

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

22/07/2015 00:00:00 - 23/07/2015 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-A satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 22/07/2015 00:00:00 - 23/07/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 22/07/2015 00:00:00 - 23/07/2015 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)	4460	4734	20150722130619.025	20150722130733.400
PX1 (130)	4753	4755	20150722130737.509	20150722130737.939
PX2 (135)	4442	4444	20150722130615.134	20150722130615.564
PX2 (135)	4446	4448	20150722130615.997	20150722130616.431
PX2 (135)	4455	4457	20150722130617.943	20150722130618.376
PX2 (135)	4458	4734	20150722130618.591	20150722130733.400
PX3 (140)	4442	4444	20150722130615.134	20150722130615.564
PX3 (140)	4446	4448	20150722130615.997	20150722130616.431
PX3 (140)	4458	4734	20150722130618.591	20150722130733.400
PX4 (145)	4446	4448	20150722130615.997	20150722130616.431
PX4 (145)	4453	4455	20150722130617.509	20150722130617.943
PX4 (145)	4455	4457	20150722130617.943	20150722130618.376
PX4 (145)	4458	4460	20150722130618.591	20150722130619.025
PX4 (145)	4460	4734	20150722130619.025	20150722130733.400
IMG (150)	2463	2465	20150722130617.943	20150722130618.376
IMG (150)	2468	2778	20150722130619.025	20150722130732.103
IMG (150)	2779	2781	20150722130732.318	20150722130732.970
VER (160)	1609	1659	20150722130611.673	20150722130619.025

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
AUX (180)	3597	3607	20150722130612.107	20150722130732.103

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
22/07/2015 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	480	-
L1 ENG distinct GEPSGranule	481	-
GQisFlagQual set (PX1)	99.46 %	-
GQisFlagQual set (PX2)	99.43 %	-
GQisFlagQual set (PX3)	99.44 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.45 %	-

