

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

26/08/2016 00:00:00 - 27/08/2016 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 26/08/2016 00:00:00 - 27/08/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 26/08/2016 00:00:00 - 27/08/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	481	-
L1 ENG distinct GEPSGranule	478	-
L1 DPX PDUs (RM: IASI-HIRS)	481	-
L1 DPS Files (RM: OBS-CAL NWP based)	442	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	11035	11038	20160826164133.870	20160826164136.035
PX1 (130)	11094	11158	20160826164149.656	20160826164208.034
PX1 (130)	11367	11507	20160826164302.339	20160826164340.175
PX1 (130)	11540	11548	20160826164348.823	20160826164352.065
PX2 (135)	11035	11038	20160826164133.870	20160826164136.035
PX2 (135)	11094	11158	20160826164149.656	20160826164208.034
PX2 (135)	11367	11507	20160826164302.339	20160826164340.175
PX2 (135)	11539	11548	20160826164348.608	20160826164352.065
PX3 (140)	12989	12991	20160826010338.135	20160826010338.569
PX3 (140)	12989	12991	20160826021626.988	20160826021627.417
PX3 (140)	11035	11038	20160826164133.870	20160826164136.035
PX3 (140)	11094	11158	20160826164149.656	20160826164208.034
PX3 (140)	11367	11507	20160826164302.339	20160826164340.175
PX3 (140)	11539	11548	20160826164348.608	20160826164352.065
PX4 (145)	11035	11038	20160826164133.870	20160826164136.035
PX4 (145)	11093	11158	20160826164149.441	20160826164208.034
PX4 (145)	11367	11506	20160826164302.339	20160826164339.960
PX4 (145)	11539	11548	20160826164348.608	20160826164352.065

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	13125	13127	20160826010113.276	20160826010113.710
IMG (150)	7155	7158	20160826164133.870	20160826164134.738
IMG (150)	7221	7294	20160826164149.441	20160826164206.738
IMG (150)	7531	7690	20160826164302.339	20160826164339.960
IMG (150)	7727	7736	20160826164348.608	20160826164350.769
VER (160)	15721	15726	20160826164126.304	20160826164133.870
VER (160)	15731	15745	20160826164142.304	20160826164149.656
VER (160)	15778	15802	20160826164302.339	20160826164342.339
VER (160)	15806	15811	20160826164342.339	20160826164348.823
AUX (180)	3127	3130	20160826164142.738	20160826164206.738
AUX (180)	3136	3142	20160826164254.773	20160826164342.769

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
26/08/2016 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	481	-
L1 ENG distinct GEPSGranule	478	-
GQisFlagQual set (PX1)	99.49 %	-
GQisFlagQual set (PX2)	99.48 %	-
GQisFlagQual set (PX3)	99.47 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

