

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

IASI monitoring team

28/02/2020 00:00:00 - 29/02/2020 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 28/02/2020 00:00:00 - 29/02/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 28/02/2020 00:00:00 - 29/02/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	459	a
L1 DPX PDUs (RM: IASI-HIRS)	480	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2008	2010	20200228030207.774	20200228030208.207
PX1 (130)	2011	2013	20200228030208.422	20200228030208.856
PX1 (130)	2025	2027	20200228030211.449	20200228030211.883
PX1 (130)	2034	2036	20200228030213.395	20200228030213.828
PX2 (135)	1999	2001	20200228030204.316	20200228030204.746
PX2 (135)	2010	2012	20200228030208.207	20200228030208.641
PX3 (140)	2001	2003	20200228030204.746	20200228030205.180
PX3 (140)	2009	2011	20200228030207.988	20200228030208.422
PX3 (140)	2012	2015	20200228030208.641	20200228030209.289
PX3 (140)	2024	2026	20200228030211.234	20200228030211.668
PX3 (140)	2034	2036	20200228030213.395	20200228030213.828
PX4 (145)	1994	1996	20200228030203.234	20200228030203.664
PX4 (145)	2009	2011	20200228030207.988	20200228030208.422
PX4 (145)	2011	2014	20200228030208.422	20200228030209.070
PX4 (145)	2019	2021	20200228030210.152	20200228030210.586
PX4 (145)	2027	2029	20200228030211.883	20200228030212.313
IMG (150)	16072	16074	20200228030207.774	20200228030208.207
IMG (150)	16088	16090	20200228030211.234	20200228030211.668
VER (160)	1197	1201	20200228030205.828	20200228030205.828

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
28/02/2020 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	459	a
GQisFlagQual set (PX1)	99.62 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.67 %	-
GQisFlagQual set (PX4)	99.61 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

