

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

24/09/2014 00:00:00 - 25/09/2014 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 24/09/2014 00:00:00 - 25/09/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 24/09/2014 00:00:00 - 25/09/2014 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)	402	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	3602	3604	20140924000945.274	20140924000945.704
PX1 (130)	3153	3155	20140924023323.202	20140924023323.635
PX1 (130)	9016	9018	20140924142227.318	20140924142227.751
PX2 (135)	11069	11071	20140924004256.644	20140924004257.078
PX3 (140)	3218	3220	20140924000802.575	20140924000803.005
PX3 (140)	1615	1617	20140924210627.886	20140924210628.320
PX4 (145)	2097	2099	20140924022841.913	20140924022842.347
IMG (150)	8848	8850	20140924021531.845	20140924021532.279
IMG (150)	12205	12207	20140924022841.913	20140924022842.347
IMG (150)	14862	14864	20140924023906.978	20140924023907.412
IMG (150)	1784	1786	20140924233746.817	20140924233747.246
VER (160)	6884	6886	20140924014436.940	20140924014436.940
VER (160)	7200	7202	20140924015300.927	20140924015300.927
VER (160)	7256	7258	20140924234940.741	20140924234940.741
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
24/09/2014 00:00:04	-	Normal operation
24/09/2014 05:12:52	Normal operation	Auxiliary ASE synchronised
24/09/2014 05:15:00	Auxiliary ASE synchronised	External calibration
24/09/2014 09:08:52	External calibration	Auxiliary ASE synchronised
24/09/2014 09:11:00	Auxiliary ASE synchronised	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)	99.44 %	-
GQisFlagQual set (PX2)	99.42 %	-
GQisFlagQual set (PX3)	99.45 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.44 %	-

