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

IASI monitoring team

08/05/2024 00:00:00 - 09/05/2024 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 08/05/2024 00:00:00 - 09/05/2024 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 08/05/2024 00:00:00 - 09/05/2024 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	477	-
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)	4195	4199	20240508083913.897	20240508083914.764
PX2 (135)	4194	4199	20240508083913.682	20240508083914.764
PX3 (140)	4194	4199	20240508083913.682	20240508083914.764
PX4 (145)	4194	4199	20240508083913.682	20240508083914.764
IMG (150)	14398	14403	20240508083913.682	20240508083914.764
VER (160)	7450	11164	20240508133237.981	20240508151337.631
VER (160)	11164	11169	20240508151337.631	20240508151337.631
VER (160)	11169	11174	20240508151337.631	20240508151337.631
VER (160)	11174	11179	20240508151337.631	20240508151337.631
VER (160)	11179	11184	20240508151337.631	20240508151337.631
VER (160)	11184	11189	20240508151337.631	20240508151337.631
VER (160)	11189	11194	20240508151337.631	20240508151337.631
VER (160)	11194	11199	20240508151337.631	20240508151337.631
VER (160)	11199	11204	20240508151337.631	20240508151337.631
VER (160)	11204	11209	20240508151337.631	20240508151337.631
VER (160)	11209	11214	20240508151337.631	20240508151337.631
VER (160)	11214	11219	20240508151337.631	20240508151337.631
VER (160)	11219	11224	20240508151337.631	20240508151337.631
VER (160)	11224	11229	20240508151337.631	20240508151337.631

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	11229	11234	20240508151337.631	20240508151337.631
VER (160)	11234	11165	20240508151337.631	20240508151337.631
VER (160)	11165	11170	20240508151337.631	20240508151337.631
VER (160)	11170	11175	20240508151337.631	20240508151337.631
VER (160)	11175	11180	20240508151337.631	20240508151337.631
VER (160)	11180	11185	20240508151337.631	20240508151337.631
VER (160)	11185	11190	20240508151337.631	20240508151337.631
VER (160)	11190	11195	20240508151337.631	20240508151337.631
VER (160)	11195	11200	20240508151337.631	20240508151337.631
VER (160)	11200	11205	20240508151337.631	20240508151337.631
VER (160)	11205	11210	20240508151337.631	20240508151337.631
VER (160)	11210	11215	20240508151337.631	20240508151337.631
VER (160)	11215	11220	20240508151337.631	20240508151337.631
VER (160)	11220	11225	20240508151337.631	20240508151337.631
VER (160)	11225	11230	20240508151337.631	20240508151337.631
VER (160)	11230	11235	20240508151337.631	20240508151337.631
VER (160)	11235	11166	20240508151337.631	20240508151337.631
VER (160)	11166	11171	20240508151337.631	20240508151337.631
VER (160)	11171	11176	20240508151337.631	20240508151337.631
VER (160)	11176	11181	20240508151337.631	20240508151337.631
VER (160)	11181	11186	20240508151337.631	20240508151337.631
VER (160)	11186	11191	20240508151337.631	20240508151337.631
VER (160)	11191	11196	20240508151337.631	20240508151337.631
VER (160)	11196	11201	20240508151337.631	20240508151337.631
VER (160)	11201	11206	20240508151337.631	20240508151337.631
VER (160)	11206	11211	20240508151337.631	20240508151337.631
VER (160)	11211	11216	20240508151337.631	20240508151337.631
VER (160)	11216	11221	20240508151337.631	20240508151337.631
VER (160)	11221	11226	20240508151337.631	20240508151337.631
VER (160)	11226	11231	20240508151337.631	20240508151337.631
VER (160)	11231	11236	20240508151337.631	20240508151337.631
VER (160)	11236	11167	20240508151337.631	20240508151337.631
VER (160)	11167	11172	20240508151337.631	20240508151337.631
VER (160)	11172	11177	20240508151337.631	20240508151337.631
VER (160)	11177	11182	20240508151337.631	20240508151337.631
VER (160)	11182	11187	20240508151337.631	20240508151337.631
VER (160)	11187	11192	20240508151337.631	20240508151337.631
VER (160)	11192	11197	20240508151337.631	20240508151337.631
VER (160)	11197	11202	20240508151337.631	20240508151337.631
VER (160)	11202	11207	20240508151337.631	20240508151337.631
VER (160)	11207	11212	20240508151337.631	20240508151337.631
VER (160)	11212	11217	20240508151337.631	20240508151337.631
VER (160)	11217	11222	20240508151337.631	20240508151337.631
VER (160)	11222	11227	20240508151337.631	20240508151337.631
VER (160)	11227	11232	20240508151337.631	20240508151337.631
VER (160)	11232	11237	20240508151337.631	20240508151337.631
VER (160)	11237	11168	20240508151337.631	20240508151337.631
VER (160)	11168	11173	20240508151337.631	20240508151337.631
VER (160)	11173	11178	20240508151337.631	20240508151337.631
VER (160)	11178	11183	20240508151337.631	20240508151337.631
VER (160)	11183	11188	20240508151337.631	20240508151337.631
VER (160)	11188	11193	20240508151337.631	20240508151337.631
VER (160)	11193	11198	20240508151337.631	20240508151337.631

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APID	Seq from	Seq to	Time from	Time to
VER (160)	11198	11203	20240508151337.631	20240508151337.631
VER (160)	11203	11208	20240508151337.631	20240508151337.631
VER (160)	11208	11213	20240508151337.631	20240508151337.631
VER (160)	11213	11218	20240508151337.631	20240508151337.631
VER (160)	11218	11223	20240508151337.631	20240508151337.631
VER (160)	11223	11228	20240508151337.631	20240508151337.631
VER (160)	11228	11233	20240508151337.631	20240508151337.631
VER (160)	11233	11238	20240508151337.631	20240508151337.631
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
08/05/2024 00:00:03	-	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	477	-
GQisFlagQual set (PX1)	99.65 %	-
GQisFlagQual set (PX2)	99.73 %	-
GQisFlagQual set (PX3)	99.71 %	-
GQisFlagQual set (PX4)	99.66 %	-
GQisFlagQual set (all)	99.69 %	-

