IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

08/12/2010 00:00:00 - 09/12/2010 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 08/12/2010 00:00:00 - 09/12/2010 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 08/12/2010 00:00:00 - 09/12/2010 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)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	**Seq from**	**Seq to**	**Time from**	**Time to**
PX1 (130)	1485	1487	20101208021721.117	20101208021721.550
PX1 (130)	15564	15569	20101208164053.987	20101208164056.581
PX1 (130)	15636	15661	20101208164114.096	20101208164121.014
PX1 (130)	15661	15663	20101208164121.014	20101208164121.448
PX1 (130)	15667	15669	20101208164122.311	20101208164122.745
PX1 (130)	15671	16079	20101208164123.178	20101208164312.580
PX2 (135)	15564	15569	20101208164053.987	20101208164056.581
PX2 (135)	15636	15661	20101208164114.096	20101208164121.014
PX2 (135)	15661	15663	20101208164121.014	20101208164121.448
PX2 (135)	15669	16079	20101208164122.745	20101208164312.580
PX3 (140)	15564	15569	20101208164053.987	20101208164056.581
PX3 (140)	15636	15661	20101208164114.096	20101208164121.014
PX3 (140)	15666	15669	20101208164122.096	20101208164122.745
PX3 (140)	15669	16079	20101208164122.745	20101208164312.580
PX4 (145)	15564	15569	20101208164053.987	20101208164056.581
PX4 (145)	15636	15664	20101208164114.096	20101208164121.663
PX4 (145)	15664	15666	20101208164121.663	20101208164122.096
PX4 (145)	15666	16079	20101208164122.096	20101208164312.580

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	16035	16041	20101208164053.772	20101208164055.284
IMG (150)	16120	16148	20101208164114.096	20101208164120.795
IMG (150)	16151	16153	20101208164121.448	20101208164121.877
IMG (150)	16154	16156	20101208164122.096	20101208164122.526
IMG (150)	16156	235	20101208164122.526	20101208164311.279
VER (160)	607	609	20101208164046.854	20101208164053.987
VER (160)	622	697	20101208164110.850	20101208164123.178
AUX (180)	121	135	20101208164119.284	20101208164311.279

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
08/12/2010 00:00:10	-	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)	99.28 %	-
GQisFlagQual set (PX2)	99.03 %	-
GQisFlagQual set (PX3)	99.17 %	-
GQisFlagQual set (PX4)	99.30 %	-
GQisFlagQual set (all)	99.19 %	-

