IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

19/01/2017 00:00:00 - 20/01/2017 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 19/01/2017 00:00:00 - 20/01/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2   Data quantity 19/01/2017 00:00:00 - 20/01/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	467	-
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)	13324	13354	20170119181604.387	20170119181612.387
PX2 (135)	13324	13354	20170119181604.387	20170119181612.387
PX3 (140)	13324	13354	20170119181604.387	20170119181612.387
PX4 (145)	13324	13353	20170119181604.387	20170119181610.657
IMG (150)	2503	2505	20170119083454.377	20170119083454.806
IMG (150)	3243	3273	20170119181603.953	20170119181610.657
VER (160)	8653	8871	201701190927146.681	20170119093340.657
VER (160)	8871	8876	20170119093340.657	20170119093340.657
VER (160)	8876	8881	20170119093340.657	20170119093340.657
VER (160)	8881	8886	20170119093340.657	20170119093340.657
VER (160)	8886	8891	20170119093340.657	20170119093340.657
VER (160)	8891	8872	20170119093340.657	20170119093340.657
VER (160)	8872	8877	20170119093340.657	20170119093340.657
VER (160)	8877	8882	20170119093340.657	20170119093340.657
VER (160)	8882	8887	20170119093340.657	20170119093340.657
VER (160)	8887	8892	20170119093340.657	20170119093340.657
VER (160)	8892	8873	20170119093340.657	20170119093340.657
VER (160)	8873	8878	20170119093340.657	20170119093340.657
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	8878	8883	20170119093340.657	20170119093340.657
VER (160)	8883	8888	20170119093340.657	20170119093340.657
VER (160)	8888	8893	20170119093340.657	20170119093340.657
VER (160)	8893	8874	20170119093340.657	20170119093340.657
VER (160)	8874	8879	20170119093340.657	20170119093340.657
VER (160)	8879	8884	20170119093340.657	20170119093340.657
VER (160)	8884	8889	20170119093340.657	20170119093340.657
VER (160)	8889	8894	20170119093340.657	20170119093340.657
VER (160)	8894	8875	20170119093340.657	20170119093340.657
VER (160)	8875	8880	20170119093340.657	20170119093340.657
VER (160)	8880	8885	20170119093340.657	20170119093340.657
VER (160)	8885	8890	20170119093340.657	20170119093340.657
VER (160)	8890	8895	20170119093340.657	20170119093340.657
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3   Instrument modes

Time	Transition from	Transition to
19/01/2017 00:00:08	-	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	467	-
GQisFlagQual set (PX1)	99.60 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.67 %	-
GQisFlagQual set (PX4)	99.60 %	-
GQisFlagQual set (all)	99.63 %	-

