IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

25/12/2013 00:00:00 - 26/12/2013 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 25/12/2013 00:00:00 - 26/12/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 25/12/2013 00:00:00 - 26/12/2013 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)	401	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	4393	4397	20131225024055.025	20131225024055.889
PX1 (130)	4406	4408	20131225024057.834	20131225024058.268
PX1 (130)	4420	4422	20131225024100.861	20131225024102.807
PX1 (130)	4427	4433	20131225024103.889	20131225024105.186
PX1 (130)	6723	6727	20131225025115.368	20131225025116.231
PX1 (130)	6738	6741	20131225025120.122	20131225025120.770
PX1 (130)	6743	6752	20131225025121.204	20131225025123.149
PX2 (135)	4393	4397	20131225024055.025	20131225024055.889
PX2 (135)	4406	4408	20131225024057.834	20131225024058.268
PX2 (135)	4420	4422	20131225024100.861	20131225024102.807
PX2 (135)	4427	4433	20131225024103.889	20131225024105.186
PX2 (135)	6723	6727	20131225025115.368	20131225025116.231
PX2 (135)	6738	6741	20131225025120.122	20131225025120.770
PX2 (135)	6743	6752	20131225025121.204	20131225025123.149
PX3 (140)	4393	4397	20131225024055.025	20131225024055.889
PX3 (140)	4406	4408	20131225024057.834	20131225024058.268
PX3 (140)	4420	4422	20131225024100.861	20131225024102.807
PX3 (140)	4427	4433	20131225024103.889	20131225024105.186

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	6723	6727	20131225025115.368	20131225025116.231
PX3 (140)	6738	6741	20131225025120.122	20131225025120.770
PX3 (140)	6743	6752	20131225025121.204	20131225025123.149
PX4 (145)	4393	4397	20131225024055.025	20131225024055.889
PX4 (145)	4406	4408	20131225024057.834	20131225024058.268
PX4 (145)	4420	4422	20131225024100.861	20131225024102.807
PX4 (145)	4426	4433	20131225024103.674	20131225024105.186
PX4 (145)	6723	6726	20131225025115.368	20131225025116.017
PX4 (145)	6737	6741	20131225025119.907	20131225025120.770
PX4 (145)	6743	6752	20131225025121.204	20131225025123.149
IMG (150)	9204	9209	20131225024054.807	20131225024055.889
IMG (150)	9231	9238	20131225024100.646	20131225024102.807
IMG (150)	9242	9249	20131225024103.674	20131225024105.186
IMG (150)	11842	11846	20131225025115.149	20131225025116.017
IMG (150)	11861	11865	20131225025119.907	20131225025120.770
IMG (150)	11867	11876	20131225025121.204	20131225025123.149
VER (160)	6098	6104	20131225024052.861	20131225024108.861
AUX (180)	1202	1204	20131225024053.295	20131225024109.295

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
25/12/2013 00:00:10	-	Normal operation
25/12/2013 05:14:34	Normal operation	Auxiliary ASE synchronised
25/12/2013 05:16:26	Auxiliary ASE synchronised	External calibration
25/12/2013 09:10:34	External calibration	Auxiliary ASE synchronised
25/12/2013 09:12:26	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)	99.52 %	-
GQisFlagQual set (PX2)	99.60 %	-
GQisFlagQual set (PX3)	99.62 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.58 %	-

