

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

04/05/2011 00:00:00 - 05/05/2011 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 04/05/2011 00:00:00 - 05/05/2011 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 04/05/2011 00:00:00 - 05/05/2011 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)	10398	10577	20110504065136.745	20110504065224.526
PX1 (130)	10578	10581	20110504065224.741	20110504065225.393
PX1 (130)	10581	10583	20110504065225.393	20110504065227.334
PX1 (130)	10584	10586	20110504065227.553	20110504065227.987
PX1 (130)	10589	10591	20110504065228.635	20110504065229.065
PX1 (130)	10608	10610	20110504065232.741	20110504065233.174
PX1 (130)	10611	10613	20110504065233.389	20110504065235.338
PX1 (130)	10633	10637	20110504065239.663	20110504065240.526
PX1 (130)	10637	10640	20110504065240.526	20110504065241.174
PX1 (130)	10643	10645	20110504065243.334	20110504065243.768
PX1 (130)	10648	10652	20110504065244.416	20110504065245.284
PX1 (130)	10656	10659	20110504065246.147	20110504065246.795
PX1 (130)	10659	10662	20110504065246.795	20110504065247.444
PX1 (130)	12483	13129	20110504081342.342	20110504081635.346
PX2 (135)	10398	10578	20110504065136.745	20110504065224.741
PX2 (135)	10578	10580	20110504065224.741	20110504065225.174
PX2 (135)	10584	10586	20110504065227.553	20110504065227.987
PX2 (135)	10589	10591	20110504065228.635	20110504065229.065

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	10593	10595	20110504065229.499	20110504065229.932
PX2 (135)	10598	10600	20110504065230.581	20110504065231.014
PX2 (135)	10608	10610	20110504065232.741	20110504065233.174
PX2 (135)	10611	10613	20110504065233.389	20110504065235.338
PX2 (135)	10633	10635	20110504065239.663	20110504065240.092
PX2 (135)	10635	10637	20110504065240.092	20110504065240.526
PX2 (135)	10637	10640	20110504065240.526	20110504065241.174
PX2 (135)	10649	10652	20110504065244.631	20110504065245.284
PX2 (135)	10656	10659	20110504065246.147	20110504065246.795
PX2 (135)	10659	10661	20110504065246.795	20110504065247.229
PX2 (135)	10661	10663	20110504065247.229	20110504065247.659
PX2 (135)	12483	13128	20110504081342.342	20110504081633.615
PX3 (140)	10398	10576	20110504065136.745	20110504065224.311
PX3 (140)	10576	10578	20110504065224.311	20110504065224.741
PX3 (140)	10578	10580	20110504065224.741	20110504065225.174
PX3 (140)	10589	10591	20110504065228.635	20110504065229.065
PX3 (140)	10593	10595	20110504065229.499	20110504065229.932
PX3 (140)	10598	10600	20110504065230.581	20110504065231.014
PX3 (140)	10608	10610	20110504065232.741	20110504065233.174
PX3 (140)	10612	10614	20110504065233.608	20110504065235.553
PX3 (140)	10633	10635	20110504065239.663	20110504065240.092
PX3 (140)	10656	10659	20110504065246.147	20110504065246.795
PX3 (140)	10659	10661	20110504065246.795	20110504065247.229
PX3 (140)	10661	10663	20110504065247.229	20110504065247.659
PX3 (140)	12483	13128	20110504081342.342	20110504081633.615
PX4 (145)	10398	10575	20110504065136.745	20110504065224.092
PX4 (145)	10578	10580	20110504065224.741	20110504065225.174
PX4 (145)	10589	10591	20110504065228.635	20110504065229.065
PX4 (145)	10593	10595	20110504065229.499	20110504065229.932
PX4 (145)	10598	10600	20110504065230.581	20110504065231.014
PX4 (145)	10612	10614	20110504065233.608	20110504065235.553
PX4 (145)	10622	10624	20110504065237.284	20110504065237.713
PX4 (145)	10631	10633	20110504065239.229	20110504065239.663
PX4 (145)	10635	10637	20110504065240.092	20110504065240.526
PX4 (145)	10642	10644	20110504065241.608	20110504065243.553
PX4 (145)	10647	10649	20110504065244.202	20110504065244.631
PX4 (145)	10649	10651	20110504065244.631	20110504065245.065
PX4 (145)	10656	10658	20110504065246.147	20110504065246.580
PX4 (145)	10661	10663	20110504065247.229	20110504065247.659
PX4 (145)	12483	13128	20110504081342.342	20110504081633.615
IMG (150)	16038	16241	20110504065136.745	20110504065224.526
IMG (150)	16242	16244	20110504065224.741	20110504065225.174
IMG (150)	16244	16246	20110504065225.174	20110504065225.608
IMG (150)	16251	16253	20110504065227.334	20110504065227.768
IMG (150)	16257	16259	20110504065228.635	20110504065229.065
IMG (150)	16265	16267	20110504065230.362	20110504065230.795
IMG (150)	16278	16280	20110504065233.174	20110504065233.608
IMG (150)	16284	16286	20110504065234.905	20110504065235.553
IMG (150)	16294	16296	20110504065237.284	20110504065237.713
IMG (150)	16296	16298	20110504065237.713	20110504065238.147
IMG (150)	16302	16305	20110504065239.010	20110504065239.663
IMG (150)	16305	16307	20110504065239.663	20110504065240.092
IMG (150)	16307	16309	20110504065240.092	20110504065240.526

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	16309	16311	20110504065240.526	20110504065240.959
IMG (150)	16316	16320	20110504065242.256	20110504065243.553
IMG (150)	16323	16327	20110504065244.202	20110504065245.065
IMG (150)	16332	16335	20110504065246.147	20110504065246.795
IMG (150)	16335	16337	20110504065246.795	20110504065247.229
IMG (150)	4202	4932	20110504081342.123	20110504081633.615
VER (160)	7065	7099	20110504065129.608	20110504065225.608
VER (160)	7106	7109	20110504065241.608	20110504065241.608
VER (160)	10145	10251	20110504081337.584	20110504081633.615
AUX (180)	1409	1416	20110504065130.042	20110504065226.038
AUX (180)	2025	2047	20110504081338.018	20110504081634.049

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
04/05/2011 00:00:29	-	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)	99.27 %	-
GQisFlagQual set (PX2)	99.11 %	-
GQisFlagQual set (PX3)	99.20 %	-
GQisFlagQual set (PX4)	99.32 %	-
GQisFlagQual set (all)	99.22 %	-