Table 4: Quality flags

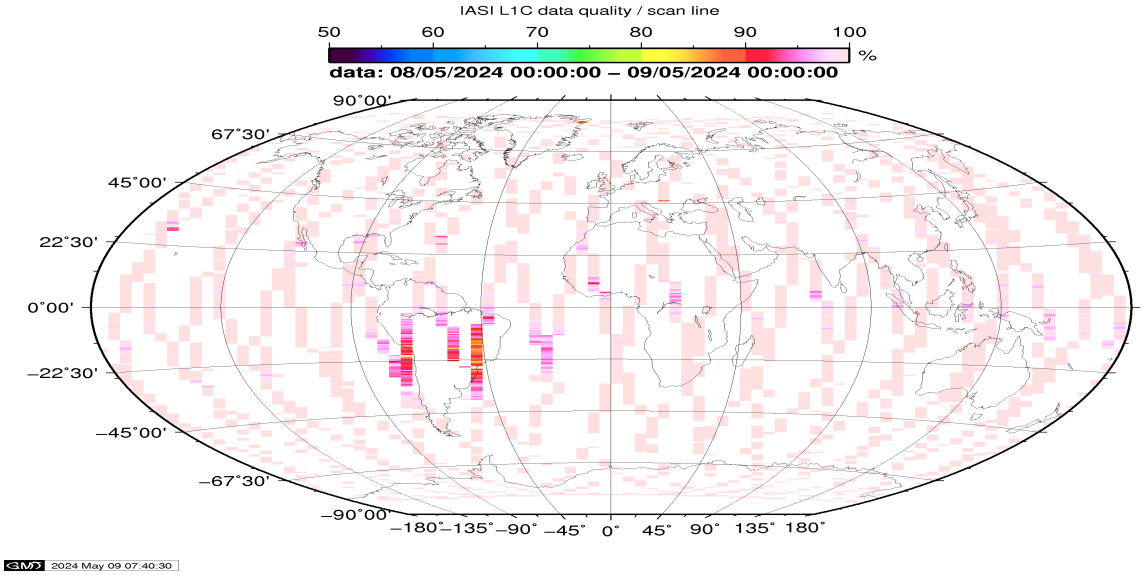

Figure 1: L1C data quality

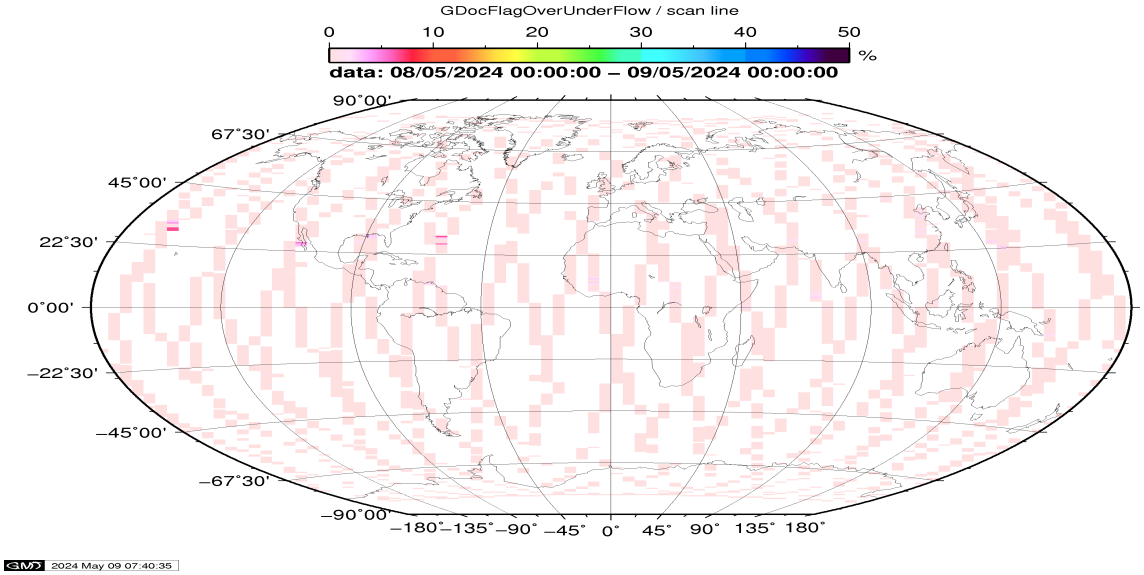

Figure 2: Flag of Over and Under Flows

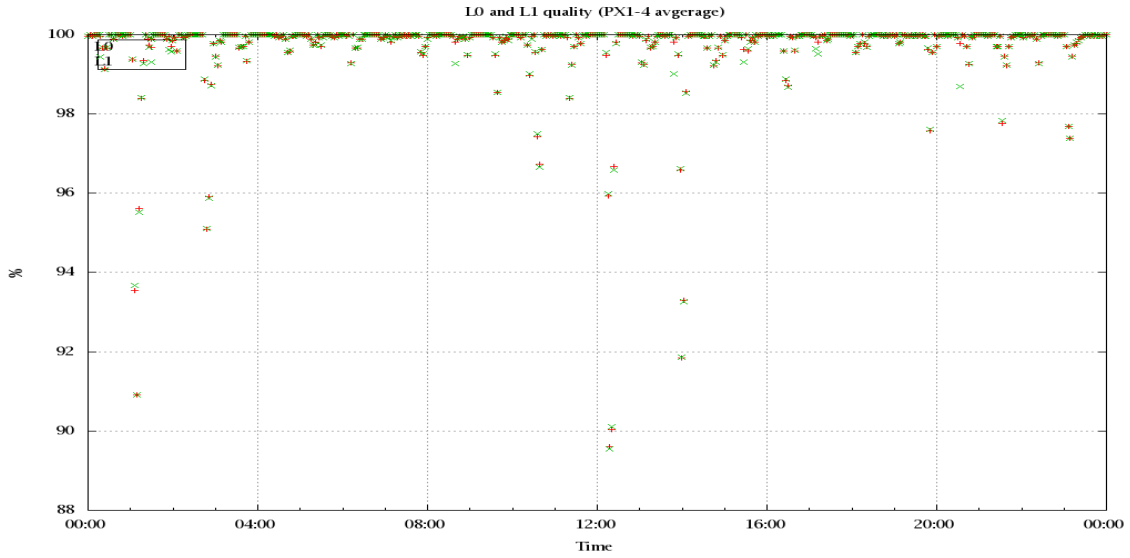

Figure 3: Level 0 and 1C overall quality

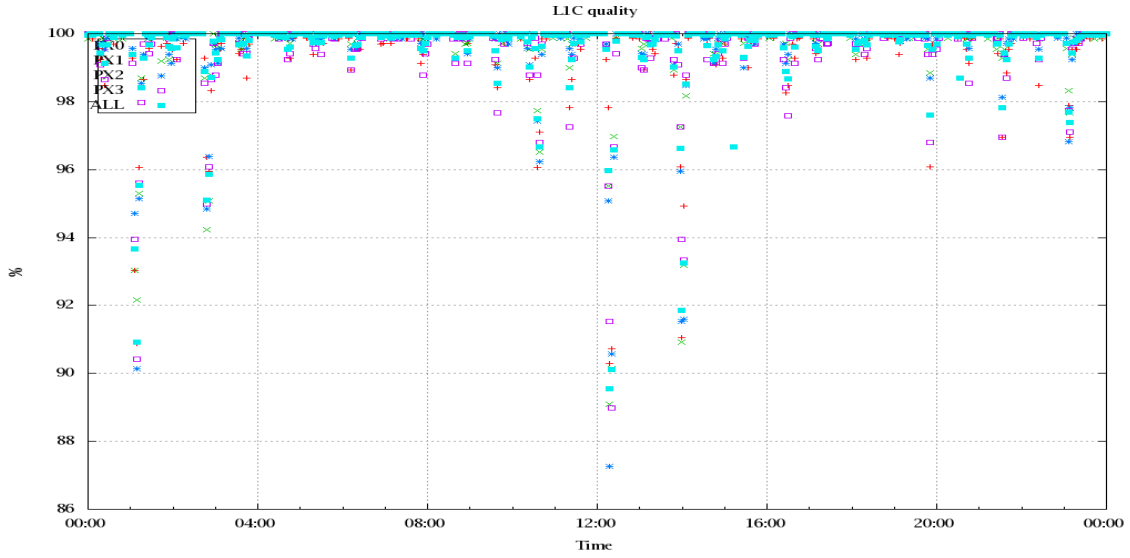

Figure 4: Level 1C quality

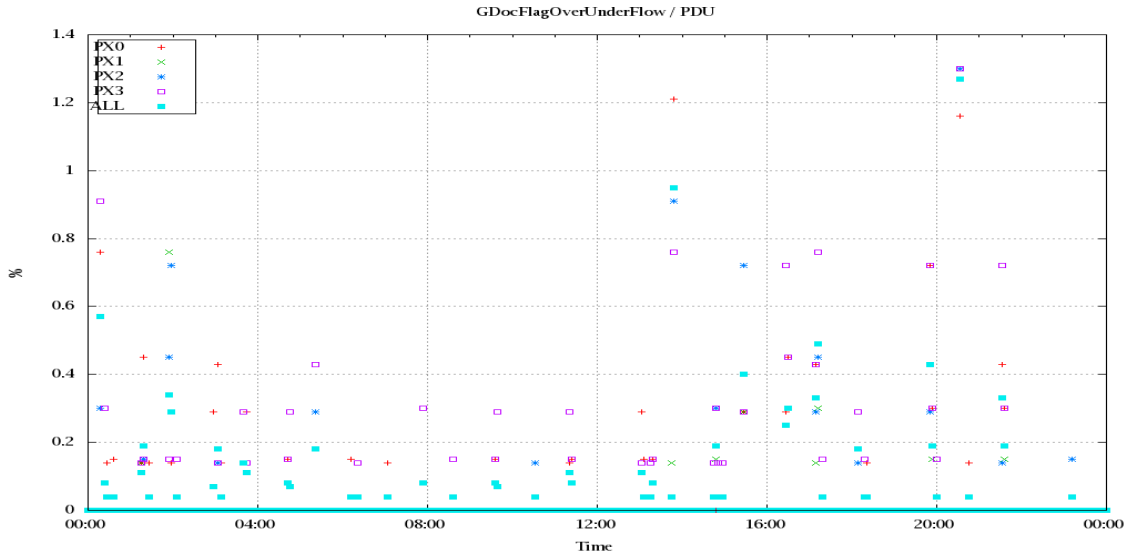

Figure 5: Timeseries of flag of Over and Under Flows

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.