Table 4: Quality flags

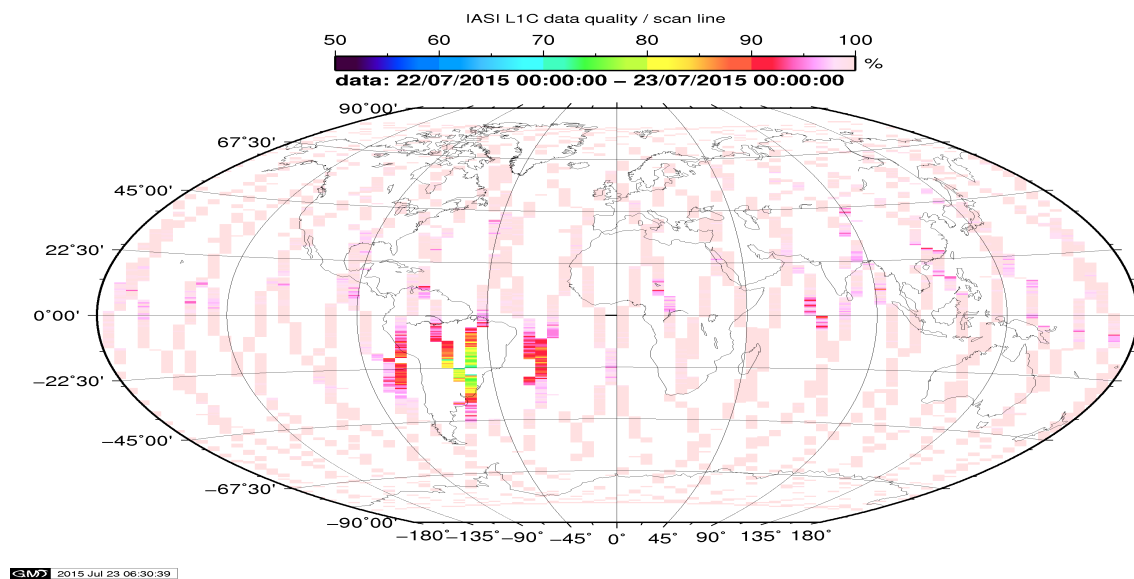


Figure 1: L1C data quality

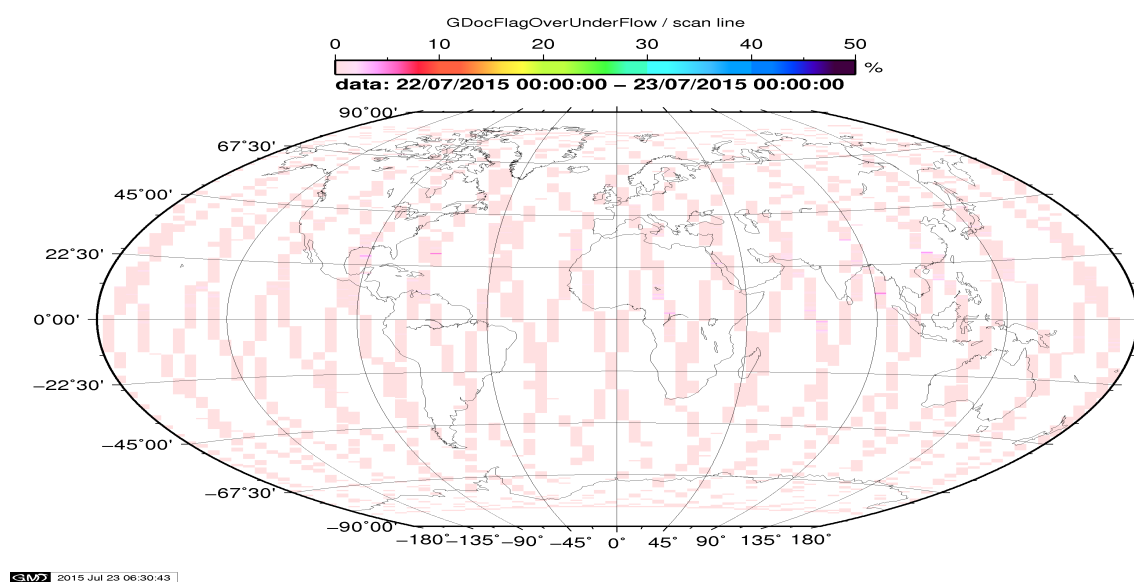


Figure 2: Flag of Over and Under Flows

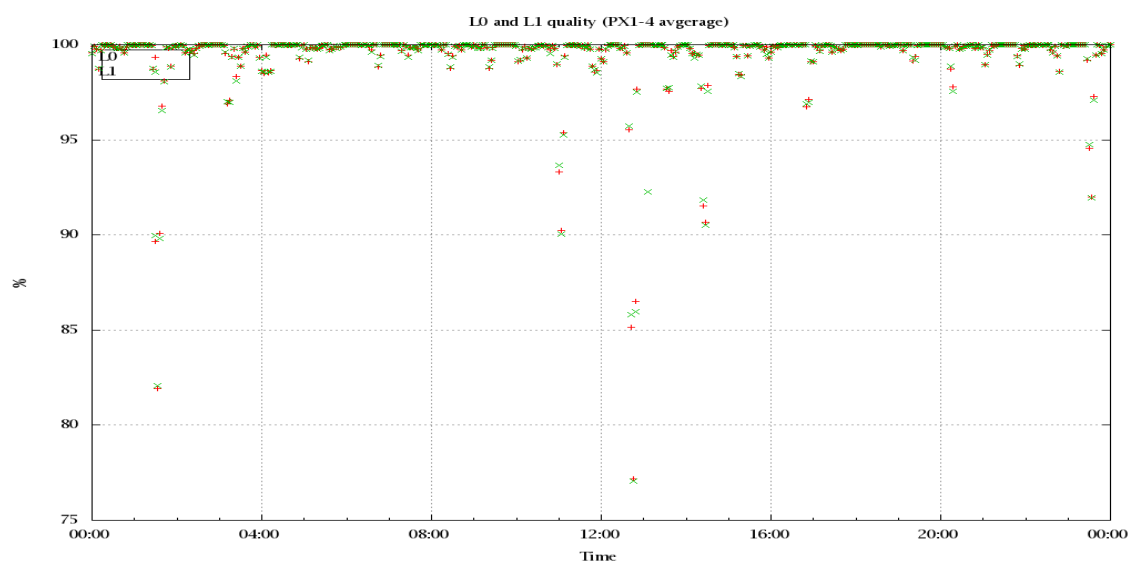


Figure 3: Level 0 and 1C overall quality

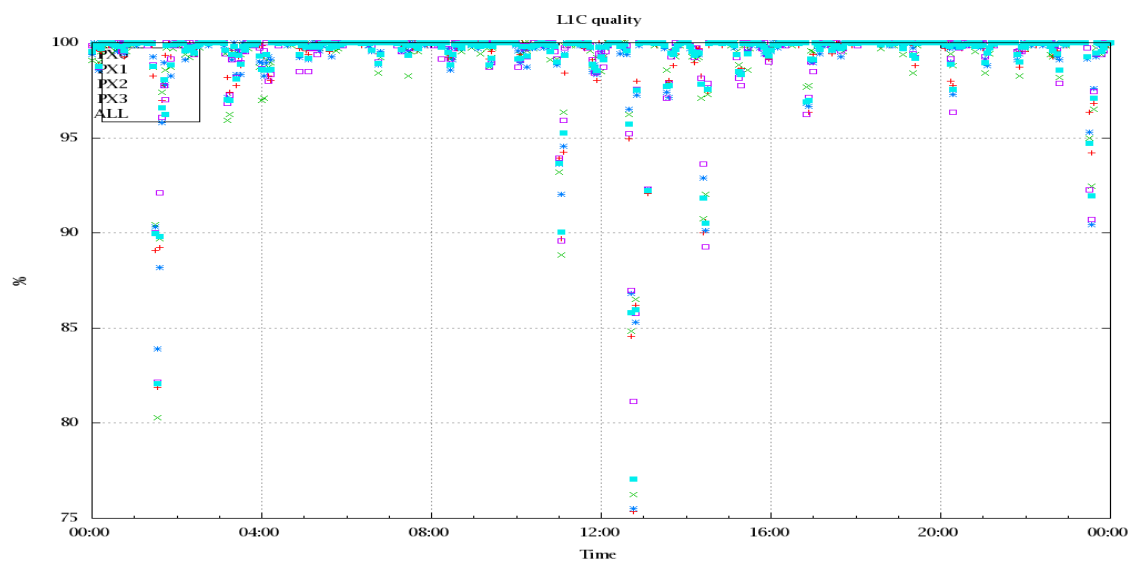


Figure 4: Level 1C quality

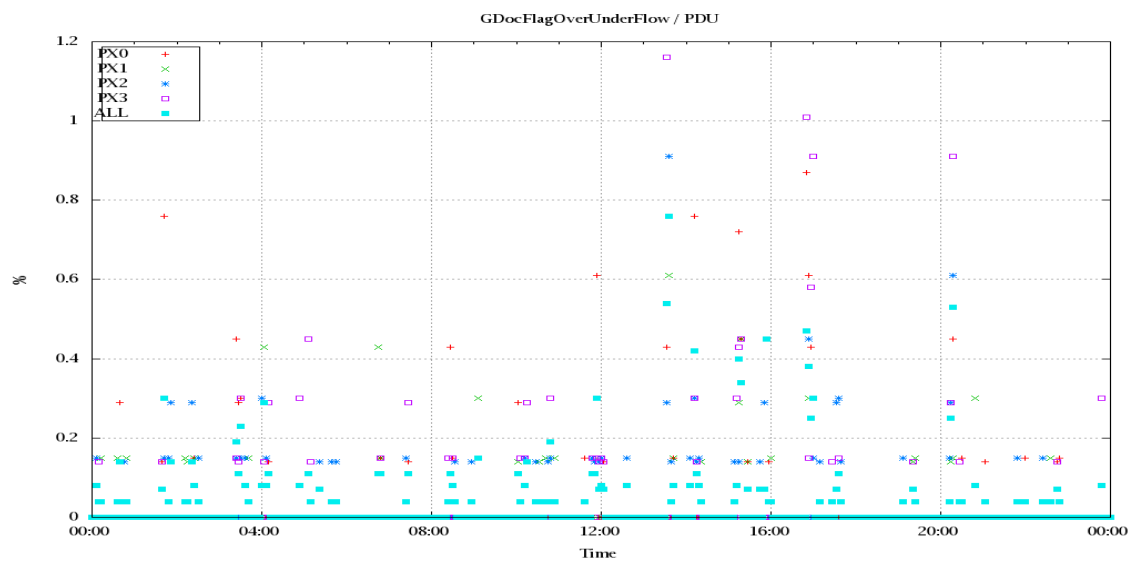


Figure 5: OverUnderFlowFlag timeseries

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.