Table 4: Quality flags

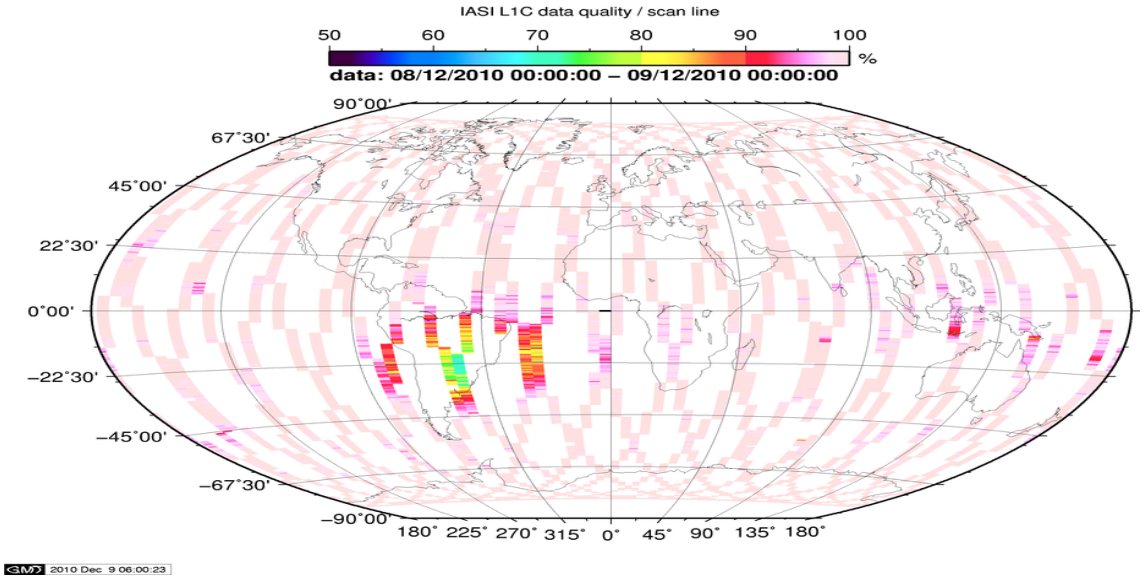

Figure 1: L1C data quality

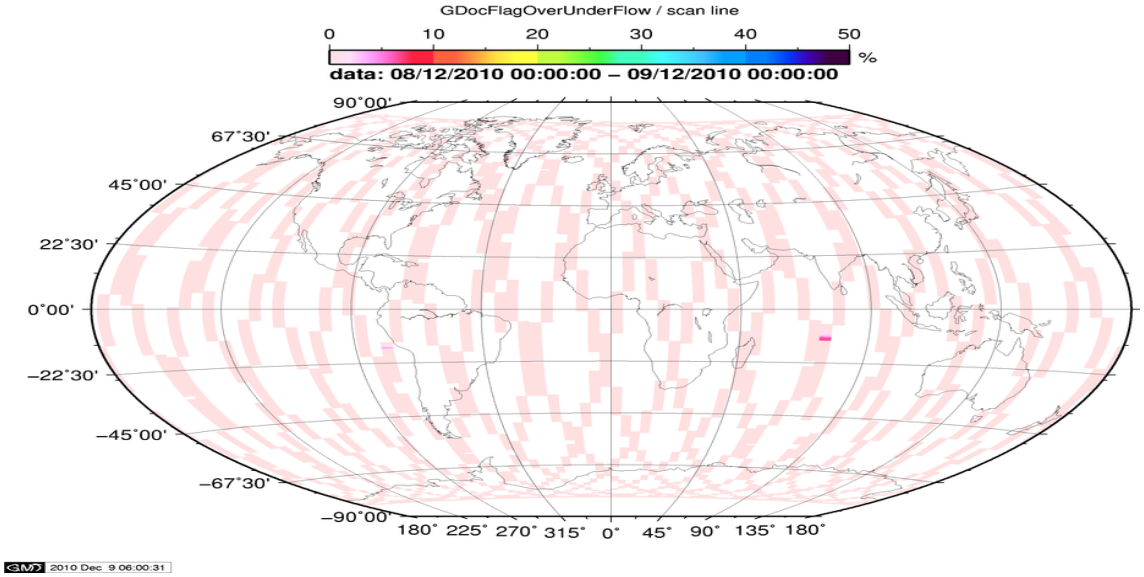

Figure 2: Flag of Over and Under Flows

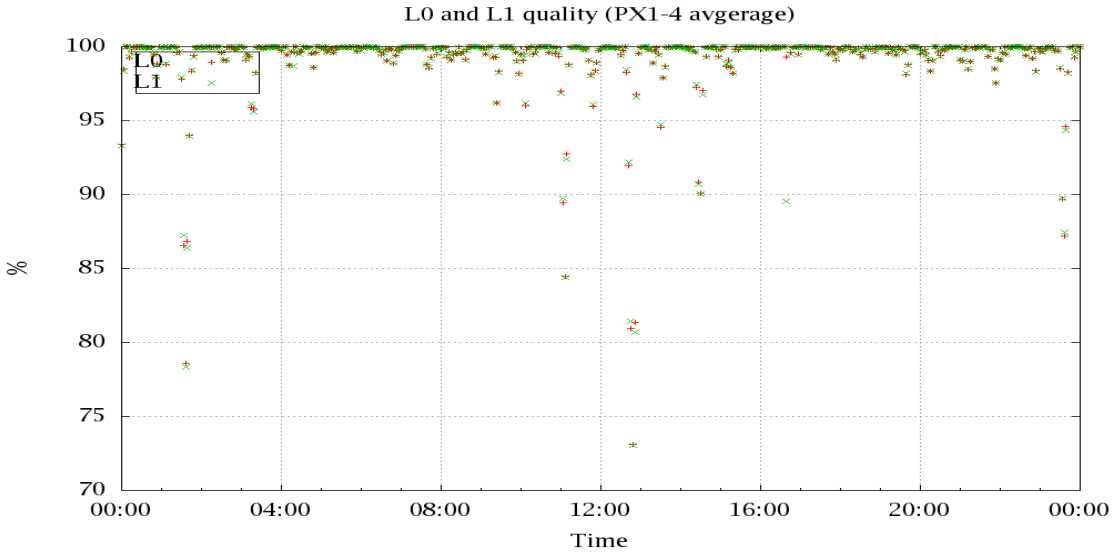

Figure 3: Level 0 and 1C overall quality

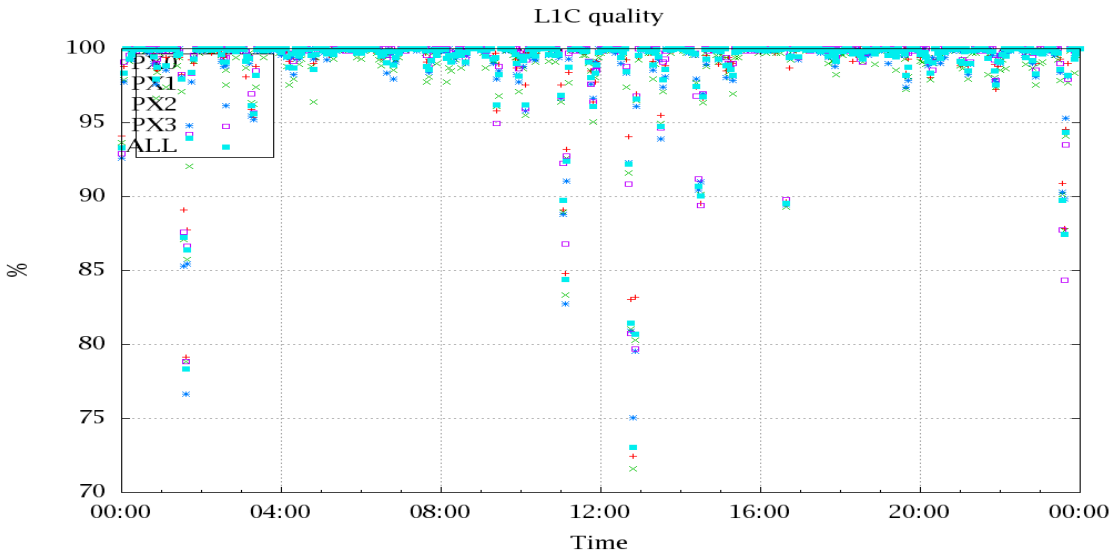

Figure 4: Level 1C quality

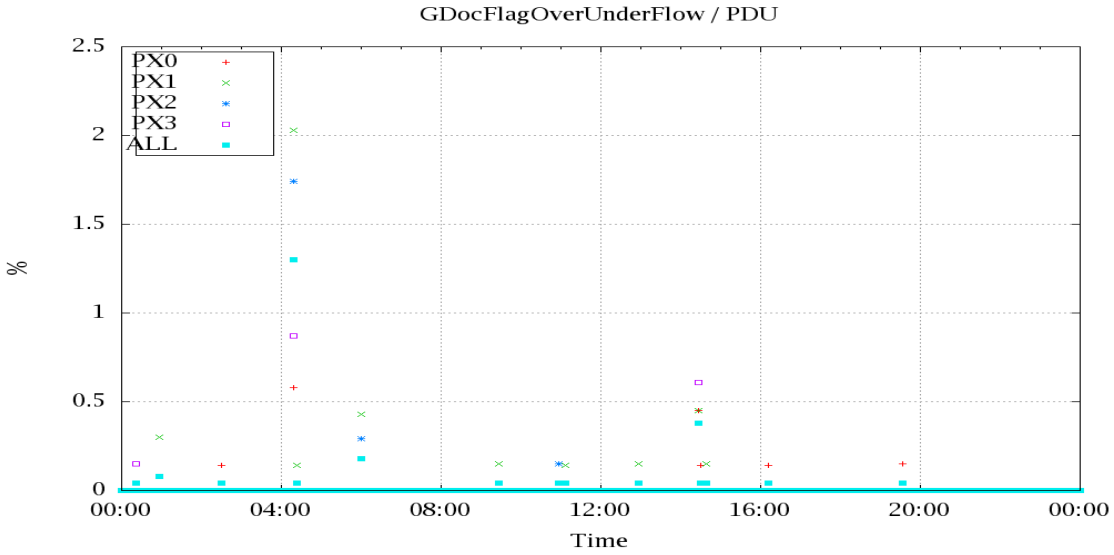

Figure 5: OverUnderFlowFlag timeseries

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.

