

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

28/10/2014 00:00:00 - 29/10/2014 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 28/10/2014 00:00:00 - 29/10/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 28/10/2014 00:00:00 - 29/10/2014 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)	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)	5746	5755	20141028033052.512	20141028033054.457
PX1 (130)	5756	5766	20141028033054.676	20141028033056.836
PX1 (130)	5774	5780	20141028033100.078	20141028033101.379
PX1 (130)	5788	5800	20141028033103.106	20141028033107.215
PX1 (130)	5803	5806	20141028033107.864	20141028033108.512
PX1 (130)	5818	5827	20141028033111.106	20141028033113.055
PX1 (130)	10119	10121	20141028171117.946	20141028171118.380
PX2 (135)	5746	5755	20141028033052.512	20141028033054.457
PX2 (135)	5756	5766	20141028033054.676	20141028033056.836
PX2 (135)	5774	5780	20141028033100.078	20141028033101.379
PX2 (135)	5788	5800	20141028033103.106	20141028033107.215
PX2 (135)	5802	5805	20141028033107.649	20141028033108.297
PX2 (135)	5818	5827	20141028033111.106	20141028033113.055
PX2 (135)	10119	10121	20141028171117.946	20141028171118.380
PX3 (140)	5746	5755	20141028033052.512	20141028033054.457
PX3 (140)	5756	5765	20141028033054.676	20141028033056.621
PX3 (140)	5774	5780	20141028033100.078	20141028033101.379
PX3 (140)	5788	5800	20141028033103.106	20141028033107.215

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	5802	5805	20141028033107.649	20141028033108.297
PX3 (140)	5818	5827	20141028033111.106	20141028033113.055
PX3 (140)	10119	10121	20141028171117.946	20141028171118.380
PX4 (145)	5745	5755	20141028033052.297	20141028033054.457
PX4 (145)	5756	5765	20141028033054.676	20141028033056.621
PX4 (145)	5774	5780	20141028033100.078	20141028033101.379
PX4 (145)	5788	5800	20141028033103.106	20141028033107.215
PX4 (145)	5802	5805	20141028033107.649	20141028033108.297
PX4 (145)	5818	5827	20141028033111.106	20141028033113.055
IMG (150)	1041	1050	20141028033052.297	20141028033054.243
IMG (150)	1051	1061	20141028033054.457	20141028033056.621
IMG (150)	1074	1080	20141028033100.078	20141028033101.379
IMG (150)	1087	1090	20141028033102.891	20141028033103.539
IMG (150)	1090	1100	20141028033103.539	20141028033105.918
IMG (150)	1106	1109	20141028033107.649	20141028033108.297
IMG (150)	1121	1130	20141028033110.891	20141028033112.836
IMG (150)	13642	13644	20141028171117.727	20141028171118.161
VER (160)	14608	14610	20141028033057.485	20141028033103.539
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
28/10/2014 00:00:15	-	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)	99.56 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

