

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

09/03/2016 00:00:00 - 10/03/2016 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 09/03/2016 00:00:00 - 10/03/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 09/03/2016 00:00:00 - 10/03/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	479	-
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)	235	238	2016030914442.336	2016030914442.989
PX1 (130)	241	243	2016030914445.149	2016030914445.582
PX1 (130)	258	260	2016030914448.825	2016030914449.258
PX1 (130)	273	276	2016030914453.582	2016030914454.231
PX1 (130)	276	278	2016030914454.231	2016030914454.664
PX1 (130)	288	291	2016030914456.825	2016030914457.473
PX1 (130)	291	293	2016030914457.473	2016030914457.907
PX1 (130)	296	298	2016030914458.555	2016030914458.989
PX1 (130)	298	300	2016030914458.989	2016030914459.934
PX1 (130)	301	303	2016030914459.934	2016030914459.934
PX1 (130)	304	307	2016030914459.934	2016030914459.934
PX1 (130)	308	311	2016030914459.934	2016030914459.934
PX1 (130)	316	318	2016030914459.934	2016030914459.934
PX1 (130)	318	320	2016030914459.934	2016030914459.934
PX1 (130)	321	323	2016030914459.934	2016030914459.934
PX1 (130)	324	326	2016030914459.934	2016030914459.934
PX1 (130)	327	329	2016030914459.934	2016030914459.934
PX1 (130)	330	333	2016030914459.934	2016030914459.934

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	334	336	20160309144509.797	20160309144510.231
PX1 (130)	336	342	20160309144510.231	20160309144511.528
PX2 (135)	234	238	20160309144442.121	20160309144442.989
PX2 (135)	241	243	20160309144445.149	20160309144445.582
PX2 (135)	244	246	20160309144445.797	20160309144446.231
PX2 (135)	254	256	20160309144447.961	20160309144448.391
PX2 (135)	258	260	20160309144448.825	20160309144449.258
PX2 (135)	273	275	20160309144453.582	20160309144454.012
PX2 (135)	276	278	20160309144454.231	20160309144454.664
PX2 (135)	285	287	20160309144456.176	20160309144456.610
PX2 (135)	288	291	20160309144456.825	20160309144457.473
PX2 (135)	291	293	20160309144457.473	20160309144457.907
PX2 (135)	296	298	20160309144458.555	20160309144458.989
PX2 (135)	301	303	20160309144501.149	20160309144501.582
PX2 (135)	309	311	20160309144502.879	20160309144503.313
PX2 (135)	311	313	20160309144503.313	20160309144503.746
PX2 (135)	315	318	20160309144504.176	20160309144504.825
PX2 (135)	334	336	20160309144509.797	20160309144510.231
PX2 (135)	336	342	20160309144510.231	20160309144511.528
PX3 (140)	234	238	20160309144442.121	20160309144442.989
PX3 (140)	241	243	20160309144445.149	20160309144445.582
PX3 (140)	243	246	20160309144445.582	20160309144446.231
PX3 (140)	251	253	20160309144447.313	20160309144447.746
PX3 (140)	253	256	20160309144447.746	20160309144448.391
PX3 (140)	258	260	20160309144448.825	20160309144449.258
PX3 (140)	273	275	20160309144453.582	20160309144454.012
PX3 (140)	276	278	20160309144454.231	20160309144454.664
PX3 (140)	278	280	20160309144454.664	20160309144455.094
PX3 (140)	285	287	20160309144456.176	20160309144456.610
PX3 (140)	289	291	20160309144457.039	20160309144457.473
PX3 (140)	291	293	20160309144457.473	20160309144457.907
PX3 (140)	295	298	20160309144458.336	20160309144458.989
PX3 (140)	300	303	20160309144500.934	20160309144501.582
PX3 (140)	309	311	20160309144502.879	20160309144503.313
PX3 (140)	311	313	20160309144503.313	20160309144503.746
PX3 (140)	315	318	20160309144504.176	20160309144504.825
PX3 (140)	331	334	20160309144509.149	20160309144509.797
PX3 (140)	336	339	20160309144510.231	20160309144510.879
PX3 (140)	339	343	20160309144510.879	20160309144511.746
PX4 (145)	234	236	20160309144442.121	20160309144442.555
PX4 (145)	236	238	20160309144442.555	20160309144442.989
PX4 (145)	240	243	20160309144444.934	20160309144445.582
PX4 (145)	243	246	20160309144445.582	20160309144446.231
PX4 (145)	251	253	20160309144447.313	20160309144447.746
PX4 (145)	253	256	20160309144447.746	20160309144448.391
PX4 (145)	256	258	20160309144448.391	20160309144448.825
PX4 (145)	258	260	20160309144448.825	20160309144449.258
PX4 (145)	278	281	20160309144454.664	20160309144455.309
PX4 (145)	284	288	20160309144455.961	20160309144456.825
PX4 (145)	295	298	20160309144458.336	20160309144458.989
PX4 (145)	300	302	20160309144500.934	20160309144501.364
PX4 (145)	309	311	20160309144502.879	20160309144503.313
PX4 (145)	311	315	20160309144503.313	20160309144504.176
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	316	318	20160309144504.391	20160309144504.825
PX4 (145)	325	327	20160309144506.336	20160309144506.770
PX4 (145)	330	335	20160309144508.934	20160309144510.012
PX4 (145)	336	339	20160309144510.231	20160309144510.879
PX4 (145)	339	343	20160309144510.879	20160309144511.746
IMG (150)	8202	8208	20160309144442.121	20160309144443.637
IMG (150)	8212	8217	20160309144444.934	20160309144446.016
IMG (150)	8217	8220	20160309144446.016	20160309144446.661
IMG (150)	8220	8222	20160309144446.661	20160309144447.094
IMG (150)	8226	8228	20160309144447.961	20160309144448.391
IMG (150)	8228	8231	20160309144448.391	20160309144449.039
IMG (150)	8231	8233	20160309144449.039	20160309144449.473
IMG (150)	8249	8253	20160309144453.582	20160309144454.446
IMG (150)	8254	8257	20160309144454.664	20160309144455.309
IMG (150)	8260	8262	20160309144455.961	20160309144456.391
IMG (150)	8262	8265	20160309144456.391	20160309144457.039
IMG (150)	8267	8269	20160309144457.473	20160309144457.907
IMG (150)	8271	8275	20160309144458.336	20160309144459.203
IMG (150)	8275	8282	20160309144459.203	20160309144501.364
IMG (150)	8283	8286	20160309144501.582	20160309144502.231
IMG (150)	8287	8291	20160309144502.446	20160309144503.313
IMG (150)	8292	8295	20160309144503.528	20160309144504.176
IMG (150)	8295	8300	20160309144504.176	20160309144505.254
IMG (150)	8300	8302	20160309144505.254	20160309144505.688
IMG (150)	8303	8305	20160309144505.907	20160309144506.336
IMG (150)	8305	8308	20160309144506.336	20160309144506.985
IMG (150)	8308	8311	20160309144506.985	20160309144507.852
IMG (150)	8311	8319	20160309144507.852	20160309144510.012
IMG (150)	8319	8327	20160309144510.012	20160309144511.746
VER (160)	9967	9970	20160309144435.204	20160309144443.203
VER (160)	9970	9972	20160309144443.203	20160309144443.203
VER (160)	9977	9979	20160309144451.203	20160309144459.203
VER (160)	9984	9988	20160309144507.203	20160309144515.203
AUX (180)	1994	1996	20160309144459.633	20160309144515.633

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
09/03/2016 00:00:02	-	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	479	-
GQisFlagQual set (PX1)	99.44 %	-
GQisFlagQual set (PX2)	99.44 %	-
GQisFlagQual set (PX3)	99.45 %	-
GQisFlagQual set (PX4)	99.42 %	-
GQisFlagQual set (all)	99.44 %	-

