IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

09/12/2017 00:00:00 - 10/12/2017 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 09/12/2017 00:00:00 - 10/12/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 09/12/2017 00:00:00 - 10/12/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	466	-
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)	15761	15790	20171209013826.213	20171209013833.998
PX1 (130)	5267	5394	20171209175114.558	20171209175148.074
PX1 (130)	5489	5509	20171209175213.152	20171209175218.992
PX1 (130)	5559	5581	20171209175232.827	20171209175239.097
PX1 (130)	5632	5680	20171209175251.640	20171209175305.042
PX1 (130)	5683	5686	20171209175305.691	20171209175306.339
PX2 (135)	15760	15790	20171209013825.998	20171209013833.998
PX2 (135)	5268	5394	20171209175114.777	20171209175148.074
PX2 (135)	5489	5509	20171209175213.152	20171209175218.992
PX2 (135)	5558	5581	20171209175232.613	20171209175239.097
PX2 (135)	5633	5680	20171209175251.855	20171209175305.042
PX2 (135)	5683	5686	20171209175305.691	20171209175306.339
PX3 (140)	15761	15790	20171209013826.213	20171209013833.998
PX3 (140)	5267	5393	20171209175114.558	20171209175147.855
PX3 (140)	5489	5508	20171209175213.152	20171209175218.773
PX3 (140)	5557	5581	20171209175232.394	20171209175239.097
PX3 (140)	5632	5680	20171209175251.640	20171209175305.042
PX3 (140)	5683	5686	20171209175305.691	20171209175306.339
Continued on next page				

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	15760	15790	20171209013825.998	20171209013833.998
PX4 (145)	5267	5393	20171209175114.558	20171209175147.855
PX4 (145)	5489	5508	20171209175213.152	20171209175218.773
PX4 (145)	5558	5581	20171209175232.613	20171209175239.097
PX4 (145)	5632	5679	20171209175251.640	20171209175304.827
PX4 (145)	5683	5686	20171209175305.691	20171209175306.339
IMG (150)	3656	3689	20171209013825.998	20171209013833.783
IMG (150)	5963	6106	20171209175114.558	20171209175148.074
IMG (150)	6213	6236	20171209175213.152	20171209175218.773
IMG (150)	6293	6320	20171209175232.394	20171209175238.882
IMG (150)	6376	6431	20171209175251.640	20171209175304.827
IMG (150)	6434	6438	20171209175305.476	20171209175306.339
VER (160)	13543	13549	20171209013821.240	20171209013837.240
VER (160)	871	892	20171209175109.156	20171209175149.152
VER (160)	906	912	20171209175205.152	20171209175221.152
VER (160)	921	927	20171209175229.152	20171209175245.152
VER (160)	931	942	20171209175245.152	20171209175309.152
AUX (180)	9261	9263	20171209013821.674	20171209013837.674
AUX (180)	173	178	20171209175109.585	20171209175149.585
AUX (180)	180	182	20171209175205.585	20171209175221.585
AUX (180)	183	185	20171209175229.585	20171209175245.585
AUX (180)	185	188	20171209175245.585	20171209175309.581

Table 2: L0 data gaps

3   Instrument modes

Time	Transition from	Transition to
09/12/2017 00:00:10	-	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	466	-
GQisFlagQual set (PX1)	99.56 %	-
GQisFlagQual set (PX2)	99.62 %	-
GQisFlagQual set (PX3)	99.63 %	-
GQisFlagQual set (PX4)	99.56 %	-
GQisFlagQual set (all)	99.60 %	-

