

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

IASI monitoring team

03/05/2019 00:00:00 - 04/05/2019 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 03/05/2019 00:00:00 - 04/05/2019 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 03/05/2019 00:00:00 - 04/05/2019 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	458	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)	13826	14014	20190503145659.378	20190503145750.616
PX1 (130)	14190	14217	20190503145837.753	20190503145845.101
PX1 (130)	14230	14232	20190503145847.913	20190503145848.347
PX1 (130)	14246	14274	20190503145851.374	20190503145858.941
PX2 (135)	13826	14014	20190503145659.378	20190503145750.616
PX2 (135)	14189	14217	20190503145837.538	20190503145845.101
PX2 (135)	14239	14241	20190503145849.859	20190503145850.292
PX2 (135)	14246	14274	20190503145851.374	20190503145858.941
PX3 (140)	13826	14014	20190503145659.378	20190503145750.616
PX3 (140)	14189	14217	20190503145837.538	20190503145845.101
PX3 (140)	14232	14234	20190503145848.347	20190503145848.780
PX3 (140)	14246	14274	20190503145851.374	20190503145858.941
PX4 (145)	13826	14014	20190503145659.378	20190503145750.616
PX4 (145)	14189	14217	20190503145837.538	20190503145845.101
PX4 (145)	14241	14243	20190503145850.292	20190503145850.726
PX4 (145)	14246	14274	20190503145851.374	20190503145858.941
IMG (150)	13077	13293	20190503145659.160	20190503145750.402
IMG (150)	13493	13521	20190503145837.538	20190503145843.804
IMG (150)	13535	13537	20190503145847.265	20190503145847.698

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	13542	13544	20190503145848.780	20190503145849.210
IMG (150)	13544	13546	20190503145849.210	20190503145849.644
IMG (150)	13551	13553	20190503145850.726	20190503145851.155
IMG (150)	13558	13586	20190503145852.671	20190503145858.941
VER (160)	3166	3202	20190503145651.374	20190503145755.374
VER (160)	3231	3235	20190503145835.374	20190503145837.753
VER (160)	3236	3240	20190503145837.753	20190503145843.374
AUX (180)	3908	3916	20190503145651.808	20190503145755.808

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
03/05/2019 00:00:56	-	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	458	a
GQisFlagQual set (PX1)	99.55 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.64 %	-
GQisFlagQual set (PX4)	99.58 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

