

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

18/01/2014 00:00:00 - 19/01/2014 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 18/01/2014 00:00:00 - 19/01/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 18/01/2014 00:00:00 - 19/01/2014 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)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	5062	0	20140118022705.406	20140118023003.132
PX2 (135)	5062	0	20140118022705.406	20140118023003.132
PX3 (140)	5062	0	20140118022705.406	20140118023003.132
PX4 (145)	5062	0	20140118022705.406	20140118023003.132
IMG (150)	13930	0	20140118022705.406	20140118023003.132
VER (160)	7078	460	20140118022705.406	20140118024259.580
VER (160)	460	465	20140118024259.580	20140118024259.580
VER (160)	465	470	20140118024259.580	20140118024259.580
VER (160)	470	475	20140118024259.580	20140118024259.580
VER (160)	475	480	20140118024259.580	20140118024259.580
VER (160)	480	461	20140118024259.580	20140118024259.580
VER (160)	461	466	20140118024259.580	20140118024259.580
VER (160)	466	471	20140118024259.580	20140118024259.580
VER (160)	471	476	20140118024259.580	20140118024259.580
VER (160)	476	481	20140118024259.580	20140118024259.580
VER (160)	481	462	20140118024259.580	20140118024259.580
VER (160)	462	467	20140118024259.580	20140118024259.580
VER (160)	467	472	20140118024259.580	20140118024259.580

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	472	477	20140118024259.580	20140118024259.580
VER (160)	477	482	20140118024259.580	20140118024259.580
VER (160)	482	463	20140118024259.580	20140118024259.580
VER (160)	463	468	20140118024259.580	20140118024259.580
VER (160)	468	473	20140118024259.580	20140118024259.580
VER (160)	473	478	20140118024259.580	20140118024259.580
VER (160)	478	483	20140118024259.580	20140118024259.580
VER (160)	483	464	20140118024259.580	20140118024259.580
VER (160)	464	469	20140118024259.580	20140118024259.580
VER (160)	469	474	20140118024259.580	20140118024259.580
VER (160)	474	479	20140118024259.580	20140118024259.580
VER (160)	479	484	20140118024259.580	20140118024259.580
AUX (180)	14504	0	20140118022657.840	20140118023009.835

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
18/01/2014 00:00:06	-	Normal operation
18/01/2014 04:26:14	Normal operation	Auxiliary ASE synchronised
18/01/2014 04:28:06	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)	99.46 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.64 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.57 %	-

