

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

26/03/2013 00:00:00 - 27/03/2013 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-A satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 26/03/2013 00:00:00 - 27/03/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 26/03/2013 00:00:00 - 27/03/2013 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
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)	9492	9494	20130326025423.993	20130326025424.427
PX1 (130)	9502	9505	20130326025426.153	20130326025426.802
PX1 (130)	9521	9530	20130326025431.774	20130326025433.720
PX1 (130)	9530	9538	20130326025433.720	20130326025436.966
PX1 (130)	9558	9566	20130326025441.290	20130326025443.020
PX1 (130)	9568	9570	20130326025444.966	20130326025445.395
PX2 (135)	9492	9494	20130326025423.993	20130326025424.427
PX2 (135)	9502	9505	20130326025426.153	20130326025426.802
PX2 (135)	9521	9530	20130326025431.774	20130326025433.720
PX2 (135)	9530	9538	20130326025433.720	20130326025436.966
PX2 (135)	9558	9566	20130326025441.290	20130326025443.020
PX2 (135)	9568	9570	20130326025444.966	20130326025445.395
PX3 (140)	9492	9494	20130326025423.993	20130326025424.427
PX3 (140)	9502	9504	20130326025426.153	20130326025426.587
PX3 (140)	9520	9538	20130326025431.559	20130326025436.966
PX3 (140)	9558	9566	20130326025441.290	20130326025443.020
PX3 (140)	9568	9570	20130326025444.966	20130326025445.395
PX4 (145)	9492	9494	20130326025423.993	20130326025424.427

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	9502	9504	20130326025426.153	20130326025426.587
PX4 (145)	9520	9529	20130326025431.559	20130326025433.505
PX4 (145)	9529	9538	20130326025433.505	20130326025436.966
PX4 (145)	9558	9566	20130326025441.290	20130326025443.020
PX4 (145)	9567	9569	20130326025443.235	20130326025445.180
IMG (150)	15839	15841	20130326025423.774	20130326025424.208
IMG (150)	15849	15852	20130326025425.938	20130326025426.587
IMG (150)	15872	15881	20130326025431.559	20130326025433.505
IMG (150)	15881	15890	20130326025433.505	20130326025435.669
IMG (150)	15913	15921	20130326025441.071	20130326025442.802
IMG (150)	15927	15929	20130326025444.532	20130326025445.180
VER (160)	8093	8097	20130326025427.235	20130326025433.720
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
26/03/2013 00:00:10	-	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	481	-
GQisFlagQual set (PX1)	99.41 %	-
GQisFlagQual set (PX2)	99.26 %	-
GQisFlagQual set (PX3)	99.33 %	-
GQisFlagQual set (PX4)	99.43 %	-
GQisFlagQual set (all)	99.36 %	-