Table 4: Quality flags

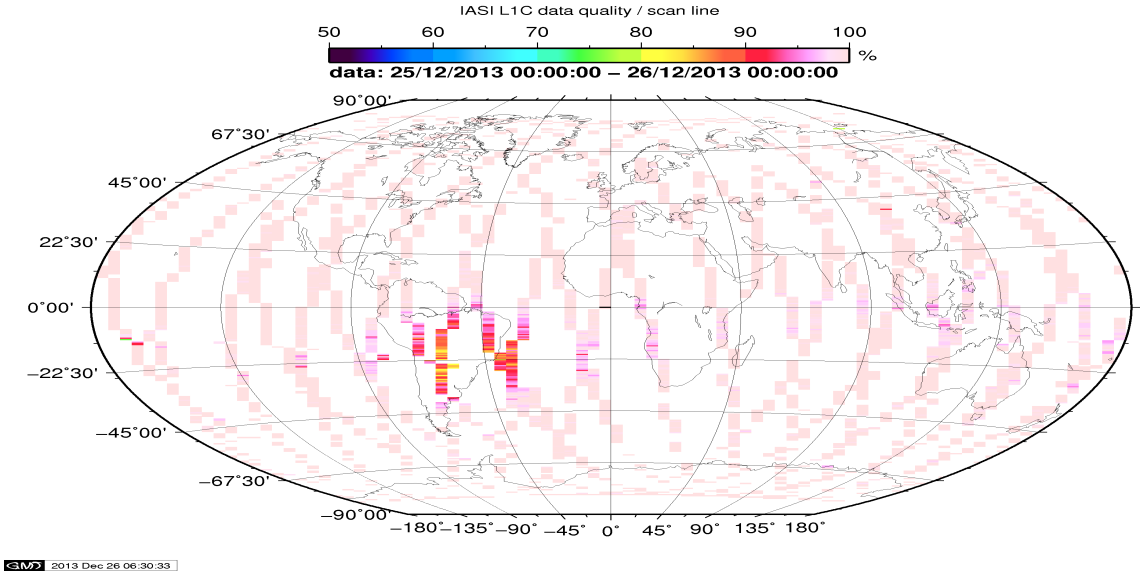

Figure 1: L1C data quality

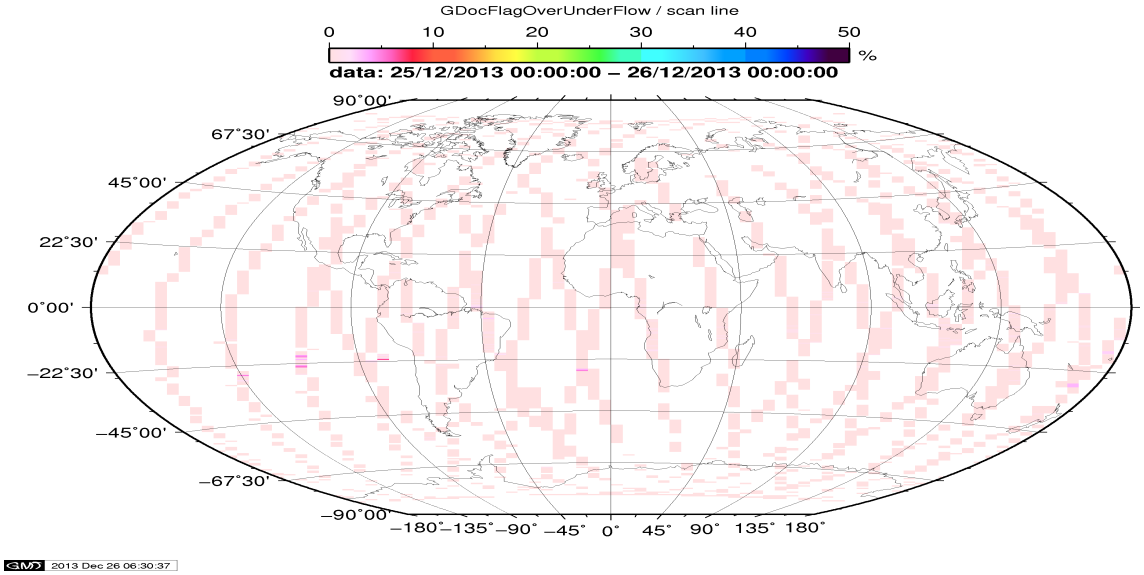

Figure 2: Flag of Over and Under Flows

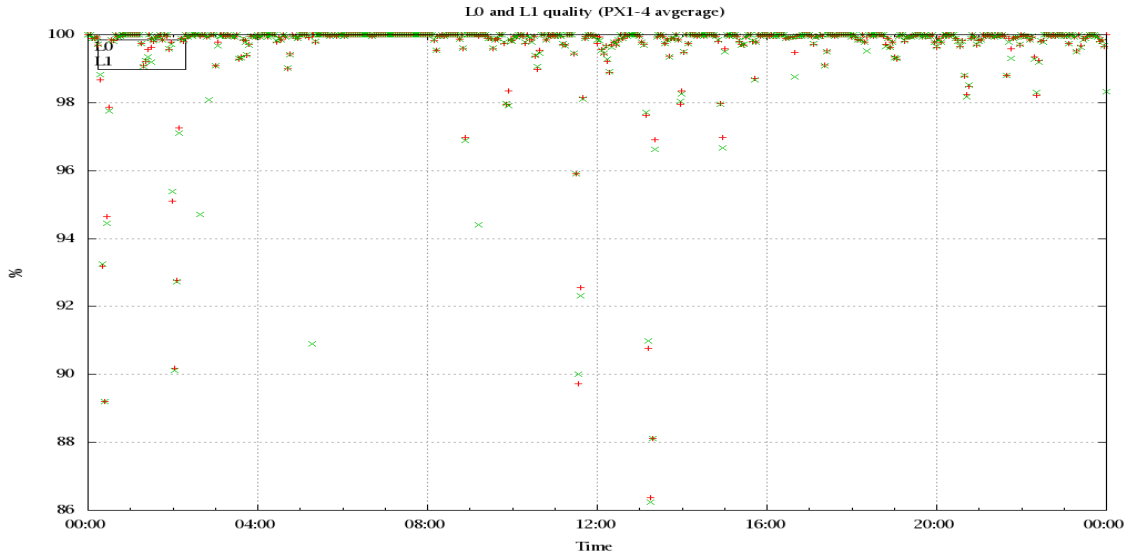

Figure 3: Level 0 and 1C overall quality

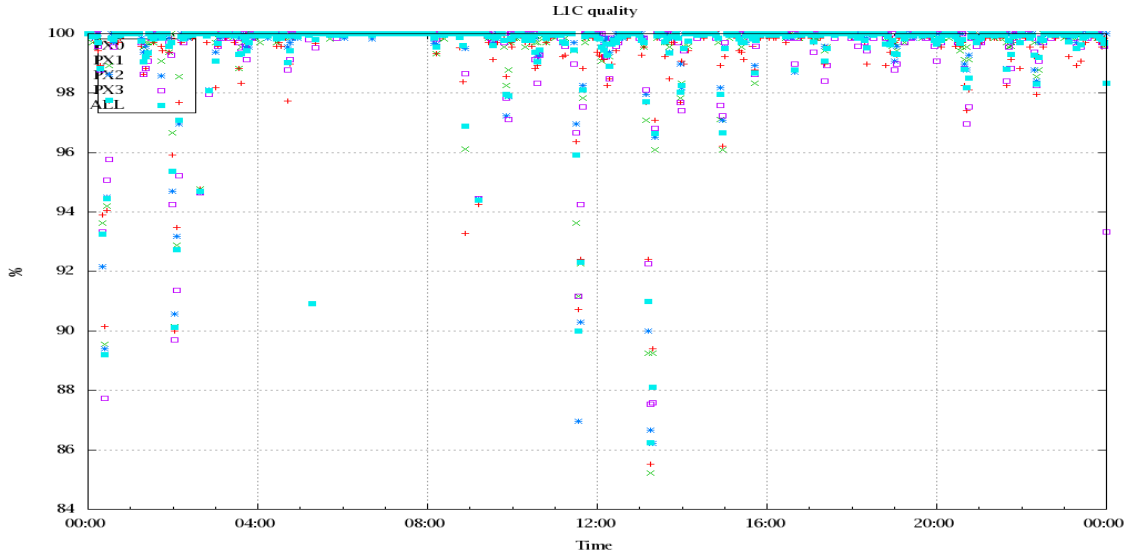

Figure 4: Level 1C quality

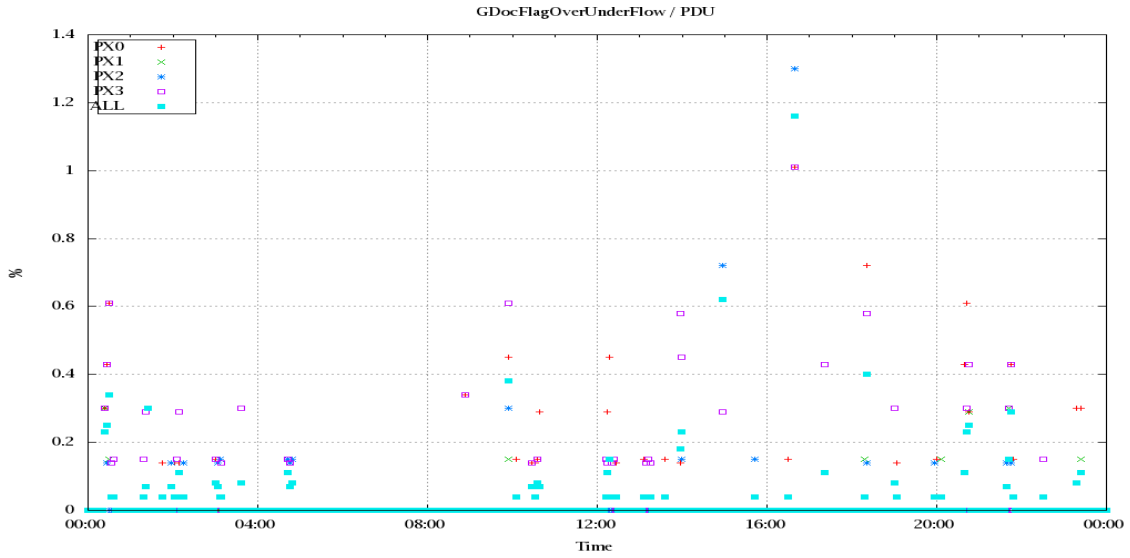

Figure 5: OverUnderFlowFlag timeseries

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 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.

