

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

06/05/2017 00:00:00 - 07/05/2017 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 06/05/2017 00:00:00 - 07/05/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 06/05/2017 00:00:00 - 07/05/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	464	-
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)	3944	3987	20170506192723.943	20170506192736.267
PX1 (130)	4007	4065	20170506192742.103	20170506192757.674
PX1 (130)	4087	4137	20170506192802.428	20170506192816.267
PX1 (130)	4158	4215	20170506192822.318	20170506192837.670
PX2 (135)	3944	3987	20170506192723.943	20170506192736.267
PX2 (135)	4007	4065	20170506192742.103	20170506192757.674
PX2 (135)	4087	4137	20170506192802.428	20170506192816.267
PX2 (135)	4158	4215	20170506192822.318	20170506192837.670
PX3 (140)	3944	3987	20170506192723.943	20170506192736.267
PX3 (140)	4007	4065	20170506192742.103	20170506192757.674
PX3 (140)	4086	4137	20170506192802.213	20170506192816.267
PX3 (140)	4158	4215	20170506192822.318	20170506192837.670
PX4 (145)	3944	3987	20170506192723.943	20170506192736.267
PX4 (145)	4007	4065	20170506192742.103	20170506192757.674
PX4 (145)	4086	4137	20170506192802.213	20170506192816.267
PX4 (145)	4158	4215	20170506192822.318	20170506192837.670
IMG (150)	13952	14003	20170506192723.943	20170506192736.267
IMG (150)	14027	14089	20170506192742.103	20170506192756.373

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	14114	14173	20170506192802.213	20170506192816.267
IMG (150)	14197	14259	20170506192822.103	20170506192836.373
VER (160)	8555	8566	20170506192715.943	20170506192739.943
VER (160)	8570	8577	20170506192739.943	20170506192742.103
VER (160)	8580	8591	20170506192742.103	20170506192819.939
VER (160)	8595	8602	20170506192819.939	20170506192822.318
AUX (180)	14789	14792	20170506192716.377	20170506192740.377
AUX (180)	14792	14794	20170506192740.377	20170506192756.373
AUX (180)	14794	14797	20170506192756.373	20170506192820.373
AUX (180)	14797	14799	20170506192820.373	20170506192836.373

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
06/05/2017 00:00:09	-	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	464	-
GQisFlagQual set (PX1)	99.52 %	-
GQisFlagQual set (PX2)	99.58 %	-
GQisFlagQual set (PX3)	99.57 %	-
GQisFlagQual set (PX4)	99.50 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

