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

IASI monitoring team

29/04/2020 00:00:00 - 30/04/2020 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 29/04/2020 00:00:00 - 30/04/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 29/04/2020 00:00:00 - 30/04/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	481	-
L1 ENG distinct GEPSGranule	459	a
L1 DPX PDUs (RM: IASI-HIRS)	481	-
L1 DPS Files (RM: OBS-CAL NWP based)	481	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	3833	3835	20200429022948.242	20200429022948.672
PX1 (130)	3837	3839	20200429022949.106	20200429022949.539
PX1 (130)	3847	3850	20200429022952.781	20200429022953.430
PX1 (130)	3851	3853	20200429022953.645	20200429022954.078
PX1 (130)	3854	3856	20200429022954.293	20200429022954.727
PX1 (130)	3856	3858	20200429022954.727	20200429022955.160
PX1 (130)	3860	3862	20200429022955.594	20200429022956.024
PX1 (130)	3862	3864	20200429022956.024	20200429022956.457
PX1 (130)	3868	3870	20200429022957.320	20200429022957.754
PX1 (130)	3877	3879	20200429023000.781	20200429023001.215
PX2 (135)	3831	3833	20200429022947.809	20200429022948.242
PX2 (135)	3835	3837	20200429022948.672	20200429022949.106
PX2 (135)	3837	3839	20200429022949.106	20200429022949.539
PX2 (135)	3840	3842	20200429022949.754	20200429022950.188
PX2 (135)	3844	3846	20200429022952.133	20200429022952.567
PX2 (135)	3846	3848	20200429022952.567	20200429022952.996
PX2 (135)	3849	3852	20200429022953.211	20200429022953.863
PX2 (135)	3852	3855	20200429022953.863	20200429022954.512
PX2 (135)	3856	3858	20200429022954.727	20200429022955.160

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	3859	3861	20200429022955.375	20200429022955.809
PX2 (135)	3861	3863	20200429022955.809	20200429022956.238
PX2 (135)	3864	3866	20200429022956.457	20200429022956.891
PX2 (135)	3867	3869	20200429022957.106	20200429022957.539
PX3 (140)	3826	3828	20200429022946.727	20200429022947.160
PX3 (140)	3830	3832	20200429022947.590	20200429022948.024
PX3 (140)	3836	3839	20200429022948.887	20200429022949.539
PX3 (140)	3841	3843	20200429022949.969	20200429022950.402
PX3 (140)	3844	3846	20200429022952.133	20200429022952.567
PX3 (140)	3846	3848	20200429022952.567	20200429022952.996
PX3 (140)	3848	3850	20200429022952.996	20200429022953.430
PX3 (140)	3850	3852	20200429022953.430	20200429022953.863
PX3 (140)	3852	3855	20200429022953.863	20200429022954.512
PX3 (140)	3856	3860	20200429022954.727	20200429022955.594
PX3 (140)	3865	3867	20200429022956.672	20200429022957.106
PX3 (140)	3868	3870	20200429022957.320	20200429022957.754
PX3 (140)	3871	3873	20200429022957.969	20200429022958.402
PX4 (145)	3827	3829	20200429022946.945	20200429022947.375
PX4 (145)	3831	3833	20200429022947.809	20200429022948.242
PX4 (145)	3838	3840	20200429022949.320	20200429022949.754
PX4 (145)	3840	3842	20200429022949.754	20200429022950.188
PX4 (145)	3842	3844	20200429022950.188	20200429022952.133
PX4 (145)	3844	3850	20200429022952.133	20200429022953.430
PX4 (145)	3851	3856	20200429022953.645	20200429022954.727
PX4 (145)	3856	3862	20200429022954.727	20200429022956.024
PX4 (145)	3866	3869	20200429022956.891	20200429022957.539
IMG (150)	2163	2166	20200429022950.402	20200429022951.484
IMG (150)	2169	2173	20200429022952.348	20200429022953.211
IMG (150)	2173	2177	20200429022953.211	20200429022954.078
IMG (150)	2179	2181	20200429022954.512	20200429022954.942
IMG (150)	2181	2183	20200429022954.942	20200429022955.375
IMG (150)	2183	2185	20200429022955.375	20200429022955.809
IMG (150)	2186	2188	20200429022956.024	20200429022956.457
IMG (150)	2189	2191	20200429022956.672	20200429022957.106
VER (160)	14285	14290	20200429022942.402	20200429022950.402
VER (160)	14293	14295	20200429022958.402	20200429022958.402
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
29/04/2020 00:00:11	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	481	-
L1 ENG PDUs	481	-
L1 ENG distinct GEPSGranule	459	a
GQisFlagQual set (PX1)	99.56 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.67 %	-
GQisFlagQual set (PX4)	99.57 %	-
GQisFlagQual set (all)	99.62 %	-