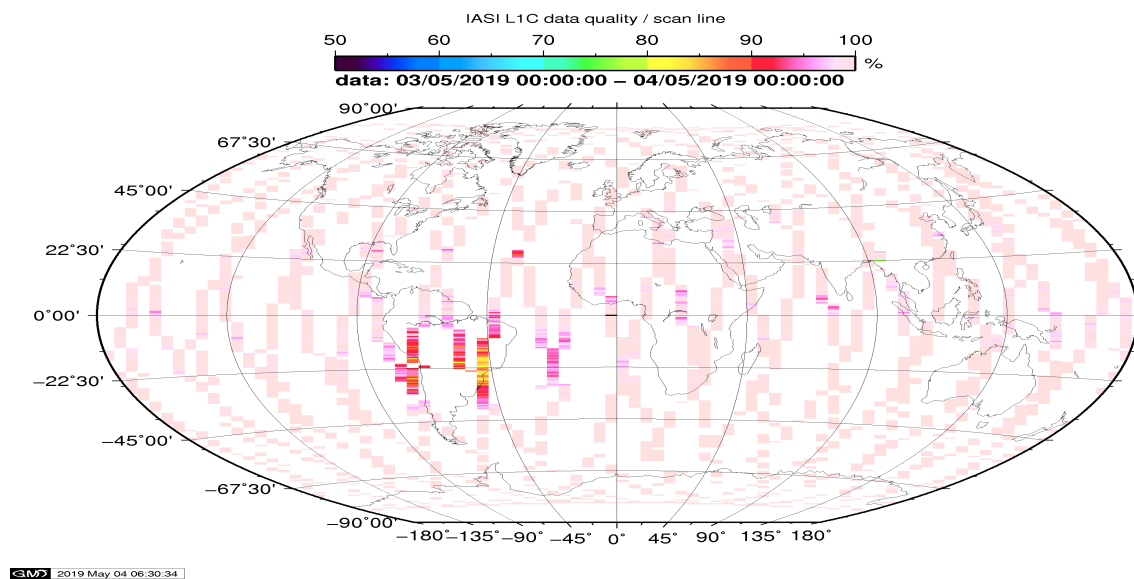


Figure 1: L1C data quality

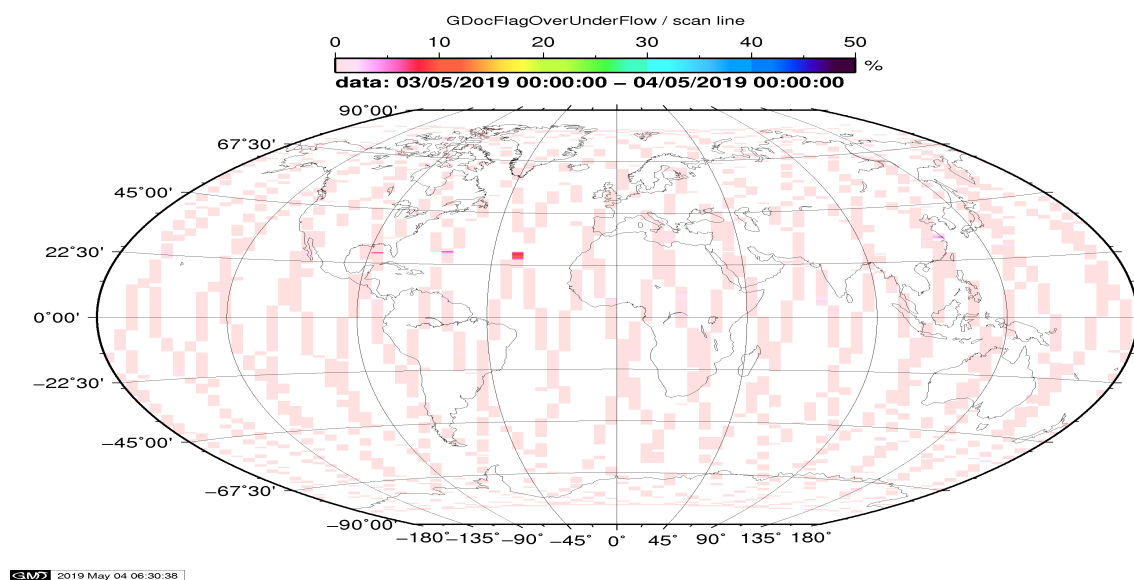


Figure 2: Flag of Over and Under Flows

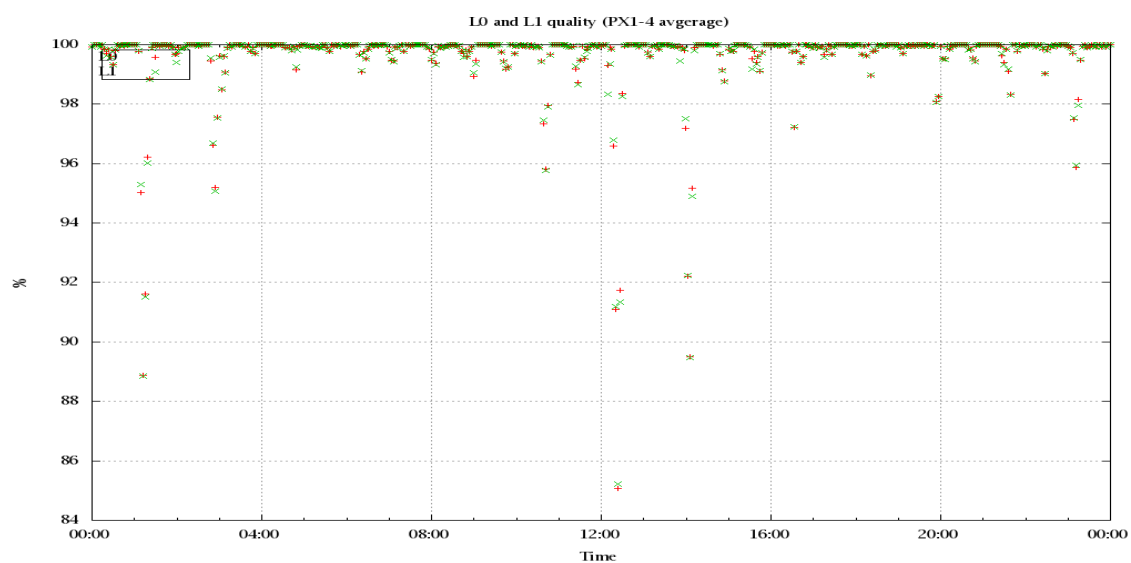


Figure 3: Level 0 and 1C overall quality

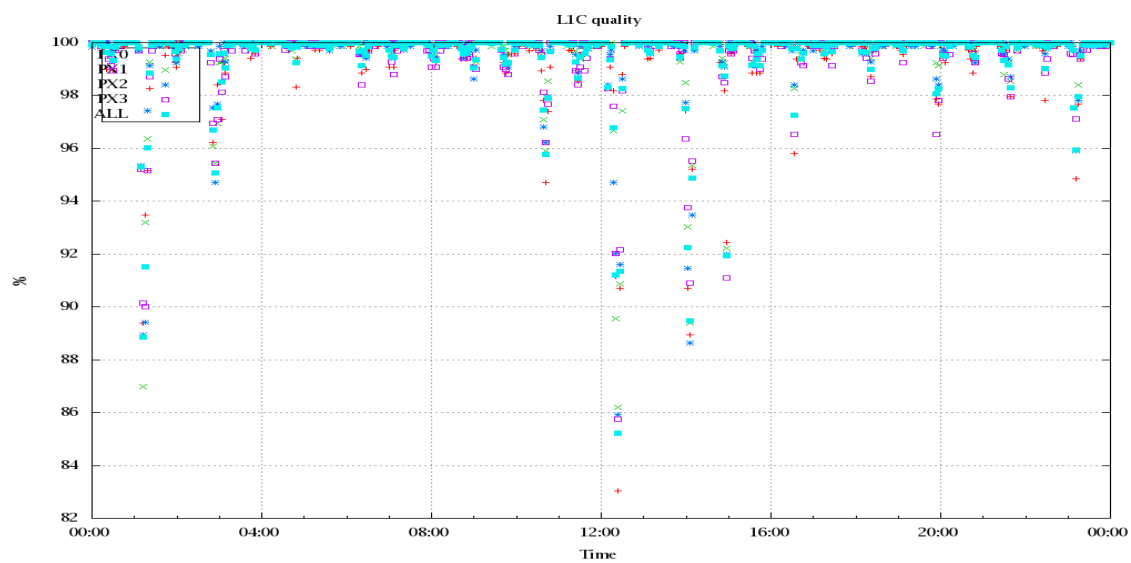


Figure 4: Level 1C quality

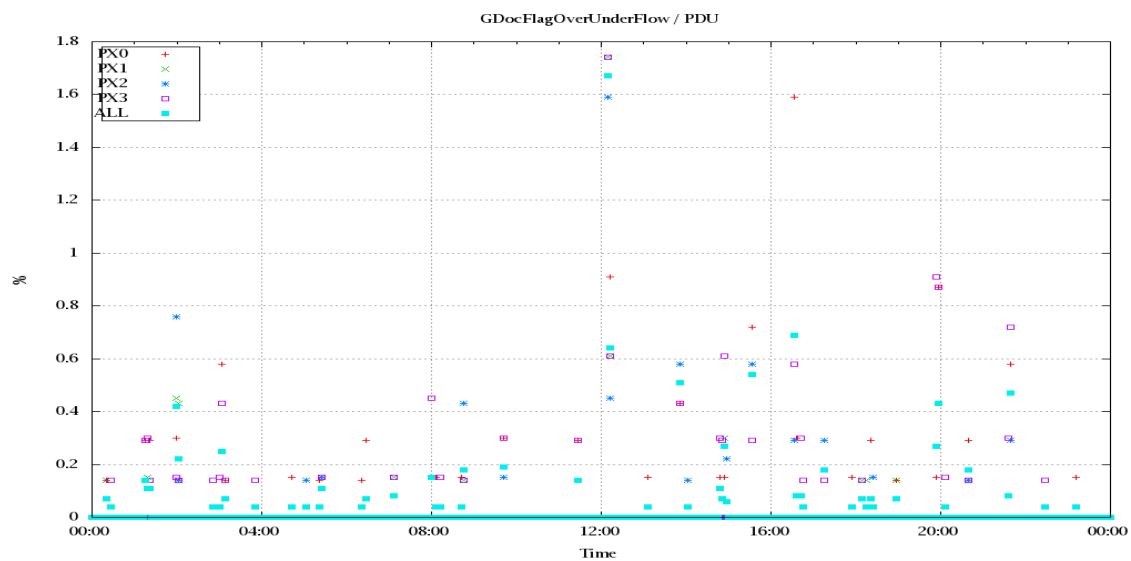


Figure 5: Timeseries of flag of Over and Under Flows

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.

