IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

07/11/2015 00:00:00 - 08/11/2015 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 07/11/2015 00:00:00 - 08/11/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 07/11/2015 00:00:00 - 08/11/2015 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)	2259	2261	20151107092250.725	20151107092251.155
PX1 (130)	2273	2275	20151107092255.264	20151107092255.698
PX1 (130)	2276	2278	20151107092255.913	20151107092256.346
PX1 (130)	2278	2280	20151107092256.346	20151107092256.776
PX1 (130)	2282	2288	20151107092257.210	20151107092258.506
PX1 (130)	2288	2358	20151107092258.506	20151107092318.182
PX1 (130)	2793	2808	20151107092513.424	20151107092518.178
PX2 (135)	2275	2277	20151107092255.698	20151107092256.127
PX2 (135)	2278	2280	20151107092256.346	20151107092256.776
PX2 (135)	2282	2284	20151107092257.210	20151107092257.643
PX2 (135)	2285	2289	20151107092257.858	20151107092258.721
PX2 (135)	2289	2292	20151107092258.721	20151107092259.374
PX2 (135)	2292	2295	20151107092259.374	20151107092300.022
PX2 (135)	2295	2358	20151107092300.022	20151107092318.182
PX2 (135)	2788	2790	20151107092512.342	20151107092512.772
PX2 (135)	2794	2808	20151107092513.639	20151107092518.178
PX3 (140)	2277	2280	20151107092256.127	20151107092256.776
PX3 (140)	2280	2282	20151107092256.776	20151107092257.210

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	2282	2284	20151107092257.210	20151107092257.643
PX3 (140)	2286	2295	20151107092258.077	20151107092300.022
PX3 (140)	2295	2358	20151107092300.022	20151107092318.182
PX3 (140)	2794	2808	20151107092513.639	20151107092518.178
PX4 (145)	2268	2270	20151107092254.182	20151107092254.616
PX4 (145)	2270	2272	20151107092254.616	20151107092255.049
PX4 (145)	2274	2276	20151107092255.479	20151107092255.913
PX4 (145)	2277	2280	20151107092256.127	20151107092256.776
PX4 (145)	2280	2284	20151107092256.776	20151107092257.643
PX4 (145)	2286	2294	20151107092258.077	20151107092259.803
PX4 (145)	2294	2357	20151107092259.803	20151107092316.452
PX4 (145)	2359	2361	20151107092318.397	20151107092318.831
PX4 (145)	2794	2808	20151107092513.639	20151107092518.178
IMG (150)	15683	15685	20151107092250.725	20151107092251.155
IMG (150)	15705	15709	20151107092256.127	20151107092256.995
IMG (150)	15709	15714	20151107092256.995	20151107092258.077
IMG (150)	15714	15716	20151107092258.077	20151107092258.506
IMG (150)	15717	15722	20151107092258.721	20151107092259.803
IMG (150)	15722	15724	20151107092259.803	20151107092300.237
IMG (150)	15724	15794	20151107092300.237	20151107092316.885
IMG (150)	16287	16289	20151107092512.990	20151107092513.424
IMG (150)	16289	16304	20151107092513.424	20151107092516.881
VER (160)	4576	4578	20151107092252.452	20151107092252.452
VER (160)	4578	4593	20151107092252.452	20151107092316.452
VER (160)	4663	4667	20151107092508.447	20151107092513.639
AUX (180)	7452	7455	20151107092252.885	20151107092316.885

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/11/2015 00:03:08	-	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)	99.48 %	-
GQisFlagQual set (PX2)	99.47 %	-
GQisFlagQual set (PX3)	99.48 %	-
GQisFlagQual set (PX4)	99.48 %	-
GQisFlagQual set (all)	99.48 %	-

