

IASI L0 and L1 Daily Monitoring Report **Metop-B**

IASI monitoring team

05/05/2019 00:00:00 - 06/05/2019 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 minutes data packet) for 05/05/2019 00:00:00 - 06/05/2019 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 05/05/2019 00:00:00 - 06/05/2019 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSSGranule	480	-
L1 DPX PDUs (RM: IASI-HIRS)	478	-
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	8172	8309	20190505161723.091	20190505161800.278
PX1 (130)	8390	8398	20190505161822.333	20190505161824.059
PX1 (130)	8409	8434	20190505161826.438	20190505161833.360
PX1 (130)	8475	8523	20190505161845.251	20190505161857.141
PX1 (130)	13901	13952	20190505175541.230	20190505175553.773
PX2 (135)	8172	8309	20190505161723.091	20190505161800.278
PX2 (135)	8390	8398	20190505161822.333	20190505161824.059
PX2 (135)	8409	8425	20190505161826.438	20190505161831.411
PX2 (135)	8425	8434	20190505161831.411	20190505161833.360
PX2 (135)	8475	8523	20190505161845.251	20190505161857.141
PX2 (135)	13901	13952	20190505175541.230	20190505175553.773
PX3 (140)	8172	8309	20190505161723.091	20190505161800.278
PX3 (140)	8390	8398	20190505161822.333	20190505161824.059
PX3 (140)	8409	8425	20190505161826.438	20190505161831.411
PX3 (140)	8425	8434	20190505161831.411	20190505161833.360
PX3 (140)	8475	8523	20190505161845.251	20190505161857.141
PX3 (140)	13901	13951	20190505175541.230	20190505175553.554
PX4 (145)	8172	8309	20190505161723.091	20190505161800.278
PX4 (145)	8390	8398	20190505161822.333	20190505161824.059
PX4 (145)	8409	8425	20190505161826.438	20190505161831.411

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	8425	8433	20190505161831.411	20190505161833.141
PX4 (145)	8475	8523	20190505161845.251	20190505161857.141
PX4 (145)	13901	13951	20190505175541.230	20190505175553.554
IMG (150)	14316	14473	20190505161723.091	20190505161800.278
IMG (150)	14565	14574	20190505161822.114	20190505161824.059
IMG (150)	14585	14613	20190505161826.438	20190505161833.141
IMG (150)	14662	14715	20190505161845.036	20190505161857.141
IMG (150)	6612	6667	20190505175541.015	20190505175553.554
VER (160)	2334	10526	20190505025915.169	20190505043023.699
VER (160)	10526	10526	20190505043023.699	20190505061239.241
VER (160)	10526	10591	20190505061239.241	20190505063923.160
VER (160)	2334	10526	20190505101611.120	20190505111535.884
VER (160)	10526	10526	20190505111535.884	20190505125633.805
VER (160)	10526	10591	20190505125633.805	20190505135619.112
VER (160)	15878	15903	20190505161723.091	20190505161803.090
VER (160)	15917	15923	20190505161819.090	20190505161835.086
VER (160)	15932	15938	20190505161843.086	20190505161859.086
VER (160)	2334	10526	20190505173307.072	20190505175541.230
VER (160)	10526	10526	20190505175541.230	20190505193640.267
VER (160)	10526	10591	20190505193640.267	20190505211315.063
AUX (180)	9727	9733	20190505161715.524	20190505161803.520
AUX (180)	9735	9737	20190505161819.520	20190505161835.520
AUX (180)	9738	9740	20190505161843.520	20190505161859.520

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
05/05/2019 00:00:08	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
GQisFlagQual set (PX1)	99.53 %	-
GQisFlagQual set (PX2)	99.59 %	-
GQisFlagQual set (PX3)	99.61 %	-
GQisFlagQual set (PX4)	99.54 %	-
GQisFlagQual set (all)	99.57 %	-

