IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

07/07/2014 00:00:00 - 08/07/2014 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 07/07/2014 00:00:00 - 08/07/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 07/07/2014 00:00:00 - 08/07/2014 00:00:00

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

Table 1: Data quantity

APID	**Seq from**	**Seq to**	**Time from**	**Time to**
PX1 (130)	129	131	20140707184624.106	20140707184624.539
PX1 (130)	158	160	20140707184631.891	20140707184632.325
PX1 (130)	160	163	20140707184632.325	20140707184632.973
PX1 (130)	163	166	20140707184632.973	20140707184633.621
PX1 (130)	167	169	20140707184633.836	20140707184634.270
PX1 (130)	169	172	20140707184634.270	20140707184634.918
PX1 (130)	178	180	20140707184636.215	20140707184636.649
PX1 (130)	180	182	20140707184636.649	20140707184637.078
PX1 (130)	182	184	20140707184637.078	20140707184637.512
PX1 (130)	184	186	20140707184637.512	20140707184637.946
PX1 (130)	187	189	20140707184638.160	20140707184640.106
PX1 (130)	14895	14897	20140707233027.937	20140707233028.367
PX2 (135)	129	132	20140707184624.106	20140707184624.758
PX2 (135)	142	144	20140707184626.918	20140707184627.352
PX2 (135)	144	146	20140707184627.352	20140707184627.782
PX2 (135)	150	152	20140707184628.649	20140707184629.082
PX2 (135)	158	163	20140707184631.891	20140707184632.973
PX2 (135)	163	166	20140707184632.973	20140707184633.621

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	167	169	20140707184633.836	20140707184634.270
PX2 (135)	170	173	20140707184634.485	20140707184635.133
PX2 (135)	173	175	20140707184635.133	20140707184635.567
PX2 (135)	175	177	20140707184635.567	20140707184636.000
PX2 (135)	178	180	20140707184636.215	20140707184636.649
PX2 (135)	184	186	20140707184637.512	20140707184637.946
PX2 (135)	187	189	20140707184638.160	20140707184640.106
PX2 (135)	16220	16222	20140707233621.006	20140707233621.440
PX3 (140)	129	132	20140707184624.106	20140707184624.758
PX3 (140)	142	144	20140707184626.918	20140707184627.352
PX3 (140)	144	146	20140707184627.352	20140707184627.782
PX3 (140)	150	152	20140707184628.649	20140707184629.082
PX3 (140)	159	163	20140707184632.106	20140707184632.973
PX3 (140)	163	166	20140707184632.973	20140707184633.621
PX3 (140)	166	169	20140707184633.621	20140707184634.270
PX3 (140)	170	173	20140707184634.485	20140707184635.133
PX3 (140)	173	175	20140707184635.133	20140707184635.567
PX3 (140)	175	177	20140707184635.567	20140707184636.000
PX3 (140)	177	179	20140707184636.000	20140707184636.430
PX3 (140)	180	182	20140707184636.649	20140707184637.078
PX3 (140)	182	184	20140707184637.078	20140707184637.512
PX3 (140)	184	186	20140707184637.512	20140707184637.946
PX3 (140)	187	189	20140707184638.160	20140707184640.106
PX4 (145)	129	133	20140707184624.106	20140707184624.973
PX4 (145)	142	144	20140707184626.918	20140707184627.352
PX4 (145)	144	146	20140707184627.352	20140707184627.782
PX4 (145)	150	152	20140707184628.649	20140707184629.082
PX4 (145)	160	162	20140707184632.325	20140707184632.754
PX4 (145)	163	169	20140707184632.973	20140707184634.270
PX4 (145)	170	173	20140707184634.485	20140707184635.133
PX4 (145)	173	175	20140707184635.133	20140707184635.567
PX4 (145)	175	177	20140707184635.567	20140707184636.000
PX4 (145)	177	179	20140707184636.000	20140707184636.430
PX4 (145)	180	182	20140707184636.649	20140707184637.078
PX4 (145)	182	184	20140707184637.078	20140707184637.512
PX4 (145)	186	188	20140707184637.946	20140707184639.891
IMG (150)	3605	3607	20140707184623.891	20140707184624.325
IMG (150)	3607	3610	20140707184624.325	20140707184624.973
IMG (150)	3610	3612	20140707184624.973	20140707184625.403
IMG (150)	3621	3623	20140707184627.352	20140707184627.782
IMG (150)	3627	3629	20140707184628.649	20140707184629.082
IMG (150)	3633	3635	20140707184629.946	20140707184630.594
IMG (150)	3637	3640	20140707184631.243	20140707184632.106
IMG (150)	3640	3643	20140707184632.106	20140707184632.754
IMG (150)	3643	3652	20140707184632.754	20140707184634.703
IMG (150)	3656	3658	20140707184635.567	20140707184636.000
IMG (150)	3658	3660	20140707184636.000	20140707184636.430
IMG (150)	3660	3665	20140707184636.430	20140707184637.512
IMG (150)	3667	3669	20140707184637.946	20140707184638.594
IMG (150)	3671	3673	20140707184639.243	20140707184639.891
VER (160)	12560	12565	20140707184622.161	20140707184630.160
VER (160)	12565	12569	20140707184630.160	20140707184638.160
AUX (180)	-	-	-	-

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/07/2014 00:01:25	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	481	-
L1 ENG distinct GEPSGranule	481	-
GQisFlagQual set (PX1)	99.46 %	-
GQisFlagQual set (PX2)	99.40 %	-
GQisFlagQual set (PX3)	99.48 %	-
GQisFlagQual set (PX4)	99.49 %	-
GQisFlagQual set (all)	99.46 %	-

