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

IASI monitoring team

31/01/2025 00:00:00 - 01/02/2025 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 31/01/2025 00:00:00 - 01/02/2025 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 31/01/2025 00:00:00 - 01/02/2025 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	480	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	478	-
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)	13218	0	20250131002059.971	20250131002402.884
PX2 (135)	13218	0	20250131002059.971	20250131002402.884
PX3 (140)	13218	0	20250131002059.971	20250131002402.884
PX4 (145)	13218	0	20250131002059.971	20250131002402.884
IMG (150)	14430	0	20250131002059.971	20250131002402.884
VER (160)	9914	1185	20250131002057.158	20250131005619.514
VER (160)	1185	1190	20250131005619.514	20250131005619.514
VER (160)	1190	1195	20250131005619.514	20250131005619.514
VER (160)	1195	1200	20250131005619.514	20250131005619.514
VER (160)	1200	1205	20250131005619.514	20250131005619.514
VER (160)	1205	1186	20250131005619.514	20250131005619.514
VER (160)	1186	1191	20250131005619.514	20250131005619.514
VER (160)	1191	1196	20250131005619.514	20250131005619.514
VER (160)	1196	1201	20250131005619.514	20250131005619.514
VER (160)	1201	1206	20250131005619.514	20250131005619.514
VER (160)	1206	1187	20250131005619.514	20250131005619.514
VER (160)	1187	1192	20250131005619.514	20250131005619.514
VER (160)	1192	1197	20250131005619.514	20250131005619.514
VER (160)	1197	1202	20250131005619.514	20250131005619.514

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1202	1207	20250131005619.514	20250131005619.514
VER (160)	1207	1188	20250131005619.514	20250131005619.514
VER (160)	1188	1193	20250131005619.514	20250131005619.514
VER (160)	1193	1198	20250131005619.514	20250131005619.514
VER (160)	1198	1203	20250131005619.514	20250131005619.514
VER (160)	1203	1208	20250131005619.514	20250131005619.514
VER (160)	1208	1189	20250131005619.514	20250131005619.514
VER (160)	1189	1194	20250131005619.514	20250131005619.514
VER (160)	1194	1199	20250131005619.514	20250131005619.514
VER (160)	1199	1204	20250131005619.514	20250131005619.514
VER (160)	1204	1209	20250131005619.514	20250131005619.514
AUX (180)	8494	0	20250131002057.592	20250131002409.588

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
31/01/2025 00:00:07	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	478	-
GQisFlagQual set (PX1)	99.71 %	-
GQisFlagQual set (PX2)	99.78 %	-
GQisFlagQual set (PX3)	99.79 %	-
GQisFlagQual set (PX4)	99.71 %	-
GQisFlagQual set (all)	99.75 %	-

