

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

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

The monitoring data are extracted on PDU basis.

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

2 Data quantity 04/04/2018 00:00:00 - 05/04/2018 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	480	-
L0 IASI PDUs	480	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	479	-
L1 DPX PDUs (RM: IASI-HIRS)	477	-
L1 DPS Files (RM: OBS-CAL NWP based)	478	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	14263	15467	20180404054301.392	20180404054823.759
PX1 (130)	15643	15674	20180404054909.380	20180404054919.110
PX1 (130)	15685	15687	20180404054921.489	20180404054921.923
PX1 (130)	15694	15696	20180404054923.434	20180404054923.864
PX1 (130)	15701	15703	20180404054924.946	20180404054925.380
PX1 (130)	15703	15729	20180404054925.380	20180404054932.512
PX1 (130)	7334	8221	20180404062503.984	20180404062859.655
PX2 (135)	14263	15467	20180404054301.392	20180404054823.759
PX2 (135)	15643	15674	20180404054909.380	20180404054919.110
PX2 (135)	15680	15682	20180404054920.407	20180404054920.837
PX2 (135)	15703	15729	20180404054925.380	20180404054932.512
PX2 (135)	7334	8221	20180404062503.984	20180404062859.655
PX3 (140)	14263	15467	20180404054301.392	20180404054823.759
PX3 (140)	15643	15674	20180404054909.380	20180404054919.110
PX3 (140)	15696	15698	20180404054923.864	20180404054924.298
PX3 (140)	15703	15729	20180404054925.380	20180404054932.512
PX3 (140)	7334	8221	20180404062503.984	20180404062859.655
PX4 (145)	14263	15467	20180404054301.392	20180404054823.759

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	15643	15674	20180404054909.380	20180404054919.110
PX4 (145)	15689	15691	20180404054922.352	20180404054922.786
PX4 (145)	15703	15729	20180404054925.380	20180404054932.512
PX4 (145)	7334	8220	20180404062503.984	20180404062859.441
IMG (150)	13179	14546	20180404054301.392	20180404054823.544
IMG (150)	14744	14778	20180404054909.813	20180404054917.809
IMG (150)	14790	14792	20180404054920.837	20180404054921.270
IMG (150)	14799	14801	20180404054922.786	20180404054923.216
IMG (150)	14806	14808	20180404054924.298	20180404054924.731
IMG (150)	14811	14840	20180404054925.380	20180404054932.298
IMG (150)	7513	8516	20180404062503.769	20180404062859.441
VER (160)	6844	7050	20180404054253.388	20180404054829.380
VER (160)	7079	7081	20180404054909.380	20180404054909.813
VER (160)	7084	7090	20180404054909.813	20180404054933.380
VER (160)	8424	8570	20180404062501.390	20180404062901.386
AUX (180)	7920	7962	20180404054253.822	20180404054829.813
AUX (180)	7968	7970	20180404054917.809	20180404054933.809
AUX (180)	8236	8266	20180404062501.824	20180404062901.816

Table 2: L0 data gaps

3 Instrument modes

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

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	479	-
GQisFlagQual set (PX1)	99.47 %	-
GQisFlagQual set (PX2)	99.47 %	-
GQisFlagQual set (PX3)	99.47 %	-
GQisFlagQual set (PX4)	99.49 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

