

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

13/01/2015 00:00:00 - 14/01/2015 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 13/01/2015 00:00:00 - 14/01/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 13/01/2015 00:00:00 - 14/01/2015 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)	1044	1048	20150113020846.358	20150113020848.737
PX1 (130)	1812	1817	20150113021211.760	20150113021212.842
PX1 (130)	3920	3925	20150113022133.474	20150113022136.067
PX1 (130)	8547	8554	20150113035457.351	20150113035458.867
PX2 (135)	1044	1048	20150113020846.358	20150113020848.737
PX2 (135)	1812	1817	20150113021211.760	20150113021212.842
PX2 (135)	3920	3925	20150113022133.474	20150113022136.067
PX2 (135)	8547	8553	20150113035457.351	20150113035458.648
PX3 (140)	1044	1048	20150113020846.358	20150113020848.737
PX3 (140)	1812	1817	20150113021211.760	20150113021212.842
PX3 (140)	3920	3925	20150113022133.474	20150113022136.067
PX3 (140)	8547	8553	20150113035457.351	20150113035458.648
PX4 (145)	1044	1048	20150113020846.358	20150113020848.737
PX4 (145)	1811	1817	20150113021211.545	20150113021212.842
PX4 (145)	3920	3925	20150113022133.474	20150113022136.067
PX4 (145)	8546	8553	20150113035457.136	20150113035458.648
IMG (150)	9716	9724	20150113020846.358	20150113020848.737
IMG (150)	10587	10593	20150113021211.545	20150113021212.842

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	12976	12981	20150113022133.474	20150113022134.770
IMG (150)	4022	4029	20150113035457.136	20150113035458.648
VER (160)	14985	14989	20150113020846.358	20150113020854.362
VER (160)	15463	15465	20150113022126.337	20150113022133.474
AUX (180)	6263	6265	20150113020838.791	20150113020854.791

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
13/01/2015 00:00:03	-	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)	99.61 %	-
GQisFlagQual set (PX2)	99.67 %	-
GQisFlagQual set (PX3)	99.67 %	-
GQisFlagQual set (PX4)	99.62 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