Table 4: Quality flags

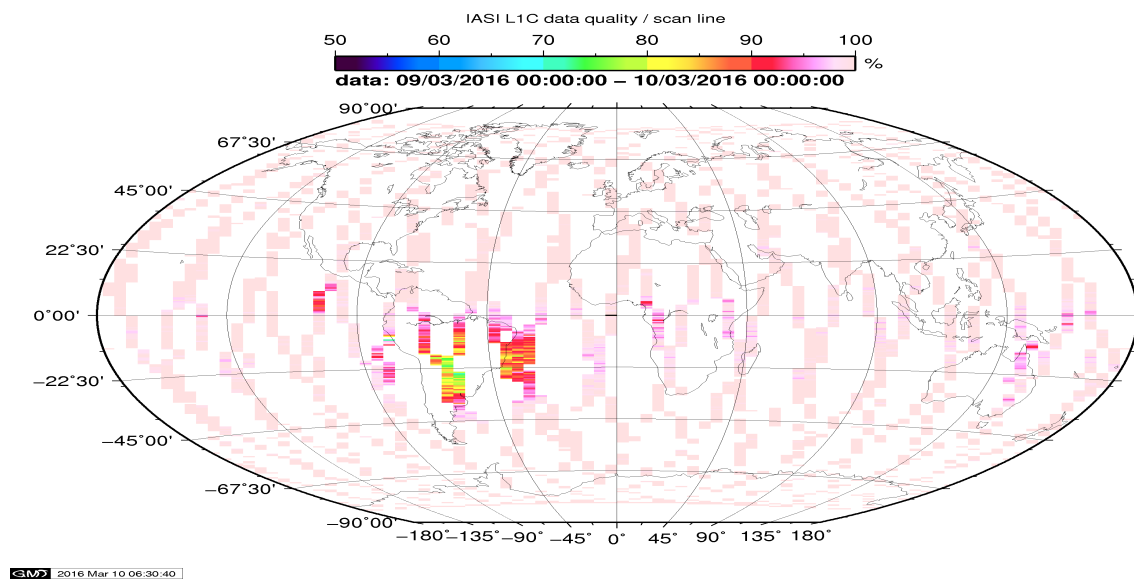


Figure 1: L1C data quality

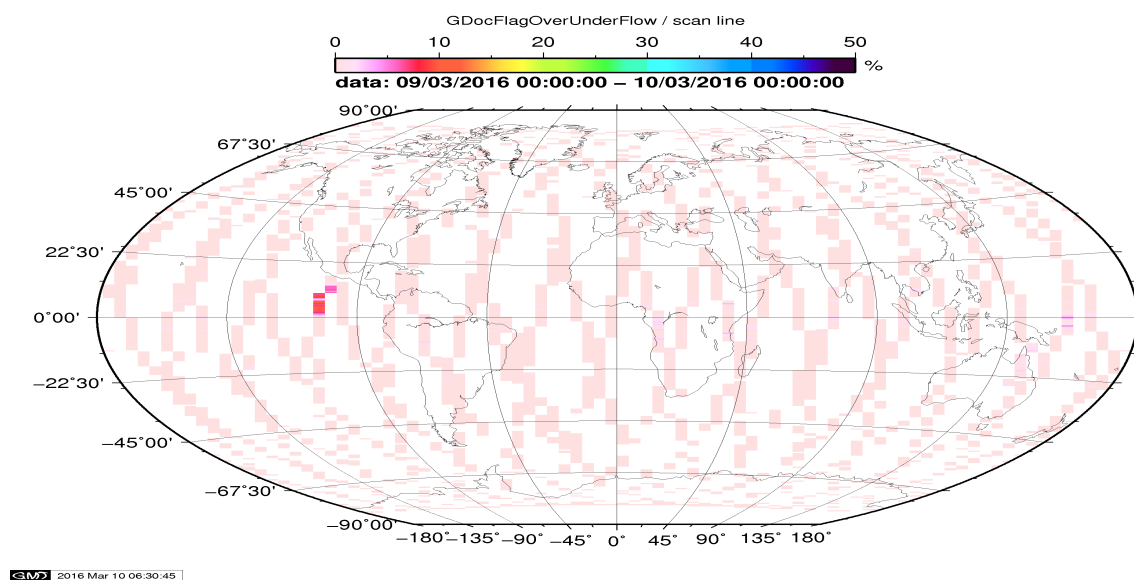


Figure 2: Flag of Over and Under Flows

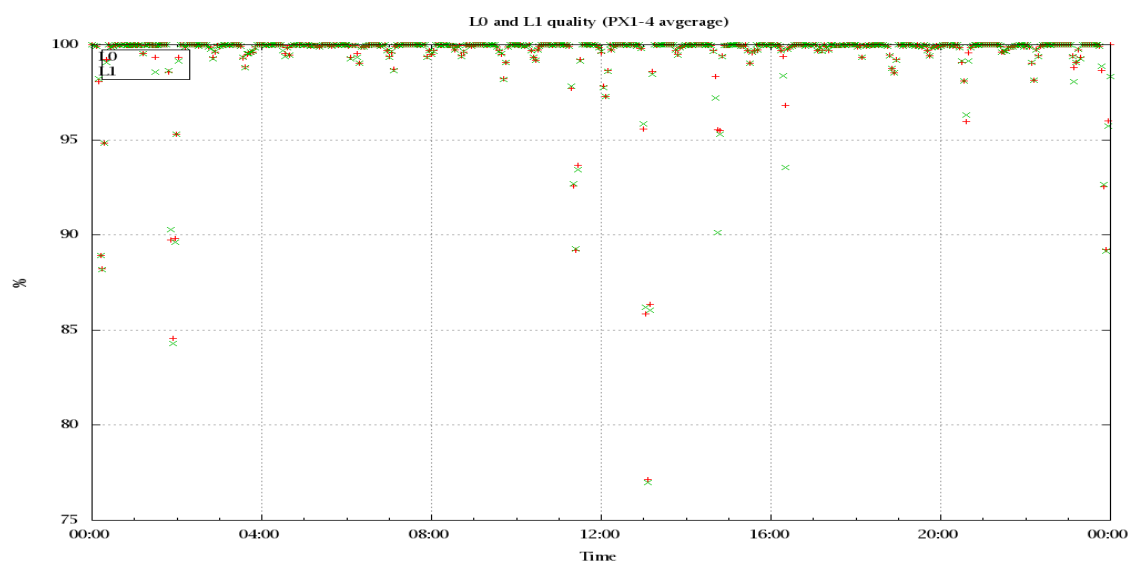


Figure 3: Level 0 and 1C overall quality

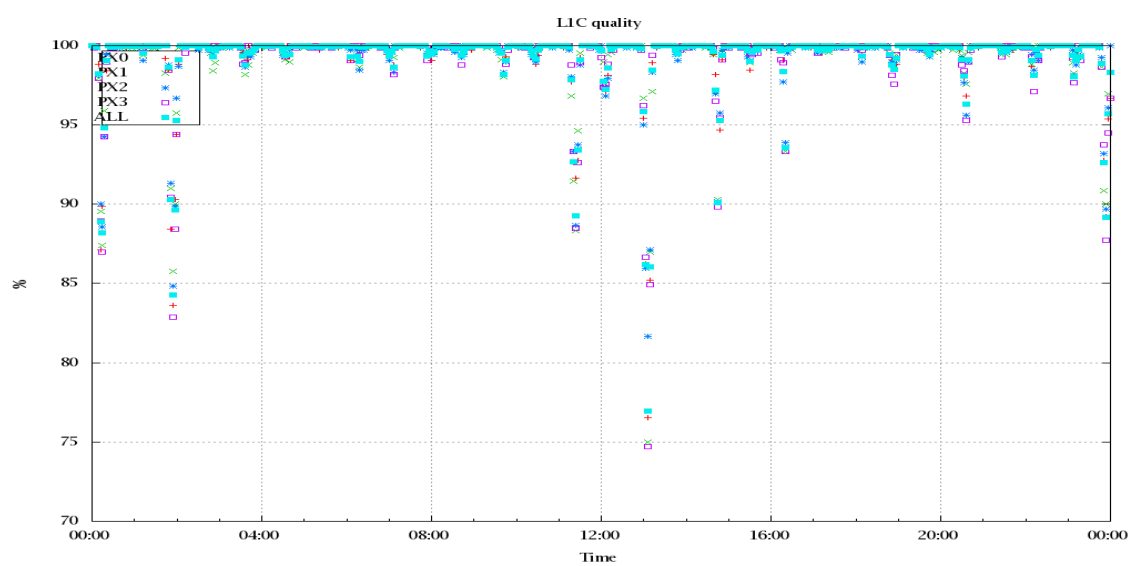


Figure 4: Level 1C quality

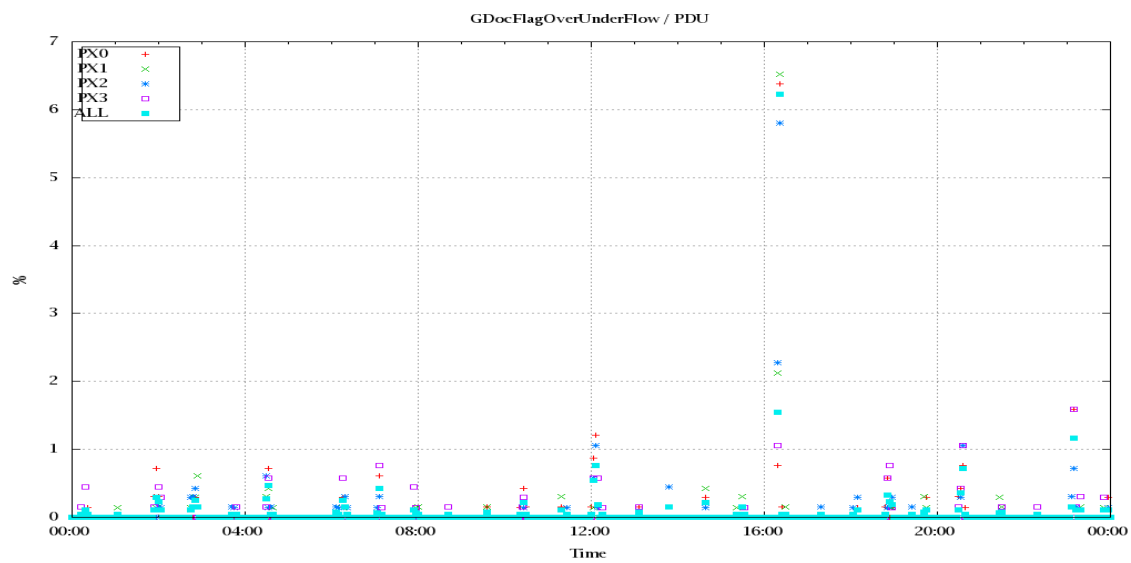


Figure 5: OverUnderFlowFlag timeseries

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.

