

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

IASI monitoring team

08/06/2023 00:00:00 - 09/06/2023 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 08/06/2023 00:00:00 - 09/06/2023 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 08/06/2023 00:00:00 - 09/06/2023 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1789	1838	20230608061133.256	20230608061145.365
PX1 (130)	1840	1909	20230608061145.799	20230608061205.256
PX1 (130)	1912	1988	20230608061205.905	20230608061225.365
PX1 (130)	8667	8683	20230608075455.859	20230608075500.832
PX1 (130)	8686	8762	20230608075501.480	20230608075520.941
PX1 (130)	8765	8833	20230608075521.589	20230608075540.832
PX1 (130)	15004	15024	20230608093554.212	20230608093600.048
PX1 (130)	15025	15095	20230608093600.267	20230608093619.943
PX1 (130)	15098	15174	20230608093620.591	20230608093640.048
PX1 (130)	4957	5051	20230608111654.077	20230608111718.944
PX2 (135)	1789	1837	20230608061133.256	20230608061145.151
PX2 (135)	1840	1909	20230608061145.799	20230608061205.256
PX2 (135)	1912	1987	20230608061205.905	20230608061225.147
PX2 (135)	8667	8683	20230608075455.859	20230608075500.832
PX2 (135)	8686	8762	20230608075501.480	20230608075520.941
PX2 (135)	8764	8833	20230608075521.375	20230608075540.832
PX2 (135)	15004	15023	20230608093554.212	20230608093559.833
PX2 (135)	15025	15095	20230608093600.267	20230608093619.943
PX2 (135)	15098	15173	20230608093620.591	20230608093639.833
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	4957	5051	20230608111654.077	20230608111718.944
PX3 (140)	1789	1837	20230608061133.256	20230608061145.151
PX3 (140)	1840	1909	20230608061145.799	20230608061205.256
PX3 (140)	1912	1987	20230608061205.905	20230608061225.147
PX3 (140)	8667	8683	20230608075455.859	20230608075500.832
PX3 (140)	8686	8762	20230608075501.480	20230608075520.941
PX3 (140)	8764	8833	20230608075521.375	20230608075540.832
PX3 (140)	15004	15023	20230608093554.212	20230608093559.833
PX3 (140)	15025	15095	20230608093600.267	20230608093619.943
PX3 (140)	15098	15173	20230608093620.591	20230608093639.833
PX3 (140)	4957	5050	20230608111654.077	20230608111718.726
PX4 (145)	1789	1837	20230608061133.256	20230608061145.151
PX4 (145)	1840	1909	20230608061145.799	20230608061205.256
PX4 (145)	1911	1987	20230608061205.690	20230608061225.147
PX4 (145)	8666	8683	20230608075455.644	20230608075500.832
PX4 (145)	8686	8761	20230608075501.480	20230608075520.722
PX4 (145)	8764	8833	20230608075521.375	20230608075540.832
PX4 (145)	15004	15023	20230608093554.212	20230608093559.833
PX4 (145)	15025	15095	20230608093600.267	20230608093619.943
PX4 (145)	15097	15173	20230608093620.372	20230608093639.833
PX4 (145)	4957	5050	20230608111654.077	20230608111718.726
IMG (150)	7084	7137	20230608061133.041	20230608061145.151
IMG (150)	7139	7220	20230608061145.584	20230608061205.041
IMG (150)	7223	7307	20230608061205.690	20230608061225.147
IMG (150)	678	699	20230608075455.644	20230608075500.832
IMG (150)	701	785	20230608075501.265	20230608075520.722
IMG (150)	788	869	20230608075521.375	20230608075540.832
IMG (150)	10044	10067	20230608093554.212	20230608093559.833
IMG (150)	10069	10151	20230608093600.267	20230608093619.943
IMG (150)	10153	10237	20230608093620.372	20230608093639.833
IMG (150)	3028	3134	20230608111653.862	20230608111718.726
VER (160)	14818	14823	20230608061225.799	20230608061225.799
VER (160)	14823	14828	20230608061225.799	20230608061225.799
VER (160)	14828	14833	20230608061225.799	20230608061225.799
VER (160)	14833	14838	20230608061225.799	20230608061225.799
VER (160)	14838	14843	20230608061225.799	20230608061225.799
VER (160)	14843	14819	20230608061225.799	20230608061225.799
VER (160)	14819	14824	20230608061225.799	20230608061225.799
VER (160)	14824	14829	20230608061225.799	20230608061225.799
VER (160)	14829	14834	20230608061225.799	20230608061225.799
VER (160)	14834	14839	20230608061225.799	20230608061225.799
VER (160)	14839	14844	20230608061225.799	20230608061225.799
VER (160)	14844	14820	20230608061225.799	20230608061225.799
VER (160)	14820	14825	20230608061225.799	20230608061225.799
VER (160)	14825	14830	20230608061225.799	20230608061225.799
VER (160)	14830	14835	20230608061225.799	20230608061225.799
VER (160)	14835	14840	20230608061225.799	20230608061225.799
VER (160)	14840	14845	20230608061225.799	20230608061225.799
VER (160)	14845	14821	20230608061225.799	20230608061225.799
VER (160)	14821	14826	20230608061225.799	20230608061225.799
VER (160)	14826	14831	20230608061225.799	20230608061225.799
VER (160)	14831	14836	20230608061225.799	20230608061225.799
VER (160)	14836	14841	20230608061225.799	20230608061225.799

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	14841	14846	20230608061225.799	20230608061225.799
VER (160)	14846	14822	20230608061225.799	20230608061225.799
VER (160)	14822	14827	20230608061225.799	20230608061225.799
VER (160)	14827	14832	20230608061225.799	20230608061225.799
VER (160)	14832	14837	20230608061225.799	20230608061225.799
VER (160)	14837	14842	20230608061225.799	20230608061225.799
VER (160)	14842	14847	20230608061225.799	20230608061225.799
VER (160)	2309	2314	20230608075541.695	20230608075541.695
VER (160)	2314	2319	20230608075541.695	20230608075541.695
VER (160)	2319	2324	20230608075541.695	20230608075541.695
VER (160)	2324	2329	20230608075541.695	20230608075541.695
VER (160)	2329	2334	20230608075541.695	20230608075541.695
VER (160)	2334	2310	20230608075541.695	20230608075541.695
VER (160)	2310	2315	20230608075541.695	20230608075541.695
VER (160)	2315	2320	20230608075541.695	20230608075541.695
VER (160)	2320	2325	20230608075541.695	20230608075541.695
VER (160)	2325	2330	20230608075541.695	20230608075541.695
VER (160)	2330	2335	20230608075541.695	20230608075541.695
VER (160)	2335	2311	20230608075541.695	20230608075541.695
VER (160)	2311	2316	20230608075541.695	20230608075541.695
VER (160)	2316	2321	20230608075541.695	20230608075541.695
VER (160)	2321	2326	20230608075541.695	20230608075541.695
VER (160)	2326	2331	20230608075541.695	20230608075541.695
VER (160)	2331	2336	20230608075541.695	20230608075541.695
VER (160)	2336	2312	20230608075541.695	20230608075541.695
VER (160)	2312	2317	20230608075541.695	20230608075541.695
VER (160)	2317	2322	20230608075541.695	20230608075541.695
VER (160)	2322	2327	20230608075541.695	20230608075541.695
VER (160)	2327	2332	20230608075541.695	20230608075541.695
VER (160)	2332	2337	20230608075541.695	20230608075541.695
VER (160)	2337	2313	20230608075541.695	20230608075541.695
VER (160)	2313	2318	20230608075541.695	20230608075541.695
VER (160)	2318	2323	20230608075541.695	20230608075541.695
VER (160)	2323	2328	20230608075541.695	20230608075541.695
VER (160)	2328	2333	20230608075541.695	20230608075541.695
VER (160)	2333	2338	20230608075541.695	20230608075541.695
VER (160)	6094	6099	20230608093640.267	20230608093640.267
VER (160)	6099	6104	20230608093640.267	20230608093640.267
VER (160)	6104	6109	20230608093640.267	20230608093640.267
VER (160)	6109	6114	20230608093640.267	20230608093640.267
VER (160)	6114	6119	20230608093640.267	20230608093640.267
VER (160)	6119	6095	20230608093640.267	20230608093640.267
VER (160)	6095	6100	20230608093640.267	20230608093640.267
VER (160)	6100	6105	20230608093640.267	20230608093640.267
VER (160)	6105	6110	20230608093640.267	20230608093640.267
VER (160)	6110	6115	20230608093640.267	20230608093640.267
VER (160)	6115	6120	20230608093640.267	20230608093640.267
VER (160)	6120	6096	20230608093640.267	20230608093640.267
VER (160)	6096	6101	20230608093640.267	20230608093640.267
VER (160)	6101	6106	20230608093640.267	20230608093640.267
VER (160)	6106	6111	20230608093640.267	20230608093640.267
VER (160)	6111	6116	20230608093640.267	20230608093640.267
VER (160)	6116	6121	20230608093640.267	20230608093640.267
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	6121	6097	20230608093640.267	20230608093640.267
VER (160)	6097	6102	20230608093640.267	20230608093640.267
VER (160)	6102	6107	20230608093640.267	20230608093640.267
VER (160)	6107	6112	20230608093640.267	20230608093640.267
VER (160)	6112	6117	20230608093640.267	20230608093640.267
VER (160)	6117	6122	20230608093640.267	20230608093640.267
VER (160)	6122	6098	20230608093640.267	20230608093640.267
VER (160)	6098	6103	20230608093640.267	20230608093640.267
VER (160)	6103	6108	20230608093640.267	20230608093640.267
VER (160)	6108	6113	20230608093640.267	20230608093640.267
VER (160)	6113	6118	20230608093640.267	20230608093640.267
VER (160)	6118	6123	20230608093640.267	20230608093640.267
VER (160)	9883	9885	20230608111650.187	20230608111654.077
VER (160)	9885	9910	20230608111654.077	20230608111719.593
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
08/06/2023 00:00:15	-	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)	99.48 %	-
GQisFlagQual set (PX2)	99.57 %	-
GQisFlagQual set (PX3)	99.58 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.52 %	-

