

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

28/03/2018 00:00:00 - 29/03/2018 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 28/03/2018 00:00:00 - 29/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 28/03/2018 00:00:00 - 29/03/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	480	-
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)	3376	3384	20180328112954.642	20180328112956.372
PX1 (130)	3417	3428	20180328113005.021	20180328113008.911
PX1 (130)	12505	12514	20180328121028.589	20180328121030.535
PX1 (130)	12540	12542	20180328121037.671	20180328121038.105
PX1 (130)	12545	12559	20180328121038.753	20180328121043.292
PX2 (135)	3375	3384	20180328112954.427	20180328112956.372
PX2 (135)	3405	3407	20180328113002.423	20180328113002.857
PX2 (135)	3417	3428	20180328113005.021	20180328113008.911
PX2 (135)	12505	12514	20180328121028.589	20180328121030.535
PX2 (135)	12542	12544	20180328121038.105	20180328121038.538
PX2 (135)	12545	12559	20180328121038.753	20180328121043.292
PX3 (140)	3375	3384	20180328112954.427	20180328112956.372
PX3 (140)	3412	3414	20180328113003.939	20180328113004.372
PX3 (140)	3417	3428	20180328113005.021	20180328113008.911
PX3 (140)	12505	12514	20180328121028.589	20180328121030.535
PX3 (140)	12542	12544	20180328121038.105	20180328121038.538
PX3 (140)	12545	12559	20180328121038.753	20180328121043.292
PX4 (145)	3375	3383	20180328112954.427	20180328112956.153

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	3414	3416	20180328113004.372	20180328113004.802
PX4 (145)	3417	3428	20180328113005.021	20180328113008.911
PX4 (145)	12505	12513	20180328121028.589	20180328121030.320
PX4 (145)	12544	12559	20180328121038.538	20180328121043.292
IMG (150)	5211	5219	20180328112954.427	20180328112956.153
IMG (150)	5254	5256	20180328113004.372	20180328113004.802
IMG (150)	5256	5271	20180328113004.802	20180328113008.696
IMG (150)	15556	15565	20180328121028.374	20180328121030.320
IMG (150)	15595	15597	20180328121037.456	20180328121037.886
IMG (150)	15600	15618	20180328121038.538	20180328121043.077
VER (160)	2307	2313	20180328112958.751	20180328113014.751
VER (160)	3827	3833	20180328121030.753	20180328121046.753
AUX (180)	459	461	20180328112959.181	20180328113015.181
AUX (180)	763	765	20180328121031.187	20180328121047.187

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
28/03/2018 00:00:06	-	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	480	-
GQisFlagQual set (PX1)	99.49 %	-
GQisFlagQual set (PX2)	99.44 %	-
GQisFlagQual set (PX3)	99.42 %	-
GQisFlagQual set (PX4)	99.45 %	-
GQisFlagQual set (all)	99.45 %	-