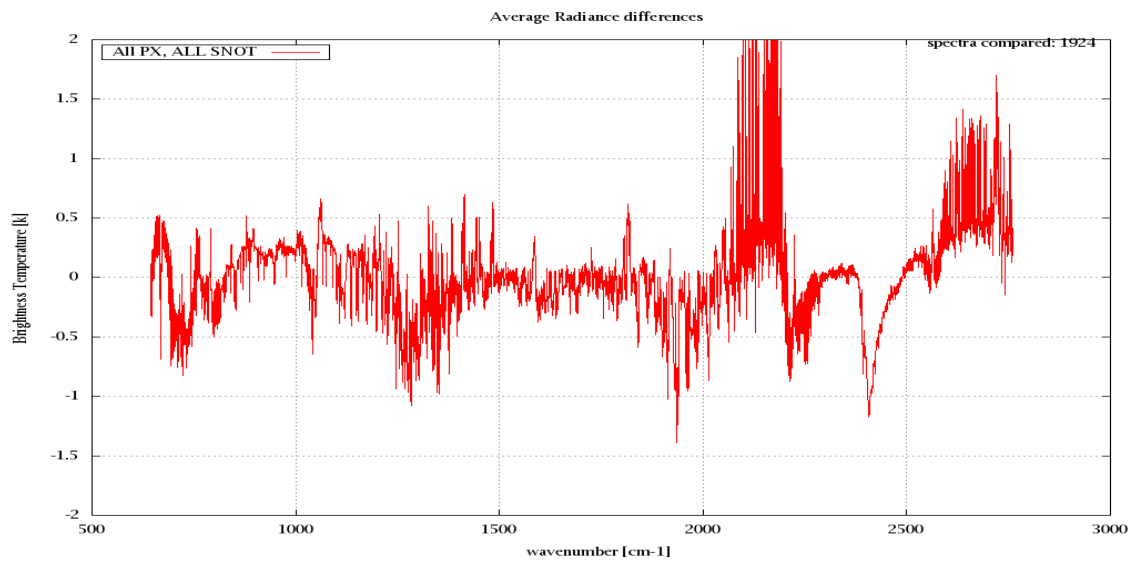


Figure 6: Average Radiance differences: OBS-CAL

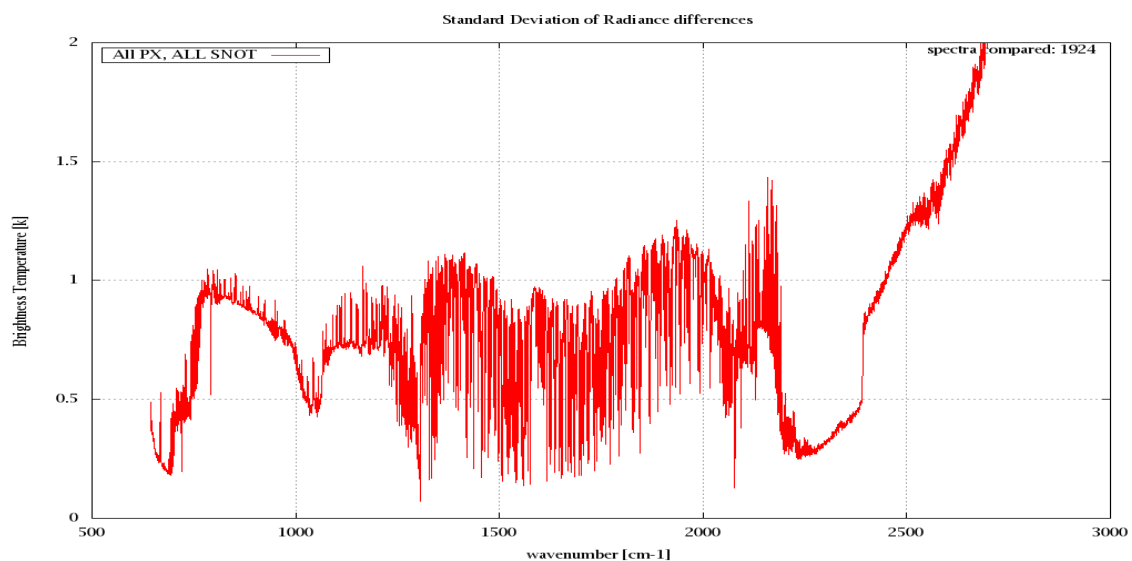


Figure 7: Standard Deviation of Radiance differences

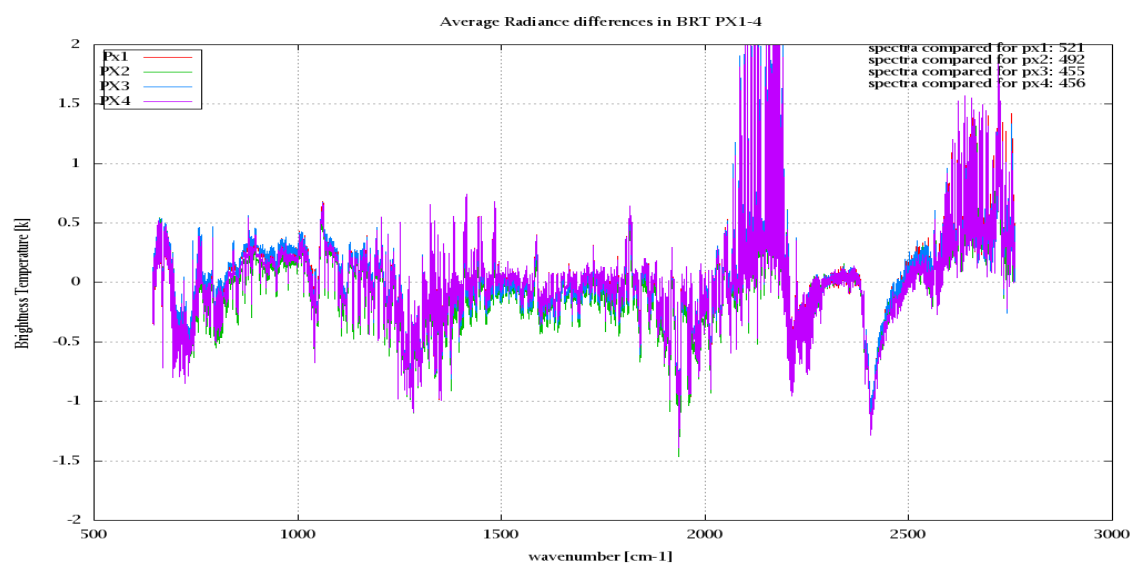


Figure 8: Average Radiance differences: OBS-CAL

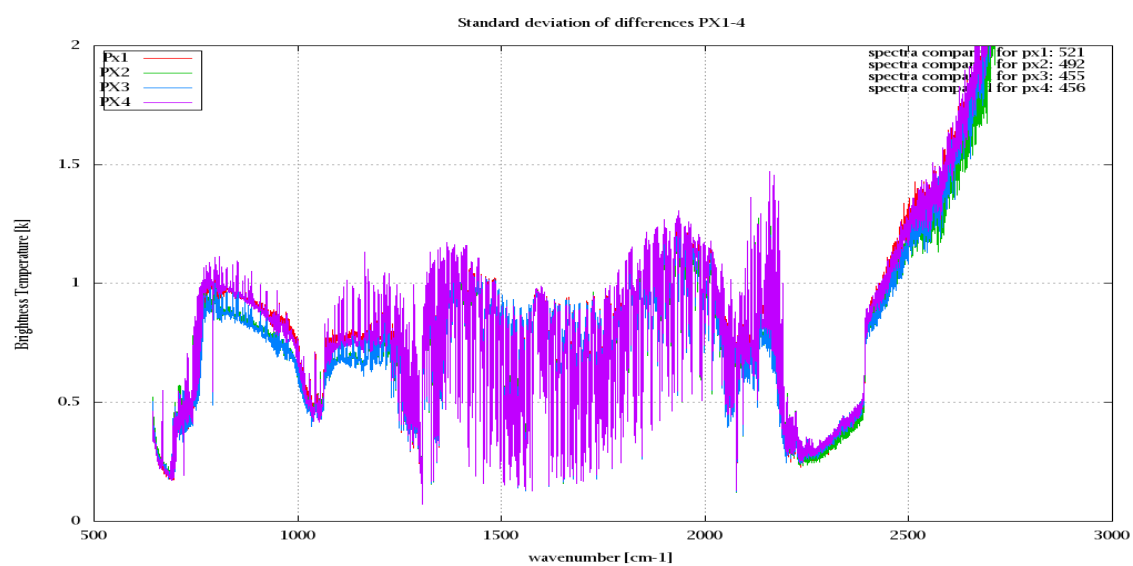


Figure 9: Standard Deviation of Radiance differences

