

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

25/11/2014 00:00:00 - 26/11/2014 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 25/11/2014 00:00:00 - 26/11/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 25/11/2014 00:00:00 - 26/11/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	465	-
L1 ENG PDUs	464	-
L1 ENG distinct GEPSGranule	465	-
L1 DPX PDUs (RM: IASI-HIRS)	464	-
L1 DPS Files (RM: OBS-CAL NWP based)	464	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	11054	11056	20141125161023.397	20141125161025.342
PX2 (135)	-	-	-	-
PX3 (140)	12218	12220	20141125161534.087	20141125161534.521
PX3 (140)	12930	12932	20141125161844.353	20141125161844.786
PX4 (145)	11663	11665	20141125161306.849	20141125161307.283
PX4 (145)	12265	12267	20141125161547.279	20141125161547.712
IMG (150)	1235	1237	20141125160505.999	20141125160506.433
IMG (150)	1921	1923	20141125160747.292	20141125160747.725
IMG (150)	2332	2334	20141125160923.936	20141125160924.370
IMG (150)	2381	2383	20141125160935.178	20141125160935.612
IMG (150)	3115	3117	20141125161228.146	20141125161228.580
VER (160)	5701	5703	20141125061159.687	20141125070119.672
VER (160)	9809	9811	20141125160743.616	20141125160743.616
VER (160)	10098	10100	20141125161519.603	20141125161527.603
VER (160)	10100	10102	20141125161527.603	20141125161527.603
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
25/11/2014 00:00:07	-	Normal operation
25/11/2014 06:12:07	Normal operation	Auxiliary ASE synchronised
25/11/2014 06:13:11	Auxiliary ASE synchronised	Heater 2
25/11/2014 06:40:07	Heater 2	Auxiliary ASE synchronised
25/11/2014 07:01:11	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	465	-
L1 ENG PDUs	464	-
L1 ENG distinct GEPSGranule	465	-
GQisFlagQual set (PX1)	99.42 %	-
GQisFlagQual set (PX2)	99.43 %	-
GQisFlagQual set (PX3)	99.44 %	-
GQisFlagQual set (PX4)	99.45 %	-
GQisFlagQual set (all)	99.44 %	-

