

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

25/07/2011 00:00:00 - 26/07/2011 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 25/07/2011 00:00:00 - 26/07/2011 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 25/07/2011 00:00:00 - 26/07/2011 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	414	e
L1 ENG PDUs	412	e
L1 ENG distinct GEPSGranule	413	a
L1 DPX PDUs (RM: IASI-HIRS)	412	e
L1 DPS Files (RM: OBS-CAL NWP based)	412	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	10165	0	20110725091602.141	20110725124153.669
PX1 (130)	3549	3581	20110725190143.898	20110725190153.843
PX1 (130)	3609	3617	20110725190159.894	20110725190203.140
PX1 (130)	3638	3640	20110725190207.679	20110725190209.624
PX1 (130)	3644	3655	20110725190210.492	20110725190212.867
PX1 (130)	3655	3666	20110725190212.867	20110725190215.249
PX1 (130)	3669	3680	20110725190215.894	20110725190219.788
PX1 (130)	3680	3691	20110725190219.788	20110725190222.167
PX1 (130)	3697	3700	20110725190223.464	20110725190225.624
PX1 (130)	3710	3716	20110725190227.788	20110725190229.085
PX1 (130)	3721	3727	20110725190230.167	20110725190231.464
PX1 (130)	3727	3742	20110725190231.464	20110725190236.218
PX1 (130)	3751	3788	20110725190238.167	20110725190247.679
PX1 (130)	3789	3792	20110725190247.894	20110725190250.058
PX1 (130)	3793	3803	20110725190250.273	20110725190252.437
PX1 (130)	3805	3814	20110725190252.866	20110725190254.812
PX1 (130)	3819	3839	20110725190255.894	20110725190301.730
PX1 (130)	3839	3854	20110725190301.730	20110725190306.487

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	3855	3875	20110725190306.706	20110725190311.030
PX1 (130)	3878	3880	20110725190311.679	20110725190313.624
PX2 (135)	10165	0	20110725091602.141	20110725124153.669
PX2 (135)	3549	3581	20110725190143.898	20110725190153.843
PX2 (135)	3609	3617	20110725190159.894	20110725190203.140
PX2 (135)	3638	3640	20110725190207.679	20110725190209.624
PX2 (135)	3643	3655	20110725190210.273	20110725190212.867
PX2 (135)	3655	3666	20110725190212.867	20110725190215.249
PX2 (135)	3669	3680	20110725190215.894	20110725190219.788
PX2 (135)	3680	3691	20110725190219.788	20110725190222.167
PX2 (135)	3697	3700	20110725190223.464	20110725190225.624
PX2 (135)	3710	3716	20110725190227.788	20110725190229.085
PX2 (135)	3721	3727	20110725190230.167	20110725190231.464
PX2 (135)	3727	3741	20110725190231.464	20110725190236.003
PX2 (135)	3751	3777	20110725190238.167	20110725190245.300
PX2 (135)	3777	3788	20110725190245.300	20110725190247.679
PX2 (135)	3789	3792	20110725190247.894	20110725190250.058
PX2 (135)	3793	3803	20110725190250.273	20110725190252.437
PX2 (135)	3805	3814	20110725190252.866	20110725190254.812
PX2 (135)	3819	3839	20110725190255.894	20110725190301.730
PX2 (135)	3839	3846	20110725190301.730	20110725190303.245
PX2 (135)	3846	3853	20110725190303.245	20110725190306.273
PX2 (135)	3855	3875	20110725190306.706	20110725190311.030
PX2 (135)	3877	3880	20110725190311.460	20110725190313.624
PX3 (140)	10165	0	20110725091602.141	20110725124153.669
PX3 (140)	3549	3581	20110725190143.898	20110725190153.843
PX3 (140)	3609	3617	20110725190159.894	20110725190203.140
PX3 (140)	3637	3640	20110725190207.464	20110725190209.624
PX3 (140)	3643	3655	20110725190210.273	20110725190212.867
PX3 (140)	3655	3666	20110725190212.867	20110725190215.249
PX3 (140)	3669	3691	20110725190215.894	20110725190222.167
PX3 (140)	3697	3700	20110725190223.464	20110725190225.624
PX3 (140)	3710	3716	20110725190227.788	20110725190229.085
PX3 (140)	3721	3730	20110725190230.167	20110725190233.624
PX3 (140)	3730	3741	20110725190233.624	20110725190236.003
PX3 (140)	3751	3766	20110725190238.167	20110725190242.921
PX3 (140)	3766	3777	20110725190242.921	20110725190245.300
PX3 (140)	3777	3788	20110725190245.300	20110725190247.679
PX3 (140)	3789	3792	20110725190247.894	20110725190250.058
PX3 (140)	3793	3803	20110725190250.273	20110725190252.437
PX3 (140)	3804	3813	20110725190252.652	20110725190254.597
PX3 (140)	3819	3839	20110725190255.894	20110725190301.730
PX3 (140)	3839	3846	20110725190301.730	20110725190303.245
PX3 (140)	3846	3853	20110725190303.245	20110725190306.273
PX3 (140)	3855	3875	20110725190306.706	20110725190311.030
PX3 (140)	3877	3880	20110725190311.460	20110725190313.624
PX4 (145)	10165	0	20110725091602.141	20110725124153.669
PX4 (145)	3549	3581	20110725190143.898	20110725190153.843
PX4 (145)	3609	3617	20110725190159.894	20110725190203.140
PX4 (145)	3637	3640	20110725190207.464	20110725190209.624
PX4 (145)	3643	3655	20110725190210.273	20110725190212.867
PX4 (145)	3655	3666	20110725190212.867	20110725190215.249
PX4 (145)	3669	3691	20110725190215.894	20110725190222.167

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	3696	3700	20110725190223.245	20110725190225.624
PX4 (145)	3710	3716	20110725190227.788	20110725190229.085
PX4 (145)	3721	3730	20110725190230.167	20110725190233.624
PX4 (145)	3730	3741	20110725190233.624	20110725190236.003
PX4 (145)	3751	3766	20110725190238.167	20110725190242.921
PX4 (145)	3766	3777	20110725190242.921	20110725190245.300
PX4 (145)	3777	3788	20110725190245.300	20110725190247.679
PX4 (145)	3789	3792	20110725190247.894	20110725190250.058
PX4 (145)	3793	3802	20110725190250.273	20110725190252.218
PX4 (145)	3804	3813	20110725190252.652	20110725190254.597
PX4 (145)	3819	3846	20110725190255.894	20110725190303.245
PX4 (145)	3846	3849	20110725190303.245	20110725190303.894
PX4 (145)	3849	3853	20110725190303.894	20110725190306.273
PX4 (145)	3855	3875	20110725190306.706	20110725190311.030
PX4 (145)	3877	3880	20110725190311.460	20110725190313.624
IMG (150)	5260	0	20110725091601.922	20110725124153.669
IMG (150)	14941	14981	20110725190143.898	20110725190153.843
IMG (150)	15009	15021	20110725190159.894	20110725190203.140
IMG (150)	15041	15044	20110725190207.464	20110725190208.327
IMG (150)	15051	15073	20110725190210.273	20110725190215.031
IMG (150)	15080	15103	20110725190216.976	20110725190222.167
IMG (150)	15108	15112	20110725190223.245	20110725190224.327
IMG (150)	15125	15132	20110725190227.570	20110725190229.085
IMG (150)	15136	15142	20110725190229.949	20110725190231.245
IMG (150)	15142	15161	20110725190231.245	20110725190236.003
IMG (150)	15170	15201	20110725190237.949	20110725190245.300
IMG (150)	15201	15212	20110725190245.300	20110725190247.679
IMG (150)	15213	15220	20110725190247.894	20110725190250.058
IMG (150)	15221	15230	20110725190250.273	20110725190252.218
IMG (150)	15232	15241	20110725190252.652	20110725190254.597
IMG (150)	15247	15270	20110725190255.894	20110725190301.515
IMG (150)	15270	15289	20110725190301.515	20110725190306.273
IMG (150)	15290	15311	20110725190306.487	20110725190311.030
IMG (150)	15313	15316	20110725190311.460	20110725190312.327
VER (160)	6165	0	20110725091559.977	20110725124159.939
VER (160)	14241	14250	20110725190143.898	20110725190159.894
VER (160)	14251	14256	20110725190159.894	20110725190207.679
VER (160)	14264	14266	20110725190215.894	20110725190223.464
VER (160)	14269	14277	20110725190223.464	20110725190238.167
VER (160)	14277	14299	20110725190238.167	20110725190311.679
AUX (180)	11061	0	20110725091600.411	20110725124200.368
AUX (180)	2847	2851	20110725190136.331	20110725190208.327
AUX (180)	2853	2859	20110725190224.327	20110725190312.327