Table 4: Quality flags

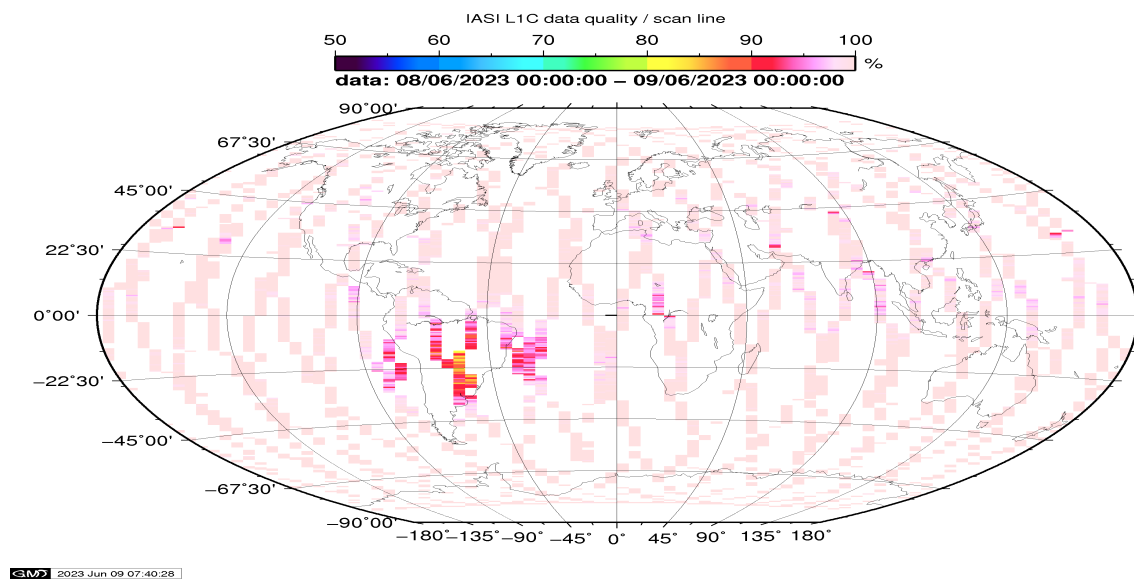


Figure 1: L1C data quality

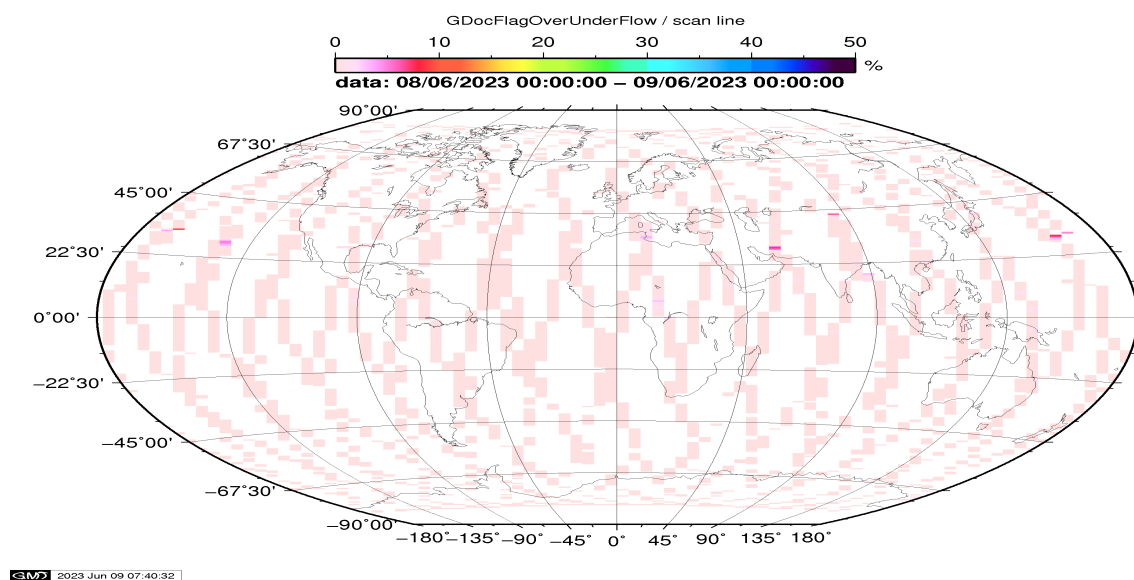


Figure 2: Flag of Over and Under Flows

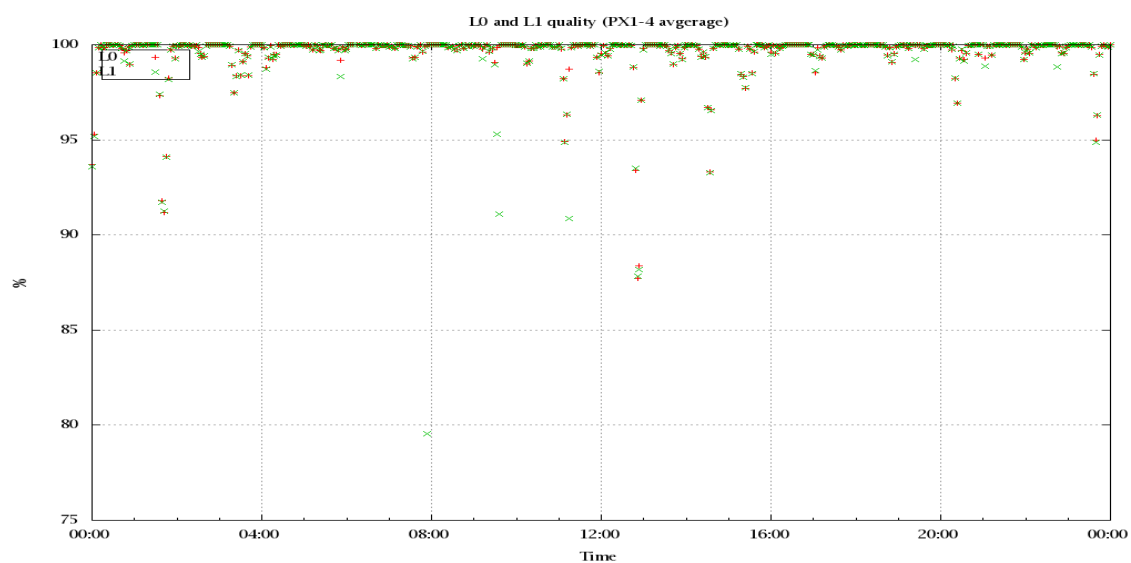


Figure 3: Level 0 and 1C overall quality

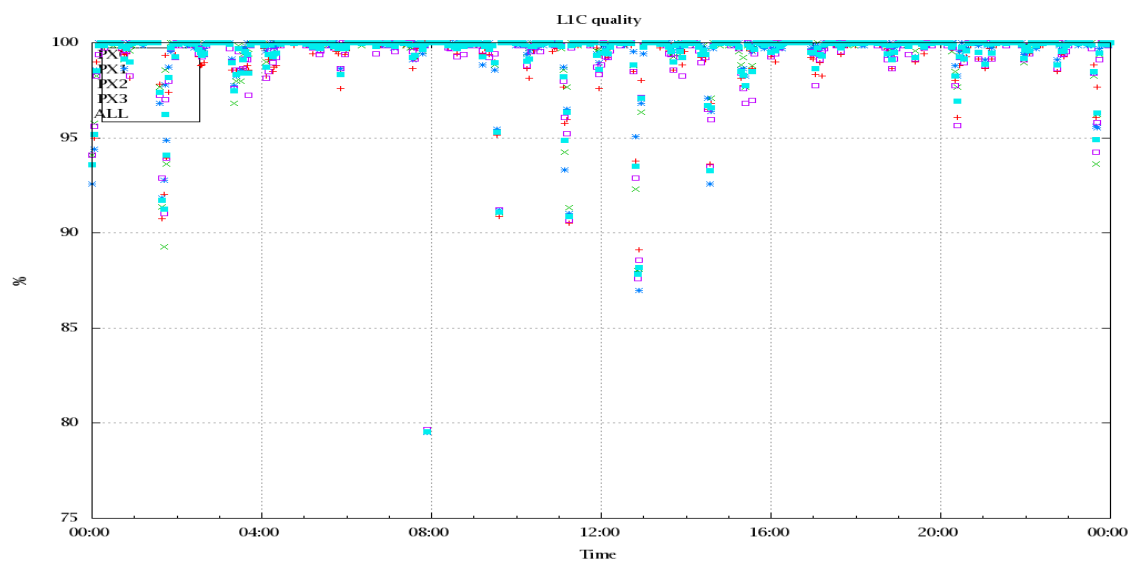


Figure 4: Level 1C quality

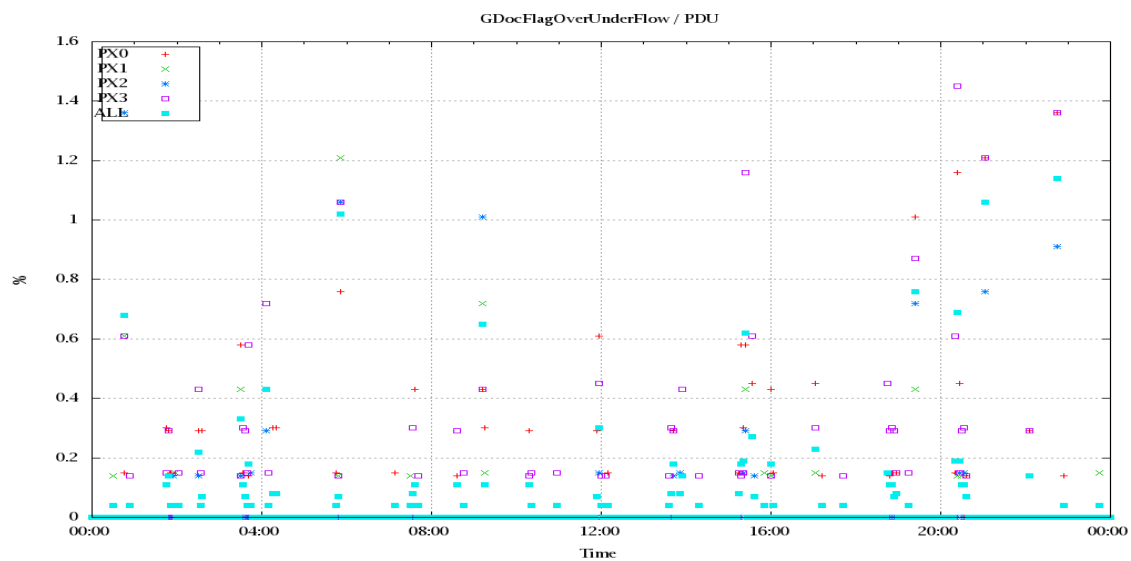


Figure 5: Timeseries of flag of Over and Under Flows

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.

