

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

23/04/2015 00:00:00 - 24/04/2015 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 23/04/2015 00:00:00 - 24/04/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 23/04/2015 00:00:00 - 24/04/2015 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
L1 DPX PDUs (RM: IASI-HIRS)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	15821	0	20150423005552.640	20150423005850.362
PX2 (135)	15821	0	20150423005552.640	20150423005850.362
PX3 (140)	12277	12280	20150423004007.763	20150423004008.412
PX3 (140)	15821	0	20150423005552.640	20150423005850.362
PX4 (145)	15821	0	20150423005552.640	20150423005850.362
IMG (150)	5513	0	20150423005552.640	20150423005850.362
VER (160)	11696	0	20150423005552.640	20150423005856.631
VER (160)	843	1150	20150423012120.632	20150423013010.779
VER (160)	1150	1155	20150423013010.779	20150423013010.779
VER (160)	1155	1160	20150423013010.779	20150423013010.779
VER (160)	1160	1165	20150423013010.779	20150423013010.779
VER (160)	1165	1170	20150423013010.779	20150423013010.779
VER (160)	1170	1151	20150423013010.779	20150423013010.779
VER (160)	1151	1156	20150423013010.779	20150423013010.779
VER (160)	1156	1161	20150423013010.779	20150423013010.779
VER (160)	1161	1166	20150423013010.779	20150423013010.779
VER (160)	1166	1171	20150423013010.779	20150423013010.779
VER (160)	1171	1152	20150423013010.779	20150423013010.779

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1152	1157	20150423013010.779	20150423013010.779
VER (160)	1157	1162	20150423013010.779	20150423013010.779
VER (160)	1162	1167	20150423013010.779	20150423013010.779
VER (160)	1167	1172	20150423013010.779	20150423013010.779
VER (160)	1172	1153	20150423013010.779	20150423013010.779
VER (160)	1153	1158	20150423013010.779	20150423013010.779
VER (160)	1158	1163	20150423013010.779	20150423013010.779
VER (160)	1163	1168	20150423013010.779	20150423013010.779
VER (160)	1168	1173	20150423013010.779	20150423013010.779
VER (160)	1173	1154	20150423013010.779	20150423013010.779
VER (160)	1154	1159	20150423013010.779	20150423013010.779
VER (160)	1159	1164	20150423013010.779	20150423013010.779
VER (160)	1164	1169	20150423013010.779	20150423013010.779
VER (160)	1169	1174	20150423013010.779	20150423013010.779
AUX (180)	5614	0	20150423005545.069	20150423005857.065

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
23/04/2015 00:02:00	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
GQisFlagQual set (PX1)	99.49 %	-
GQisFlagQual set (PX2)	99.45 %	-
GQisFlagQual set (PX3)	99.44 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.46 %	-