Table 4: Quality flags

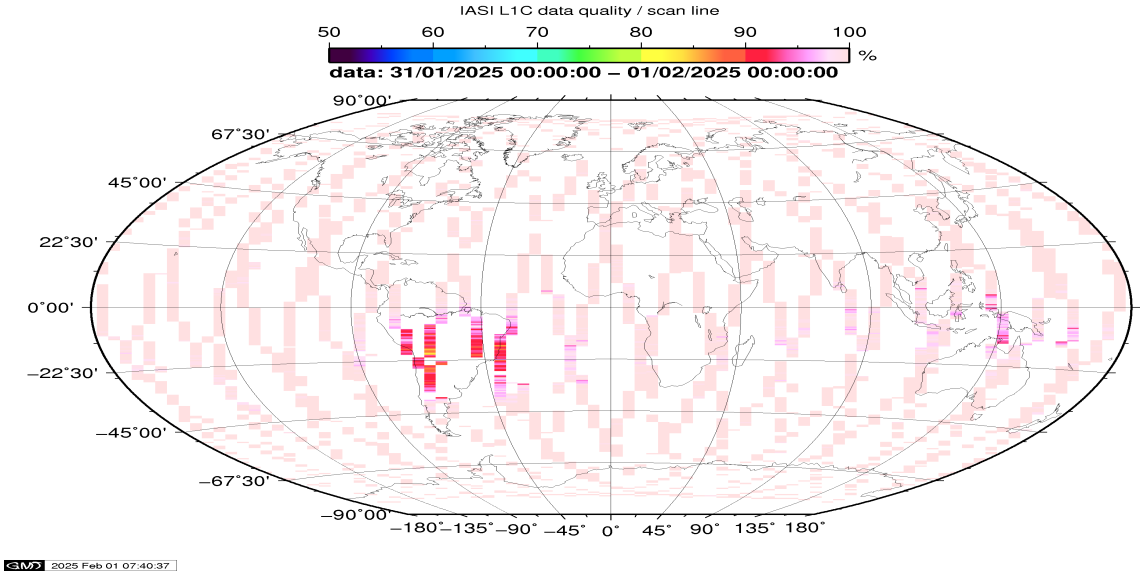

Figure 1: L1C data quality

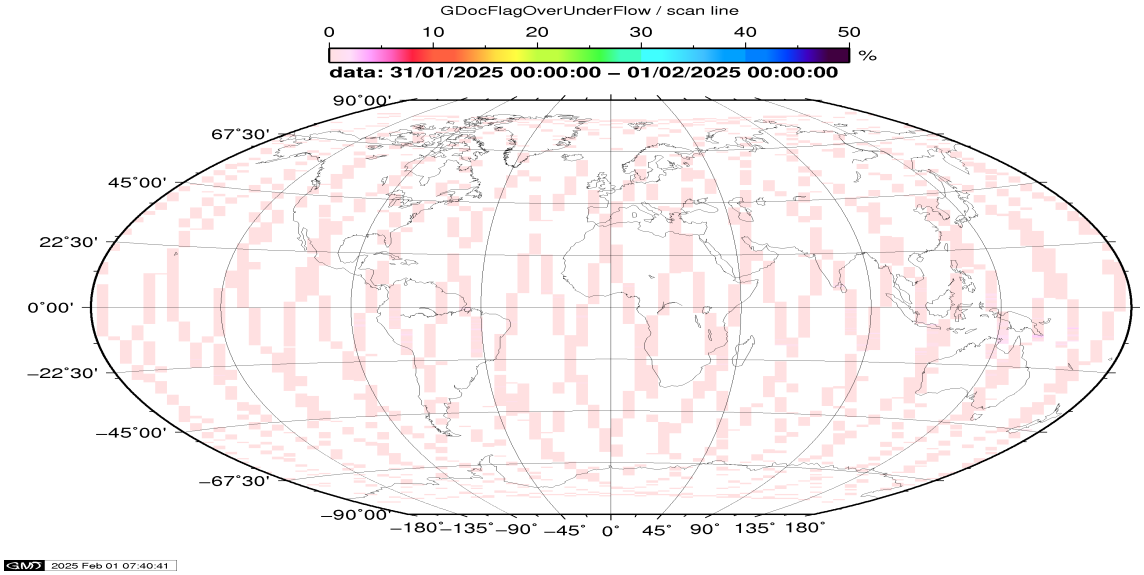

Figure 2: Flag of Over and Under Flows

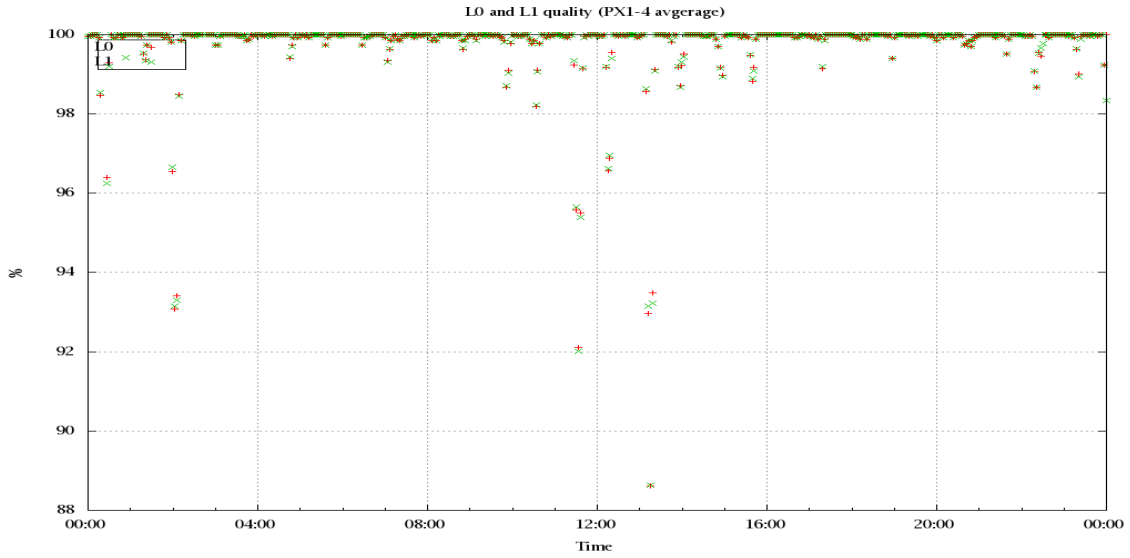

Figure 3: Level 0 and 1C overall quality

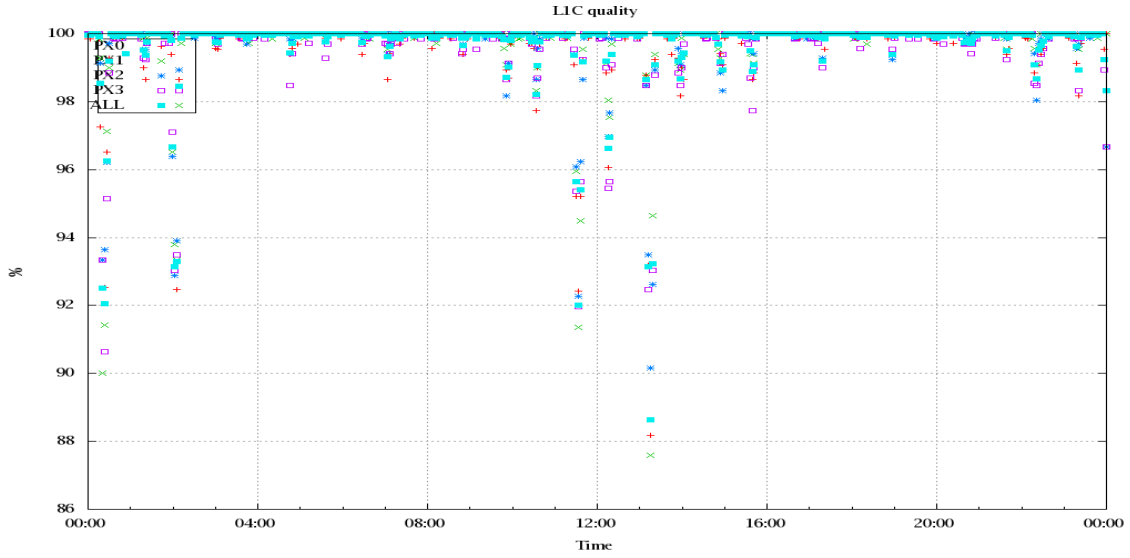

Figure 4: Level 1C quality

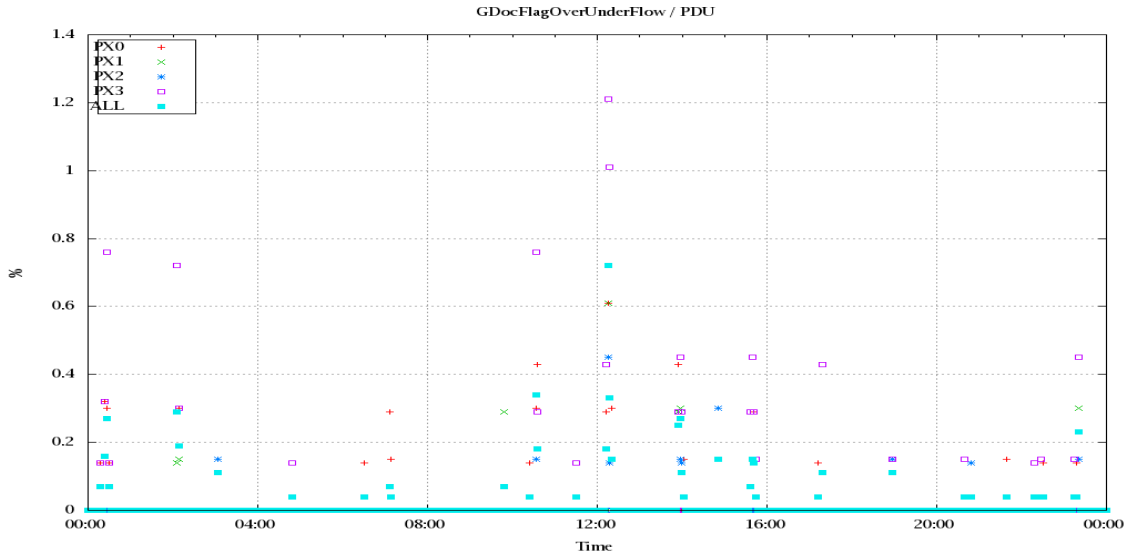

Figure 5: Timeseries of flag of Over and Under Flows

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.

