

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

15/12/2016 00:00:00 - 16/12/2016 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 15/12/2016 00:00:00 - 16/12/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 15/12/2016 00:00:00 - 16/12/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	465	-
L1 DPX PDUs (RM: IASI-HIRS)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	4025	0	20161215054607.837	20161215054857.993
PX2 (135)	4025	0	20161215054607.837	20161215054857.993
PX3 (140)	4025	0	20161215054607.837	20161215054857.993
PX4 (145)	3997	0	20161215054600.270	20161215054857.993
IMG (150)	730	0	20161215054607.837	20161215054857.993
VER (160)	8303	1745	20161215054607.837	20161215063613.664
VER (160)	1745	1750	20161215063613.664	20161215063613.664
VER (160)	1750	1755	20161215063613.664	20161215063613.664
VER (160)	1755	1760	20161215063613.664	20161215063613.664
VER (160)	1760	1765	20161215063613.664	20161215063613.664
VER (160)	1765	1746	20161215063613.664	20161215063613.664
VER (160)	1746	1751	20161215063613.664	20161215063613.664
VER (160)	1751	1756	20161215063613.664	20161215063613.664
VER (160)	1756	1761	20161215063613.664	20161215063613.664
VER (160)	1761	1766	20161215063613.664	20161215063613.664
VER (160)	1766	1747	20161215063613.664	20161215063613.664
VER (160)	1747	1752	20161215063613.664	20161215063613.664
VER (160)	1752	1757	20161215063613.664	20161215063613.664

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1757	1762	20161215063613.664	20161215063613.664
VER (160)	1762	1767	20161215063613.664	20161215063613.664
VER (160)	1767	1748	20161215063613.664	20161215063613.664
VER (160)	1748	1753	20161215063613.664	20161215063613.664
VER (160)	1753	1758	20161215063613.664	20161215063613.664
VER (160)	1758	1763	20161215063613.664	20161215063613.664
VER (160)	1763	1768	20161215063613.664	20161215063613.664
VER (160)	1768	1749	20161215063613.664	20161215063613.664
VER (160)	1749	1754	20161215063613.664	20161215063613.664
VER (160)	1754	1759	20161215063613.664	20161215063613.664
VER (160)	1759	1764	20161215063613.664	20161215063613.664
VER (160)	1764	1769	20161215063613.664	20161215063613.664
AUX (180)	11463	0	20161215054600.704	20161215054904.696

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
15/12/2016 00:00:13	-	Normal operation
15/12/2016 08:20:13	Normal operation	Auxiliary ASE synchronised
15/12/2016 08:22:05	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	479	-
L1 ENG distinct GEPSGranule	465	-
GQisFlagQual set (PX1)	99.58 %	-
GQisFlagQual set (PX2)	99.64 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