Table 4: Quality flags

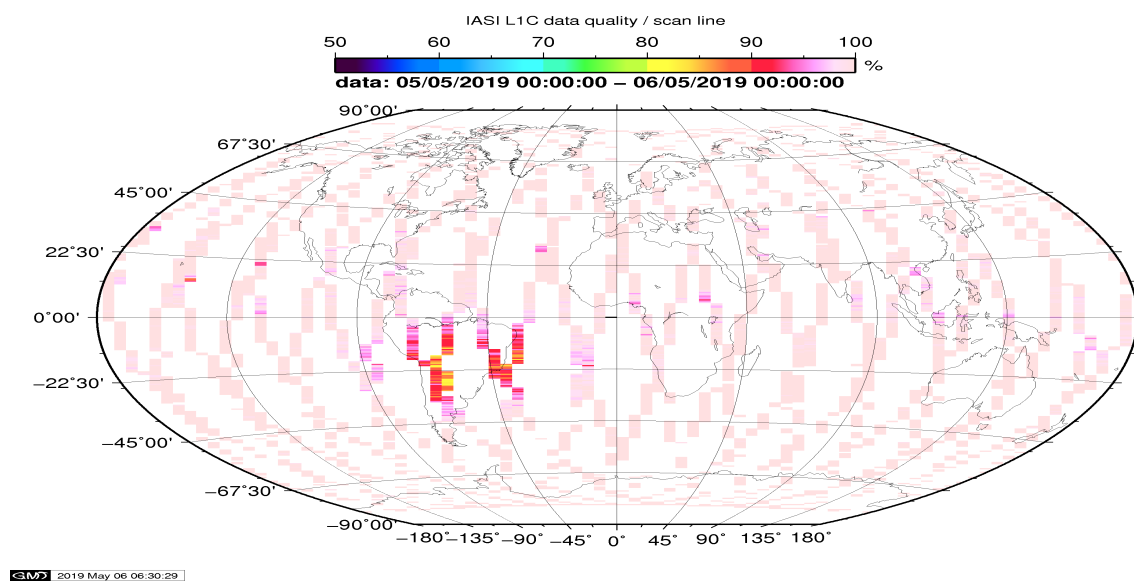


Figure 1: L1C data quality

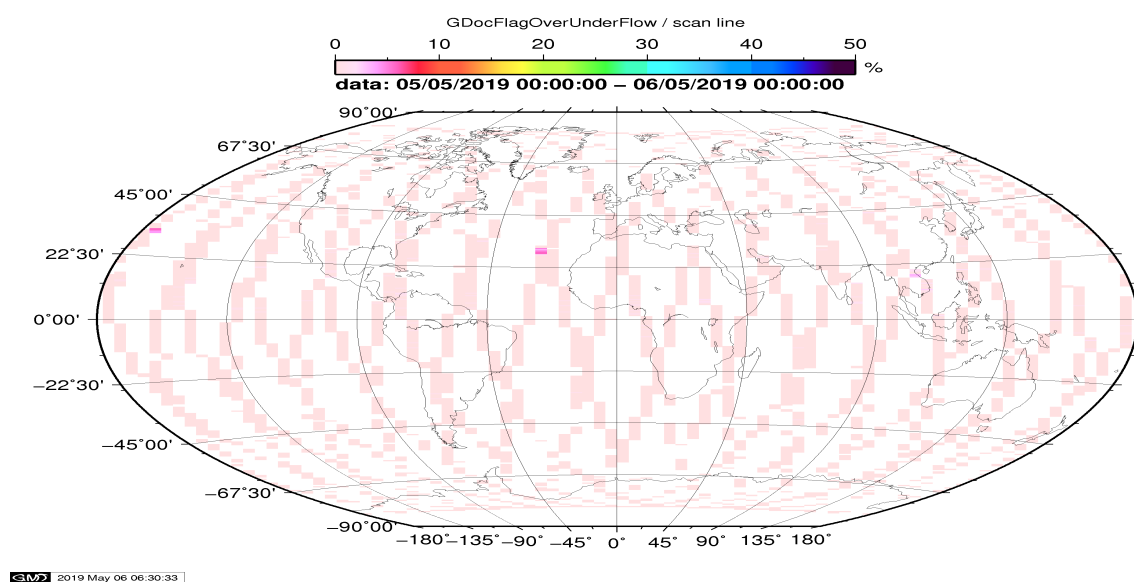


Figure 2: Flag of Over and Under Flows

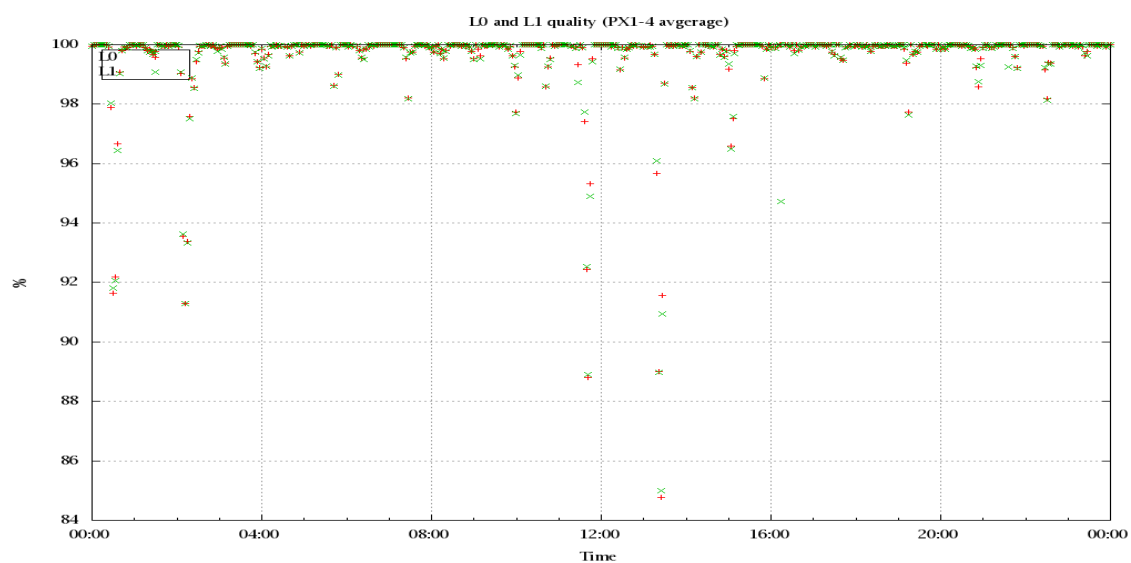


Figure 3: Level 0 and 1C overall quality

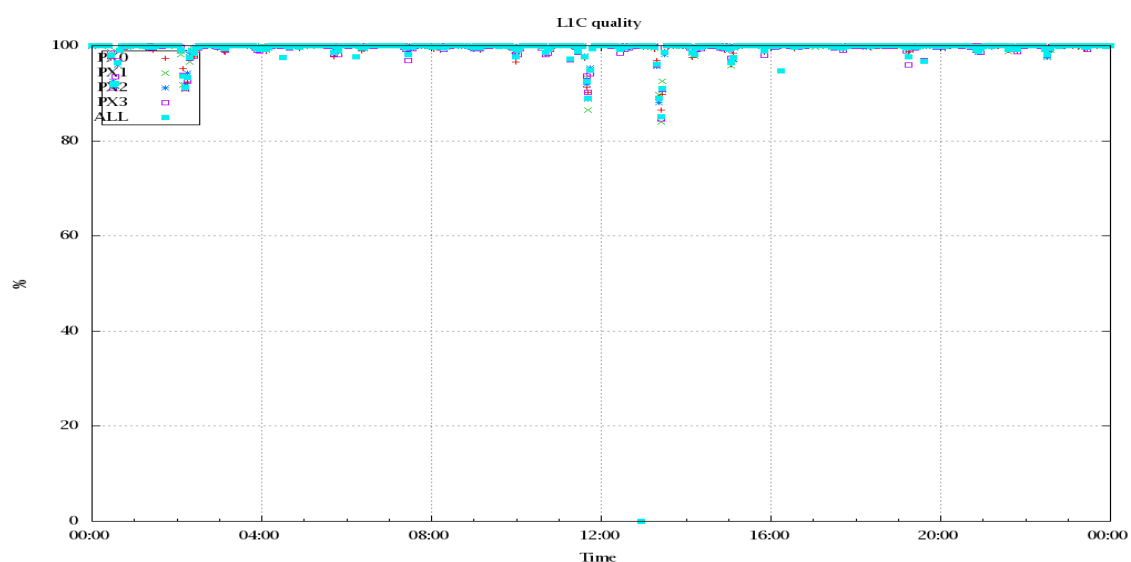


Figure 4: Level 1C quality

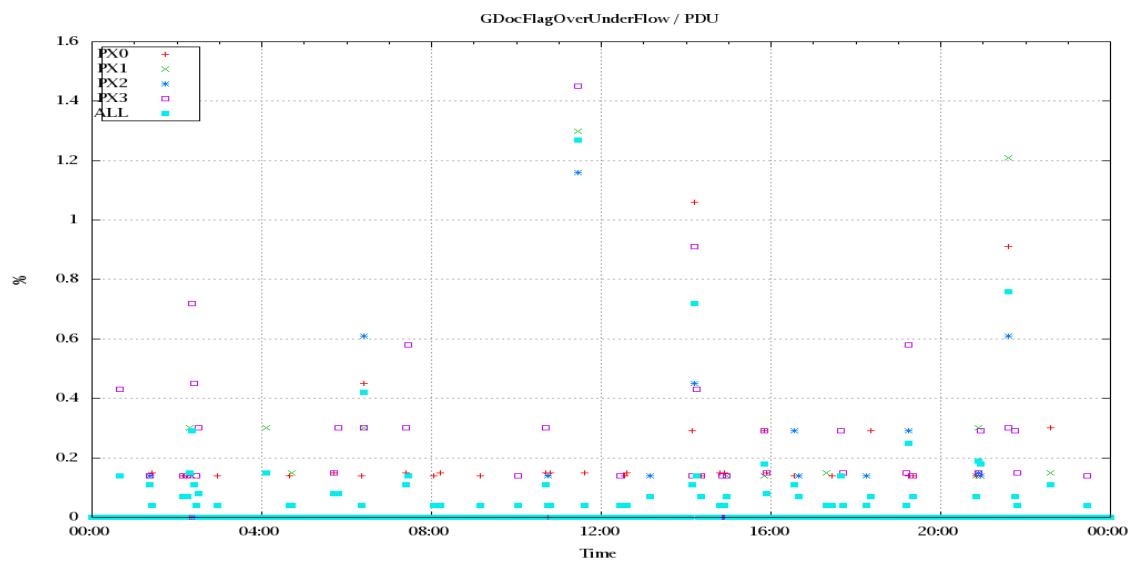


Figure 5: Timeseries of flag of Over and Under Flows

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, water vapor and Ozone. 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 28 to 34, 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 pixels and scan positions 10 to 20) and the average bias OBS-CAL (over all pixels and scan positions 10 to 20) of the last 30 days.

