

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

22/05/2014 00:00:00 - 23/05/2014 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 22/05/2014 00:00:00 - 23/05/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 22/05/2014 00:00:00 - 23/05/2014 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)	224	537	20140522173634.755	20140522173757.564
PX1 (130)	539	541	20140522173757.997	20140522173758.431
PX1 (130)	541	545	20140522173758.431	20140522173759.294
PX1 (130)	546	548	20140522173759.513	20140522173801.454
PX1 (130)	550	552	20140522173801.888	20140522173802.321
PX1 (130)	565	567	20140522173805.134	20140522173805.564
PX1 (130)	568	570	20140522173805.782	20140522173806.212
PX1 (130)	573	575	20140522173806.861	20140522173807.294
PX1 (130)	598	600	20140522173813.782	20140522173814.212
PX2 (135)	224	531	20140522173634.755	20140522173756.267
PX2 (135)	531	539	20140522173756.267	20140522173757.997
PX2 (135)	540	543	20140522173758.212	20140522173758.861
PX2 (135)	546	548	20140522173759.513	20140522173801.454
PX2 (135)	553	555	20140522173802.536	20140522173802.970
PX2 (135)	704	706	20140522173842.751	20140522173843.185
PX3 (140)	224	536	20140522173634.755	20140522173757.349
PX3 (140)	539	542	20140522173757.997	20140522173758.646
PX3 (140)	543	546	20140522173758.861	20140522173759.513

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	548	550	20140522173801.454	20140522173801.888
PX3 (140)	556	558	20140522173803.185	20140522173803.618
PX3 (140)	558	560	20140522173803.618	20140522173804.052
PX3 (140)	582	584	20140522173810.321	20140522173810.755
PX4 (145)	224	512	20140522173634.755	20140522173750.646
PX4 (145)	512	531	20140522173750.646	20140522173756.267
PX4 (145)	531	536	20140522173756.267	20140522173757.349
PX4 (145)	539	541	20140522173757.997	20140522173758.431
PX4 (145)	541	543	20140522173758.431	20140522173758.861
PX4 (145)	543	545	20140522173758.861	20140522173759.294
PX4 (145)	554	556	20140522173802.755	20140522173803.185
PX4 (145)	564	566	20140522173804.915	20140522173805.349
PX4 (145)	568	570	20140522173805.782	20140522173806.212
IMG (150)	13256	13601	20140522173634.755	20140522173755.833
IMG (150)	13601	13603	20140522173755.833	20140522173756.267
IMG (150)	13603	13607	20140522173756.267	20140522173757.134
IMG (150)	13610	13612	20140522173757.782	20140522173758.212
IMG (150)	13612	13614	20140522173758.212	20140522173758.646
IMG (150)	13633	13635	20140522173803.404	20140522173803.833
VER (160)	8109	8159	20140522173631.513	20140522173750.646
VER (160)	8159	8161	20140522173750.646	20140522173759.513
VER (160)	8161	8164	20140522173759.513	20140522173759.513
AUX (180)	11449	11458	20140522173631.947	20140522173743.943

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
22/05/2014 00:07:01	-	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)	99.47 %	-
GQisFlagQual set (PX2)	99.57 %	-
GQisFlagQual set (PX3)	99.62 %	-
GQisFlagQual set (PX4)	99.54 %	-
GQisFlagQual set (all)	99.55 %	-

