

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

05/03/2014 00:00:00 - 06/03/2014 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 05/03/2014 00:00:00 - 06/03/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 05/03/2014 00:00:00 - 06/03/2014 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)	13551	13561	20140305033912.495	20140305033914.659
PX1 (130)	13561	13565	20140305033914.659	20140305033917.038
PX1 (130)	13594	13601	20140305033924.819	20140305033926.335
PX2 (135)	13551	13561	20140305033912.495	20140305033914.659
PX2 (135)	13561	13565	20140305033914.659	20140305033917.038
PX2 (135)	13594	13601	20140305033924.819	20140305033926.335
PX3 (140)	13551	13561	20140305033912.495	20140305033914.659
PX3 (140)	13561	13565	20140305033914.659	20140305033917.038
PX3 (140)	13593	13601	20140305033924.604	20140305033926.335
PX3 (140)	11525	11527	20140305104706.154	20140305104706.587
PX4 (145)	13551	13561	20140305033912.495	20140305033914.659
PX4 (145)	13561	13565	20140305033914.659	20140305033917.038
PX4 (145)	13593	13597	20140305033924.604	20140305033925.468
PX4 (145)	13597	13601	20140305033925.468	20140305033926.335
IMG (150)	3631	3642	20140305033912.280	20140305033914.659
IMG (150)	3642	3650	20140305033914.659	20140305033917.038
IMG (150)	3682	3689	20140305033924.604	20140305033926.116
VER (160)	12188	12191	20140305033914.659	20140305033922.659

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
AUX (180)	5711	5713	20140305033907.093	20140305033923.093

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
05/03/2014 00:00:00	-	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)	99.45 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.63 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.56 %	-