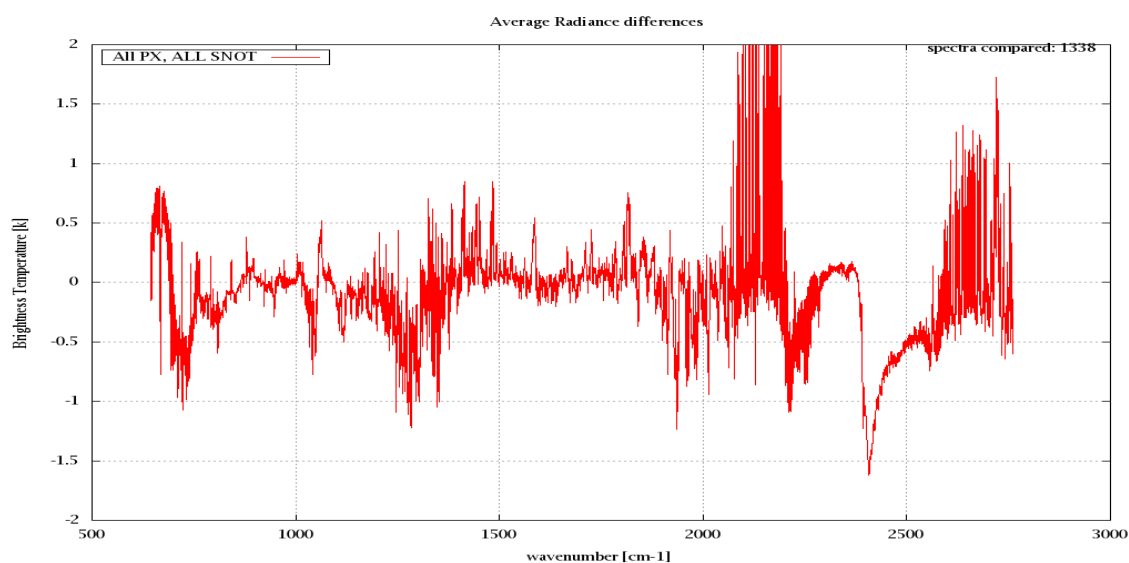


Figure 6: Average Radiance differences: OBS-CAL

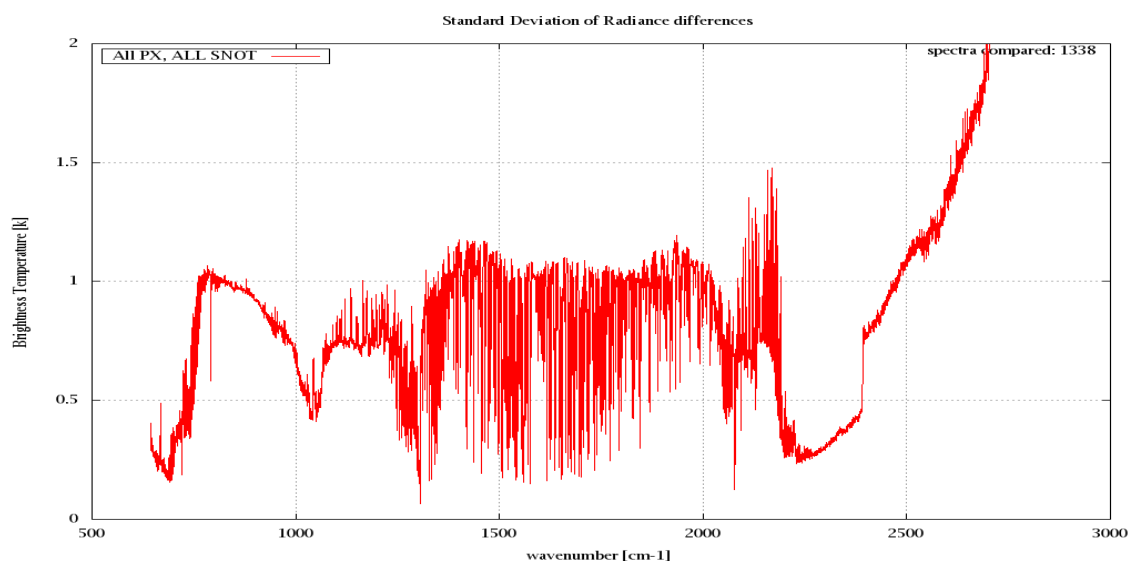


Figure 7: Standard Deviation of Radiance differences

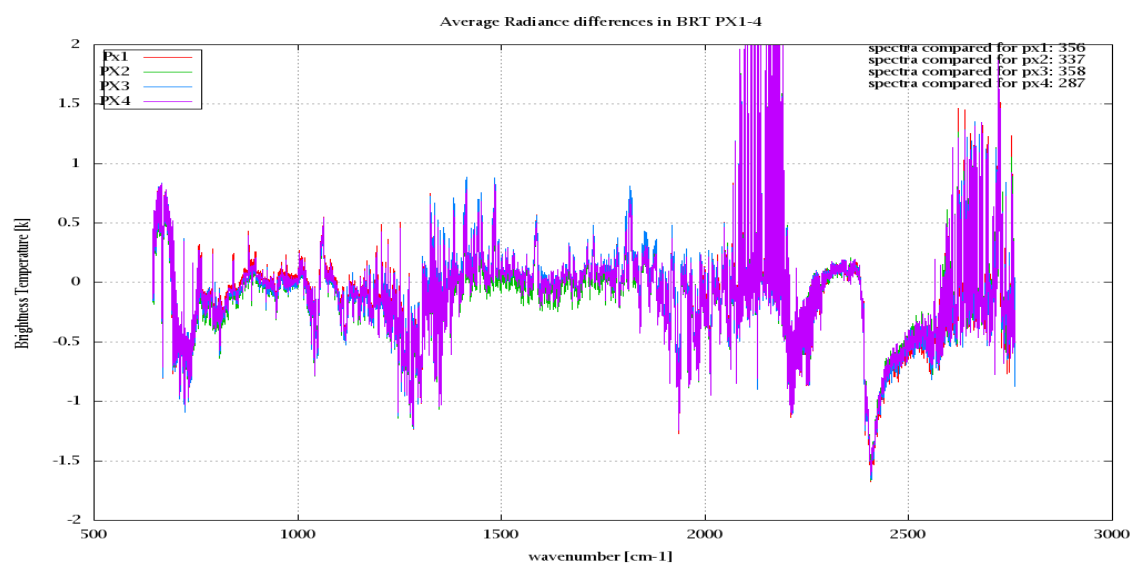


Figure 8: Average Radiance differences: OBS-CAL

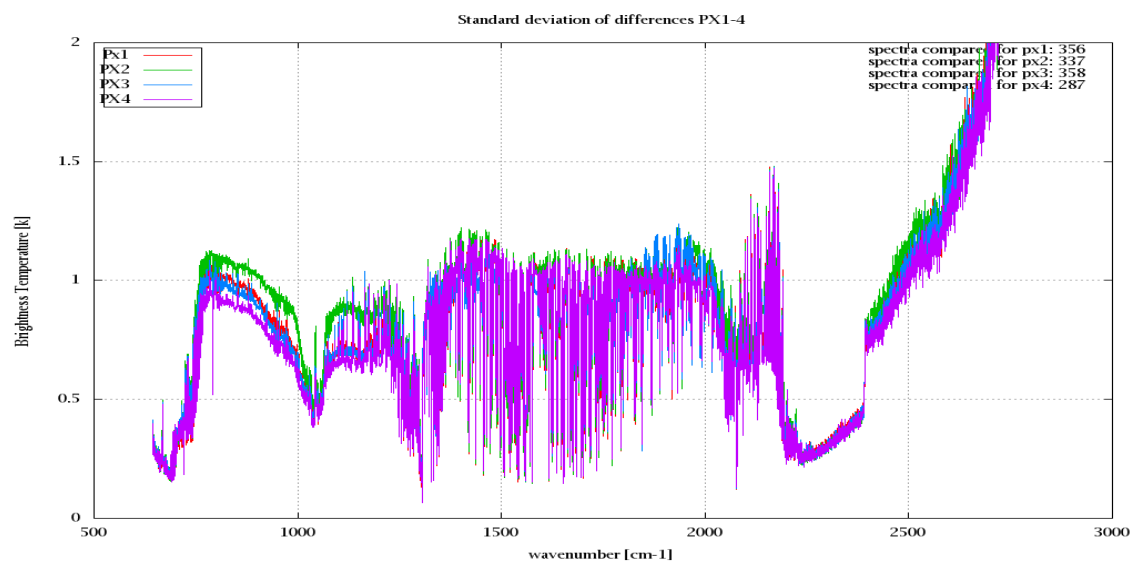


Figure 9: Standard Deviation of Radiance differences

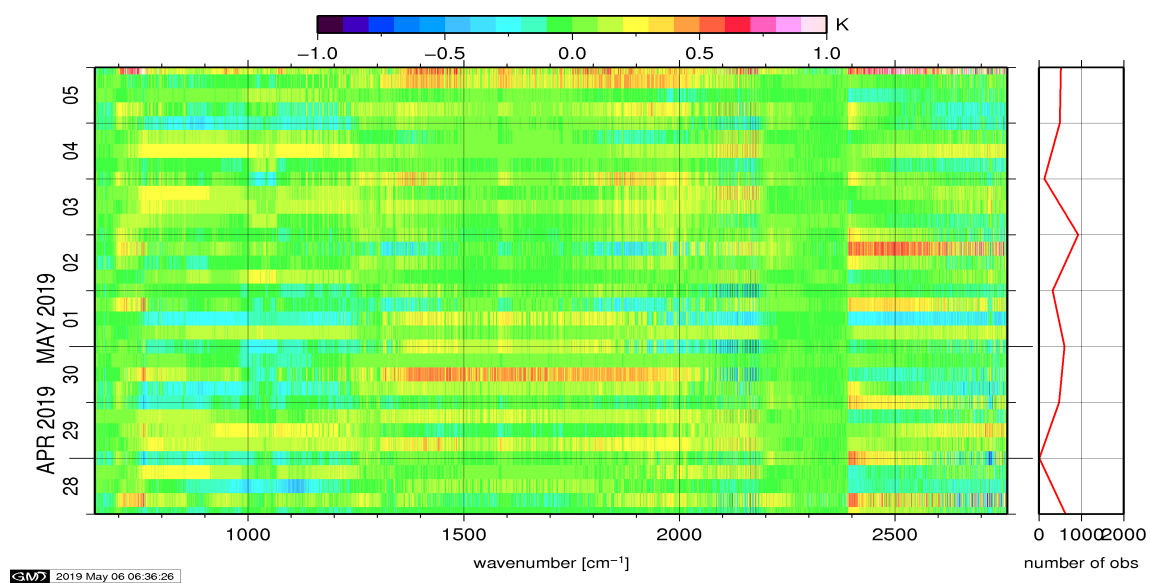


