

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

26/01/2017 00:00:00 - 27/01/2017 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 26/01/2017 00:00:00 - 27/01/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 26/01/2017 00:00:00 - 27/01/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	478	-
L0 IASI PDUs	478	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	463	-
L1 DPX PDUs (RM: IASI-HIRS)	476	-
L1 DPS Files (RM: OBS-CAL NWP based)	478	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	9664	10336	20170126014159.900	20170126014500.005
PX1 (130)	7268	7947	20170126035659.997	20170126040000.103
PX1 (130)	16350	645	20170126070259.973	20170126070600.078
PX2 (135)	9664	10336	20170126014159.900	20170126014500.005
PX2 (135)	7268	7947	20170126035659.997	20170126040000.103
PX2 (135)	16350	645	20170126070259.973	20170126070600.078
PX3 (140)	9664	10336	20170126014159.900	20170126014500.005
PX3 (140)	7268	7947	20170126035659.997	20170126040000.103
PX3 (140)	16350	645	20170126070259.973	20170126070600.078
PX4 (145)	9664	10336	20170126014159.900	20170126014500.005
PX4 (145)	7268	7947	20170126035659.997	20170126040000.103
PX4 (145)	16350	645	20170126070259.973	20170126070600.078
IMG (150)	10016	10780	20170126014159.900	20170126014500.005
IMG (150)	11672	12439	20170126035659.997	20170126040000.103
IMG (150)	9950	10717	20170126070259.973	20170126070600.078
VER (160)	8757	8873	20170126014153.849	20170126014505.841
VER (160)	13822	13933	20170126035657.837	20170126040001.833
VER (160)	4413	4524	20170126070257.809	20170126070601.805

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
AUX (180)	8279	8303	20170126014154.279	20170126014506.275
AUX (180)	9292	9315	20170126035658.271	20170126040002.263
AUX (180)	10687	10710	20170126070258.242	20170126070602.238

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
26/01/2017 00:00:07	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	478	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	463	-
GQisFlagQual set (PX1)	99.60 %	-
GQisFlagQual set (PX2)	99.69 %	-
GQisFlagQual set (PX3)	99.68 %	-
GQisFlagQual set (PX4)	99.61 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

