IASI L0 and L1 Weekly Monitoring Report

IASI monitoring team

28/12/2015 00:00:00 - 04/01/2016 00:00:00 (Week 53)

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 28/12/2015 00:00:00 - 04/01/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 28/12/2015 00:00:00 - 04/01/2016 00:00:00

Product Type	**Number**	**Action**
L0 HKTM PDUs	3361	-
L0 IASI PDUs	3361	-
L1 ENG PDUs	3360	-
L1 ENG distinct GEPSGranule	3346	-
L1 DPX PDUs (RM: IASI-HIRS)	3149	-
L1 DPS Files (RM: OBS-CAL NWP based)	3360	-

Table 1: Data quantity

APID	**Packet type**	**Packets lost**
-	-	-

Table 2: L0 packet losses

3 Instrument modes

Time	Transition from	Transition to
28/12/2015 00:00:01	-	Normal operation
29/12/2015 00:44:49	External calibration	Auxiliary ASE synchronised
29/12/2015 00:46:57	Auxiliary ASE synchronised	Normal operation
29/12/2015 02:28:49	External calibration	Auxiliary ASE synchronised
29/12/2015 02:30:41	Auxiliary ASE synchronised	Normal operation
29/12/2015 05:21:21	Normal operation	Auxiliary ASE synchronised
29/12/2015 05:23:13	Auxiliary ASE synchronised	External calibration
29/12/2015 05:56:01	External calibration	Auxiliary ASE synchronised
29/12/2015 05:57:53	Auxiliary ASE synchronised	Normal operation
29/12/2015 07:03:13	Normal operation	Auxiliary ASE synchronised
29/12/2015 07:05:21	Auxiliary ASE synchronised	External calibration
29/12/2015 07:36:49	External calibration	Auxiliary ASE synchronised
29/12/2015 07:38:41	Auxiliary ASE synchronised	Normal operation
29/12/2015 08:46:57	Normal operation	Auxiliary ASE synchronised
29/12/2015 08:49:05	Auxiliary ASE synchronised	External calibration
29/12/2015 09:17:21	External calibration	Auxiliary ASE synchronised
29/12/2015 09:19:13	Auxiliary ASE synchronised	Normal operation
29/12/2015 10:32:01	Normal operation	Auxiliary ASE synchronised
29/12/2015 10:57:21	External calibration	Auxiliary ASE synchronised
29/12/2015 10:59:29	Auxiliary ASE synchronised	Normal operation
29/12/2015 21:42:41	Normal operation	Auxiliary ASE synchronised
29/12/2015 21:44:33	Auxiliary ASE synchronised	External calibration
29/12/2015 22:07:45	Auxiliary ASE synchronised	Normal operation
29/12/2015 23:23:29	Normal operation	Auxiliary ASE synchronised
29/12/2015 23:25:21	Auxiliary ASE synchronised	External calibration
29/12/2015 23:52:33	External calibration	Auxiliary ASE synchronised
29/12/2015 23:54:41	Auxiliary ASE synchronised	Normal operation
30/12/2015 01:04:33	Normal operation	Auxiliary ASE synchronised
30/12/2015 01:06:25	Auxiliary ASE synchronised	External calibration
30/12/2015 01:37:05	External calibration	Auxiliary ASE synchronised
30/12/2015 01:39:13	Auxiliary ASE synchronised	Normal operation
30/12/2015 02:45:37	Normal operation	Auxiliary ASE synchronised
30/12/2015 02:47:29	Auxiliary ASE synchronised	External calibration
30/12/2015 04:59:29	Auxiliary ASE synchronised	Normal operation
30/12/2015 06:10:09	Normal operation	Auxiliary ASE synchronised
30/12/2015 06:12:01	Auxiliary ASE synchronised	External calibration
30/12/2015 06:37:53	External calibration	Auxiliary ASE synchronised
30/12/2015 06:39:45	Auxiliary ASE synchronised	Normal operation
30/12/2015 07:55:13	Normal operation	Auxiliary ASE synchronised
30/12/2015 07:57:05	Auxiliary ASE synchronised	External calibration
30/12/2015 08:18:25	External calibration	Auxiliary ASE synchronised
30/12/2015 08:20:17	Auxiliary ASE synchronised	Normal operation
01/01/2016 05:11:12	Normal operation	Auxiliary ASE synchronised
01/01/2016 05:13:04	Auxiliary ASE synchronised	External calibration
01/01/2016 09:07:12	External calibration	Auxiliary ASE synchronised
01/01/2016 09:09:04	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

Day	L0 quality	L1 quality	L0 PDUs	L1 PDUs
28/12/2015	99.50 %	99.49 %	480	480
29/12/2015	99.15 %	98.78 %	480	480
30/12/2015	99.25 %	98.88 %	480	480
31/12/2015	99.55 %	99.55 %	480	480
01/01/2016	99.53 %	99.50 %	480	480
02/01/2016	99.51 %	99.49 %	480	480
03/01/2016	99.53 %	99.52 %	480	480