Table 4: Quality flags

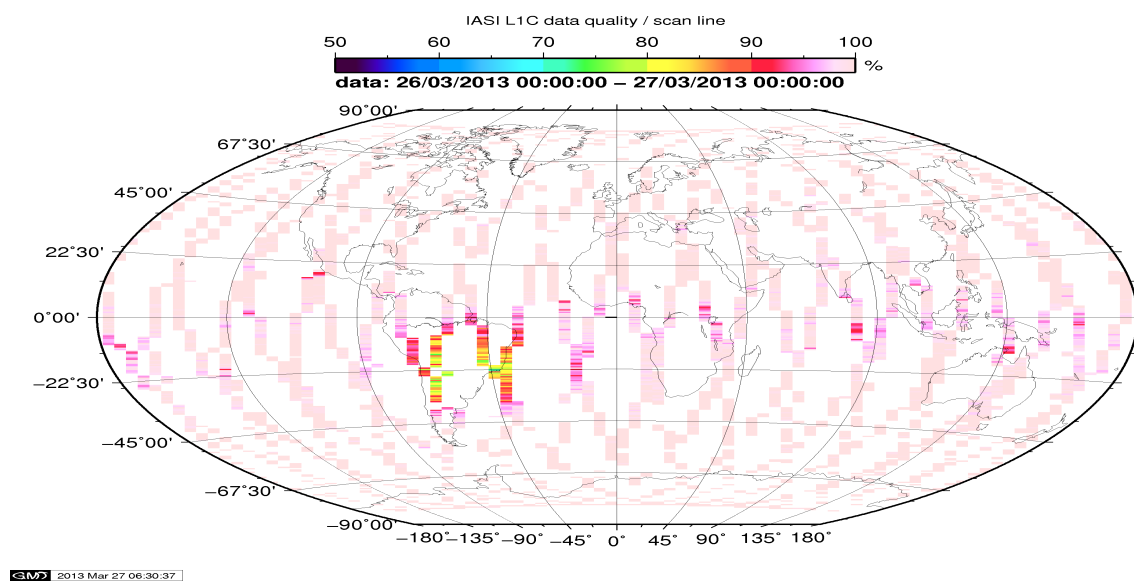


Figure 1: L1C data quality

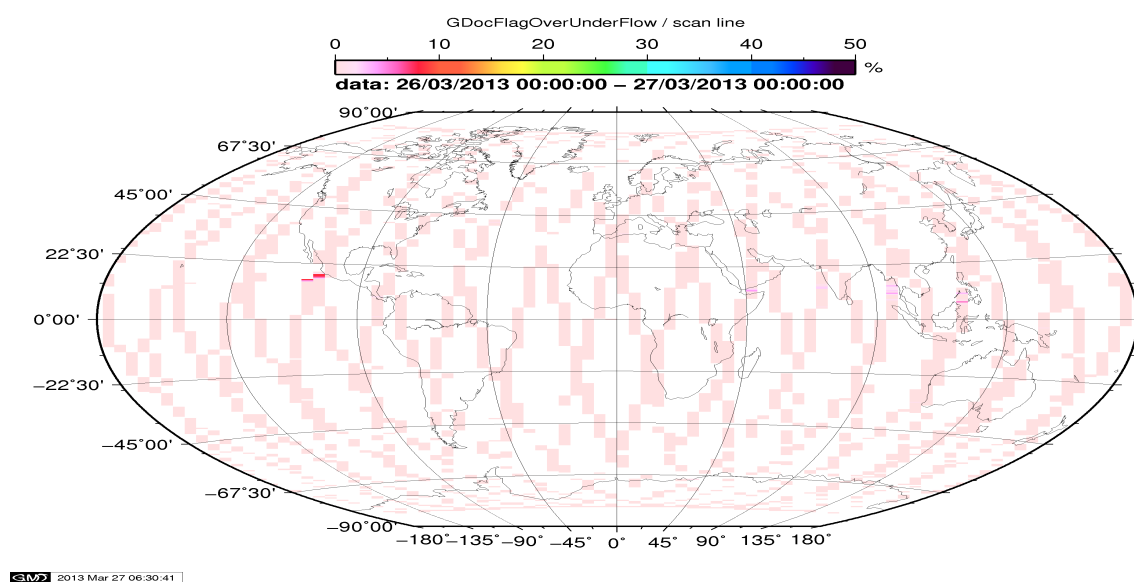


Figure 2: Flag of Over and Under Flows

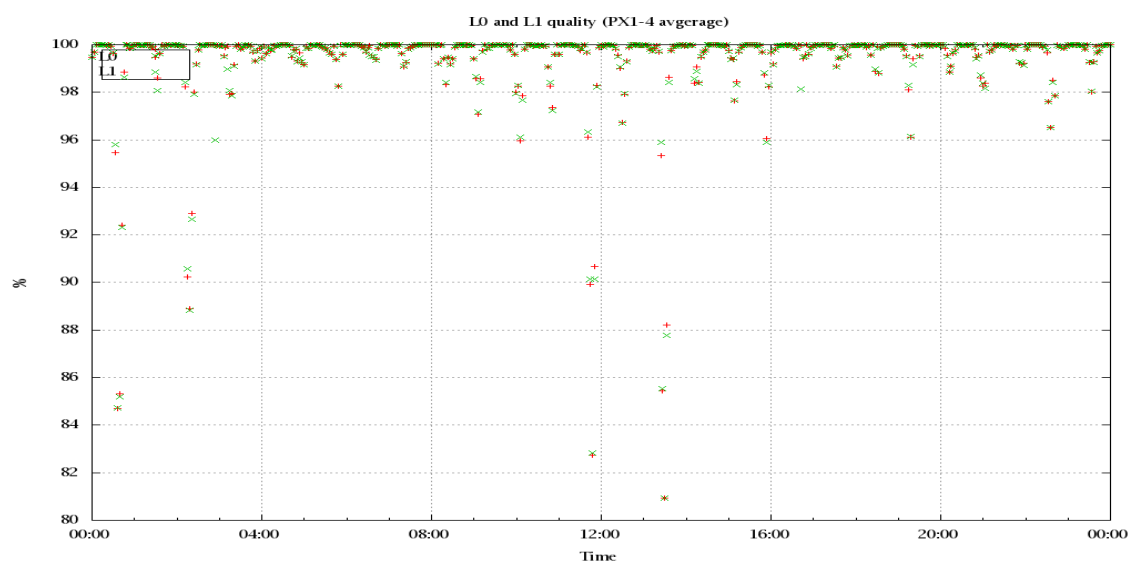


Figure 3: Level 0 and 1C overall quality

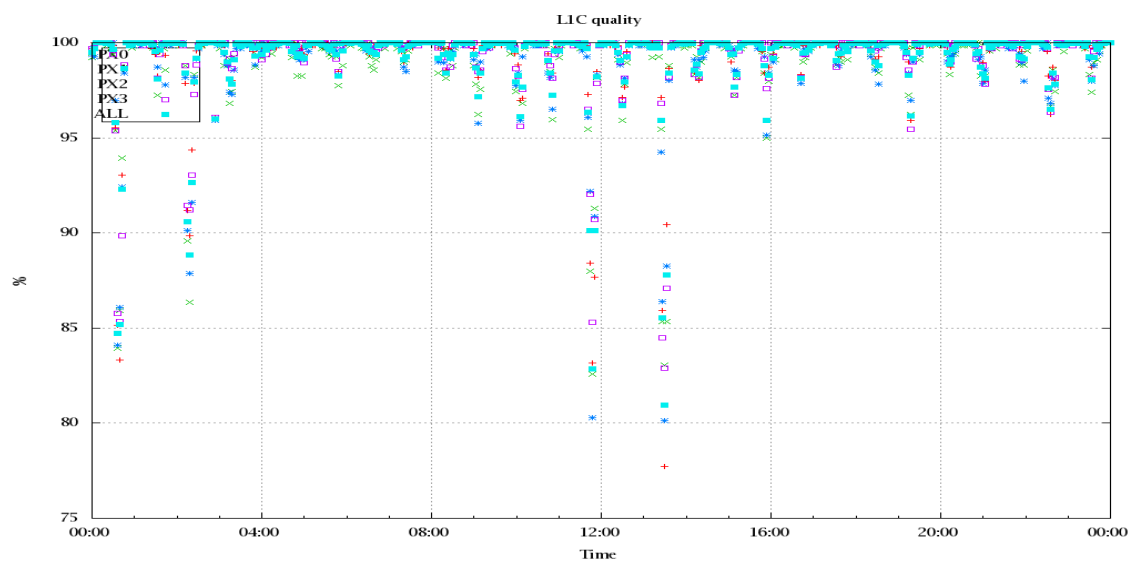


Figure 4: Level 1C quality

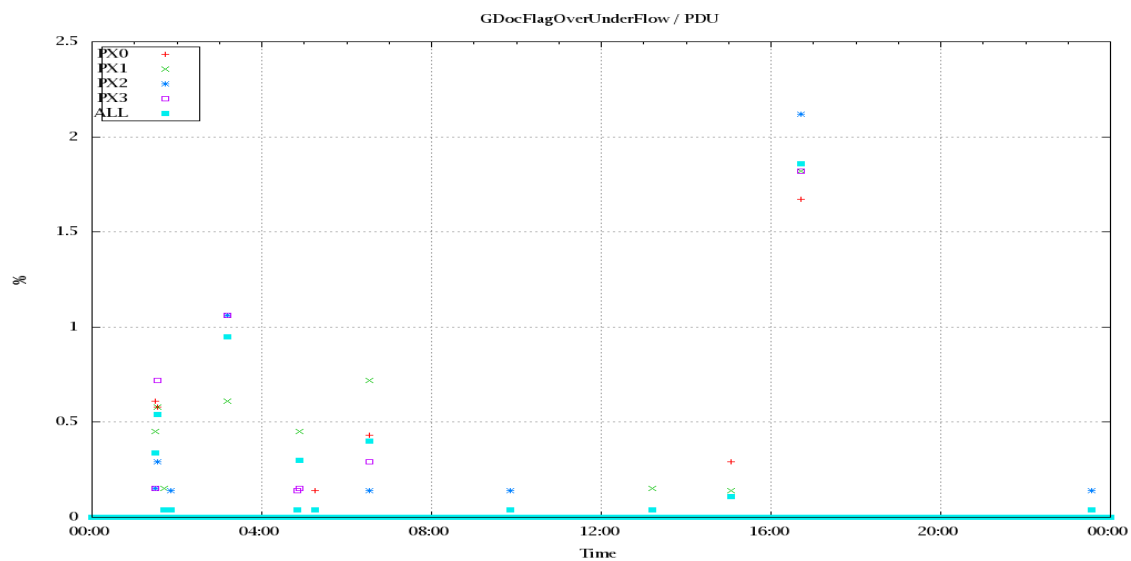


Figure 5: OverUnderFlowFlag timeseries

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.

