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

IASI monitoring team

07/08/2023 00:00:00 - 08/08/2023 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 07/08/2023 00:00:00 - 08/08/2023 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 07/08/2023 00:00:00 - 08/08/2023 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	476	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2211	2214	20230807151807.411	20230807151808.059
PX1 (130)	2221	2285	20230807151809.571	20230807151827.950
PX1 (130)	2290	2364	20230807151829.032	20230807151848.059
PX1 (130)	2370	2435	20230807151849.356	20230807151907.950
PX2 (135)	2211	2213	20230807151807.411	20230807151807.844
PX2 (135)	2221	2285	20230807151809.571	20230807151827.950
PX2 (135)	2290	2363	20230807151829.032	20230807151847.840
PX2 (135)	2369	2435	20230807151849.137	20230807151907.950
PX3 (140)	2210	2213	20230807151807.192	20230807151807.844
PX3 (140)	2221	2285	20230807151809.571	20230807151827.950
PX3 (140)	2290	2363	20230807151829.032	20230807151847.840
PX3 (140)	2369	2435	20230807151849.137	20230807151907.950
PX4 (145)	2210	2213	20230807151807.192	20230807151807.844
PX4 (145)	2221	2285	20230807151809.571	20230807151827.950
PX4 (145)	2290	2363	20230807151829.032	20230807151847.840
PX4 (145)	2369	2435	20230807151849.137	20230807151907.950
IMG (150)	11930	11933	20230807151807.192	20230807151807.844
IMG (150)	11940	12017	20230807151809.356	20230807151827.950
IMG (150)	12021	12103	20230807151828.813	20230807151847.840

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	12109	12187	20230807151849.137	20230807151907.950
VER (160)	3964	3969	20230807151909.247	20230807151909.247
VER (160)	3969	3974	20230807151909.247	20230807151909.247
VER (160)	3974	3979	20230807151909.247	20230807151909.247
VER (160)	3979	3984	20230807151909.247	20230807151909.247
VER (160)	3984	3989	20230807151909.247	20230807151909.247
VER (160)	3989	3994	20230807151909.247	20230807151909.247
VER (160)	3994	3999	20230807151909.247	20230807151909.247
VER (160)	3999	3965	20230807151909.247	20230807151909.247
VER (160)	3965	3970	20230807151909.247	20230807151909.247
VER (160)	3970	3975	20230807151909.247	20230807151909.247
VER (160)	3975	3980	20230807151909.247	20230807151909.247
VER (160)	3980	3985	20230807151909.247	20230807151909.247
VER (160)	3985	3990	20230807151909.247	20230807151909.247
VER (160)	3990	3995	20230807151909.247	20230807151909.247
VER (160)	3995	4000	20230807151909.247	20230807151909.247
VER (160)	4000	3966	20230807151909.247	20230807151909.247
VER (160)	3966	3971	20230807151909.247	20230807151909.247
VER (160)	3971	3976	20230807151909.247	20230807151909.247
VER (160)	3976	3981	20230807151909.247	20230807151909.247
VER (160)	3981	3986	20230807151909.247	20230807151909.247
VER (160)	3986	3991	20230807151909.247	20230807151909.247
VER (160)	3991	3996	20230807151909.247	20230807151909.247
VER (160)	3996	4001	20230807151909.247	20230807151909.247
VER (160)	4001	3967	20230807151909.247	20230807151909.247
VER (160)	3967	3972	20230807151909.247	20230807151909.247
VER (160)	3972	3977	20230807151909.247	20230807151909.247
VER (160)	3977	3982	20230807151909.247	20230807151909.247
VER (160)	3982	3987	20230807151909.247	20230807151909.247
VER (160)	3987	3992	20230807151909.247	20230807151909.247
VER (160)	3992	3997	20230807151909.247	20230807151909.247
VER (160)	3997	4002	20230807151909.247	20230807151909.247
VER (160)	4002	3968	20230807151909.247	20230807151909.247
VER (160)	3968	3973	20230807151909.247	20230807151909.247
VER (160)	3973	3978	20230807151909.247	20230807151909.247
VER (160)	3978	3983	20230807151909.247	20230807151909.247
VER (160)	3983	3988	20230807151909.247	20230807151909.247
VER (160)	3988	3993	20230807151909.247	20230807151909.247
VER (160)	3993	3998	20230807151909.247	20230807151909.247
VER (160)	3998	4003	20230807151909.247	20230807151909.247
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/08/2023 00:04:07	-	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	476	-
GQisFlagQual set (PX1)	99.57 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.67 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.62 %	-