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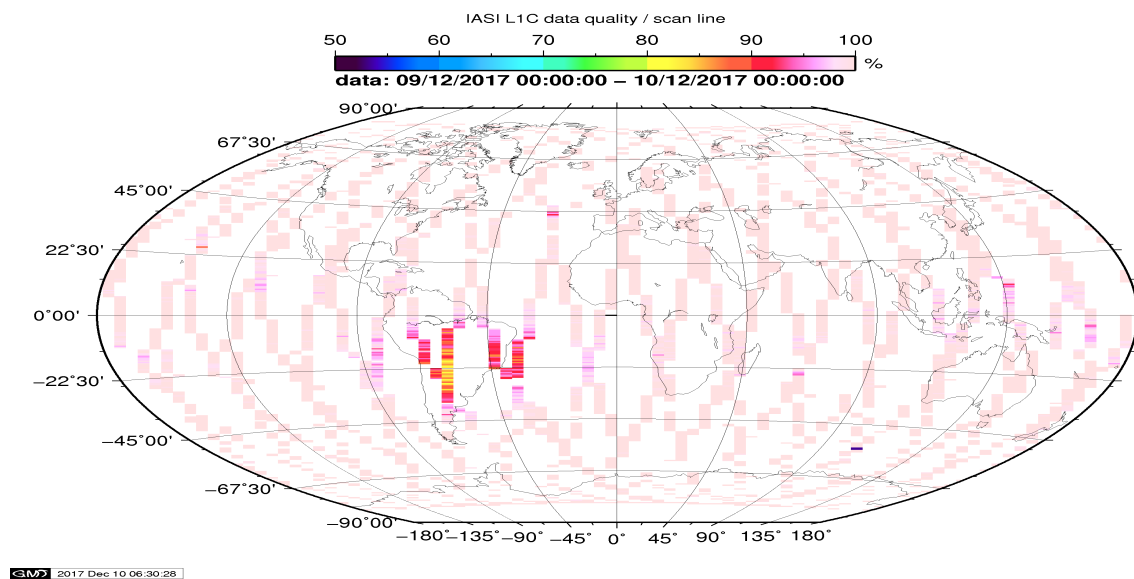
Figure 1: L1C data quality
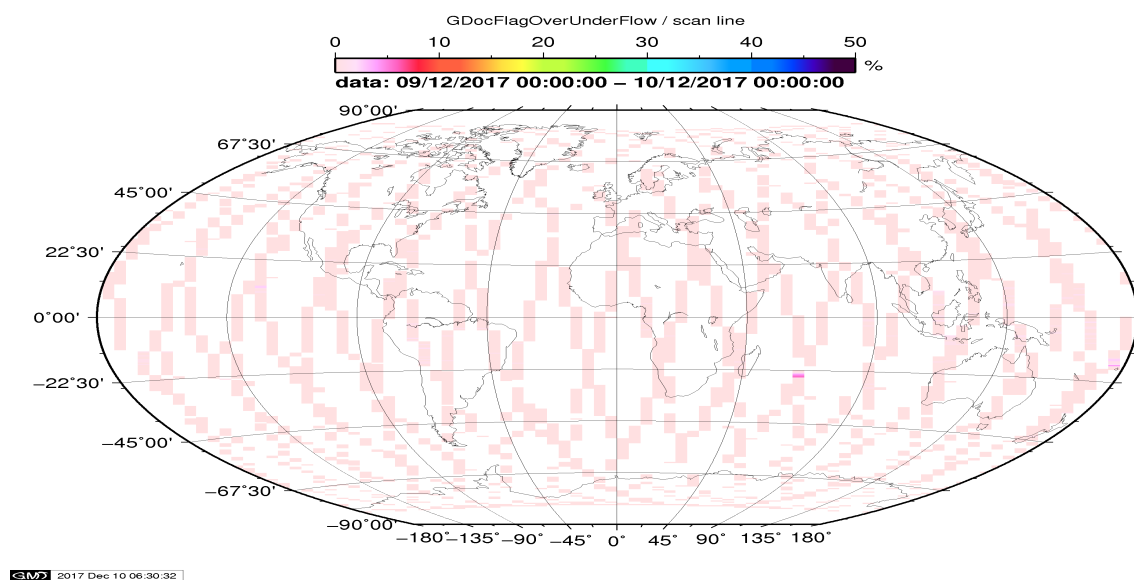
Figure 2: Flag of Over and Under Flows
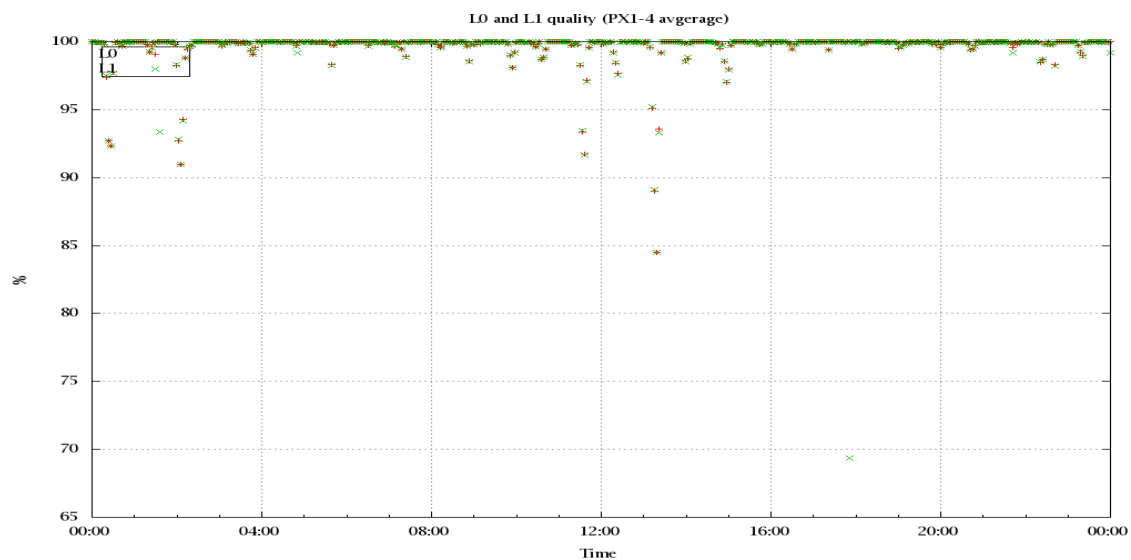
Figure 3: Level 0 and 1C overall quality
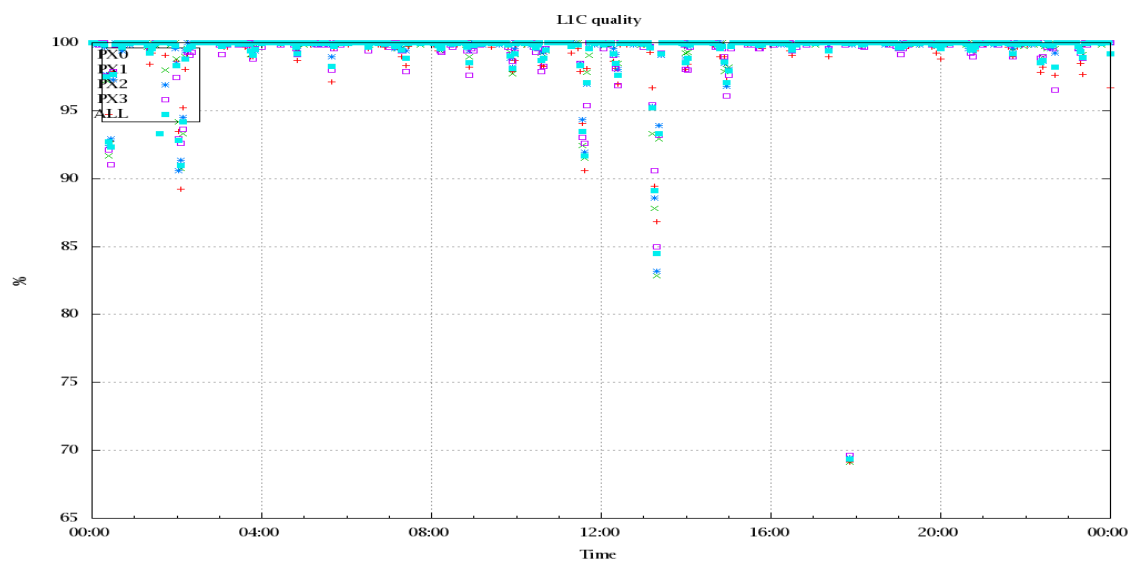
Figure 4: Level 1C quality
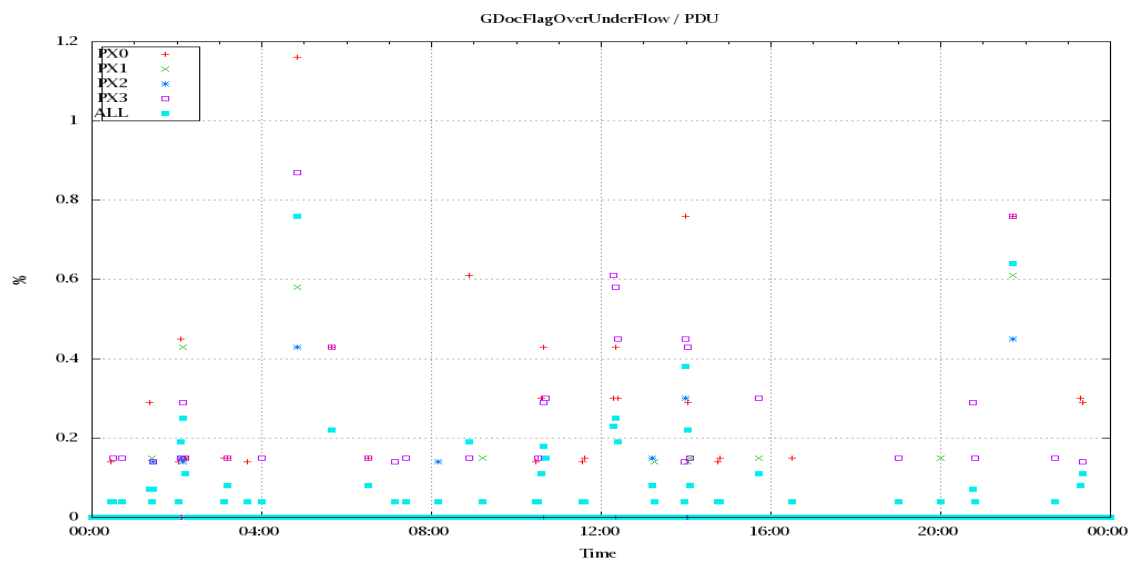
Figure 5: OverUnderFlowFlag timeseries