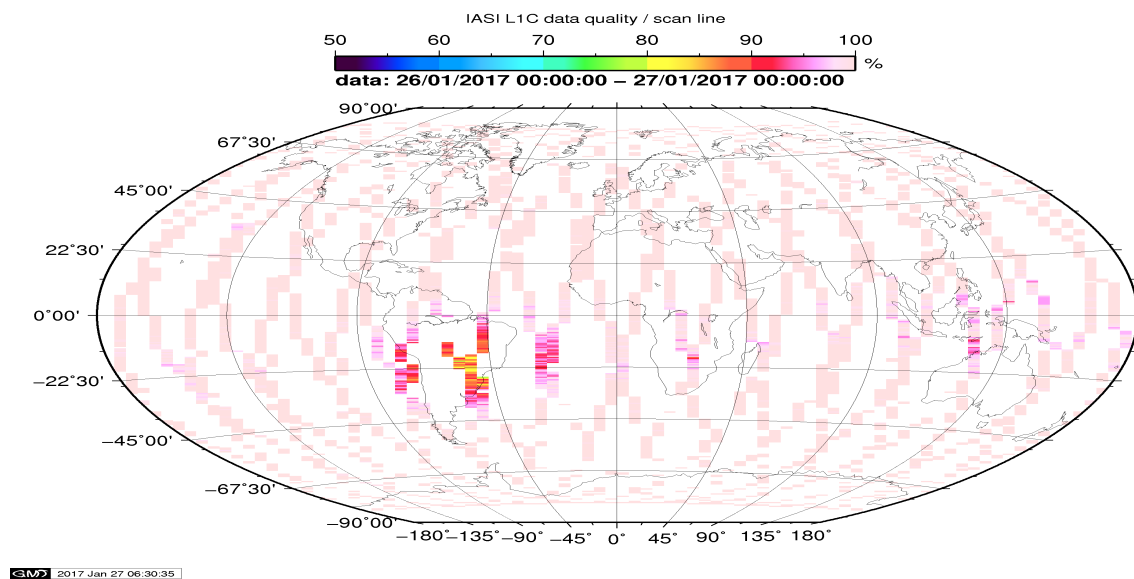


Figure 1: L1C data quality

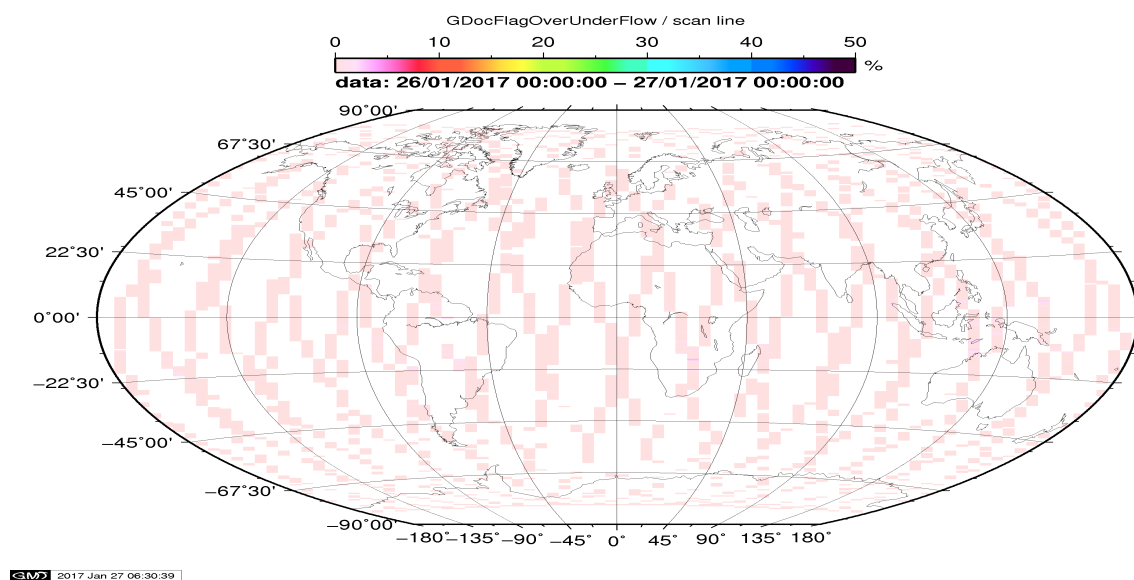


Figure 2: Flag of Over and Under Flows

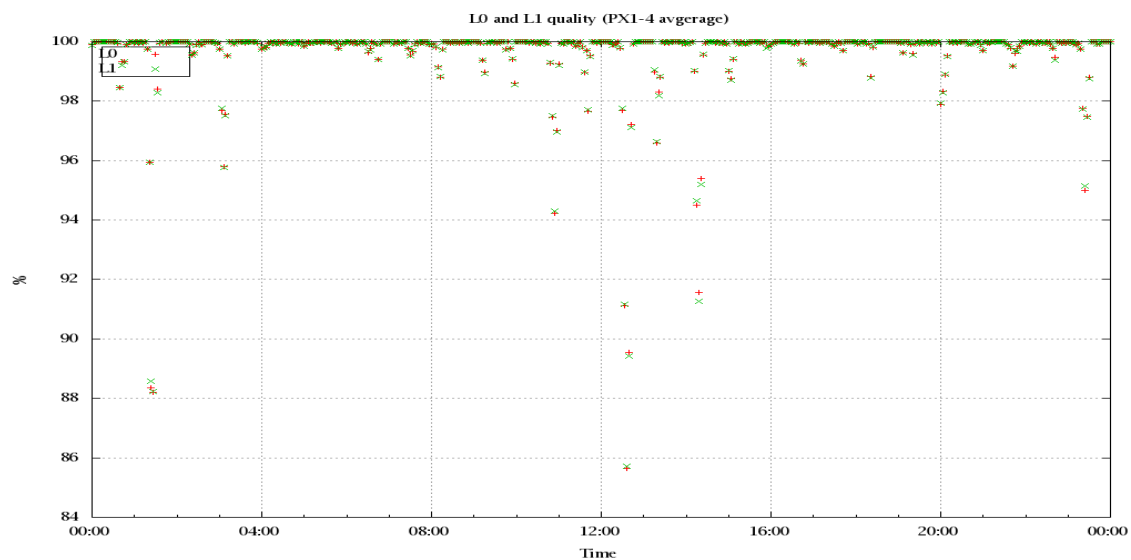


Figure 3: Level 0 and 1C overall quality

