IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

17/10/2014 00:00:00 - 18/10/2014 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-B satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 17/10/2014 00:00:00 - 18/10/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 17/10/2014 00:00:00 - 18/10/2014 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)	7318	7329	20141017164125.227	20141017164127.606
PX1 (130)	7364	7526	20141017164136.688	20141017164220.793
PX1 (130)	7555	7567	20141017164227.063	20141017164231.172
PX1 (130)	7585	7598	20141017164235.063	20141017164239.387
PX1 (130)	7605	7629	20141017164240.899	20141017164247.602
PX2 (135)	7318	7328	20141017164125.227	20141017164127.387
PX2 (135)	7363	7526	20141017164136.469	20141017164220.793
PX2 (135)	7555	7567	20141017164227.063	20141017164231.172
PX2 (135)	7585	7598	20141017164235.063	20141017164239.387
PX2 (135)	7605	7629	20141017164240.899	20141017164247.602
PX3 (140)	7318	7327	20141017164125.227	20141017164127.172
PX3 (140)	7363	7526	20141017164136.469	20141017164220.793
PX3 (140)	7555	7567	20141017164227.063	20141017164231.172
PX3 (140)	7585	7598	20141017164235.063	20141017164239.387
PX3 (140)	7605	7629	20141017164240.899	20141017164247.602
PX4 (145)	7317	7327	20141017164125.012	20141017164127.172
PX4 (145)	7362	7526	20141017164136.254	20141017164220.793
PX4 (145)	7555	7567	20141017164227.063	20141017164231.172

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	7585	7598	20141017164235.063	20141017164239.387
PX4 (145)	7604	7629	20141017164240.684	20141017164247.602
IMG (150)	15461	15471	20141017164125.012	20141017164127.172
IMG (150)	15510	15694	20141017164136.254	20141017164219.496
IMG (150)	15727	15743	20141017164227.063	20141017164231.172
IMG (150)	15761	15777	20141017164235.063	20141017164239.168
IMG (150)	15784	15813	20141017164240.684	20141017164247.602
VER (160)	2110	2139	20141017164131.063	20141017164136.688
VER (160)	2141	2146	20141017164227.063	20141017164235.063
VER (160)	2148	2156	20141017164235.063	20141017164251.063
AUX (180)	10228	10234	20141017164131.496	20141017164219.496
AUX (180)	10234	10238	20141017164219.496	20141017164251.496

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
17/10/2014 00:00:00	-	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)	99.53 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.60 %	-
GQisFlagQual set (PX4)	99.55 %	-
GQisFlagQual set (all)	99.57 %	-