Table 4: Quality flags

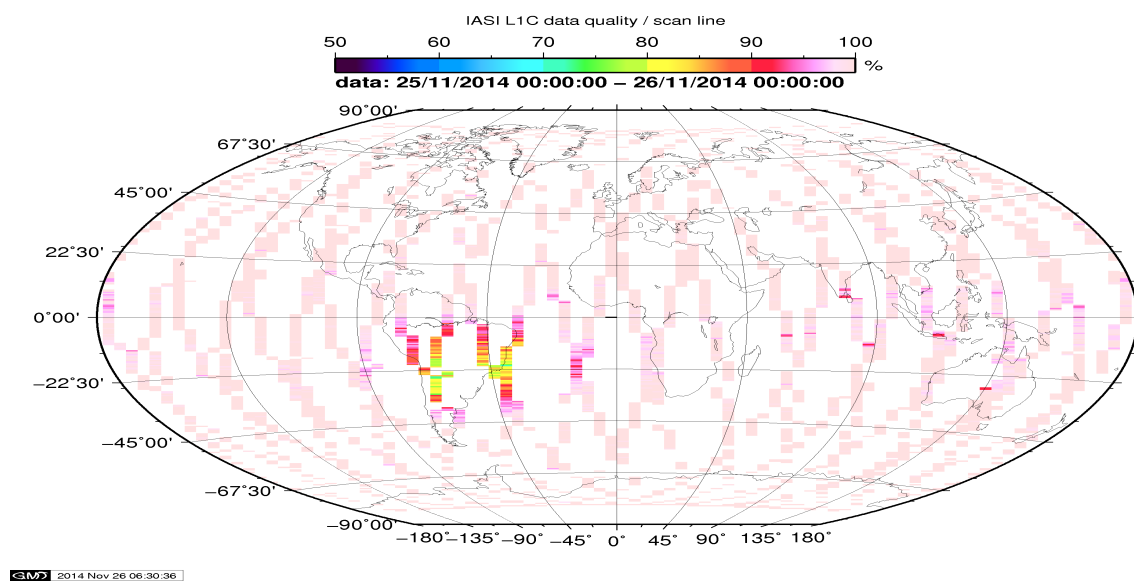


Figure 1: L1C data quality

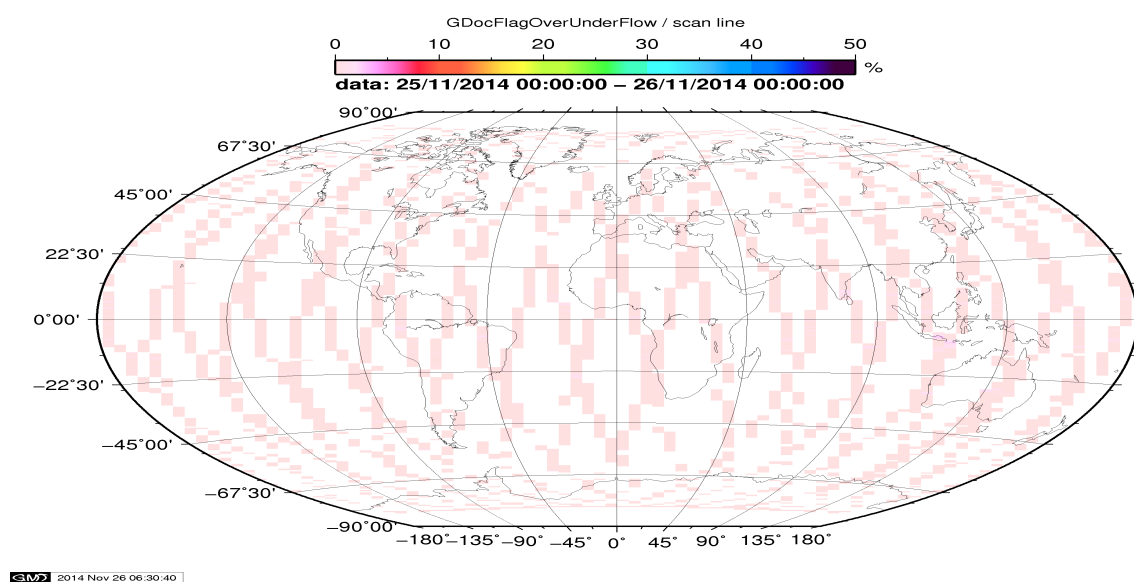


Figure 2: Flag of Over and Under Flows

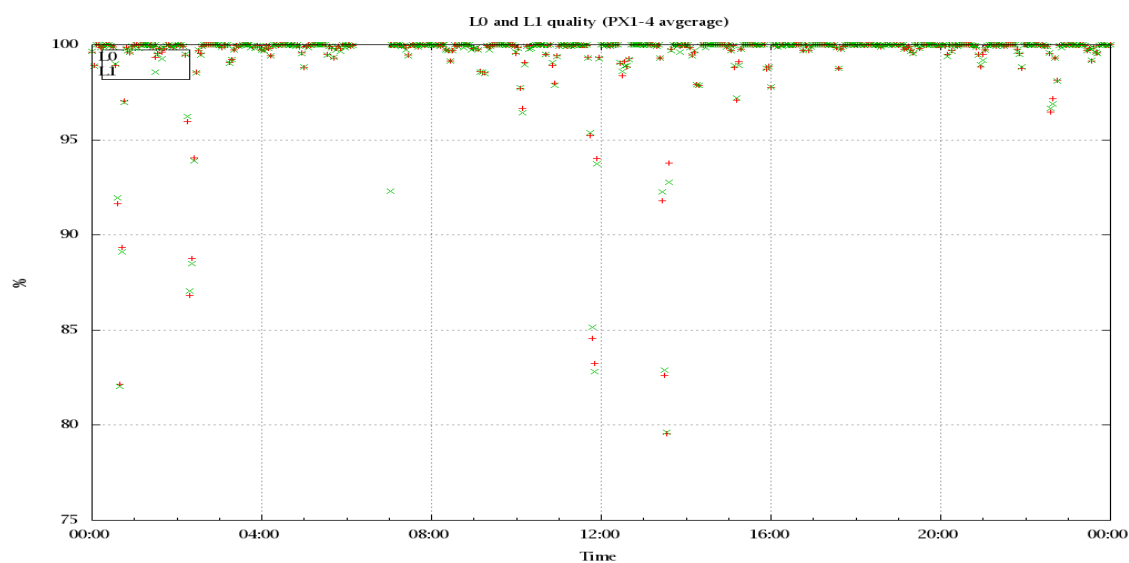


Figure 3: Level 0 and 1C overall quality

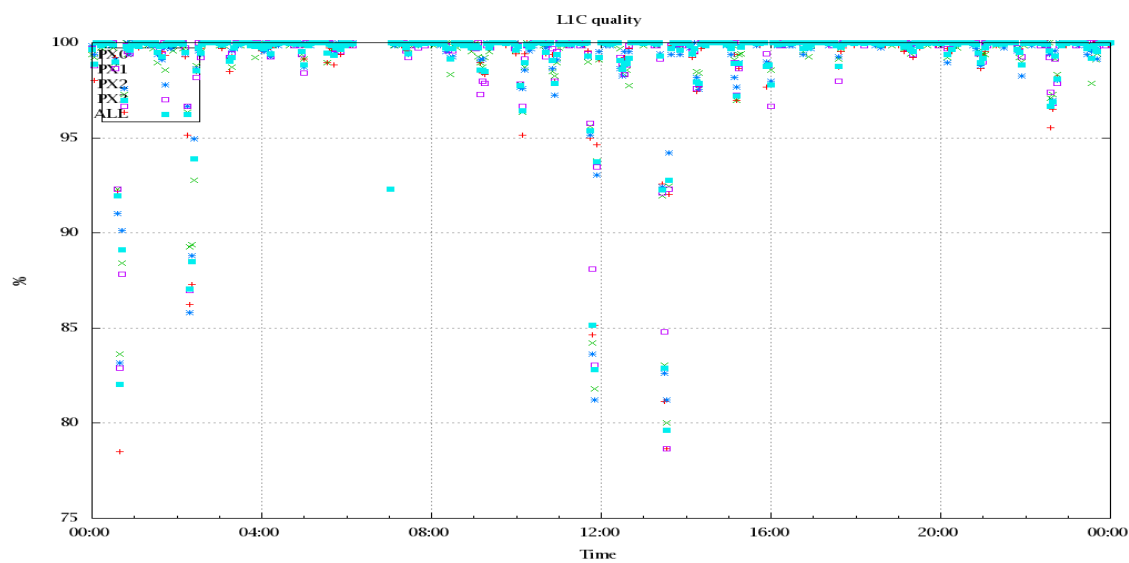


Figure 4: Level 1C quality

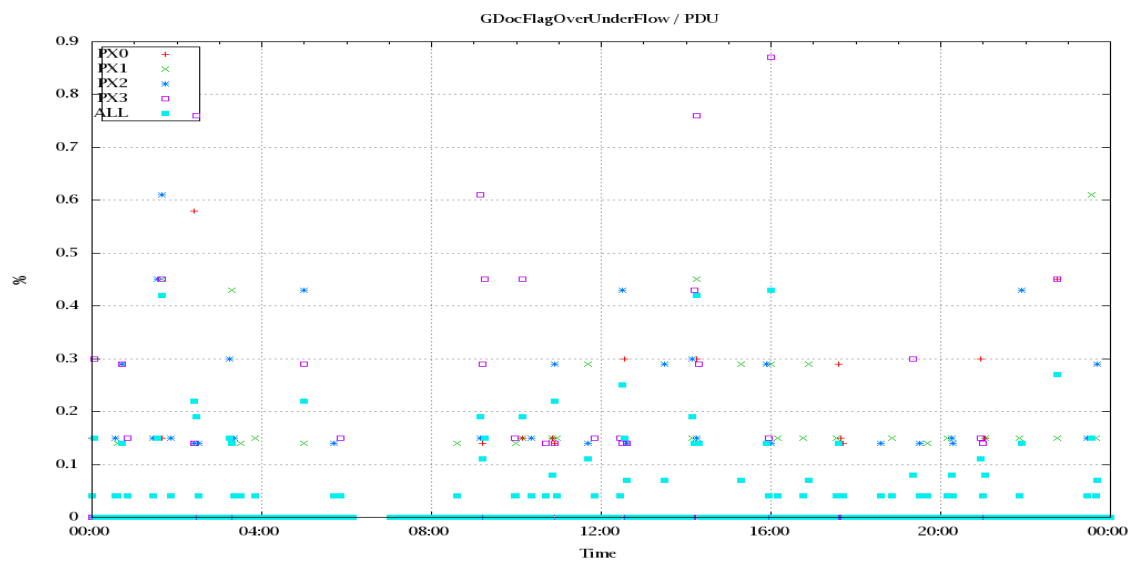


Figure 5: OverUnderFlowFlag timeseries

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.