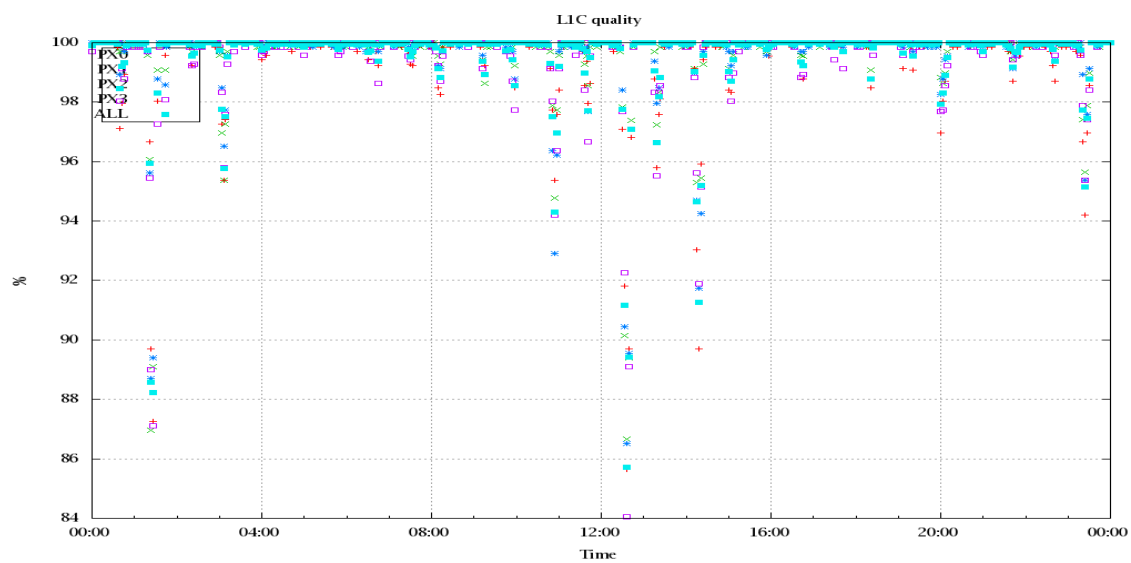


Figure 4: Level 1C quality

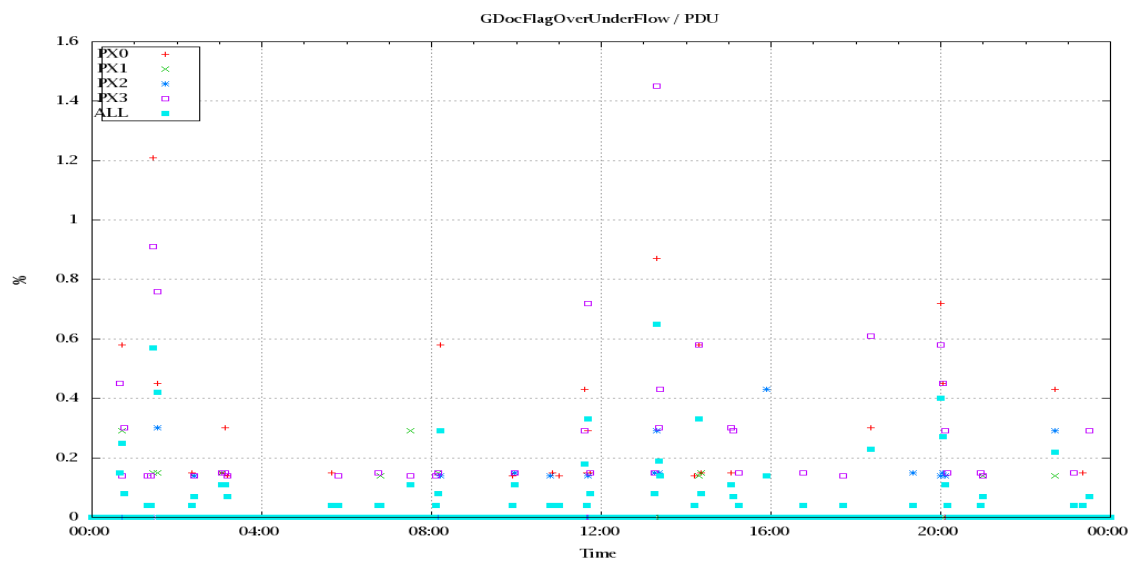


Figure 5: OverUnderFlowFlag timeseries

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.