Table 4: Quality flags

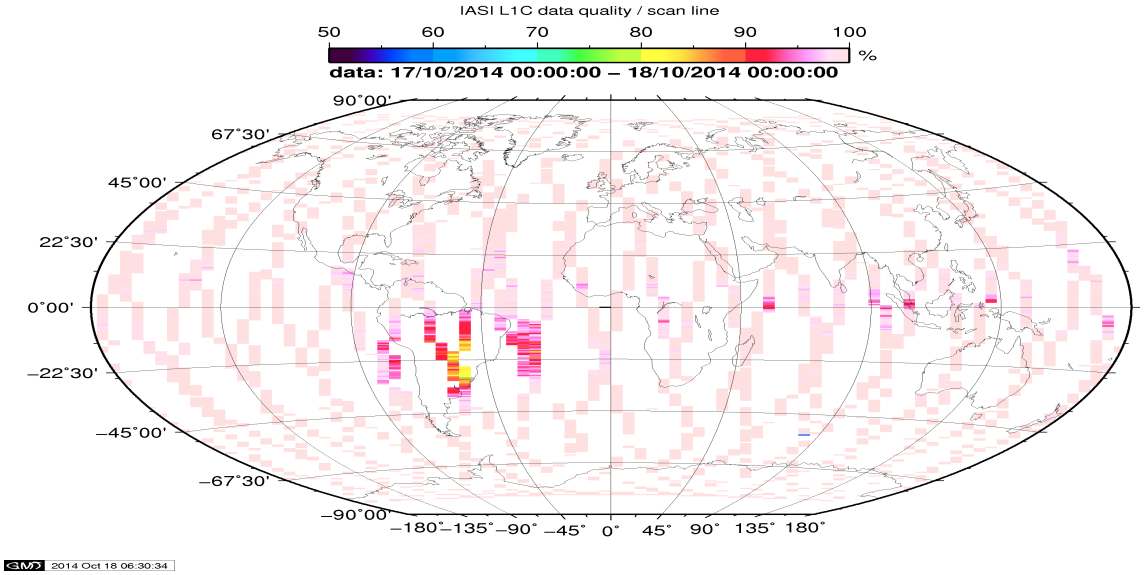

Figure 1: L1C data quality

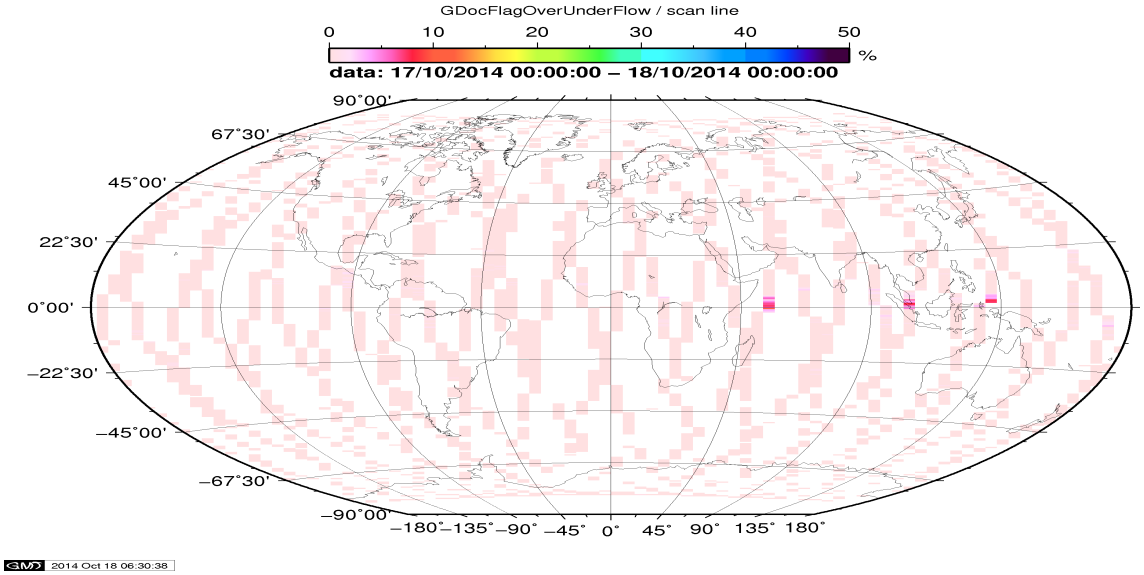

Figure 2: Flag of Over and Under Flows

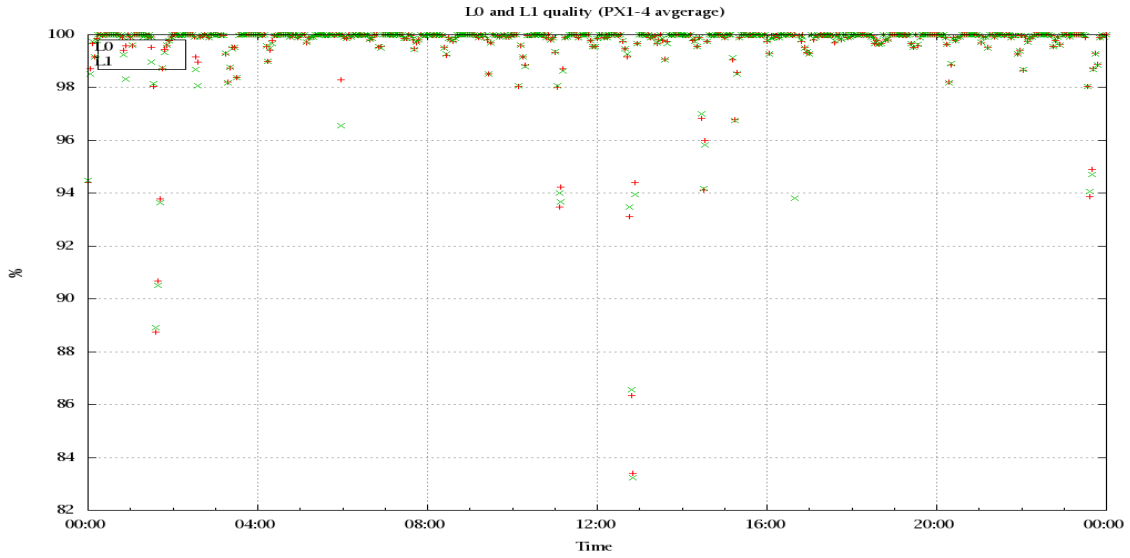

Figure 3: Level 0 and 1C overall quality

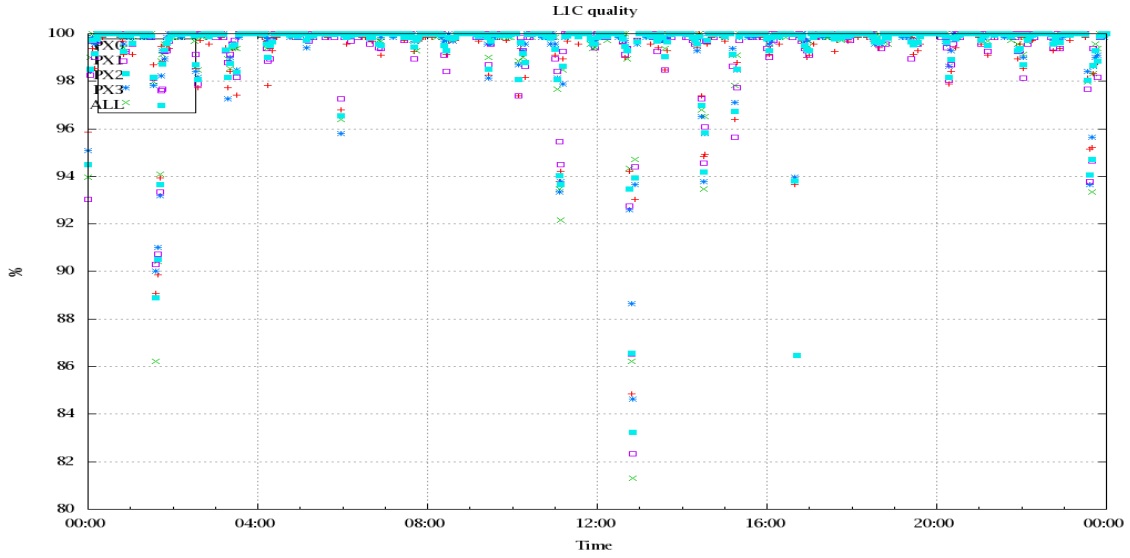

Figure 4: Level 1C quality

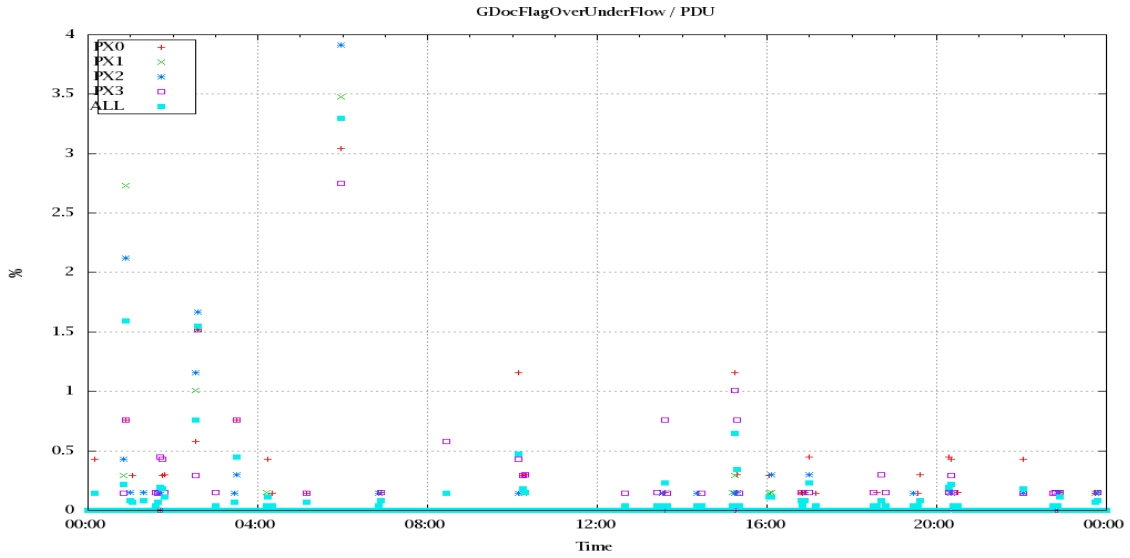

Figure 5: OverUnderFlowFlag timeseries

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.