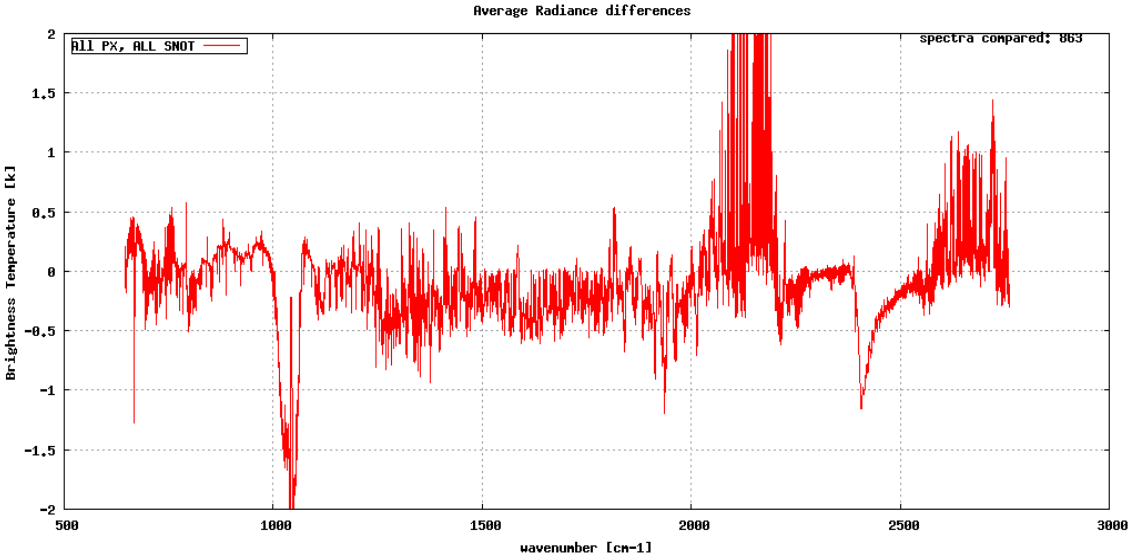

Figure 6: Average Radiance differences: OBS-CAL

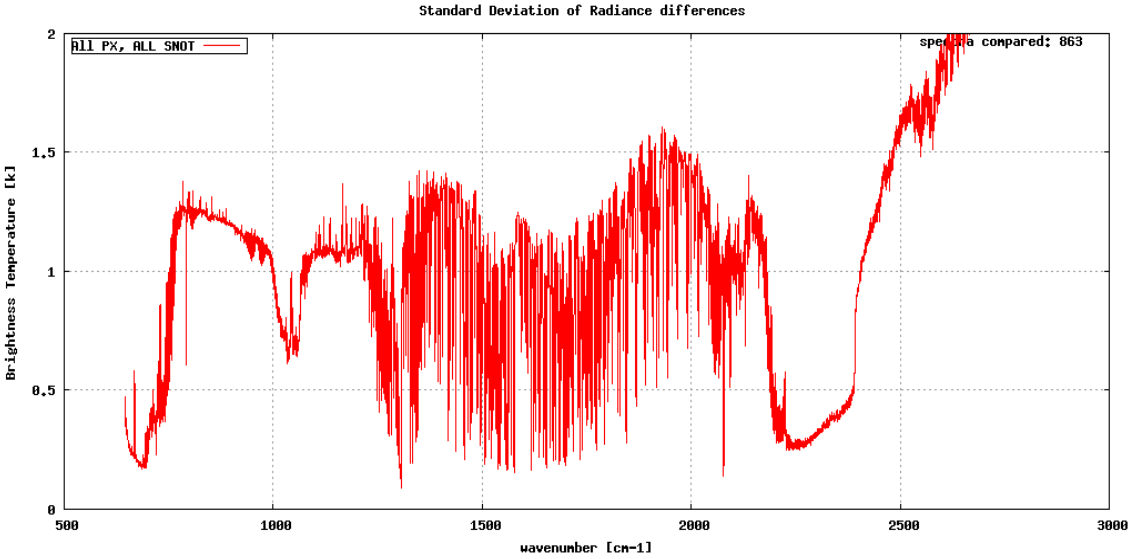

Figure 7: Standard Deviation of Radiance differences

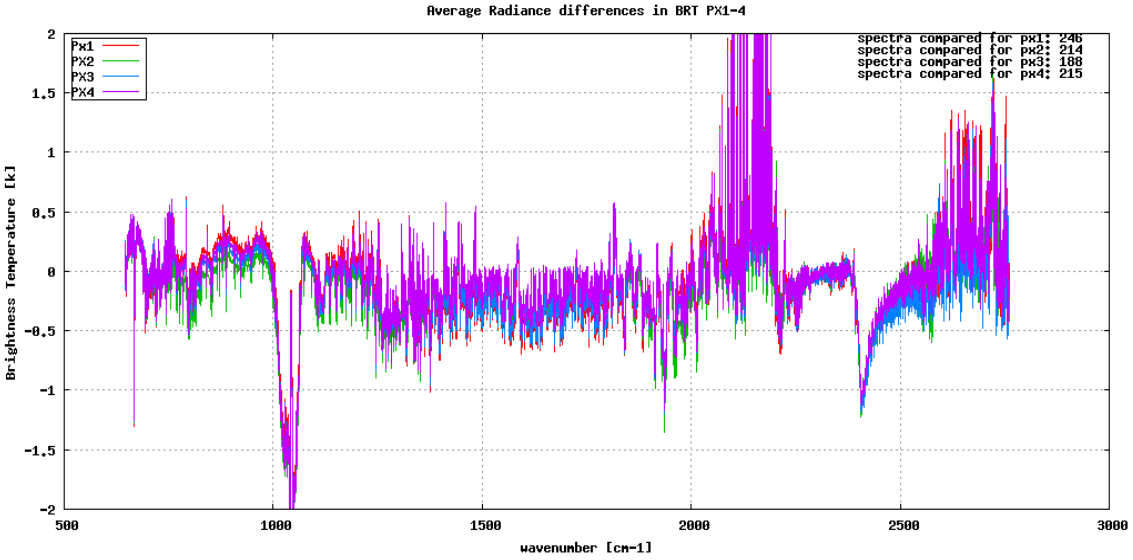

Figure 8: Average Radiance differences: OBS-CAL

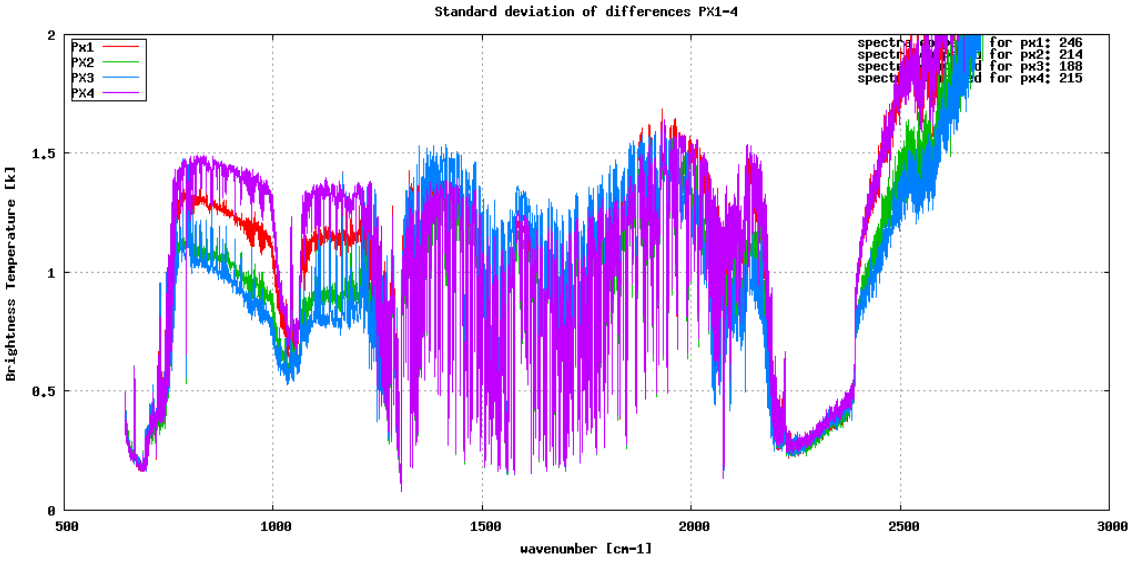

Figure 9: Standard Deviation of Radiance differences