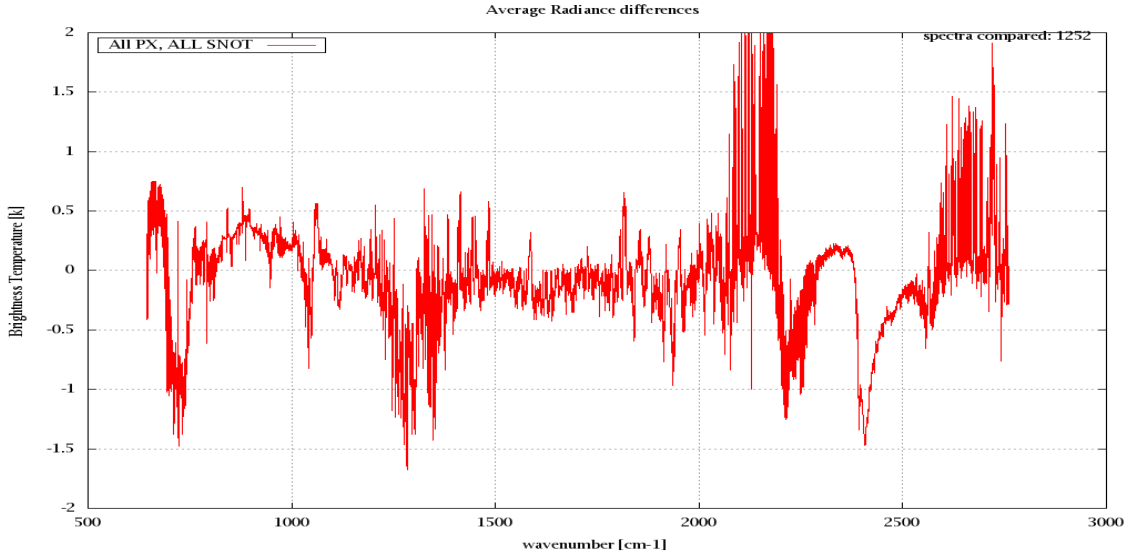

Figure 6: Average Radiance differences: OBS-CAL

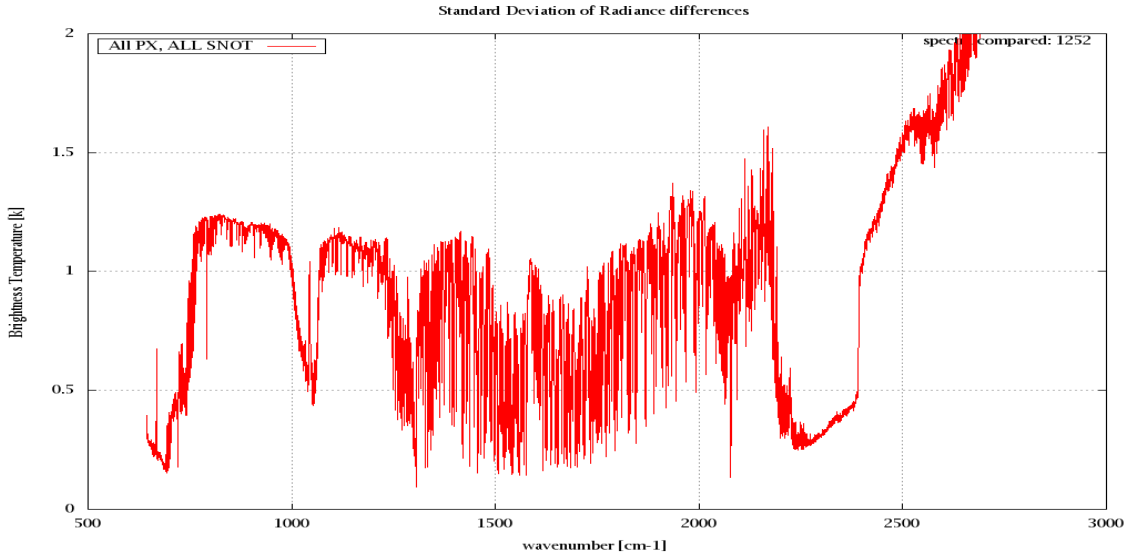

Figure 7: Standard Deviation of Radiance differences

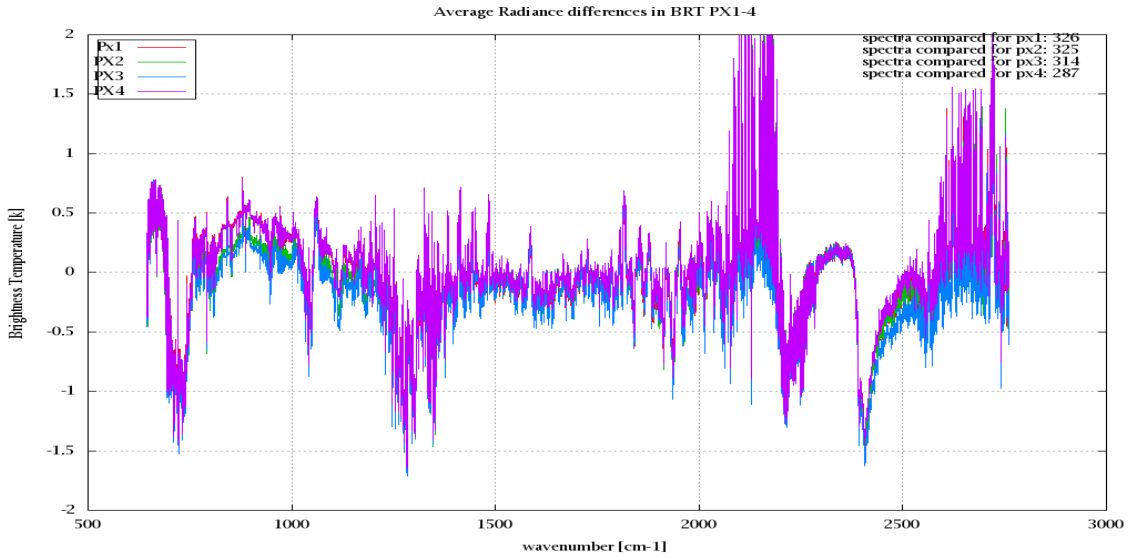

Figure 8: Average Radiance differences: OBS-CAL

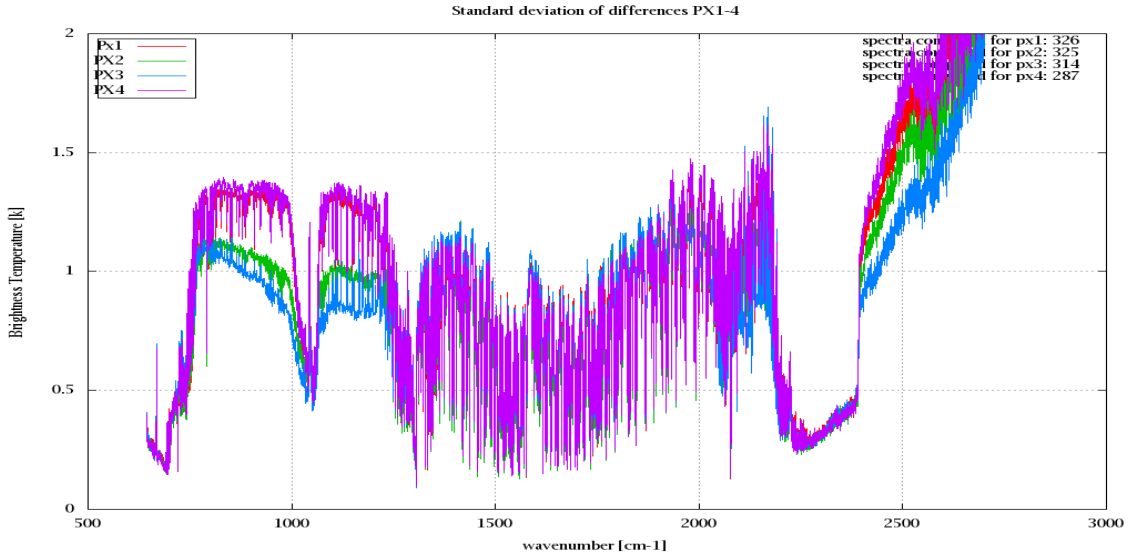

Figure 9: Standard Deviation of Radiance differences

