IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

10/02/2014 00:00:00 - 11/02/2014 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 10/02/2014 00:00:00 - 11/02/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 10/02/2014 00:00:00 - 11/02/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	344	e
L0 IASI PDUs	342	e
L1 ENG PDUs	341	e
L1 ENG distinct GEPSGranule	341	a
L1 DPX PDUs (RM: IASI-HIRS)	336	e
L1 DPS Files (RM: OBS-CAL NWP based)	219	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	12414	1247	20140210003259.887	20140210020900.092
PX1 (130)	1917	7135	20140210021158.287	20140210034800.183
PX1 (130)	7812	8485	20140210035059.890	20140210035400.209
PX1 (130)	9834	15051	20140210035959.986	20140210053600.187
PX1 (130)	15728	5233	20140210053859.859	20140210071800.169
PX2 (135)	12414	1247	20140210003259.887	20140210020900.092
PX2 (135)	1917	7135	20140210021158.287	20140210034800.183
PX2 (135)	7812	8485	20140210035059.890	20140210035400.209
PX2 (135)	9834	15051	20140210035959.986	20140210053600.187
PX2 (135)	15728	5233	20140210053859.859	20140210071800.169
PX3 (140)	12414	1247	20140210003259.887	20140210020900.092
PX3 (140)	1917	7135	20140210021158.287	20140210034800.183
PX3 (140)	7812	8485	20140210035059.890	20140210035400.209
PX3 (140)	9834	15051	20140210035959.986	20140210053600.187
PX3 (140)	15728	5233	20140210053859.859	20140210071800.169
PX4 (145)	12414	1247	20140210003259.887	20140210020900.092

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	1917	7135	20140210021158.287	20140210034800.183
PX4 (145)	7812	8485	20140210035059.890	20140210035400.209
PX4 (145)	9834	15051	20140210035959.986	20140210053600.187
PX4 (145)	15728	5233	20140210053859.859	20140210071800.169
IMG (150)	8246	16343	20140210003259.887	20140210020900.092
IMG (150)	721	8819	20140210021159.583	20140210034800.183
IMG (150)	9584	10349	20140210035059.890	20140210035400.209
IMG (150)	11878	3591	20140210035959.986	20140210053600.187
IMG (150)	4356	13217	20140210053859.859	20140210071800.169
VER (160)	7165	10766	20140210003254.266	20140210020902.256
VER (160)	10880	14481	20140210021158.287	20140210034806.238
VER (160)	14590	14706	20140210035054.269	20140210035406.264
VER (160)	14930	2147	20140210035958.255	20140210053606.242
VER (160)	2256	5972	20140210053854.237	20140210071806.219
AUX (180)	11245	11966	20140210003254.699	20140210020902.685
AUX (180)	11988	12709	20140210021158.720	20140210034806.667
AUX (180)	12730	12754	20140210035054.702	20140210035406.698
AUX (180)	12798	13519	20140210035958.685	20140210053606.675
AUX (180)	13540	14284	20140210053854.671	20140210071806.653

Table 2: L0 data gaps

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3 Instrument modes

Time	Transition from	Transition to
10/02/2014 00:27:01	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	342	e
L1 ENG PDUs	341	e
L1 ENG distinct GEPSGranule	341	a
GQisFlagQual set (PX1)	99.50 %	-
GQisFlagQual set (PX2)	99.47 %	-
GQisFlagQual set (PX3)	99.50 %	-
GQisFlagQual set (PX4)	99.53 %	-
GQisFlagQual set (all)	99.50 %	-

Table 4: Quality flags

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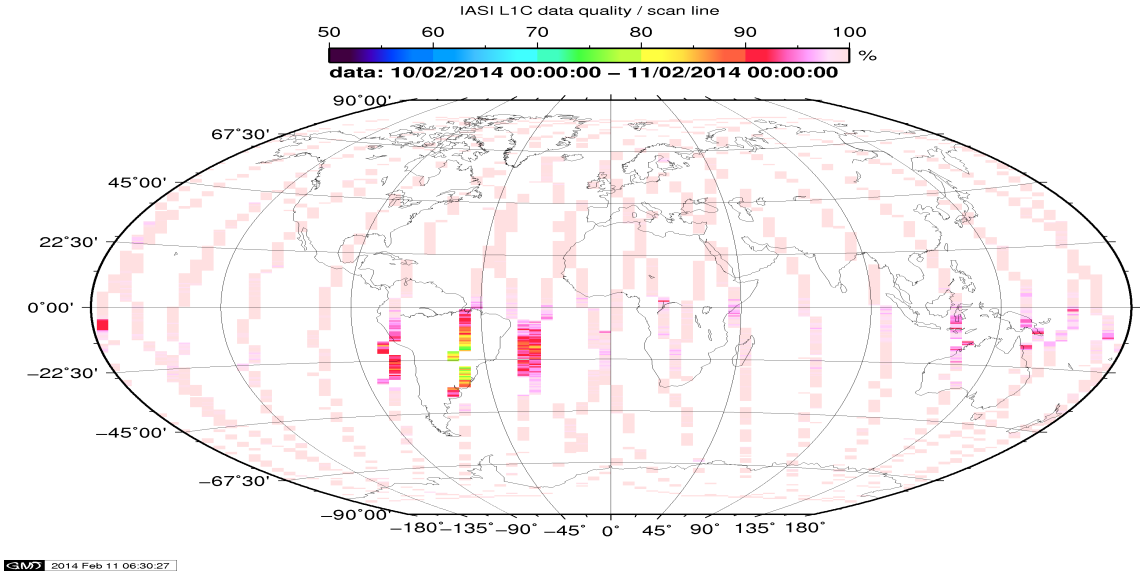

