

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

IASI monitoring team

16/11/2021 00:00:00 - 17/11/2021 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 16/11/2021 00:00:00 - 17/11/2021 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 16/11/2021 00:00:00 - 17/11/2021 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	11379	11381	20211116112343.575	20211116112344.009
PX1 (130)	11382	11384	20211116112344.224	20211116112344.653
PX1 (130)	11394	11396	20211116112346.817	20211116112347.251
PX1 (130)	11396	11398	20211116112347.251	20211116112347.681
PX1 (130)	11398	11400	20211116112347.681	20211116112348.114
PX1 (130)	11420	11423	20211116112353.954	20211116112354.603
PX1 (130)	11425	11613	20211116112355.032	20211116112446.274
PX1 (130)	11613	11615	20211116112446.274	20211116112446.708
PX1 (130)	11615	11619	20211116112446.708	20211116112447.571
PX1 (130)	11619	11621	20211116112447.571	20211116112448.005
PX1 (130)	11621	11623	20211116112448.005	20211116112448.438
PX1 (130)	11628	11630	20211116112449.516	20211116112449.950
PX1 (130)	11638	11640	20211116112451.681	20211116112452.110
PX1 (130)	11640	11642	20211116112452.110	20211116112452.544
PX1 (130)	11644	11646	20211116112454.493	20211116112454.923
PX1 (130)	2718	2720	20211116115802.363	20211116115802.797
PX1 (130)	2727	2729	20211116115804.309	20211116115806.254
PX1 (130)	2754	2756	20211116115811.660	20211116115812.090
PX1 (130)	2758	2780	20211116115812.523	20211116115818.793
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2780	2791	20211116115818.793	20211116115822.688
PX1 (130)	2791	2793	20211116115822.688	20211116115823.117
PX1 (130)	2793	3209	20211116115823.117	20211116120014.250
PX2 (135)	11375	11377	20211116112342.708	20211116112343.142
PX2 (135)	11379	11381	20211116112343.575	20211116112344.009
PX2 (135)	11393	11397	20211116112346.603	20211116112347.466
PX2 (135)	11398	11401	20211116112347.681	20211116112348.333
PX2 (135)	11401	11403	20211116112348.333	20211116112350.274
PX2 (135)	11415	11417	20211116112352.872	20211116112353.302
PX2 (135)	11419	11421	20211116112353.735	20211116112354.169
PX2 (135)	11425	11618	20211116112355.032	20211116112447.356
PX2 (135)	11618	11620	20211116112447.356	20211116112447.786
PX2 (135)	11621	11623	20211116112448.005	20211116112448.438
PX2 (135)	11632	11634	20211116112450.384	20211116112450.813
PX2 (135)	11640	11642	20211116112452.110	20211116112452.544
PX2 (135)	11643	11646	20211116112454.274	20211116112454.923
PX2 (135)	2686	2688	20211116115753.930	20211116115754.363
PX2 (135)	2712	2714	20211116115801.066	20211116115801.496
PX2 (135)	2715	2717	20211116115801.711	20211116115802.145
PX2 (135)	2754	2756	20211116115811.660	20211116115812.090
PX2 (135)	2758	2776	20211116115812.523	20211116115817.930
PX2 (135)	2777	2780	20211116115818.145	20211116115818.793
PX2 (135)	2780	2782	20211116115818.793	20211116115819.227
PX2 (135)	2783	2799	20211116115819.441	20211116115824.414
PX2 (135)	2799	3209	20211116115824.414	20211116120014.250
PX3 (140)	11378	11380	20211116112343.356	20211116112343.790
PX3 (140)	11380	11382	20211116112343.790	20211116112344.224
PX3 (140)	11383	11385	20211116112344.439	20211116112344.872
PX3 (140)	11389	11391	20211116112345.735	20211116112346.169
PX3 (140)	11392	11395	20211116112346.384	20211116112347.032
PX3 (140)	11398	11400	20211116112347.681	20211116112348.114
PX3 (140)	11419	11422	20211116112353.735	20211116112354.384
PX3 (140)	11426	11428	20211116112355.251	20211116112355.681
PX3 (140)	11428	11618	20211116112355.681	20211116112447.356
PX3 (140)	11626	11628	20211116112449.087	20211116112449.516
PX3 (140)	11631	11633	20211116112450.169	20211116112450.599
PX3 (140)	11636	11638	20211116112451.247	20211116112451.681
PX3 (140)	11638	11643	20211116112451.681	20211116112454.274
PX3 (140)	11651	11653	20211116112456.005	20211116112456.434
PX3 (140)	2712	2714	20211116115801.066	20211116115801.496
PX3 (140)	2719	2724	20211116115802.578	20211116115803.660
PX3 (140)	2740	2742	20211116115808.633	20211116115809.063
PX3 (140)	2748	2750	20211116115810.363	20211116115810.793
PX3 (140)	2758	2770	20211116115812.523	20211116115816.633
PX3 (140)	2770	2774	20211116115816.633	20211116115817.496
PX3 (140)	2775	2778	20211116115817.711	20211116115818.363
PX3 (140)	2779	2785	20211116115818.578	20211116115819.875
PX3 (140)	2785	2796	20211116115819.875	20211116115823.766
PX3 (140)	2796	3209	20211116115823.766	20211116120014.250
PX4 (145)	11374	11376	20211116112342.493	20211116112342.927
PX4 (145)	11393	11395	20211116112346.603	20211116112347.032
PX4 (145)	11395	11397	20211116112347.032	20211116112347.466
PX4 (145)	11397	11401	20211116112347.466	20211116112348.333

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	11413	11415	20211116112352.438	20211116112352.872
PX4 (145)	11415	11417	20211116112352.872	20211116112353.302
PX4 (145)	11418	11420	20211116112353.521	20211116112353.954
PX4 (145)	11420	11422	20211116112353.954	20211116112354.384
PX4 (145)	11431	11617	20211116112356.329	20211116112447.141
PX4 (145)	11619	11621	20211116112447.571	20211116112448.005
PX4 (145)	11621	11624	20211116112448.005	20211116112448.653
PX4 (145)	11624	11626	20211116112448.653	20211116112449.087
PX4 (145)	11630	11633	20211116112449.950	20211116112450.599
PX4 (145)	11638	11640	20211116112451.681	20211116112452.110
PX4 (145)	2715	2717	20211116115801.711	20211116115802.145
PX4 (145)	2718	2720	20211116115802.363	20211116115802.797
PX4 (145)	2720	2722	20211116115802.797	20211116115803.227
PX4 (145)	2722	2724	20211116115803.227	20211116115803.660
PX4 (145)	2730	2732	20211116115806.469	20211116115806.902
PX4 (145)	2756	2779	20211116115812.090	20211116115818.578
PX4 (145)	2780	2782	20211116115818.793	20211116115819.227
PX4 (145)	2784	3209	20211116115819.660	20211116120014.250
IMG (150)	13476	13478	20211116112346.384	20211116112346.817
IMG (150)	13478	13480	20211116112346.817	20211116112347.251
IMG (150)	13481	13483	20211116112347.466	20211116112347.899
IMG (150)	13483	13485	20211116112347.899	20211116112348.333
IMG (150)	13485	13487	20211116112348.333	20211116112348.978
IMG (150)	13501	13503	20211116112352.438	20211116112352.872
IMG (150)	13506	13510	20211116112353.521	20211116112354.384
IMG (150)	13510	13512	20211116112354.384	20211116112354.817
IMG (150)	13514	13516	20211116112355.251	20211116112355.681
IMG (150)	13518	13725	20211116112356.114	20211116112444.977
IMG (150)	13726	13728	20211116112445.192	20211116112445.845
IMG (150)	13730	13734	20211116112446.489	20211116112447.356
IMG (150)	13737	13739	20211116112448.005	20211116112448.438
IMG (150)	13750	13752	20211116112450.813	20211116112451.247
IMG (150)	13756	13758	20211116112452.110	20211116112452.544
IMG (150)	5829	5832	20211116115802.145	20211116115802.797
IMG (150)	5833	5835	20211116115803.012	20211116115803.441
IMG (150)	5838	5840	20211116115804.094	20211116115804.523
IMG (150)	5872	5874	20211116115812.090	20211116115812.523
IMG (150)	5874	5901	20211116115812.523	20211116115819.008
IMG (150)	5902	5904	20211116115819.227	20211116115819.660
IMG (150)	5904	5953	20211116115819.660	20211116115831.551
IMG (150)	5953	6385	20211116115831.551	20211116120012.953
VER (160)	2607	2609	20211116112332.548	20211116112340.548
VER (160)	2612	2614	20211116112340.548	20211116112348.548
VER (160)	2614	2616	20211116112348.548	20211116112348.548
VER (160)	2617	2656	20211116112348.548	20211116112452.544
VER (160)	3898	3900	20211116115804.523	20211116115804.523
VER (160)	3900	3902	20211116115804.523	20211116115804.523
VER (160)	3902	3979	20211116115804.523	20211116115831.551
AUX (180)	521	528	20211116112348.978	20211116112444.977
AUX (180)	778	780	20211116115804.957	20211116115820.957
AUX (180)	780	794	20211116115820.957	20211116120012.953

