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

IASI monitoring team

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

The monitoring data are extracted on PDU basis.

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

Product Type	**Number**	**Action**
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	470	-
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)	7963	7981	20190504095601.319	20190504095606.725
PX1 (130)	8209	8365	20190504095706.616	20190504095749.424
PX1 (130)	14388	14598	20190504113723.239	20190504113819.239
PX1 (130)	9957	10027	20190504145609.283	20190504145628.959
PX1 (130)	16292	16371	20190504163707.203	20190504163728.824
PX1 (130)	217	286	20190504190408.397	20190504190426.346
PX1 (130)	643	692	20190504190601.693	20190504190615.314
PX1 (130)	705	735	20190504190618.123	20190504190626.123
PX1 (130)	736	747	20190504190626.342	20190504190630.232
PX1 (130)	12288	12312	20190504195746.759	20190504195753.462
PX1 (130)	2239	2276	20190504213846.230	20190504213855.742
PX1 (130)	3288	3409	20190504214326.003	20190504214358.222
PX1 (130)	9196	9199	20190504232230.416	20190504232231.064
PX2 (135)	7963	7981	20190504095601.319	20190504095606.725
PX2 (135)	8209	8365	20190504095706.616	20190504095749.424
PX2 (135)	14388	14598	20190504113723.239	20190504113819.239
PX2 (135)	9957	10027	20190504145609.283	20190504145628.959
PX2 (135)	16292	16371	20190504163707.203	20190504163728.824
PX2 (135)	216	285	20190504190408.182	20190504190426.127
PX2 (135)	643	692	20190504190601.693	20190504190615.314

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	704	735	20190504190617.912	20190504190626.123
PX2 (135)	736	747	20190504190626.342	20190504190630.232
PX2 (135)	12288	12312	20190504195746.759	20190504195753.462
PX2 (135)	2239	2275	20190504213846.230	20190504213855.527
PX2 (135)	3288	3409	20190504214326.003	20190504214358.222
PX2 (135)	9196	9198	20190504232230.416	20190504232230.849
PX3 (140)	7963	7980	20190504095601.319	20190504095606.510
PX3 (140)	8209	8365	20190504095706.616	20190504095749.424
PX3 (140)	14388	14598	20190504113723.239	20190504113819.239
PX3 (140)	9957	10027	20190504145609.283	20190504145628.959
PX3 (140)	16292	16371	20190504163707.203	20190504163728.824
PX3 (140)	216	285	20190504190408.182	20190504190426.127
PX3 (140)	643	692	20190504190601.693	20190504190615.314
PX3 (140)	704	735	20190504190617.912	20190504190626.123
PX3 (140)	736	746	20190504190626.342	20190504190630.018
PX3 (140)	12288	12312	20190504195746.759	20190504195753.462
PX3 (140)	2239	2275	20190504213846.230	20190504213855.527
PX3 (140)	3288	3409	20190504214326.003	20190504214358.222
PX3 (140)	9195	9198	20190504232230.197	20190504232230.849
PX4 (145)	7963	7980	20190504095601.319	20190504095606.510
PX4 (145)	8209	8365	20190504095706.616	20190504095749.424
PX4 (145)	14388	14598	20190504113723.239	20190504113819.239
PX4 (145)	9956	10027	20190504145609.068	20190504145628.959
PX4 (145)	16292	16355	20190504163707.203	20190504163725.364
PX4 (145)	16355	16370	20190504163725.364	20190504163728.610
PX4 (145)	216	285	20190504190408.182	20190504190426.127
PX4 (145)	643	692	20190504190601.693	20190504190615.314
PX4 (145)	704	735	20190504190617.912	20190504190626.123
PX4 (145)	735	746	20190504190626.123	20190504190630.018
PX4 (145)	12288	12312	20190504195746.759	20190504195753.462
PX4 (145)	2238	2275	20190504213846.015	20190504213855.527
PX4 (145)	3288	3408	20190504214326.003	20190504214358.003
PX4 (145)	9195	9198	20190504232230.197	20190504232230.849
IMG (150)	8618	8640	20190504095601.104	20190504095606.510
IMG (150)	8896	9077	20190504095706.397	20190504095749.424
IMG (150)	1700	1937	20190504113723.239	20190504113819.020
IMG (150)	3232	3311	20190504145609.068	20190504145627.662
IMG (150)	12596	12686	20190504163707.203	20190504163728.610
IMG (150)	932	1009	20190504190408.182	20190504190426.127
IMG (150)	1414	1465	20190504190601.479	20190504190613.799
IMG (150)	1465	1472	20190504190613.799	20190504190615.314
IMG (150)	1484	1519	20190504190617.912	20190504190626.123
IMG (150)	1519	1534	20190504190626.123	20190504190630.018
IMG (150)	14611	14640	20190504195746.544	20190504195753.462
IMG (150)	7594	7635	20190504213846.015	20190504213855.527
IMG (150)	8783	8920	20190504214325.788	20190504214358.003
IMG (150)	1279	1282	20190504232230.197	20190504232230.849
VER (160)	13113	13119	20190504095555.264	20190504095611.264
VER (160)	13153	13184	20190504095659.264	20190504095755.260
VER (160)	530	565	20190504113723.239	20190504113819.239
VER (160)	7984	8000	20190504145603.229	20190504145635.228
VER (160)	11771	11775	20190504163707.203	20190504163729.043
VER (160)	11775	11780	20190504163729.043	20190504163729.043

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	11780	11776	20190504163729.043	20190504163729.043
VER (160)	11776	11781	20190504163729.043	20190504163729.043
VER (160)	11781	11772	20190504163729.043	20190504163729.043
VER (160)	11772	11777	20190504163729.043	20190504163729.043
VER (160)	11777	11782	20190504163729.043	20190504163729.043
VER (160)	11782	11773	20190504163729.043	20190504163729.043
VER (160)	11773	11778	20190504163729.043	20190504163729.043
VER (160)	11778	11783	20190504163729.043	20190504163729.043
VER (160)	11783	11774	20190504163729.043	20190504163729.043
VER (160)	11774	11779	20190504163729.043	20190504163729.043
VER (160)	11779	11784	20190504163729.043	20190504163729.043
VER (160)	900	911	20190504190403.209	20190504190427.209
VER (160)	970	991	20190504190555.205	20190504190635.205
VER (160)	2910	2916	20190504195739.192	20190504195755.192
VER (160)	6700	6706	20190504213843.203	20190504213859.203
VER (160)	6875	6896	20190504214323.194	20190504214403.194
AUX (180)	12451	12453	20190504095555.698	20190504095611.698
AUX (180)	13211	13219	20190504113715.673	20190504113819.669
AUX (180)	14702	14705	20190504145603.662	20190504145627.662
AUX (180)	178	181	20190504190403.643	20190504190427.643
AUX (180)	192	197	20190504190555.639	20190504190635.639
AUX (180)	580	582	20190504195739.622	20190504195755.622
AUX (180)	1338	1340	20190504213843.636	20190504213859.632
AUX (180)	1373	1378	20190504214323.628	20190504214403.624

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
04/05/2019 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	470	-
GQisFlagQual set (PX1)	99.44 %	-
GQisFlagQual set (PX2)	99.51 %	-
GQisFlagQual set (PX3)	99.52 %	-
GQisFlagQual set (PX4)	99.44 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

