

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

IASI monitoring team

25/05/2020 00:00:00 - 26/05/2020 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 25/05/2020 00:00:00 - 26/05/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 25/05/2020 00:00:00 - 26/05/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	467	-
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)	7601	7604	20200525030245.137	20200525030245.790
PX1 (130)	7608	7611	20200525030246.653	20200525030247.302
PX1 (130)	7611	7613	20200525030247.302	20200525030247.735
PX1 (130)	7613	7615	20200525030247.735	20200525030248.165
PX1 (130)	7616	7622	20200525030248.384	20200525030249.680
PX1 (130)	7622	7632	20200525030249.680	20200525030253.356
PX1 (130)	7632	7636	20200525030253.356	20200525030254.220
PX1 (130)	7636	7640	20200525030254.220	20200525030255.087
PX1 (130)	7640	7646	20200525030255.087	20200525030256.384
PX1 (130)	7646	7648	20200525030256.384	20200525030256.813
PX1 (130)	7648	7652	20200525030256.813	20200525030257.680
PX1 (130)	7652	7654	20200525030257.680	20200525030258.110
PX1 (130)	7655	7659	20200525030258.329	20200525030300.708
PX2 (135)	7604	7608	20200525030245.790	20200525030246.653
PX2 (135)	7610	7613	20200525030247.087	20200525030247.735
PX2 (135)	7613	7619	20200525030247.735	20200525030249.032
PX2 (135)	7619	7626	20200525030249.032	20200525030250.544
PX2 (135)	7626	7628	20200525030250.544	20200525030250.977
PX2 (135)	7628	7634	20200525030250.977	20200525030253.786
PX2 (135)	7636	7638	20200525030254.220	20200525030254.653

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	7639	7643	20200525030254.868	20200525030255.735
PX2 (135)	7644	7649	20200525030255.950	20200525030257.032
PX2 (135)	7649	7652	20200525030257.032	20200525030257.680
PX2 (135)	7652	7654	20200525030257.680	20200525030258.110
PX2 (135)	7655	7657	20200525030258.329	20200525030258.762
PX2 (135)	7657	7659	20200525030258.762	20200525030300.708
PX2 (135)	7660	7662	20200525030300.923	20200525030301.356
PX3 (140)	7598	7600	20200525030242.977	20200525030244.923
PX3 (140)	7603	7605	20200525030245.571	20200525030246.005
PX3 (140)	7606	7608	20200525030246.220	20200525030246.653
PX3 (140)	7608	7610	20200525030246.653	20200525030247.087
PX3 (140)	7613	7618	20200525030247.735	20200525030248.817
PX3 (140)	7618	7622	20200525030248.817	20200525030249.680
PX3 (140)	7622	7624	20200525030249.680	20200525030250.114
PX3 (140)	7624	7633	20200525030250.114	20200525030253.571
PX3 (140)	7635	7638	20200525030254.005	20200525030254.653
PX3 (140)	7638	7641	20200525030254.653	20200525030255.302
PX3 (140)	7641	7643	20200525030255.302	20200525030255.735
PX3 (140)	7645	7649	20200525030256.169	20200525030257.032
PX3 (140)	7649	7652	20200525030257.032	20200525030257.680
PX3 (140)	7656	7658	20200525030258.544	20200525030258.977
PX3 (140)	7661	7663	20200525030301.137	20200525030301.571
PX3 (140)	7671	7673	20200525030303.302	20200525030303.735
PX4 (145)	7602	7604	20200525030245.356	20200525030245.790
PX4 (145)	7604	7608	20200525030245.790	20200525030246.653
PX4 (145)	7612	7622	20200525030247.520	20200525030249.680
PX4 (145)	7622	7624	20200525030249.680	20200525030250.114
PX4 (145)	7625	7627	20200525030250.329	20200525030250.762
PX4 (145)	7628	7632	20200525030250.977	20200525030253.356
PX4 (145)	7632	7635	20200525030253.356	20200525030254.005
PX4 (145)	7635	7637	20200525030254.005	20200525030254.438
PX4 (145)	7639	7642	20200525030254.868	20200525030255.516
PX4 (145)	7642	7650	20200525030255.516	20200525030257.247
PX4 (145)	7650	7654	20200525030257.247	20200525030258.110
PX4 (145)	7655	7659	20200525030258.329	20200525030300.708
IMG (150)	15857	15859	20200525030245.137	20200525030245.571
IMG (150)	15860	15864	20200525030245.790	20200525030246.653
IMG (150)	15871	15878	20200525030248.165	20200525030249.680
IMG (150)	15879	15881	20200525030249.895	20200525030250.329
IMG (150)	15883	15892	20200525030250.762	20200525030253.356
IMG (150)	15893	15895	20200525030253.571	20200525030254.005
IMG (150)	15895	15897	20200525030254.005	20200525030254.438
IMG (150)	15900	15905	20200525030255.087	20200525030256.169
IMG (150)	15907	15909	20200525030256.598	20200525030257.032
IMG (150)	15912	15915	20200525030257.680	20200525030258.329
IMG (150)	15915	15918	20200525030258.329	20200525030258.977
VER (160)	10325	10331	20200525030242.977	20200525030258.977
VER (160)	10331	10334	20200525030258.977	20200525030258.977
AUX (180)	2063	2065	20200525030243.411	20200525030259.411

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
25/05/2020 00:00:08	-	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	467	-
GQisFlagQual set (PX1)	99.56 %	-
GQisFlagQual set (PX2)	99.65 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags

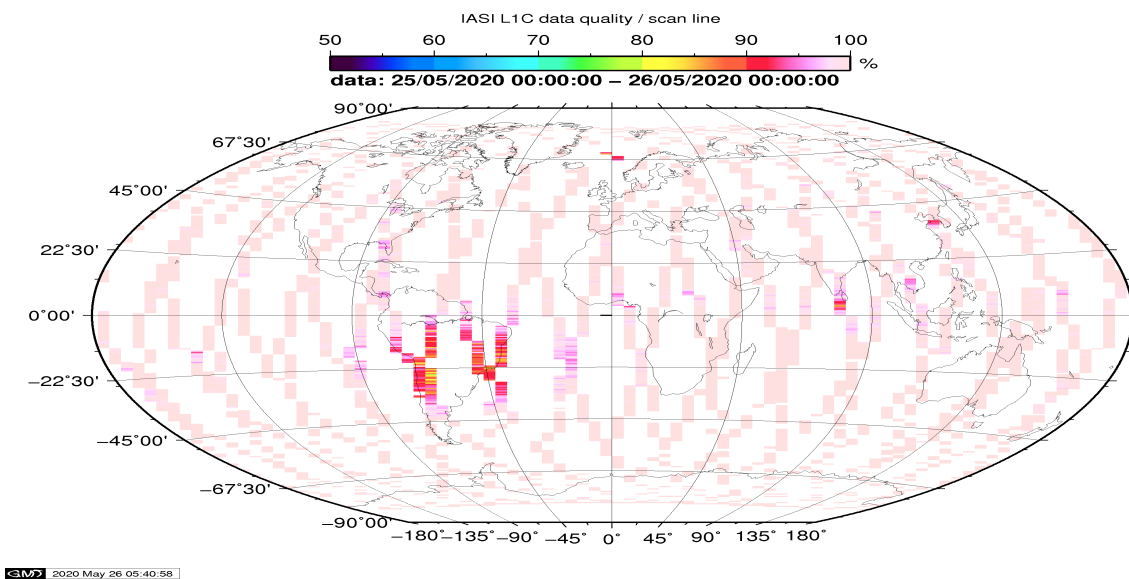


Figure 1: L1C data quality

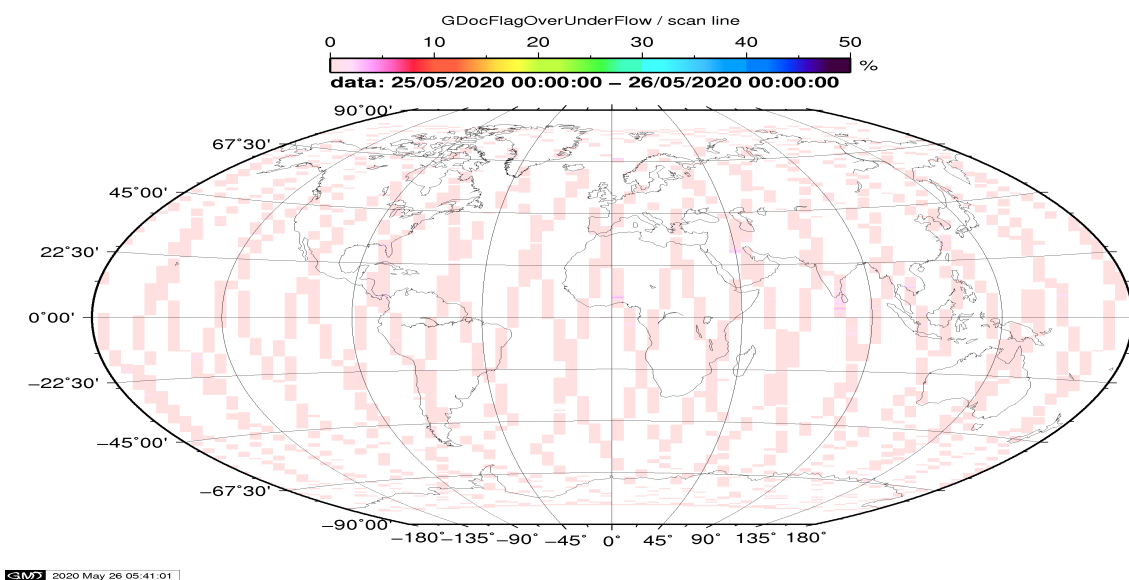


Figure 2: Flag of Over and Under Flows

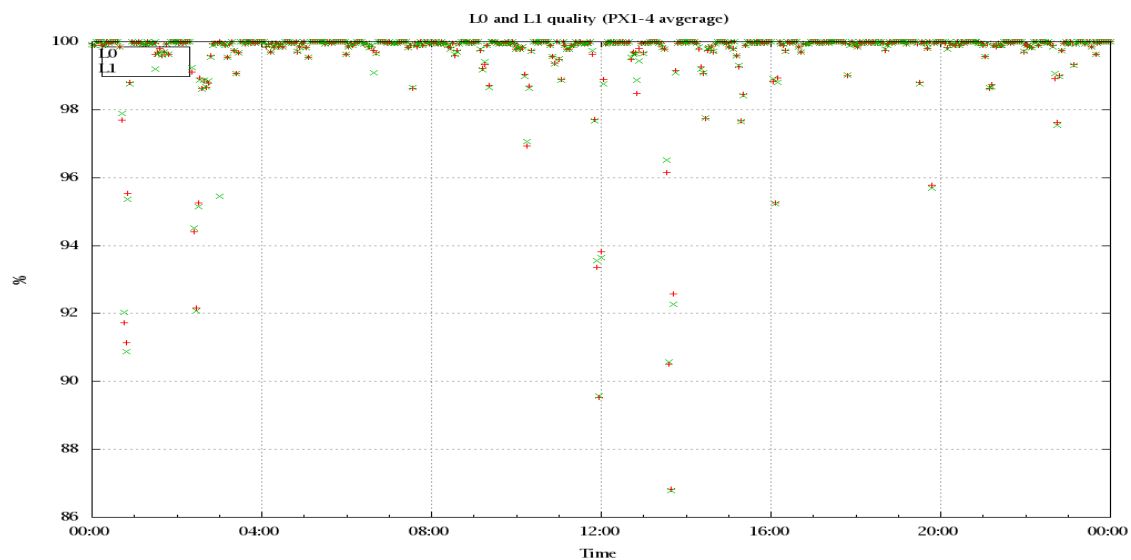


Figure 3: Level 0 and 1C overall quality

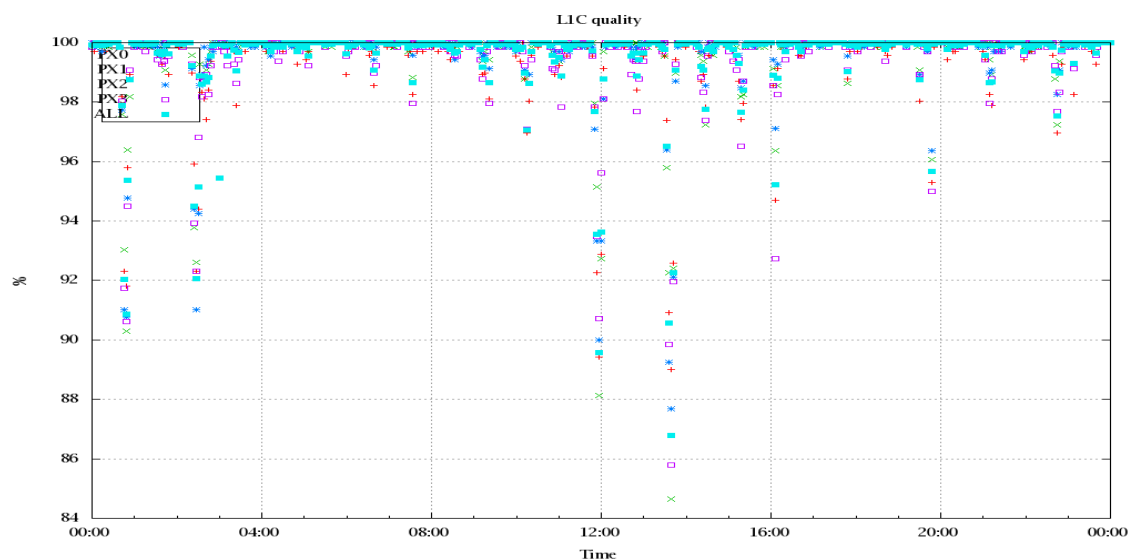


Figure 4: Level 1C quality

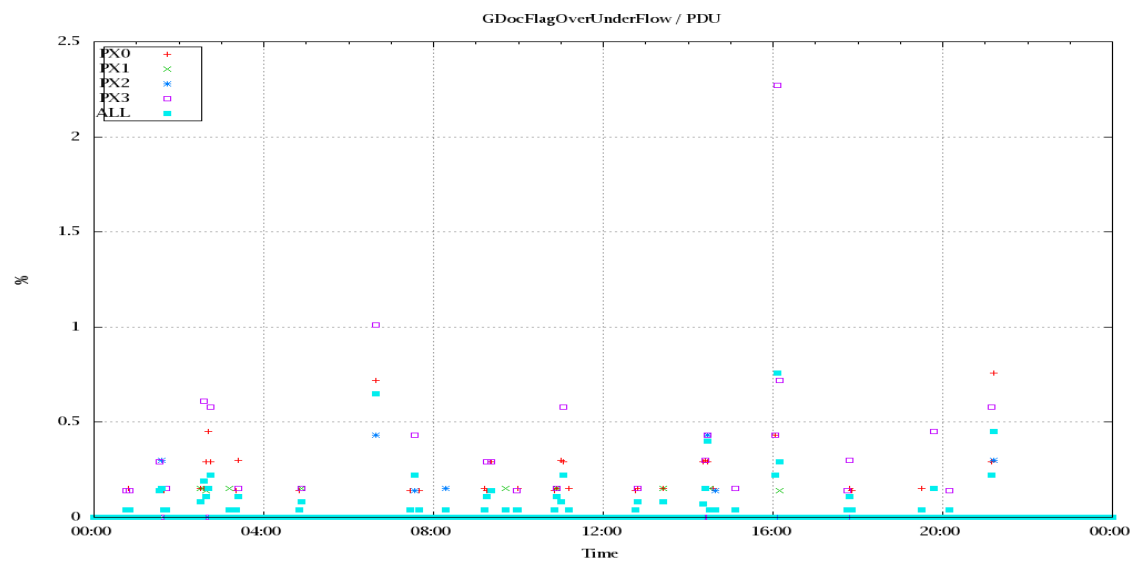


Figure 5: Timeseries of flag of Over and Under Flows

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.