Table 4: Quality flags

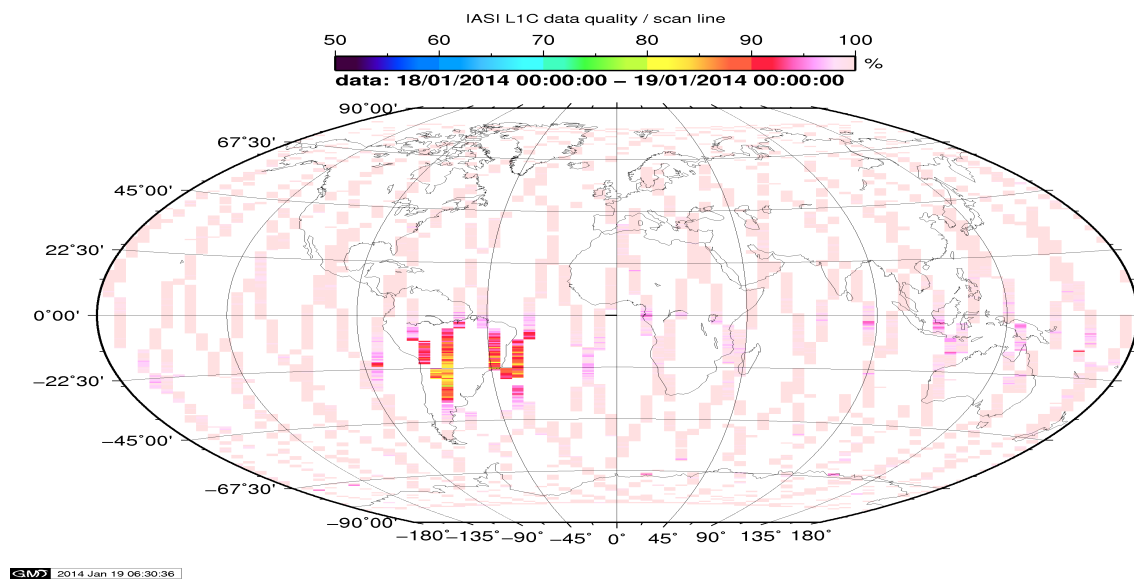


Figure 1: L1C data quality

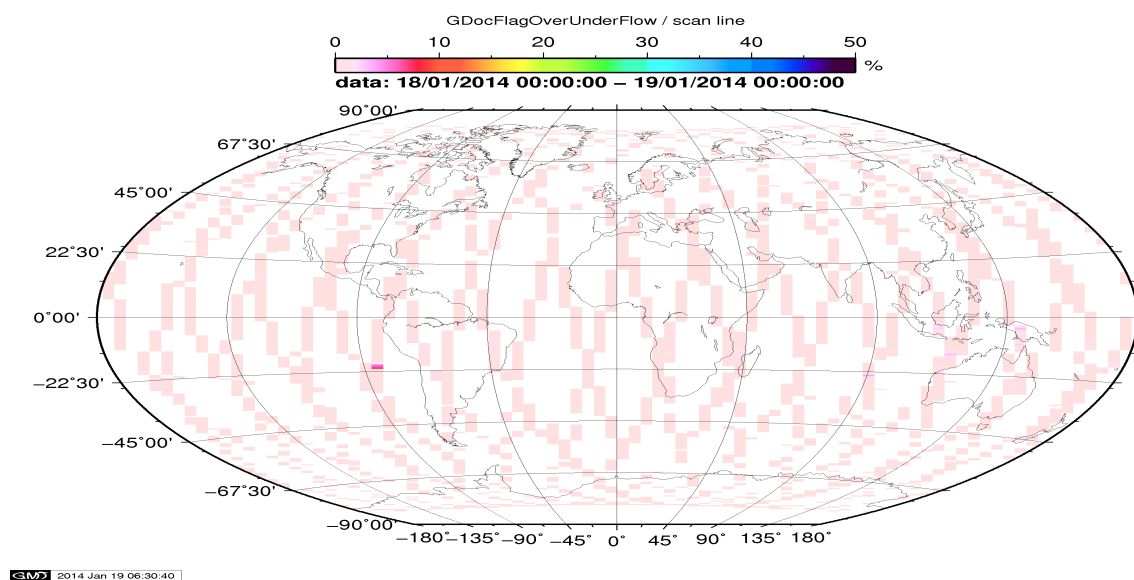


Figure 2: Flag of Over and Under Flows

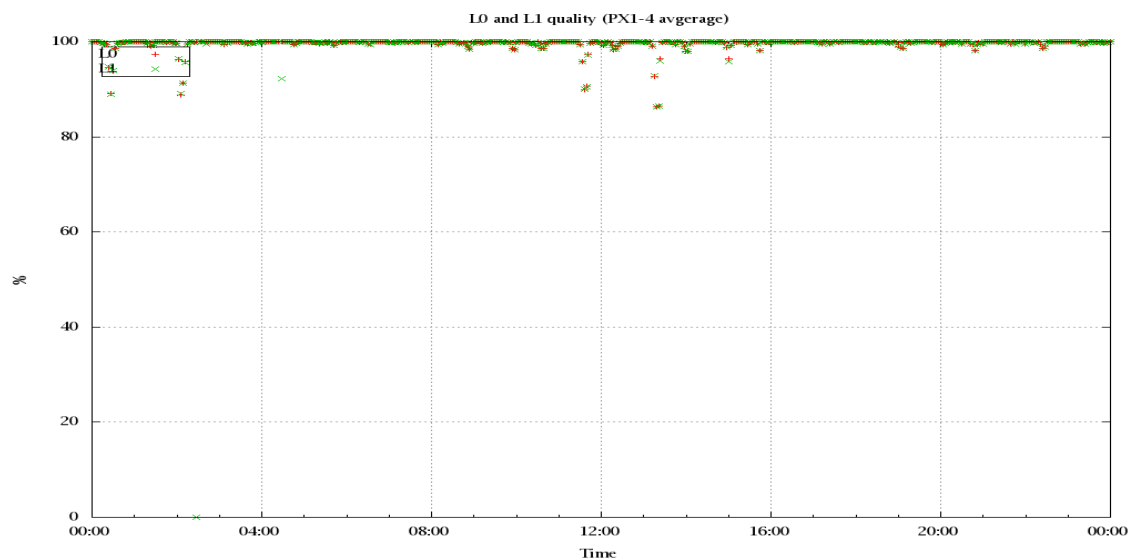


Figure 3: Level 0 and 1C overall quality

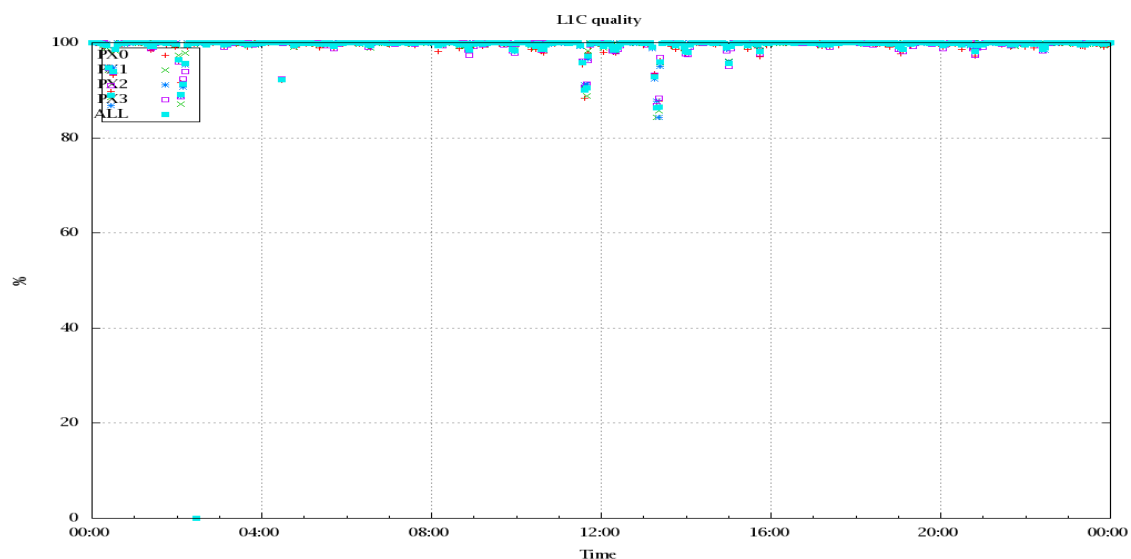


Figure 4: Level 1C quality

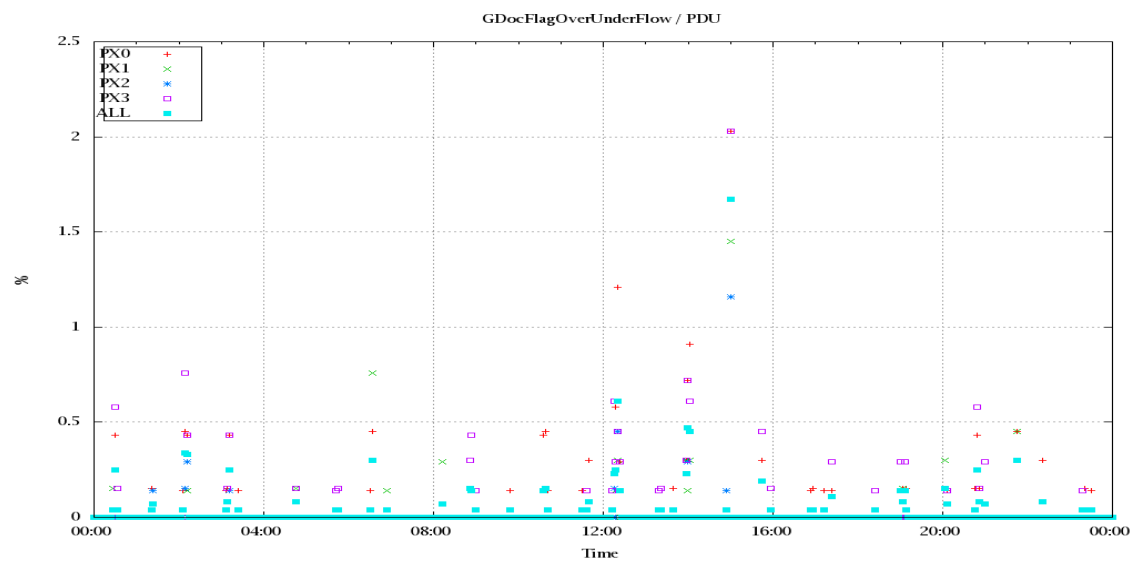


Figure 5: OverUnderFlowFlag timeseries

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.