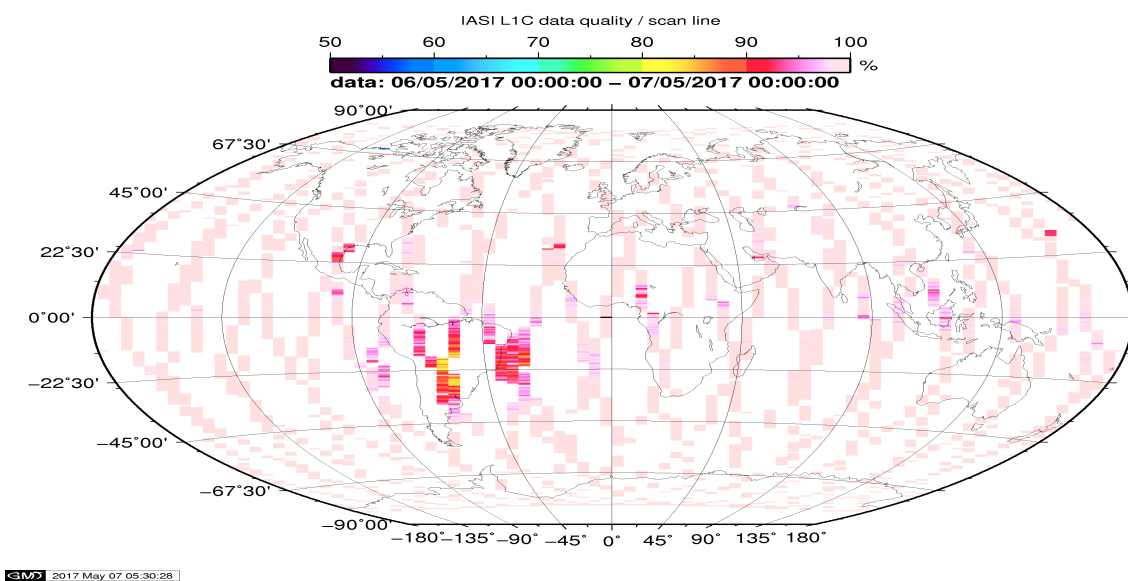


Figure 1: L1C data quality

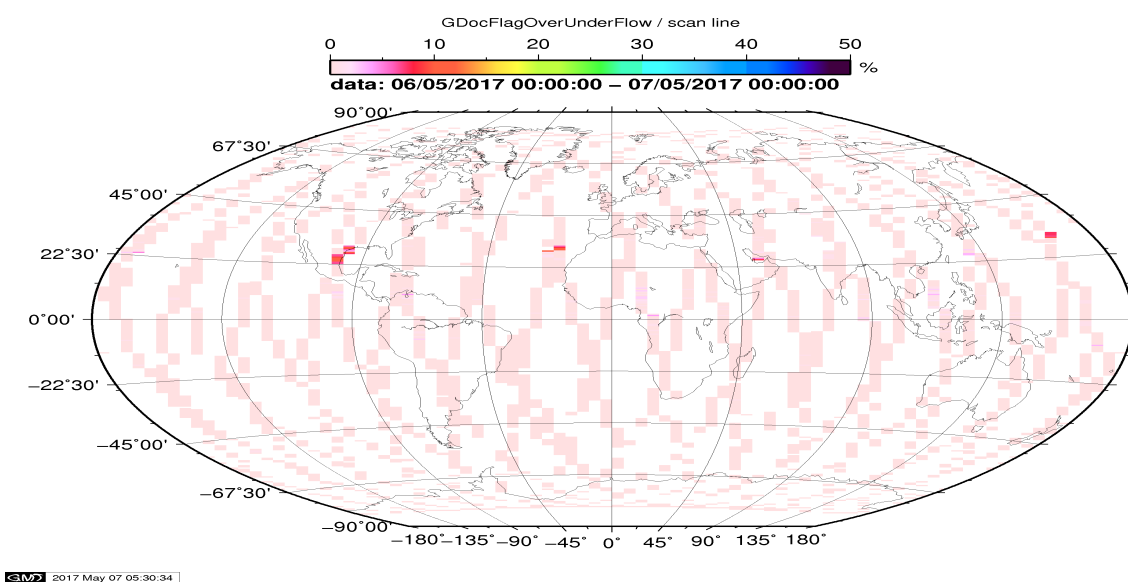


Figure 2: Flag of Over and Under Flows

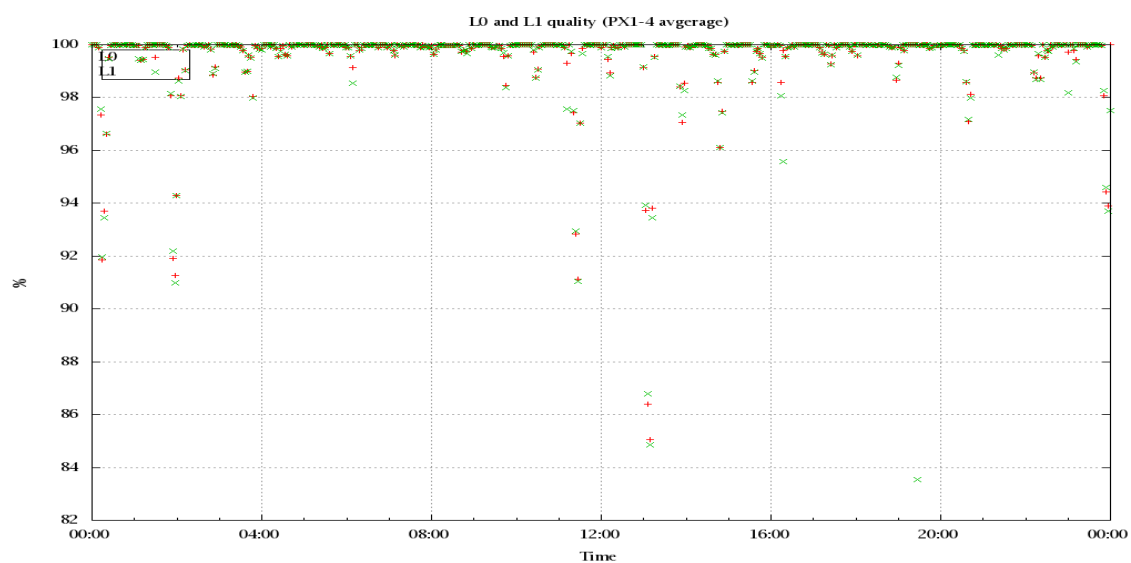


Figure 3: Level 0 and 1C overall quality

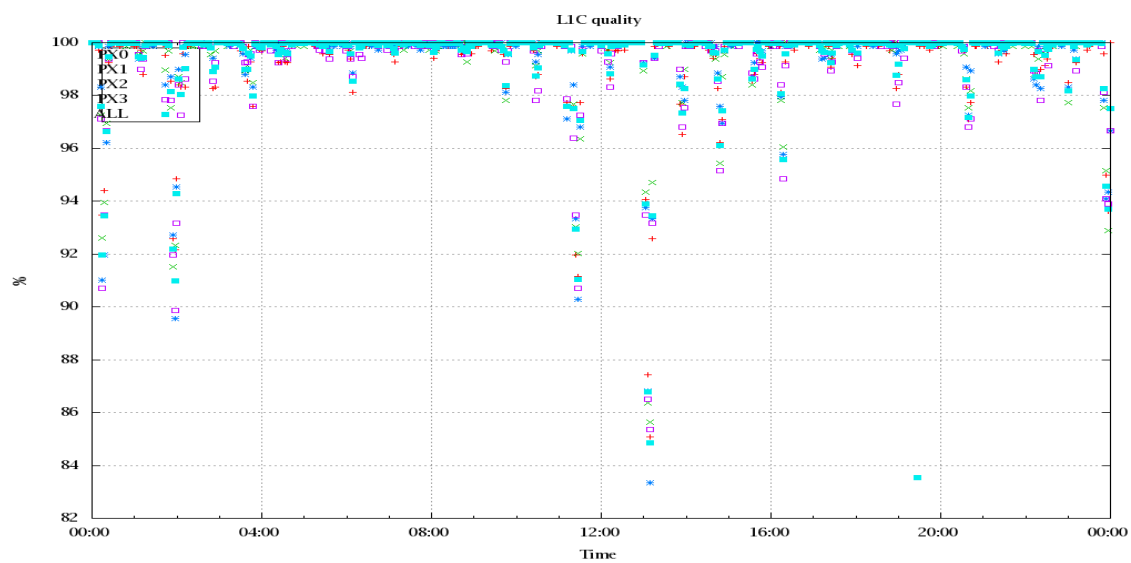


Figure 4: Level 1C quality

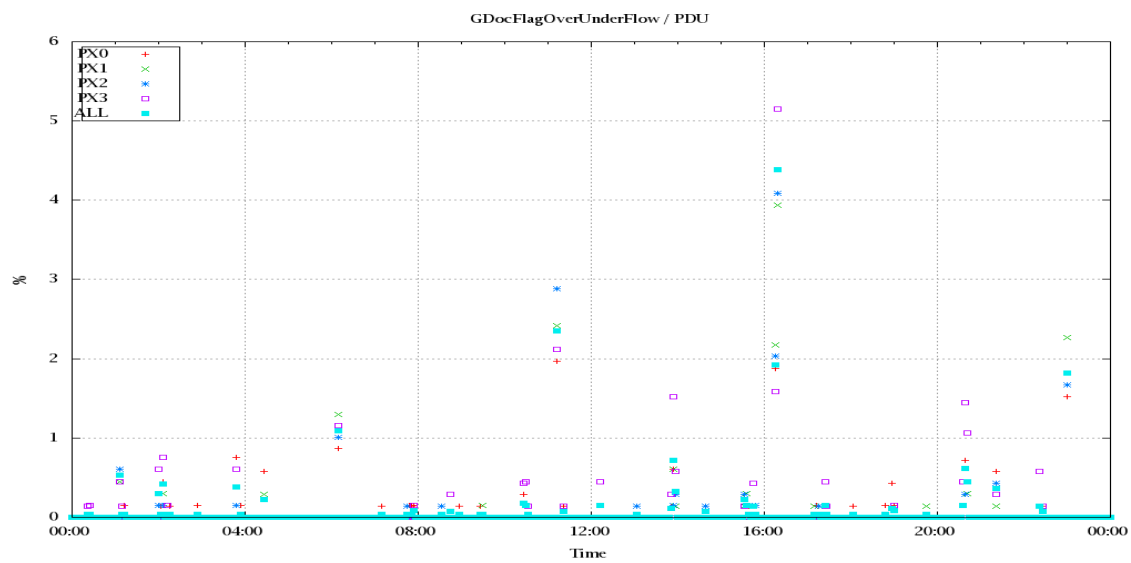


Figure 5: OverUnderFlowFlag timeseries

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.