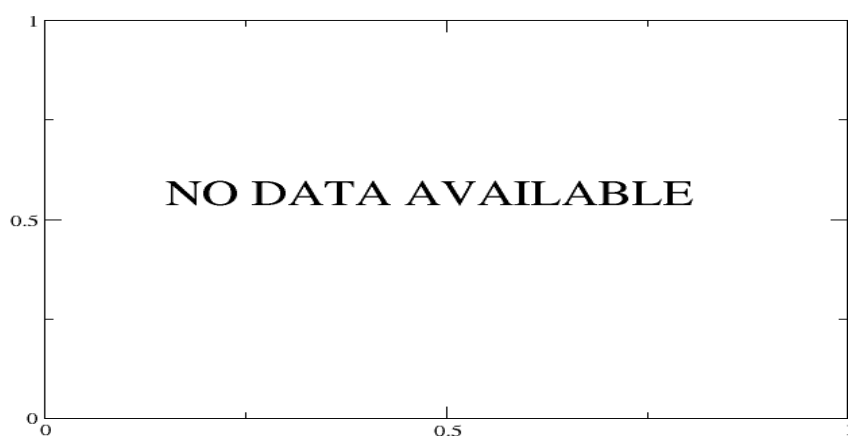


Figure 6: Average Radiance differences: OBS-CAL

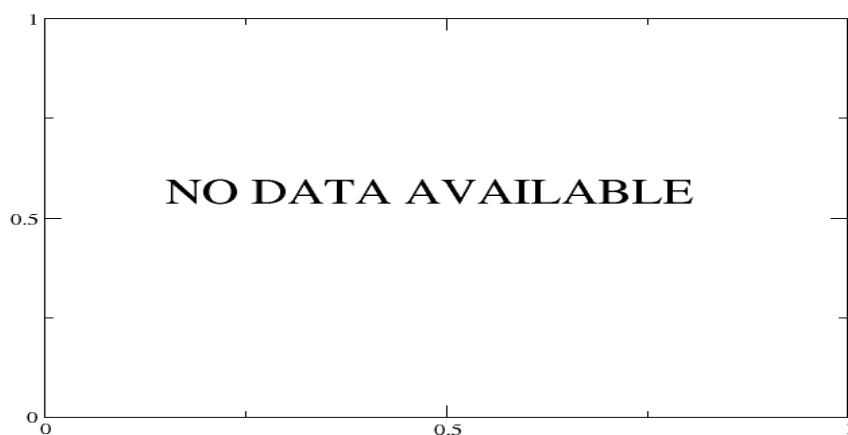


Figure 7: Standard Deviation of Radiance differences

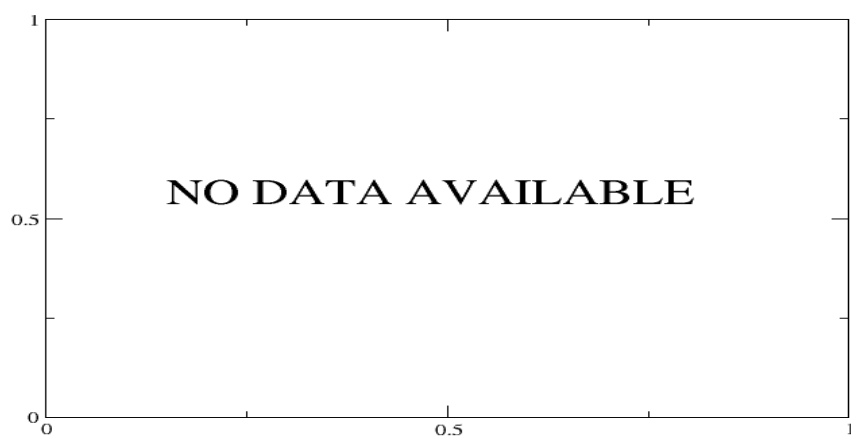


Figure 8: Average Radiance differences: OBS-CAL

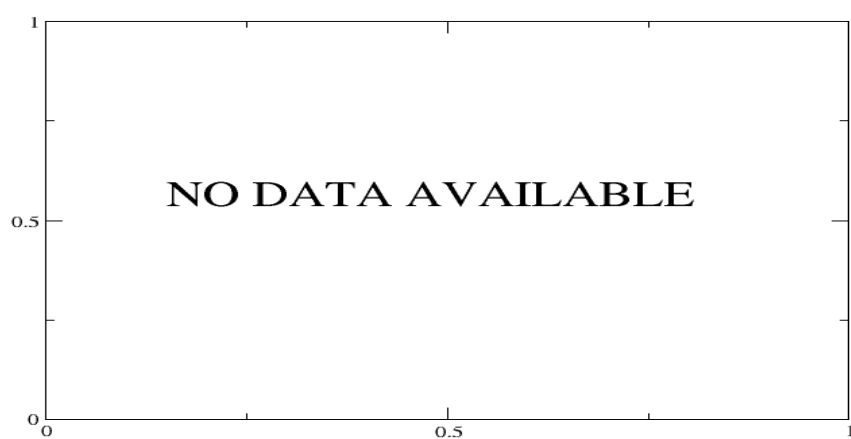


Figure 9: Standard Deviation of Radiance differences

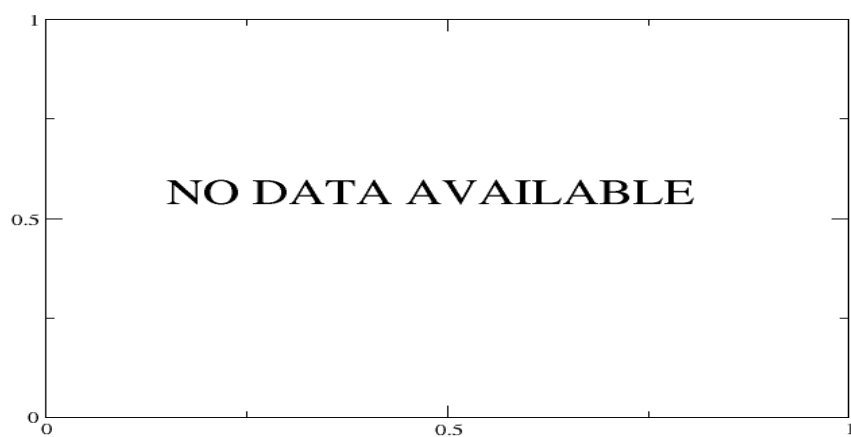


Figure 10: Radiance Anomaly in BRT: All Channels

