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

IASI monitoring team

30/05/2020 00:00:00 - 31/05/2020 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 30/05/2020 00:00:00 - 31/05/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 30/05/2020 00:00:00 - 31/05/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	473	-
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)	5195	5255	20200530030100.489	20200530030116.489
PX1 (130)	5255	5258	20200530030116.489	20200530030117.138
PX1 (130)	5259	5264	20200530030117.353	20200530030118.435
PX1 (130)	5264	5266	20200530030118.435	20200530030118.864
PX2 (135)	5191	5194	20200530030058.111	20200530030100.271
PX2 (135)	5194	5254	20200530030100.271	20200530030116.271
PX2 (135)	5254	5257	20200530030116.271	20200530030116.923
PX2 (135)	5258	5260	20200530030117.138	20200530030117.568
PX2 (135)	5260	5263	20200530030117.568	20200530030118.220
PX3 (140)	5191	5196	20200530030058.111	20200530030100.704
PX3 (140)	5197	5200	20200530030100.923	20200530030101.568
PX3 (140)	5200	5257	20200530030101.568	20200530030116.923
PX3 (140)	5257	5259	20200530030116.923	20200530030117.353
PX4 (145)	5189	5191	20200530030057.677	20200530030058.111
PX4 (145)	5191	5194	20200530030058.111	20200530030100.271
PX4 (145)	5194	5196	20200530030100.271	20200530030100.704
PX4 (145)	5196	5254	20200530030100.704	20200530030116.271
PX4 (145)	5254	5256	20200530030116.271	20200530030116.704
PX4 (145)	5259	5261	20200530030117.353	20200530030117.786

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	5263	5265	20200530030118.220	20200530030118.650
IMG (150)	2	4	20200530030055.302	20200530030055.732
IMG (150)	15	17	20200530030058.111	20200530030058.759
IMG (150)	19	22	20200530030059.407	20200530030100.271
IMG (150)	24	27	20200530030100.704	20200530030101.353
IMG (150)	27	87	20200530030101.353	20200530030115.407
IMG (150)	90	93	20200530030116.271	20200530030116.923
IMG (150)	95	98	20200530030117.353	20200530030118.001
VER (160)	1727	1729	20200530030050.325	20200530030058.325
VER (160)	1730	1732	20200530030058.325	20200530030058.325
VER (160)	1732	1743	20200530030058.325	20200530030122.325
AUX (180)	6898	6901	20200530030058.759	20200530030122.759

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
30/05/2020 00:00:07	-	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	473	-
GQisFlagQual set (PX1)	99.55 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.64 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.60 %	-