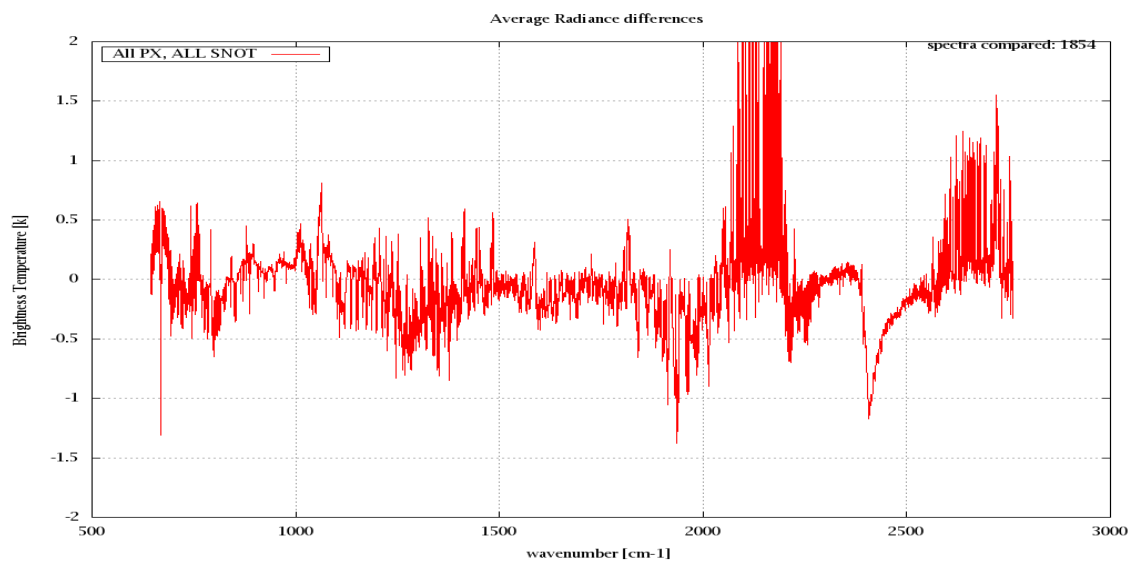


Figure 6: Average Radiance differences: OBS-CAL

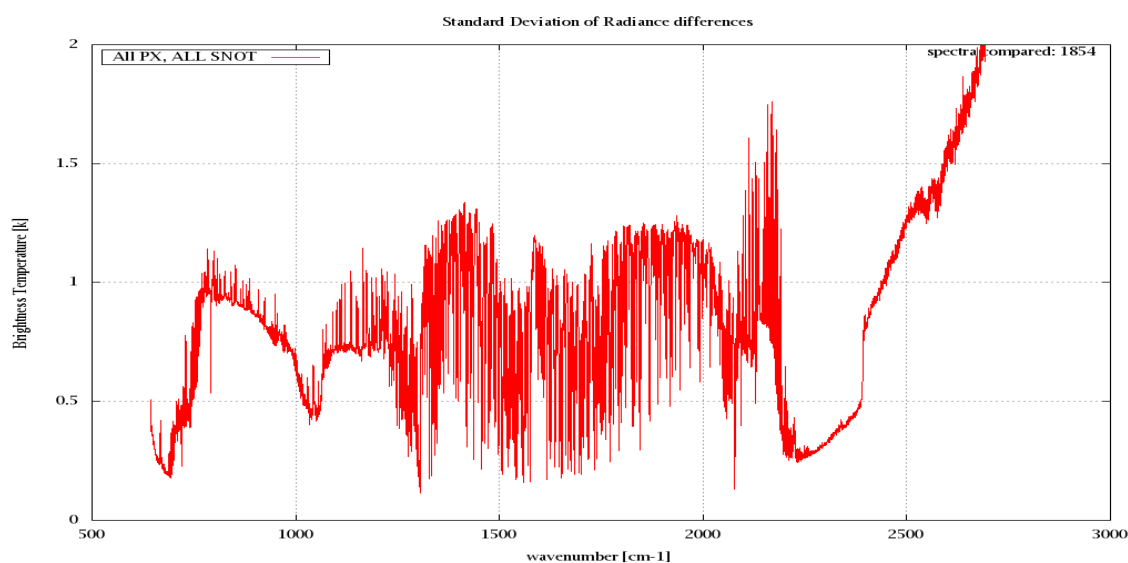


Figure 7: Standard Deviation of Radiance differences

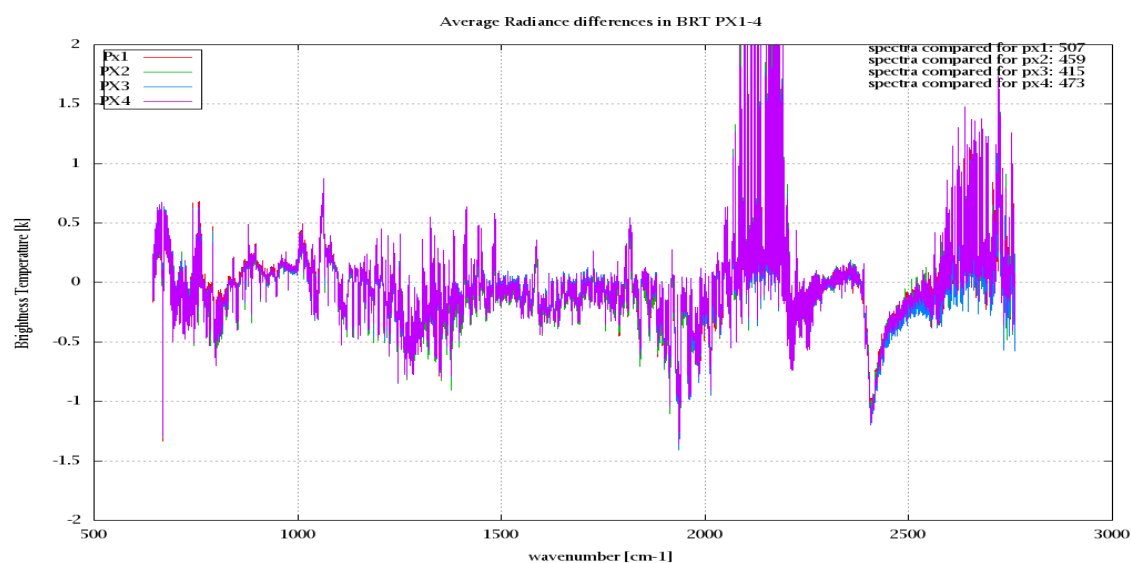


Figure 8: Average Radiance differences: OBS-CAL

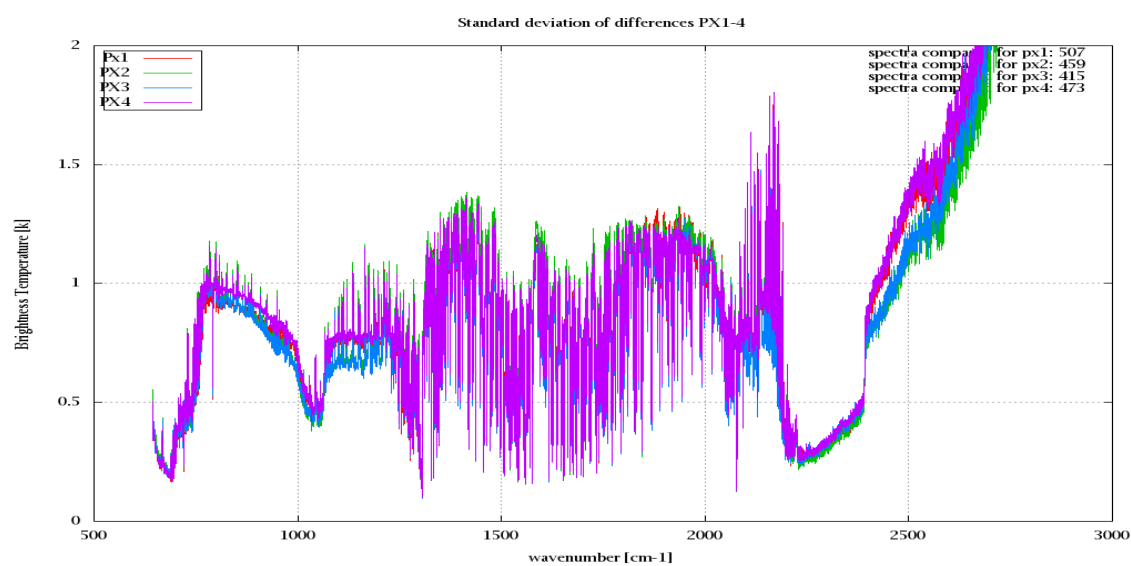


Figure 9: Standard Deviation of Radiance differences

