

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

IASI monitoring team

18/03/2019 00:00:00 - 19/03/2019 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 18/03/2019 00:00:00 - 19/03/2019 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 18/03/2019 00:00:00 - 19/03/2019 00:00:00

Product Type	Number	Action
L0 HKTU PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSSGranule	481	-
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)	8648	8656	20190318133111.845	20190318133115.083
PX1 (130)	8680	8708	20190318133121.790	20190318133127.841
PX1 (130)	1386	1394	20190318141145.788	20190318141147.519
PX1 (130)	1418	1445	20190318141154.222	20190318141201.574
PX2 (135)	8648	8656	20190318133111.845	20190318133115.083
PX2 (135)	8680	8708	20190318133121.790	20190318133127.841
PX2 (135)	1385	1394	20190318141145.574	20190318141147.519
PX2 (135)	1415	1417	20190318141153.574	20190318141154.007
PX2 (135)	1418	1445	20190318141154.222	20190318141201.574
PX3 (140)	8648	8656	20190318133111.845	20190318133115.083
PX3 (140)	8680	8708	20190318133121.790	20190318133127.841
PX3 (140)	1385	1394	20190318141145.574	20190318141147.519
PX3 (140)	1418	1445	20190318141154.222	20190318141201.574
PX4 (145)	8648	8656	20190318133111.845	20190318133115.083
PX4 (145)	8680	8708	20190318133121.790	20190318133127.841
PX4 (145)	1385	1393	20190318141145.574	20190318141147.304
PX4 (145)	1417	1445	20190318141154.007	20190318141201.574
IMG (150)	660	672	20190318133111.845	20190318133115.083
IMG (150)	697	699	20190318133120.923	20190318133121.571
IMG (150)	699	728	20190318133121.571	20190318133127.841

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	11001	11009	20190318141145.574	20190318141147.304
IMG (150)	11037	11065	20190318141154.007	20190318141200.277
VER (160)	2309	2311	20190318133111.845	20190318133119.841
VER (160)	2311	2317	20190318133119.841	20190318133127.841
VER (160)	3833	3842	20190318141151.843	20190318141207.843
AUX (180)	10290	10292	20190318133104.274	20190318133120.274

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
18/03/2019 00:00:15	-	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	481	-
GQisFlagQual set (PX1)	99.51 %	-
GQisFlagQual set (PX2)	99.50 %	-
GQisFlagQual set (PX3)	99.48 %	-
GQisFlagQual set (PX4)	99.52 %	-
GQisFlagQual set (all)	99.50 %	-

