

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

24/05/2016 00:00:00 - 25/05/2016 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 24/05/2016 00:00:00 - 25/05/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 24/05/2016 00:00:00 - 25/05/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	478	-
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)	7500	7502	20160524025609.506	20160524025609.940
PX1 (130)	7505	7507	20160524025610.588	20160524025611.022
PX1 (130)	7518	7520	20160524025614.913	20160524025615.346
PX1 (130)	7521	7523	20160524025615.561	20160524025615.995
PX1 (130)	7527	7529	20160524025616.858	20160524025617.291
PX1 (130)	7536	7538	20160524025618.803	20160524025620.752
PX2 (135)	7503	7505	20160524025610.155	20160524025610.588
PX2 (135)	7505	7507	20160524025610.588	20160524025611.022
PX2 (135)	7510	7512	20160524025613.182	20160524025613.616
PX2 (135)	7512	7514	20160524025613.616	20160524025614.049
PX2 (135)	7516	7520	20160524025614.479	20160524025615.346
PX2 (135)	7521	7523	20160524025615.561	20160524025615.995
PX2 (135)	7530	7532	20160524025617.506	20160524025617.940
PX2 (135)	7536	7538	20160524025618.803	20160524025620.752
PX3 (140)	7496	7498	20160524025608.643	20160524025609.077
PX3 (140)	7503	7505	20160524025610.155	20160524025610.588
PX3 (140)	7505	7507	20160524025610.588	20160524025611.022
PX3 (140)	7510	7512	20160524025613.182	20160524025613.616

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	7512	7514	20160524025613.616	20160524025614.049
PX3 (140)	7516	7519	20160524025614.479	20160524025615.127
PX3 (140)	7530	7532	20160524025617.506	20160524025617.940
PX4 (145)	7496	7498	20160524025608.643	20160524025609.077
PX4 (145)	7503	7505	20160524025610.155	20160524025610.588
PX4 (145)	7505	7507	20160524025610.588	20160524025611.022
PX4 (145)	7510	7512	20160524025613.182	20160524025613.616
PX4 (145)	7512	7514	20160524025613.616	20160524025614.049
PX4 (145)	7516	7519	20160524025614.479	20160524025615.127
PX4 (145)	7530	7532	20160524025617.506	20160524025617.940
PX4 (145)	7541	7543	20160524025621.397	20160524025621.831
IMG (150)	344	346	20160524025608.643	20160524025609.077
IMG (150)	347	349	20160524025609.291	20160524025609.721
IMG (150)	352	354	20160524025610.374	20160524025610.803
IMG (150)	369	371	20160524025614.698	20160524025615.127
IMG (150)	372	374	20160524025615.346	20160524025615.776
IMG (150)	374	376	20160524025615.776	20160524025616.209
IMG (150)	378	380	20160524025616.643	20160524025617.073
IMG (150)	387	389	20160524025618.588	20160524025619.022
IMG (150)	397	399	20160524025621.397	20160524025621.831
VER (160)	7459	7462	20160524025603.022	20160524025611.022
VER (160)	7465	7468	20160524025619.022	20160524025619.022
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
24/05/2016 00:00:02	-	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	478	-
GQisFlagQual set (PX1)	99.50 %	-
GQisFlagQual set (PX2)	99.49 %	-
GQisFlagQual set (PX3)	99.49 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.49 %	-