Table 4: Quality overview

4 L0 and L1 Data Quality

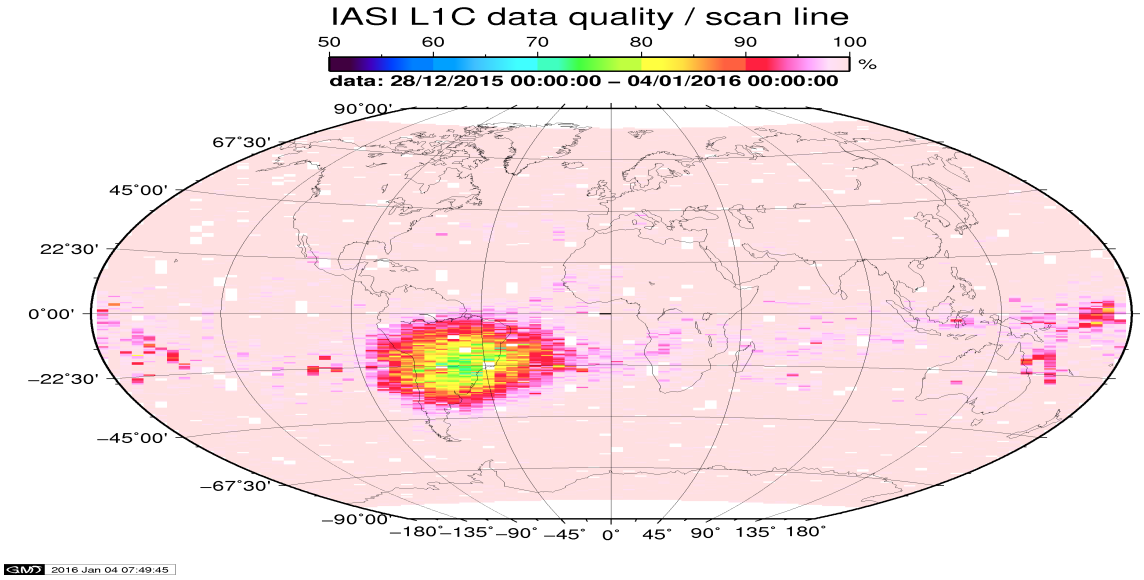

Figure 1: L1C data quality

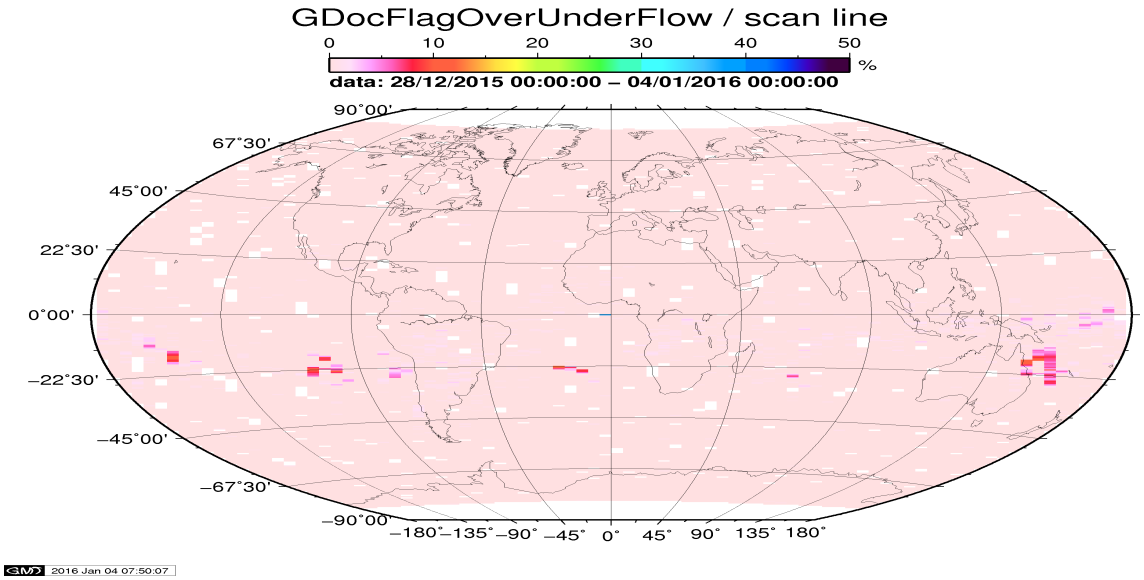

Figure 2: Flag of Over and Under Flows

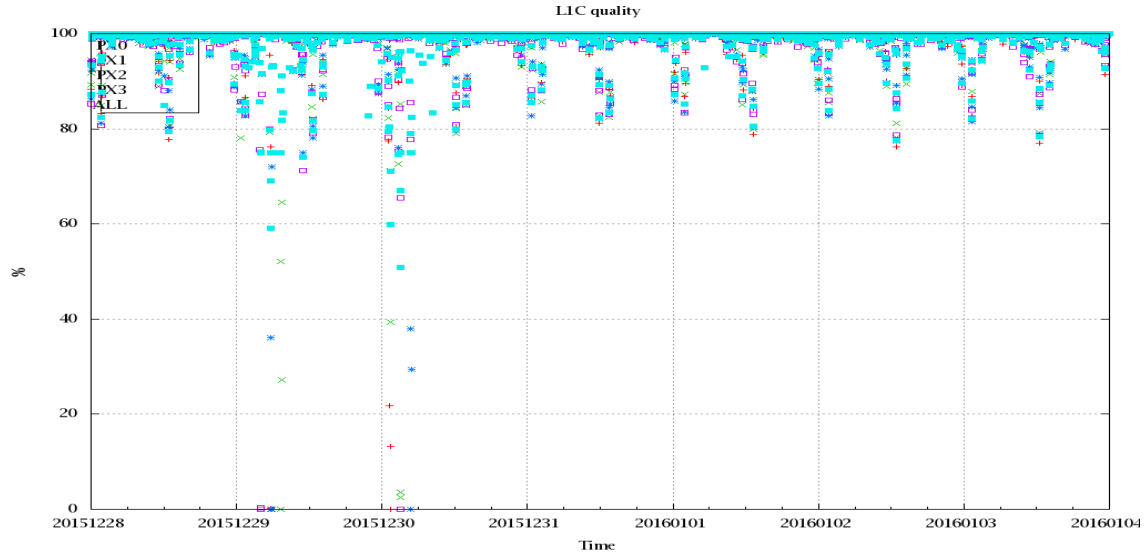

