

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

IASI monitoring team

14/09/2020 00:00:00 - 15/09/2020 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 14/09/2020 00:00:00 - 15/09/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 14/09/2020 00:00:00 - 15/09/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	467	-
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)	1253	1257	20200914185020.164	20200914185022.543
PX1 (130)	1373	1401	20200914185052.164	20200914185059.730
PX1 (130)	1408	1410	20200914185102.757	20200914185103.191
PX1 (130)	1415	1417	20200914185104.273	20200914185104.703
PX1 (130)	1433	1457	20200914185108.164	20200914185114.867
PX1 (130)	7042	7045	20200914191603.943	20200914191606.103
PX1 (130)	7134	7191	20200914191629.888	20200914191643.724
PX1 (130)	7226	7228	20200914191654.318	20200914191654.751
PX1 (130)	7249	7251	20200914191659.290	20200914191659.724
PX1 (130)	10269	10271	20200914193025.145	20200914193025.574
PX2 (135)	1253	1257	20200914185020.164	20200914185022.543
PX2 (135)	1373	1400	20200914185052.164	20200914185059.515
PX2 (135)	1408	1410	20200914185102.757	20200914185103.191
PX2 (135)	1424	1426	20200914185106.218	20200914185106.648
PX2 (135)	1431	1433	20200914185107.730	20200914185108.164
PX2 (135)	1433	1457	20200914185108.164	20200914185114.867
PX2 (135)	7042	7045	20200914191603.943	20200914191606.103
PX2 (135)	7134	7191	20200914191629.888	20200914191643.724
PX2 (135)	7210	7212	20200914191649.345	20200914191649.779

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	7219	7221	20200914191651.290	20200914191651.724
PX2 (135)	7235	7237	20200914191656.263	20200914191656.697
PX2 (135)	7242	7244	20200914191657.779	20200914191658.208
PX2 (135)	10269	10271	20200914193025.145	20200914193025.574
PX2 (135)	10294	10296	20200914193032.063	20200914193032.492
PX2 (135)	10297	10299	20200914193032.711	20200914193033.145
PX3 (140)	1253	1256	20200914185020.164	20200914185022.328
PX3 (140)	1373	1400	20200914185052.164	20200914185059.515
PX3 (140)	1417	1419	20200914185104.703	20200914185105.136
PX3 (140)	1433	1457	20200914185108.164	20200914185114.867
PX3 (140)	7042	7045	20200914191603.943	20200914191606.103
PX3 (140)	7073	7075	20200914191612.158	20200914191614.103
PX3 (140)	7134	7191	20200914191629.888	20200914191643.724
PX3 (140)	7228	7230	20200914191654.751	20200914191655.181
PX3 (140)	7235	7237	20200914191656.263	20200914191656.697
PX3 (140)	10269	10271	20200914193025.145	20200914193025.574
PX3 (140)	10292	10294	20200914193031.629	20200914193032.063
PX3 (140)	10294	10296	20200914193032.063	20200914193032.492
PX4 (145)	8279	8281	20200914165555.744	20200914165556.178
PX4 (145)	1253	1256	20200914185020.164	20200914185022.328
PX4 (145)	1373	1400	20200914185052.164	20200914185059.515
PX4 (145)	1426	1428	20200914185106.648	20200914185107.082
PX4 (145)	1433	1457	20200914185108.164	20200914185114.867
PX4 (145)	7042	7045	20200914191603.943	20200914191606.103
PX4 (145)	7073	7075	20200914191612.158	20200914191614.103
PX4 (145)	7134	7191	20200914191629.888	20200914191643.724
PX4 (145)	7212	7214	20200914191649.779	20200914191650.212
PX4 (145)	7221	7223	20200914191651.724	20200914191652.158
PX4 (145)	7237	7239	20200914191656.697	20200914191657.130
PX4 (145)	7244	7246	20200914191658.208	20200914191658.642
PX4 (145)	10269	10271	20200914193025.145	20200914193025.574
IMG (150)	8867	8869	20200914165555.744	20200914165556.178
IMG (150)	5273	5280	20200914185020.164	20200914185022.328
IMG (150)	5409	5440	20200914185052.164	20200914185059.515
IMG (150)	5449	5451	20200914185102.109	20200914185102.543
IMG (150)	5456	5458	20200914185103.621	20200914185104.054
IMG (150)	5463	5465	20200914185105.136	20200914185105.570
IMG (150)	5465	5467	20200914185105.570	20200914185106.004
IMG (150)	5472	5474	20200914185107.082	20200914185107.515
IMG (150)	5477	5505	20200914185108.164	20200914185114.867
IMG (150)	11834	11840	20200914191603.943	20200914191605.888
IMG (150)	11941	12002	20200914191629.454	20200914191643.509
IMG (150)	12021	12023	20200914191648.263	20200914191648.697
IMG (150)	12023	12025	20200914191648.697	20200914191649.130
IMG (150)	12032	12034	20200914191650.642	20200914191651.075
IMG (150)	12043	12045	20200914191653.454	20200914191654.103
IMG (150)	12050	12052	20200914191655.181	20200914191655.615
IMG (150)	12052	12054	20200914191655.615	20200914191656.048
IMG (150)	12059	12061	20200914191657.130	20200914191657.564
IMG (150)	12066	12068	20200914191658.642	20200914191659.075
IMG (150)	15493	15495	20200914193025.145	20200914193025.574
VER (160)	13306	13312	20200914185012.164	20200914185028.164
VER (160)	13312	13317	20200914185028.164	20200914185036.164
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	13328	13332	20200914185052.164	20200914185100.164
VER (160)	13336	13342	20200914185100.164	20200914185116.164
VER (160)	14271	14277	20200914191556.158	20200914191612.158
VER (160)	14277	14282	20200914191612.158	20200914191620.158
VER (160)	14291	14297	20200914191628.158	20200914191644.158
VER (160)	14301	14307	20200914191644.158	20200914191700.158
AUX (180)	9200	9202	20200914185044.597	20200914185100.597
AUX (180)	9202	9204	20200914185100.597	20200914185116.593
AUX (180)	9389	9391	20200914191556.591	20200914191612.591
AUX (180)	9393	9395	20200914191628.591	20200914191644.591

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
14/09/2020 00:00:09	-	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	467	-
GQisFlagQual set (PX1)	99.53 %	-
GQisFlagQual set (PX2)	99.60 %	-
GQisFlagQual set (PX3)	99.60 %	-
GQisFlagQual set (PX4)	99.54 %	-
GQisFlagQual set (all)	99.57 %	-