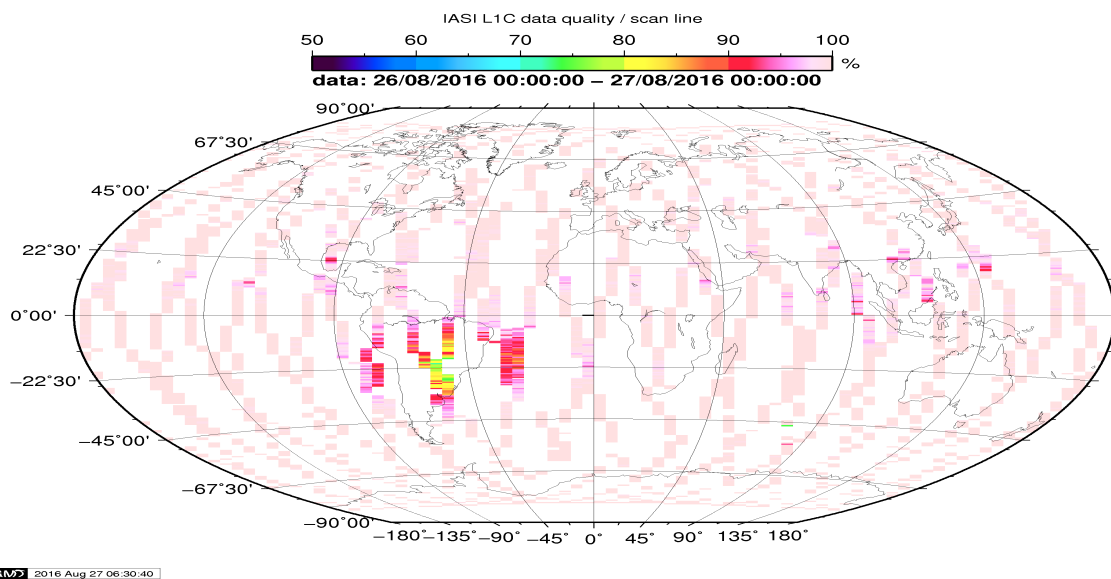


Figure 1: L1C data quality

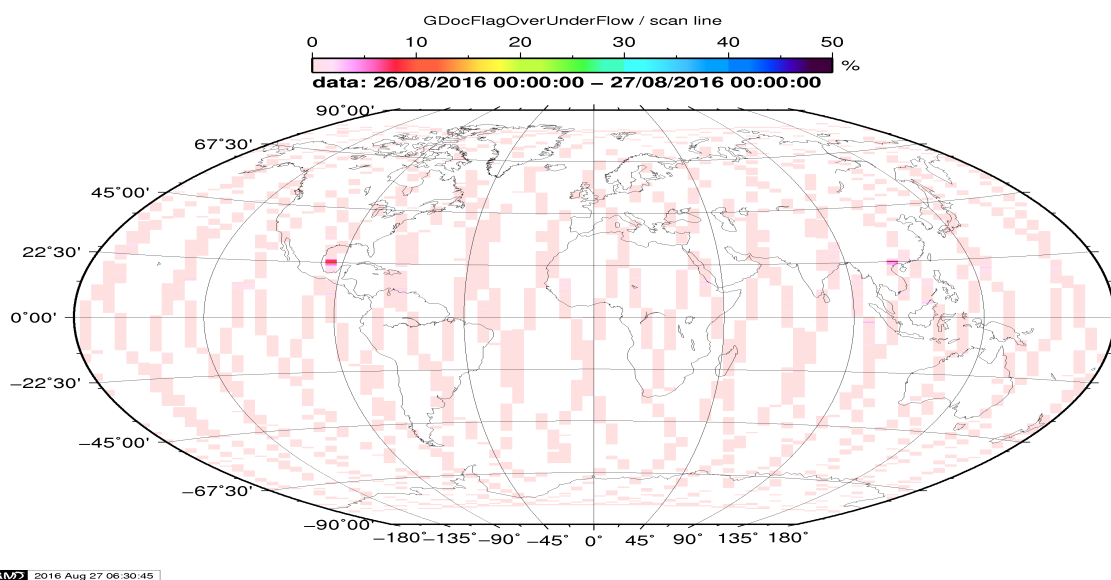


Figure 2: Flag of Over and Under Flows

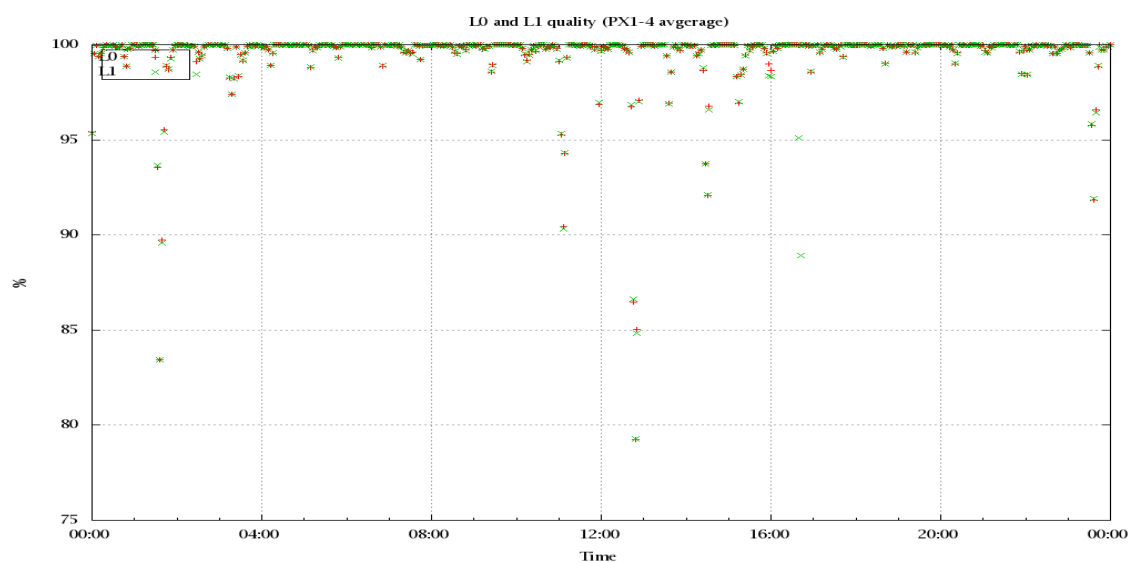


Figure 3: Level 0 and 1C overall quality

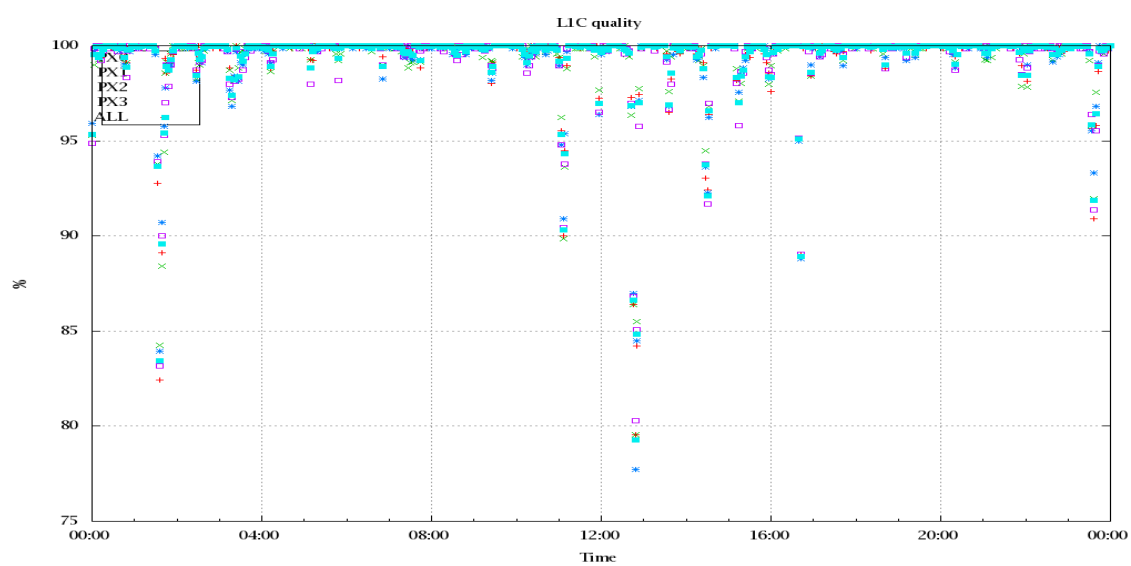


Figure 4: Level 1C quality

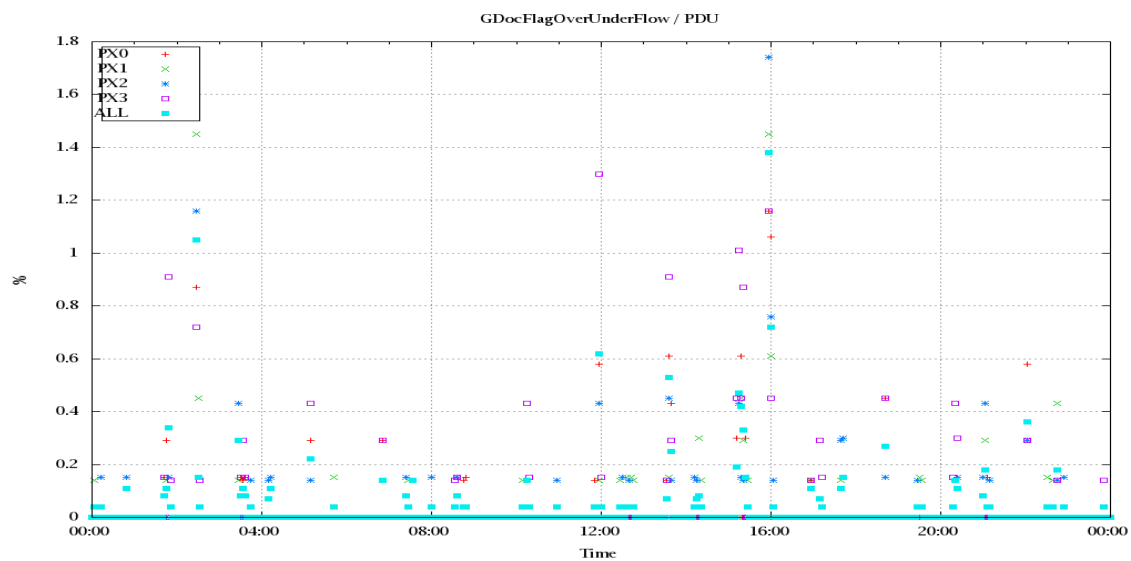


Figure 5: OverUnderFlowFlag timeseries

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.