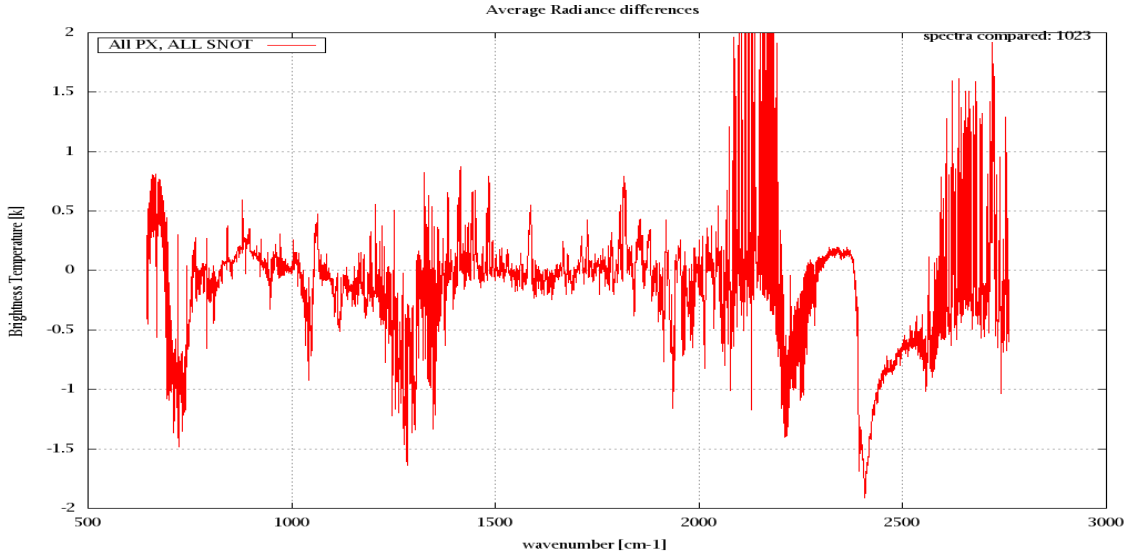

Figure 6: Average Radiance differences: OBS-CAL

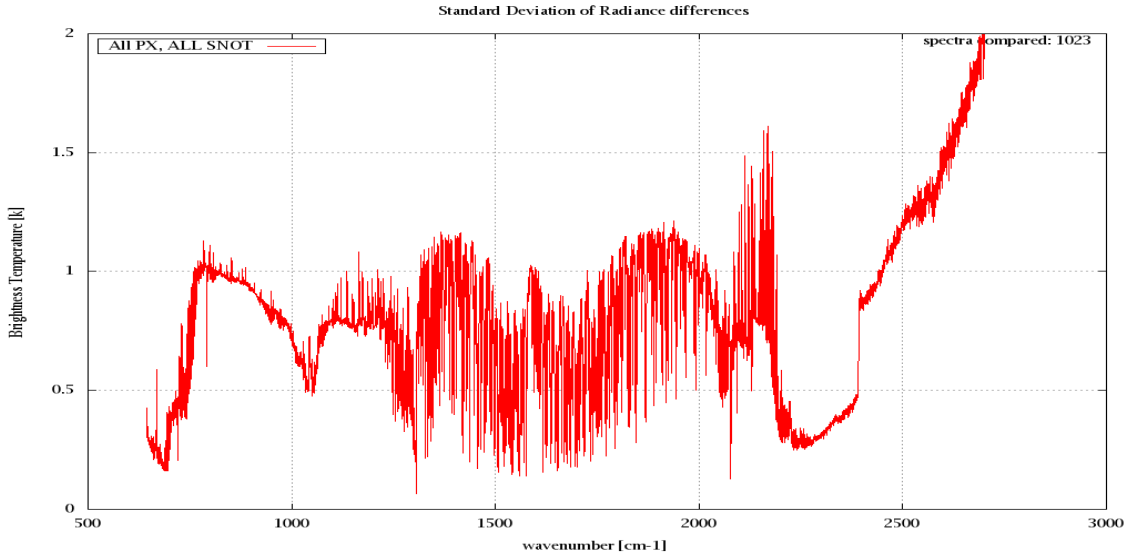

Figure 7: Standard Deviation of Radiance differences

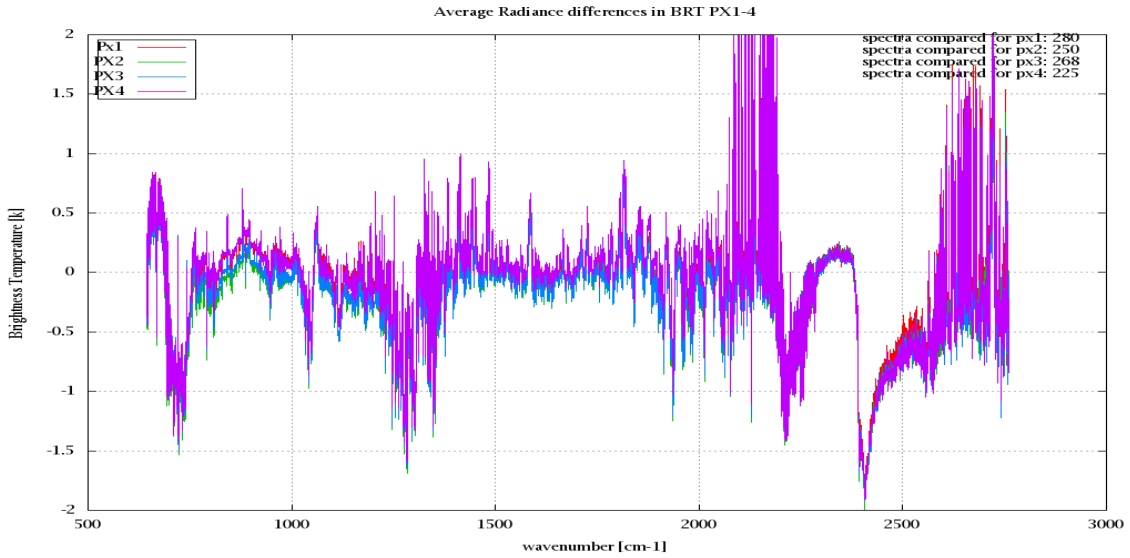

Figure 8: Average Radiance differences: OBS-CAL

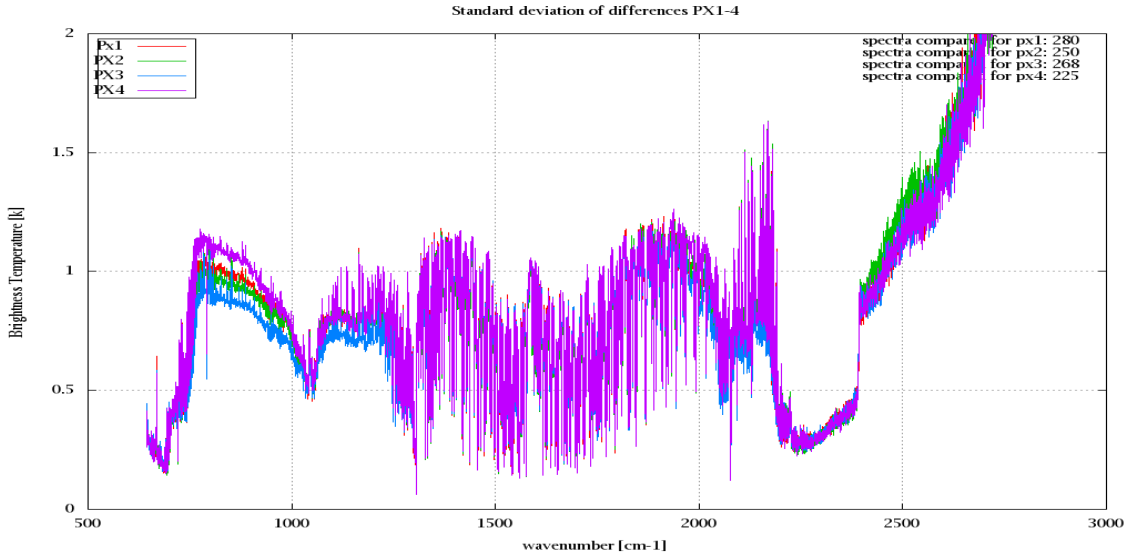

Figure 9: Standard Deviation of Radiance differences