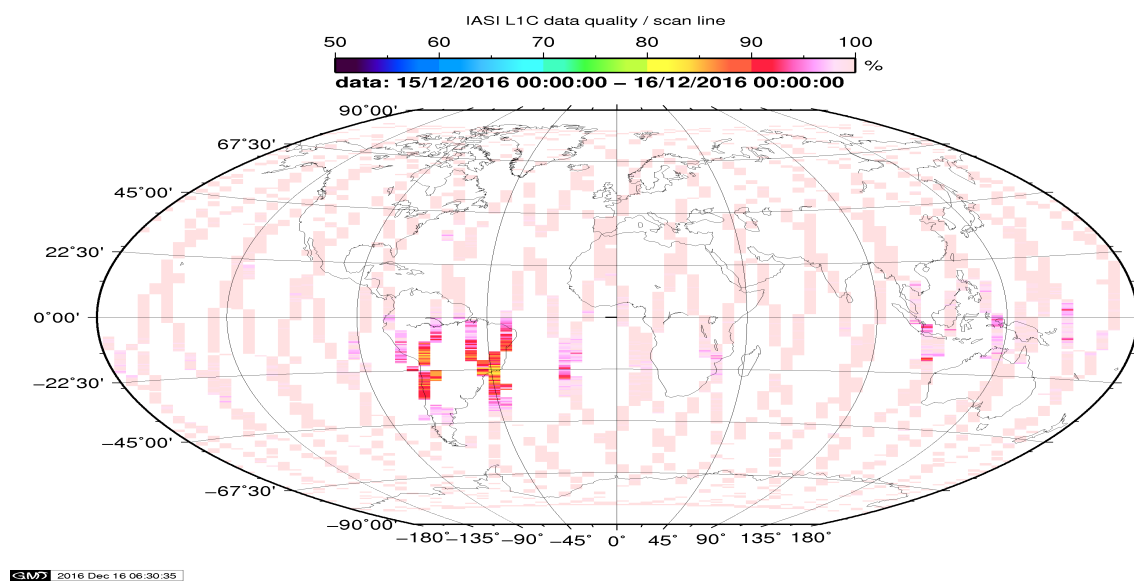


Figure 1: L1C data quality

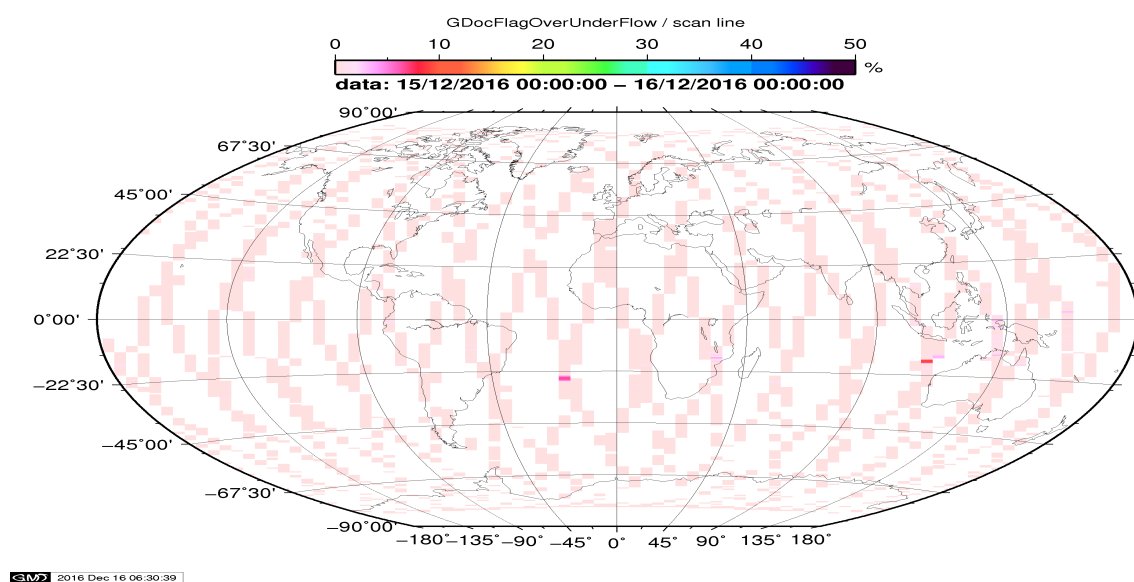


Figure 2: Flag of Over and Under Flows

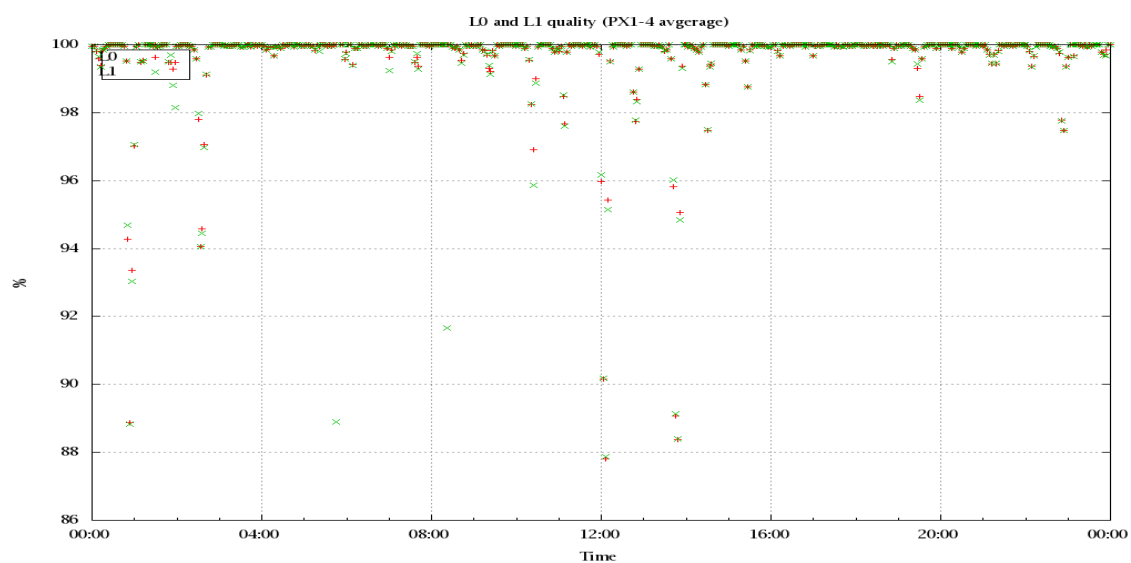


Figure 3: Level 0 and 1C overall quality

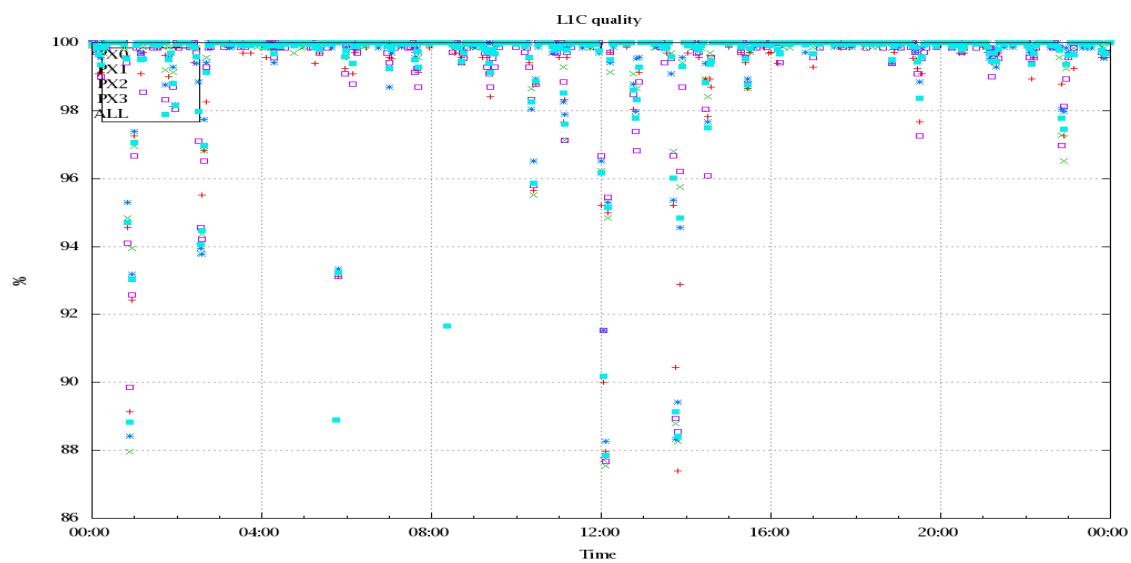


Figure 4: Level 1C quality

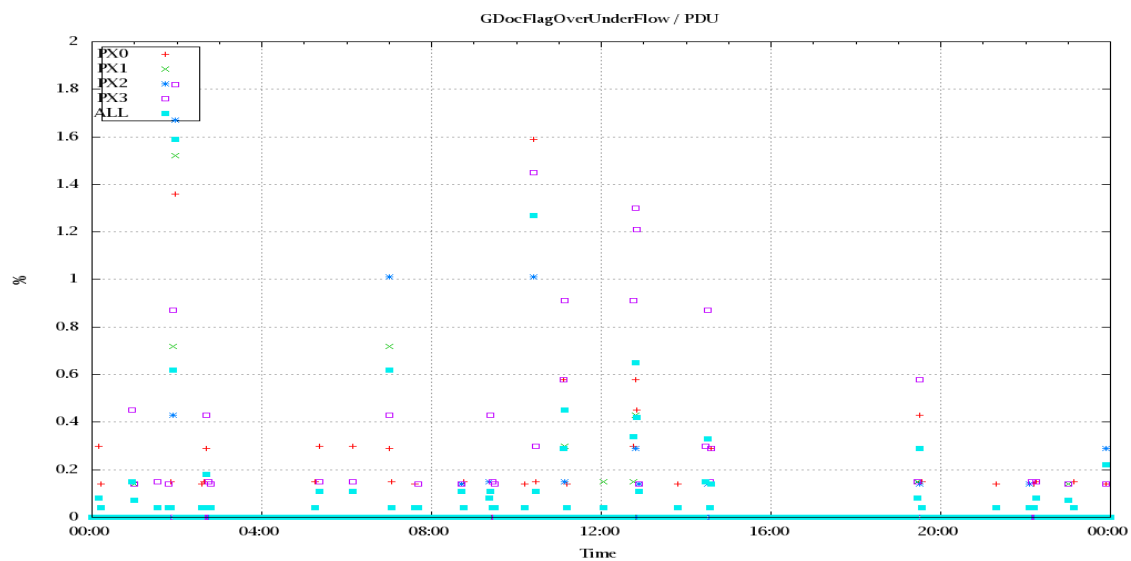


Figure 5: OverUnderFlowFlag timeseries

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.