Table 4: Quality flags

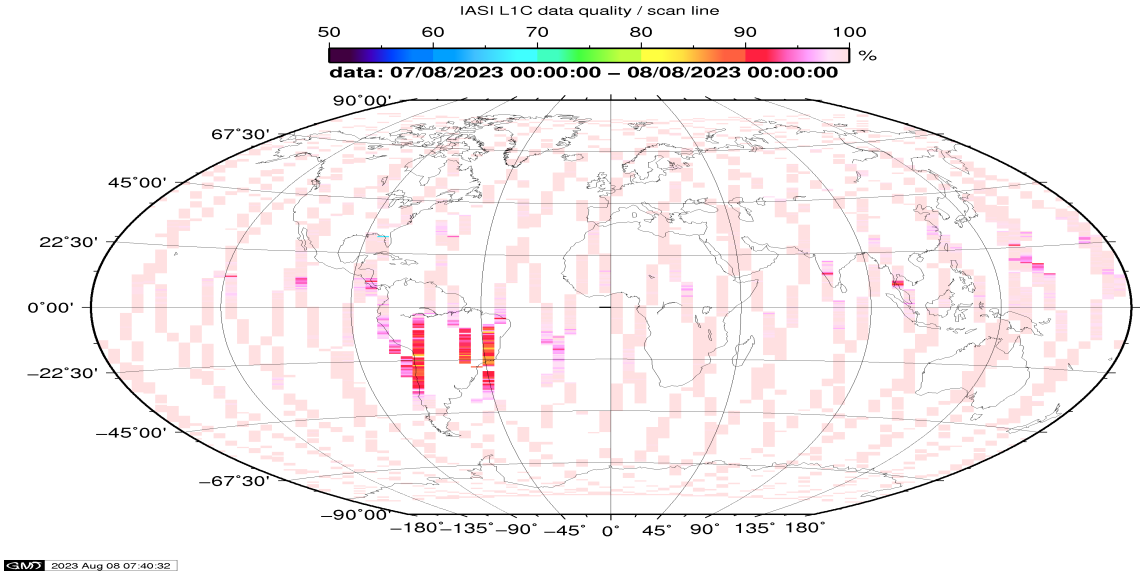

Figure 1: L1C data quality

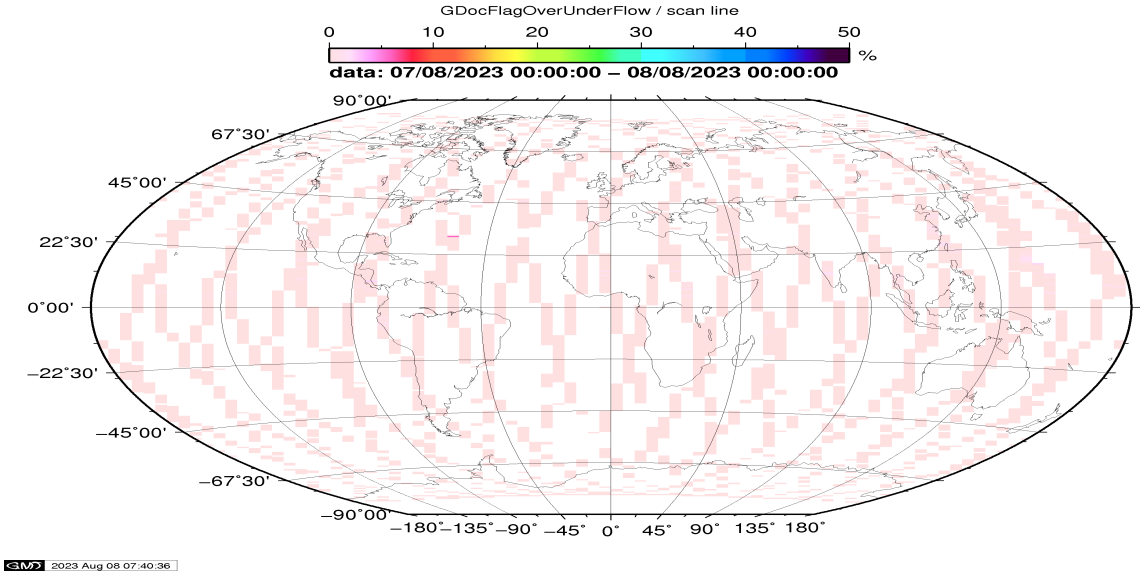

Figure 2: Flag of Over and Under Flows

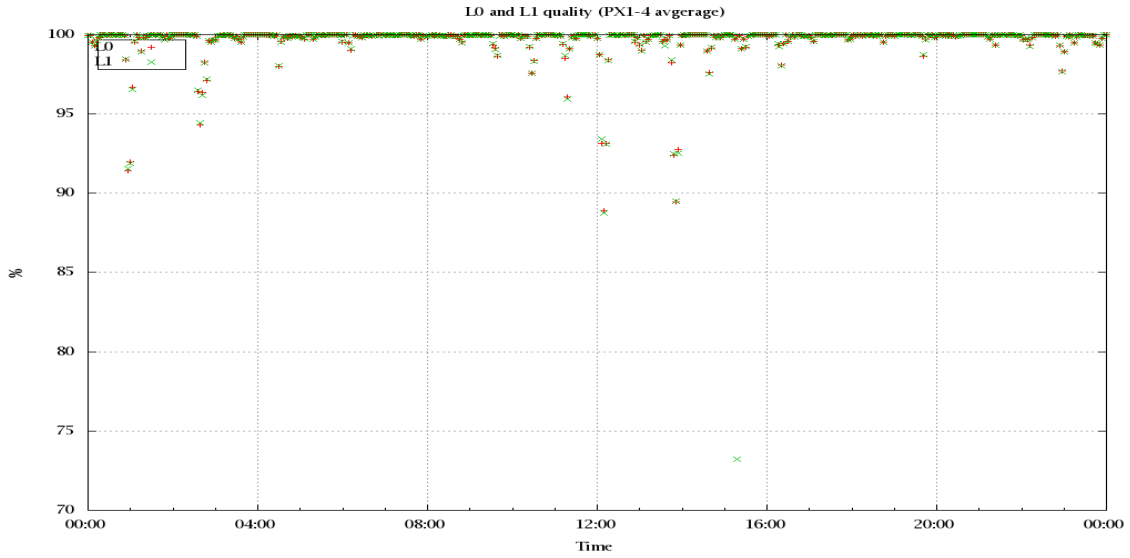

Figure 3: Level 0 and 1C overall quality

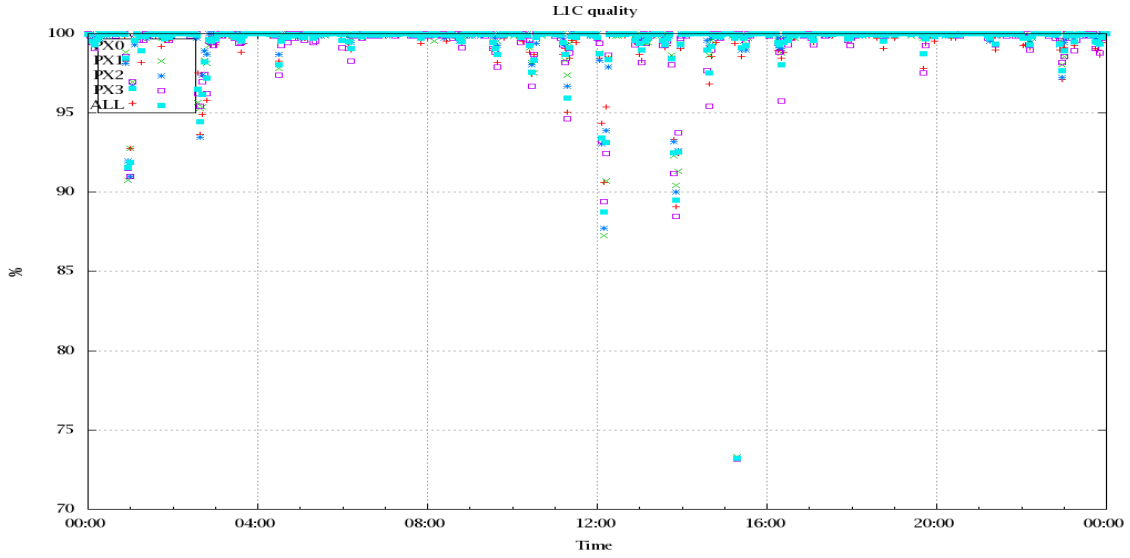

Figure 4: Level 1C quality

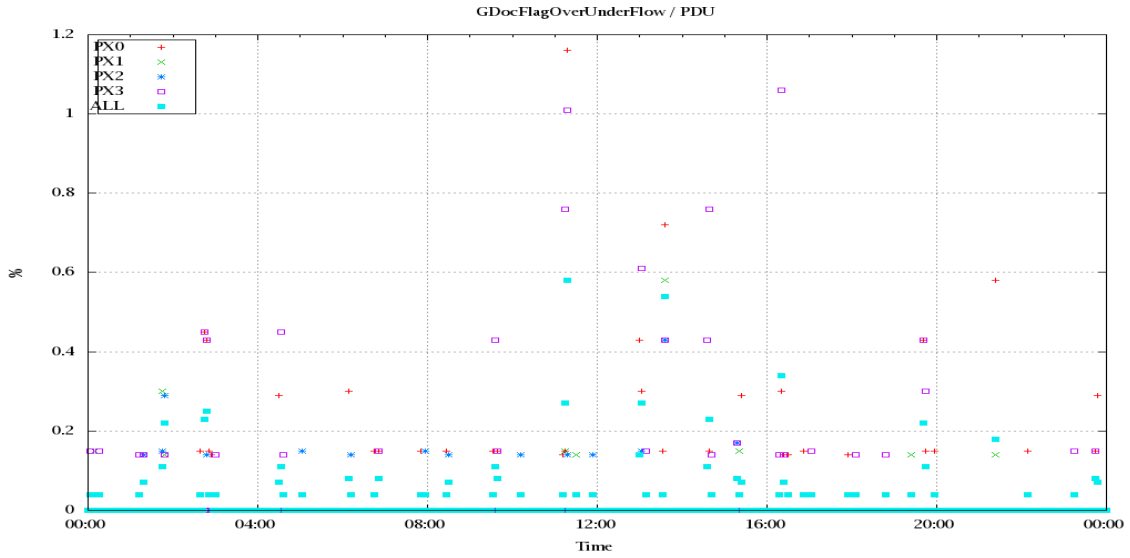

Figure 5: Timeseries of flag of Over and Under Flows

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.