Table 4: Quality flags

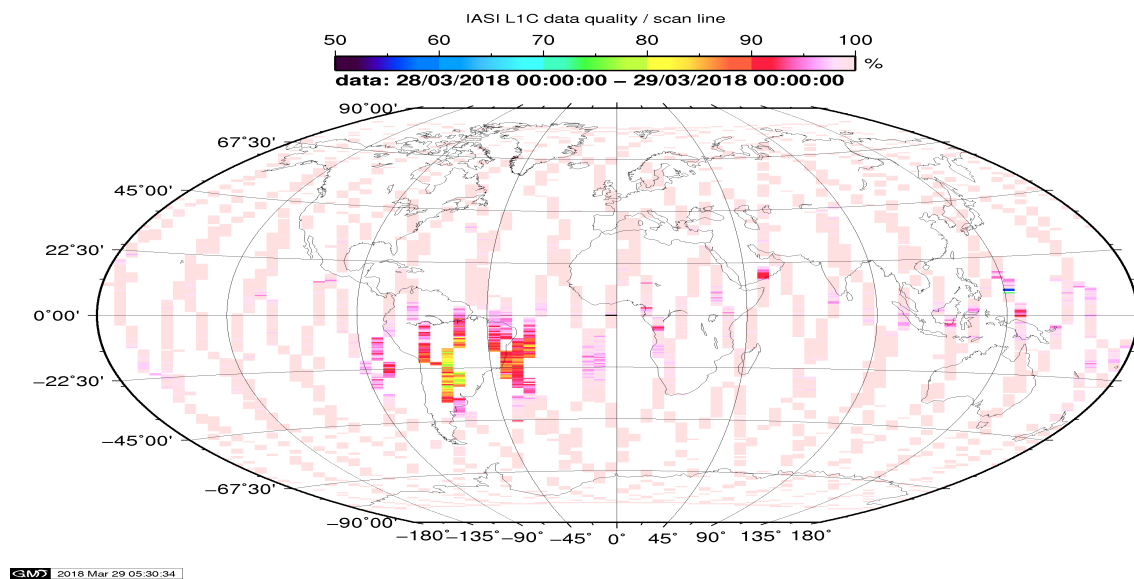


Figure 1: L1C data quality

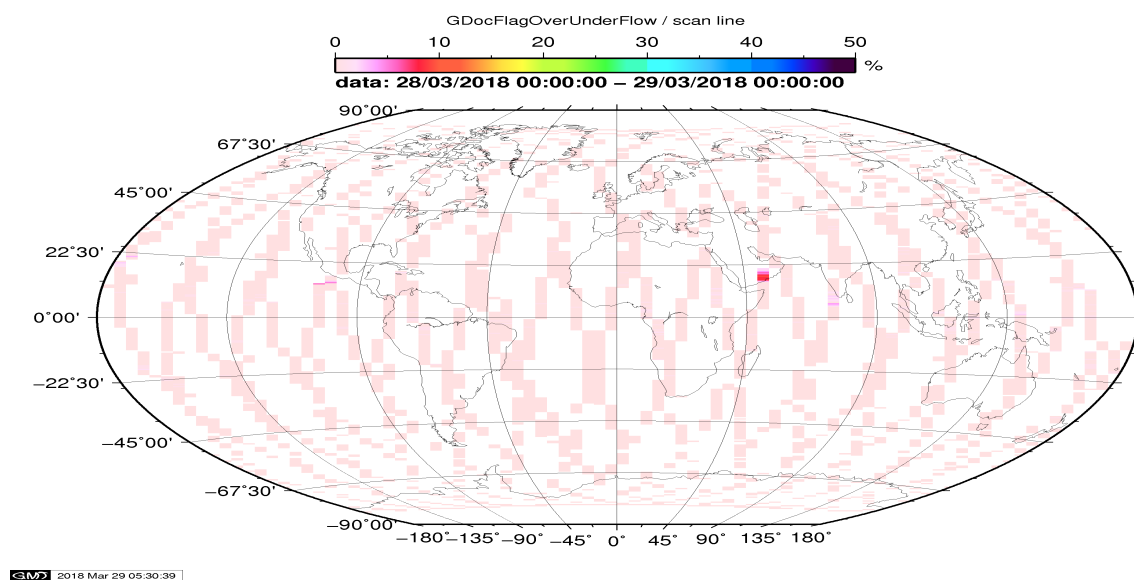


Figure 2: Flag of Over and Under Flows

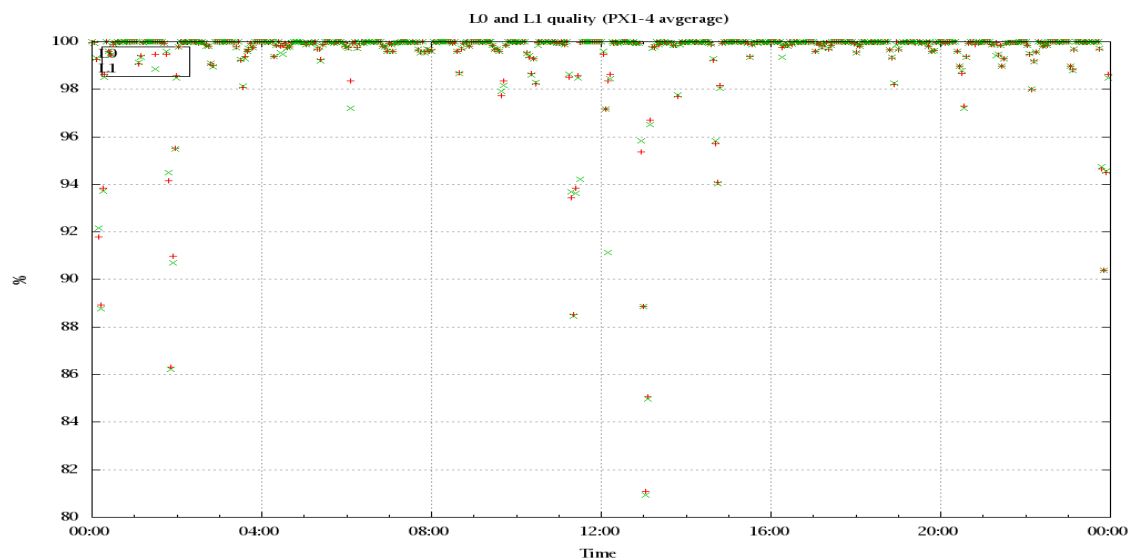


Figure 3: Level 0 and 1C overall quality

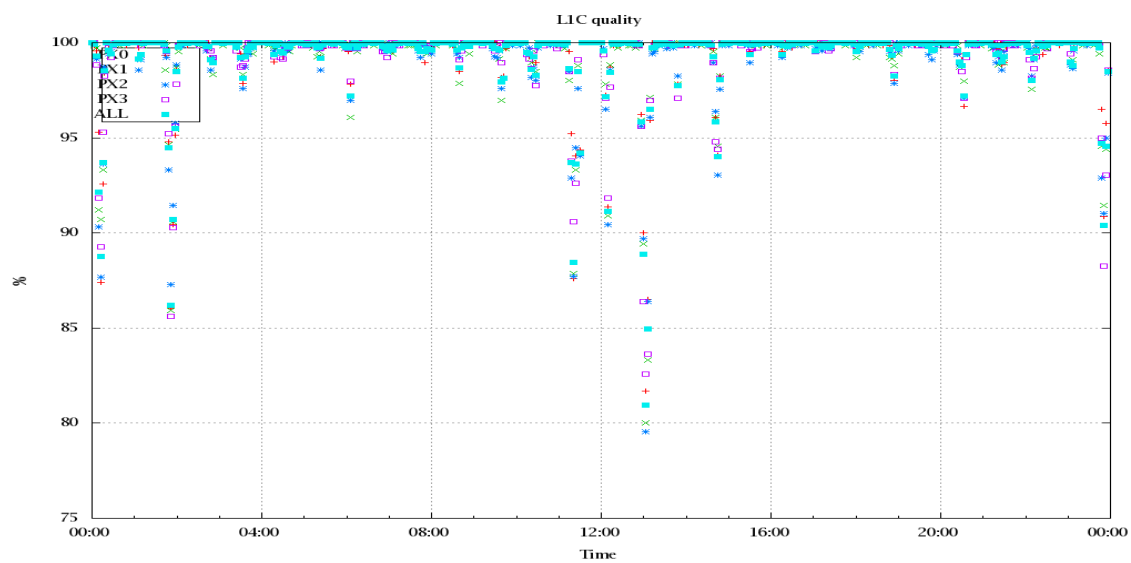


Figure 4: Level 1C quality

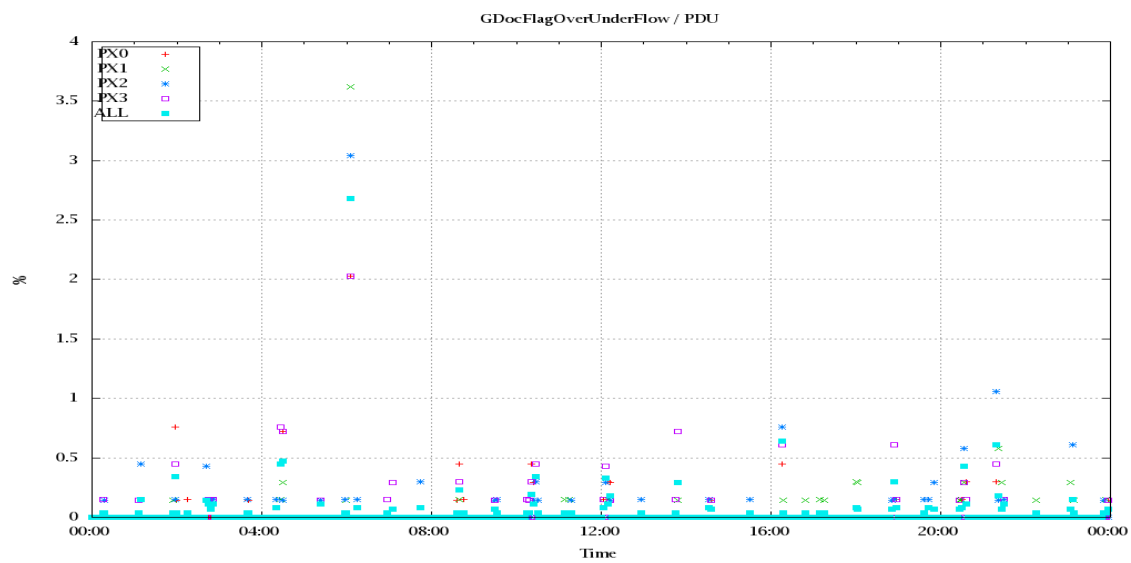


Figure 5: OverUnderFlowFlag timeseries

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.