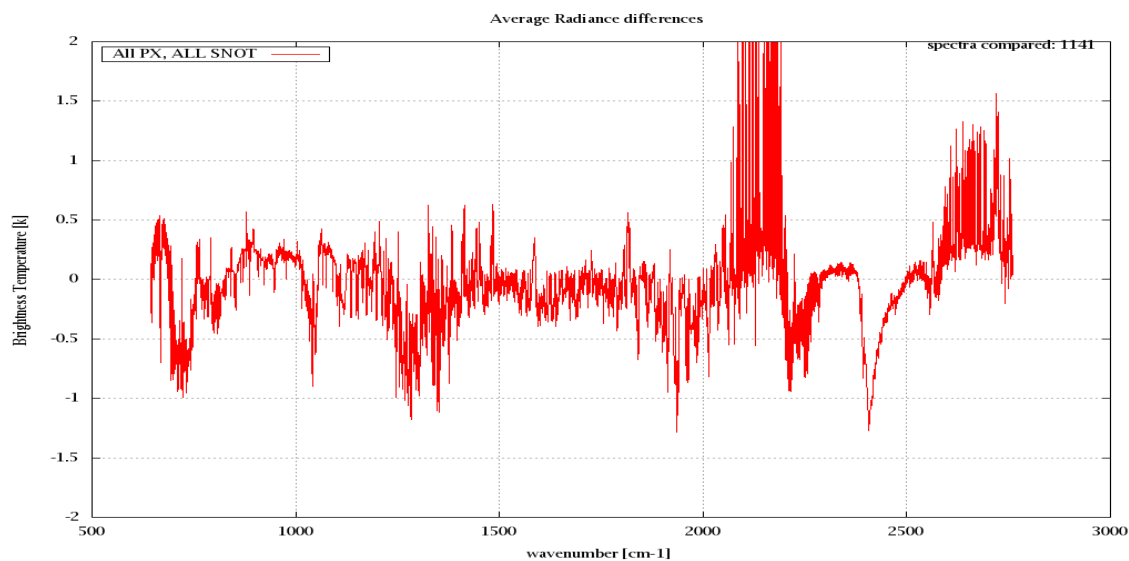


Figure 6: Average Radiance differences: OBS-CAL

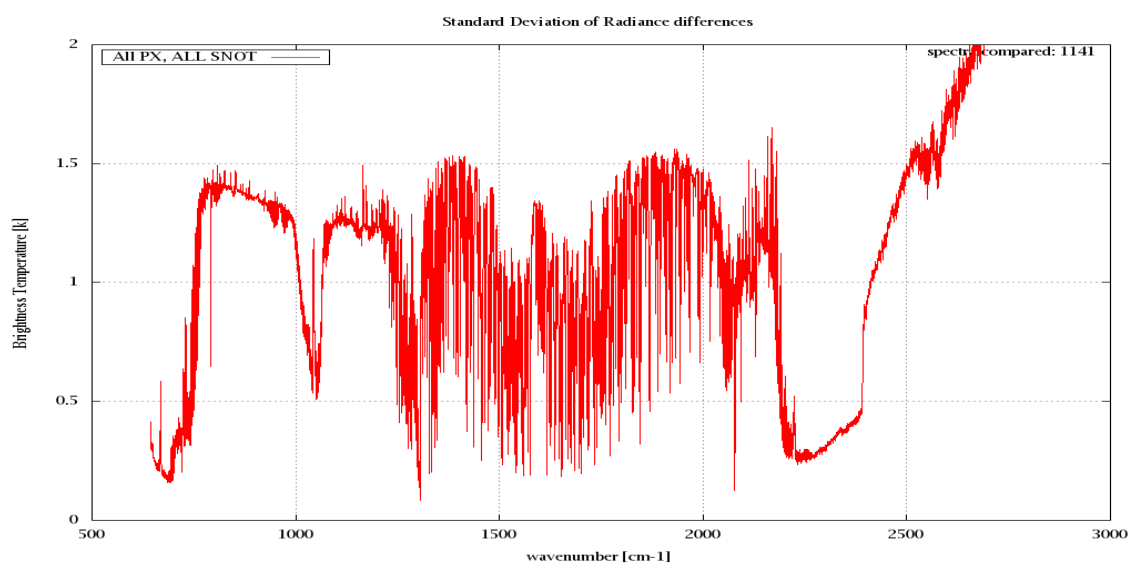


Figure 7: Standard Deviation of Radiance differences

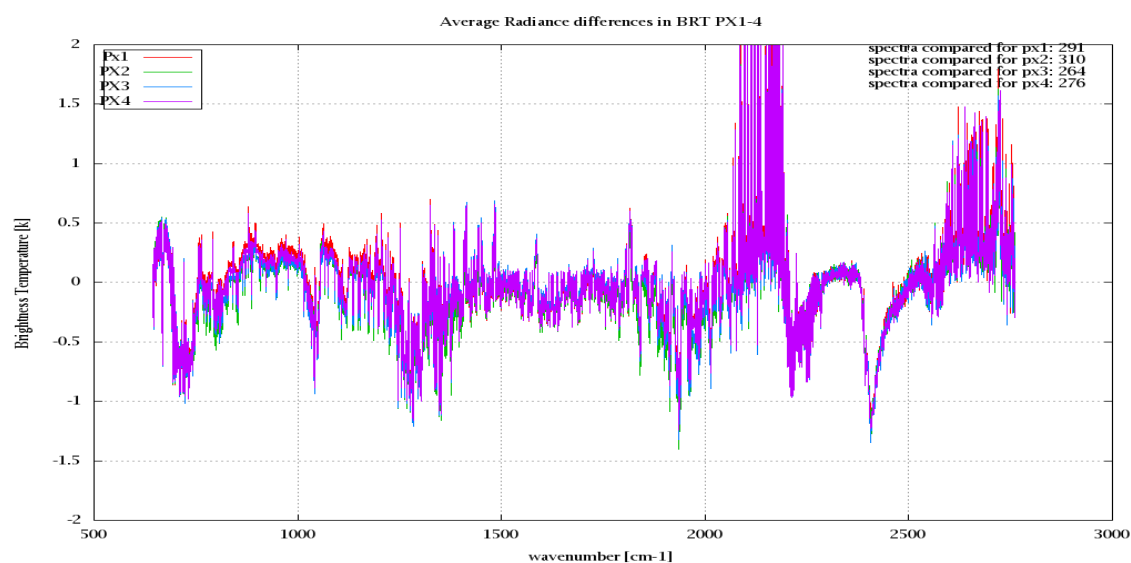


Figure 8: Average Radiance differences: OBS-CAL

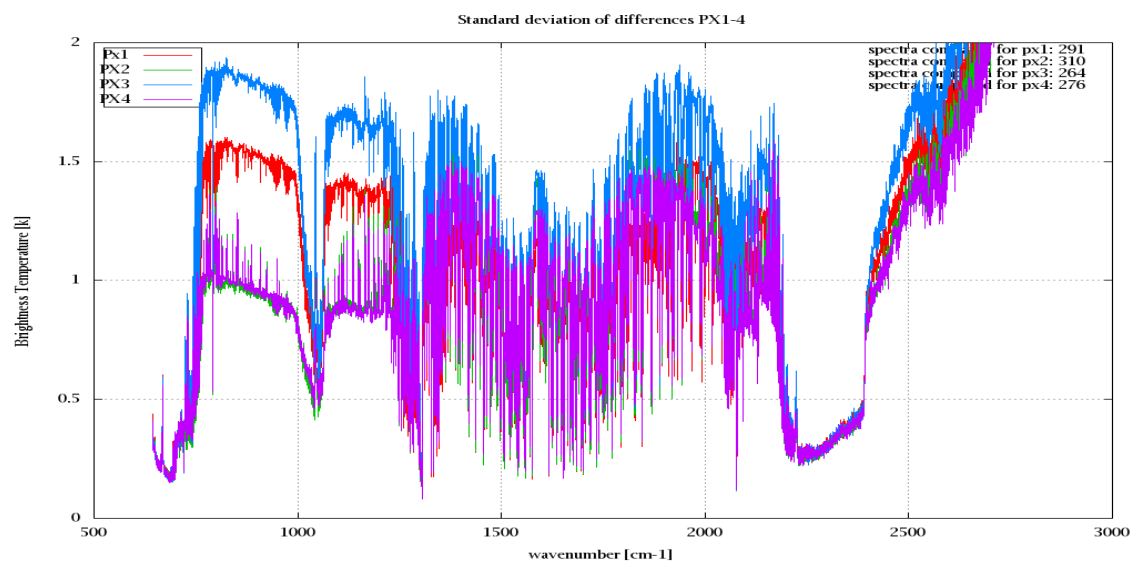


Figure 9: Standard Deviation of Radiance differences