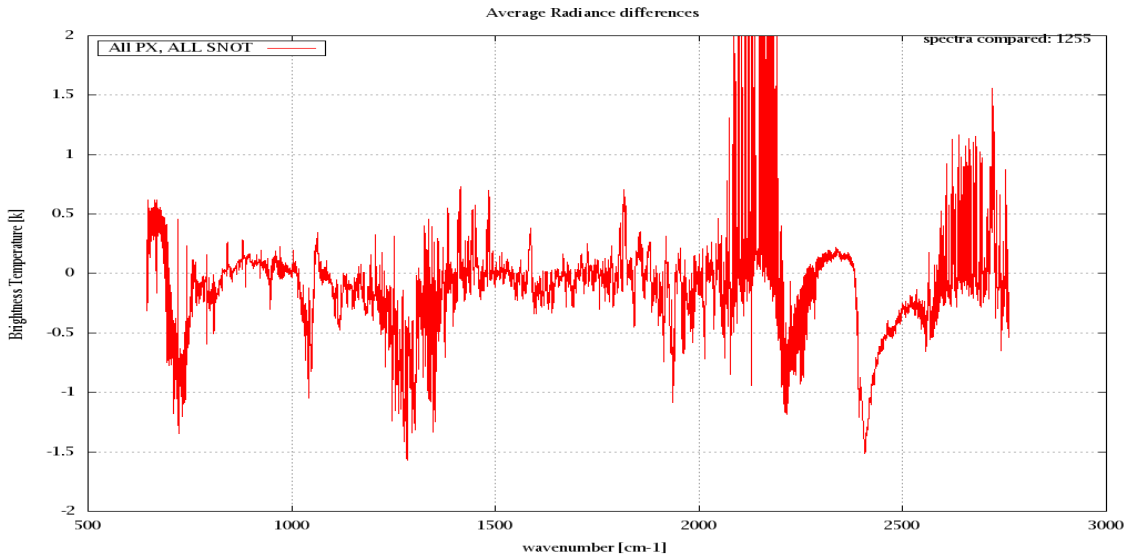

Figure 6: Average Radiance differences: OBS-CAL

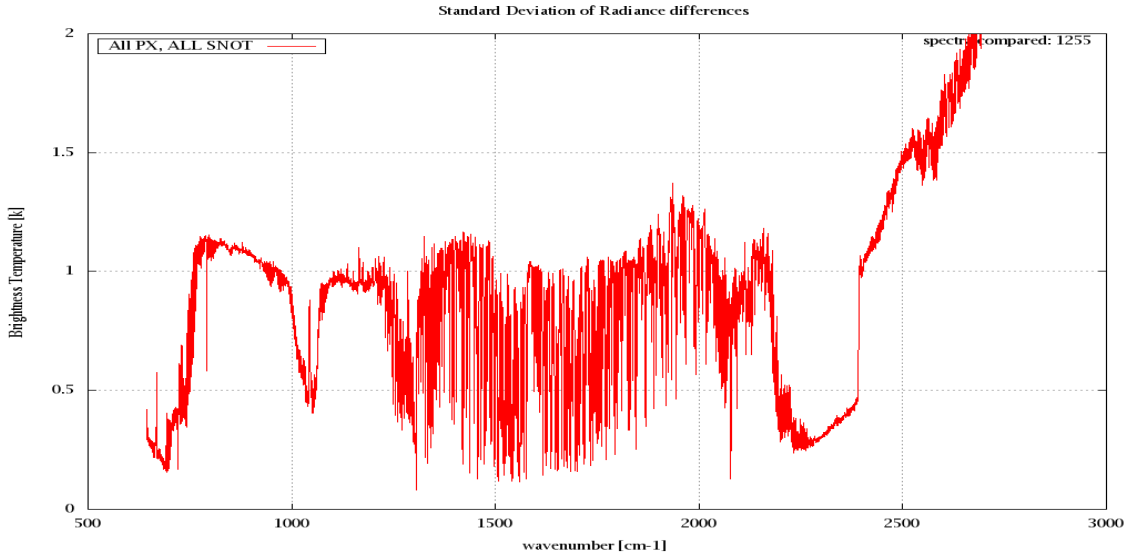

Figure 7: Standard Deviation of Radiance differences

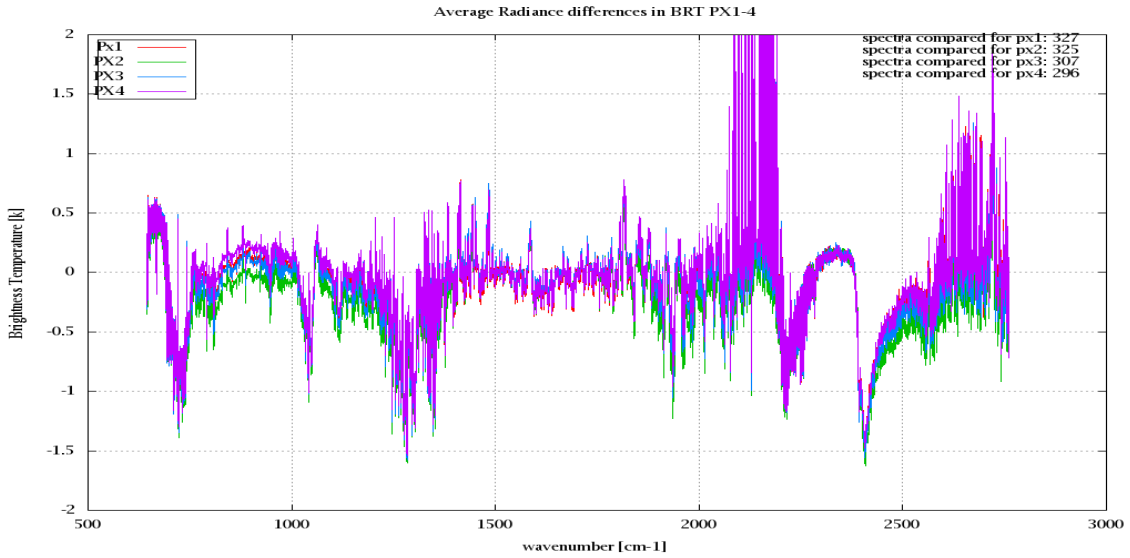

Figure 8: Average Radiance differences: OBS-CAL

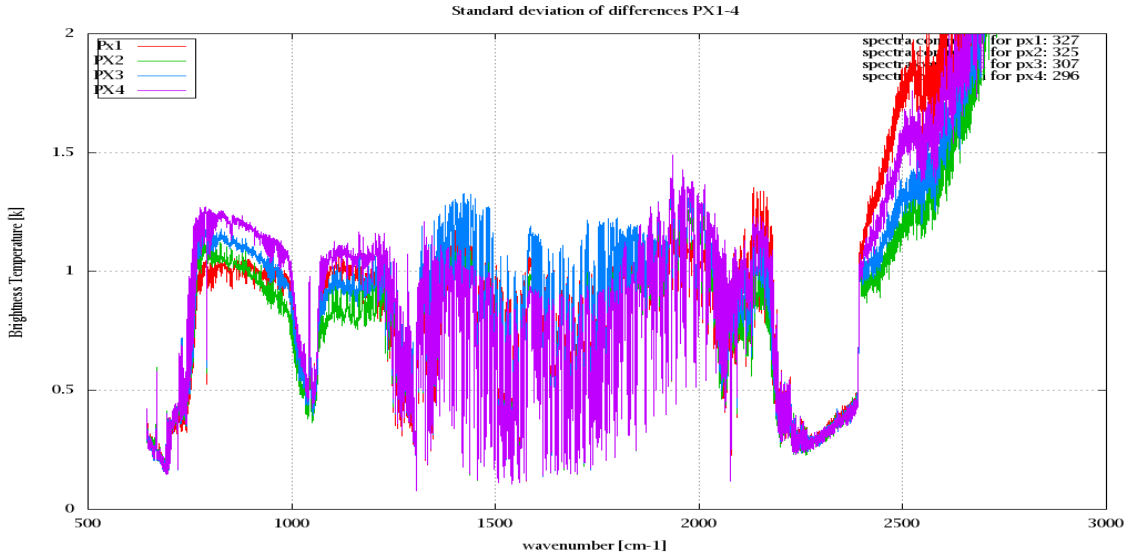

Figure 9: Standard Deviation of Radiance differences