Table 4: Quality flags

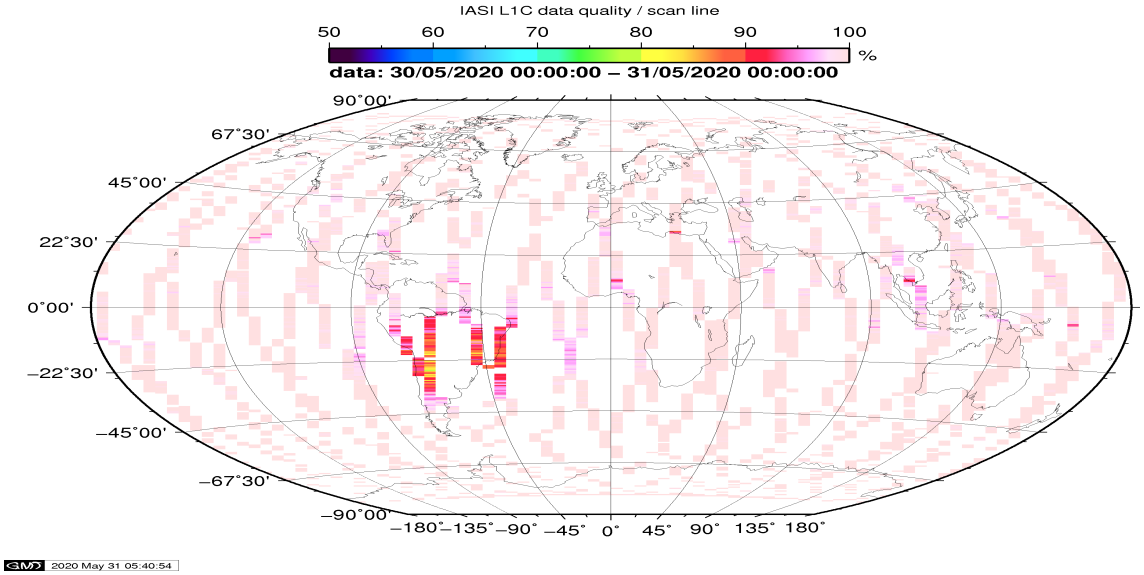

Figure 1: L1C data quality

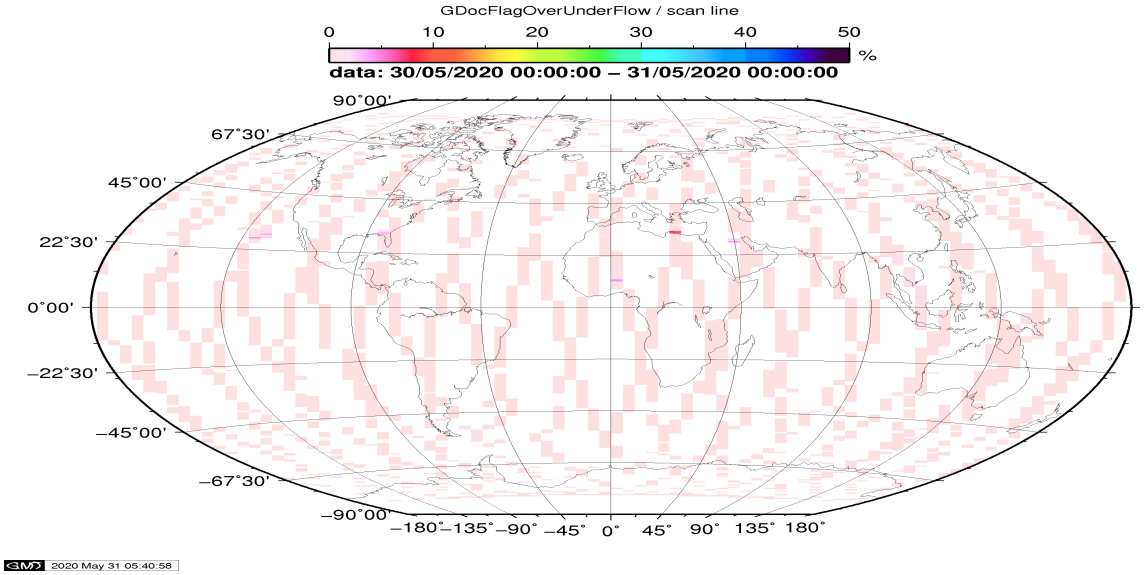

Figure 2: Flag of Over and Under Flows

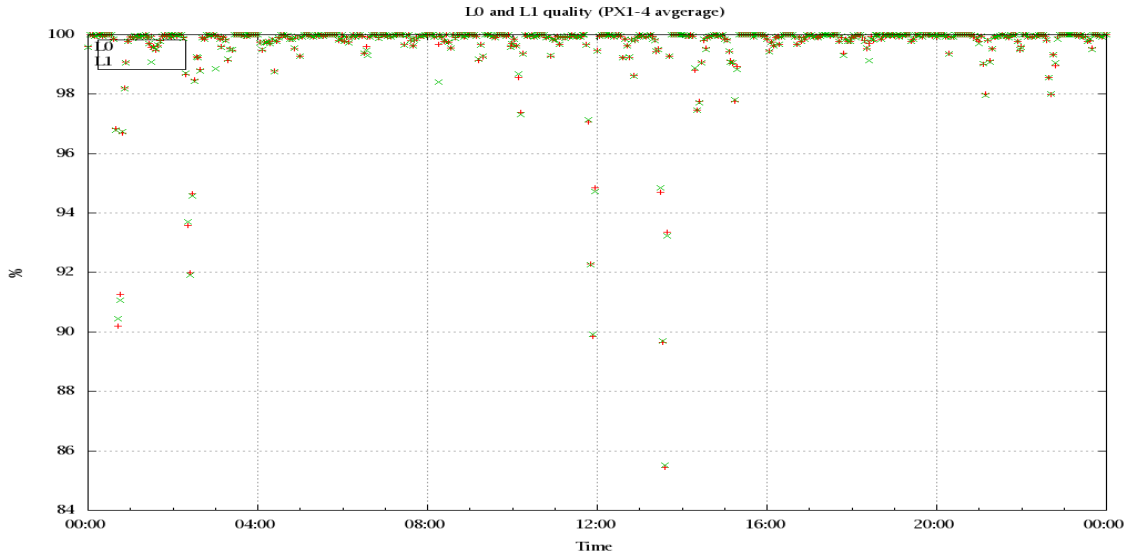

Figure 3: Level 0 and 1C overall quality

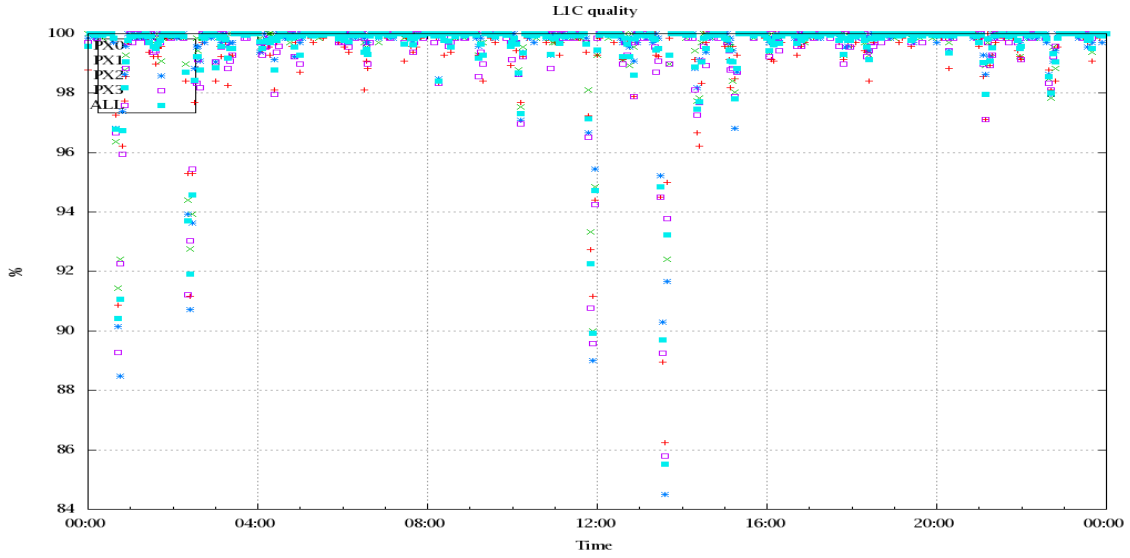

Figure 4: Level 1C quality

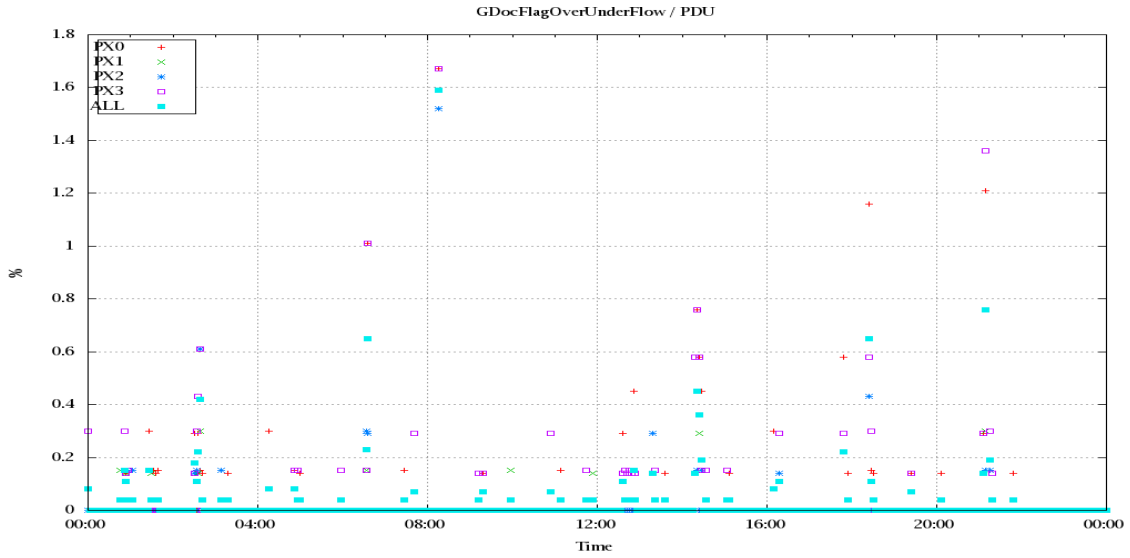

Figure 5: Timeseries of flag of Over and Under Flows

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.