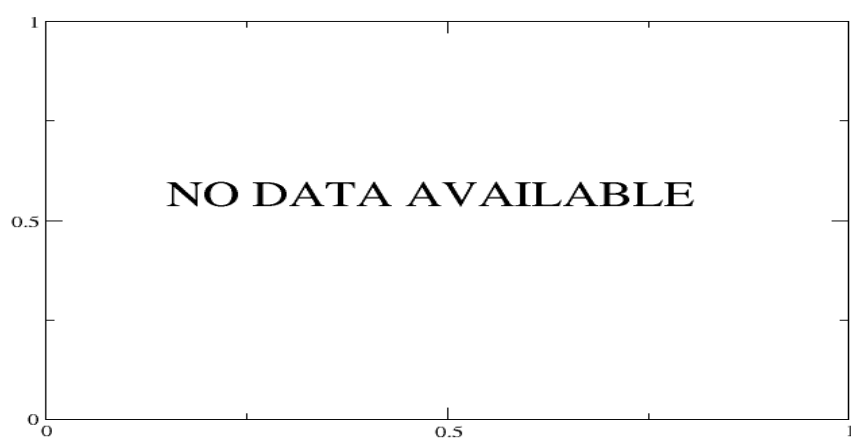


Figure 11: Radiance Anomaly in BRT: IASI Band 1

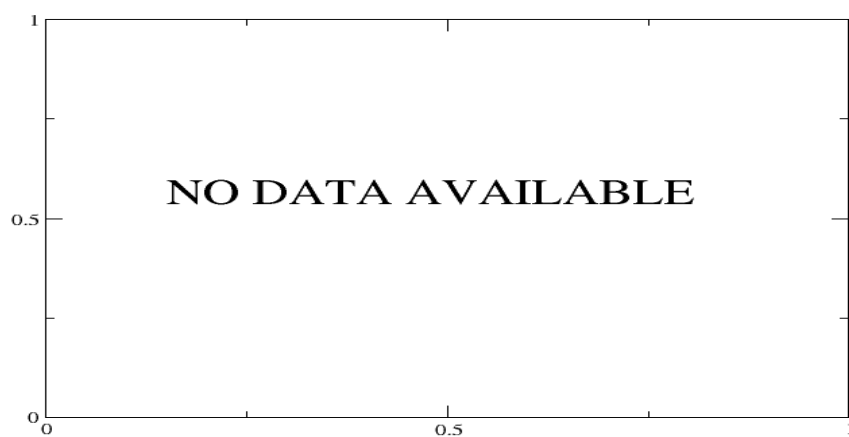


Figure 12: Radiance Anomaly in BRT: IASI Band 2



Figure 13: Radiance Anomaly in BRT: IASI Band 3

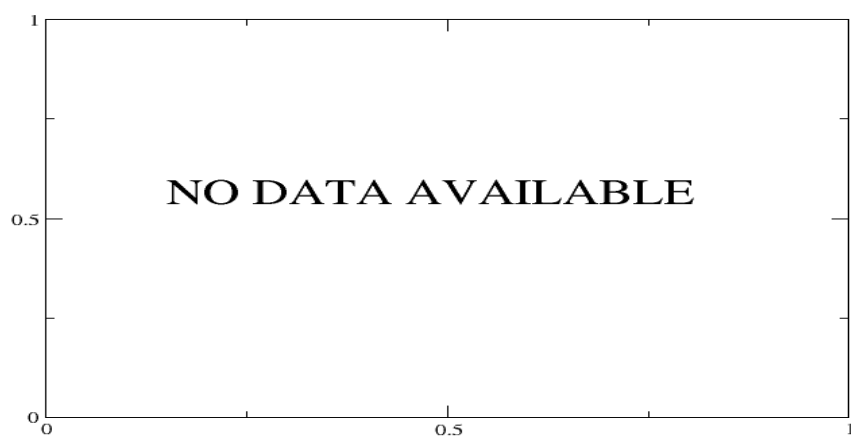


Figure 14: Radiance Anomaly in BRT: CO2 14

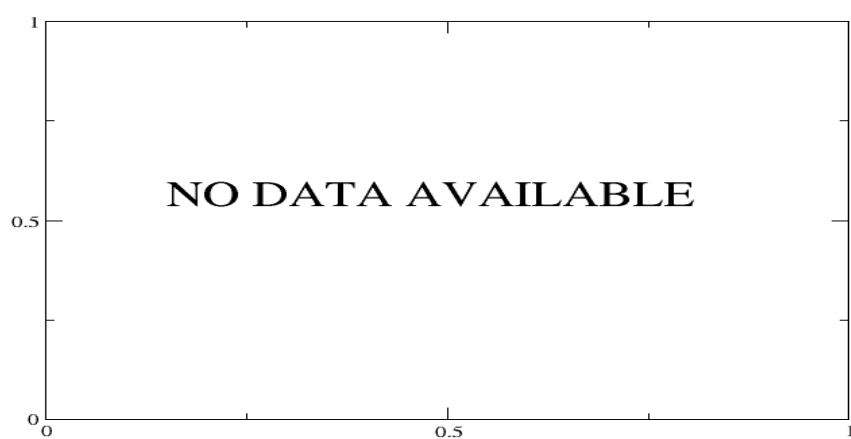


Figure 15: Radiance Anomaly in BRT: CO2 4.3



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.

