

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

12/12/2016 00:00:00 - 13/12/2016 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 12/12/2016 00:00:00 - 13/12/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 12/12/2016 00:00:00 - 13/12/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	480	-
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)	10912	10920	20161212002327.711	20161212002330.953
PX1 (130)	10920	10924	20161212002330.953	20161212002331.816
PX1 (130)	10924	10937	20161212002331.816	20161212002334.629
PX1 (130)	10938	10941	20161212002334.843	20161212002335.492
PX1 (130)	10941	10945	20161212002335.492	20161212002337.871
PX1 (130)	10945	10949	20161212002337.871	20161212002338.734
PX1 (130)	10949	10951	20161212002338.734	20161212002339.168
PX1 (130)	10951	10959	20161212002339.168	20161212002340.898
PX1 (130)	10959	10961	20161212002340.898	20161212002341.332
PX1 (130)	10961	10965	20161212002341.332	20161212002342.195
PX1 (130)	10965	10967	20161212002342.195	20161212002342.629
PX1 (130)	10967	10984	20161212002342.629	20161212002347.816
PX1 (130)	10984	10992	20161212002347.816	20161212002349.547
PX1 (130)	10993	10997	20161212002349.761	20161212002350.629
PX1 (130)	10998	11004	20161212002350.843	20161212002353.656
PX2 (135)	10911	10914	20161212002327.492	20161212002329.656
PX2 (135)	10914	10920	20161212002329.656	20161212002330.953
PX2 (135)	10920	10938	20161212002330.953	20161212002334.843

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	10938	10945	20161212002334.843	20161212002337.871
PX2 (135)	10945	10949	20161212002337.871	20161212002338.734
PX2 (135)	10949	10958	20161212002338.734	20161212002340.683
PX2 (135)	10959	10961	20161212002340.898	20161212002341.332
PX2 (135)	10961	10983	20161212002341.332	20161212002347.601
PX2 (135)	10984	10989	20161212002347.816	20161212002348.898
PX2 (135)	10990	10997	20161212002349.113	20161212002350.629
PX2 (135)	10999	11002	20161212002351.062	20161212002351.707
PX2 (135)	11002	11004	20161212002351.707	20161212002353.656
PX3 (140)	10911	10920	20161212002327.492	20161212002330.953
PX3 (140)	10920	10923	20161212002330.953	20161212002331.601
PX3 (140)	10923	10938	20161212002331.601	20161212002334.843
PX3 (140)	10938	10942	20161212002334.843	20161212002335.711
PX3 (140)	10942	10945	20161212002335.711	20161212002337.871
PX3 (140)	10945	10950	20161212002337.871	20161212002338.953
PX3 (140)	10950	10959	20161212002338.953	20161212002340.898
PX3 (140)	10959	10961	20161212002340.898	20161212002341.332
PX3 (140)	10961	10964	20161212002341.332	20161212002341.980
PX3 (140)	10964	10968	20161212002341.980	20161212002342.843
PX3 (140)	10968	10979	20161212002342.843	20161212002346.738
PX3 (140)	10979	10983	20161212002346.738	20161212002347.601
PX3 (140)	10984	10989	20161212002347.816	20161212002348.898
PX3 (140)	10991	10998	20161212002349.332	20161212002350.843
PX3 (140)	10999	11004	20161212002351.062	20161212002353.656
PX4 (145)	10911	10940	20161212002327.492	20161212002335.277
PX4 (145)	10940	10942	20161212002335.277	20161212002335.711
PX4 (145)	10942	10945	20161212002335.711	20161212002337.871
PX4 (145)	10945	10953	20161212002337.871	20161212002339.601
PX4 (145)	10953	10956	20161212002339.601	20161212002340.250
PX4 (145)	10957	10960	20161212002340.468	20161212002341.113
PX4 (145)	10961	10968	20161212002341.332	20161212002342.843
PX4 (145)	10971	10978	20161212002343.492	20161212002346.519
PX4 (145)	10979	10981	20161212002346.738	20161212002347.168
PX4 (145)	10983	10988	20161212002347.601	20161212002348.683
PX4 (145)	10989	10991	20161212002348.898	20161212002349.332
PX4 (145)	10991	10994	20161212002349.332	20161212002349.980
PX4 (145)	10994	10998	20161212002349.980	20161212002350.843
PX4 (145)	10999	11003	20161212002351.062	20161212002351.925
IMG (150)	9774	9782	20161212002327.277	20161212002329.656
IMG (150)	9782	9804	20161212002329.656	20161212002334.410
IMG (150)	9805	9808	20161212002334.629	20161212002335.277
IMG (150)	9808	9816	20161212002335.277	20161212002337.656
IMG (150)	9816	9832	20161212002337.656	20161212002341.113
IMG (150)	9832	9838	20161212002341.113	20161212002342.414
IMG (150)	9838	9843	20161212002342.414	20161212002343.492
IMG (150)	9843	9846	20161212002343.492	20161212002344.355
IMG (150)	9846	9859	20161212002344.355	20161212002347.601
IMG (150)	9859	9879	20161212002347.601	20161212002351.925
IMG (150)	9886	9888	20161212002354.086	20161212002354.519
VER (160)	10873	10889	20161212002319.926	20161212002351.925
AUX (180)	12003	12006	20161212002320.359	20161212002344.355

