

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

IASI monitoring team

26/04/2021 00:00:00 - 27/04/2021 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 26/04/2021 00:00:00 - 27/04/2021 00:00:00 .

The monitoring data are extracted on PDU basis.

## 2 Data quantity 26/04/2021 00:00:00 - 27/04/2021 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	455	e
L0 IASI PDUs	453	e
L1 ENG PDUs	448	e
L1 ENG distinct GEPSGranule	445	a
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	446	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1159	1832	20210426060259.815	20210426060600.131
PX1 (130)	2509	3182	20210426060859.803	20210426061200.123
PX1 (130)	4531	5210	20210426061759.934	20210426062100.035
PX1 (130)	7231	7726	20210426062959.913	20210426074500.036
PX2 (135)	1159	1832	20210426060259.815	20210426060600.131
PX2 (135)	2509	3182	20210426060859.803	20210426061200.123
PX2 (135)	4531	5210	20210426061759.934	20210426062100.035
PX2 (135)	7231	7726	20210426062959.913	20210426074500.036
PX3 (140)	1159	1832	20210426060259.815	20210426060600.131
PX3 (140)	2509	3182	20210426060859.803	20210426061200.123
PX3 (140)	4531	5210	20210426061759.934	20210426062100.035
PX3 (140)	7231	7726	20210426062959.913	20210426074500.036
PX4 (145)	1159	1832	20210426060259.815	20210426060600.131
PX4 (145)	2509	3182	20210426060859.803	20210426061200.123
PX4 (145)	4531	5210	20210426061759.934	20210426062100.035
PX4 (145)	7231	7726	20210426062959.913	20210426074500.036
IMG (150)	3916	4681	20210426060259.815	20210426060600.131

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	5446	6211	20210426060859.803	20210426061200.123
IMG (150)	7740	8507	20210426061759.934	20210426062100.035
IMG (150)	10800	13543	20210426062959.913	20210426074500.036
VER (160)	7740	7856	20210426060253.546	20210426060605.537
VER (160)	7965	8081	20210426060853.533	20210426061205.529
VER (160)	8305	8416	20210426061757.555	20210426062101.551
VER (160)	8755	11566	20210426062957.534	20210426074501.551
AUX (180)	4784	4808	20210426060253.975	20210426060605.971
AUX (180)	4829	4853	20210426060853.967	20210426061205.958
AUX (180)	4897	4920	20210426061757.985	20210426062101.981
AUX (180)	4987	5550	20210426062957.964	20210426074501.981

Table 2: L0 data gaps

### 3 Instrument modes

Time	Transition from	Transition to
26/04/2021 00:00:00	-	Normal operation

Table 3: Instrument modes

### 4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	453	e
L1 ENG PDUs	448	e
L1 ENG distinct GEPSGranule	445	a
GQisFlagQual set (PX1)	99.42 %	-
GQisFlagQual set (PX2)	99.42 %	-
GQisFlagQual set (PX3)	99.41 %	-
GQisFlagQual set (PX4)	99.44 %	-
GQisFlagQual set (all)	99.42 %	-