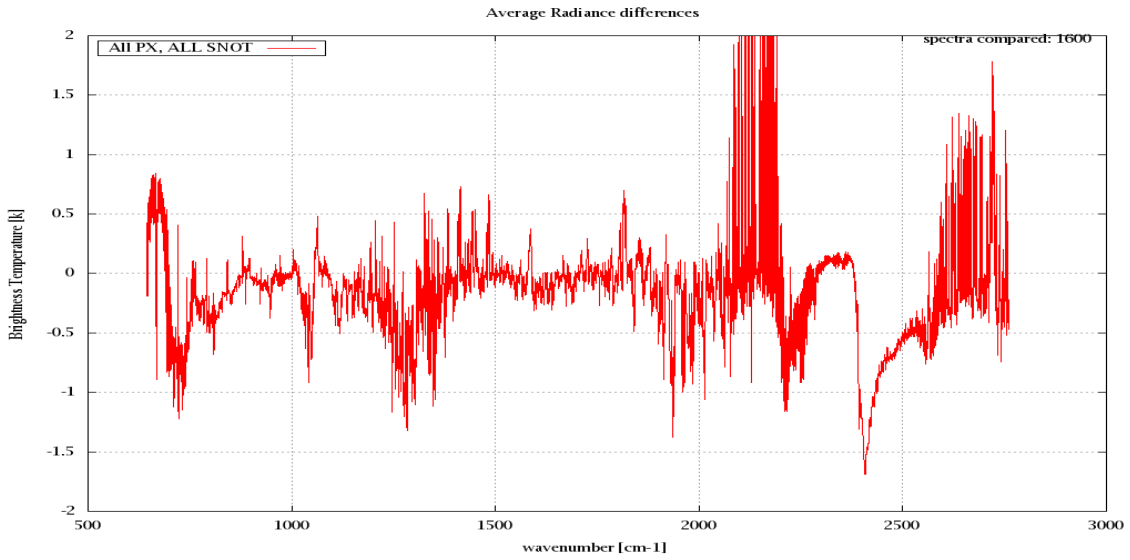

Figure 6: Average Radiance differences: OBS-CAL

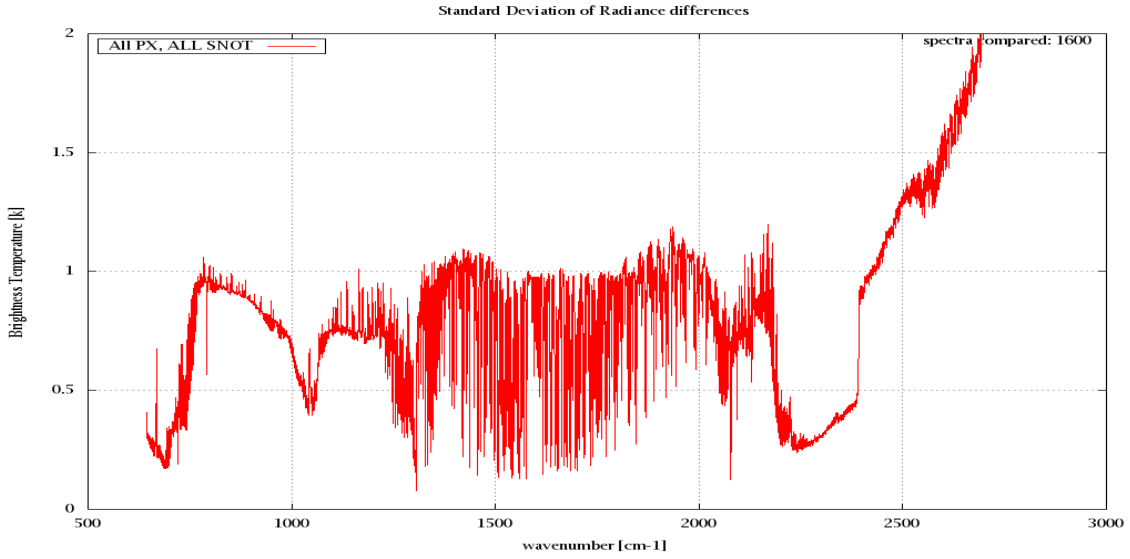

Figure 7: Standard Deviation of Radiance differences

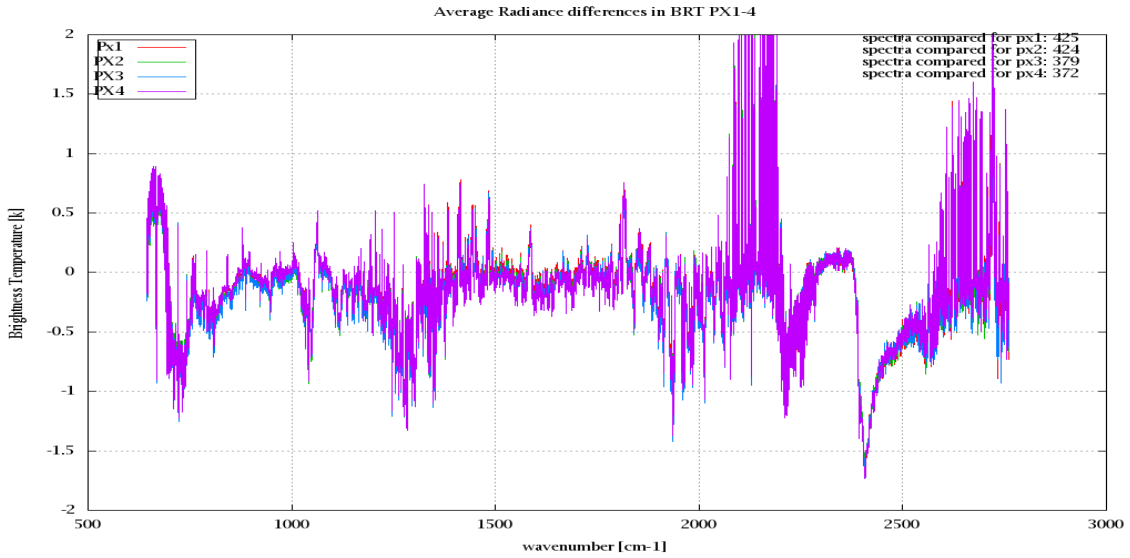

Figure 8: Average Radiance differences: OBS-CAL

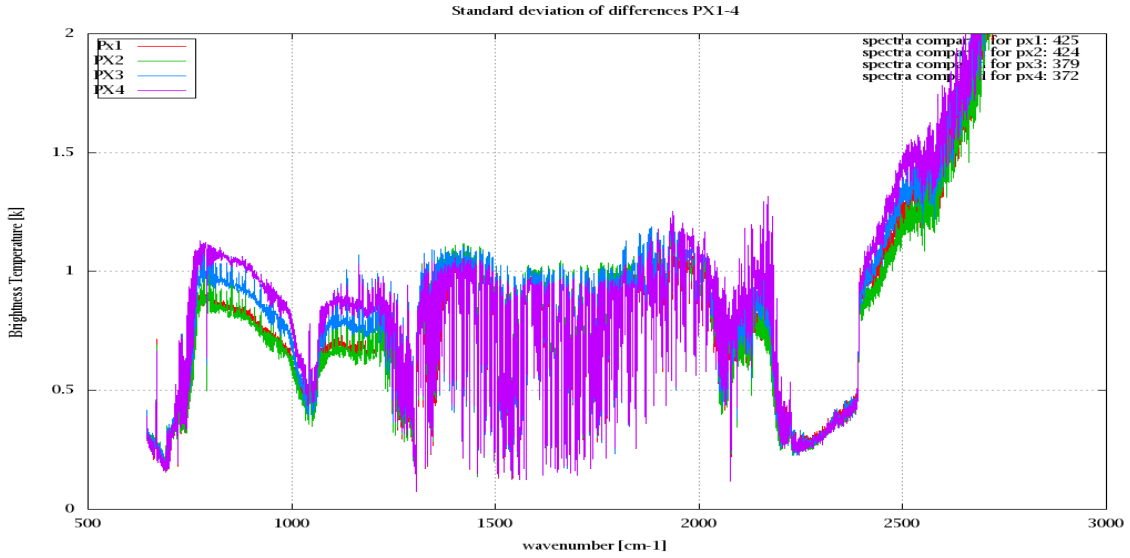

Figure 9: Standard Deviation of Radiance differences

