

IASI L0 and L1 Weekly Monitoring Report

IASI monitoring team

28/12/2020 00:00:00 - 04/01/2021 00:00:00 (Week 53)

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the Metop-C satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 28/12/2020 00:00:00 - 04/01/2021 00:00:00 .

The monitoring data are extracted on PDU basis.

Data extraction, calibration, processing and statistics are performed at EUMETSAT.

2 Data quantity 28/12/2020 00:00:00 - 04/01/2021 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	3361	-
L0 IASI PDUs	3361	-
L1 ENG PDUs	3360	-
L1 ENG distinct GEPSGranule	3334	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	3359	-

Table 1: Data quantity

APID	Packet type	Packets lost
-	-	-

Table 2: L0 packet losses

3 Instrument modes

Time	Transition from	Transition to
28/12/2020 00:00:09	-	Normal operation
28/12/2020 08:56:24	External calibration	Auxiliary ASE synchronised
28/12/2020 08:58:16	Auxiliary ASE synchronised	Normal operation
03/01/2021 00:39:36	Normal operation	Auxiliary ASE synchronised
03/01/2021 00:41:28	Auxiliary ASE synchronised	External calibration
03/01/2021 01:02:32	External calibration	Auxiliary ASE synchronised
03/01/2021 01:04:24	Auxiliary ASE synchronised	Normal operation
03/01/2021 02:21:44	Normal operation	Auxiliary ASE synchronised
03/01/2021 02:23:36	Auxiliary ASE synchronised	External calibration
03/01/2021 02:46:48	External calibration	Auxiliary ASE synchronised
03/01/2021 02:48:56	Auxiliary ASE synchronised	Normal operation
03/01/2021 05:49:12	Normal operation	Auxiliary ASE synchronised
03/01/2021 05:51:04	Auxiliary ASE synchronised	External calibration
03/01/2021 06:41:28	External calibration	Auxiliary ASE synchronised
03/01/2021 06:43:20	Auxiliary ASE synchronised	Normal operation
03/01/2021 07:36:24	Normal operation	Auxiliary ASE synchronised
03/01/2021 07:38:16	Auxiliary ASE synchronised	External calibration
03/01/2021 08:27:52	External calibration	Auxiliary ASE synchronised
03/01/2021 08:30:00	Auxiliary ASE synchronised	Normal operation
03/01/2021 09:34:48	Normal operation	Auxiliary ASE synchronised
03/01/2021 09:36:40	Auxiliary ASE synchronised	External calibration
03/01/2021 10:11:52	External calibration	Auxiliary ASE synchronised
03/01/2021 10:13:44	Auxiliary ASE synchronised	Normal operation
03/01/2021 11:18:48	Normal operation	Auxiliary ASE synchronised
03/01/2021 11:20:56	Auxiliary ASE synchronised	External calibration
03/01/2021 11:54:32	External calibration	Auxiliary ASE synchronised
03/01/2021 11:56:40	Auxiliary ASE synchronised	Normal operation
03/01/2021 13:03:52	Normal operation	Auxiliary ASE synchronised
03/01/2021 13:05:44	Auxiliary ASE synchronised	External calibration
03/01/2021 13:36:40	External calibration	Auxiliary ASE synchronised
03/01/2021 13:38:48	Auxiliary ASE synchronised	Normal operation
03/01/2021 14:48:40	Normal operation	Auxiliary ASE synchronised
03/01/2021 14:50:32	Auxiliary ASE synchronised	External calibration
03/01/2021 15:18:32	External calibration	Auxiliary ASE synchronised
03/01/2021 15:20:40	Auxiliary ASE synchronised	Normal operation
03/01/2021 16:33:28	Normal operation	Auxiliary ASE synchronised
03/01/2021 16:35:20	Auxiliary ASE synchronised	External calibration
03/01/2021 17:00:24	External calibration	Auxiliary ASE synchronised
03/01/2021 17:02:16	Auxiliary ASE synchronised	Normal operation
03/01/2021 18:17:44	Normal operation	Auxiliary ASE synchronised
03/01/2021 18:19:52	Auxiliary ASE synchronised	External calibration
03/01/2021 18:42:00	External calibration	Auxiliary ASE synchronised
03/01/2021 18:43:52	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Day	L0 quality	L1 quality	L0 PDUs	L1 PDUs
28/12/2020	99.50 %	88.77 %	480	480
29/12/2020	99.56 %	99.55 %	480	480
30/12/2020	99.55 %	99.54 %	480	480
31/12/2020	99.56 %	99.28 %	480	480
01/01/2021	99.54 %	97.83 %	480	480
02/01/2021	99.51 %	98.17 %	480	480
03/01/2021	99.07 %	72.78 %	480	480