Figure 3: Level 1C quality

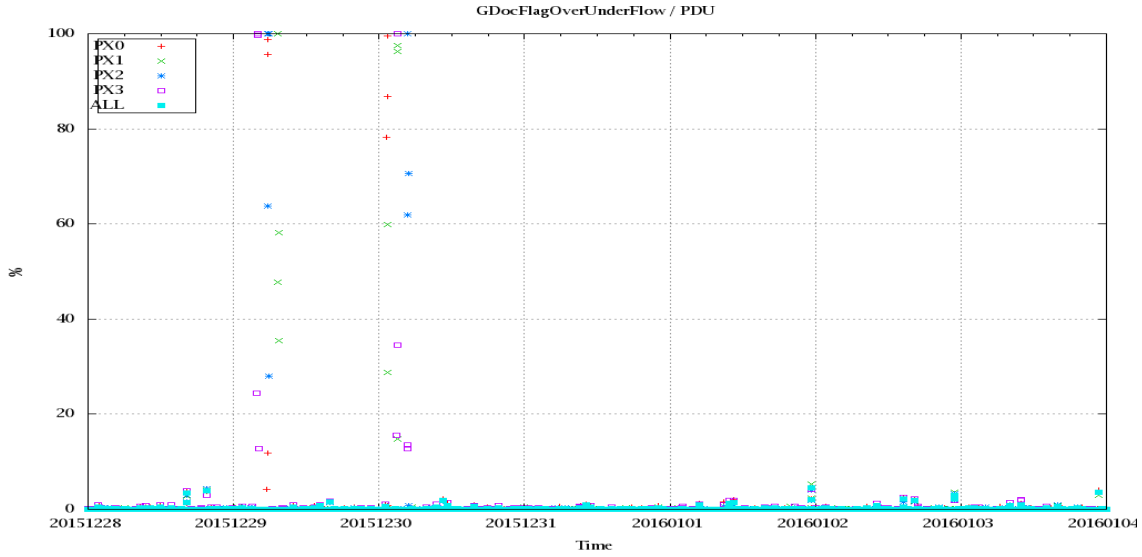

Figure 4: OverUnderFlowFlag timeseries

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 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).

