

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

11/11/2016 00:00:00 - 12/11/2016 00:00:00

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 11/11/2016 00:00:00 - 12/11/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 11/11/2016 00:00:00 - 12/11/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	479	-
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)	8547	8549	20161111070500.869	20161111070501.298
PX1 (130)	8549	8554	20161111070501.298	20161111070503.892
PX1 (130)	8554	8558	20161111070503.892	20161111070504.759
PX1 (130)	8558	8561	20161111070504.759	20161111070505.408
PX1 (130)	8561	8563	20161111070505.408	20161111070505.837
PX1 (130)	8564	8567	20161111070506.056	20161111070506.705
PX1 (130)	8568	8574	20161111070506.919	20161111070508.216
PX1 (130)	8576	8578	20161111070508.650	20161111070509.083
PX1 (130)	8579	8581	20161111070509.298	20161111070509.732
PX1 (130)	8583	8589	20161111070510.166	20161111070512.974
PX1 (130)	8590	8593	20161111070513.189	20161111070513.841
PX1 (130)	8593	8596	20161111070513.841	20161111070514.486
PX1 (130)	8597	8602	20161111070514.708	20161111070515.787
PX1 (130)	8613	8617	20161111070518.165	20161111070520.540
PX1 (130)	8617	8619	20161111070520.540	20161111070520.974
PX1 (130)	8620	8622	20161111070521.189	20161111070521.623
PX1 (130)	8623	8626	20161111070521.837	20161111070522.490
PX1 (130)	8642	8644	20161111070525.947	20161111070527.892

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	8547	8549	20161111070500.869	20161111070501.298
PX2 (135)	8549	8554	20161111070501.298	20161111070503.892
PX2 (135)	8557	8563	20161111070504.541	20161111070505.837
PX2 (135)	8564	8567	20161111070506.056	20161111070506.705
PX2 (135)	8568	8571	20161111070506.919	20161111070507.568
PX2 (135)	8571	8575	20161111070507.568	20161111070508.435
PX2 (135)	8575	8577	20161111070508.435	20161111070508.865
PX2 (135)	8579	8584	20161111070509.298	20161111070511.892
PX2 (135)	8584	8587	20161111070511.892	20161111070512.541
PX2 (135)	8587	8590	20161111070512.541	20161111070513.189
PX2 (135)	8590	8593	20161111070513.189	20161111070513.841
PX2 (135)	8593	8596	20161111070513.841	20161111070514.486
PX2 (135)	8598	8601	20161111070514.919	20161111070515.568
PX2 (135)	8613	8617	20161111070518.165	20161111070520.540
PX2 (135)	8617	8620	20161111070520.540	20161111070521.189
PX2 (135)	8620	8622	20161111070521.189	20161111070521.623
PX2 (135)	8623	8626	20161111070521.837	20161111070522.490
PX2 (135)	8627	8629	20161111070522.705	20161111070523.138
PX2 (135)	8630	8633	20161111070523.353	20161111070524.001
PX2 (135)	8642	8644	20161111070525.947	20161111070527.892
PX3 (140)	8546	8549	20161111070500.650	20161111070501.298
PX3 (140)	8552	8557	20161111070501.947	20161111070504.541
PX3 (140)	8557	8559	20161111070504.541	20161111070504.974
PX3 (140)	8559	8563	20161111070504.974	20161111070505.837
PX3 (140)	8564	8566	20161111070506.056	20161111070506.490
PX3 (140)	8568	8571	20161111070506.919	20161111070507.568
PX3 (140)	8571	8575	20161111070507.568	20161111070508.435
PX3 (140)	8575	8577	20161111070508.435	20161111070508.865
PX3 (140)	8580	8584	20161111070509.517	20161111070511.892
PX3 (140)	8585	8587	20161111070512.111	20161111070512.541
PX3 (140)	8588	8590	20161111070512.759	20161111070513.189
PX3 (140)	8590	8596	20161111070513.189	20161111070514.486
PX3 (140)	8598	8602	20161111070514.919	20161111070515.787
PX3 (140)	8613	8616	20161111070518.165	20161111070520.326
PX3 (140)	8617	8622	20161111070520.540	20161111070521.623
PX3 (140)	8622	8626	20161111070521.623	20161111070522.490
PX3 (140)	8627	8629	20161111070522.705	20161111070523.138
PX3 (140)	8630	8633	20161111070523.353	20161111070524.001
PX3 (140)	8638	8640	20161111070525.083	20161111070525.513
PX3 (140)	8642	8644	20161111070525.947	20161111070527.892
PX3 (140)	8652	8654	20161111070529.622	20161111070530.056
PX4 (145)	8546	8552	20161111070500.650	20161111070501.947
PX4 (145)	8552	8559	20161111070501.947	20161111070504.974
PX4 (145)	8559	8563	20161111070504.974	20161111070505.837
PX4 (145)	8563	8566	20161111070505.837	20161111070506.490
PX4 (145)	8568	8570	20161111070506.919	20161111070507.353
PX4 (145)	8573	8575	20161111070508.001	20161111070508.435
PX4 (145)	8575	8577	20161111070508.435	20161111070508.865
PX4 (145)	8578	8580	20161111070509.083	20161111070509.517
PX4 (145)	8580	8585	20161111070509.517	20161111070512.111
PX4 (145)	8585	8587	20161111070512.111	20161111070512.541
PX4 (145)	8588	8590	20161111070512.759	20161111070513.189
PX4 (145)	8592	8595	20161111070513.623	20161111070514.271
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	8599	8603	20161111070515.138	20161111070516.001
PX4 (145)	8613	8616	20161111070518.165	20161111070520.326
PX4 (145)	8617	8619	20161111070520.540	20161111070520.974
PX4 (145)	8619	8622	20161111070520.974	20161111070521.623
PX4 (145)	8622	8630	20161111070521.623	20161111070523.353
PX4 (145)	8630	8633	20161111070523.353	20161111070524.001
PX4 (145)	8638	8640	20161111070525.083	20161111070525.513
PX4 (145)	8642	8644	20161111070525.947	20161111070527.892
PX4 (145)	8652	8655	20161111070529.622	20161111070530.271
IMG (150)	7494	7502	20161111070500.650	20161111070502.595
IMG (150)	7505	7515	20161111070503.462	20161111070505.837
IMG (150)	7515	7518	20161111070505.837	20161111070506.490
IMG (150)	7518	7523	20161111070506.490	20161111070507.568
IMG (150)	7523	7525	20161111070507.568	20161111070508.001
IMG (150)	7527	7529	20161111070508.435	20161111070508.865
IMG (150)	7529	7532	20161111070508.865	20161111070509.517
IMG (150)	7534	7536	20161111070509.947	20161111070510.595
IMG (150)	7538	7544	20161111070511.244	20161111070512.759
IMG (150)	7544	7548	20161111070512.759	20161111070513.623
IMG (150)	7548	7554	20161111070513.623	20161111070514.919
IMG (150)	7554	7557	20161111070514.919	20161111070515.568
IMG (150)	7557	7559	20161111070515.568	20161111070516.001
IMG (150)	7569	7590	20161111070518.165	20161111070523.353
IMG (150)	7591	7593	20161111070523.568	20161111070524.001
IMG (150)	7594	7596	20161111070524.216	20161111070524.650
IMG (150)	7598	7601	20161111070525.083	20161111070525.732
IMG (150)	7602	7604	20161111070525.947	20161111070526.595
IMG (150)	7604	7608	20161111070526.595	20161111070527.892
IMG (150)	7613	7615	20161111070528.974	20161111070529.408
IMG (150)	7617	7619	20161111070529.837	20161111070530.271
VER (160)	6878	6883	20161111070454.162	20161111070501.947
VER (160)	6883	6888	20161111070501.947	20161111070510.166
VER (160)	6891	6894	20161111070518.165	20161111070525.947
AUX (180)	7930	7932	20161111070510.595	20161111070526.595