Table 4: Quality flags

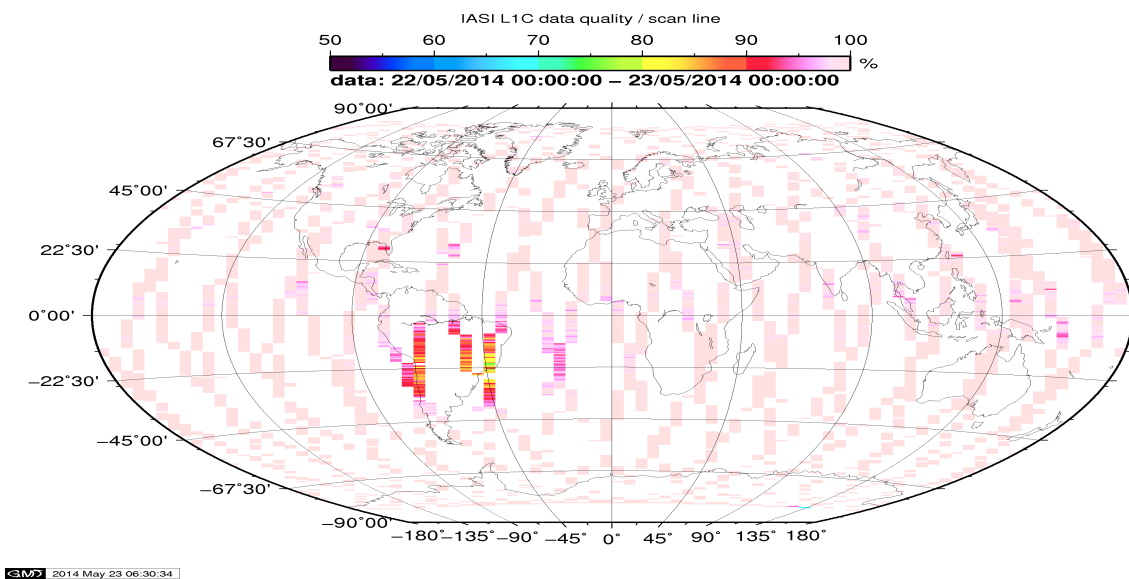


Figure 1: L1C data quality

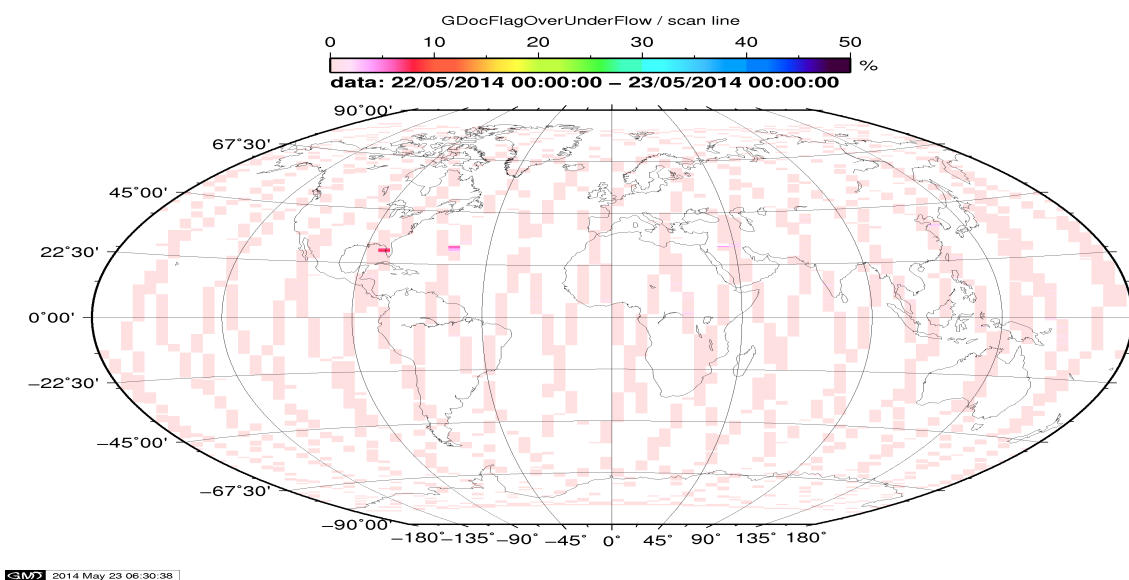


Figure 2: Flag of Over and Under Flows

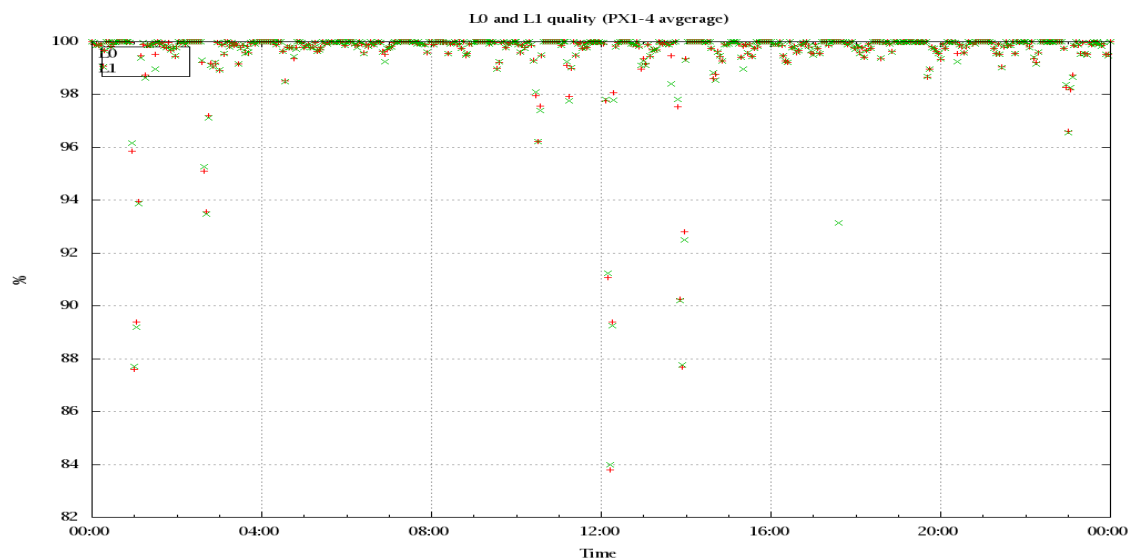


Figure 3: Level 0 and 1C overall quality

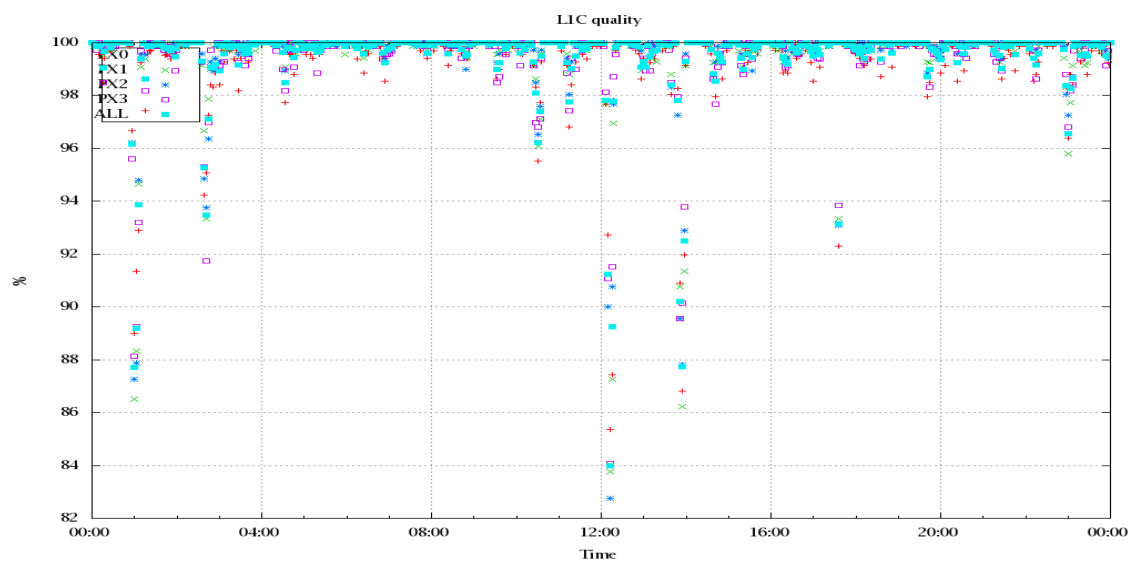


Figure 4: Level 1C quality

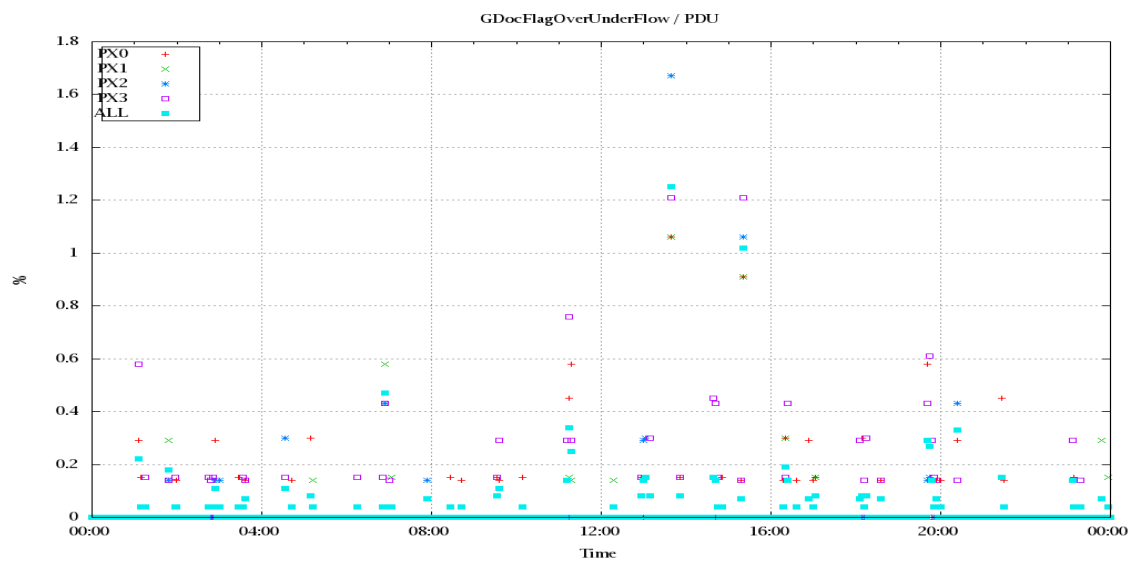


Figure 5: OverUnderFlowFlag timeseries

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.