Table 4: Quality flags

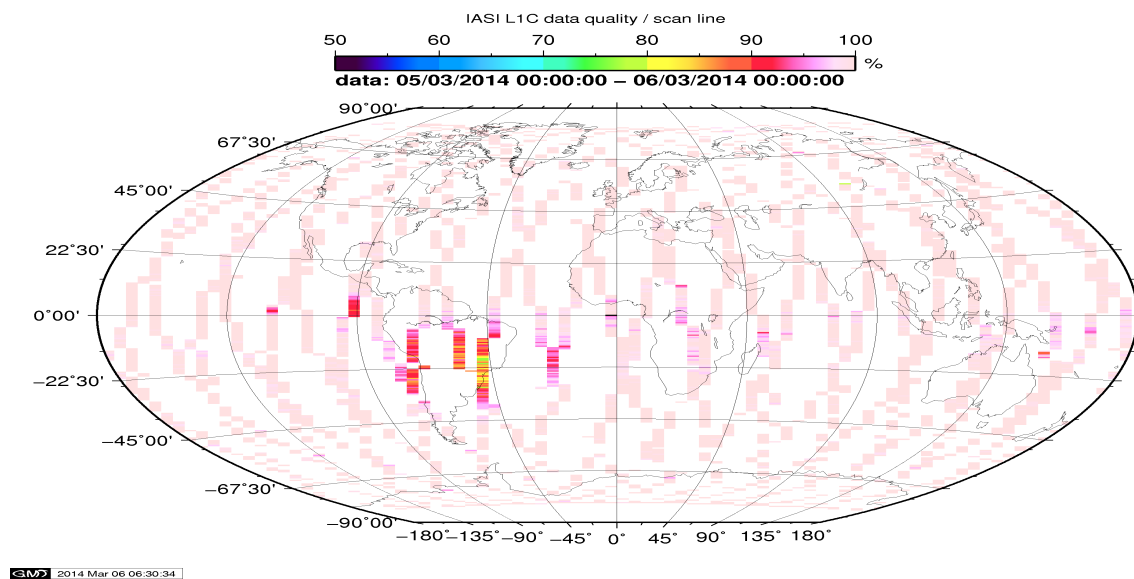


Figure 1: L1C data quality

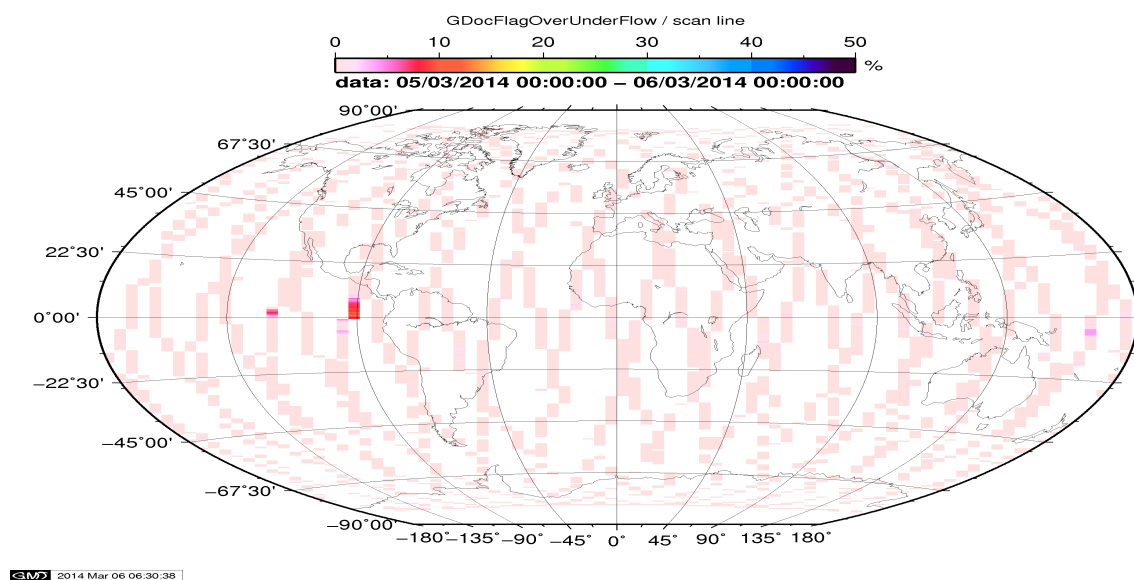


Figure 2: Flag of Over and Under Flows

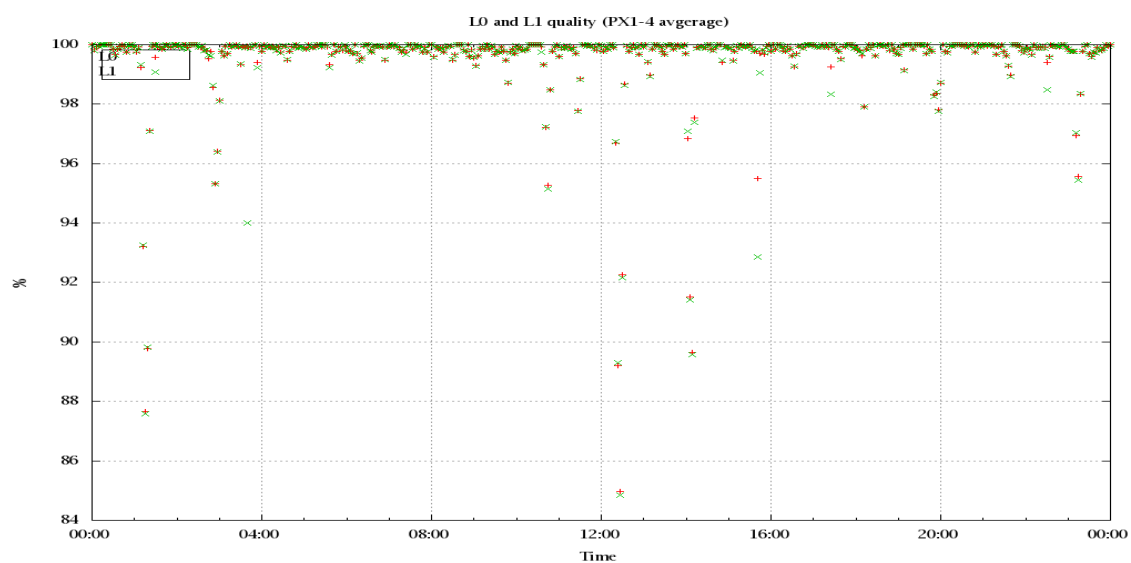


Figure 3: Level 0 and 1C overall quality

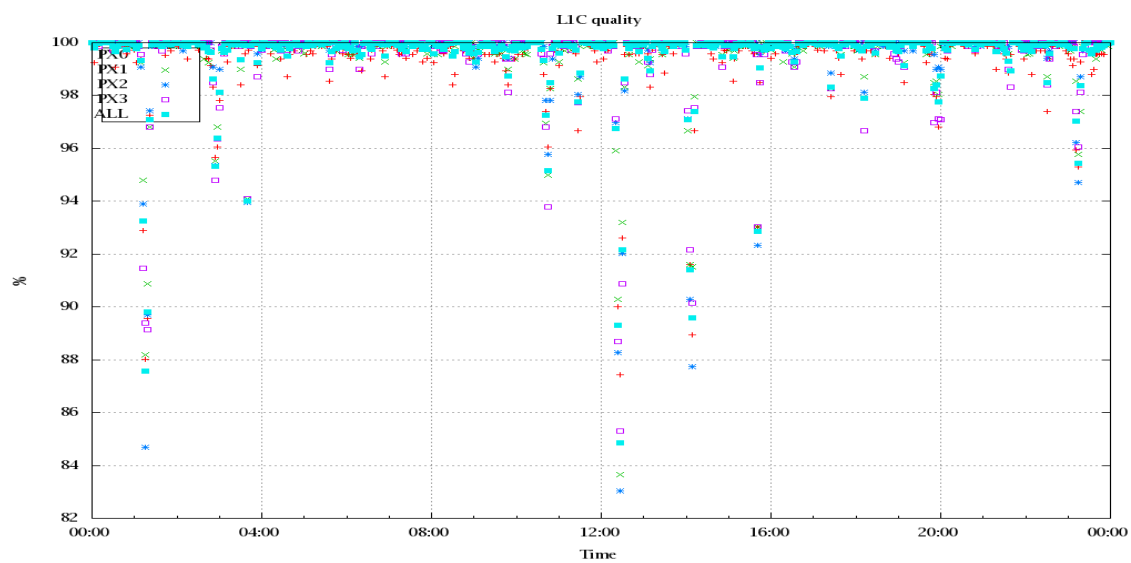


Figure 4: Level 1C quality

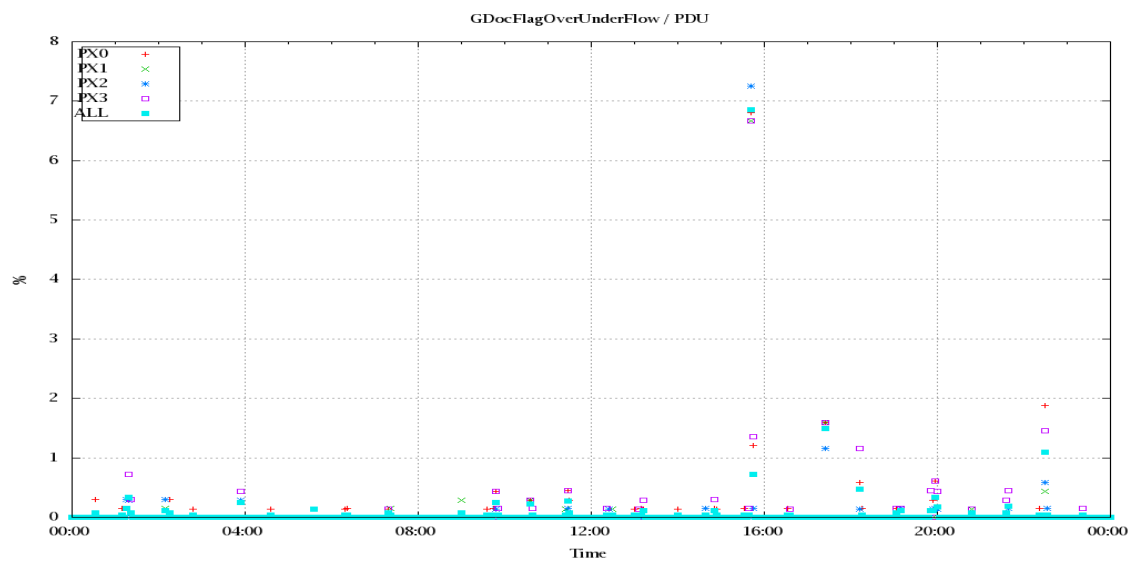


Figure 5: OverUnderFlowFlag timeseries

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.