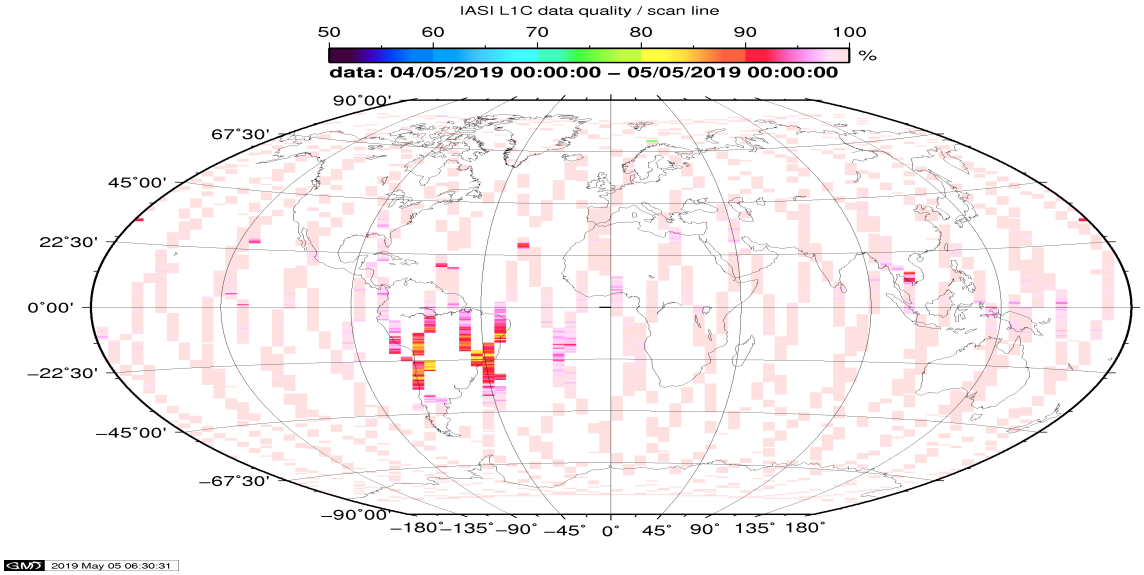

Figure 1: L1C data quality

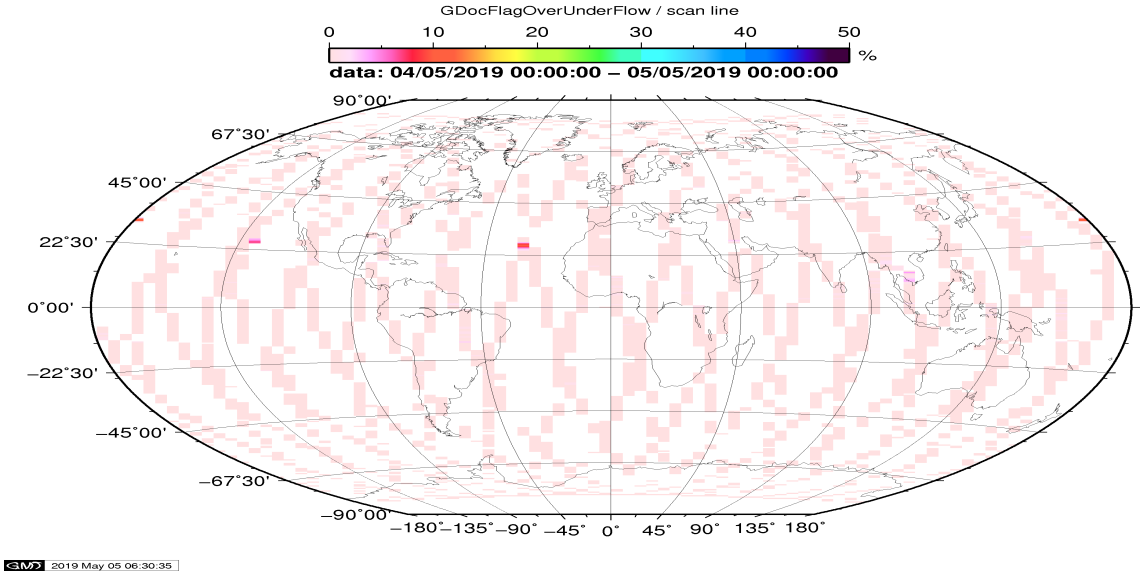

Figure 2: Flag of Over and Under Flows

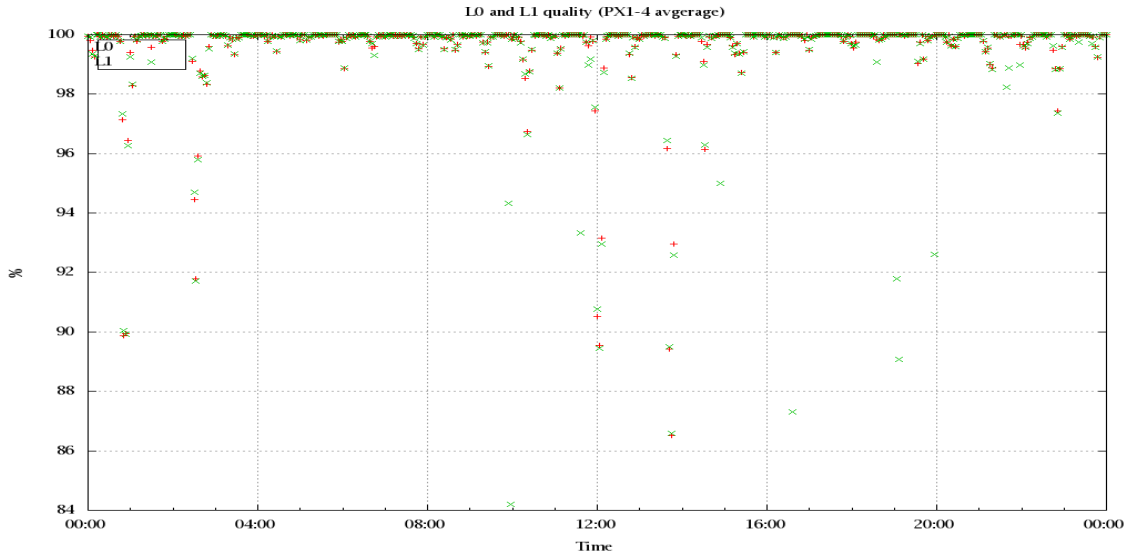

Figure 3: Level 0 and 1C overall quality

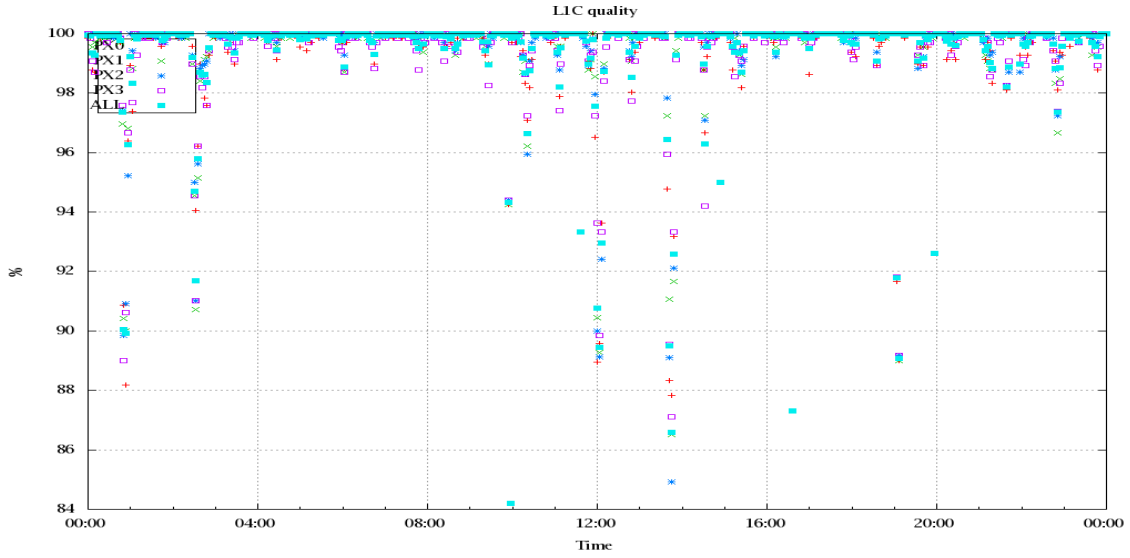

Figure 4: Level 1C quality

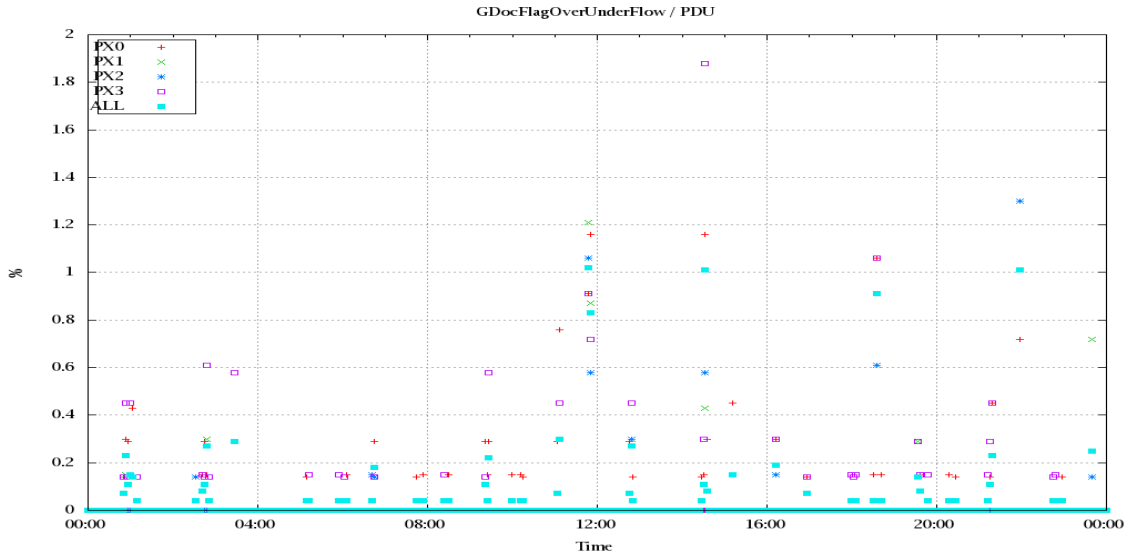

Figure 5: Timeseries of flag of Over and Under Flows

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.