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.
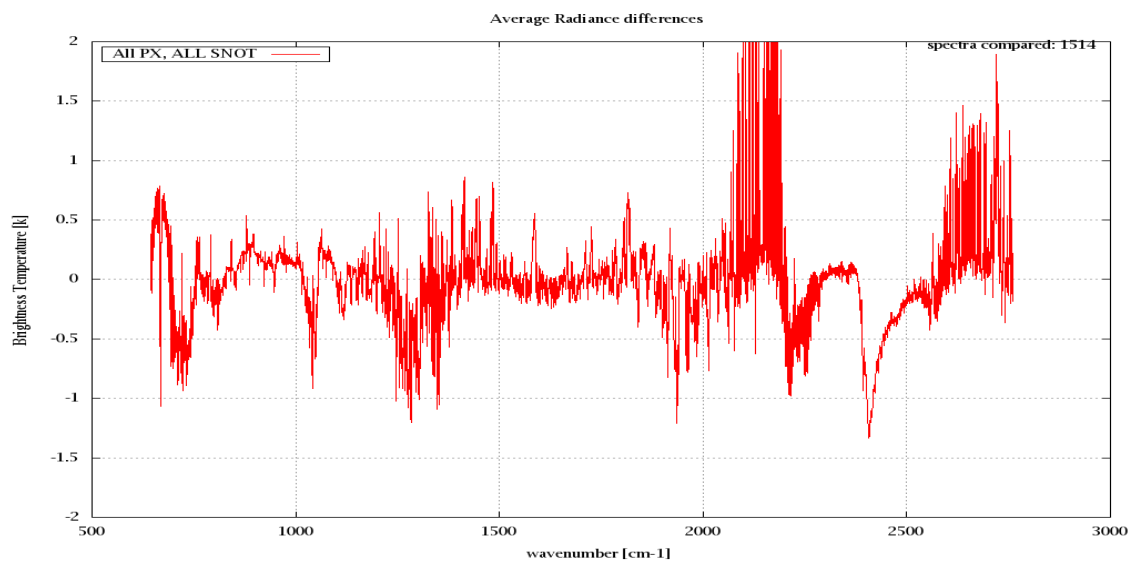
Figure 6: Average Radiance differences: OBS-CAL
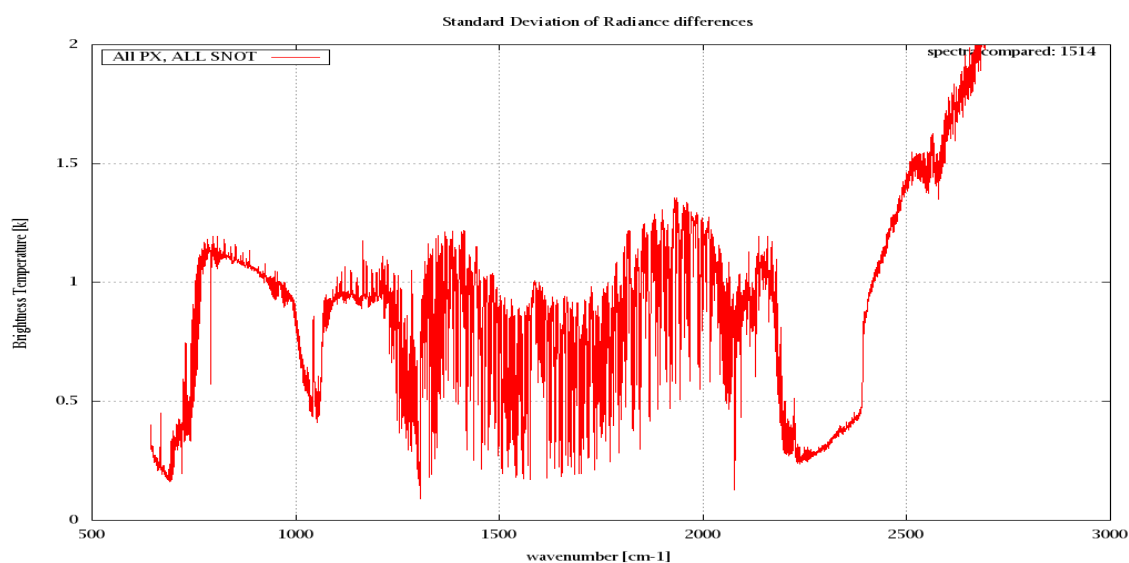
Figure 7: Standard Deviation of Radiance differences
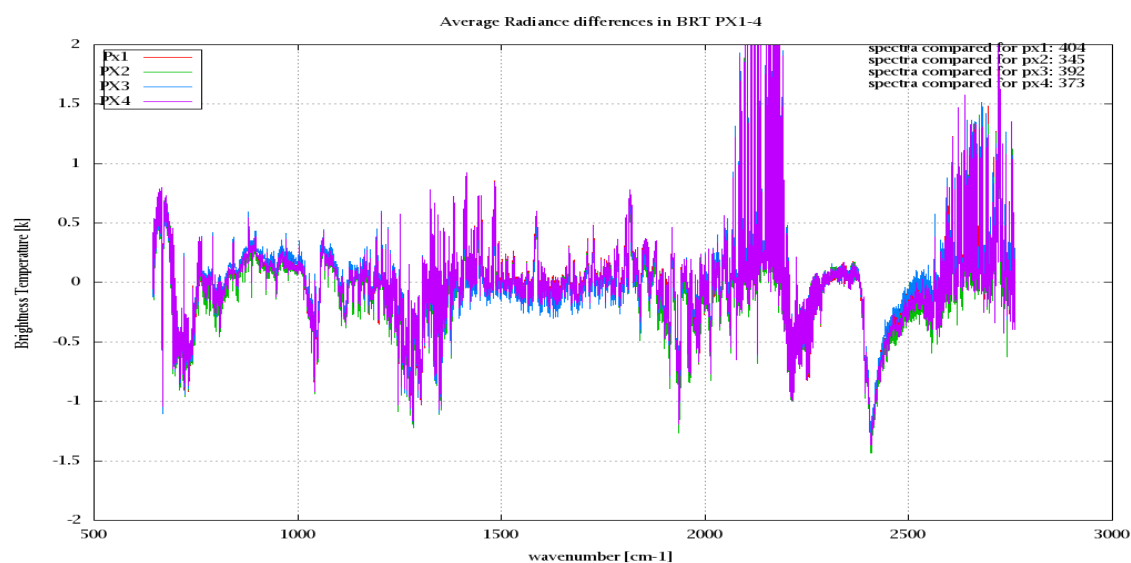
Figure 8: Average Radiance differences: OBS-CAL
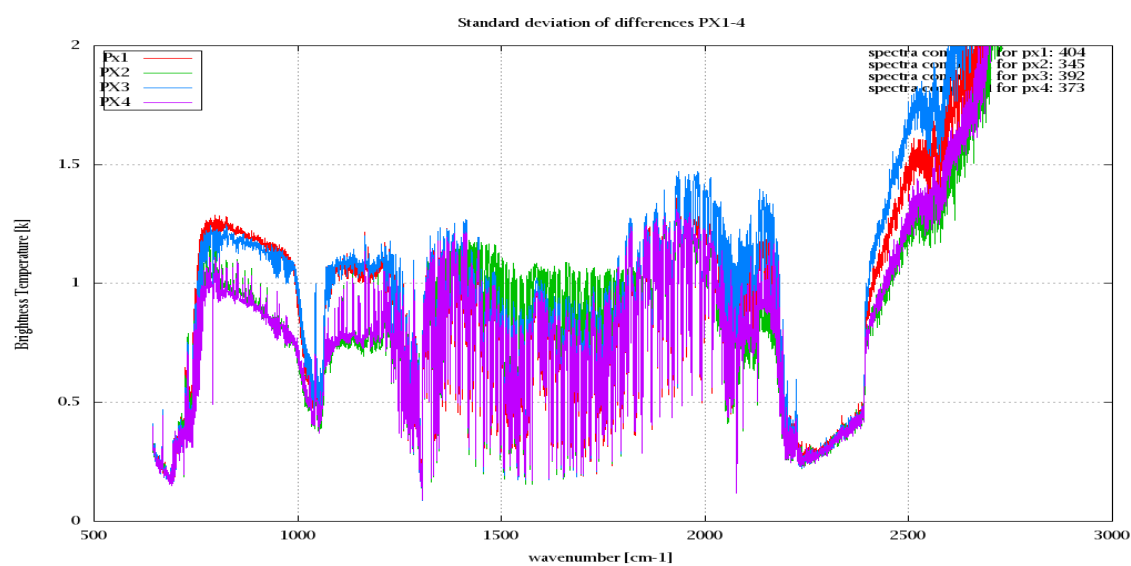
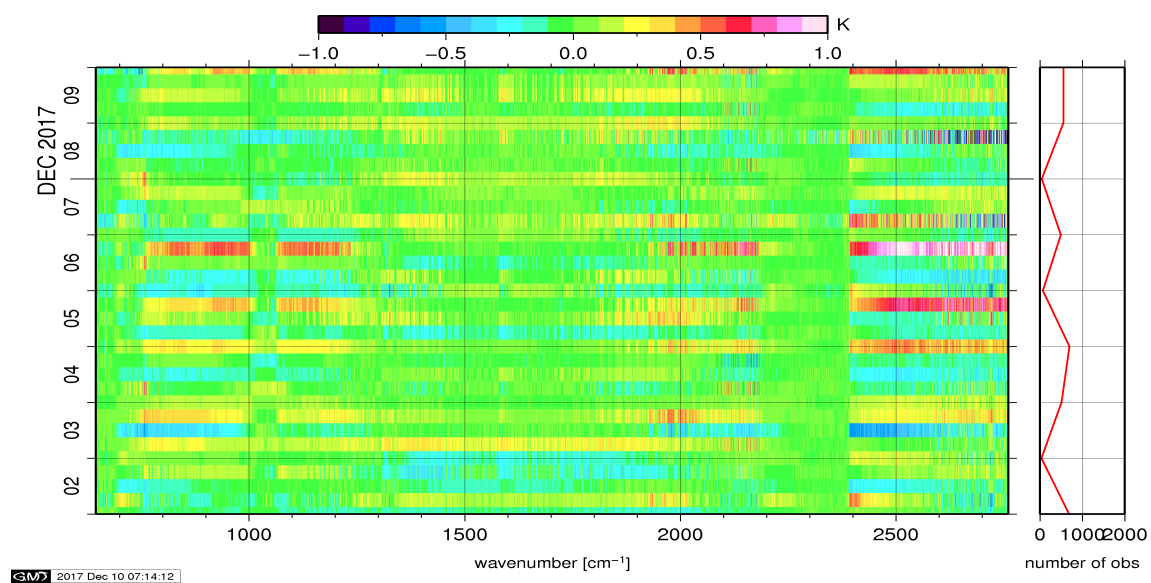Figure 9: Standard Deviation of Radiance differences

