

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

19/08/2015 00:00:00 - 20/08/2015 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 19/08/2015 00:00:00 - 20/08/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 19/08/2015 00:00:00 - 20/08/2015 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)	960	0	20150819073947.704	20150819074231.805
PX2 (135)	939	0	20150819073941.649	20150819074231.805
PX3 (140)	960	0	20150819073947.704	20150819074231.805
PX4 (145)	960	0	20150819073947.704	20150819074231.805
IMG (150)	14292	0	20150819073947.704	20150819074231.805
VER (160)	8484	1805	20150819073947.704	20150819083120.660
VER (160)	1805	1810	20150819083120.660	20150819083120.660
VER (160)	1810	1815	20150819083120.660	20150819083120.660
VER (160)	1815	1820	20150819083120.660	20150819083120.660
VER (160)	1820	1825	20150819083120.660	20150819083120.660
VER (160)	1825	1806	20150819083120.660	20150819083120.660
VER (160)	1806	1811	20150819083120.660	20150819083120.660
VER (160)	1811	1816	20150819083120.660	20150819083120.660
VER (160)	1816	1821	20150819083120.660	20150819083120.660
VER (160)	1821	1826	20150819083120.660	20150819083120.660
VER (160)	1826	1807	20150819083120.660	20150819083120.660
VER (160)	1807	1812	20150819083120.660	20150819083120.660
VER (160)	1812	1817	20150819083120.660	20150819083120.660

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1817	1822	20150819083120.660	20150819083120.660
VER (160)	1822	1827	20150819083120.660	20150819083120.660
VER (160)	1827	1808	20150819083120.660	20150819083120.660
VER (160)	1808	1813	20150819083120.660	20150819083120.660
VER (160)	1813	1818	20150819083120.660	20150819083120.660
VER (160)	1818	1823	20150819083120.660	20150819083120.660
VER (160)	1823	1828	20150819083120.660	20150819083120.660
VER (160)	1828	1809	20150819083120.660	20150819083120.660
VER (160)	1809	1814	20150819083120.660	20150819083120.660
VER (160)	1814	1819	20150819083120.660	20150819083120.660
VER (160)	1819	1824	20150819083120.660	20150819083120.660
VER (160)	1824	1829	20150819083120.660	20150819083120.660
AUX (180)	11524	0	20150819073942.513	20150819074238.509

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
19/08/2015 00:00:03	-	Normal operation
19/08/2015 08:55:15	Normal operation	Auxiliary ASE synchronised
19/08/2015 08:57:07	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)	99.50 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.58 %	-