Table 4: Quality flags

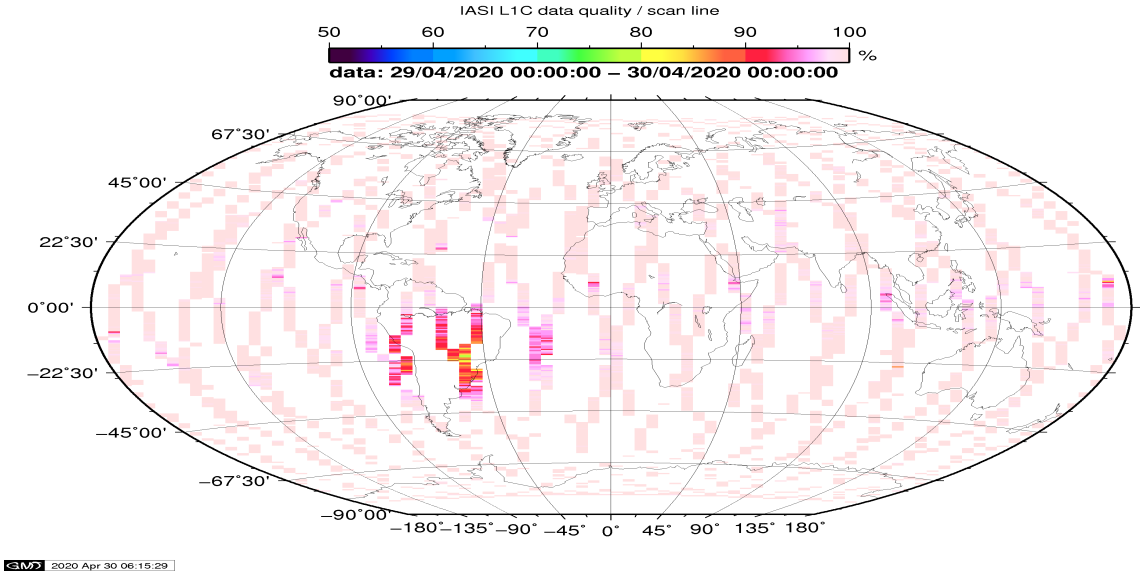

Figure 1: L1C data quality

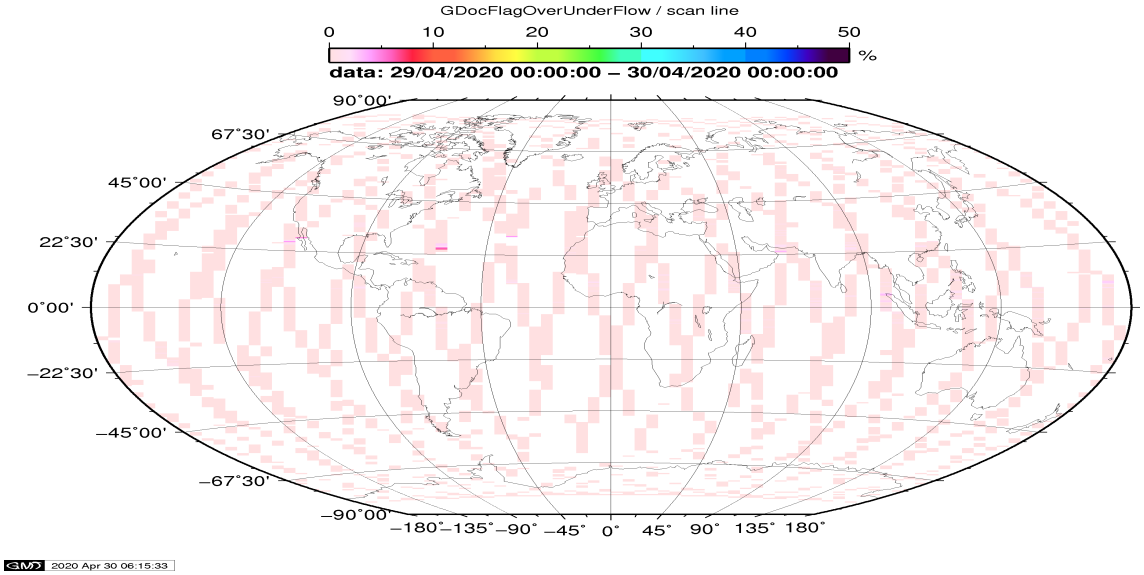

Figure 2: Flag of Over and Under Flows

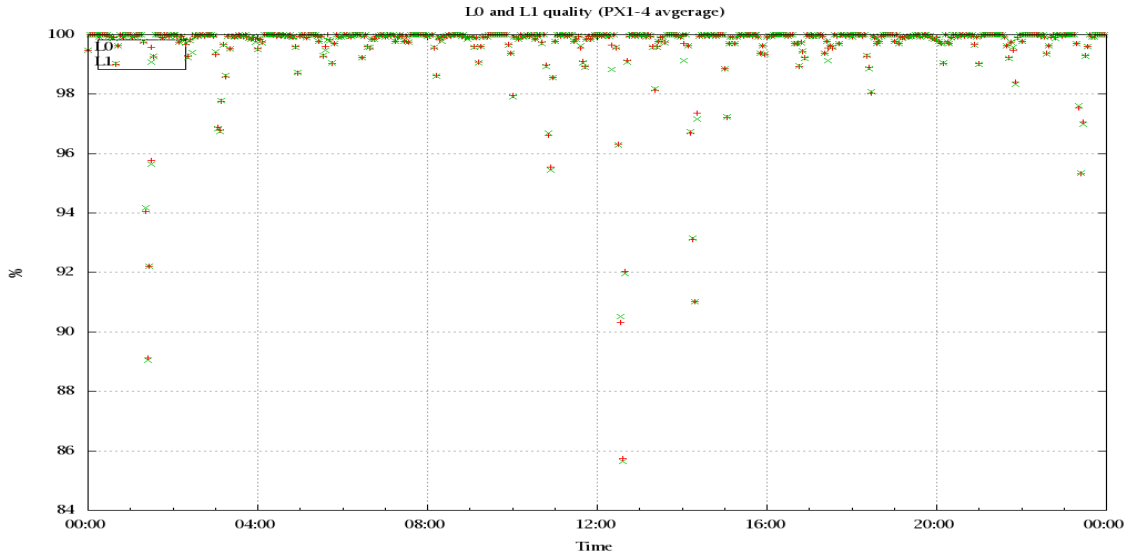

Figure 3: Level 0 and 1C overall quality

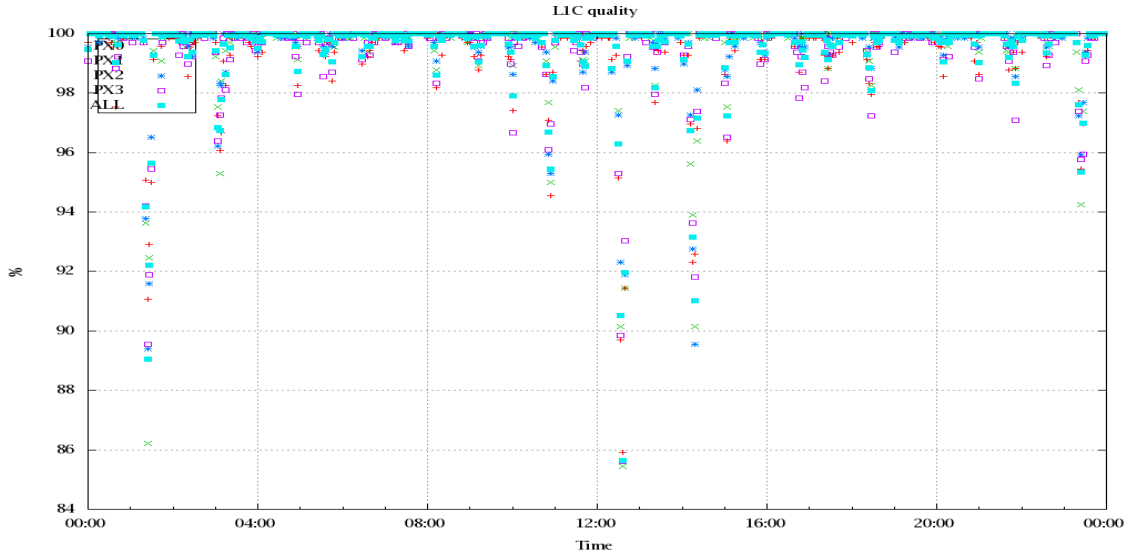

Figure 4: Level 1C quality

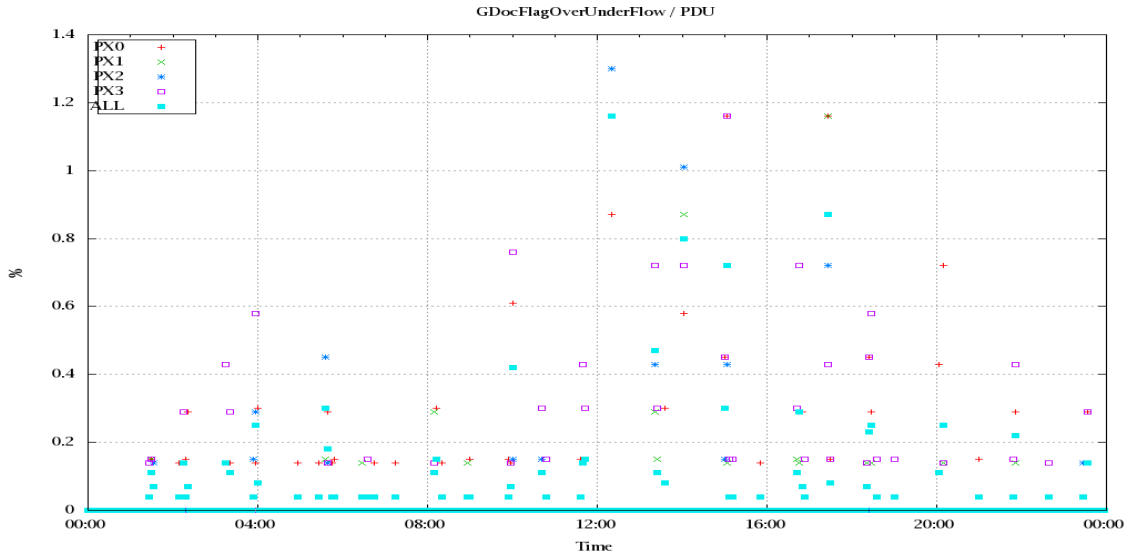

Figure 5: Timeseries of flag of Over and Under Flows

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 indentification 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.

