

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

07/02/2014 00:00:00 - 08/02/2014 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 07/02/2014 00:00:00 - 08/02/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 07/02/2014 00:00:00 - 08/02/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	235	e
L0 IASI PDUs	235	e
L1 ENG PDUs	235	e
L1 ENG distinct GEPSGranule	235	a
L1 DPX PDUs (RM: IASI-HIRS)	234	e
L1 DPS Files (RM: OBS-CAL NWP based)	235	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1675	1677	20140207023014.274	20140207023016.219
PX1 (130)	2336	2340	20140207023310.485	20140207023312.864
PX1 (130)	4337	4346	20140207024204.562	20140207024206.507
PX1 (130)	7827	7838	20140207025736.248	20140207025738.623
PX1 (130)	9986	9995	20140207030710.501	20140207030713.958
PX1 (130)	9681	9683	20140207041838.271	20140207041840.216
PX1 (130)	10513	10521	20140207042220.536	20140207042222.263
PX1 (130)	11680	11688	20140207042731.914	20140207042733.645
PX1 (130)	13674	13682	20140207043624.441	20140207043626.171
PX2 (135)	1674	1677	20140207023014.055	20140207023016.219
PX2 (135)	2336	2340	20140207023310.485	20140207023312.864
PX2 (135)	4337	4346	20140207024204.562	20140207024206.507
PX2 (135)	7827	7838	20140207025736.248	20140207025738.623
PX2 (135)	9986	9995	20140207030710.501	20140207030713.958
PX2 (135)	9681	9683	20140207041838.271	20140207041840.216
PX2 (135)	10513	10521	20140207042220.536	20140207042222.263

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	11680	11687	20140207042731.914	20140207042733.426
PX2 (135)	13674	13682	20140207043624.441	20140207043626.171
PX3 (140)	1674	1677	20140207023014.055	20140207023016.219
PX3 (140)	2336	2340	20140207023310.485	20140207023312.864
PX3 (140)	4337	4346	20140207024204.562	20140207024206.507
PX3 (140)	7827	7838	20140207025736.248	20140207025738.623
PX3 (140)	9986	9995	20140207030710.501	20140207030713.958
PX3 (140)	9681	9683	20140207041838.271	20140207041840.216
PX3 (140)	10513	10521	20140207042220.536	20140207042222.263
PX3 (140)	11679	11687	20140207042731.700	20140207042733.426
PX3 (140)	13674	13682	20140207043624.441	20140207043626.171
PX4 (145)	1674	1677	20140207023014.055	20140207023016.219
PX4 (145)	2336	2339	20140207023310.485	20140207023312.645
PX4 (145)	4337	4346	20140207024204.562	20140207024206.507
PX4 (145)	7827	7838	20140207025736.248	20140207025738.623
PX4 (145)	9986	9995	20140207030710.501	20140207030713.958
PX4 (145)	9681	9683	20140207041838.271	20140207041840.216
PX4 (145)	10513	10521	20140207042220.536	20140207042222.263
PX4 (145)	11679	11687	20140207042731.700	20140207042733.426
PX4 (145)	13674	13681	20140207043624.441	20140207043625.953
IMG (150)	13507	13510	20140207023014.055	20140207023014.922
IMG (150)	14257	14264	20140207023310.485	20140207023312.645
IMG (150)	141	151	20140207024204.343	20140207024206.507
IMG (150)	4100	4111	20140207025736.248	20140207025738.623
IMG (150)	6545	6556	20140207030711.149	20140207030713.958
IMG (150)	8381	8384	20140207041838.056	20140207041838.919
IMG (150)	9326	9334	20140207042220.536	20140207042222.263
IMG (150)	10648	10656	20140207042731.700	20140207042733.426
IMG (150)	12910	12918	20140207043624.222	20140207043625.953
VER (160)	11350	11352	20140207005814.502	20140207005822.502
VER (160)	14795	14798	20140207023006.489	20140207023014.274
VER (160)	14907	14911	20140207023310.485	20140207023318.485
AUX (180)	2979	2981	20140207023302.918	20140207023318.918

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/02/2014 00:00:04	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	235	e
L1 ENG PDUs	235	e
L1 ENG distinct GEPSGranule	235	a
GQisFlagQual set (PX1)	99.27 %	-
GQisFlagQual set (PX2)	99.40 %	-
GQisFlagQual set (PX3)	99.58 %	-
GQisFlagQual set (PX4)	99.51 %	-
GQisFlagQual set (all)	99.44 %	-

