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

IASI monitoring team

16/05/2020 00:00:00 - 17/05/2020 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 16/05/2020 00:00:00 - 17/05/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 16/05/2020 00:00:00 - 17/05/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	459	a
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)	5025	5027	20200516024944.921	20200516024945.355
PX1 (130)	5027	5029	20200516024945.355	20200516024945.788
PX1 (130)	5062	5064	20200516024954.437	20200516024954.866
PX1 (130)	7462	7464	20200516030034.455	20200516030034.889
PX1 (130)	7464	7467	20200516030034.889	20200516030035.537
PX1 (130)	7467	7469	20200516030035.537	20200516030035.967
PX1 (130)	7470	7472	20200516030036.182	20200516030038.131
PX1 (130)	7472	7476	20200516030038.131	20200516030038.994
PX1 (130)	7476	7478	20200516030038.994	20200516030039.428
PX1 (130)	7480	7483	20200516030039.861	20200516030040.506
PX1 (130)	7486	7488	20200516030041.158	20200516030041.588
PX2 (135)	5062	5064	20200516024954.437	20200516024954.866
PX2 (135)	7456	7459	20200516030033.154	20200516030033.807
PX2 (135)	7464	7466	20200516030034.889	20200516030035.318
PX2 (135)	7473	7477	20200516030038.346	20200516030039.209
PX2 (135)	7479	7483	20200516030039.643	20200516030040.506
PX2 (135)	7486	7488	20200516030041.158	20200516030041.588
PX2 (135)	7491	7493	20200516030042.236	20200516030042.670
PX3 (140)	7460	7463	20200516030034.022	20200516030034.670

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	7465	7467	20200516030035.104	20200516030035.537
PX3 (140)	7470	7472	20200516030036.182	20200516030038.131
PX3 (140)	7472	7475	20200516030038.131	20200516030038.779
PX3 (140)	7475	7478	20200516030038.779	20200516030039.428
PX3 (140)	7478	7481	20200516030039.428	20200516030040.076
PX3 (140)	7483	7485	20200516030040.506	20200516030040.939
PX4 (145)	7452	7454	20200516030032.291	20200516030032.725
PX4 (145)	7464	7466	20200516030034.889	20200516030035.318
PX4 (145)	7469	7472	20200516030035.967	20200516030038.131
PX4 (145)	7475	7478	20200516030038.779	20200516030039.428
PX4 (145)	7478	7481	20200516030039.428	20200516030040.076
PX4 (145)	7483	7486	20200516030040.506	20200516030041.158
PX4 (145)	7486	7489	20200516030041.158	20200516030041.803
PX4 (145)	7493	7495	20200516030042.670	20200516030043.104
IMG (150)	920	922	20200516024944.706	20200516024945.140
IMG (150)	3691	3693	20200516030036.615	20200516030037.264
IMG (150)	3696	3699	20200516030038.131	20200516030038.779
IMG (150)	3700	3702	20200516030038.994	20200516030039.428
IMG (150)	3703	3706	20200516030039.643	20200516030040.291
VER (160)	15760	15762	20200516030028.186	20200516030036.182
VER (160)	15762	15765	20200516030036.182	20200516030036.182
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
16/05/2020 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	459	a
GQisFlagQual set (PX1)	99.60 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.63 %	-

