

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

IASI monitoring team

23/06/2020 00:00:00 - 24/06/2020 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 23/06/2020 00:00:00 - 24/06/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 23/06/2020 00:00:00 - 24/06/2020 00:00:00

Product Type	Number	Action
L0 HKTm PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	459	a
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)	14449	14452	20200623030307.193	20200623030307.841
PX1 (130)	14454	14456	20200623030308.275	20200623030308.708
PX1 (130)	14458	14465	20200623030309.138	20200623030310.654
PX1 (130)	14468	14471	20200623030312.814	20200623030313.462
PX1 (130)	14472	14480	20200623030313.677	20200623030315.407
PX1 (130)	14481	14483	20200623030315.626	20200623030316.060
PX1 (130)	14483	14485	20200623030316.060	20200623030316.489
PX1 (130)	14486	14489	20200623030316.704	20200623030317.357
PX1 (130)	14489	14492	20200623030317.357	20200623030318.001
PX1 (130)	14492	14495	20200623030318.001	20200623030318.654
PX1 (130)	14519	14521	20200623030325.353	20200623030325.786
PX2 (135)	14447	14449	20200623030306.759	20200623030307.193
PX2 (135)	14454	14457	20200623030308.275	20200623030308.923
PX2 (135)	14459	14462	20200623030309.357	20200623030310.005
PX2 (135)	14462	14464	20200623030310.005	20200623030310.439
PX2 (135)	14464	14466	20200623030310.439	20200623030310.868
PX2 (135)	14471	14479	20200623030313.462	20200623030315.193
PX2 (135)	14479	14481	20200623030315.193	20200623030315.626
PX2 (135)	14481	14483	20200623030315.626	20200623030316.060

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	14486	14491	20200623030316.704	20200623030317.790
PX2 (135)	14491	14498	20200623030317.790	20200623030320.814
PX2 (135)	14498	14500	20200623030320.814	20200623030321.247
PX2 (135)	14515	14517	20200623030324.489	20200623030324.923
PX3 (140)	14442	14444	20200623030305.681	20200623030306.114
PX3 (140)	14447	14449	20200623030306.759	20200623030307.193
PX3 (140)	14449	14452	20200623030307.193	20200623030307.841
PX3 (140)	14452	14454	20200623030307.841	20200623030308.275
PX3 (140)	14459	14461	20200623030309.357	20200623030309.786
PX3 (140)	14461	14463	20200623030309.786	20200623030310.220
PX3 (140)	14465	14468	20200623030310.654	20200623030312.814
PX3 (140)	14468	14470	20200623030312.814	20200623030313.247
PX3 (140)	14472	14480	20200623030313.677	20200623030315.407
PX3 (140)	14482	14484	20200623030315.841	20200623030316.275
PX3 (140)	14486	14495	20200623030316.704	20200623030318.654
PX3 (140)	14495	14498	20200623030318.654	20200623030320.814
PX3 (140)	14499	14501	20200623030321.028	20200623030321.462
PX3 (140)	14517	14520	20200623030324.923	20200623030325.571
PX4 (145)	14450	14452	20200623030307.411	20200623030307.841
PX4 (145)	14454	14456	20200623030308.275	20200623030308.708
PX4 (145)	14456	14461	20200623030308.708	20200623030309.786
PX4 (145)	14461	14464	20200623030309.786	20200623030310.439
PX4 (145)	14464	14466	20200623030310.439	20200623030310.868
PX4 (145)	14467	14473	20200623030311.083	20200623030313.896
PX4 (145)	14473	14478	20200623030313.896	20200623030314.978
PX4 (145)	14478	14481	20200623030314.978	20200623030315.626
PX4 (145)	14484	14487	20200623030316.275	20200623030316.923
PX4 (145)	14489	14491	20200623030317.357	20200623030317.790
PX4 (145)	14491	14494	20200623030317.790	20200623030318.435
PX4 (145)	14494	14497	20200623030318.435	20200623030319.087
PX4 (145)	14497	14499	20200623030319.087	20200623030321.028
PX4 (145)	14517	14519	20200623030324.923	20200623030325.353
IMG (150)	11999	12001	20200623030306.759	20200623030307.193
IMG (150)	12002	12004	20200623030307.411	20200623030307.841
IMG (150)	12012	12015	20200623030309.571	20200623030310.220
IMG (150)	12016	12018	20200623030310.439	20200623030310.868
IMG (150)	12018	12020	20200623030310.868	20200623030311.517
IMG (150)	12022	12024	20200623030312.165	20200623030312.814
IMG (150)	12029	12034	20200623030313.896	20200623030314.978
IMG (150)	12037	12039	20200623030315.626	20200623030316.060
IMG (150)	12042	12047	20200623030316.704	20200623030317.790
IMG (150)	12047	12050	20200623030317.790	20200623030318.435
IMG (150)	12050	12052	20200623030318.435	20200623030318.868
VER (160)	5133	5138	20200623030303.087	20200623030311.083
VER (160)	5138	5143	20200623030311.083	20200623030319.087
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
23/06/2020 00:00:04	-	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	459	a
GQisFlagQual set (PX1)	99.53 %	-
GQisFlagQual set (PX2)	99.63 %	-
GQisFlagQual set (PX3)	99.63 %	-
GQisFlagQual set (PX4)	99.53 %	-
GQisFlagQual set (all)	99.58 %	-