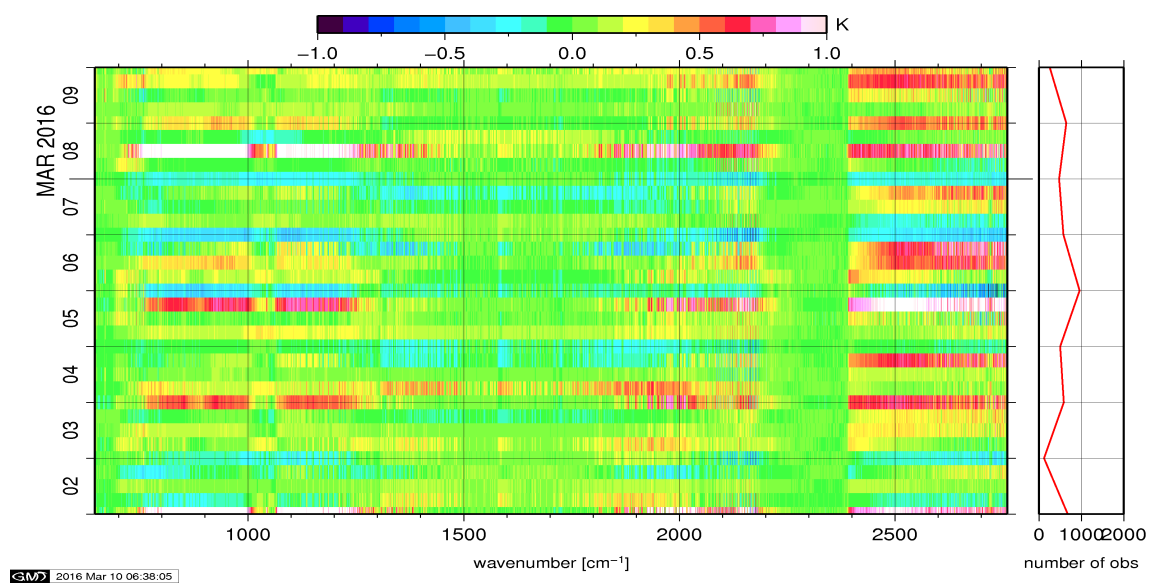


Figure 10: Radiance Anomaly in BRT: All Channels

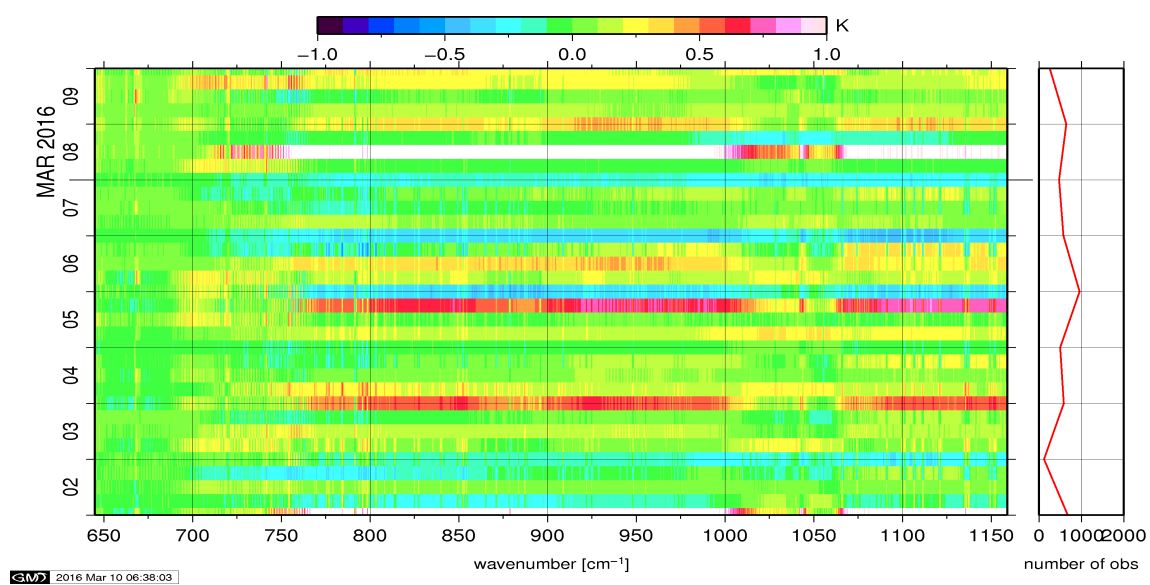


Figure 11: Radiance Anomaly in BRT: IASI Band 1

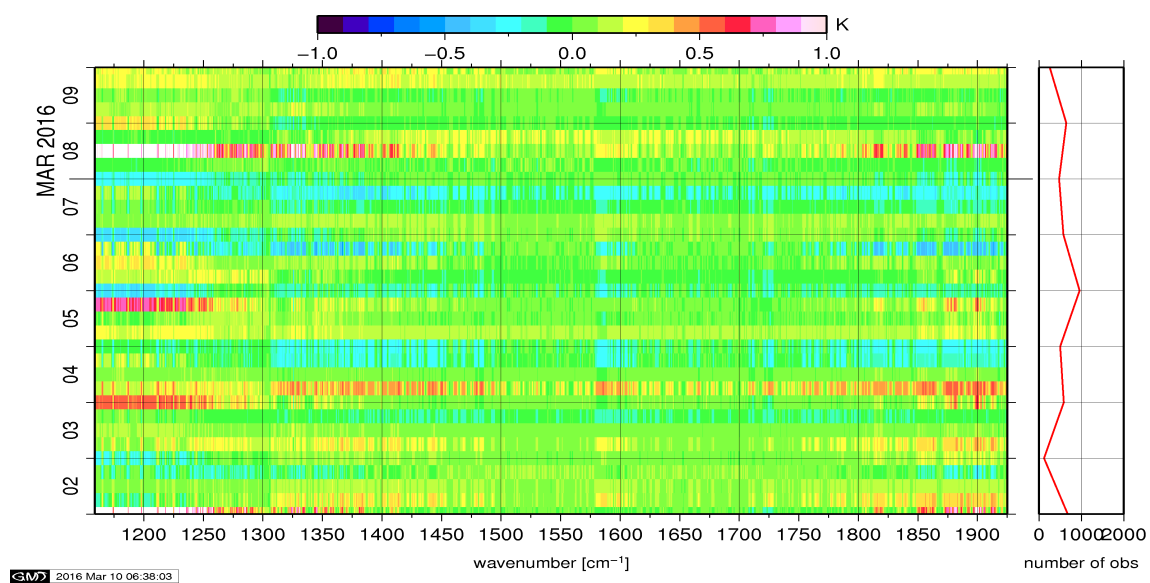


Figure 12: Radiance Anomaly in BRT: IASI Band 2

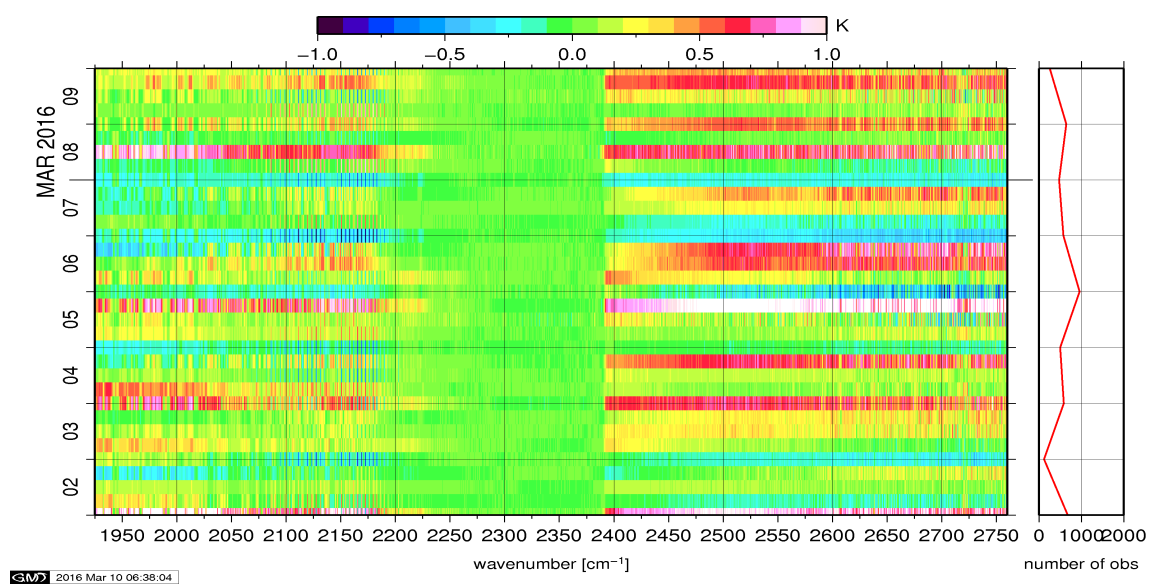