Table 4: Quality flags

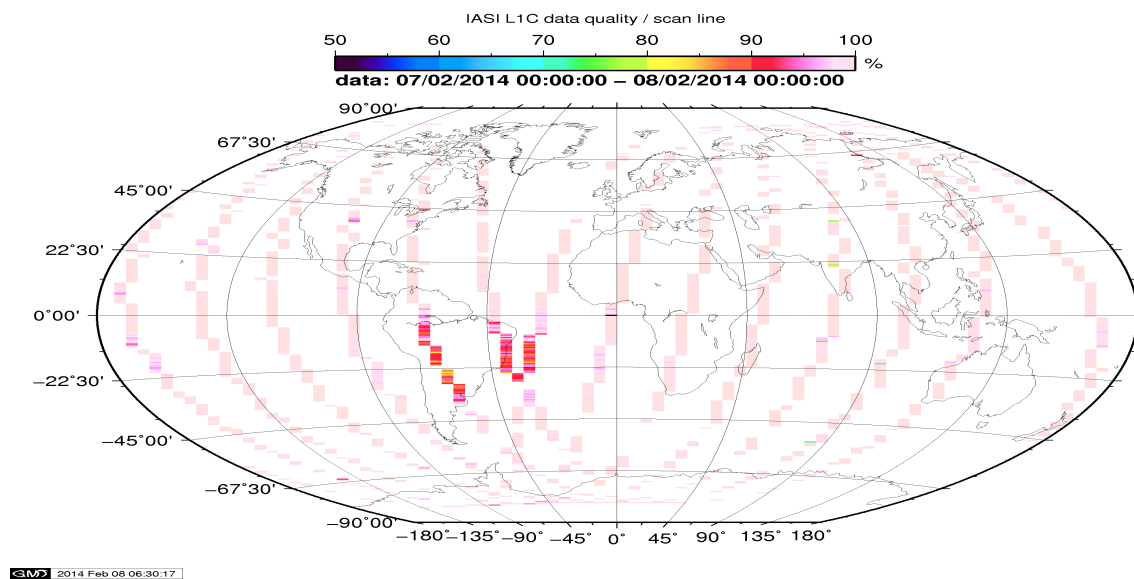


Figure 1: L1C data quality

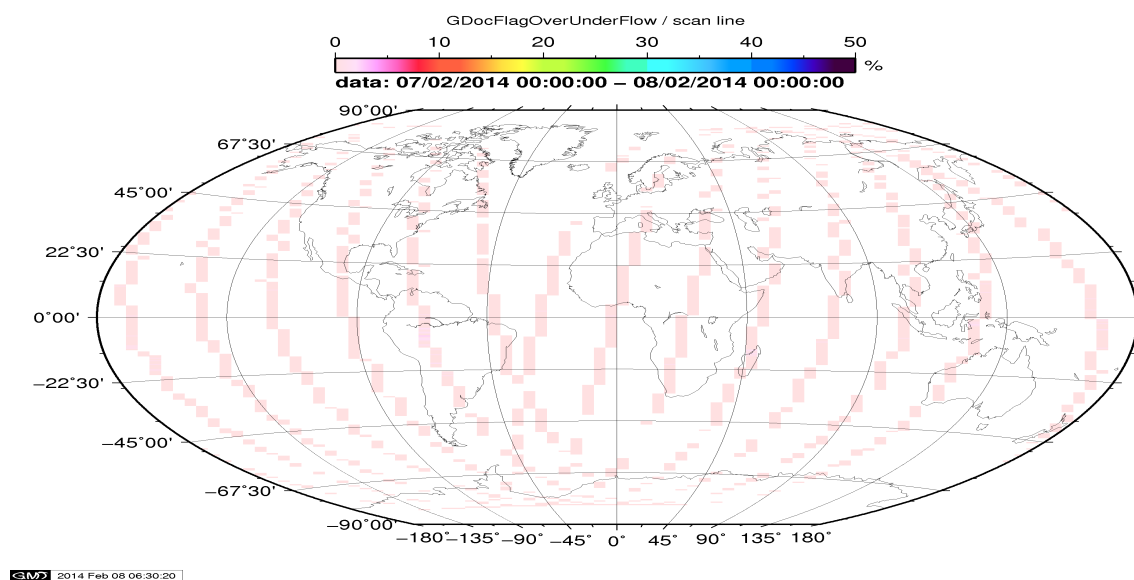


Figure 2: Flag of Over and Under Flows

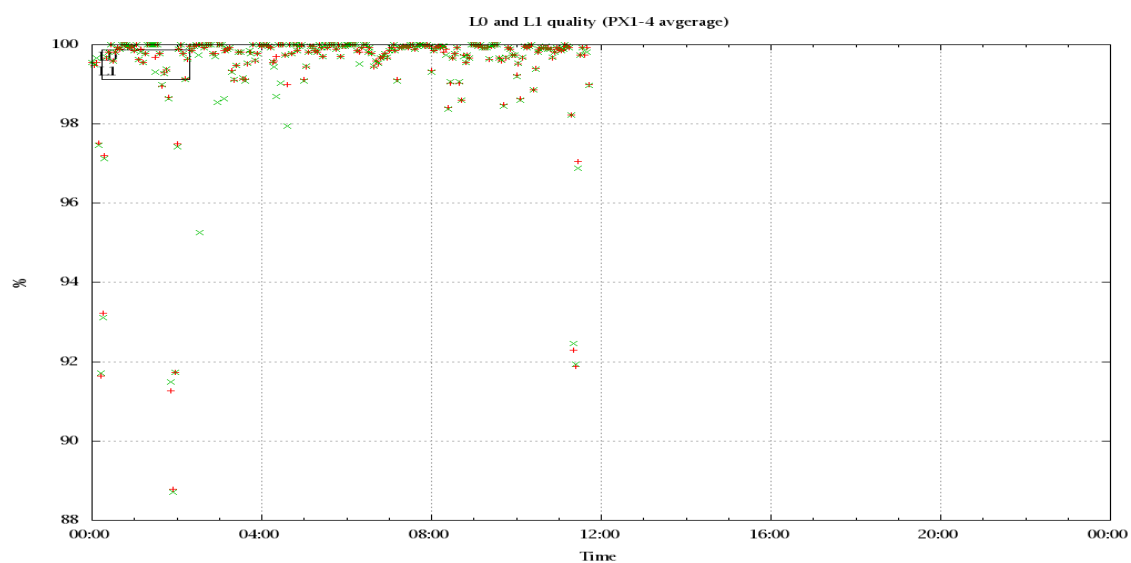


Figure 3: Level 0 and 1C overall quality

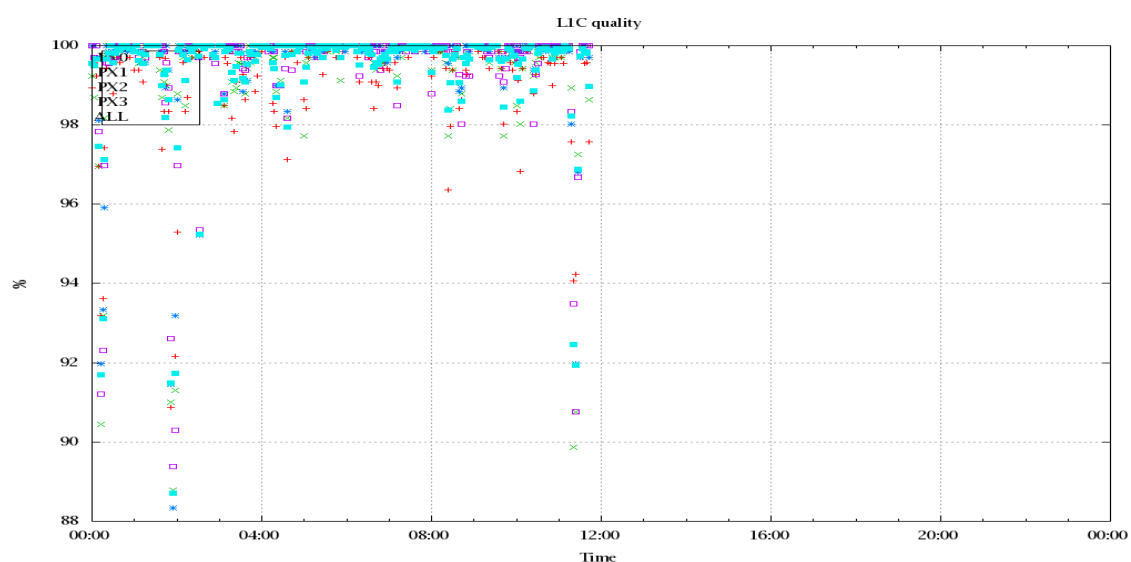


Figure 4: Level 1C quality

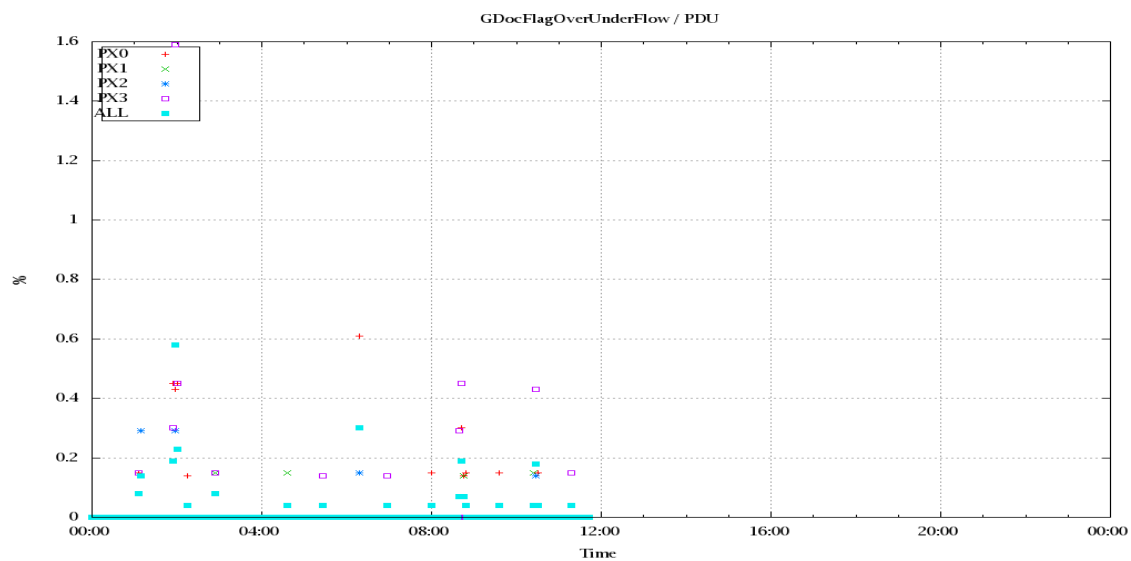


Figure 5: OverUnderFlowFlag timeseries

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 identification 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.

