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

IASI monitoring team

07/07/2020 00:00:00 - 08/07/2020 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 07/07/2020 00:00:00 - 08/07/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 07/07/2020 00:00:00 - 08/07/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	480	-
L0 IASI PDUs	480	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	6008	6012	20200707113758.706	20200707113801.085
PX1 (130)	6038	6040	20200707113806.706	20200707113807.140
PX1 (130)	6041	6072	20200707113807.355	20200707113817.085
PX1 (130)	8888	9822	20200707115046.685	20200707115457.091
PX1 (130)	865	874	20200707122756.746	20200707122758.692
PX1 (130)	894	896	20200707122804.531	20200707122804.961
PX1 (130)	905	907	20200707122806.910	20200707122807.340
PX1 (130)	9997	10001	20200707130831.346	20200707130833.725
PX1 (130)	10027	10029	20200707130839.346	20200707130841.291
PX1 (130)	10093	10144	20200707130858.155	20200707130910.694
PX1 (130)	10161	10163	20200707130915.885	20200707130916.315
PX1 (130)	10168	10170	20200707130917.397	20200707130917.830
PX1 (130)	12908	13808	20200707132129.051	20200707132529.082
PX2 (135)	6008	6012	20200707113758.706	20200707113801.085
PX2 (135)	6038	6040	20200707113806.706	20200707113807.140
PX2 (135)	6041	6072	20200707113807.355	20200707113817.085
PX2 (135)	8888	9822	20200707115046.685	20200707115457.091
PX2 (135)	865	874	20200707122756.746	20200707122758.692
PX2 (135)	894	896	20200707122804.531	20200707122804.961

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	905	907	20200707122806.910	20200707122807.340
PX2 (135)	9997	10001	20200707130831.346	20200707130833.725
PX2 (135)	10027	10029	20200707130839.346	20200707130841.291
PX2 (135)	10093	10144	20200707130858.155	20200707130910.694
PX2 (135)	10154	10156	20200707130914.369	20200707130914.803
PX2 (135)	10161	10163	20200707130915.885	20200707130916.315
PX2 (135)	10177	10179	20200707130919.342	20200707130921.291
PX2 (135)	12908	13808	20200707132129.051	20200707132529.082
PX3 (140)	6008	6012	20200707113758.706	20200707113801.085
PX3 (140)	6041	6072	20200707113807.355	20200707113817.085
PX3 (140)	8887	9821	20200707115046.470	20200707115455.364
PX3 (140)	865	874	20200707122756.746	20200707122758.692
PX3 (140)	896	898	20200707122804.961	20200707122805.395
PX3 (140)	9997	10001	20200707130831.346	20200707130833.725
PX3 (140)	10093	10144	20200707130858.155	20200707130910.694
PX3 (140)	10147	10149	20200707130911.342	20200707130913.287
PX3 (140)	10170	10172	20200707130917.830	20200707130918.264
PX3 (140)	12907	13808	20200707132127.321	20200707132529.082
PX4 (145)	6008	6012	20200707113758.706	20200707113801.085
PX4 (145)	6026	6028	20200707113804.113	20200707113804.546
PX4 (145)	6041	6072	20200707113807.355	20200707113817.085
PX4 (145)	8887	9821	20200707115046.470	20200707115455.364
PX4 (145)	865	874	20200707122756.746	20200707122758.692
PX4 (145)	896	898	20200707122804.961	20200707122805.395
PX4 (145)	9997	10001	20200707130831.346	20200707130833.725
PX4 (145)	10093	10144	20200707130858.155	20200707130910.694
PX4 (145)	10156	10158	20200707130914.803	20200707130915.237
PX4 (145)	10163	10165	20200707130916.315	20200707130916.748
PX4 (145)	10179	10181	20200707130921.291	20200707130921.721
PX4 (145)	12907	13808	20200707132127.321	20200707132529.082
IMG (150)	251	256	20200707113758.491	20200707113759.788
IMG (150)	289	324	20200707113807.355	20200707113815.788
IMG (150)	3515	4573	20200707115046.470	20200707115455.364
IMG (150)	12992	13001	20200707122756.535	20200707122758.477
IMG (150)	13030	13032	20200707122805.395	20200707122805.828
IMG (150)	13034	13036	20200707122806.258	20200707122806.692
IMG (150)	13036	13038	20200707122806.692	20200707122807.125
IMG (150)	6957	6965	20200707130831.346	20200707130833.725
IMG (150)	6988	6990	20200707130838.698	20200707130839.127
IMG (150)	7068	7124	20200707130857.940	20200707130910.694
IMG (150)	7133	7135	20200707130913.287	20200707130913.721
IMG (150)	7135	7137	20200707130913.721	20200707130914.155
IMG (150)	7142	7144	20200707130915.237	20200707130915.666
IMG (150)	7156	7158	20200707130918.264	20200707130918.694
IMG (150)	7158	7160	20200707130918.694	20200707130919.127
IMG (150)	10259	11276	20200707132128.622	20200707132527.777
VER (160)	996	1000	20200707113751.355	20200707113758.706
VER (160)	1001	1003	20200707113758.706	20200707113807.355
VER (160)	1003	1010	20200707113807.355	20200707113807.355
VER (160)	1476	1632	20200707115039.333	20200707115455.364
VER (160)	4392	4397	20200707130831.346	20200707130839.346
VER (160)	4399	4401	20200707130839.346	20200707130839.346
VER (160)	4411	4417	20200707130855.346	20200707130911.342

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APID	Seq from	Seq to	Time from	Time to
VER (160)	4421	4427	20200707130911.342	20200707130927.342
VER (160)	4881	5028	20200707132127.321	20200707132129.051
AUX (180)	6753	6755	20200707113759.788	20200707113815.788
AUX (180)	6848	6880	20200707115039.763	20200707115455.794
AUX (180)	7431	7433	20200707130823.780	20200707130839.776
AUX (180)	7435	7437	20200707130855.776	20200707130911.776
AUX (180)	7529	7559	20200707132127.755	20200707132527.777

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
07/07/2020 00:00:09	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
GQisFlagQual set (PX1)	99.44 %	-
GQisFlagQual set (PX2)	99.40 %	-
GQisFlagQual set (PX3)	99.41 %	-
GQisFlagQual set (PX4)	99.41 %	-
GQisFlagQual set (all)	99.42 %	-

