IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

30/08/2015 00:00:00 - 31/08/2015 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 30/08/2015 00:00:00 - 31/08/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 30/08/2015 00:00:00 - 31/08/2015 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)	1992	1994	20150830214440.009	20150830214440.439
PX1 (130)	1995	1999	20150830214440.658	20150830214441.521
PX1 (130)	2006	2008	20150830214443.037	20150830214444.982
PX1 (130)	2008	2010	20150830214444.982	20150830214445.416
PX1 (130)	2011	2014	20150830214445.630	20150830214446.279
PX1 (130)	2014	2016	20150830214446.279	20150830214446.712
PX1 (130)	2016	2019	20150830214446.712	20150830214447.361
PX1 (130)	2019	2021	20150830214447.361	20150830214447.791
PX1 (130)	2022	2024	20150830214448.009	20150830214448.443
PX1 (130)	2054	2056	20150830214456.439	20150830214456.873
PX1 (130)	2064	2066	20150830214458.603	20150830214459.037
PX2 (135)	1992	1994	20150830214440.009	20150830214440.439
PX2 (135)	1997	1999	20150830214441.091	20150830214441.521
PX2 (135)	2000	2002	20150830214441.740	20150830214442.170
PX2 (135)	2004	2006	20150830214442.603	20150830214443.037
PX2 (135)	2008	2010	20150830214444.982	20150830214445.416
PX2 (135)	2010	2014	20150830214445.416	20150830214446.279
PX2 (135)	2014	2016	20150830214446.279	20150830214446.712

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	2019	2021	20150830214447.361	20150830214447.791
PX2 (135)	2022	2024	20150830214448.009	20150830214448.443
PX2 (135)	2054	2056	20150830214456.439	20150830214456.873
PX3 (140)	1992	1994	20150830214440.009	20150830214440.439
PX3 (140)	1997	1999	20150830214441.091	20150830214441.521
PX3 (140)	2000	2002	20150830214441.740	20150830214442.170
PX3 (140)	2003	2006	20150830214442.388	20150830214443.037
PX3 (140)	2010	2012	20150830214445.416	20150830214445.845
PX3 (140)	2012	2014	20150830214445.845	20150830214446.279
PX3 (140)	2019	2021	20150830214447.361	20150830214447.791
PX3 (140)	2022	2024	20150830214448.009	20150830214448.443
PX4 (145)	1992	1994	20150830214440.009	20150830214440.439
PX4 (145)	1997	1999	20150830214441.091	20150830214441.521
PX4 (145)	2000	2002	20150830214441.740	20150830214442.170
PX4 (145)	2003	2005	20150830214442.388	20150830214442.818
PX4 (145)	2010	2012	20150830214445.416	20150830214445.845
PX4 (145)	2012	2014	20150830214445.845	20150830214446.279
IMG (150)	16054	16058	20150830214439.576	20150830214440.439
IMG (150)	16058	16063	20150830214440.439	20150830214441.521
IMG (150)	16064	16067	20150830214441.740	20150830214442.388
IMG (150)	16067	16069	20150830214442.388	20150830214442.818
IMG (150)	16072	16075	20150830214443.685	20150830214444.763
IMG (150)	16075	16077	20150830214444.763	20150830214445.197
IMG (150)	16078	16083	20150830214445.416	20150830214446.494
IMG (150)	16083	16086	20150830214446.494	20150830214447.142
IMG (150)	16125	16127	20150830214456.224	20150830214456.658
IMG (150)	16135	16137	20150830214458.388	20150830214458.818
VER (160)	9391	9397	20150830214435.037	20150830214451.037
AUX (180)	11707	11709	20150830214435.470	20150830214451.466

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
30/08/2015 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)	99.50 %	-
GQisFlagQual set (PX2)	99.47 %	-
GQisFlagQual set (PX3)	99.46 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

