

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

29/01/2014 00:00:00 - 30/01/2014 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 29/01/2014 00:00:00 - 30/01/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 29/01/2014 00:00:00 - 30/01/2014 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)	9911	9915	20140129003940.589	20140129003941.456
PX1 (130)	445	456	20140129022314.828	20140129022317.207
PX1 (130)	2198	2204	20140129023101.664	20140129023102.960
PX1 (130)	331	337	20140129060110.717	20140129060113.525
PX1 (130)	4655	4657	20140129062023.582	20140129062025.527
PX2 (135)	9911	9915	20140129003940.589	20140129003941.456
PX2 (135)	445	456	20140129022314.828	20140129022317.207
PX2 (135)	2197	2204	20140129023101.449	20140129023102.960
PX2 (135)	331	337	20140129060110.717	20140129060113.525
PX2 (135)	4655	4657	20140129062023.582	20140129062025.527
PX3 (140)	9911	9915	20140129003940.589	20140129003941.456
PX3 (140)	445	456	20140129022314.828	20140129022317.207
PX3 (140)	2197	2204	20140129023101.449	20140129023102.960
PX3 (140)	330	337	20140129060110.498	20140129060113.525
PX3 (140)	4654	4657	20140129062023.367	20140129062025.527
PX4 (145)	9911	9915	20140129003940.589	20140129003941.456
PX4 (145)	445	456	20140129022314.828	20140129022317.207
PX4 (145)	2197	2204	20140129023101.449	20140129023102.960

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	330	337	20140129060110.498	20140129060113.525
PX4 (145)	4654	4657	20140129062023.367	20140129062025.527
IMG (150)	6459	6463	20140129003940.374	20140129003941.241
IMG (150)	101	113	20140129022314.614	20140129022317.207
IMG (150)	2086	2093	20140129023101.449	20140129023102.960
IMG (150)	5033	5038	20140129055519.807	20140129055521.534
IMG (150)	6523	6530	20140129060110.498	20140129060112.228
IMG (150)	11423	11426	20140129062023.367	20140129062024.230
VER (160)	11621	11627	20140129055511.807	20140129055527.807
VER (160)	11841	11845	20140129060103.795	20140129060110.717
VER (160)	12561	12565	20140129062015.801	20140129062023.582
AUX (180)	5599	5601	20140129055512.241	20140129055528.241

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
29/01/2014 00:00:05	-	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)	99.39 %	-
GQisFlagQual set (PX2)	99.51 %	-
GQisFlagQual set (PX3)	99.62 %	-
GQisFlagQual set (PX4)	99.53 %	-
GQisFlagQual set (all)	99.51 %	-