Table 4: Quality flags

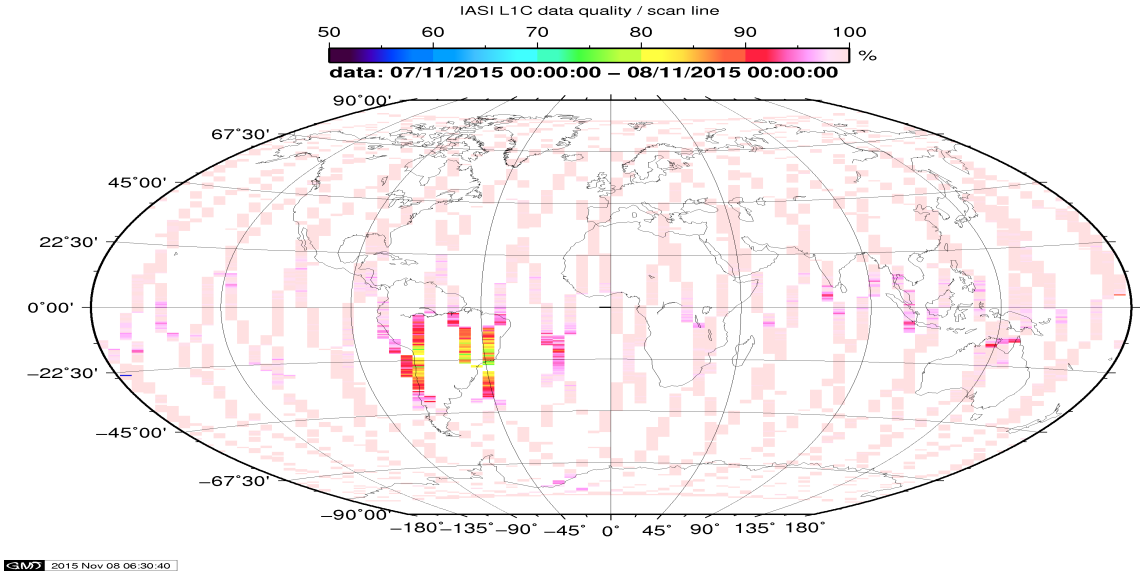

Figure 1: L1C data quality

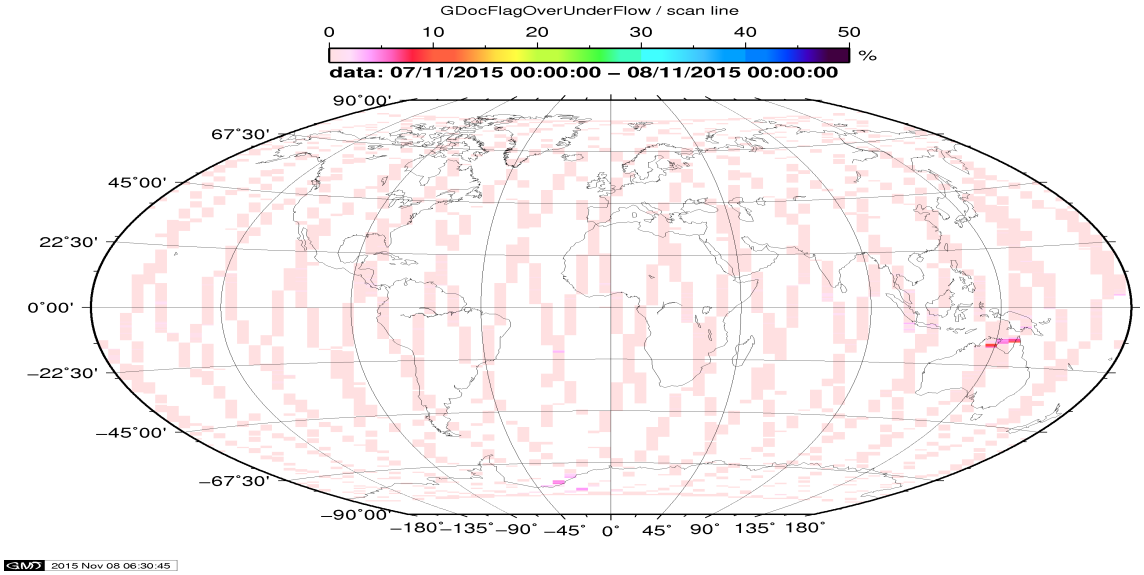

Figure 2: Flag of Over and Under Flows

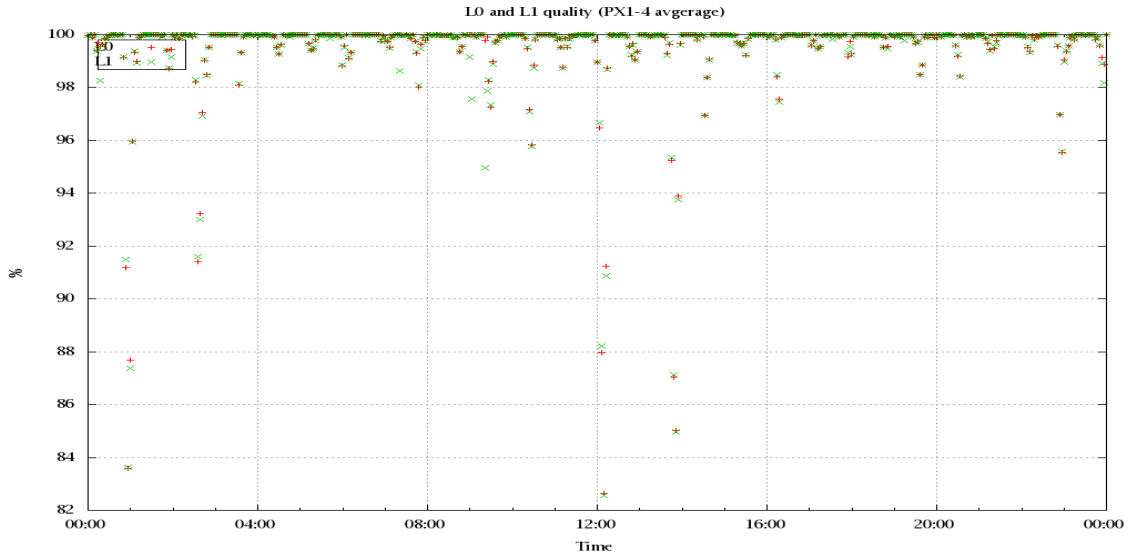

Figure 3: Level 0 and 1C overall quality

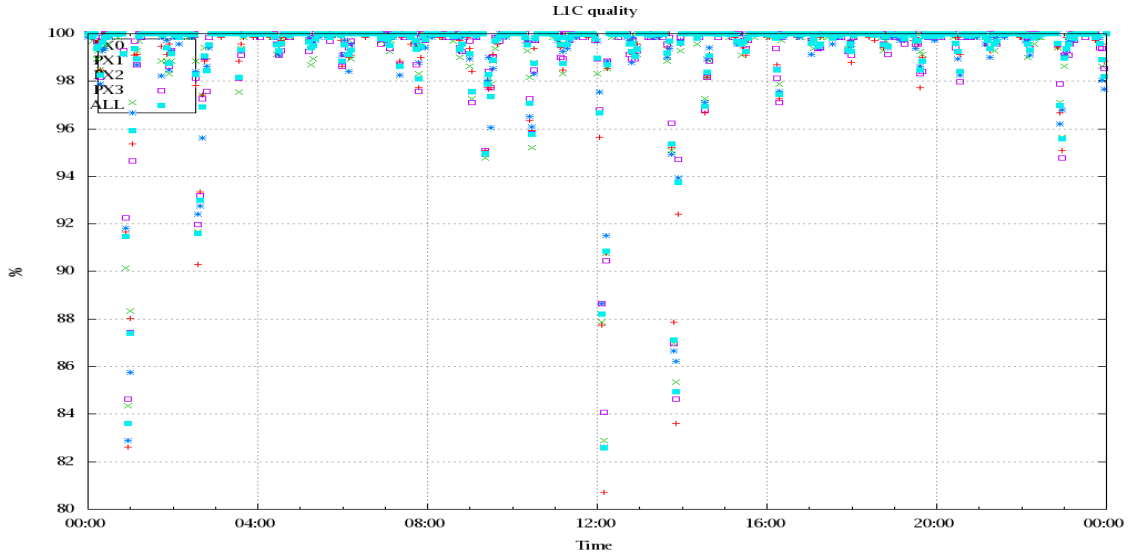

Figure 4: Level 1C quality

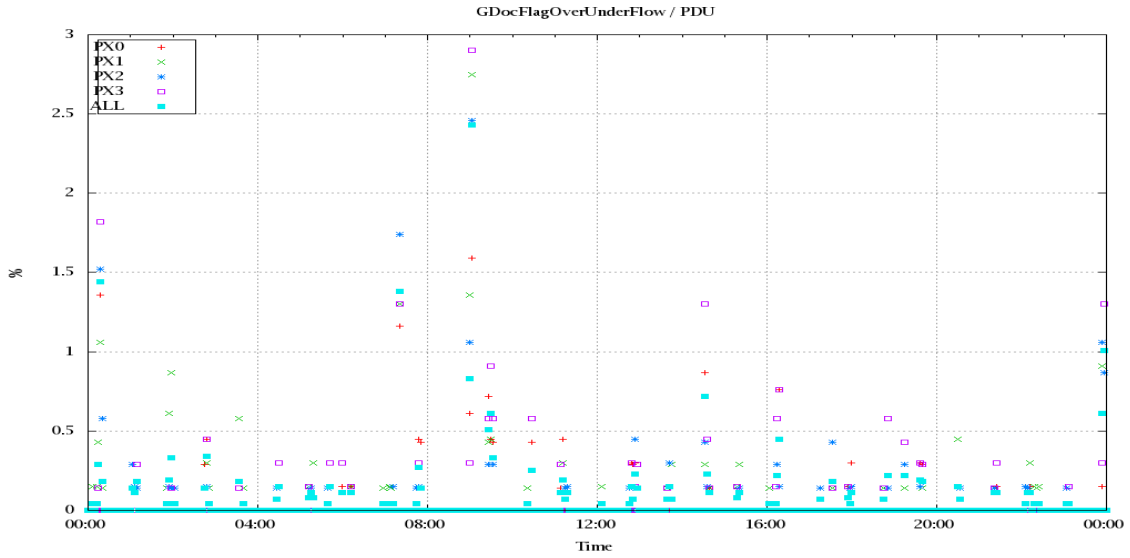

Figure 5: OverUnderFlowFlag timeseries

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.