Table 4: Quality flags

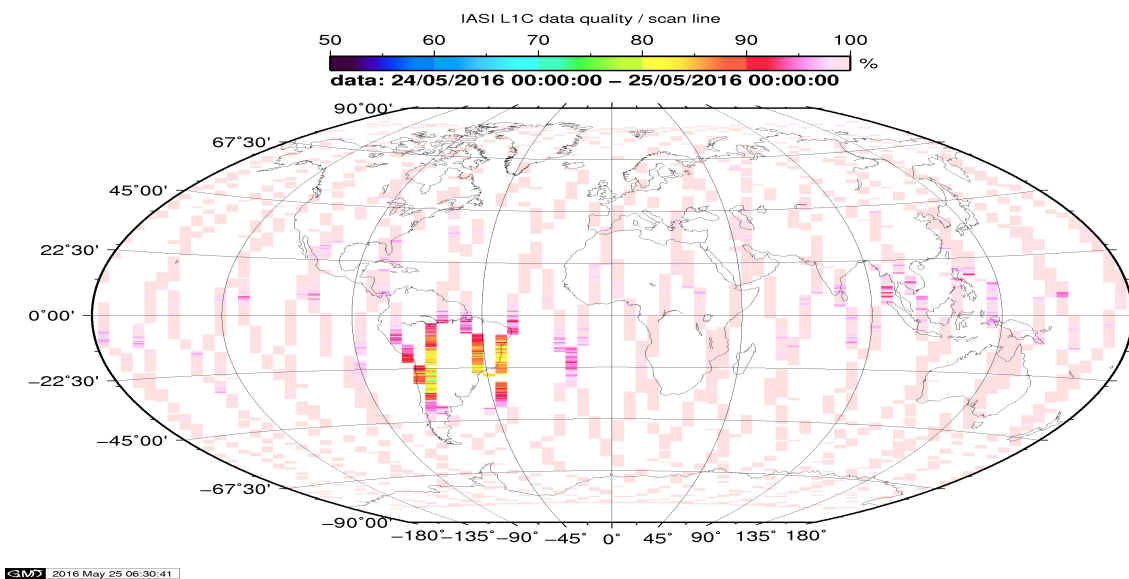


Figure 1: L1C data quality

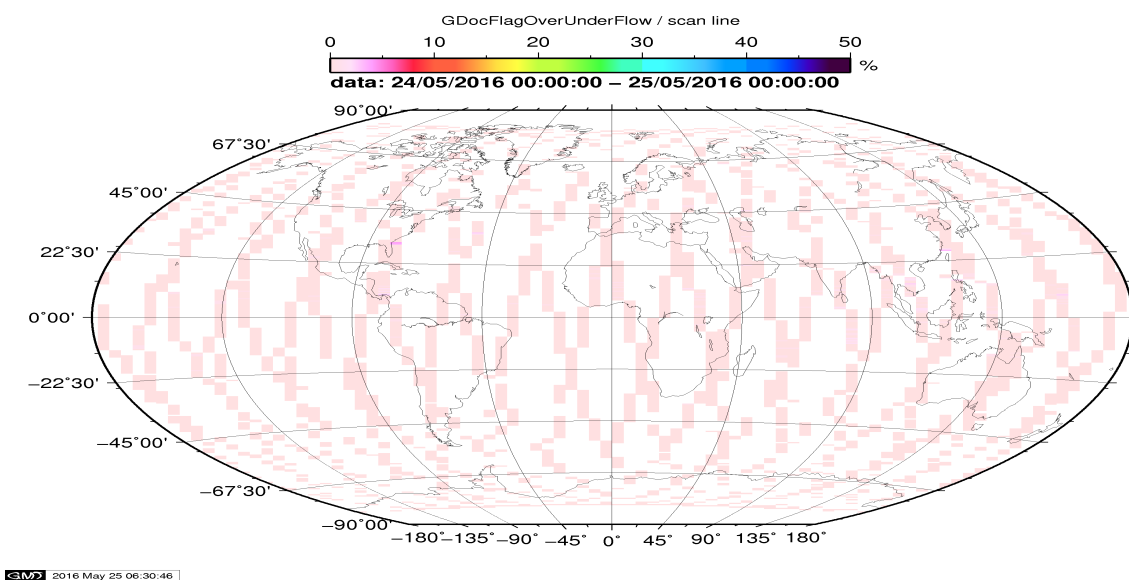


Figure 2: Flag of Over and Under Flows

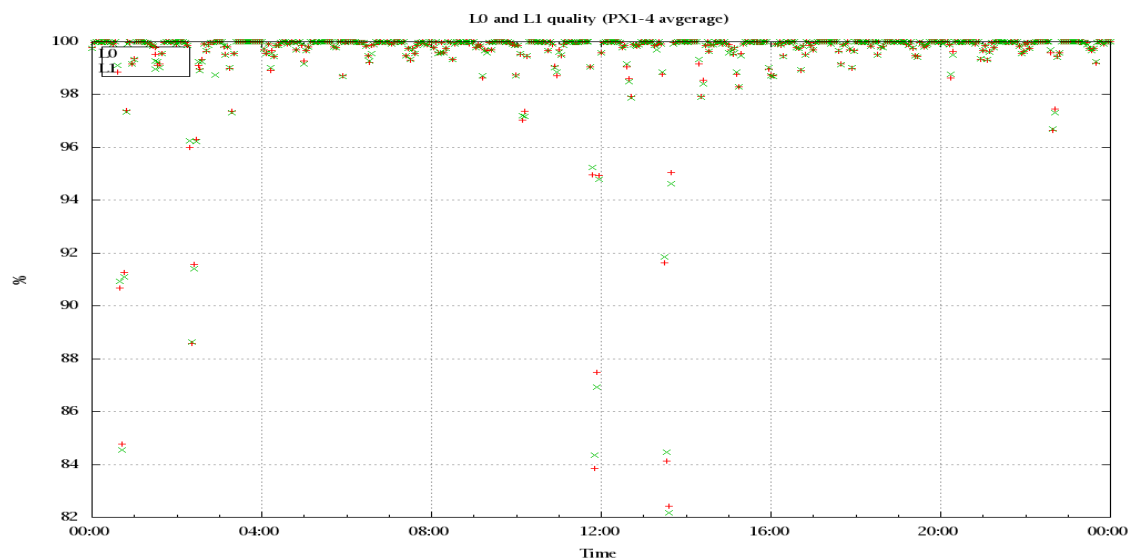


Figure 3: Level 0 and 1C overall quality

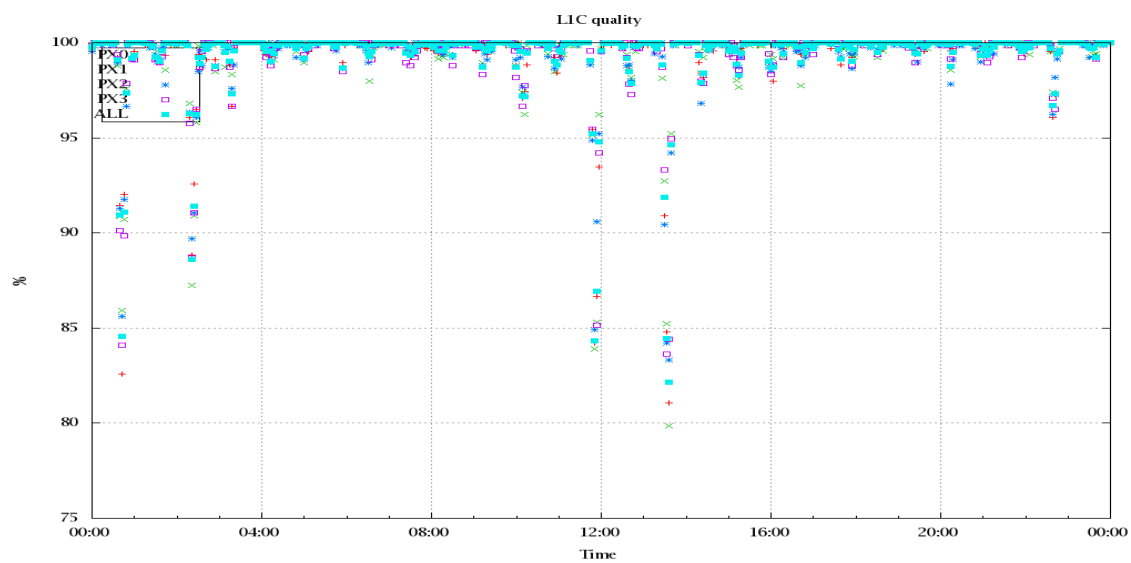


Figure 4: Level 1C quality

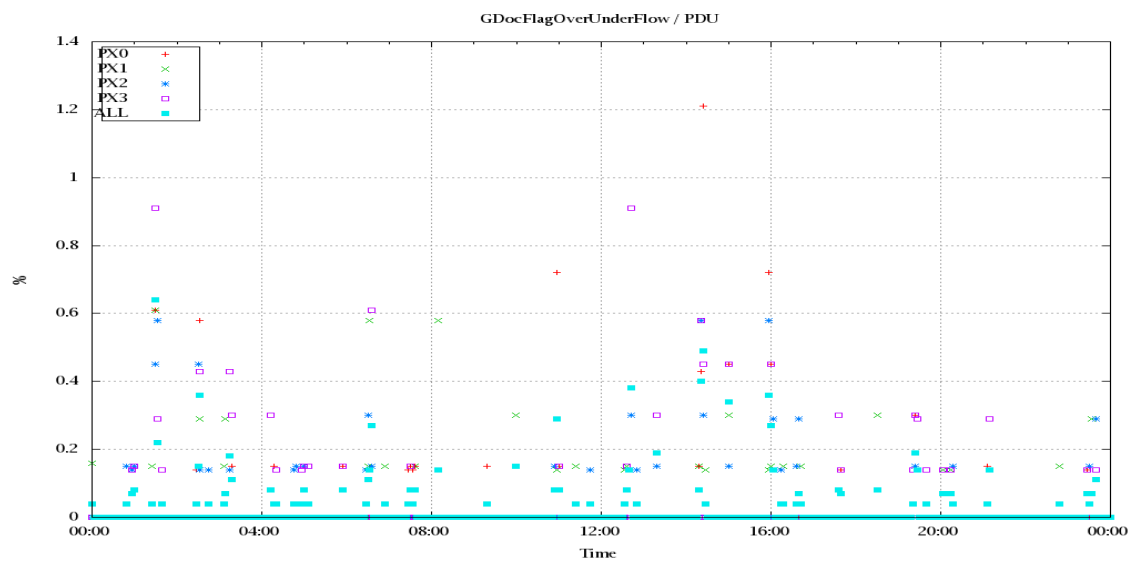


Figure 5: OverUnderFlowFlag timeseries

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.