Table 4: Quality flags

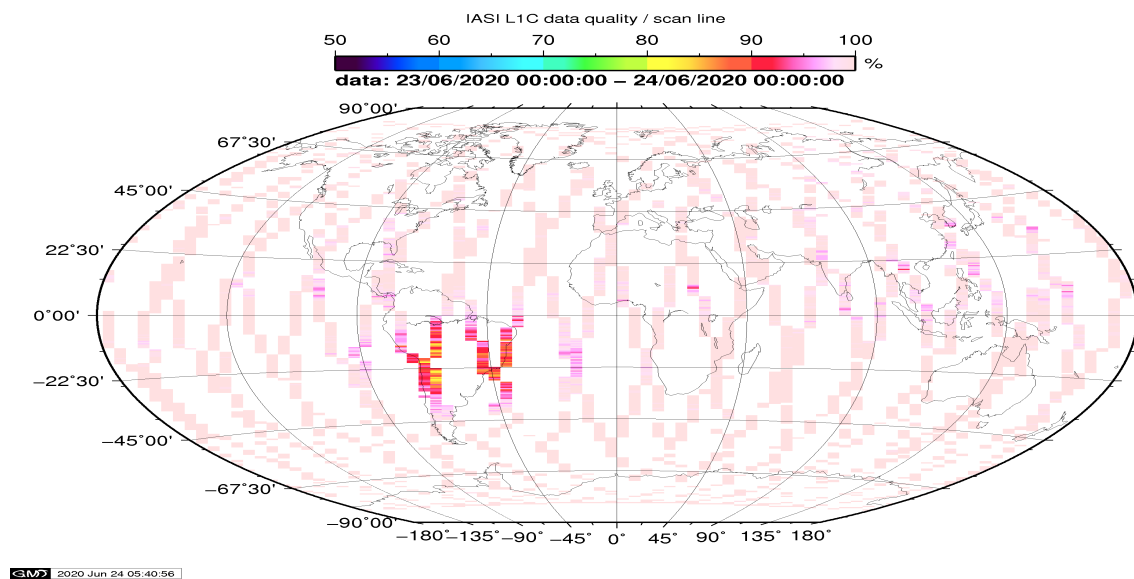


Figure 1: L1C data quality

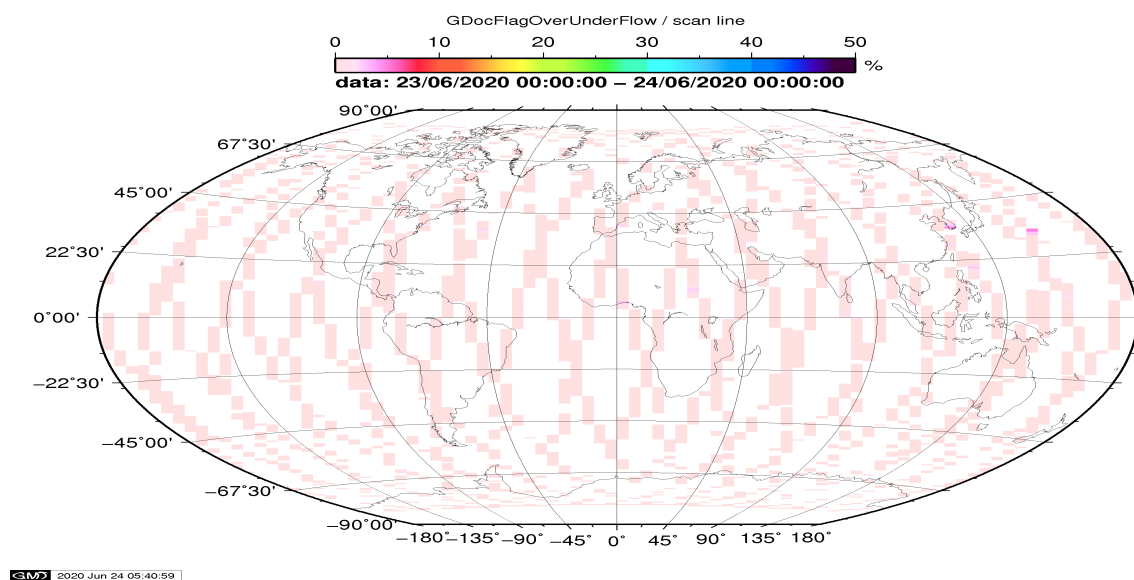


Figure 2: Flag of Over and Under Flows

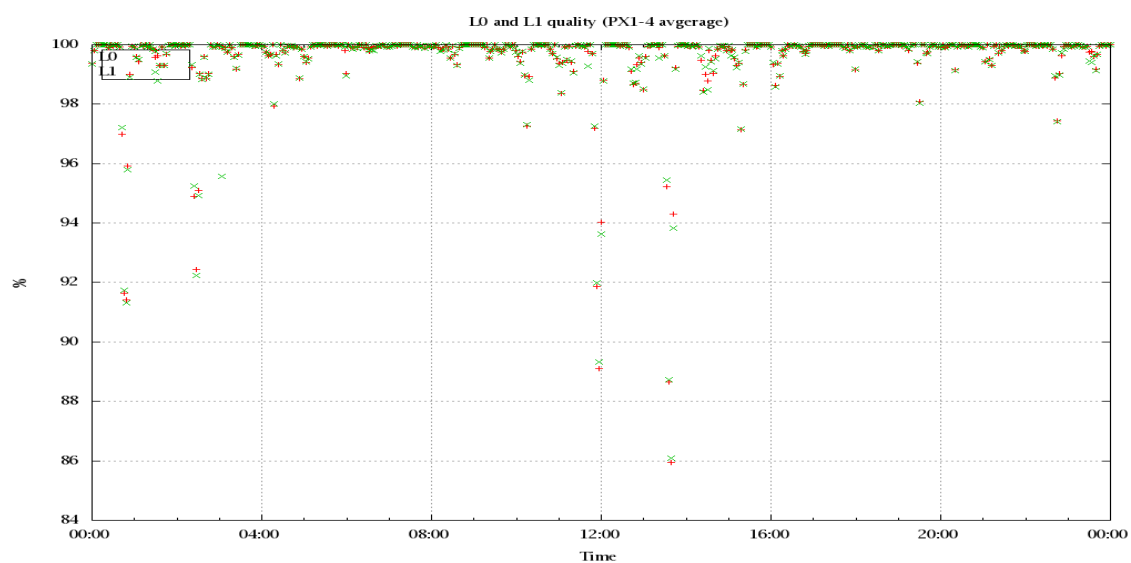


Figure 3: Level 0 and 1C overall quality