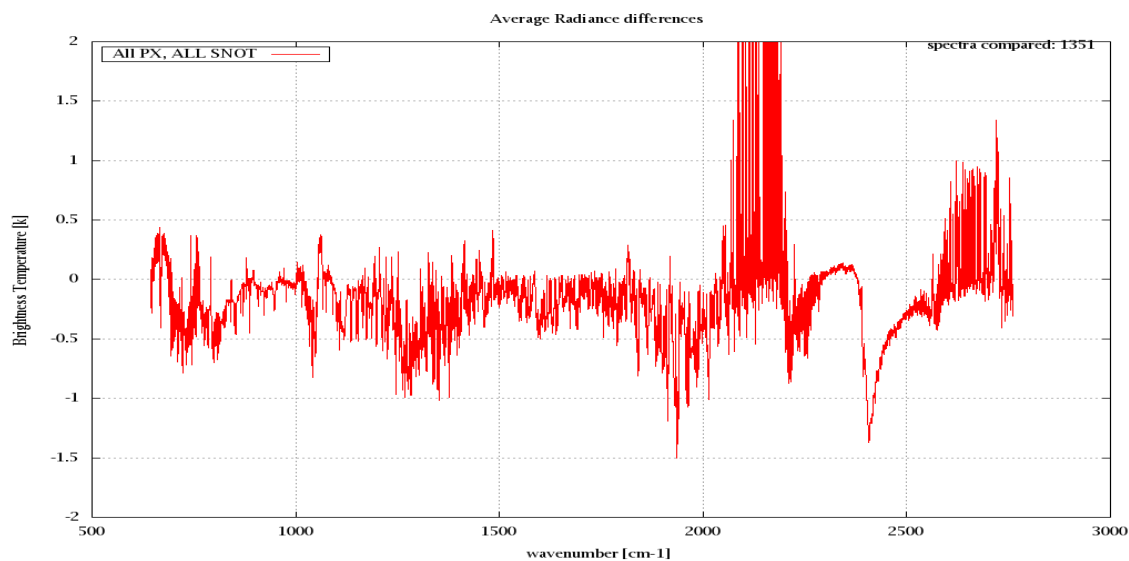


Figure 6: Average Radiance differences: OBS-CAL

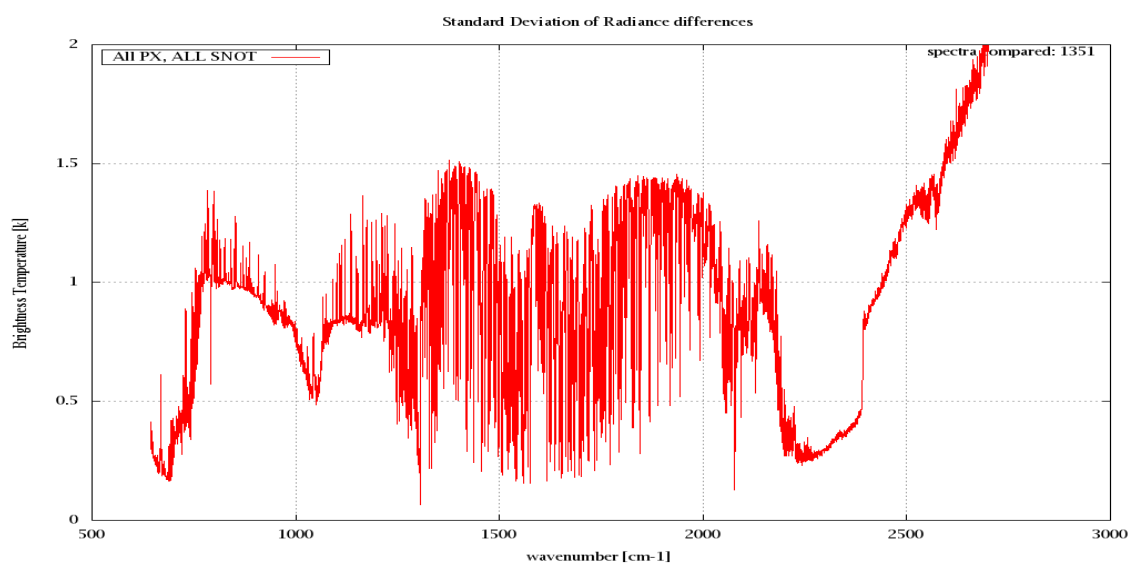


Figure 7: Standard Deviation of Radiance differences

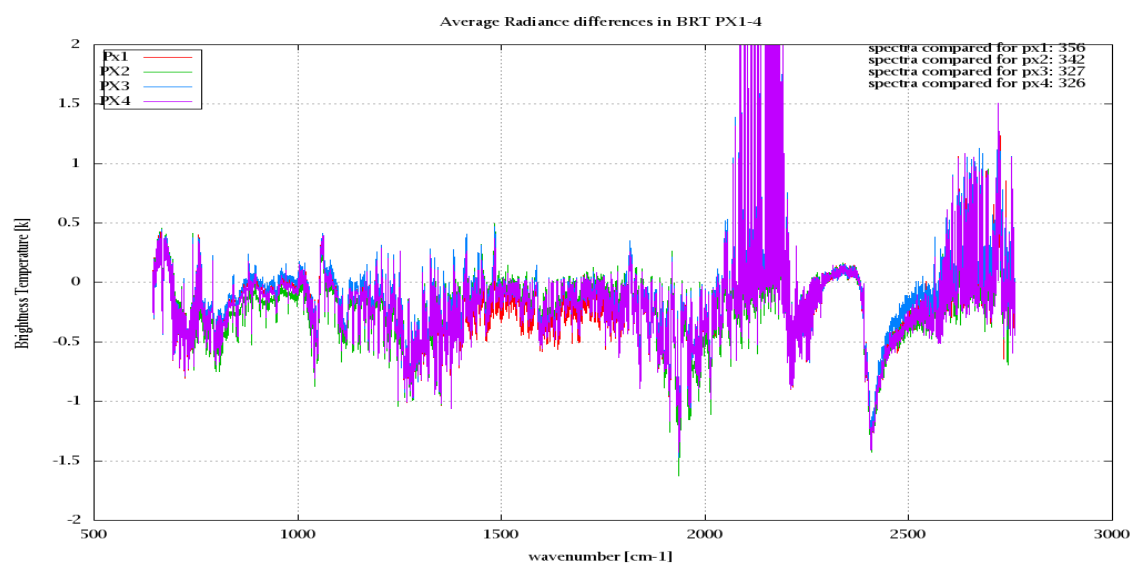


Figure 8: Average Radiance differences: OBS-CAL

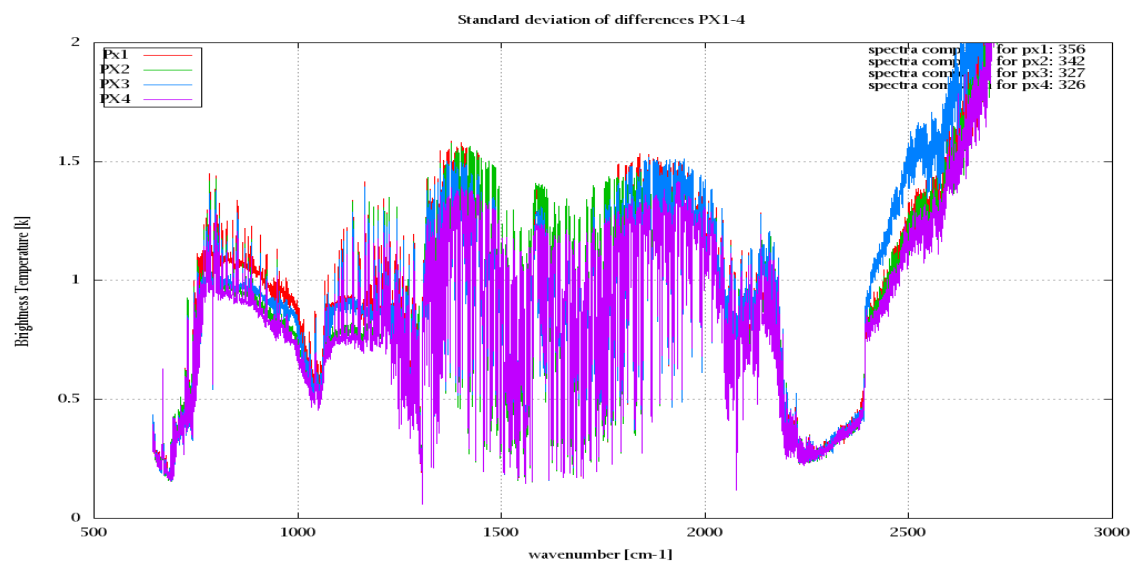


Figure 9: Standard Deviation of Radiance differences