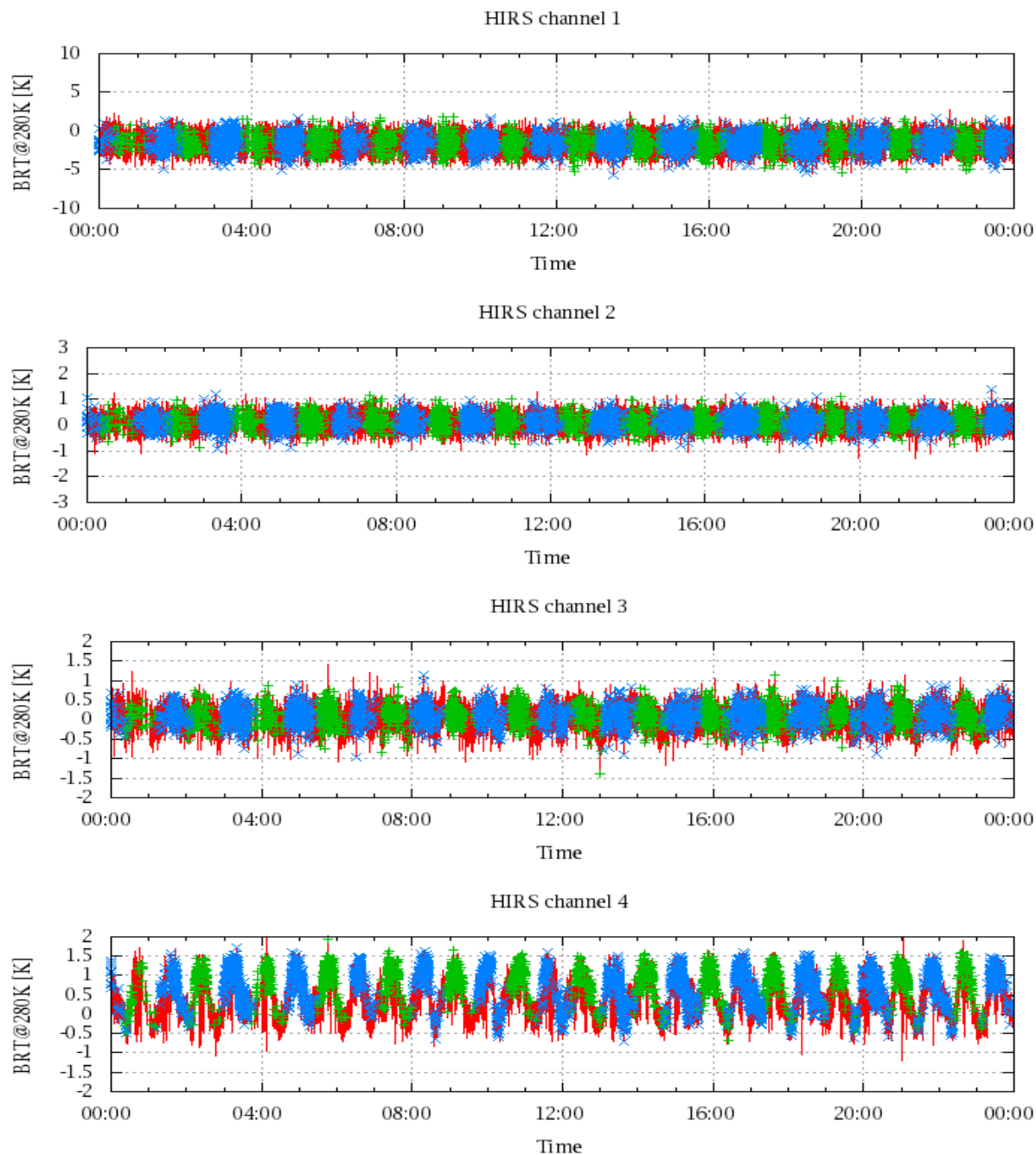


Figure 17: Radiance Differences in BRT

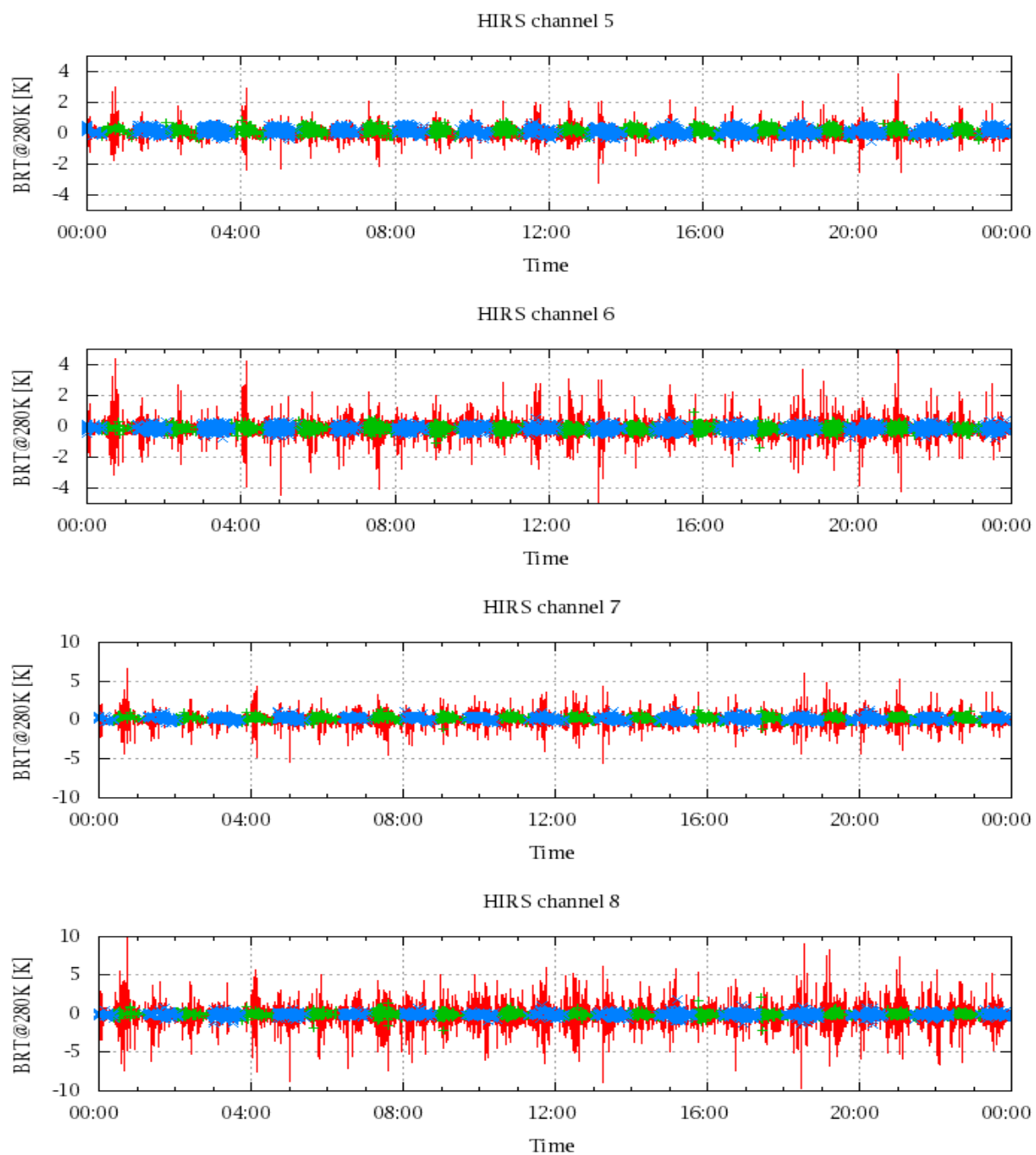