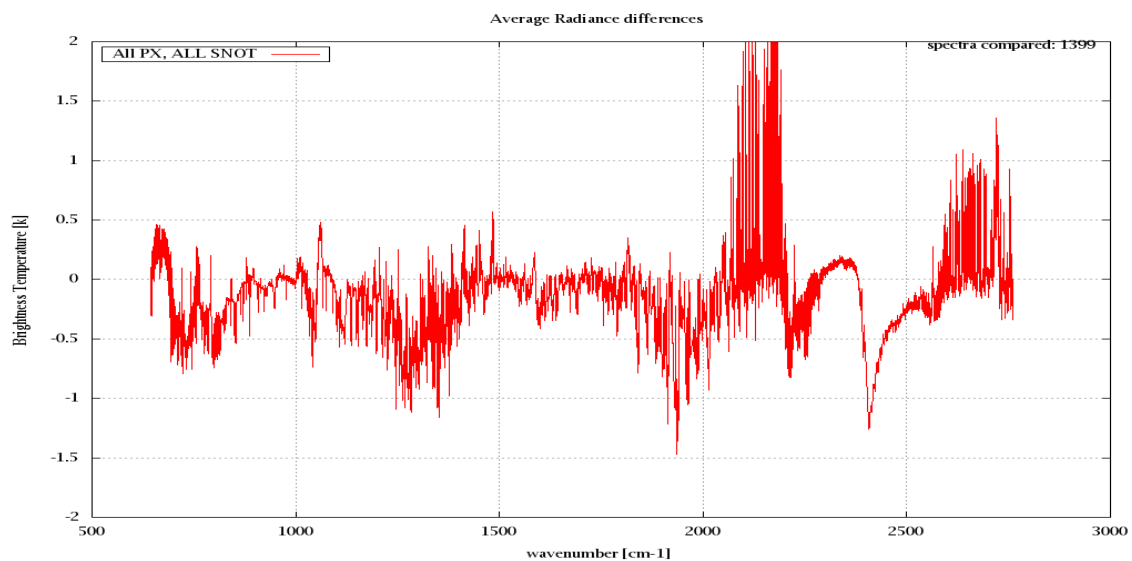


Figure 6: Average Radiance differences: OBS-CAL

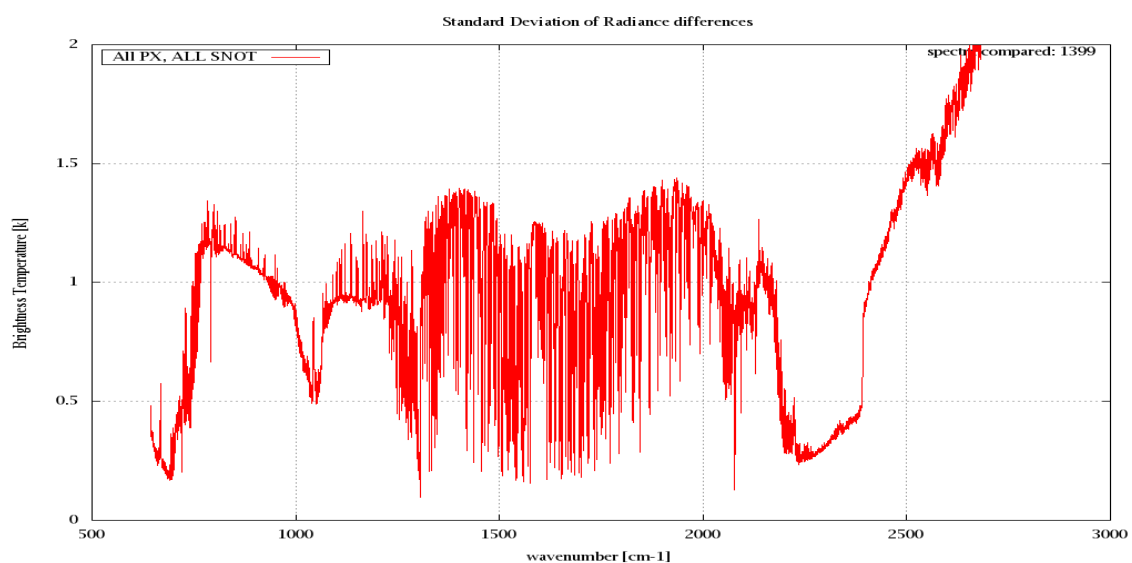


Figure 7: Standard Deviation of Radiance differences

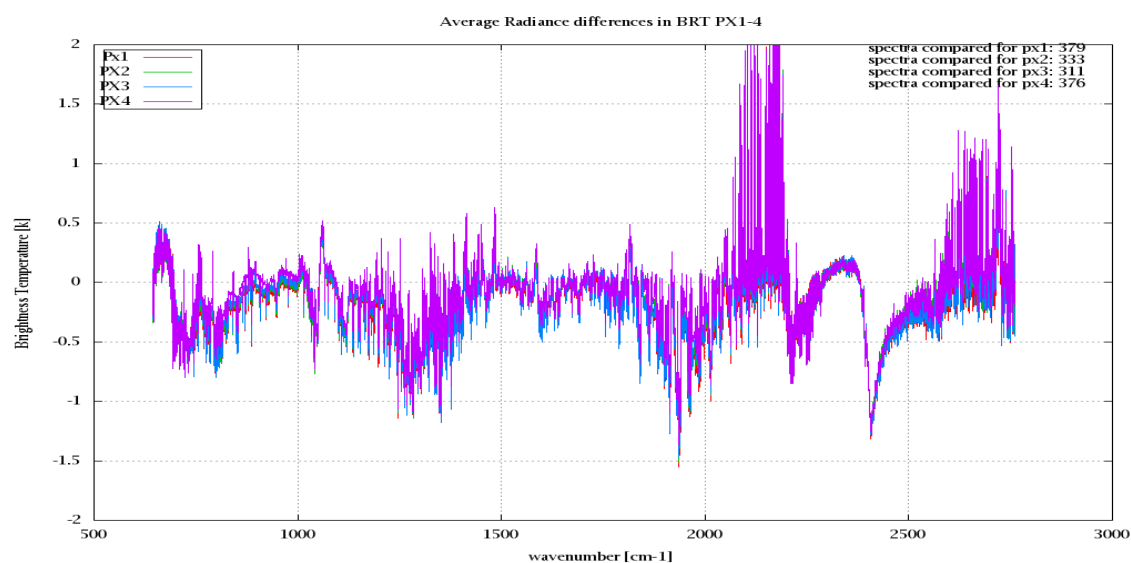


Figure 8: Average Radiance differences: OBS-CAL

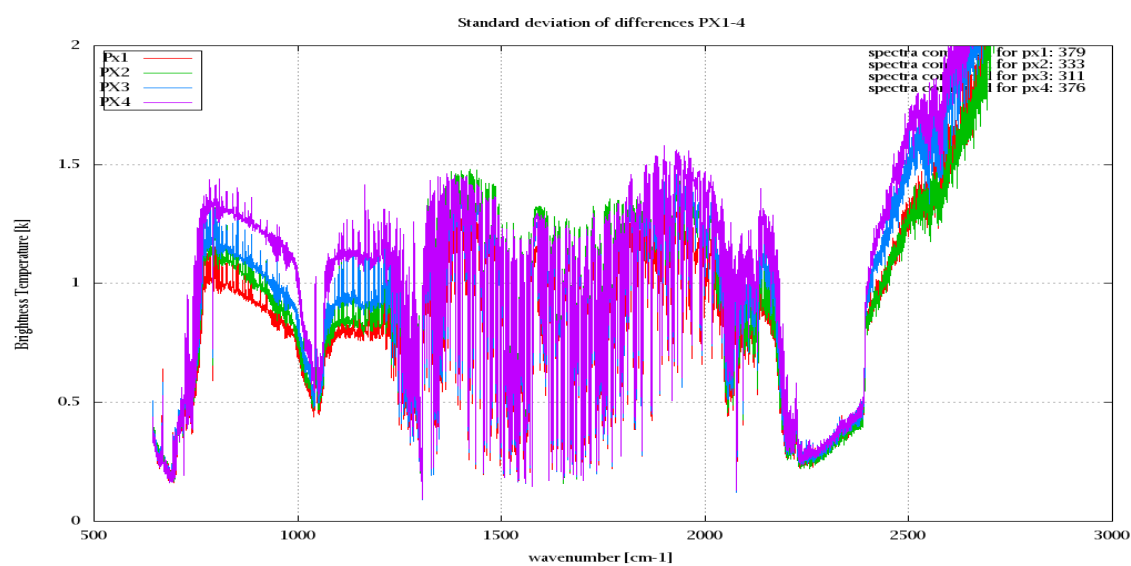


Figure 9: Standard Deviation of Radiance differences