Figure 10: Radiance Anomaly in BT: All Channels

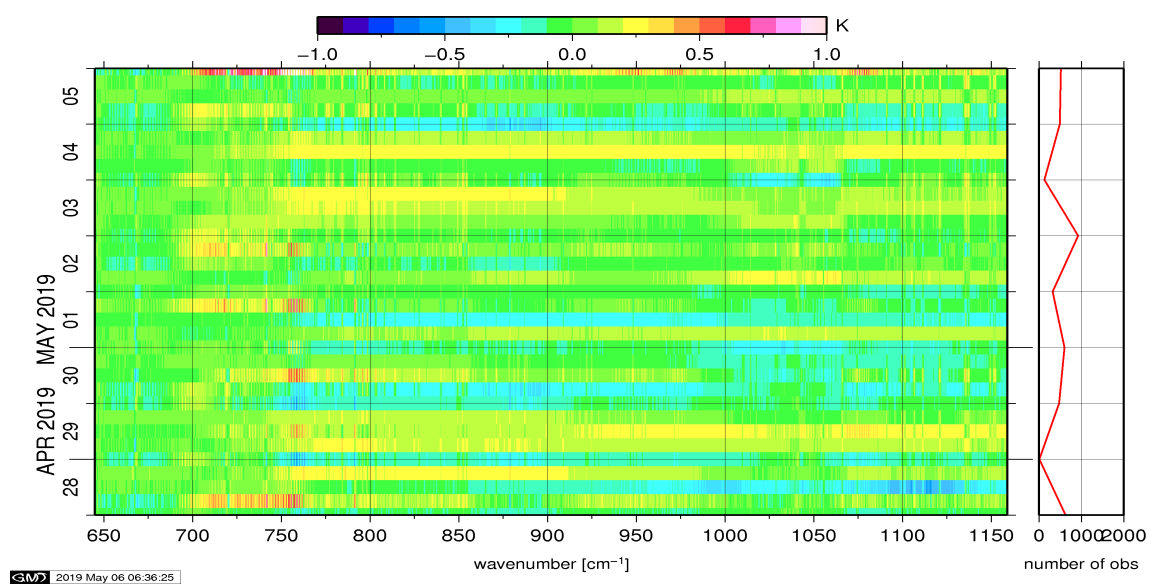


Figure 11: Radiance Anomaly in BT: IASI Band 1

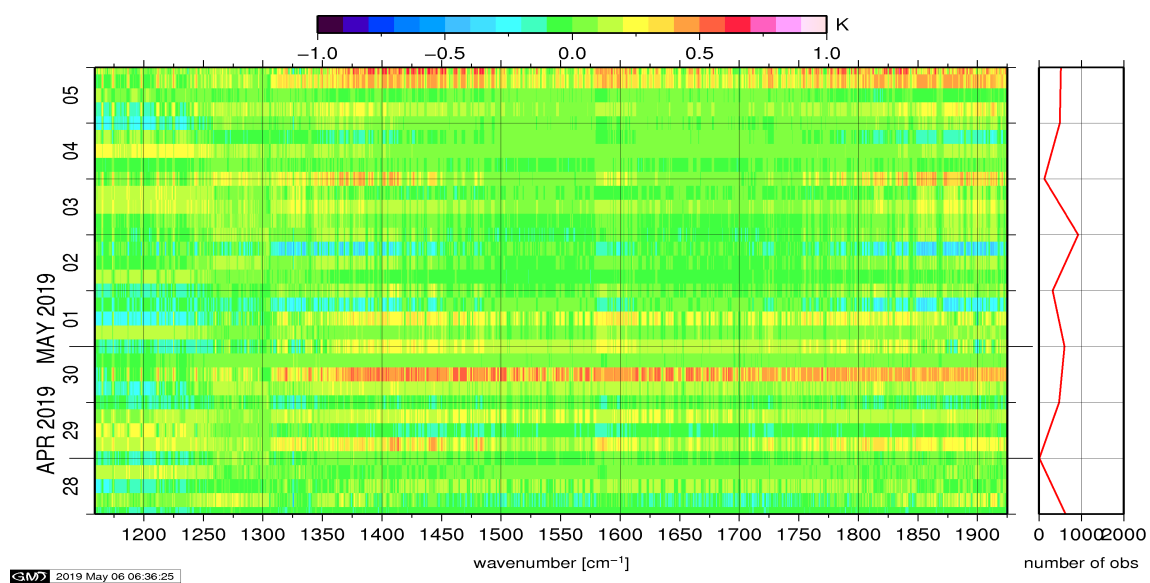


Figure 12: Radiance Anomaly in BT: IASI Band 2

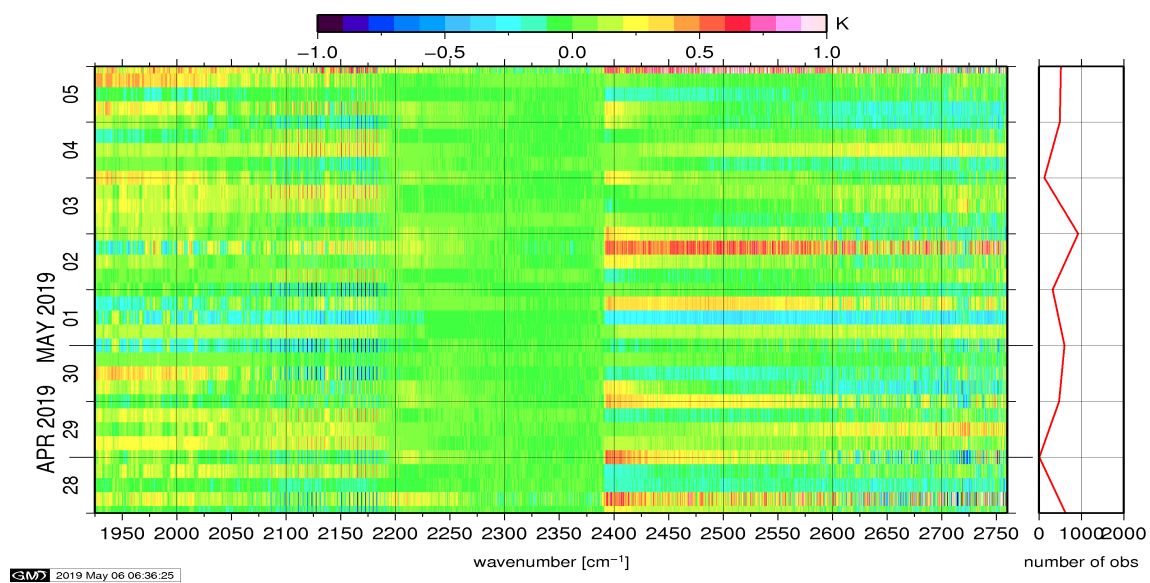


Figure 13: Radiance Anomaly in BT: IASI Band 3

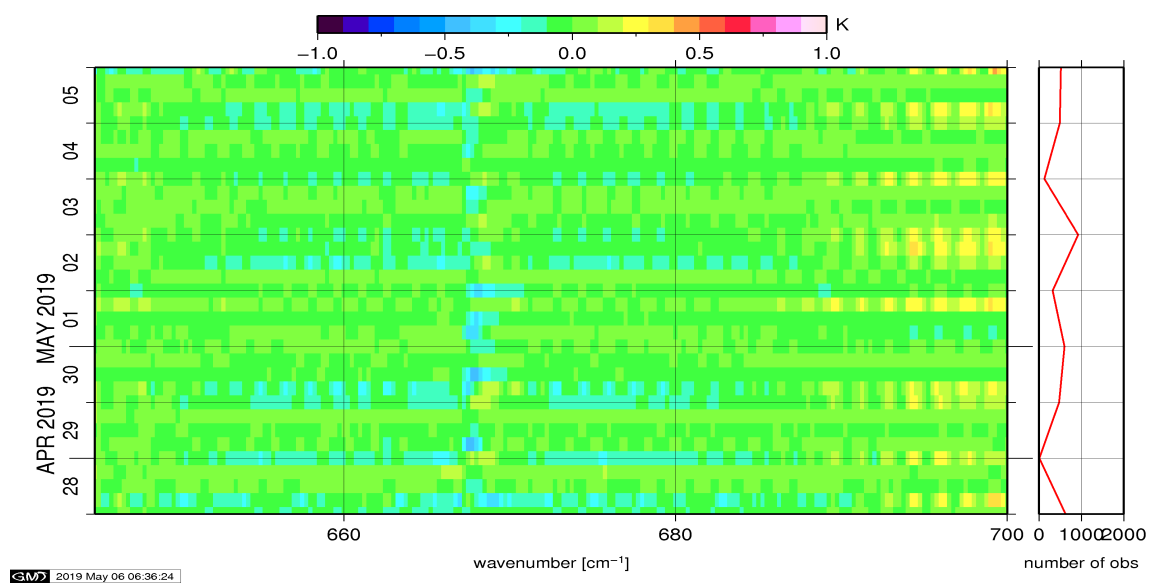


Figure 14: Radiance Anomaly in BT: CO2 14