Table 4: Quality flags

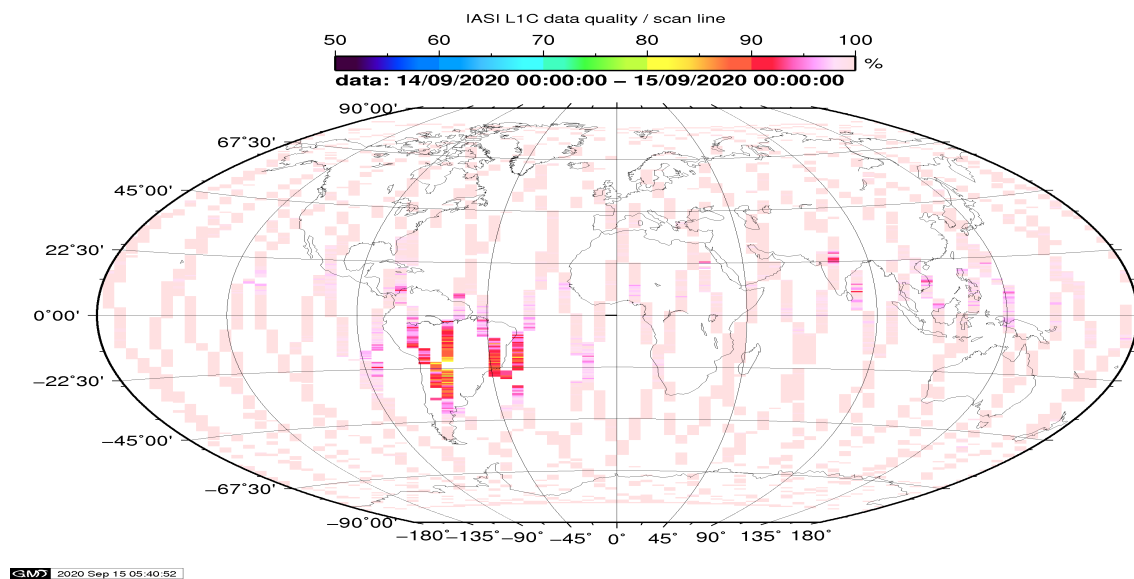


Figure 1: L1C data quality

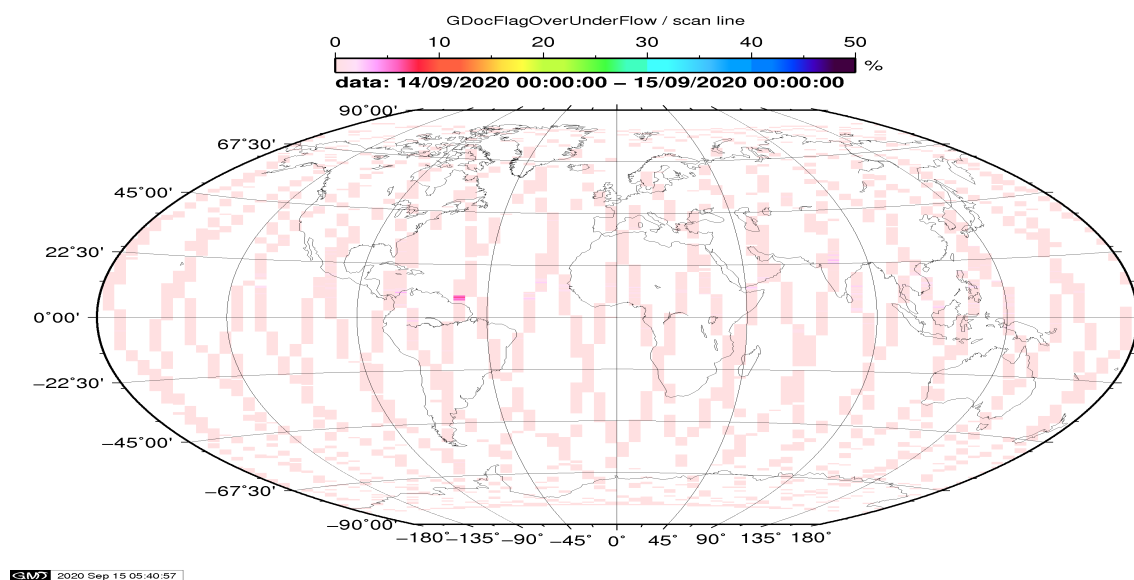


Figure 2: Flag of Over and Under Flows

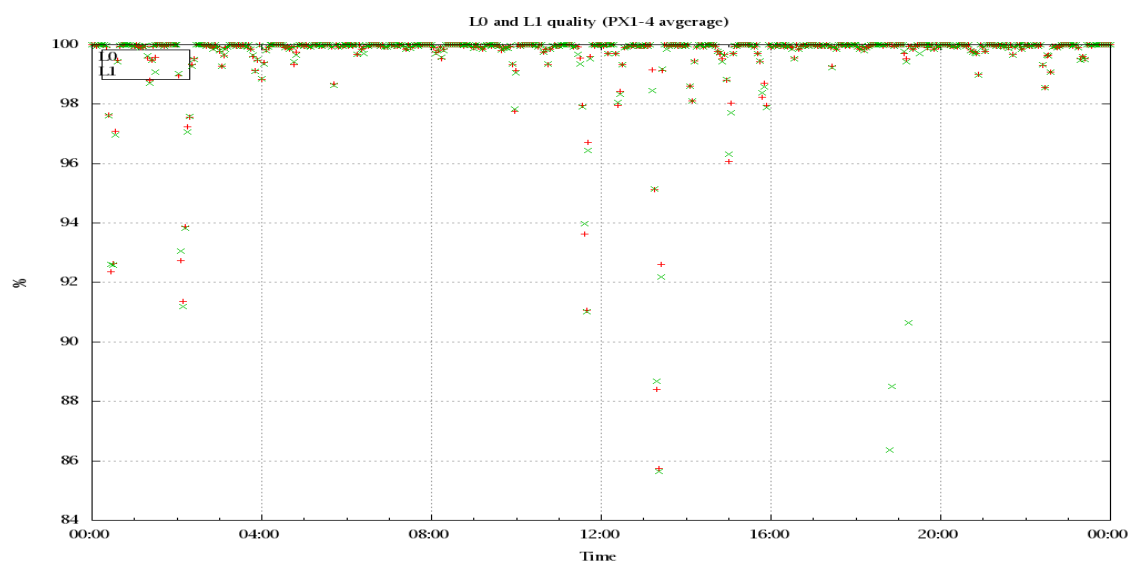


Figure 3: Level 0 and 1C overall quality

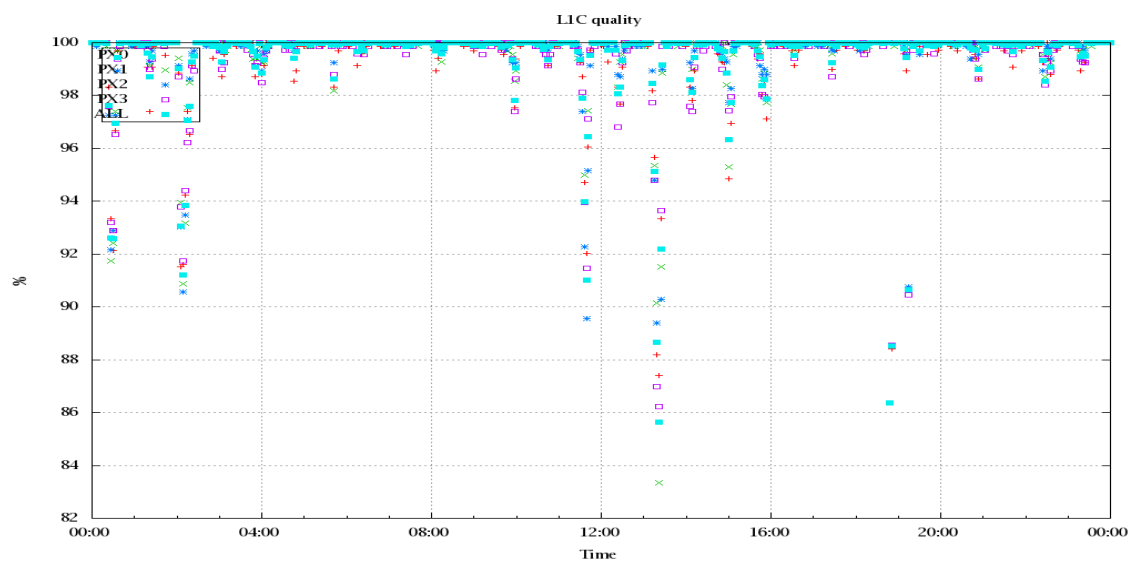


Figure 4: Level 1C quality

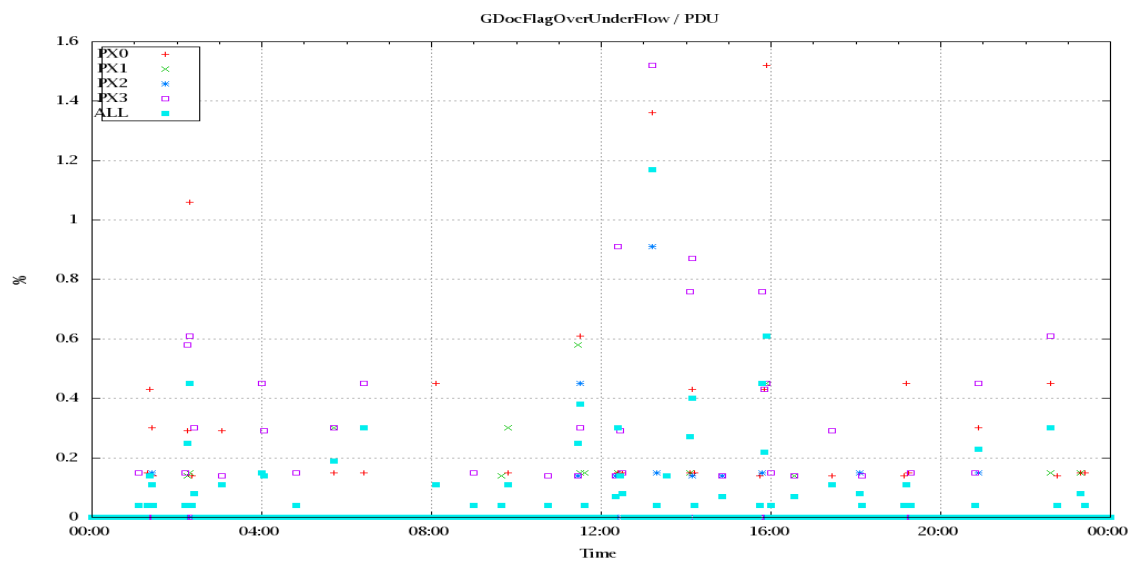


Figure 5: Timeseries of flag of Over and Under Flows

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 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.

