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

IASI monitoring team

12/09/2019 00:00:00 - 13/09/2019 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 12/09/2019 00:00:00 - 13/09/2019 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 12/09/2019 00:00:00 - 13/09/2019 00:00:00

Product Type	**Number**	**Action**
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	469	-
L1 DPX PDUs (RM: IASI-HIRS)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	**Seq from**	**Seq to**	**Time from**	**Time to**
PX1 (130)	4031	4040	20190912104525.914	20190912104527.859
PX1 (130)	4155	4179	20190912104558.777	20190912104605.480
PX1 (130)	4200	4202	20190912104611.535	20190912104611.969
PX1 (130)	4214	4223	20190912104614.562	20190912104616.508
PX1 (130)	7483	8271	20190912110046.323	20190912110416.045
PX2 (135)	4031	4040	20190912104525.914	20190912104527.859
PX2 (135)	4061	4063	20190912104533.914	20190912104534.348
PX2 (135)	4155	4178	20190912104558.777	20190912104605.266
PX2 (135)	4193	4195	20190912104608.508	20190912104608.941
PX2 (135)	4209	4211	20190912104613.480	20190912104613.914
PX2 (135)	4214	4223	20190912104614.562	20190912104616.508
PX2 (135)	7482	8270	20190912110046.104	20190912110415.826
PX3 (140)	4031	4039	20190912104525.914	20190912104527.645
PX3 (140)	4155	4178	20190912104558.777	20190912104605.266
PX3 (140)	4202	4204	20190912104611.969	20190912104612.398
PX3 (140)	4214	4223	20190912104614.562	20190912104616.508
PX3 (140)	7482	8270	20190912110046.104	20190912110415.826
PX4 (145)	4031	4039	20190912104525.914	20190912104527.645
PX4 (145)	4063	4065	20190912104534.348	20190912104534.781
PX4 (145)	4155	4178	20190912104558.777	20190912104605.266

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	4195	4197	20190912104608.941	20190912104609.375
PX4 (145)	4211	4213	20190912104613.914	20190912104614.344
PX4 (145)	4214	4222	20190912104614.562	20190912104616.293
PX4 (145)	7482	8270	20190912110046.104	20190912110415.826
IMG (150)	5114	5123	20190912104525.699	20190912104527.645
IMG (150)	5146	5148	20190912104533.266	20190912104533.699
IMG (150)	5255	5282	20190912104558.777	20190912104605.266
IMG (150)	5294	5296	20190912104607.859	20190912104608.293
IMG (150)	5305	5307	20190912104610.672	20190912104611.316
IMG (150)	5312	5314	20190912104612.398	20190912104612.832
IMG (150)	5314	5316	20190912104612.832	20190912104613.266
IMG (150)	5319	5321	20190912104613.914	20190912104614.344
IMG (150)	5321	5330	20190912104614.344	20190912104616.293
IMG (150)	9026	9918	20190912110046.104	20190912110415.826
VER (160)	1430	1437	20190912104553.375	20190912104600.293
VER (160)	1437	1441	20190912104600.293	20190912104617.371
VER (160)	1985	2116	20190912110041.346	20190912110417.342
AUX (180)	274	276	20190912104553.805	20190912104609.805
AUX (180)	385	412	20190912110041.780	20190912110417.776

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
12/09/2019 00:00:06	-	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	469	-
GQisFlagQual set (PX1)	99.54 %	-
GQisFlagQual set (PX2)	99.63 %	-
GQisFlagQual set (PX3)	99.61 %	-
GQisFlagQual set (PX4)	99.54 %	-
GQisFlagQual set (all)	99.58 %	-