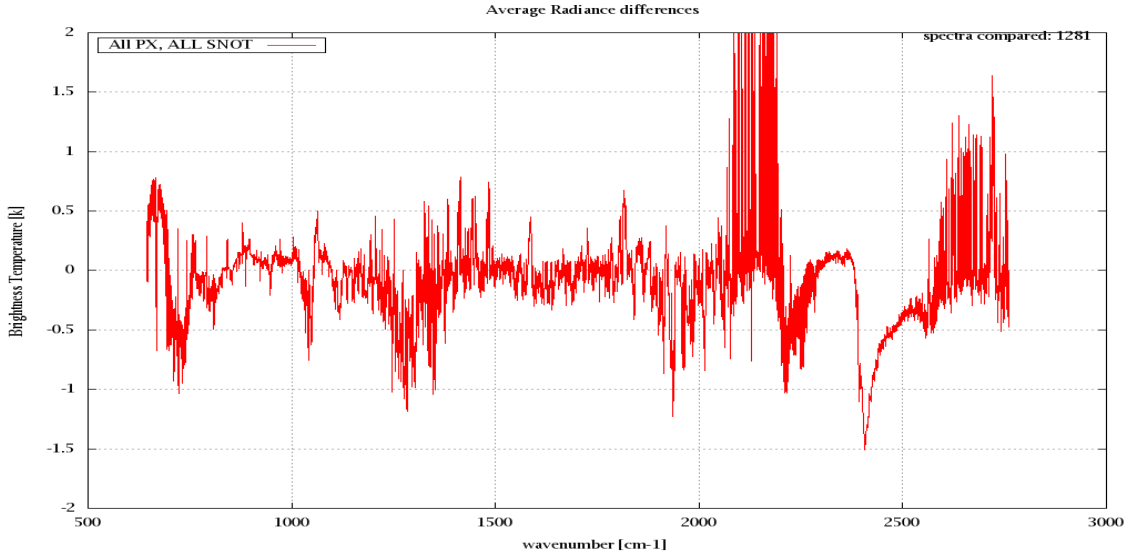

Figure 6: Average Radiance differences: OBS-CAL

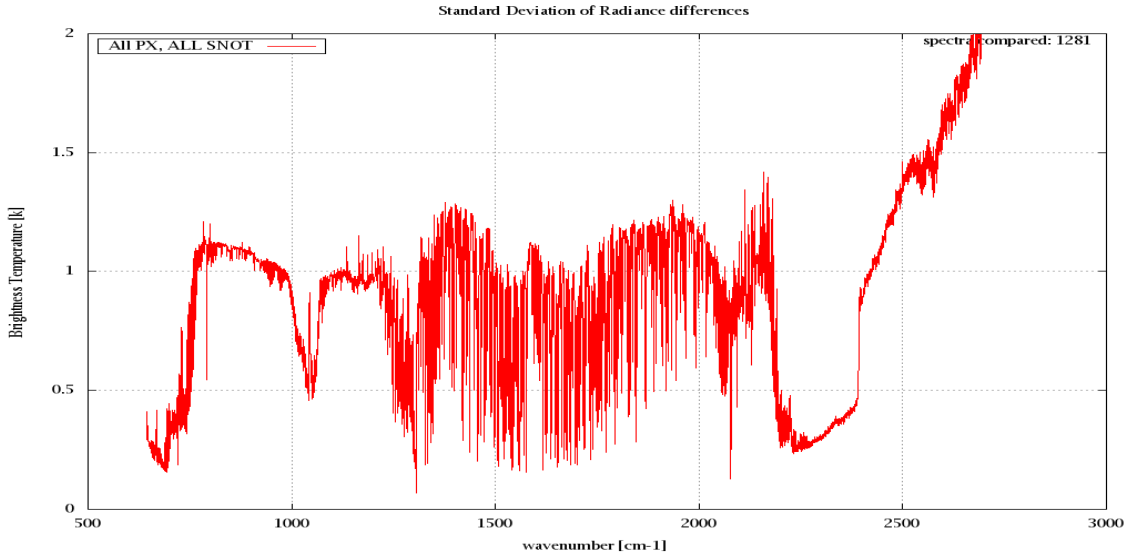

Figure 7: Standard Deviation of Radiance differences

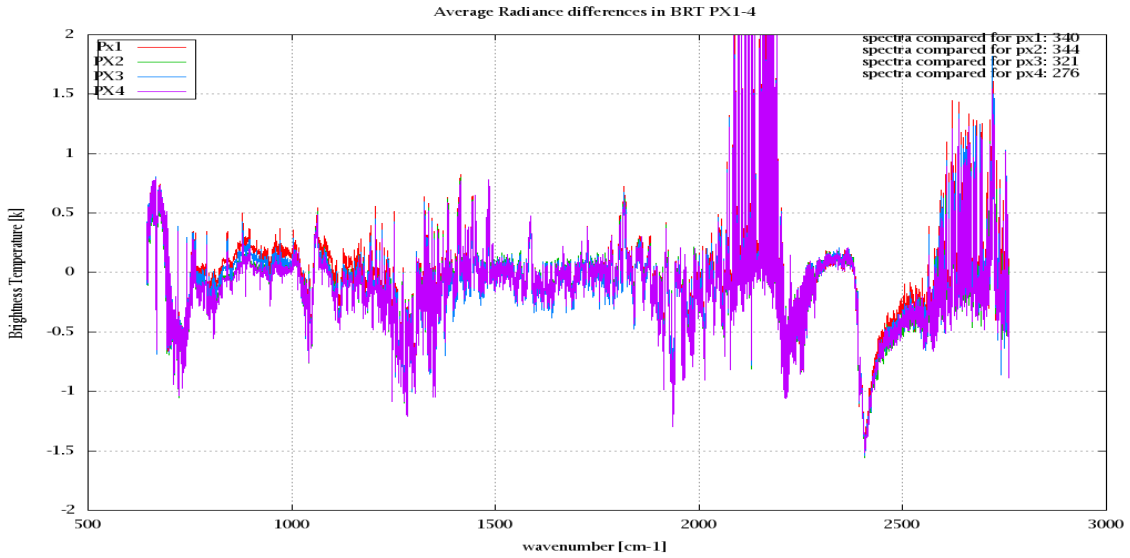

Figure 8: Average Radiance differences: OBS-CAL

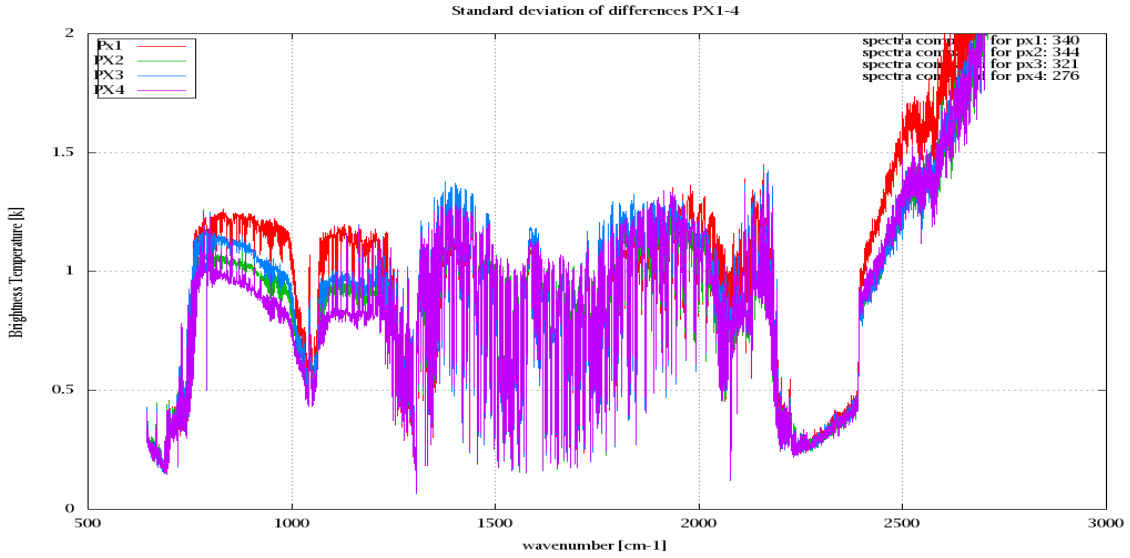

Figure 9: Standard Deviation of Radiance differences