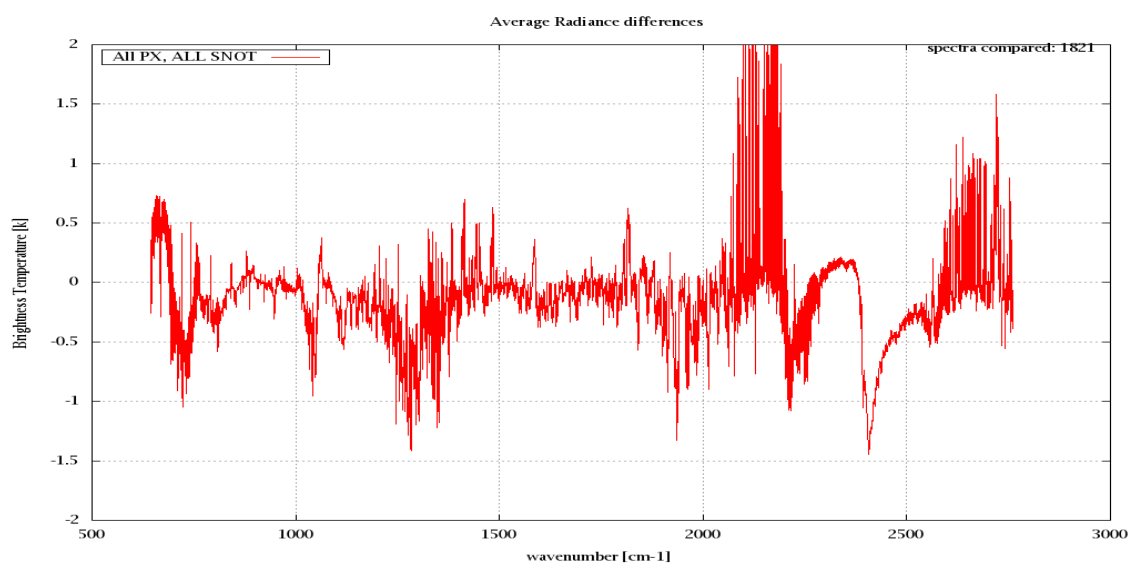


Figure 6: Average Radiance differences: OBS-CAL

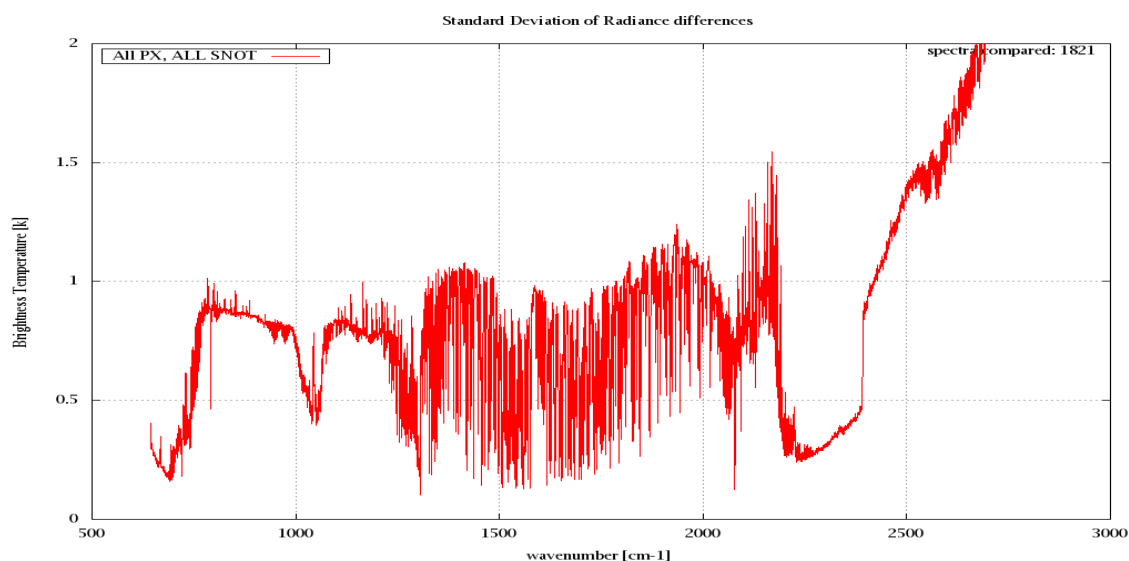


Figure 7: Standard Deviation of Radiance differences

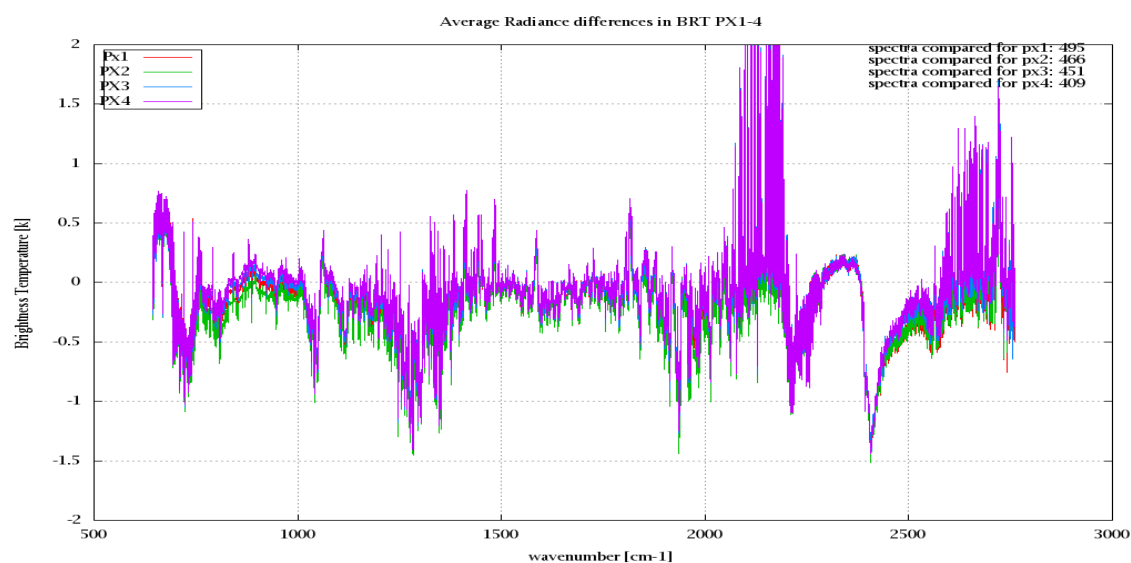


Figure 8: Average Radiance differences: OBS-CAL

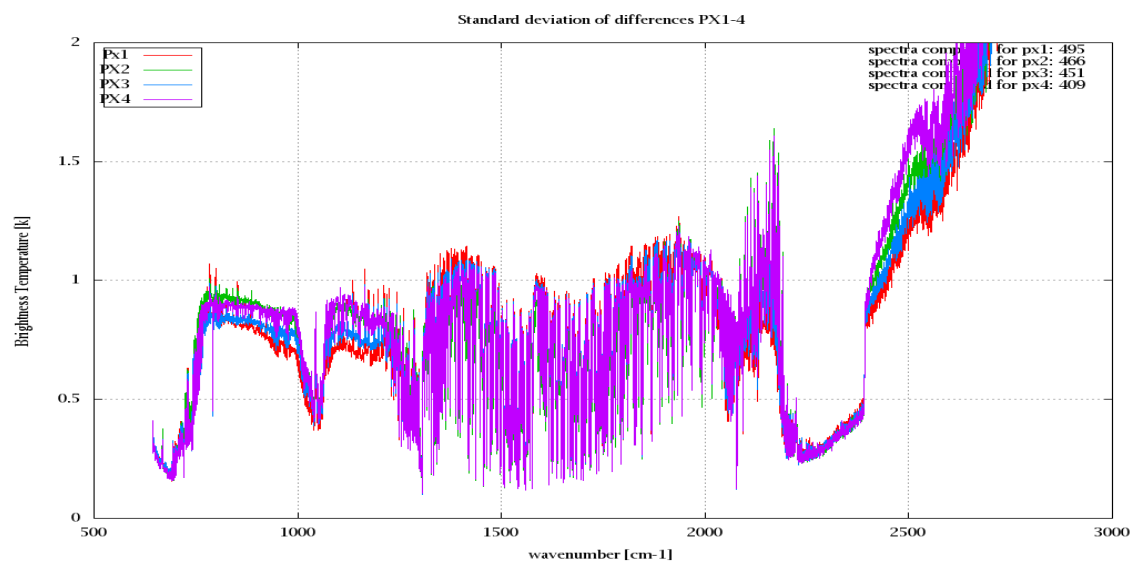


Figure 9: Standard Deviation of Radiance differences