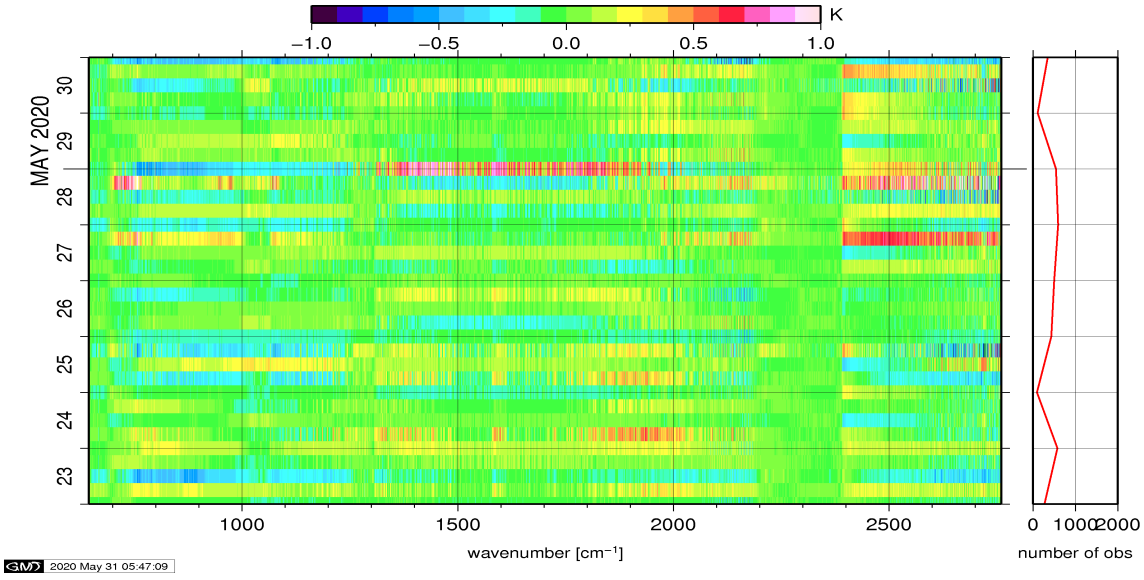

Figure 10: Radiance Anomaly in BT: All Channels

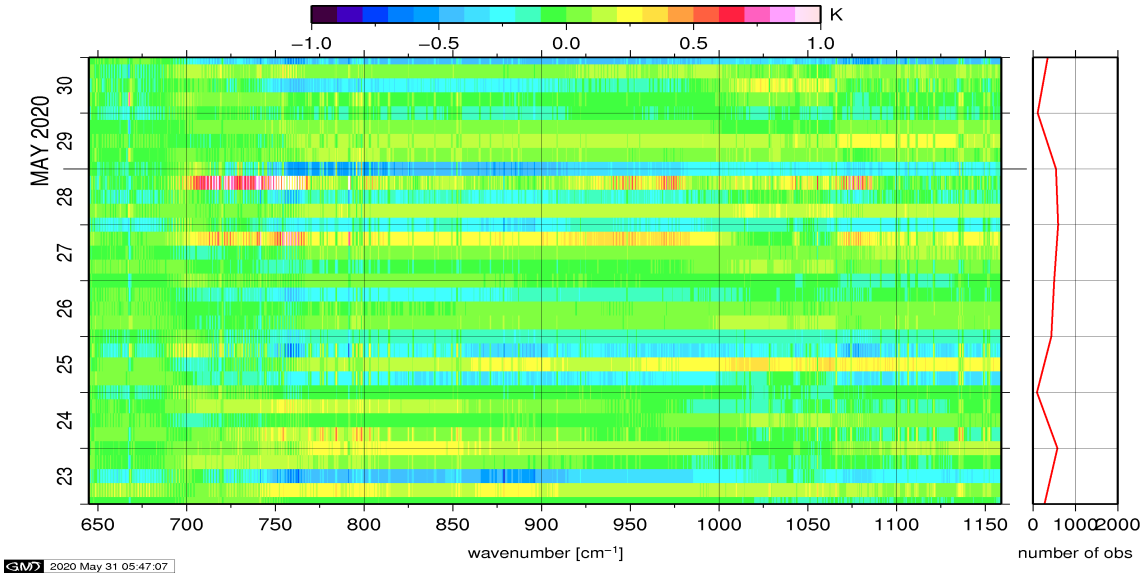

Figure 11: Radiance Anomaly in BT: IASI Band 1

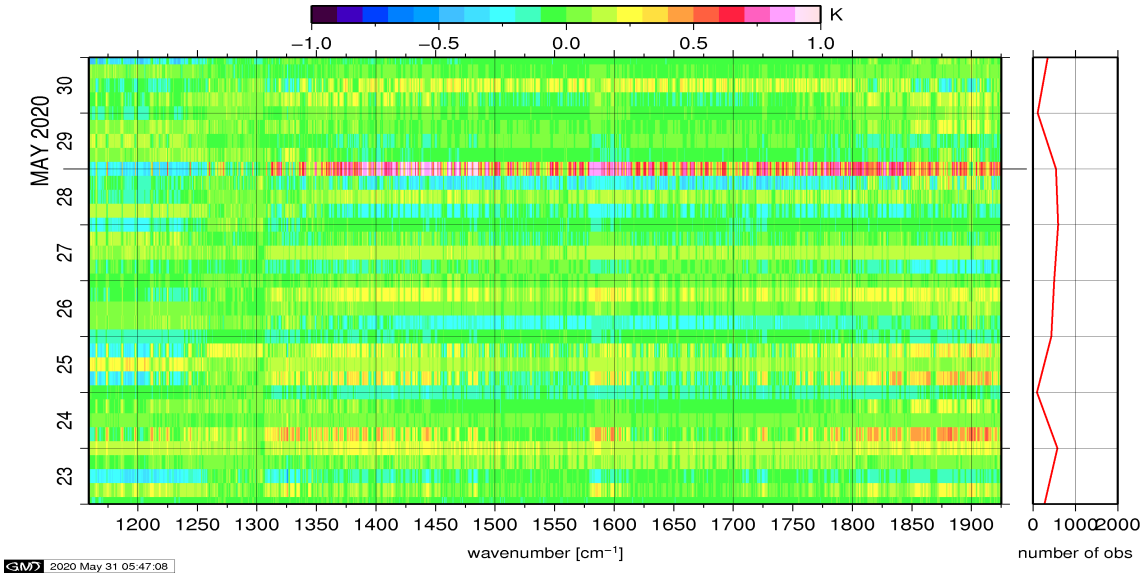

Figure 12: Radiance Anomaly in BT: IASI Band 2

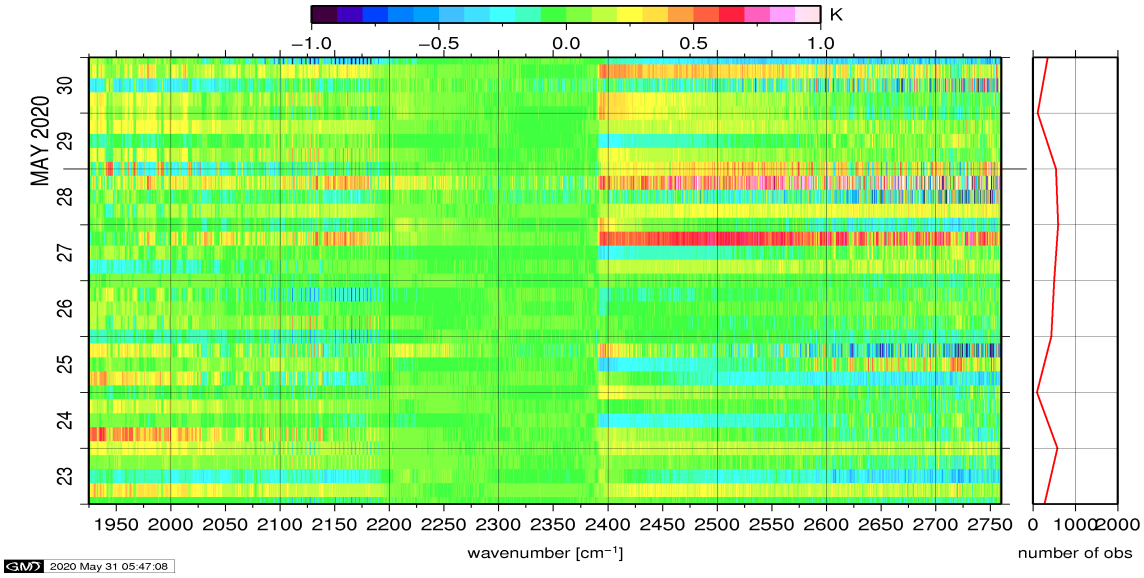