Table 4: Quality flags

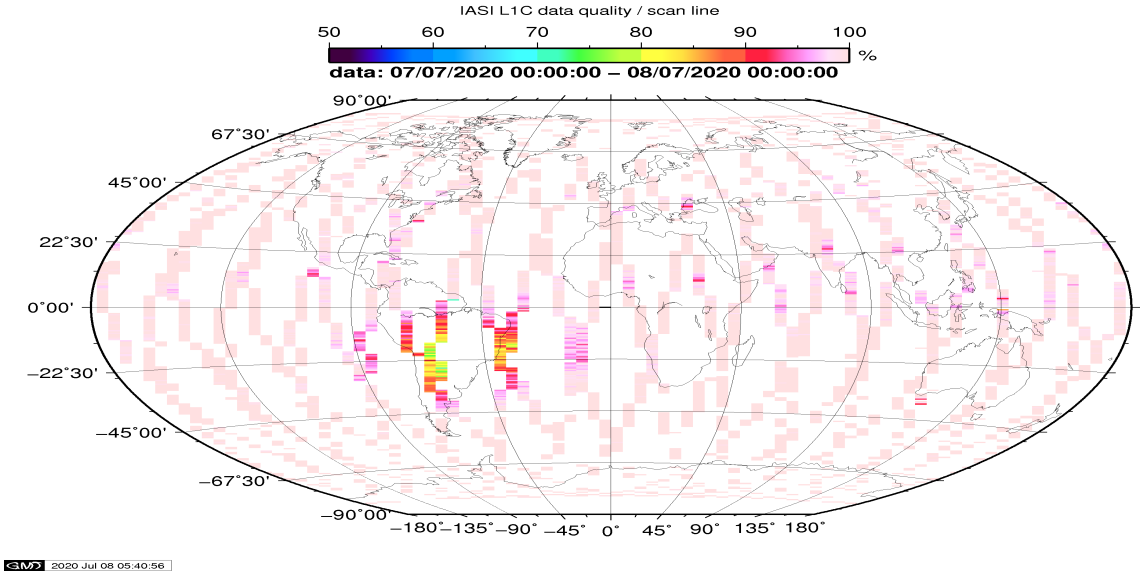

Figure 1: L1C data quality

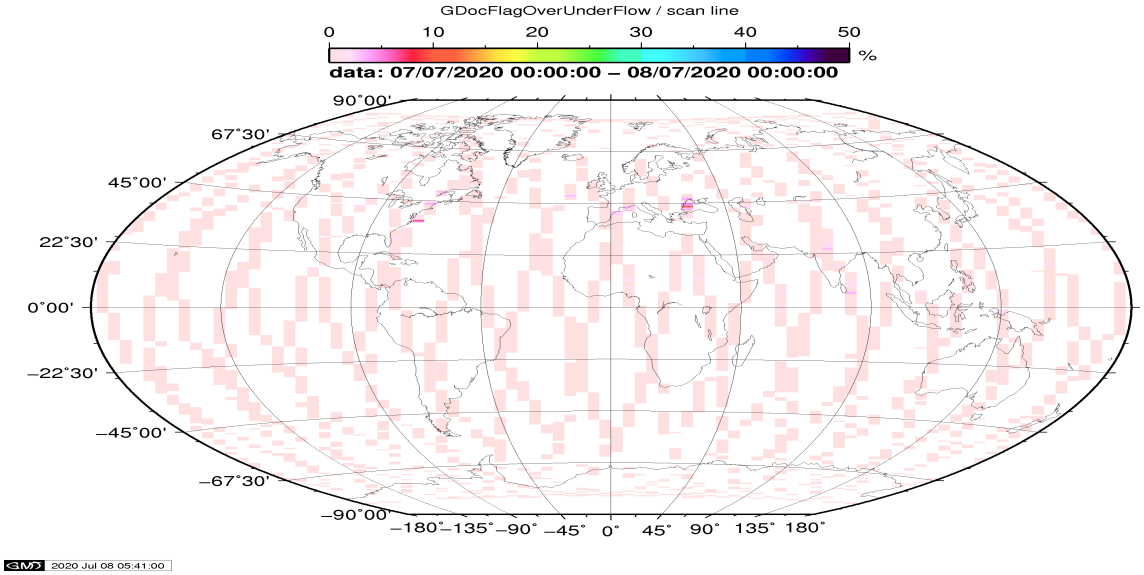

Figure 2: Flag of Over and Under Flows

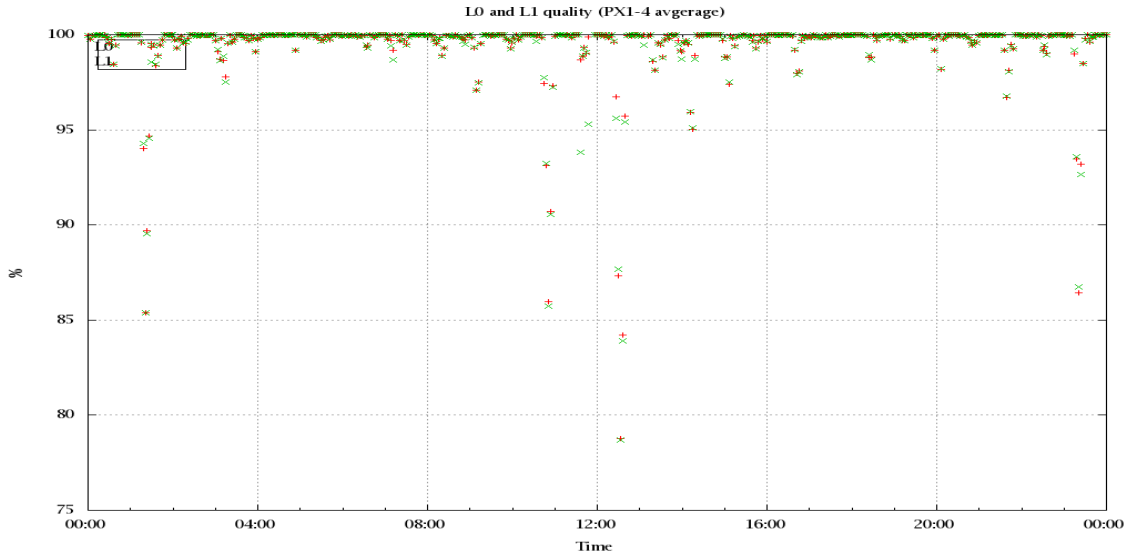

Figure 3: Level 0 and 1C overall quality

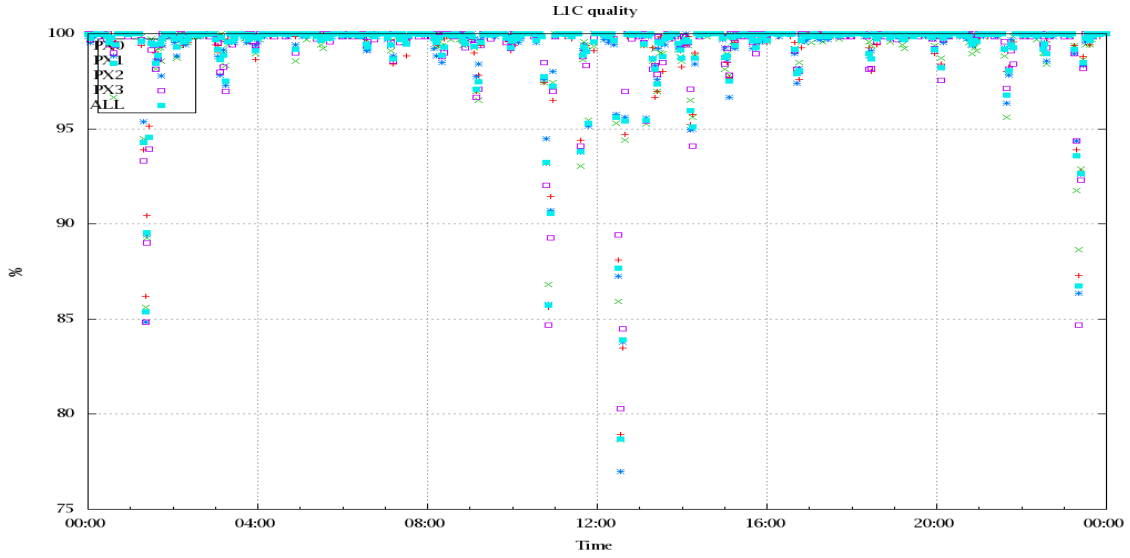

Figure 4: Level 1C quality

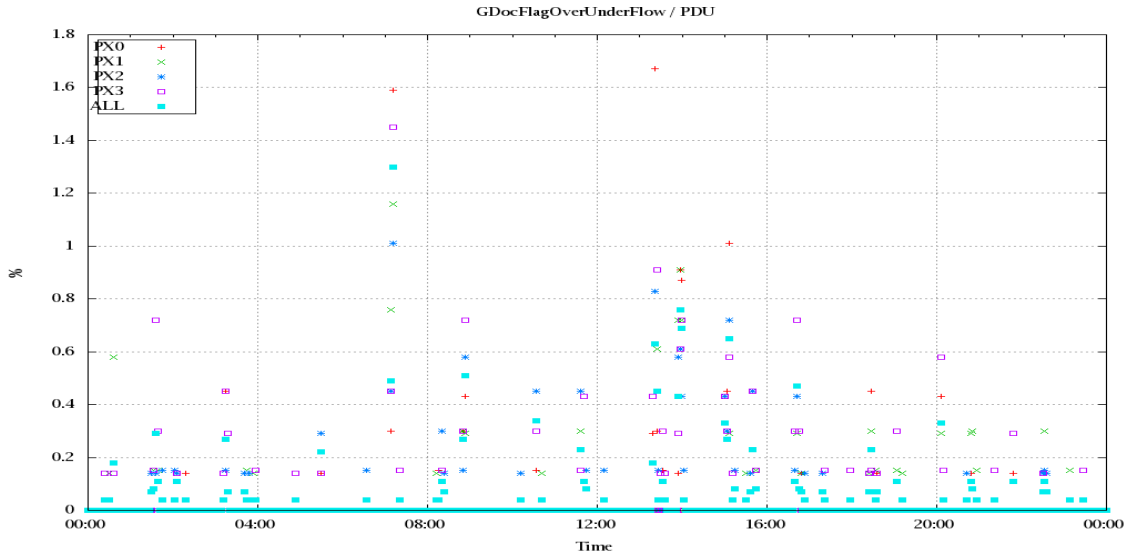

Figure 5: Timeseries of flag of Over and Under Flows

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.