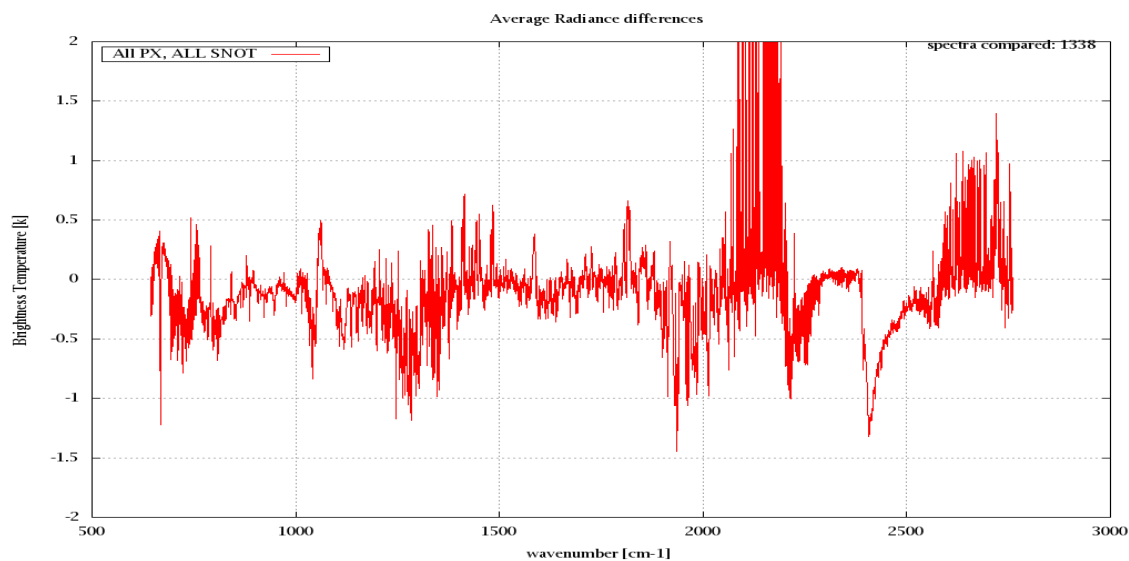


Figure 6: Average Radiance differences: OBS-CAL

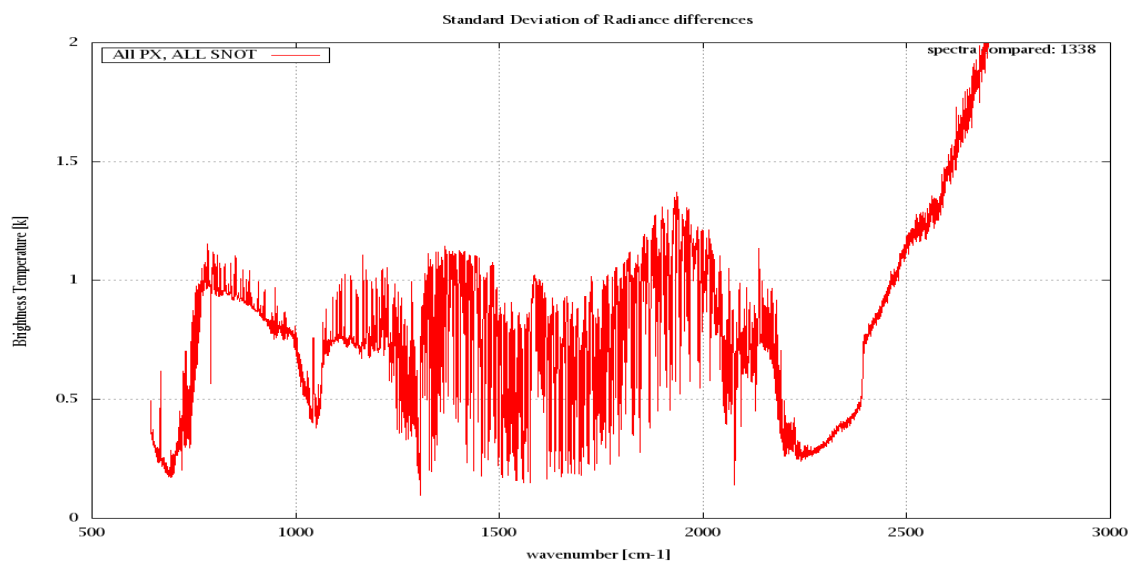


Figure 7: Standard Deviation of Radiance differences

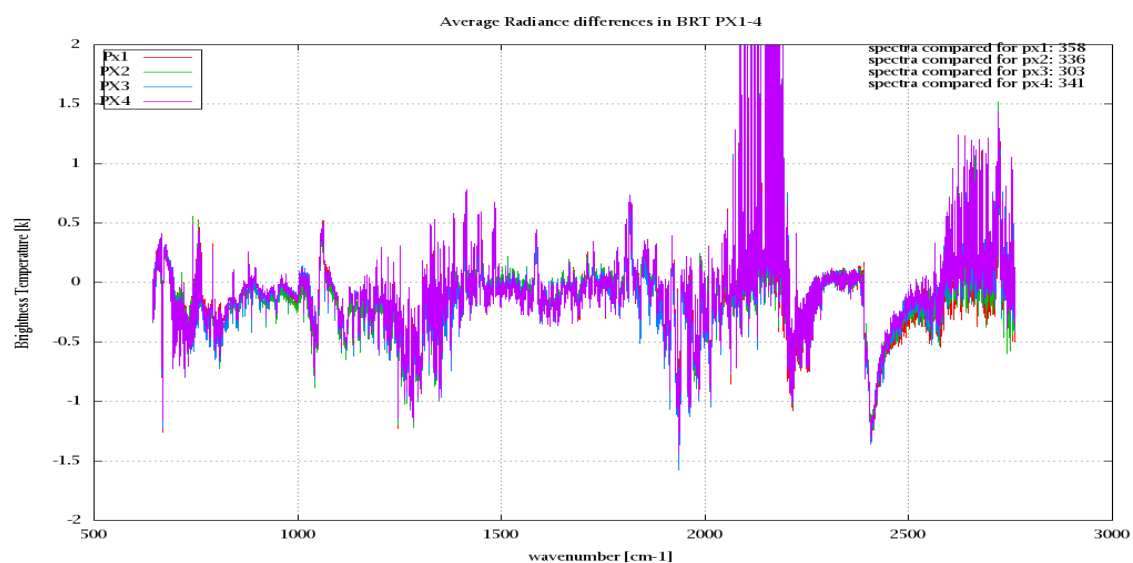


Figure 8: Average Radiance differences: OBS-CAL

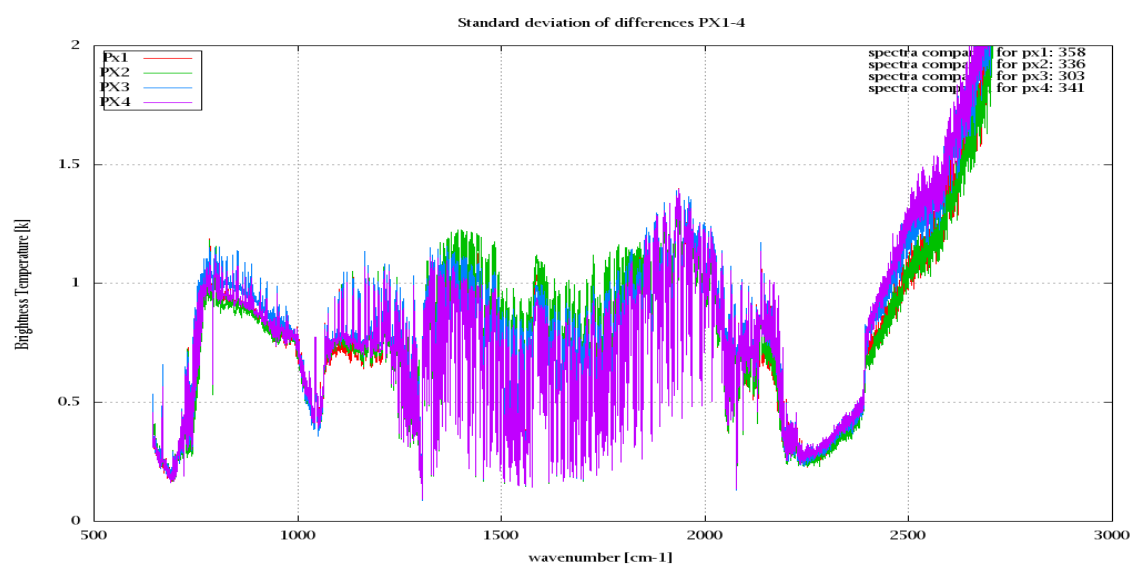


Figure 9: Standard Deviation of Radiance differences