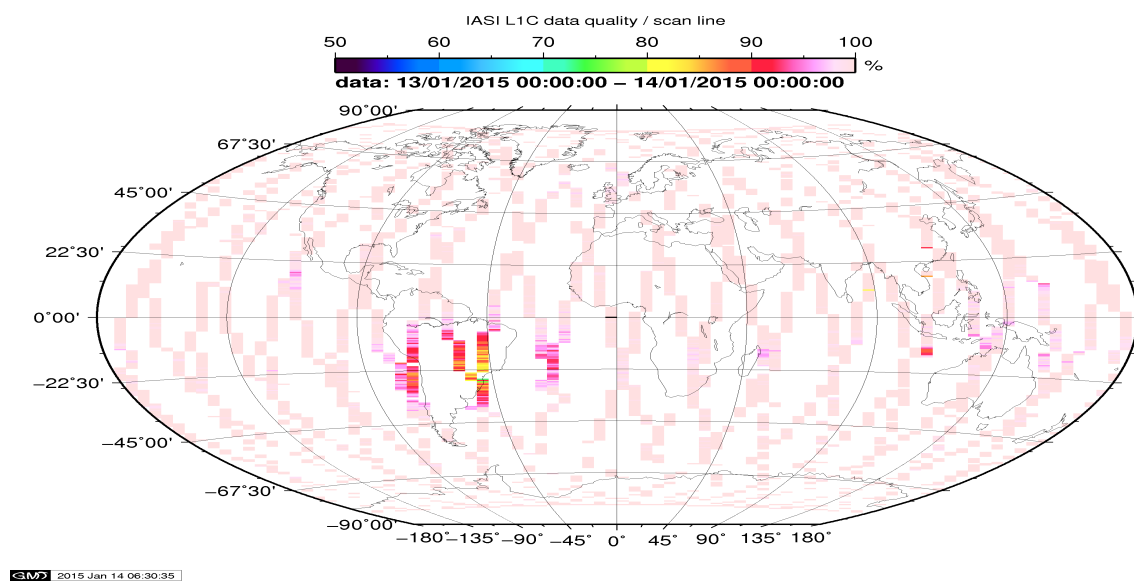


Figure 1: L1C data quality

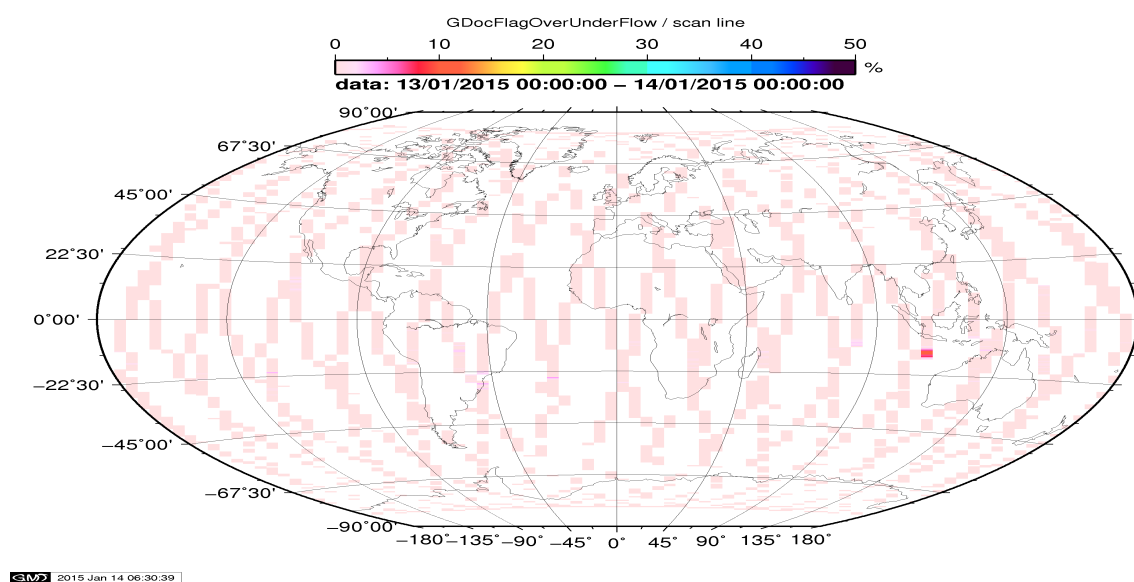


Figure 2: Flag of Over and Under Flows

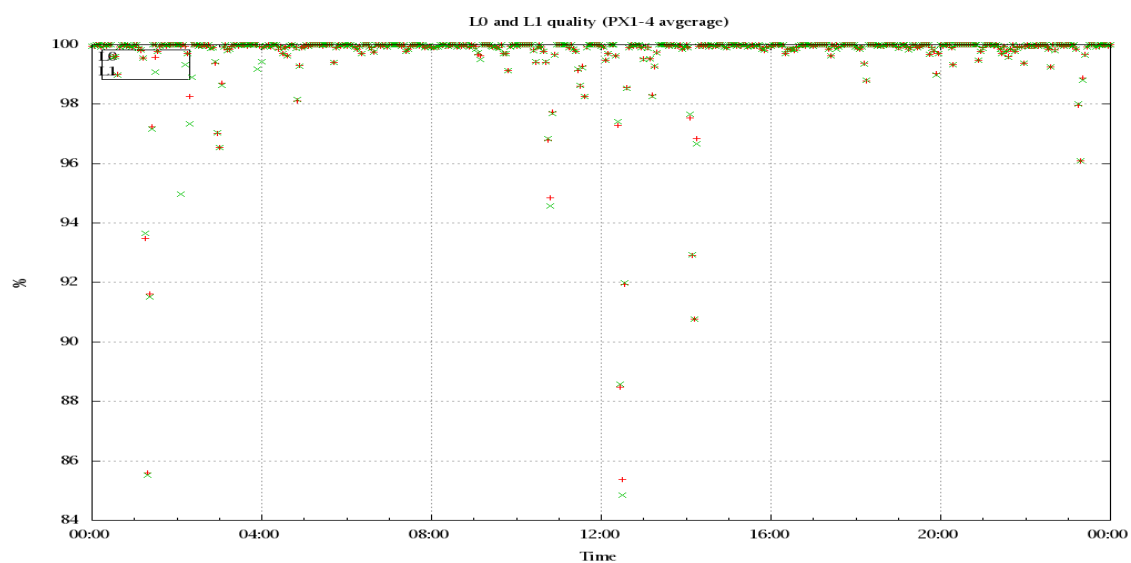


Figure 3: Level 0 and 1C overall quality

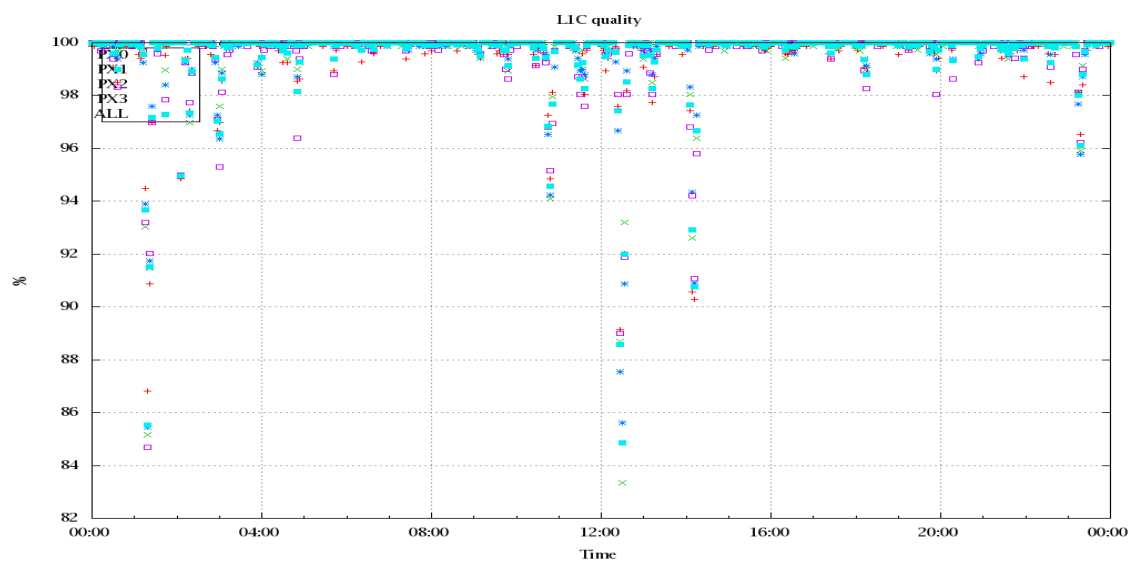


Figure 4: Level 1C quality

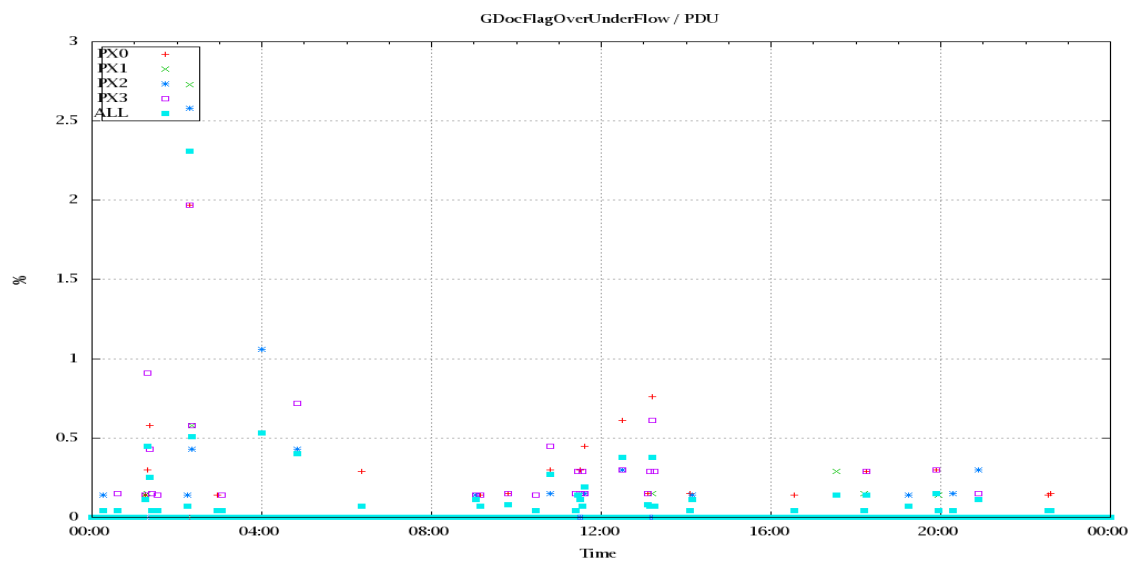


Figure 5: OverUnderFlowFlag timeseries

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.

