

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

IASI monitoring team

28/12/2020 00:00:00 - 29/12/2020 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 28/12/2020 00:00:00 - 29/12/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

2 Data quantity 28/12/2020 00:00:00 - 29/12/2020 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)	5717	5899	20201228122517.123	20201228122607.068
PX1 (130)	6075	6107	20201228122652.689	20201228122701.119
PX1 (130)	6112	6114	20201228122703.712	20201228122704.146
PX1 (130)	6119	6121	20201228122705.228	20201228122705.662
PX1 (130)	6136	6166	20201228122708.904	20201228122716.904
PX1 (130)	14832	15019	20201228130548.008	20201228130639.031
PX2 (135)	5717	5899	20201228122517.123	20201228122607.068
PX2 (135)	6075	6107	20201228122652.689	20201228122701.119
PX2 (135)	6128	6130	20201228122707.173	20201228122707.607
PX2 (135)	6135	6166	20201228122708.689	20201228122716.904
PX2 (135)	14832	15019	20201228130548.008	20201228130639.031
PX3 (140)	5717	5899	20201228122517.123	20201228122607.068
PX3 (140)	6075	6107	20201228122652.689	20201228122701.119
PX3 (140)	6114	6116	20201228122704.146	20201228122704.580
PX3 (140)	6121	6123	20201228122705.662	20201228122706.091
PX3 (140)	6135	6165	20201228122708.689	20201228122716.685
PX3 (140)	14832	15019	20201228130548.008	20201228130639.031
PX4 (145)	5717	5899	20201228122517.123	20201228122607.068
PX4 (145)	6074	6106	20201228122652.470	20201228122700.904

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	6114	6116	20201228122704.146	20201228122704.580
PX4 (145)	6130	6132	20201228122707.607	20201228122708.037
PX4 (145)	6135	6165	20201228122708.689	20201228122716.685
PX4 (145)	14832	15019	20201228130548.008	20201228130639.031
IMG (150)	10116	10323	20201228122516.908	20201228122605.771
IMG (150)	10522	10558	20201228122652.470	20201228122700.904
IMG (150)	10572	10574	20201228122704.580	20201228122705.009
IMG (150)	10579	10581	20201228122706.091	20201228122706.525
IMG (150)	10581	10583	20201228122706.525	20201228122706.959
IMG (150)	10588	10590	20201228122708.037	20201228122708.470
IMG (150)	10591	10625	20201228122708.689	20201228122716.685
IMG (150)	4063	4275	20201228130547.793	20201228130637.734
VER (160)	5619	5654	20201228122509.342	20201228122517.123
VER (160)	5679	5685	20201228122645.337	20201228122701.337
VER (160)	5689	5695	20201228122701.337	20201228122717.337
VER (160)	7139	7172	20201228130541.305	20201228130548.008
AUX (180)	1099	1106	20201228122509.771	20201228122605.771
AUX (180)	1111	1113	20201228122645.771	20201228122701.767
AUX (180)	1113	1115	20201228122701.767	20201228122717.767
AUX (180)	1403	1410	20201228130541.739	20201228130637.734

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
28/12/2020 00:00:07	-	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)	99.41 %	-
GQisFlagQual set (PX3)	99.43 %	-
GQisFlagQual set (PX4)	99.45 %	-
GQisFlagQual set (all)	99.43 %	-