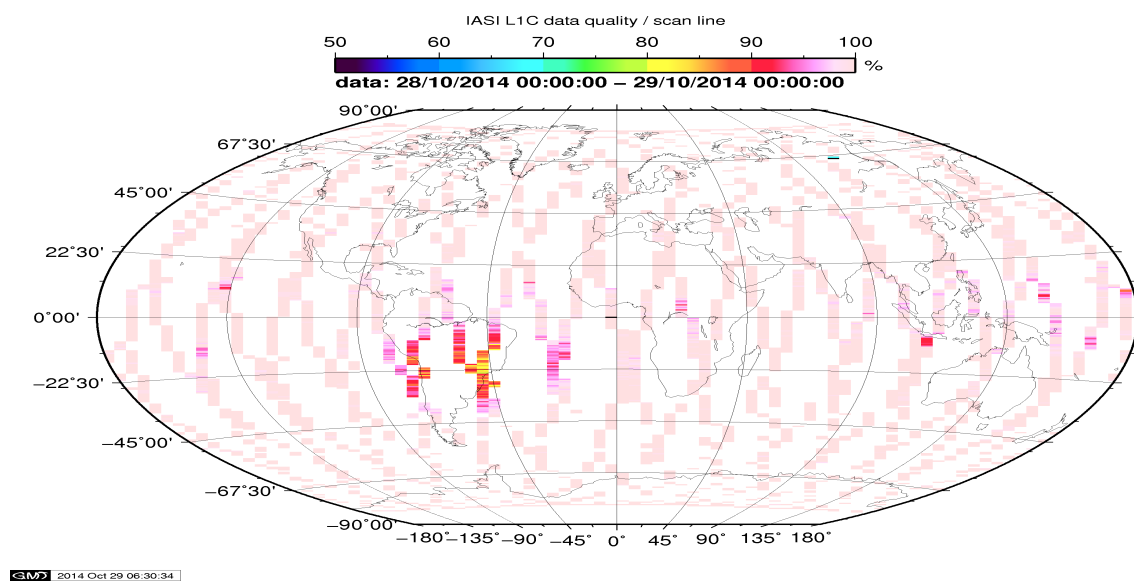


Figure 1: L1C data quality

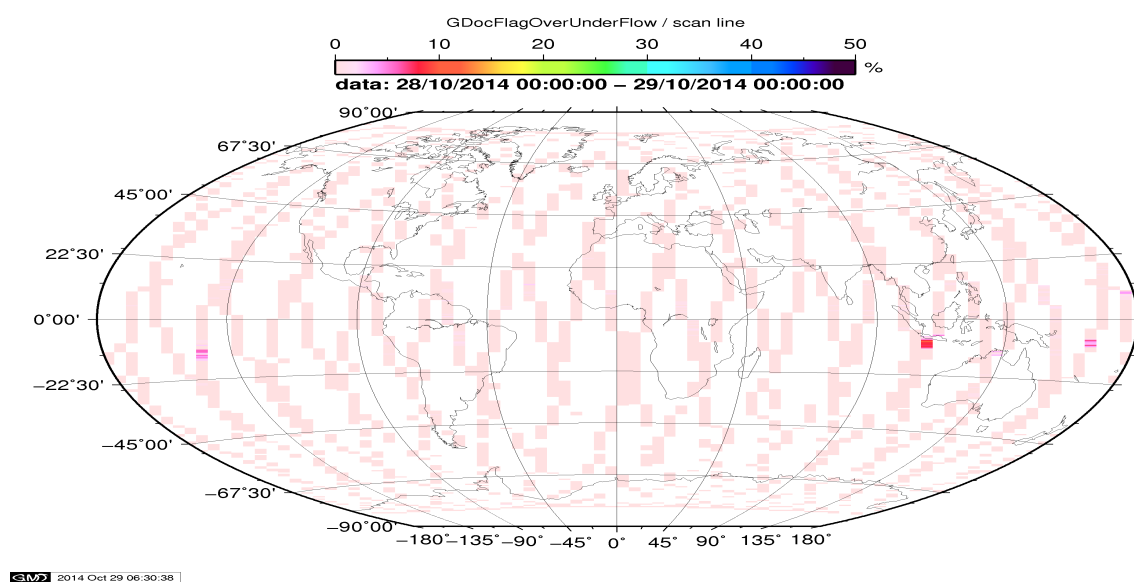


Figure 2: Flag of Over and Under Flows

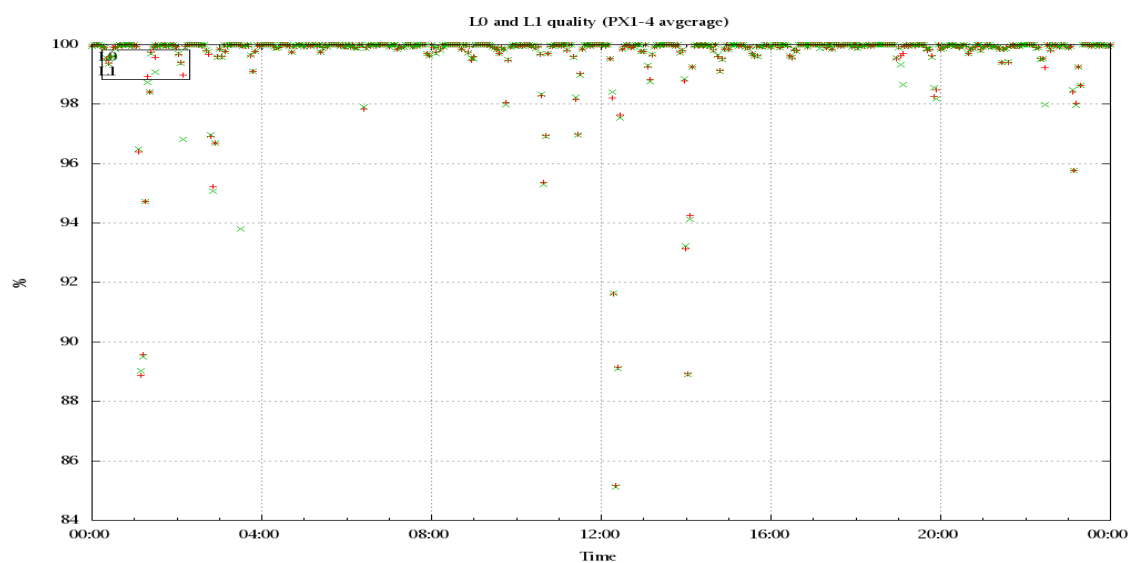


Figure 3: Level 0 and 1C overall quality

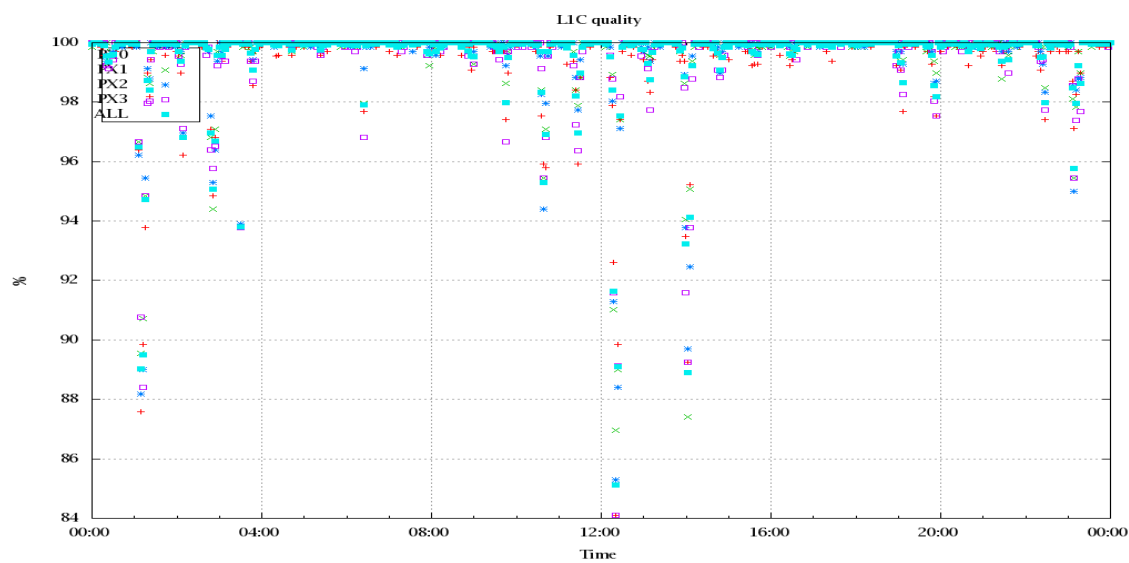


Figure 4: Level 1C quality

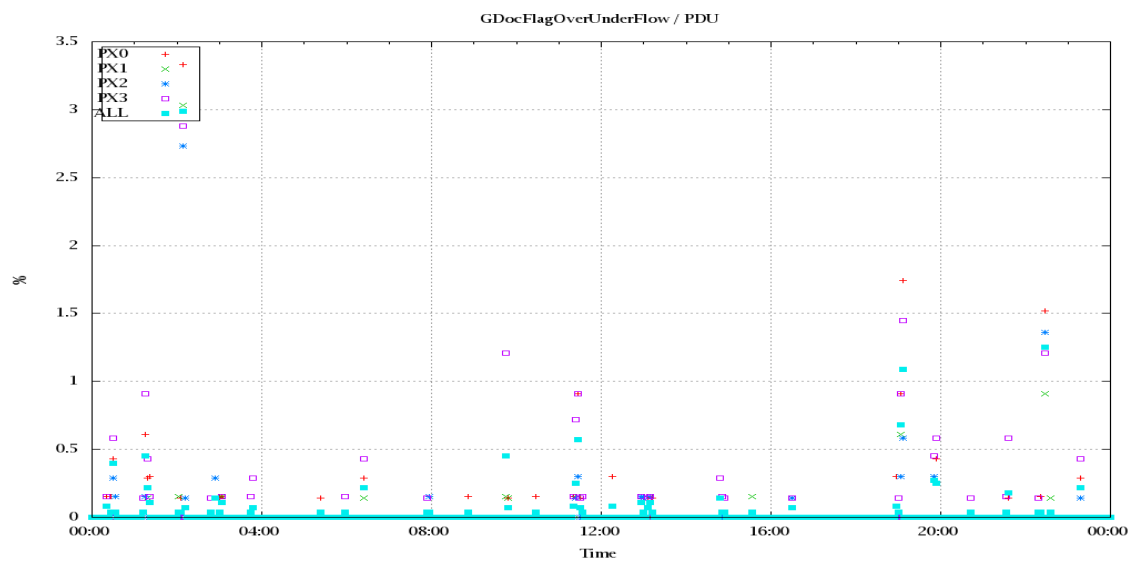


Figure 5: OverUnderFlowFlag timeseries

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.

