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

IASI monitoring team

29/09/2023 00:00:00 - 30/09/2023 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 29/09/2023 00:00:00 - 30/09/2023 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 29/09/2023 00:00:00 - 30/09/2023 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	478	-
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)	3701	3703	20230929073127.108	20230929073127.541
PX1 (130)	3708	3710	20230929073128.623	20230929073129.053
PX1 (130)	3717	3719	20230929073132.080	20230929073132.514
PX1 (130)	3721	3723	20230929073132.947	20230929073133.377
PX1 (130)	3724	3726	20230929073133.596	20230929073134.029
PX1 (130)	3806	3887	20230929073154.354	20230929073216.404
PX1 (130)	3897	3899	20230929073220.080	20230929073220.514
PX1 (130)	3913	3915	20230929073223.537	20230929073223.971
PX1 (130)	3920	3922	20230929073225.053	20230929073225.486
PX1 (130)	3936	3938	20230929073230.025	20230929073230.459
PX1 (130)	3950	3952	20230929073233.053	20230929073233.486
PX1 (130)	4046	4107	20230929073258.350	20230929073316.080
PX1 (130)	4134	4136	20230929073321.916	20230929073322.350
PX1 (130)	4141	4143	20230929073324.943	20230929073325.381
PX1 (130)	4157	4159	20230929073328.420	20230929073328.853
PX1 (130)	4164	4166	20230929073329.943	20230929073330.377
PX2 (135)	3694	3696	20230929073125.596	20230929073126.026
PX2 (135)	3710	3712	20230929073129.053	20230929073129.486
PX2 (135)	3725	3727	20230929073133.811	20230929073134.244

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	3806	3887	20230929073154.354	20230929073216.404
PX2 (135)	3906	3908	20230929073222.025	20230929073222.459
PX2 (135)	3929	3931	20230929073228.514	20230929073228.943
PX2 (135)	3945	3947	20230929073231.971	20230929073232.404
PX2 (135)	4046	4107	20230929073258.350	20230929073316.080
PX2 (135)	4150	4152	20230929073326.900	20230929073327.334
PX3 (140)	3703	3705	20230929073127.541	20230929073127.975
PX3 (140)	3719	3722	20230929073132.514	20230929073133.162
PX3 (140)	3726	3728	20230929073134.029	20230929073134.459
PX3 (140)	3806	3887	20230929073154.354	20230929073216.404
PX3 (140)	3922	3924	20230929073225.486	20230929073225.920
PX3 (140)	3938	3940	20230929073230.459	20230929073230.889
PX3 (140)	3945	3947	20230929073231.971	20230929073232.404
PX3 (140)	3952	3955	20230929073233.486	20230929073234.135
PX3 (140)	4046	4107	20230929073258.350	20230929073316.080
PX3 (140)	4113	4115	20230929073317.377	20230929073317.810
PX3 (140)	4136	4138	20230929073322.350	20230929073324.295
PX3 (140)	4143	4145	20230929073325.381	20230929073325.814
PX3 (140)	4159	4161	20230929073328.853	20230929073329.287
PX4 (145)	3696	3698	20230929073126.026	20230929073126.459
PX4 (145)	3712	3714	20230929073129.486	20230929073129.920
PX4 (145)	3806	3887	20230929073154.354	20230929073216.404
PX4 (145)	3908	3910	20230929073222.459	20230929073222.893
PX4 (145)	3915	3917	20230929073223.971	20230929073224.404
PX4 (145)	3931	3933	20230929073228.943	20230929073229.377
PX4 (145)	4046	4107	20230929073258.350	20230929073316.080
PX4 (145)	4129	4131	20230929073320.834	20230929073321.268
IMG (150)	9949	9951	20230929073124.514	20230929073124.947
IMG (150)	9958	9960	20230929073126.459	20230929073126.893
IMG (150)	9965	9967	20230929073127.975	20230929073128.408
IMG (150)	9967	9969	20230929073128.408	20230929073128.838
IMG (150)	9972	9974	20230929073129.486	20230929073129.920
IMG (150)	9974	9976	20230929073129.920	20230929073130.350
IMG (150)	9985	9987	20230929073132.947	20230929073133.377
IMG (150)	10080	10171	20230929073154.998	20230929073216.404
IMG (150)	10184	10186	20230929073219.647	20230929073220.295
IMG (150)	10198	10200	20230929073222.893	20230929073223.322
IMG (150)	10205	10207	20230929073224.404	20230929073224.838
IMG (150)	10212	10214	20230929073225.920	20230929073226.350
IMG (150)	10218	10220	20230929073227.647	20230929073228.295
IMG (150)	10225	10227	20230929073229.377	20230929073229.811
IMG (150)	10232	10234	20230929073230.889	20230929073231.322
IMG (150)	10234	10236	20230929073231.322	20230929073231.756
IMG (150)	10239	10241	20230929073232.404	20230929073232.838
IMG (150)	10241	10243	20230929073232.838	20230929073233.268
IMG (150)	10353	10419	20230929073259.432	20230929073314.783
IMG (150)	10431	10433	20230929073317.810	20230929073318.240
IMG (150)	10447	10449	20230929073321.268	20230929073321.701
IMG (150)	10458	10460	20230929073324.295	20230929073324.728
IMG (150)	10460	10462	20230929073324.728	20230929073325.162
IMG (150)	10465	10467	20230929073325.814	20230929073326.248
IMG (150)	10467	10469	20230929073326.248	20230929073326.682
IMG (150)	10479	10485	20230929073328.853	20230929073330.158

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APID	Seq from	Seq to	Time from	Time to
VER (160)	11974	11976	20230929073122.354	20230929073130.350
VER (160)	11976	11980	20230929073130.350	20230929073138.354
VER (160)	11994	12005	20230929073154.354	20230929073218.350
VER (160)	12006	12015	20230929073218.350	20230929073234.350
VER (160)	12034	12042	20230929073258.350	20230929073259.432
VER (160)	12044	12049	20230929073259.432	20230929073305.701
AUX (180)	5664	5667	20230929073154.783	20230929073218.783
AUX (180)	5672	5674	20230929073258.783	20230929073314.783

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
29/09/2023 00:06:55	-	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	478	-
GQisFlagQual set (PX1)	99.63 %	-
GQisFlagQual set (PX2)	99.71 %	-
GQisFlagQual set (PX3)	99.71 %	-
GQisFlagQual set (PX4)	99.63 %	-
GQisFlagQual set (all)	99.67 %	-