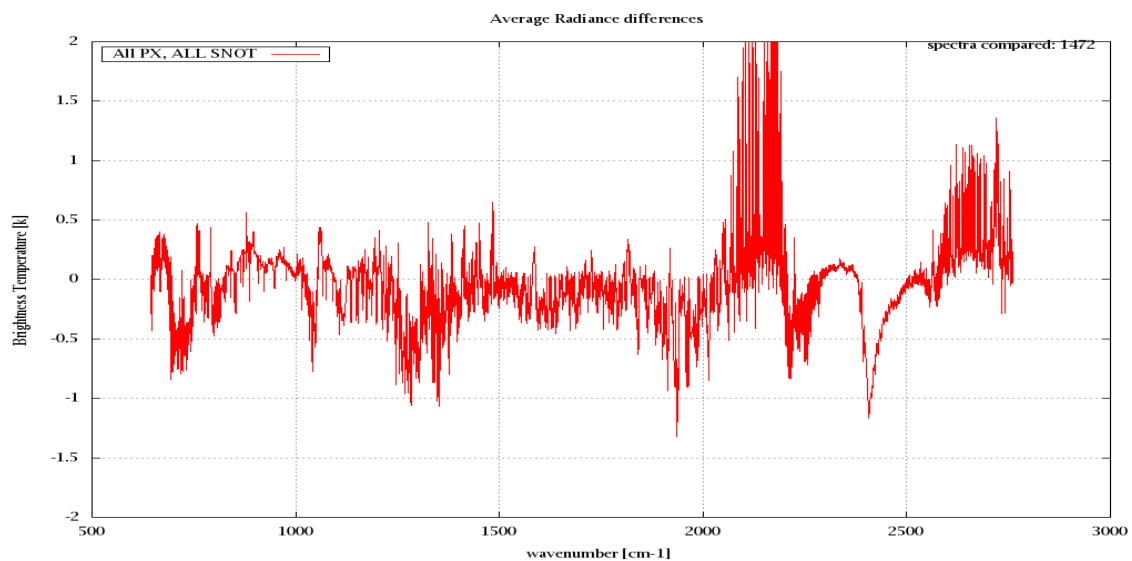


Figure 6: Average Radiance differences: OBS-CAL

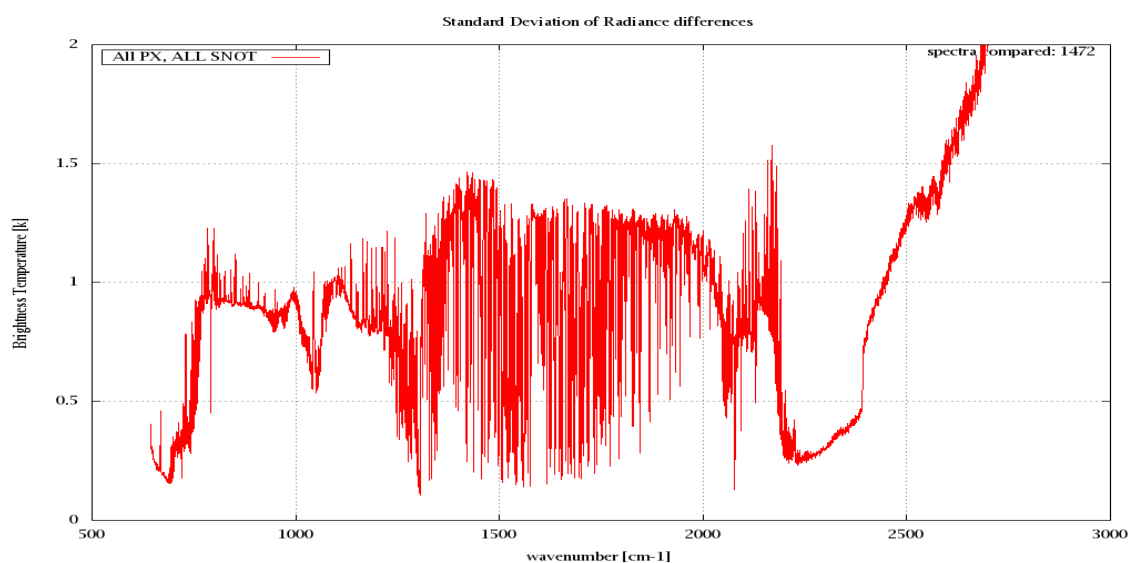


Figure 7: Standard Deviation of Radiance differences

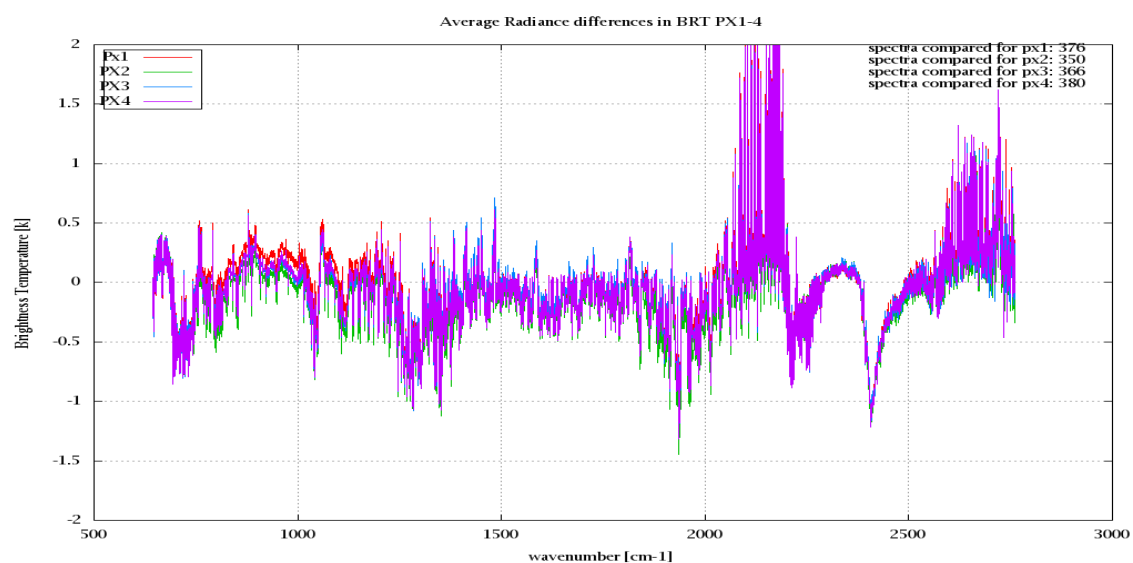


Figure 8: Average Radiance differences: OBS-CAL

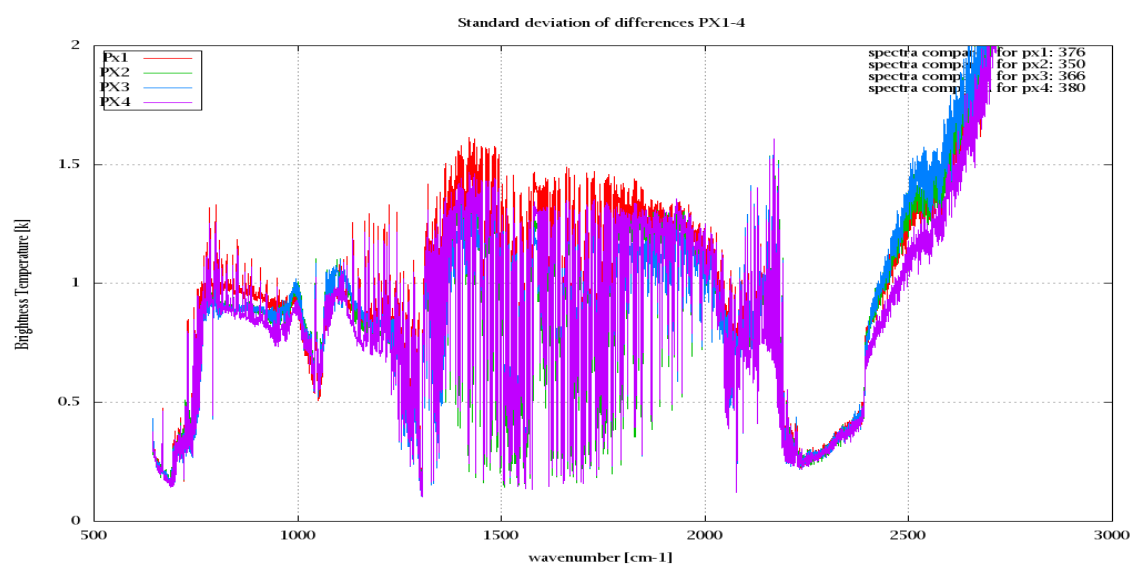


Figure 9: Standard Deviation of Radiance differences