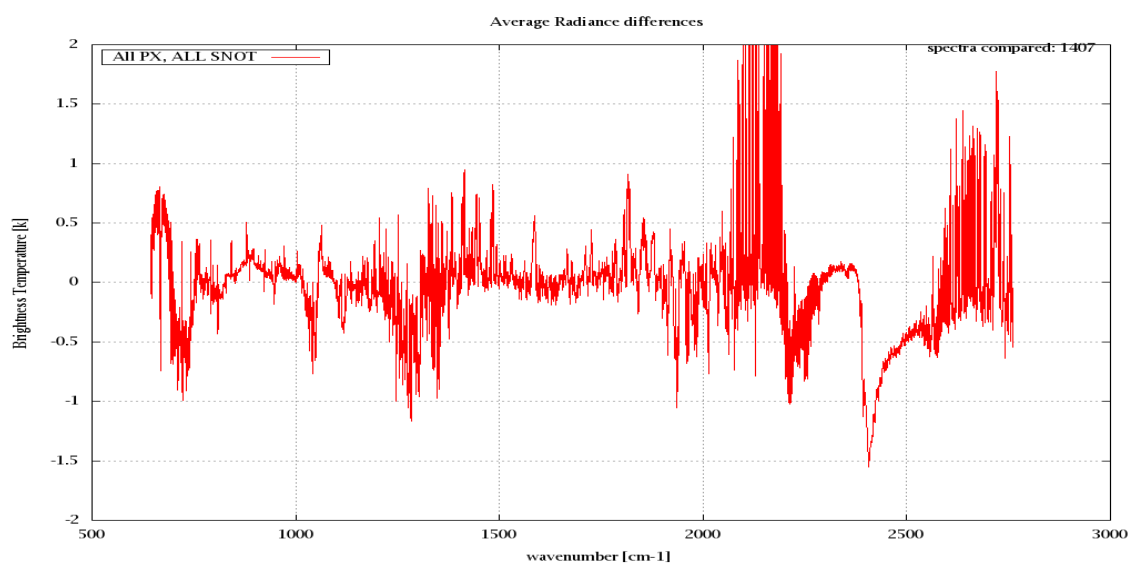


Figure 6: Average Radiance differences: OBS-CAL

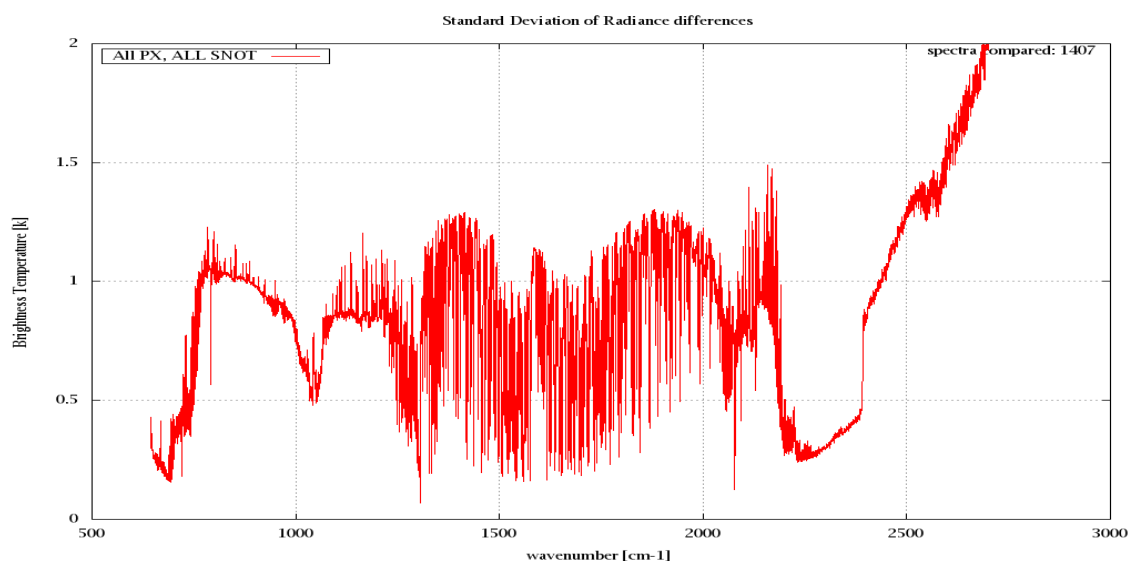


Figure 7: Standard Deviation of Radiance differences

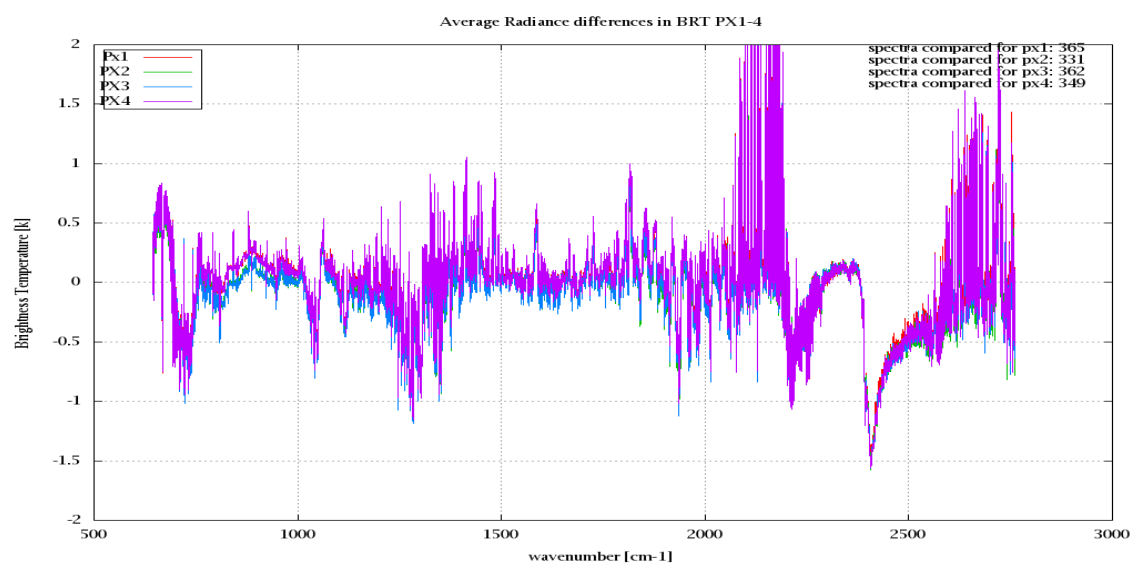


Figure 8: Average Radiance differences: OBS-CAL

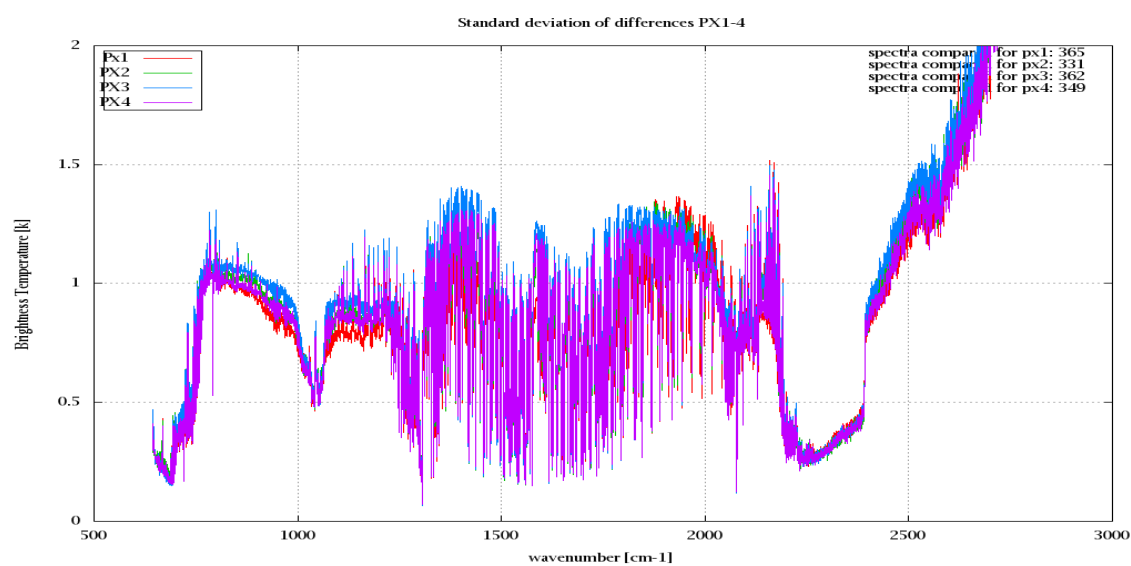


Figure 9: Standard Deviation of Radiance differences