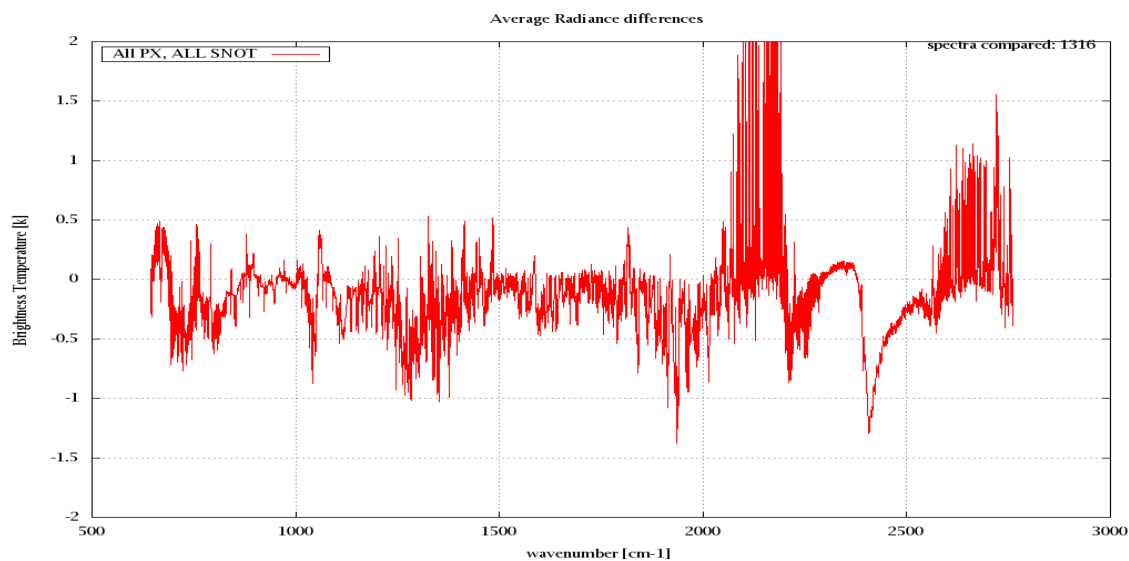


Figure 6: Average Radiance differences: OBS-CAL

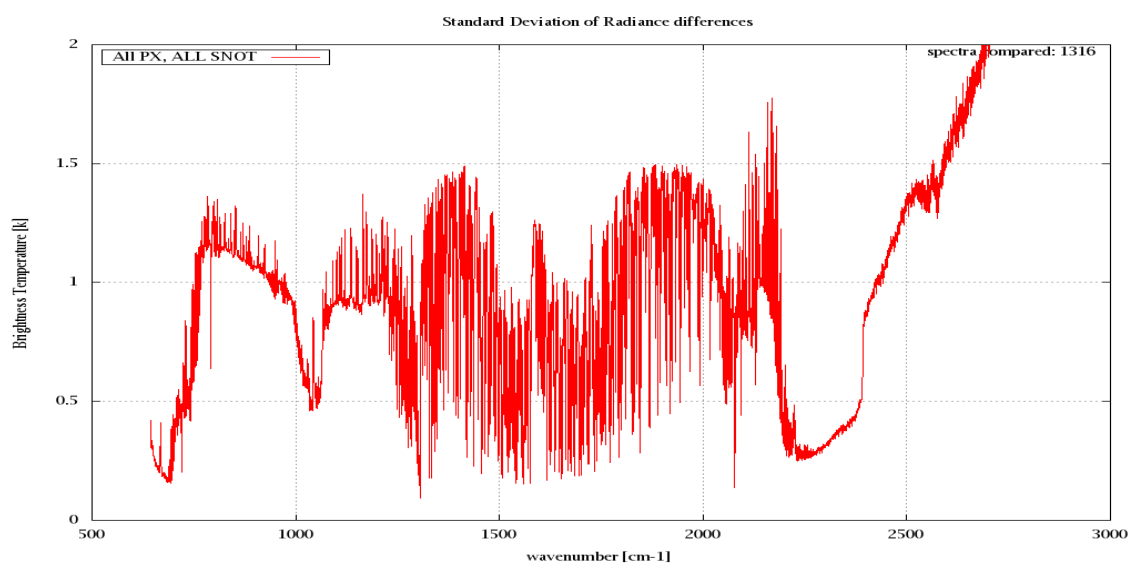


Figure 7: Standard Deviation of Radiance differences

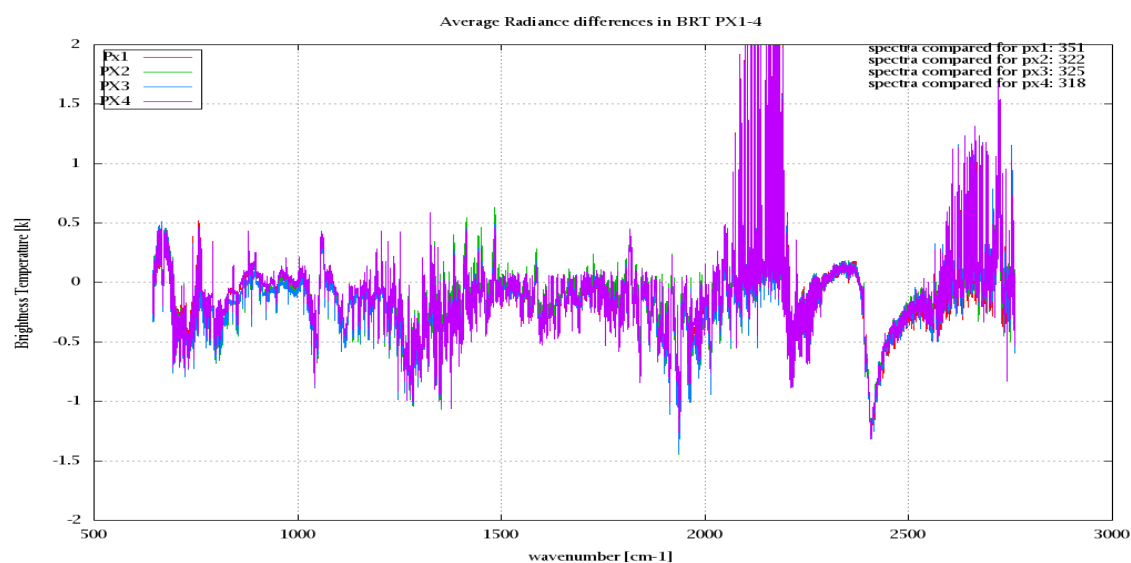


Figure 8: Average Radiance differences: OBS-CAL

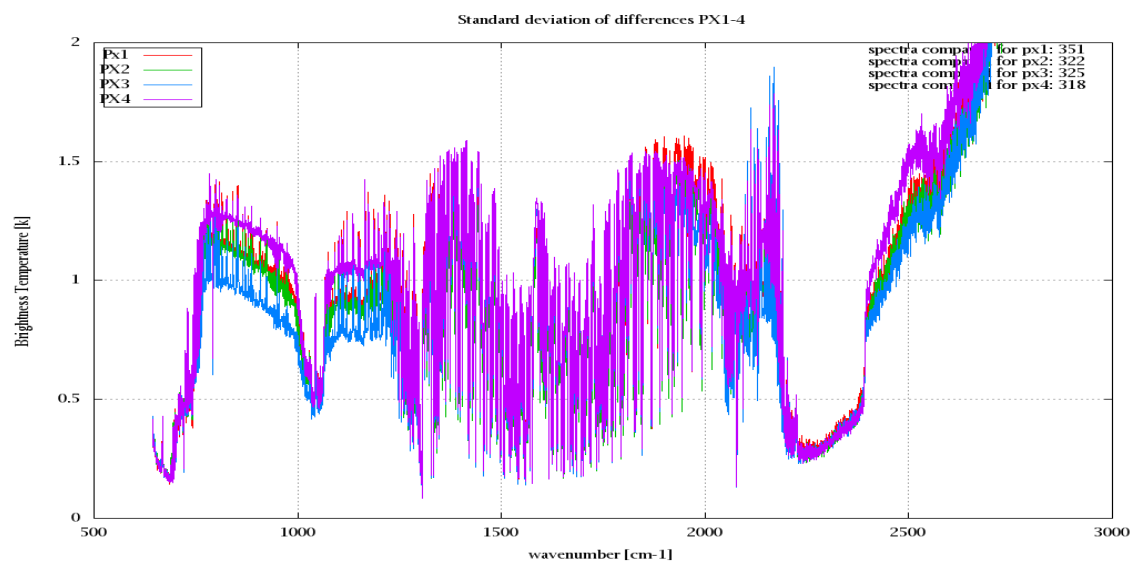


Figure 9: Standard Deviation of Radiance differences