Table 4: Quality flags

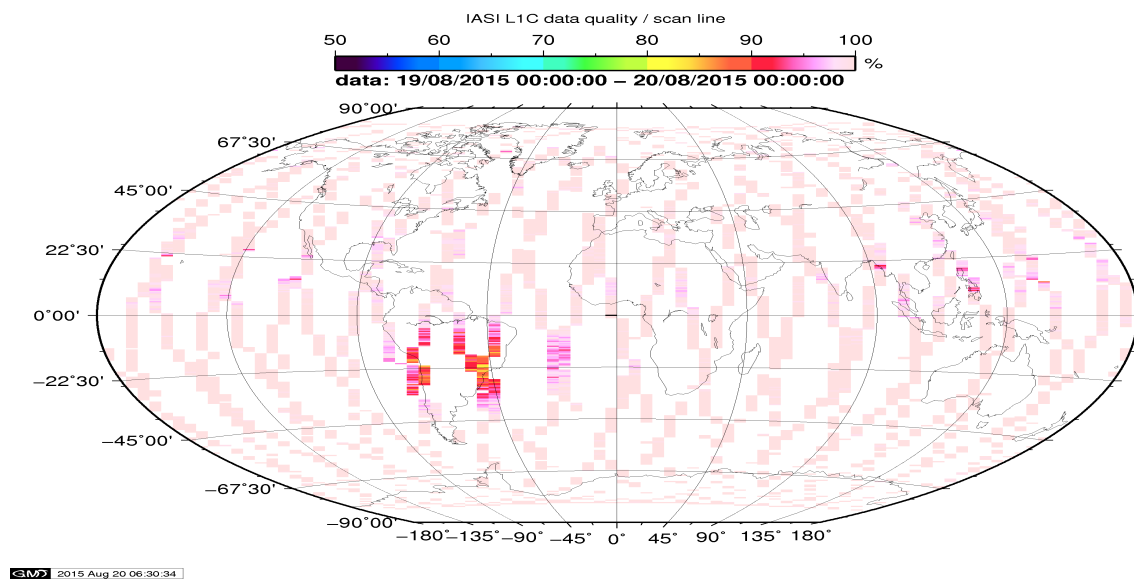


Figure 1: L1C data quality

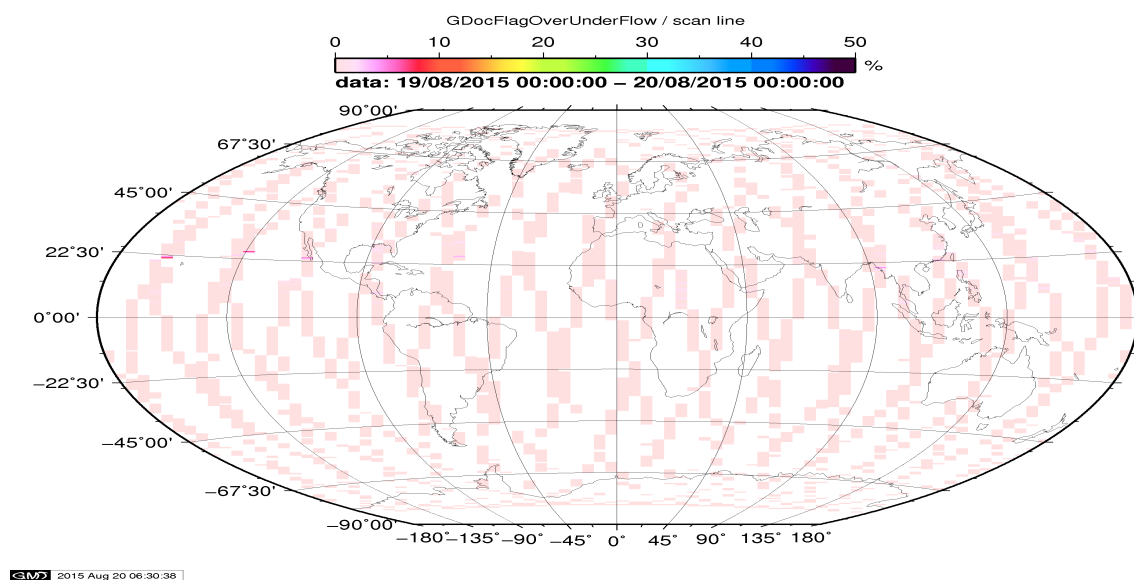


Figure 2: Flag of Over and Under Flows

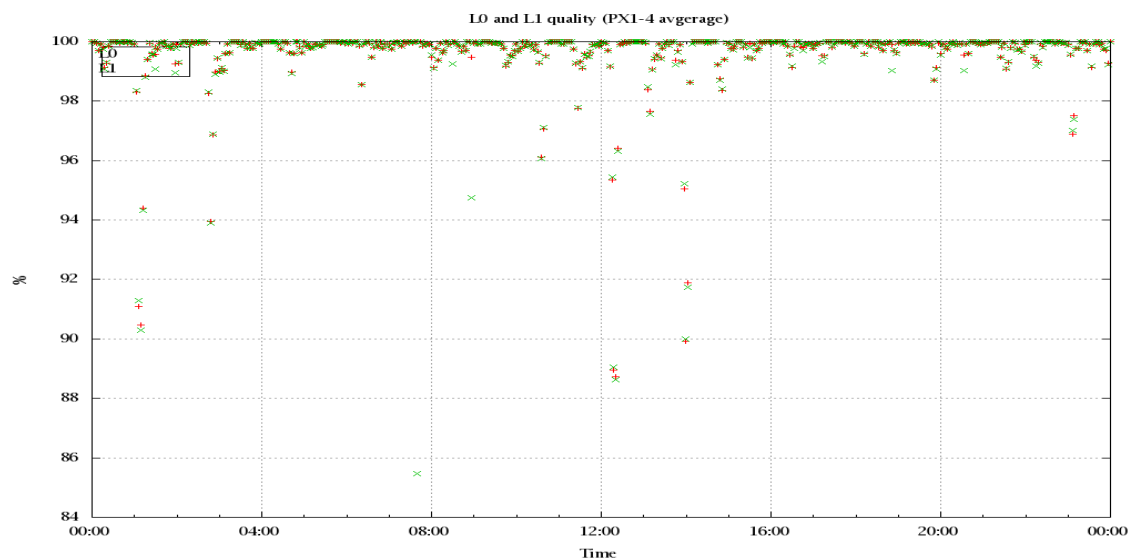


Figure 3: Level 0 and 1C overall quality

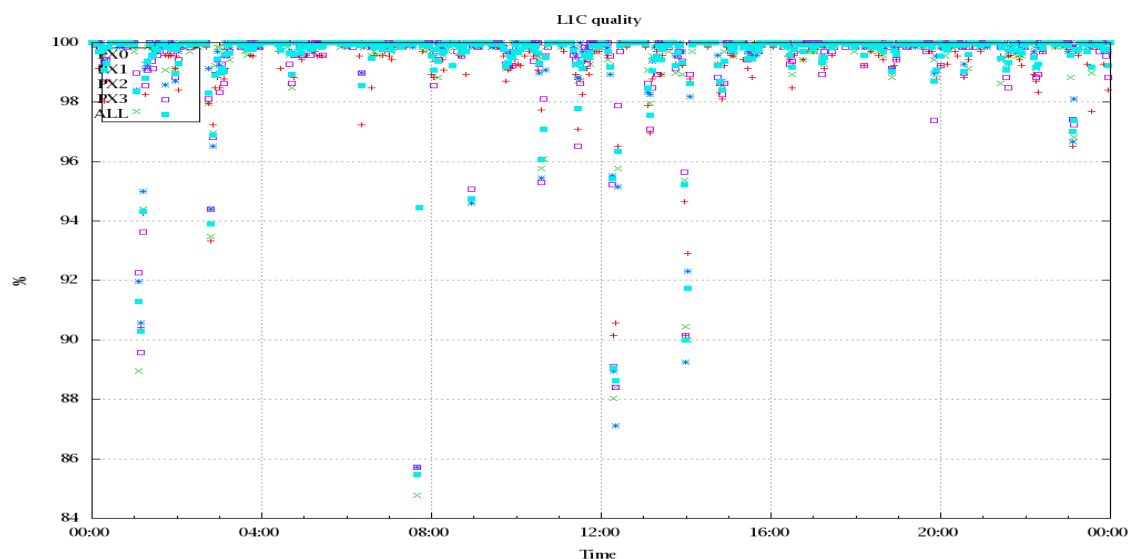


Figure 4: Level 1C quality

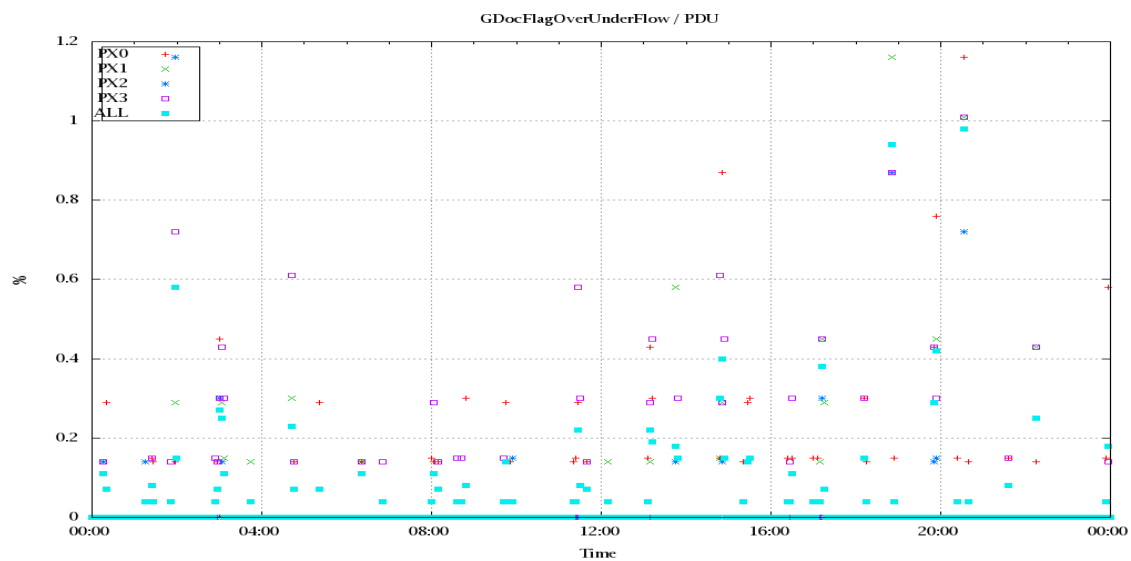


Figure 5: OverUnderFlowFlag timeseries

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.