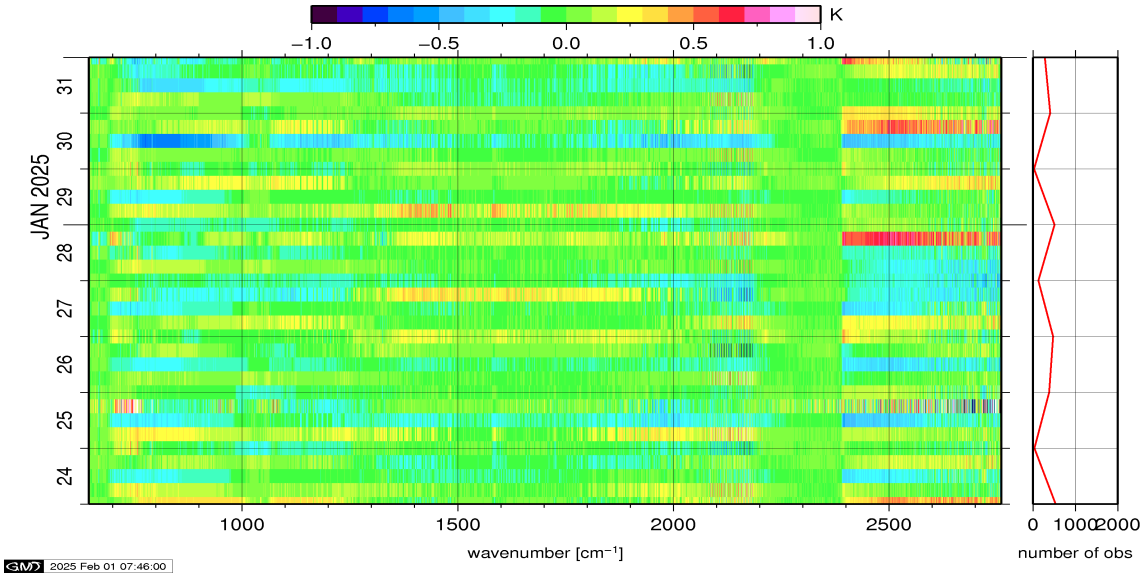

Figure 10: Radiance Anomaly in BT: All Channels

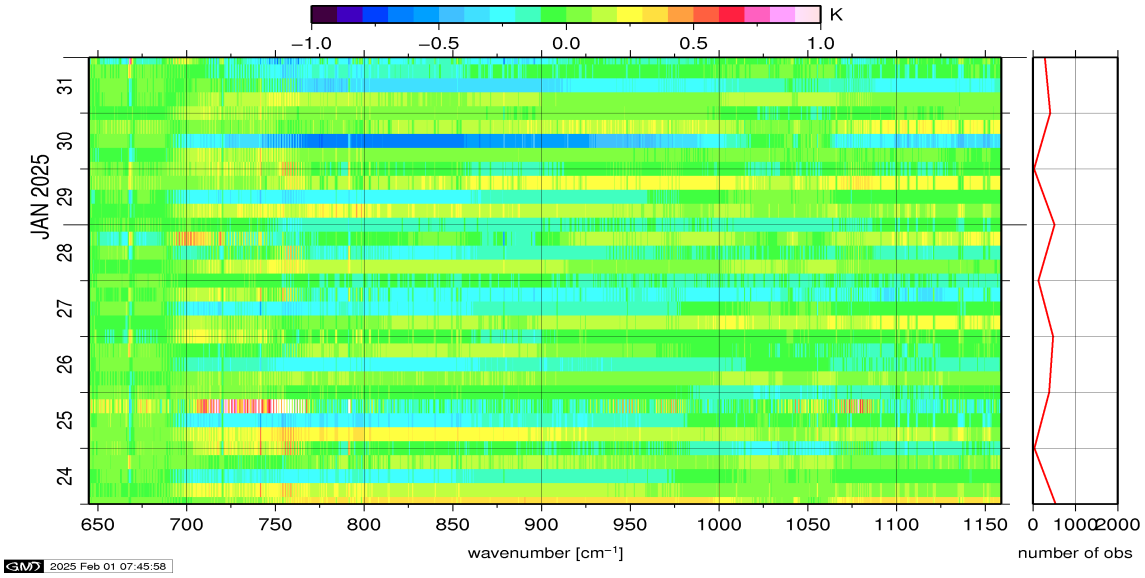

Figure 11: Radiance Anomaly in BT: IASI Band 1

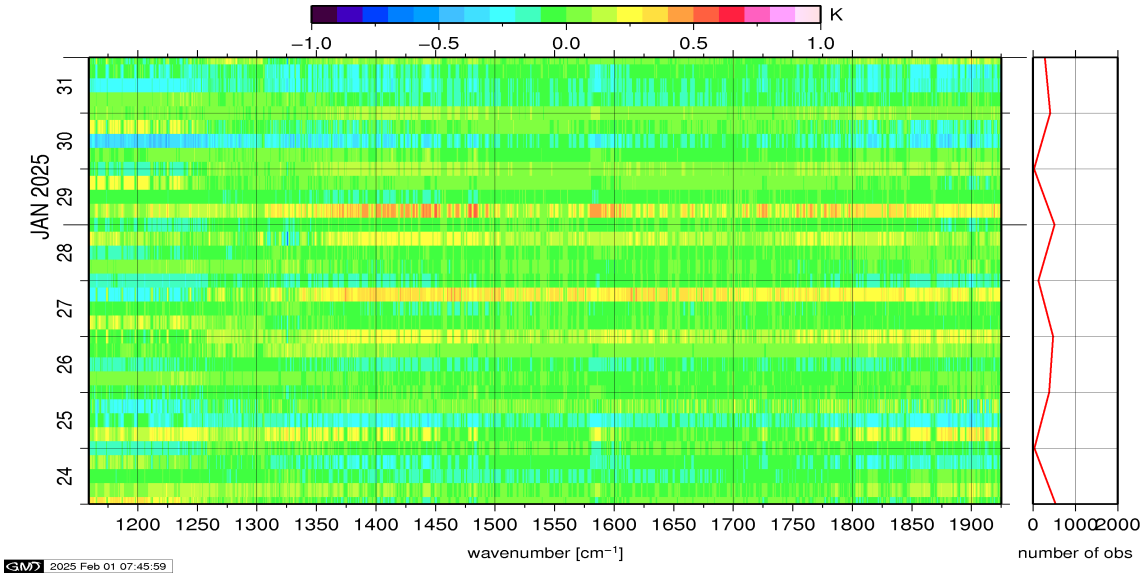

Figure 12: Radiance Anomaly in BT: IASI Band 2

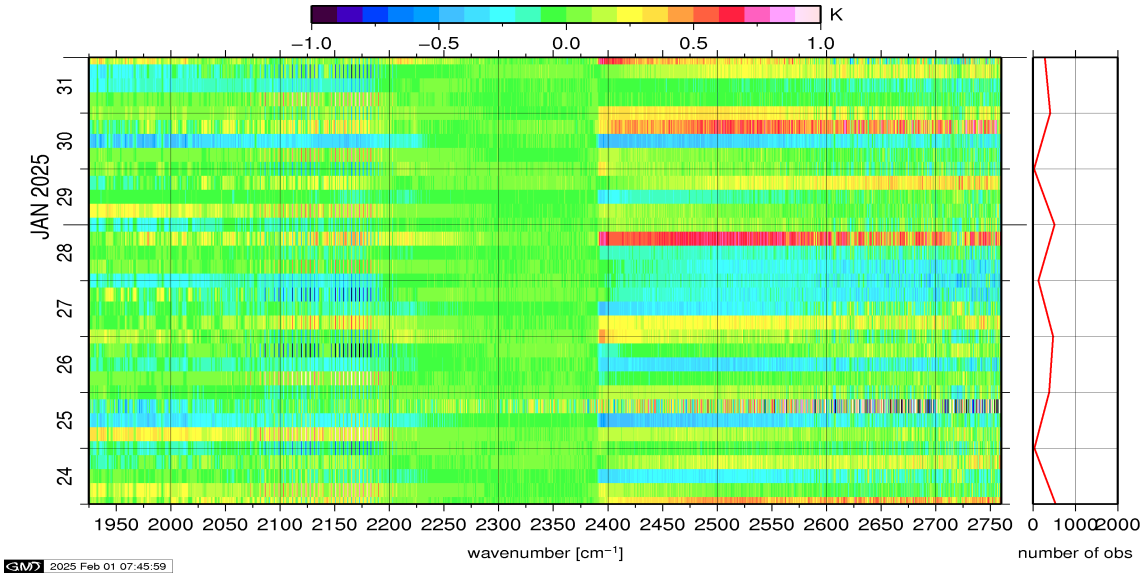