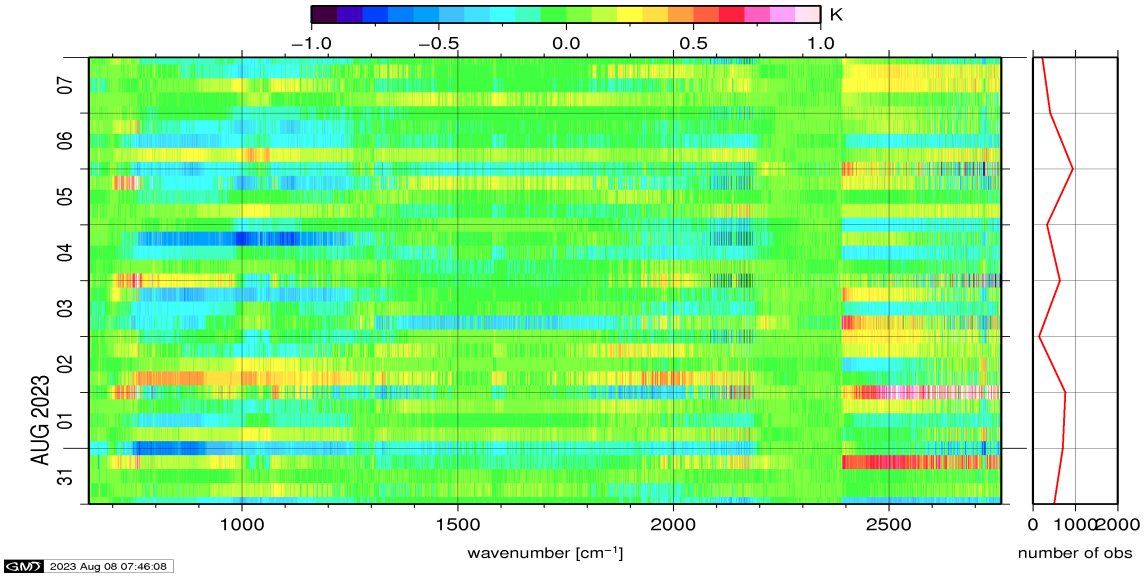

Figure 10: Radiance Anomaly in BT: All Channels

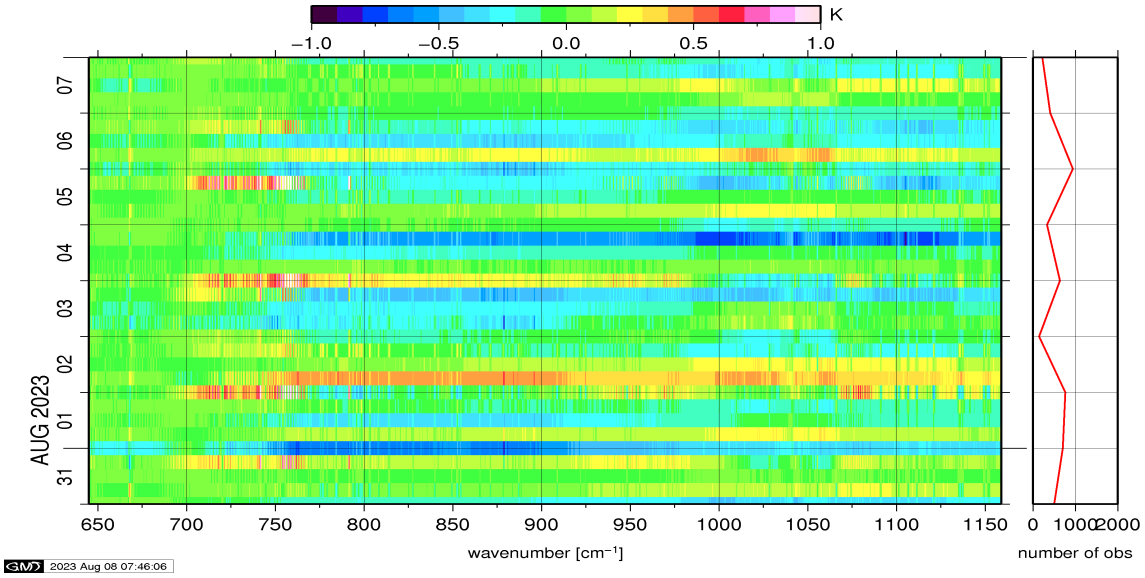

Figure 11: Radiance Anomaly in BT: IASI Band 1

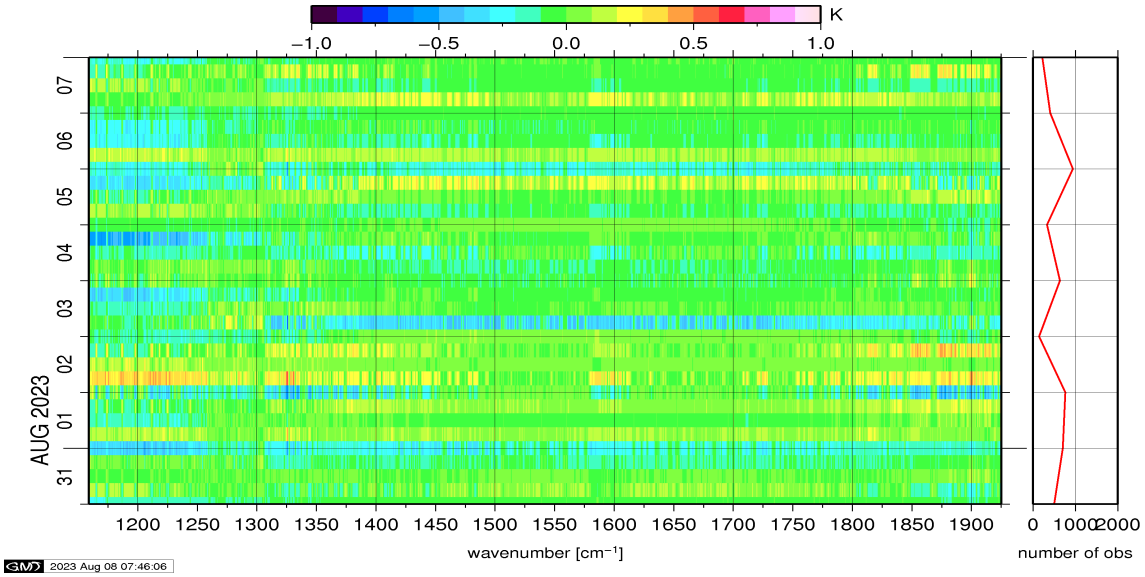

Figure 12: Radiance Anomaly in BT: IASI Band 2

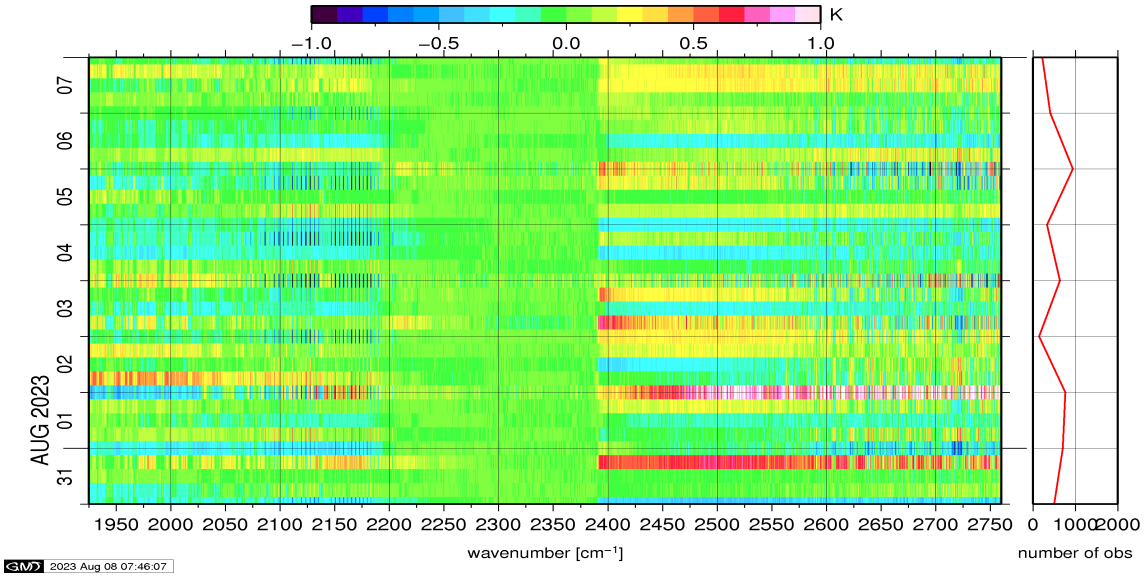