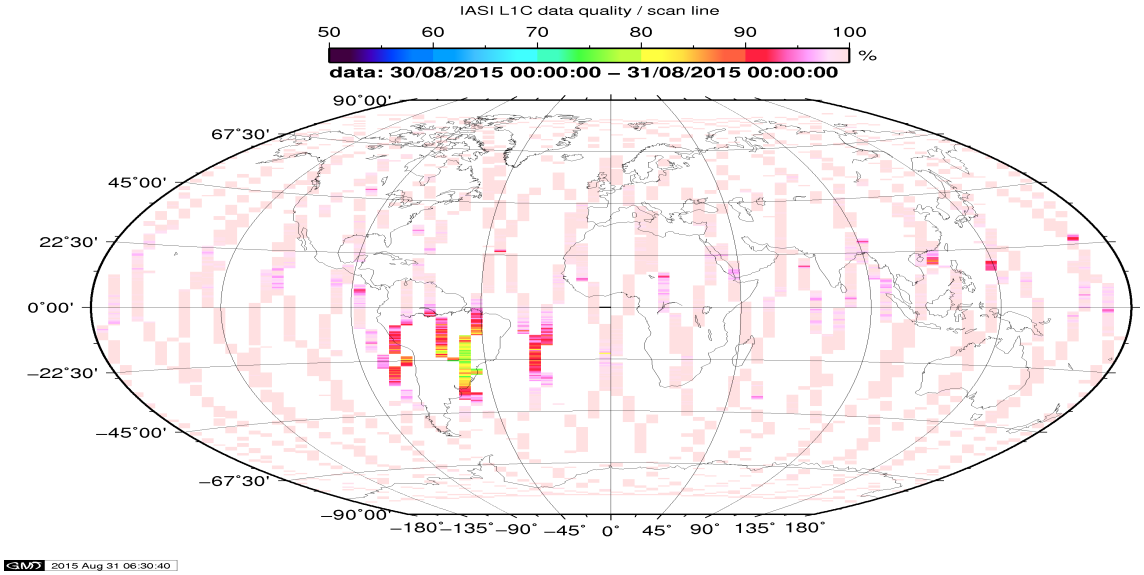

Figure 1: L1C data quality

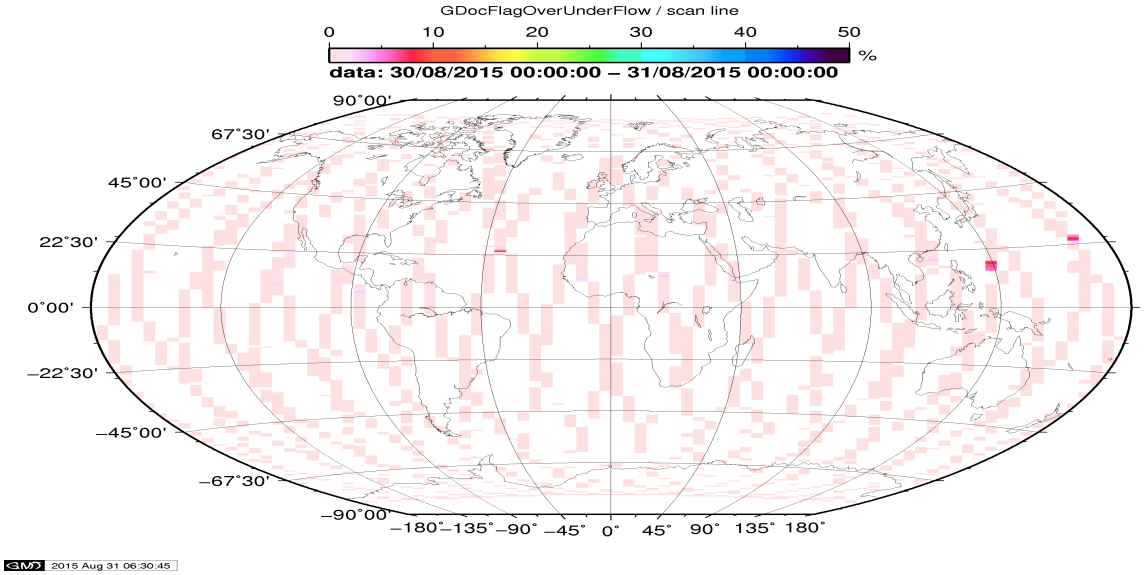

Figure 2: Flag of Over and Under Flows

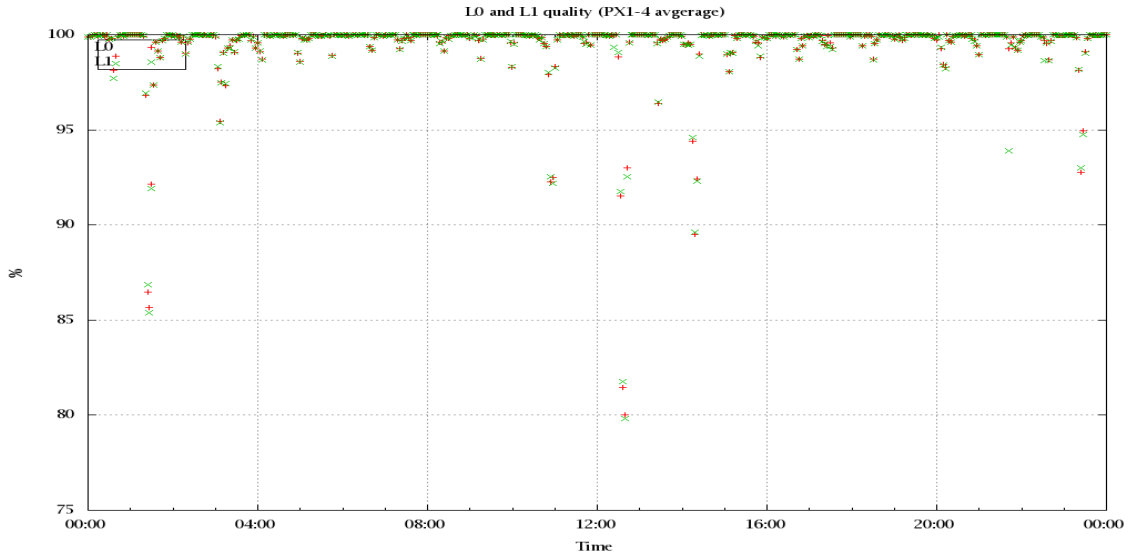

Figure 3: Level 0 and 1C overall quality

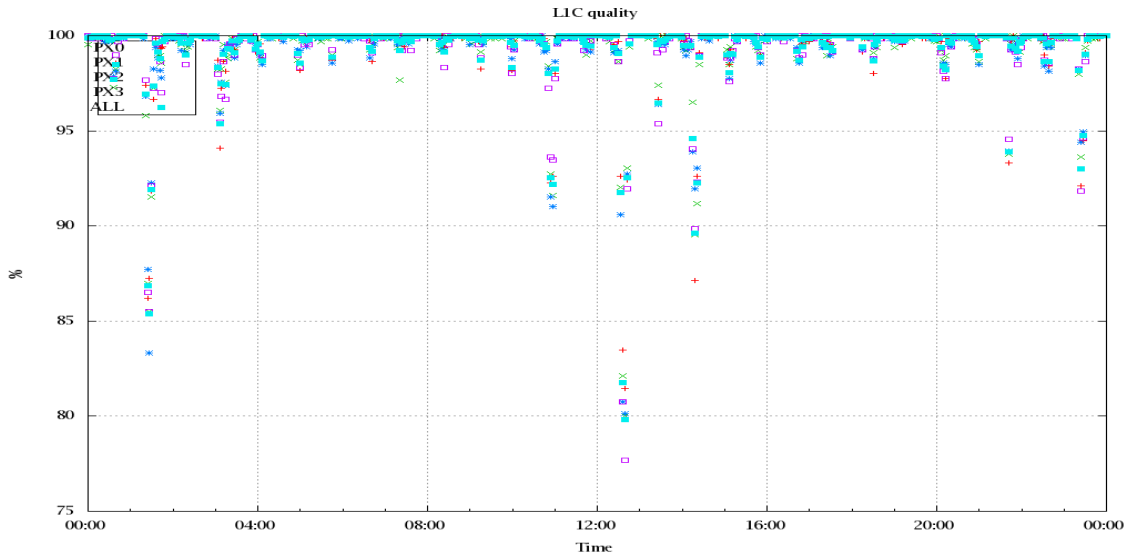

Figure 4: Level 1C quality

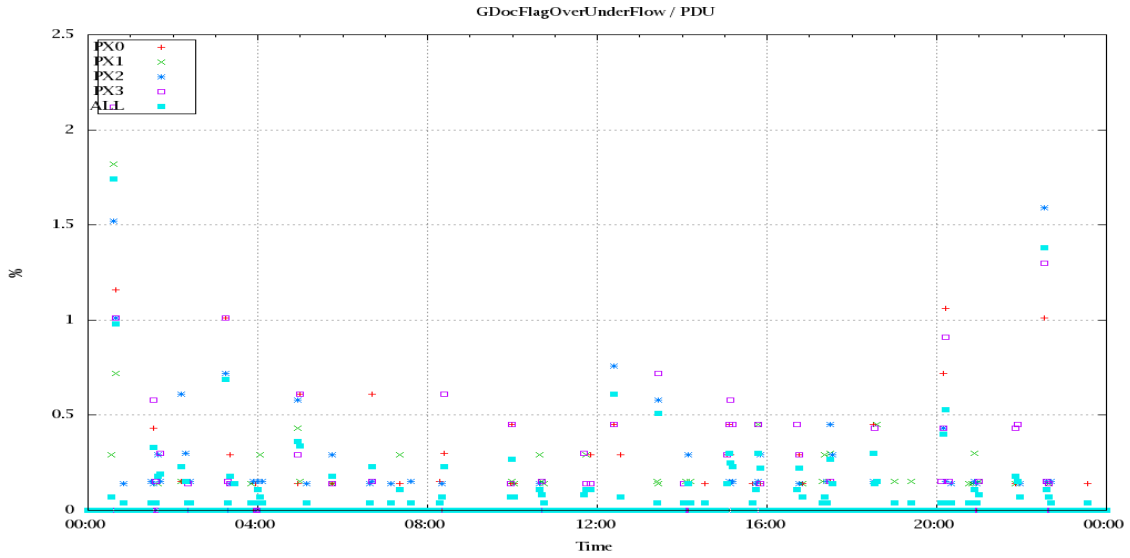

Figure 5: OverUnderFlowFlag timeseries

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.