Table 4: Quality flags

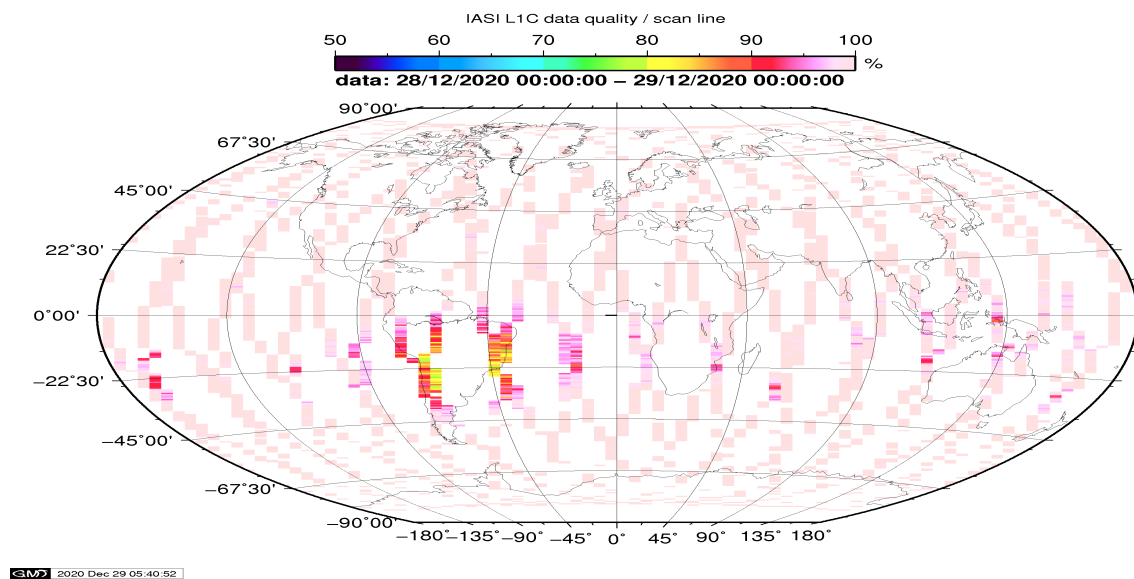


Figure 1: L1C data quality

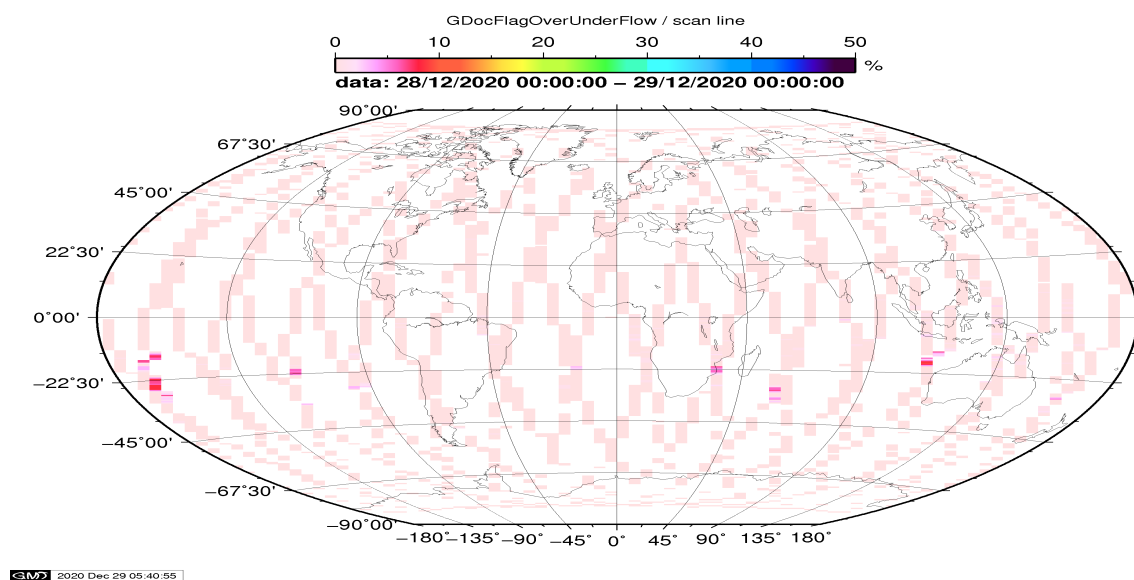


Figure 2: Flag of Over and Under Flows

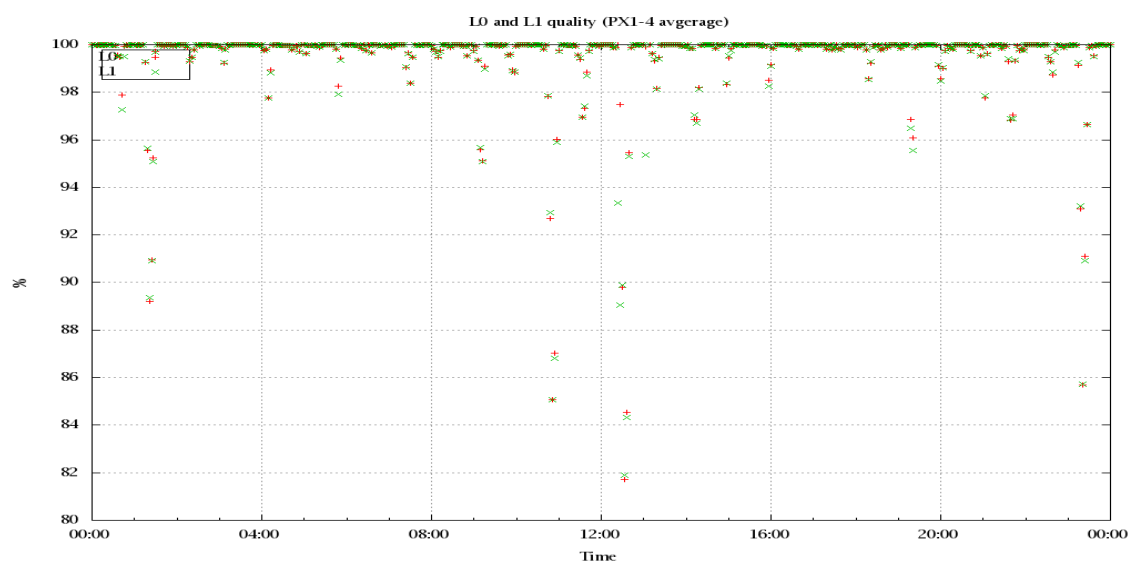


Figure 3: Level 0 and 1C overall quality