Table 4: Quality overview

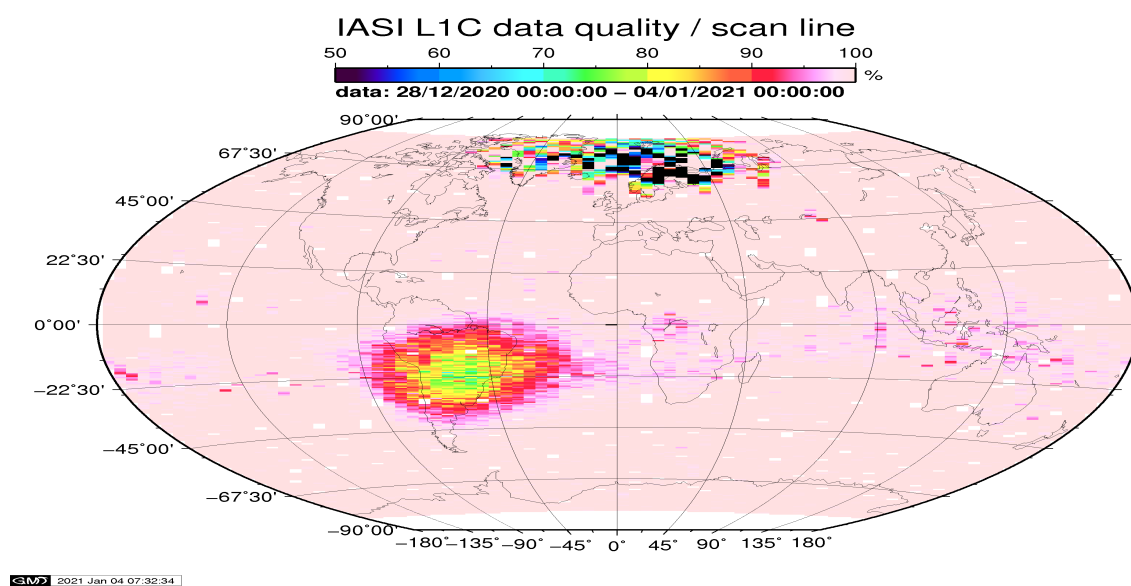


Figure 1: L1C data quality

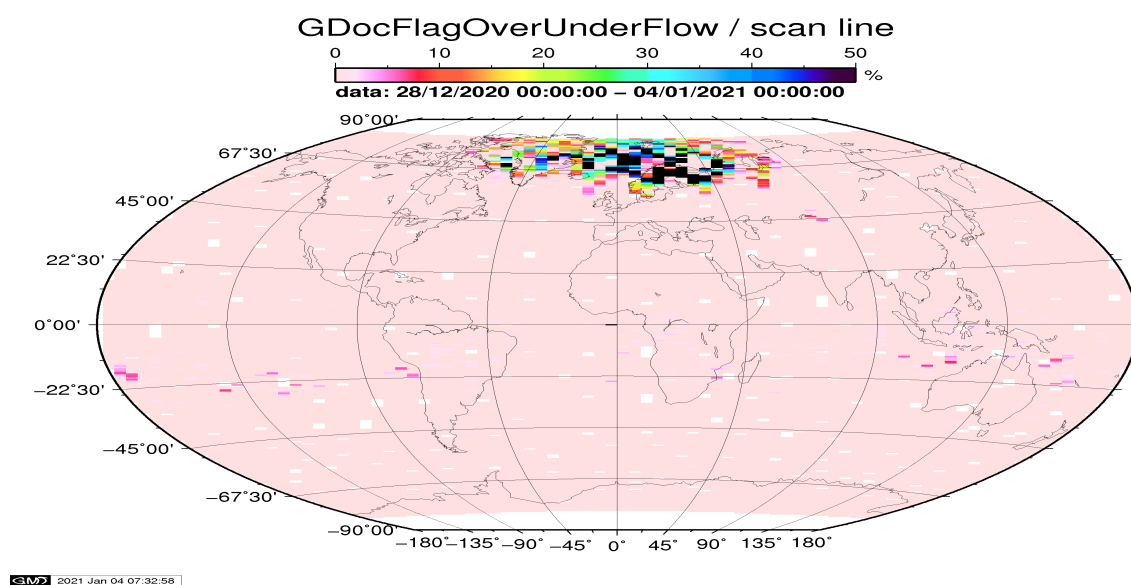


Figure 2: Flag of Over and Under Flows

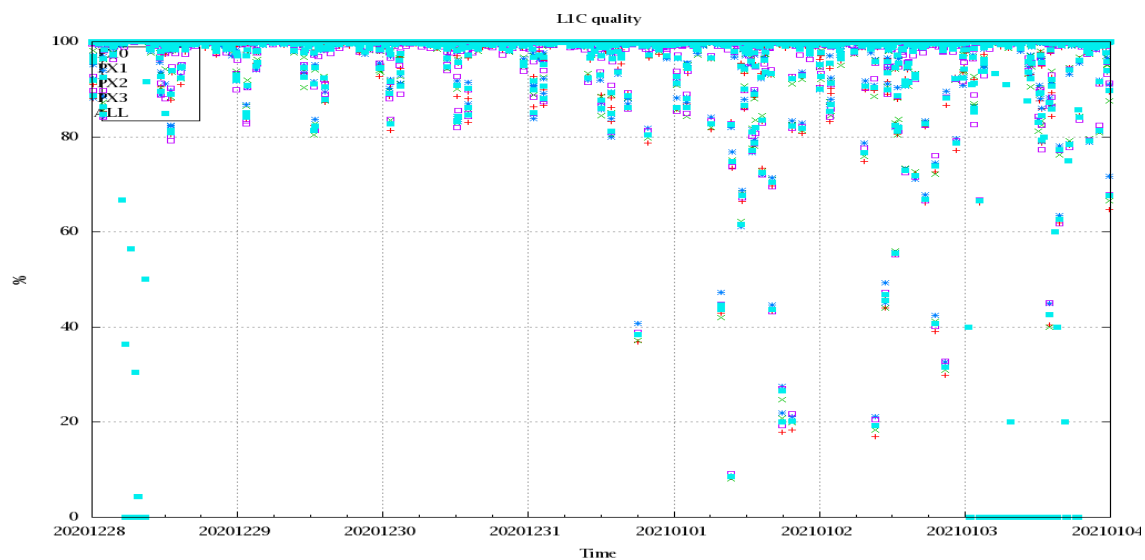


Figure 3: Level 1C quality

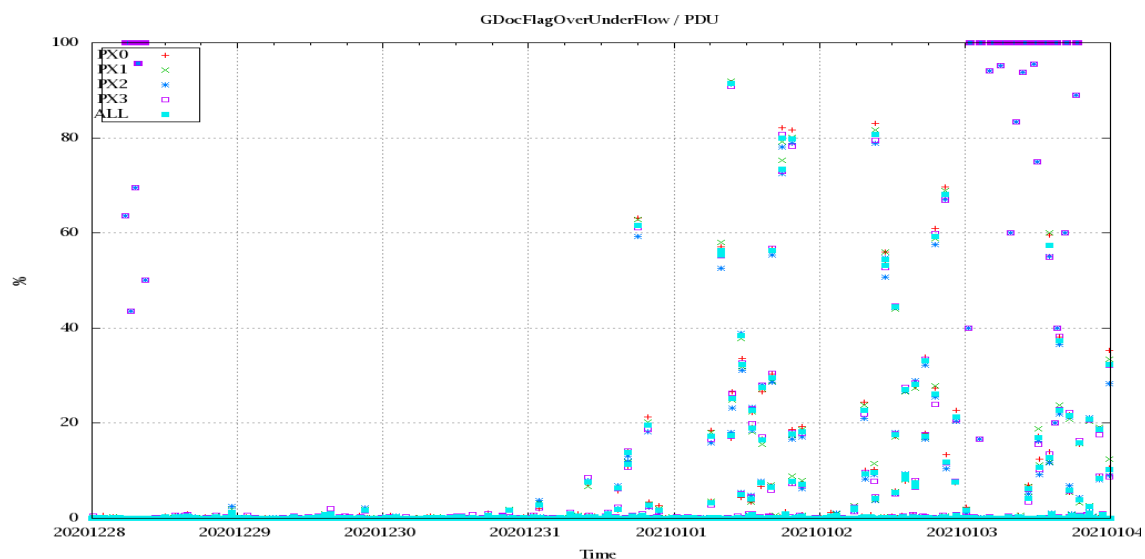


Figure 4: OverUnderFlowFlag timeseries

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 fed with co-located ECMWF profiles of T,WV, and Ozon. Between March 2007 and the 18th of May 2010 RTIASI in Version 4.0 is used. After the 18th of May 2010 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).