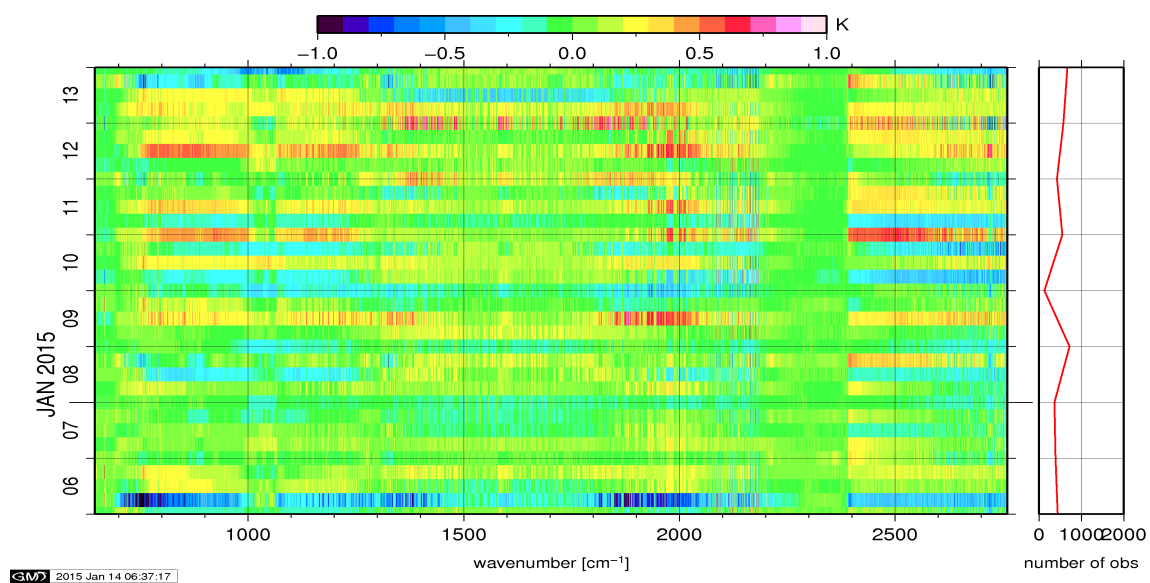


Figure 10: Radiance Anomaly in BRT: All Channels

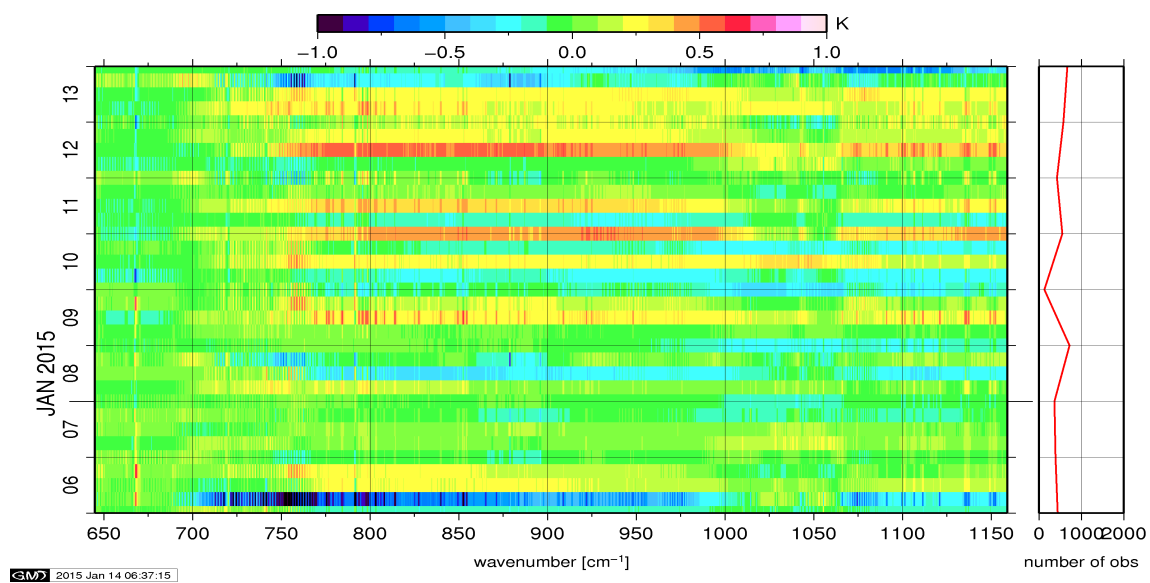


Figure 11: Radiance Anomaly in BRT: IASI Band 1

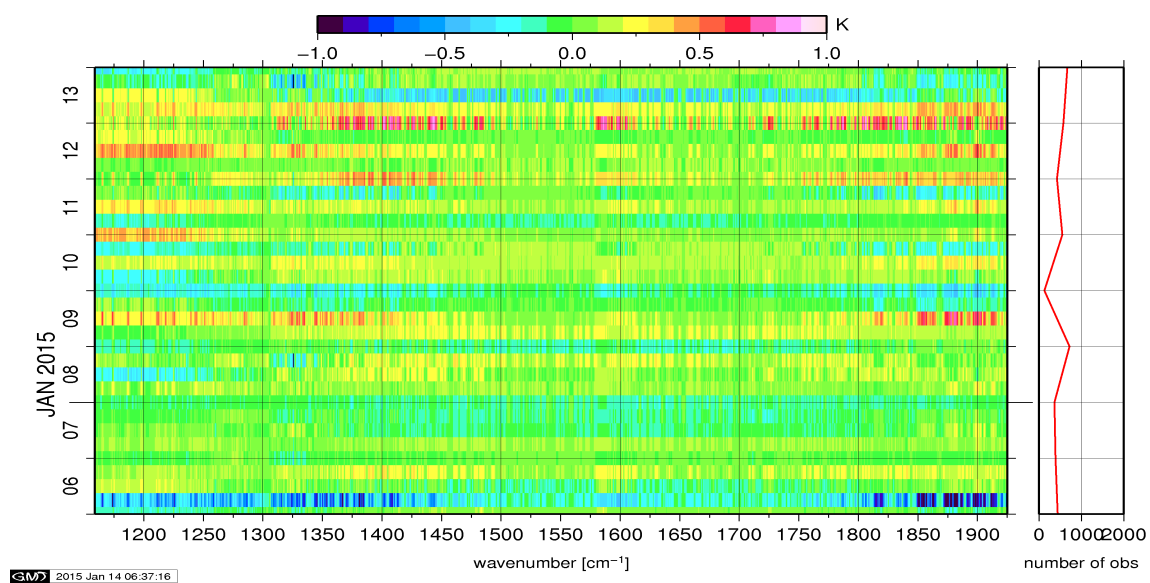


Figure 12: Radiance Anomaly in BRT: IASI Band 2

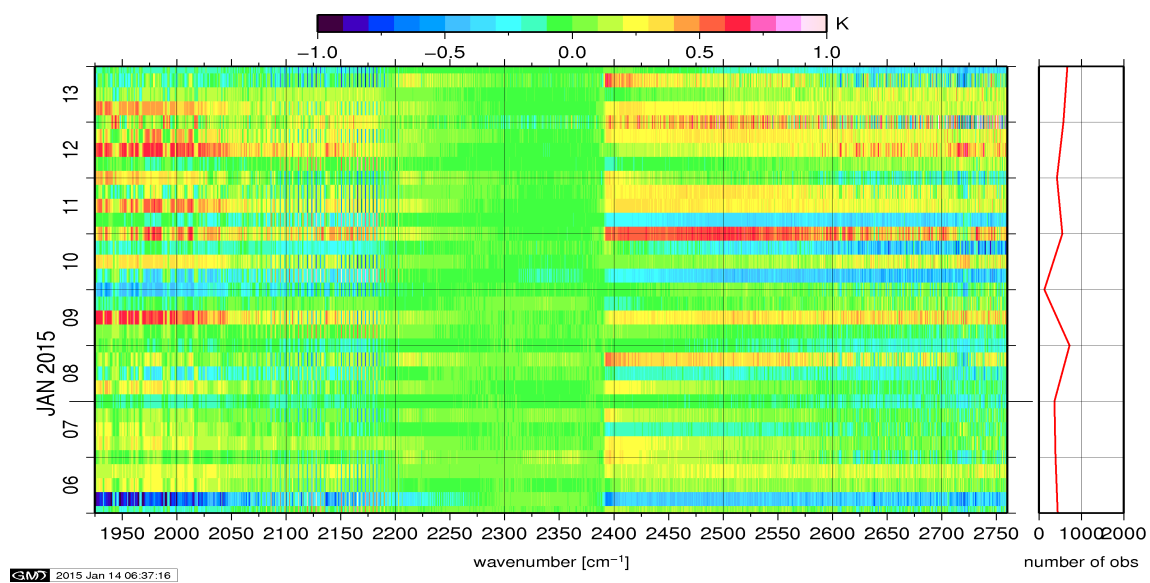