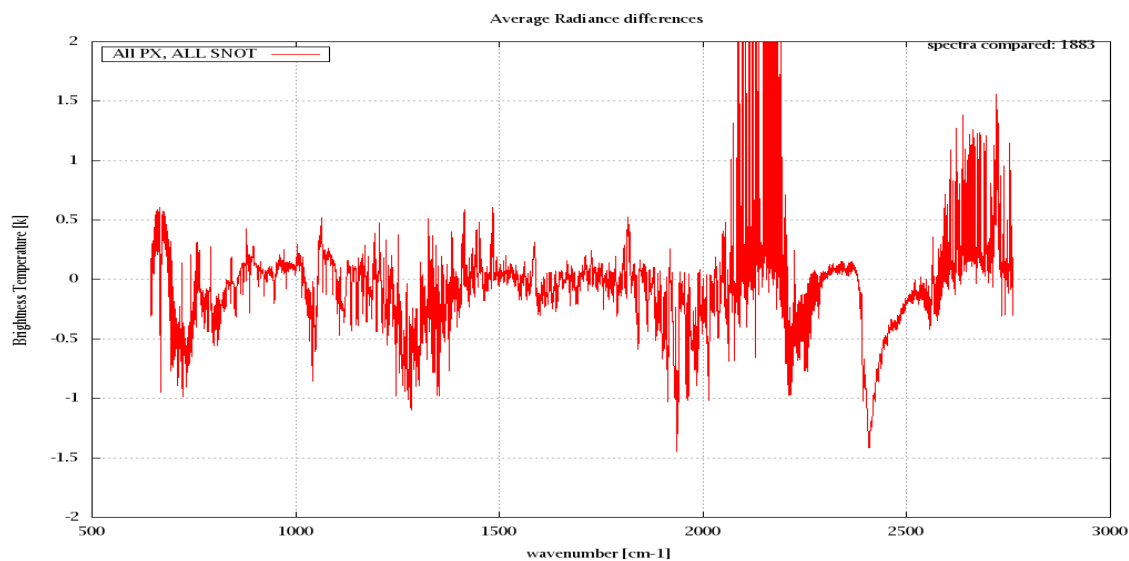


Figure 6: Average Radiance differences: OBS-CAL

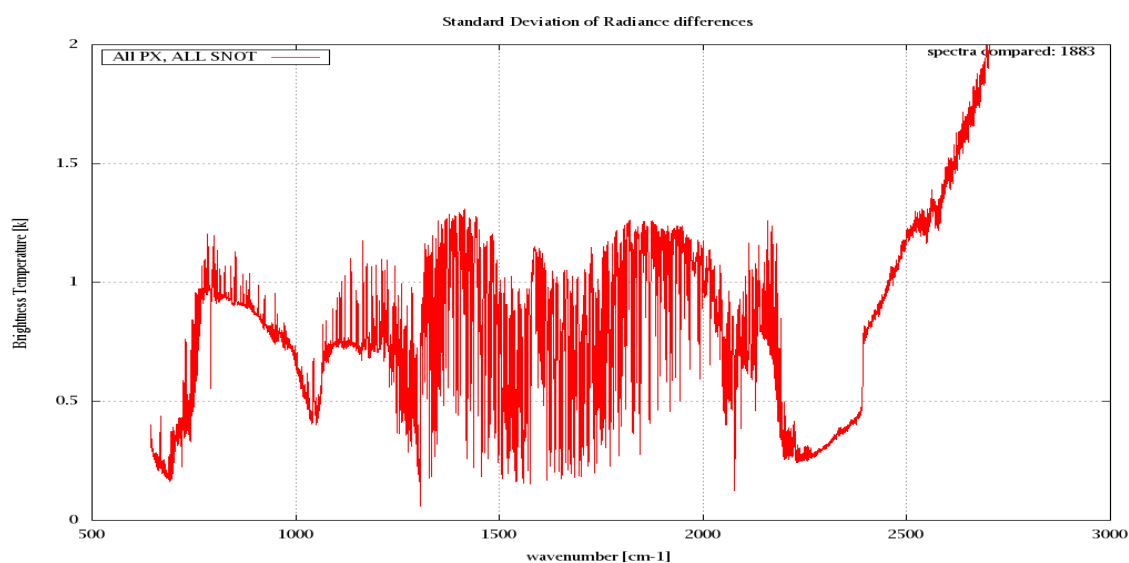


Figure 7: Standard Deviation of Radiance differences

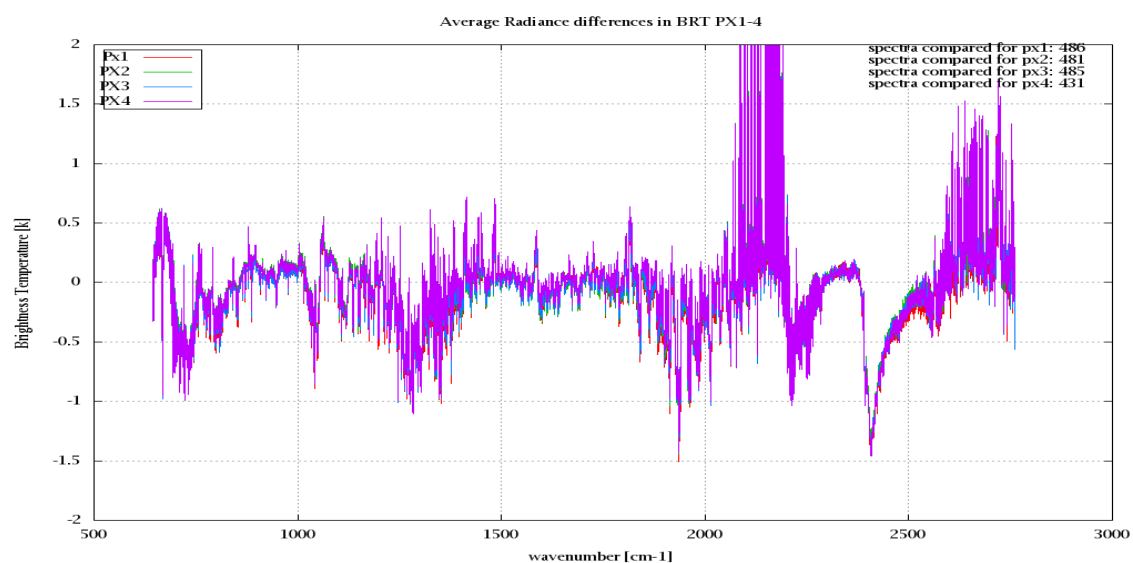


Figure 8: Average Radiance differences: OBS-CAL

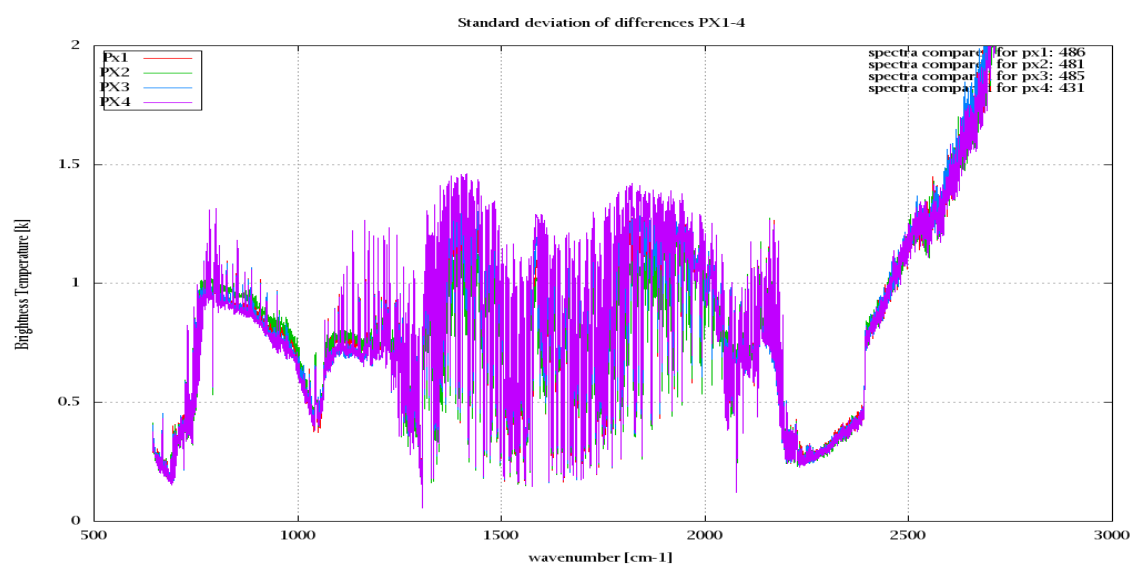


Figure 9: Standard Deviation of Radiance differences

