

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

03/05/2018 00:00:00 - 04/05/2018 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 03/05/2018 00:00:00 - 04/05/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 03/05/2018 00:00:00 - 04/05/2018 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)	15643	15693	20180503113423.701	20180503113437.537
PX1 (130)	15695	15772	20180503113437.970	20180503113457.646
PX1 (130)	15772	15843	20180503113457.646	20180503113517.537
PX2 (135)	15643	15693	20180503113423.701	20180503113437.537
PX2 (135)	15695	15772	20180503113437.970	20180503113457.646
PX2 (135)	15772	15843	20180503113457.646	20180503113517.537
PX3 (140)	15643	15693	20180503113423.701	20180503113437.537
PX3 (140)	15694	15772	20180503113437.756	20180503113457.646
PX3 (140)	15772	15843	20180503113457.646	20180503113517.537
PX4 (145)	15643	15693	20180503113423.701	20180503113437.537
PX4 (145)	15694	15772	20180503113437.756	20180503113457.646
PX4 (145)	15772	15843	20180503113457.646	20180503113517.537
IMG (150)	7374	7433	20180503113423.486	20180503113437.537
IMG (150)	7434	7519	20180503113437.756	20180503113457.431
IMG (150)	7520	7603	20180503113457.646	20180503113517.537
VER (160)	14327	14332	20180503113517.970	20180503113517.970
VER (160)	14332	14337	20180503113517.970	20180503113517.970
VER (160)	14337	14342	20180503113517.970	20180503113517.970

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	14342	14347	20180503113517.970	20180503113517.970
VER (160)	14347	14352	20180503113517.970	20180503113517.970
VER (160)	14352	14357	20180503113517.970	20180503113517.970
VER (160)	14357	14328	20180503113517.970	20180503113517.970
VER (160)	14328	14333	20180503113517.970	20180503113517.970
VER (160)	14333	14338	20180503113517.970	20180503113517.970
VER (160)	14338	14343	20180503113517.970	20180503113517.970
VER (160)	14343	14348	20180503113517.970	20180503113517.970
VER (160)	14348	14353	20180503113517.970	20180503113517.970
VER (160)	14353	14358	20180503113517.970	20180503113517.970
VER (160)	14358	14329	20180503113517.970	20180503113517.970
VER (160)	14329	14334	20180503113517.970	20180503113517.970
VER (160)	14334	14339	20180503113517.970	20180503113517.970
VER (160)	14339	14344	20180503113517.970	20180503113517.970
VER (160)	14344	14349	20180503113517.970	20180503113517.970
VER (160)	14349	14354	20180503113517.970	20180503113517.970
VER (160)	14354	14359	20180503113517.970	20180503113517.970
VER (160)	14359	14330	20180503113517.970	20180503113517.970
VER (160)	14330	14335	20180503113517.970	20180503113517.970
VER (160)	14335	14340	20180503113517.970	20180503113517.970
VER (160)	14340	14345	20180503113517.970	20180503113517.970
VER (160)	14345	14350	20180503113517.970	20180503113517.970
VER (160)	14350	14355	20180503113517.970	20180503113517.970
VER (160)	14355	14360	20180503113517.970	20180503113517.970
VER (160)	14360	14331	20180503113517.970	20180503113517.970
VER (160)	14331	14336	20180503113517.970	20180503113517.970
VER (160)	14336	14341	20180503113517.970	20180503113517.970
VER (160)	14341	14346	20180503113517.970	20180503113517.970
VER (160)	14346	14351	20180503113517.970	20180503113517.970
VER (160)	14351	14356	20180503113517.970	20180503113517.970
VER (160)	14356	14361	20180503113517.970	20180503113517.970
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
03/05/2018 00:00:24	-	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)	99.56 %	-
GQisFlagQual set (PX2)	99.64 %	-
GQisFlagQual set (PX3)	99.64 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.60 %	-