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
11/11/2016 00:00:13	-	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	479	-
GQisFlagQual set (PX1)	99.47 %	-
GQisFlagQual set (PX2)	99.45 %	-
GQisFlagQual set (PX3)	99.46 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.46 %	-

Table 4: Quality flags

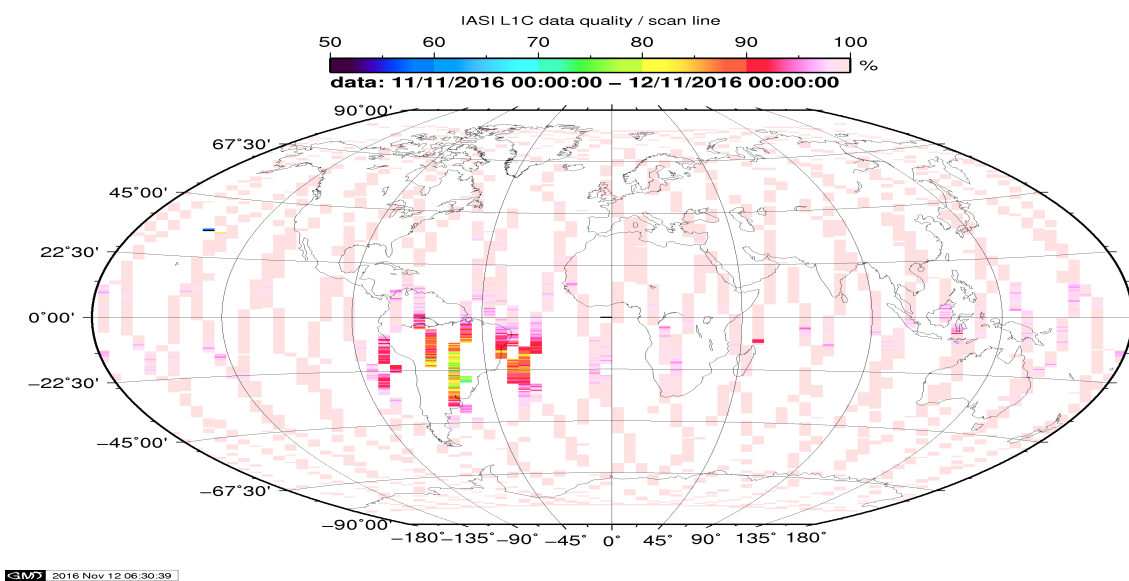


Figure 1: L1C data quality

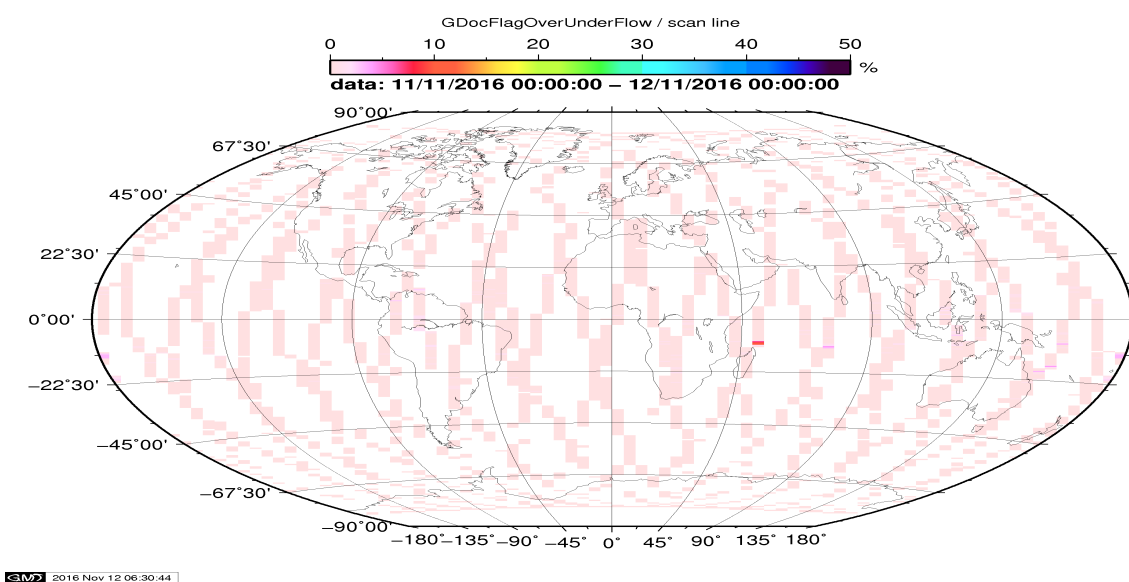


Figure 2: Flag of Over and Under Flows

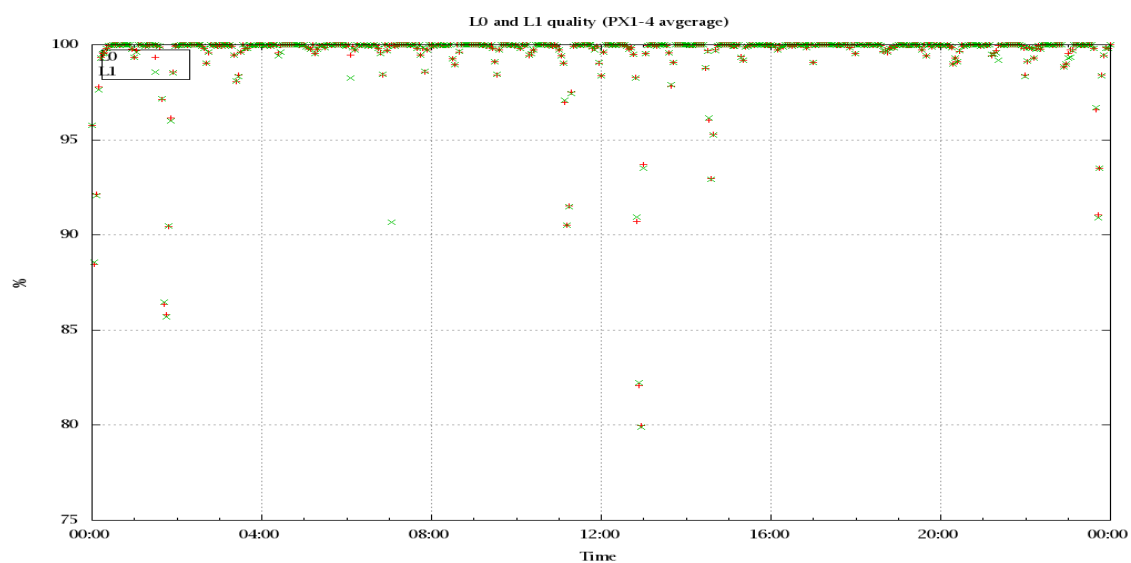


Figure 3: Level 0 and 1C overall quality

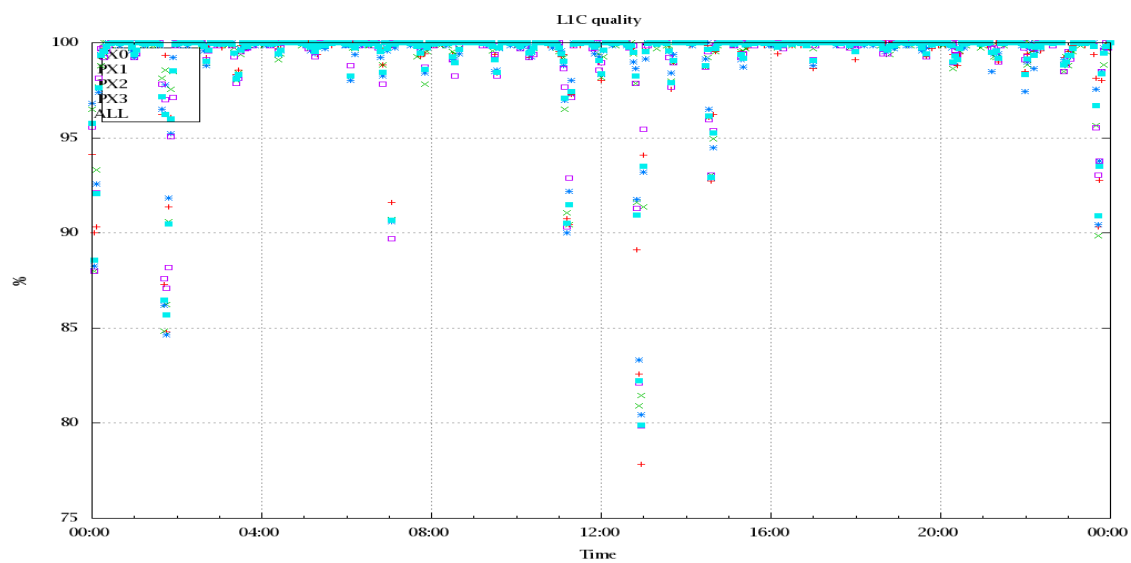


Figure 4: Level 1C quality

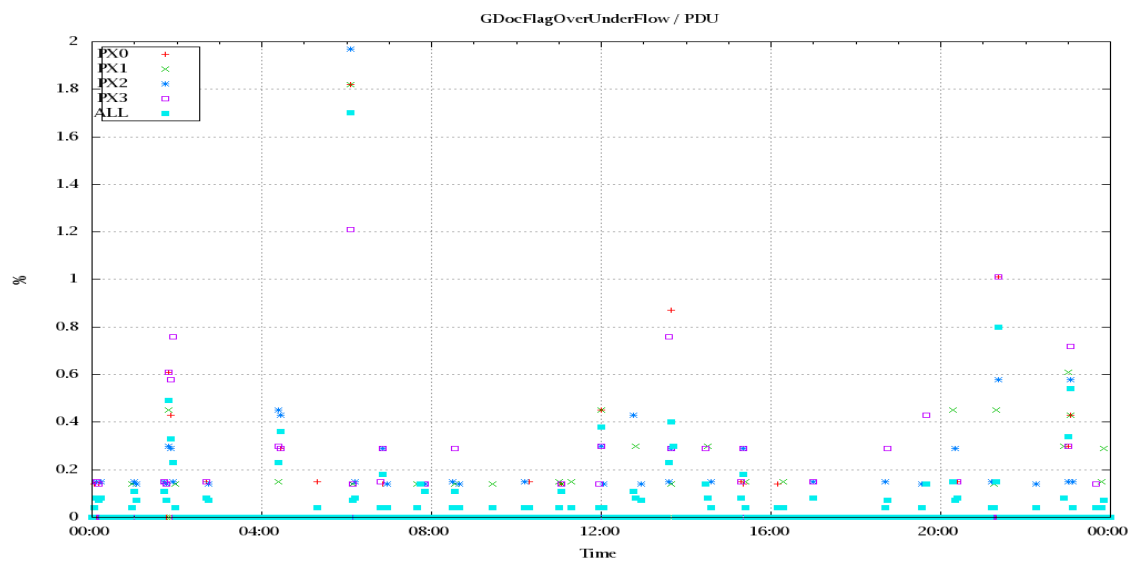


Figure 5: OverUnderFlowFlag timeseries

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 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 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.