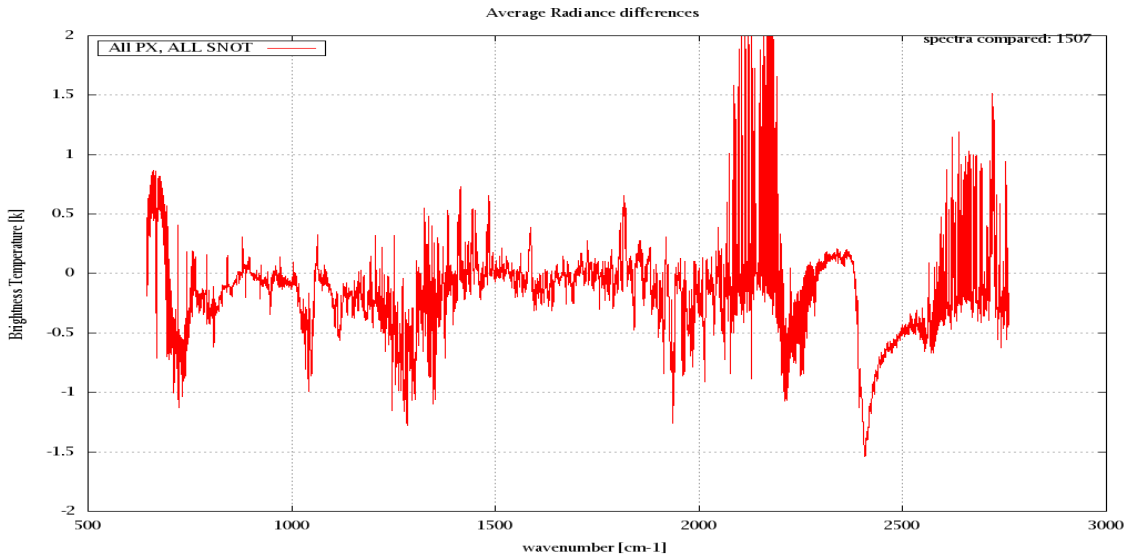

Figure 6: Average Radiance differences: OBS-CAL

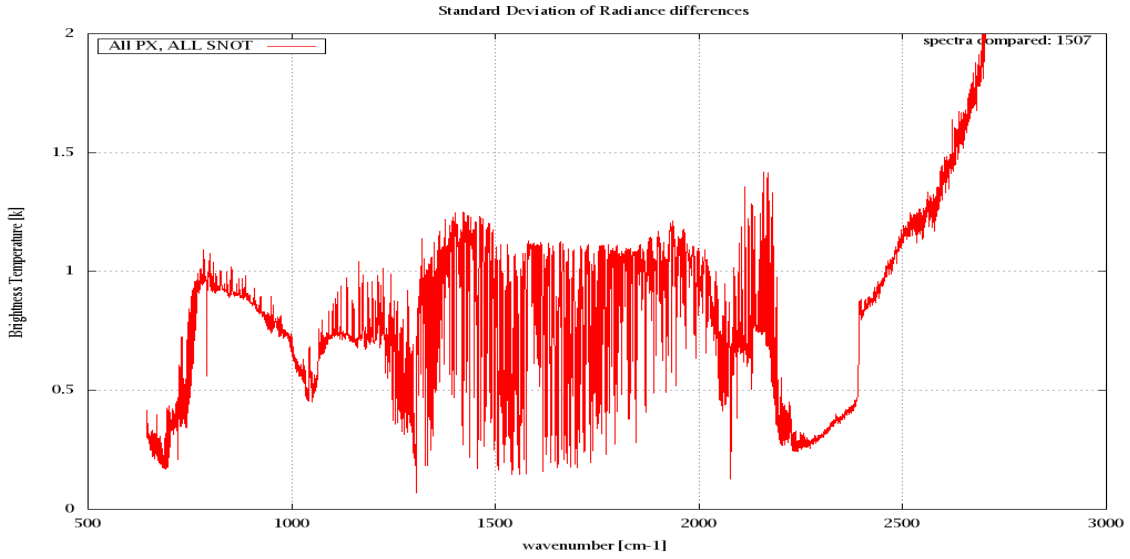

Figure 7: Standard Deviation of Radiance differences

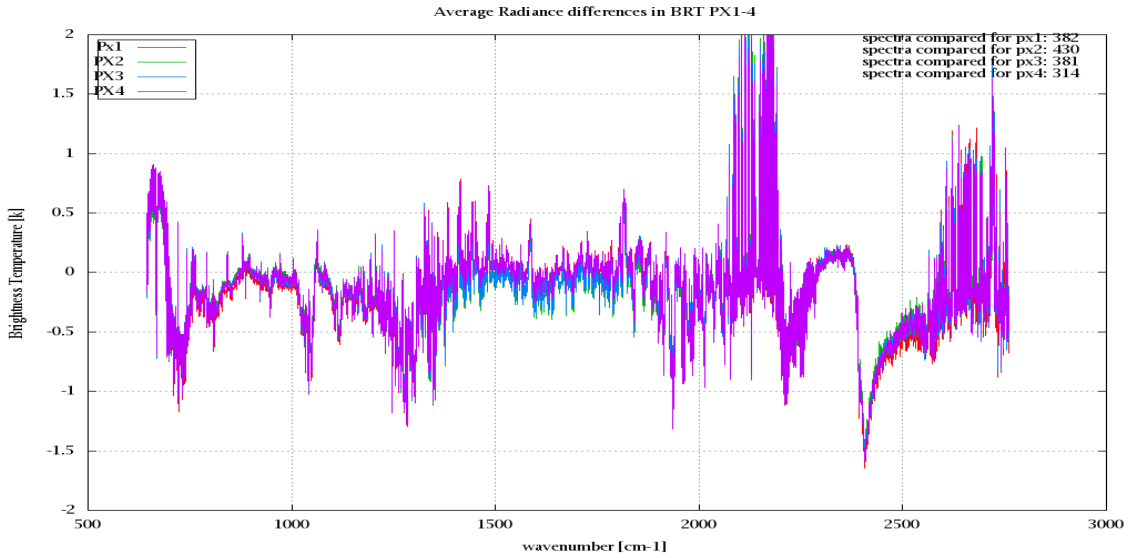

Figure 8: Average Radiance differences: OBS-CAL

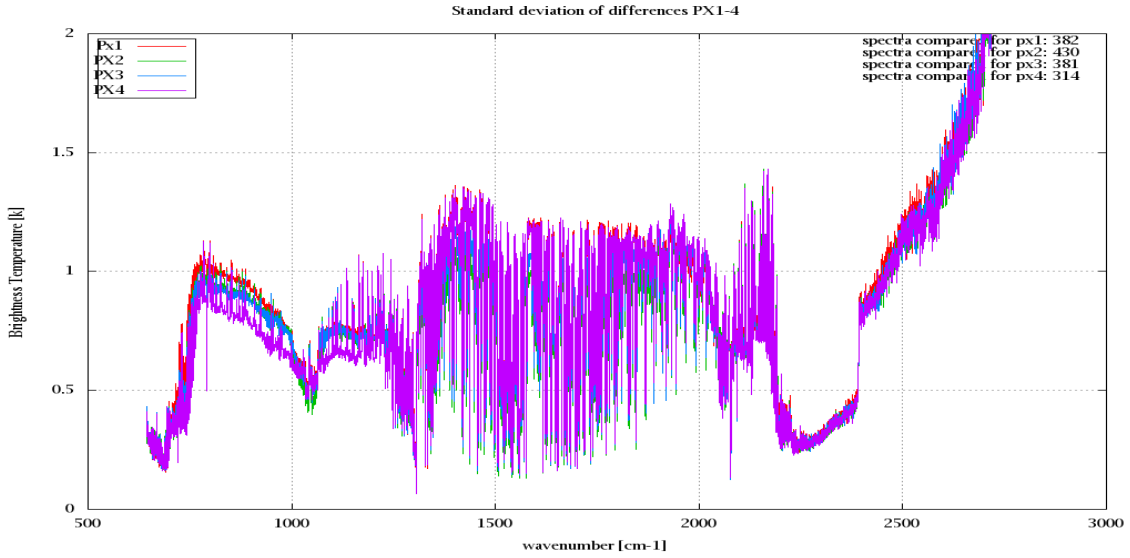

Figure 9: Standard Deviation of Radiance differences