Table 4: Quality flags

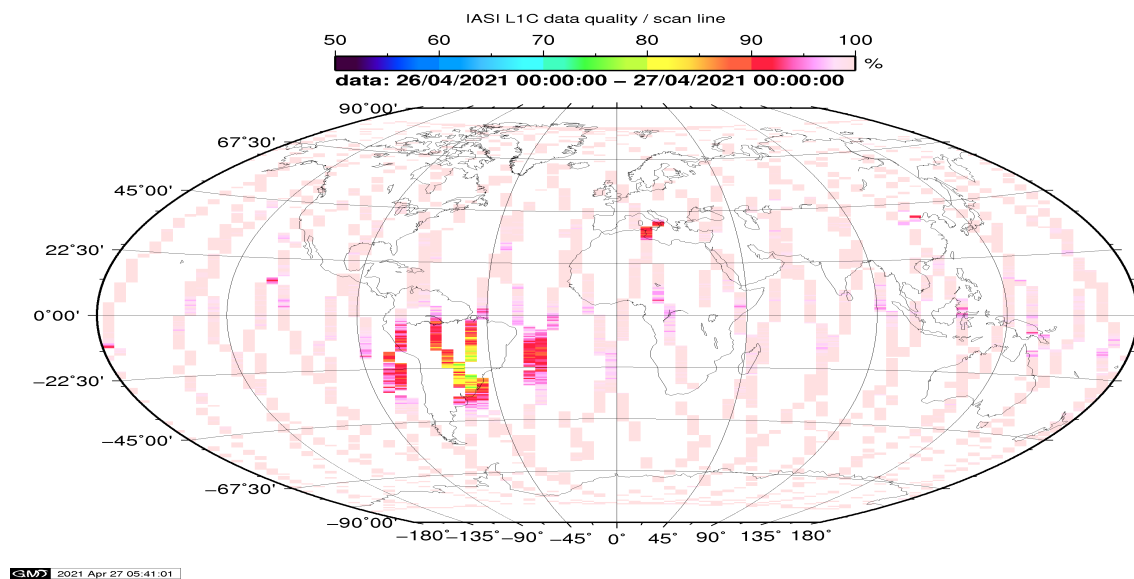


Figure 1: L1C data quality

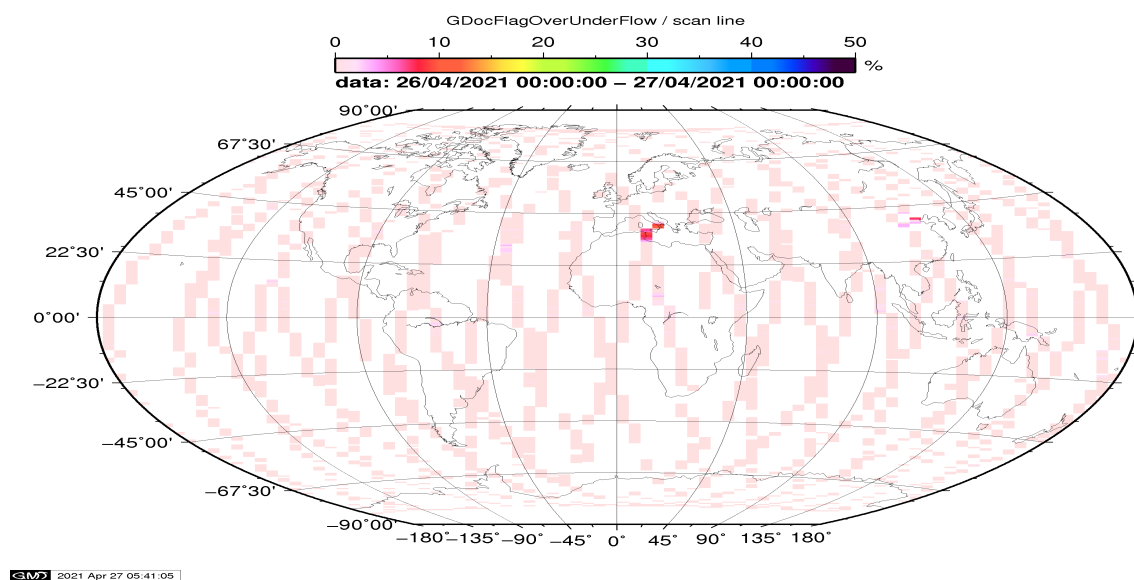


Figure 2: Flag of Over and Under Flows

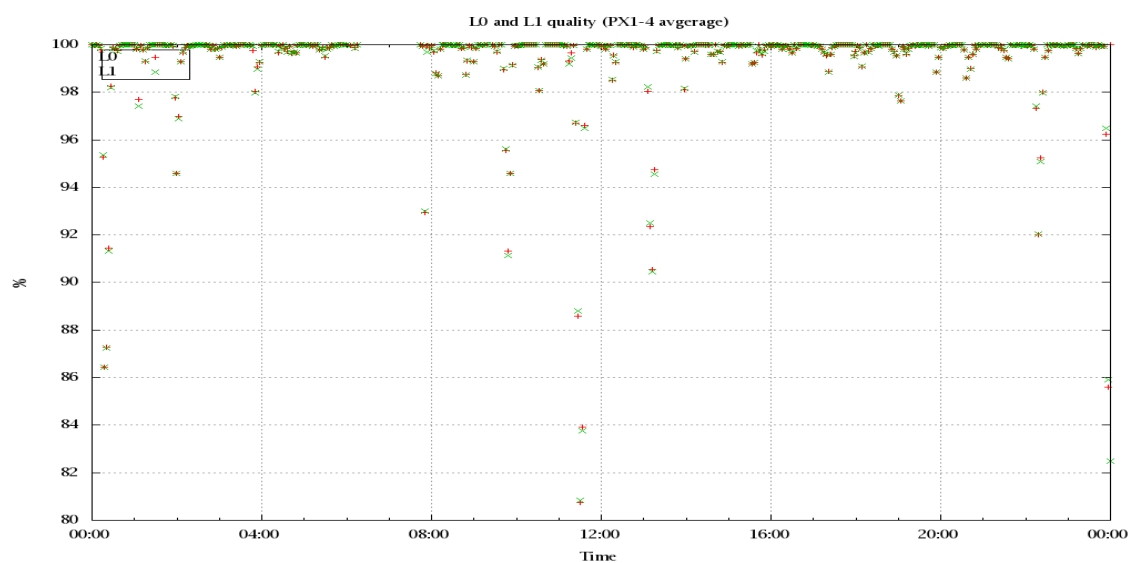


Figure 3: Level 0 and 1C overall quality