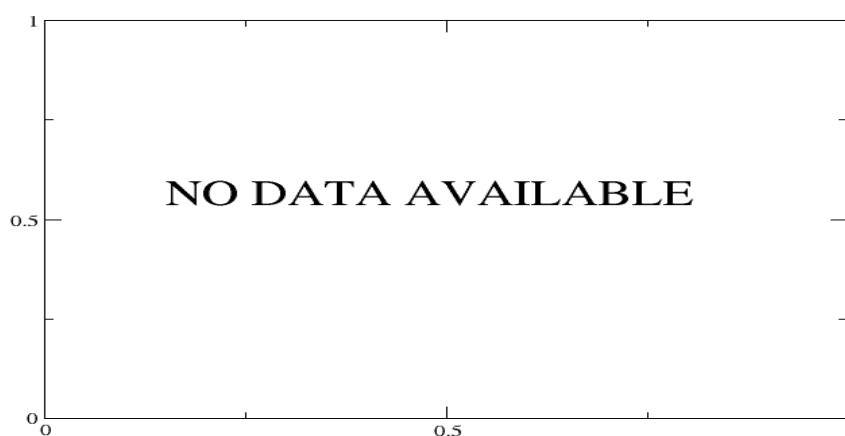


Figure 6: Average Radiance differences: OBS-CAL

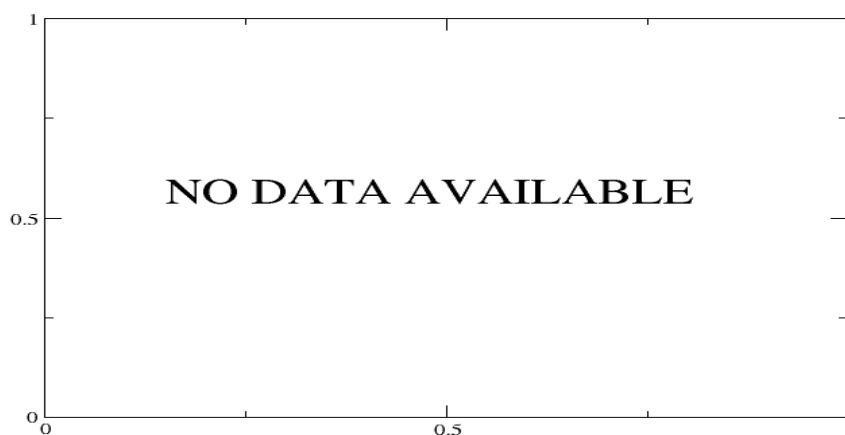


Figure 7: Standard Deviation of Radiance differences

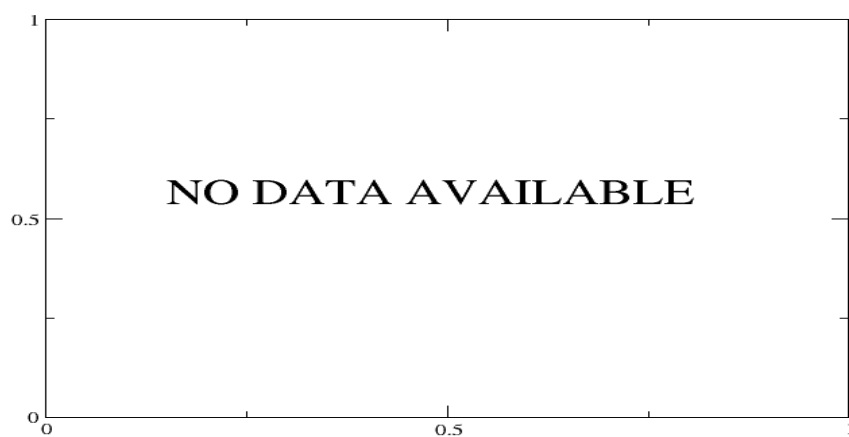


Figure 8: Average Radiance differences: OBS-CAL



Figure 9: Standard Deviation of Radiance differences

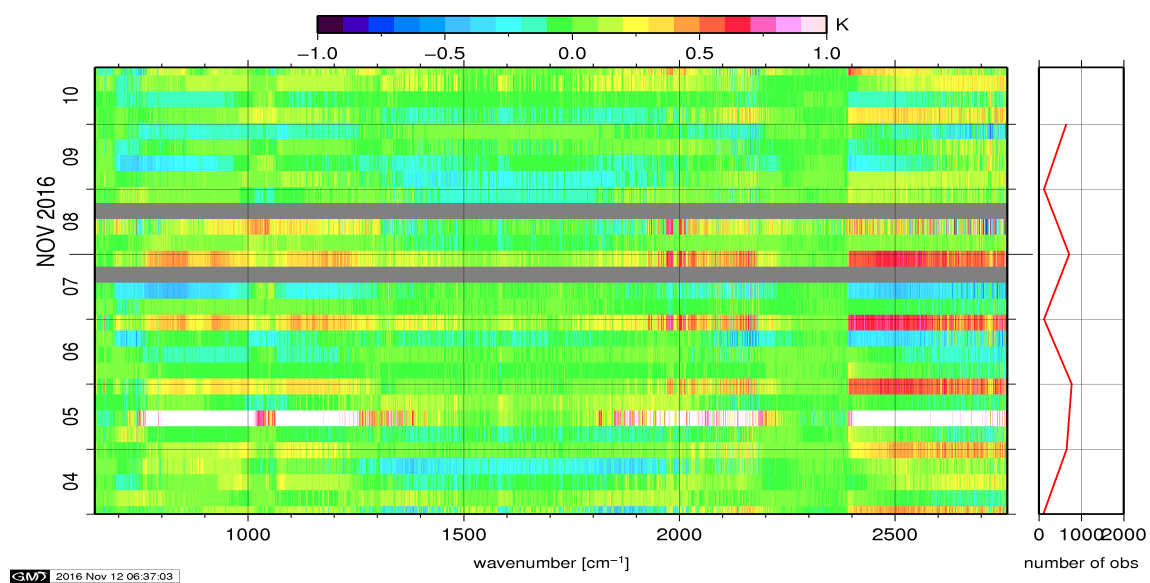