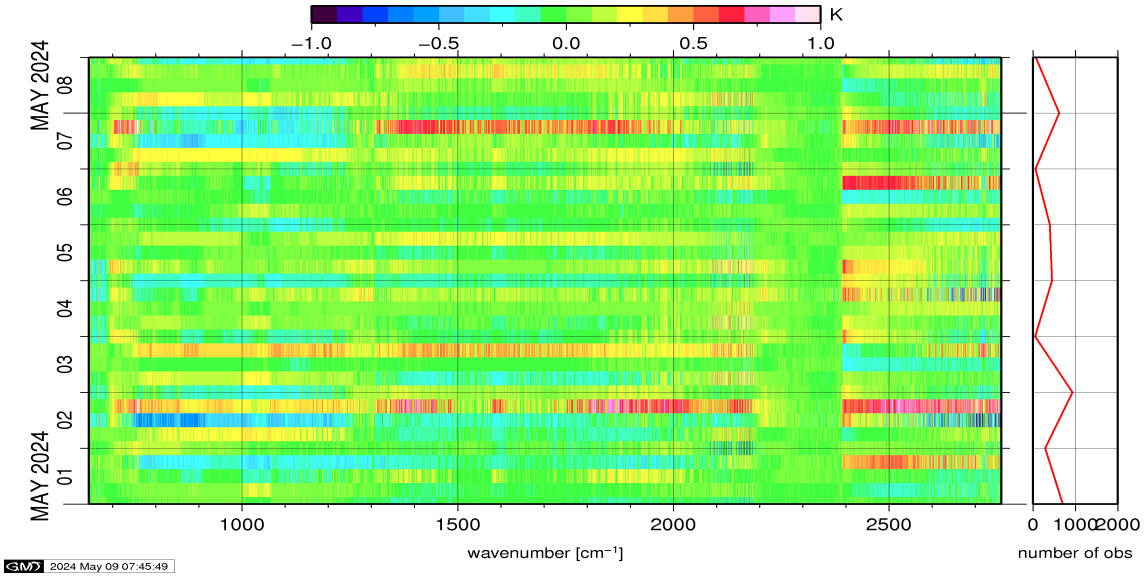

Figure 10: Radiance Anomaly in BT: All Channels

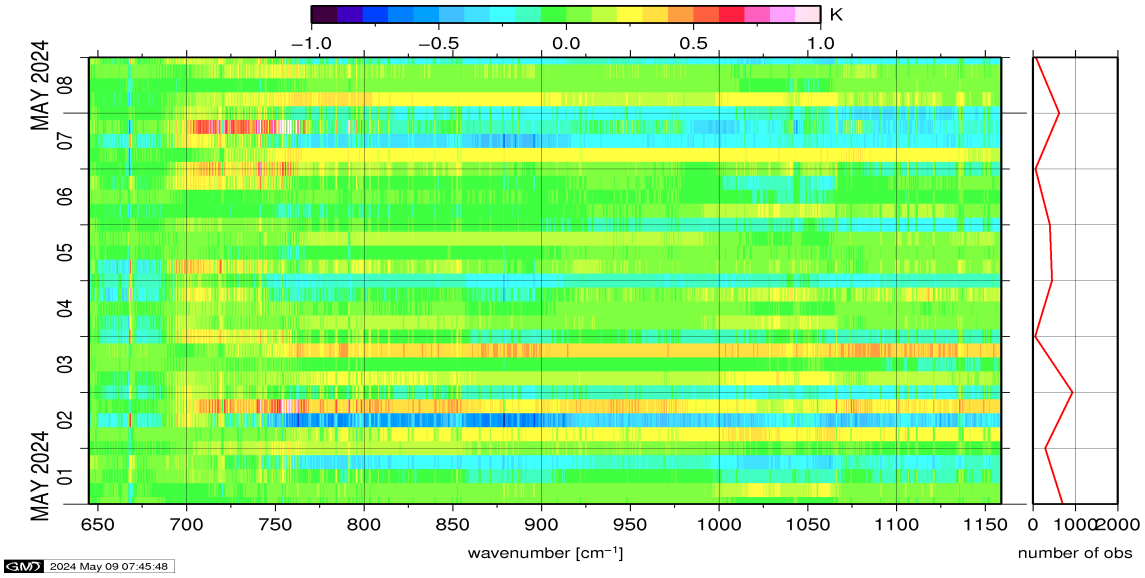

Figure 11: Radiance Anomaly in BT: IASI Band 1

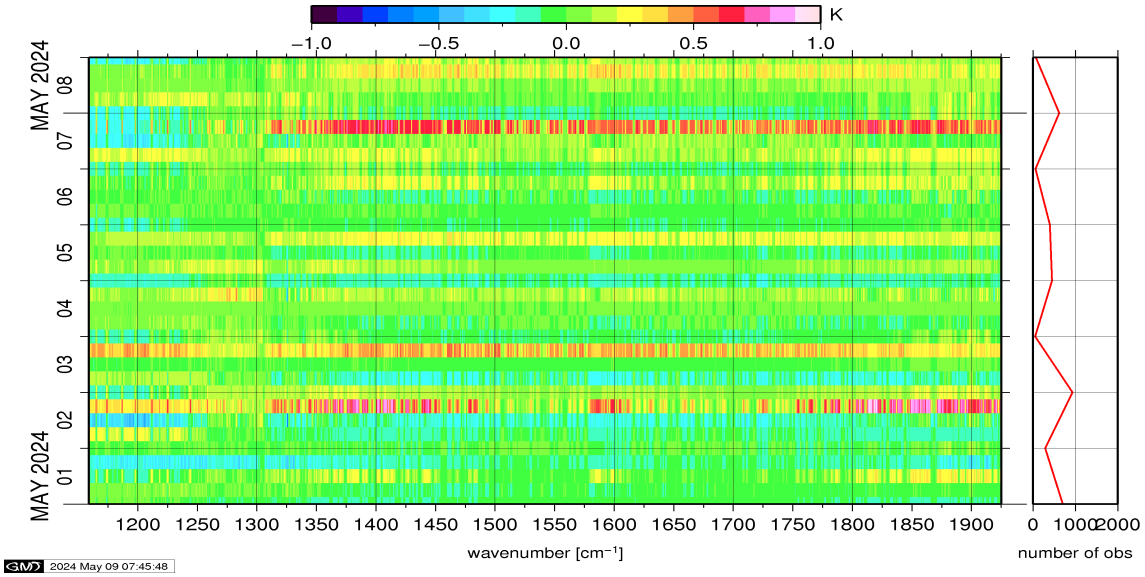

Figure 12: Radiance Anomaly in BT: IASI Band 2

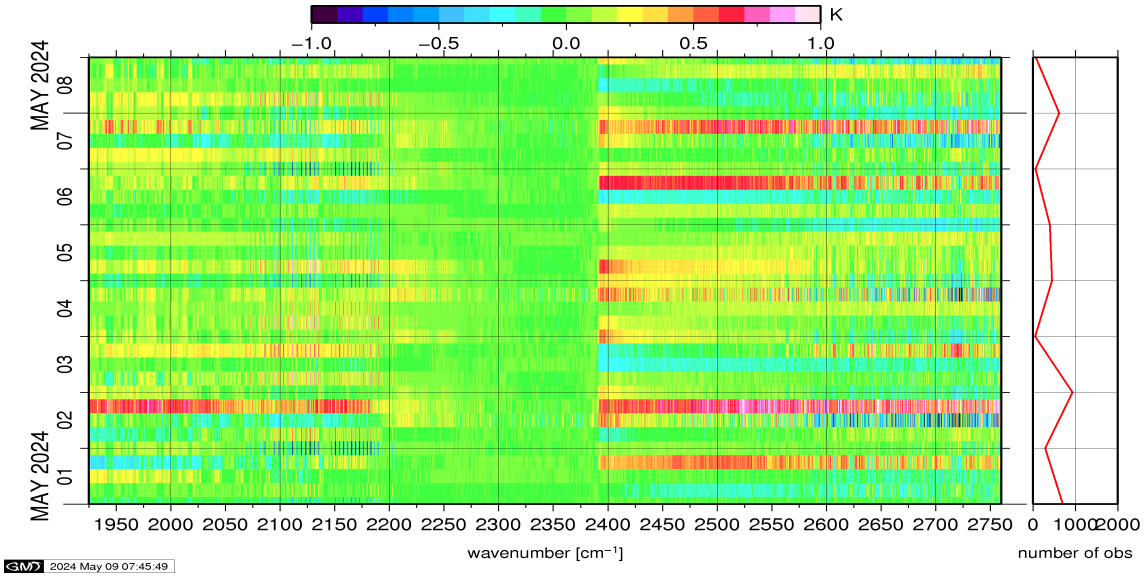