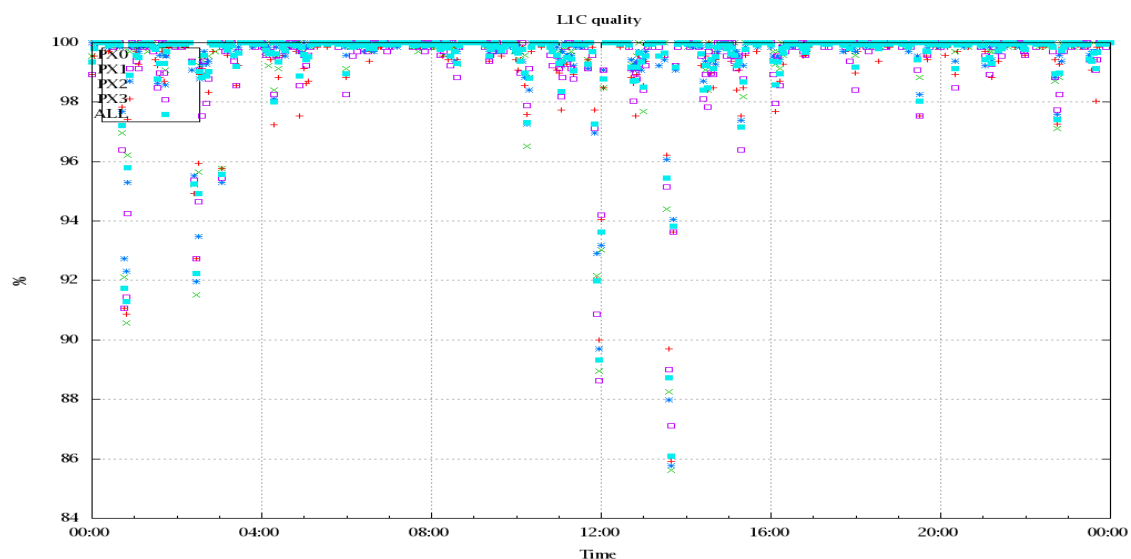


Figure 4: Level 1C quality

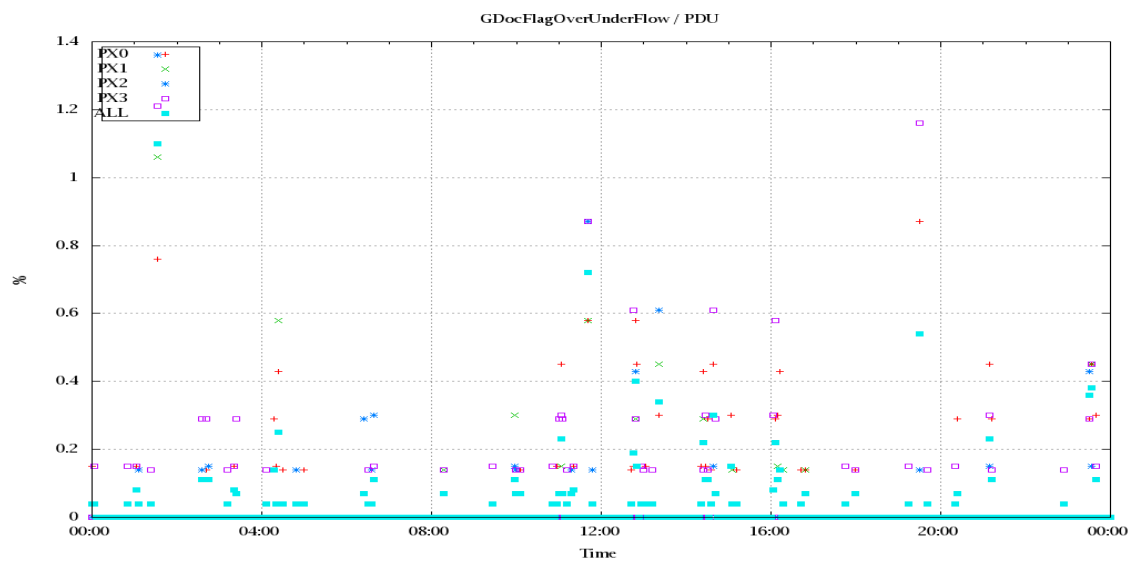


Figure 5: Timeseries of flag of Over and Under Flows

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 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.

