

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

IASI monitoring team

05/05/2020 00:00:00 - 06/05/2020 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the Metop-A satellite retrieved from the IASI L0 and L1 ENG product (3 minutes data packet) for 05/05/2020 00:00:00 - 06/05/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 05/05/2020 00:00:00 - 06/05/2020 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	463	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	478	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1289	1630	20200505171029.675	20200505171200.050
PX1 (130)	7629	8196	20200505185128.673	20200505185400.020
PX2 (135)	1289	1630	20200505171029.675	20200505171200.050
PX2 (135)	7629	8196	20200505185128.673	20200505185400.020
PX3 (140)	1289	1630	20200505171029.675	20200505171200.050
PX3 (140)	7629	8196	20200505185128.673	20200505185400.020
PX4 (145)	1289	1630	20200505171029.675	20200505171200.050
PX4 (145)	7628	8196	20200505185128.454	20200505185400.020
IMG (150)	15201	15586	20200505171029.675	20200505171200.050
IMG (150)	8184	8828	20200505185128.454	20200505185400.020
VER (160)	5213	5269	20200505171027.730	20200505171203.726
VER (160)	8998	9094	20200505185123.700	20200505185403.692
AUX (180)	7573	7585	20200505171028.159	20200505171204.159
AUX (180)	8330	8350	20200505185124.130	20200505185404.126

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
05/05/2020 00:00:06	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	463	-
GQisFlagQual set (PX1)	99.46 %	-
GQisFlagQual set (PX2)	99.43 %	-
GQisFlagQual set (PX3)	99.44 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.45 %	-