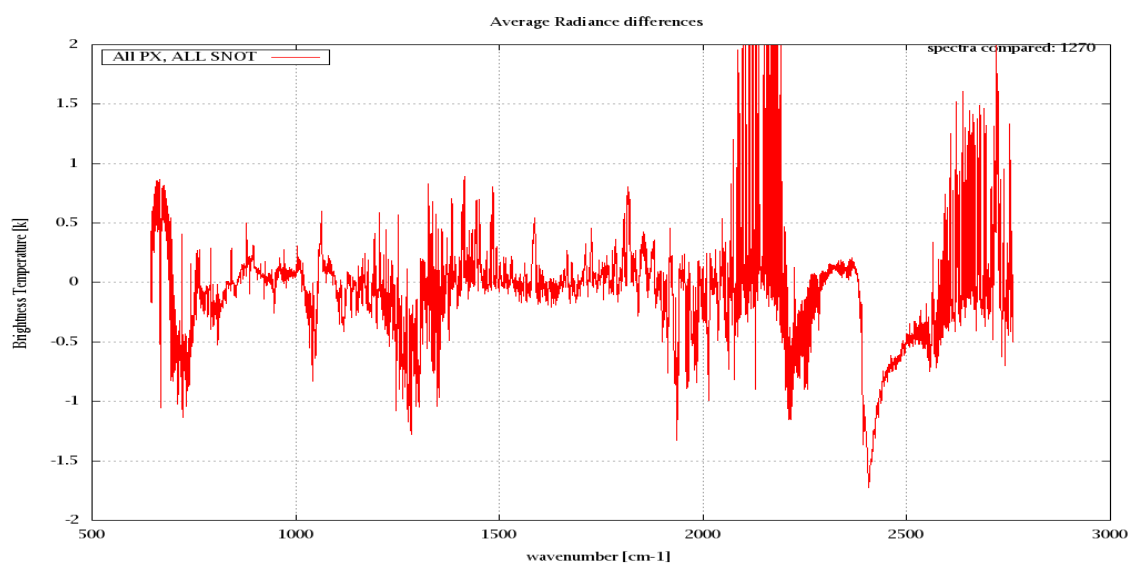


Figure 6: Average Radiance differences: OBS-CAL

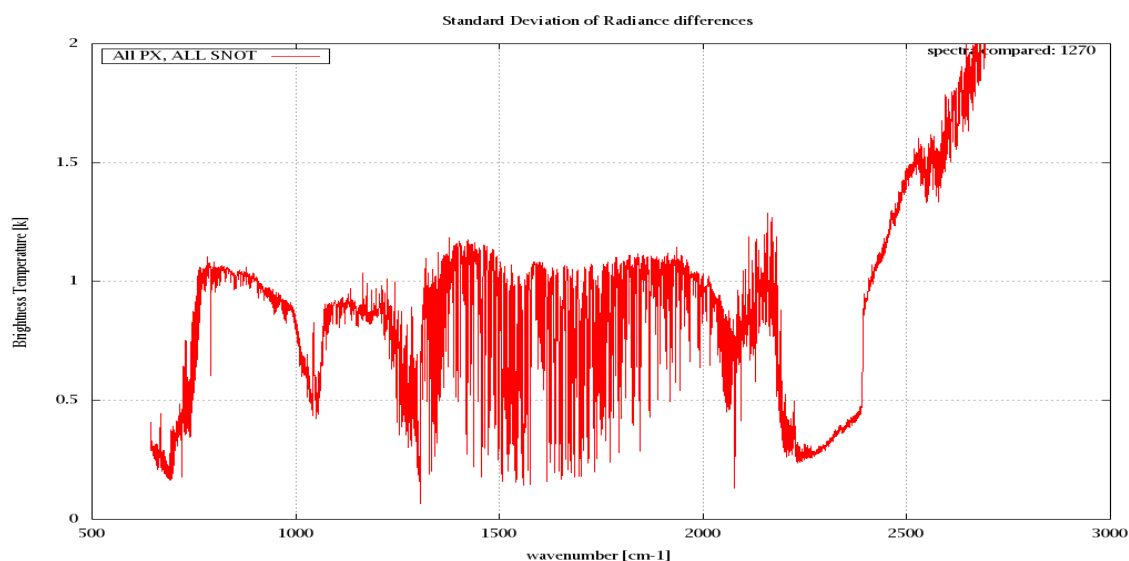


Figure 7: Standard Deviation of Radiance differences

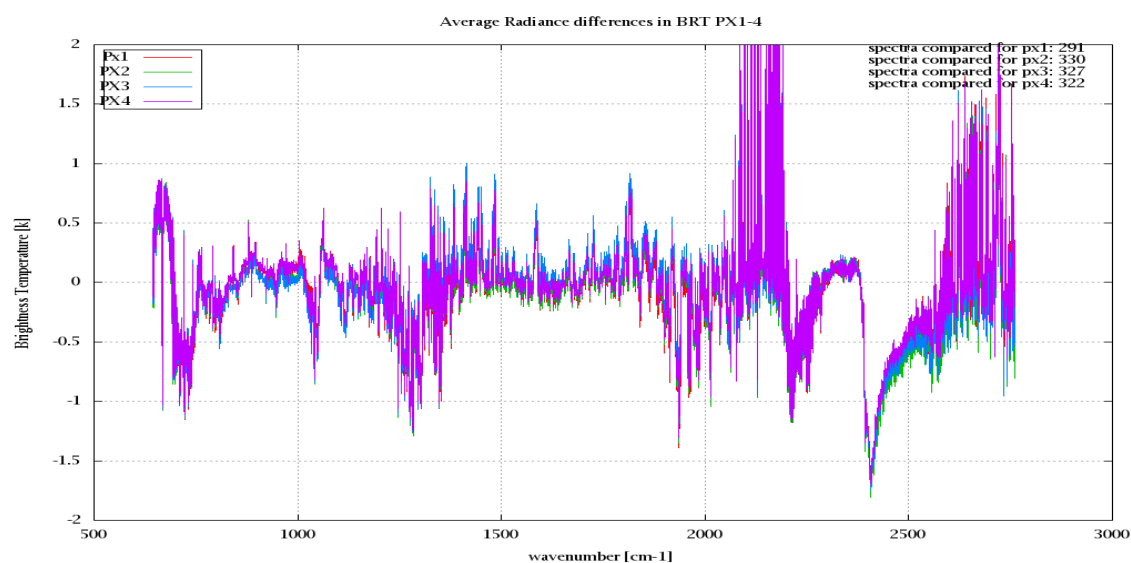


Figure 8: Average Radiance differences: OBS-CAL

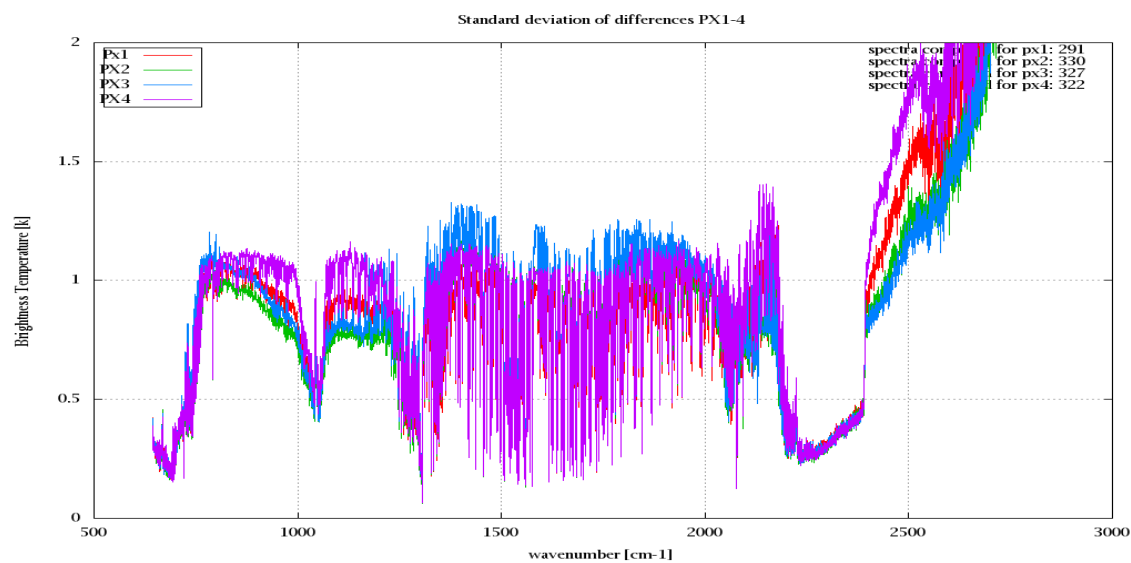


Figure 9: Standard Deviation of Radiance differences