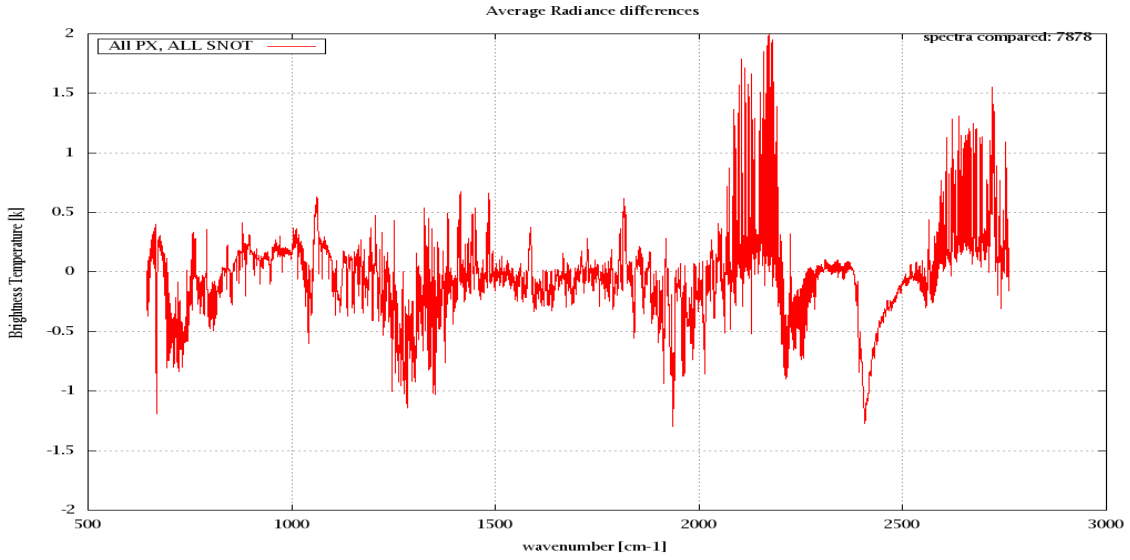

Figure 5: Average radiance differences: OBS-CAL

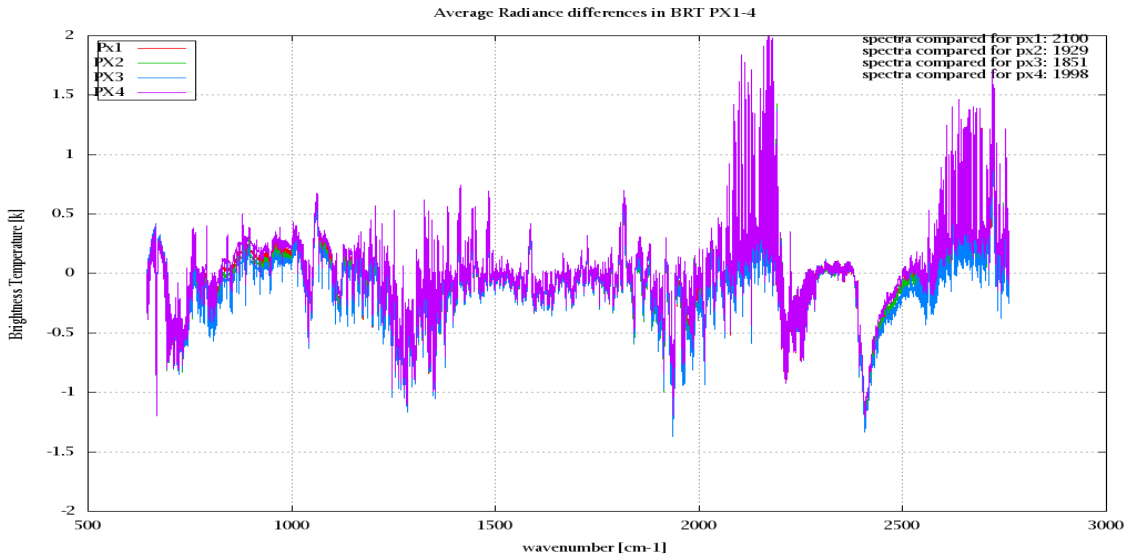

Figure 6: Average radiance differences: OBS-CAL

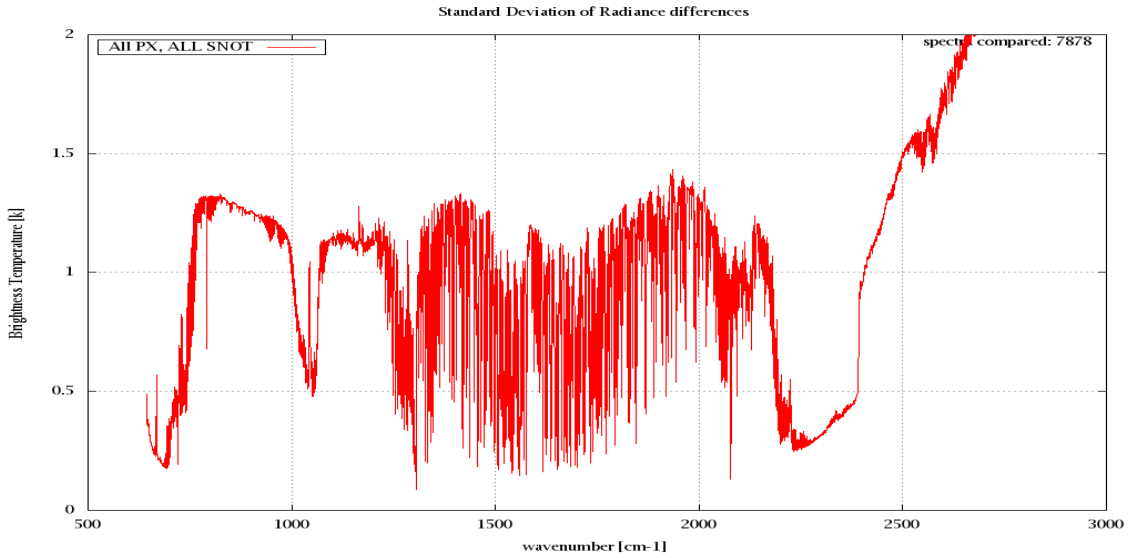

Figure 7: Standard deviation of radiance differences