Table 4: Quality flags

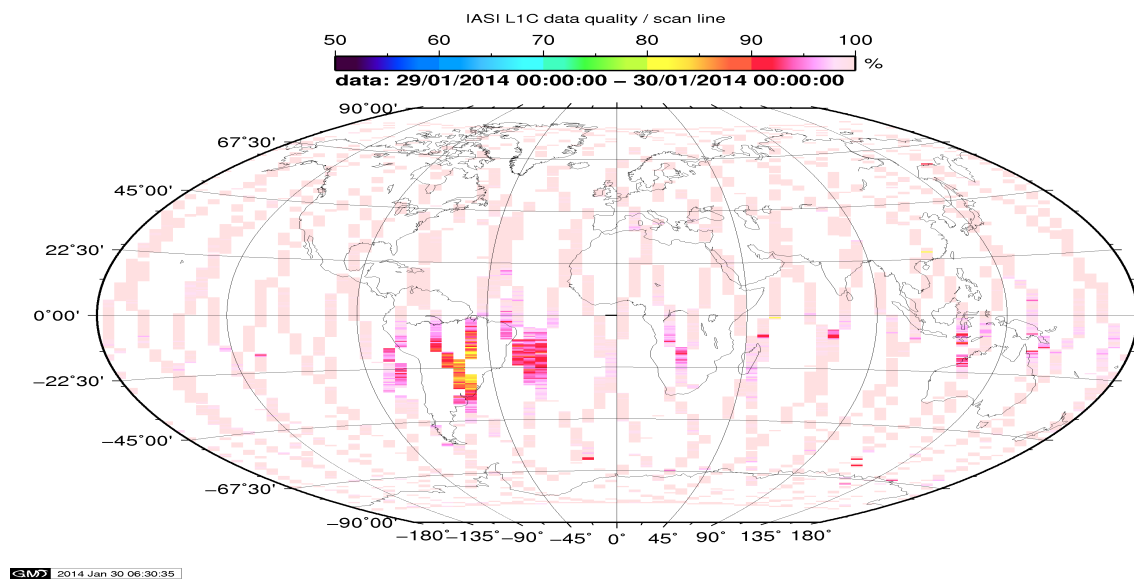


Figure 1: L1C data quality

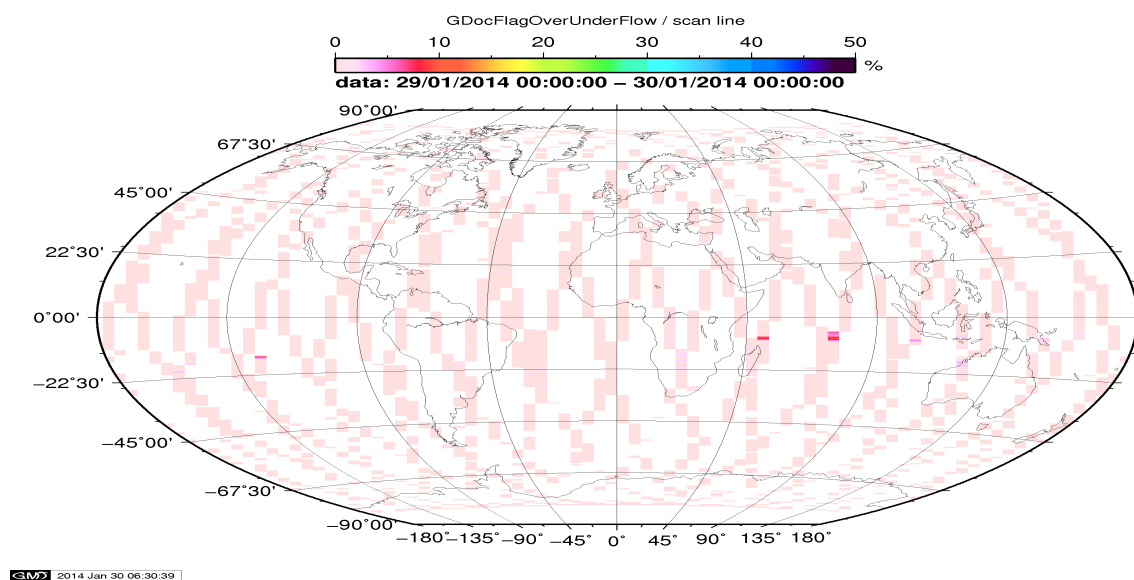


Figure 2: Flag of Over and Under Flows

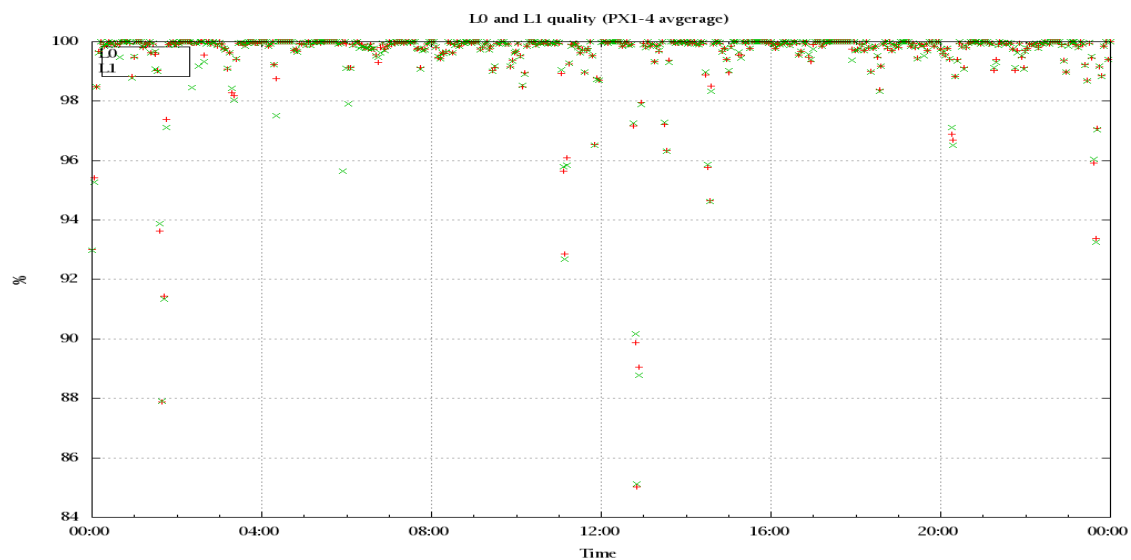


Figure 3: Level 0 and 1C overall quality

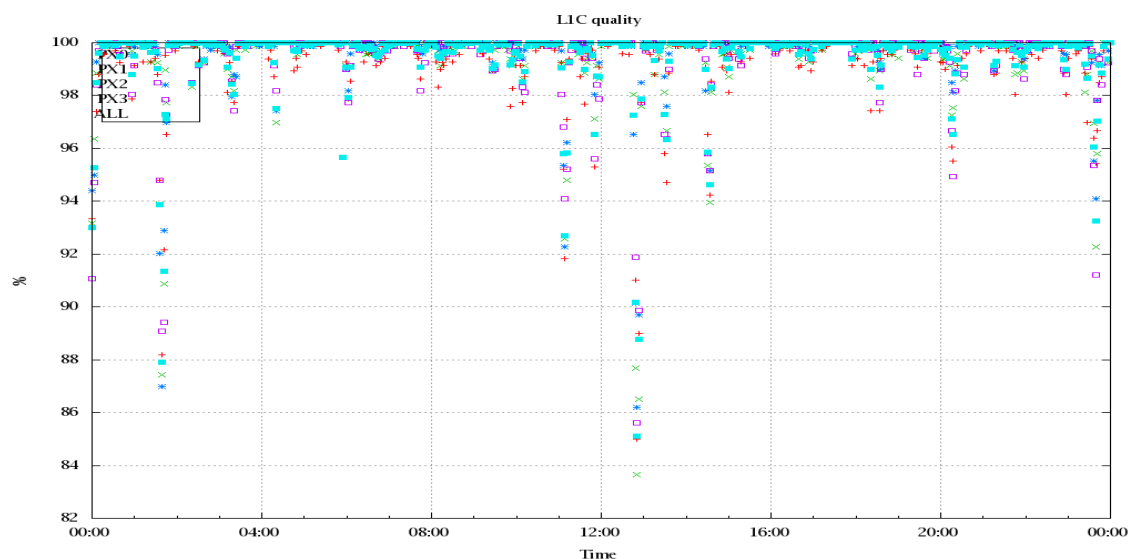


Figure 4: Level 1C quality

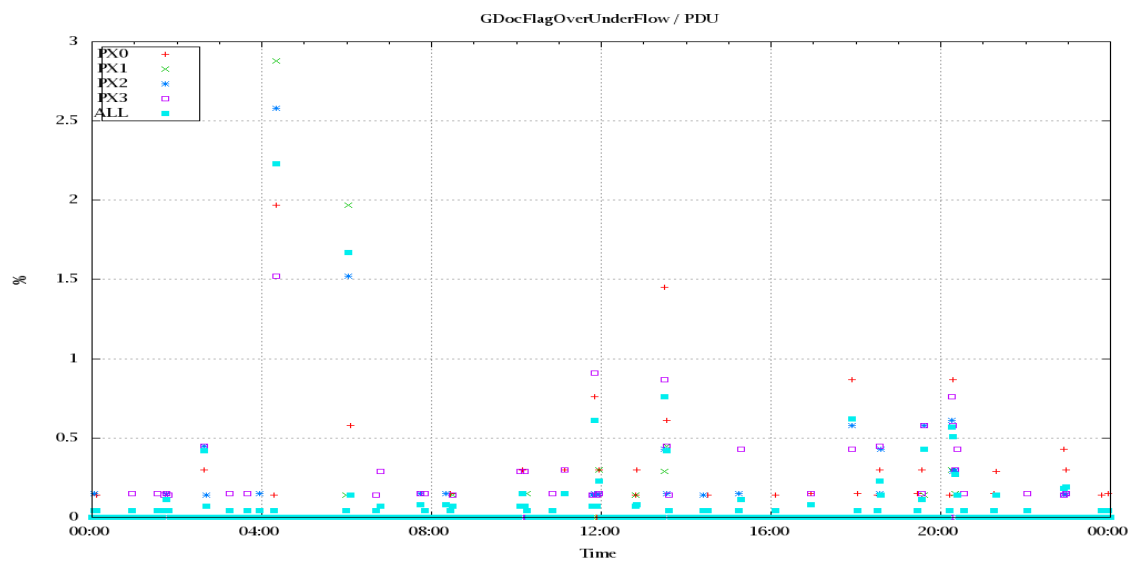


Figure 5: OverUnderFlowFlag timeseries

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.