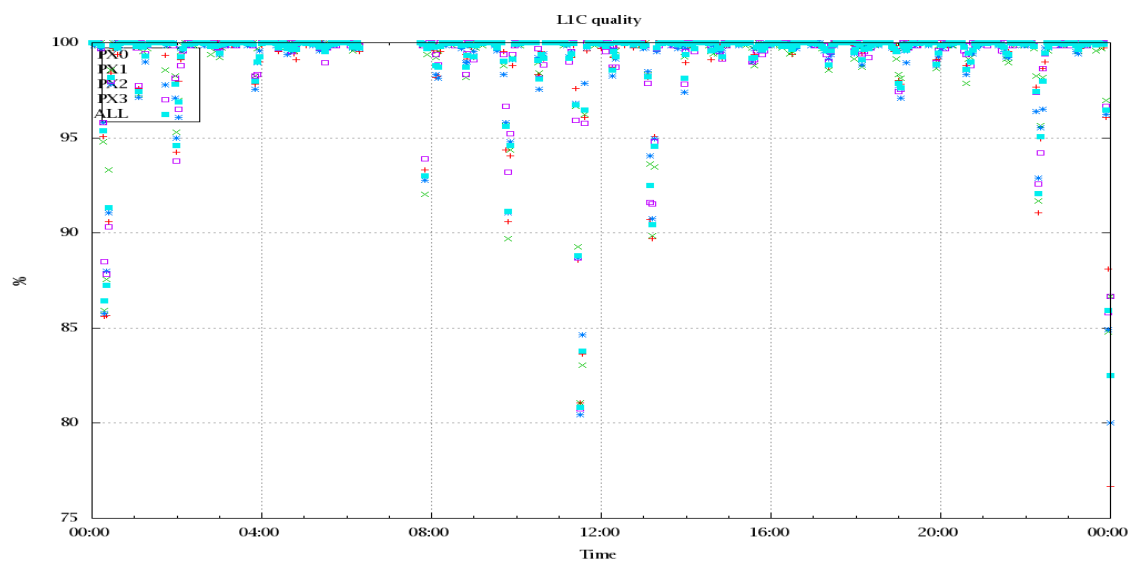


Figure 4: Level 1C quality

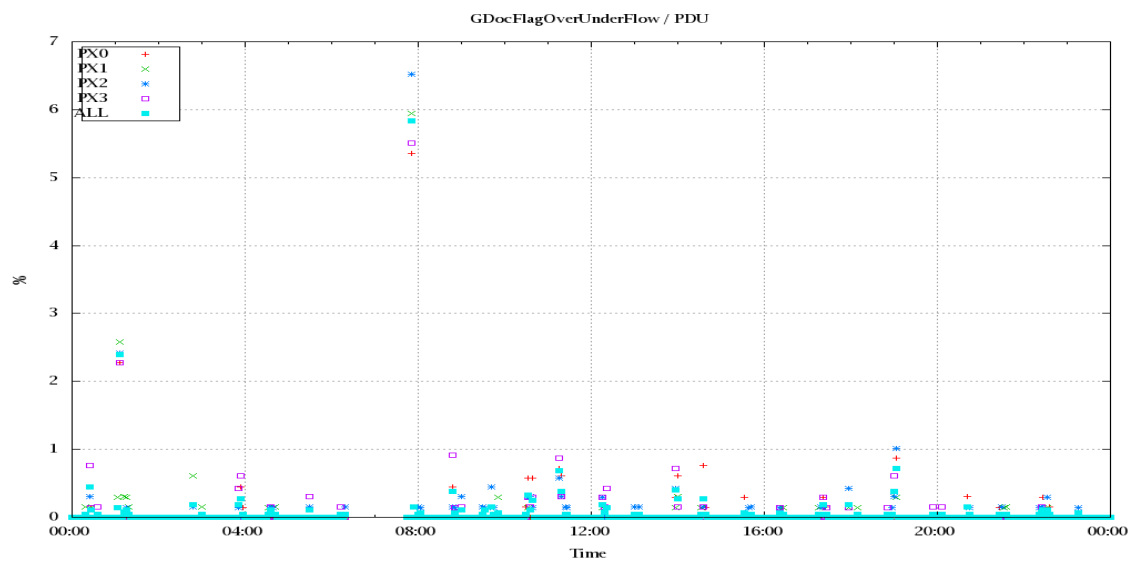


Figure 5: Timeseries of flag of Over and Under Flows

## 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.

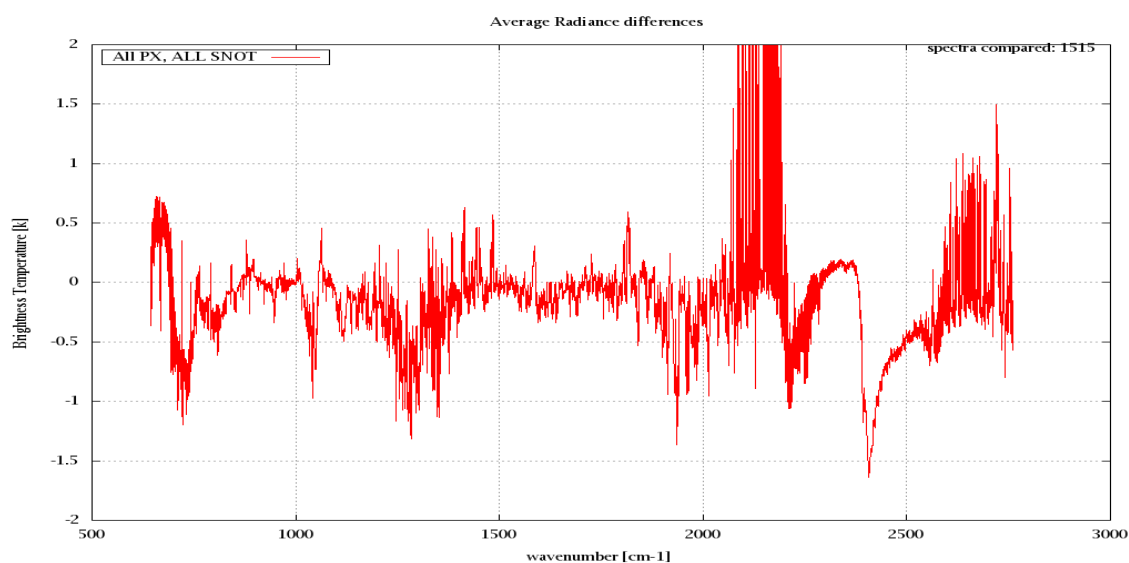


Figure 6: Average Radiance differences: OBS-CAL