Table 4: Quality flags

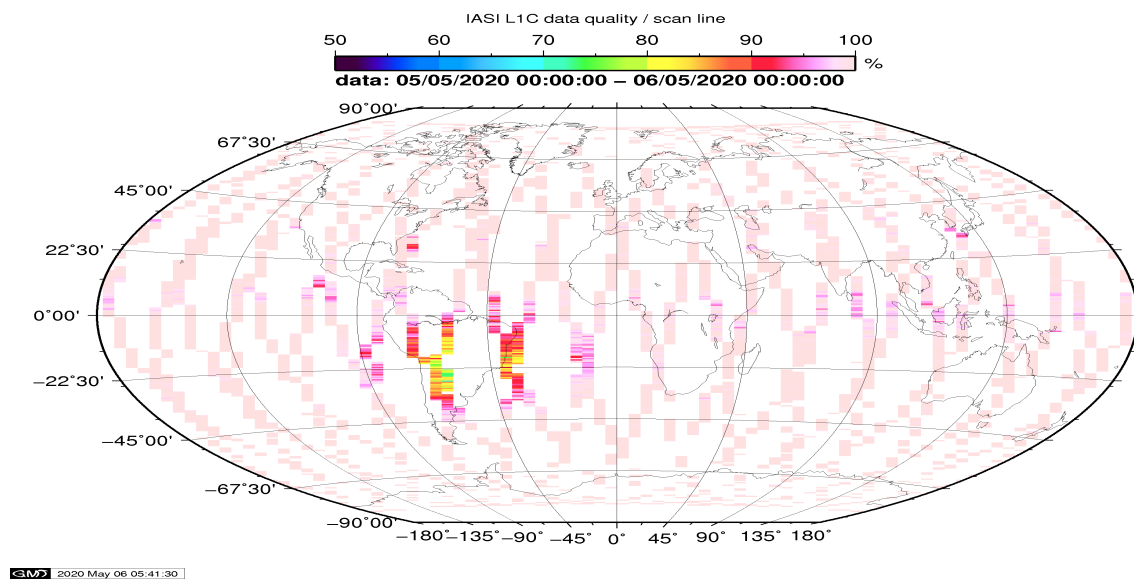


Figure 1: L1C data quality

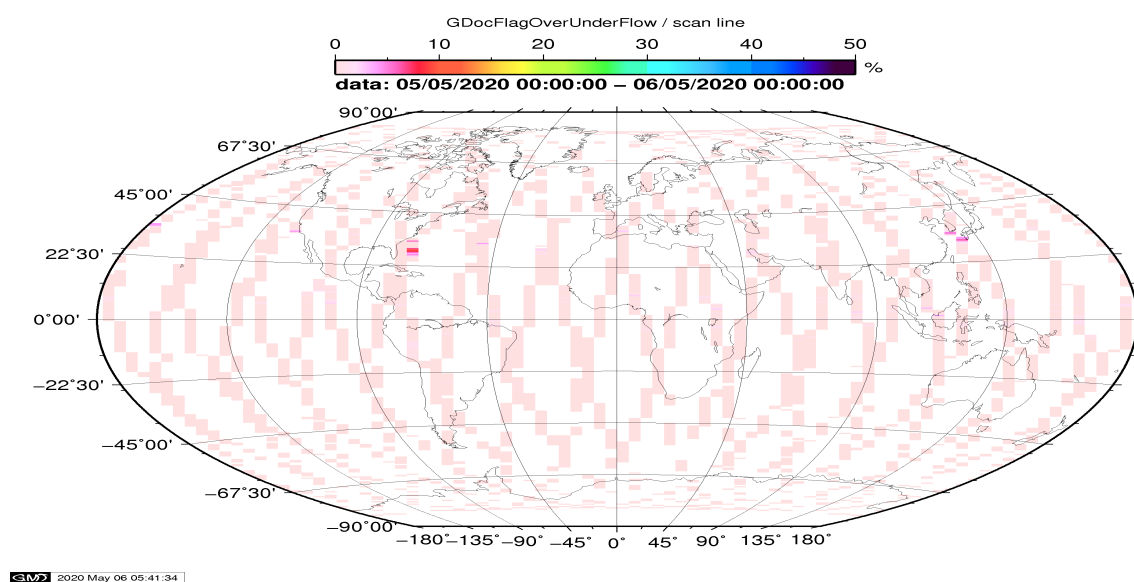


Figure 2: Flag of Over and Under Flows

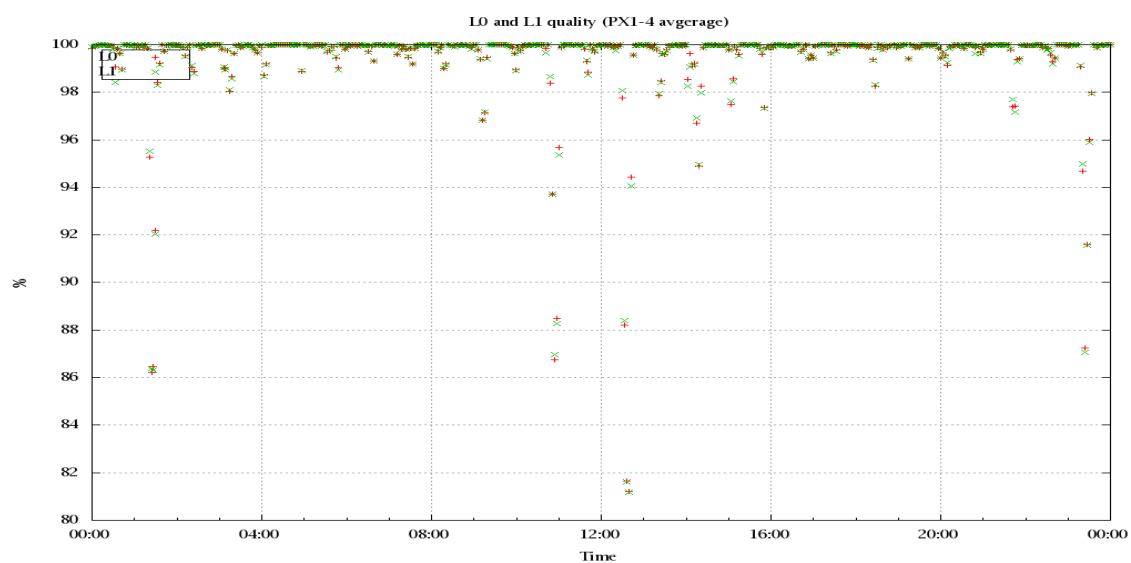


Figure 3: Level 0 and 1C overall quality

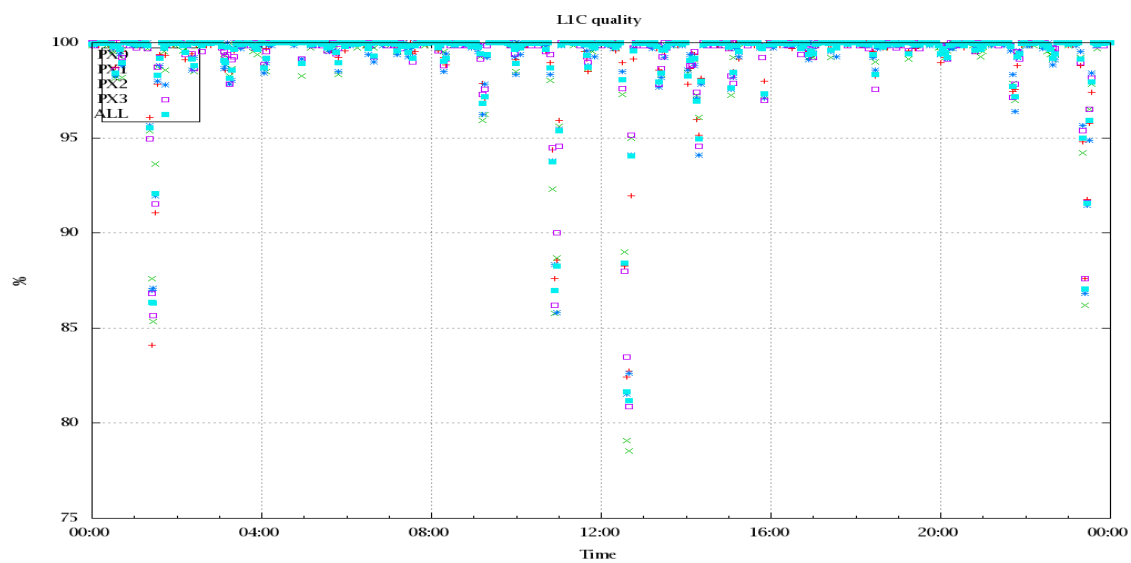


Figure 4: Level 1C quality

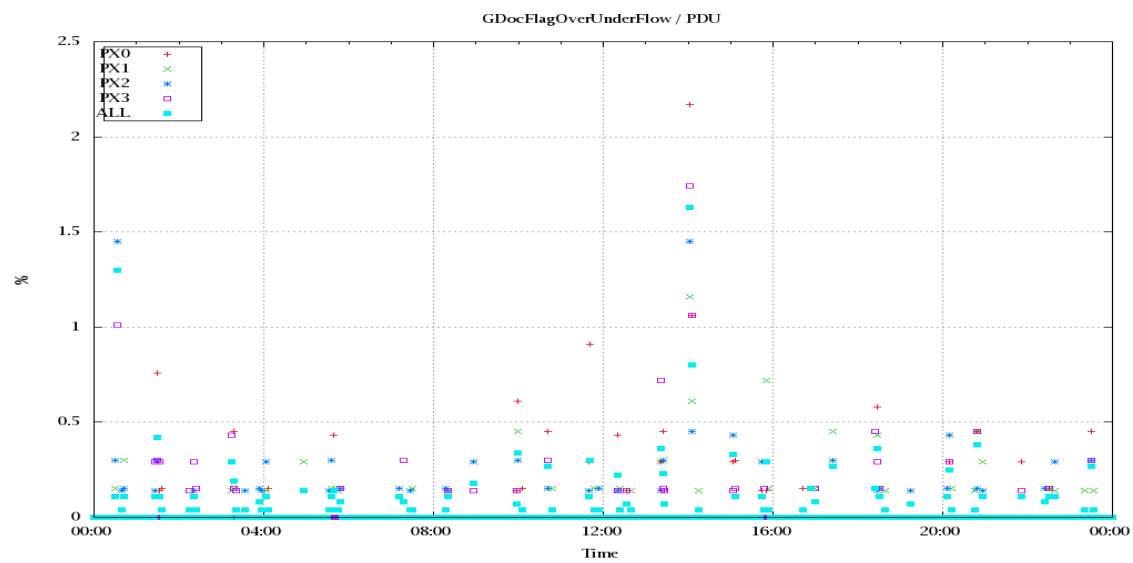


Figure 5: Timeseries of flag of Over and Under Flows

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.