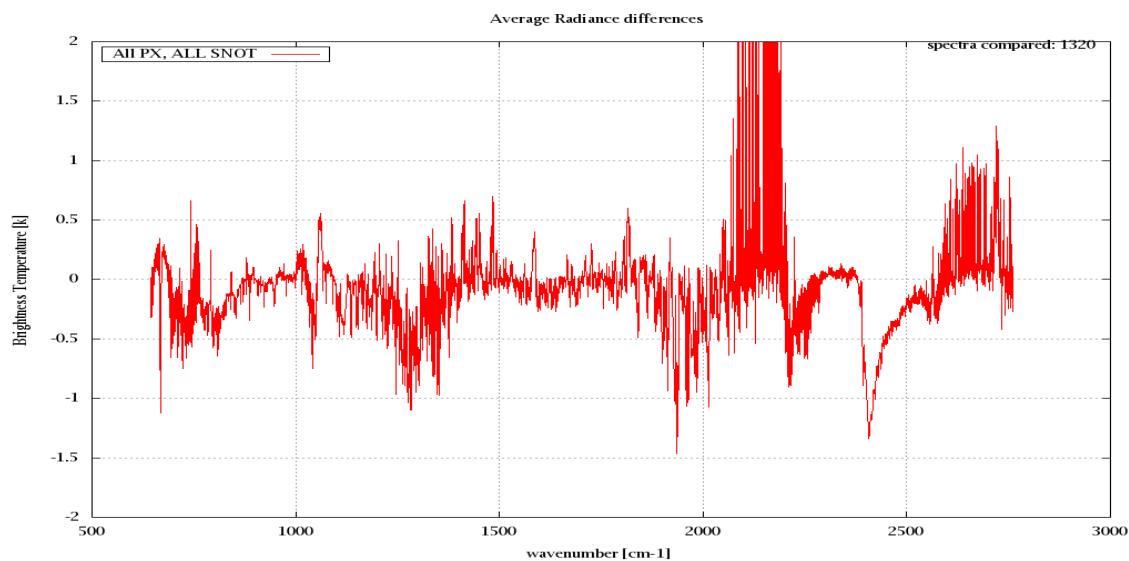


Figure 6: Average Radiance differences: OBS-CAL

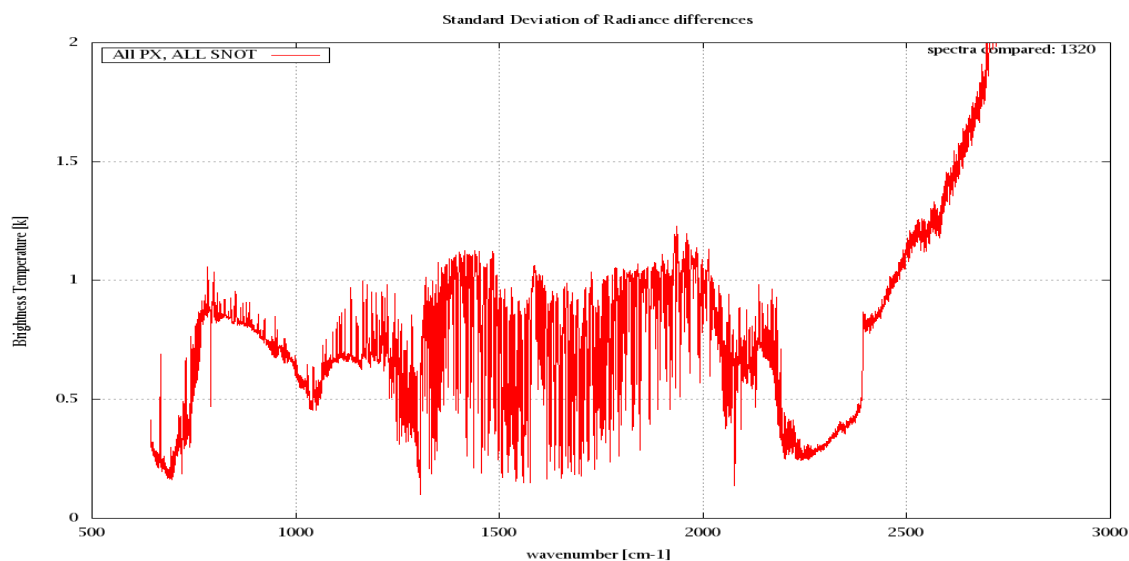


Figure 7: Standard Deviation of Radiance differences

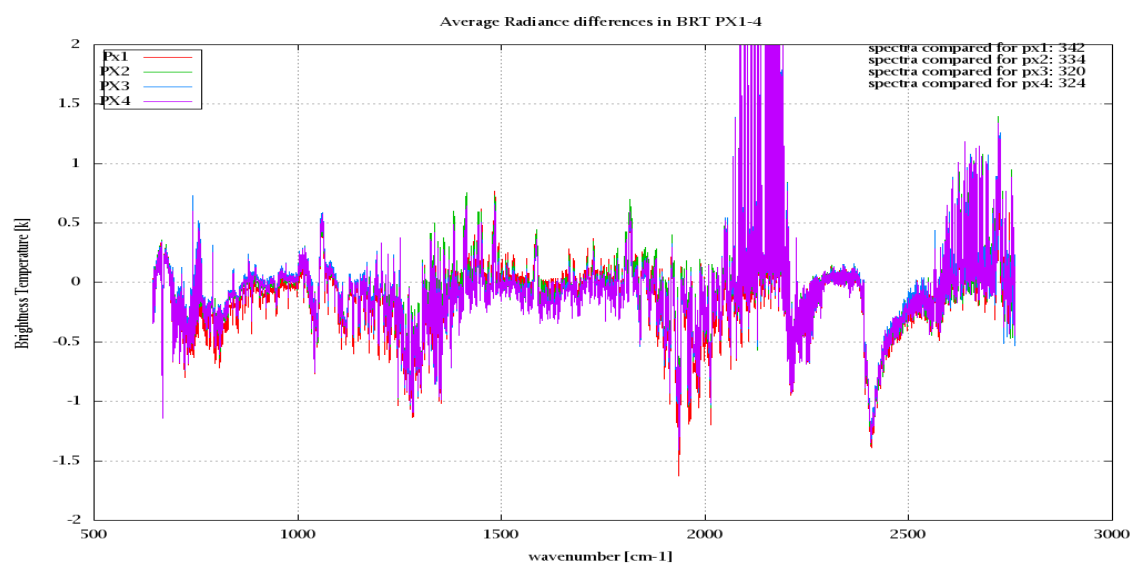


Figure 8: Average Radiance differences: OBS-CAL

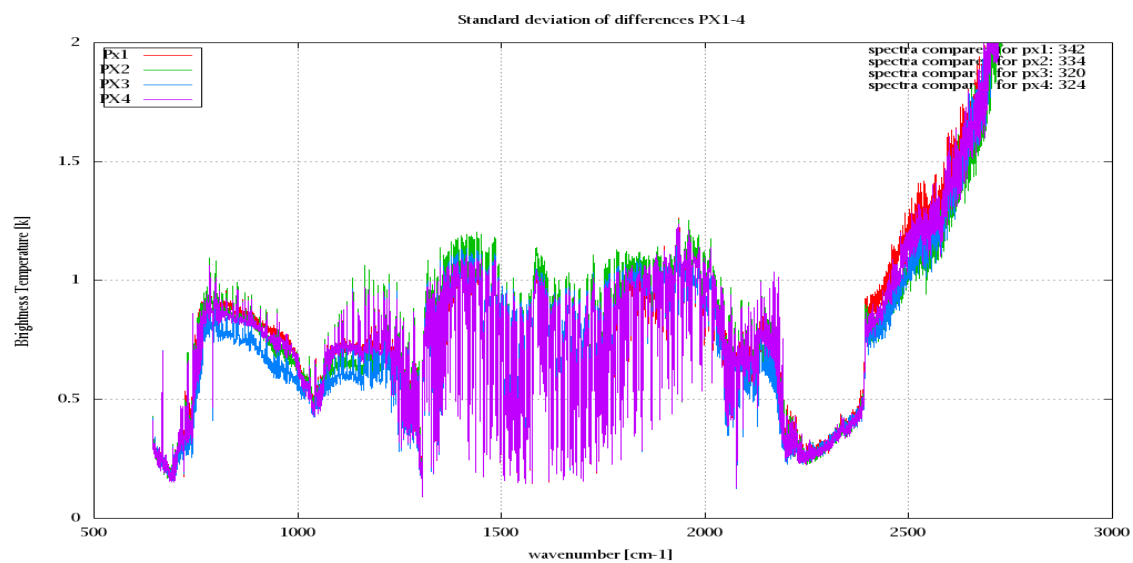


Figure 9: Standard Deviation of Radiance differences