Table 4: Quality flags

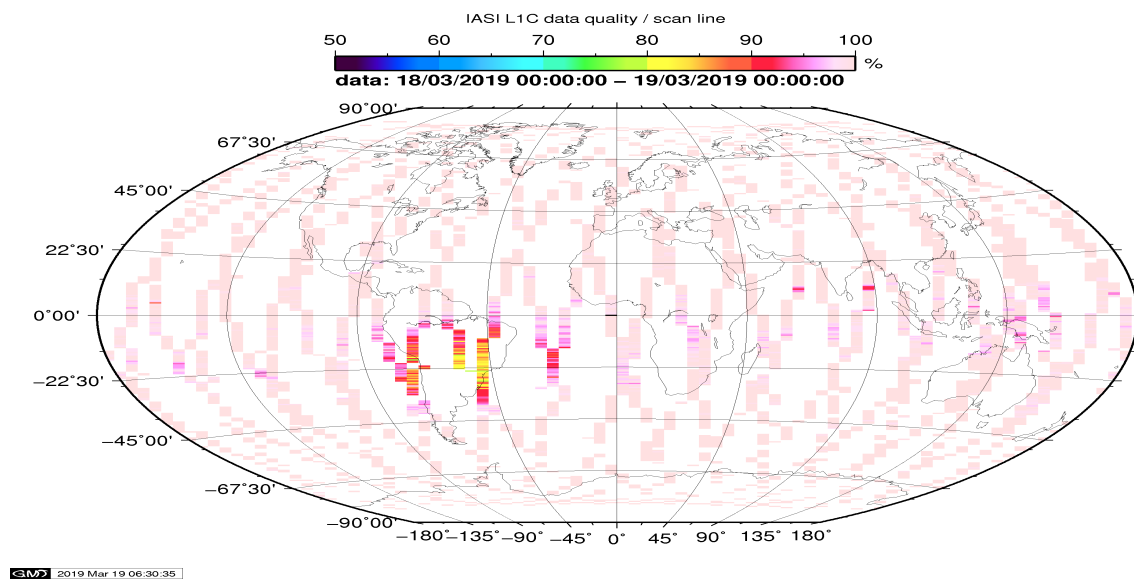


Figure 1: L1C data quality

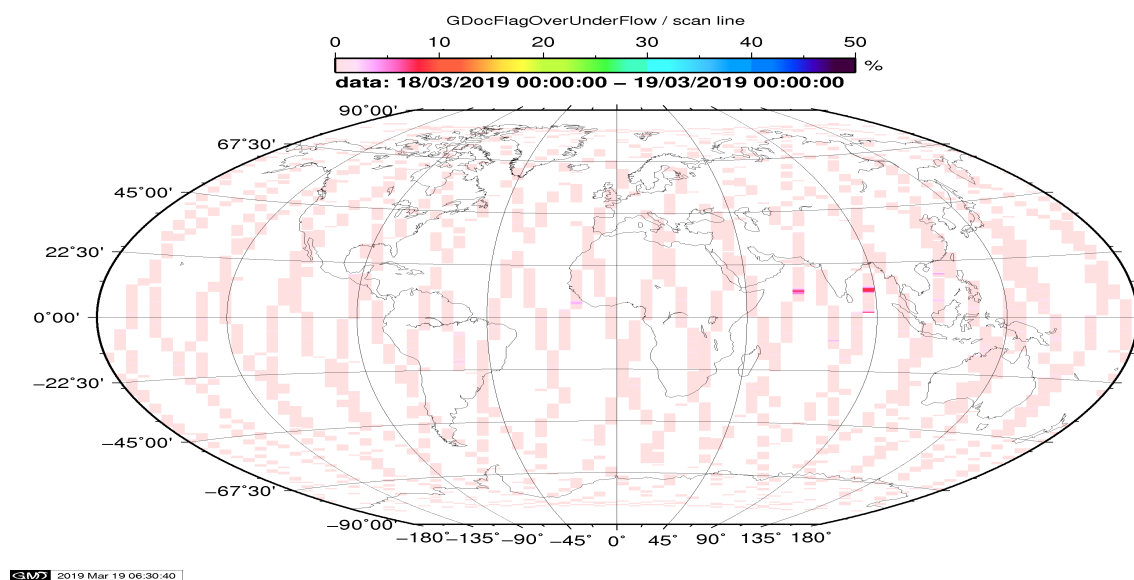


Figure 2: Flag of Over and Under Flows

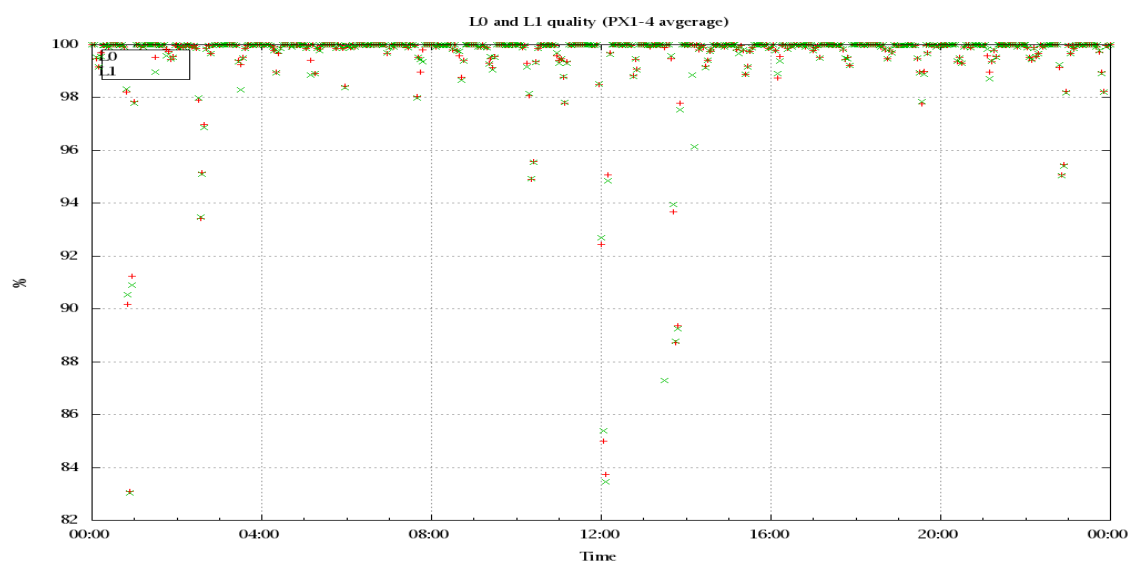


Figure 3: Level 0 and 1C overall quality

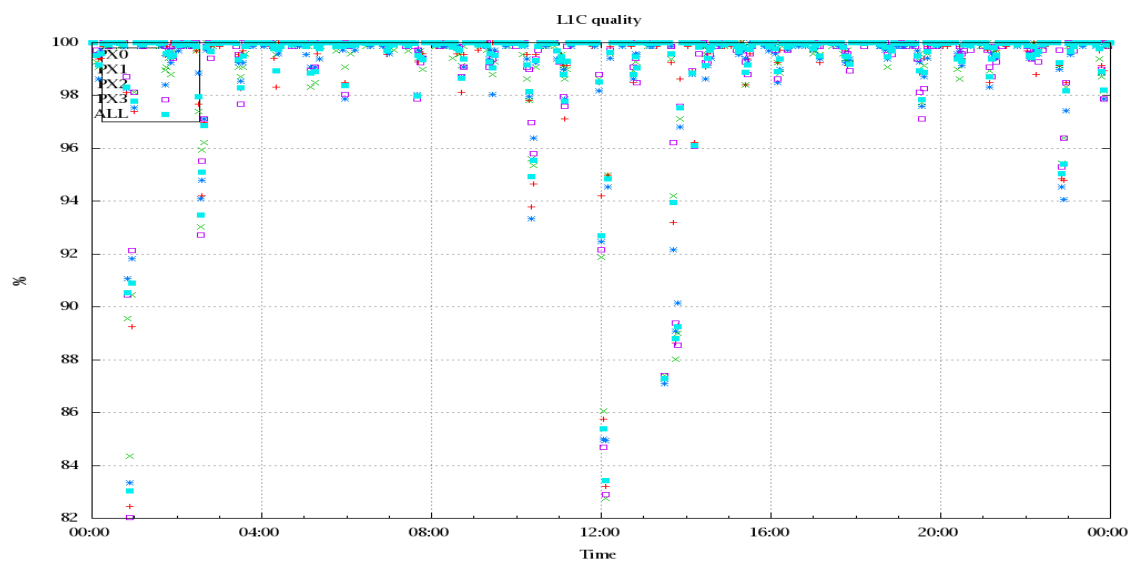


Figure 4: Level 1C quality

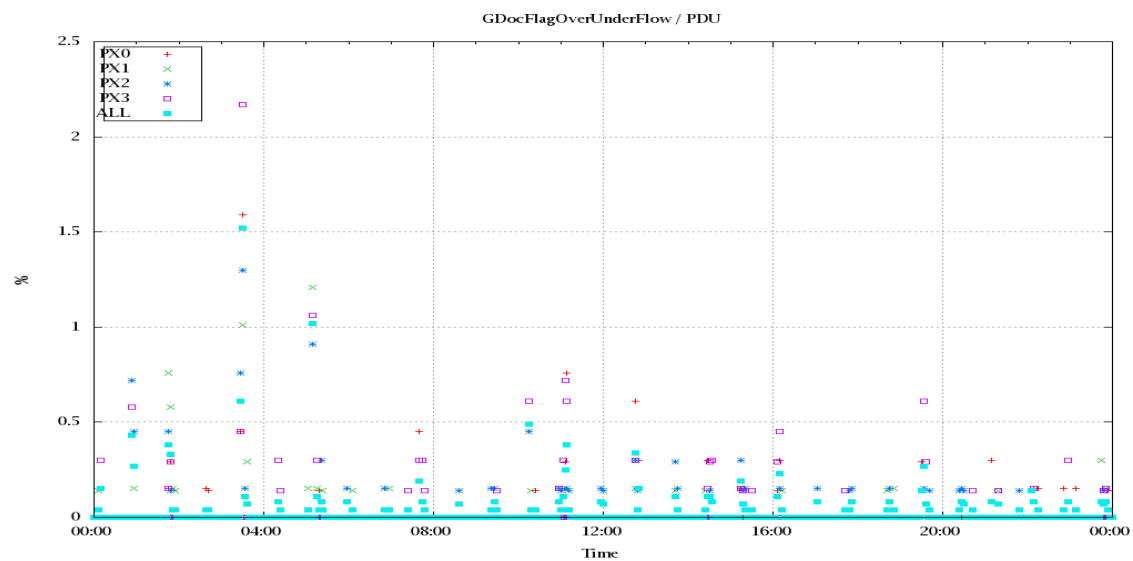


Figure 5: Timeseries of flag of Over and Under Flows

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.