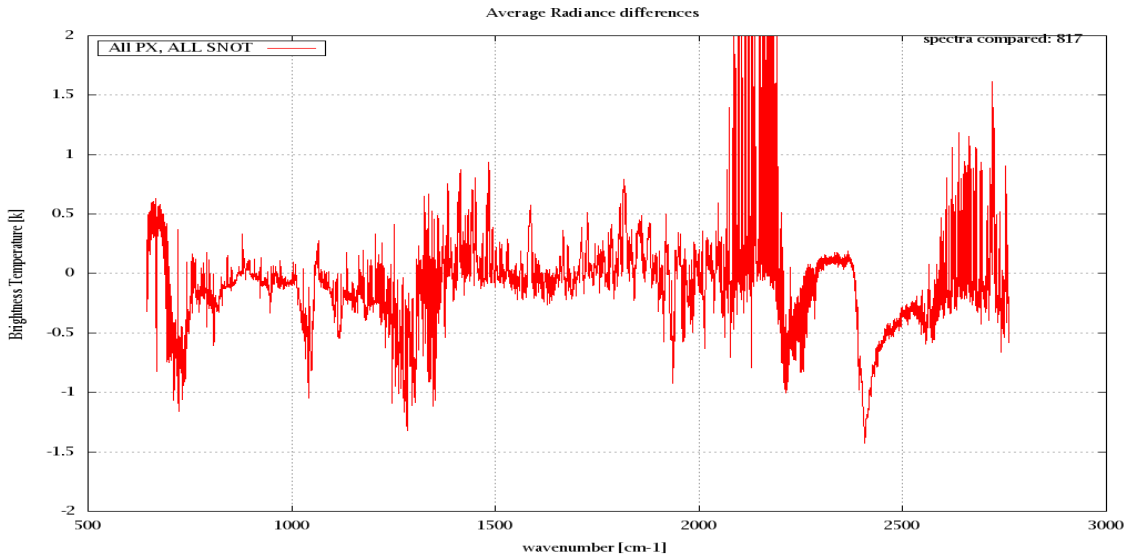

Figure 6: Average Radiance differences: OBS-CAL

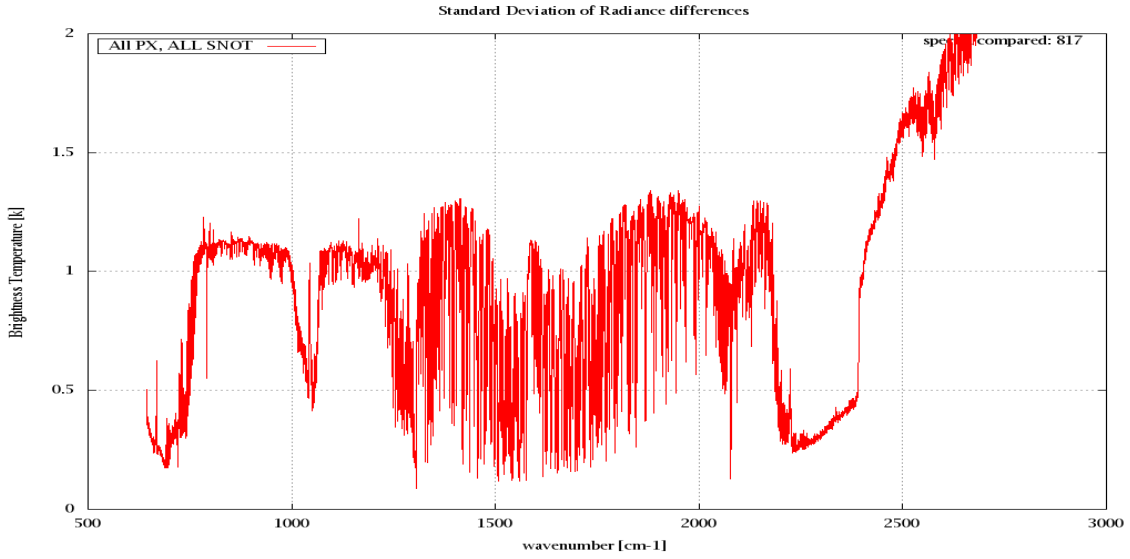

Figure 7: Standard Deviation of Radiance differences

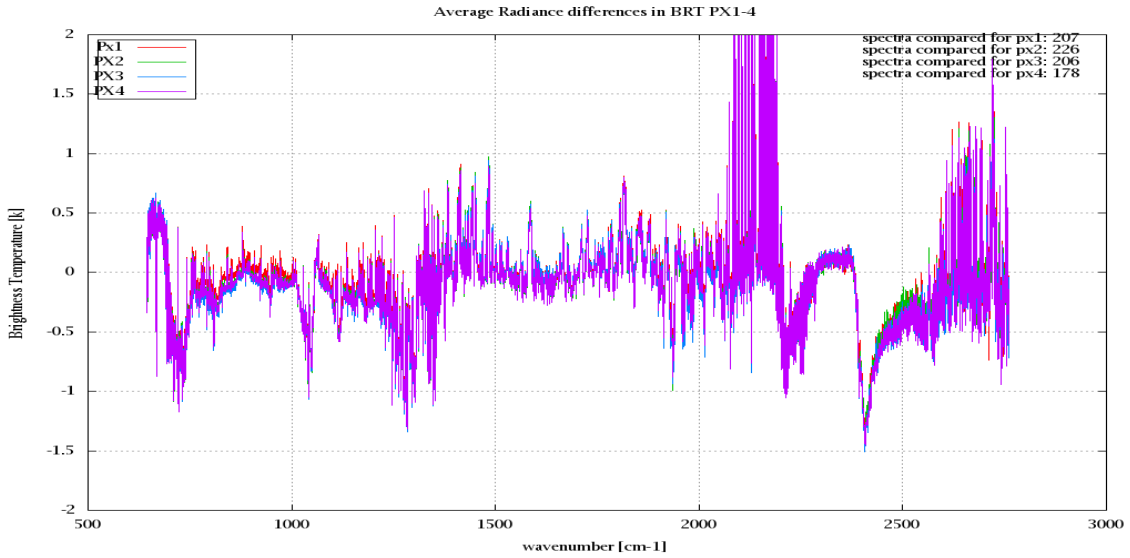

Figure 8: Average Radiance differences: OBS-CAL

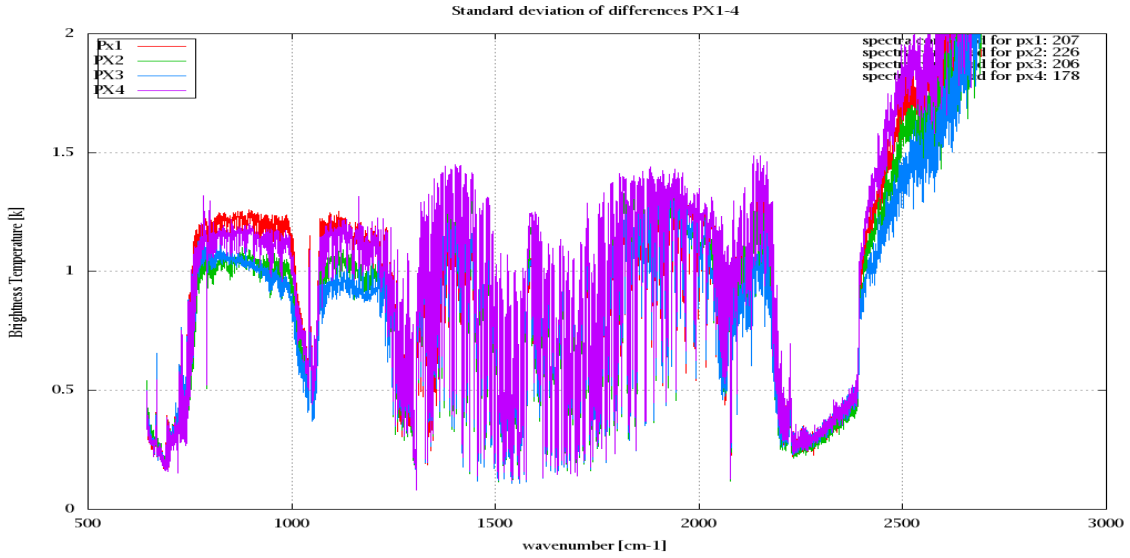

Figure 9: Standard Deviation of Radiance differences