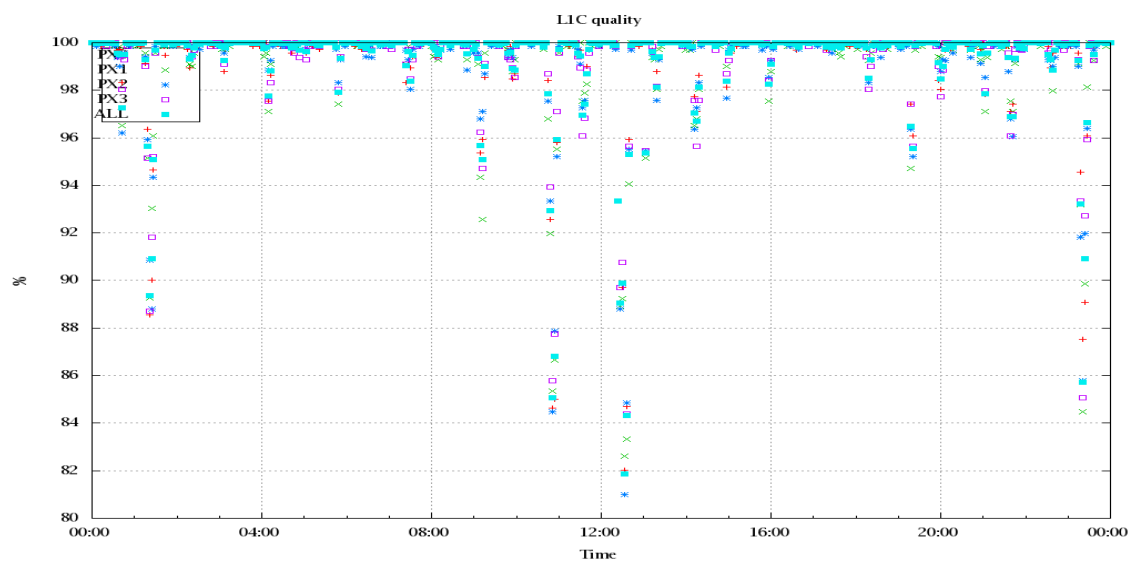


Figure 4: Level 1C quality

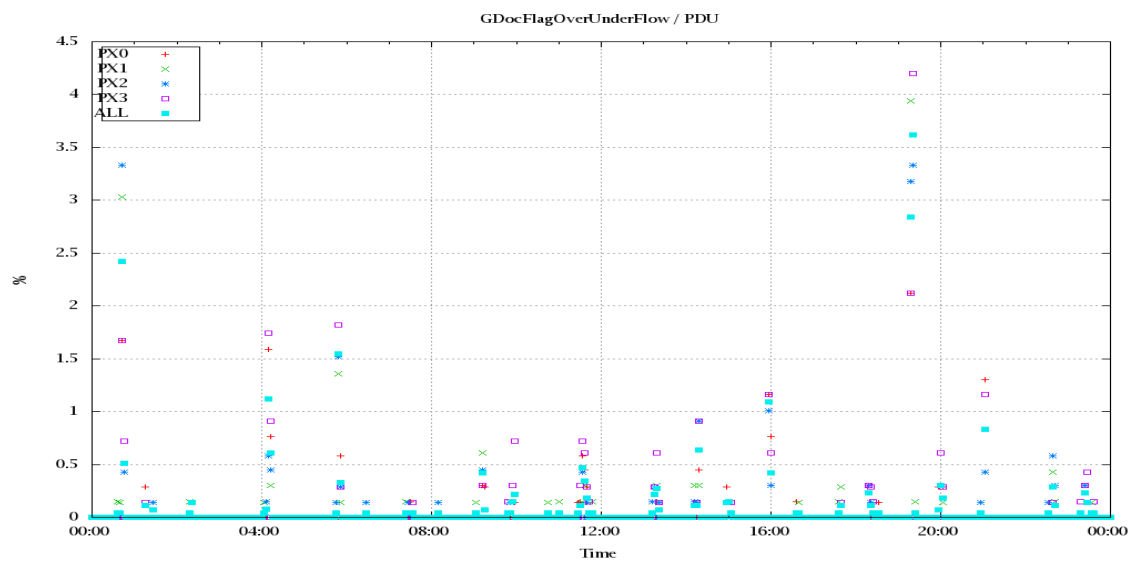


Figure 5: Timeseries of flag of Over and Under Flows

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.