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
25/07/2011 00:03:55	-	Normal operation
25/07/2011 09:16:11	Normal operation	Heater refuse
25/07/2011 12:00:27	Heater refuse	Heater 1 warm up
25/07/2011 12:00:59	Heater 1 warm up	Heater 2
25/07/2011 12:10:51	Heater 2	Auxiliary ASE synchronised
25/07/2011 12:41:47	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	414	e
L1 ENG PDUs	412	e
L1 ENG distinct GEPSGranule	413	a
GQisFlagQual set (PX1)	99.32 %	-
GQisFlagQual set (PX2)	99.14 %	-
GQisFlagQual set (PX3)	99.24 %	-
GQisFlagQual set (PX4)	99.34 %	-
GQisFlagQual set (all)	99.26 %	-

Table 4: Quality flags

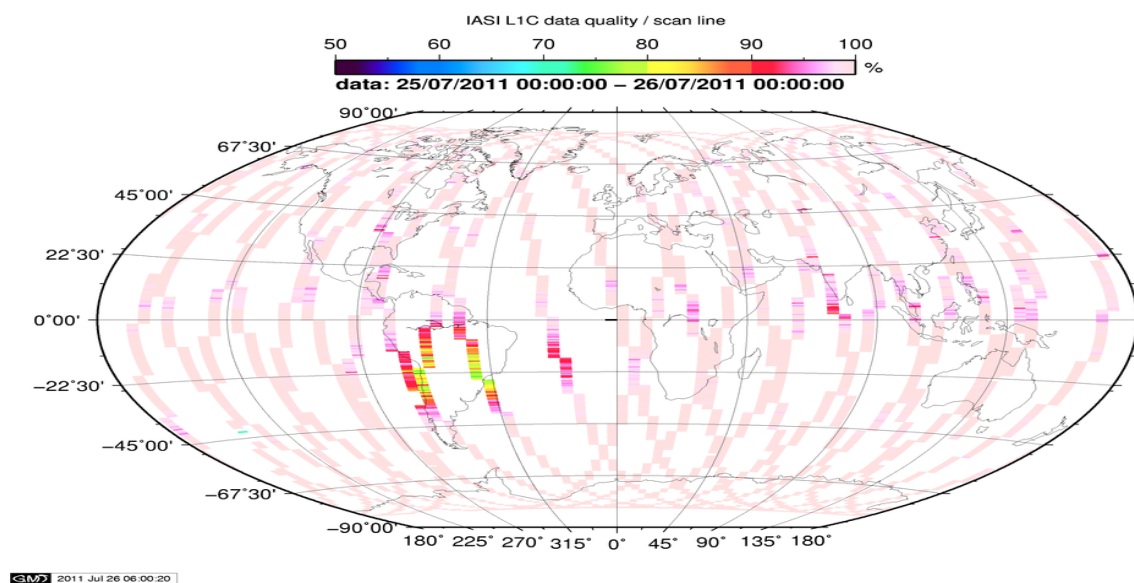


Figure 1: L1C data quality

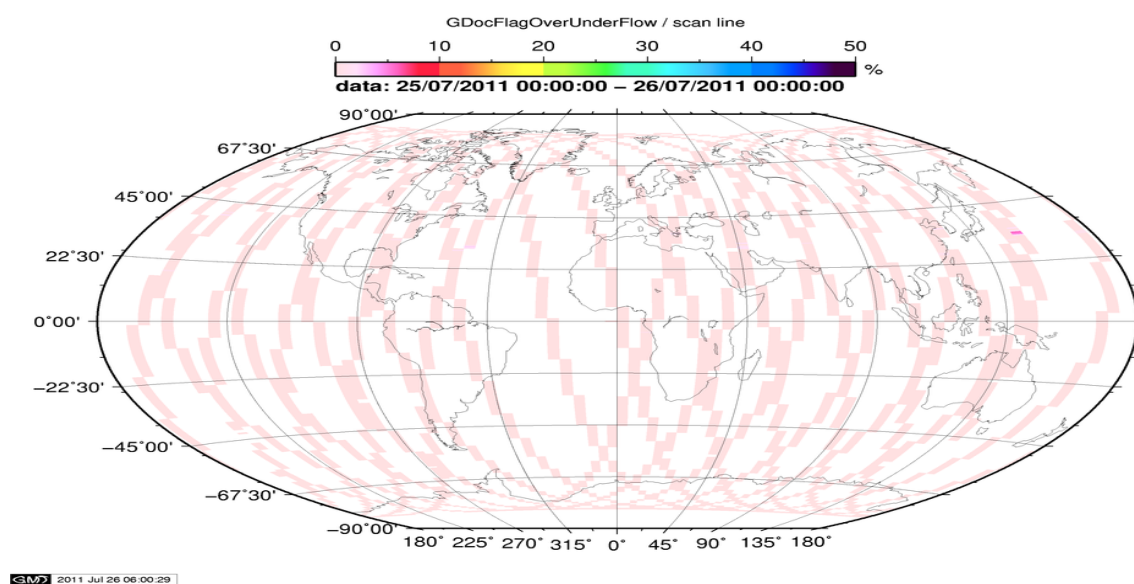


Figure 2: Flag of Over and Under Flows

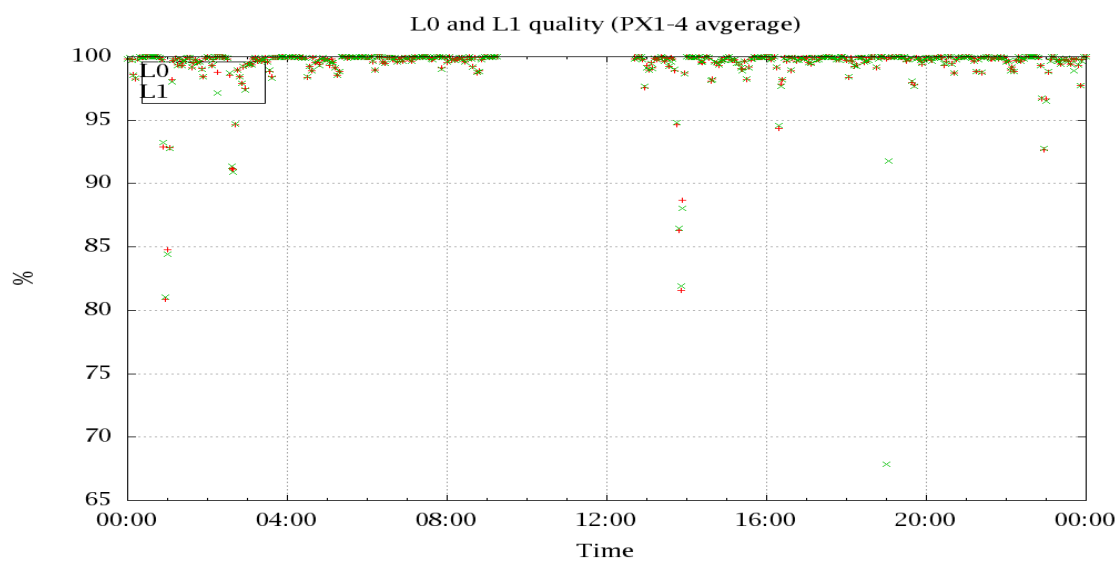


Figure 3: Level 0 and 1C overall quality

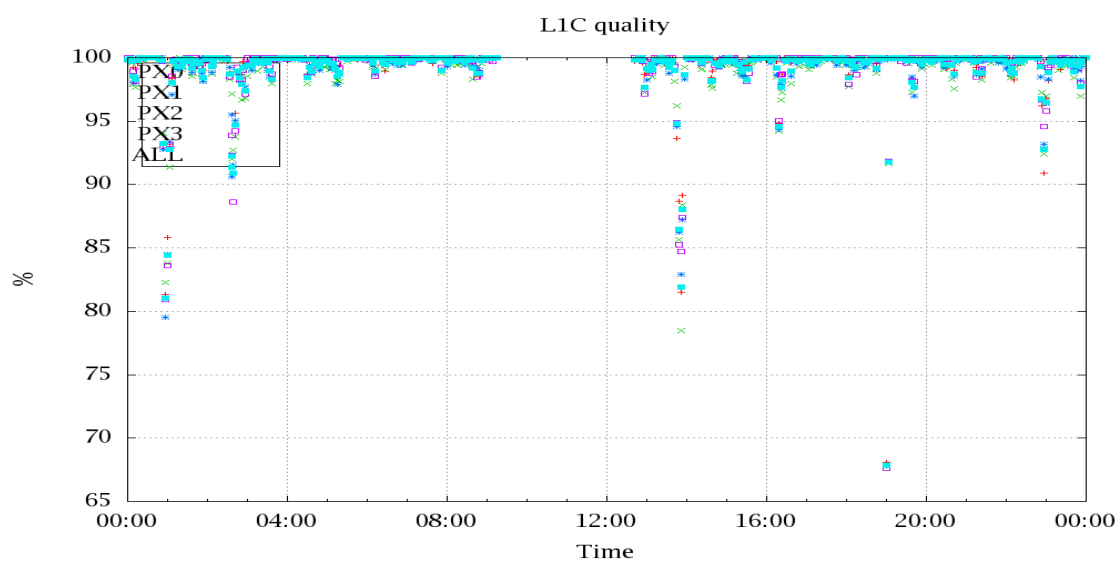


Figure 4: Level 1C quality

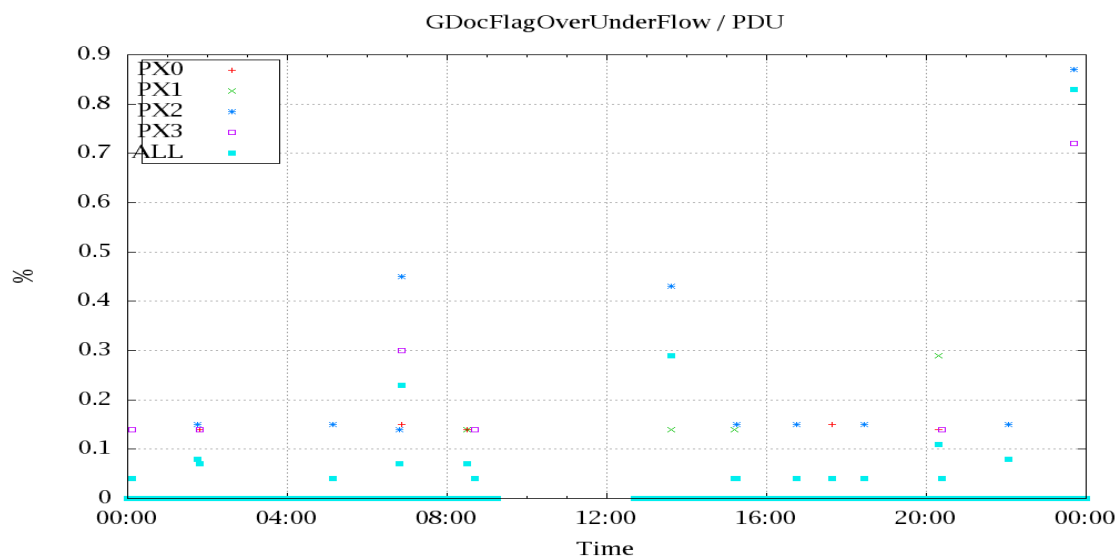


Figure 5: OverUnderFlowFlag timeseries

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.