Table 4: Quality flags

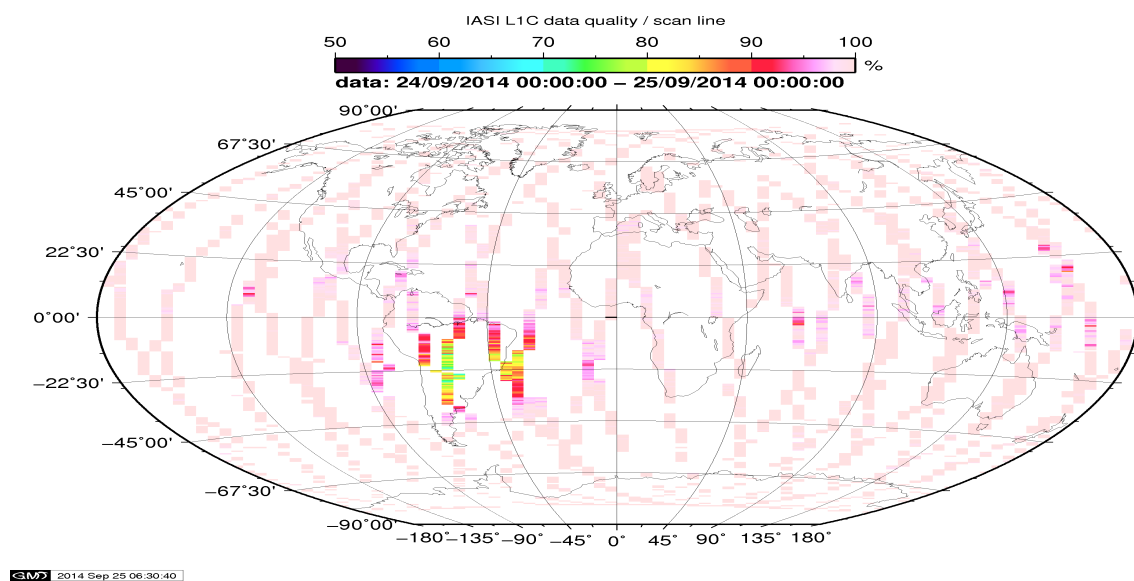


Figure 1: L1C data quality

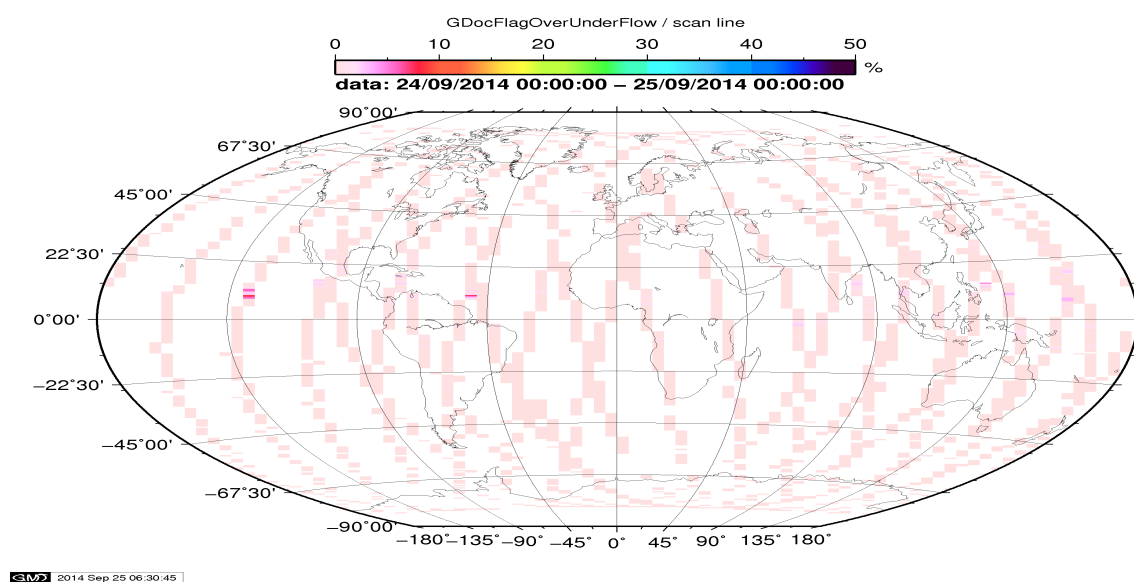


Figure 2: Flag of Over and Under Flows

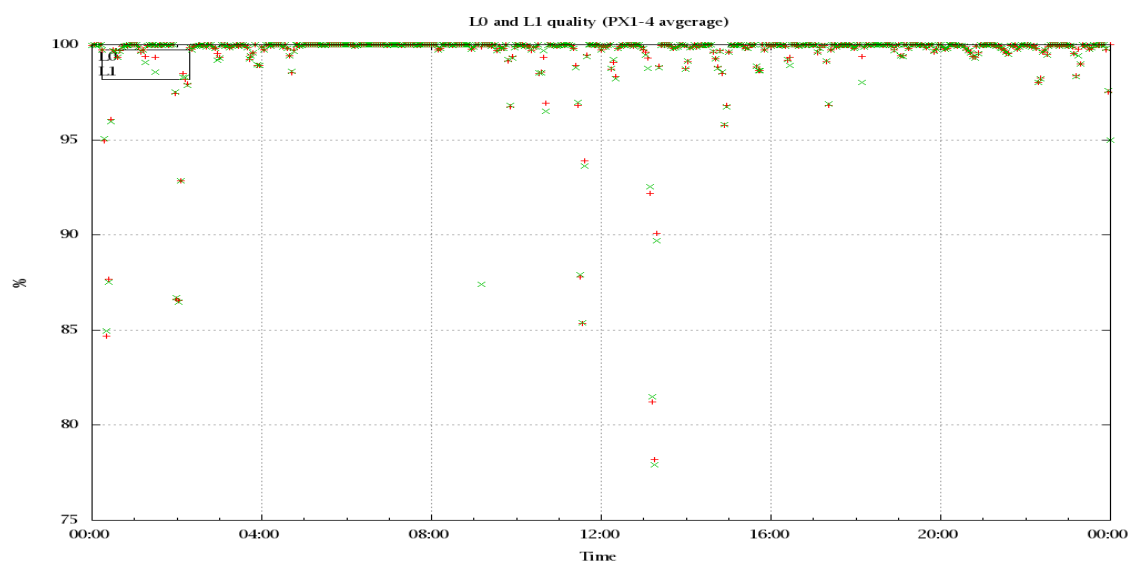


Figure 3: Level 0 and 1C overall quality

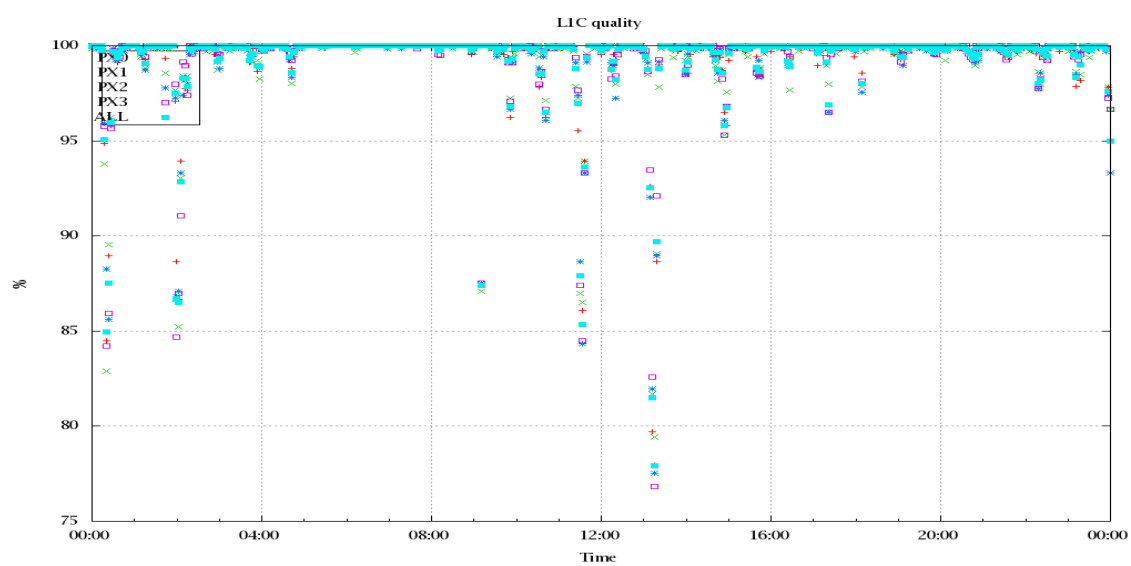


Figure 4: Level 1C quality

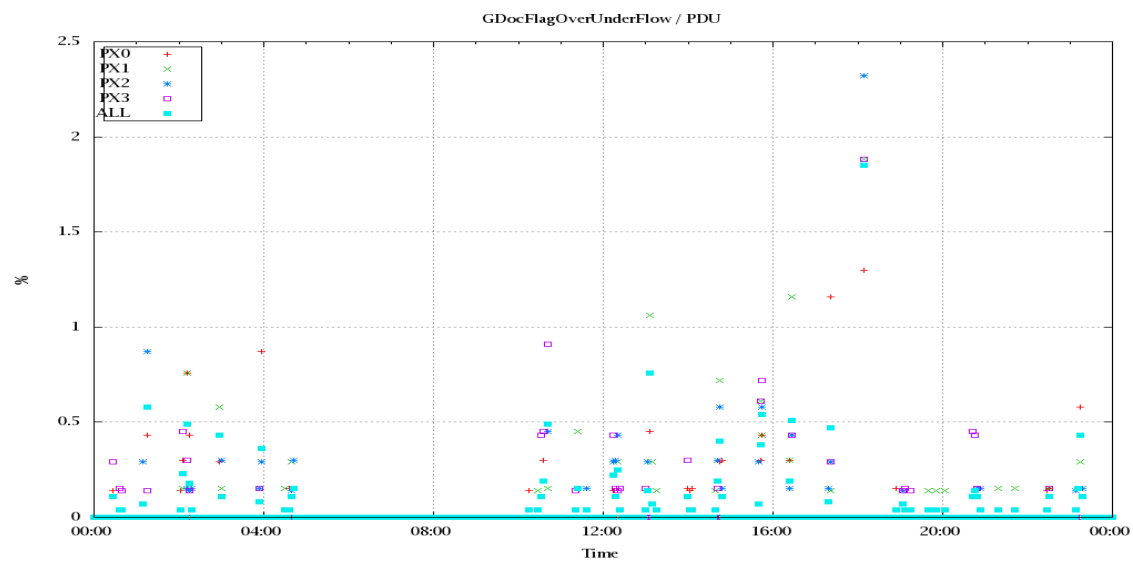


Figure 5: OverUnderFlowFlag timeseries

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.