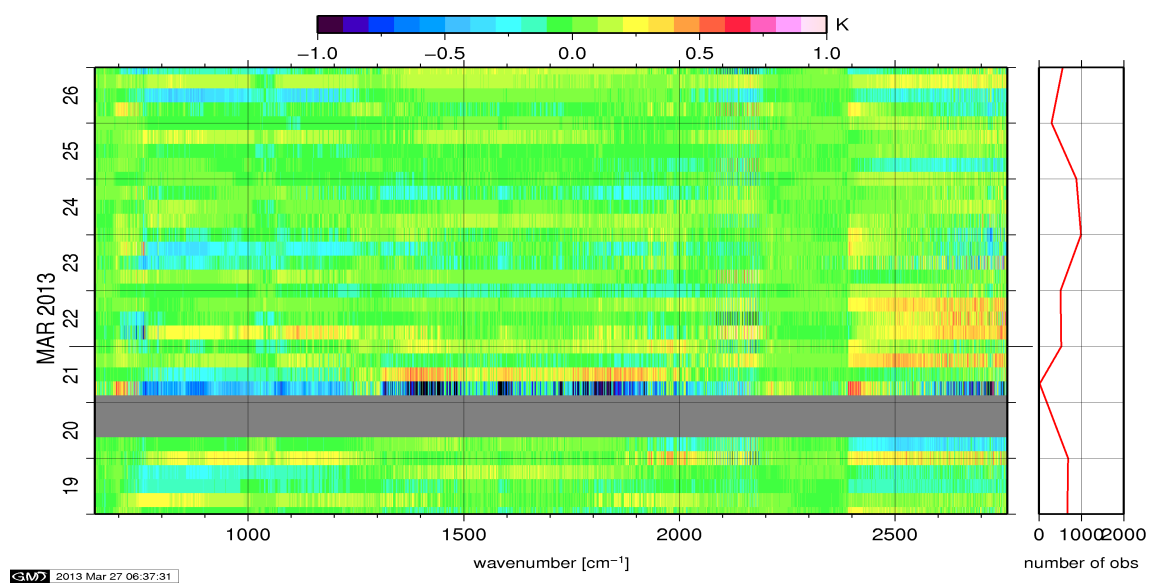


Figure 10: Radiance Anomaly in BRT: All Channels

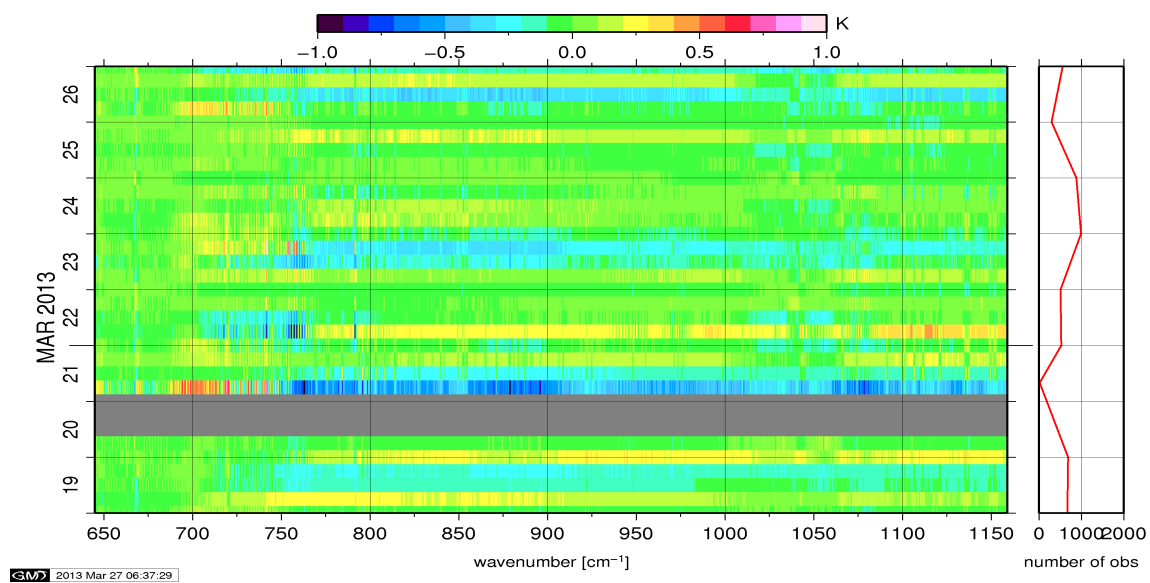


Figure 11: Radiance Anomaly in BRT: IASI Band 1

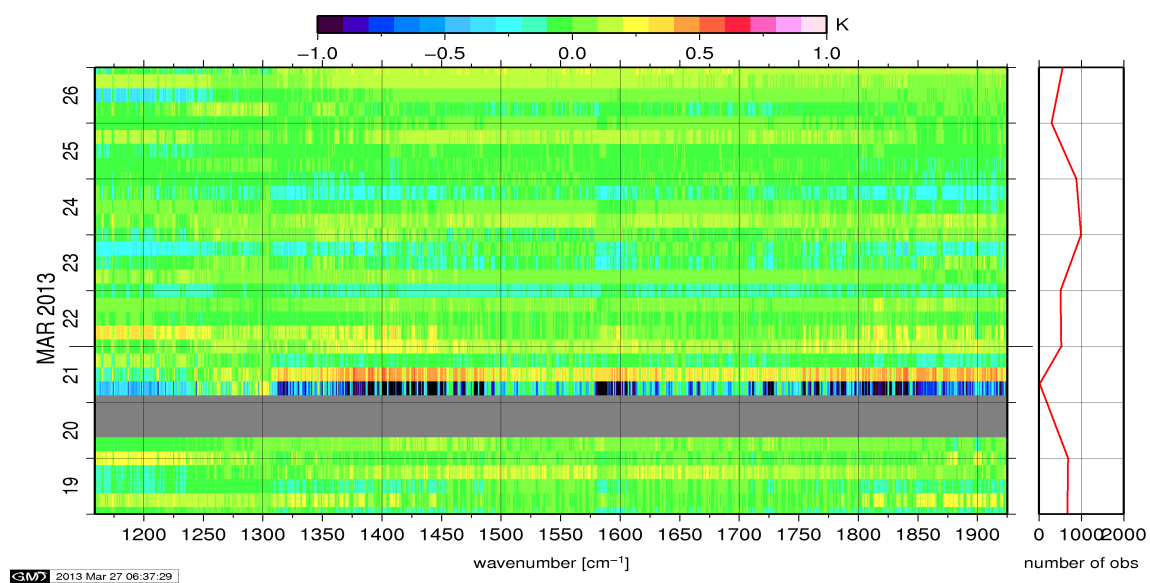


Figure 12: Radiance Anomaly in BRT: IASI Band 2

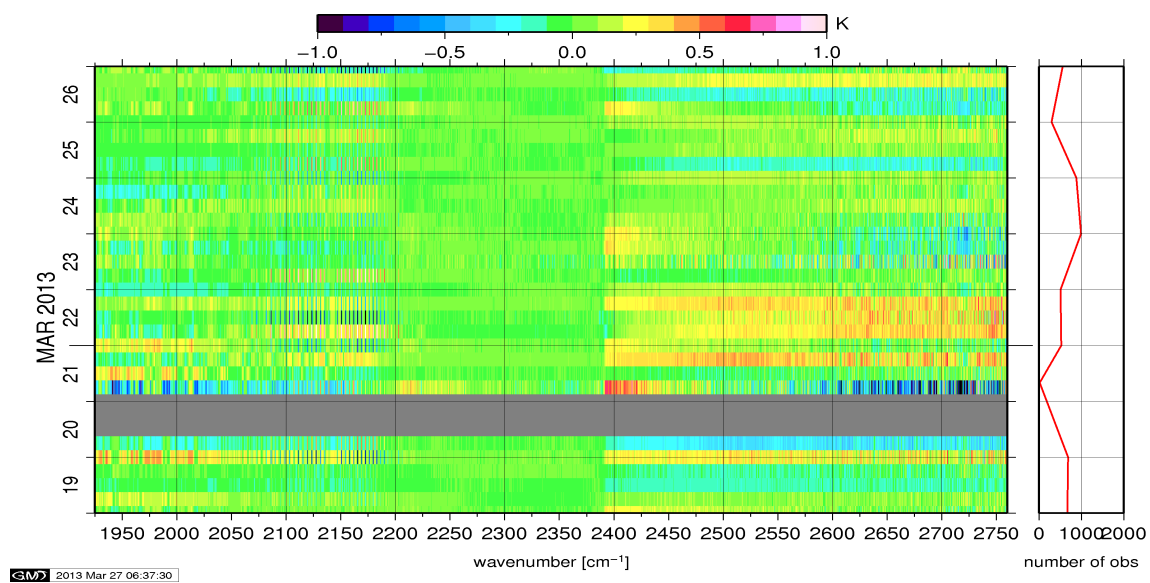