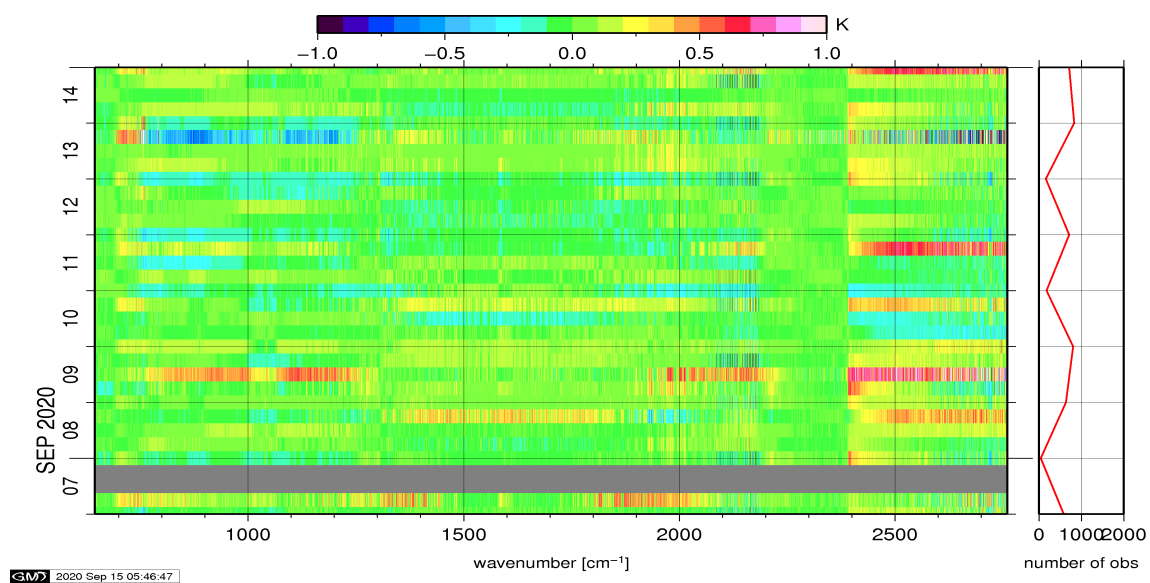


Figure 10: Radiance Anomaly in BT: All Channels

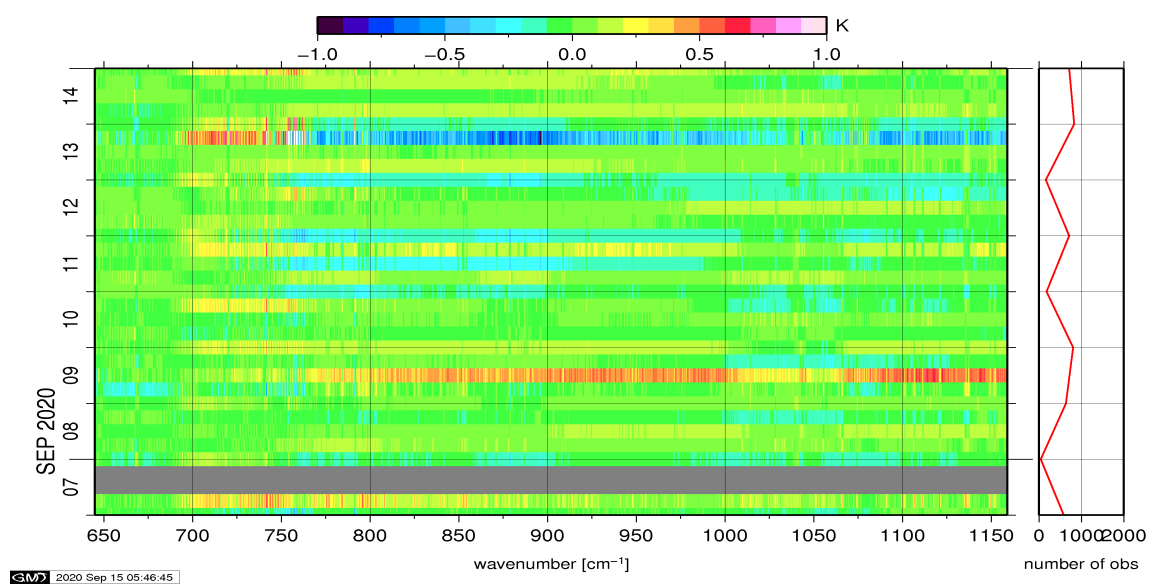


Figure 11: Radiance Anomaly in BT: IASI Band 1

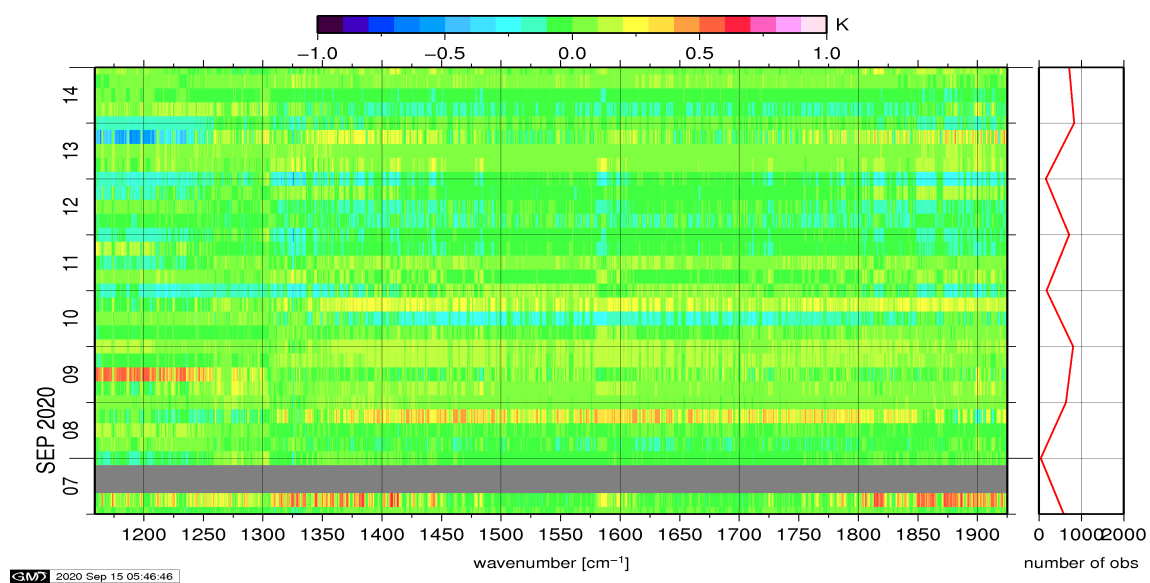


Figure 12: Radiance Anomaly in BT: IASI Band 2

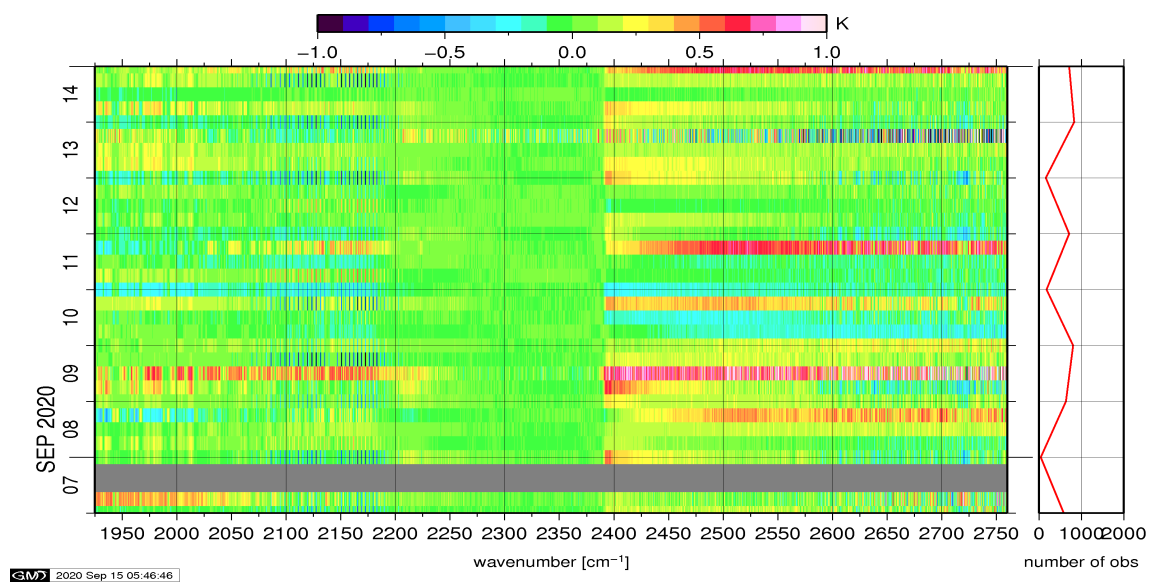


