

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

11/04/2018 00:00:00 - 12/04/2018 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 11/04/2018 00:00:00 - 12/04/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 11/04/2018 00:00:00 - 12/04/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	475	-
L0 IASI PDUs	476	-
L1 ENG PDUs	475	-
L1 ENG distinct GEPSGranule	475	-
L1 DPX PDUs (RM: IASI-HIRS)	468	-
L1 DPS Files (RM: OBS-CAL NWP based)	475	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	925	1646	20180411150755.894	20180411151109.621
PX1 (130)	10045	13963	20180411154827.900	20180411160553.273
PX1 (130)	1998	3037	20180411162531.223	20180411163008.836
PX1 (130)	3139	3141	20180411163035.429	20180411163035.863
PX1 (130)	11114	11960	20180411170602.362	20180411170947.650
PX2 (135)	925	1646	20180411150755.894	20180411151109.621
PX2 (135)	10045	13963	20180411154827.900	20180411160553.273
PX2 (135)	1998	3037	20180411162531.223	20180411163008.836
PX2 (135)	11113	11960	20180411170602.143	20180411170947.650
PX3 (140)	925	1646	20180411150755.894	20180411151109.621
PX3 (140)	10045	13963	20180411154827.900	20180411160553.273
PX3 (140)	1998	3037	20180411162531.223	20180411163008.836
PX3 (140)	11113	11960	20180411170602.143	20180411170947.650
PX4 (145)	925	1646	20180411150755.894	20180411151109.621
PX4 (145)	10045	13963	20180411154827.900	20180411160553.273
PX4 (145)	1997	3037	20180411162531.004	20180411163008.836
PX4 (145)	11113	11960	20180411170602.143	20180411170947.650
IMG (150)	7896	8710	20180411150756.976	20180411151108.320

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	1848	6287	201804111154828.979	201804111160553.273
IMG (150)	11293	12473	201804111162531.004	201804111163008.836
IMG (150)	5241	6200	201804111170602.143	201804111170947.650
VER (160)	12818	12937	201804111150755.894	201804111150756.976
VER (160)	14338	14989	201804111154827.900	201804111160555.870
VER (160)	15723	15899	201804111162523.871	201804111163011.863
VER (160)	859	1000	201804111170555.874	201804111170947.865
AUX (180)	5838	5862	201804111150756.328	201804111151108.320
AUX (180)	6142	6273	201804111154828.330	201804111160556.300
AUX (180)	6419	6455	201804111162524.305	201804111163012.297
AUX (180)	6723	6752	201804111170556.307	201804111170948.299

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
11/04/2018 00:00:03	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	476	-
L1 ENG PDUs	475	-
L1 ENG distinct GEPSGranule	475	-
GQisFlagQual set (PX1)	99.42 %	-
GQisFlagQual set (PX2)	99.39 %	-
GQisFlagQual set (PX3)	99.38 %	-
GQisFlagQual set (PX4)	99.39 %	-
GQisFlagQual set (all)	99.40 %	-