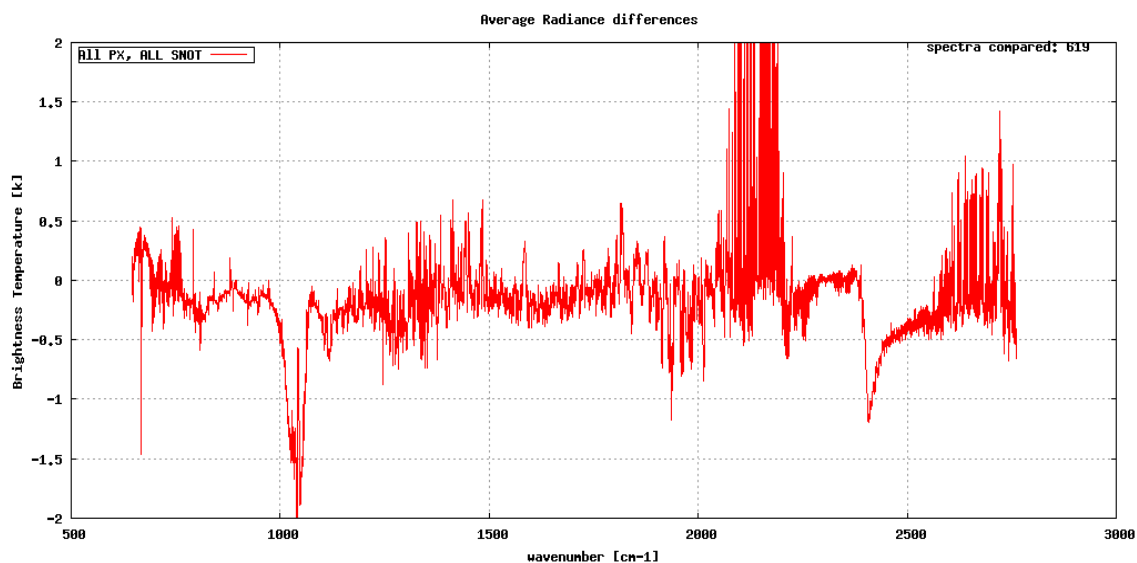


Figure 6: Average Radiance differences: OBS-CAL

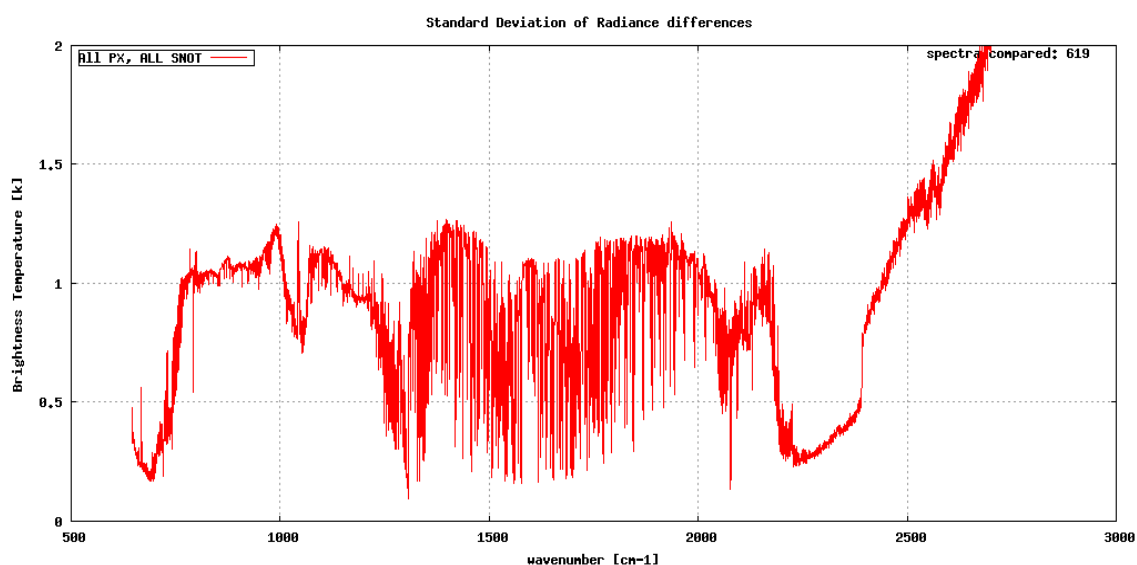


Figure 7: Standard Deviation of Radiance differences

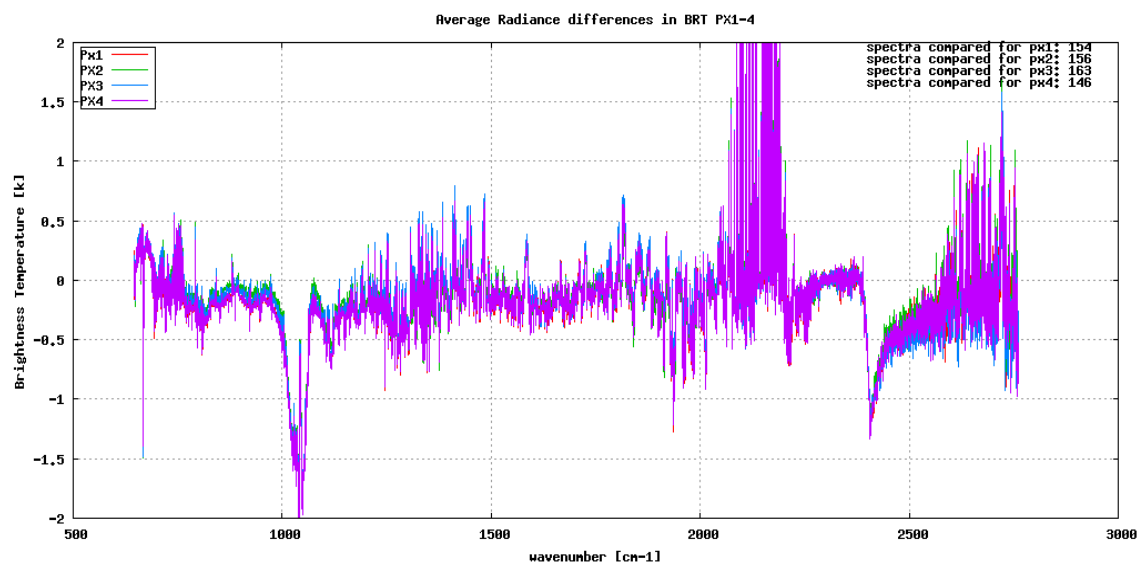


Figure 8: Average Radiance differences: OBS-CAL

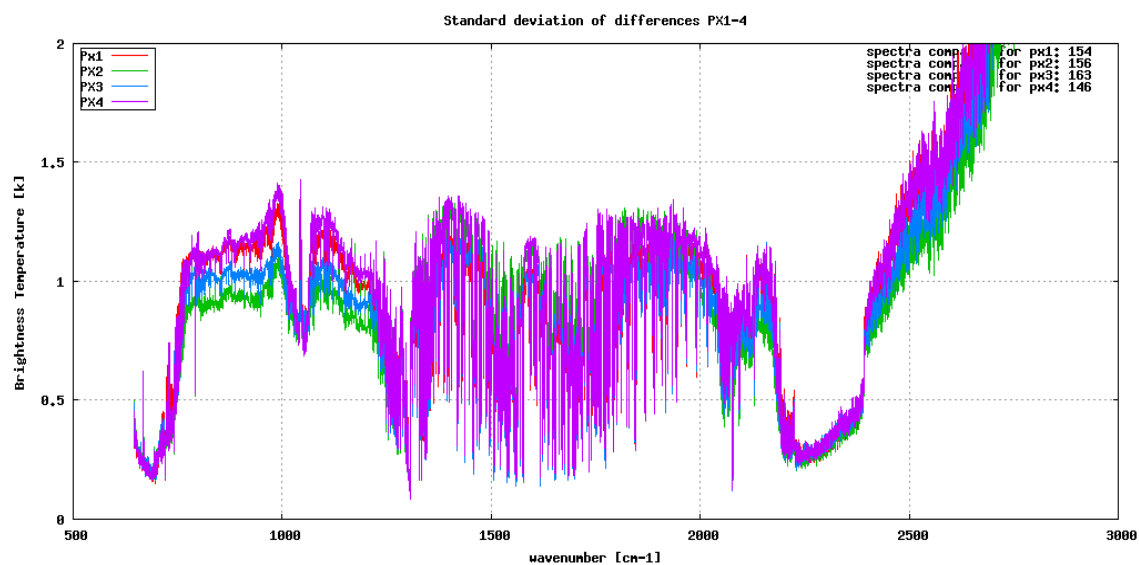


Figure 9: Standard Deviation of Radiance differences

