

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

14/08/2016 00:00:00 - 15/08/2016 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 14/08/2016 00:00:00 - 15/08/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 14/08/2016 00:00:00 - 15/08/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	481	-
L1 DPX PDUs (RM: IASI-HIRS)	480	-
L1 DPS Files (RM: OBS-CAL NWP based)	356	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	11931	11933	20160814220838.915	20160814220839.345
PX1 (130)	9434	9440	20160814231022.230	20160814231023.531
PX1 (130)	9440	9442	20160814231023.531	20160814231023.961
PX1 (130)	9442	9446	20160814231023.961	20160814231024.828
PX1 (130)	9446	9448	20160814231024.828	20160814231026.773
PX1 (130)	9448	9468	20160814231026.773	20160814231031.097
PX1 (130)	9469	9474	20160814231031.312	20160814231032.394
PX1 (130)	9474	9480	20160814231032.394	20160814231035.203
PX1 (130)	9480	9482	20160814231035.203	20160814231035.637
PX1 (130)	9482	9484	20160814231035.637	20160814231036.070
PX1 (130)	9485	9488	20160814231036.285	20160814231036.933
PX1 (130)	9488	9496	20160814231036.933	20160814231038.664
PX1 (130)	9496	9505	20160814231038.664	20160814231040.609
PX1 (130)	9505	9507	20160814231040.609	20160814231042.554
PX1 (130)	9525	9529	20160814231046.449	20160814231047.312
PX1 (130)	9546	9548	20160814231052.500	20160814231052.933
PX2 (135)	9435	9440	20160814231022.449	20160814231023.531
PX2 (135)	9440	9442	20160814231023.531	20160814231023.961

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	9442	9448	20160814231023.961	20160814231026.773
PX2 (135)	9448	9458	20160814231026.773	20160814231028.933
PX2 (135)	9458	9460	20160814231028.933	20160814231029.367
PX2 (135)	9460	9474	20160814231029.367	20160814231032.394
PX2 (135)	9474	9476	20160814231032.394	20160814231032.824
PX2 (135)	9476	9482	20160814231032.824	20160814231035.637
PX2 (135)	9482	9484	20160814231035.637	20160814231036.070
PX2 (135)	9485	9487	20160814231036.285	20160814231036.719
PX2 (135)	9488	9492	20160814231036.933	20160814231037.801
PX2 (135)	9492	9496	20160814231037.801	20160814231038.664
PX2 (135)	9496	9503	20160814231038.664	20160814231040.176
PX2 (135)	9505	9507	20160814231040.609	20160814231042.554
PX2 (135)	9508	9511	20160814231042.769	20160814231043.422
PX2 (135)	9517	9519	20160814231044.719	20160814231045.152
PX2 (135)	9519	9522	20160814231045.152	20160814231045.797
PX2 (135)	9525	9528	20160814231046.449	20160814231047.097
PX2 (135)	9532	9534	20160814231047.961	20160814231048.394
PX2 (135)	9546	9548	20160814231052.500	20160814231052.933
PX3 (140)	9433	9435	20160814231022.015	20160814231022.449
PX3 (140)	9435	9438	20160814231022.449	20160814231023.097
PX3 (140)	9438	9440	20160814231023.097	20160814231023.531
PX3 (140)	9442	9444	20160814231023.961	20160814231024.394
PX3 (140)	9444	9452	20160814231024.394	20160814231027.637
PX3 (140)	9452	9458	20160814231027.637	20160814231028.933
PX3 (140)	9458	9464	20160814231028.933	20160814231030.230
PX3 (140)	9464	9479	20160814231030.230	20160814231034.988
PX3 (140)	9479	9484	20160814231034.988	20160814231036.070
PX3 (140)	9484	9492	20160814231036.070	20160814231037.801
PX3 (140)	9492	9494	20160814231037.801	20160814231038.230
PX3 (140)	9494	9497	20160814231038.230	20160814231038.879
PX3 (140)	9497	9499	20160814231038.879	20160814231039.312
PX3 (140)	9499	9503	20160814231039.312	20160814231040.176
PX3 (140)	9503	9505	20160814231040.176	20160814231040.609
PX3 (140)	9505	9507	20160814231040.609	20160814231042.554
PX3 (140)	9508	9511	20160814231042.769	20160814231043.422
PX3 (140)	9517	9519	20160814231044.719	20160814231045.152
PX3 (140)	9519	9522	20160814231045.152	20160814231045.797
PX3 (140)	9532	9534	20160814231047.961	20160814231048.394
PX3 (140)	9552	9554	20160814231053.801	20160814231054.230
PX4 (145)	9433	9436	20160814231022.015	20160814231022.664
PX4 (145)	9436	9438	20160814231022.664	20160814231023.097
PX4 (145)	9438	9441	20160814231023.097	20160814231023.746
PX4 (145)	9441	9444	20160814231023.746	20160814231024.394
PX4 (145)	9444	9458	20160814231024.394	20160814231028.933
PX4 (145)	9458	9473	20160814231028.933	20160814231032.179
PX4 (145)	9473	9475	20160814231032.179	20160814231032.609
PX4 (145)	9475	9484	20160814231032.609	20160814231036.070
PX4 (145)	9484	9497	20160814231036.070	20160814231038.879
PX4 (145)	9497	9499	20160814231038.879	20160814231039.312
PX4 (145)	9499	9501	20160814231039.312	20160814231039.746
PX4 (145)	9501	9503	20160814231039.746	20160814231040.176
PX4 (145)	9503	9507	20160814231040.176	20160814231042.554
PX4 (145)	9517	9519	20160814231044.719	20160814231045.152

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	9519	9522	20160814231045.152	20160814231045.797
PX4 (145)	9532	9534	20160814231047.961	20160814231048.394
PX4 (145)	9552	9554	20160814231053.801	20160814231054.230
IMG (150)	8989	9018	20160814231022.015	20160814231028.933
IMG (150)	9018	9027	20160814231028.933	20160814231030.879
IMG (150)	9027	9033	20160814231030.879	20160814231032.179
IMG (150)	9033	9037	20160814231032.179	20160814231033.258
IMG (150)	9039	9048	20160814231033.906	20160814231036.070
IMG (150)	9048	9073	20160814231036.070	20160814231041.906
IMG (150)	9092	9096	20160814231046.230	20160814231047.097
IMG (150)	9100	9102	20160814231047.961	20160814231048.394
IMG (150)	9112	9114	20160814231051.203	20160814231051.636
IMG (150)	9117	9119	20160814231052.285	20160814231052.718
IMG (150)	9123	9126	20160814231053.582	20160814231054.230
VER (160)	7664	7674	20160814231016.824	20160814231032.824
VER (160)	7674	7680	20160814231032.824	20160814231048.824
AUX (180)	8080	8082	20160814231017.258	20160814231033.258
AUX (180)	8082	8084	20160814231033.258	20160814231049.258

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
14/08/2016 00:00:00	-	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	481	-
GQisFlagQual set (PX1)	99.47 %	-
GQisFlagQual set (PX2)	99.46 %	-
GQisFlagQual set (PX3)	99.48 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