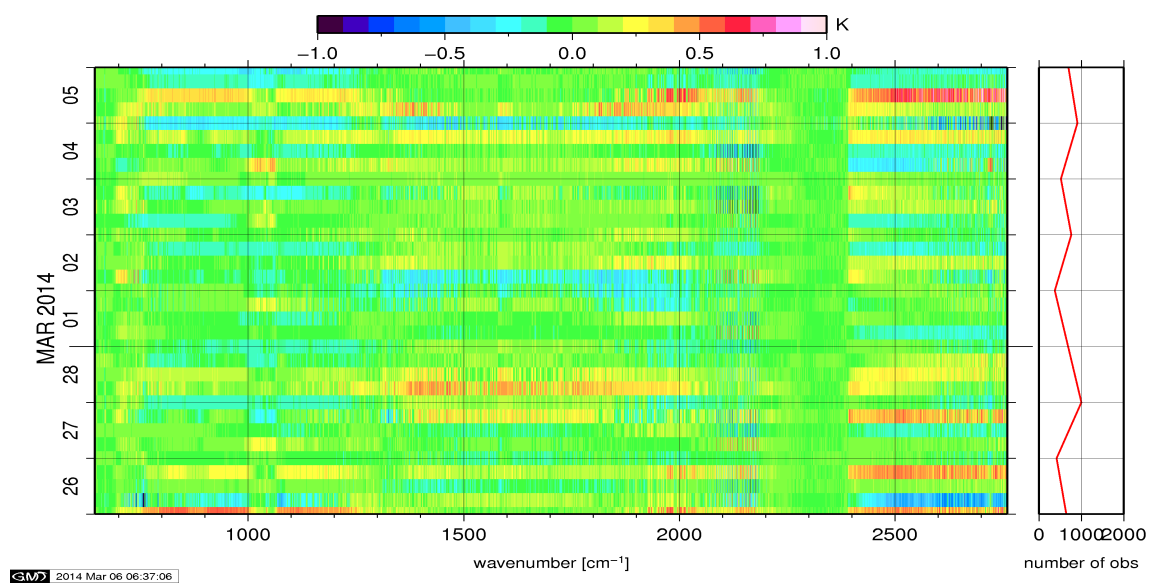


Figure 10: Radiance Anomaly in BRT: All Channels

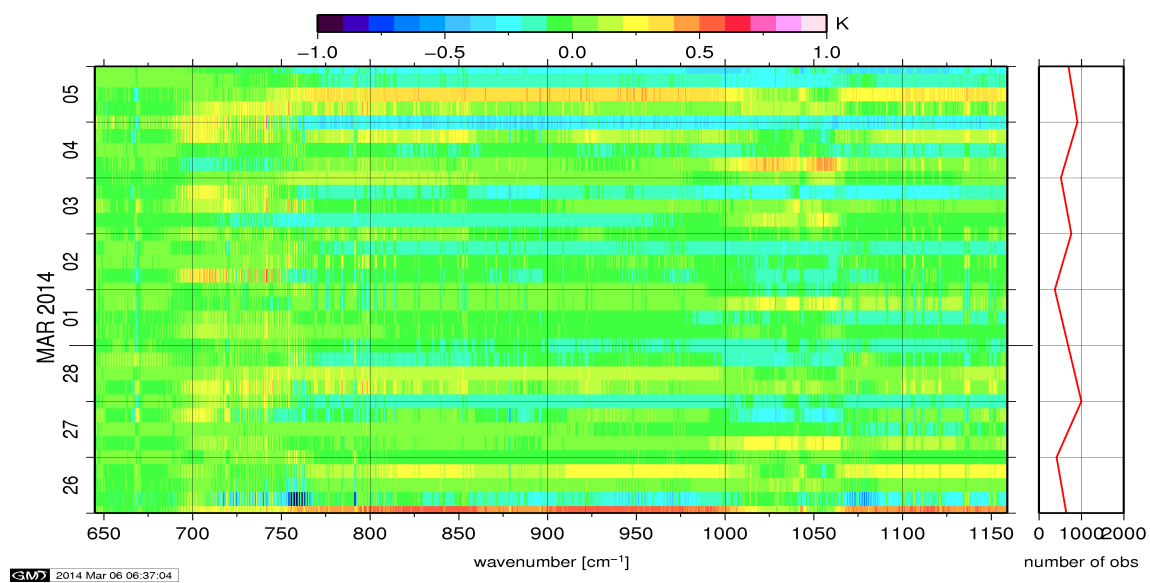


Figure 11: Radiance Anomaly in BRT: IASI Band 1

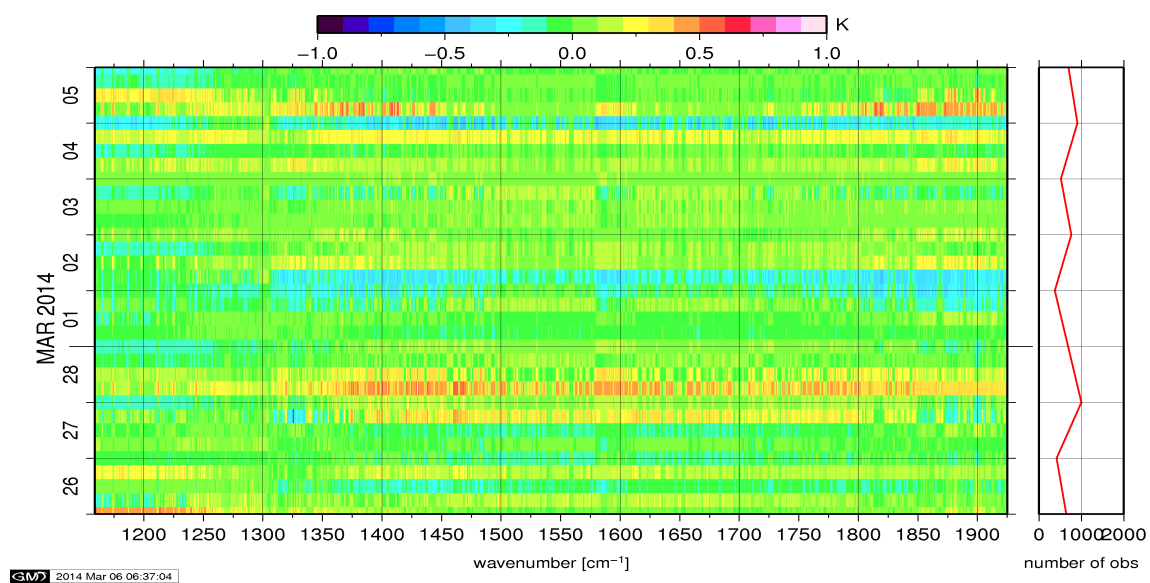


Figure 12: Radiance Anomaly in BRT: IASI Band 2

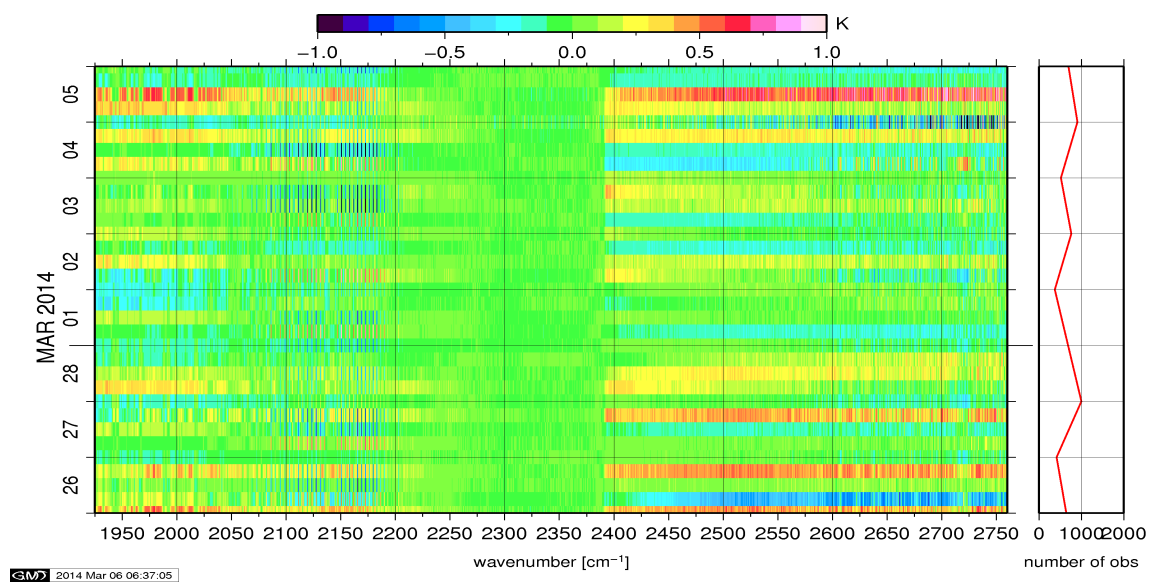