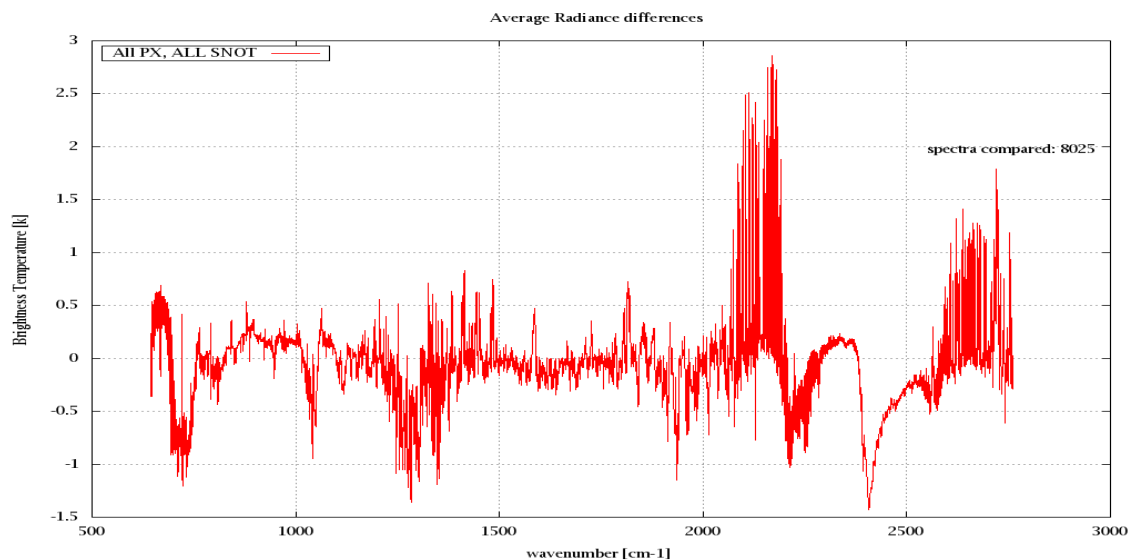


Figure 5: Average radiance differences: OBS-CAL

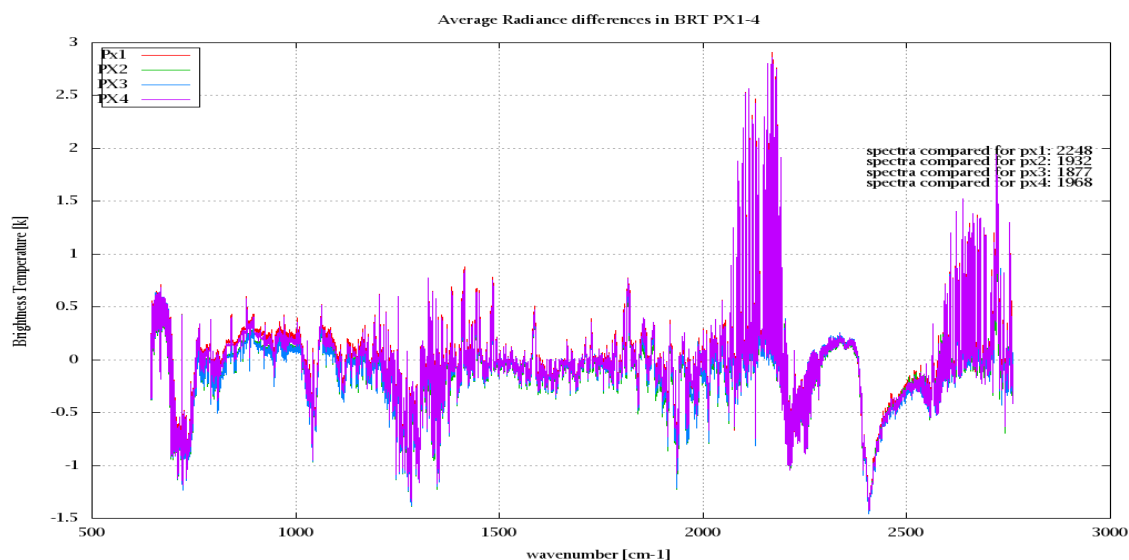


Figure 6: Average radiance differences: OBS-CAL

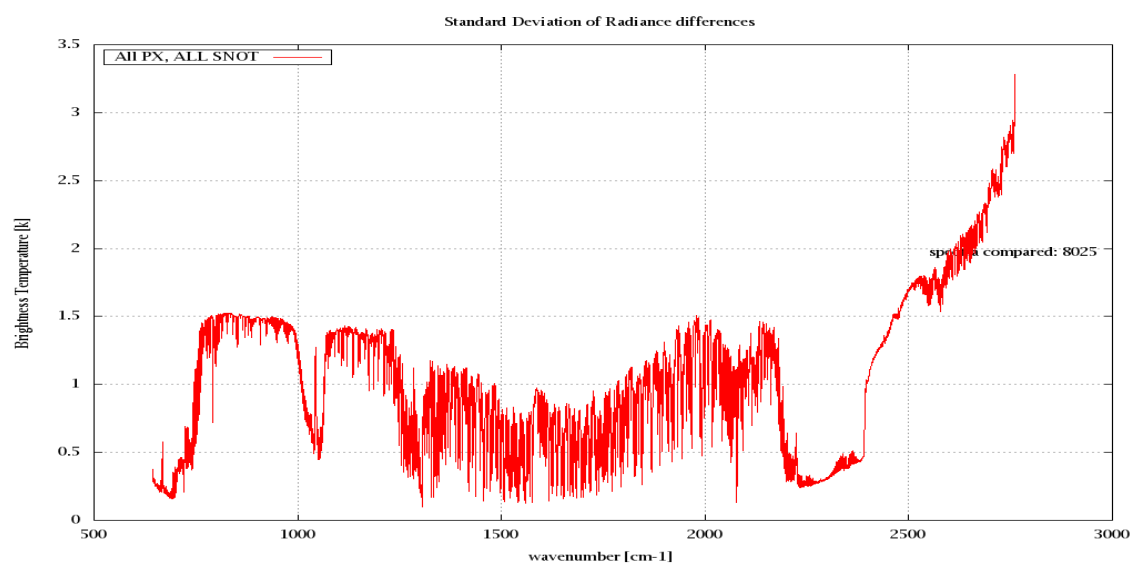


Figure 7: Standard deviation of radiance differences

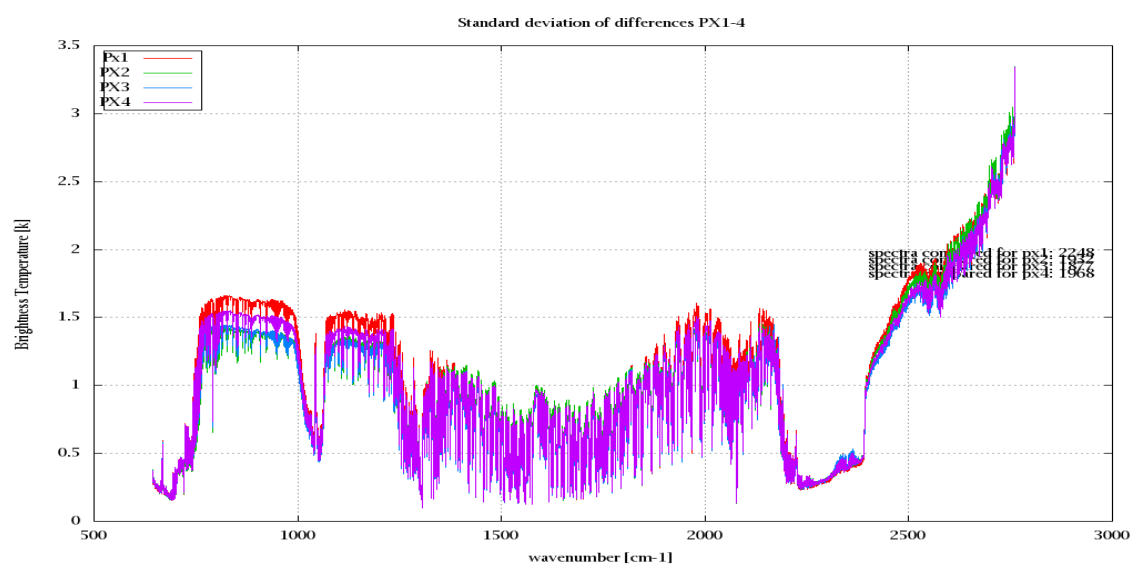