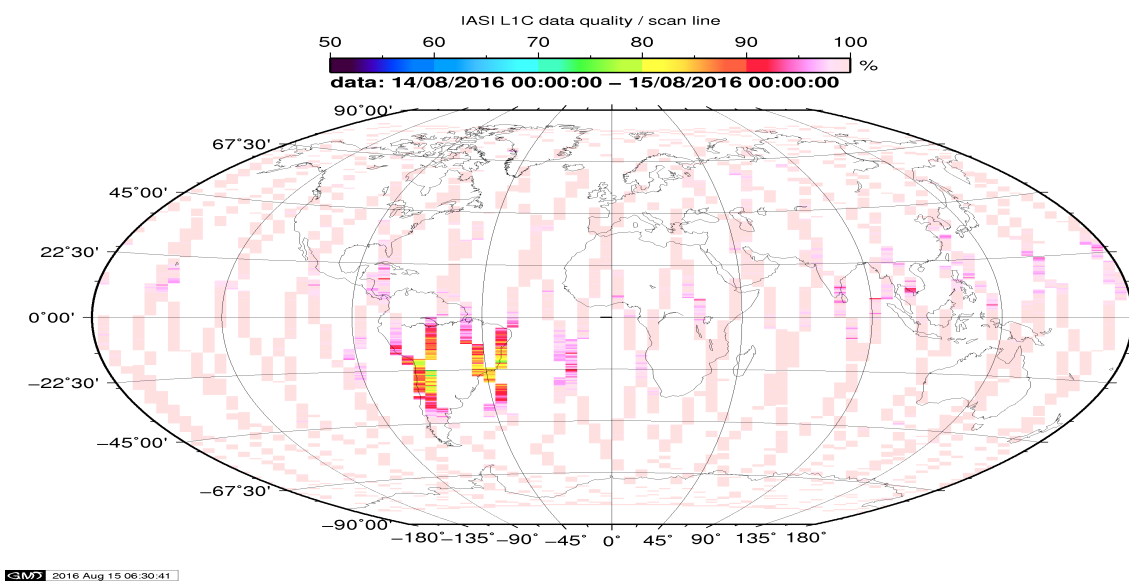


Figure 1: L1C data quality

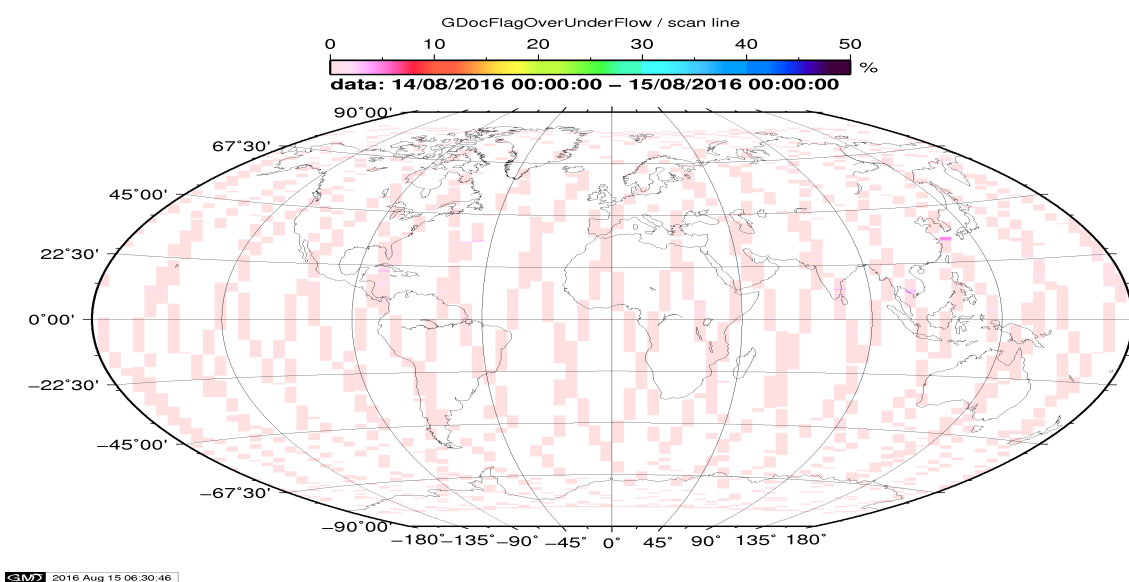


Figure 2: Flag of Over and Under Flows

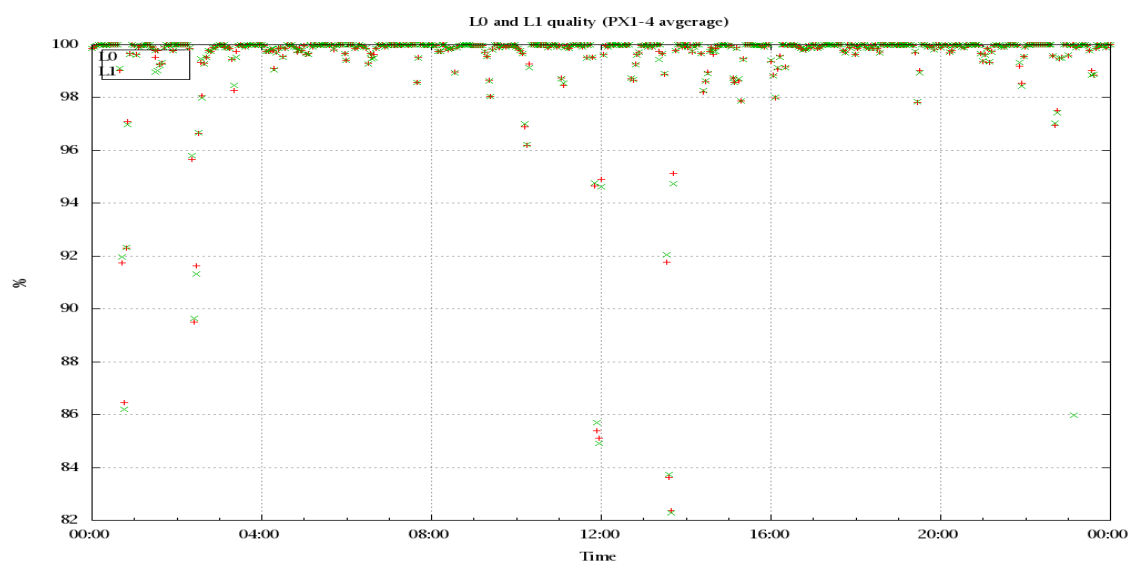


Figure 3: Level 0 and 1C overall quality

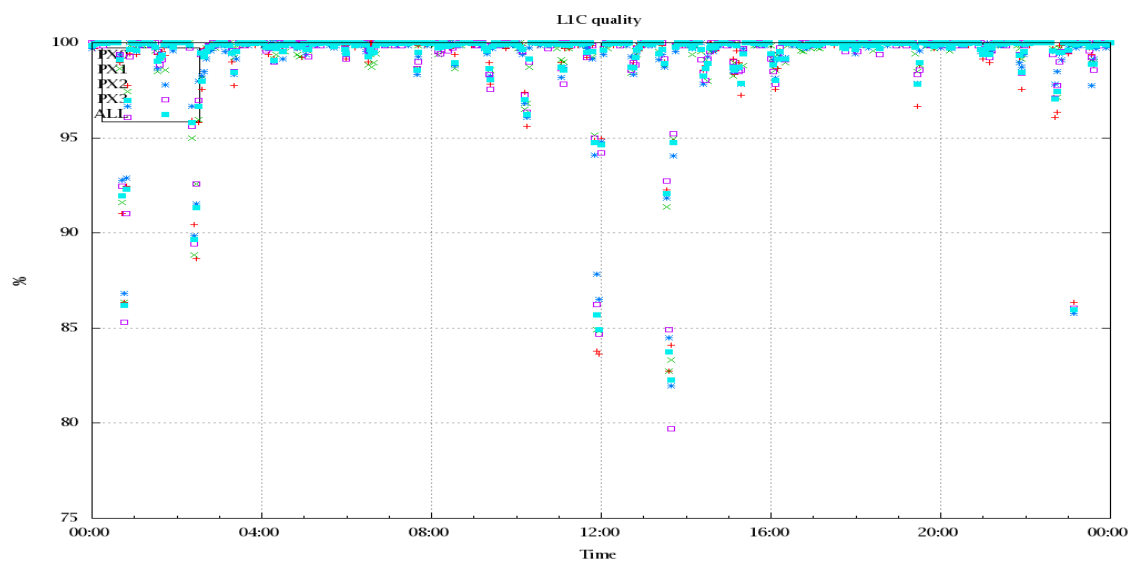


Figure 4: Level 1C quality

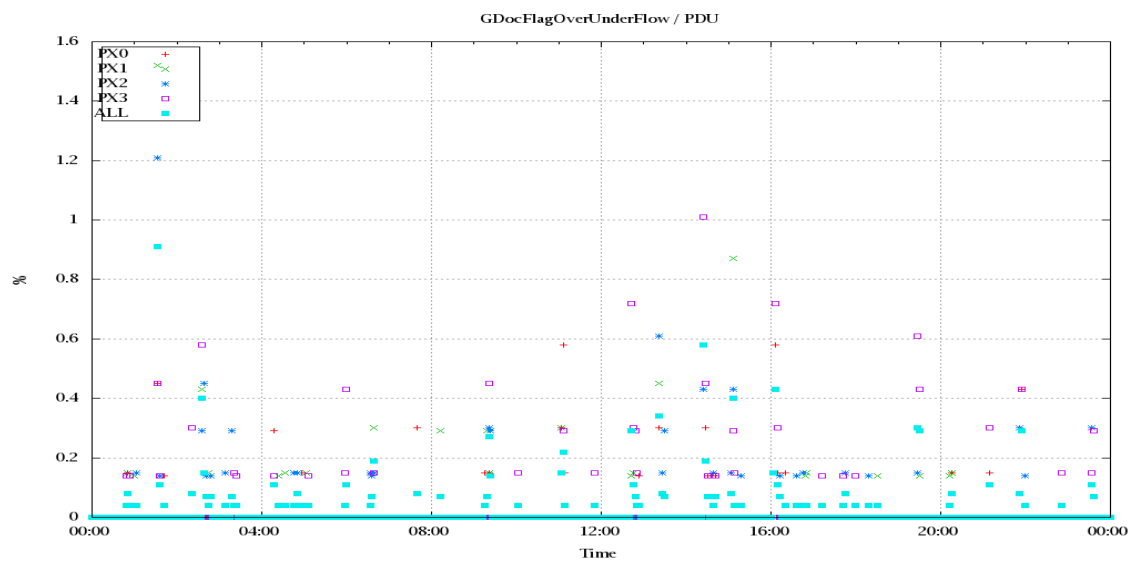


Figure 5: OverUnderFlowFlag timeseries

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.