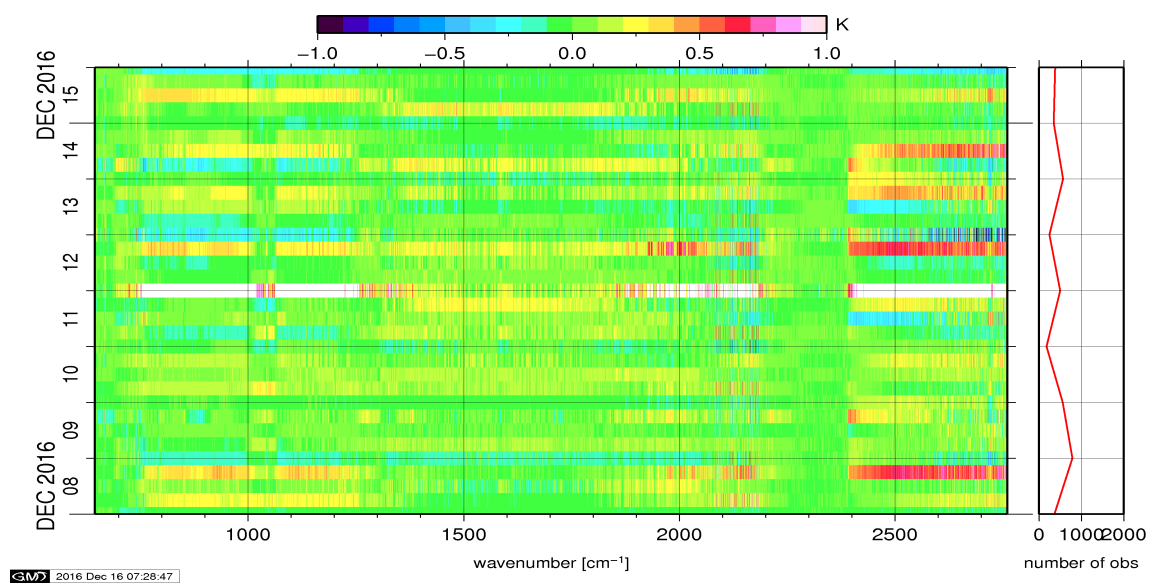


Figure 10: Radiance Anomaly in BRT: All Channels

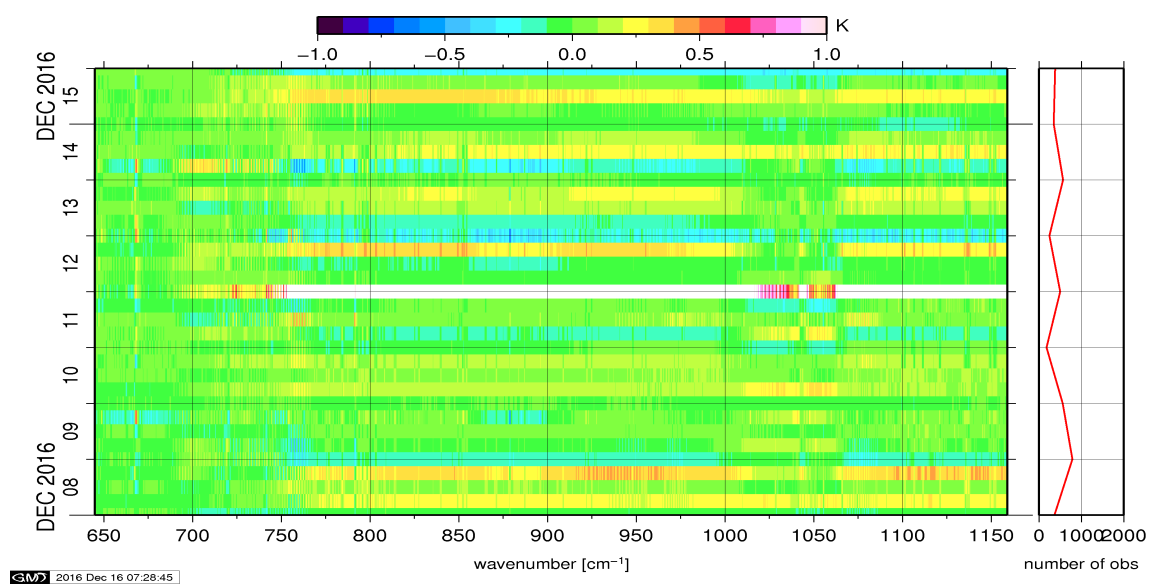


Figure 11: Radiance Anomaly in BRT: IASI Band 1

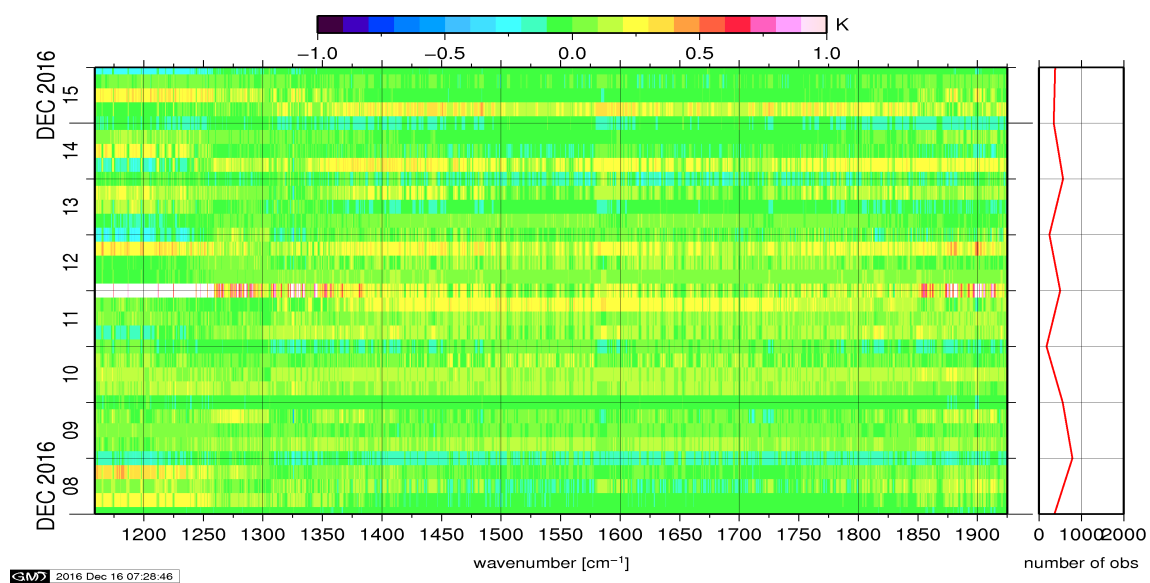


Figure 12: Radiance Anomaly in BRT: IASI Band 2

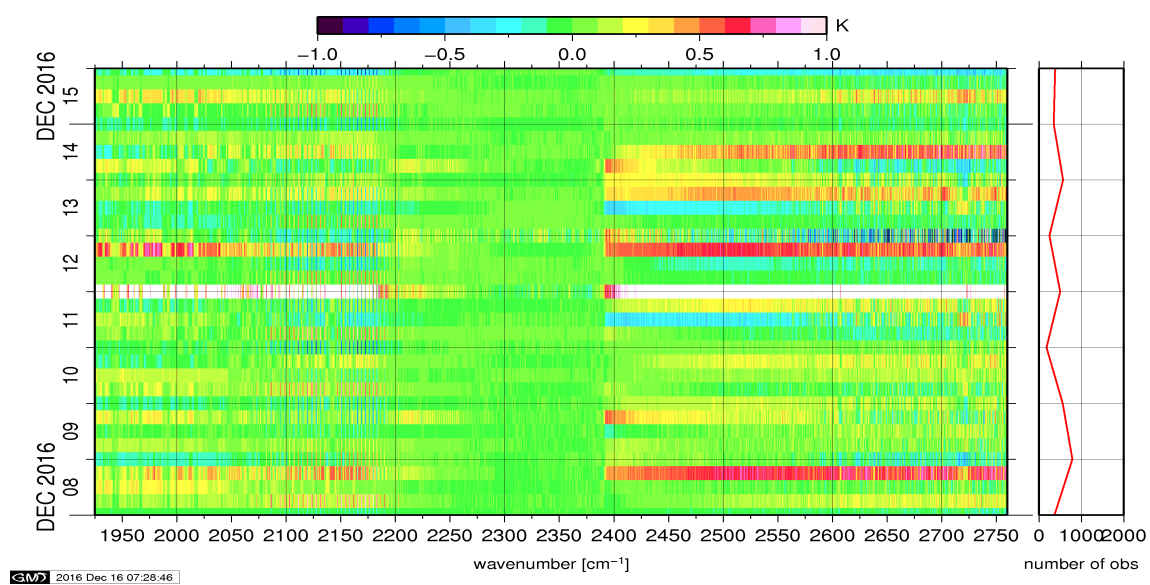