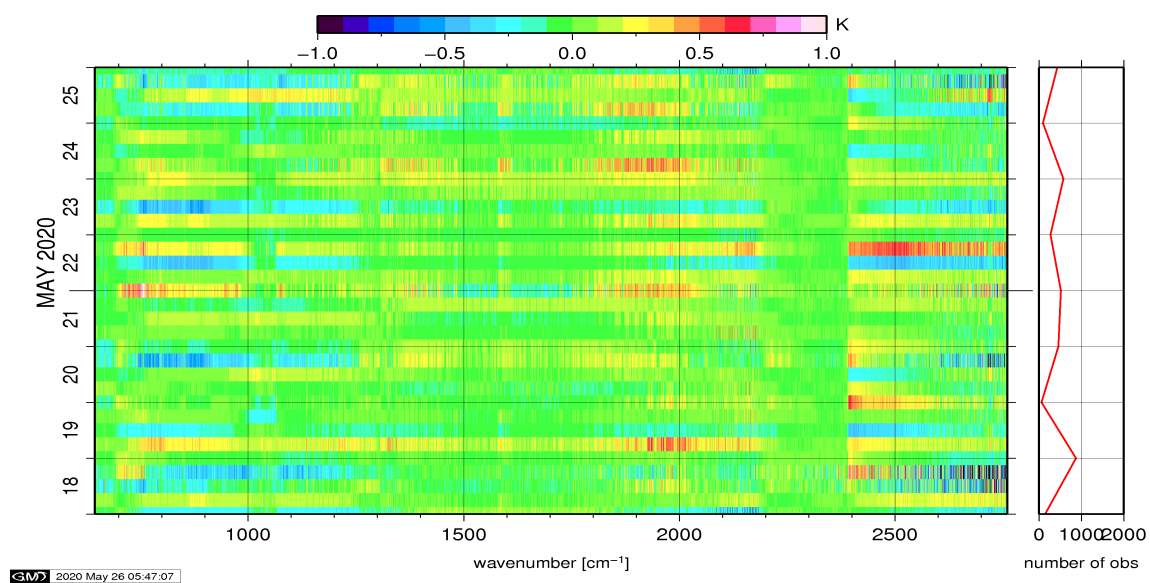


Figure 10: Radiance Anomaly in BT: All Channels

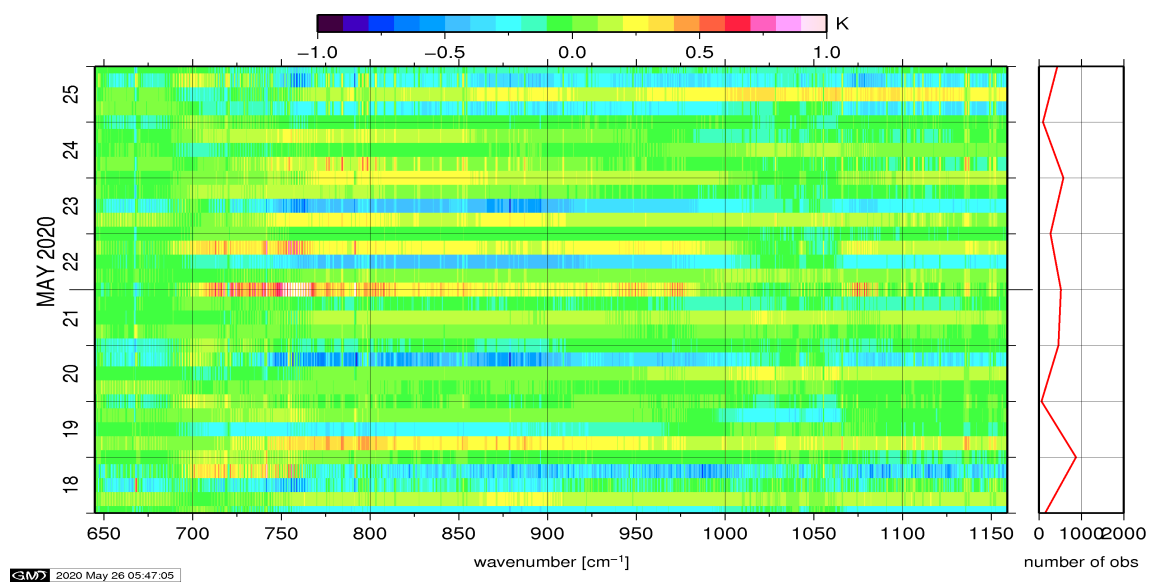


Figure 11: Radiance Anomaly in BT: IASI Band 1

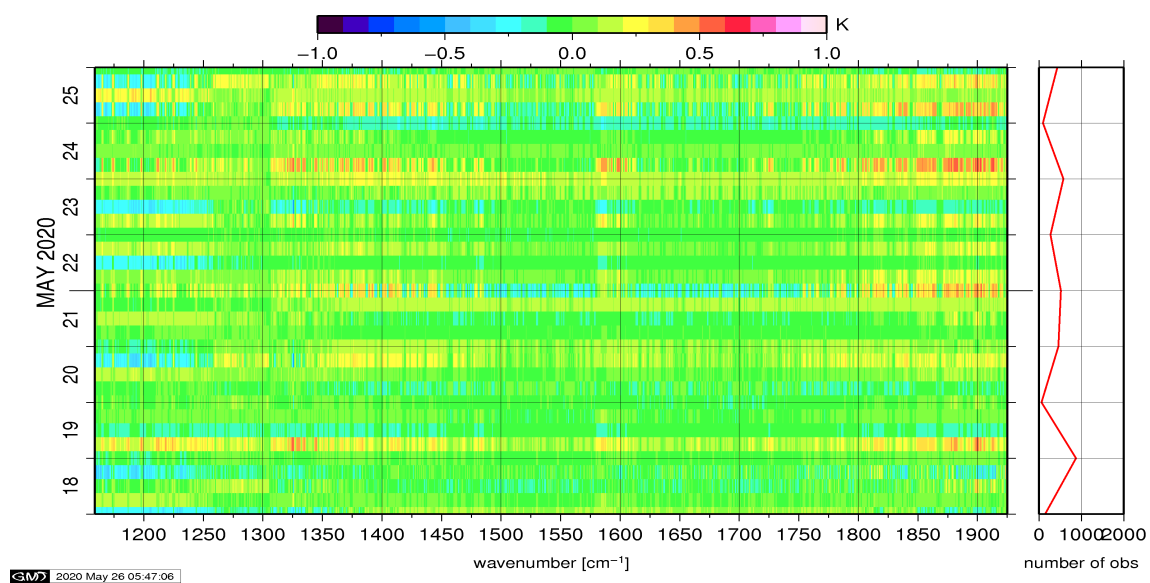


Figure 12: Radiance Anomaly in BT: IASI Band 2

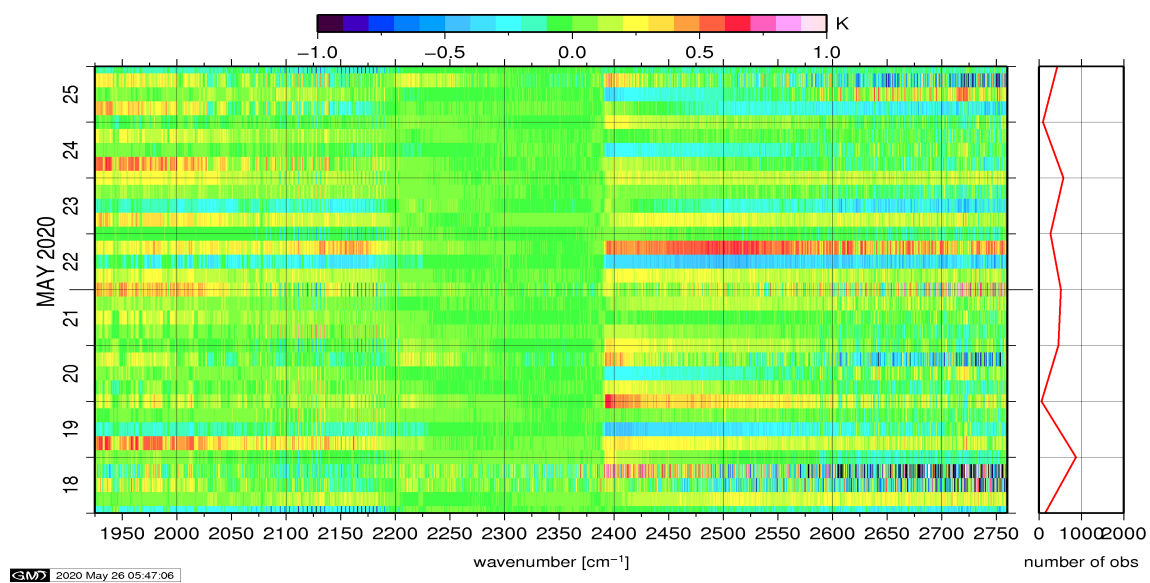