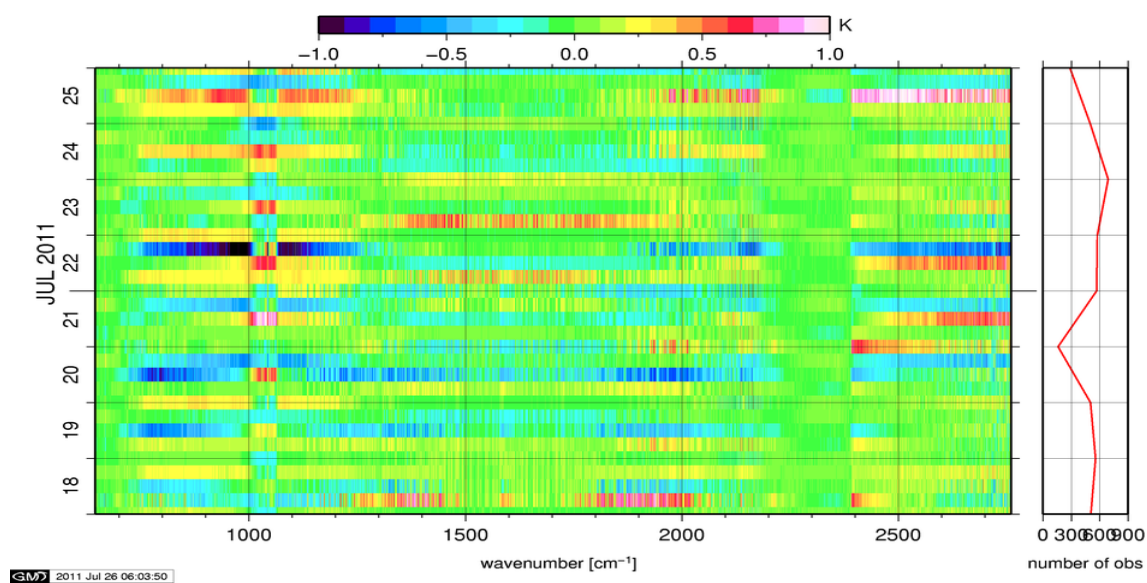


Figure 10: Radiance Anomaly in BRT: All Channels

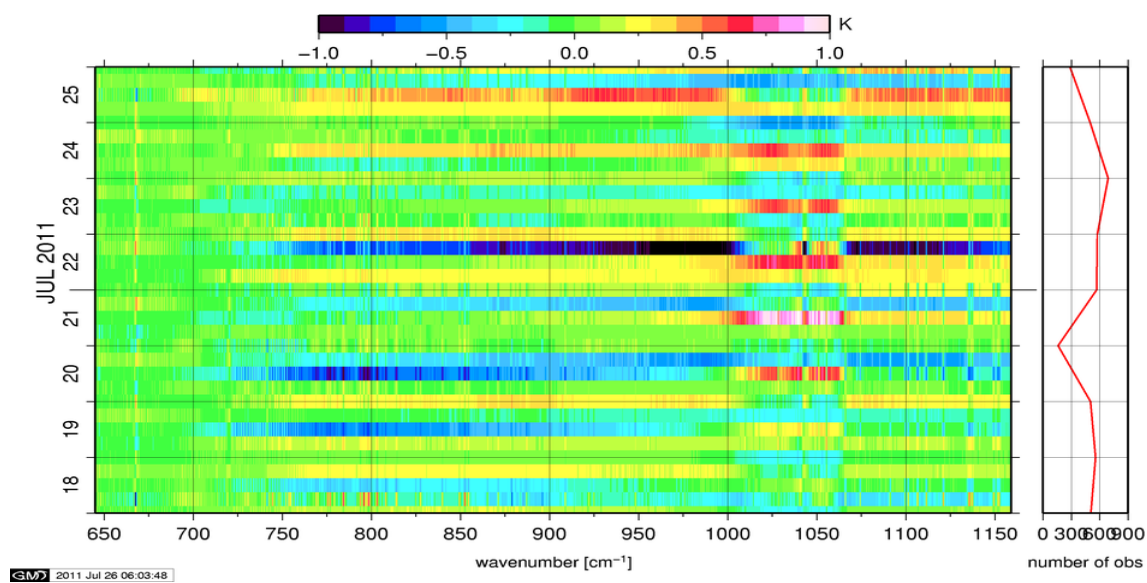


Figure 11: Radiance Anomaly in BRT: IASI Band 1

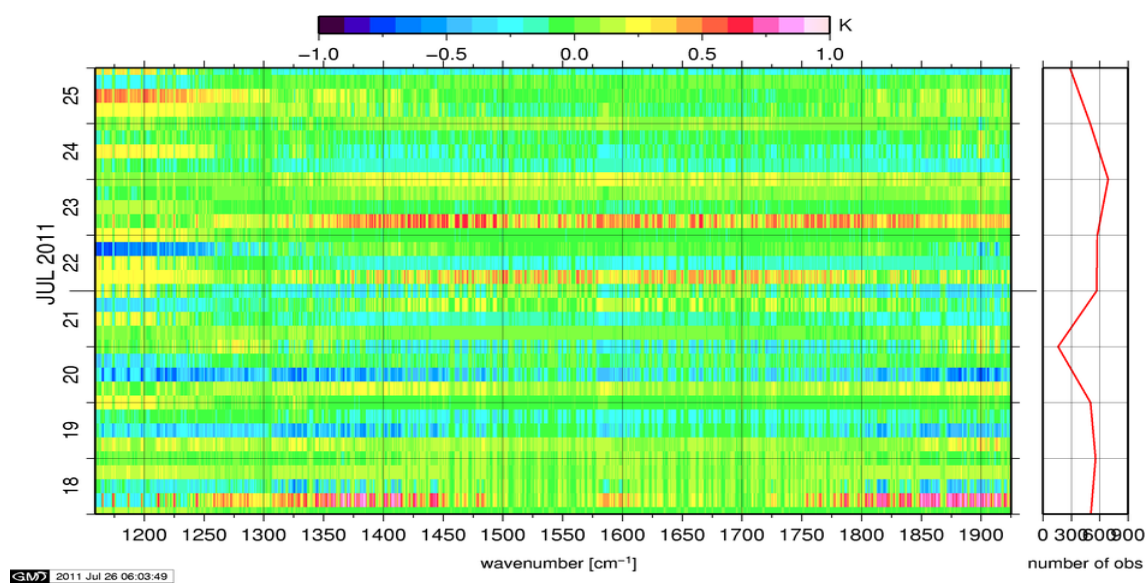


Figure 12: Radiance Anomaly in BRT: IASI Band 2

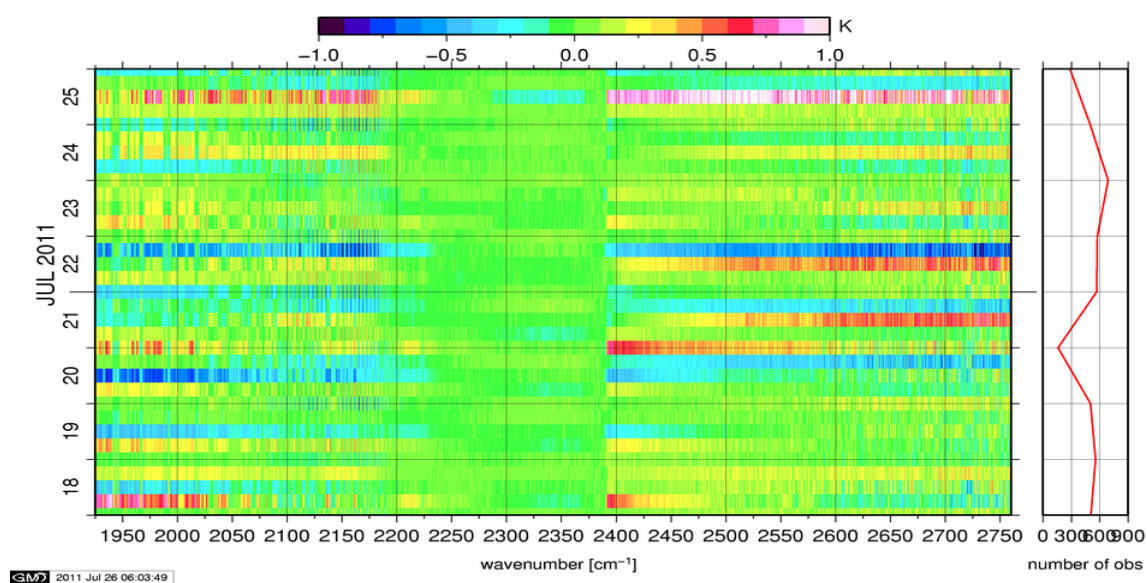


