

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

07/10/2011 00:00:00 - 08/10/2011 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 07/10/2011 00:00:00 - 08/10/2011 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 07/10/2011 00:00:00 - 08/10/2011 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)	10480	10496	20111007032923.263	20111007032926.720
PX1 (130)	7238	7243	20111007042747.708	20111007042748.790
PX1 (130)	7243	7254	20111007042748.790	20111007042751.169
PX1 (130)	9890	9903	20111007093051.219	20111007093054.027
PX1 (130)	14984	15013	20111007193602.272	20111007193610.057
PX1 (130)	1030	1041	20111007194650.255	20111007194652.642
PX1 (130)	6338	6341	20111007201024.306	20111007201026.470
PX1 (130)	7388	7543	20111007201504.337	20111007201546.930
PX1 (130)	7543	7552	20111007201546.930	20111007201548.876
PX1 (130)	8462	8465	20111007201951.031	20111007201951.680
PX2 (135)	10480	10496	20111007032923.263	20111007032926.720
PX2 (135)	7238	7254	20111007042747.708	20111007042751.169
PX2 (135)	9890	9903	20111007093051.219	20111007093054.027
PX2 (135)	14984	15013	20111007193602.272	20111007193610.057
PX2 (135)	1030	1041	20111007194650.255	20111007194652.642
PX2 (135)	6338	6341	20111007201024.306	20111007201026.470
PX2 (135)	7388	7543	20111007201504.337	20111007201546.930
PX2 (135)	7543	7552	20111007201546.930	20111007201548.876

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	8461	8465	20111007201950.817	20111007201951.680
PX3 (140)	10480	10496	20111007032923.263	20111007032926.720
PX3 (140)	7238	7254	20111007042747.708	20111007042751.169
PX3 (140)	9890	9903	20111007093051.219	20111007093054.027
PX3 (140)	14984	15012	20111007193602.272	20111007193608.327
PX3 (140)	1030	1041	20111007194650.255	20111007194652.642
PX3 (140)	6337	6341	20111007201024.091	20111007201026.470
PX3 (140)	7388	7542	20111007201504.337	20111007201546.712
PX3 (140)	7542	7552	20111007201546.712	20111007201548.876
PX3 (140)	8461	8465	20111007201950.817	20111007201951.680
PX4 (145)	10480	10496	20111007032923.263	20111007032926.720
PX4 (145)	7238	7254	20111007042747.708	20111007042751.169
PX4 (145)	9890	9903	20111007093051.219	20111007093054.027
PX4 (145)	14984	15012	20111007193602.272	20111007193608.327
PX4 (145)	1030	1040	20111007194650.255	20111007194652.427
PX4 (145)	6337	6341	20111007201024.091	20111007201026.470
PX4 (145)	7388	7542	20111007201504.337	20111007201546.712
PX4 (145)	7542	7552	20111007201546.712	20111007201548.876
PX4 (145)	8461	8465	20111007201950.817	20111007201951.680
IMG (150)	3403	3420	20111007032923.048	20111007032926.720
IMG (150)	1914	1929	20111007042747.708	20111007042750.954
IMG (150)	13658	13670	20111007093051.219	20111007093053.812
IMG (150)	4139	4168	20111007193602.057	20111007193608.327
IMG (150)	6893	6904	20111007194650.036	20111007194652.427
IMG (150)	12905	12912	20111007201024.091	20111007201026.251
IMG (150)	14096	14274	20111007201504.337	20111007201546.712
IMG (150)	14274	14284	20111007201546.712	20111007201548.876
IMG (150)	15313	15317	20111007201950.817	20111007201951.680
VER (160)	12351	12357	20111007201016.306	20111007201032.306
VER (160)	12526	12557	20111007201456.337	20111007201552.333
AUX (180)	5737	5739	20111007201016.740	20111007201032.740
AUX (180)	5772	5779	20111007201456.770	20111007201552.766

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/10/2011 00:00:11	-	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)	99.30 %	-
GQisFlagQual set (PX2)	99.15 %	-
GQisFlagQual set (PX3)	99.25 %	-
GQisFlagQual set (PX4)	99.34 %	-
GQisFlagQual set (all)	99.26 %	-