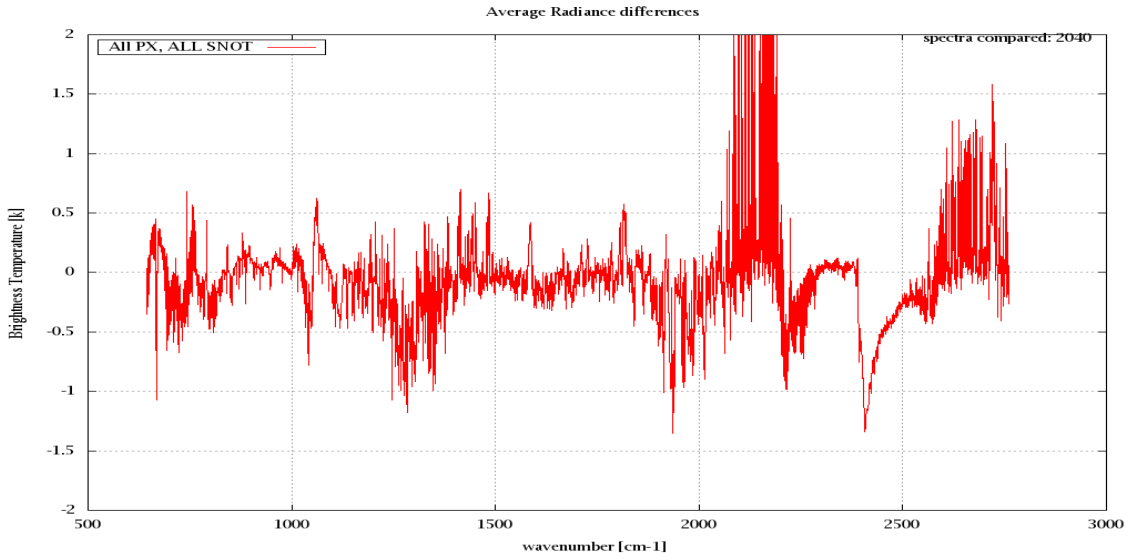

Figure 6: Average Radiance differences: OBS-CAL

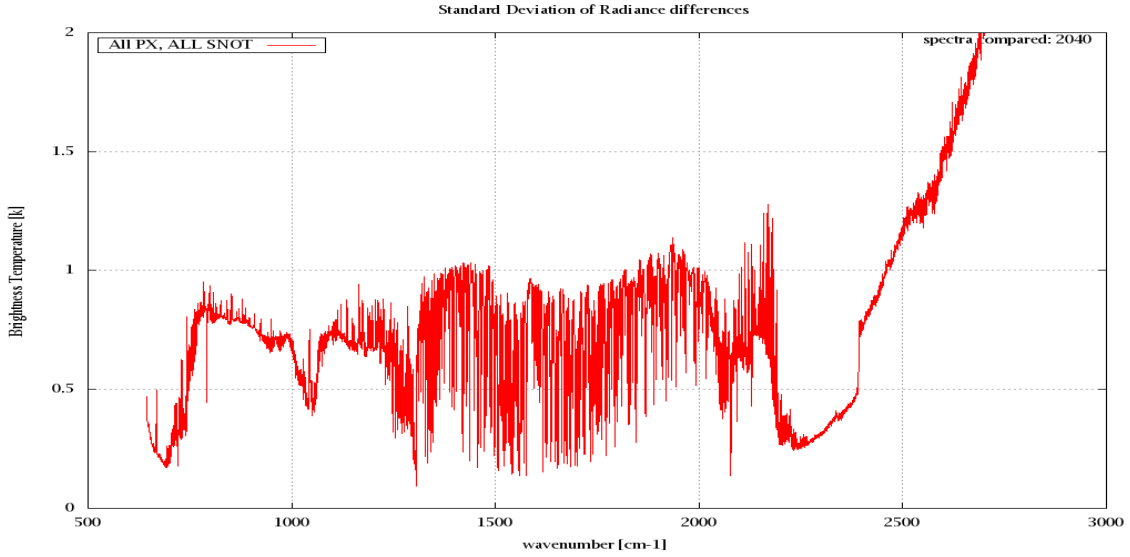

Figure 7: Standard Deviation of Radiance differences

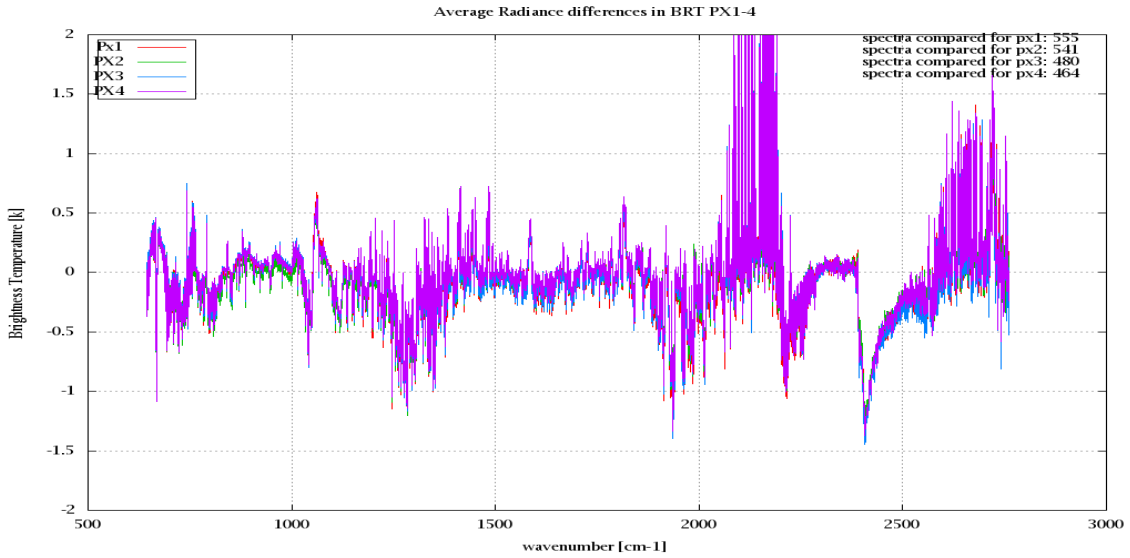

Figure 8: Average Radiance differences: OBS-CAL

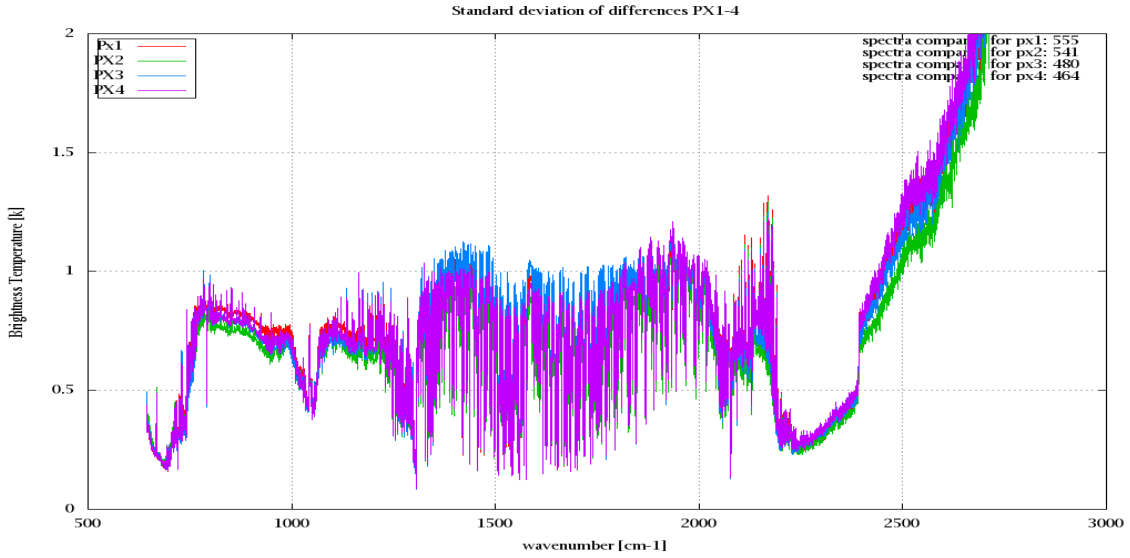

Figure 9: Standard Deviation of Radiance differences