Figure 13: Radiance Anomaly in BRT: IASI Band 3

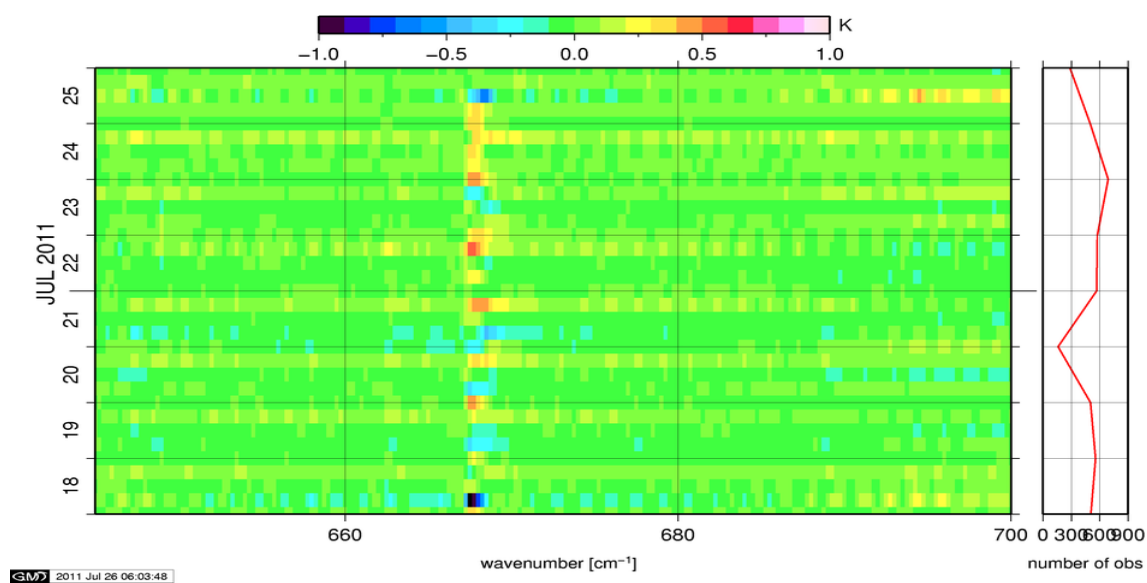


Figure 14: Radiance Anomaly in BRT: CO2 14

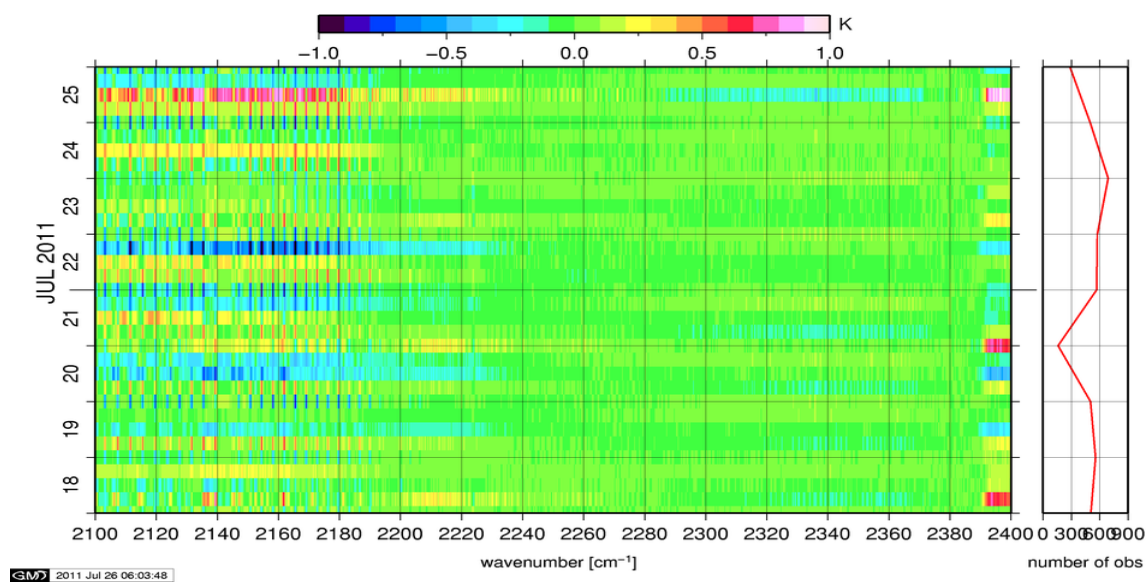


Figure 15: Radiance Anomaly in BRT: CO2 4.3

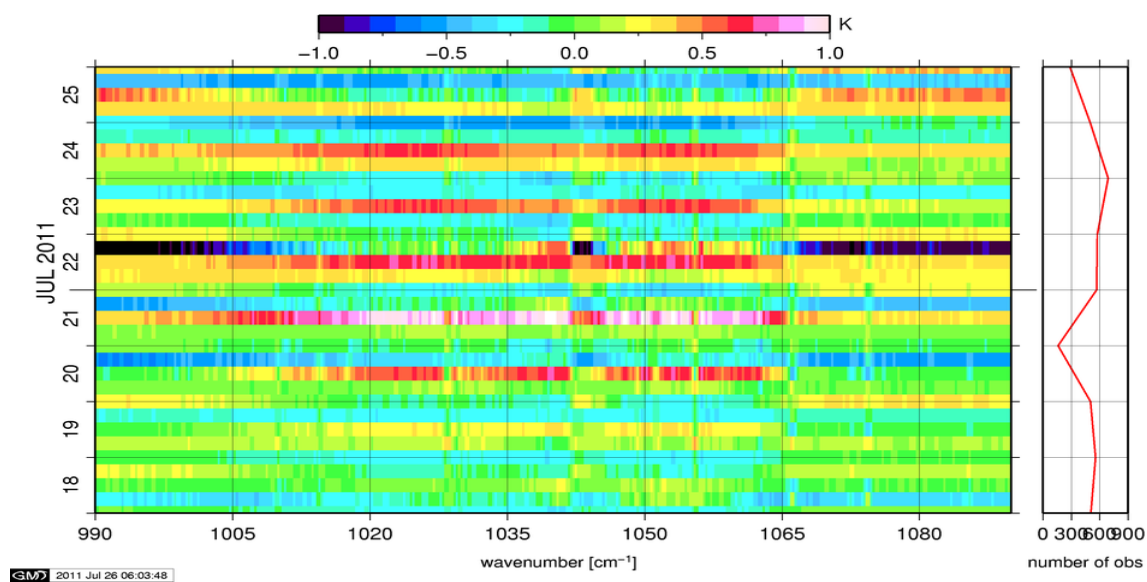


Figure 16: Radiance Anomaly in BRT: O3

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.