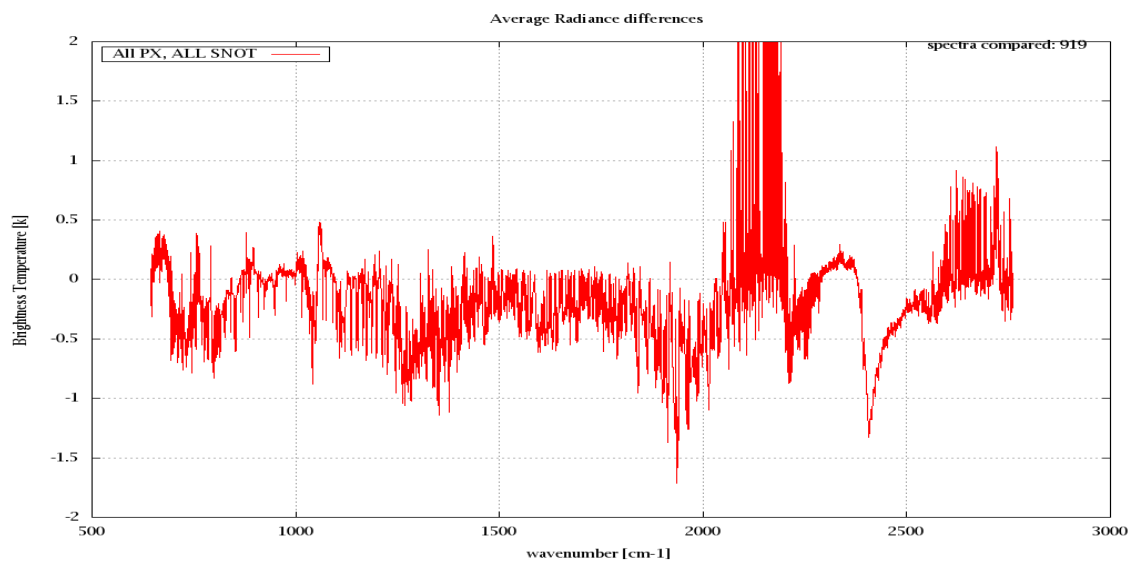


Figure 6: Average Radiance differences: OBS-CAL

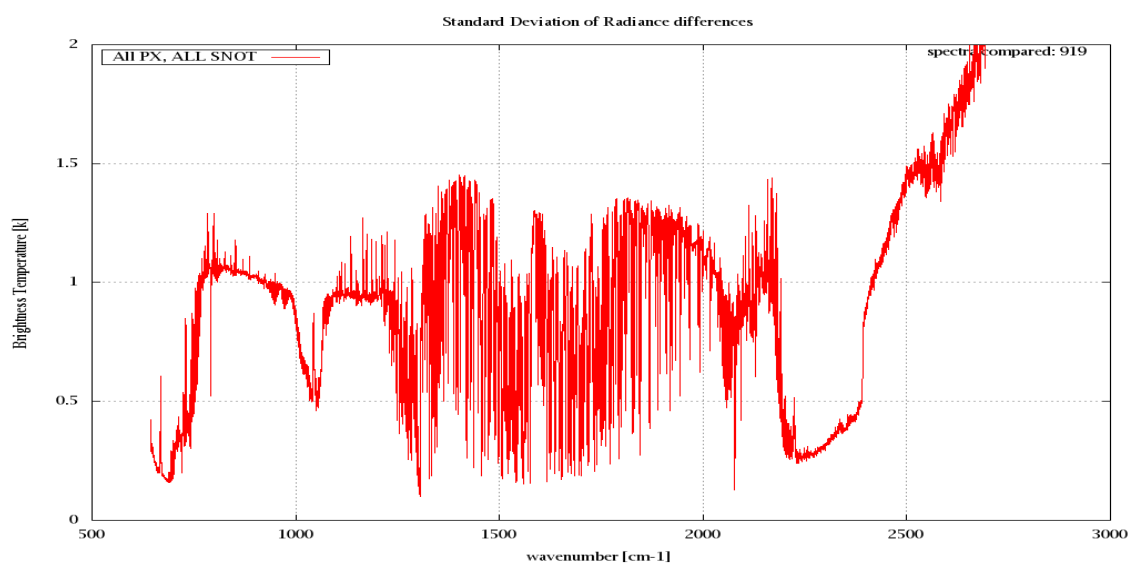


Figure 7: Standard Deviation of Radiance differences

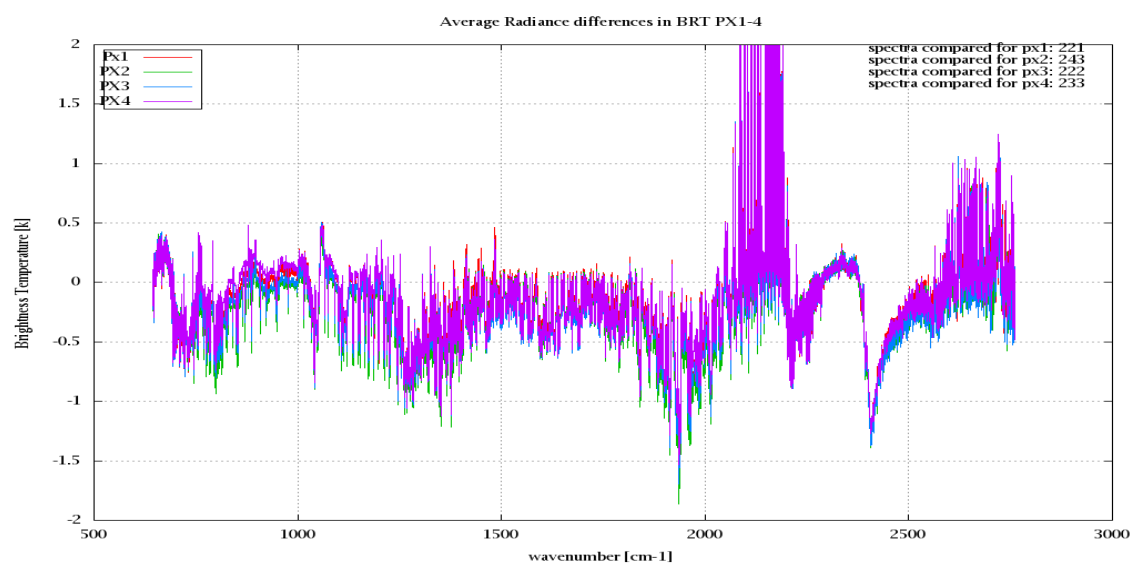


Figure 8: Average Radiance differences: OBS-CAL

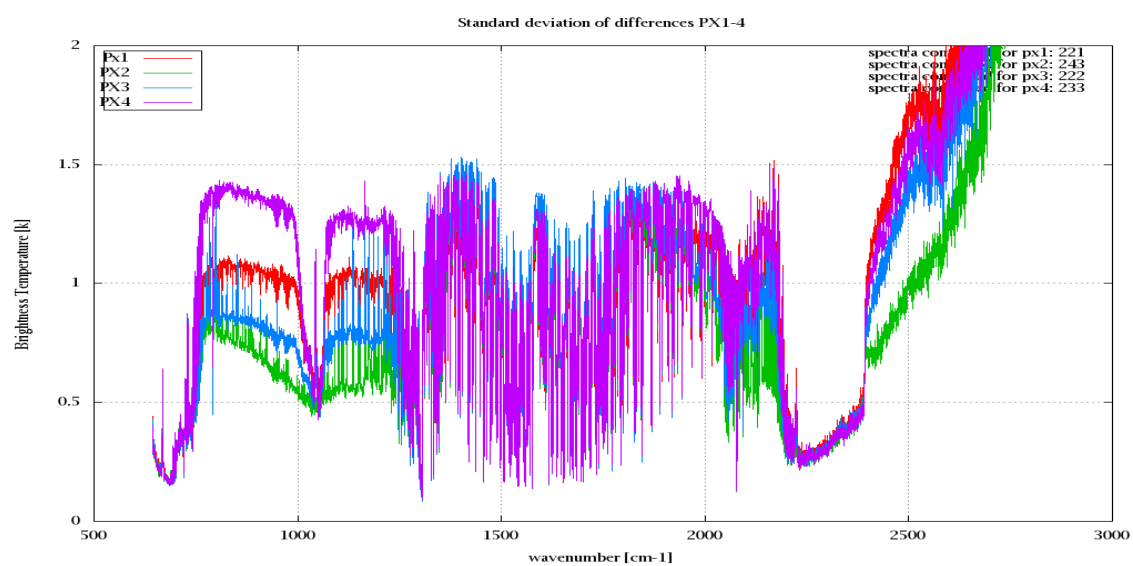


Figure 9: Standard Deviation of Radiance differences