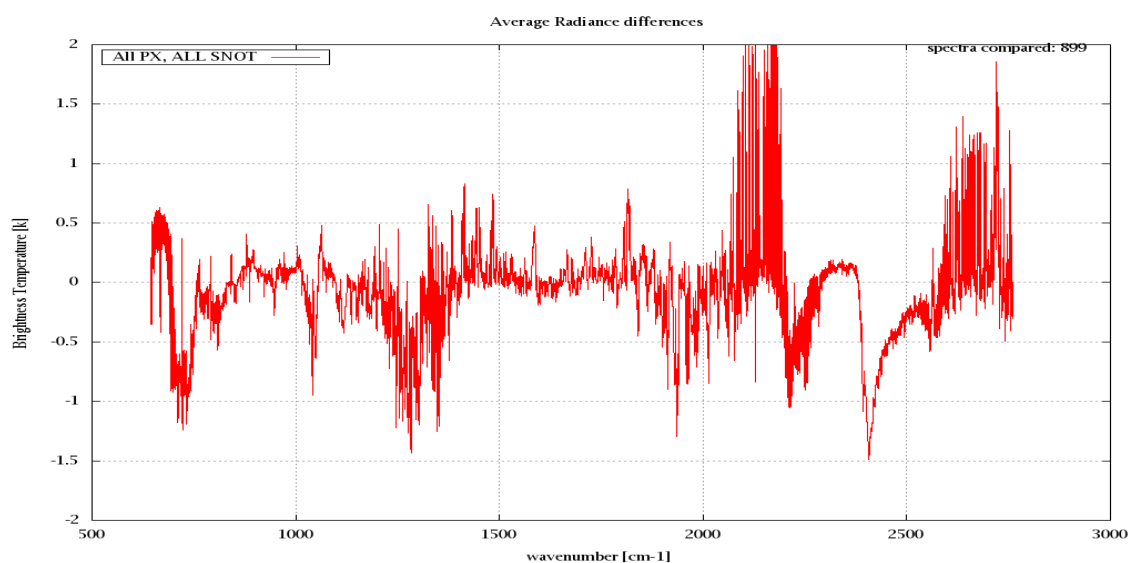


Figure 6: Average Radiance differences: OBS-CAL

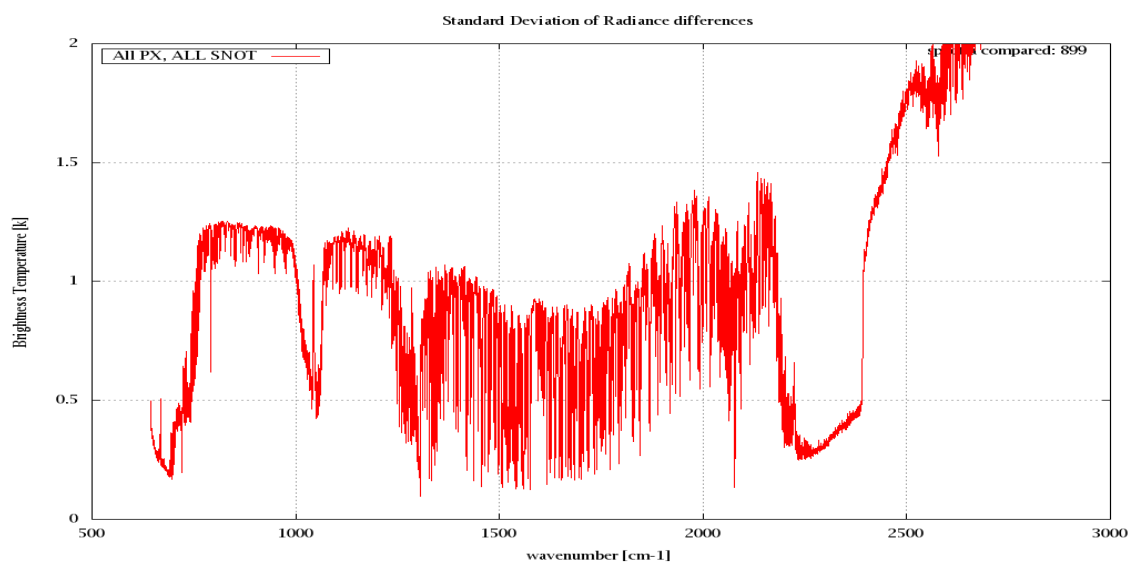


Figure 7: Standard Deviation of Radiance differences

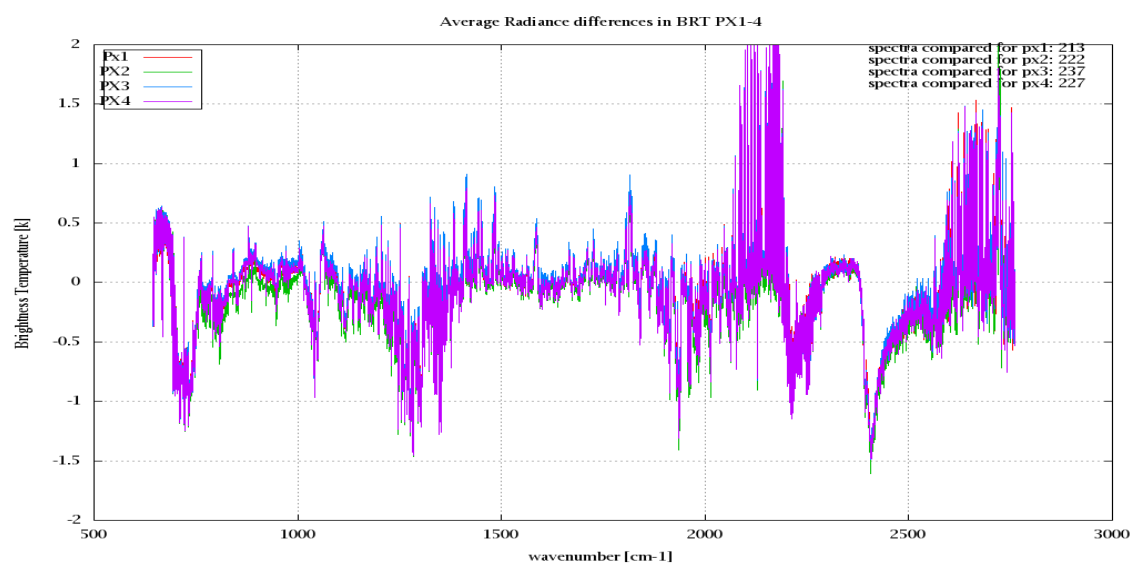


Figure 8: Average Radiance differences: OBS-CAL