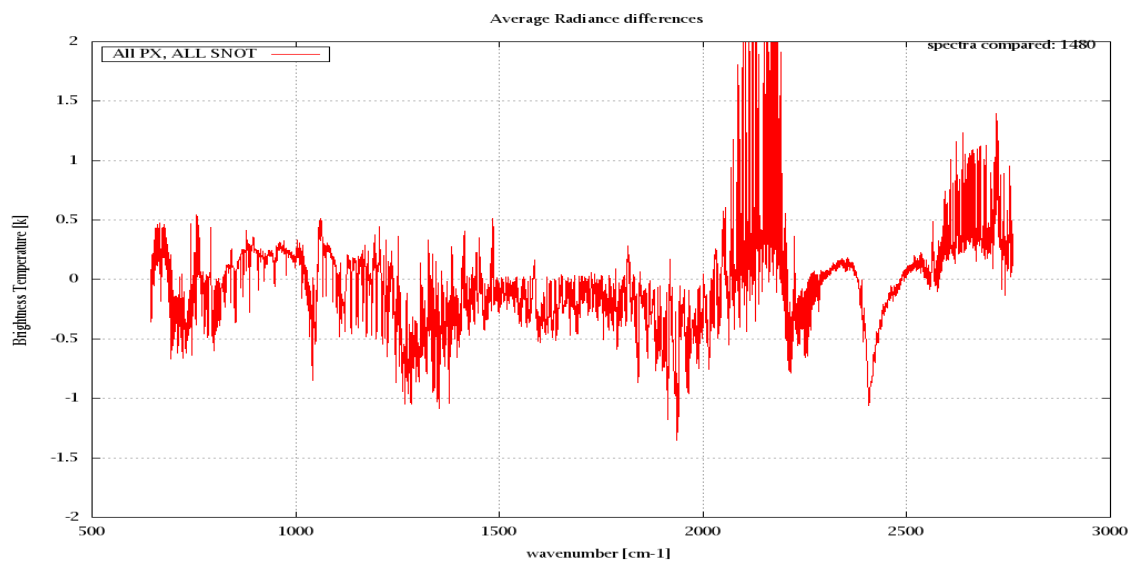


Figure 6: Average Radiance differences: OBS-CAL

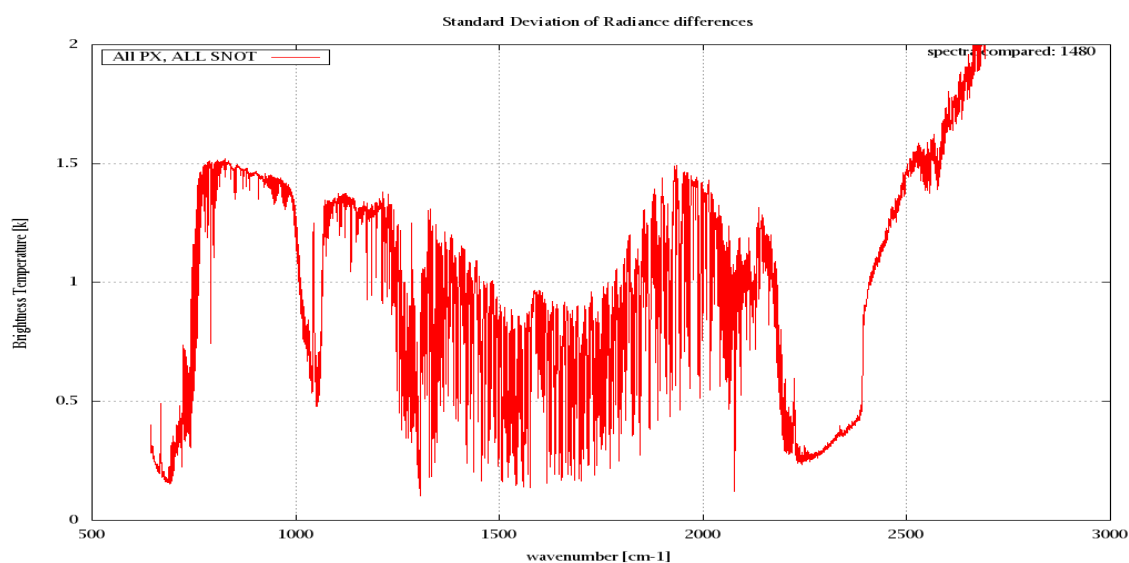


Figure 7: Standard Deviation of Radiance differences

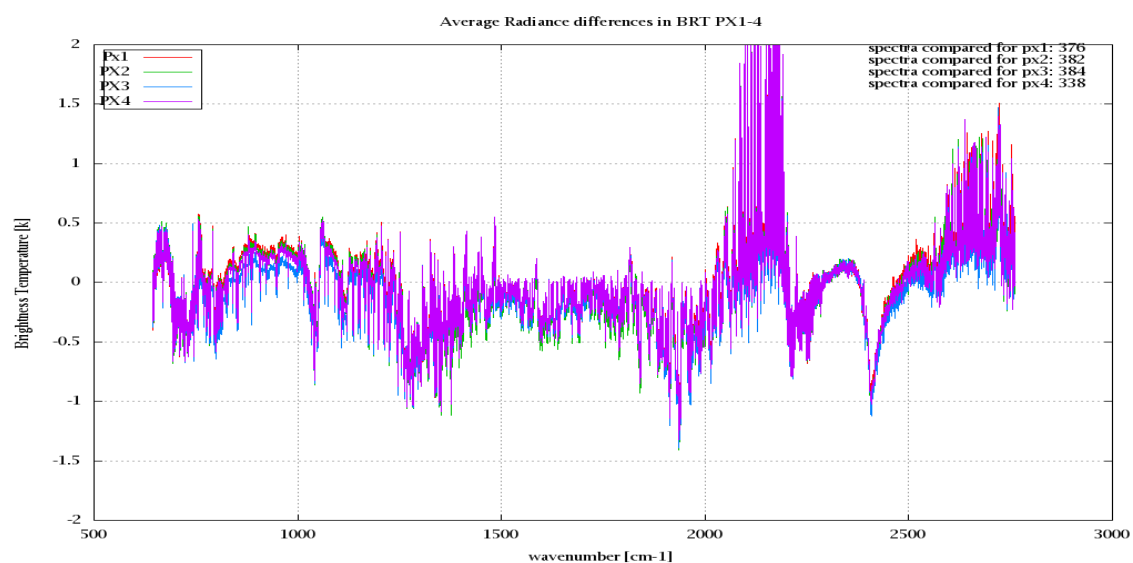


Figure 8: Average Radiance differences: OBS-CAL

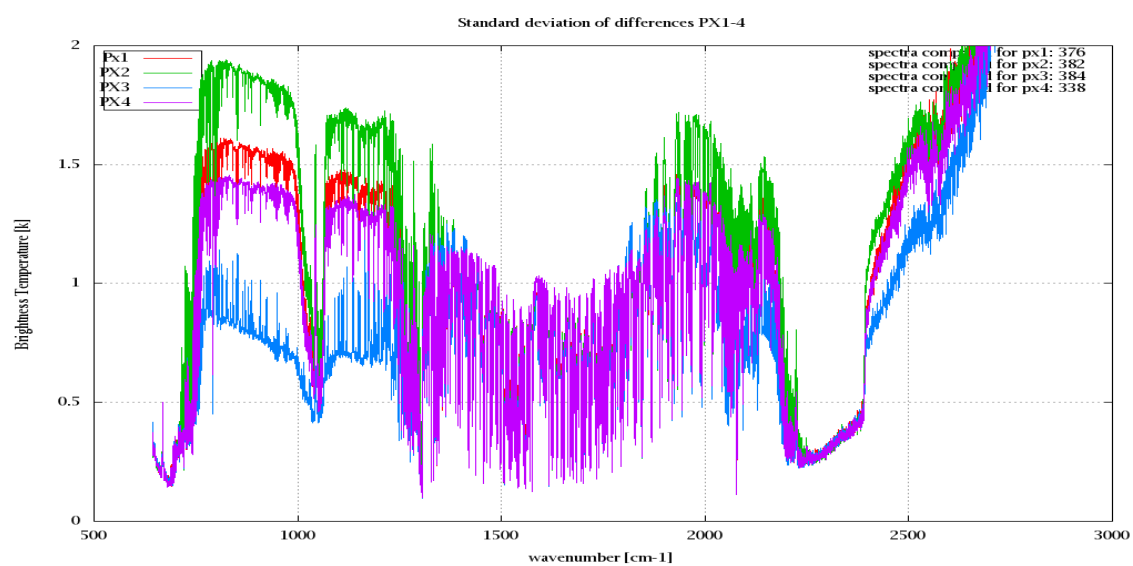


Figure 9: Standard Deviation of Radiance differences