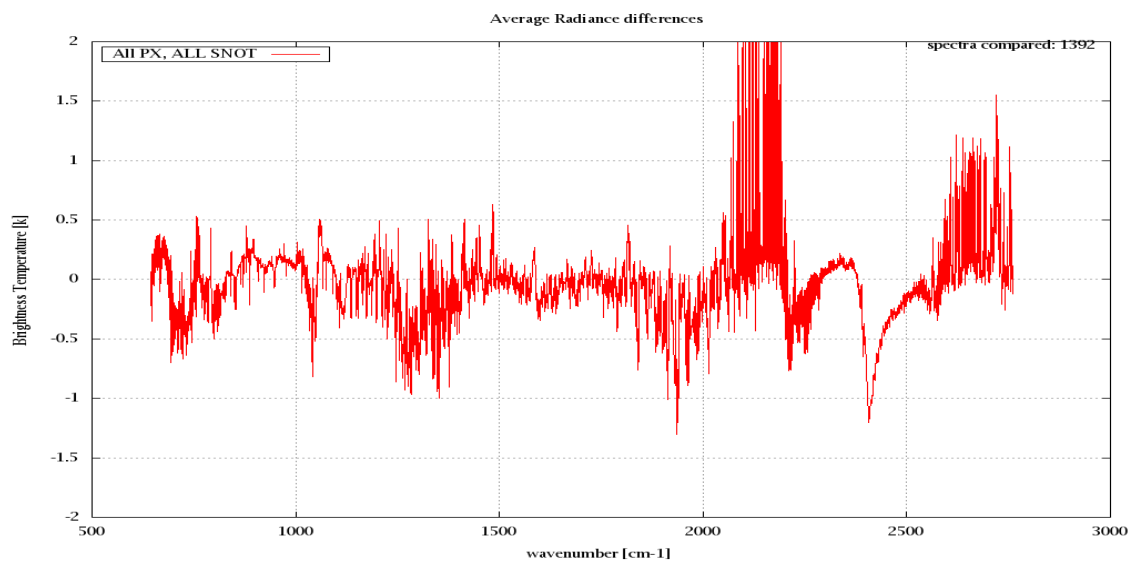


Figure 6: Average Radiance differences: OBS-CAL

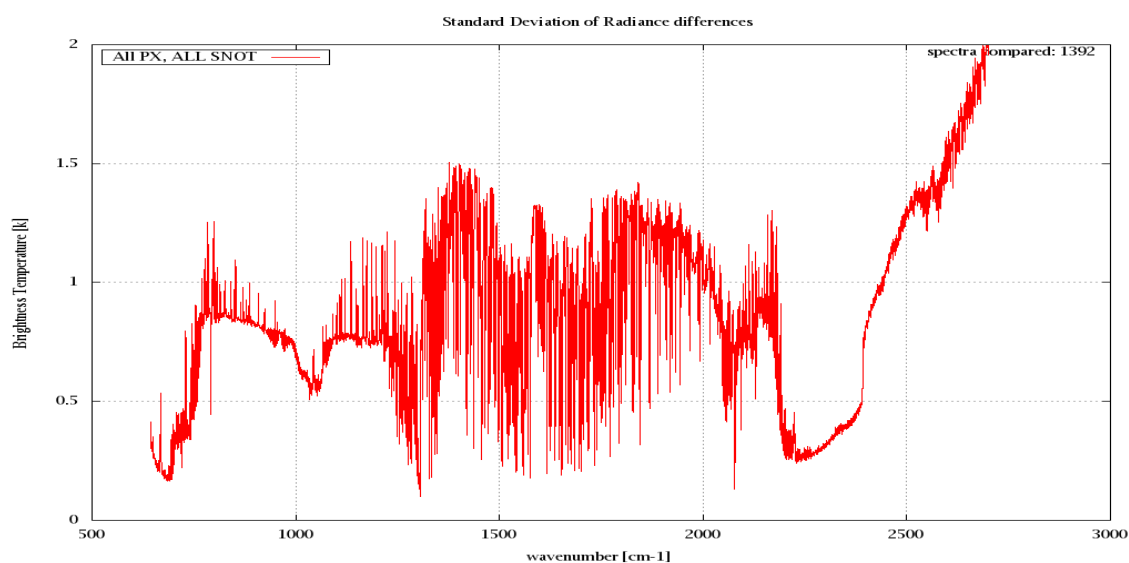


Figure 7: Standard Deviation of Radiance differences

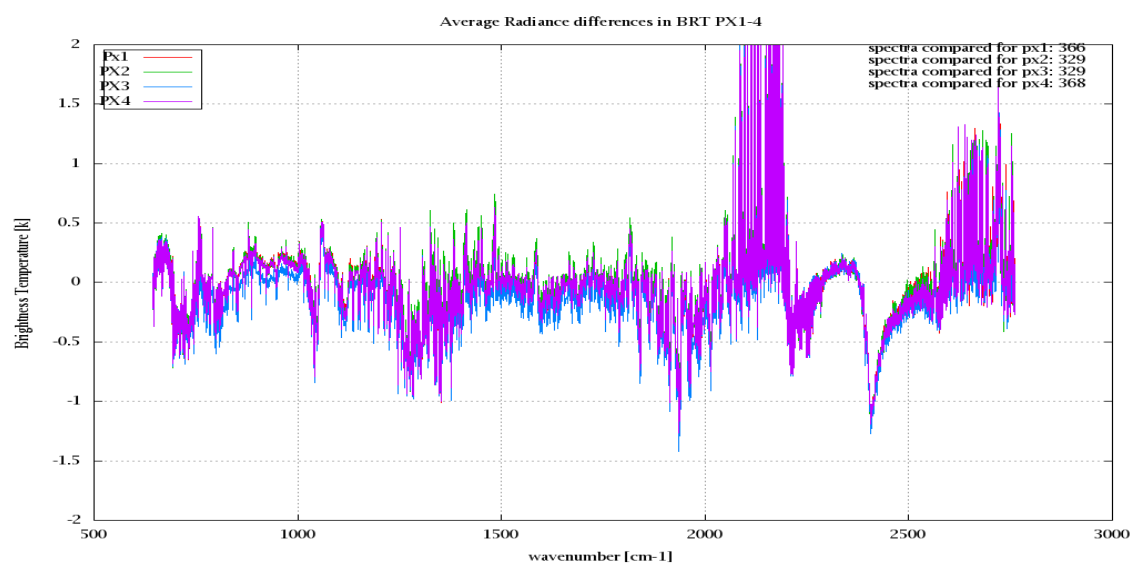


Figure 8: Average Radiance differences: OBS-CAL

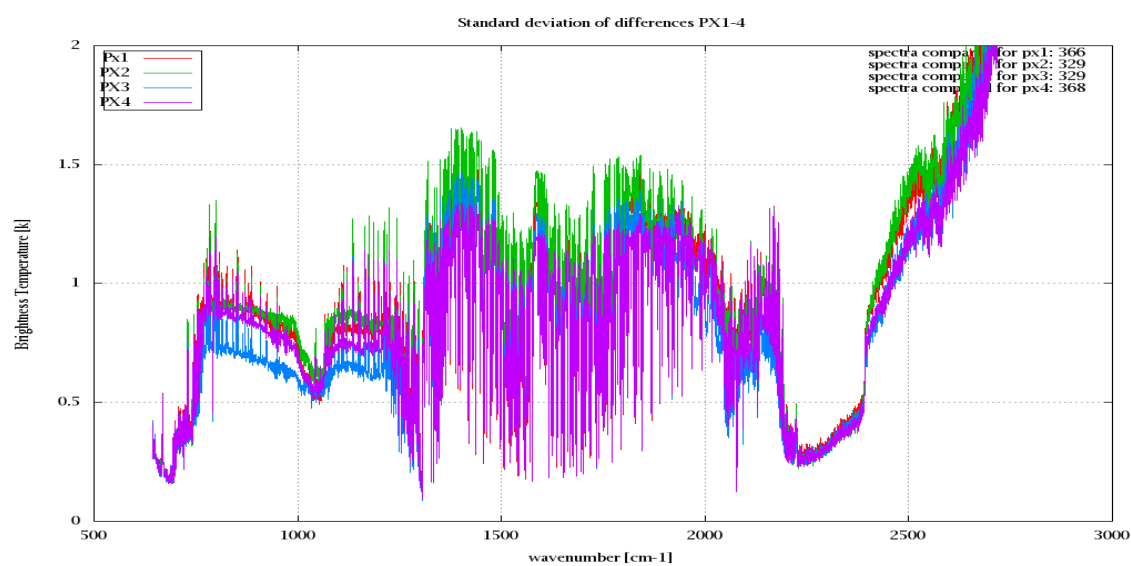


Figure 9: Standard Deviation of Radiance differences