Table 4: Quality flags

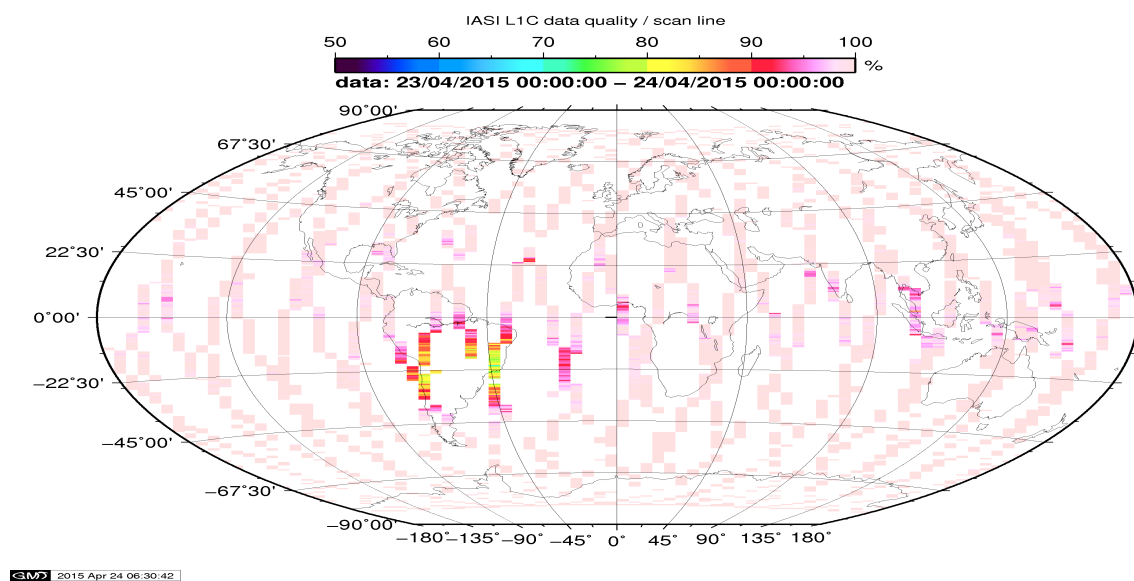


Figure 1: L1C data quality

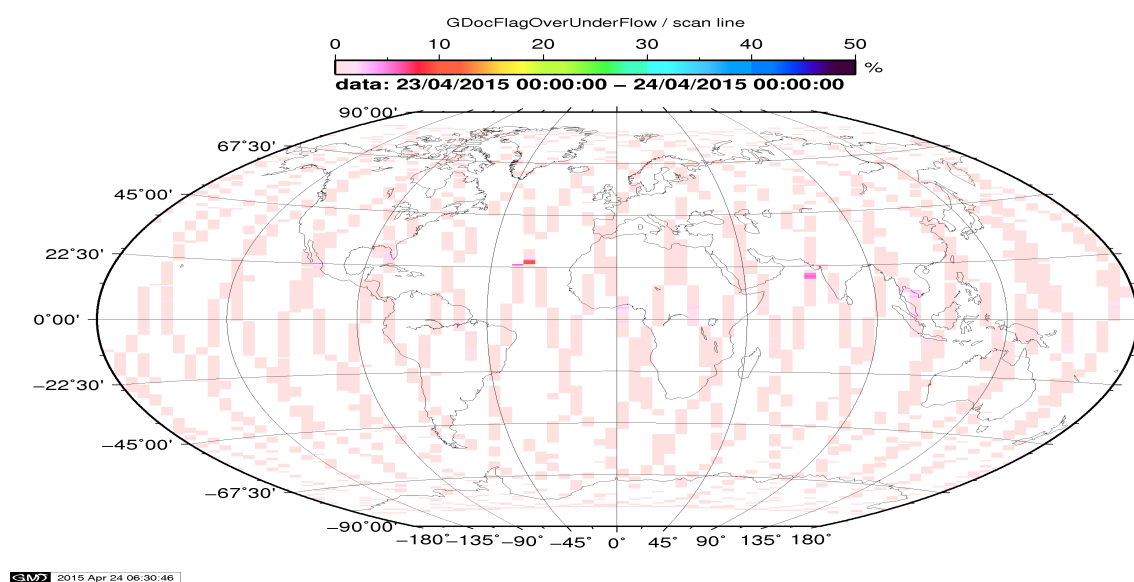


Figure 2: Flag of Over and Under Flows

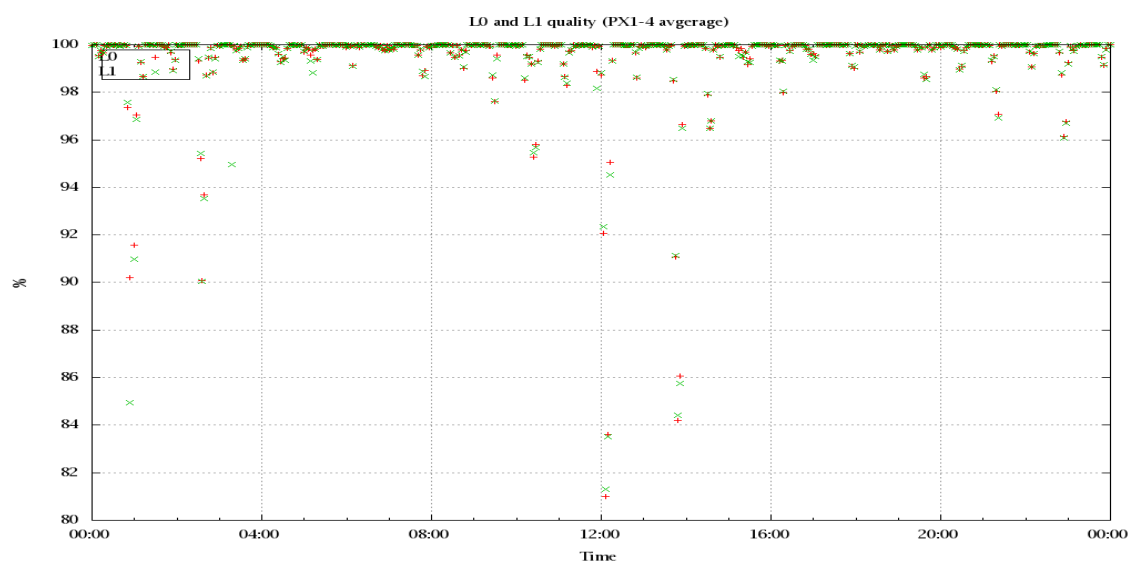


Figure 3: Level 0 and 1C overall quality

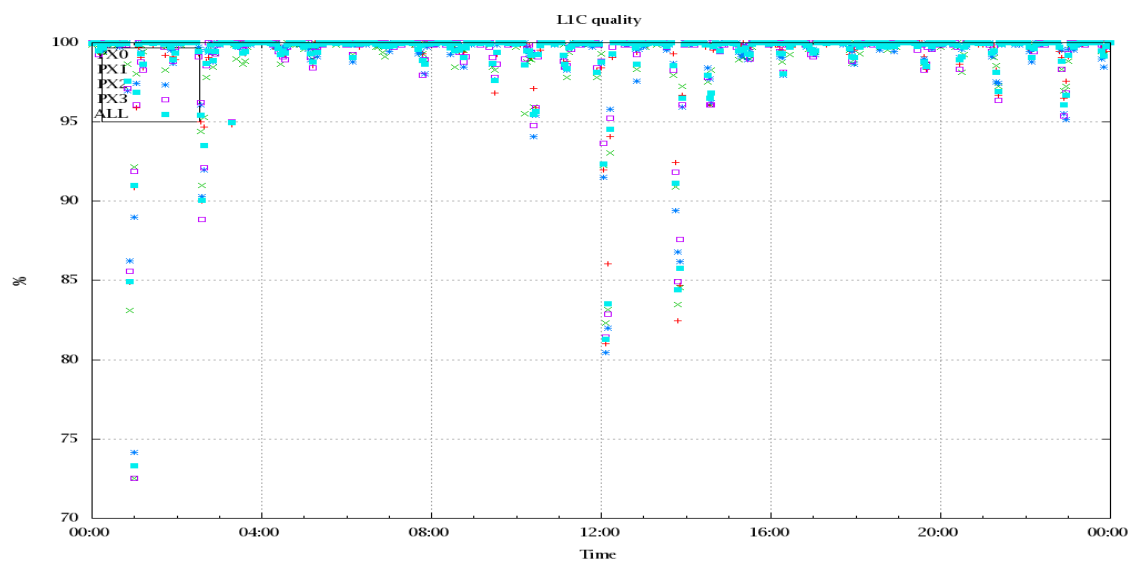


Figure 4: Level 1C quality

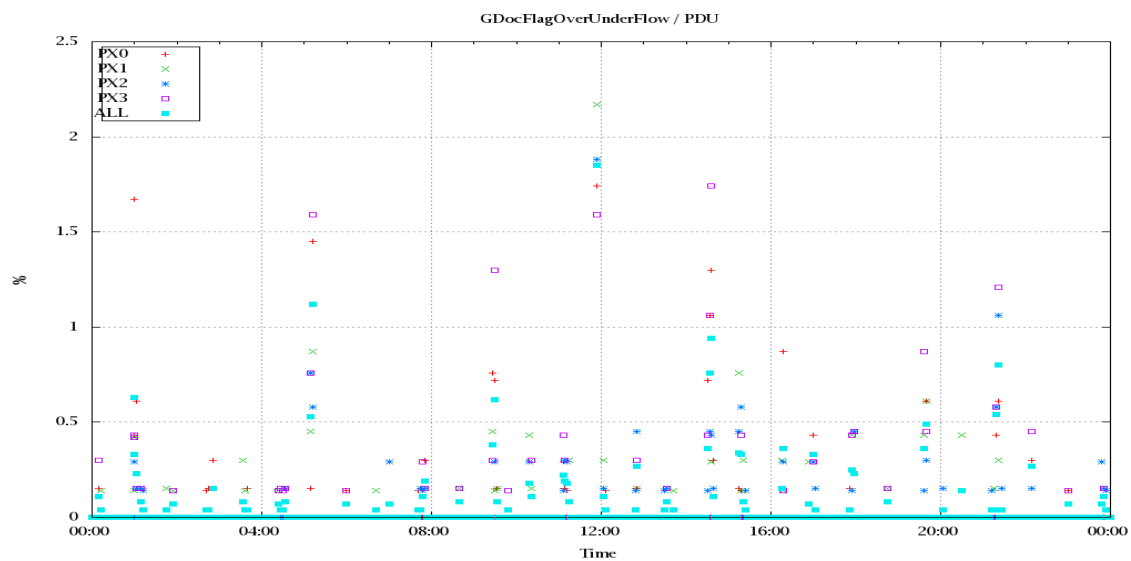


Figure 5: OverUnderFlowFlag timeseries

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.