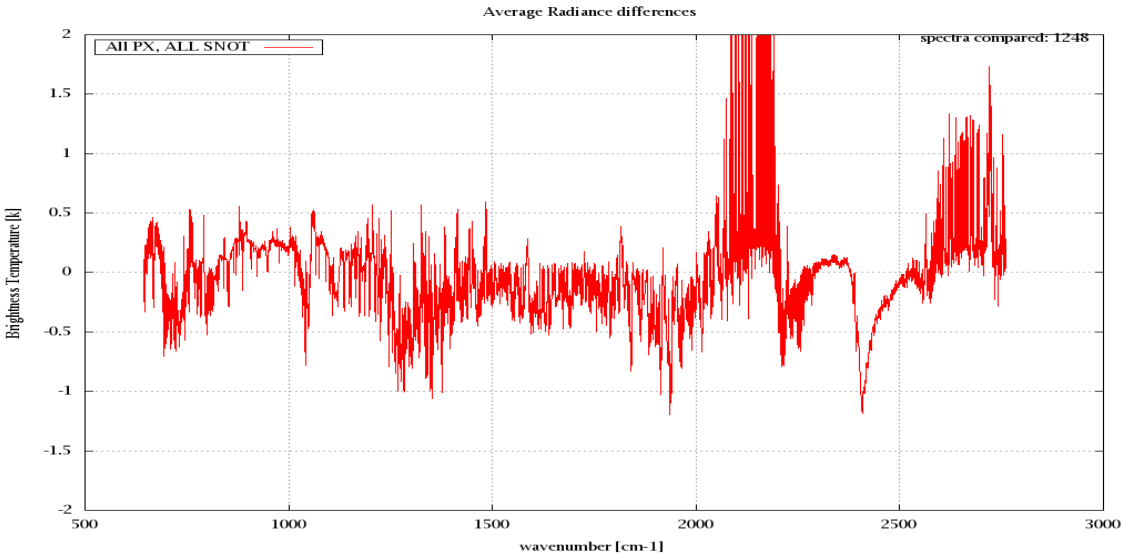

Figure 6: Average Radiance differences: OBS-CAL

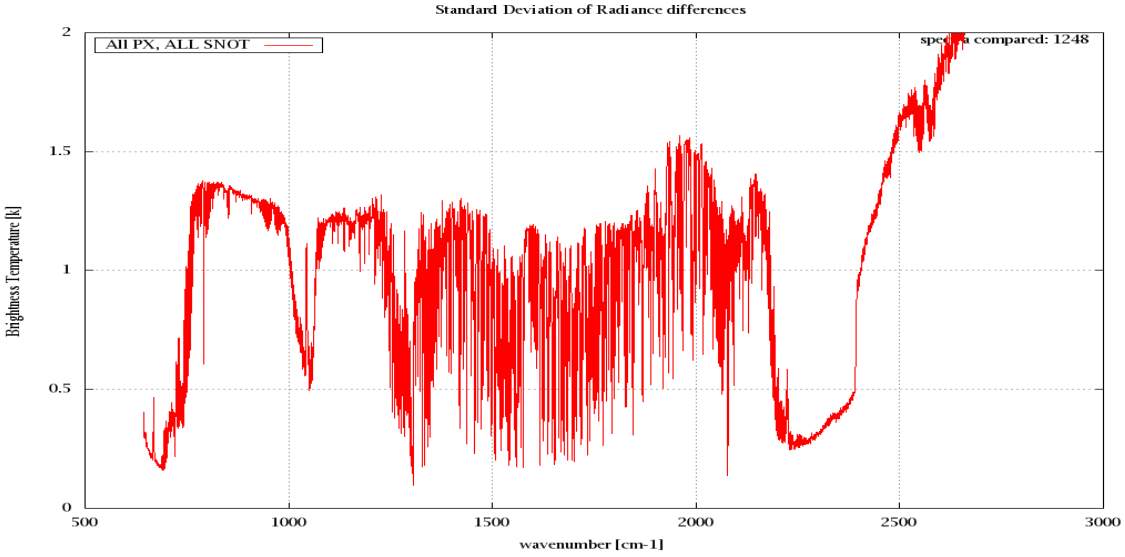

Figure 7: Standard Deviation of Radiance differences

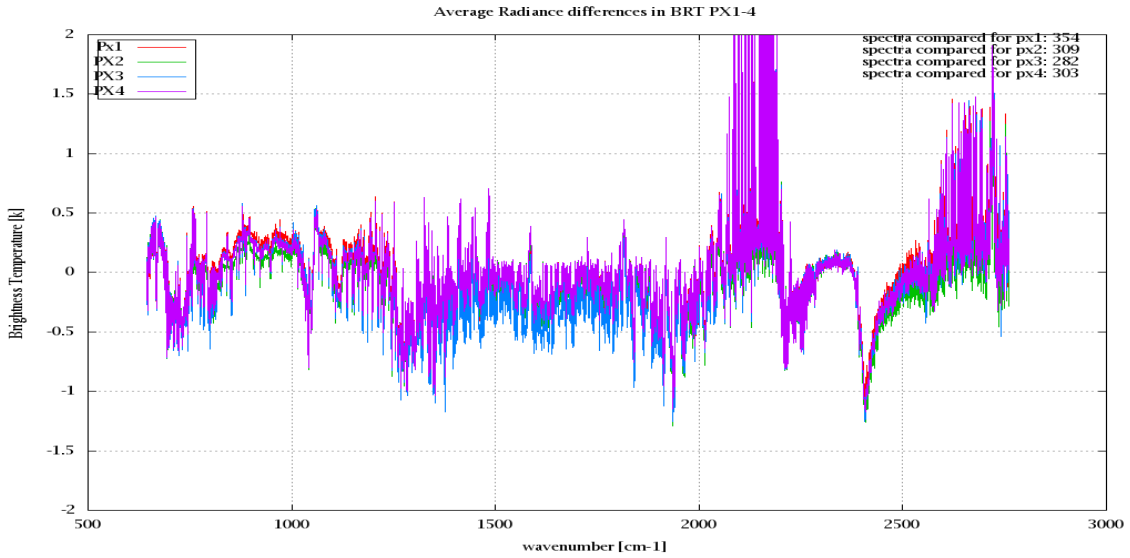

Figure 8: Average Radiance differences: OBS-CAL

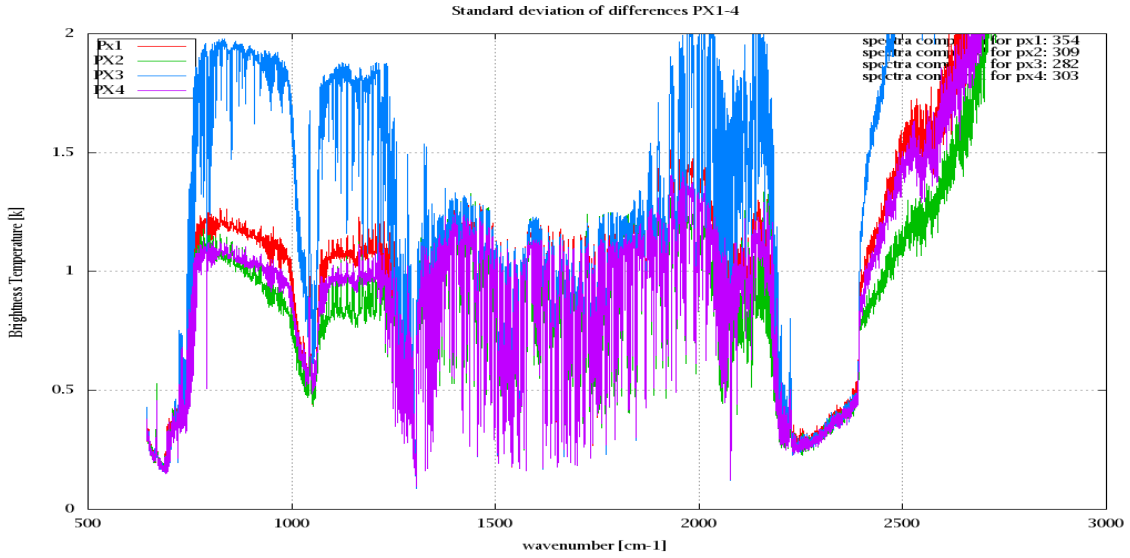

Figure 9: Standard Deviation of Radiance differences