Table 4: Quality flags

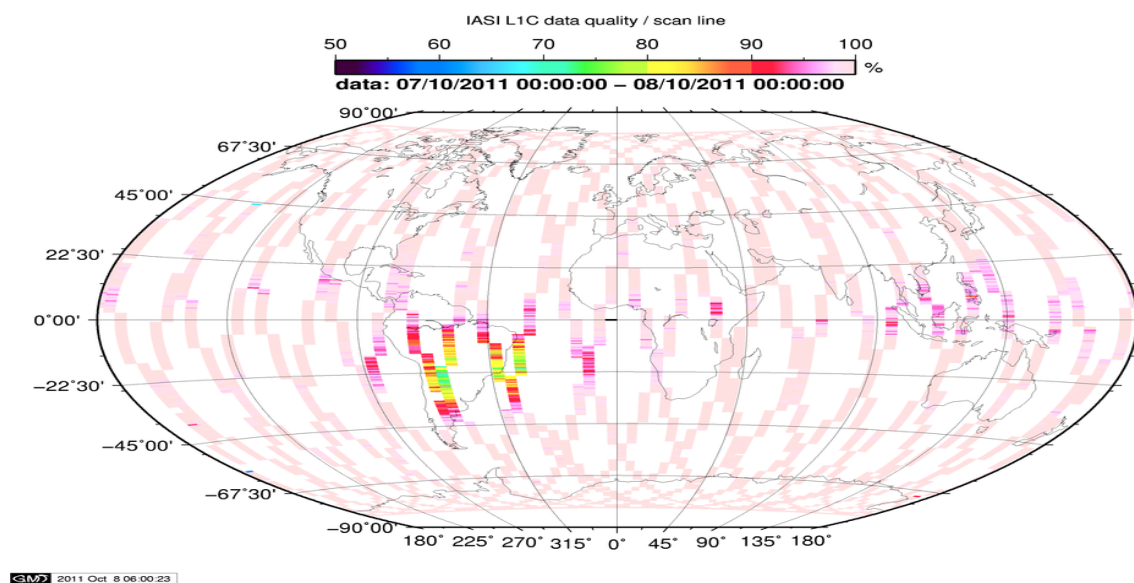


Figure 1: L1C data quality

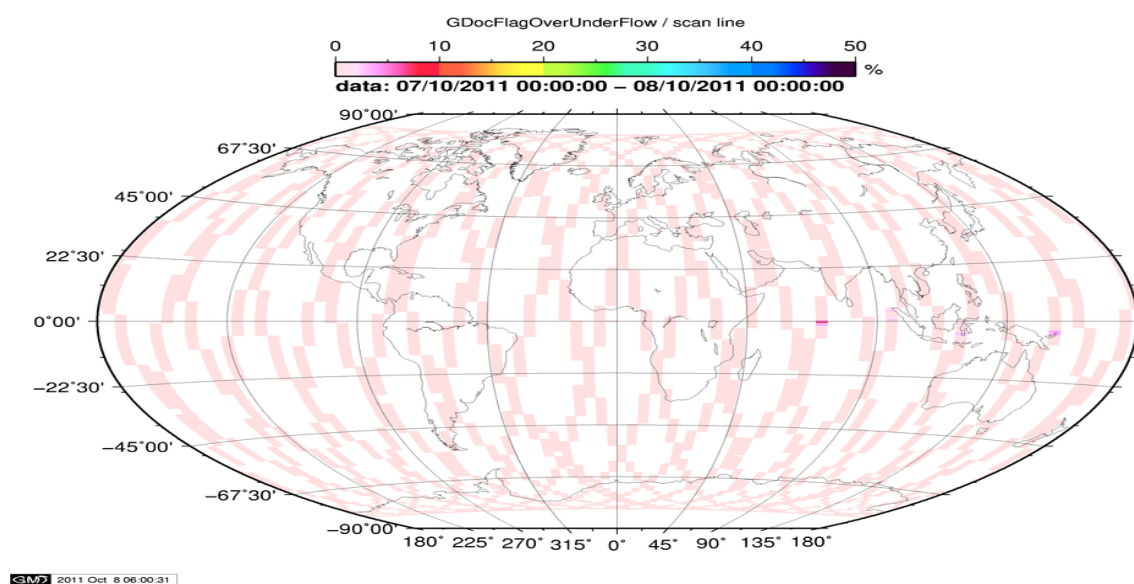


Figure 2: Flag of Over and Under Flows

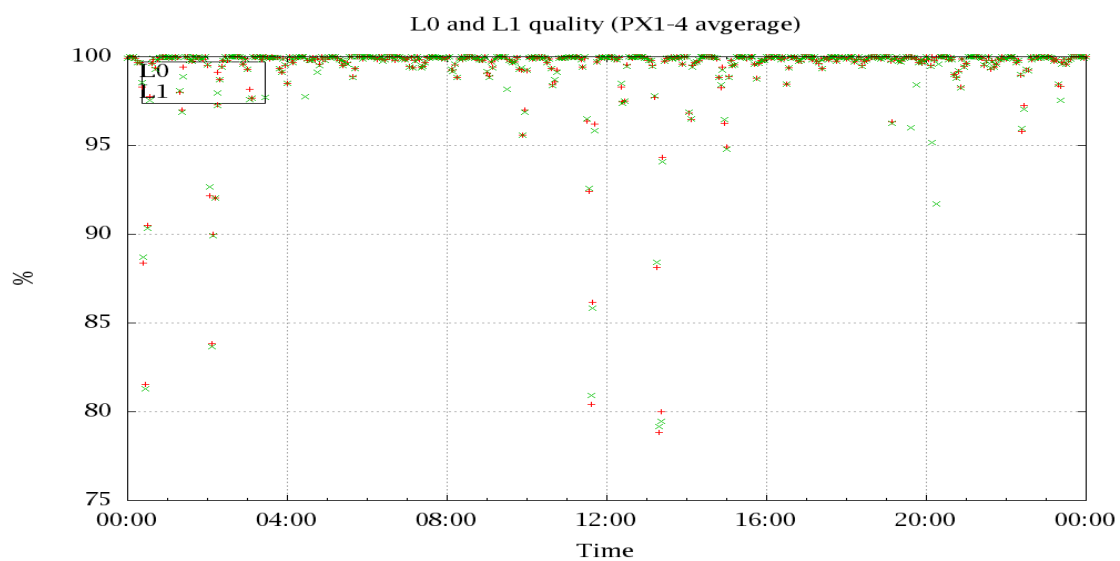


Figure 3: Level 0 and 1C overall quality

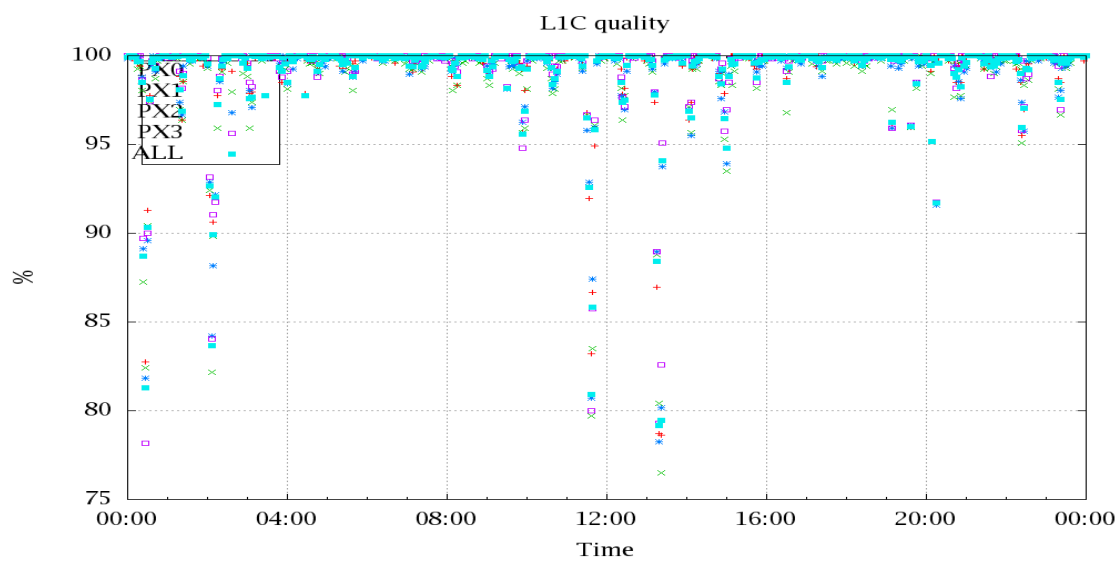


Figure 4: Level 1C quality

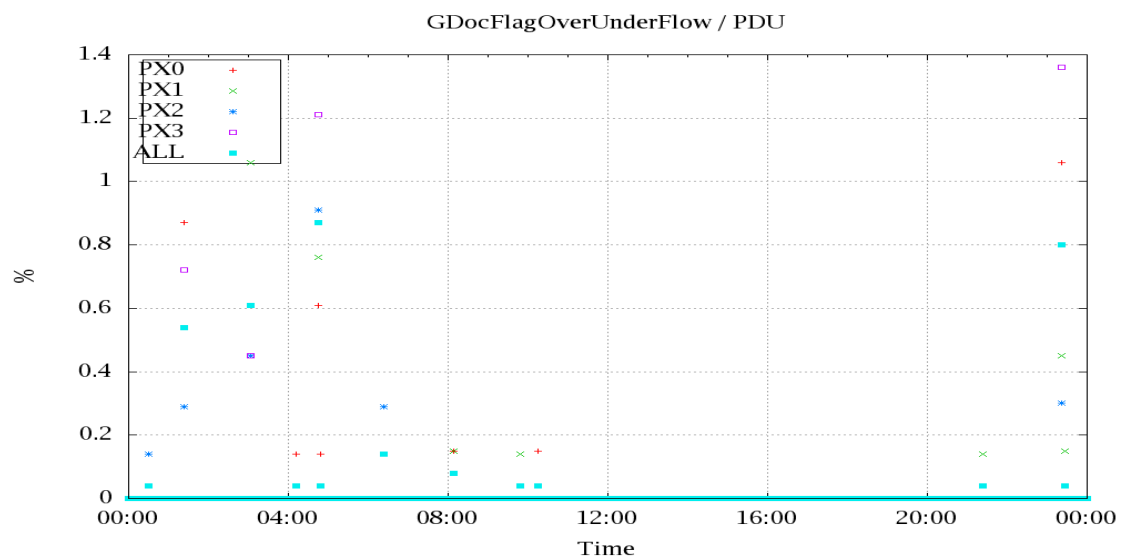


Figure 5: OverUnderFlowFlag timeseries

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.