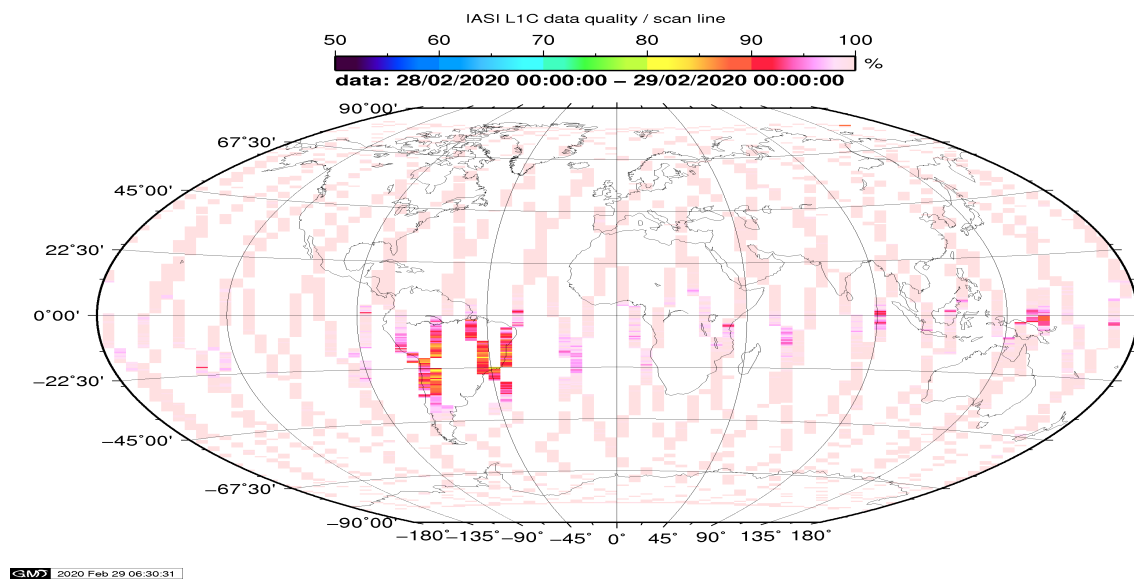


Figure 1: L1C data quality

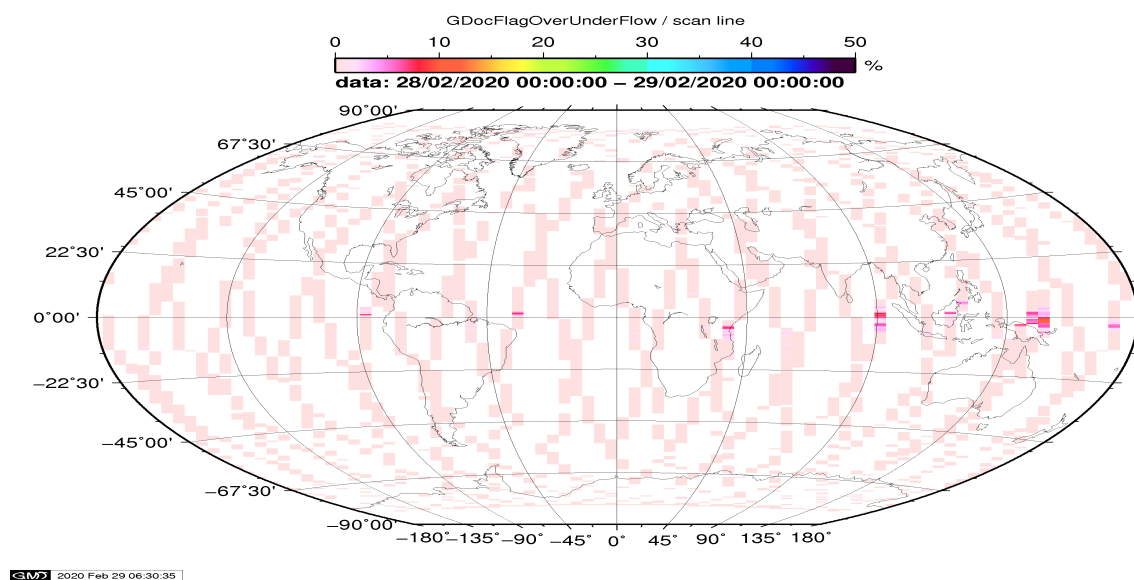


Figure 2: Flag of Over and Under Flows

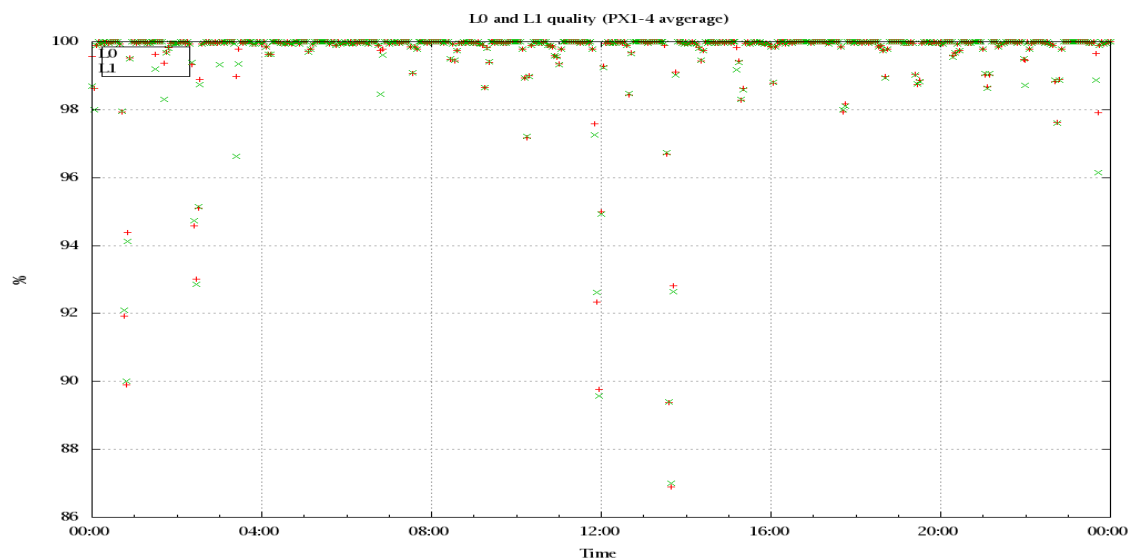


Figure 3: Level 0 and 1C overall quality

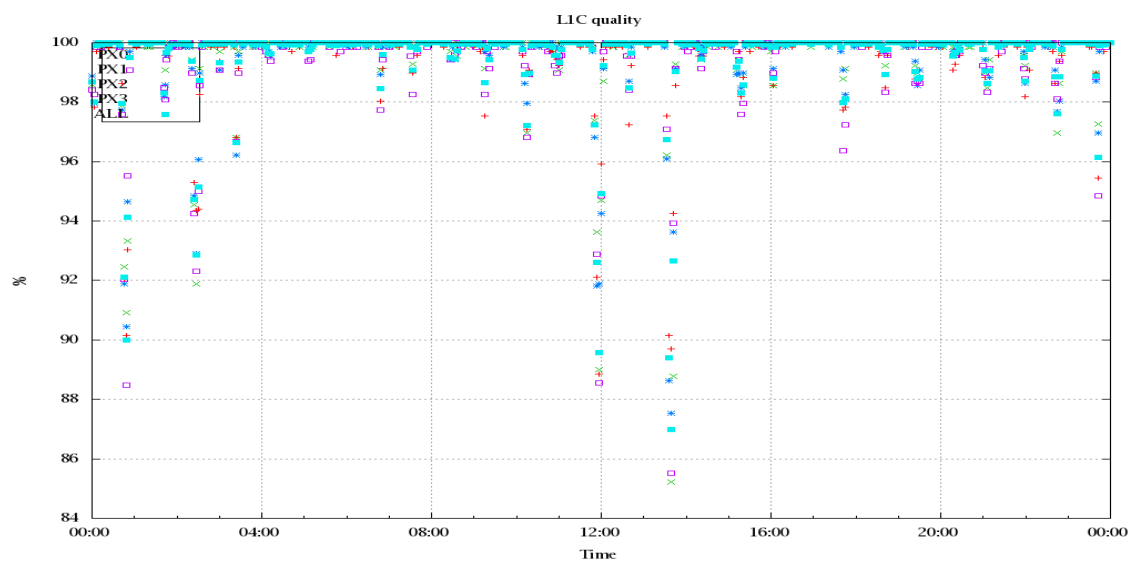


Figure 4: Level 1C quality

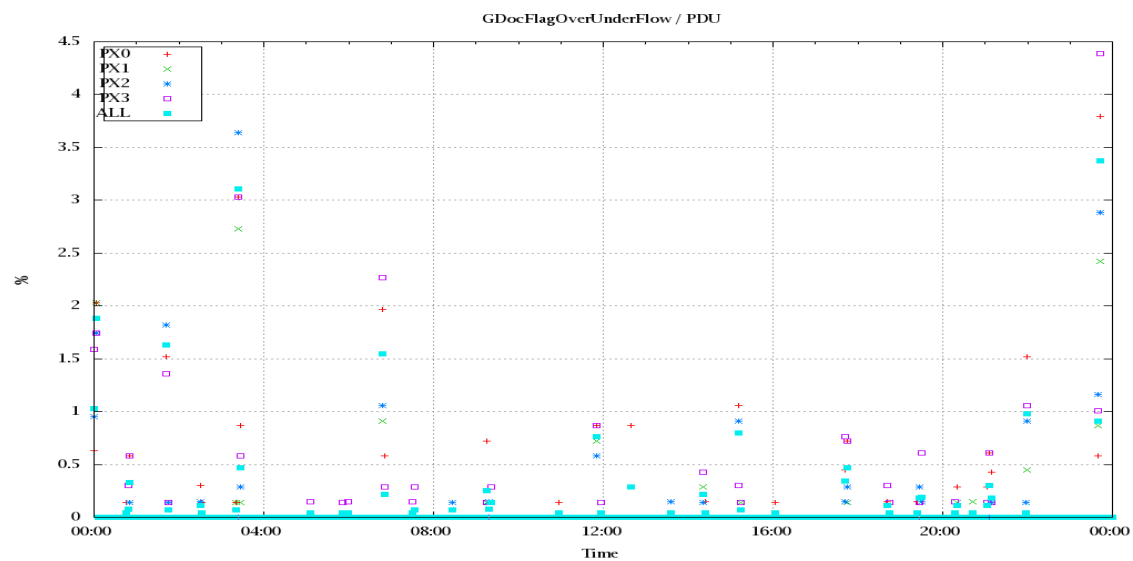


Figure 5: Timeseries of flag of Over and Under Flows

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.