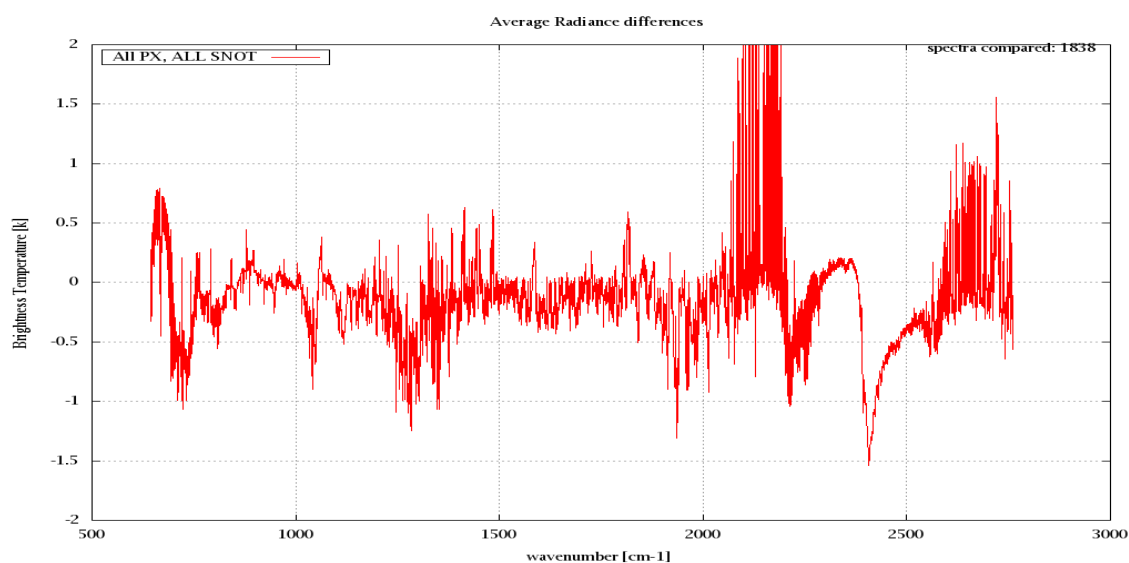


Figure 6: Average Radiance differences: OBS-CAL

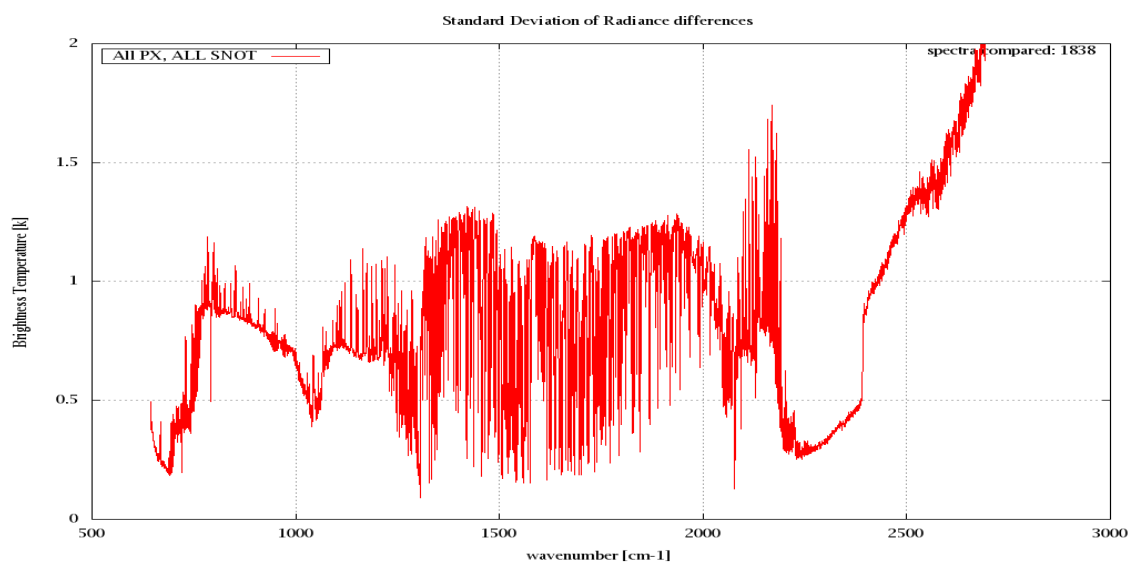


Figure 7: Standard Deviation of Radiance differences

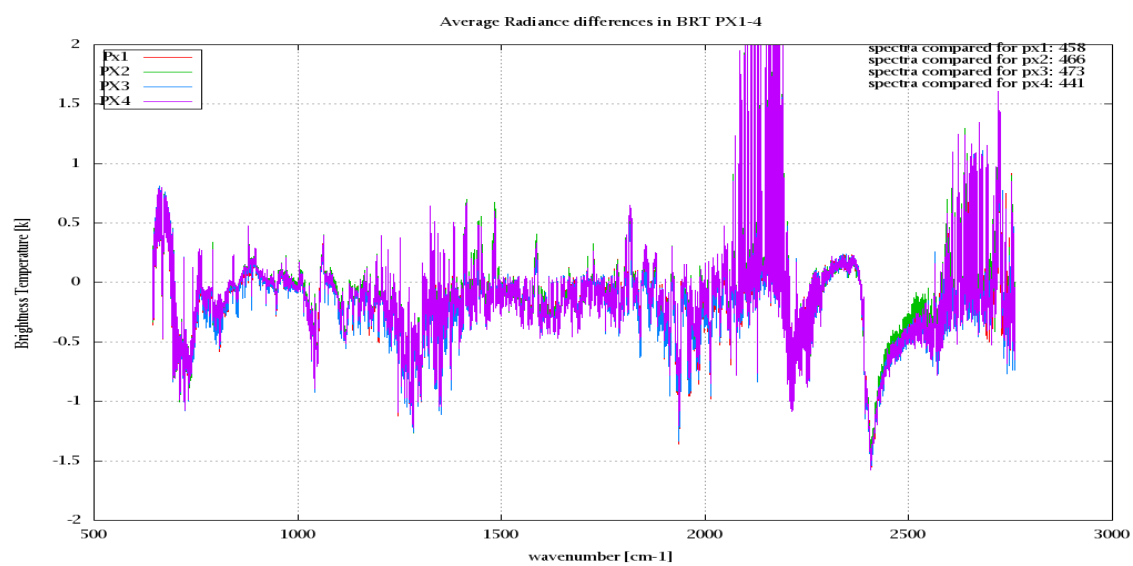


Figure 8: Average Radiance differences: OBS-CAL

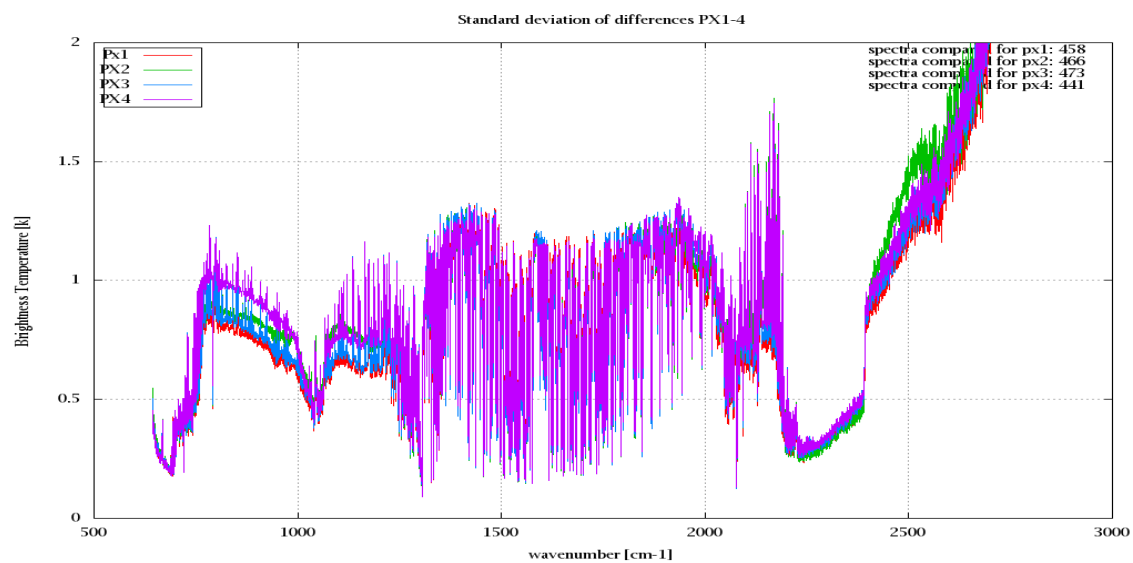


Figure 9: Standard Deviation of Radiance differences

