IASI L0 and L1 Weekly Monitoring Report Metop-A

IASI monitoring team

27/01/2020 00:00:00 - 03/02/2020 00:00:00 (Week 05)

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 minute data packet) for 27/01/2020 00:00:00 - 03/02/2020 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 27/01/2020 00:00:00 - 03/02/2020 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	3358	-
L0 IASI PDUs	3358	-
L1 ENG PDUs	3357	-
L1 ENG distinct GEPSGranule	3356	-
L1 DPX PDUs (RM: IASI-HIRS)	0	e
L1 DPS Files (RM: OBS-CAL NWP based)	3355	-

Table 1: Data quantity

APID	Packet type	Packets lost
-	-	-

Table 2: L0 packet losses

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3 Instrument modes

Time	Transition from	Transition to
27/01/2020 00:00:09	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Day	L0 quality	L1 quality	L0 PDUs	L1 PDUs
27/01/2020	99.48 %	99.47 %	480	480
28/01/2020	99.37 %	99.35 %	480	479
29/01/2020	99.47 %	97.54 %	477	477
30/01/2020	99.47 %	99.47 %	480	480
31/01/2020	99.47 %	99.47 %	480	481
01/02/2020	99.49 %	99.48 %	480	480
02/02/2020	99.38 %	99.37 %	480	480

Table 4: Quality overview

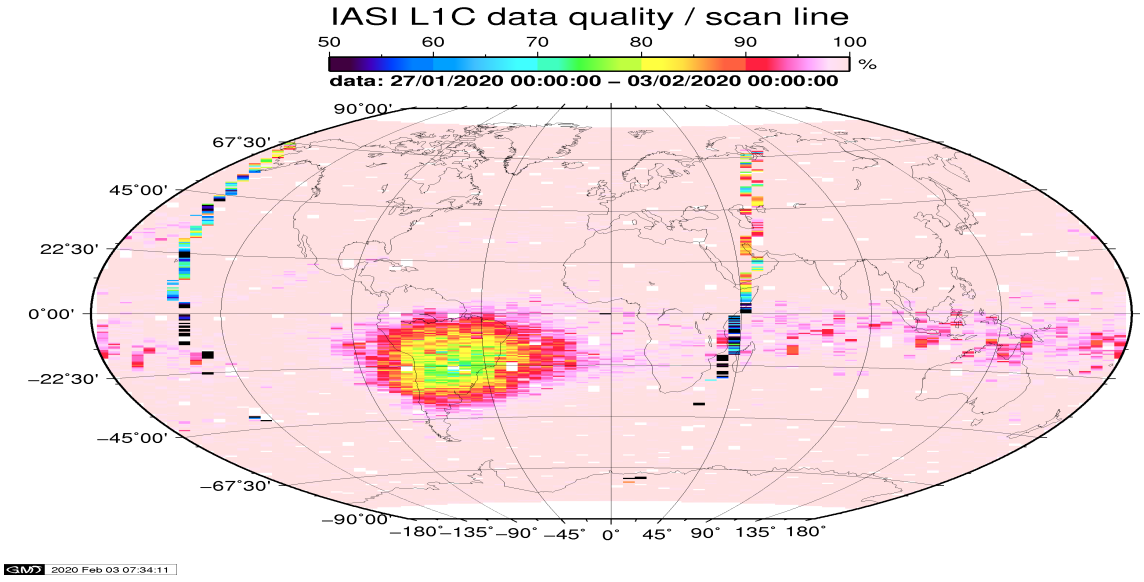

Figure 1: L1C data quality

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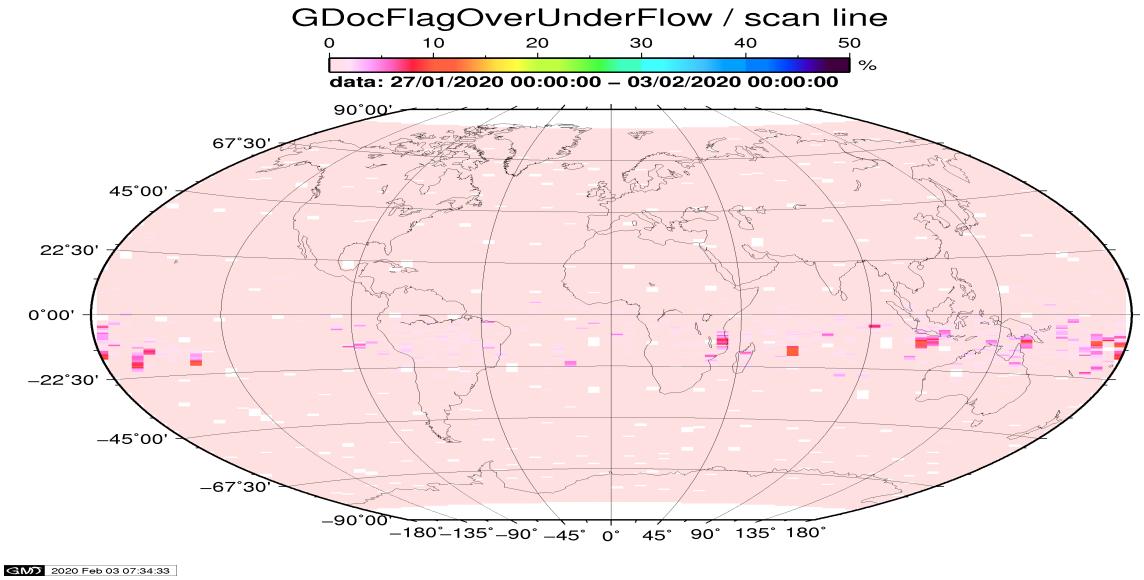