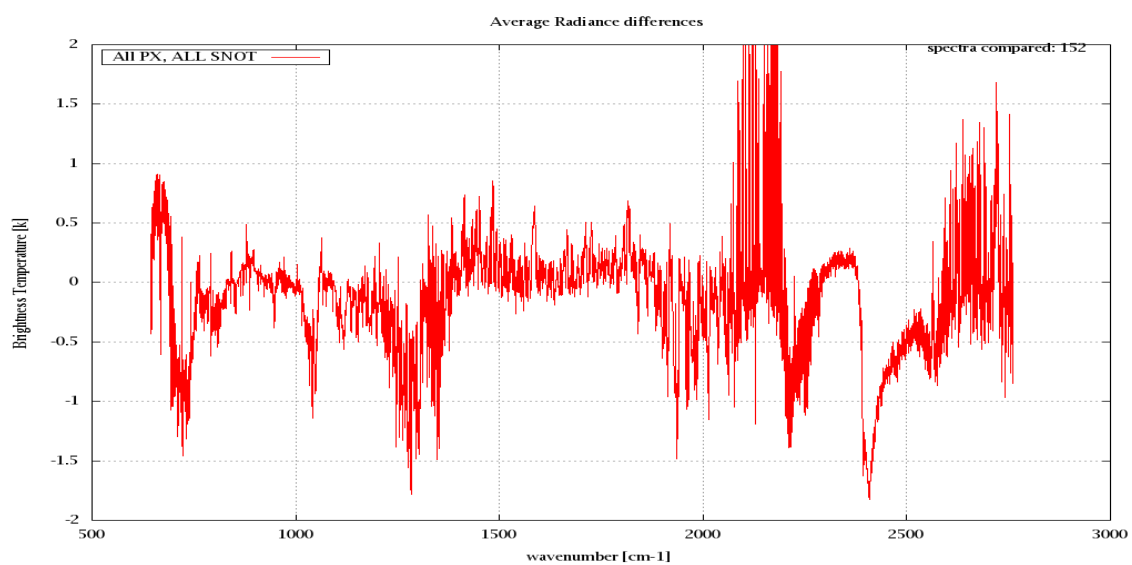


Figure 6: Average Radiance differences: OBS-CAL

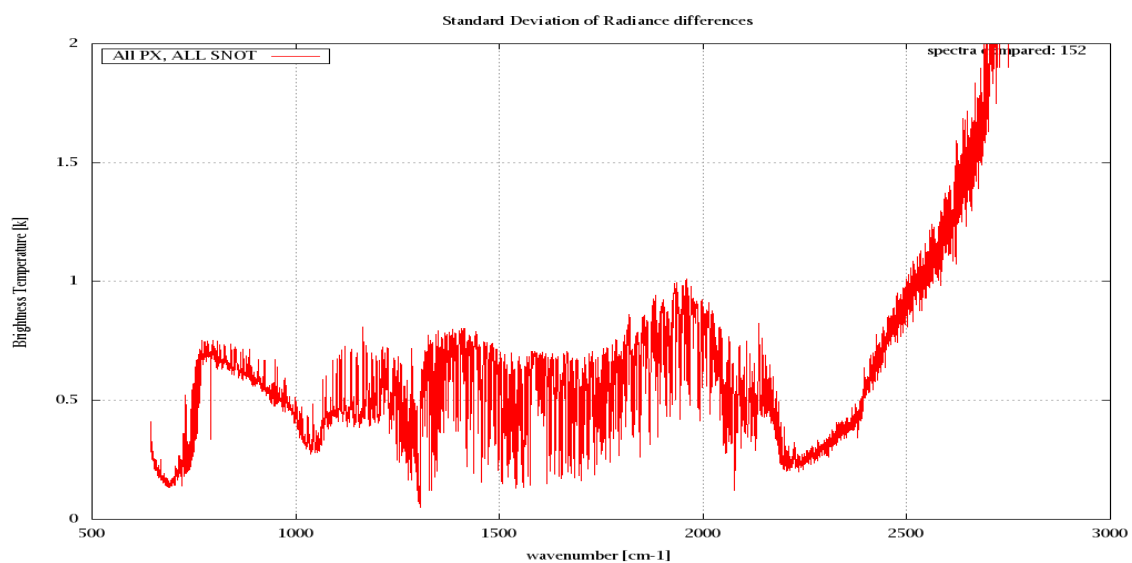


Figure 7: Standard Deviation of Radiance differences

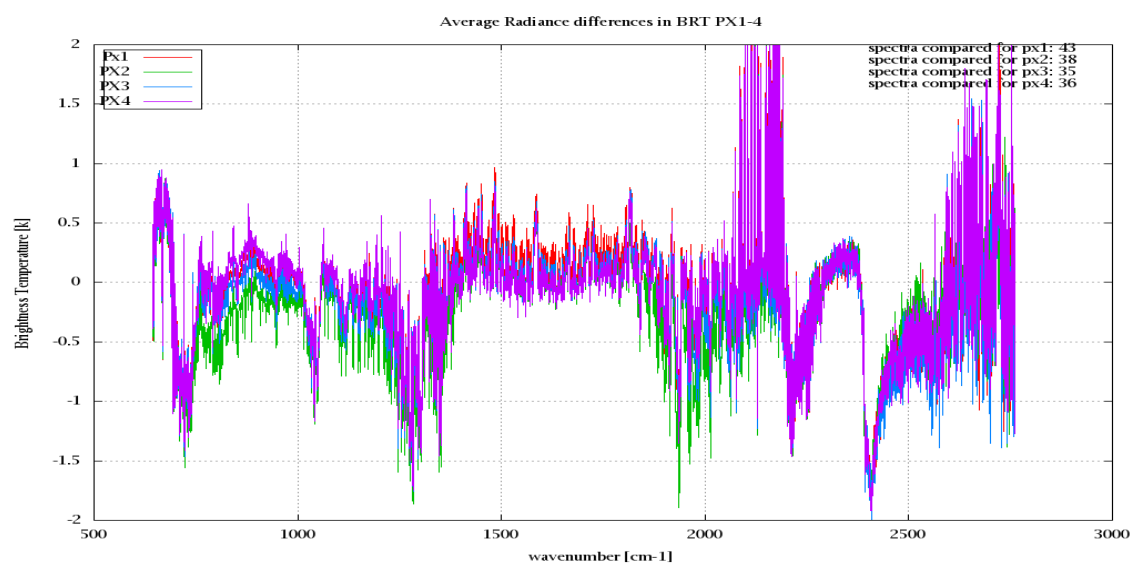


Figure 8: Average Radiance differences: OBS-CAL

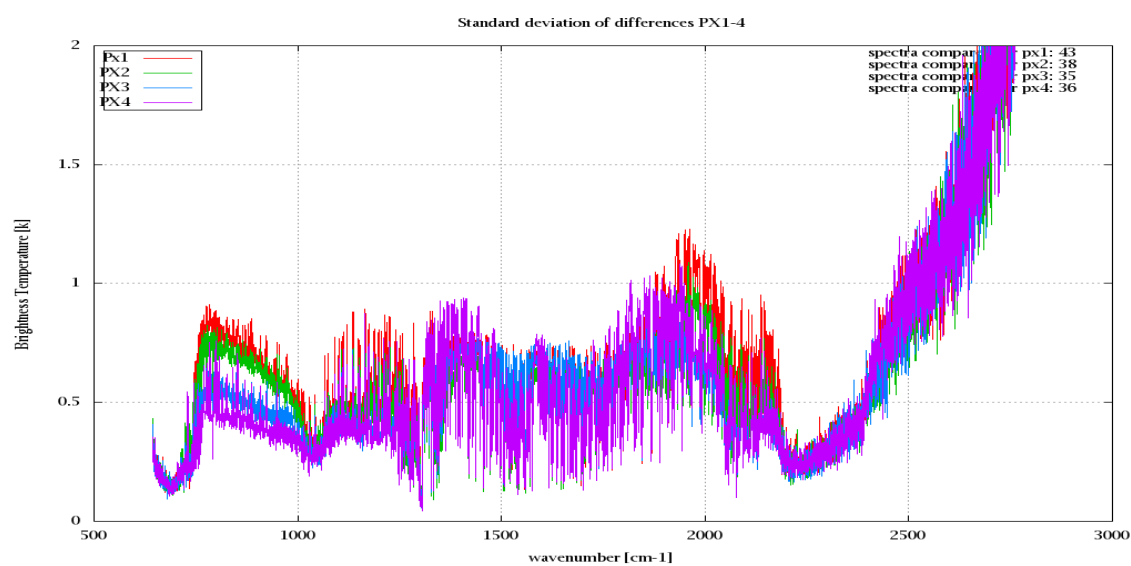


Figure 9: Standard Deviation of Radiance differences