Table 4: Quality flags

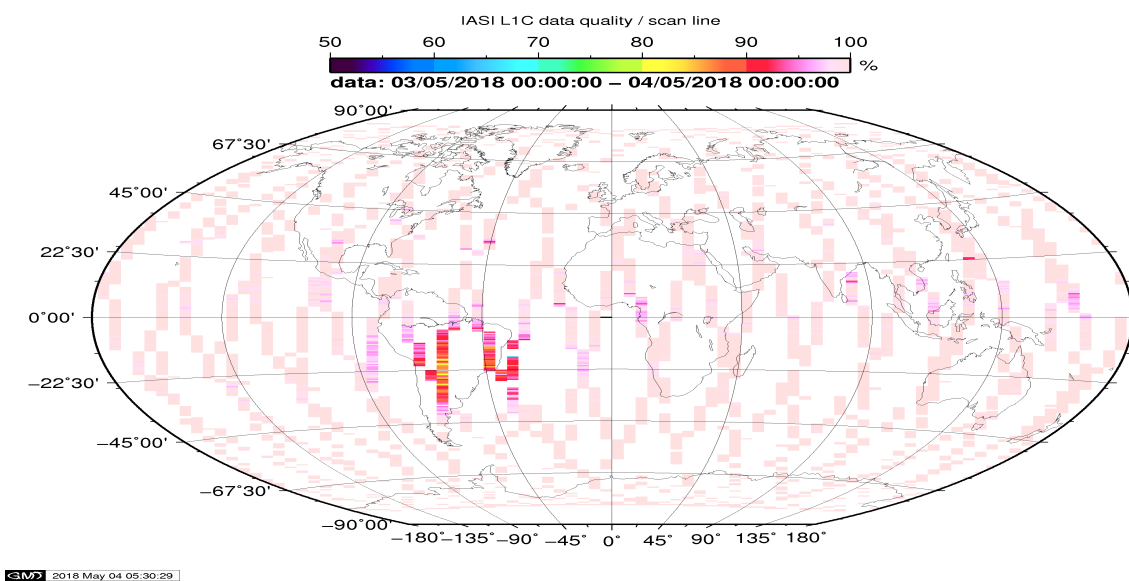


Figure 1: L1C data quality

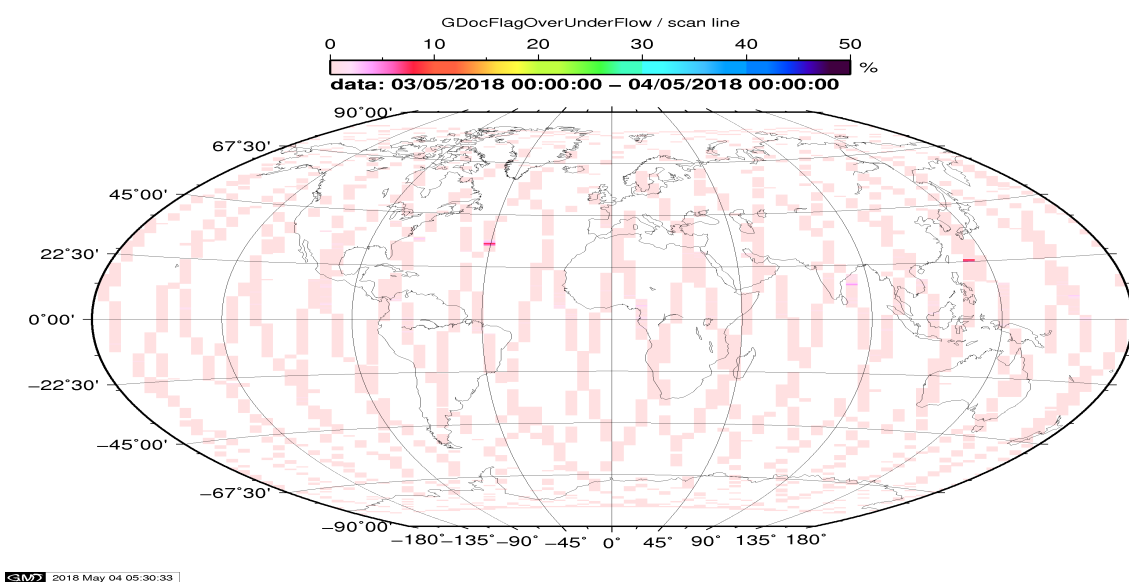


Figure 2: Flag of Over and Under Flows

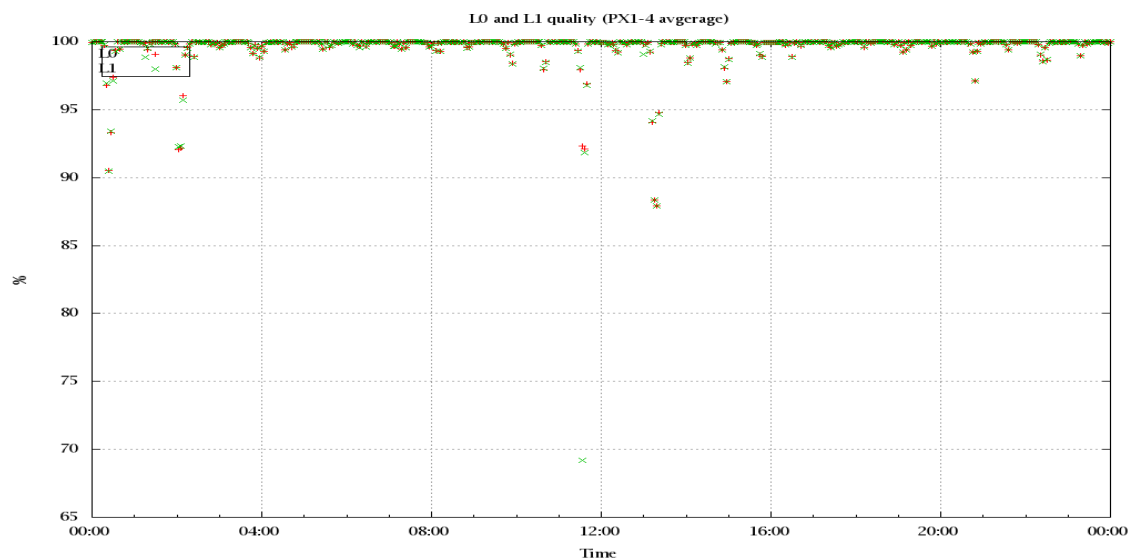


Figure 3: Level 0 and 1C overall quality

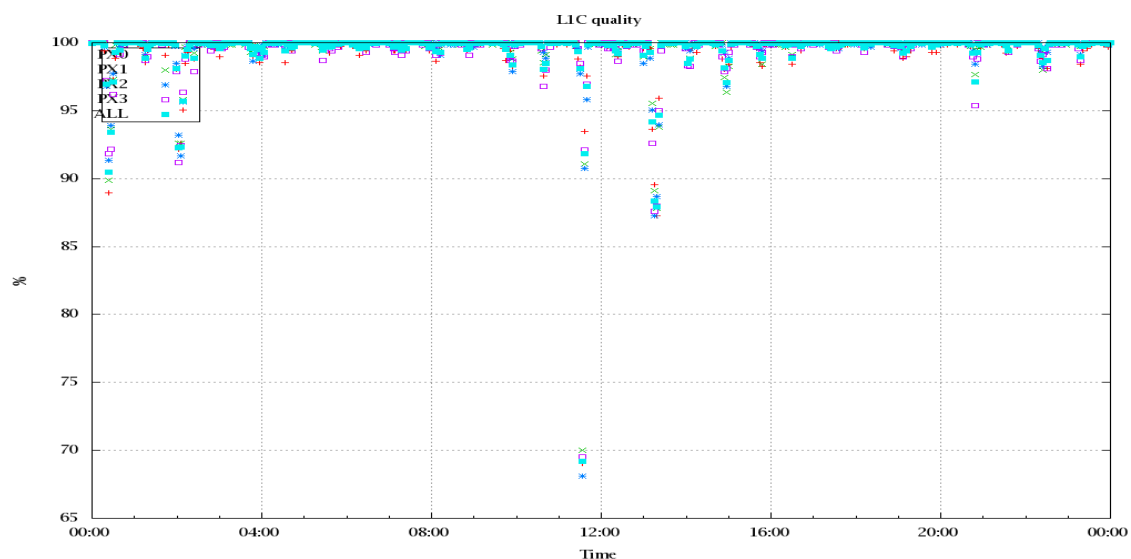


Figure 4: Level 1C quality

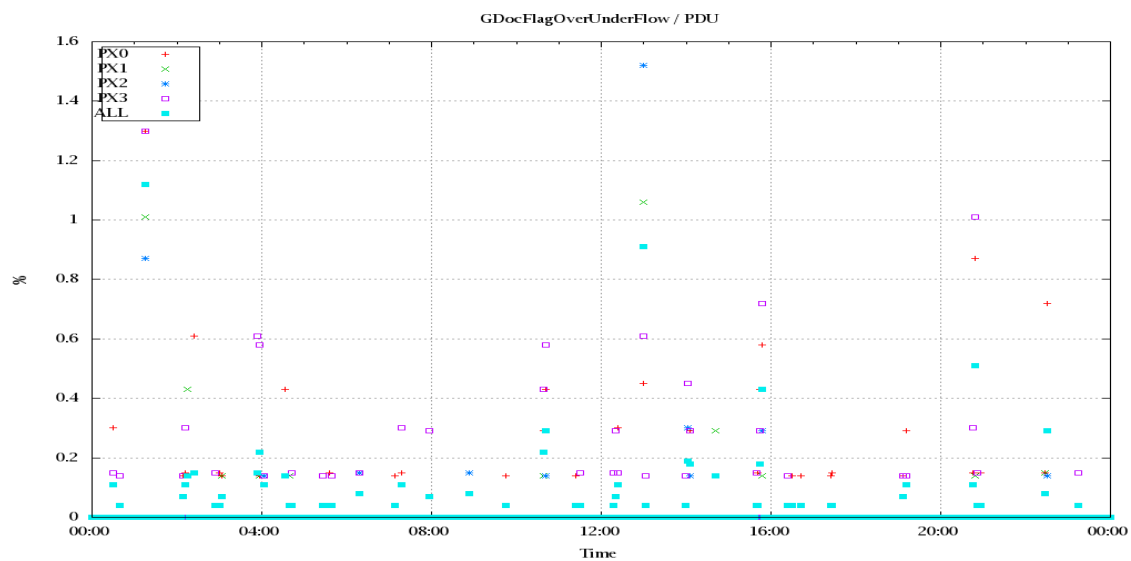


Figure 5: OverUnderFlowFlag timeseries

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.