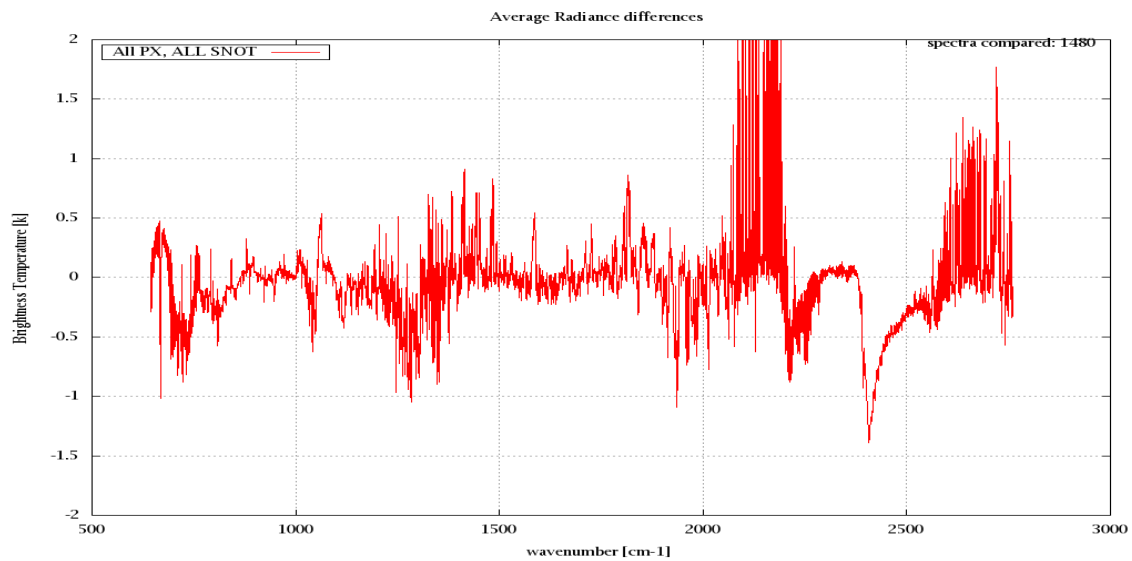


Figure 6: Average Radiance differences: OBS-CAL

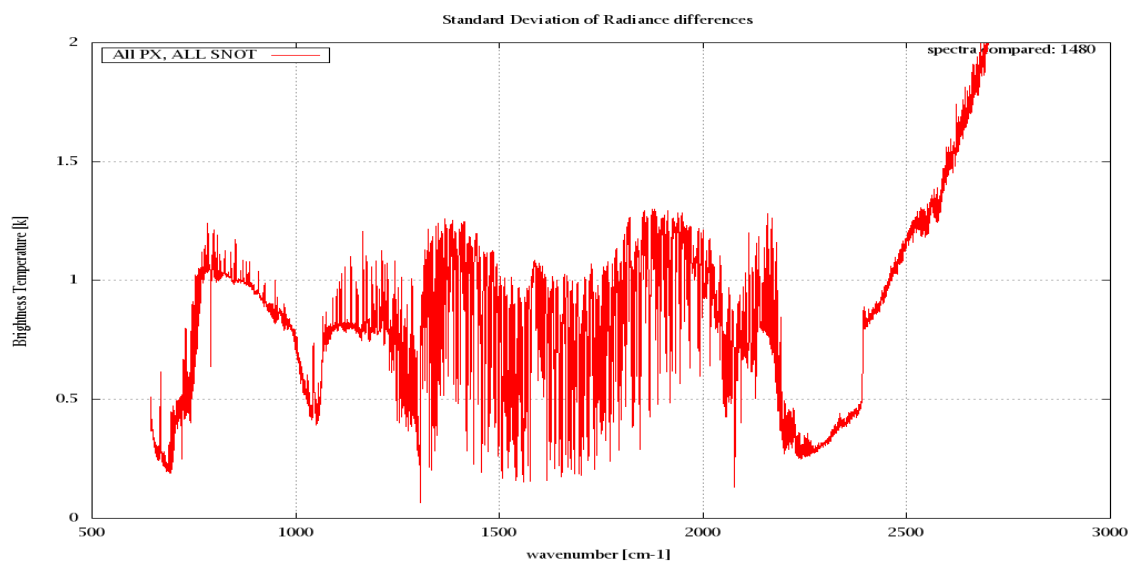


Figure 7: Standard Deviation of Radiance differences

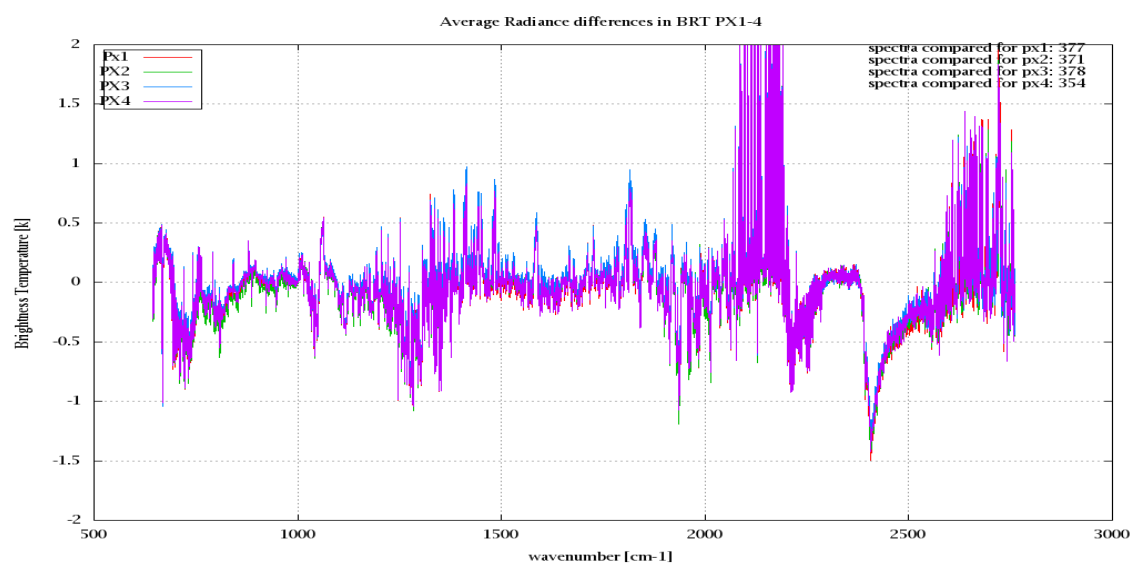


Figure 8: Average Radiance differences: OBS-CAL

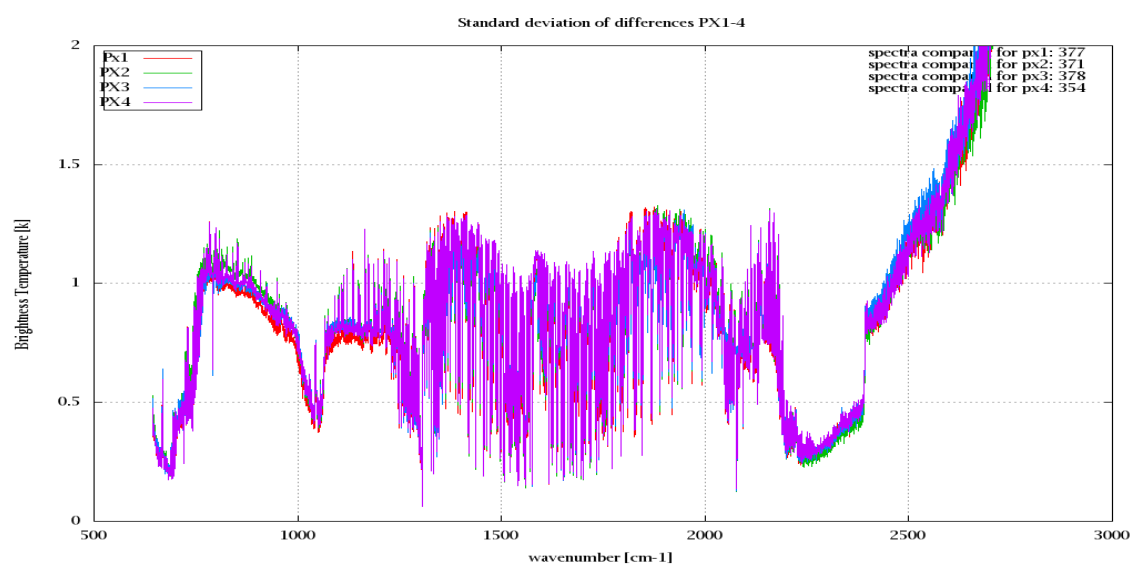


Figure 9: Standard Deviation of Radiance differences

