

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

14/07/2013 00:00:00 - 15/07/2013 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 14/07/2013 00:00:00 - 15/07/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 14/07/2013 00:00:00 - 15/07/2013 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)	14470	14812	20130714064353.105	20130714064525.210
PX1 (130)	14812	14816	20130714064525.210	20130714064526.074
PX1 (130)	14816	14820	20130714064526.074	20130714064526.941
PX1 (130)	14820	14824	20130714064526.941	20130714064527.804
PX1 (130)	14824	14829	20130714064527.804	20130714064528.886
PX1 (130)	14829	14831	20130714064528.886	20130714064529.316
PX1 (130)	14832	14834	20130714064529.535	20130714064529.968
PX1 (130)	14837	14839	20130714064530.613	20130714064531.046
PX1 (130)	14840	14842	20130714064532.777	20130714064533.210
PX2 (135)	14470	14813	20130714064353.105	20130714064525.425
PX2 (135)	14813	14820	20130714064525.425	20130714064526.941
PX2 (135)	14820	14824	20130714064526.941	20130714064527.804
PX2 (135)	14824	14827	20130714064527.804	20130714064528.453
PX2 (135)	14829	14831	20130714064528.886	20130714064529.316
PX2 (135)	14831	14833	20130714064529.316	20130714064529.749
PX2 (135)	14839	14841	20130714064531.046	20130714064532.996
PX3 (140)	14470	14816	20130714064353.105	20130714064526.074
PX3 (140)	14816	14820	20130714064526.074	20130714064526.941

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	14820	14824	20130714064526.941	20130714064527.804
PX3 (140)	14825	14829	20130714064528.019	20130714064528.886
PX3 (140)	14829	14831	20130714064528.886	20130714064529.316
PX3 (140)	14832	14836	20130714064529.535	20130714064530.398
PX3 (140)	14841	14843	20130714064532.996	20130714064533.425
PX4 (145)	14470	14813	20130714064353.105	20130714064525.425
PX4 (145)	14813	14822	20130714064525.425	20130714064527.371
PX4 (145)	14822	14825	20130714064527.371	20130714064528.019
PX4 (145)	14825	14831	20130714064528.019	20130714064529.316
PX4 (145)	14833	14837	20130714064529.749	20130714064530.613
PX4 (145)	14844	14846	20130714064533.640	20130714064534.074
PX4 (145)	14896	14898	20130714064546.398	20130714064546.831
IMG (150)	11545	11930	20130714064352.887	20130714064523.480
IMG (150)	11930	11937	20130714064523.480	20130714064525.425
IMG (150)	11938	11940	20130714064525.644	20130714064526.074
IMG (150)	11940	11943	20130714064526.074	20130714064526.722
IMG (150)	11945	11947	20130714064527.156	20130714064527.589
IMG (150)	11948	11951	20130714064527.804	20130714064528.453
IMG (150)	11959	11961	20130714064530.183	20130714064530.613
IMG (150)	11965	11967	20130714064531.695	20130714064532.343
IMG (150)	12028	12030	20130714064546.398	20130714064546.831
VER (160)	8798	8859	20130714064347.051	20130714064531.046
VER (160)	8860	8863	20130714064531.046	20130714064531.046
AUX (180)	11556	11568	20130714064347.484	20130714064523.480

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
14/07/2013 00:07:46	-	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)	99.41 %	-
GQisFlagQual set (PX2)	99.21 %	-
GQisFlagQual set (PX3)	99.28 %	-
GQisFlagQual set (PX4)	99.42 %	-
GQisFlagQual set (all)	99.33 %	-