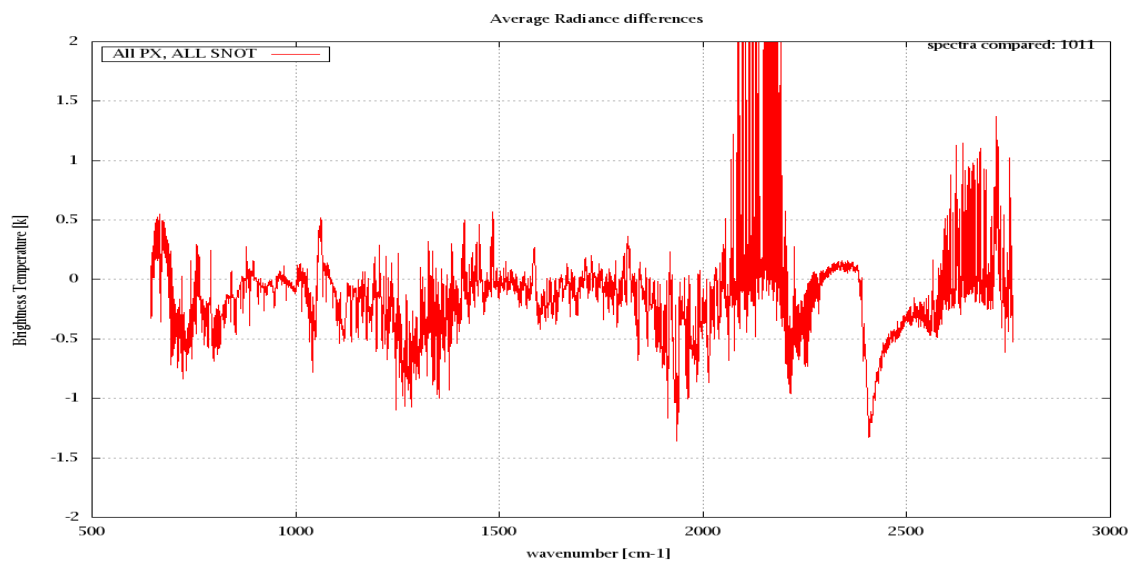


Figure 6: Average Radiance differences: OBS-CAL

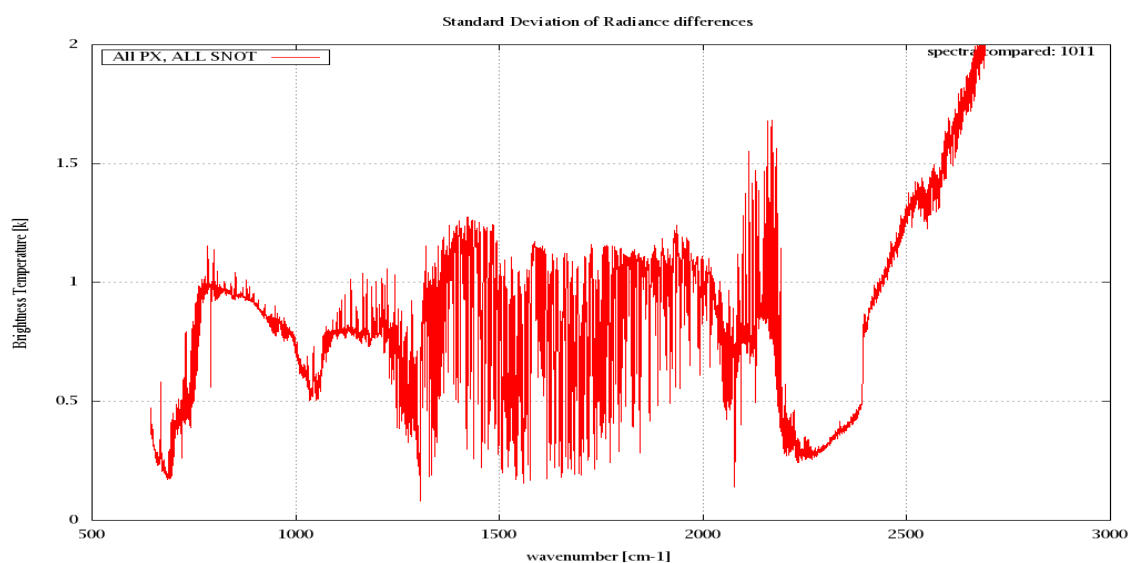


Figure 7: Standard Deviation of Radiance differences

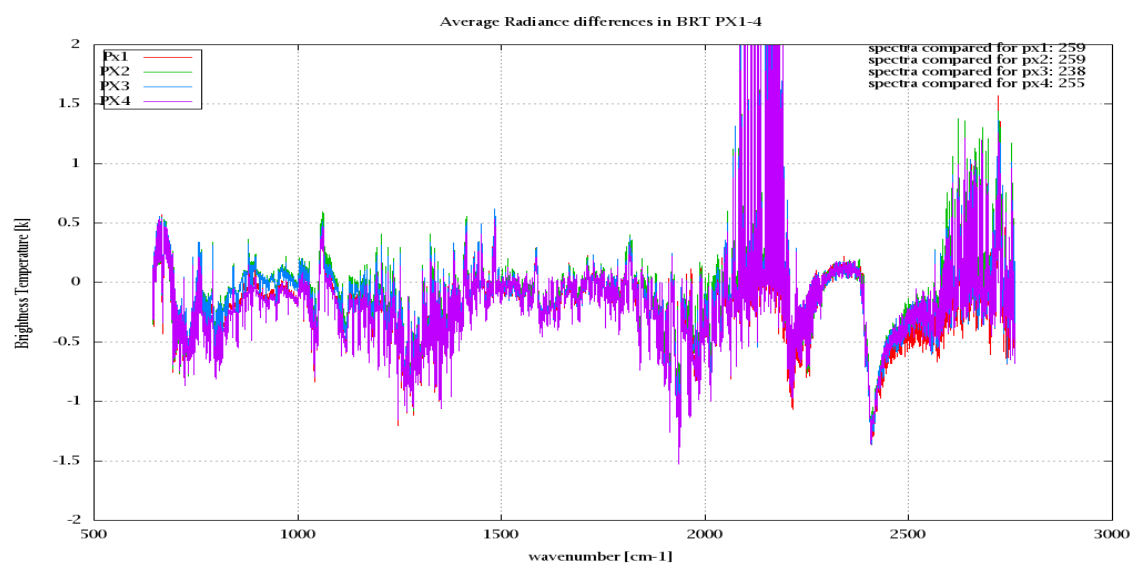


Figure 8: Average Radiance differences: OBS-CAL

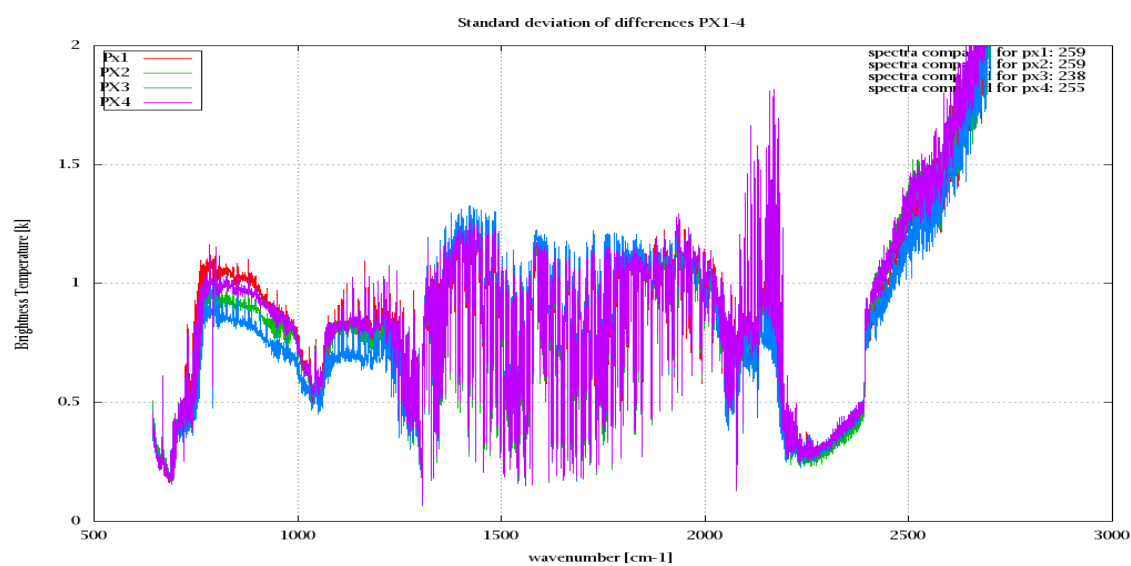


Figure 9: Standard Deviation of Radiance differences