Figure 13: Radiance Anomaly in BT: IASI Band 3

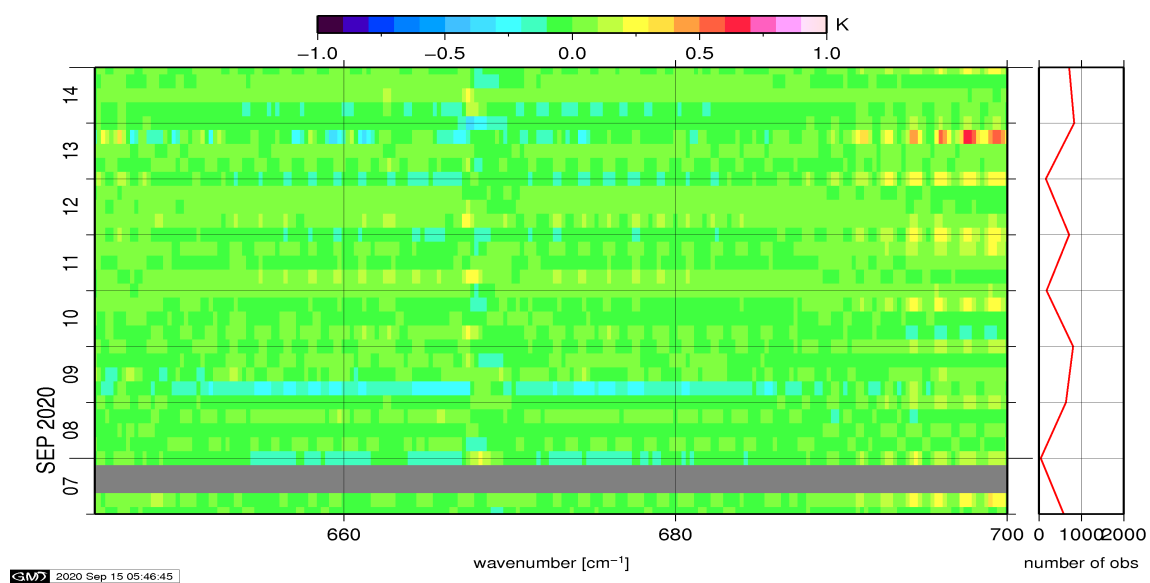


Figure 14: Radiance Anomaly in BT: CO2 14

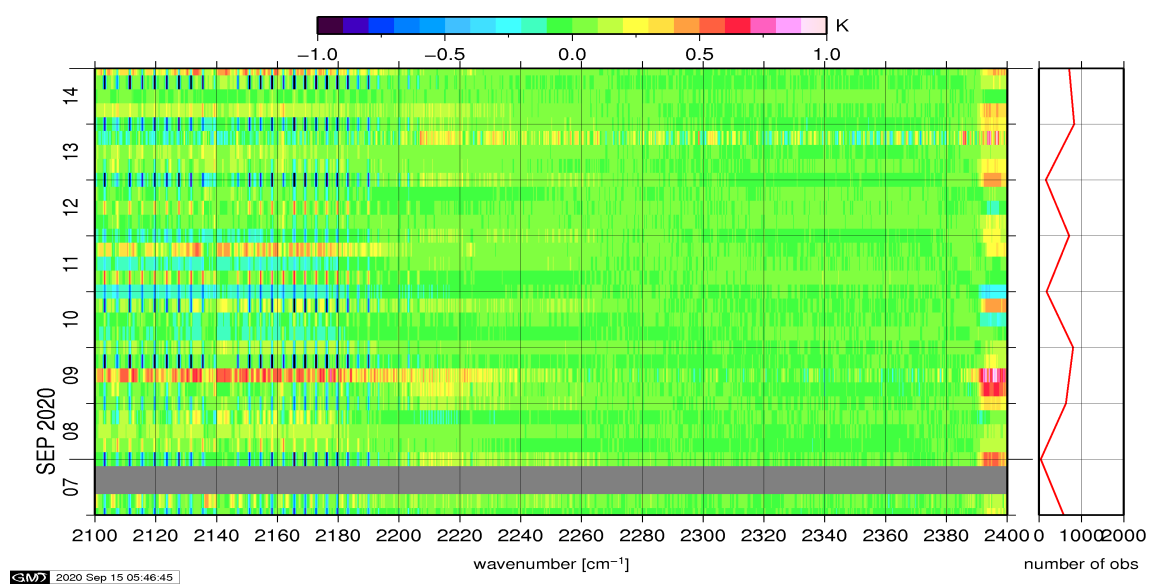


Figure 15: Radiance Anomaly in BT: CO2 4.3

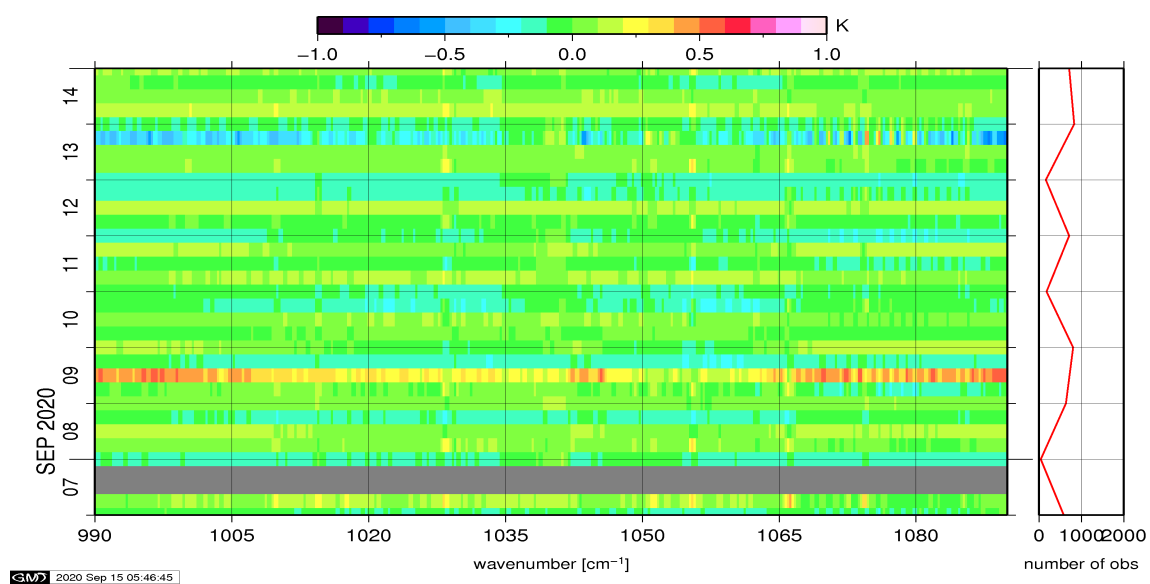


Figure 16: Radiance Anomaly in BT: O3

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.

