

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

31/03/2018 00:00:00 - 01/04/2018 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 31/03/2018 00:00:00 - 01/04/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 31/03/2018 00:00:00 - 01/04/2018 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)	3029	3036	20180331022349.999	20180331022353.022
PX1 (130)	3259	3419	20180331022451.831	20180331022533.995
PX1 (130)	9619	9702	20180331040556.669	20180331040619.157
PX1 (130)	16268	16326	20180331054819.167	20180331054834.734
PX1 (130)	143	204	20180331054927.269	20180331054944.999
PX2 (135)	3029	3036	20180331022349.999	20180331022353.022
PX2 (135)	3259	3419	20180331022451.831	20180331022533.995
PX2 (135)	9618	9702	20180331040556.454	20180331040619.157
PX2 (135)	16267	16326	20180331054818.949	20180331054834.734
PX2 (135)	143	204	20180331054927.269	20180331054944.999
PX3 (140)	3029	3036	20180331022349.999	20180331022353.022
PX3 (140)	3259	3419	20180331022451.831	20180331022533.995
PX3 (140)	9618	9701	20180331040556.454	20180331040618.938
PX3 (140)	16267	16325	20180331054818.949	20180331054834.515
PX3 (140)	143	203	20180331054927.269	20180331054943.269
PX4 (145)	3029	3036	20180331022349.999	20180331022353.022
PX4 (145)	3259	3418	20180331022451.831	20180331022533.776
PX4 (145)	9618	9701	20180331040556.454	20180331040618.938

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	16267	16325	20180331054818.949	20180331054834.515
PX4 (145)	143	203	20180331054927.269	20180331054943.269
IMG (150)	10952	10960	20180331022349.780	20180331022351.725
IMG (150)	11214	11394	20180331022451.616	20180331022533.776
IMG (150)	4222	4317	20180331040556.454	20180331040618.938
IMG (150)	13943	14009	20180331054818.949	20180331054834.515
IMG (150)	14235	14303	20180331054927.269	20180331054943.269
VER (160)	14082	14087	20180331022343.295	20180331022349.999
VER (160)	14122	14148	20180331022447.291	20180331022535.291
VER (160)	1528	1544	20180331040551.267	20180331040623.263
VER (160)	5368	5379	20180331054815.273	20180331054839.273
VER (160)	5410	5419	20180331054927.269	20180331054943.269
AUX (180)	6084	6090	20180331022447.725	20180331022535.721
AUX (180)	6842	6846	20180331040551.696	20180331040623.696
AUX (180)	7610	7613	20180331054815.706	20180331054839.706
AUX (180)	7618	7621	20180331054919.702	20180331054943.702

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
31/03/2018 00:00:12	-	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)	99.54 %	-
GQisFlagQual set (PX2)	99.60 %	-
GQisFlagQual set (PX3)	99.61 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.58 %	-