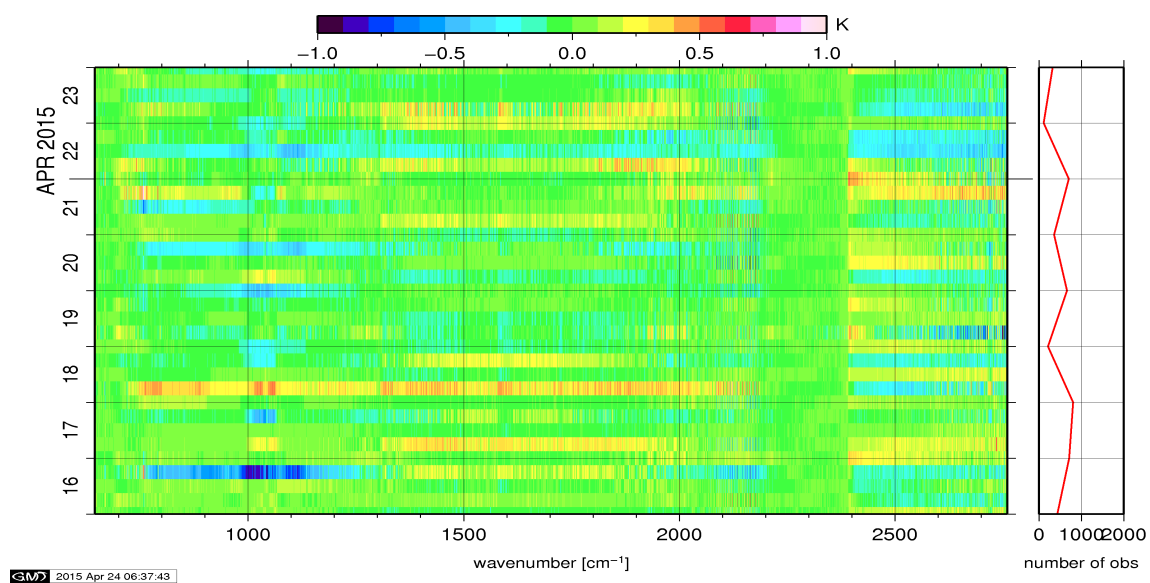


Figure 10: Radiance Anomaly in BRT: All Channels

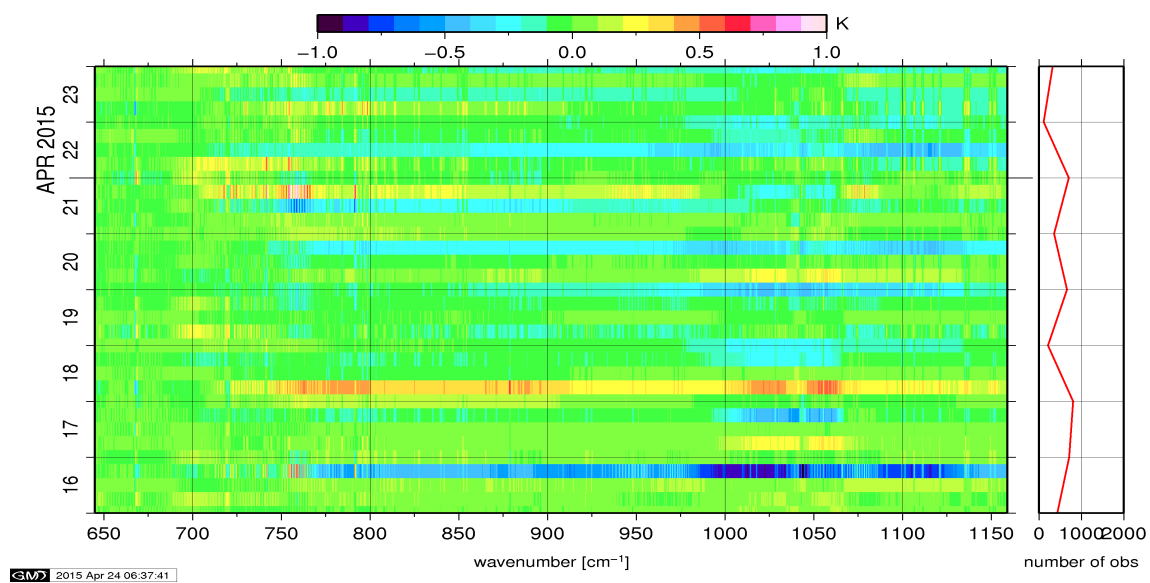


Figure 11: Radiance Anomaly in BRT: IASI Band 1

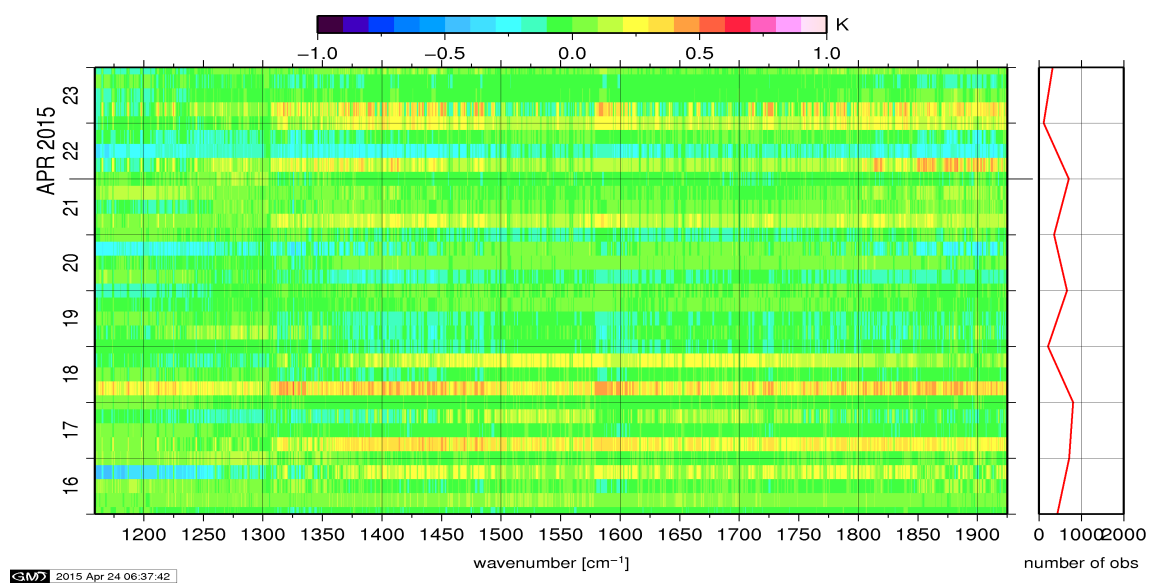


Figure 12: Radiance Anomaly in BRT: IASI Band 2

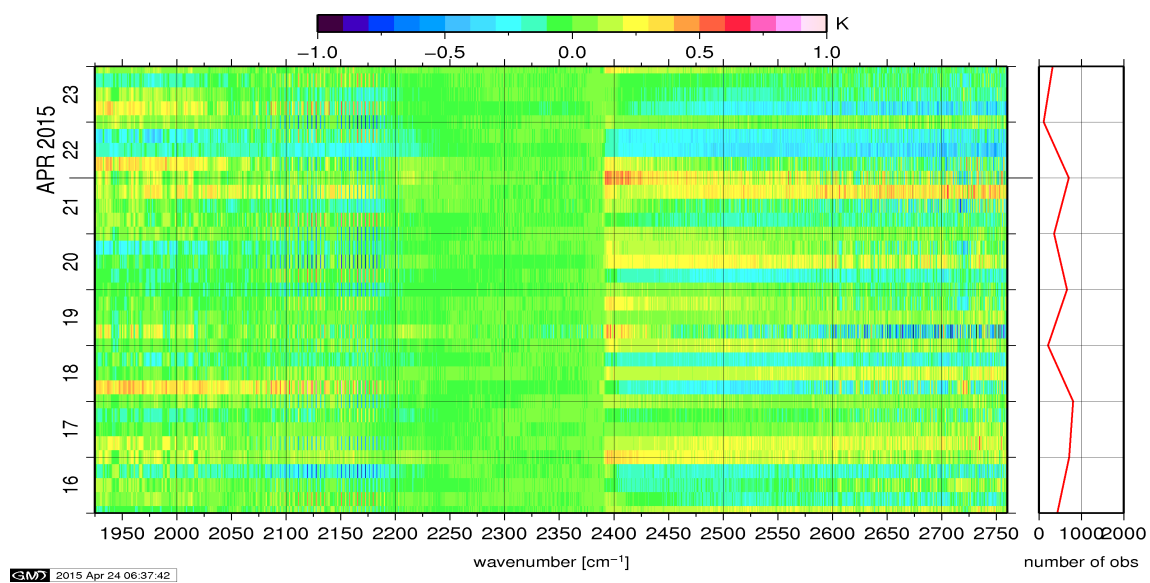