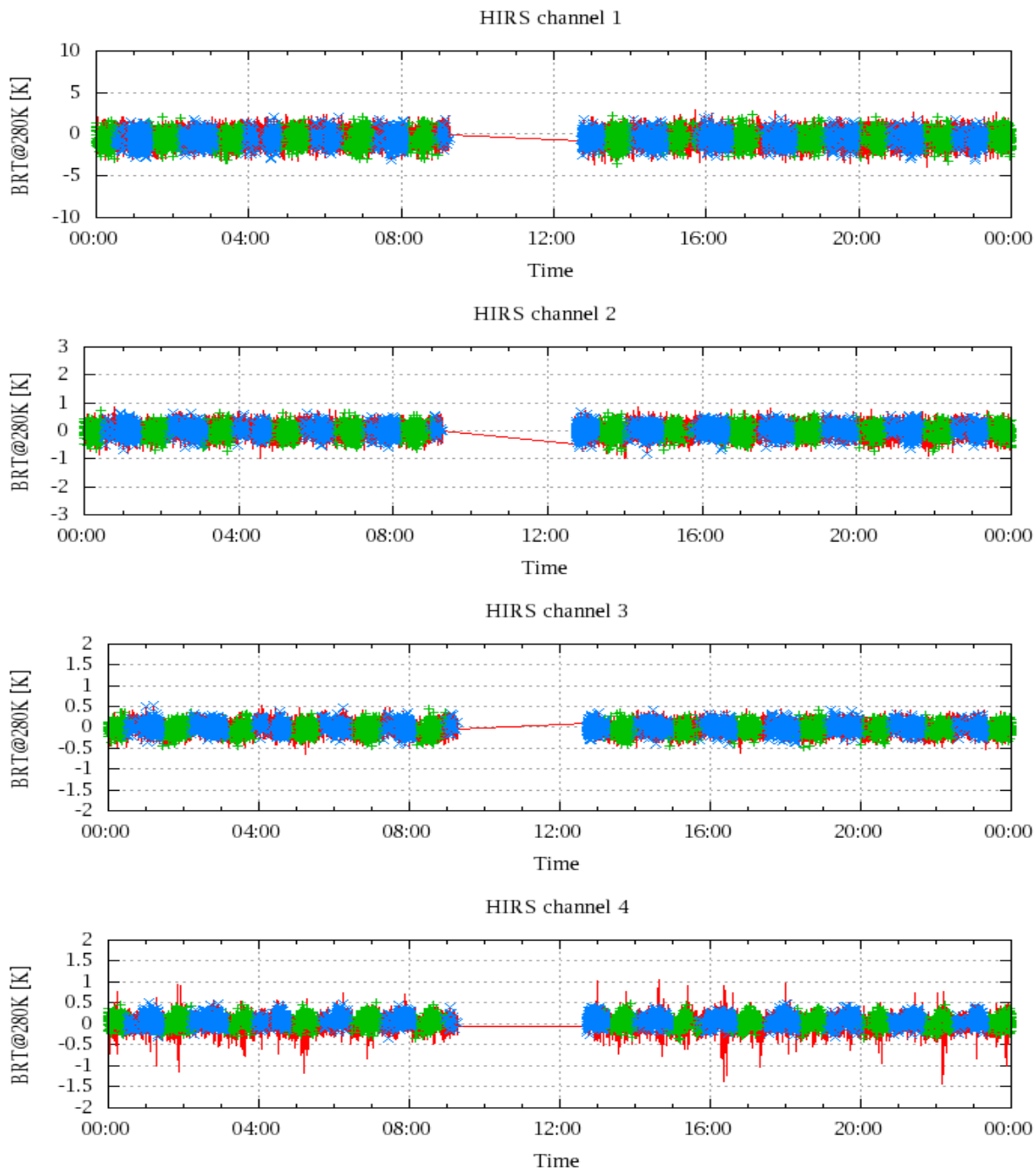


Figure 17: Radiance Differences in BRT

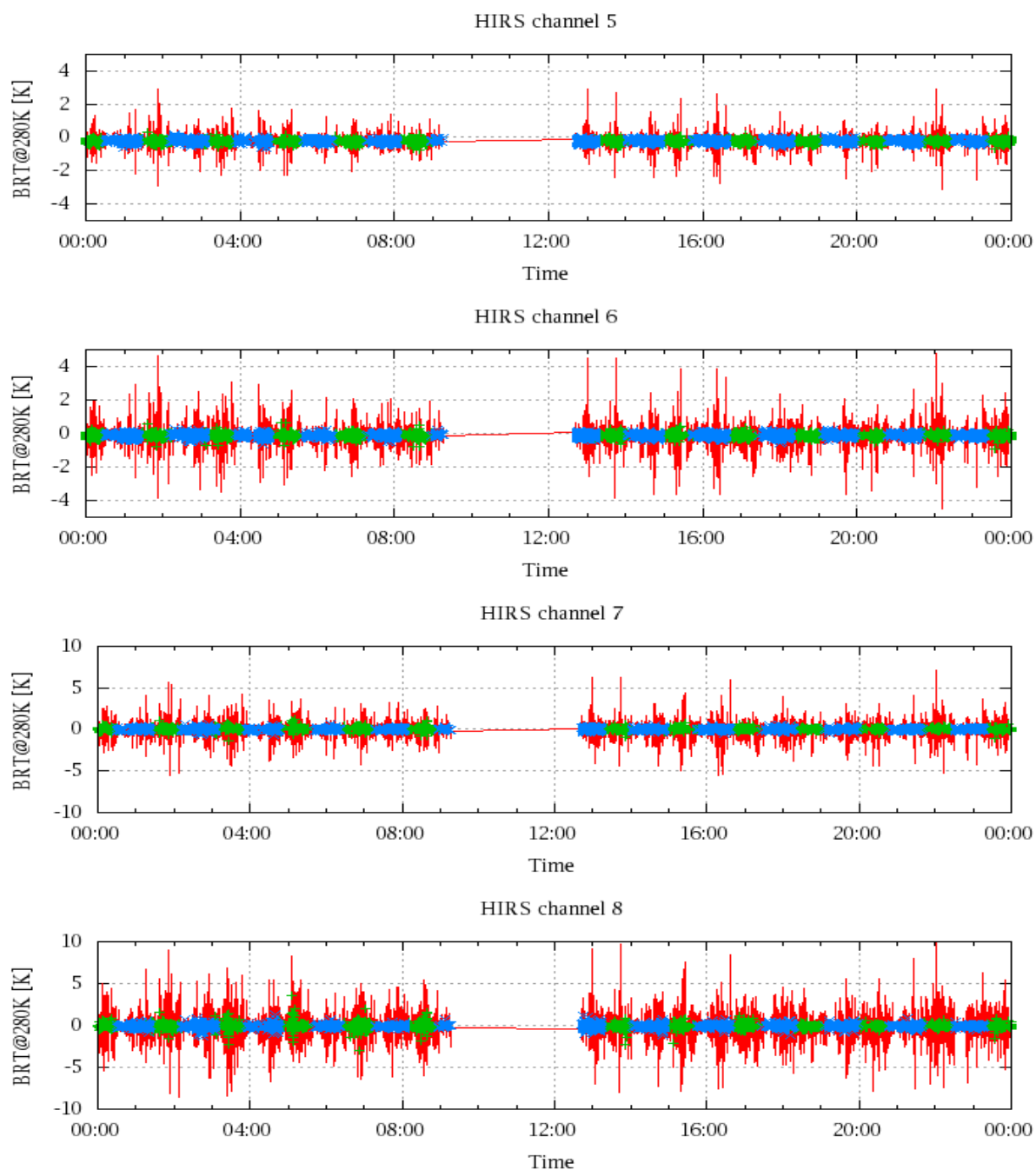