Table 4: Quality flags
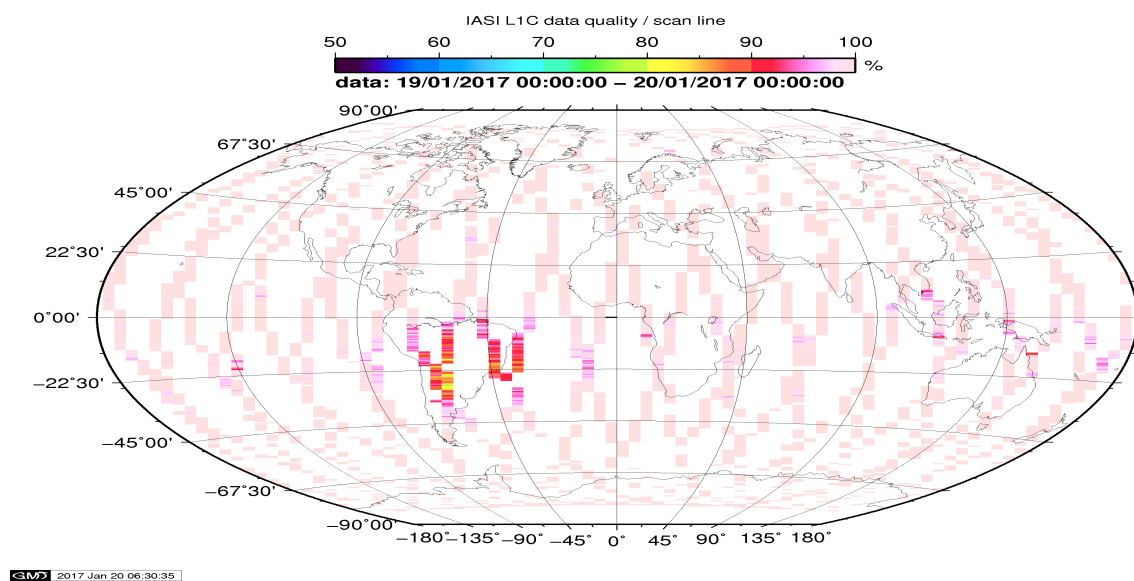
Figure 1: L1C data quality
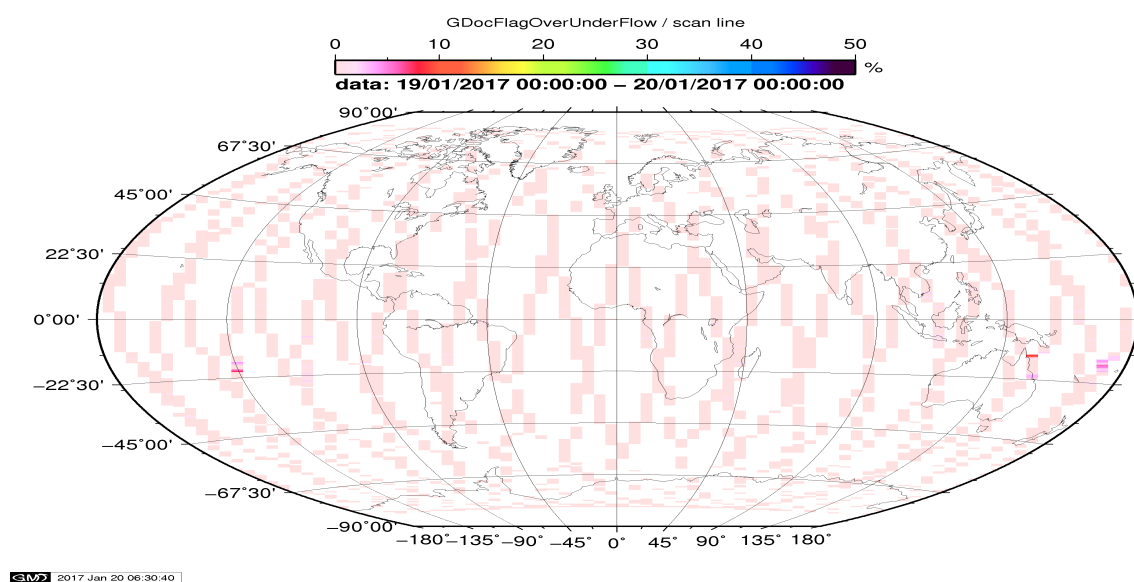
Figure 2: Flag of Over and Under Flows
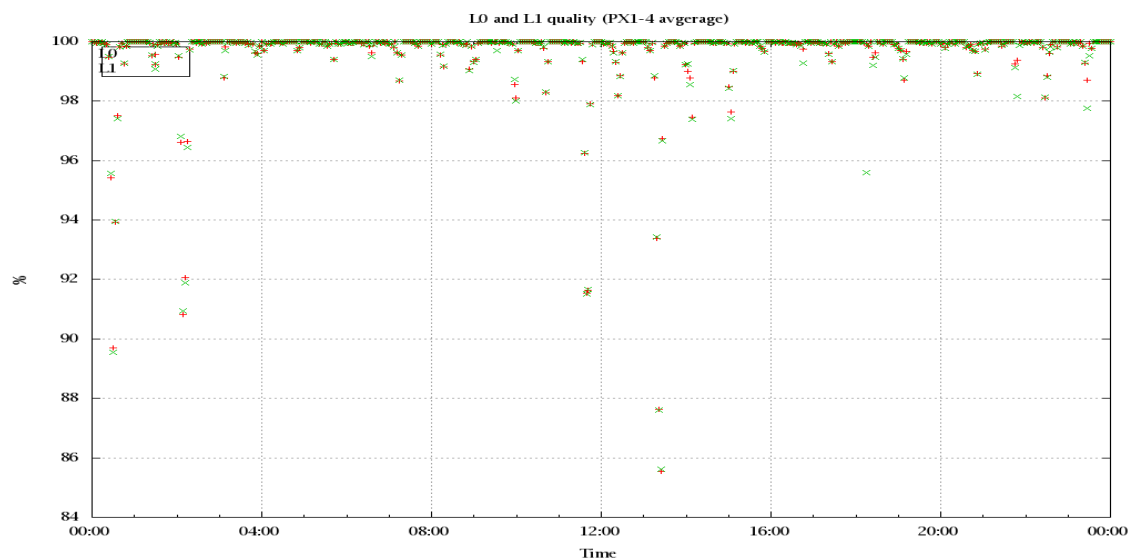
Figure 3: Level 0 and 1C overall quality
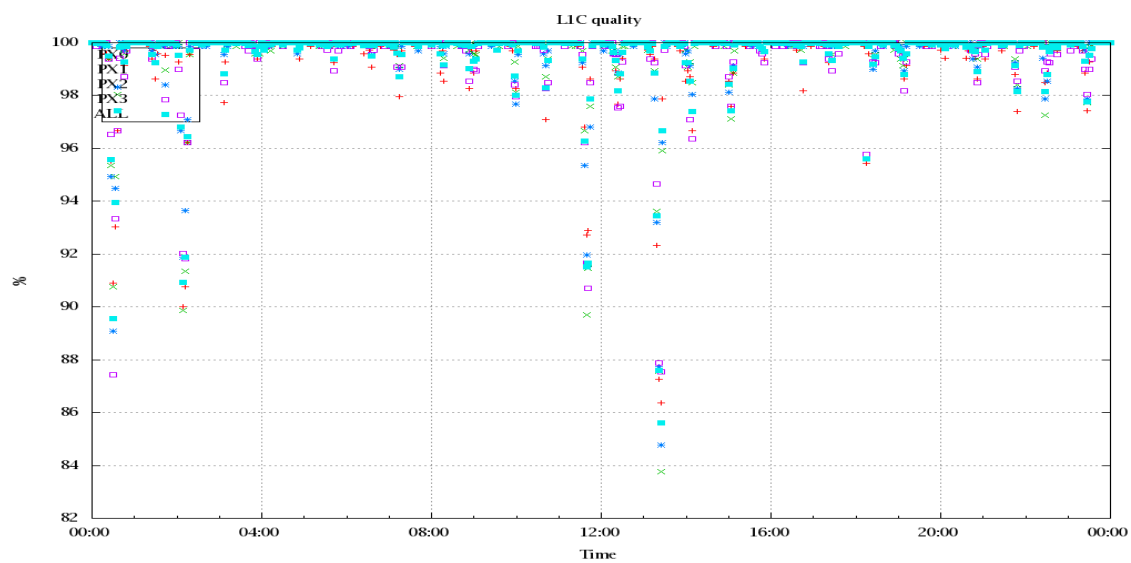
Figure 4: Level 1C quality
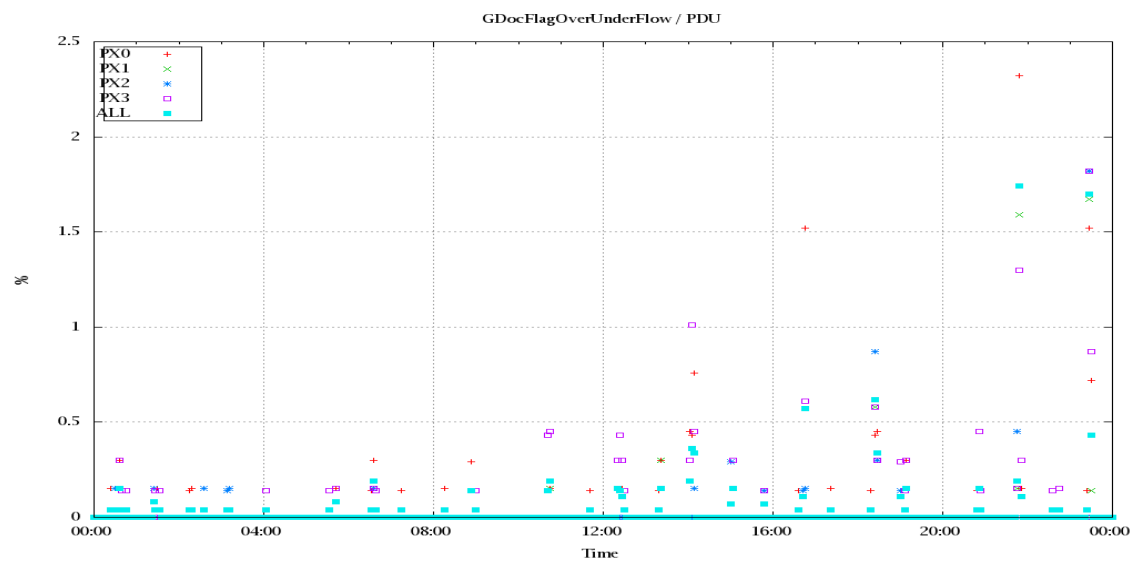
Figure 5: OverUnderFlowFlag timeseries