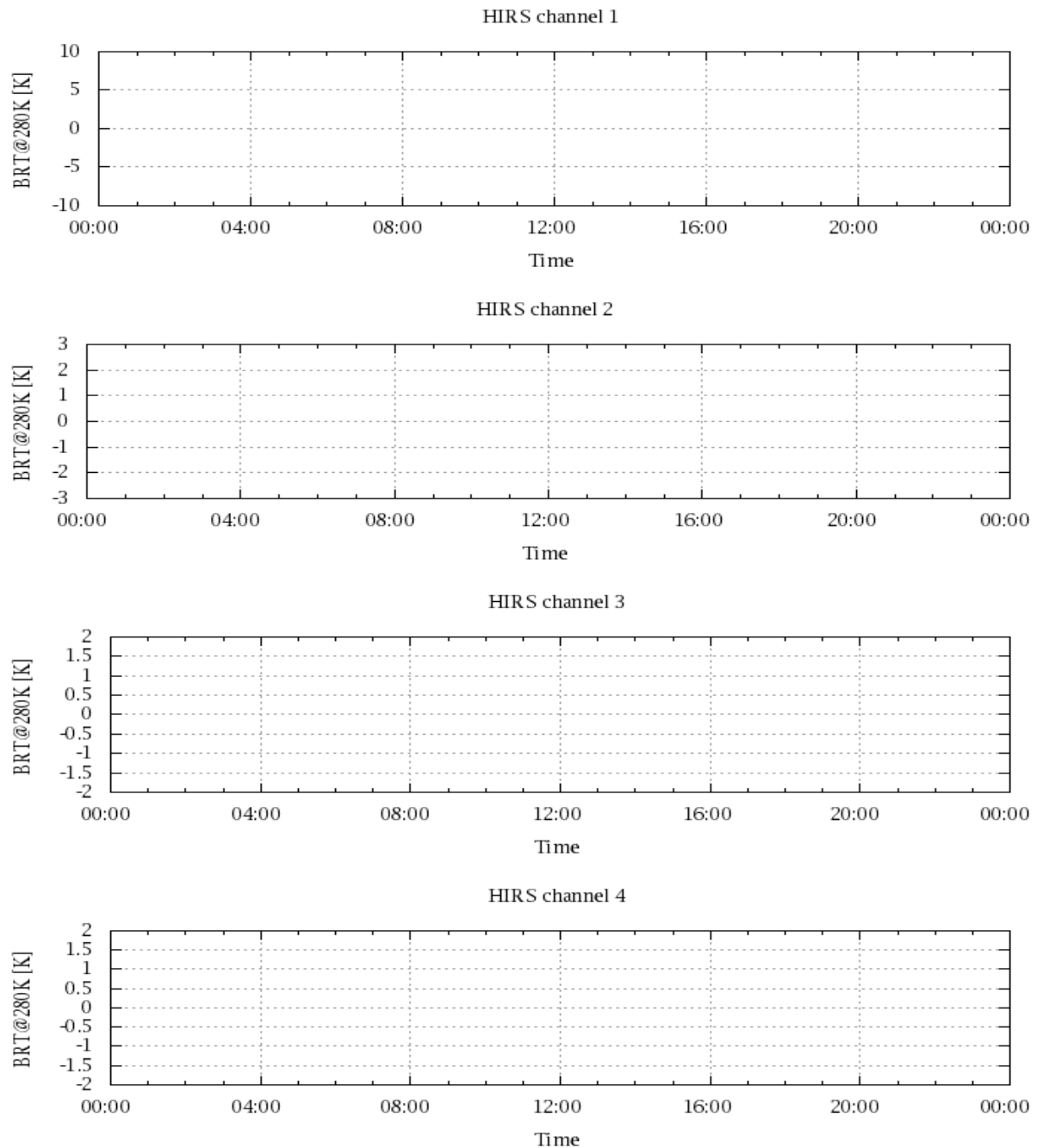


Figure 17: Radiance Differences in BT

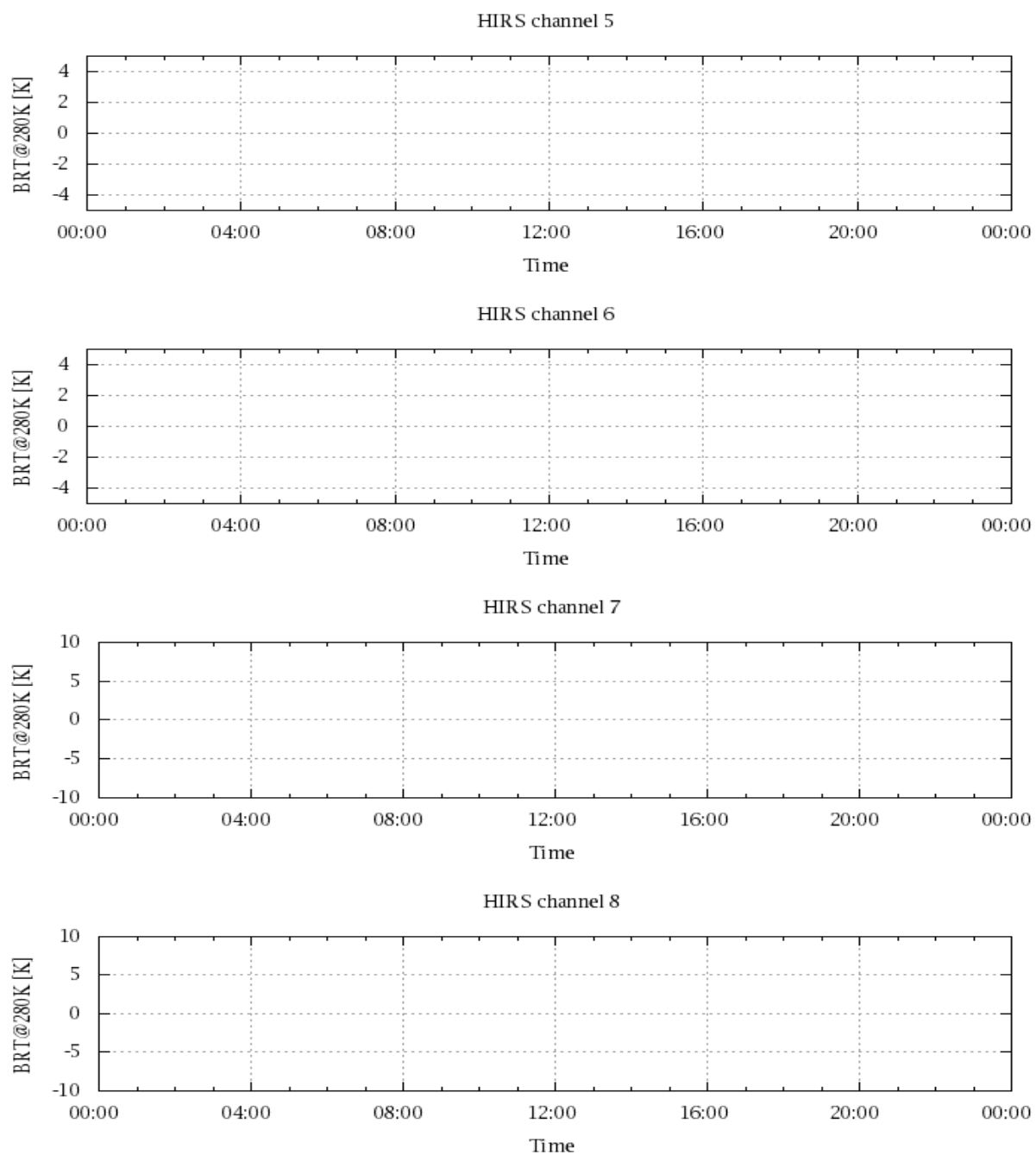