Table 4: Quality flags

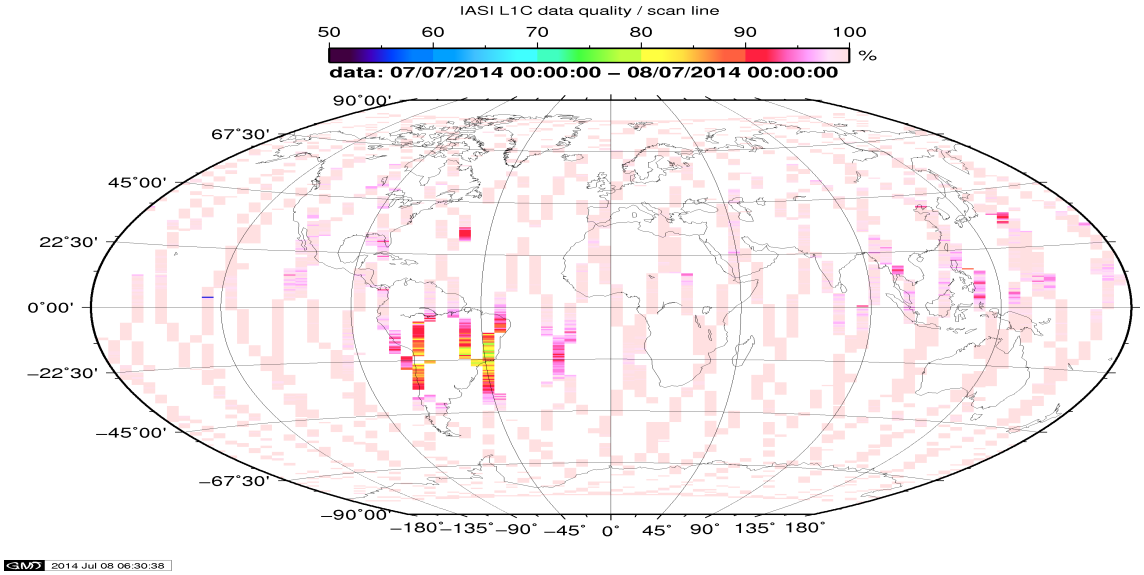

Figure 1: L1C data quality

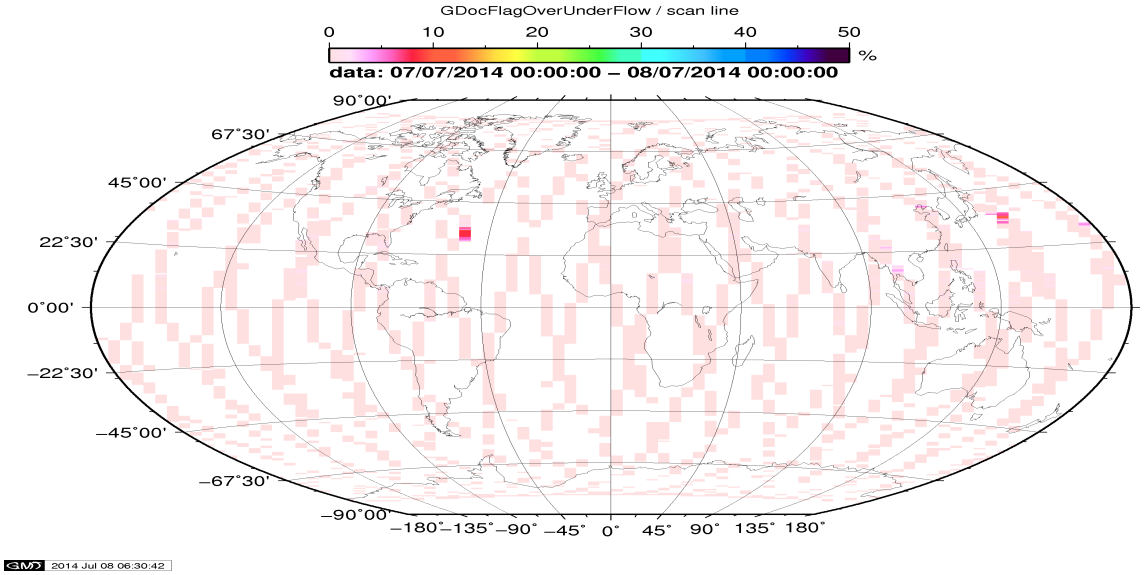

Figure 2: Flag of Over and Under Flows

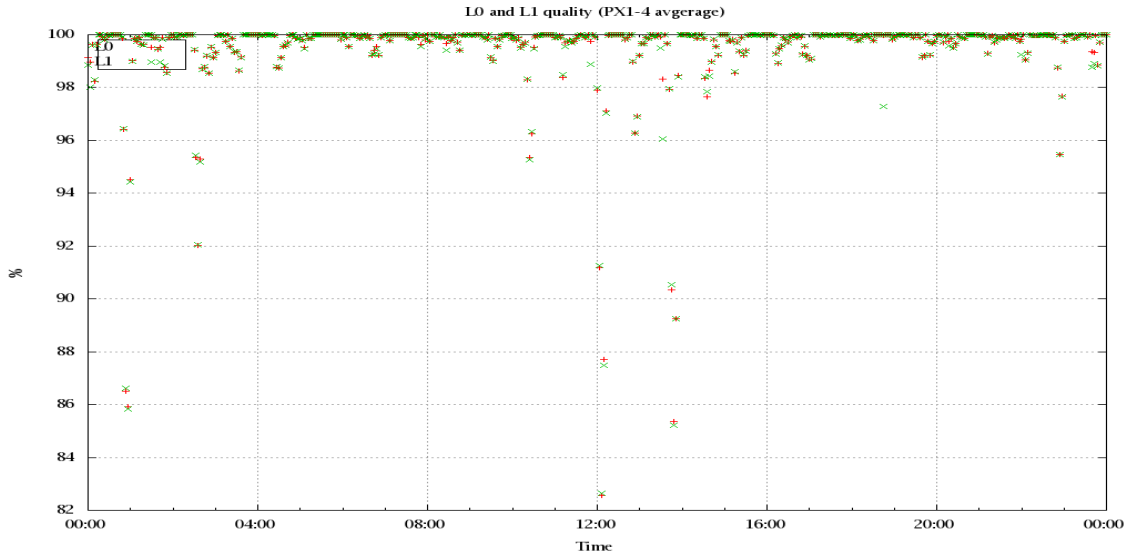

Figure 3: Level 0 and 1C overall quality

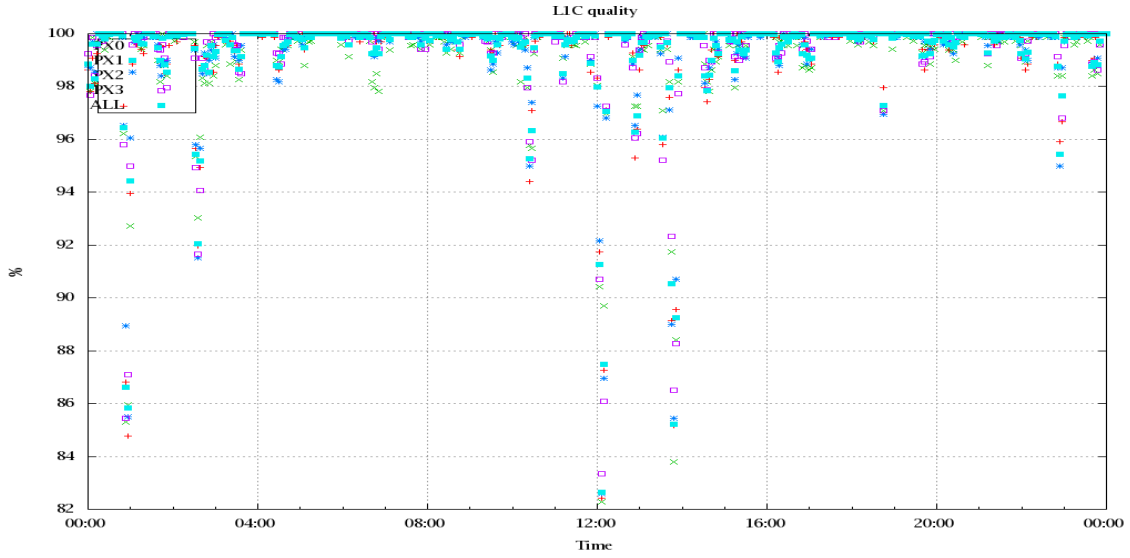

Figure 4: Level 1C quality

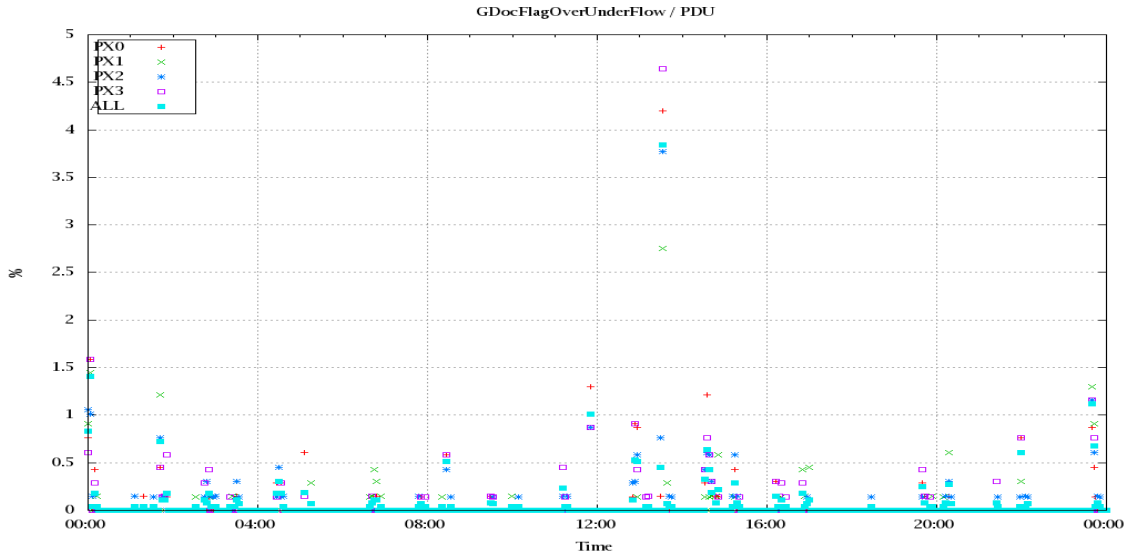

Figure 5: OverUnderFlowFlag timeseries

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.