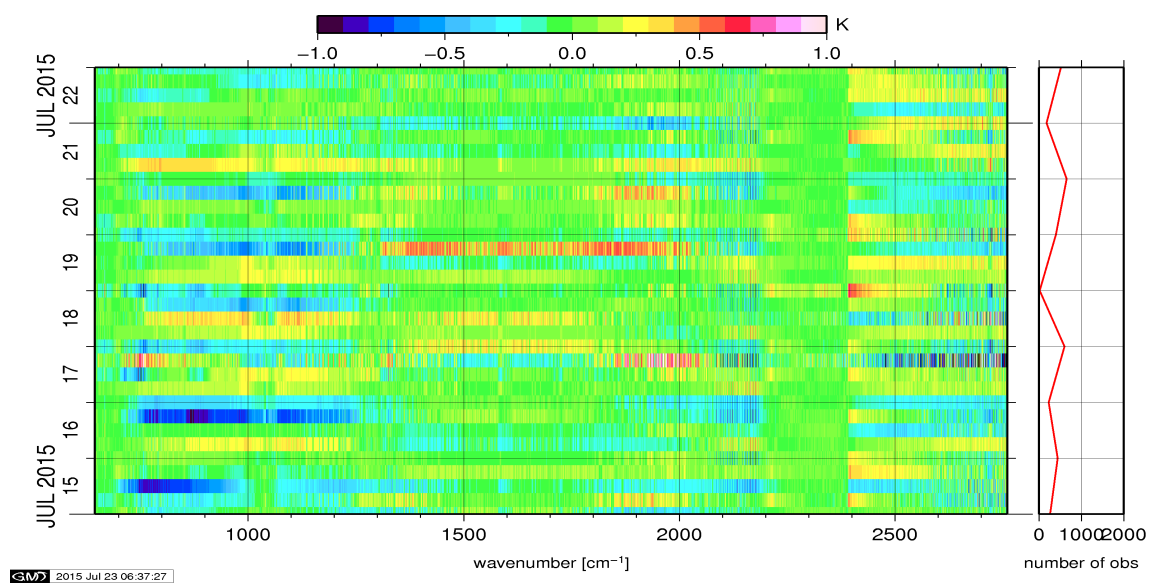


Figure 10: Radiance Anomaly in BRT: All Channels

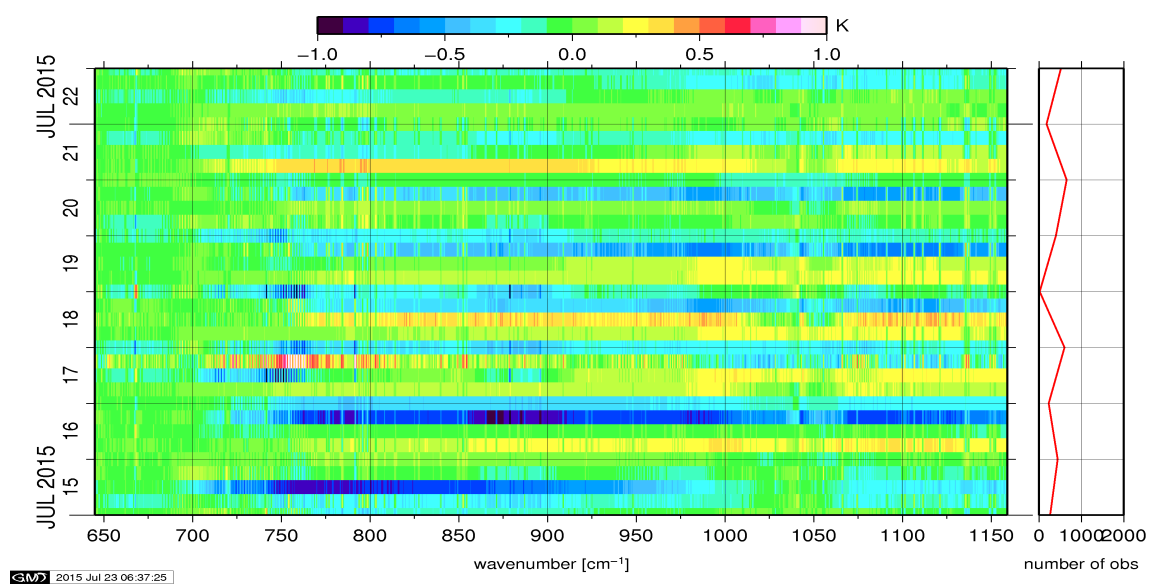


Figure 11: Radiance Anomaly in BRT: IASI Band 1

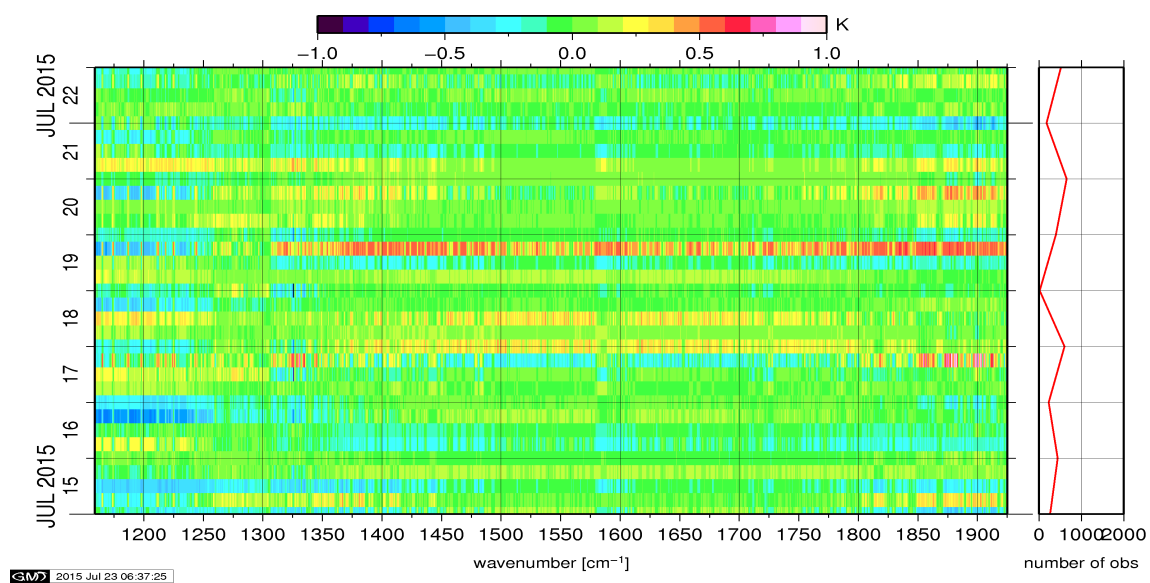


Figure 12: Radiance Anomaly in BRT: IASI Band 2

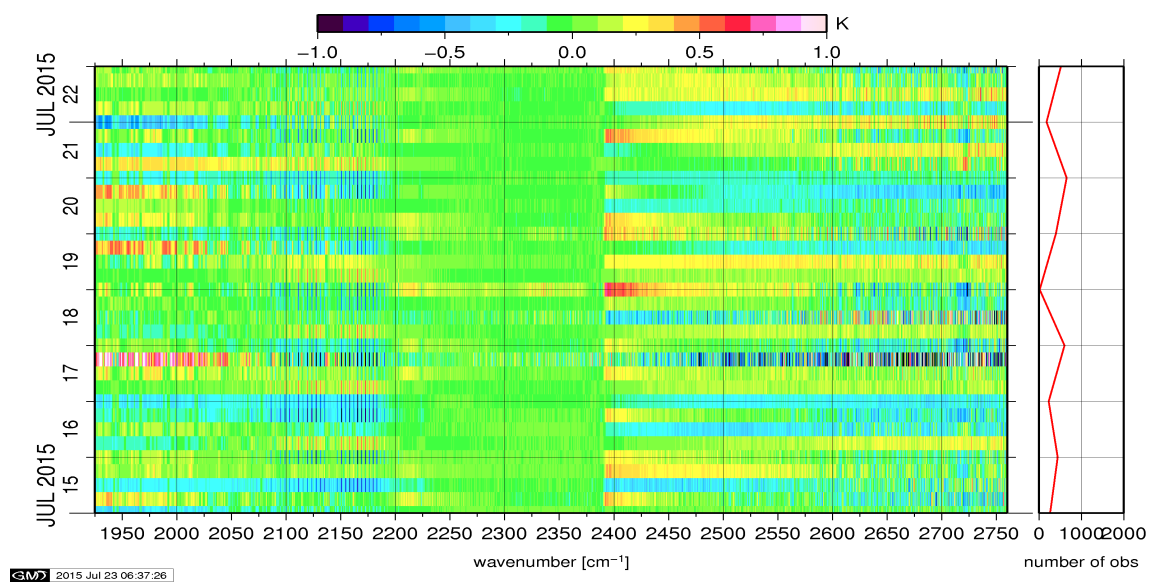