Figure 10: Radiance Anomaly in BRT: All Channels
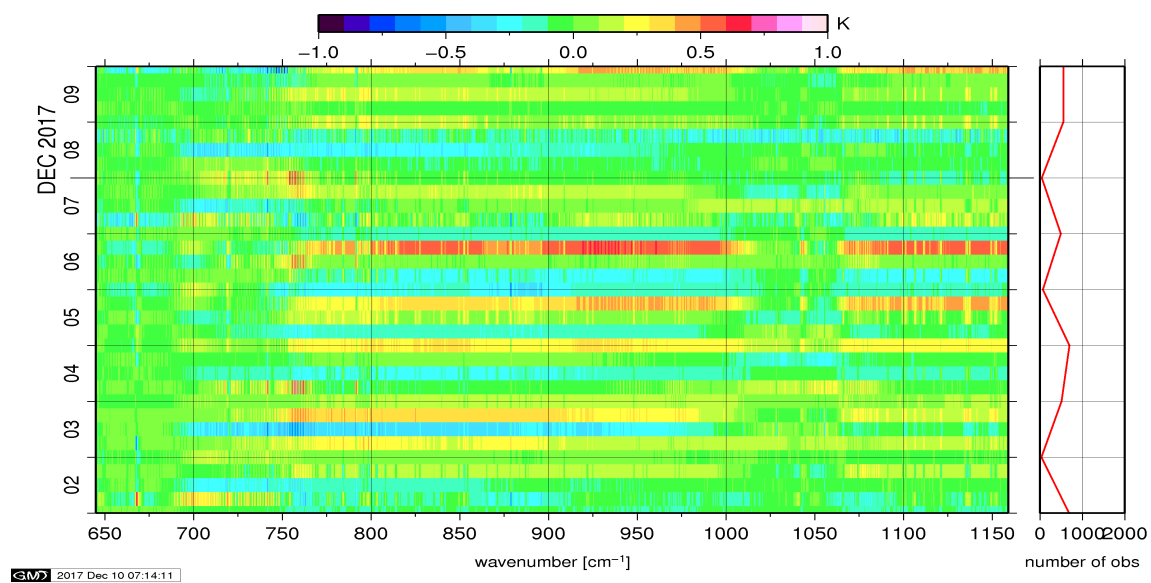

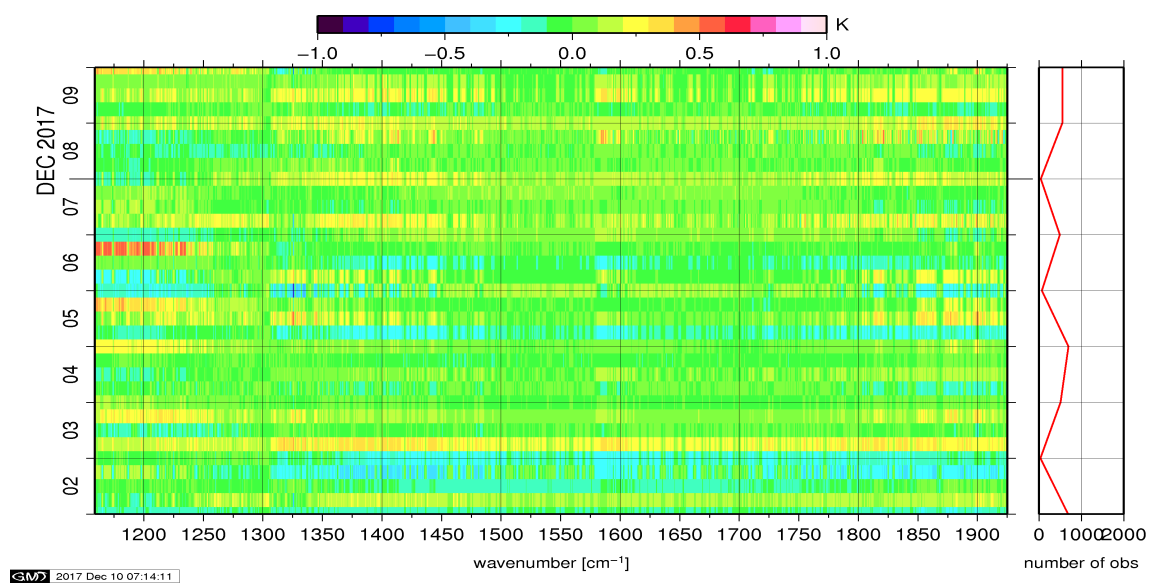Figure 11: Radiance Anomaly in BRT: IASI Band 1