Table 4: Quality flags

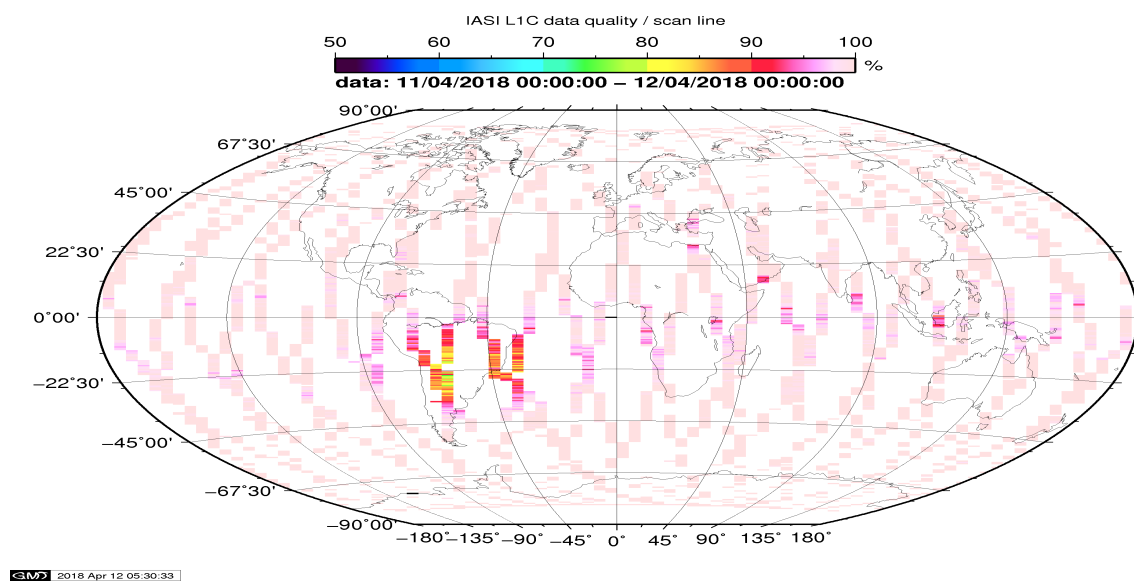


Figure 1: L1C data quality

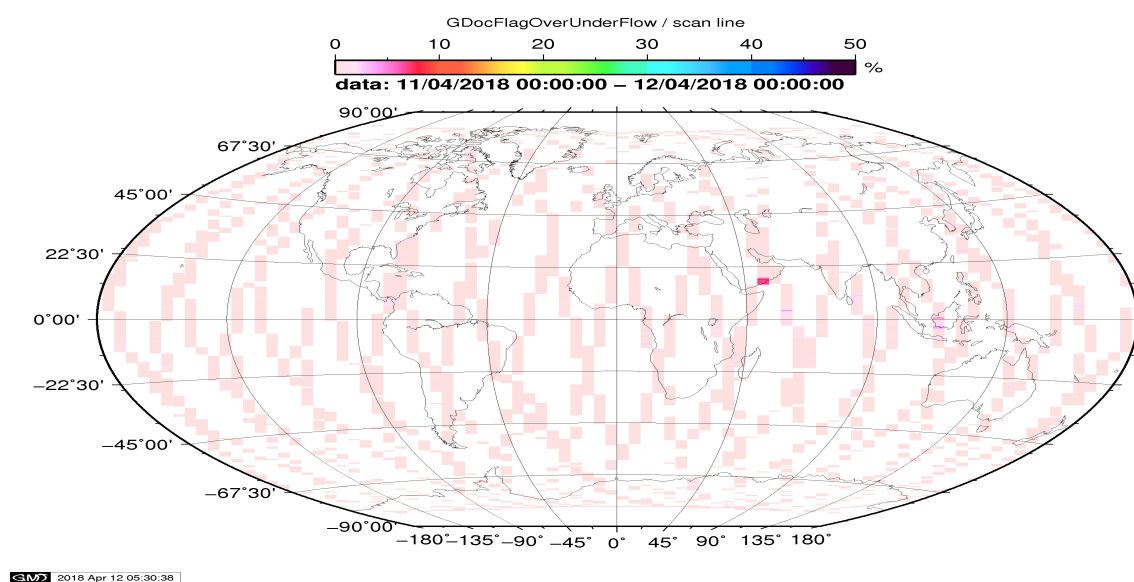


Figure 2: Flag of Over and Under Flows

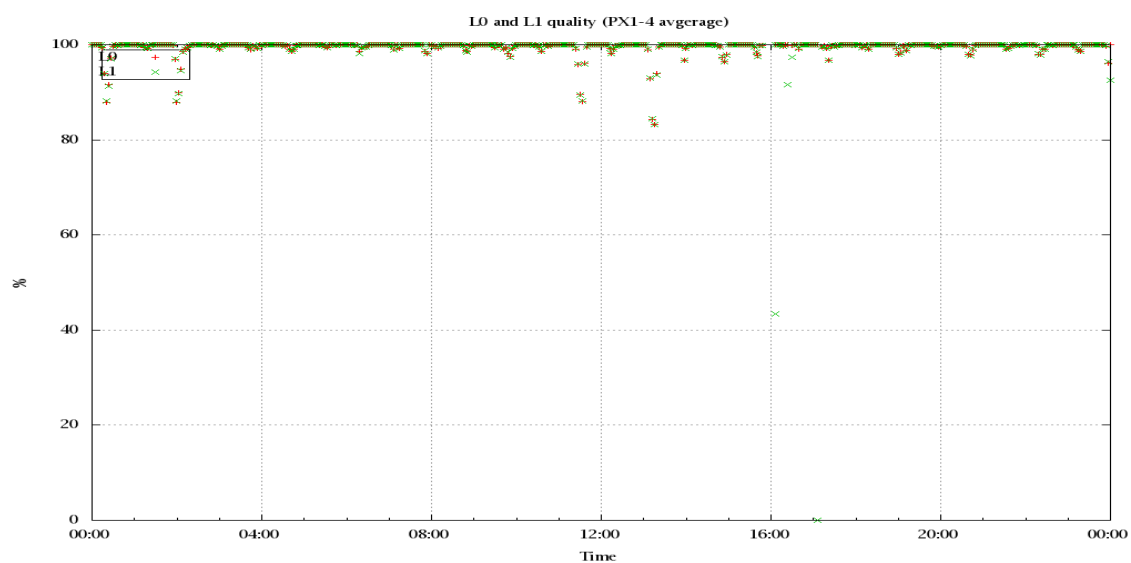


Figure 3: Level 0 and 1C overall quality

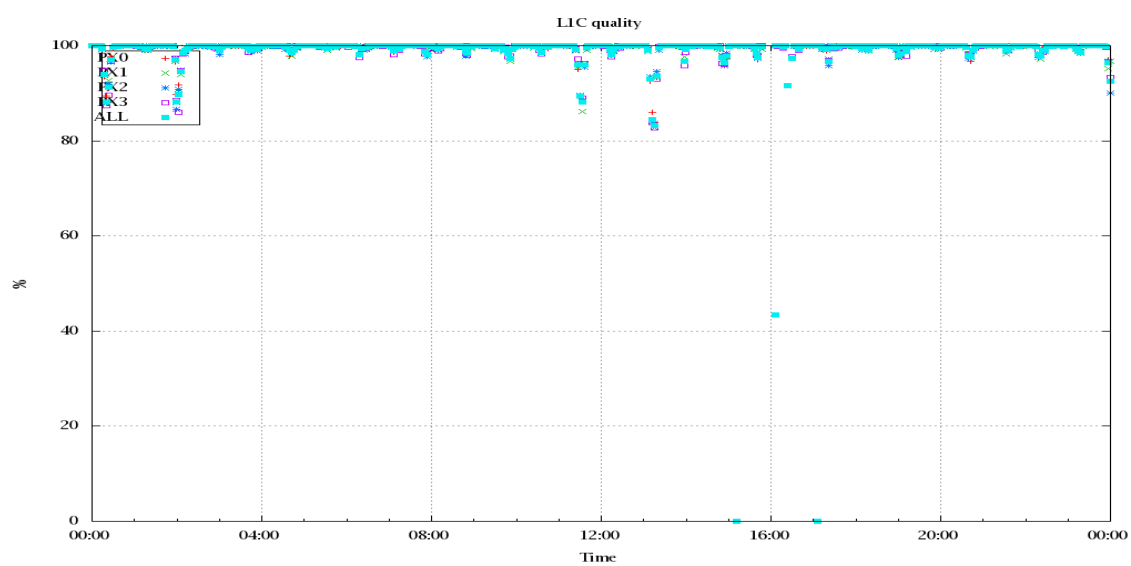


Figure 4: Level 1C quality

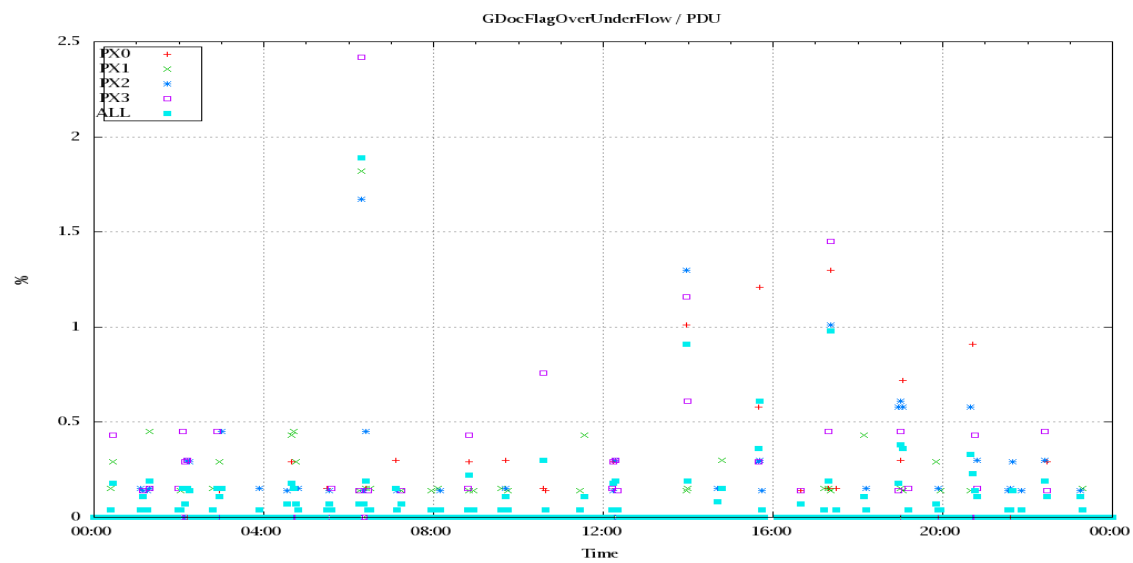


Figure 5: OverUnderFlowFlag timeseries

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.