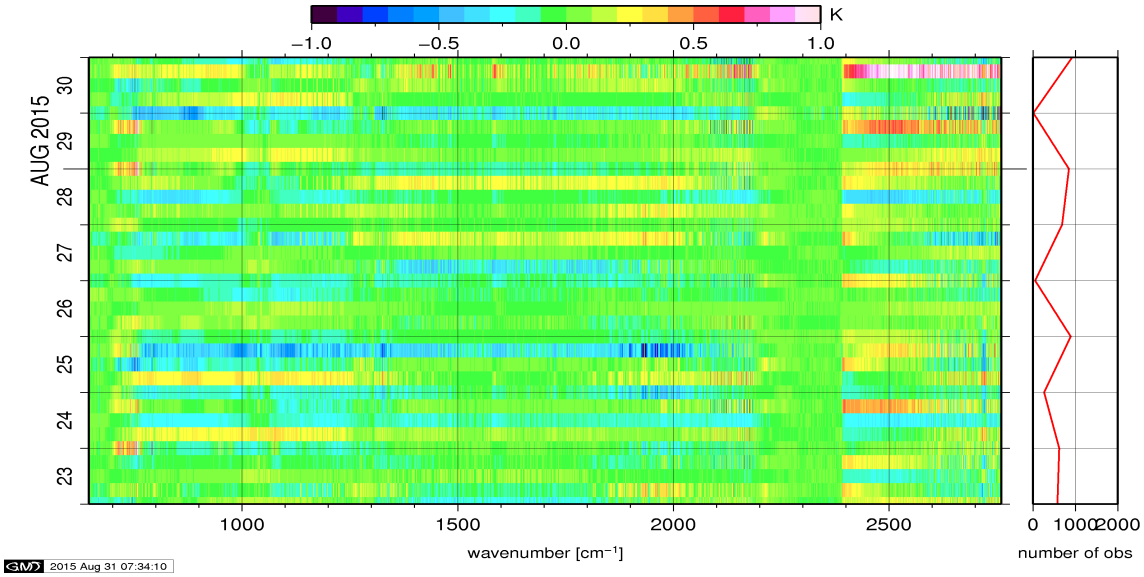

Figure 10: Radiance Anomaly in BRT: All Channels

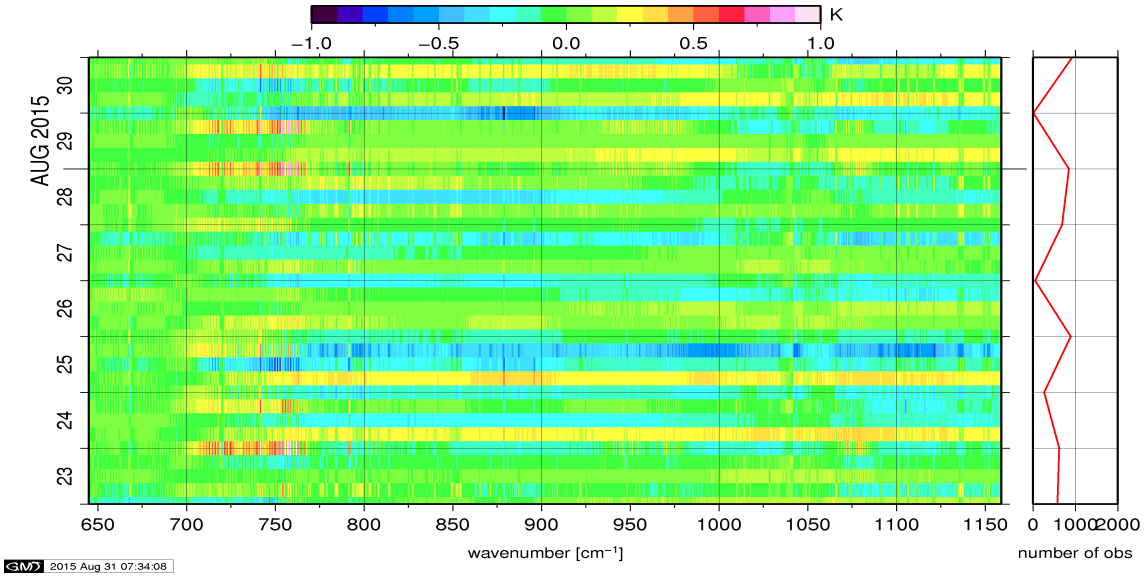

Figure 11: Radiance Anomaly in BRT: IASI Band 1

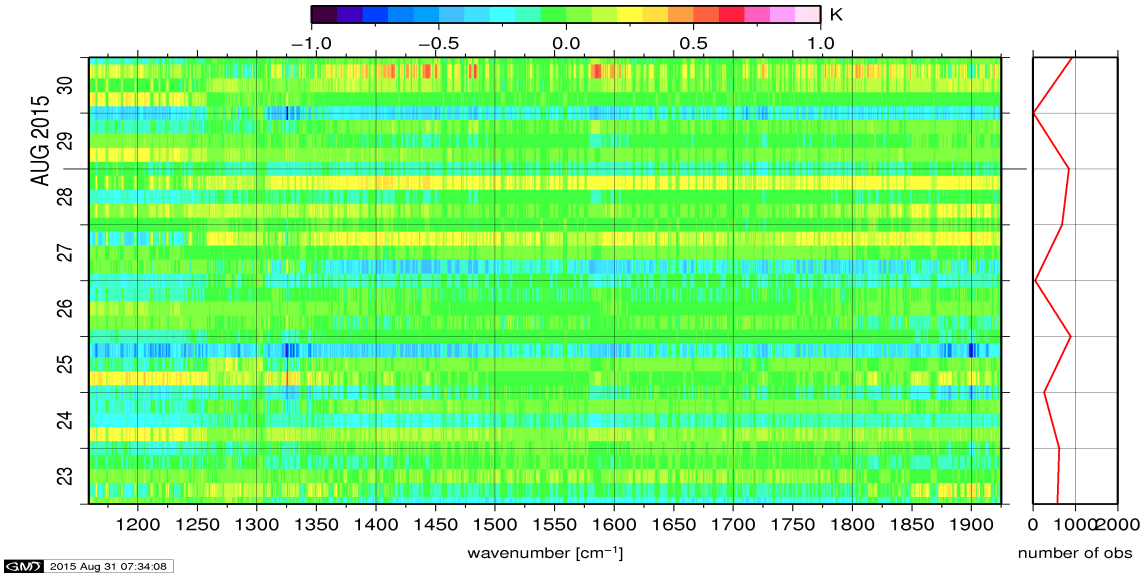

Figure 12: Radiance Anomaly in BRT: IASI Band 2

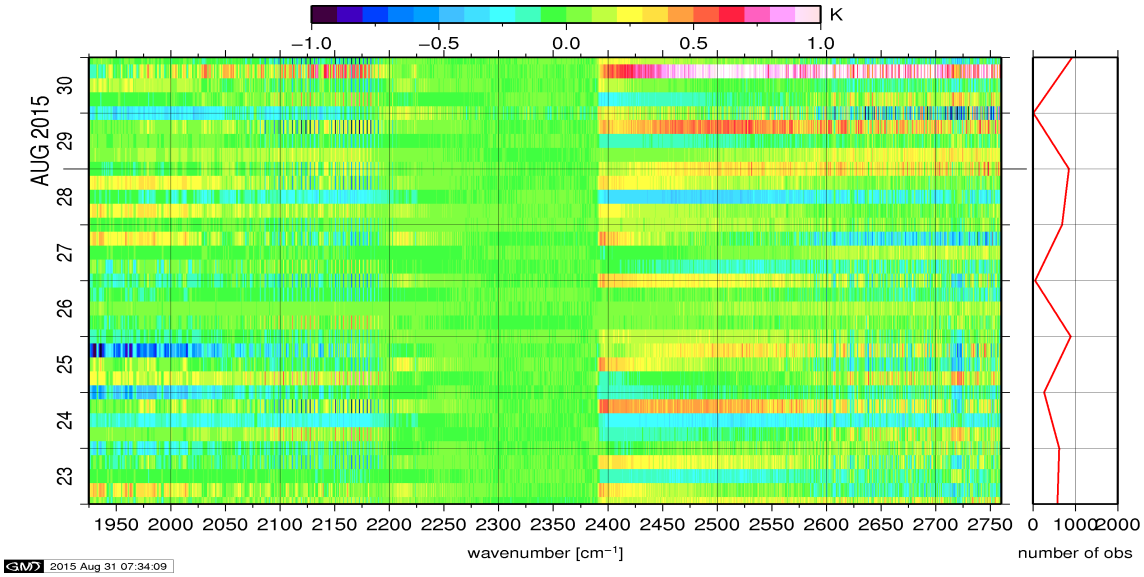