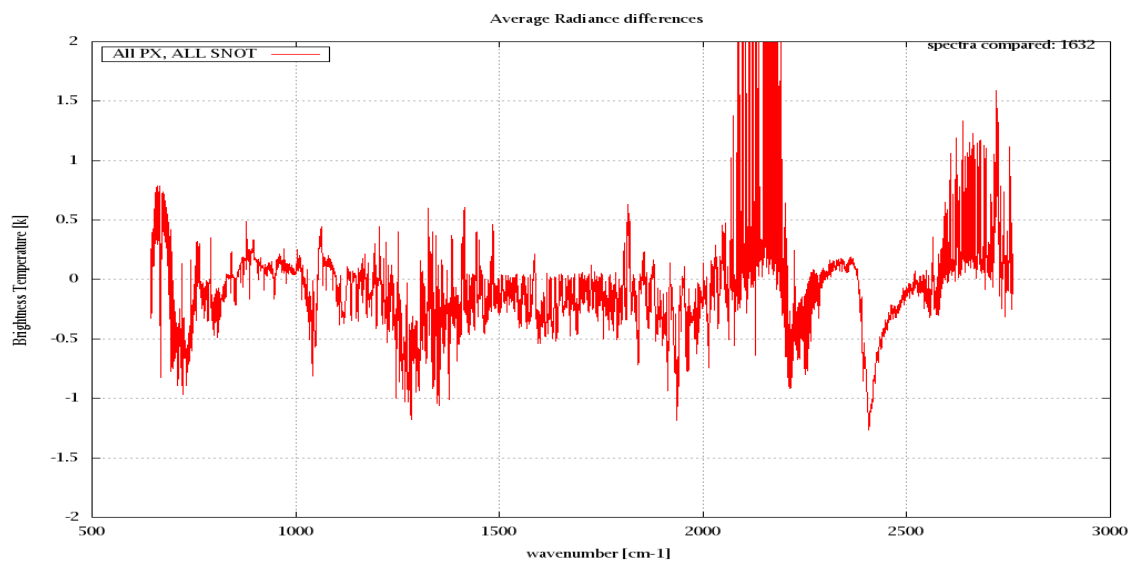


Figure 6: Average Radiance differences: OBS-CAL

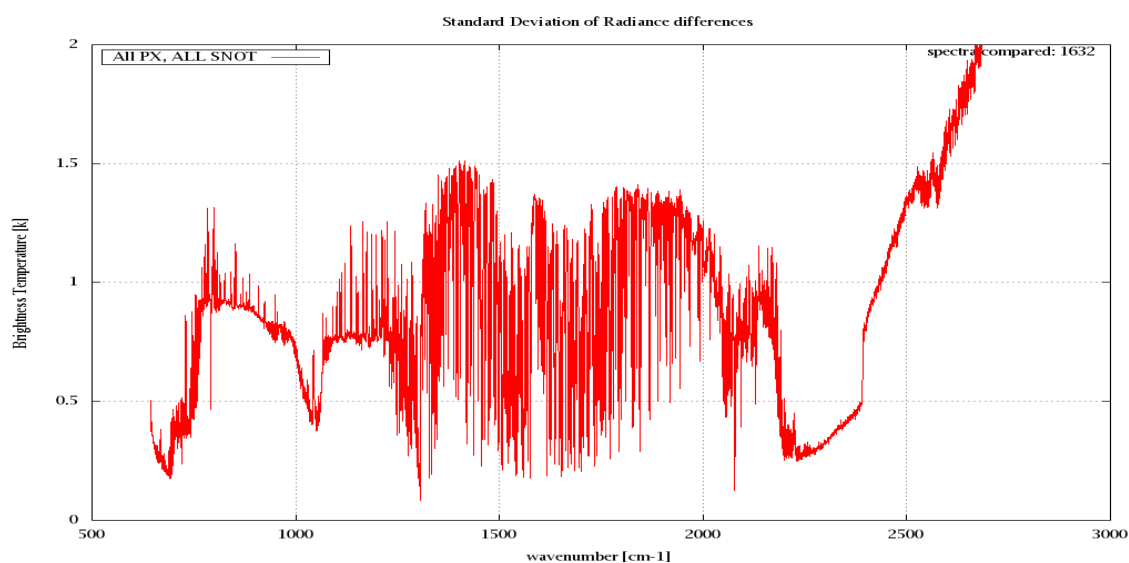


Figure 7: Standard Deviation of Radiance differences

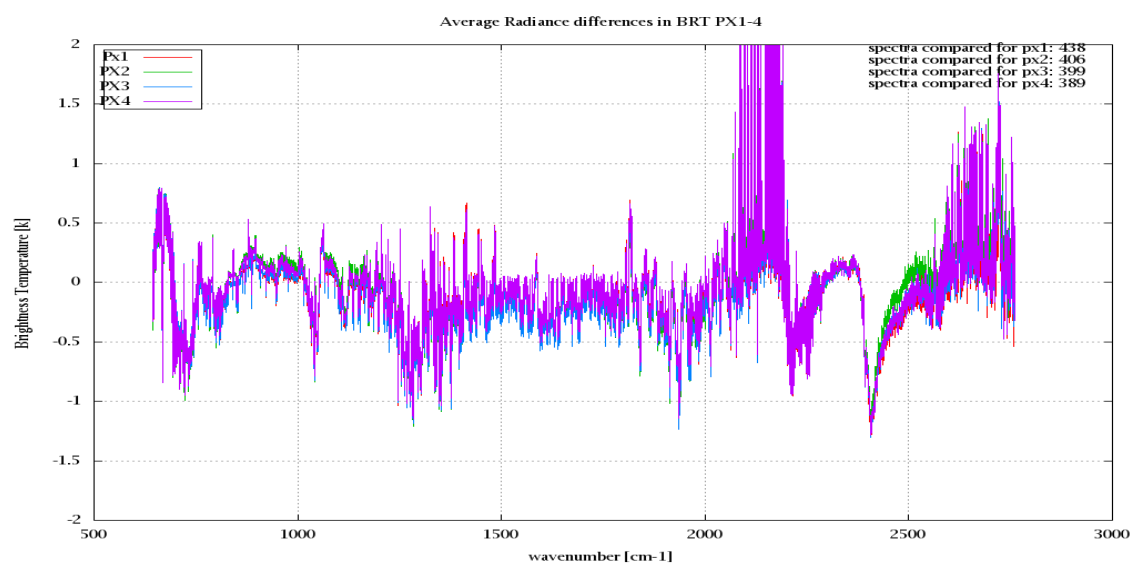


Figure 8: Average Radiance differences: OBS-CAL

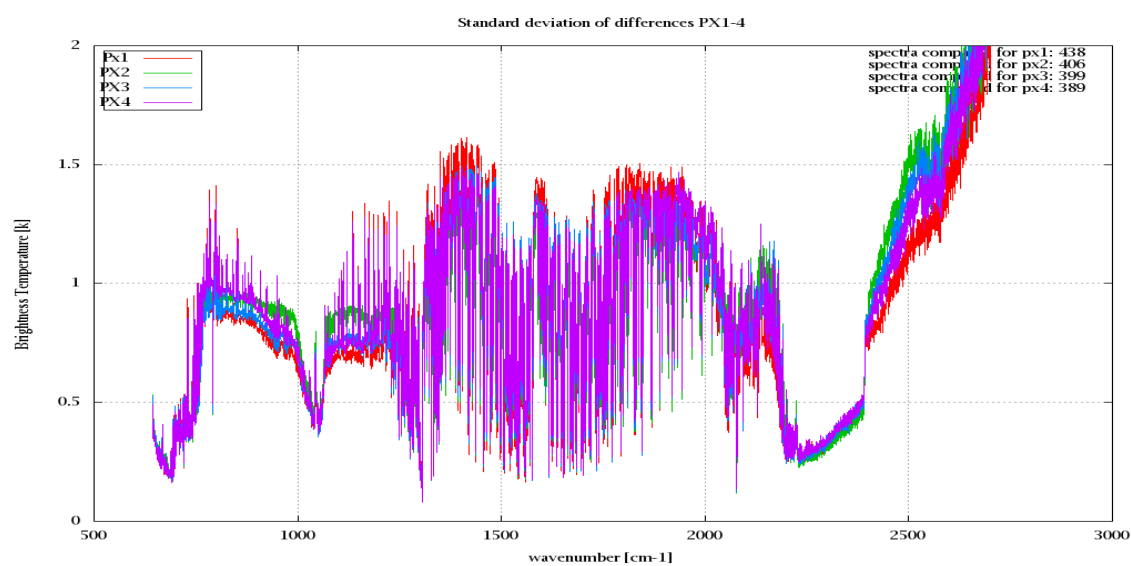


Figure 9: Standard Deviation of Radiance differences