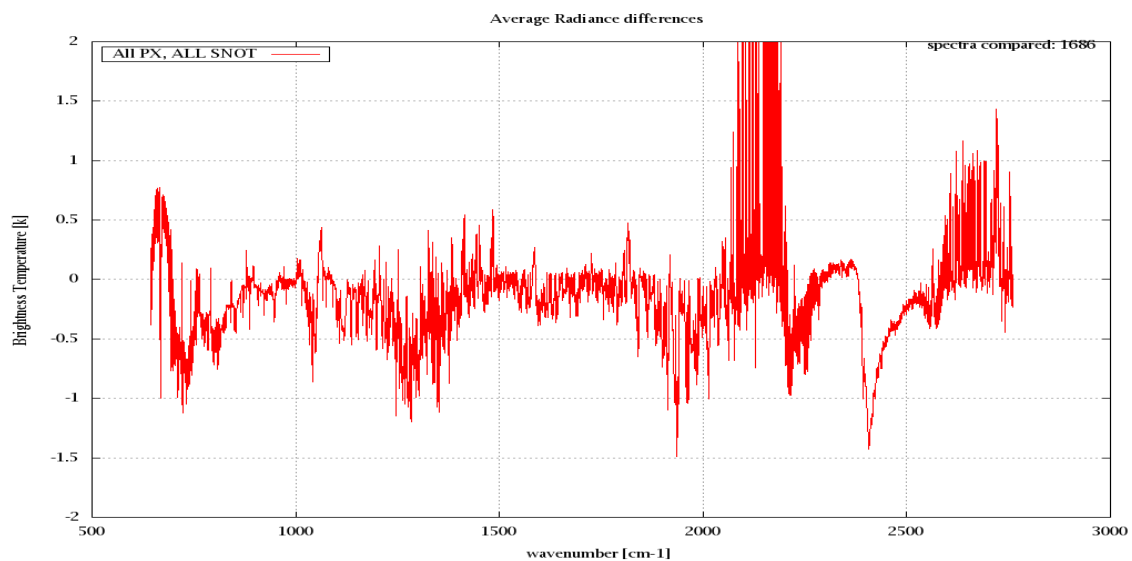


Figure 6: Average Radiance differences: OBS-CAL

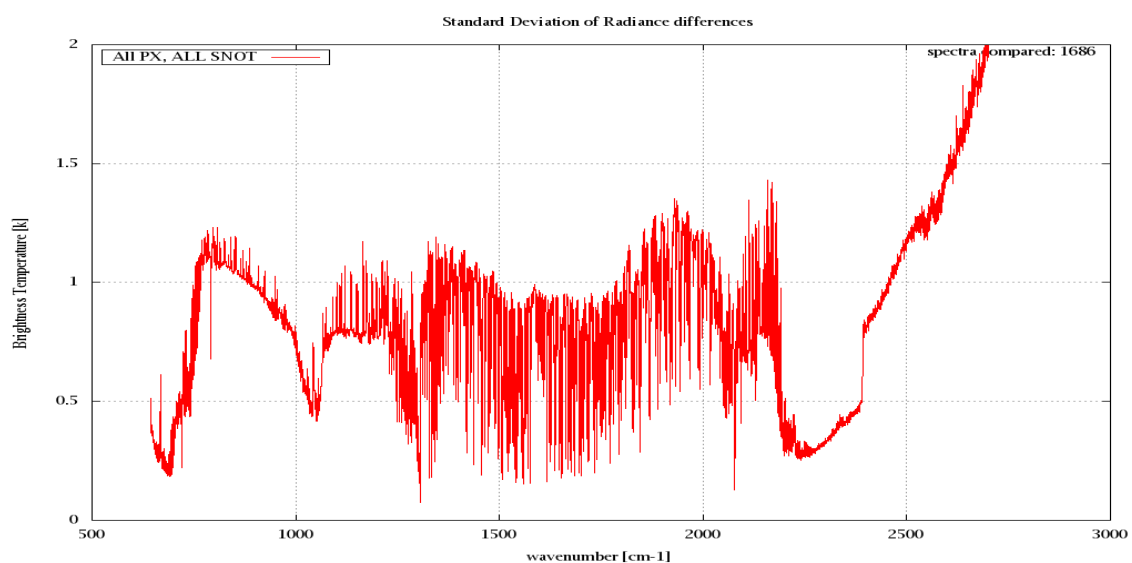


Figure 7: Standard Deviation of Radiance differences

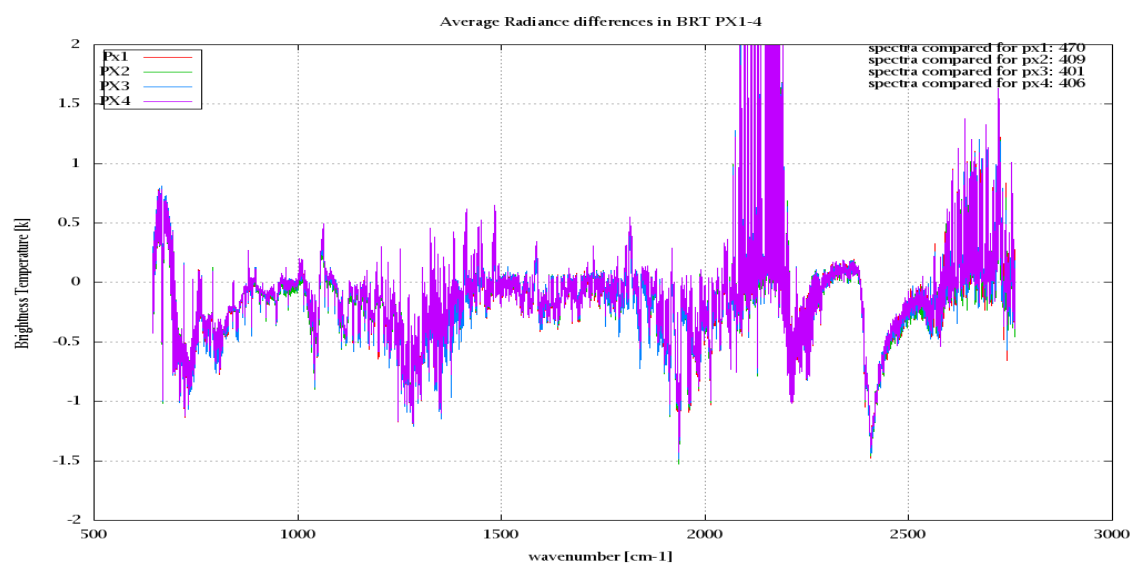


Figure 8: Average Radiance differences: OBS-CAL

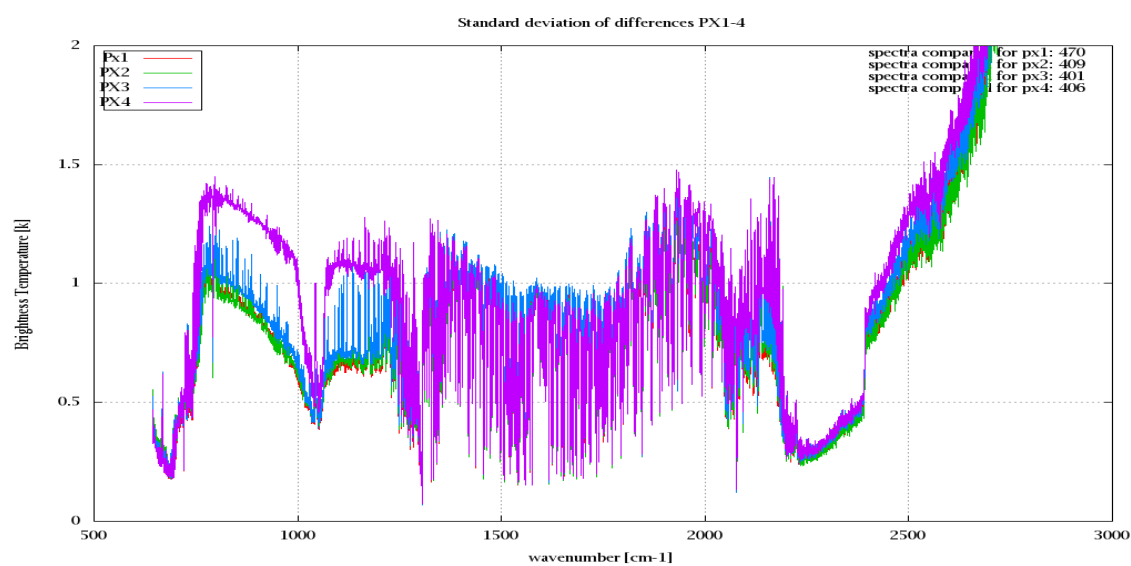


Figure 9: Standard Deviation of Radiance differences