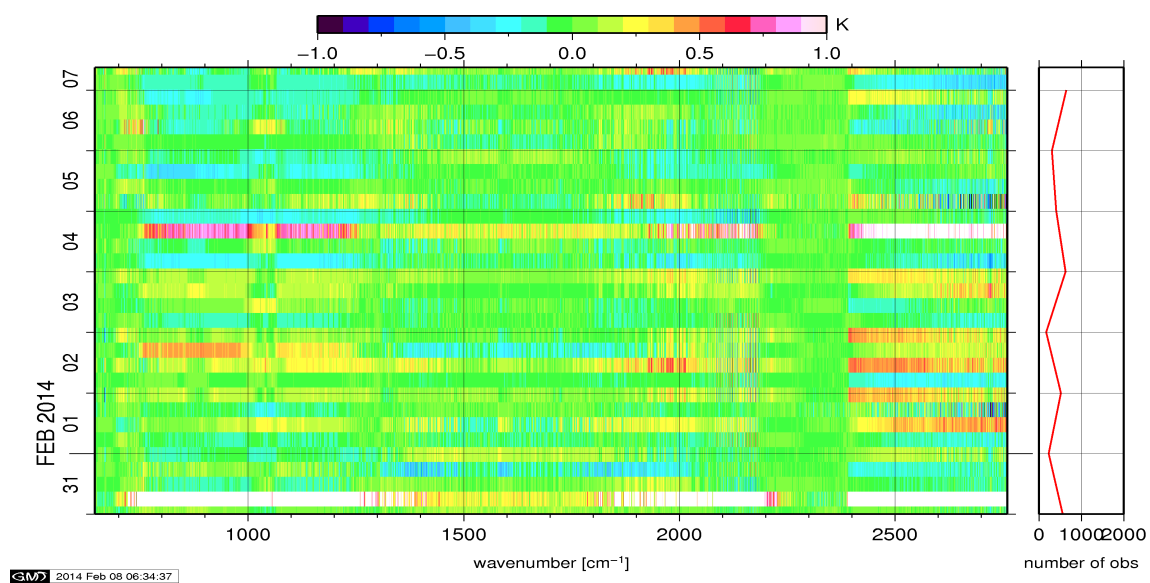


Figure 10: Radiance Anomaly in BRT: All Channels

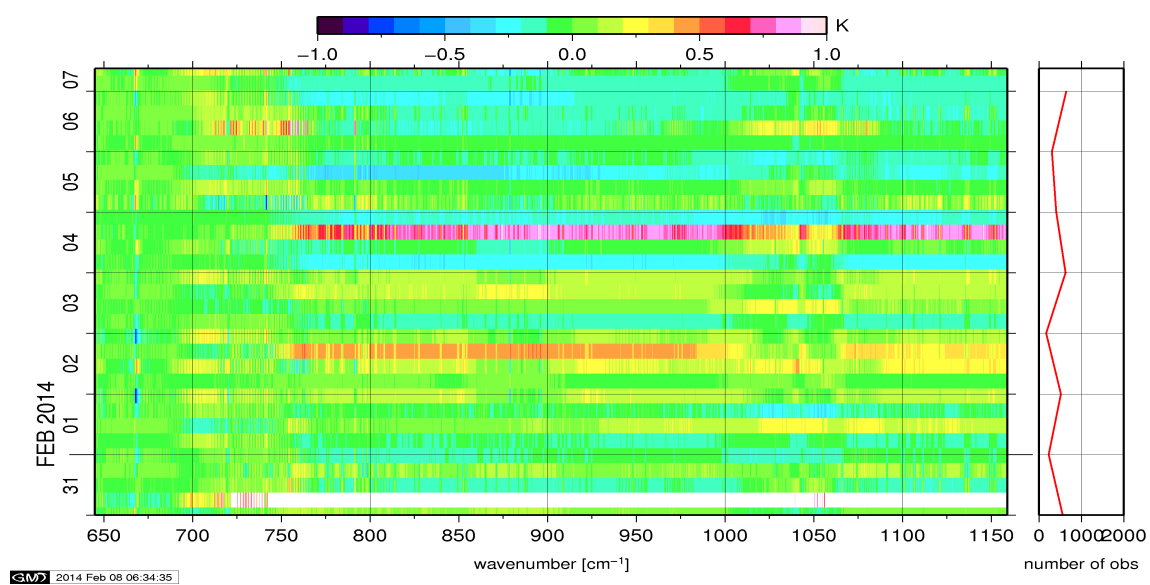


Figure 11: Radiance Anomaly in BRT: IASI Band 1

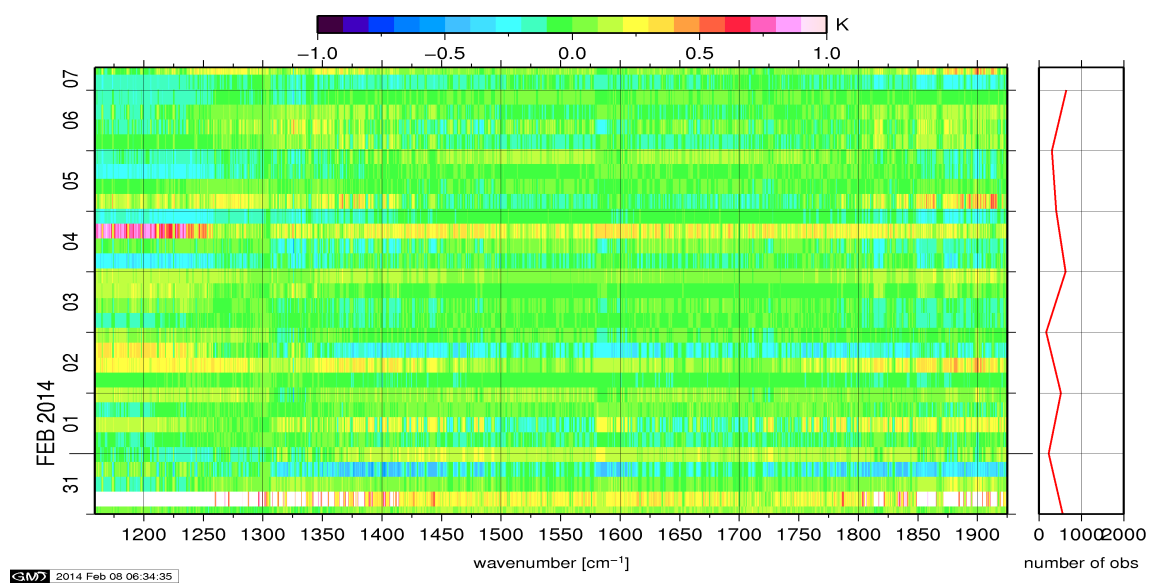


Figure 12: Radiance Anomaly in BRT: IASI Band 2

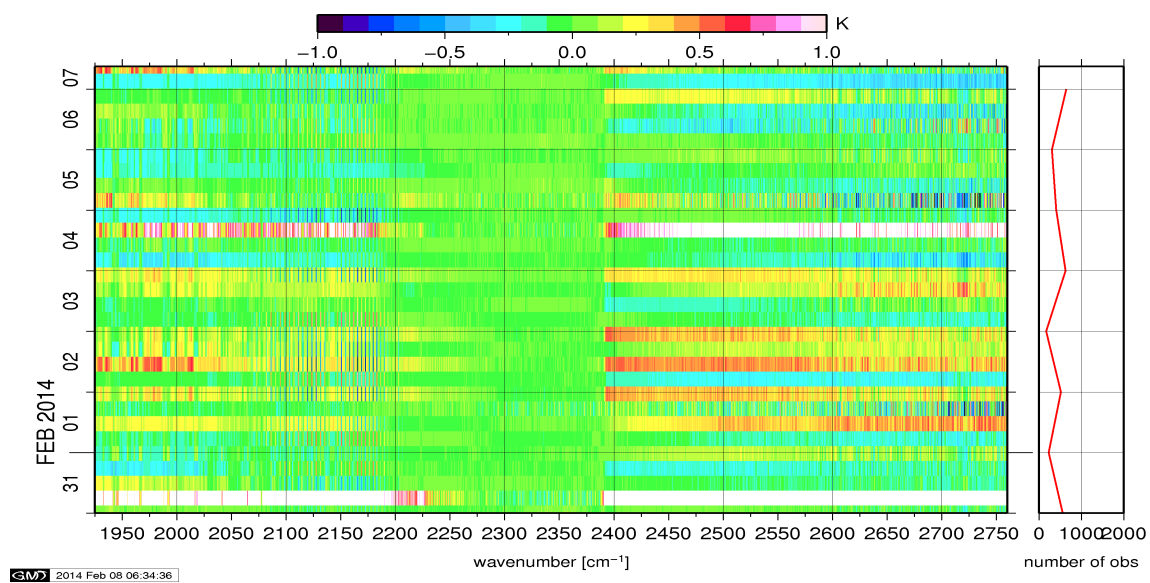