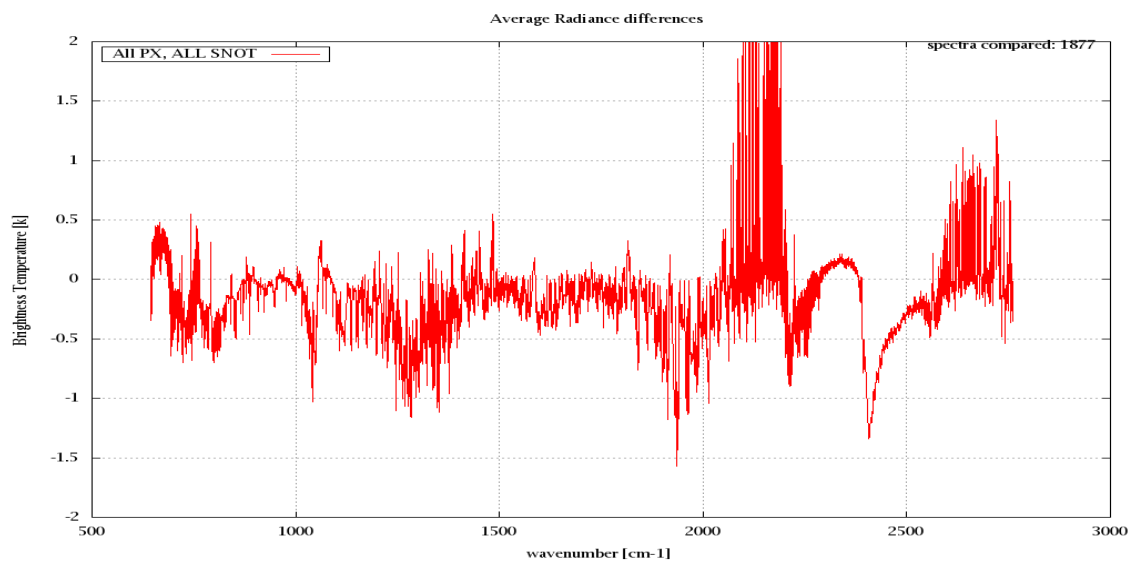


Figure 6: Average Radiance differences: OBS-CAL

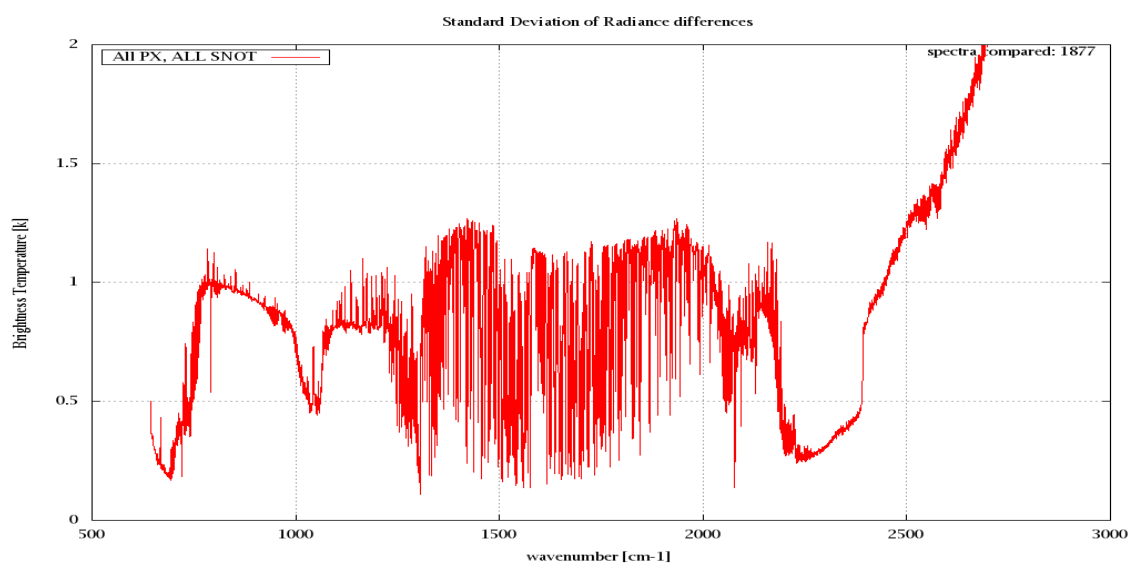


Figure 7: Standard Deviation of Radiance differences

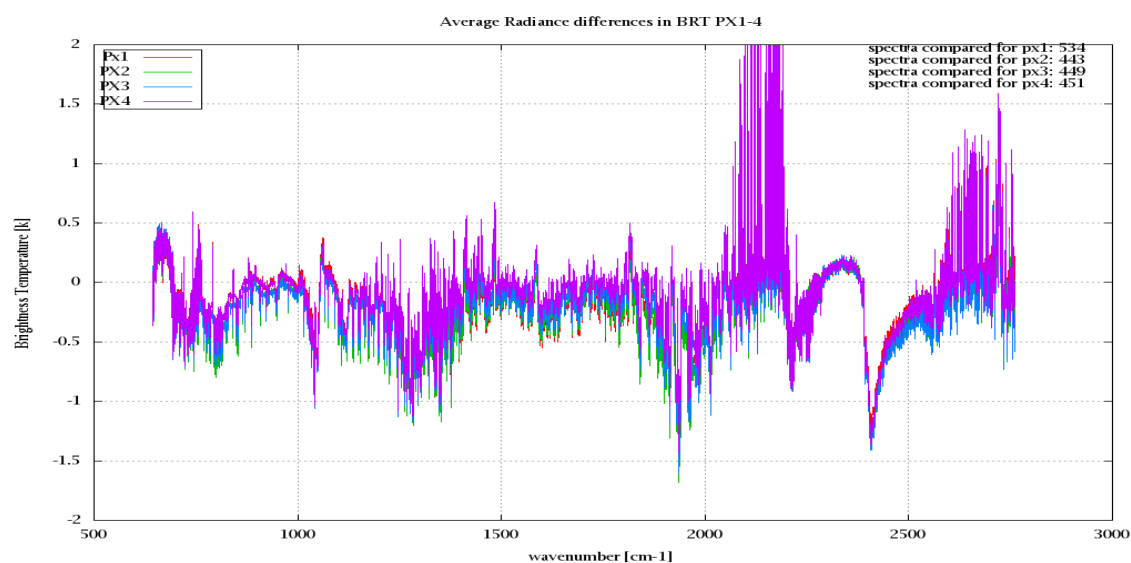


Figure 8: Average Radiance differences: OBS-CAL

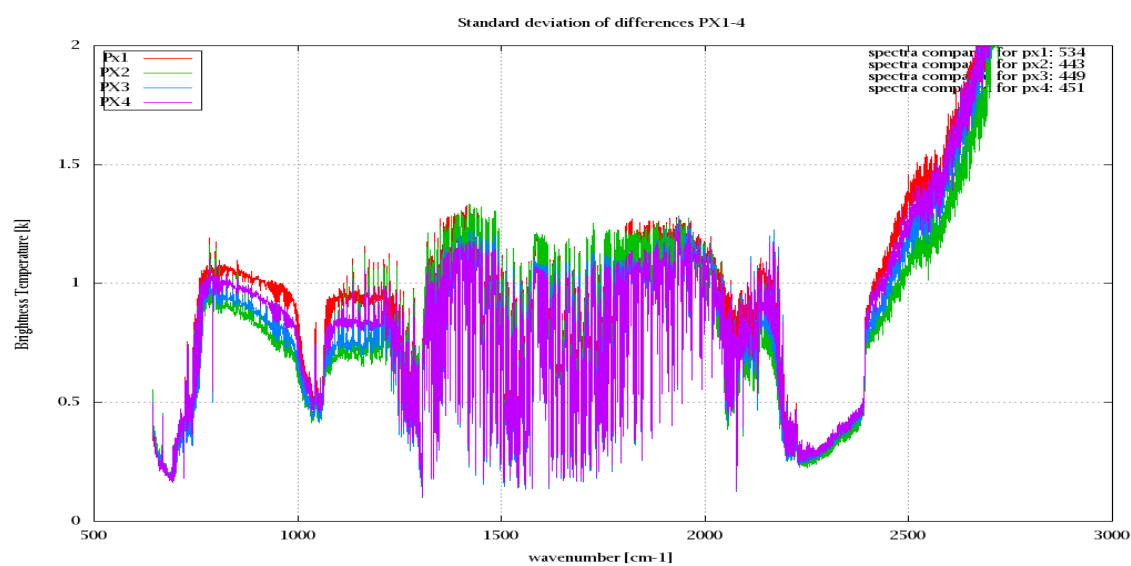


Figure 9: Standard Deviation of Radiance differences