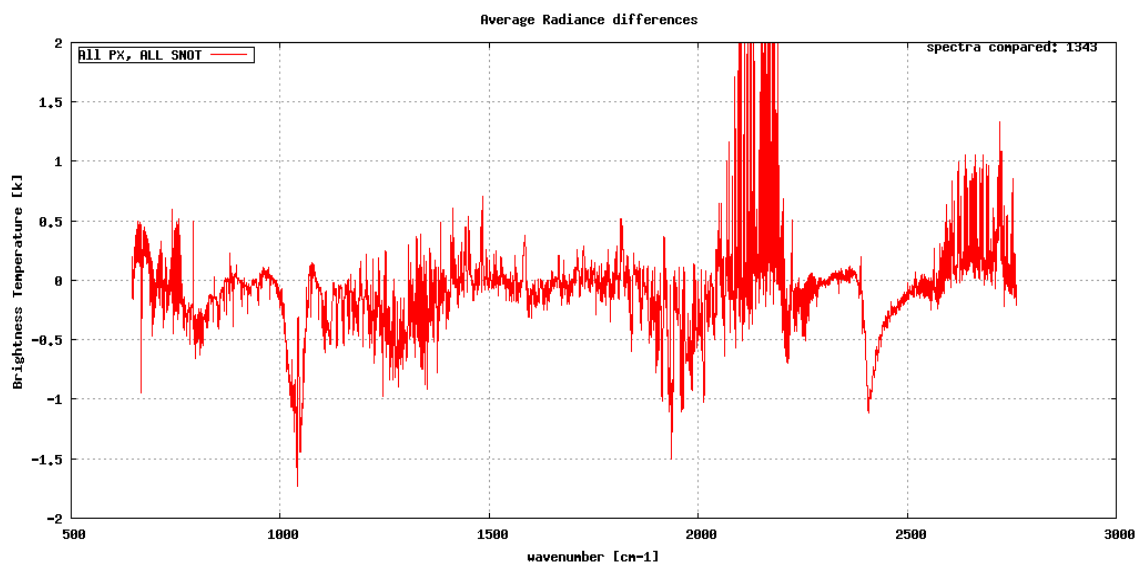


Figure 6: Average Radiance differences: OBS-CAL

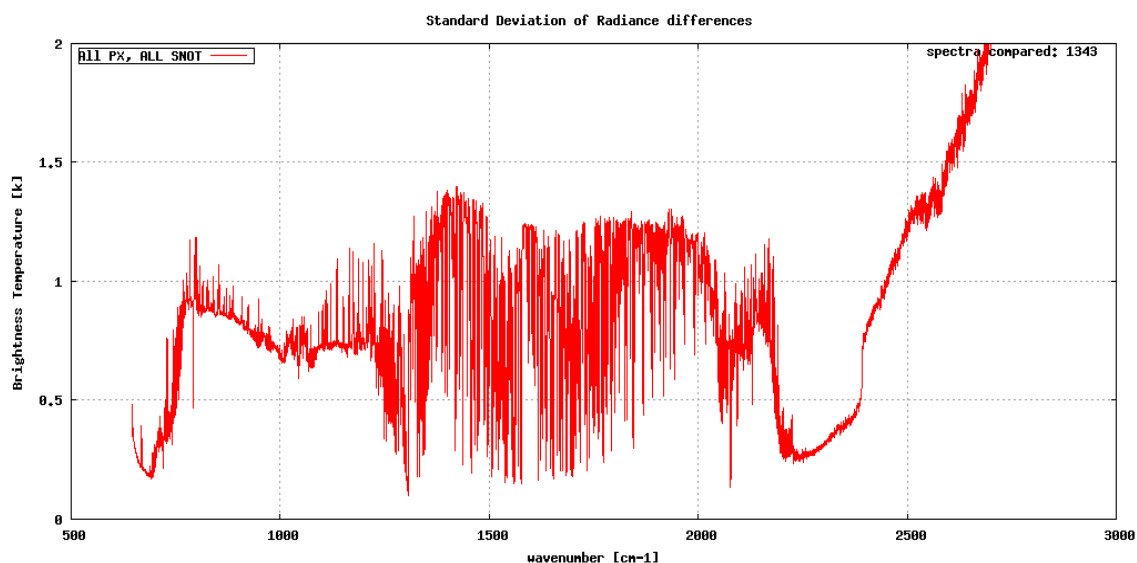


Figure 7: Standard Deviation of Radiance differences

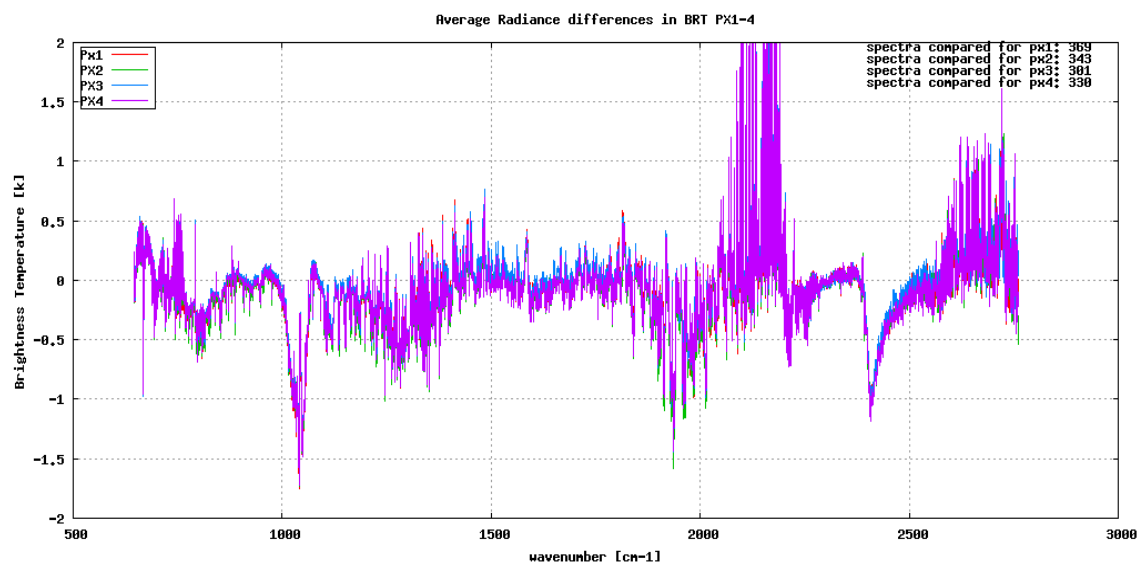


Figure 8: Average Radiance differences: OBS-CAL

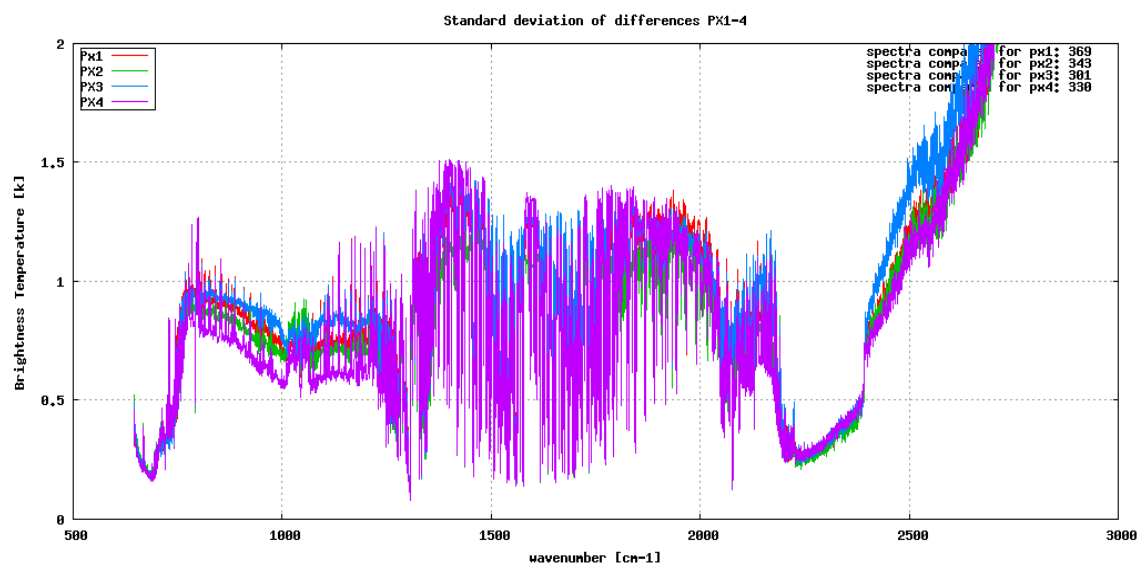


Figure 9: Standard Deviation of Radiance differences