Figure 13: Radiance Anomaly in BRT: IASI Band 3

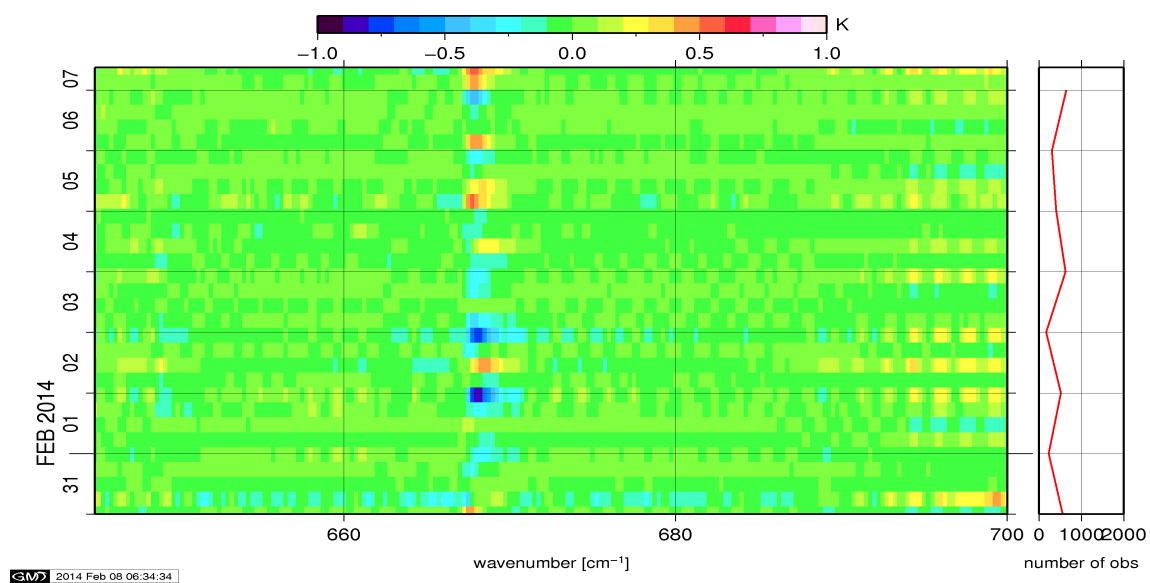


Figure 14: Radiance Anomaly in BRT: CO2 14

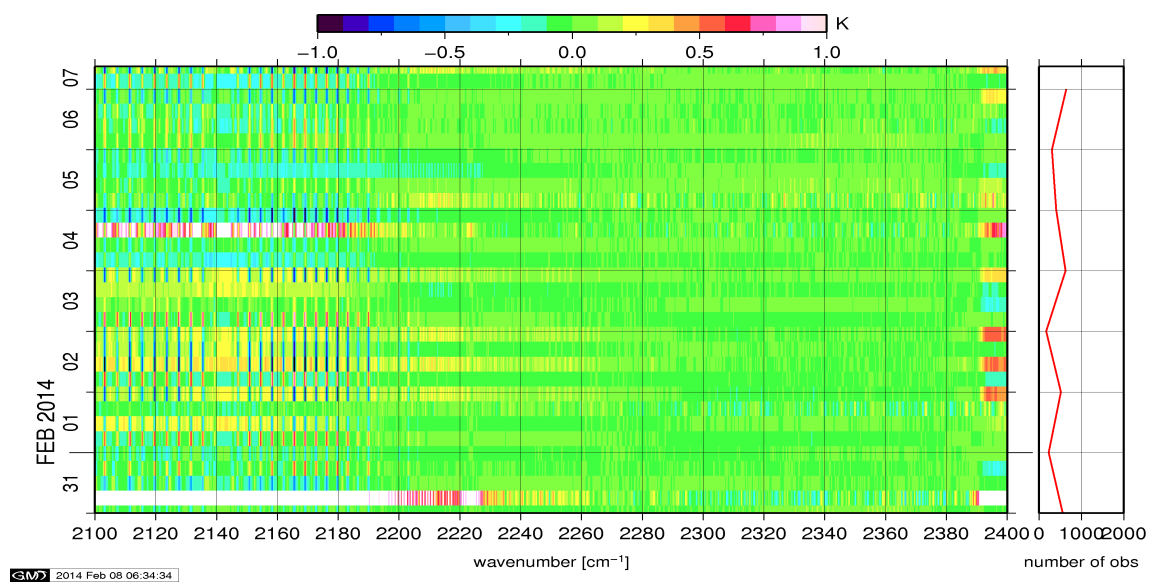


Figure 15: Radiance Anomaly in BRT: CO2 4.3

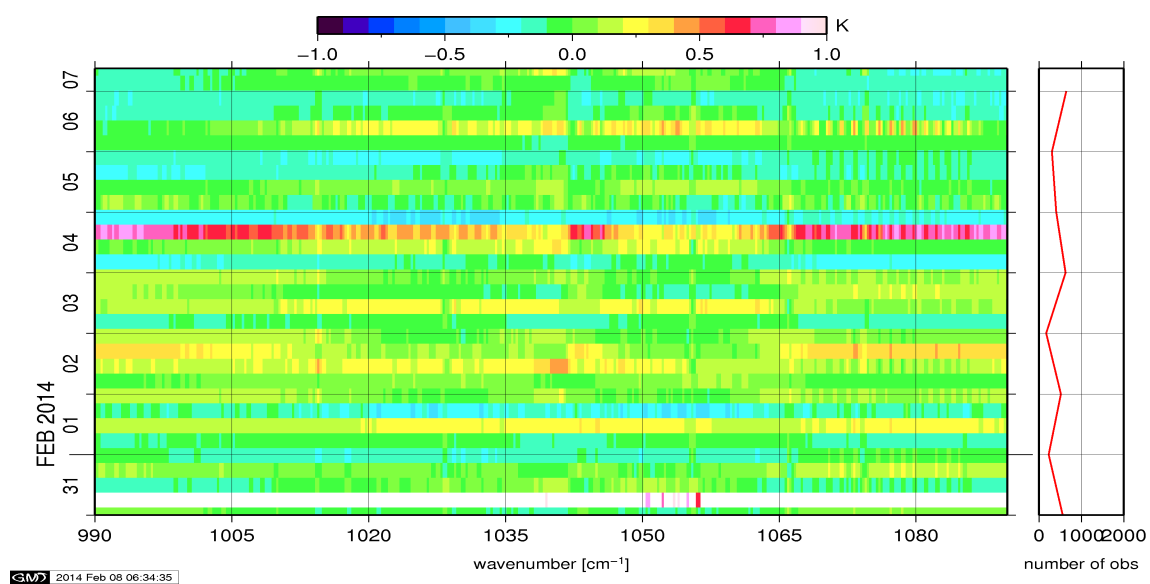


Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison 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.