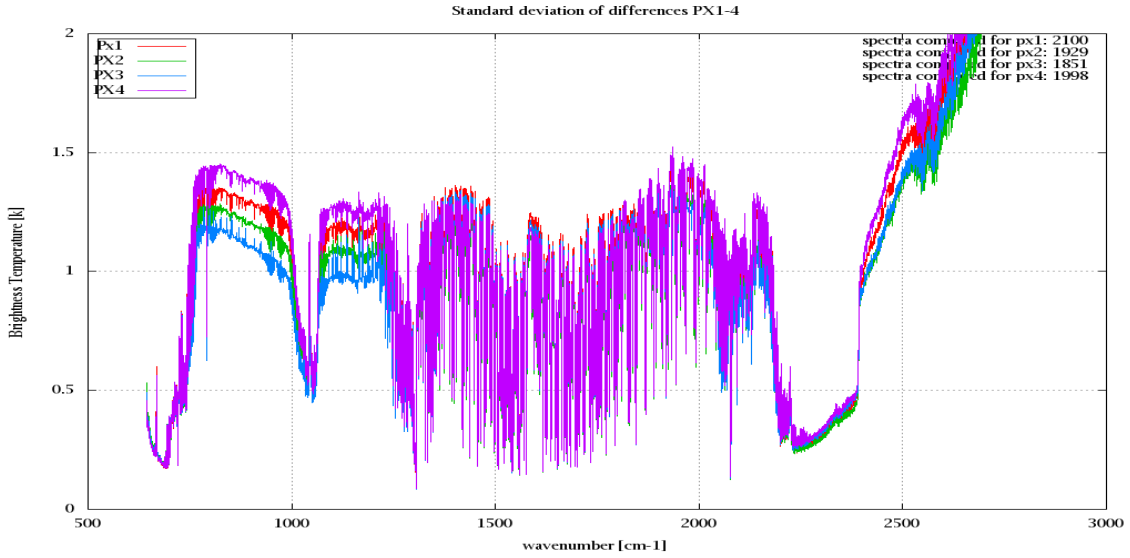

Figure 8: Standard deviation of radiance differences per pixel

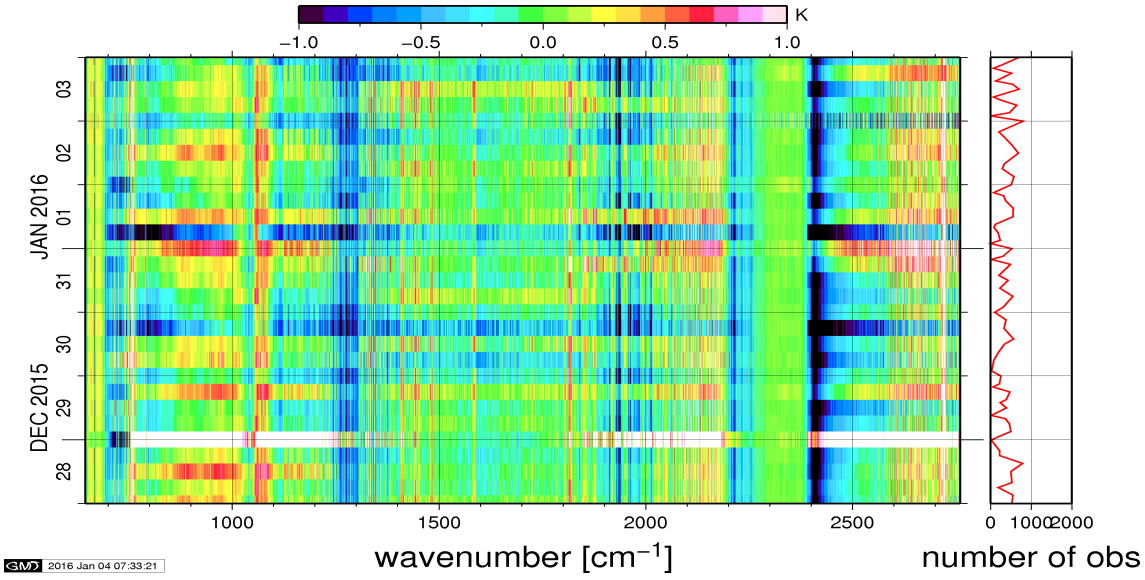

Figure 9: Radiance bias in BRT: All Channels

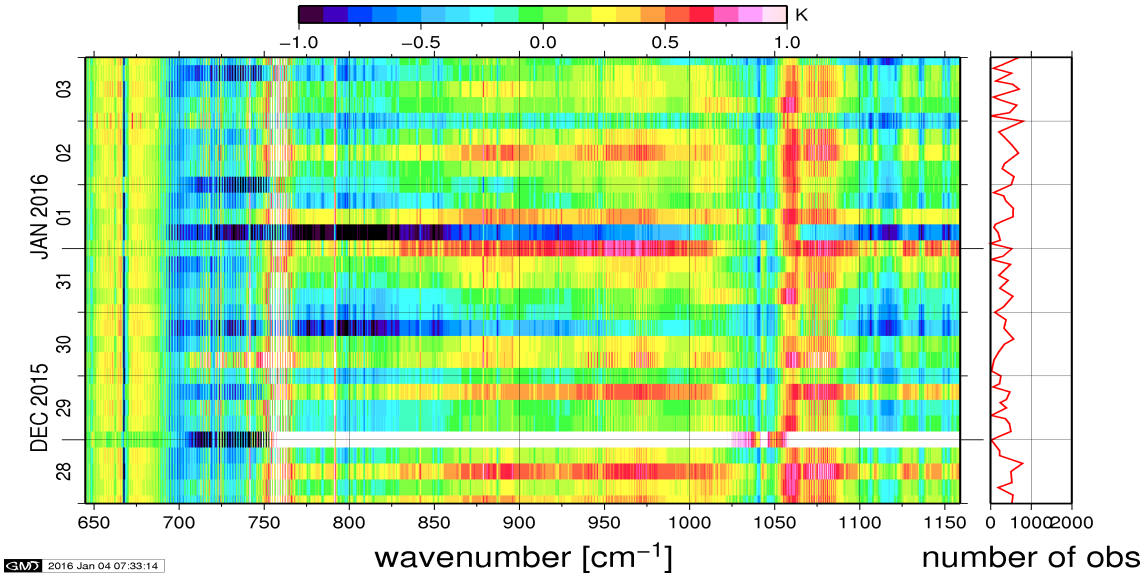

Figure 10: Radiance bias in BRT: IASI Band 1