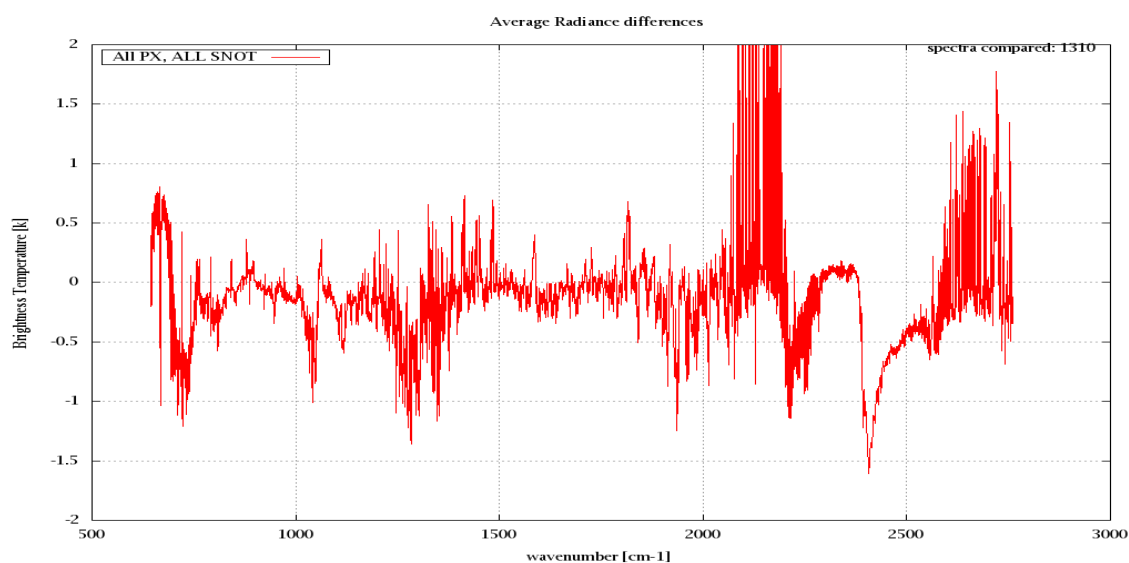


Figure 6: Average Radiance differences: OBS-CAL

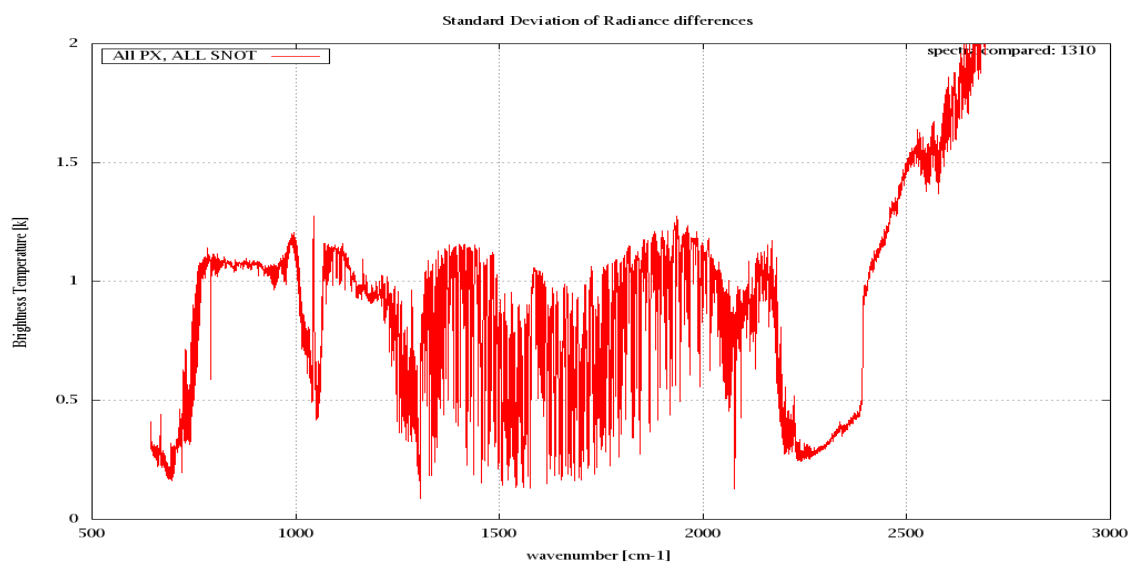


Figure 7: Standard Deviation of Radiance differences

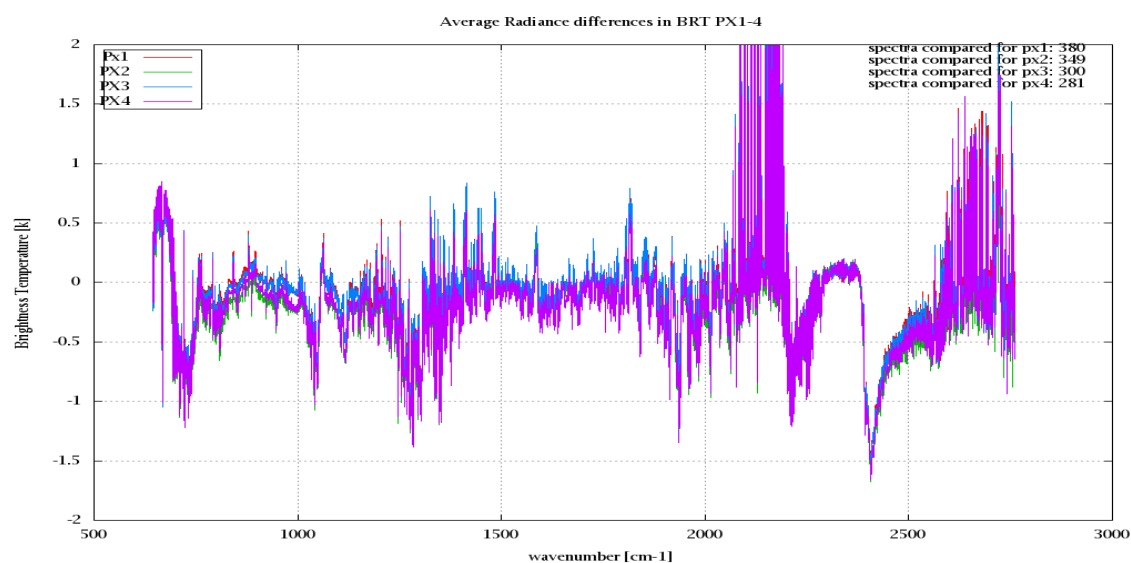