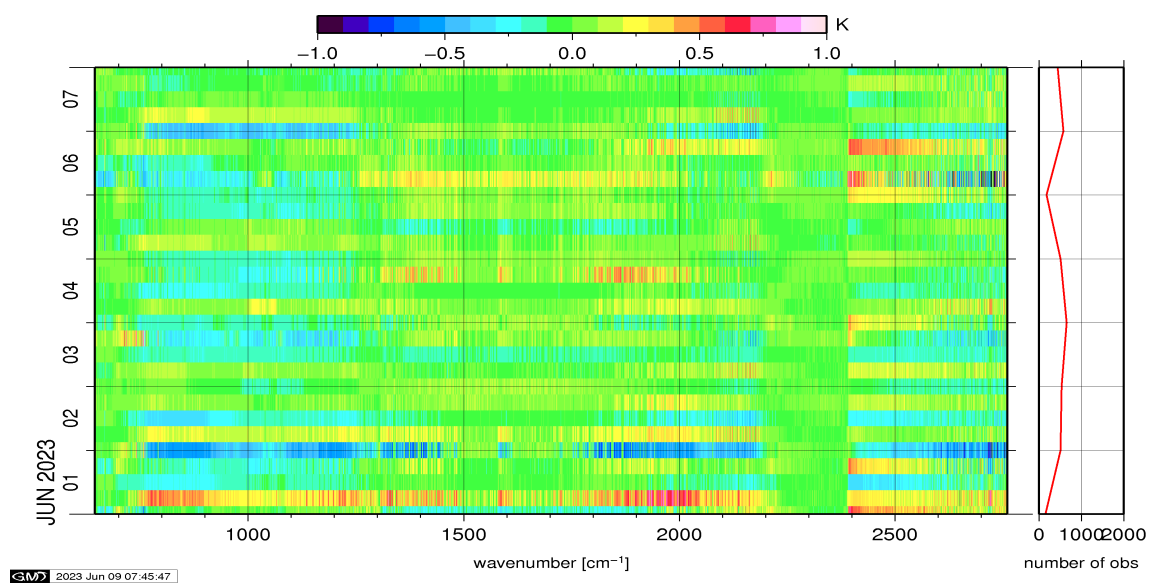


Figure 10: Radiance Anomaly in BT: All Channels

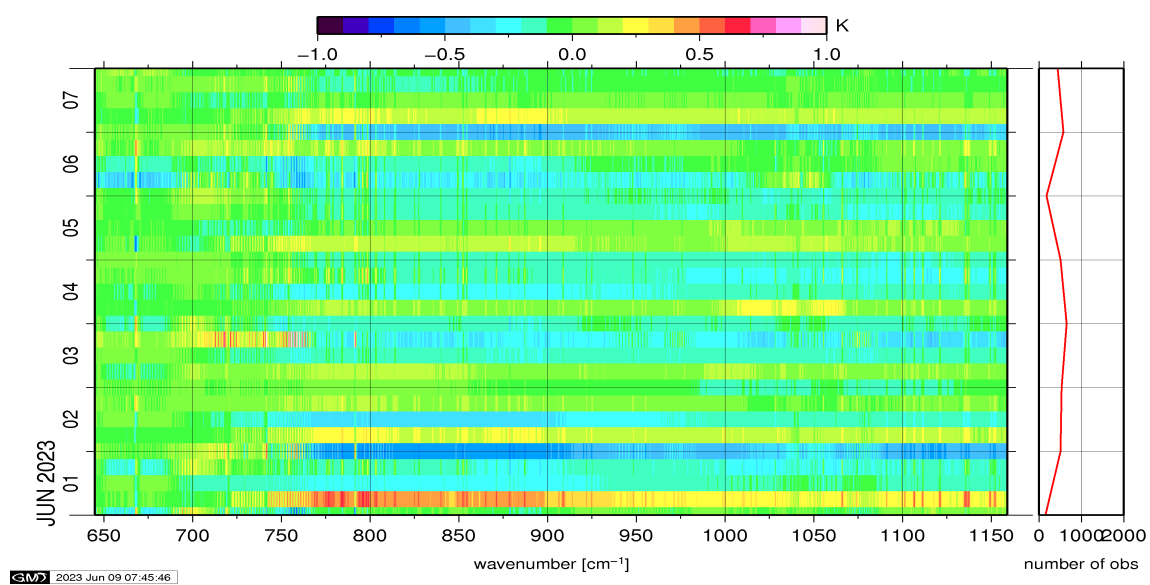


Figure 11: Radiance Anomaly in BT: IASI Band 1

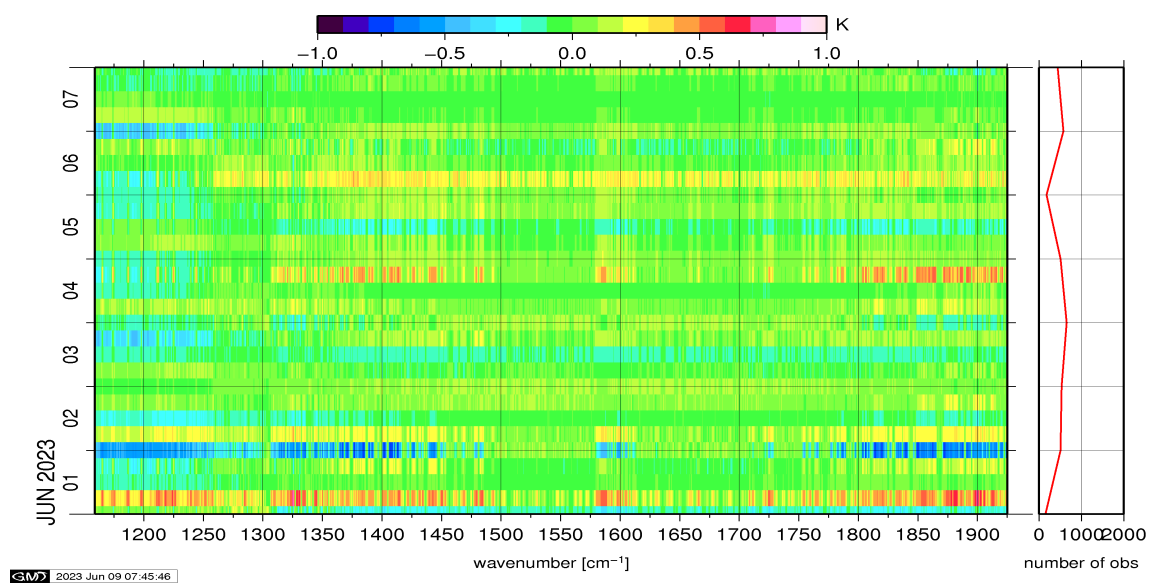


Figure 12: Radiance Anomaly in BT: IASI Band 2

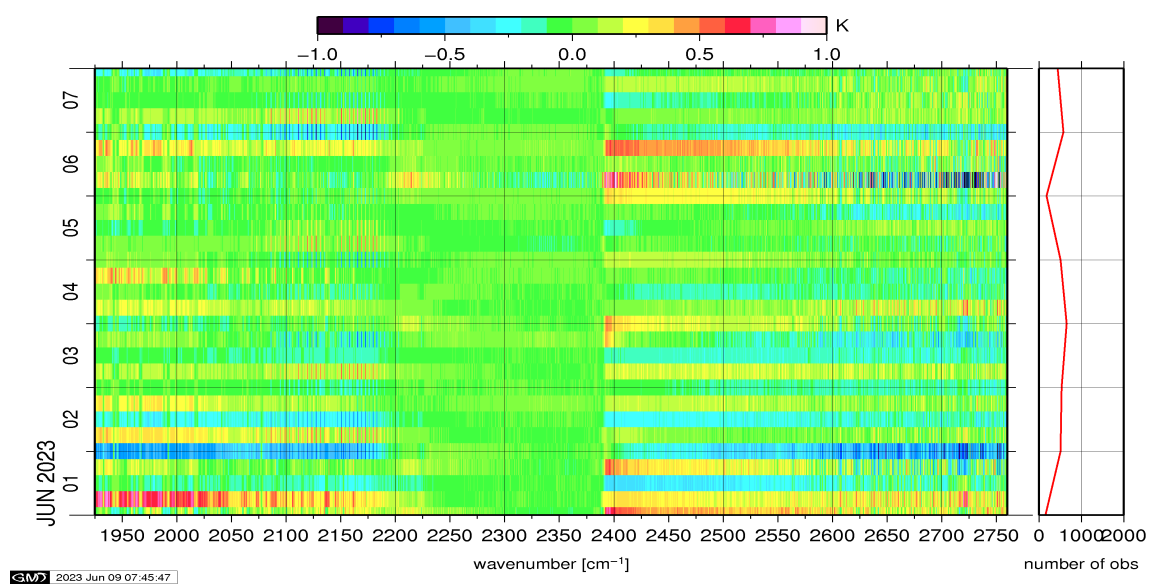