Table 4: Quality flags

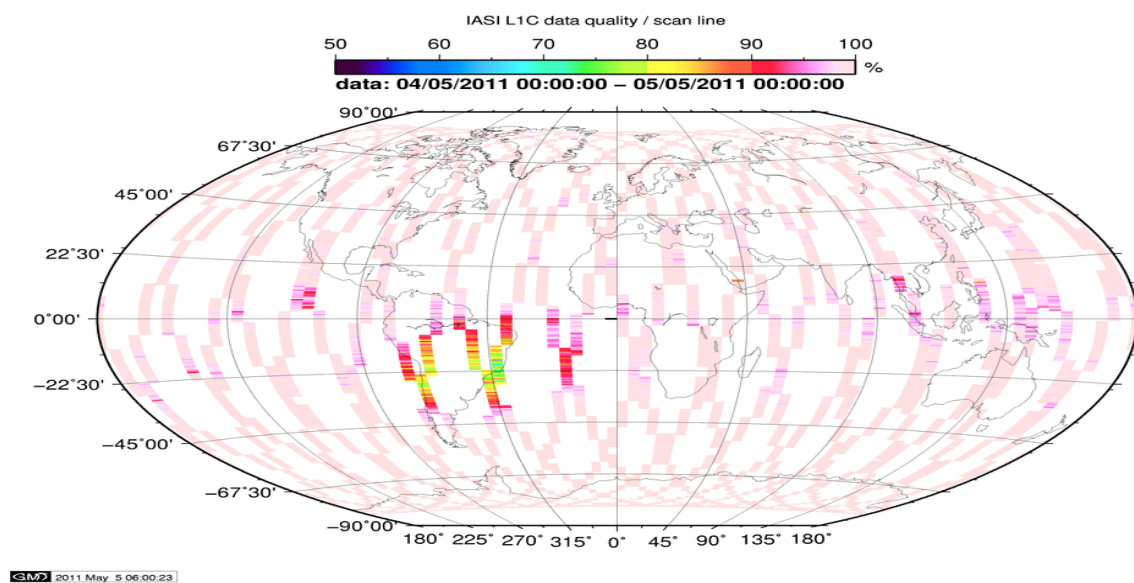


Figure 1: L1C data quality

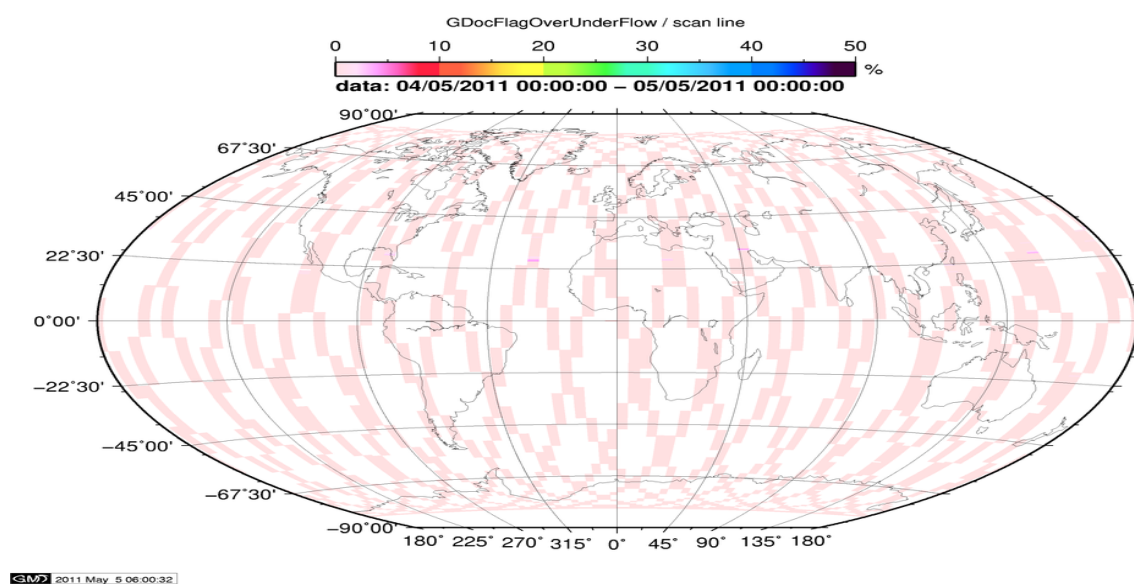


Figure 2: Flag of Over and Under Flows

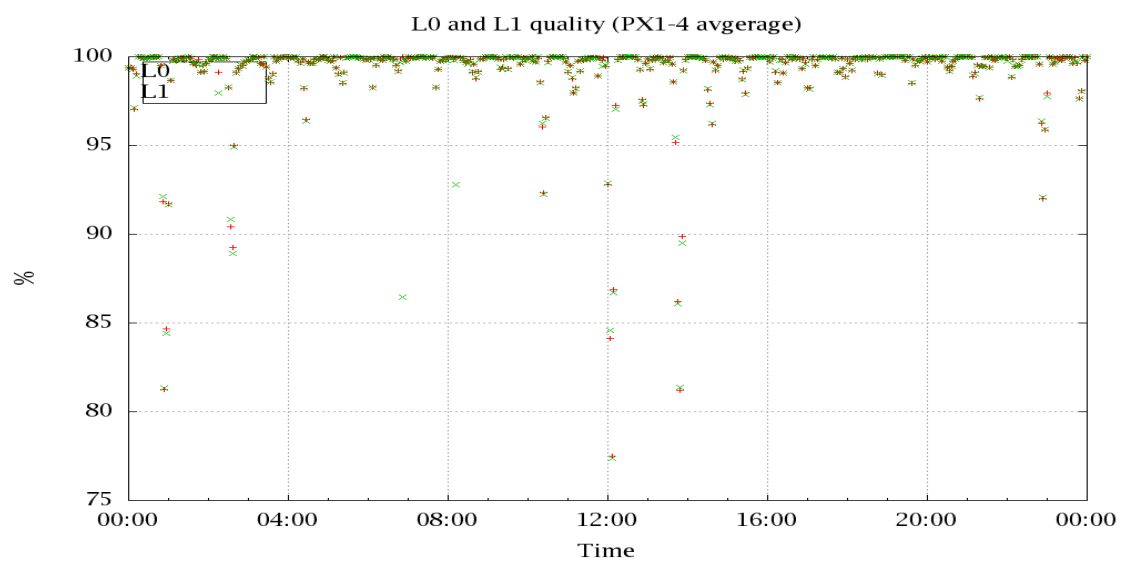


Figure 3: Level 0 and 1C overall quality

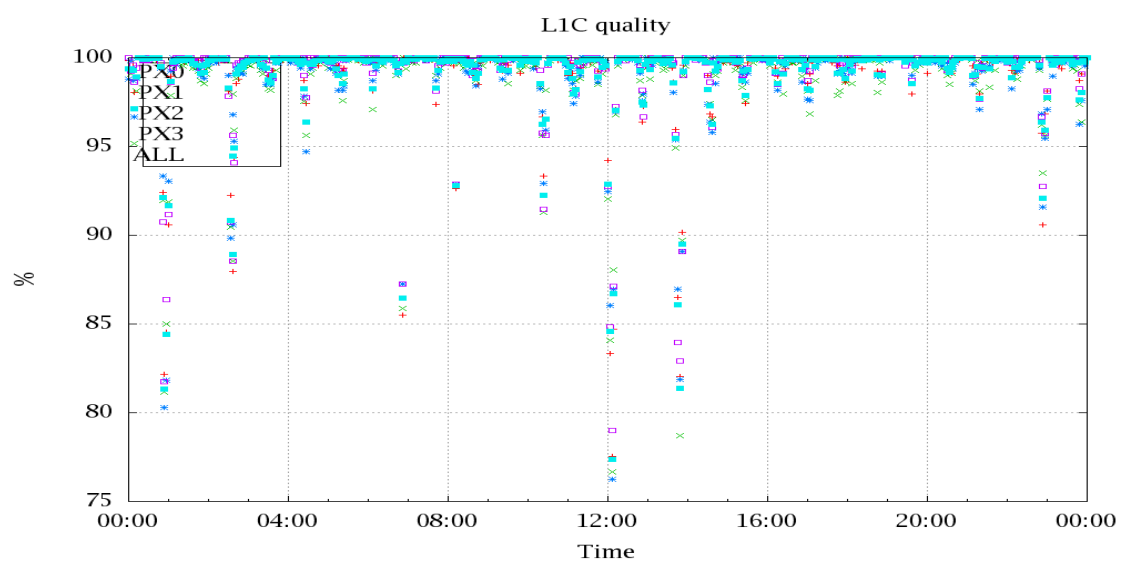


Figure 4: Level 1C quality

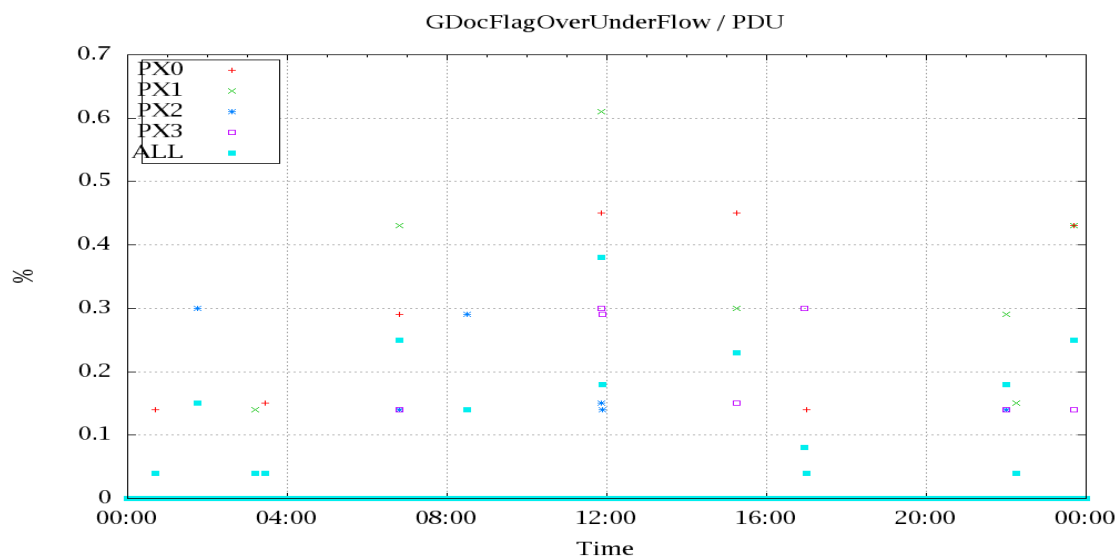


Figure 5: OverUnderFlowFlag timeseries

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.