Table 4: Quality flags

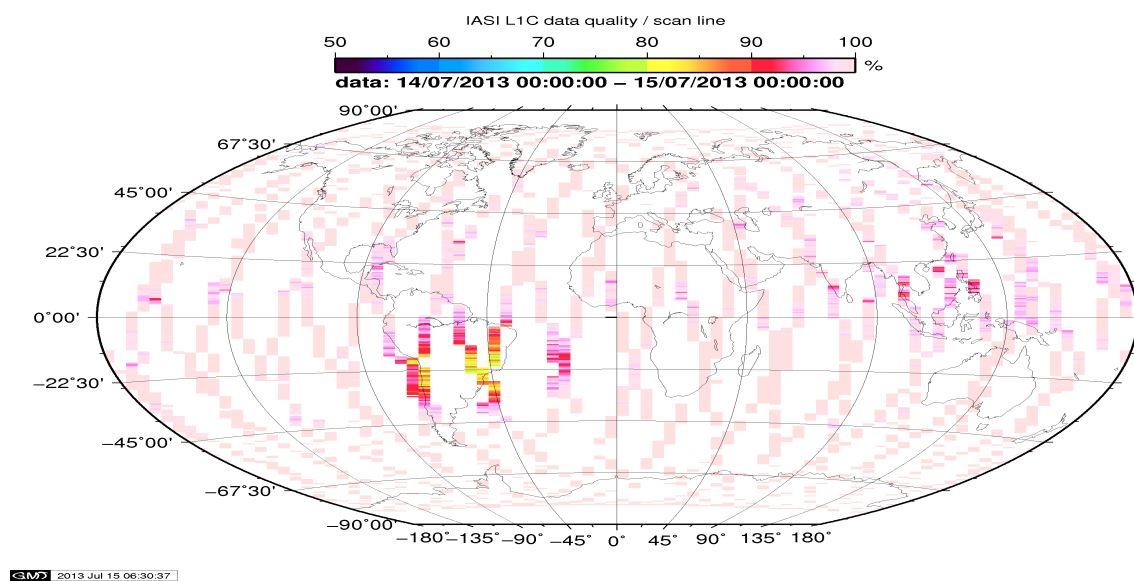


Figure 1: L1C data quality

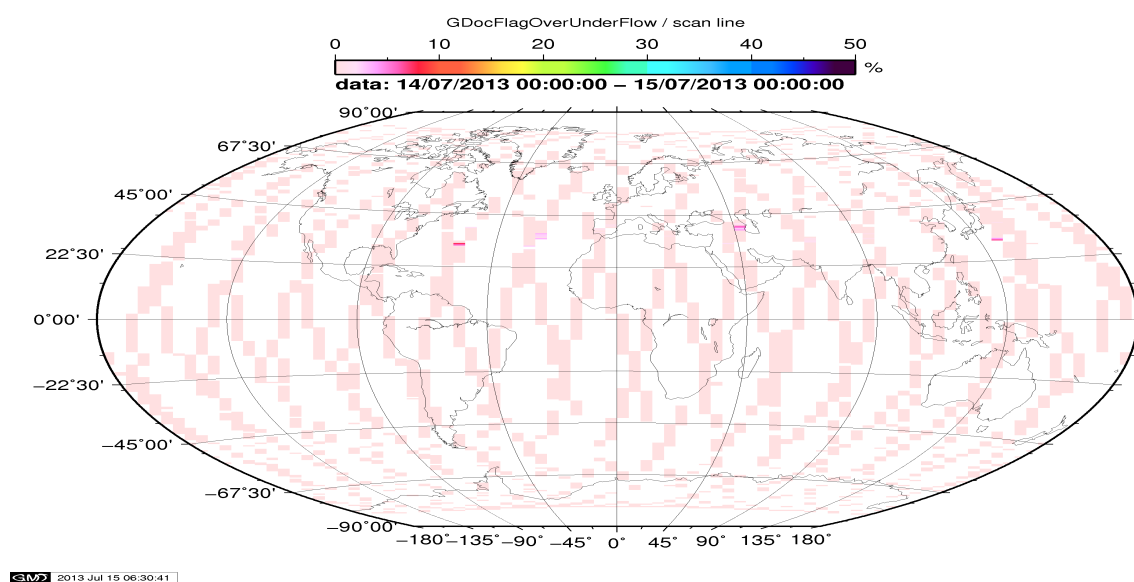


Figure 2: Flag of Over and Under Flows

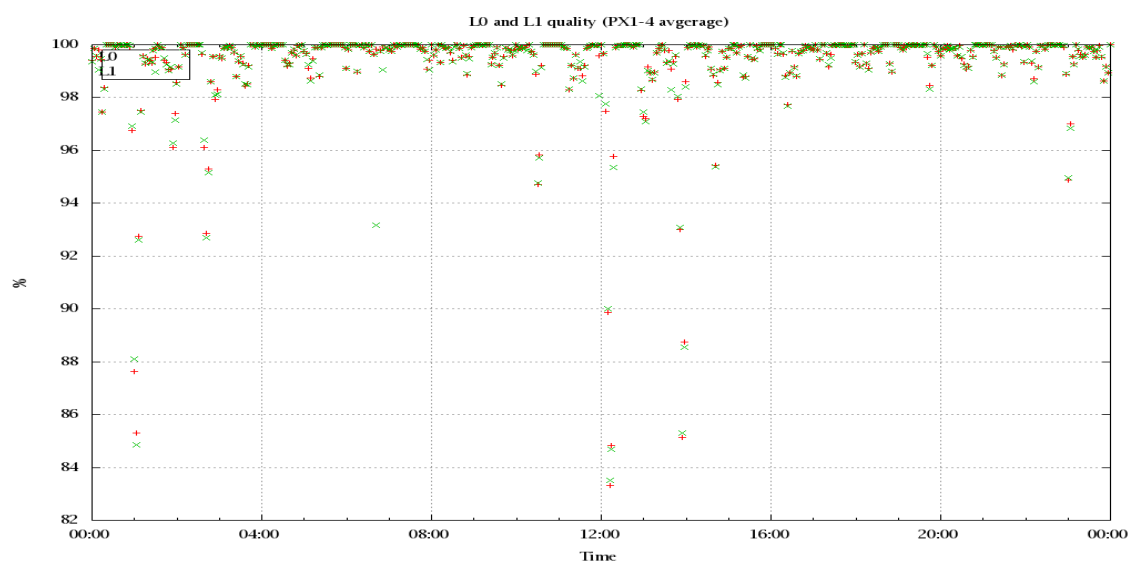


Figure 3: Level 0 and 1C overall quality

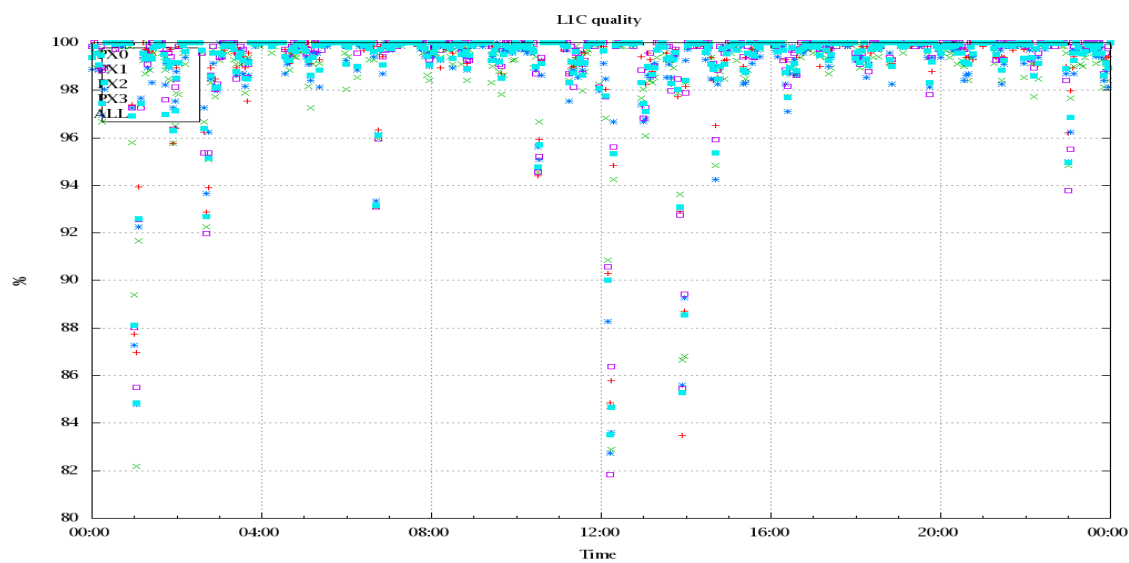


Figure 4: Level 1C quality

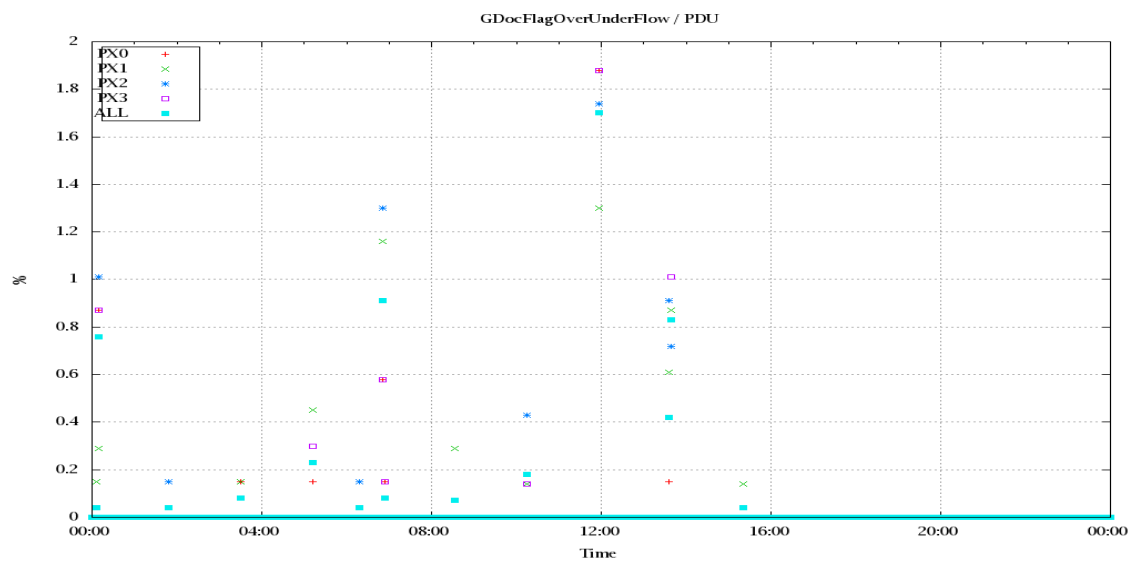


Figure 5: OverUnderFlowFlag timeseries

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.