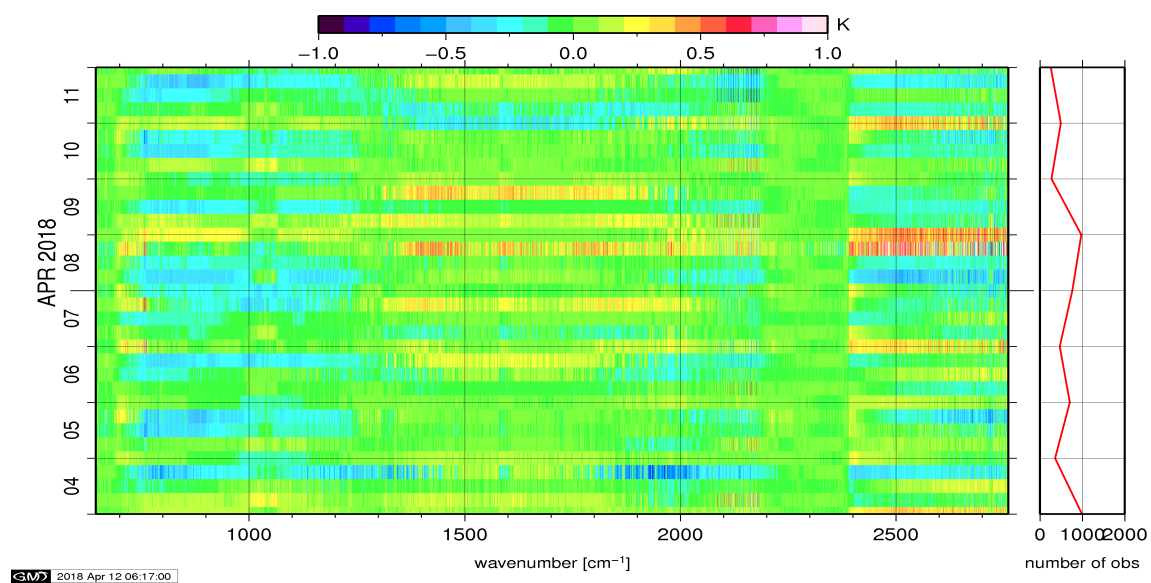


Figure 10: Radiance Anomaly in BRT: All Channels

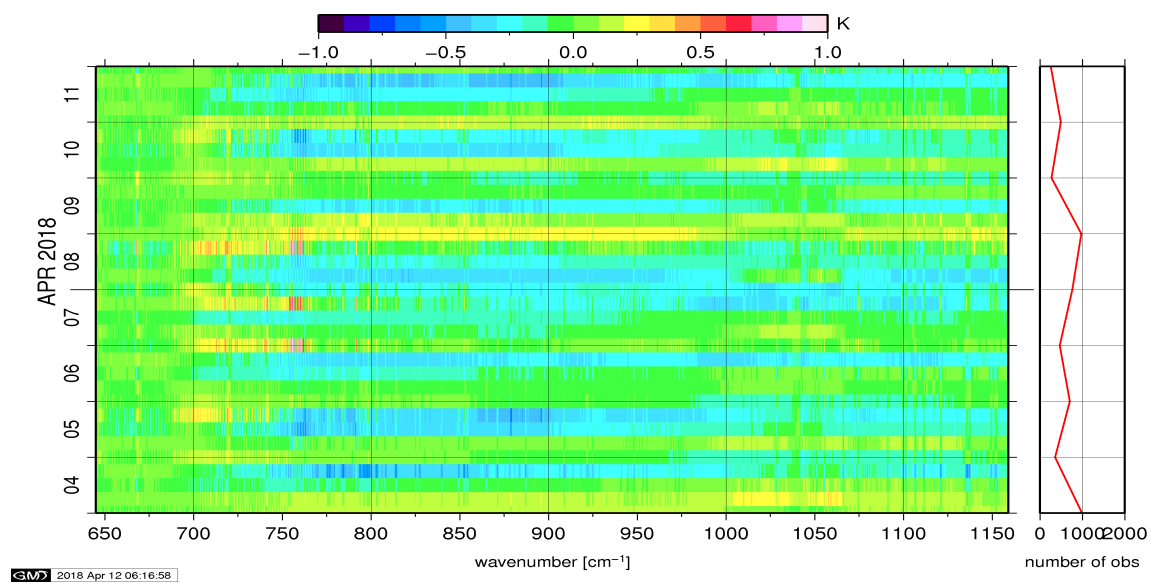


Figure 11: Radiance Anomaly in BRT: IASI Band 1

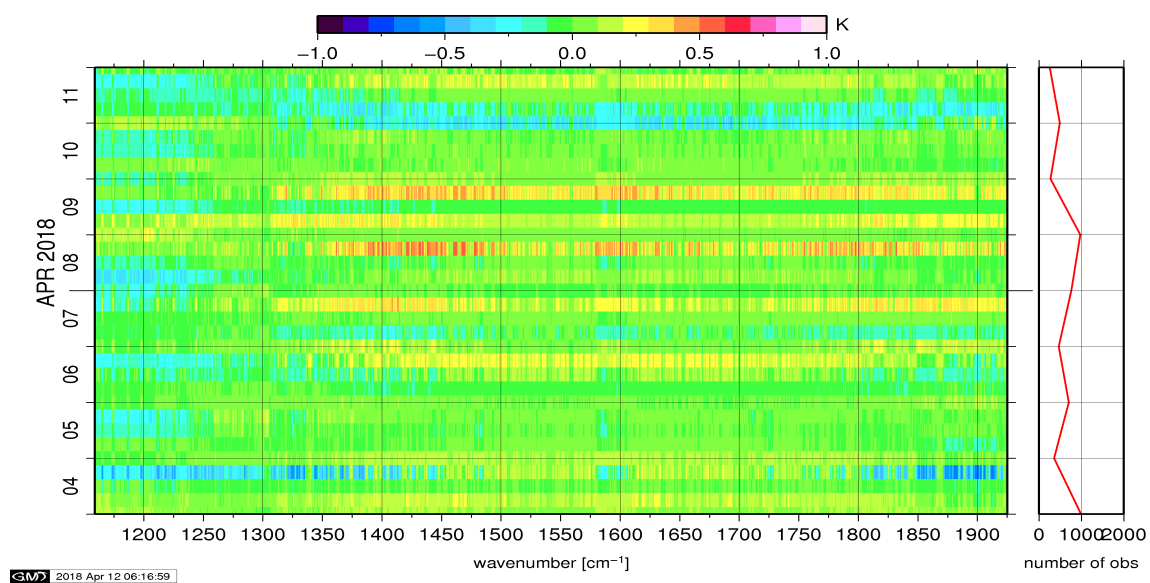


Figure 12: Radiance Anomaly in BRT: IASI Band 2

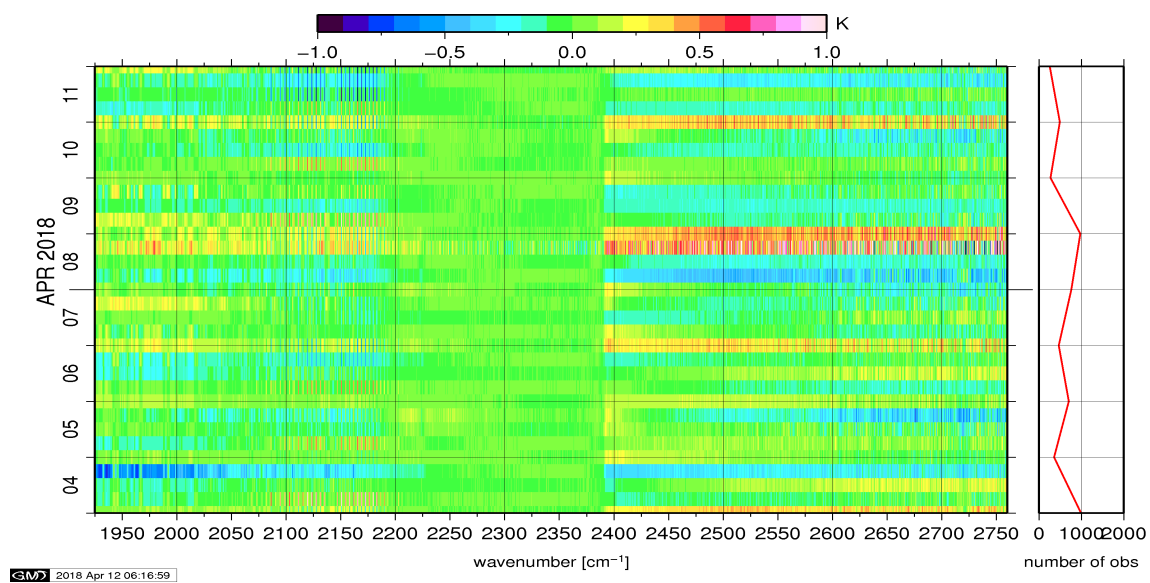