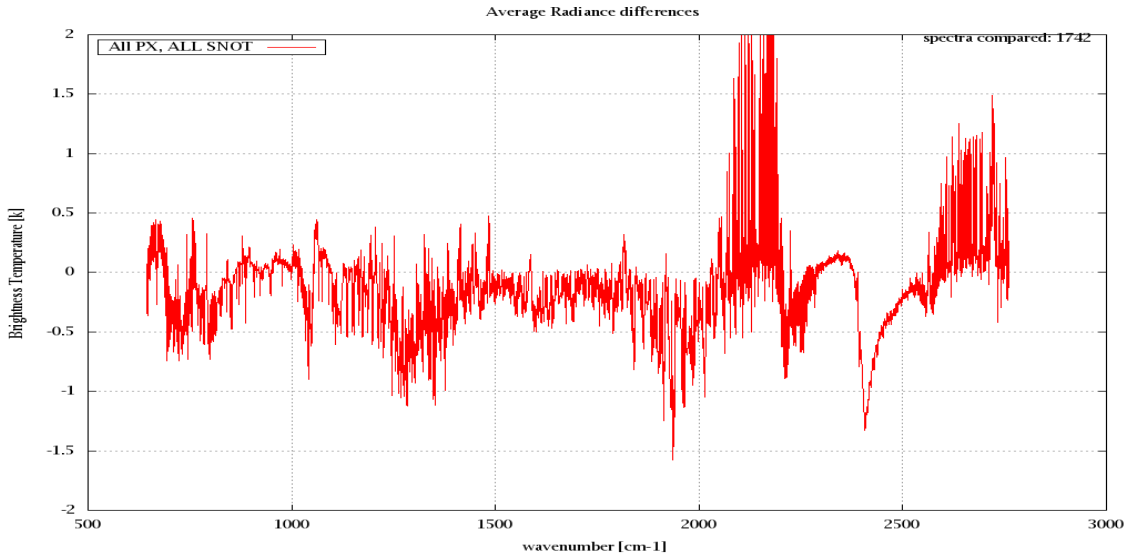

Figure 6: Average Radiance differences: OBS-CAL

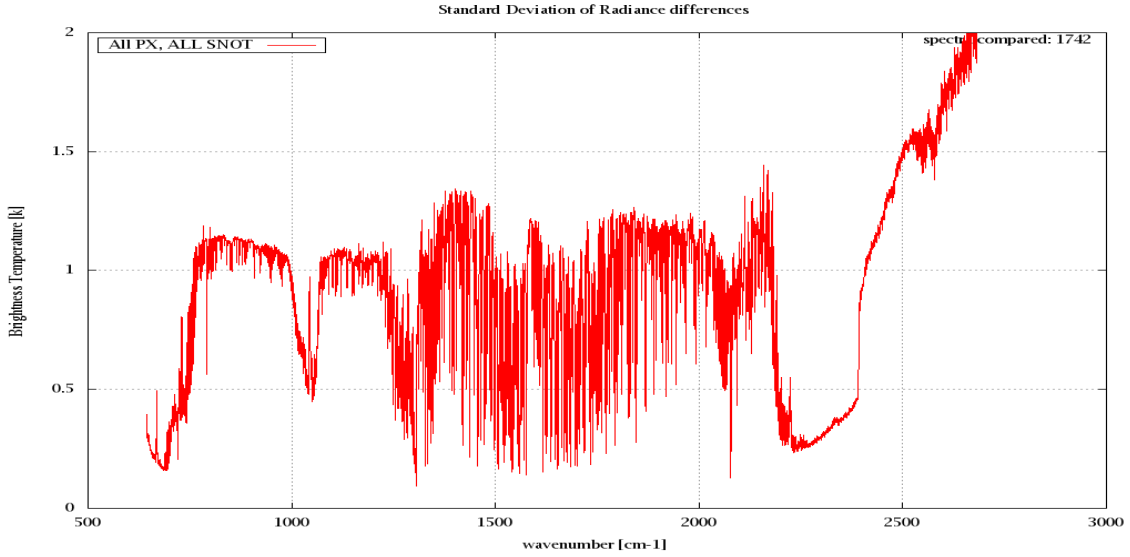

Figure 7: Standard Deviation of Radiance differences

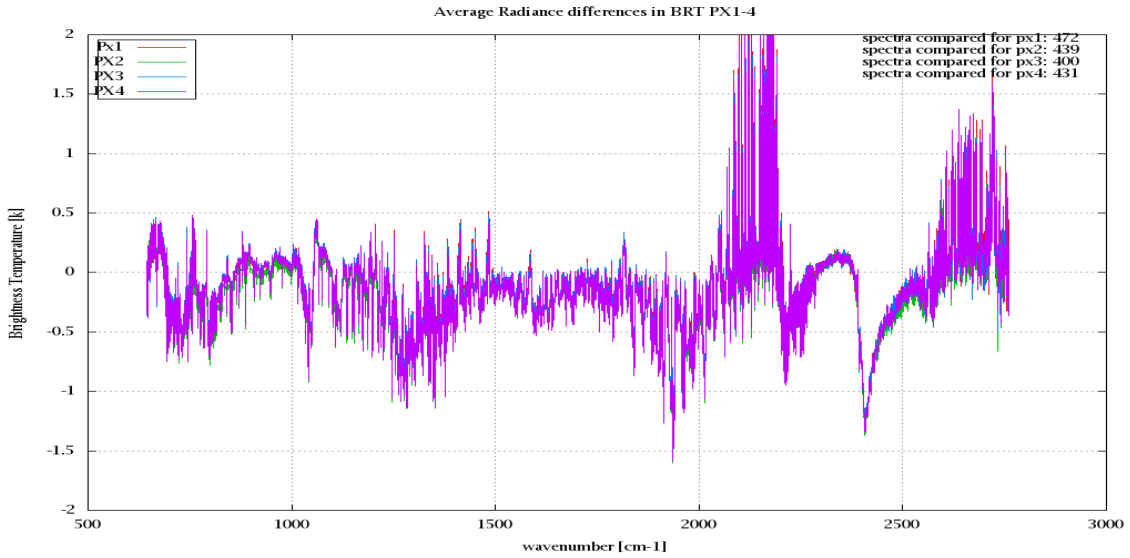

Figure 8: Average Radiance differences: OBS-CAL

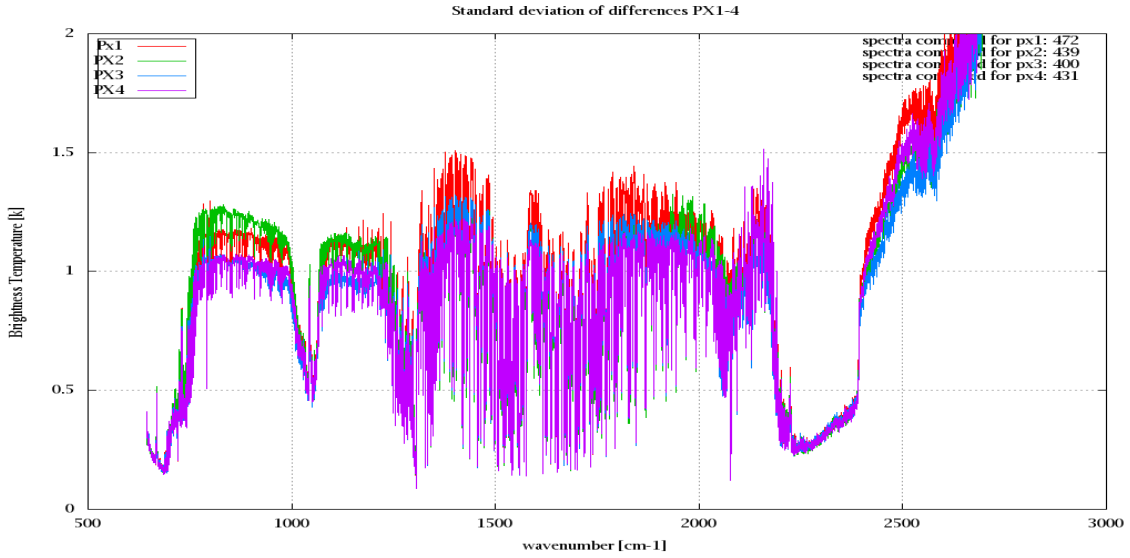

Figure 9: Standard Deviation of Radiance differences