Figure 18: Radiance Differences in BT

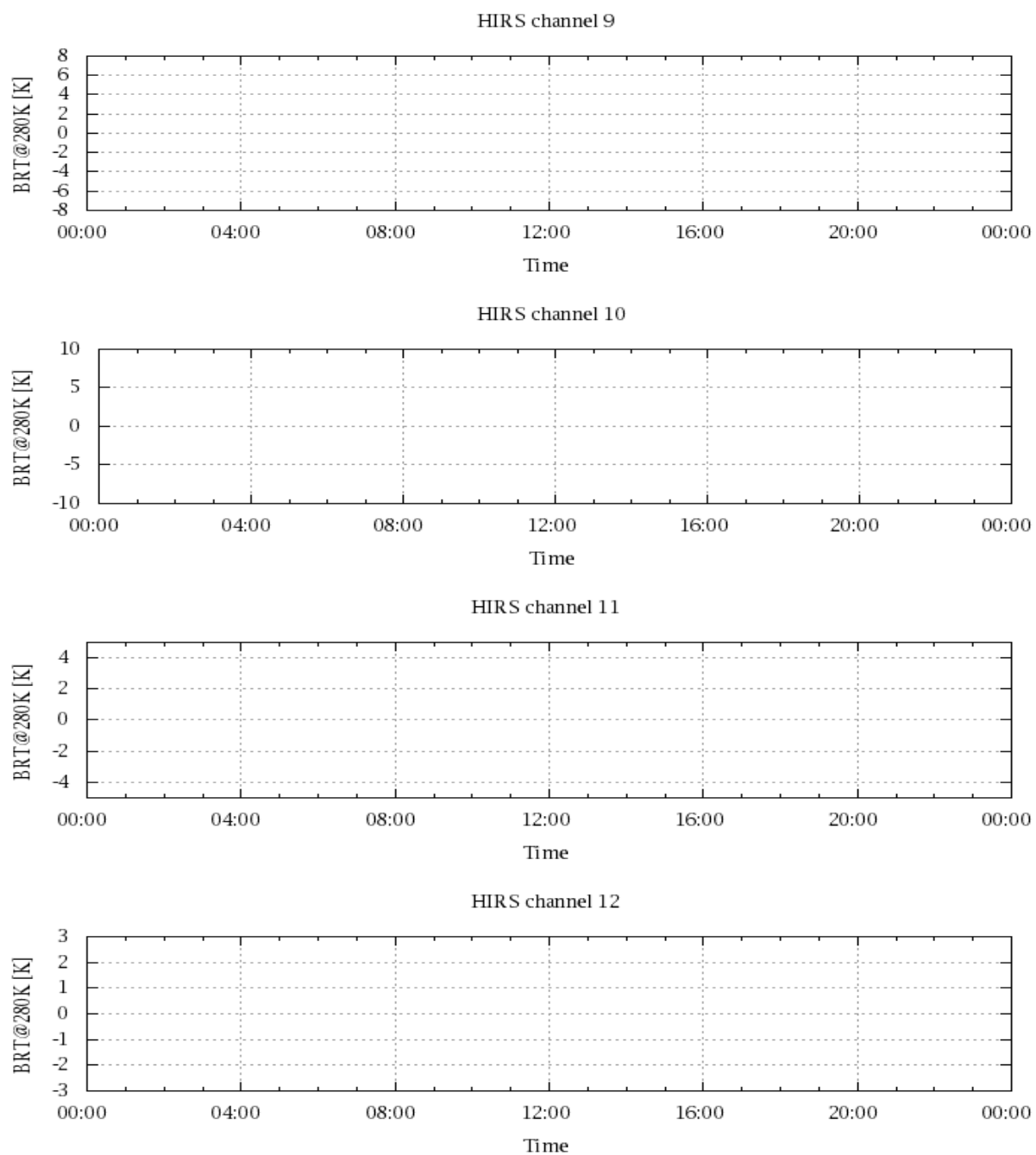


Figure 19: Radiance Differences in BT

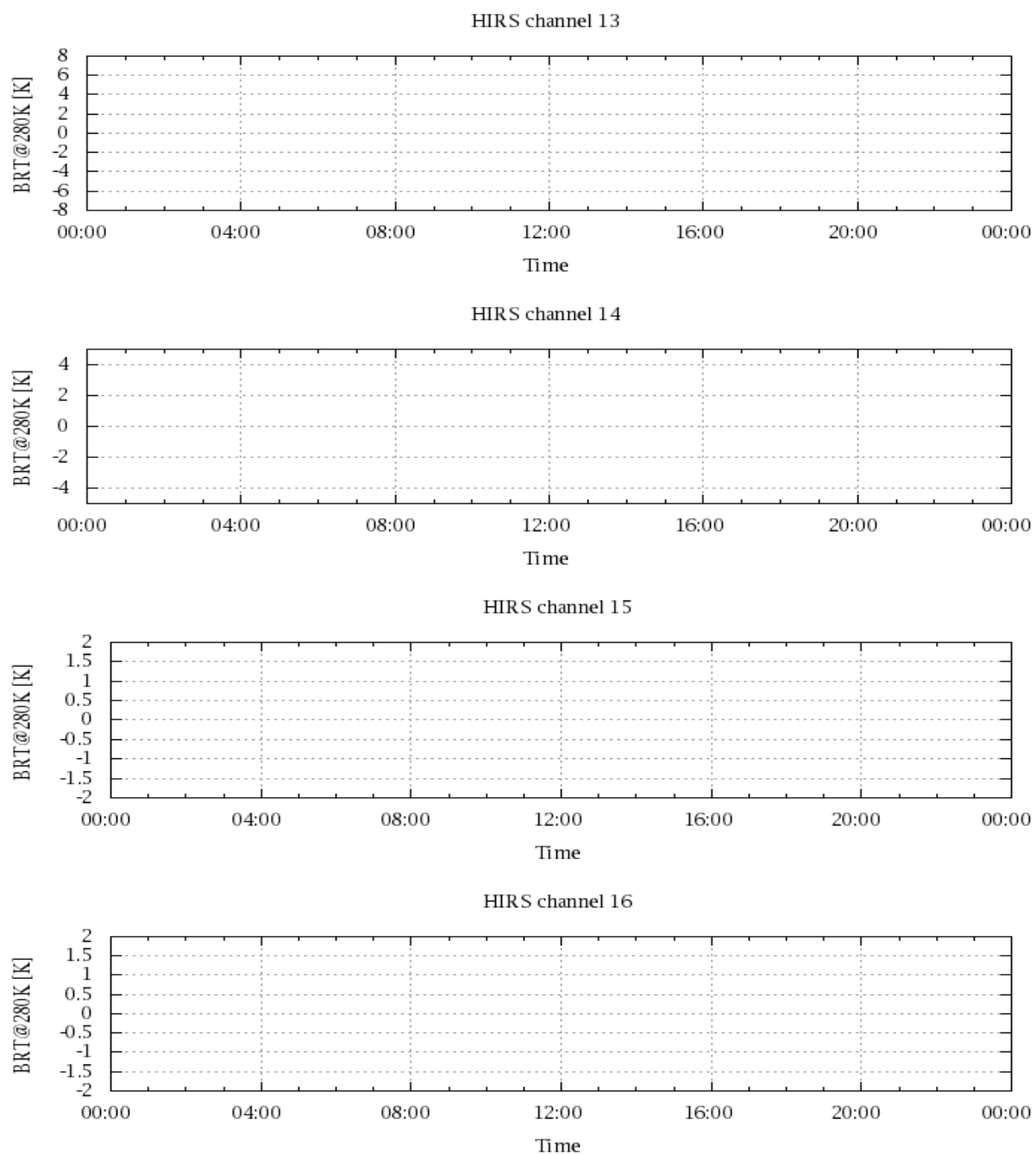