Table 4: Quality flags

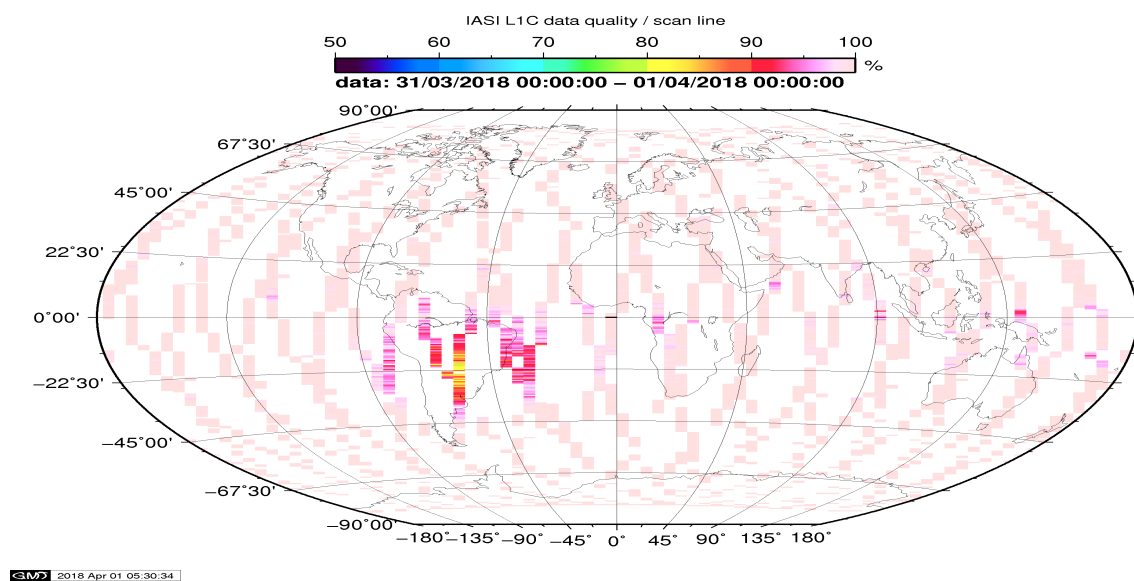


Figure 1: L1C data quality

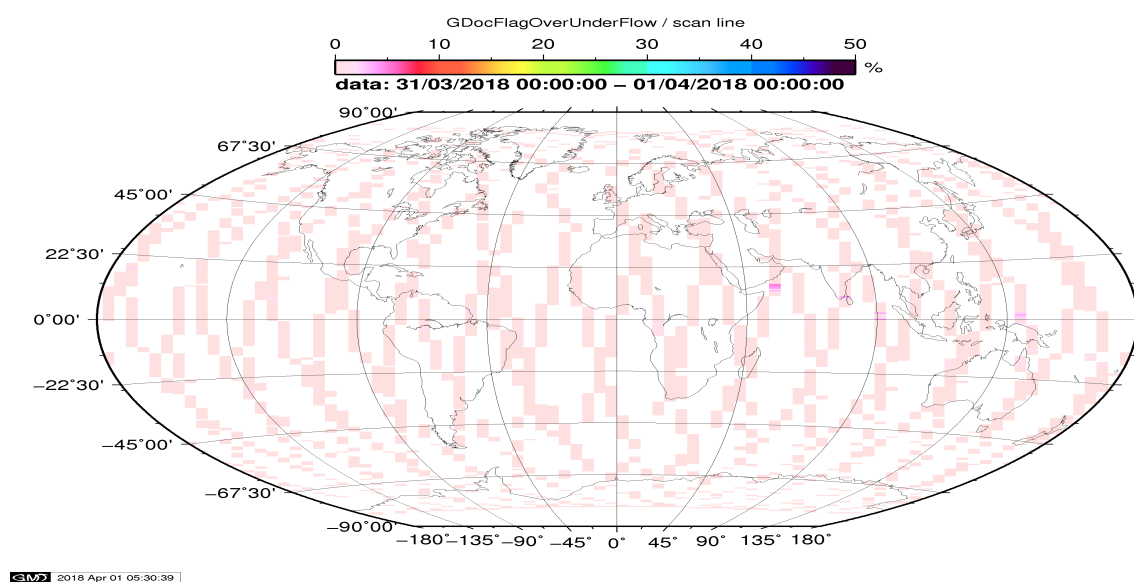


Figure 2: Flag of Over and Under Flows

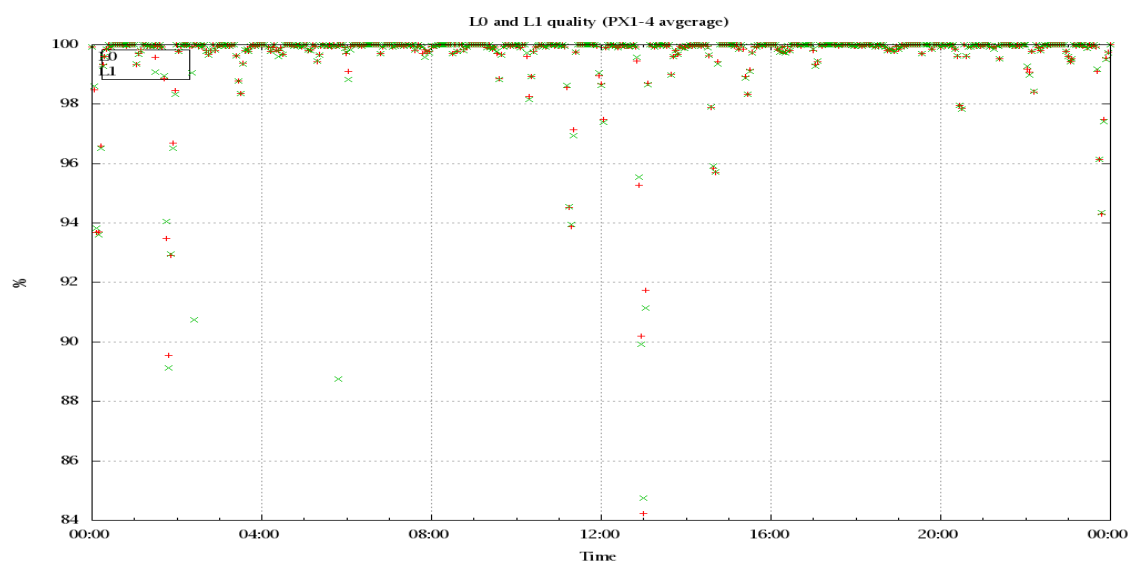


Figure 3: Level 0 and 1C overall quality

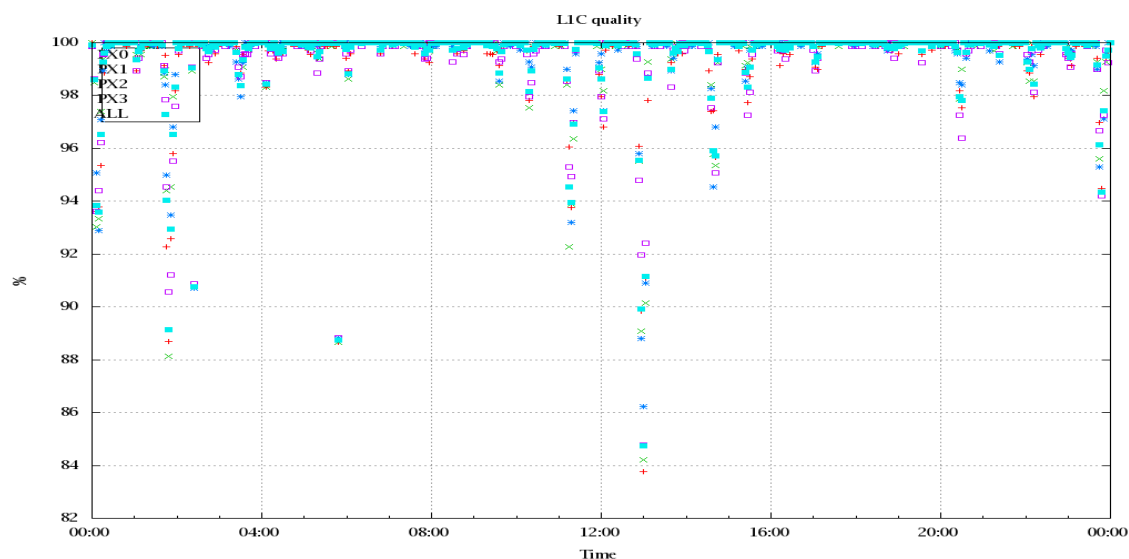


Figure 4: Level 1C quality

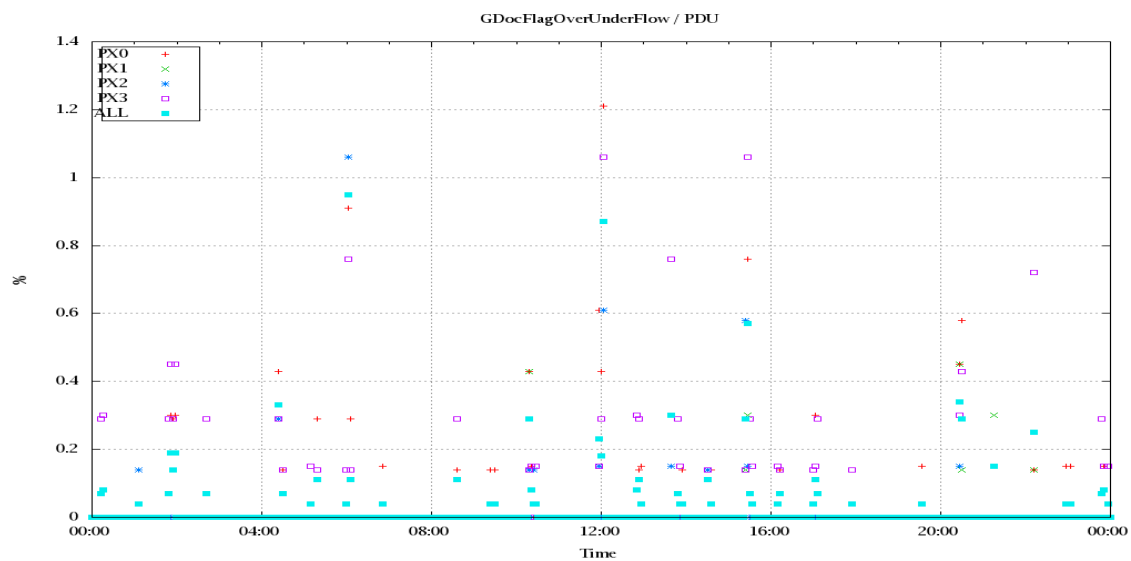


Figure 5: OverUnderFlowFlag timeseries

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.