Figure 13: Radiance Anomaly in BT: IASI Band 3

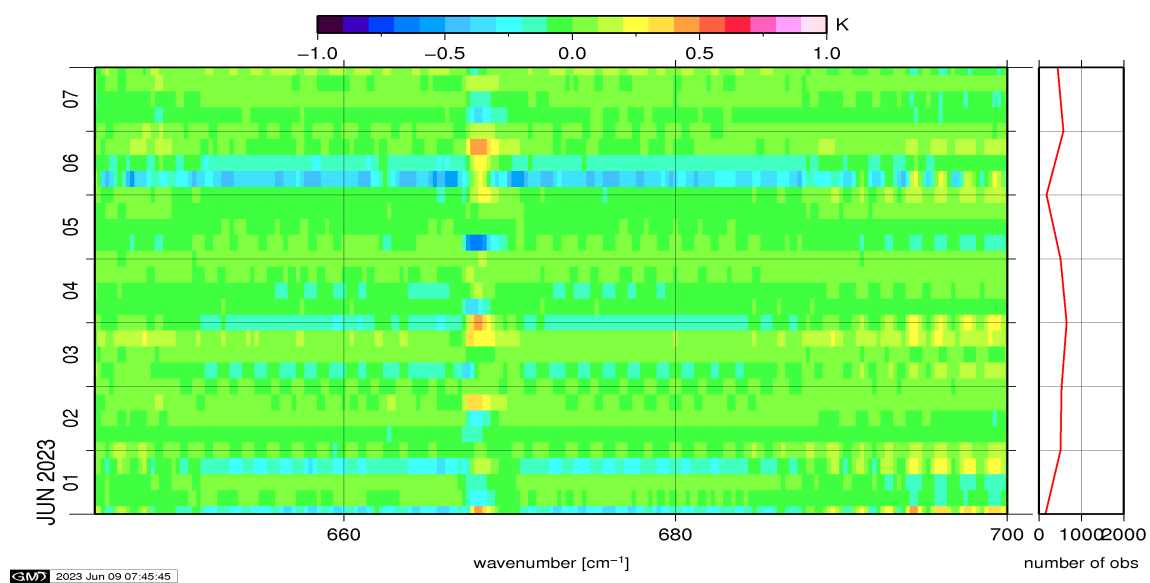


Figure 14: Radiance Anomaly in BT: CO2 14

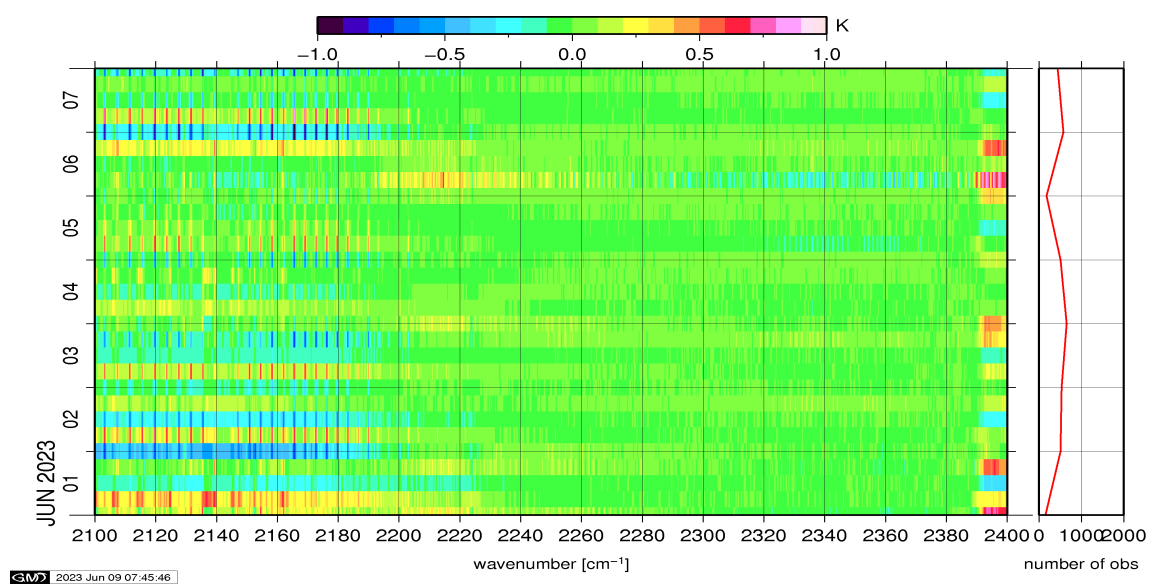


Figure 15: Radiance Anomaly in BT: CO2 4.3

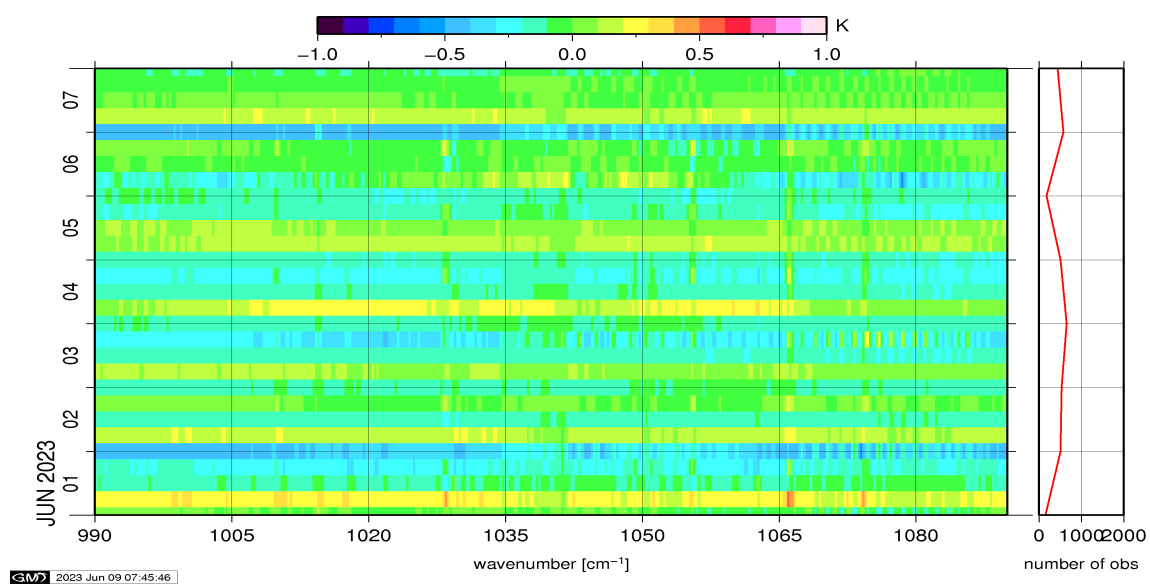


Figure 16: Radiance Anomaly in BT: O3

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.