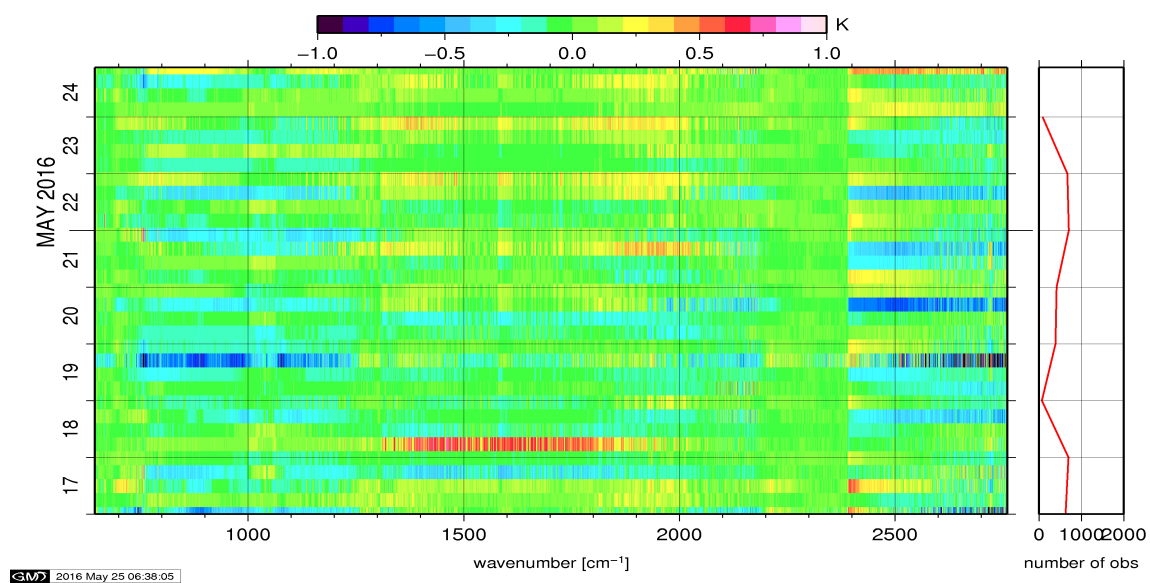


Figure 10: Radiance Anomaly in BRT: All Channels

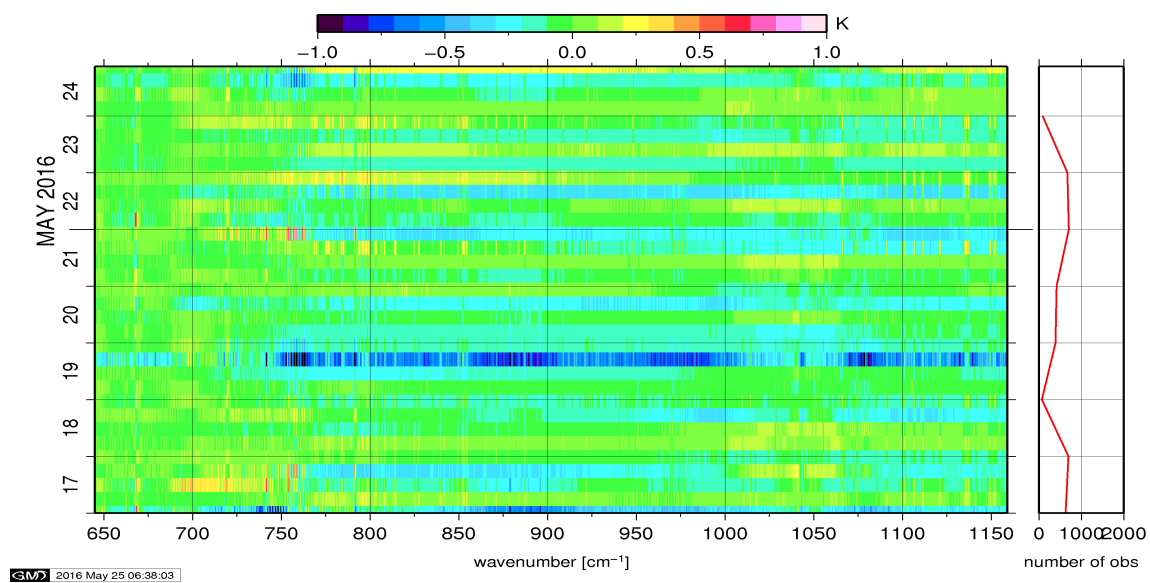


Figure 11: Radiance Anomaly in BRT: IASI Band 1

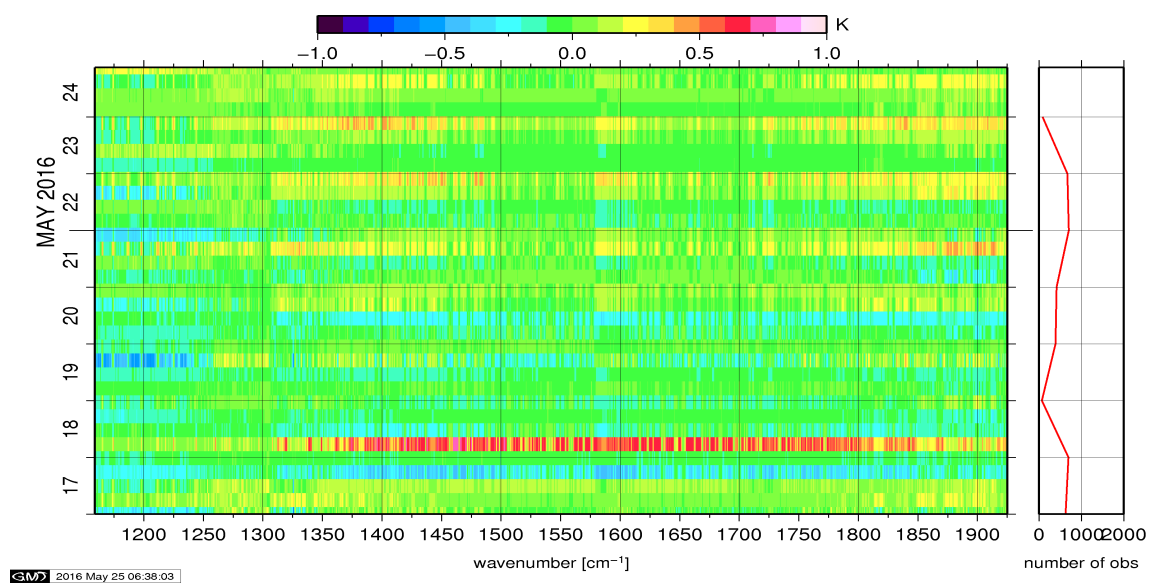


Figure 12: Radiance Anomaly in BRT: IASI Band 2

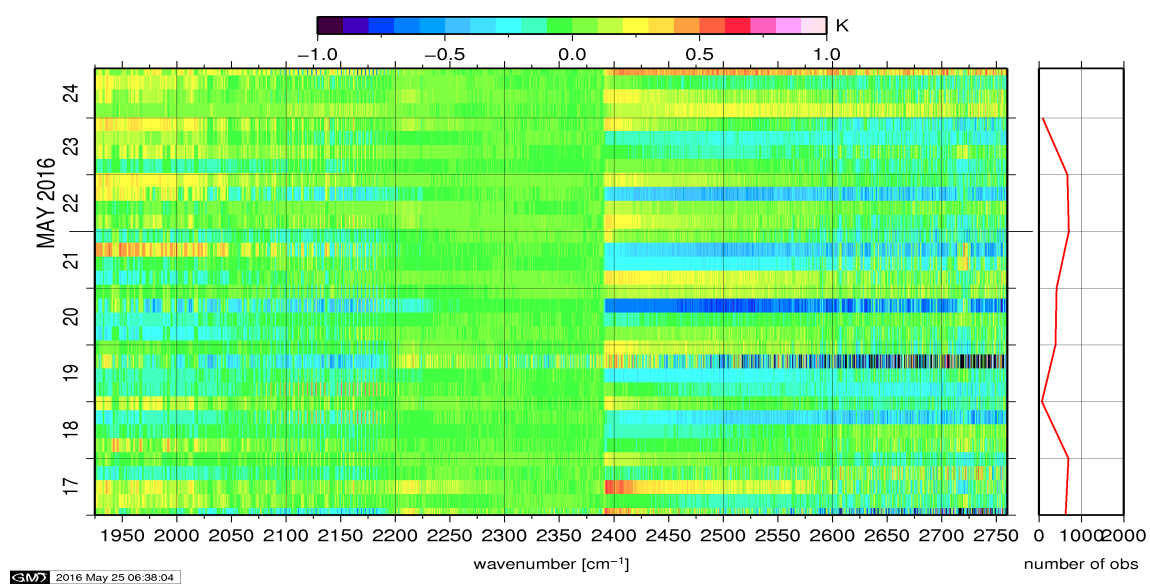