Figure 1: L1C data quality

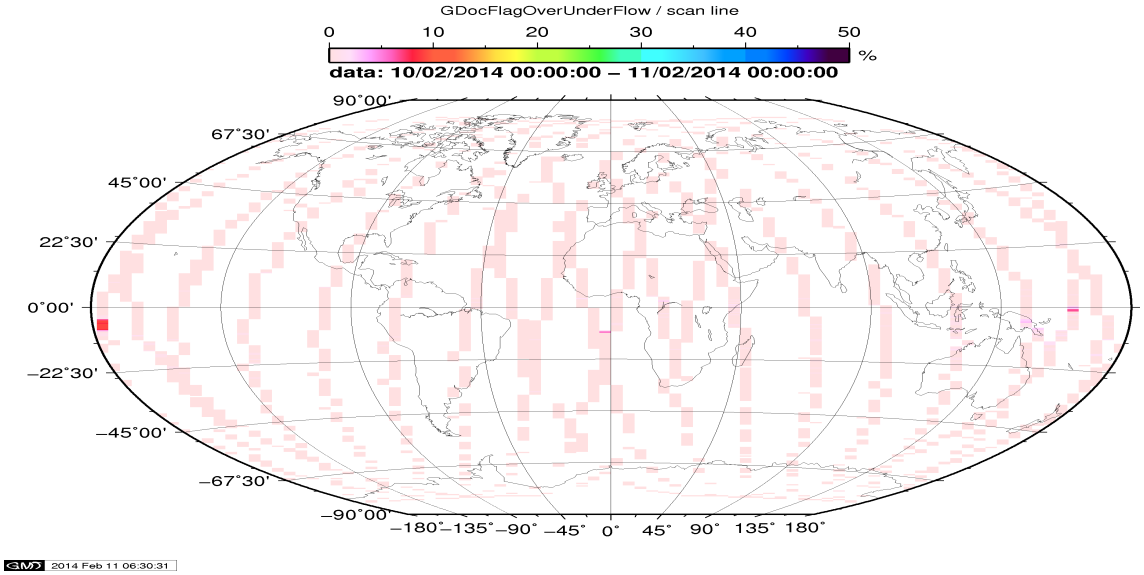

Figure 2: Flag of Over and Under Flows

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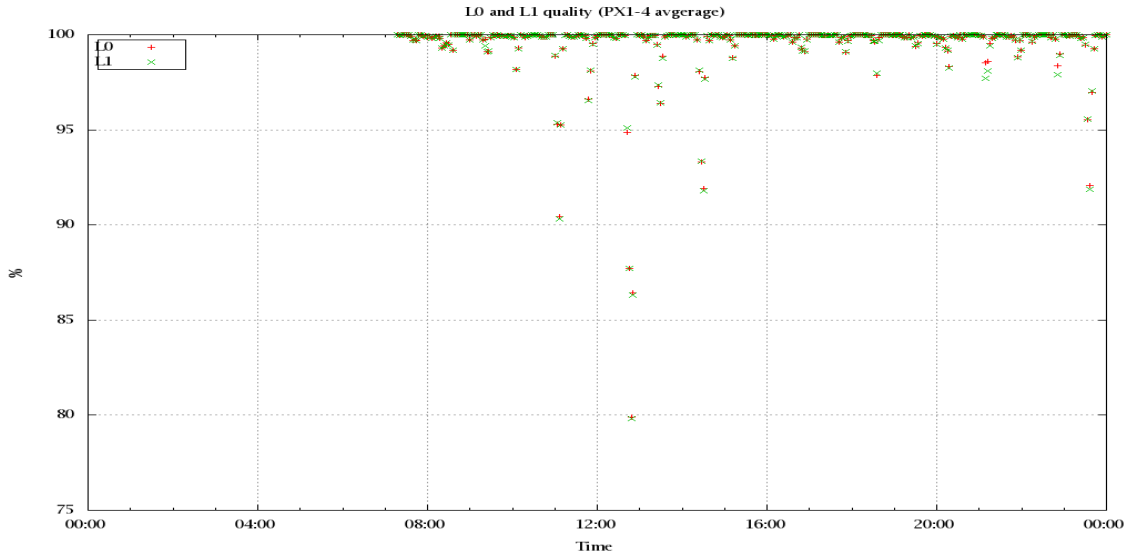

Figure 3: Level 0 and 1C overall quality

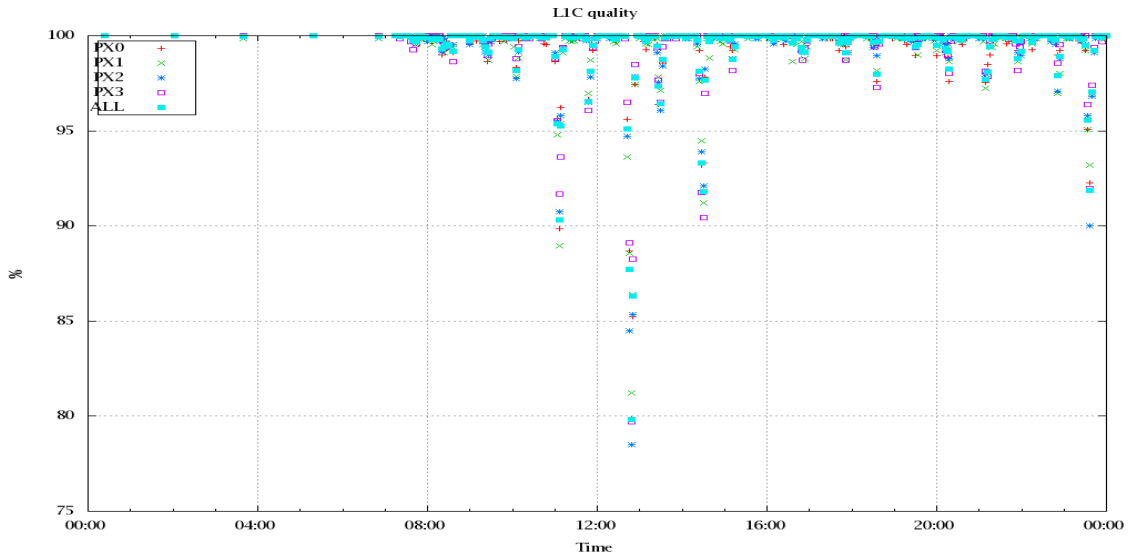

Figure 4: Level 1C quality

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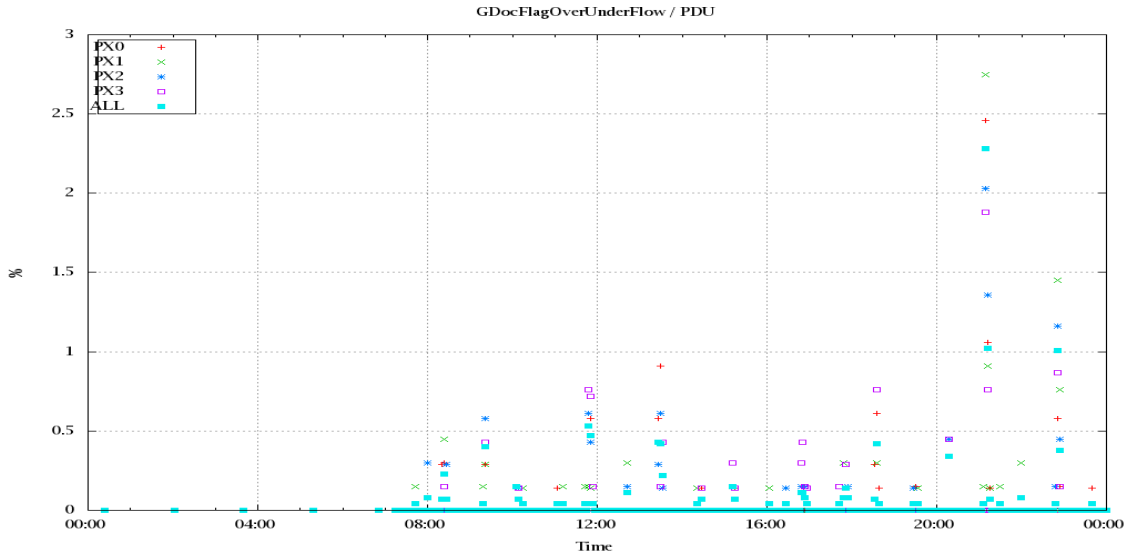

Figure 5: OverUnderFlowFlag timeseries

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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.