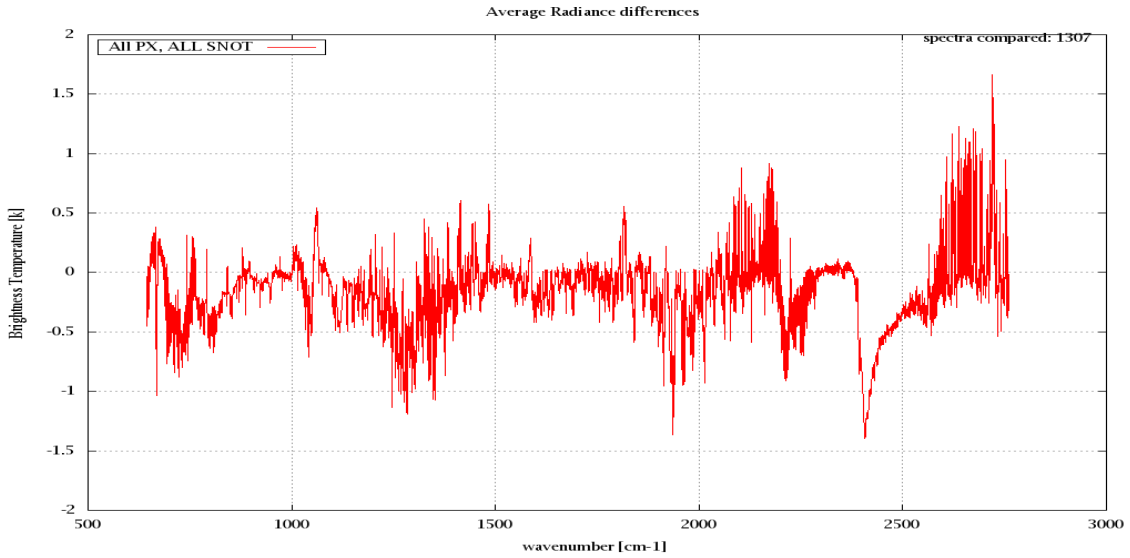

Figure 6: Average Radiance differences: OBS-CAL

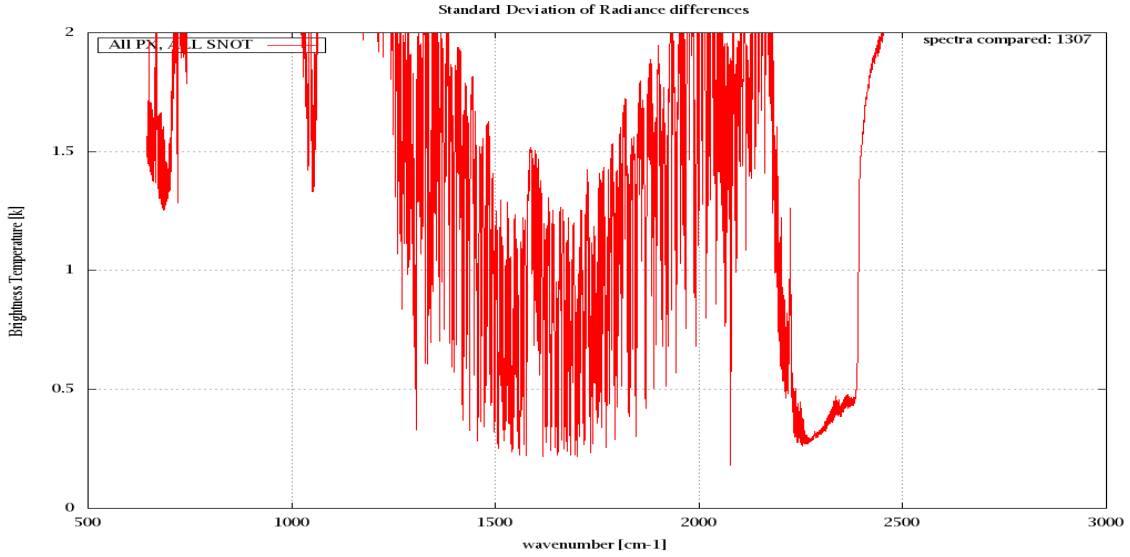

Figure 7: Standard Deviation of Radiance differences

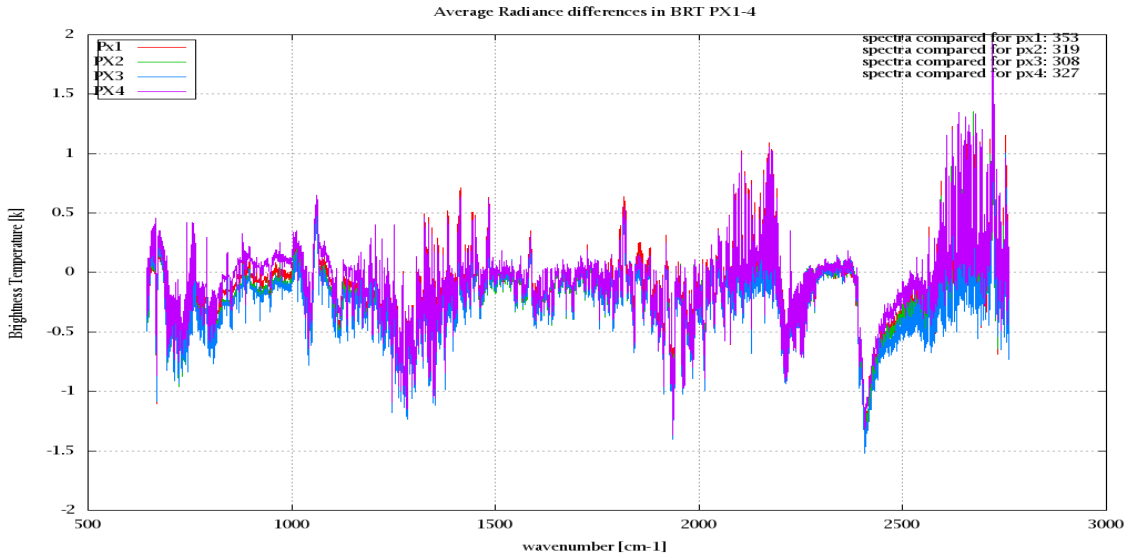

Figure 8: Average Radiance differences: OBS-CAL

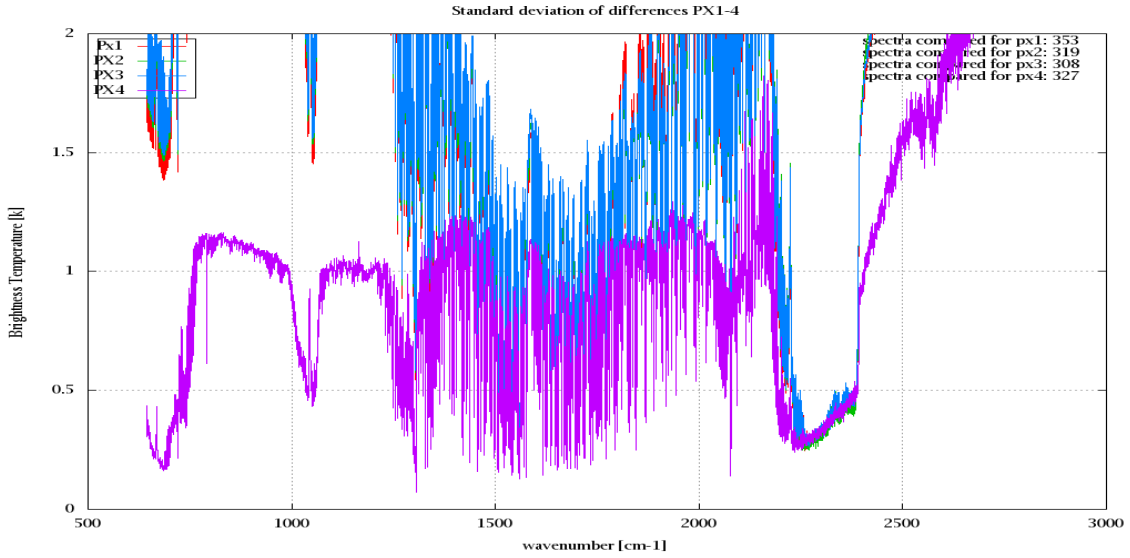

Figure 9: Standard Deviation of Radiance differences