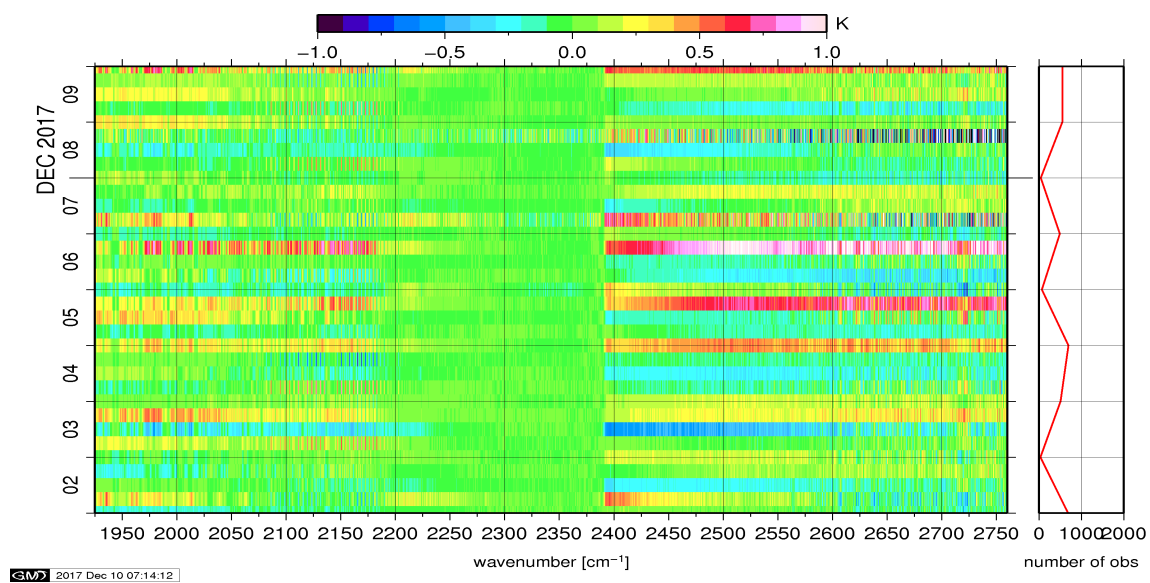Figure 12: Radiance Anomaly in BRT: IASI Band 2
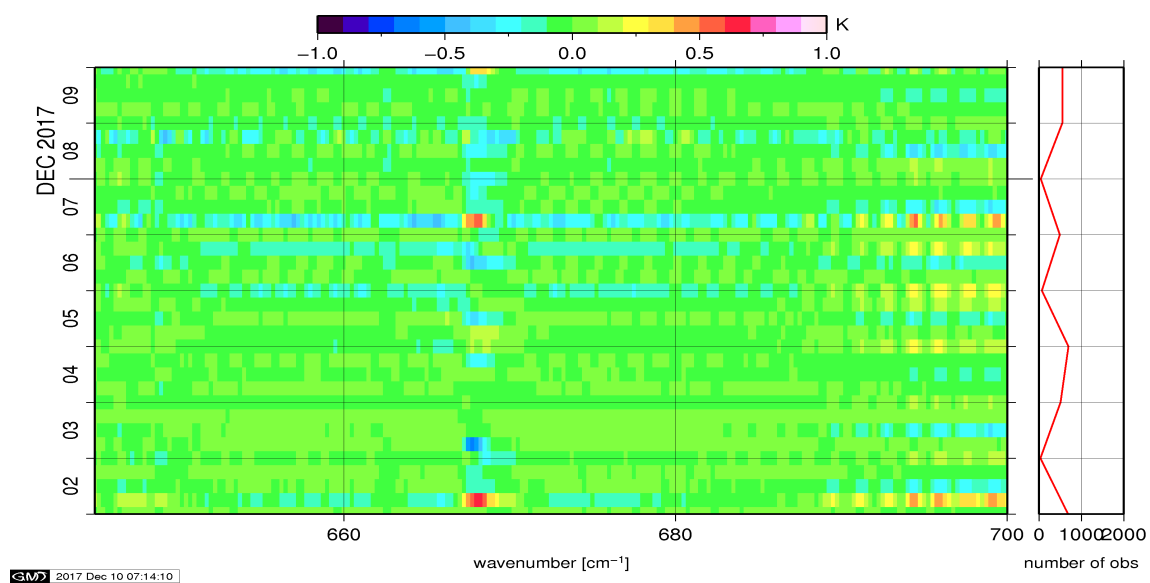

