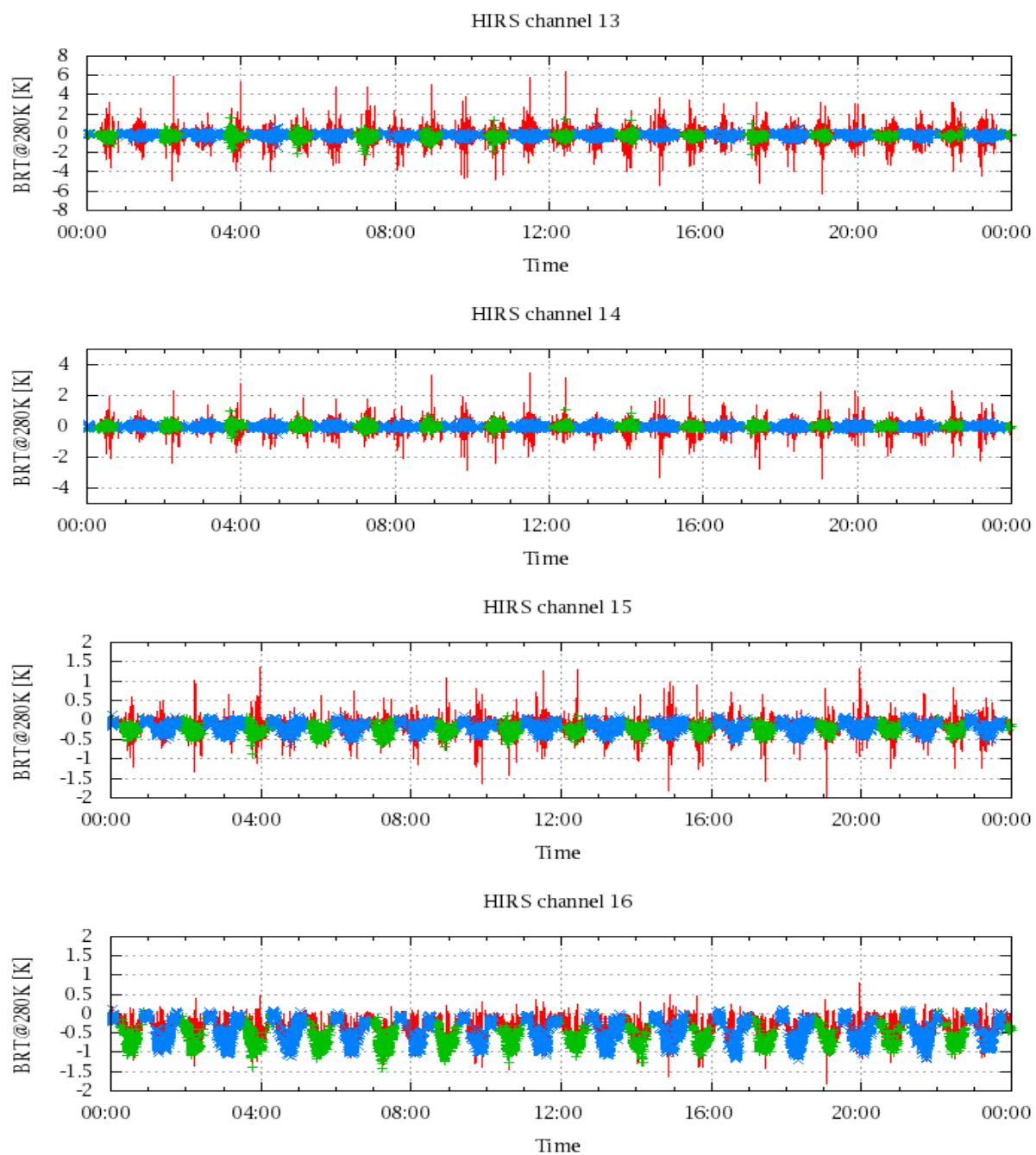


Figure 20: Radiance Differences in BRT