Figure 20: Radiance Differences in BT

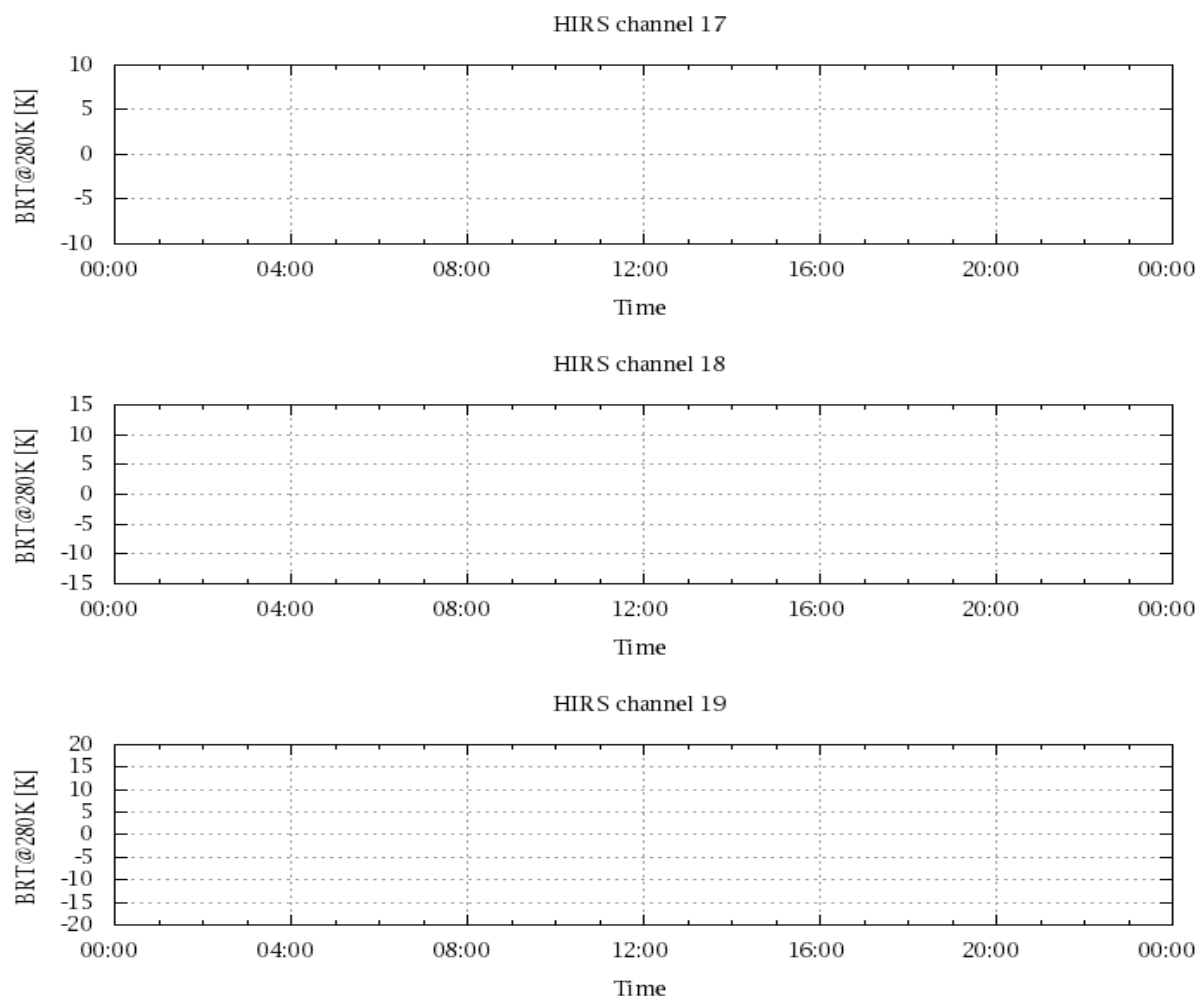


Figure 21: Radinace Differences in BT