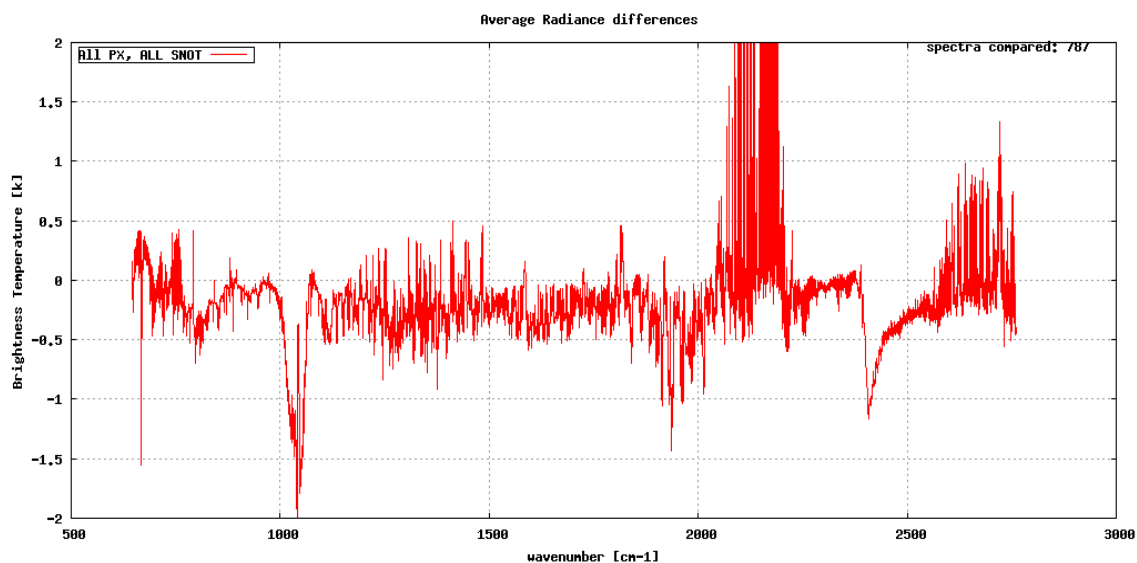


Figure 6: Average Radiance differences: OBS-CAL

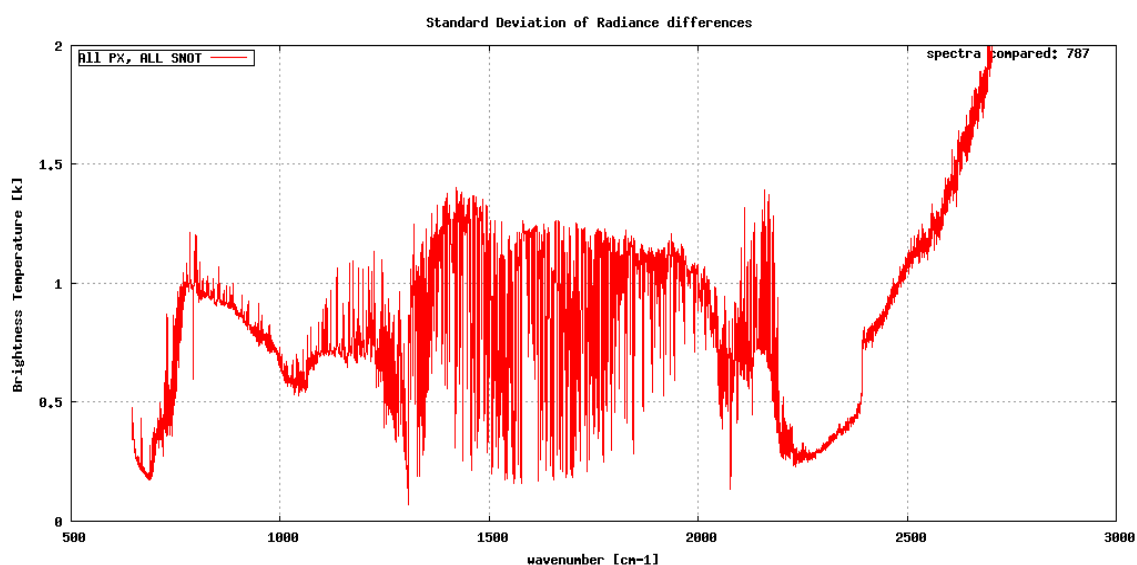


Figure 7: Standard Deviation of Radiance differences

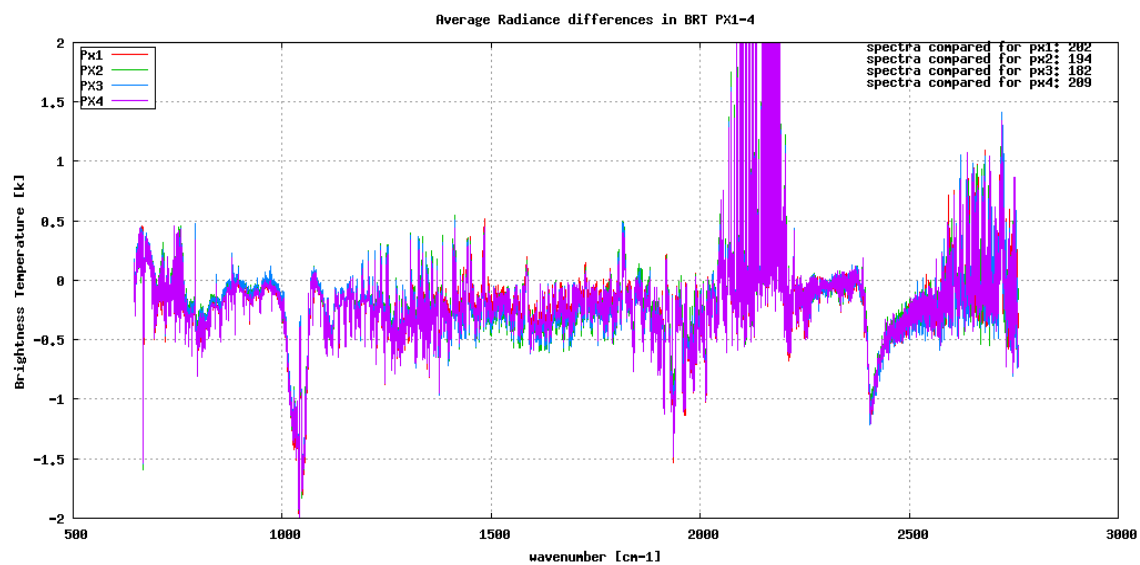


Figure 8: Average Radiance differences: OBS-CAL

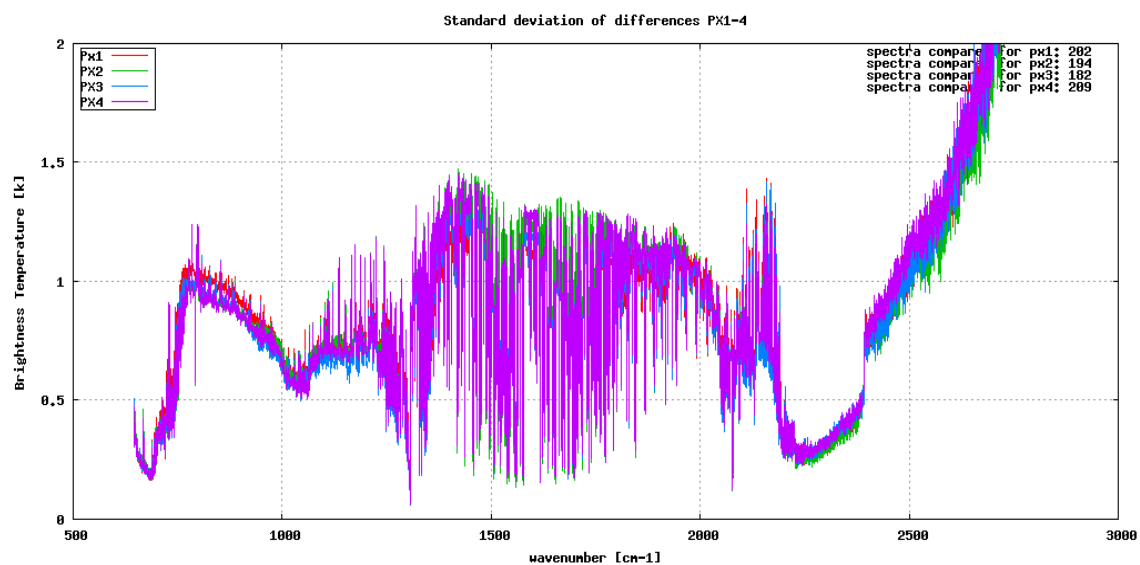


Figure 9: Standard Deviation of Radiance differences