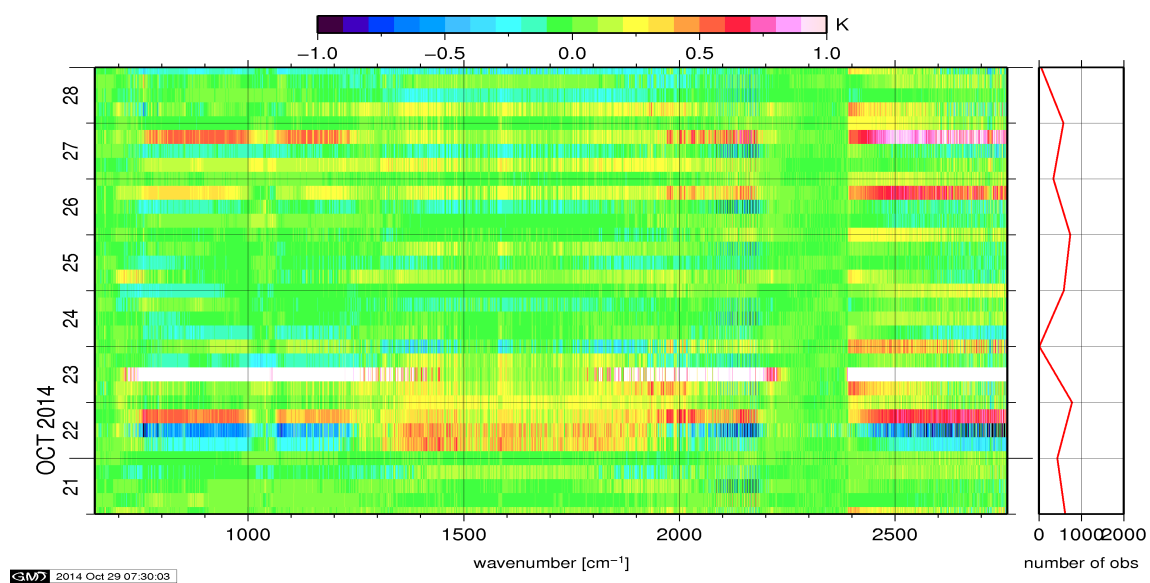


Figure 10: Radiance Anomaly in BRT: All Channels

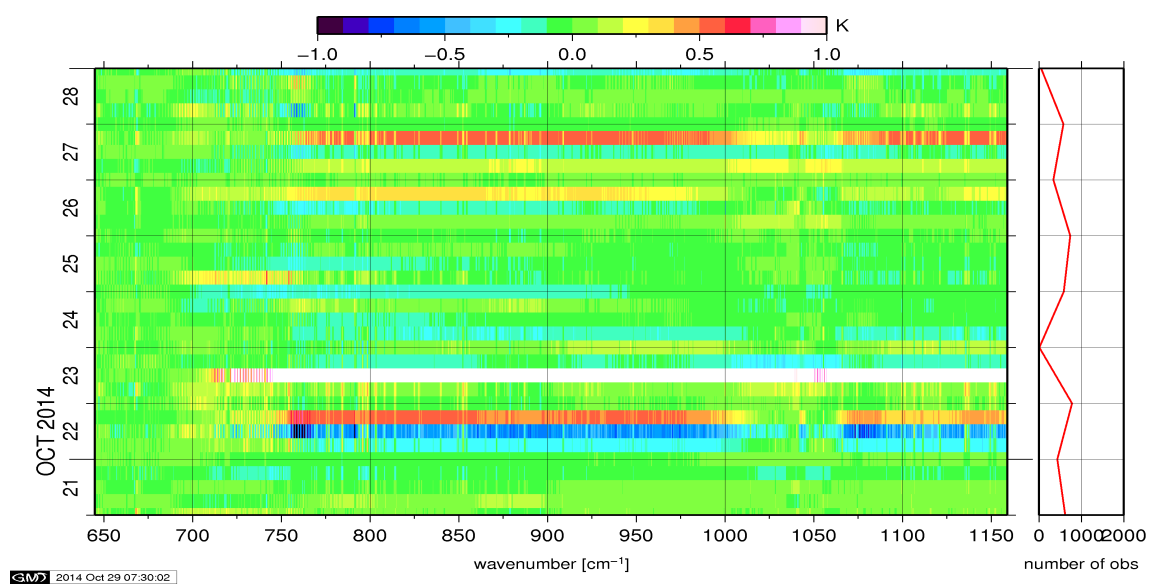


Figure 11: Radiance Anomaly in BRT: IASI Band 1

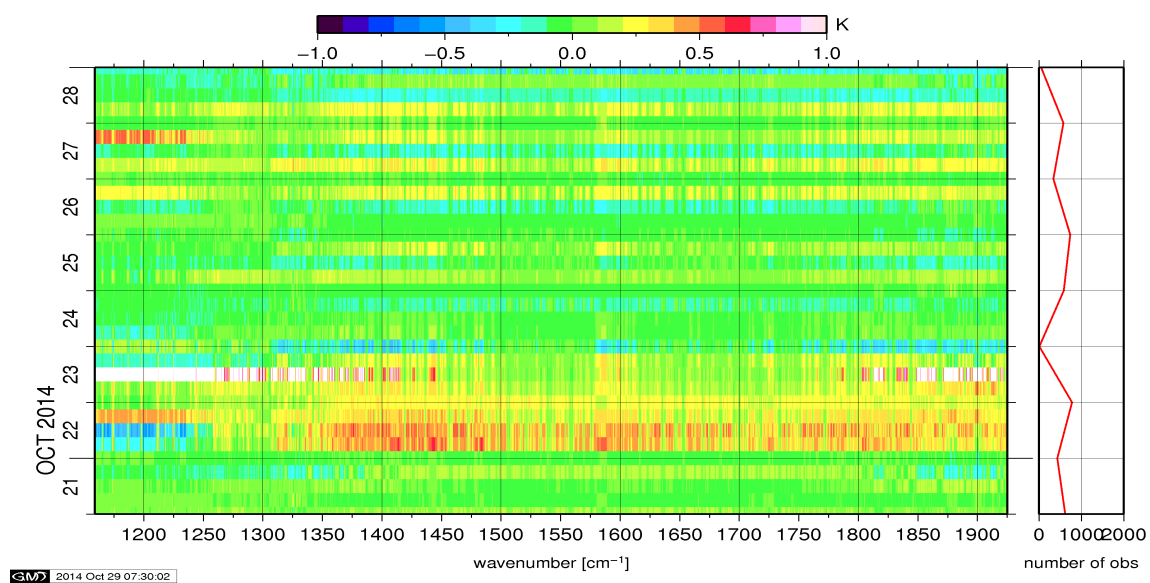


Figure 12: Radiance Anomaly in BRT: IASI Band 2

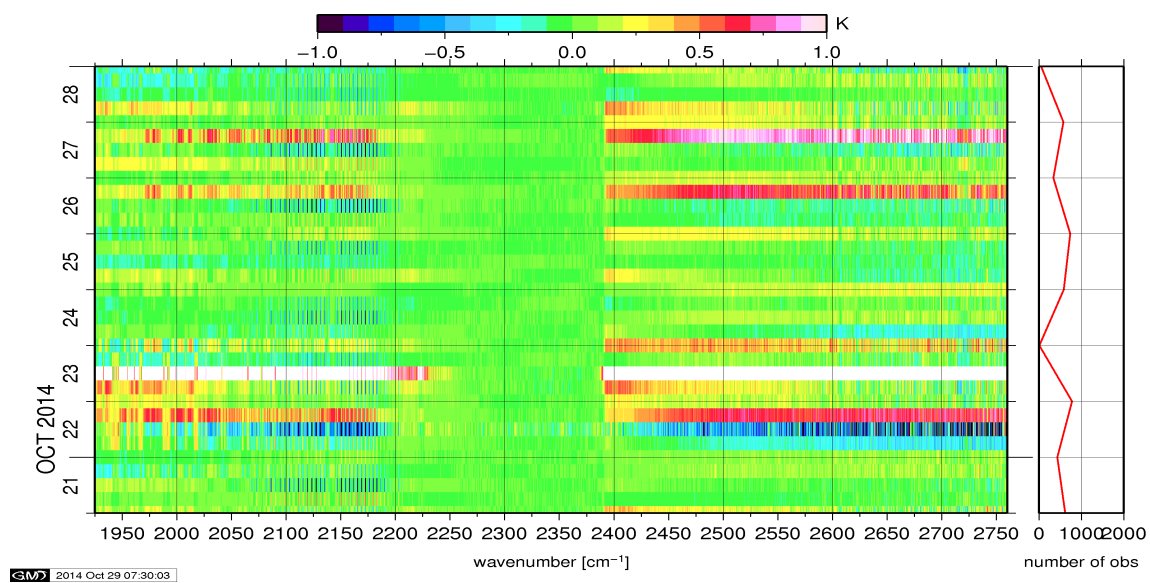