Figure 13: Radiance Anomaly in BT: IASI Band 3

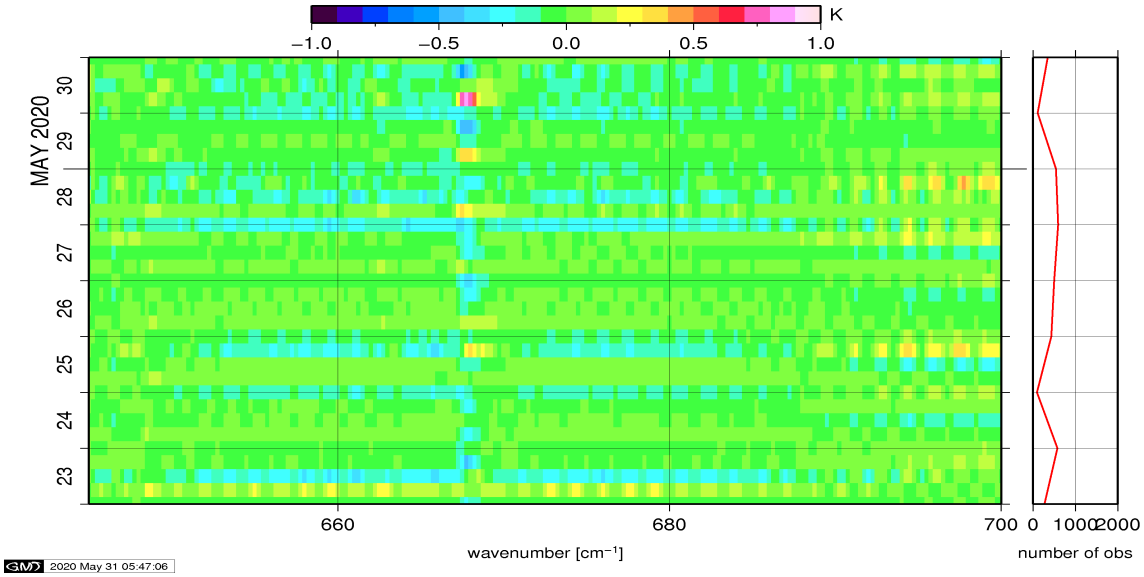

Figure 14: Radiance Anomaly in BT: CO2 14

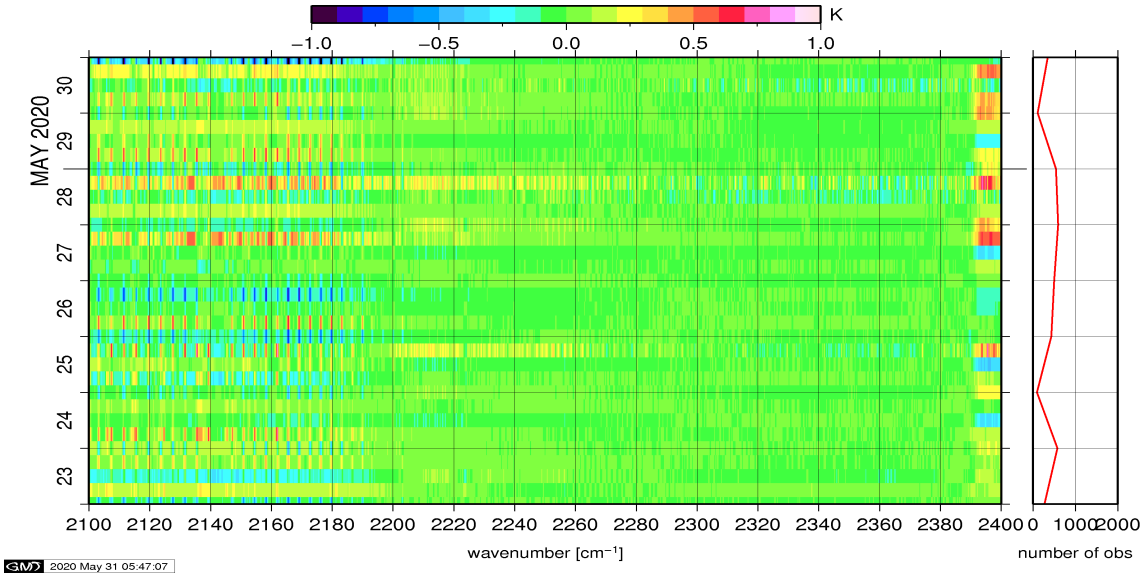

Figure 15: Radiance Anomaly in BT: CO2 4.3

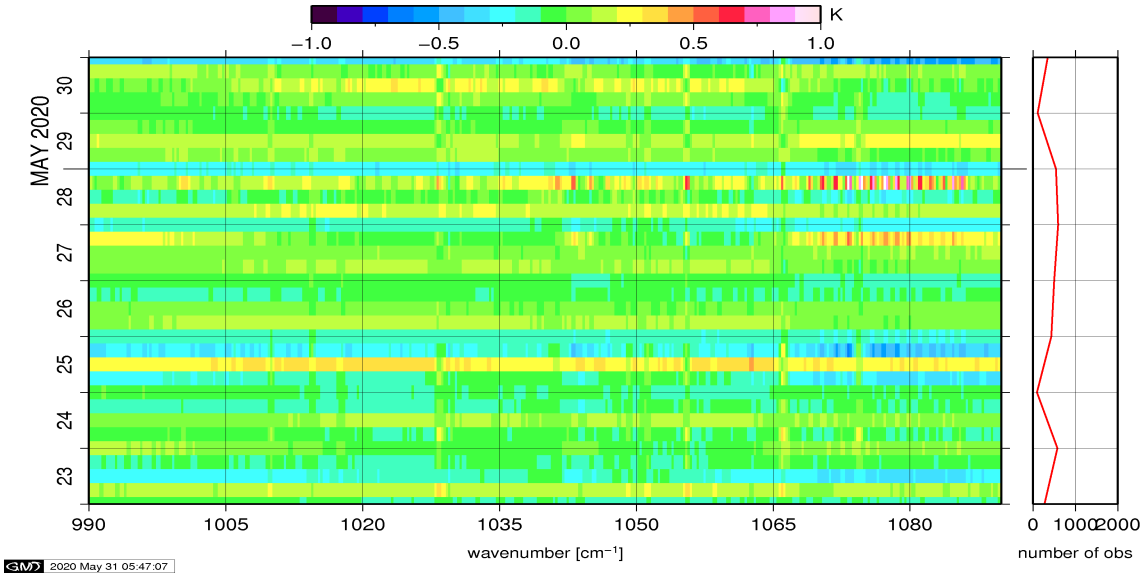

Figure 16: Radiance Anomaly in BT: O3

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.