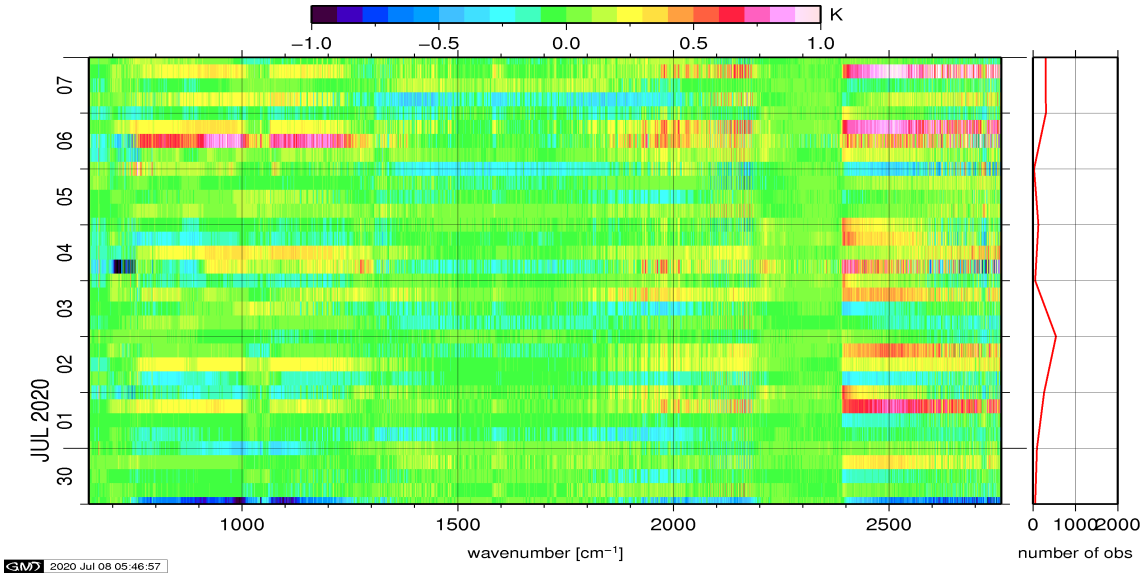

Figure 10: Radiance Anomaly in BT: All Channels

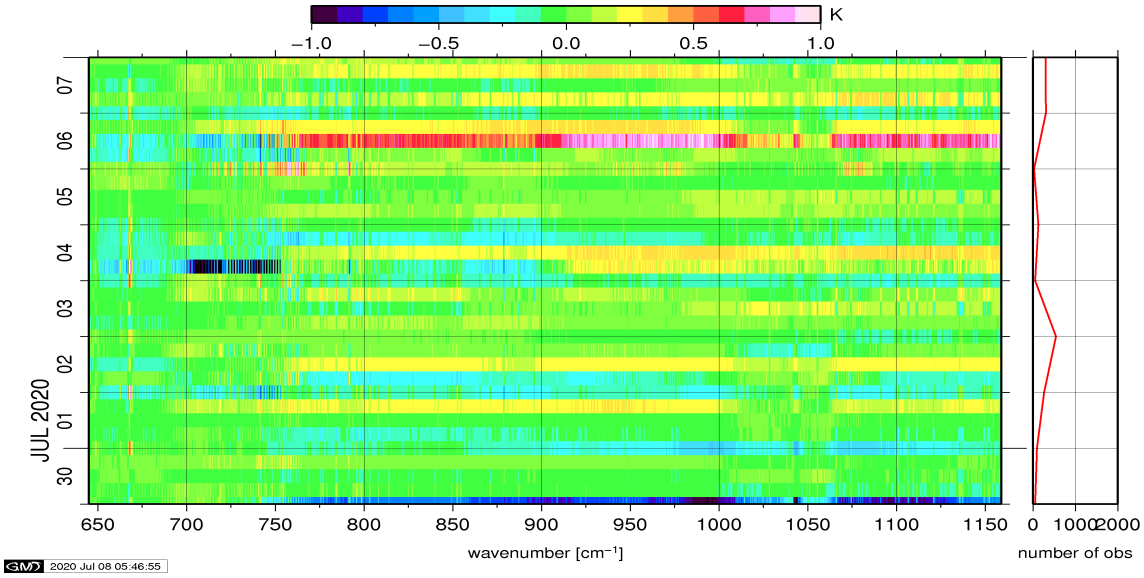

Figure 11: Radiance Anomaly in BT: IASI Band 1

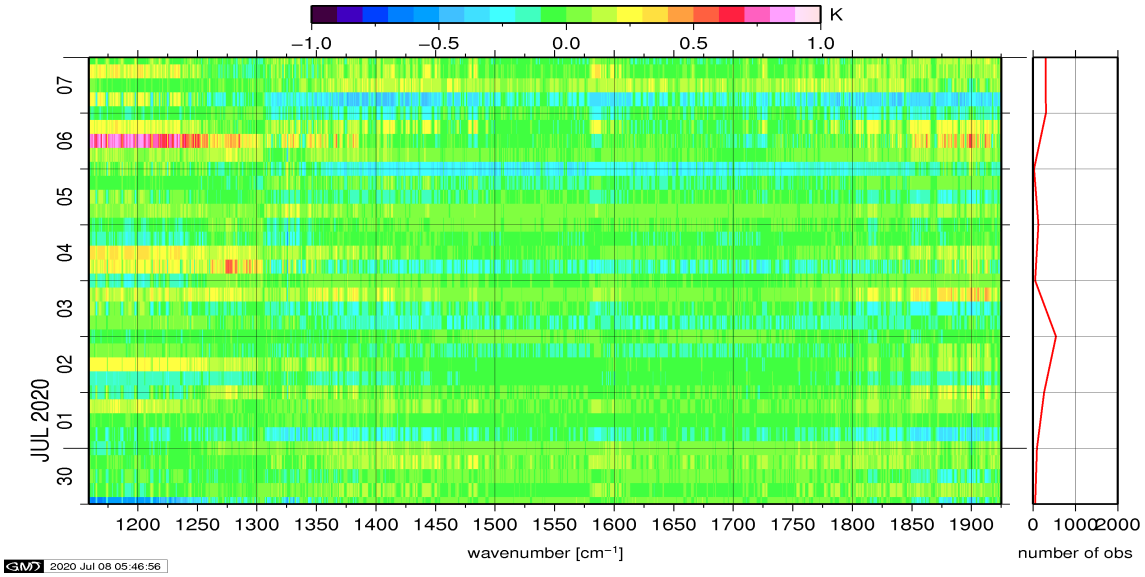

Figure 12: Radiance Anomaly in BT: IASI Band 2

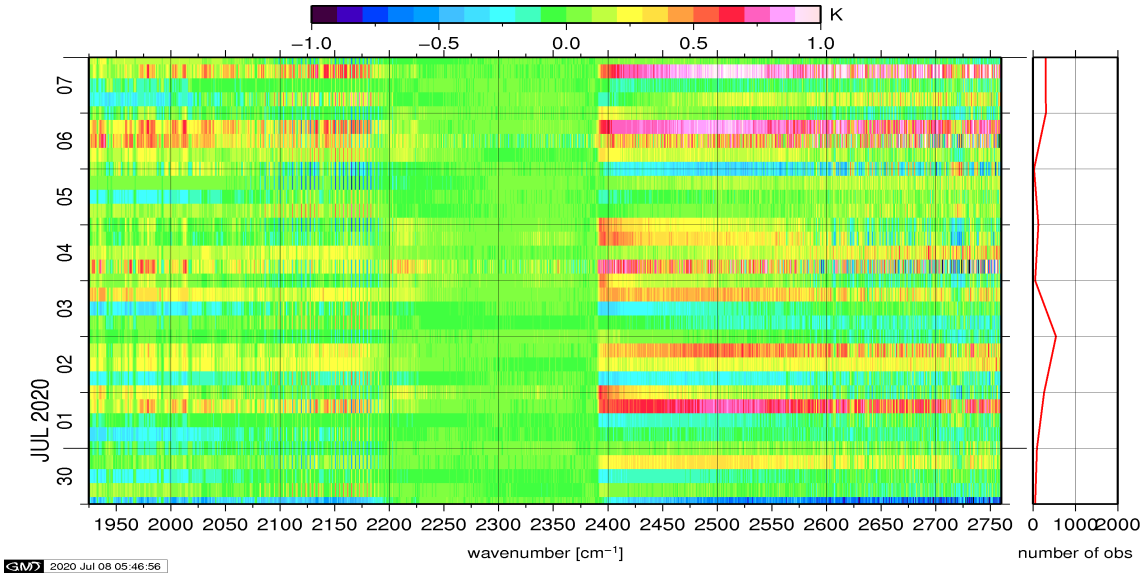