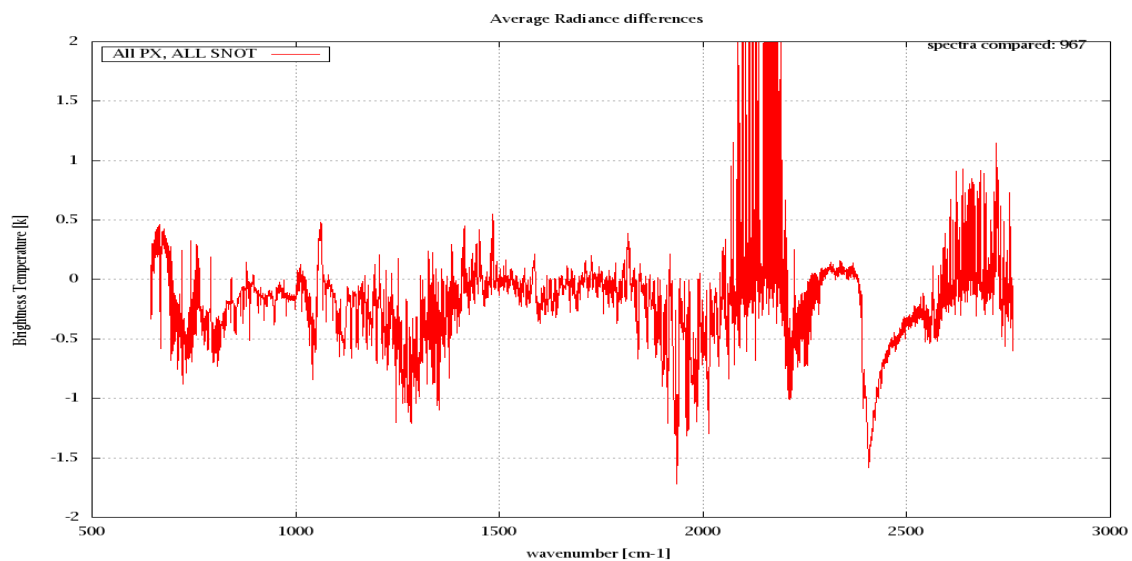


Figure 6: Average Radiance differences: OBS-CAL

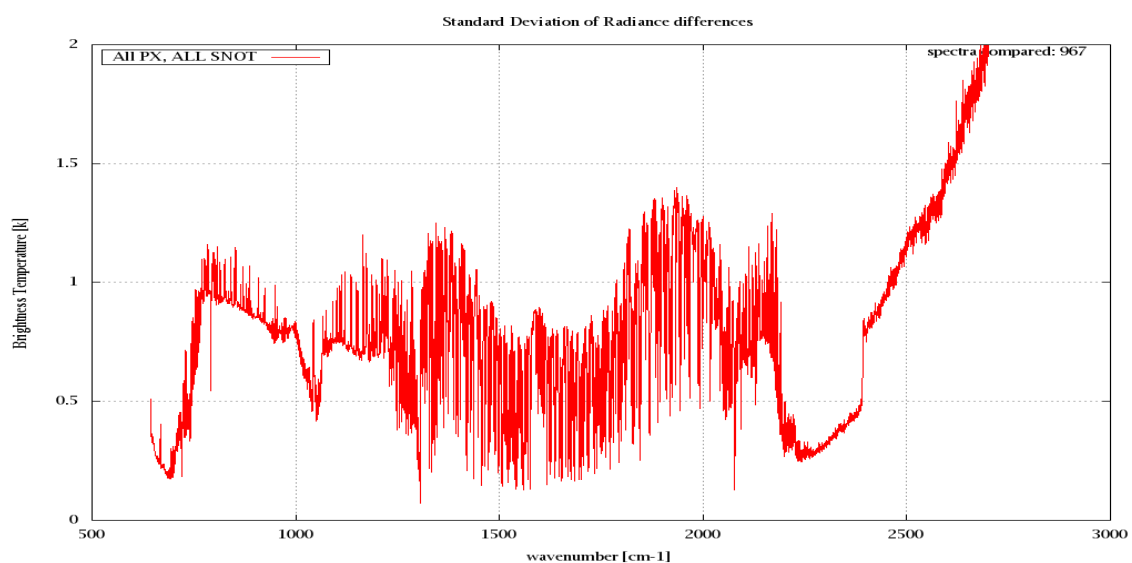


Figure 7: Standard Deviation of Radiance differences

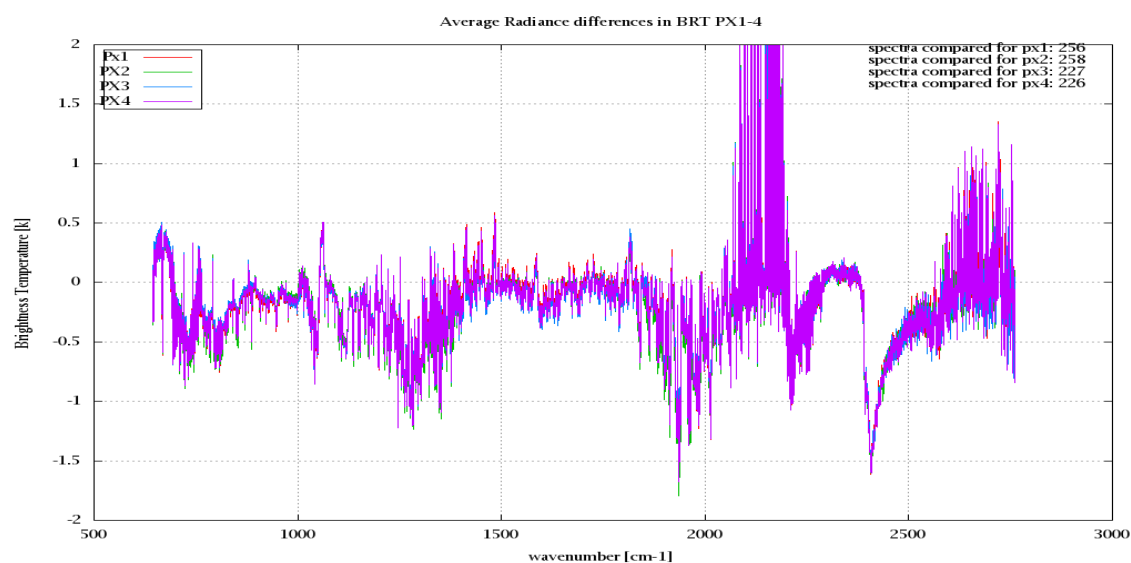


Figure 8: Average Radiance differences: OBS-CAL

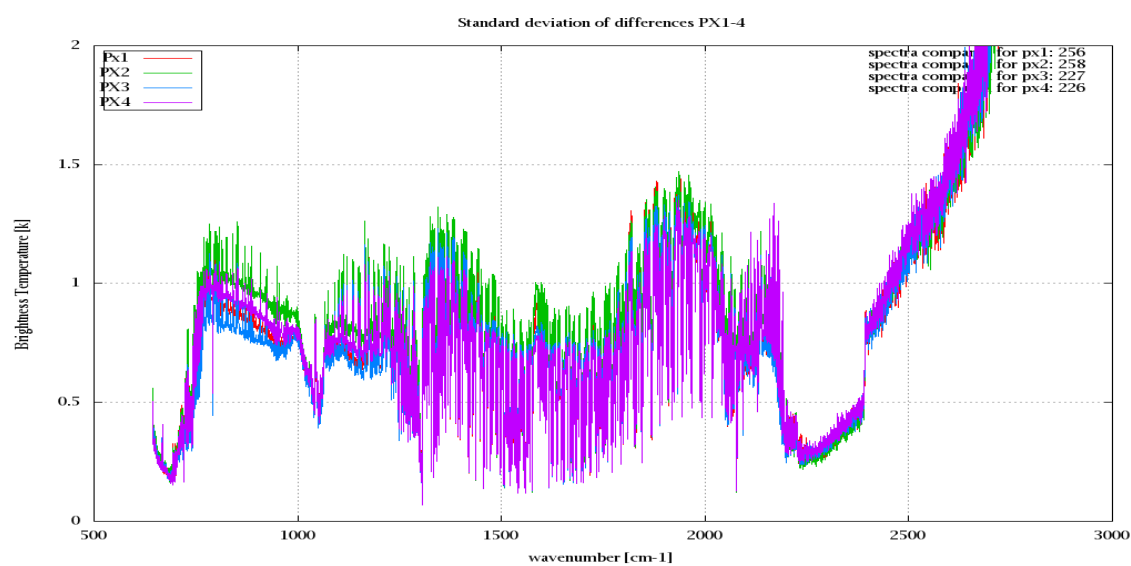


Figure 9: Standard Deviation of Radiance differences