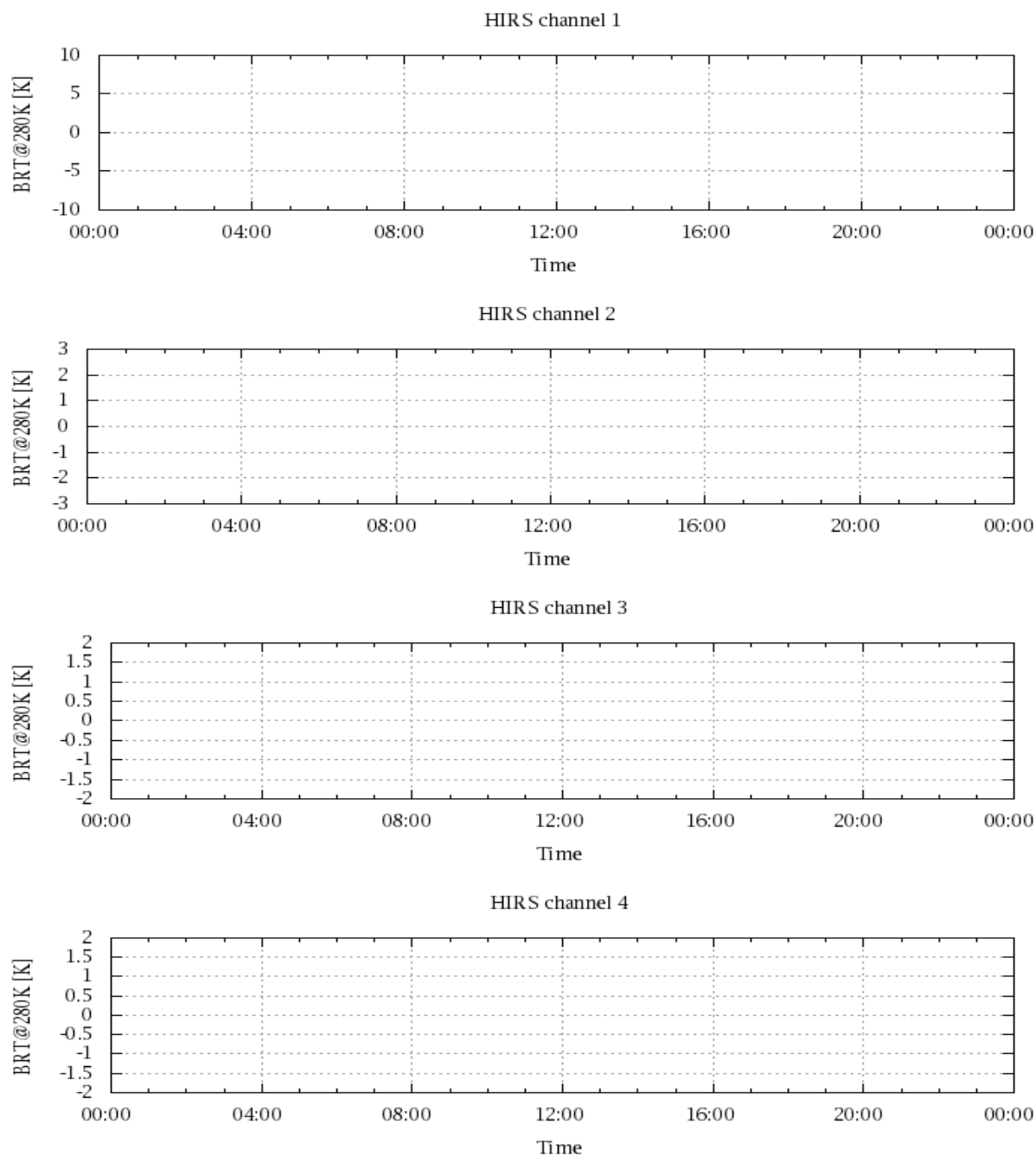


Figure 17: Radiance Differences in BT

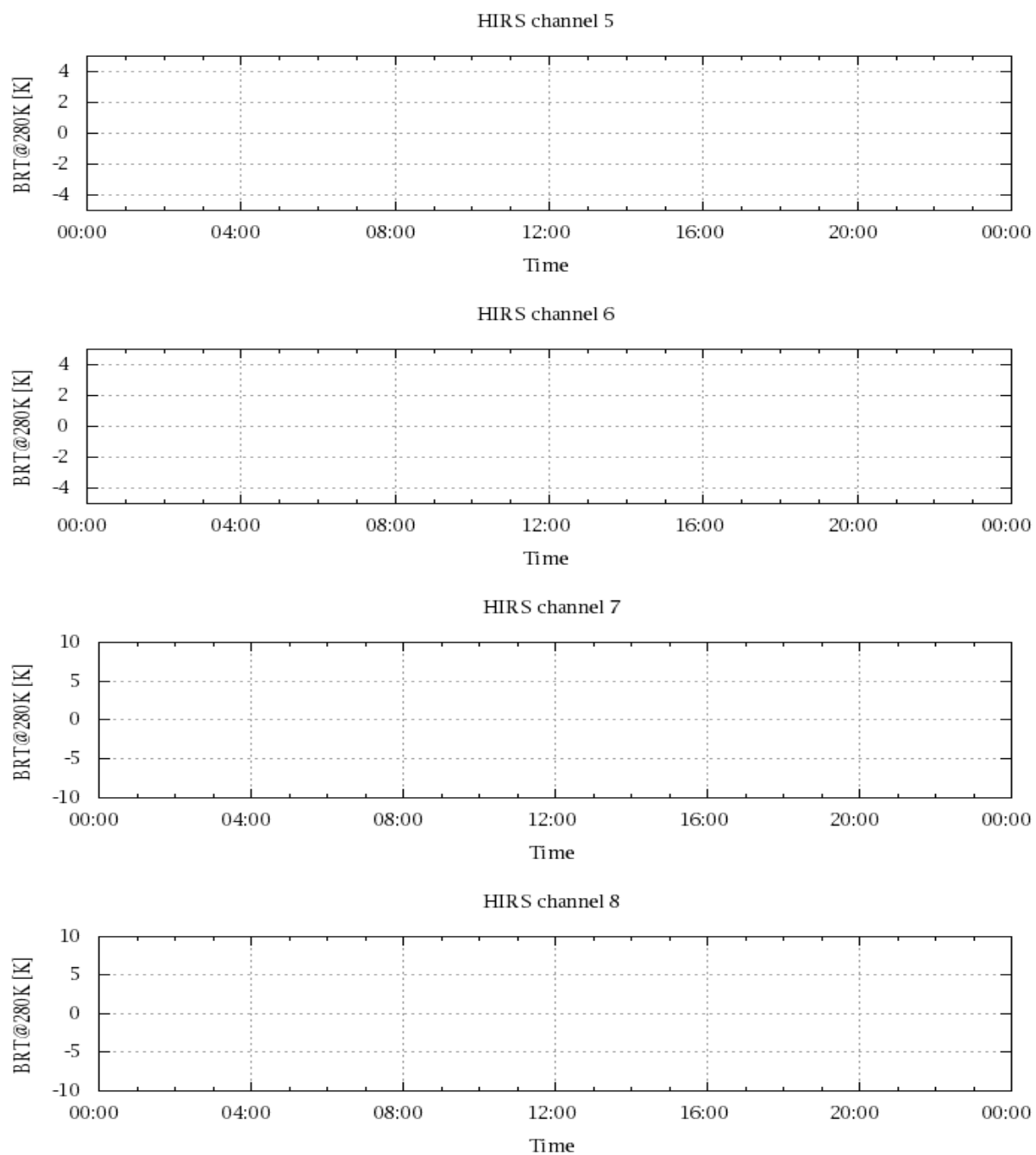