Figure 13: Radiance Anomaly in BRT: IASI Band 3

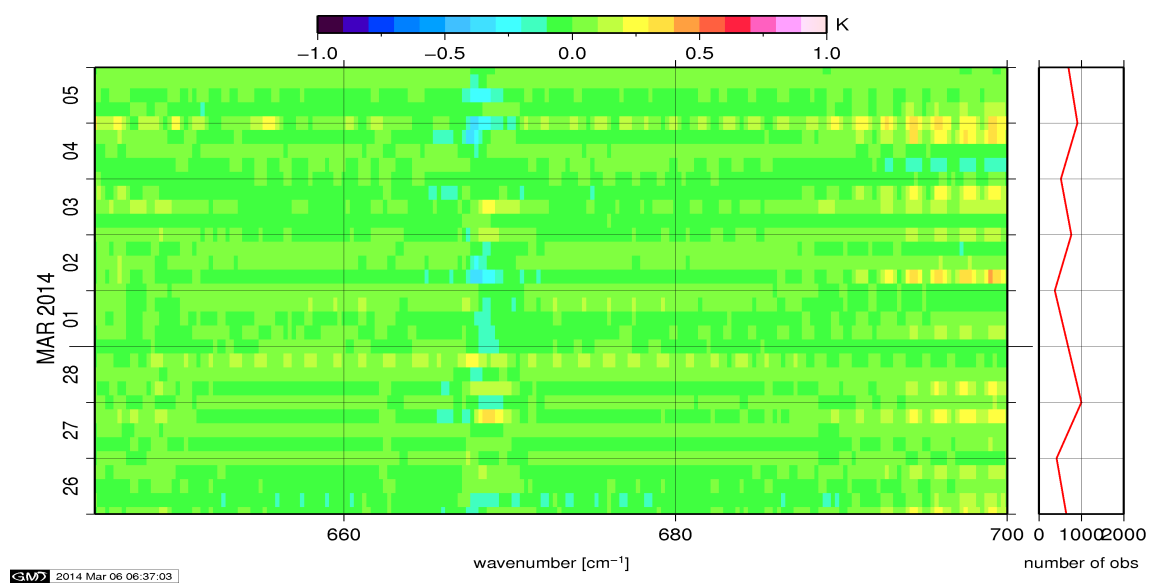


Figure 14: Radiance Anomaly in BRT: CO2 14

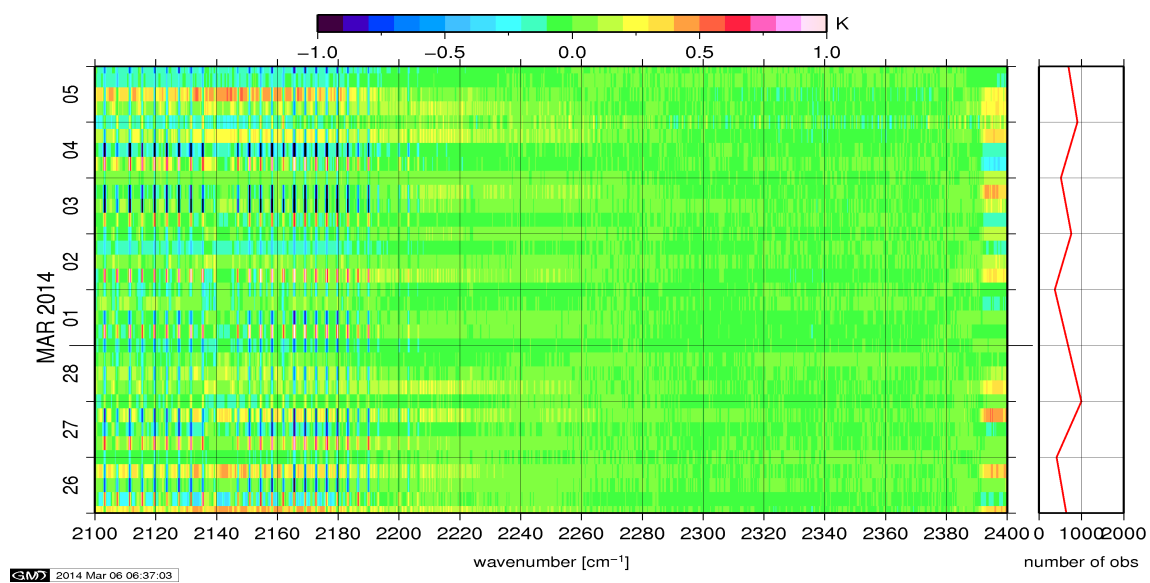


Figure 15: Radiance Anomaly in BRT: CO2 4.3

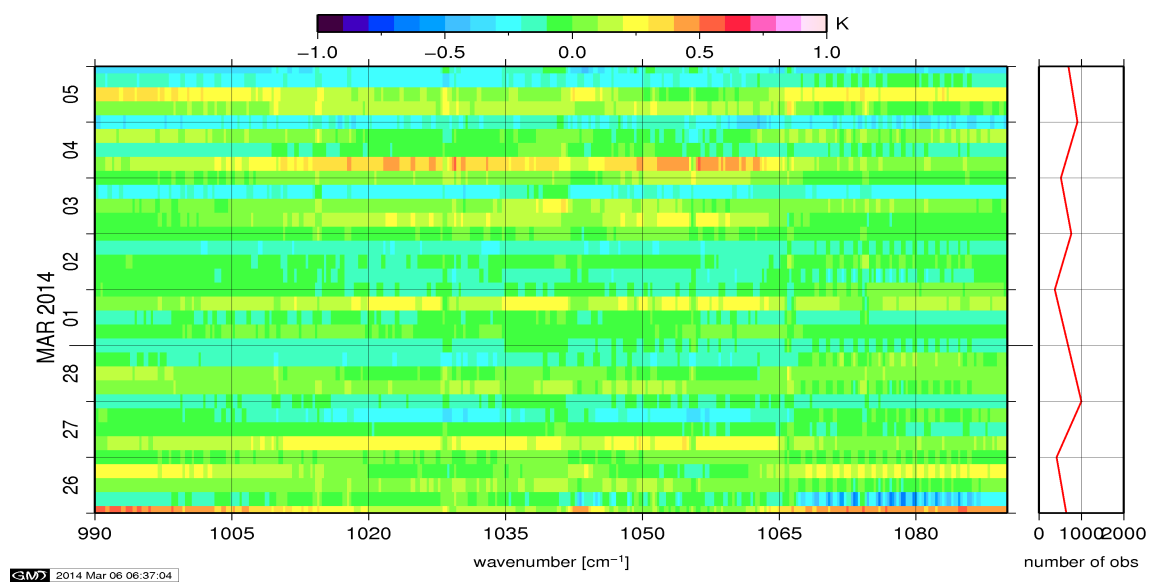


Figure 16: Radiance Anomaly in BRT: O3

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.