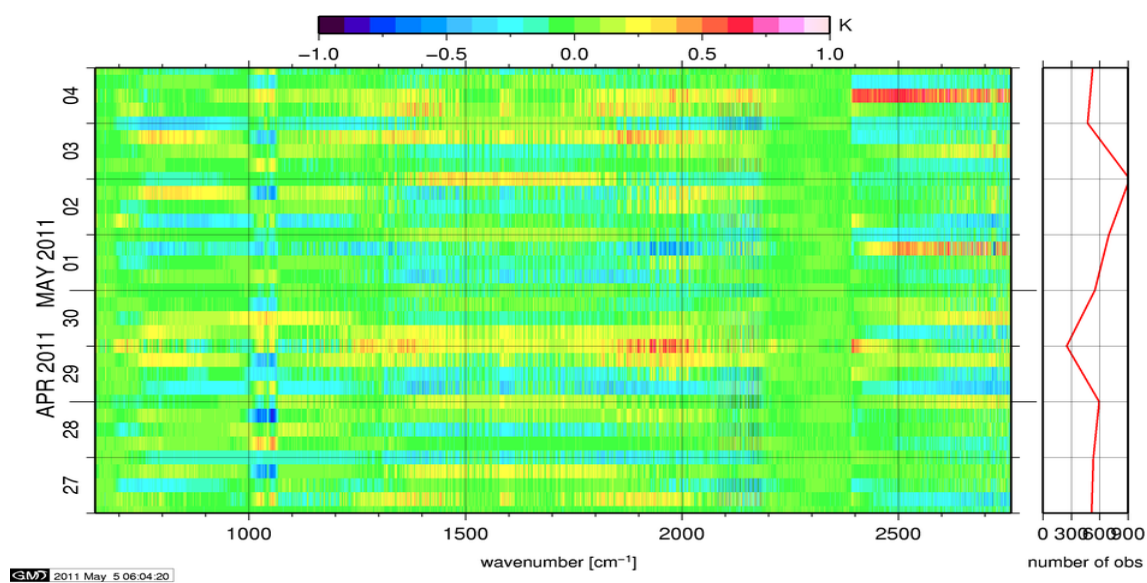


Figure 10: Radiance Anomaly in BRT: All Channels

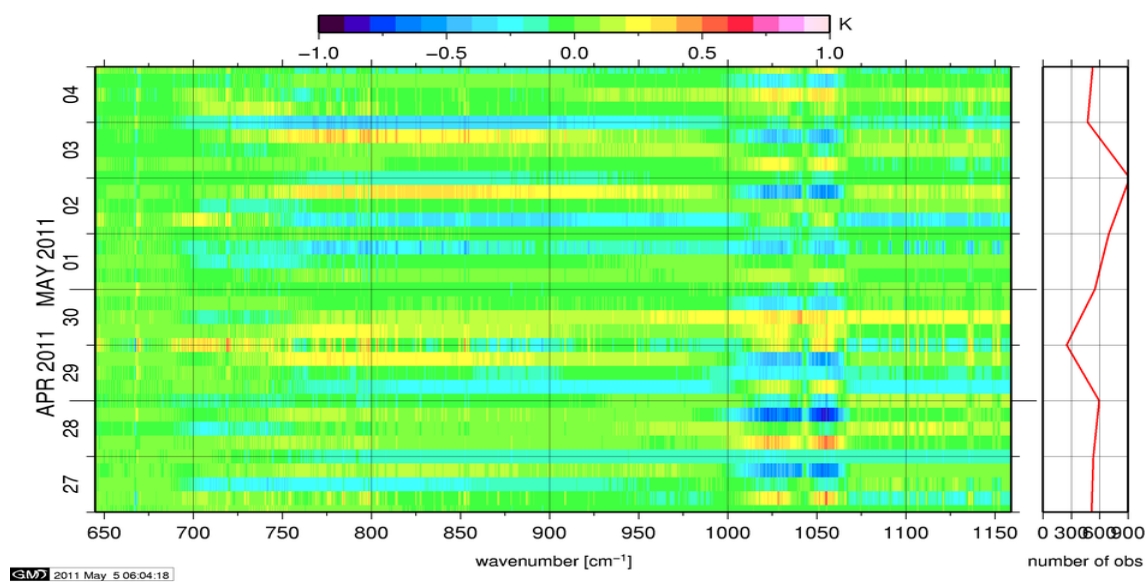


Figure 11: Radiance Anomaly in BRT: IASI Band 1

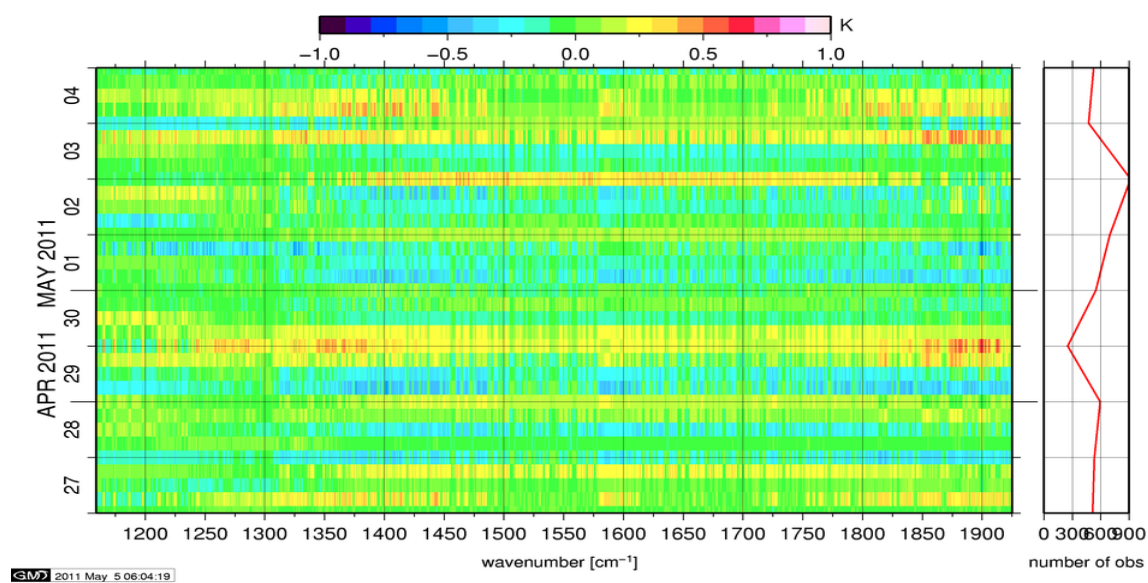


Figure 12: Radiance Anomaly in BRT: IASI Band 2

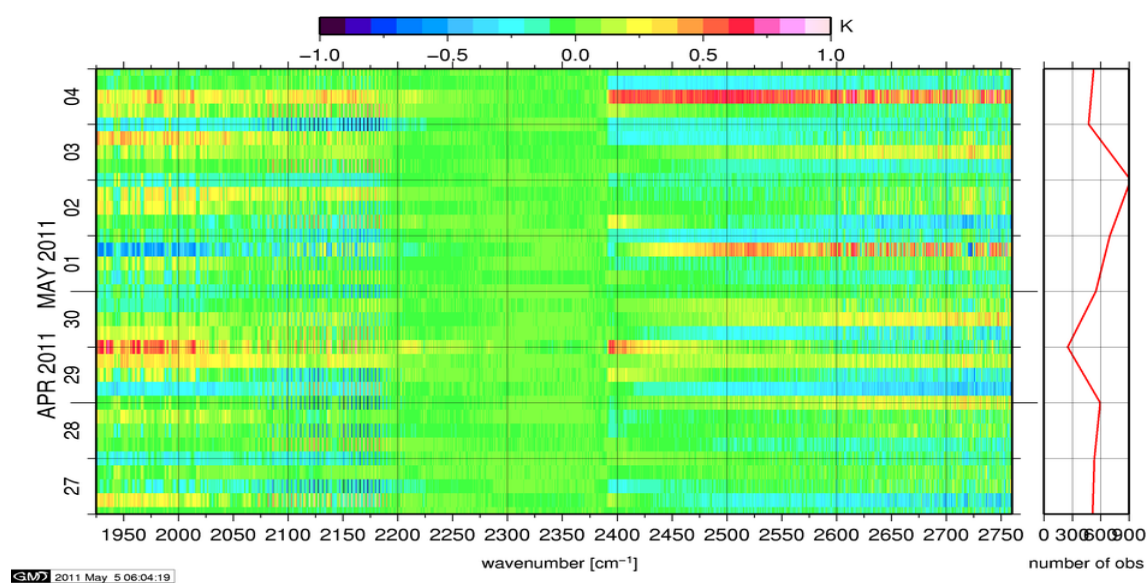