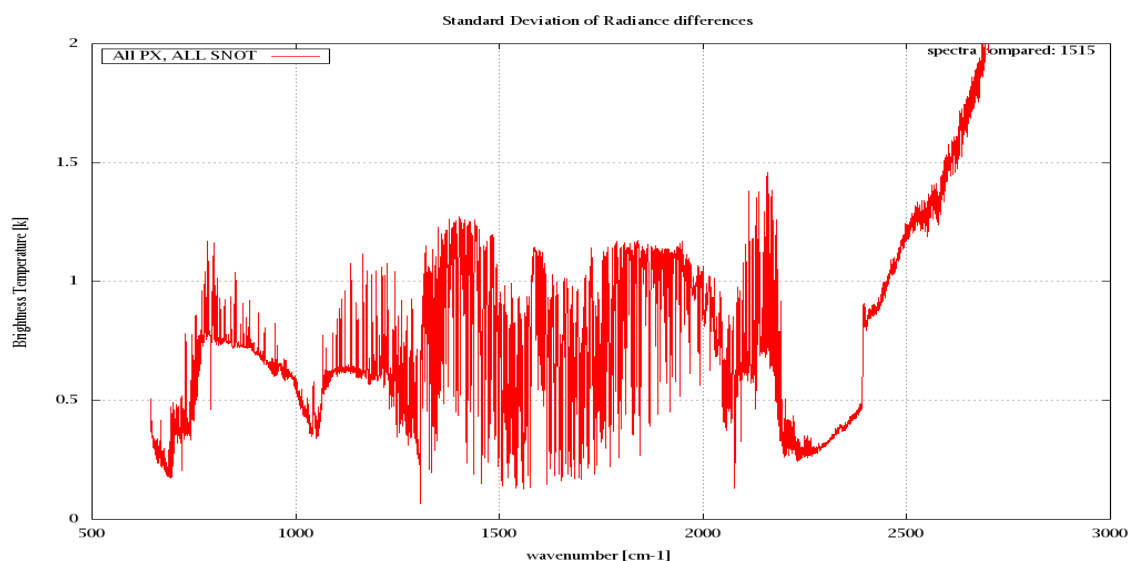


Figure 7: Standard Deviation of Radiance differences

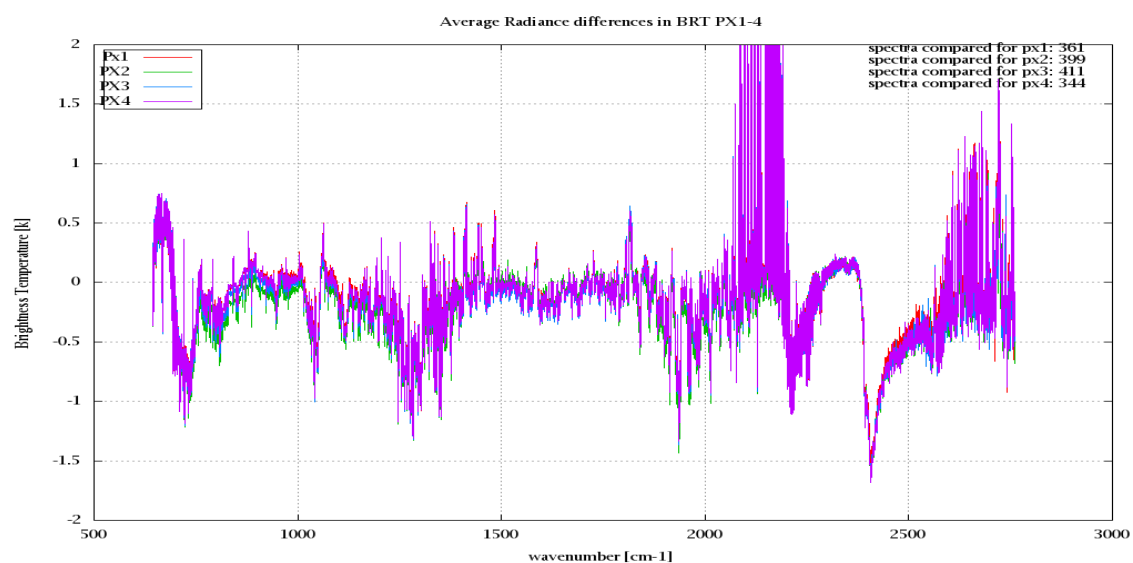


Figure 8: Average Radiance differences: OBS-CAL

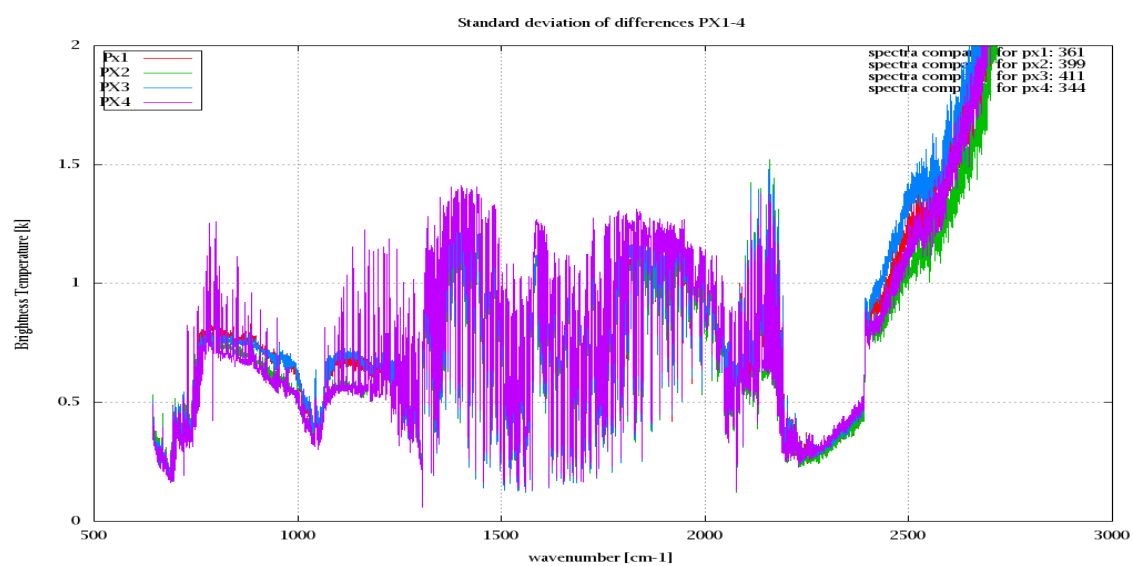