Figure 2: Flag of Over and Under Flows

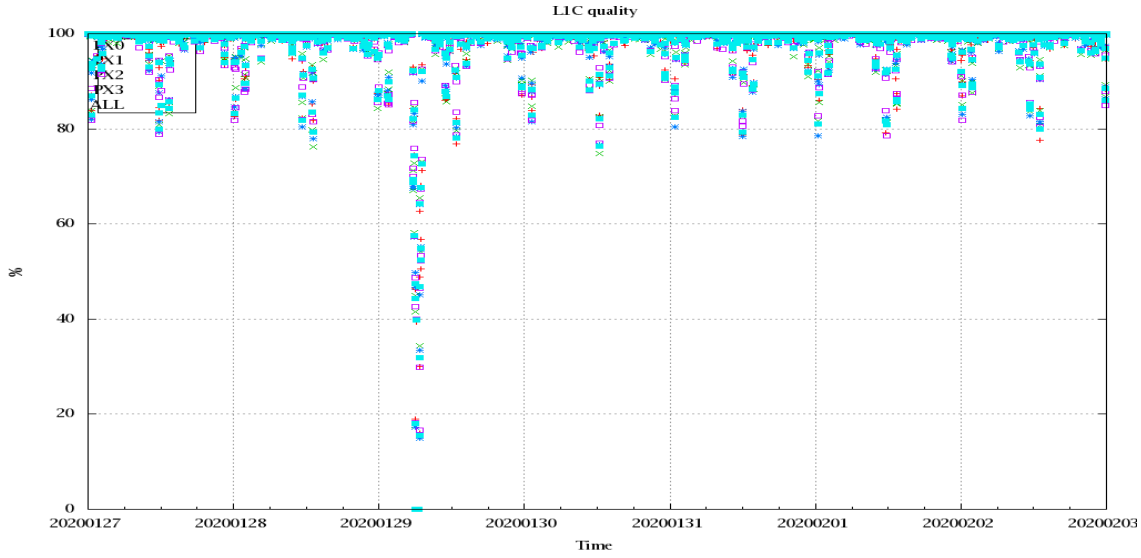

Figure 3: Level 1C quality

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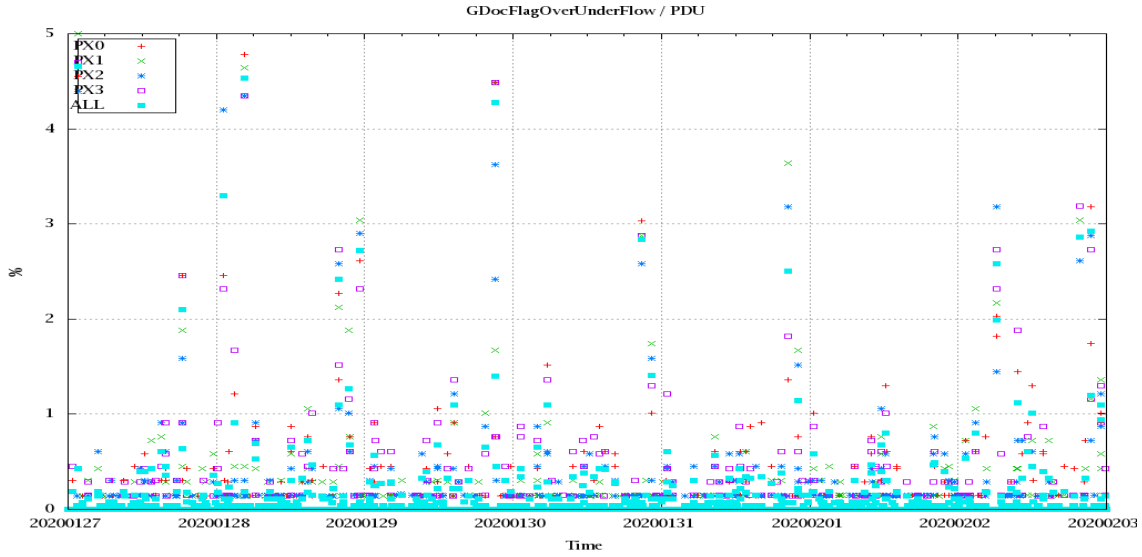

Figure 4: OverUnderFlowFlag timeseries

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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 ratiative transfer model (RTM) is feed 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).