Table 4: Quality flags

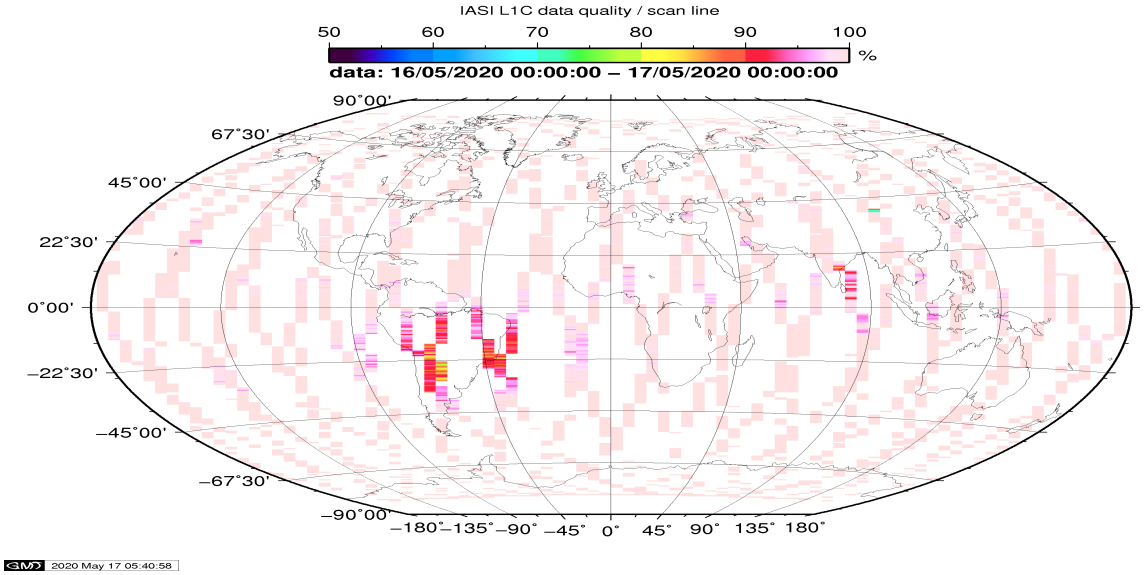

Figure 1: L1C data quality

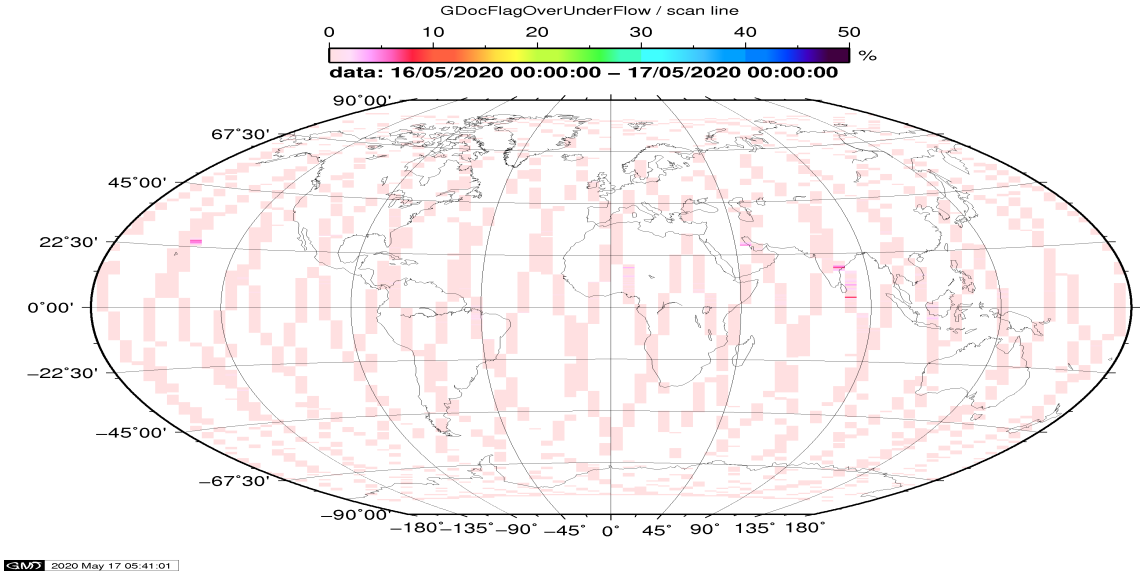

Figure 2: Flag of Over and Under Flows

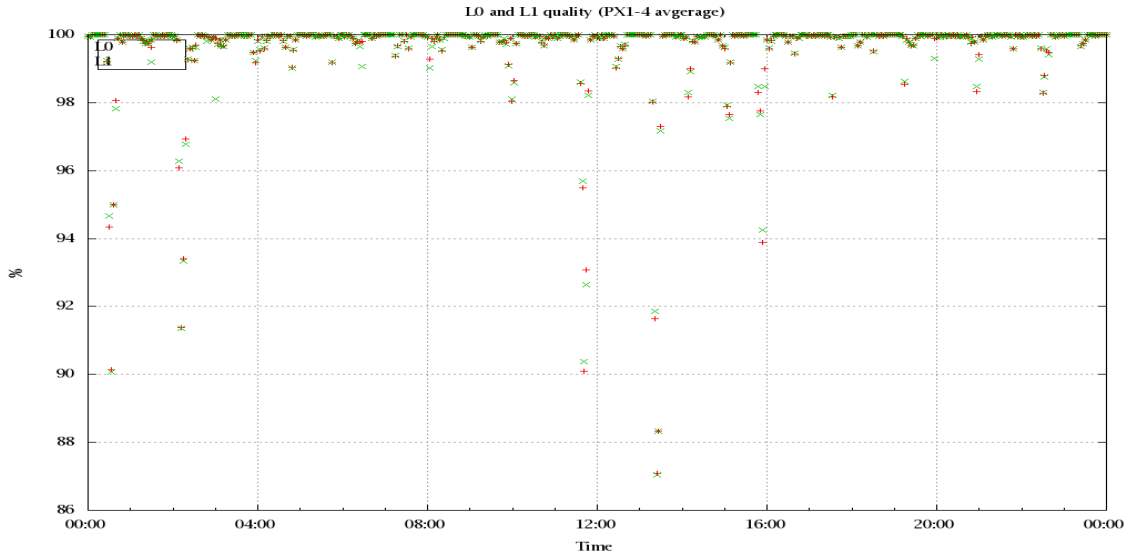

Figure 3: Level 0 and 1C overall quality

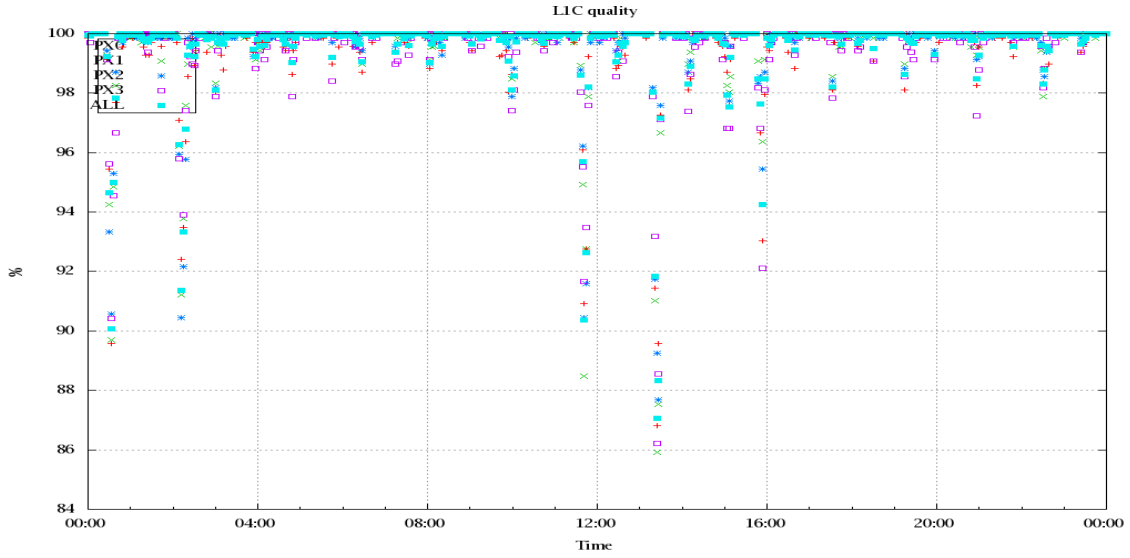

Figure 4: Level 1C quality

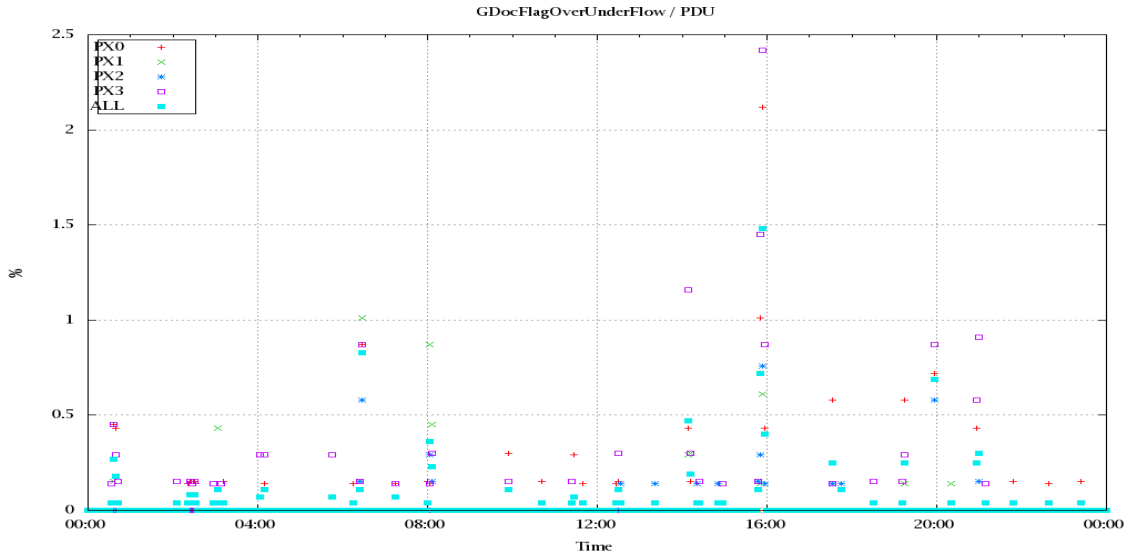

Figure 5: Timeseries of flag of Over and Under Flows

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 indentification 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.