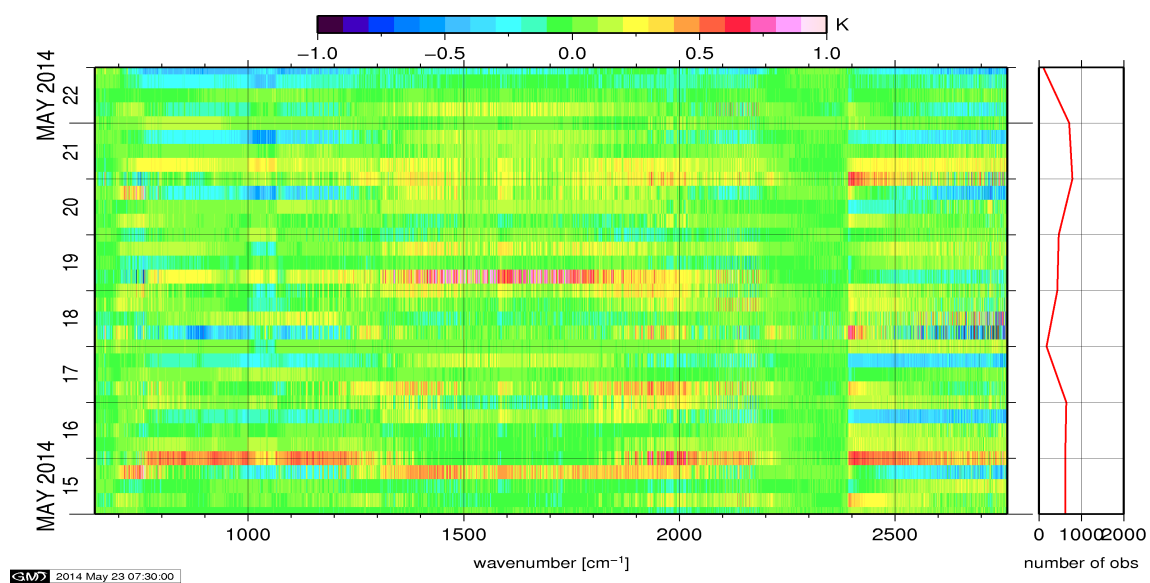


Figure 10: Radiance Anomaly in BRT: All Channels

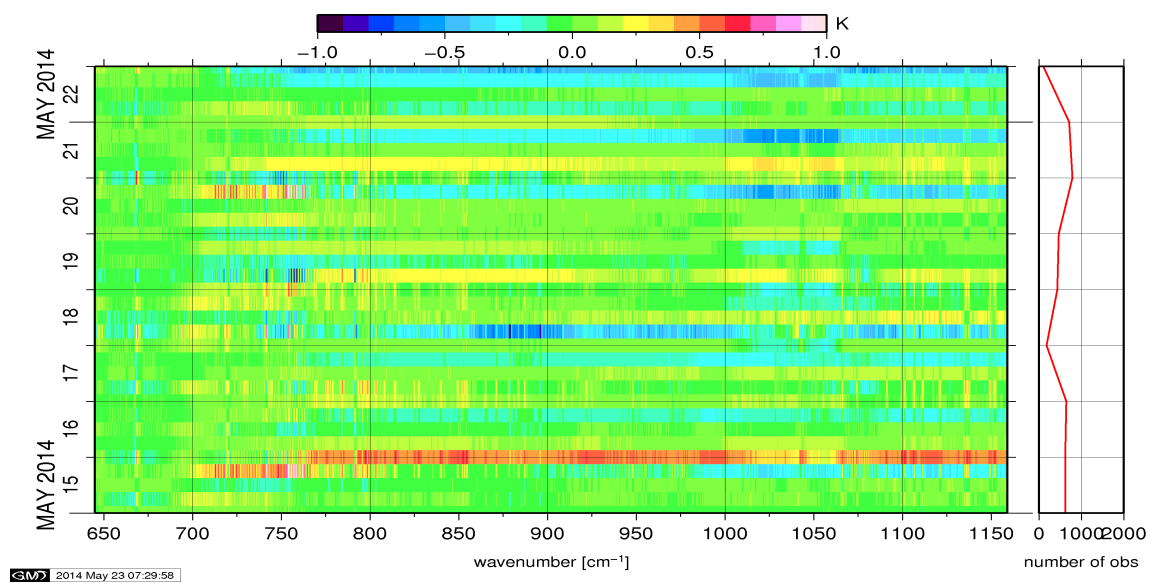


Figure 11: Radiance Anomaly in BRT: IASI Band 1

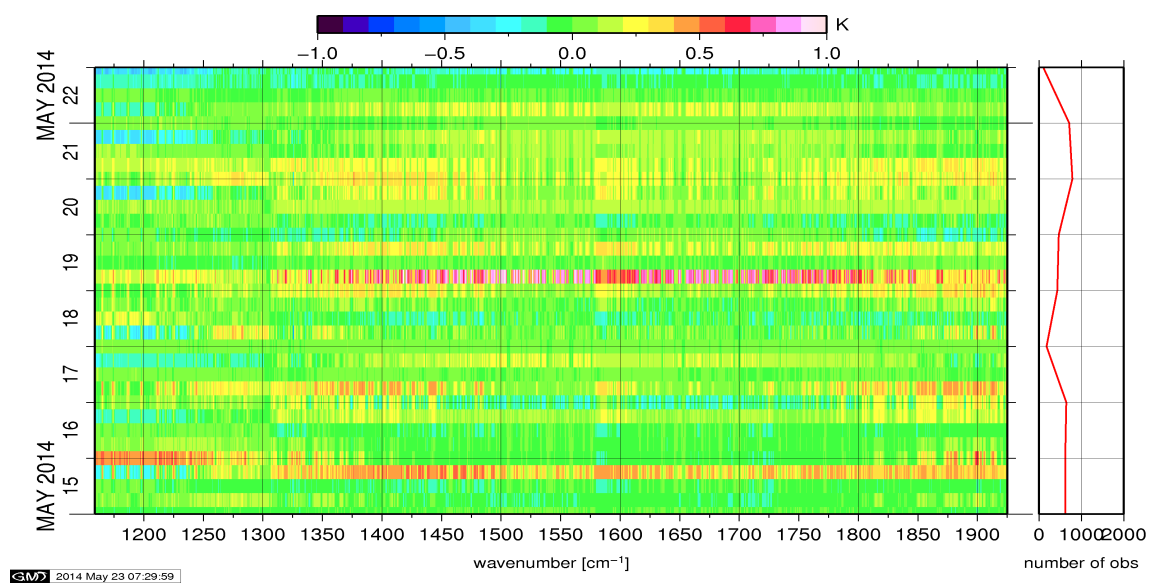


Figure 12: Radiance Anomaly in BRT: IASI Band 2

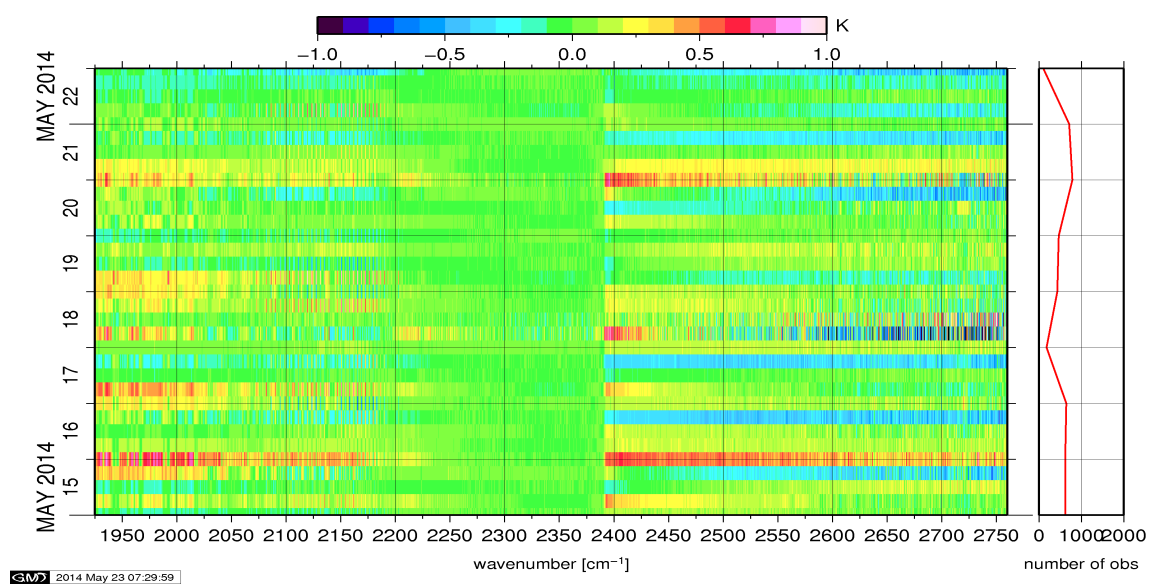