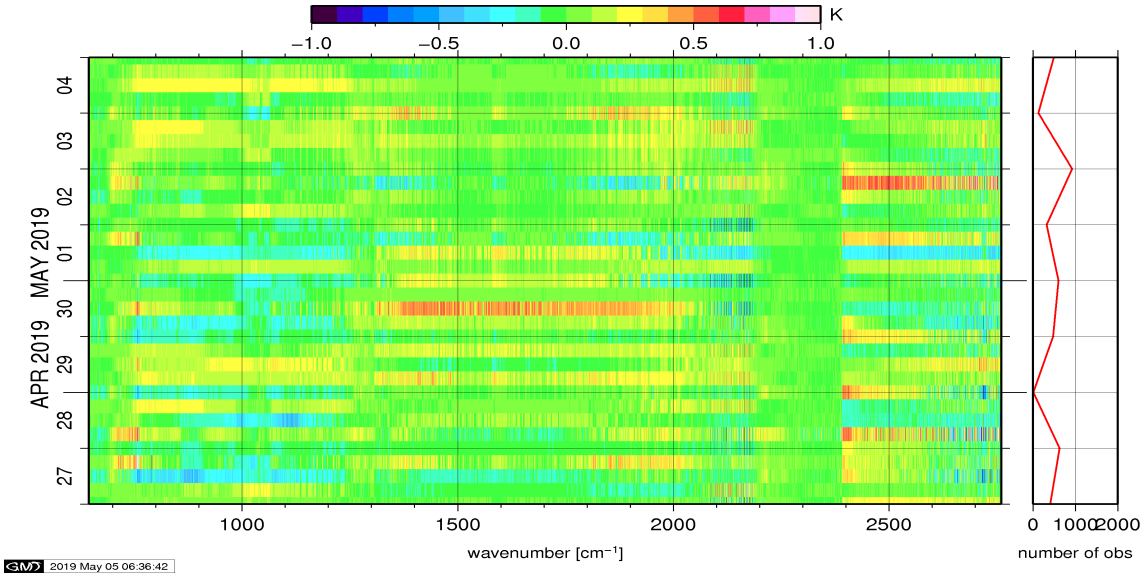

Figure 10: Radiance Anomaly in BT: All Channels

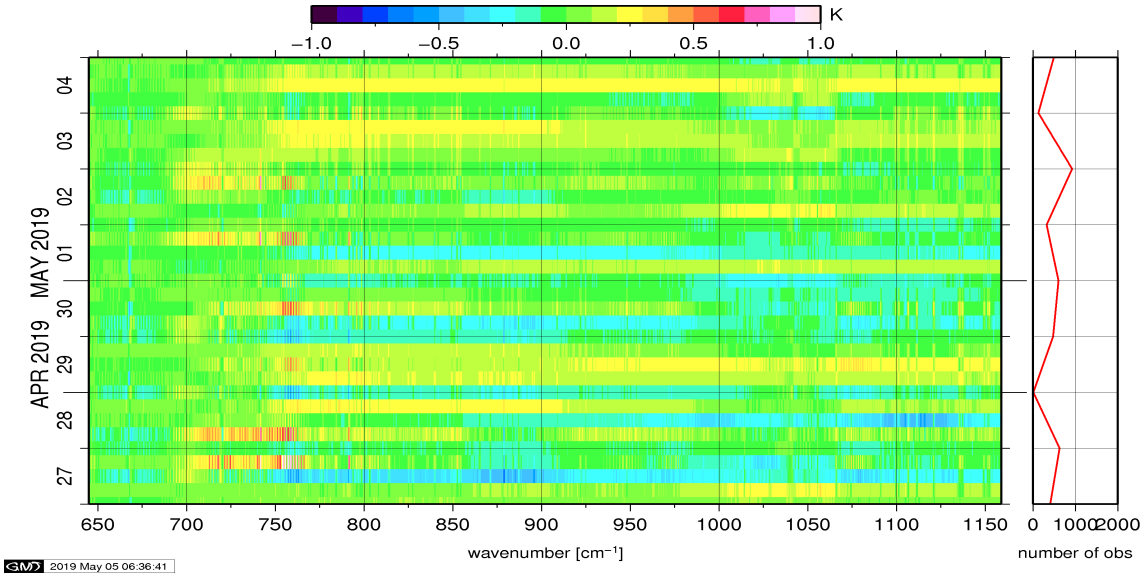

Figure 11: Radiance Anomaly in BT: IASI Band 1

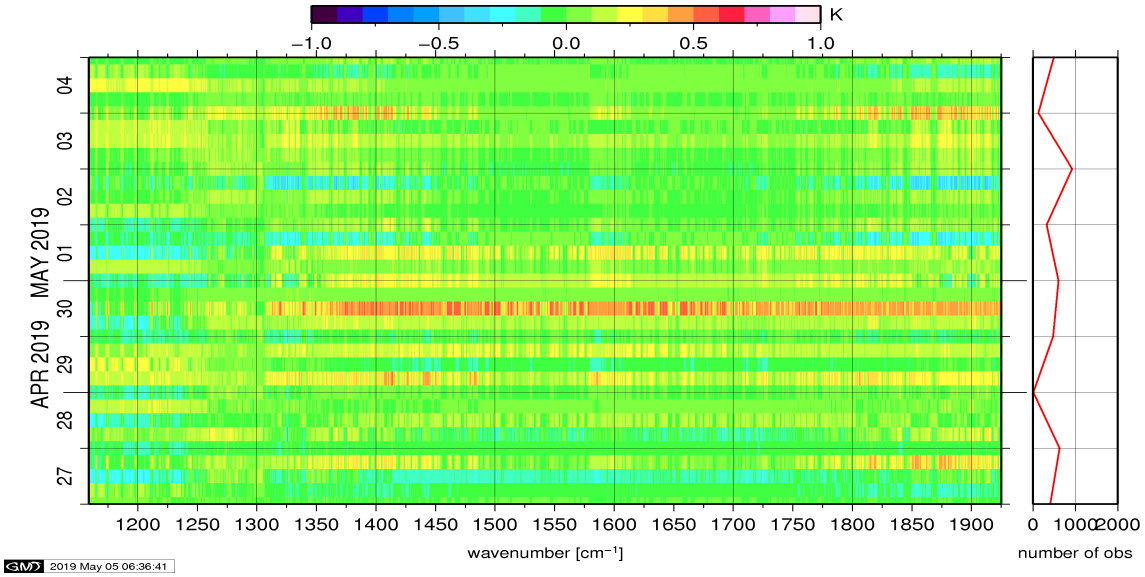

Figure 12: Radiance Anomaly in BT: IASI Band 2

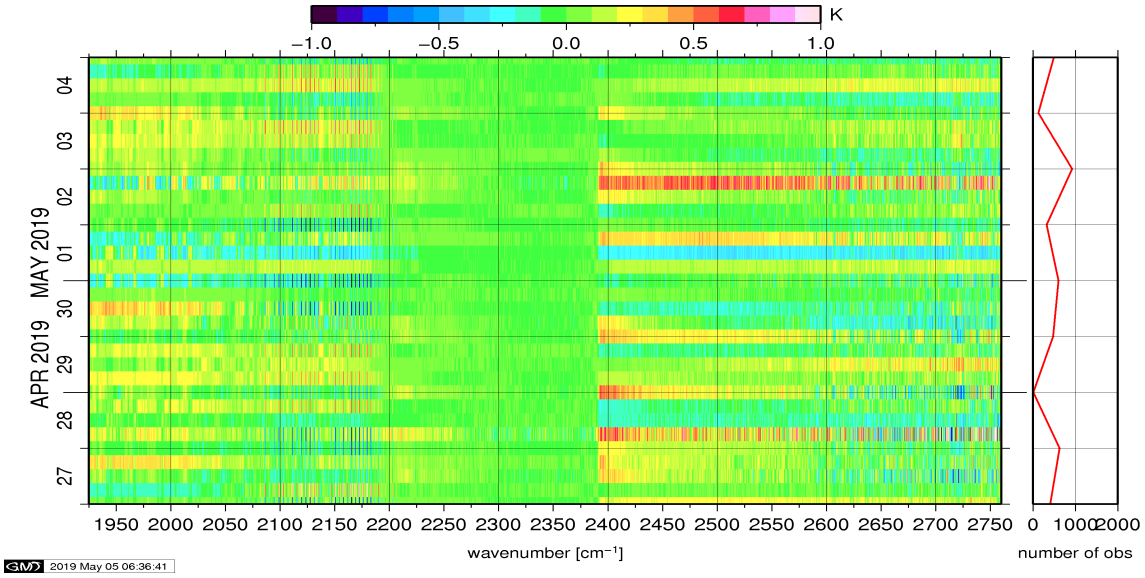

