IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

14/03/2015 00:00:00 - 15/03/2015 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 minute data packet) for 14/03/2015 00:00:00 - 15/03/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 14/03/2015 00:00:00 - 15/03/2015 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	480	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
L1 DPX PDUs (RM: IASI-HIRS)	480	-
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2447	0	20150314021759.861	20150314022247.419
PX2 (135)	2447	0	20150314021759.861	20150314022247.419
PX3 (140)	2447	0	20150314021759.861	20150314022247.419
PX4 (145)	2447	0	20150314021759.861	20150314022247.419
IMG (150)	6743	0	20150314021759.861	20150314022247.419
VER (160)	1277	1115	20150314021757.697	20150314025314.647
VER (160)	1115	1120	20150314025314.647	20150314025314.647
VER (160)	1120	1125	20150314025314.647	20150314025314.647
VER (160)	1125	1130	20150314025314.647	20150314025314.647
VER (160)	1130	1135	20150314025314.647	20150314025314.647
VER (160)	1135	1116	20150314025314.647	20150314025314.647
VER (160)	1116	1121	20150314025314.647	20150314025314.647
VER (160)	1121	1126	20150314025314.647	20150314025314.647
VER (160)	1126	1131	20150314025314.647	20150314025314.647
VER (160)	1131	1136	20150314025314.647	20150314025314.647
VER (160)	1136	1117	20150314025314.647	20150314025314.647
VER (160)	1117	1122	20150314025314.647	20150314025314.647
VER (160)	1122	1127	20150314025314.647	20150314025314.647
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	1127	1132	20150314025314.647	20150314025314.647
VER (160)	1132	1137	20150314025314.647	20150314025314.647
VER (160)	1137	1118	20150314025314.647	20150314025314.647
VER (160)	1118	1123	20150314025314.647	20150314025314.647
VER (160)	1123	1128	20150314025314.647	20150314025314.647
VER (160)	1128	1133	20150314025314.647	20150314025314.647
VER (160)	1133	1138	20150314025314.647	20150314025314.647
VER (160)	1138	1119	20150314025314.647	20150314025314.647
VER (160)	1119	1124	20150314025314.647	20150314025314.647
VER (160)	1124	1129	20150314025314.647	20150314025314.647
VER (160)	1129	1134	20150314025314.647	20150314025314.647
VER (160)	1134	1139	20150314025314.647	20150314025314.647
AUX (180)	13361	0	20150314021758.131	20150314022254.123

Table 2: L0 data gaps

3   Instrument modes

Time	Transition from	Transition to
14/03/2015 00:00:11	-	Normal operation
14/03/2015 04:36:11	Normal operation	Auxiliary ASE synchronised
14/03/2015 04:38:19	Auxiliary ASE synchronised	Normal operation

Table 3: Instrument modes

4   L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
GQisFlagQual set (PX1)	99.59 %	-
GQisFlagQual set (PX2)	99.63 %	-
GQisFlagQual set (PX3)	99.65 %	-
GQisFlagQual set (PX4)	99.60 %	-
GQisFlagQual set (all)	99.61 %	-