Figure 13: Radiance Anomaly in BT: IASI Band 3

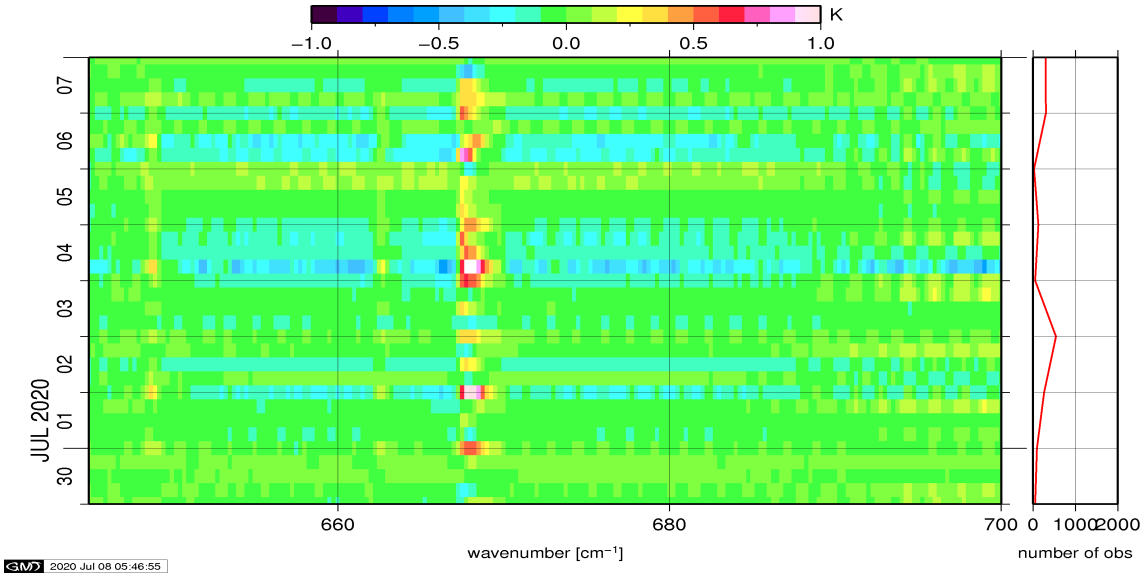

Figure 14: Radiance Anomaly in BT: CO2 14

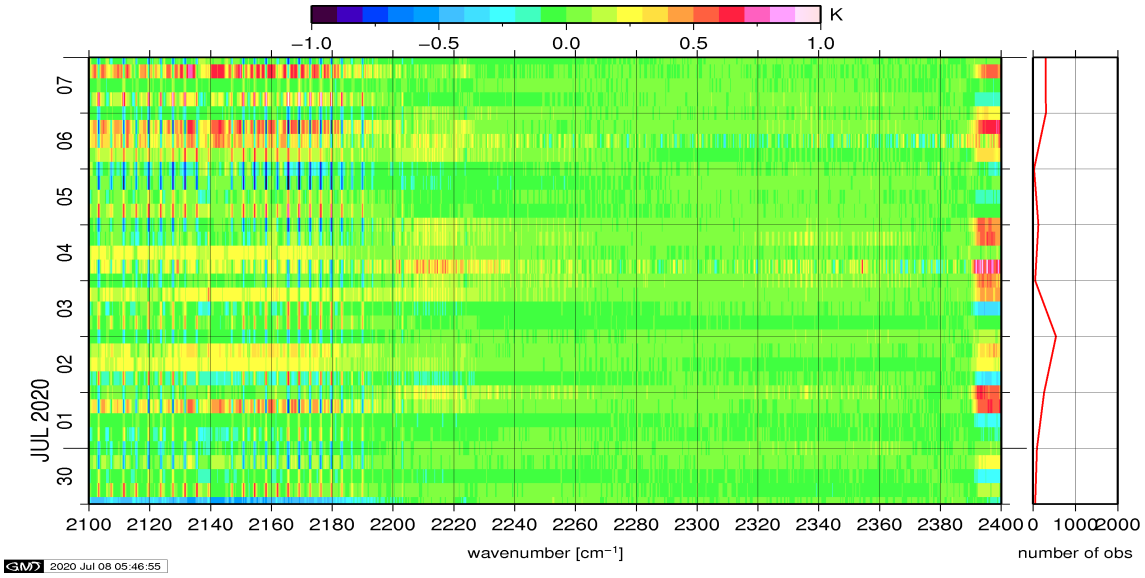

Figure 15: Radiance Anomaly in BT: CO2 4.3

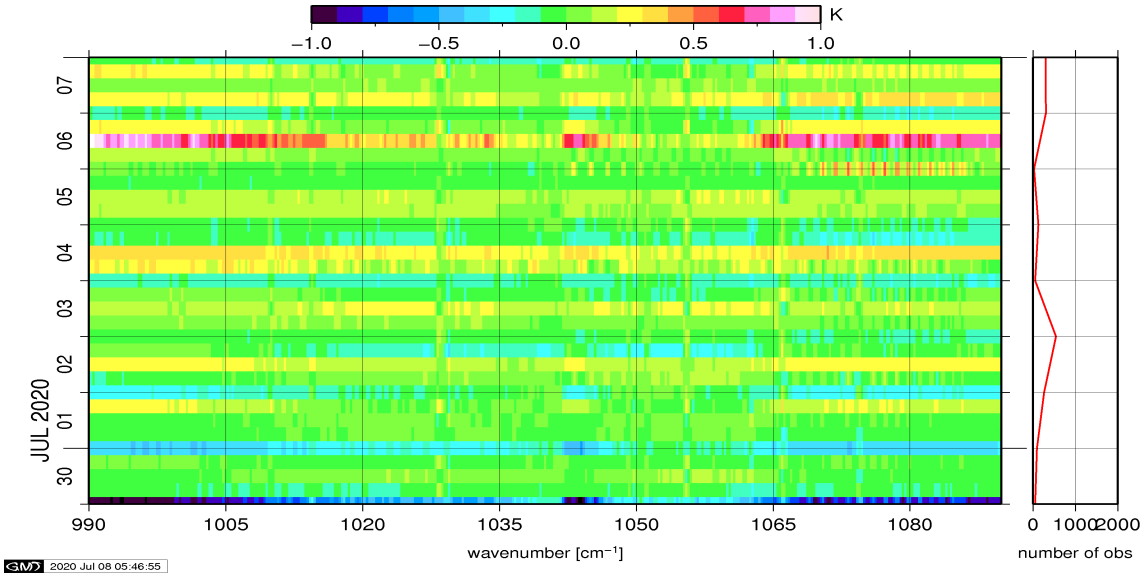

Figure 16: Radiance Anomaly in BT: O3

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.