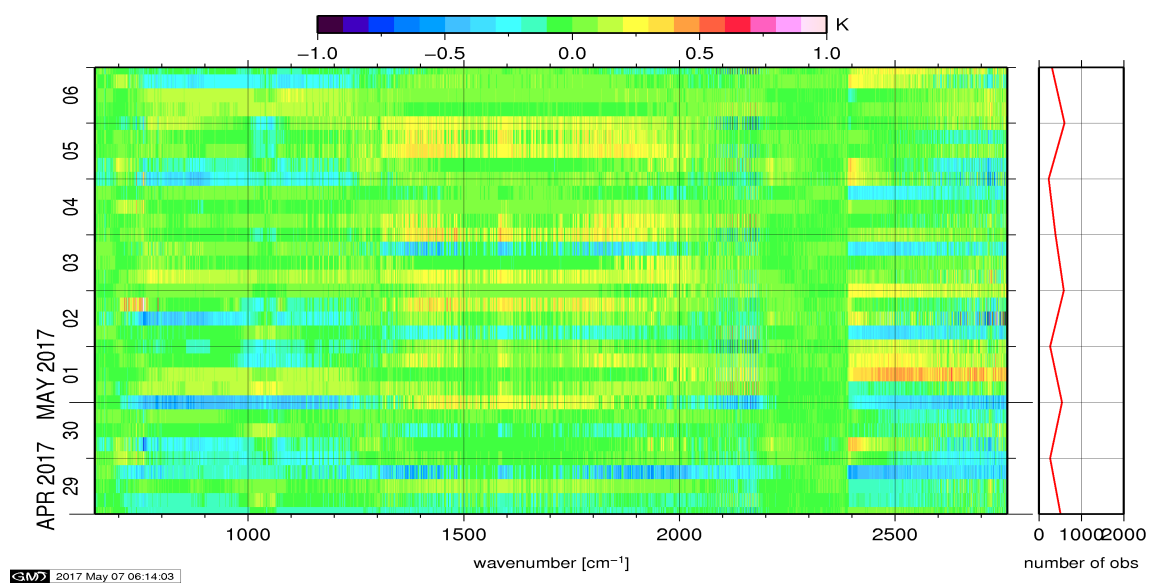


Figure 10: Radiance Anomaly in BRT: All Channels

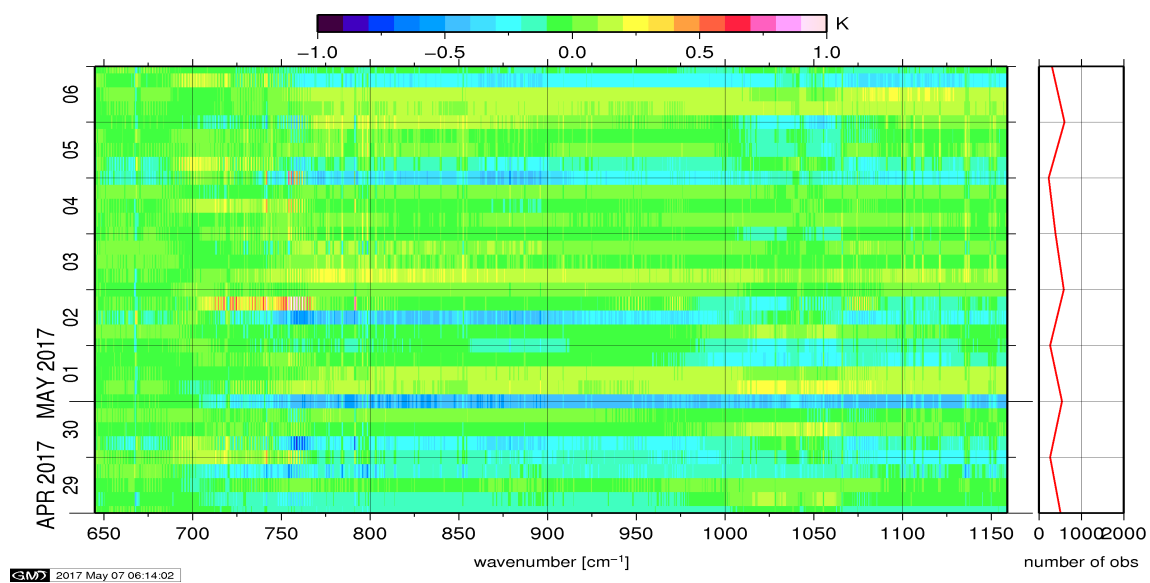


Figure 11: Radiance Anomaly in BRT: IASI Band 1

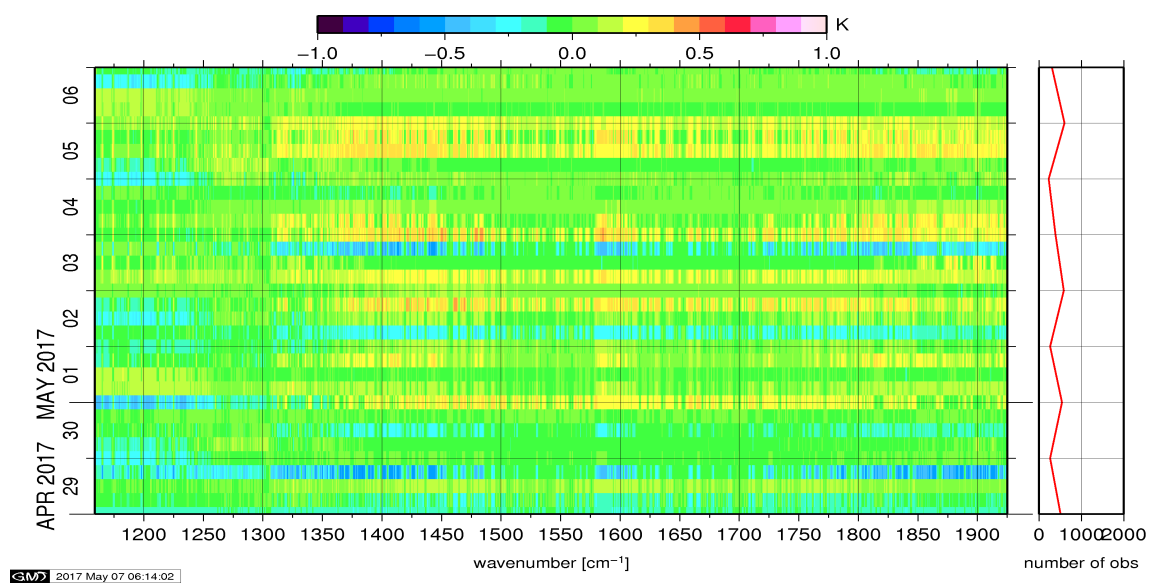


Figure 12: Radiance Anomaly in BRT: IASI Band 2

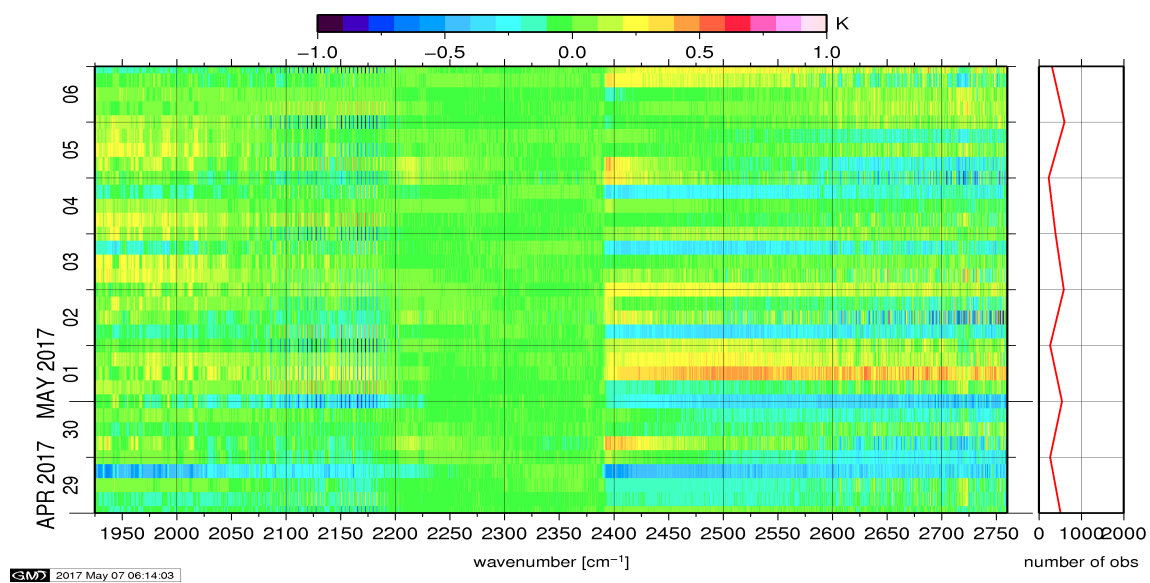