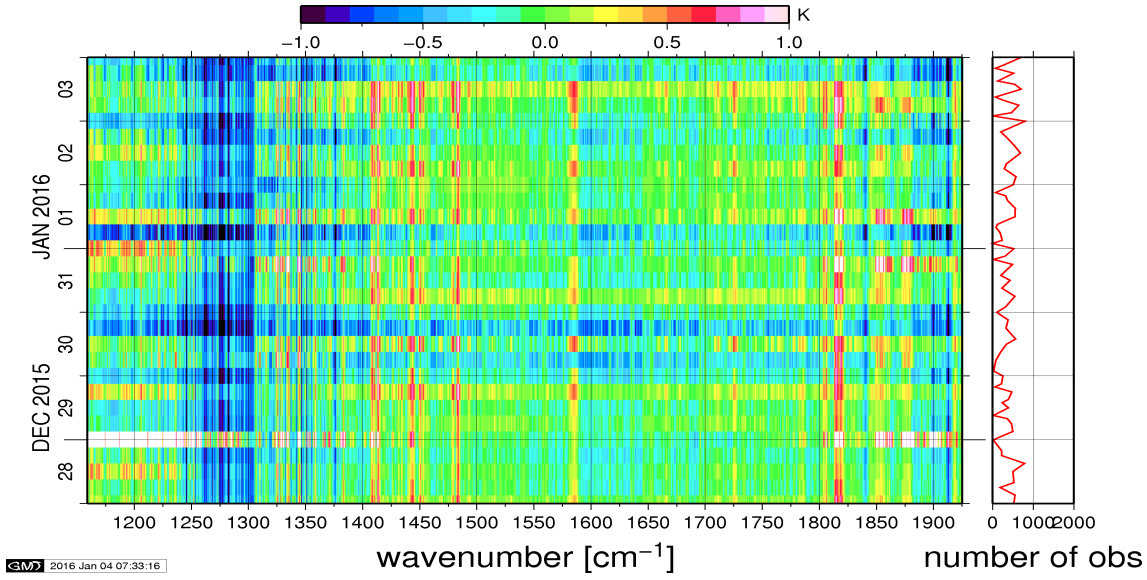

Figure 11: Radiance bias in BRT: IASI Band 2

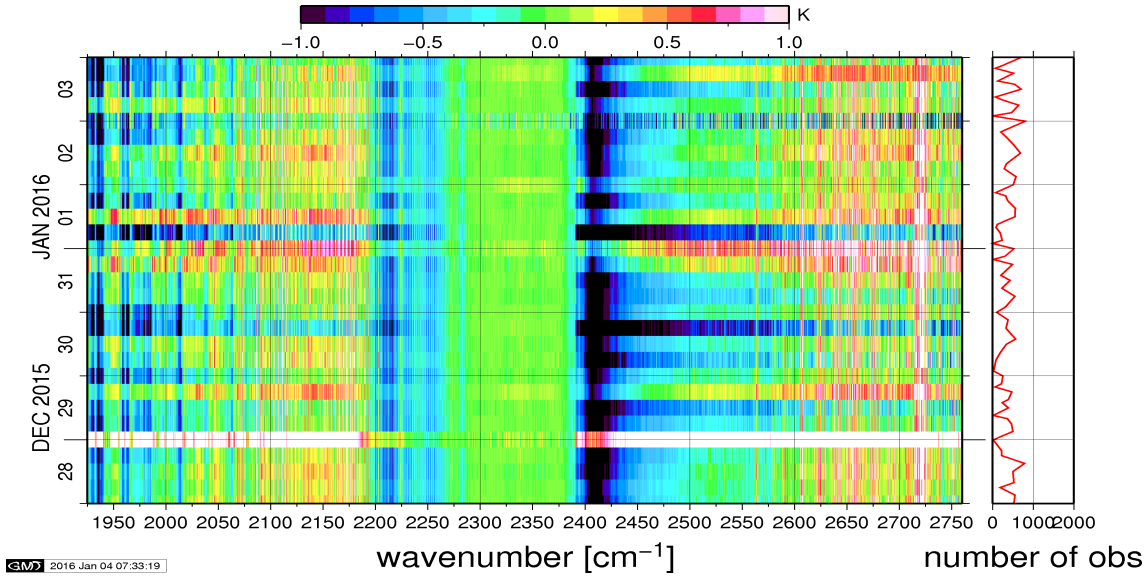

Figure 12: Radiance bias in BRT: IASI Band 3

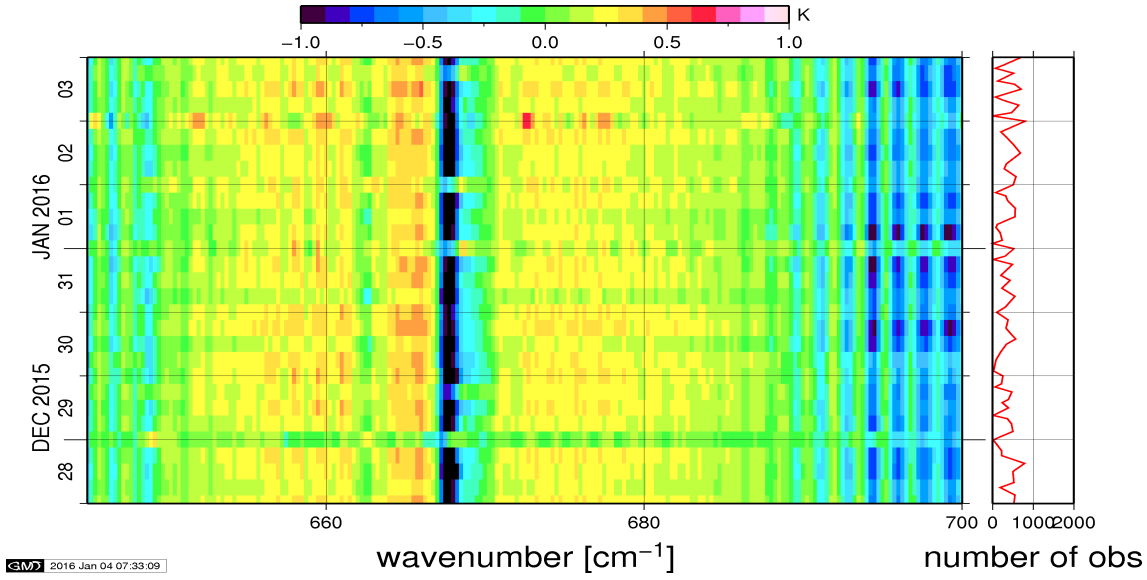

Figure 13: Radiance bias in BRT: CO2 14

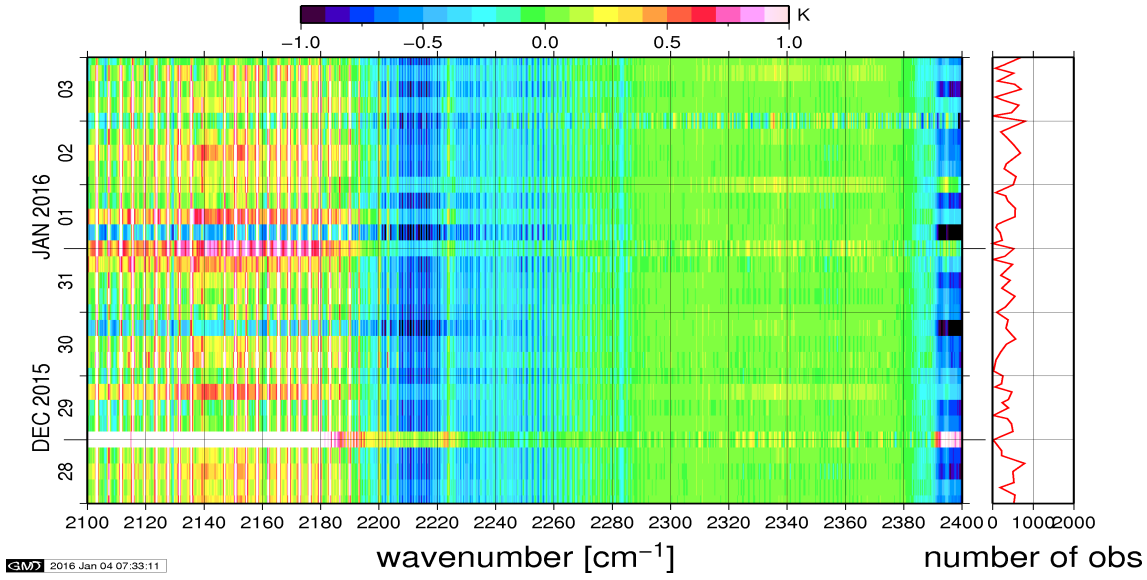