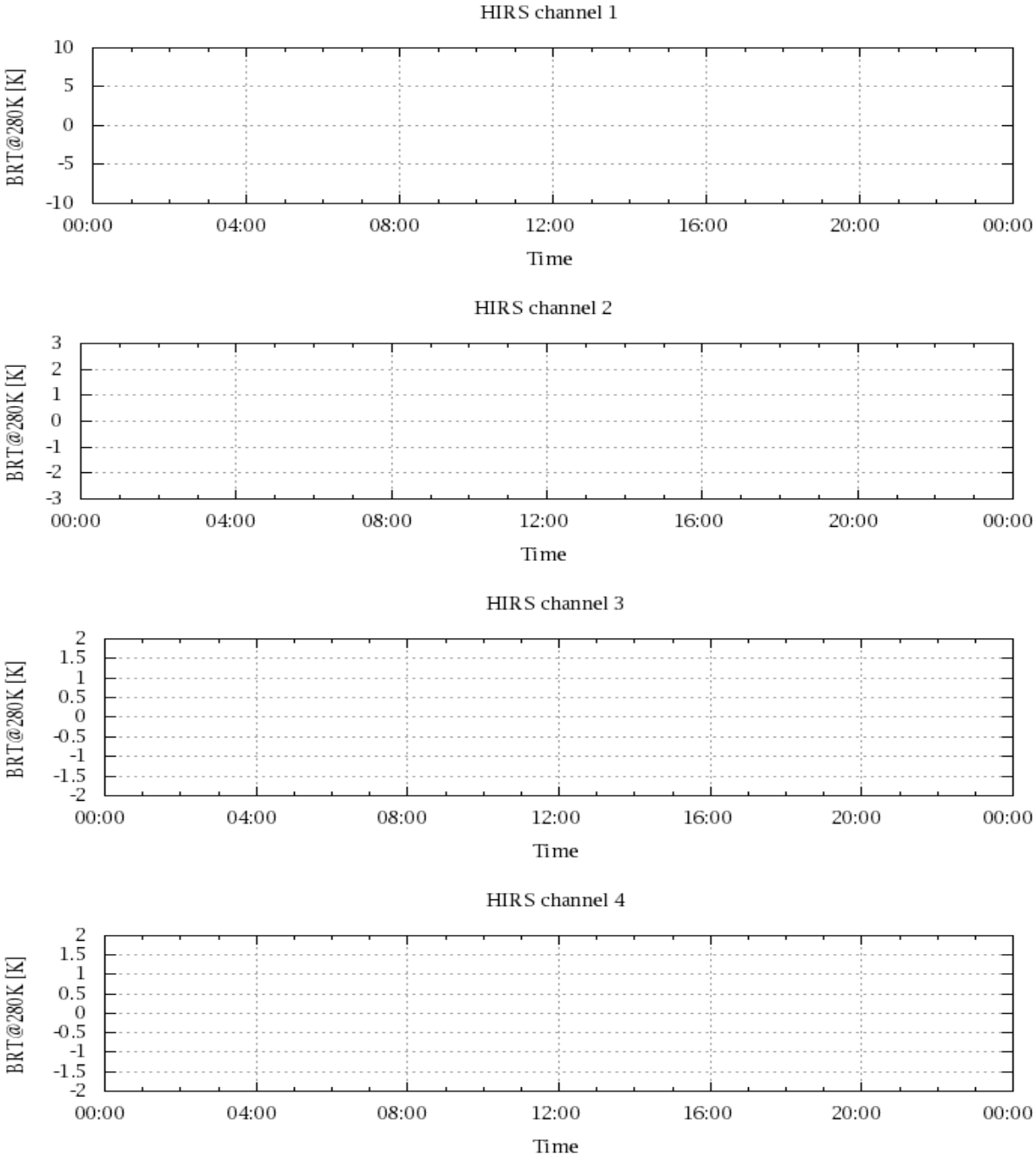

Figure 17: Radiance Differences in BT

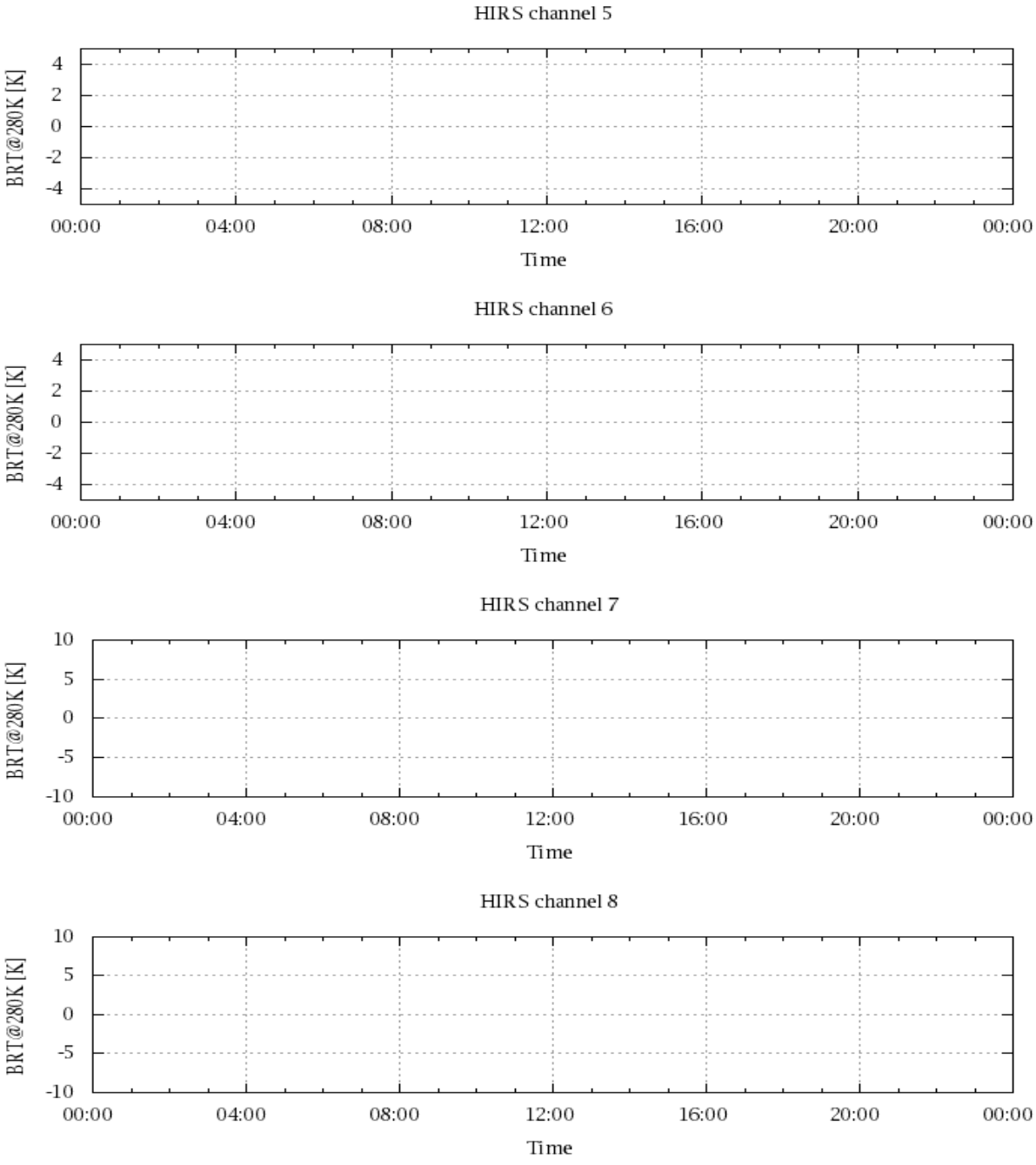