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
16/11/2021 00:28:39	-	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)	99.45 %	-
GQisFlagQual set (PX2)	99.44 %	-
GQisFlagQual set (PX3)	99.44 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.45 %	-

Table 4: Quality flags

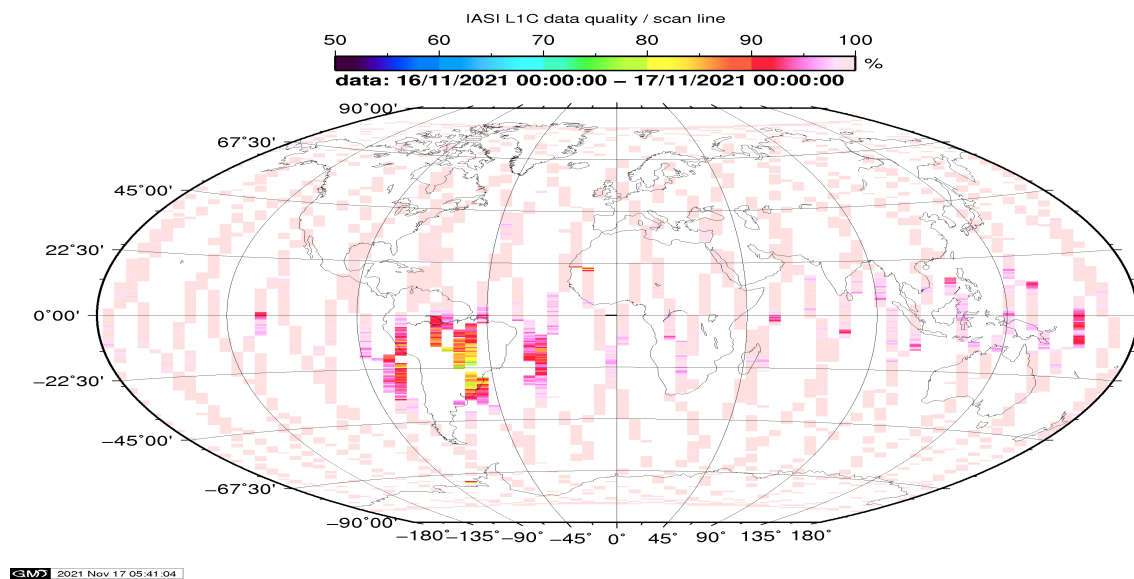


Figure 1: L1C data quality

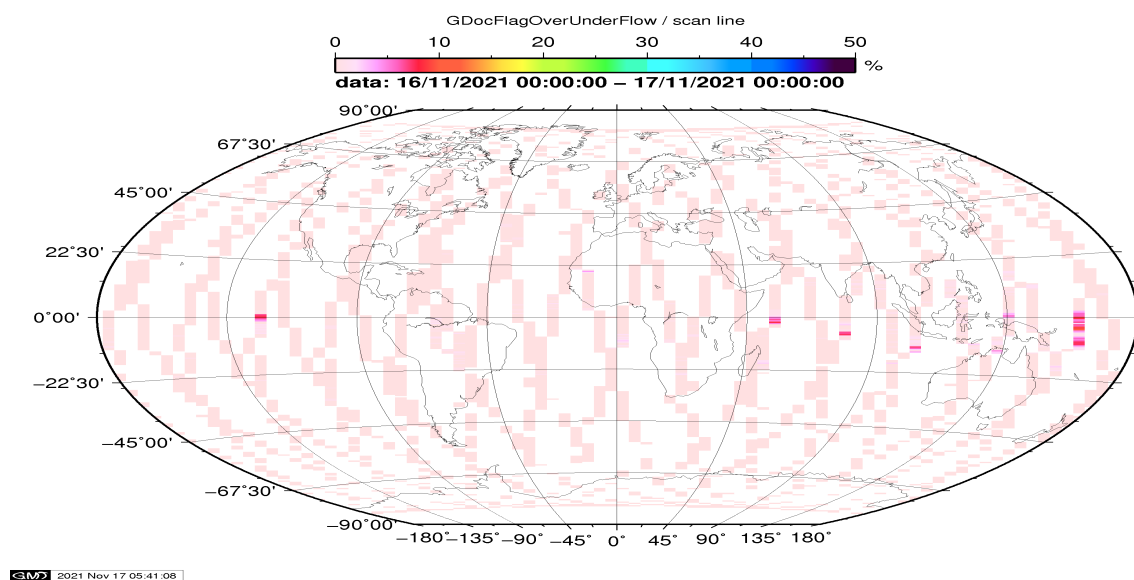


Figure 2: Flag of Over and Under Flows



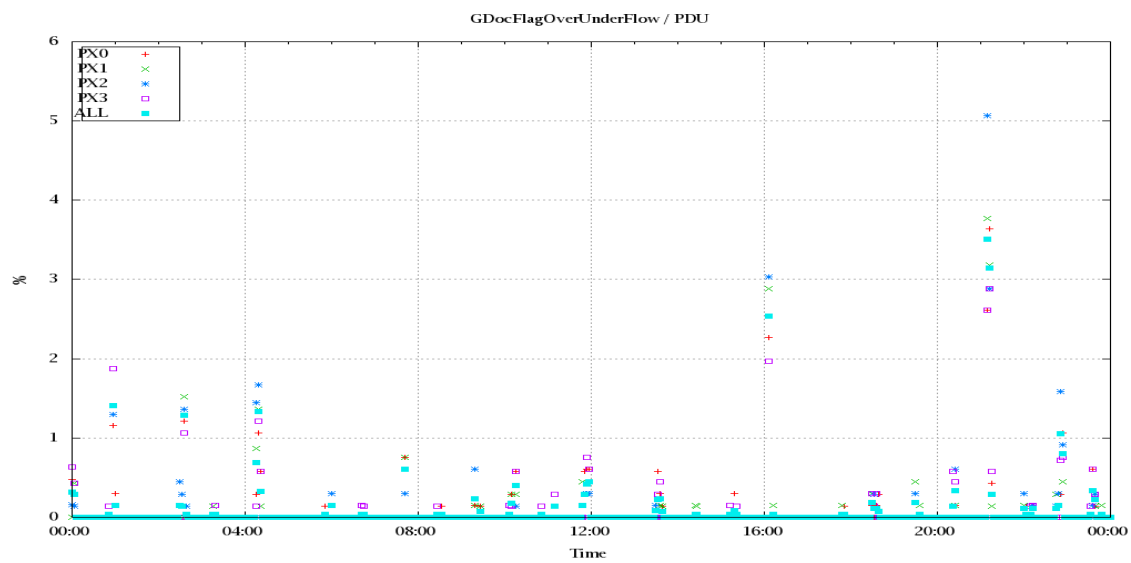


Figure 5: Timeseries of flag of Over and Under Flows

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.