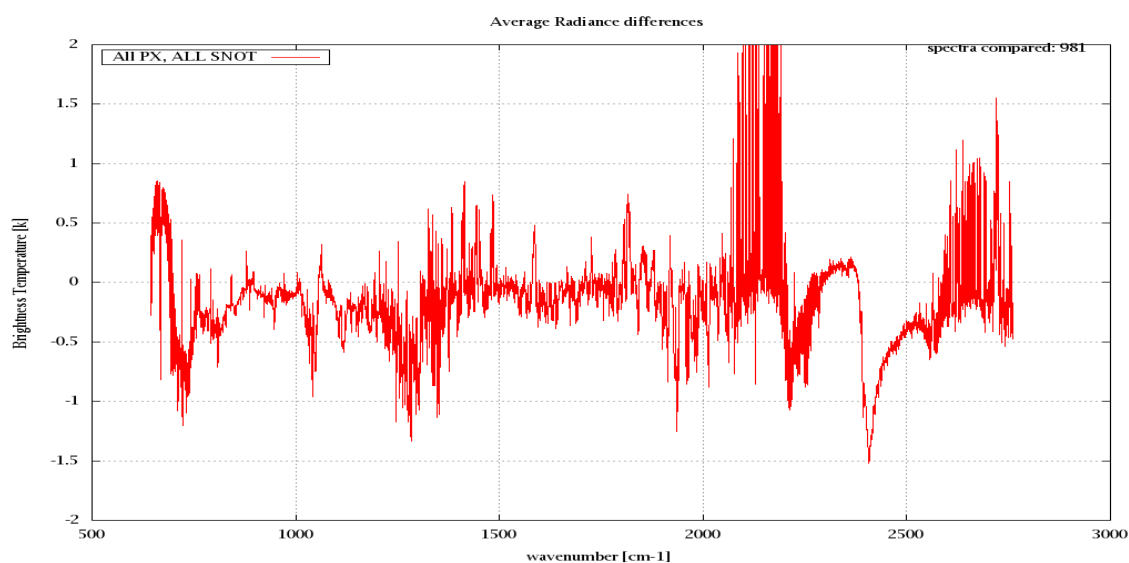


Figure 6: Average Radiance differences: OBS-CAL

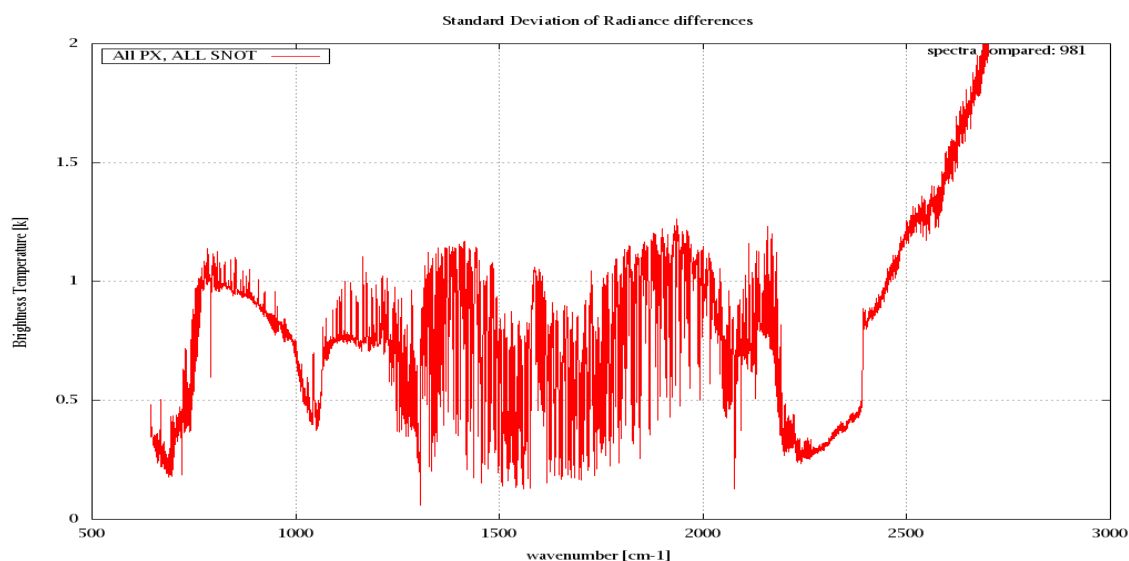


Figure 7: Standard Deviation of Radiance differences

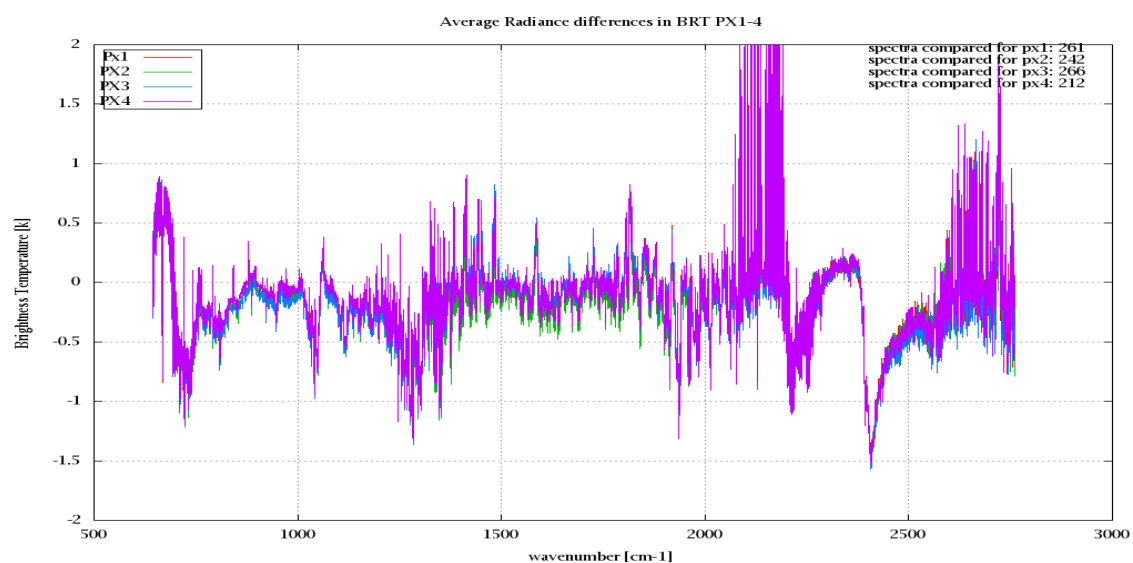


Figure 8: Average Radiance differences: OBS-CAL

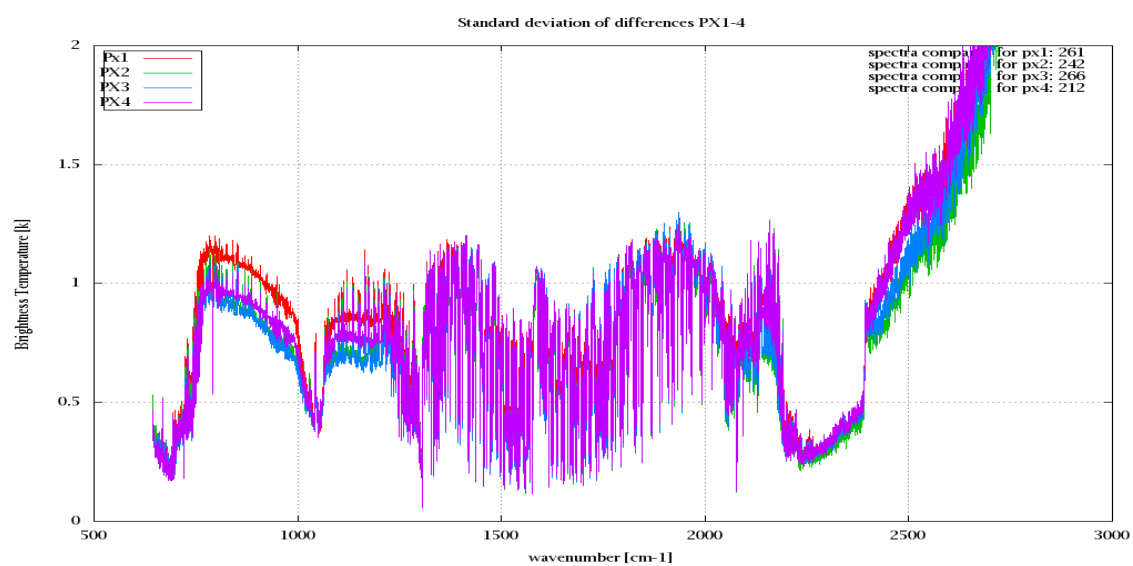


Figure 9: Standard Deviation of Radiance differences