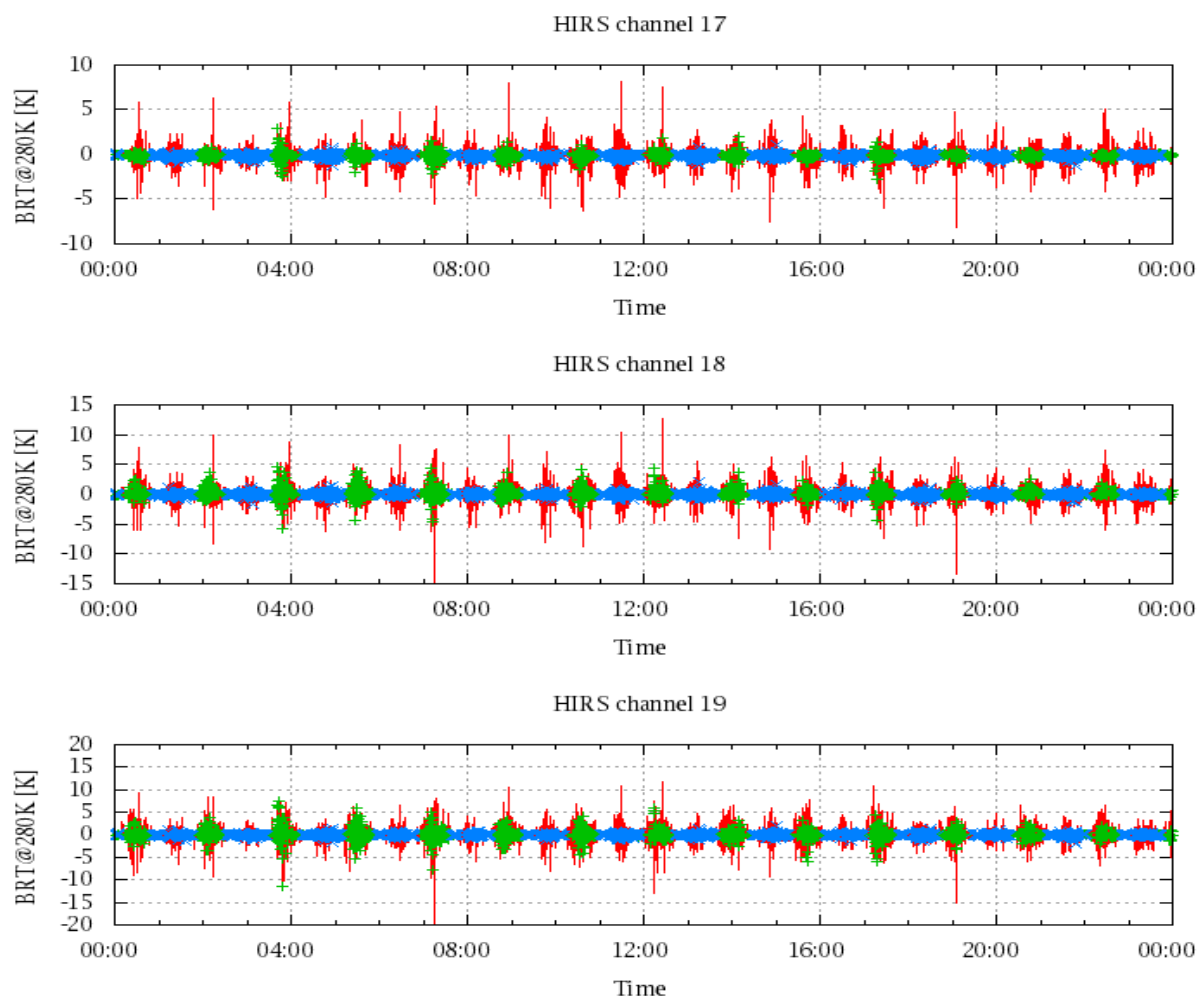


Figure 21: Radinace Differences in BRT