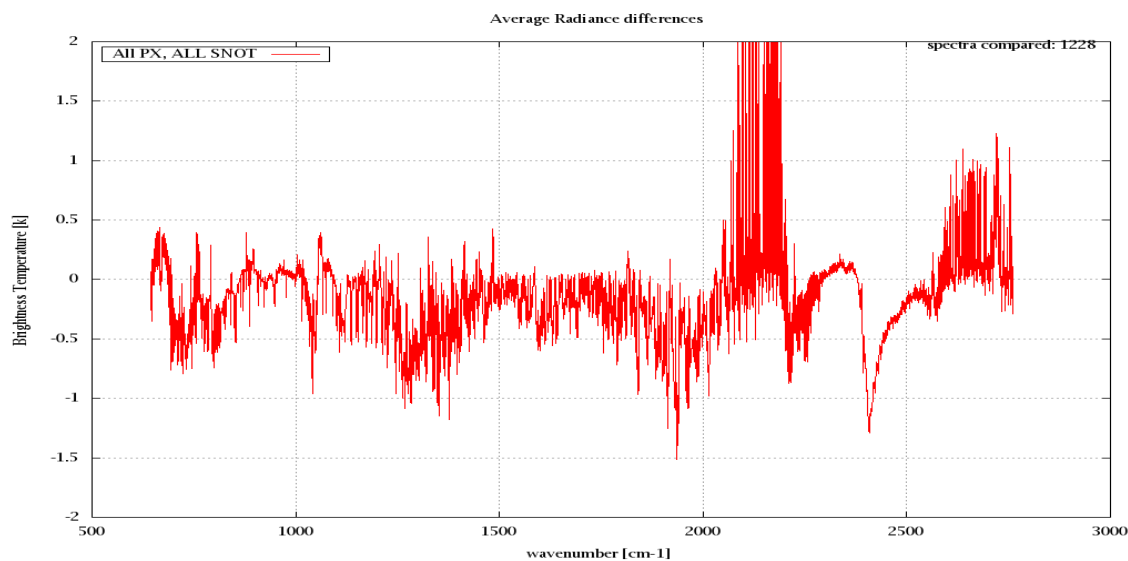


Figure 6: Average Radiance differences: OBS-CAL

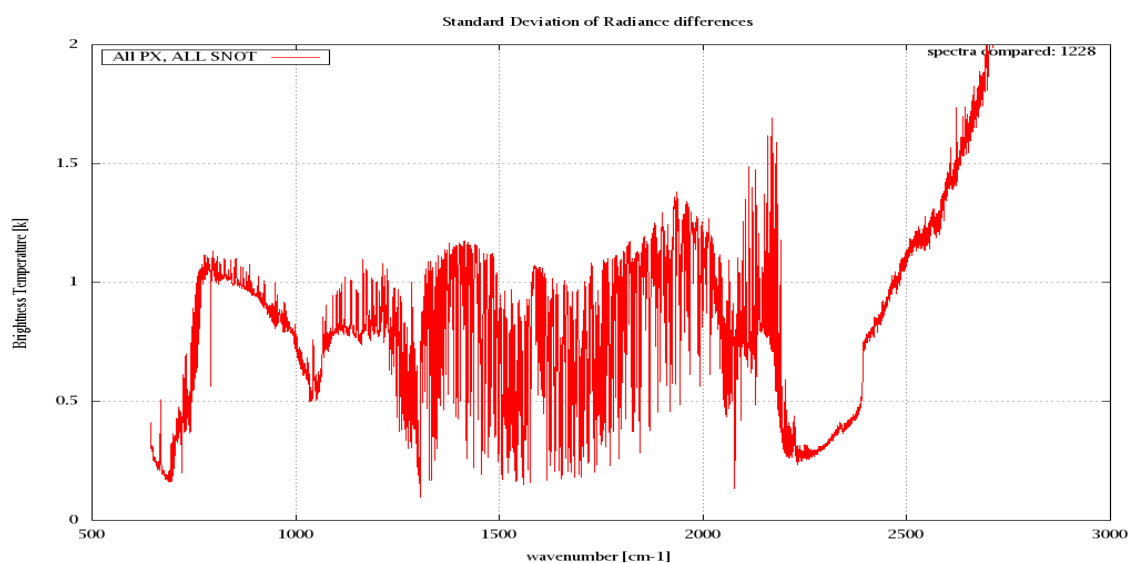


Figure 7: Standard Deviation of Radiance differences

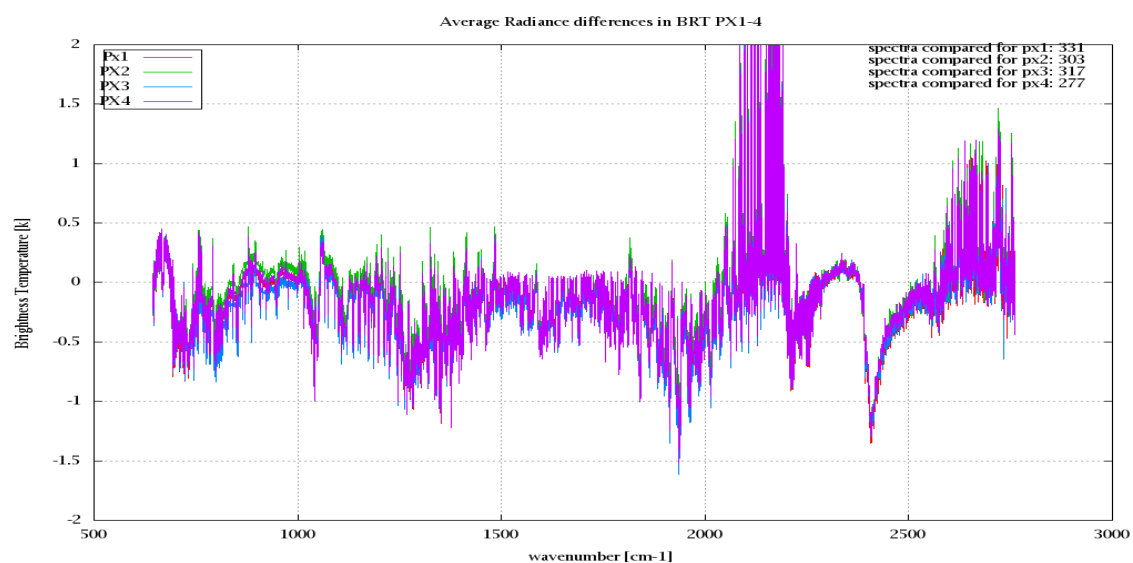


Figure 8: Average Radiance differences: OBS-CAL

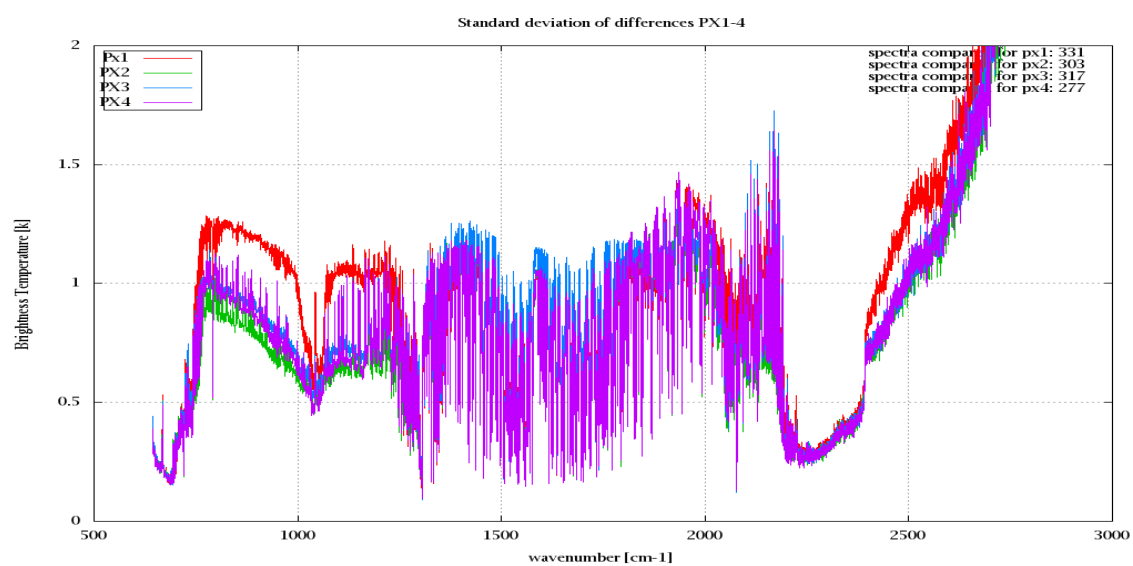


Figure 9: Standard Deviation of Radiance differences