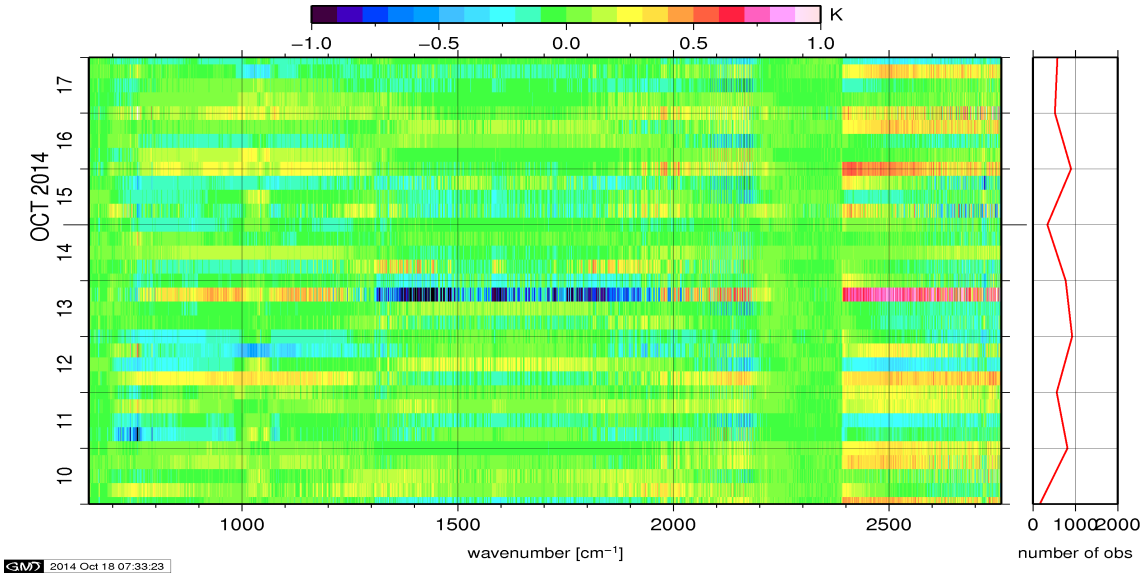

Figure 10: Radiance Anomaly in BRT: All Channels

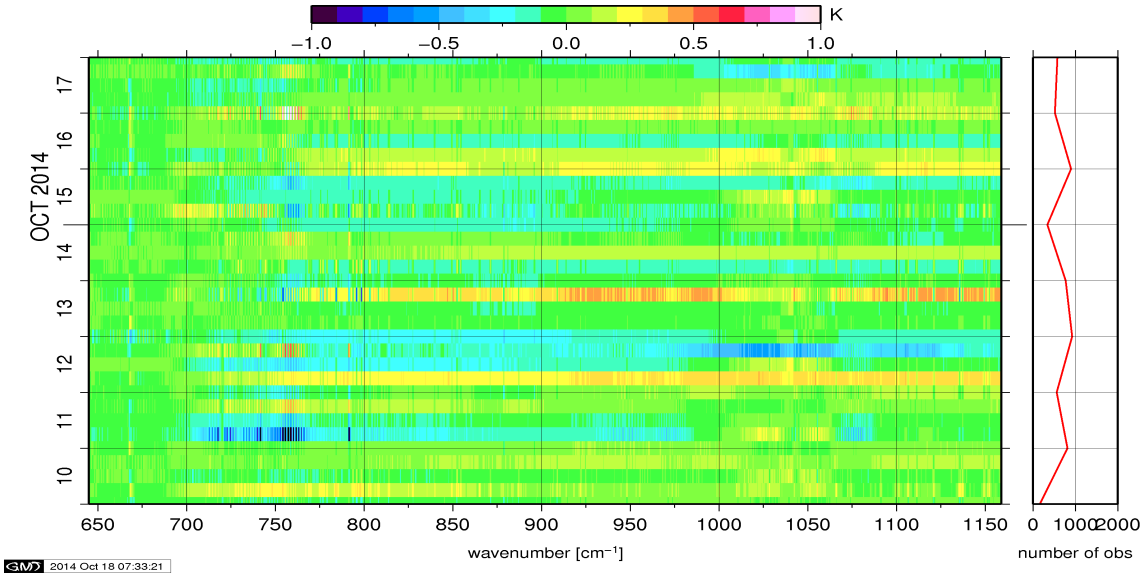

Figure 11: Radiance Anomaly in BRT: IASI Band 1

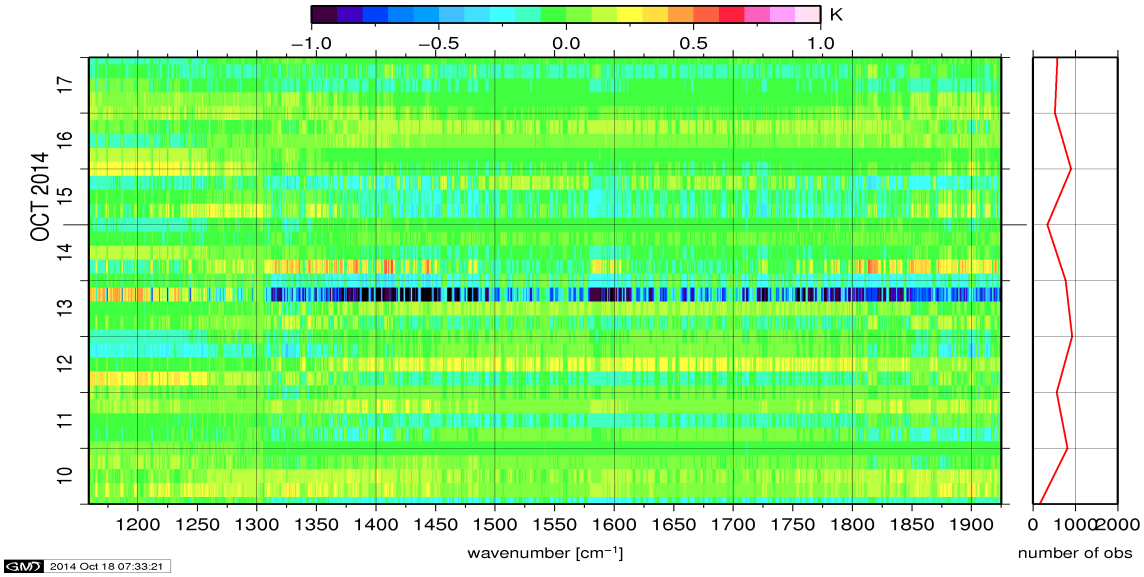

Figure 12: Radiance Anomaly in BRT: IASI Band 2

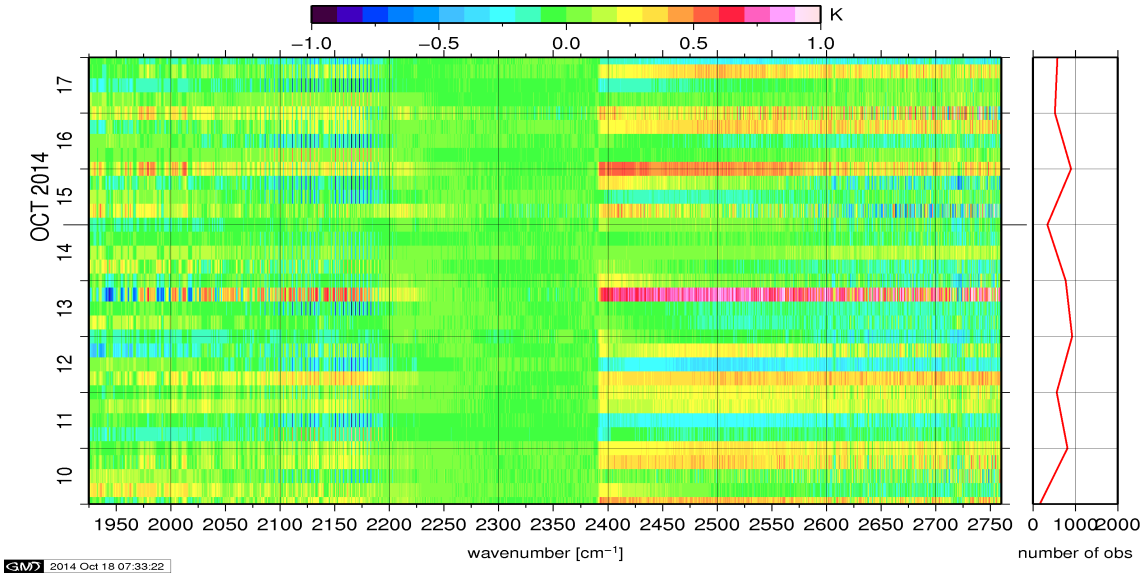