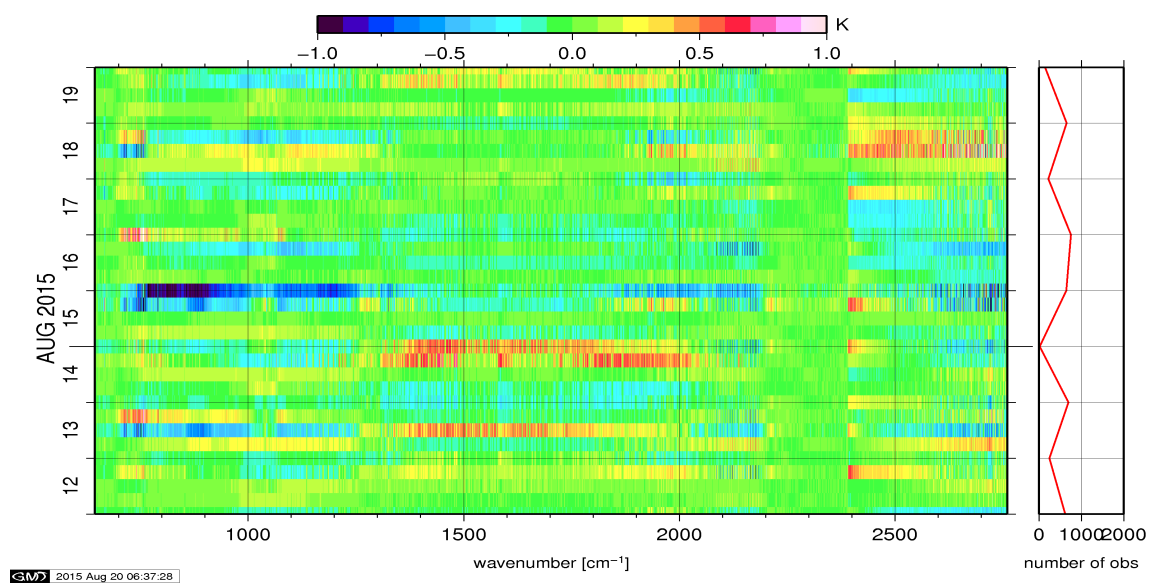


Figure 10: Radiance Anomaly in BRT: All Channels

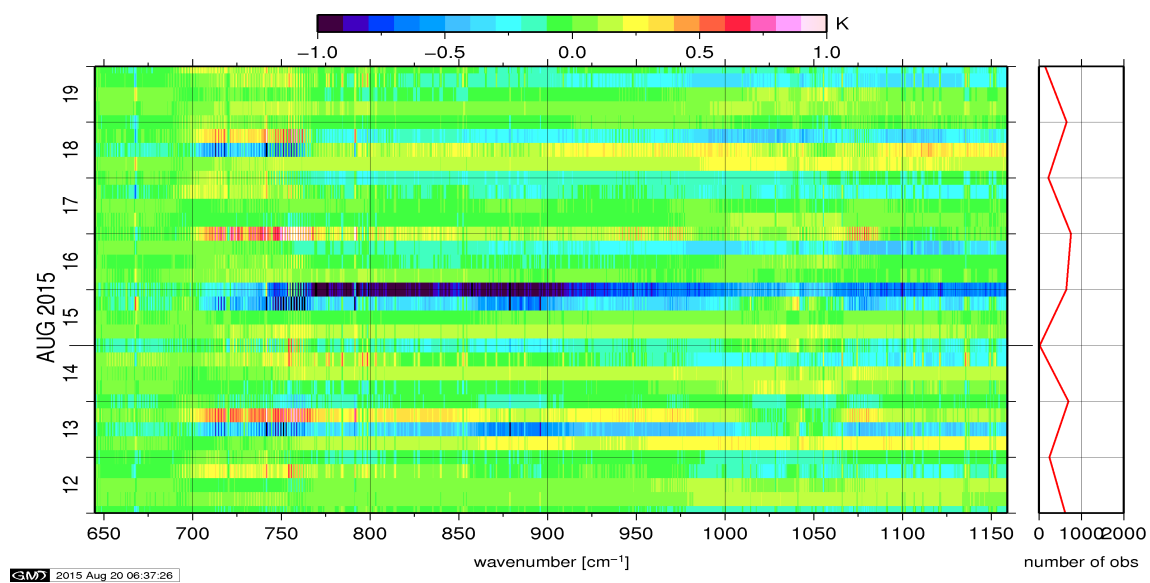


Figure 11: Radiance Anomaly in BRT: IASI Band 1

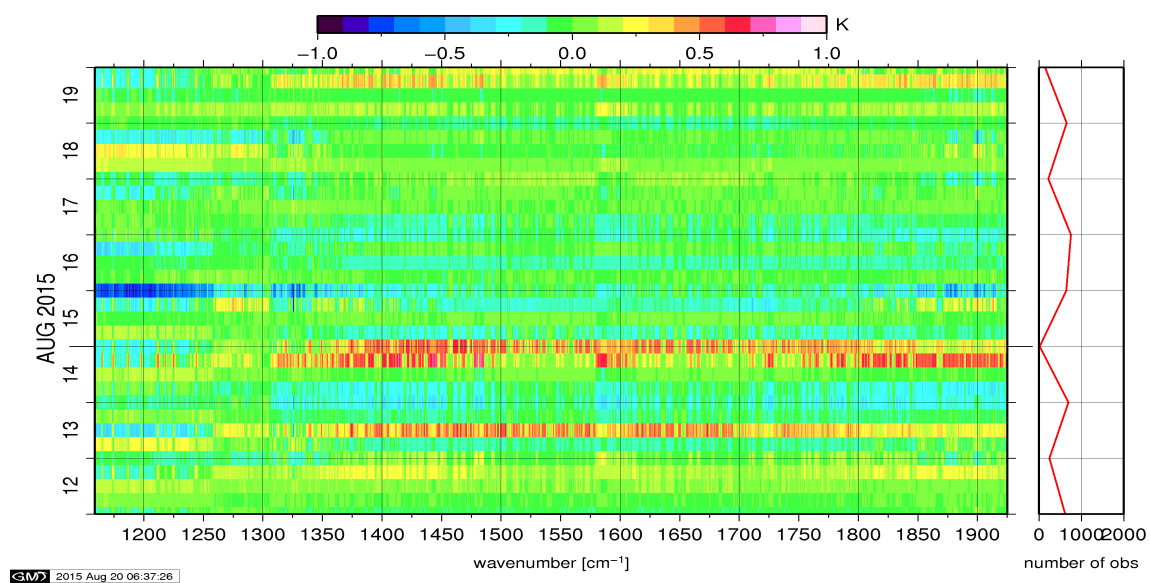


Figure 12: Radiance Anomaly in BRT: IASI Band 2

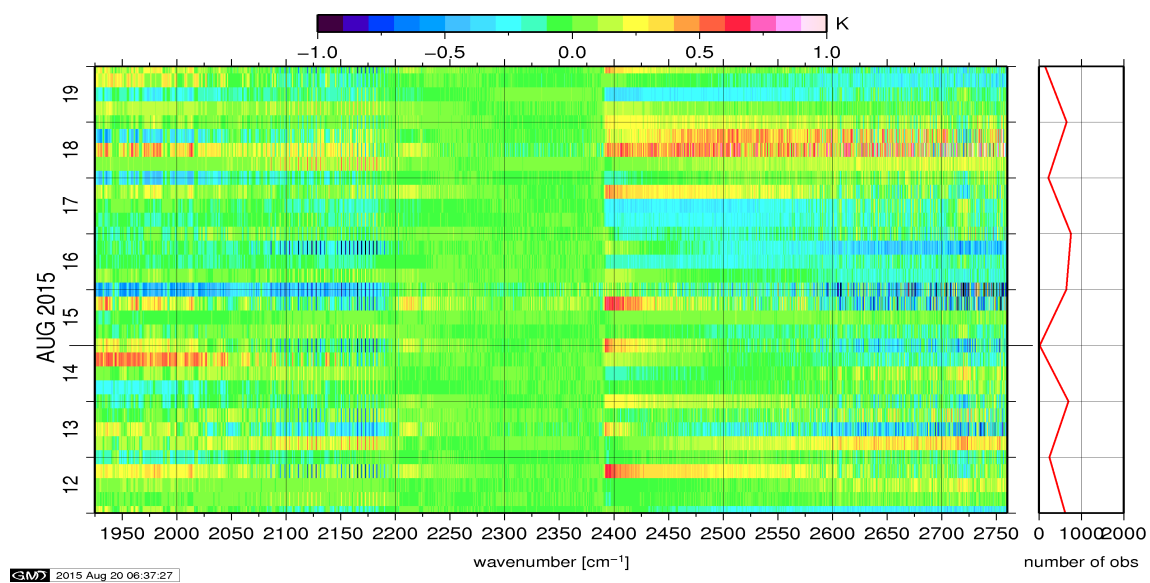