Figure 10: Radiance Anomaly in BRT: All Channels

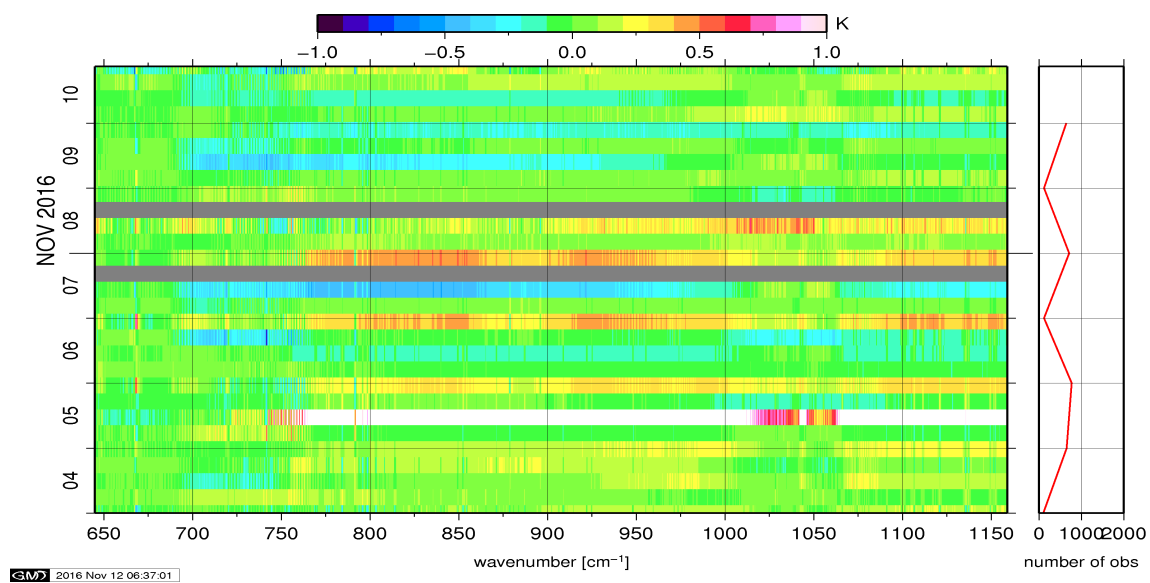


Figure 11: Radiance Anomaly in BRT: IASI Band 1

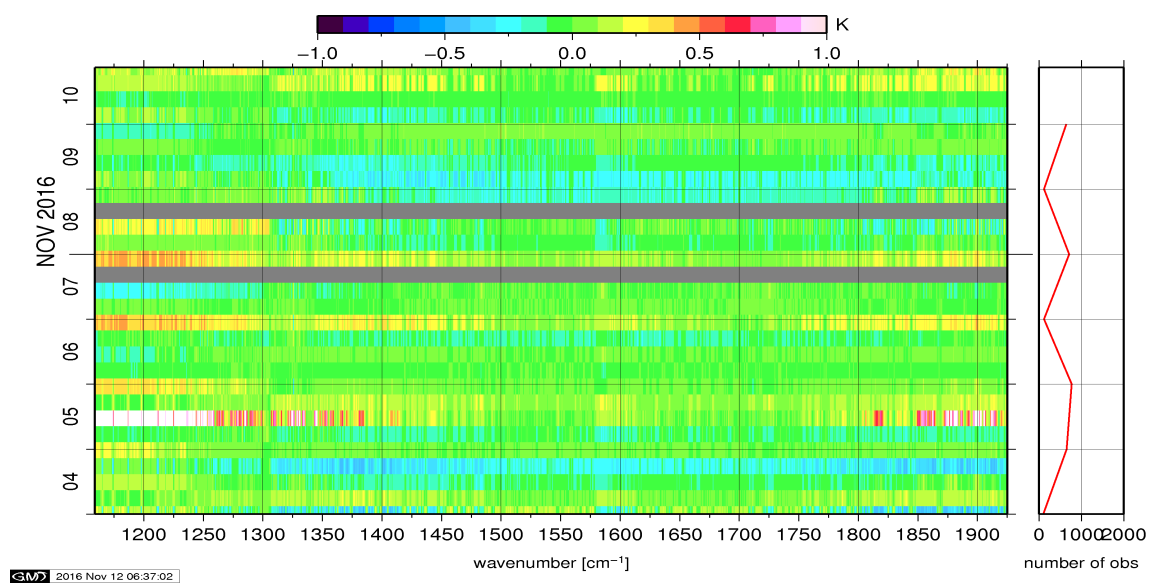


Figure 12: Radiance Anomaly in BRT: IASI Band 2

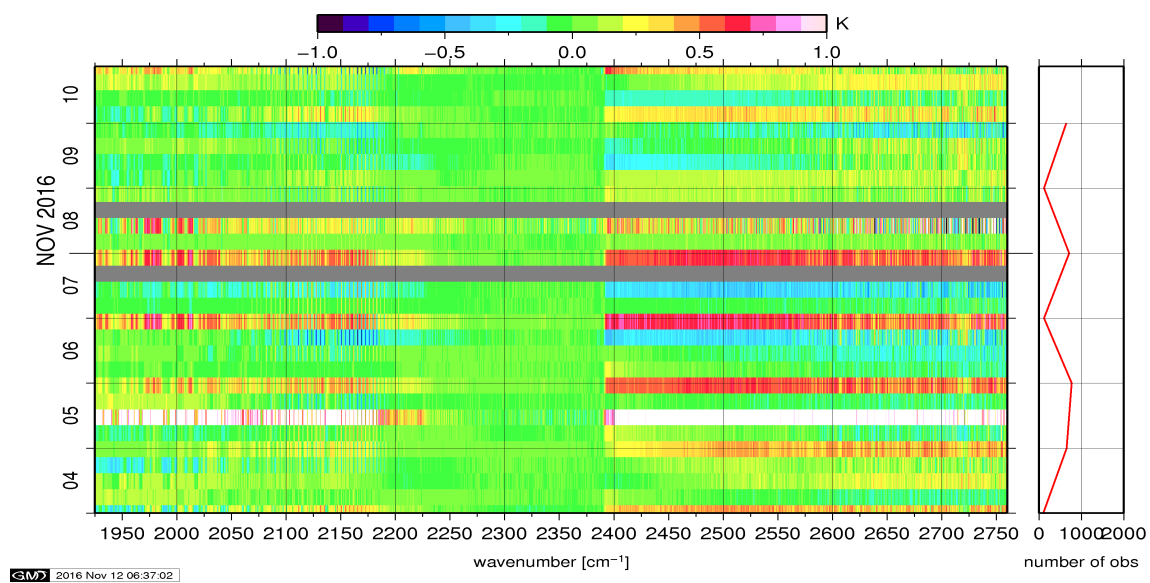


Figure 13: Radiance Anomaly in BRT: IASI Band 3