Figure 13: Radiance Anomaly in BRT: IASI Band 3

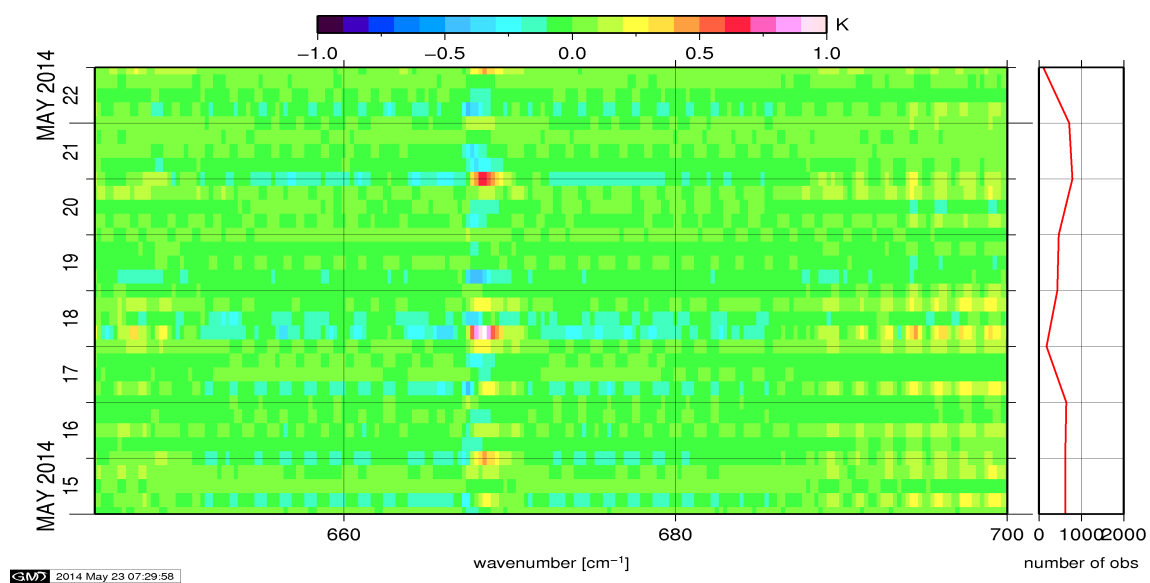


Figure 14: Radiance Anomaly in BRT: CO2 14

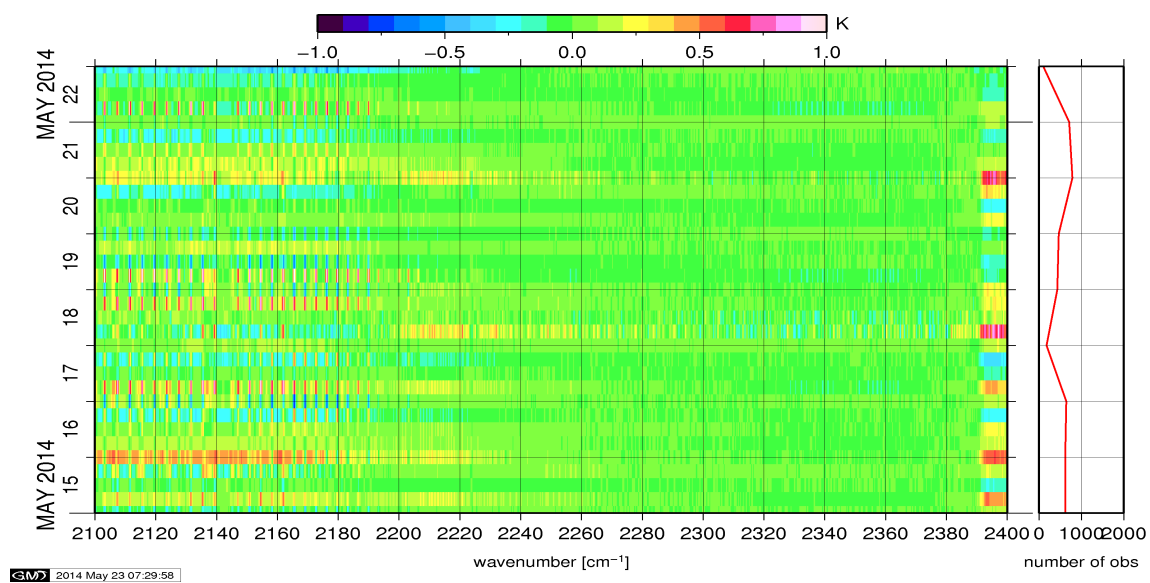


Figure 15: Radiance Anomaly in BRT: CO2 4.3

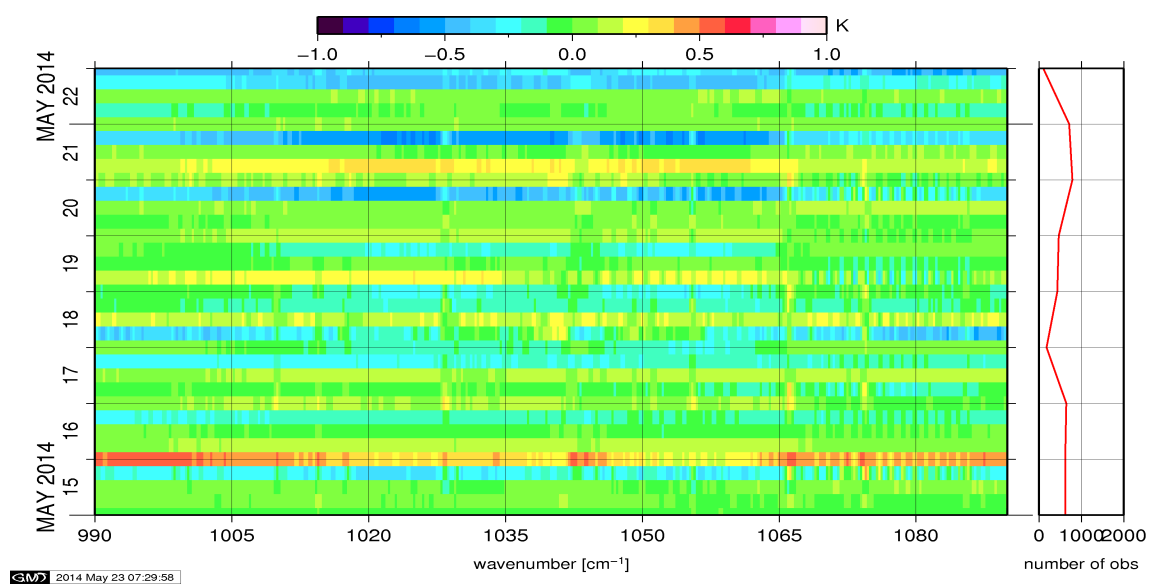


Figure 16: Radiance Anomaly in BRT: O3

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.