Figure 13: Radiance Anomaly in BRT: IASI Band 3

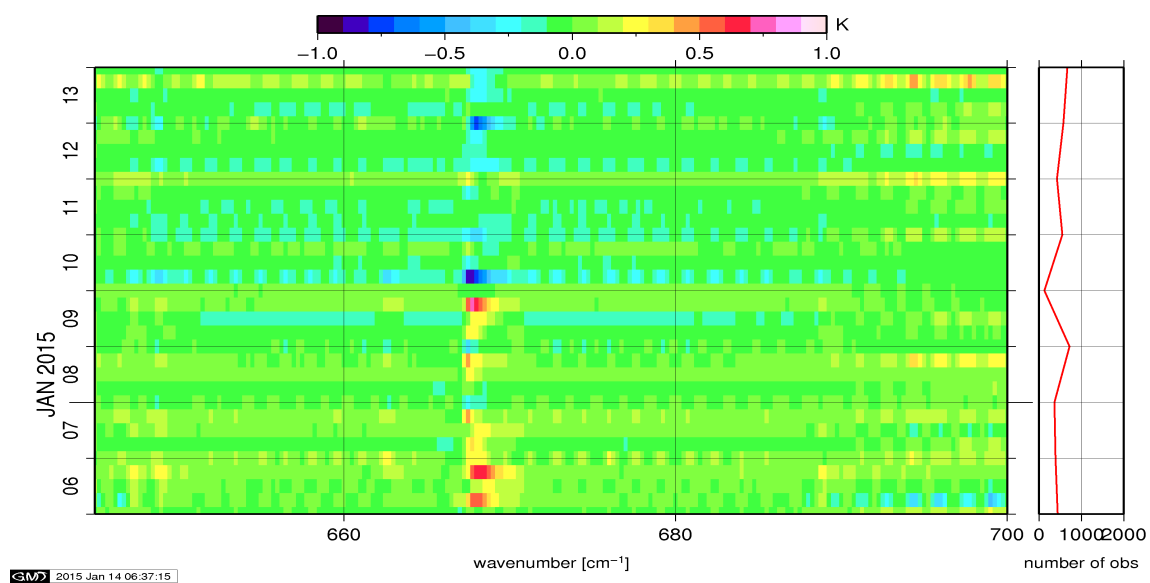


Figure 14: Radiance Anomaly in BRT: CO2 14

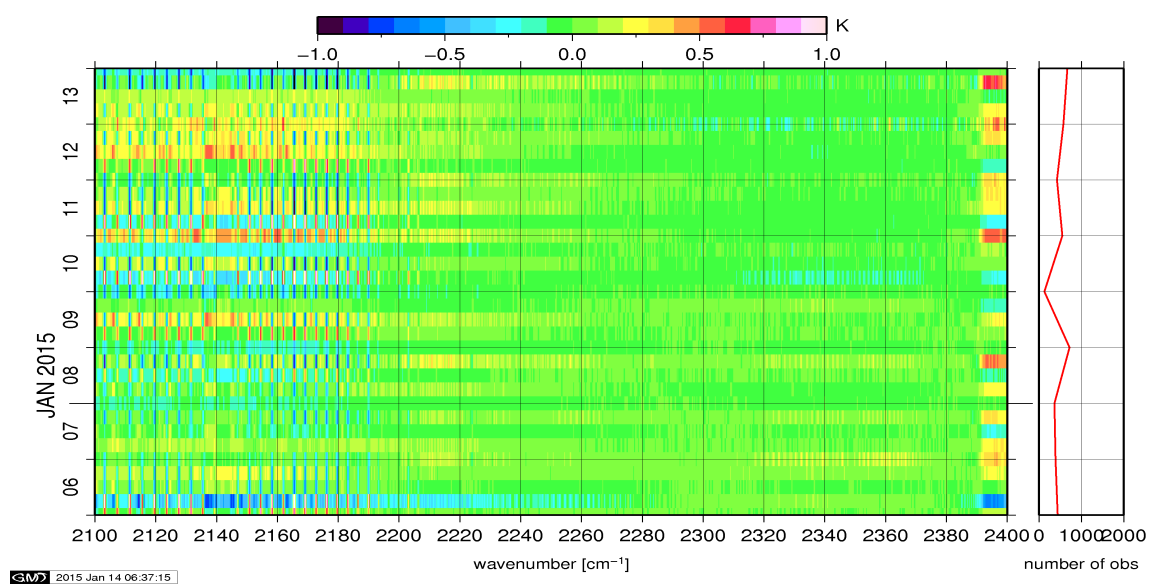


Figure 15: Radiance Anomaly in BRT: CO2 4.3

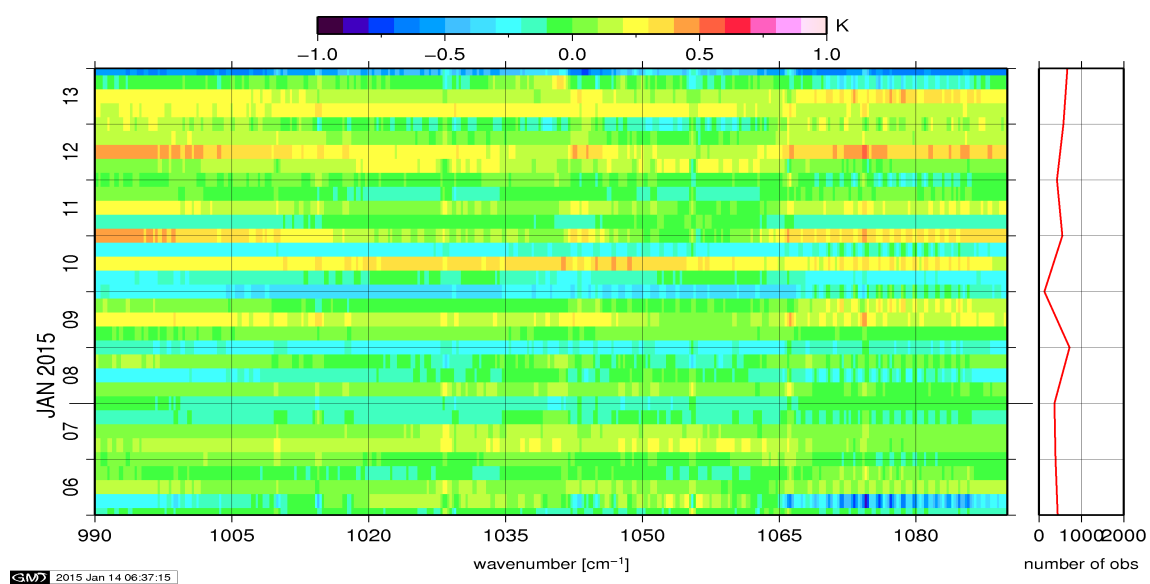


Figure 16: Radiance Anomaly in BRT: O3

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.