Table 4: Quality flags
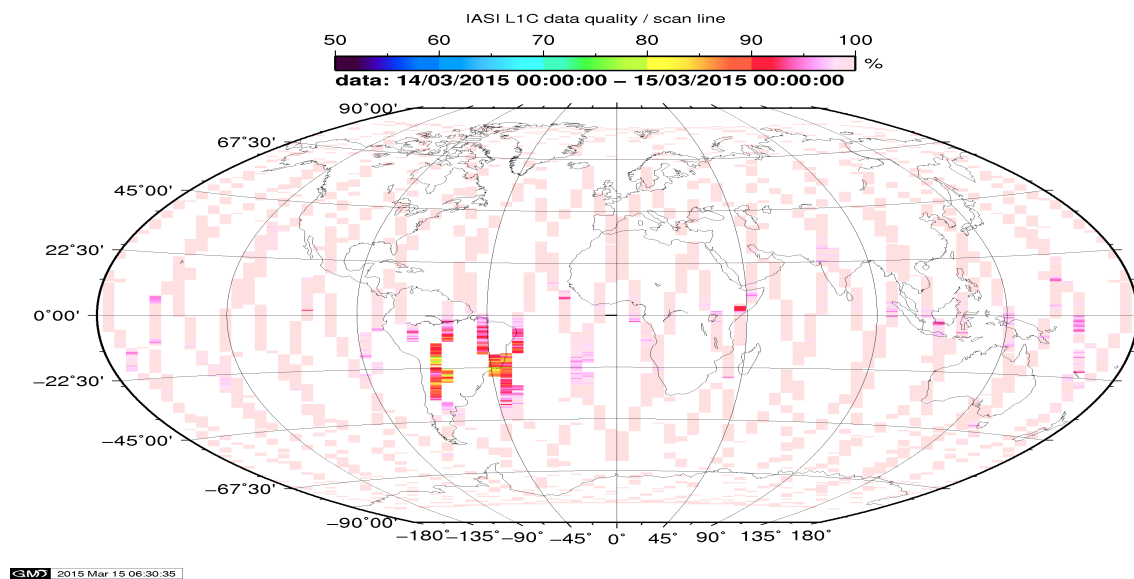
Figure 1: L1C data quality
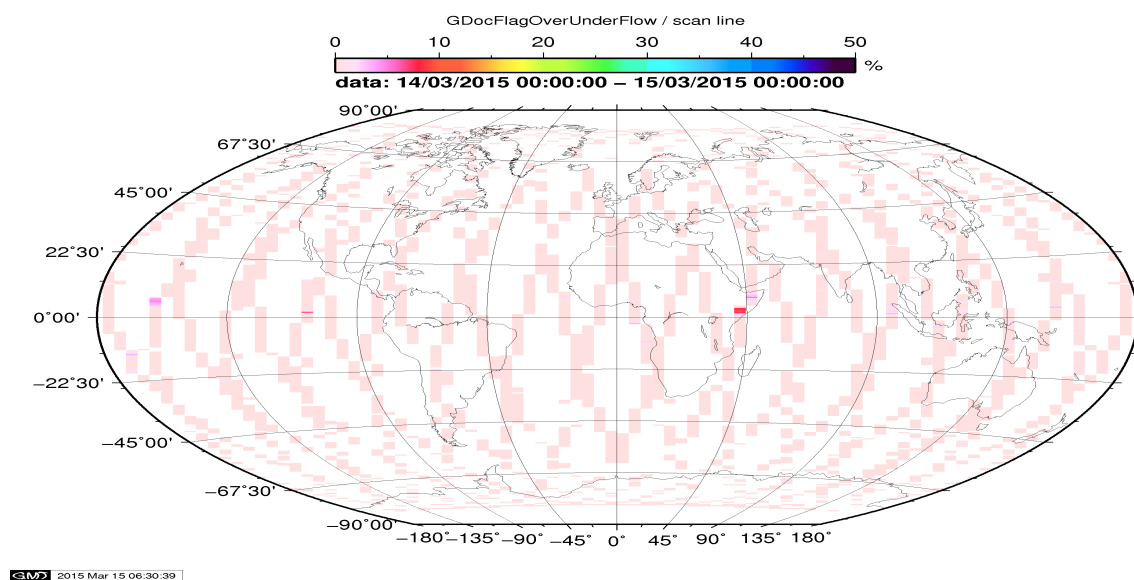
Figure 2: Flag of Over and Under Flows
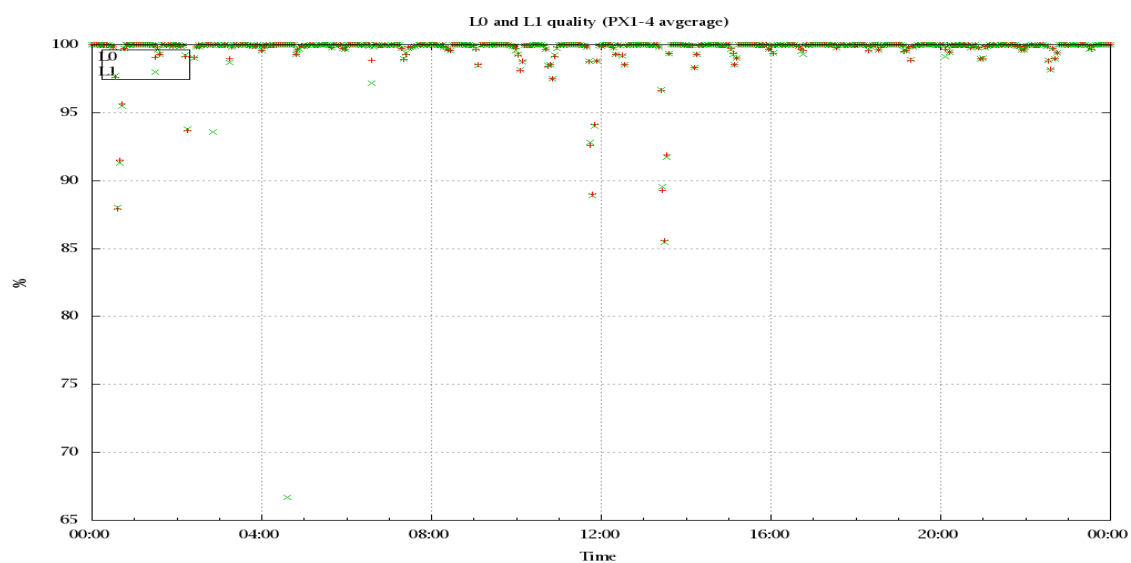
Figure 3: Level 0 and 1C overall quality
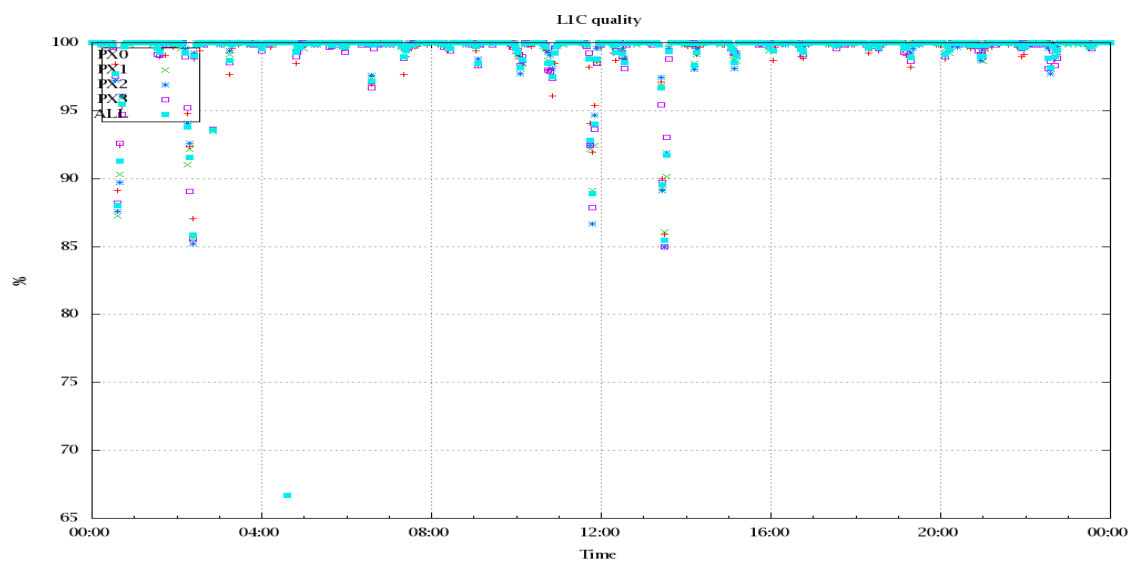
Figure 4: Level 1C quality
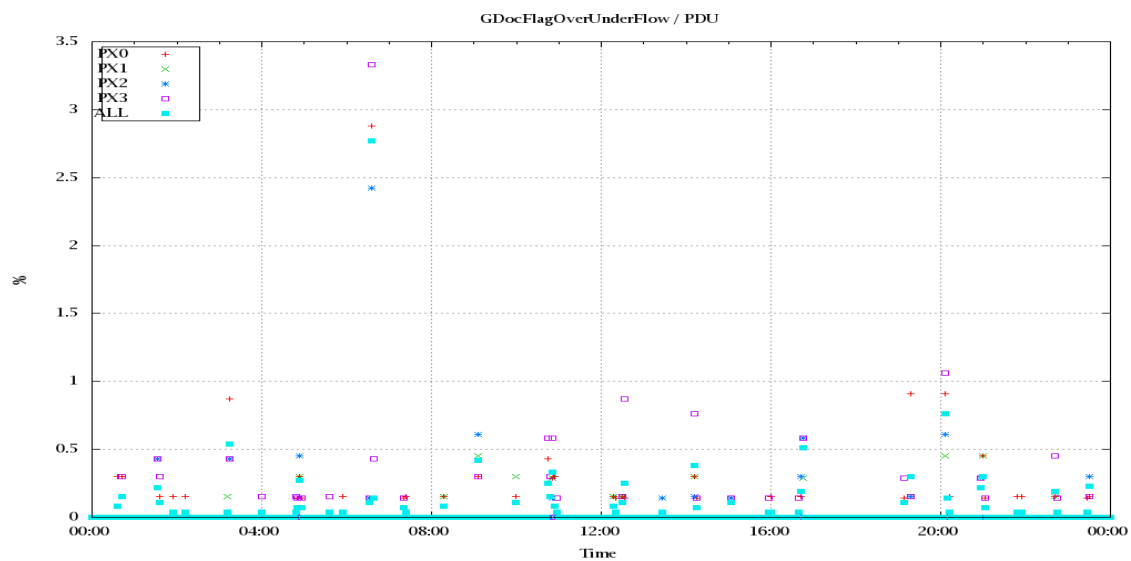
Figure 5: OverUnderFlowFlag timeseries