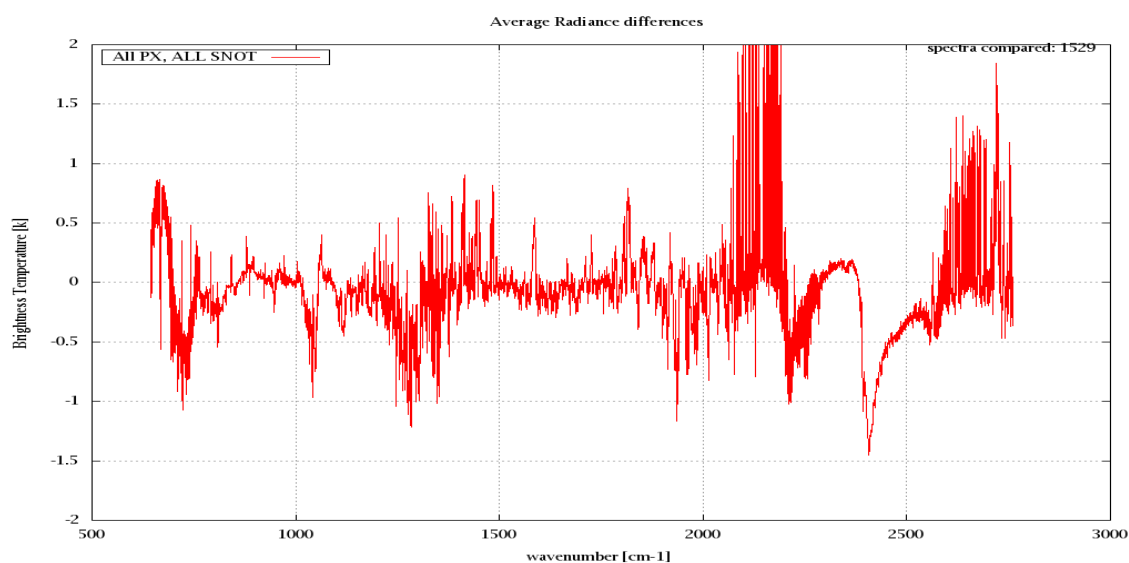


Figure 6: Average Radiance differences: OBS-CAL

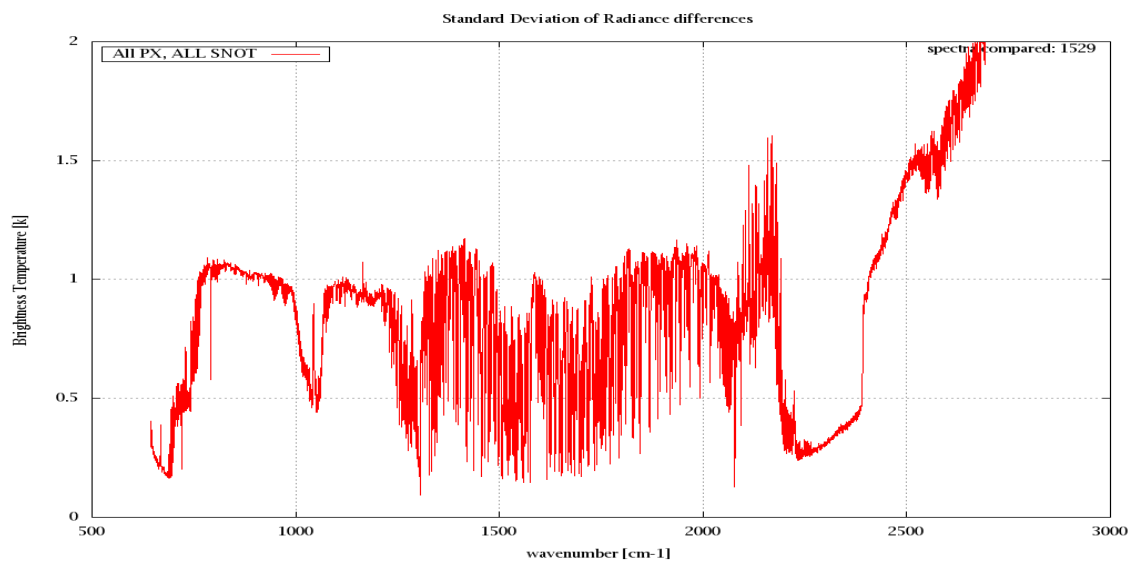


Figure 7: Standard Deviation of Radiance differences

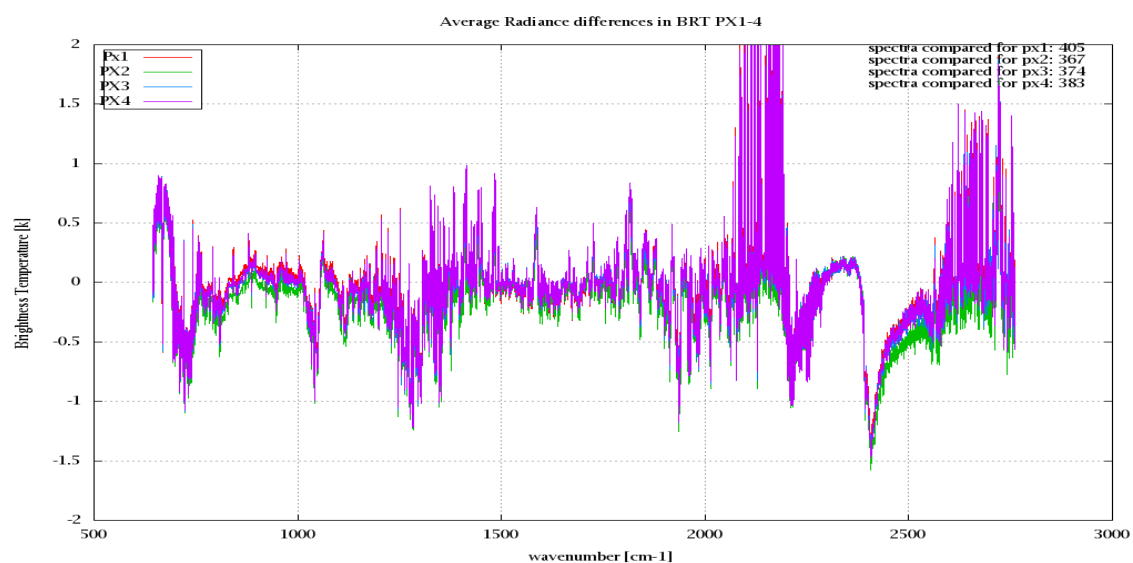


Figure 8: Average Radiance differences: OBS-CAL

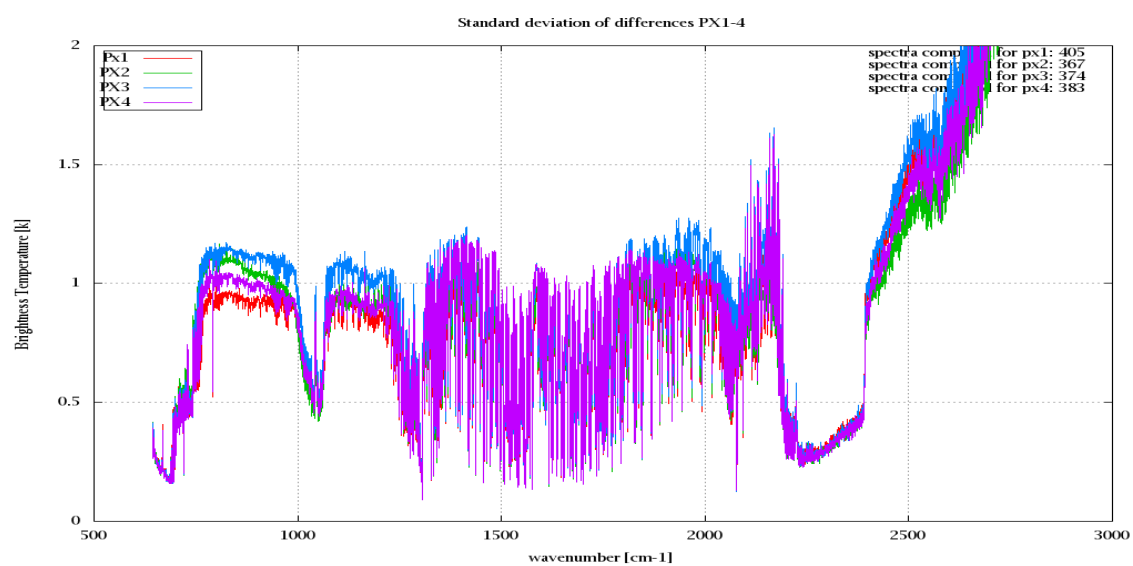


Figure 9: Standard Deviation of Radiance differences