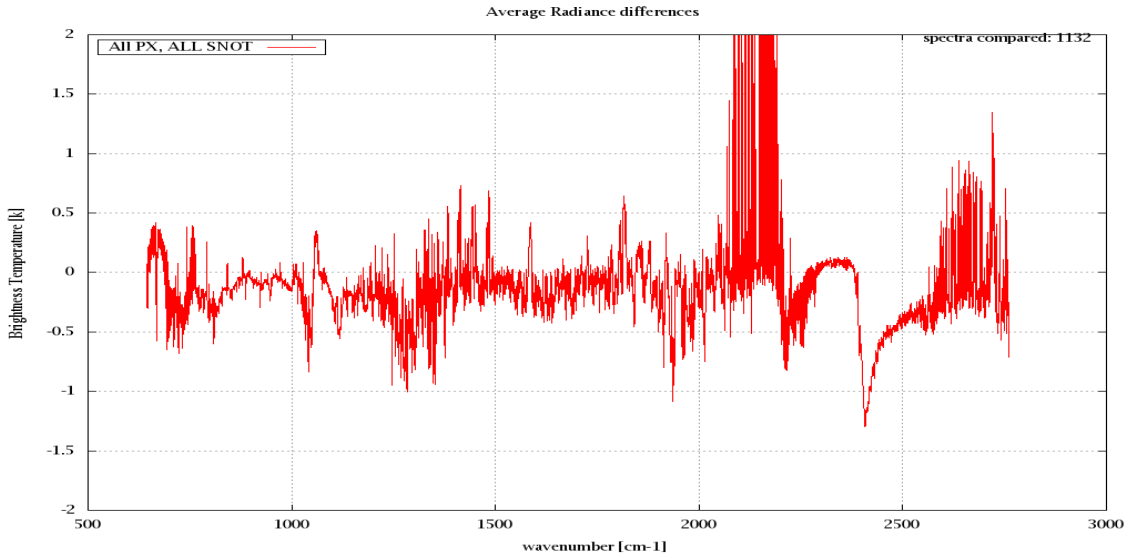

Figure 6: Average Radiance differences: OBS-CAL

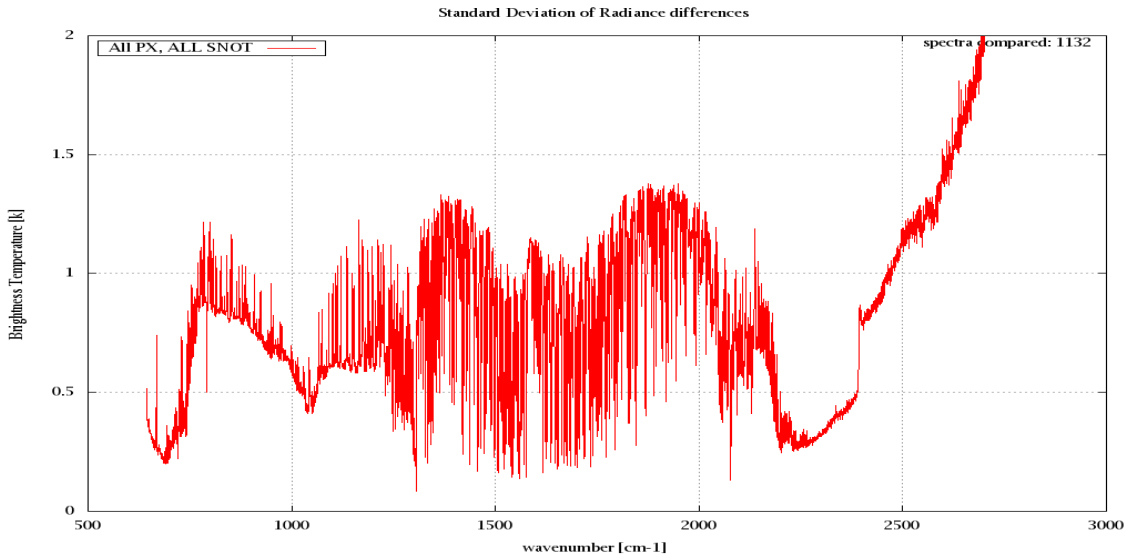

Figure 7: Standard Deviation of Radiance differences

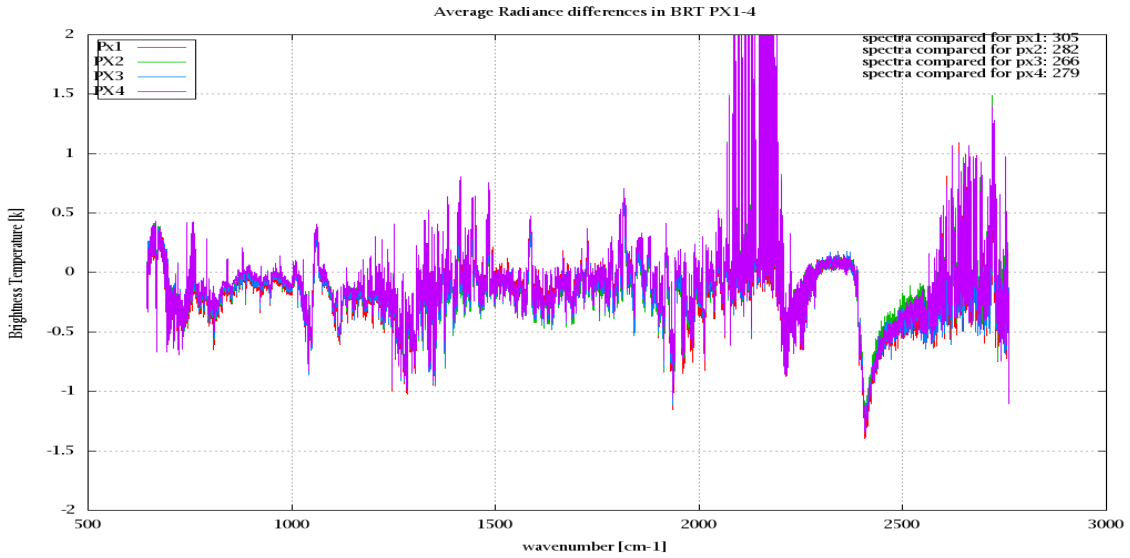

Figure 8: Average Radiance differences: OBS-CAL

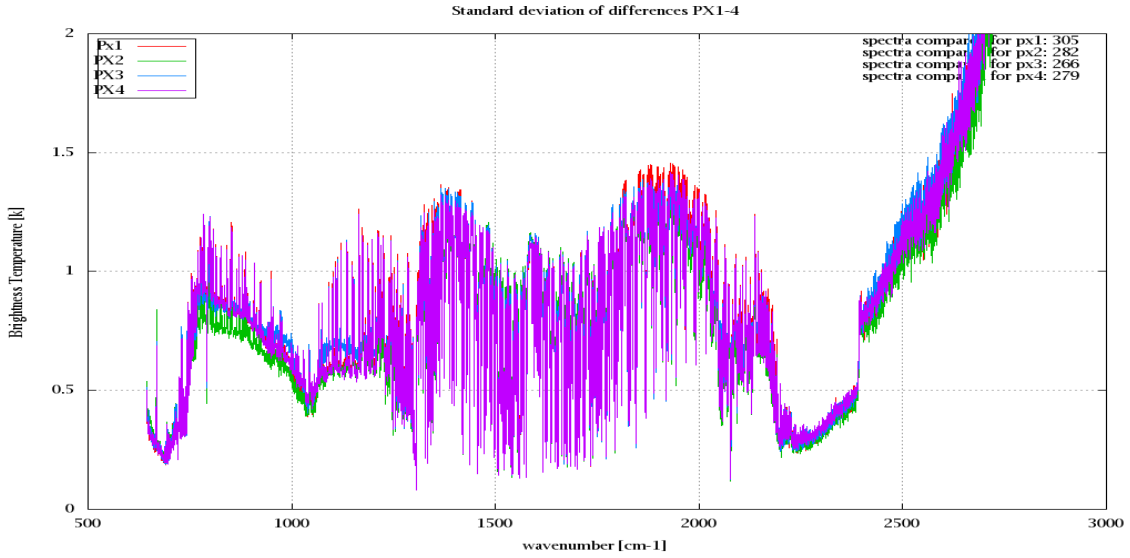

Figure 9: Standard Deviation of Radiance differences