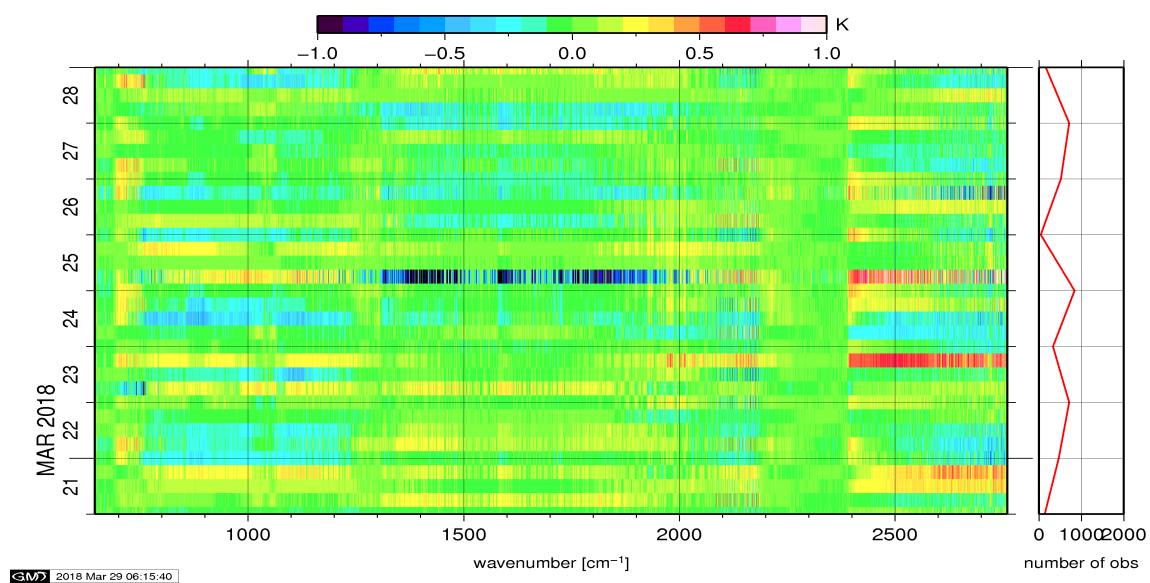


Figure 10: Radiance Anomaly in BRT: All Channels

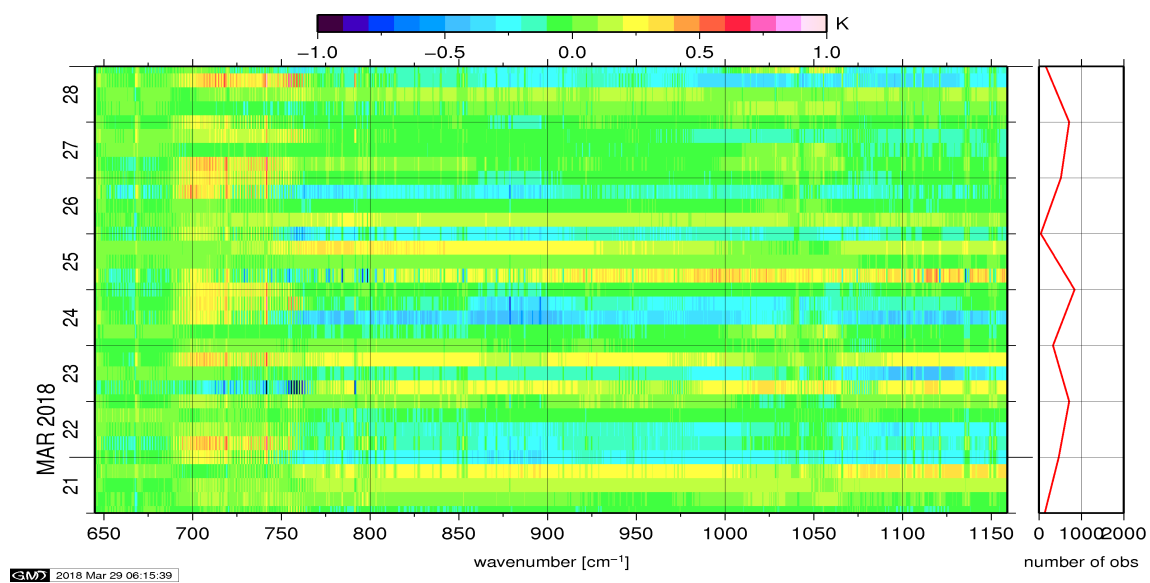


Figure 11: Radiance Anomaly in BRT: IASI Band 1

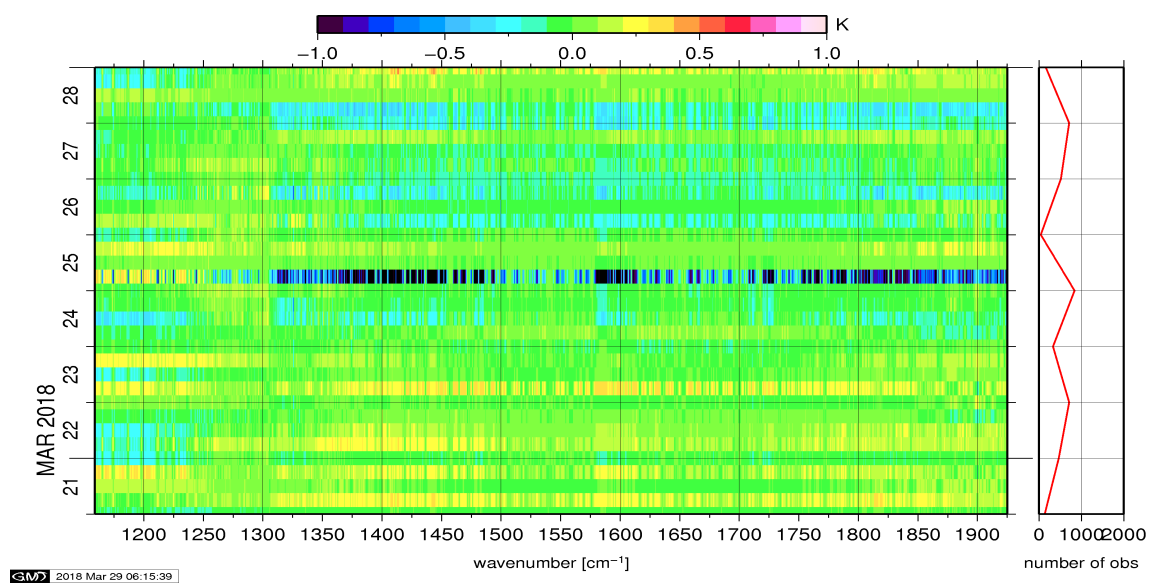


Figure 12: Radiance Anomaly in BRT: IASI Band 2

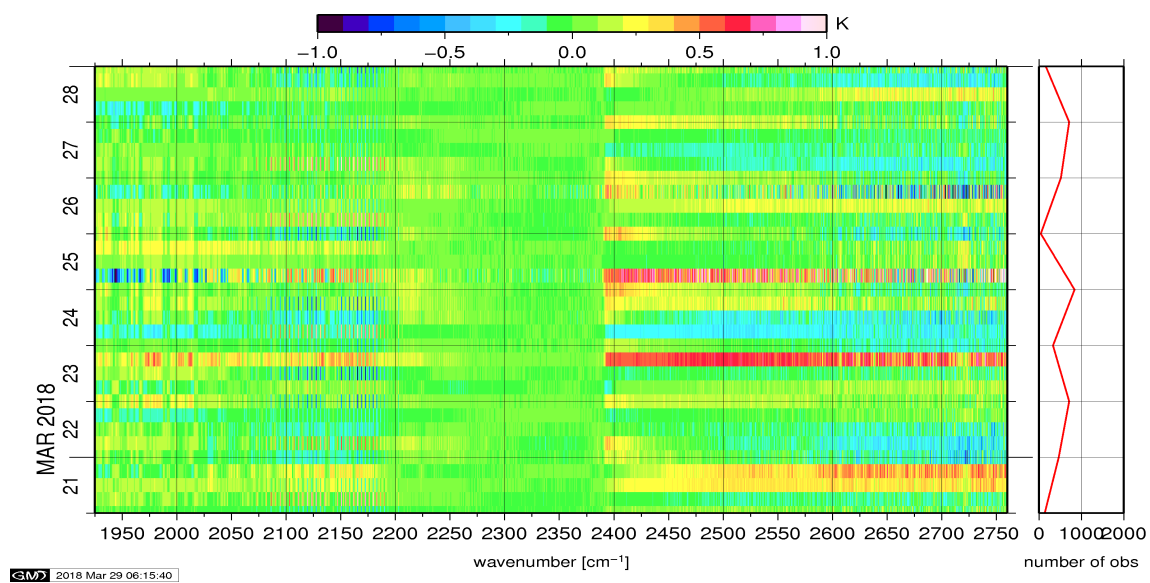