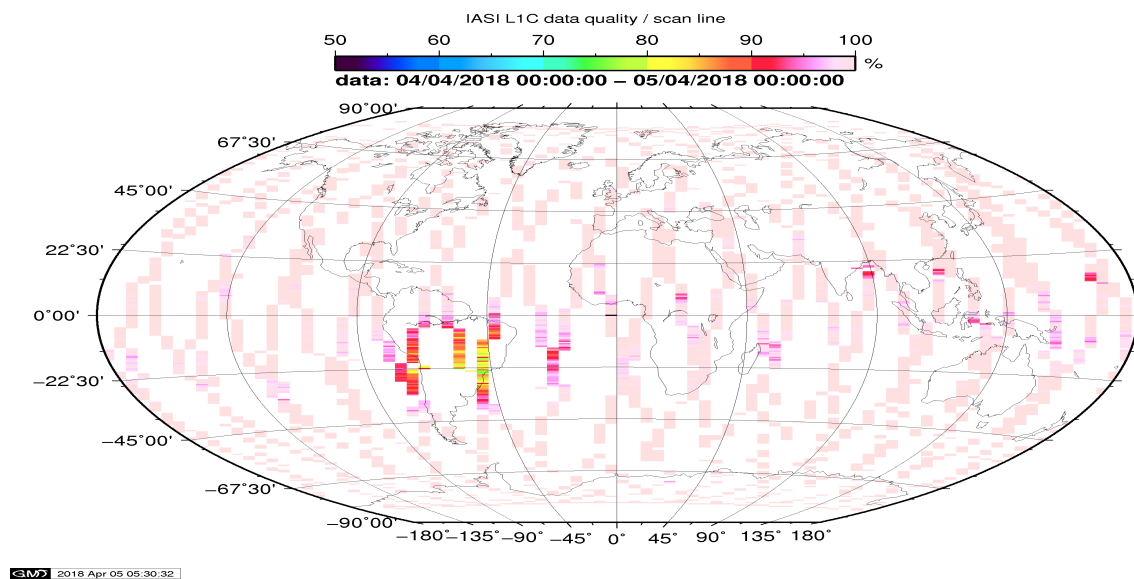


Figure 1: L1C data quality

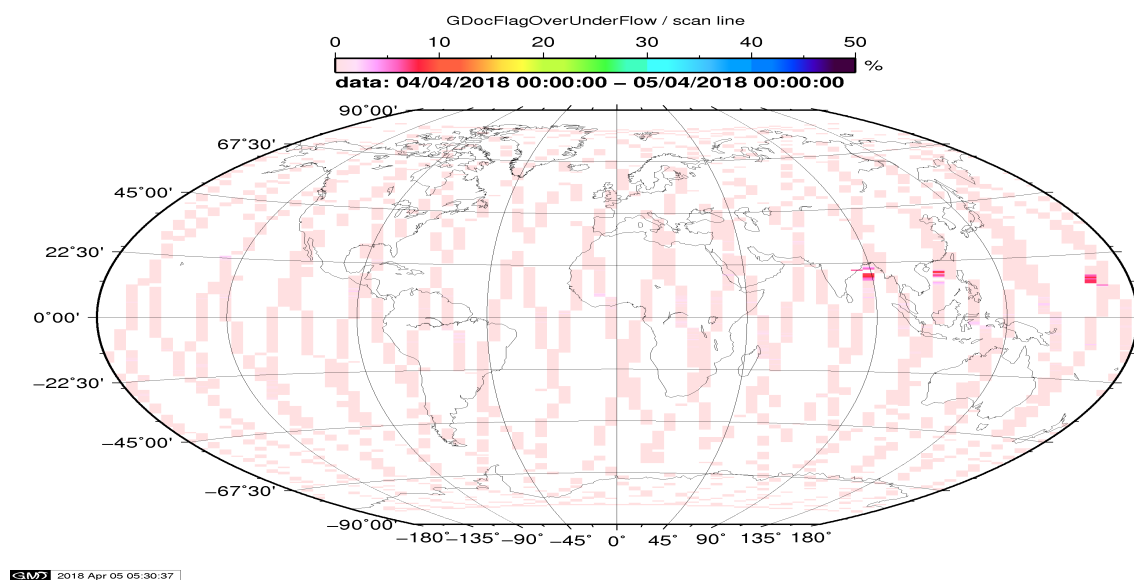


Figure 2: Flag of Over and Under Flows

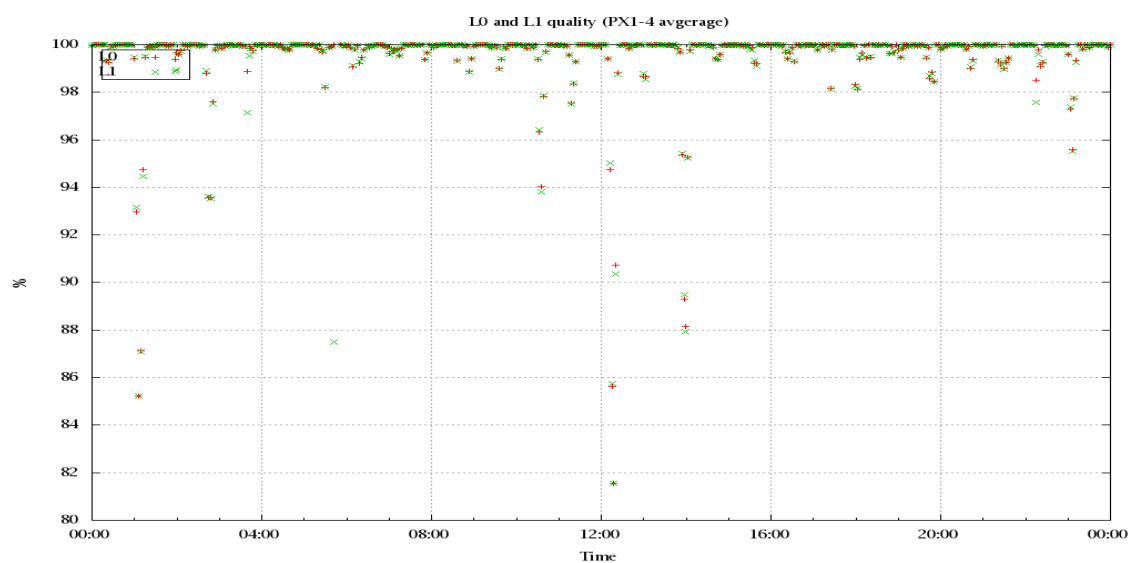


Figure 3: Level 0 and 1C overall quality

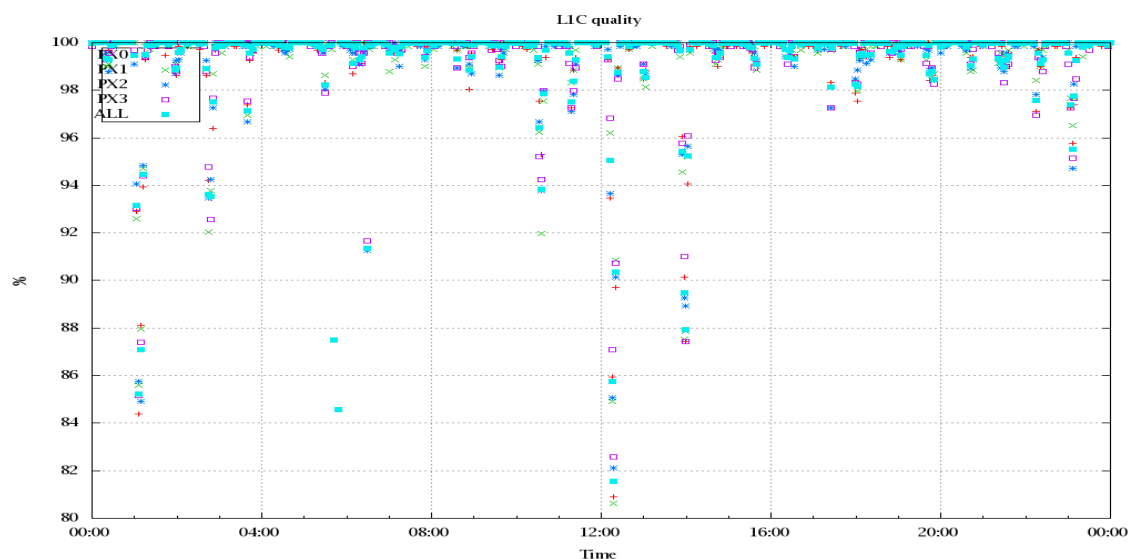


Figure 4: Level 1C quality

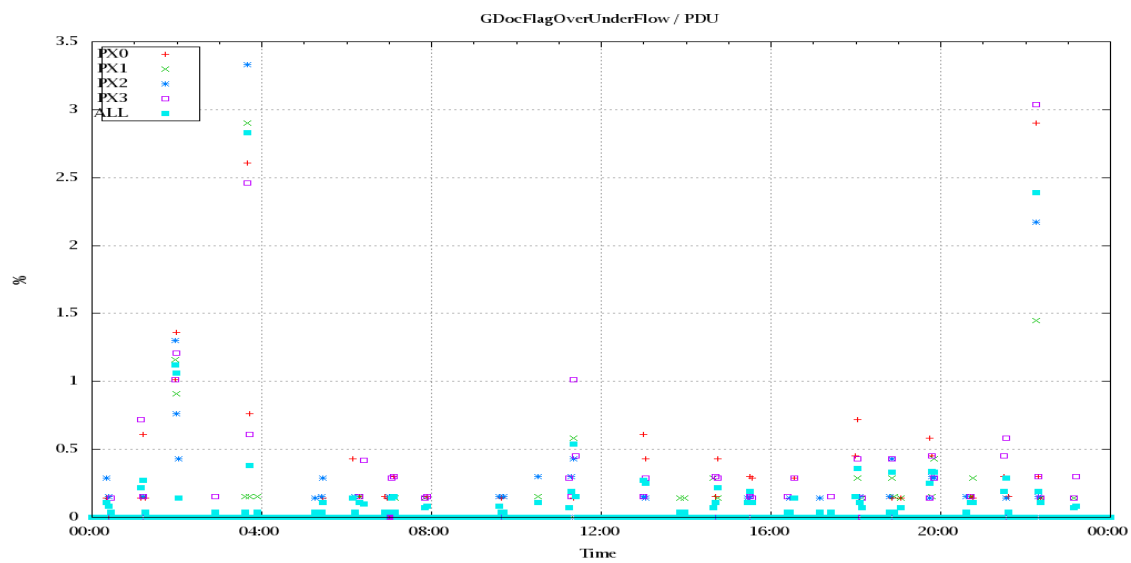


Figure 5: OverUnderFlowFlag timeseries

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.