Figure 13: Radiance Anomaly in BT: IASI Band 3

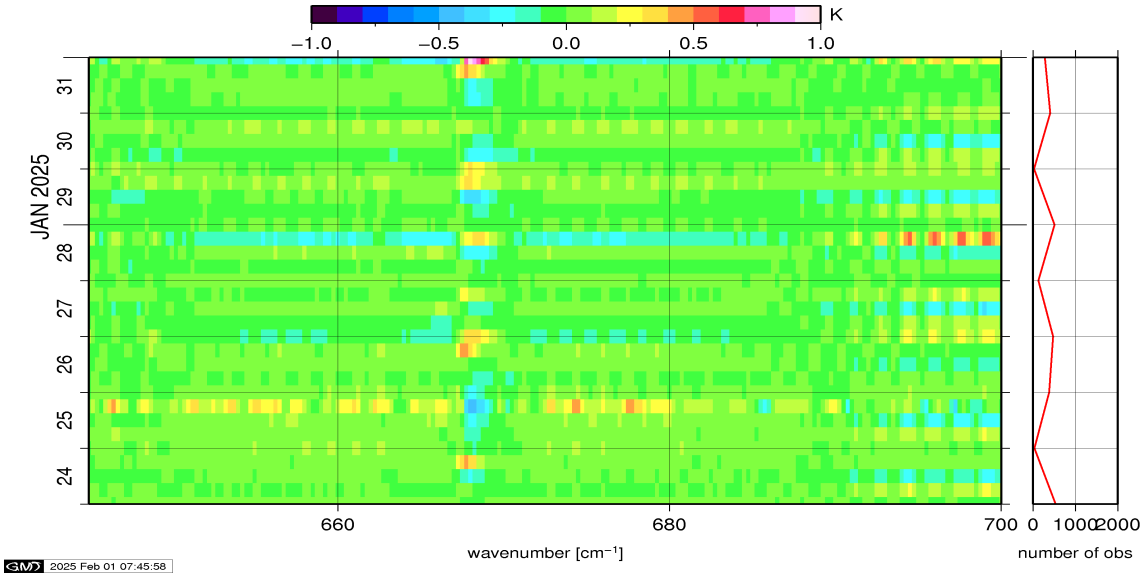

Figure 14: Radiance Anomaly in BT: CO2 14

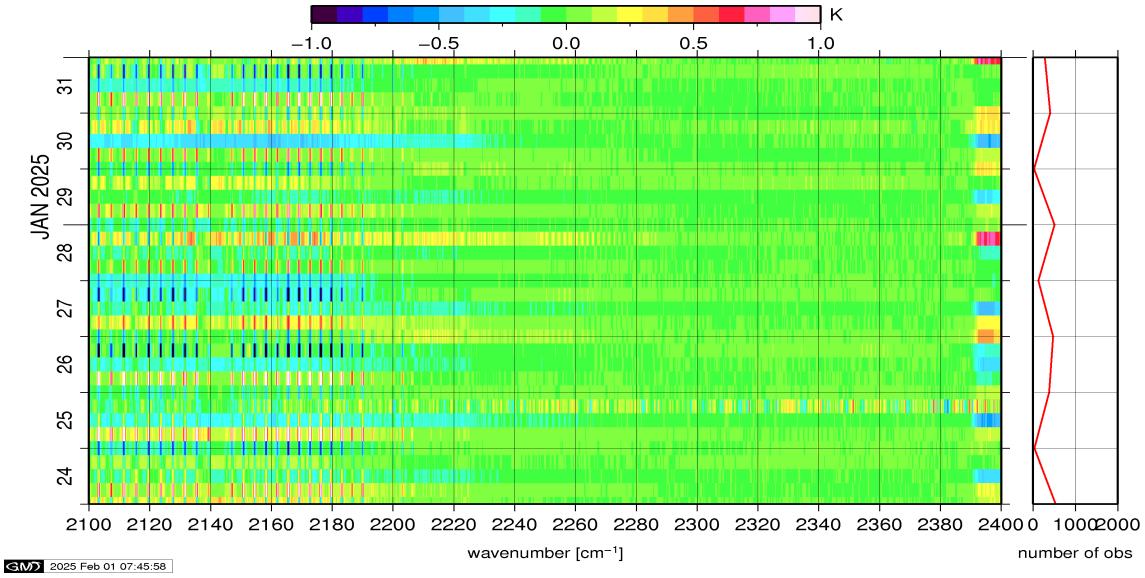

Figure 15: Radiance Anomaly in BT: CO2 4.3

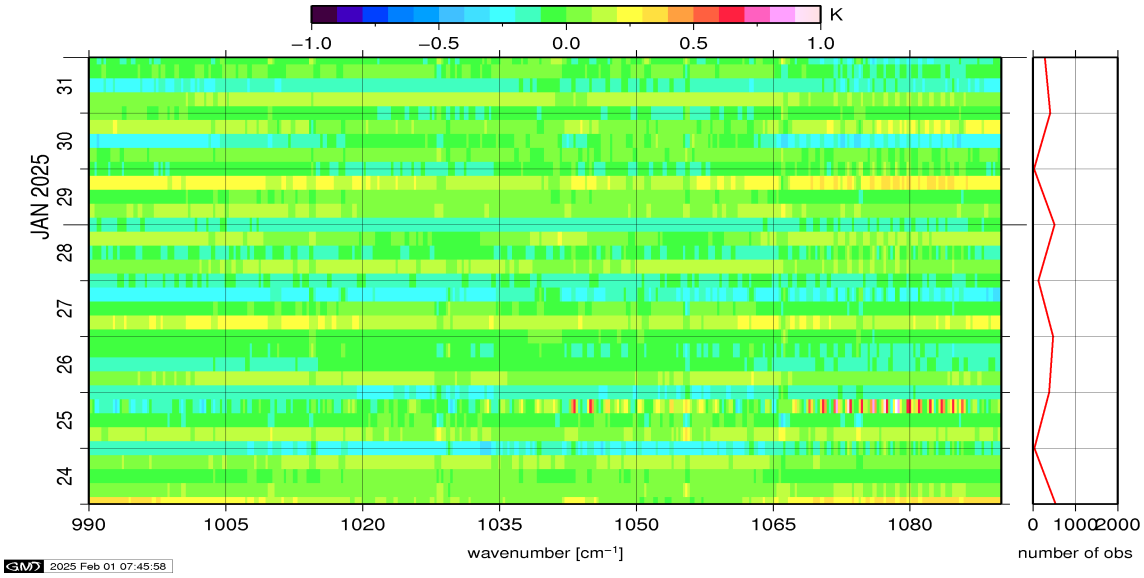

Figure 16: Radiance Anomaly in BT: O3

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.