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 radiative 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 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 10 to 16 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 pixel and scan position 10 to 20) and the average bias OBS-CAL (over all pixel and scan position 10 to 20) of the last 30 days.
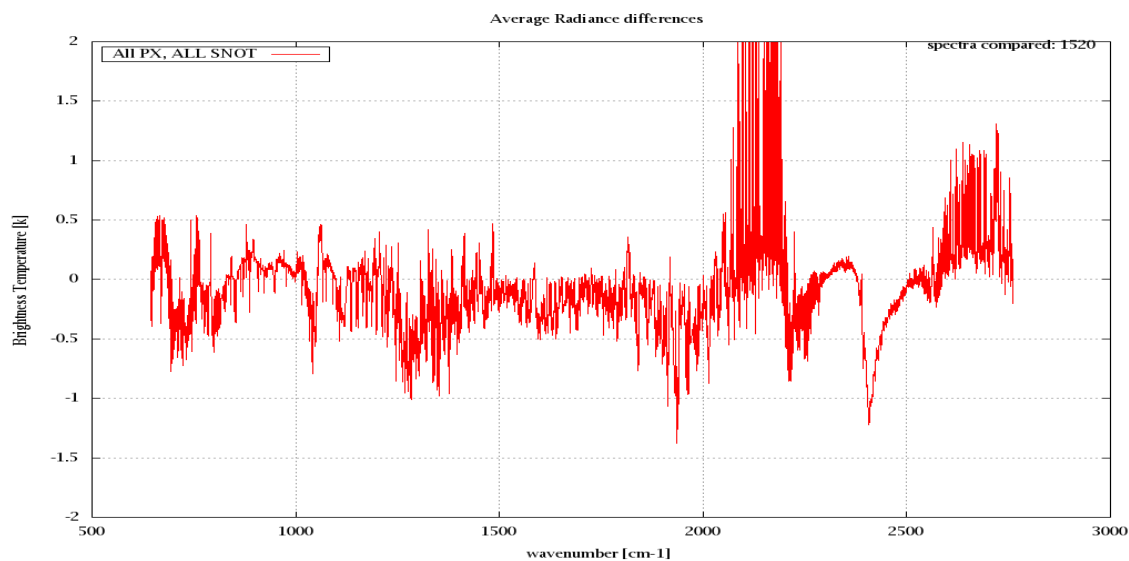
Figure 6: Average Radiance differences: OBS-CAL
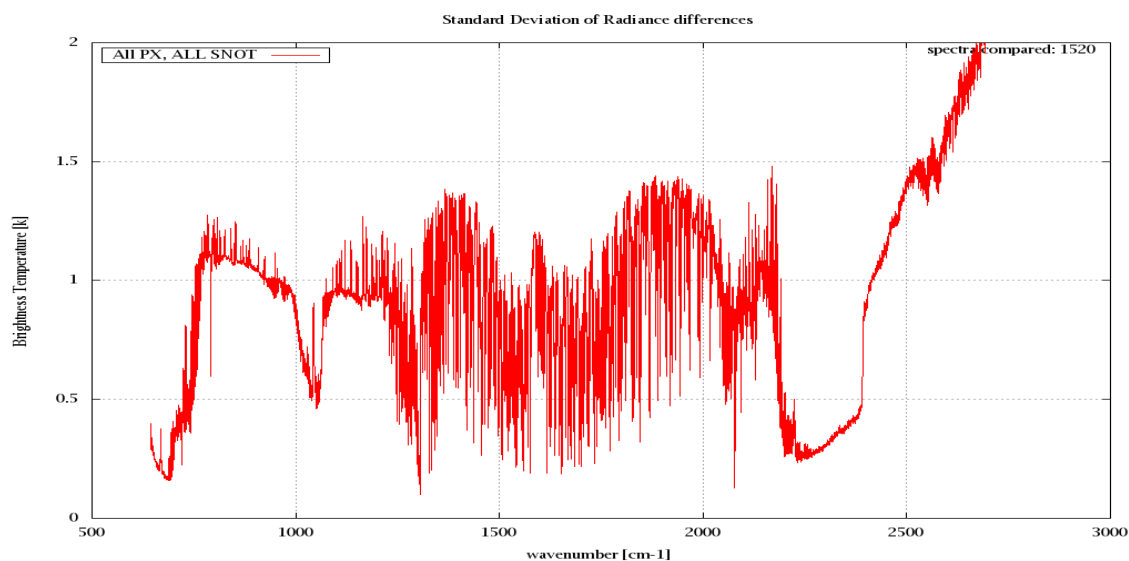
Figure 7: Standard Deviation of Radiance differences
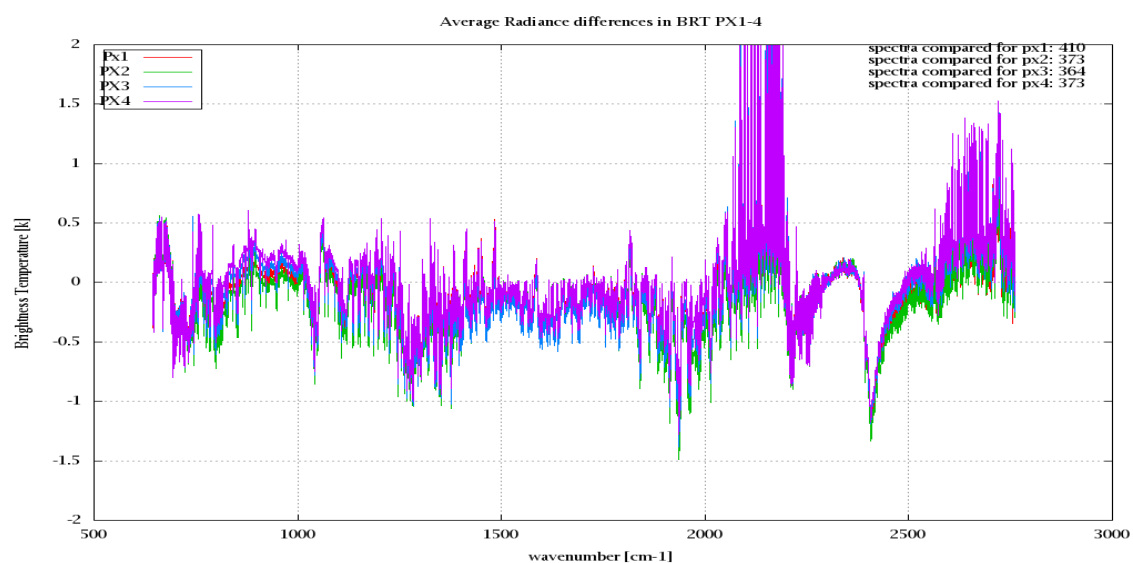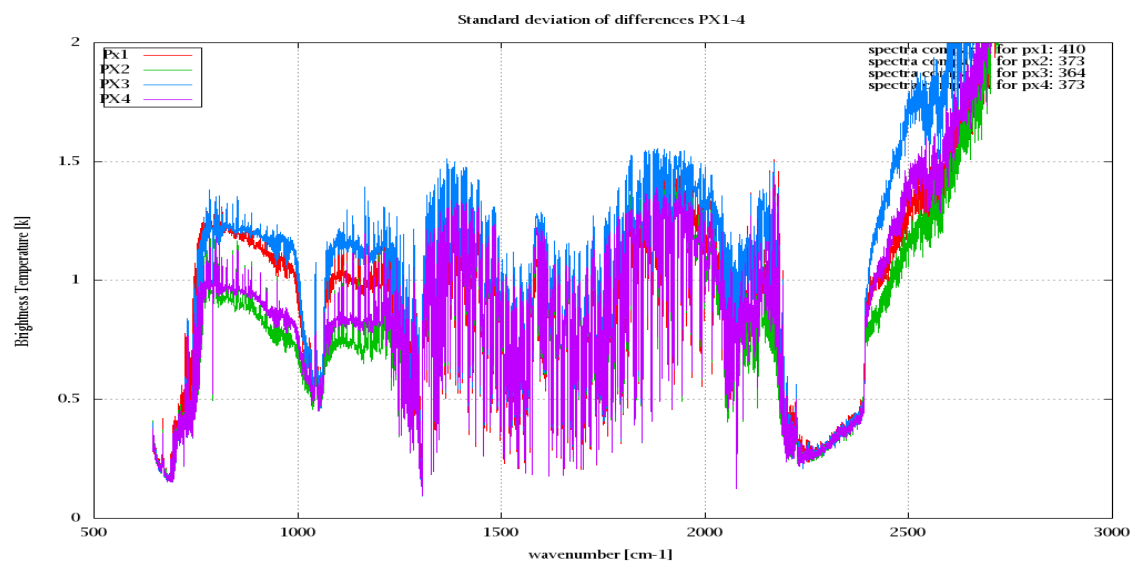
Figure 8: Average Radiance differences: OBS-CAL