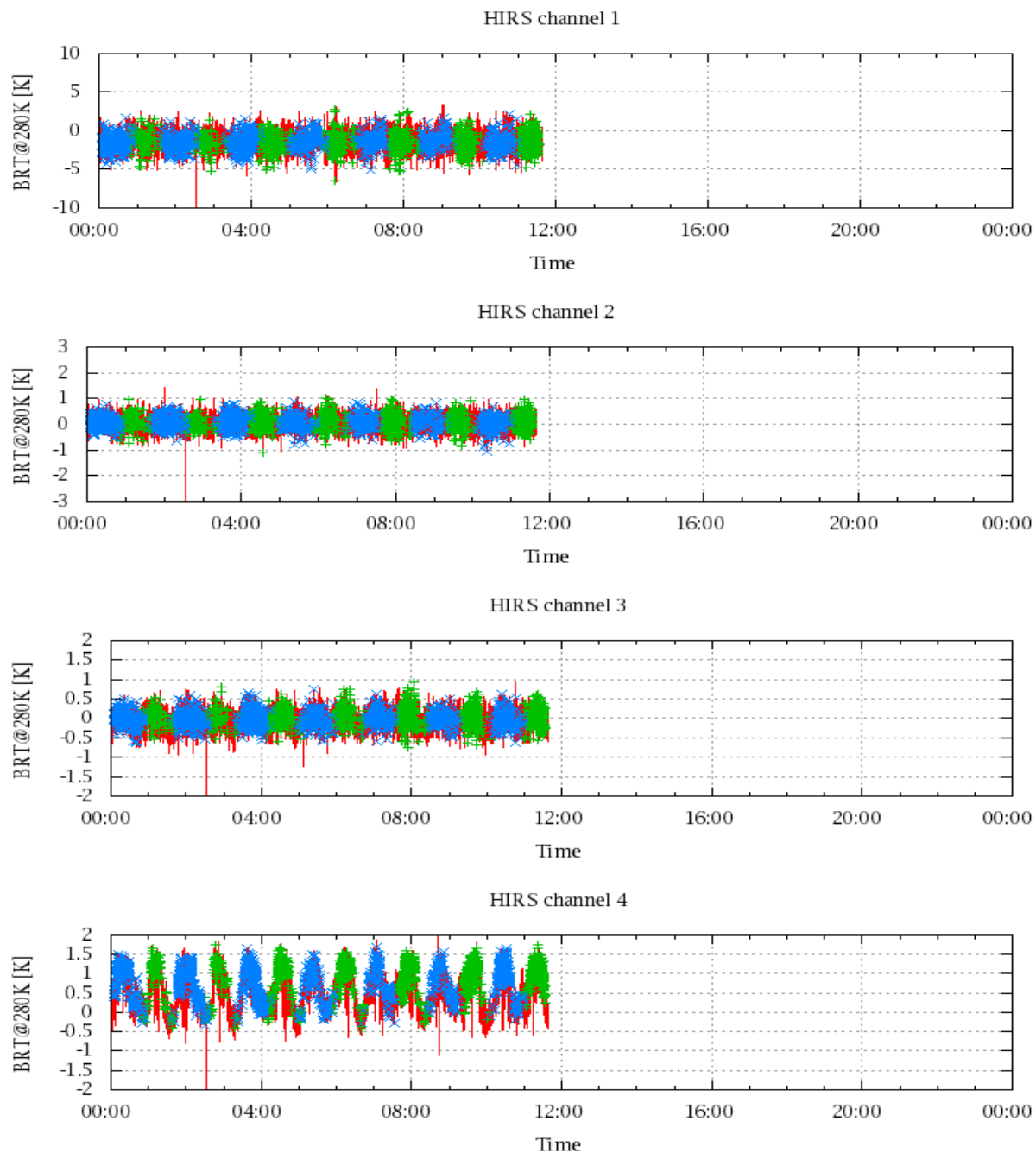


Figure 17: Radiance Differences in BRT

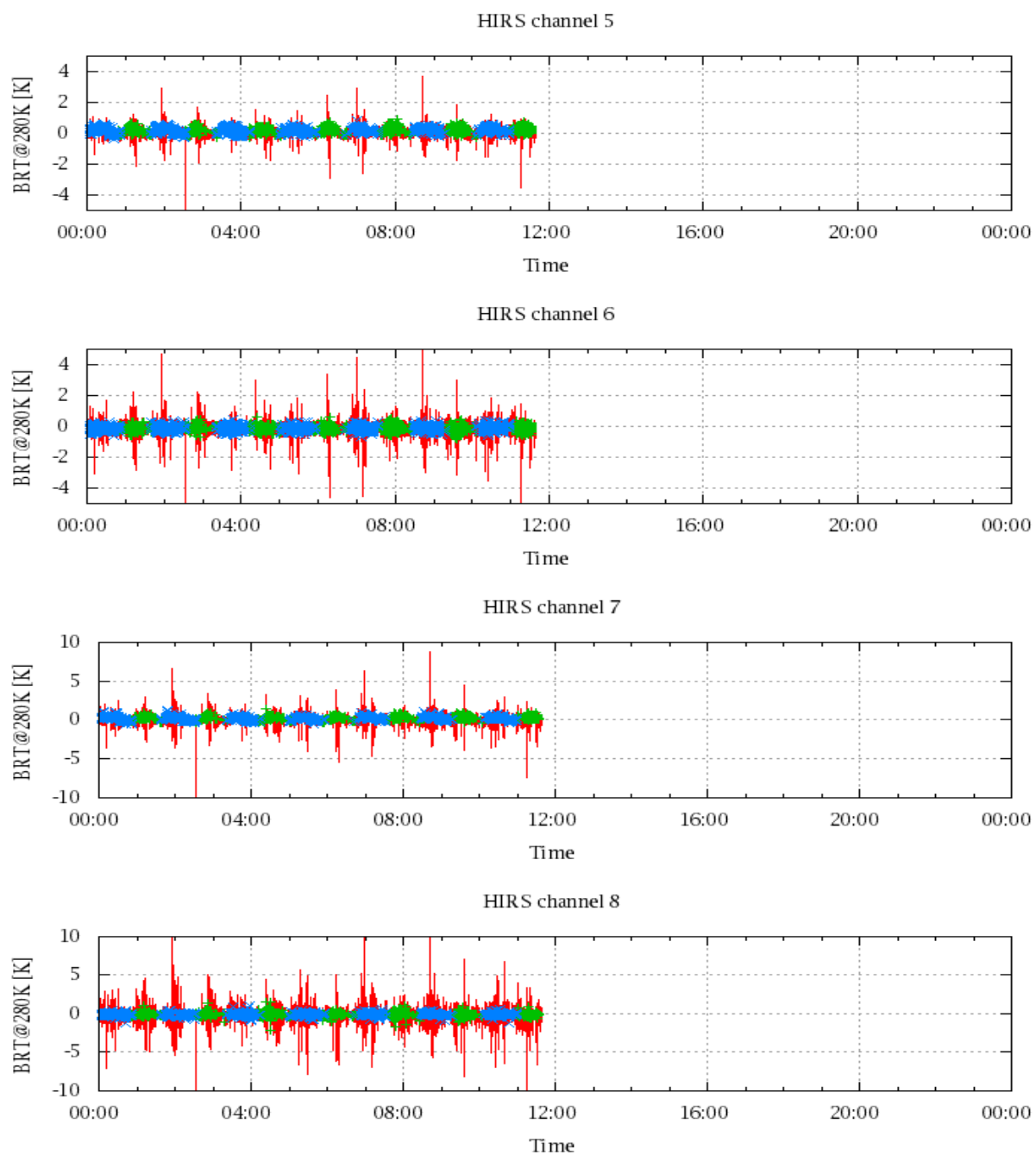