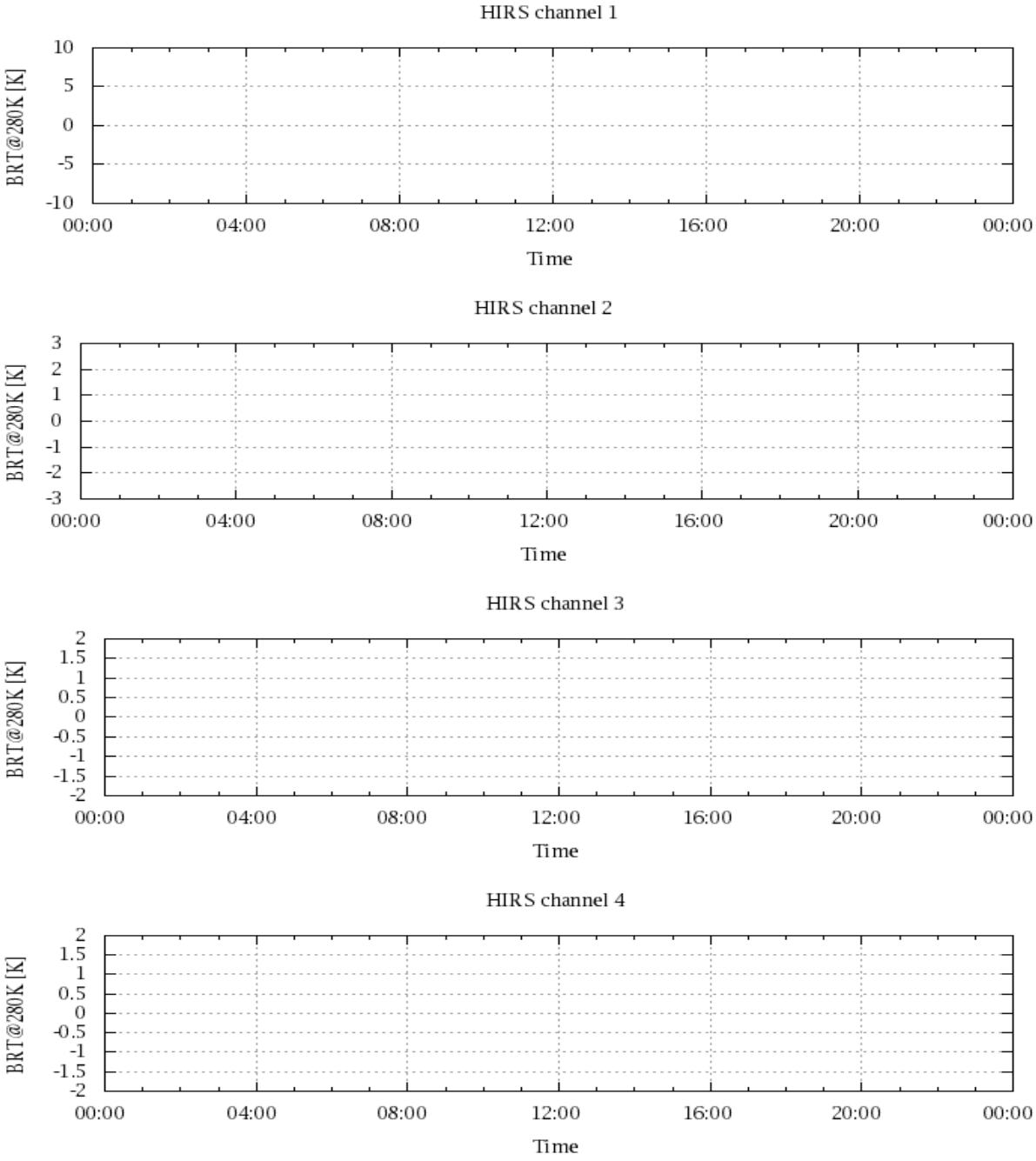

Figure 17: Radiance Differences in BT

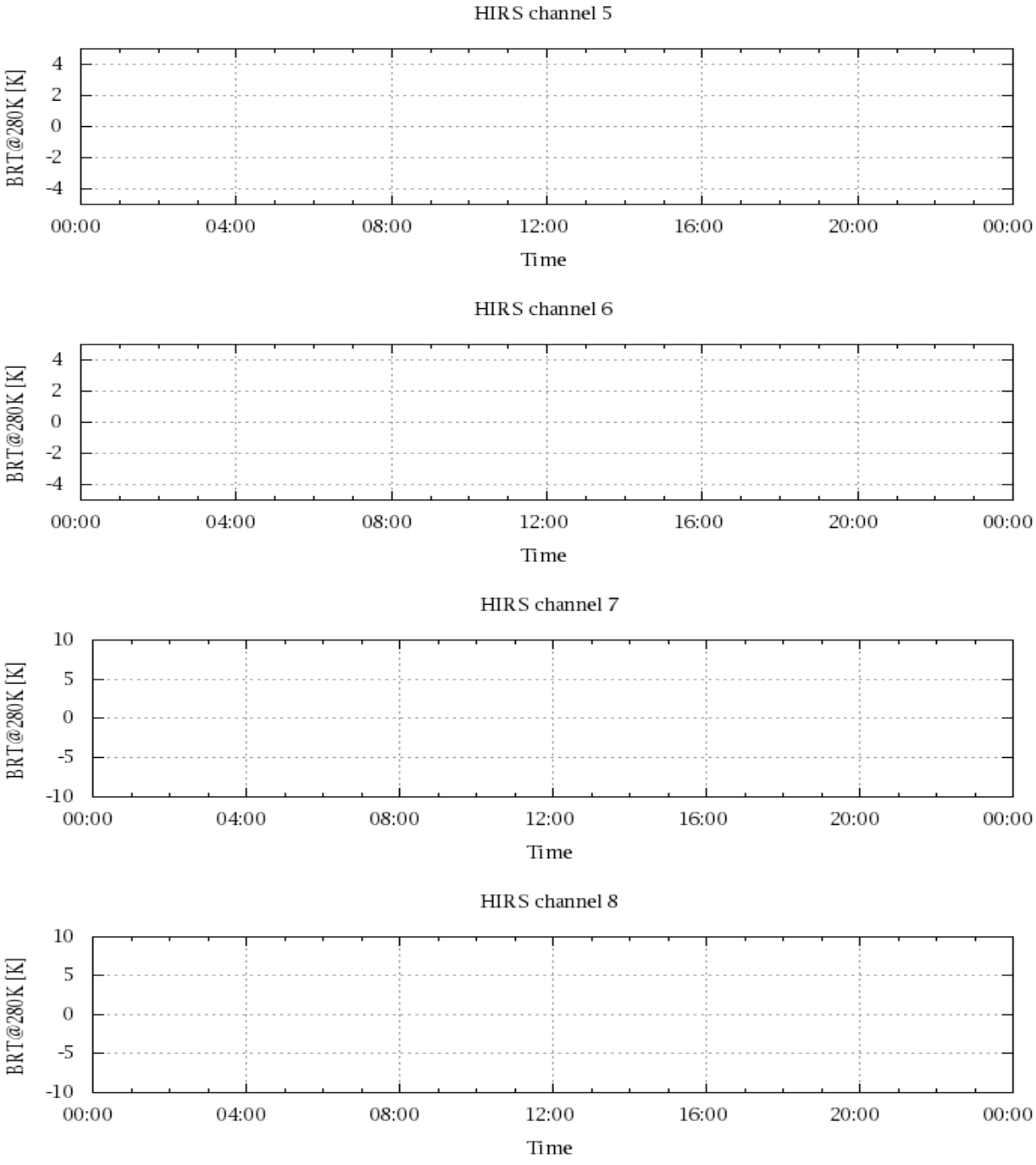