Figure 13: Radiance Anomaly in BRT: IASI Band 3
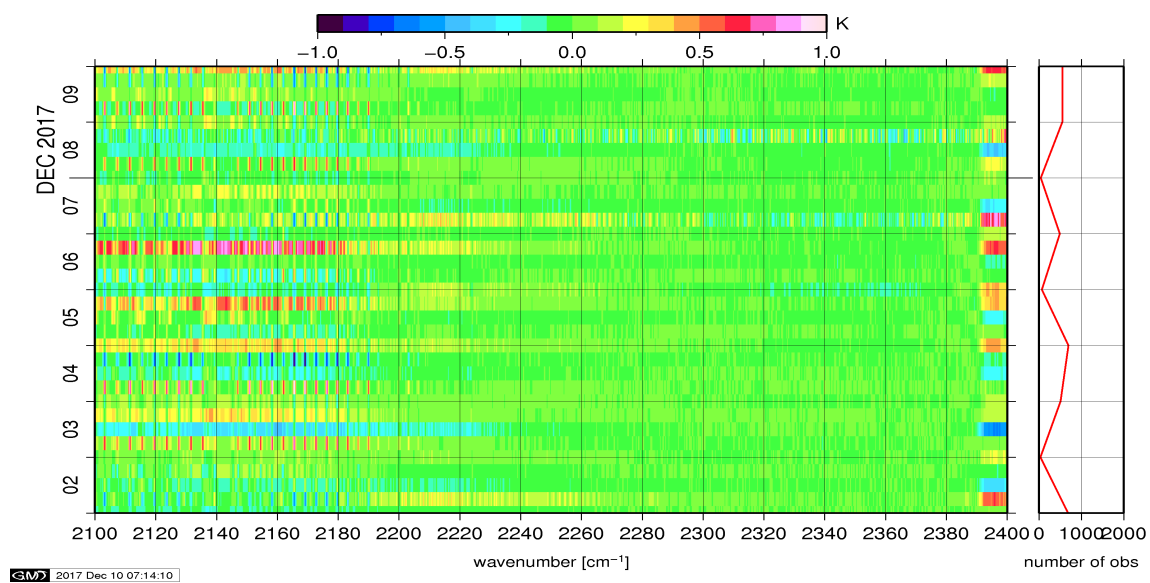
Figure 14: Radiance Anomaly in BRT: CO2 14
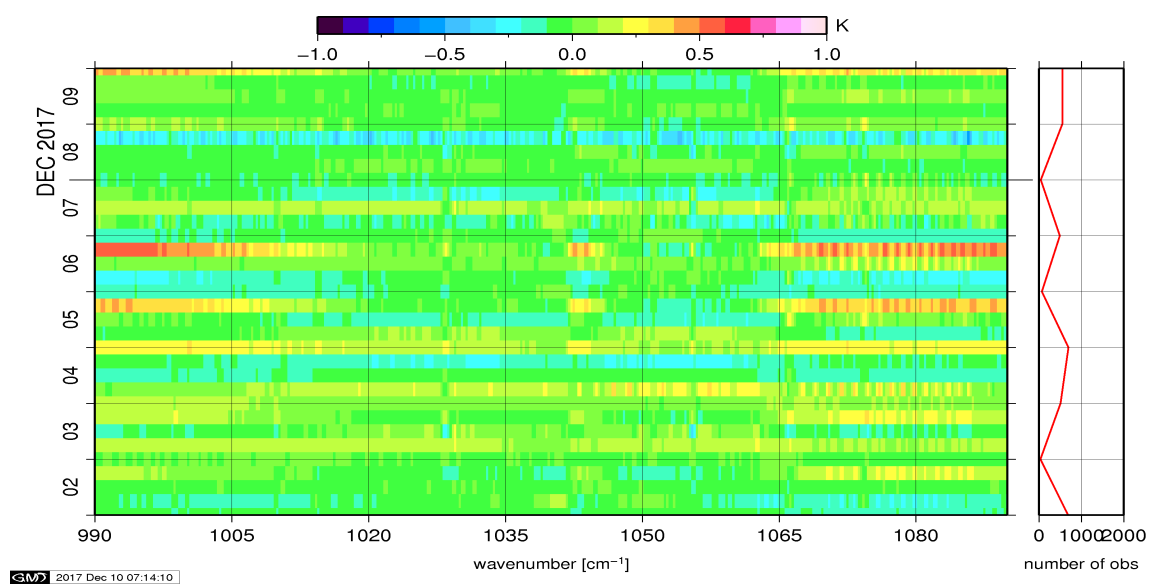

Figure 15: Radiance Anomaly in BRT: CO2 4.3

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.
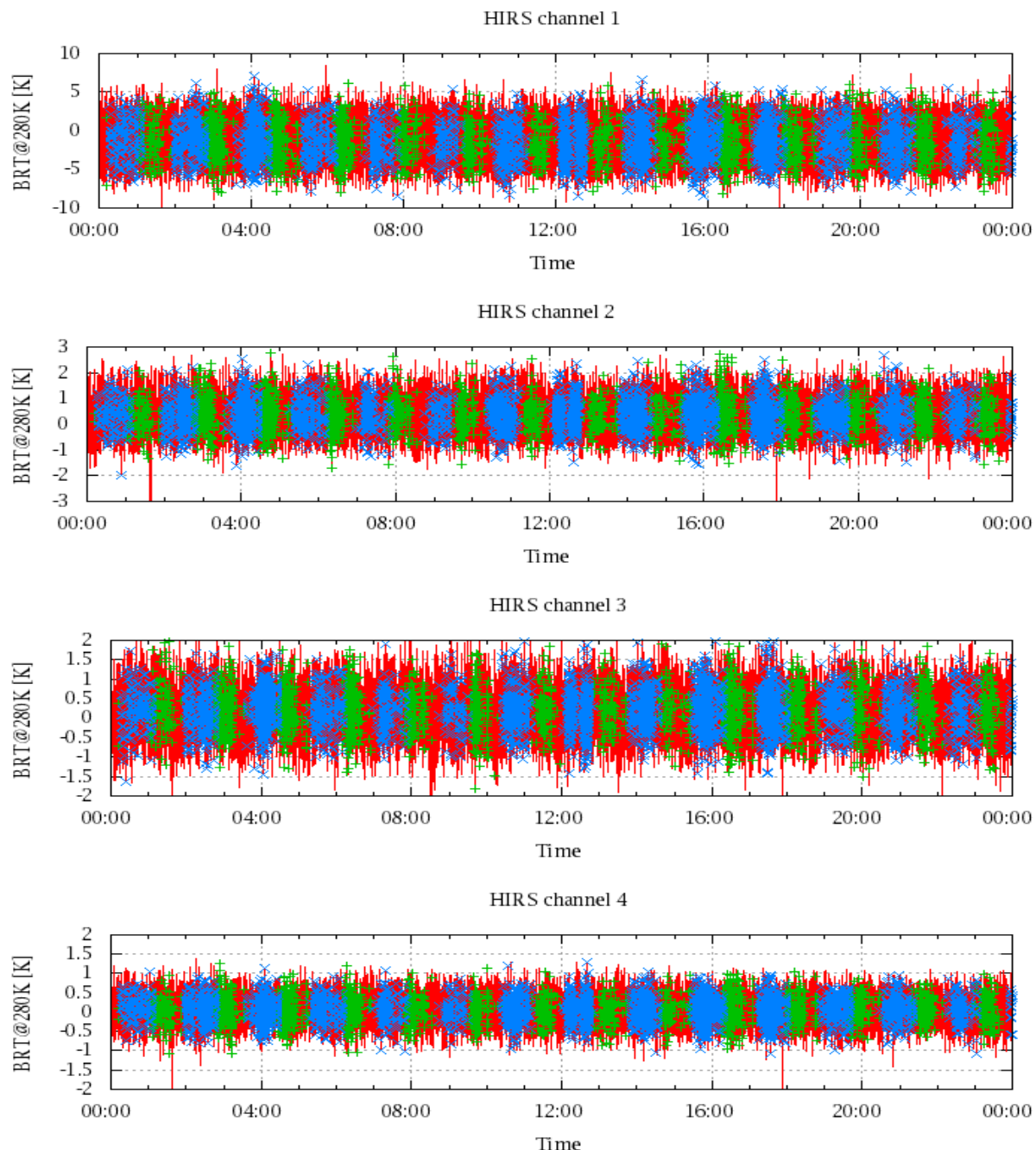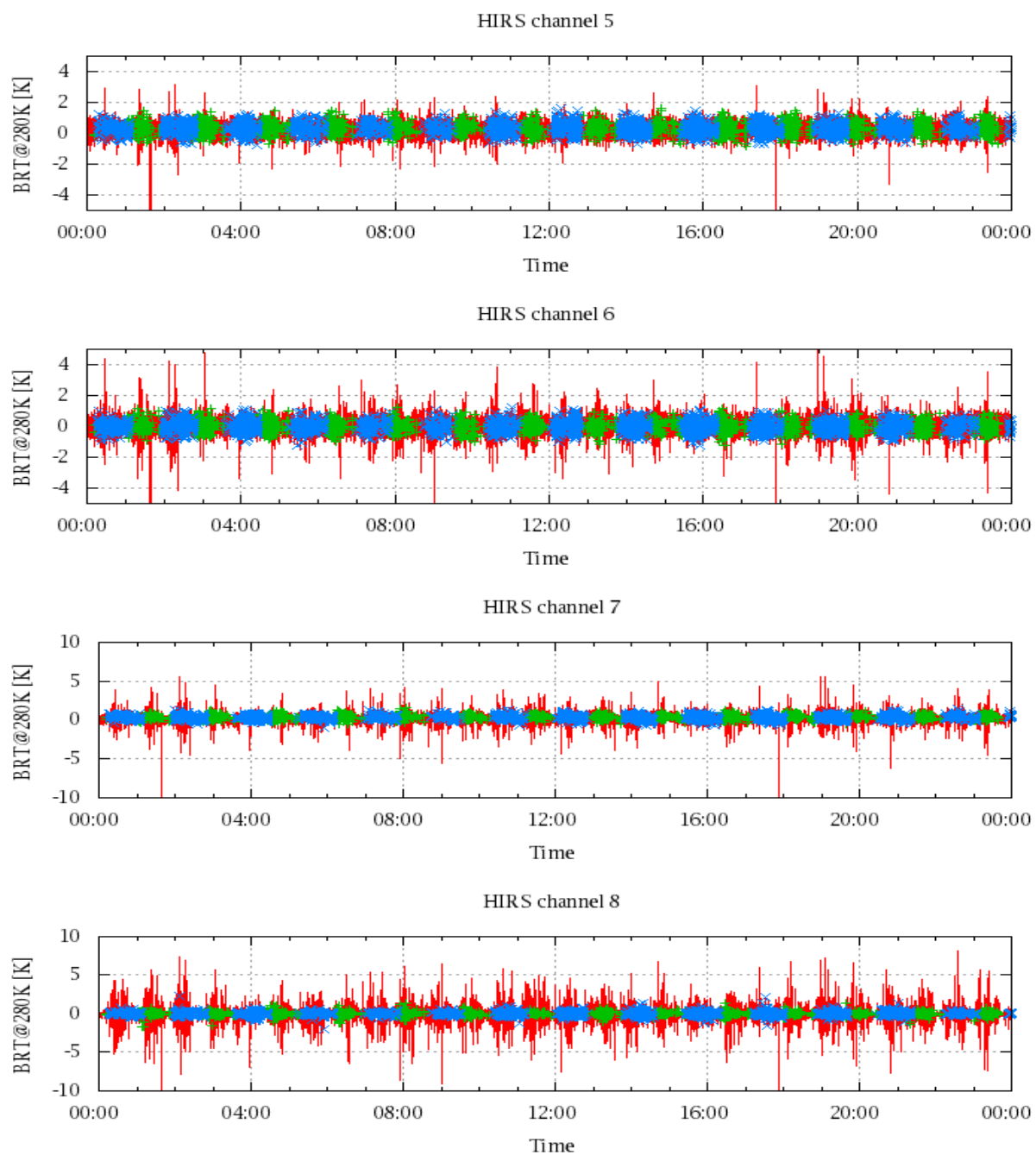