Figure 13: Radiance Anomaly in BRT: IASI Band 3

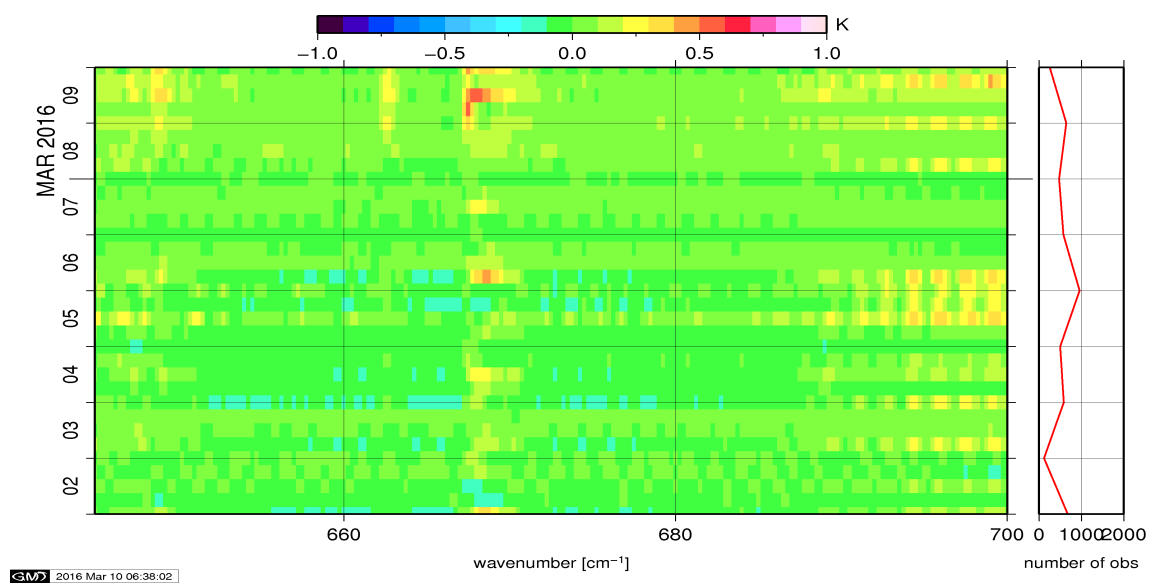


Figure 14: Radiance Anomaly in BRT: CO2 14

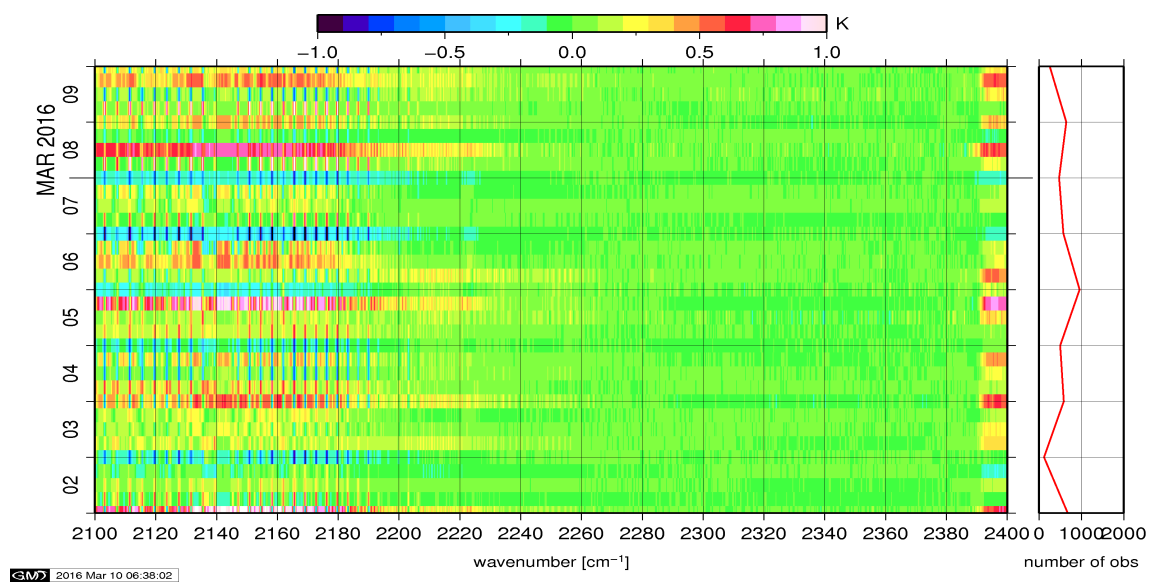


Figure 15: Radiance Anomaly in BRT: CO2 4.3

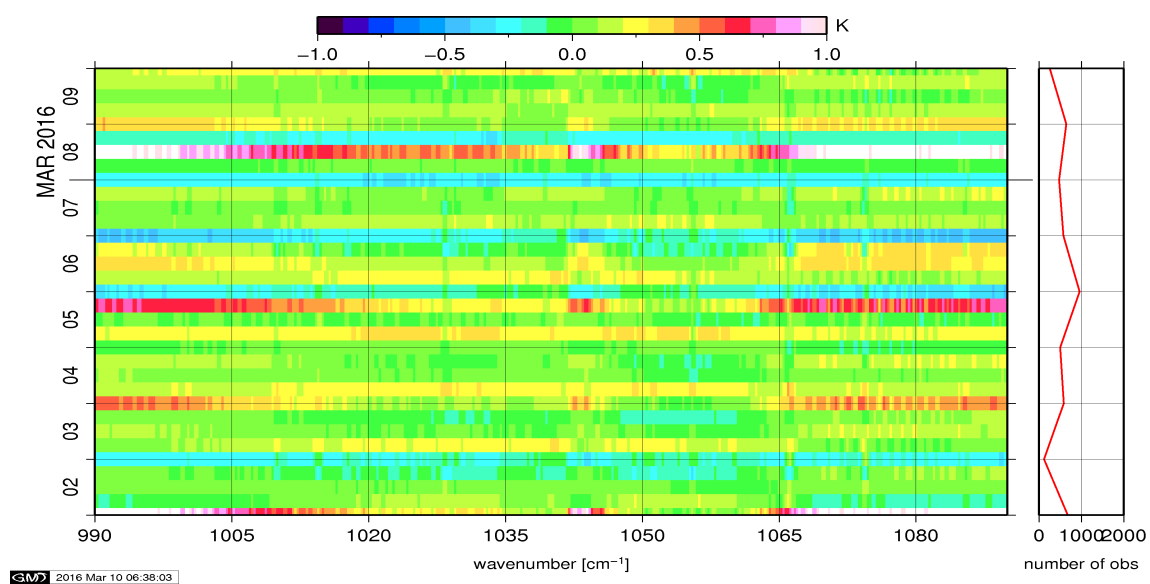


Figure 16: Radiance Anomaly in BRT: O3

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.