Figure 13: Radiance Anomaly in BRT: IASI Band 3

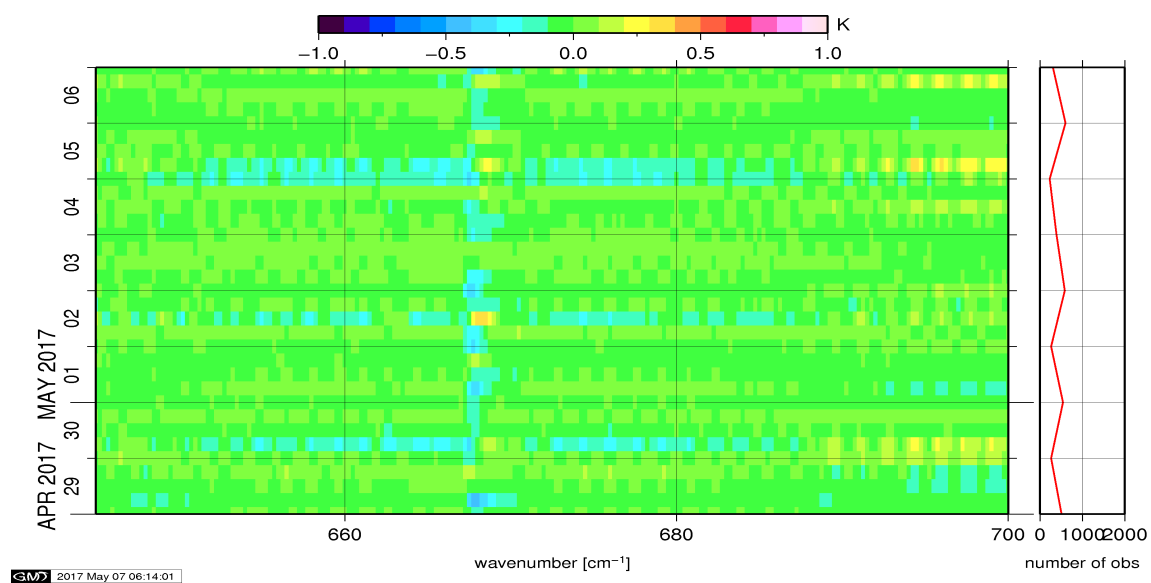


Figure 14: Radiance Anomaly in BRT: CO2 14

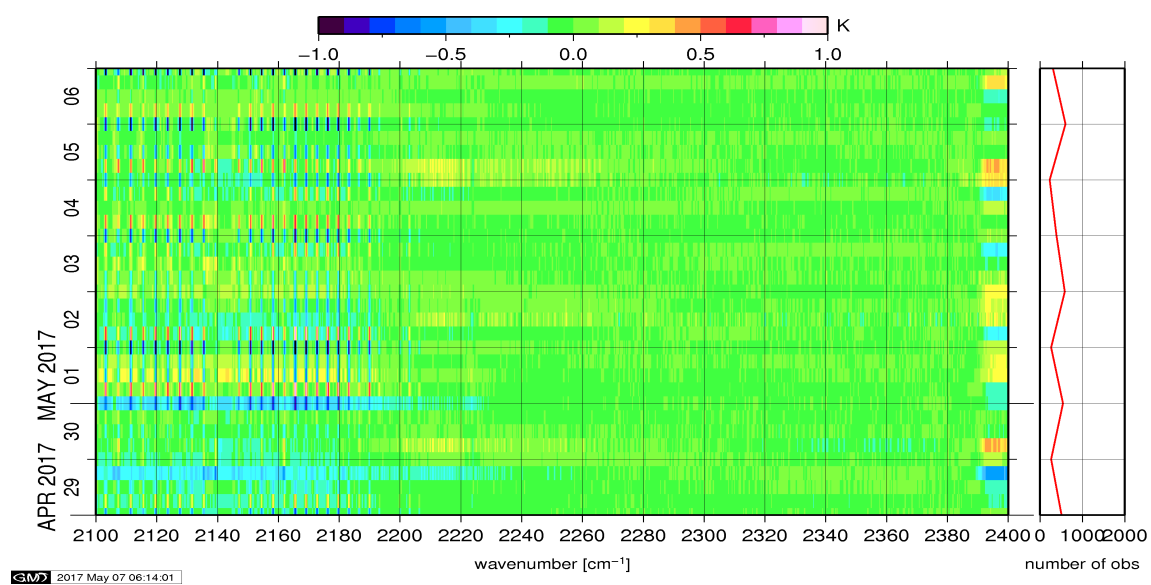


Figure 15: Radiance Anomaly in BRT: CO2 4.3

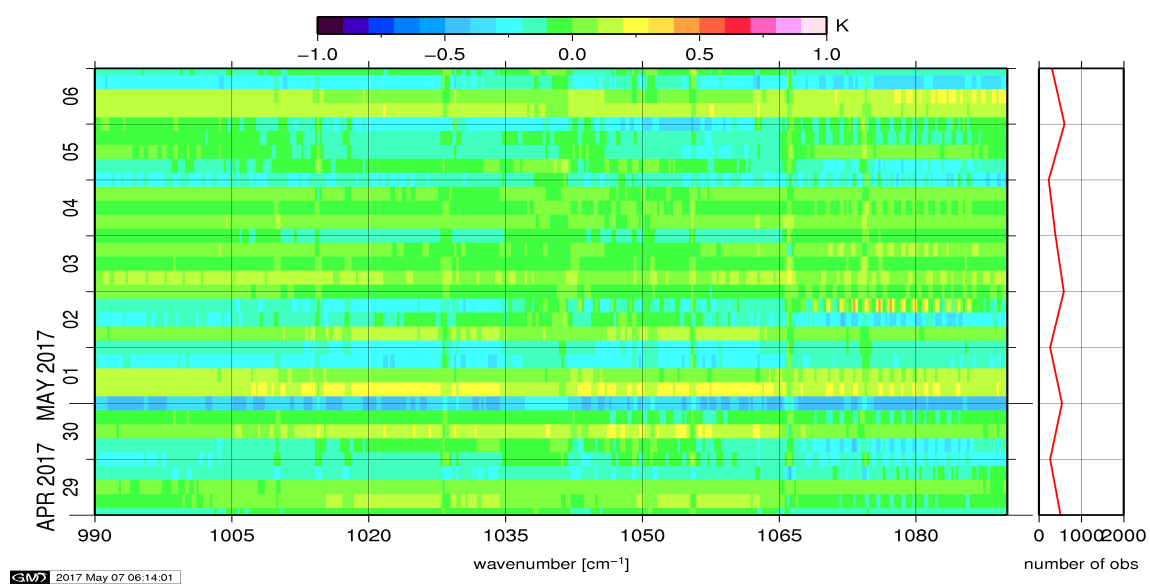


Figure 16: Radiance Anomaly in BRT: O3

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.