Table 4: Quality flags

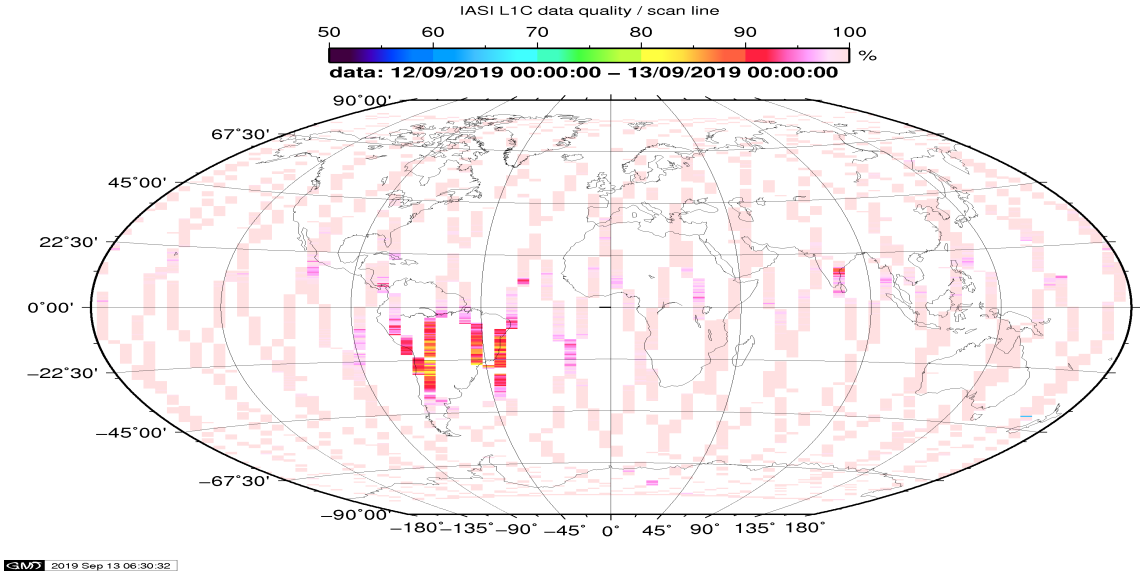

Figure 1: L1C data quality

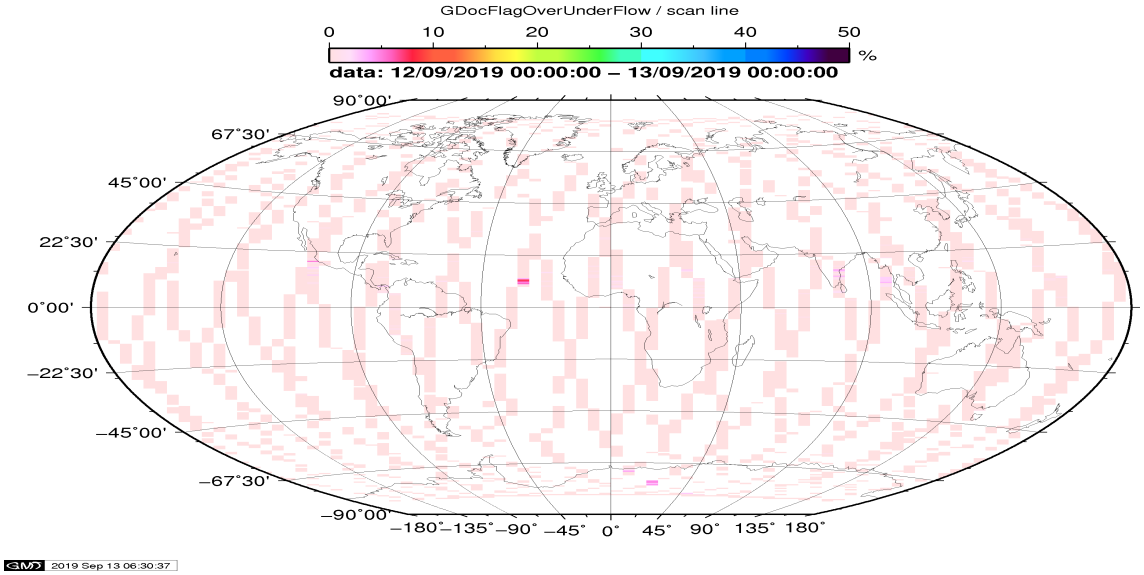

Figure 2: Flag of Over and Under Flows

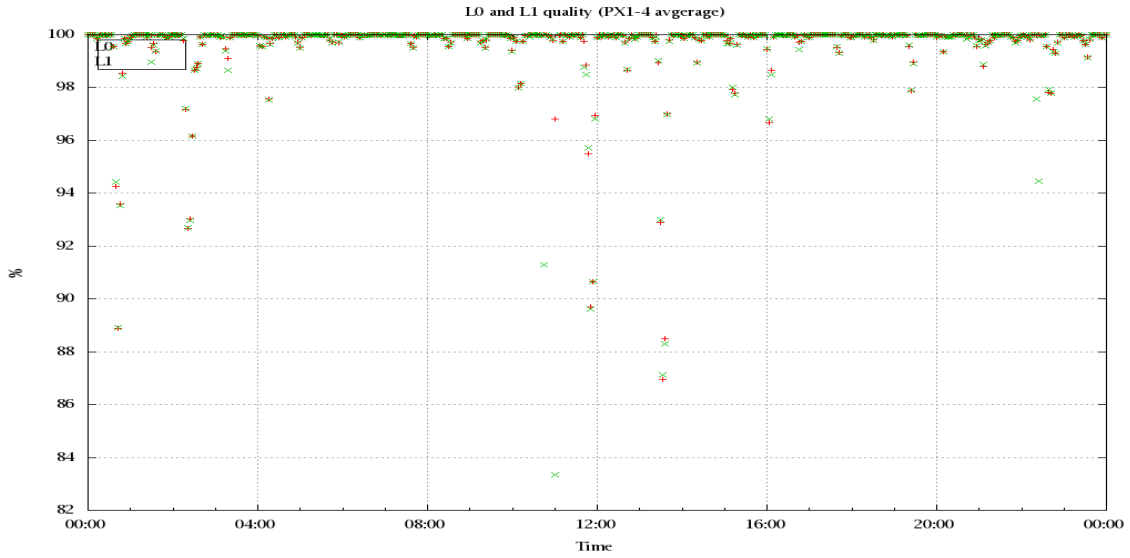

Figure 3: Level 0 and 1C overall quality

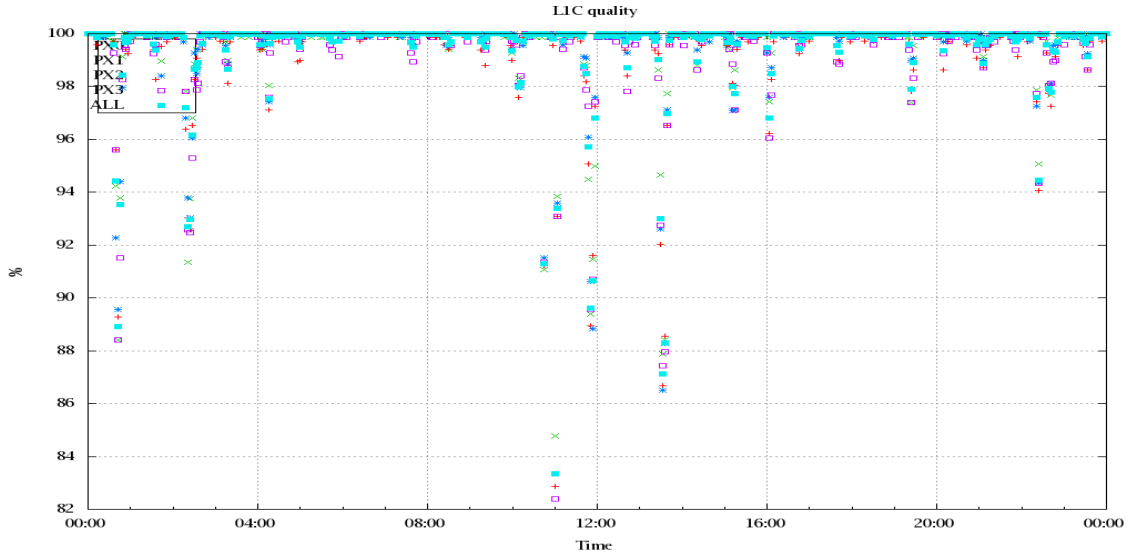

Figure 4: Level 1C quality

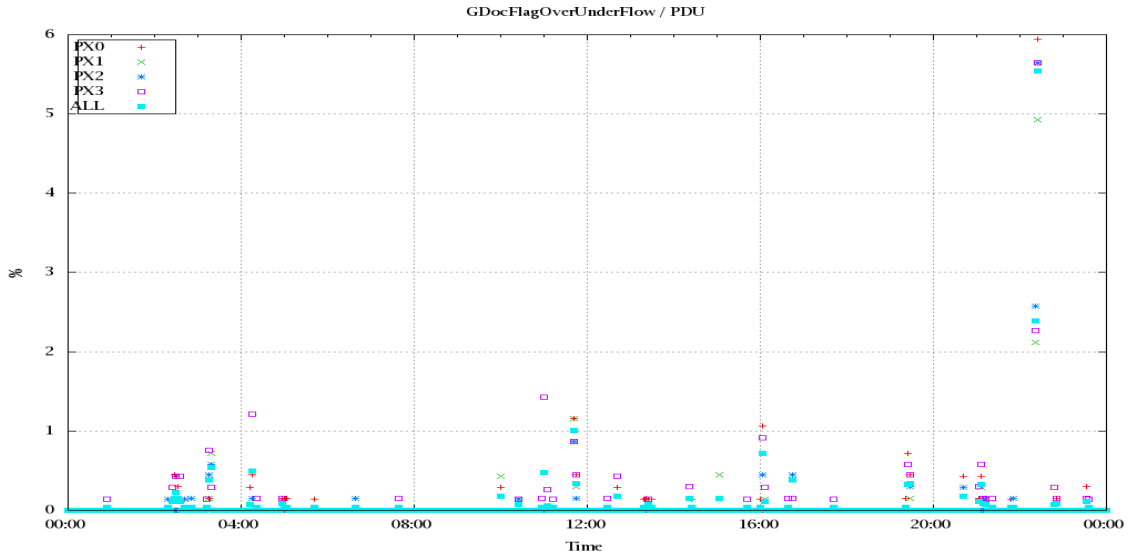

Figure 5: Timeseries of flag of Over and Under Flows

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.