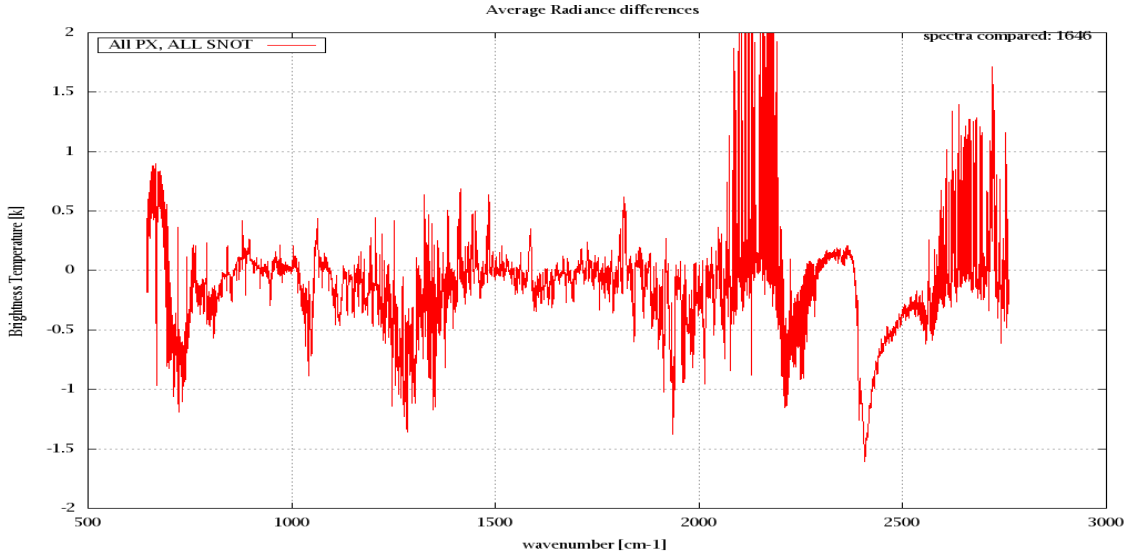

Figure 6: Average Radiance differences: OBS-CAL

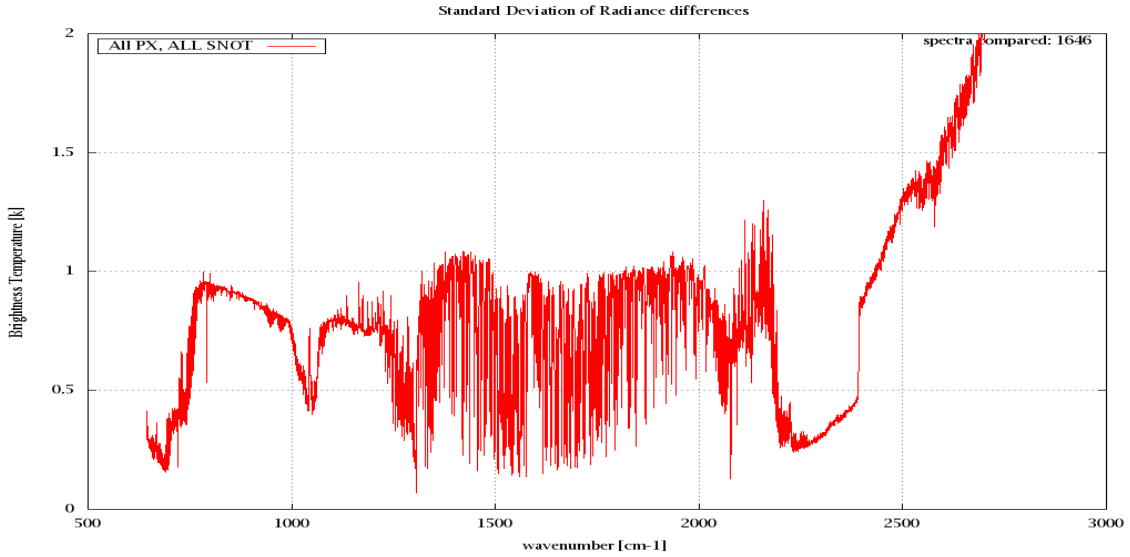

Figure 7: Standard Deviation of Radiance differences

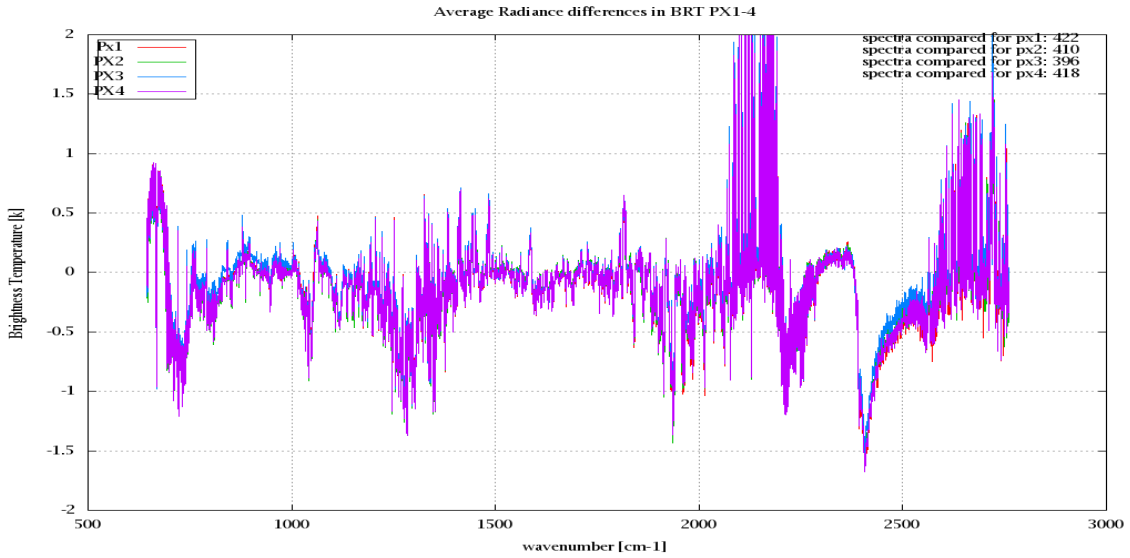

Figure 8: Average Radiance differences: OBS-CAL

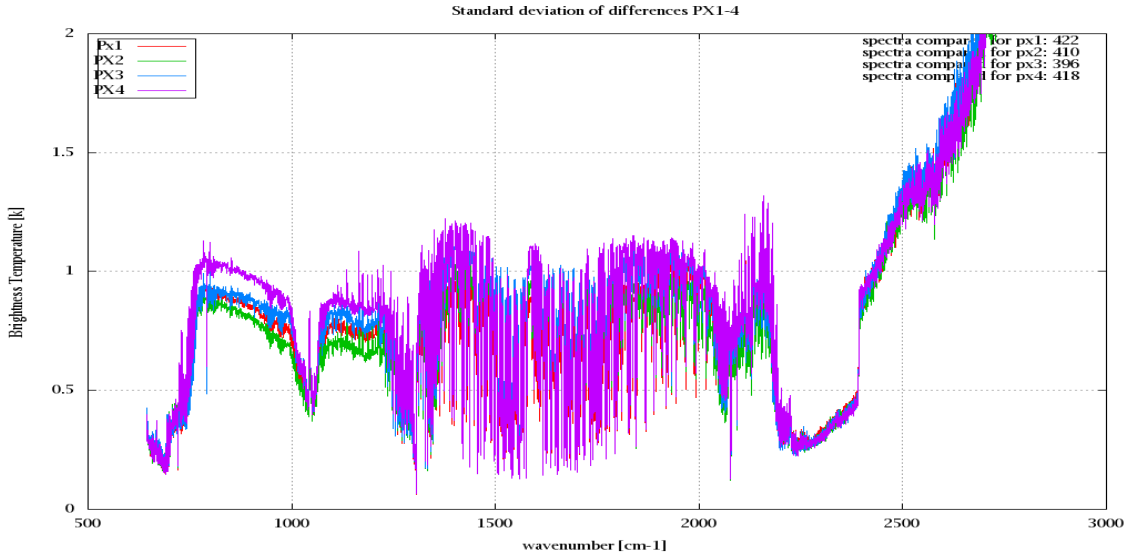

Figure 9: Standard Deviation of Radiance differences