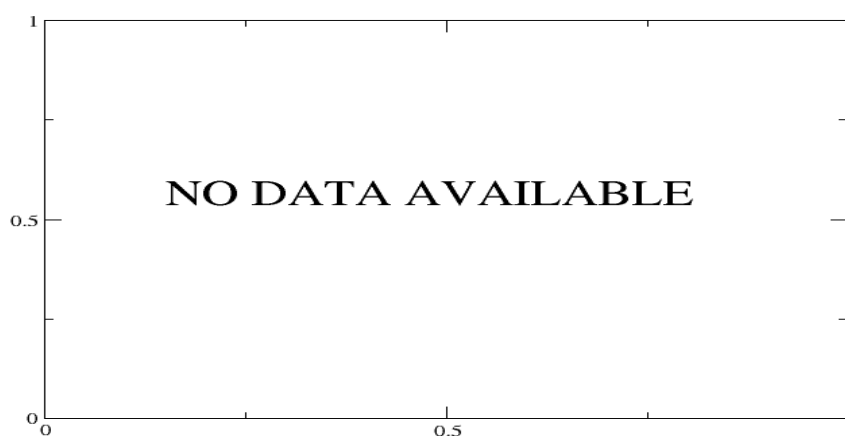


Figure 6: Average Radiance differences: OBS-CAL

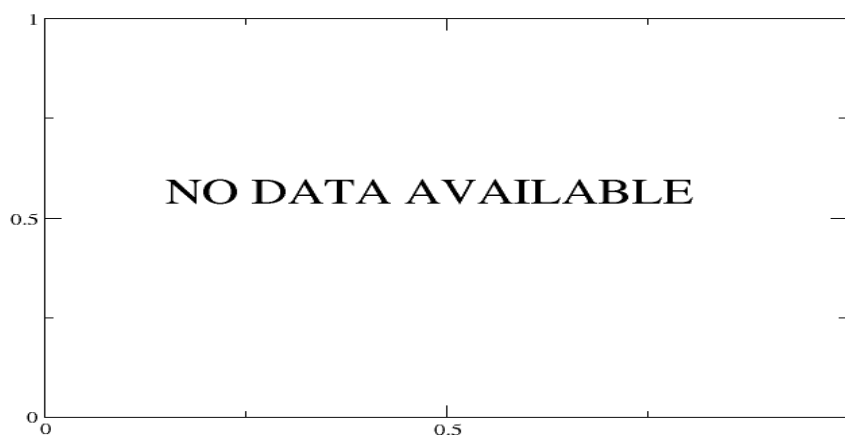


Figure 7: Standard Deviation of Radiance differences

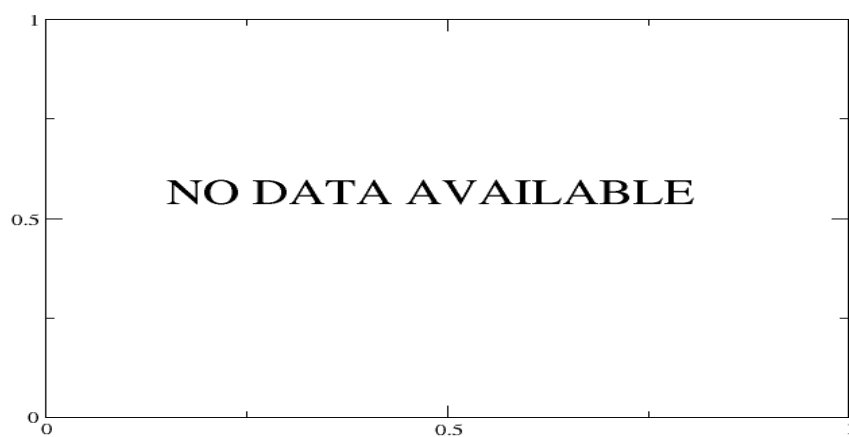


Figure 8: Average Radiance differences: OBS-CAL



Figure 9: Standard Deviation of Radiance differences