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 indentification 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.
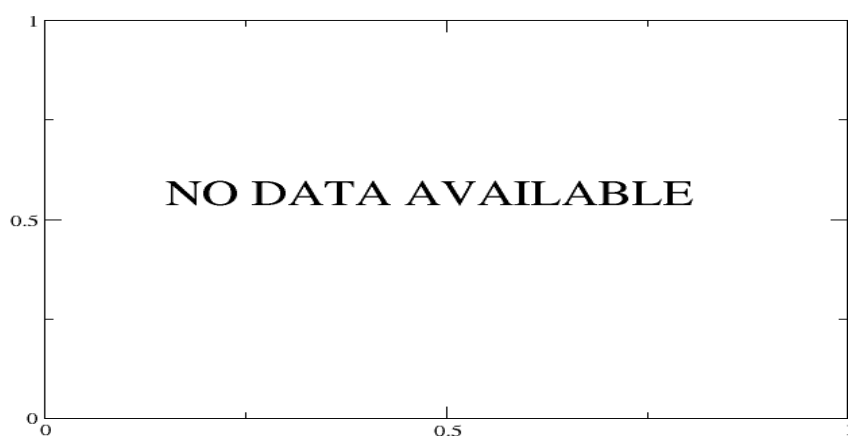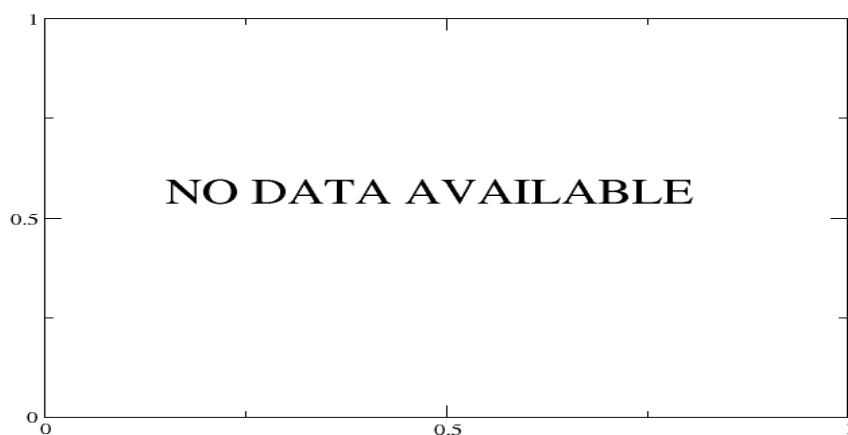