Figure 9: Standard Deviation of Radiance differences



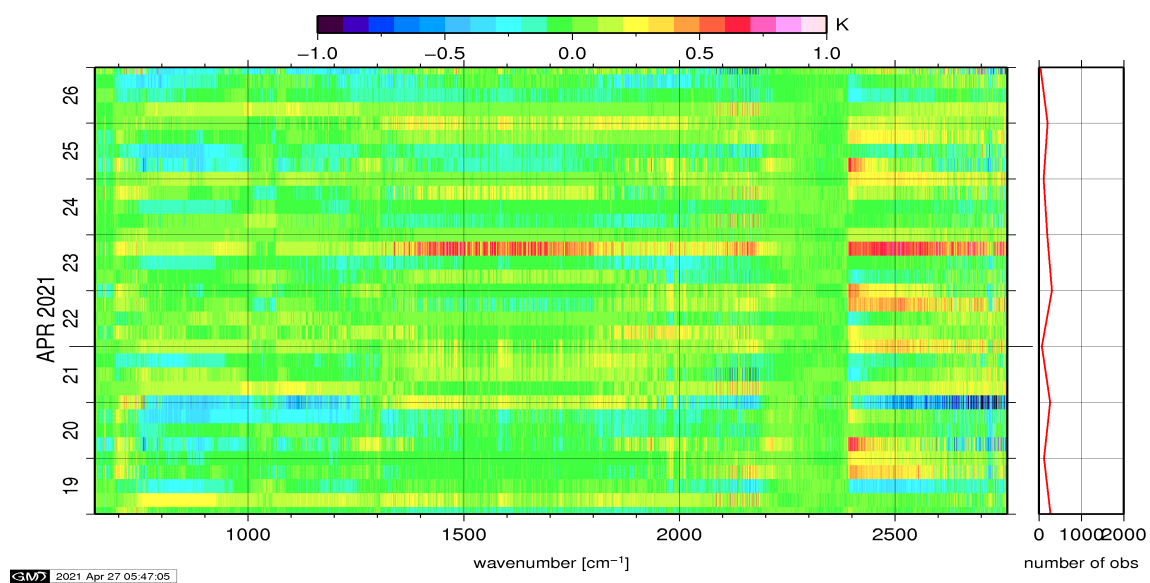


Figure 10: Radiance Anomaly in BT: All Channels

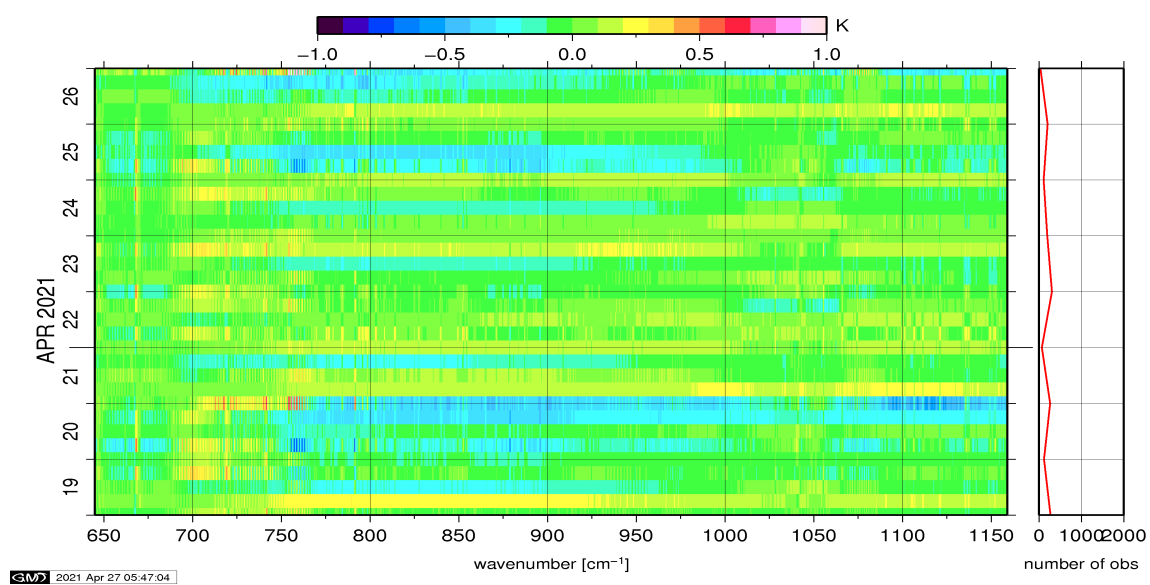


Figure 11: Radiance Anomaly in BT: IASI Band 1

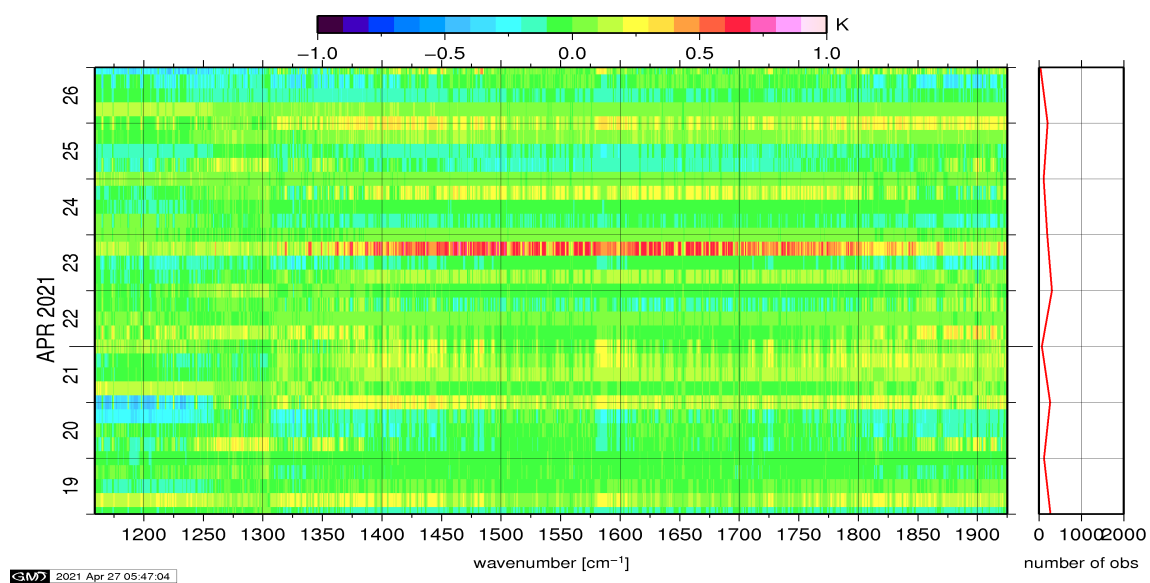