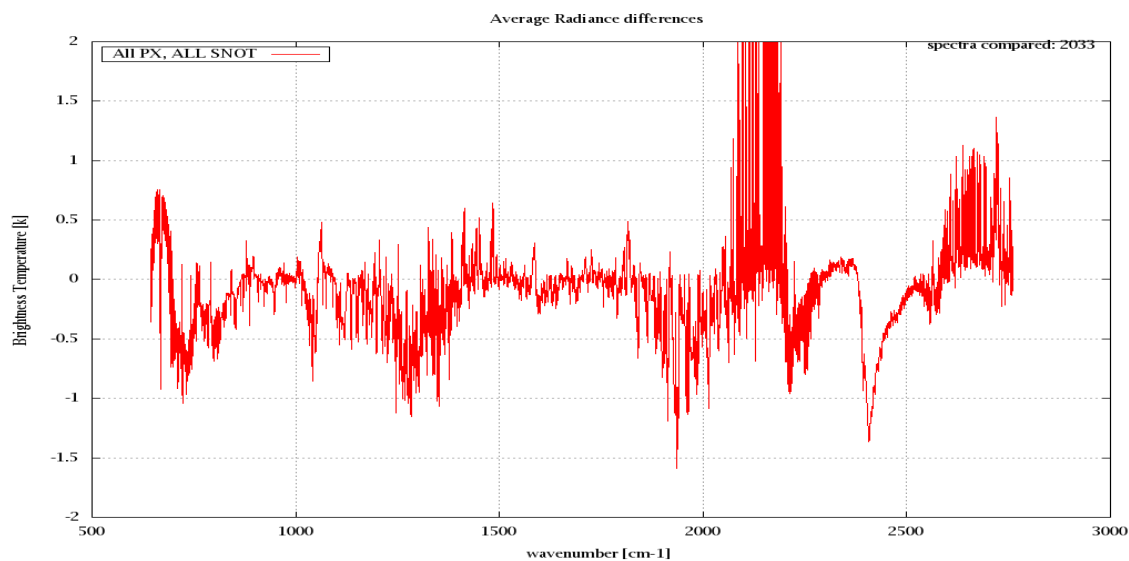


Figure 6: Average Radiance differences: OBS-CAL

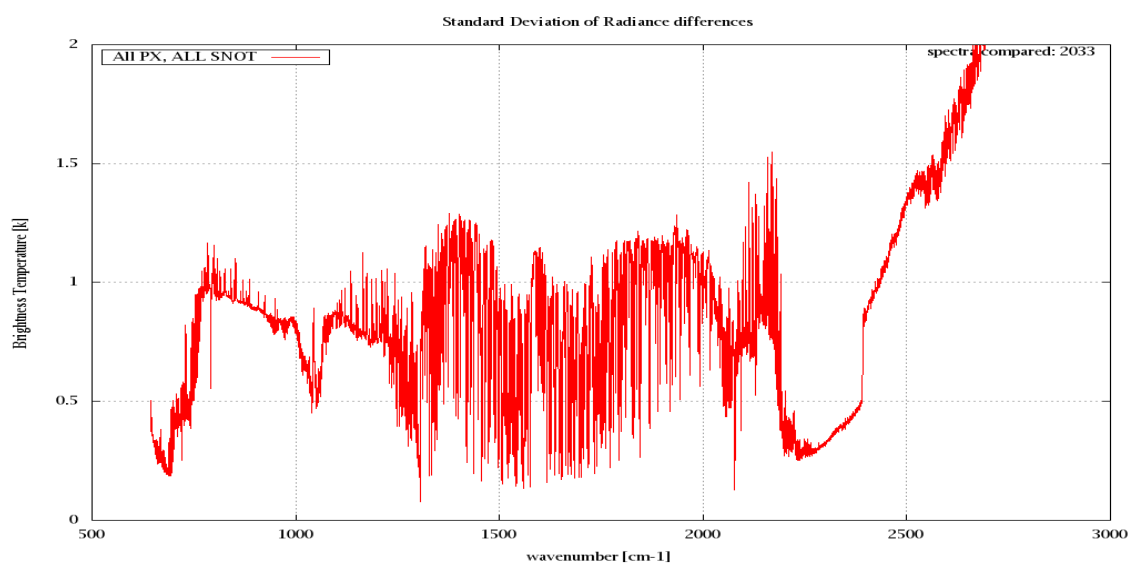


Figure 7: Standard Deviation of Radiance differences

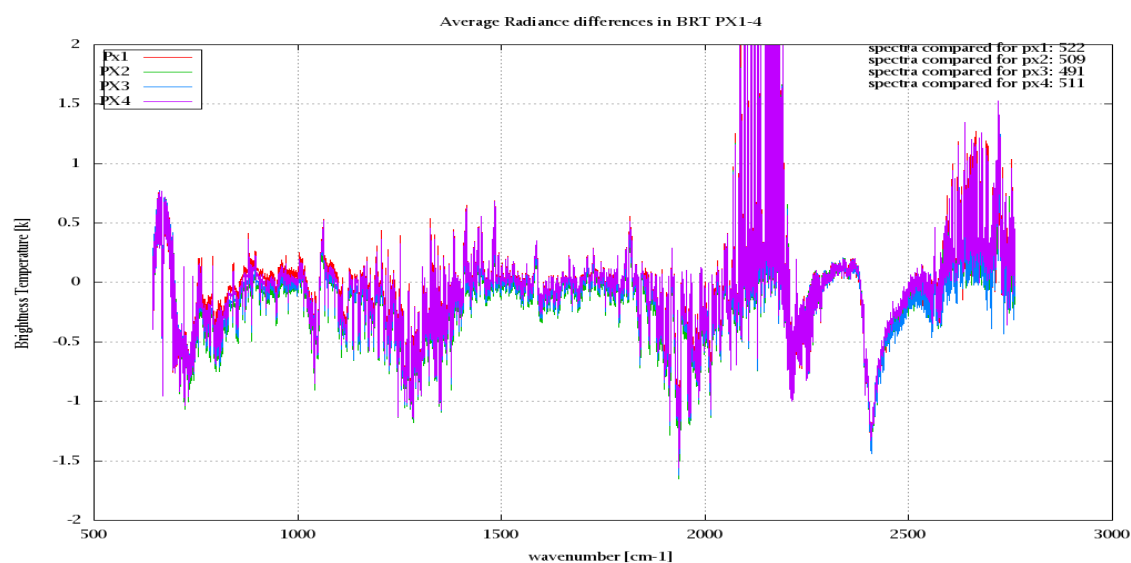


Figure 8: Average Radiance differences: OBS-CAL

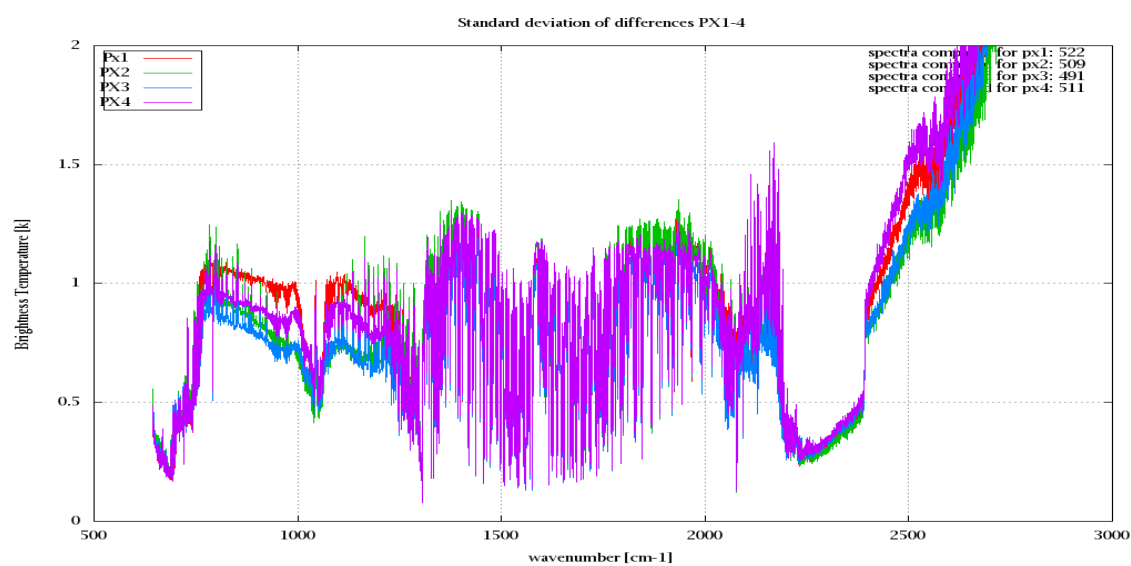


Figure 9: Standard Deviation of Radiance differences