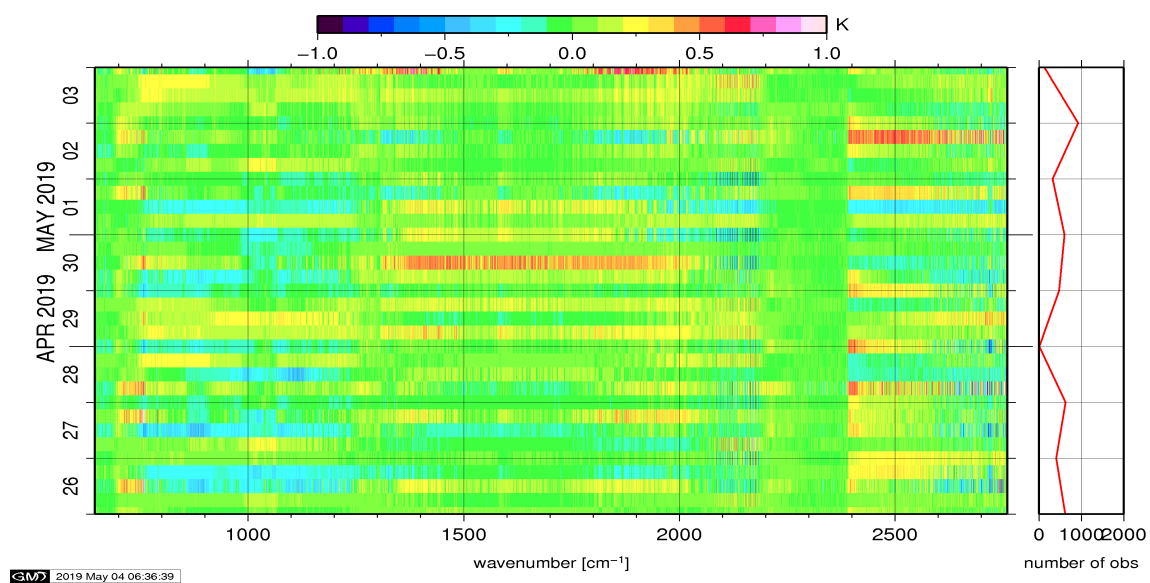


Figure 10: Radiance Anomaly in BT: All Channels

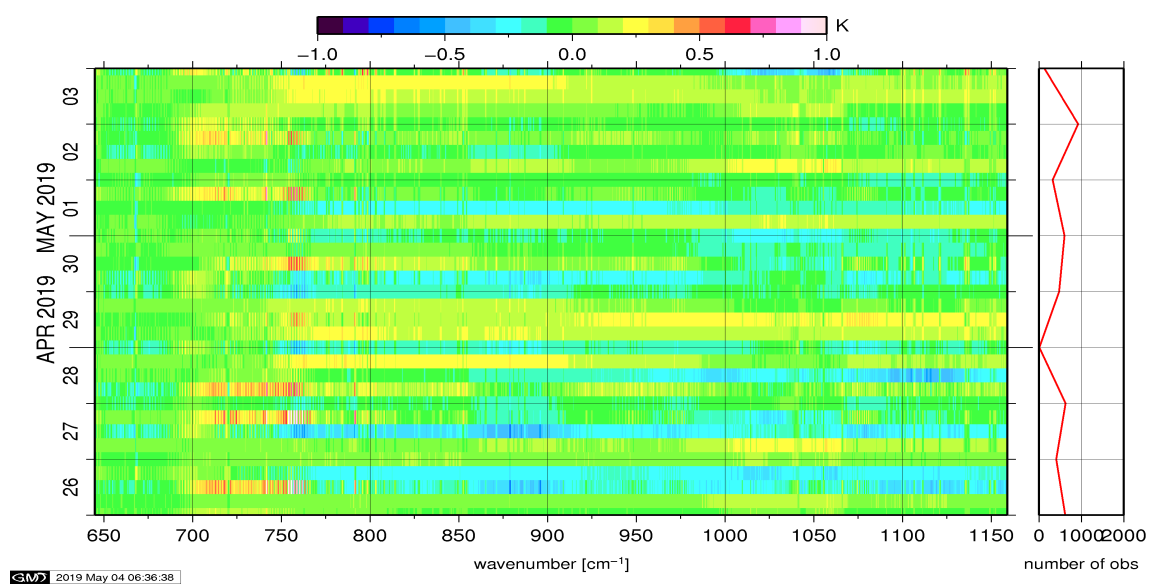


Figure 11: Radiance Anomaly in BT: IASI Band 1

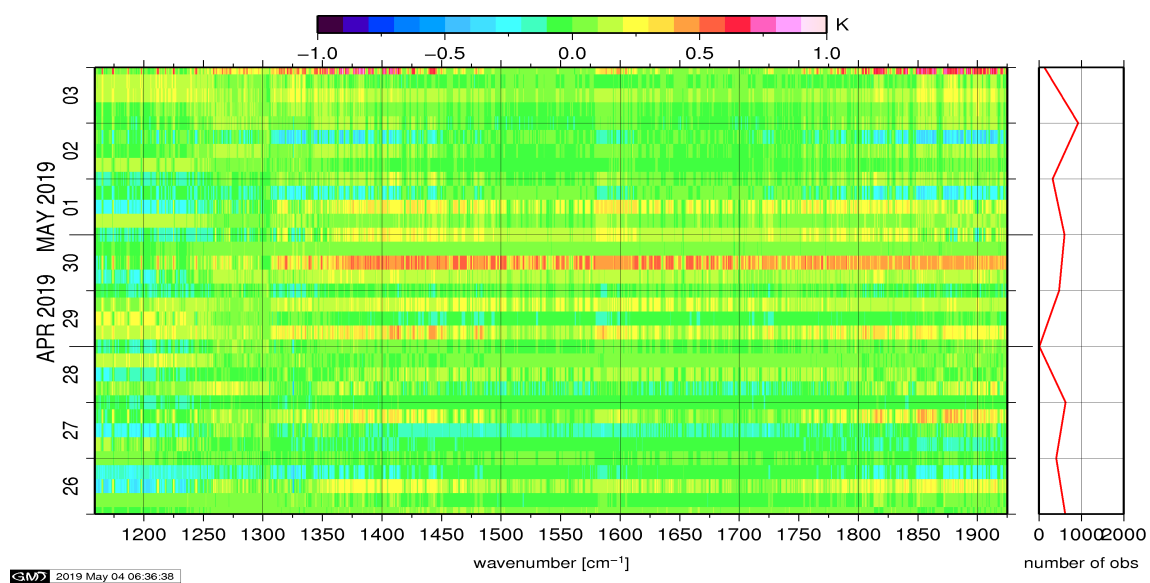


Figure 12: Radiance Anomaly in BT: IASI Band 2

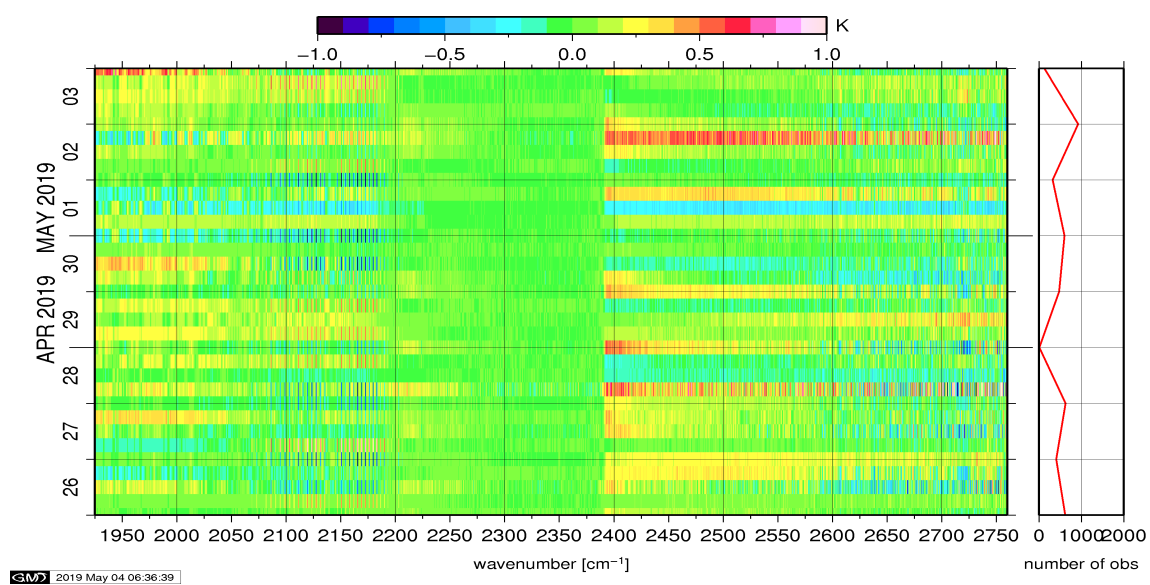