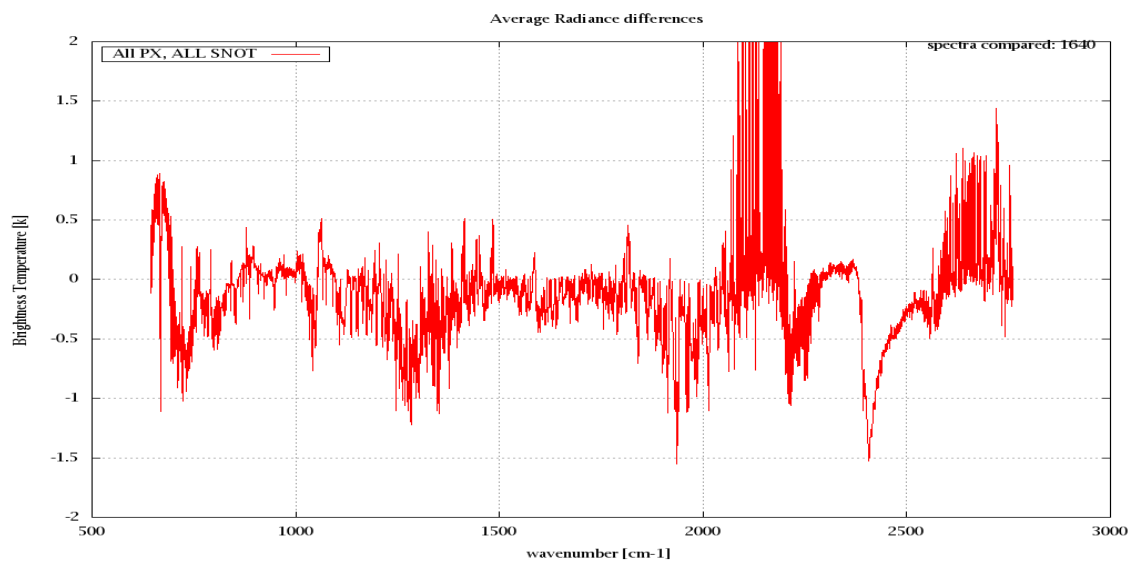


Figure 6: Average Radiance differences: OBS-CAL

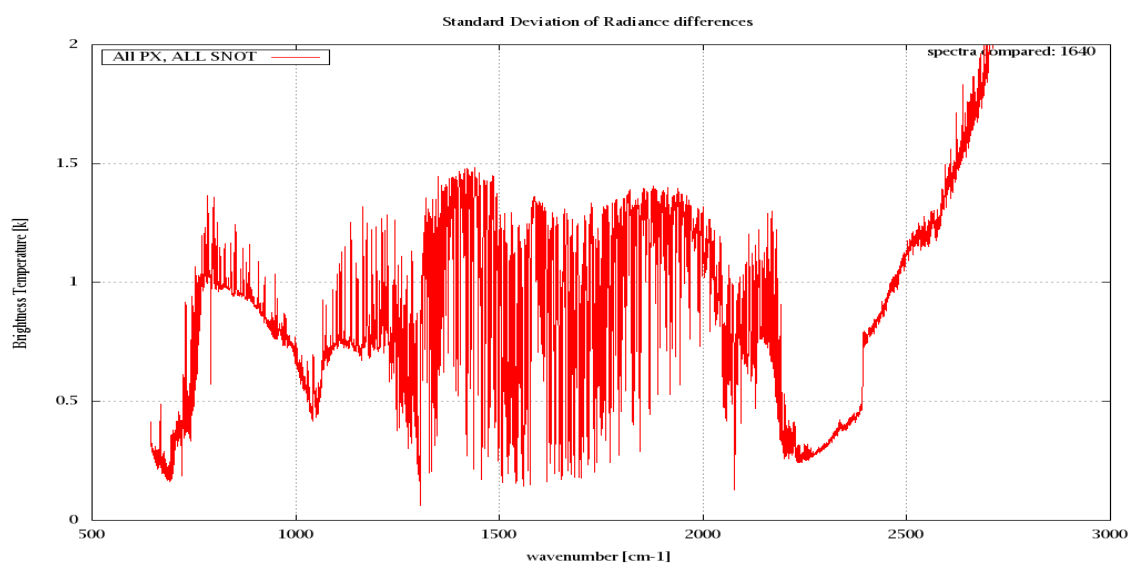


Figure 7: Standard Deviation of Radiance differences

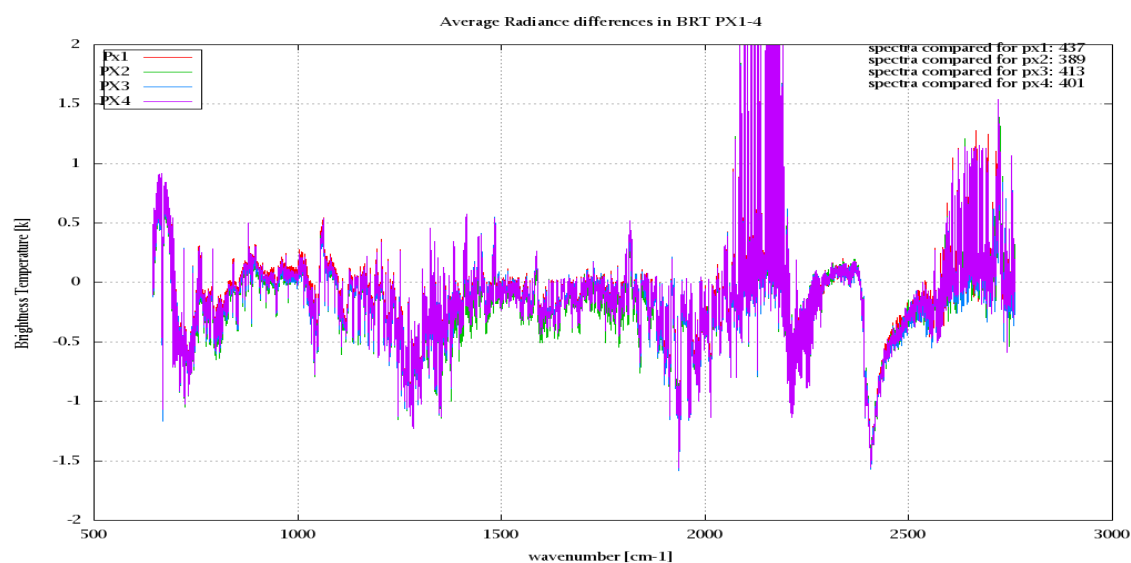


Figure 8: Average Radiance differences: OBS-CAL

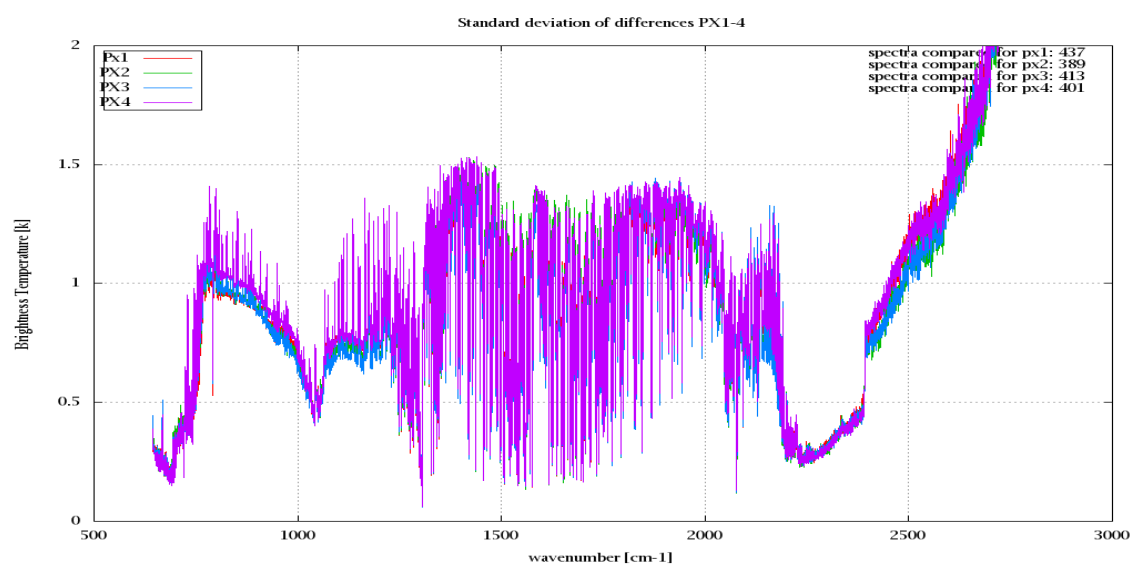


Figure 9: Standard Deviation of Radiance differences