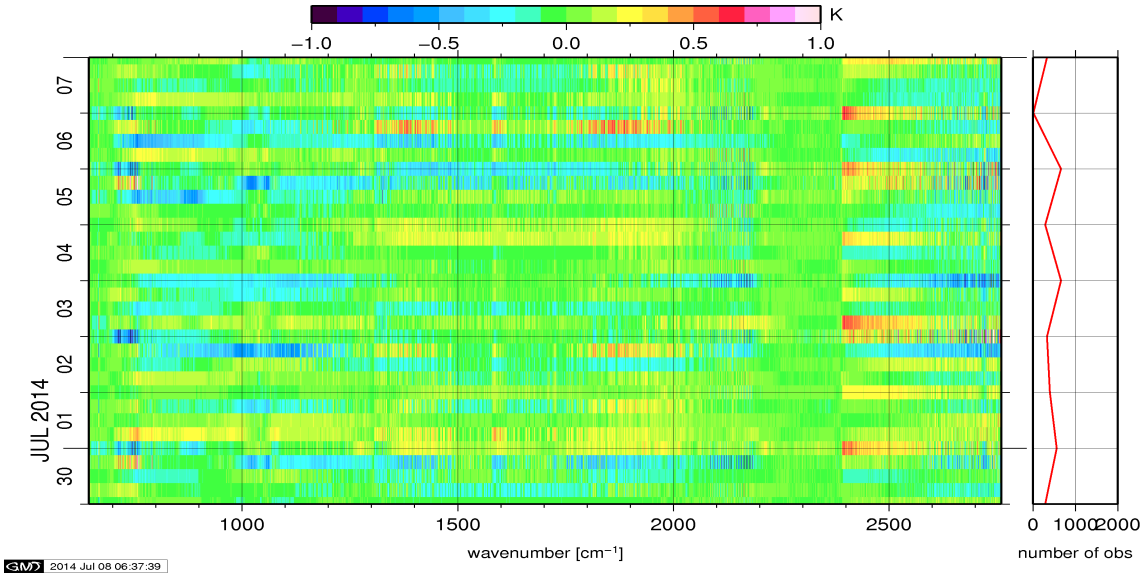

Figure 10: Radiance Anomaly in BRT: All Channels

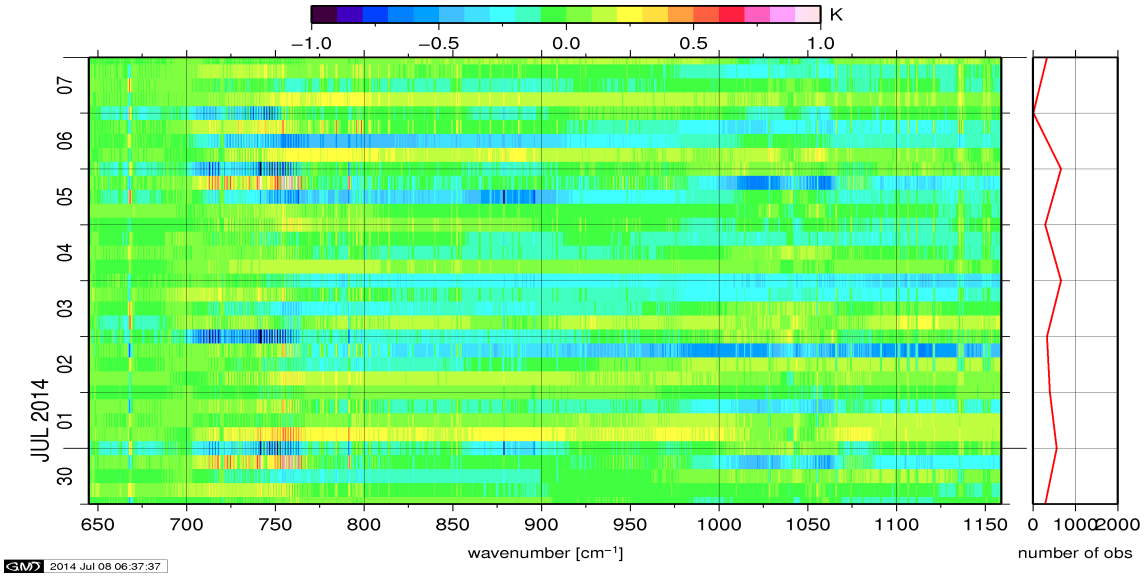

Figure 11: Radiance Anomaly in BRT: IASI Band 1

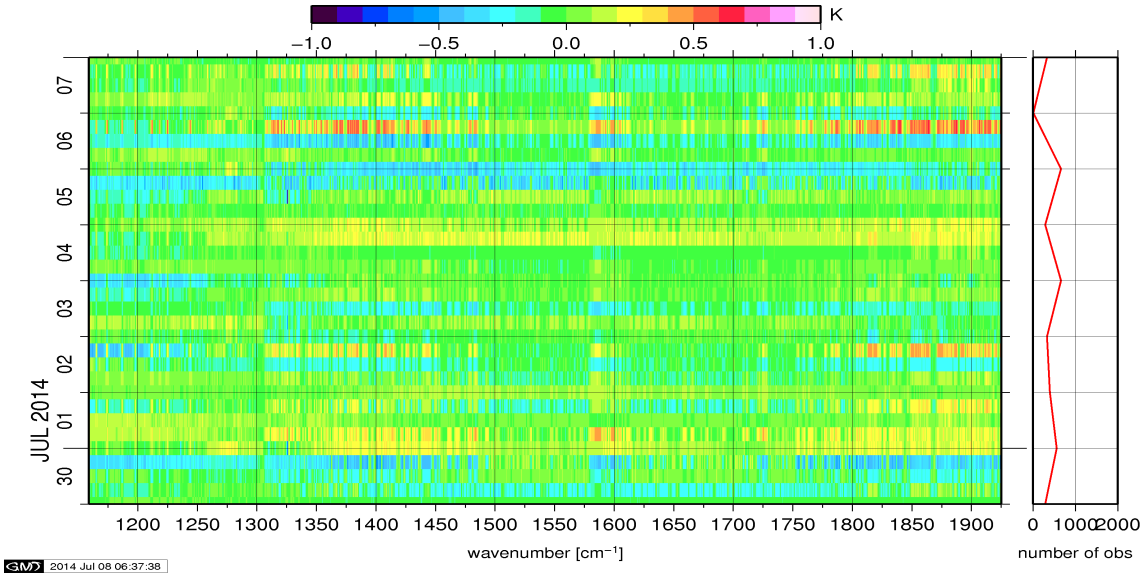

Figure 12: Radiance Anomaly in BRT: IASI Band 2

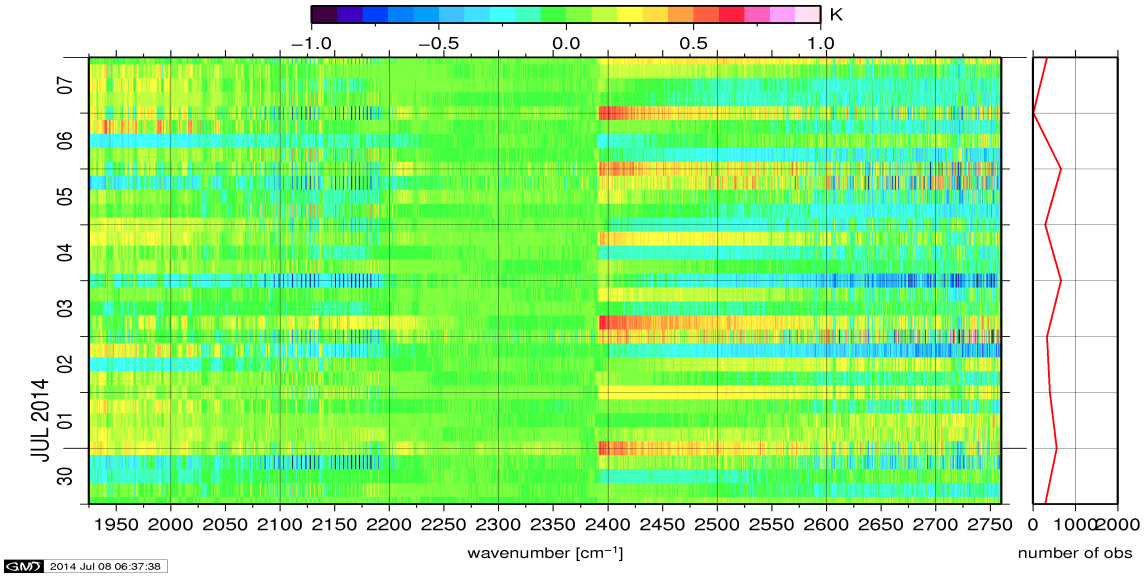