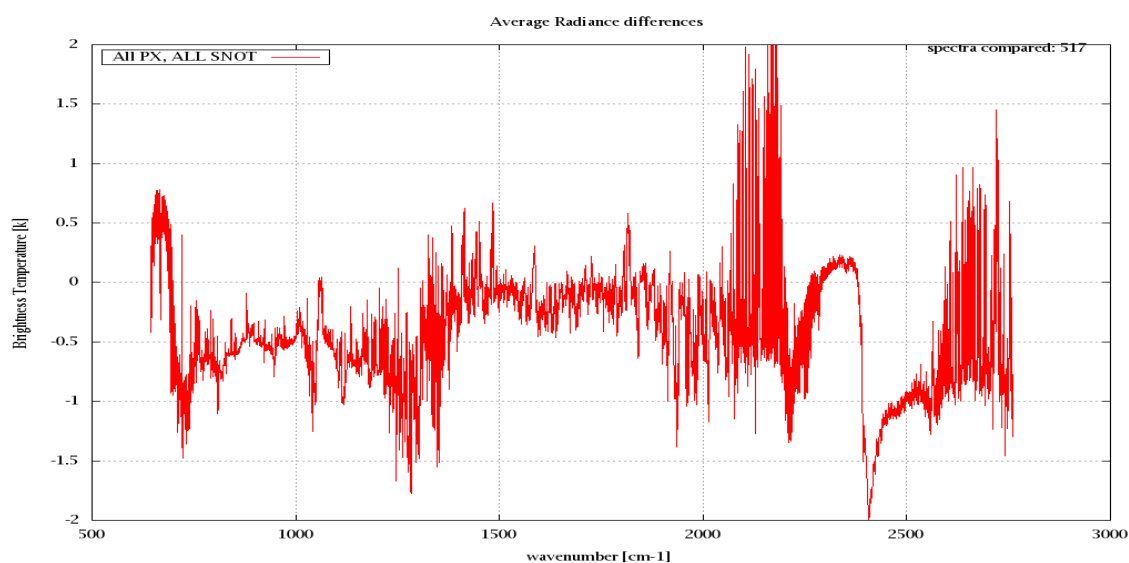


Figure 6: Average Radiance differences: OBS-CAL

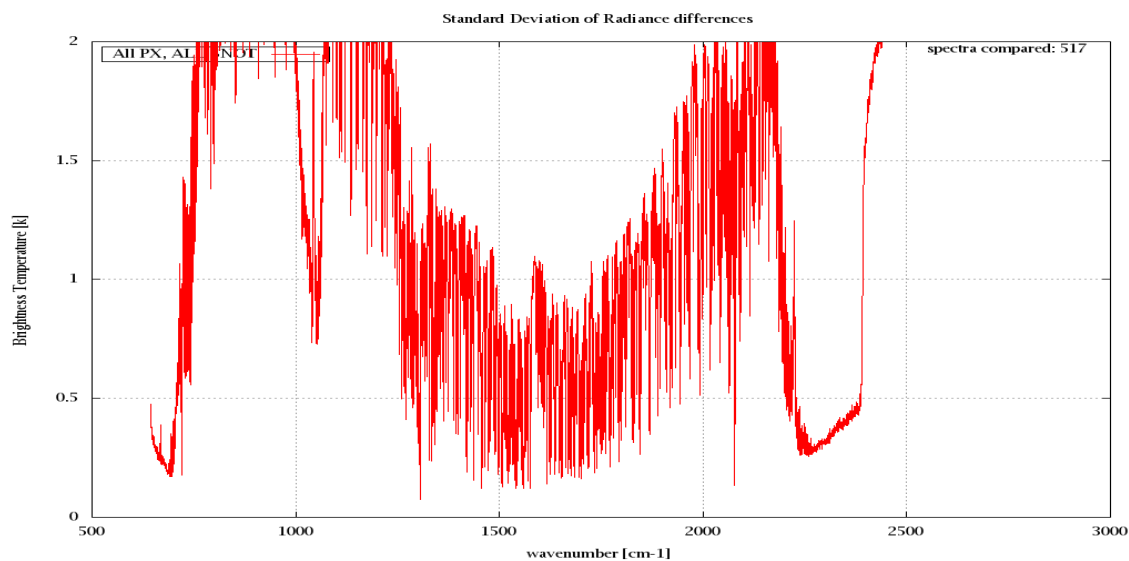


Figure 7: Standard Deviation of Radiance differences

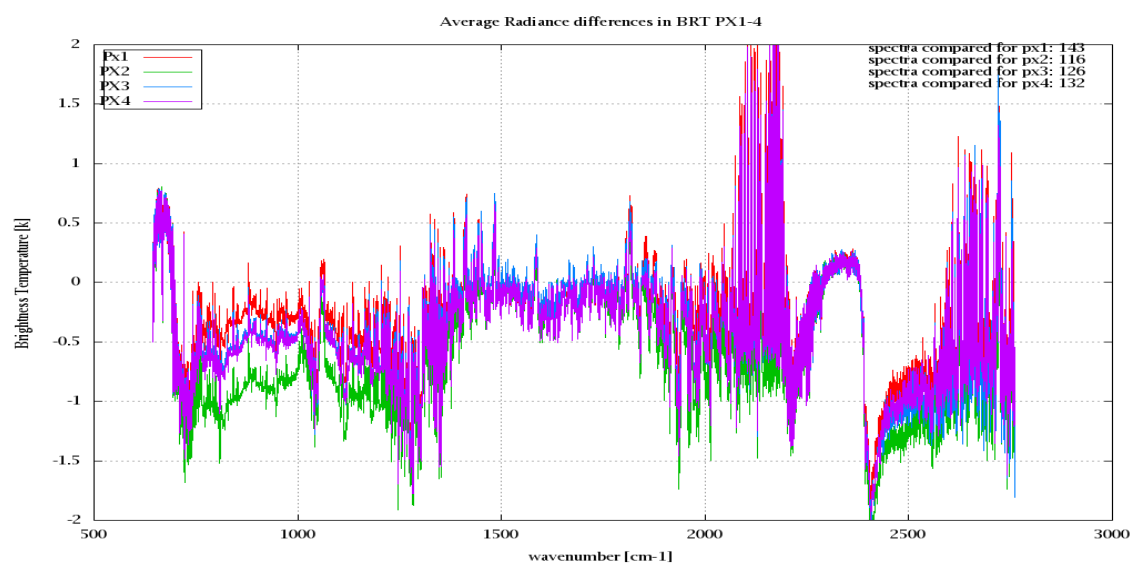


Figure 8: Average Radiance differences: OBS-CAL

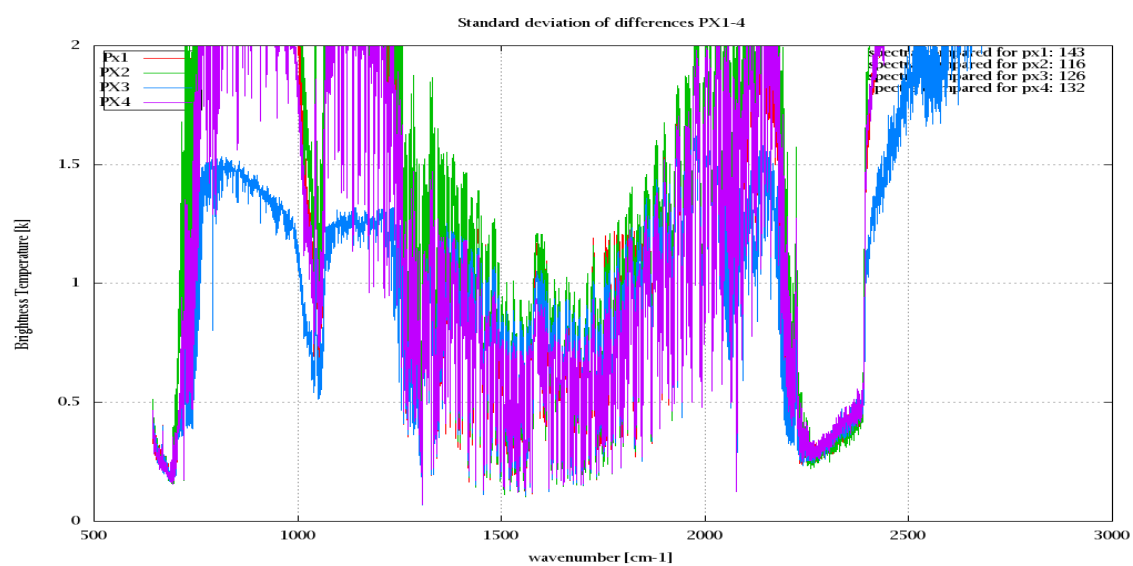


Figure 9: Standard Deviation of Radiance differences