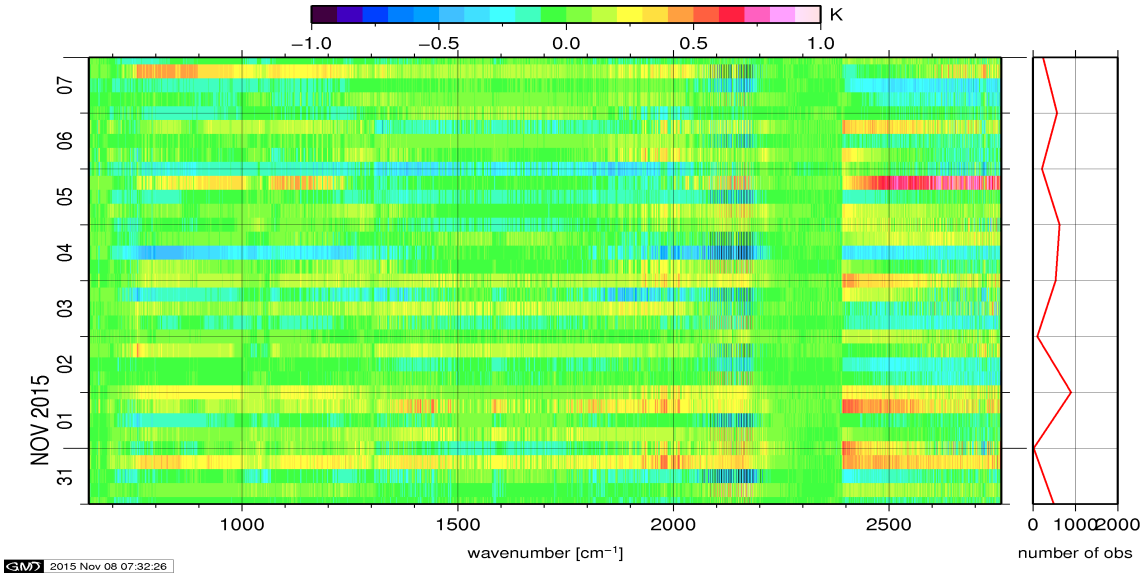

Figure 10: Radiance Anomaly in BRT: All Channels

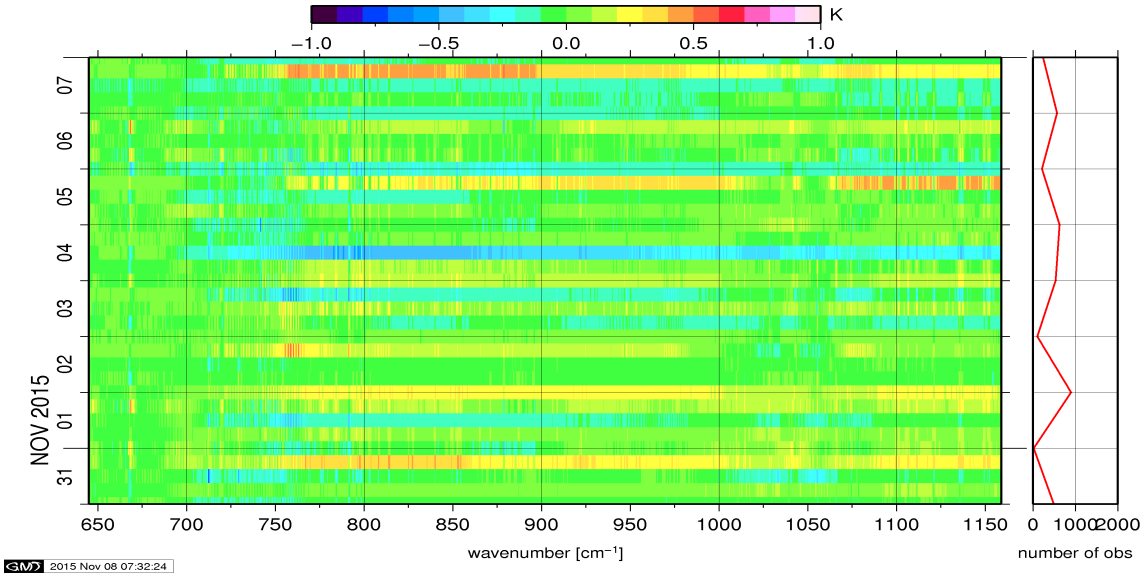

Figure 11: Radiance Anomaly in BRT: IASI Band 1

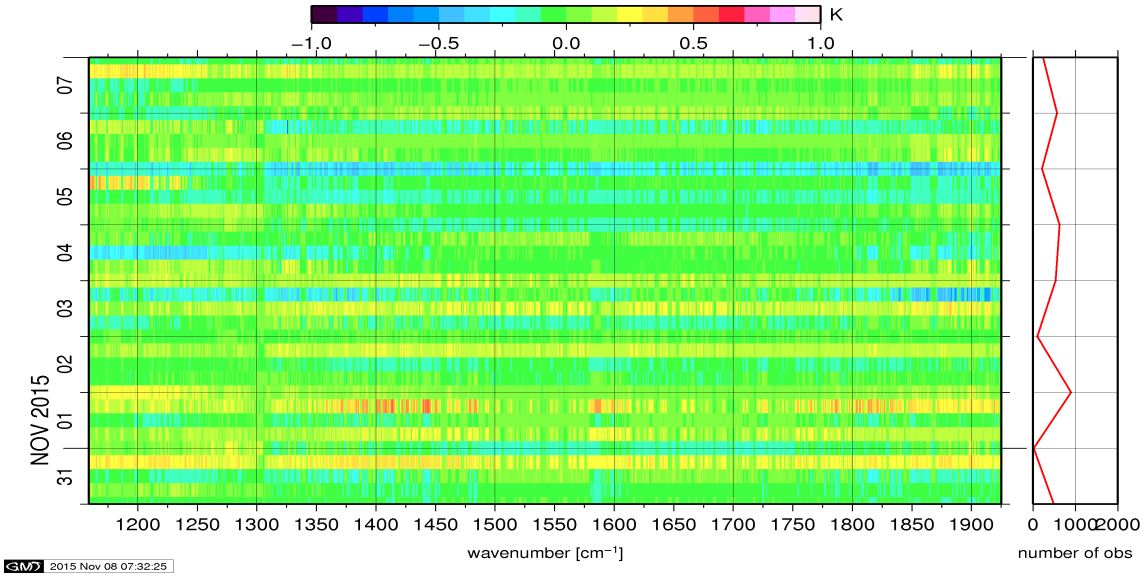

Figure 12: Radiance Anomaly in BRT: IASI Band 2

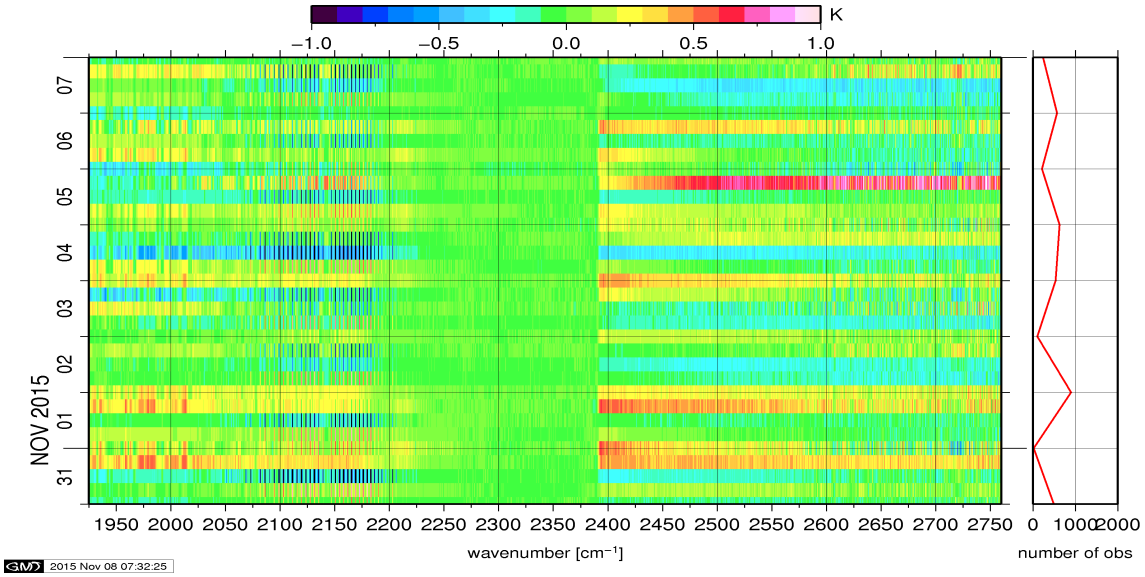