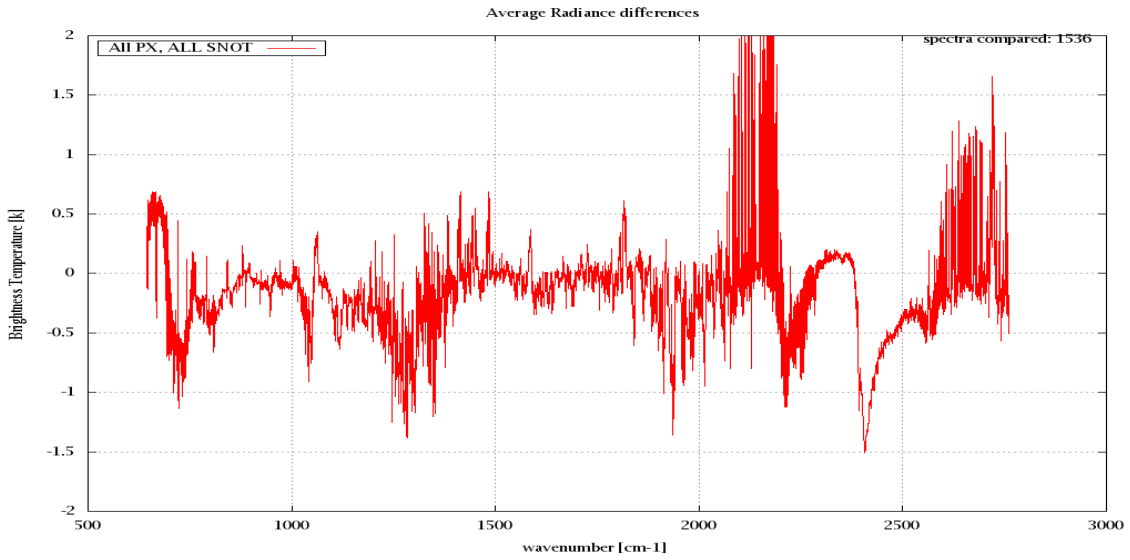

Figure 6: Average Radiance differences: OBS-CAL

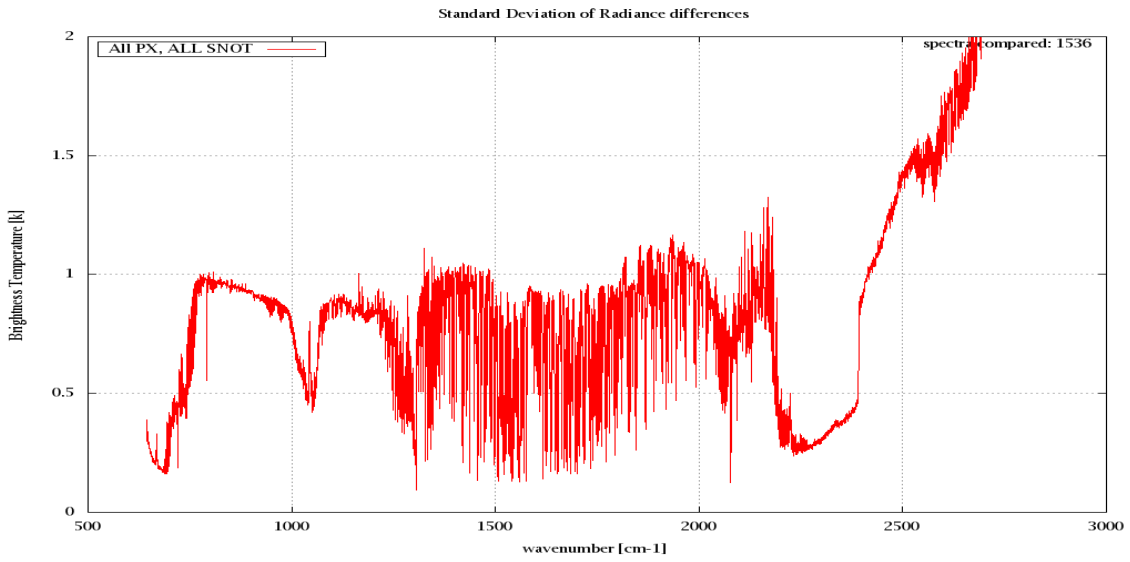

Figure 7: Standard Deviation of Radiance differences

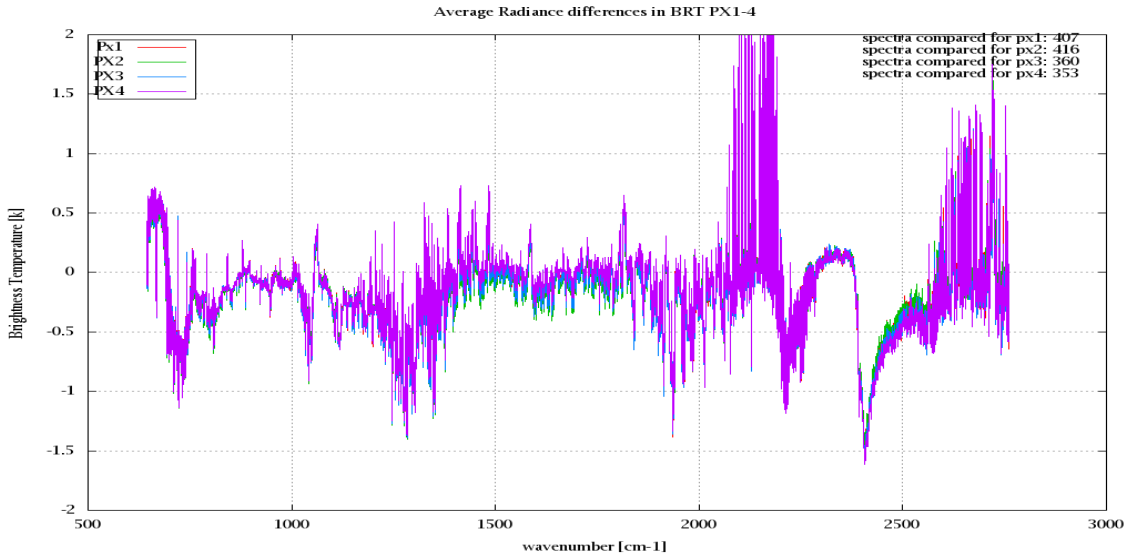

Figure 8: Average Radiance differences: OBS-CAL

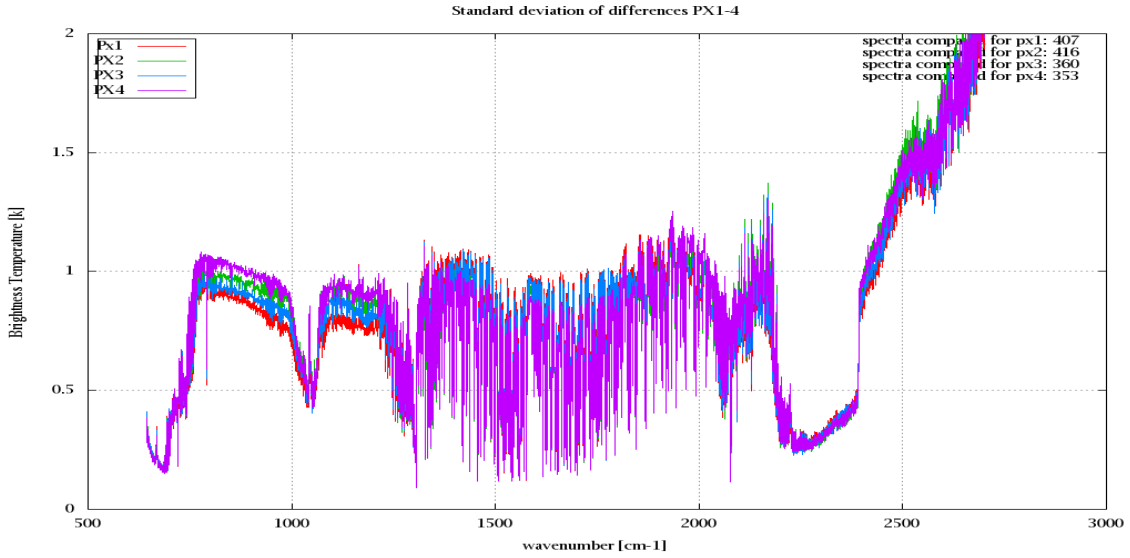

Figure 9: Standard Deviation of Radiance differences