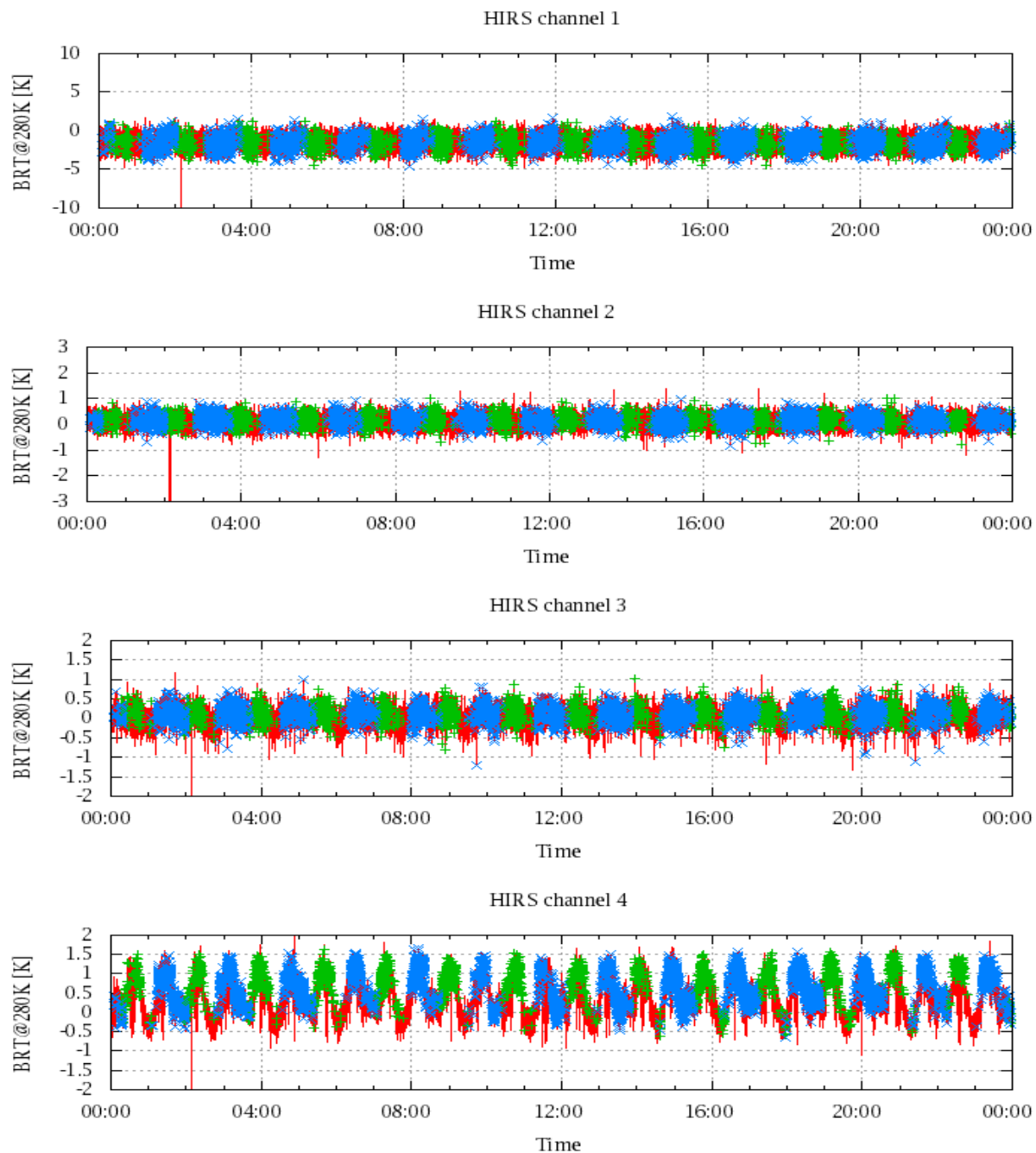


Figure 17: Radiance Differences in BRT

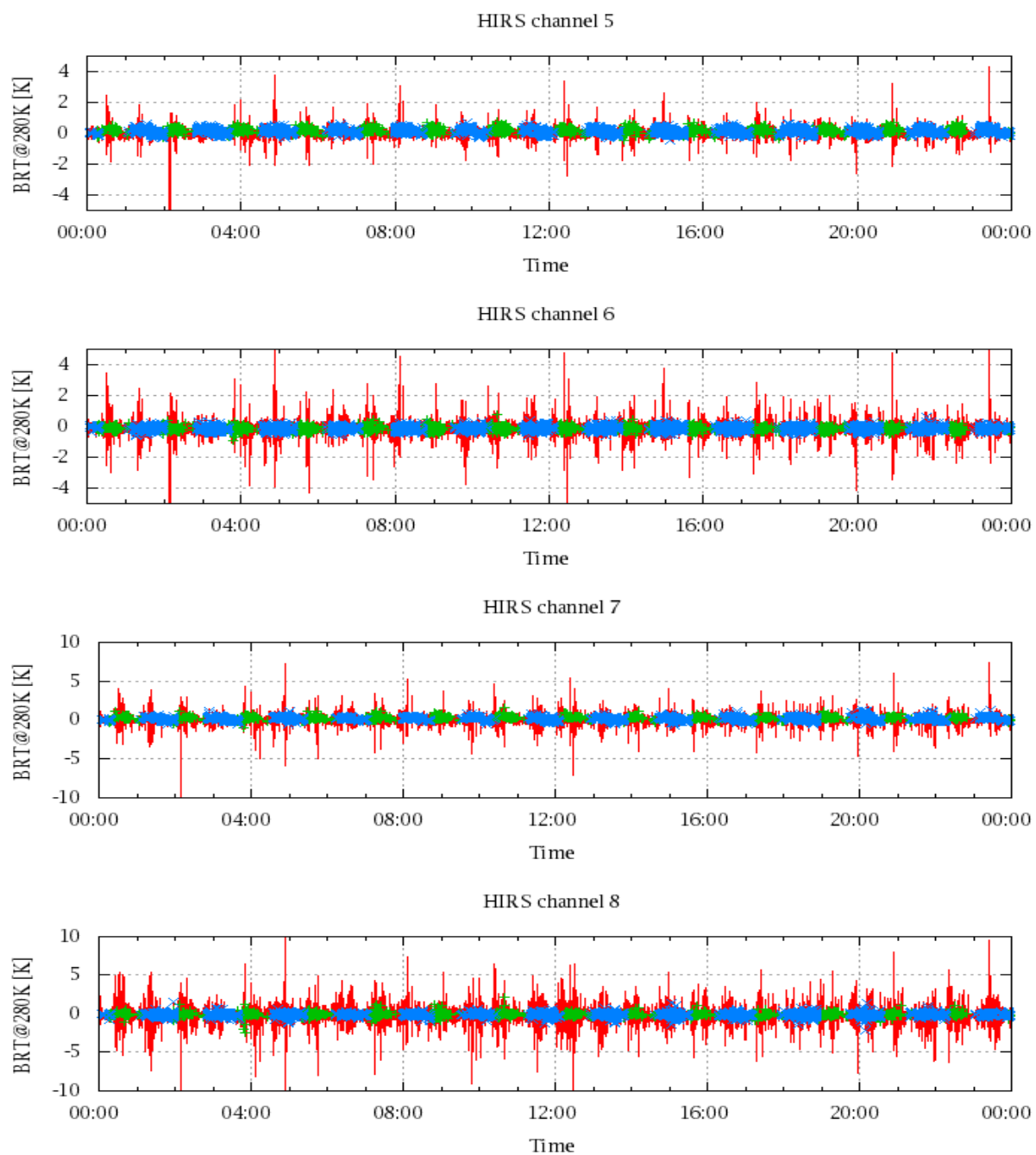