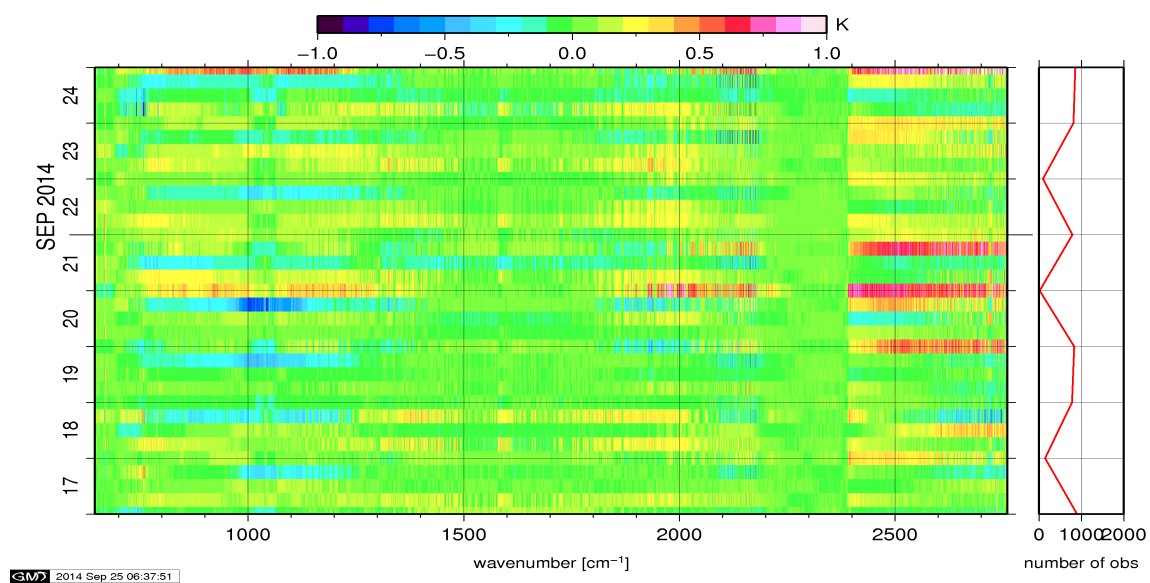


Figure 10: Radiance Anomaly in BRT: All Channels

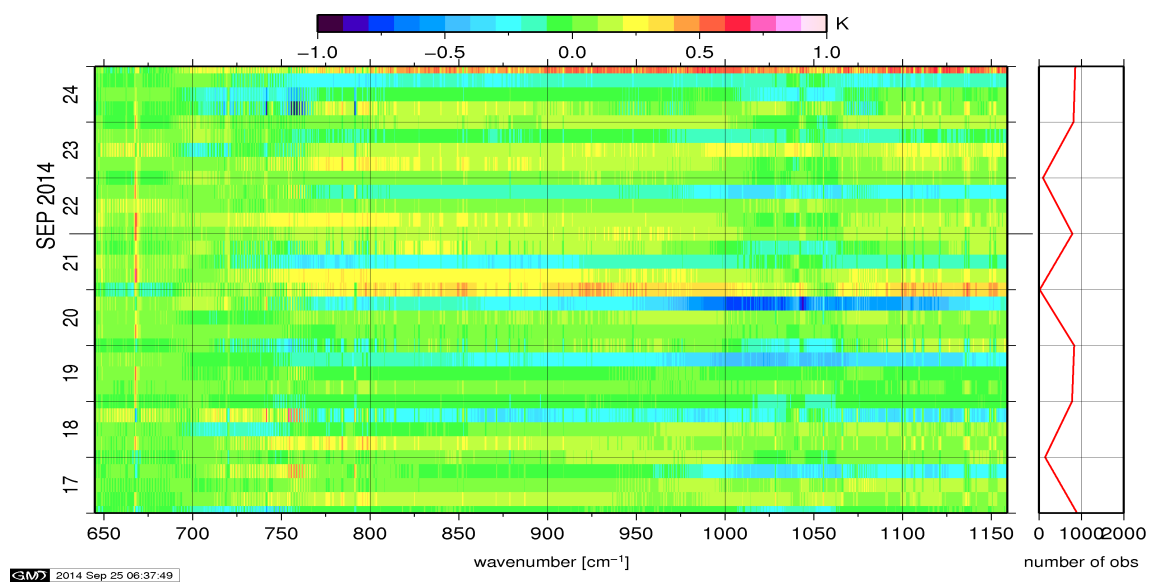


Figure 11: Radiance Anomaly in BRT: IASI Band 1

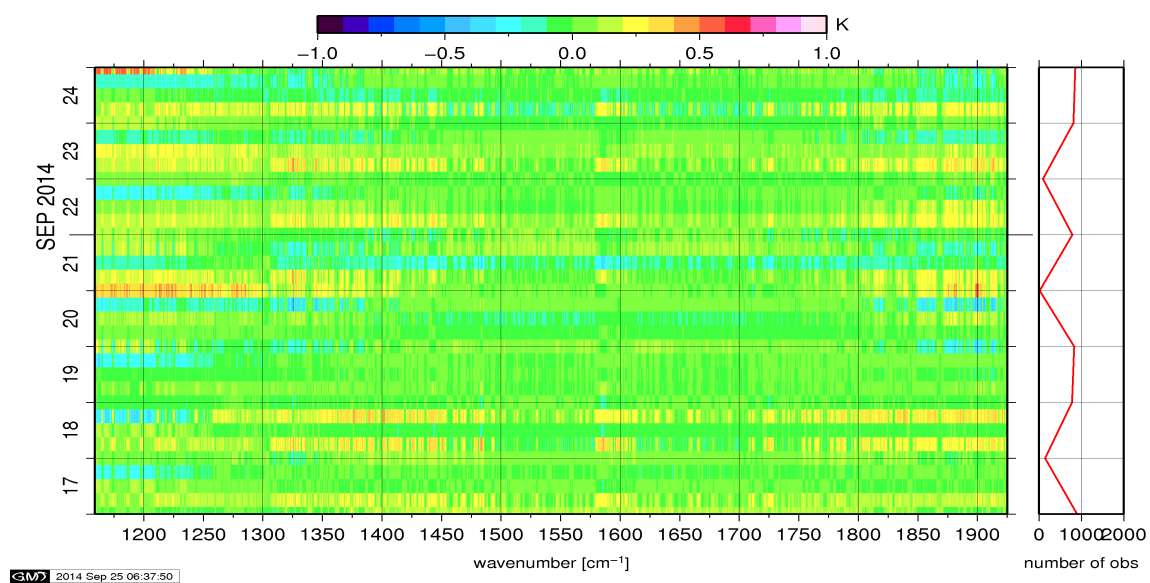


Figure 12: Radiance Anomaly in BRT: IASI Band 2

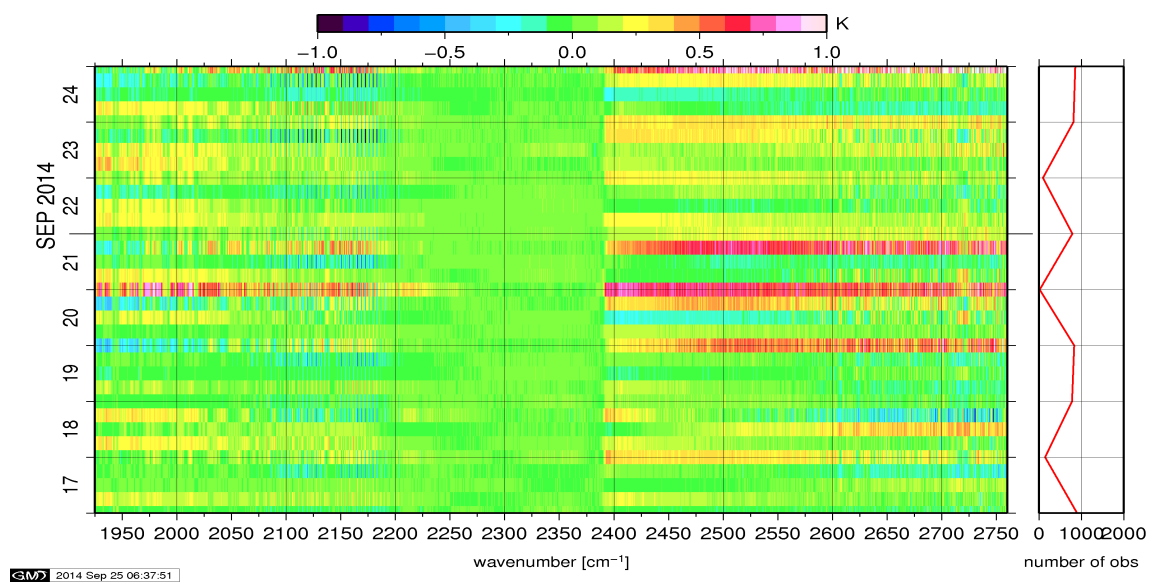