Figure 13: Radiance Anomaly in BT: IASI Band 3

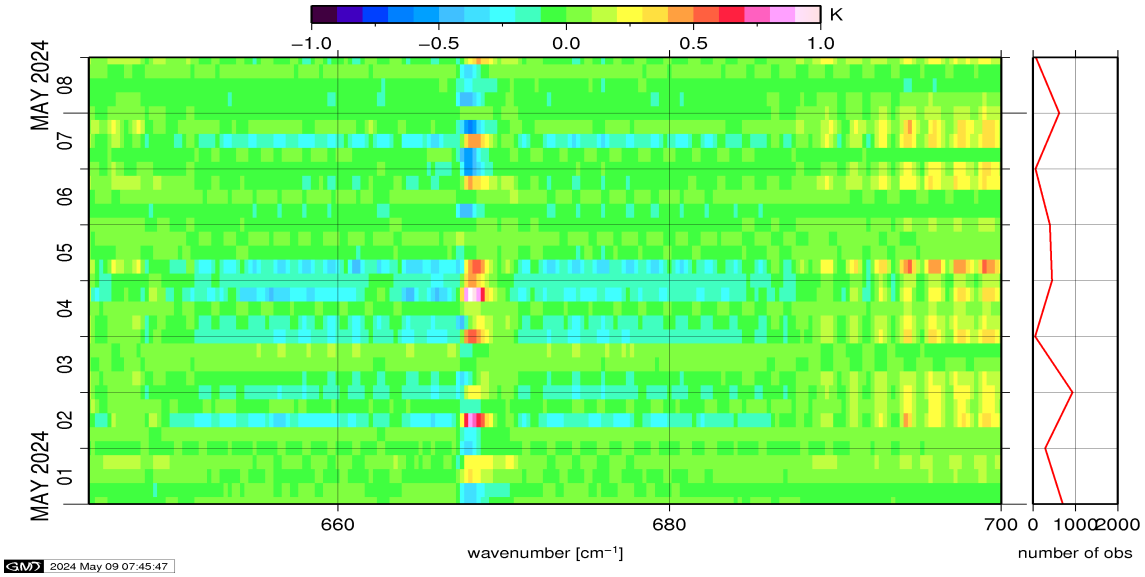

Figure 14: Radiance Anomaly in BT: CO2 14

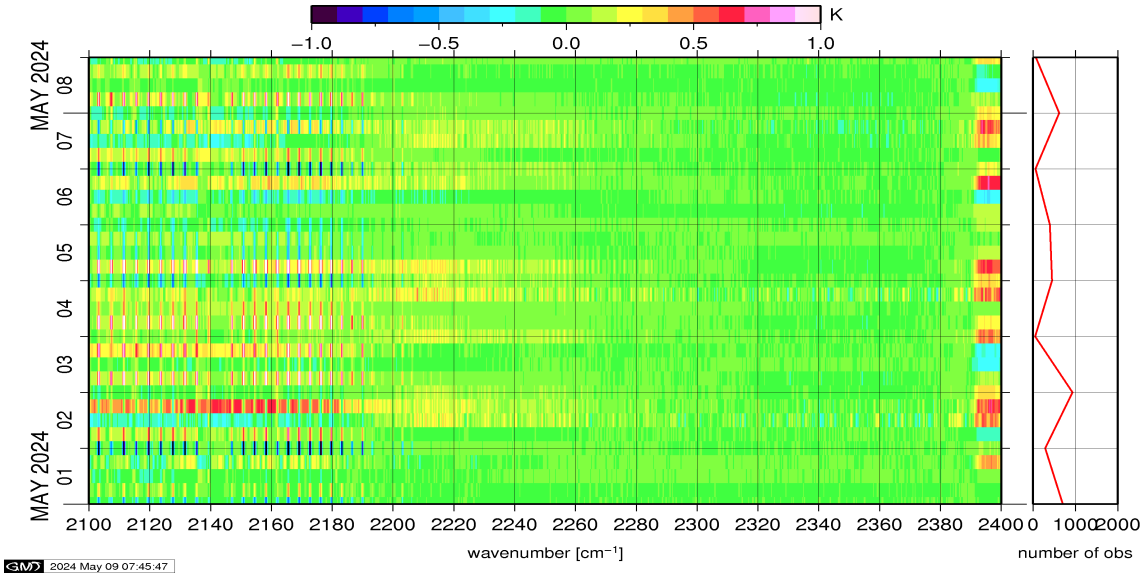

Figure 15: Radiance Anomaly in BT: CO2 4.3

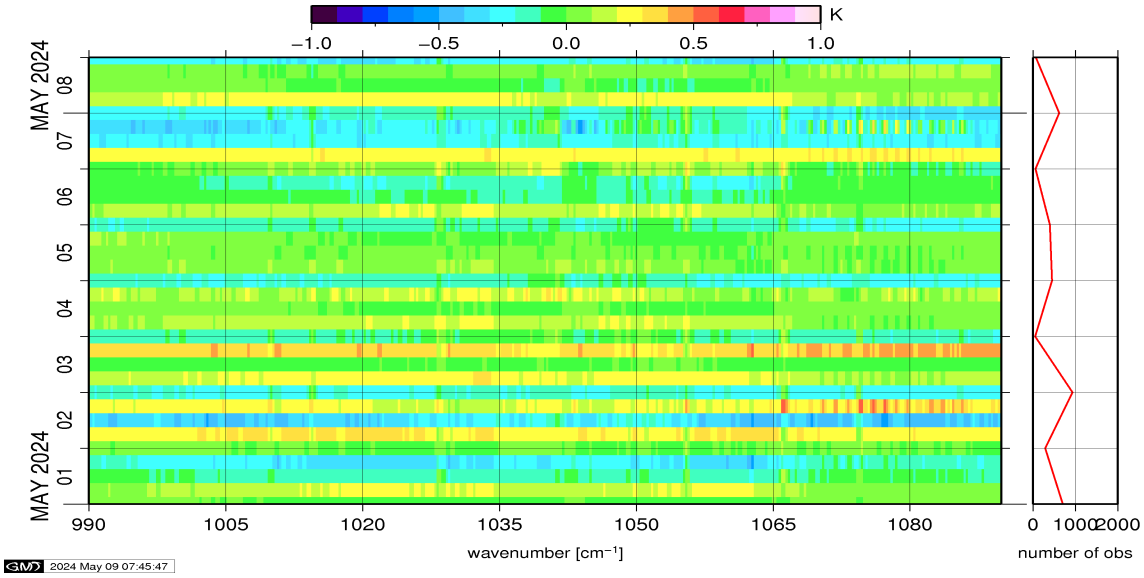

Figure 16: Radiance Anomaly in BT: O3

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.