Table 4: Quality flags

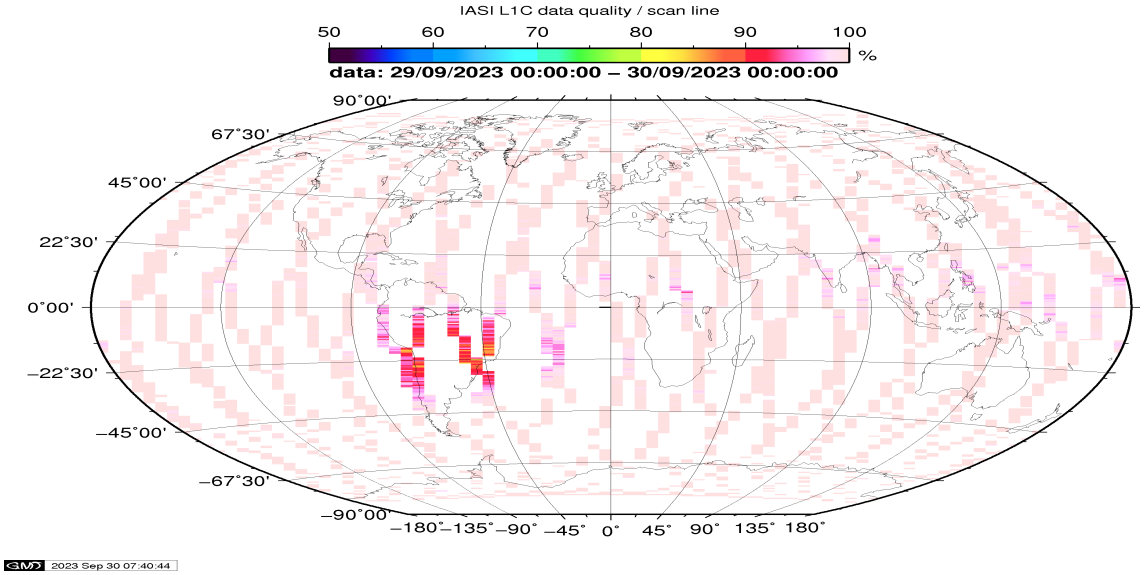

Figure 1: L1C data quality

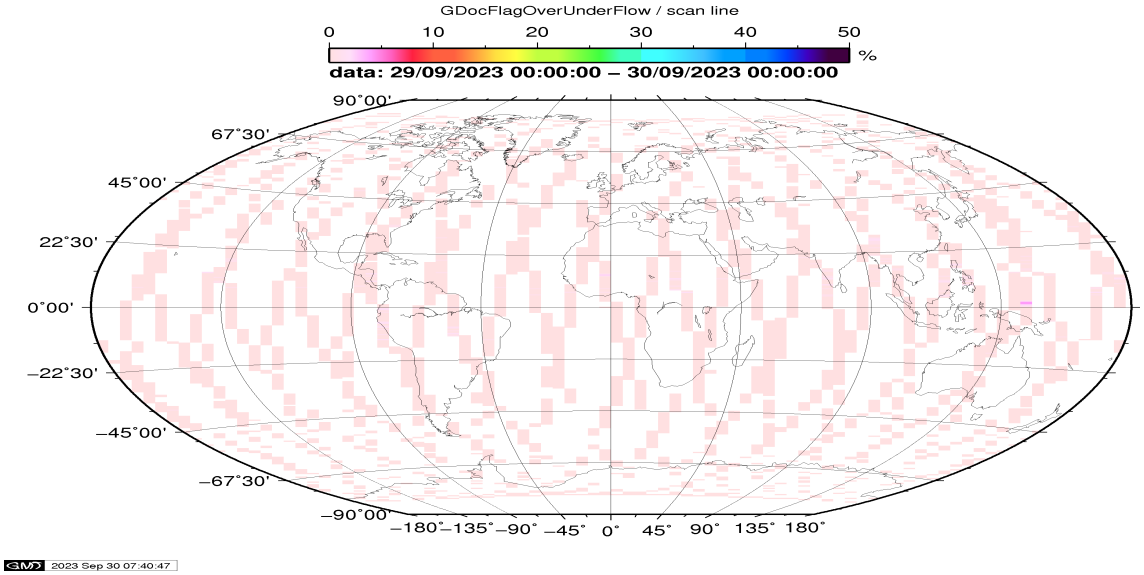

Figure 2: Flag of Over and Under Flows

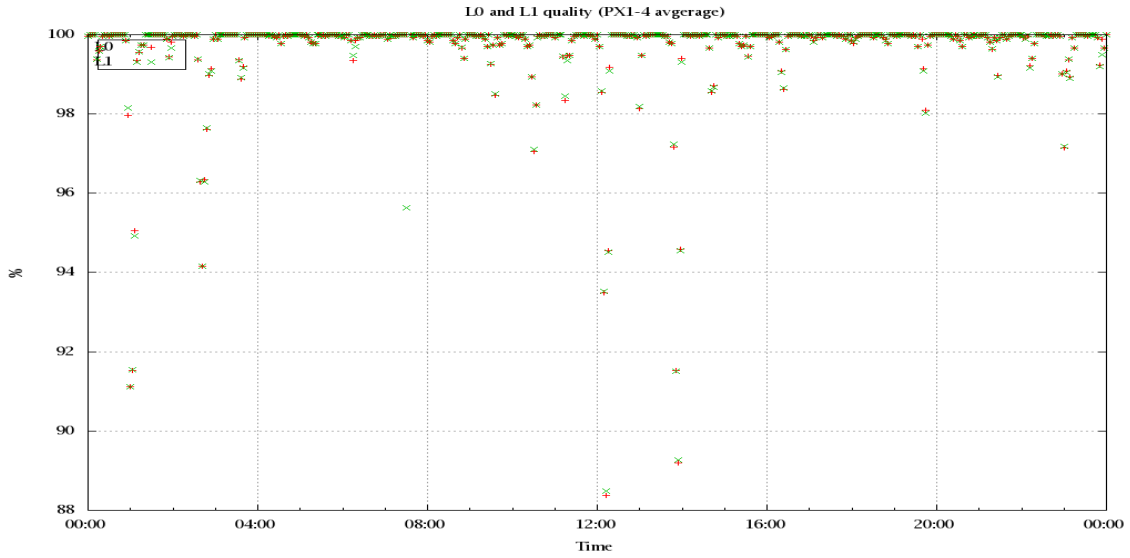

Figure 3: Level 0 and 1C overall quality

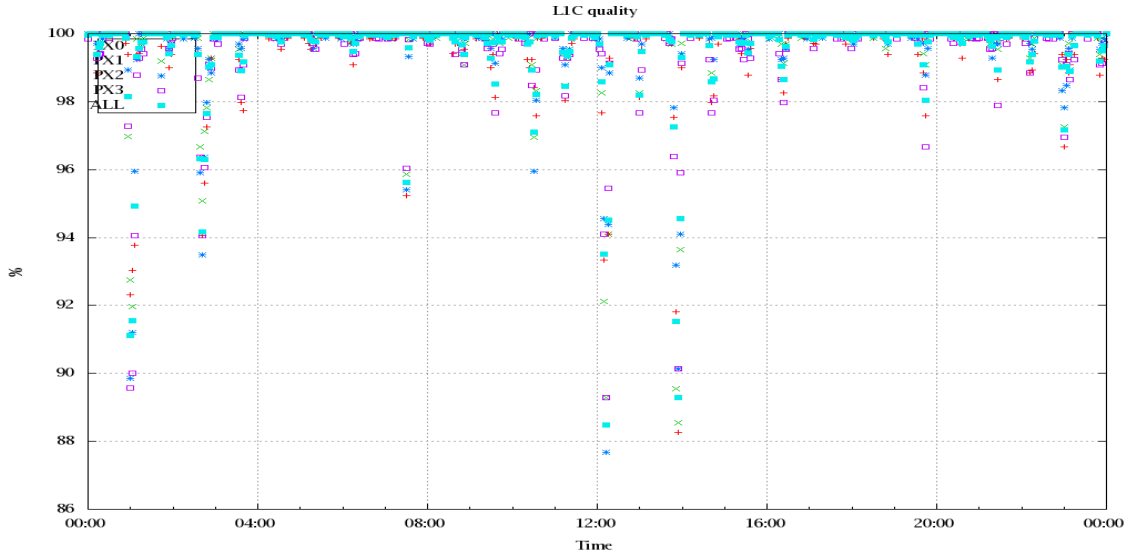

Figure 4: Level 1C quality

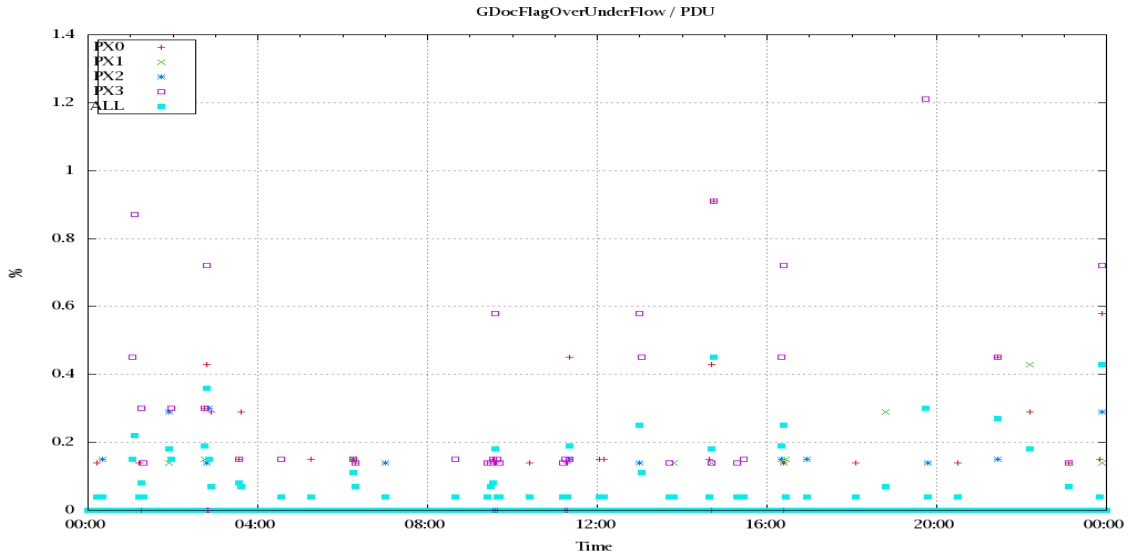

Figure 5: Timeseries of flag of Over and Under Flows

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.