Figure 13: Radiance Anomaly in BRT: IASI Band 3

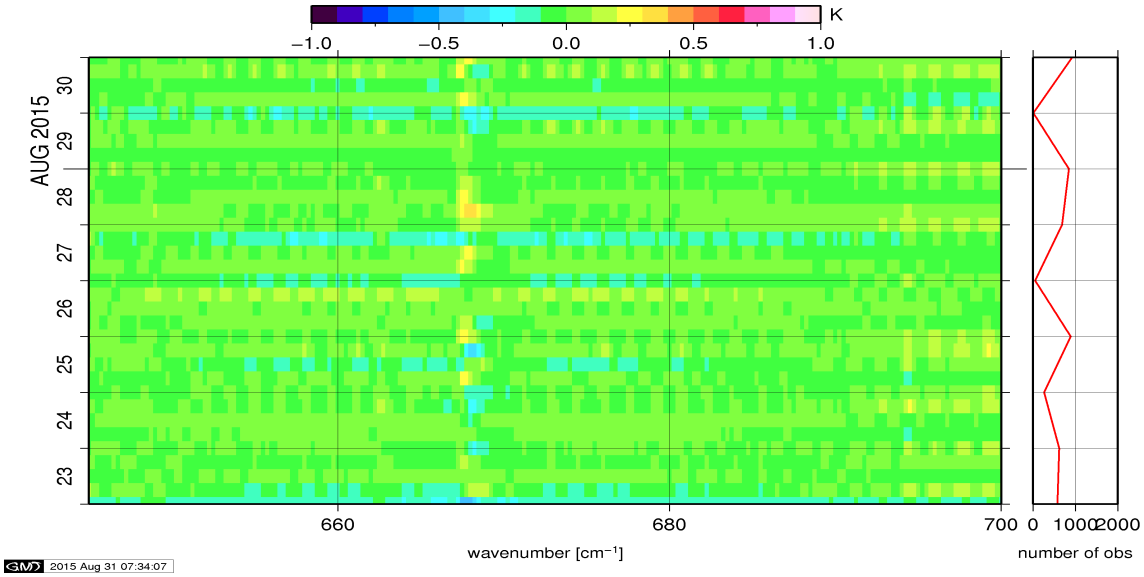

Figure 14: Radiance Anomaly in BRT: CO2 14

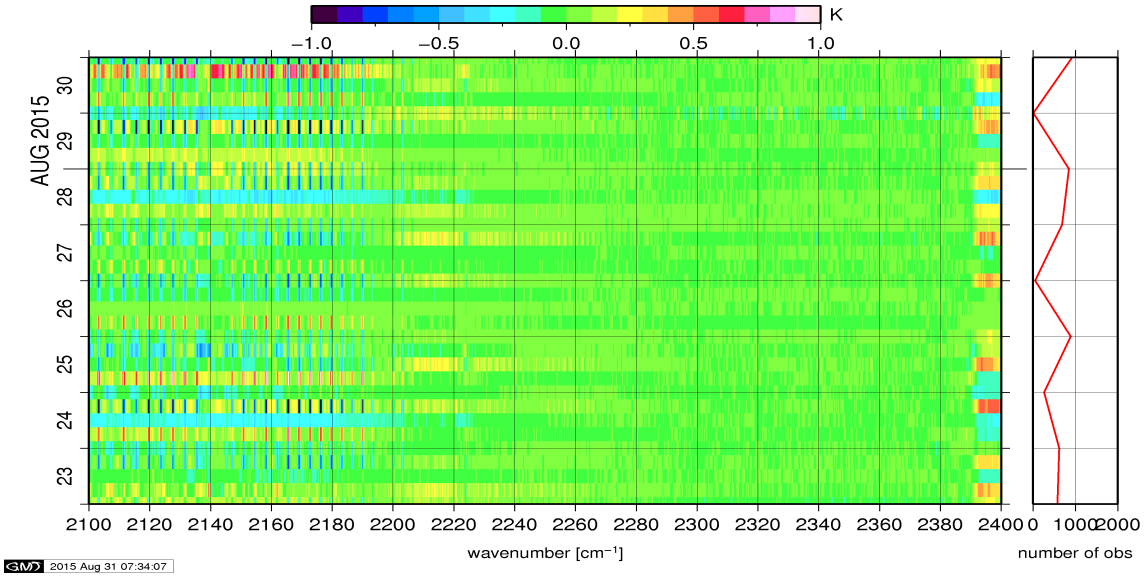

Figure 15: Radiance Anomaly in BRT: CO2 4.3

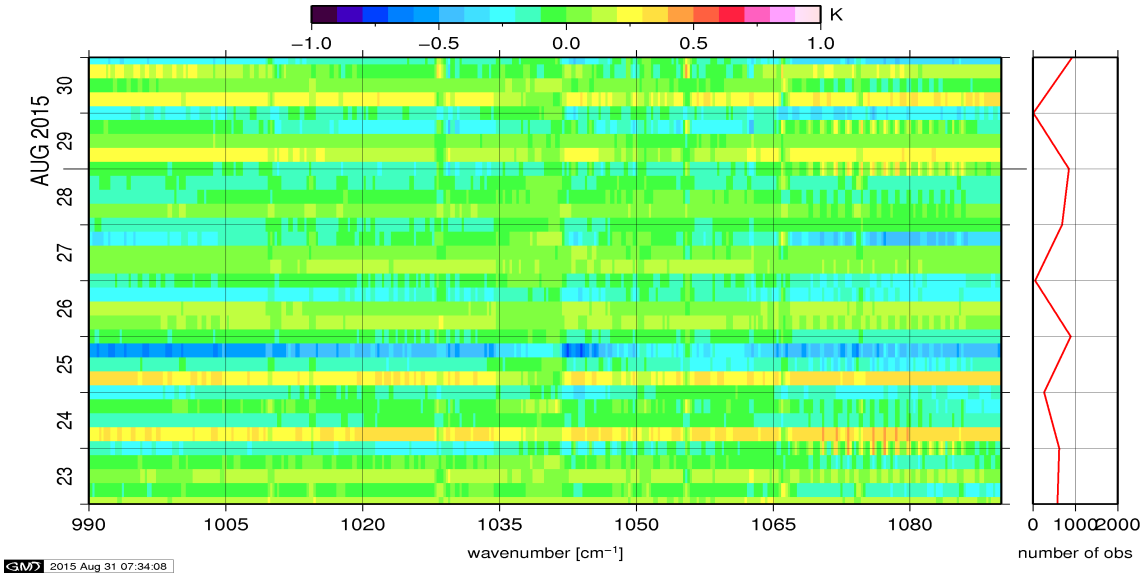

Figure 16: Radiance Anomaly in BRT: O3

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.