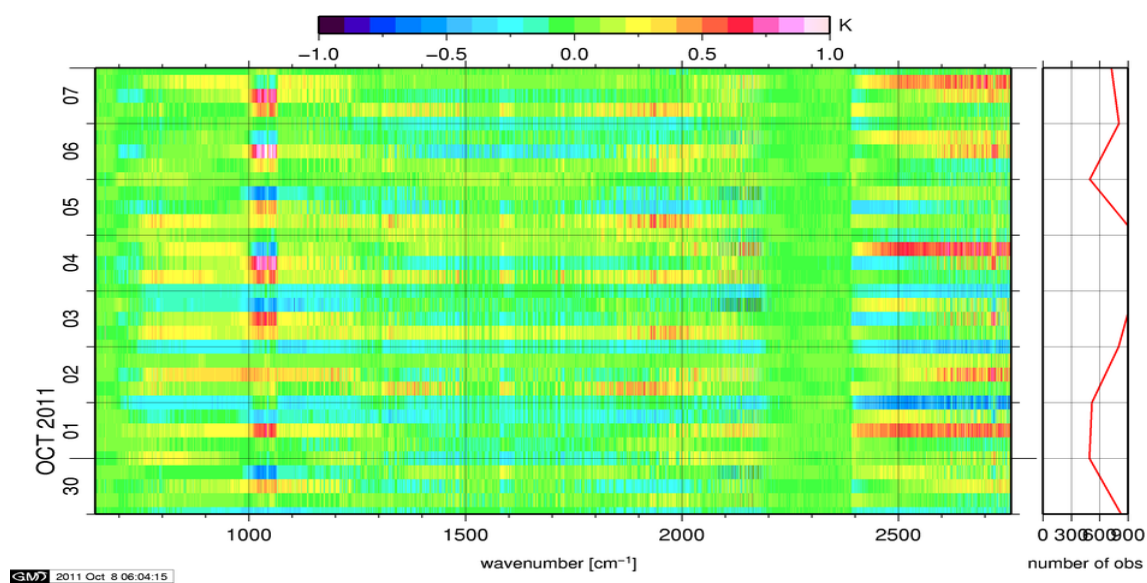


Figure 10: Radiance Anomaly in BRT: All Channels

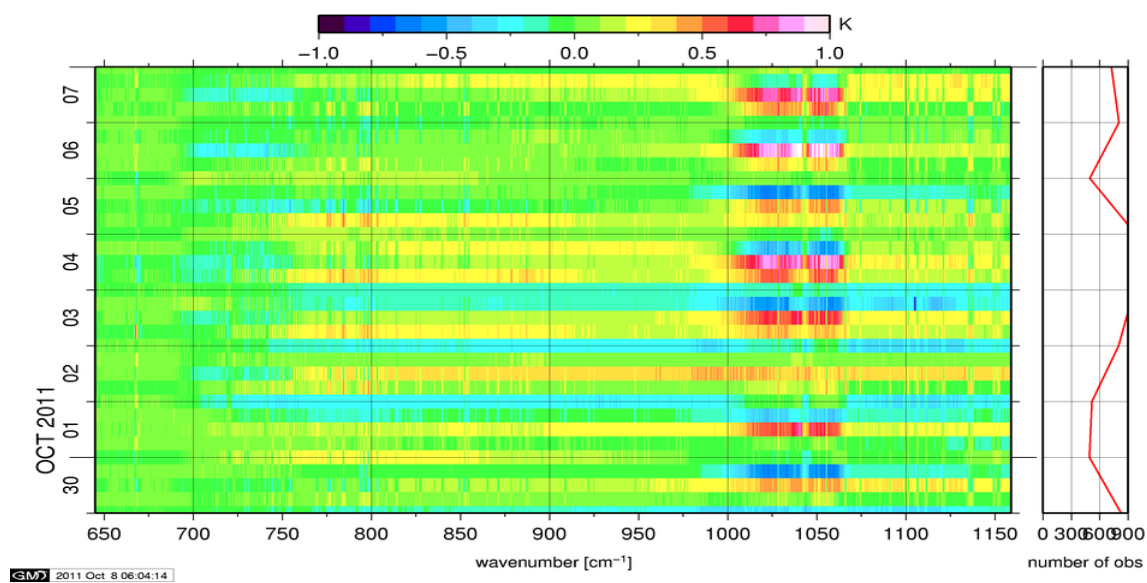


Figure 11: Radiance Anomaly in BRT: IASI Band 1

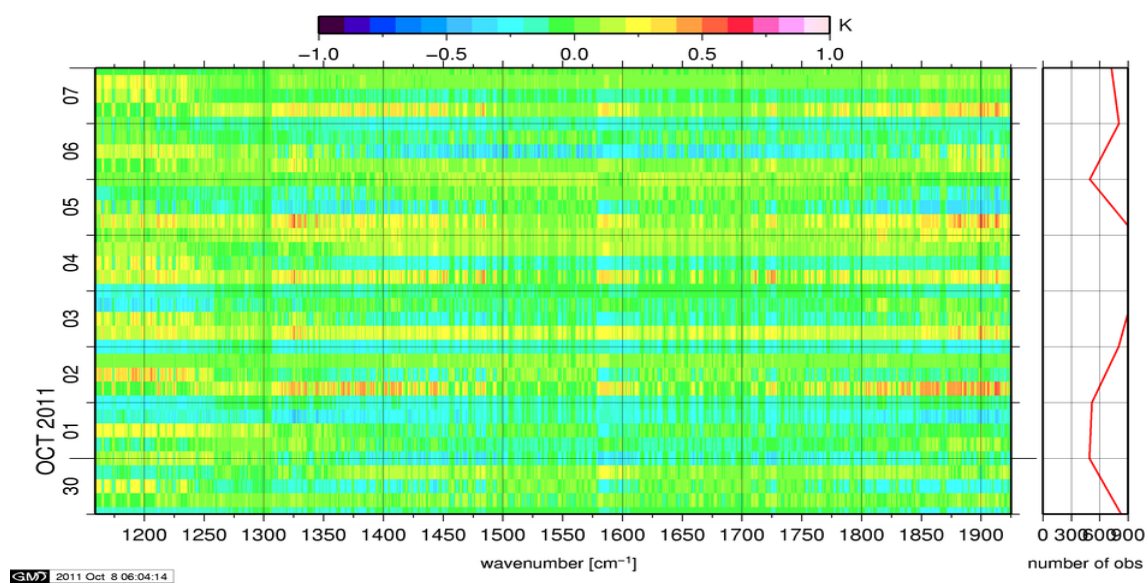


Figure 12: Radiance Anomaly in BRT: IASI Band 2

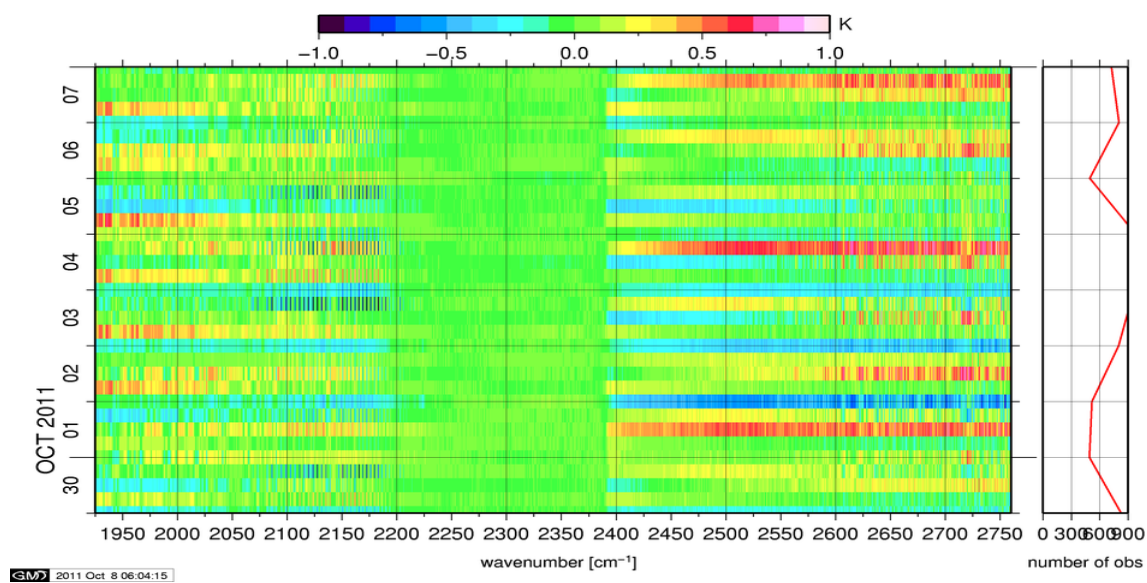