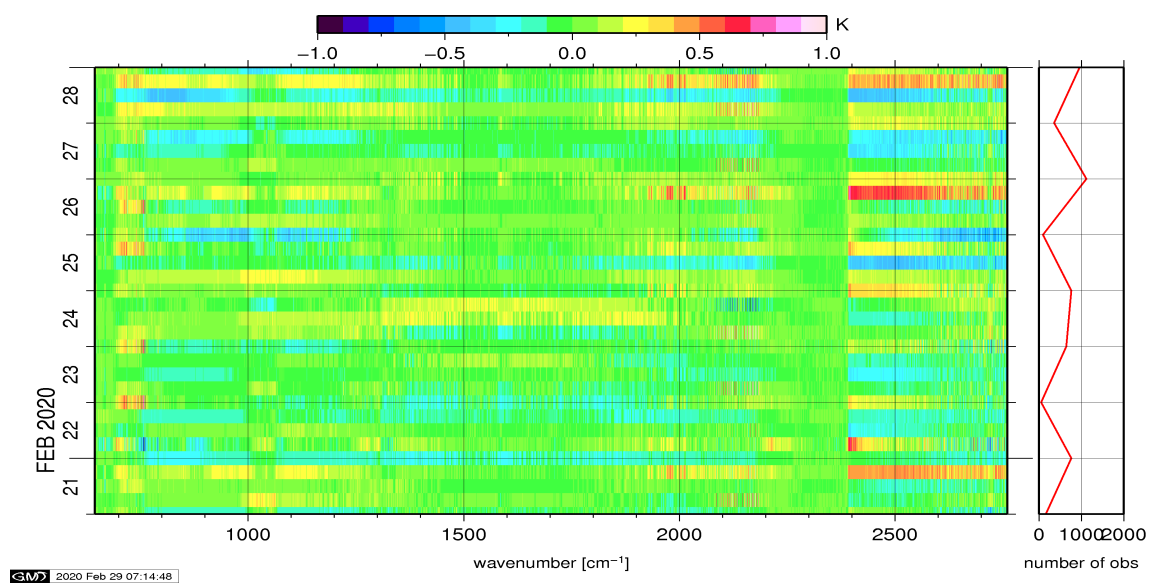


Figure 10: Radiance Anomaly in BT: All Channels

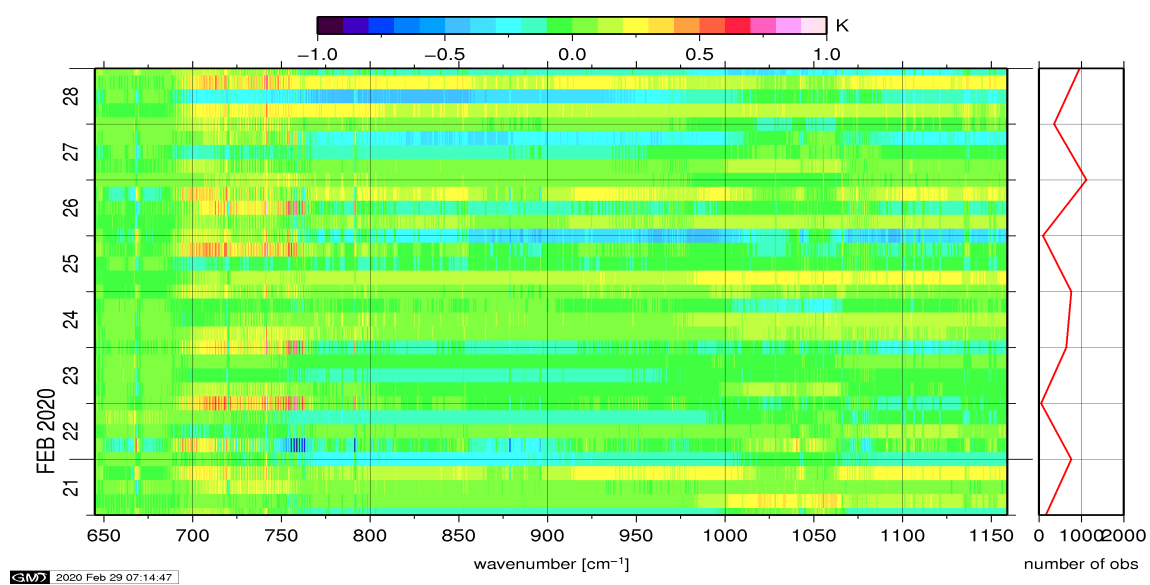


Figure 11: Radiance Anomaly in BT: IASI Band 1

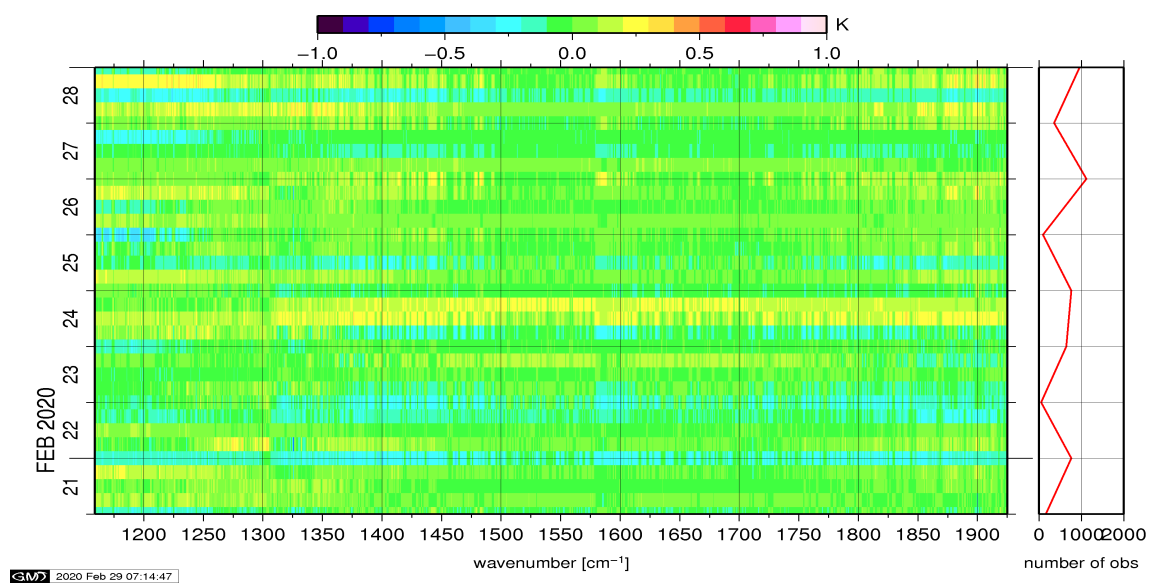


Figure 12: Radiance Anomaly in BT: IASI Band 2

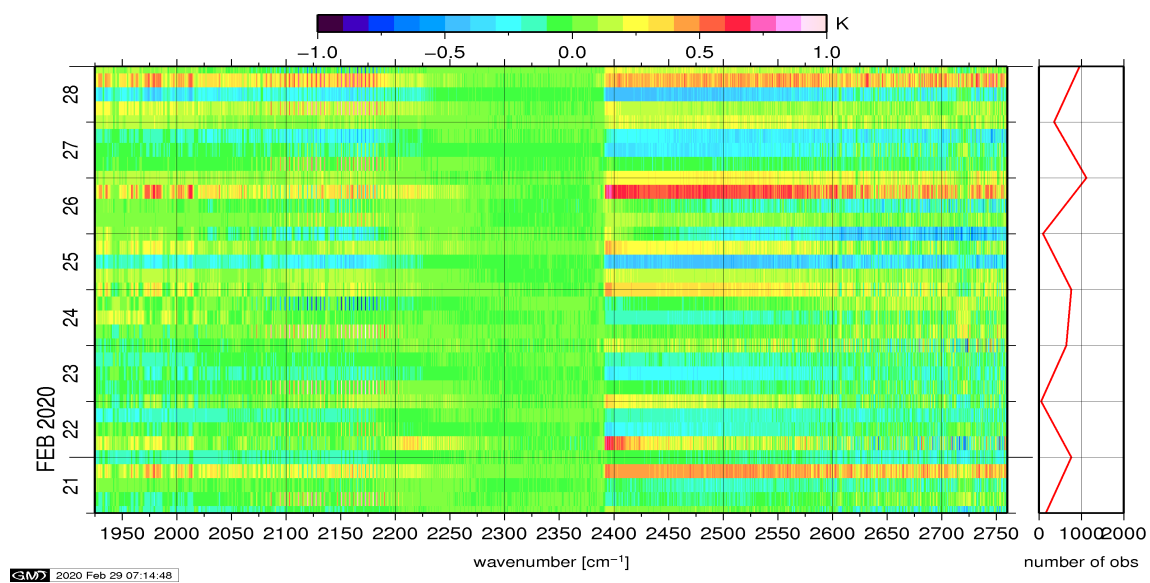