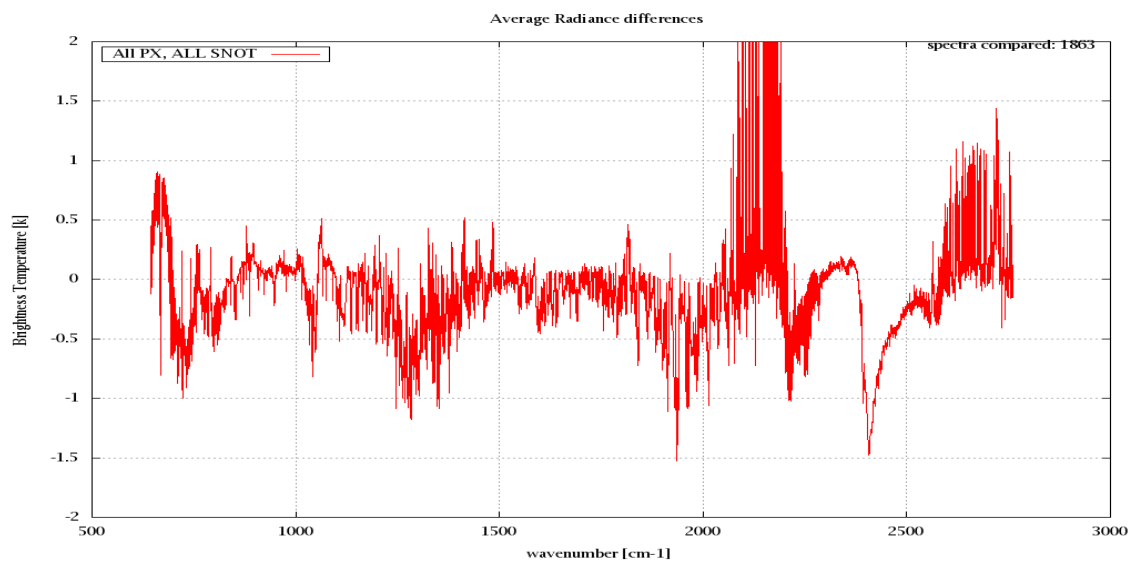


Figure 6: Average Radiance differences: OBS-CAL

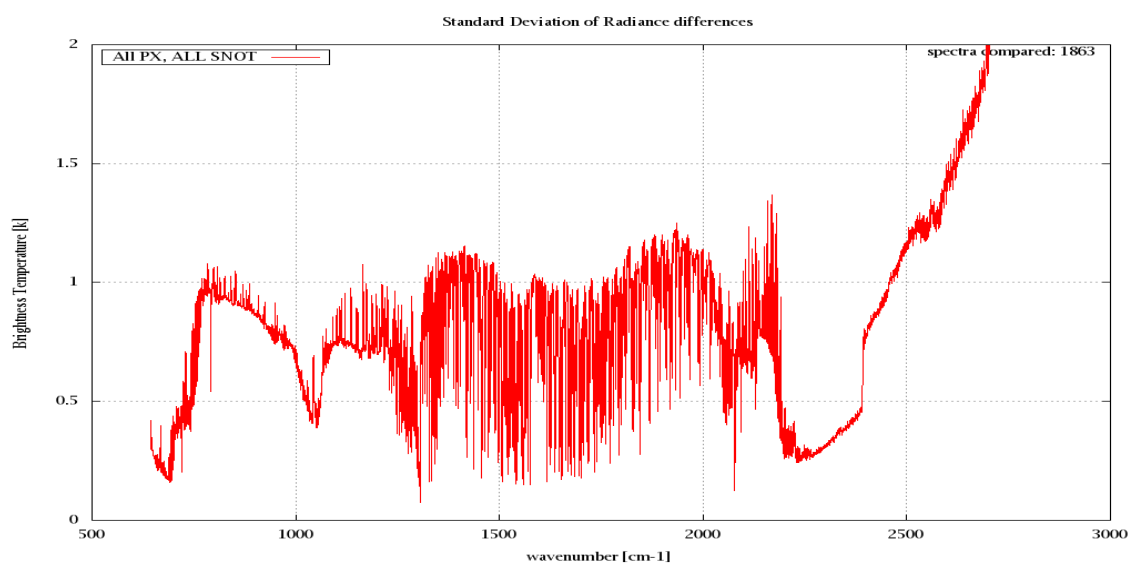


Figure 7: Standard Deviation of Radiance differences

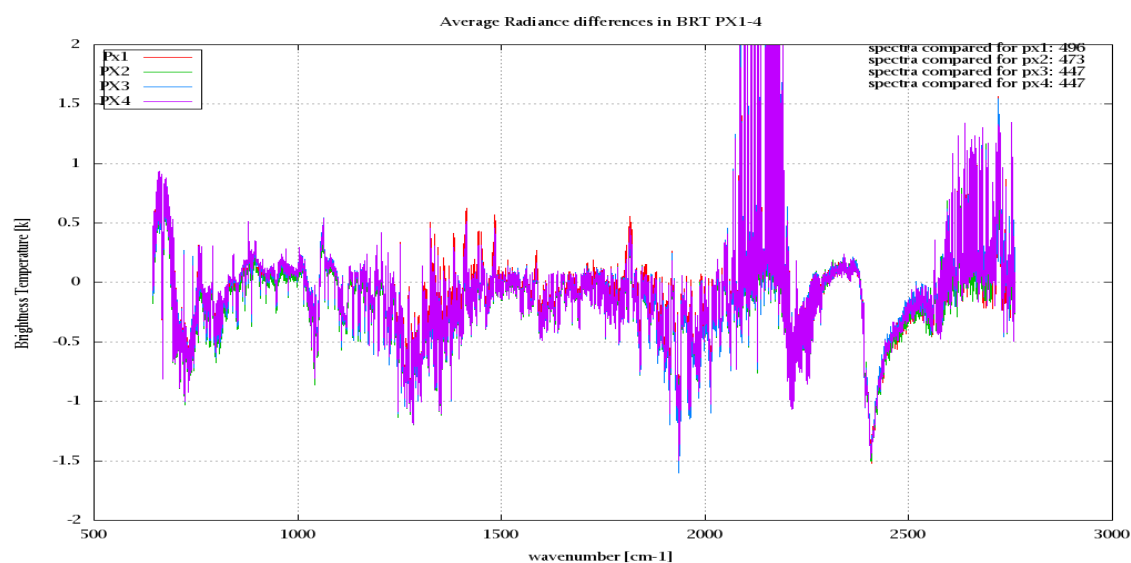


Figure 8: Average Radiance differences: OBS-CAL

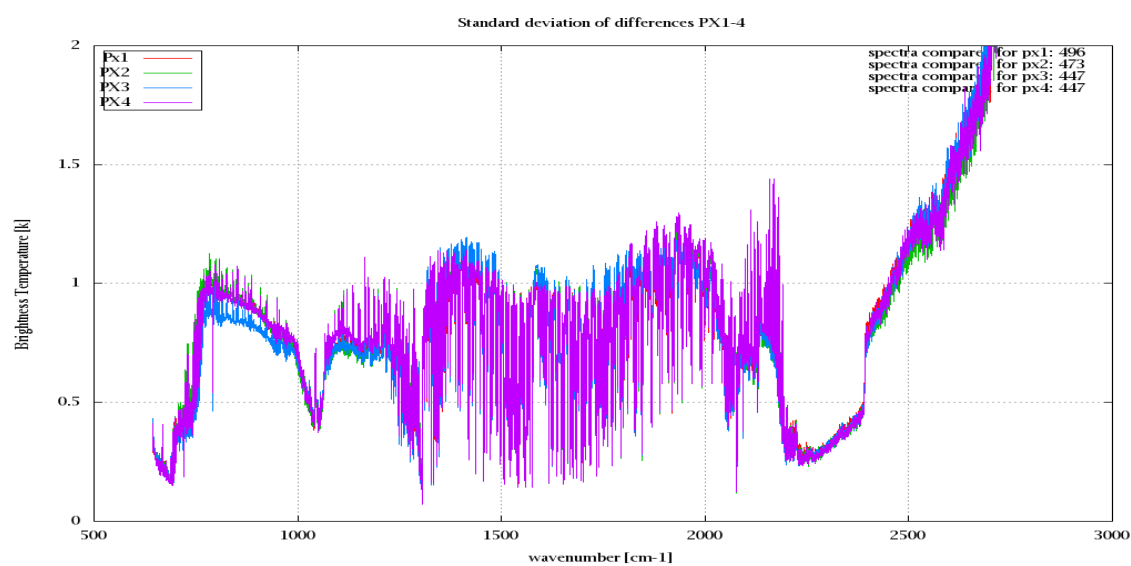


Figure 9: Standard Deviation of Radiance differences