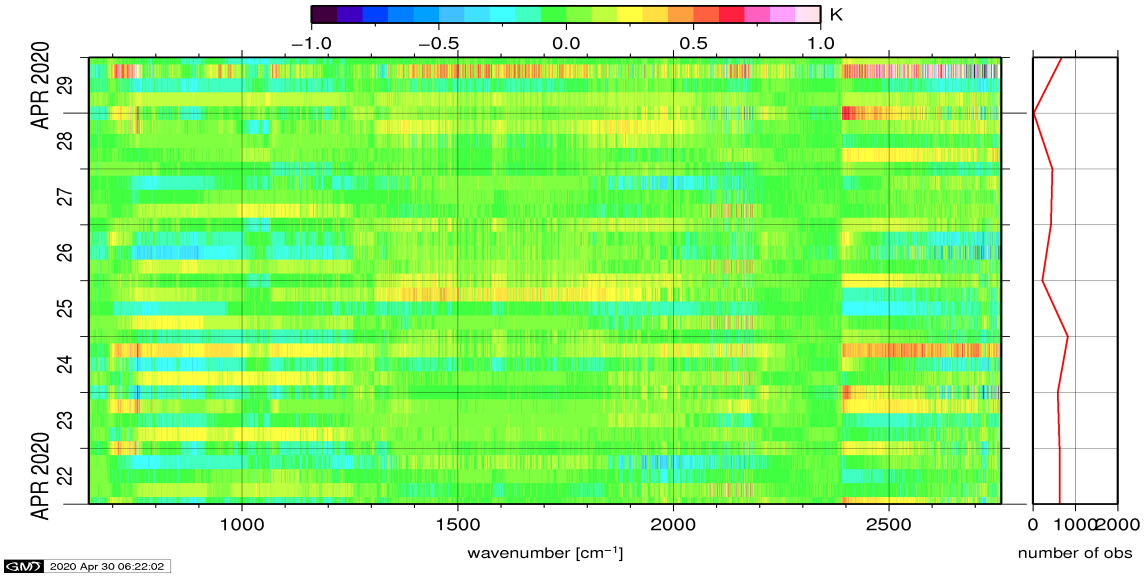

Figure 10: Radiance Anomaly in BT: All Channels

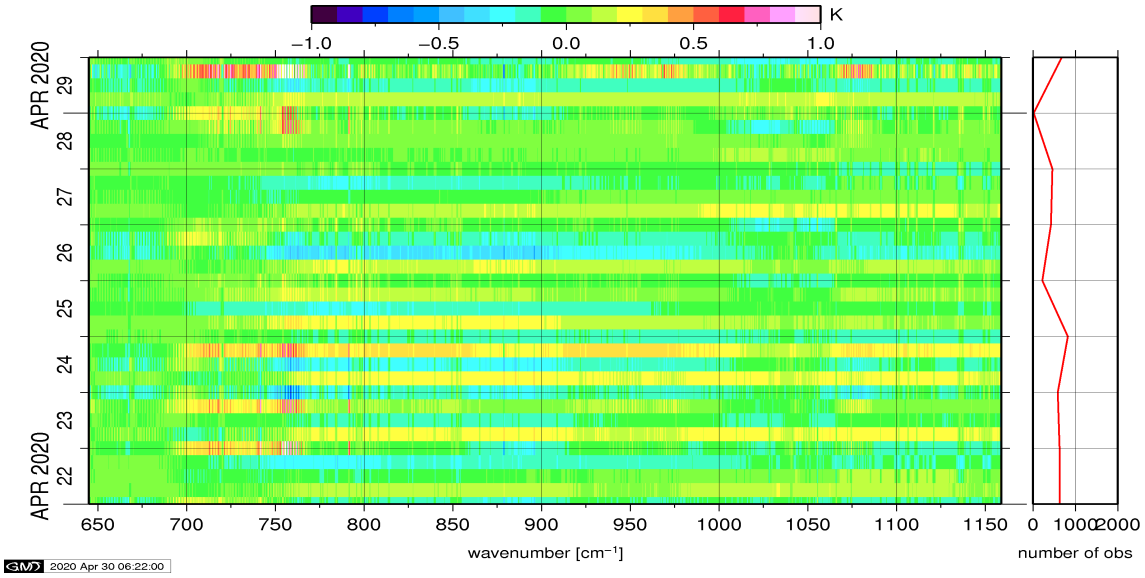

Figure 11: Radiance Anomaly in BT: IASI Band 1

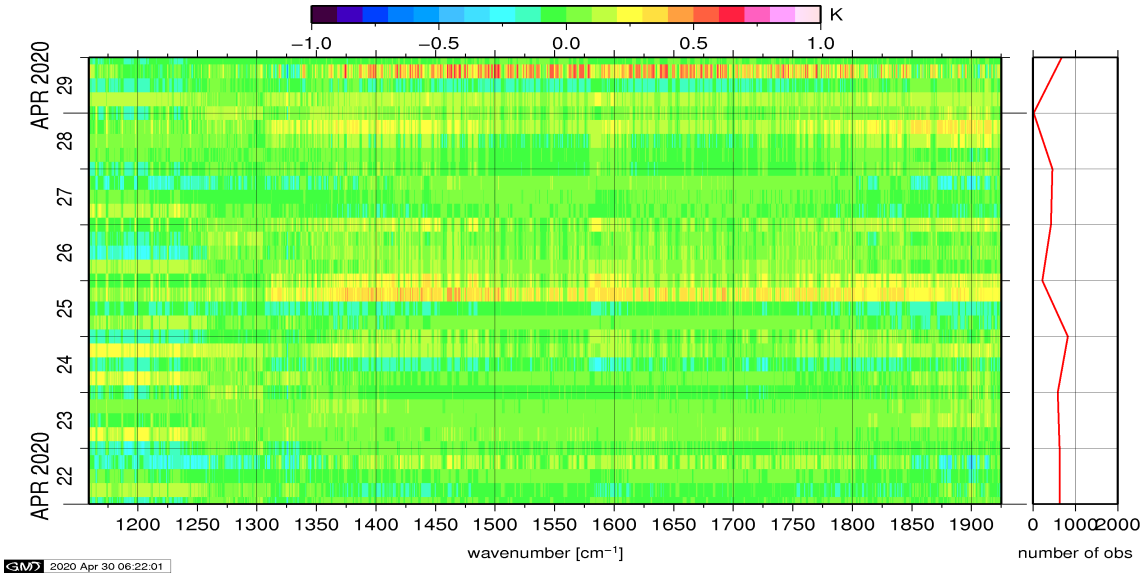

Figure 12: Radiance Anomaly in BT: IASI Band 2

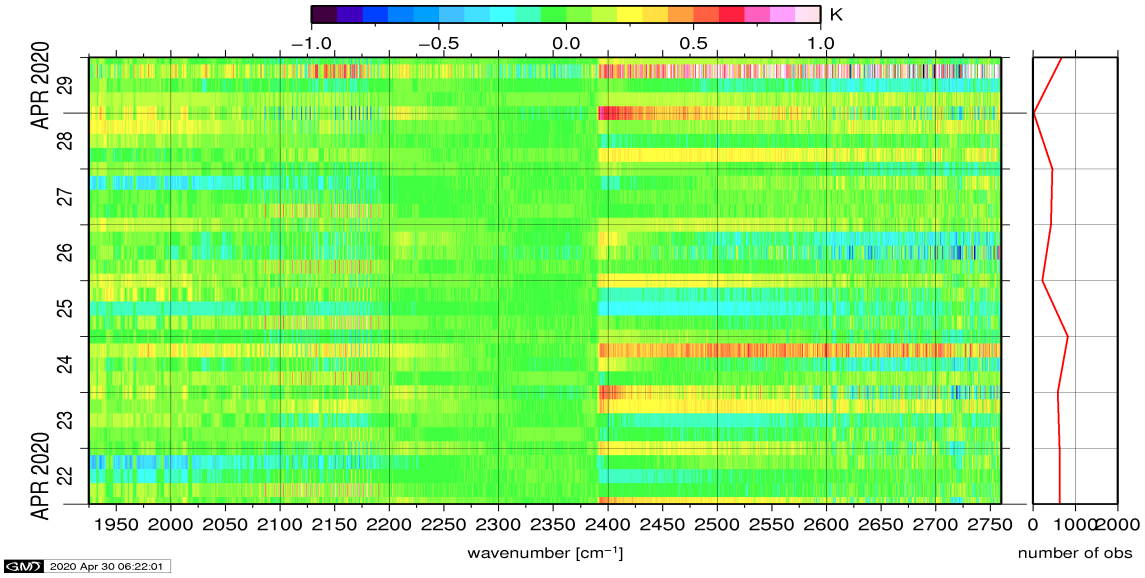