Figure 14: Radiance bias in BRT: CO2 4.3

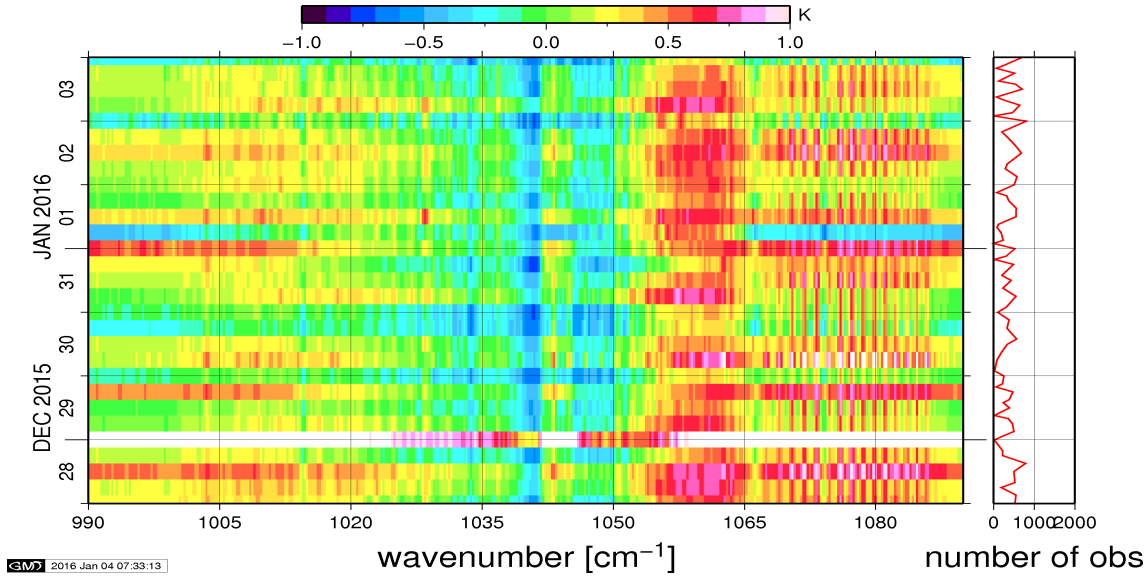

Figure 15: Radiance bias in BRT: O3

6 IASI-HIRS radiance 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.

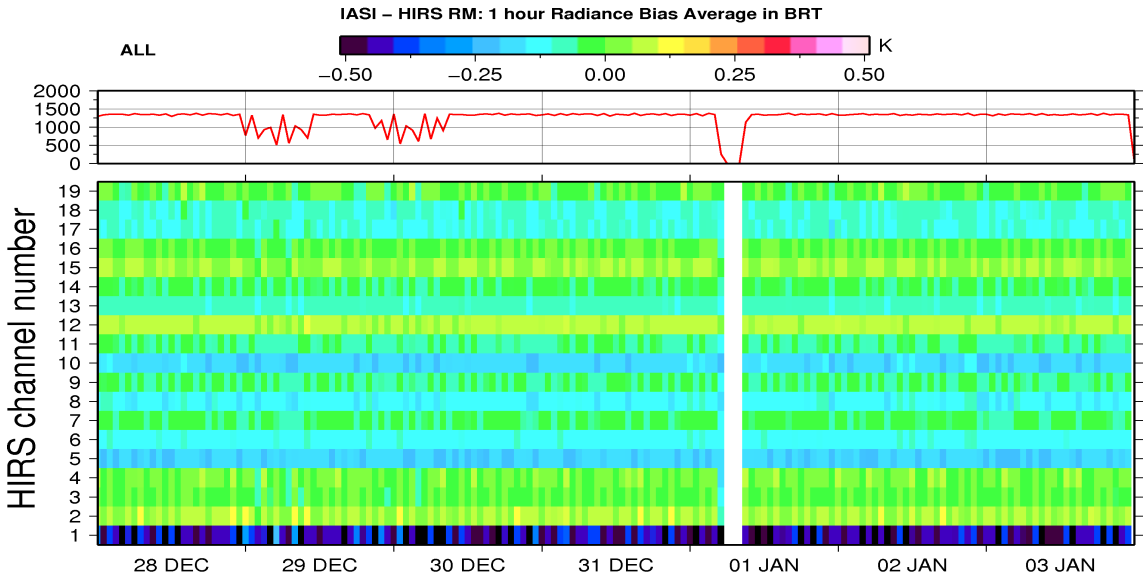

Figure 16: Radiance Differences in BRT 1h Average