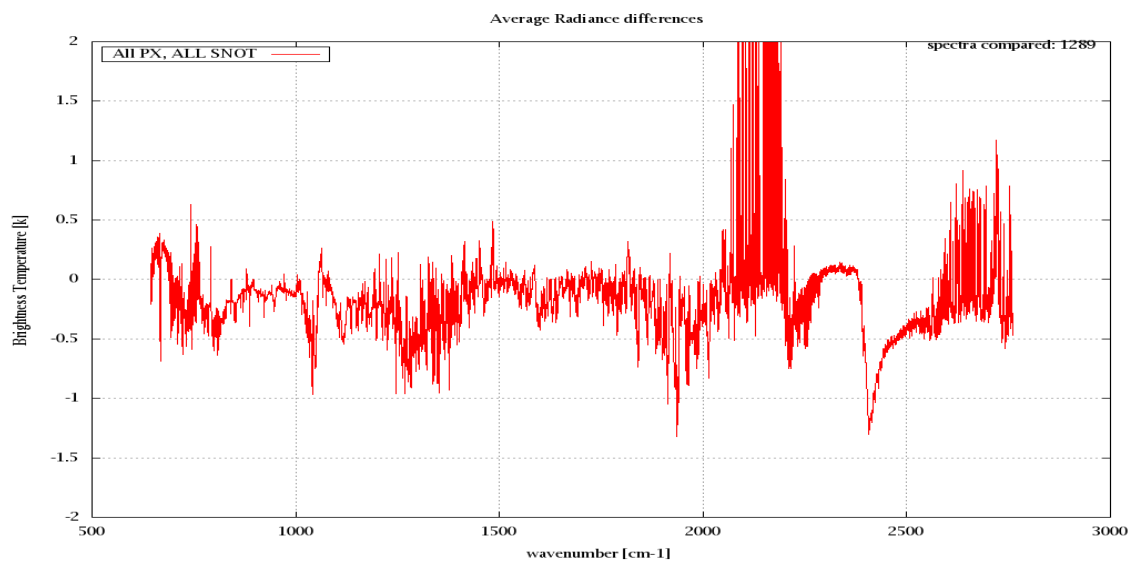


Figure 6: Average Radiance differences: OBS-CAL

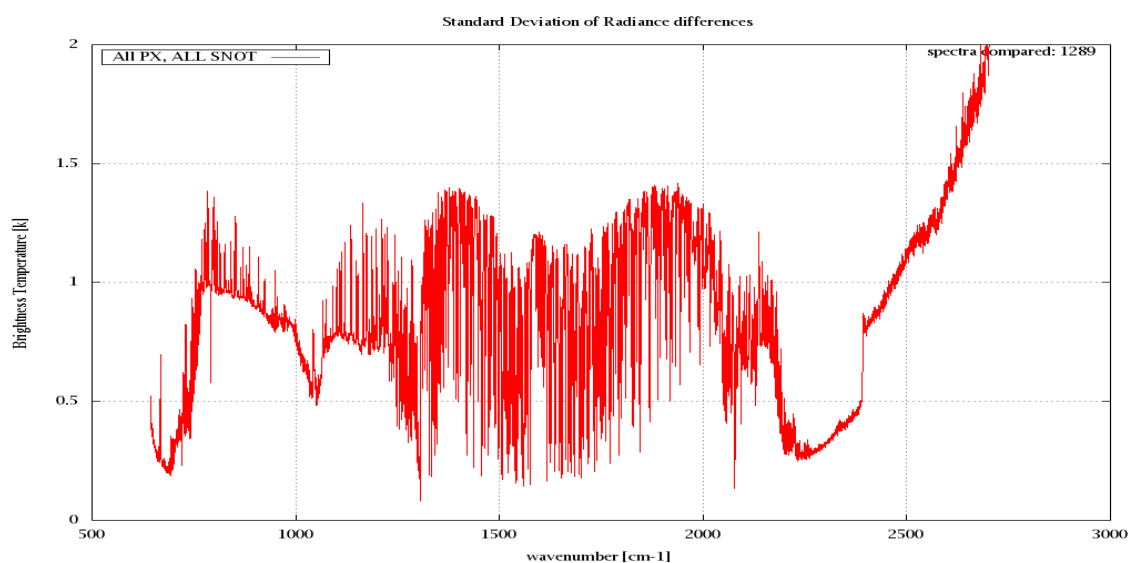


Figure 7: Standard Deviation of Radiance differences

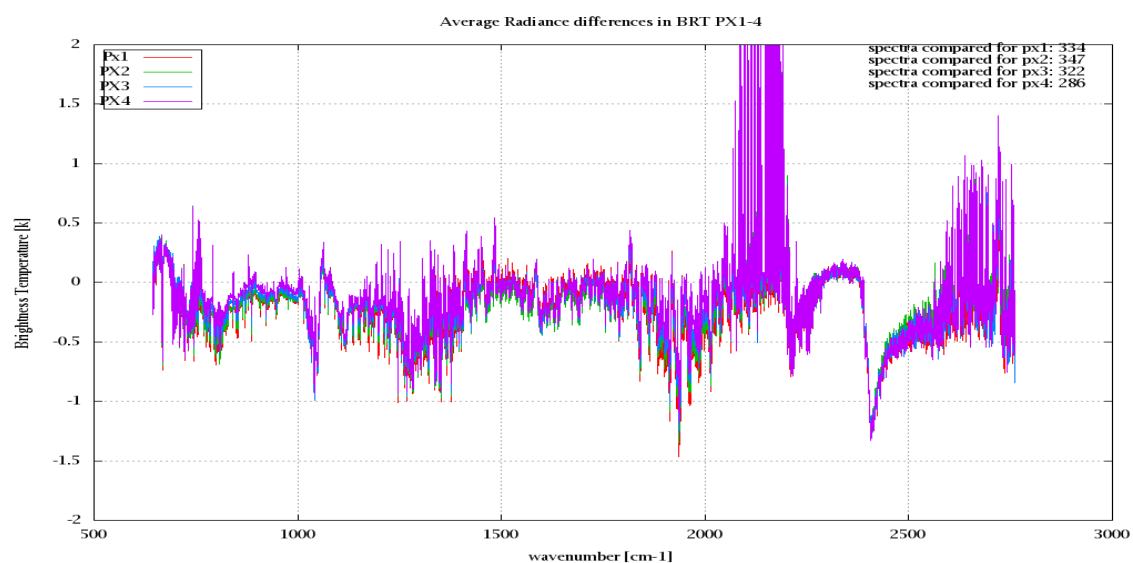


Figure 8: Average Radiance differences: OBS-CAL

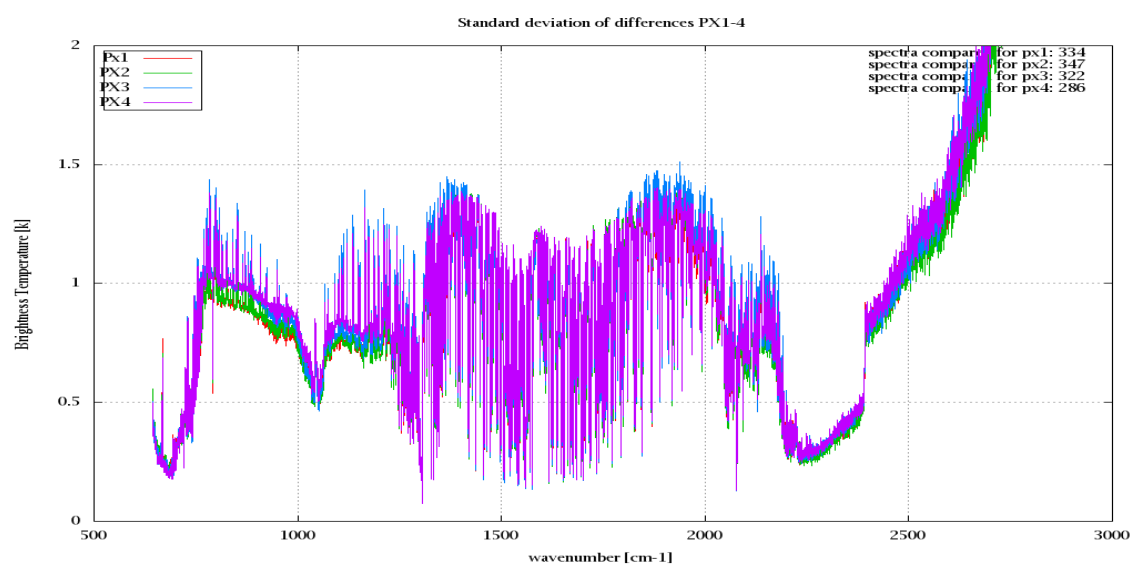


Figure 9: Standard Deviation of Radiance differences