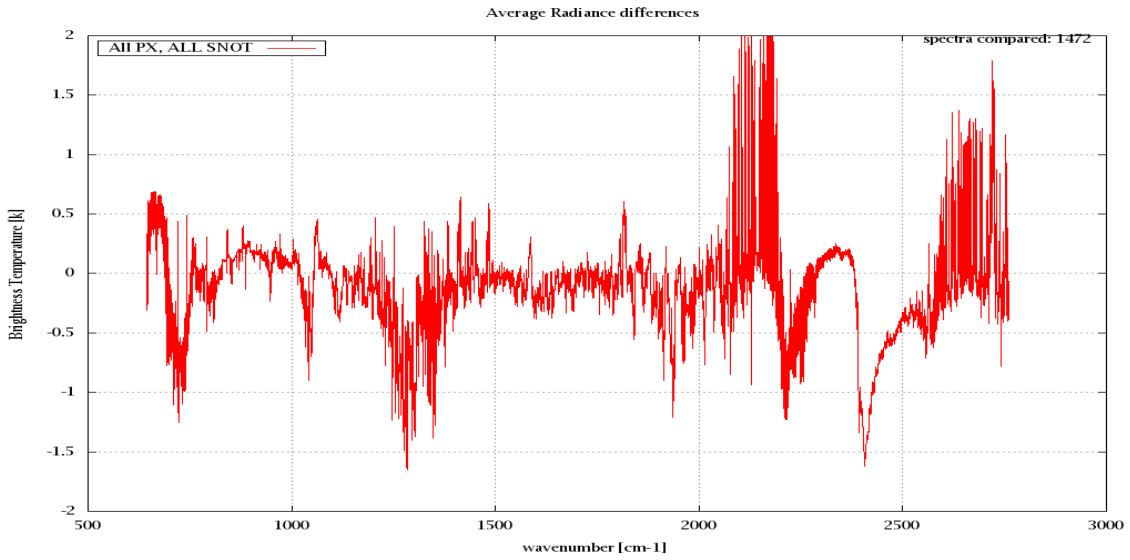

Figure 6: Average Radiance differences: OBS-CAL

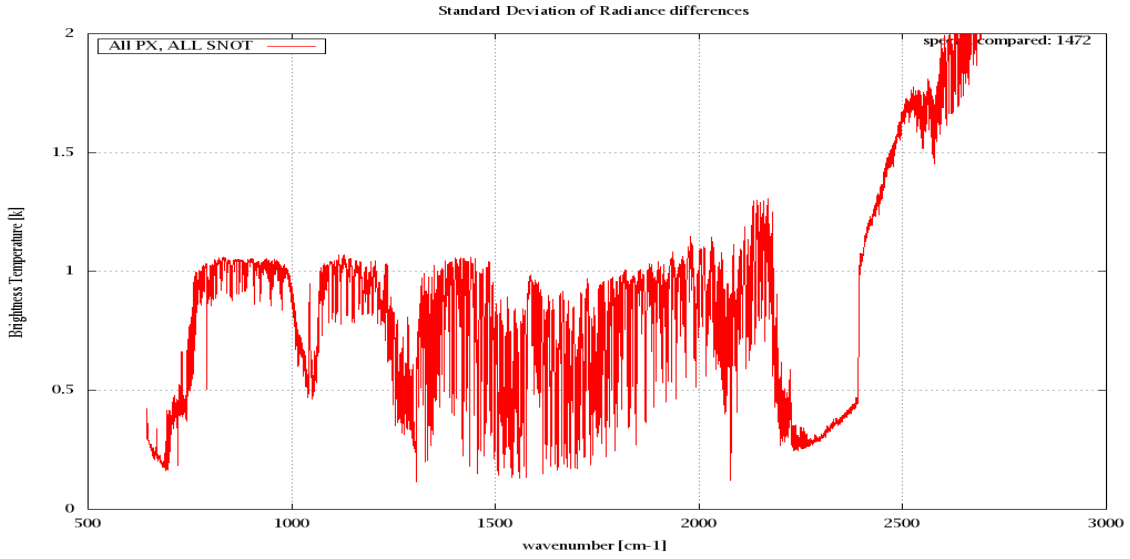

Figure 7: Standard Deviation of Radiance differences

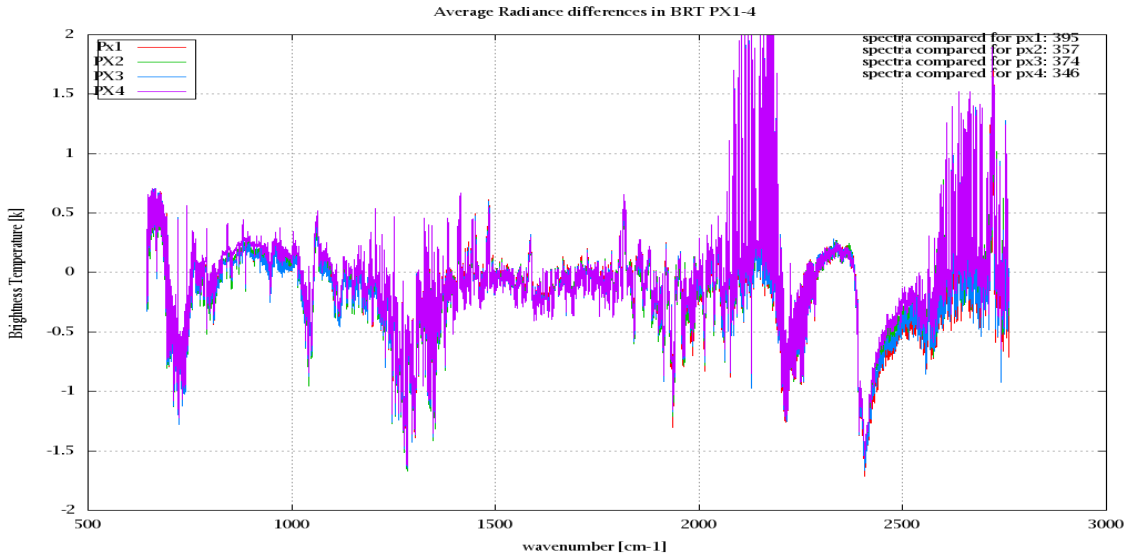

Figure 8: Average Radiance differences: OBS-CAL

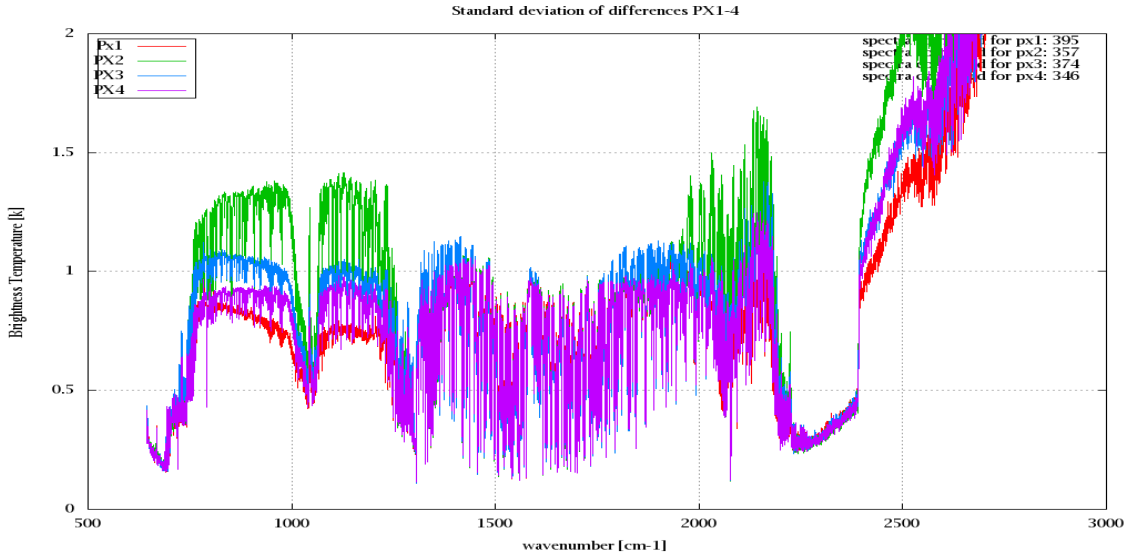

Figure 9: Standard Deviation of Radiance differences