Figure 13: Radiance Anomaly in BRT: IASI Band 3

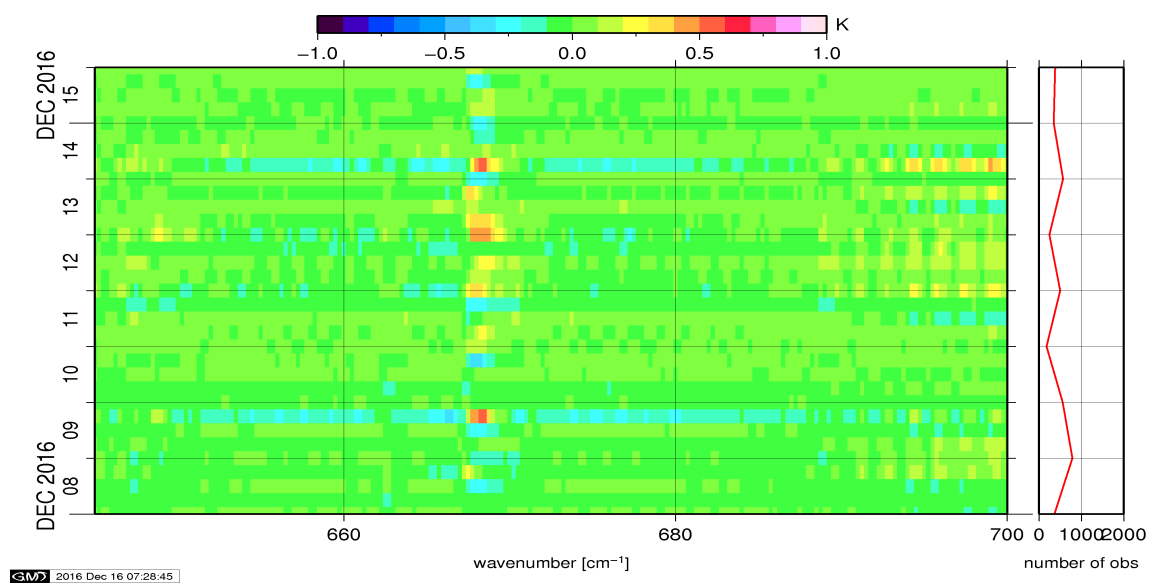


Figure 14: Radiance Anomaly in BRT: CO2 14

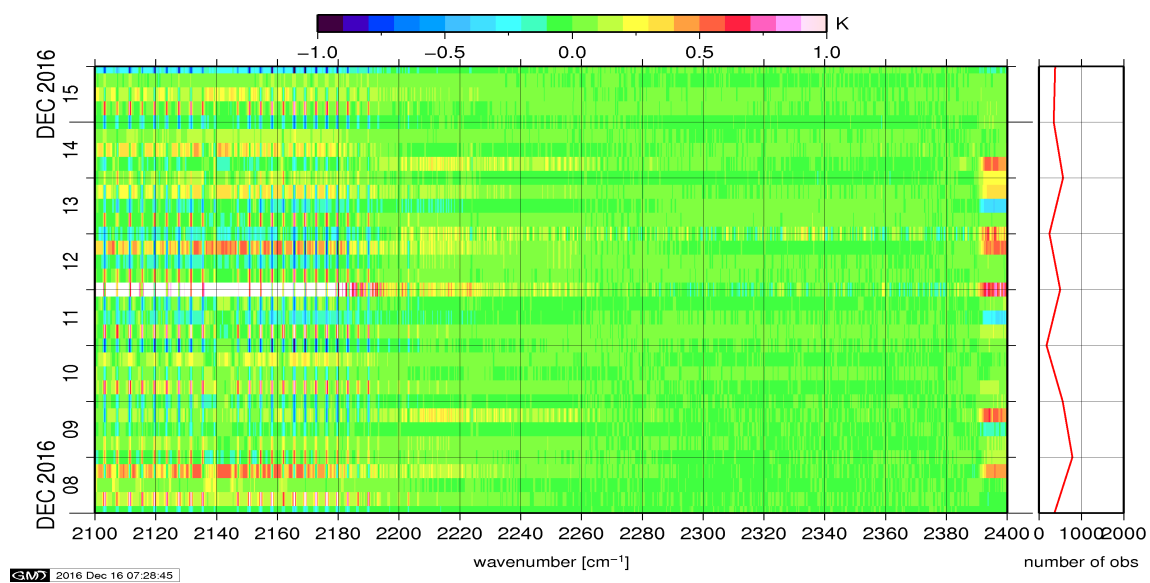


Figure 15: Radiance Anomaly in BRT: CO2 4.3

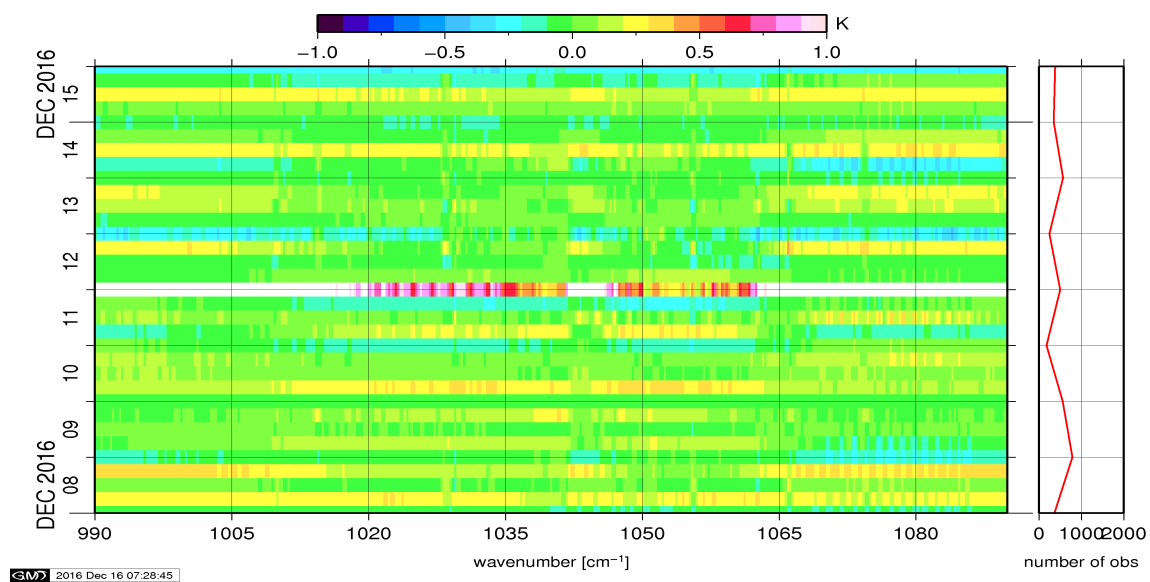


Figure 16: Radiance Anomaly in BRT: O3

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.