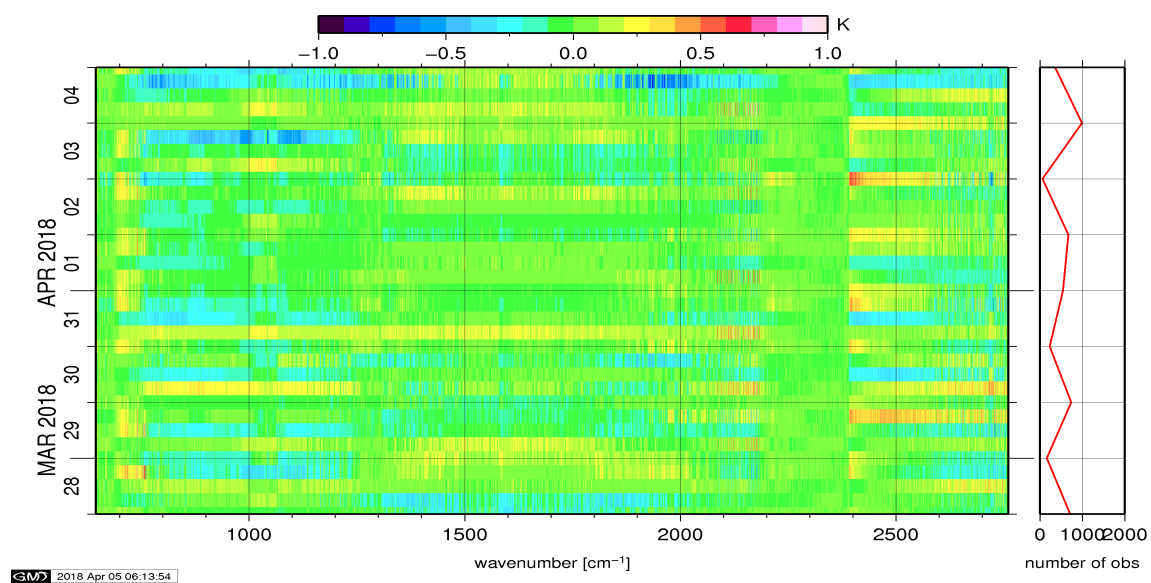


Figure 10: Radiance Anomaly in BRT: All Channels

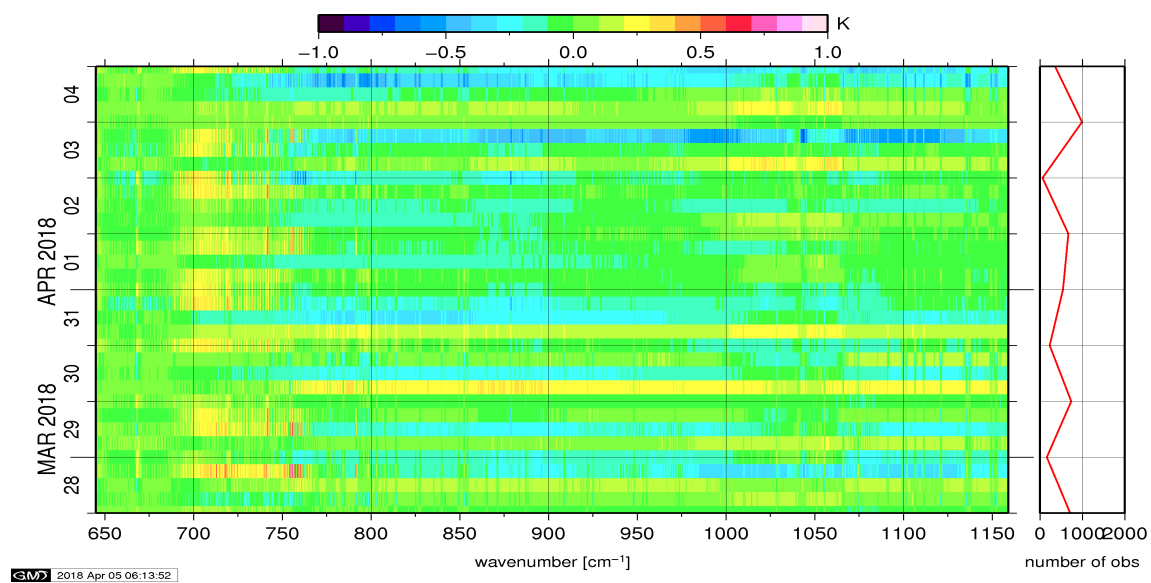


Figure 11: Radiance Anomaly in BRT: IASI Band 1

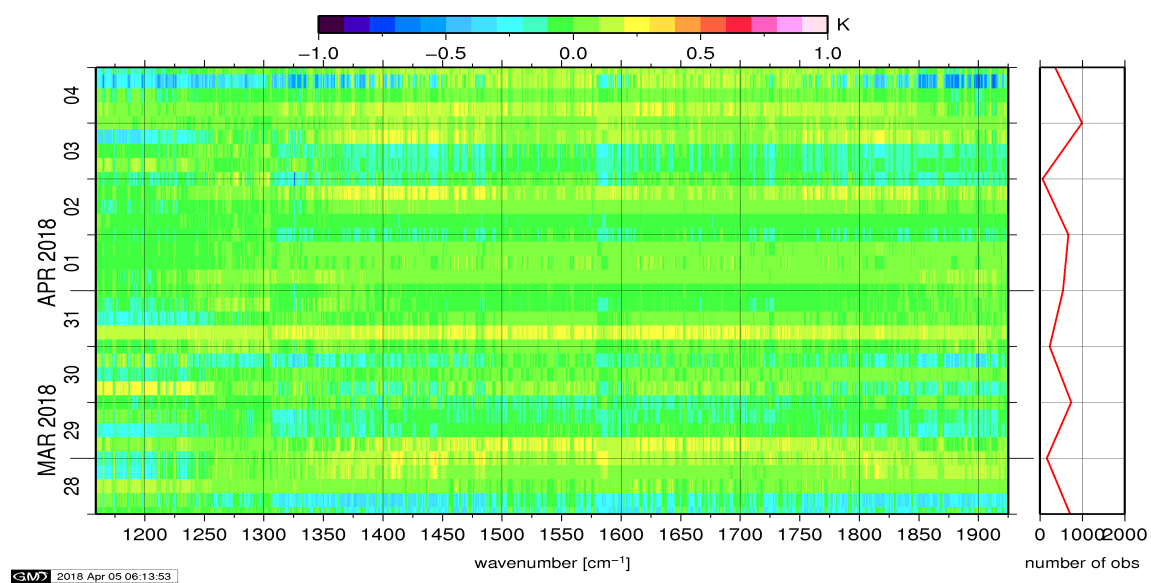


Figure 12: Radiance Anomaly in BRT: IASI Band 2

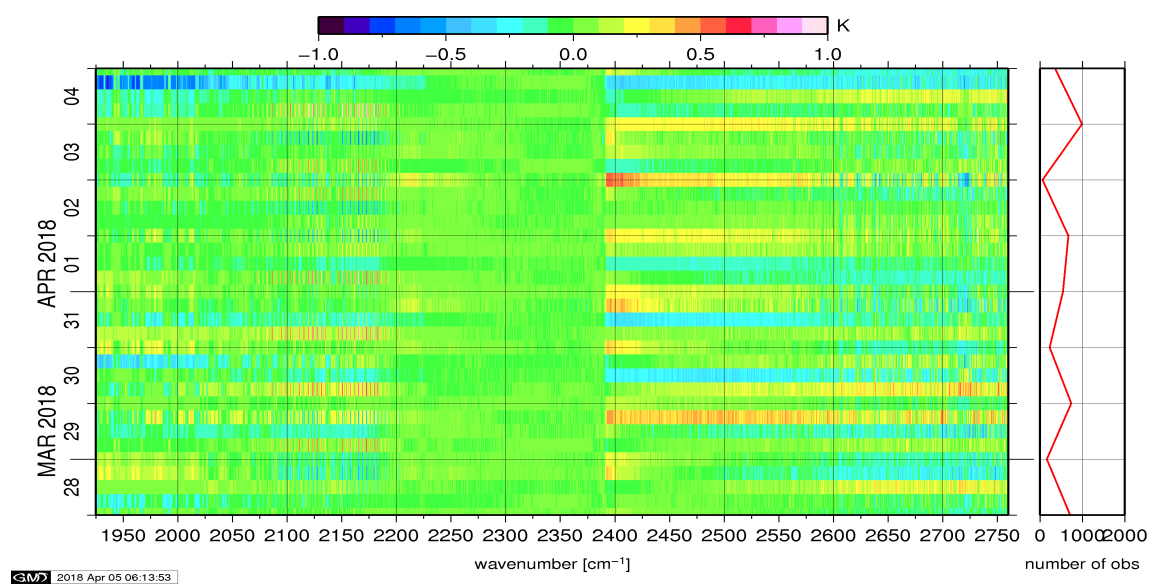