Figure 8: Standard deviation of radiance differences per pixel

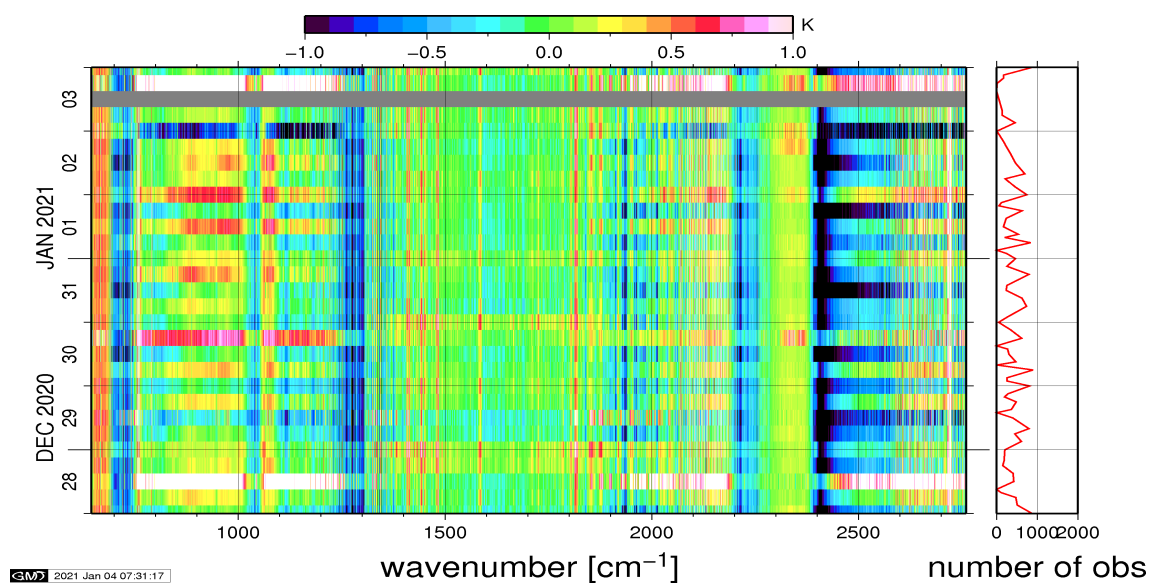


Figure 9: Radiance bias in BRT: All Channels

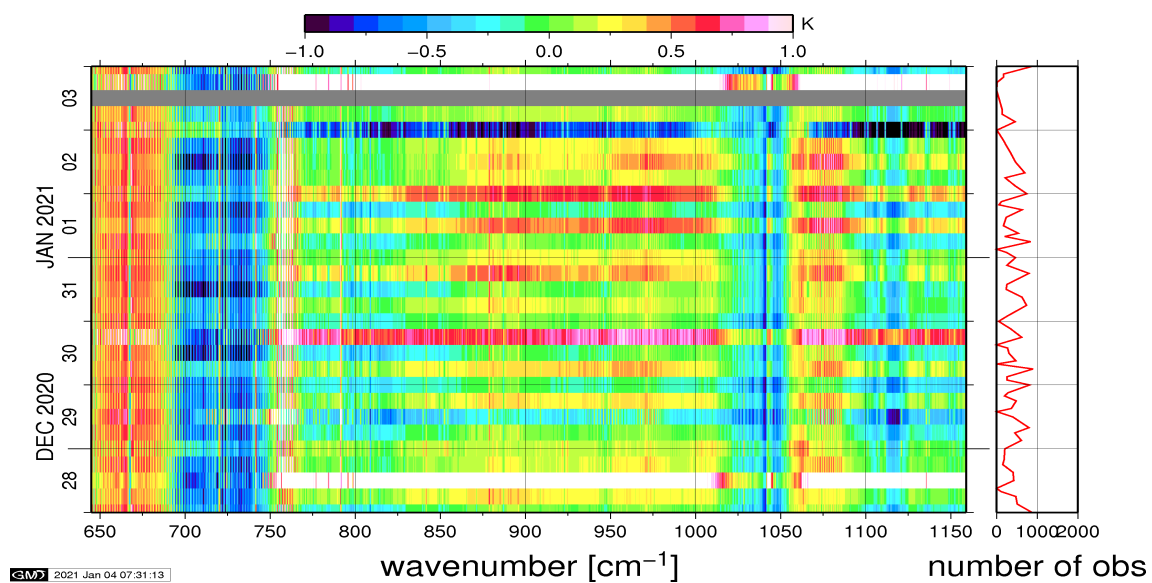


Figure 10: Radiance bias in BRT: IASI Band 1

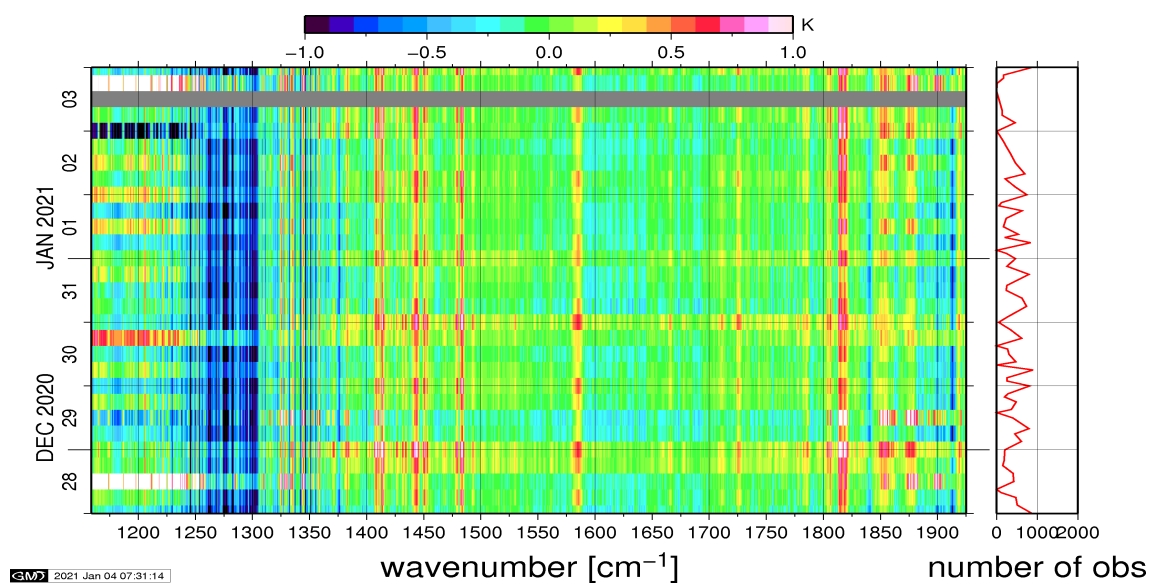