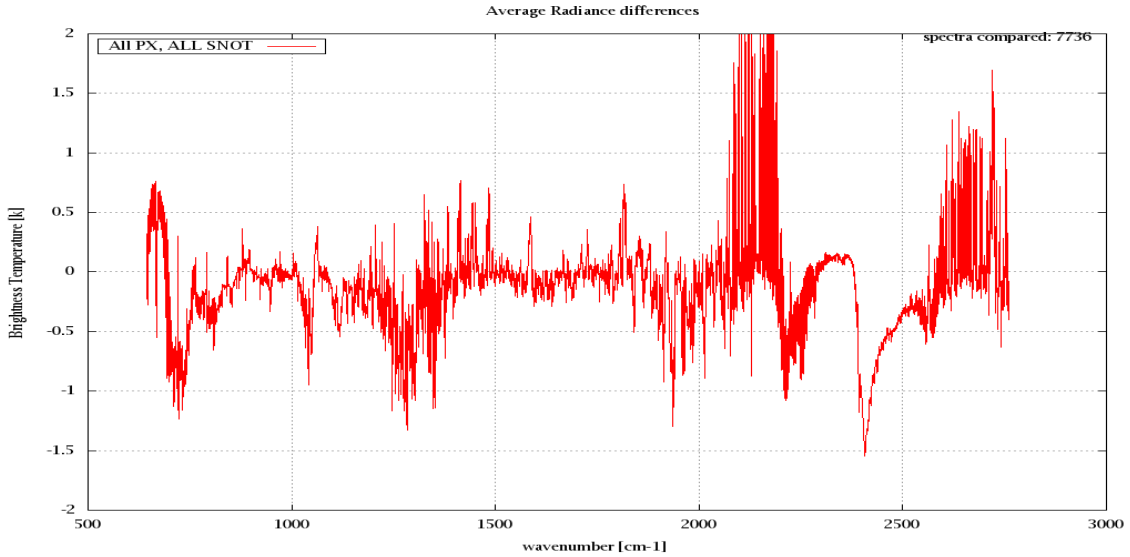

Figure 5: Average radiance differences: OBS-CAL

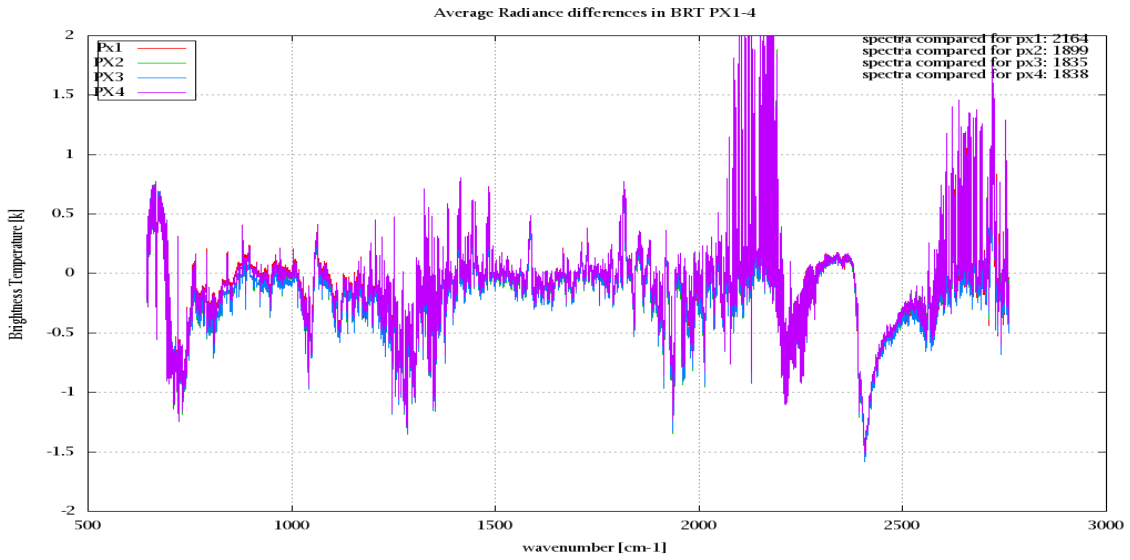

Figure 6: Average radiance differences: OBS-CAL

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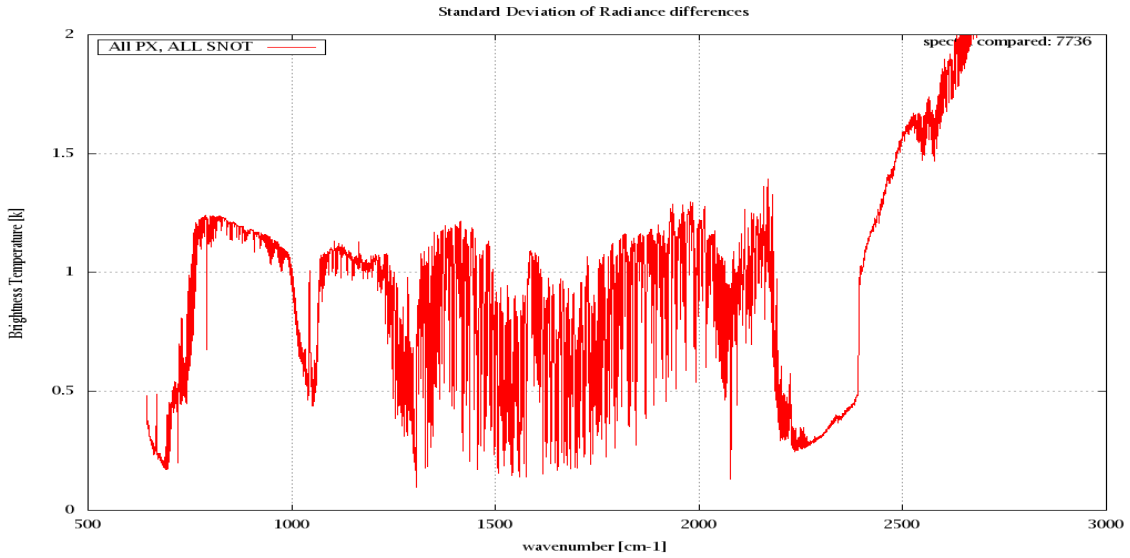