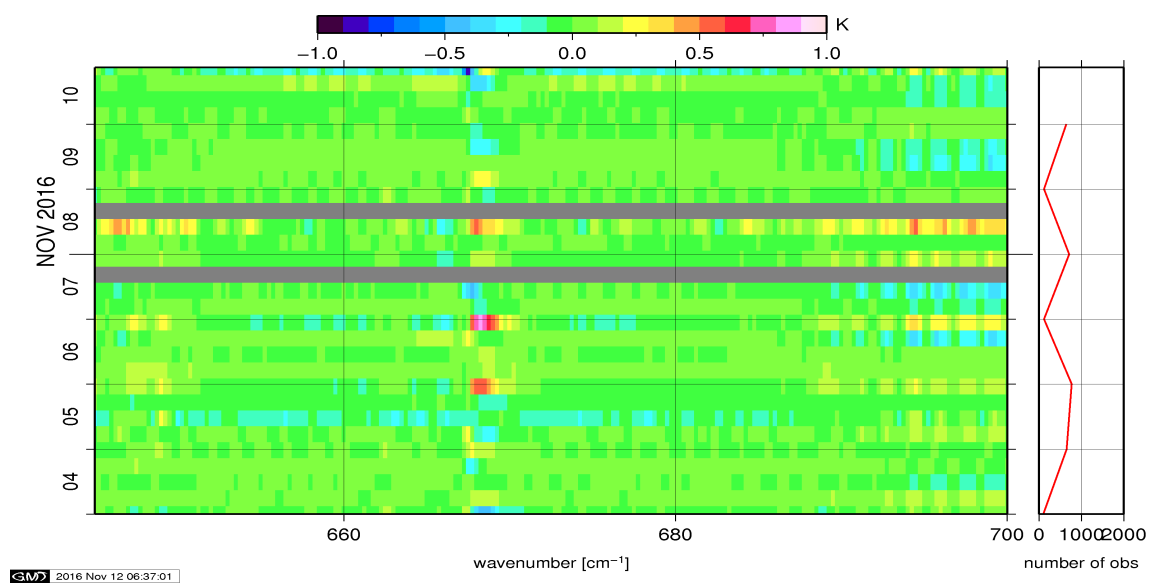


Figure 14: Radiance Anomaly in BRT: CO2 14

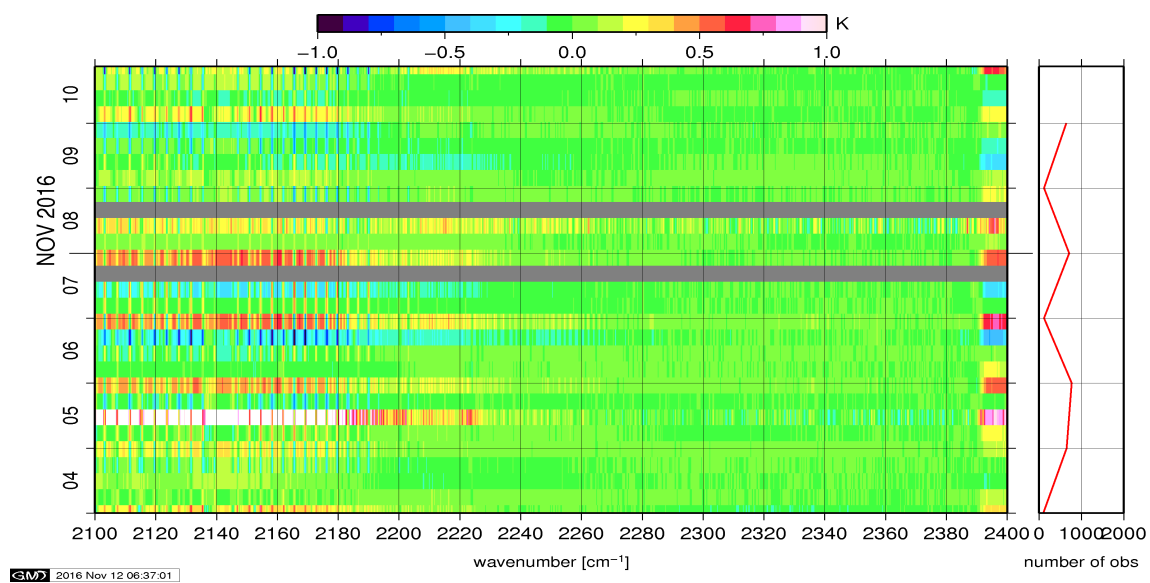


Figure 15: Radiance Anomaly in BRT: CO2 4.3

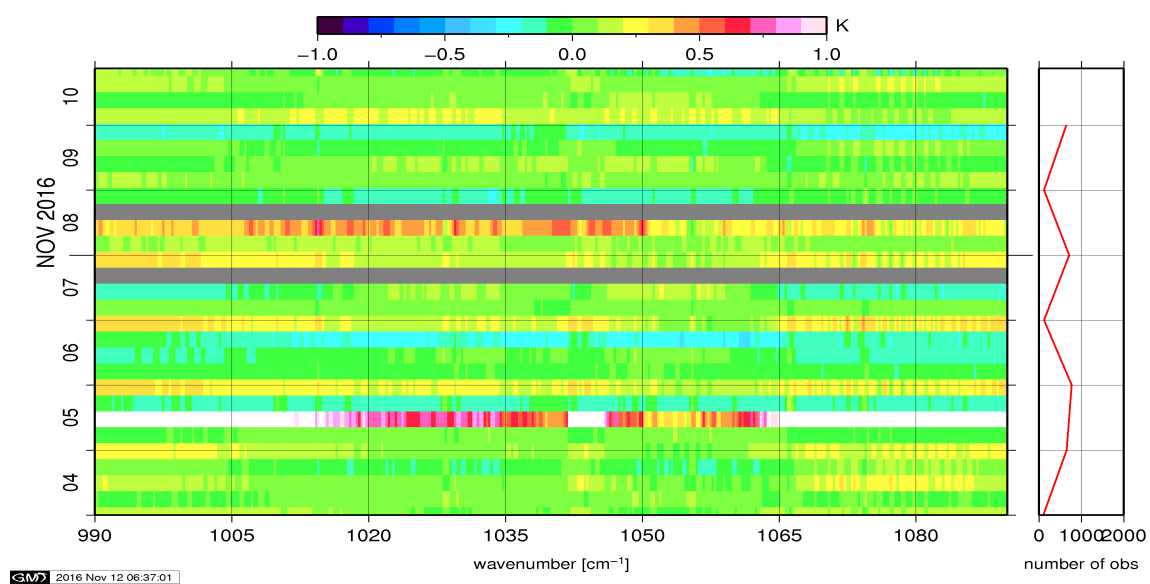


Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparison Channel 1-19

The radiance comparison 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.