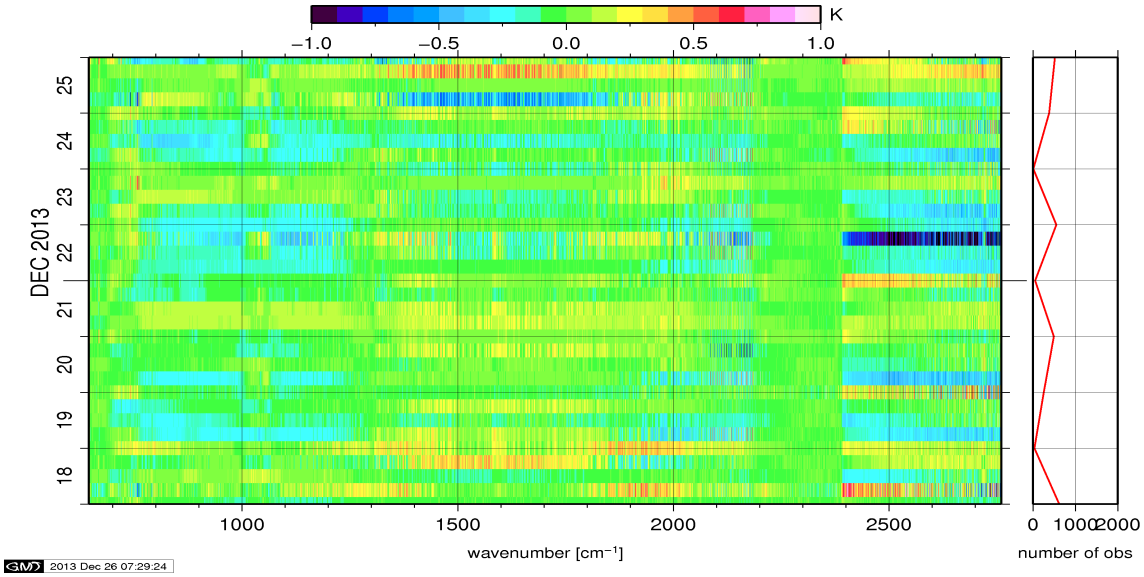

Figure 10: Radiance Anomaly in BRT: All Channels

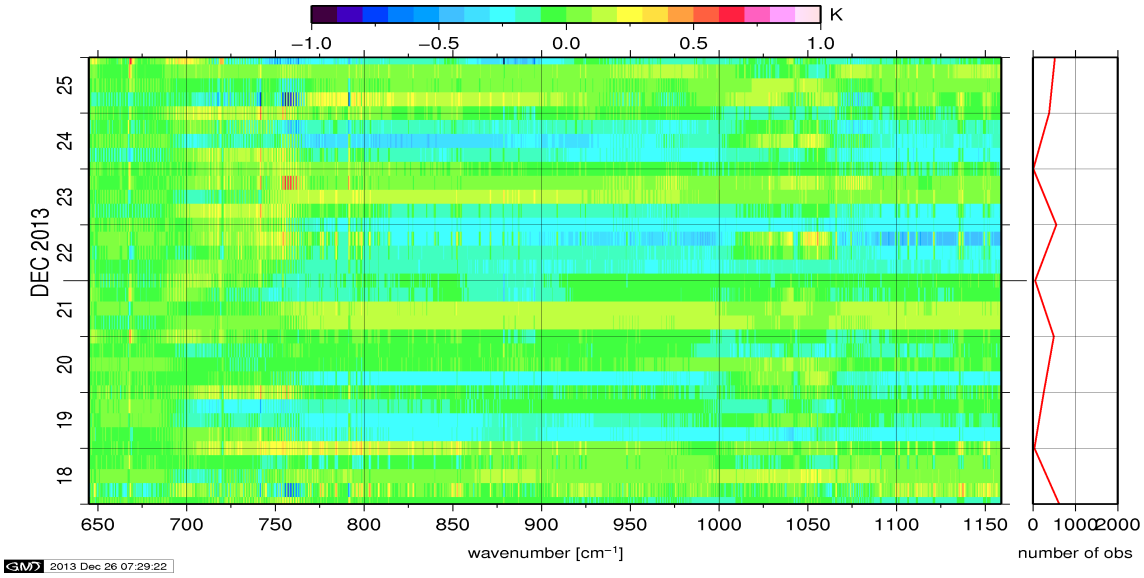

Figure 11: Radiance Anomaly in BRT: IASI Band 1

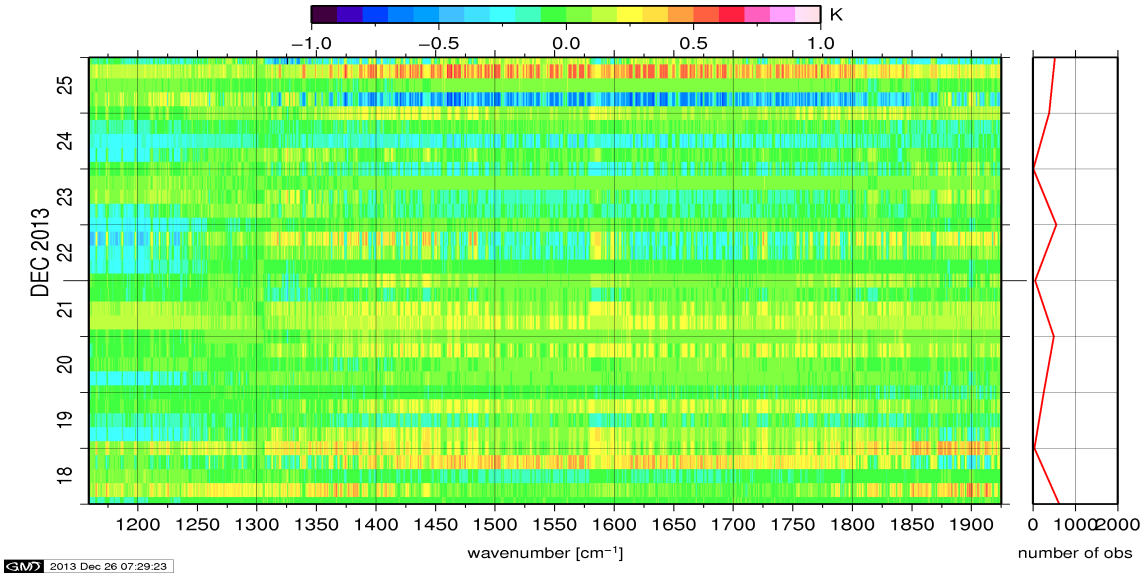

Figure 12: Radiance Anomaly in BRT: IASI Band 2

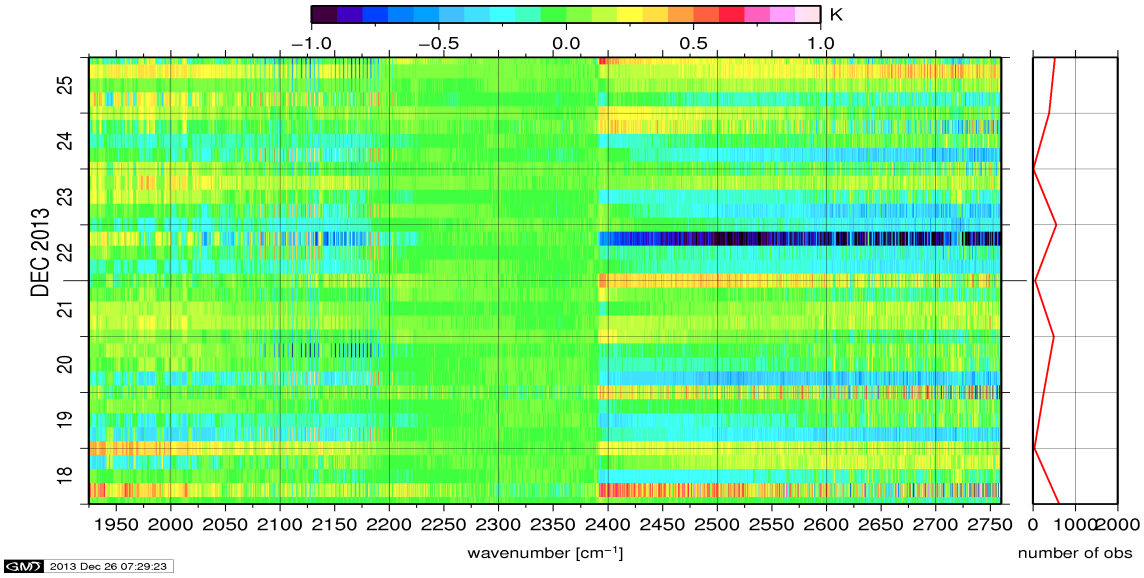