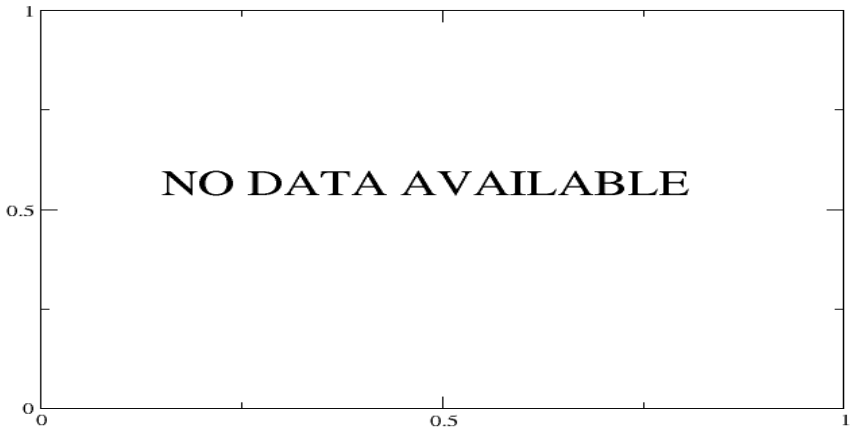

Figure 6: Average Radiance differences: OBS-CAL

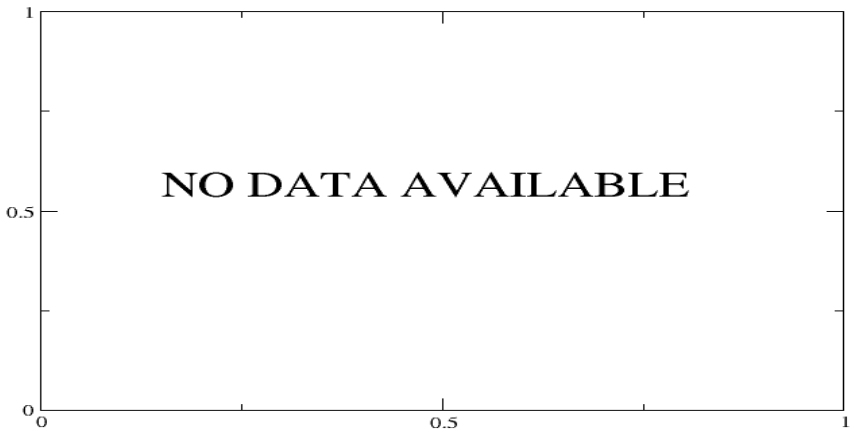

Figure 7: Standard Deviation of Radiance differences

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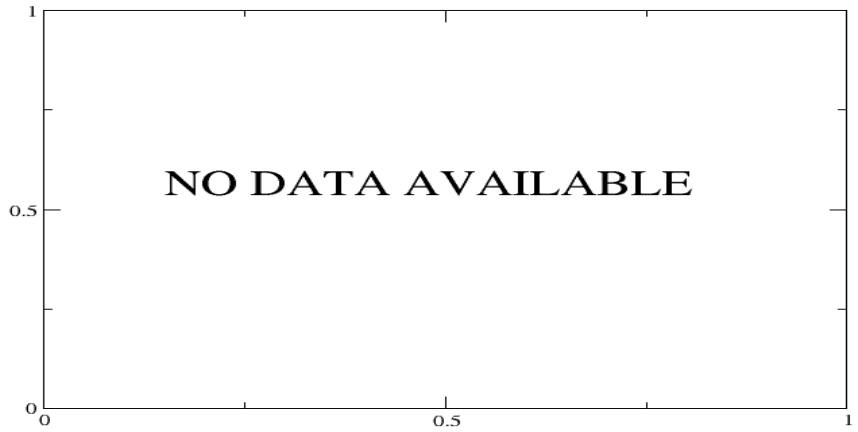