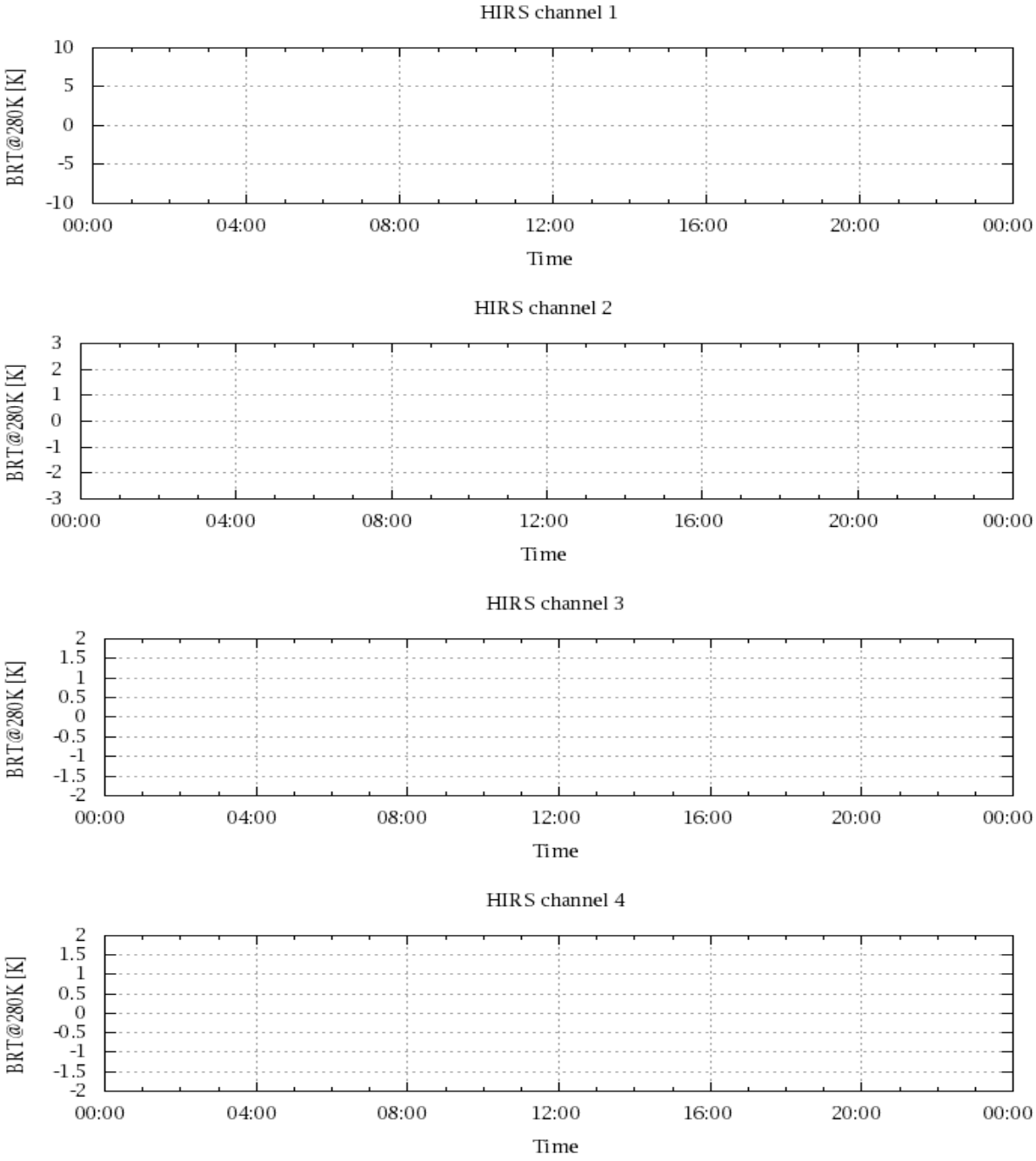

Figure 17: Radiance Differences in BT

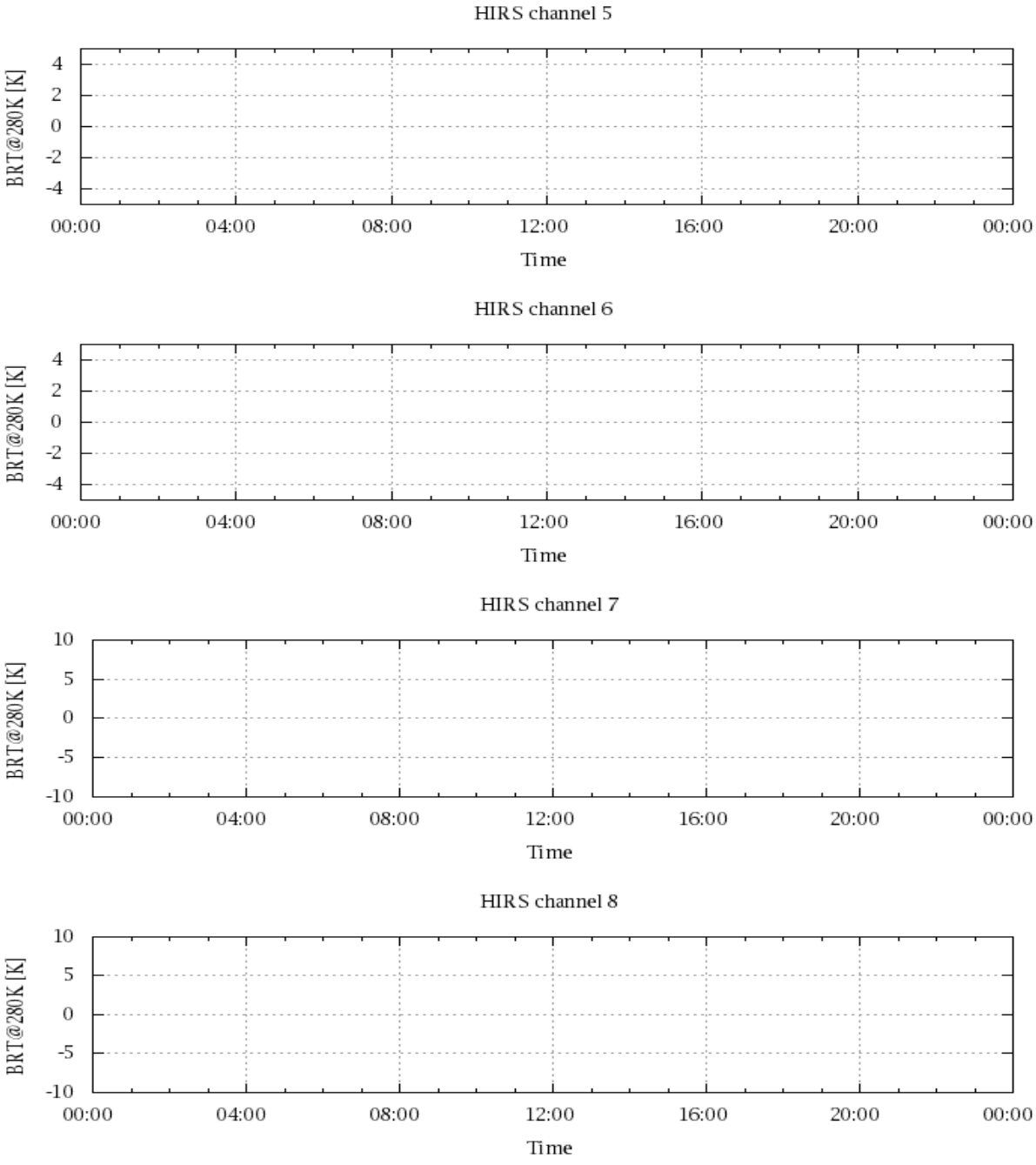