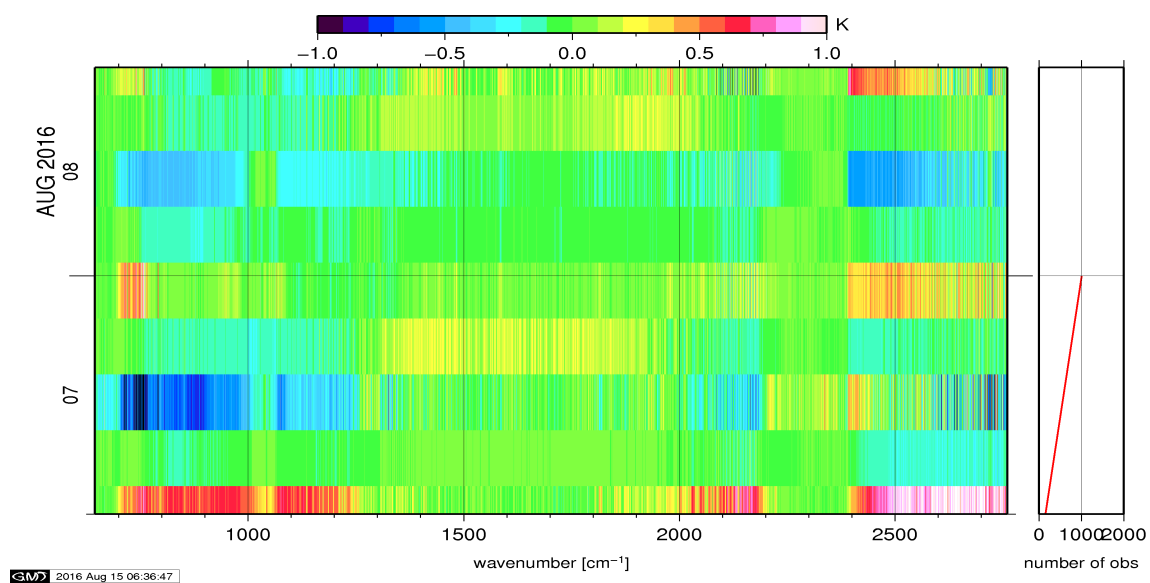


Figure 10: Radiance Anomaly in BRT: All Channels

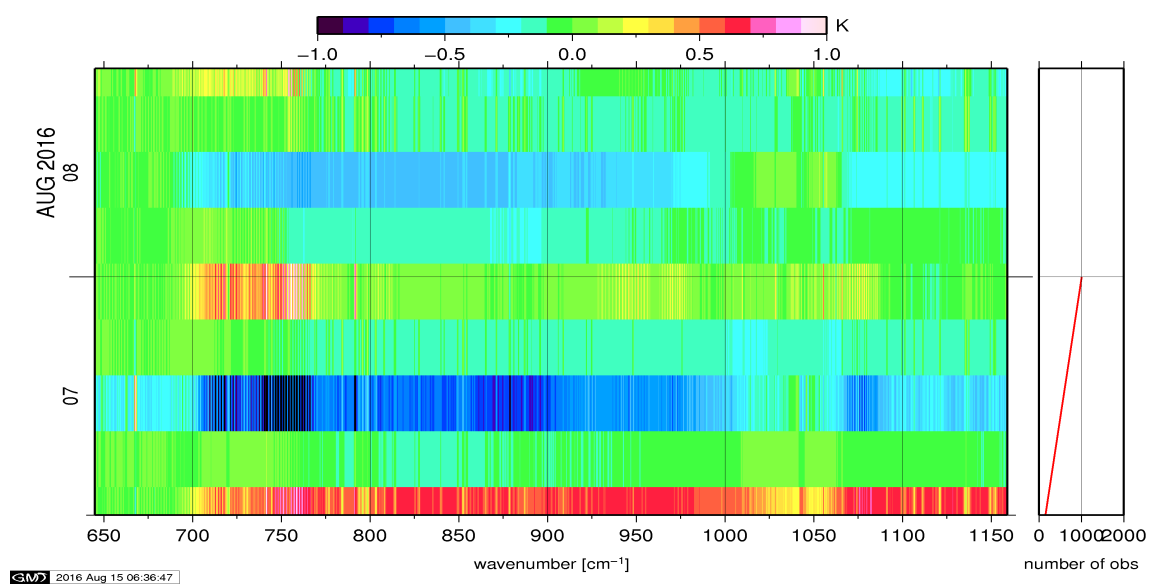


Figure 11: Radiance Anomaly in BRT: IASI Band 1

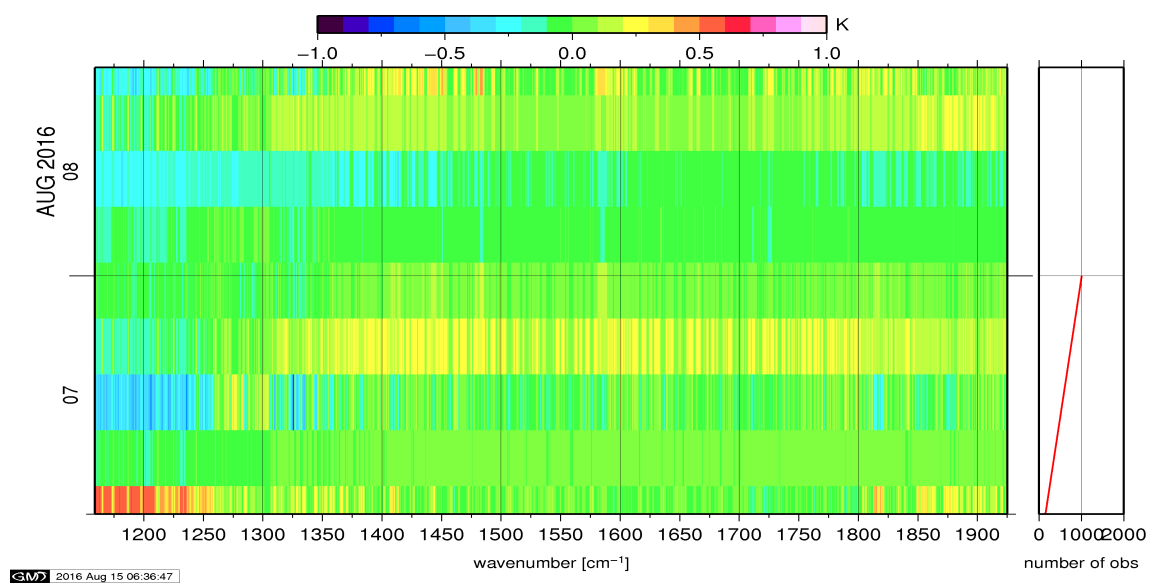


Figure 12: Radiance Anomaly in BRT: IASI Band 2

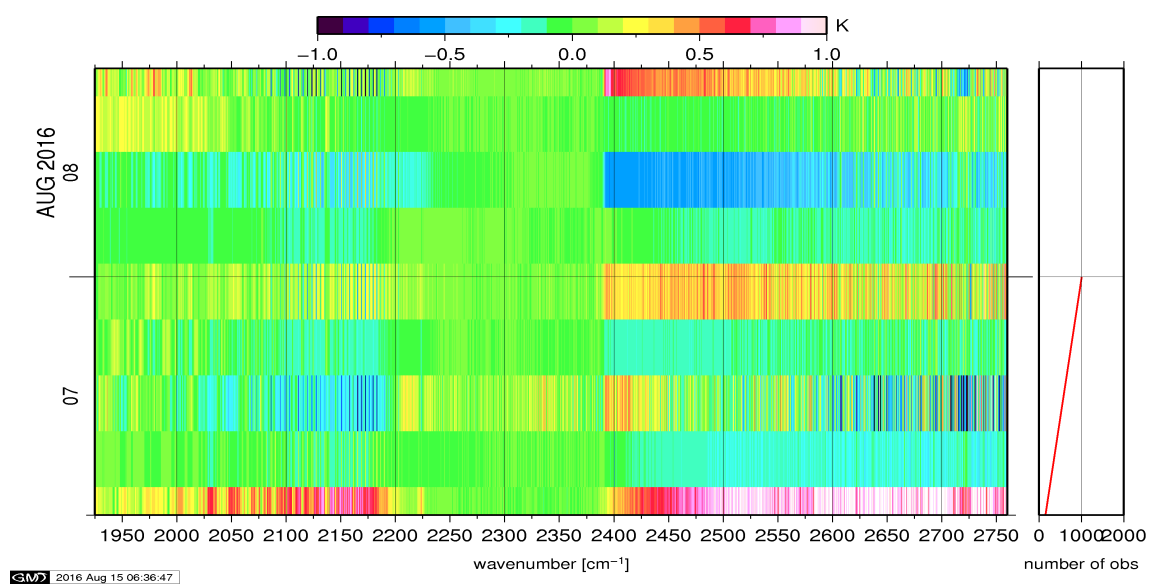