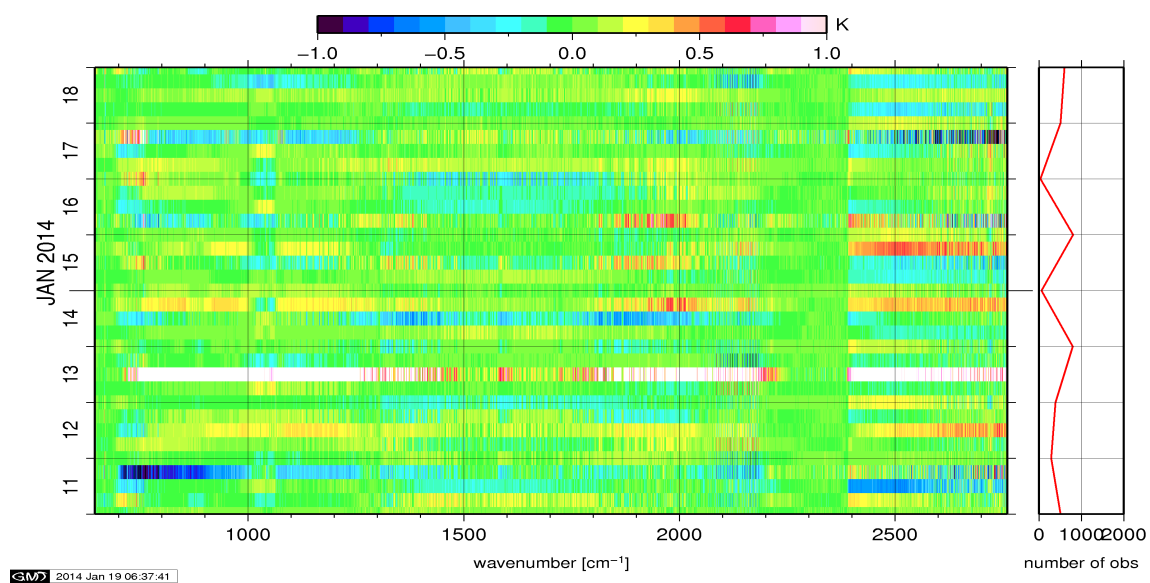


Figure 10: Radiance Anomaly in BRT: All Channels

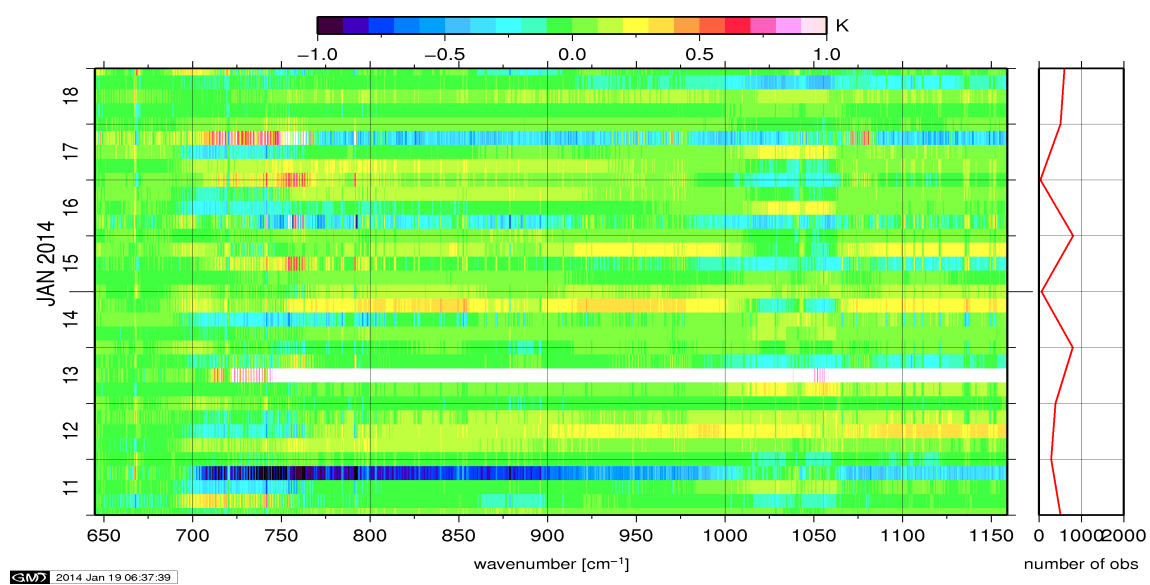


Figure 11: Radiance Anomaly in BRT: IASI Band 1

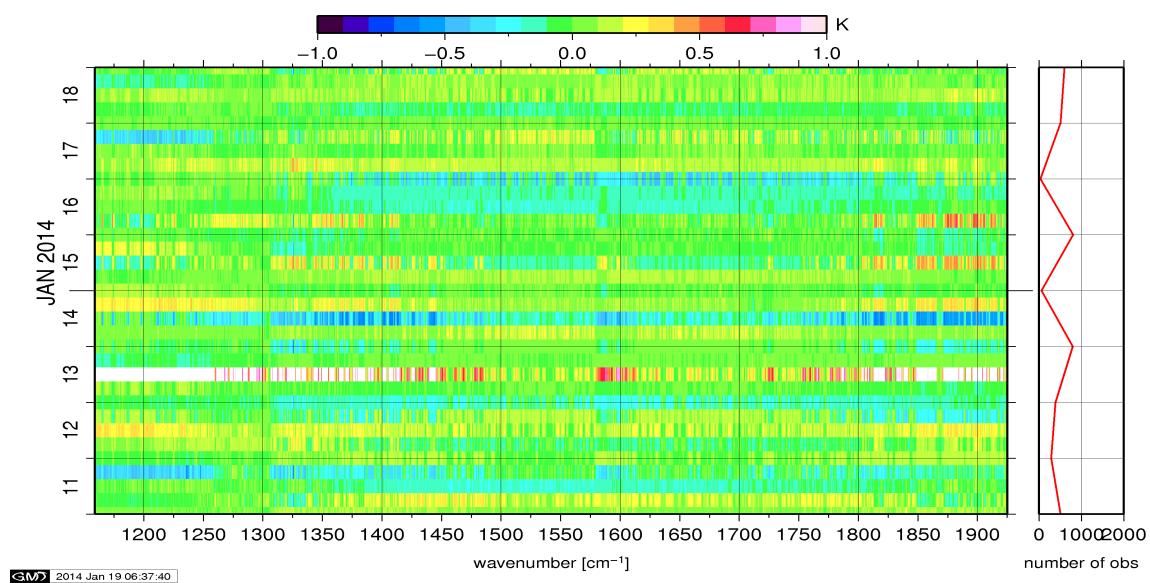


Figure 12: Radiance Anomaly in BRT: IASI Band 2

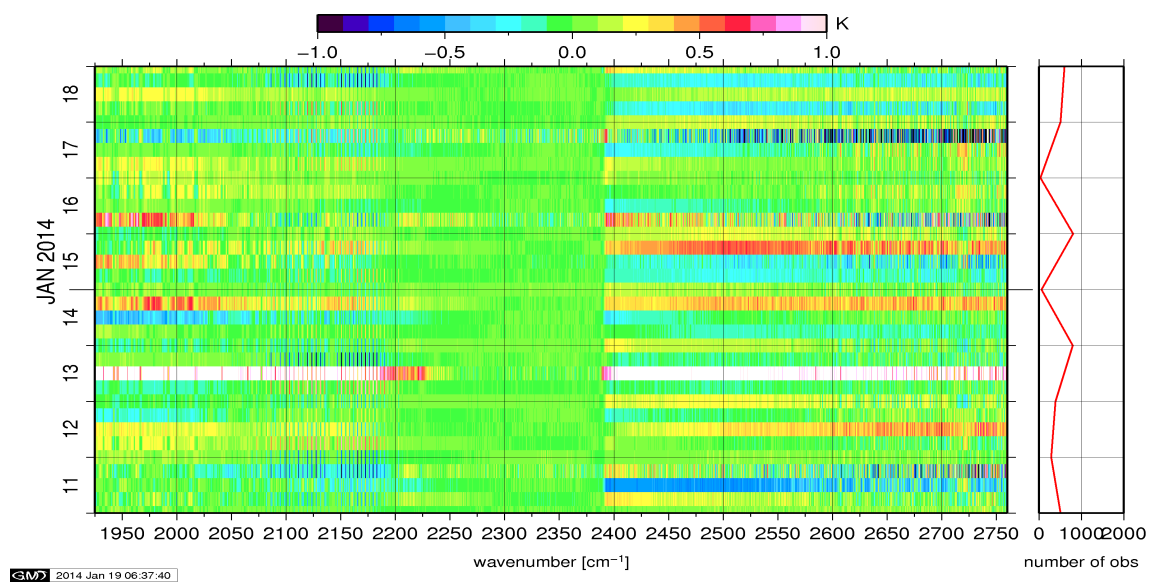