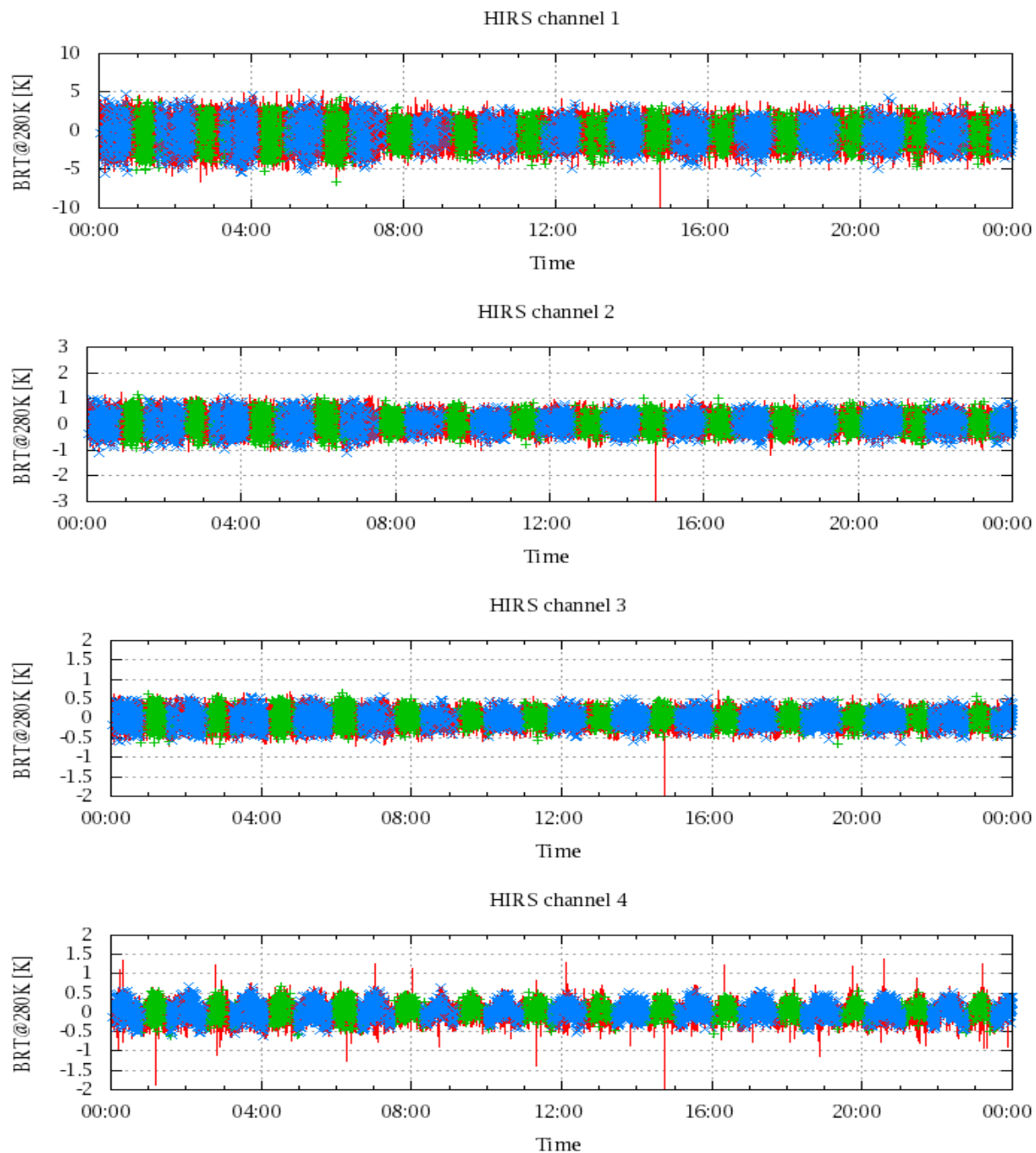


Figure 17: Radiance Differences in BRT

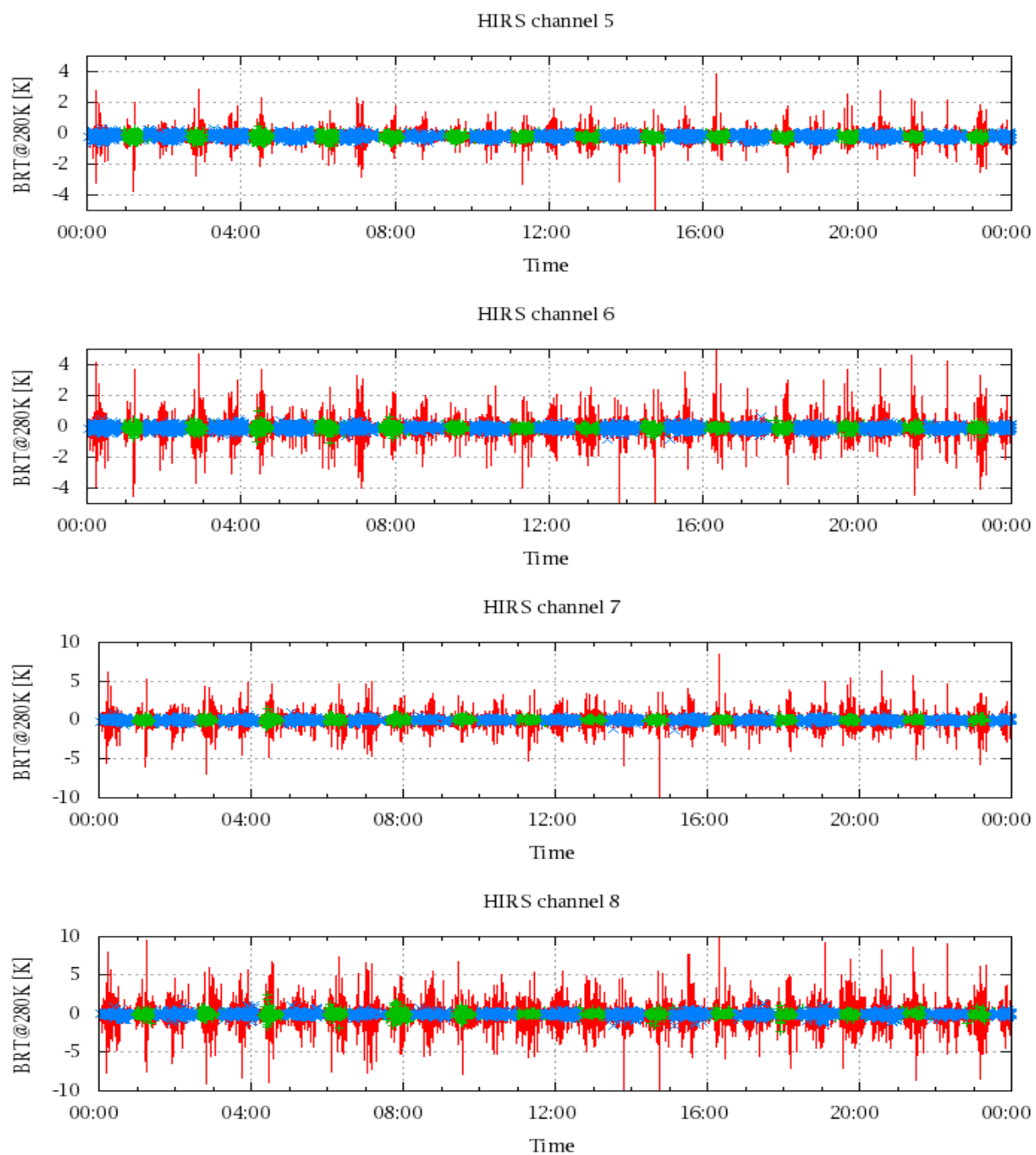