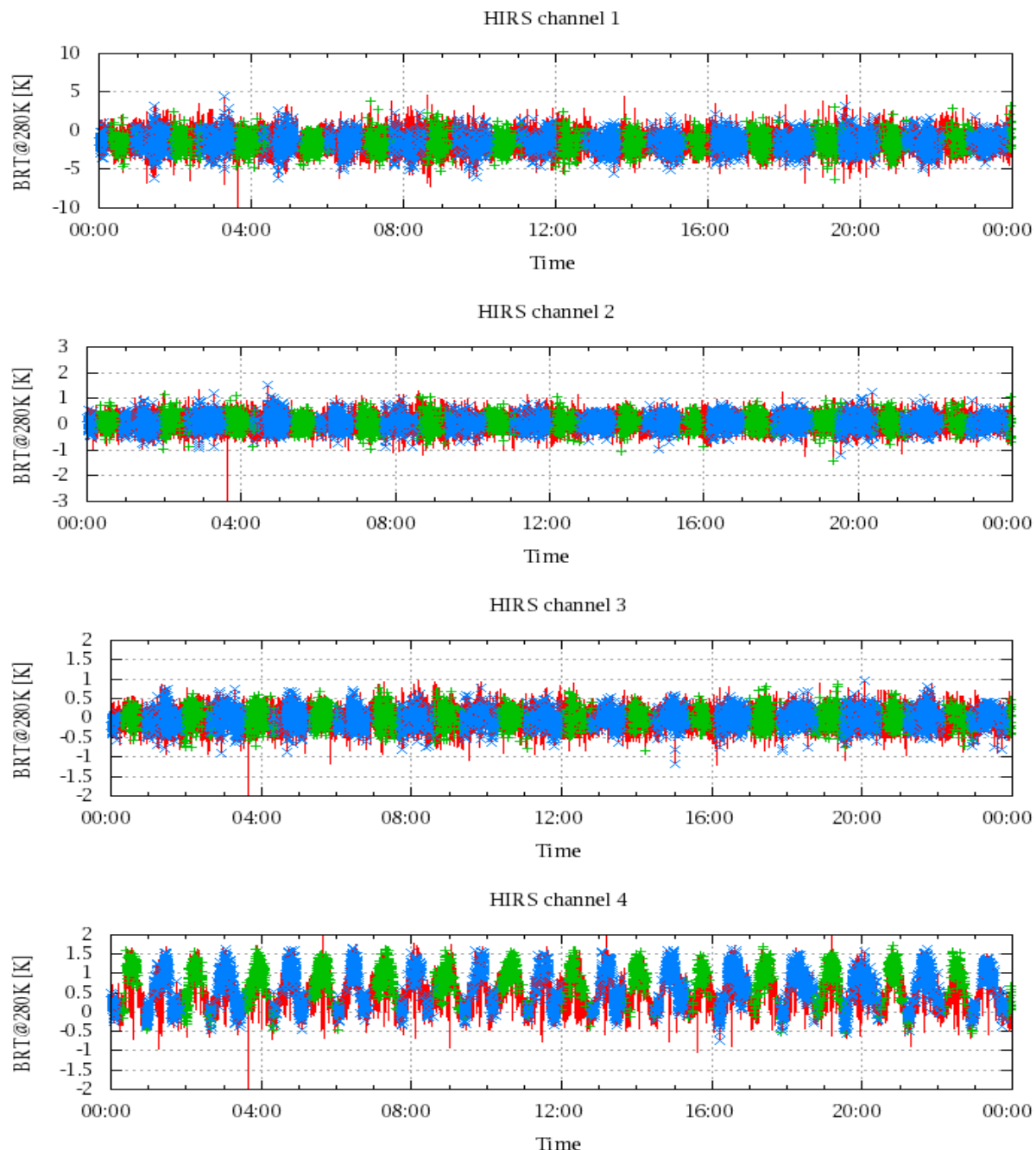


Figure 17: Radiance Differences in BRT

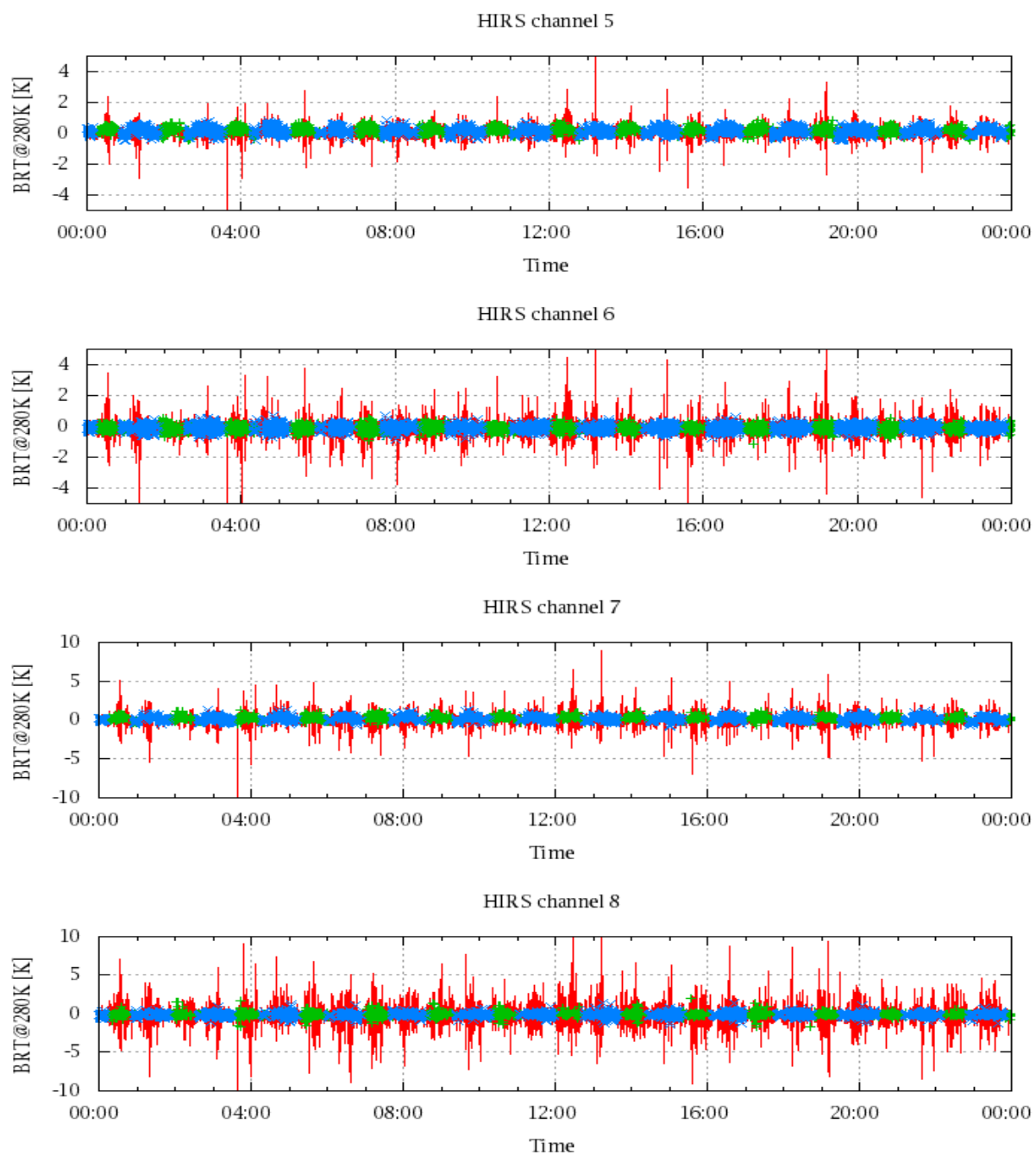