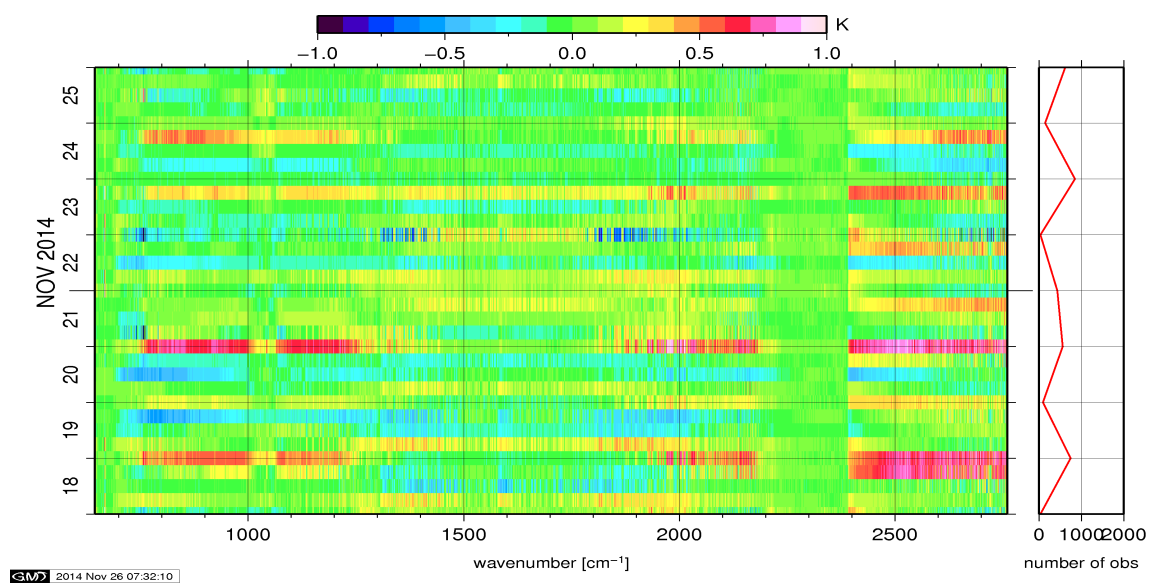


Figure 10: Radiance Anomaly in BRT: All Channels

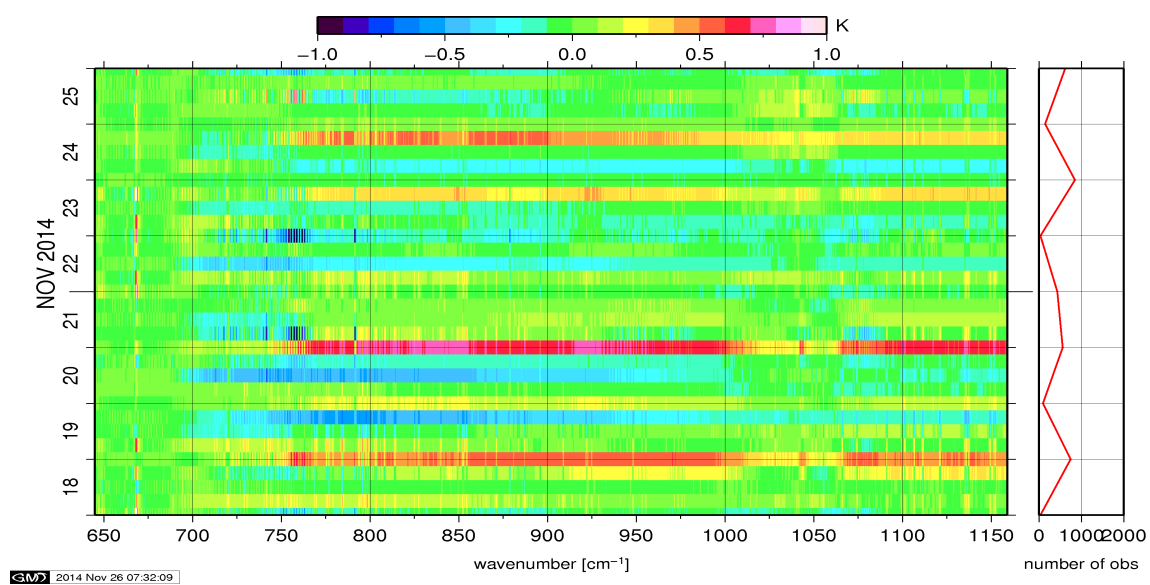


Figure 11: Radiance Anomaly in BRT: IASI Band 1

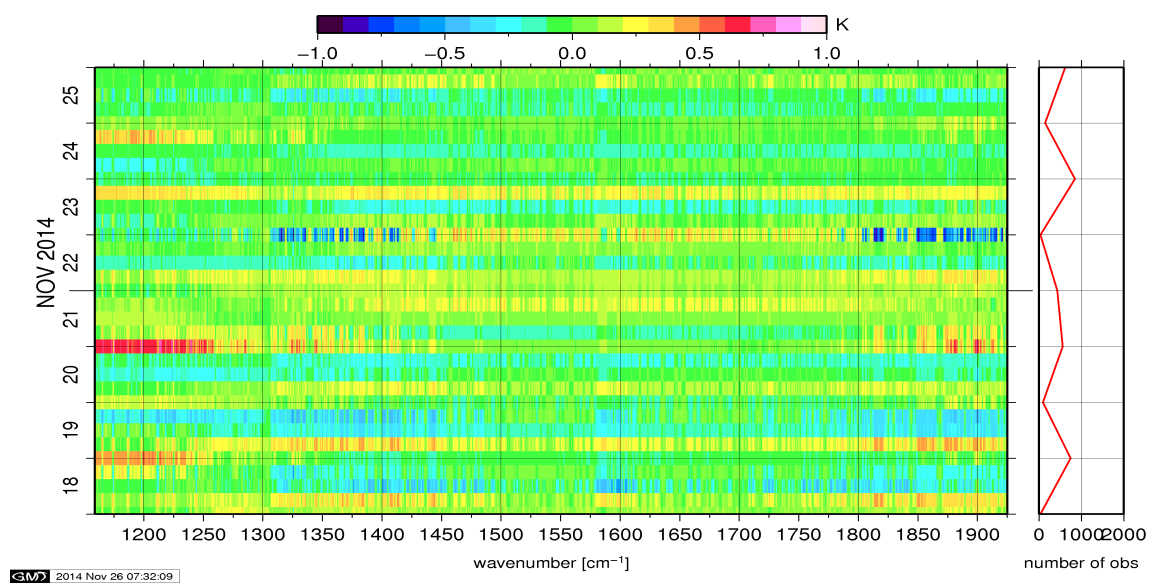


Figure 12: Radiance Anomaly in BRT: IASI Band 2

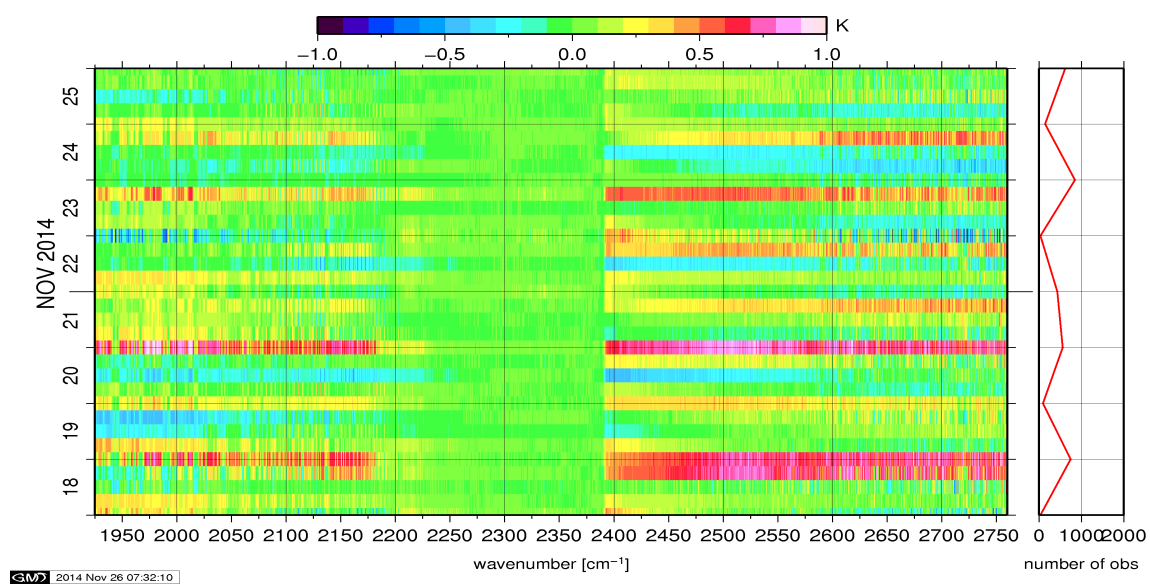