Figure 12: Radiance Anomaly in BT: IASI Band 2

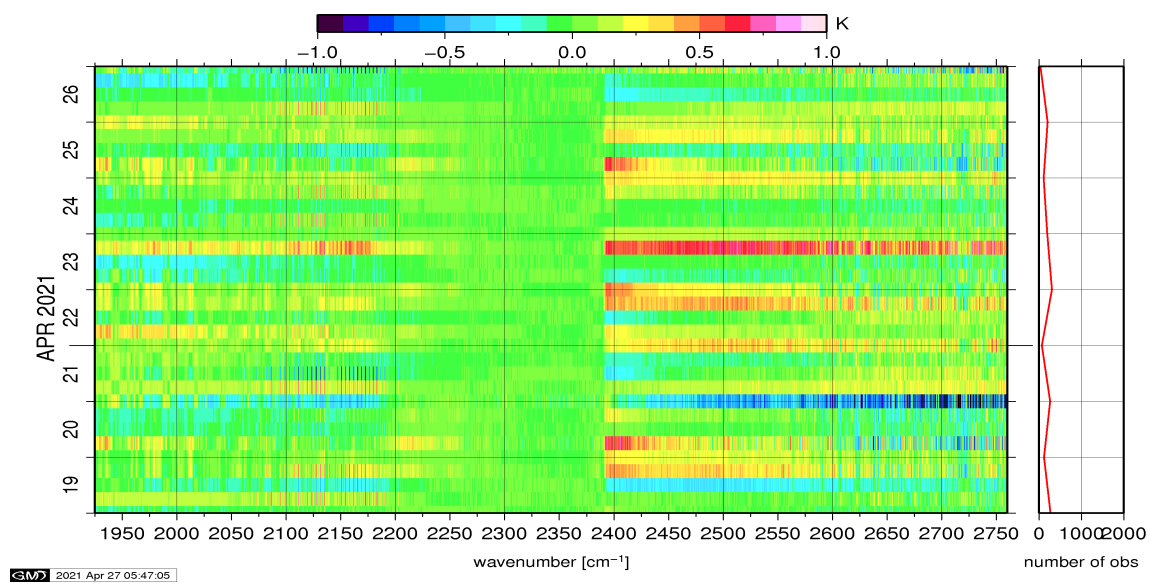


Figure 13: Radiance Anomaly in BT: IASI Band 3

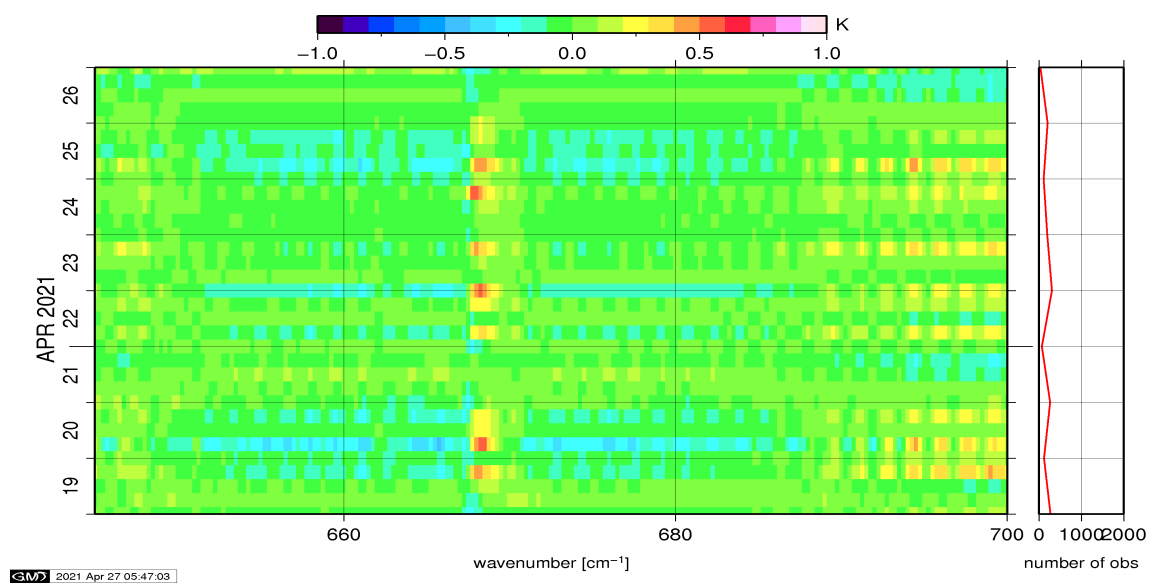


Figure 14: Radiance Anomaly in BT: CO2 14

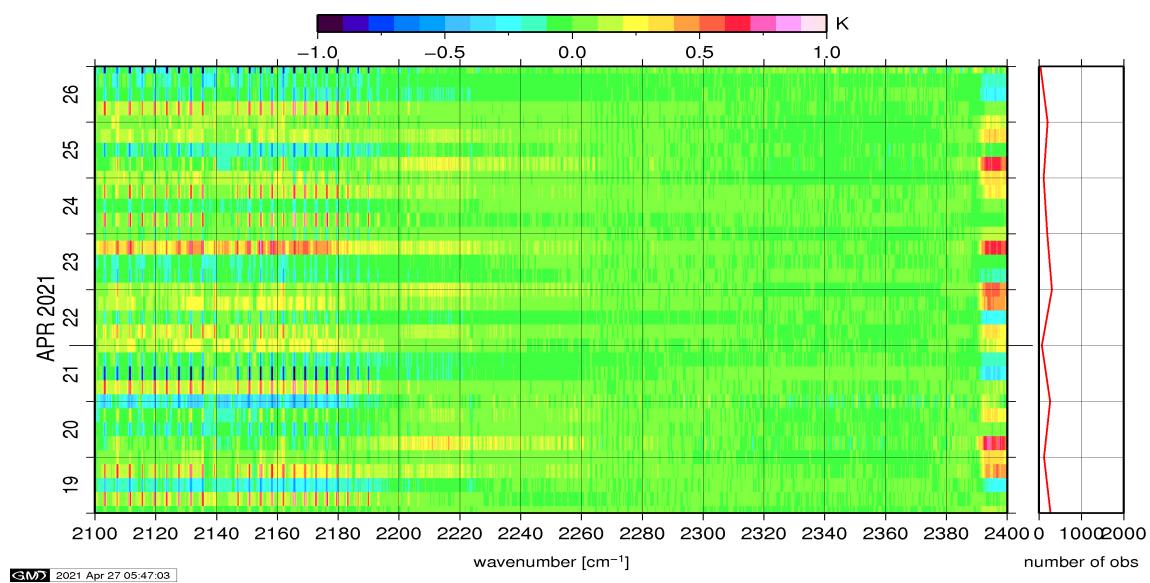


Figure 15: Radiance Anomaly in BT: CO2 4.3