Figure 13: Radiance Anomaly in BT: IASI Band 3

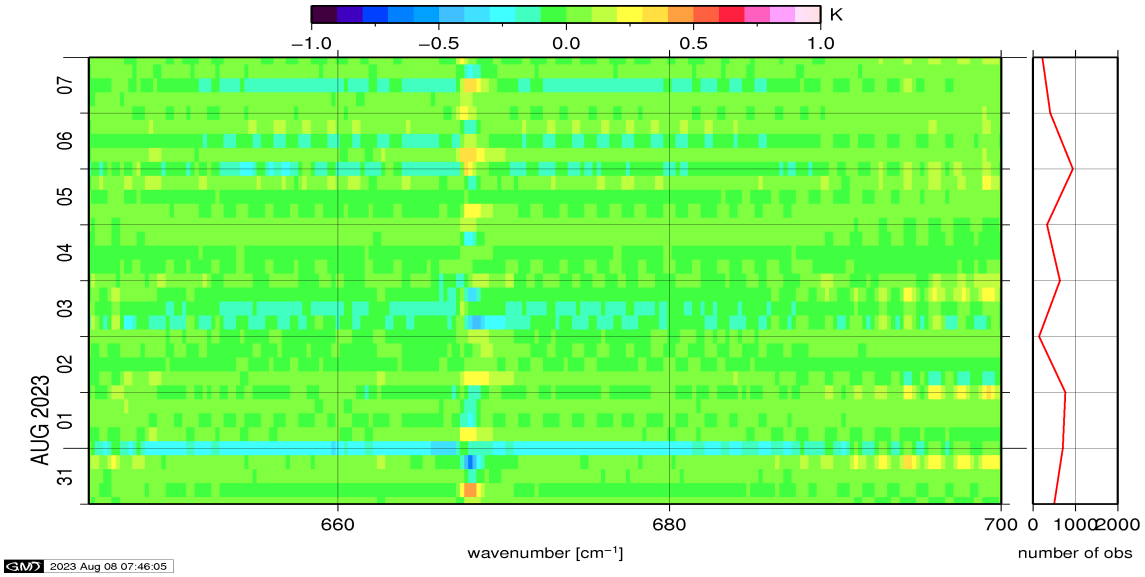

Figure 14: Radiance Anomaly in BT: CO2 14

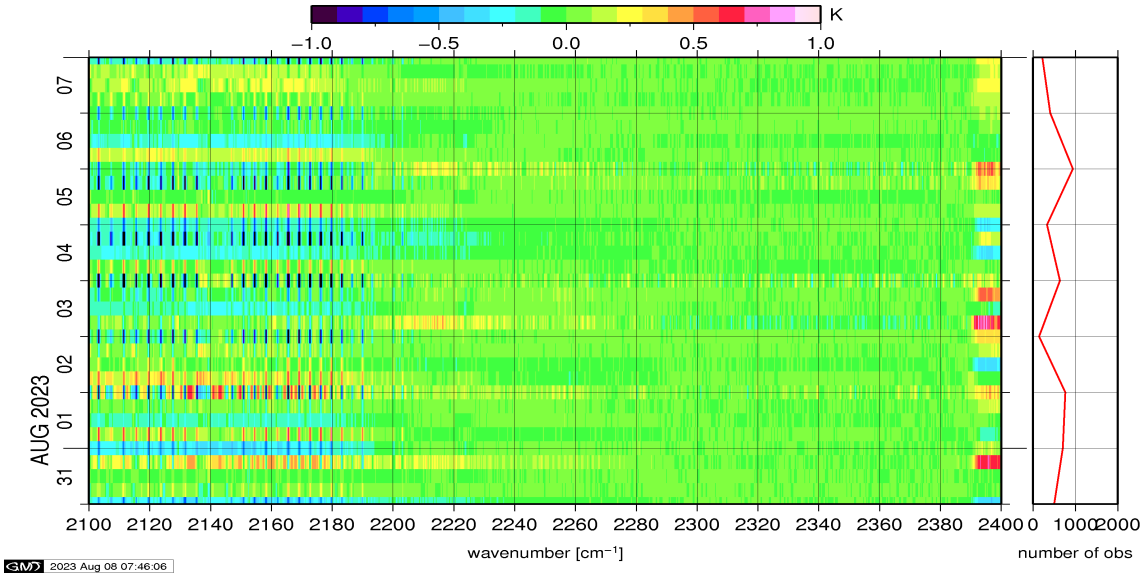

Figure 15: Radiance Anomaly in BT: CO2 4.3

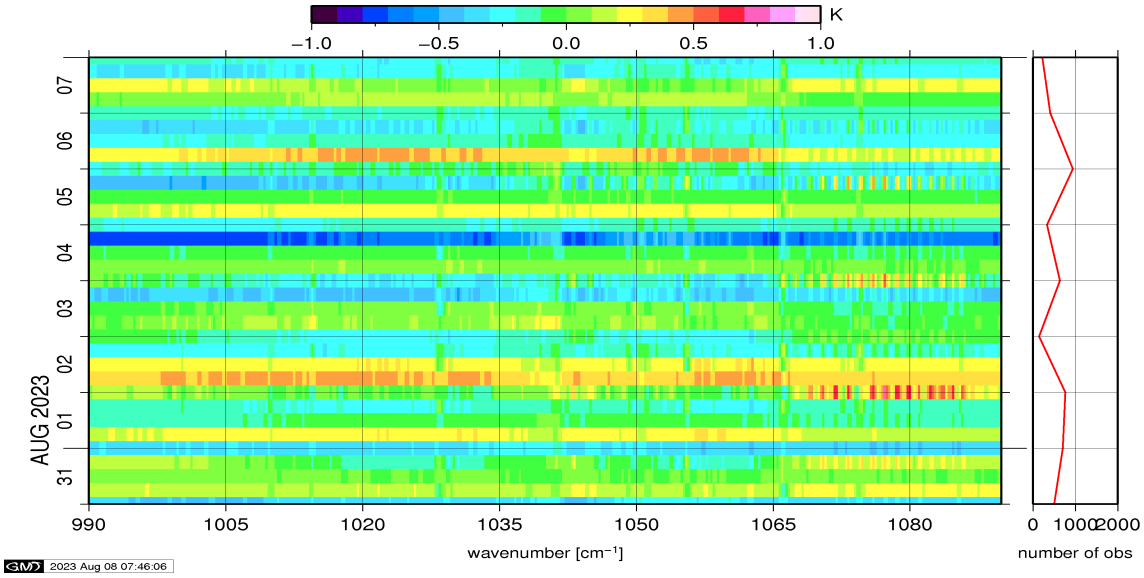

Figure 16: Radiance Anomaly in BT: O3

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.