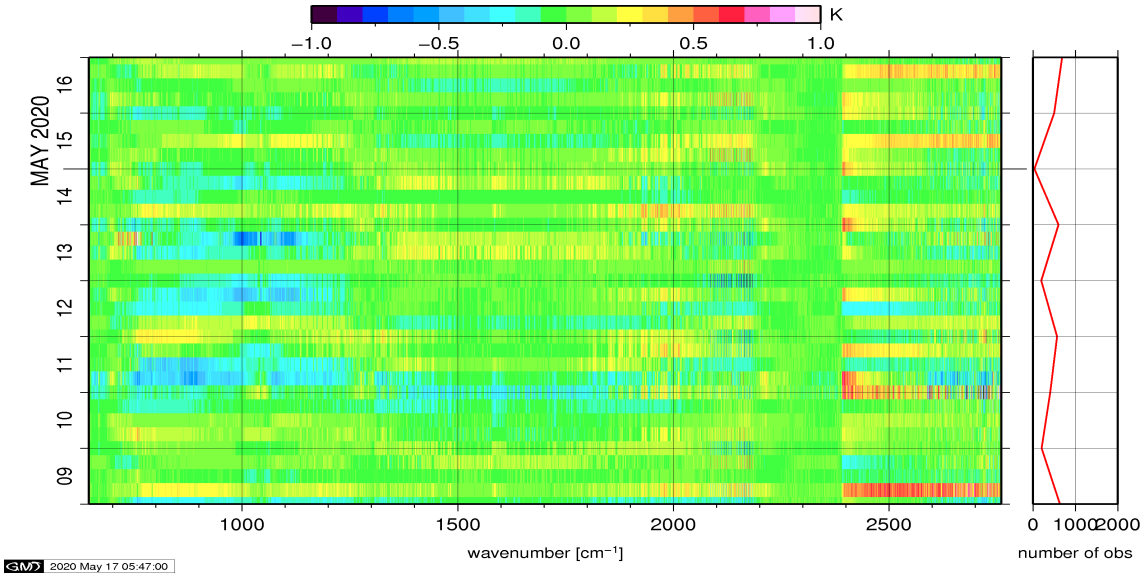

Figure 10: Radiance Anomaly in BT: All Channels

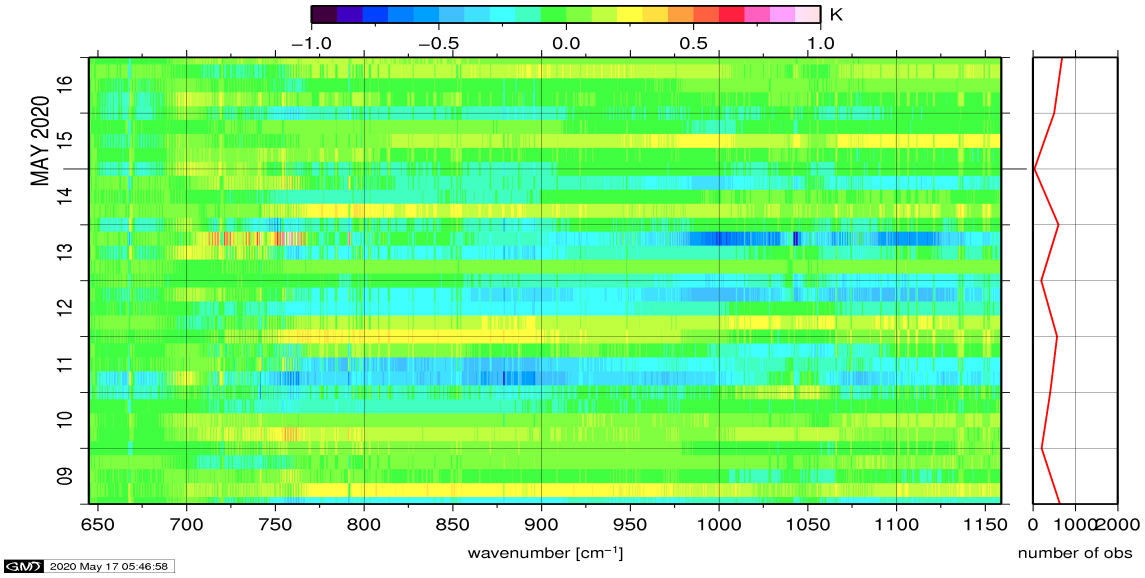

Figure 11: Radiance Anomaly in BT: IASI Band 1

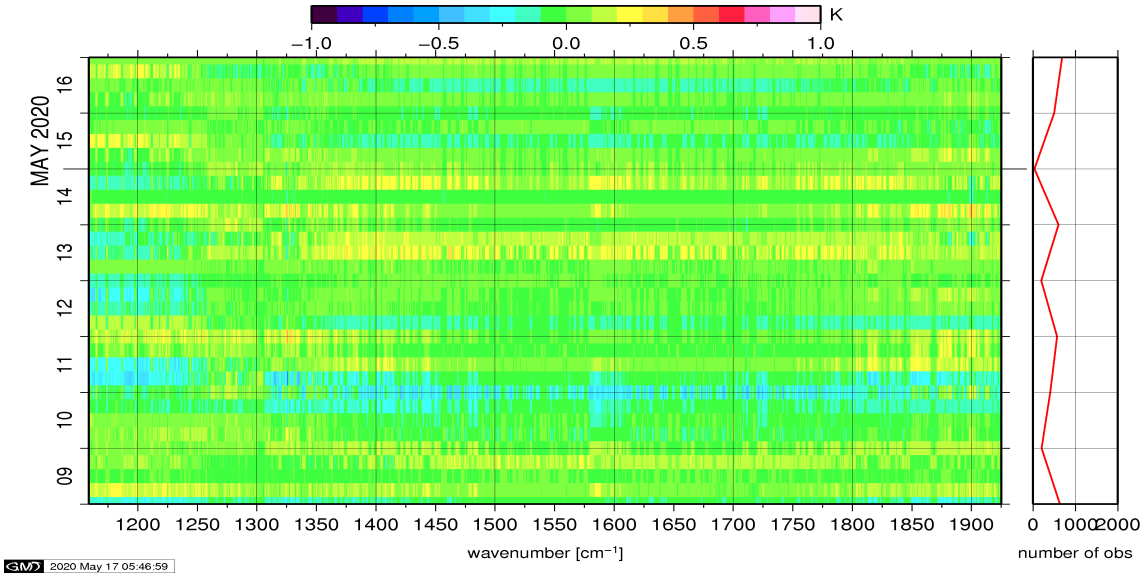

Figure 12: Radiance Anomaly in BT: IASI Band 2

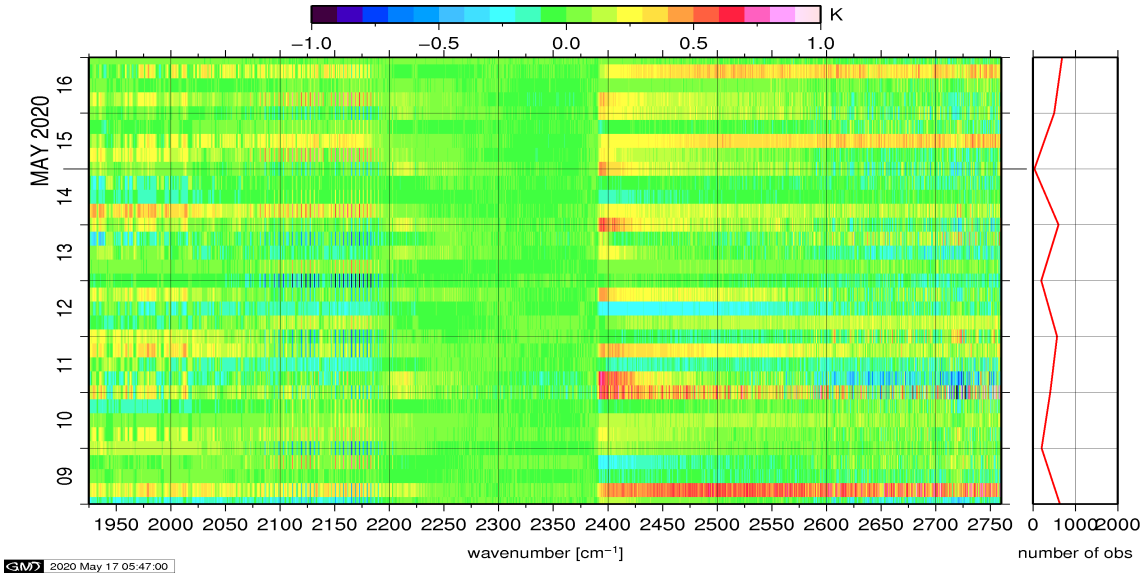