Figure 13: Radiance Anomaly in BT: IASI Band 3

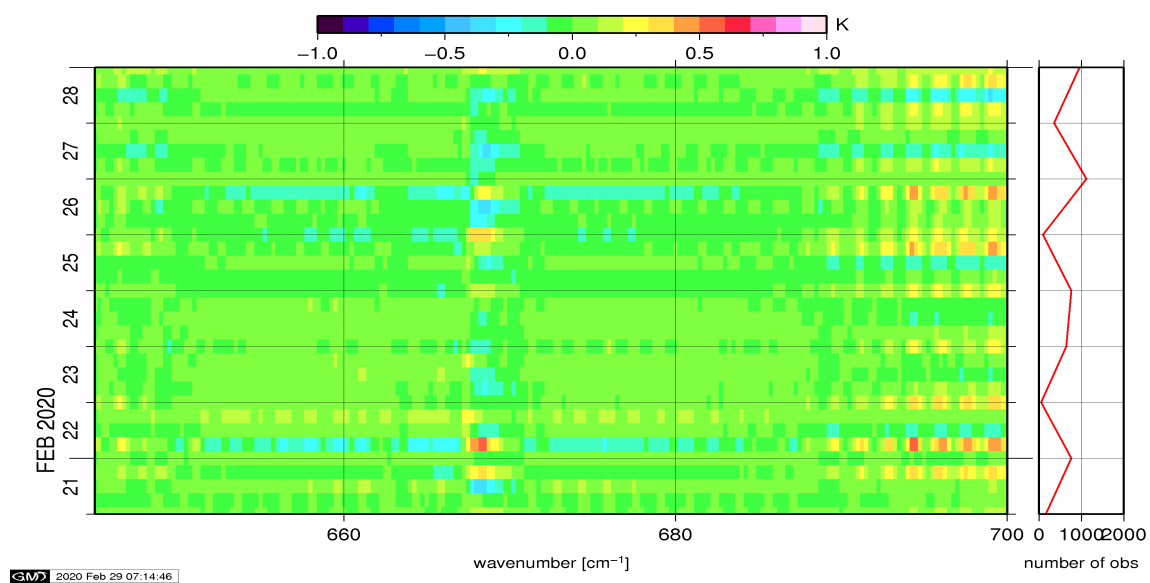


Figure 14: Radiance Anomaly in BT: CO2 14

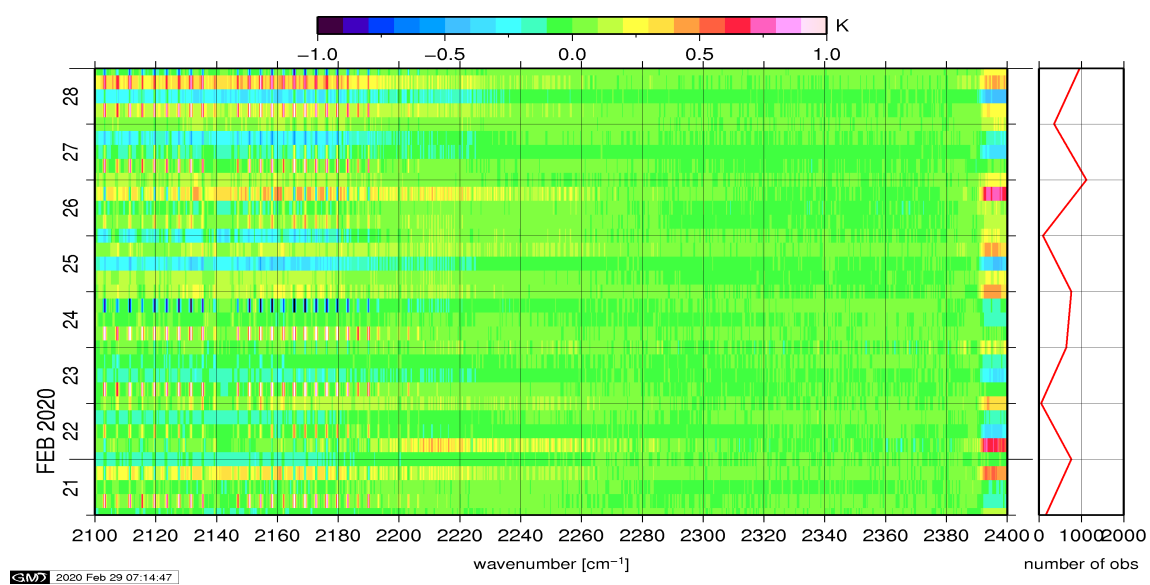


Figure 15: Radiance Anomaly in BT: CO2 4.3

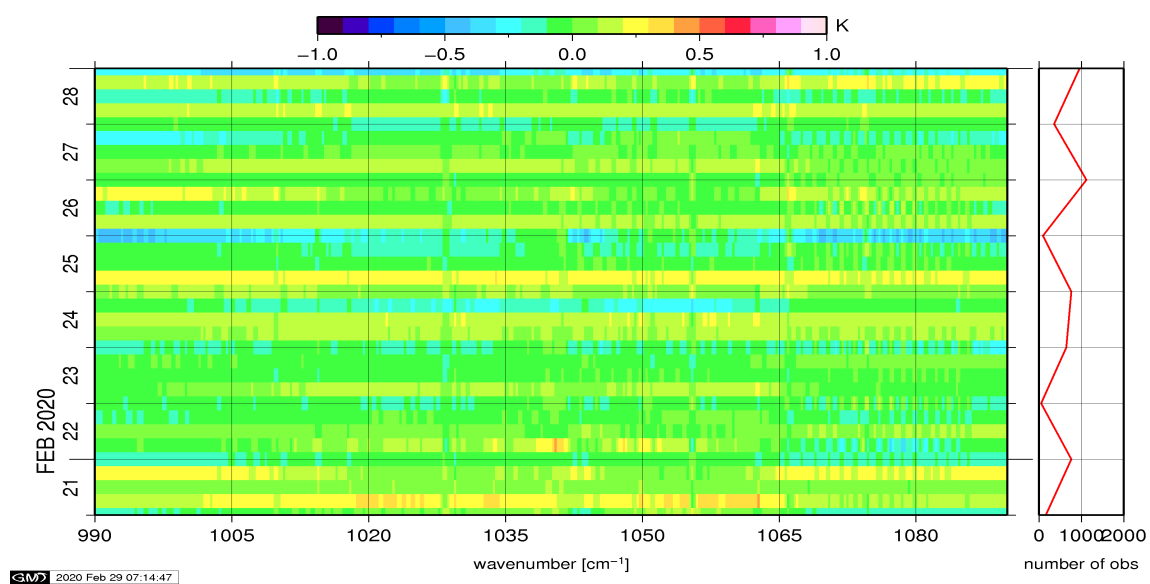


Figure 16: Radiance Anomaly in BT: O3

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.