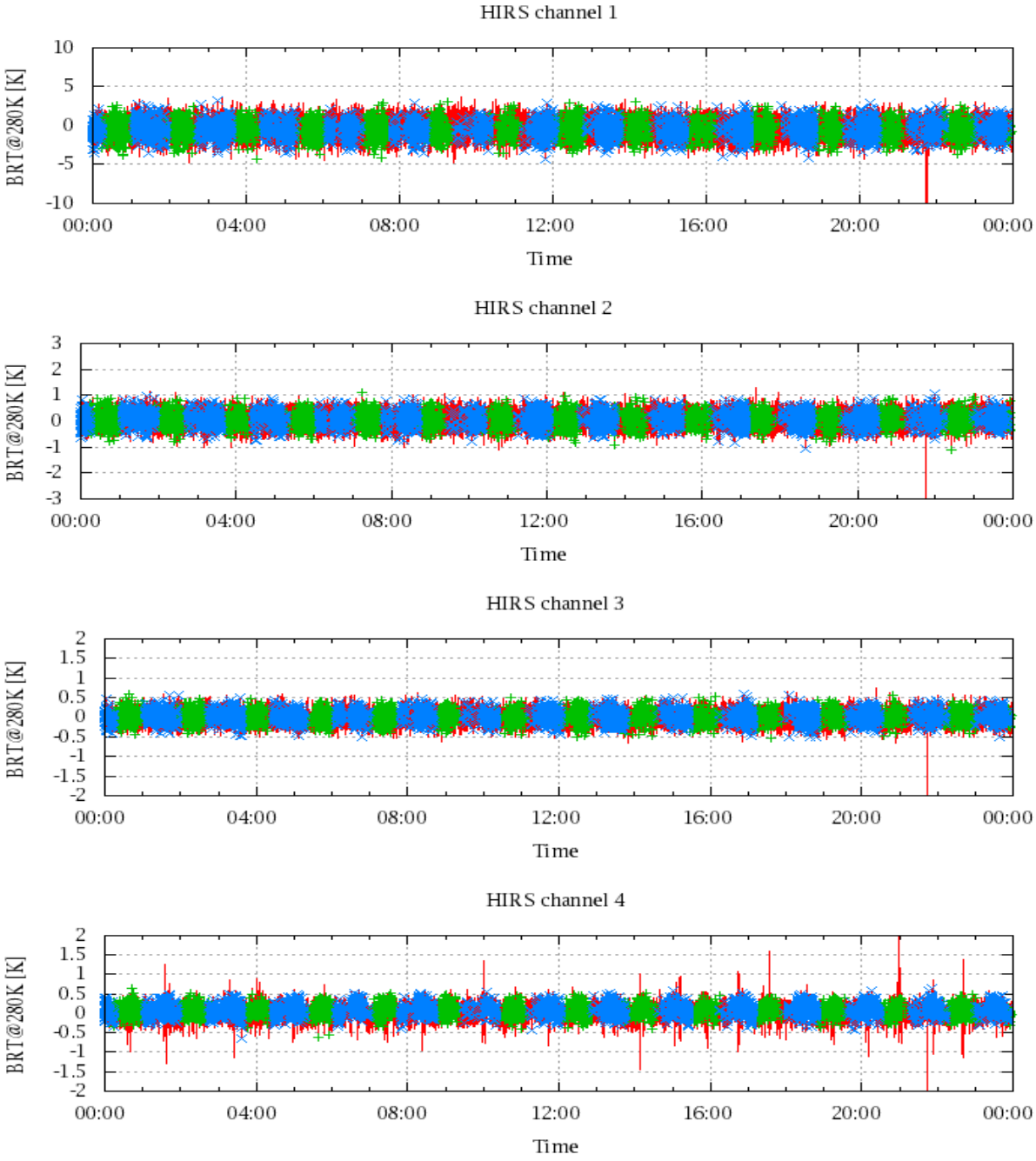

Figure 17: Radiance Differences in BRT

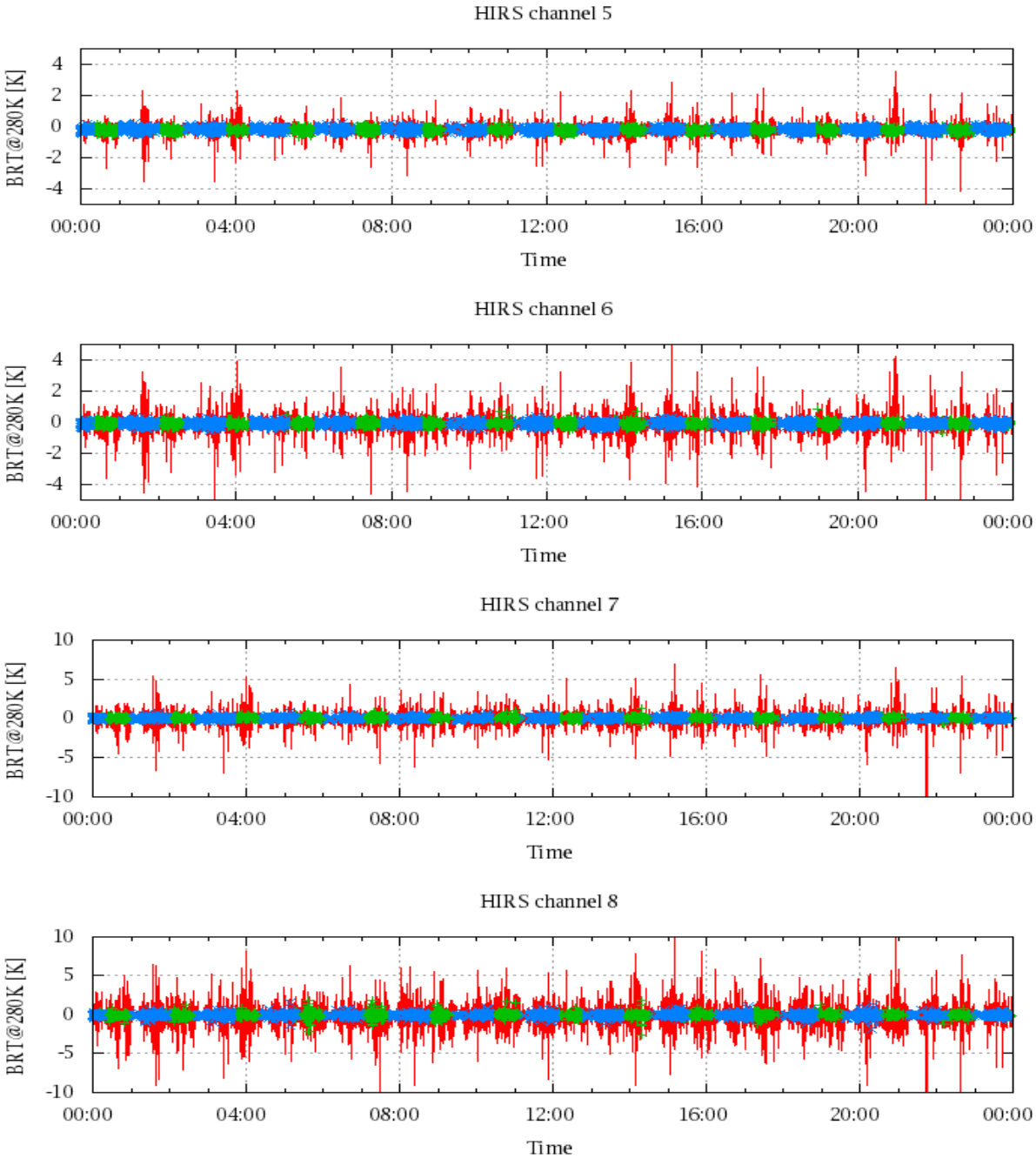