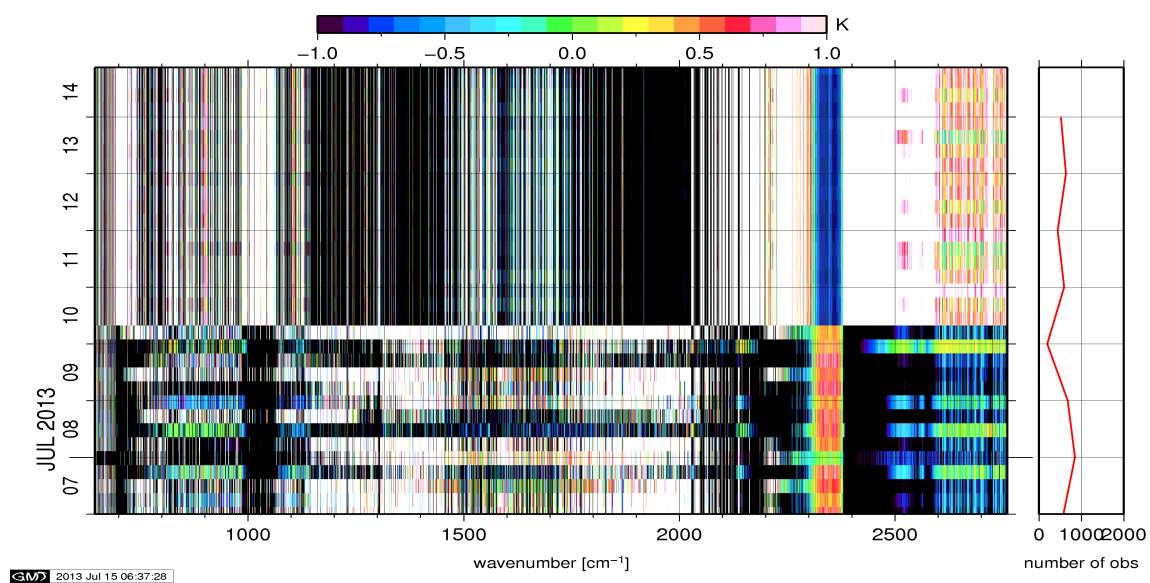


Figure 10: Radiance Anomaly in BRT: All Channels

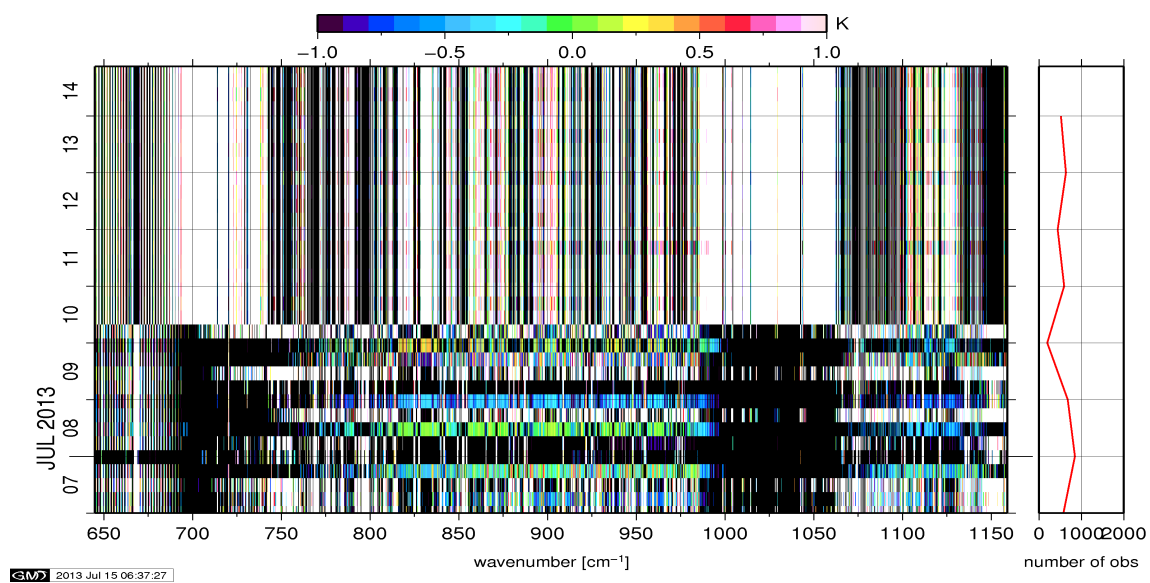


Figure 11: Radiance Anomaly in BRT: IASI Band 1

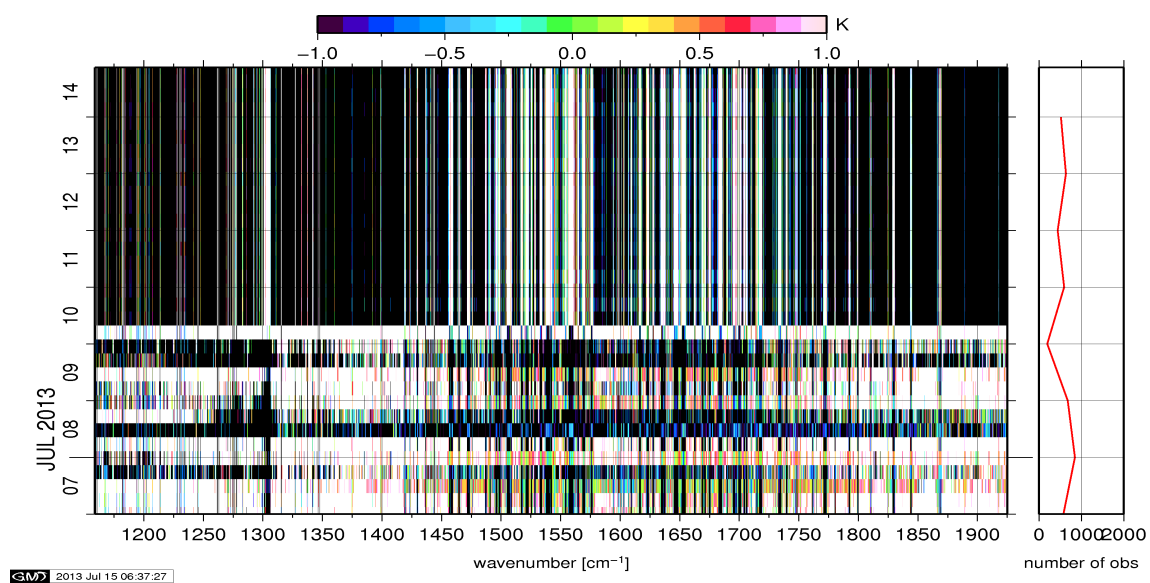


Figure 12: Radiance Anomaly in BRT: IASI Band 2

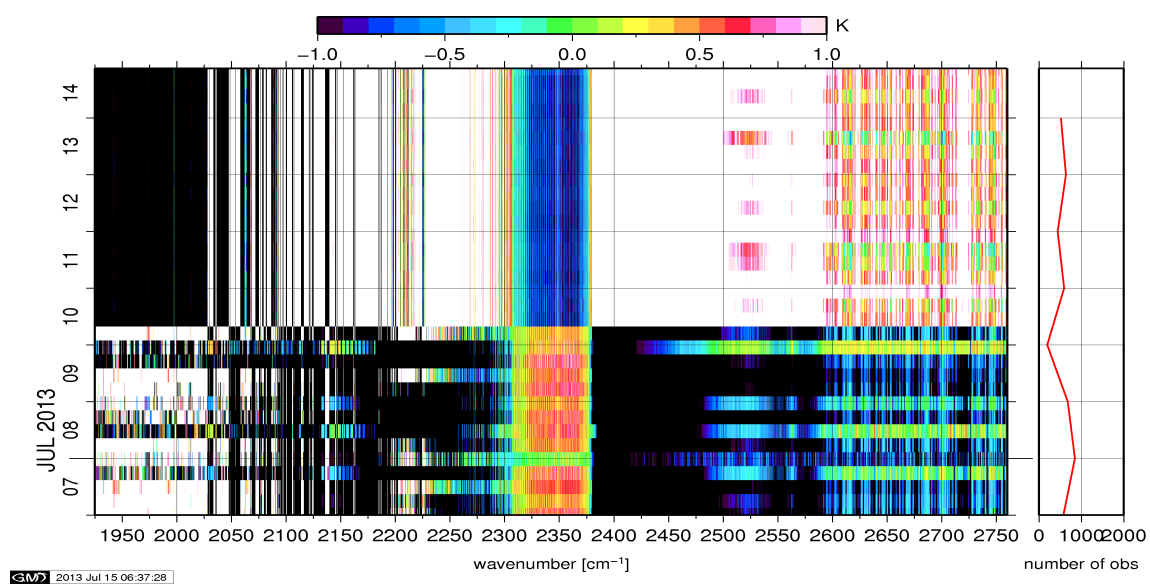