Figure 18: Radiance Differences in BT

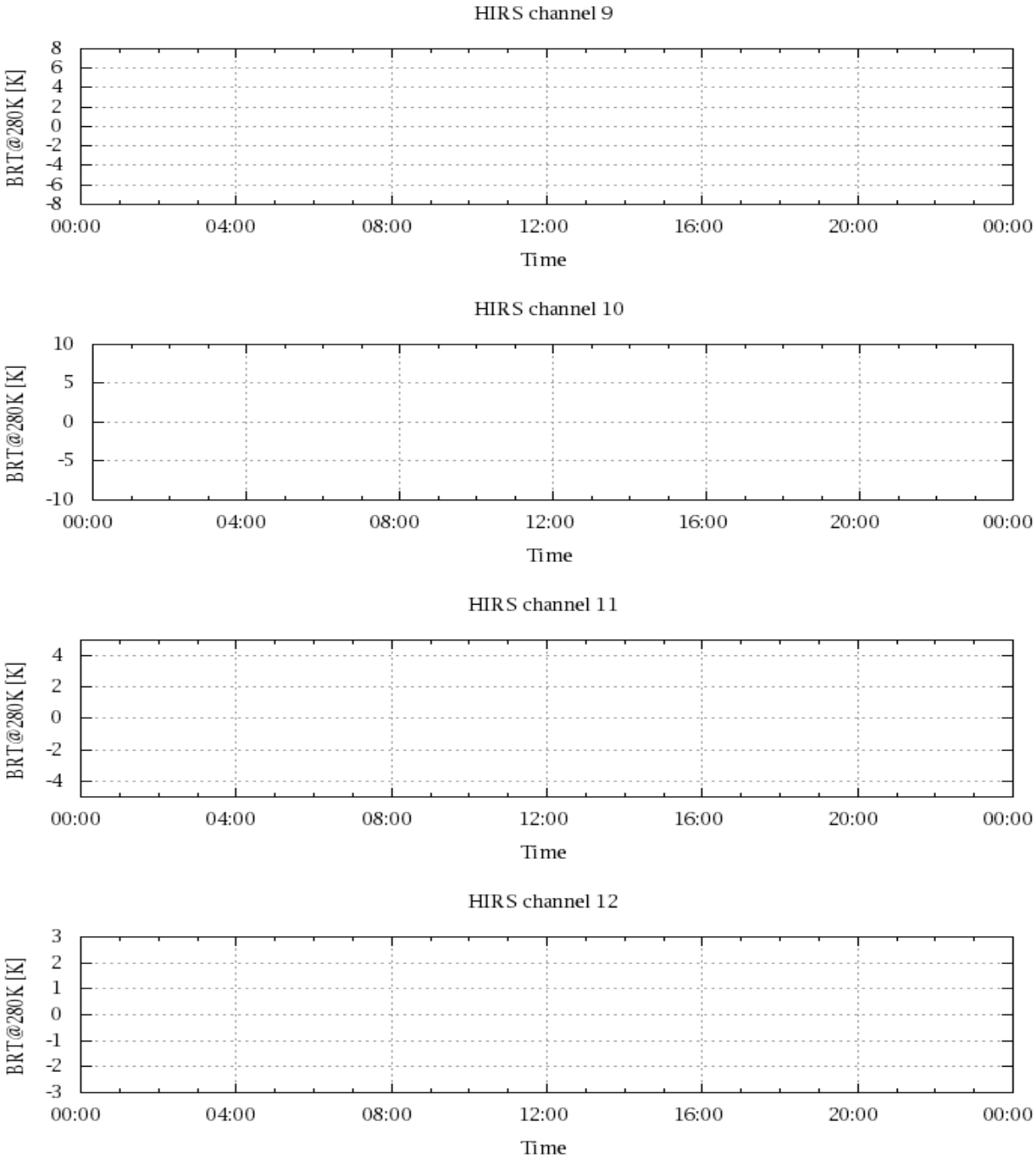

Figure 19: Radiance Differences in BT

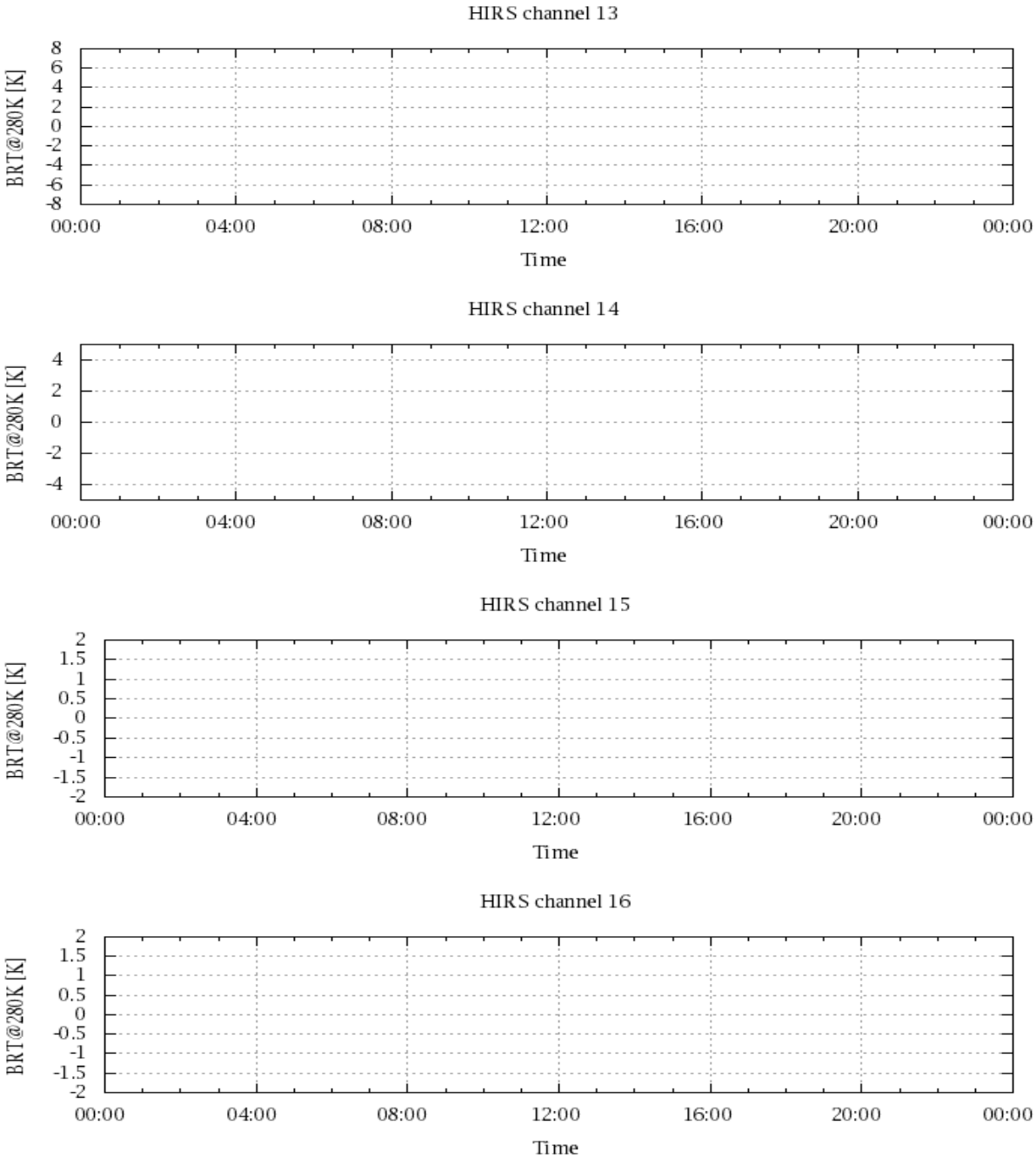