Figure 13: Radiance Anomaly in BT: IASI Band 3

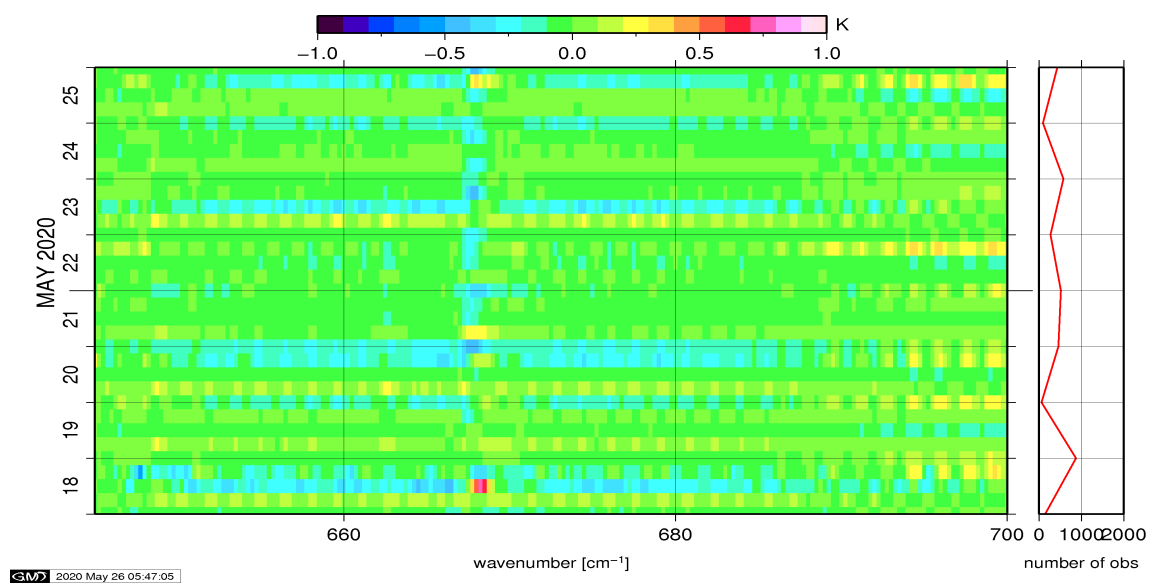


Figure 14: Radiance Anomaly in BT: CO2 14

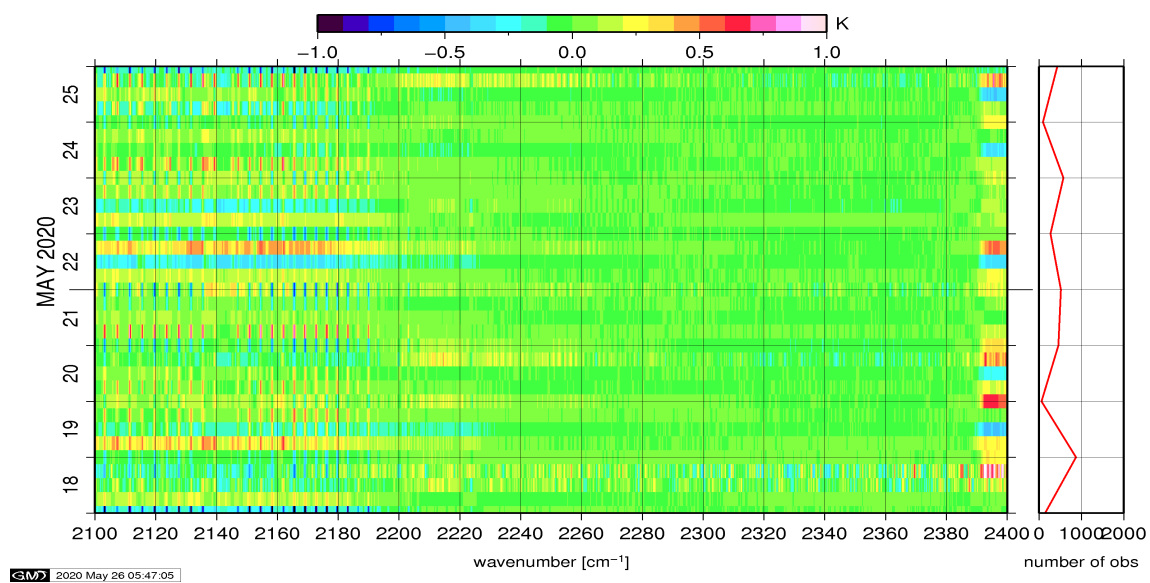


Figure 15: Radiance Anomaly in BT: CO2 4.3

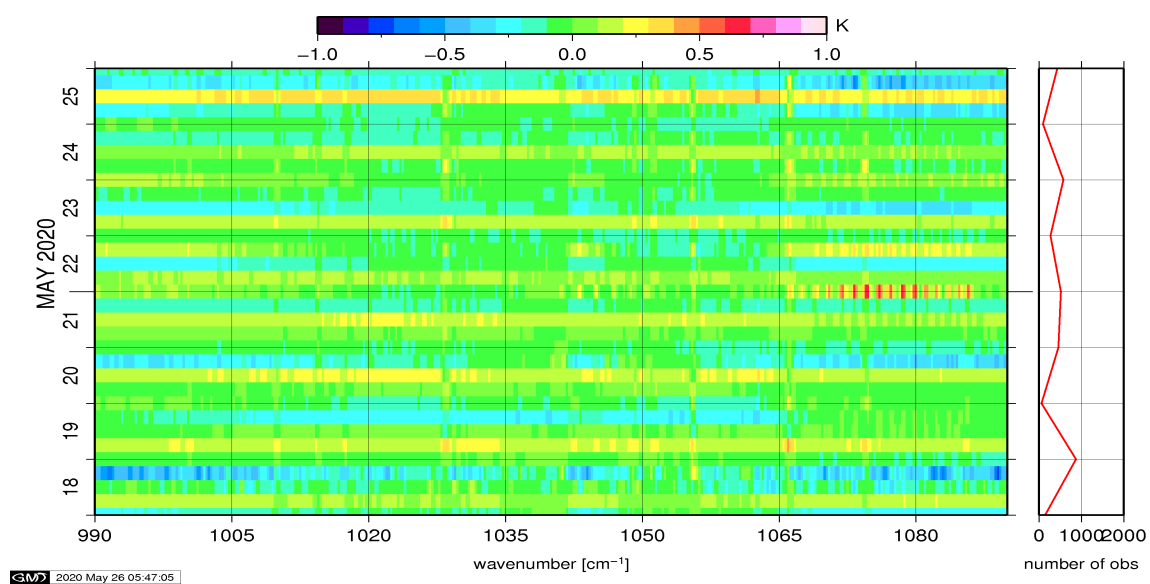


Figure 16: Radiance Anomaly in BT: O3

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.