Figure 8: Average Radiance differences: OBS-CAL

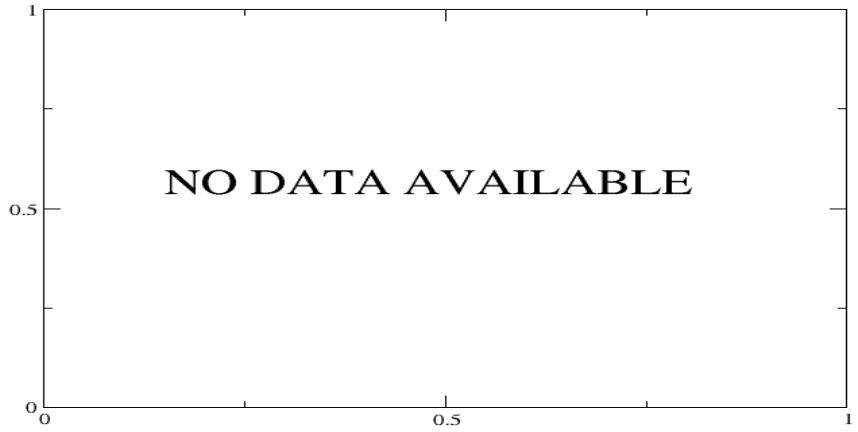

Figure 9: Standard Deviation of Radiance differences

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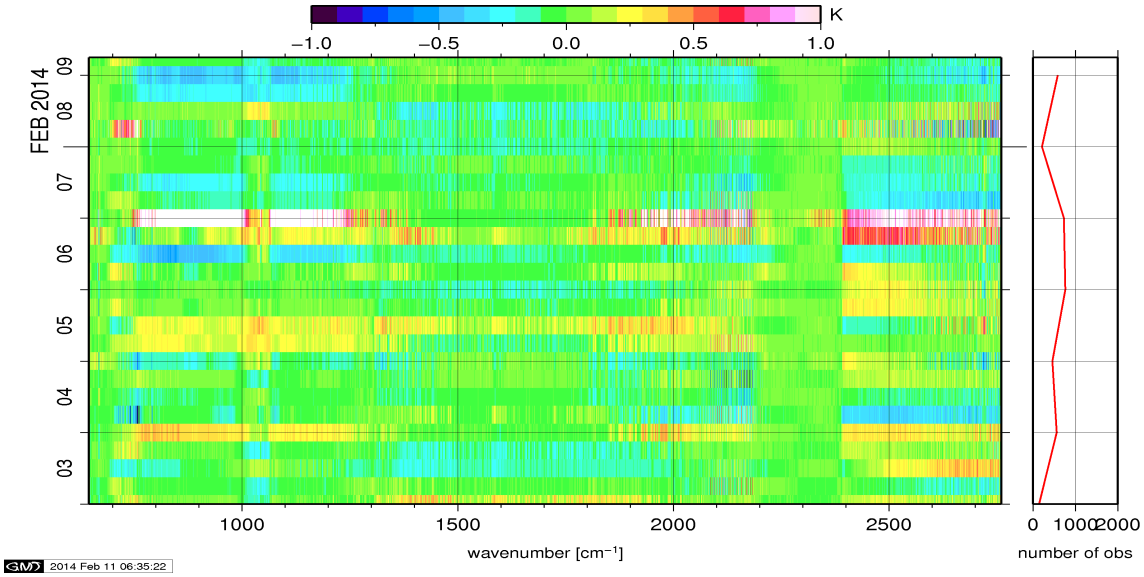

Figure 10: Radiance Anomaly in BRT: All Channels

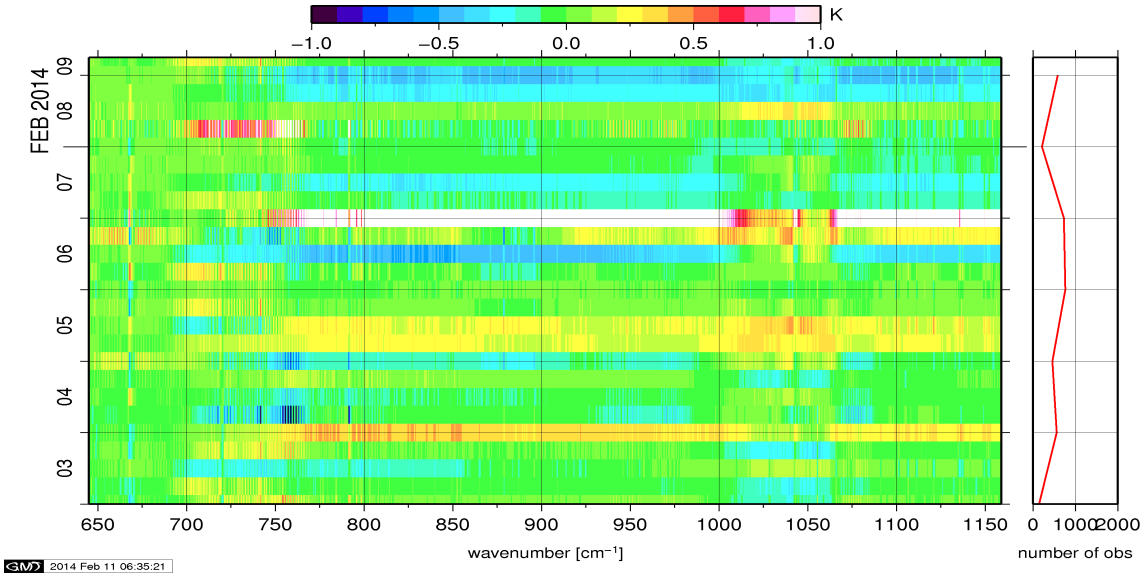

Figure 11: Radiance Anomaly in BRT: IASI Band 1

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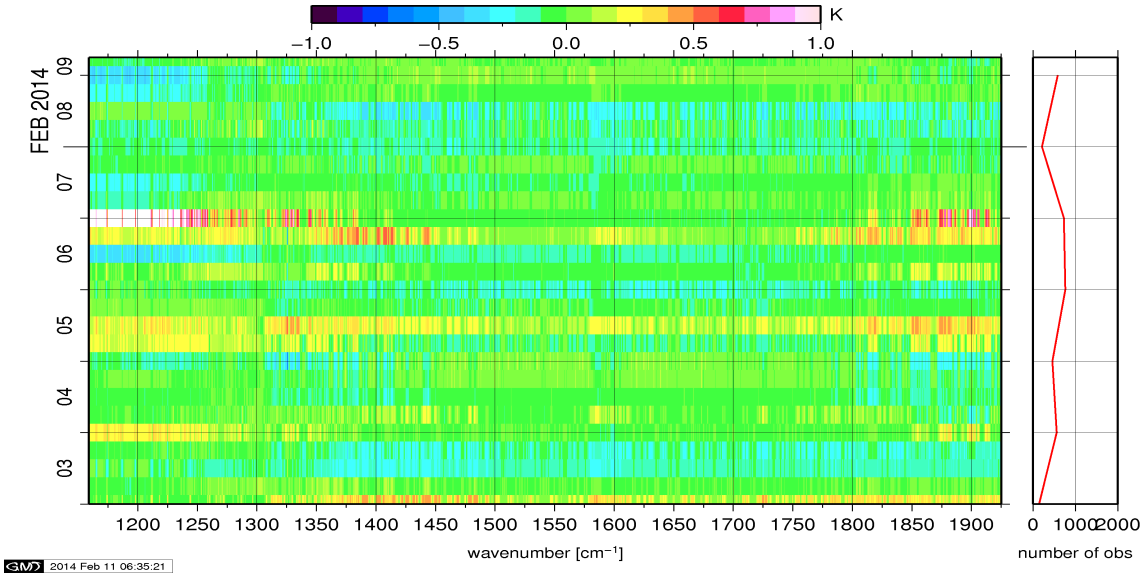