Figure 13: Radiance Anomaly in BRT: IASI Band 3

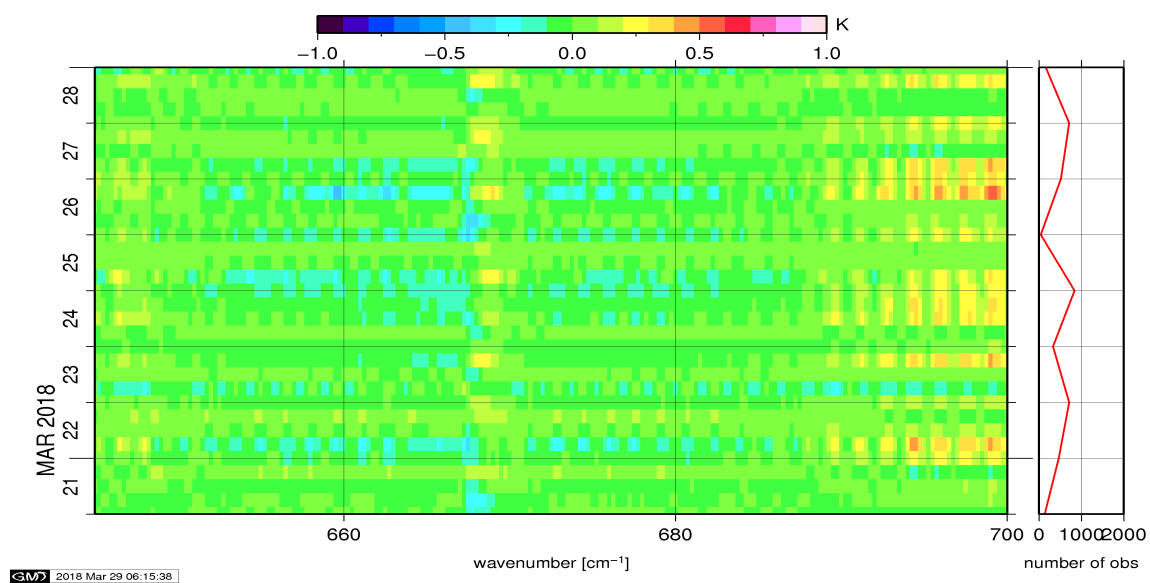


Figure 14: Radiance Anomaly in BRT: CO2 14

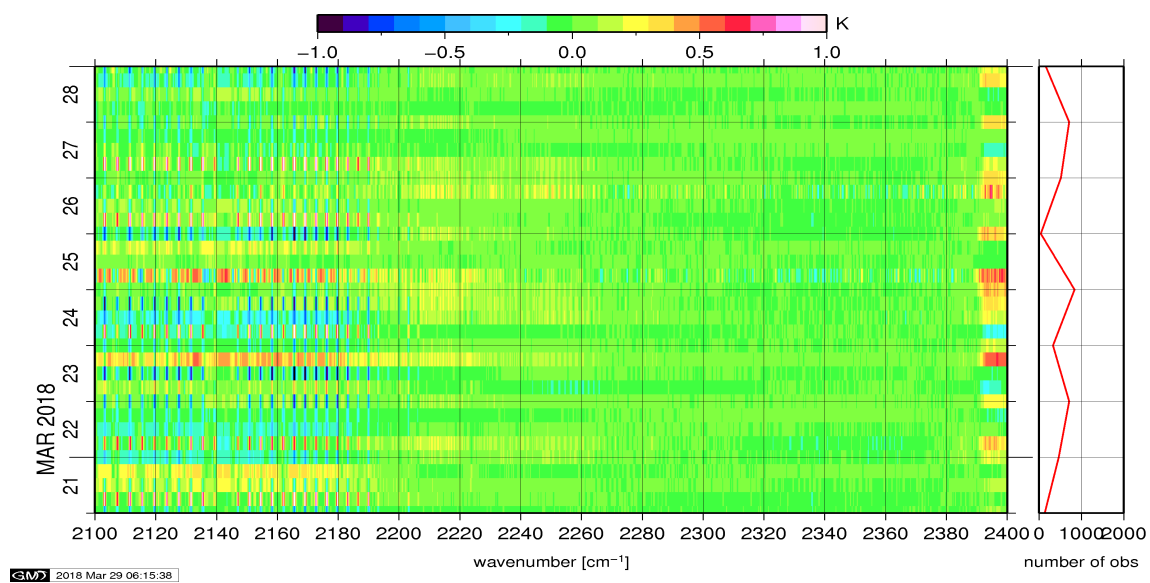


Figure 15: Radiance Anomaly in BRT: CO2 4.3

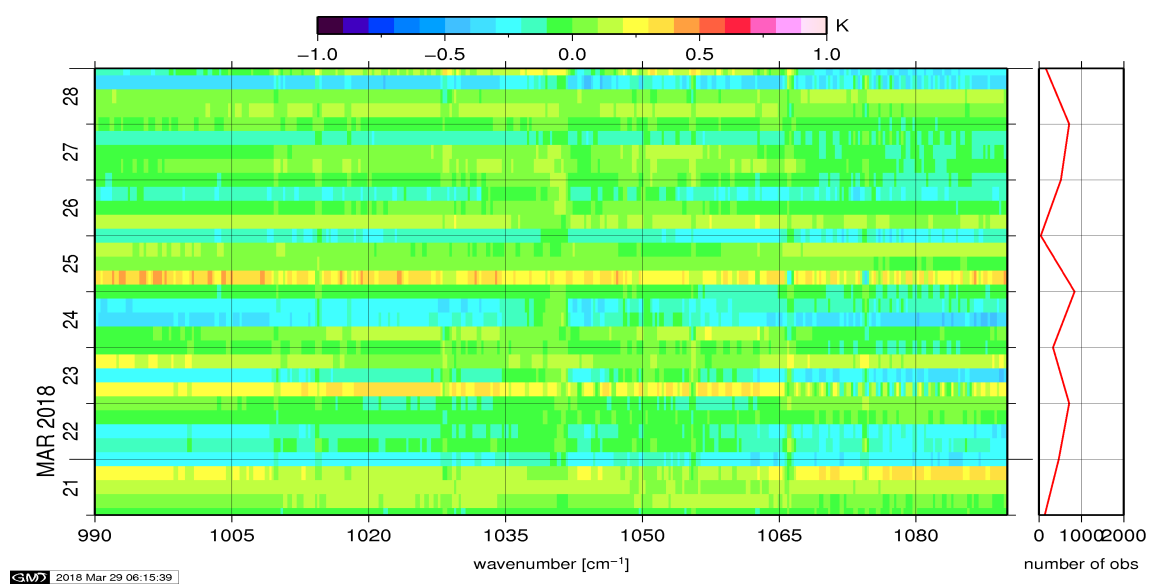


Figure 16: Radiance Anomaly in BRT: O3

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.