Figure 13: Radiance Anomaly in BT: IASI Band 3

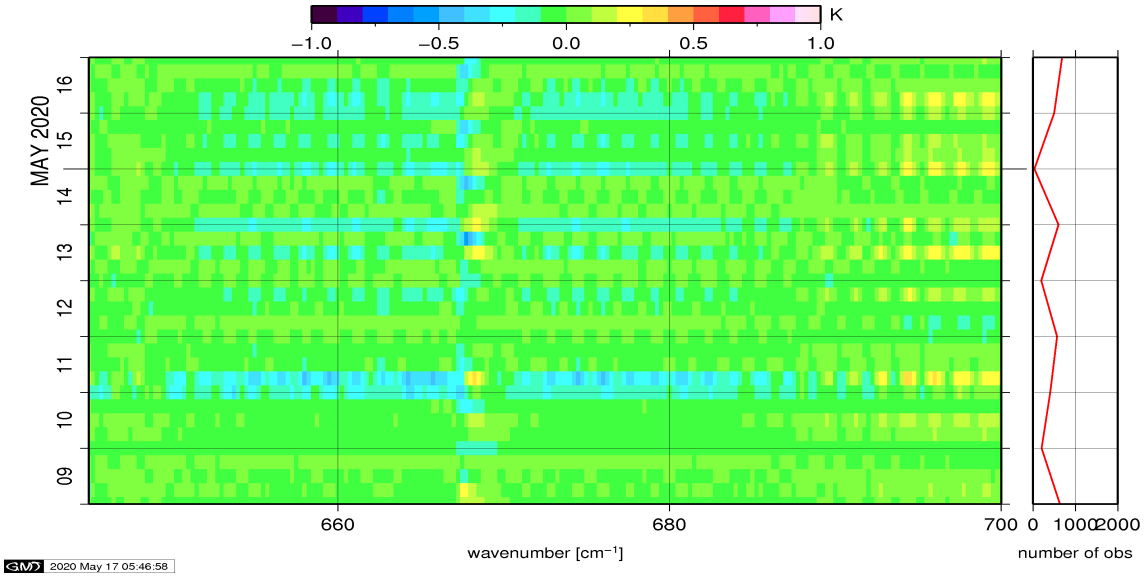

Figure 14: Radiance Anomaly in BT: CO2 14

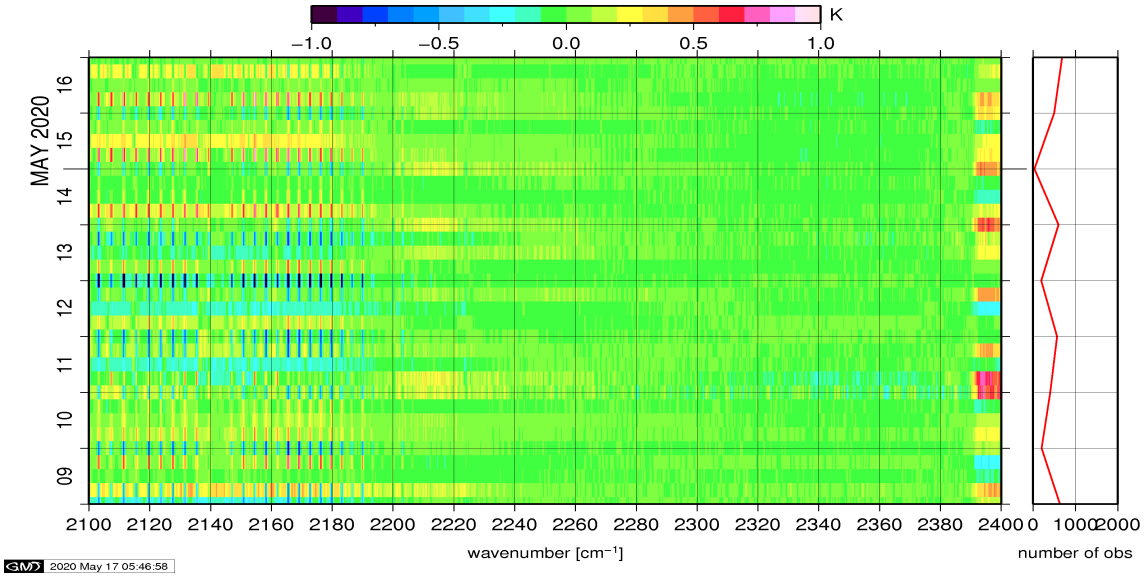

Figure 15: Radiance Anomaly in BT: CO2 4.3

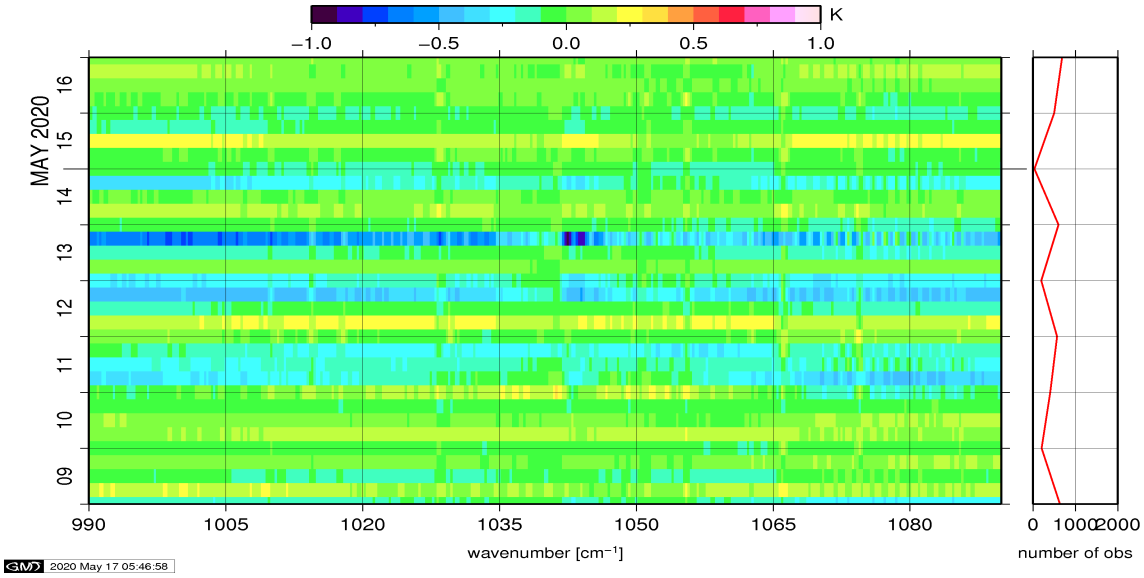

Figure 16: Radiance Anomaly in BT: O3

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.