Figure 17: Radiance Differences in BRT
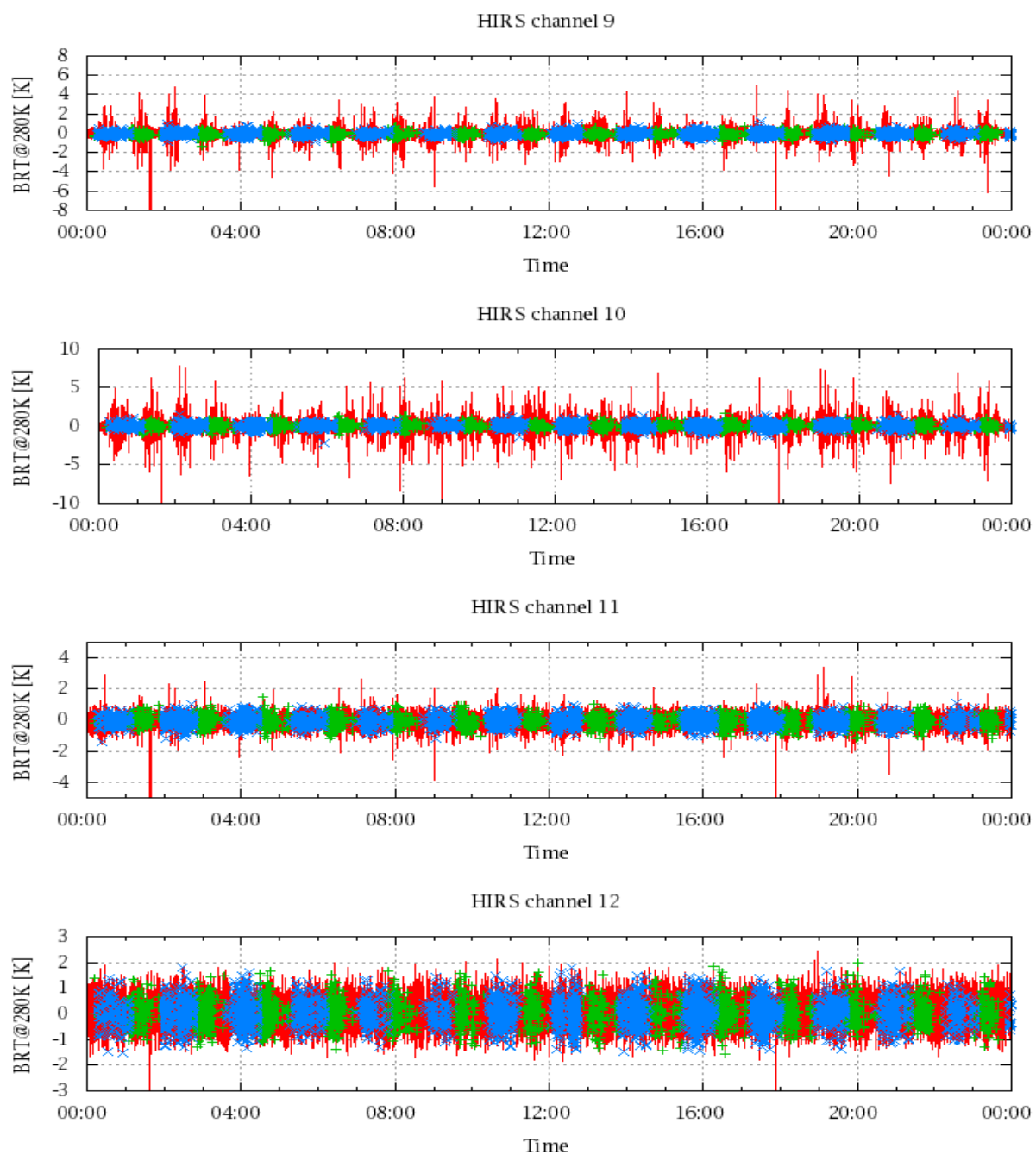
Figure 18: Radiance Differences in BRT