Figure 13: Radiance Anomaly in BRT: IASI Band 3

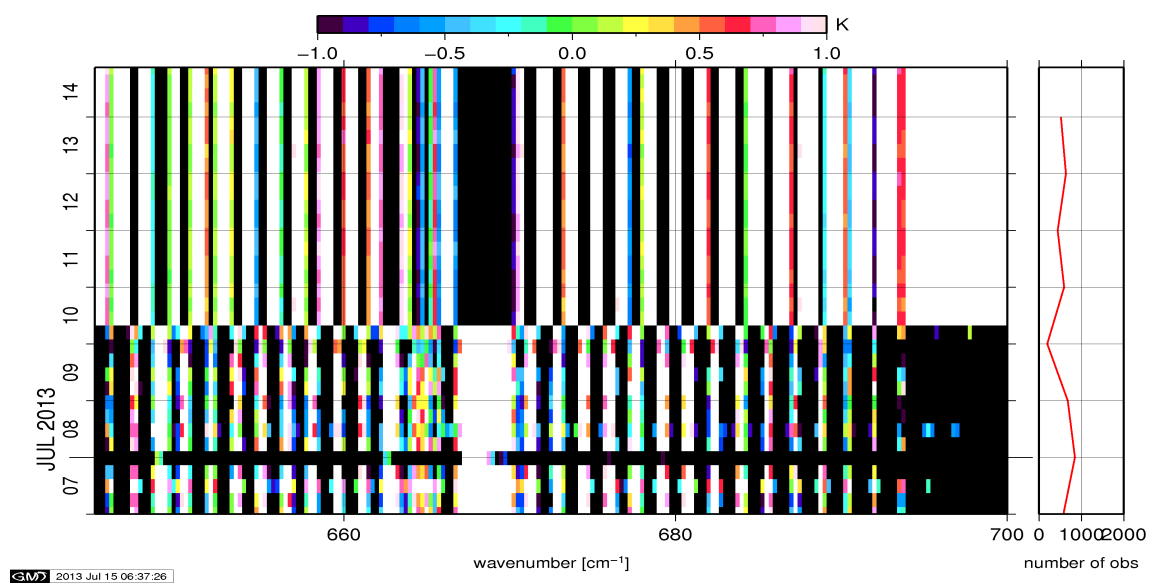


Figure 14: Radiance Anomaly in BRT: CO2 14

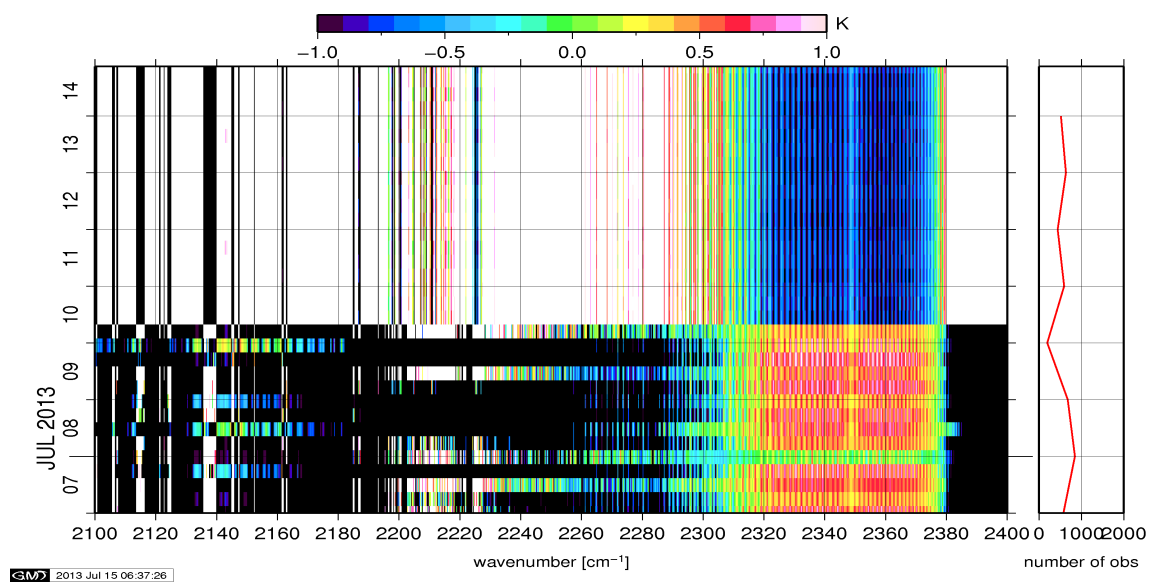


Figure 15: Radiance Anomaly in BRT: CO2 4.3

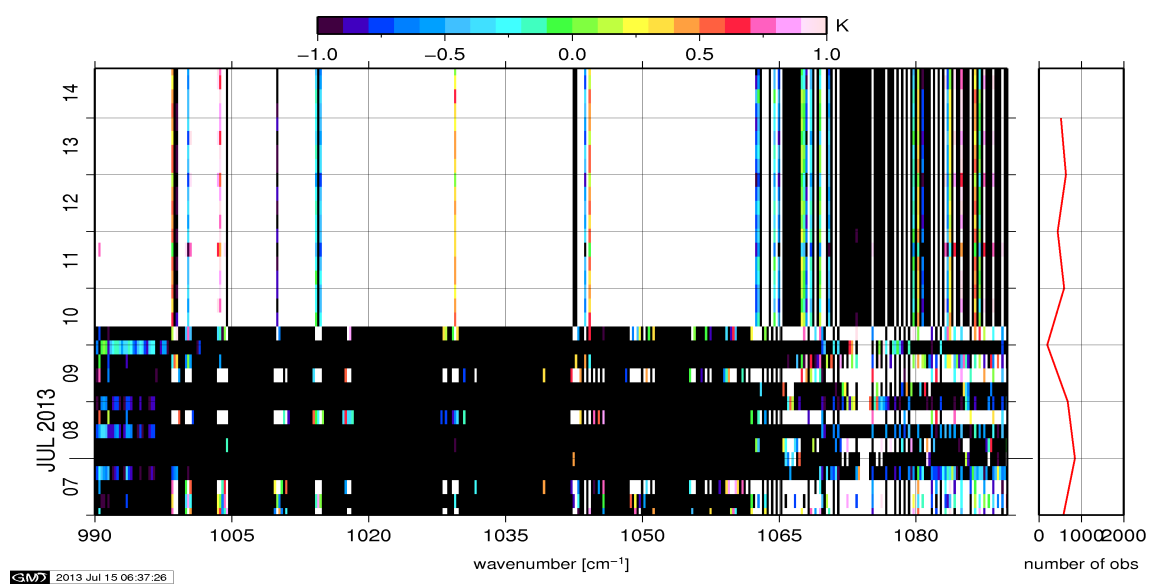


Figure 16: Radiance Anomaly in BRT: O3

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.