Figure 18: Radiance Differences in BRT

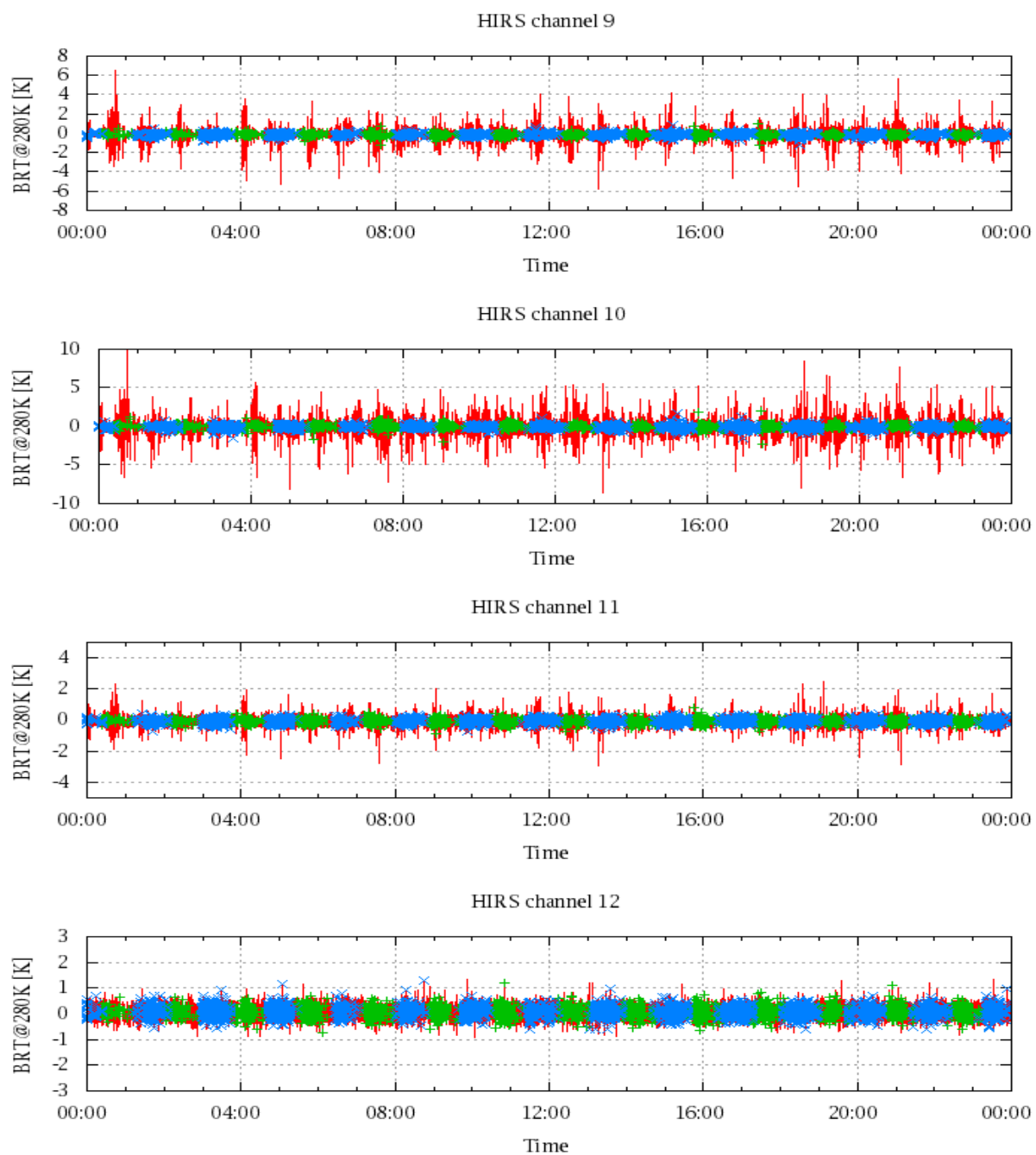


Figure 19: Radiance Differences in BRT

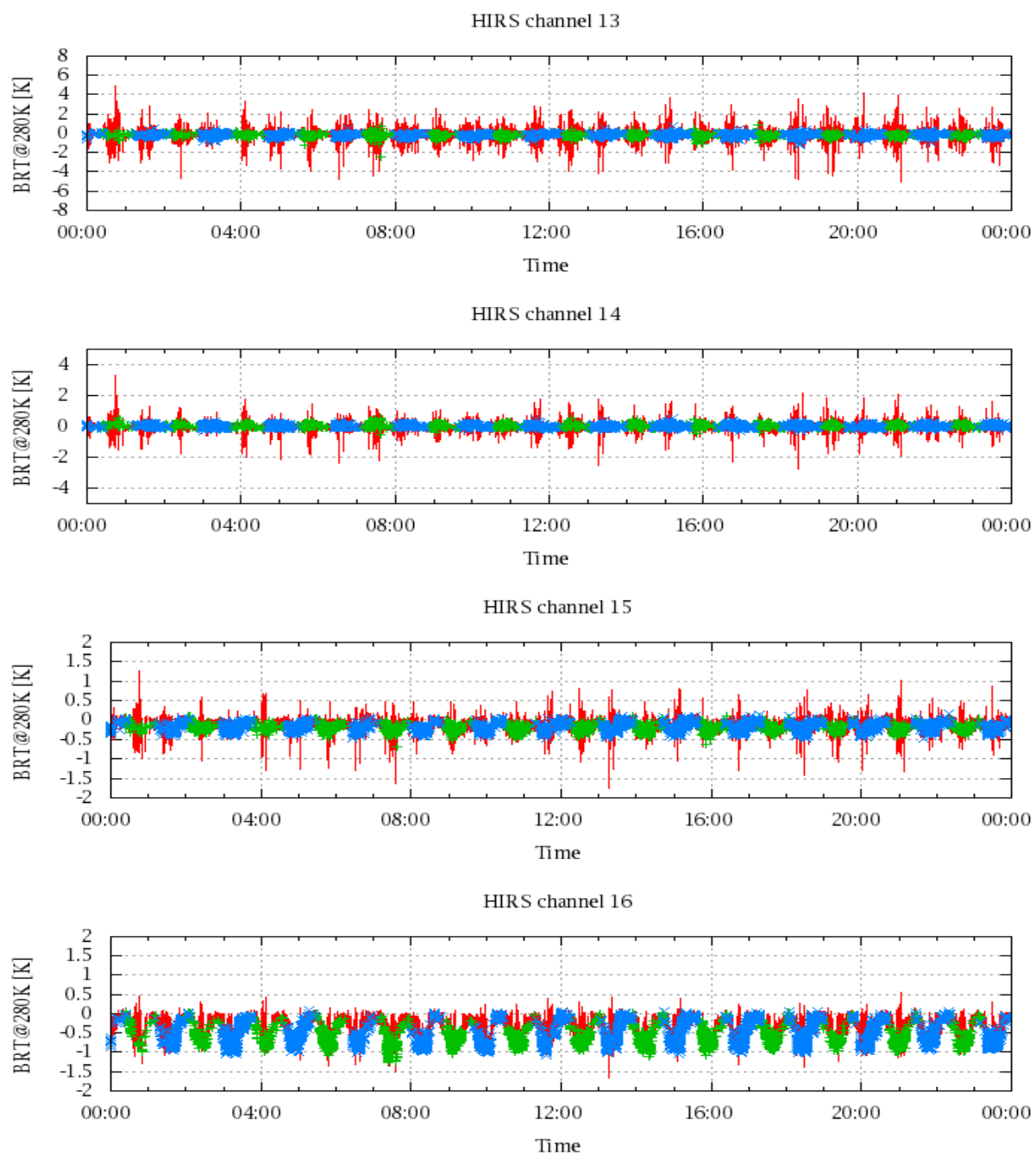