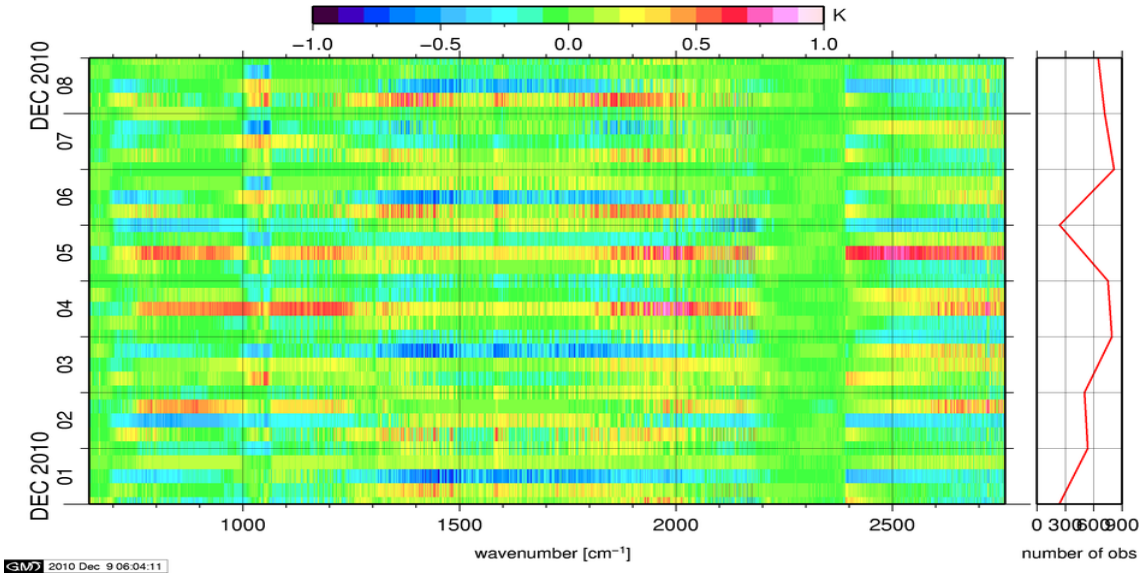

Figure 10: Radiance Anomaly in BRT: All Channels

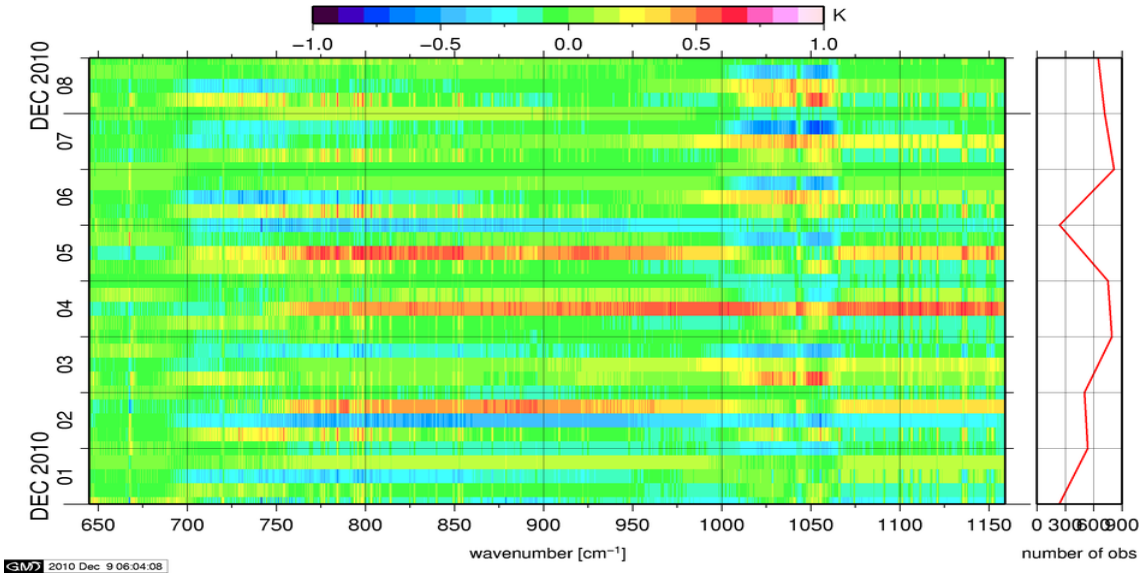

Figure 11: Radiance Anomaly in BRT: IASI Band 1

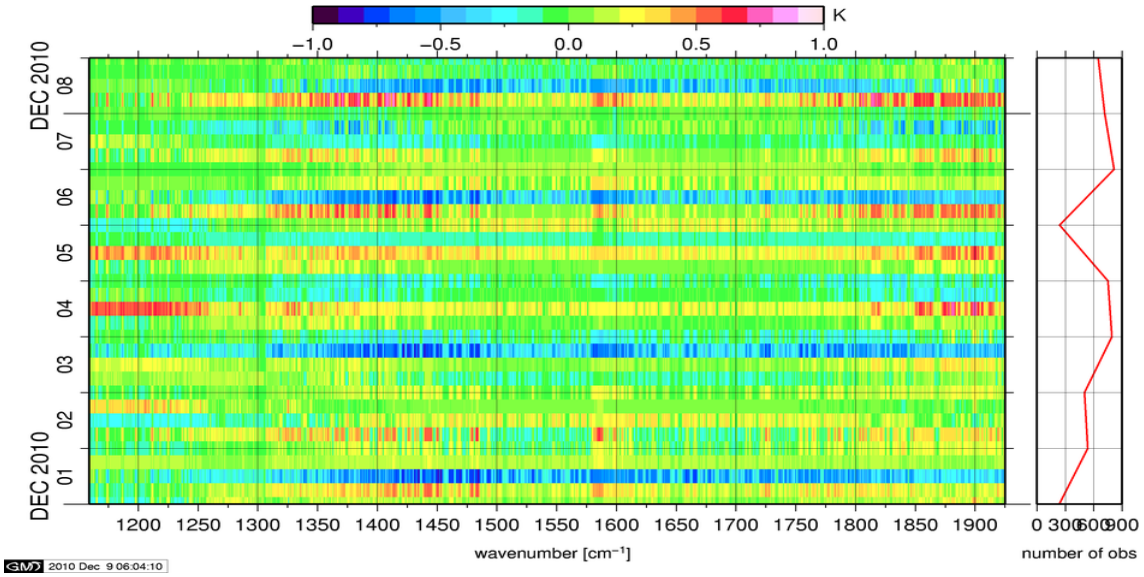

Figure 12: Radiance Anomaly in BRT: IASI Band 2

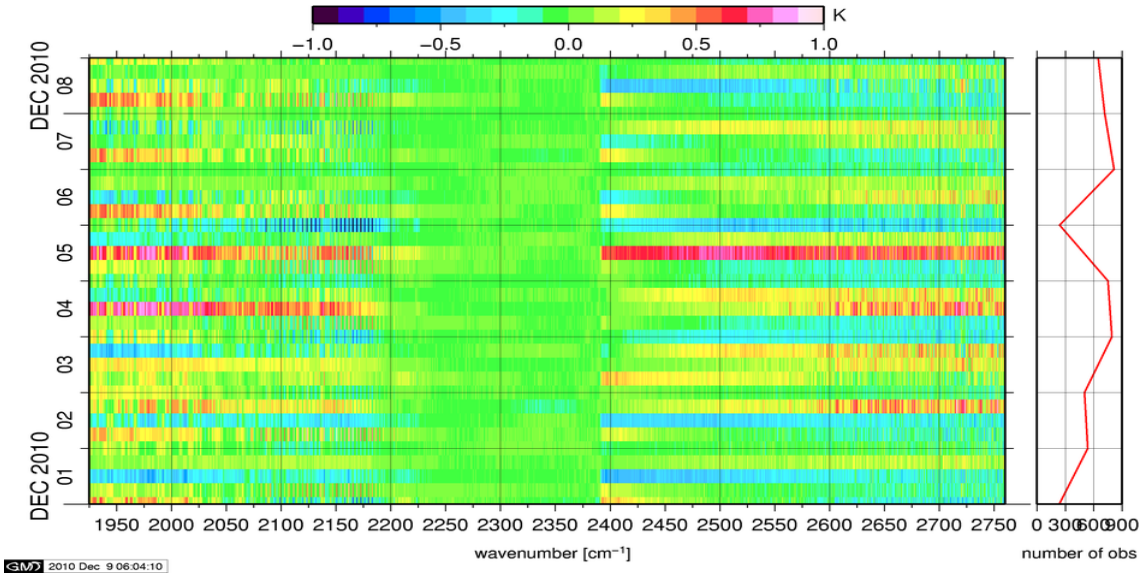