Figure 9: Standard Deviation of Radiance differences

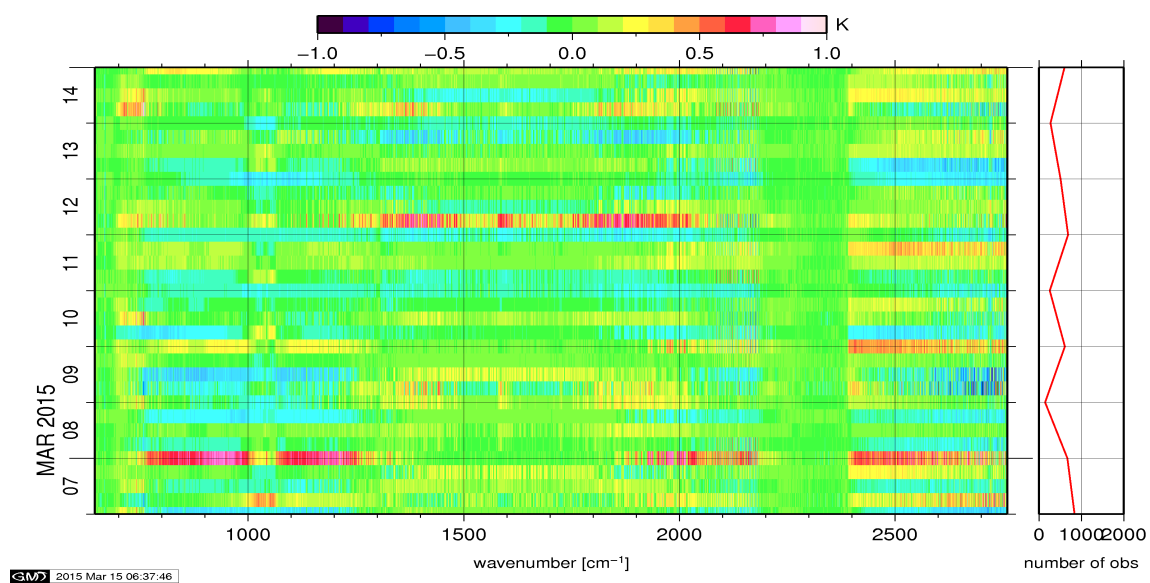European Organisation for the Exploitation of Meteorological Satellites

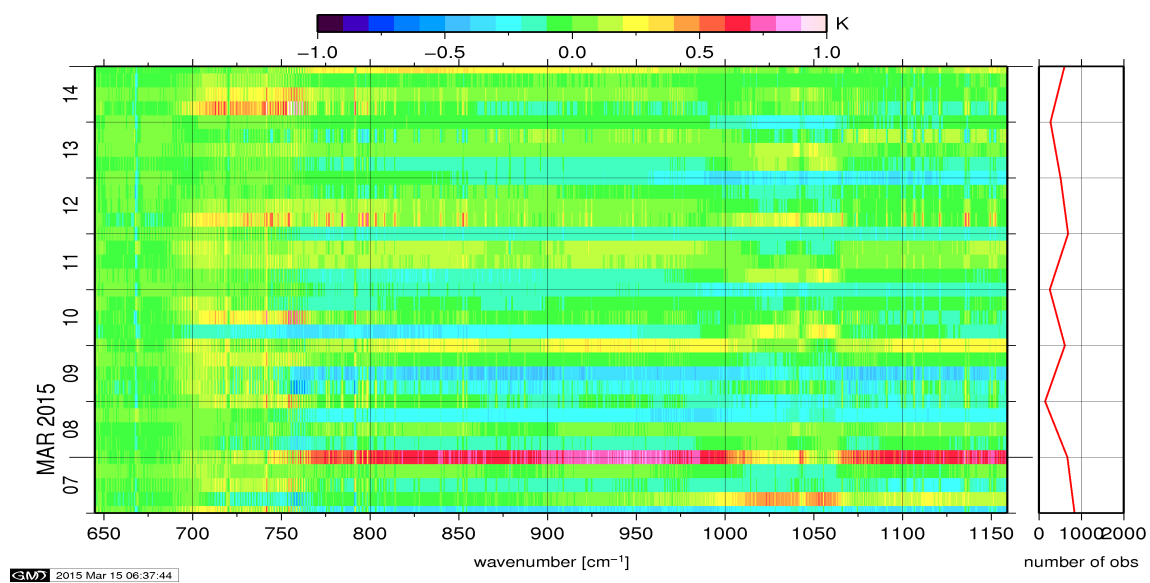Figure 10: Radiance Anomaly in BRT: All Channels