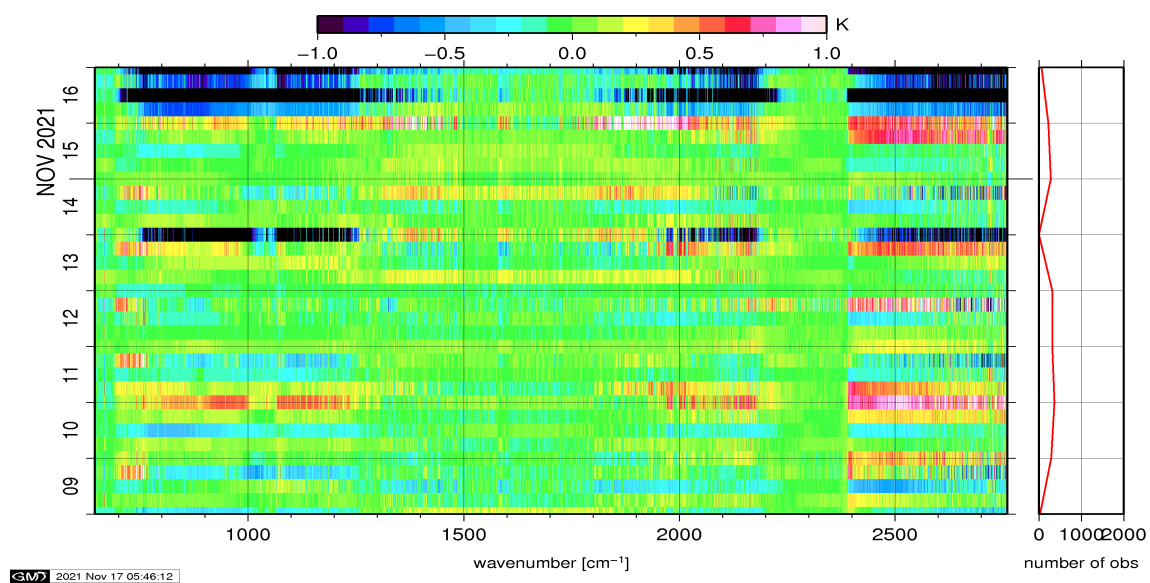


Figure 10: Radiance Anomaly in BT: All Channels

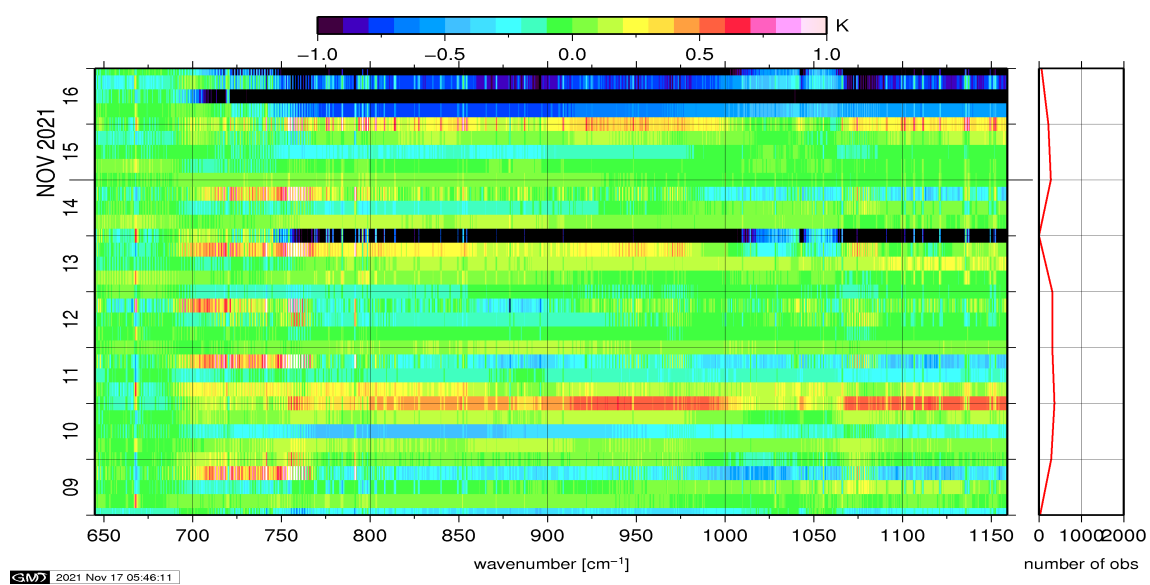


Figure 11: Radiance Anomaly in BT: IASI Band 1

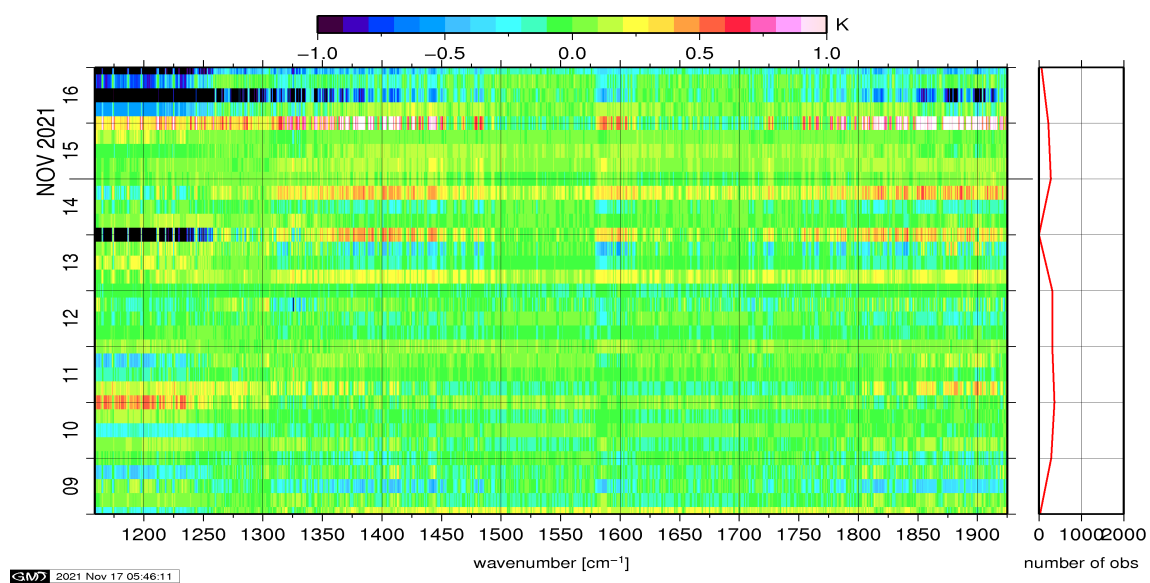


Figure 12: Radiance Anomaly in BT: IASI Band 2

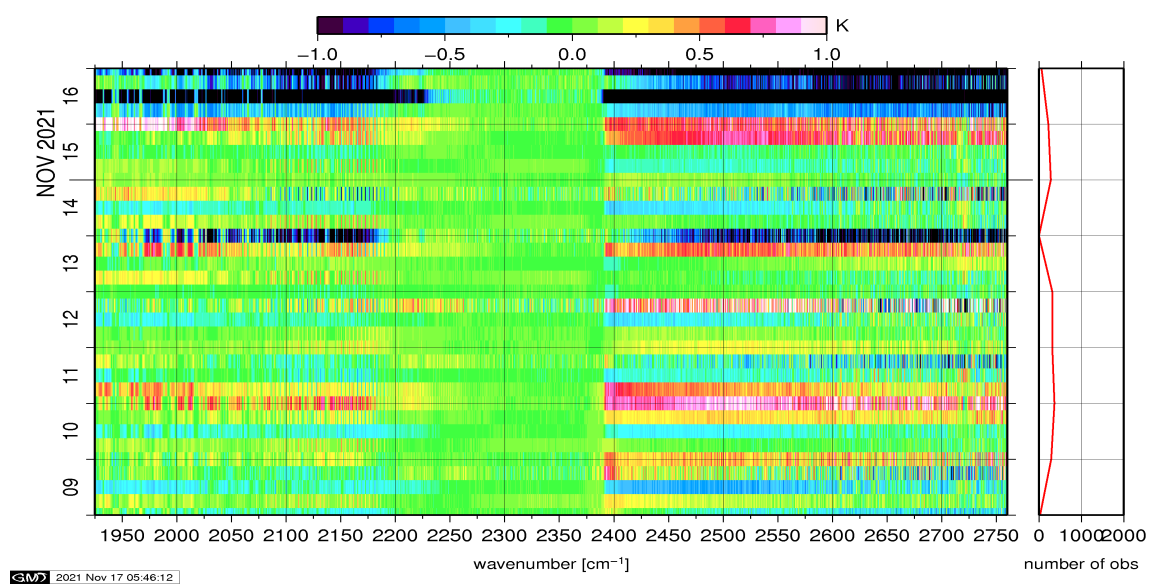