Figure 13: Radiance Anomaly in BRT: IASI Band 3

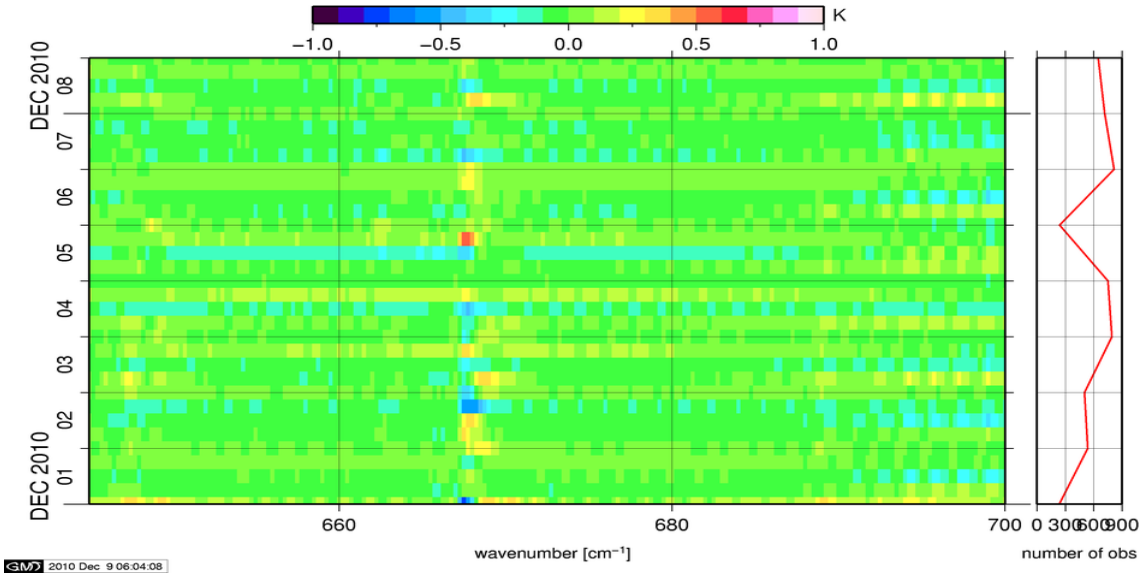

Figure 14: Radiance Anomaly in BRT: CO2 14

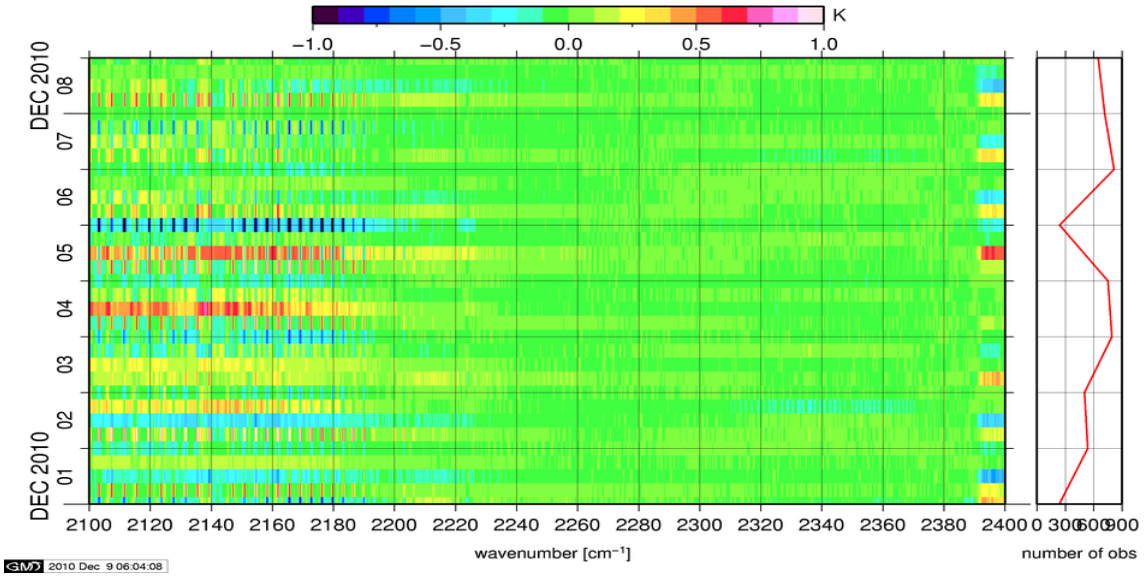

Figure 15: Radiance Anomaly in BRT: CO2 4.3

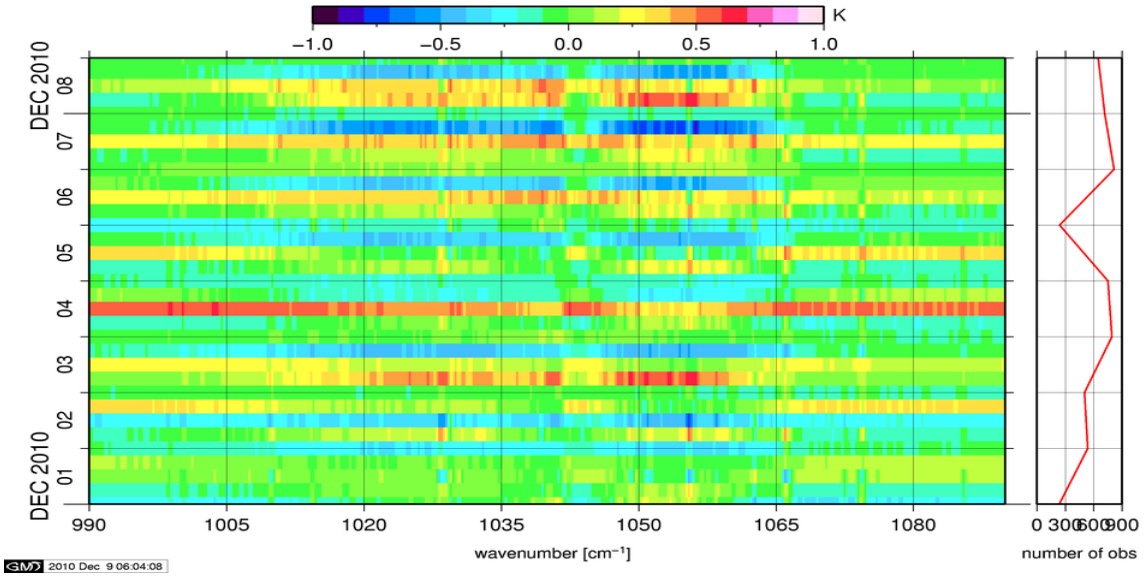

Figure 16: Radiance Anomaly in BRT: O3

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.