Figure 13: Radiance Anomaly in BRT: IASI Band 3

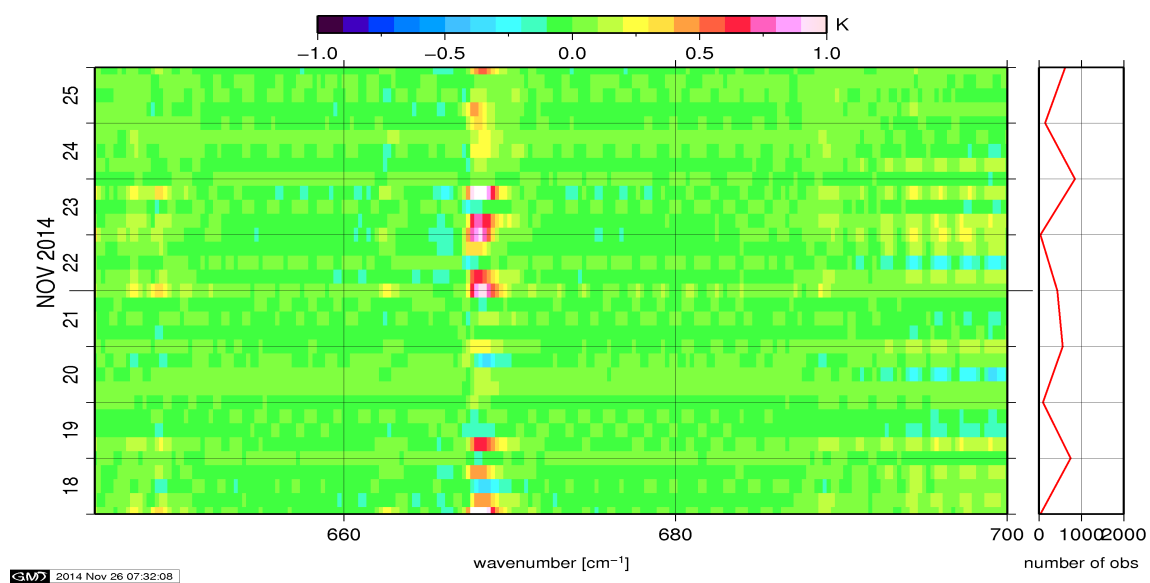


Figure 14: Radiance Anomaly in BRT: CO2 14

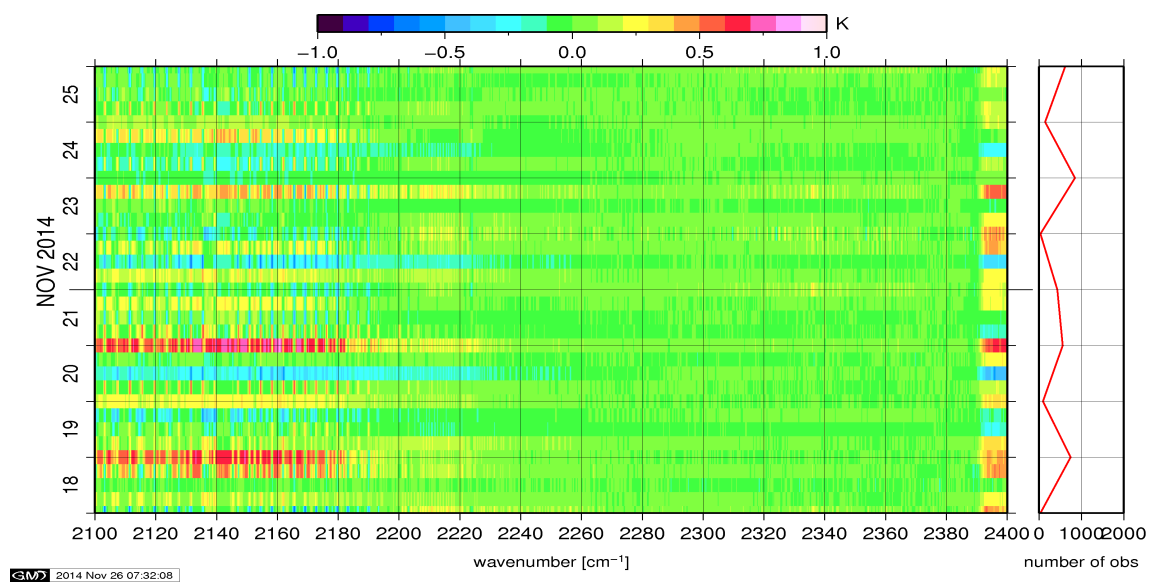


Figure 15: Radiance Anomaly in BRT: CO2 4.3

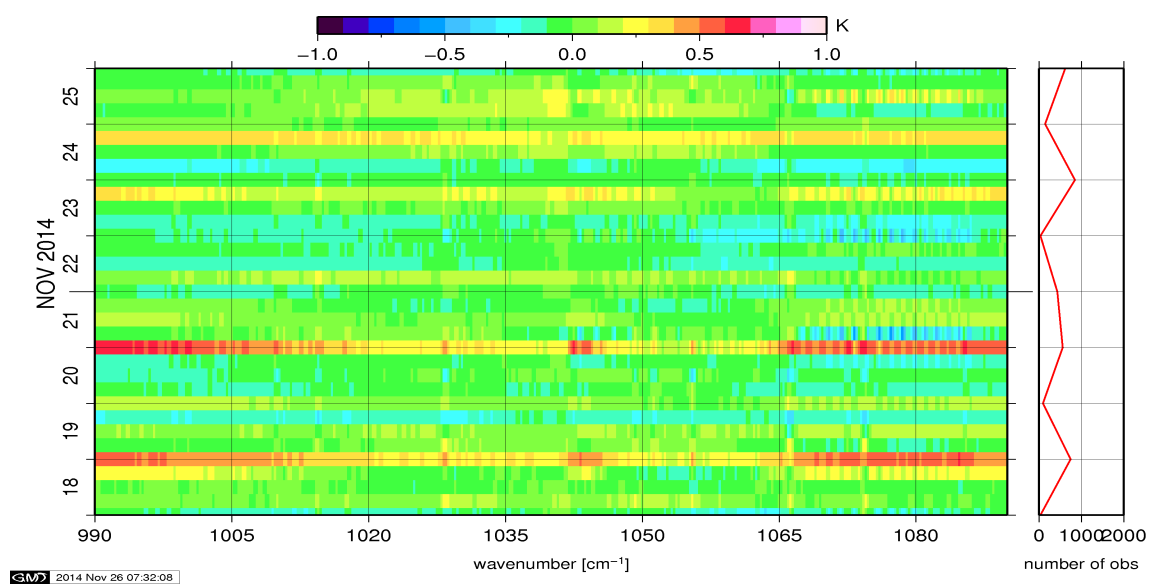


Figure 16: Radiance Anomaly in BRT: O3

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.