Figure 13: Radiance Anomaly in BRT: IASI Band 3

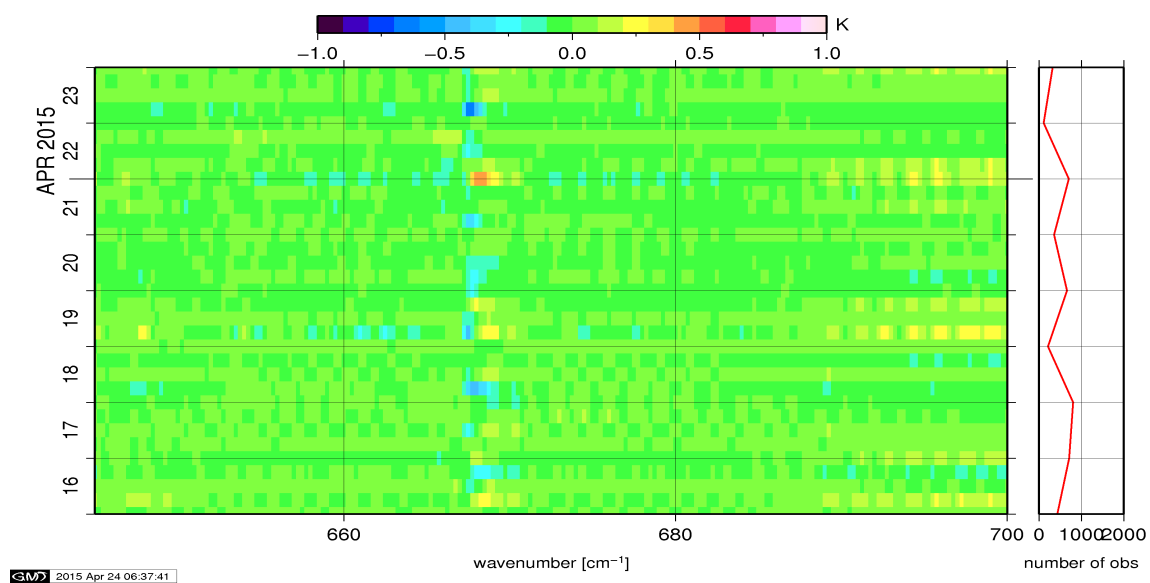


Figure 14: Radiance Anomaly in BRT: CO2 14

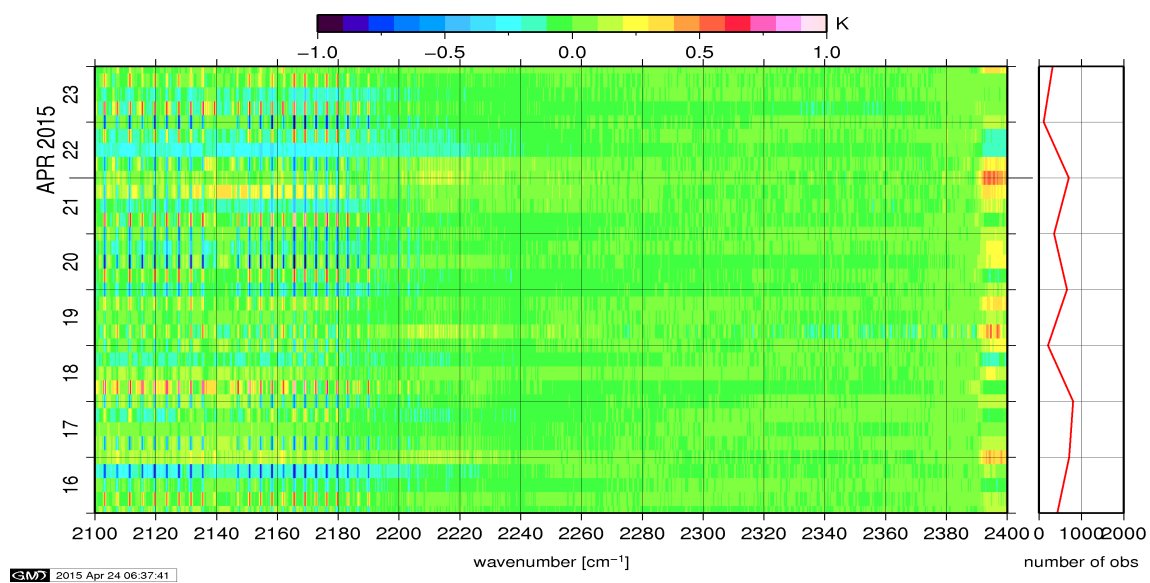


Figure 15: Radiance Anomaly in BRT: CO2 4.3

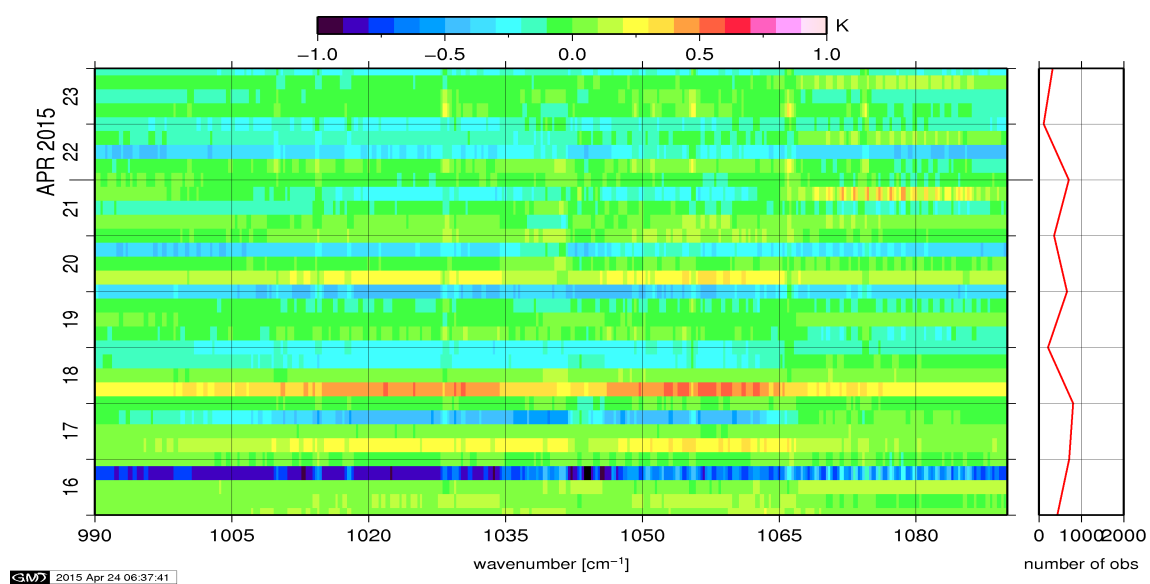


Figure 16: Radiance Anomaly in BRT: O3

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.