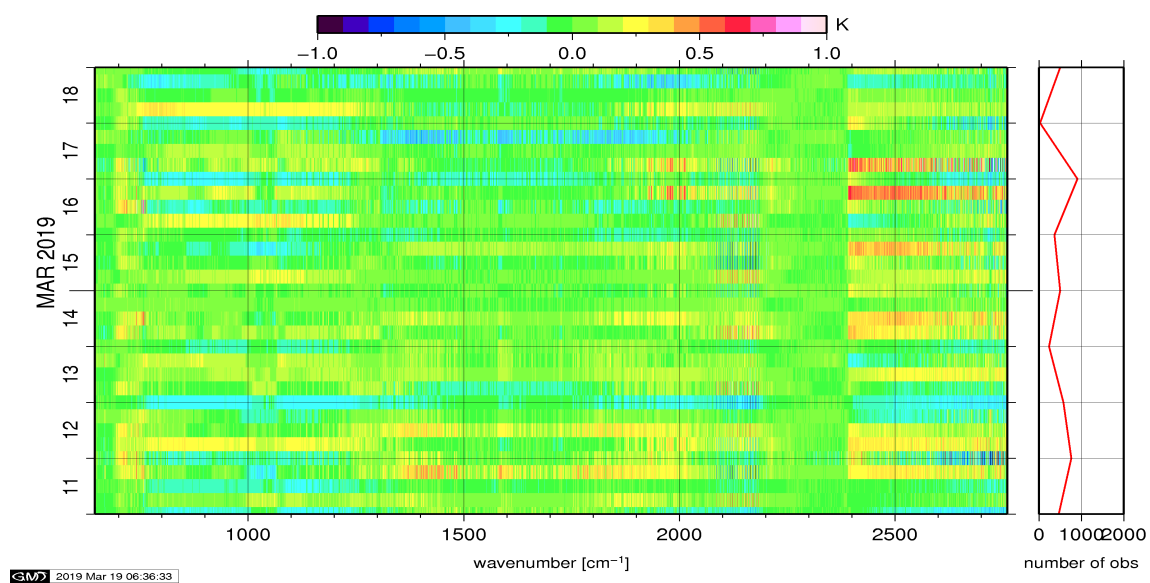


Figure 10: Radiance Anomaly in BT: All Channels

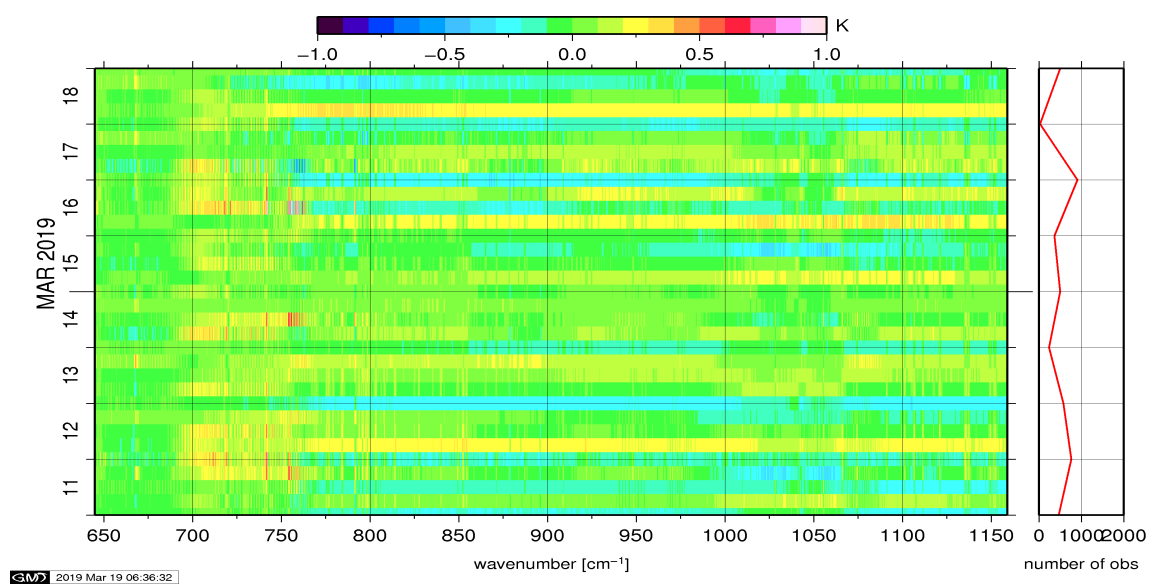


Figure 11: Radiance Anomaly in BT: IASI Band 1

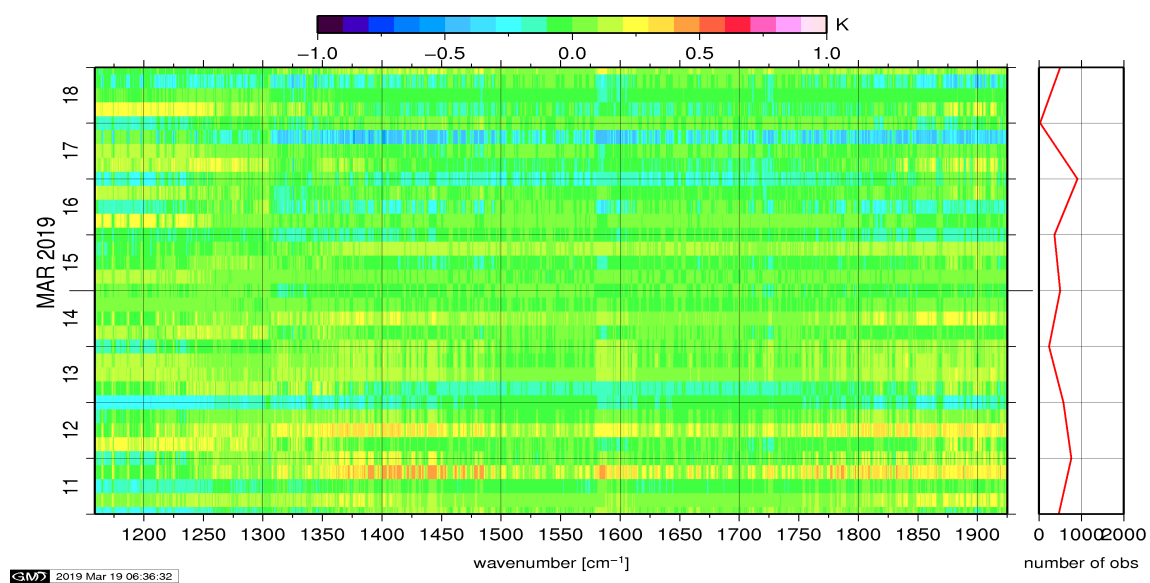


Figure 12: Radiance Anomaly in BT: IASI Band 2

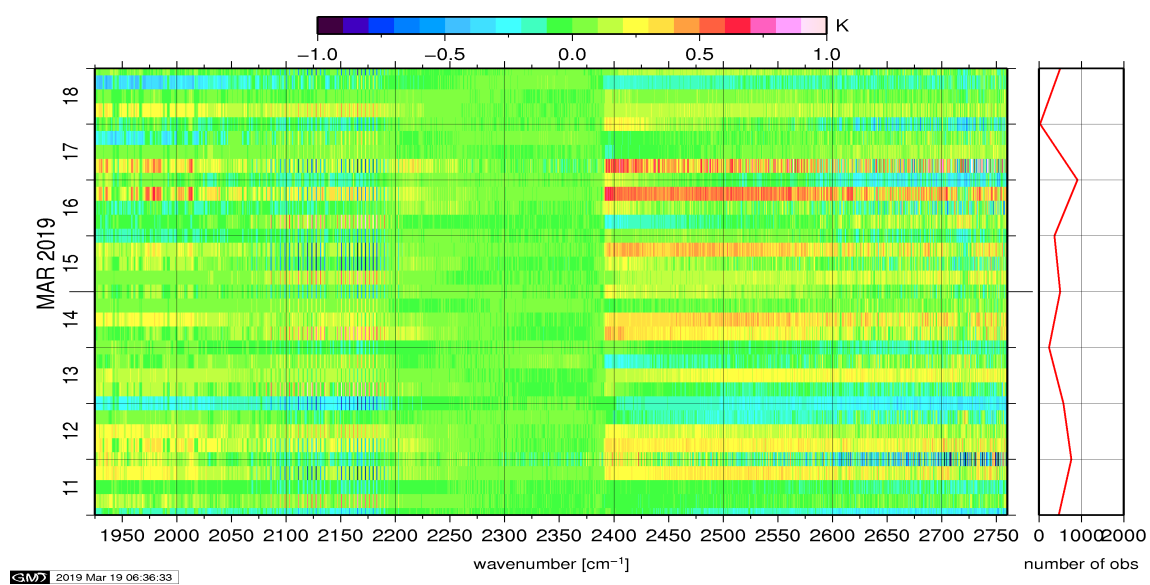