Figure 13: Radiance Anomaly in BRT: IASI Band 3

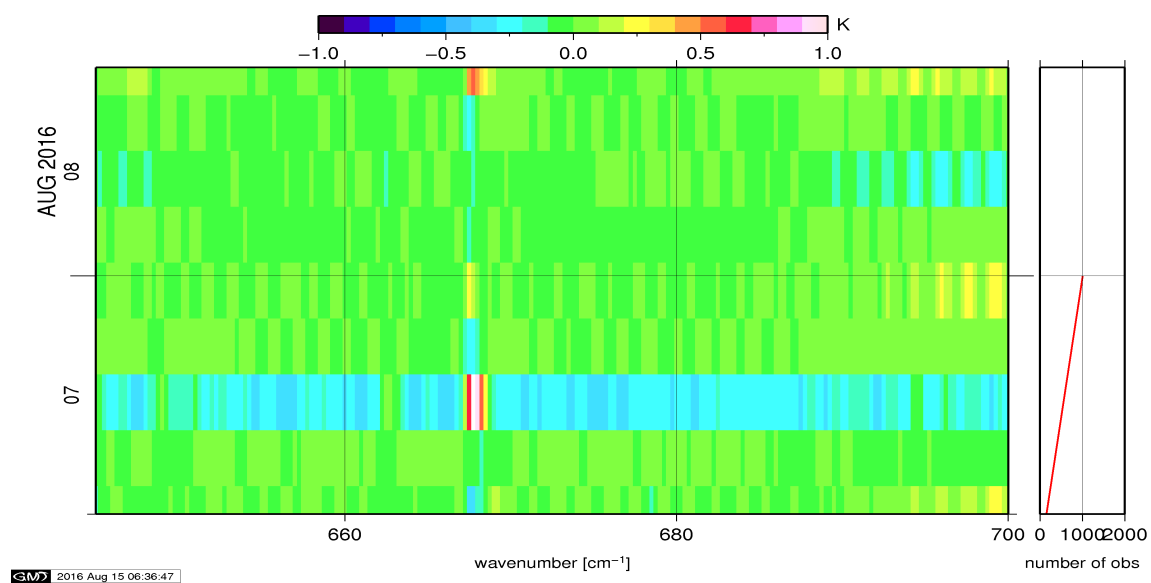


Figure 14: Radiance Anomaly in BRT: CO2 14

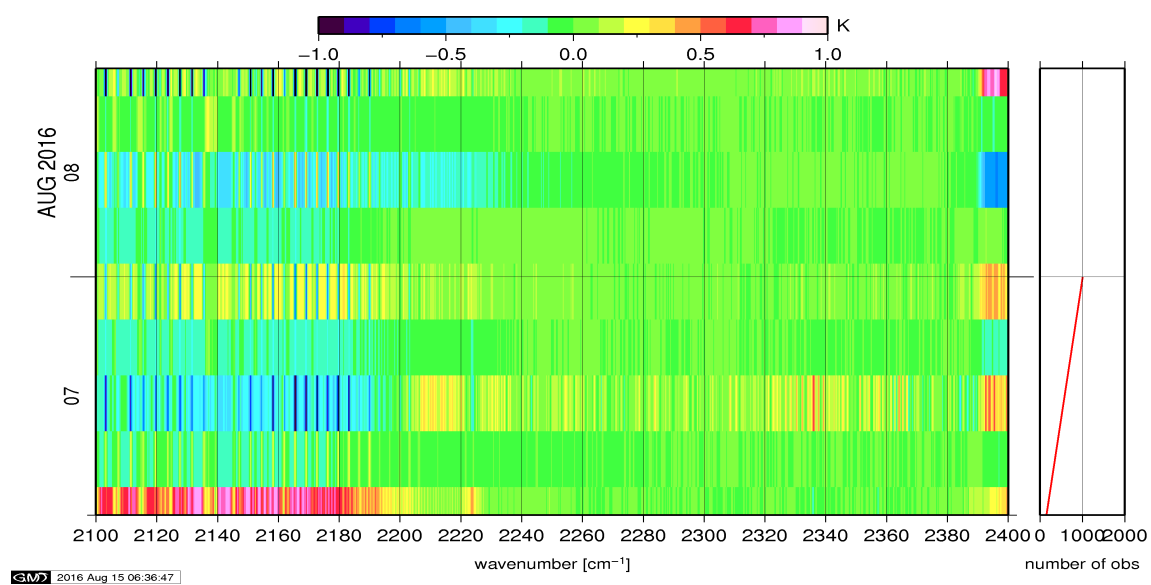


Figure 15: Radiance Anomaly in BRT: CO2 4.3

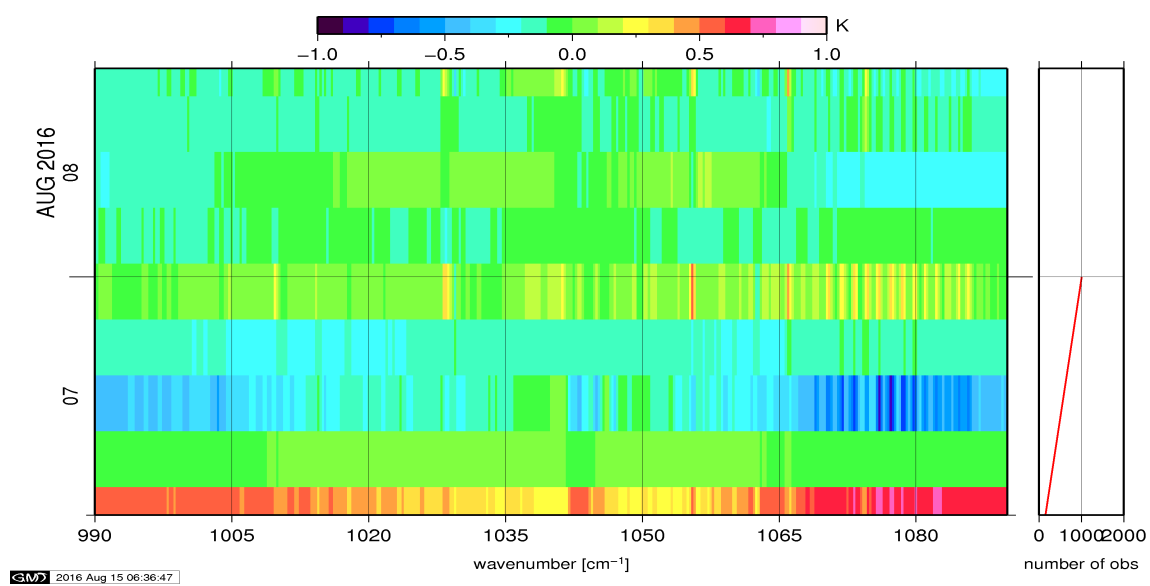


Figure 16: Radiance Anomaly in BRT: O3

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.