Figure 8: Average Radiance differences: OBS-CAL

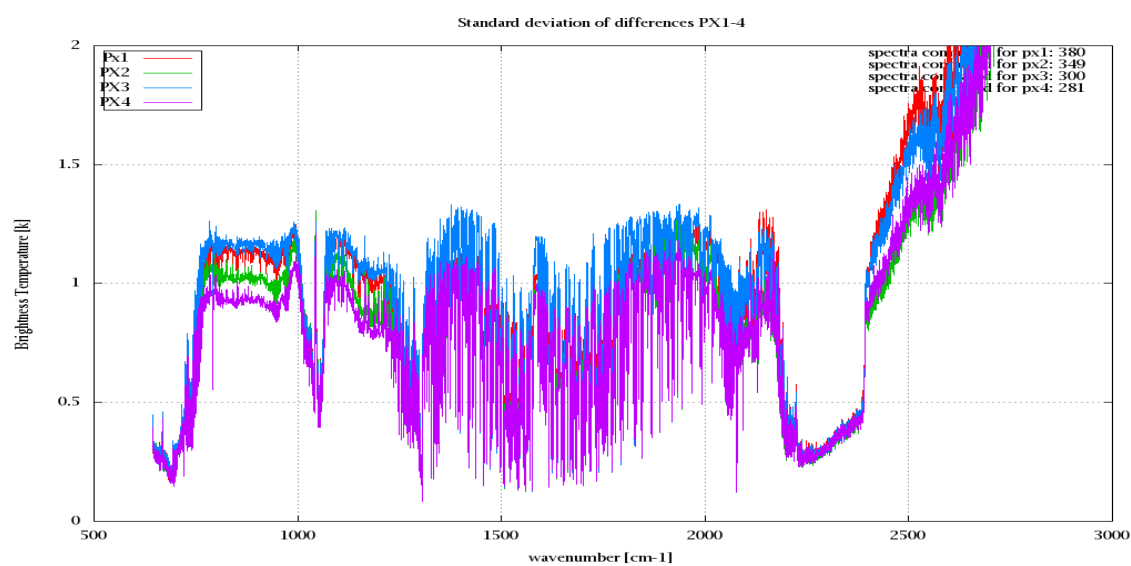


Figure 9: Standard Deviation of Radiance differences

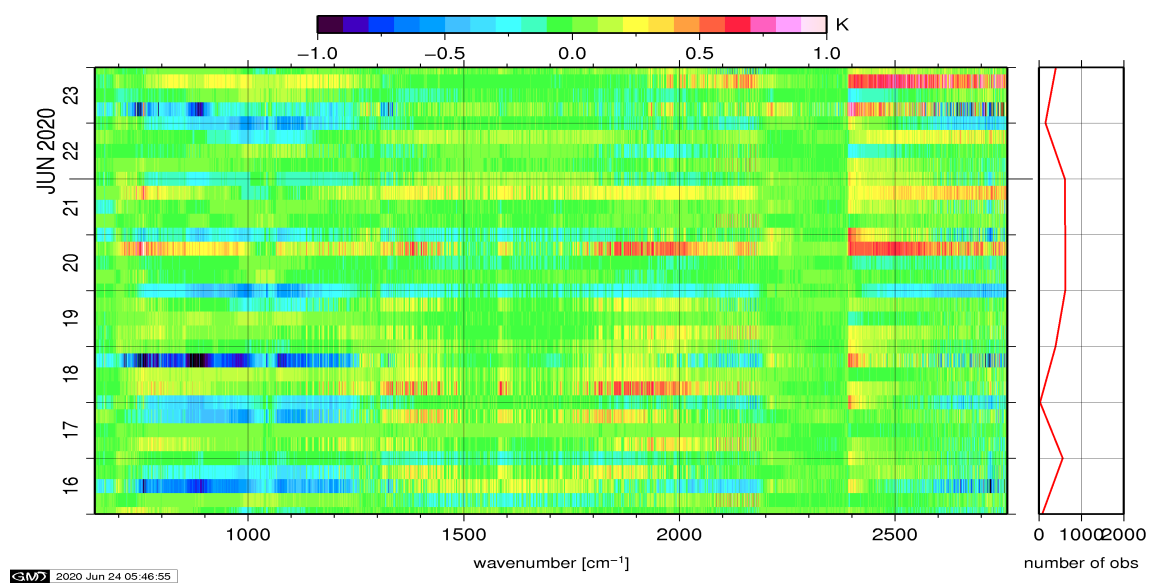


Figure 10: Radiance Anomaly in BT: All Channels

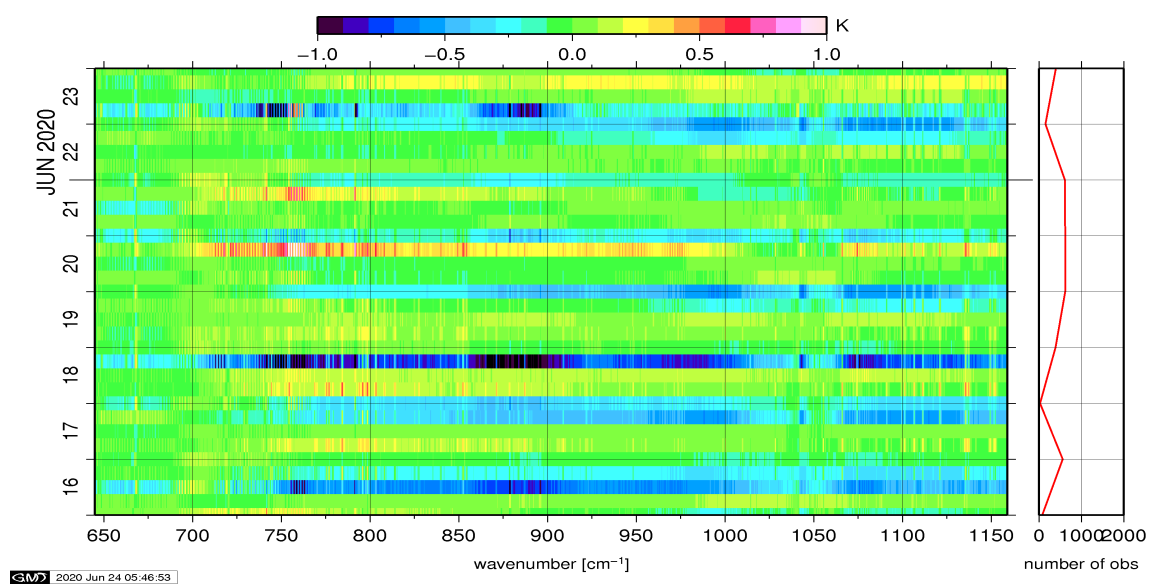