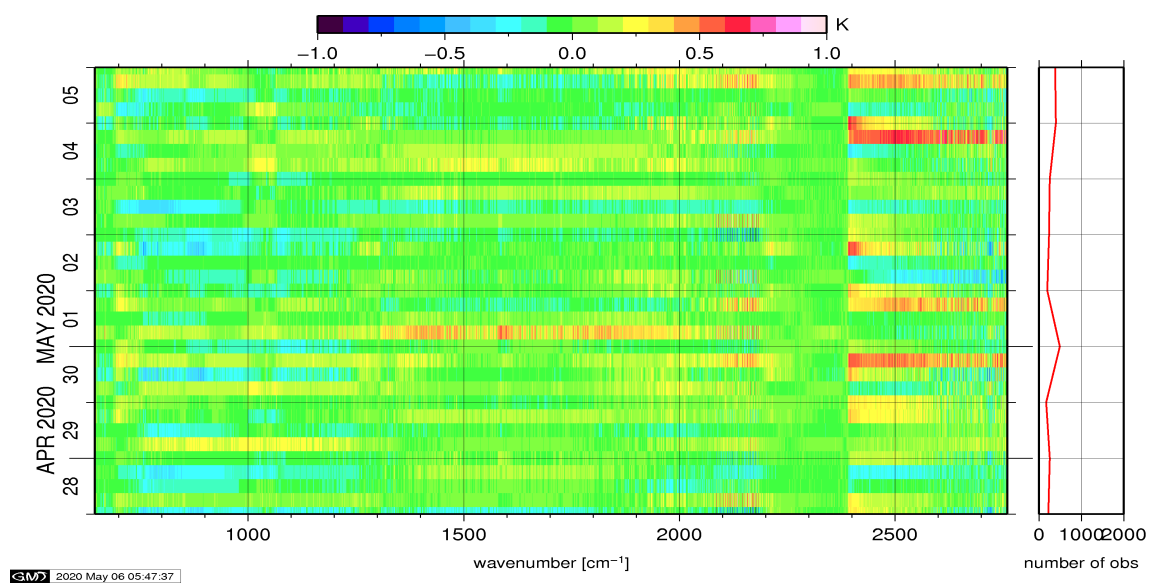


Figure 10: Radiance Anomaly in BT: All Channels

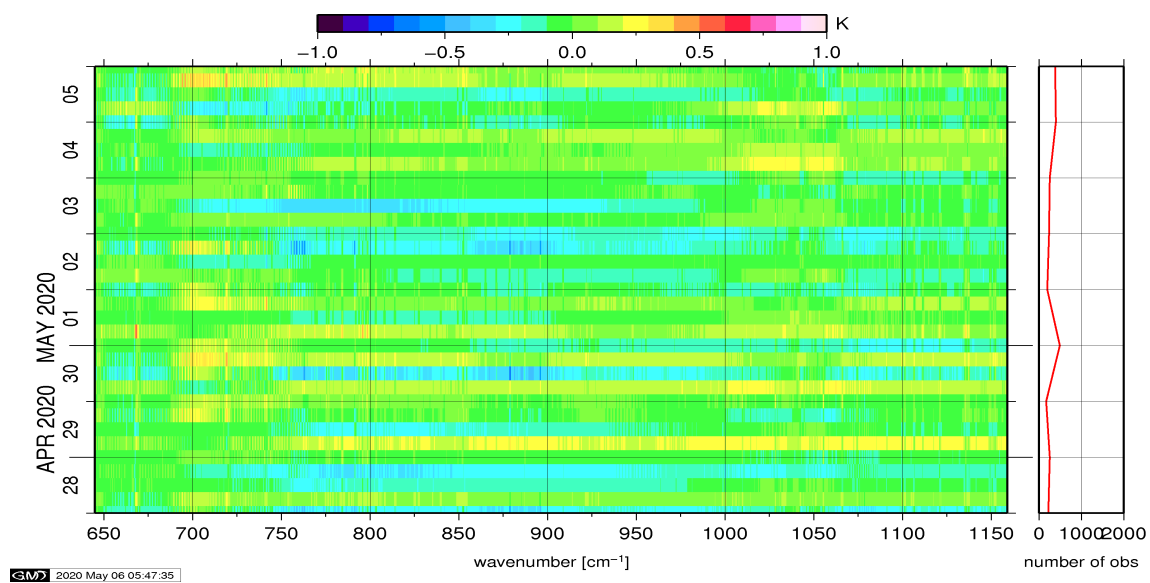


Figure 11: Radiance Anomaly in BT: IASI Band 1

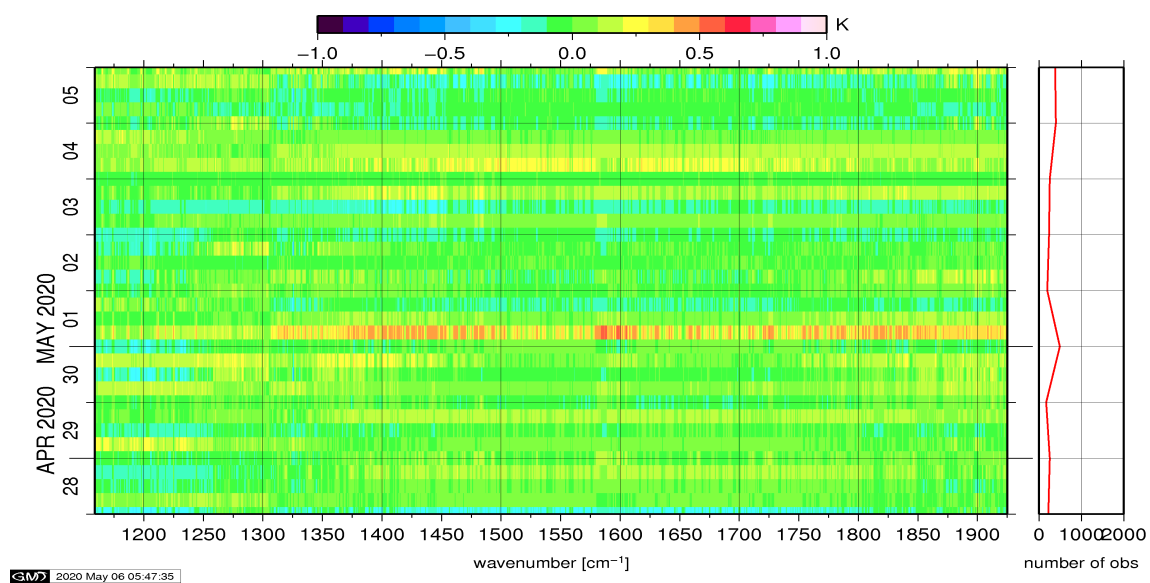


Figure 12: Radiance Anomaly in BT: IASI Band 2

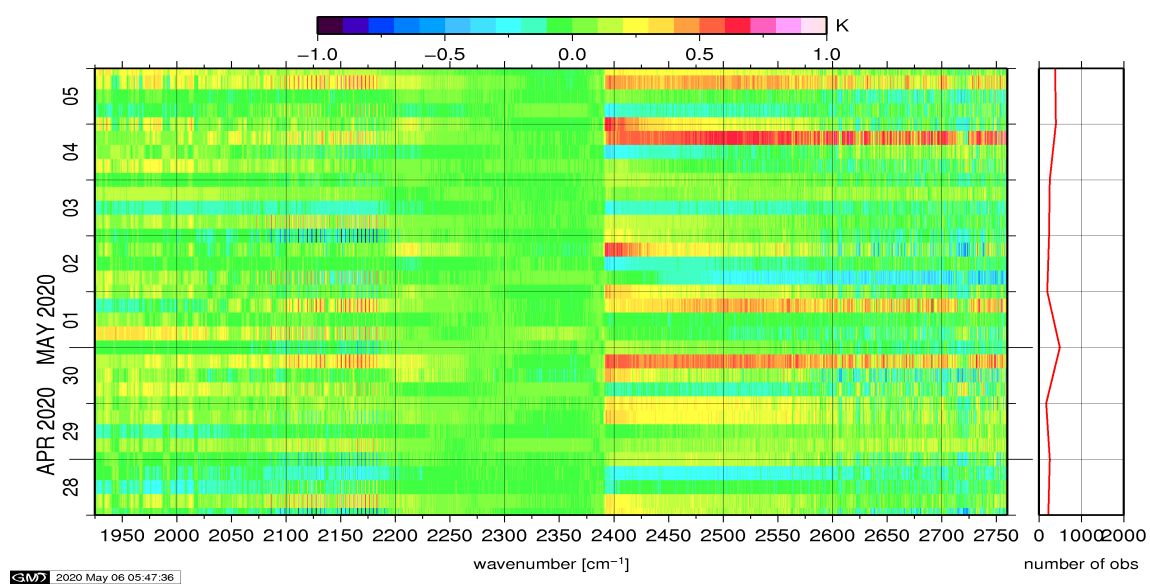