Figure 13: Radiance Anomaly in BRT: IASI Band 3

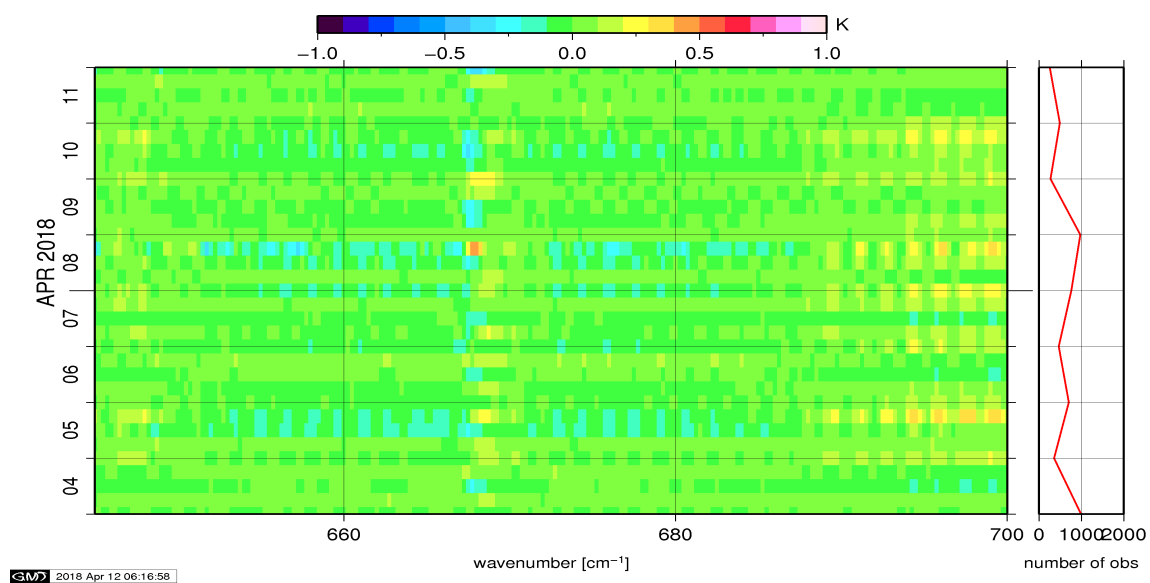


Figure 14: Radiance Anomaly in BRT: CO2 14

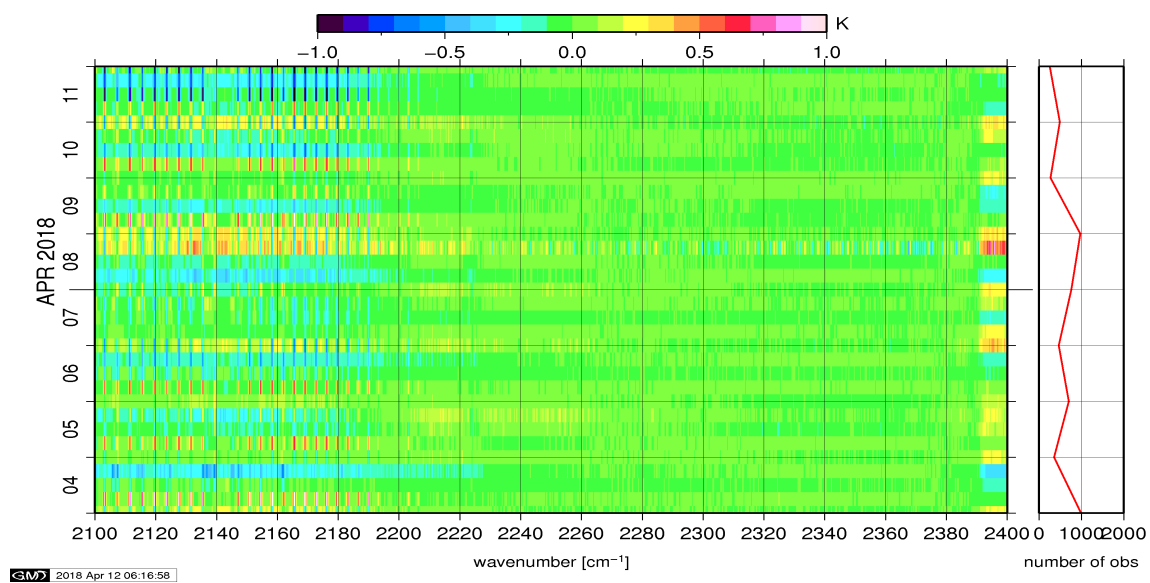


Figure 15: Radiance Anomaly in BRT: CO2 4.3

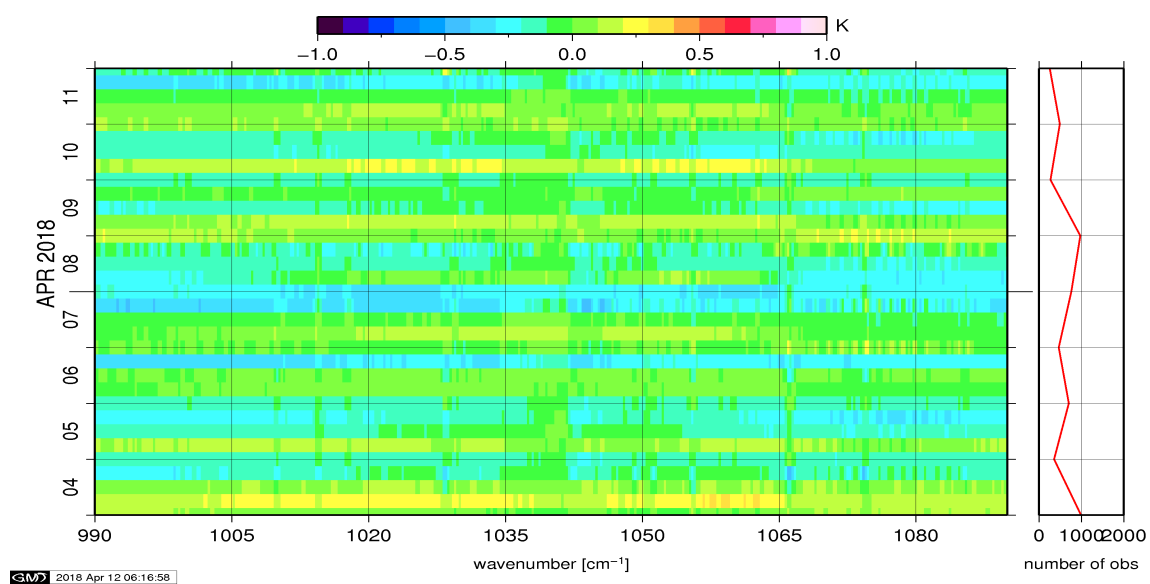


Figure 16: Radiance Anomaly in BRT: O3

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.