Figure 18: Radiance Differences in BT

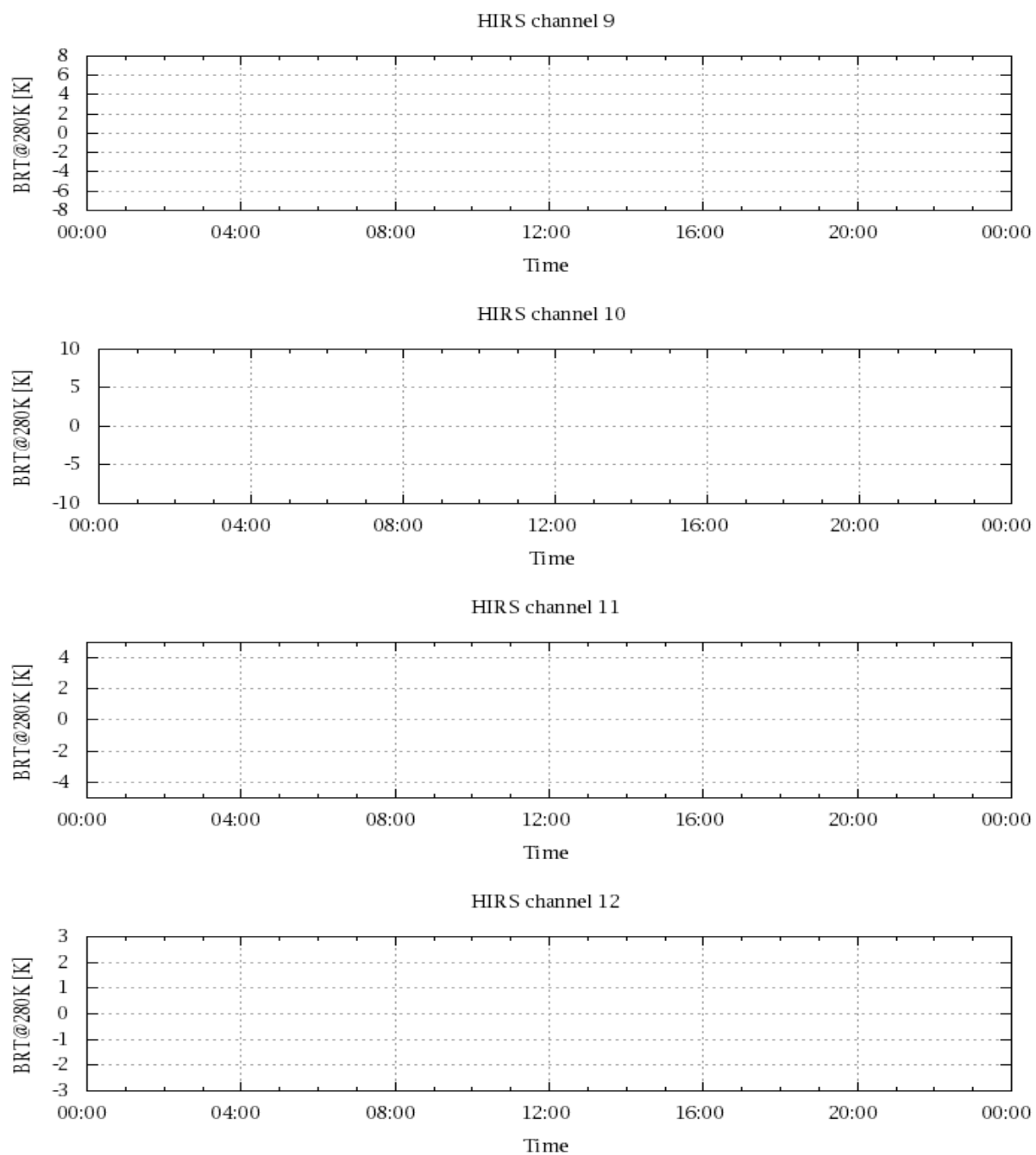


Figure 19: Radiance Differences in BT

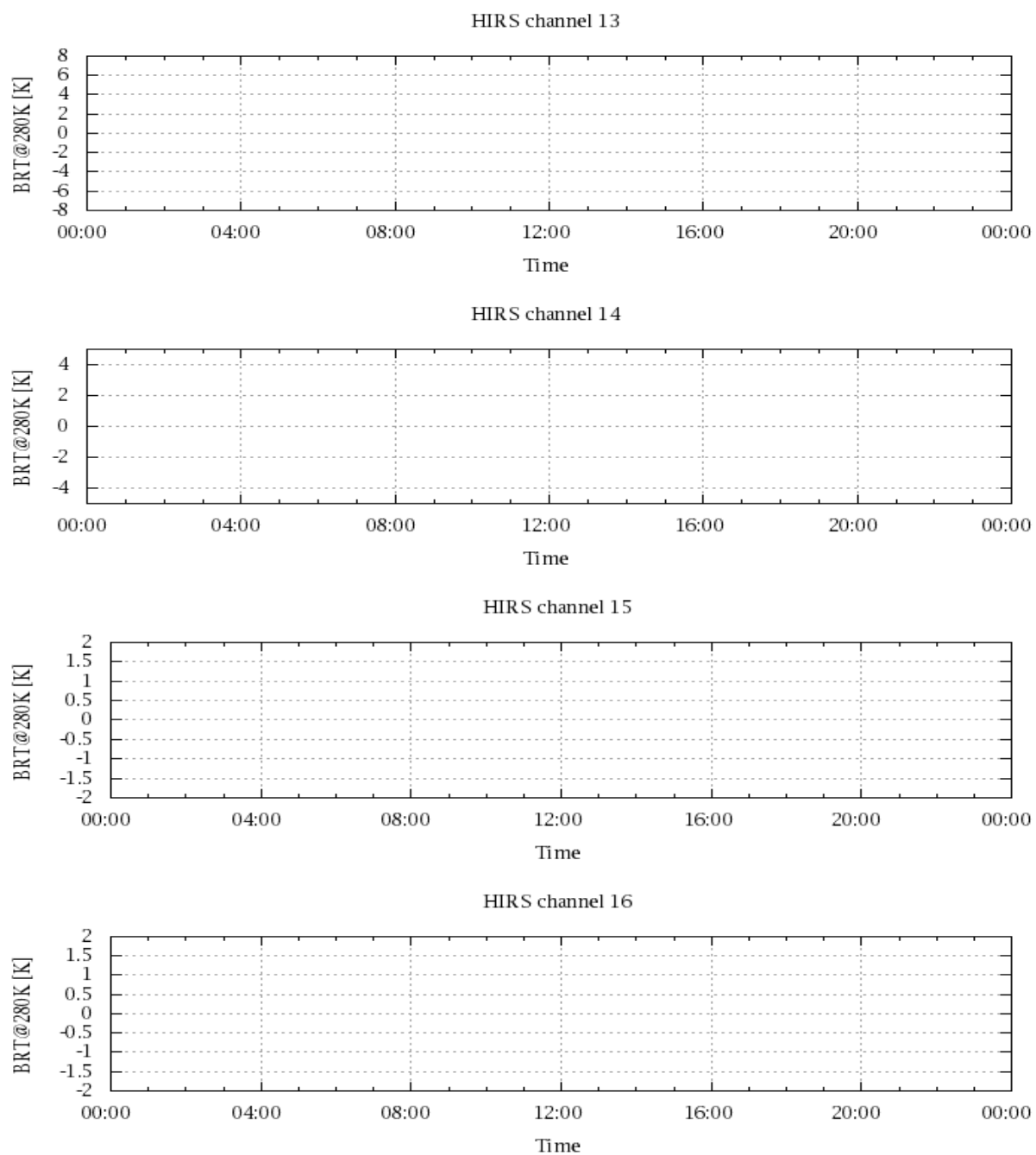