Figure 18: Radiance Differences in BT

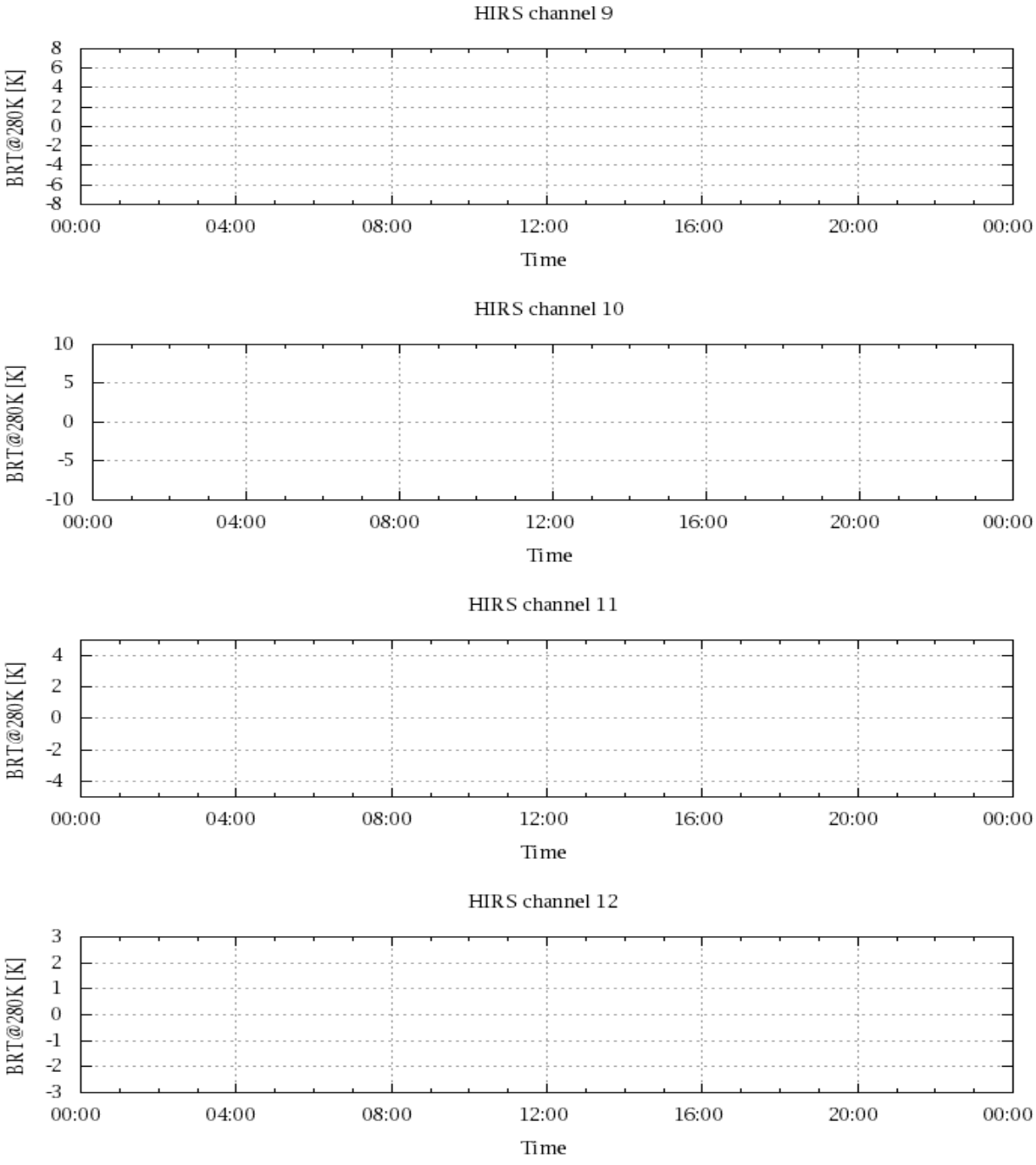

Figure 19: Radiance Differences in BT

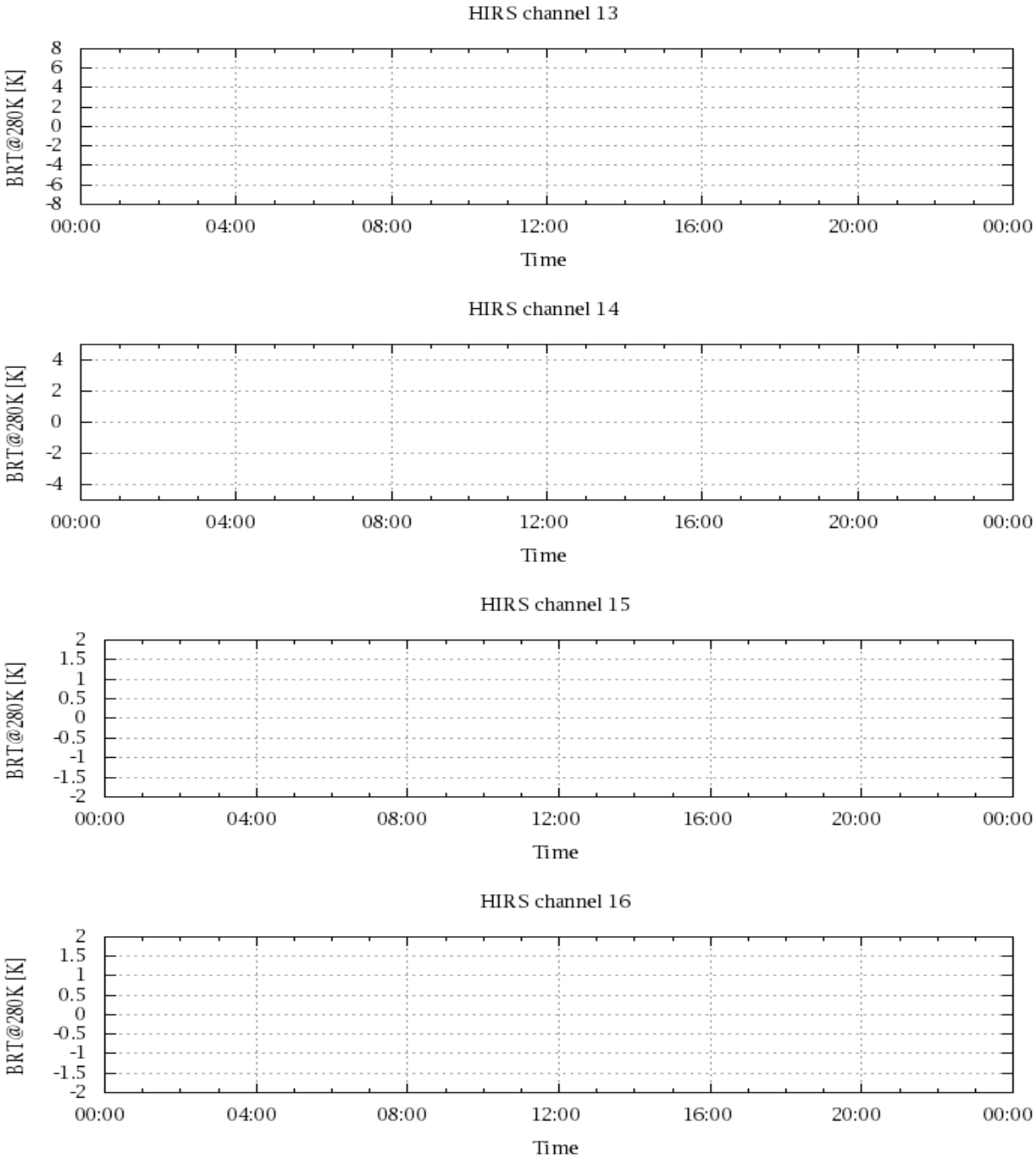