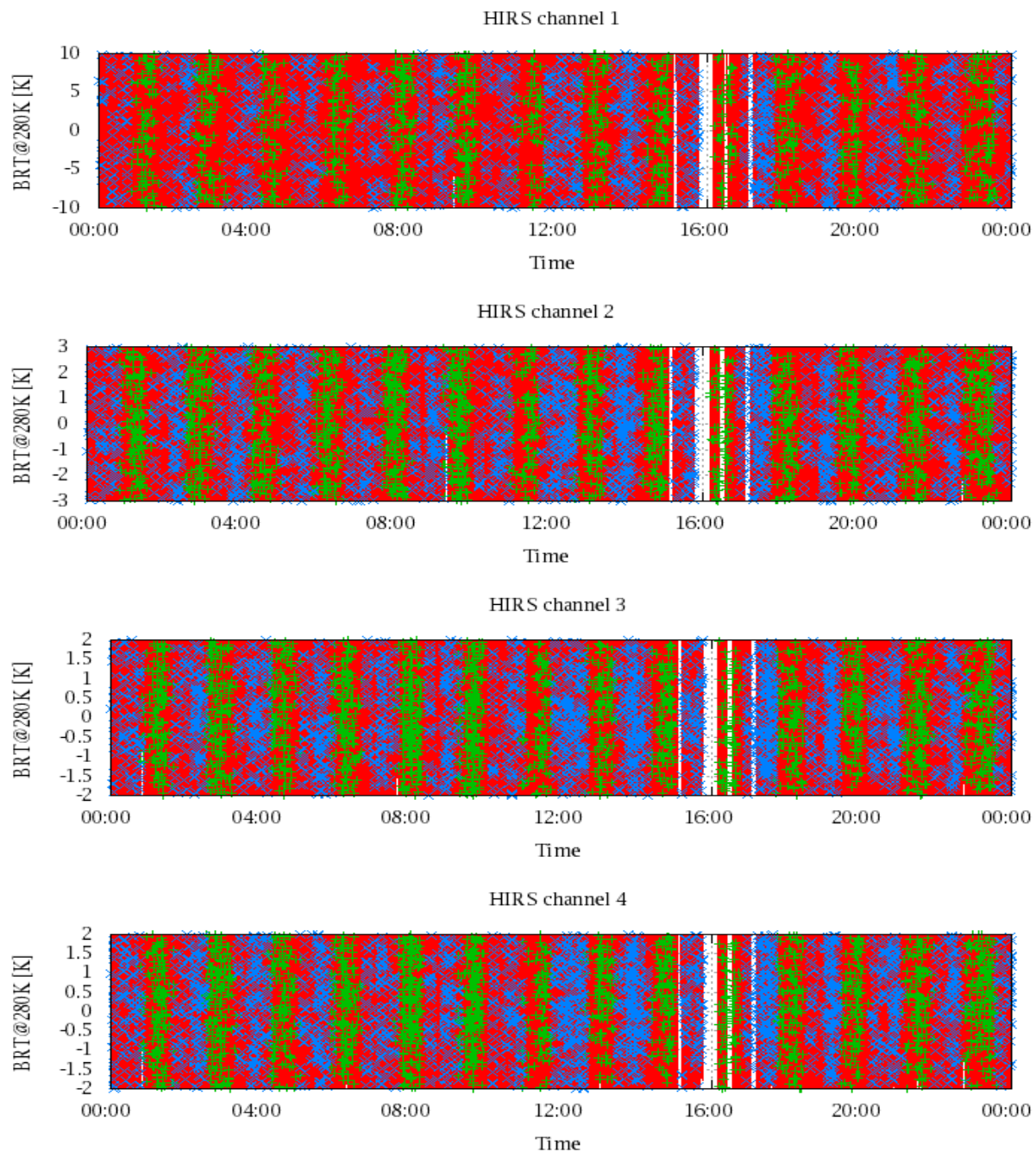


Figure 17: Radiance Differences in BRT

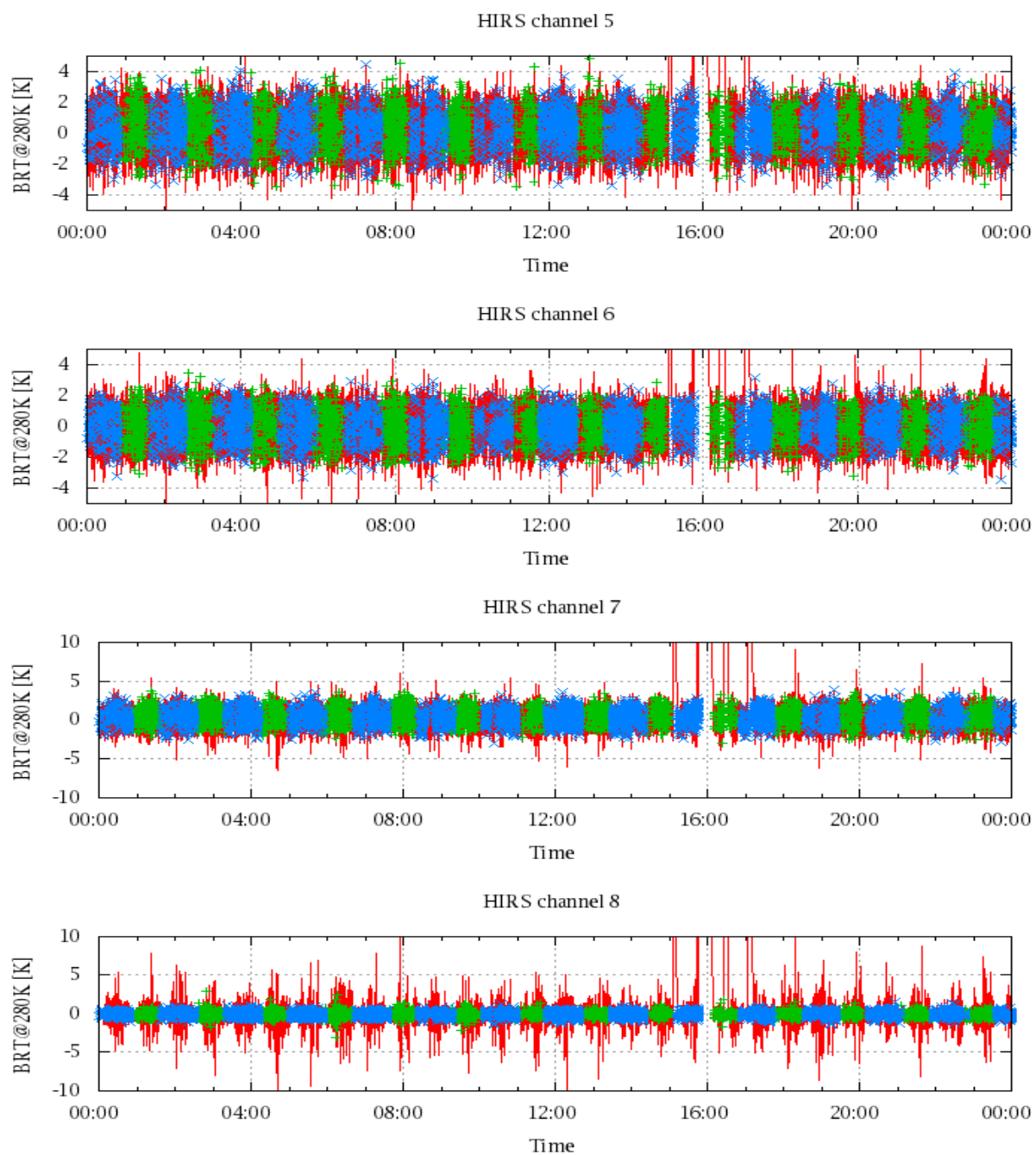