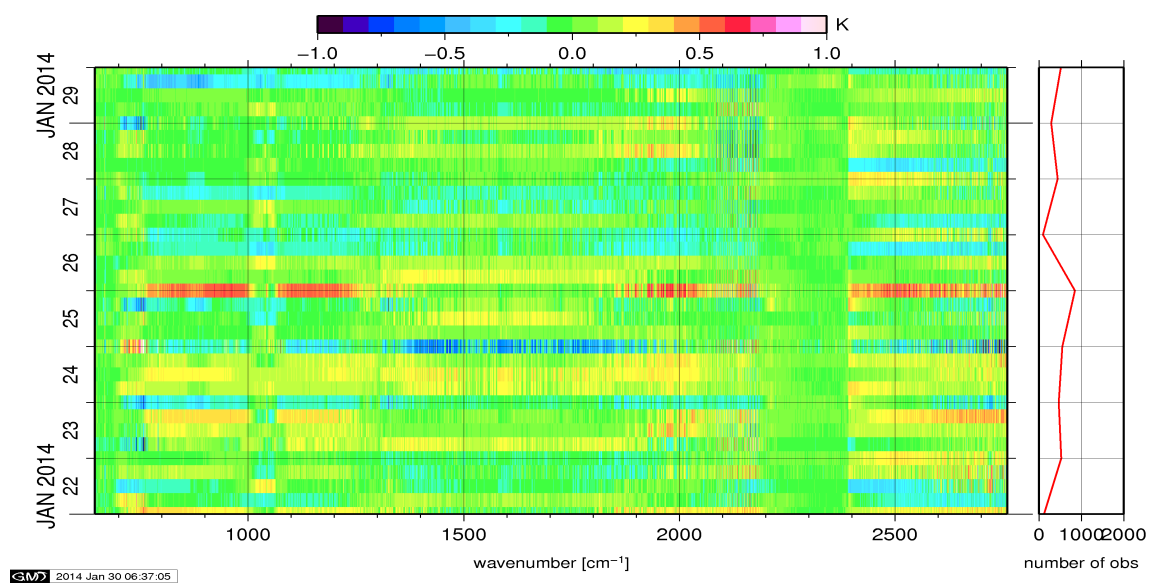


Figure 10: Radiance Anomaly in BRT: All Channels

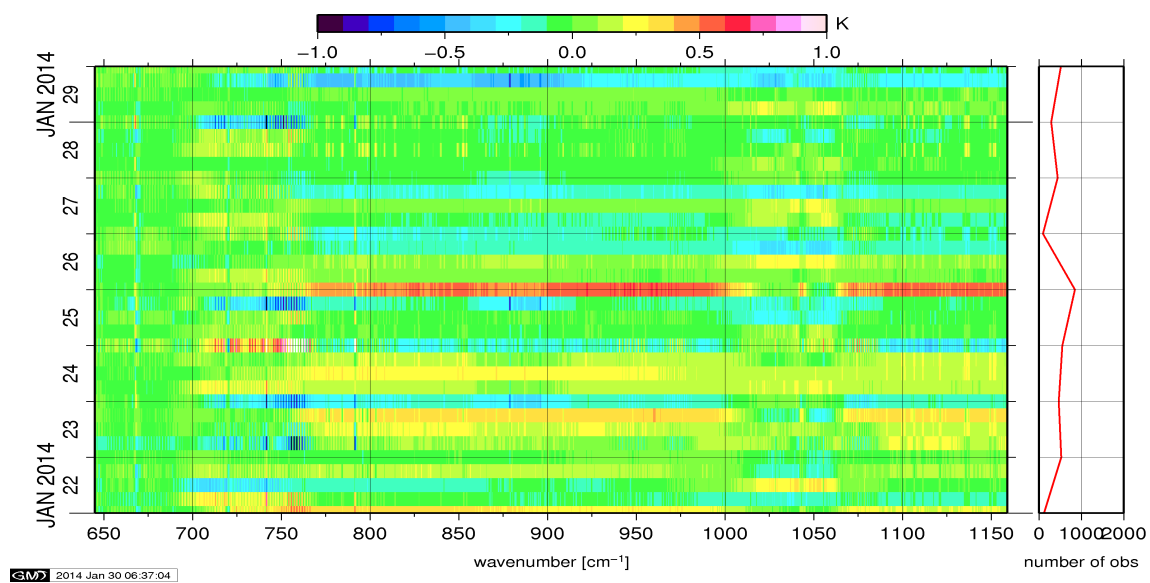


Figure 11: Radiance Anomaly in BRT: IASI Band 1

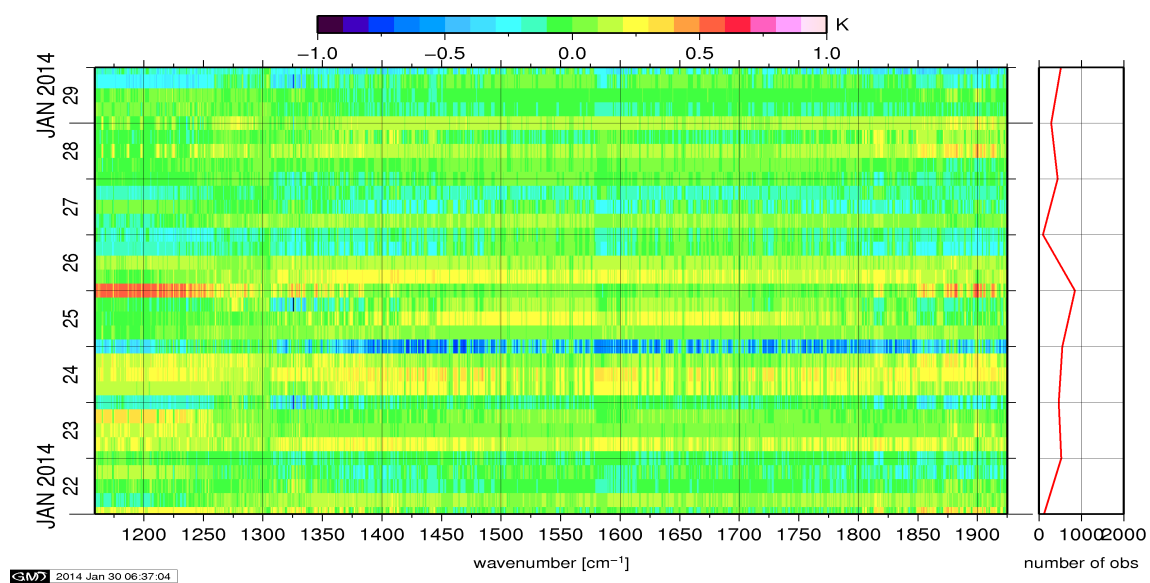


Figure 12: Radiance Anomaly in BRT: IASI Band 2

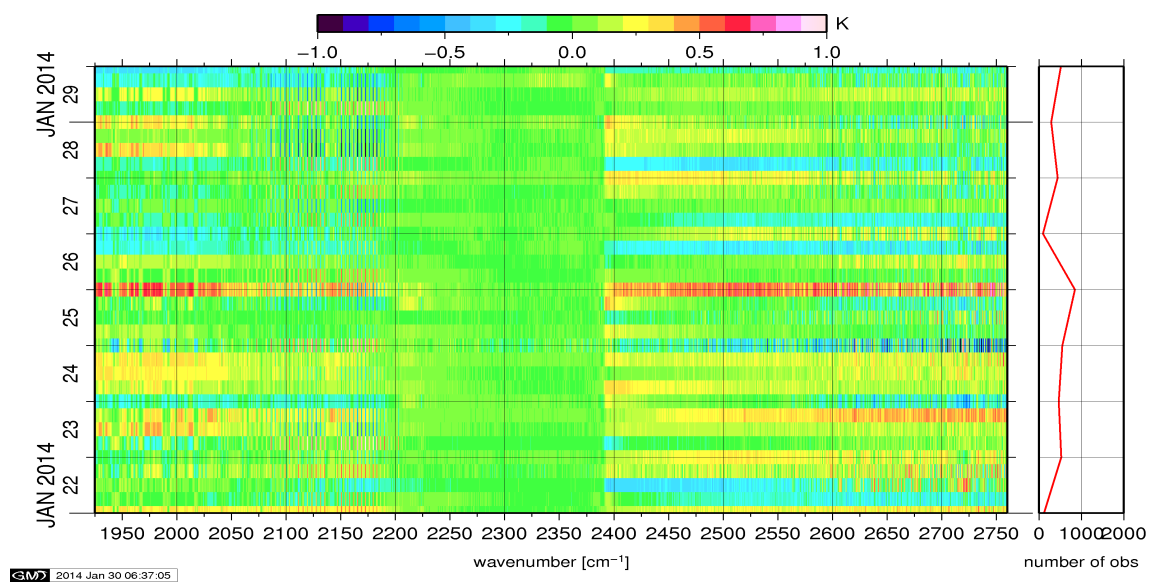