Figure 7: Standard deviation of radiance differences

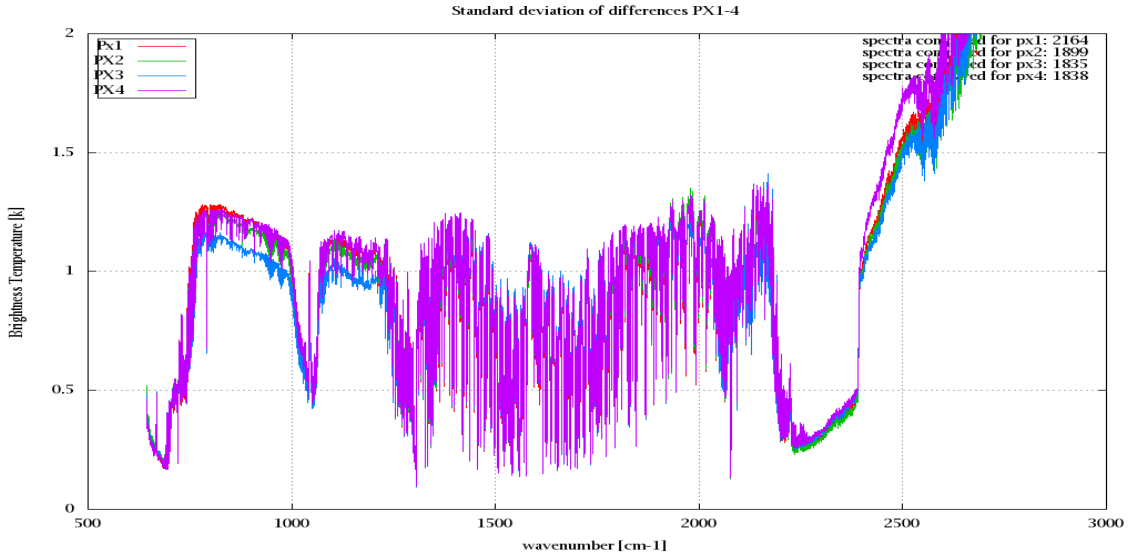

Figure 8: Standard deviation of radiance differences per pixel

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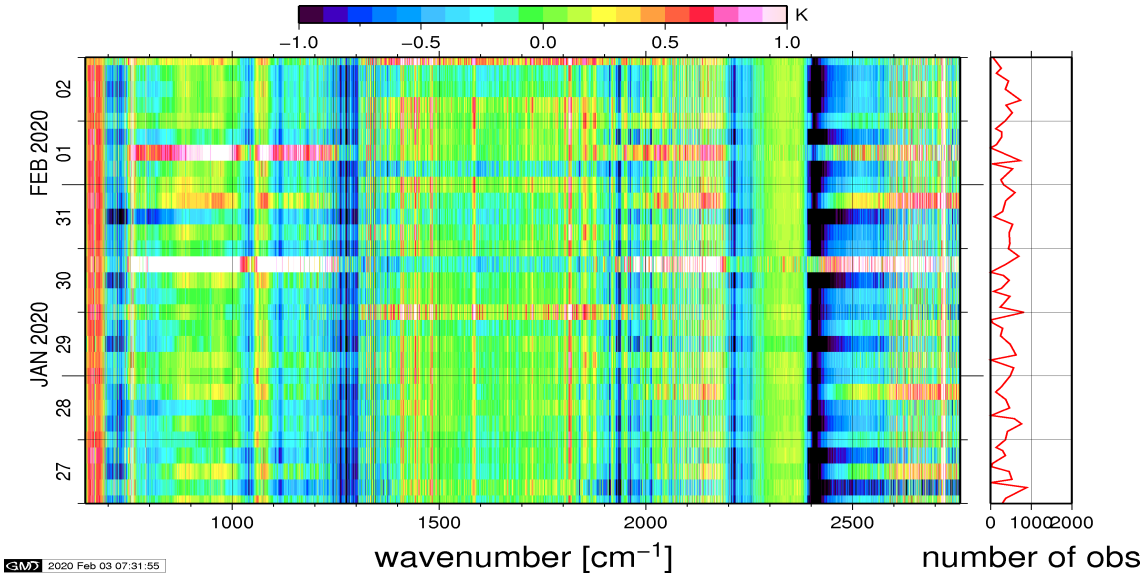