Figure 13: Radiance Anomaly in BRT: IASI Band 3

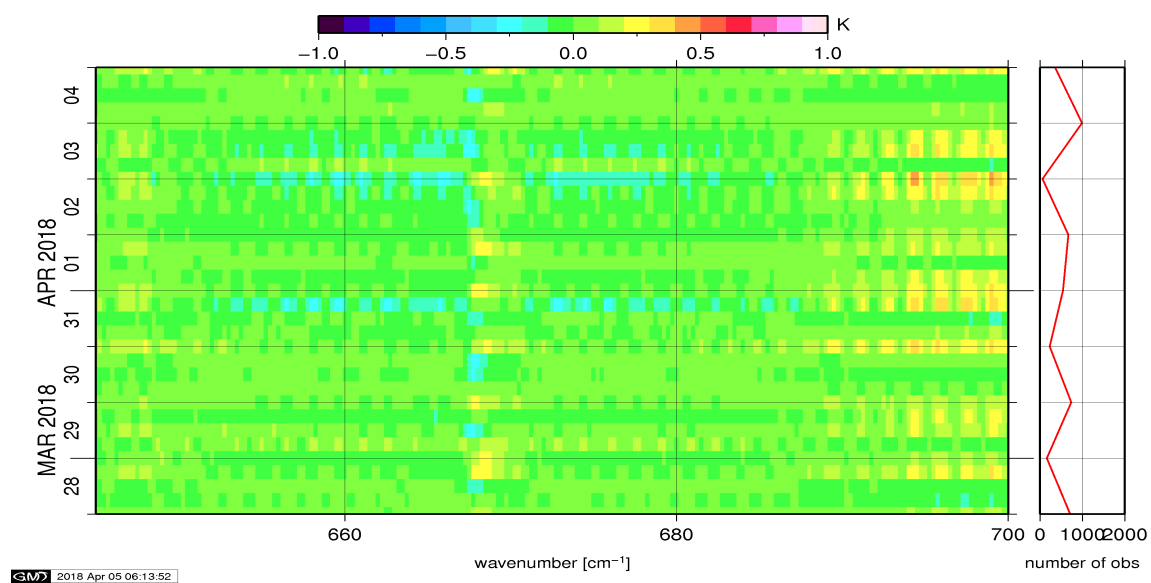


Figure 14: Radiance Anomaly in BRT: CO2 14

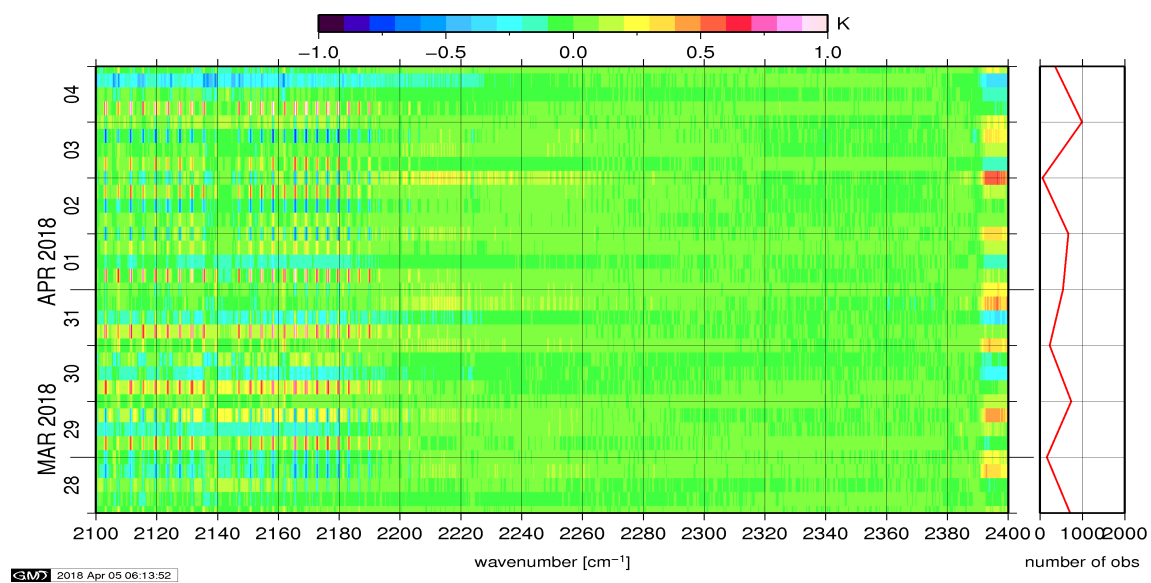


Figure 15: Radiance Anomaly in BRT: CO2 4.3

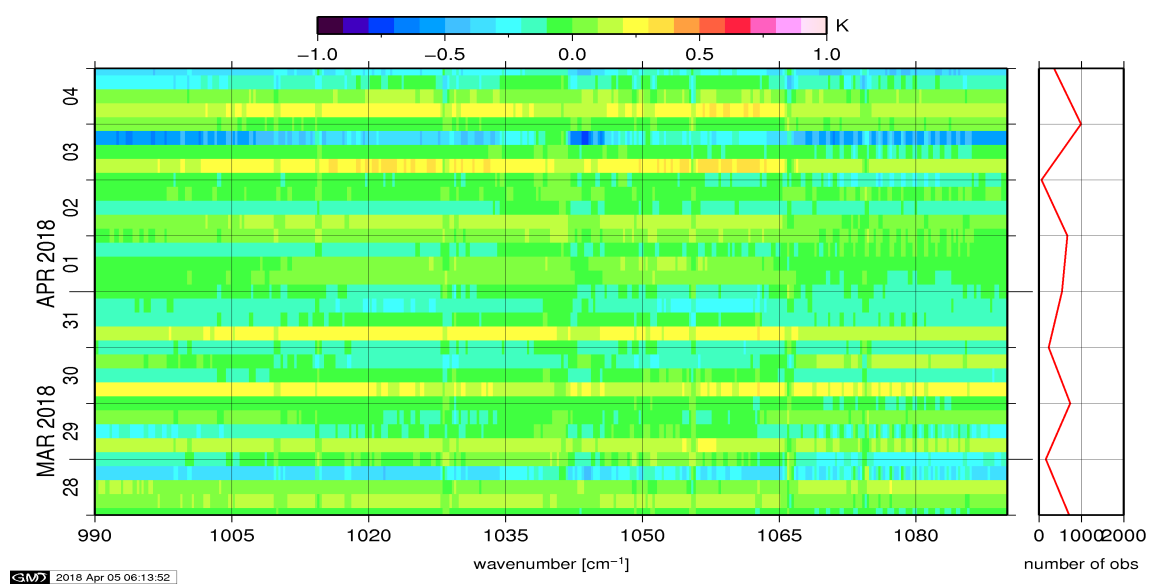


Figure 16: Radiance Anomaly in BRT: O3

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.