Figure 13: Radiance Anomaly in BRT: IASI Band 3

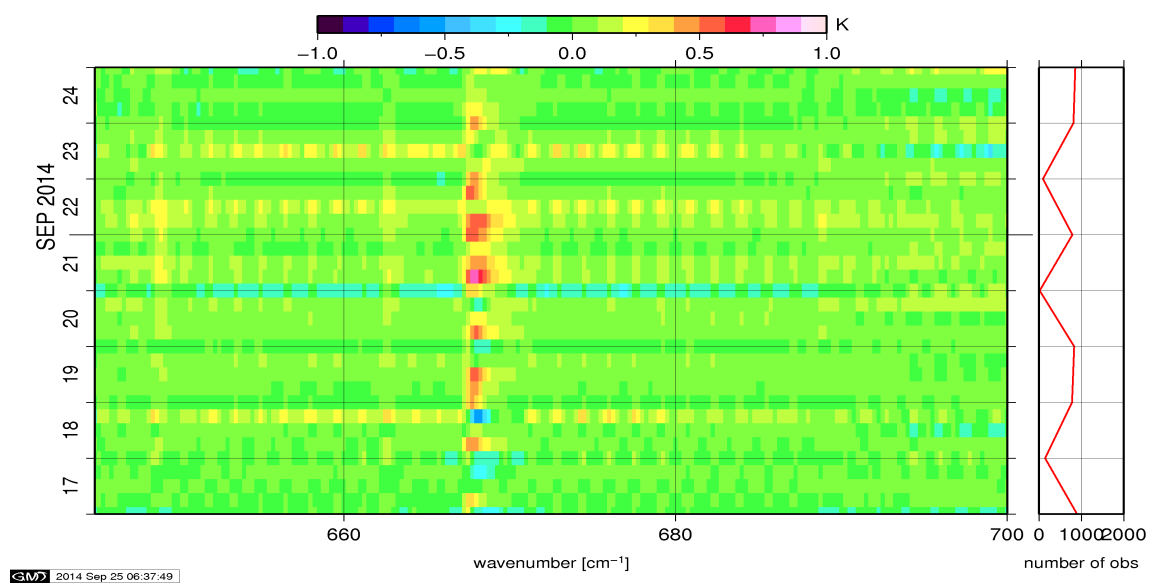


Figure 14: Radiance Anomaly in BRT: CO2 14

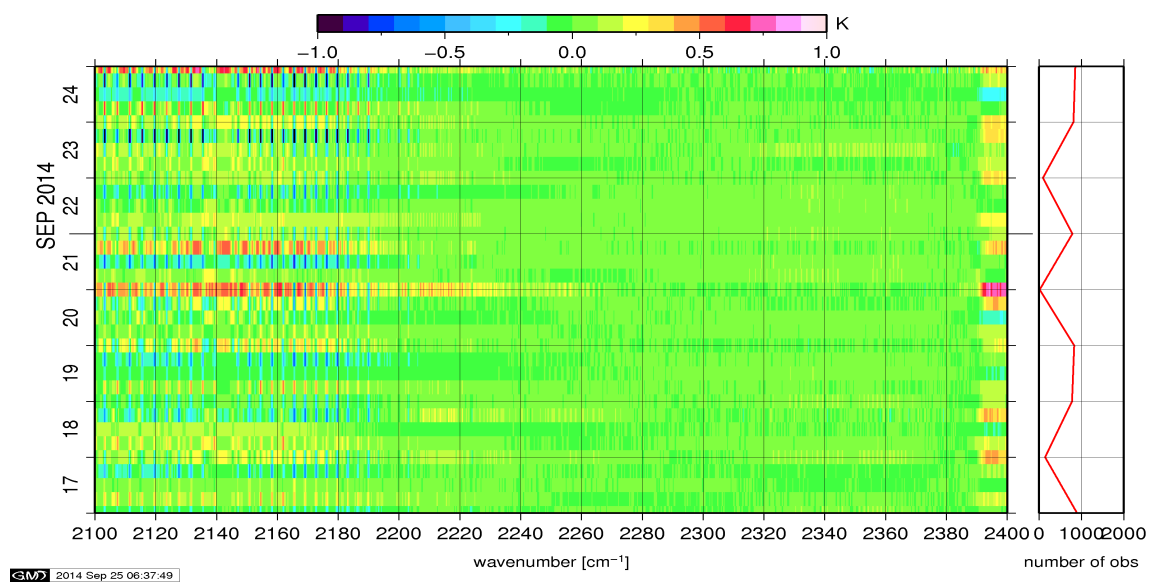


Figure 15: Radiance Anomaly in BRT: CO2 4.3

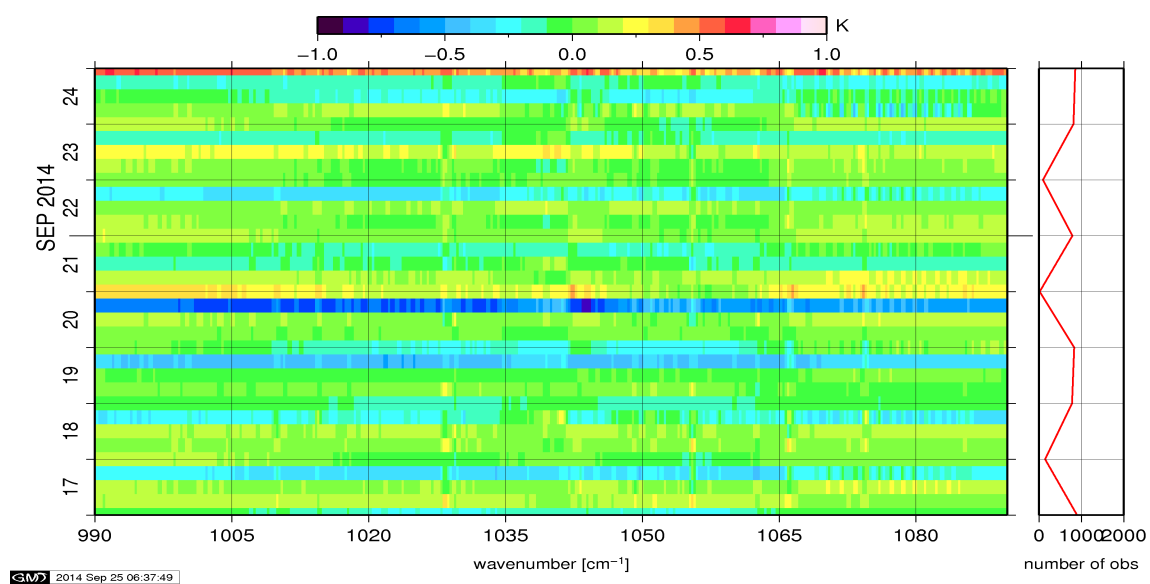


Figure 16: Radiance Anomaly in BRT: O3

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.