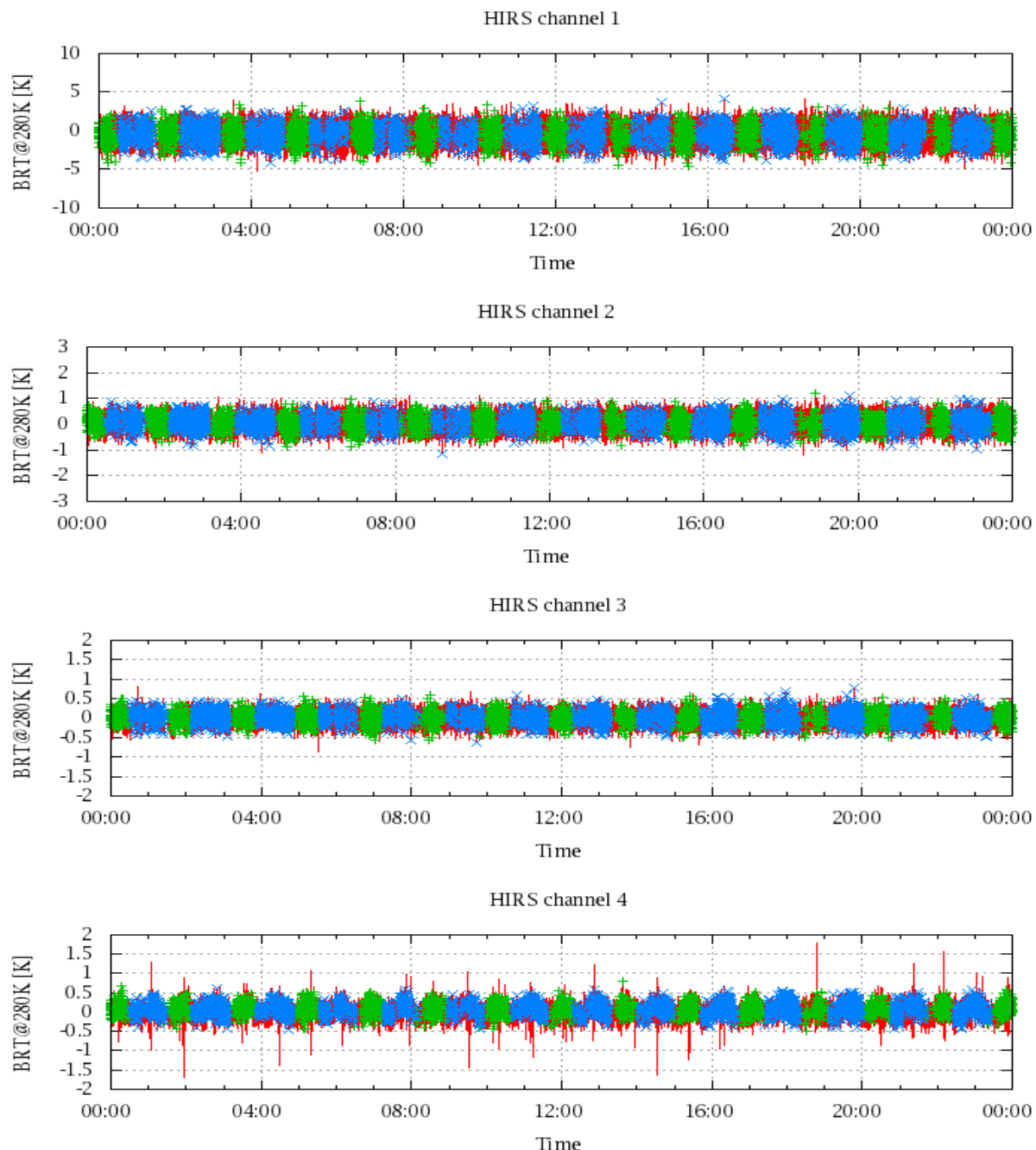


Figure 17: Radiance Differences in BRT

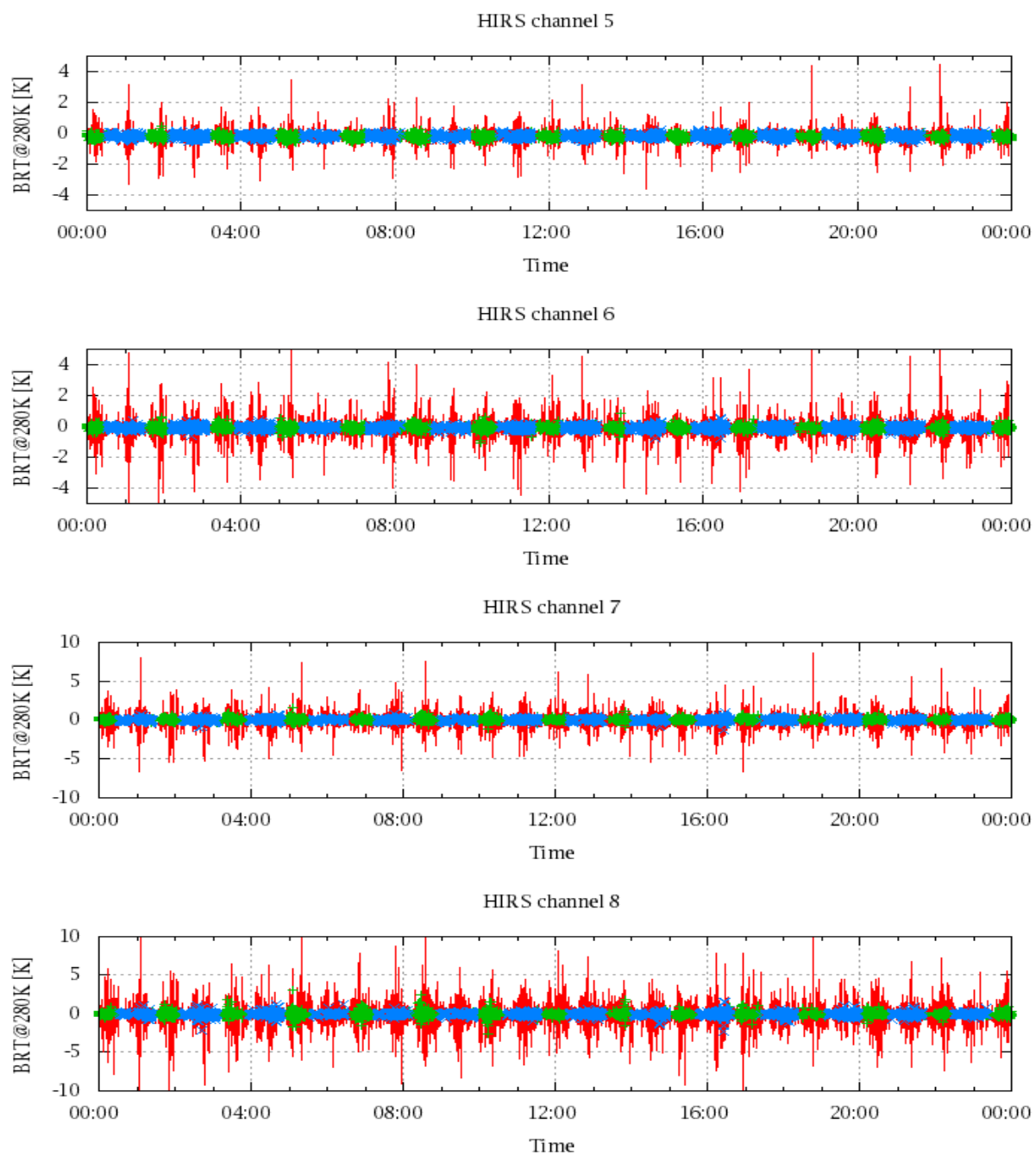