Figure 13: Radiance Anomaly in BRT: IASI Band 3

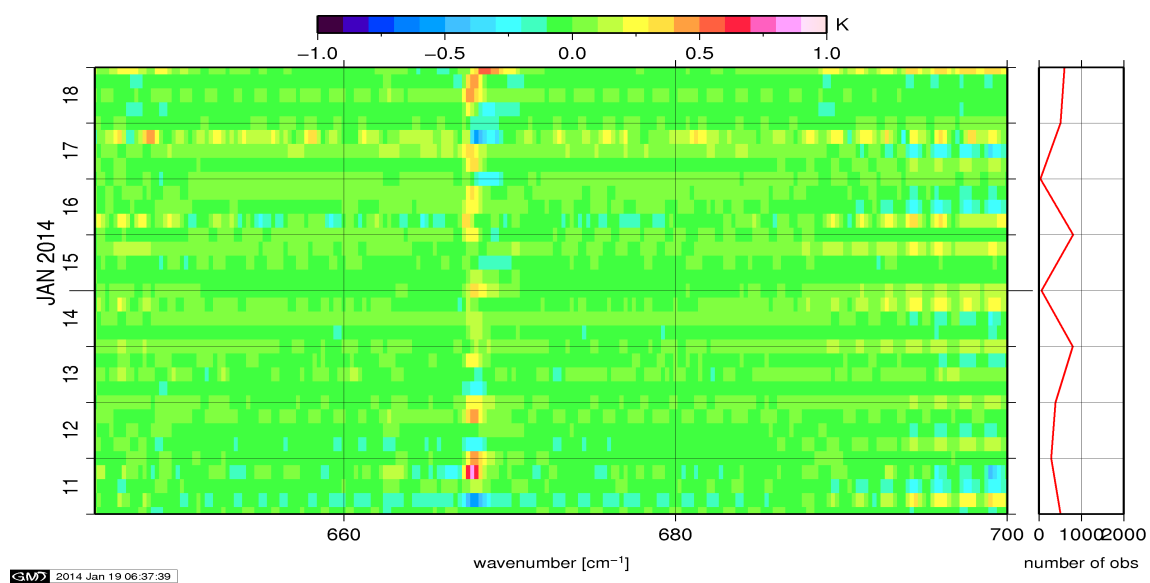


Figure 14: Radiance Anomaly in BRT: CO2 14

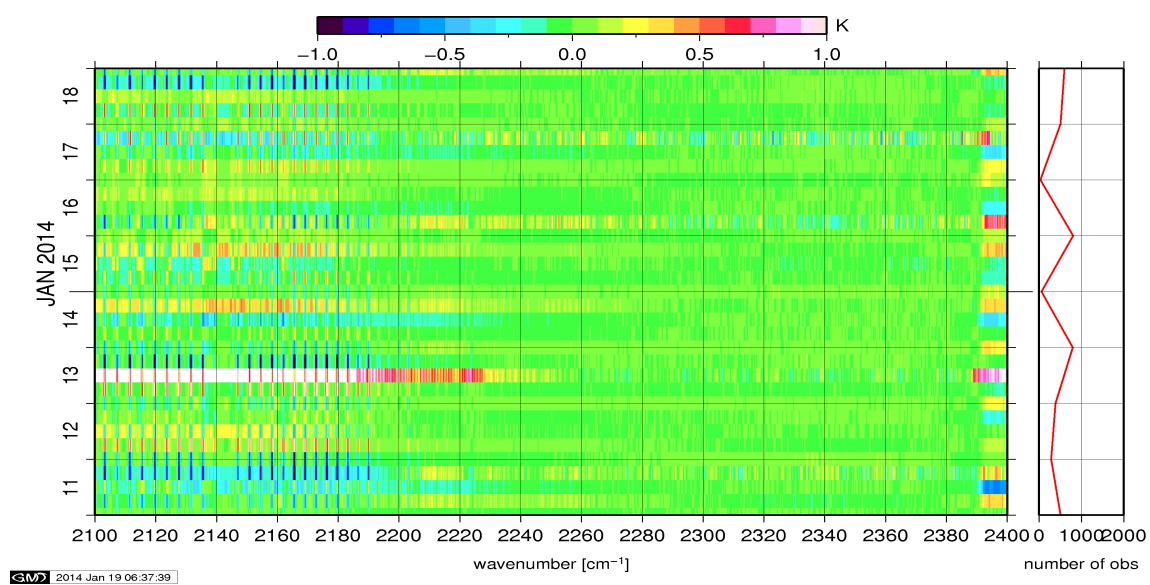


Figure 15: Radiance Anomaly in BRT: CO2 4.3

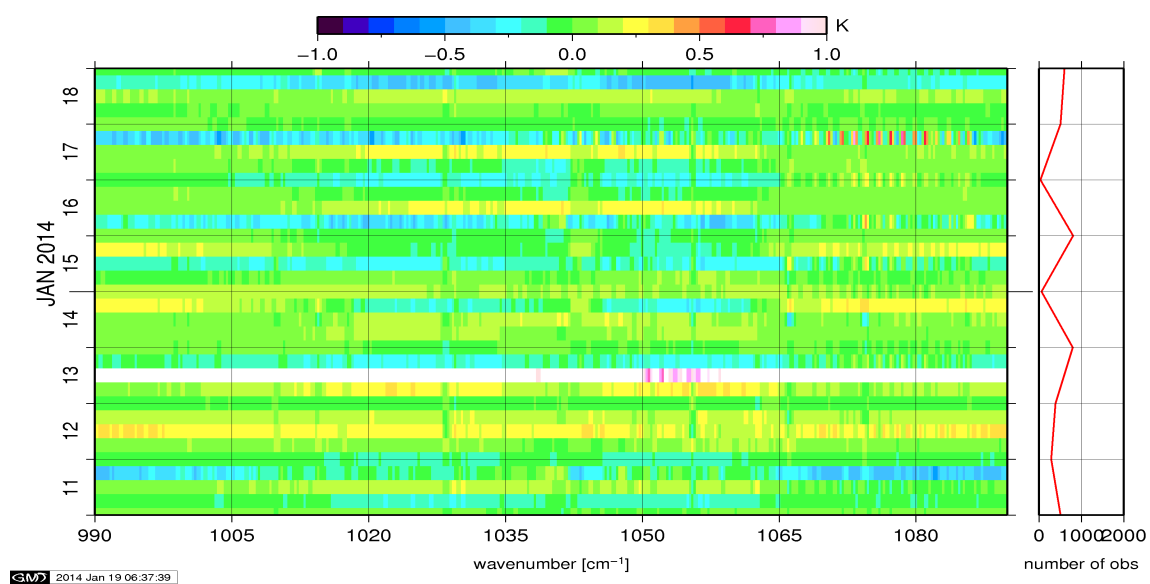


Figure 16: Radiance Anomaly in BRT: O3

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.