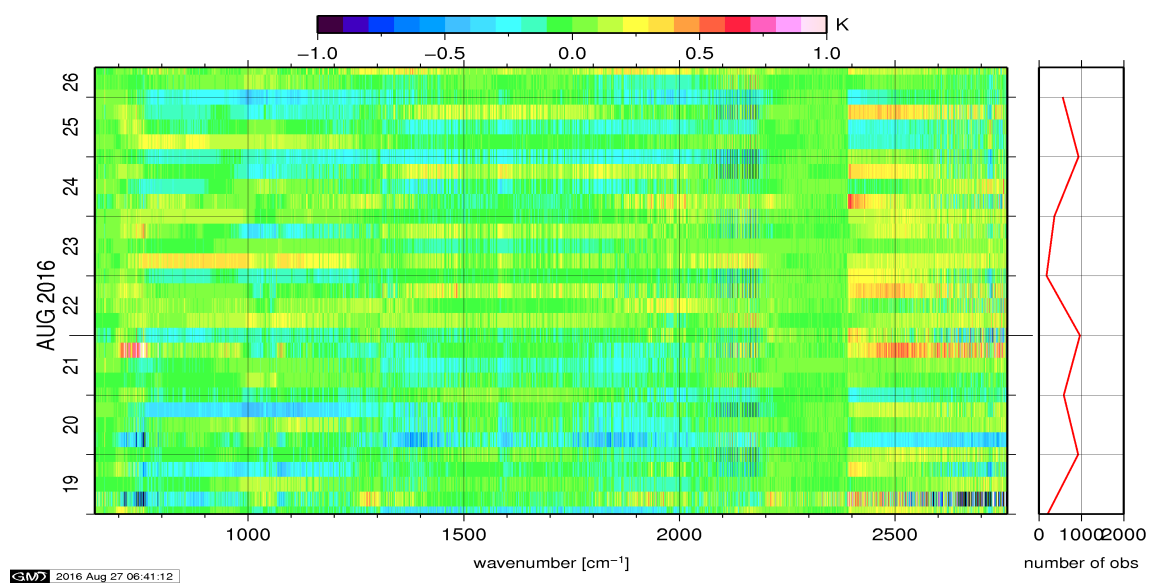


Figure 10: Radiance Anomaly in BRT: All Channels

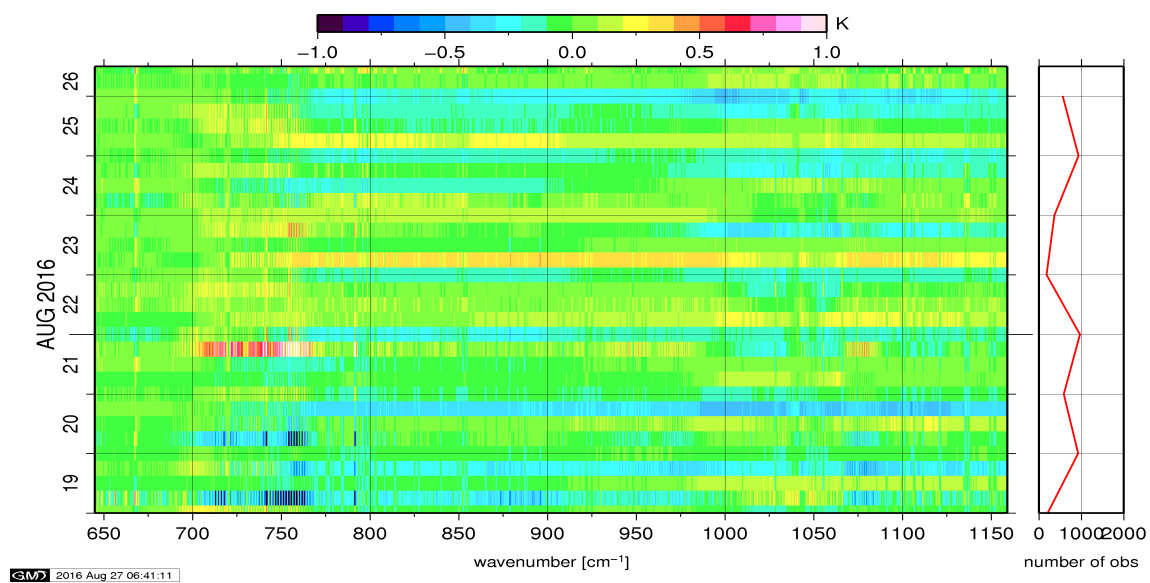


Figure 11: Radiance Anomaly in BRT: IASI Band 1

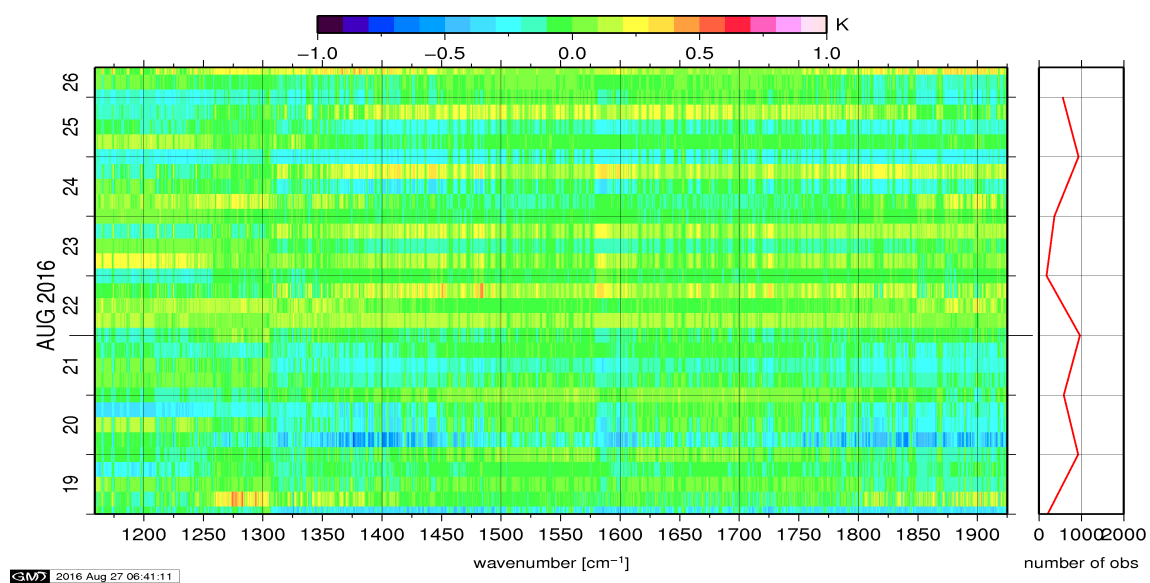


Figure 12: Radiance Anomaly in BRT: IASI Band 2

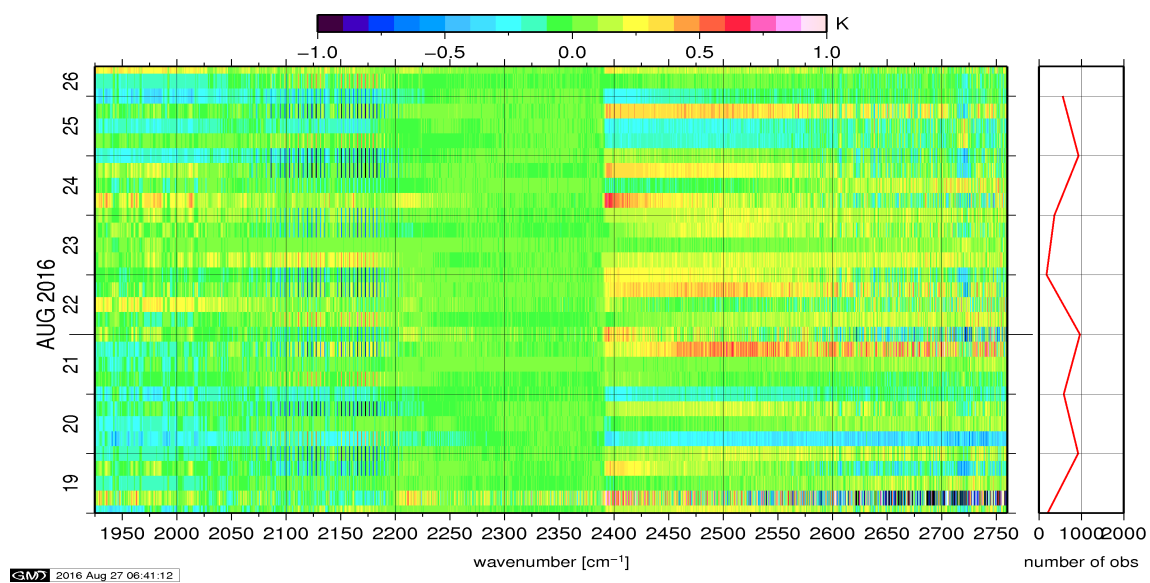