Figure 9: Radiance bias in BRT: All Channels

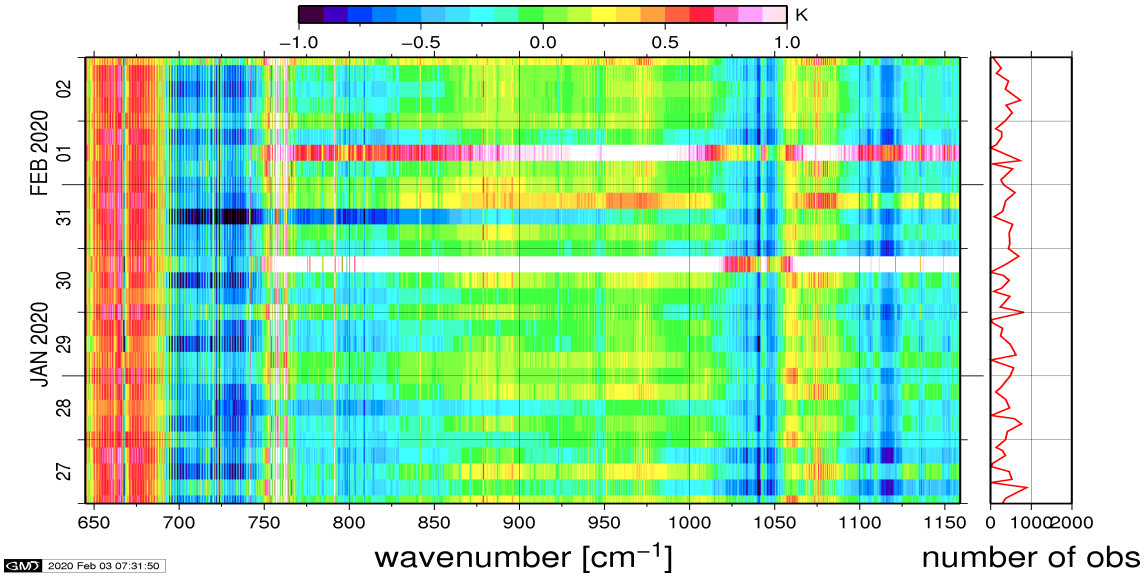

Figure 10: Radiance bias in BRT: IASI Band 1

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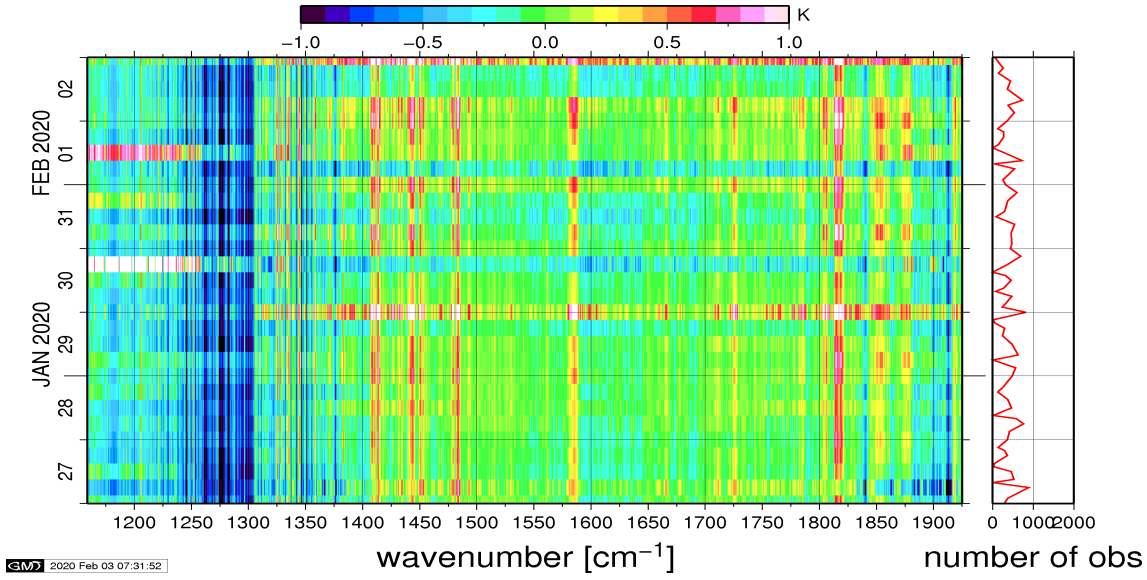