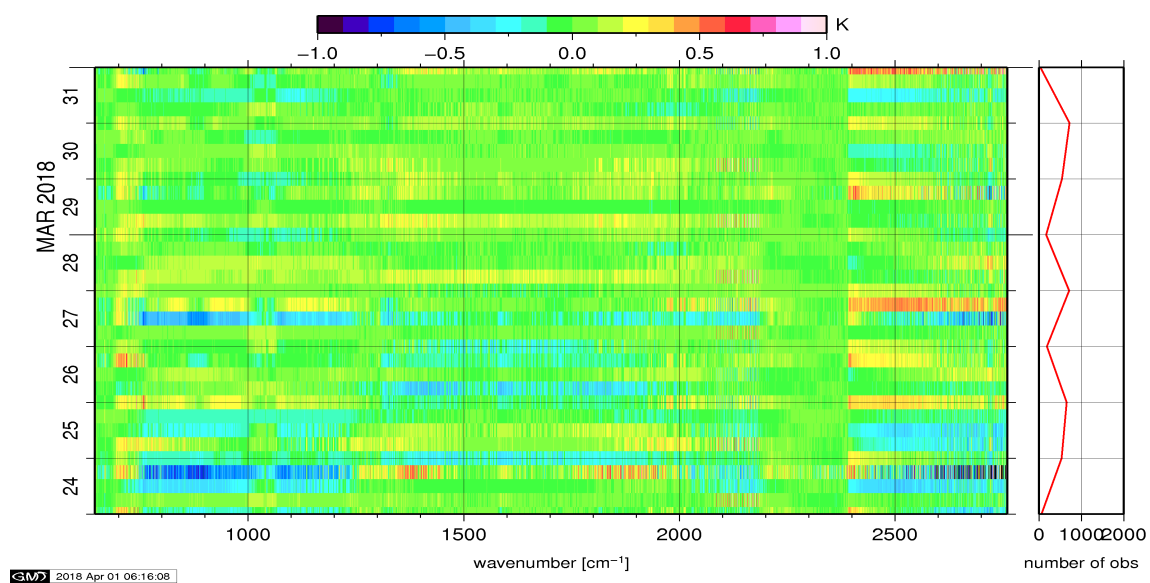


Figure 10: Radiance Anomaly in BRT: All Channels

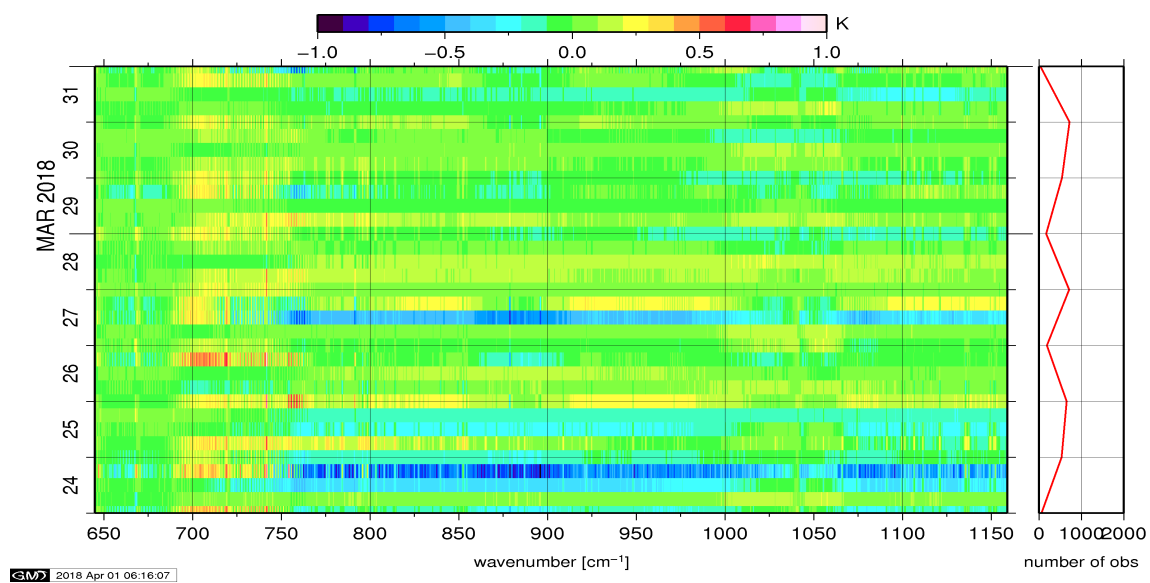


Figure 11: Radiance Anomaly in BRT: IASI Band 1

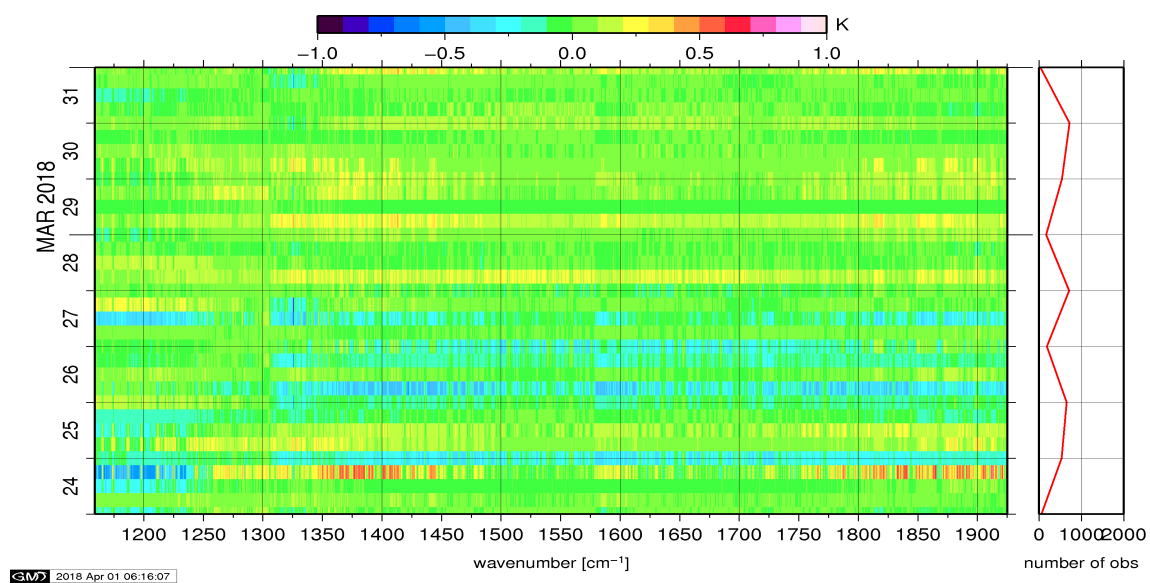


Figure 12: Radiance Anomaly in BRT: IASI Band 2

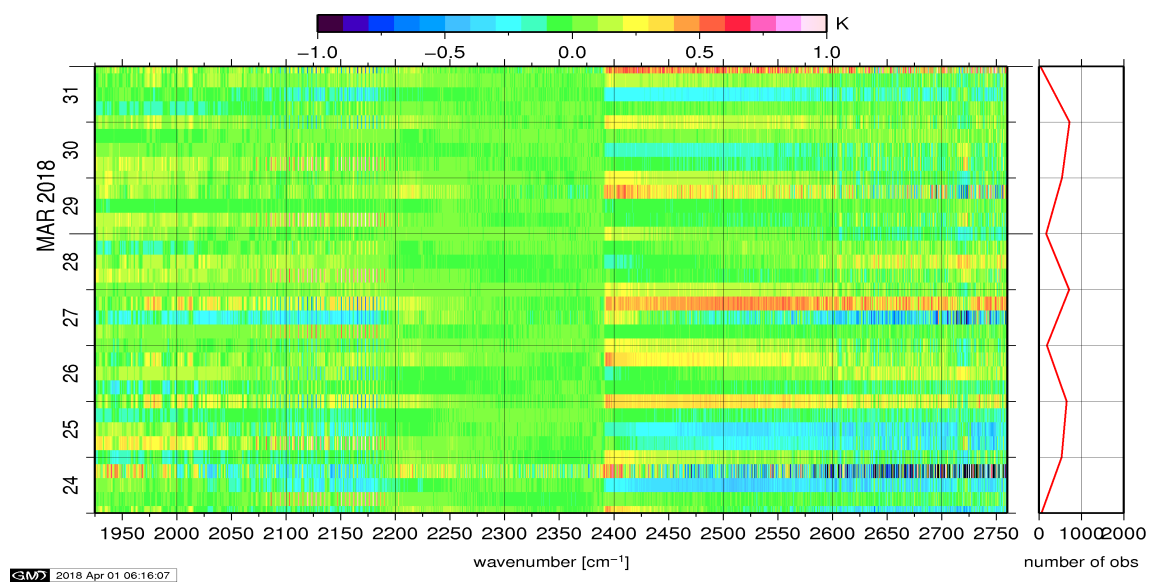