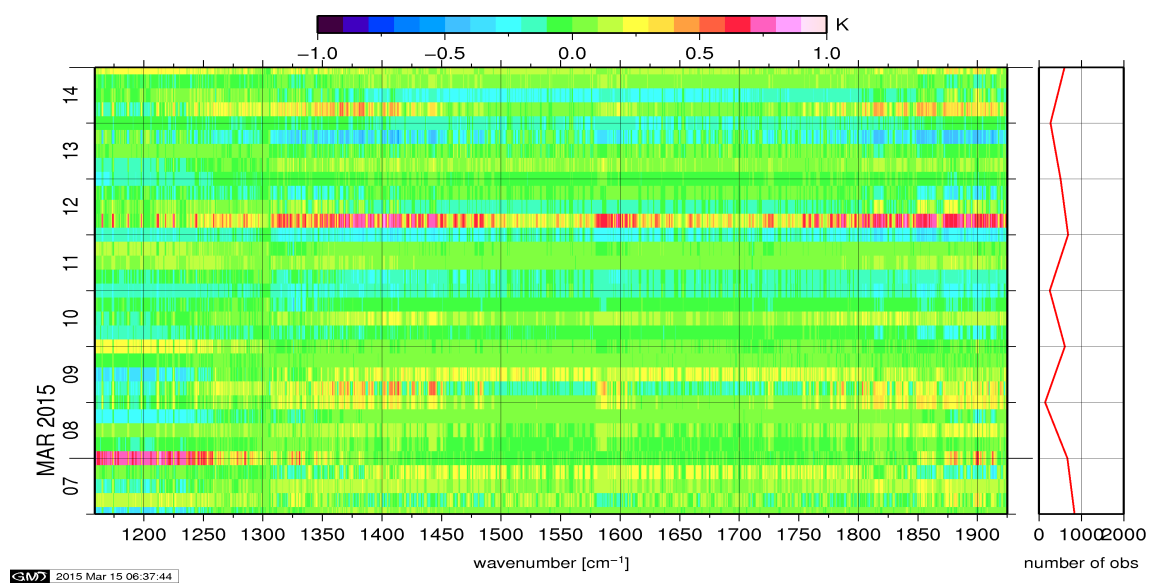Figure 11: Radiance Anomaly in BRT: IASI Band 1
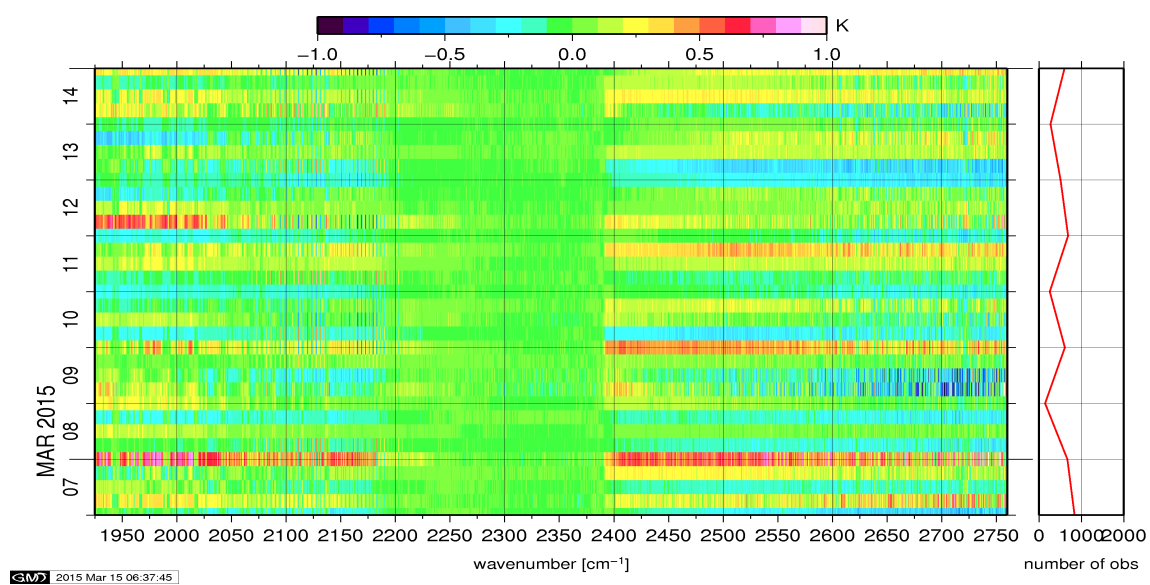
Figure 12: Radiance Anomaly in BRT: IASI Band 2

Figure 13: Radiance Anomaly in BRT: IASI Band 3
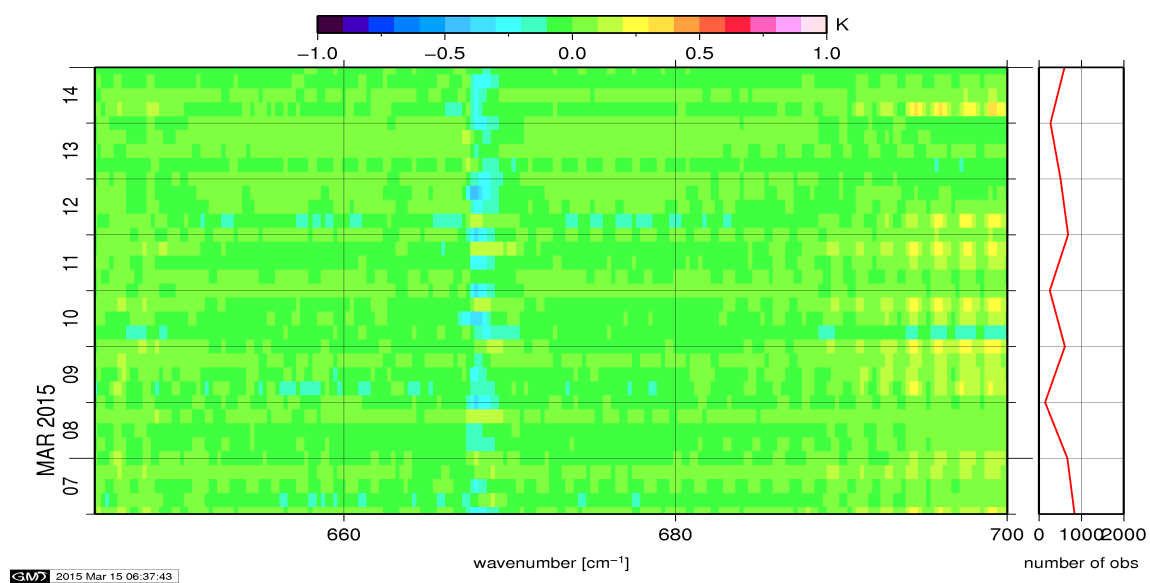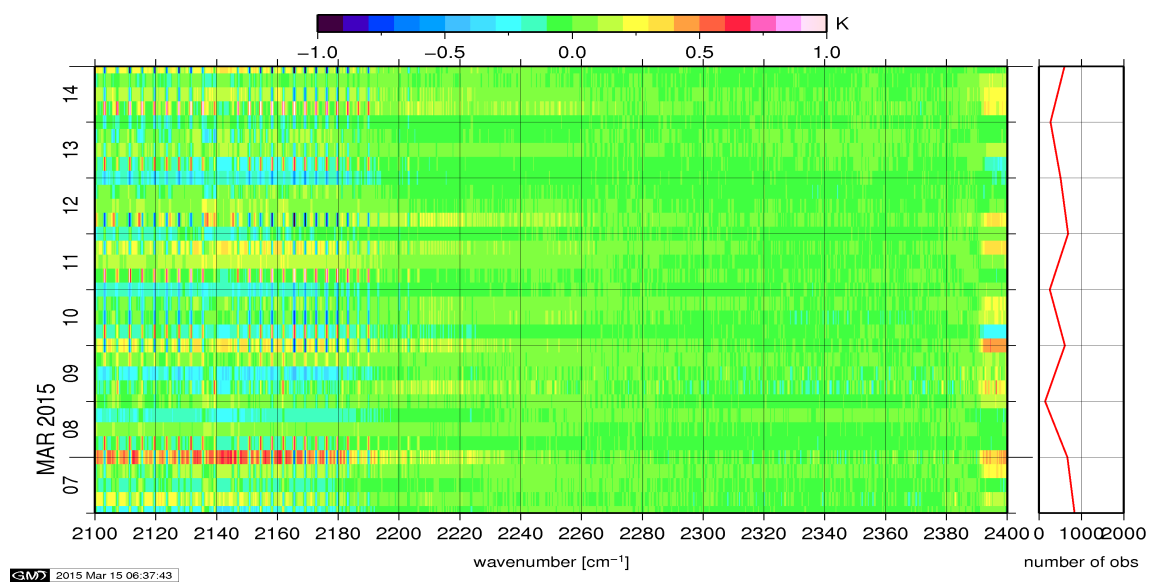
Figure 14: Radiance Anomaly in BRT: CO2 14
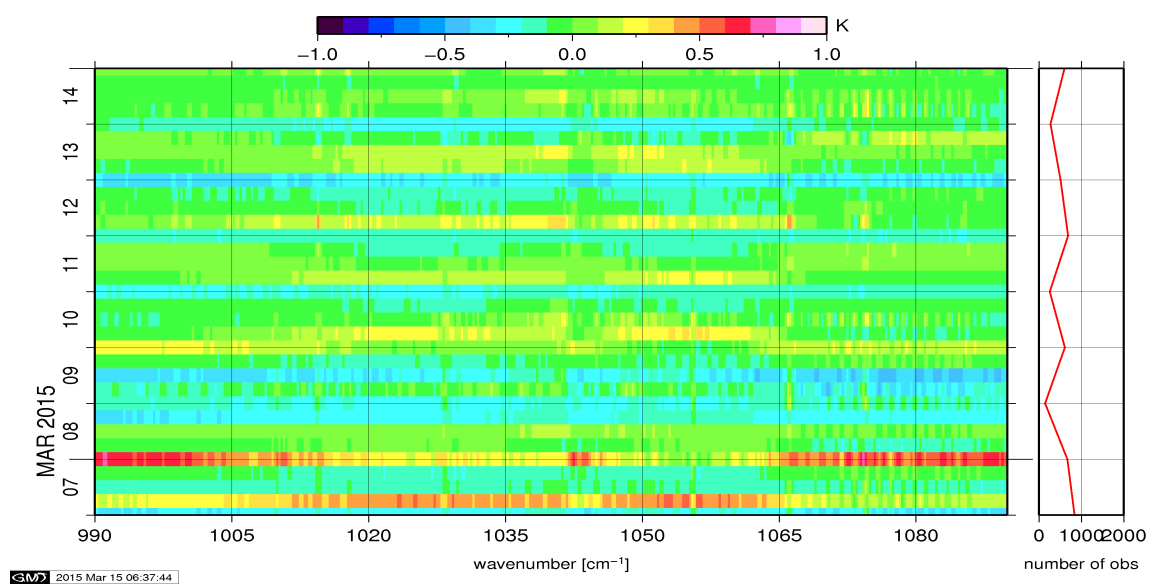