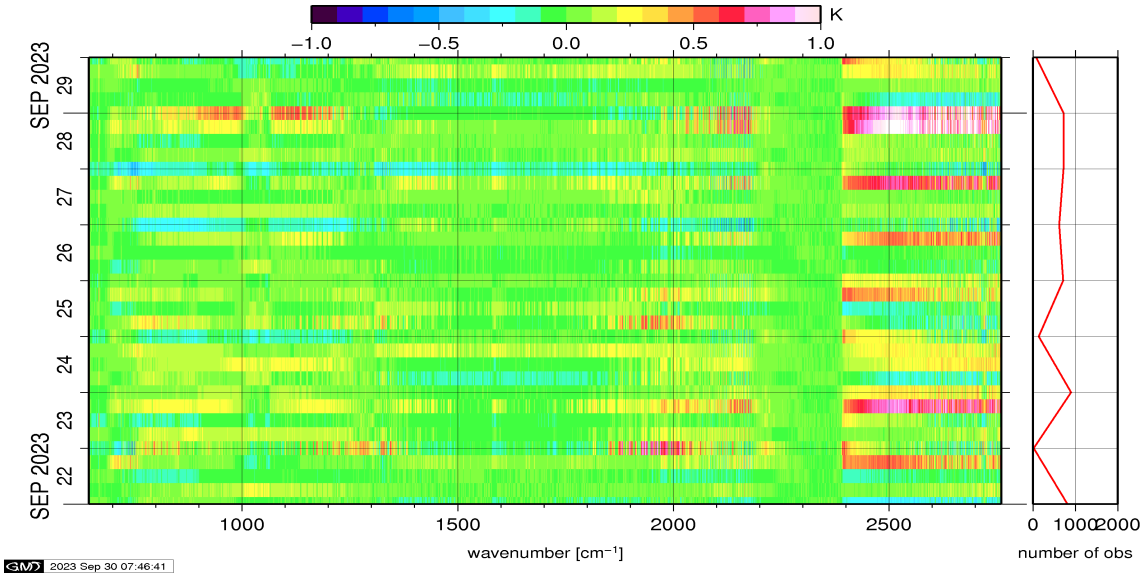

Figure 10: Radiance Anomaly in BT: All Channels

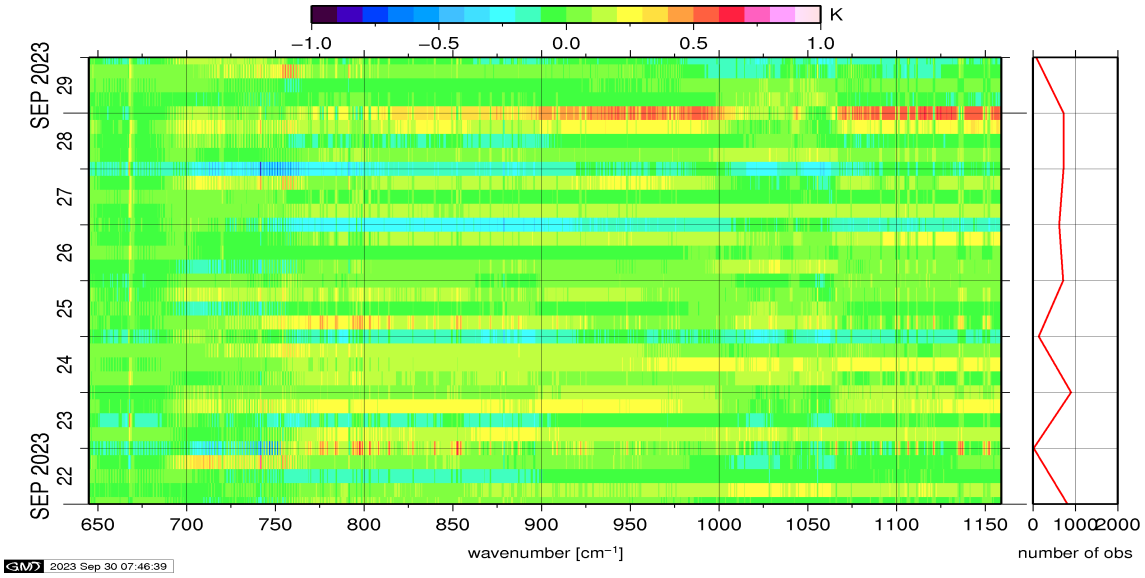

Figure 11: Radiance Anomaly in BT: IASI Band 1

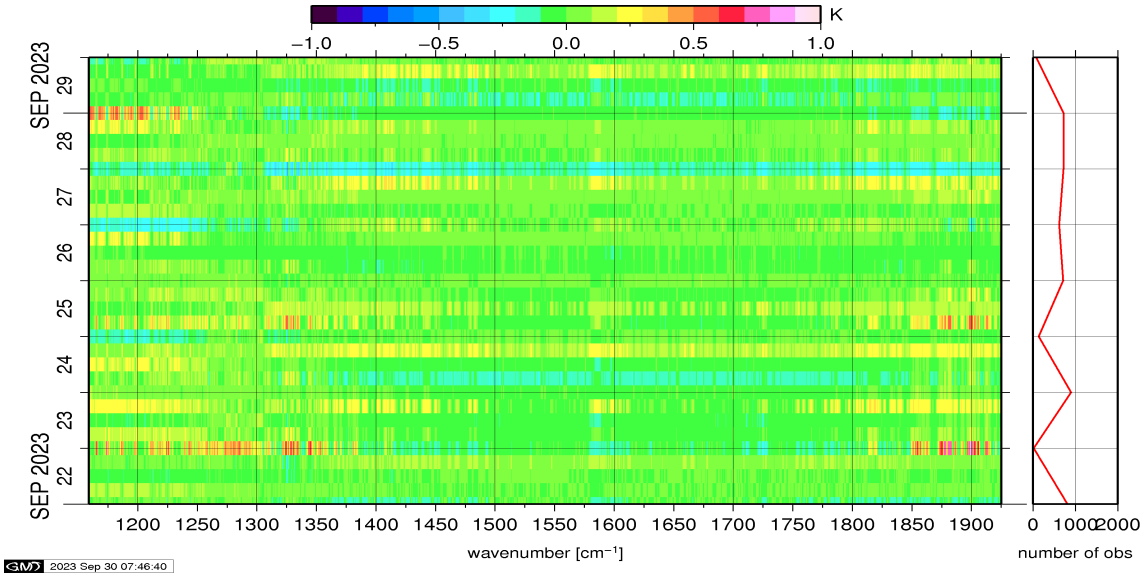

Figure 12: Radiance Anomaly in BT: IASI Band 2

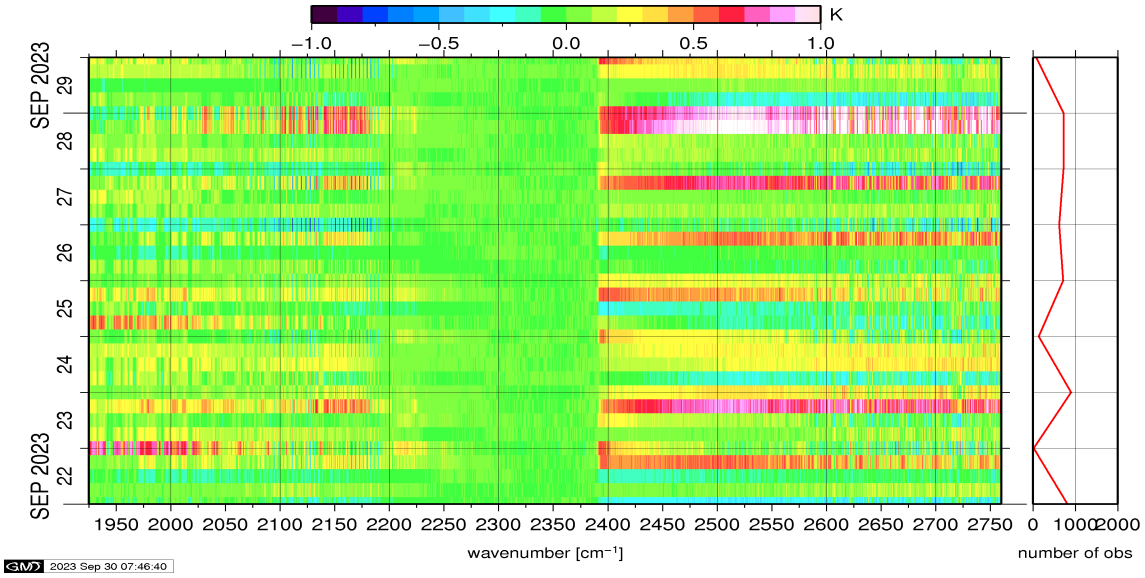