Figure 13: Radiance Anomaly in BRT: IASI Band 3

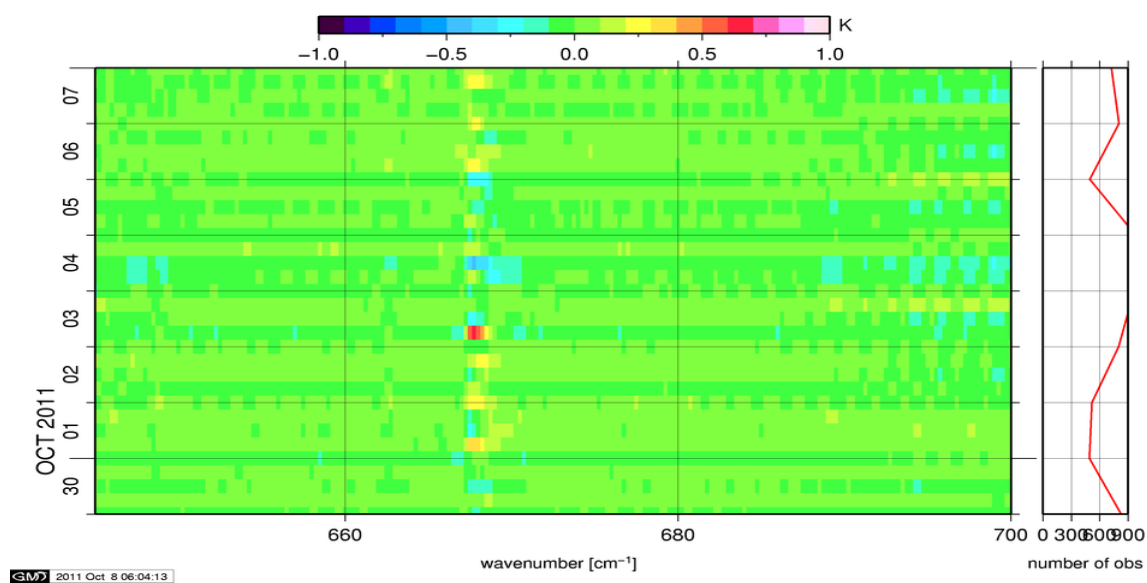


Figure 14: Radiance Anomaly in BRT: CO2 14

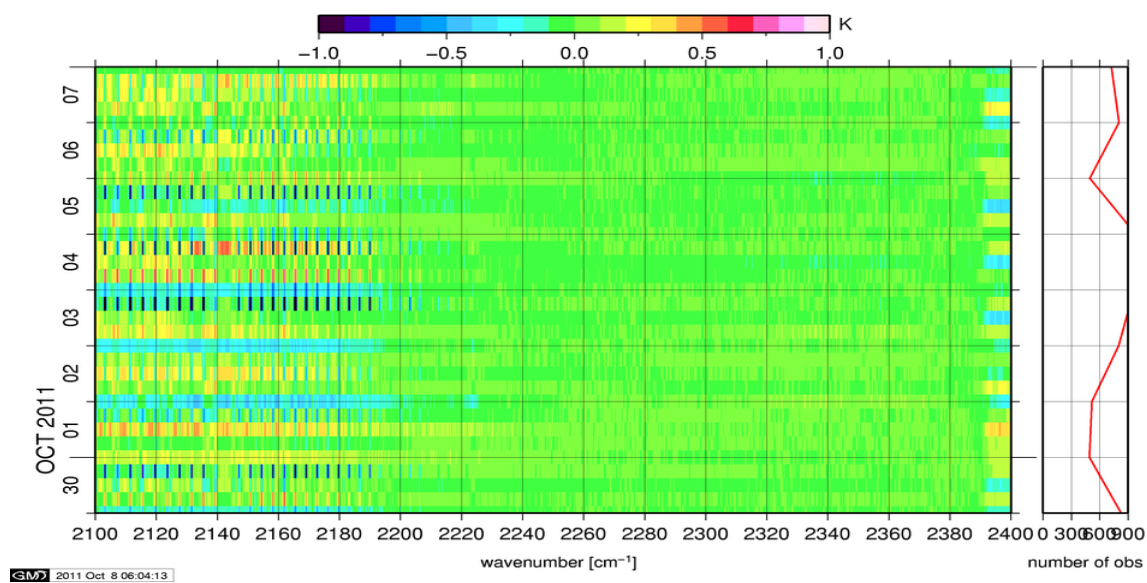


Figure 15: Radiance Anomaly in BRT: CO2 4.3

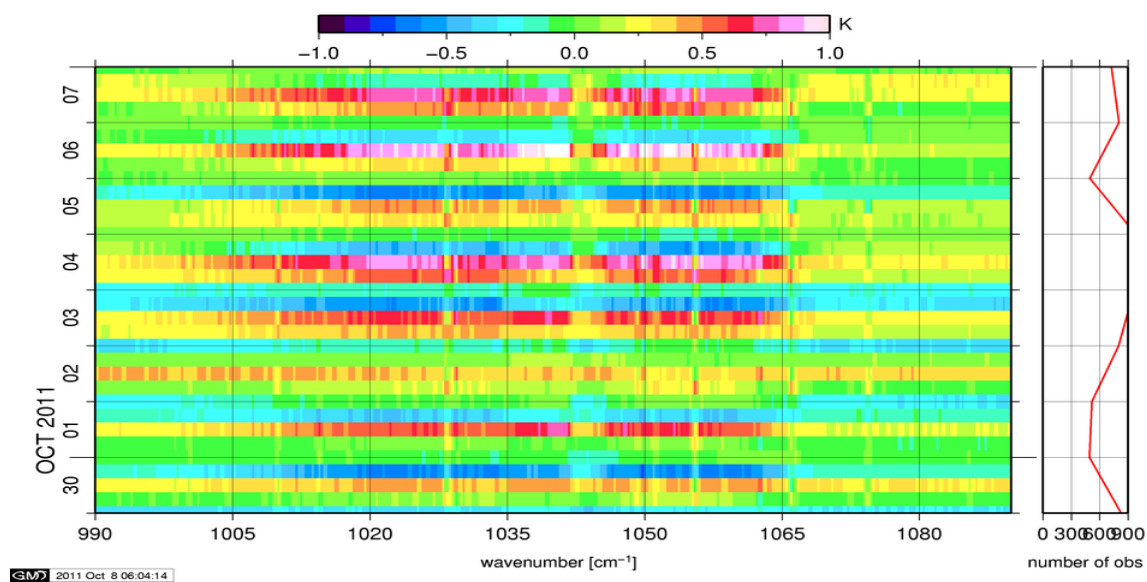


Figure 16: Radiance Anomaly in BRT: O3

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.