Figure 15: Radiance Anomaly in BRT: CO2 4.3

Figure 16: Radiance Anomaly 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. All sky conditions are covered. The radiance differences IASI - HIRS are given in brightness temperatures at 280K reference temperature. 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.
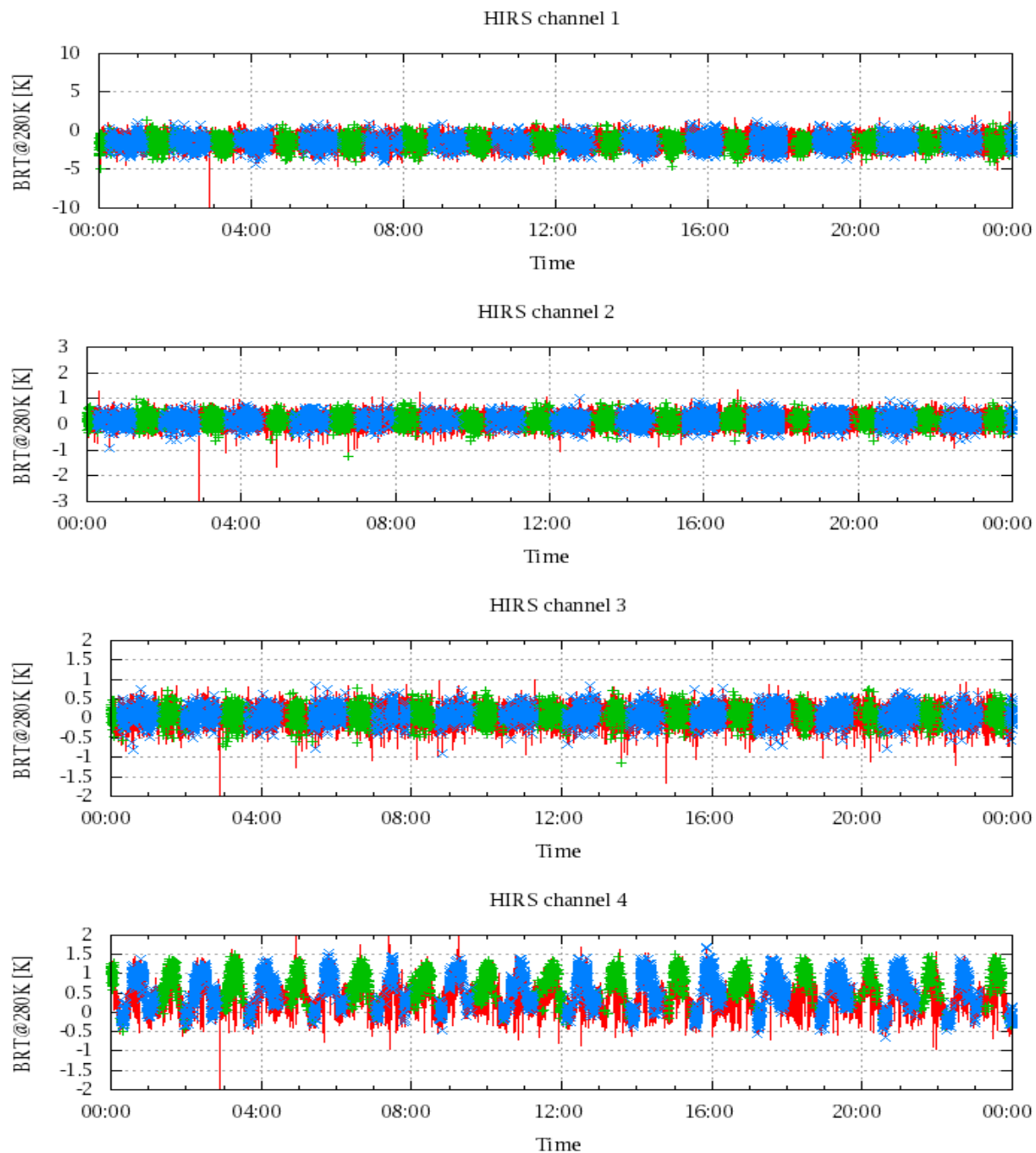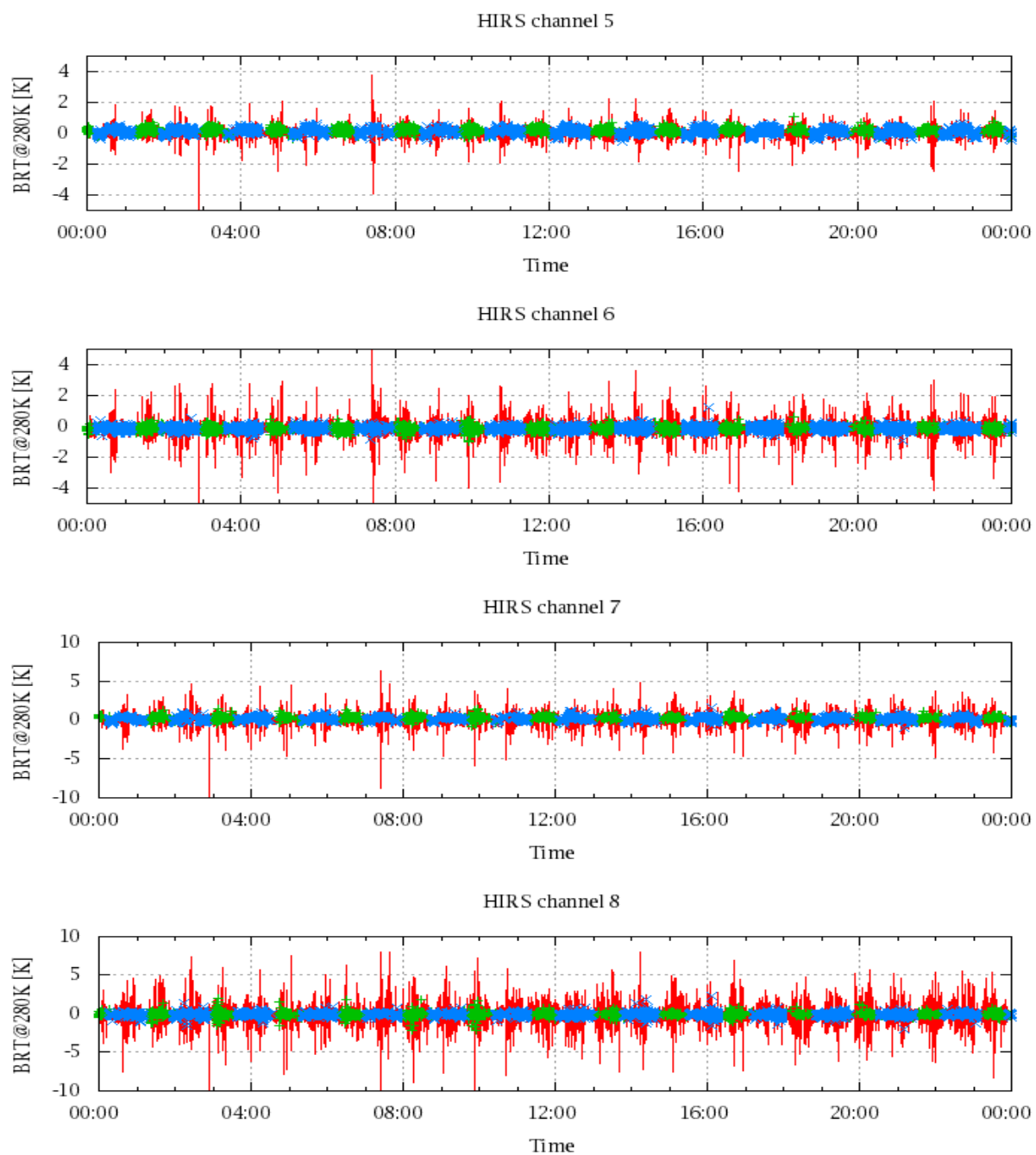