Figure 20: Radiance Differences in BRT

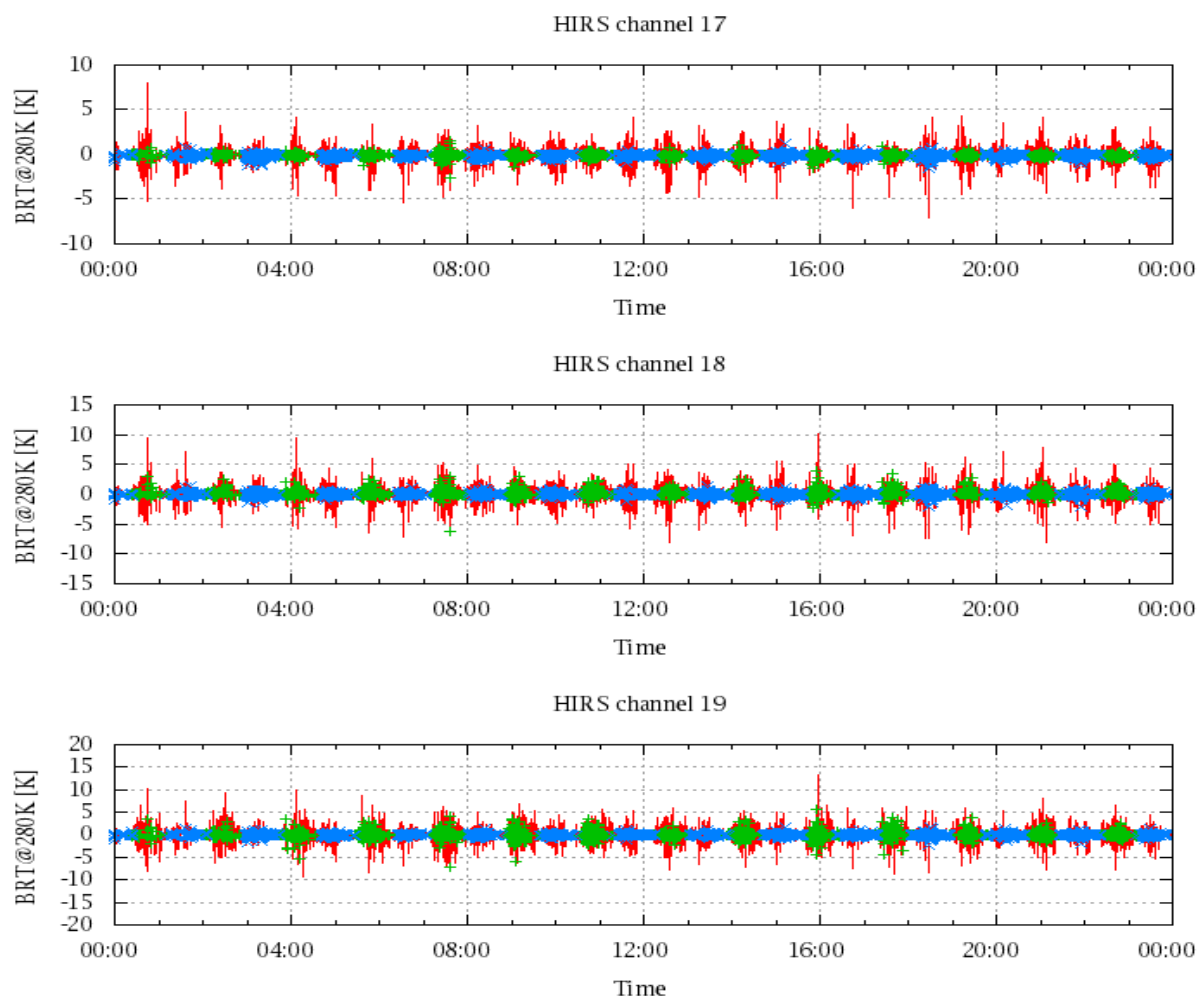


Figure 21: Radinace Differences in BRT