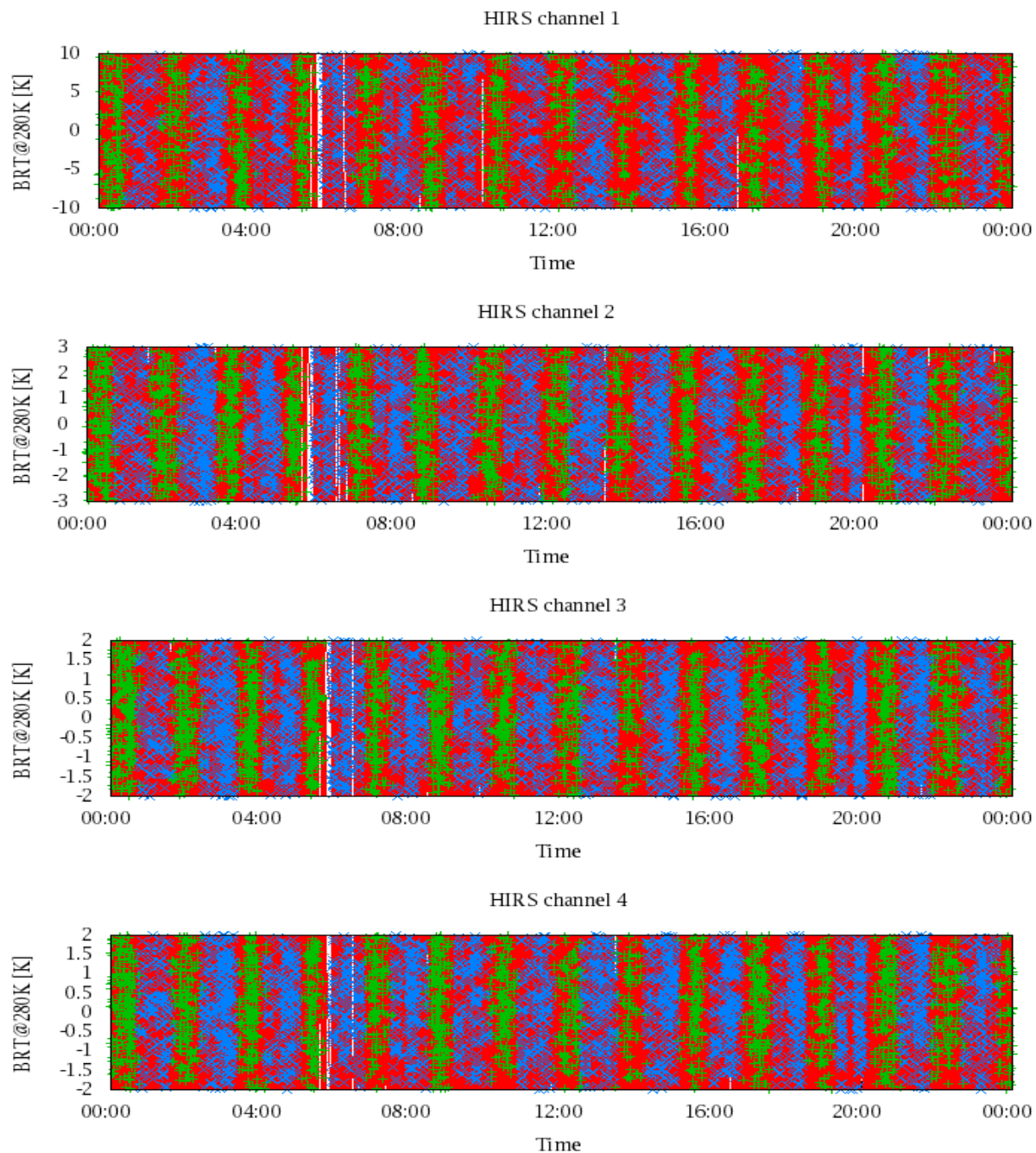


Figure 17: Radiance Differences in BRT

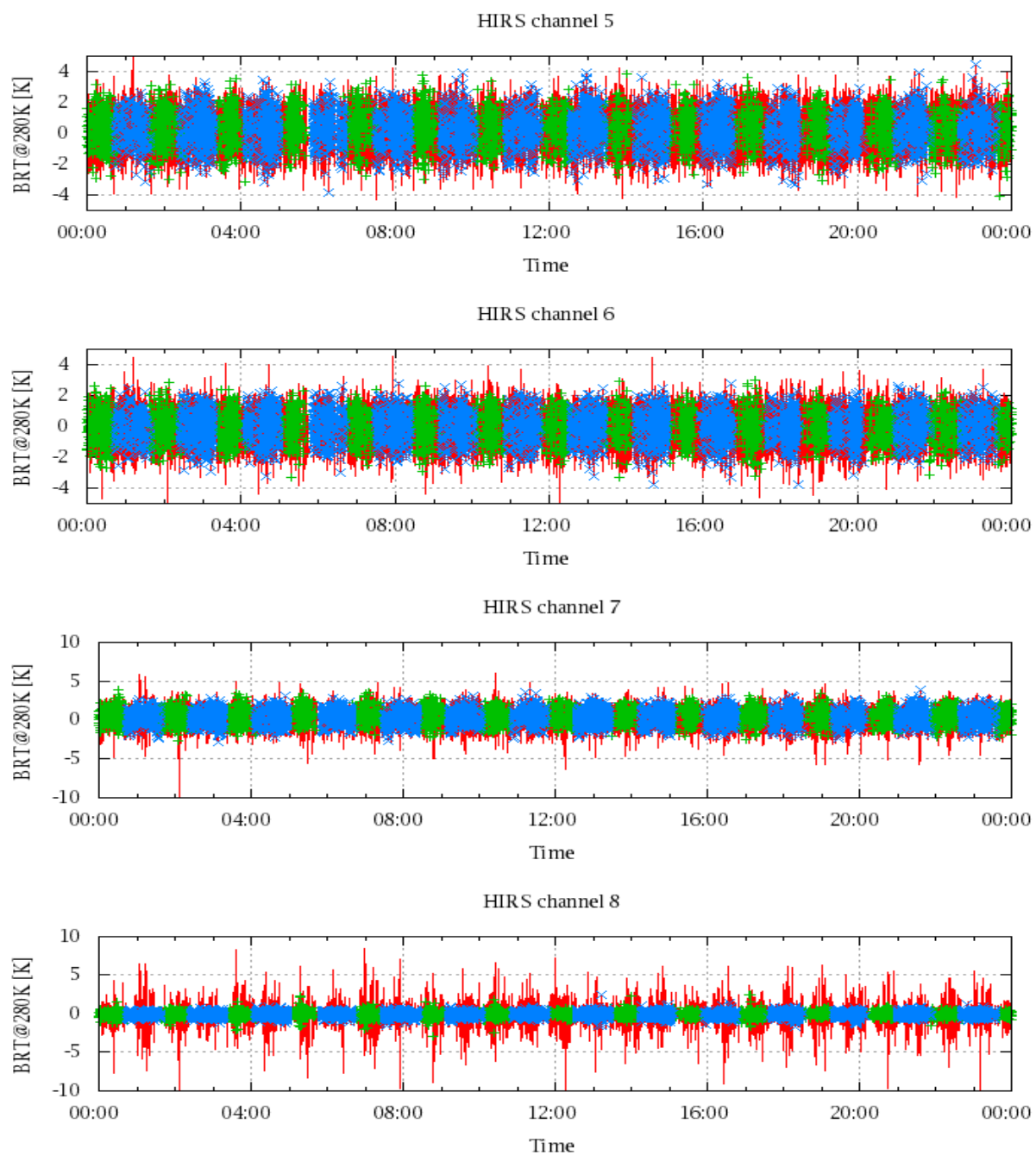