Figure 13: Radiance Anomaly in BRT: IASI Band 3

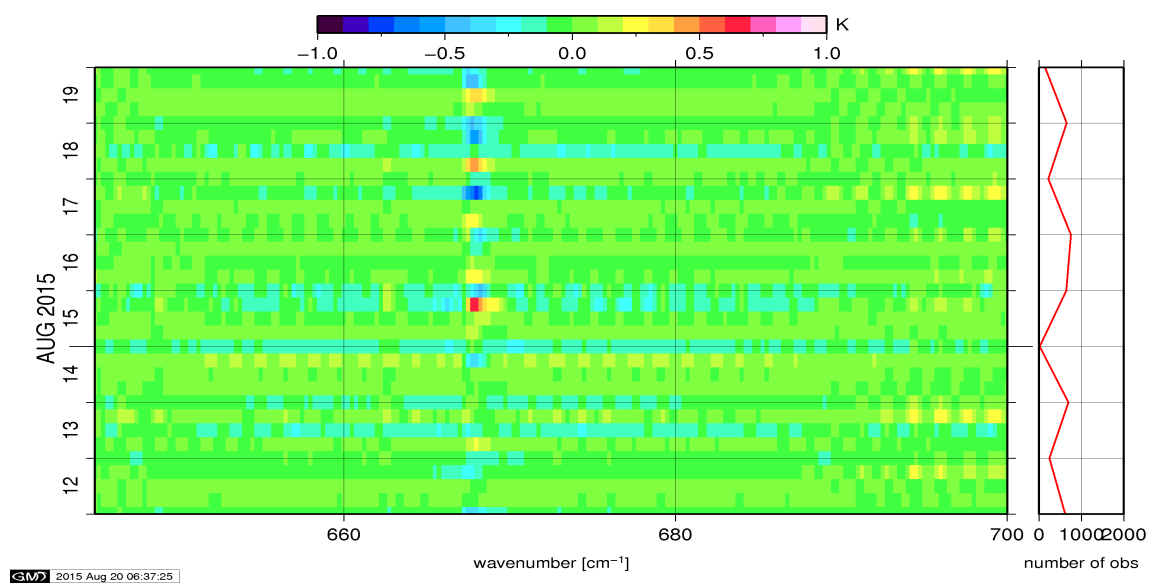


Figure 14: Radiance Anomaly in BRT: CO2 14

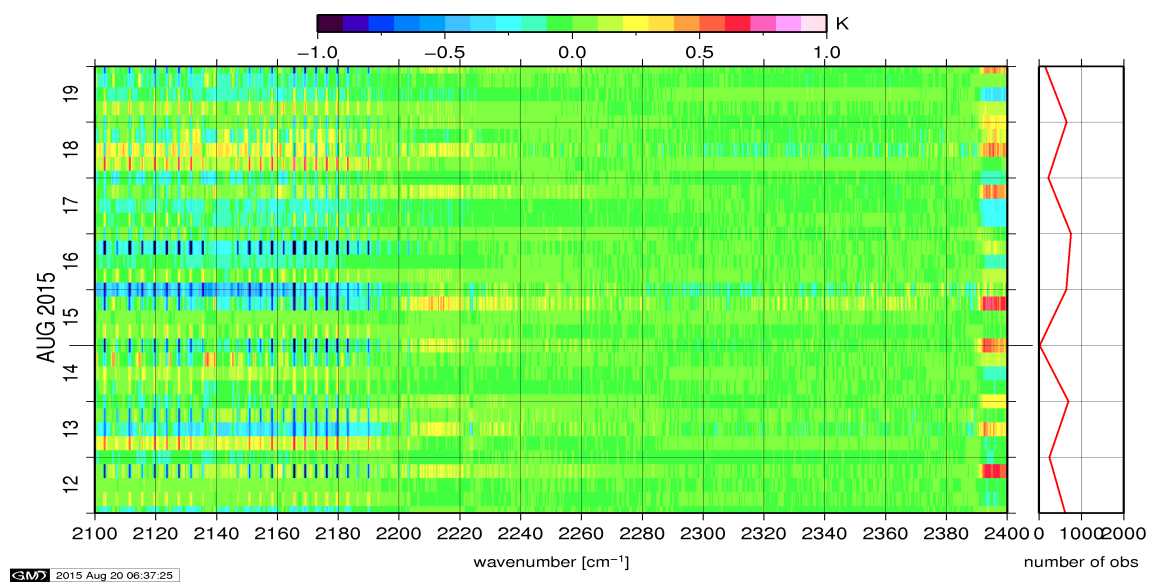


Figure 15: Radiance Anomaly in BRT: CO2 4.3

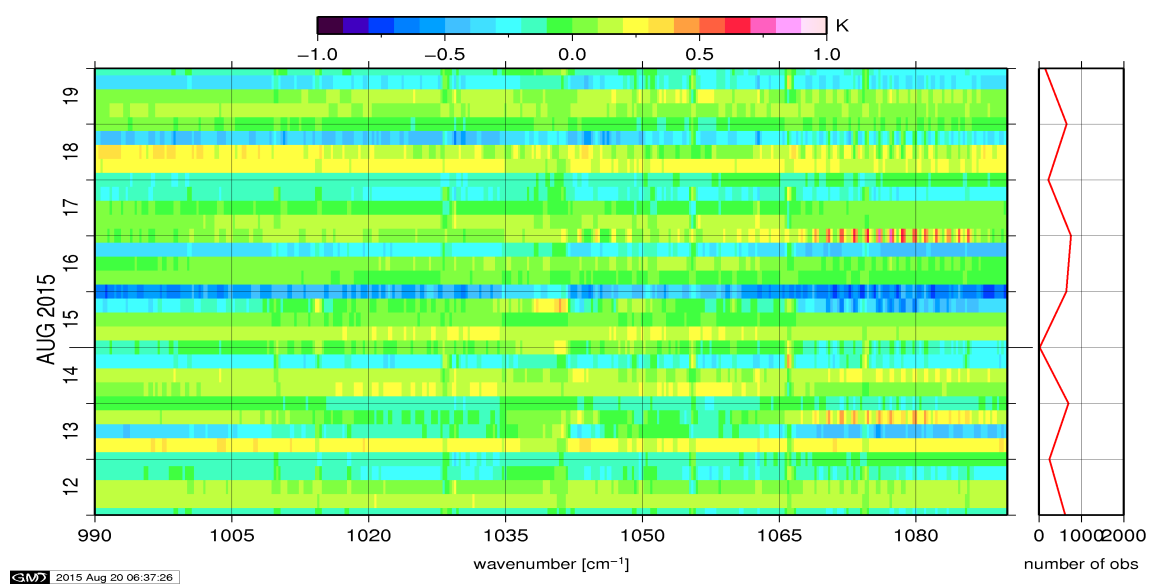


Figure 16: Radiance Anomaly in BRT: O3

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.