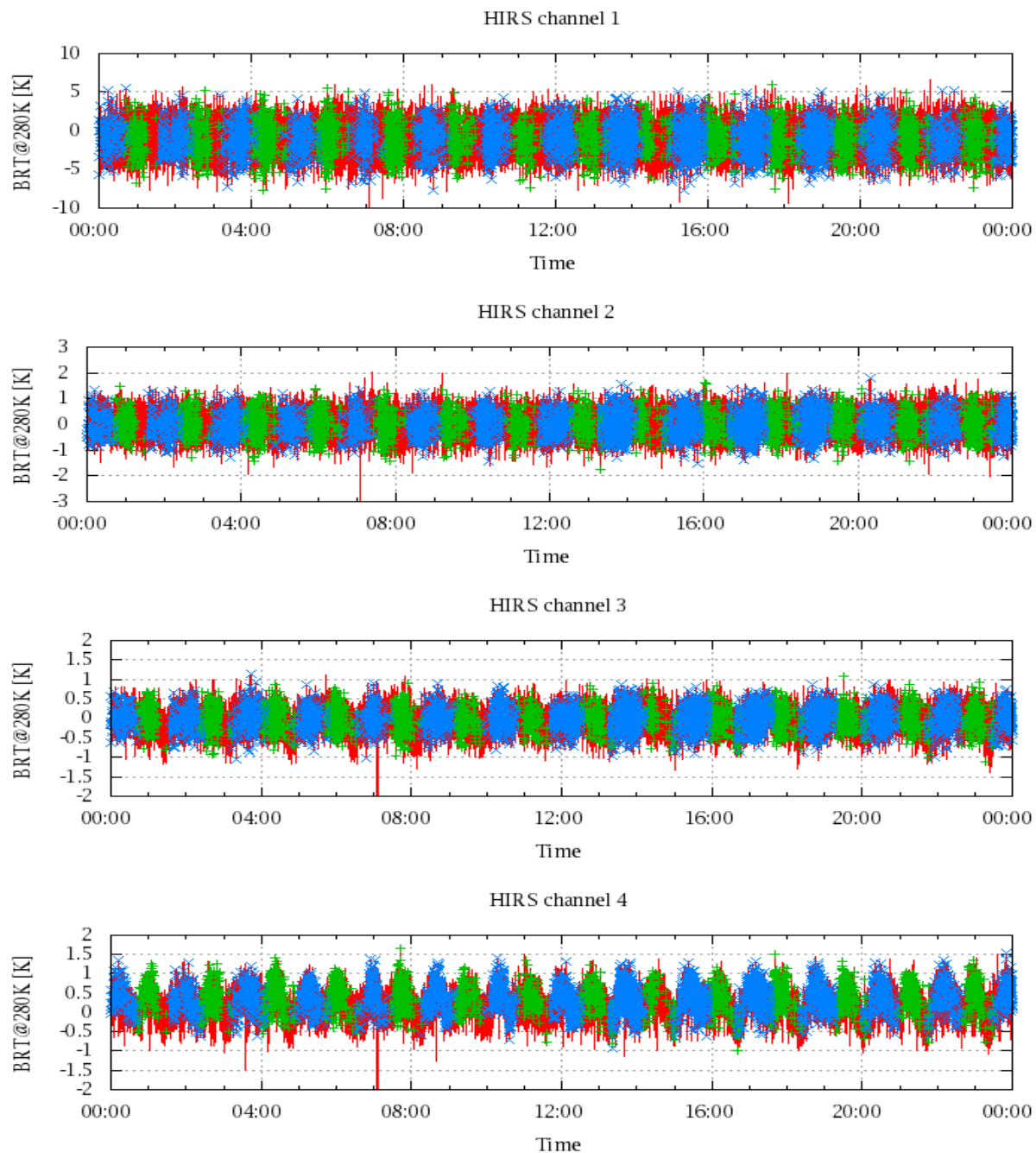


Figure 17: Radiance Differences in BRT

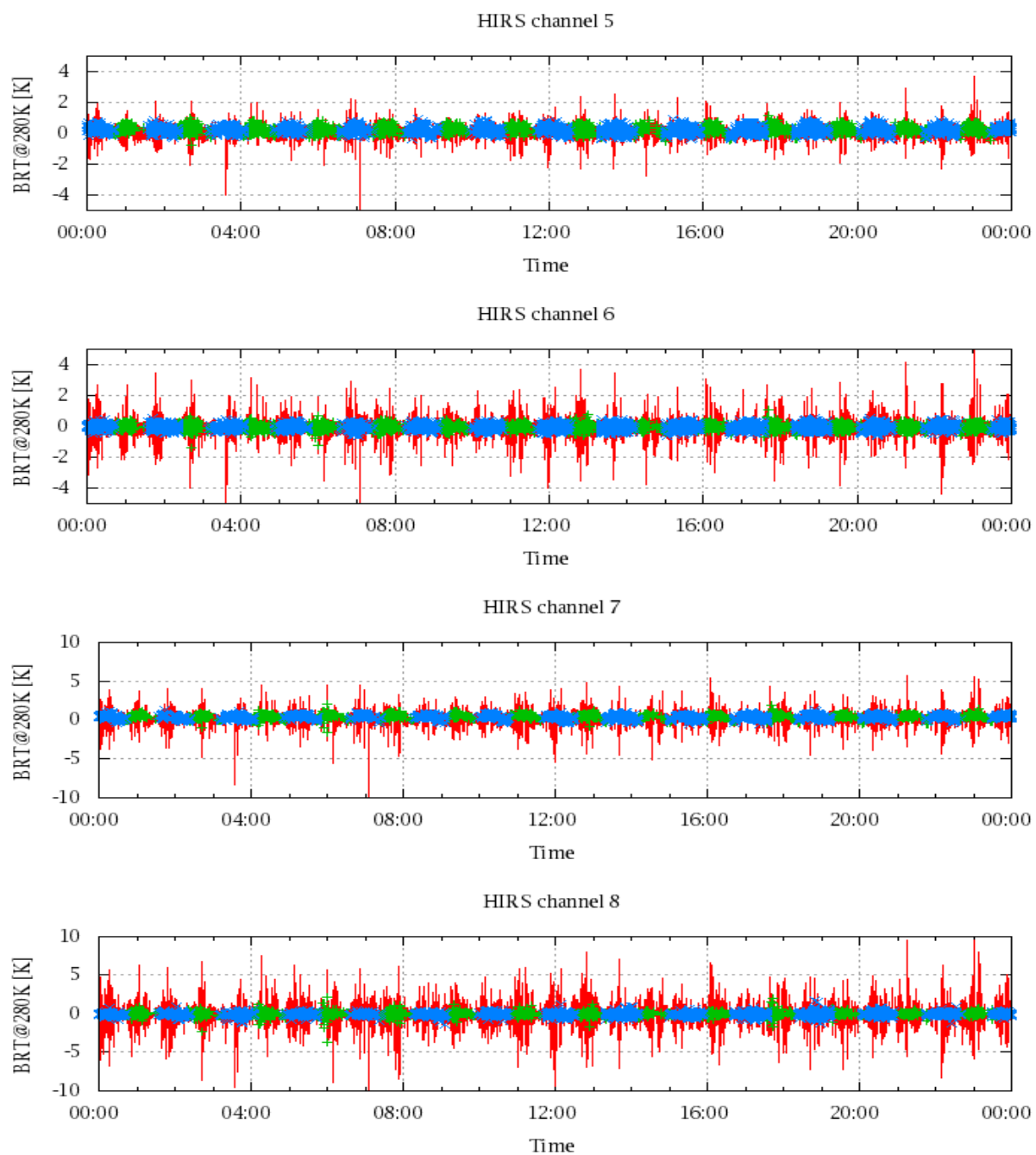