Figure 13: Radiance Anomaly in BRT: IASI Band 3

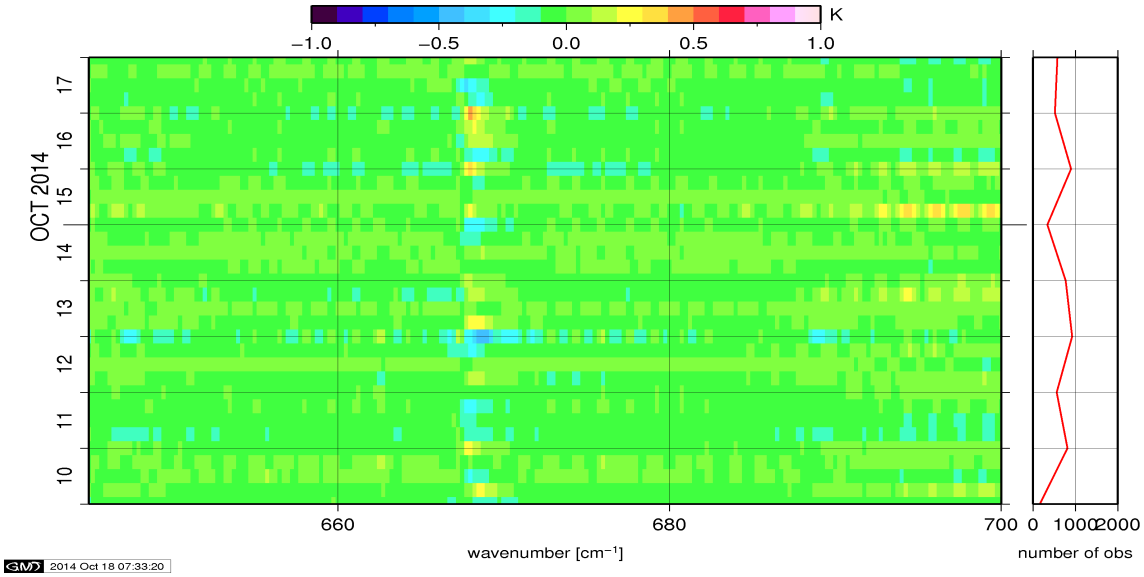

Figure 14: Radiance Anomaly in BRT: CO2 14

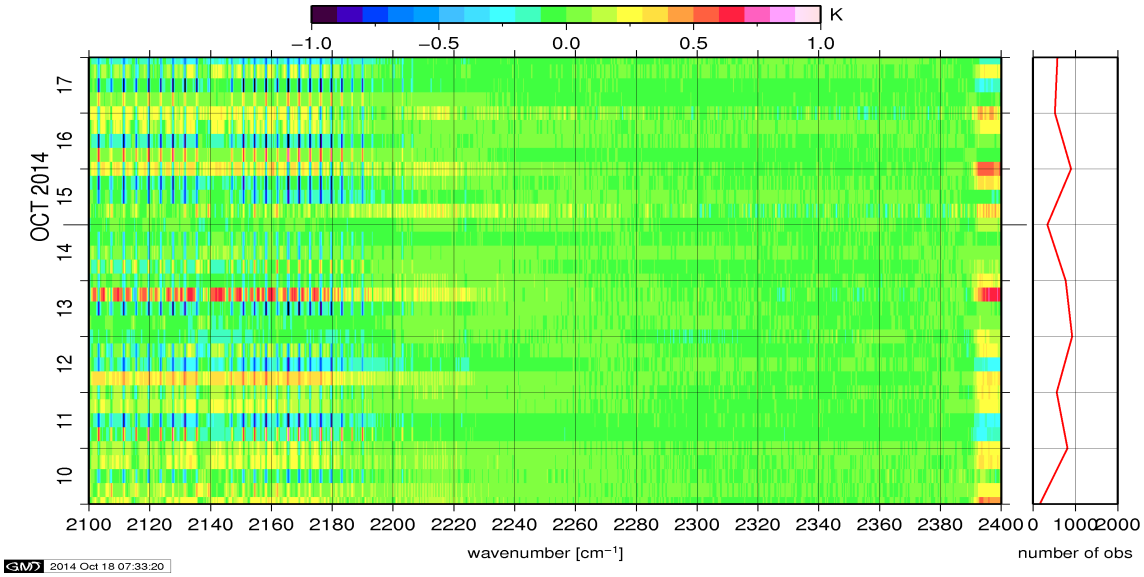

Figure 15: Radiance Anomaly in BRT: CO2 4.3

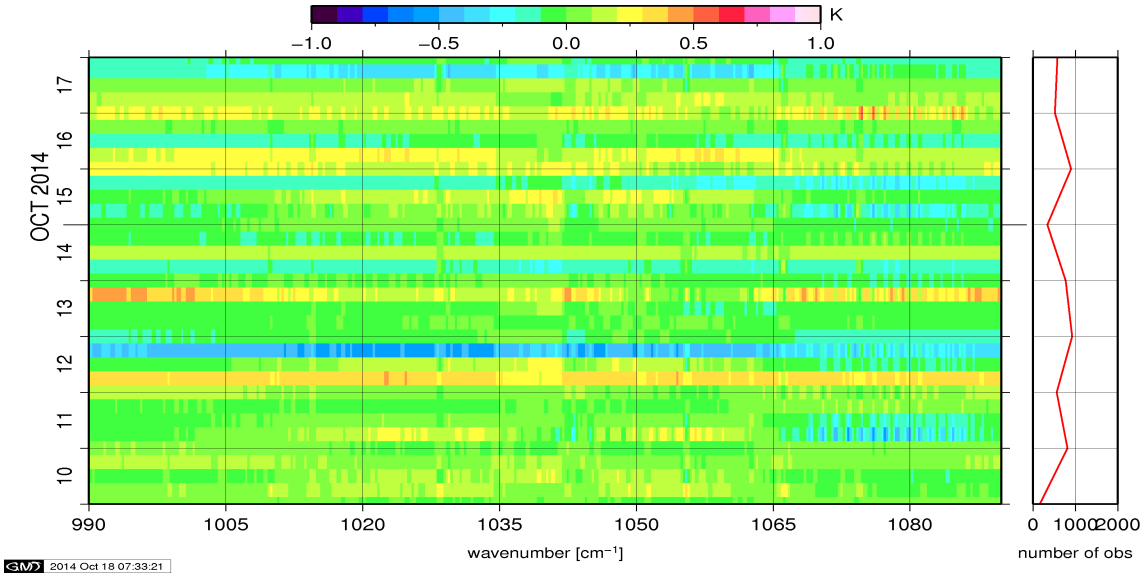

Figure 16: Radiance Anomaly in BRT: O3

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.