Figure 18: Radiance Differences in BRT

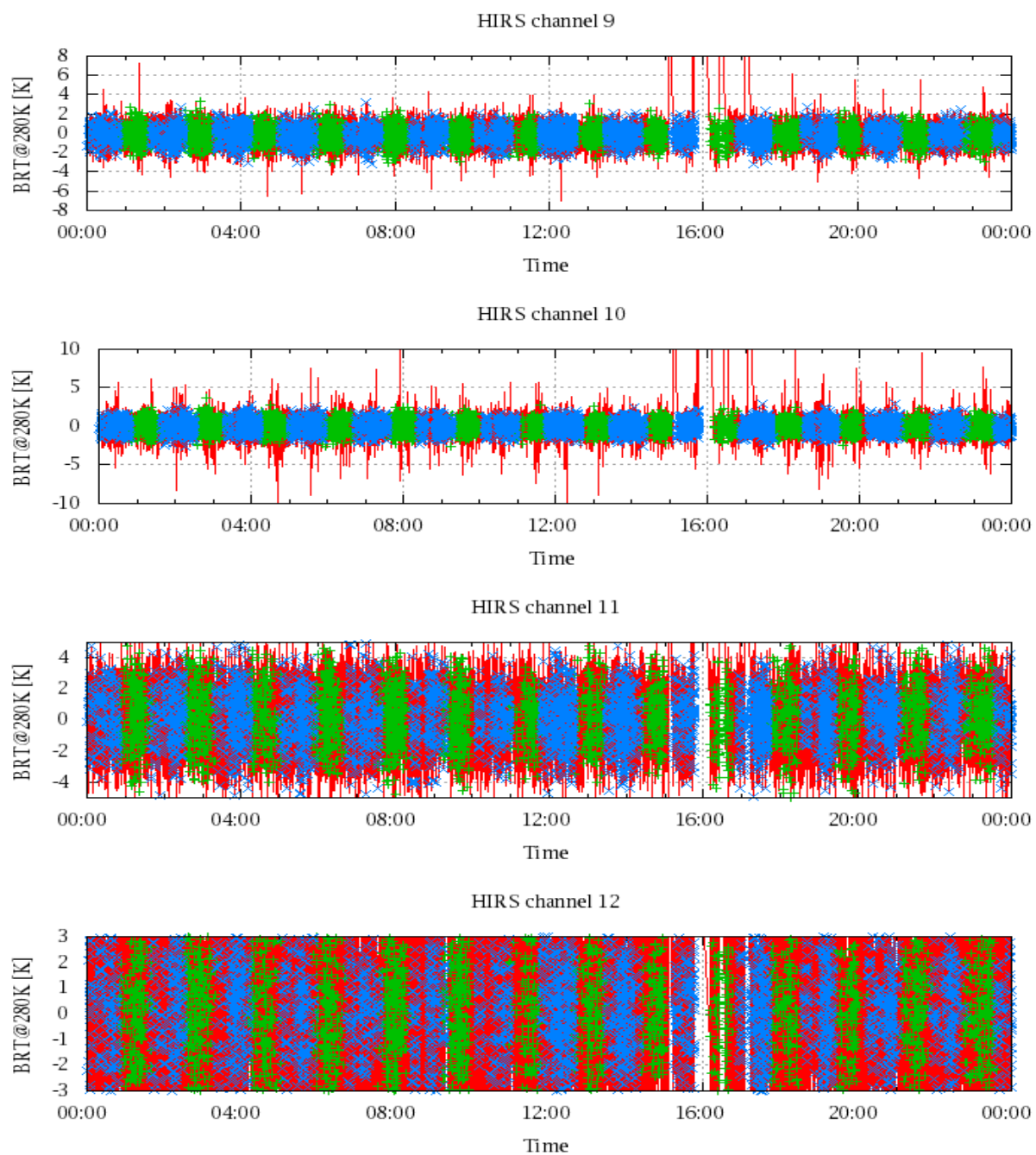


Figure 19: Radiance Differences in BRT

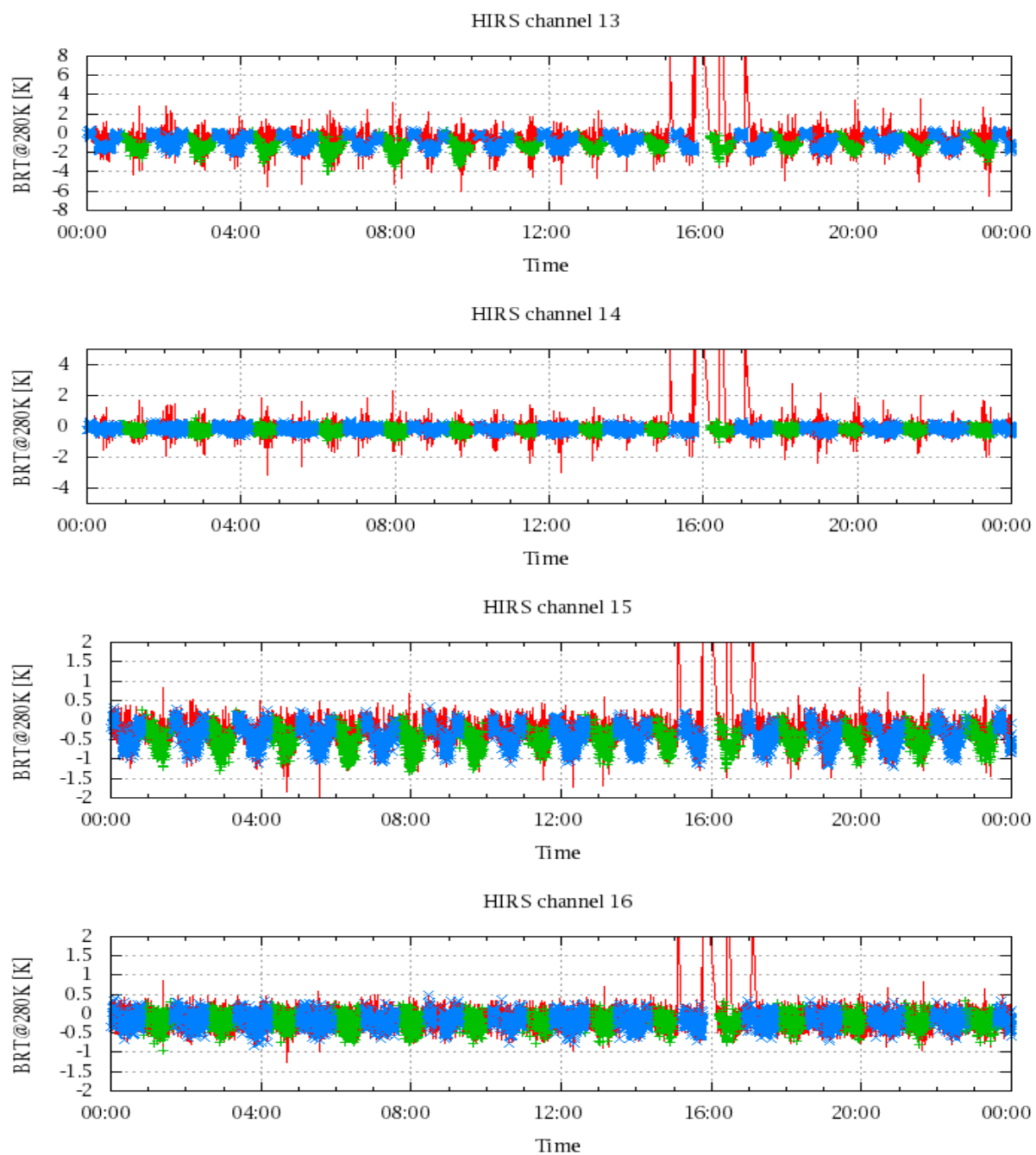