Figure 13: Radiance Anomaly in BT: IASI Band 3

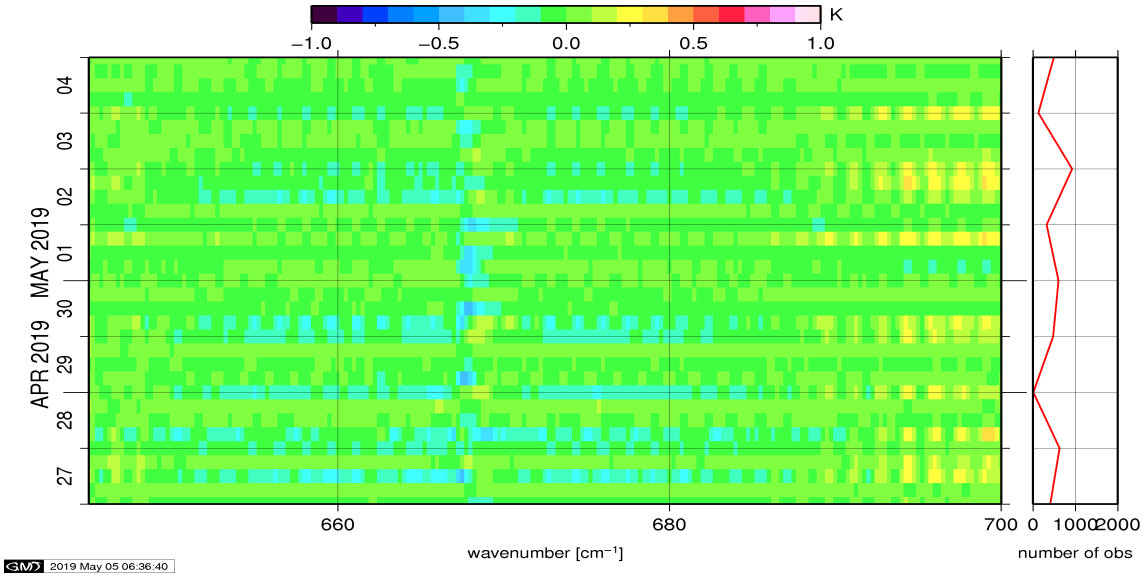

Figure 14: Radiance Anomaly in BT: CO2 14

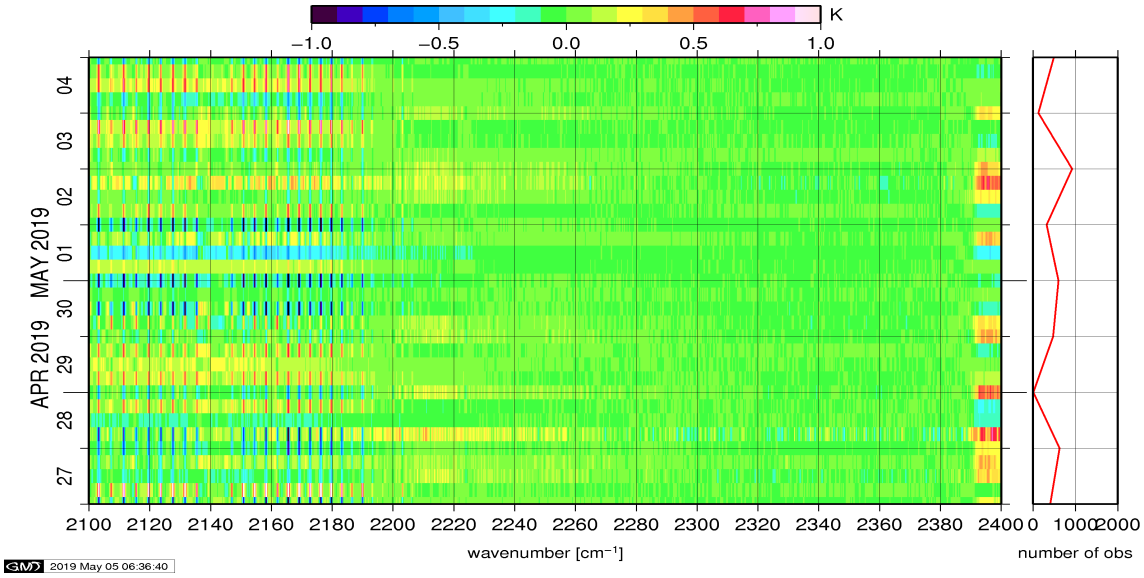

Figure 15: Radiance Anomaly in BT: CO2 4.3

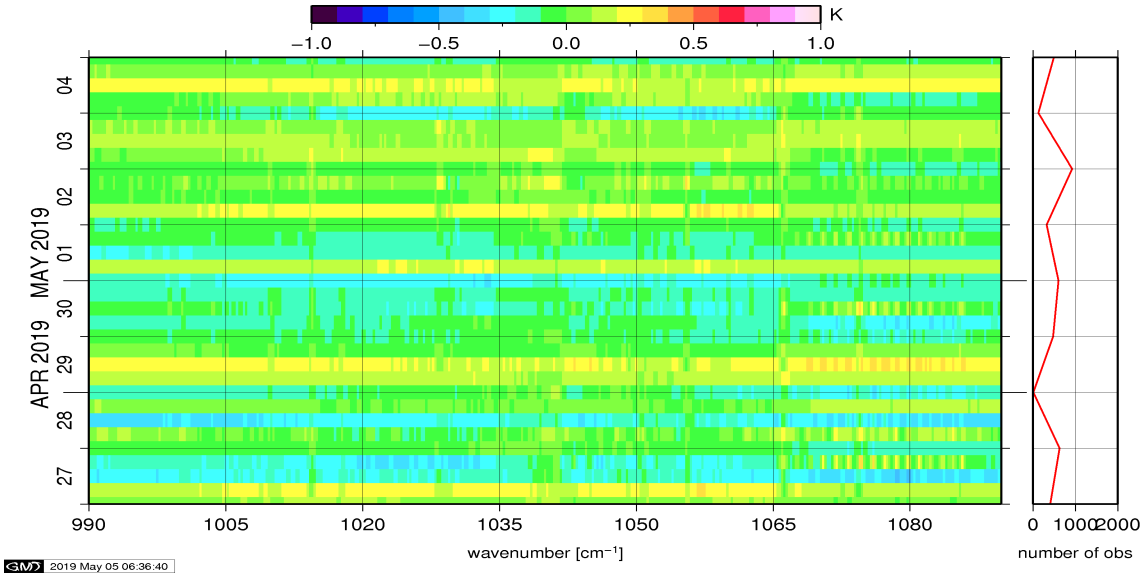

Figure 16: Radiance Anomaly in BT: O3

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.