Figure 13: Radiance Anomaly in BRT: IASI Band 3

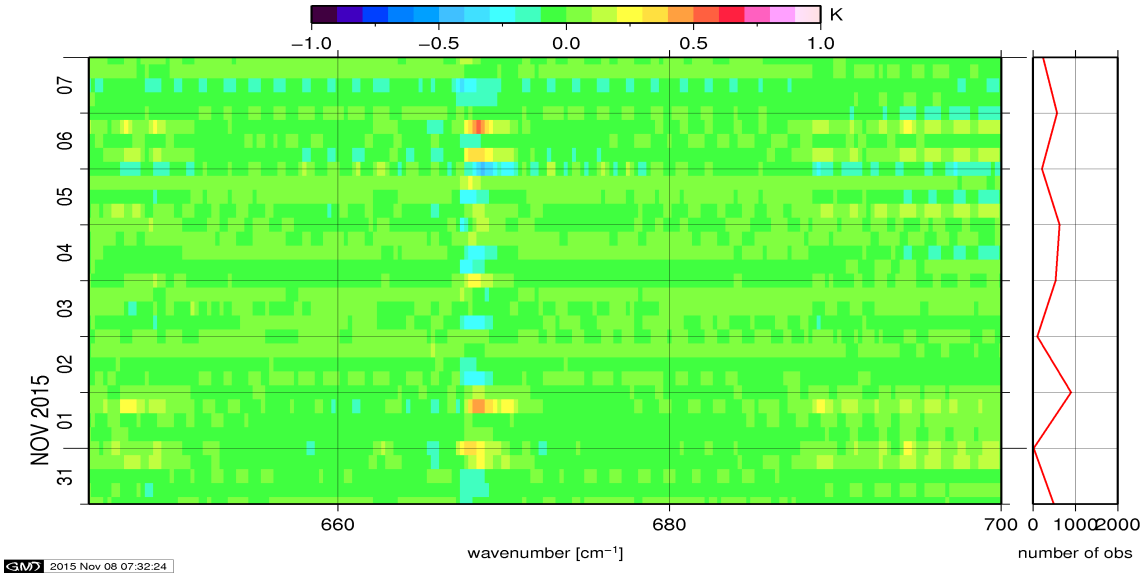

Figure 14: Radiance Anomaly in BRT: CO2 14

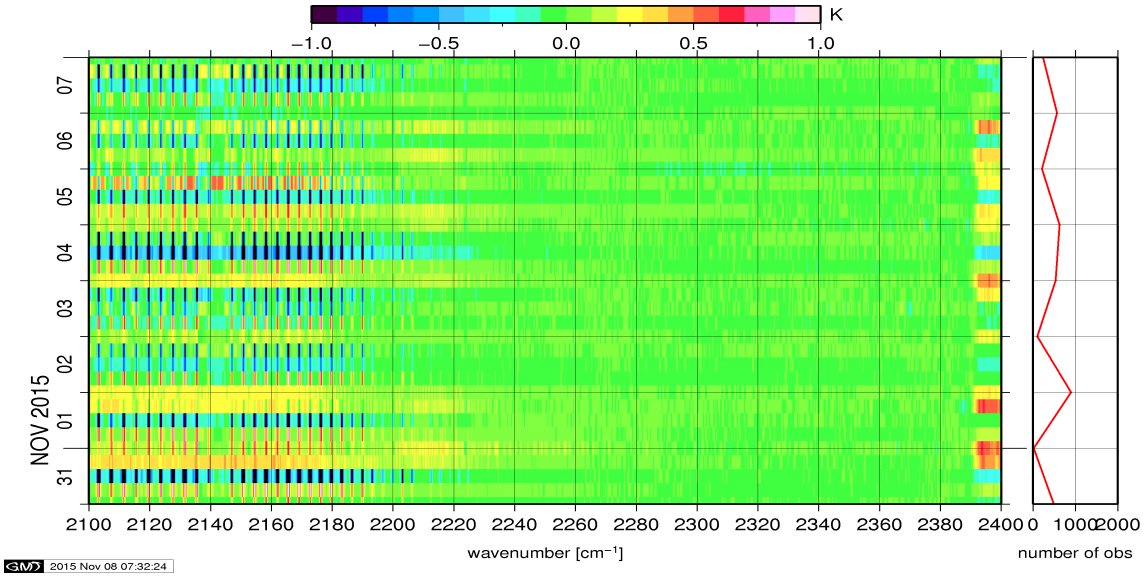

Figure 15: Radiance Anomaly in BRT: CO2 4.3

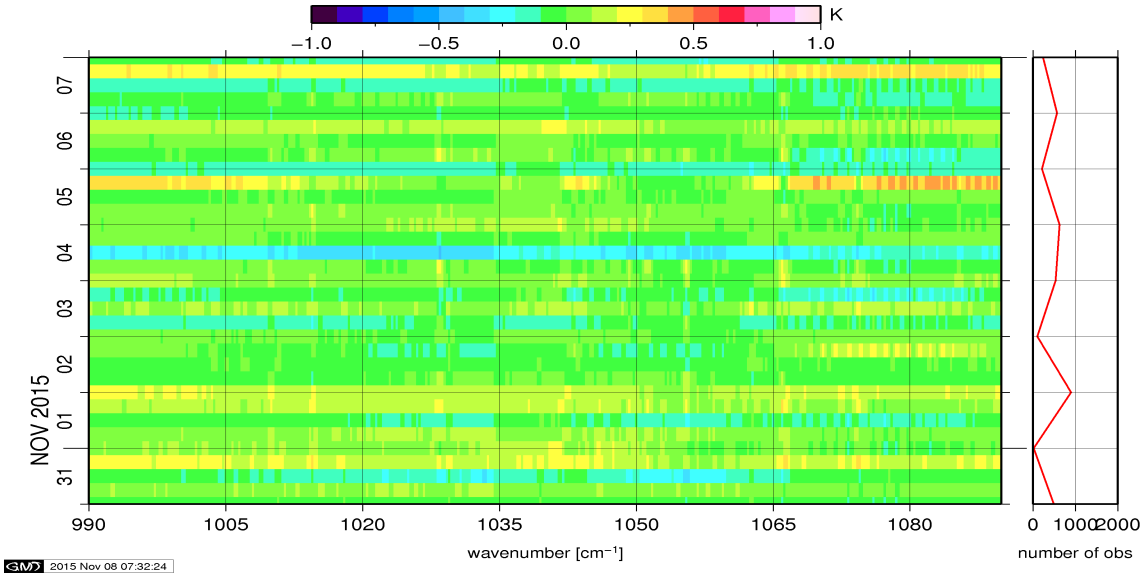

Figure 16: Radiance Anomaly in BRT: O3

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.