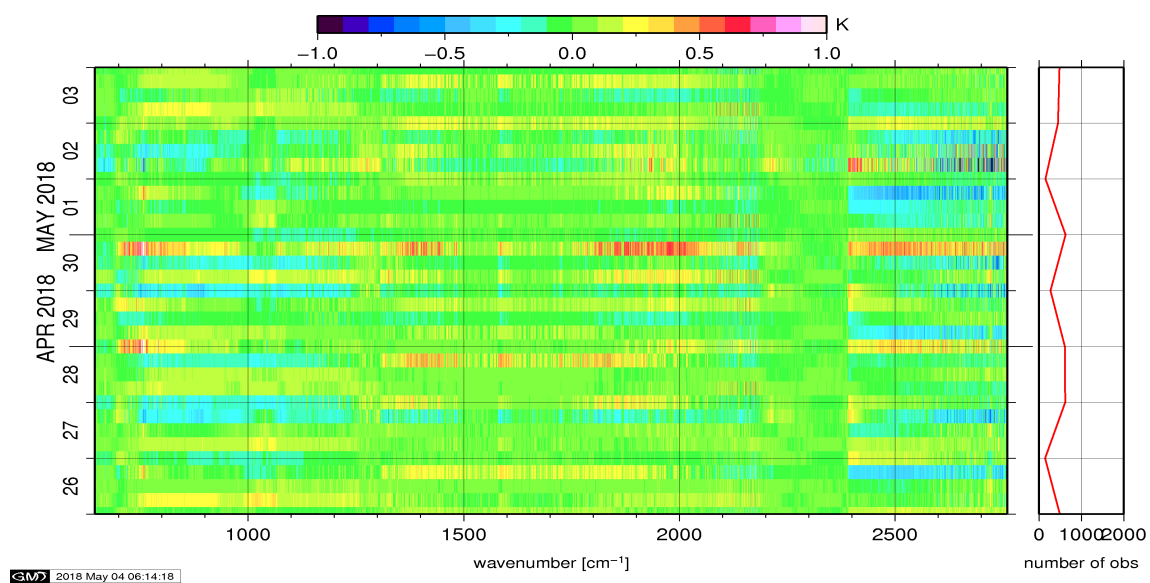


Figure 10: Radiance Anomaly in BRT: All Channels

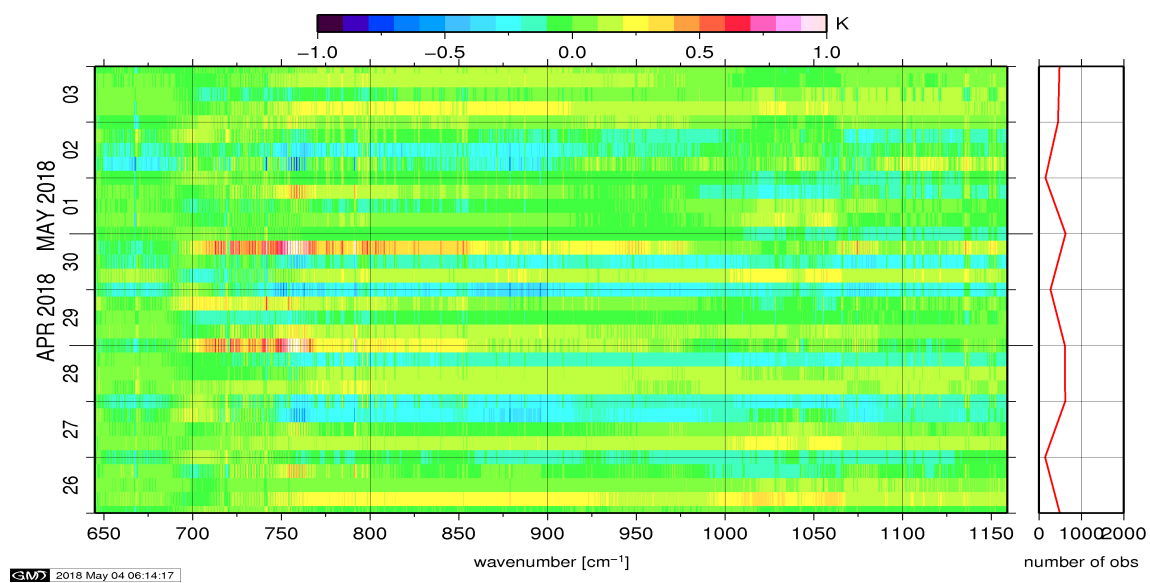


Figure 11: Radiance Anomaly in BRT: IASI Band 1

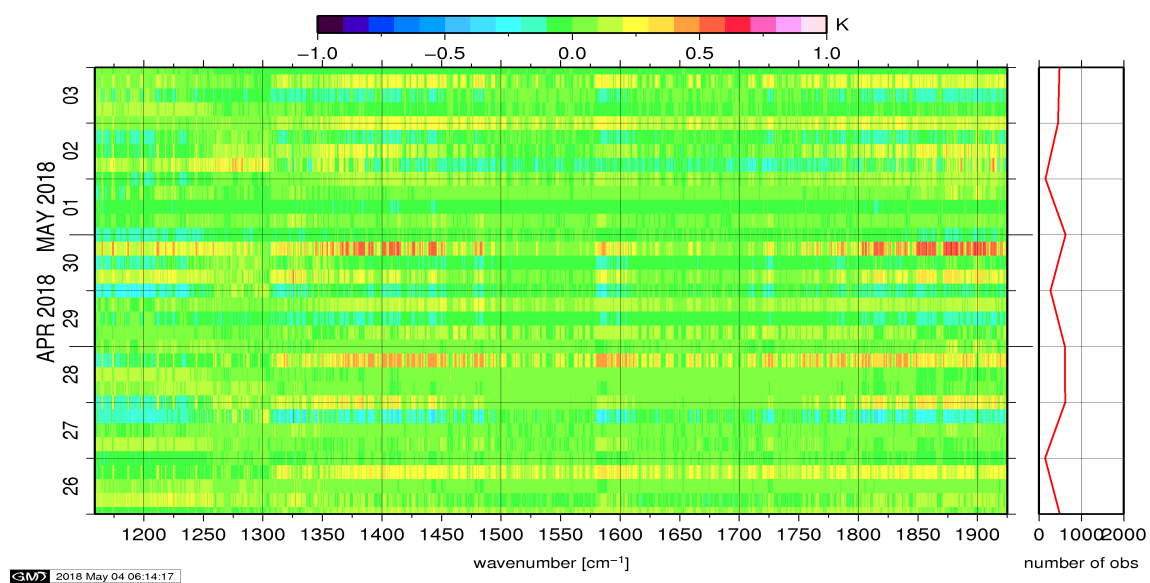


Figure 12: Radiance Anomaly in BRT: IASI Band 2

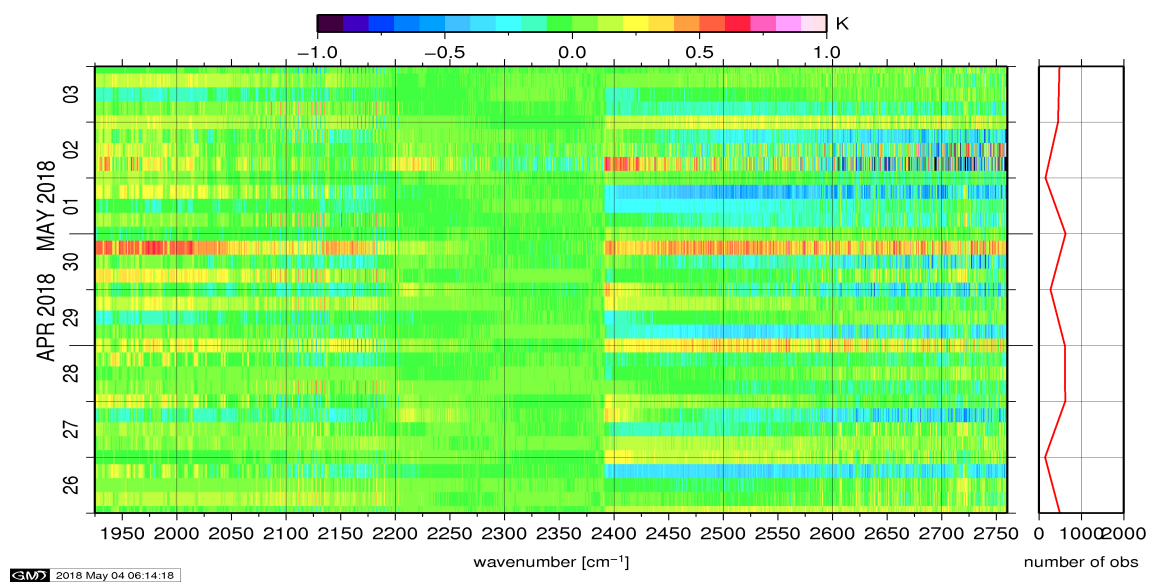