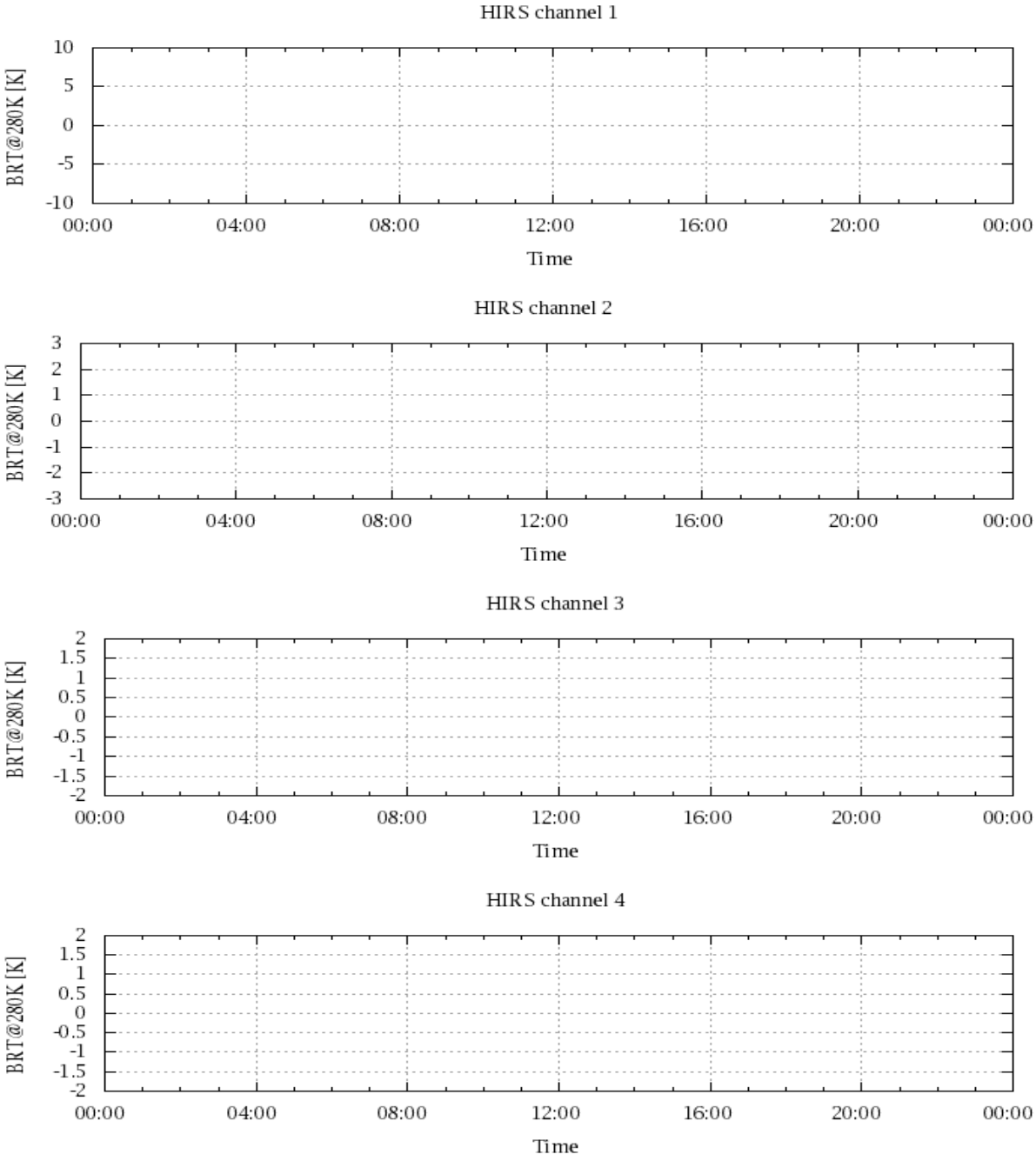

Figure 17: Radiance Differences in BT

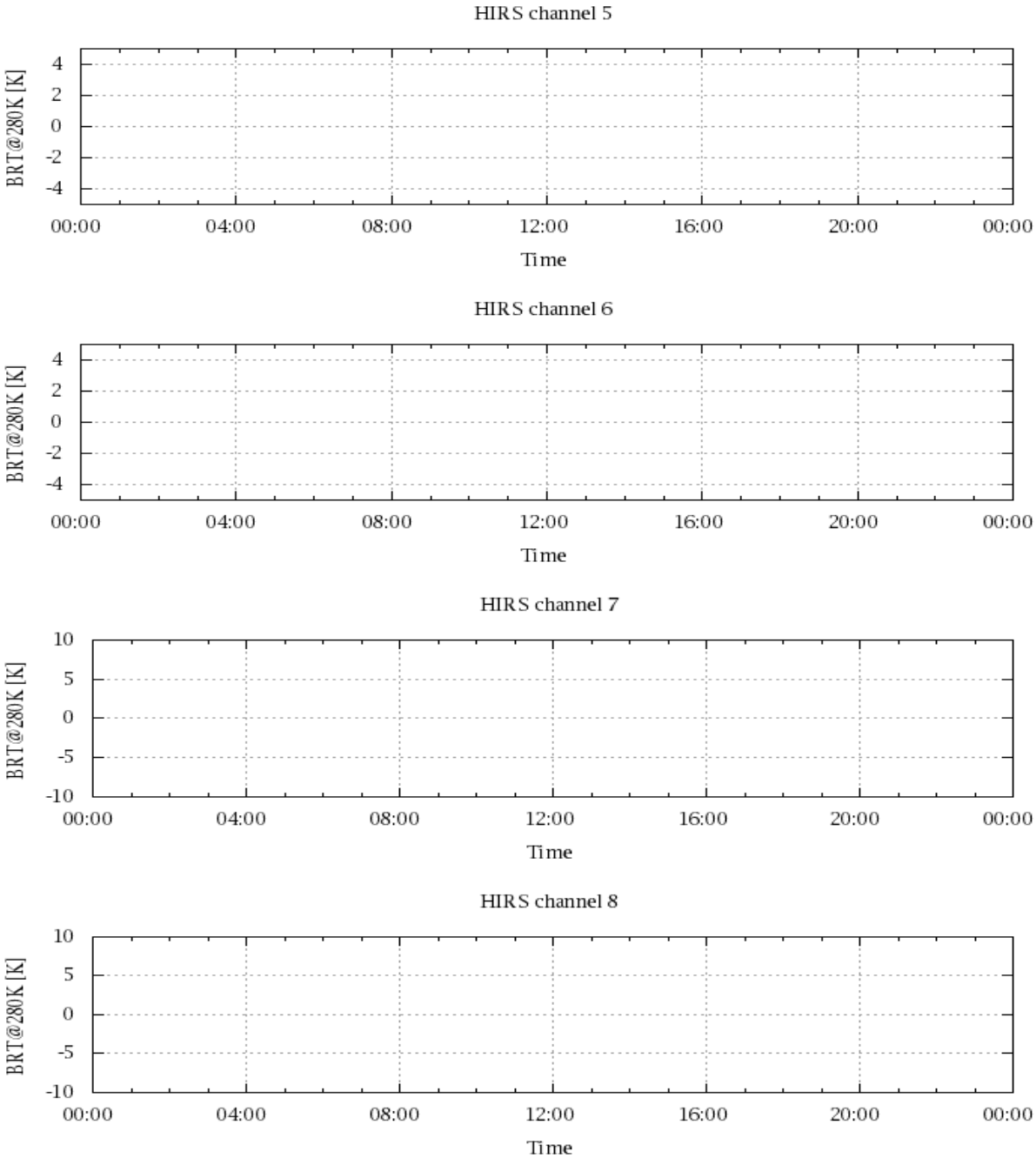