Figure 13: Radiance Anomaly in BT: IASI Band 3

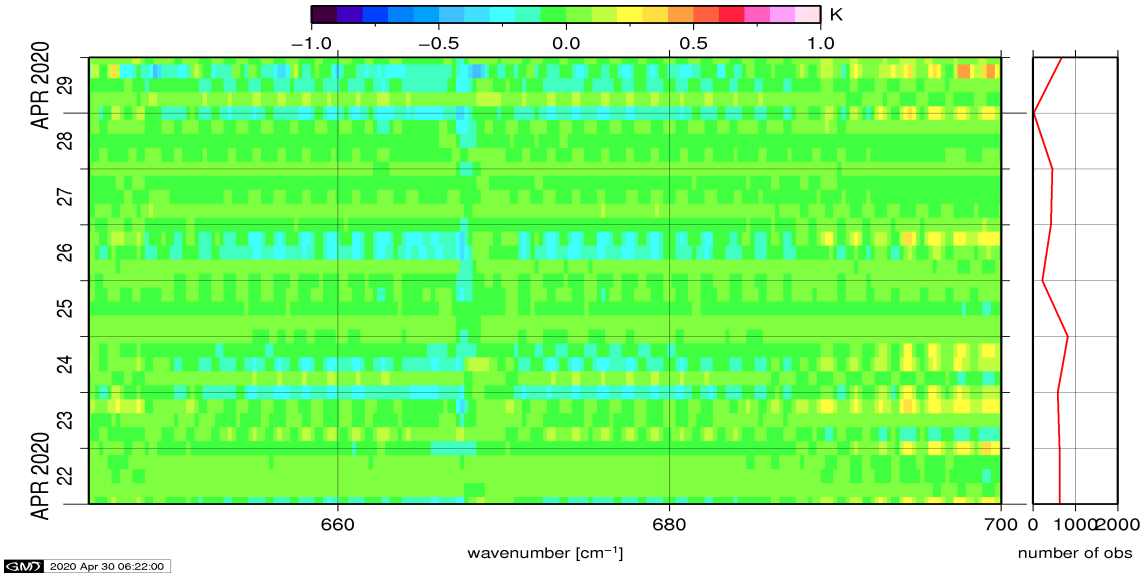

Figure 14: Radiance Anomaly in BT: CO2 14

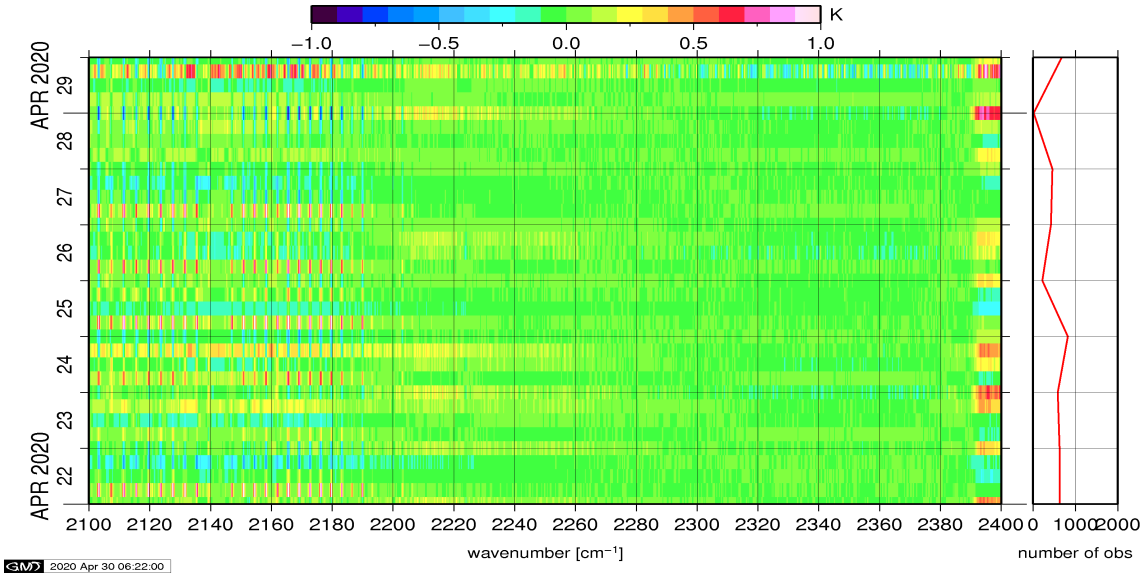

Figure 15: Radiance Anomaly in BT: CO2 4.3

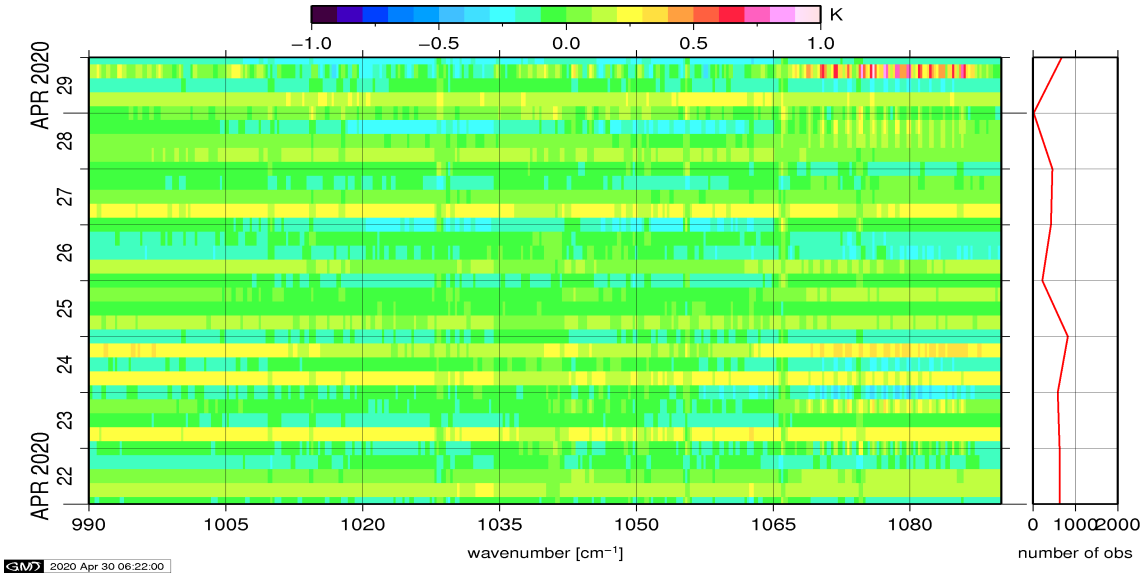

Figure 16: Radiance Anomaly in BT: O3

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.