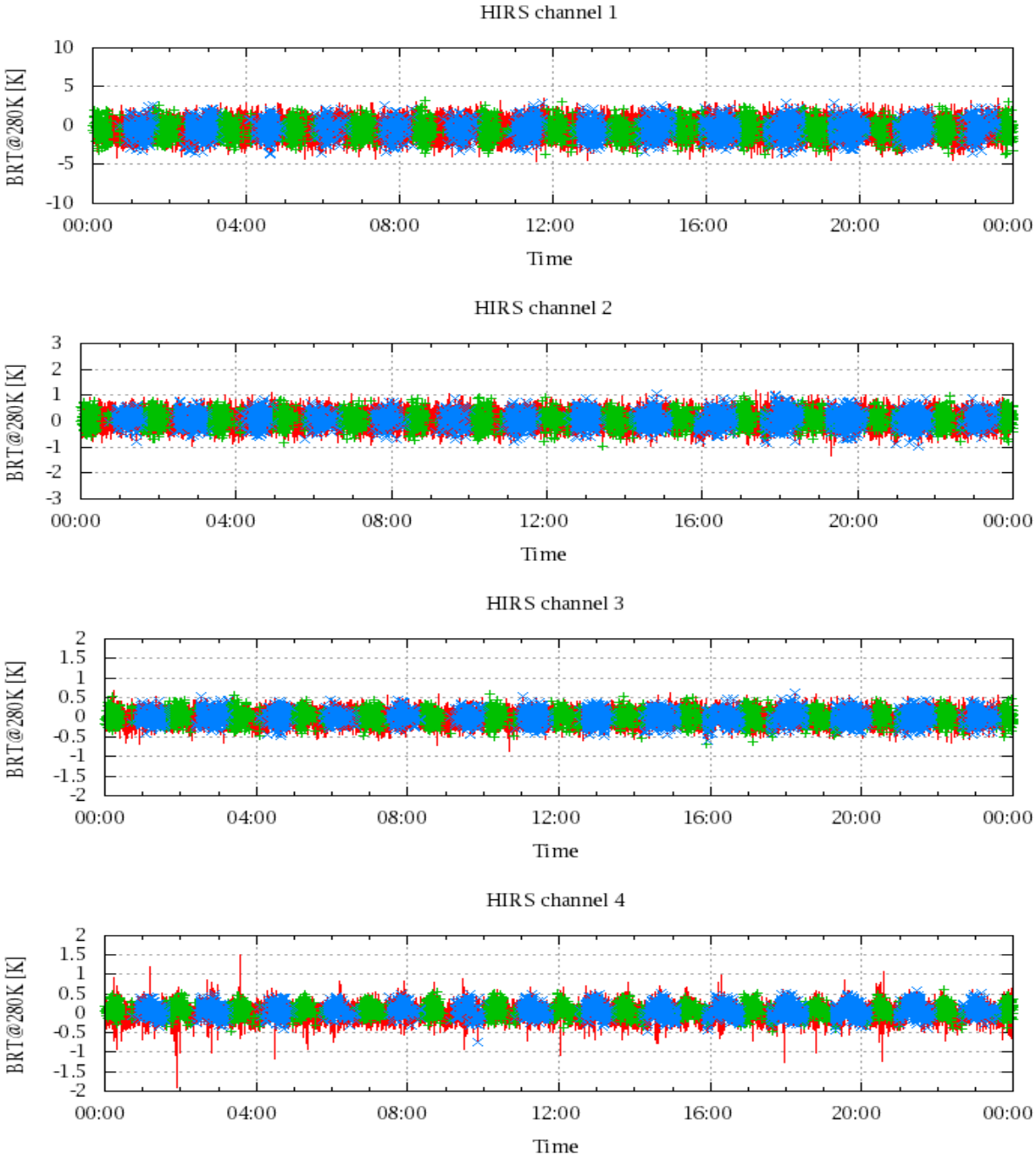

Figure 17: Radiance Differences in BRT

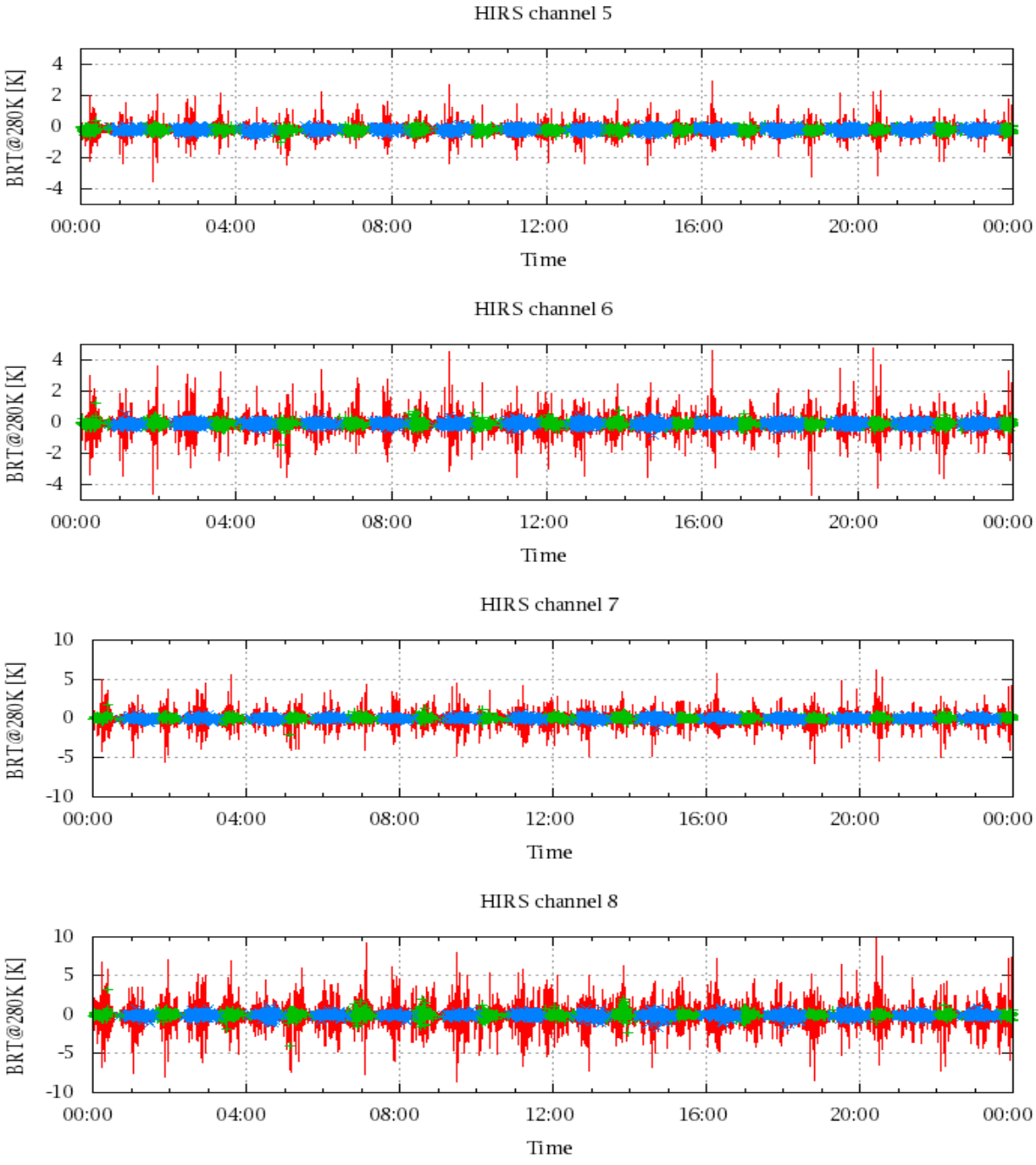