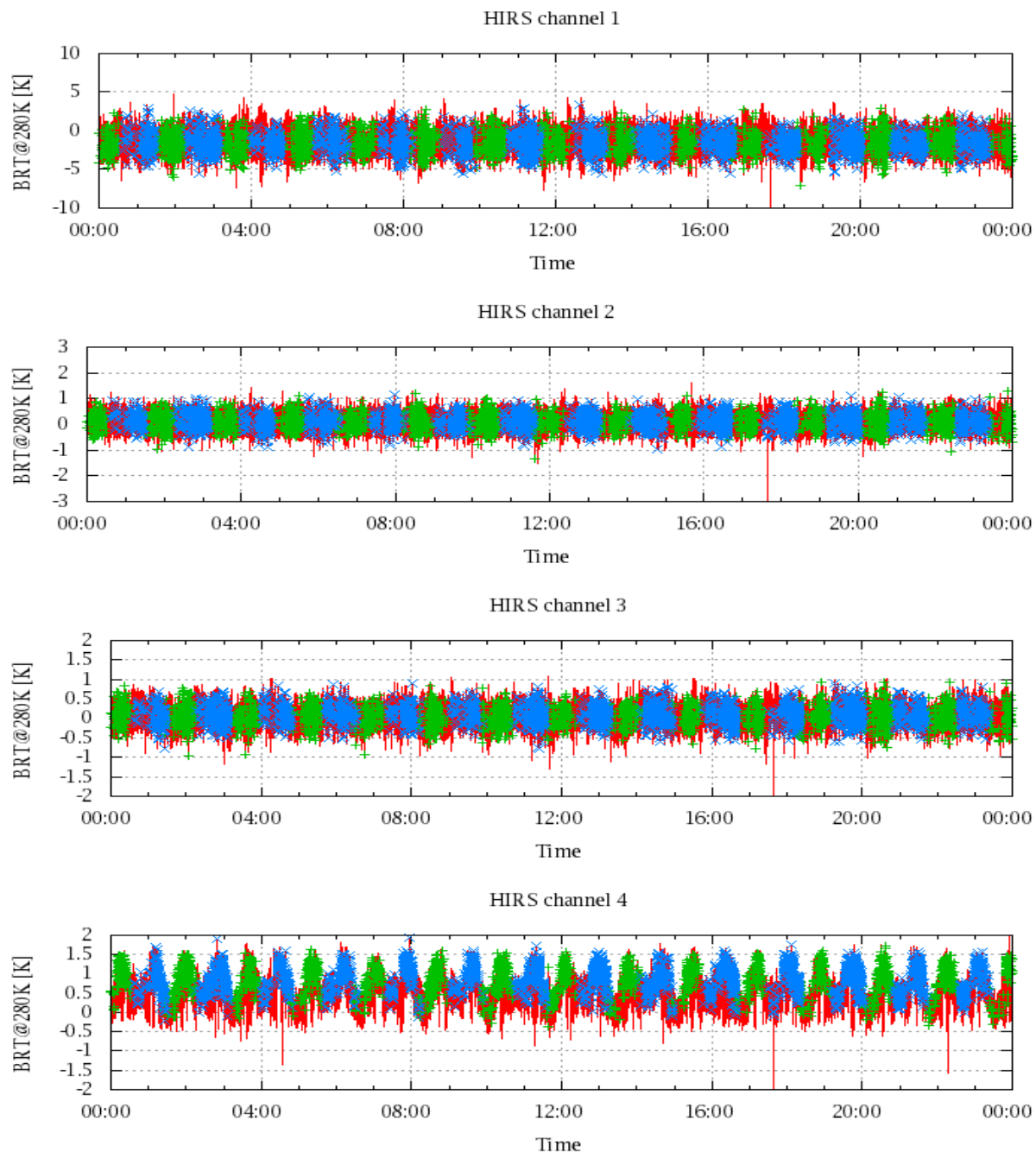


Figure 17: Radiance Differences in BRT

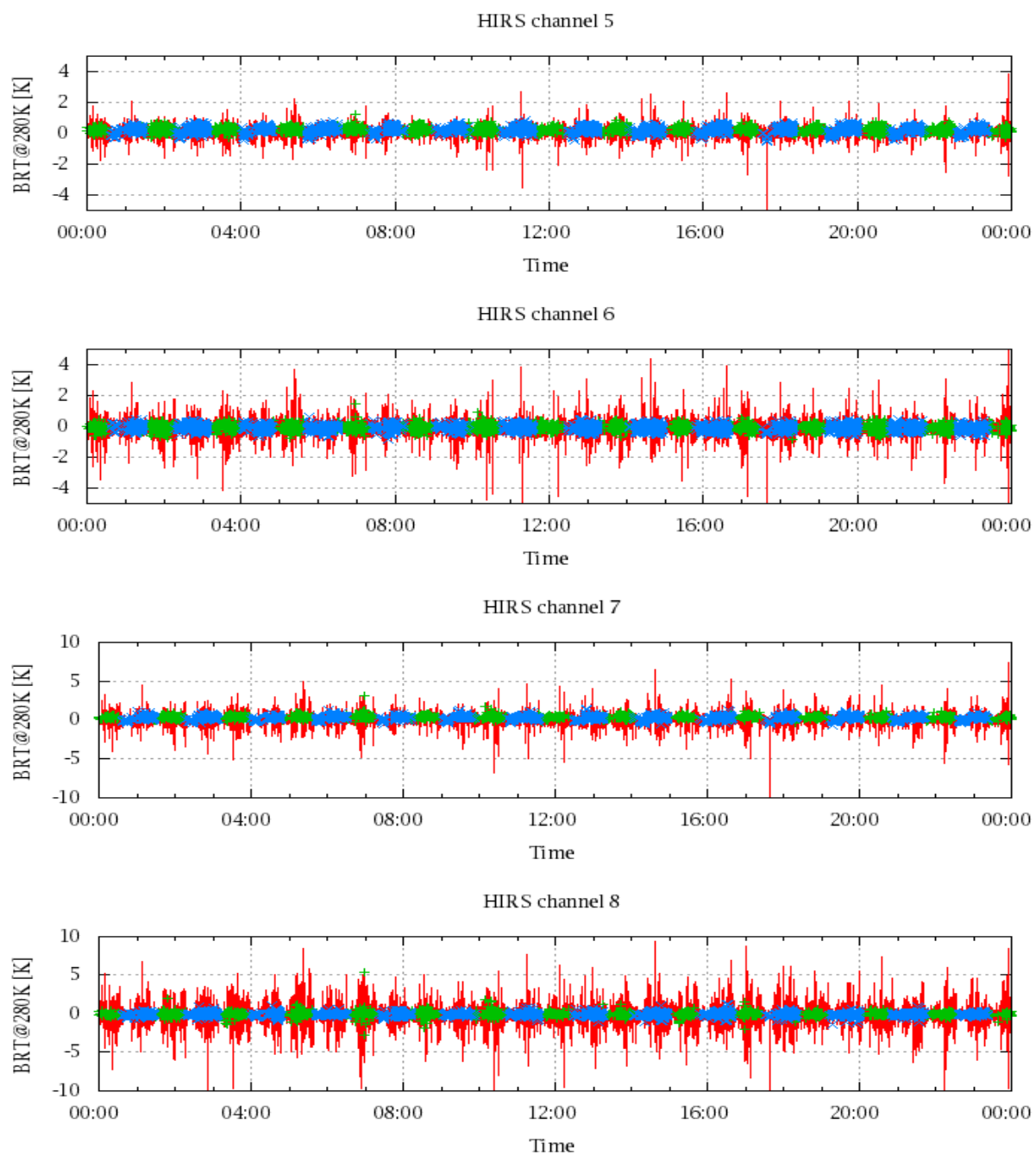