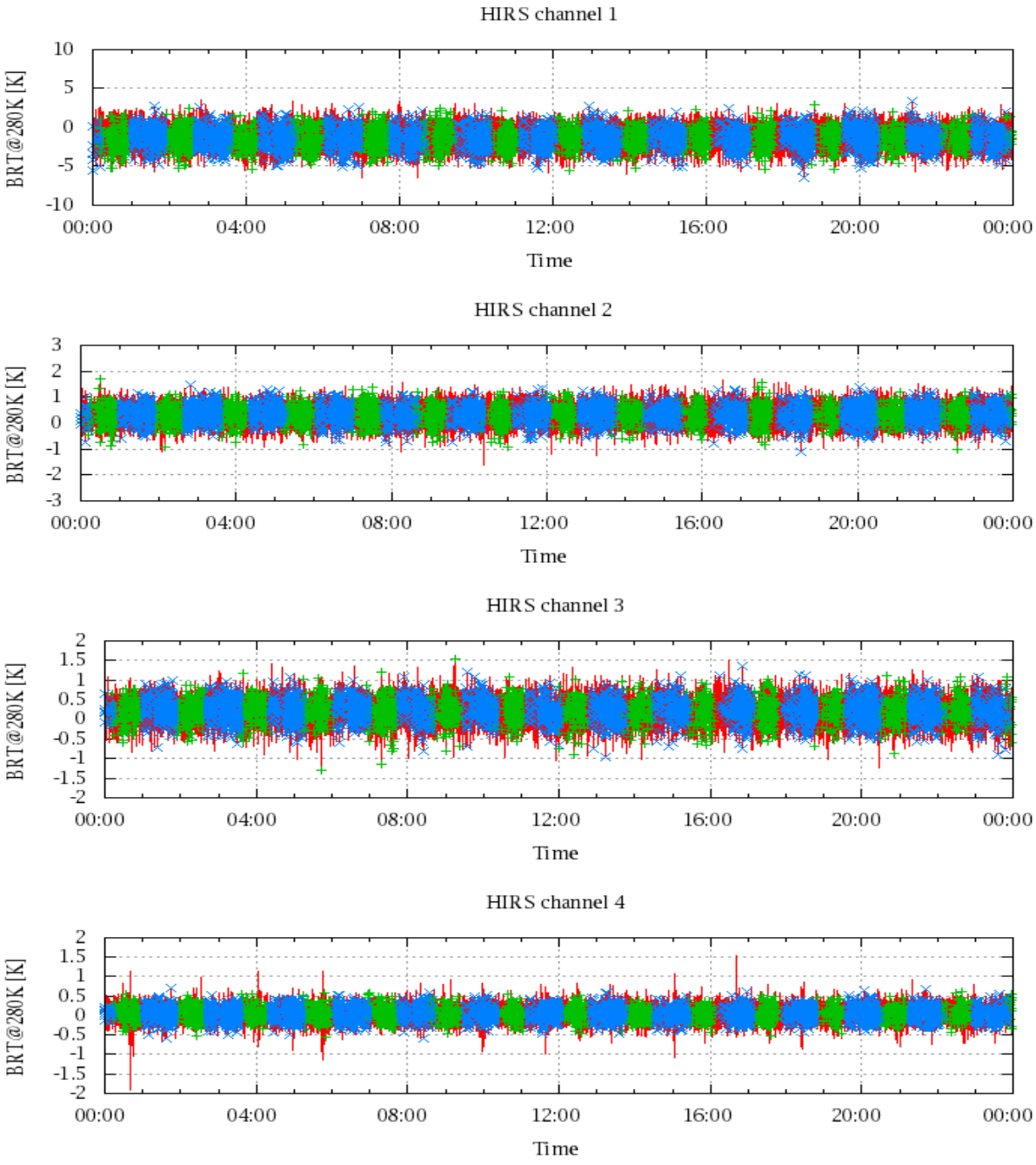

Figure 17: Radiance Differences in BT

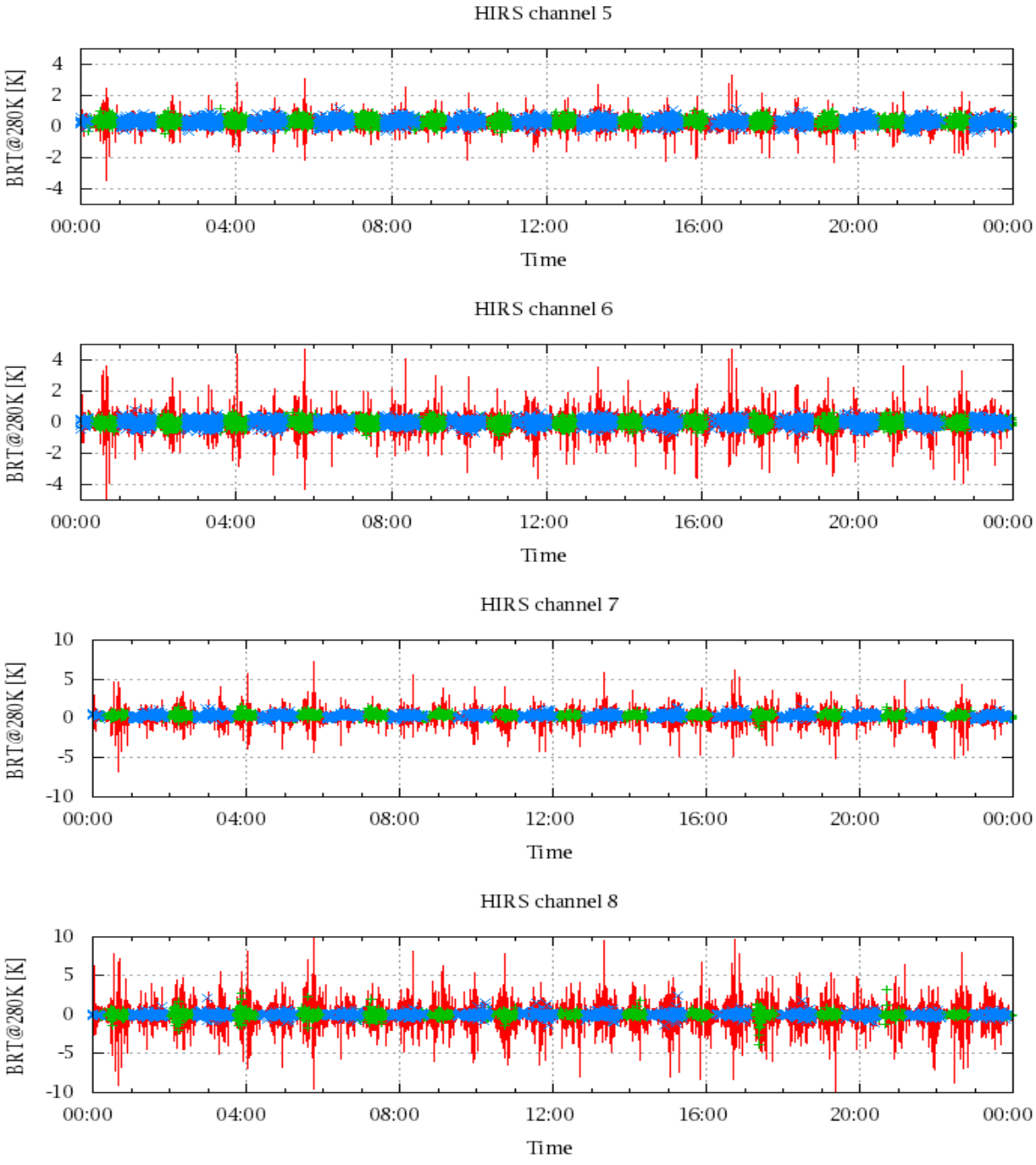