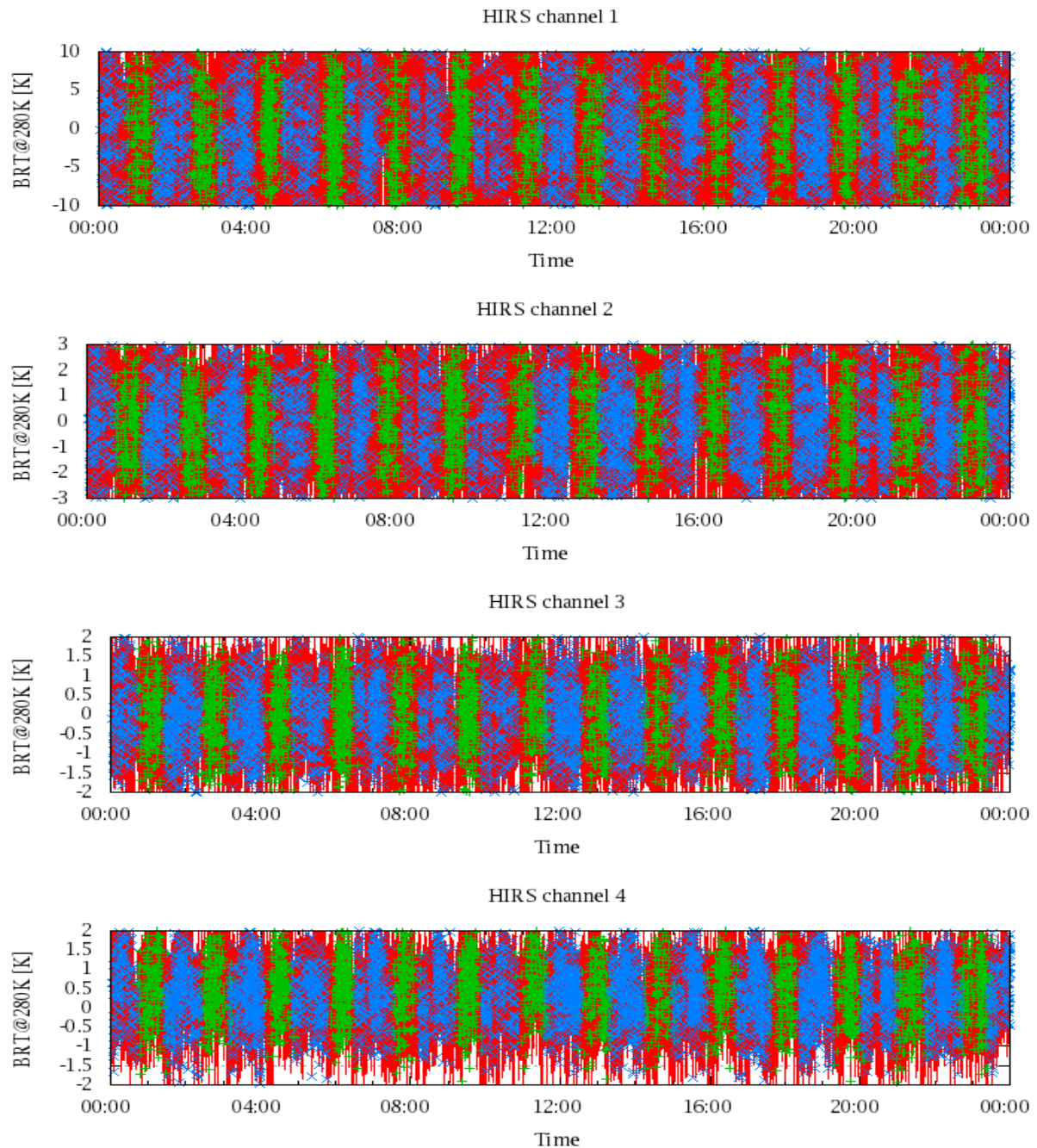


Figure 17: Radiance Differences in BRT

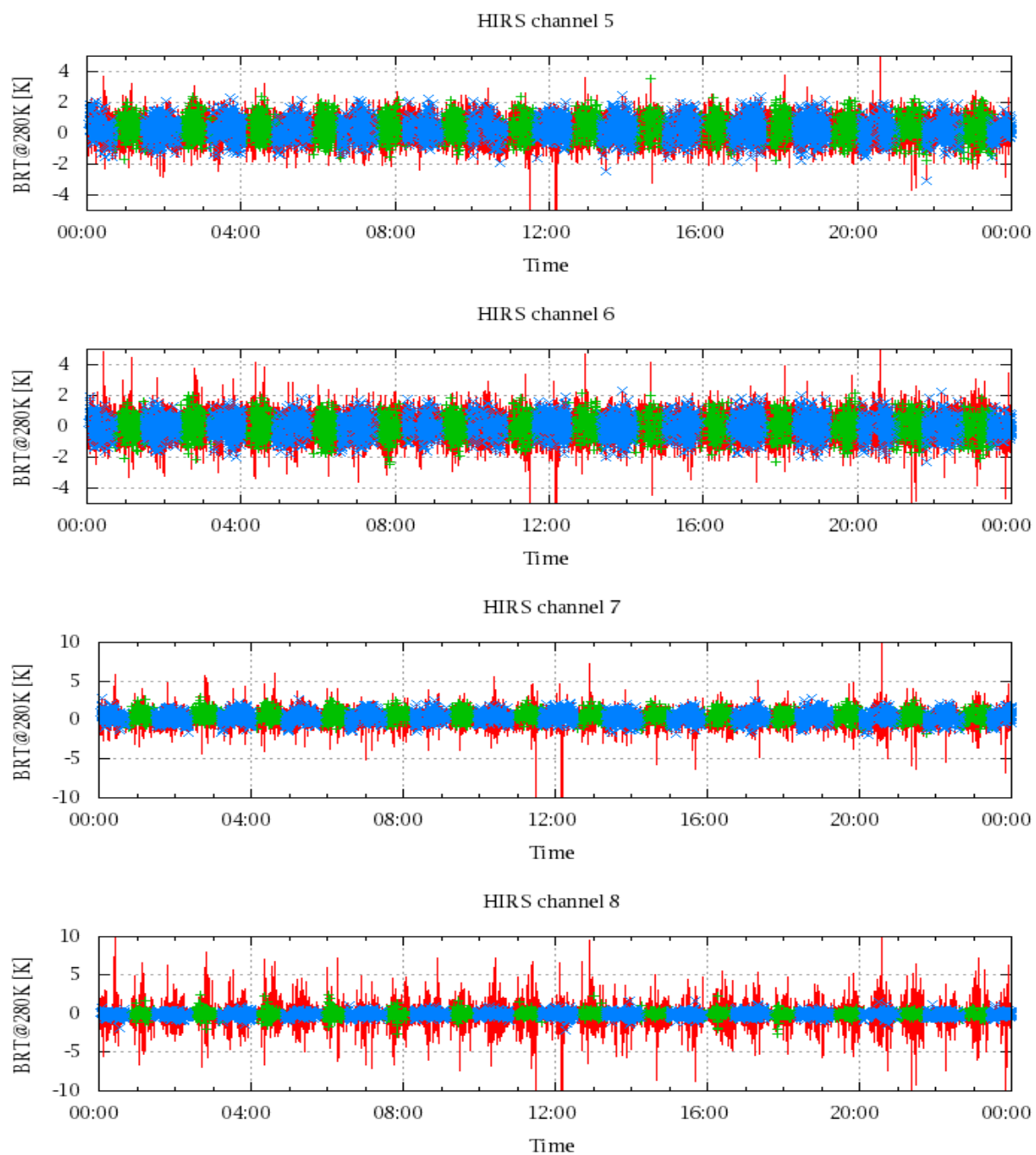