Figure 18: Radiance Differences in BRT

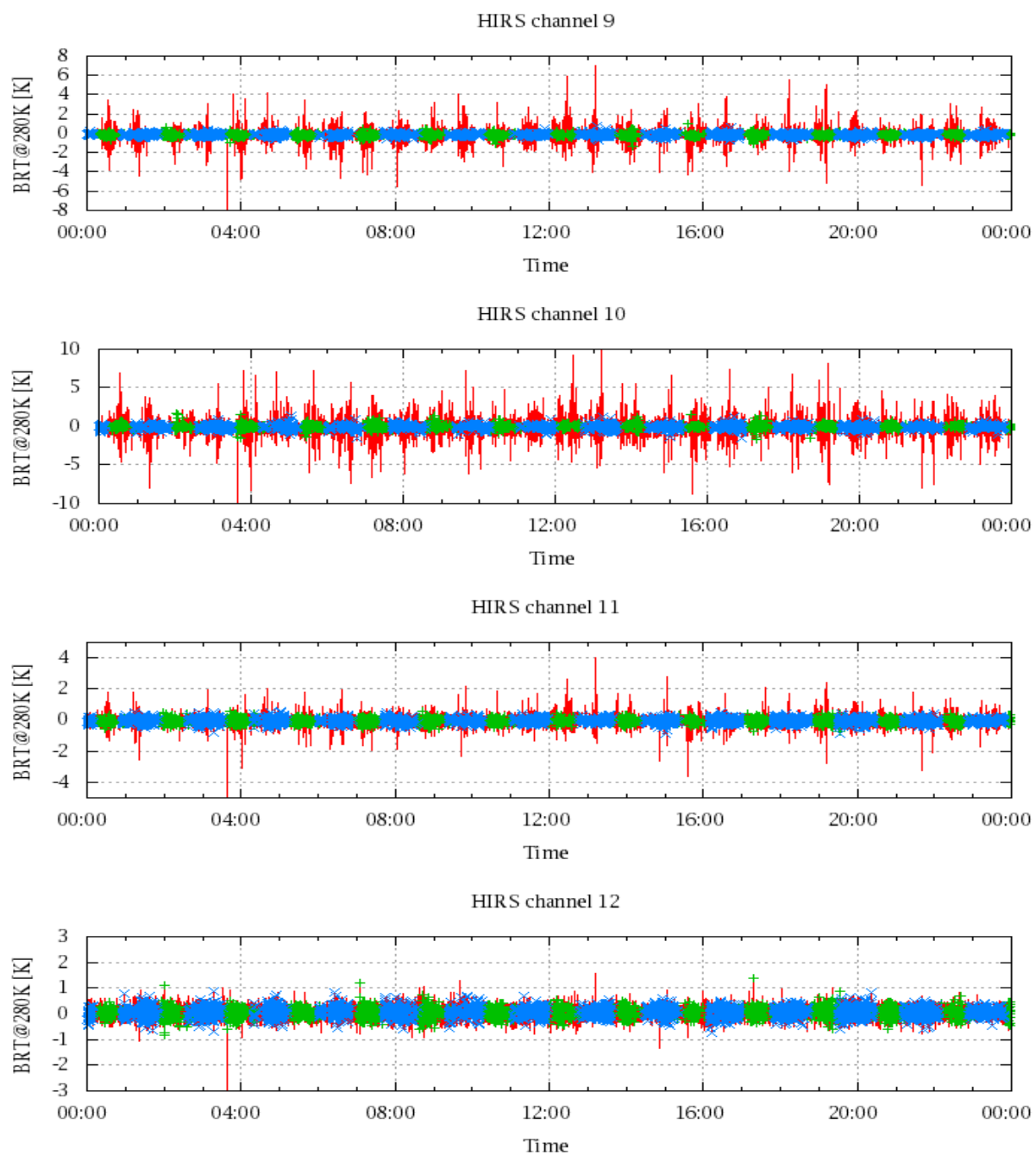


Figure 19: Radiance Differences in BRT

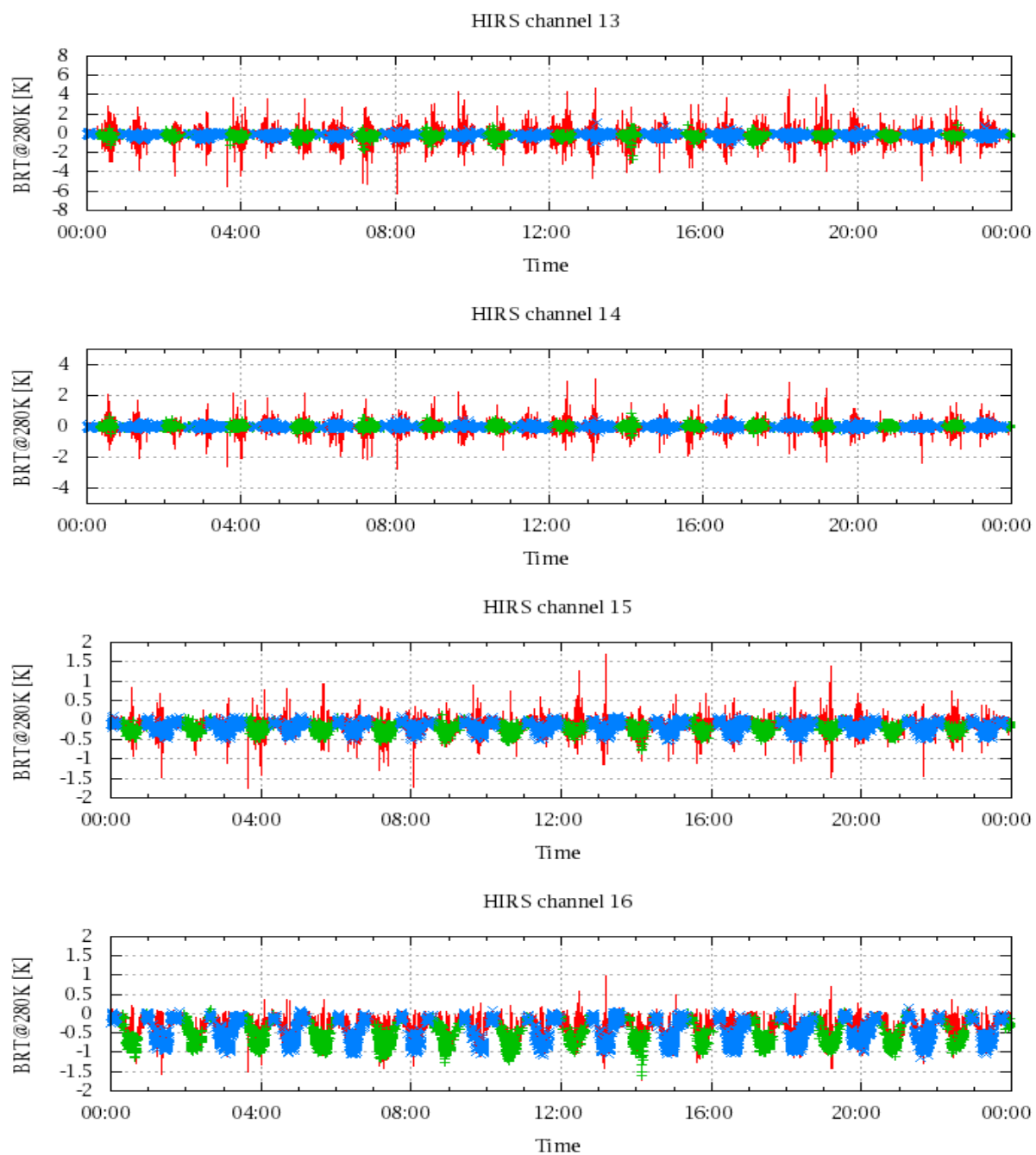