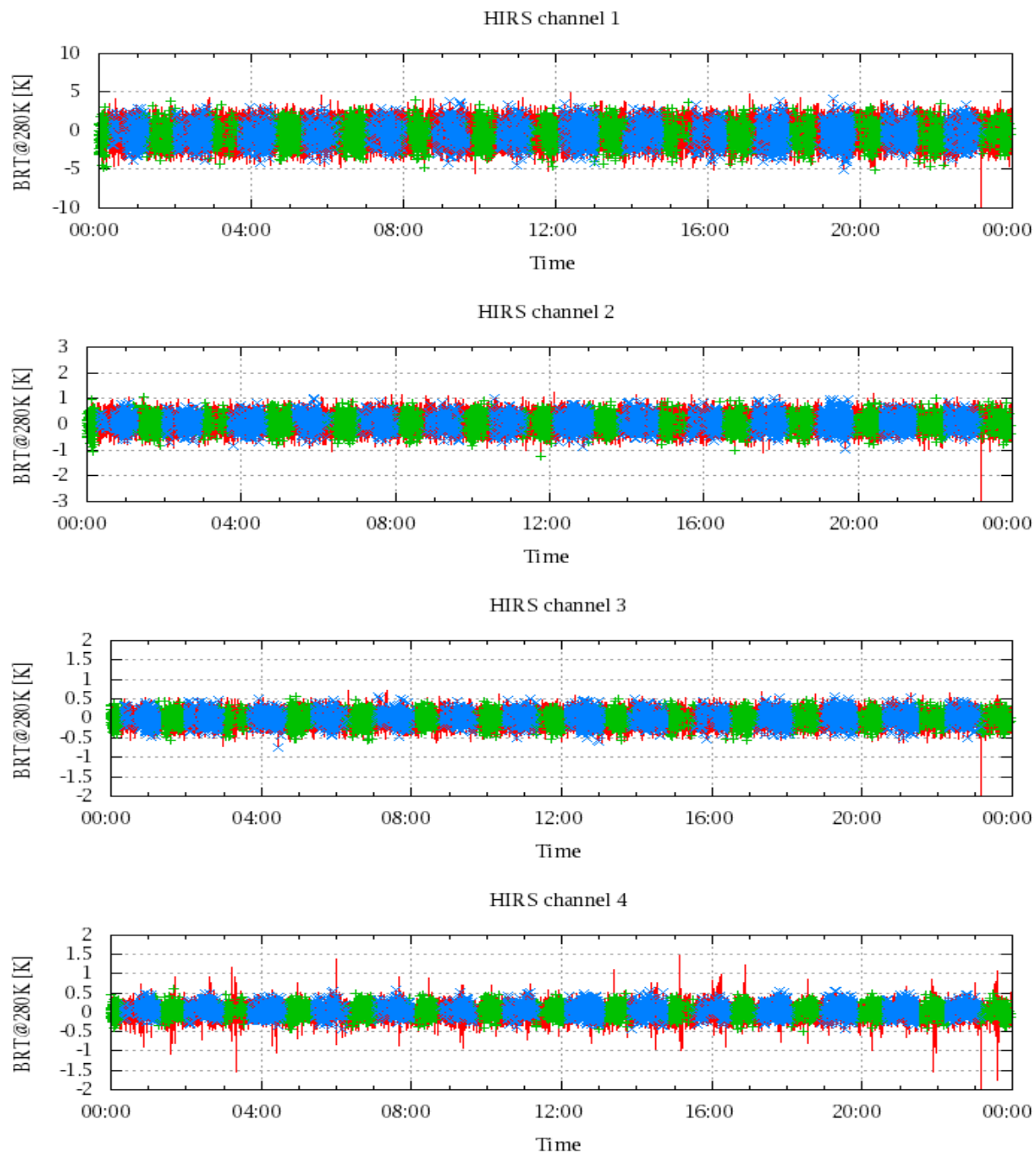


Figure 17: Radiance Differences in BRT

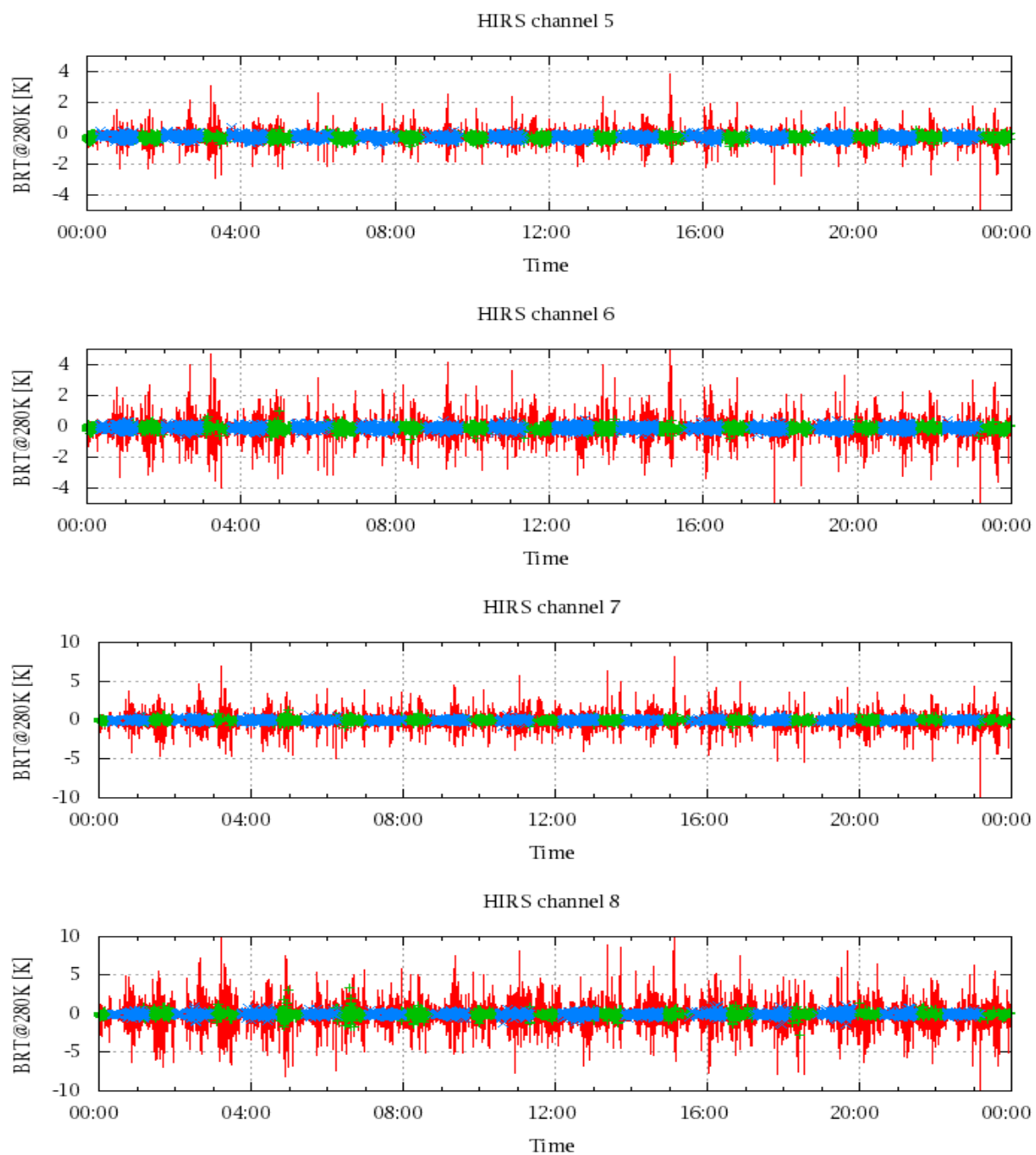