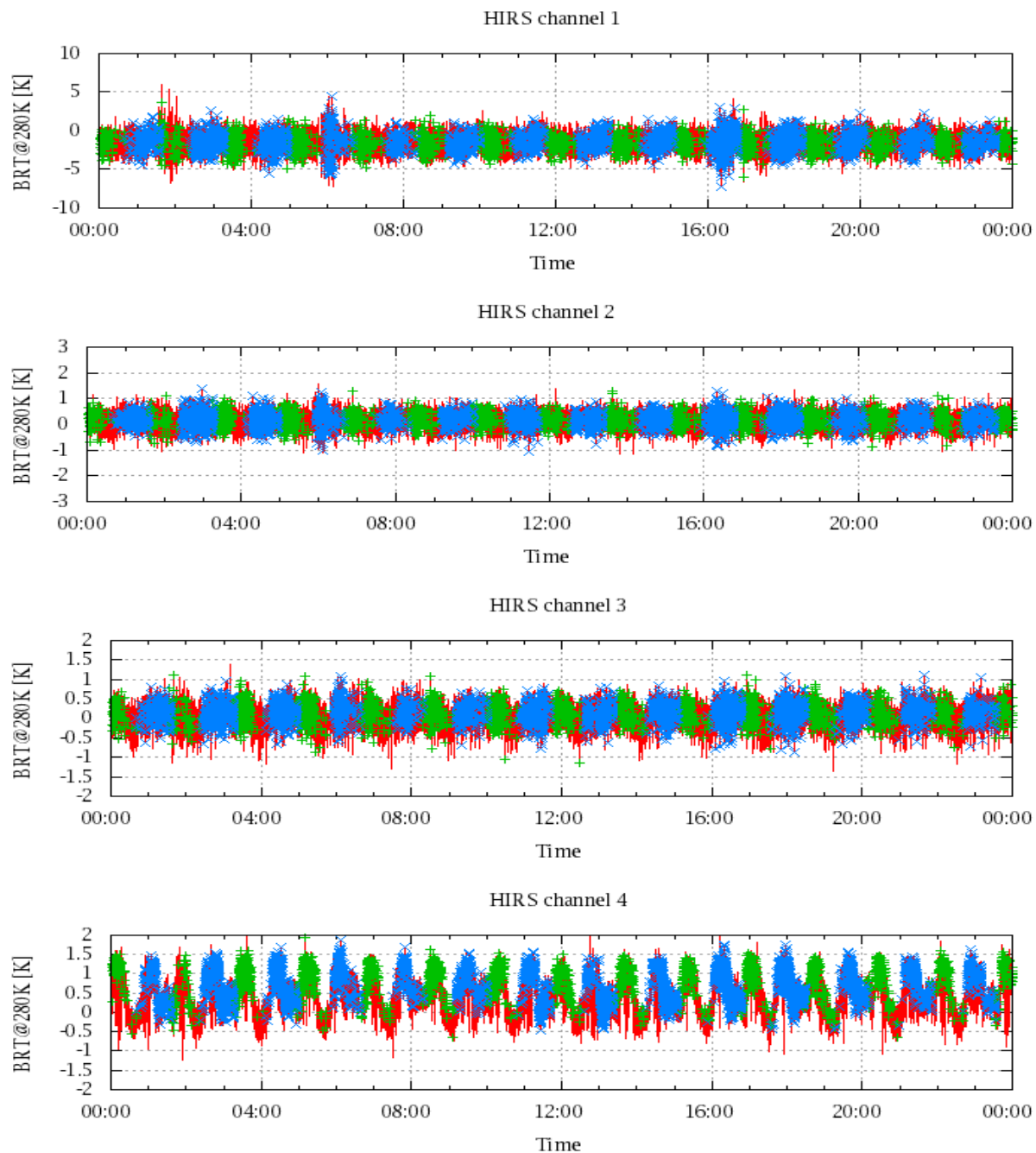


Figure 17: Radiance Differences in BRT

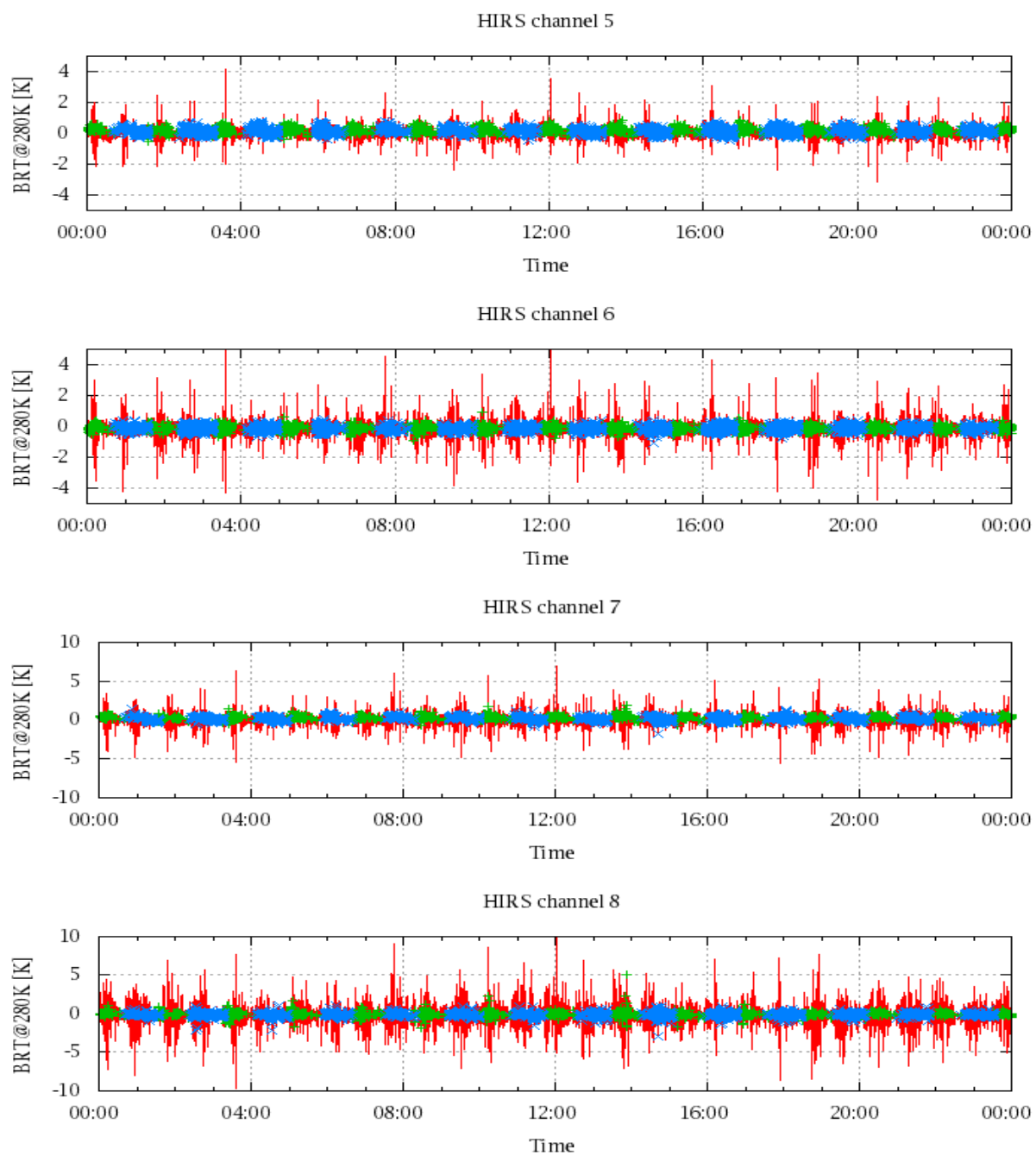