Figure 13: Radiance Anomaly in BT: IASI Band 3

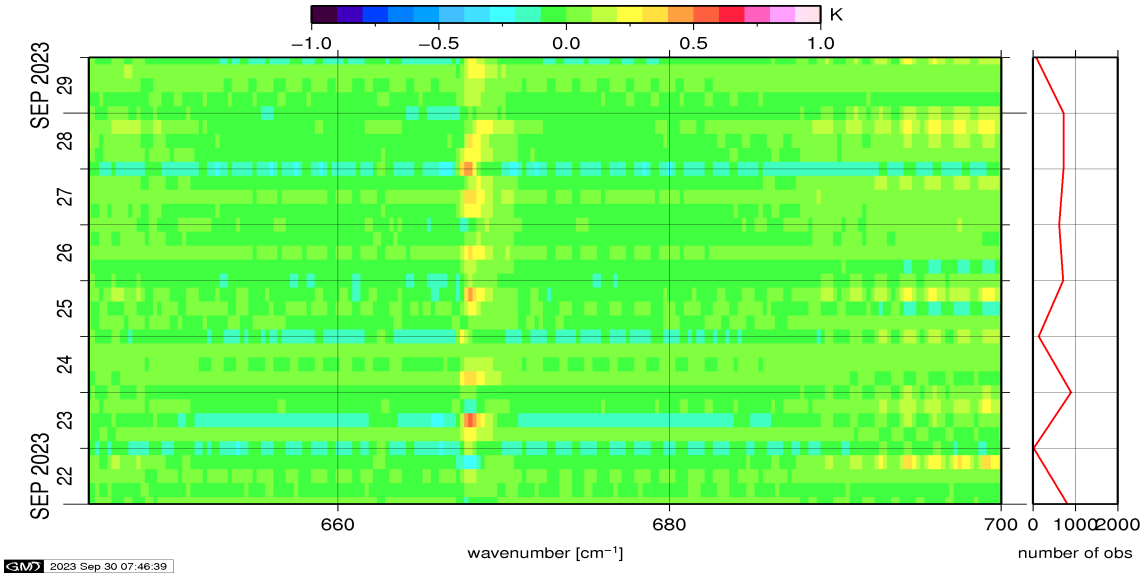

Figure 14: Radiance Anomaly in BT: CO2 14

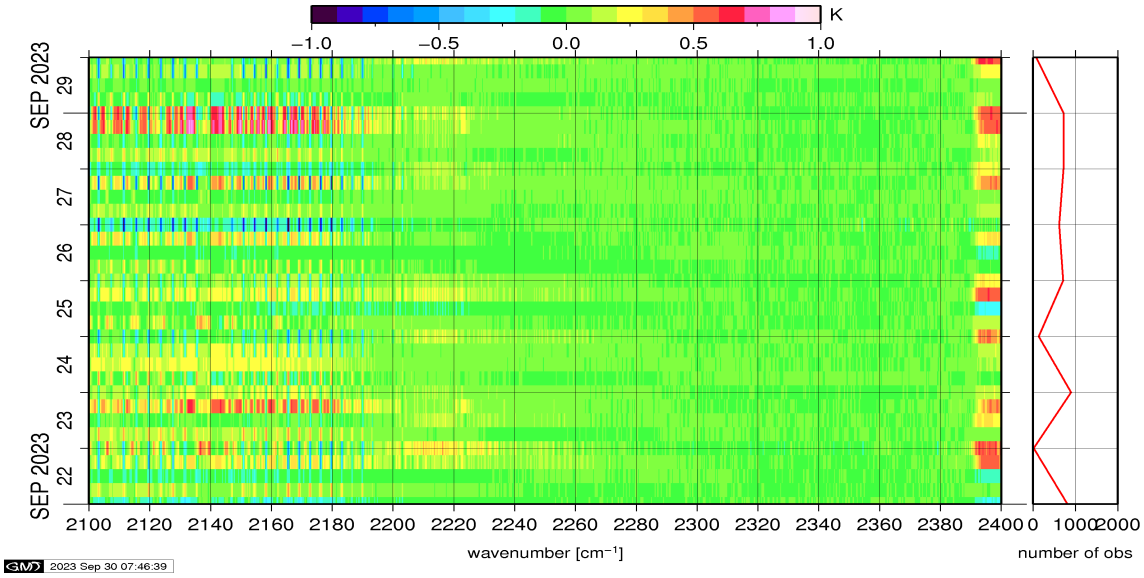

Figure 15: Radiance Anomaly in BT: CO2 4.3

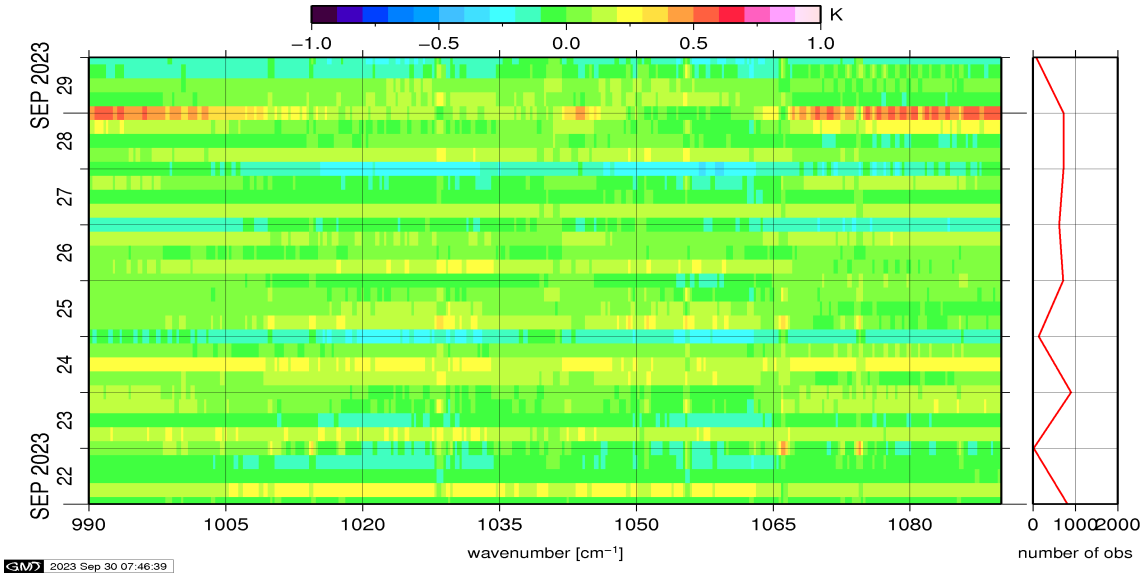

Figure 16: Radiance Anomaly in BT: O3

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.