Figure 13: Radiance Anomaly in BRT: IASI Band 3

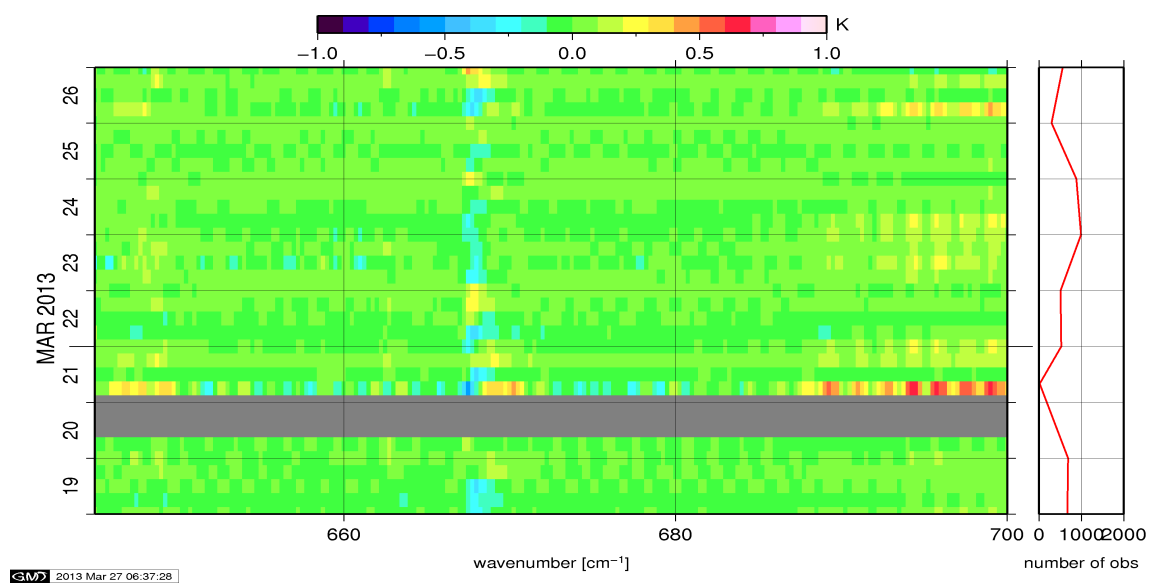


Figure 14: Radiance Anomaly in BRT: CO2 14

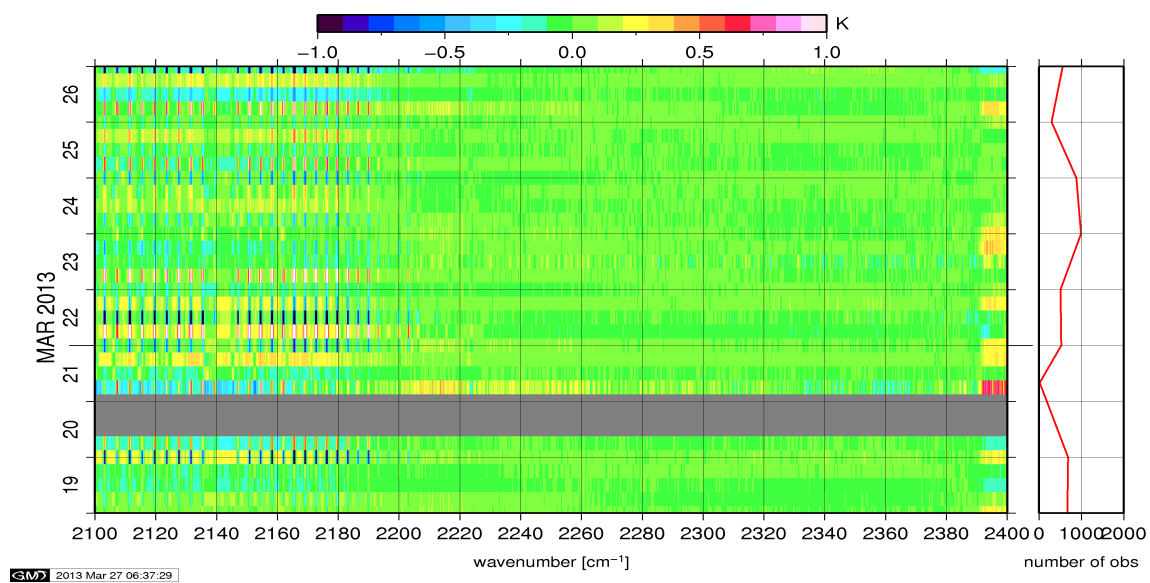


Figure 15: Radiance Anomaly in BRT: CO2 4.3

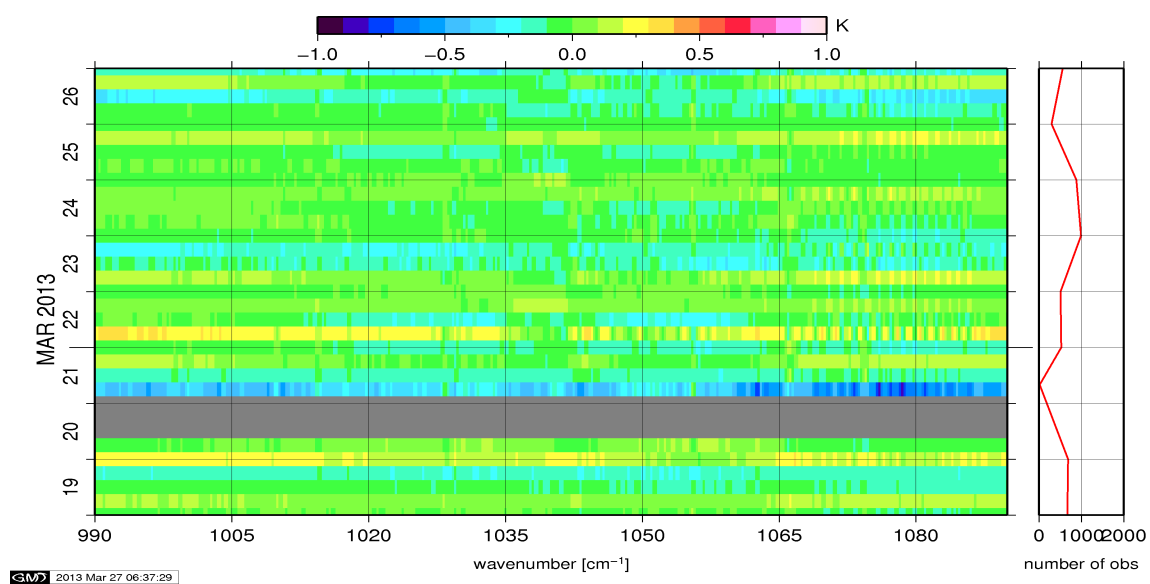


Figure 16: Radiance Anomaly in BRT: O3

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.