Figure 18: Radiance Differences in BRT

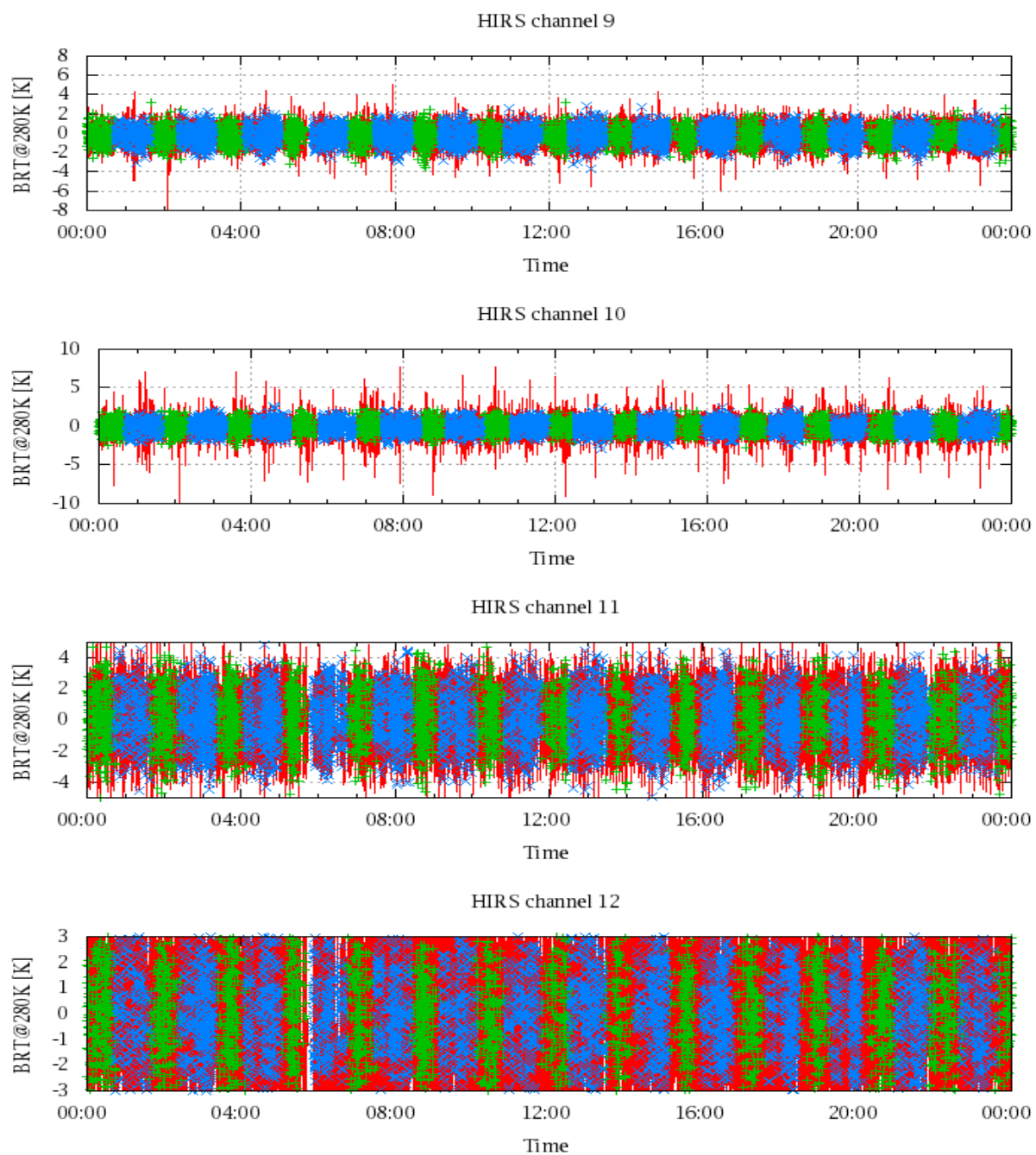


Figure 19: Radiance Differences in BRT

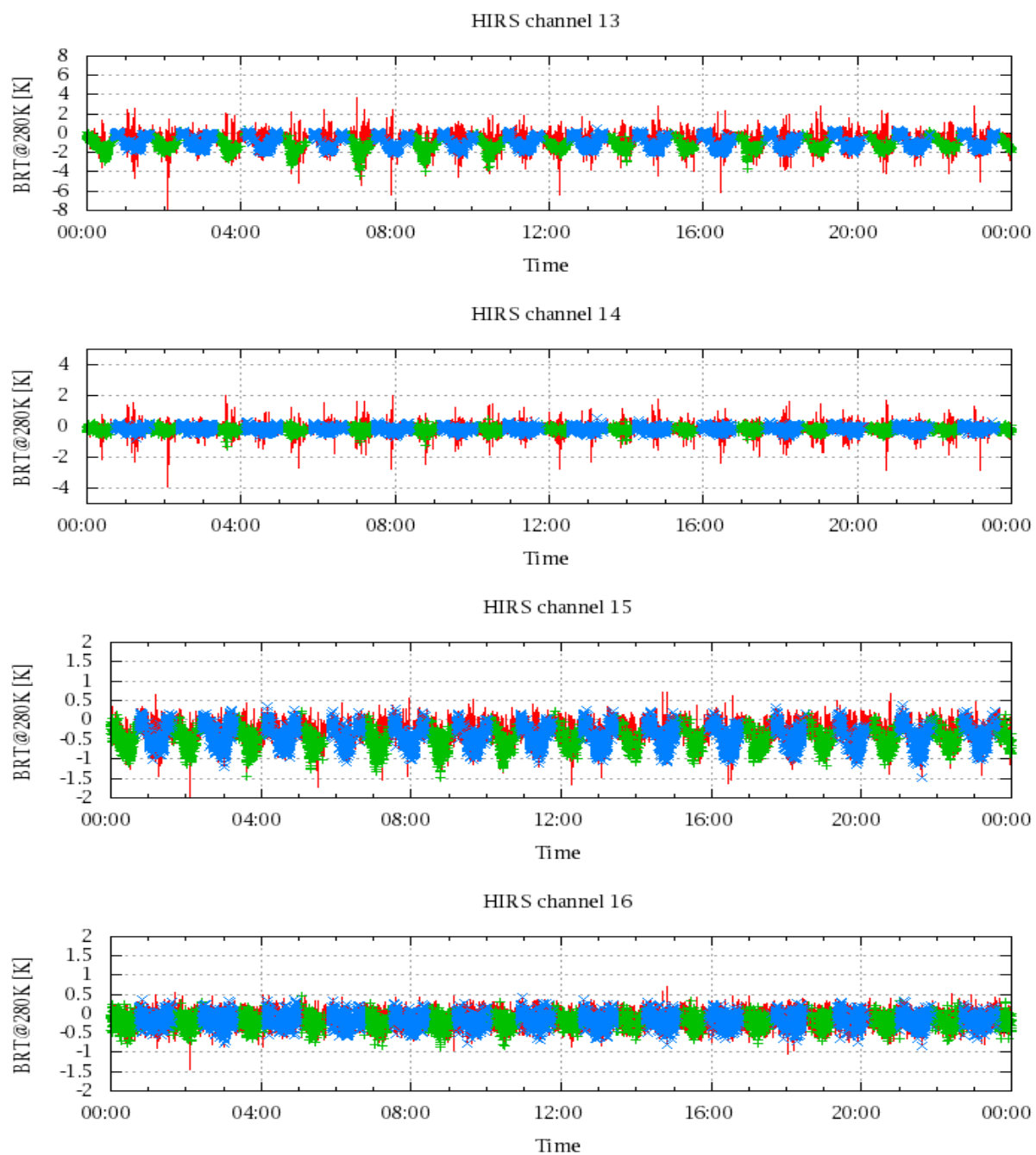