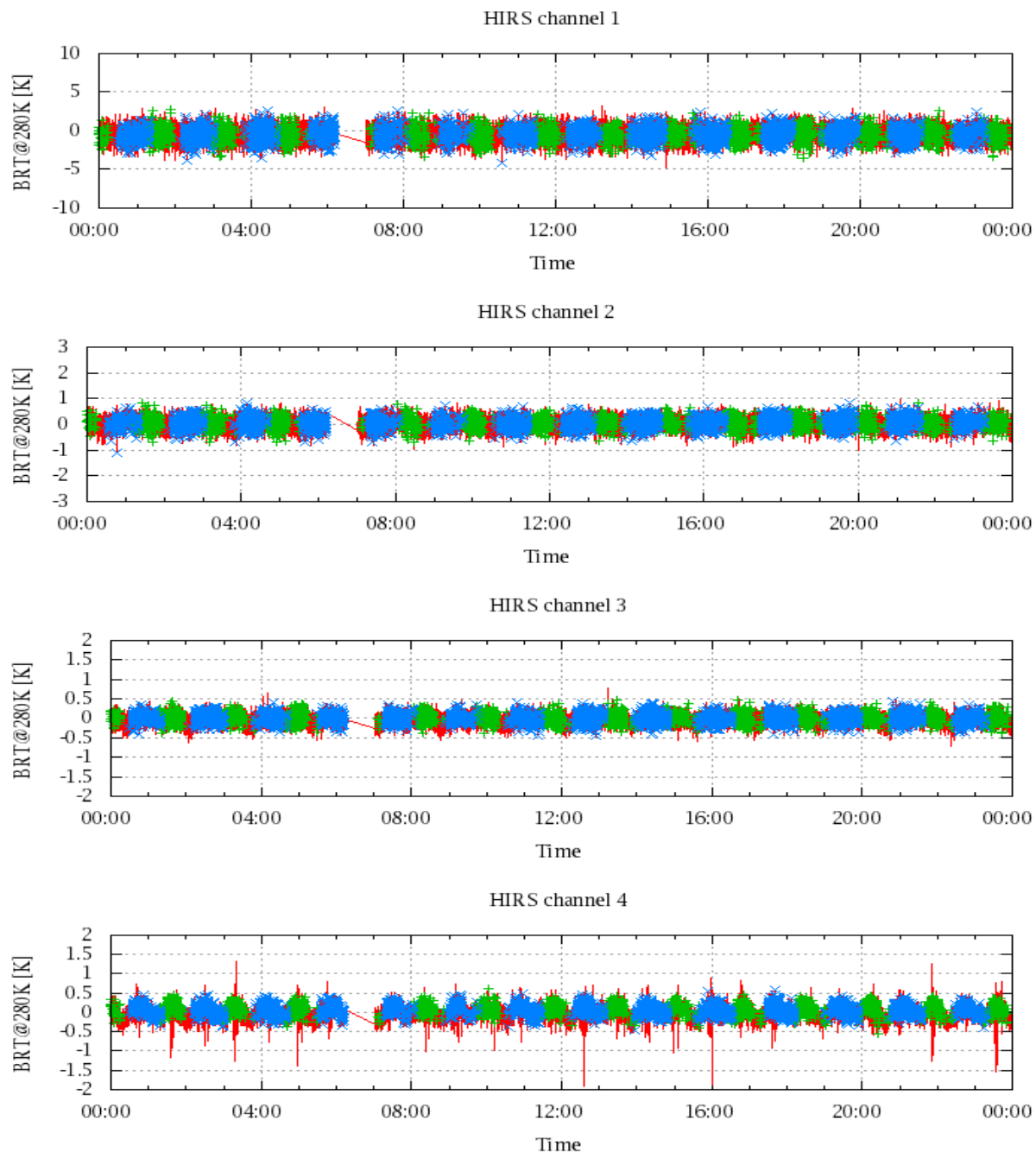


Figure 17: Radiance Differences in BRT

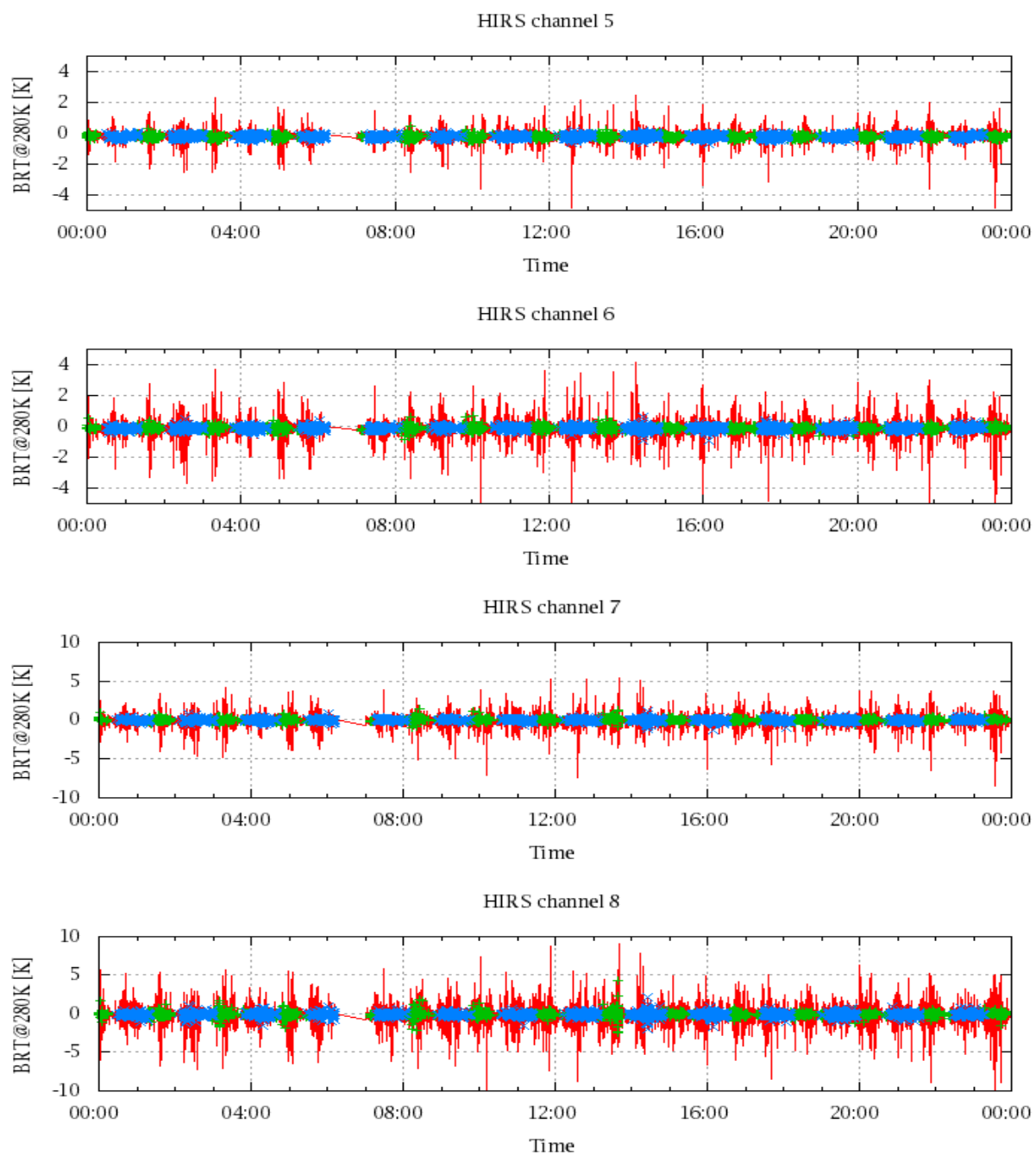