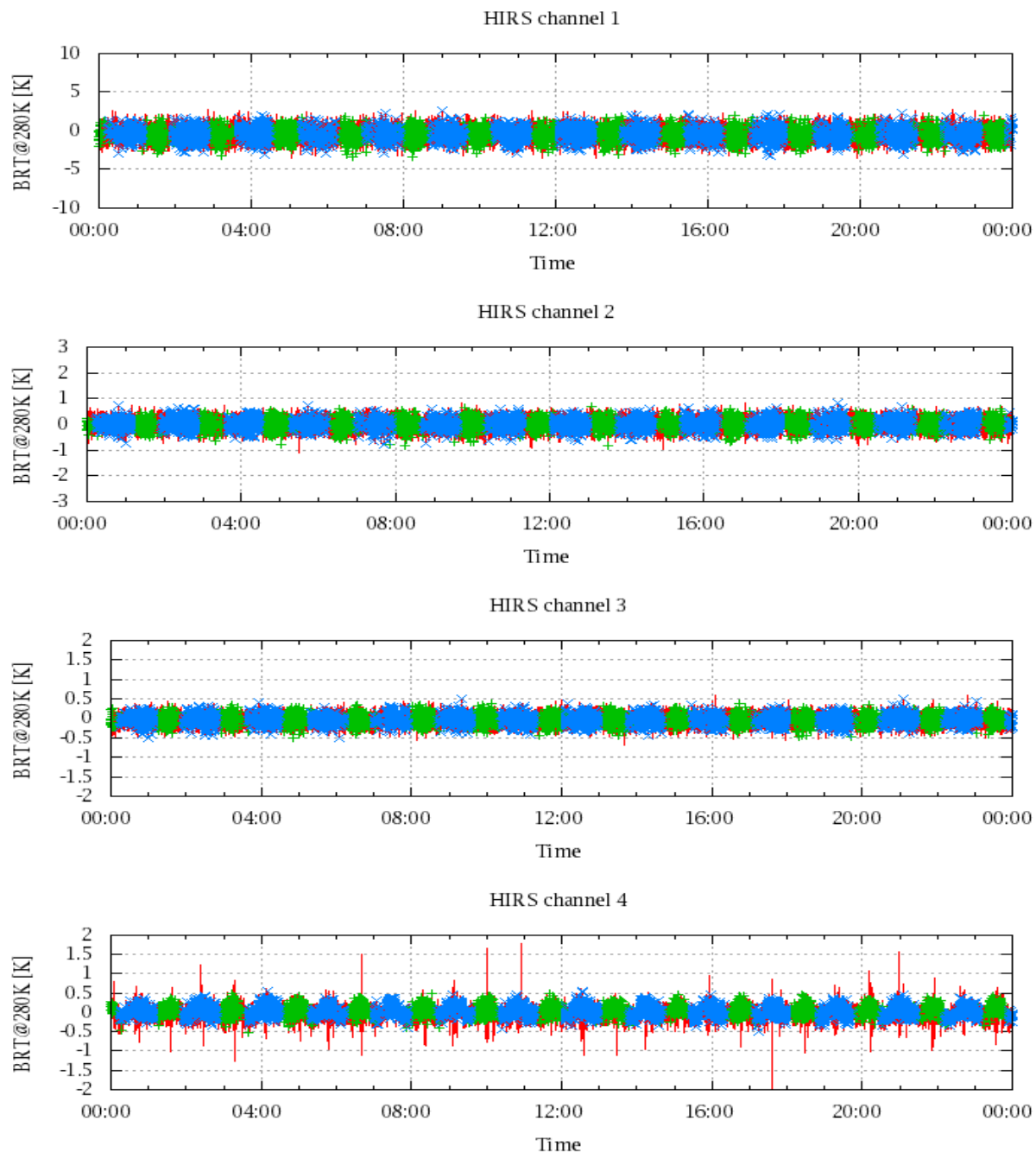


Figure 17: Radiance Differences in BRT

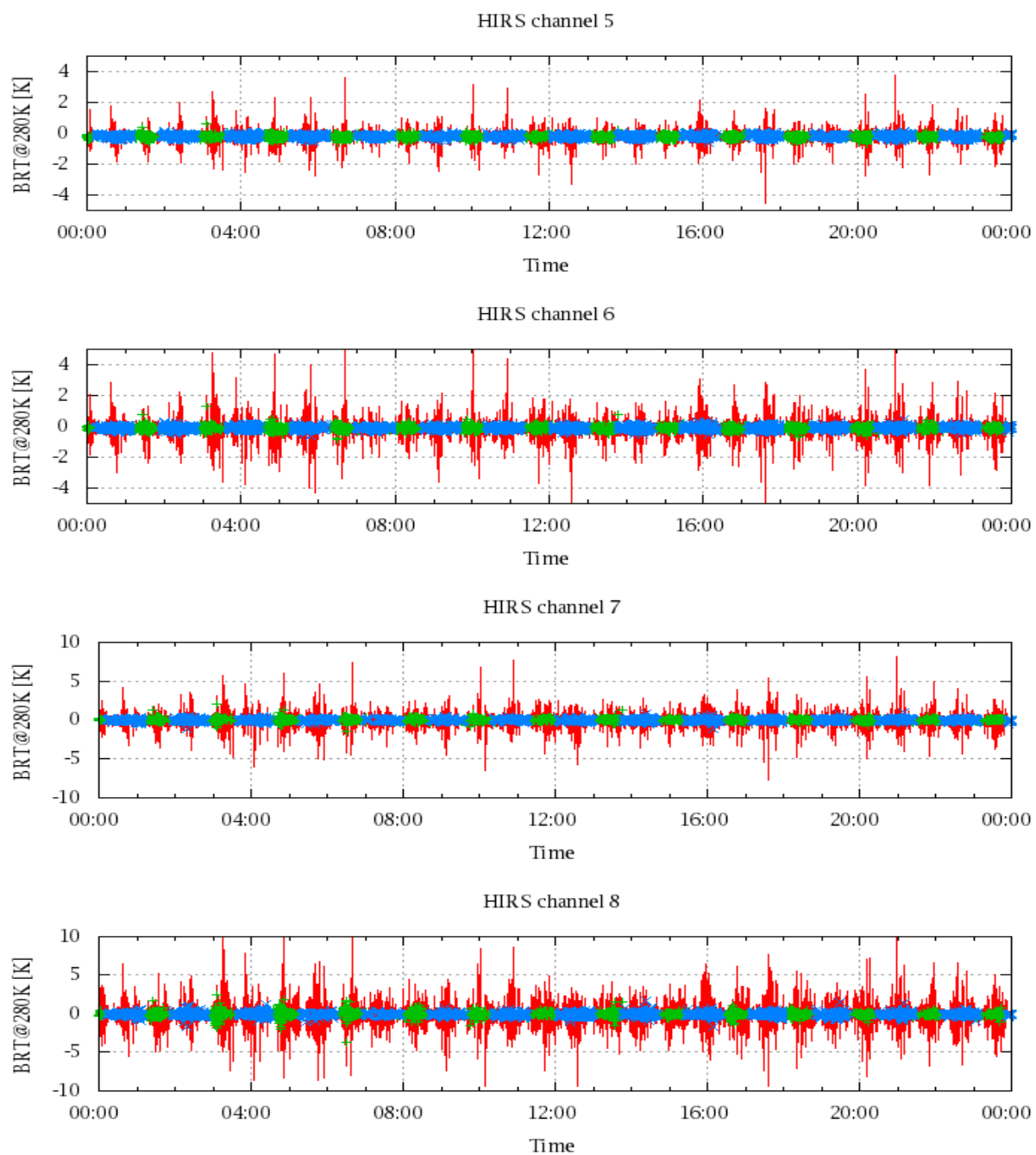