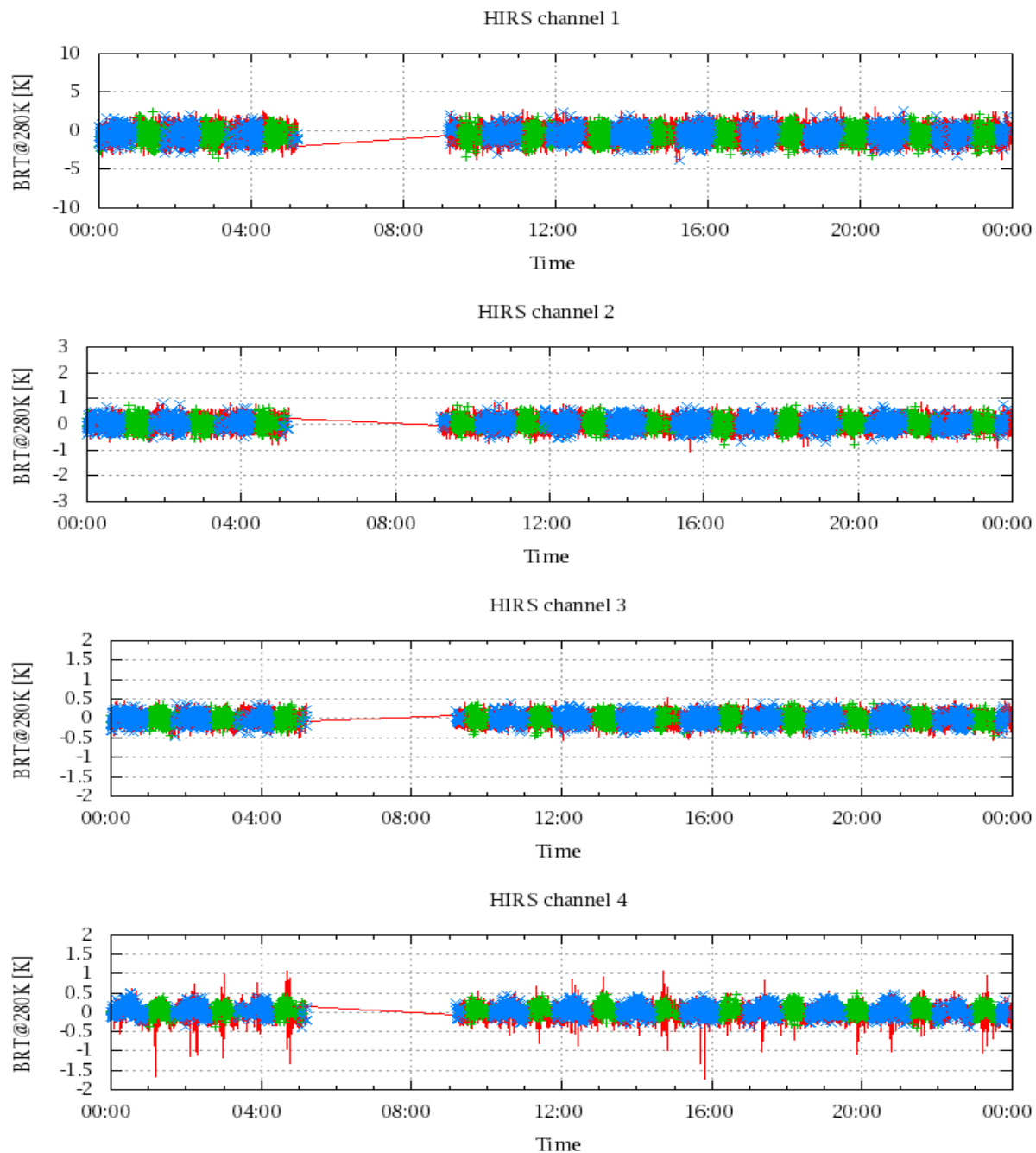


Figure 17: Radiance Differences in BRT

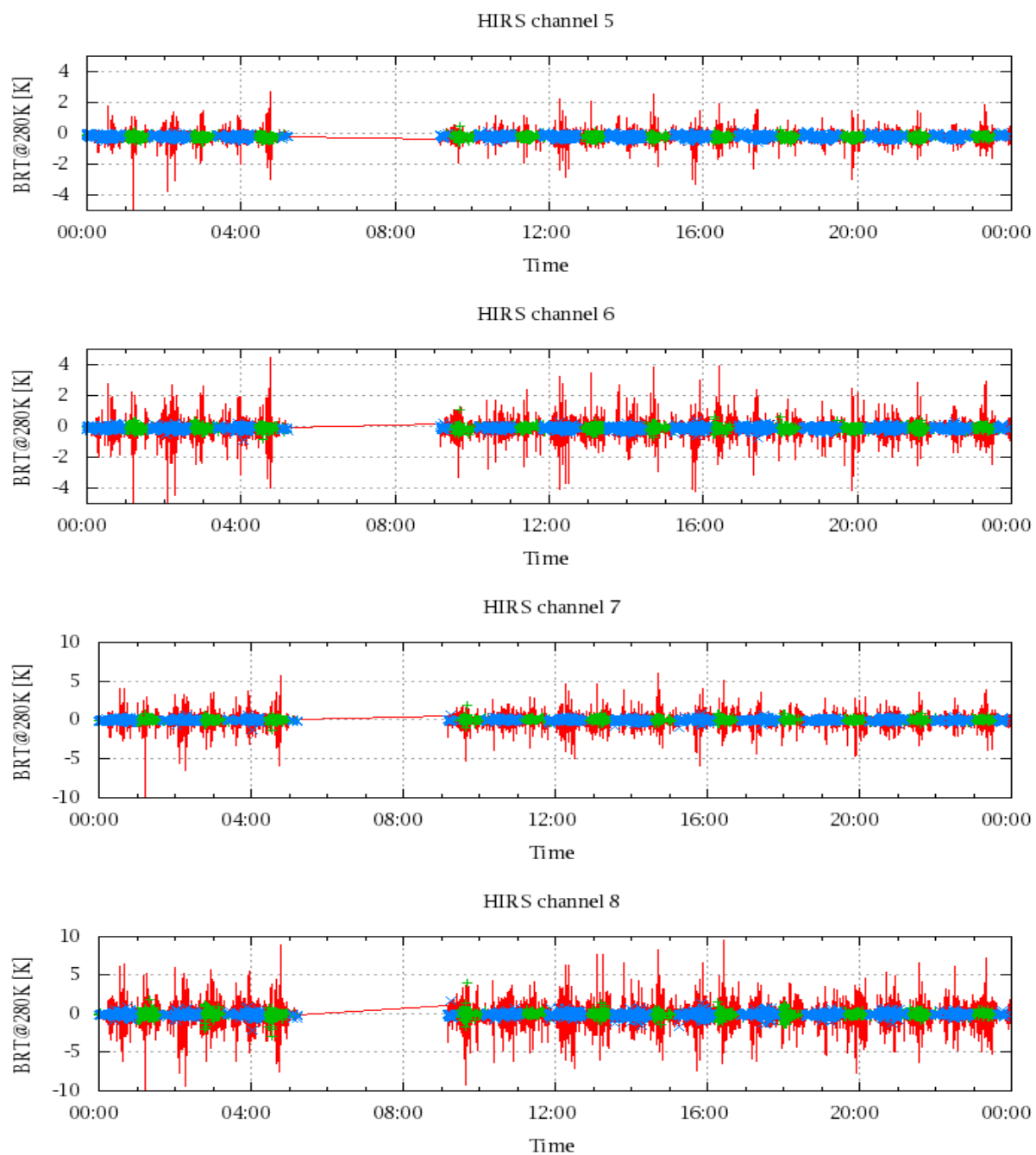