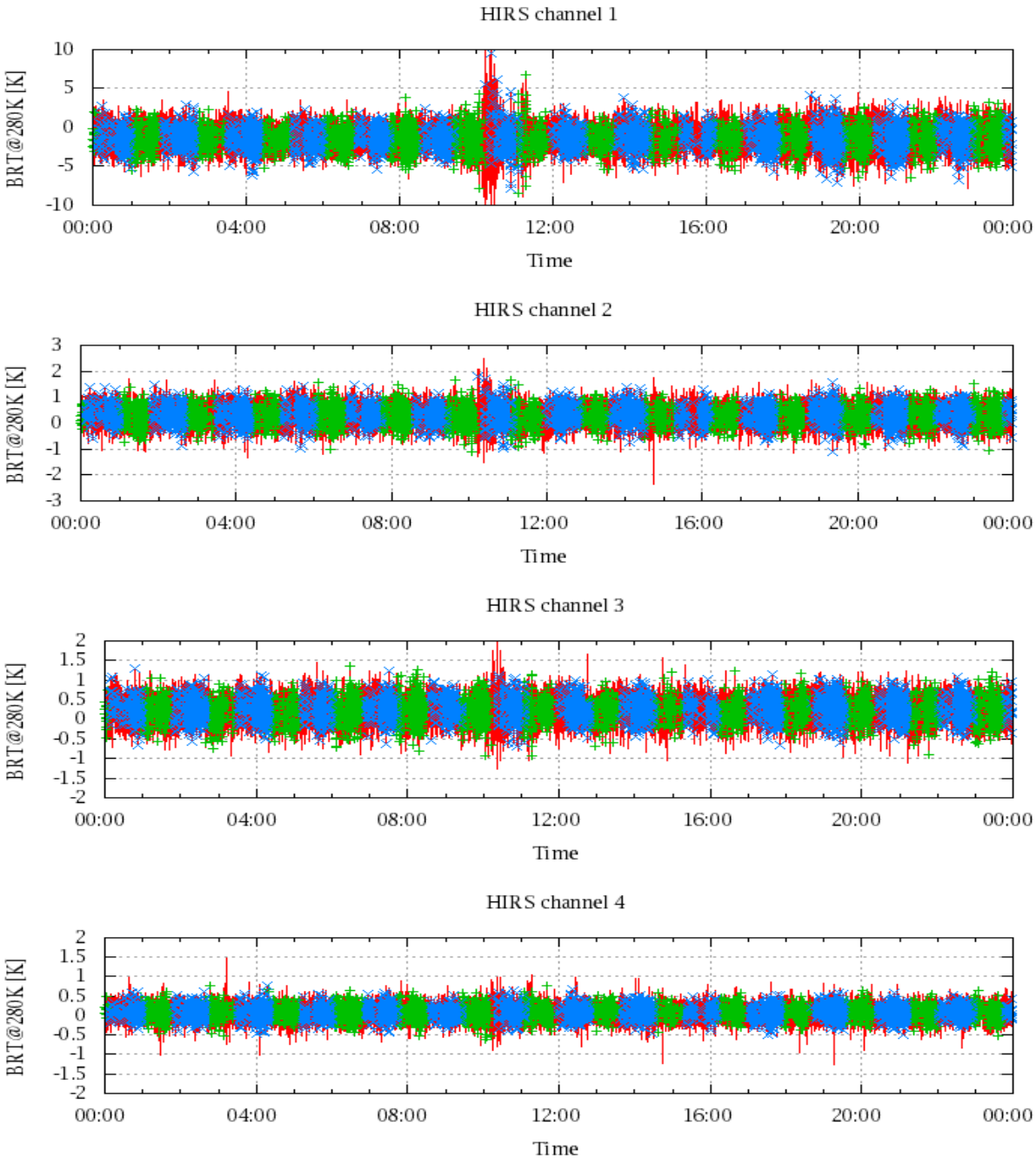

Figure 17: Radiance Differences in BT

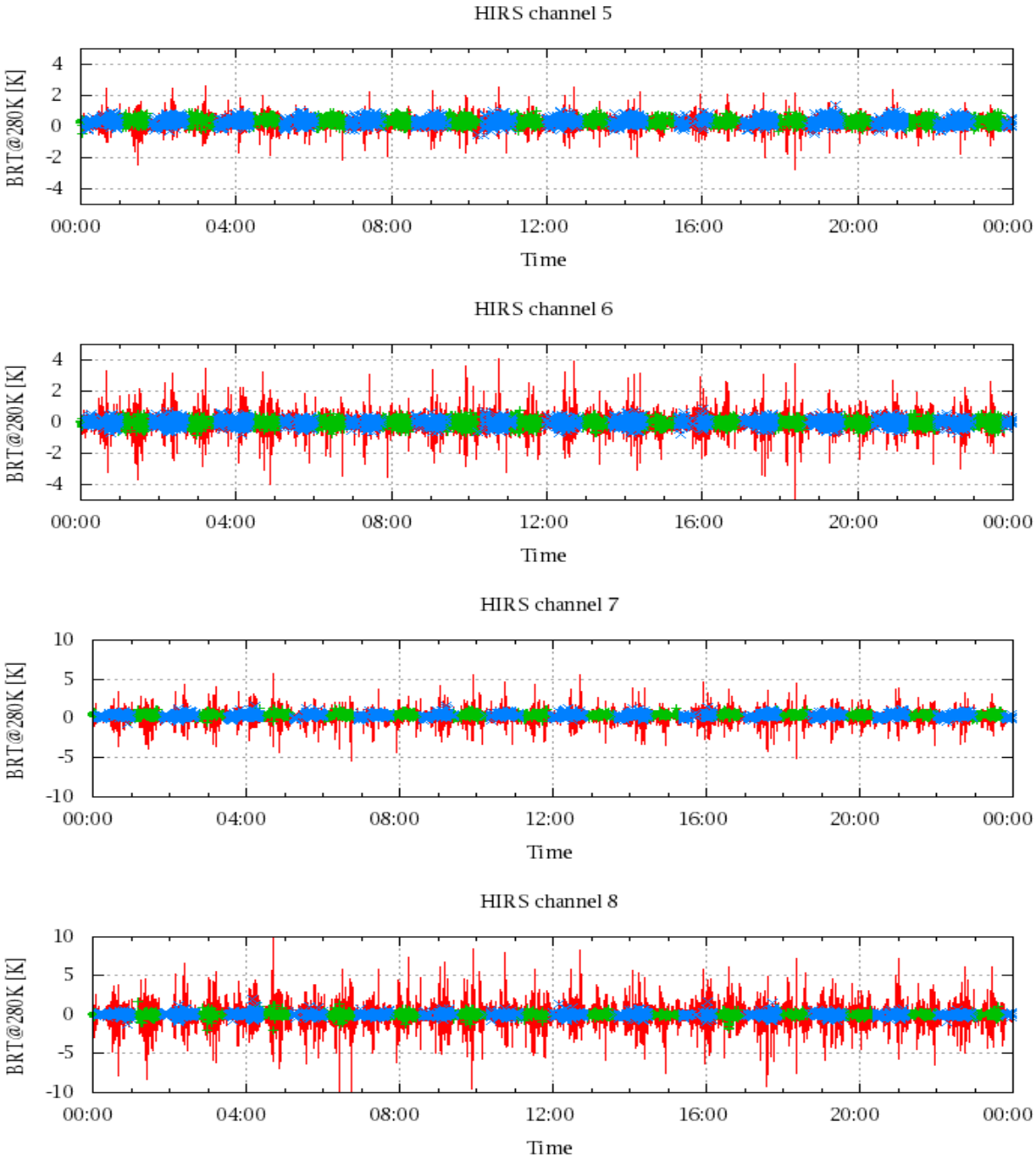