Figure 13: Radiance Anomaly in BT: IASI Band 3

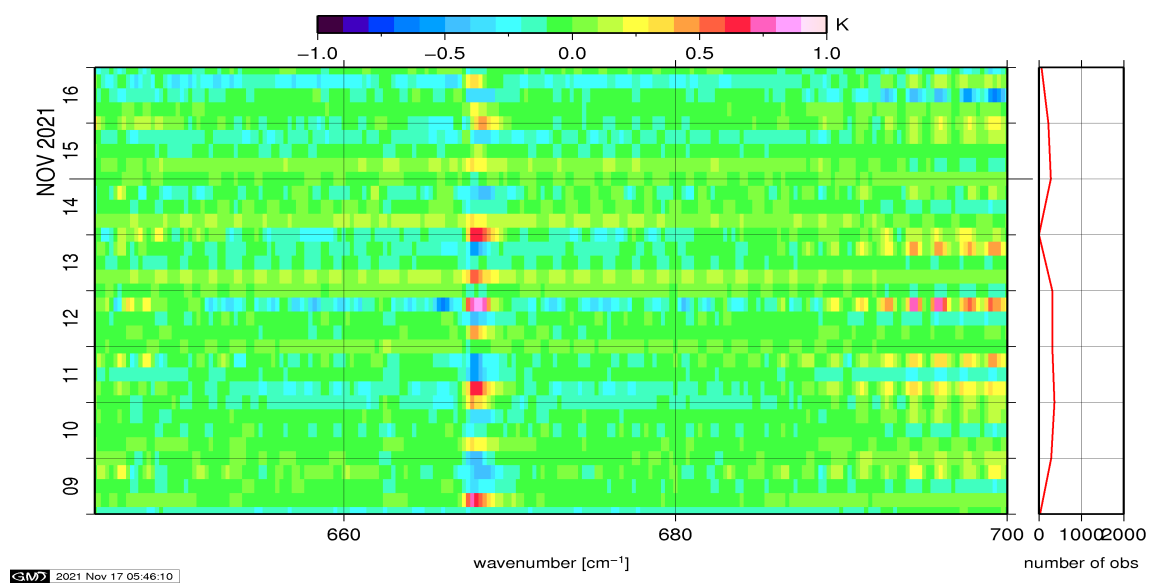


Figure 14: Radiance Anomaly in BT: CO2 14

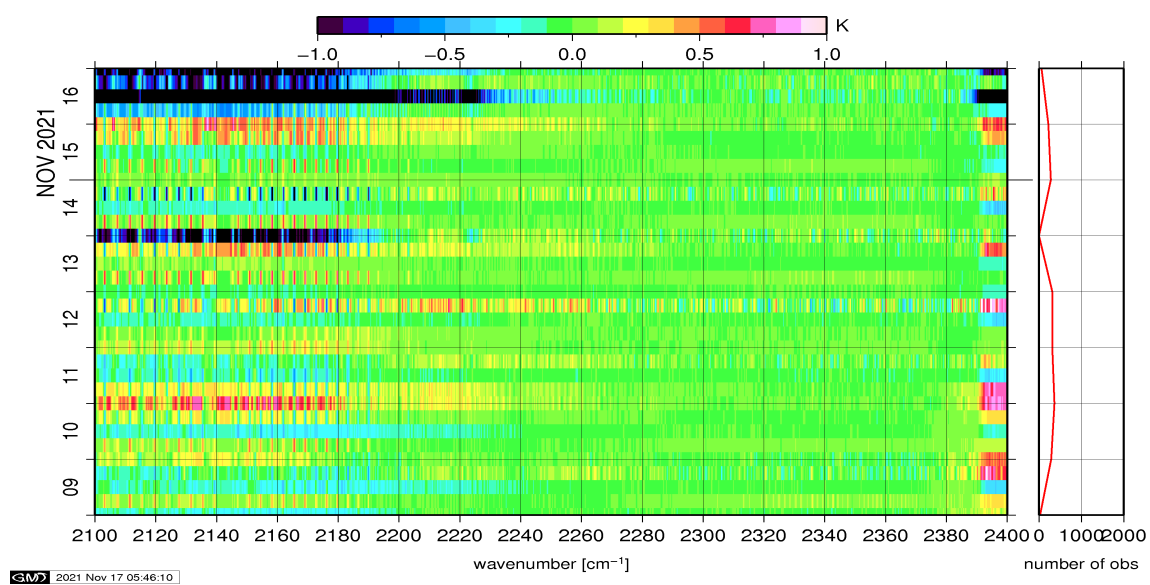


Figure 15: Radiance Anomaly in BT: CO2 4.3

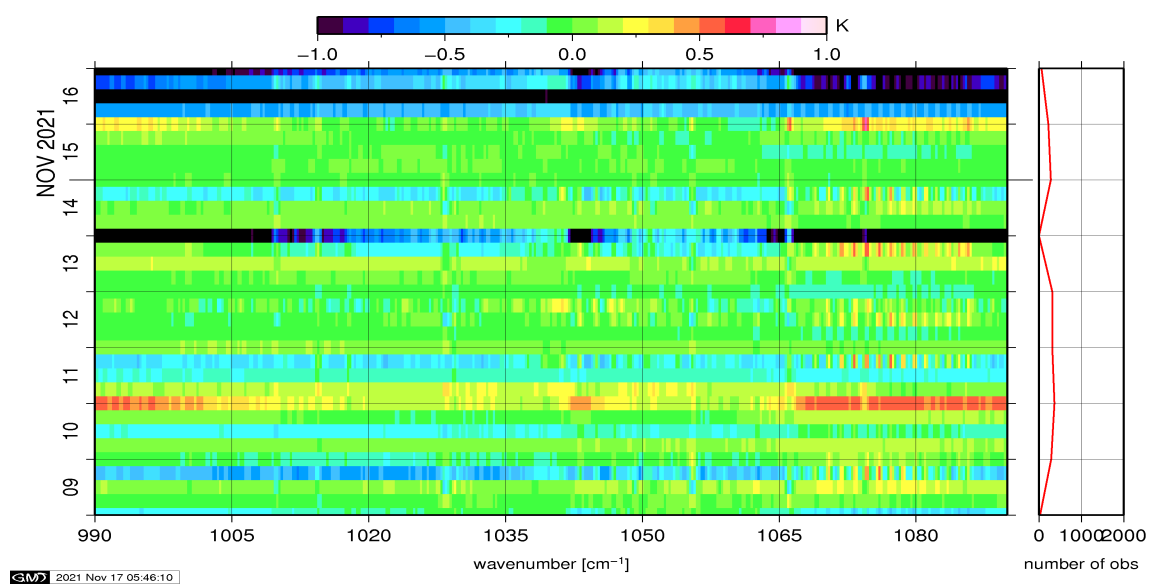


Figure 16: Radiance Anomaly in BT: O3

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.