Figure 20: Radiance Differences in BRT

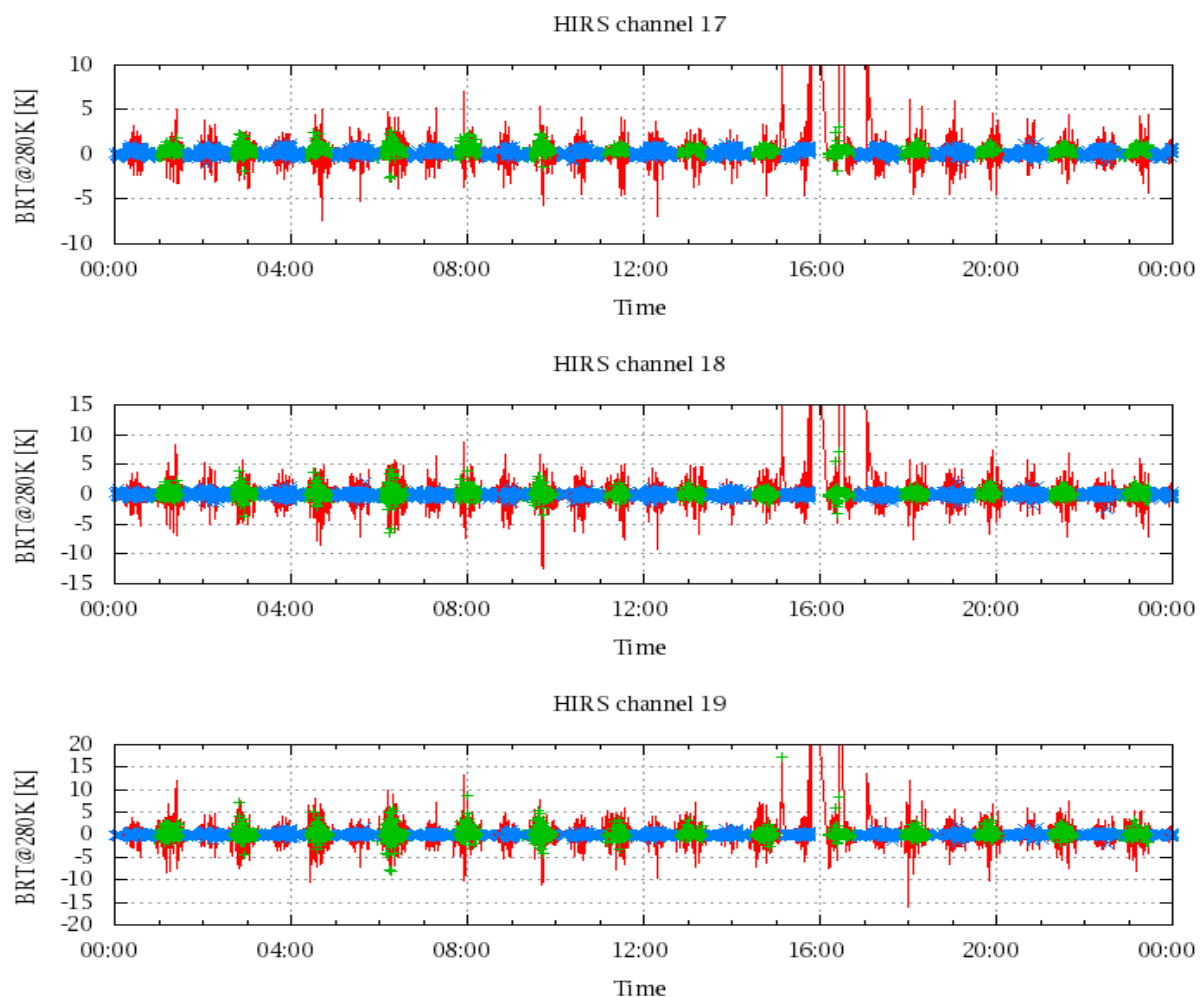


Figure 21: Radinace Differences in BRT