Figure 18: Radiance Differences in BRT

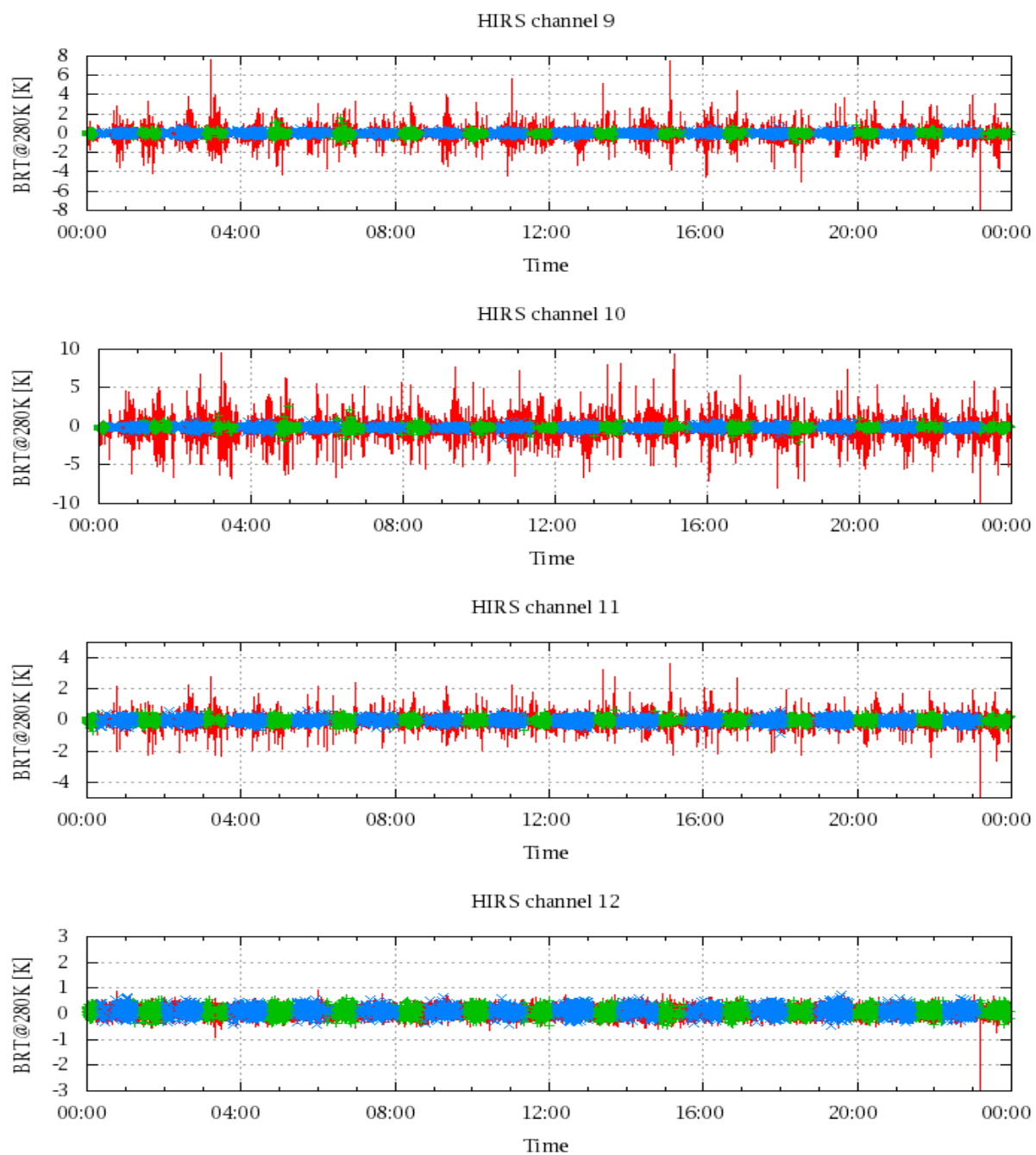


Figure 19: Radiance Differences in BRT

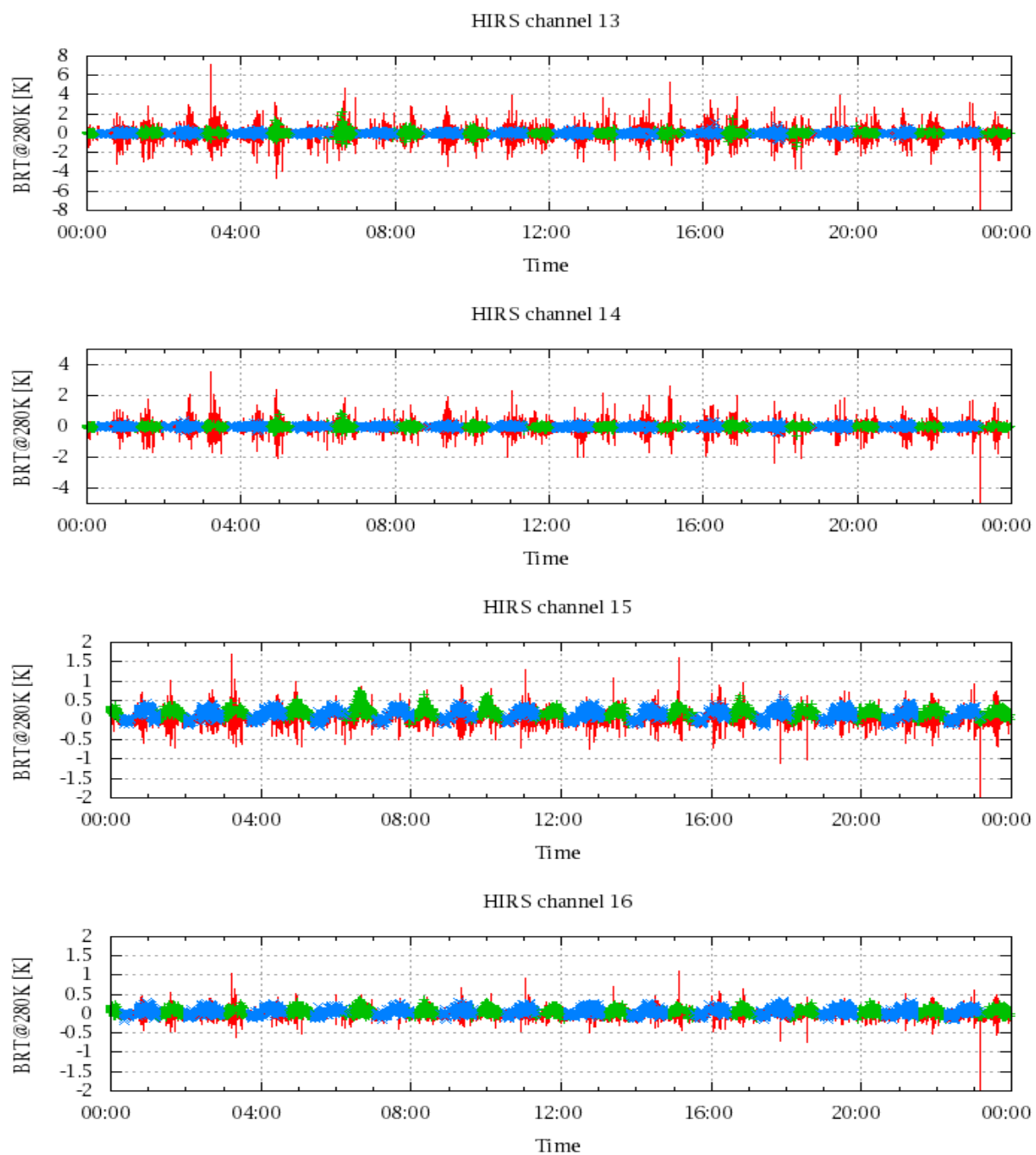