Figure 13: Radiance Anomaly in BT: IASI Band 3

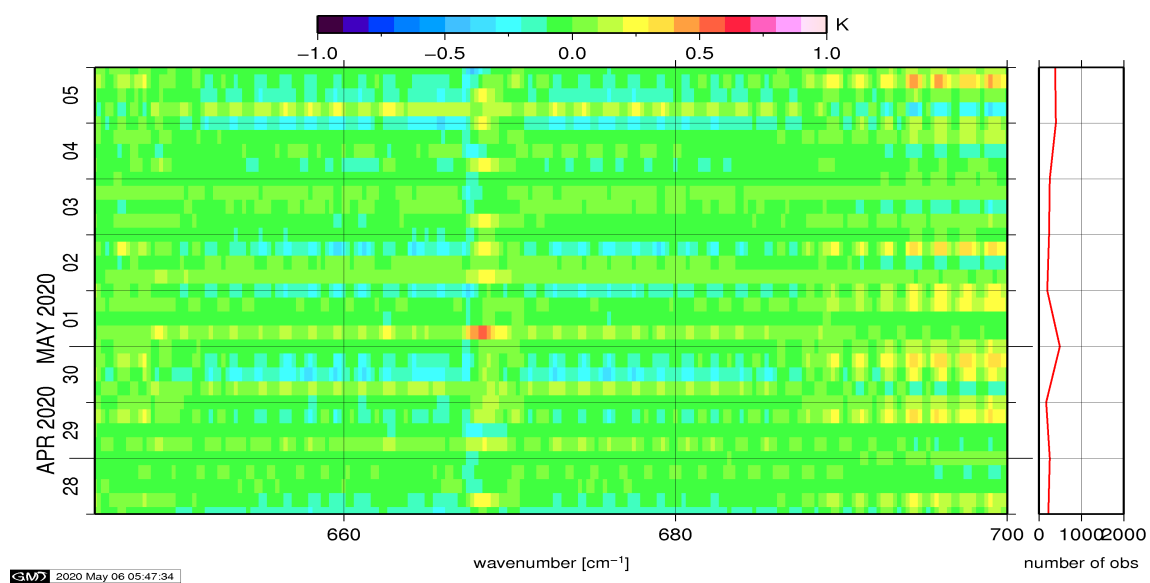


Figure 14: Radiance Anomaly in BT: CO2 14

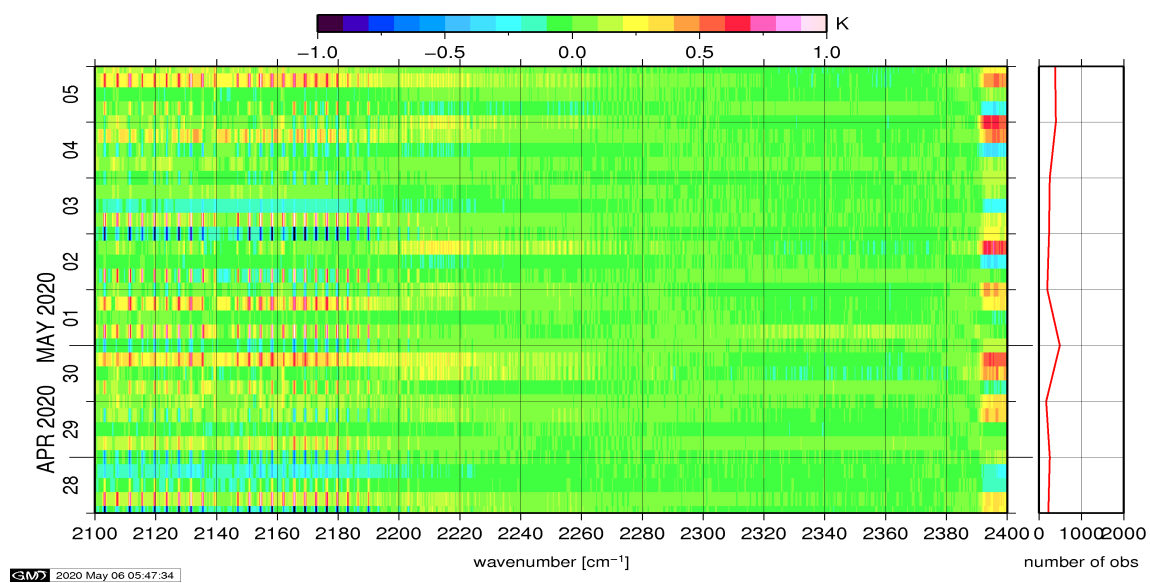


Figure 15: Radiance Anomaly in BT: CO2 4.3

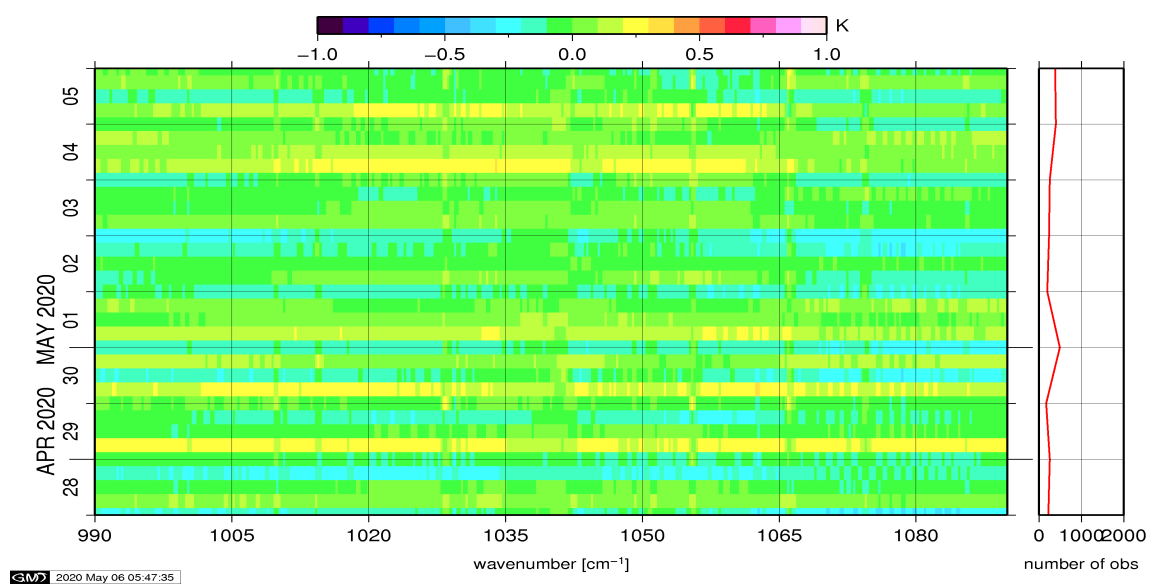


Figure 16: Radiance Anomaly in BT: O3

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.