Figure 13: Radiance Anomaly in BRT: IASI Band 3

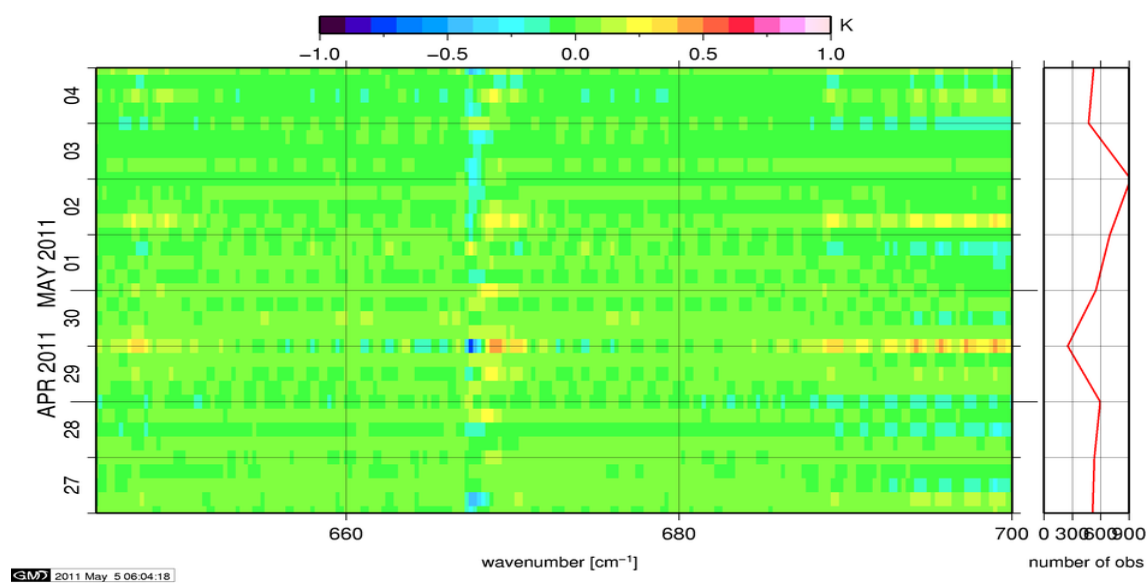


Figure 14: Radiance Anomaly in BRT: CO2 14

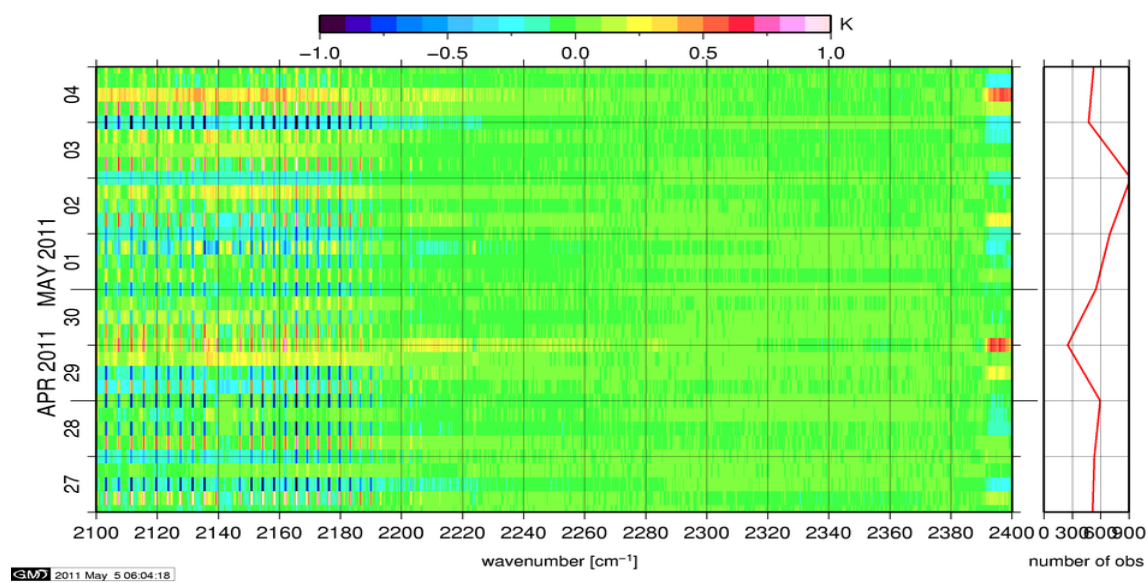


Figure 15: Radiance Anomaly in BRT: CO2 4.3

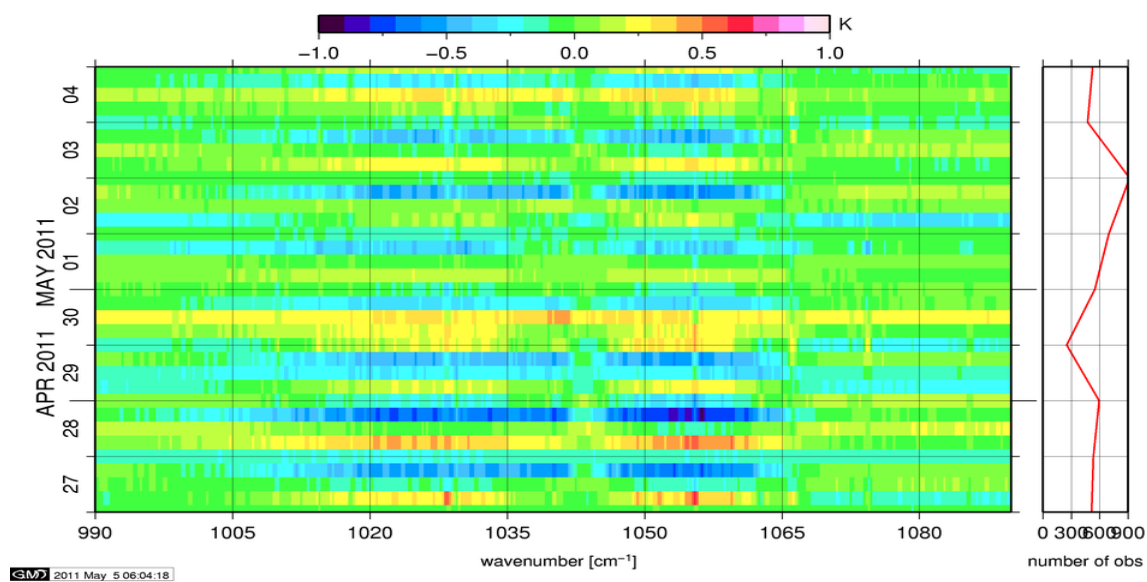


Figure 16: Radiance Anomaly in BRT: O3

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.