Figure 18: Radiance Differences in BRT

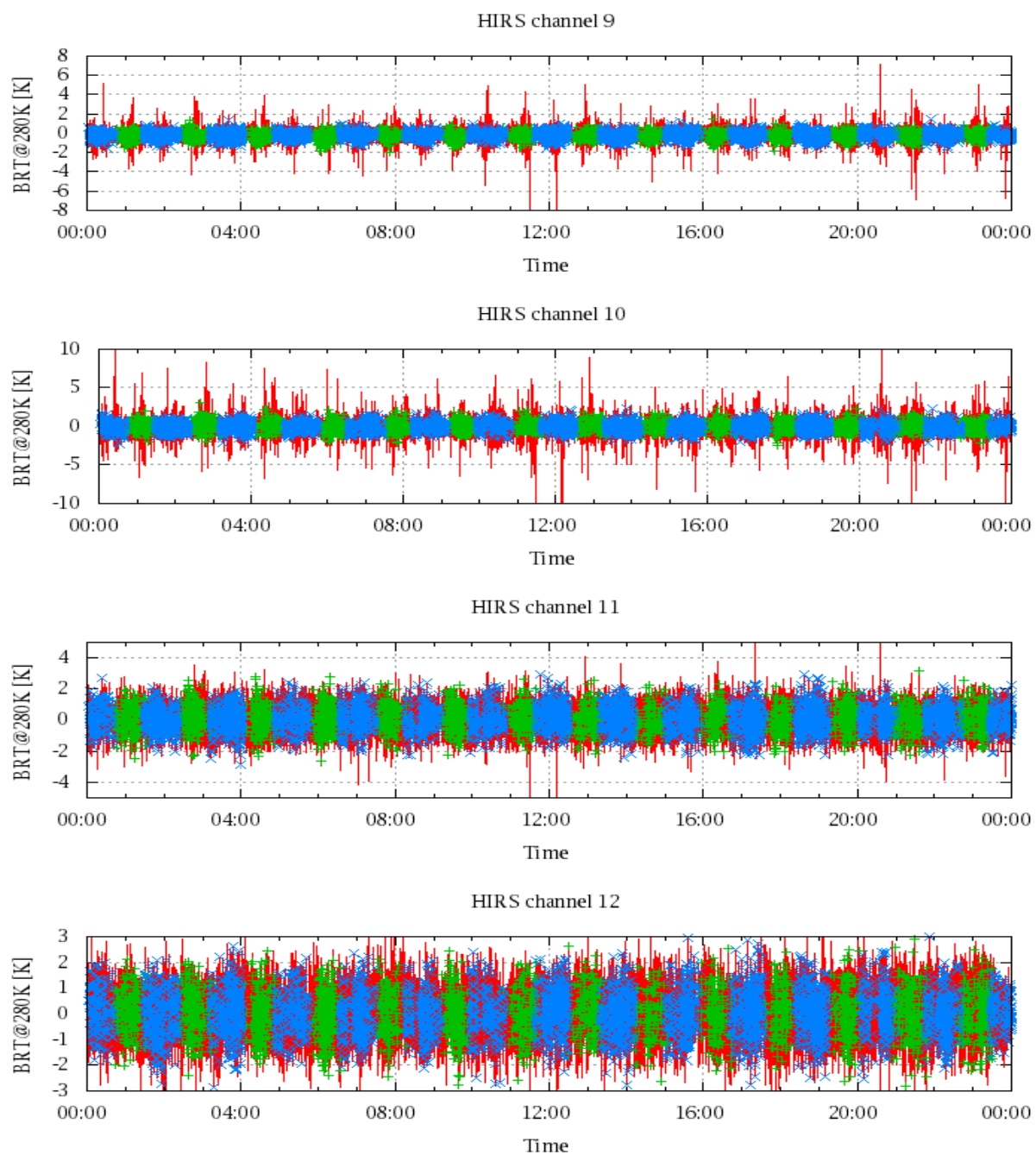


Figure 19: Radiance Differences in BRT

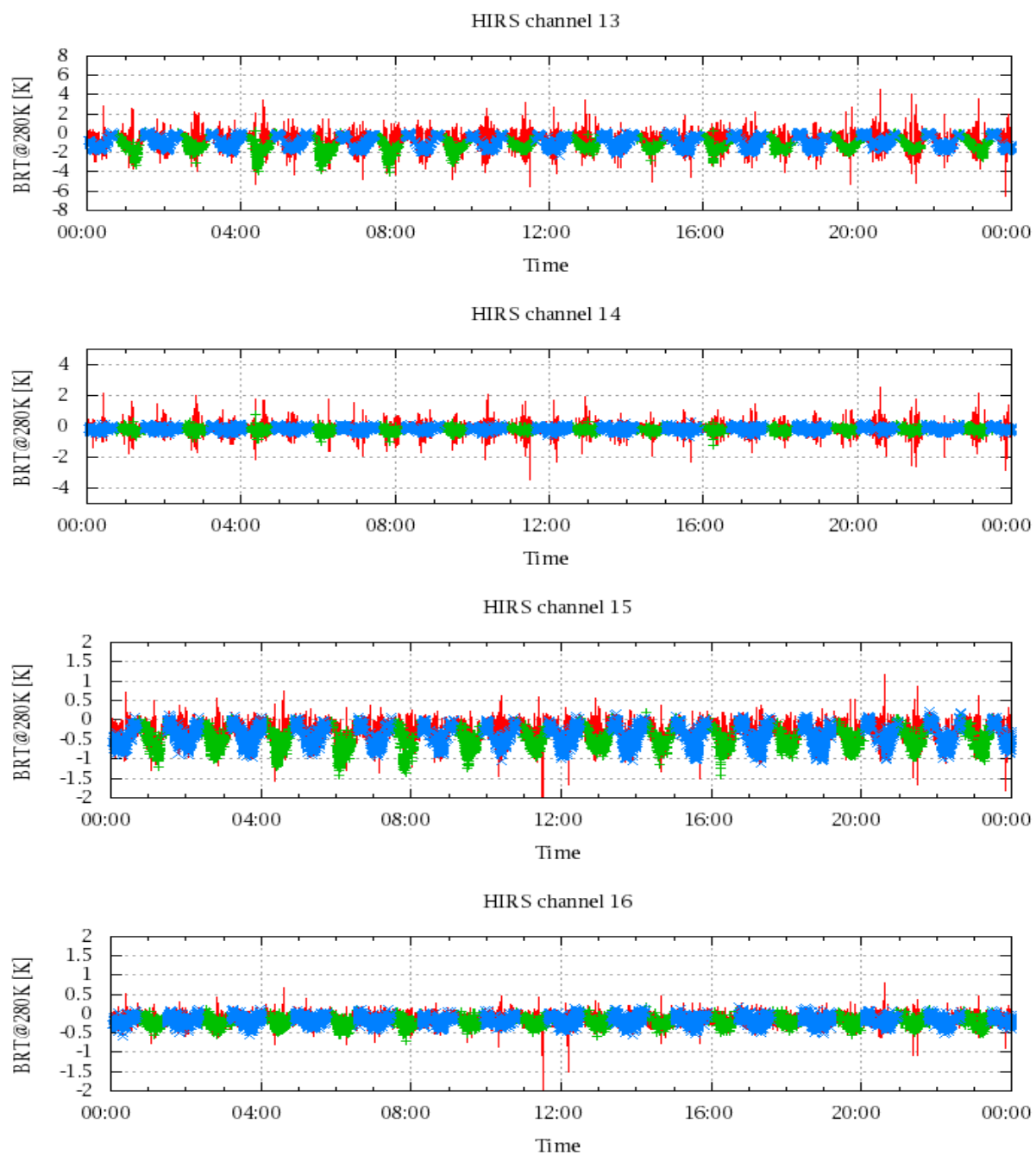