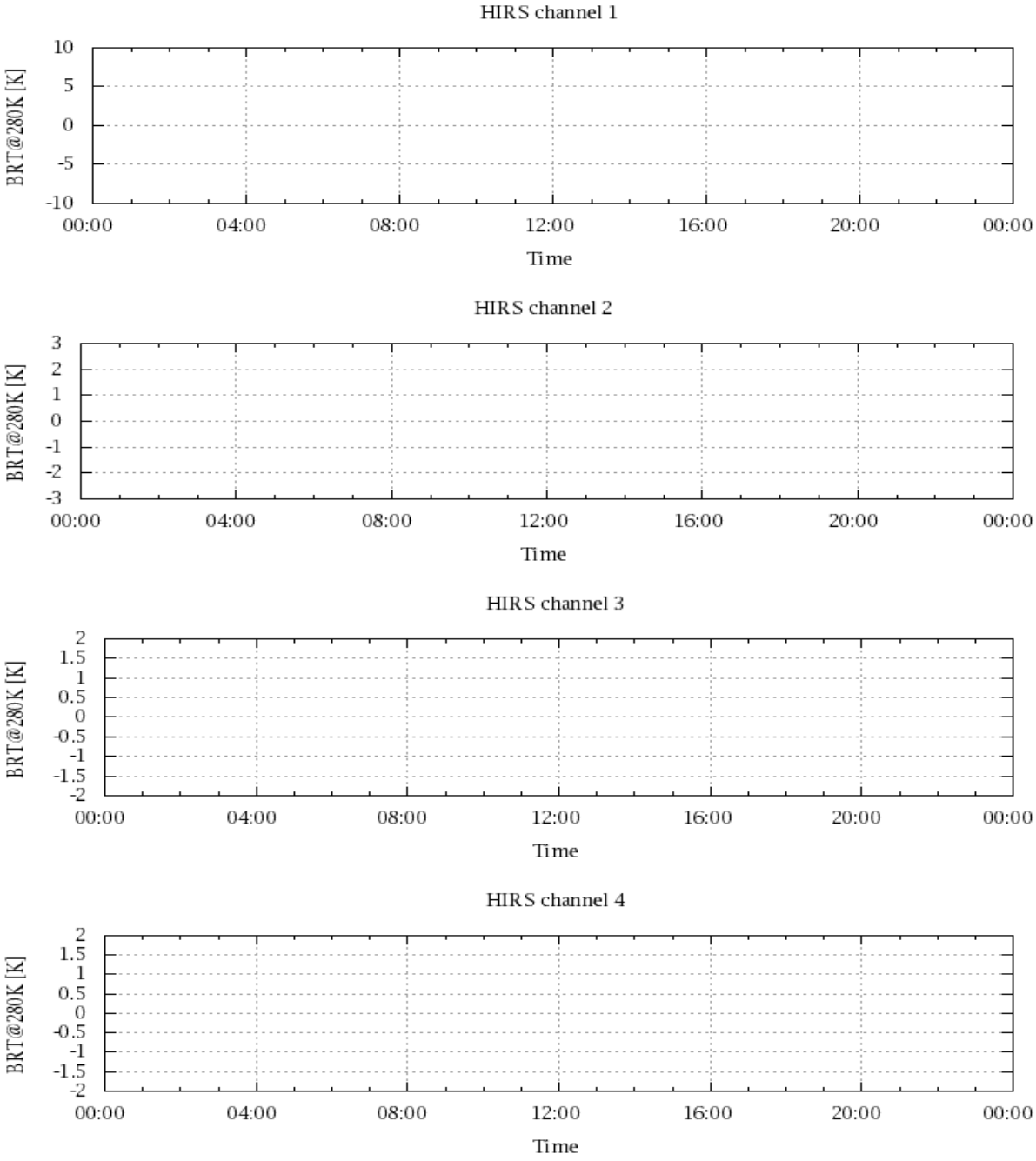

Figure 17: Radiance Differences in BT

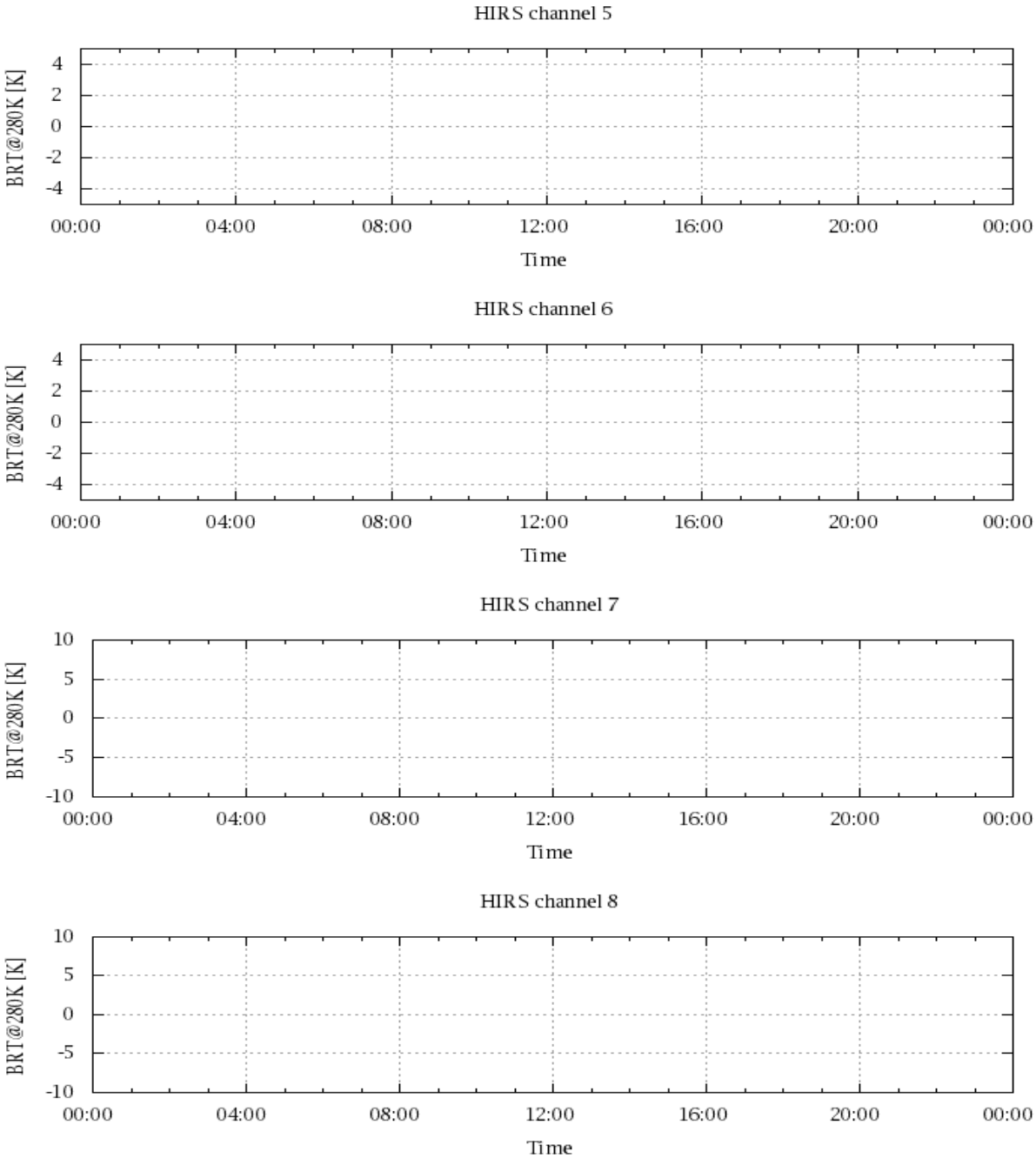