Figure 13: Radiance Anomaly in BRT: IASI Band 3

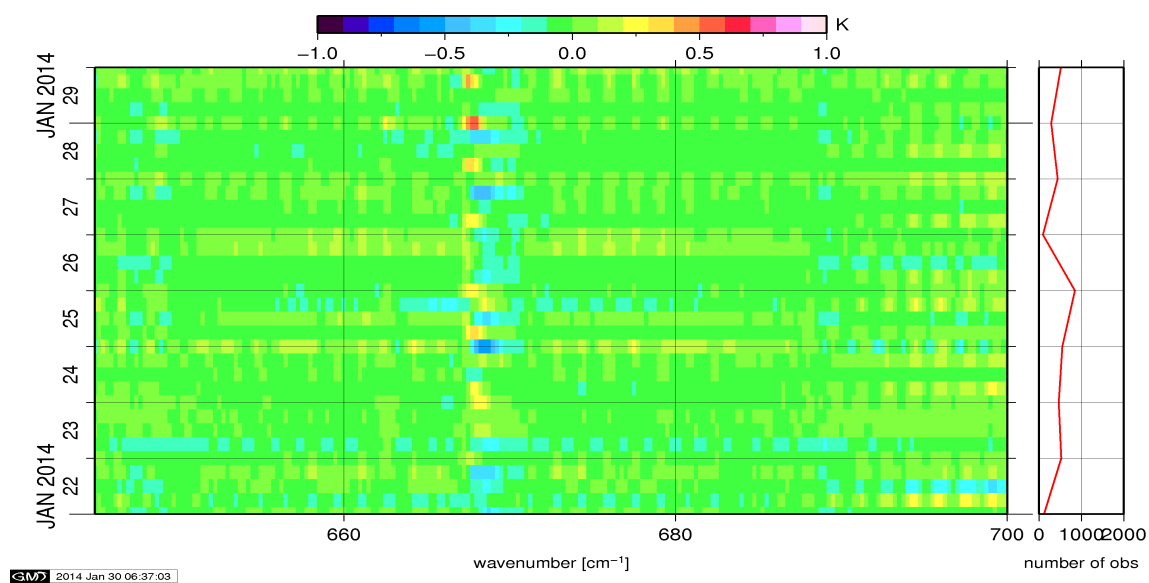


Figure 14: Radiance Anomaly in BRT: CO2 14

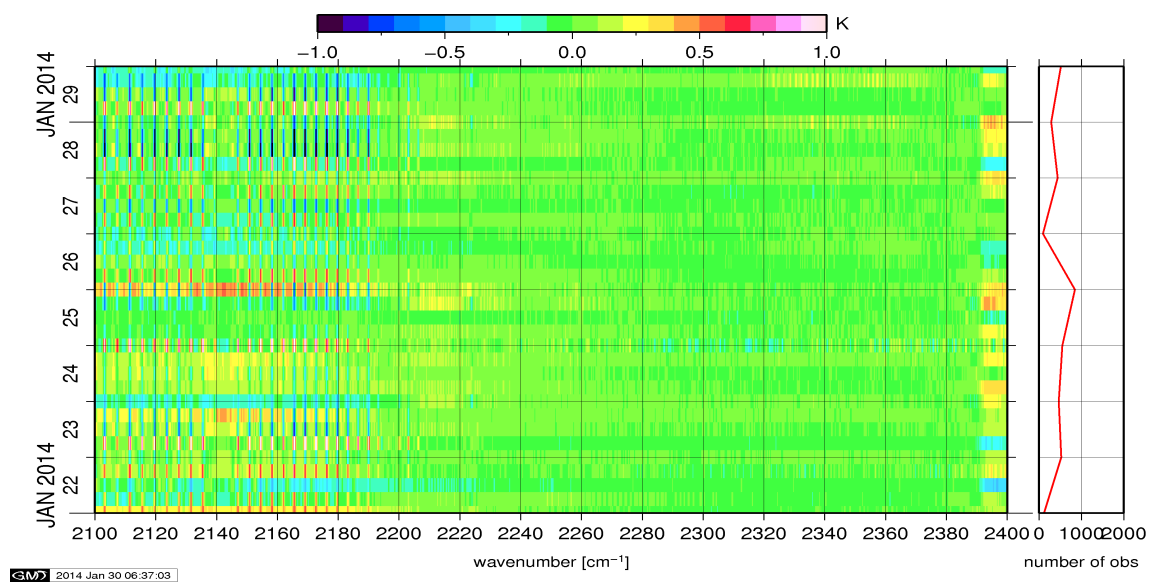


Figure 15: Radiance Anomaly in BRT: CO2 4.3

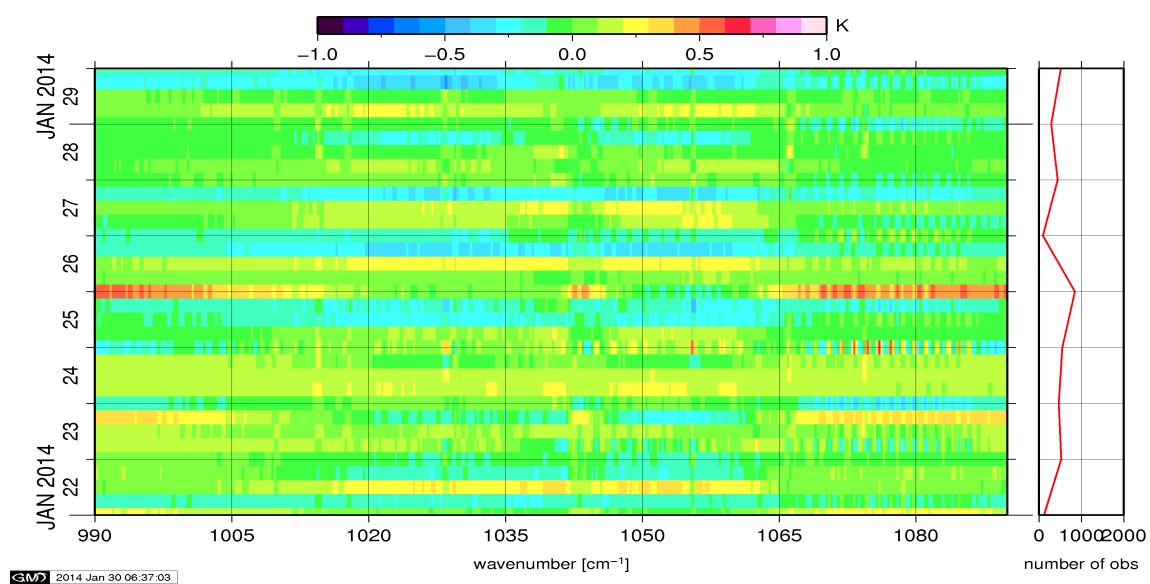


Figure 16: Radiance Anomaly in BRT: O3

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.