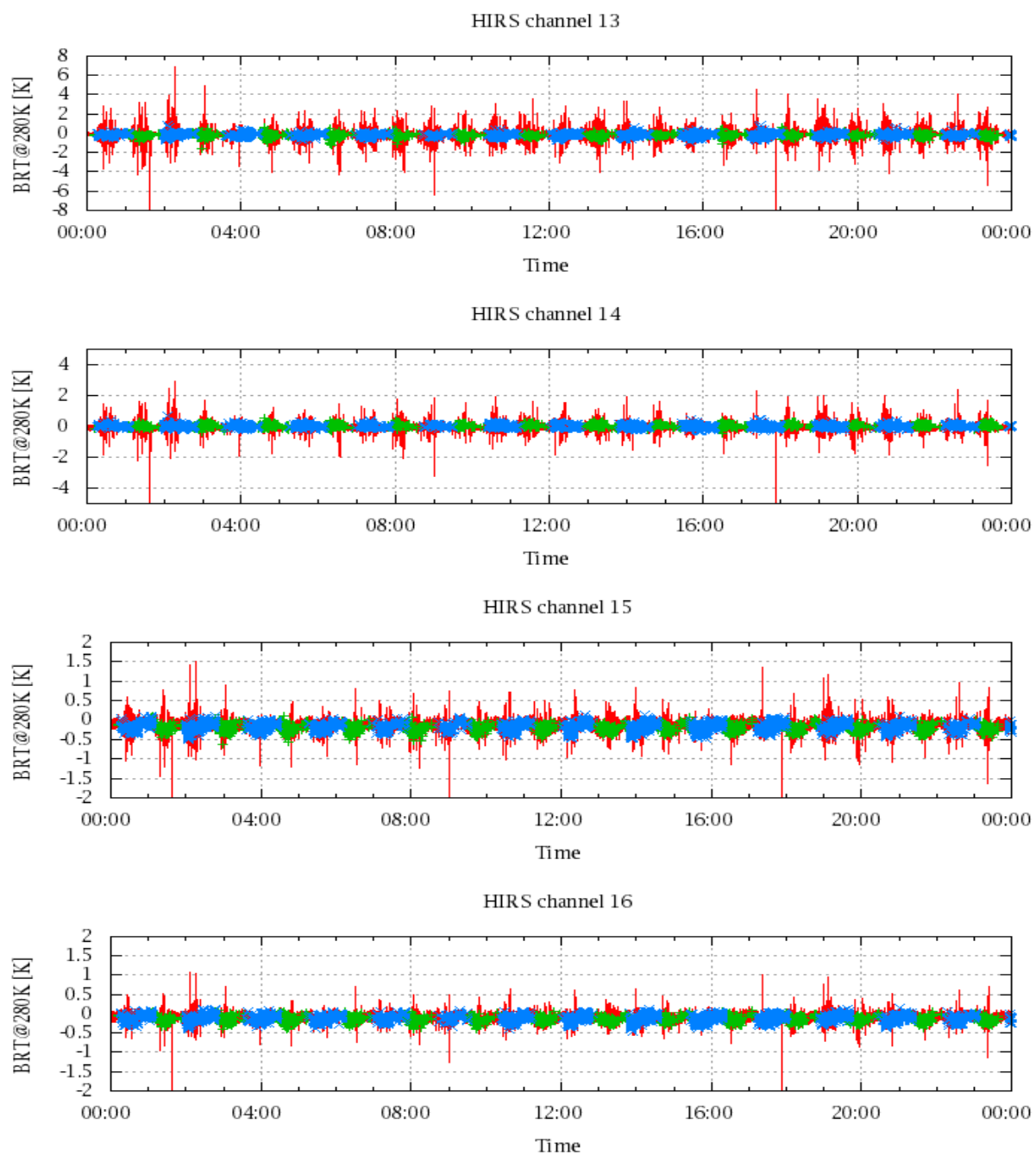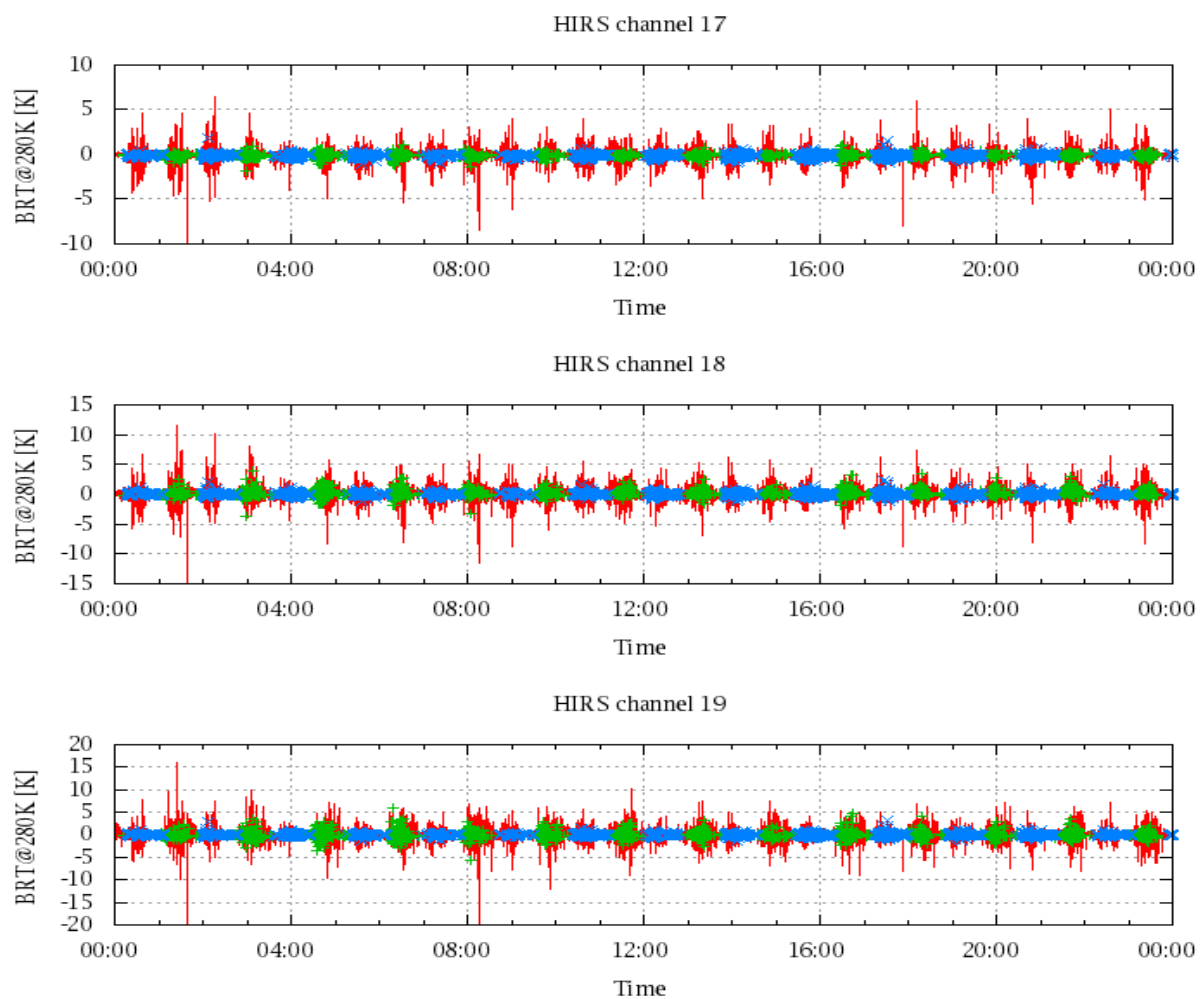Figure 19: Radiance Differences in BRT

Figure 20: Radiance Differences in BRT

Figure 21: Radinace Differences in BRT