Figure 18: Radiance Differences in BT

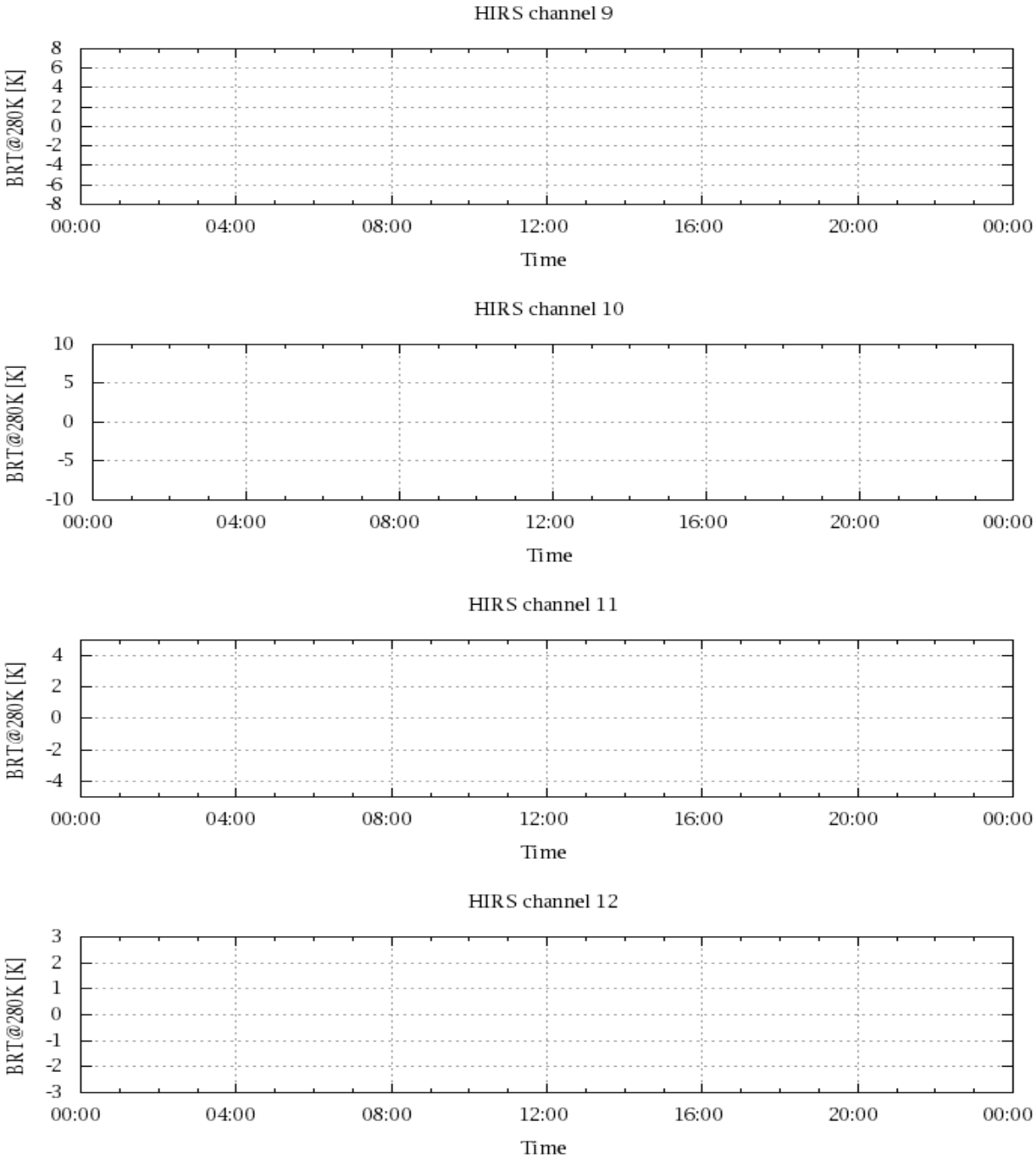

Figure 19: Radiance Differences in BT

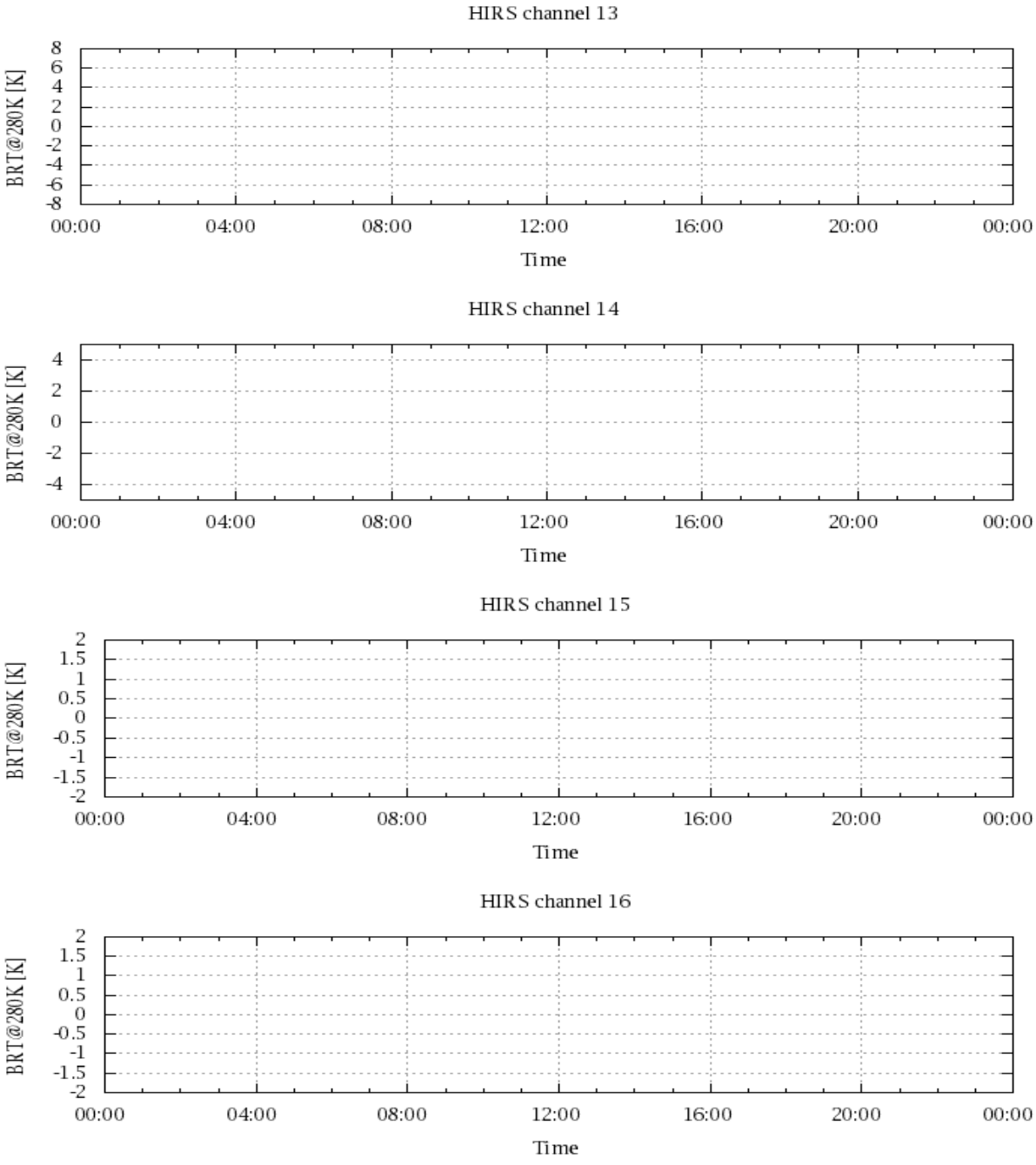