Figure 18: Radiance Differences in BRT

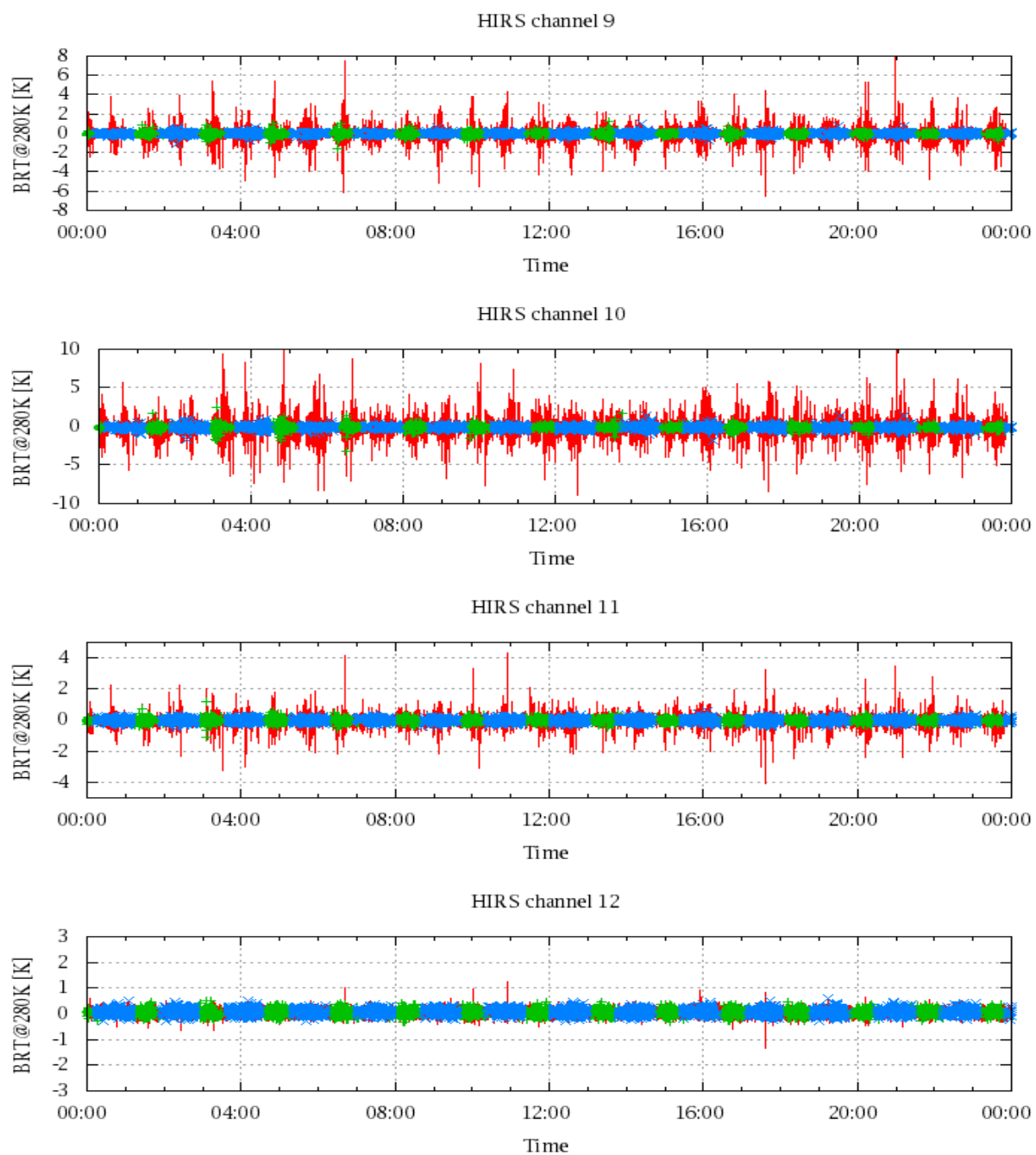


Figure 19: Radiance Differences in BRT

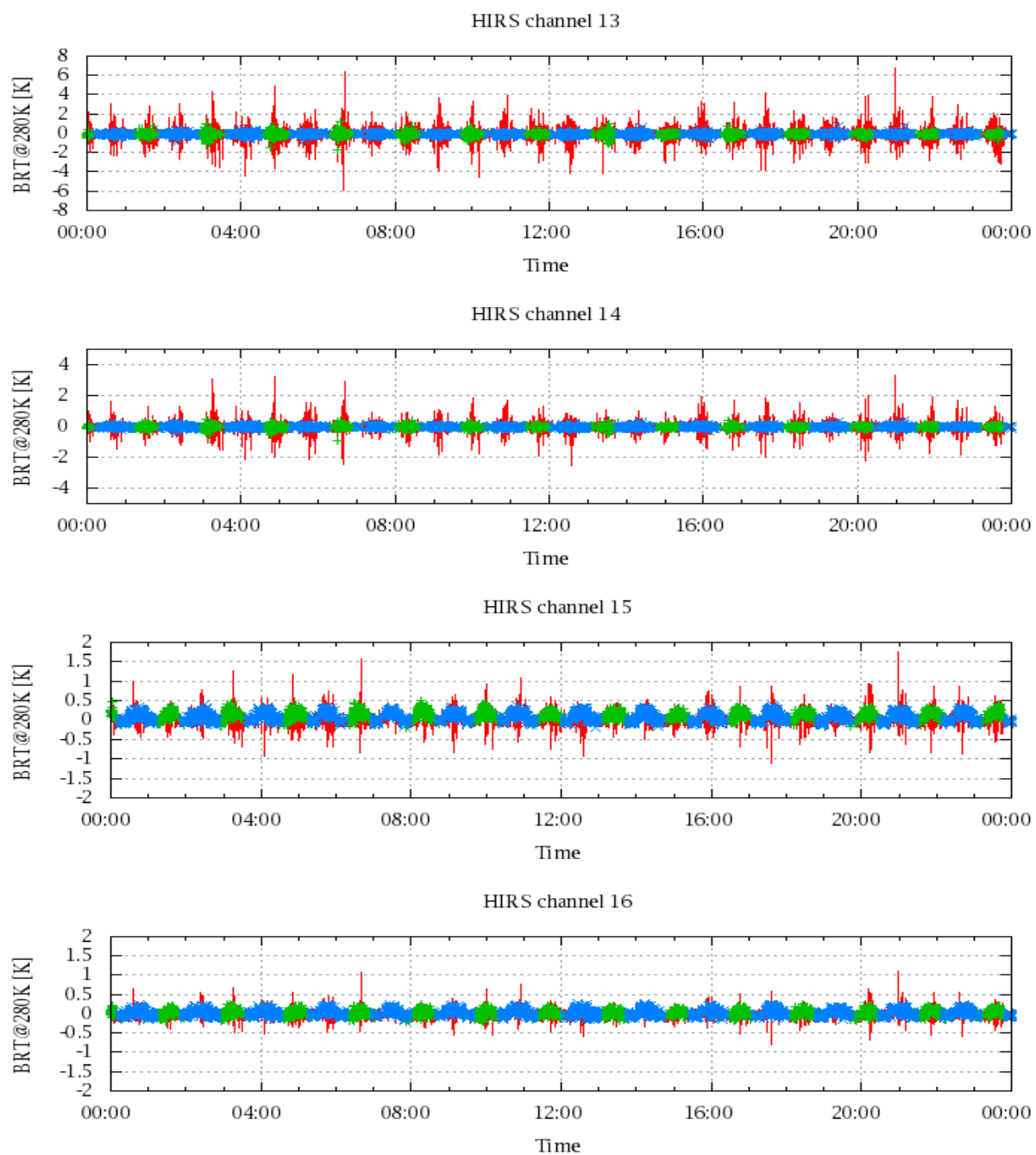