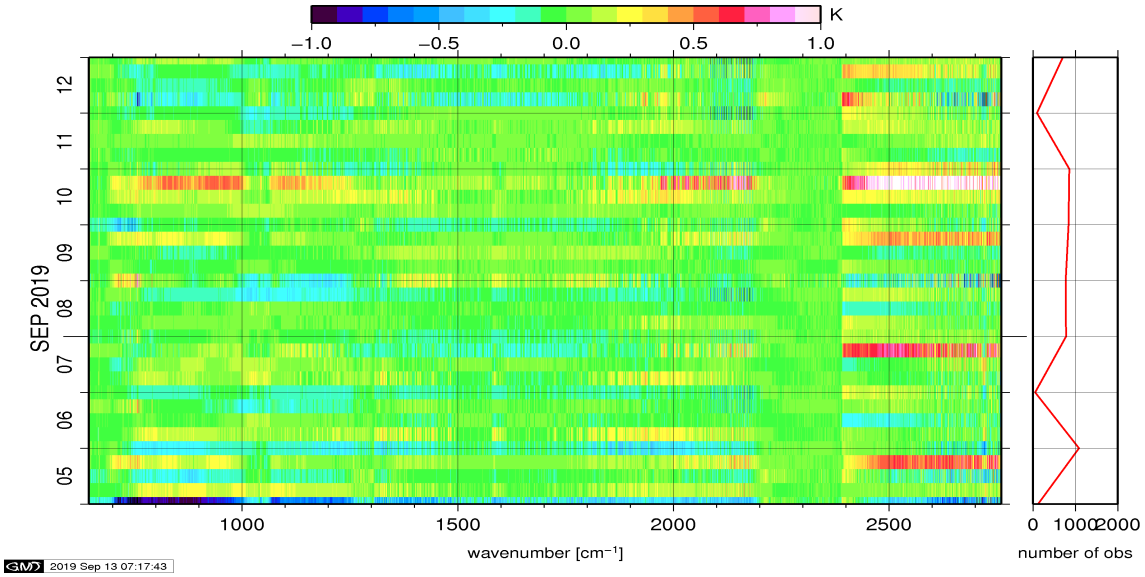

Figure 10: Radiance Anomaly in BT: All Channels

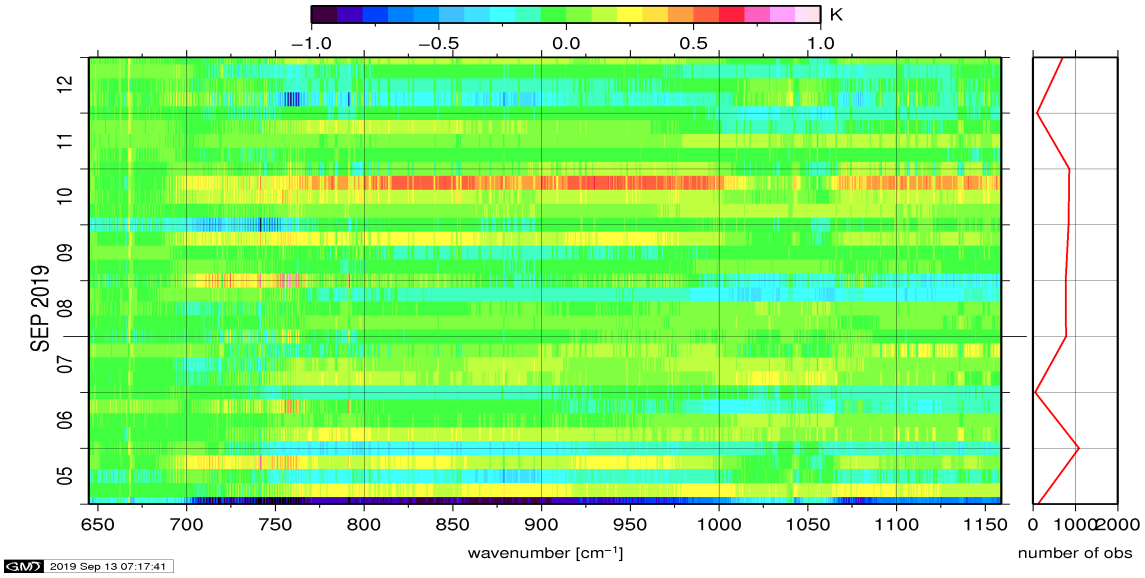

Figure 11: Radiance Anomaly in BT: IASI Band 1

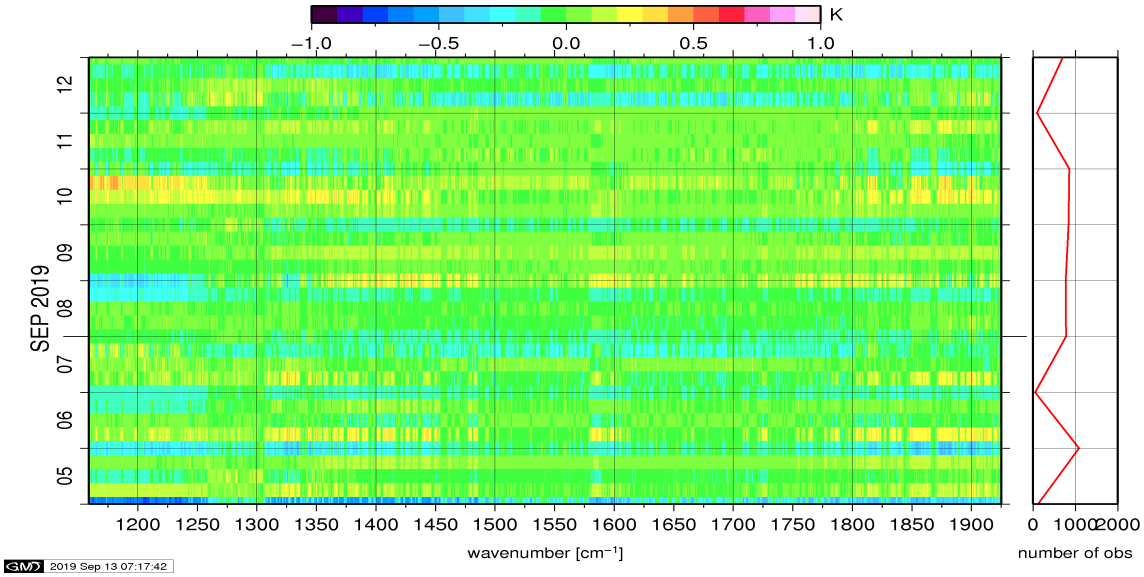

Figure 12: Radiance Anomaly in BT: IASI Band 2

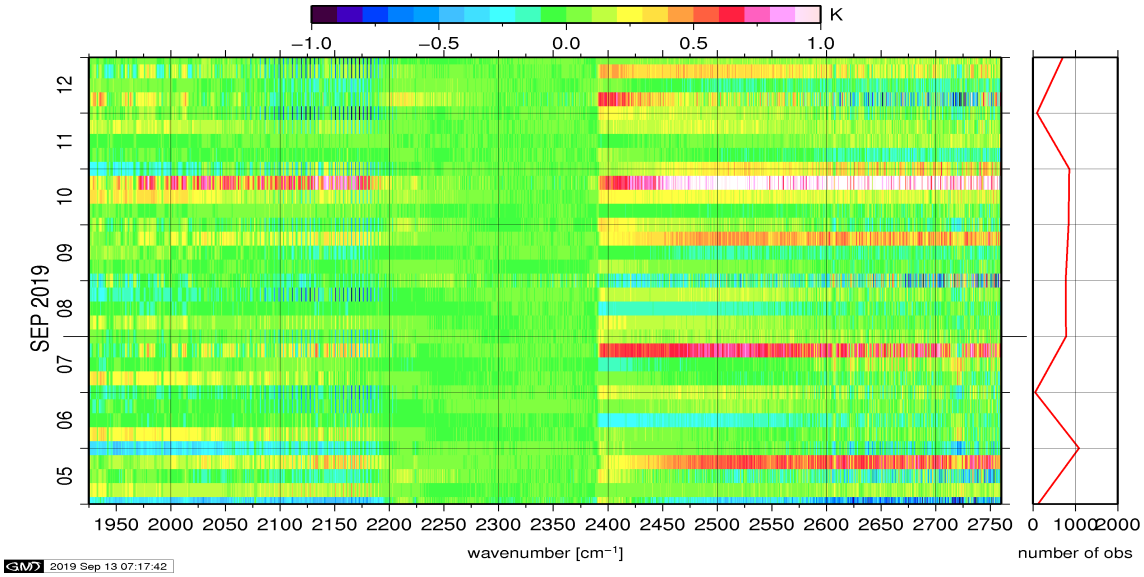