Figure 13: Radiance Anomaly in BT: IASI Band 3

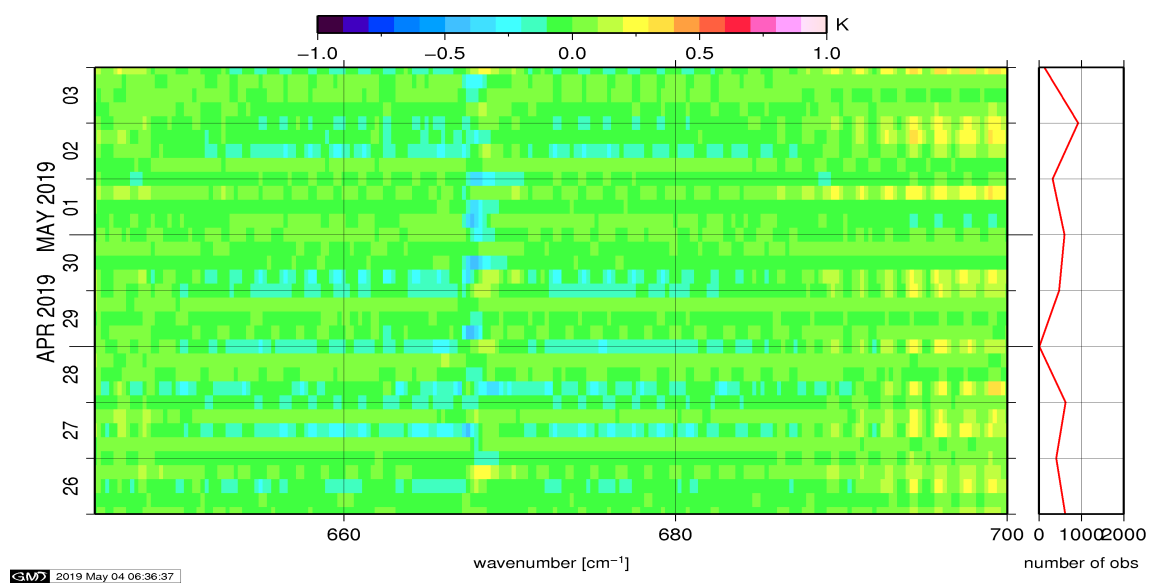


Figure 14: Radiance Anomaly in BT: CO2 14

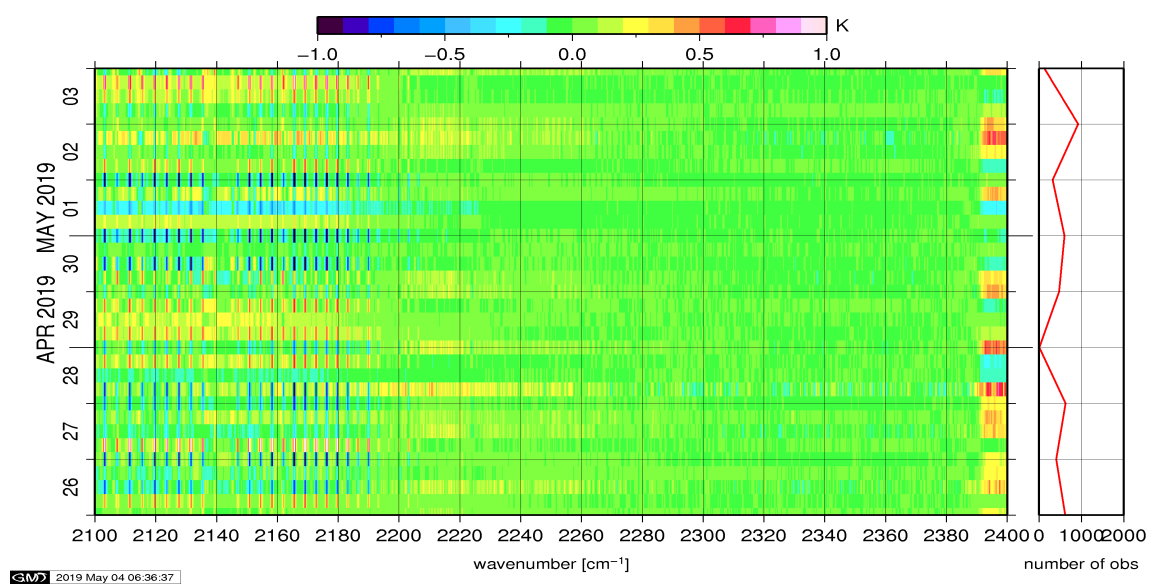


Figure 15: Radiance Anomaly in BT: CO2 4.3

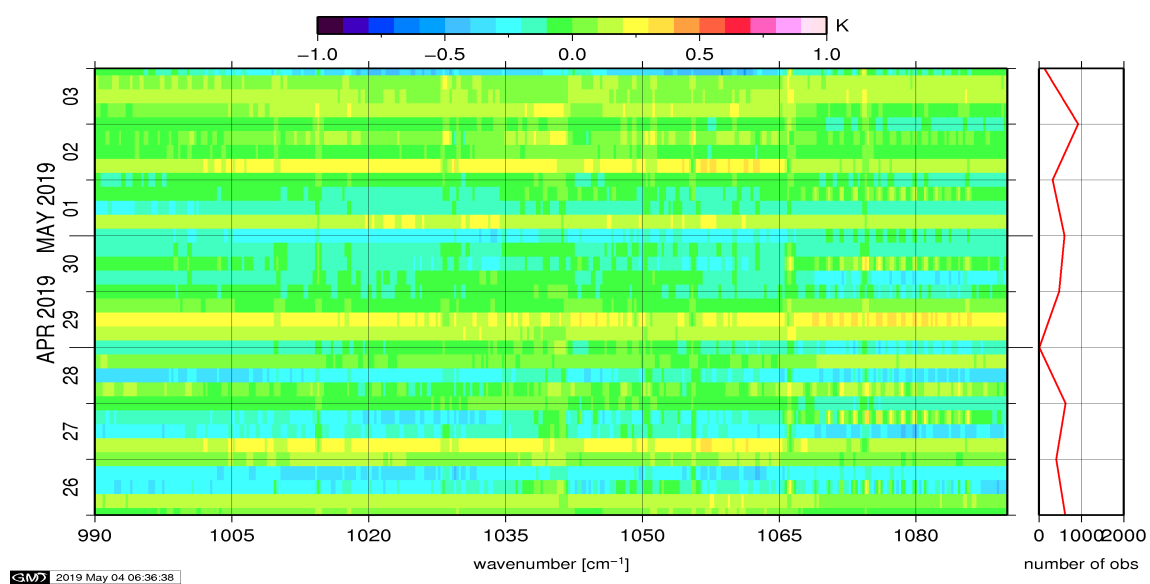


Figure 16: Radiance Anomaly in BT: O3

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.