Figure 13: Radiance Anomaly in BRT: IASI Band 3

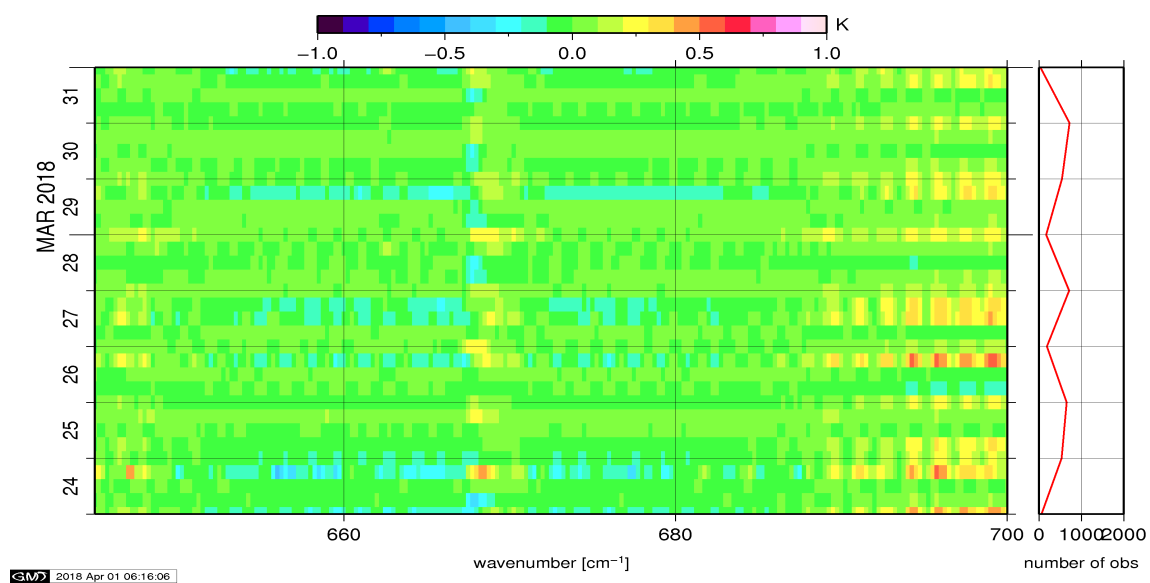


Figure 14: Radiance Anomaly in BRT: CO2 14

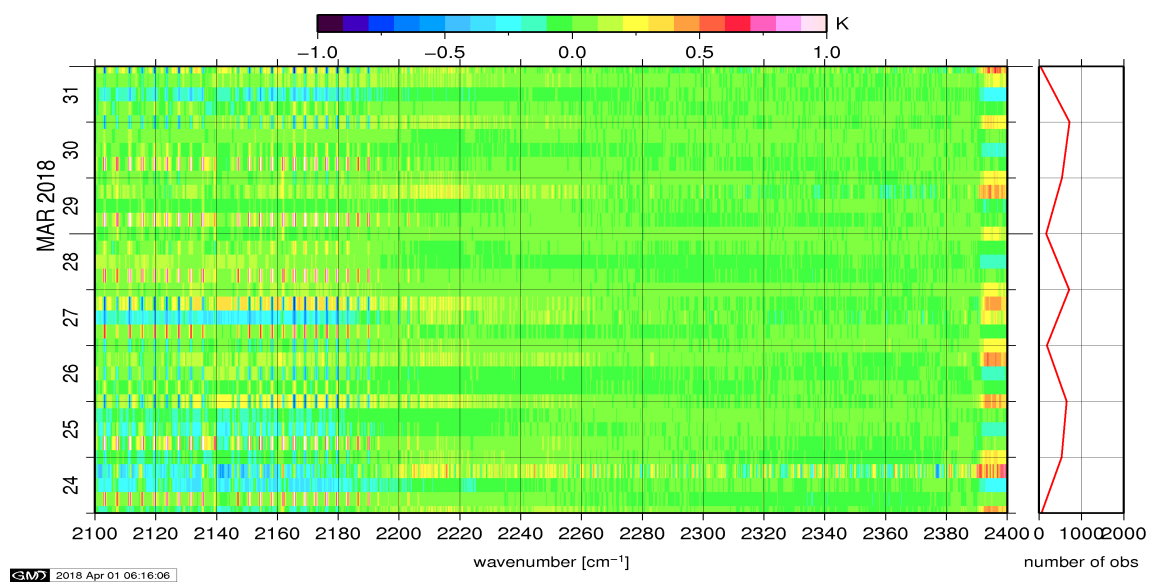


Figure 15: Radiance Anomaly in BRT: CO2 4.3

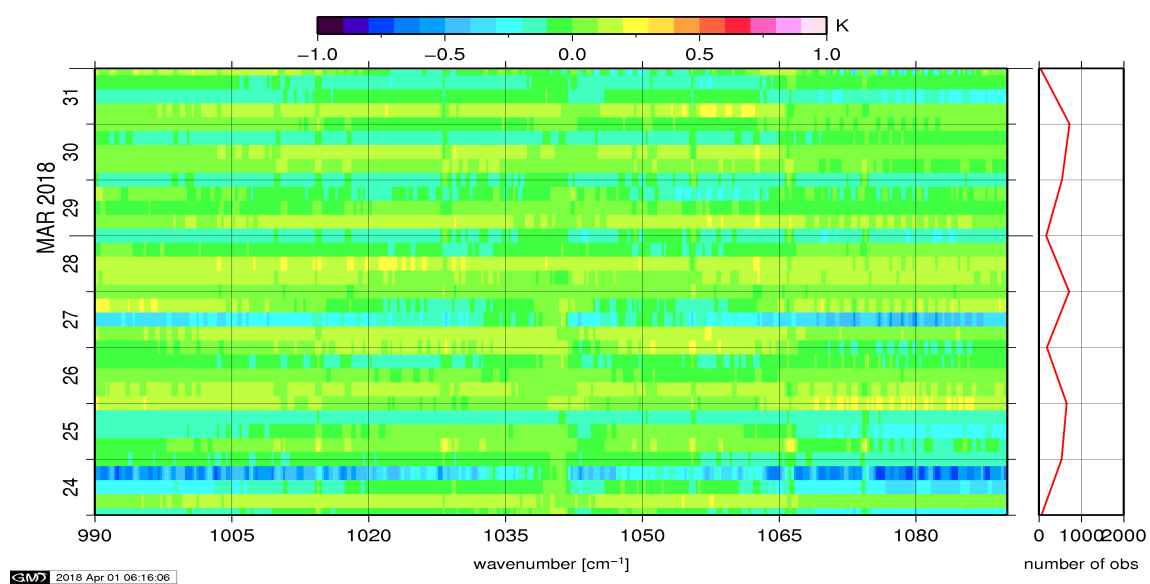


Figure 16: Radiance Anomaly in BRT: O3

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.