Figure 13: Radiance Anomaly in BRT: IASI Band 3

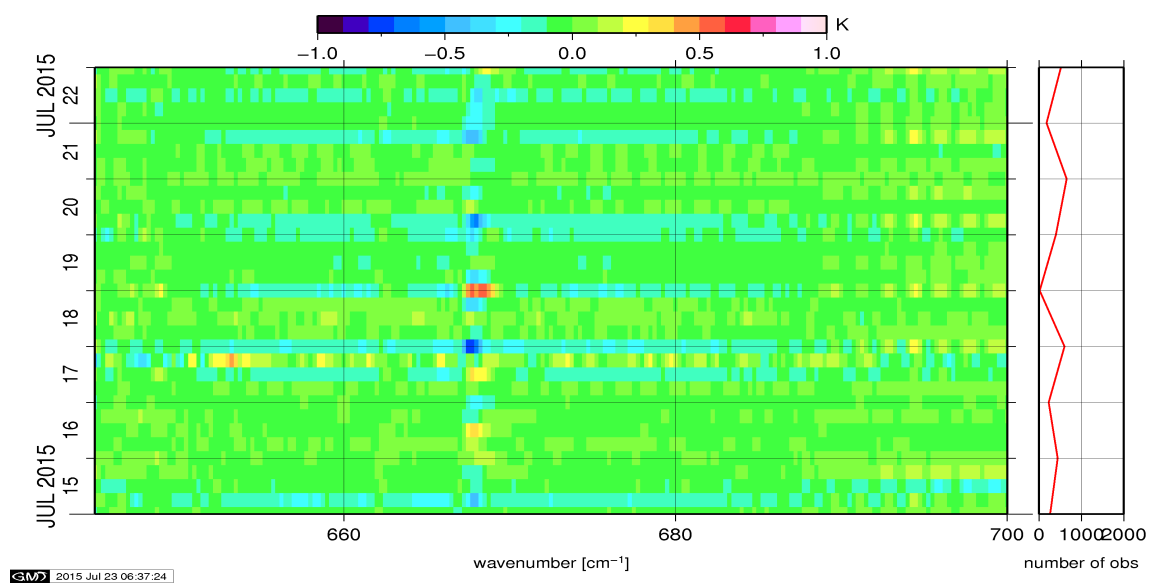


Figure 14: Radiance Anomaly in BRT: CO2 14

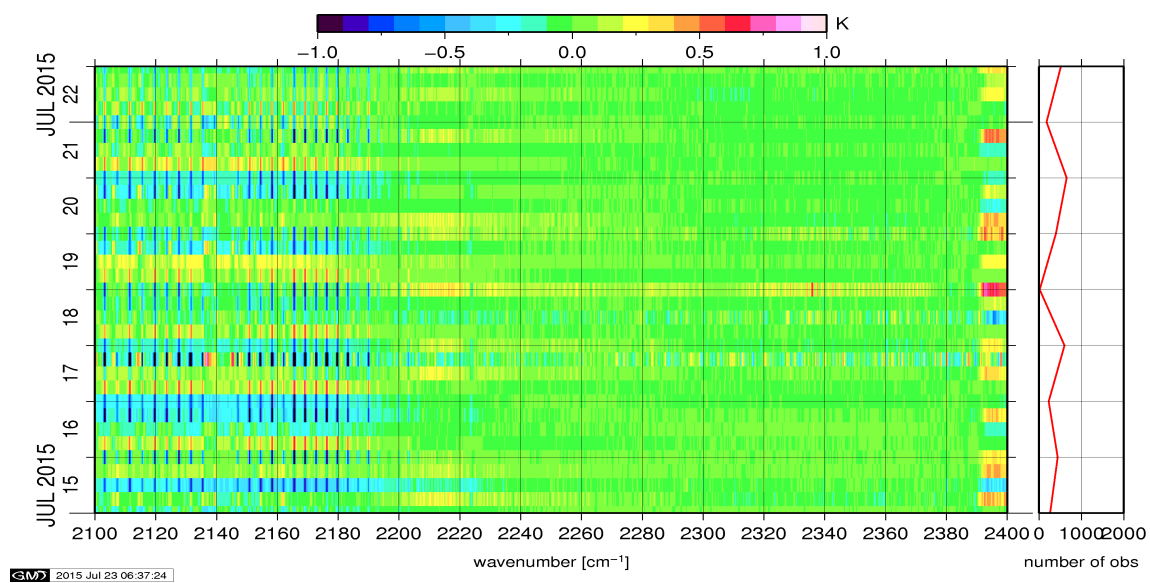


Figure 15: Radiance Anomaly in BRT: CO2 4.3

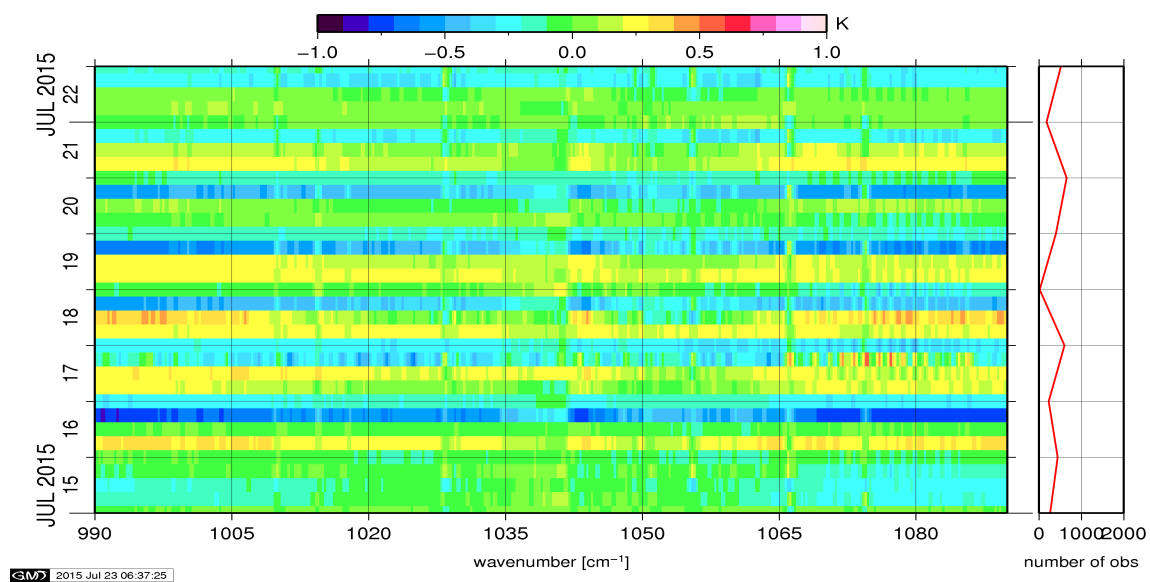


Figure 16: Radiance Anomaly in BRT: O3

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.