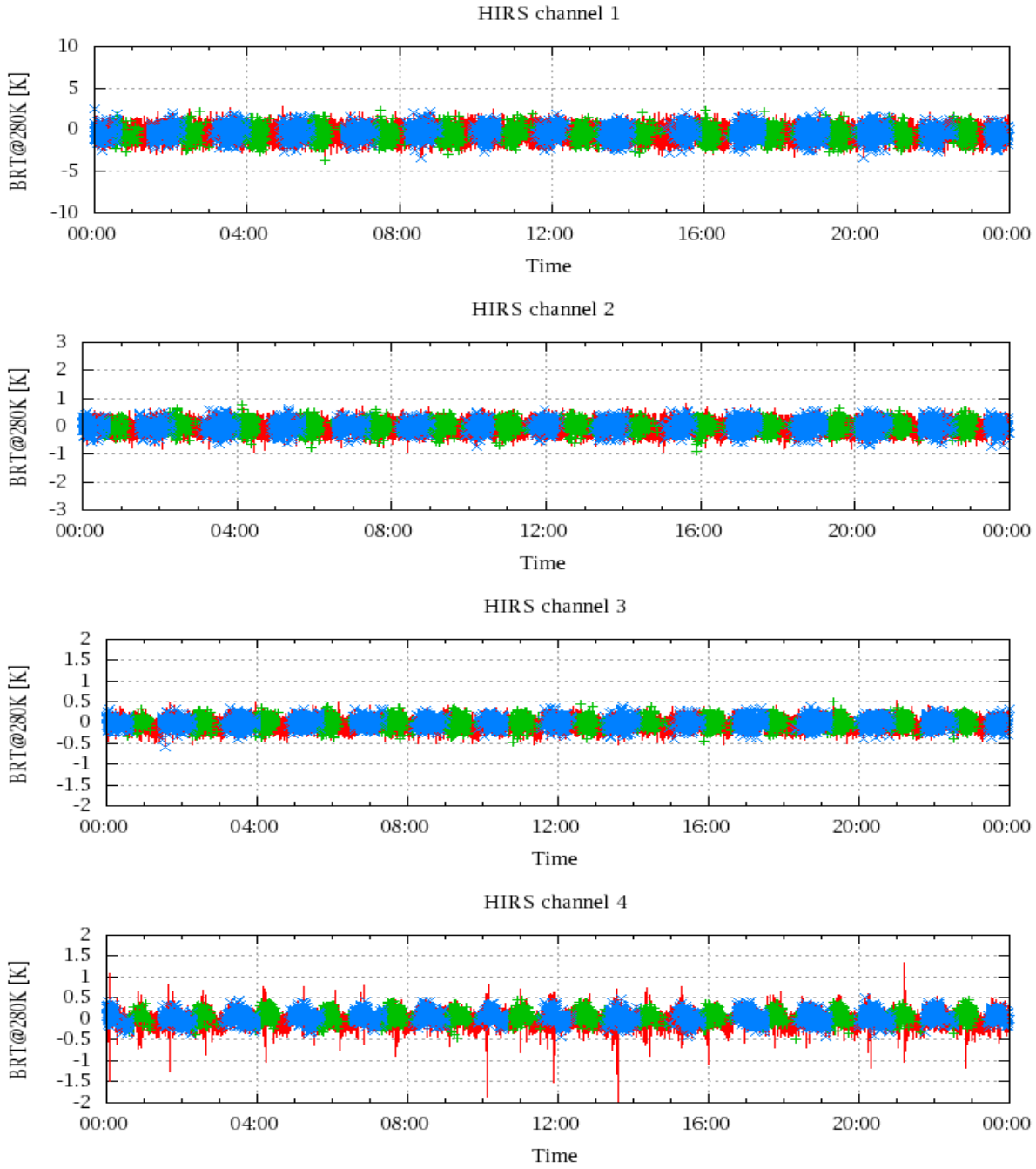

Figure 17: Radiance Differences in BRT

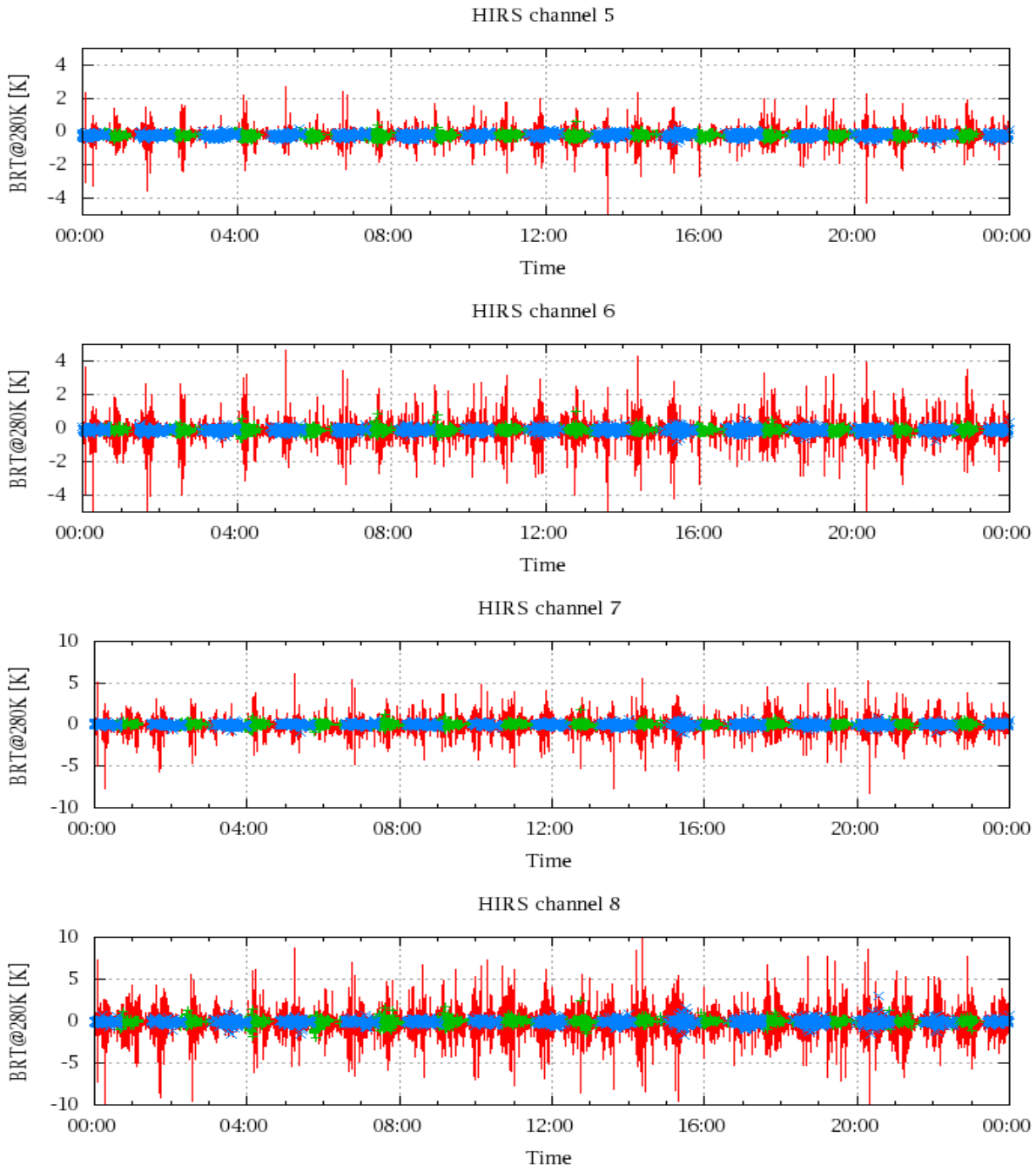