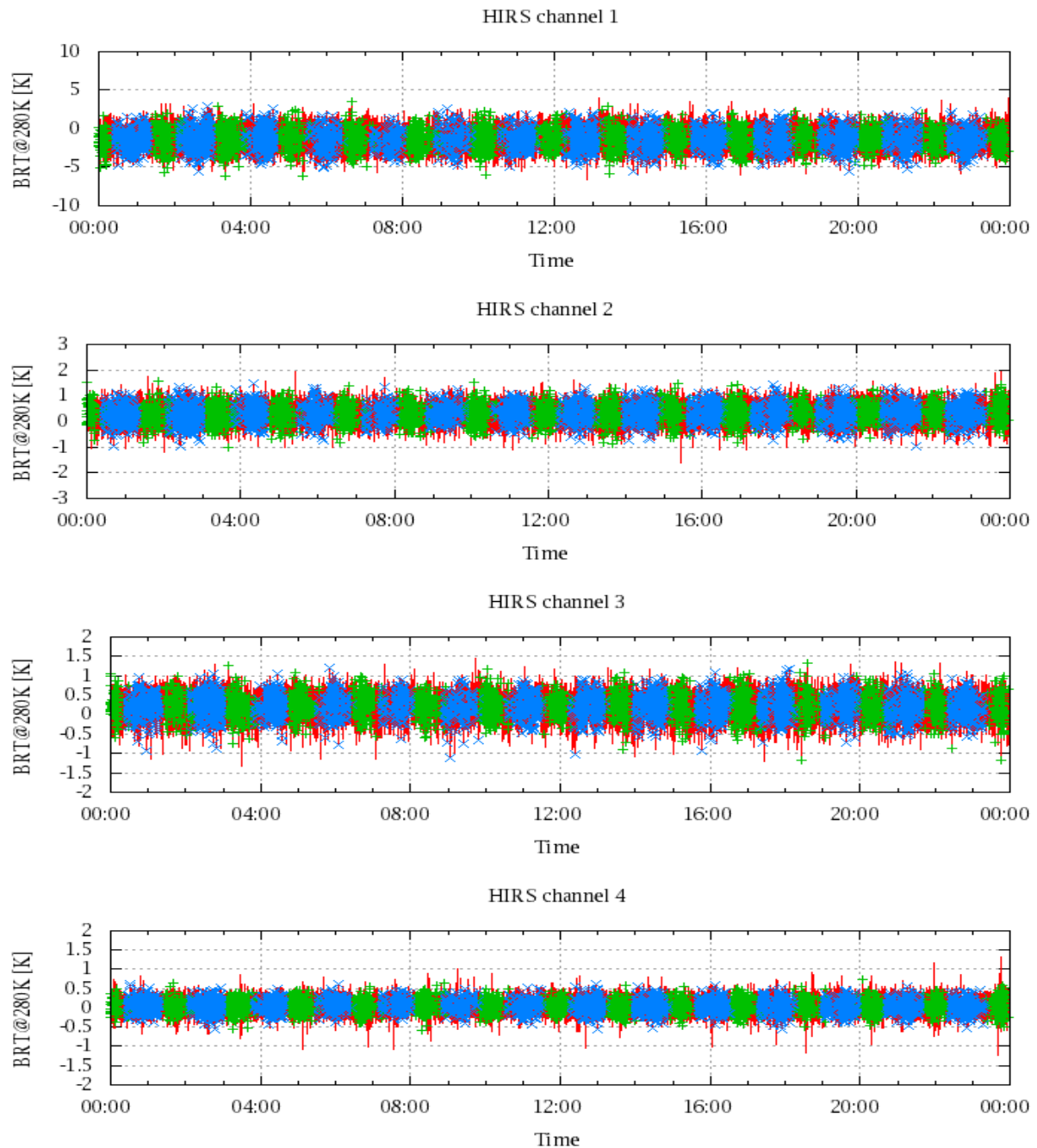


Figure 17: Radiance Differences in BT

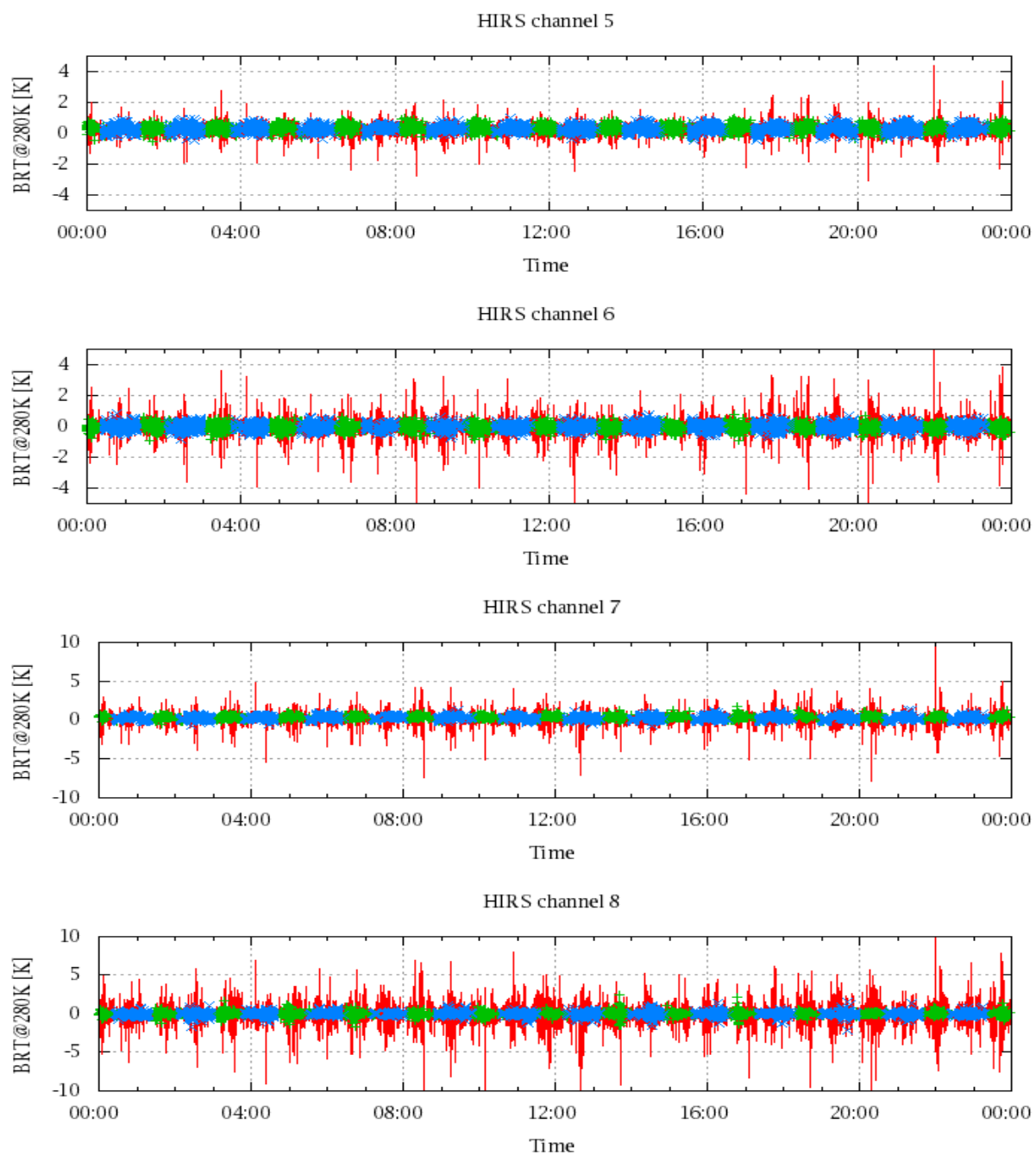