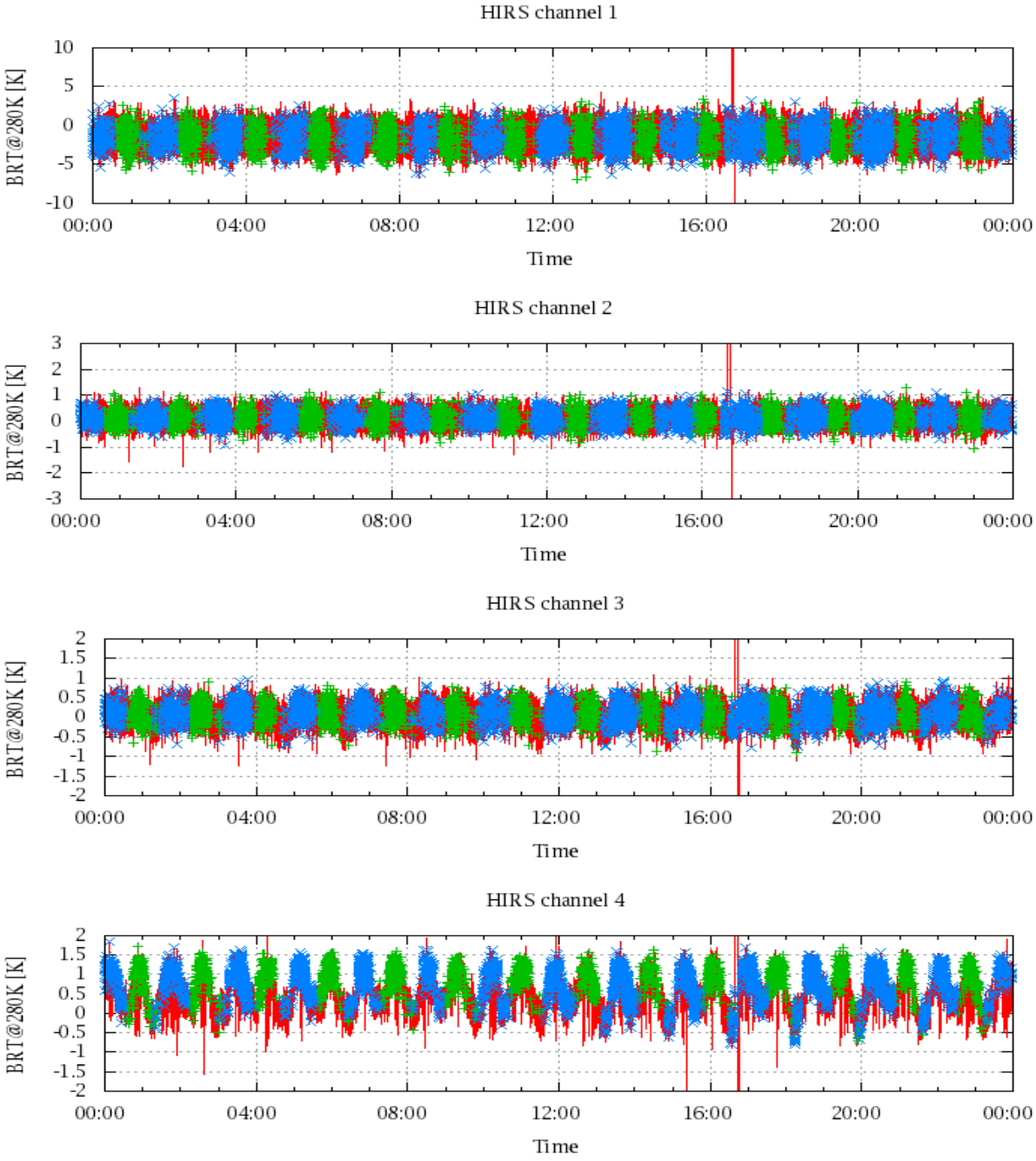

Figure 17: Radiance Differences in BRT

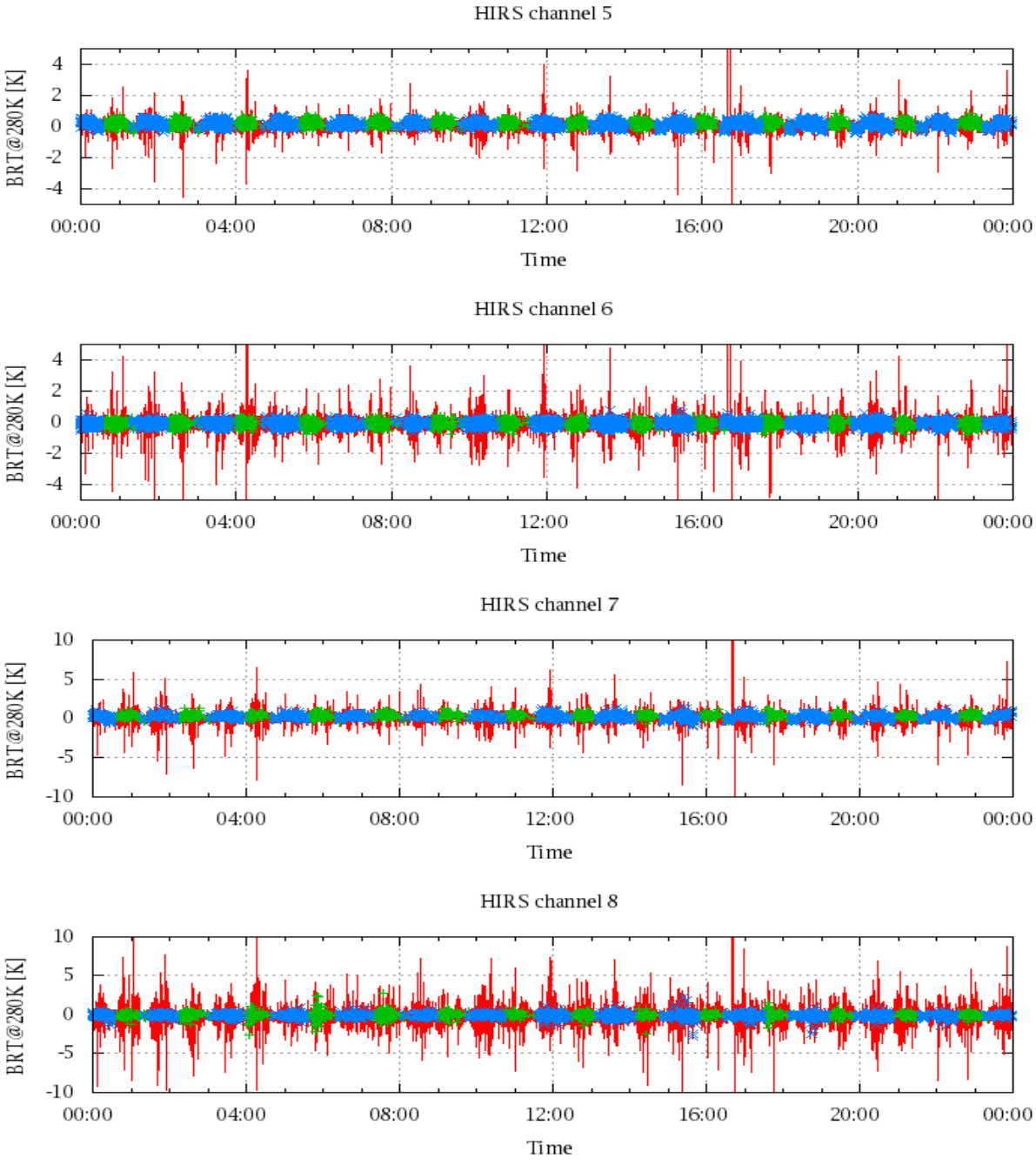