Figure 18: Radiance Differences in BRT

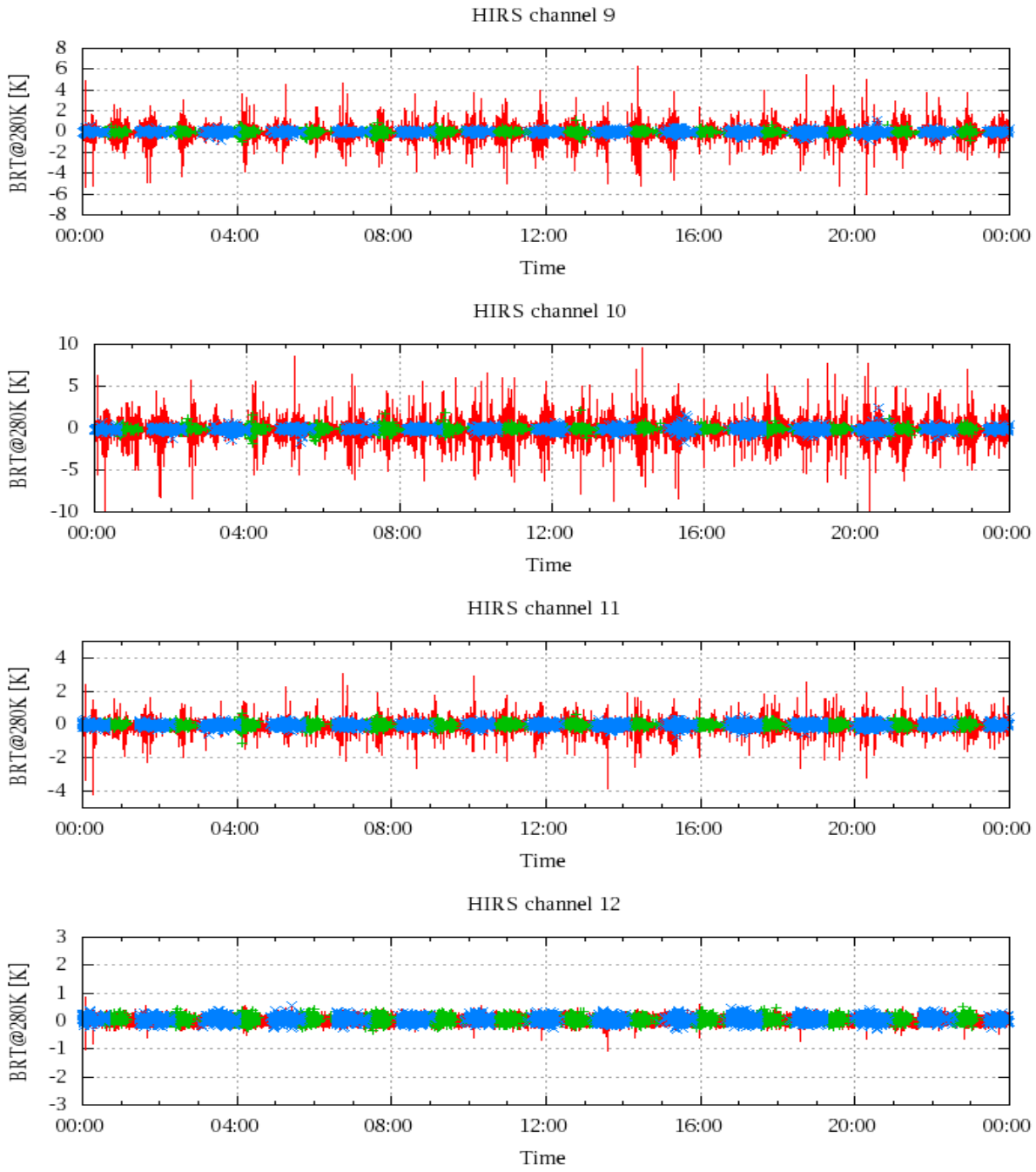

Figure 19: Radiance Differences in BRT

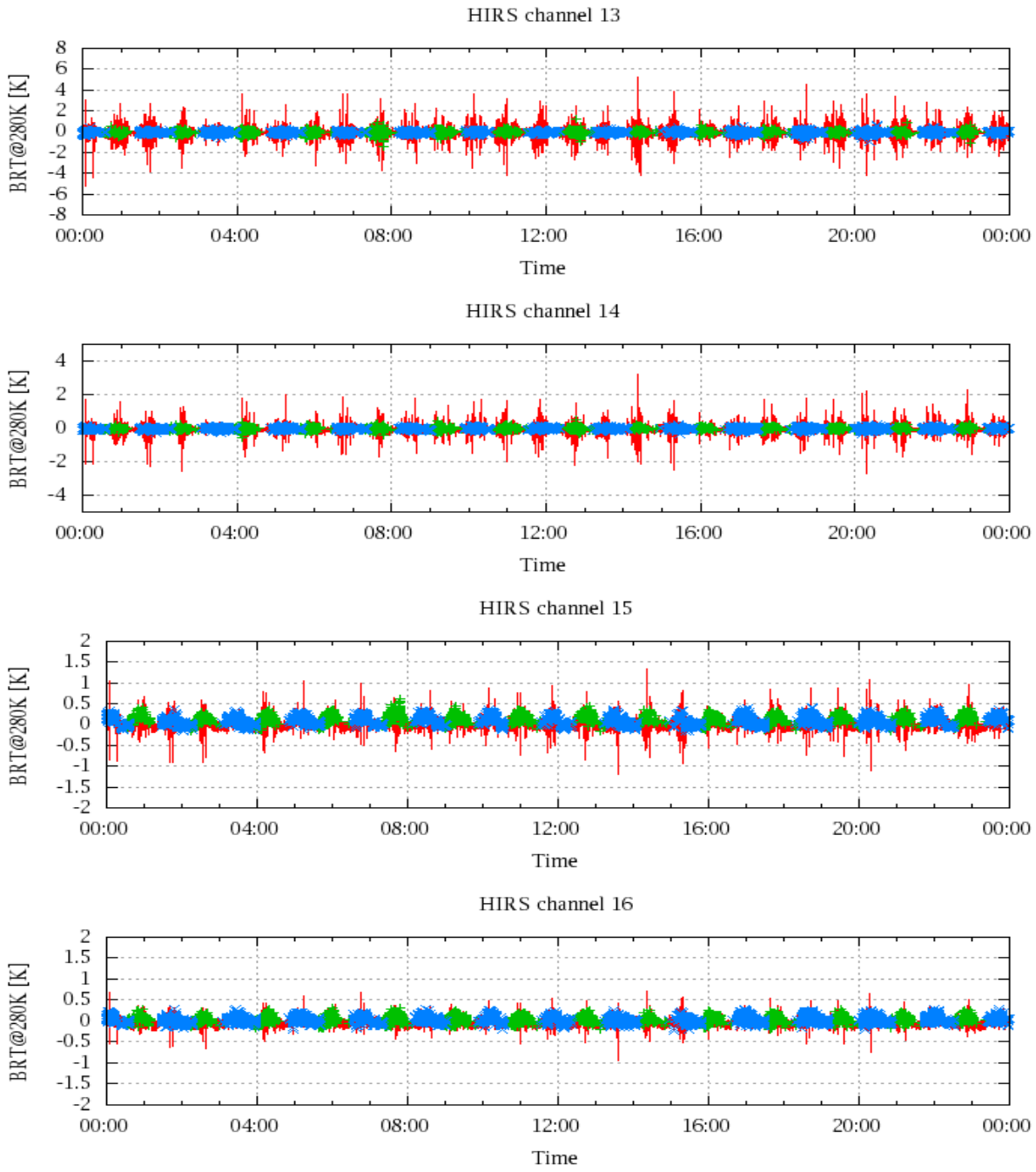