Figure 13: Radiance Anomaly in BT: IASI Band 3

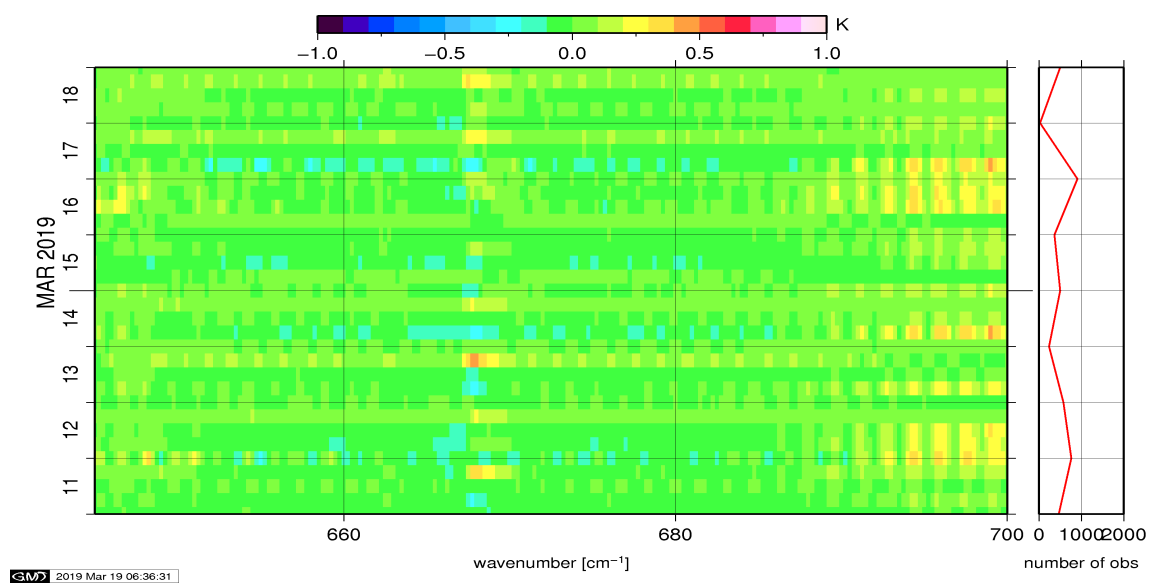


Figure 14: Radiance Anomaly in BT: CO2 14

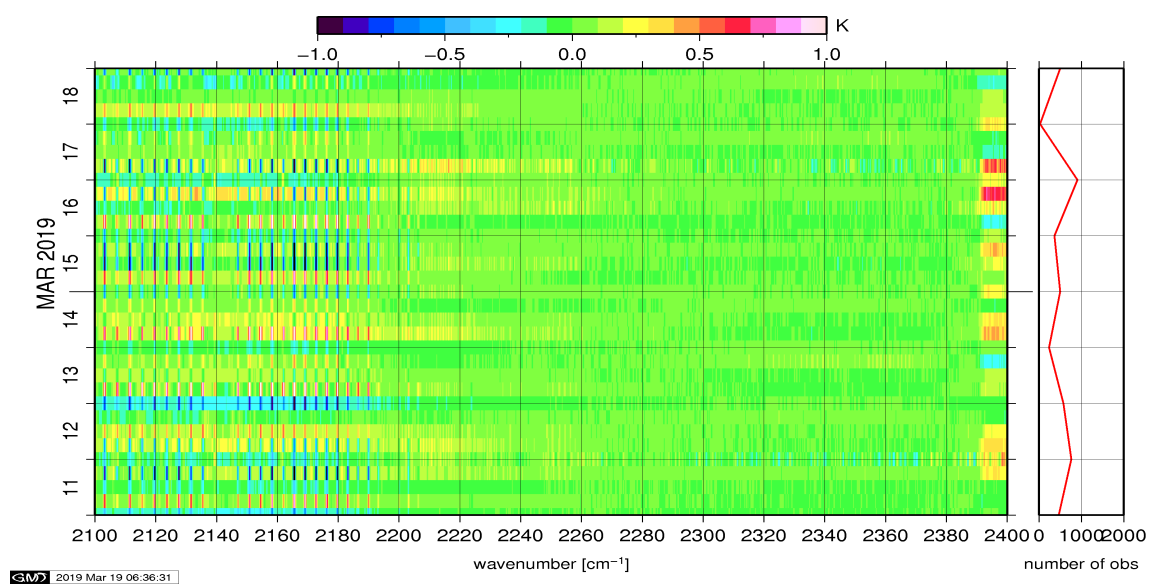


Figure 15: Radiance Anomaly in BT: CO2 4.3

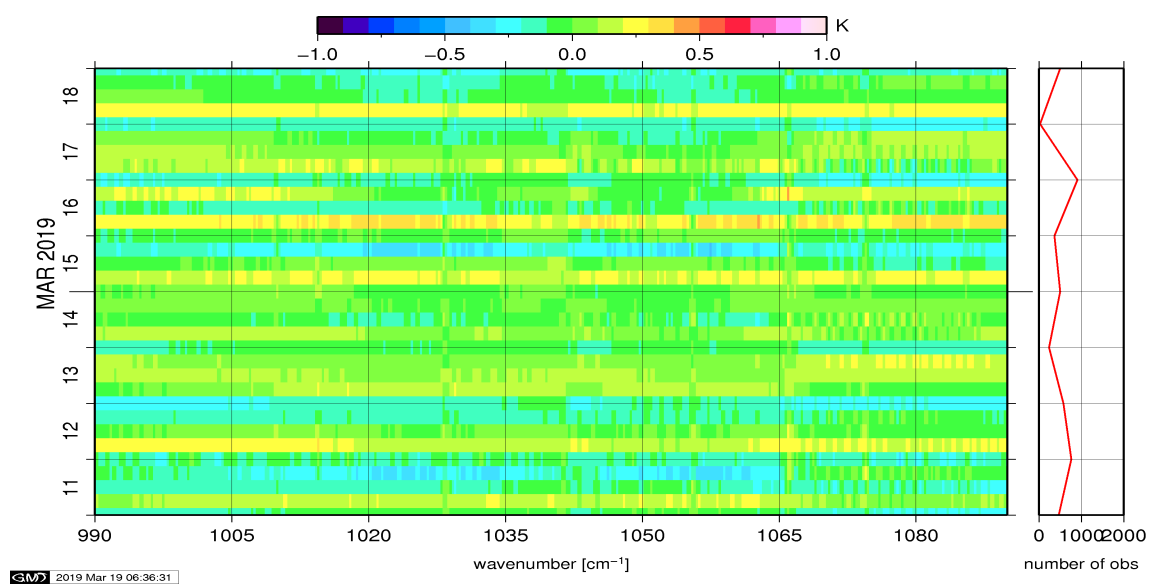


Figure 16: Radiance Anomaly in BT: O3

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.