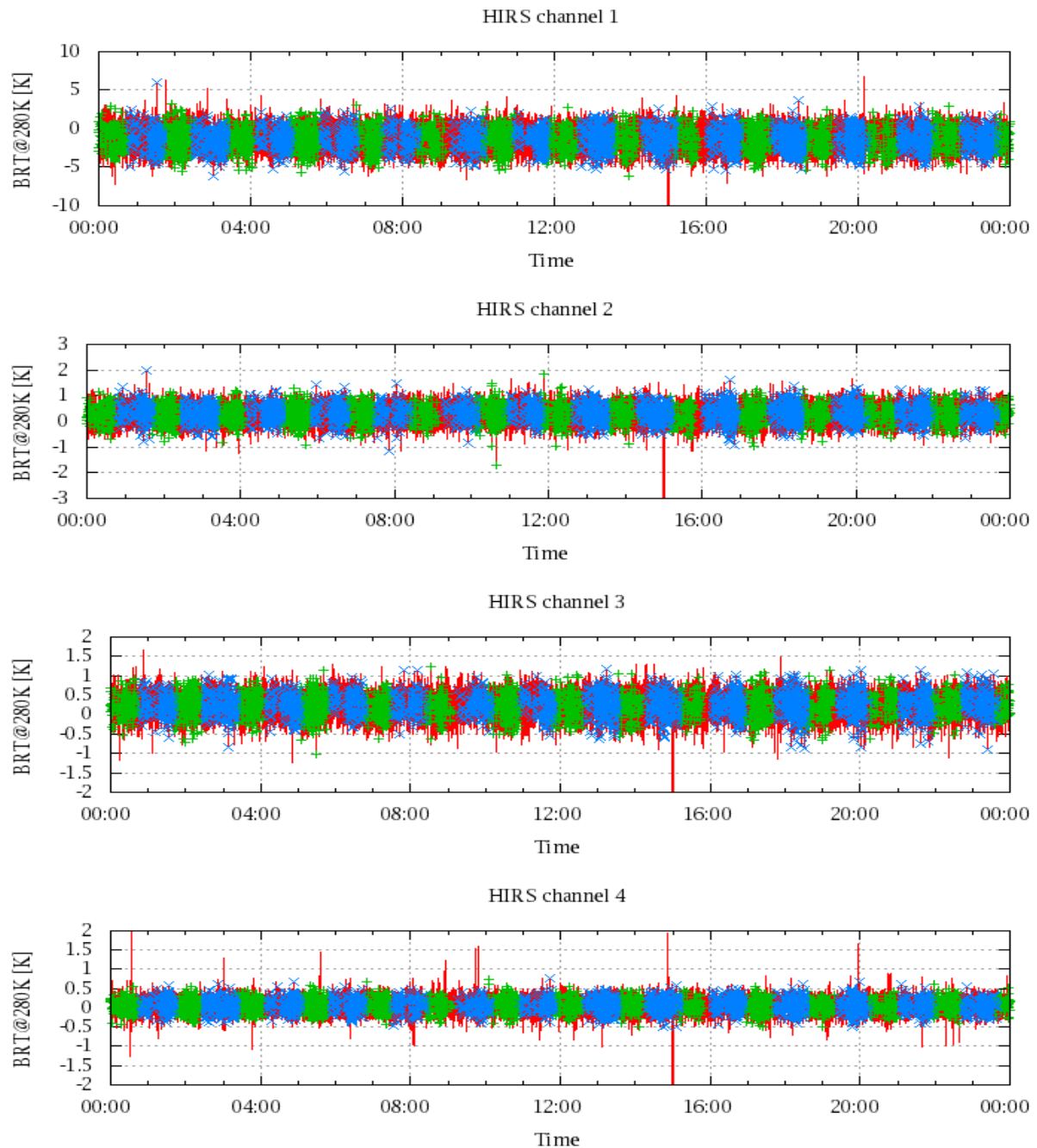


Figure 17: Radiance Differences in BT

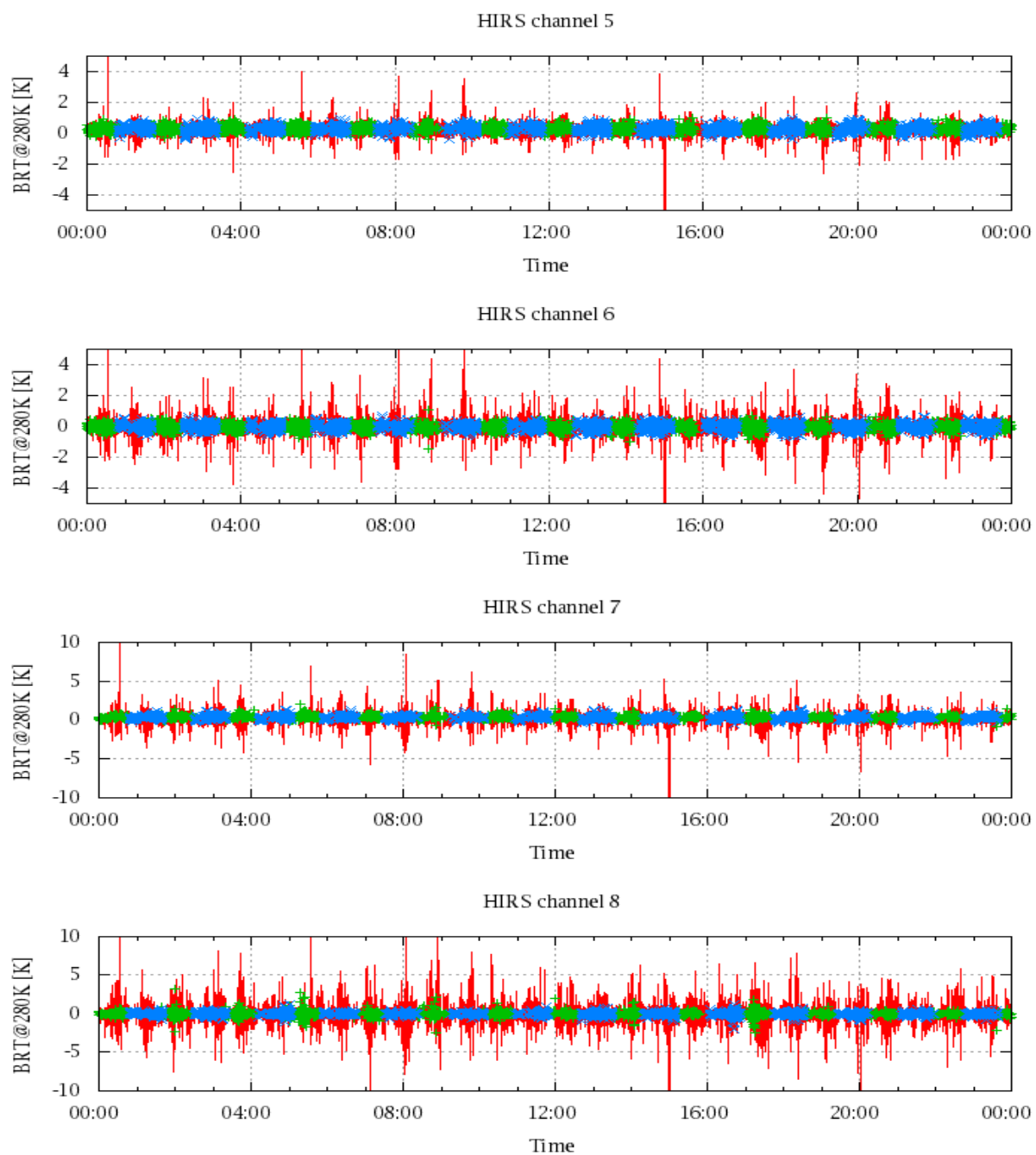