Figure 13: Radiance Anomaly in BRT: IASI Band 3

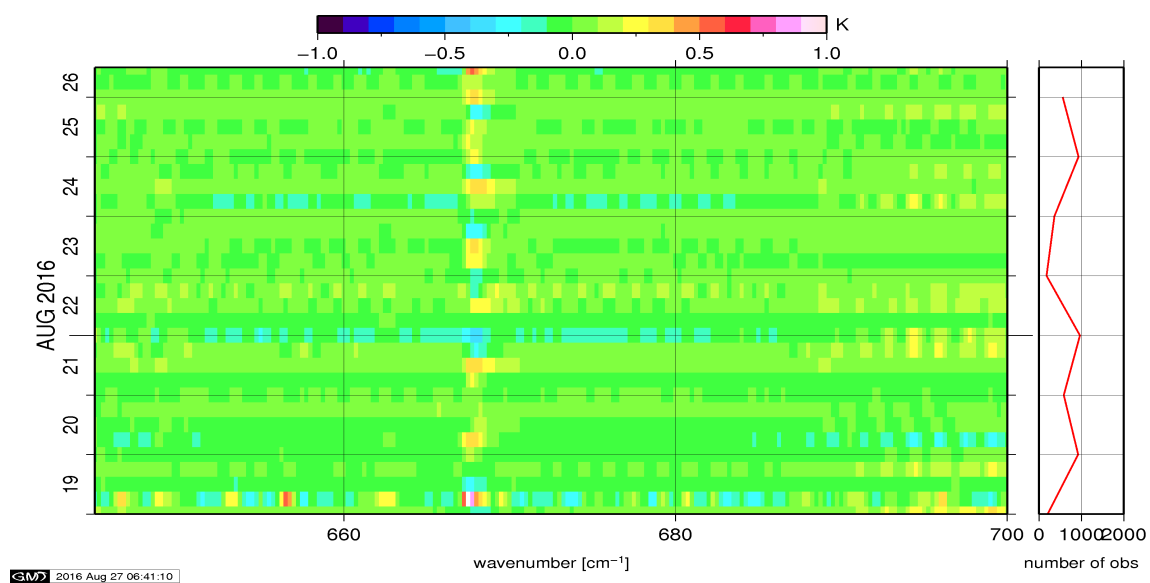


Figure 14: Radiance Anomaly in BRT: CO2 14

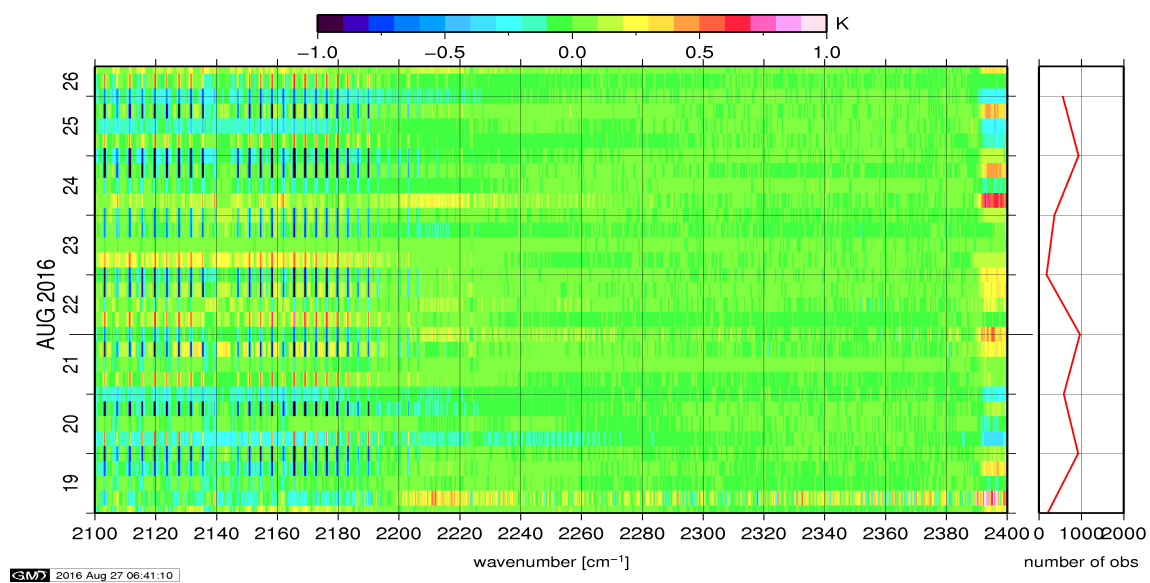


Figure 15: Radiance Anomaly in BRT: CO2 4.3

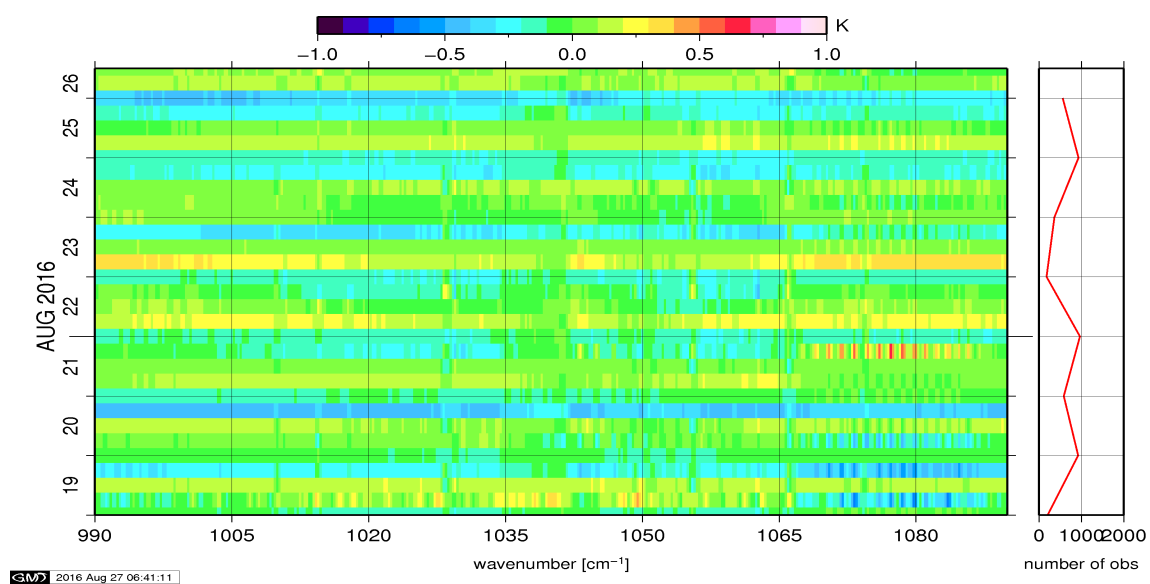


Figure 16: Radiance Anomaly in BRT: O3

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.