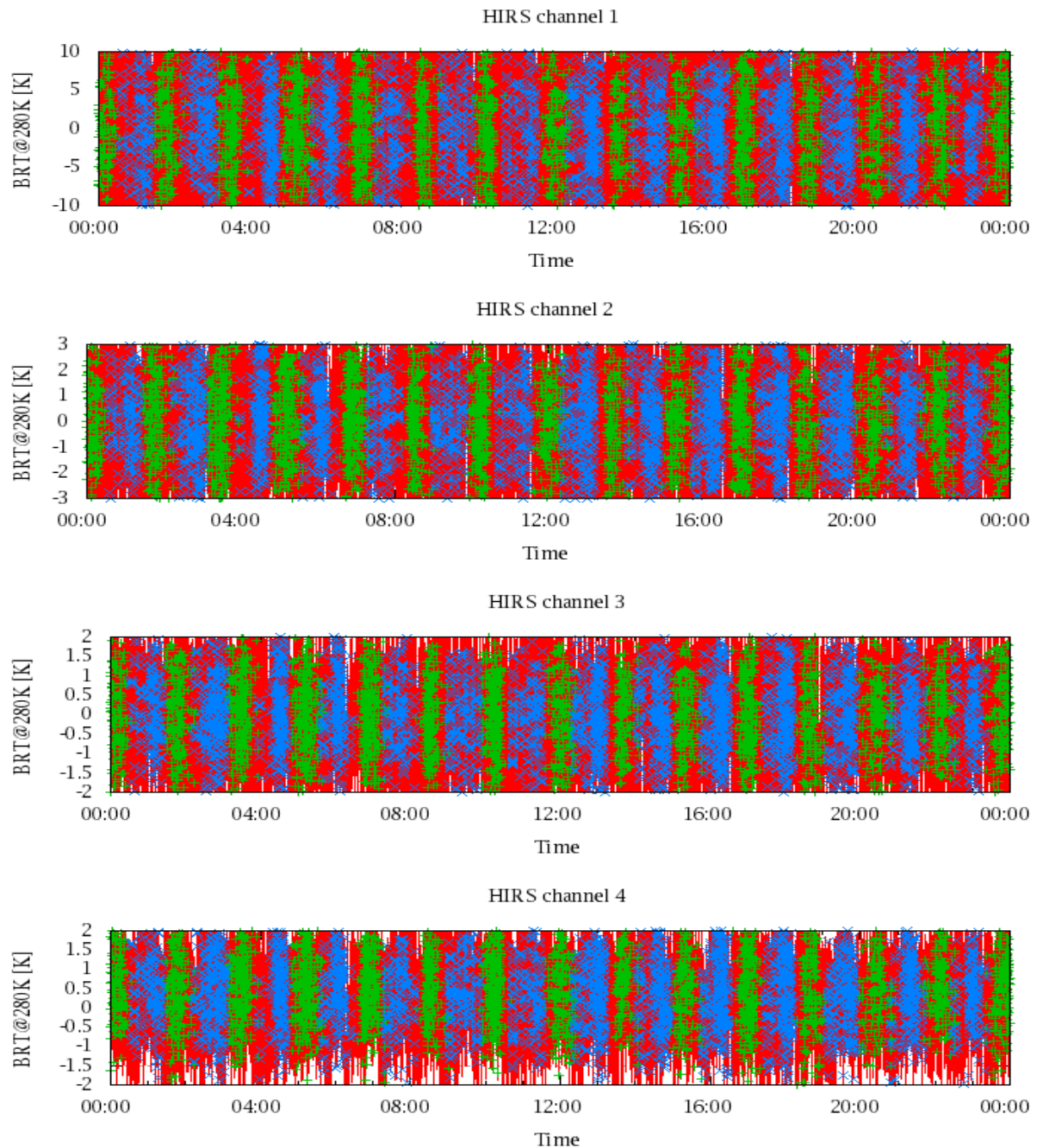


Figure 17: Radiance Differences in BT

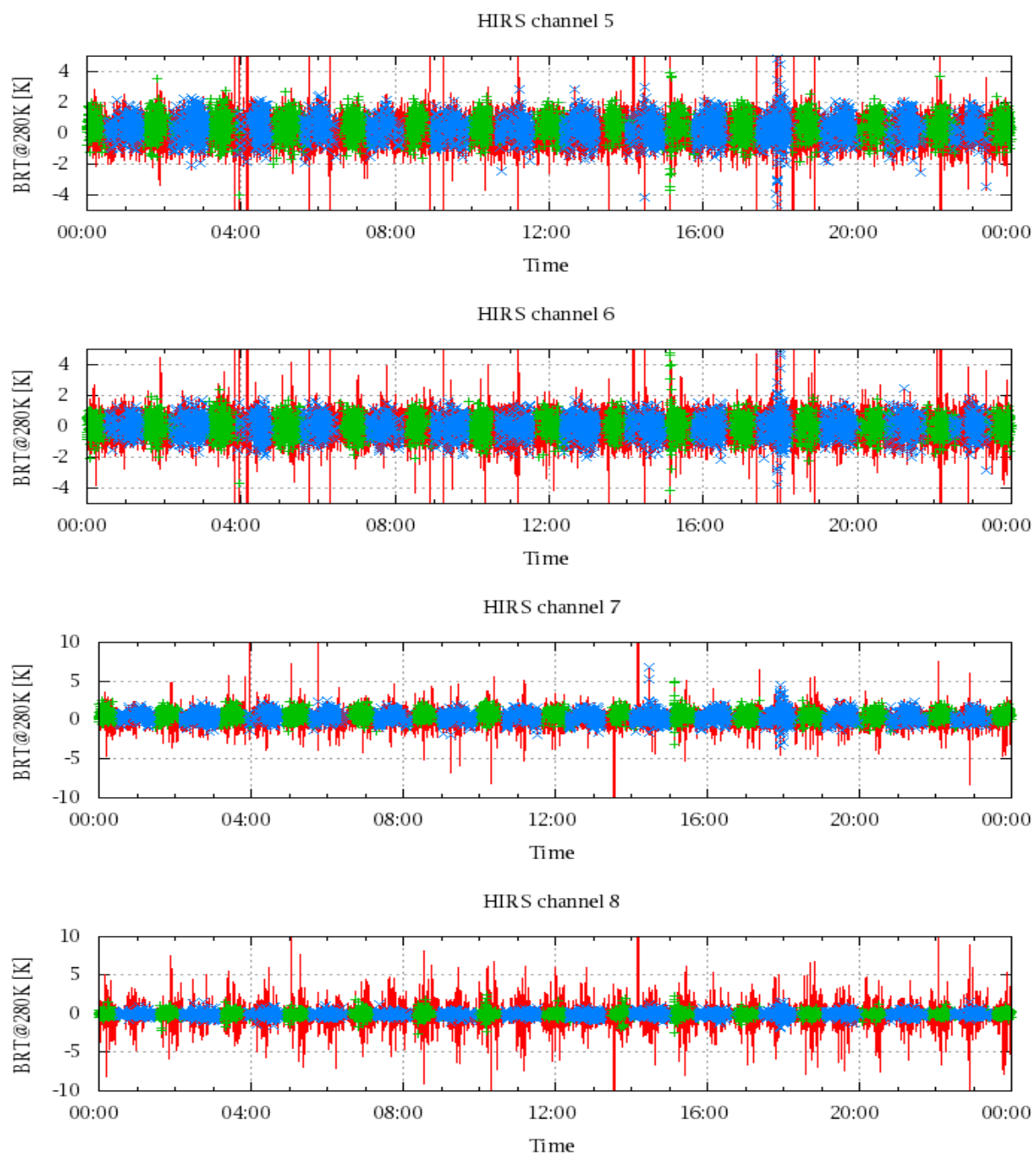