Figure 11: Radiance bias in BRT: IASI Band 2

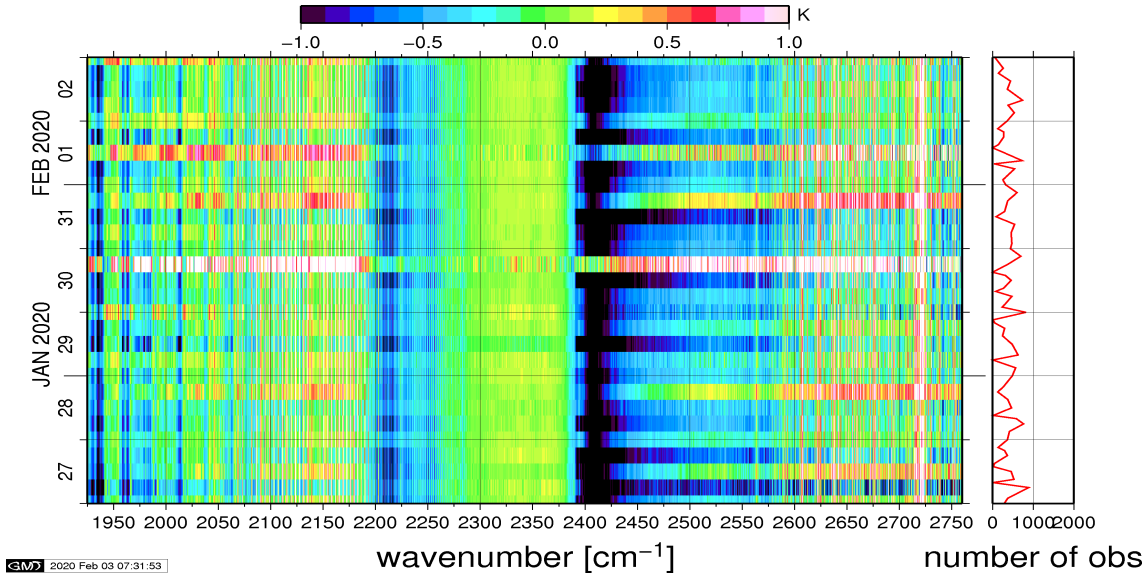

Figure 12: Radiance bias in BRT: IASI Band 3

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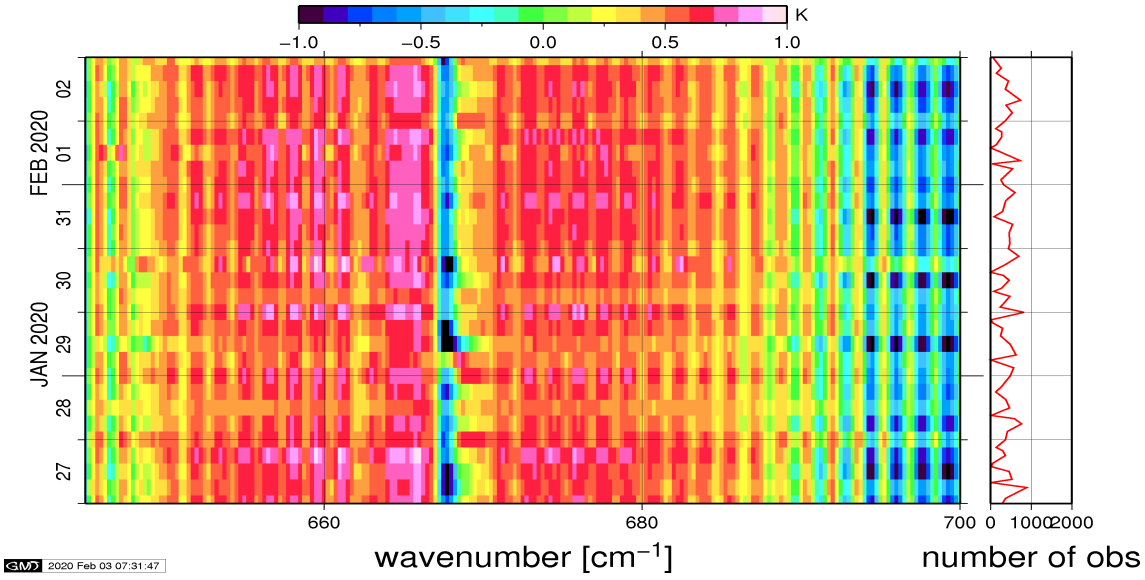