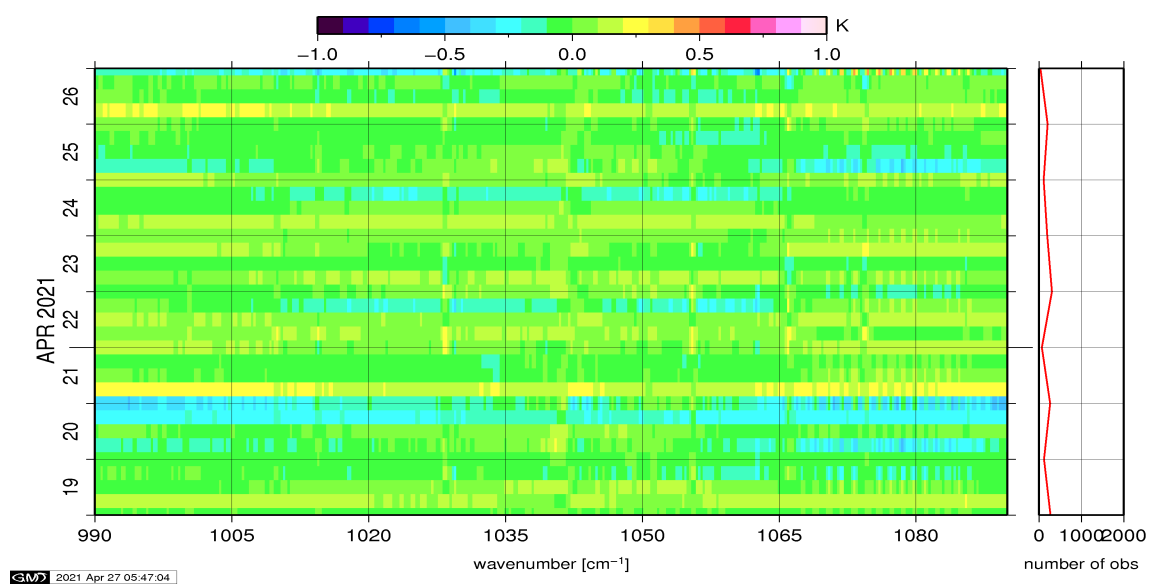


Figure 16: Radiance Anomaly in BT: O3

## 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.

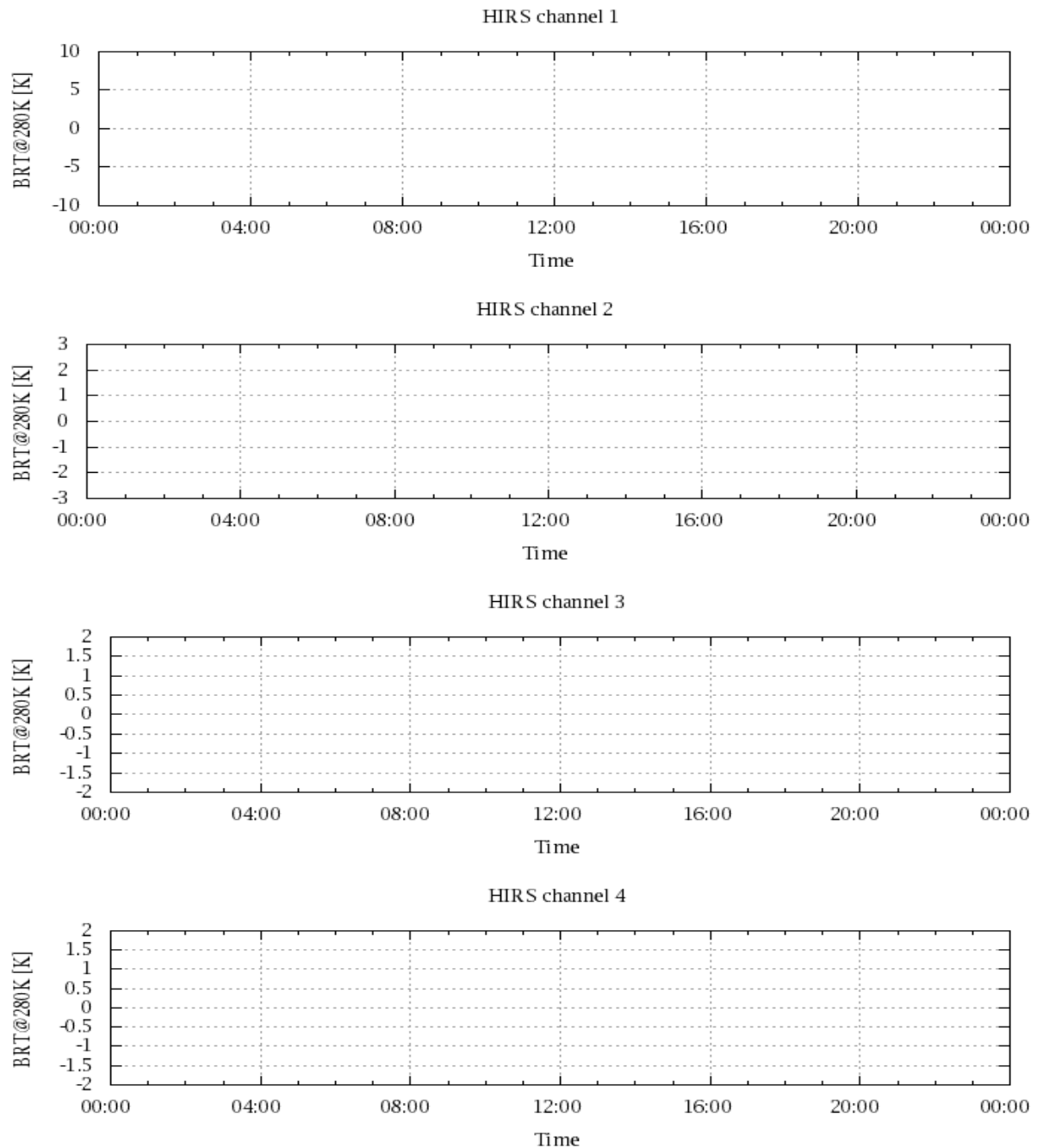


Figure 17: Radiance Differences in BT

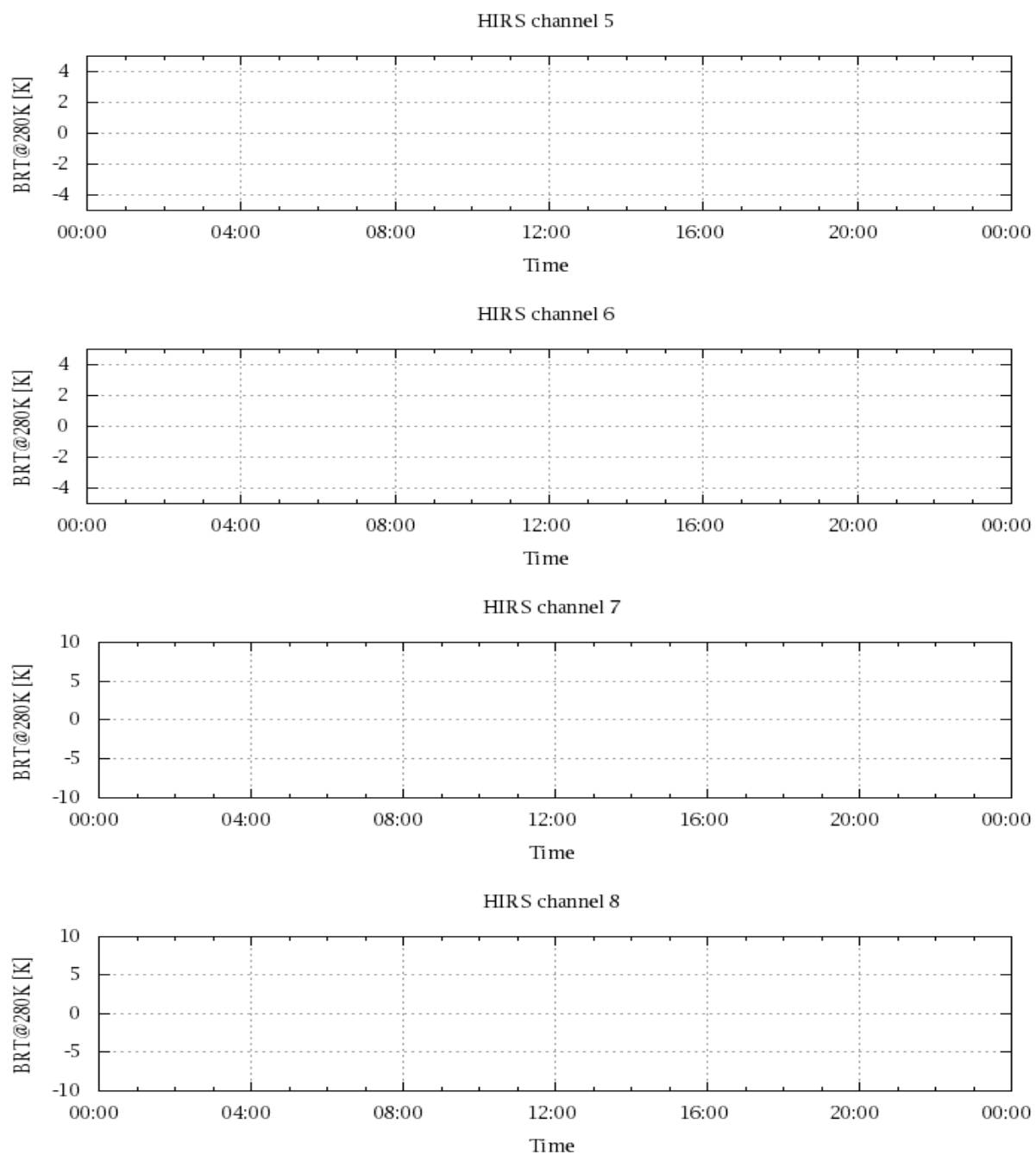