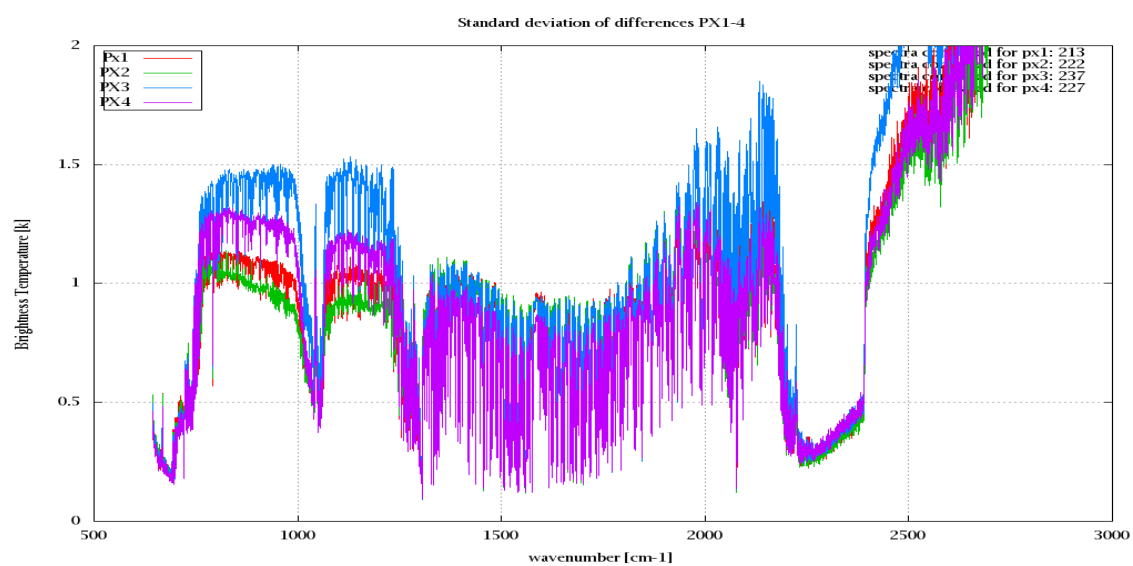


Figure 9: Standard Deviation of Radiance differences

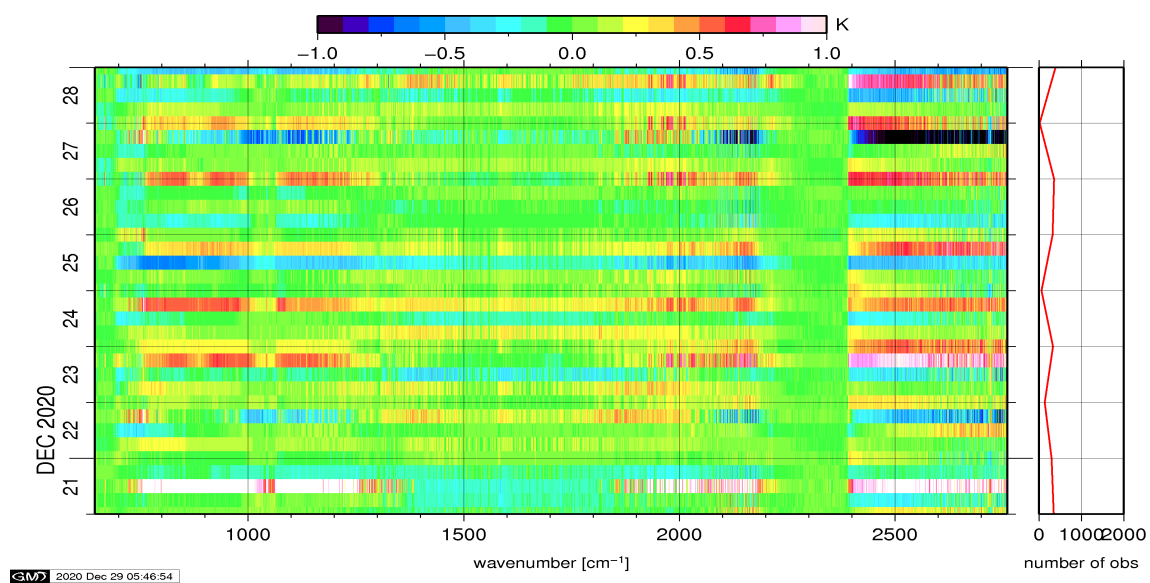


Figure 10: Radiance Anomaly in BT: All Channels

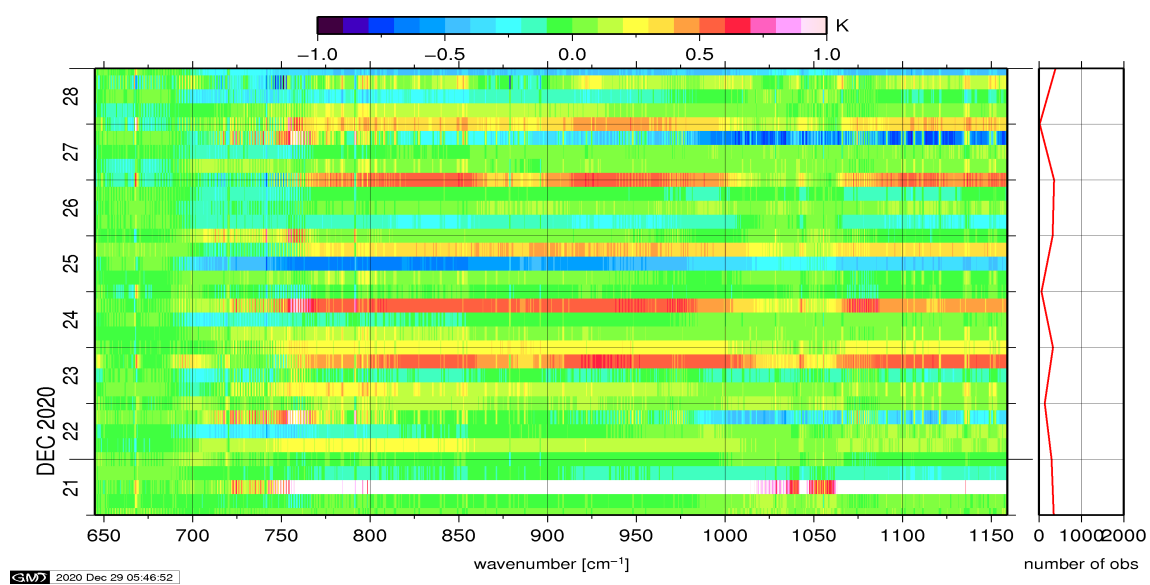