Figure 13: Radiance Anomaly in BRT: IASI Band 3

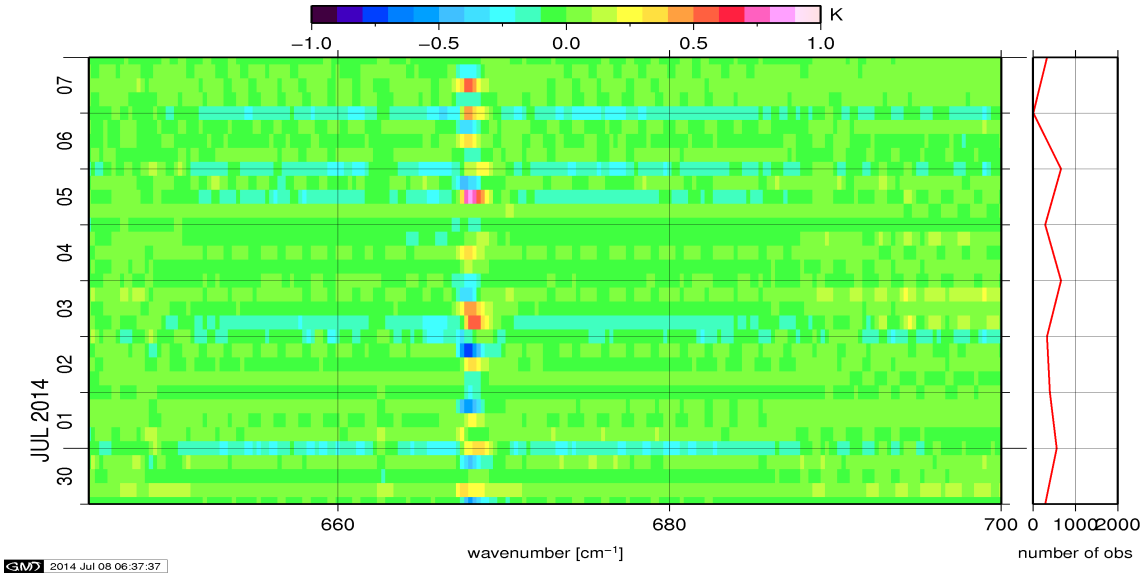

Figure 14: Radiance Anomaly in BRT: CO2 14

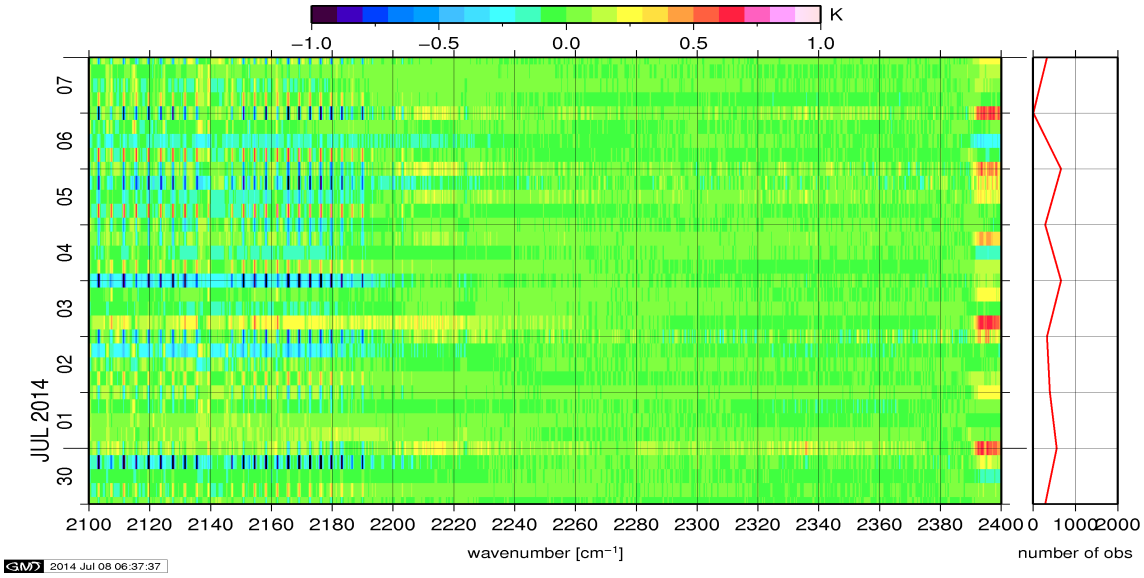

Figure 15: Radiance Anomaly in BRT: CO2 4.3

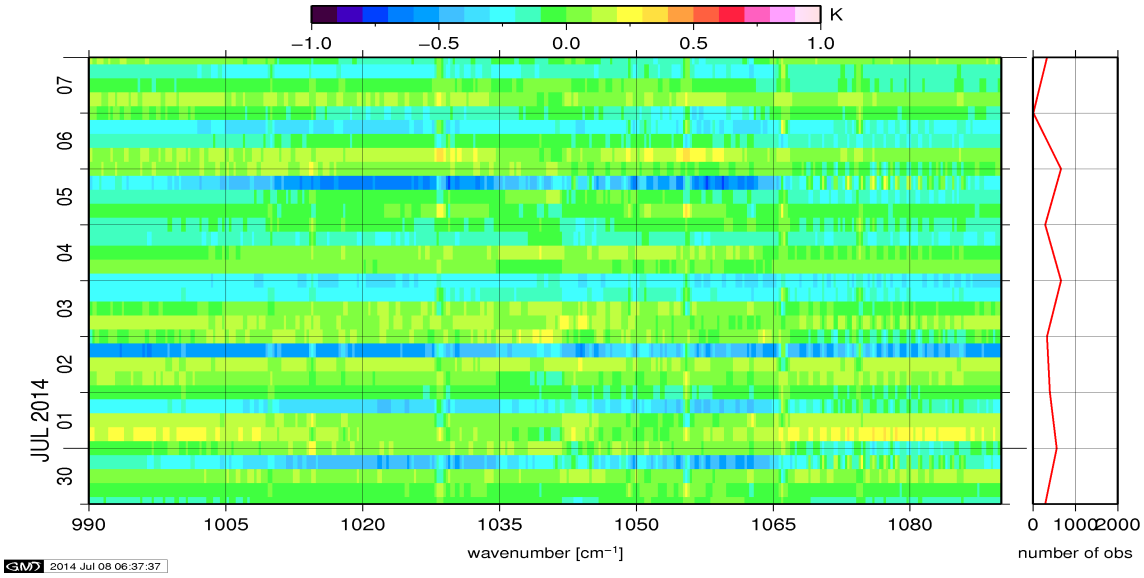

Figure 16: Radiance Anomaly in BRT: O3

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.