Figure 13: Radiance Anomaly in BRT: IASI Band 3

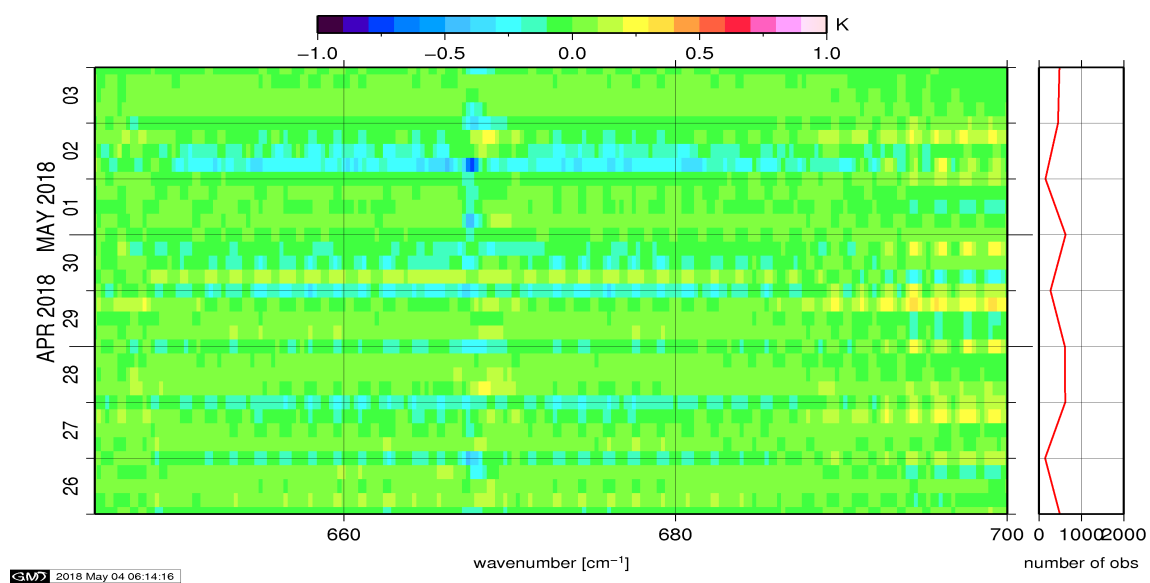


Figure 14: Radiance Anomaly in BRT: CO2 14

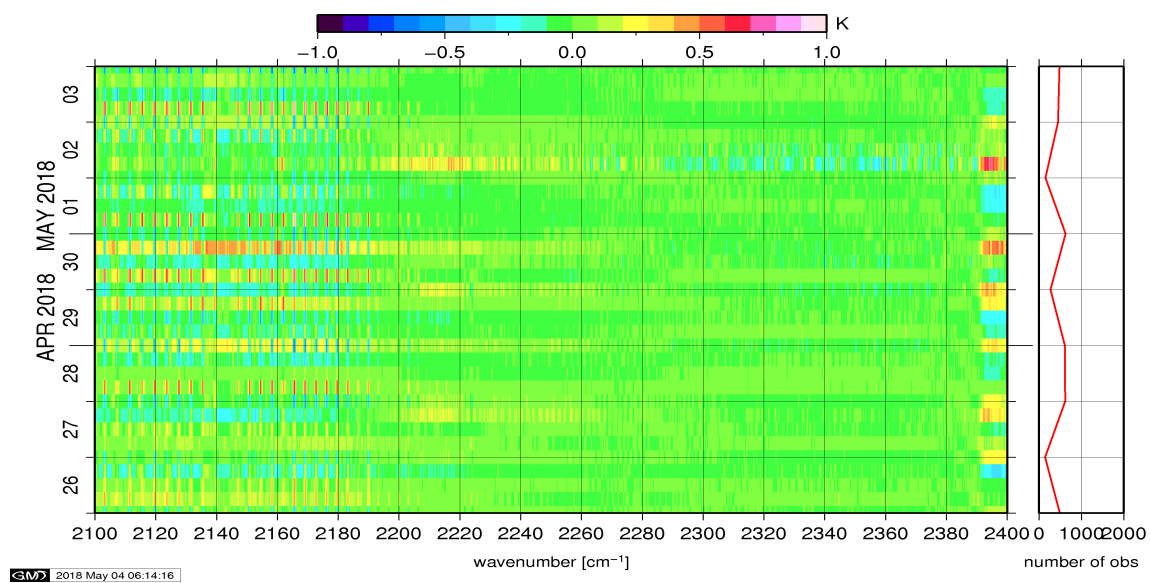


Figure 15: Radiance Anomaly in BRT: CO2 4.3

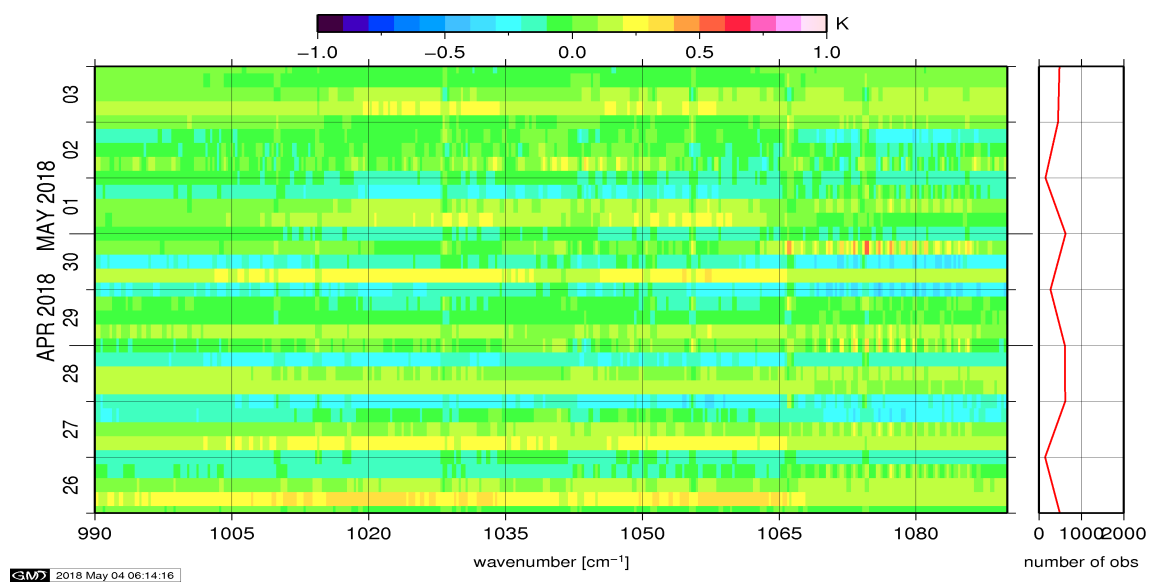


Figure 16: Radiance Anomaly in BRT: O3

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.