Figure 13: Radiance Anomaly in BRT: IASI Band 3

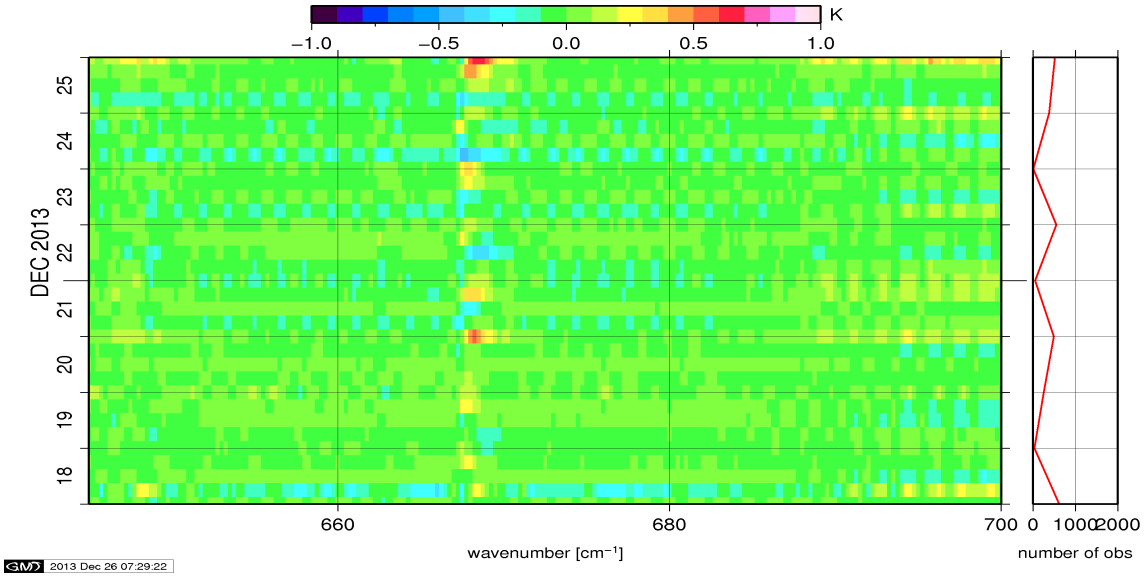

Figure 14: Radiance Anomaly in BRT: CO2 14

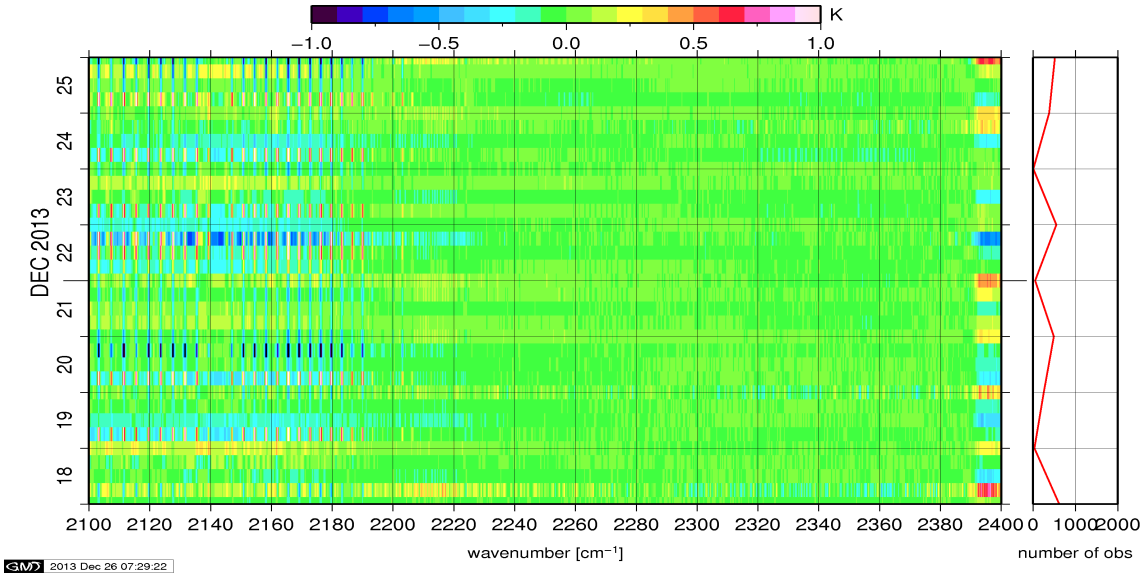

Figure 15: Radiance Anomaly in BRT: CO2 4.3

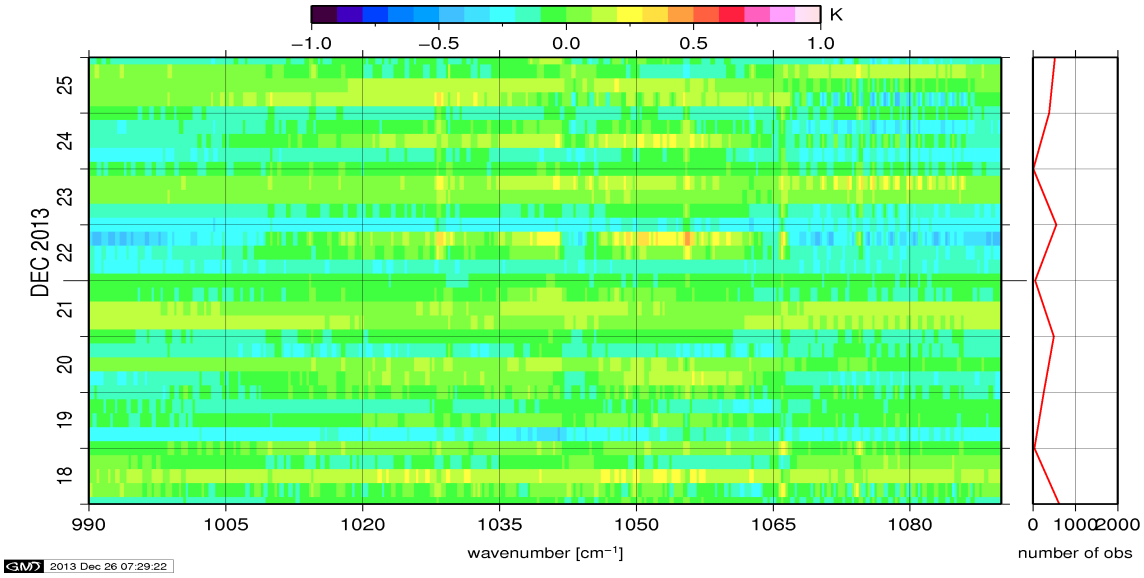

Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance 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.