Figure 13: Radiance Anomaly in BRT: IASI Band 3

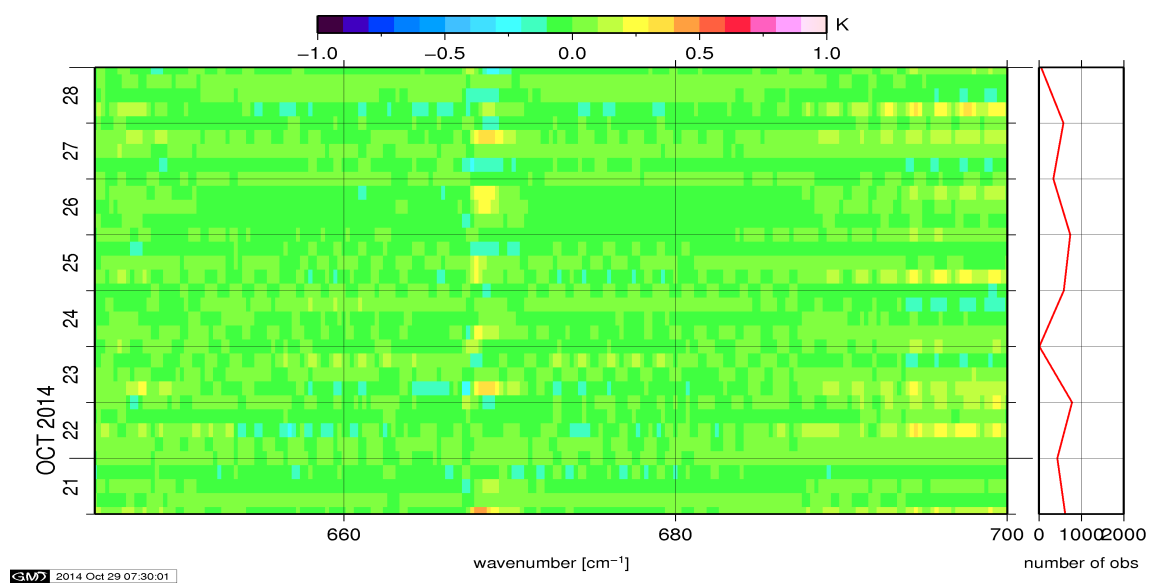


Figure 14: Radiance Anomaly in BRT: CO2 14

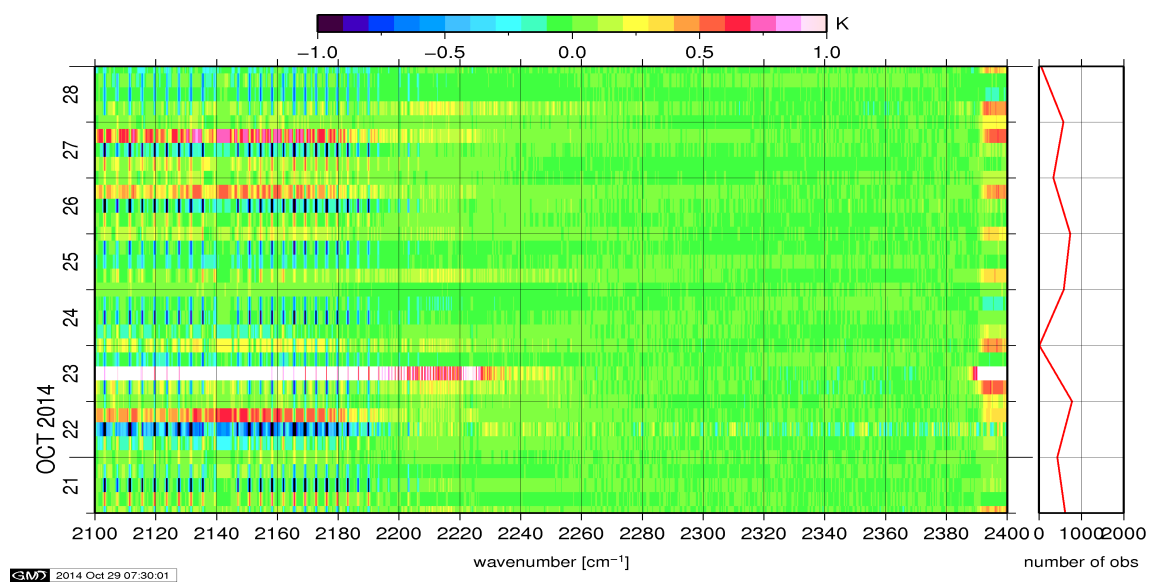


Figure 15: Radiance Anomaly in BRT: CO2 4.3

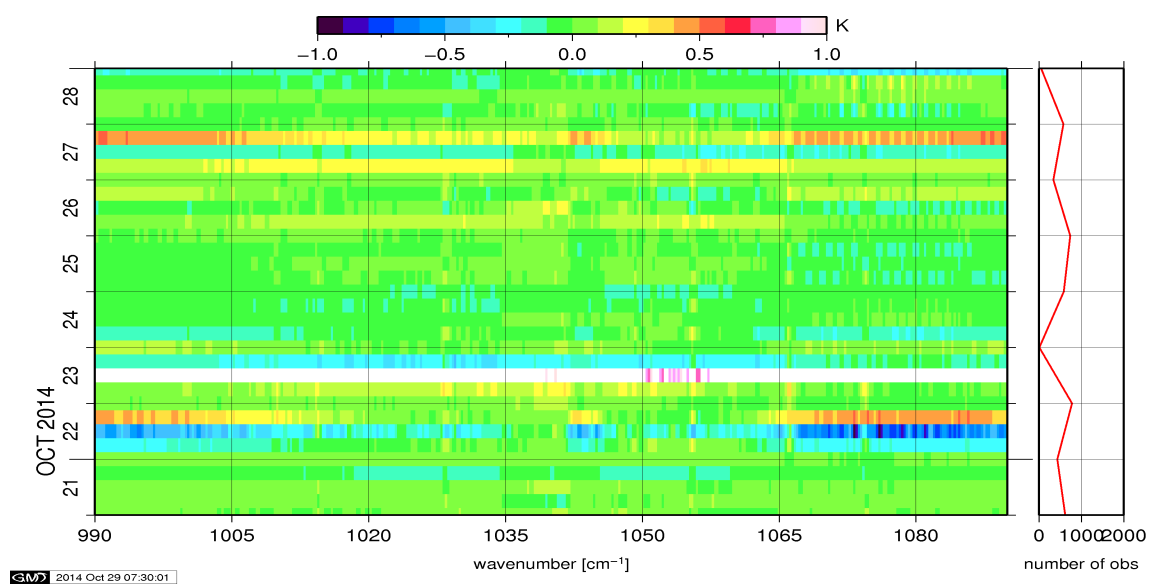


Figure 16: Radiance Anomaly in BRT: O3

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.