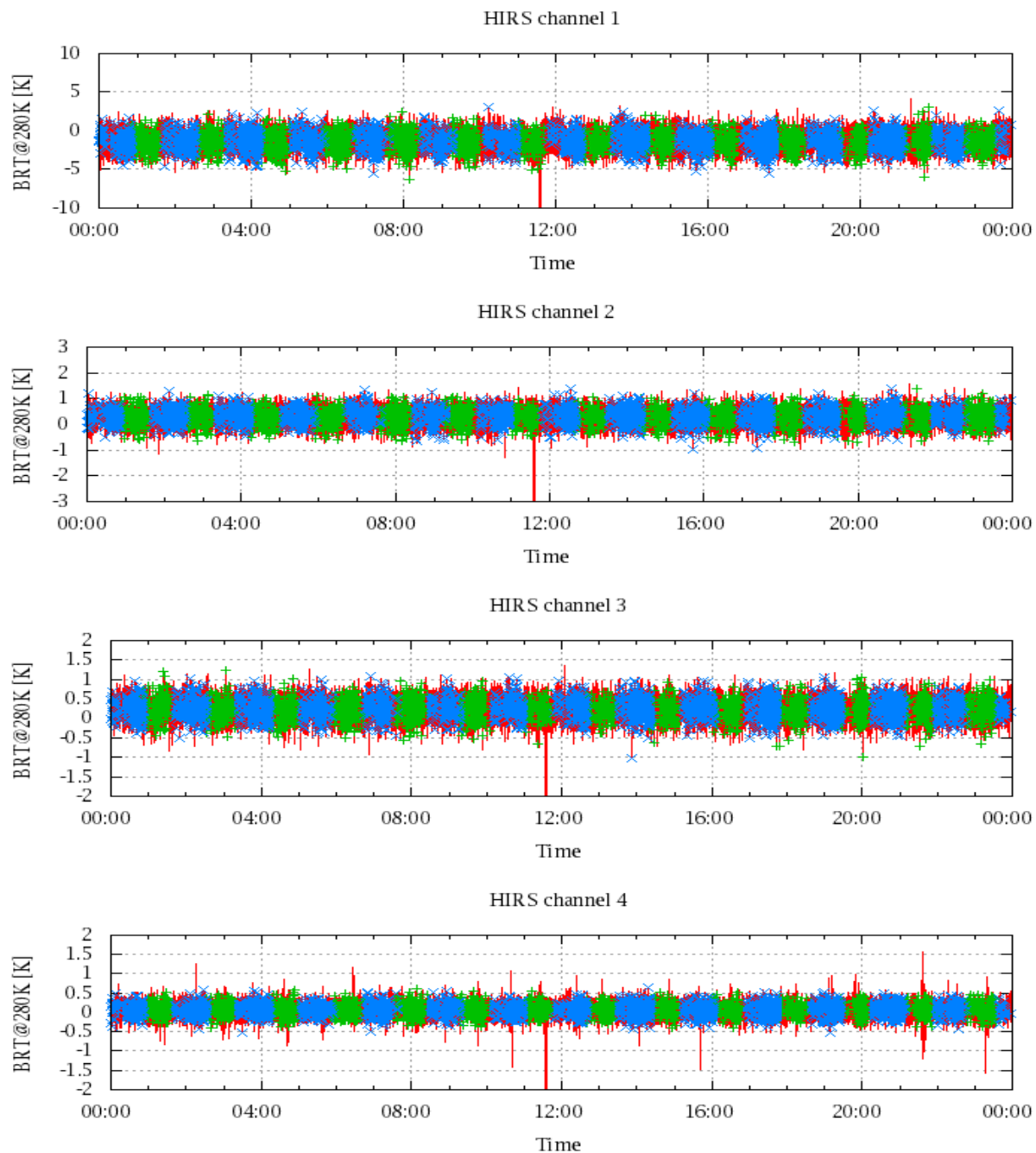


Figure 17: Radiance Differences in BRT

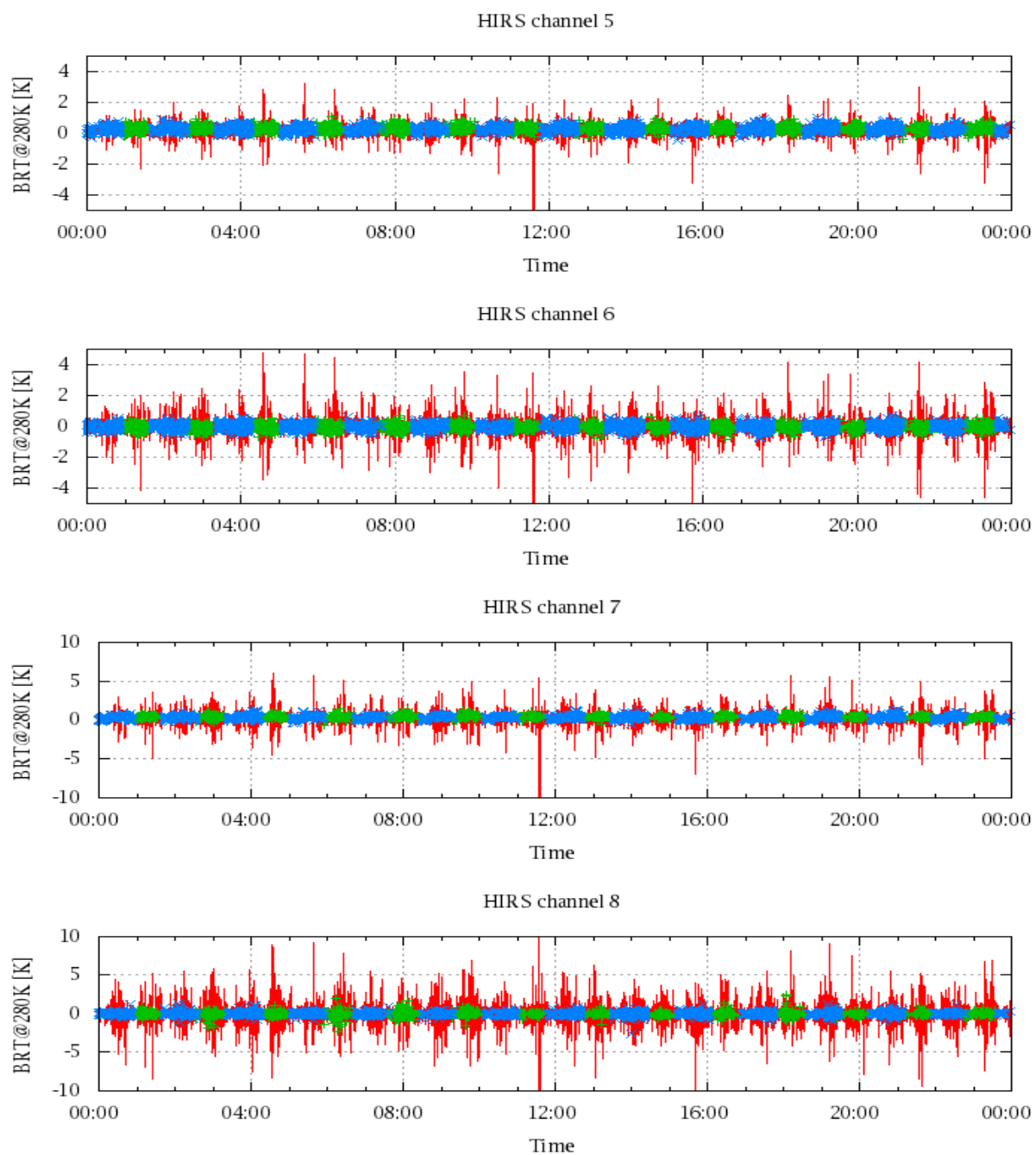