Figure 18: Radiance Differences in BT

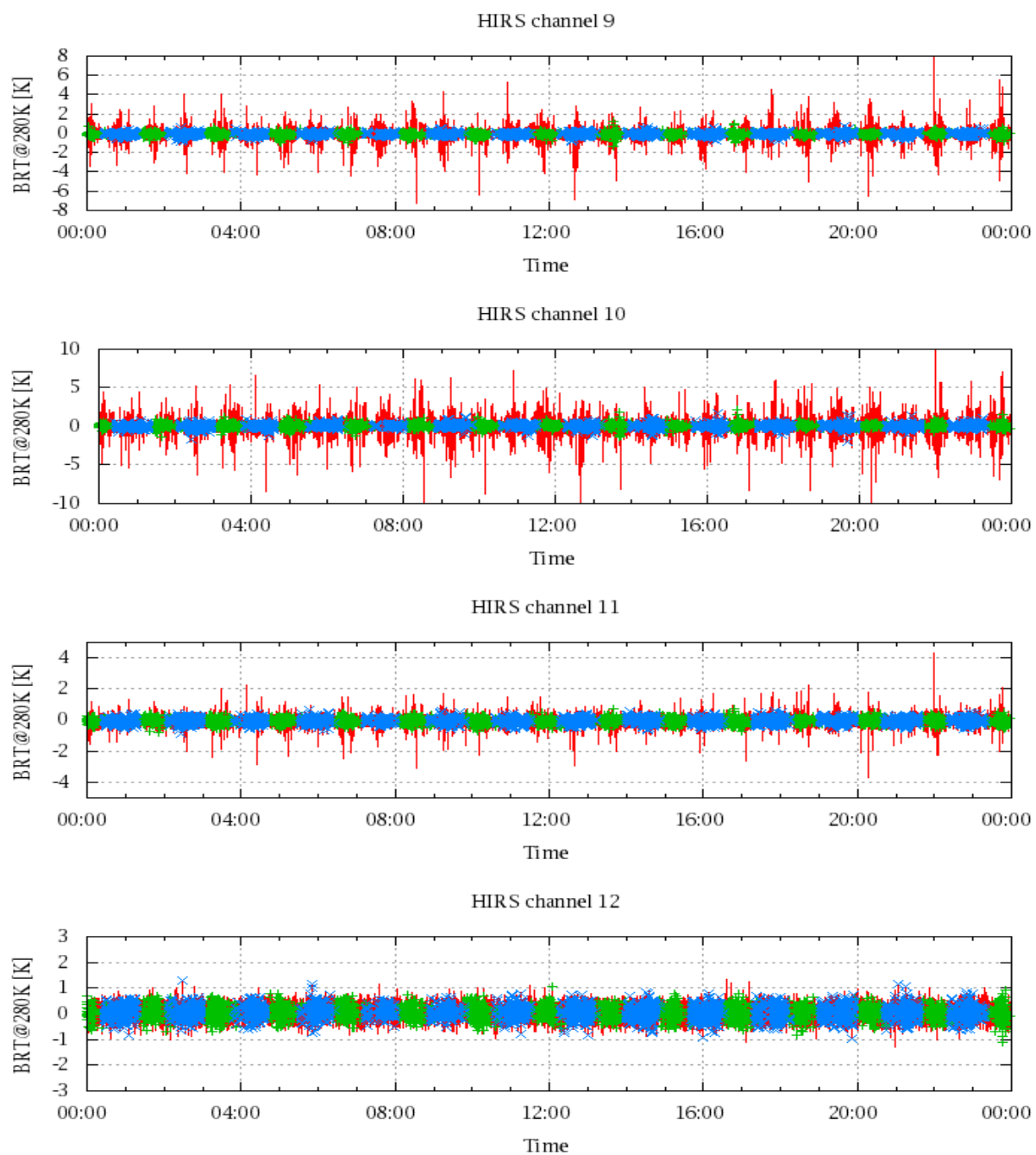


Figure 19: Radiance Differences in BT

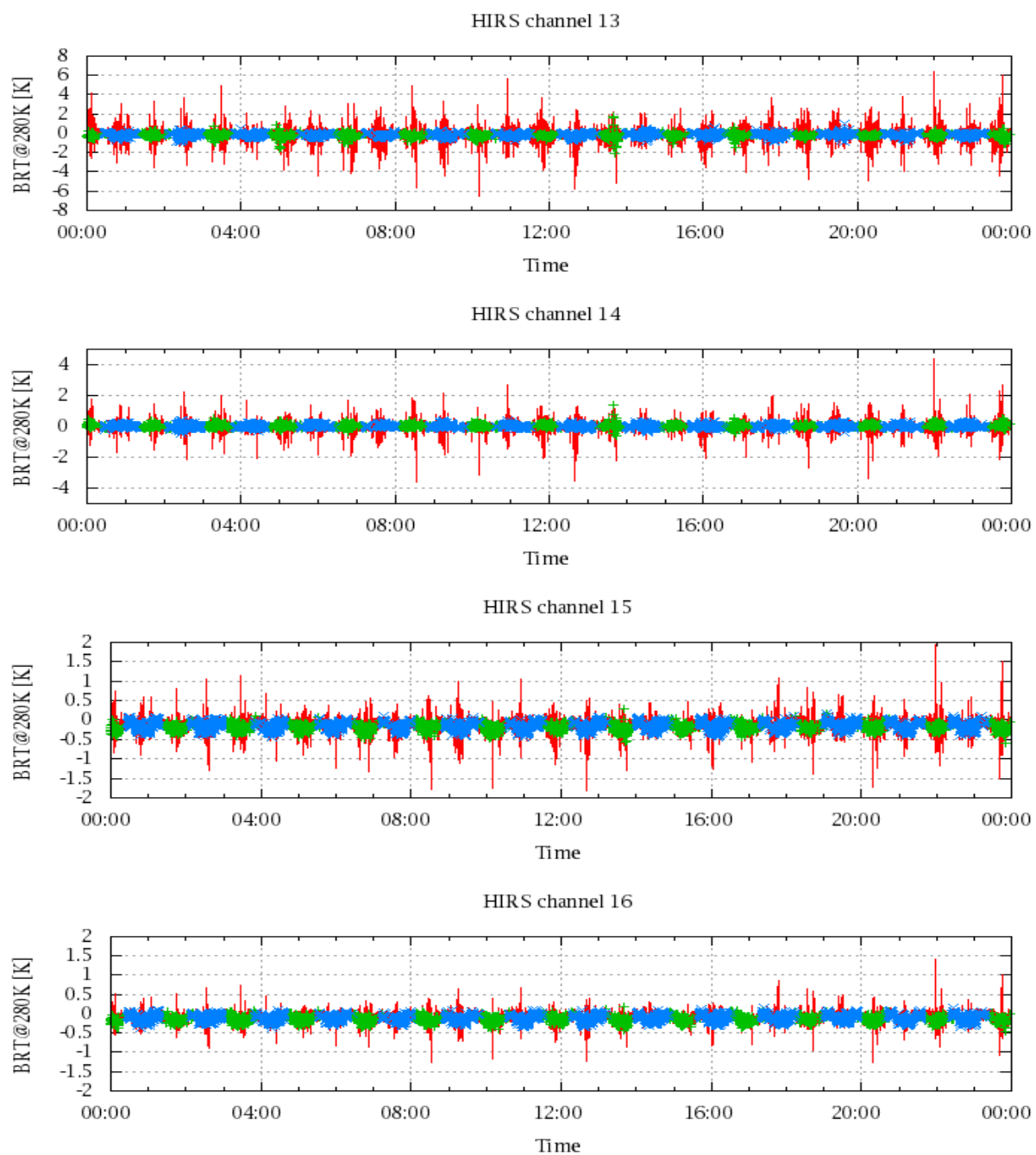