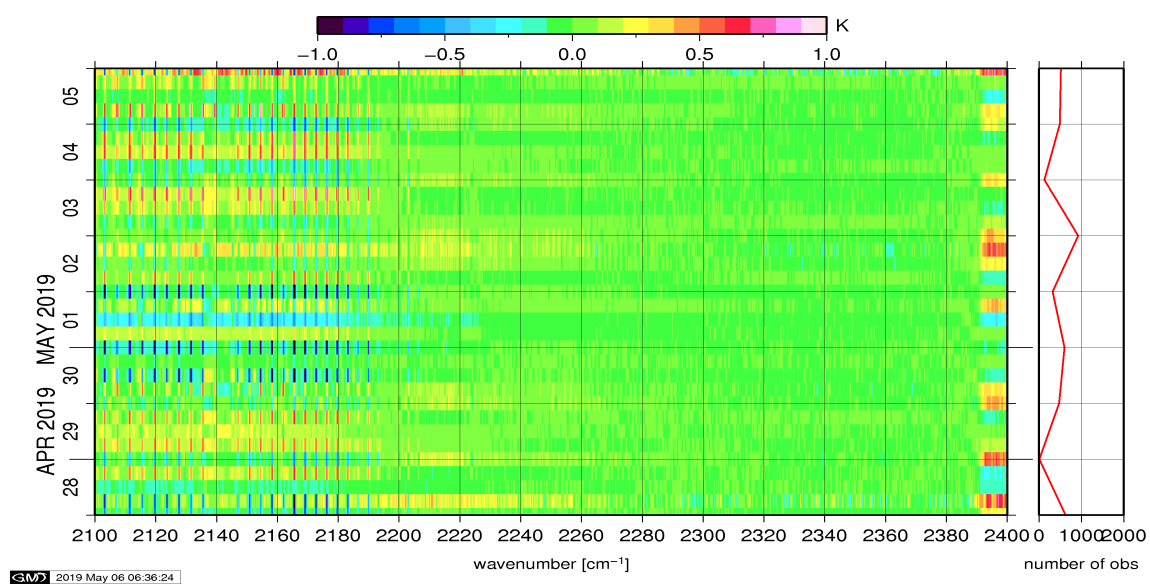


Figure 15: Radiance Anomaly in BT: CO2 4.3

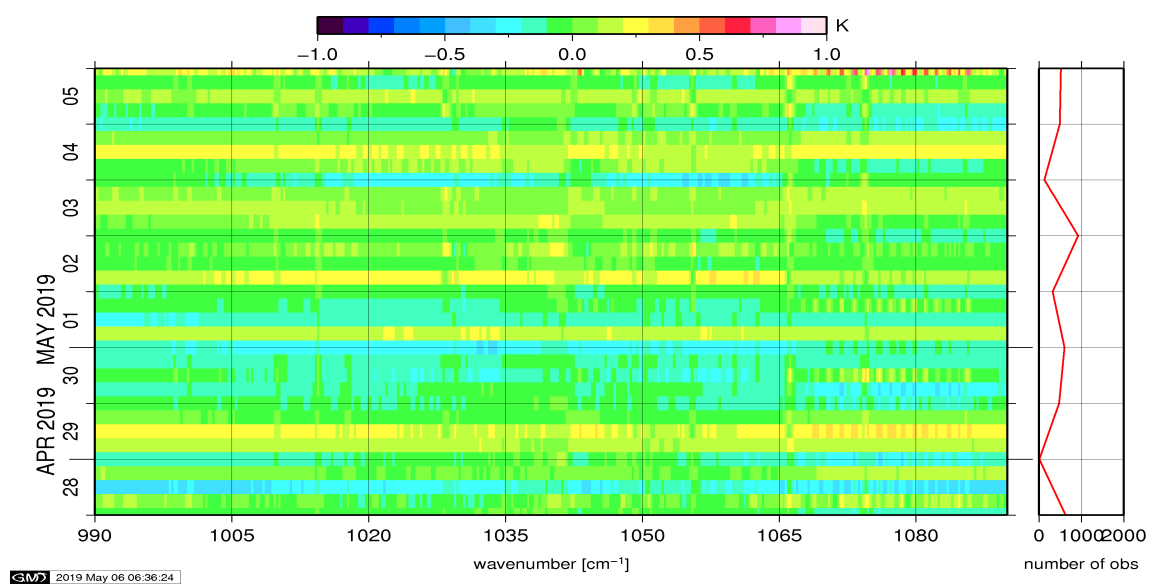


Figure 16: Radiance Anomaly in BT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison of IASI and HIRS/4 on-board Metop is performed on all pixels 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 NeDT. 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.