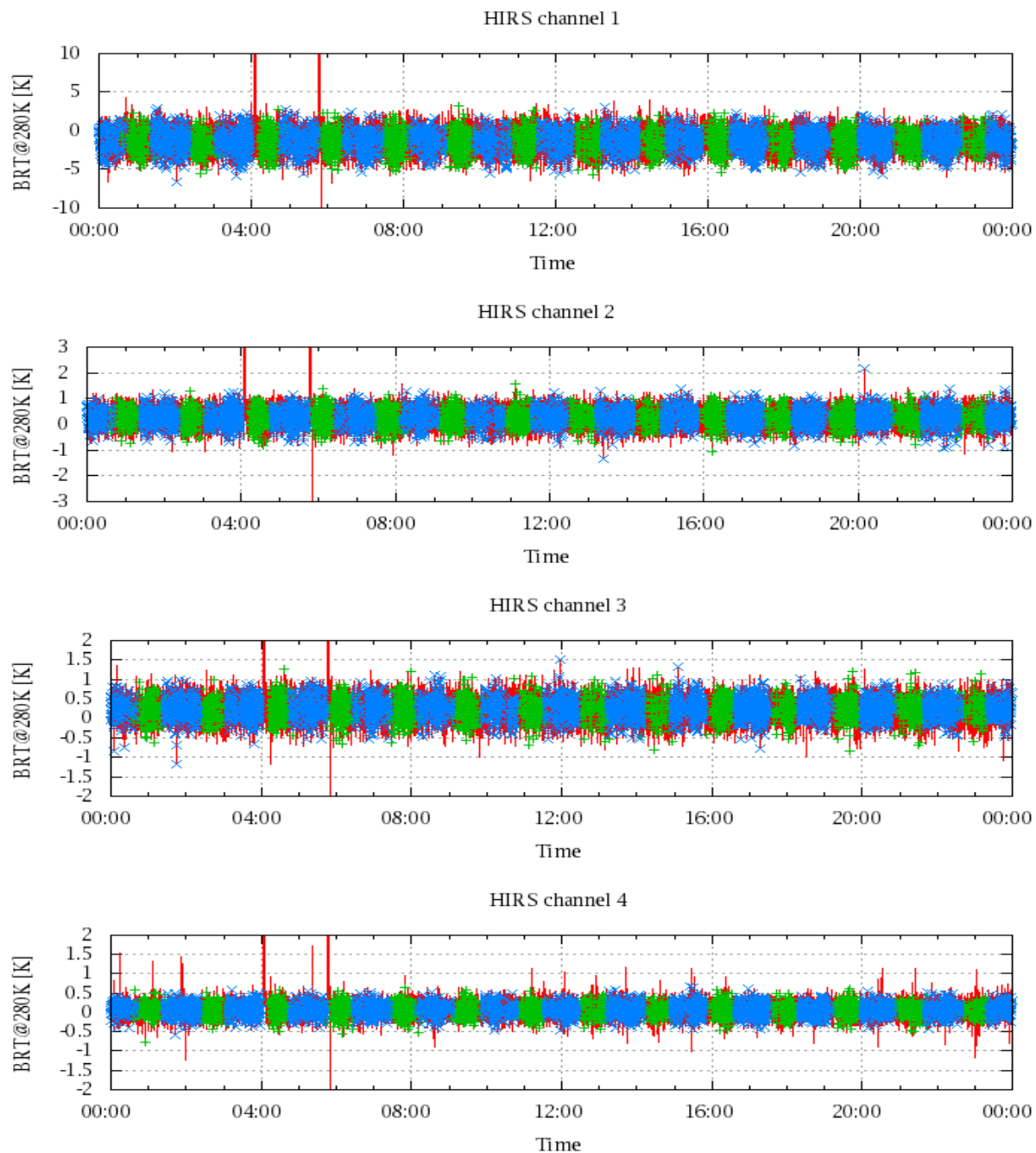


Figure 17: Radiance Differences in BRT

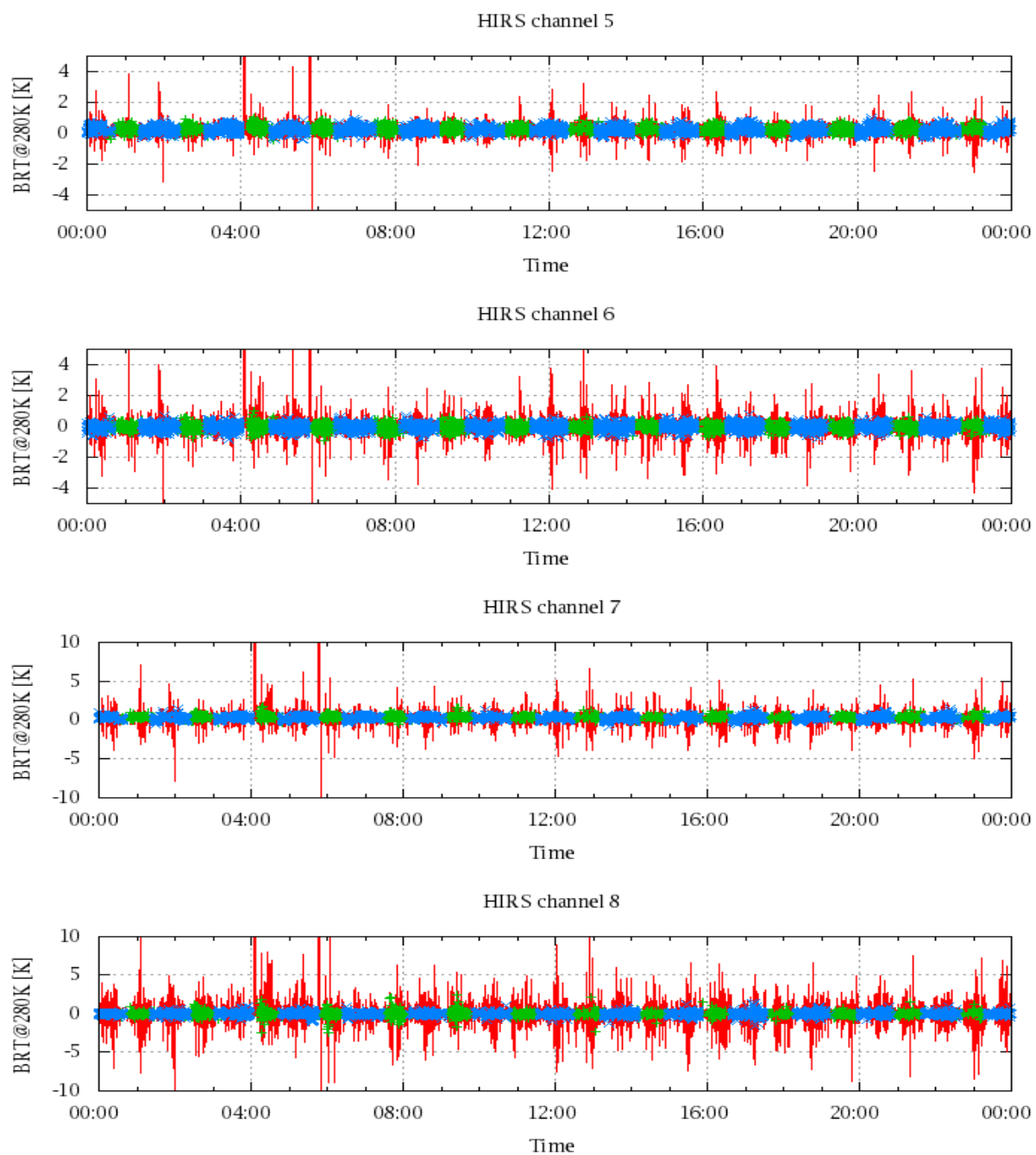