Figure 20: Radiance Differences in BRT

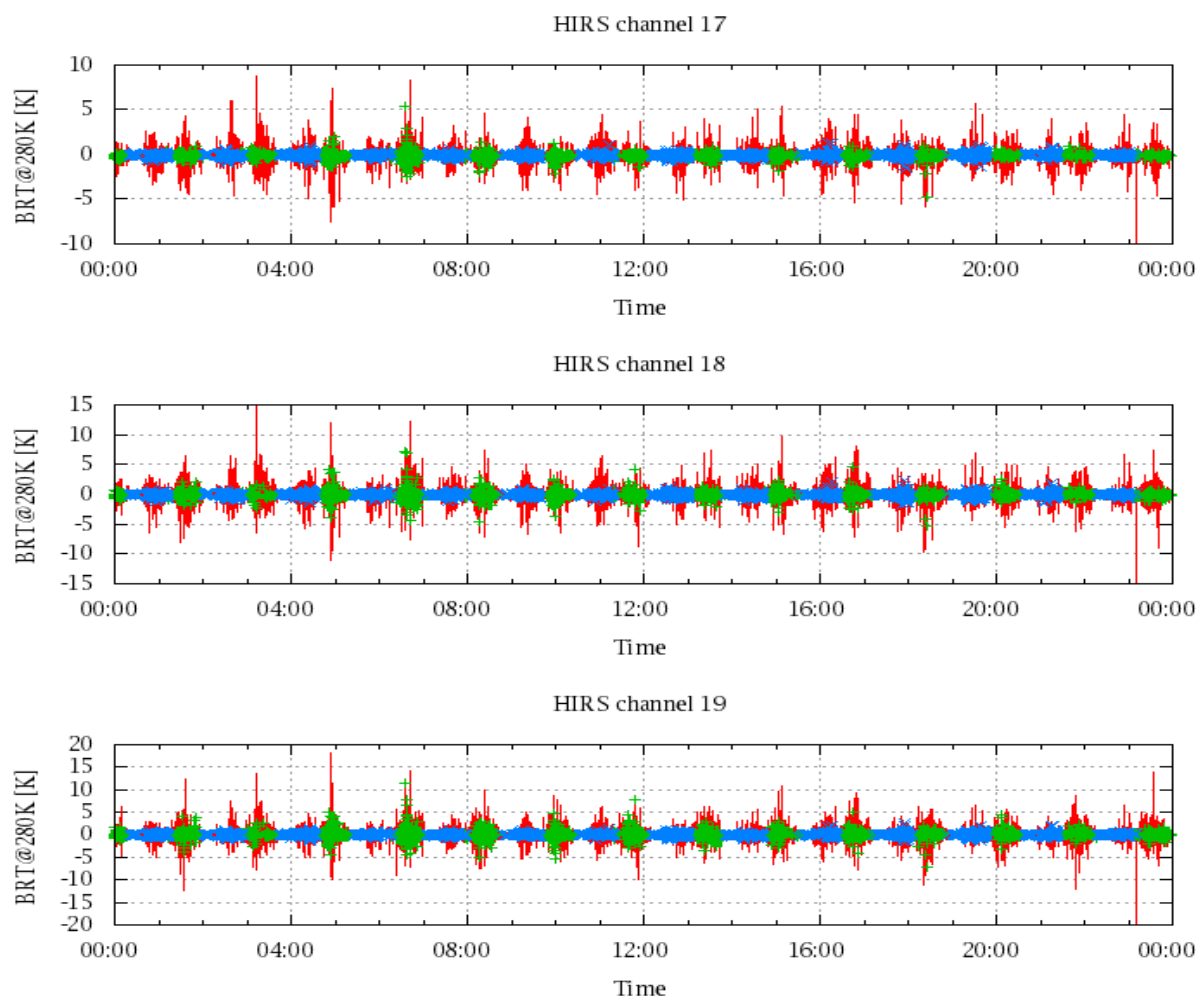


Figure 21: Radinace Differences in BRT