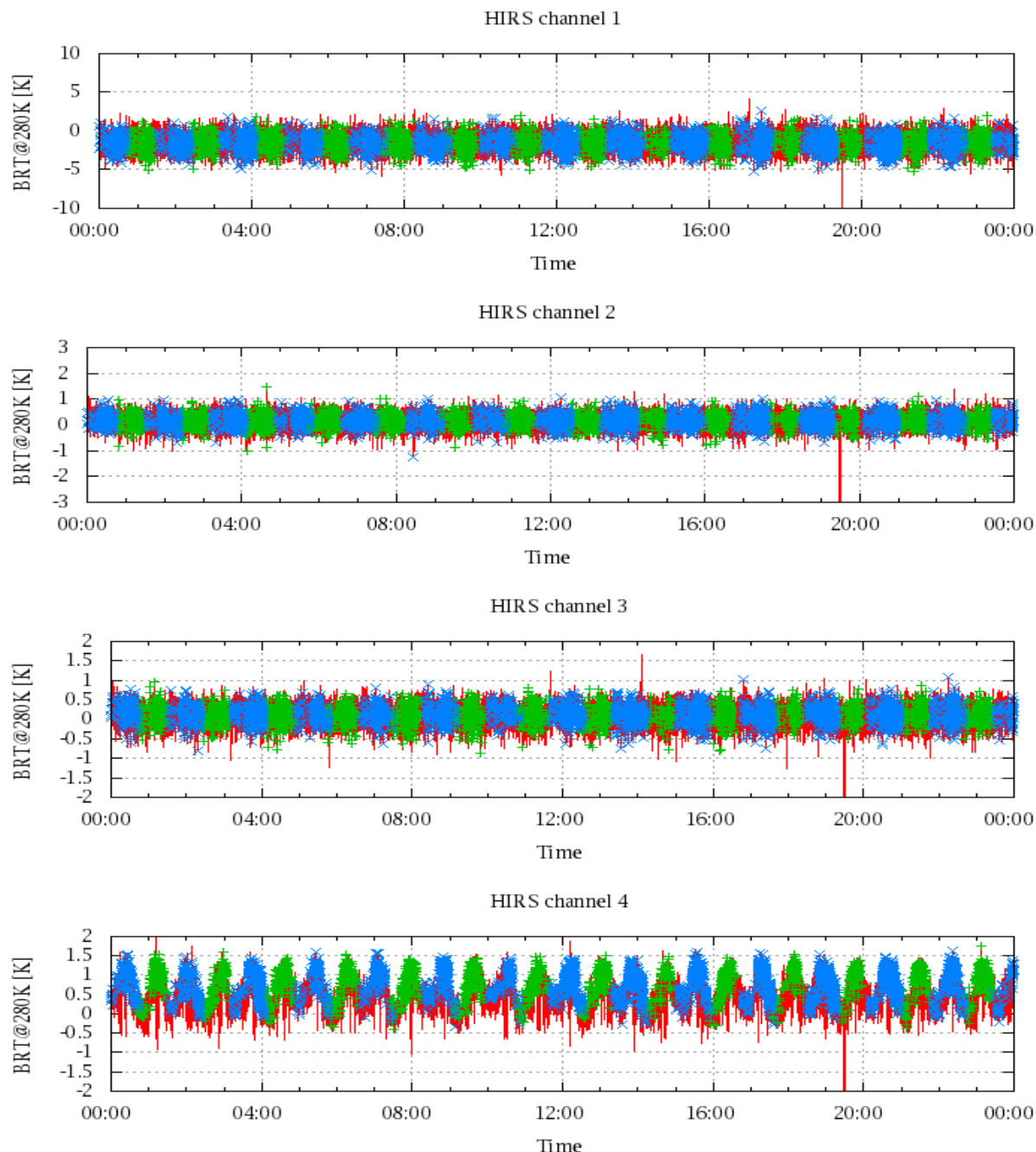


Figure 17: Radiance Differences in BRT

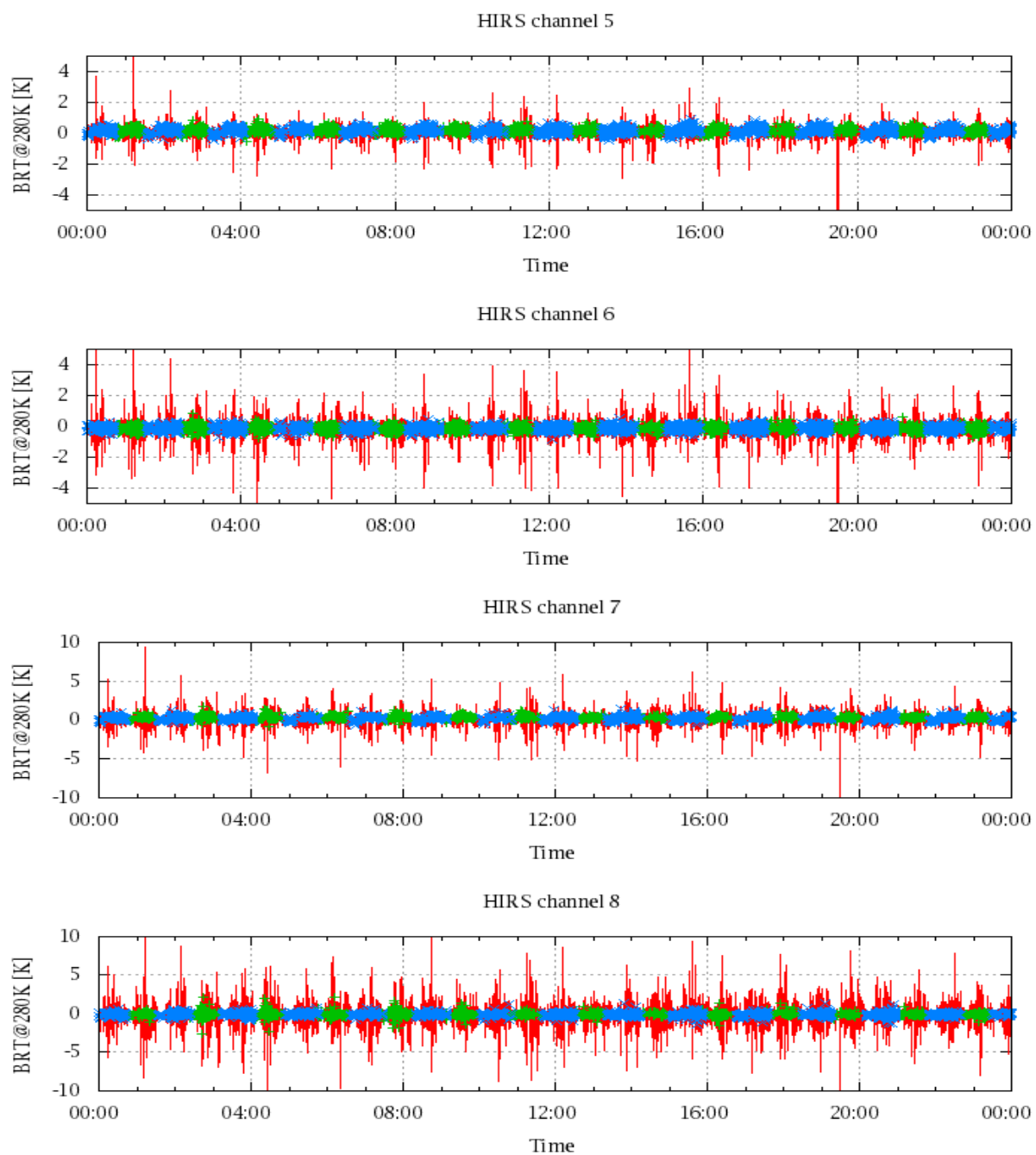