Figure 18: Radiance Differences in BT

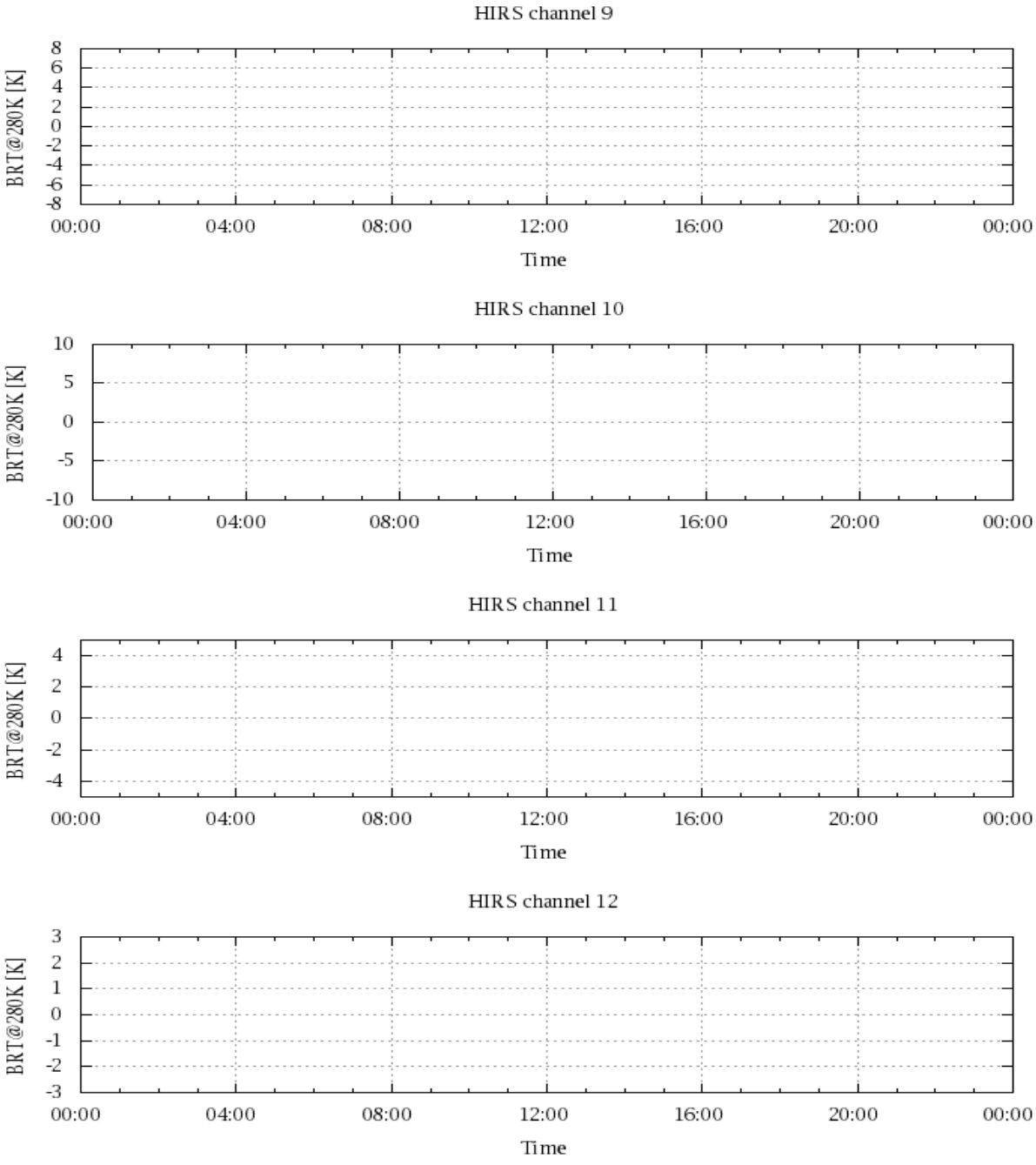

Figure 19: Radiance Differences in BT

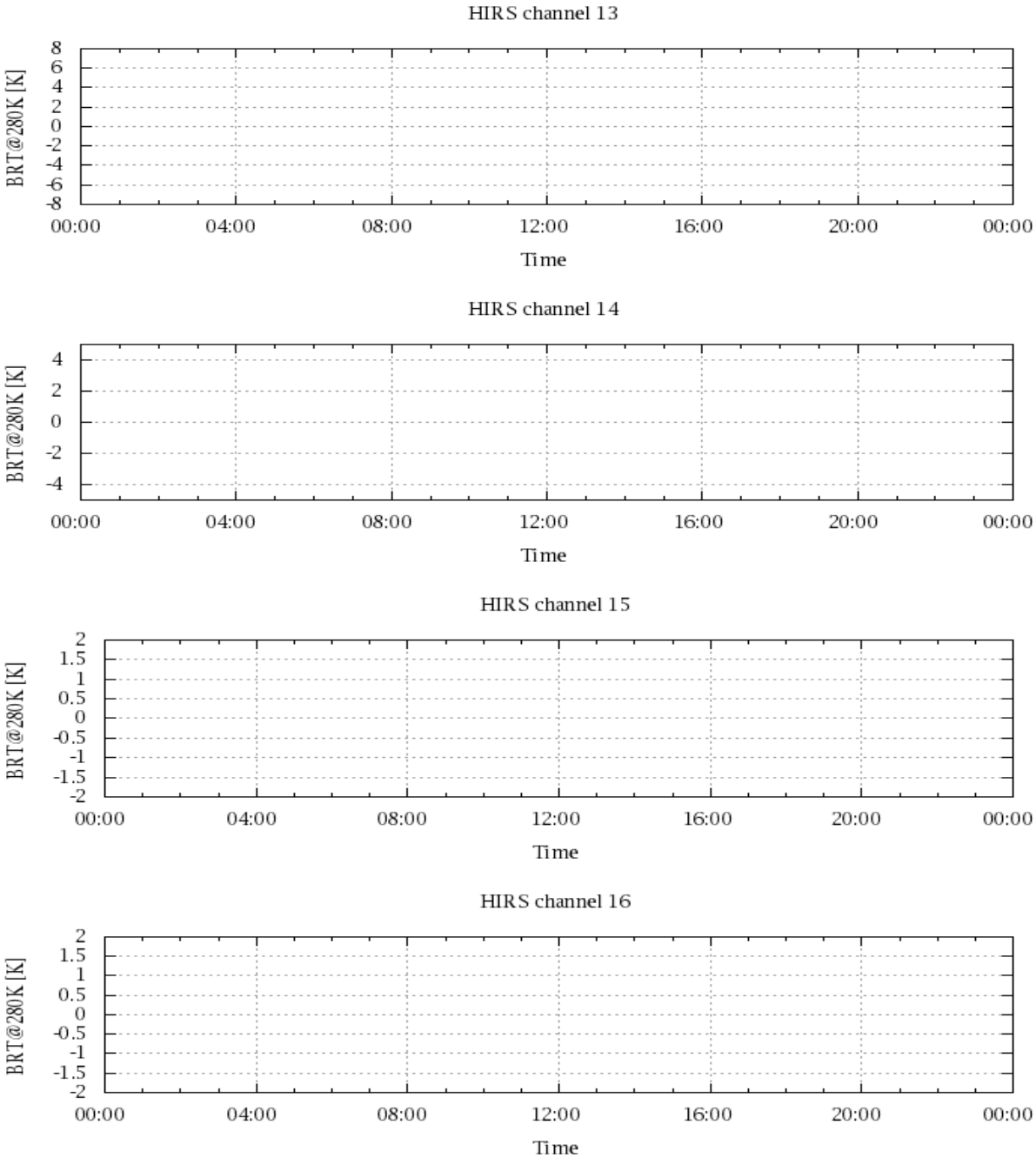