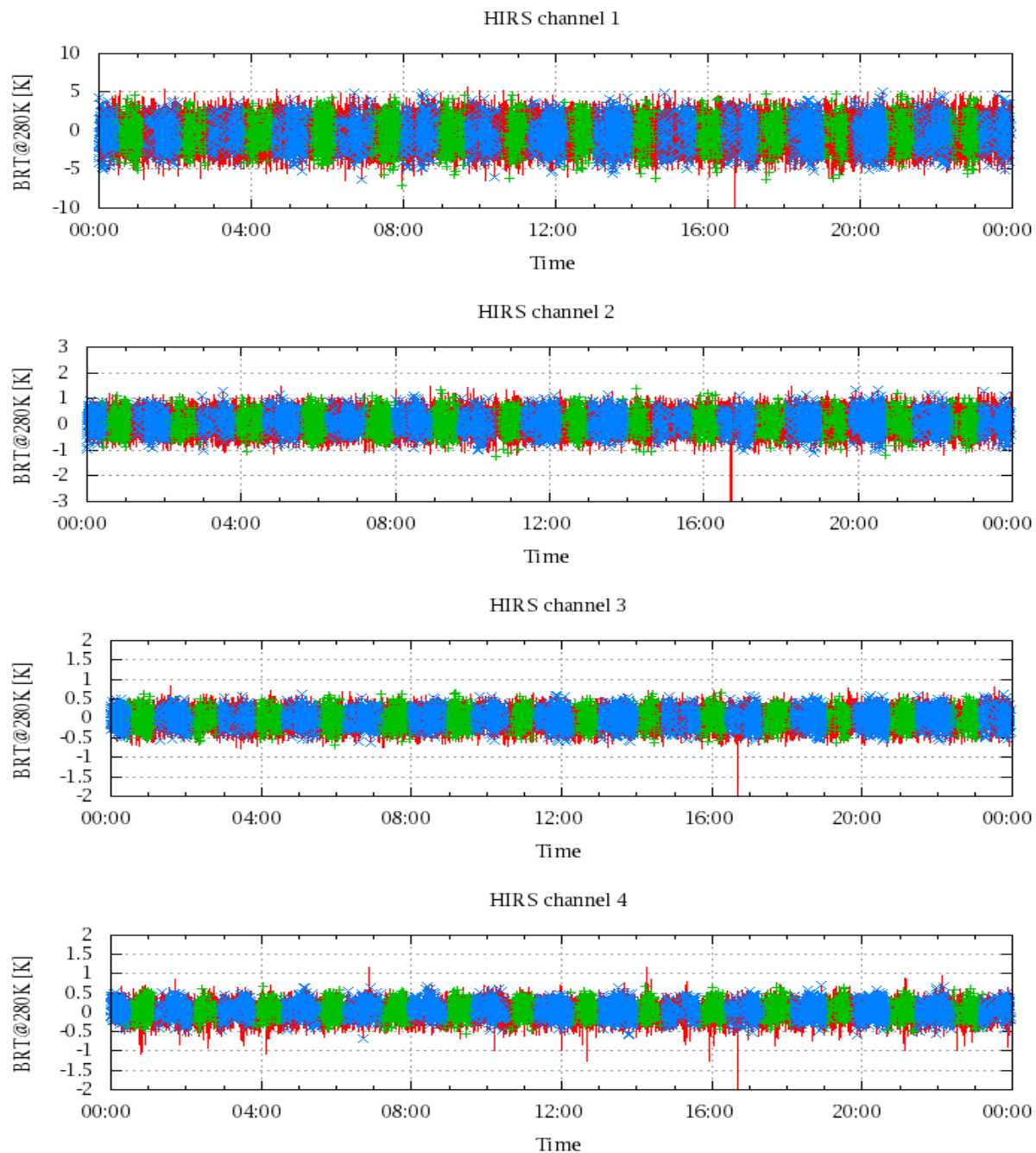


Figure 17: Radiance Differences in BRT

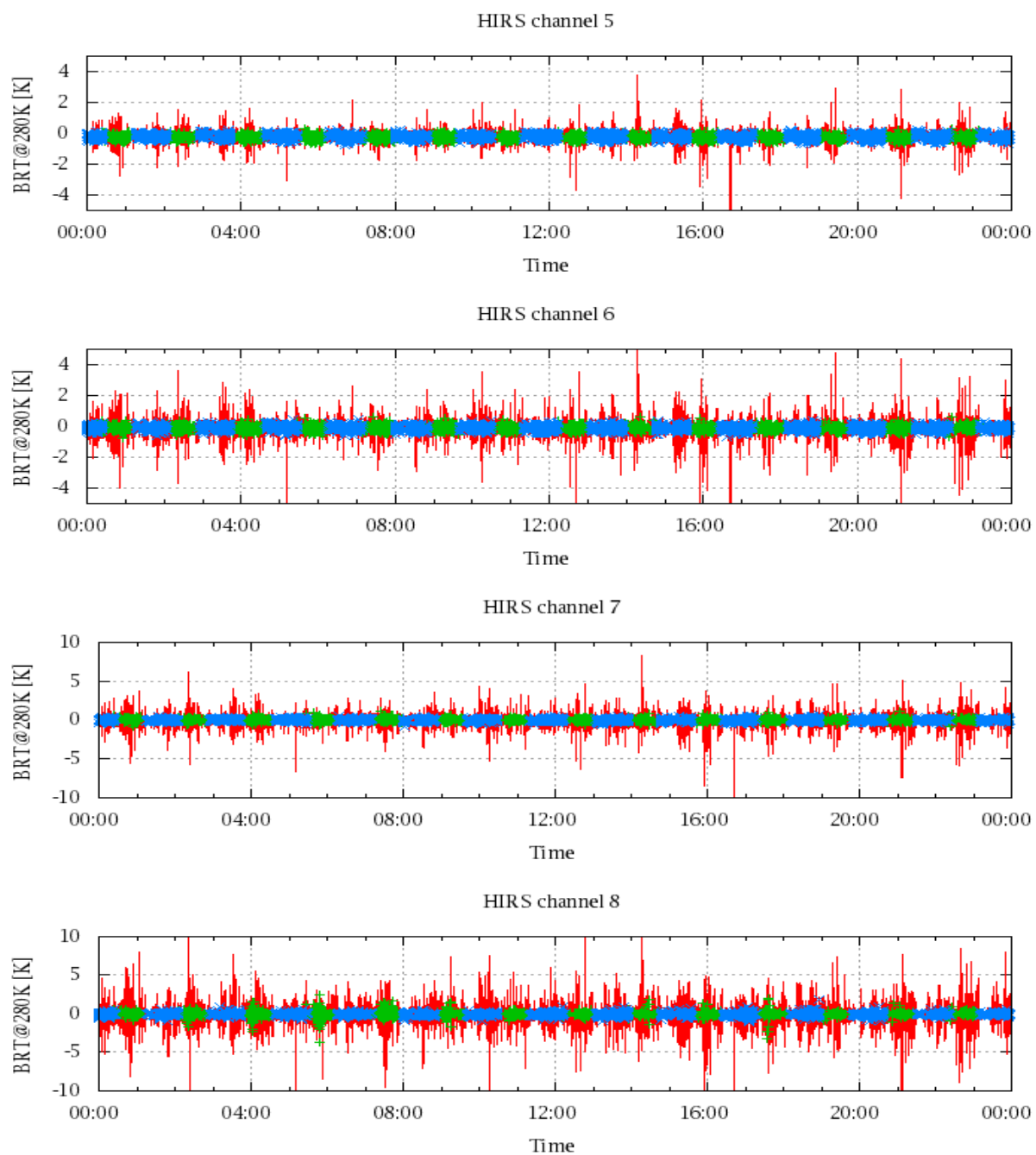