Figure 13: Radiance Anomaly in BT: IASI Band 3

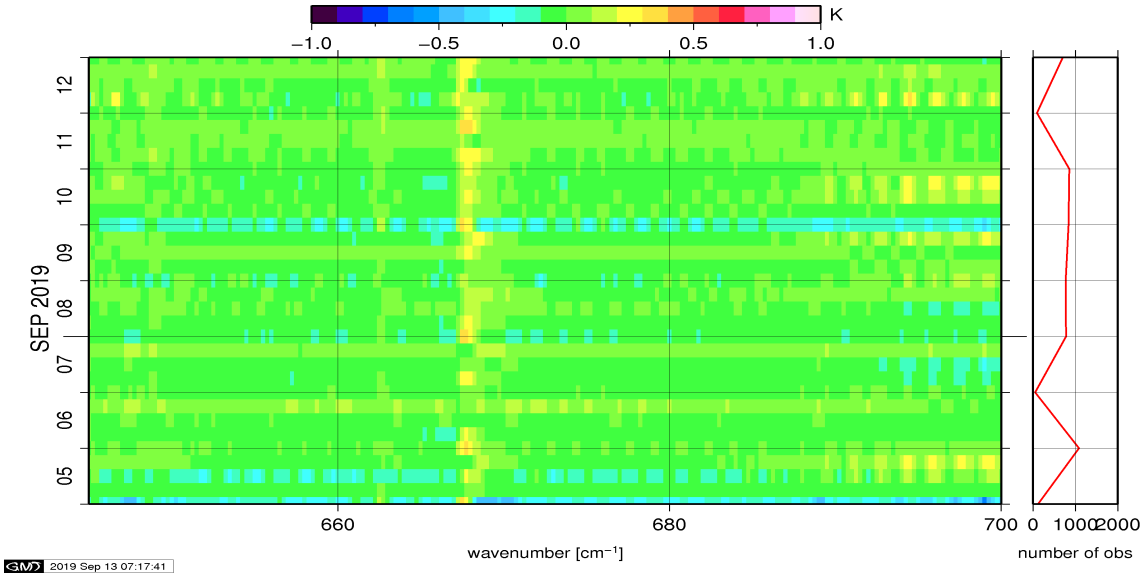

Figure 14: Radiance Anomaly in BT: CO2 14

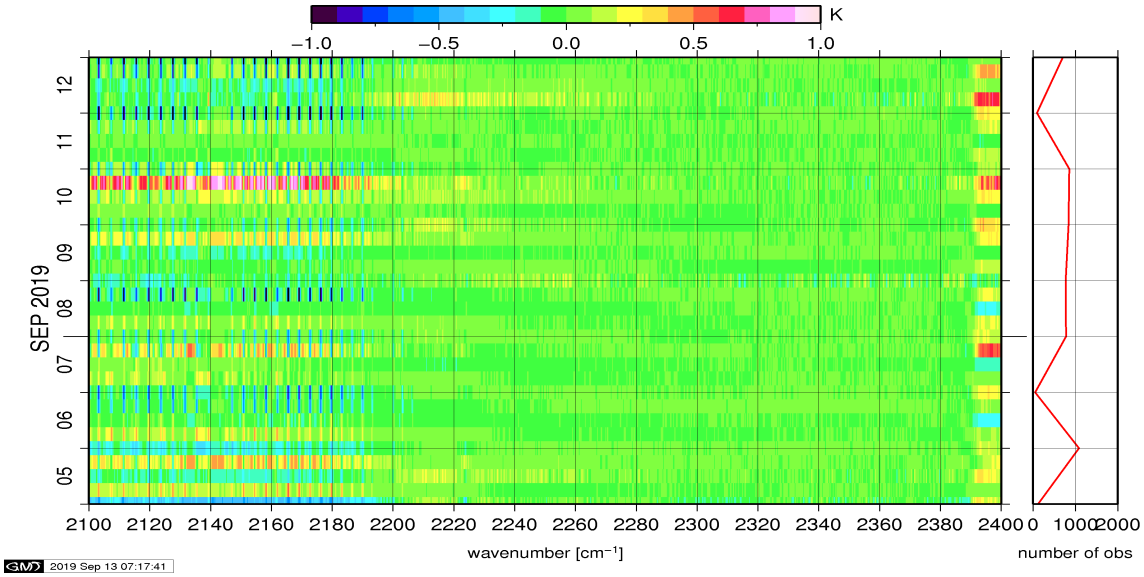

Figure 15: Radiance Anomaly in BT: CO2 4.3

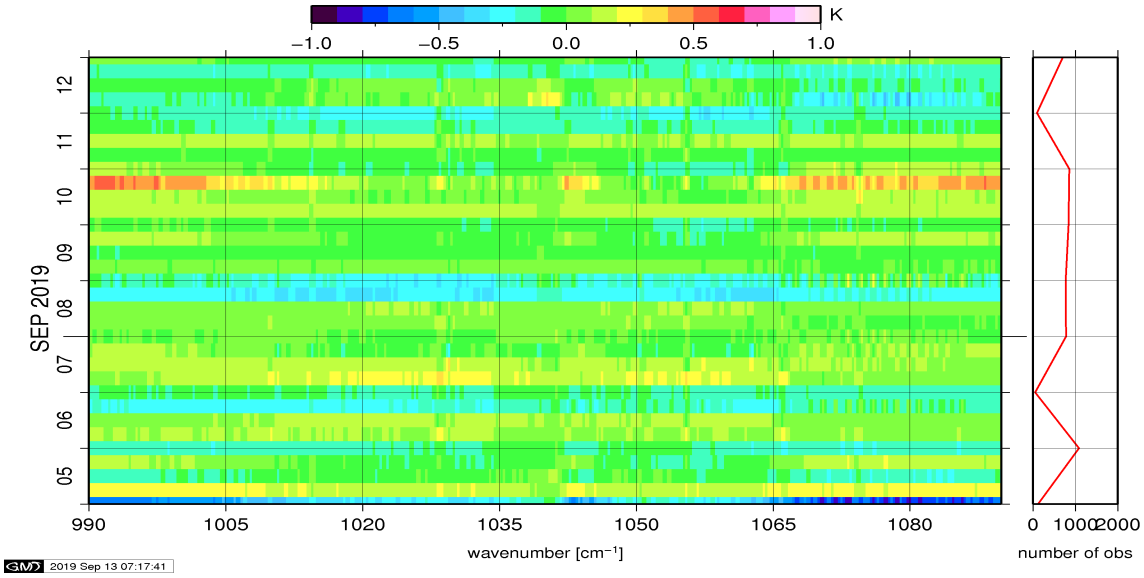

Figure 16: Radiance Anomaly in BT: O3

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.