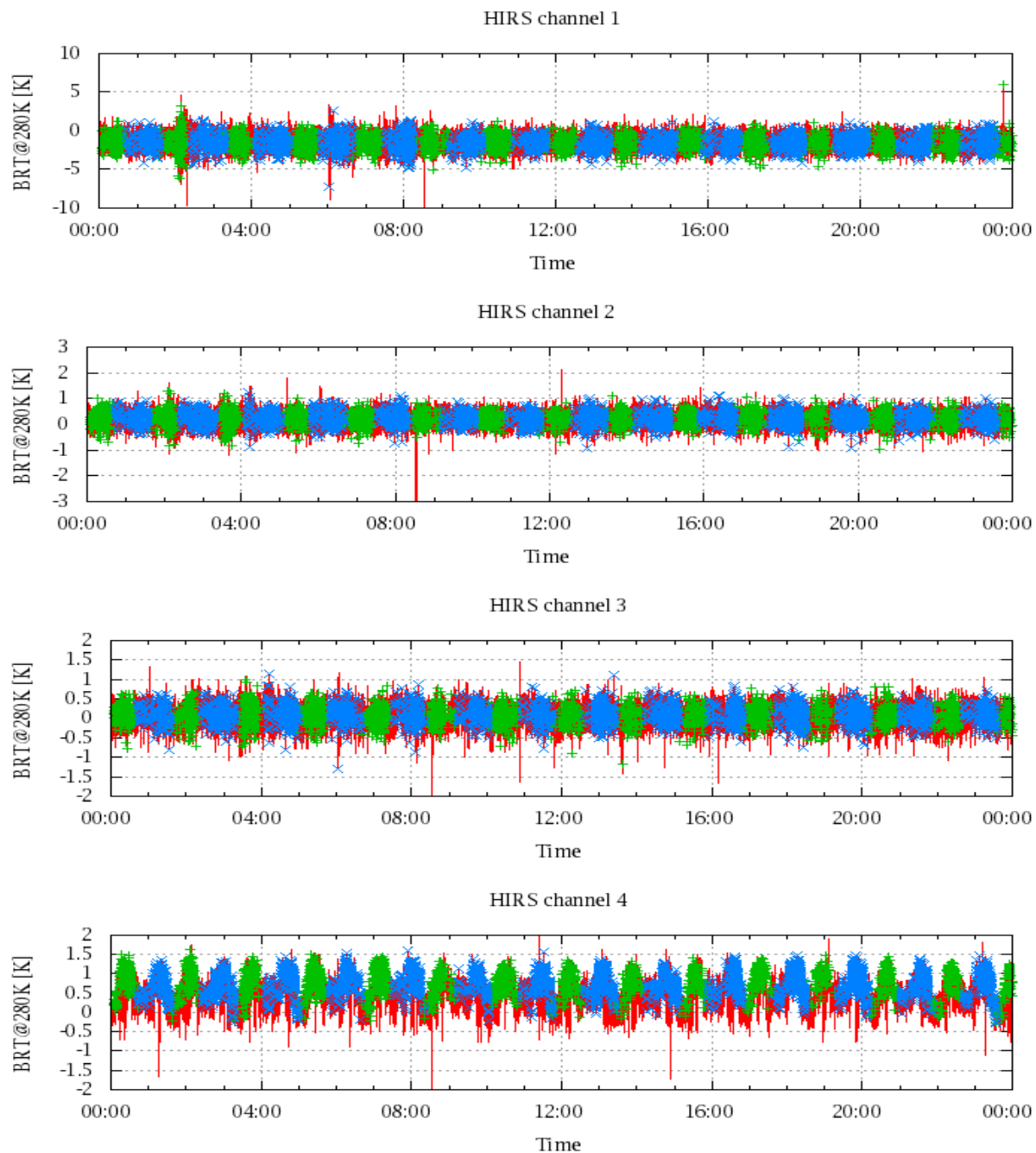


Figure 17: Radiance Differences in BRT

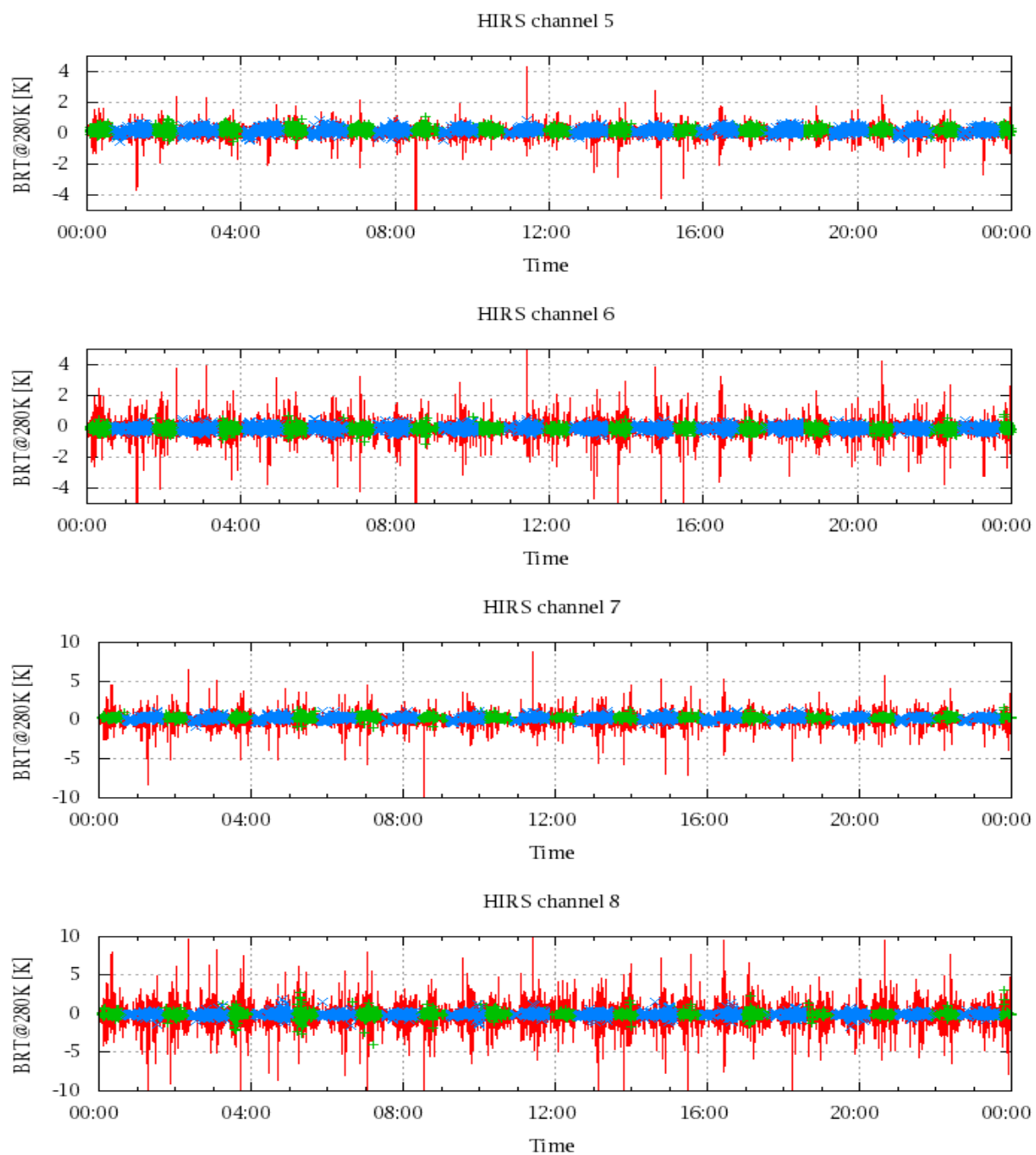