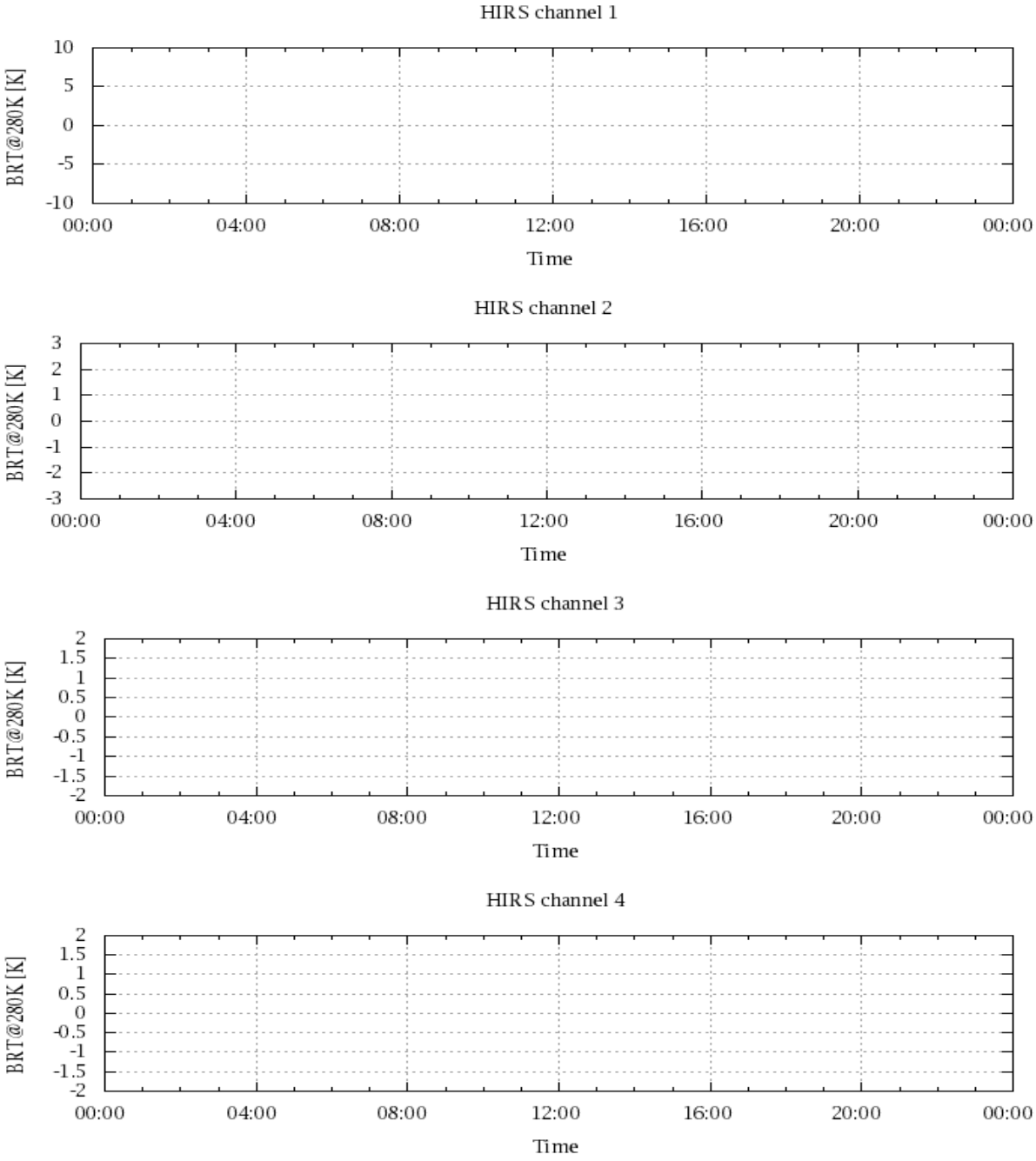

Figure 17: Radiance Differences in BT

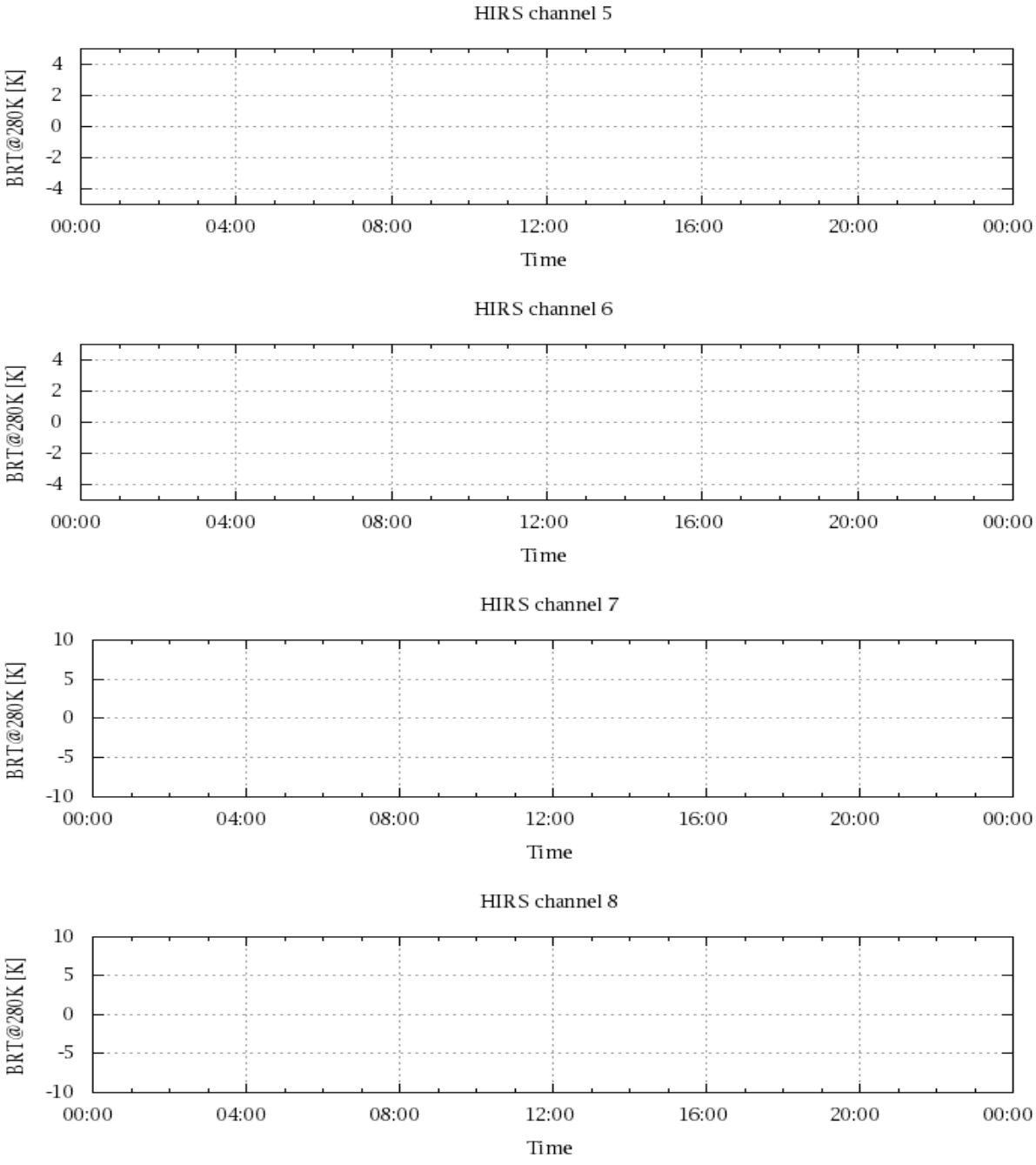