Figure 18: Radiance Differences in BT

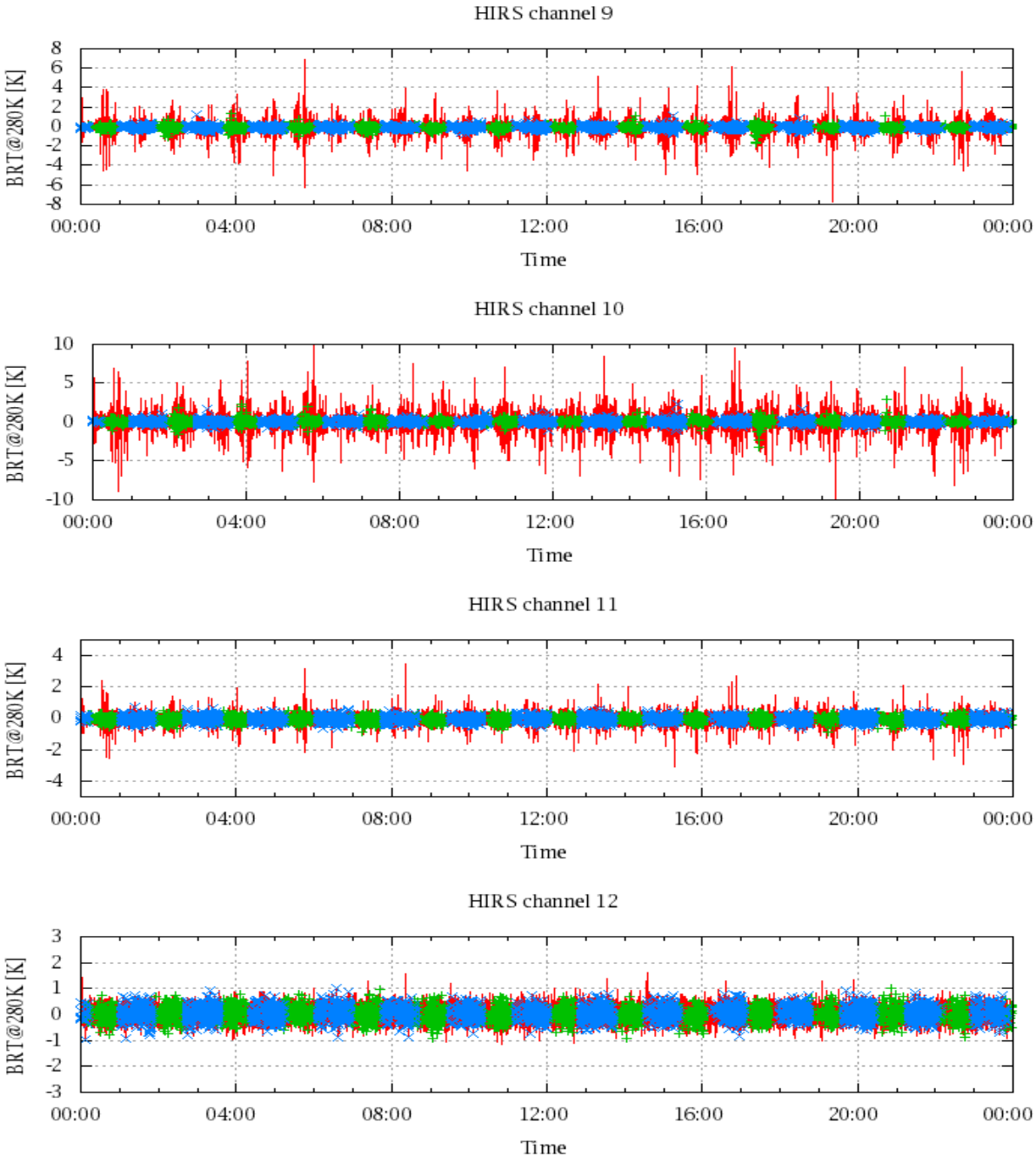

Figure 19: Radiance Differences in BT

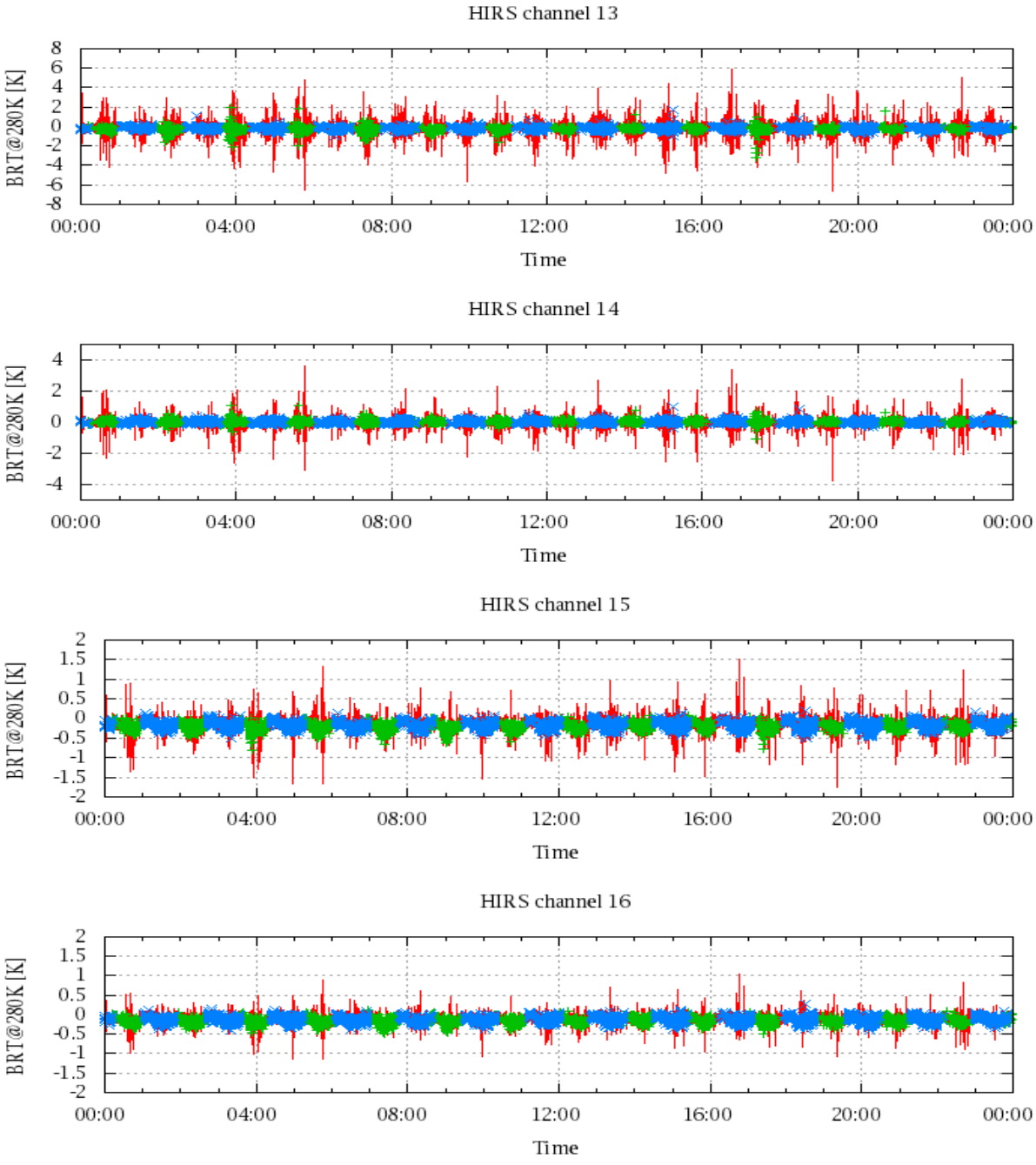