Figure 20: Radiance Differences in BT

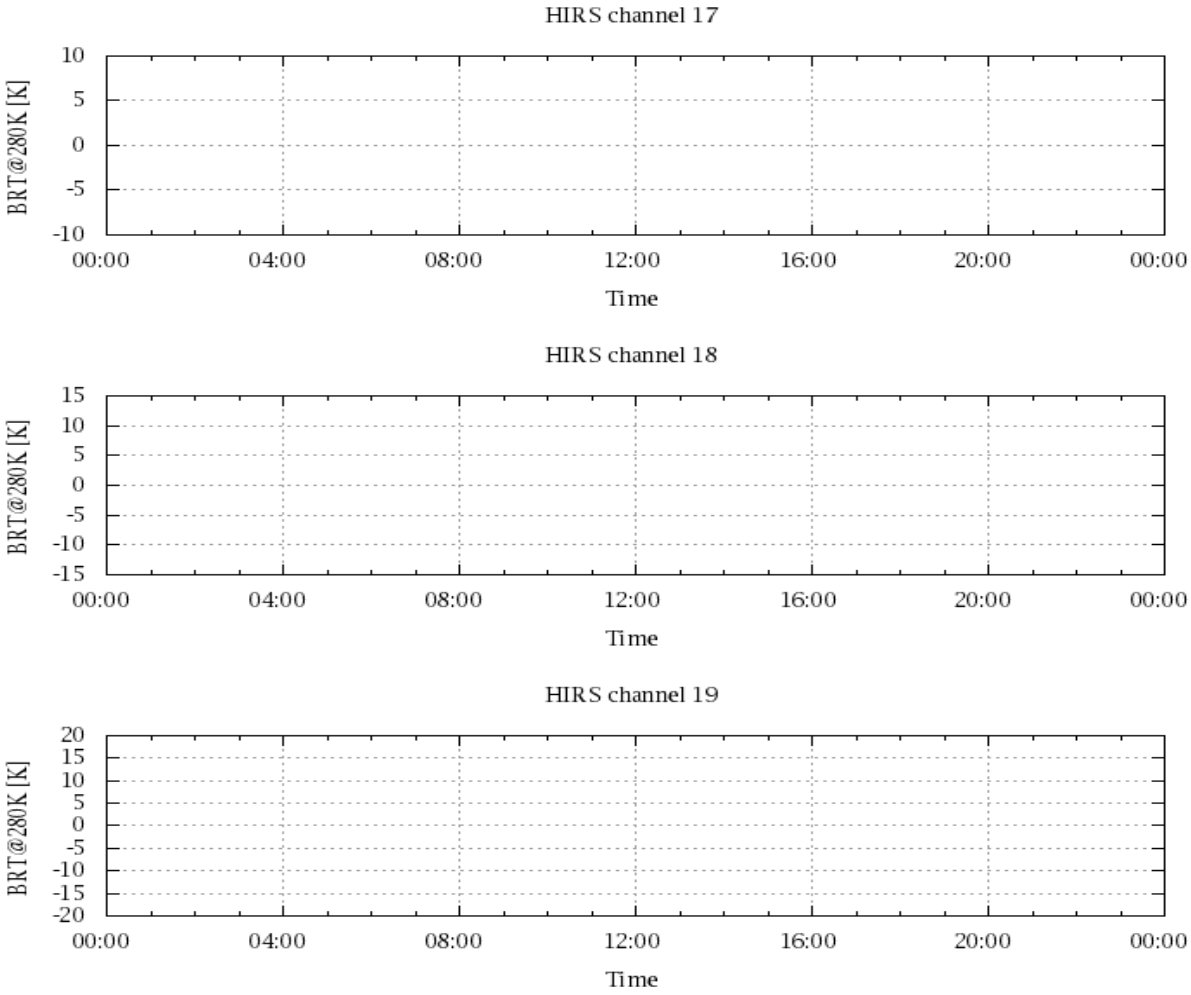

Figure 21: Radinace Differences in BT