Figure 11: Radiance Anomaly in BT: IASI Band 1

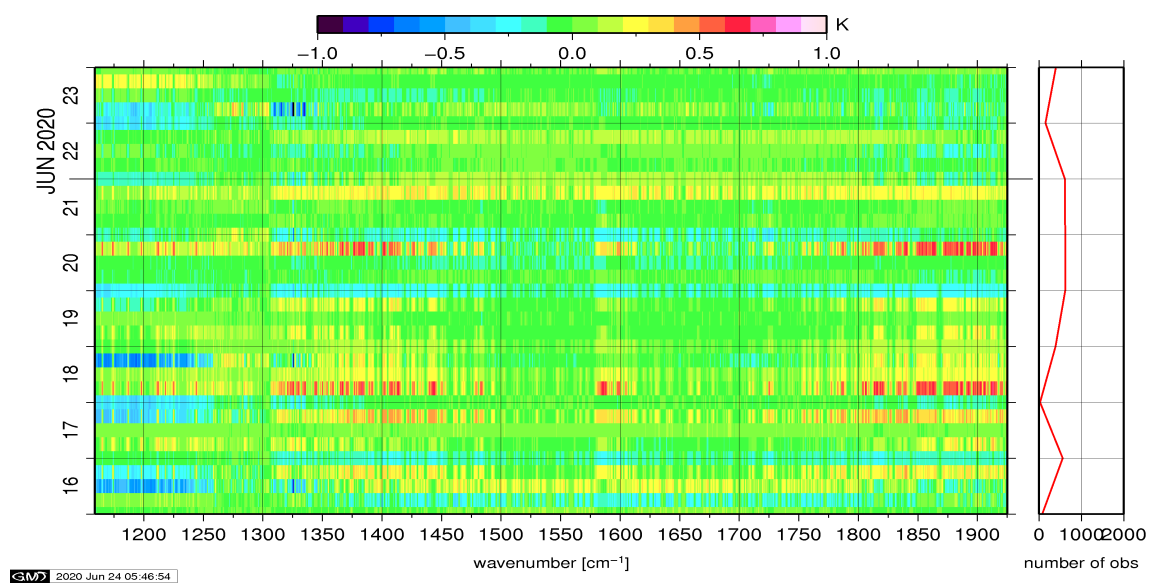


Figure 12: Radiance Anomaly in BT: IASI Band 2

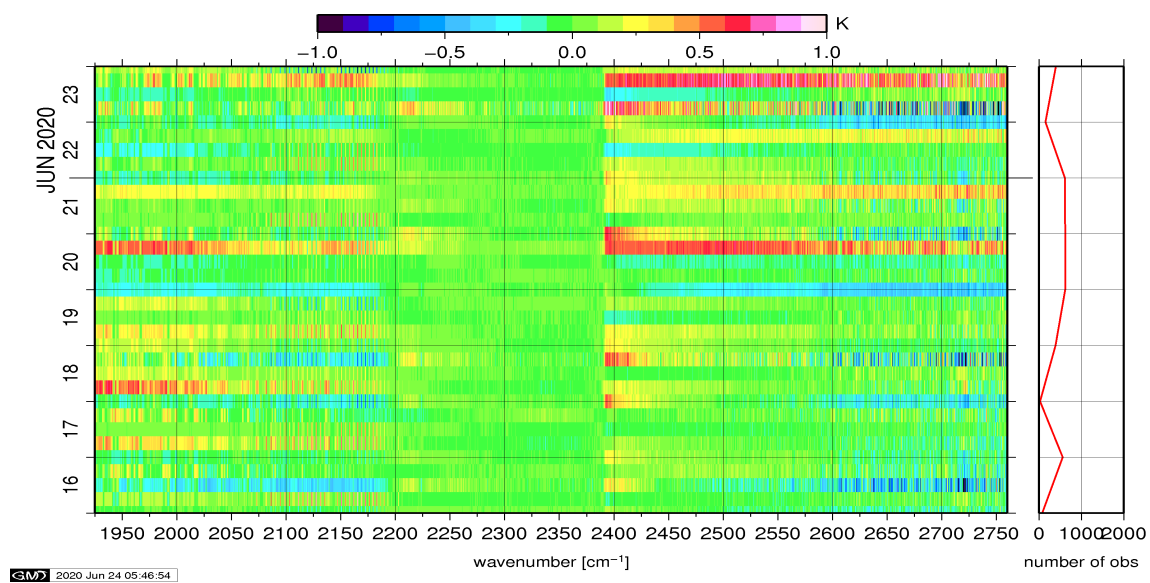


Figure 13: Radiance Anomaly in BT: IASI Band 3