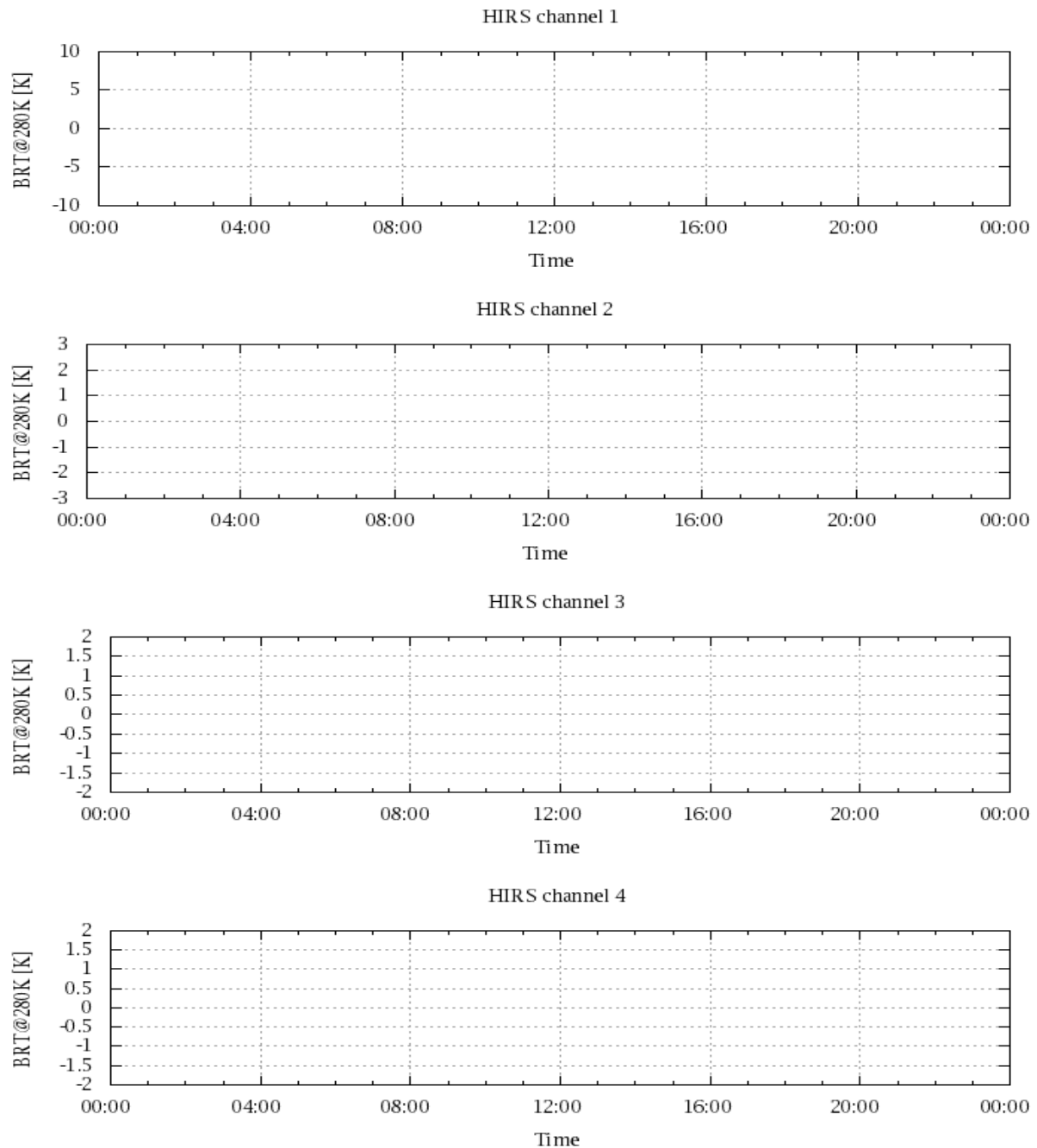


Figure 17: Radiance Differences in BT

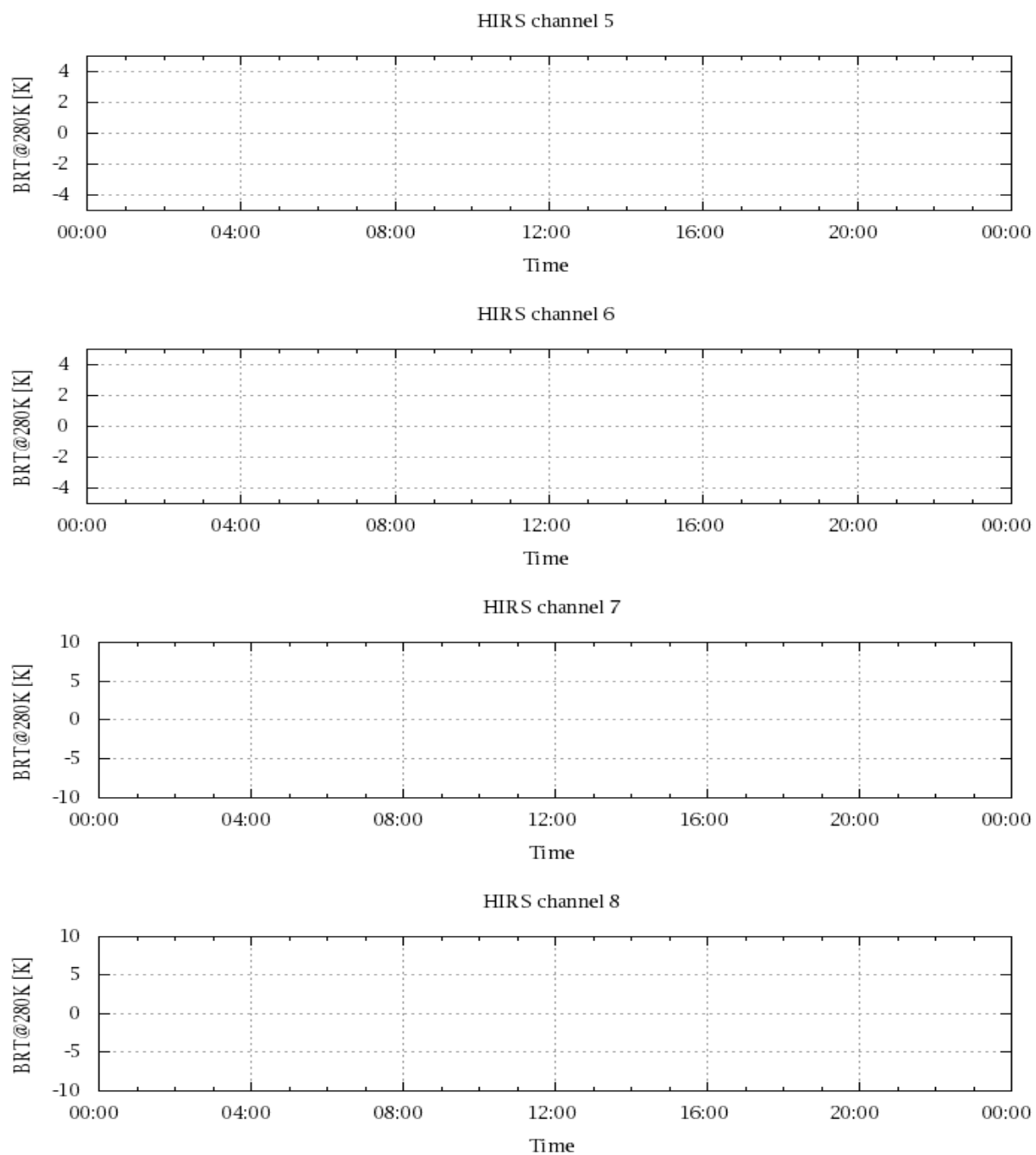