Figure 18: Radiance Differences in BRT

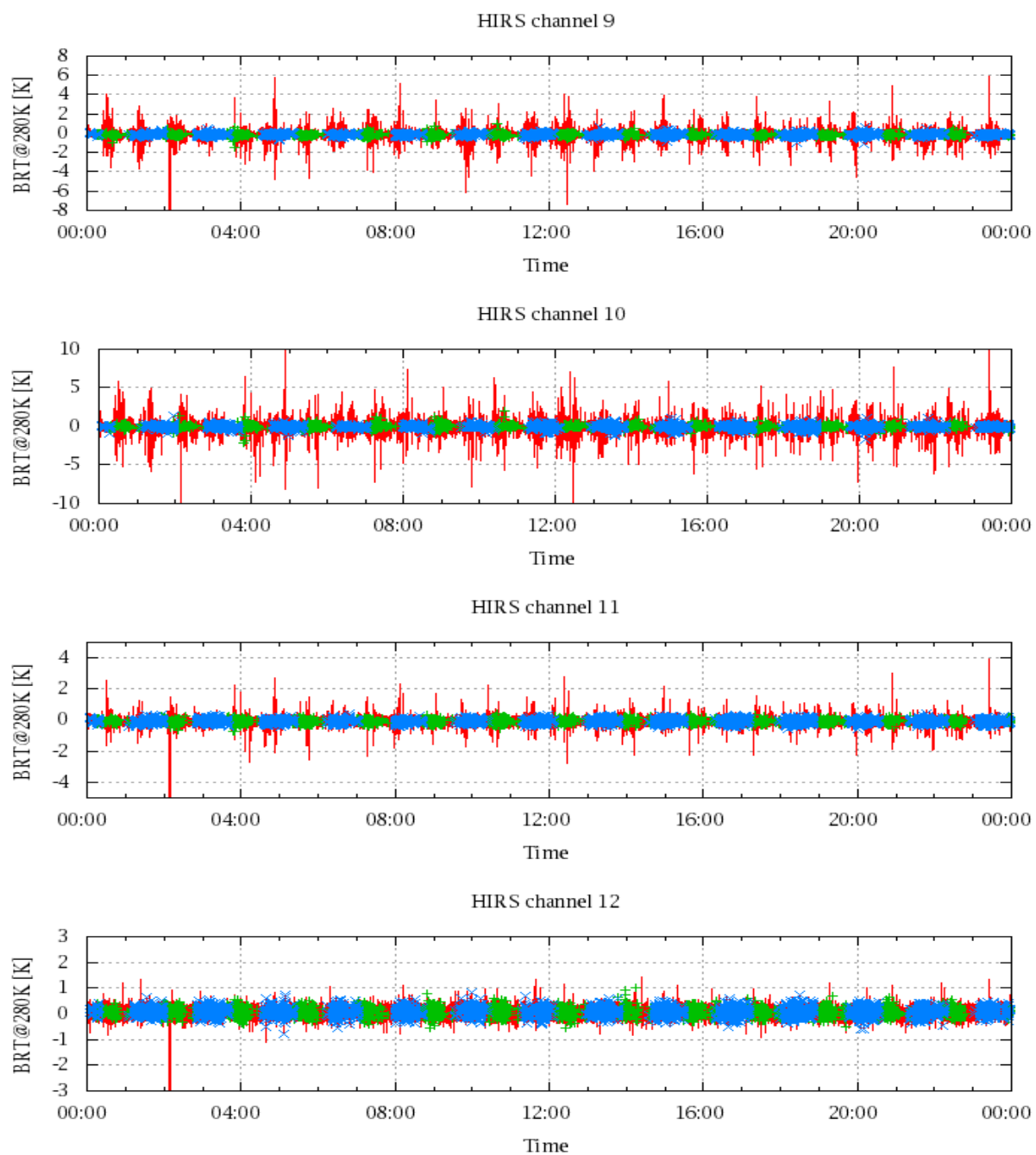


Figure 19: Radiance Differences in BRT

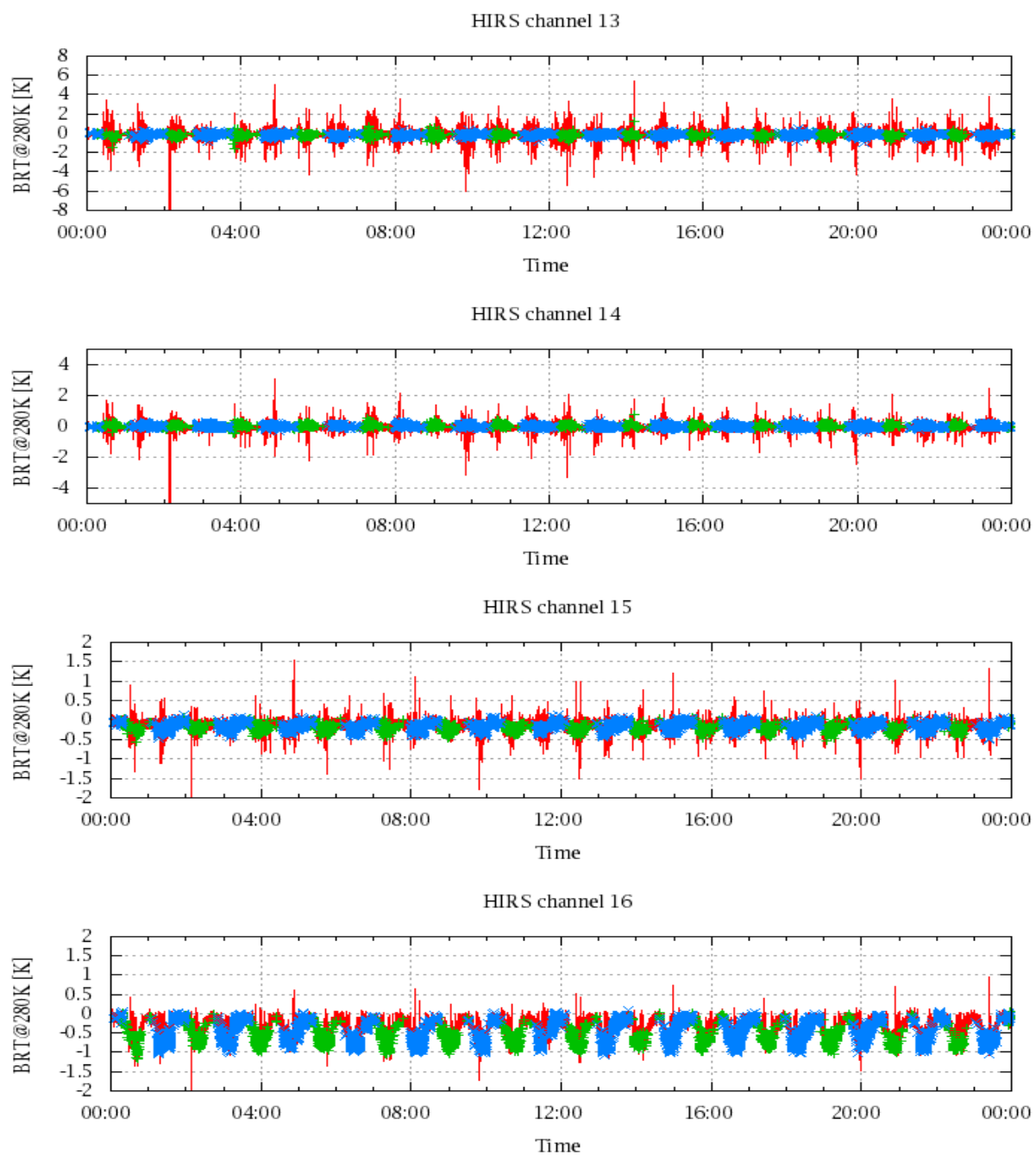