Figure 18: Radiance Differences in BT

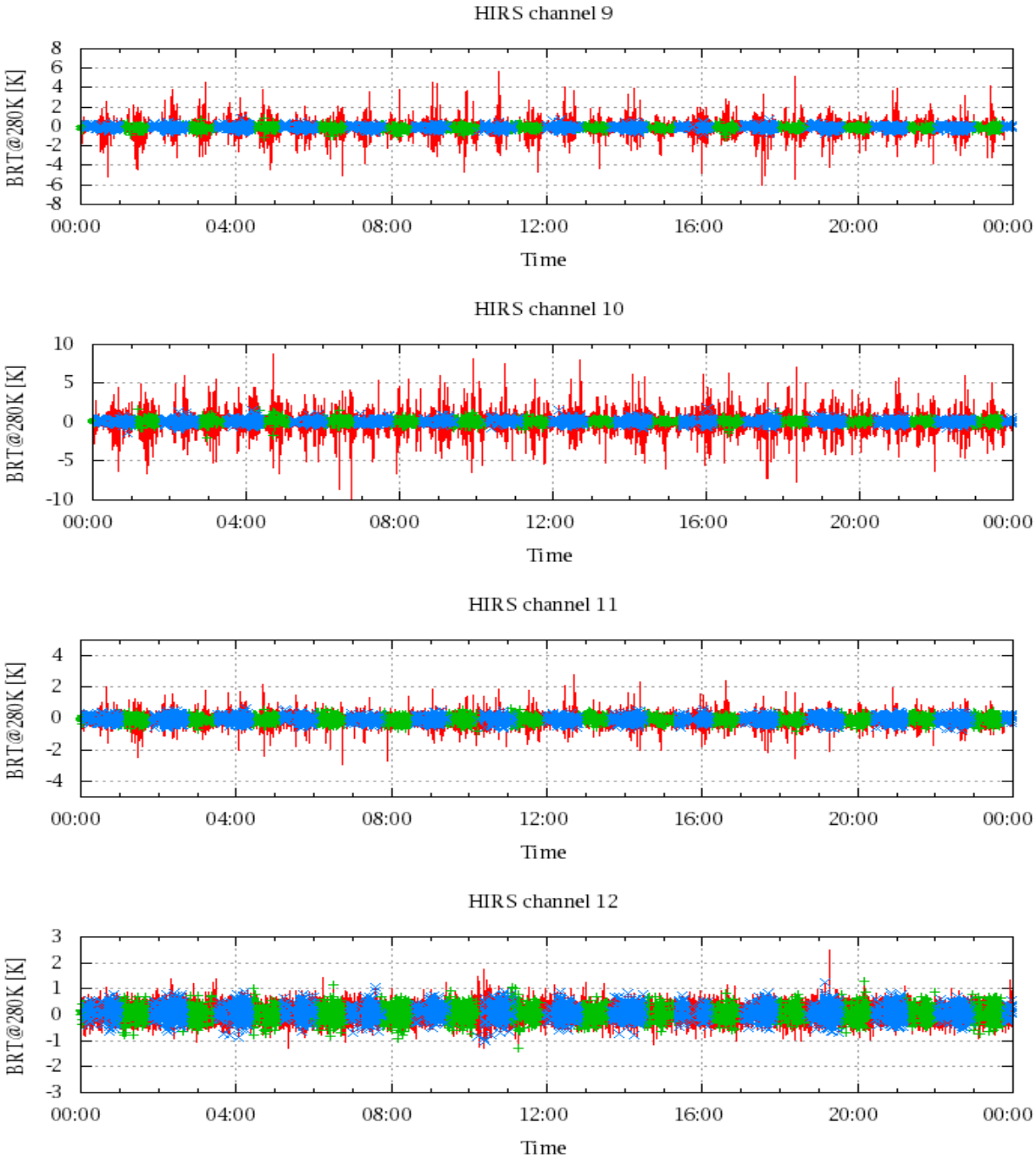

Figure 19: Radiance Differences in BT

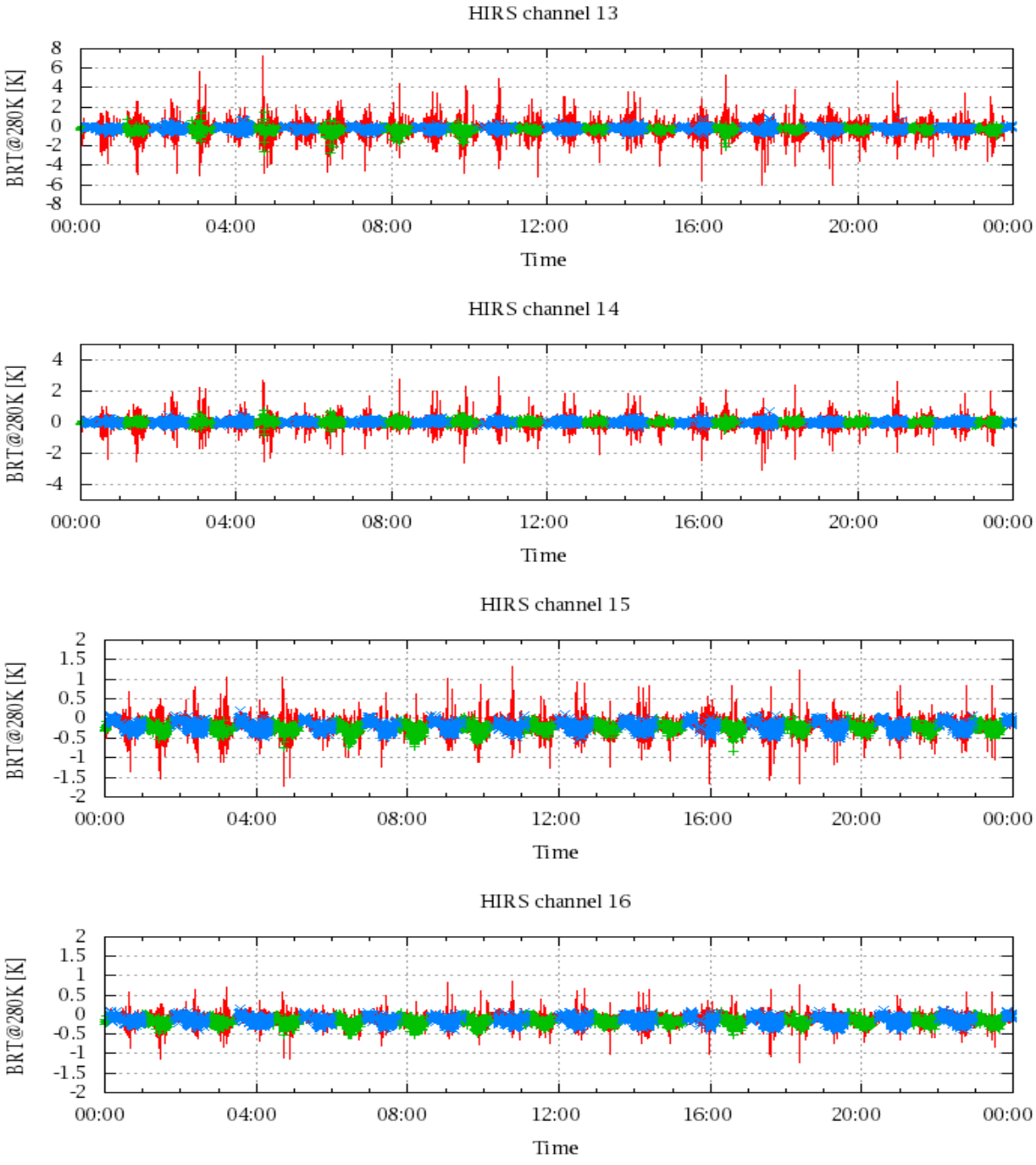