Figure 13: Radiance Anomaly in BRT: IASI Band 3

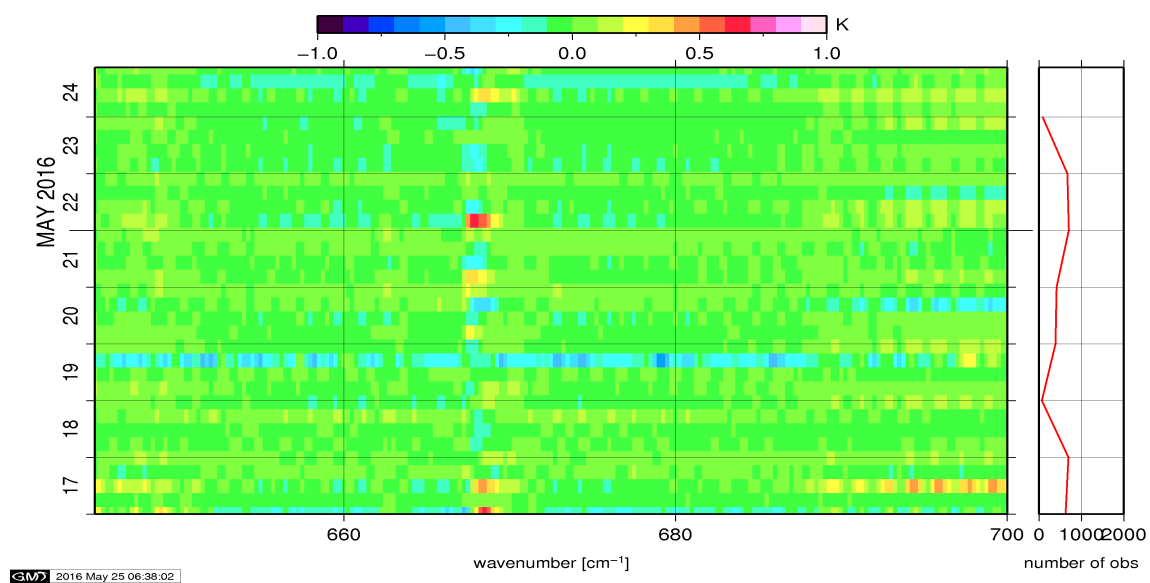


Figure 14: Radiance Anomaly in BRT: CO2 14

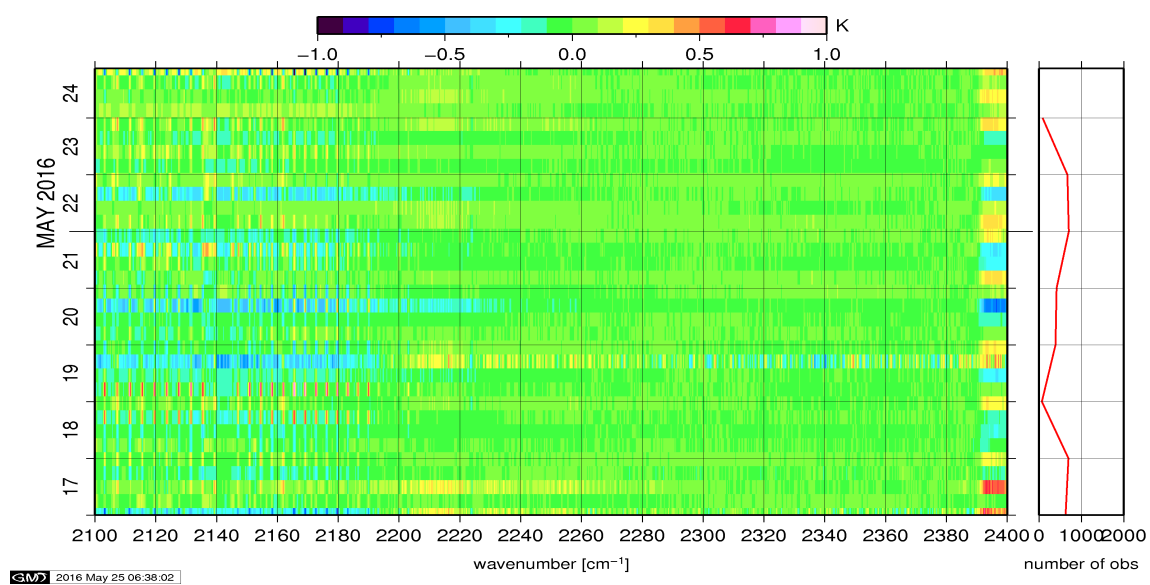


Figure 15: Radiance Anomaly in BRT: CO2 4.3

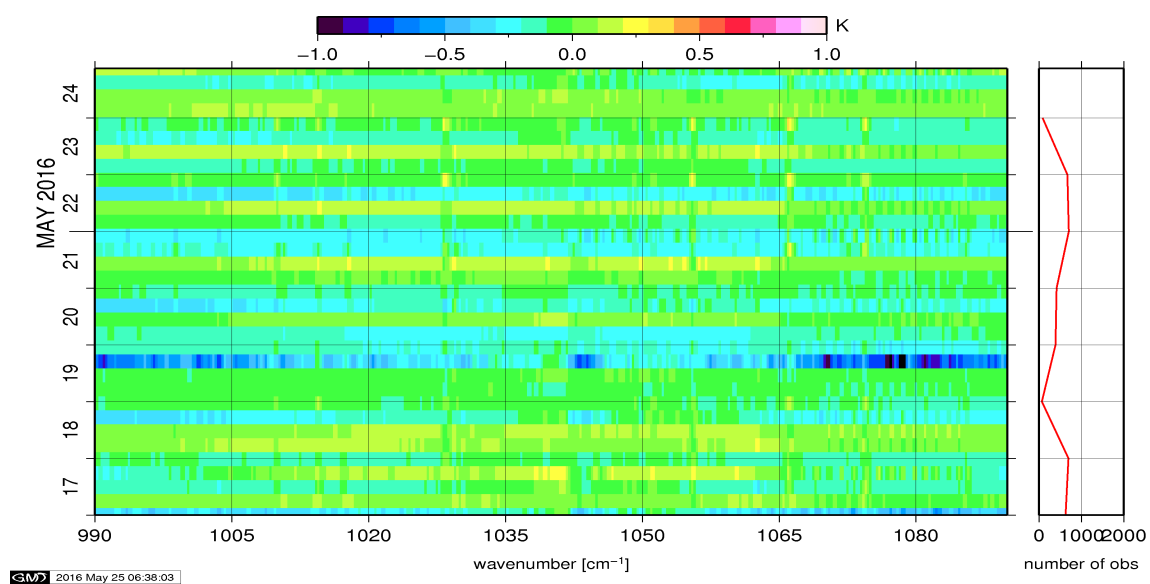


Figure 16: Radiance Anomaly in BRT: O3

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.