Figure 20: Radiance Differences in BRT

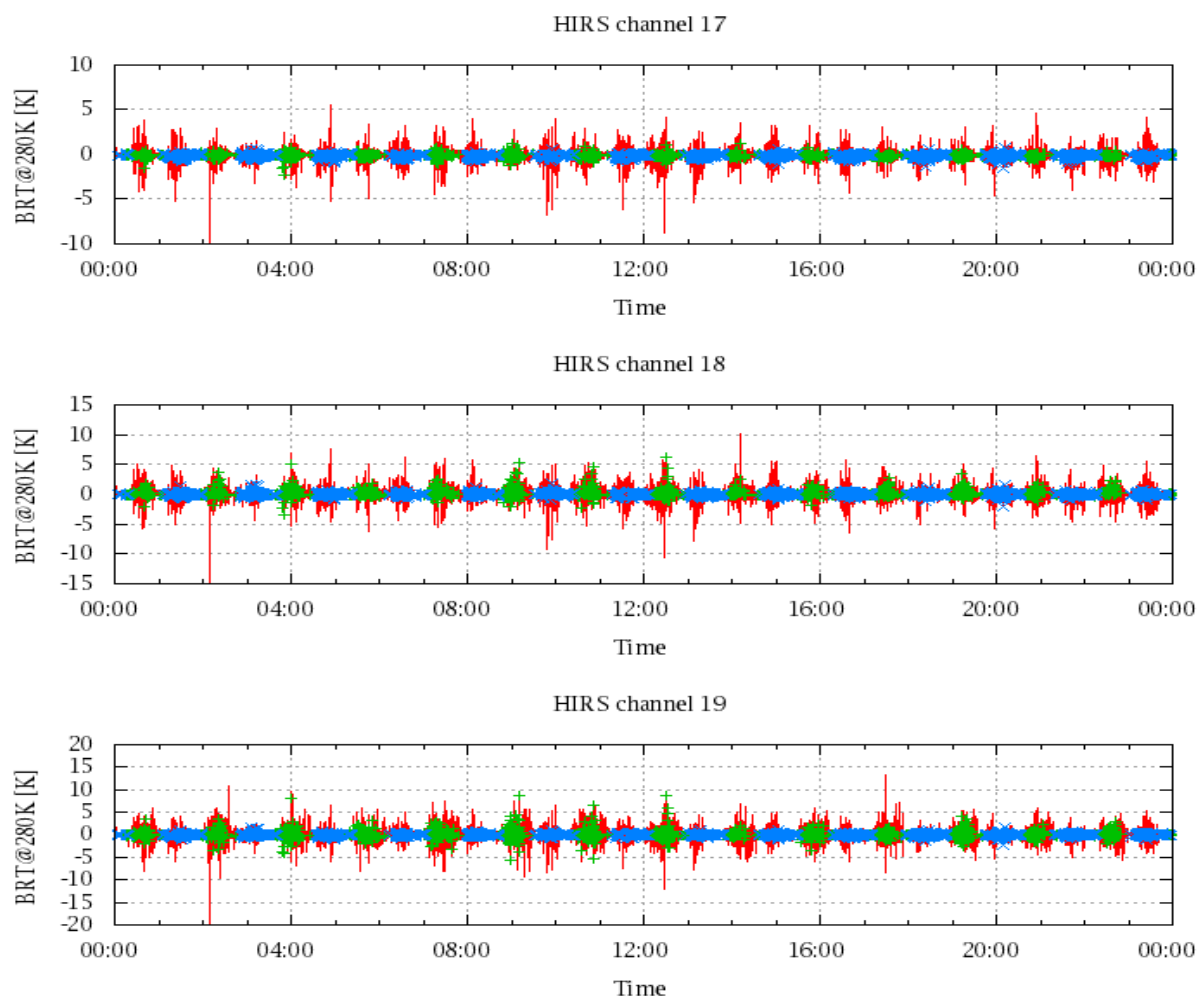


Figure 21: Radinace Differences in BRT