Figure 11: Radiance bias in BRT: IASI Band 2

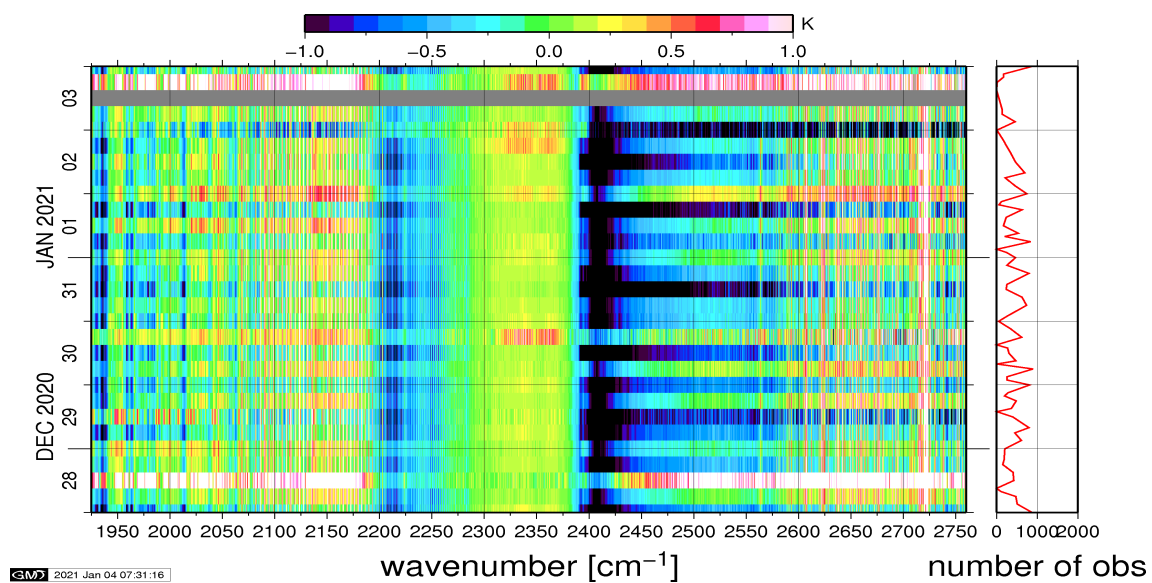


Figure 12: Radiance bias in BRT: IASI Band 3

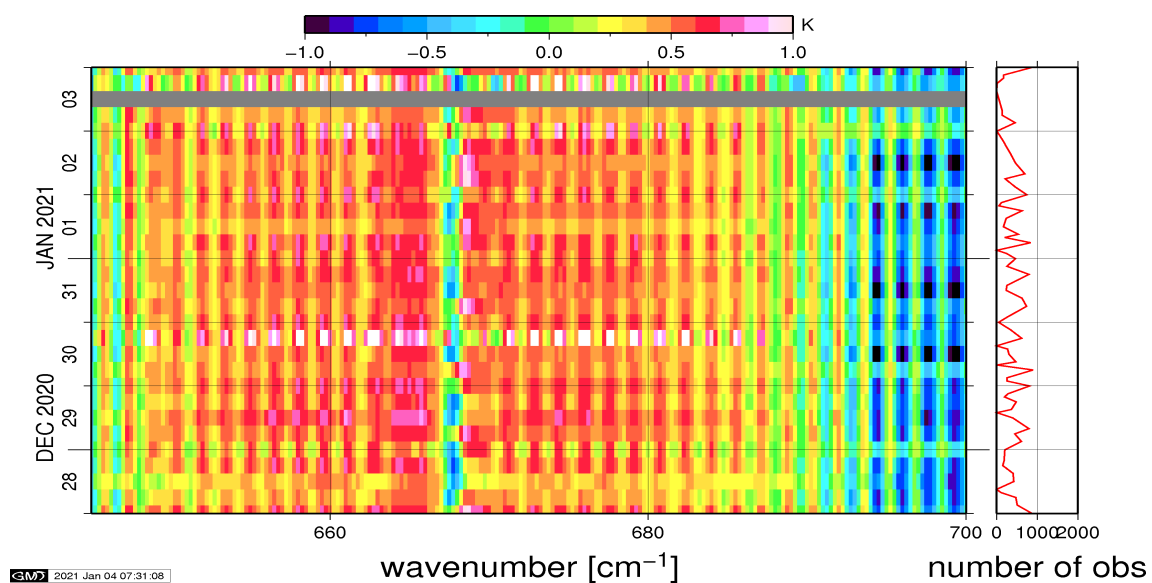


Figure 13: Radiance bias in BRT: CO2 14

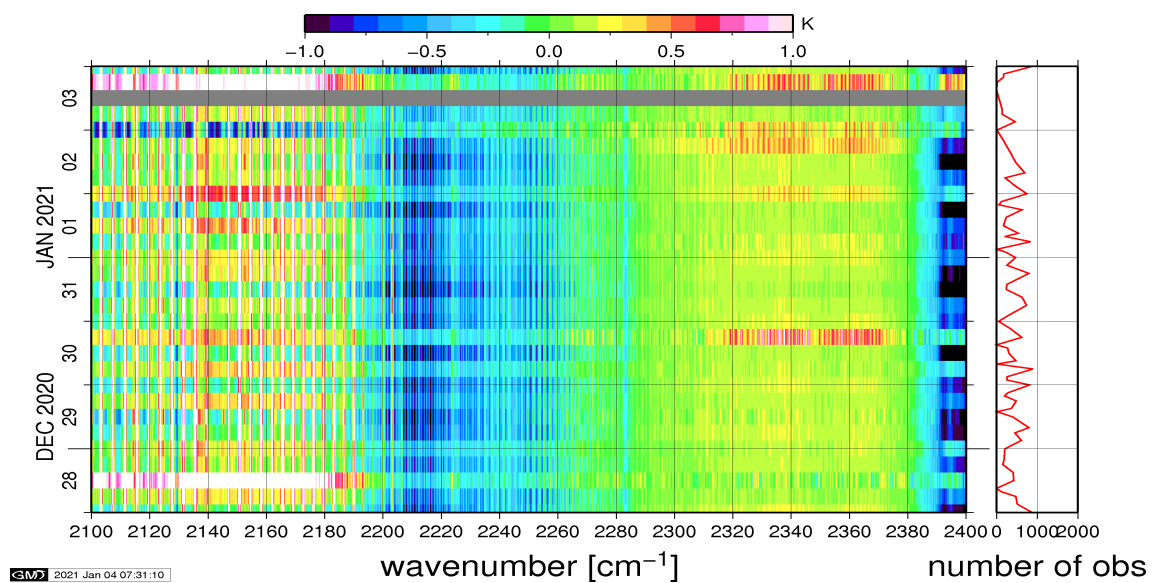


Figure 14: Radiance bias in BRT: CO2 4.3