Figure 18: Radiance Differences in BRT

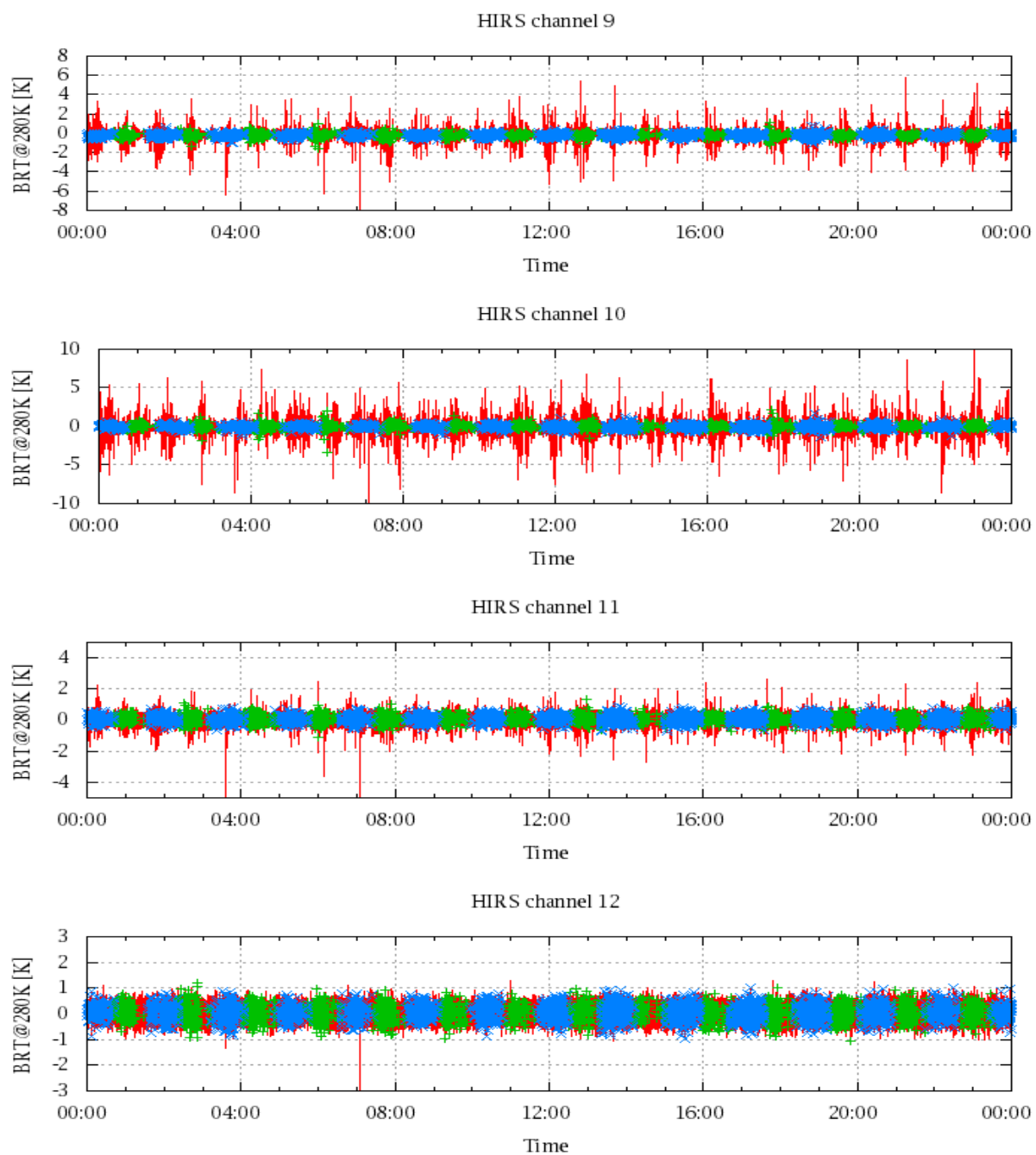


Figure 19: Radiance Differences in BRT

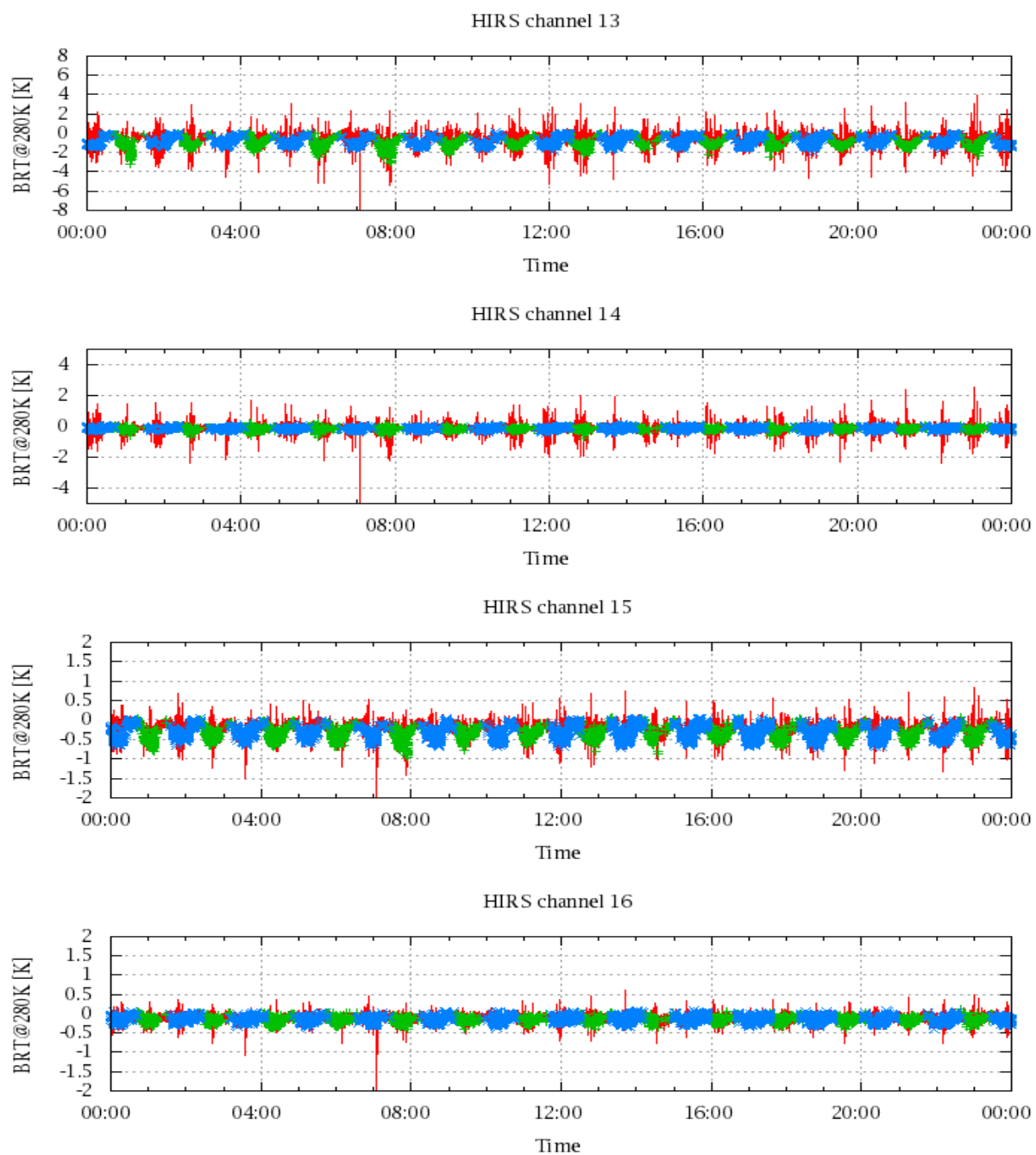