Figure 18: Radiance Differences in BRT

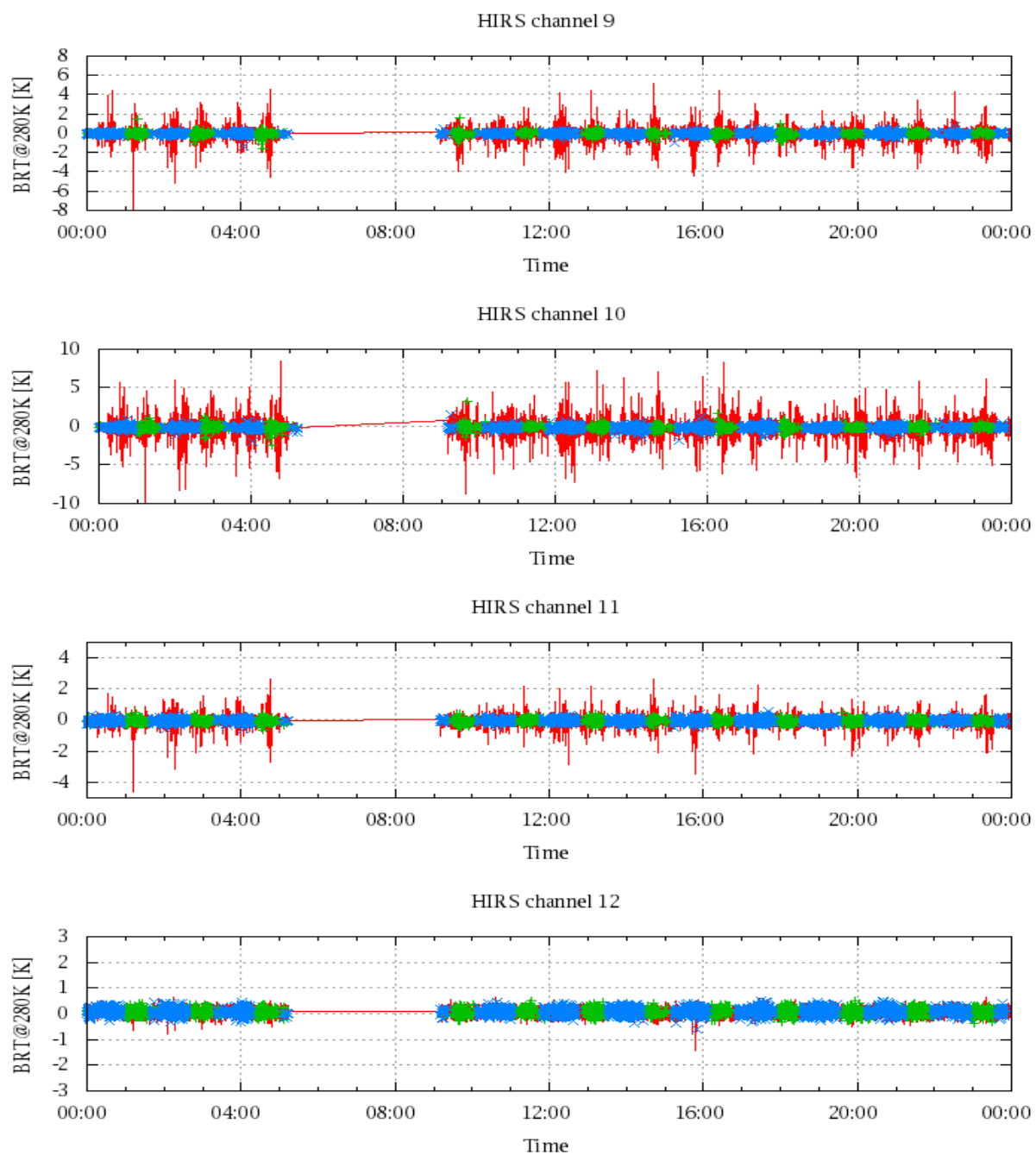


Figure 19: Radiance Differences in BRT

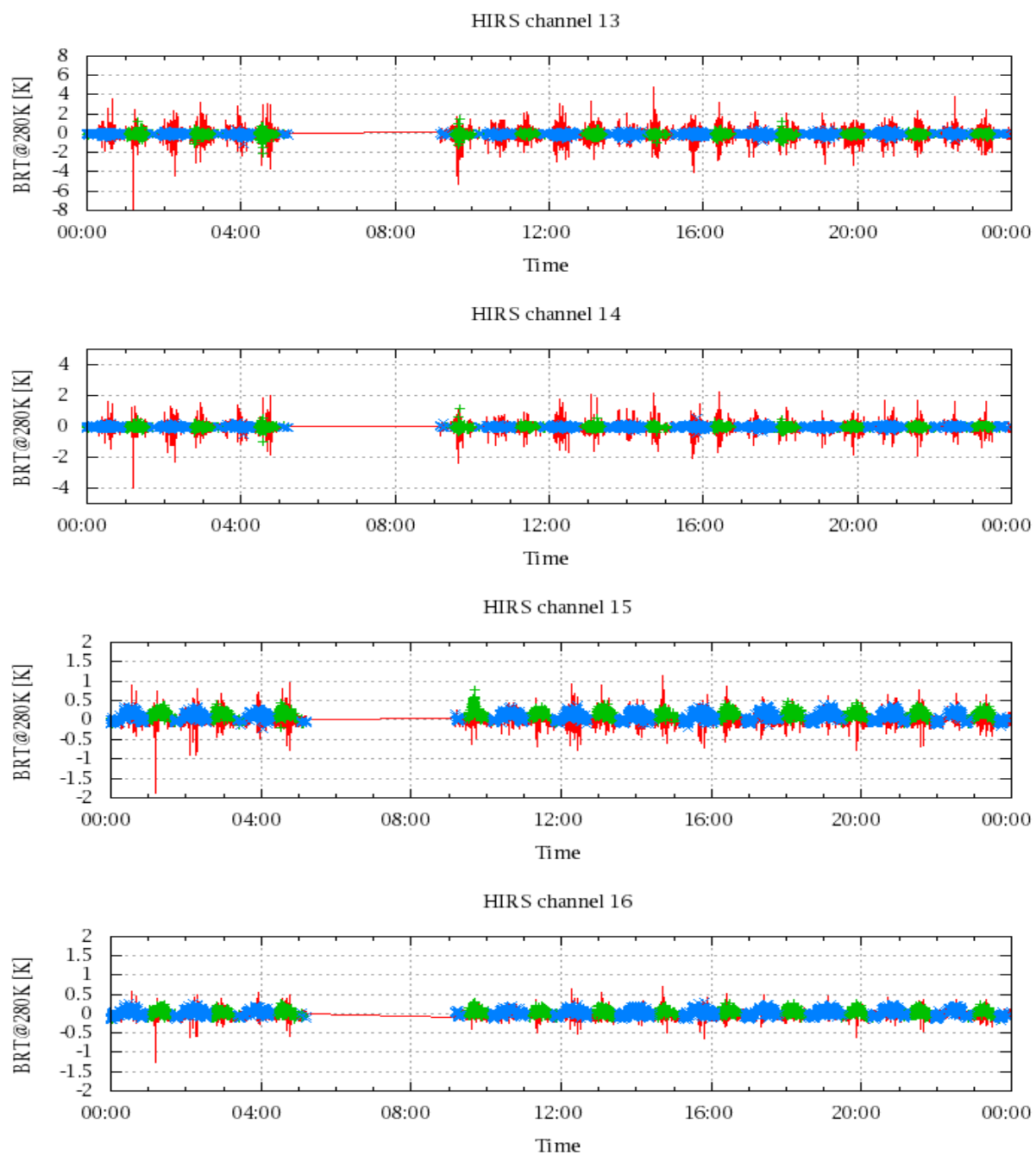