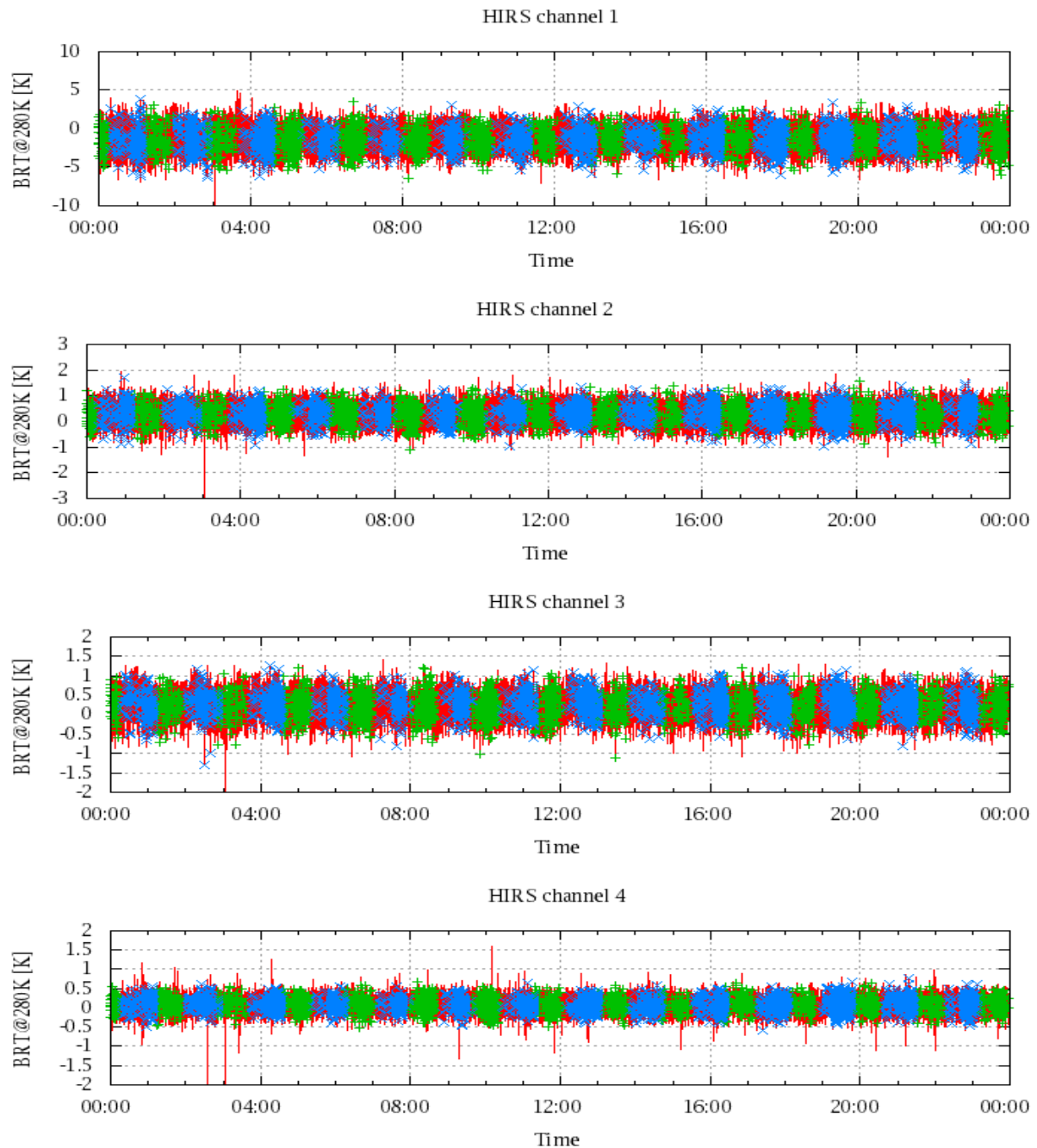


Figure 17: Radiance Differences in BT

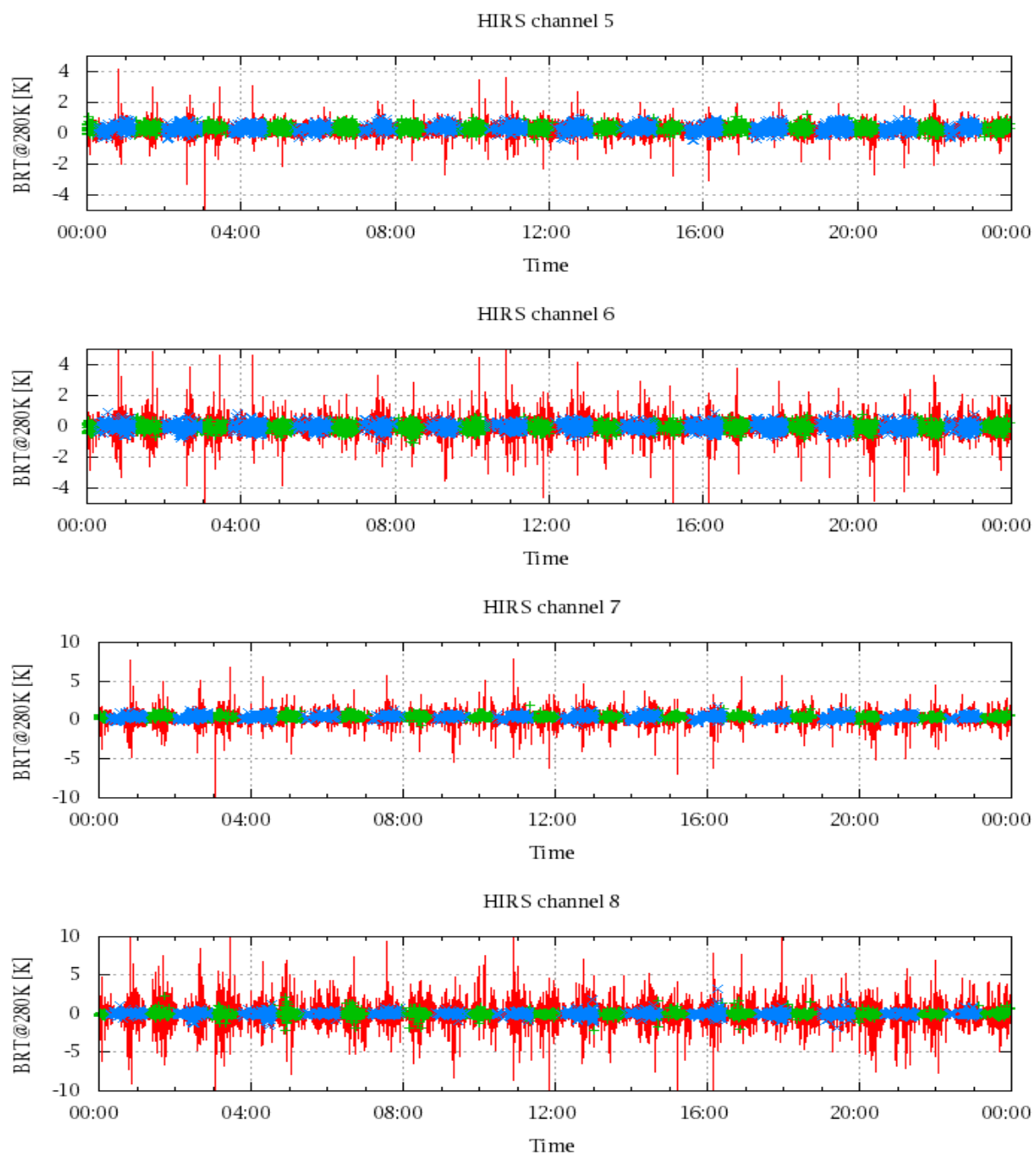