Figure 18: Radiance Differences in BT

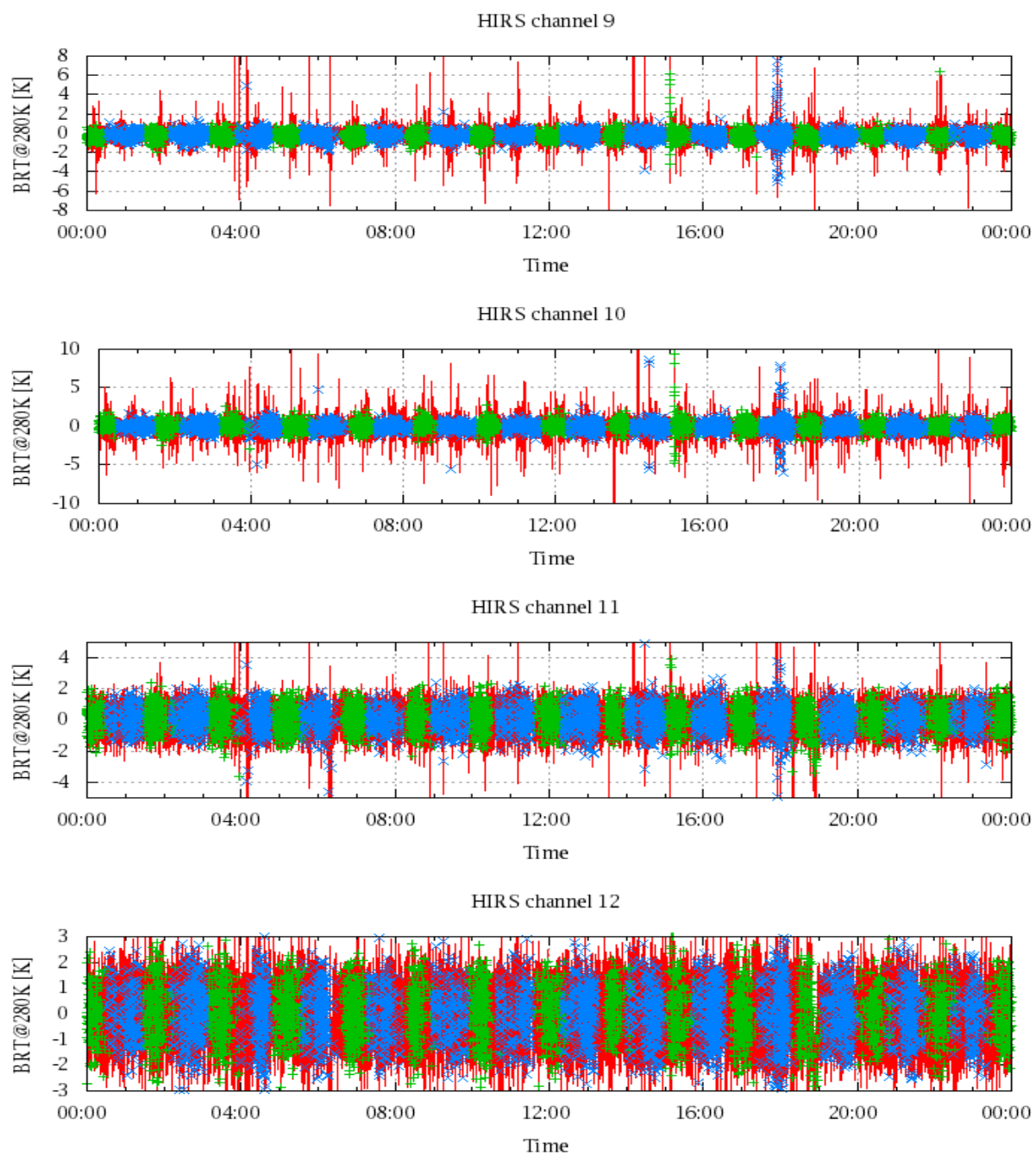


Figure 19: Radiance Differences in BT

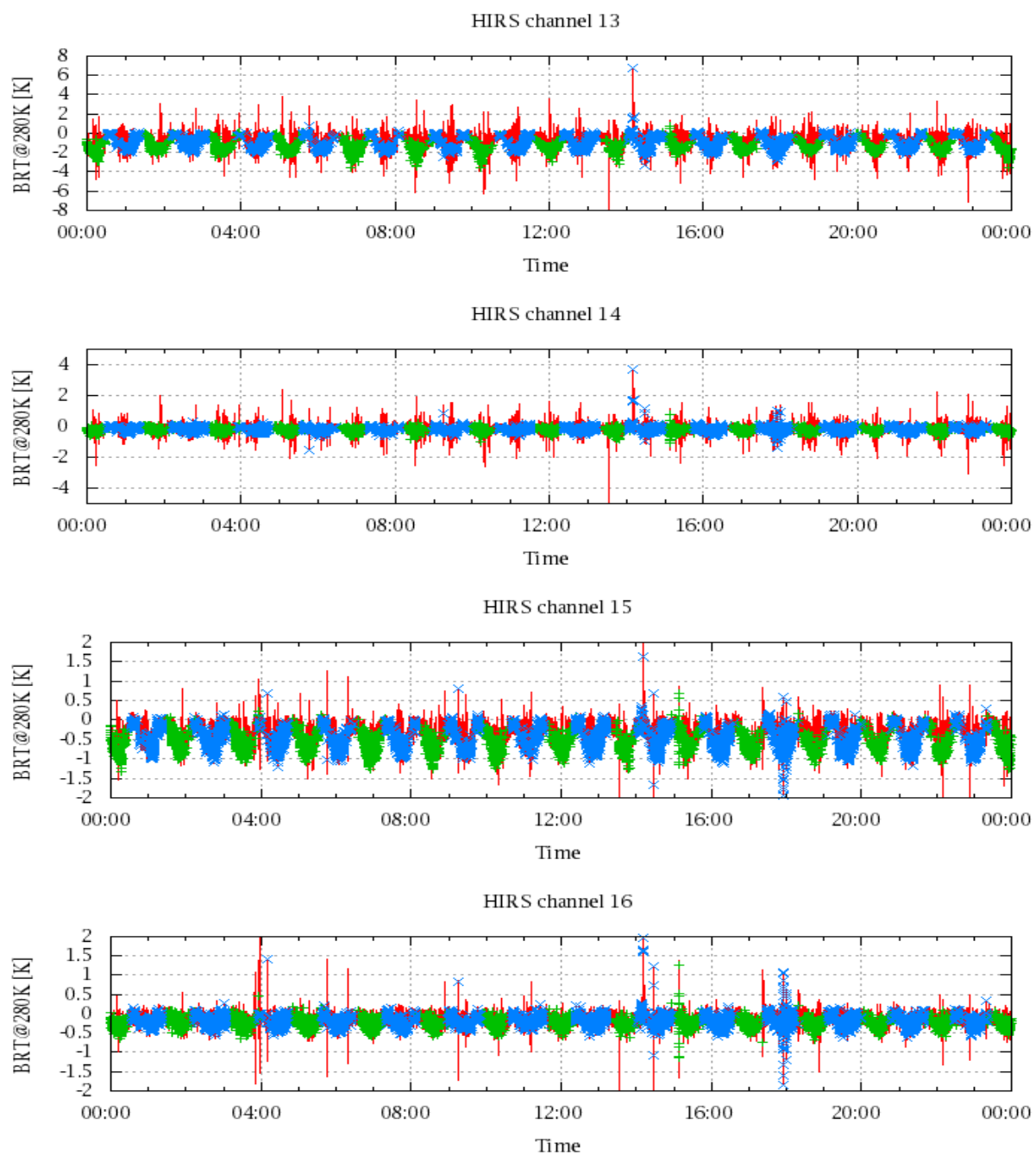