Figure 20: Radiance Differences in BT

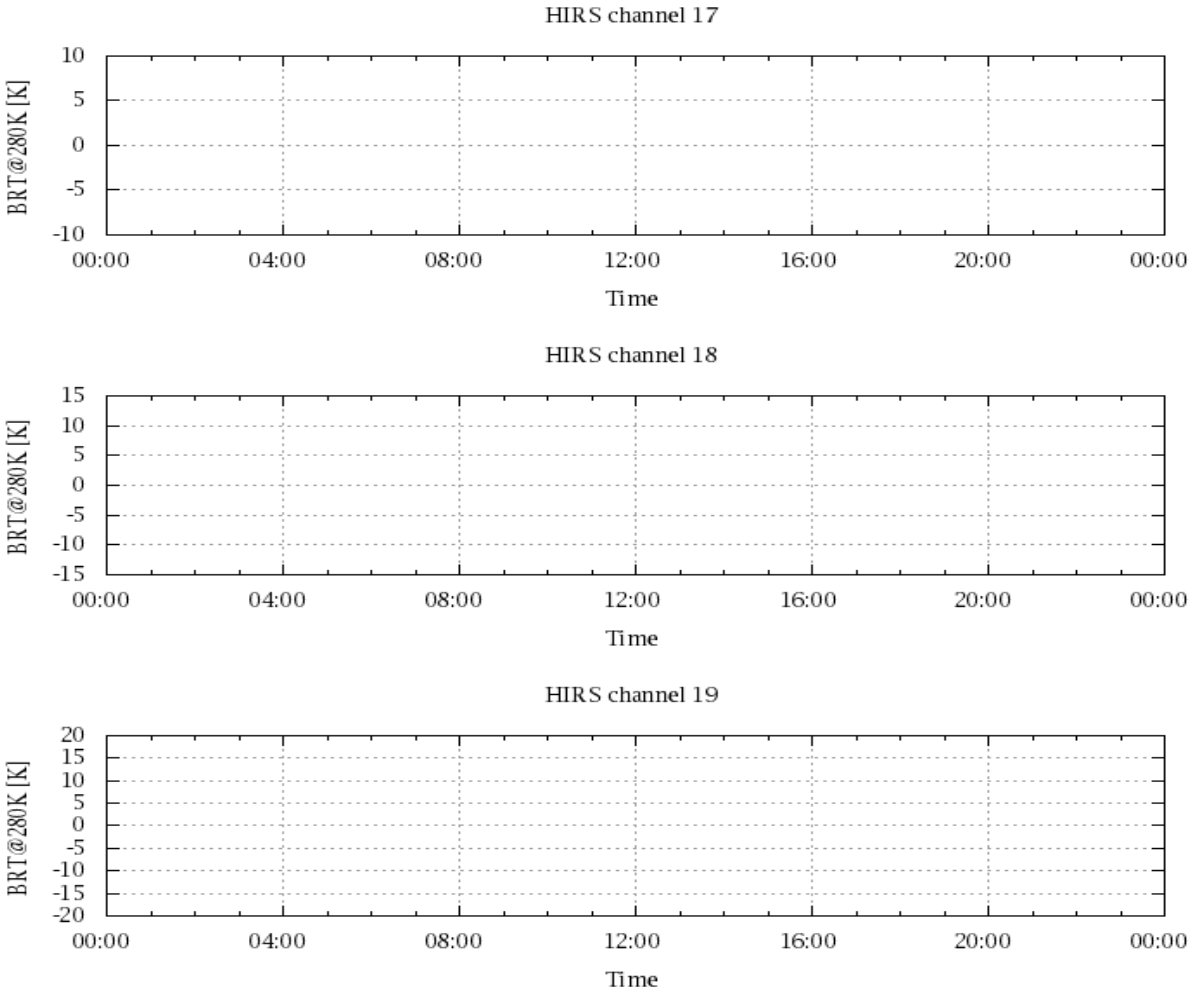

Figure 21: Radinace Differences in BT