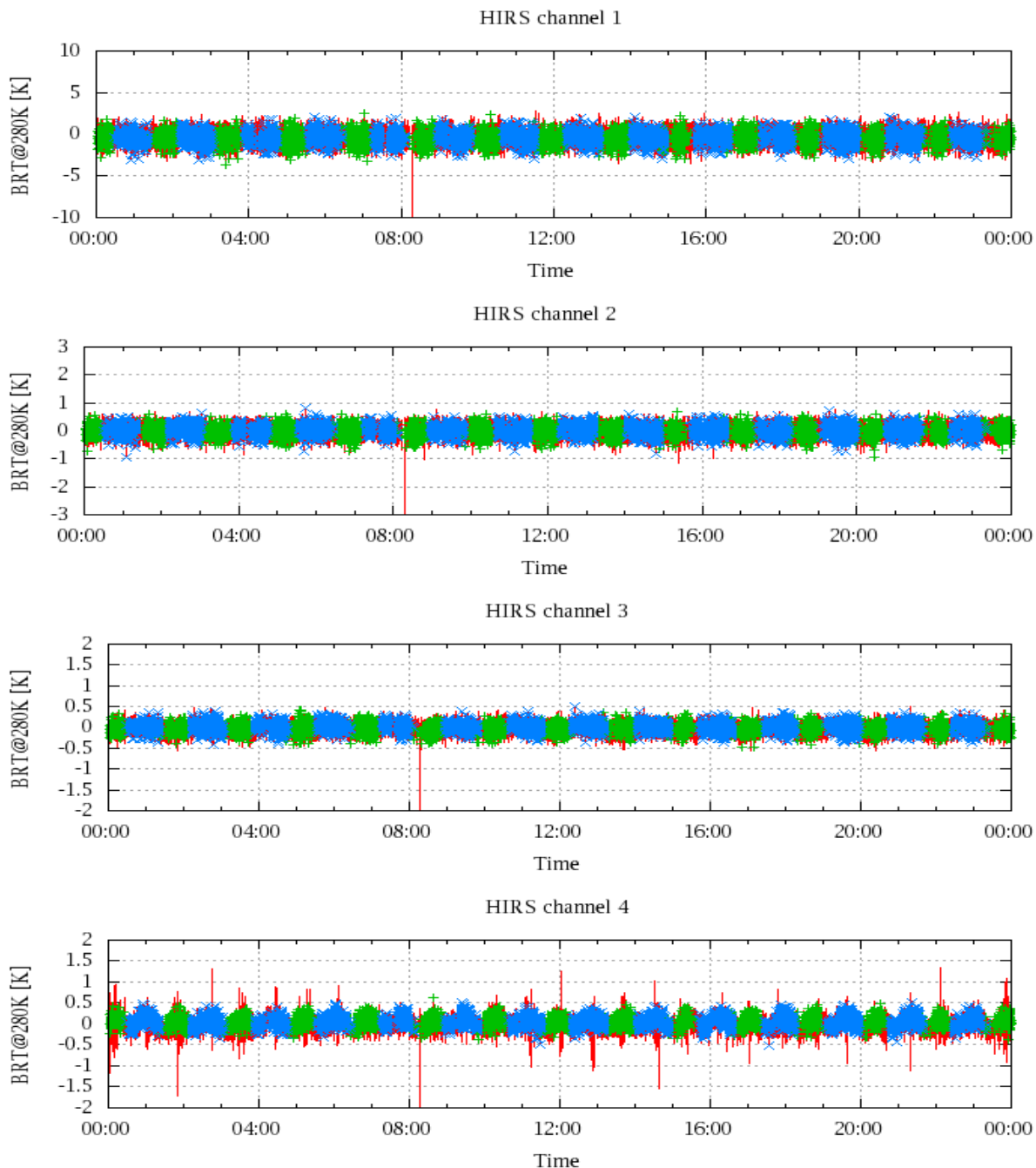


Figure 17: Radiance Differences in BRT

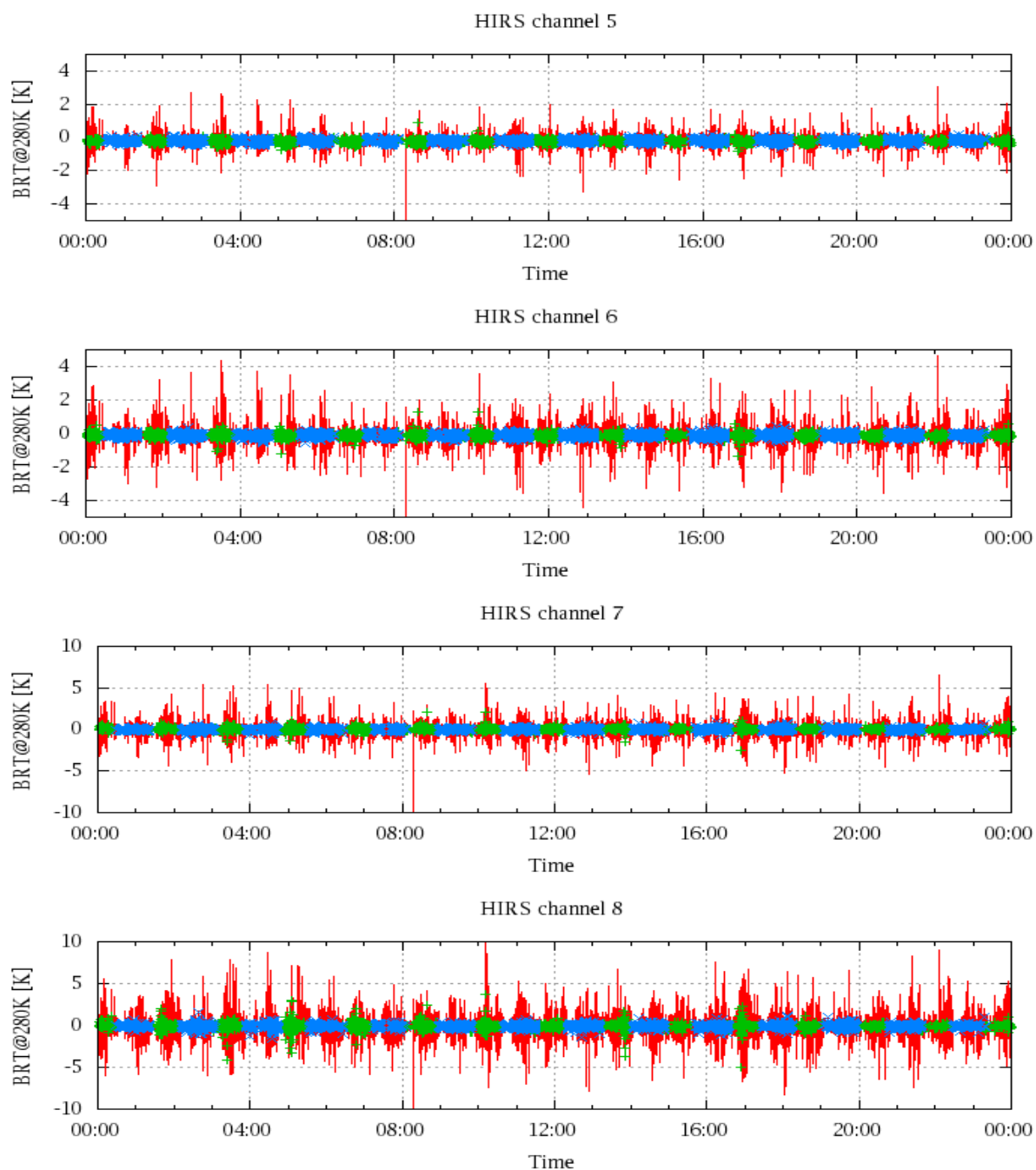