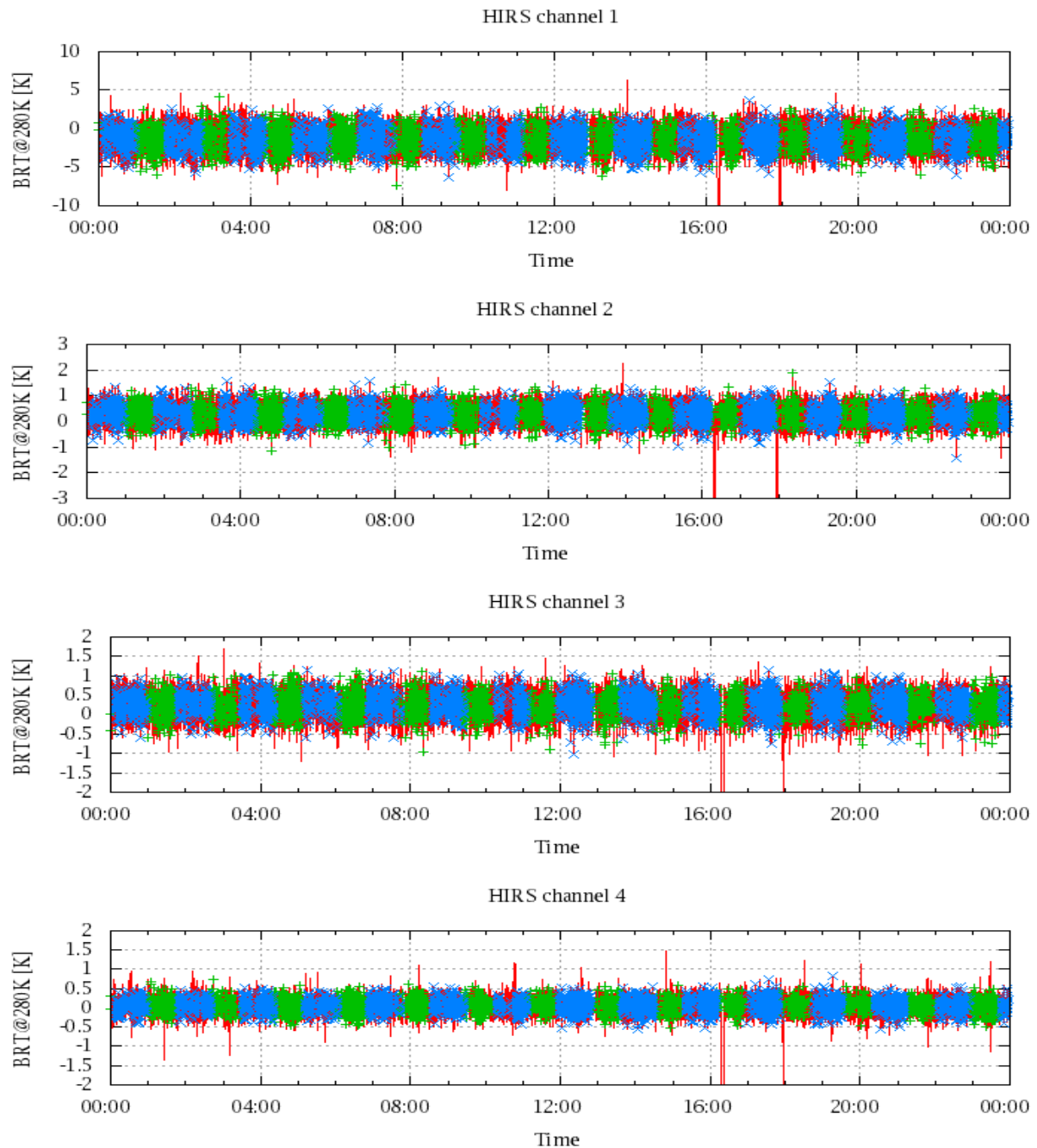


Figure 17: Radiance Differences in BT

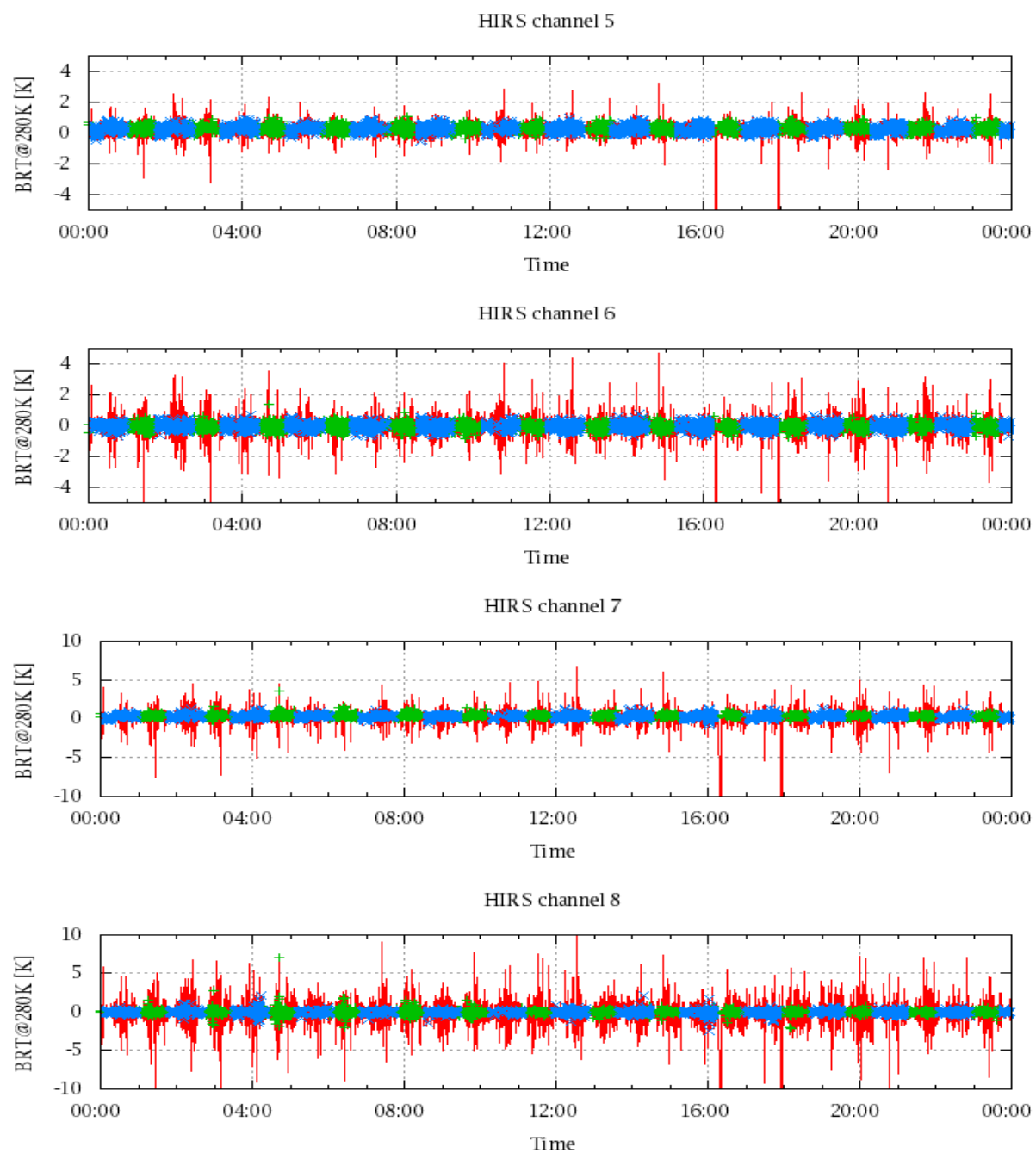