Figure 18: Radiance Differences in BRT

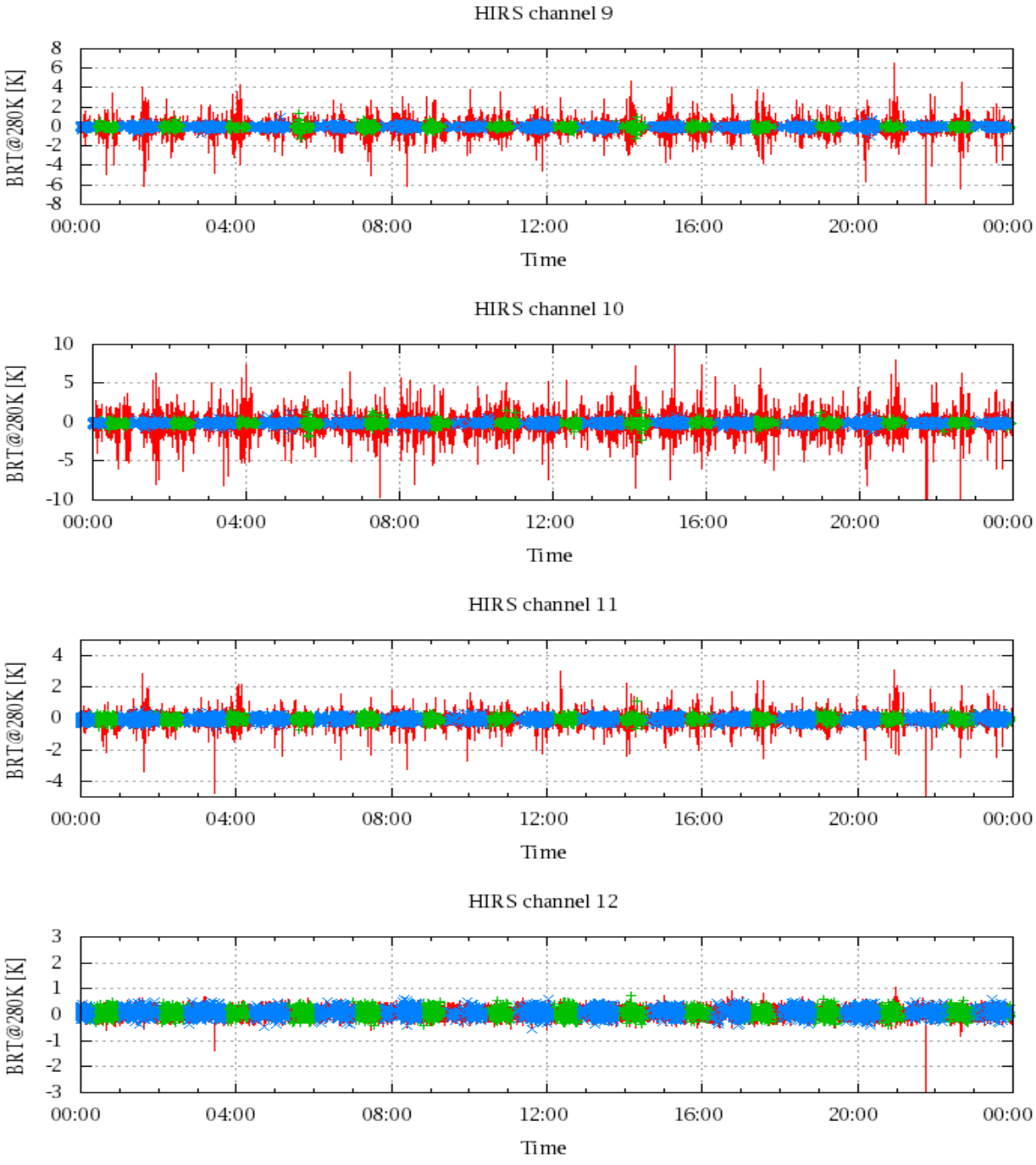

Figure 19: Radiance Differences in BRT

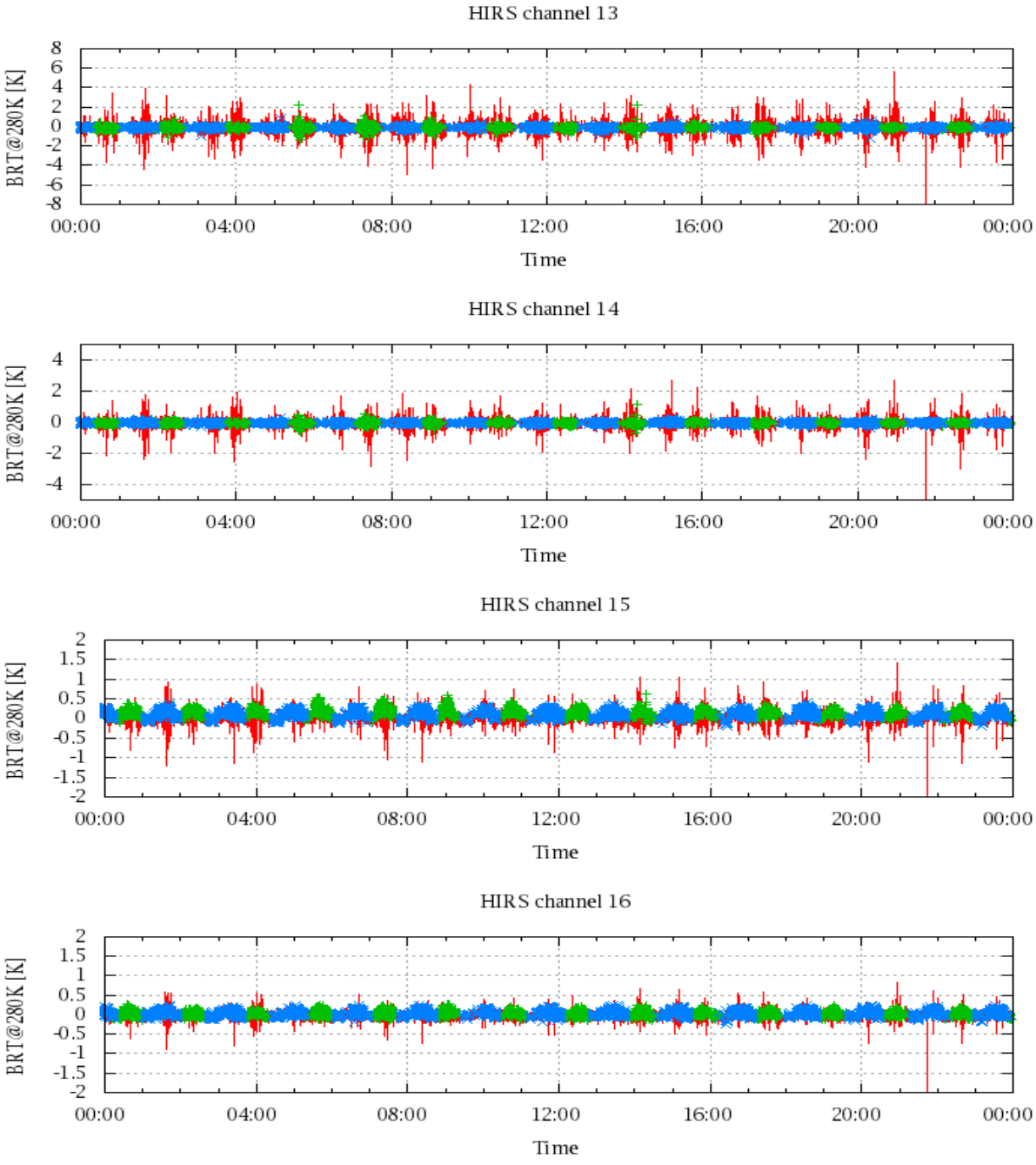