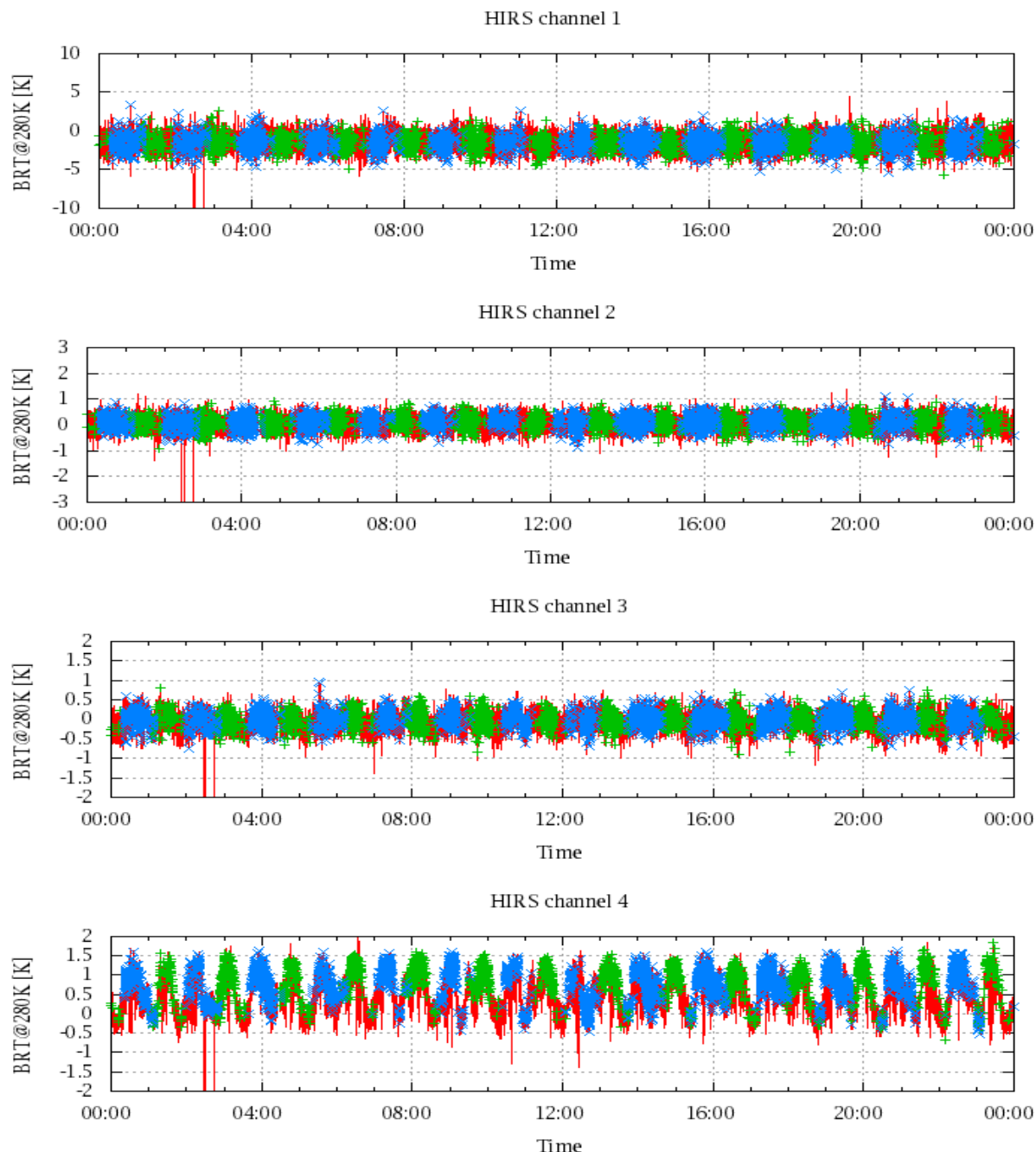


Figure 17: Radiance Differences in BRT

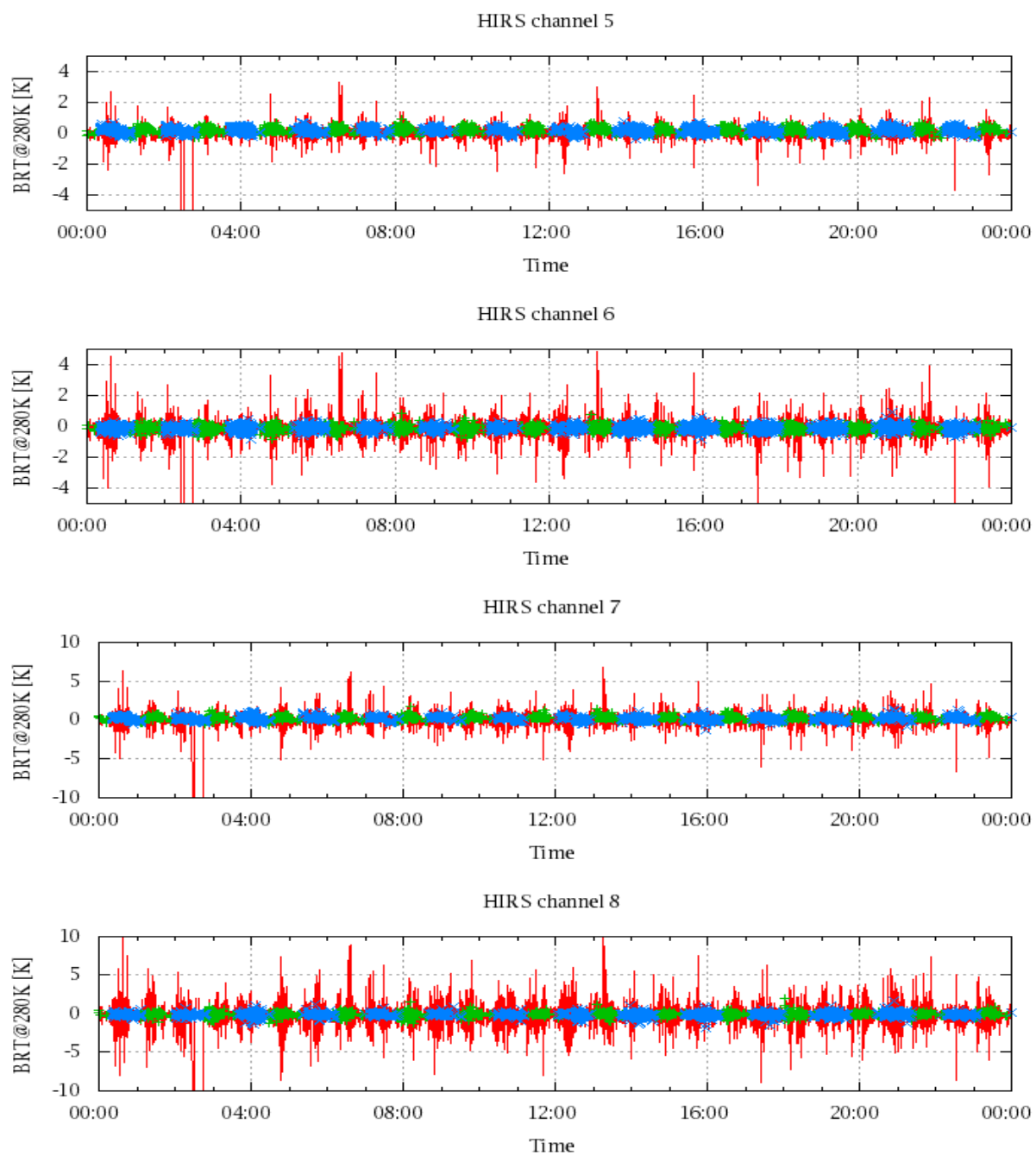