Figure 20: Radiance Differences in BT

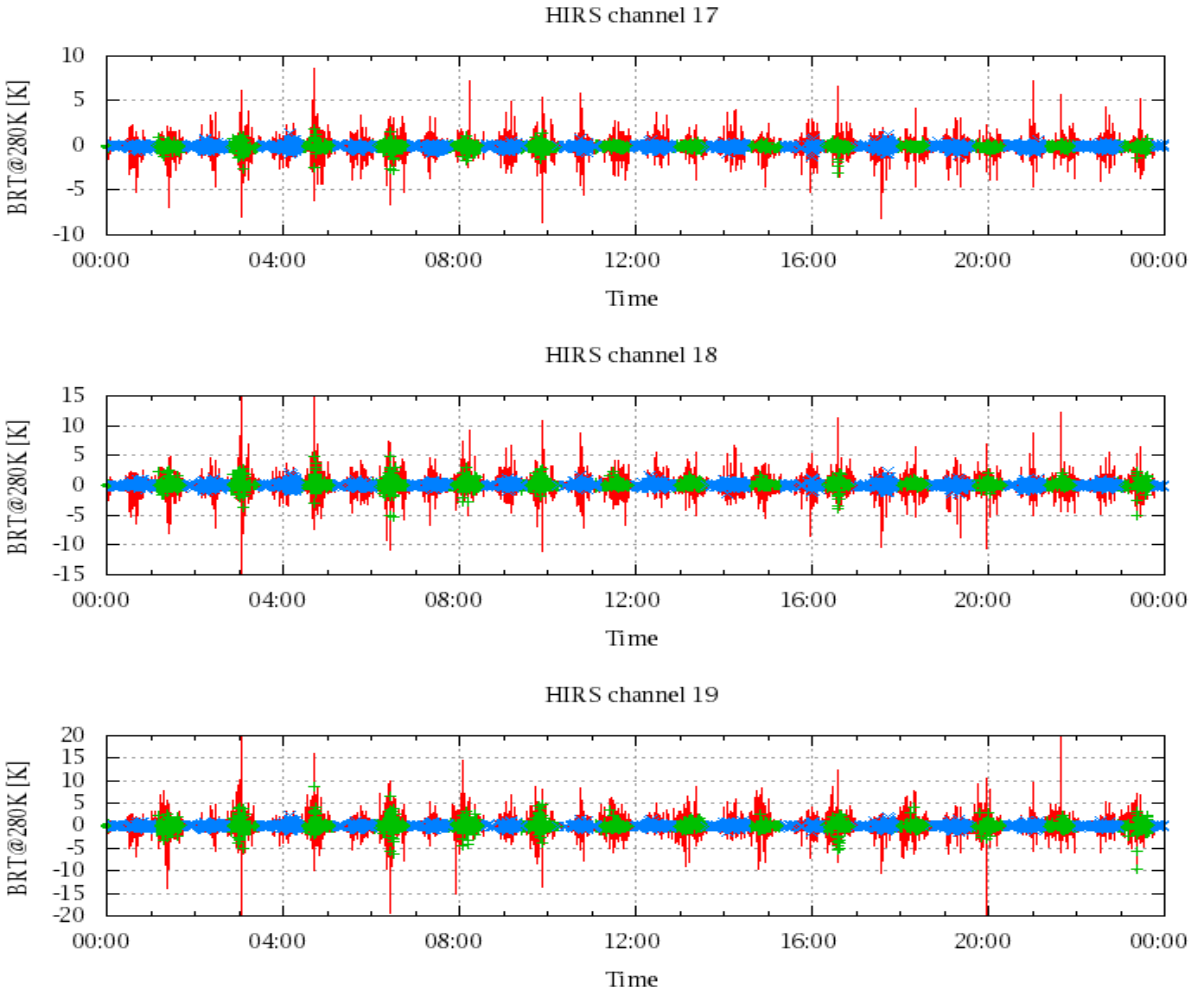

Figure 21: Radinace Differences in BT