Figure 18: Radiance Differences in BRT

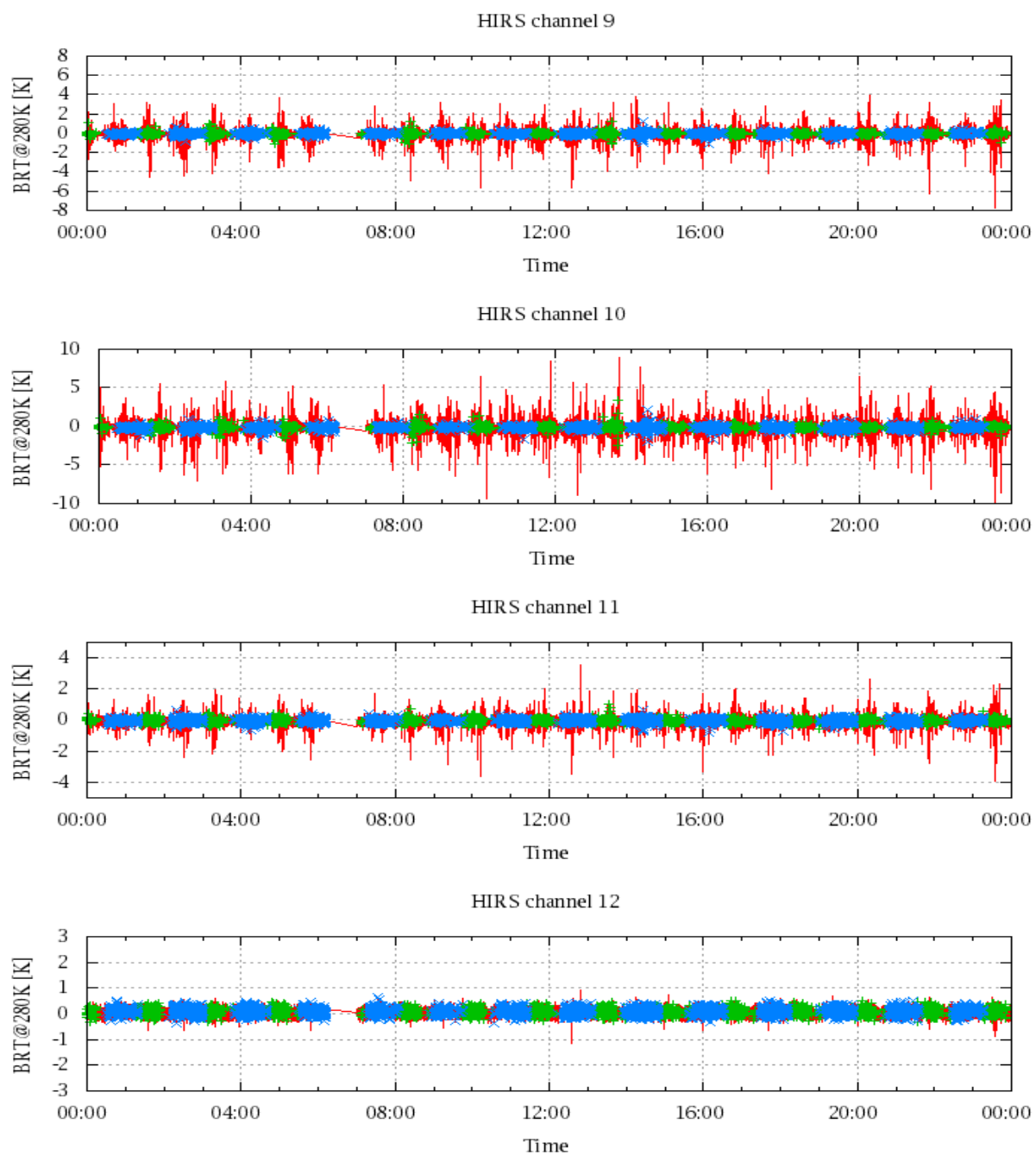


Figure 19: Radiance Differences in BRT

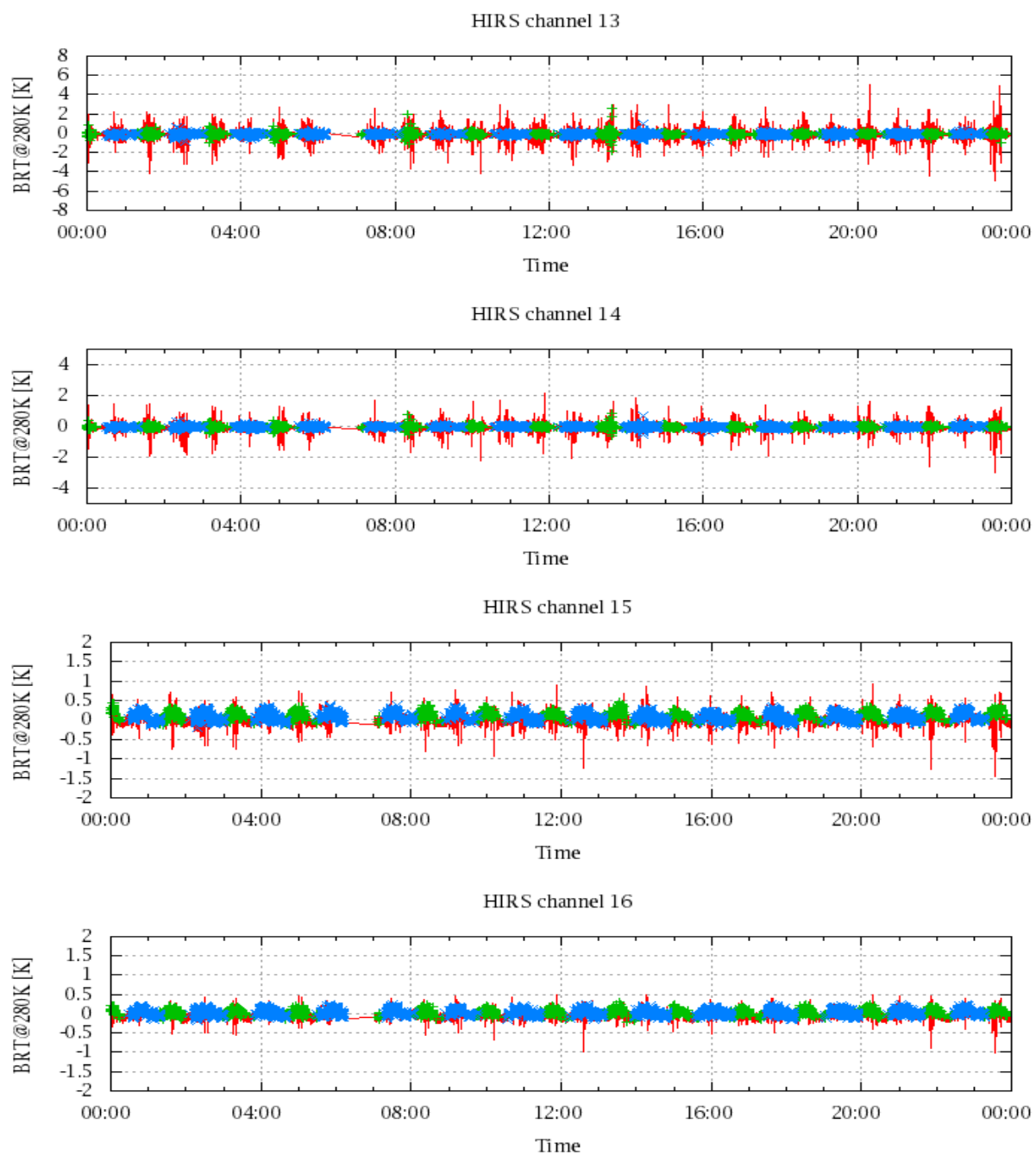