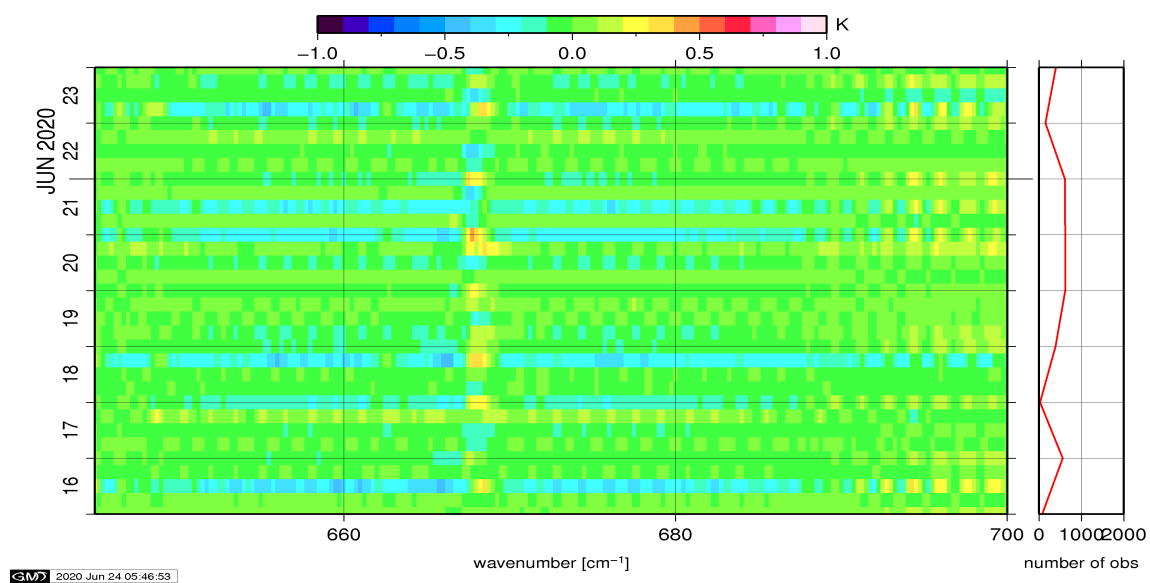


Figure 14: Radiance Anomaly in BT: CO2 14

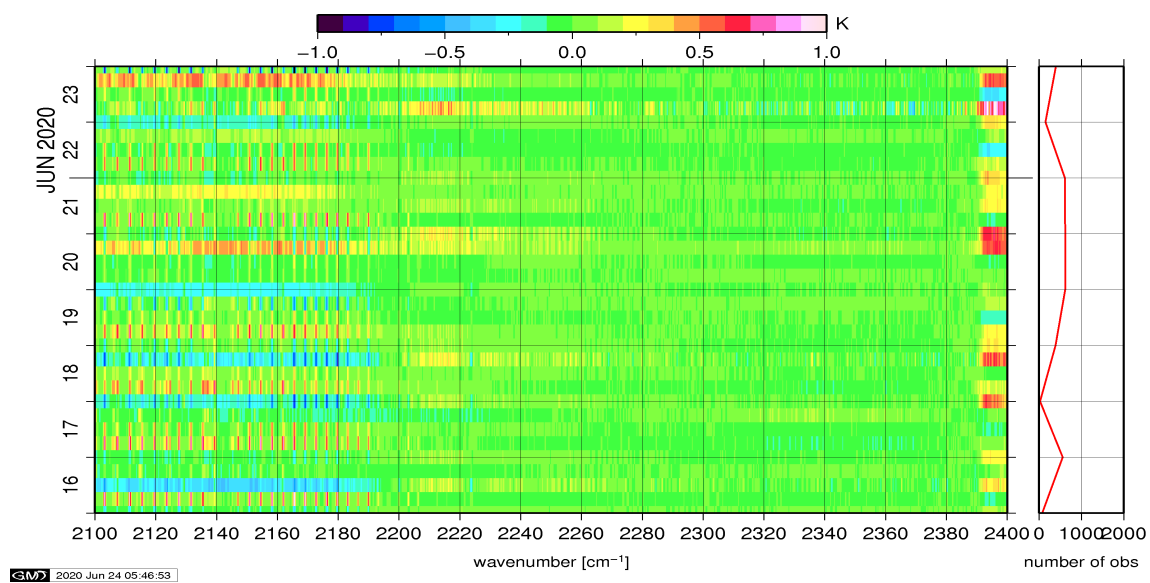


Figure 15: Radiance Anomaly in BT: CO2 4.3

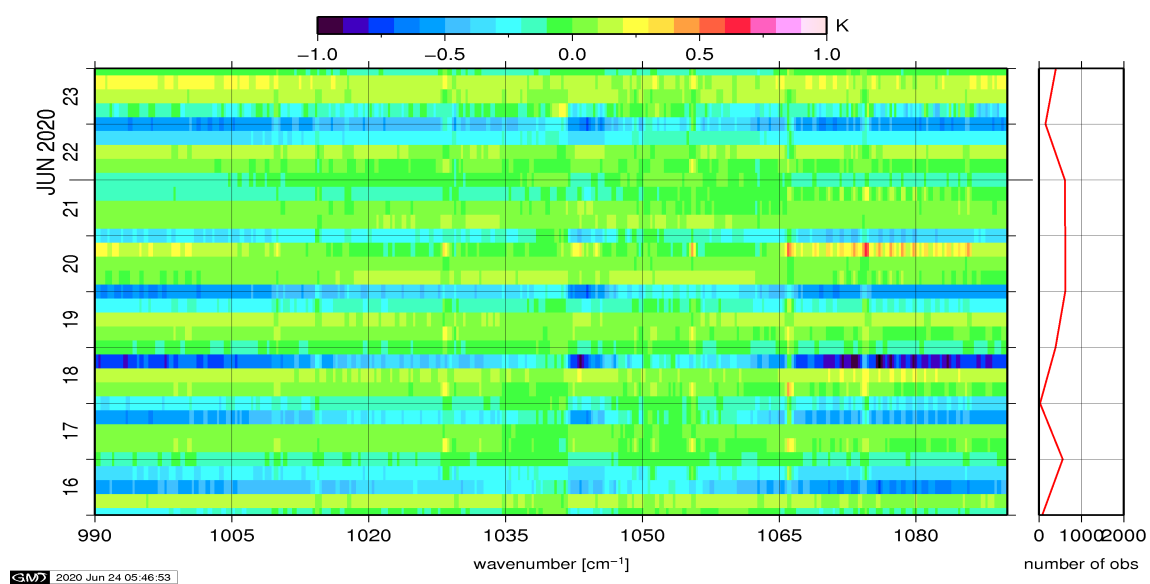


Figure 16: Radiance Anomaly in BT: O3