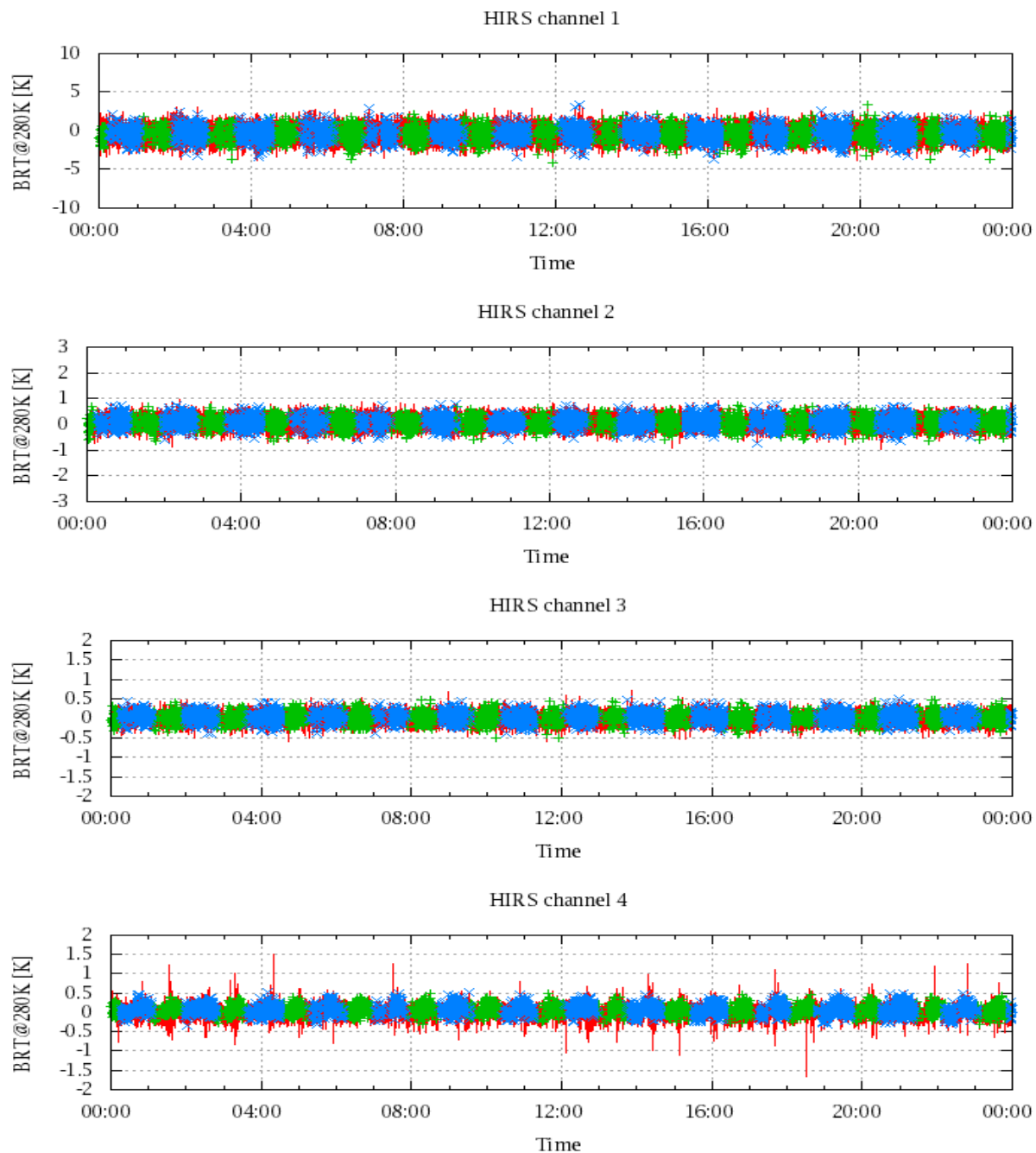


Figure 17: Radiance Differences in BRT

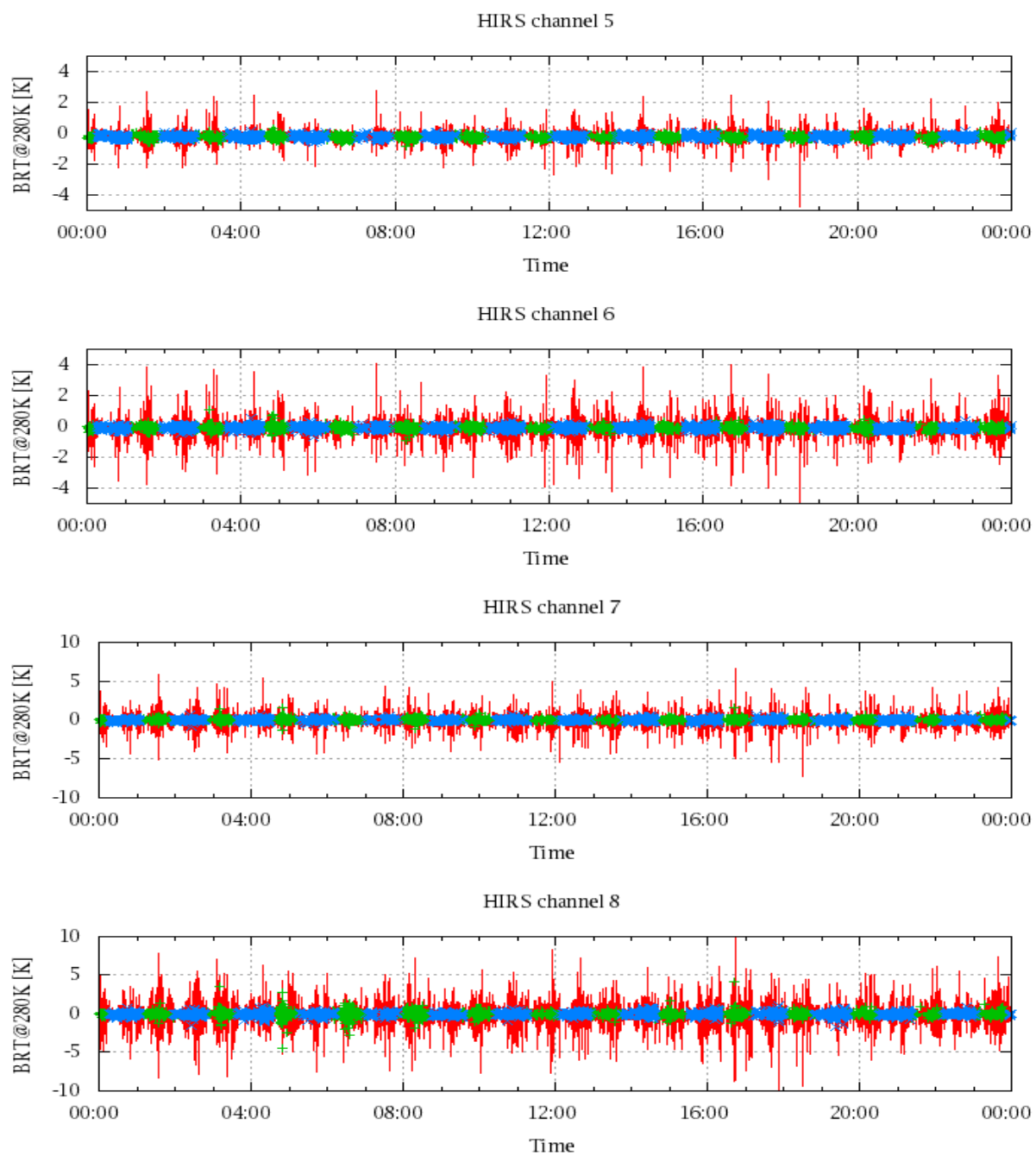