Figure 18: Radiance Differences in BT

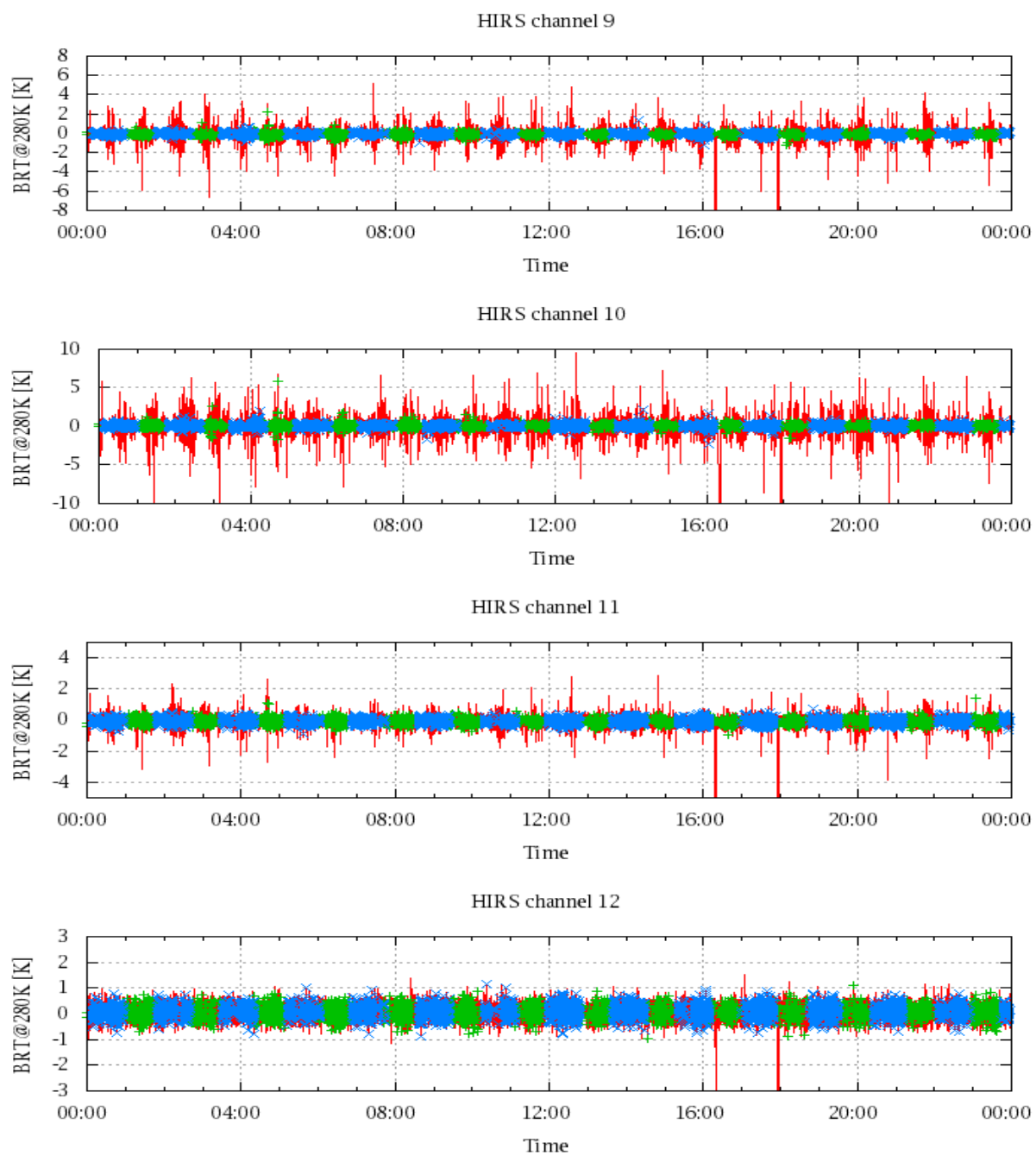


Figure 19: Radiance Differences in BT

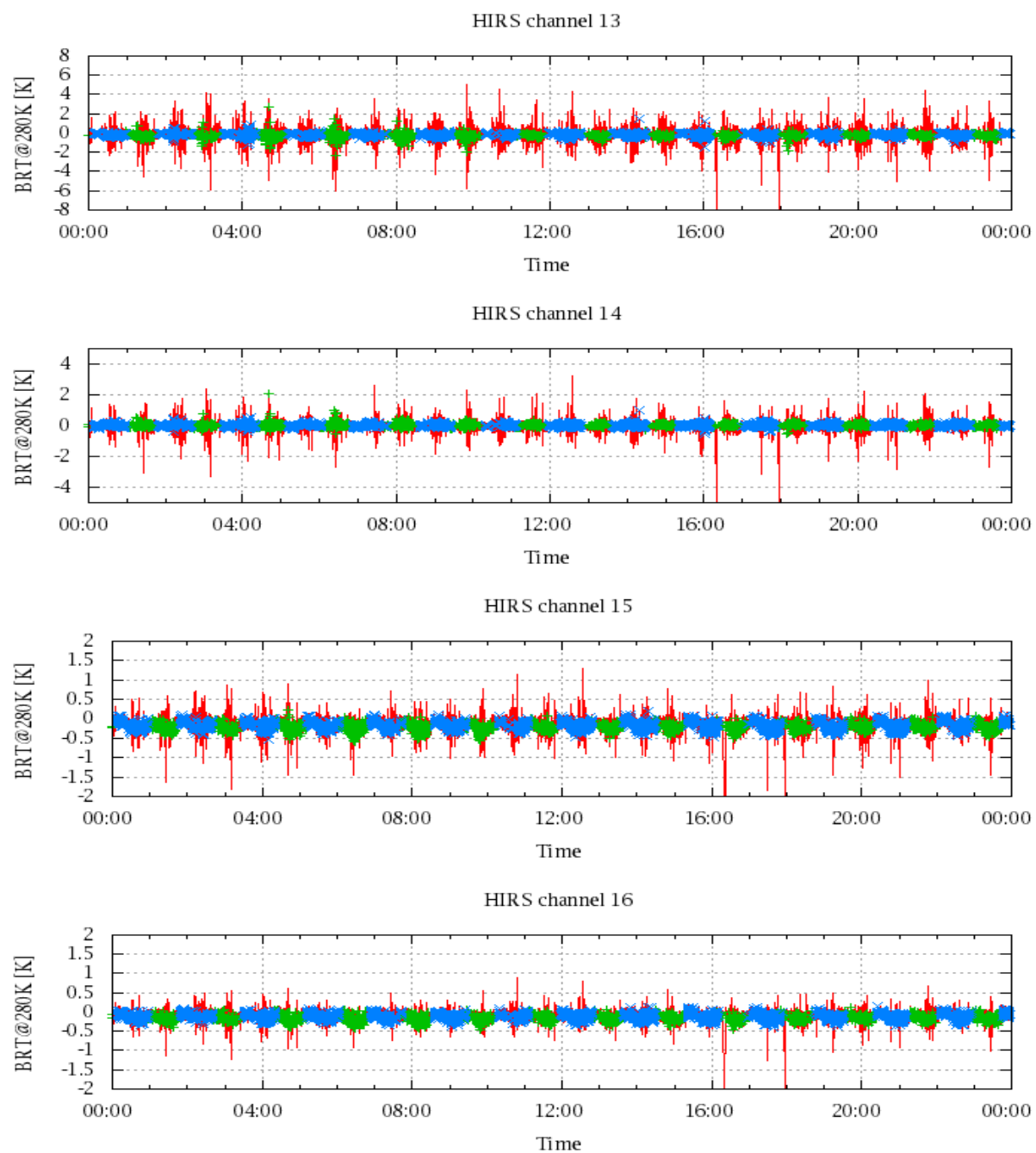