Figure 18: Radiance Differences in BT

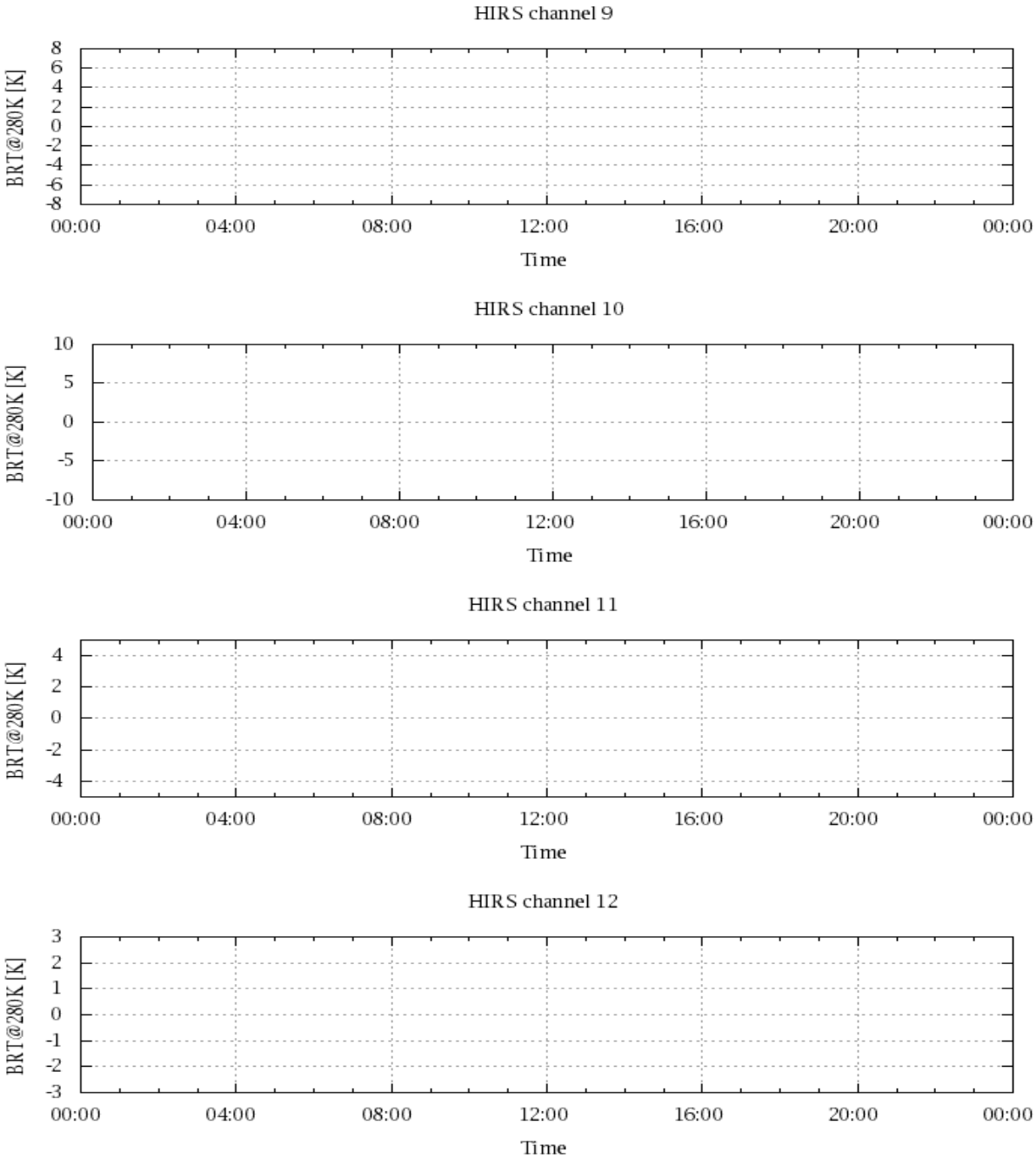

Figure 19: Radiance Differences in BT

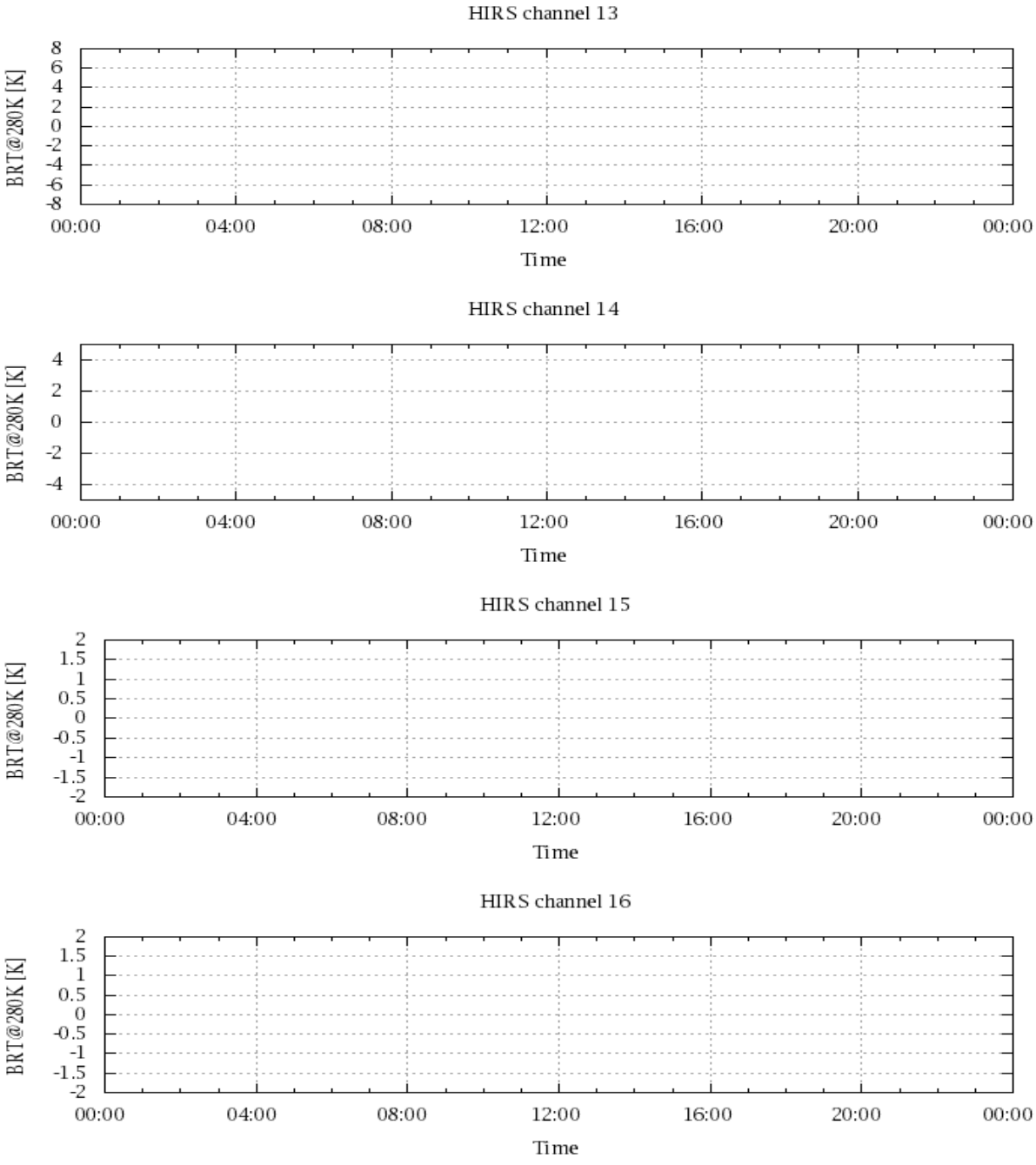