Figure 18: Radiance Differences in BRT

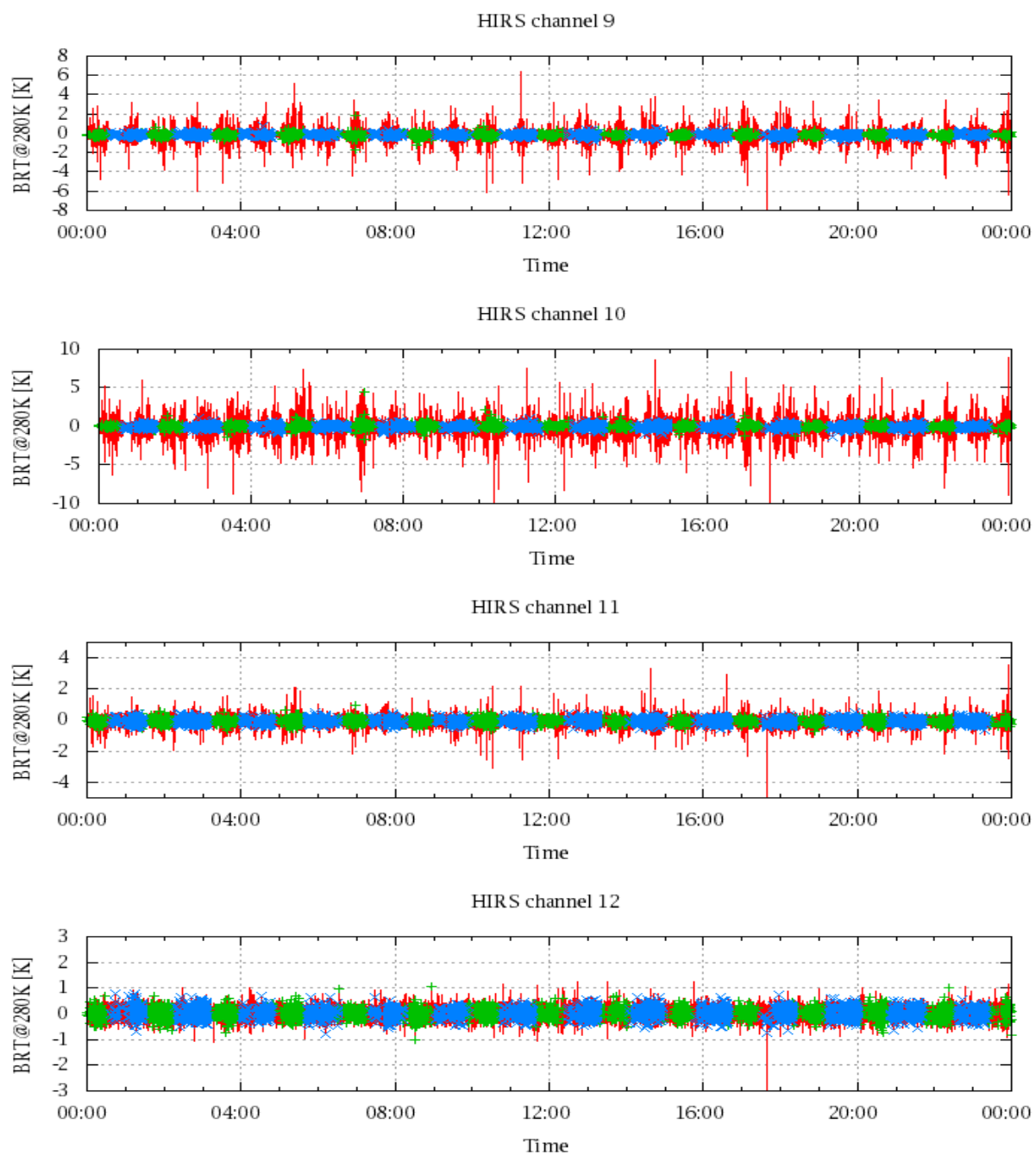


Figure 19: Radiance Differences in BRT

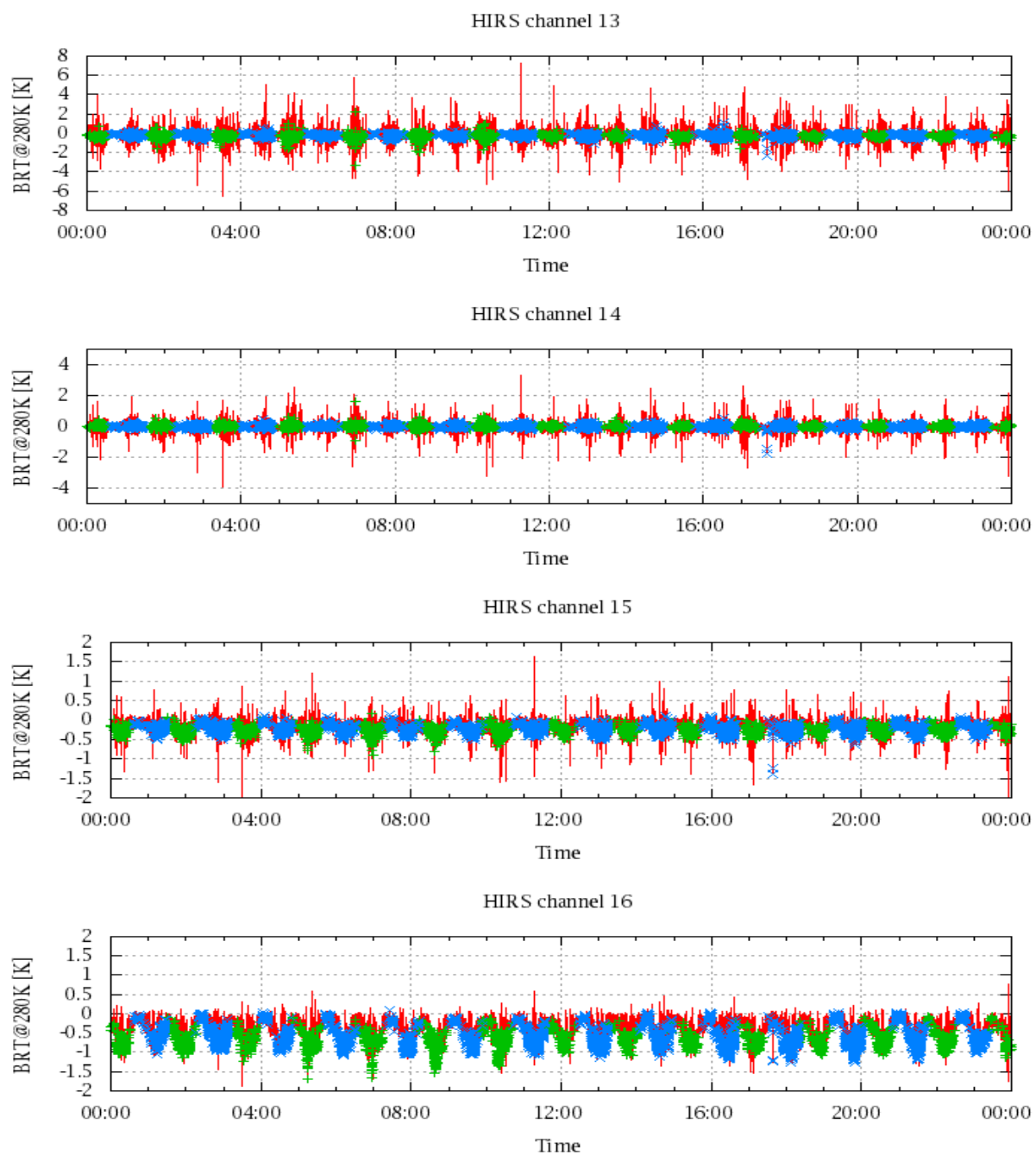