Figure 18: Radiance Differences in BRT

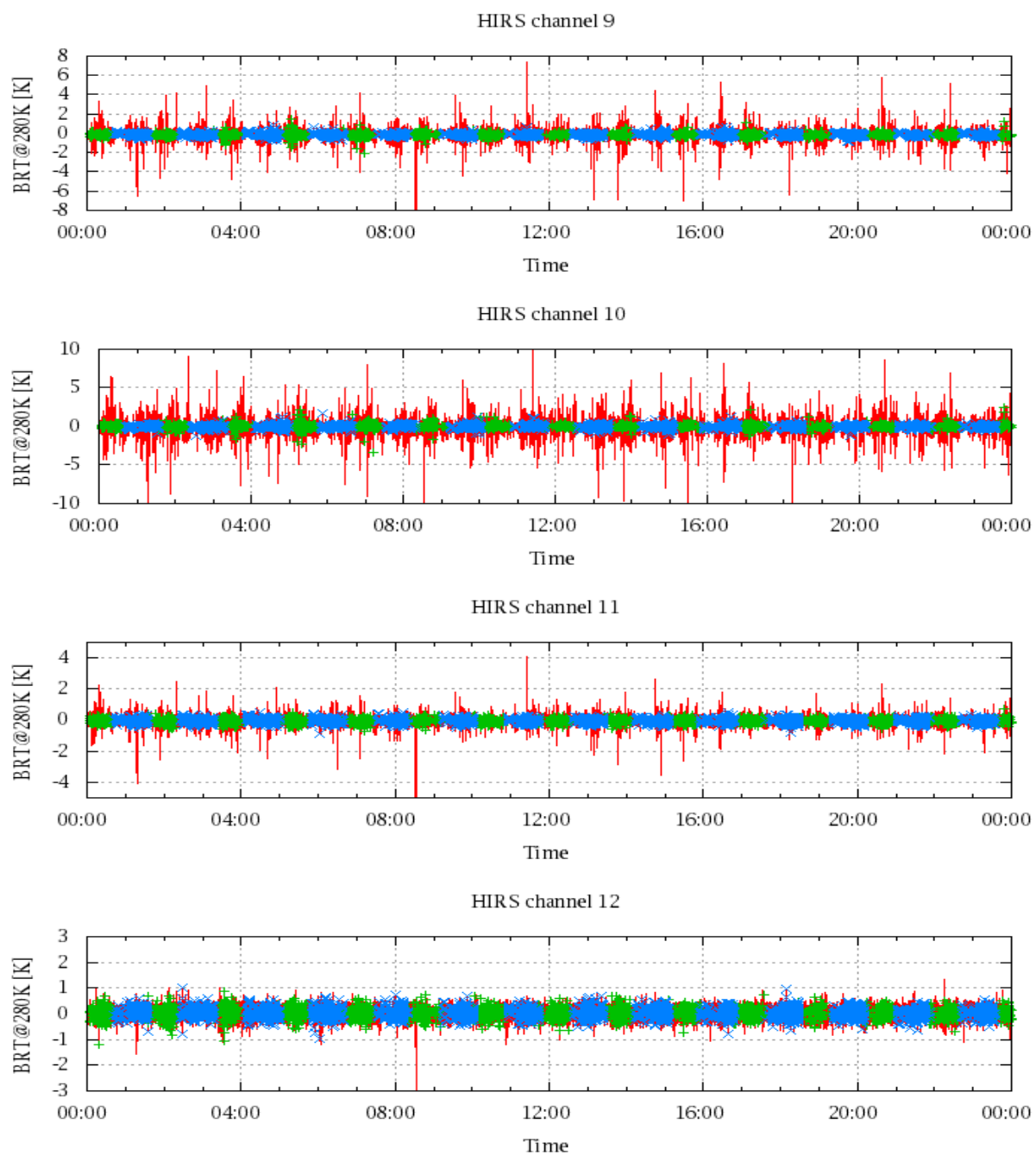


Figure 19: Radiance Differences in BRT

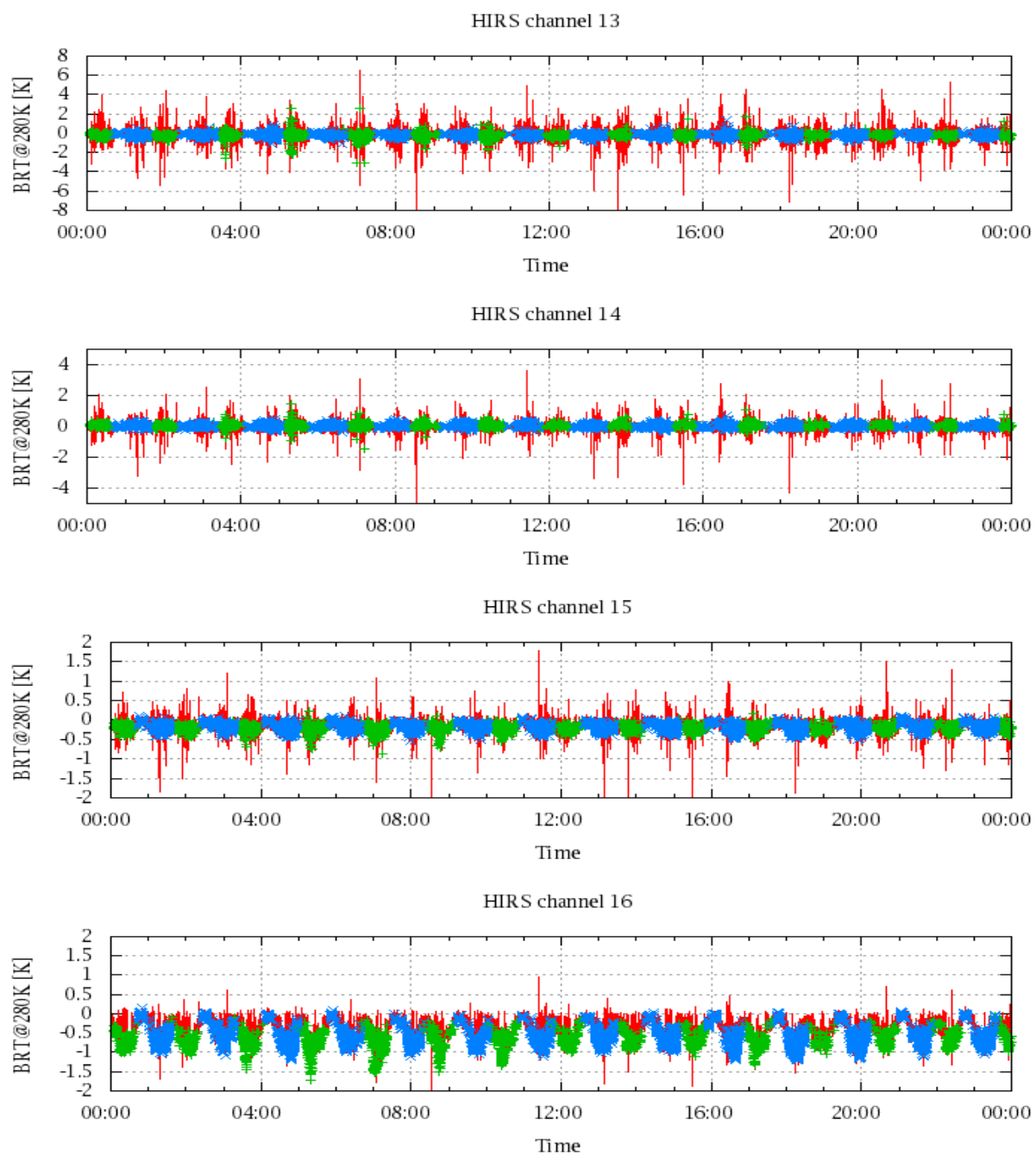