Figure 18: Radiance Differences in BRT

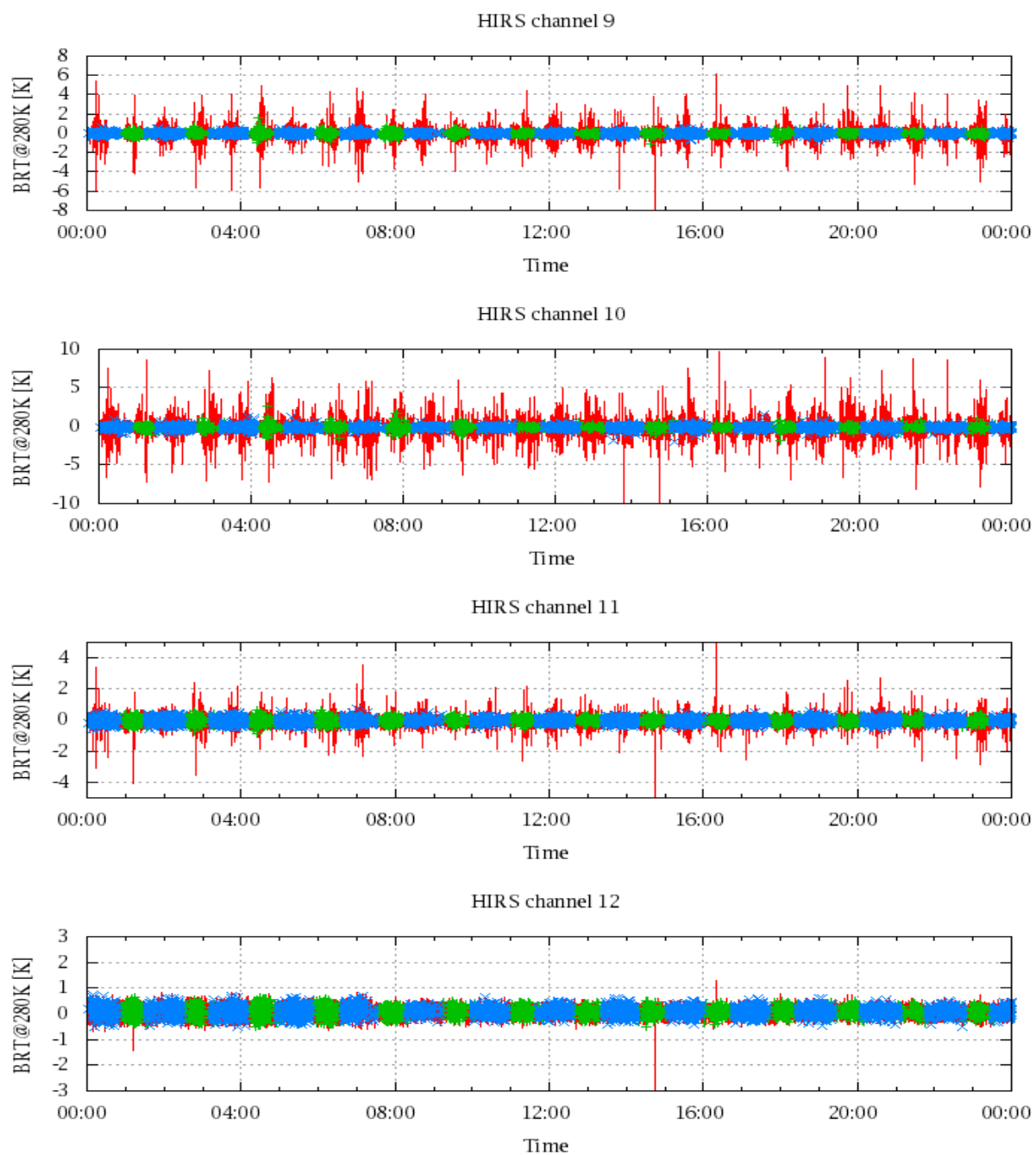


Figure 19: Radiance Differences in BRT

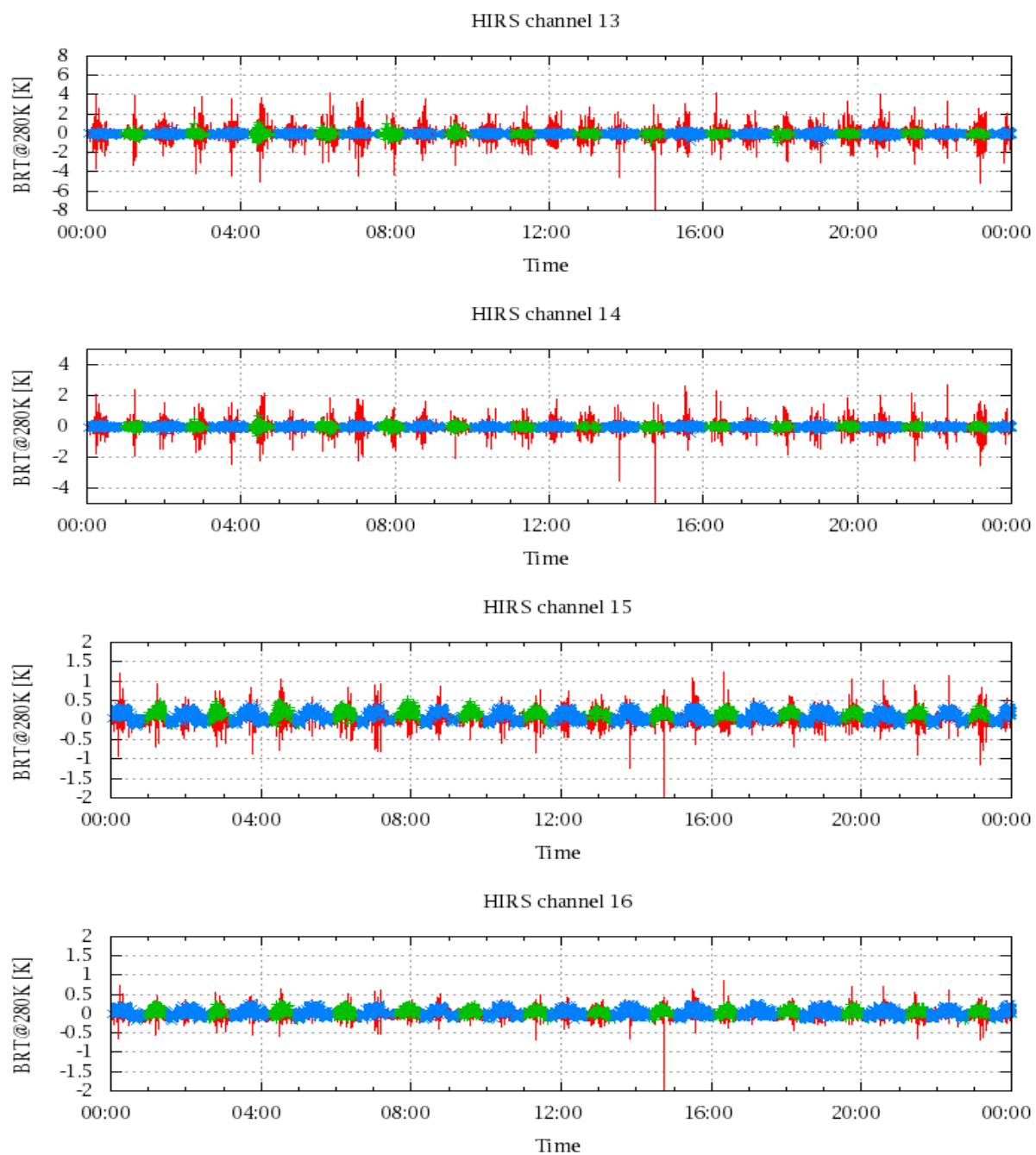