Figure 18: Radiance Differences in BRT

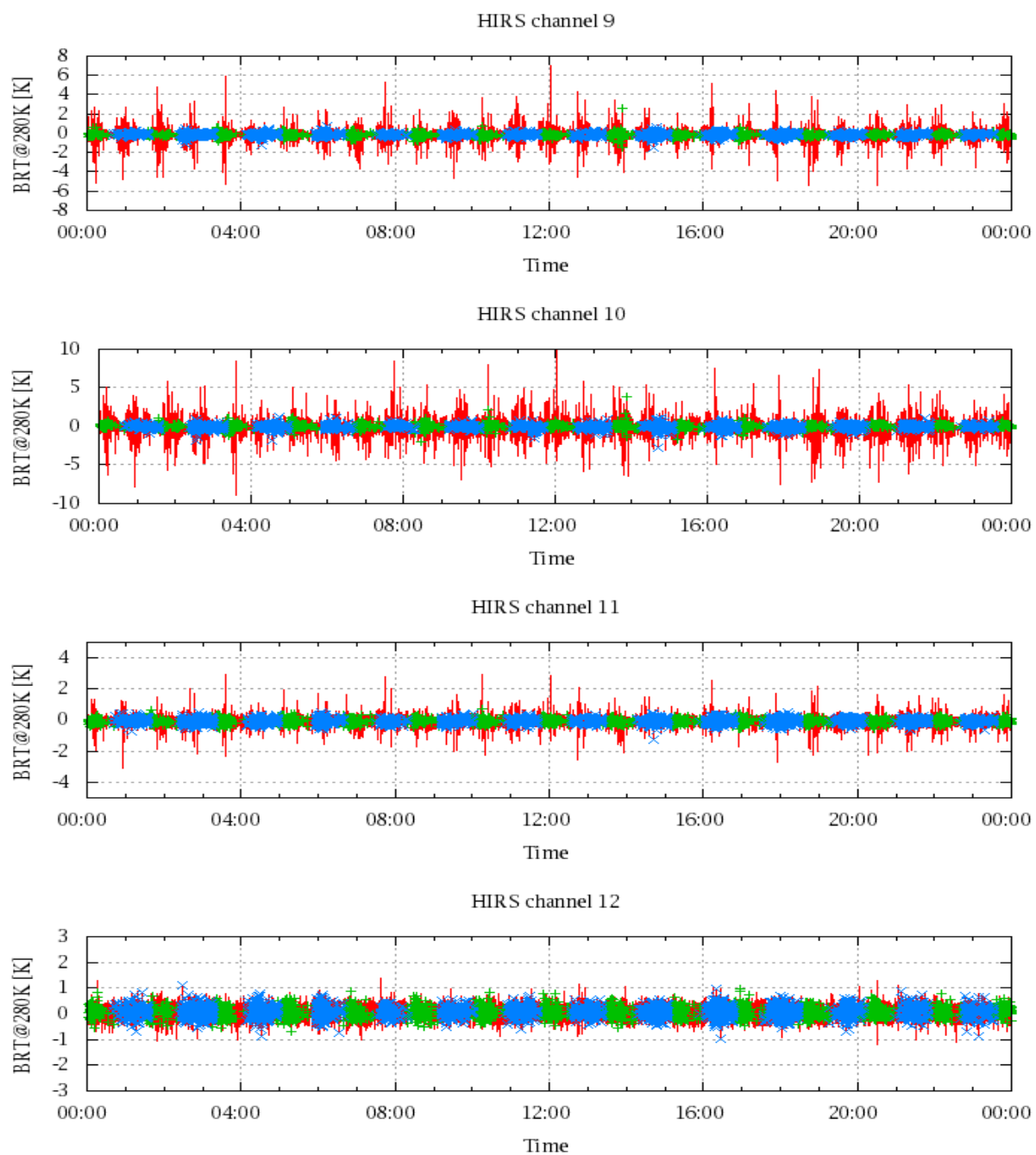


Figure 19: Radiance Differences in BRT

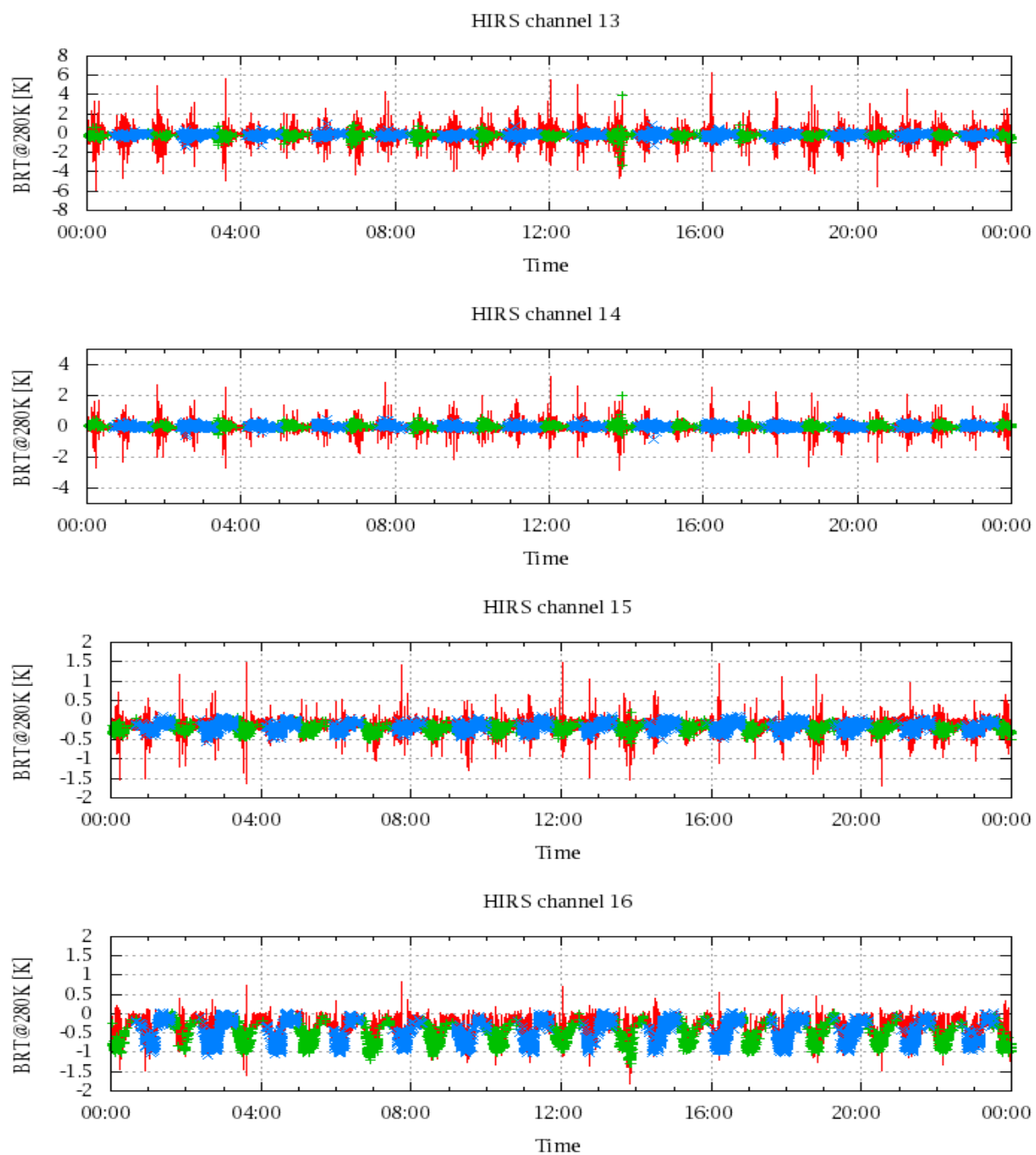