Figure 18: Radiance Differences in BT

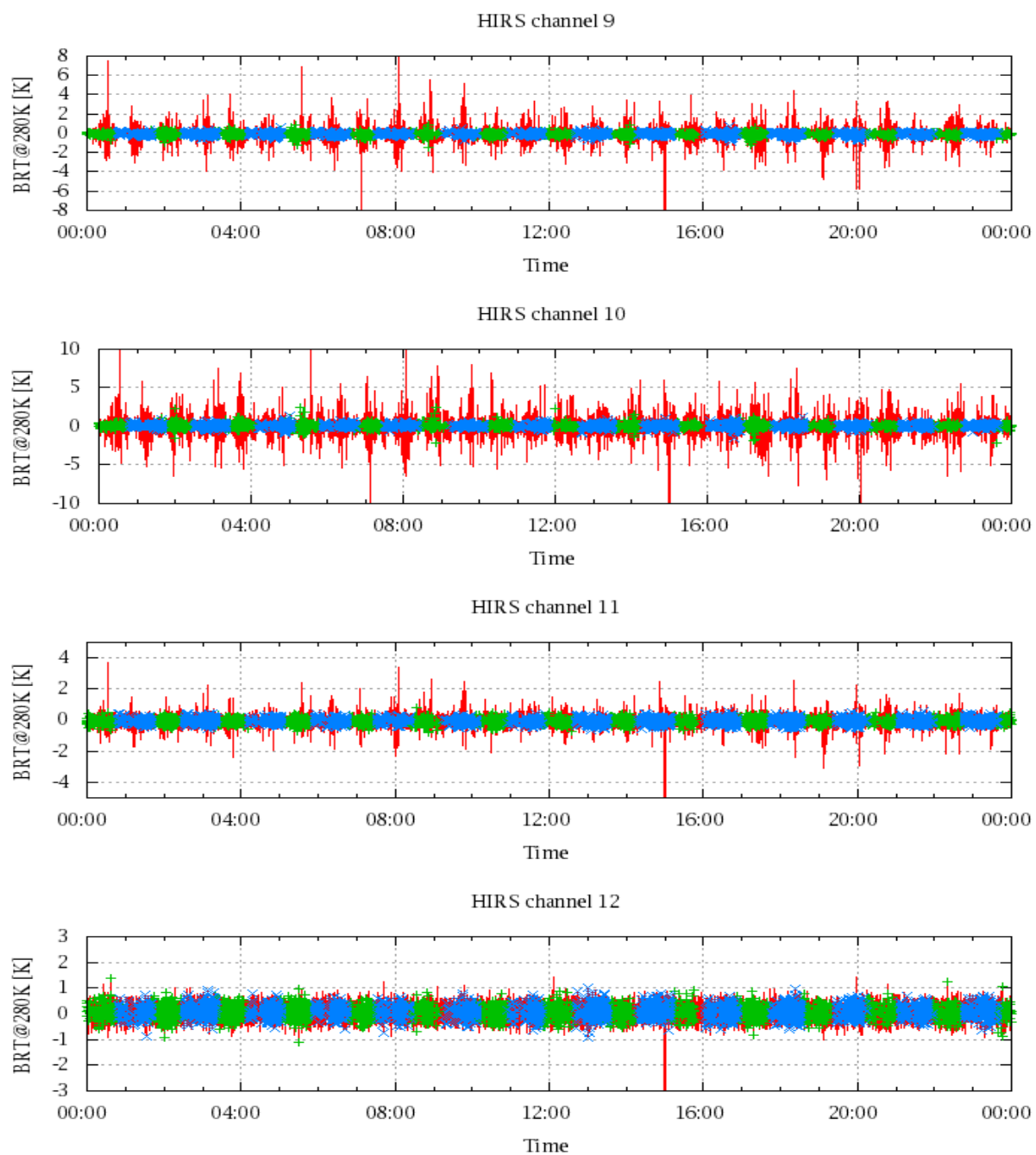


Figure 19: Radiance Differences in BT

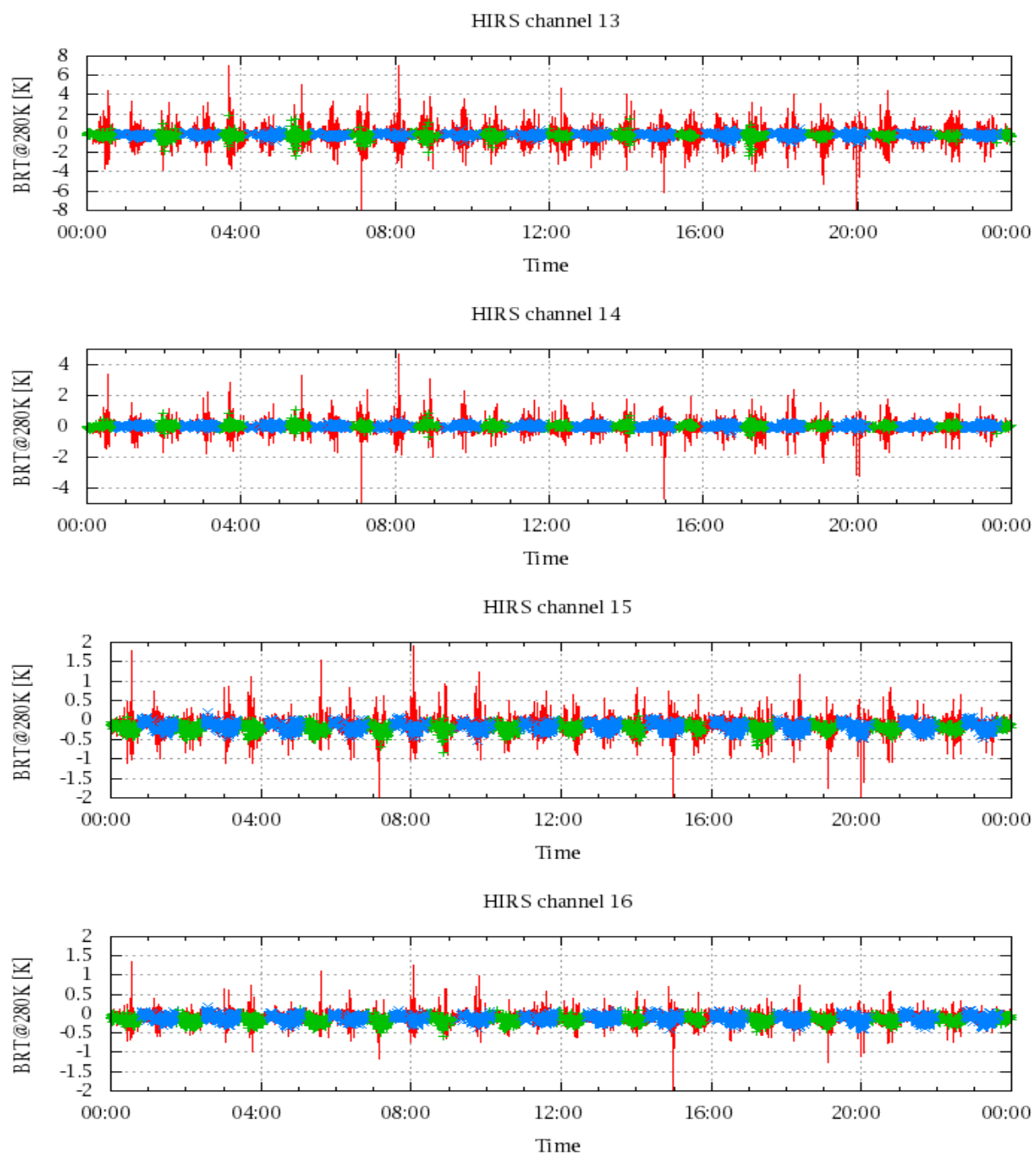