Figure 6: Average Radiance differences: OBS-CAL

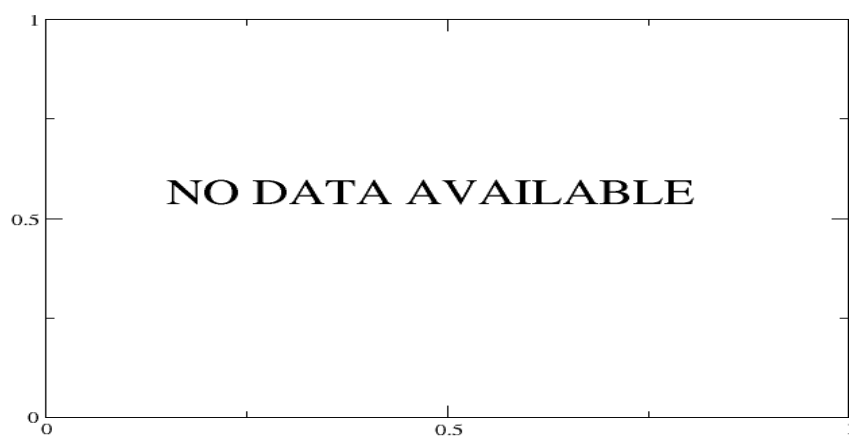Figure 7: Standard Deviation of Radiance differences

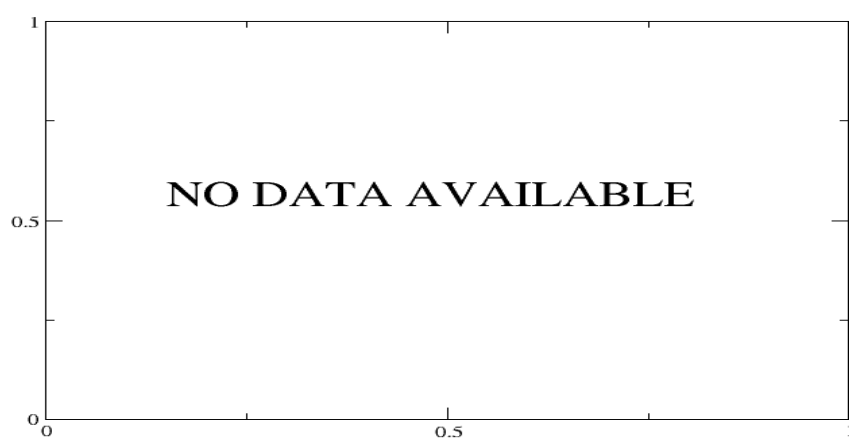Figure 8: Average Radiance differences: OBS-CAL

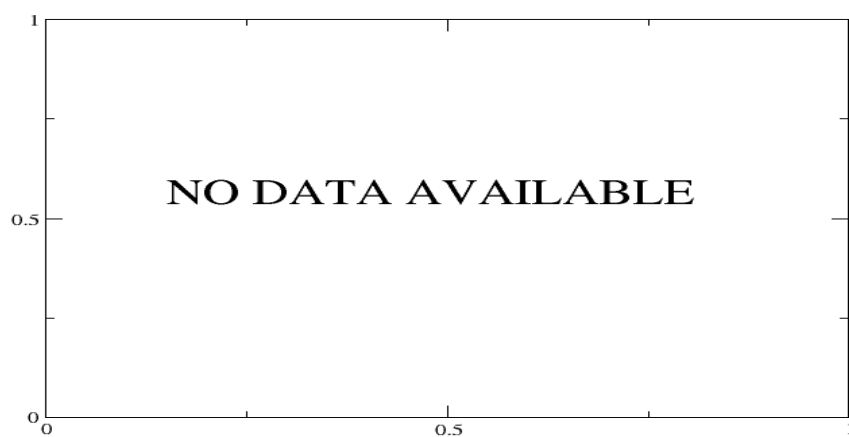Figure 9: Standard Deviation of Radiance differences

Figure 10: Radiance Anomaly in BRT: All Channels

Figure 11: Radiance Anomaly in BRT: IASI Band 1

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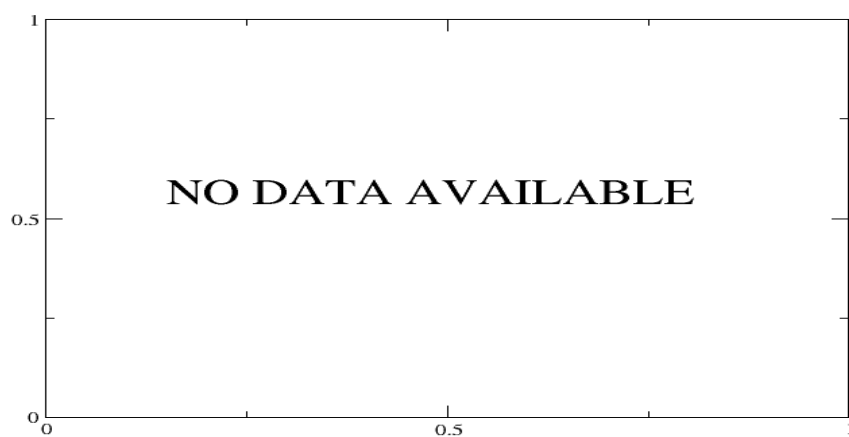
Figure 12: Radiance Anomaly in BRT: IASI Band 2