Figure 20: Radiance Differences in BRT

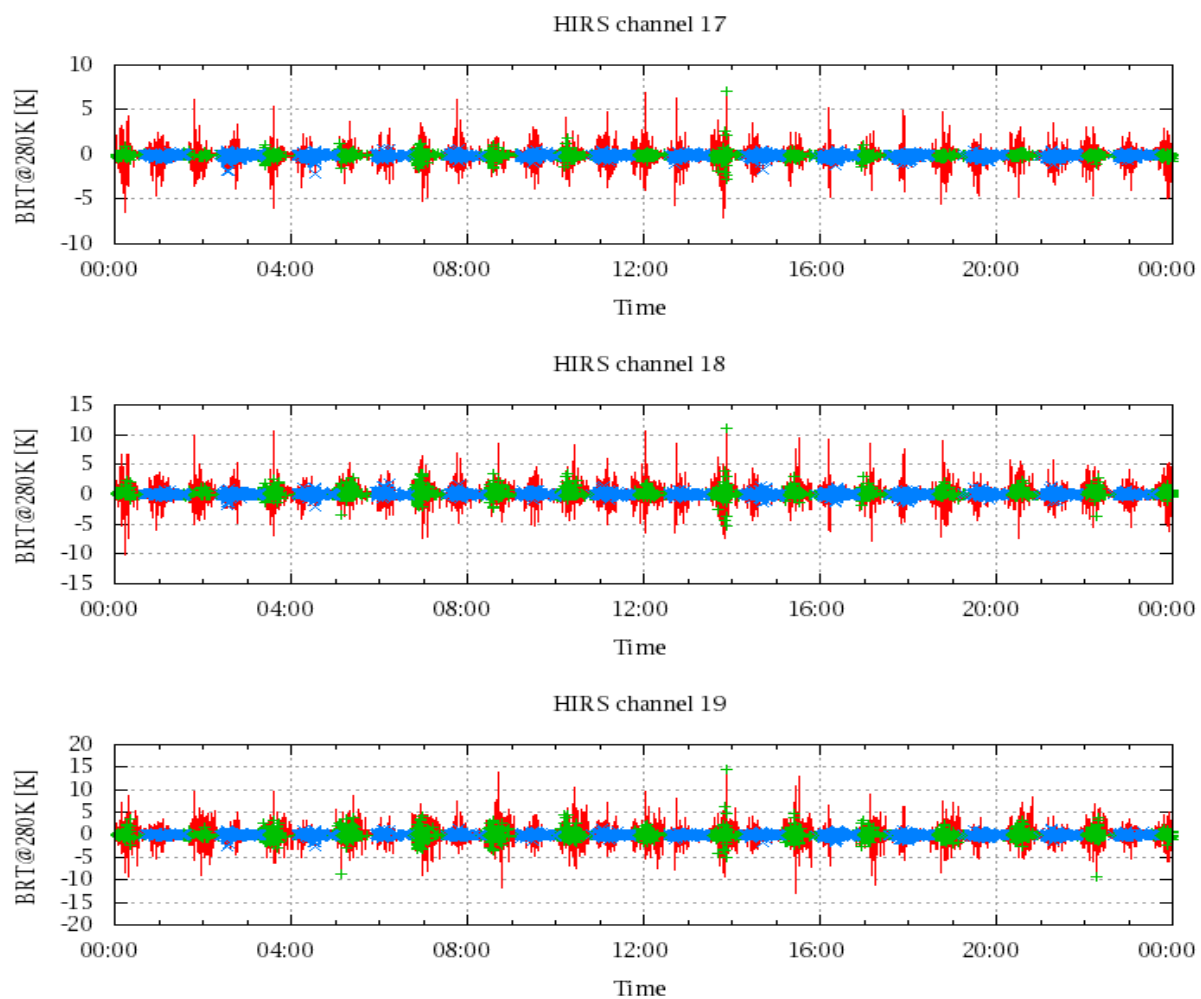


Figure 21: Radinace Differences in BRT