Figure 18: Radiance Differences in BRT

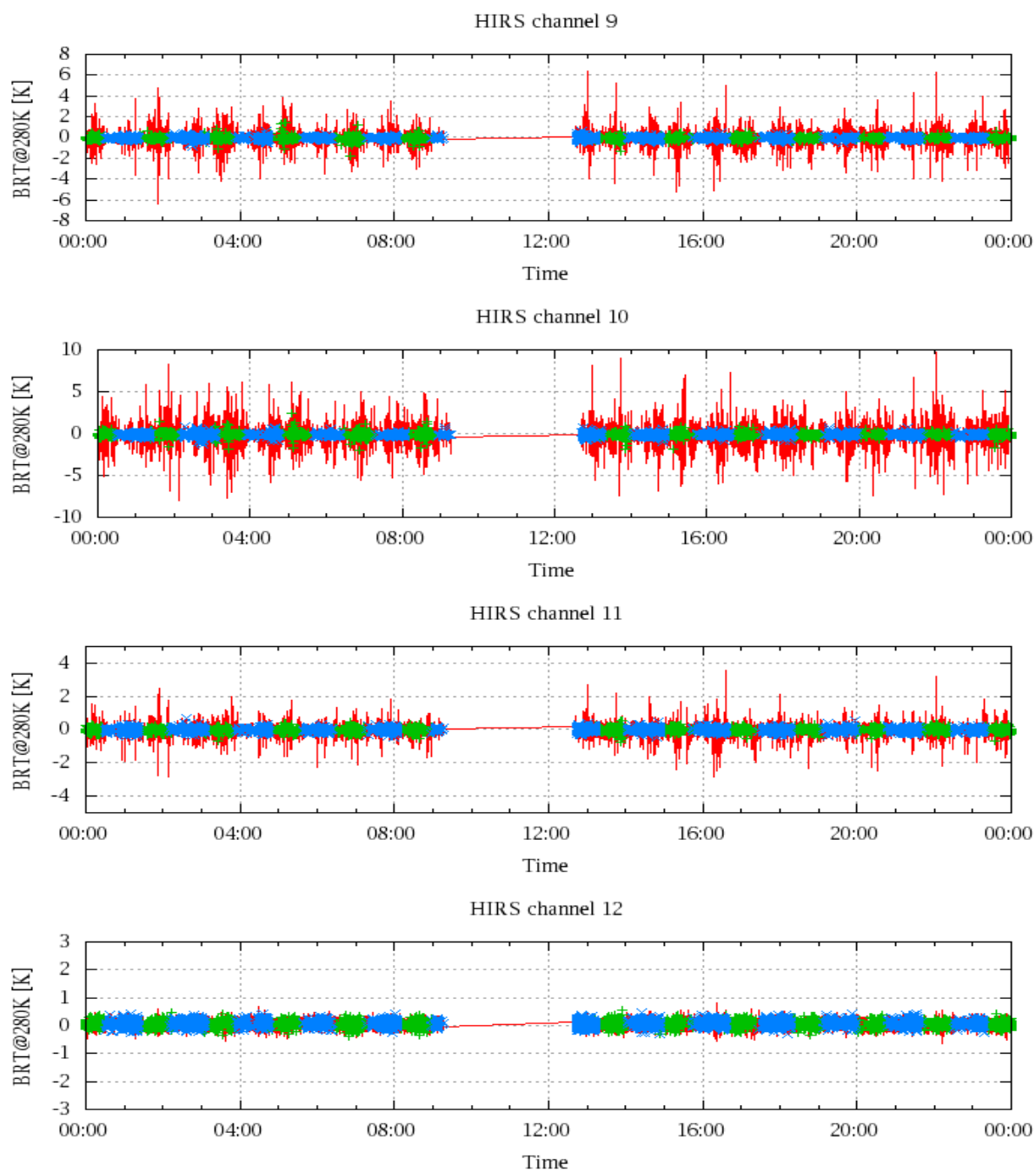


Figure 19: Radiance Differences in BRT

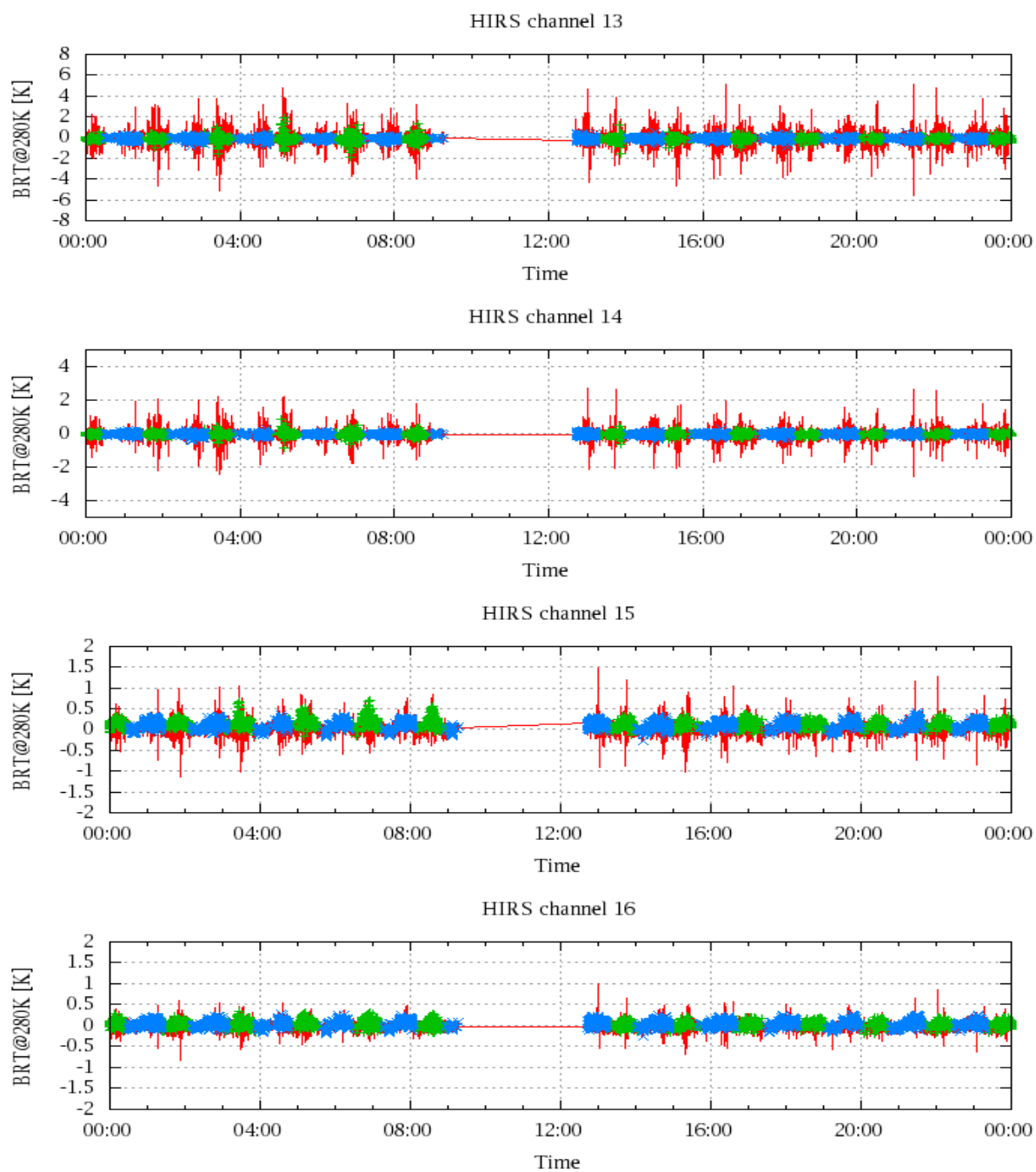