Figure 18: Radiance Differences in BRT

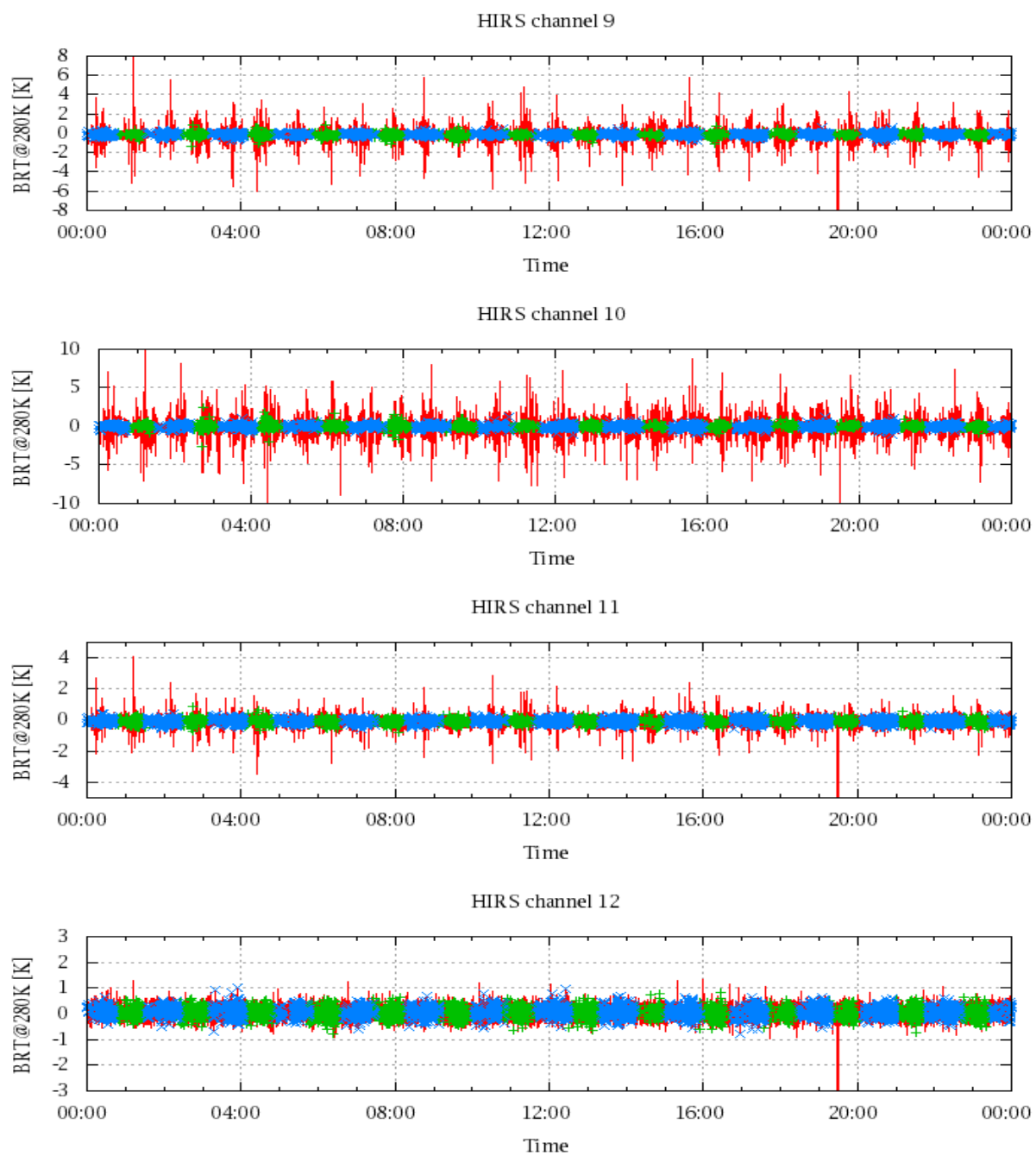


Figure 19: Radiance Differences in BRT

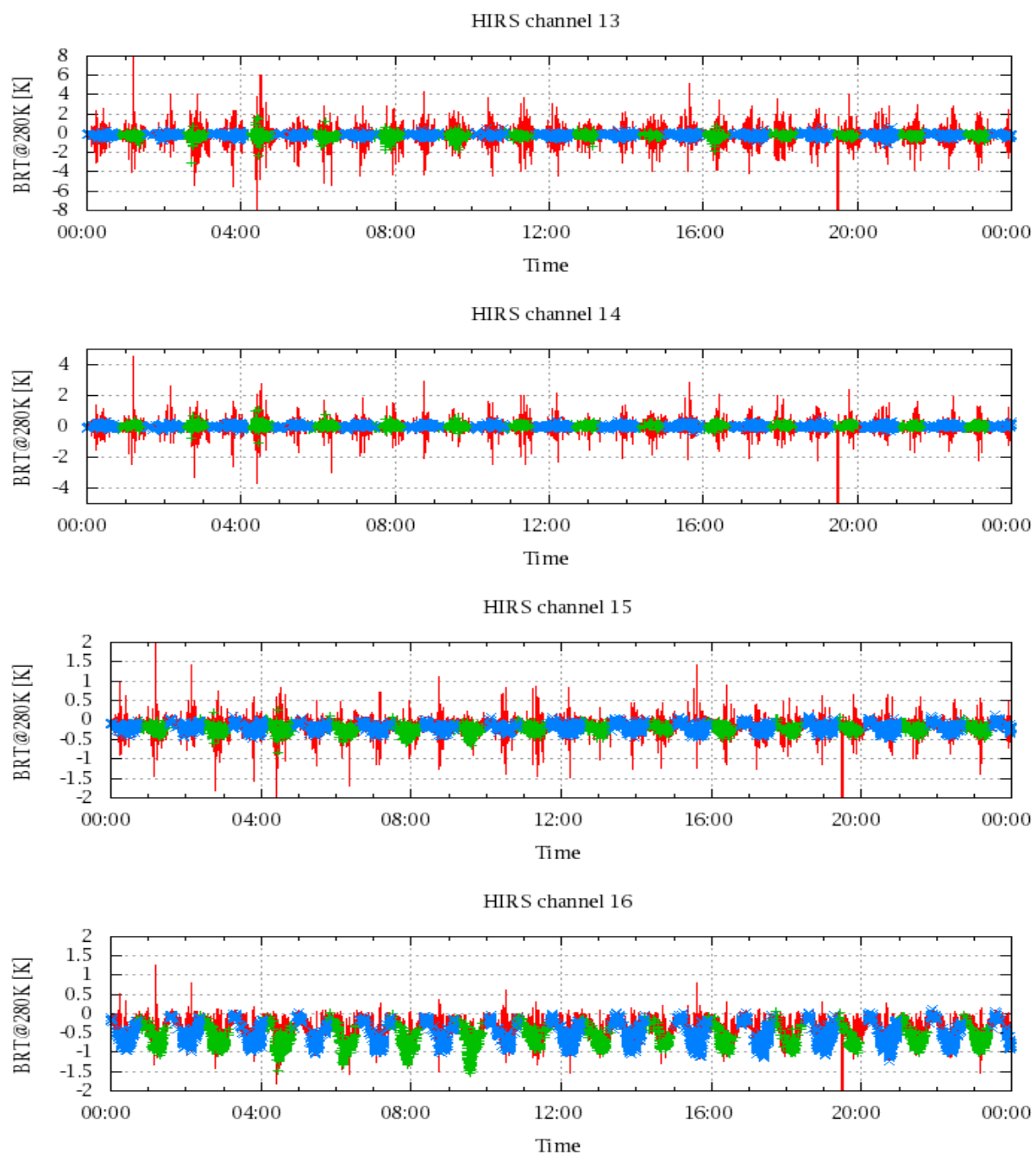