Figure 20: Radiance Differences in BT

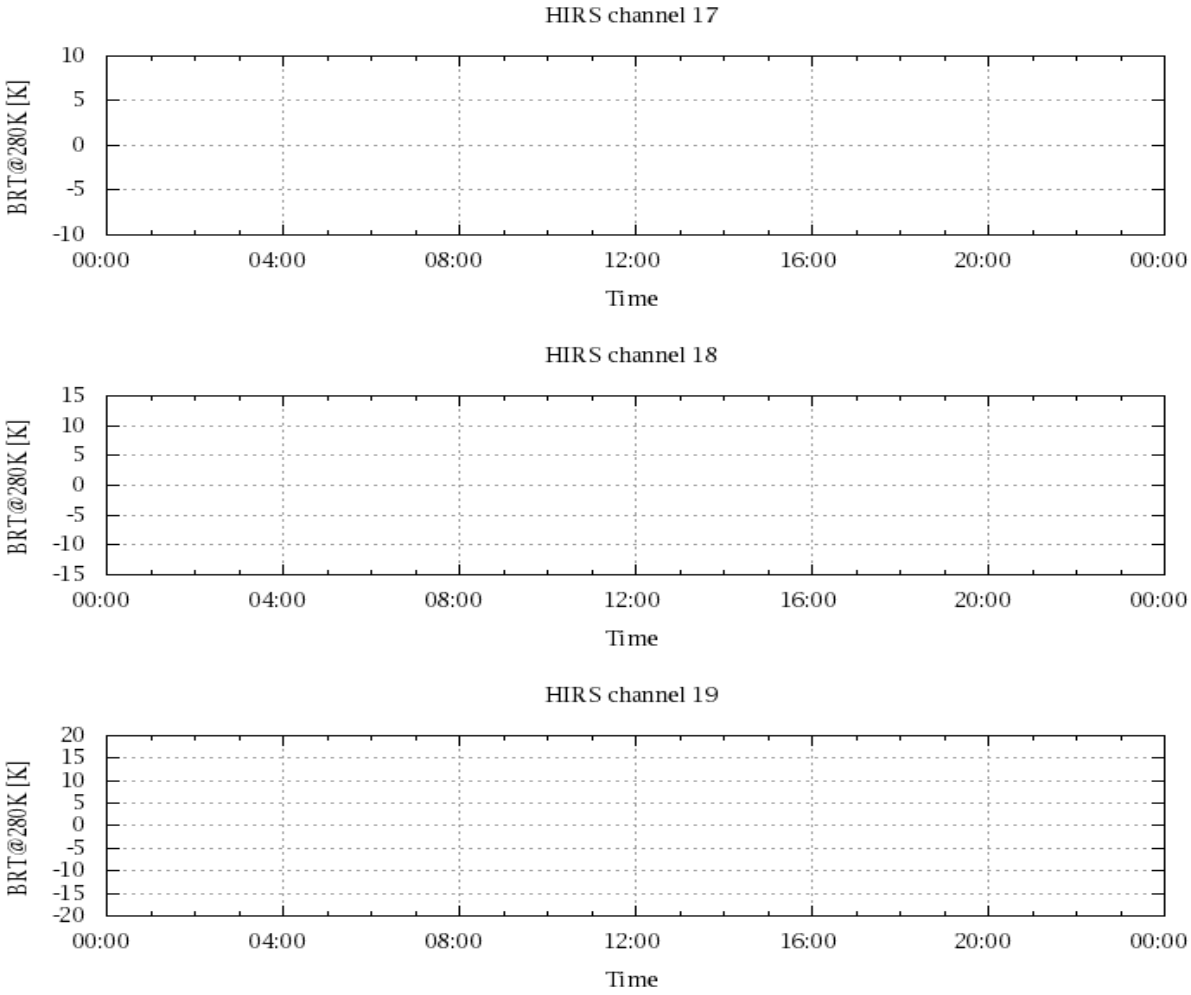

Figure 21: Radinace Differences in BT