Figure 18: Radiance Differences in BRT

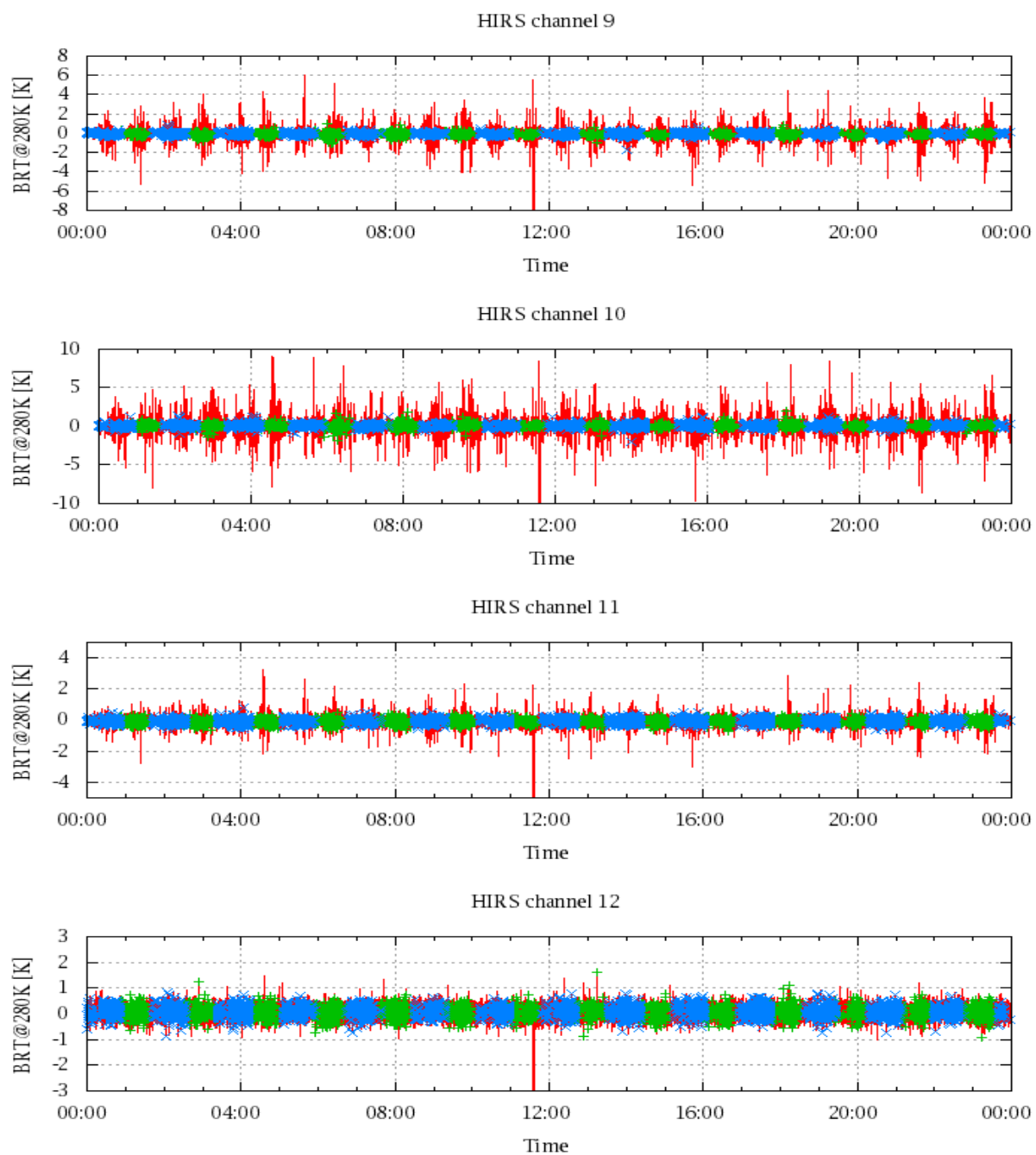


Figure 19: Radiance Differences in BRT

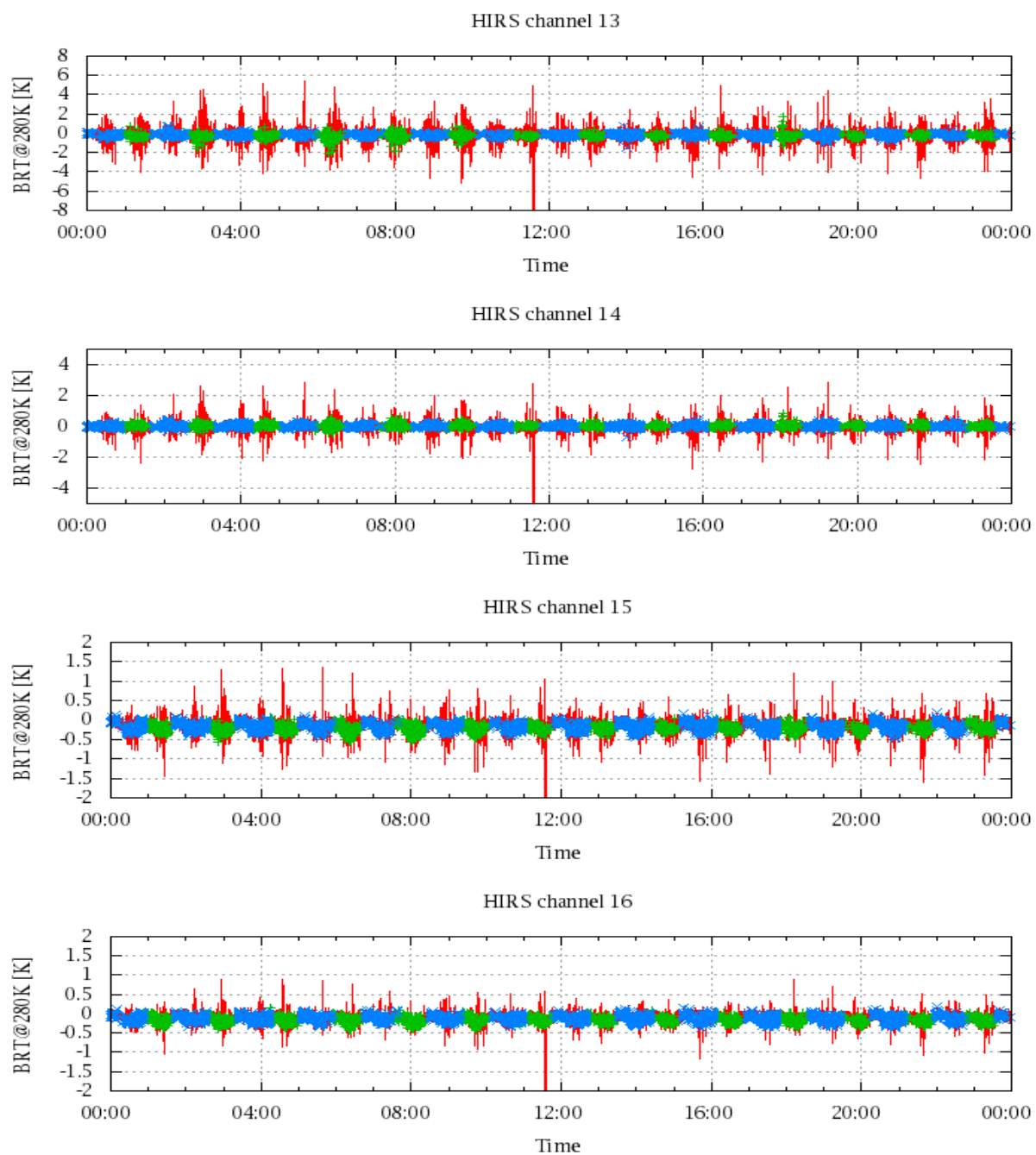