Figure 20: Radiance Differences in BRT

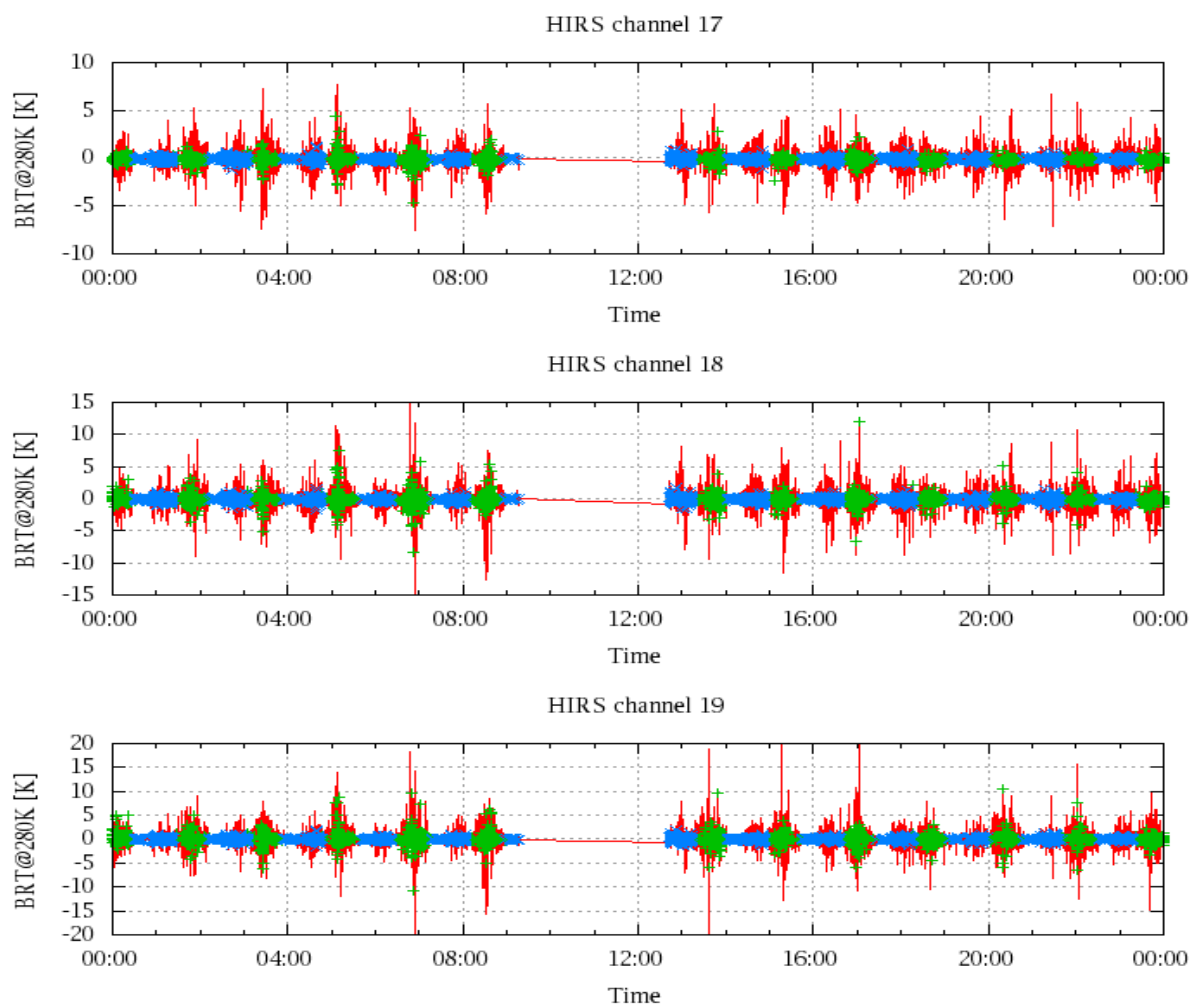


Figure 21: Radinace Differences in BRT