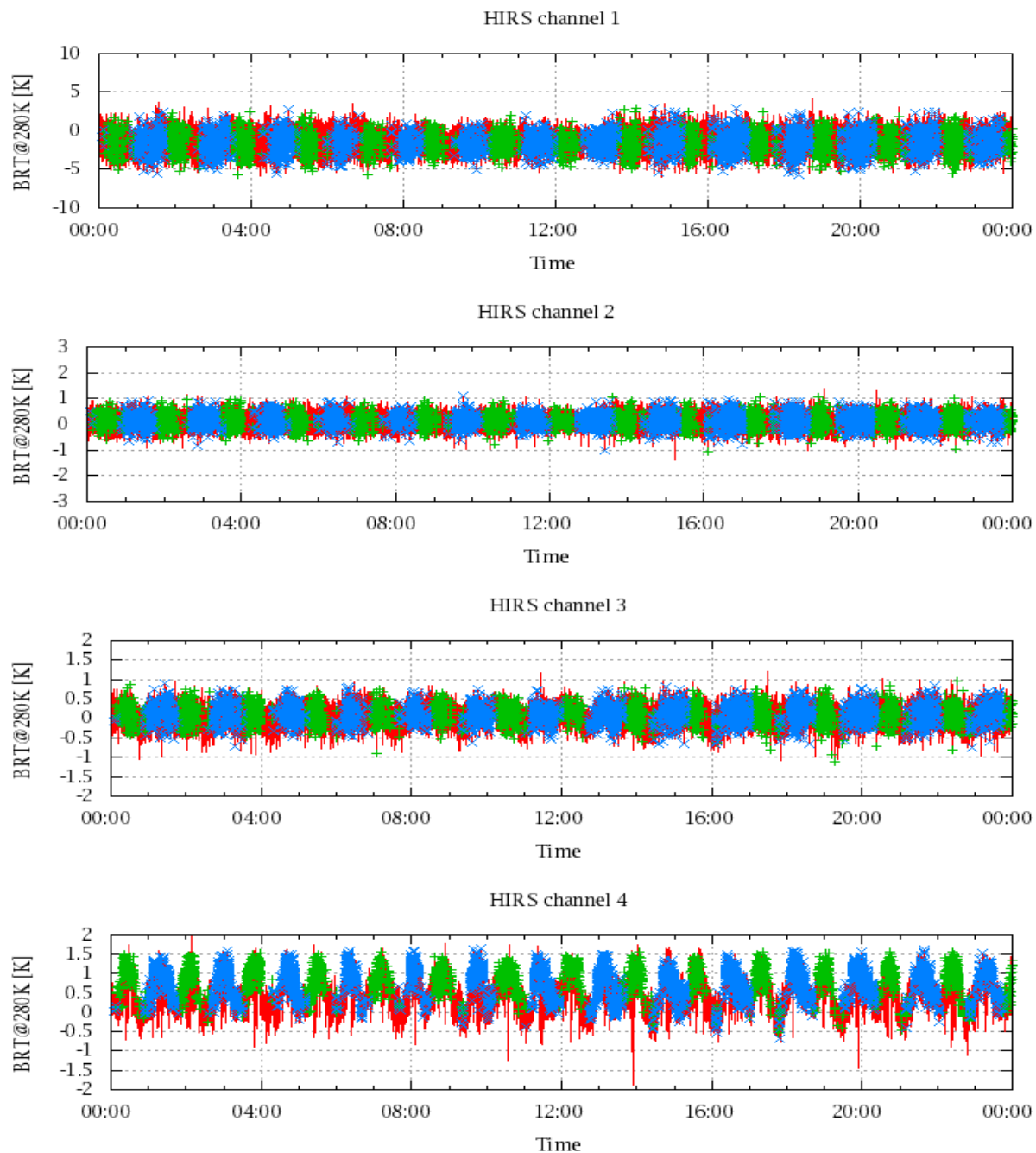


Figure 17: Radiance Differences in BRT

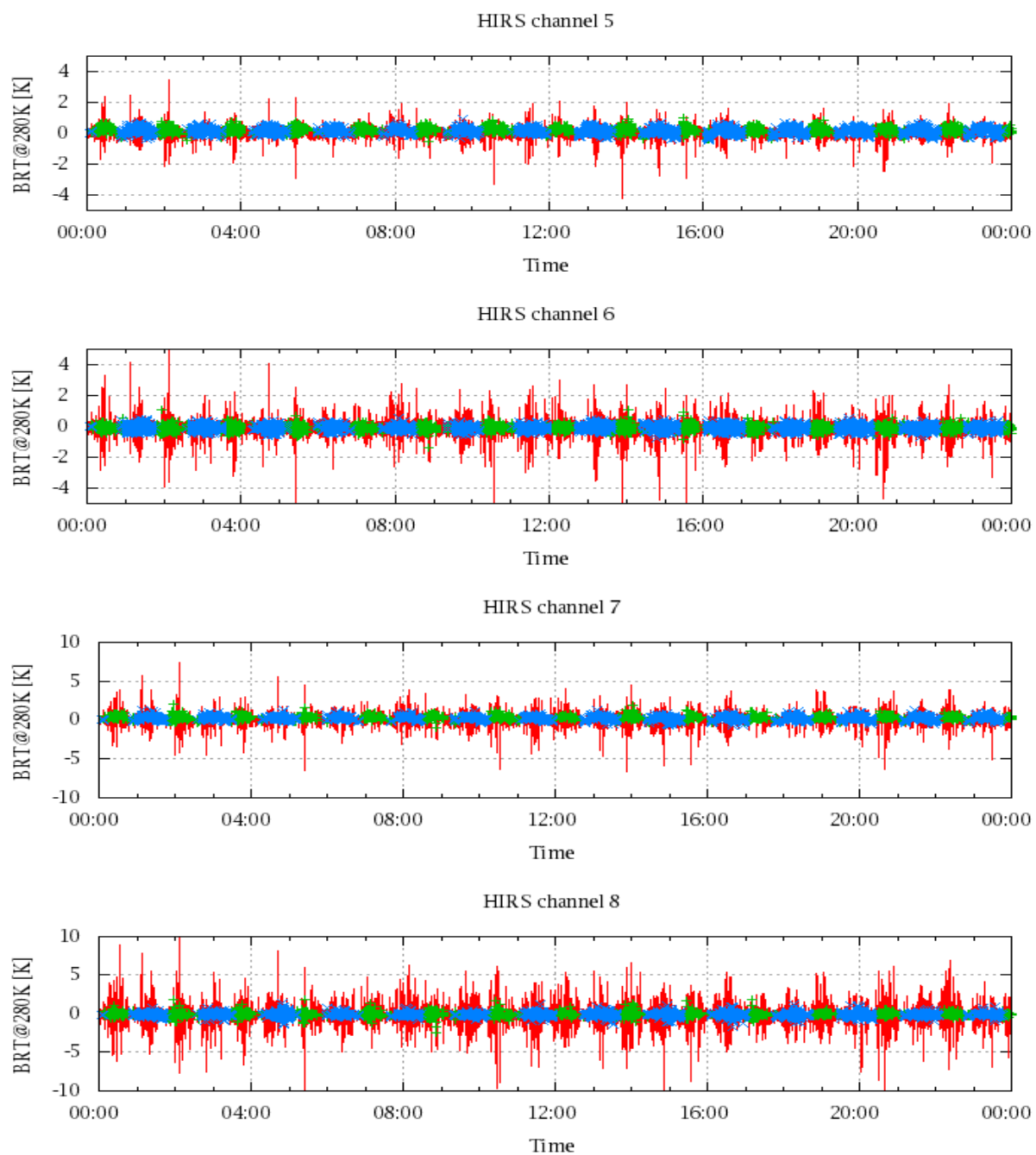