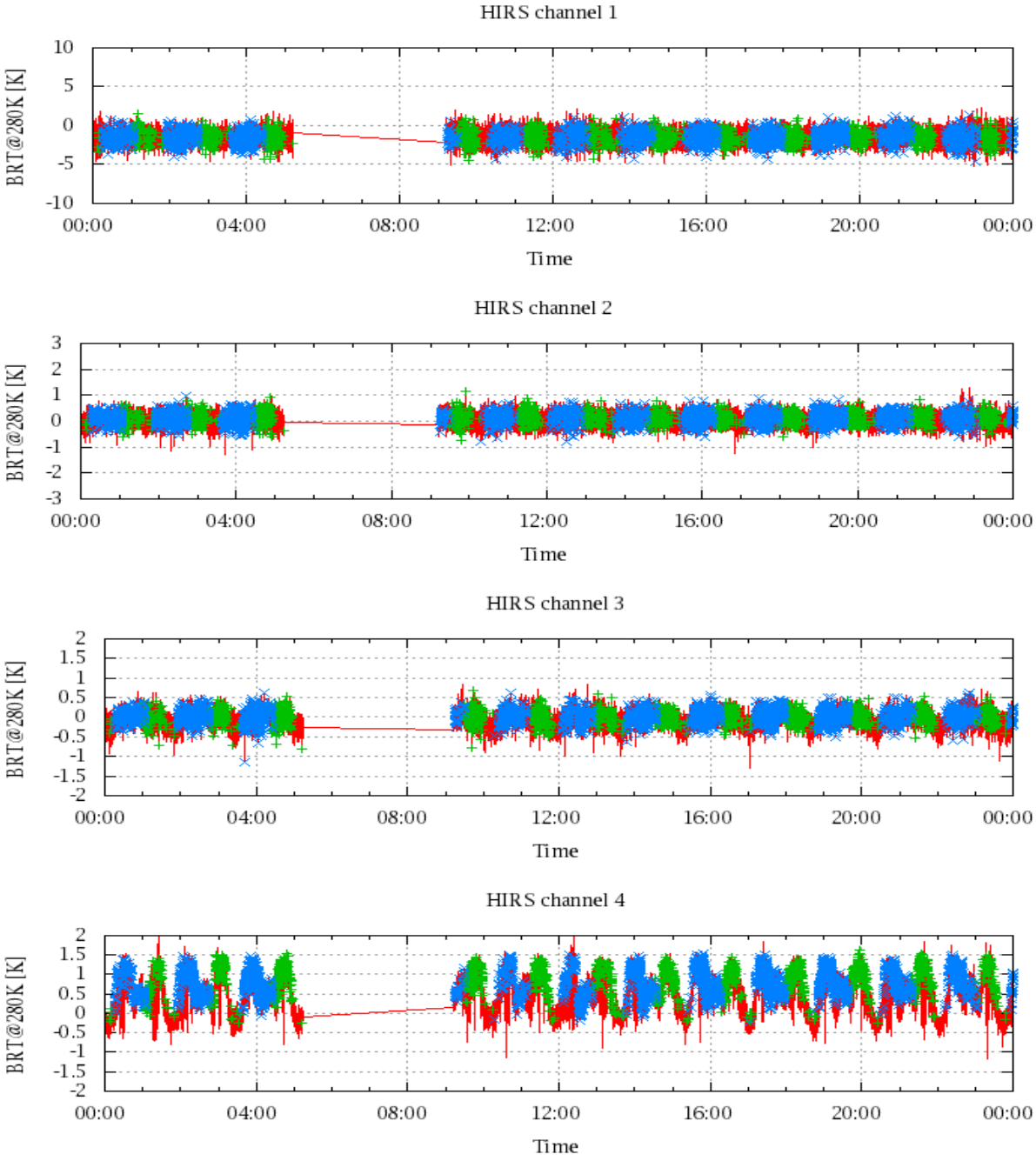

Figure 17: Radiance Differences in BRT

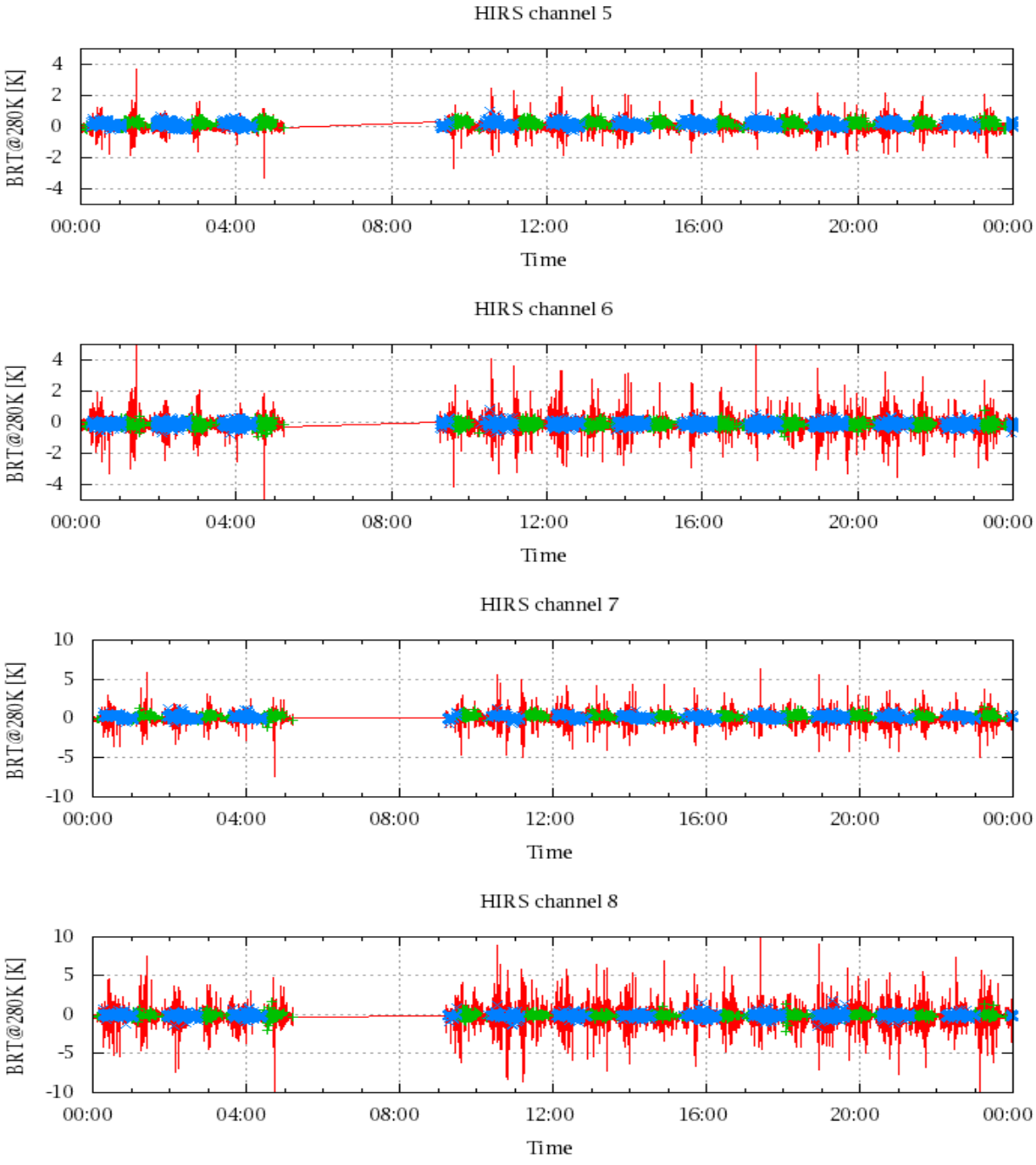