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.

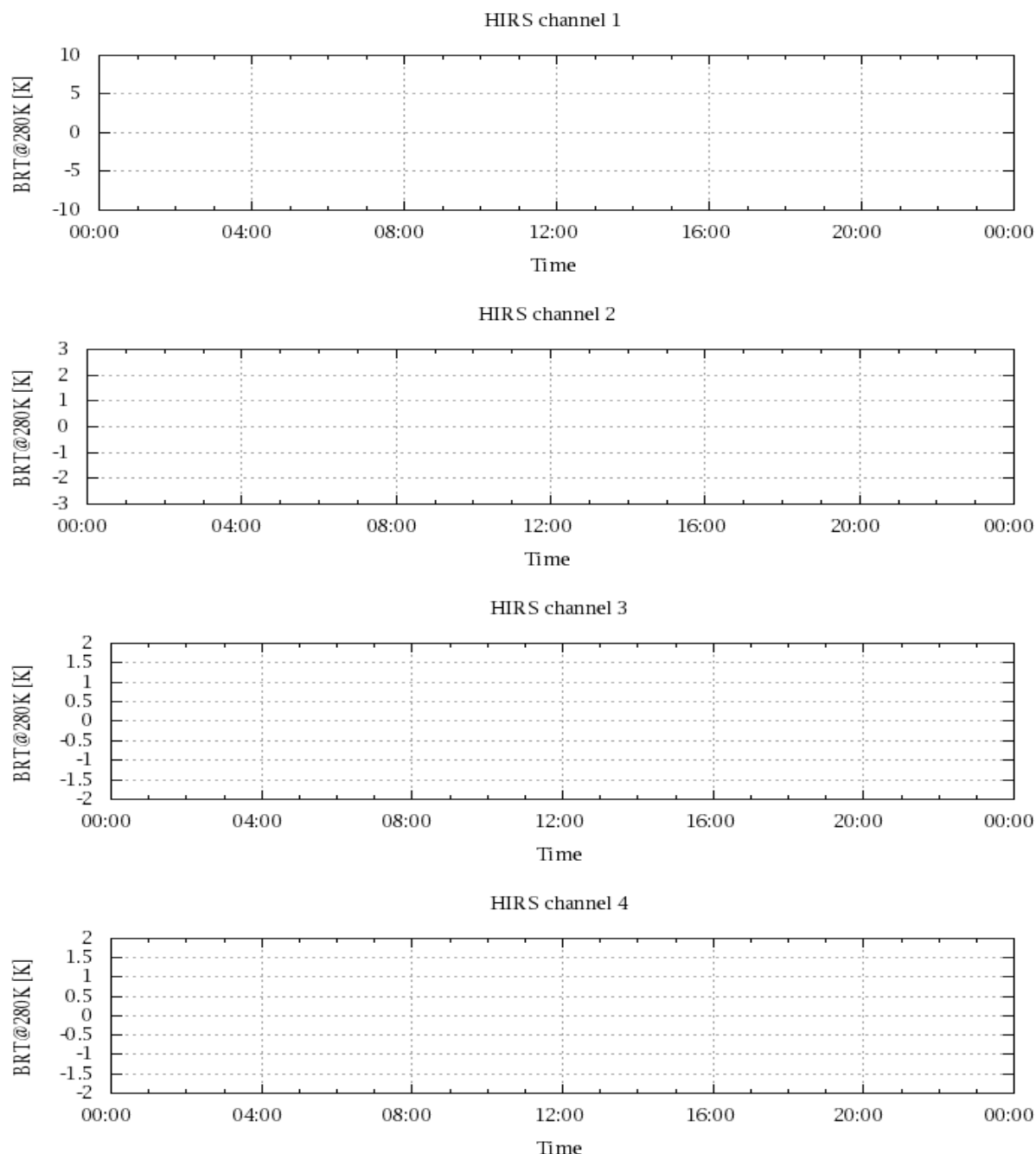


Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT



Figure 20: Radiance Differences in BT



Figure 21: Radinace Differences in BT