Figure 18: Radiance Differences in BRT

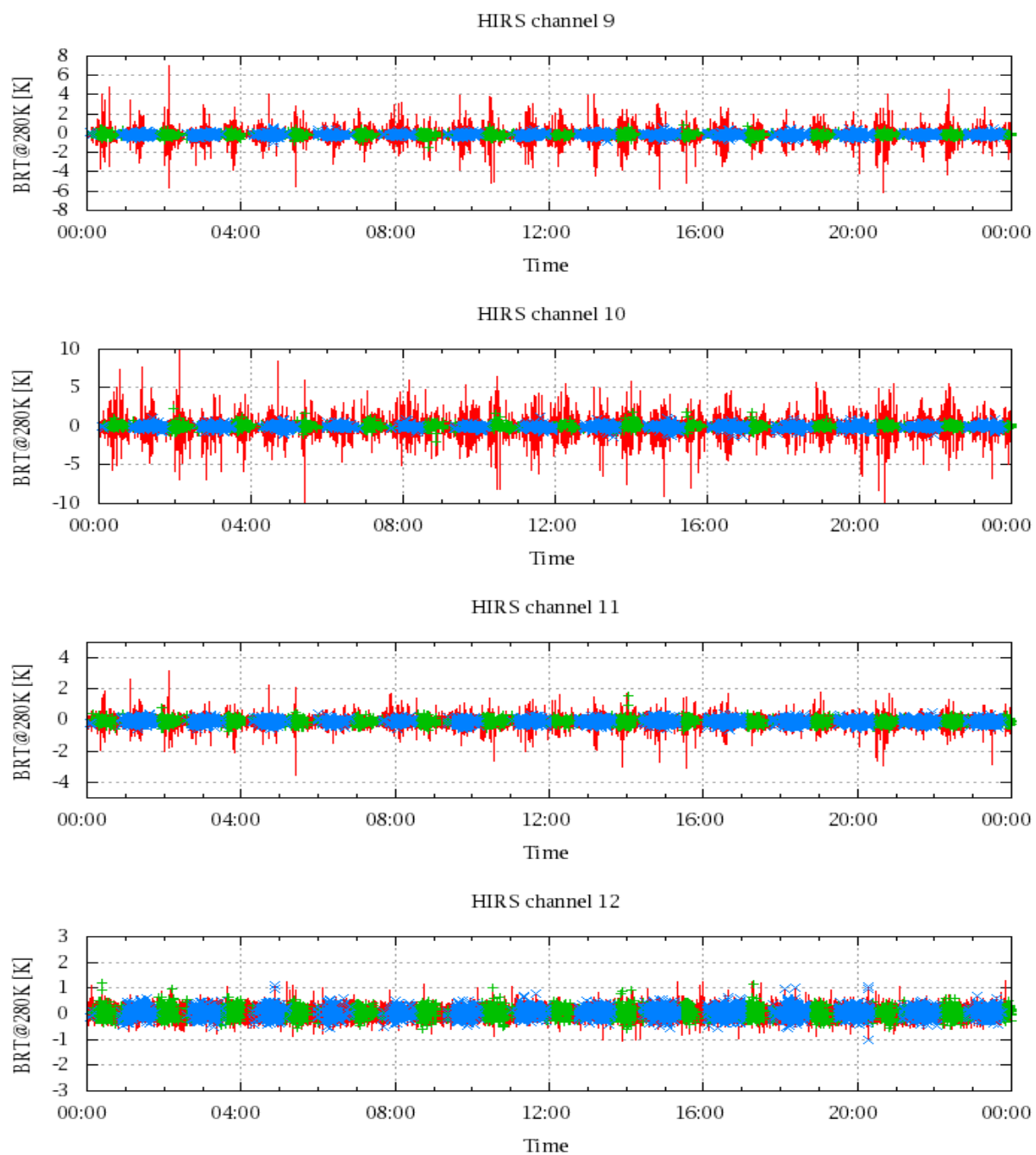


Figure 19: Radiance Differences in BRT

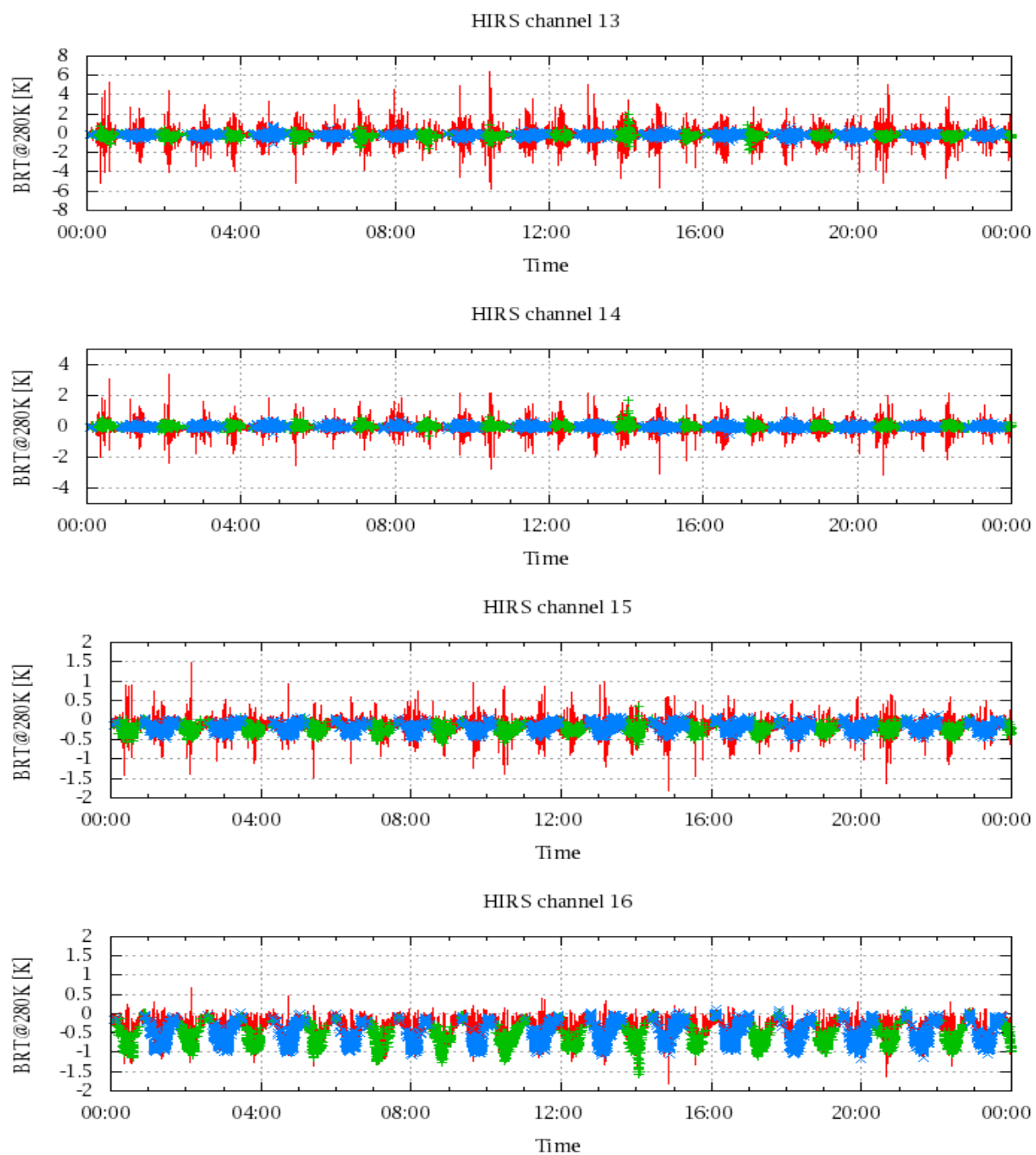