Figure 18: Radiance Differences in BRT

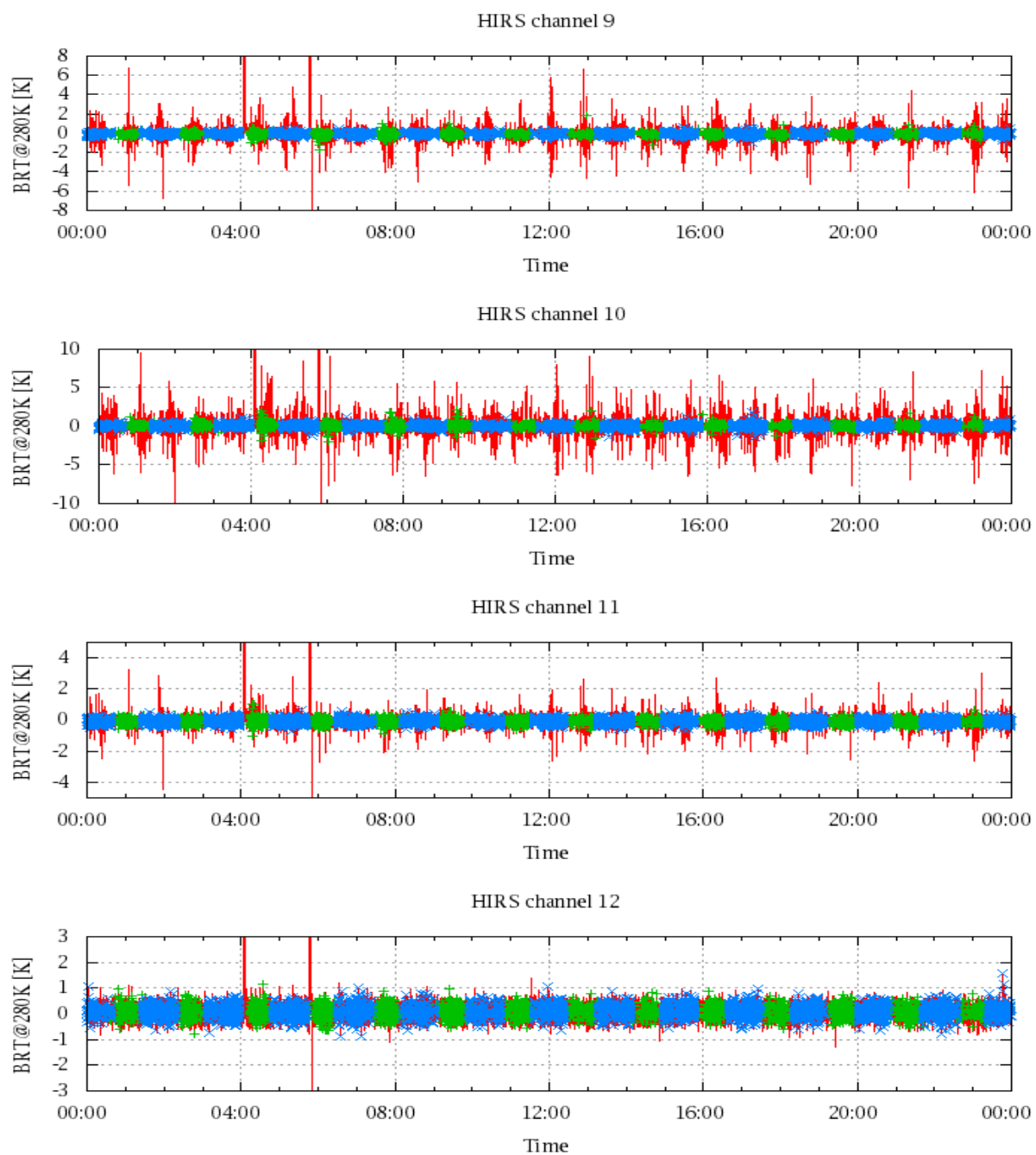


Figure 19: Radiance Differences in BRT

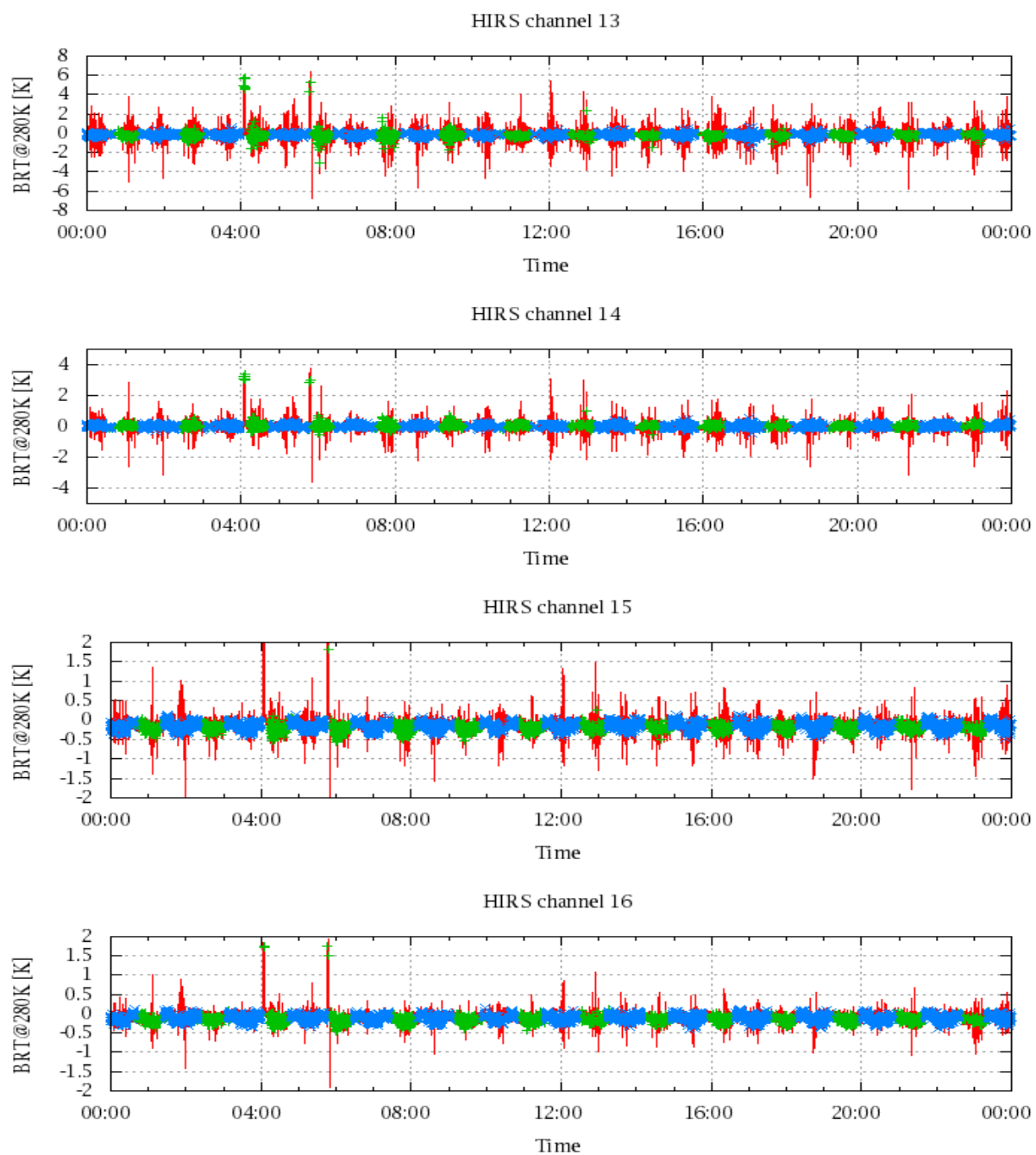