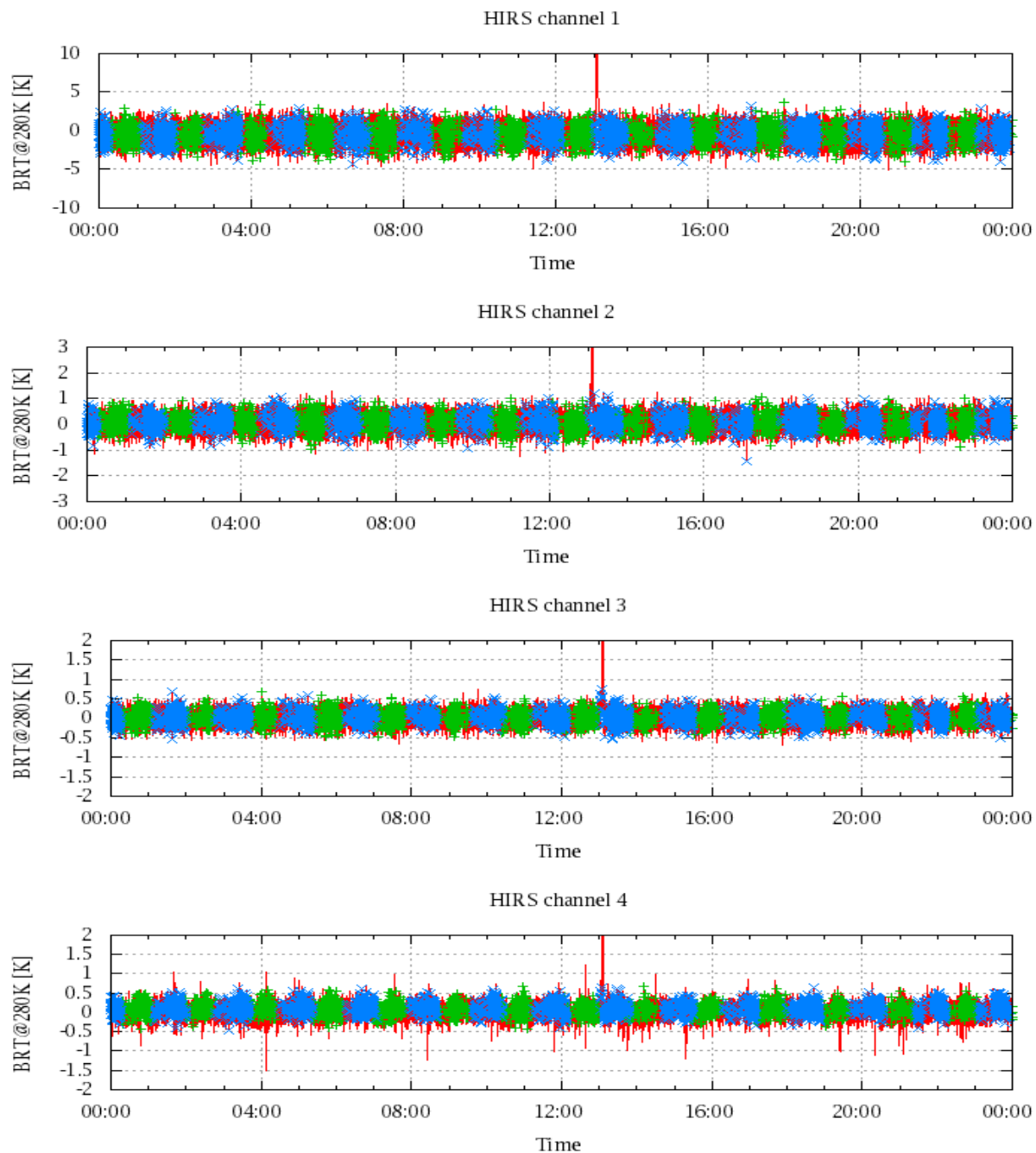


Figure 17: Radiance Differences in BRT

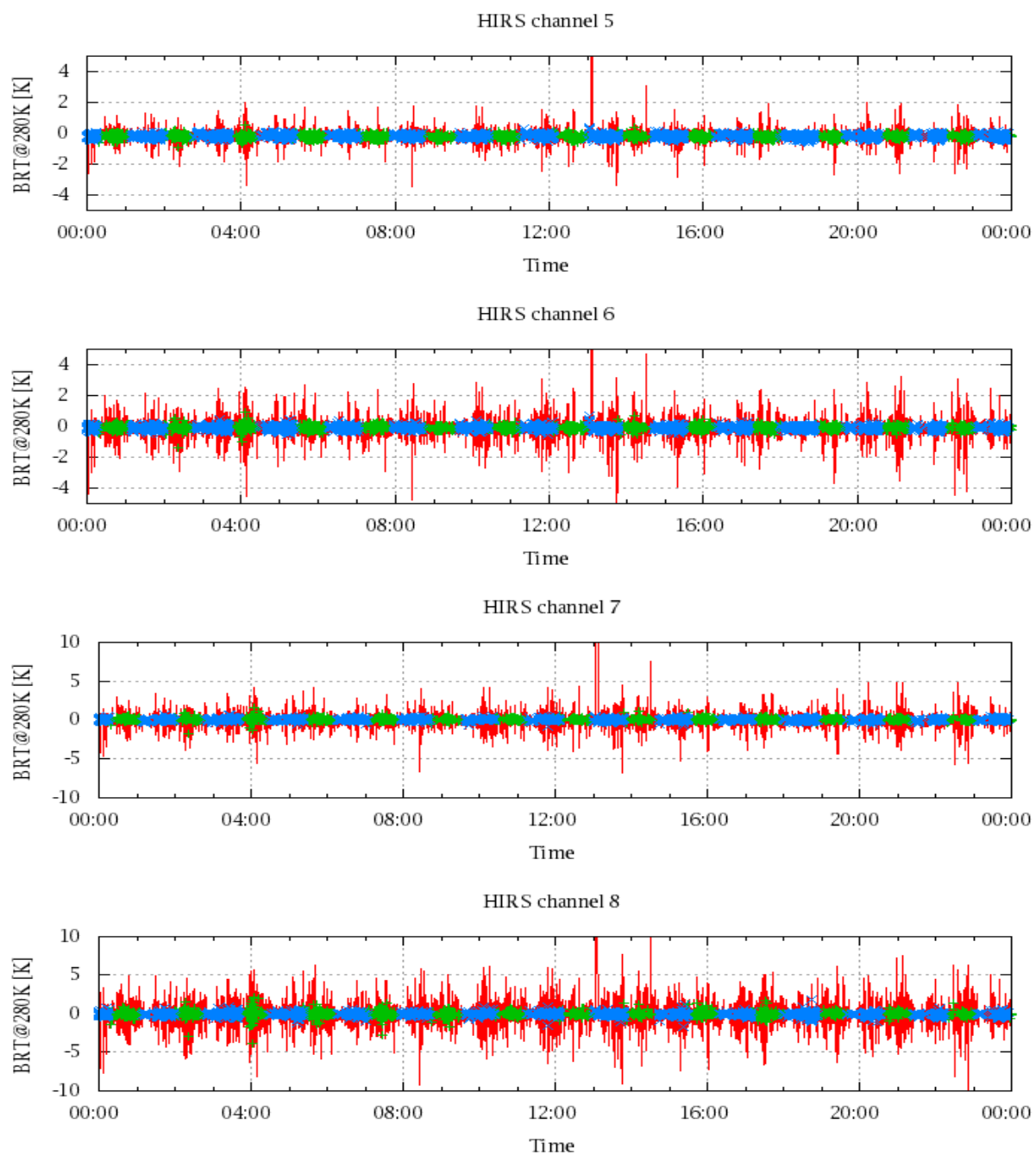