Figure 20: Radiance Differences in BRT

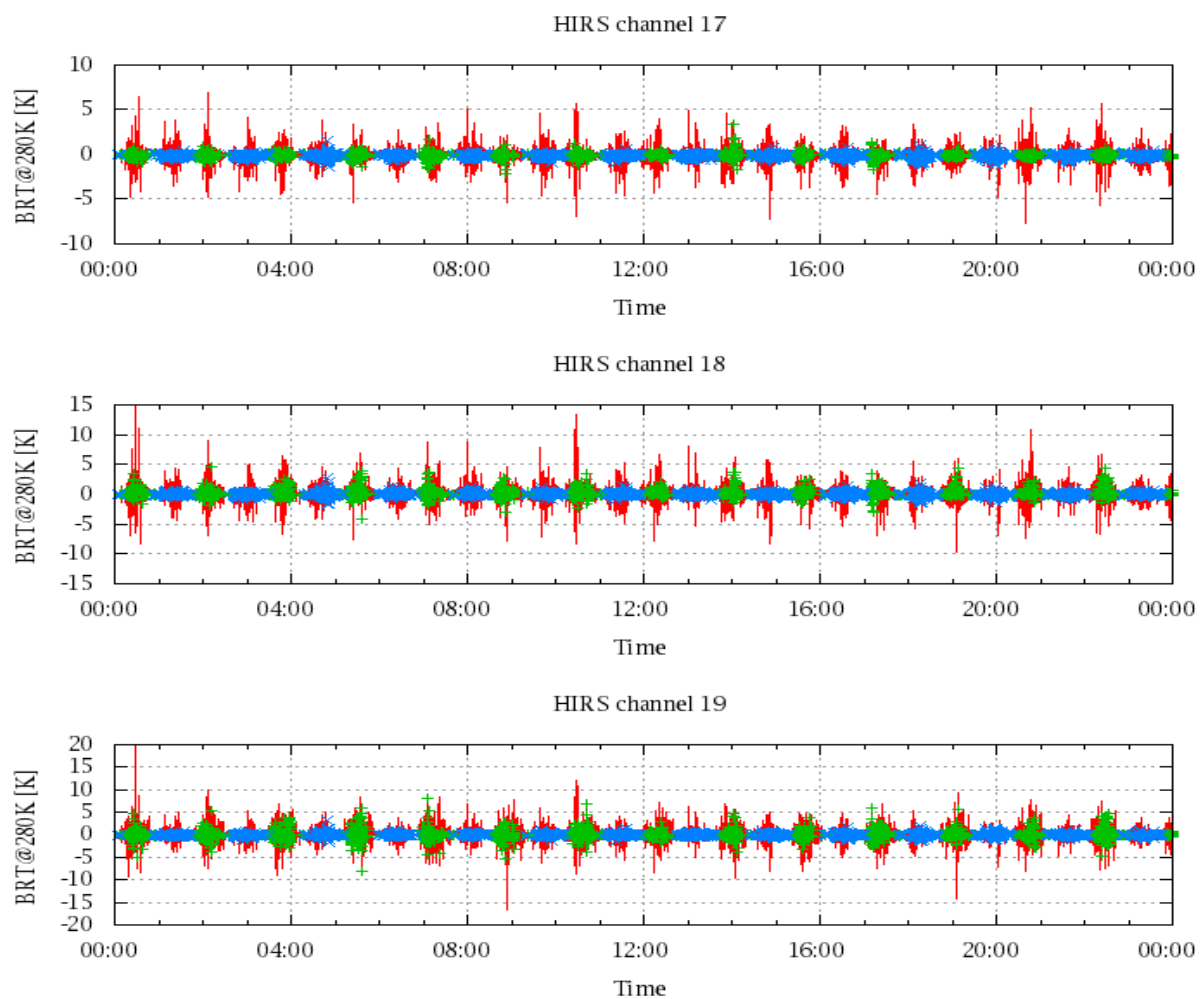


Figure 21: Radinace Differences in BRT