Figure 18: Radiance Differences in BRT

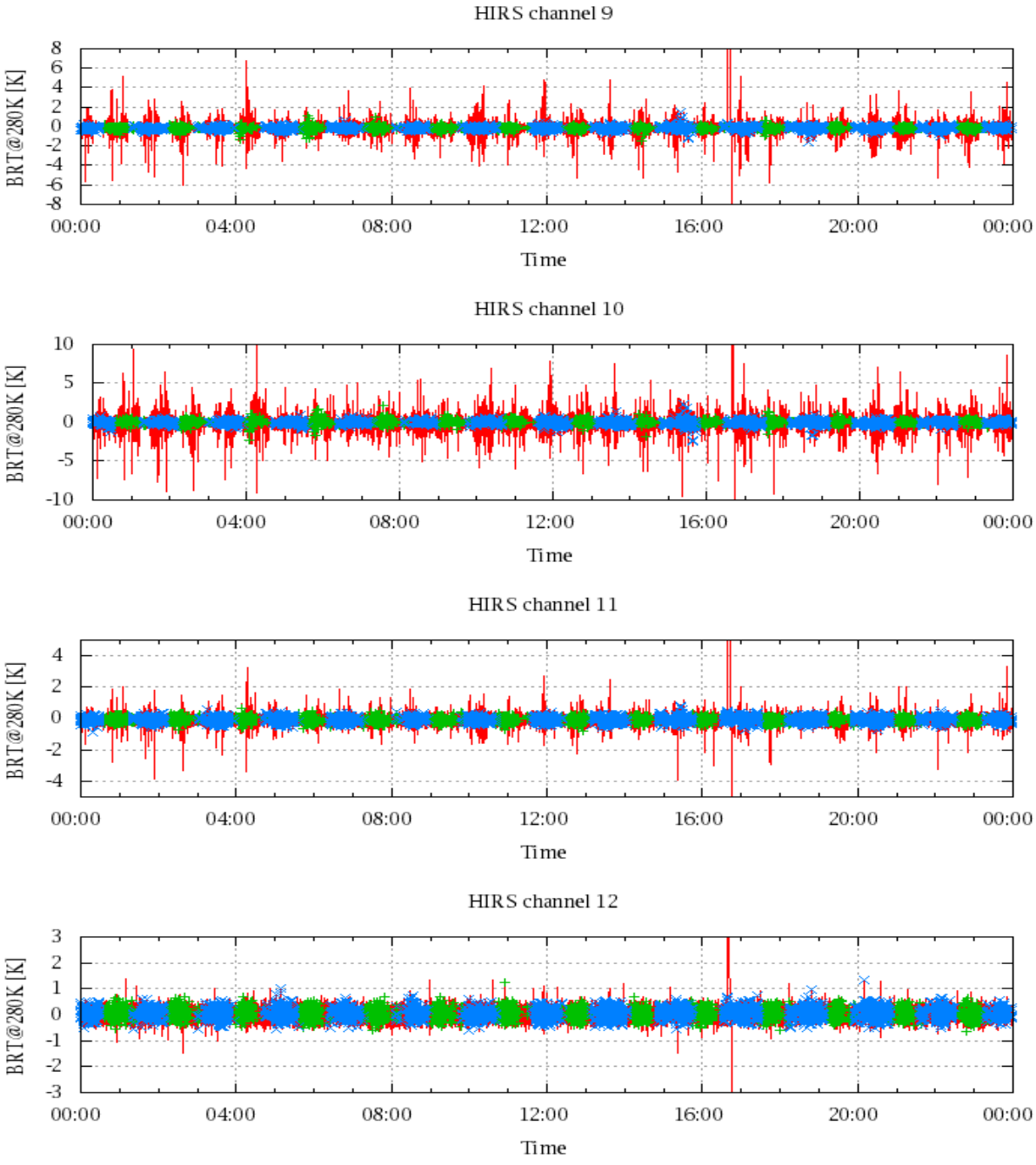

Figure 19: Radiance Differences in BRT

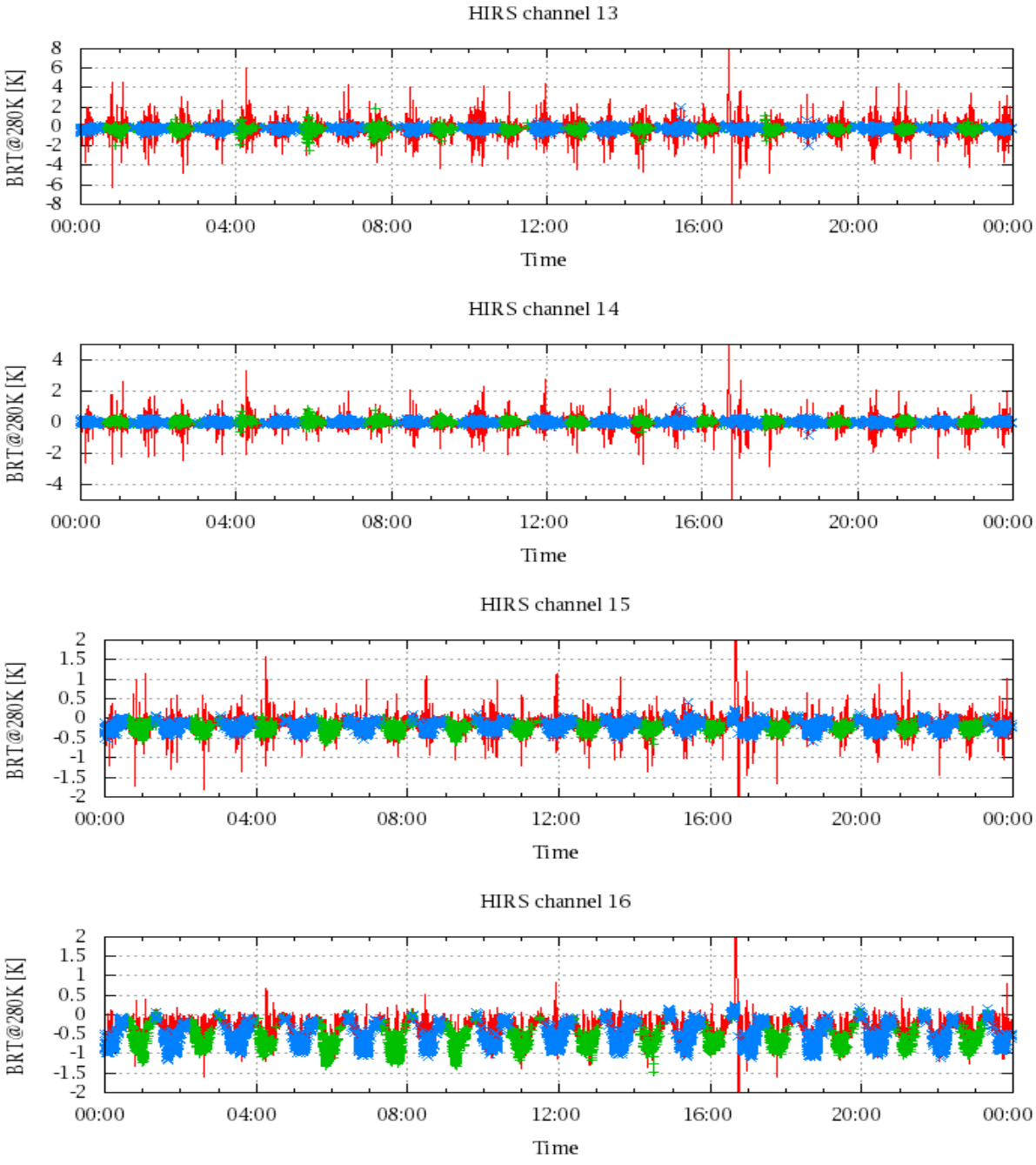