Figure 18: Radiance Differences in BT

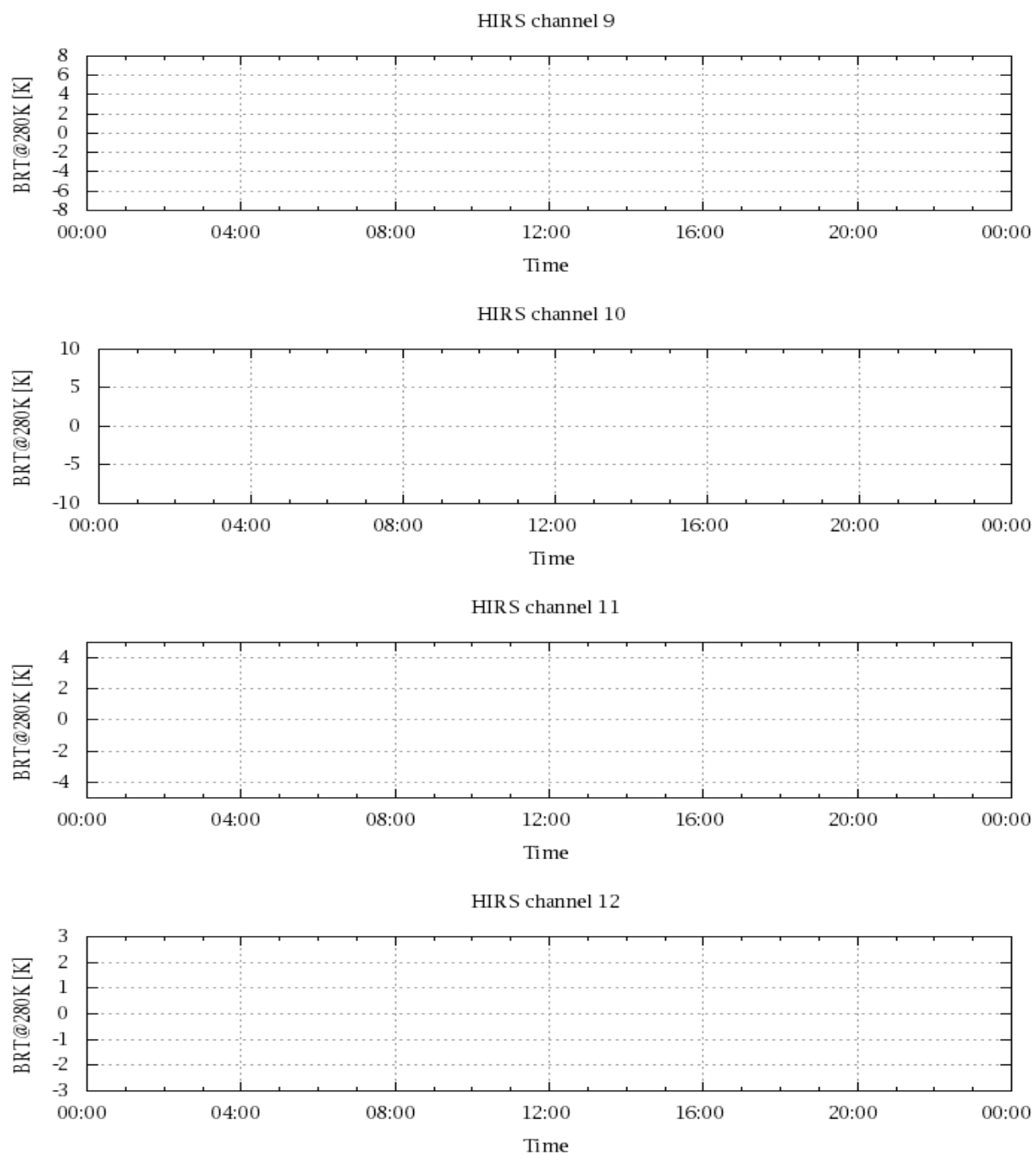


Figure 19: Radiance Differences in BT

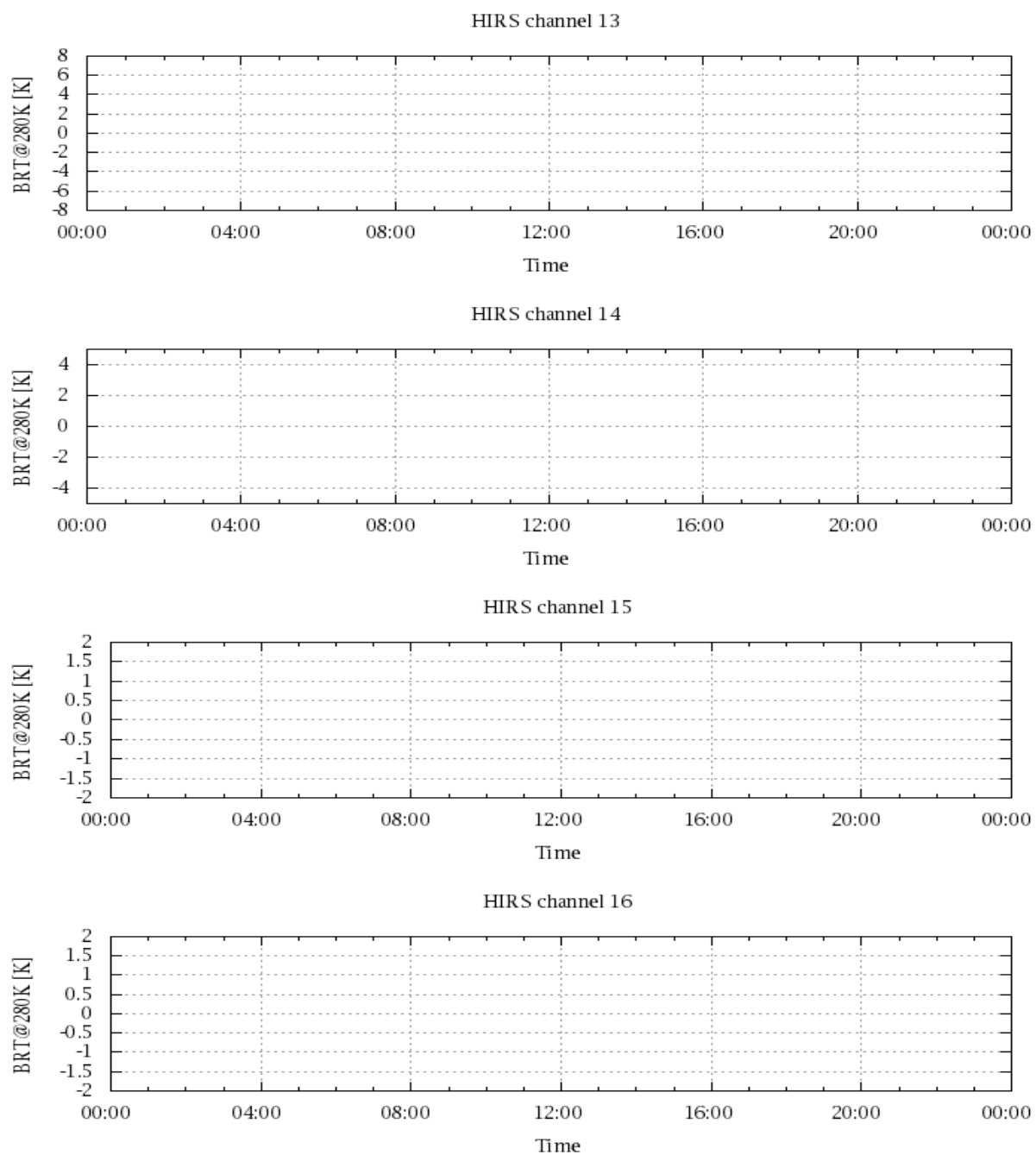