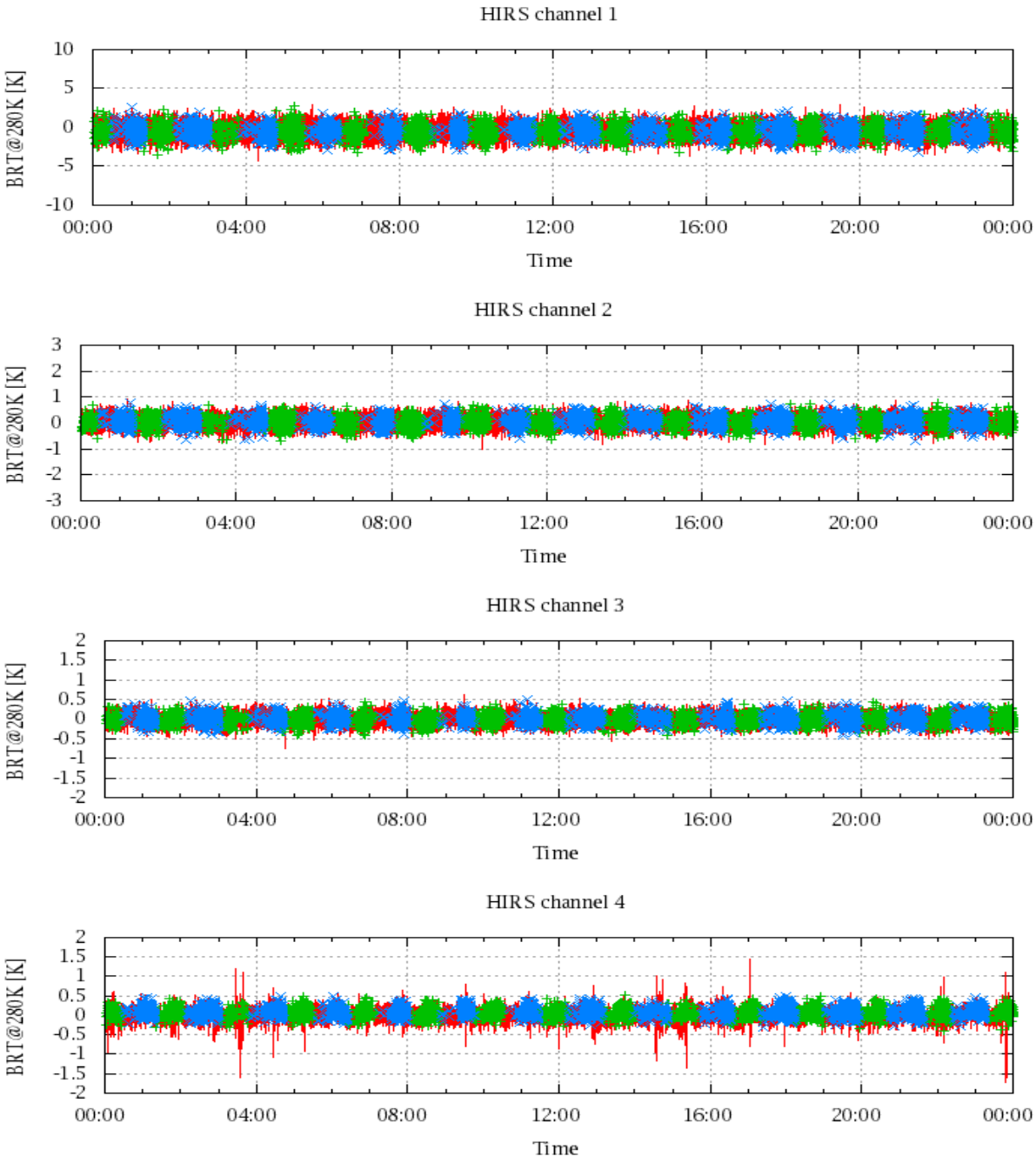

Figure 17: Radiance Differences in BRT

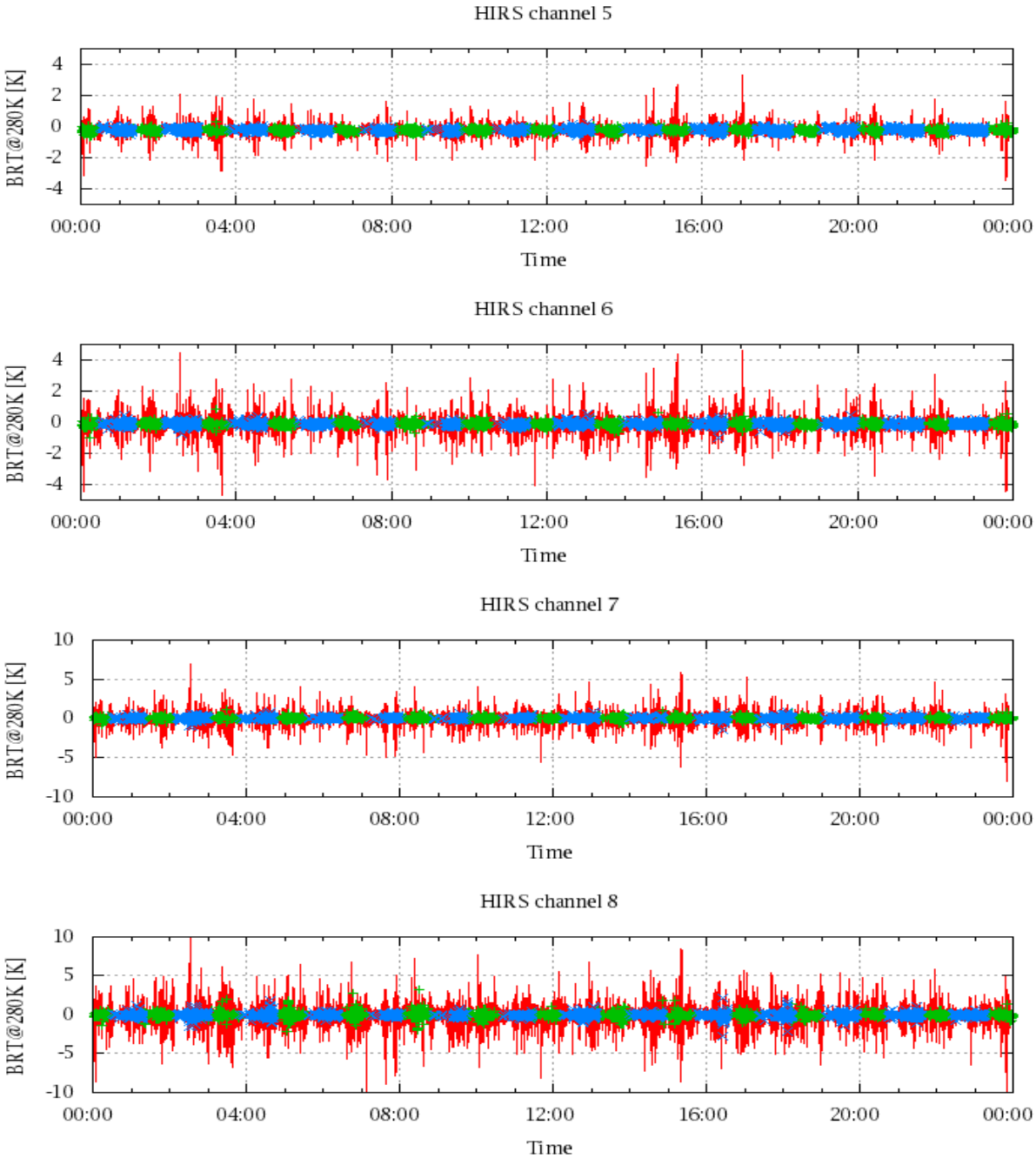