Figure 18: Radiance Differences in BRT

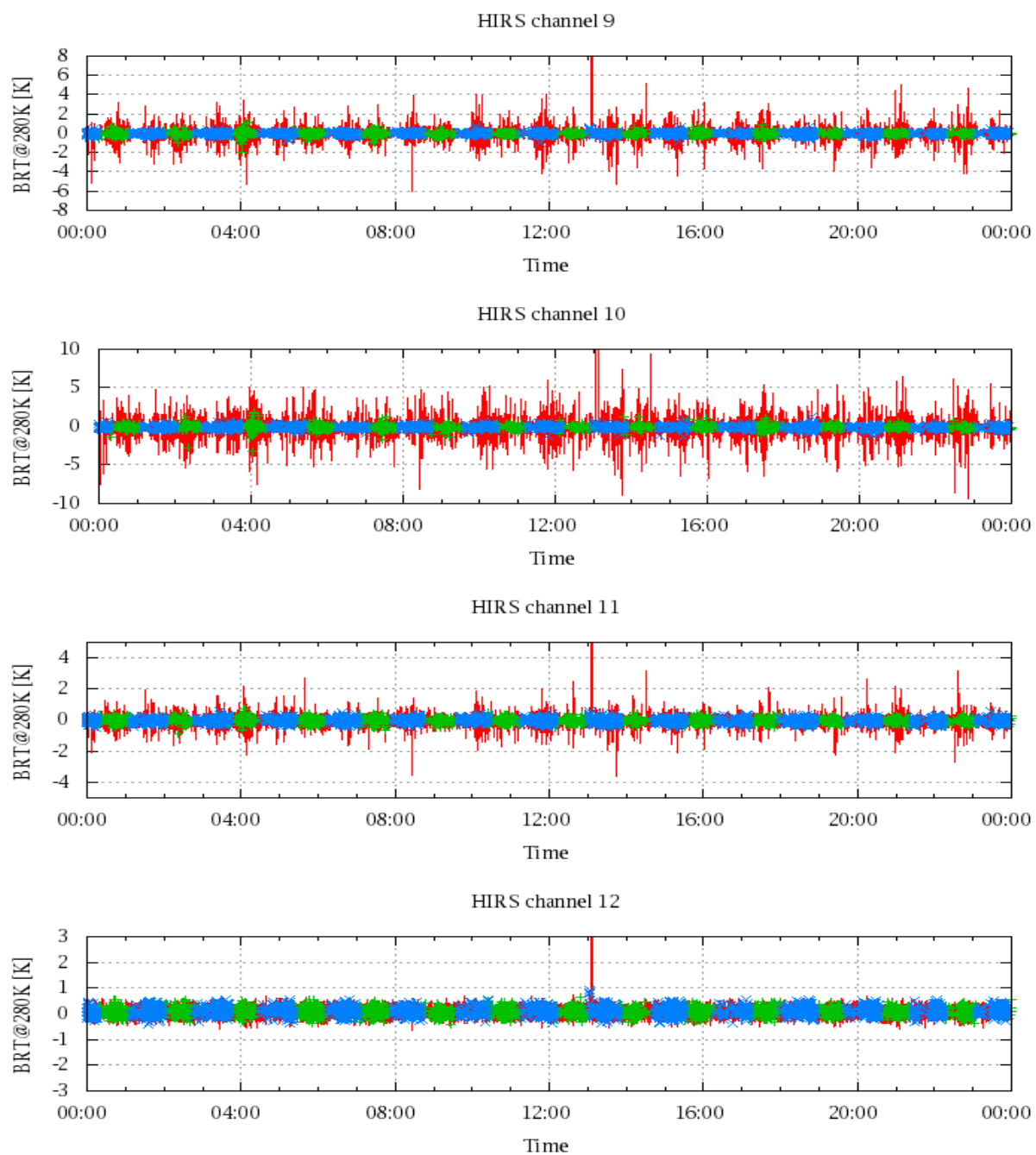


Figure 19: Radiance Differences in BRT

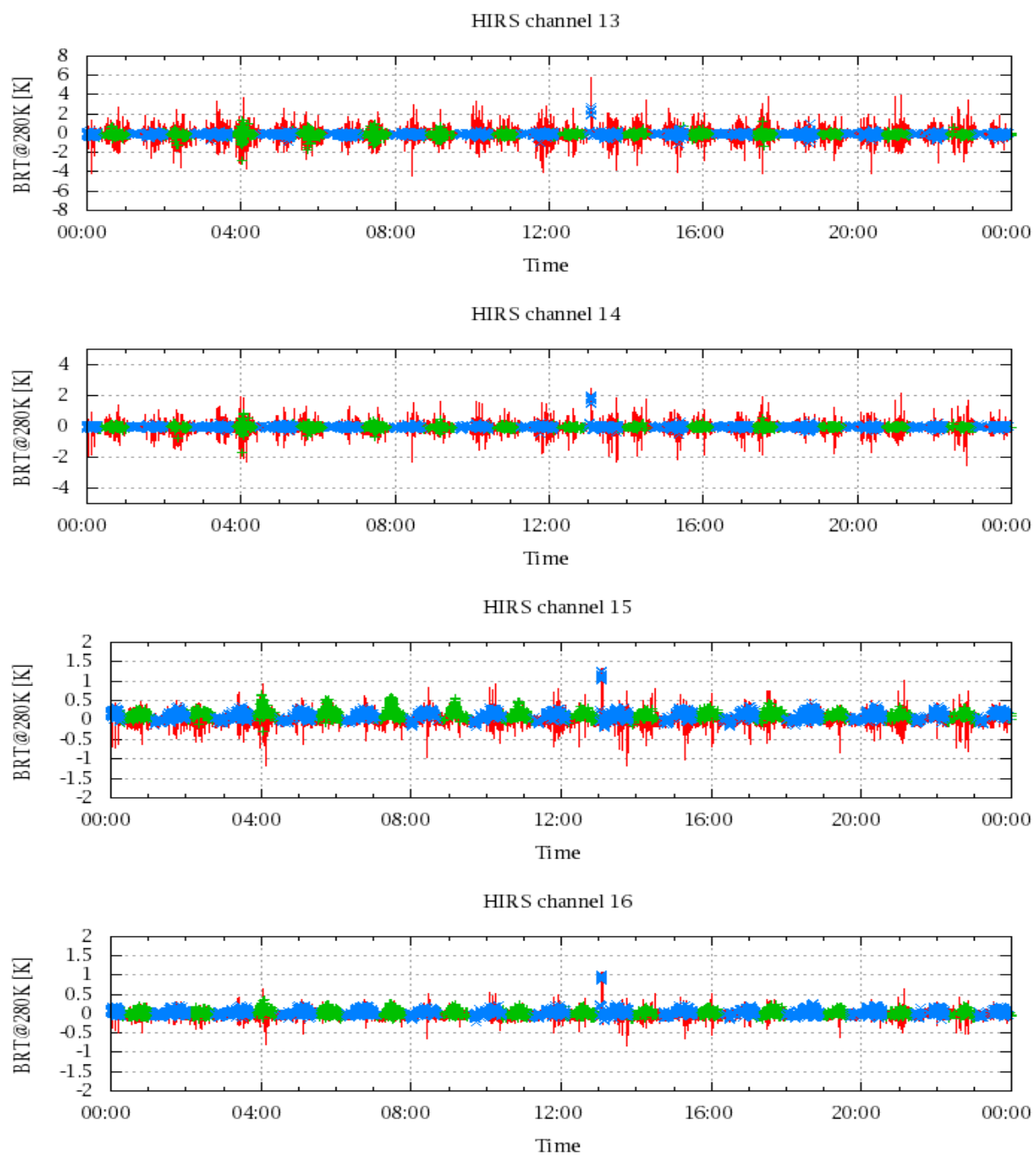