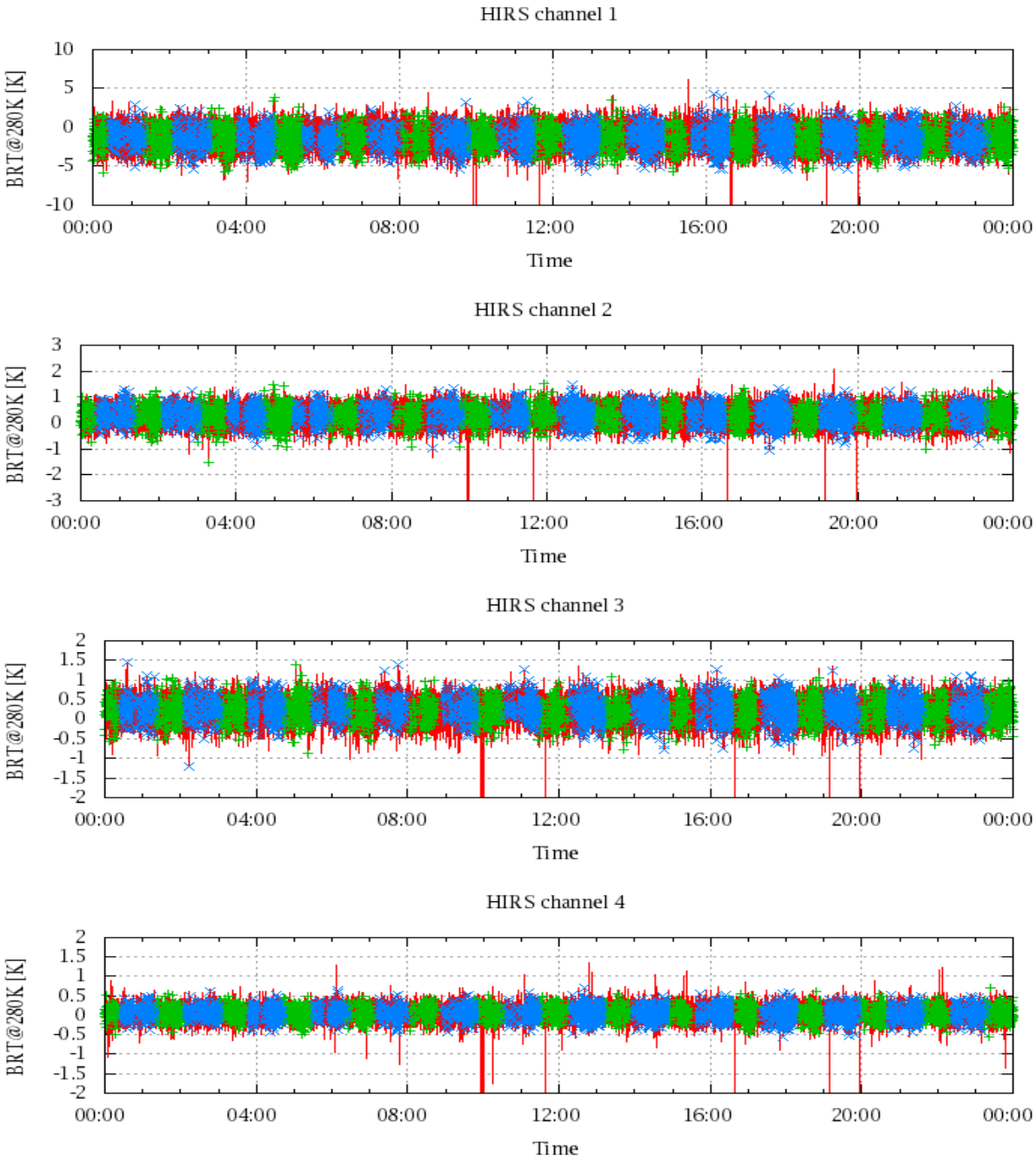

Figure 17: Radiance Differences in BT

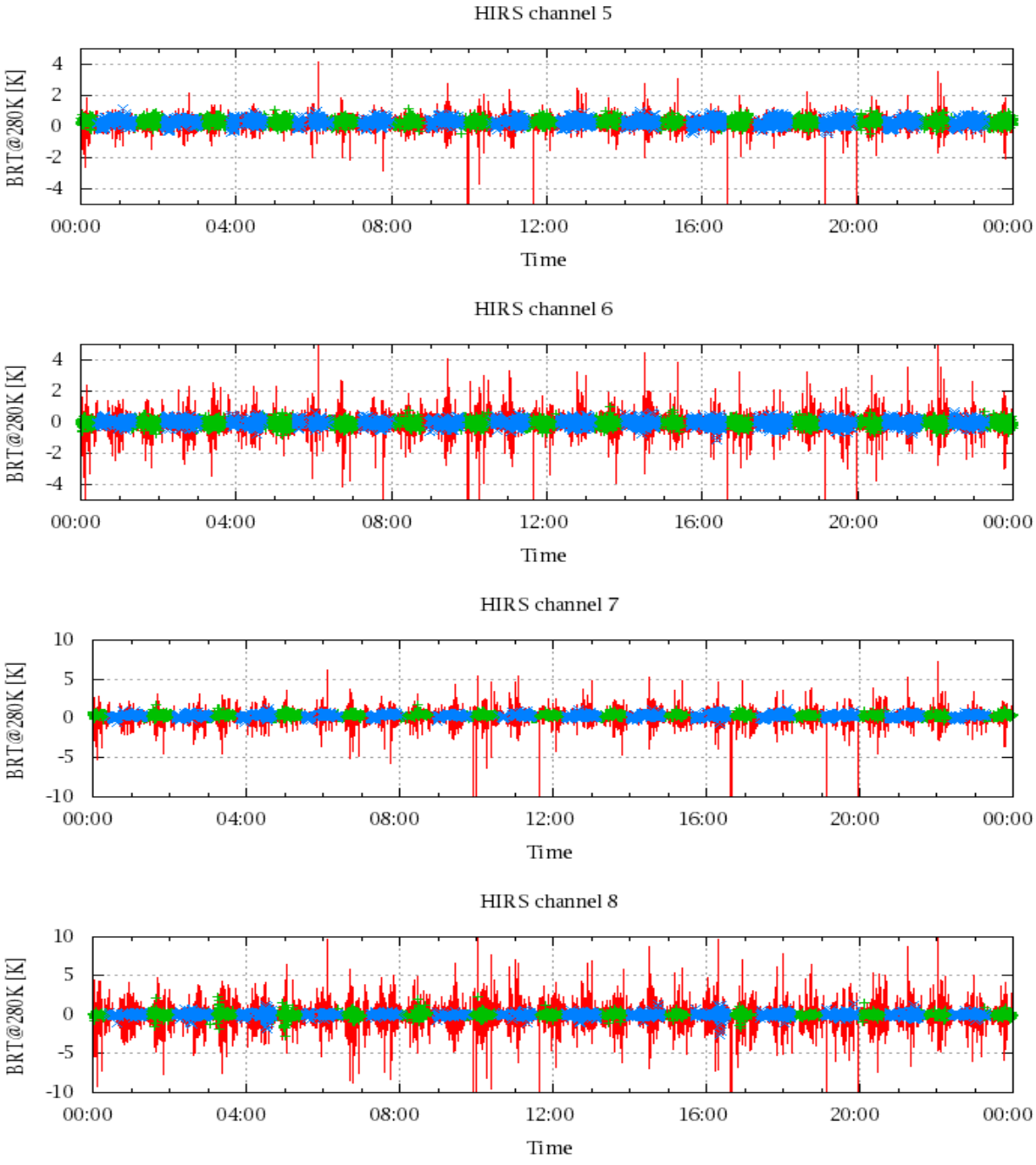