Figure 20: Radiance Differences in BRT

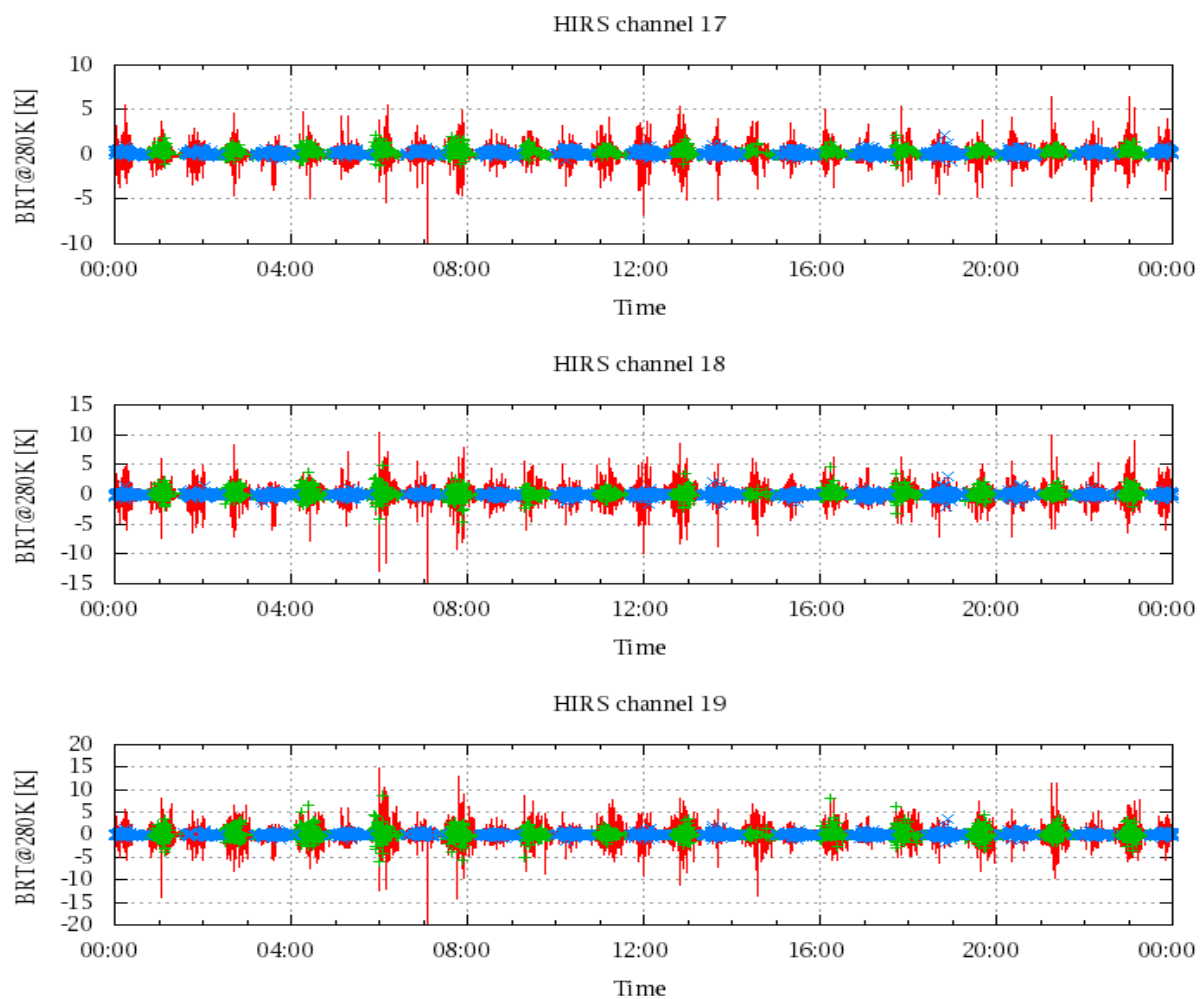


Figure 21: Radinace Differences in BRT