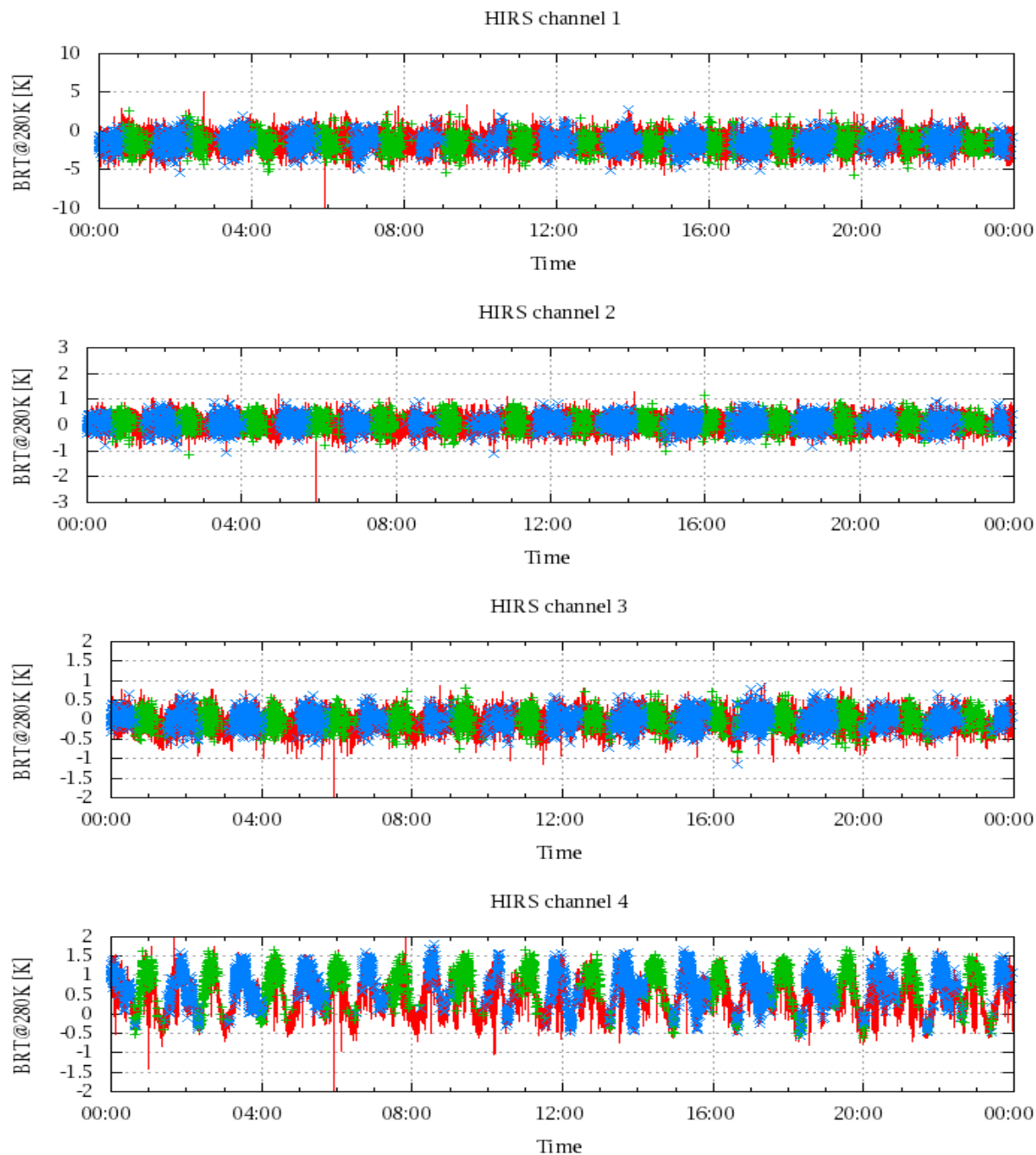


Figure 17: Radiance Differences in BRT

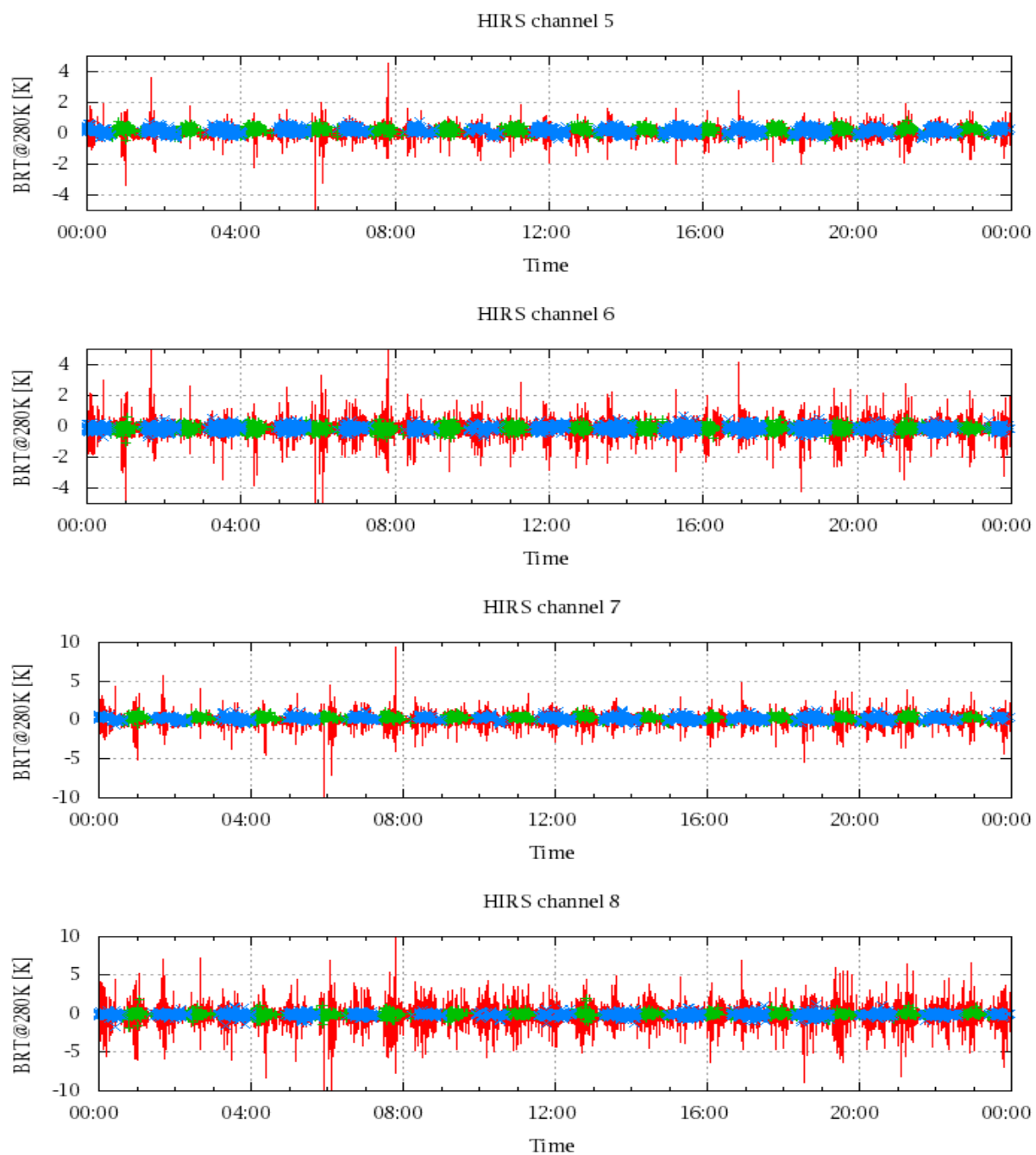