Figure 20: Radiance Differences in BRT

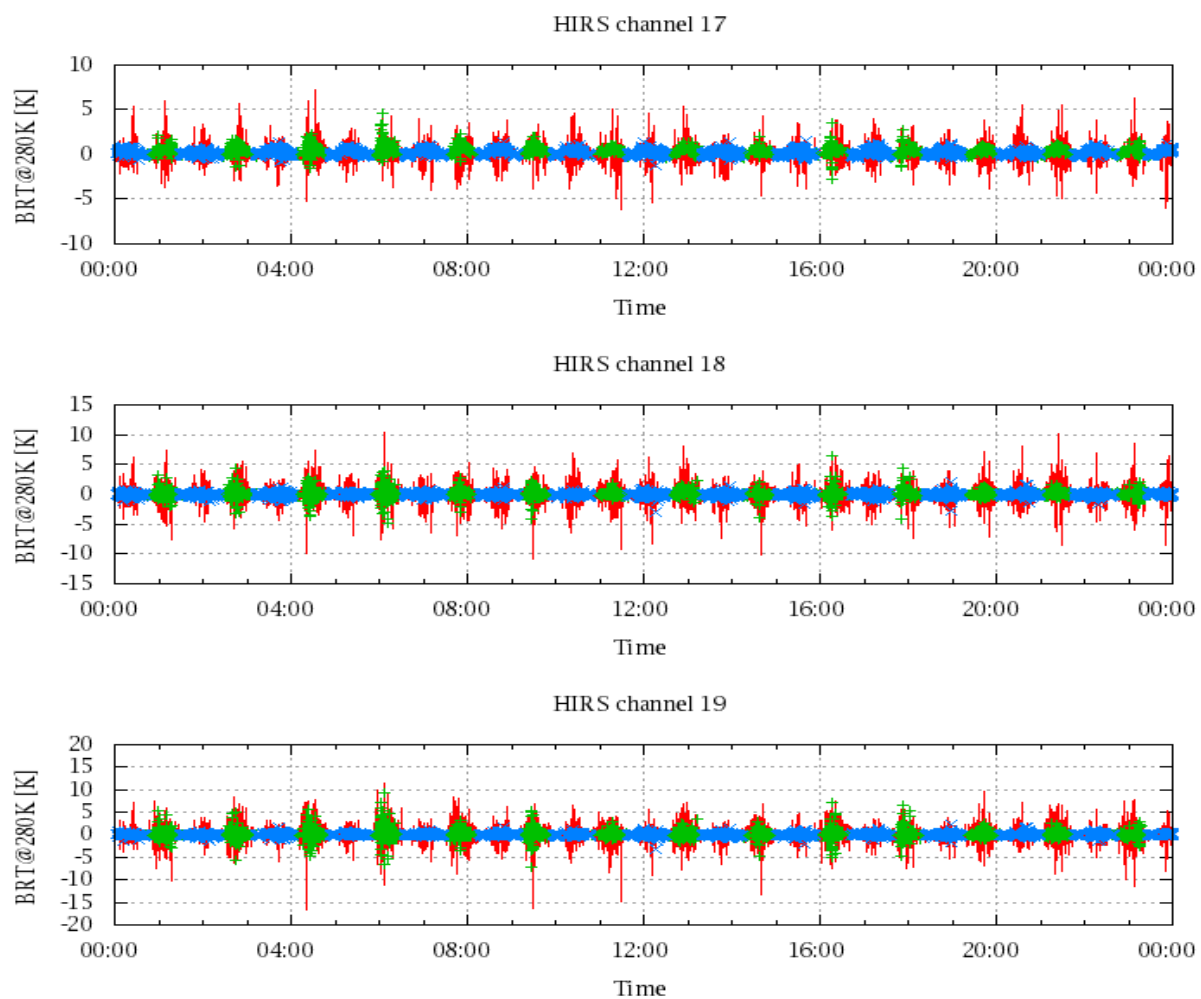


Figure 21: Radinace Differences in BRT