Figure 20: Radiance Differences in BRT

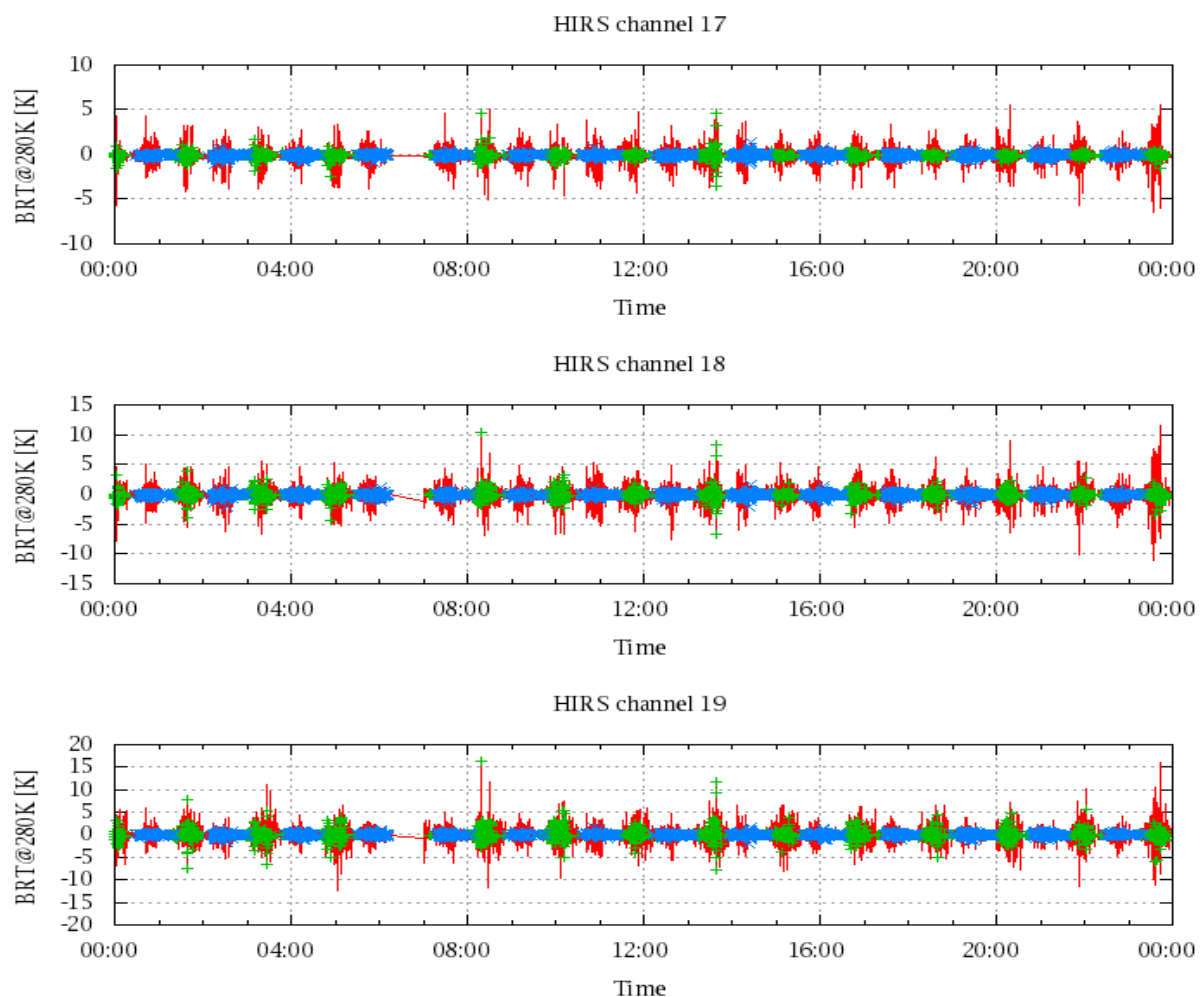


Figure 21: Radinace Differences in BRT