Figure 20: Radiance Differences in BRT

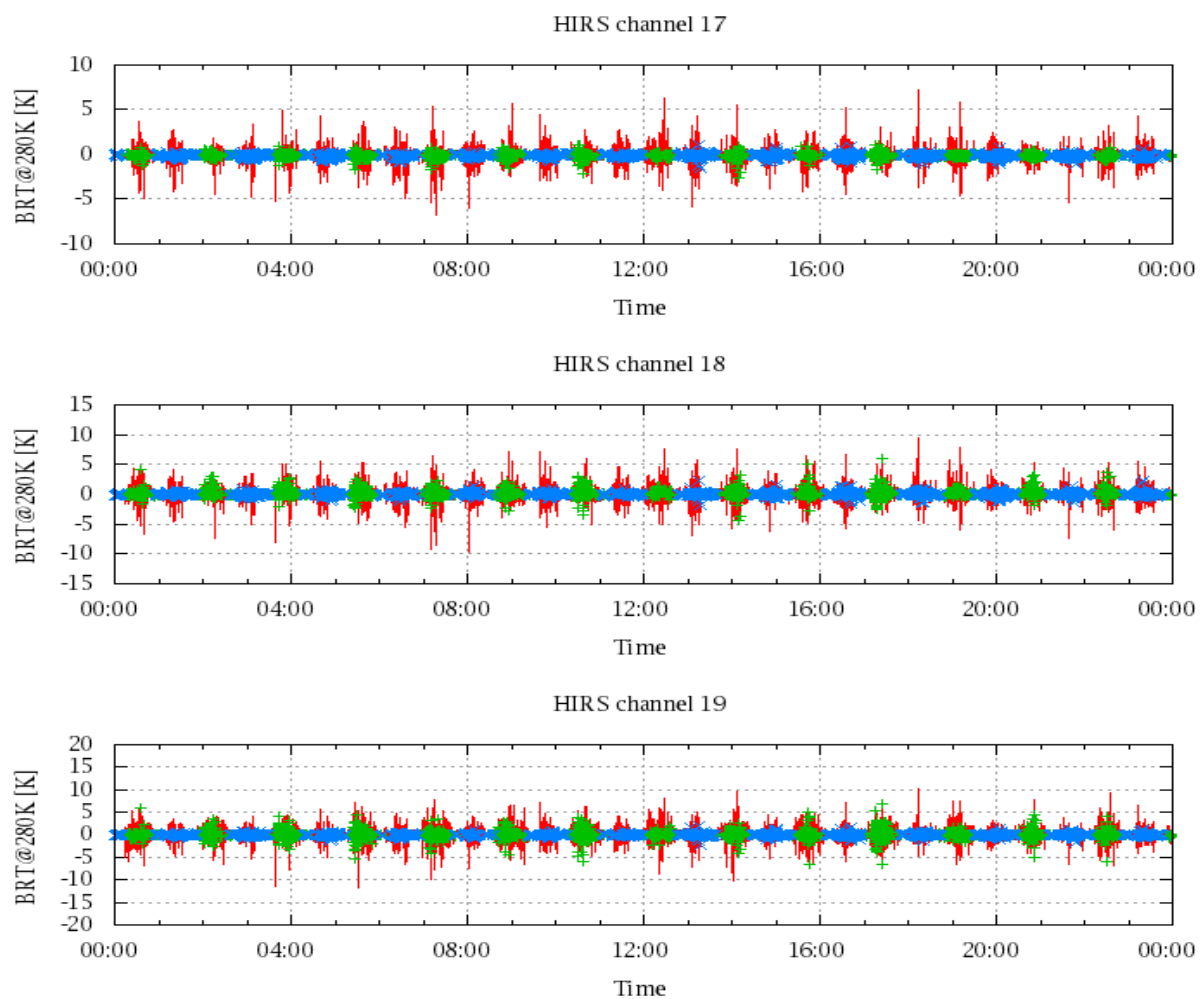


Figure 21: Radinace Differences in BRT