Figure 18: Radiance Differences in BRT

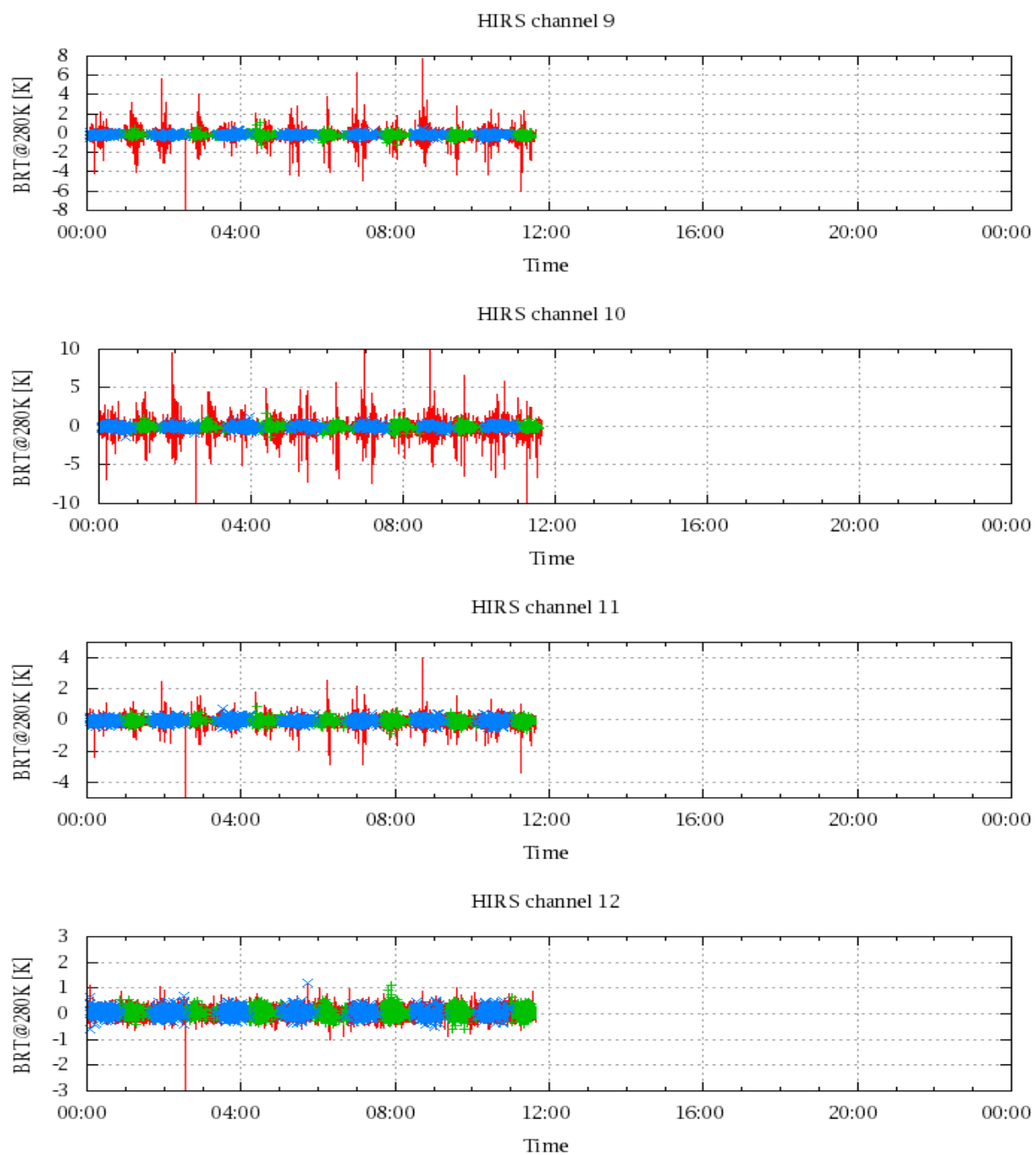


Figure 19: Radiance Differences in BRT

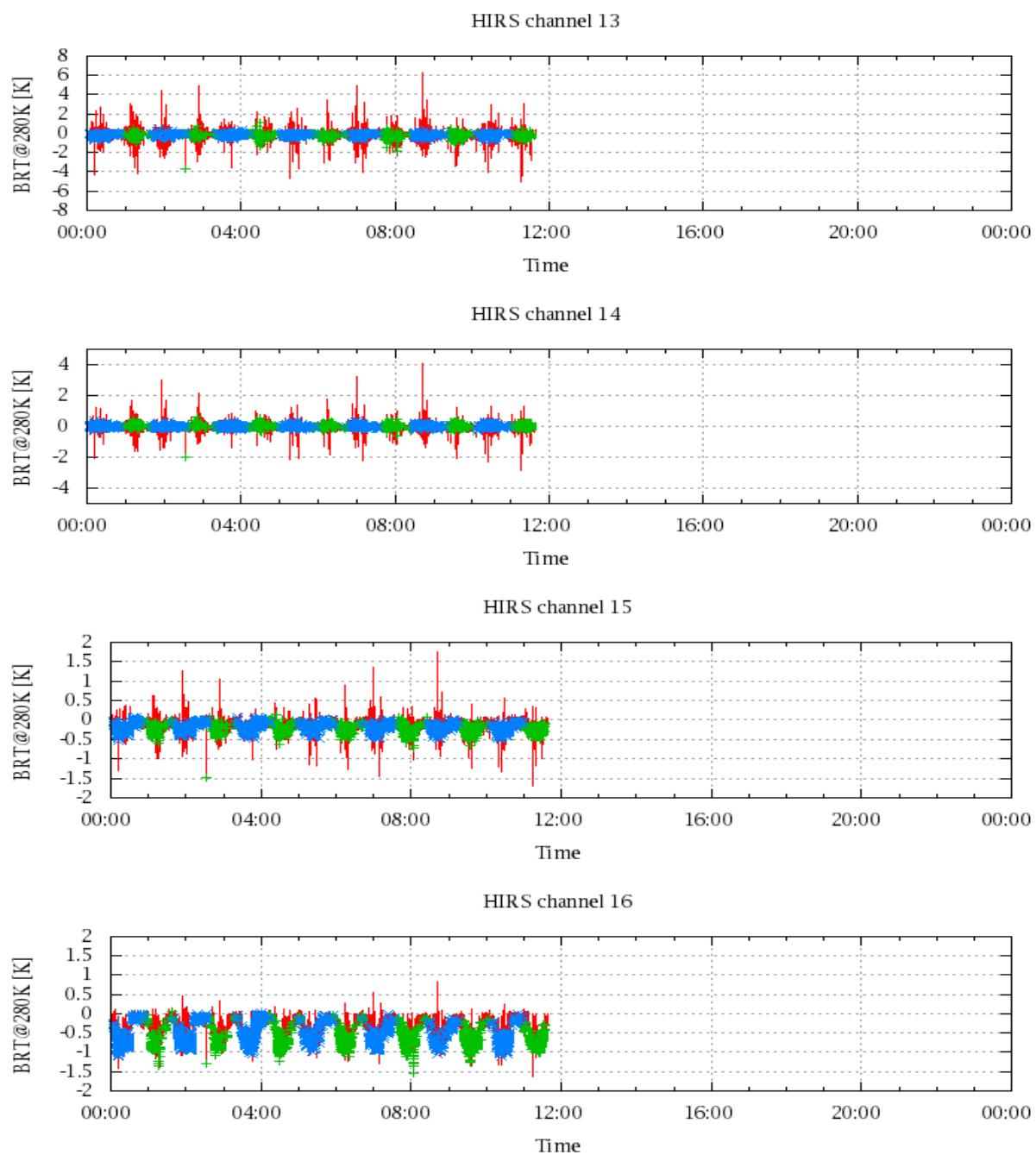