Figure 18: Radiance Differences in BRT

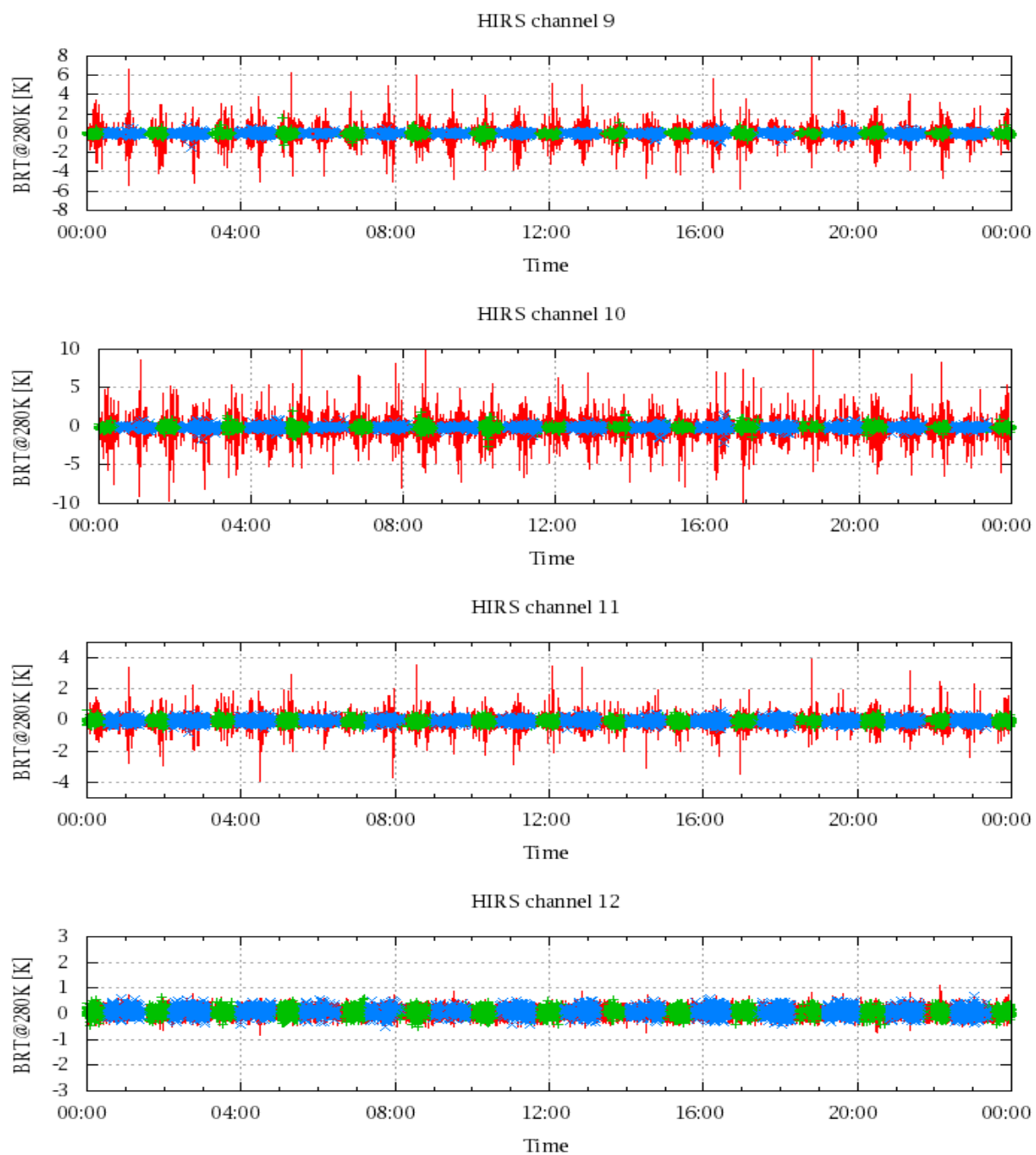


Figure 19: Radiance Differences in BRT

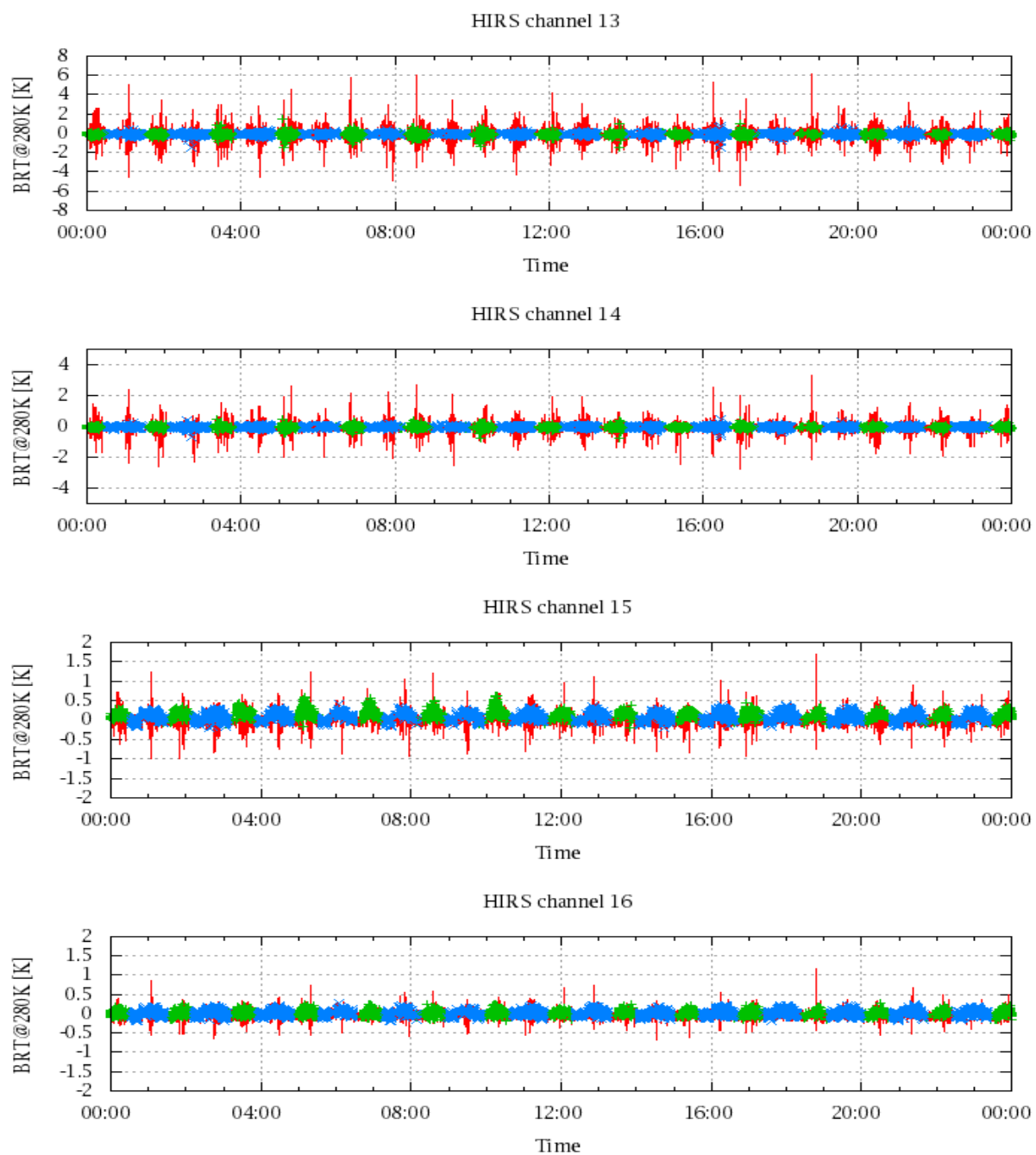