Figure 18: Radiance Differences in BRT

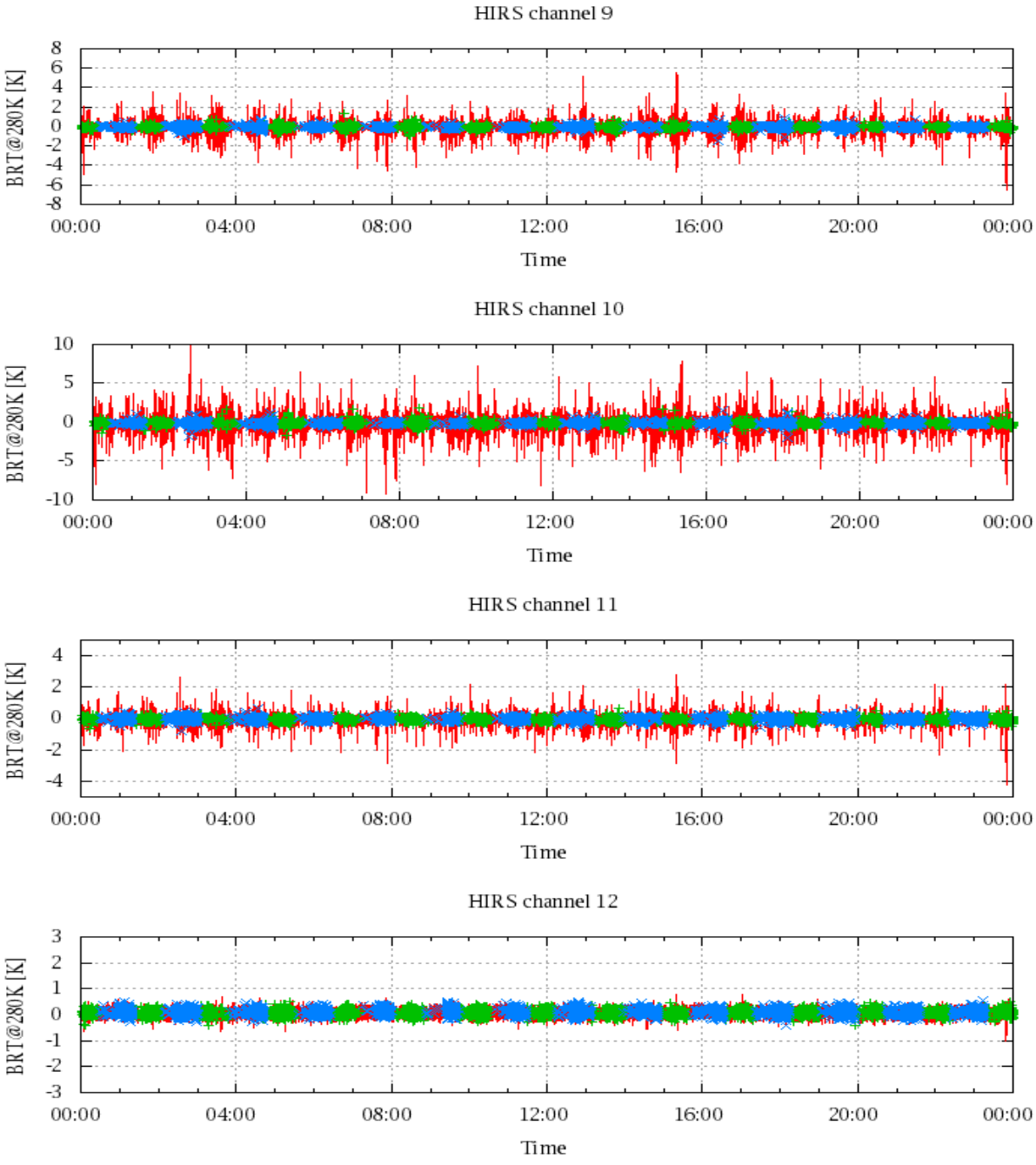

Figure 19: Radiance Differences in BRT

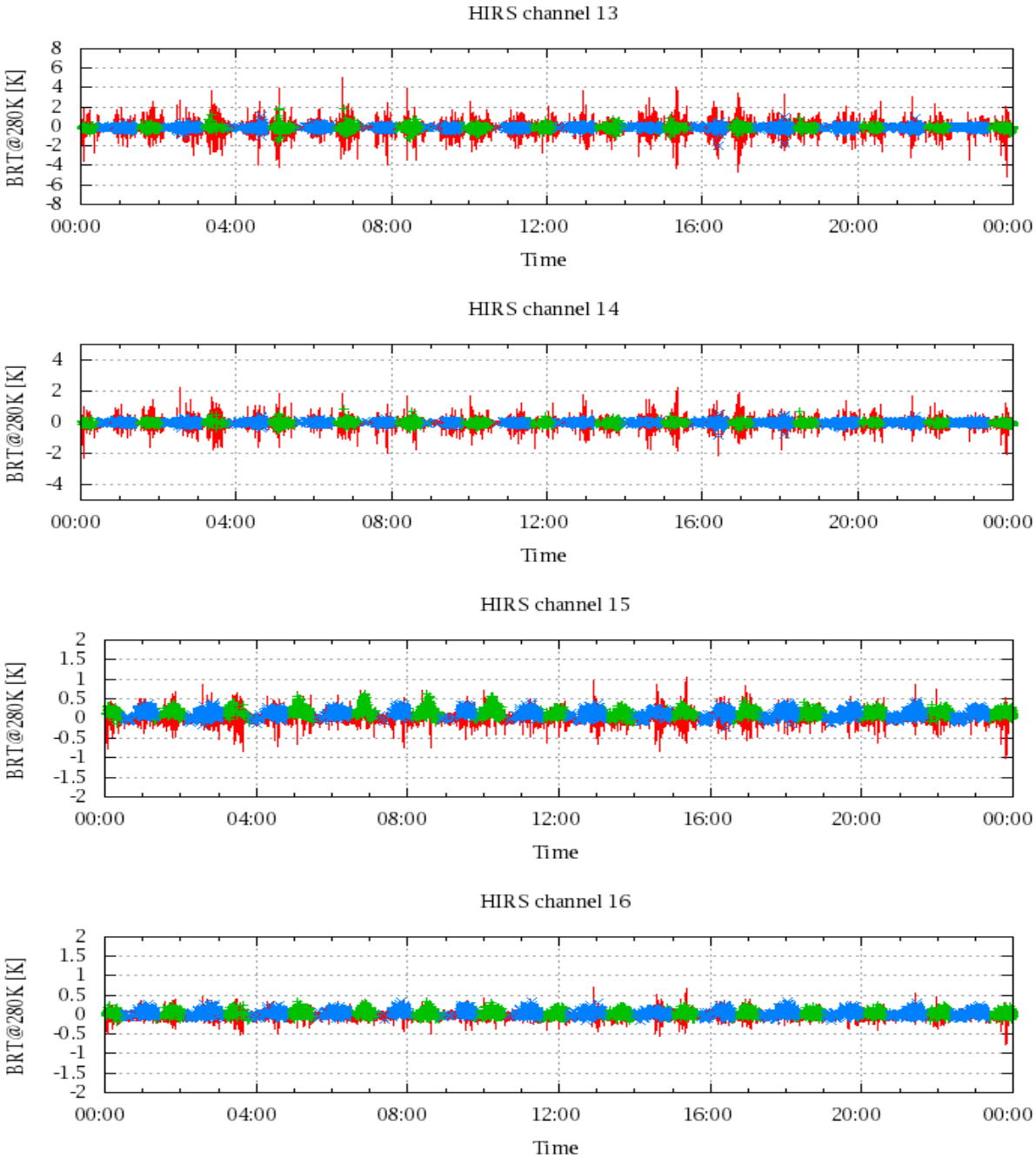