Figure 20: Radiance Differences in BT

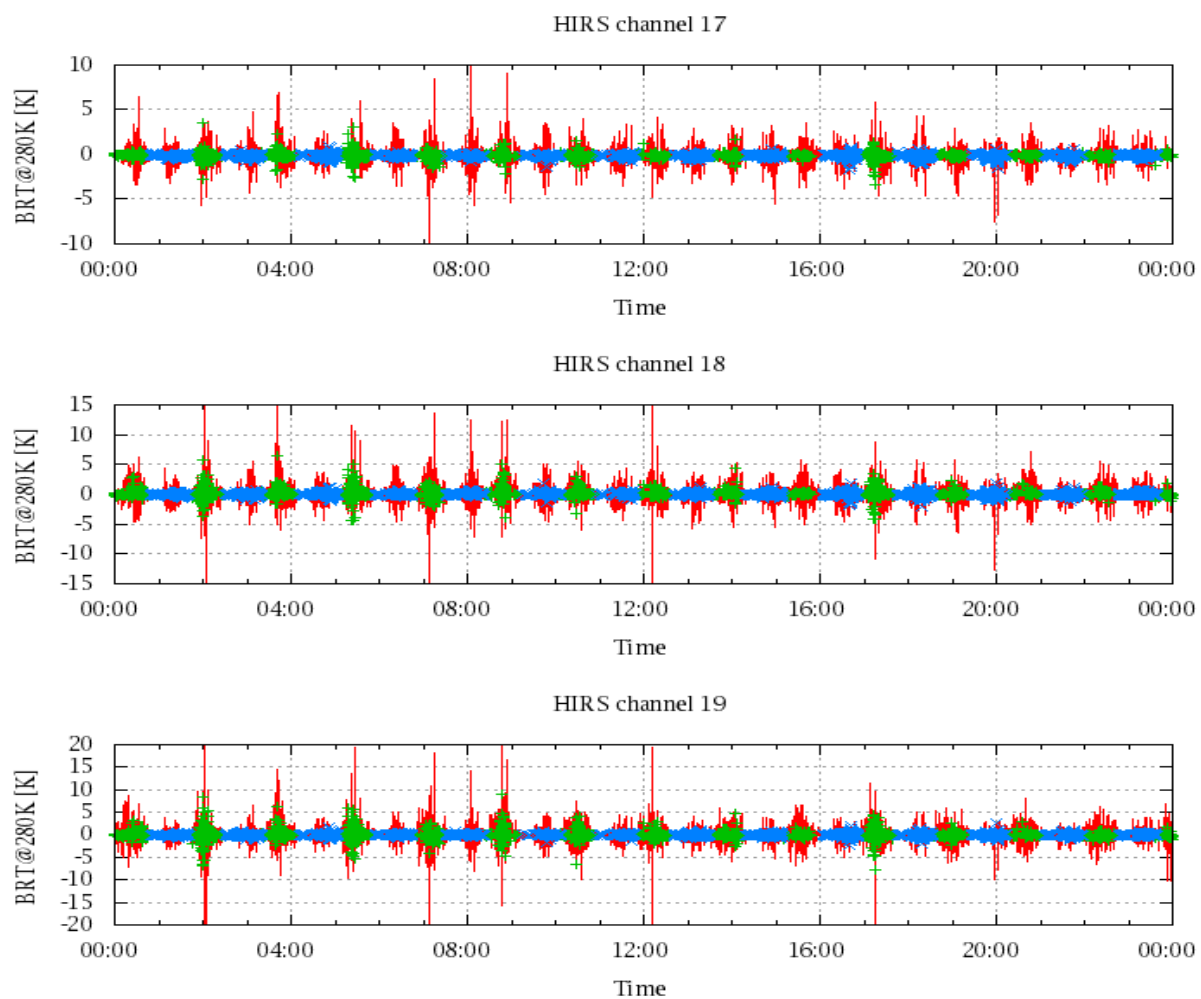


Figure 21: Radinace Differences in BT