Figure 18: Radiance Differences in BRT

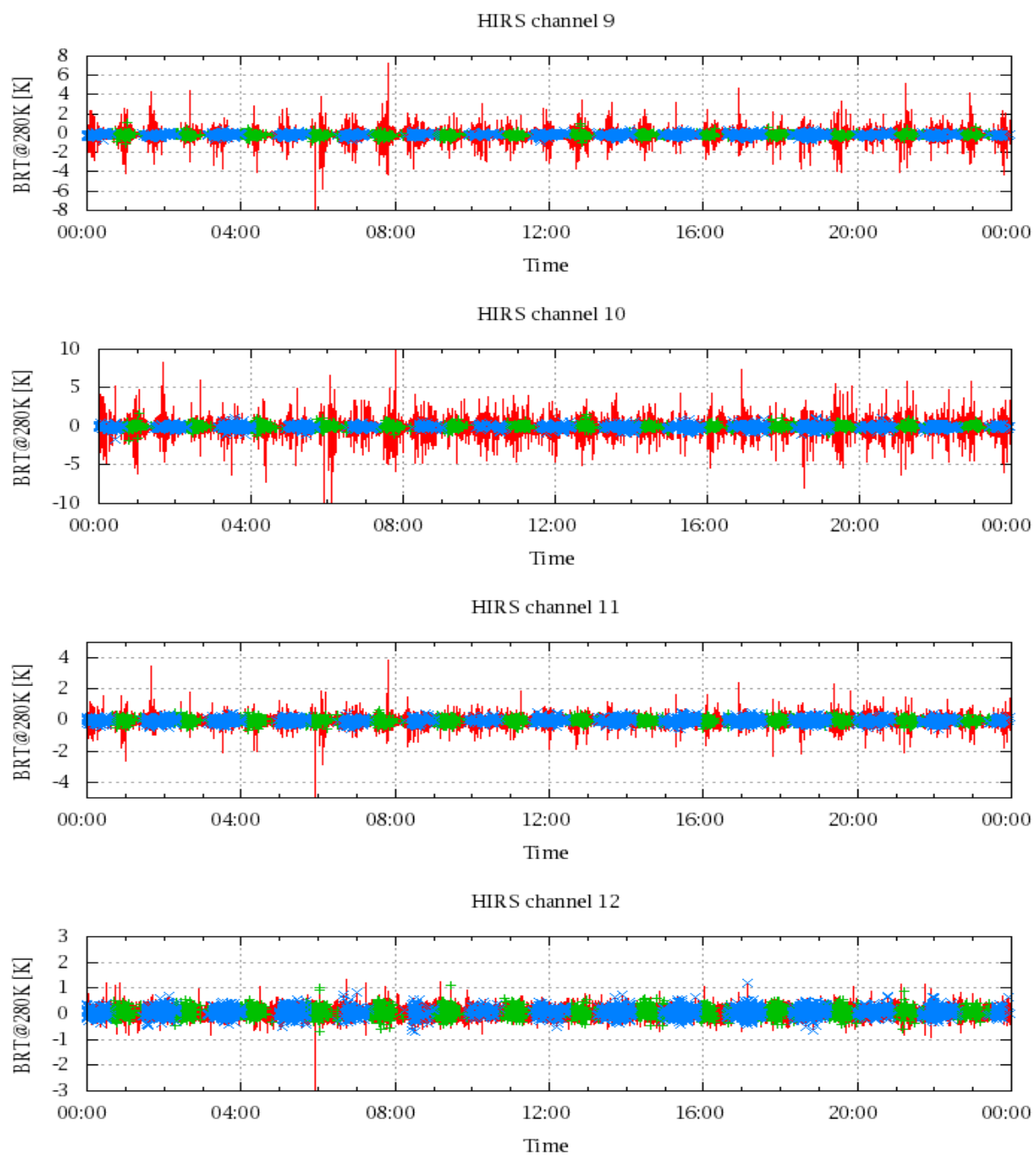


Figure 19: Radiance Differences in BRT

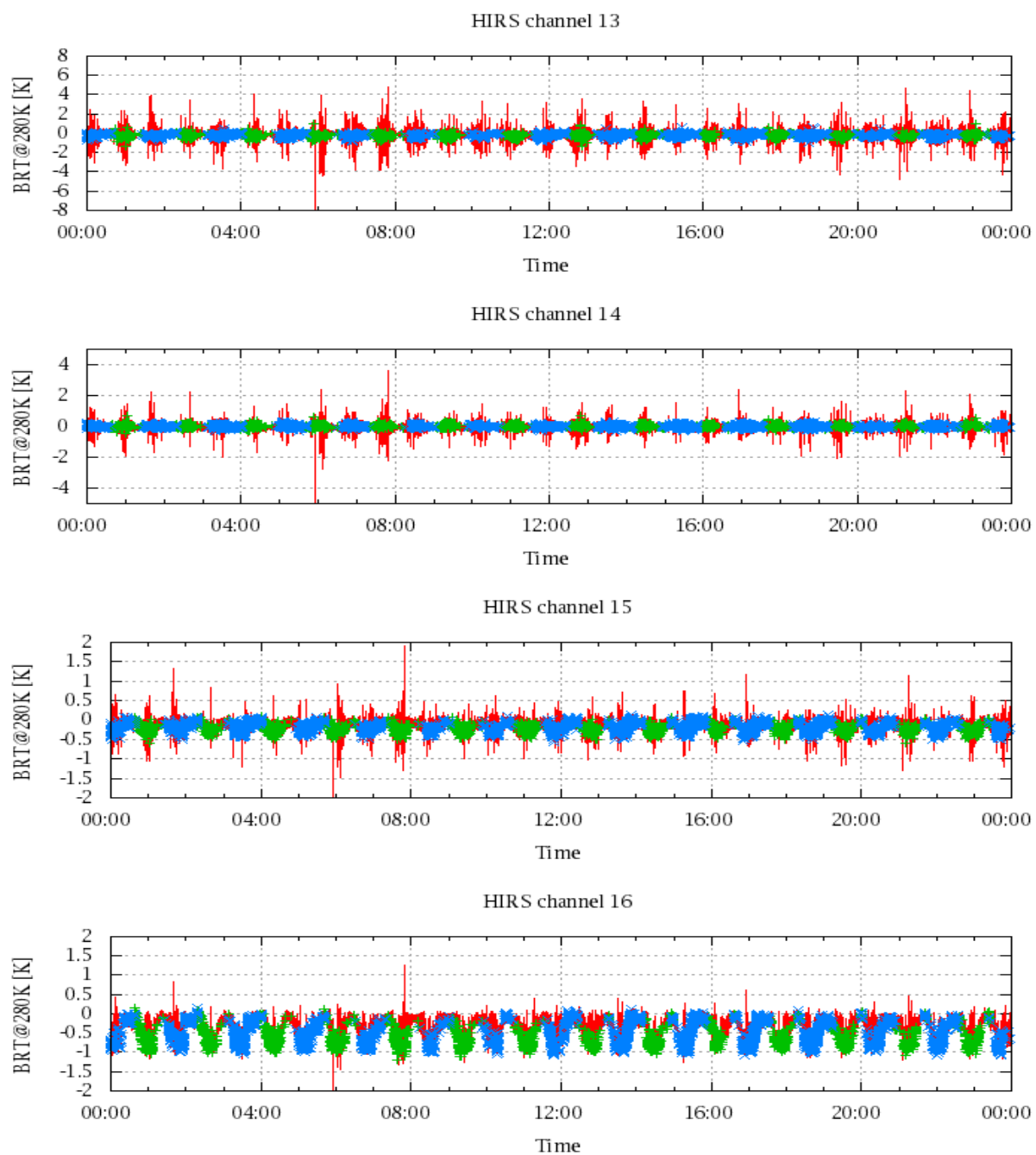