Figure 13: Radiance bias in BRT: CO2 14

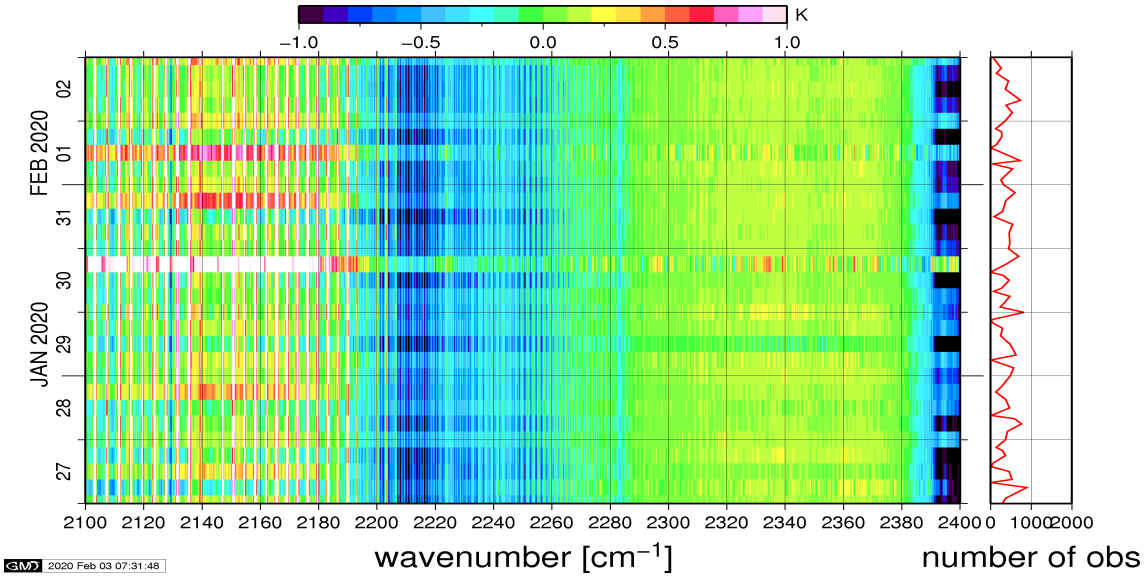

Figure 14: Radiance bias in BRT: CO2 4.3

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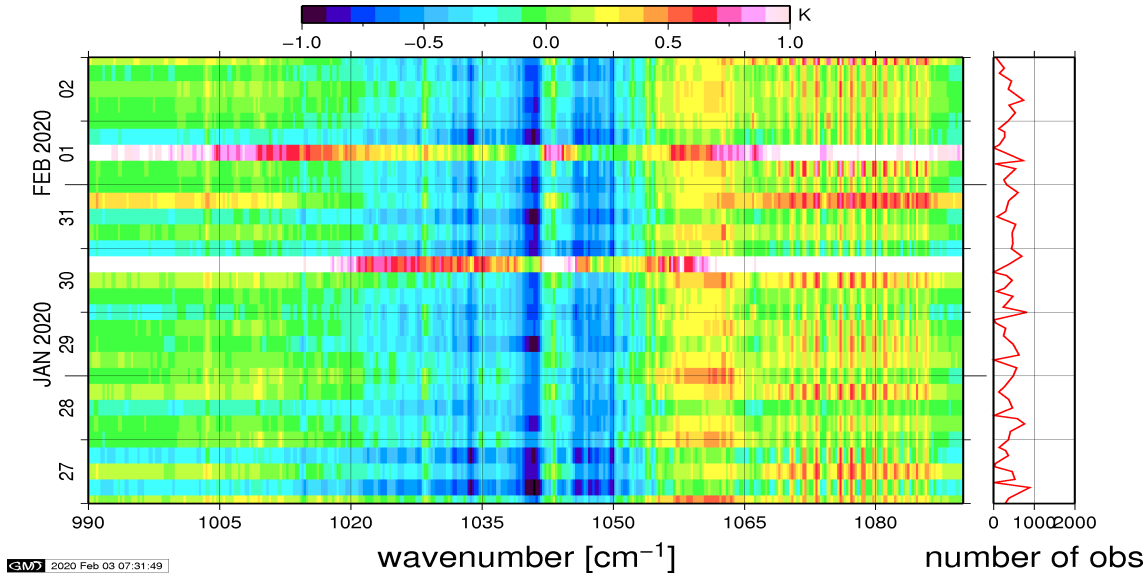

Figure 15: Radiance bias in BRT: O3

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6 IASI-HIRS radiance comparision Channel 1-19

The radiance comparision of IASI and HIRS/4 on-board MetOp 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.