Figure 13: Radiance Anomaly in BRT: IASI Band 3
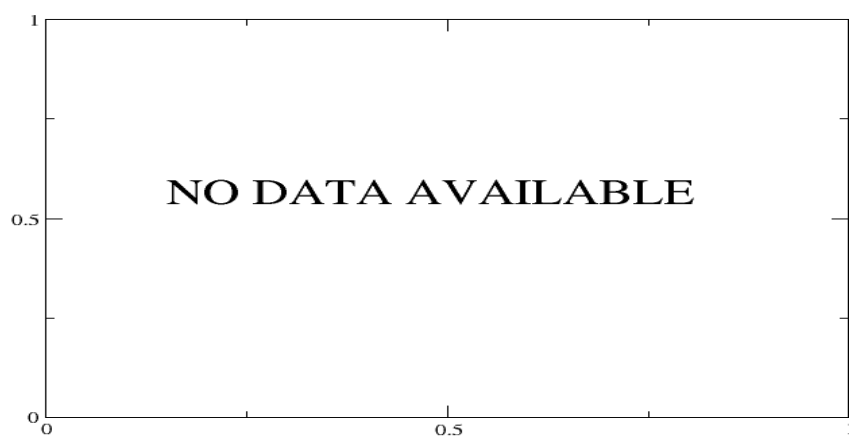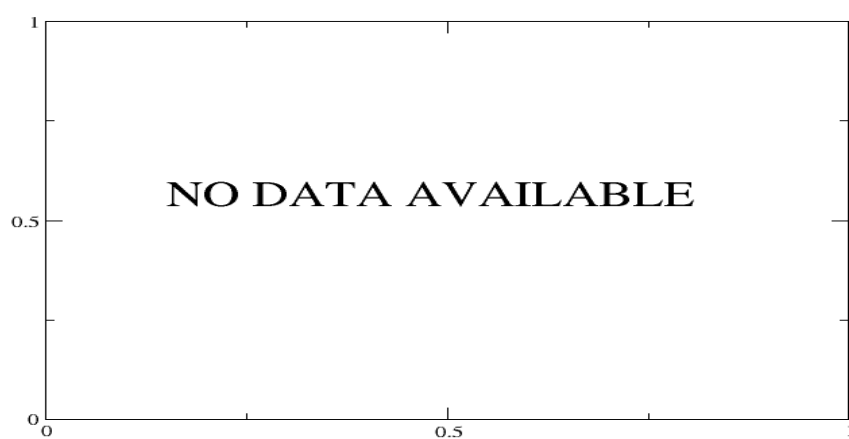
Figure 14: Radiance Anomaly in BRT: CO2 14

Figure 15: Radiance Anomaly in BRT: CO2 4.3

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Figure 16: Radiance Anomaly in BRT: O3