Figure 11: Radiance Anomaly in BT: IASI Band 1

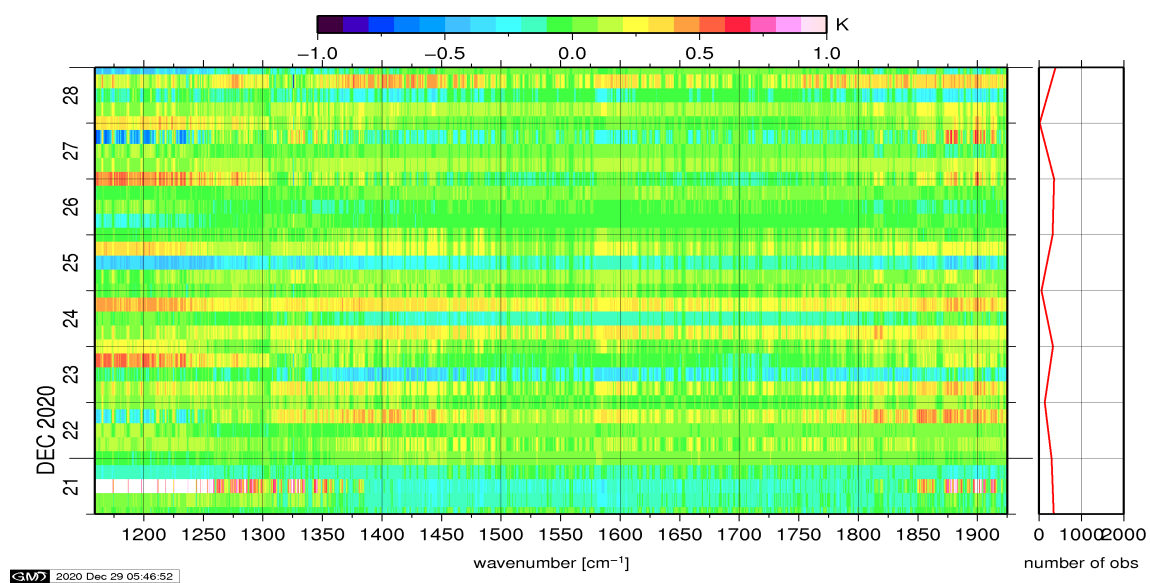


Figure 12: Radiance Anomaly in BT: IASI Band 2

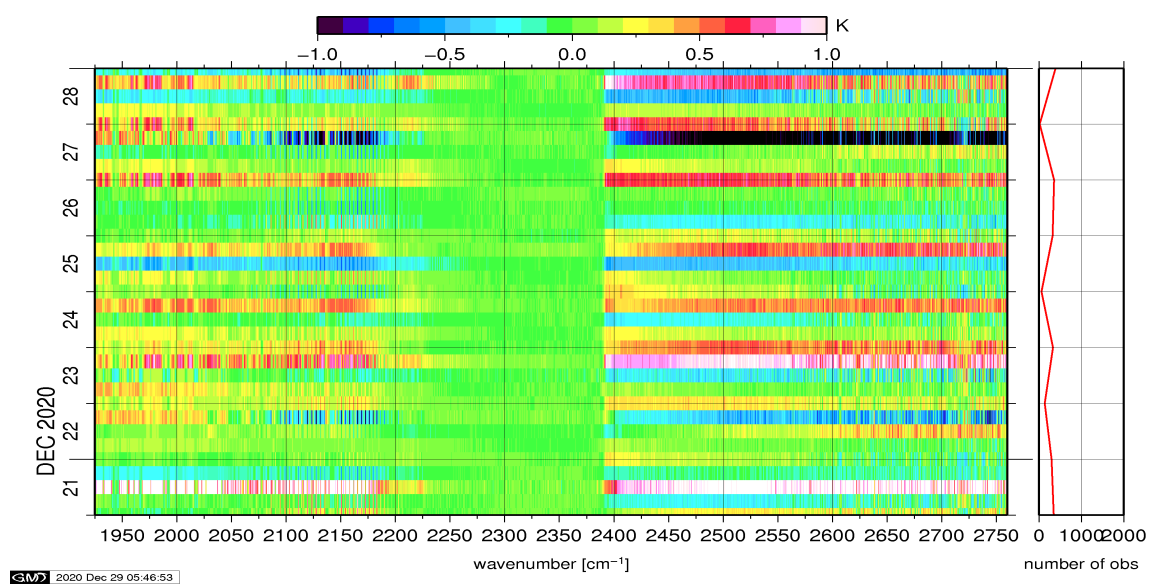


Figure 13: Radiance Anomaly in BT: IASI Band 3

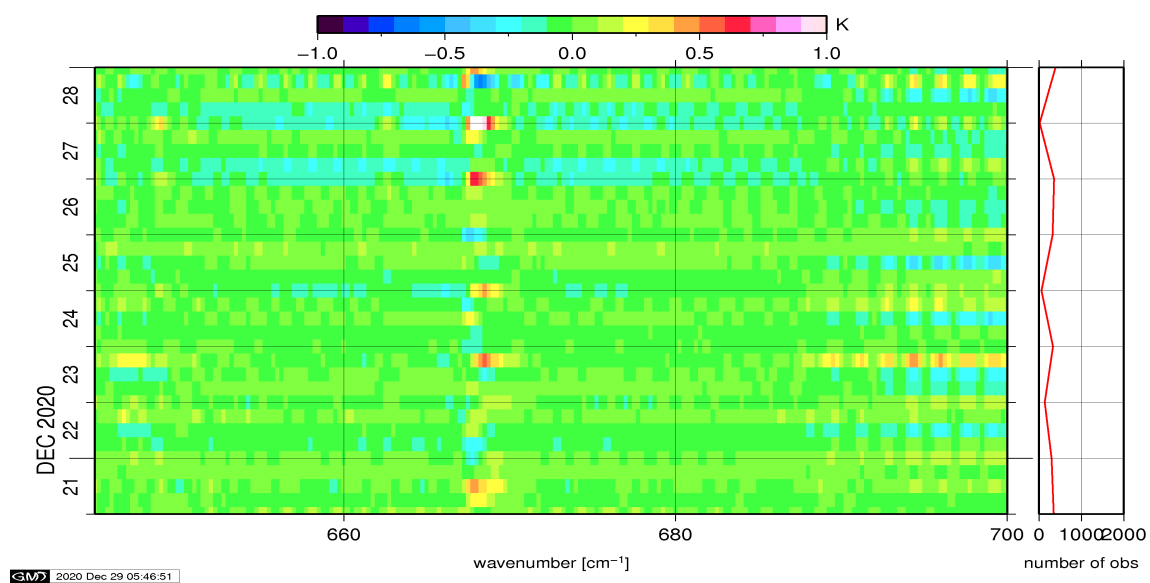