Figure 20: Radiance Differences in BRT

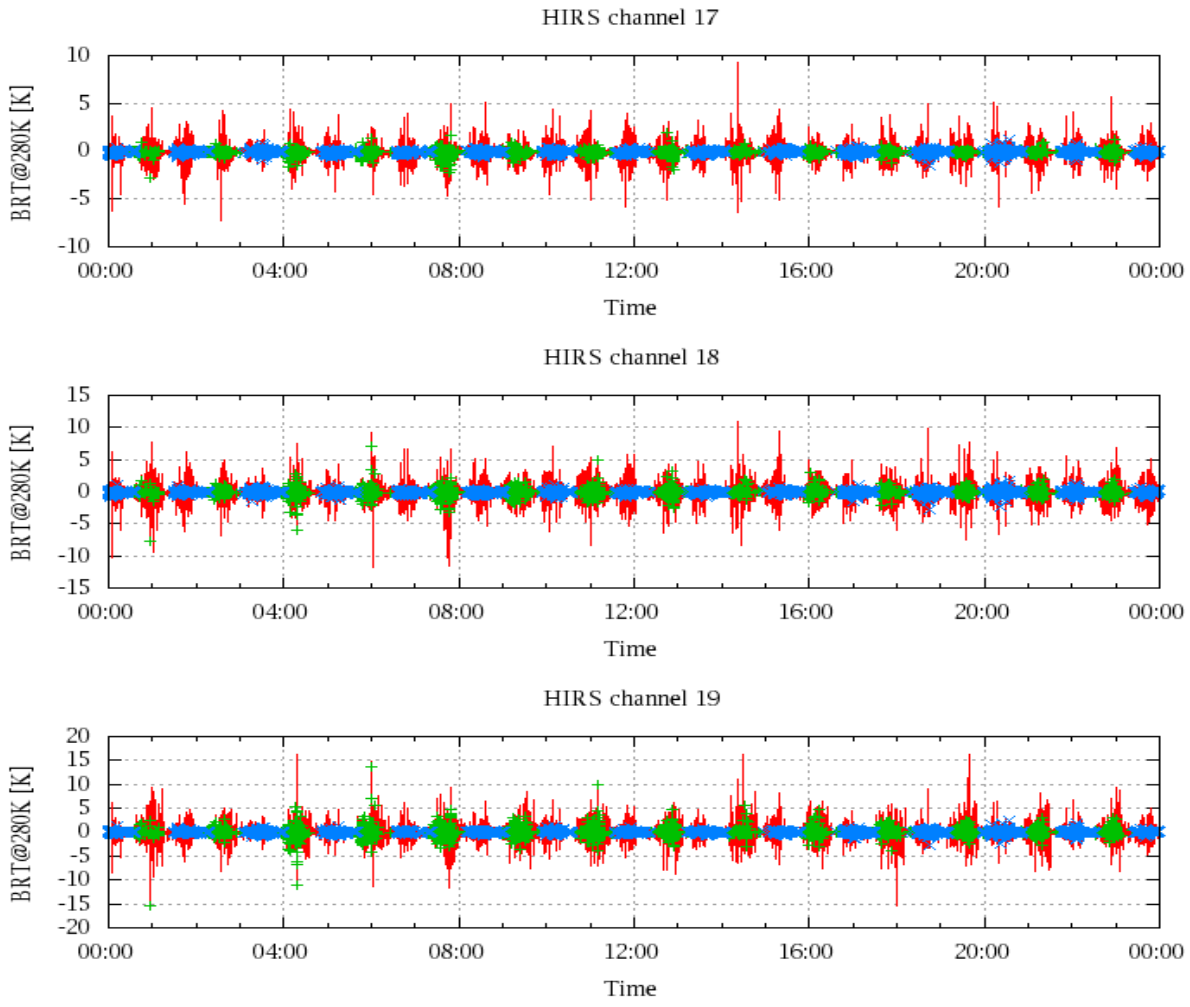

Figure 21: Radinace Differences in BRT