Figure 20: Radiance Differences in BRT

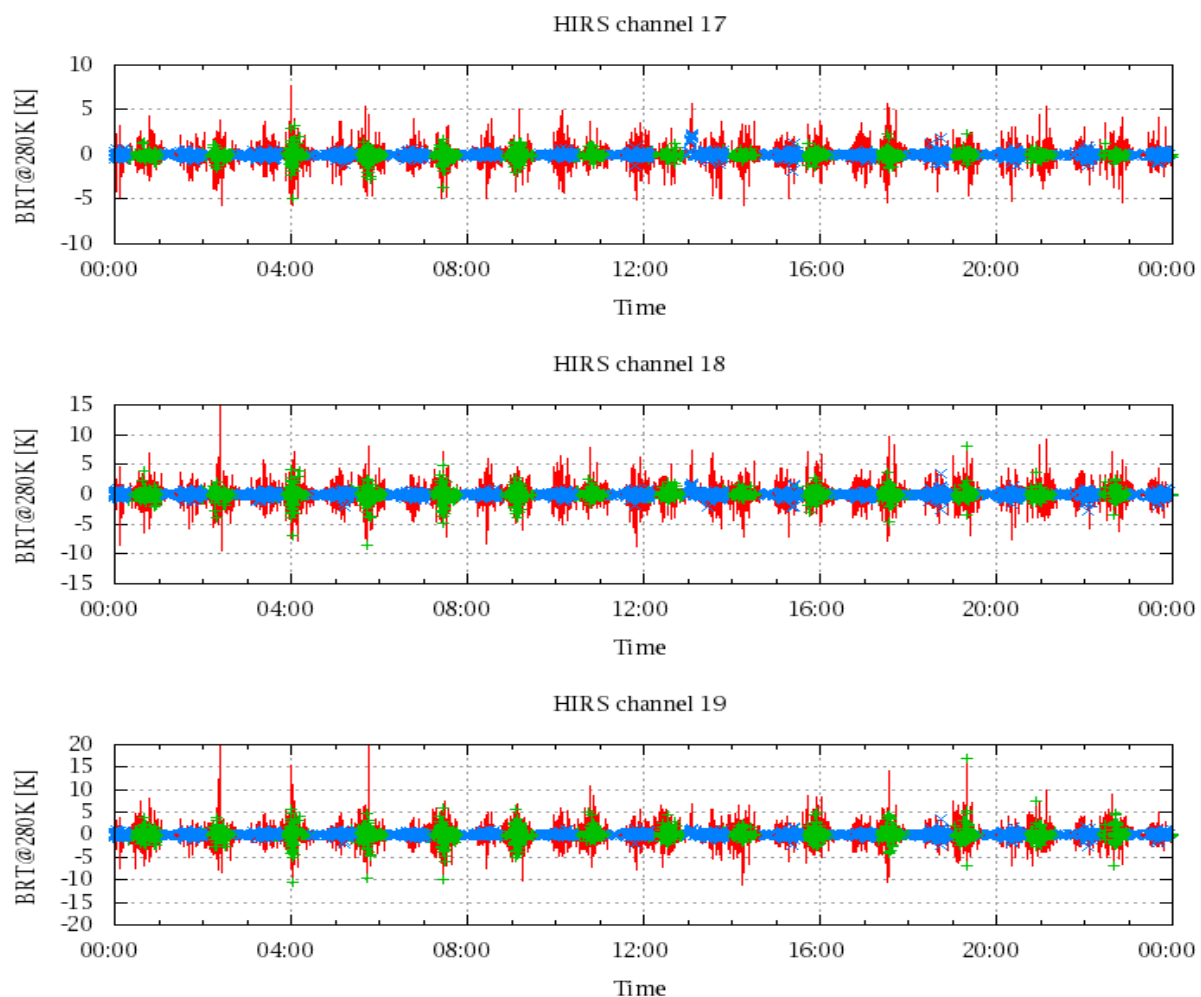


Figure 21: Radinace Differences in BRT