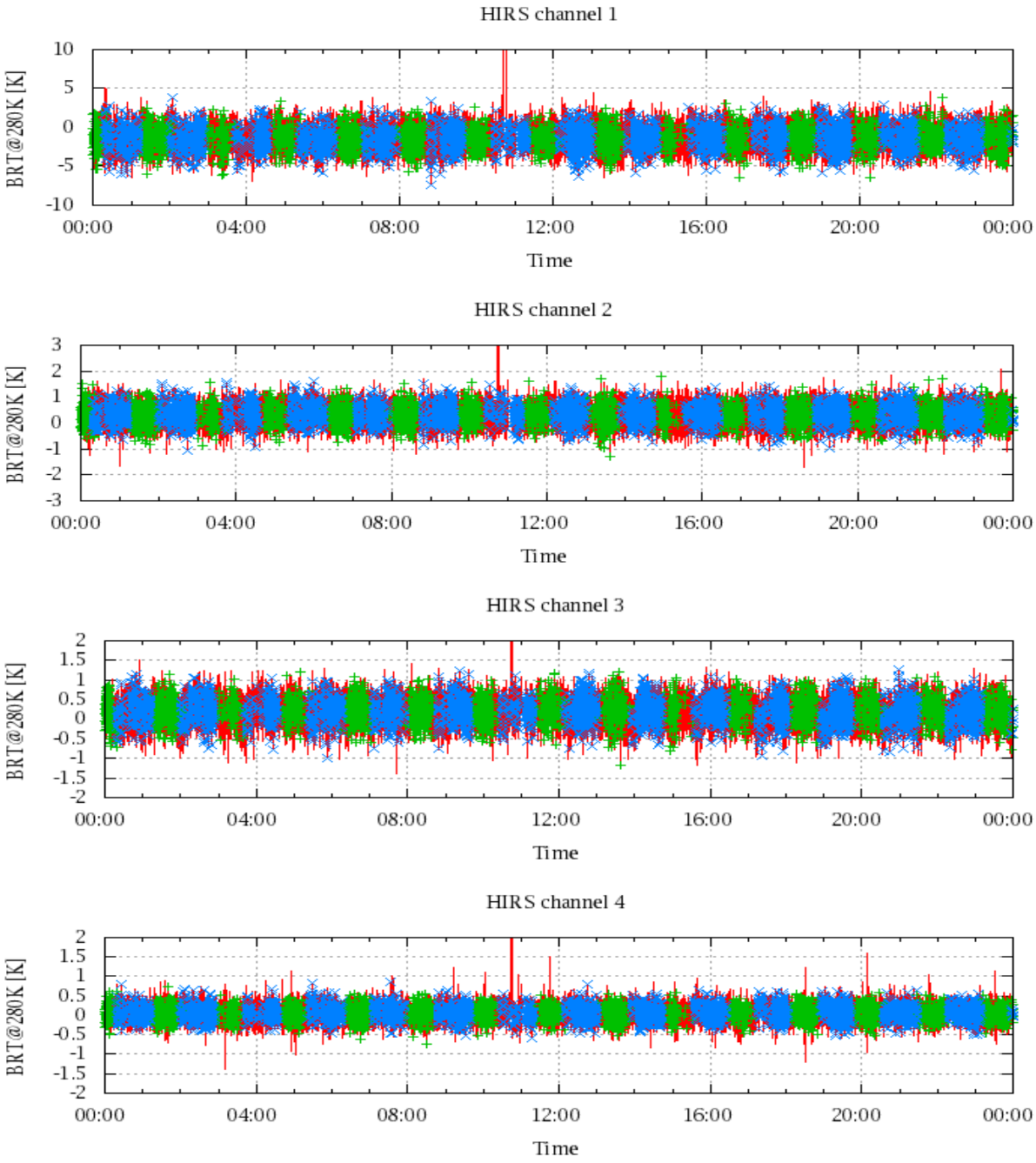

Figure 17: Radiance Differences in BT

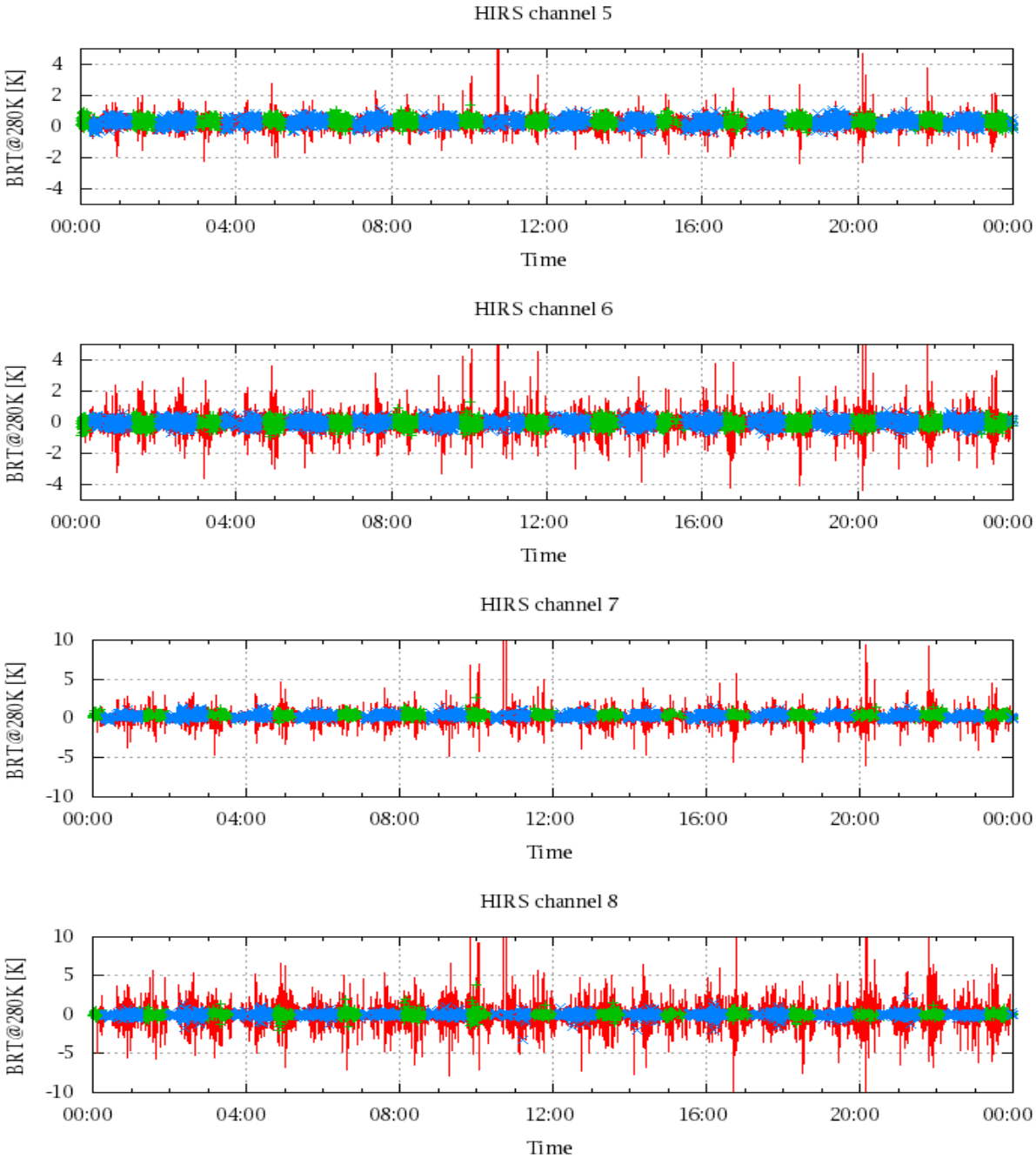