Figure 20: Radiance Differences in BRT

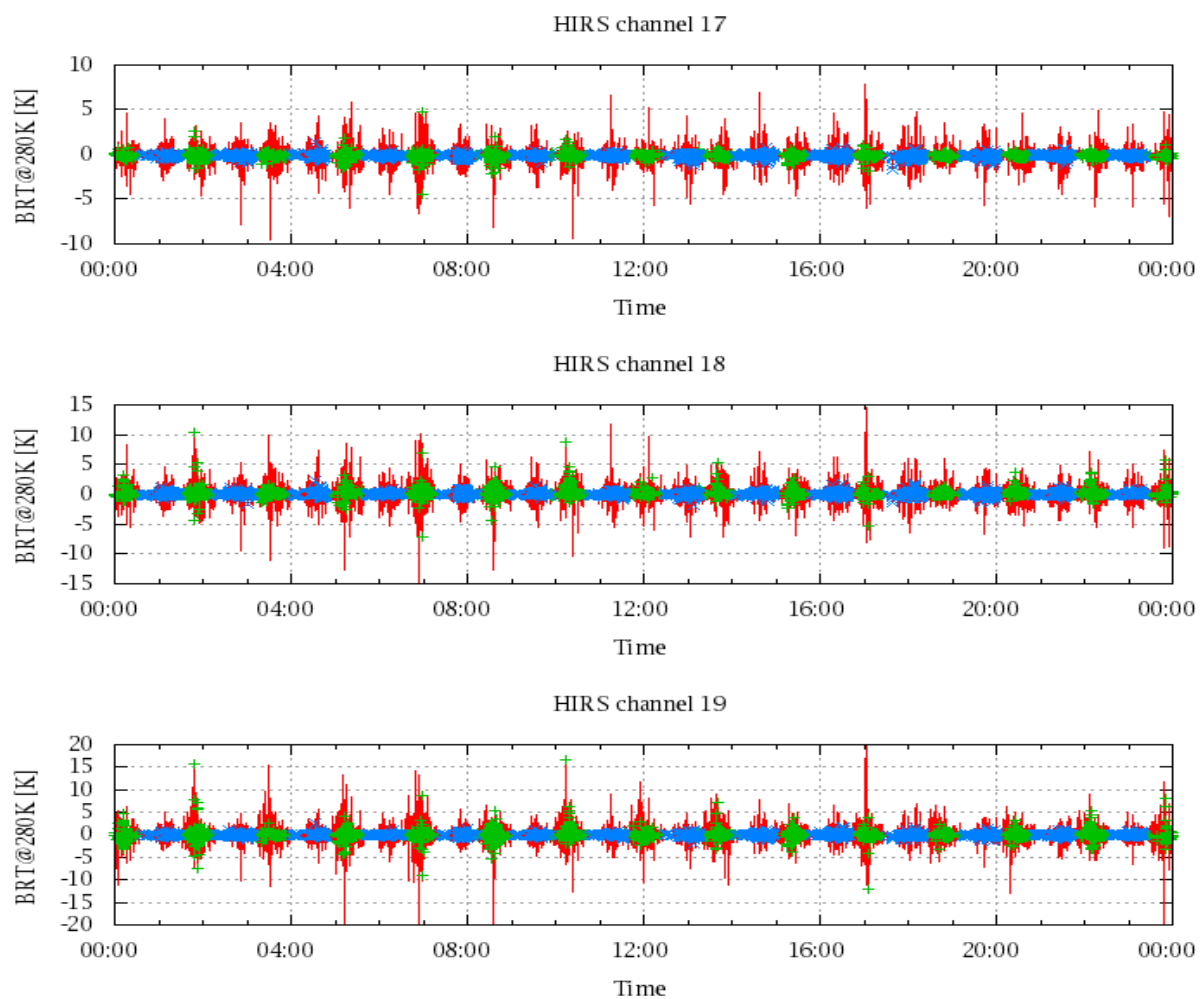


Figure 21: Radinace Differences in BRT