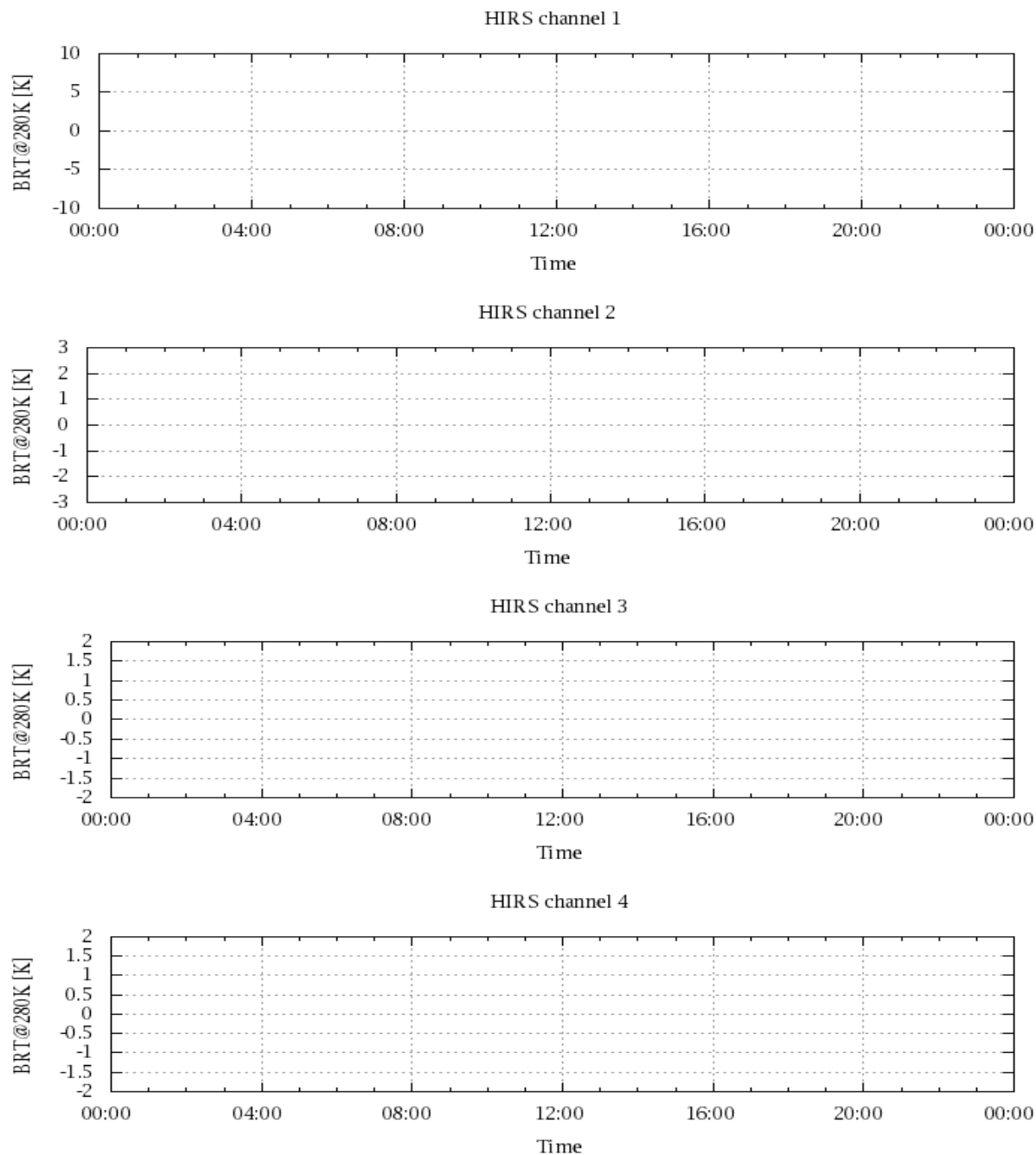


Figure 17: Radiance Differences in BT

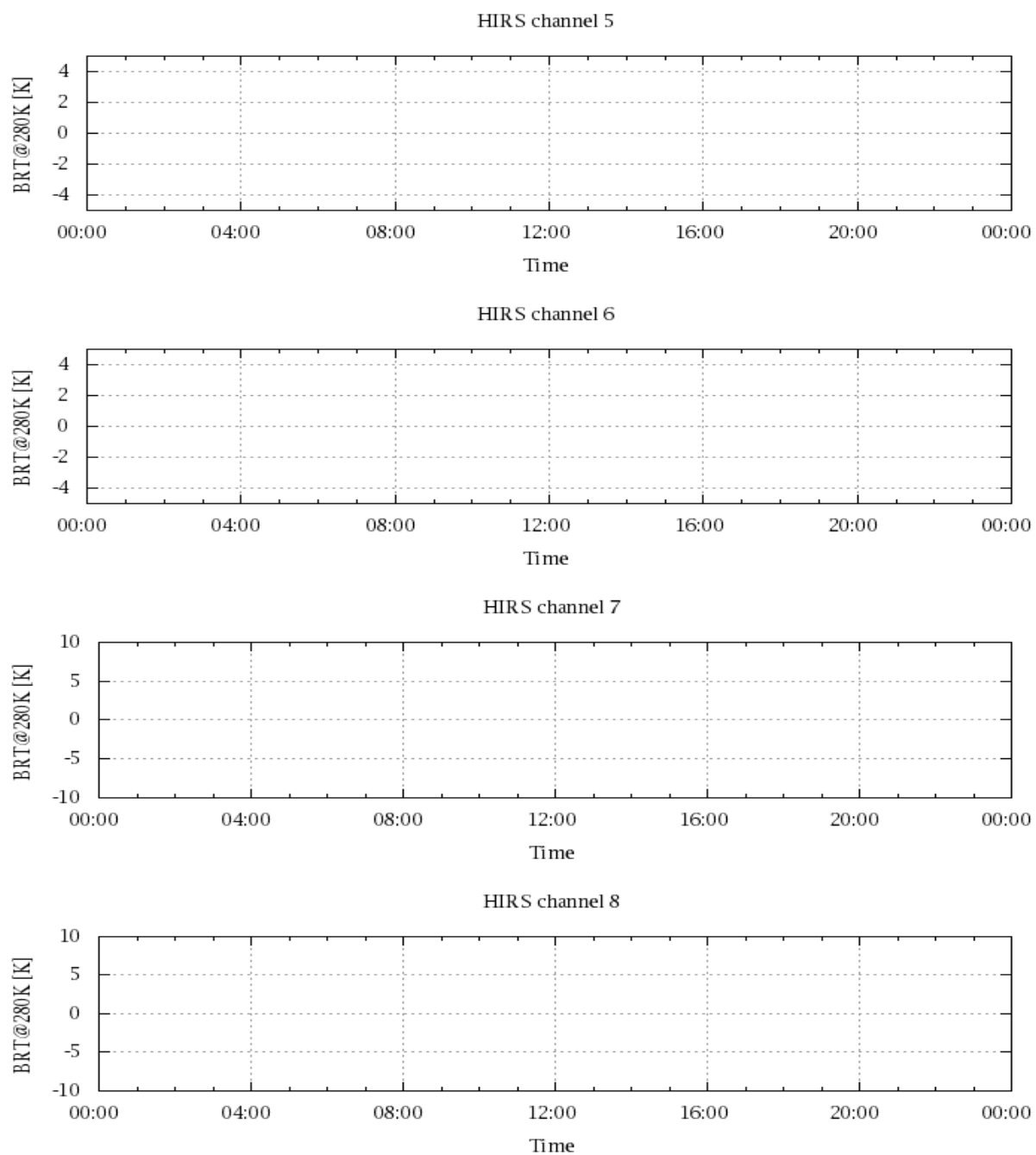