Figure 18: Radiance Differences in BT

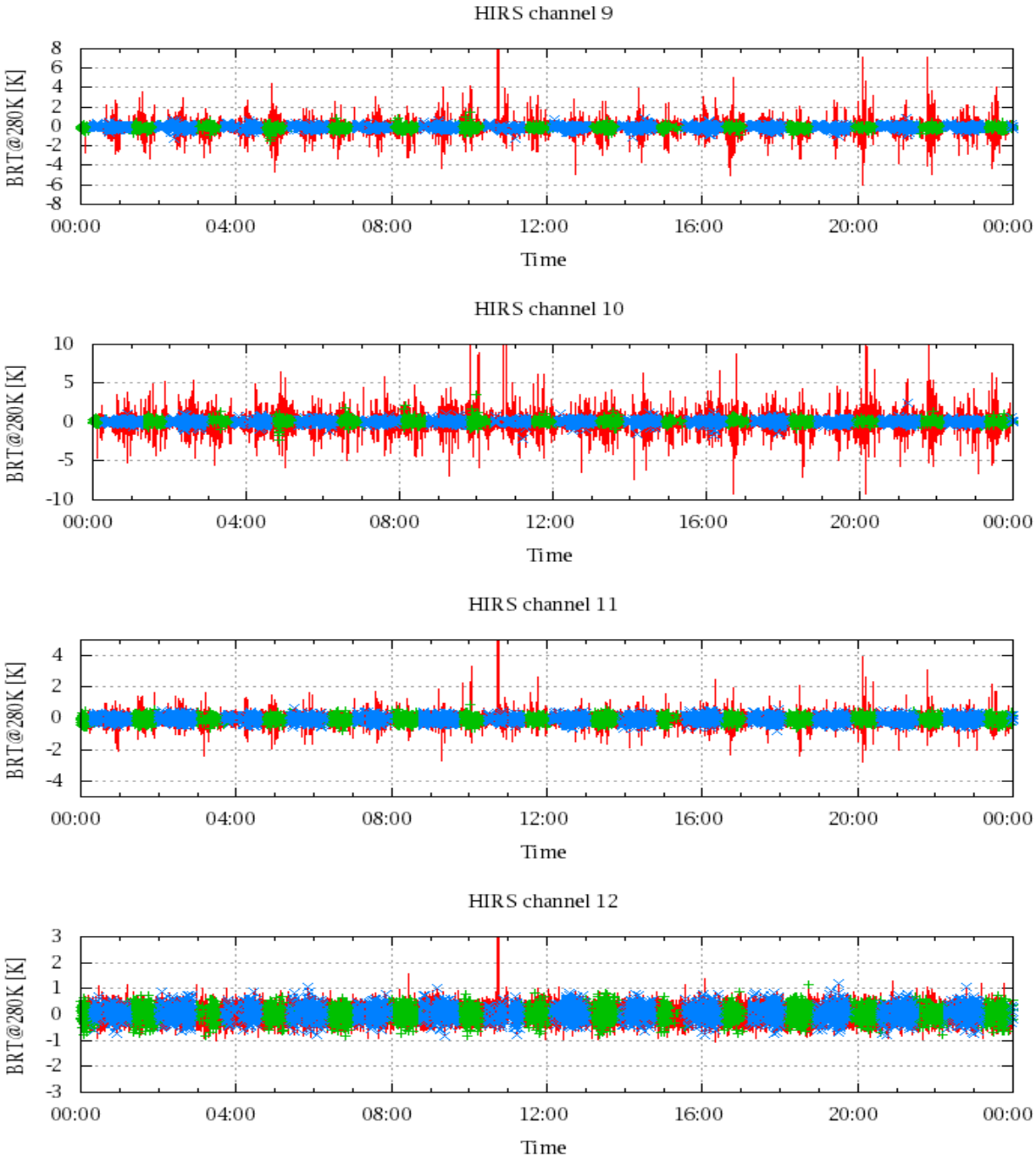

Figure 19: Radiance Differences in BT

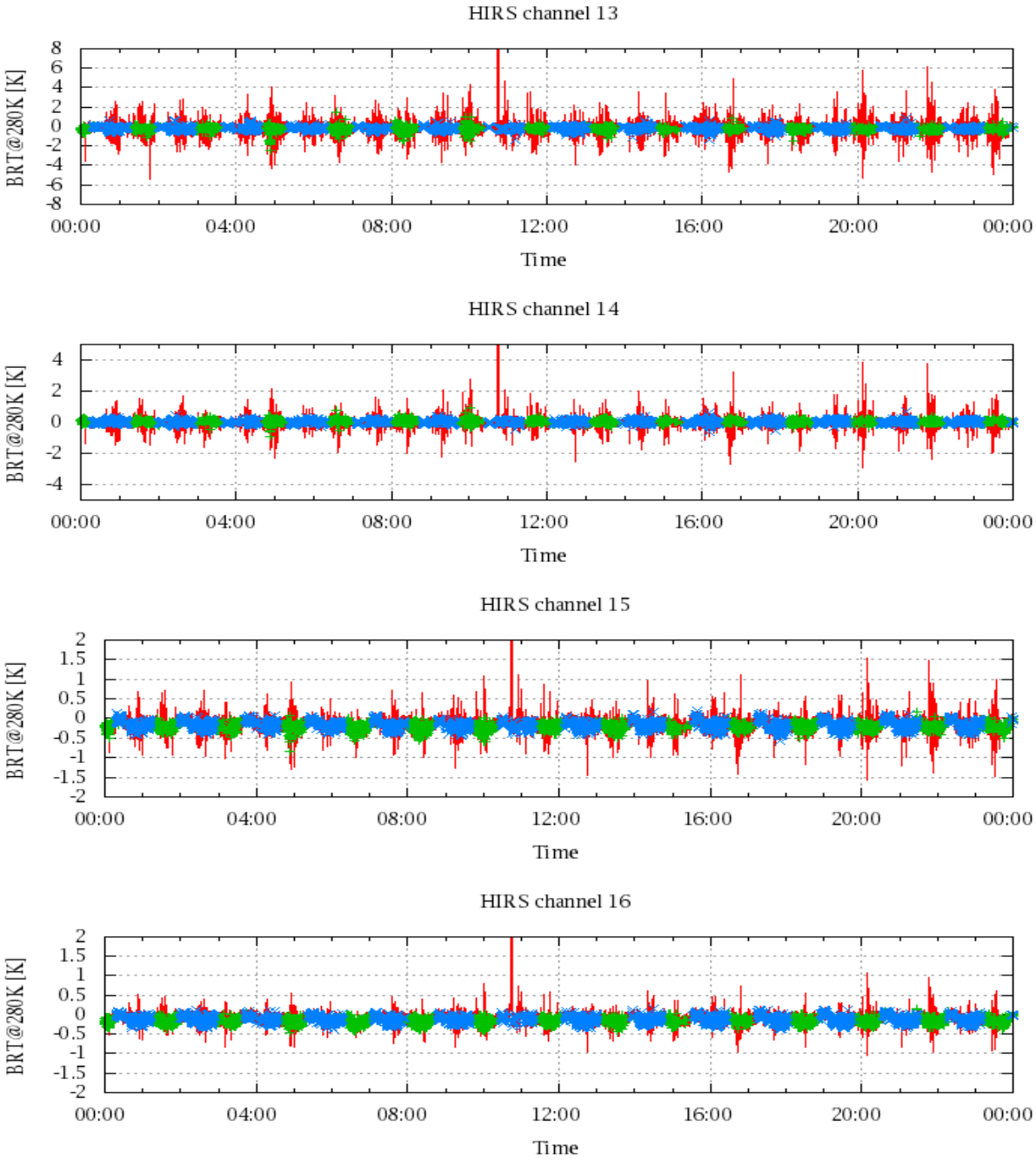