Figure 12: Radiance Anomaly in BRT: IASI Band 2

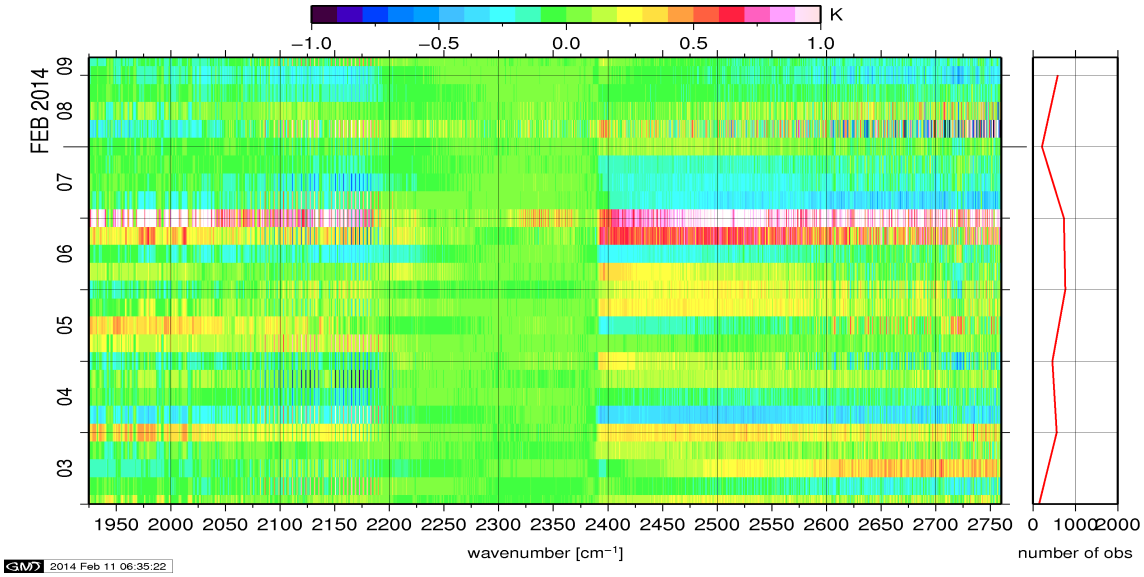

Figure 13: Radiance Anomaly in BRT: IASI Band 3

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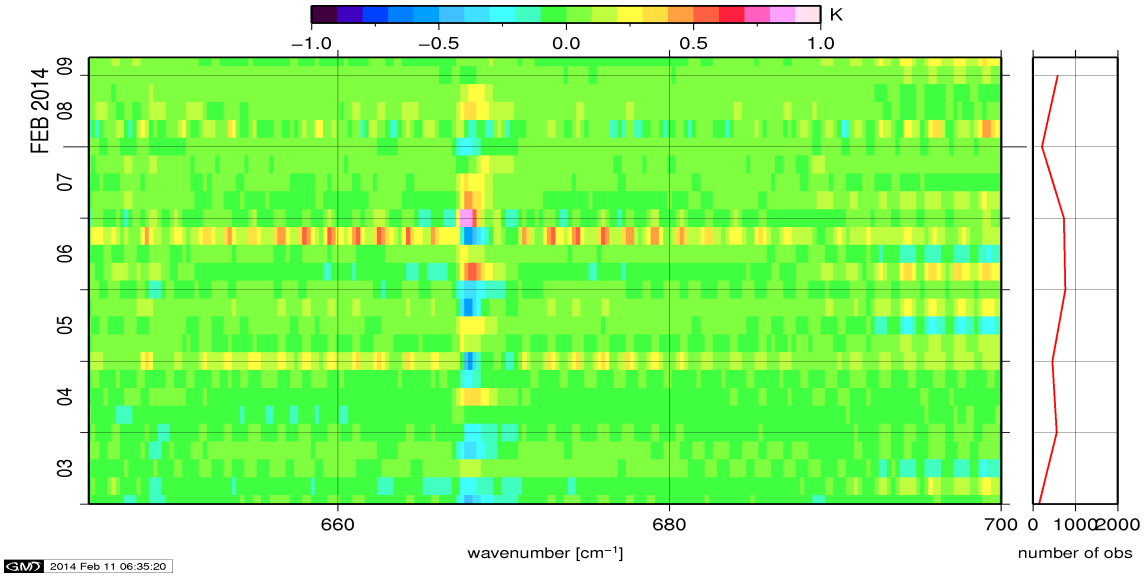

Figure 14: Radiance Anomaly in BRT: CO2 14

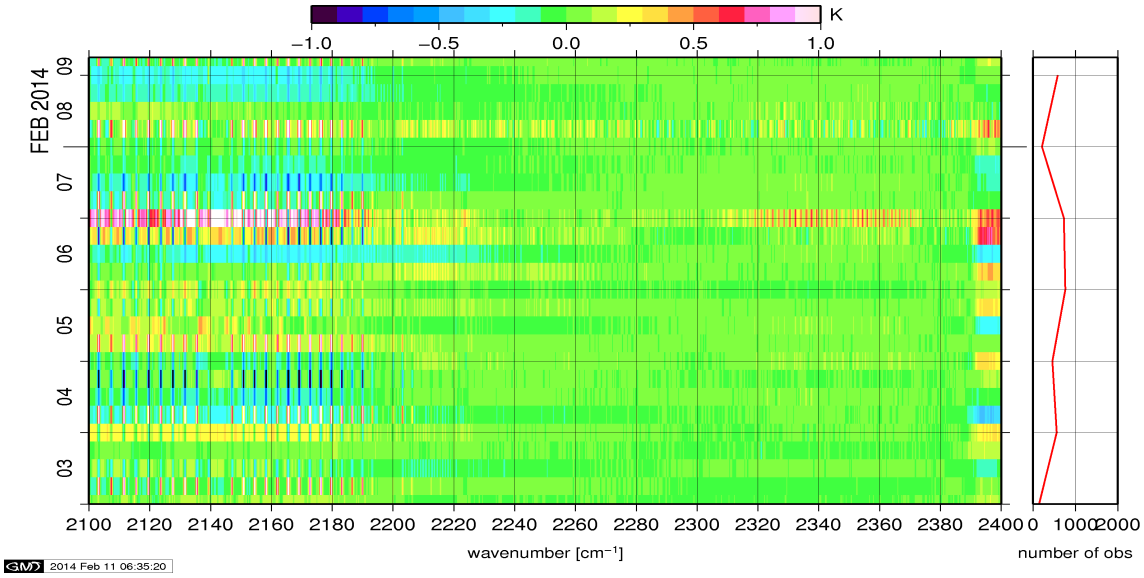

Figure 15: Radiance Anomaly in BRT: CO2 4.3

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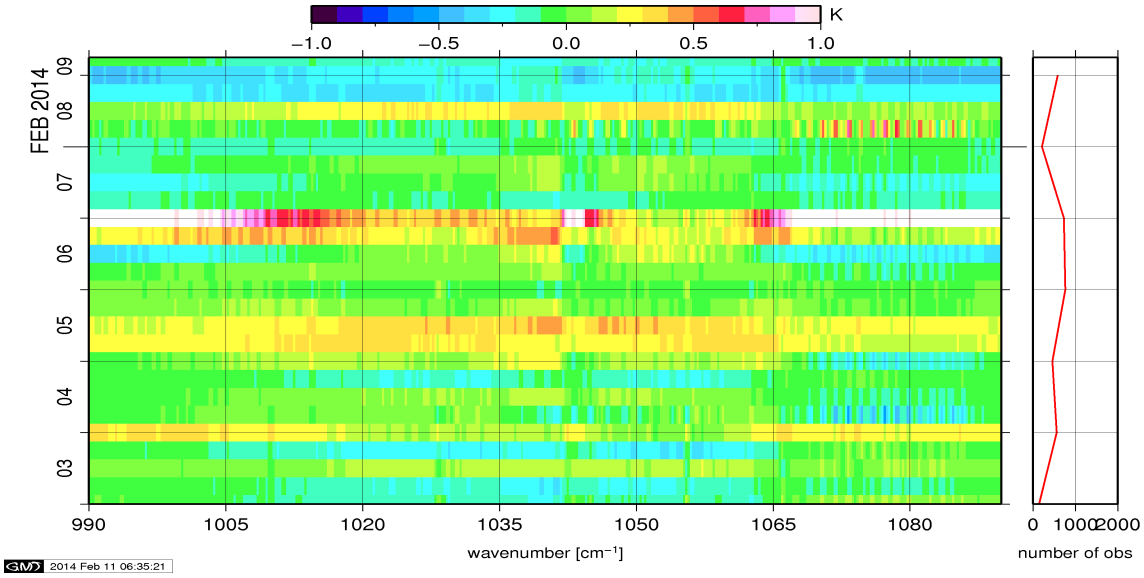

Figure 16: Radiance Anomaly in BRT: O3

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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.