Figure 20: Radiance Differences in BRT

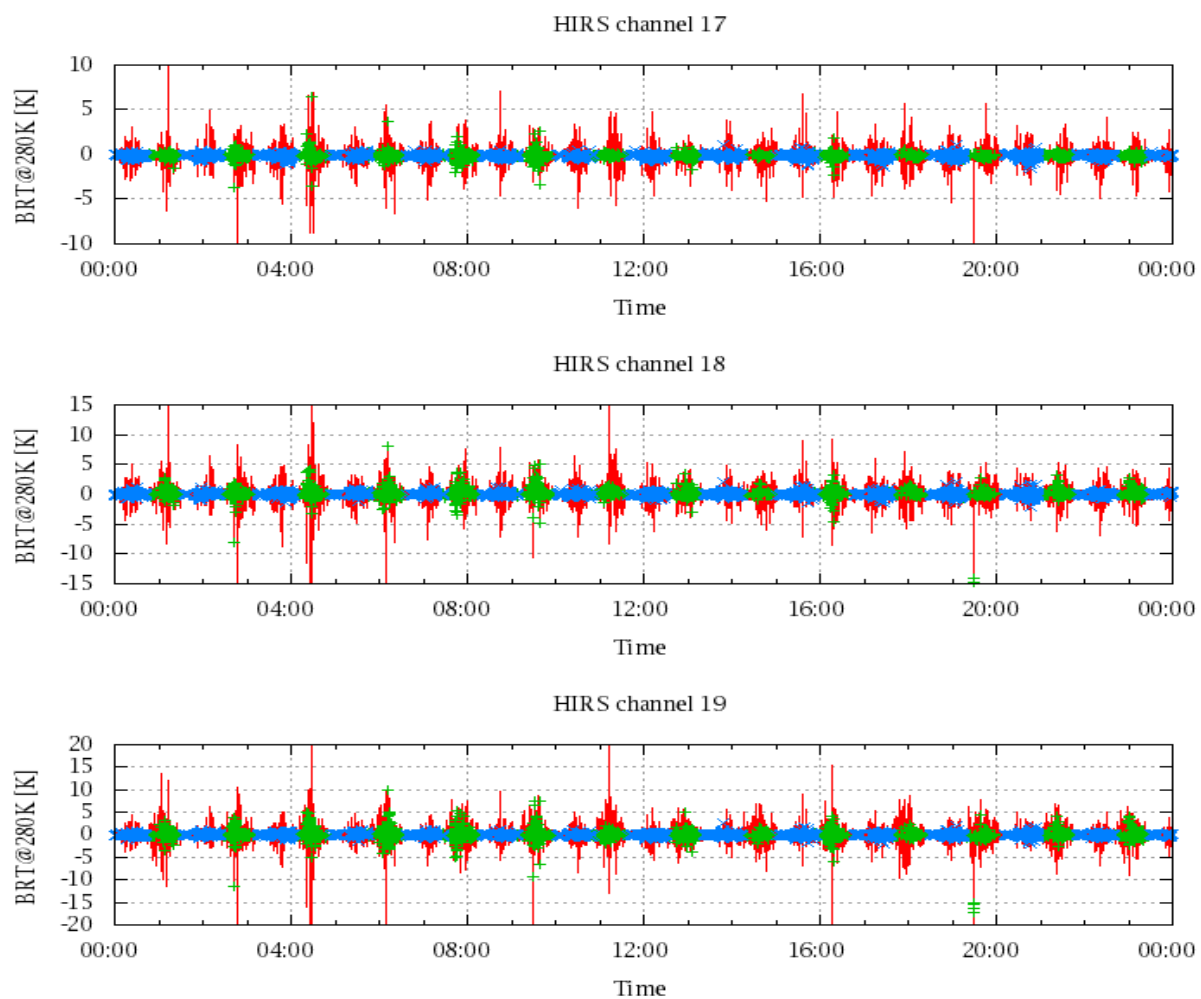


Figure 21: Radinace Differences in BRT