Figure 20: Radiance Differences in BRT

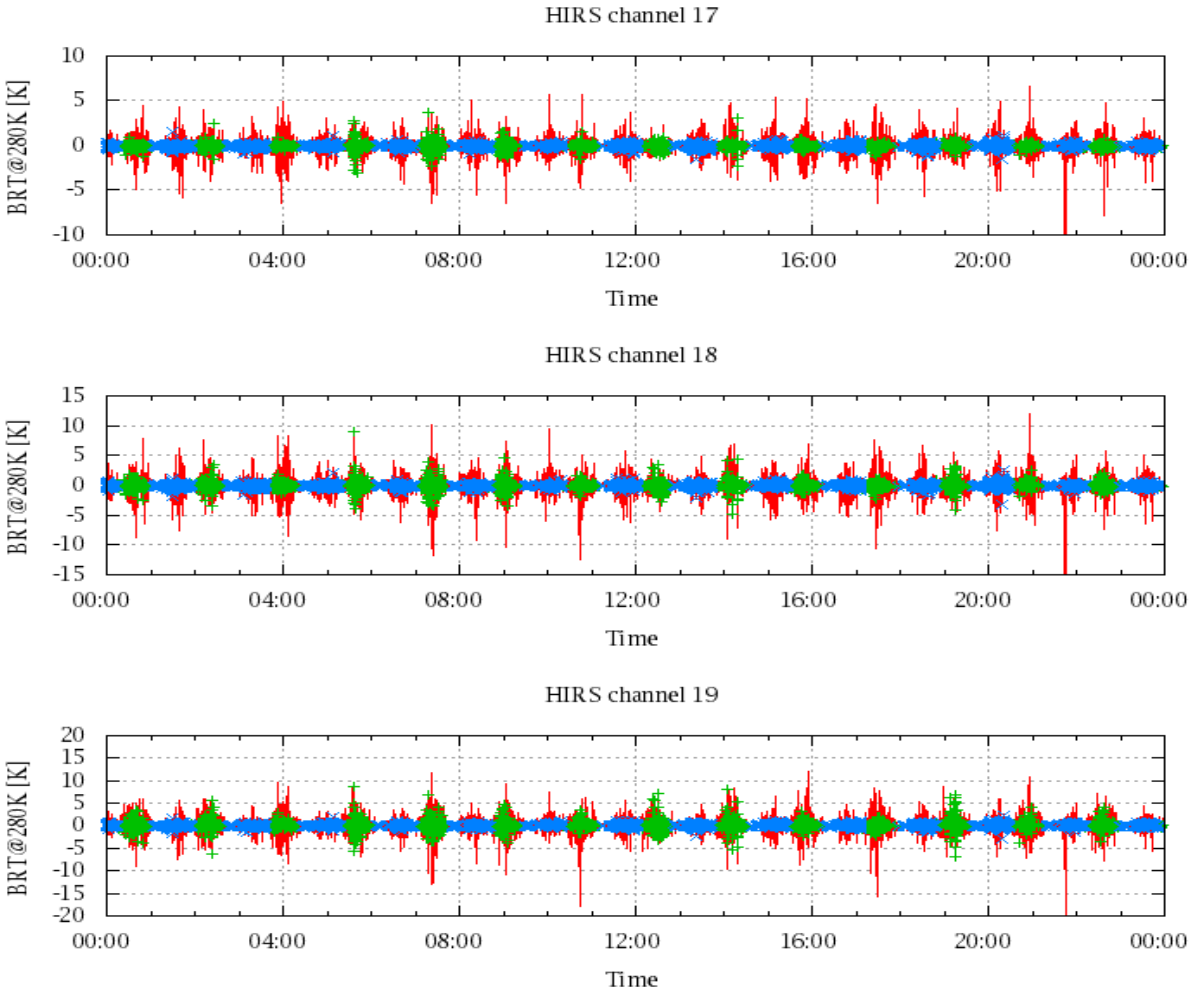

Figure 21: Radinace Differences in BRT