Figure 18: Radiance Differences in BT

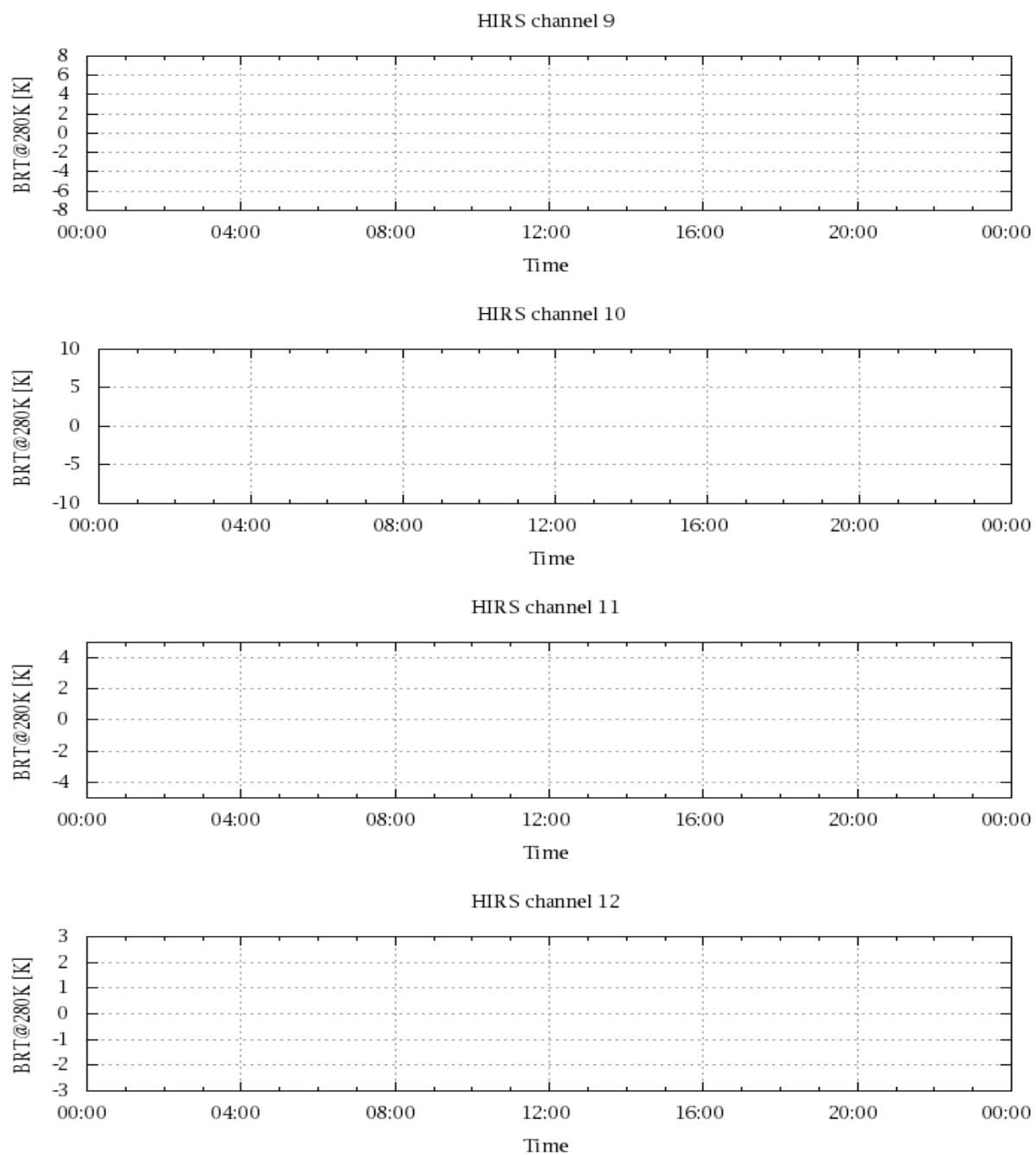


Figure 19: Radiance Differences in BT

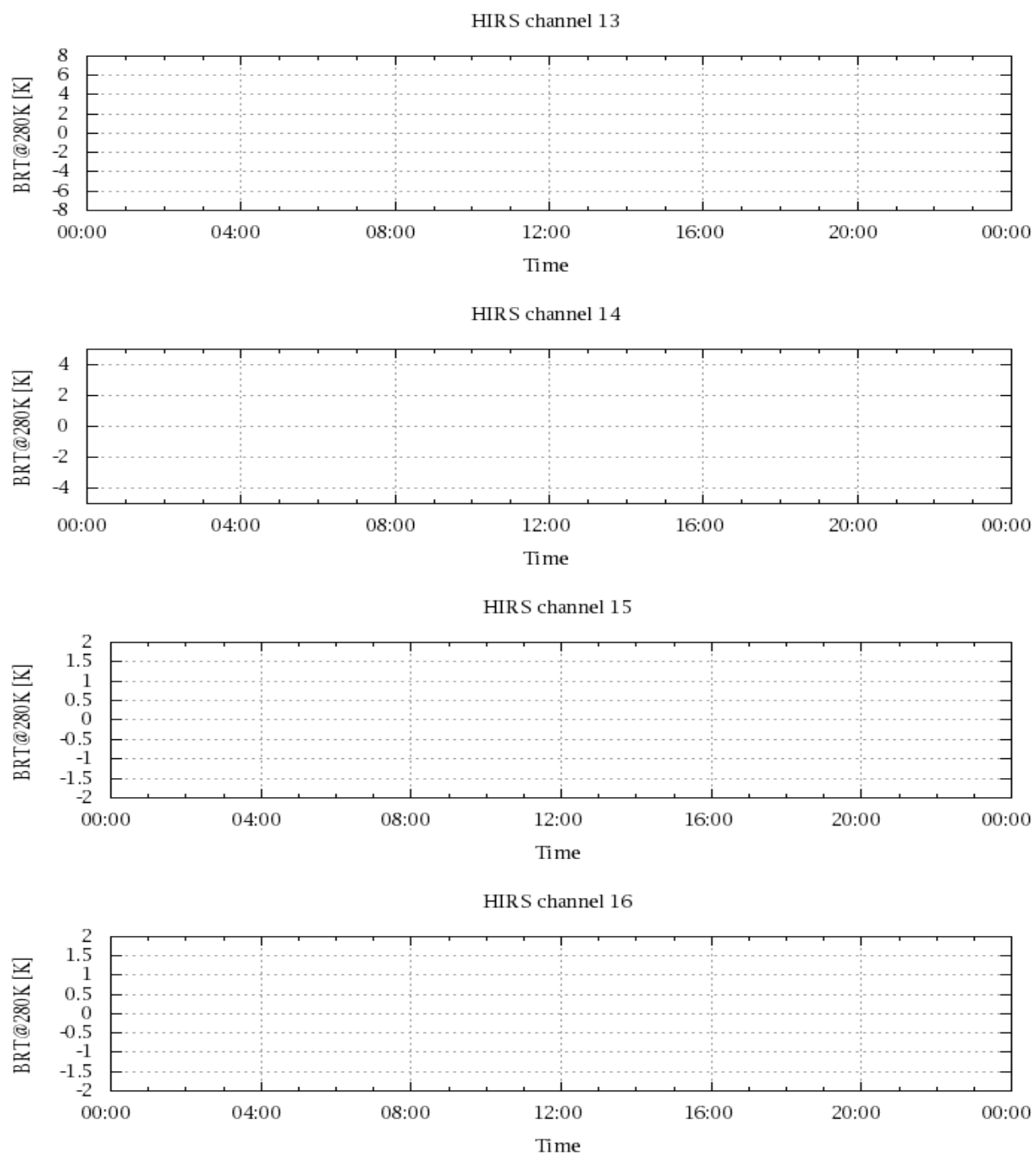