Figure 20: Radiance Differences in BT

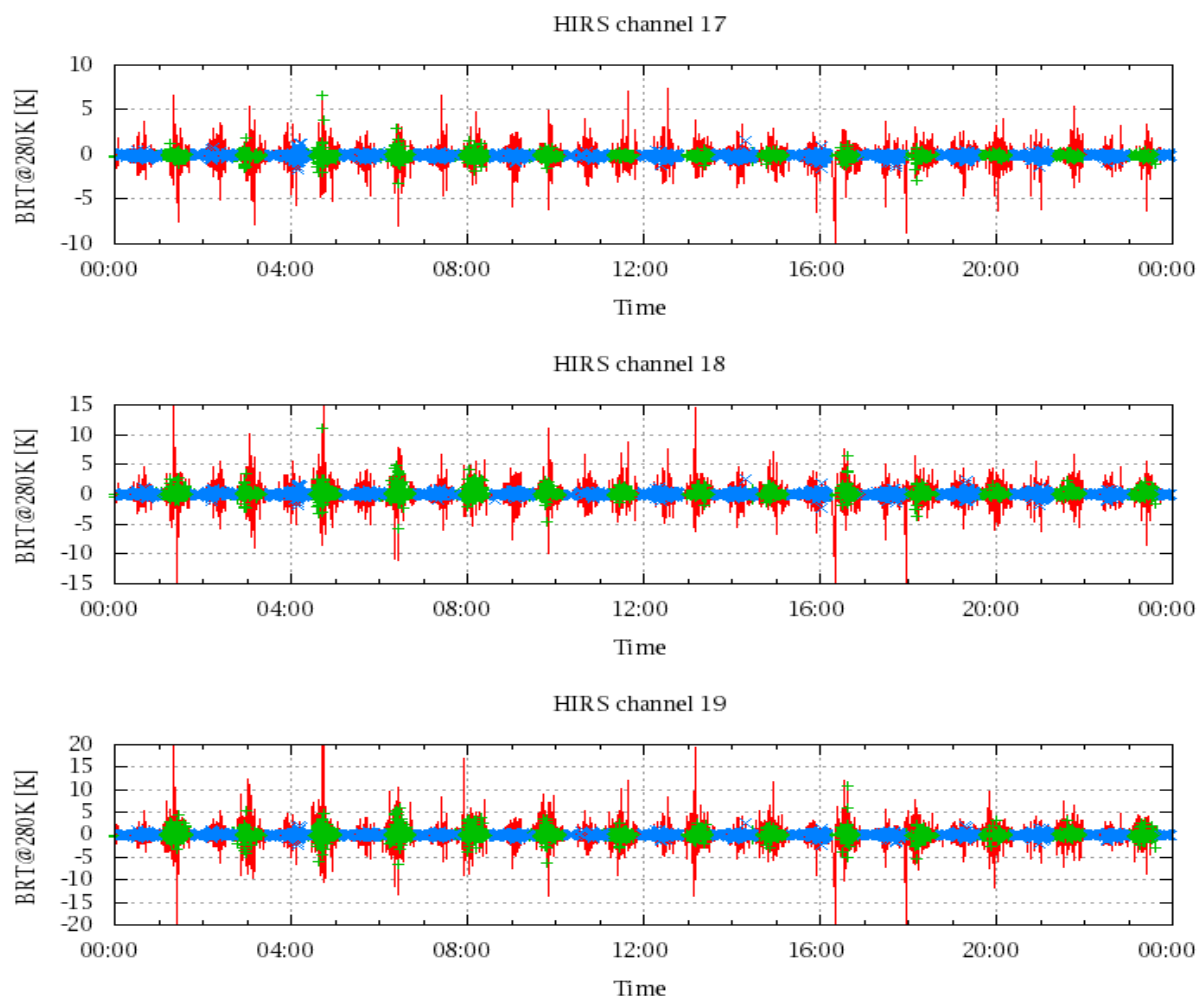


Figure 21: Radinace Differences in BT