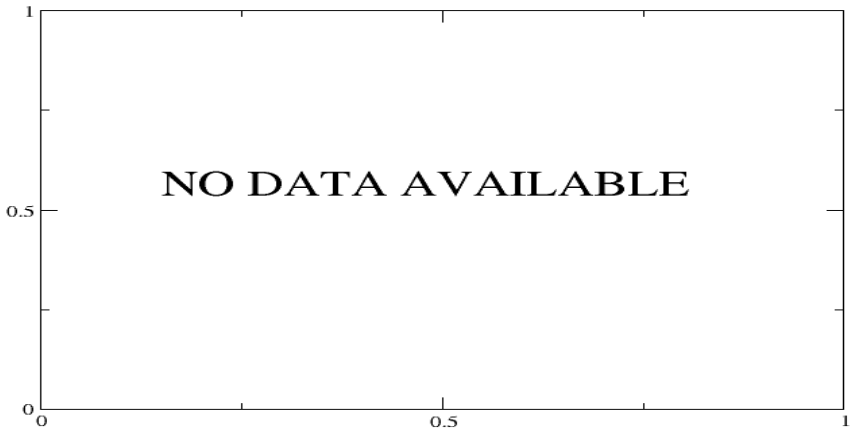

Figure 16: Radiance Differences in BRT 1h Average

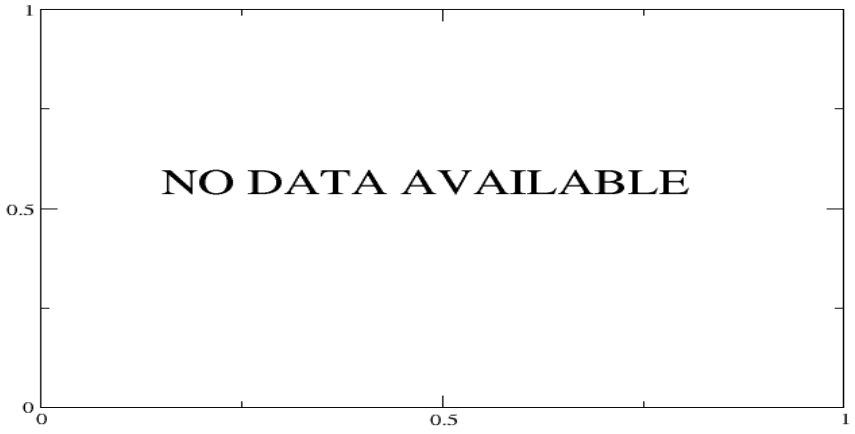

Figure 17: Standard Deviation of Radiance Differences 1h Average

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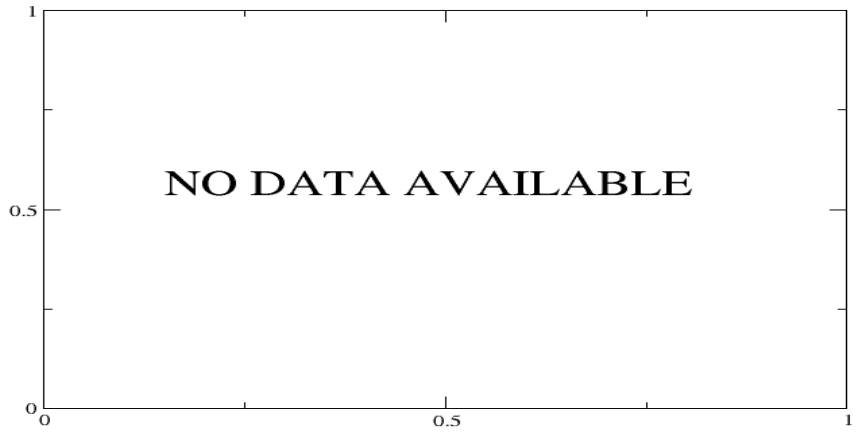

Figure 18: Radiance Differences in BRT 1h Average - Clear Sky

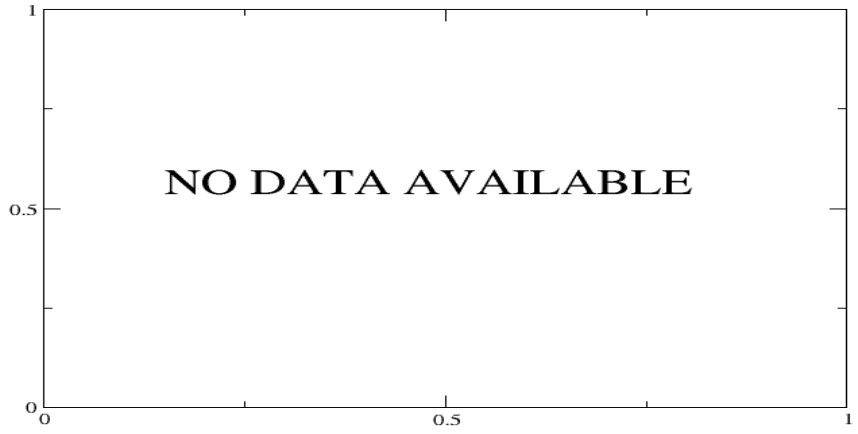

Figure 19: Standard Deviation of Radiance Differences 1h Average - Clear Sky

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