Figure 20: Radiance Differences in BT

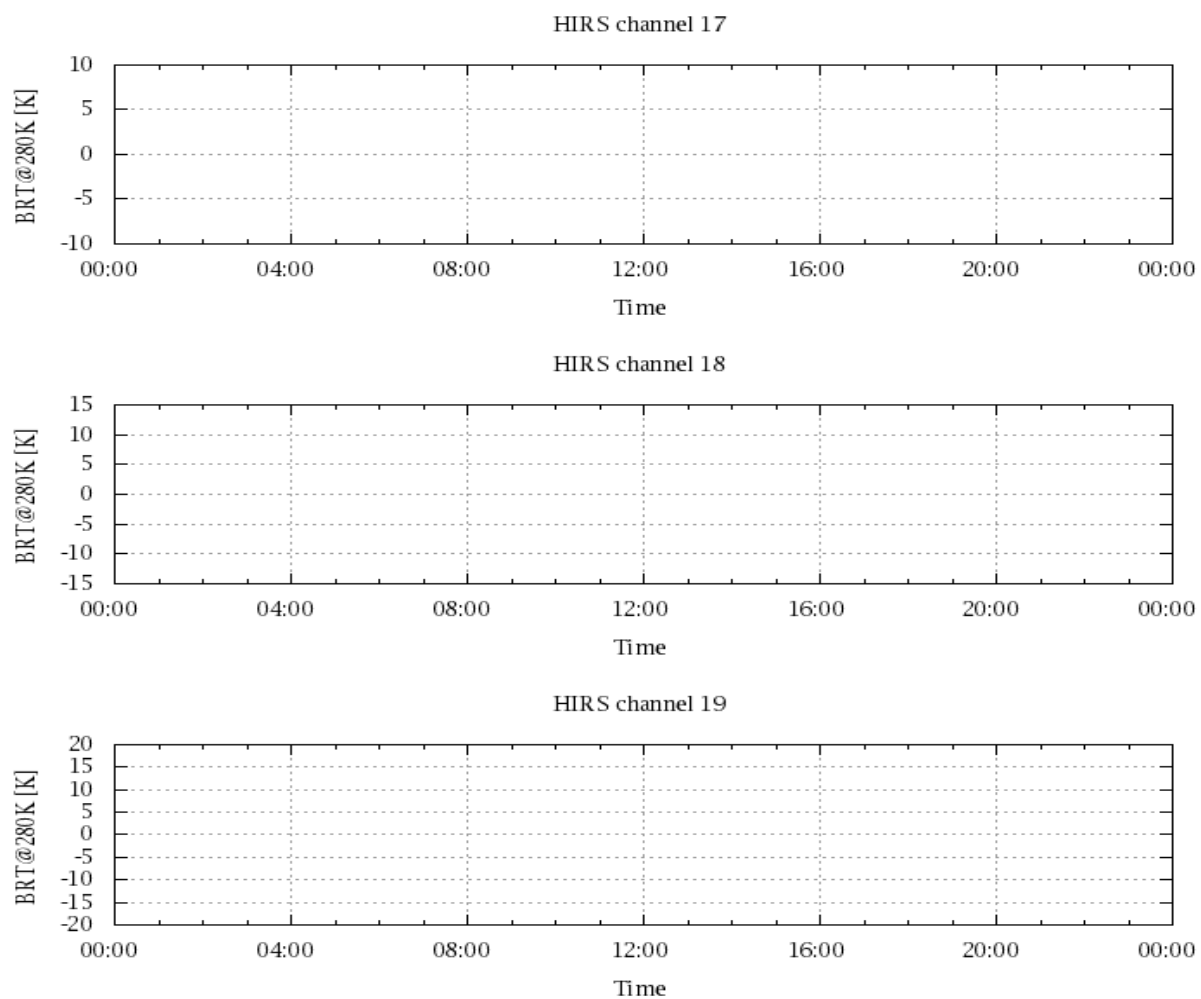


Figure 21: Radinace Differences in BT