Figure 20: Radiance Differences in BT

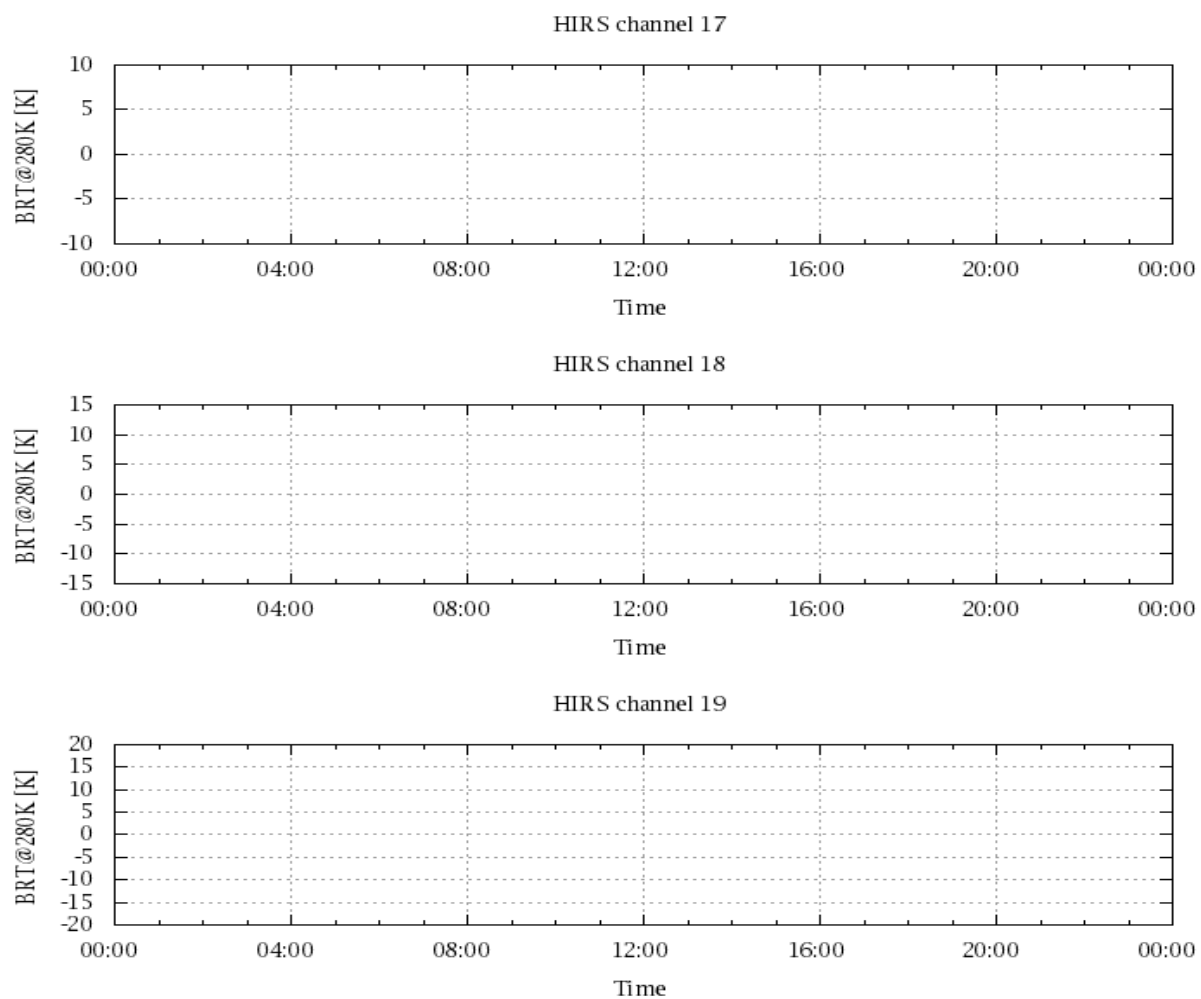


Figure 21: Radinace Differences in BT