Figure 20: Radiance Differences in BRT

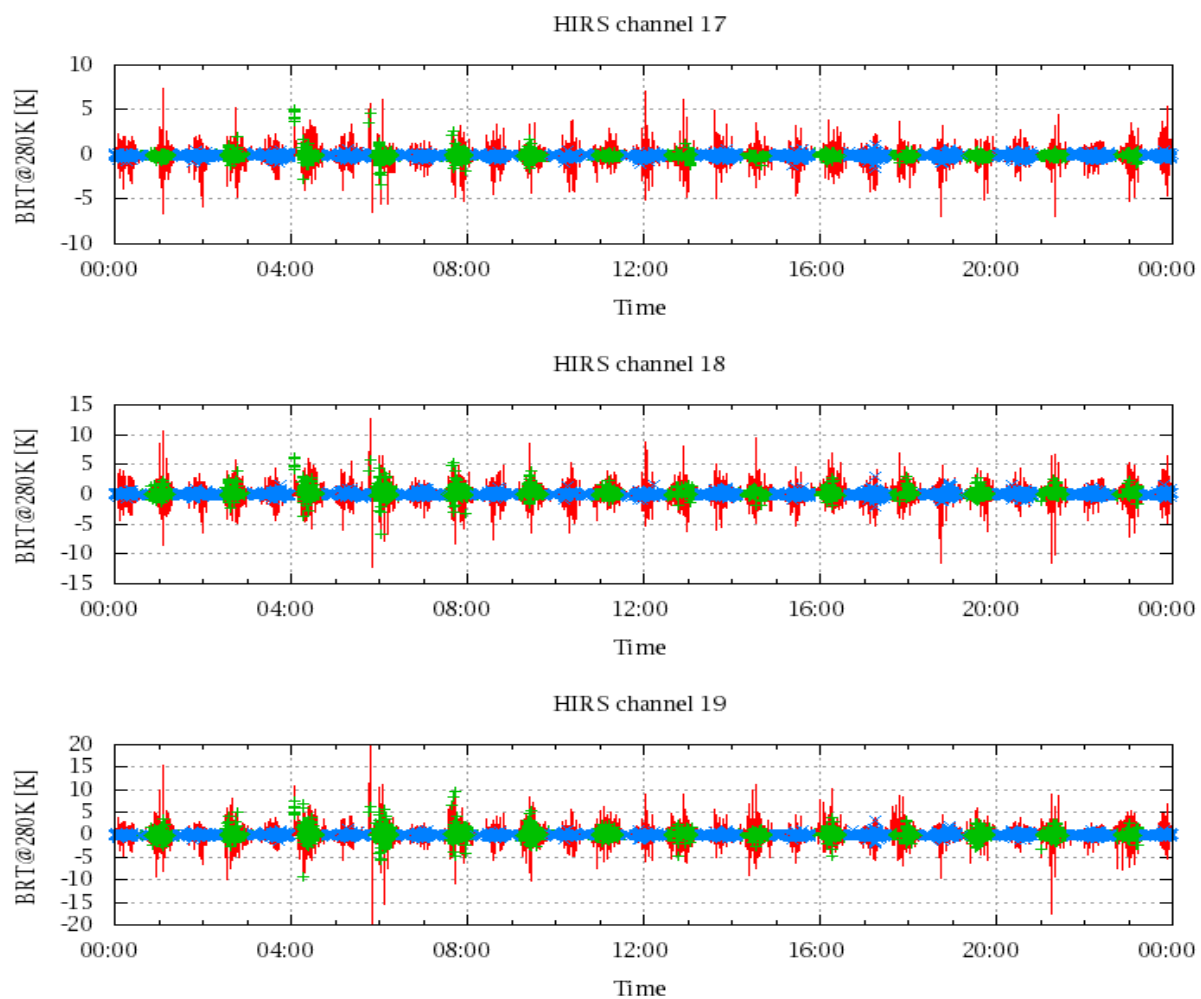


Figure 21: Radinace Differences in BRT