Figure 20: Radiance Differences in BRT

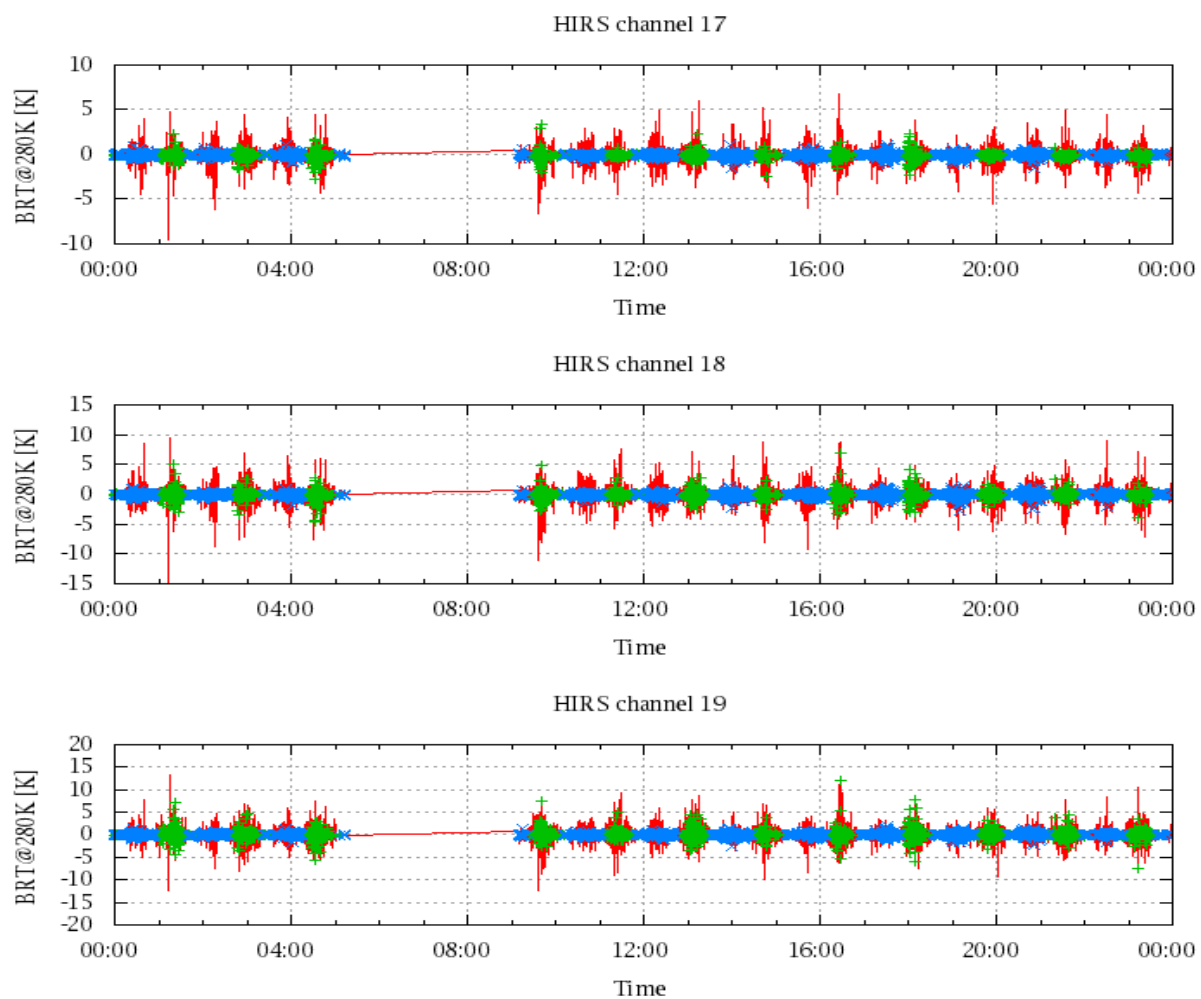


Figure 21: Radinace Differences in BRT