Figure 18: Radiance Differences in BT

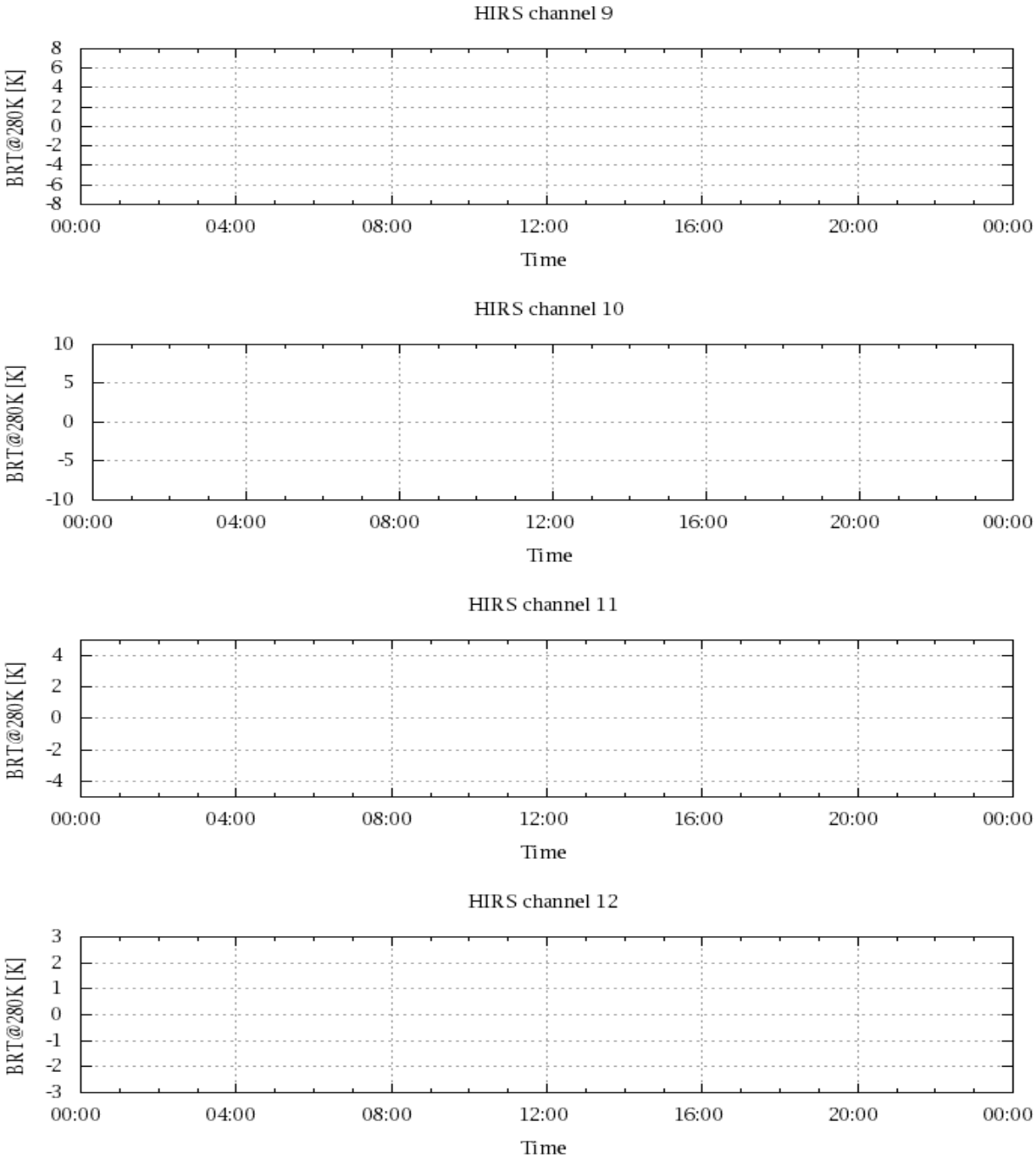

Figure 19: Radiance Differences in BT

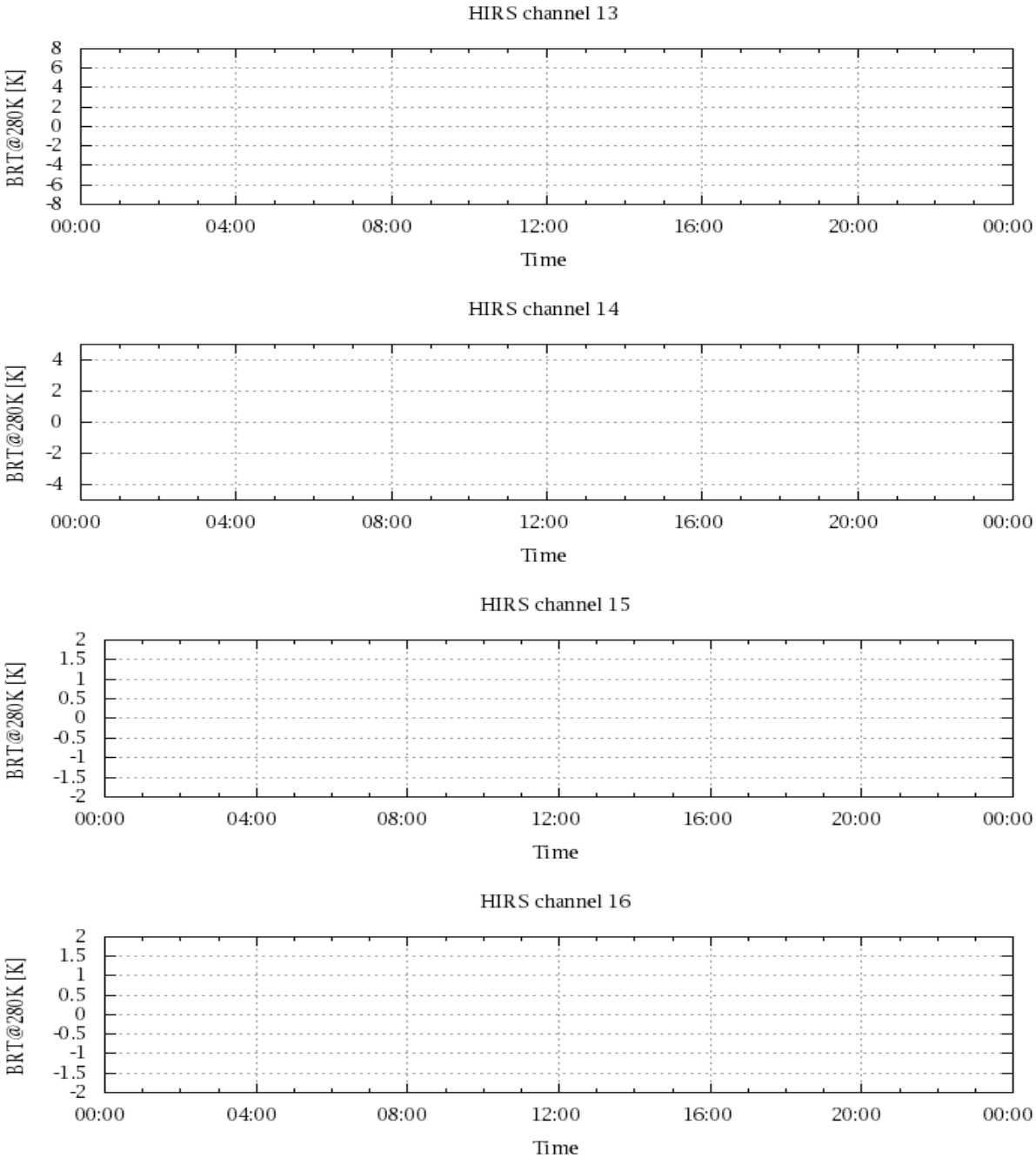