Figure 18: Radiance Differences in BRT

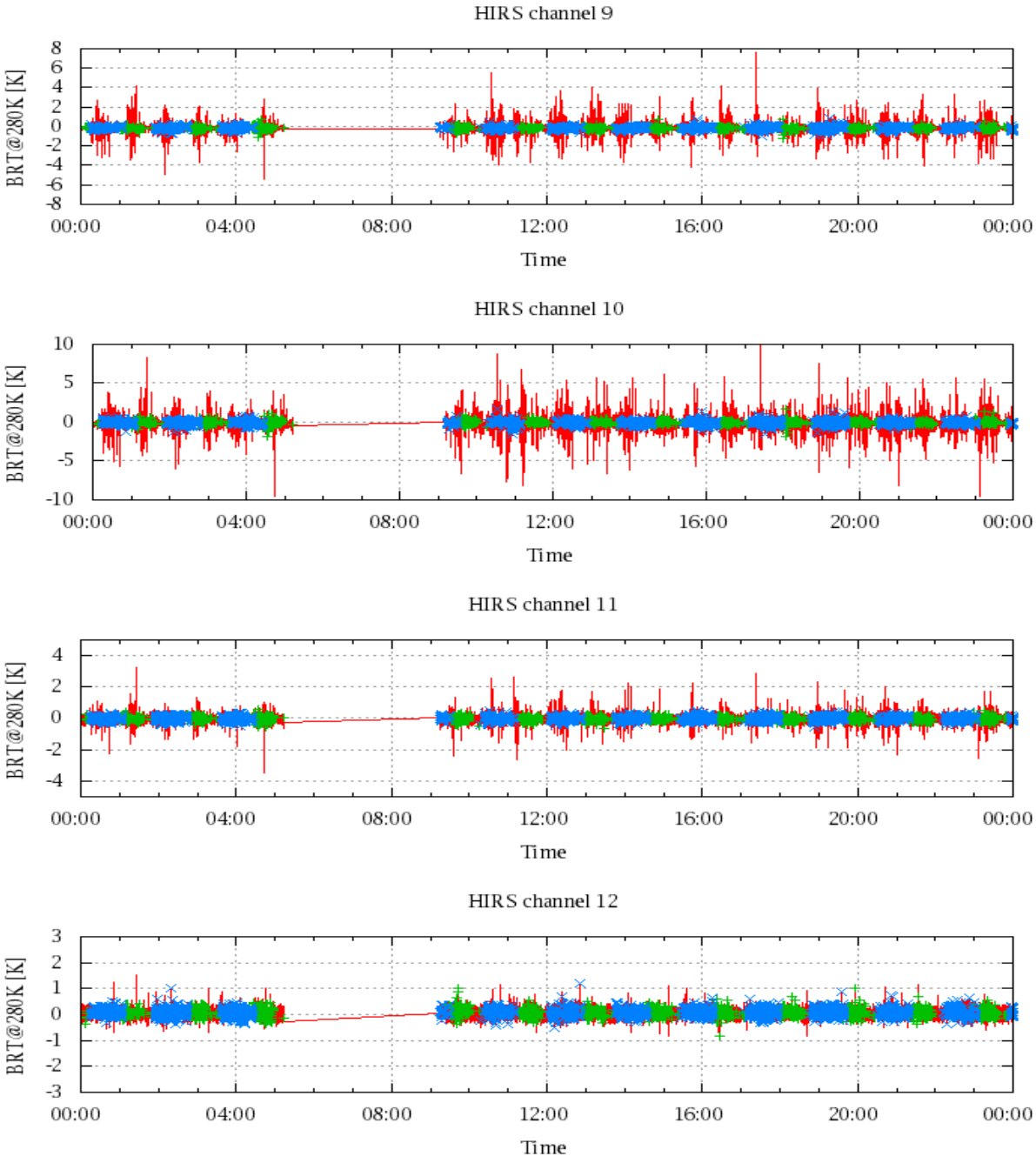

Figure 19: Radiance Differences in BRT

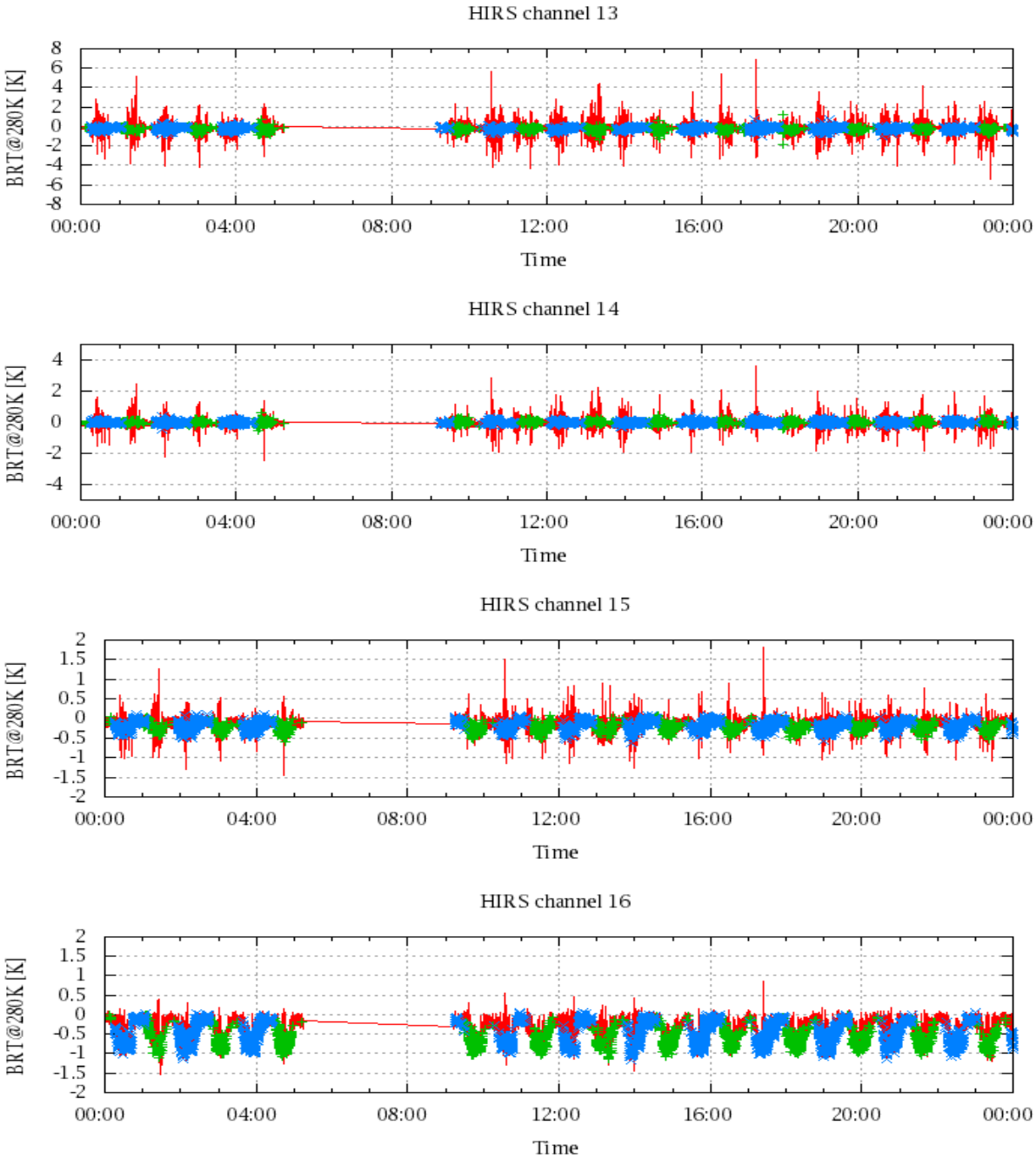