Figure 18: Radiance Differences in BRT

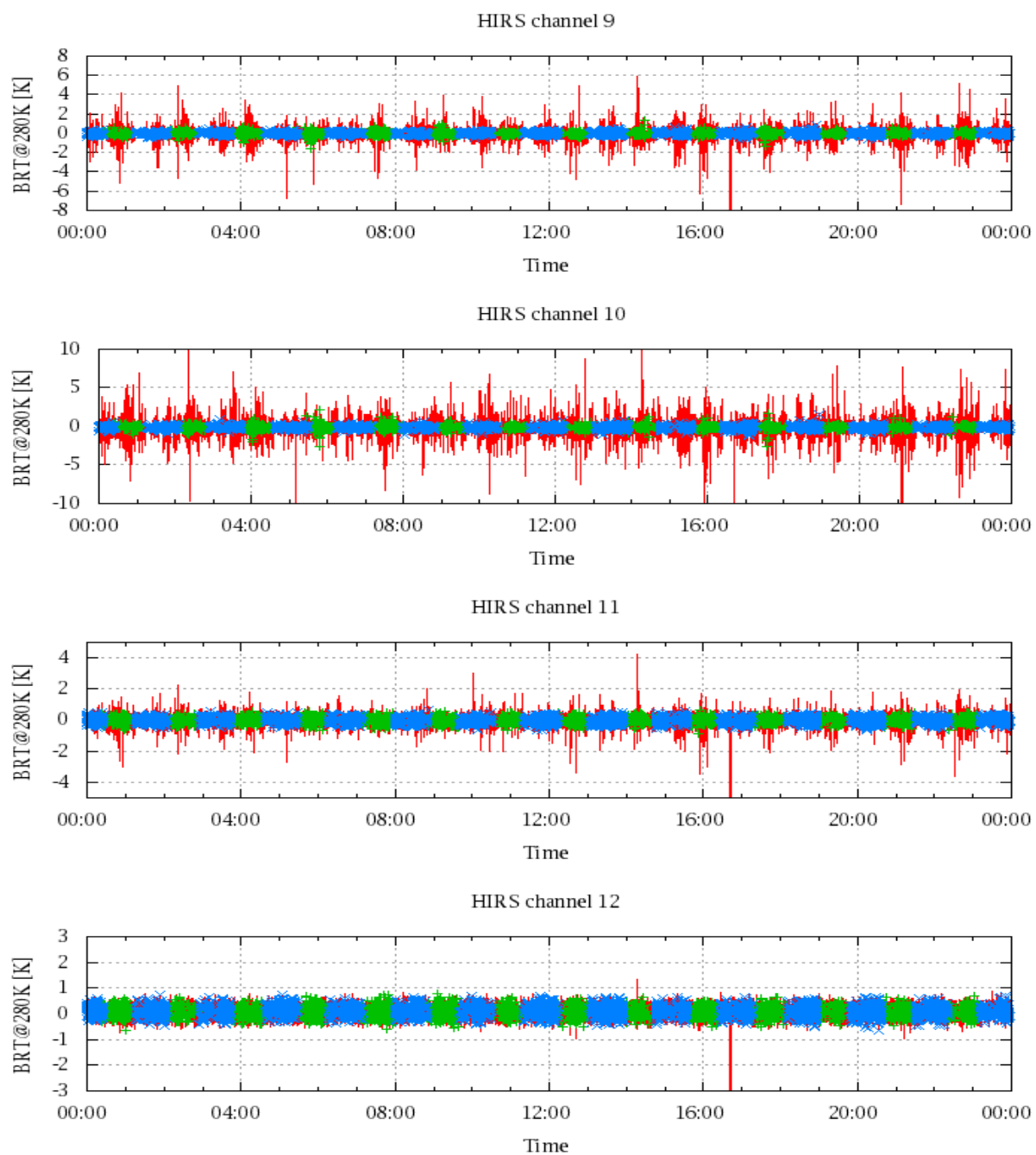


Figure 19: Radiance Differences in BRT

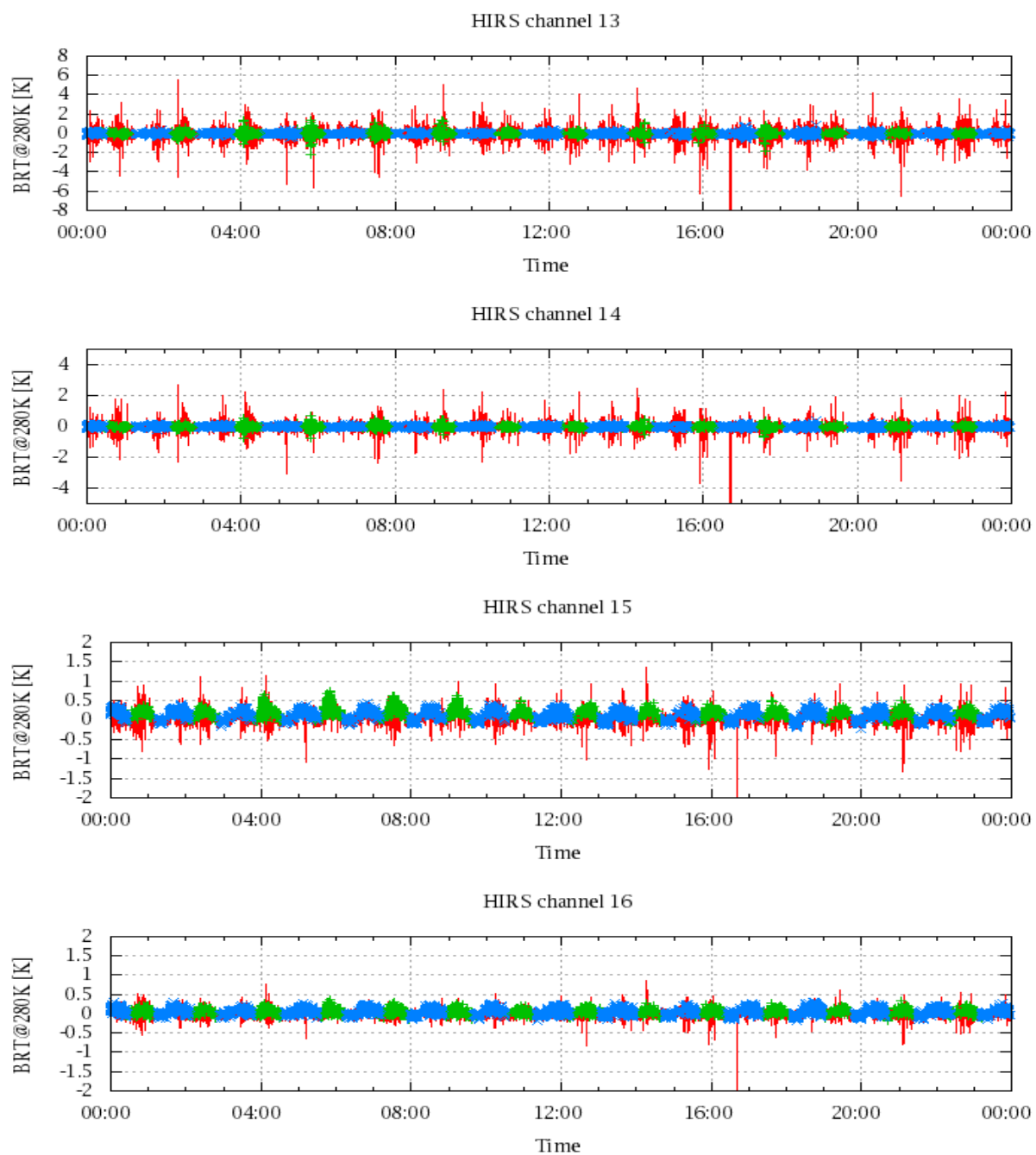