Figure 20: Radiance Differences in BT

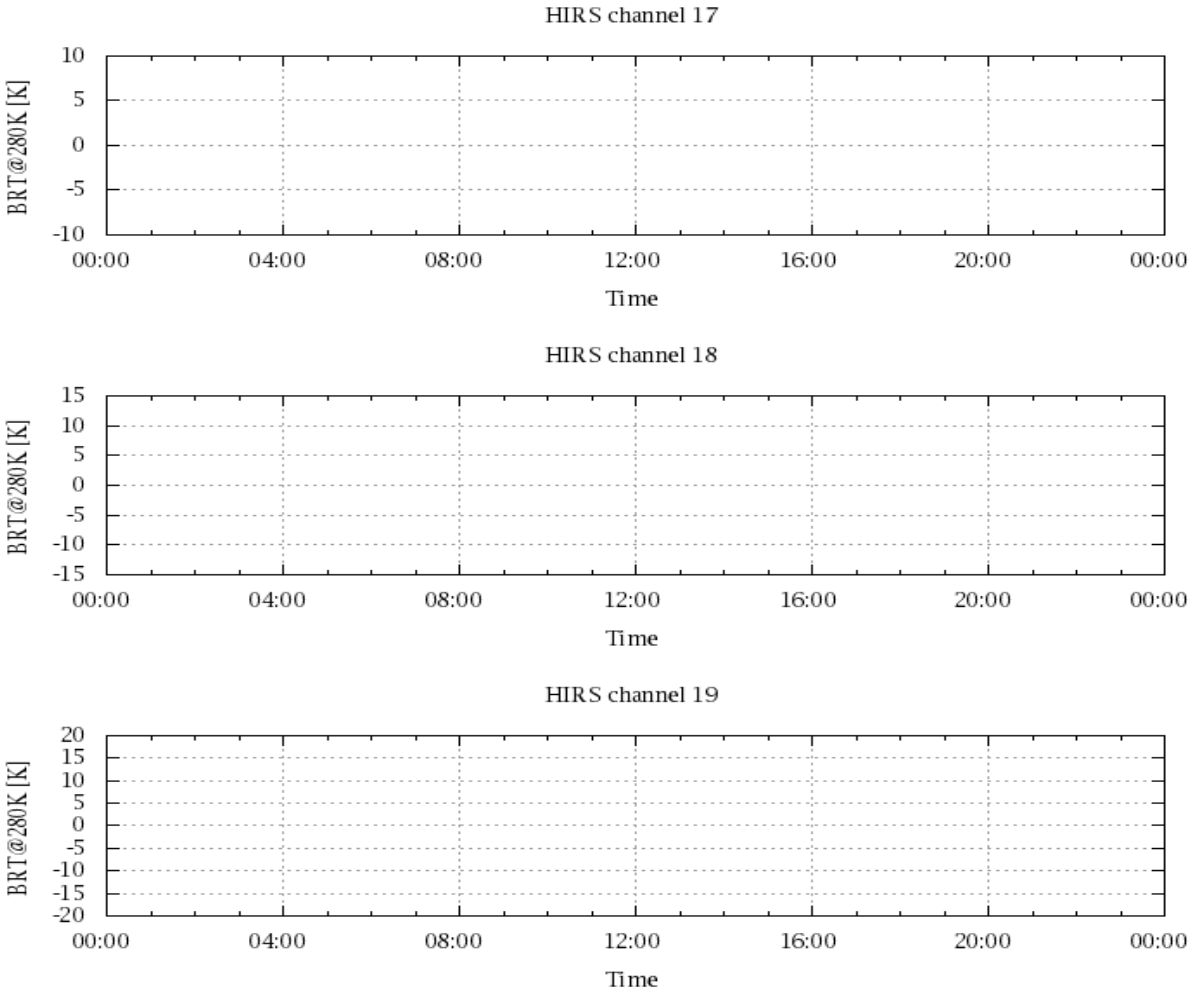

Figure 21: Radinace Differences in BT