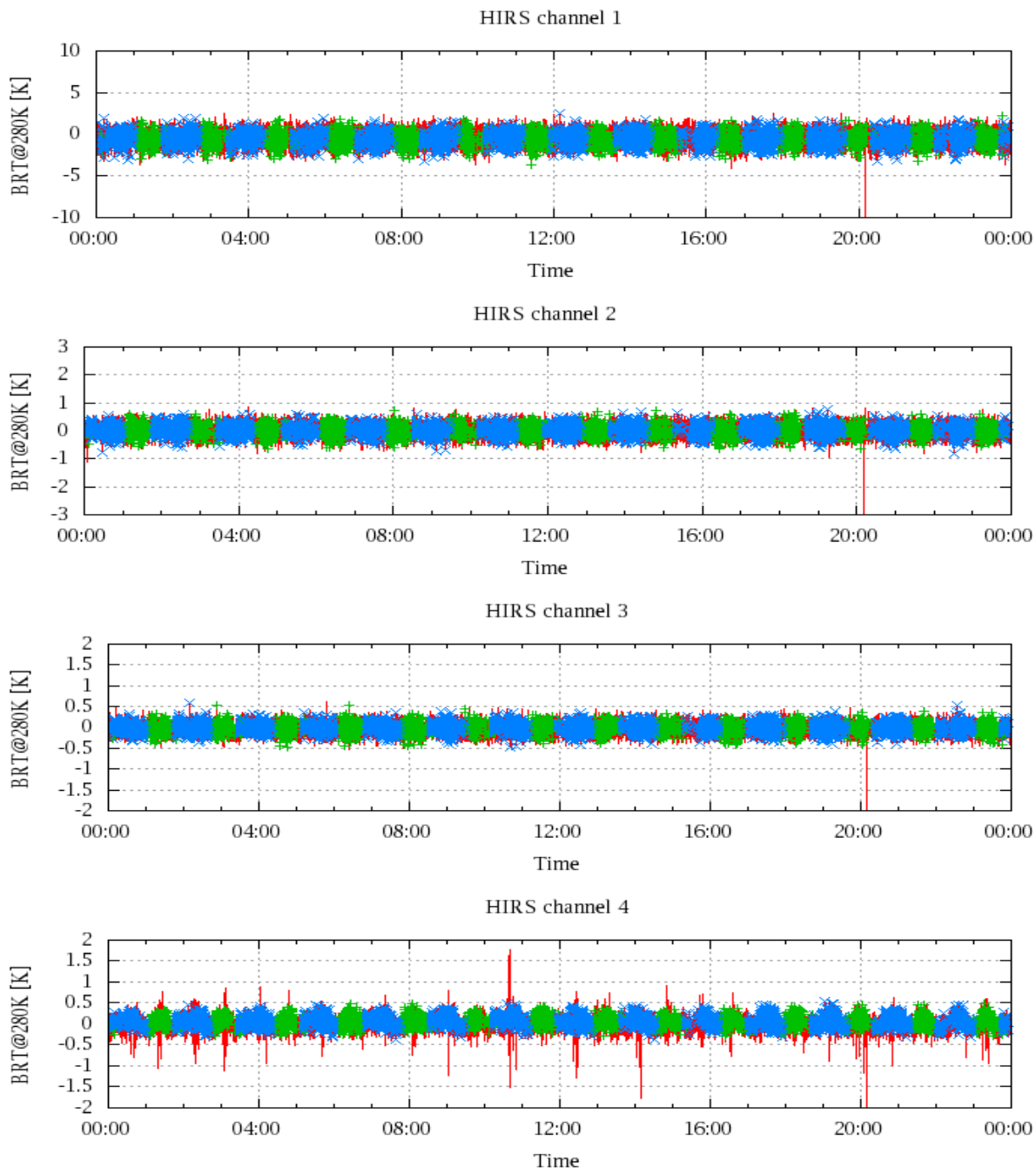


Figure 17: Radiance Differences in BRT

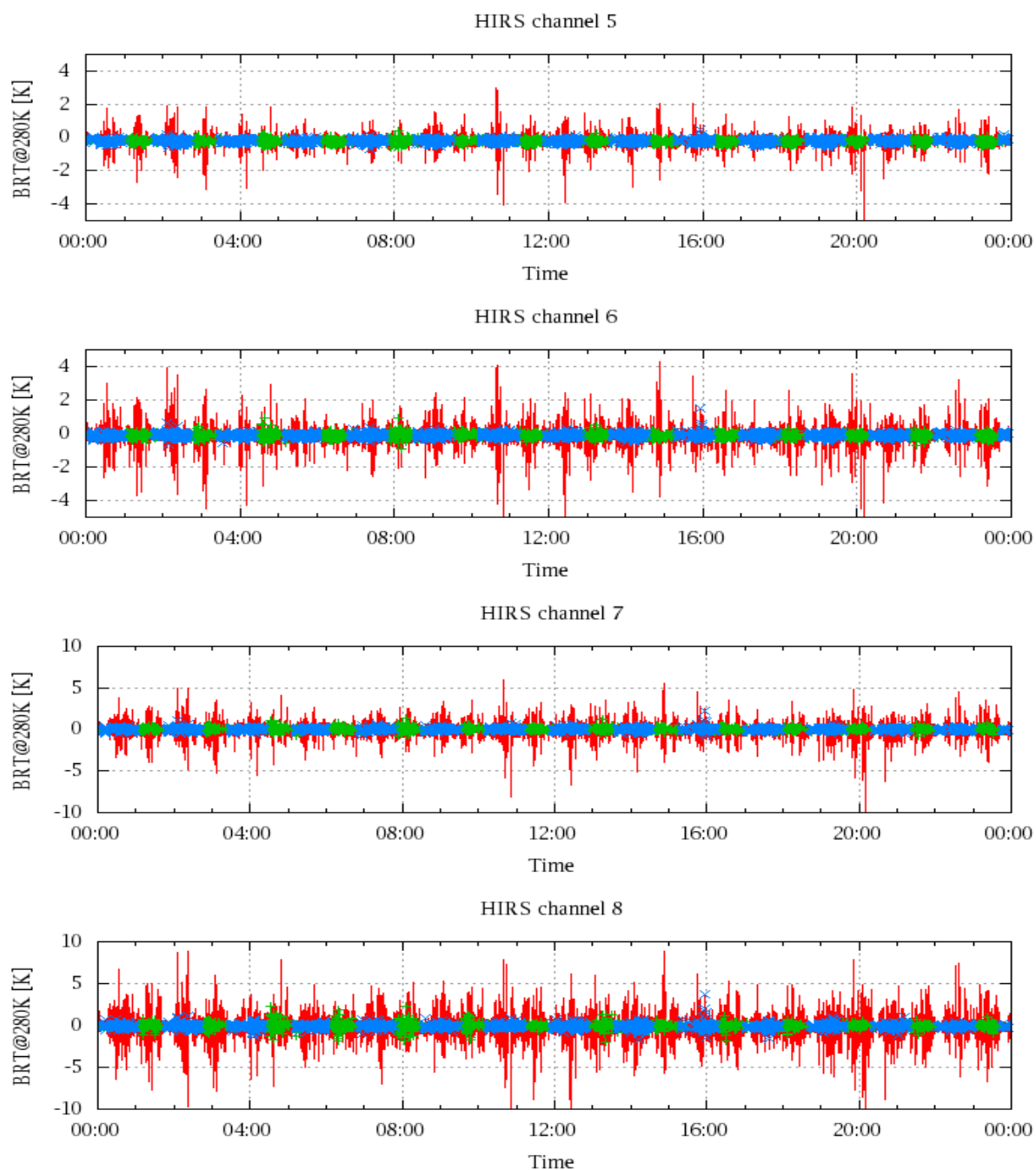