Figure 20: Radiance Differences in BT

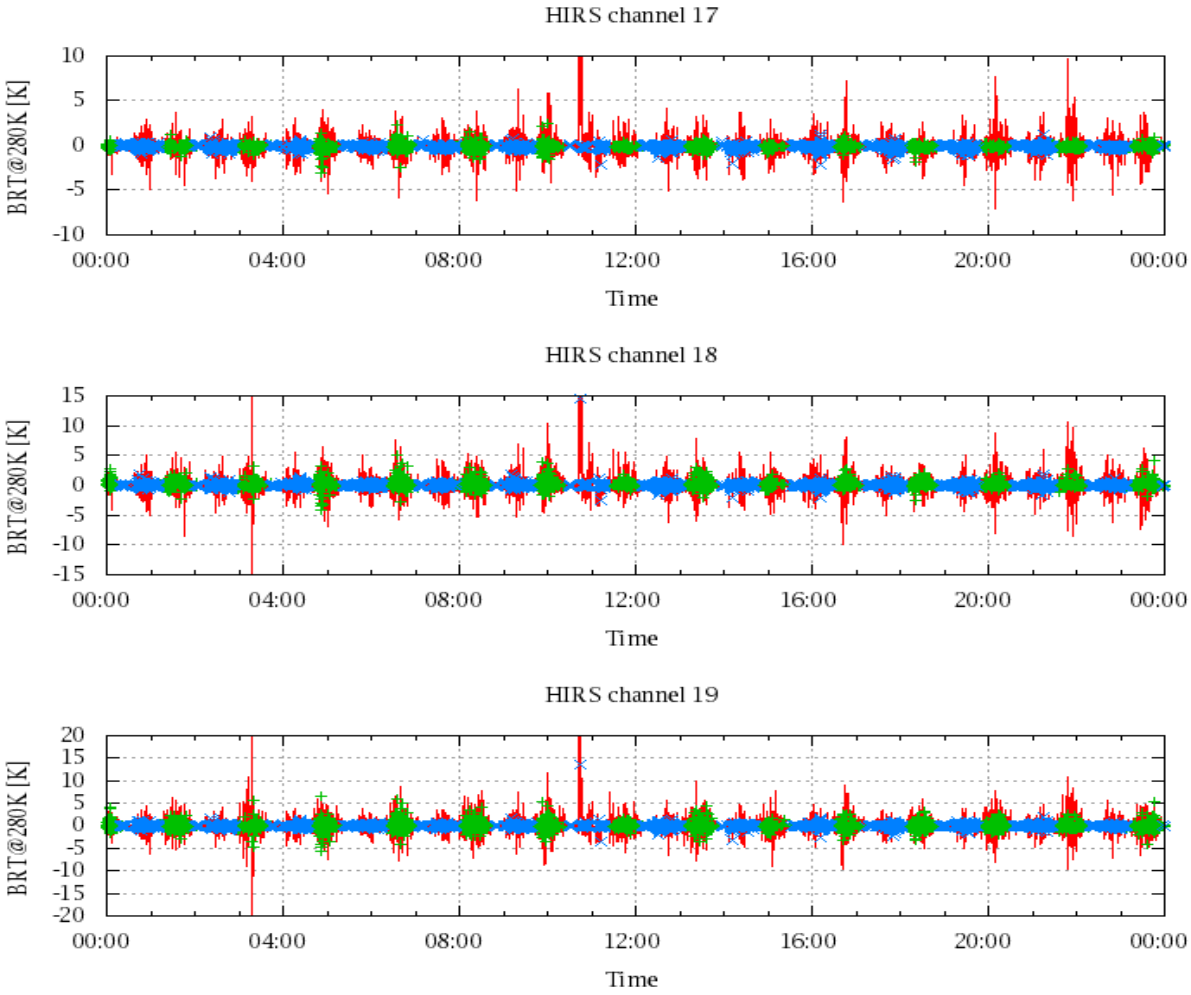

Figure 21: Radinace Differences in BT