Figure 18: Radiance Differences in BT

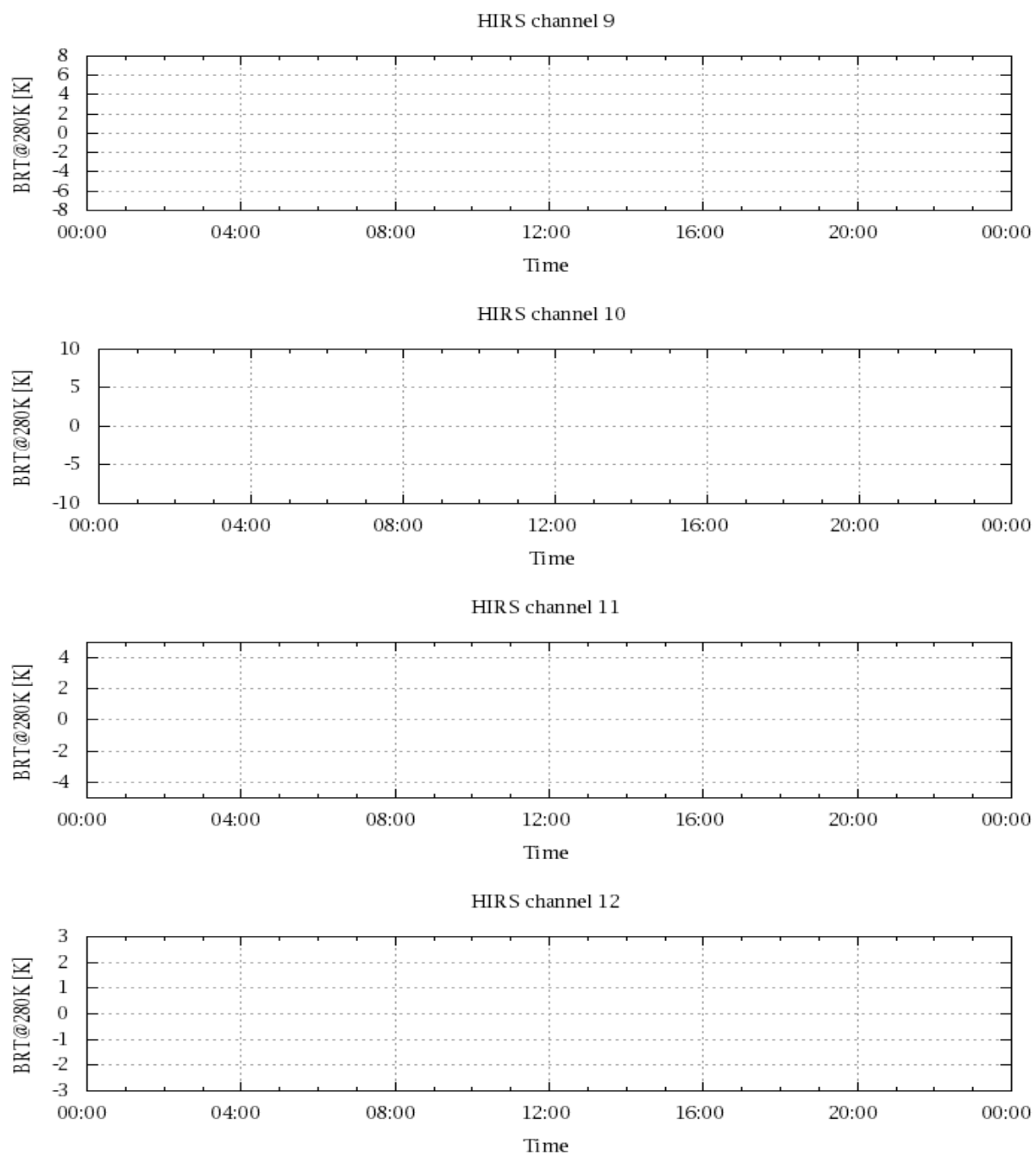


Figure 19: Radiance Differences in BT

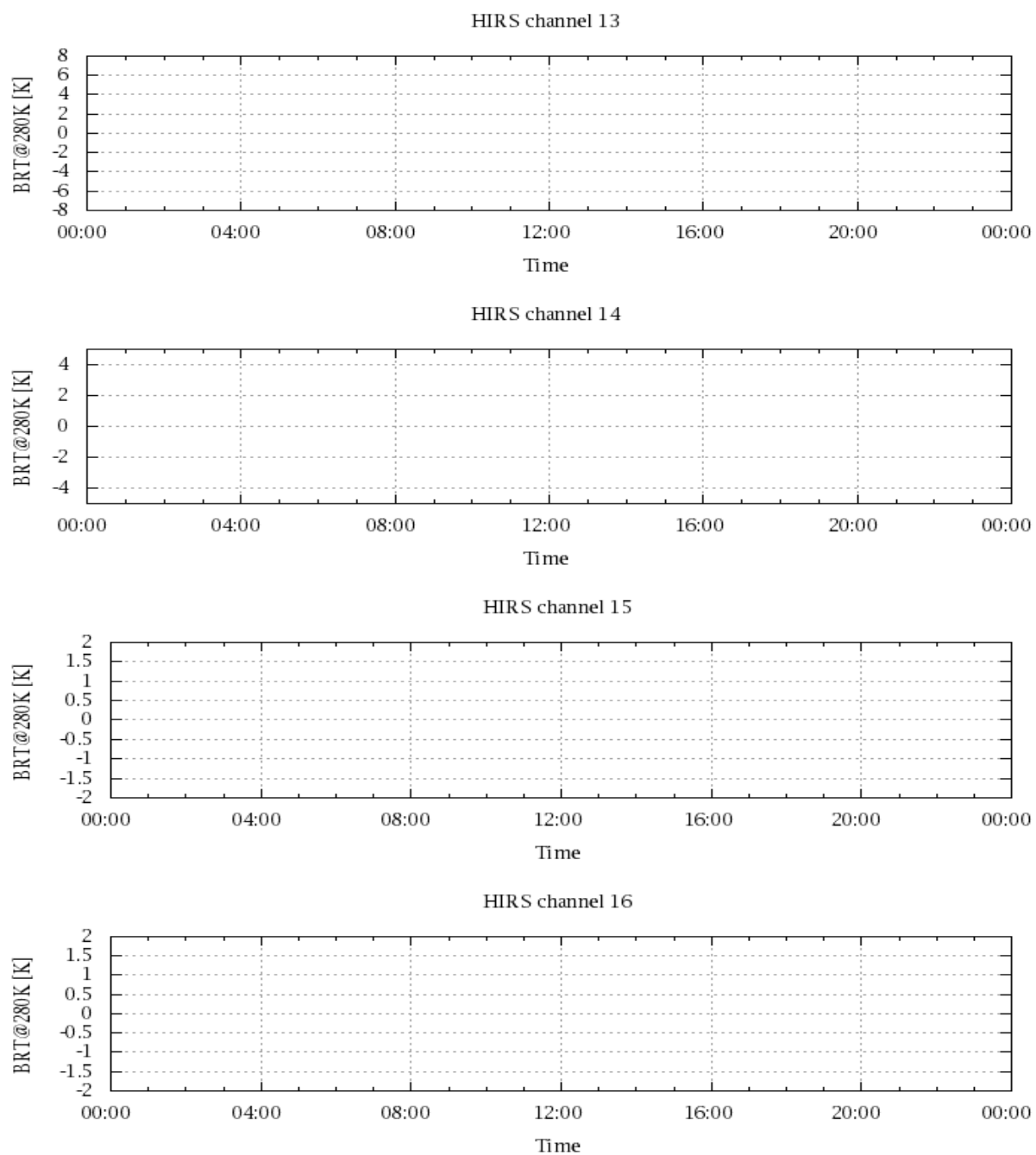


Figure 20: Radiance Differences in BT



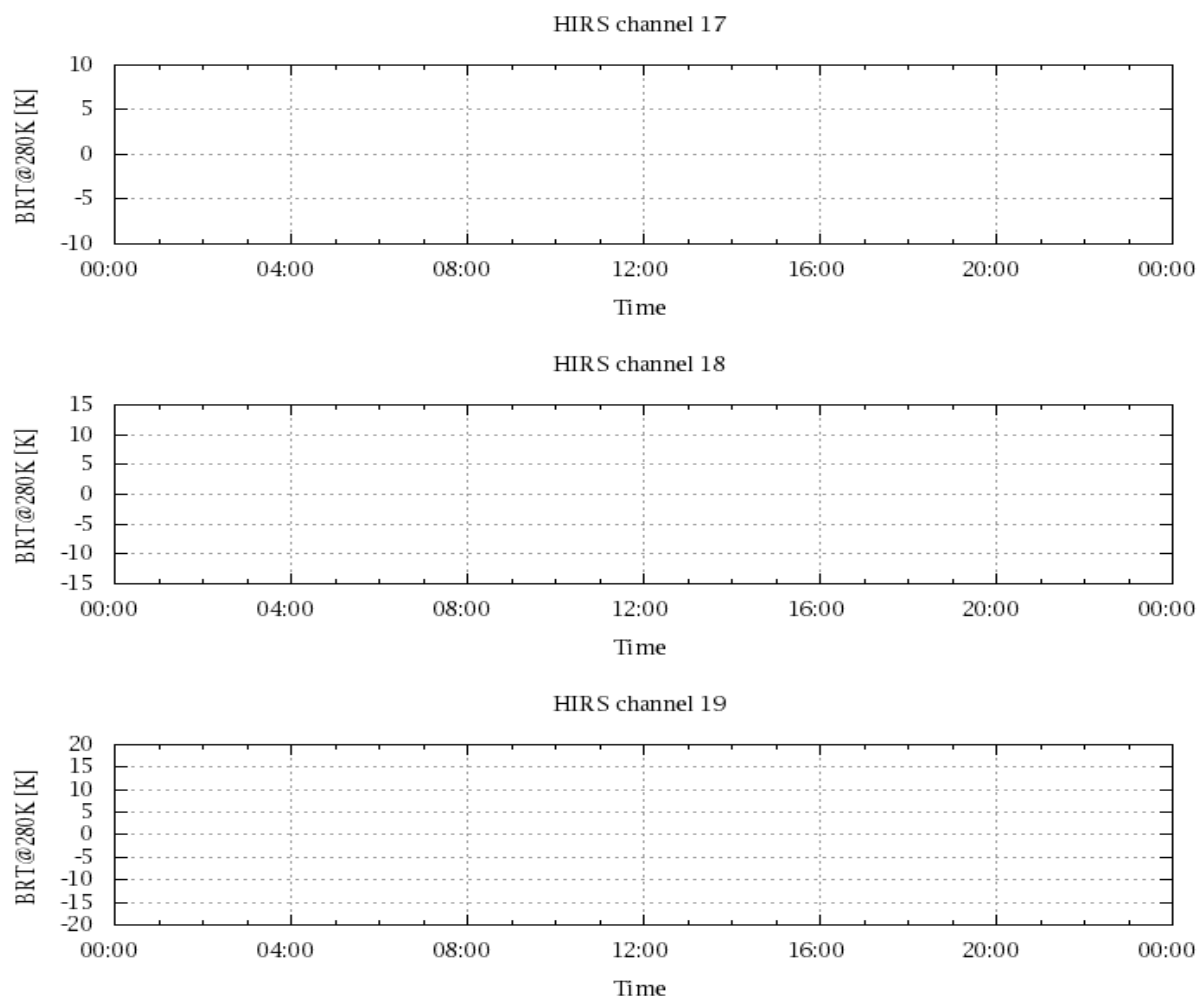


Figure 21: Radinace Differences in BT