Figure 20: Radiance Differences in BRT

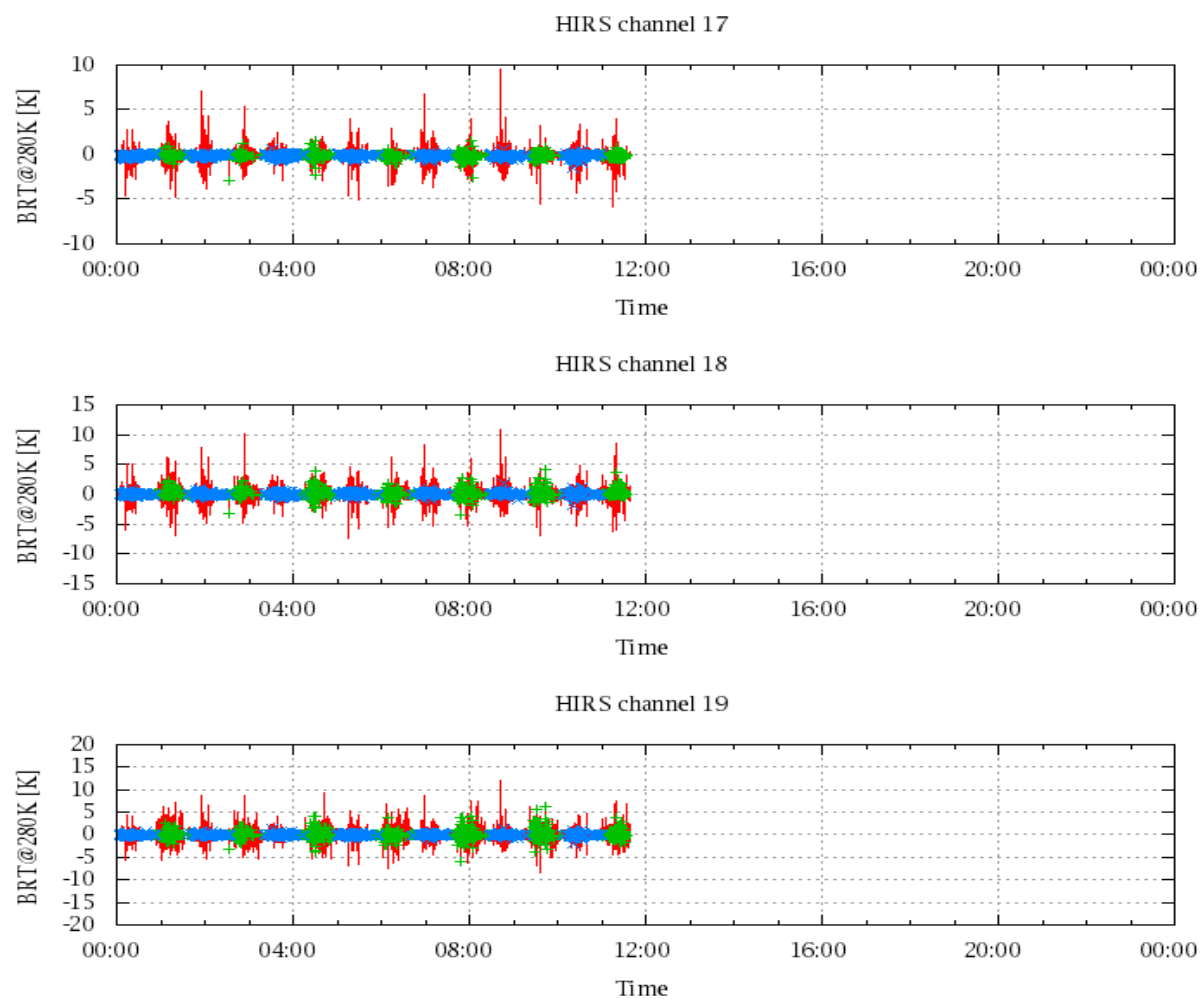


Figure 21: Radiances Differences in BRT