Figure 18: Radiance Differences in BRT

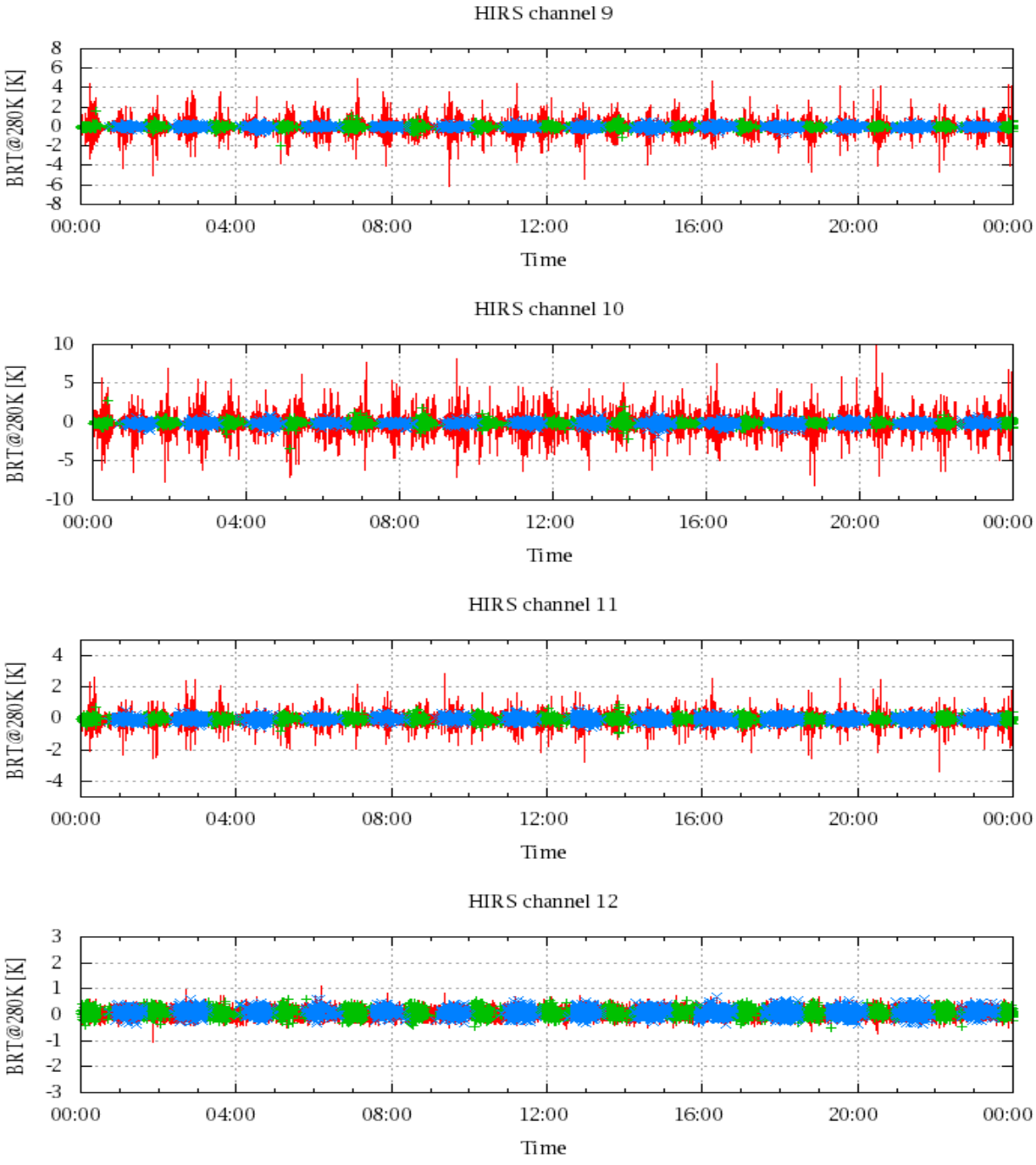

Figure 19: Radiance Differences in BRT

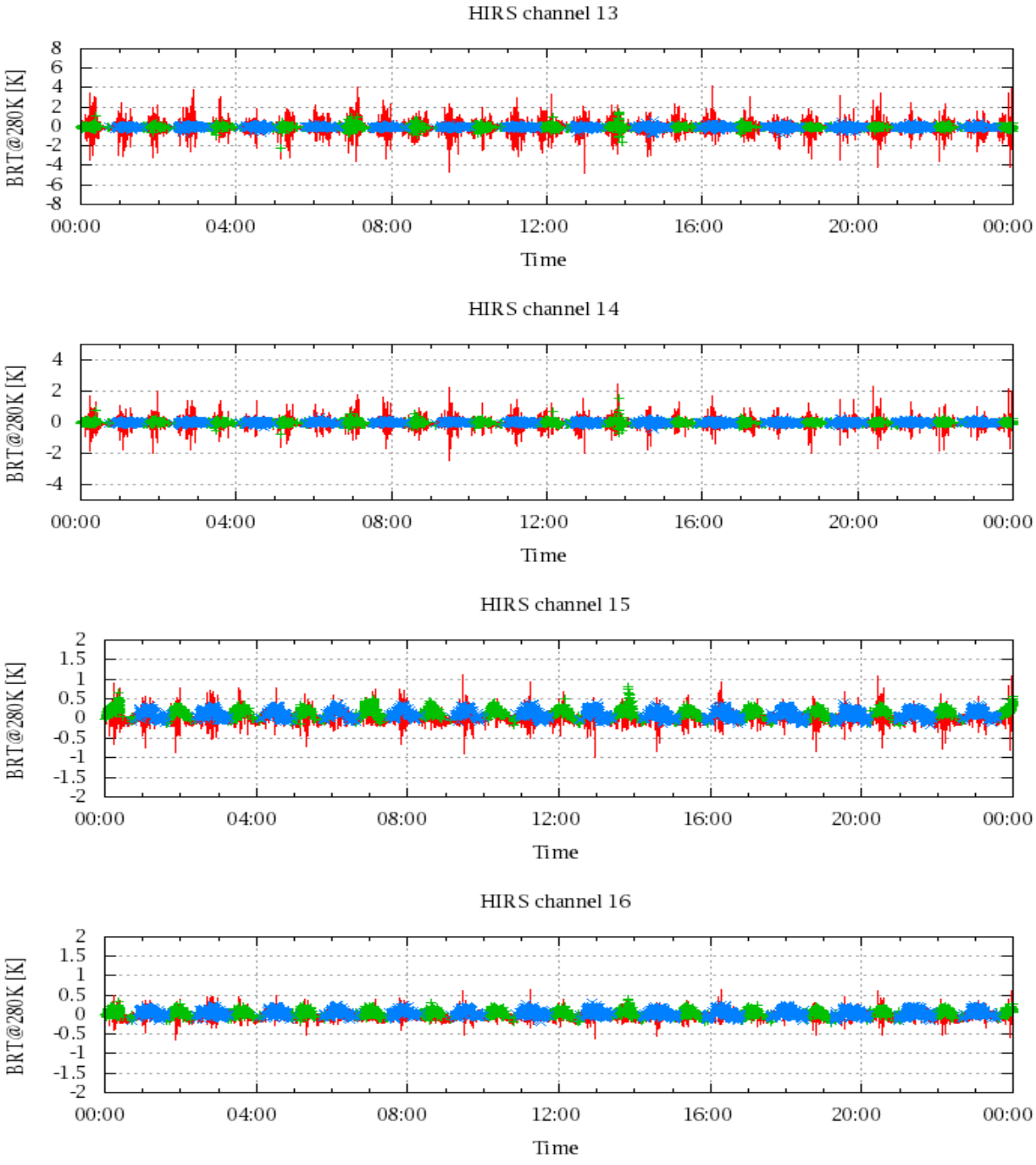