Figure 20: Radiance Differences in BRT

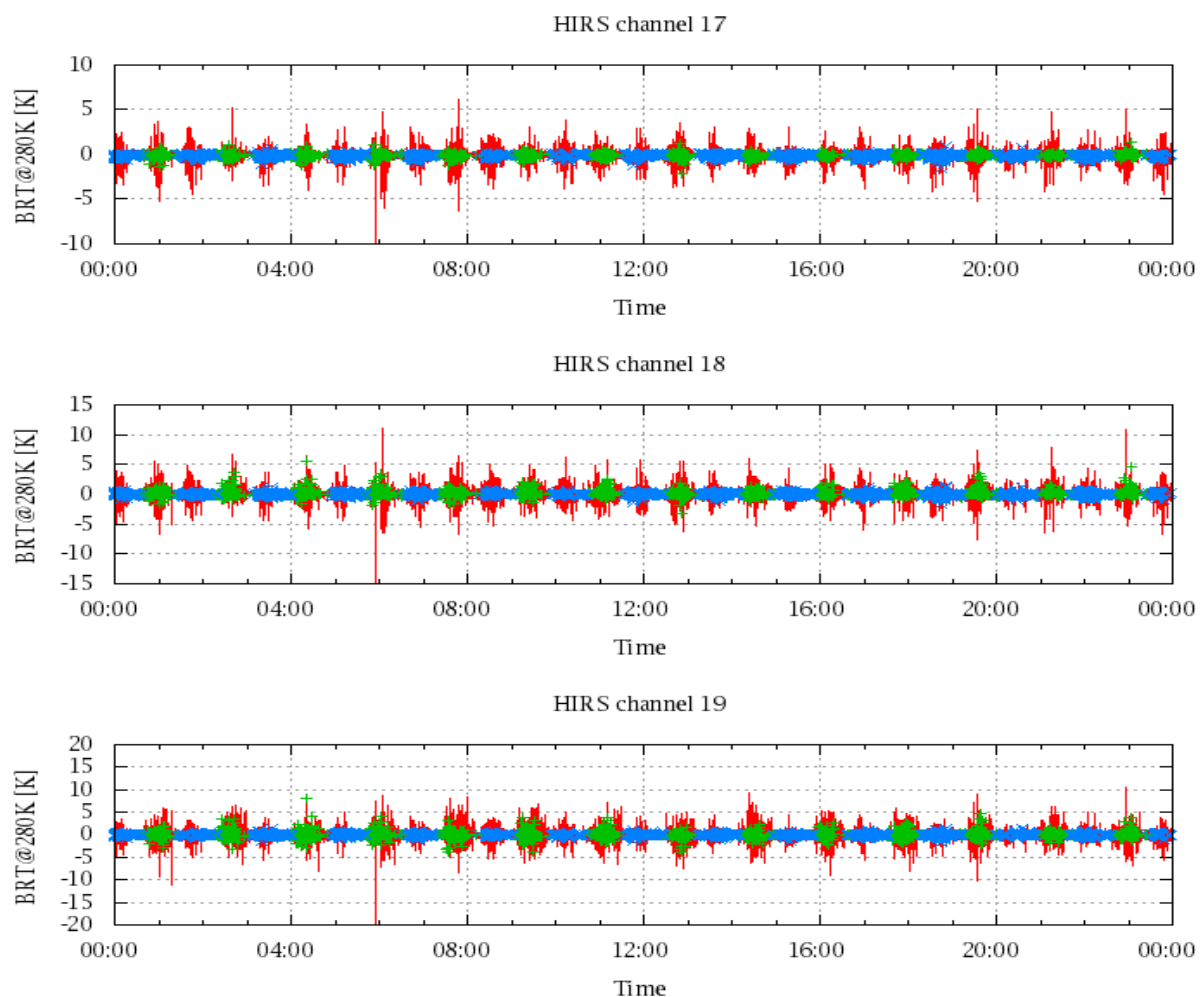


Figure 21: Radinace Differences in BRT