Figure 20: Radiance Differences in BRT

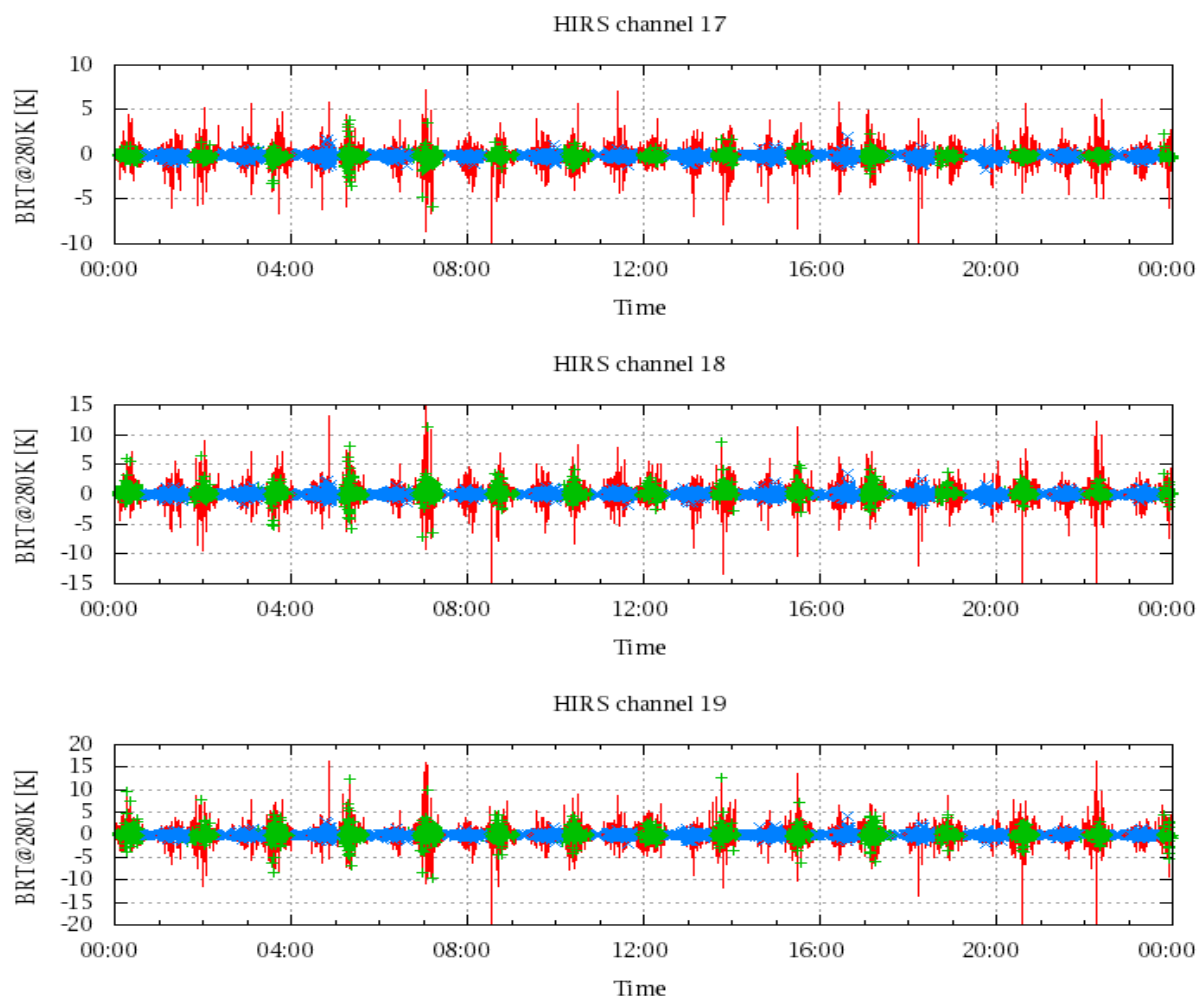


Figure 21: Radinace Differences in BRT