Figure 20: Radiance Differences in BRT

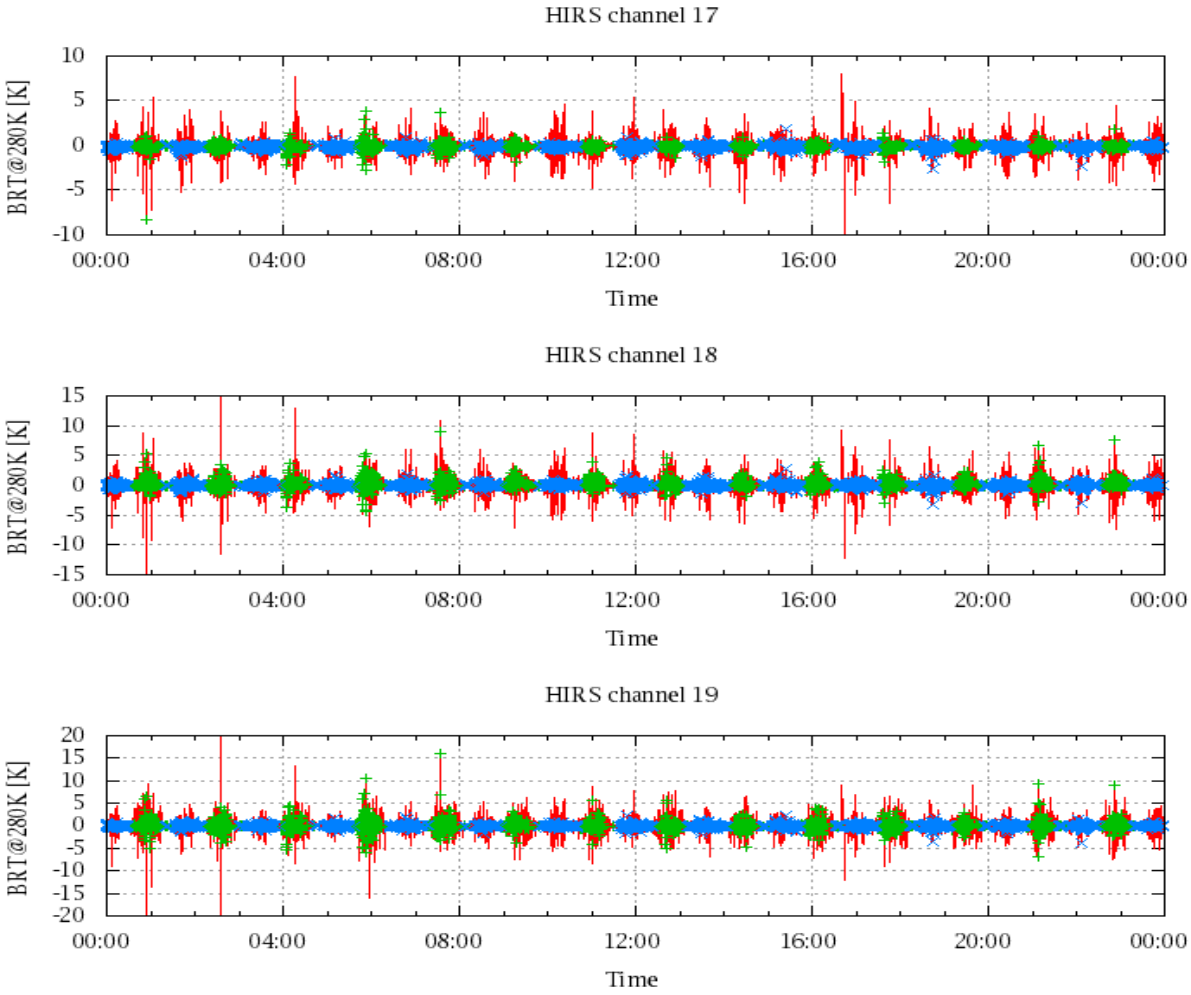

Figure 21: Radinace Differences in BRT