Figure 18: Radiance Differences in BT

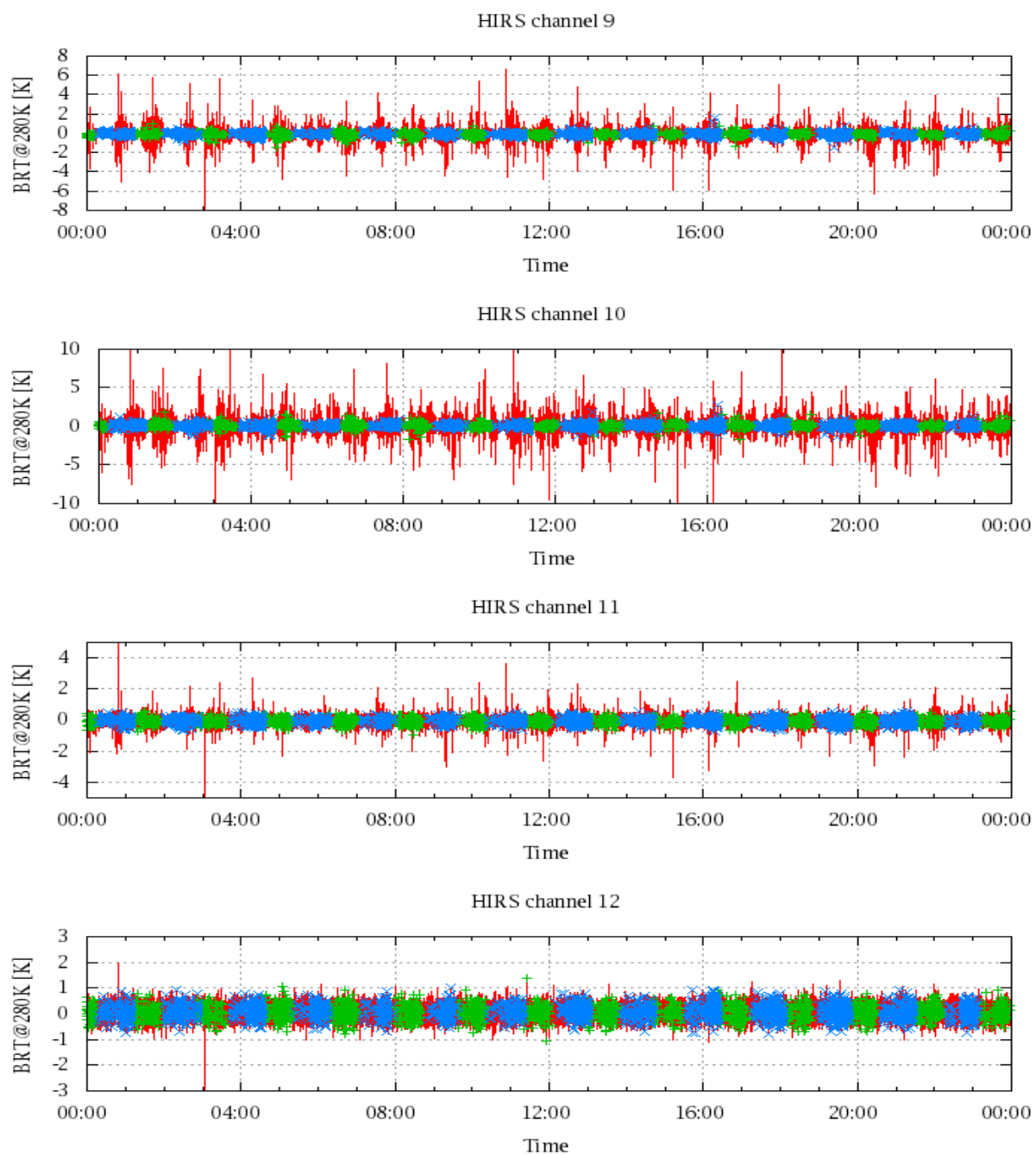


Figure 19: Radiance Differences in BT

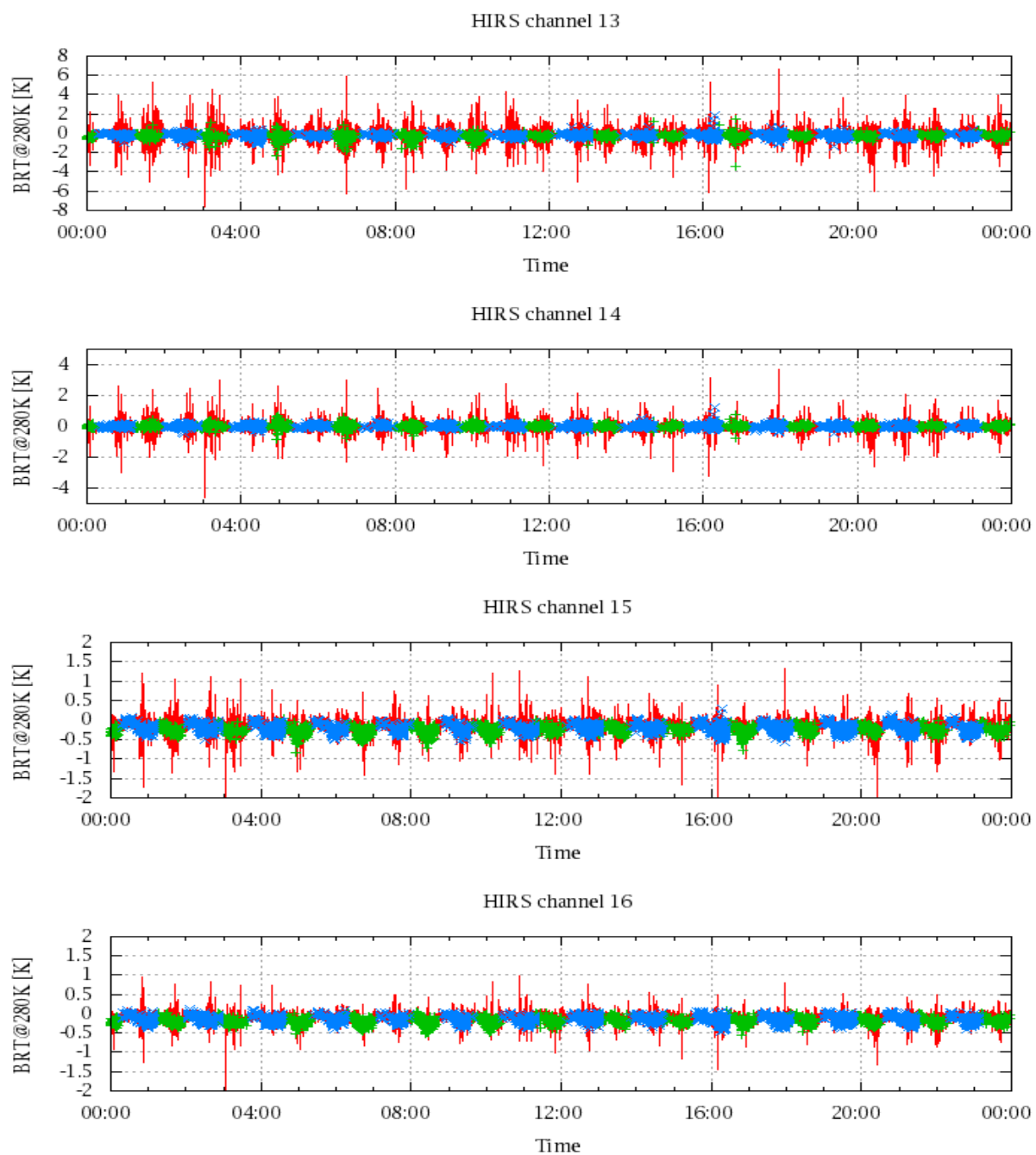