Figure 20: Radiance Differences in BT

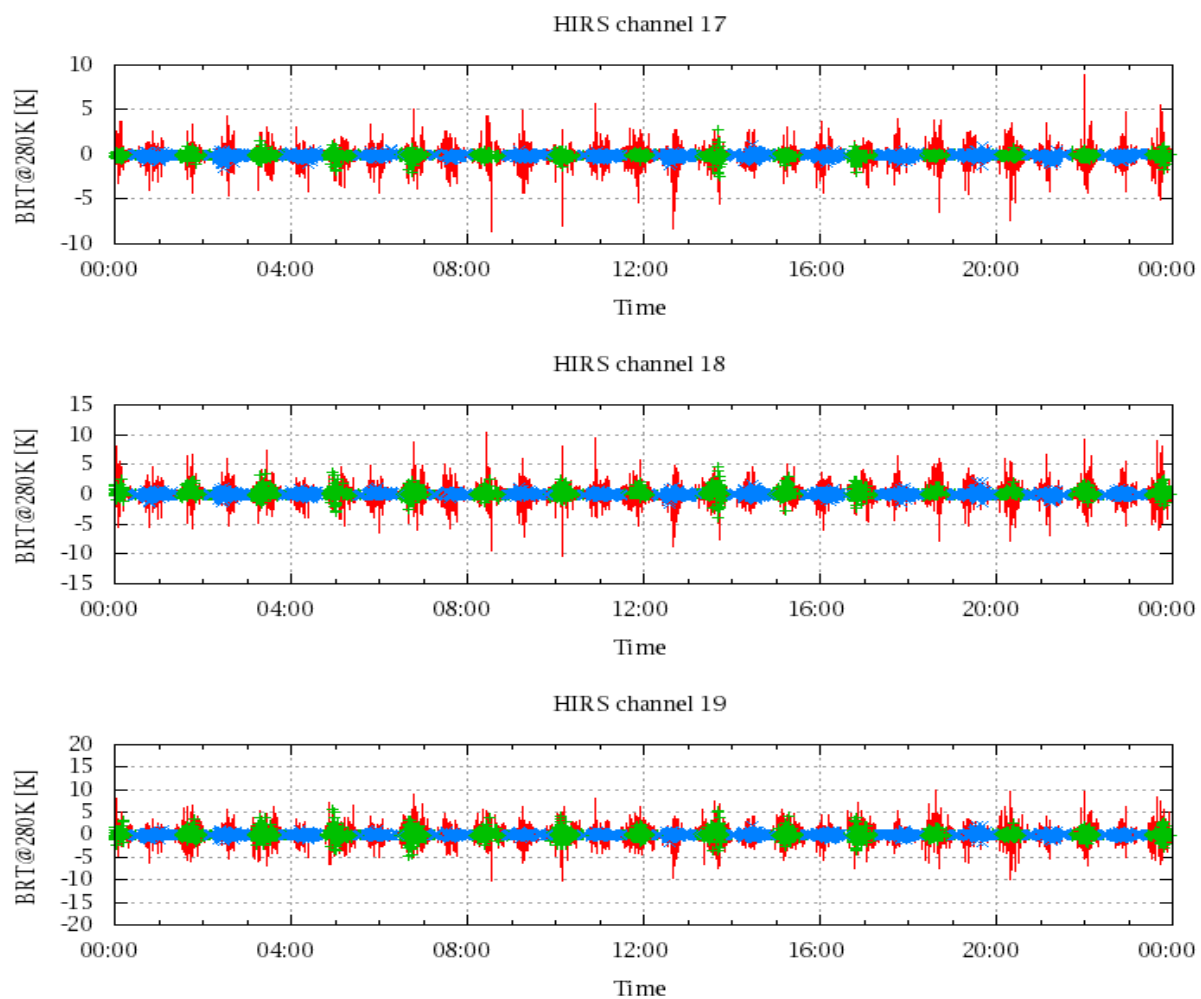


Figure 21: Radinace Differences in BT