Figure 18: Radiance Differences in BRT

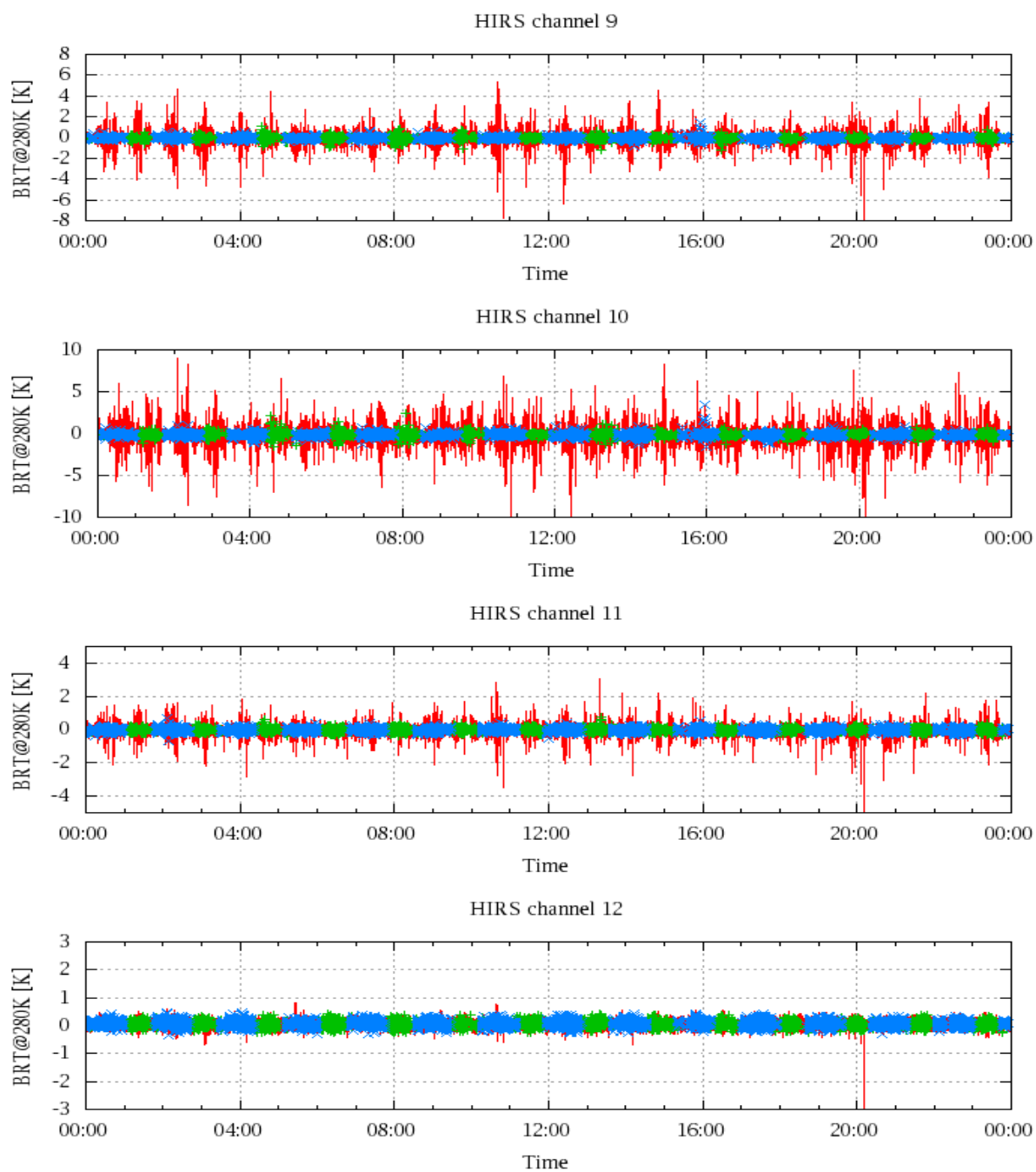


Figure 19: Radiance Differences in BRT

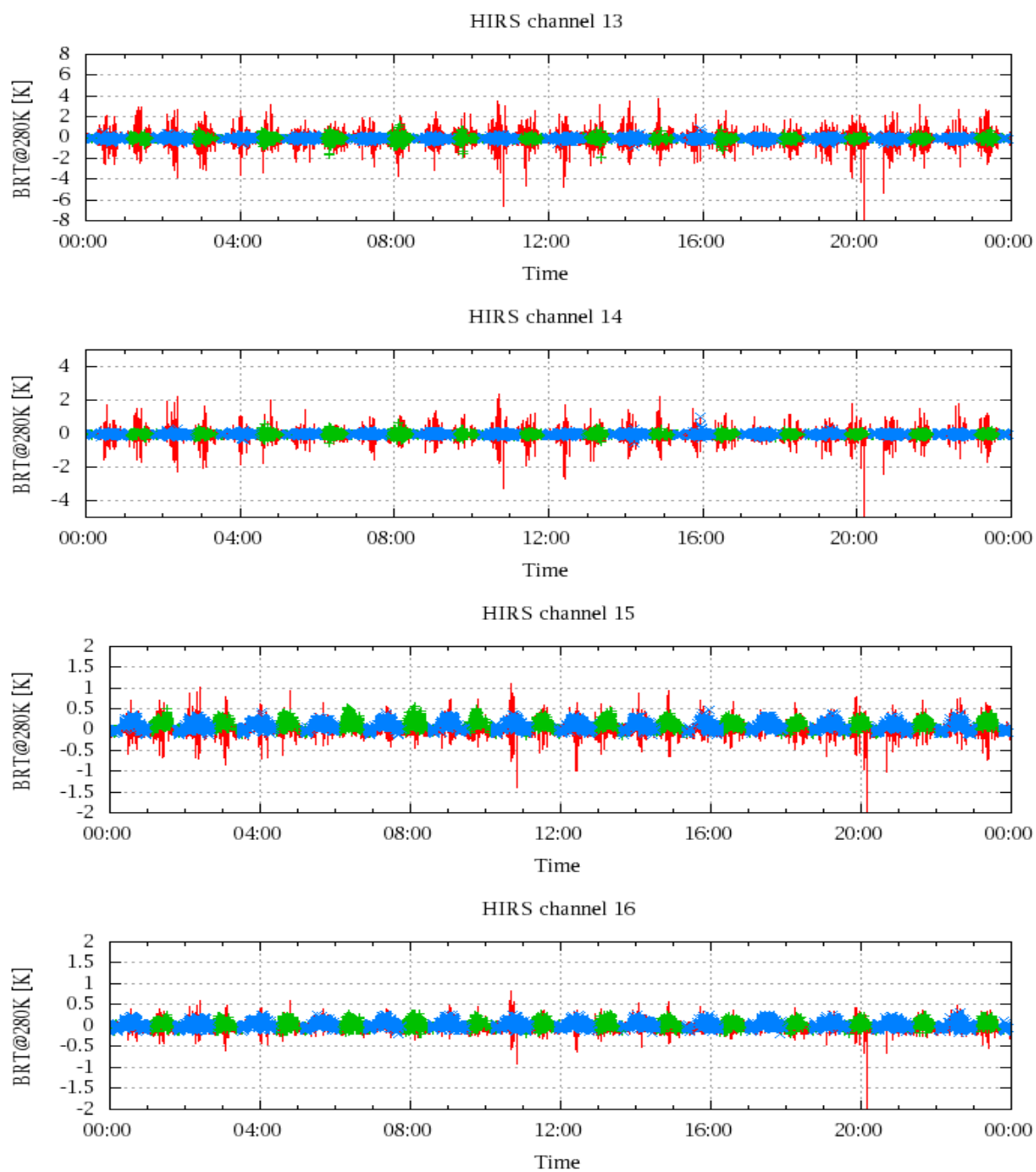