Figure 20: Radiance Differences in BT

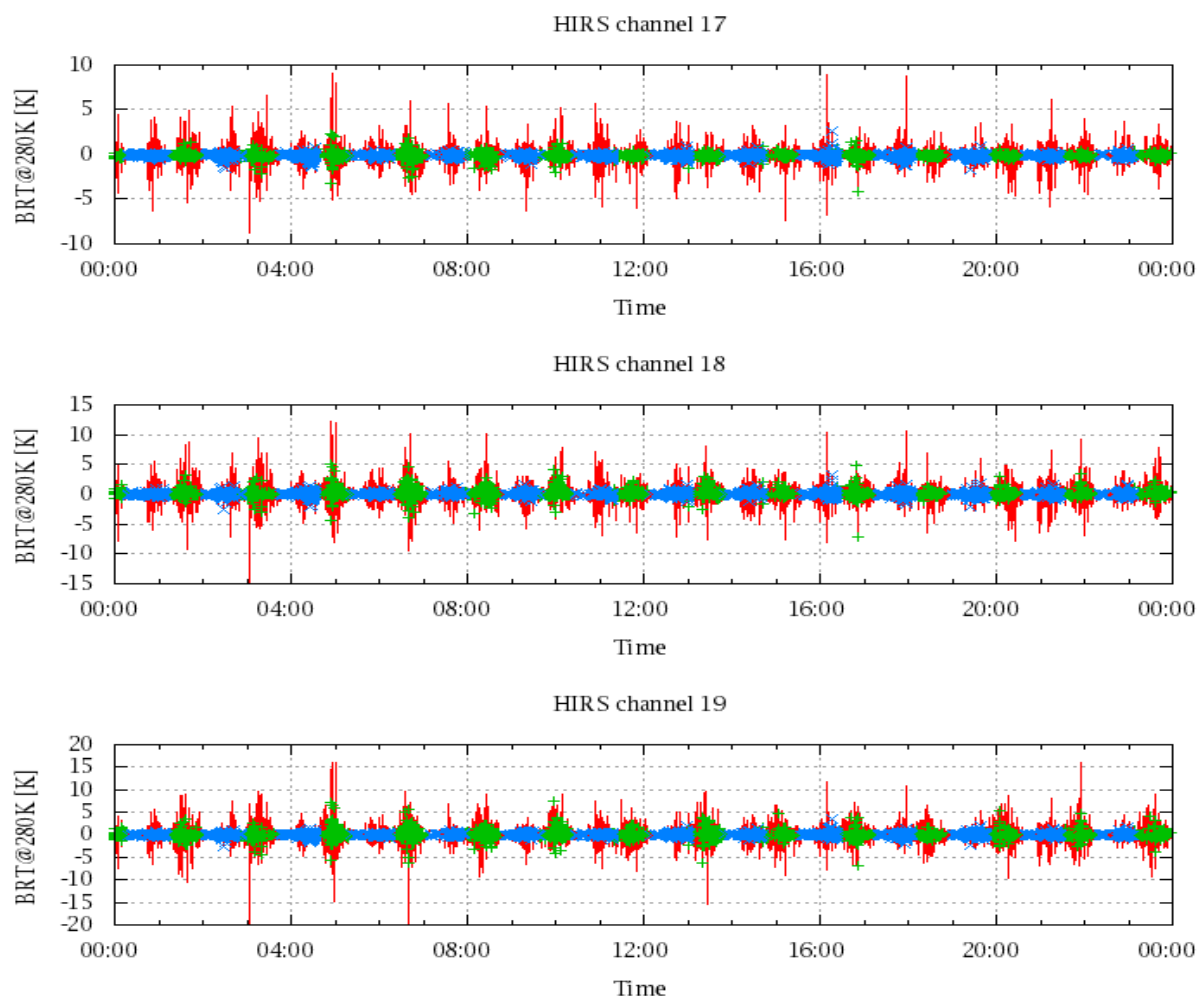


Figure 21: Radinace Differences in BT