Figure 18: Radiance Differences in BRT

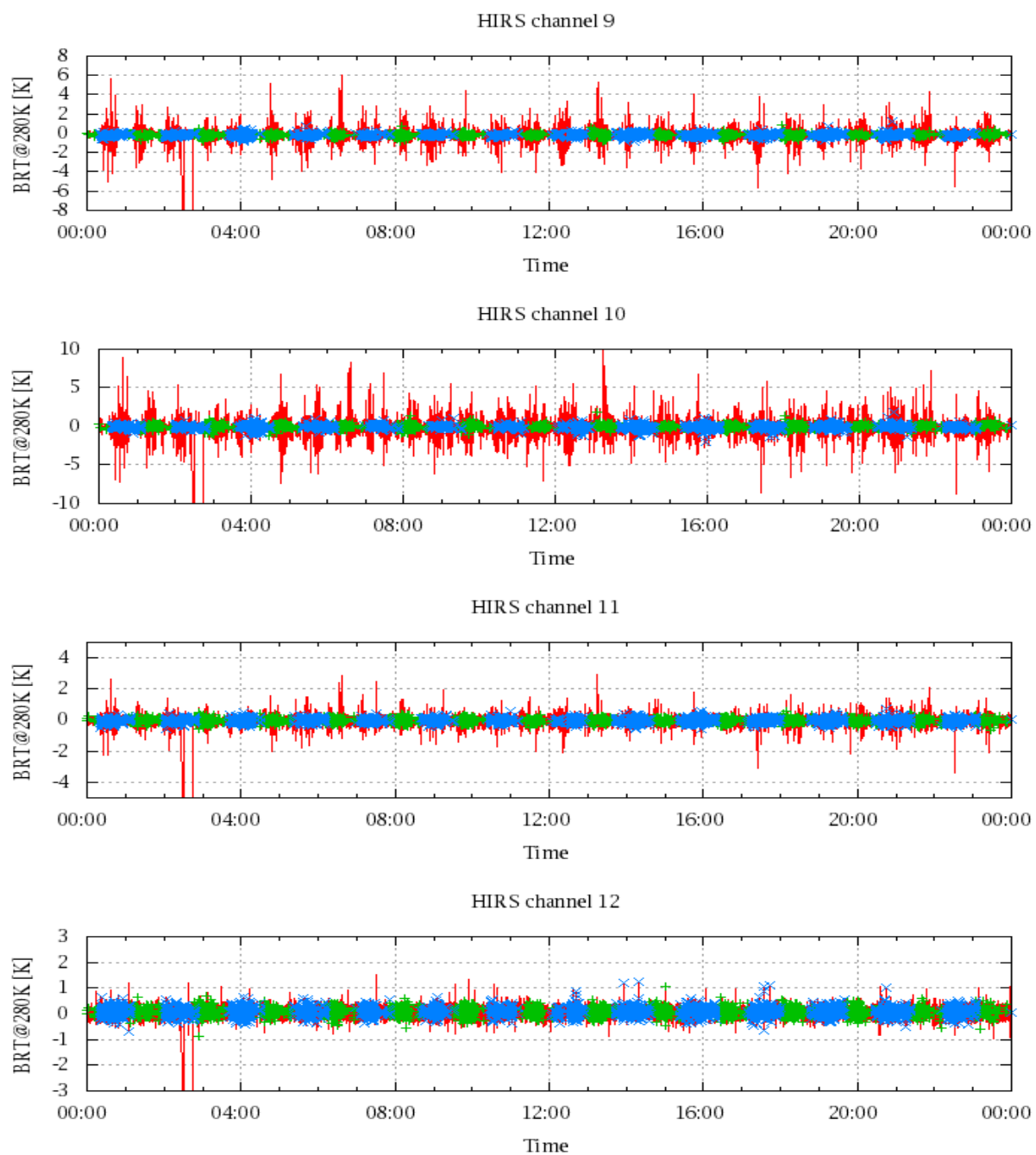


Figure 19: Radiance Differences in BRT

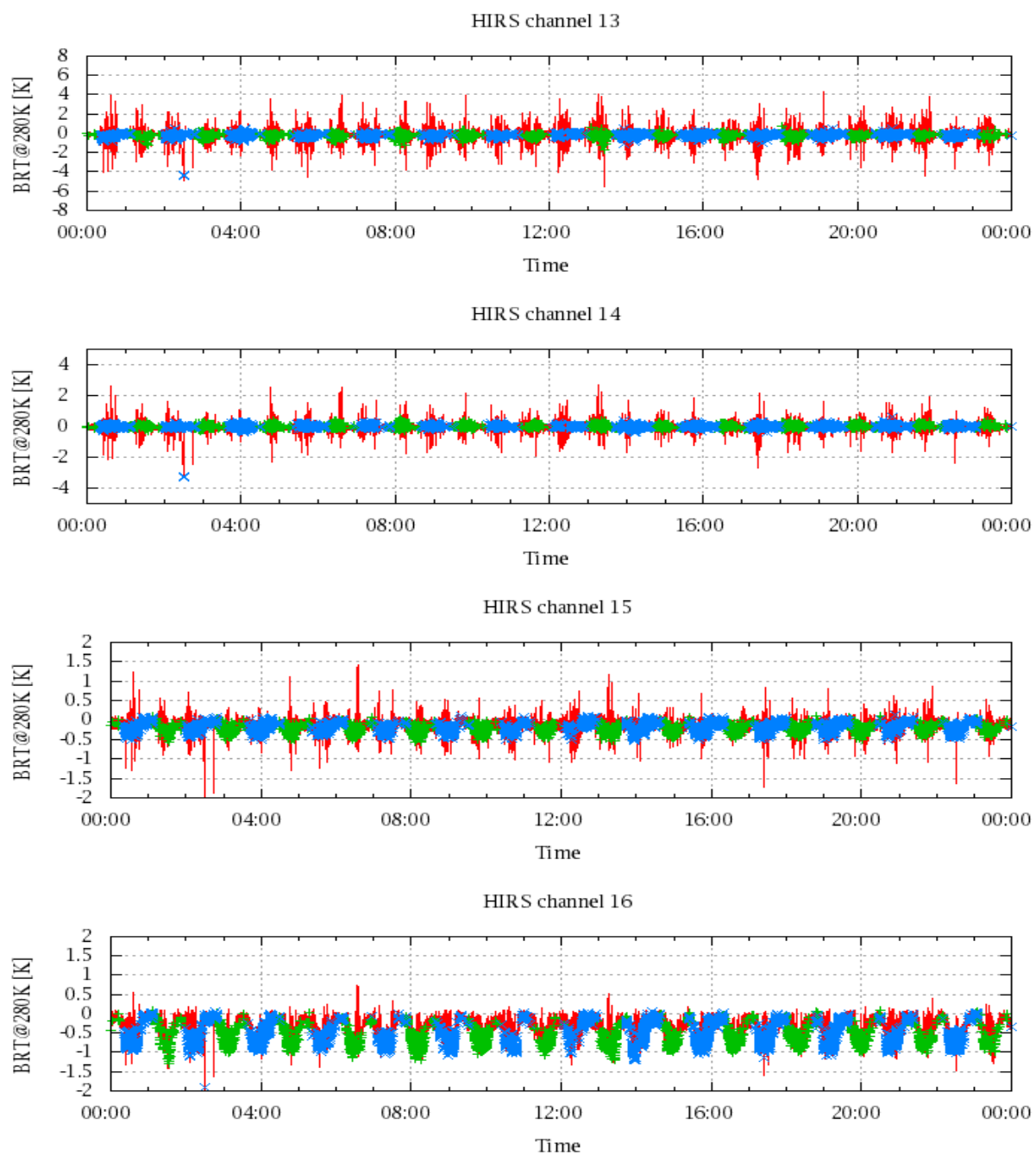