Figure 14: Radiance Anomaly in BT: CO2 14

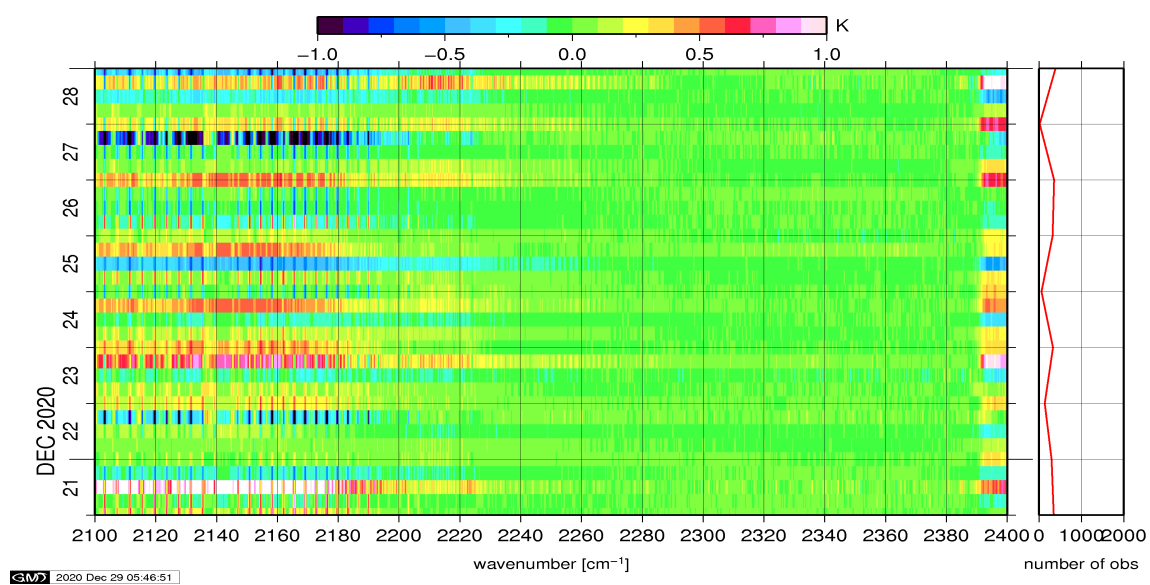


Figure 15: Radiance Anomaly in BT: CO2 4.3

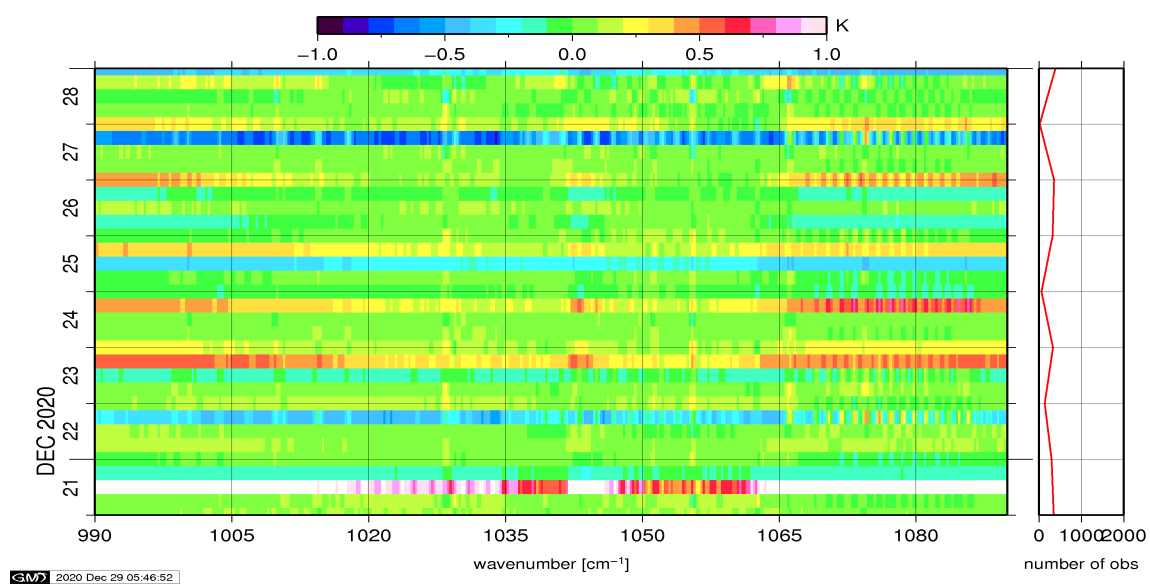


Figure 16: Radiance Anomaly in BT: O3

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.