6   IASI-HIRS radiance comparision Channel 1-19

The radiance comparision 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.
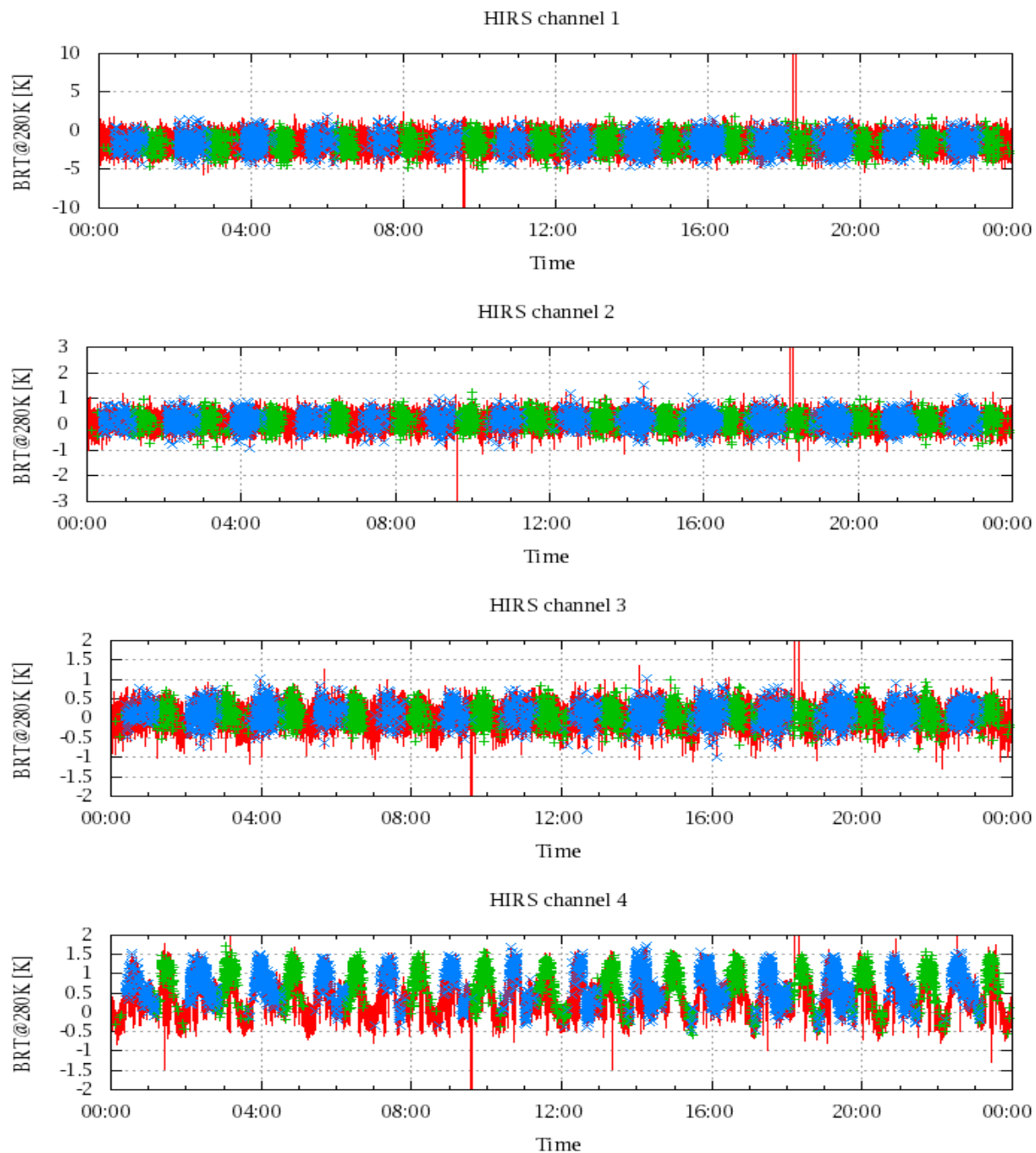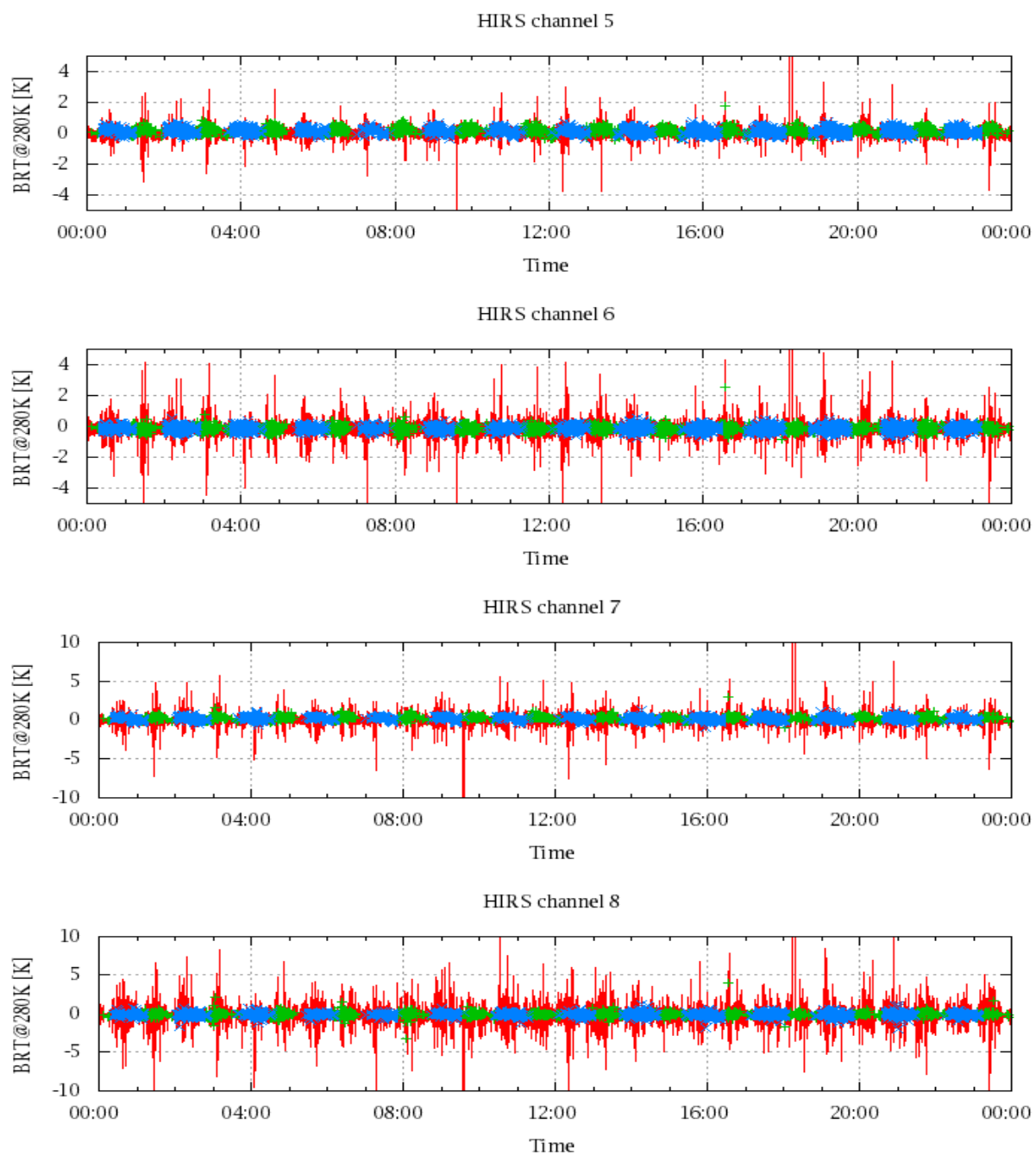