Figure 20: Radiance Differences in BRT

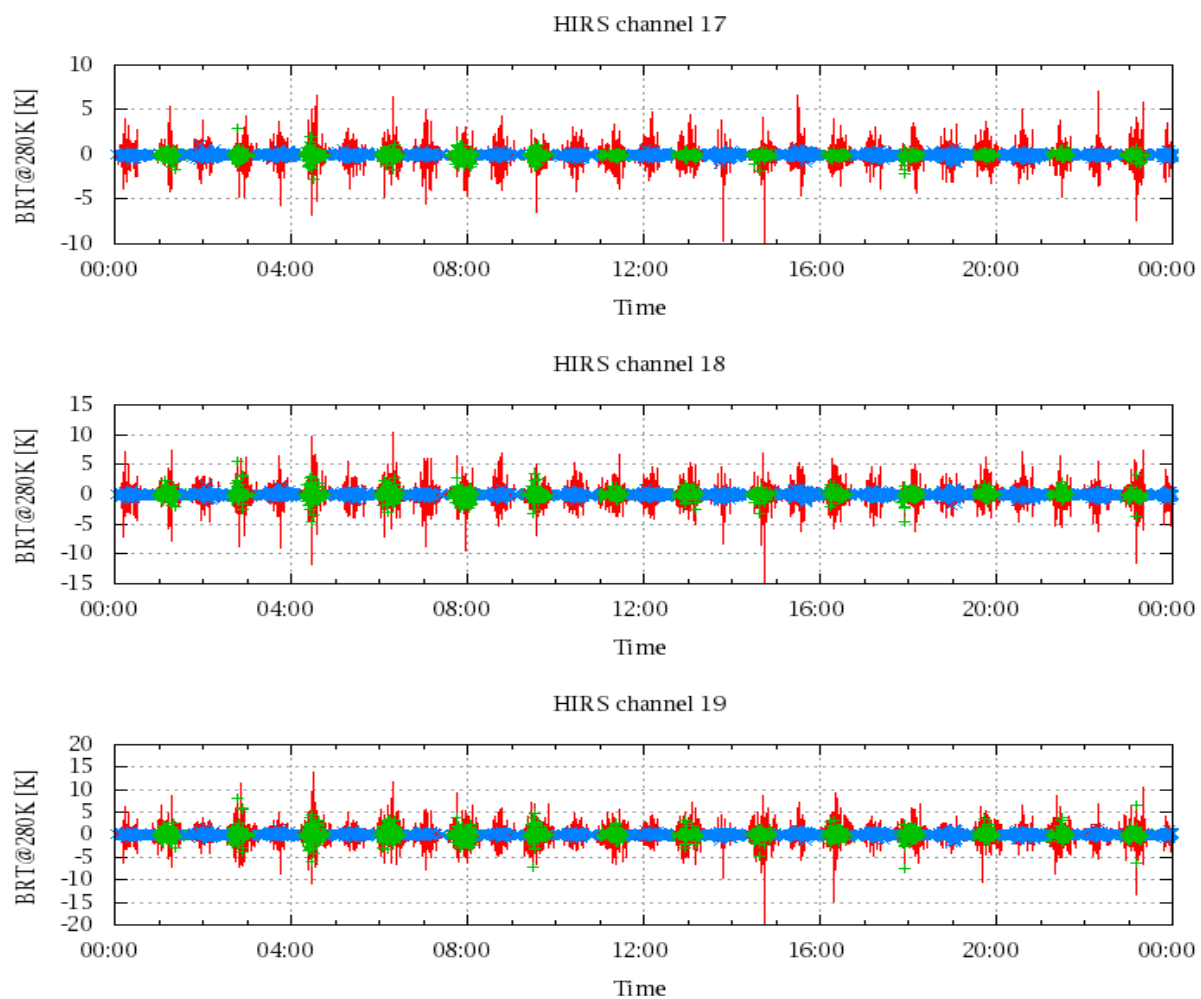


Figure 21: Radinace Differences in BRT