Figure 20: Radiance Differences in BRT

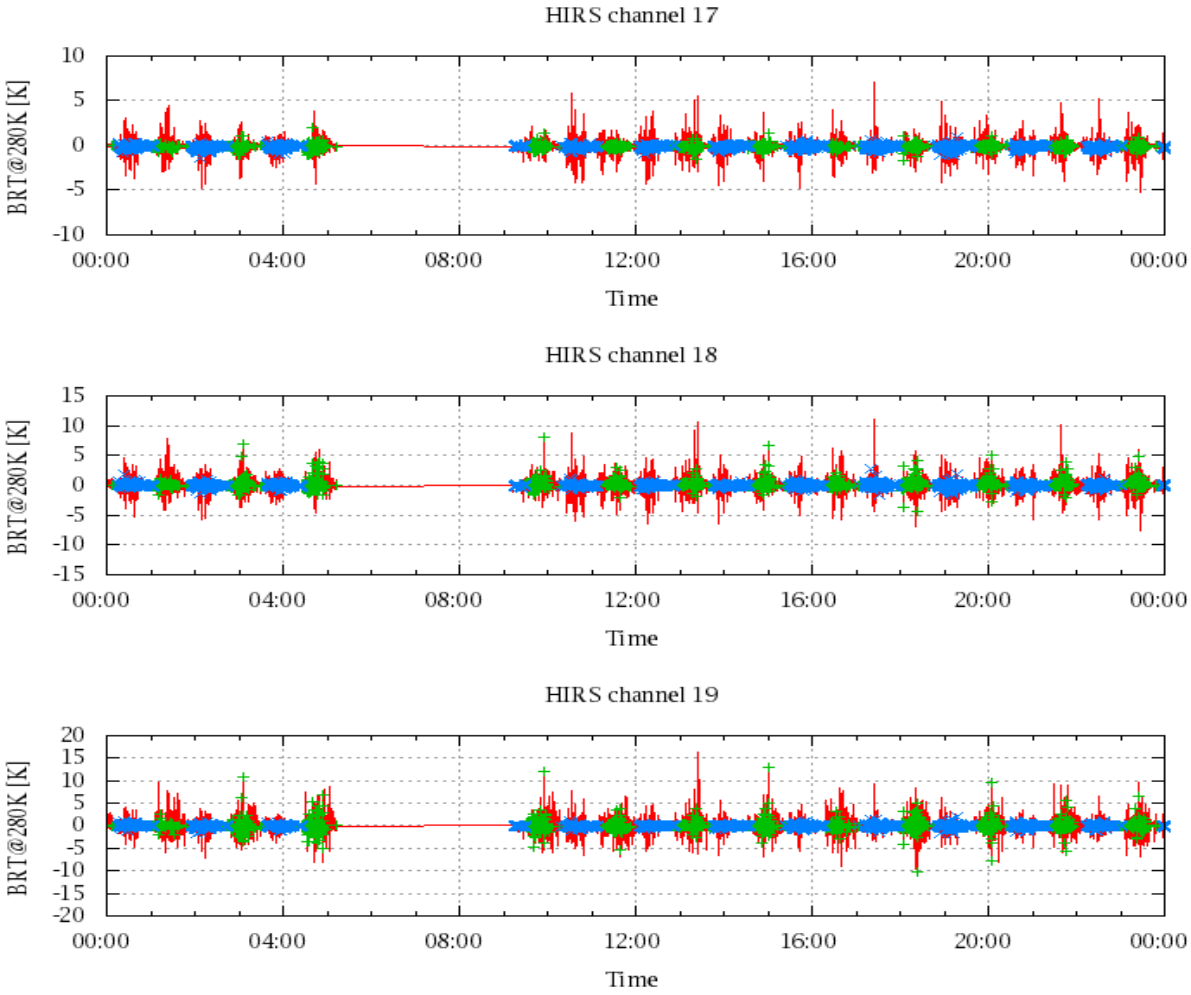

Figure 21: Radinace Differences in BRT