Figure 20: Radiance Differences in BT

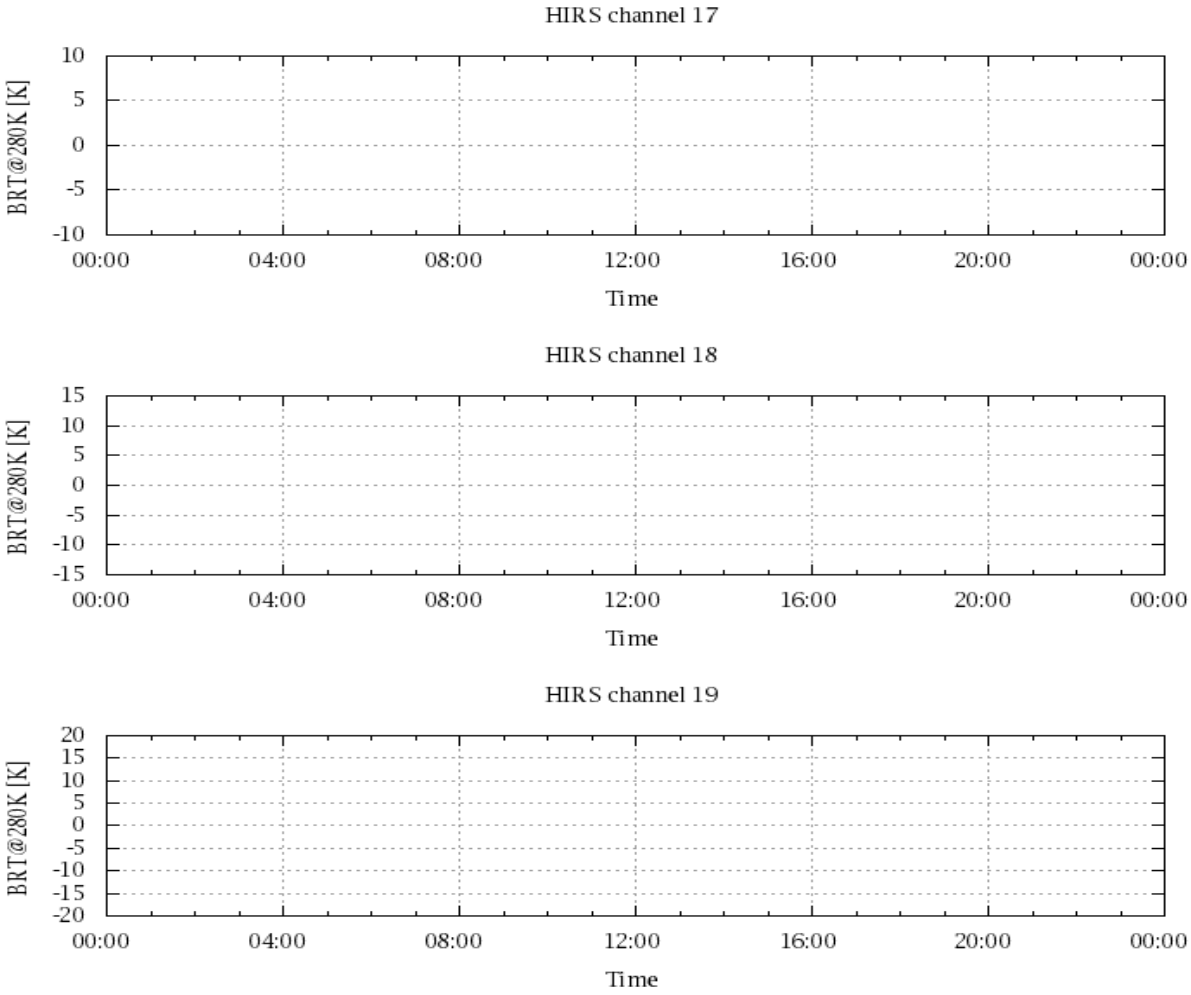

Figure 21: Radinace Differences in BT