Figure 20: Radiance Differences in BRT

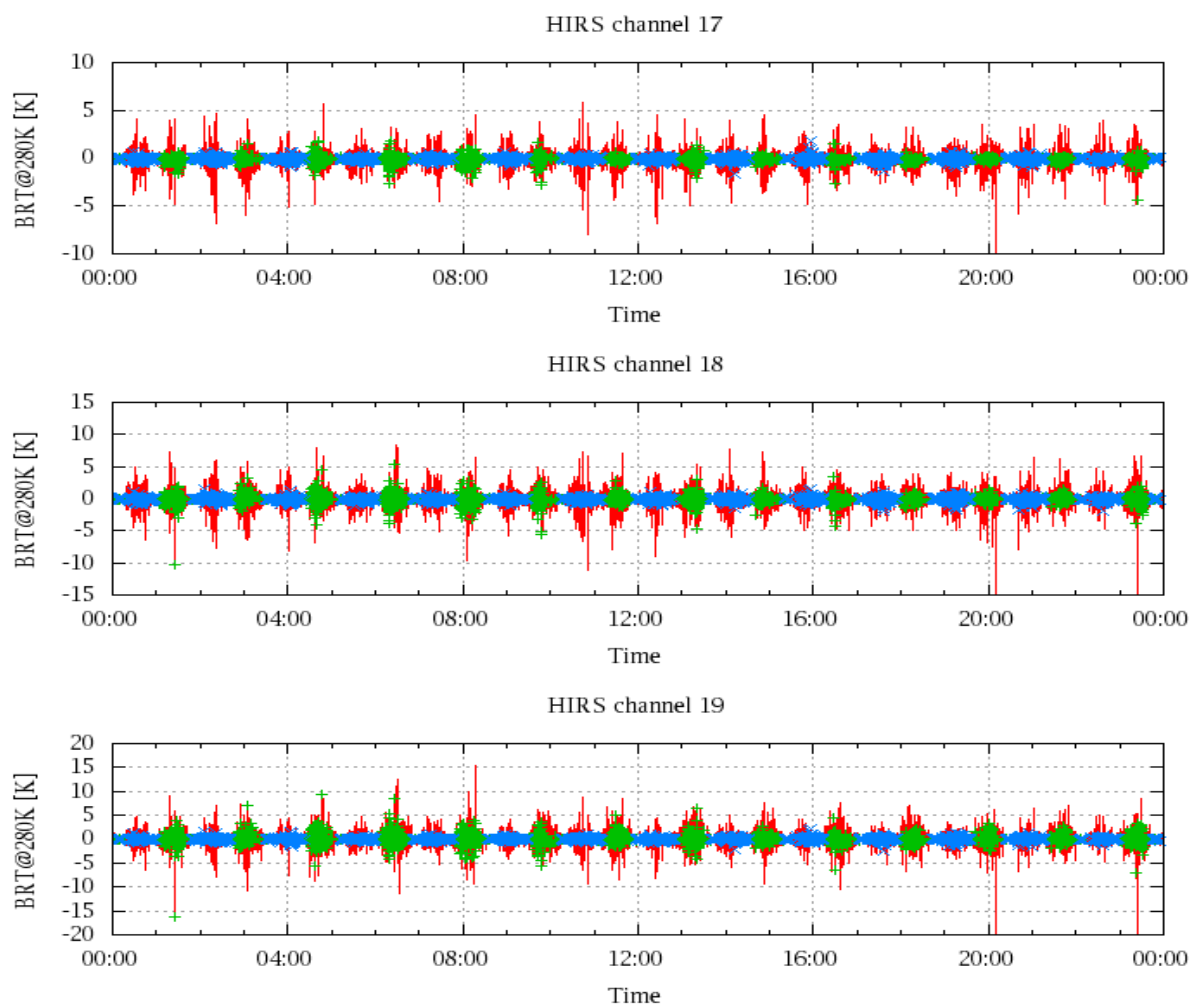


Figure 21: Radinace Differences in BRT