Figure 20: Radiance Differences in BRT

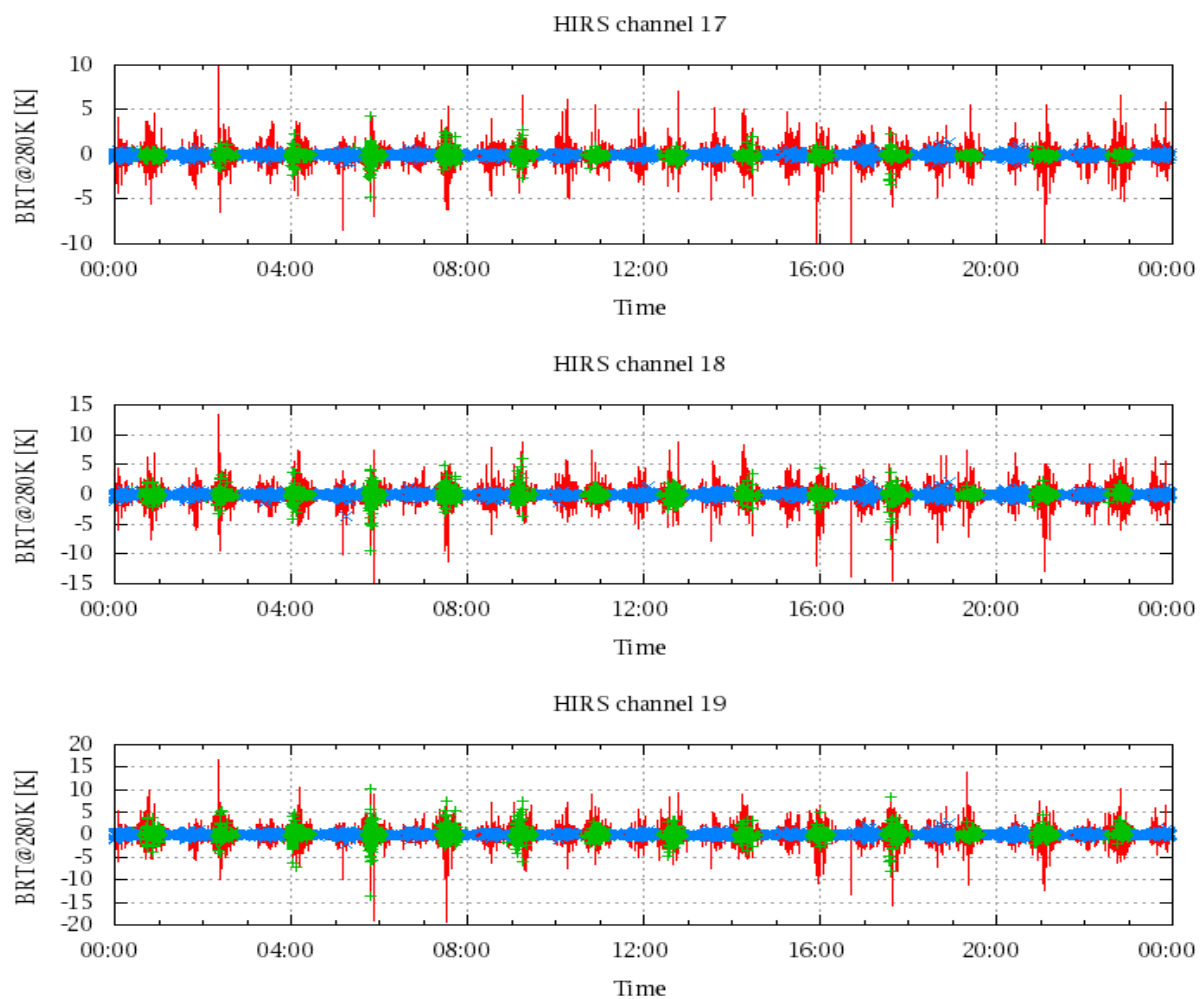


Figure 21: Radinace Differences in BRT