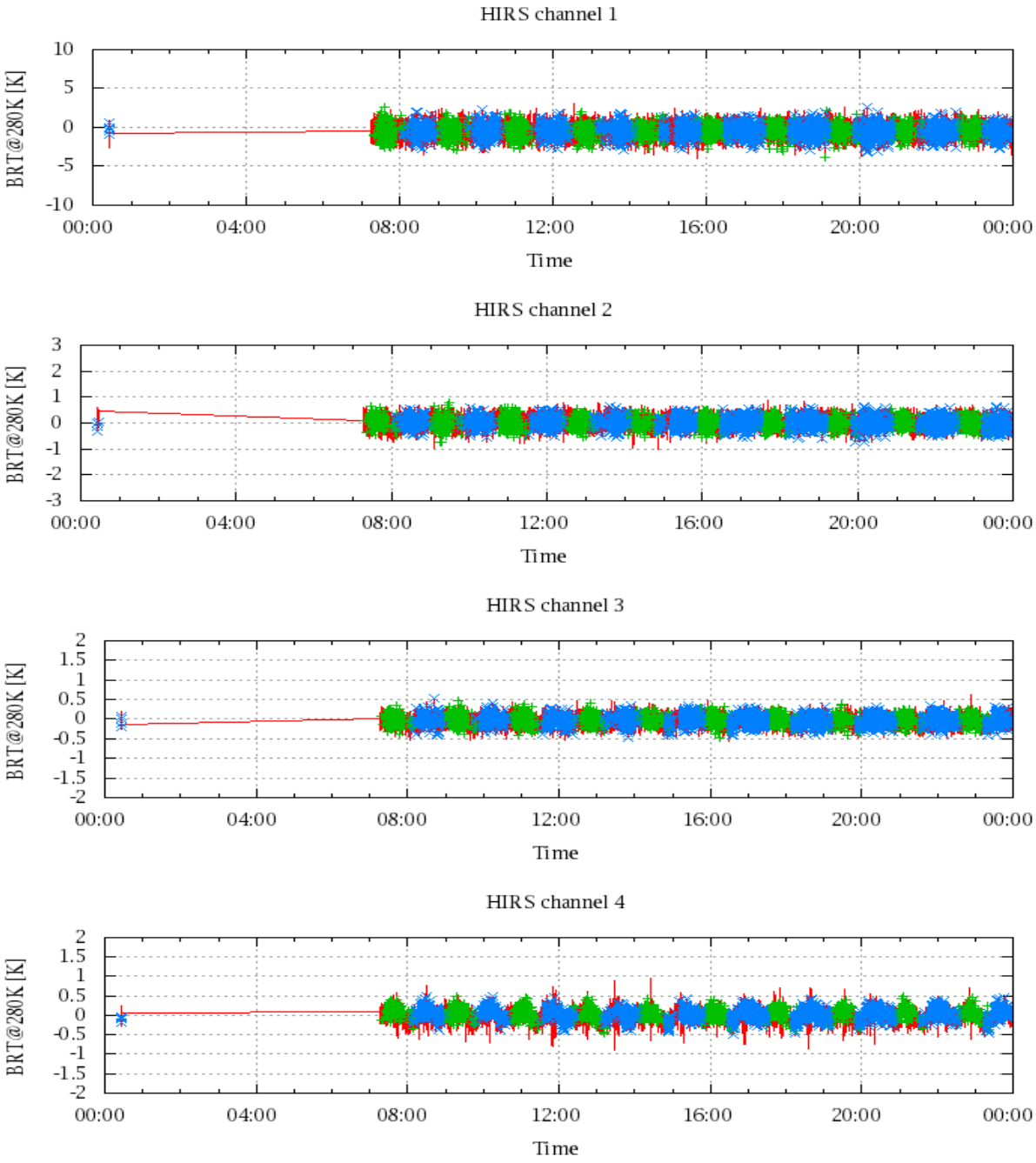

Figure 17: Radiance Differences in BRT

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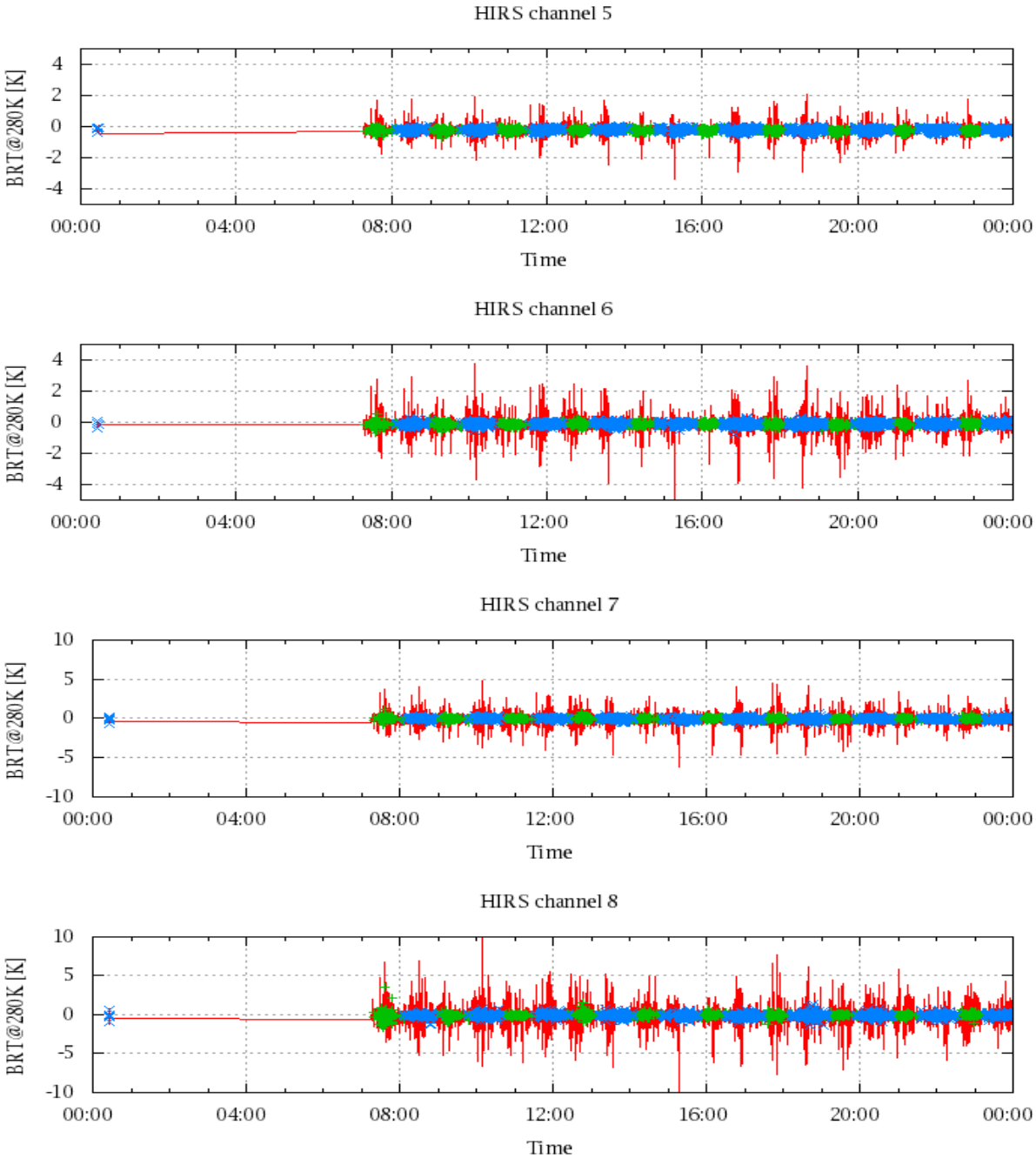