Figure 18: Radiance Differences in BRT

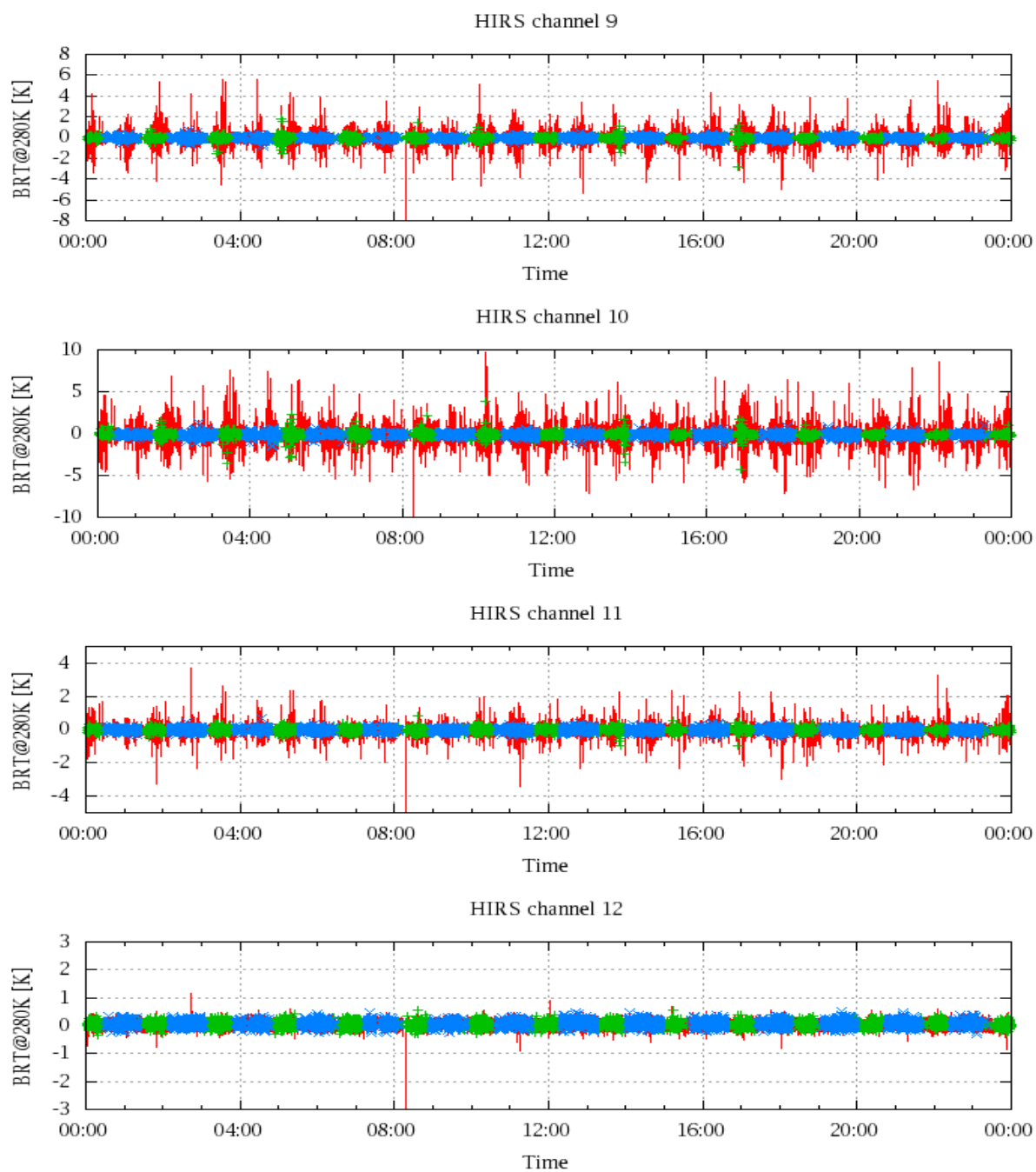


Figure 19: Radiance Differences in BRT

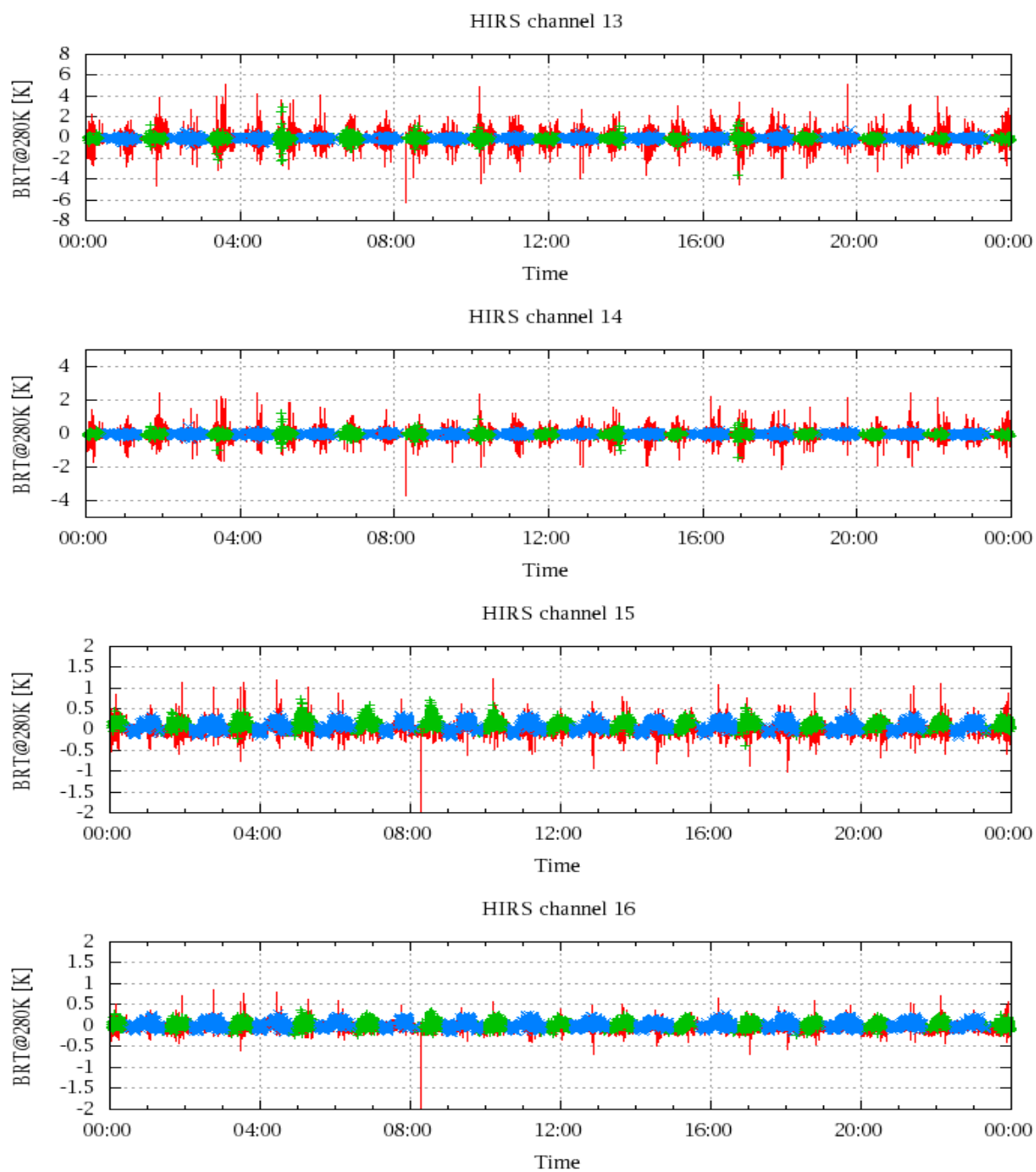