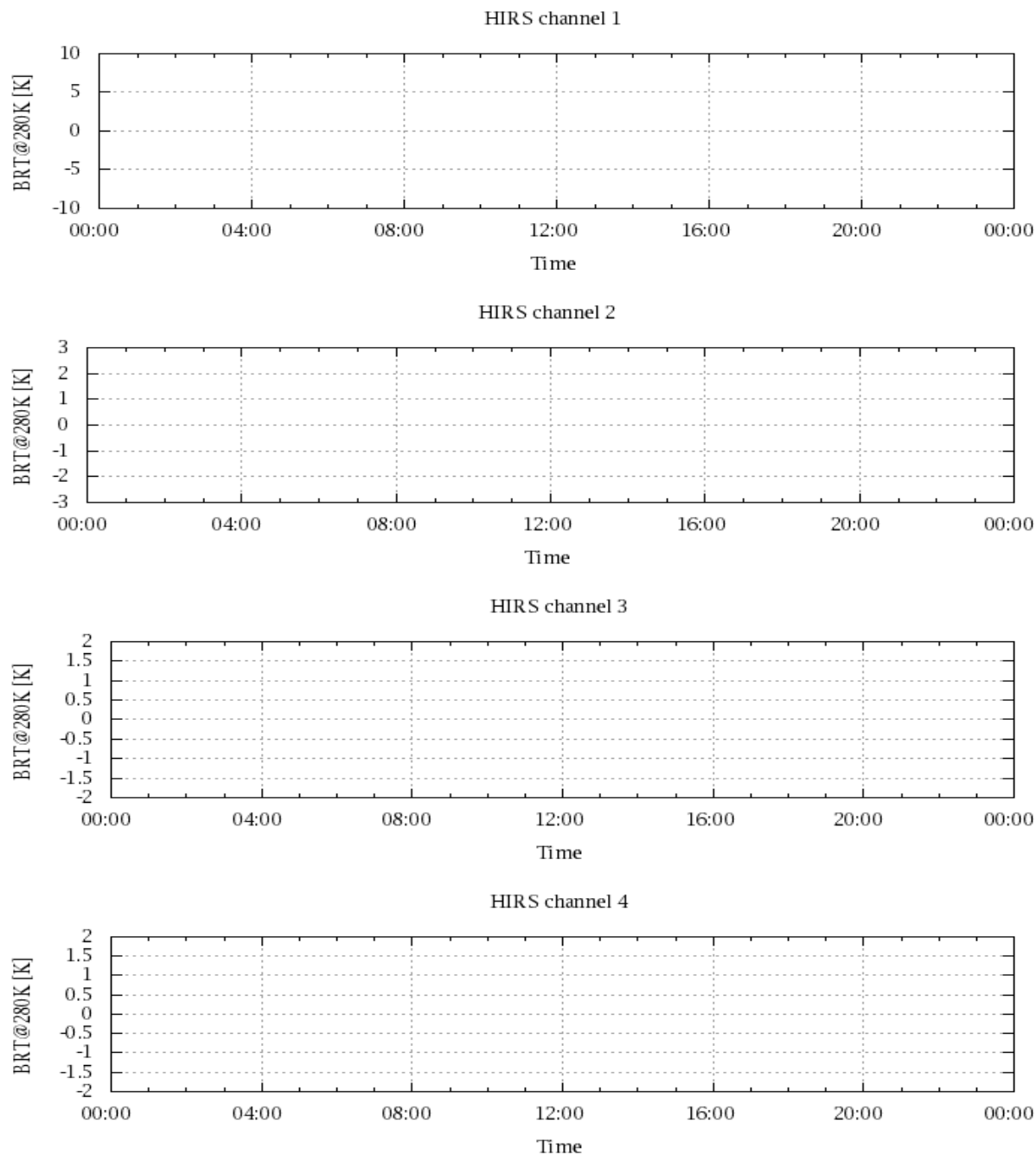


Figure 17: Radiance Differences in BT



Figure 18: Radiance Differences in BT



Figure 19: Radiance Differences in BT



Figure 20: Radiance Differences in BT



Figure 21: Radinace Differences in BT