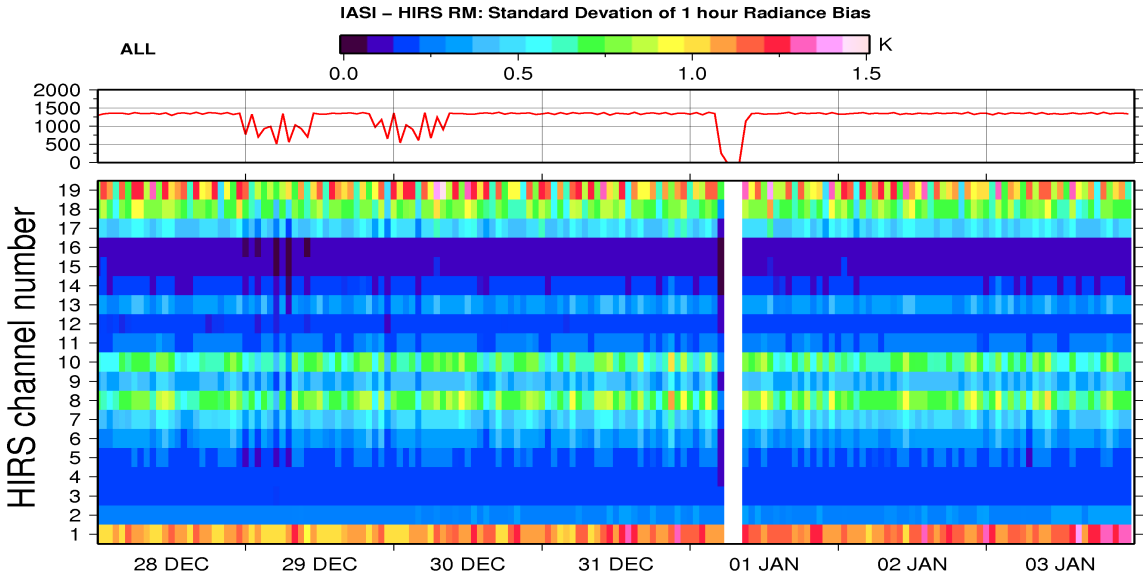

Figure 17: Standard Deviation of Radiance Differences 1h Average

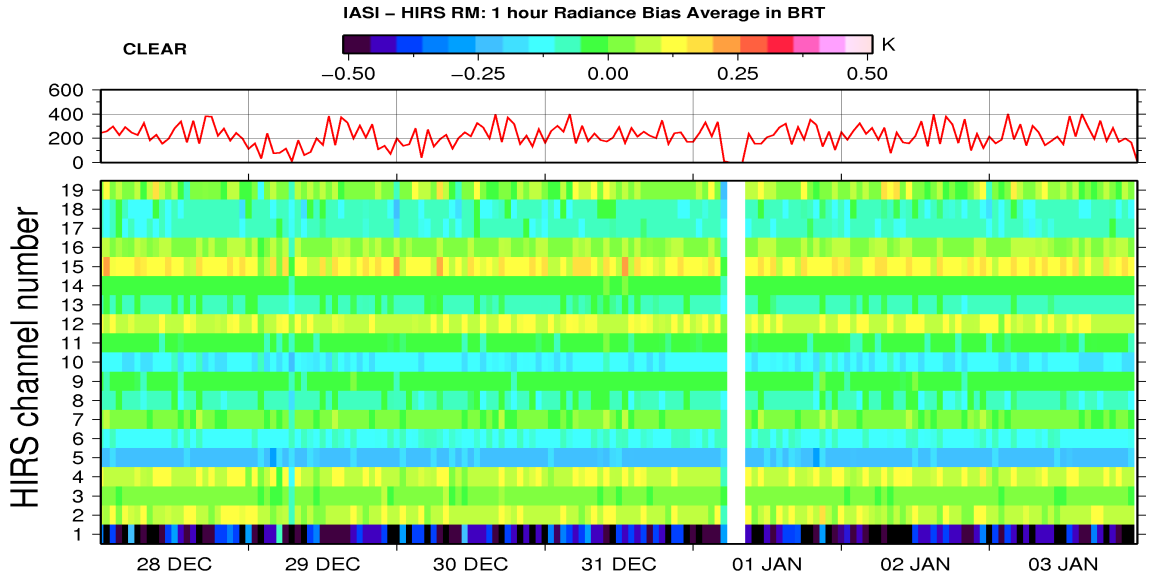

Figure 18: Radiance Differences in BRT 1h Average - Clear Sky

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