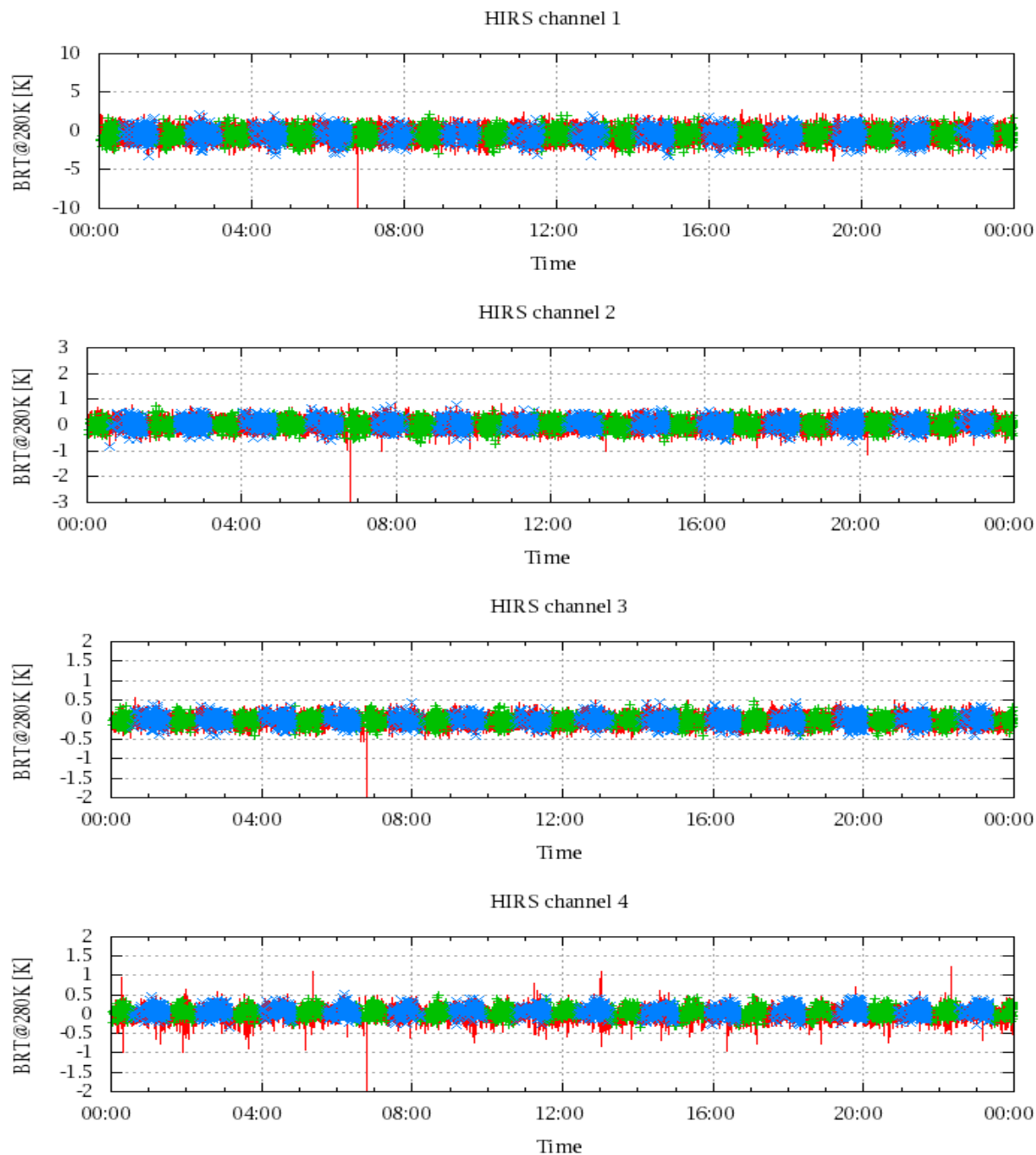


Figure 17: Radiance Differences in BRT

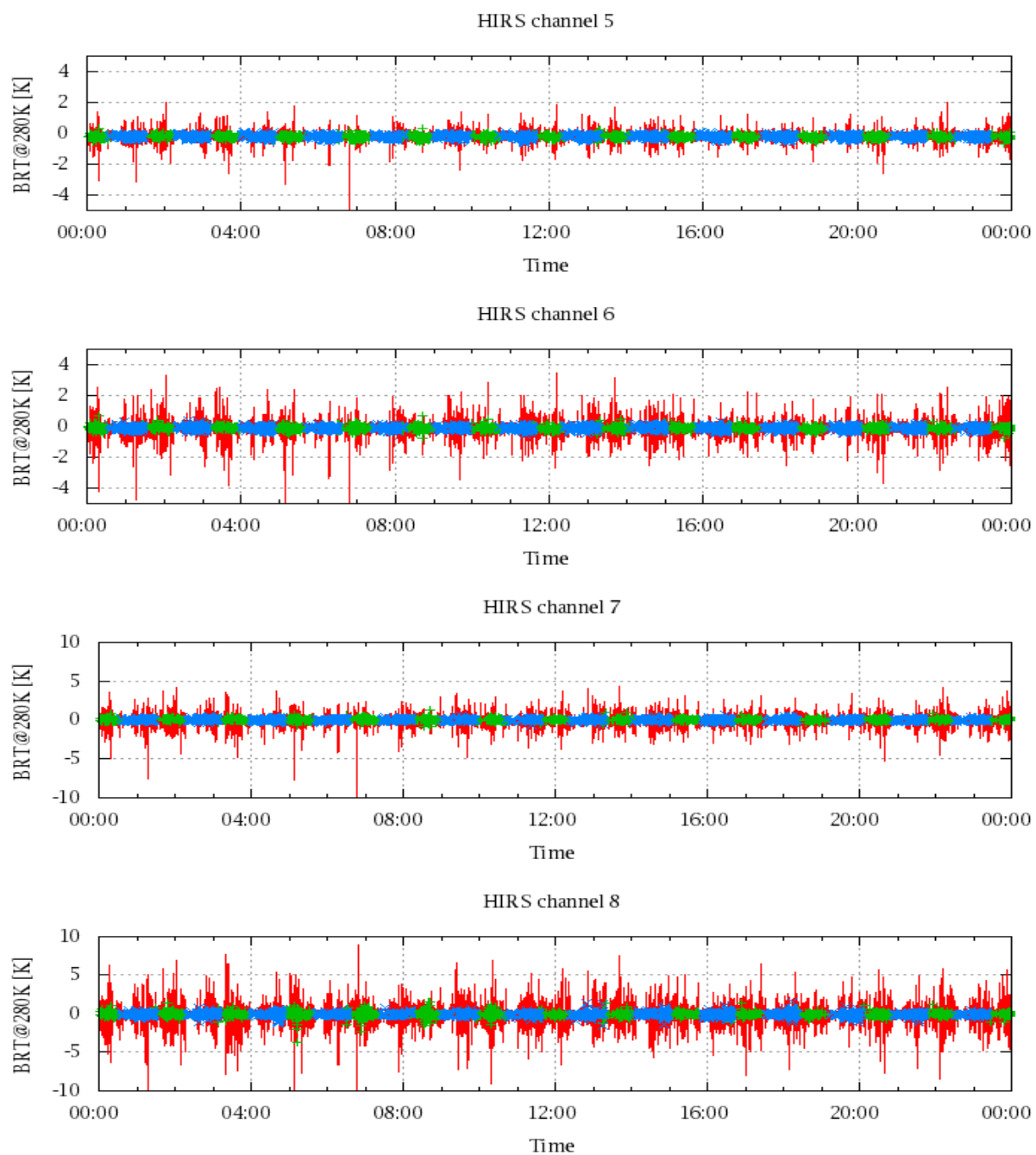