Figure 20: Radiance Differences in BRT

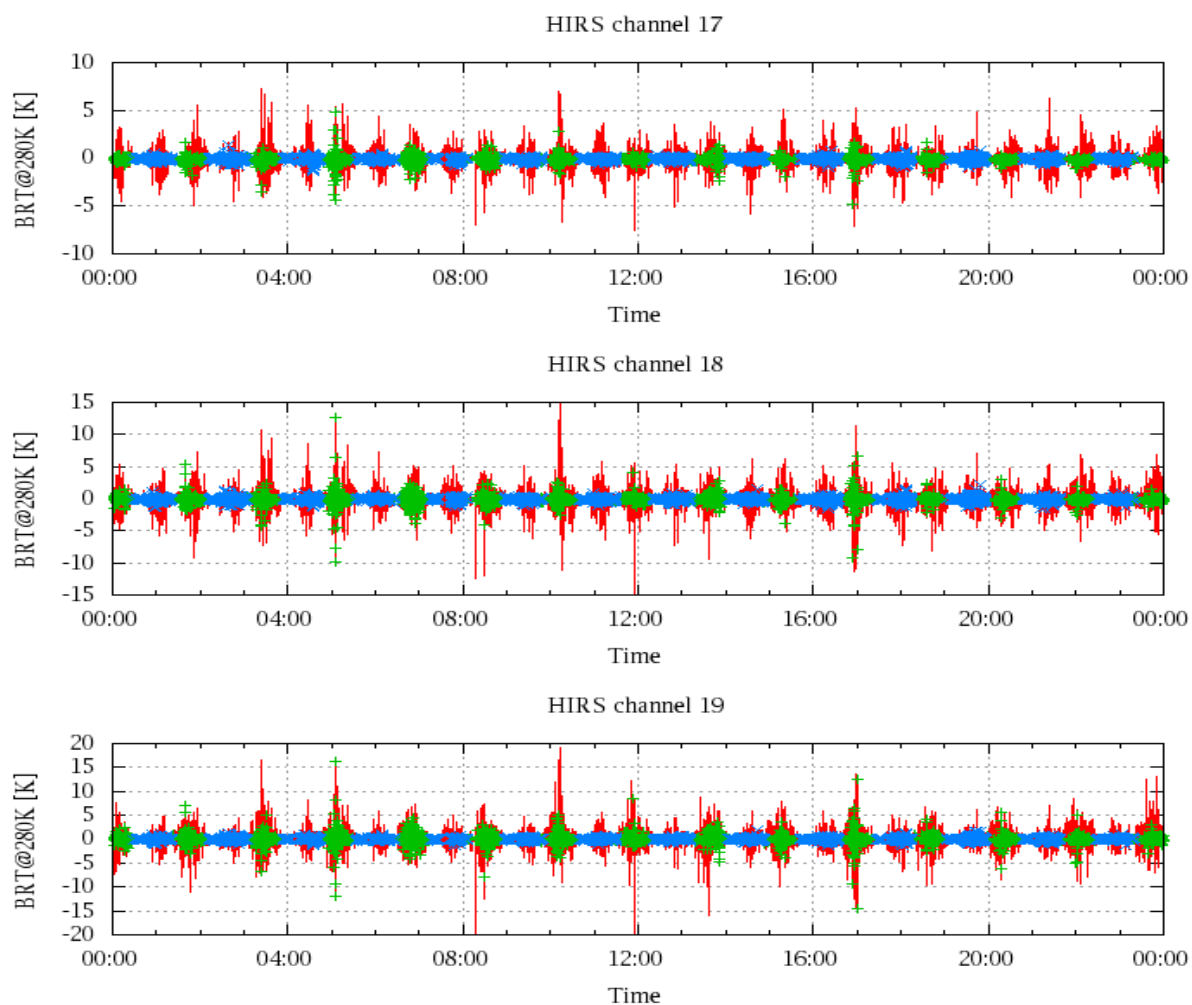


Figure 21: Radinace Differences in BRT