Figure 20: Radiance Differences in BRT

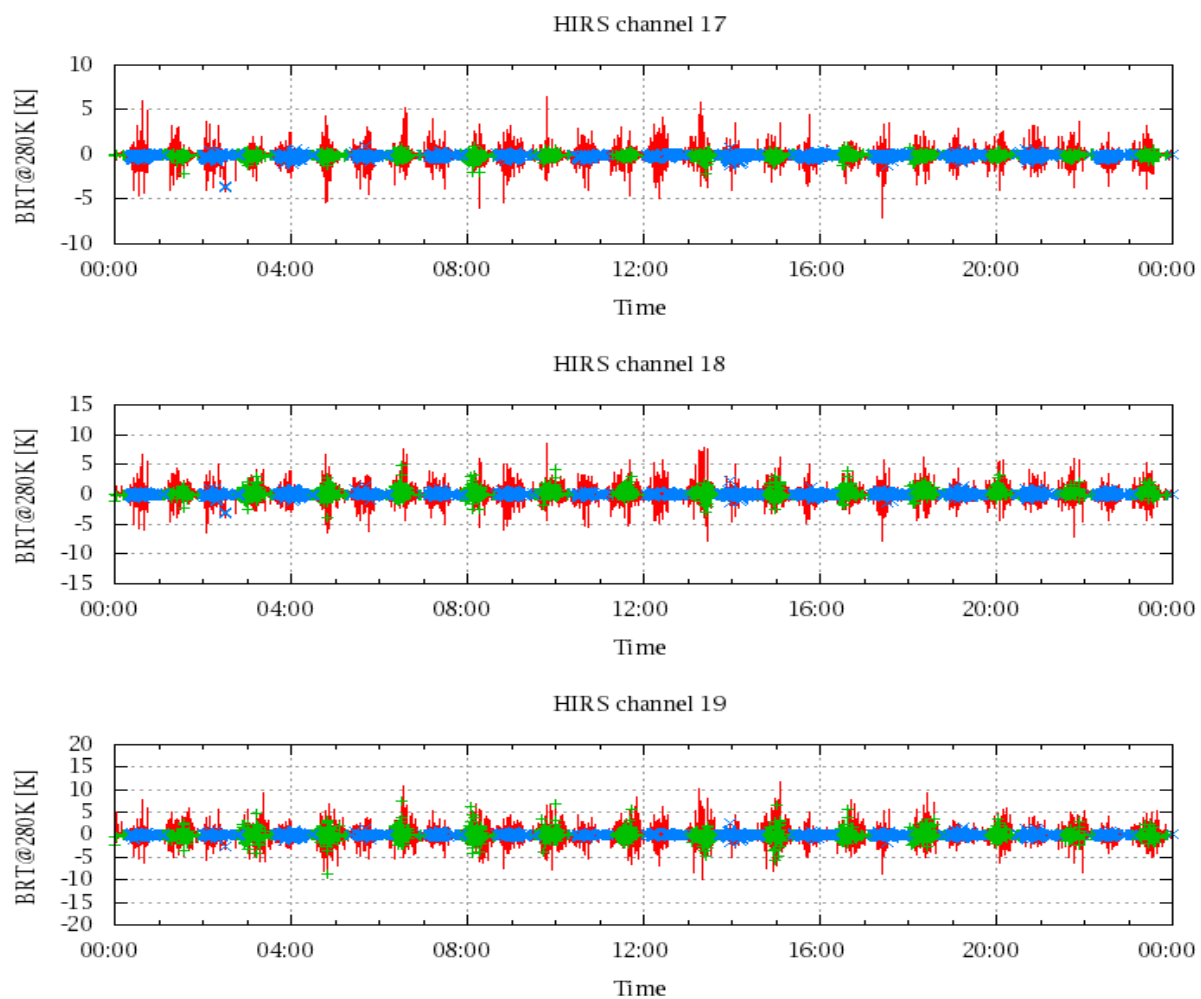


Figure 21: Radinace Differences in BRT