Figure 17: Radiance Differences in BRT
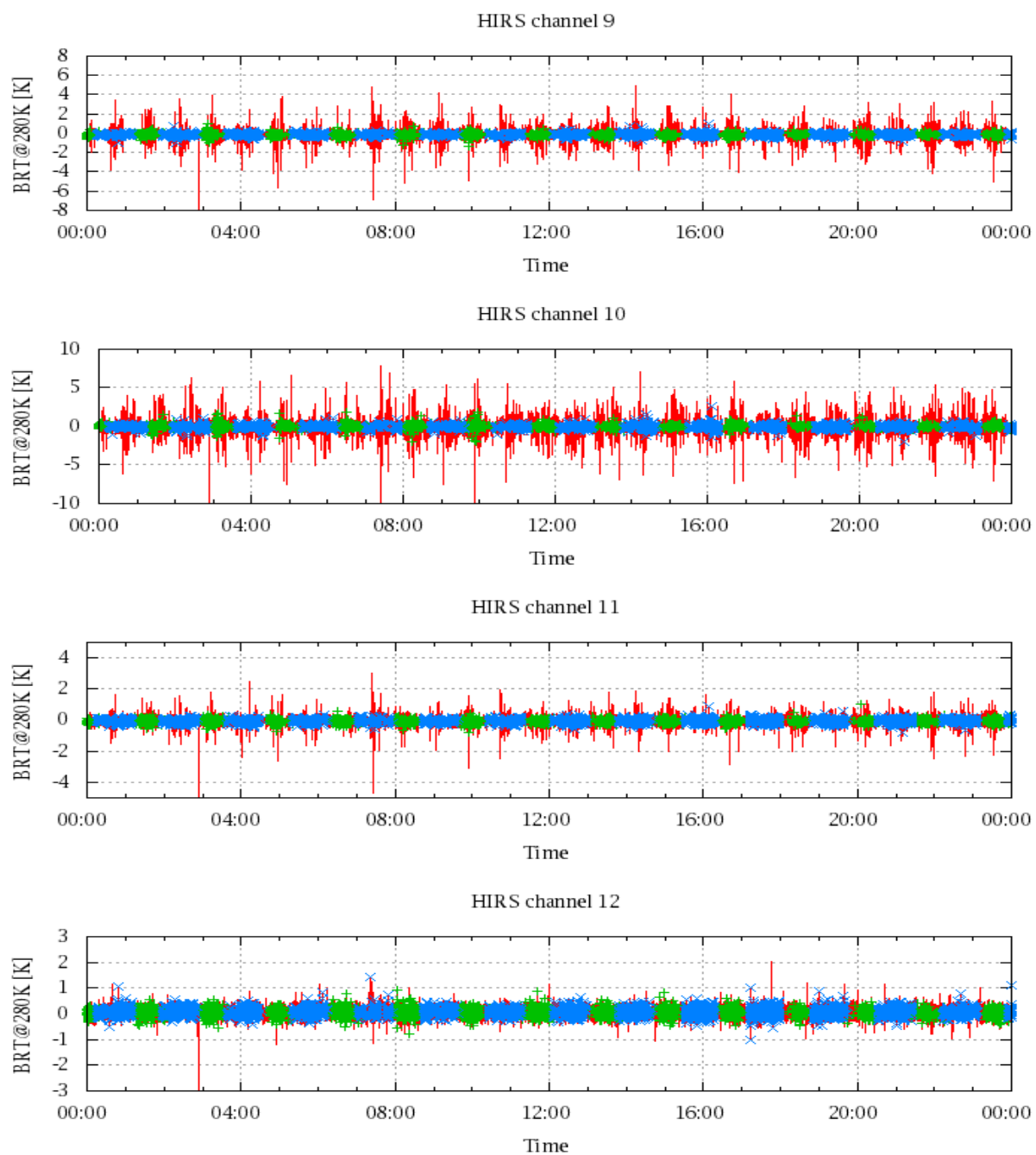
Figure 18: Radiance Differences in BRT