Figure 17: Radiance Differences in BRT
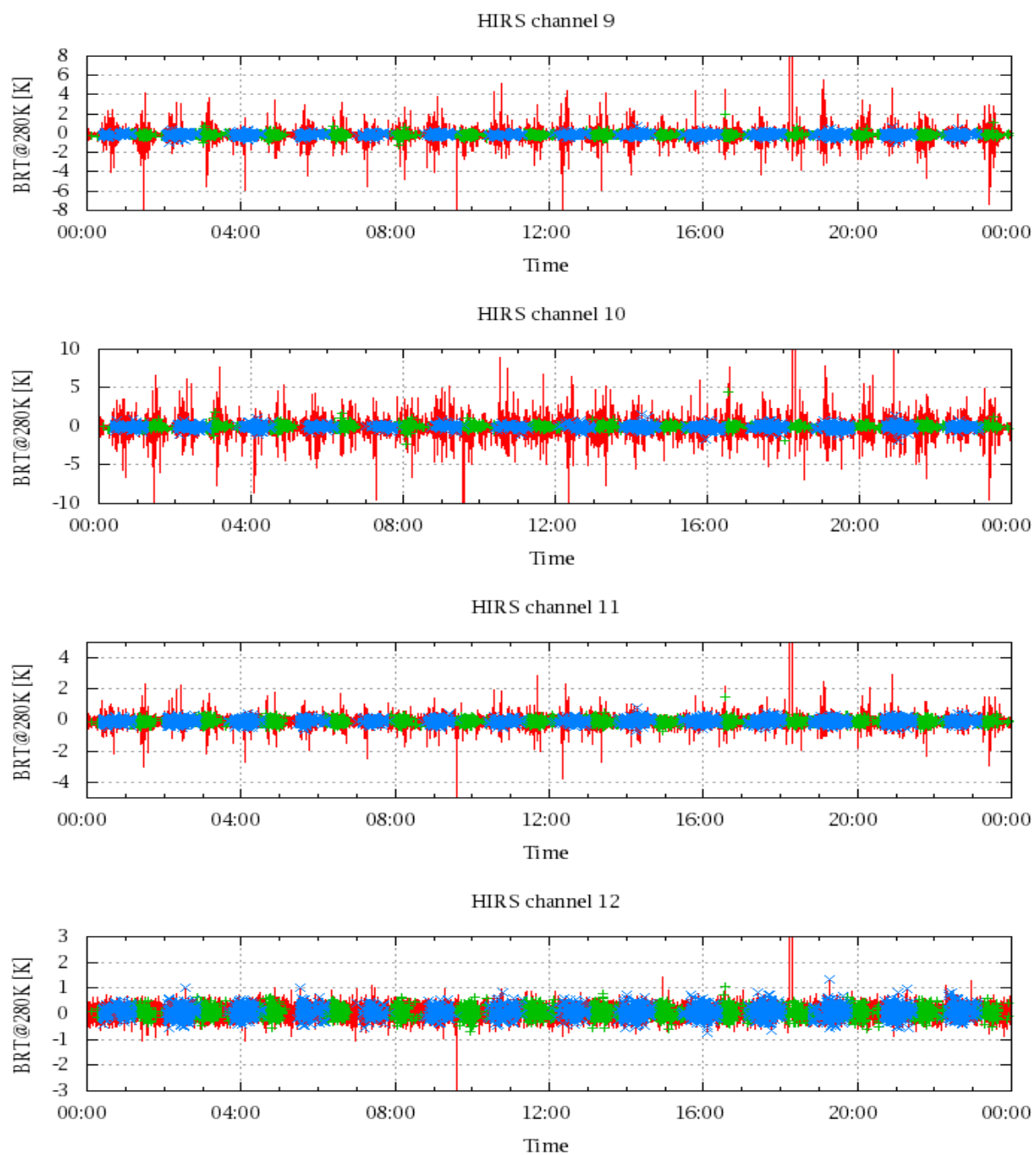
Figure 18: Radiance Differences in BRT