Figure 18: Radiance Differences in BRT

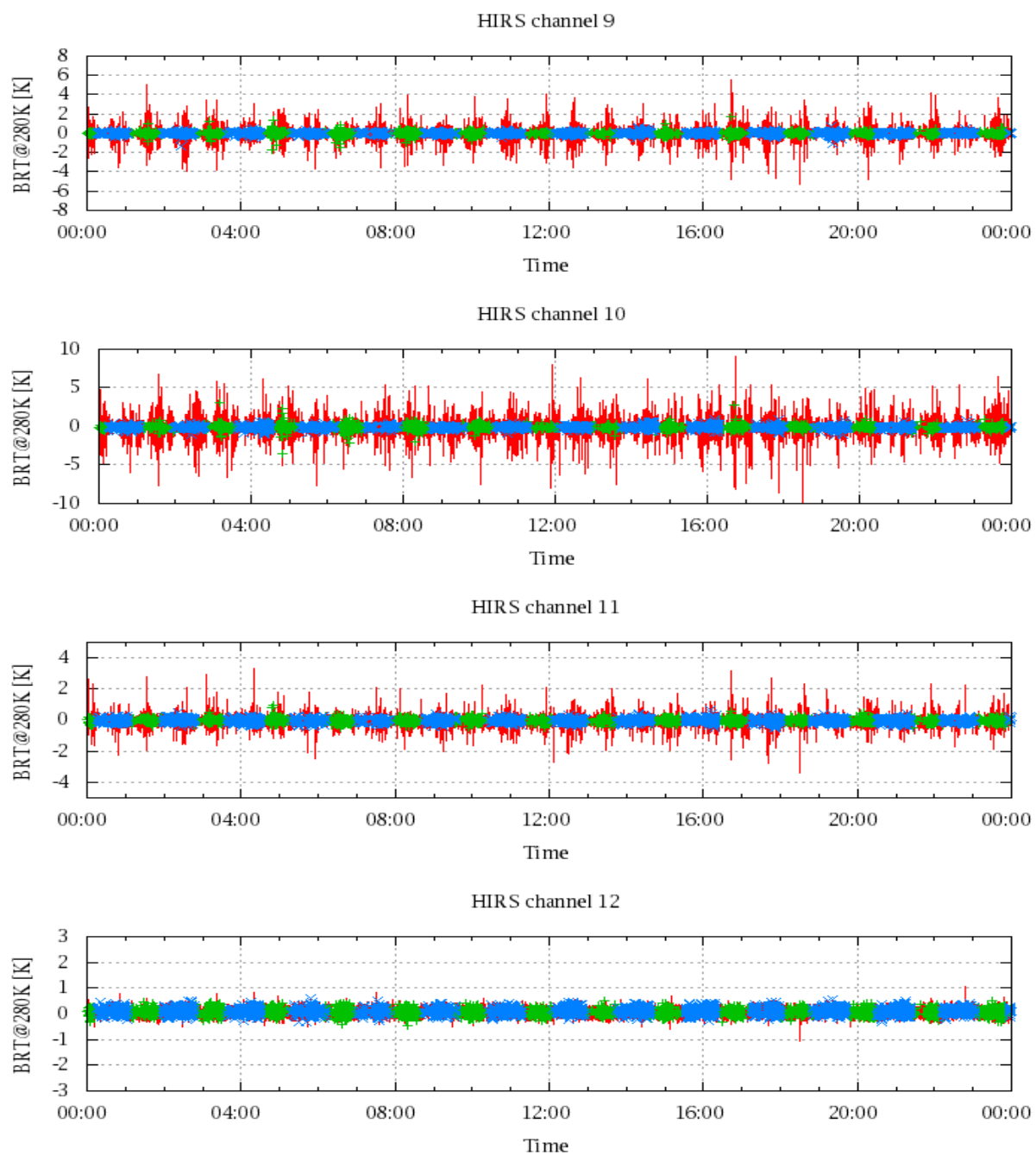


Figure 19: Radiance Differences in BRT

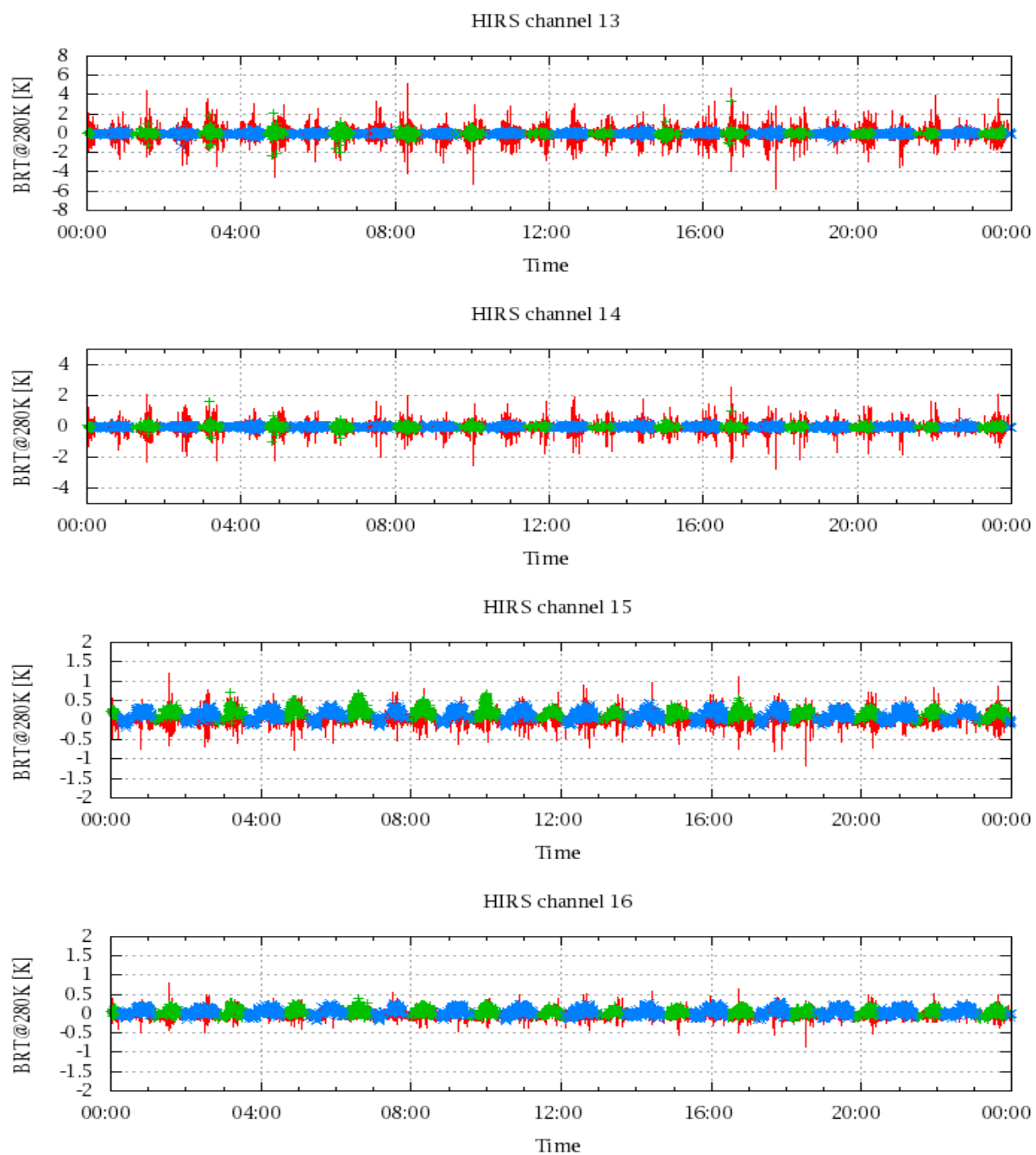