Figure 20: Radiance Differences in BRT

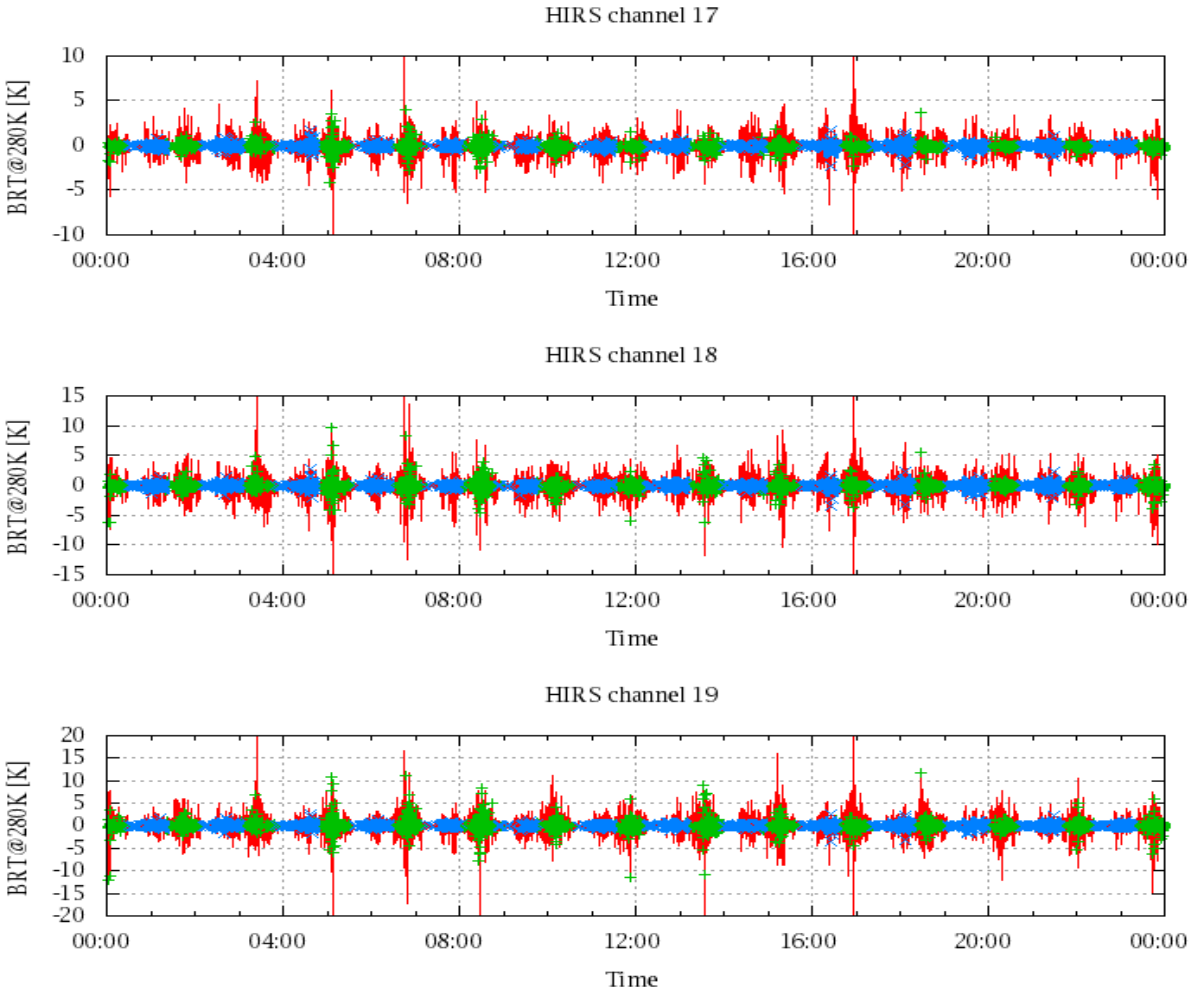

Figure 21: Radinace Differences in BRT