Figure 18: Radiance Differences in BRT

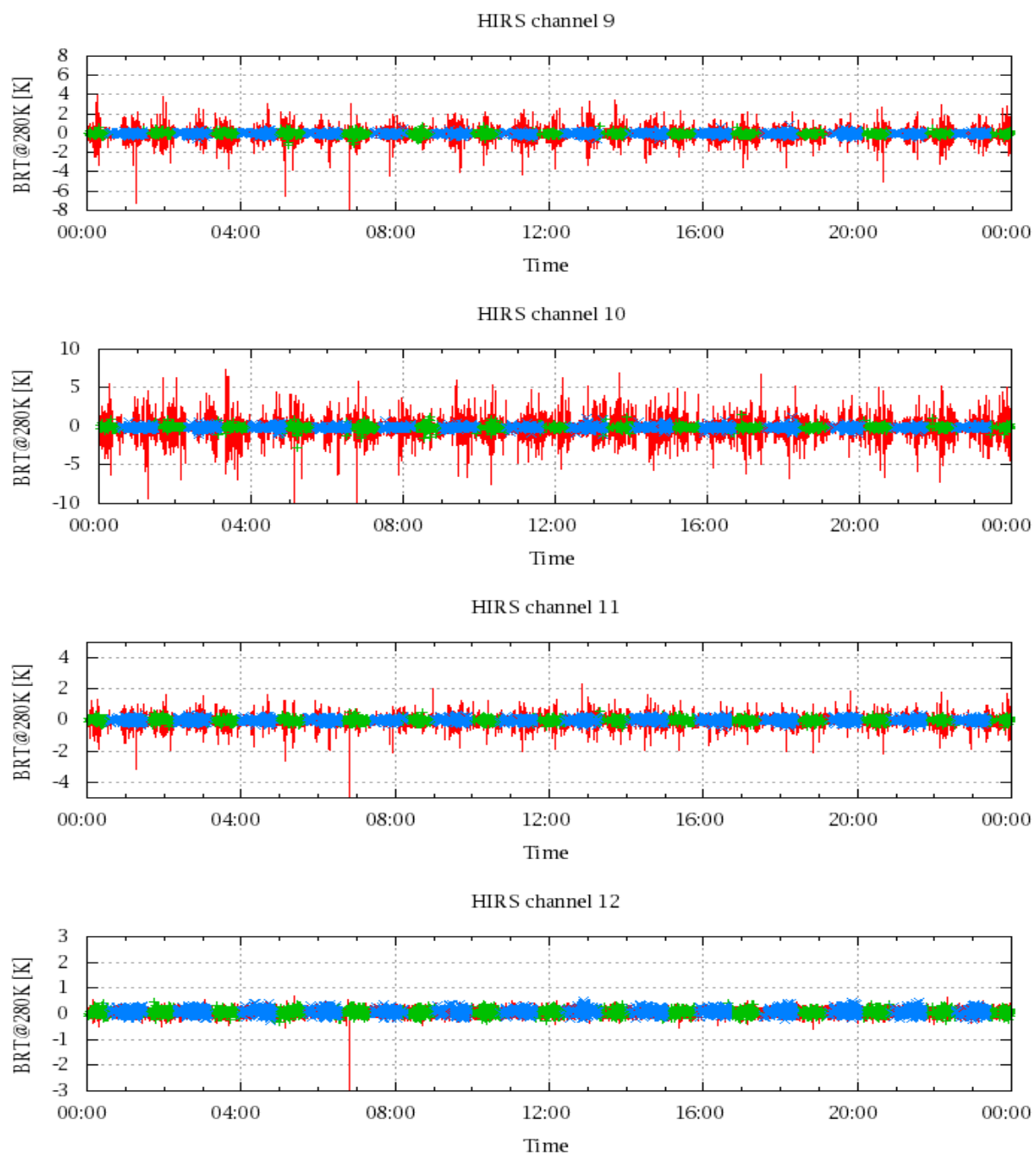


Figure 19: Radiance Differences in BRT

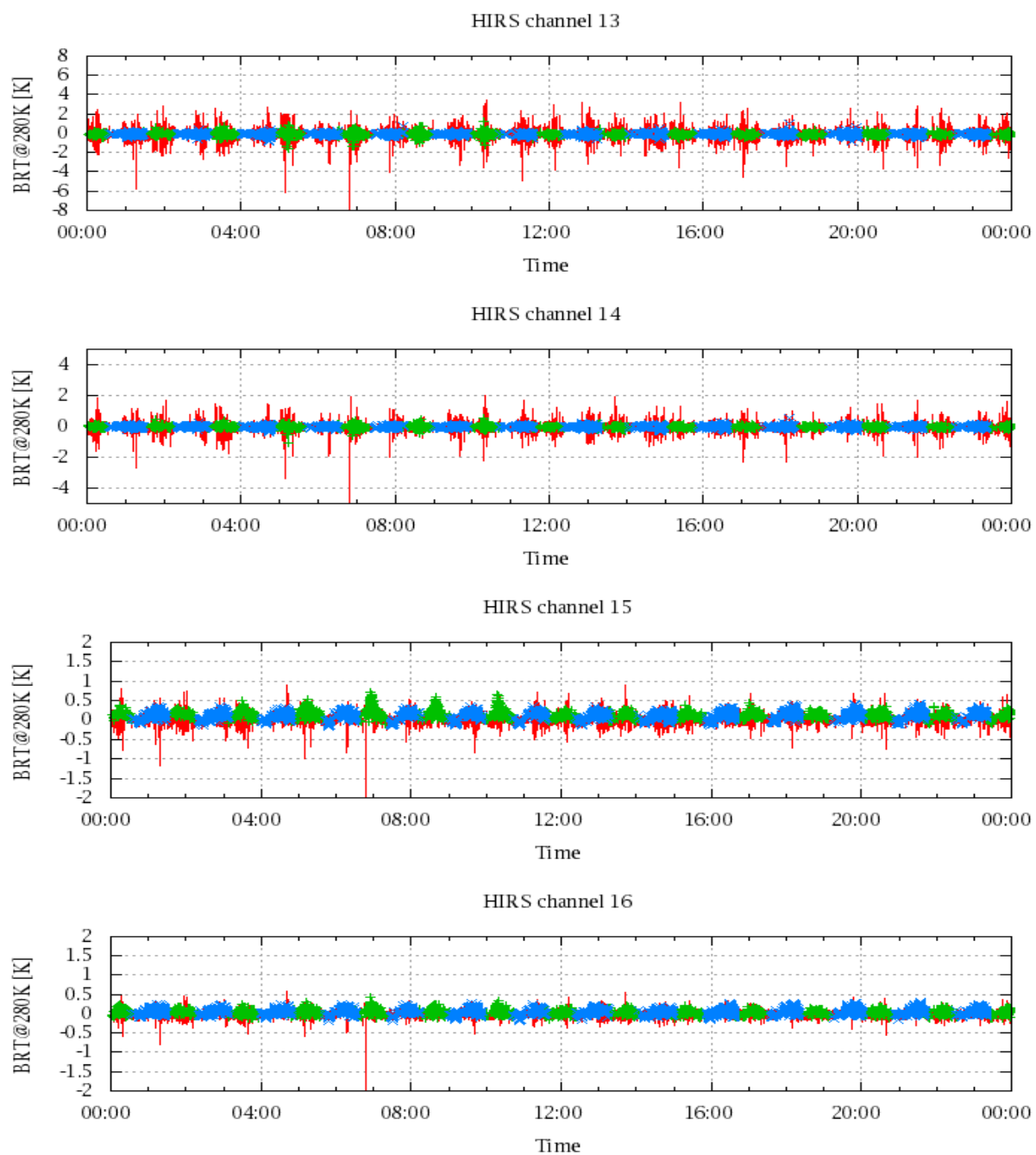