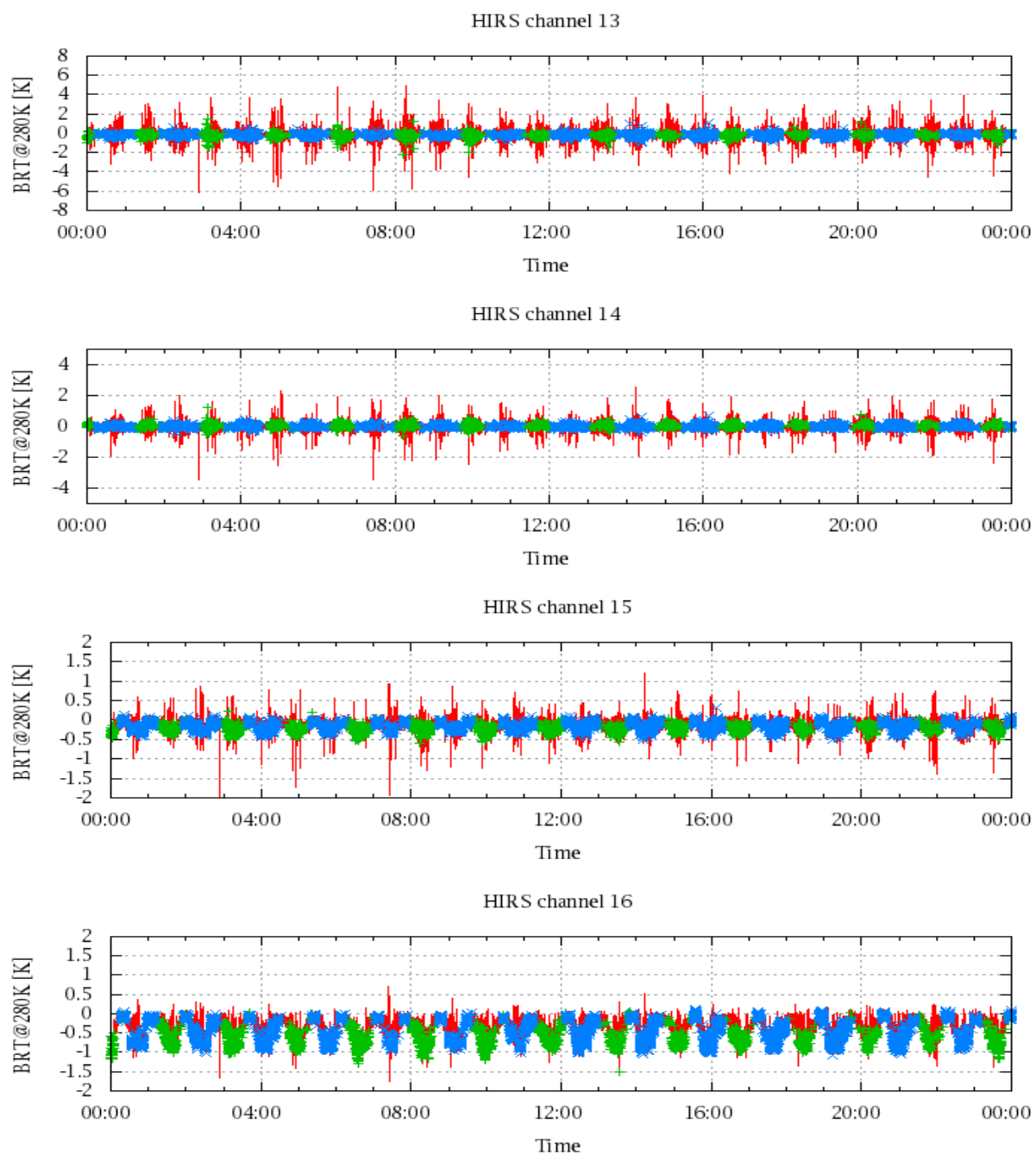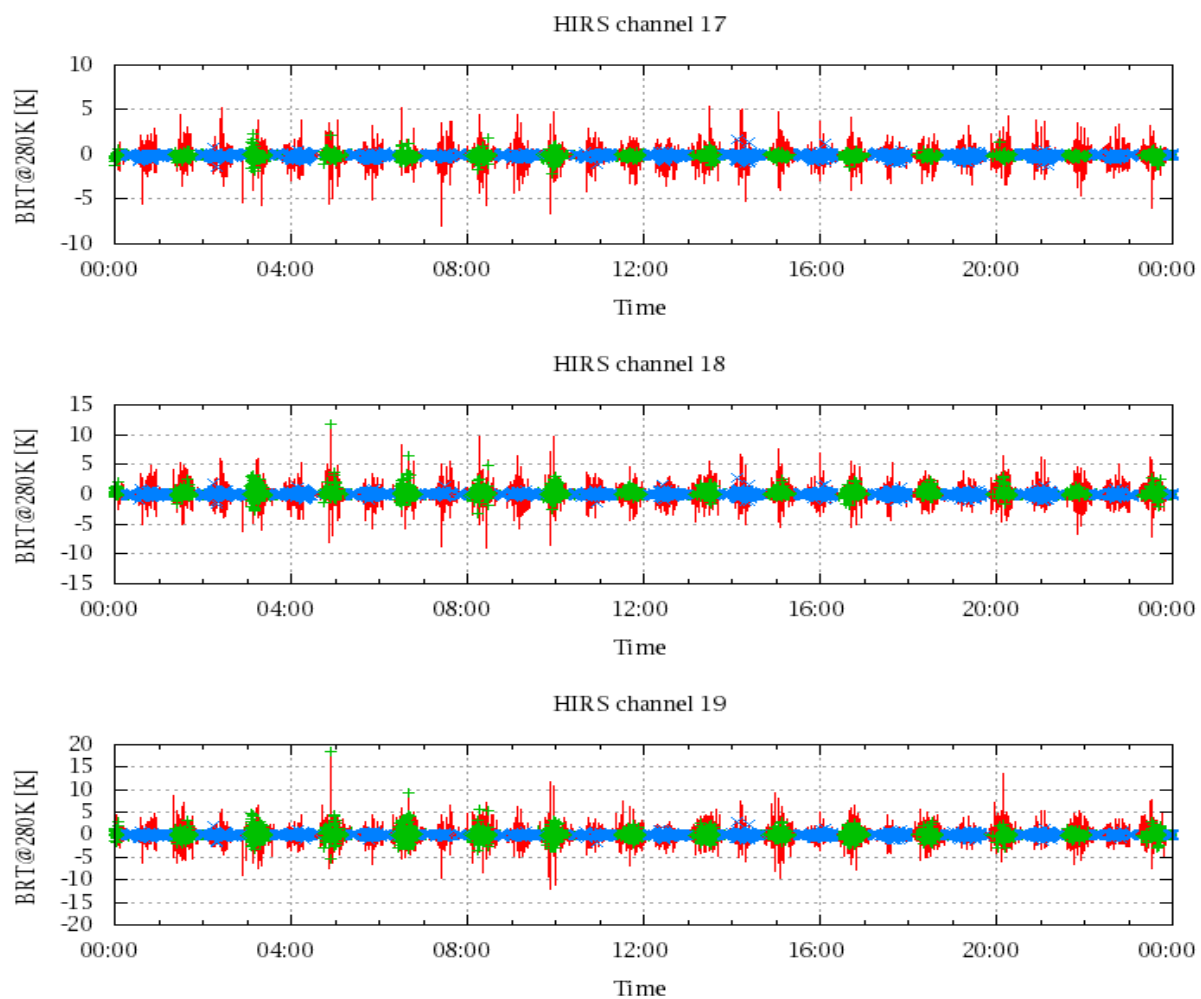Figure 19: Radiance Differences in BRT

Figure 20: Radiance Differences in BRT

Figure 21: Radinace Differences in BRT