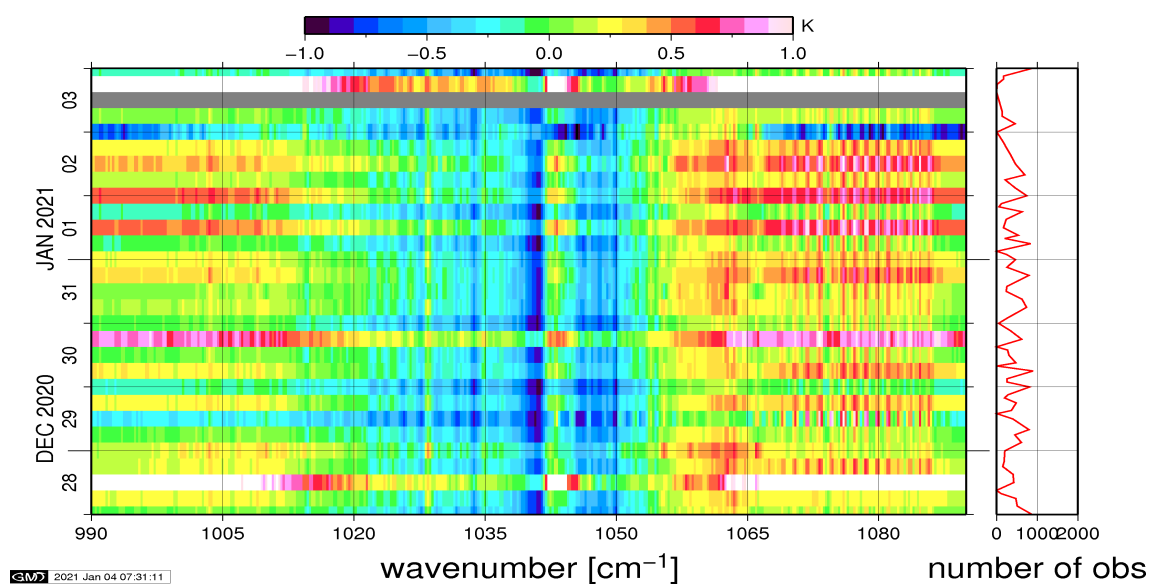


Figure 15: Radiance bias in BRT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison of IASI and HIRS/4 on-board Metop-C is performed on all pixel with distances smaller than 3 km between IASI and HIRS. The radiance differences IASI - HIRS are given in brightness temperatures at 280K reference temperature.



Figure 16: Radiance Differences in BRT 1h Average



Figure 17: Standard Deviation of Radiance Differences 1h Average



Figure 18: Radiance Differences in BRT 1h Average - Clear Sky



Figure 19: Standard Deviation of Radiance Differences 1h Average - Clear Sky