Figure 18: Radiance Differences in BRT

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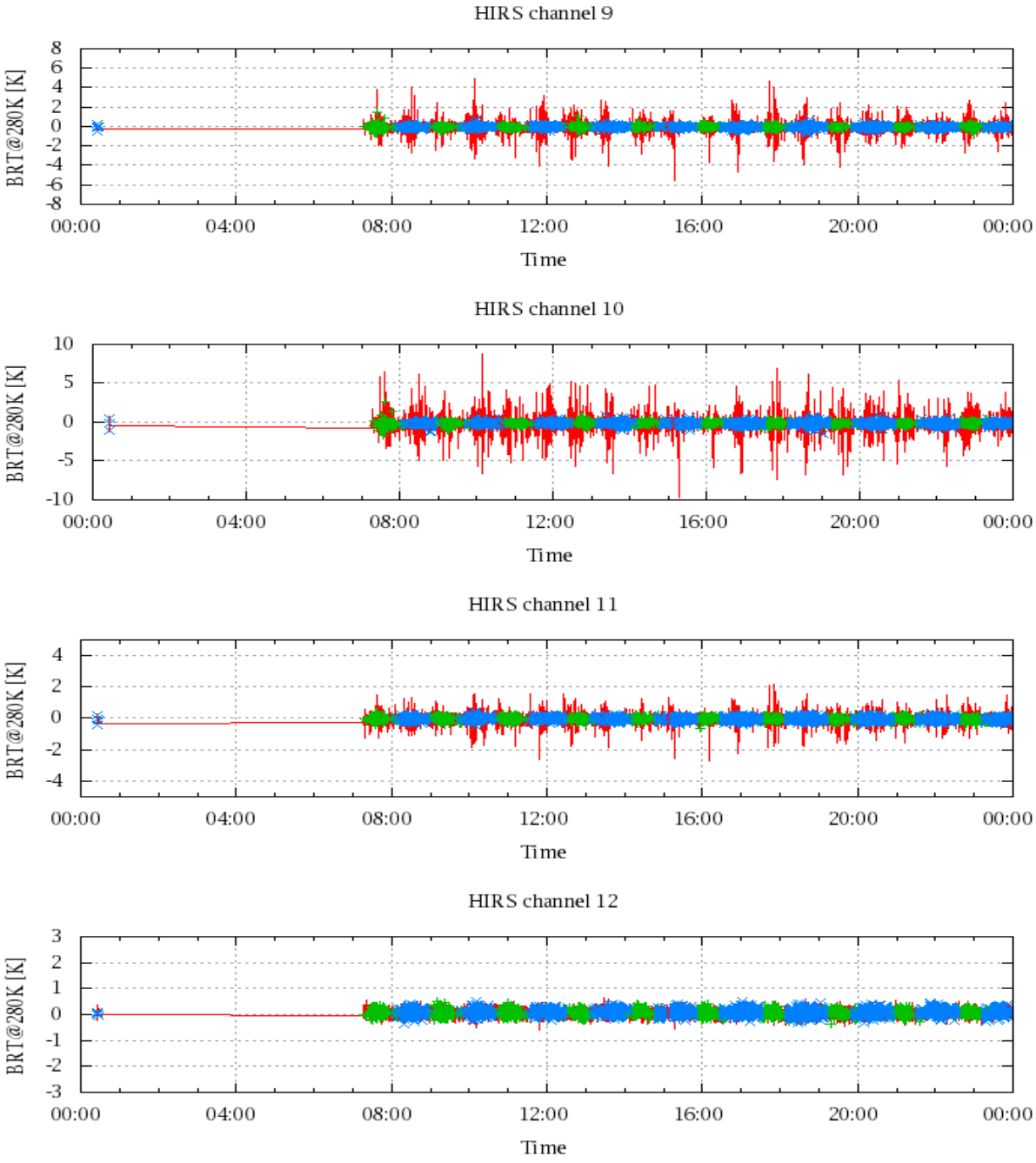