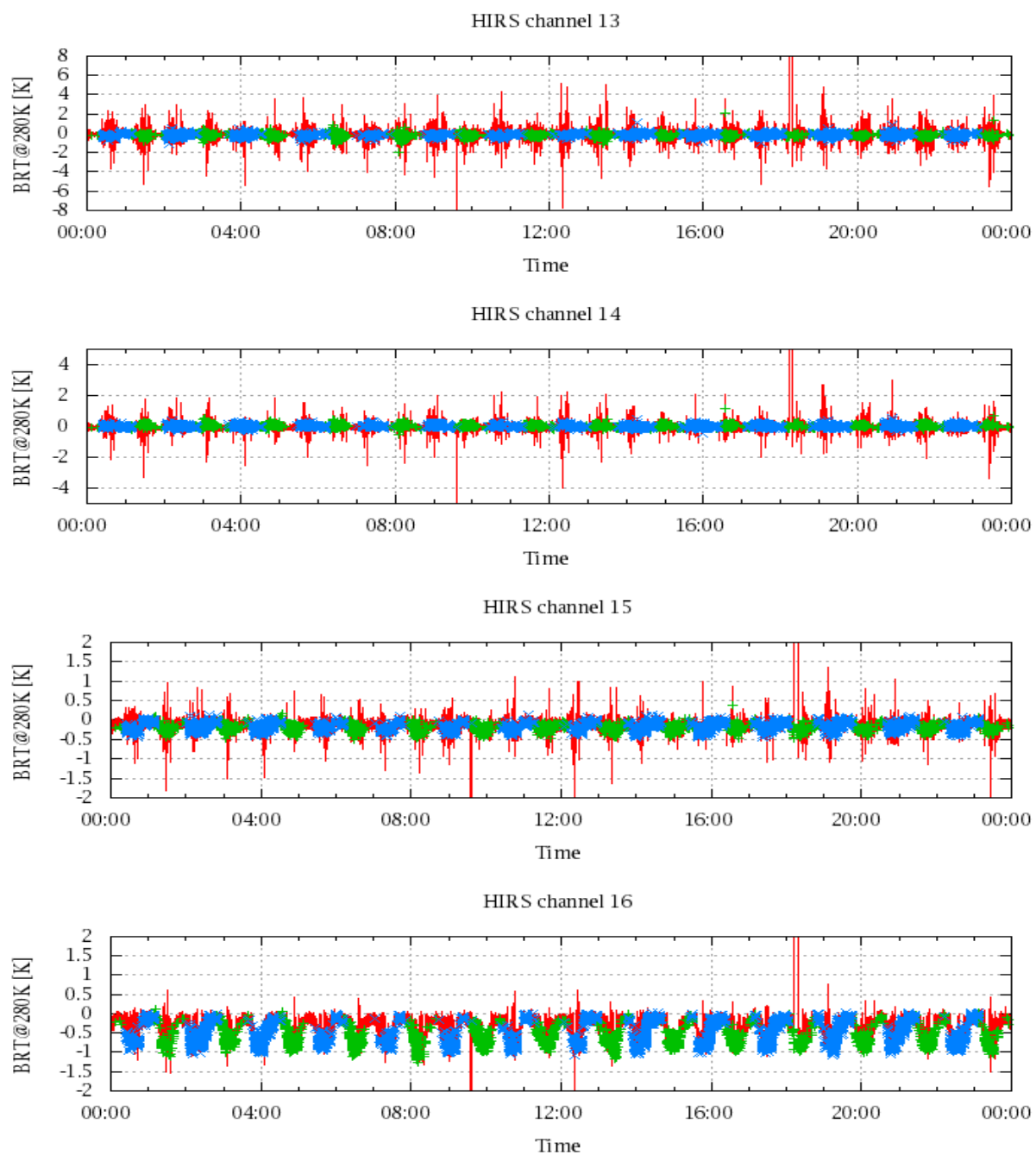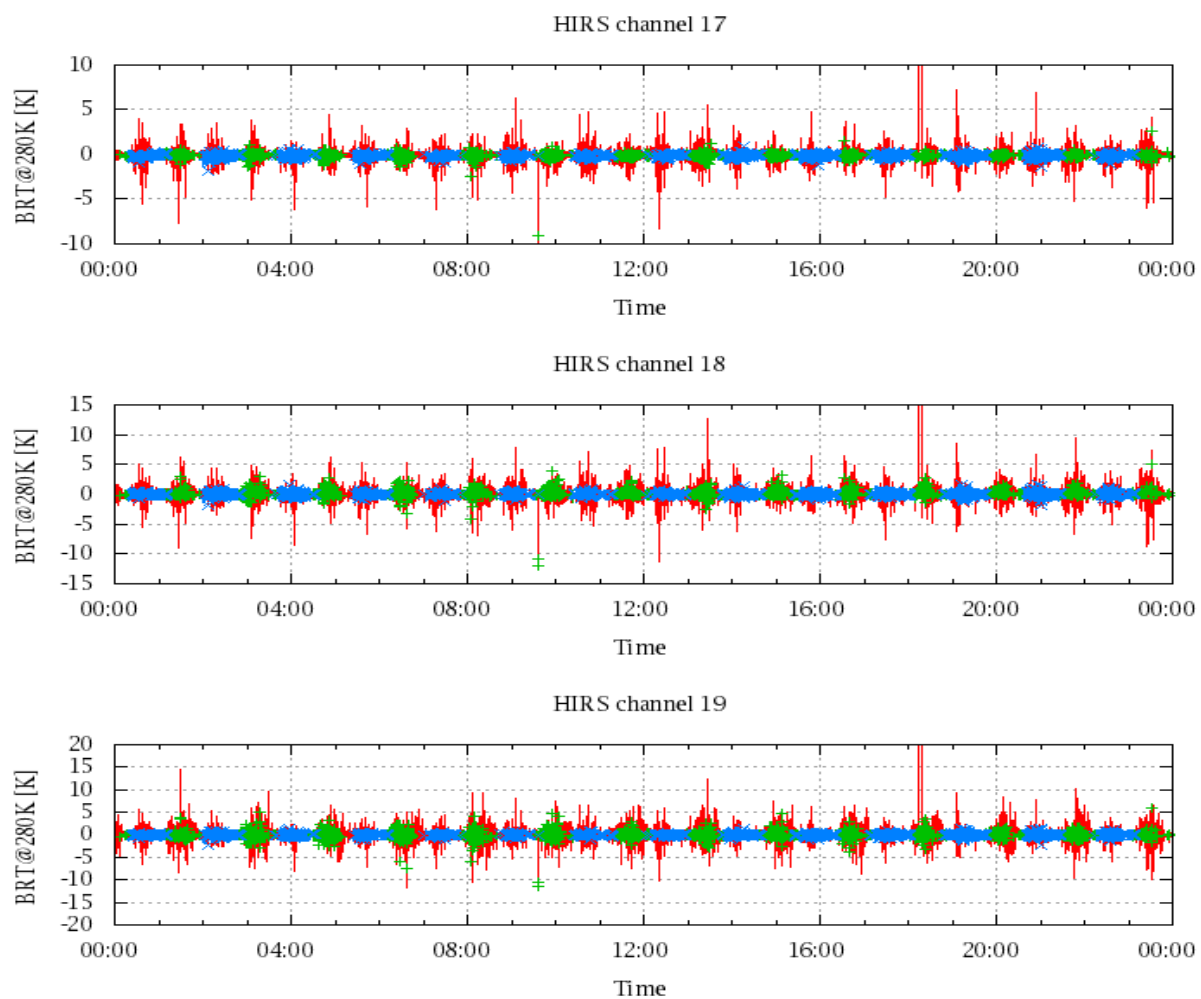Figure 19: Radiance Differences in BRT

Figure 20: Radiance Differences in BRT

Figure 21: Radinace Differences in BRT