Figure 20: Radiance Differences in BRT

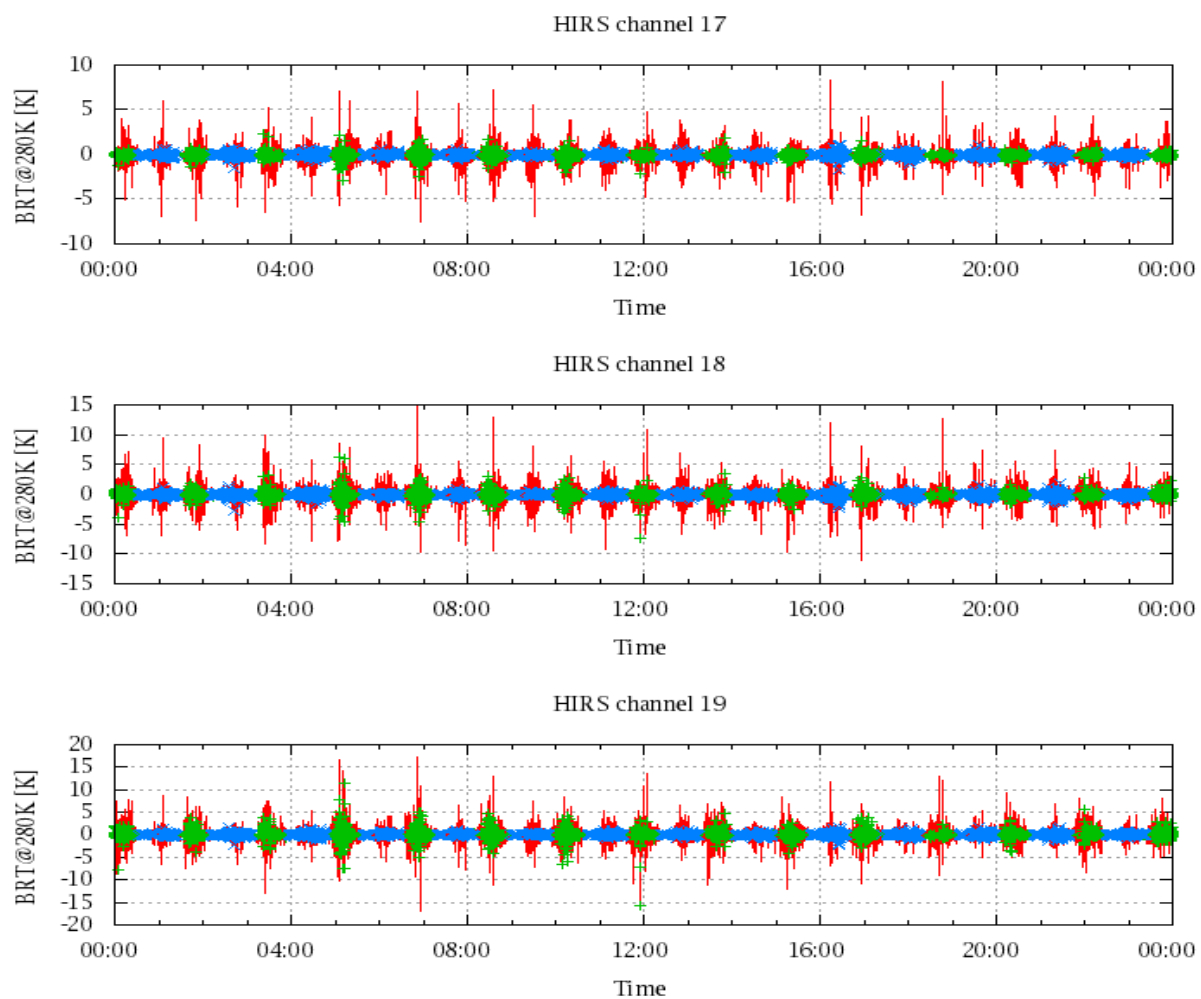


Figure 21: Radinace Differences in BRT