Figure 19: Radiance Differences in BRT

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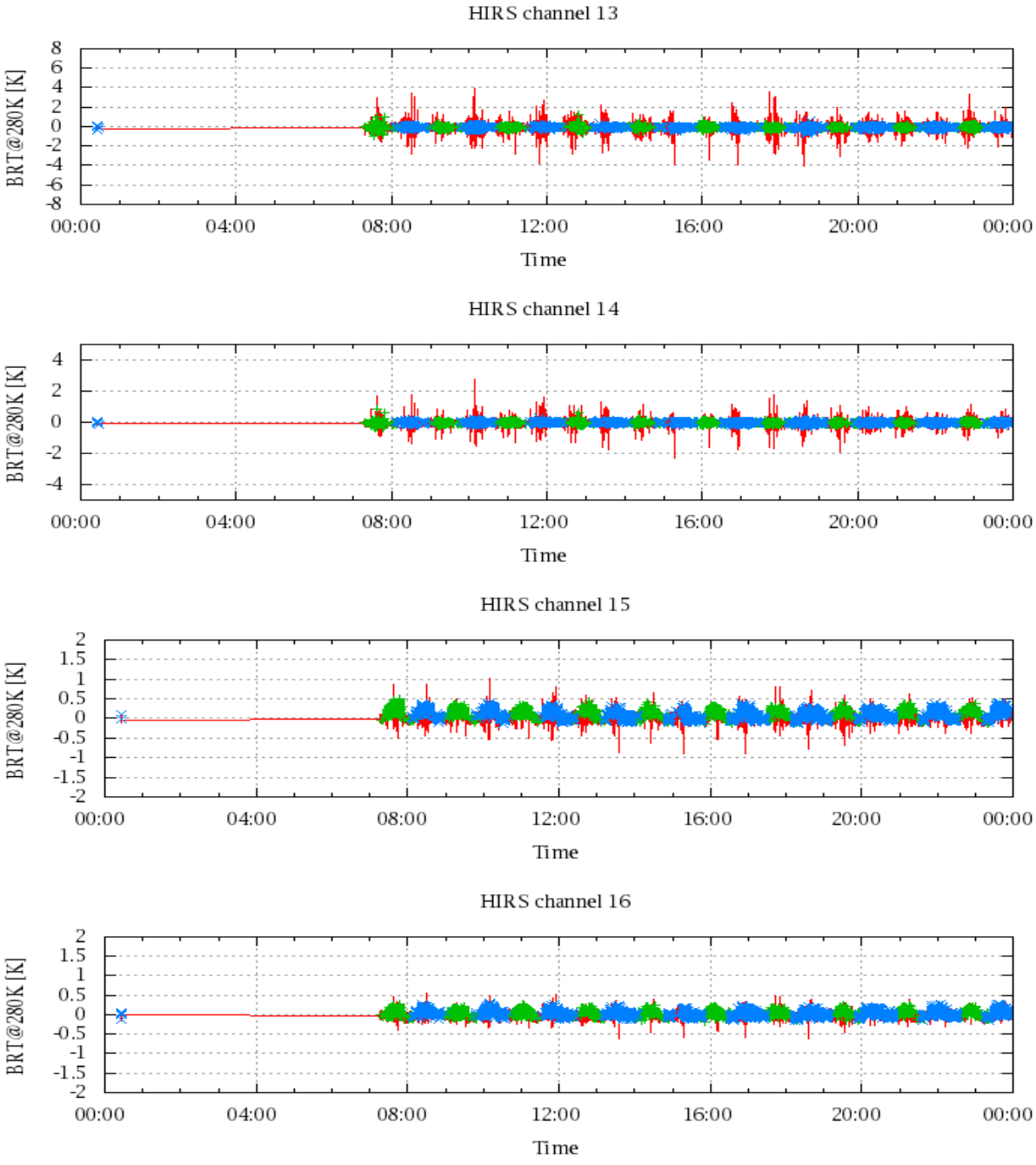

Figure 20: Radiance Differences in BRT

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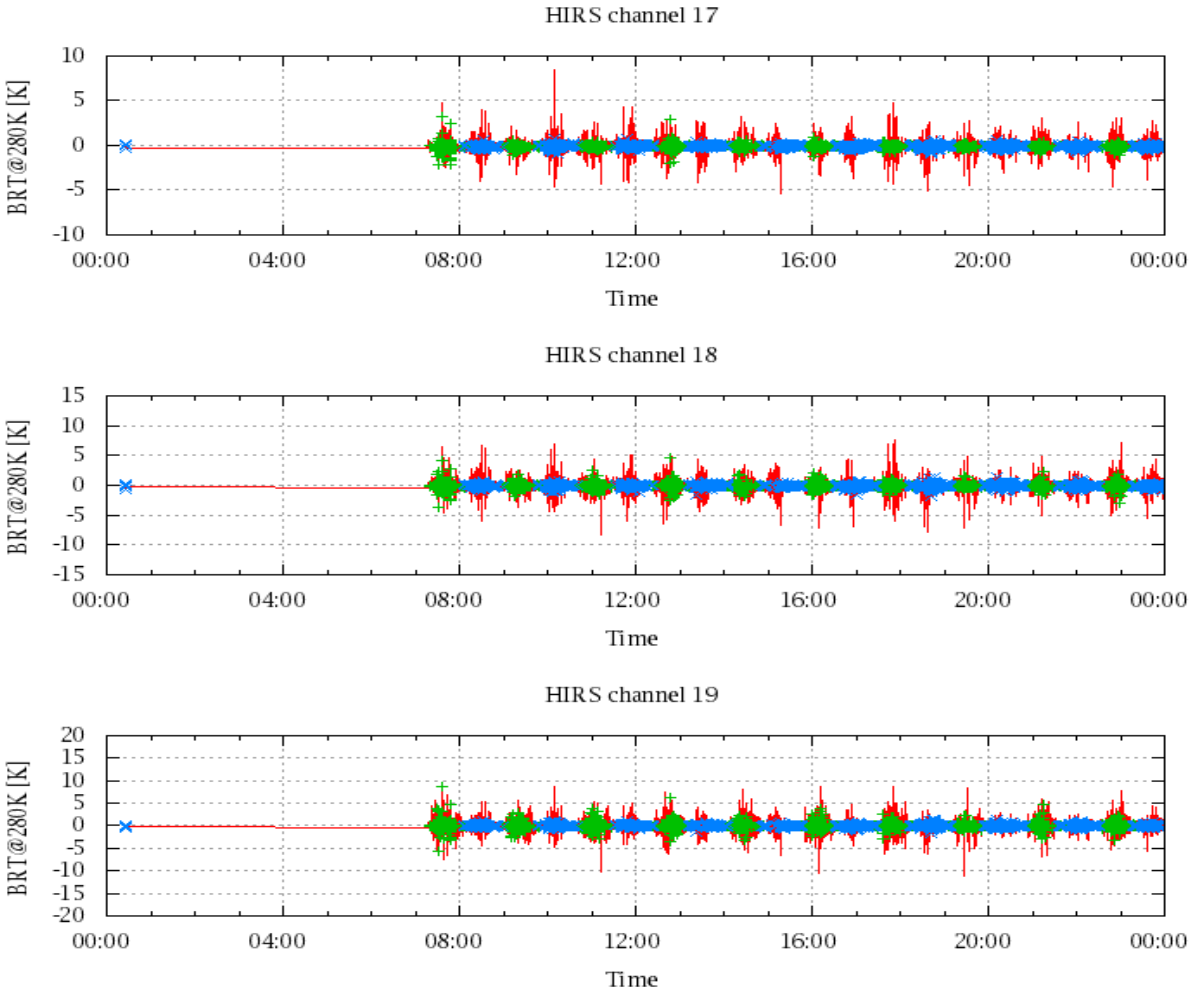

Figure 21: Radinace Differences in BRT

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