Figure 18: Radiance Differences in BT

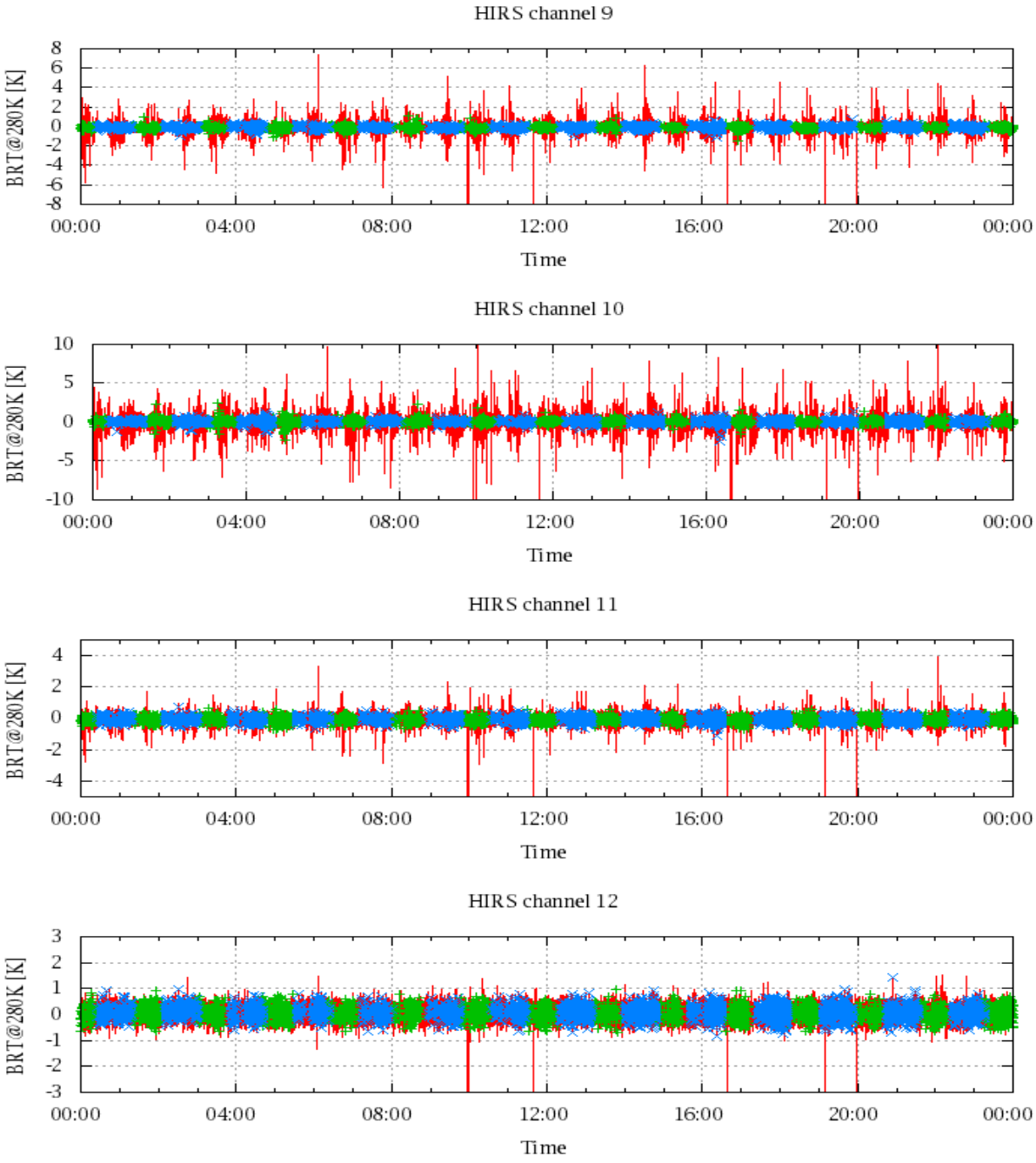

Figure 19: Radiance Differences in BT

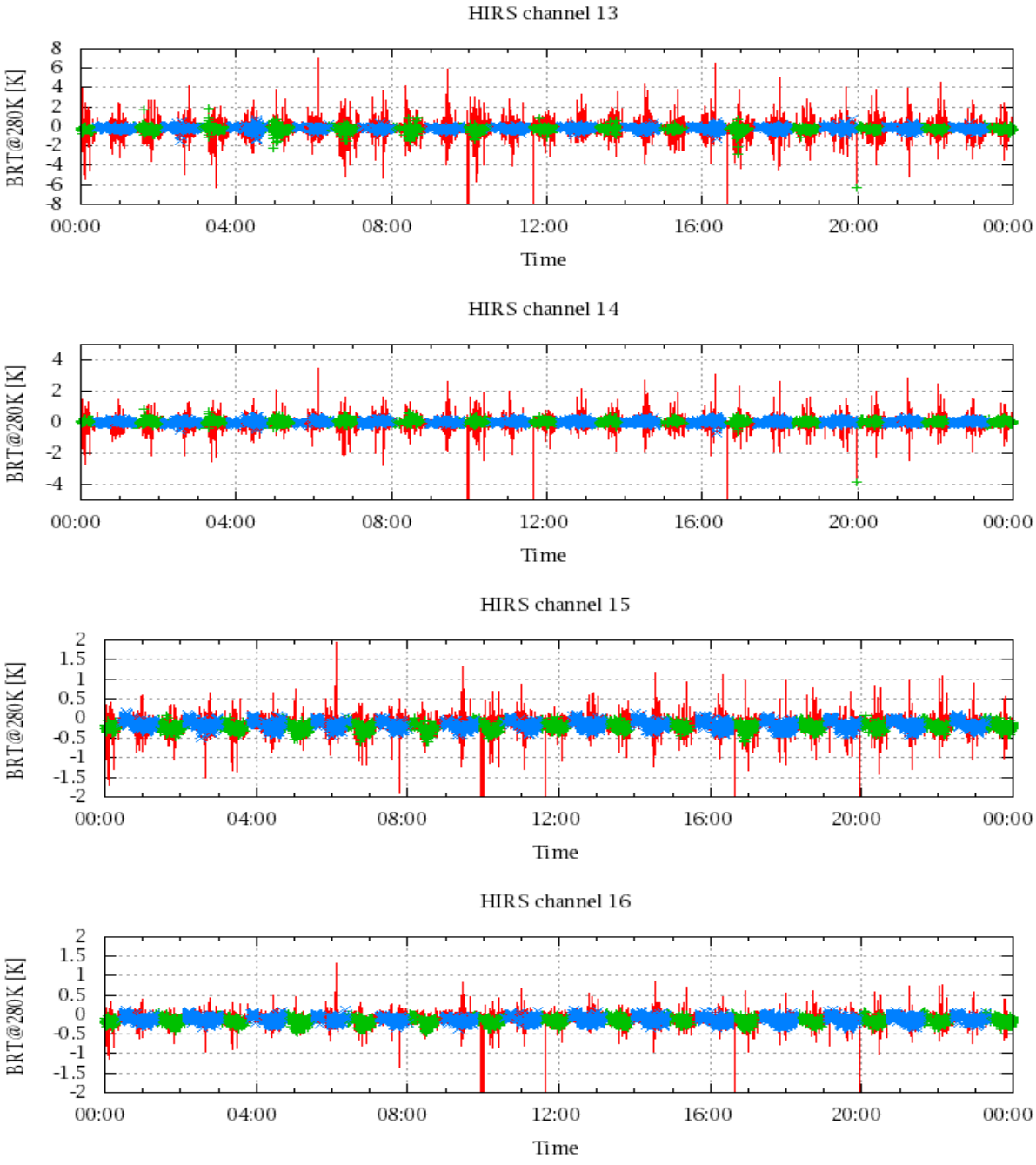