Figure 20: Radiance Differences in BRT

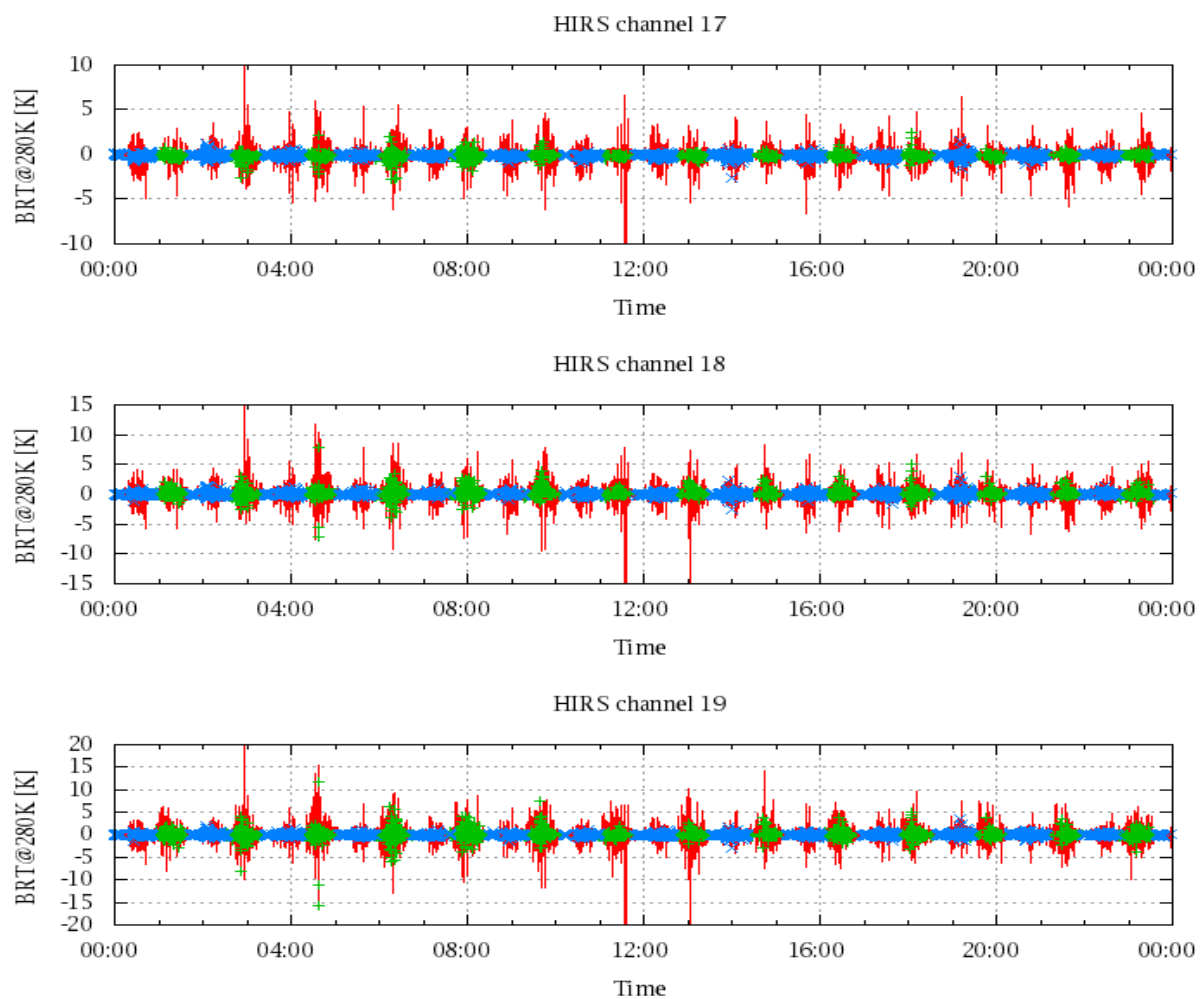


Figure 21: Radinace Differences in BRT