Figure 20: Radiance Differences in BT

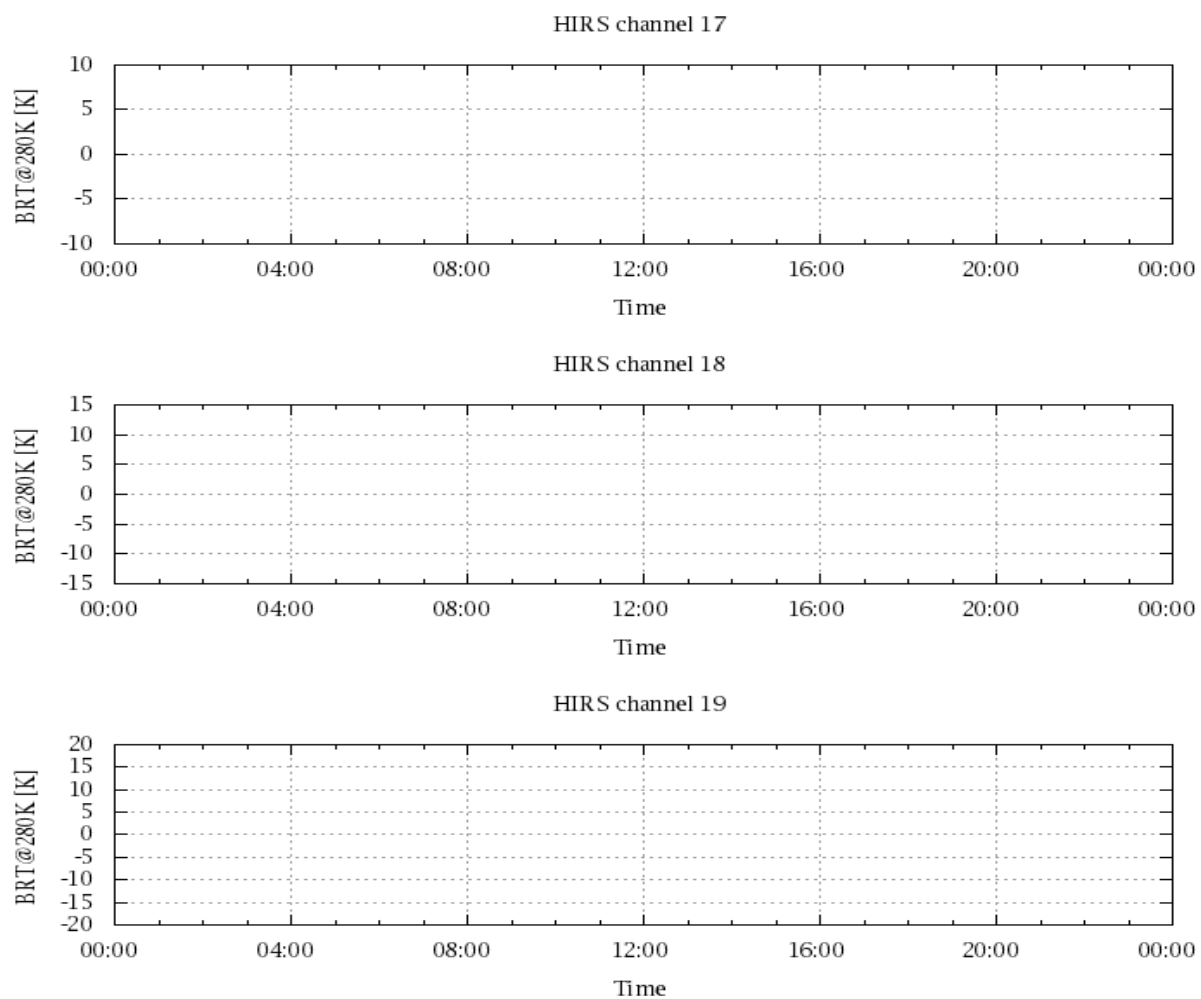


Figure 21: Radinace Differences in BT