Figure 20: Radiance Differences in BT

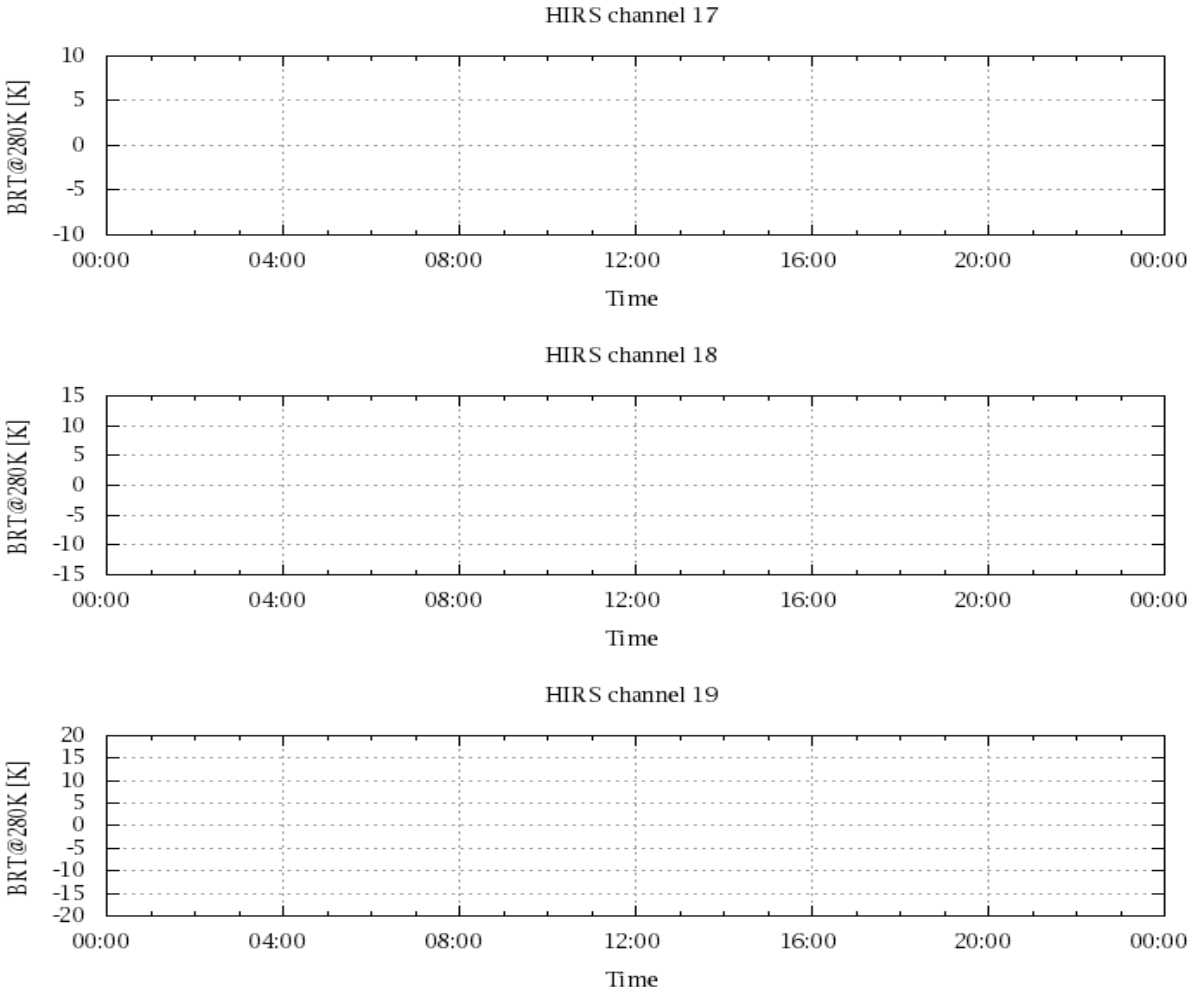

Figure 21: Radinace Differences in BT