Figure 20: Radiance Differences in BRT

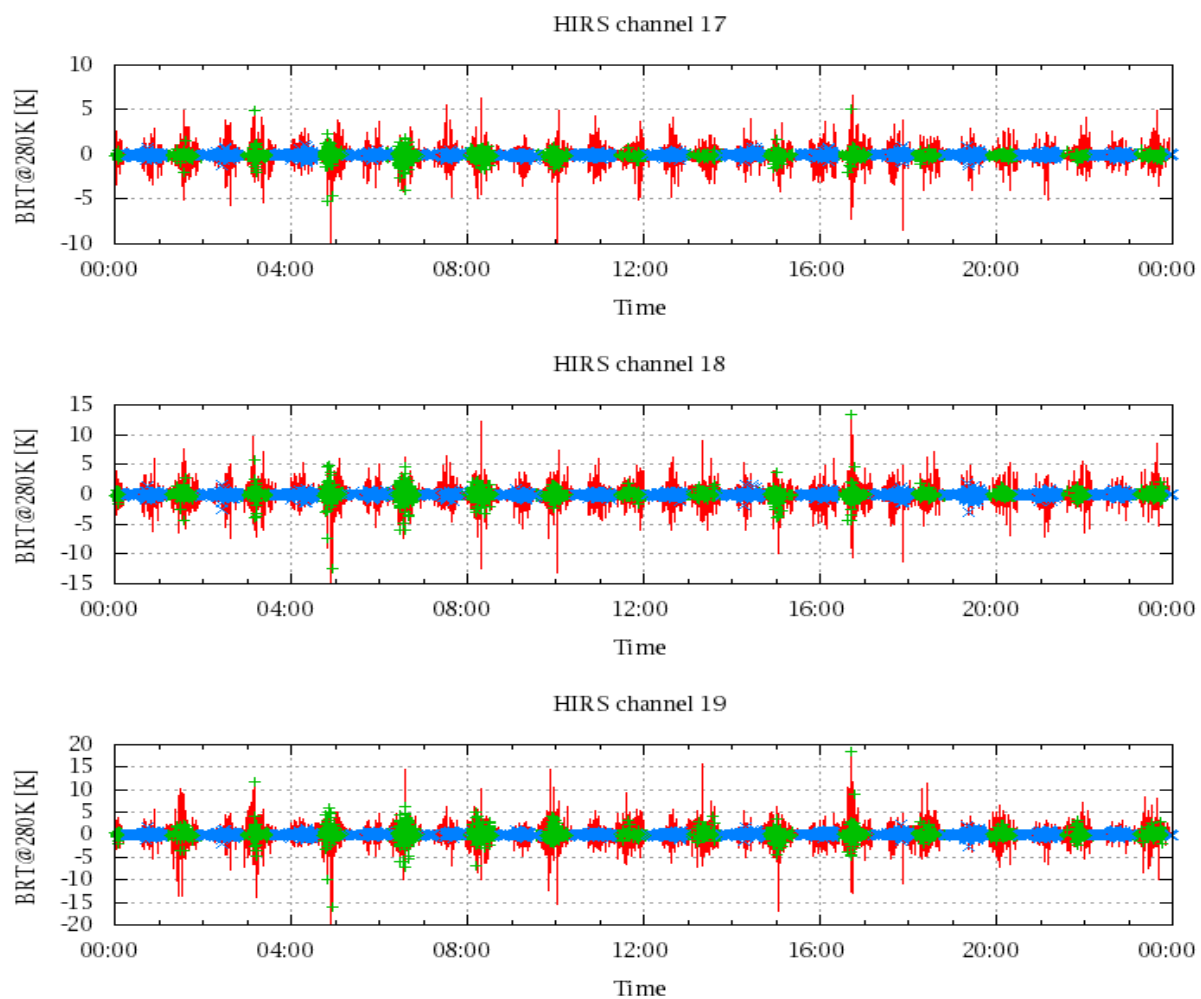


Figure 21: Radinace Differences in BRT