Figure 20: Radiance Differences in BRT

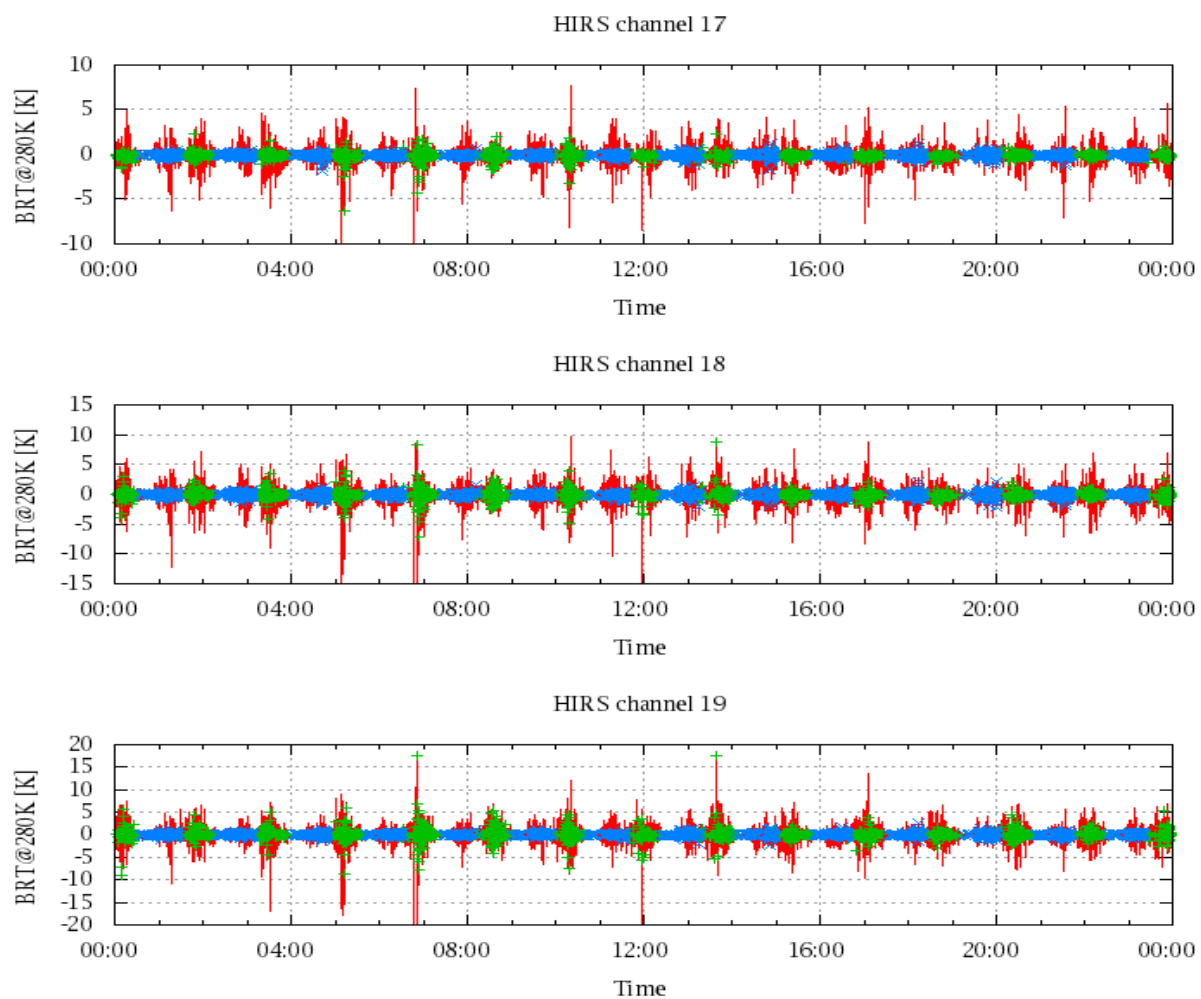


Figure 21: Radinace Differences in BRT