Figure 20: Radiance Differences in BRT

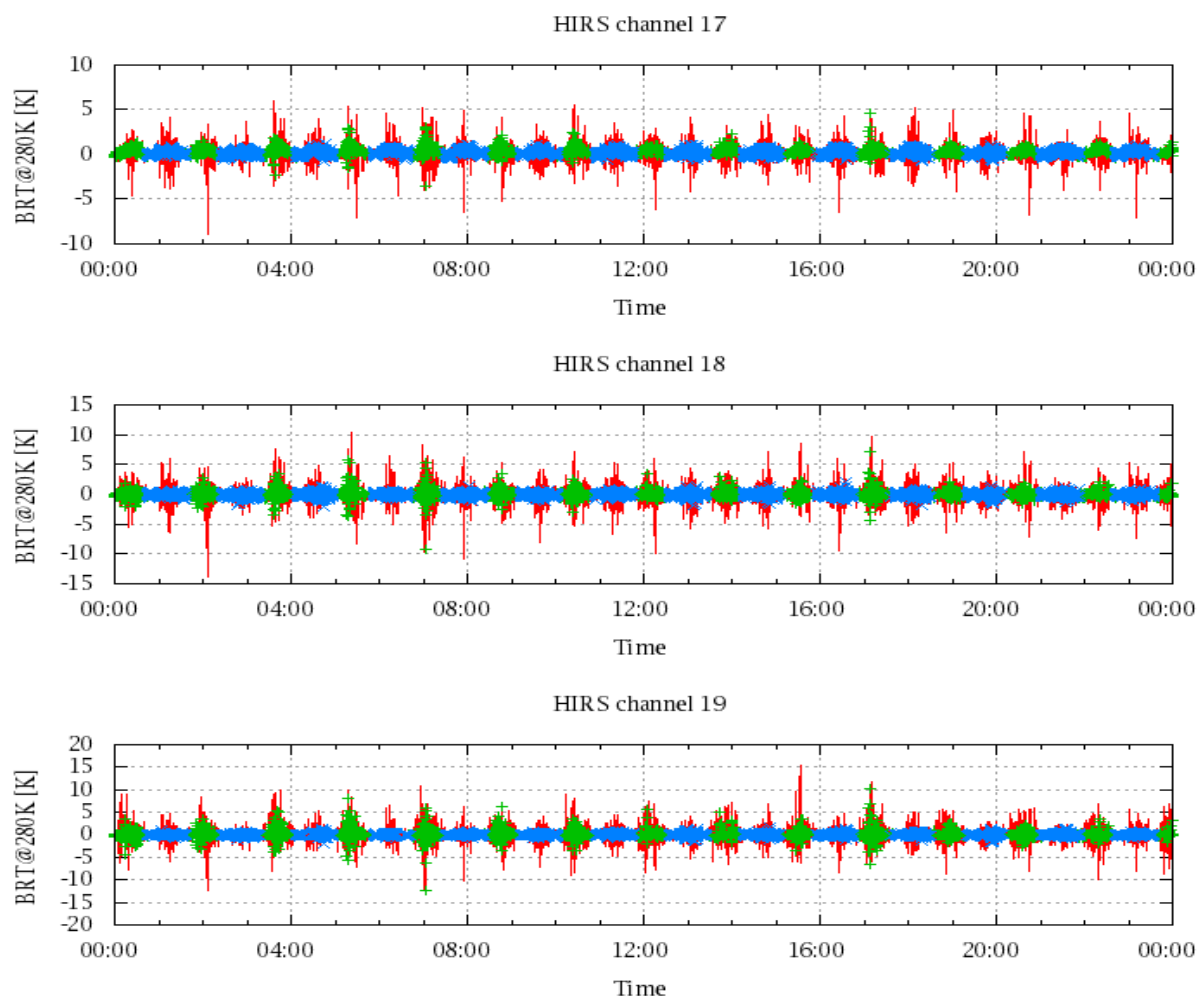


Figure 21: Radinace Differences in BRT