Figure 20: Radiance Differences in BRT

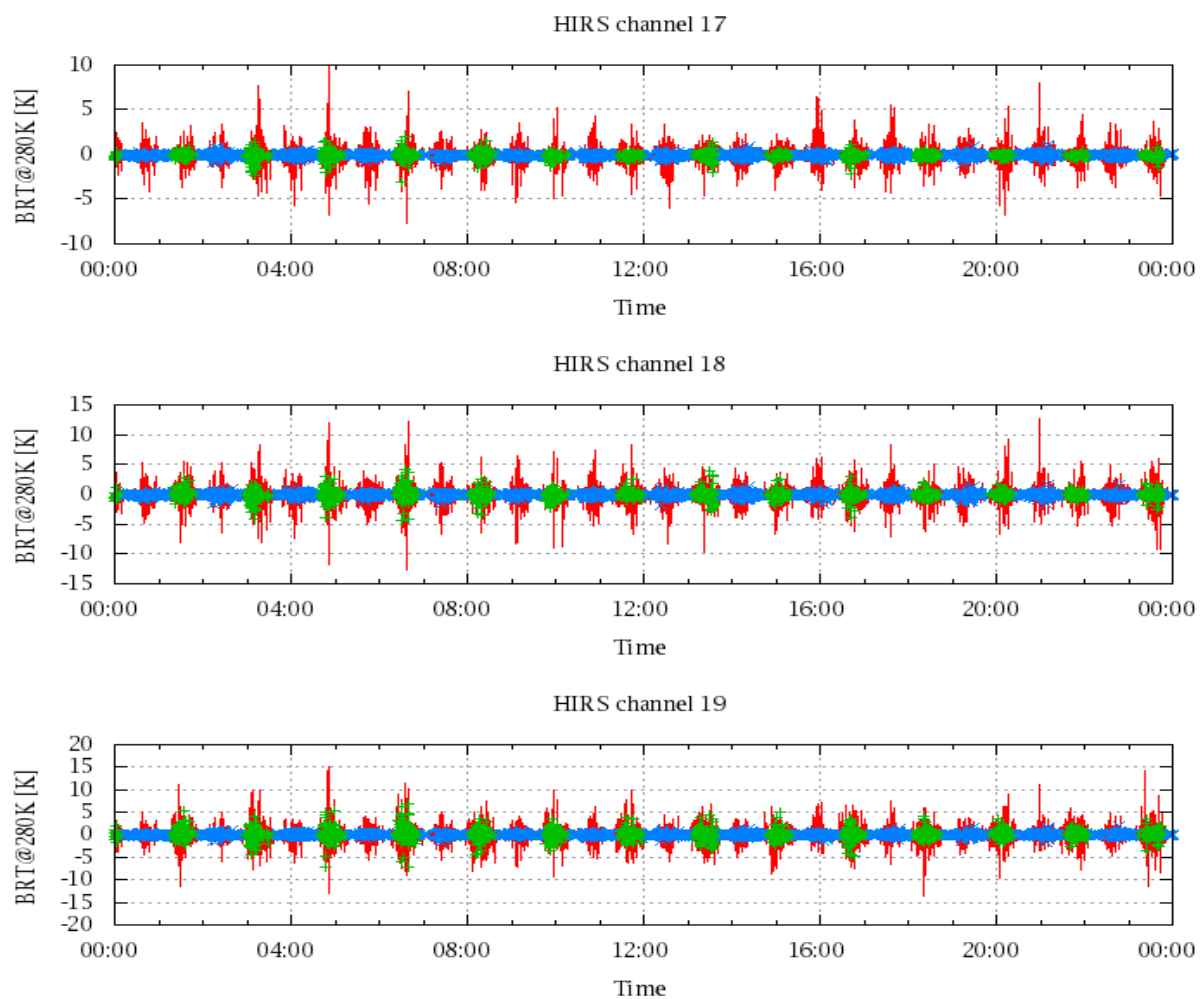


Figure 21: Radinace Differences in BRT