Figure 20: Radiance Differences in BT

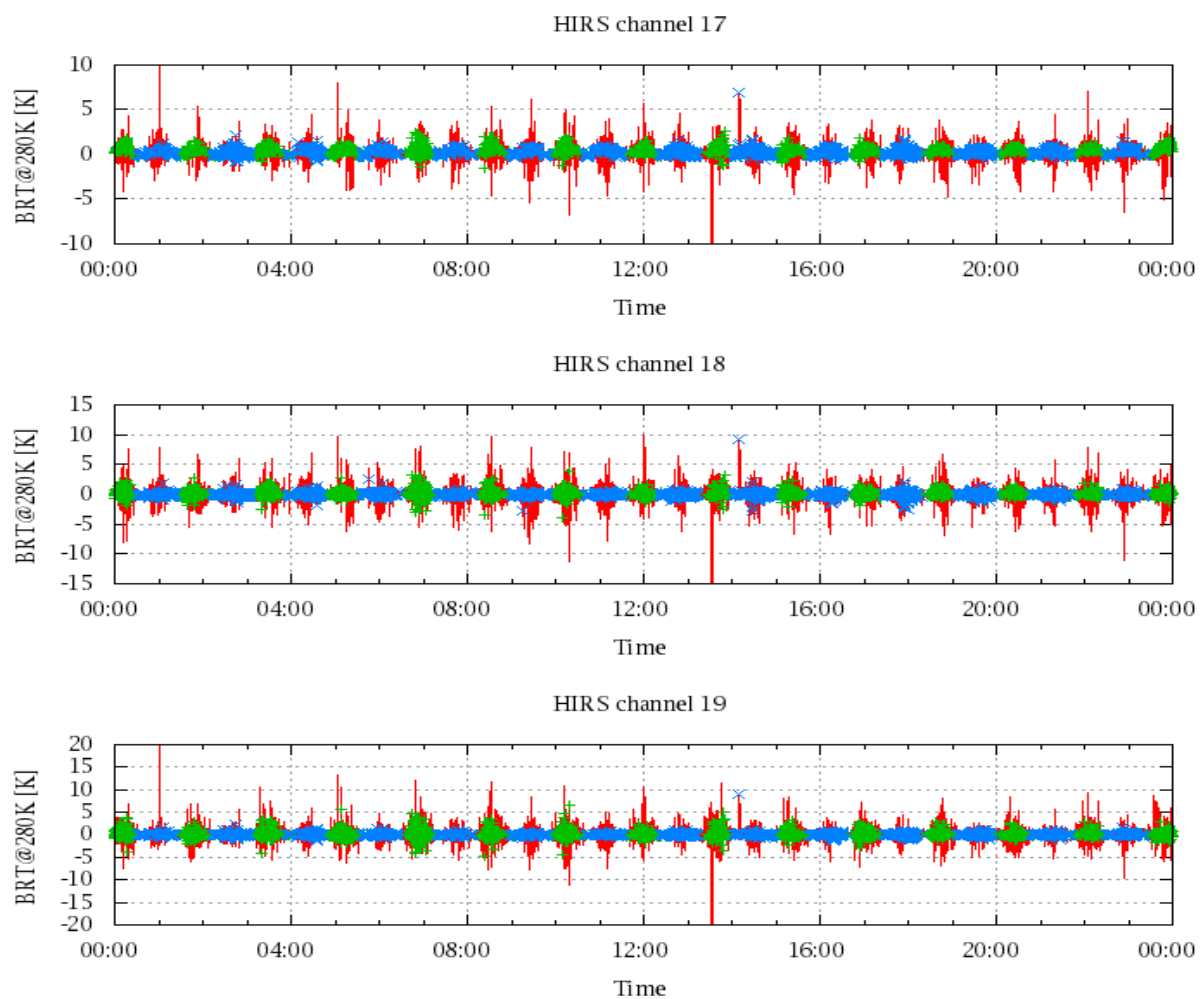


Figure 21: Radinace Differences in BT