Figure 20: Radiance Differences in BT

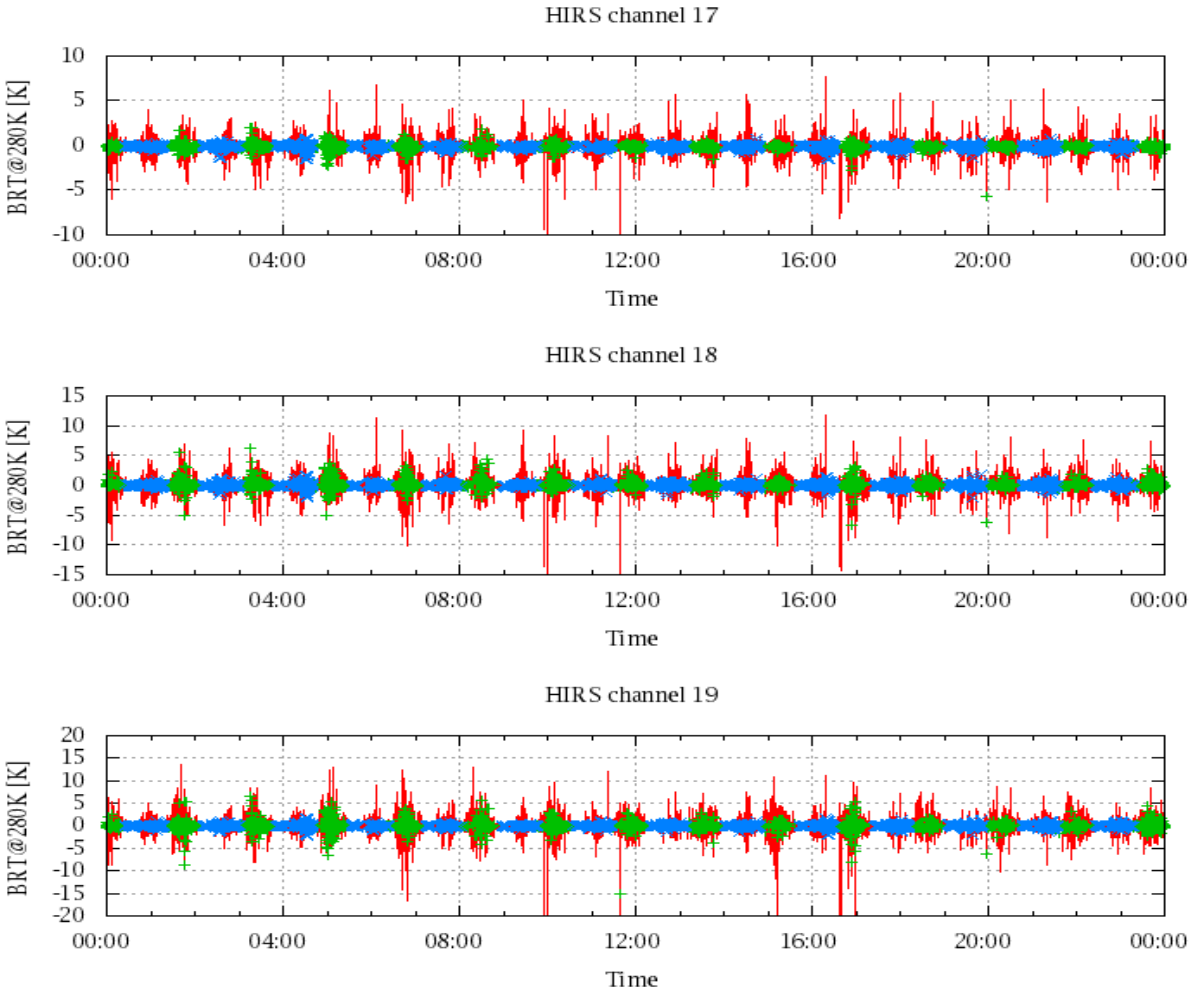

Figure 21: Radinace Differences in BT