Figure 20: Radiance Differences in BRT

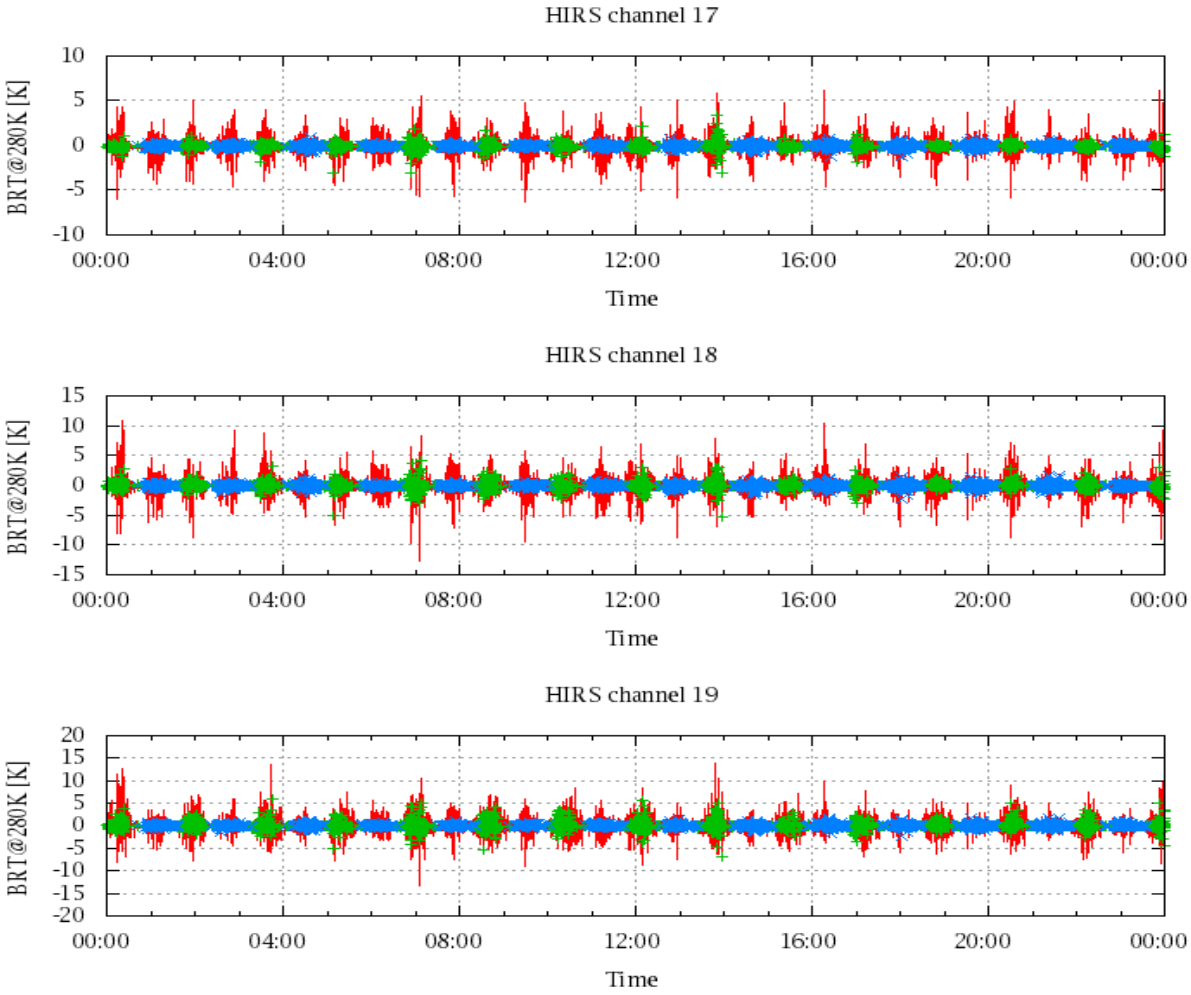

Figure 21: Radinace Differences in BRT