Figure 20: Radiance Differences in BT

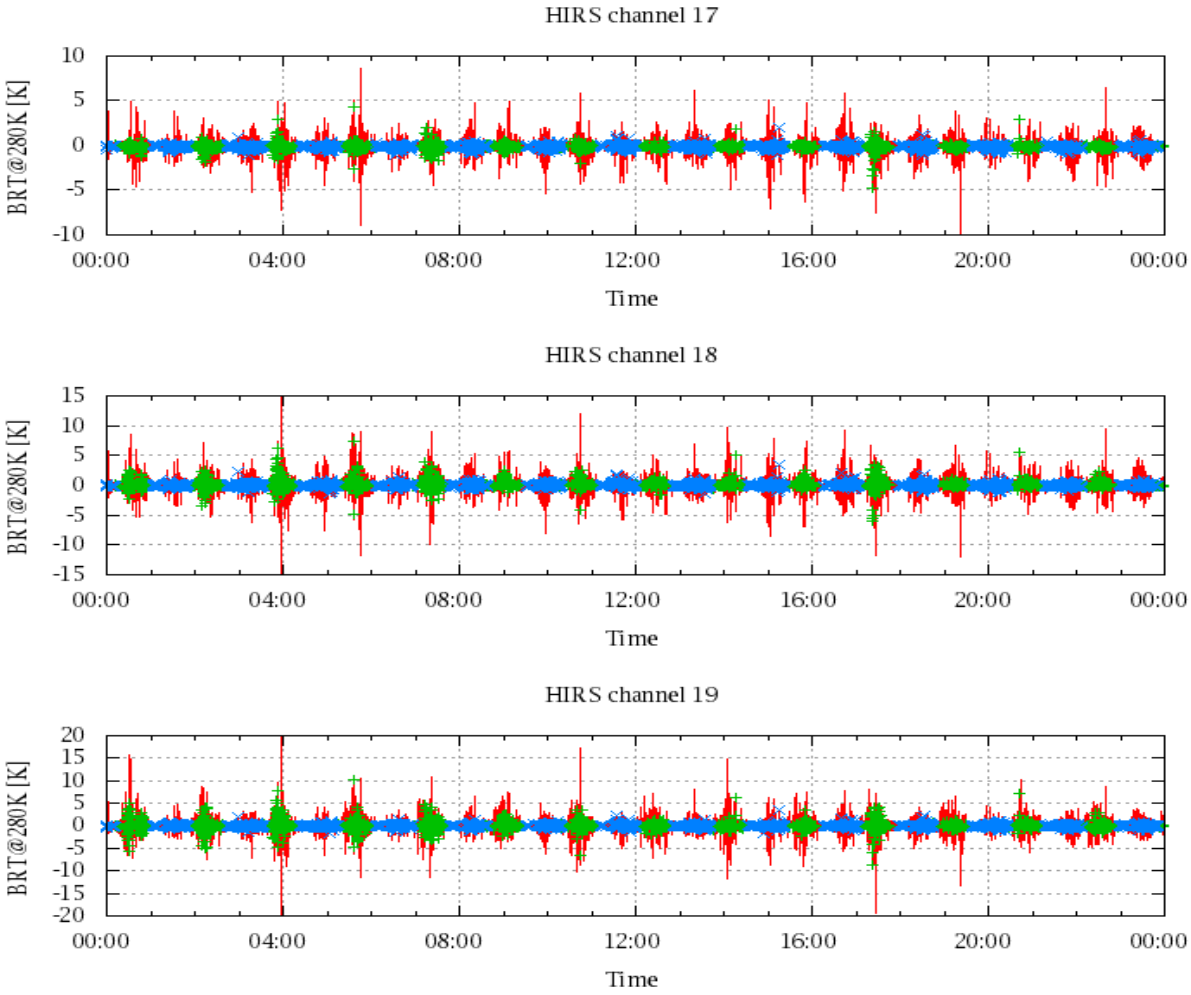

Figure 21: Radinace Differences in BT