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
12/12/2016 00:07:51	-	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	480	-
GQisFlagQual set (PX1)	99.50 %	-
GQisFlagQual set (PX2)	99.51 %	-
GQisFlagQual set (PX3)	99.49 %	-
GQisFlagQual set (PX4)	99.51 %	-
GQisFlagQual set (all)	99.50 %	-

Table 4: Quality flags

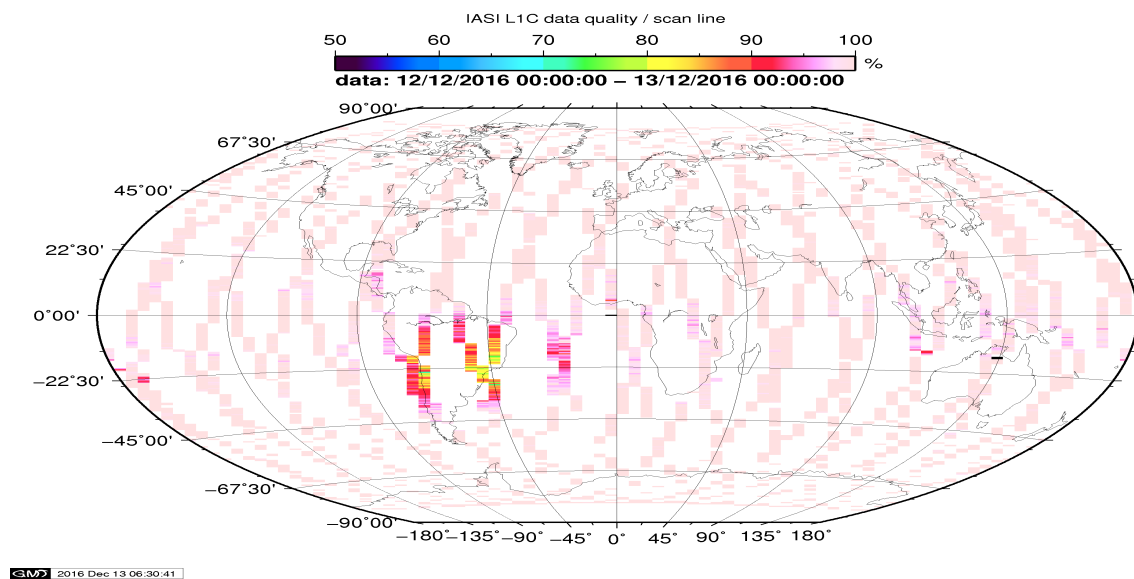


Figure 1: L1C data quality

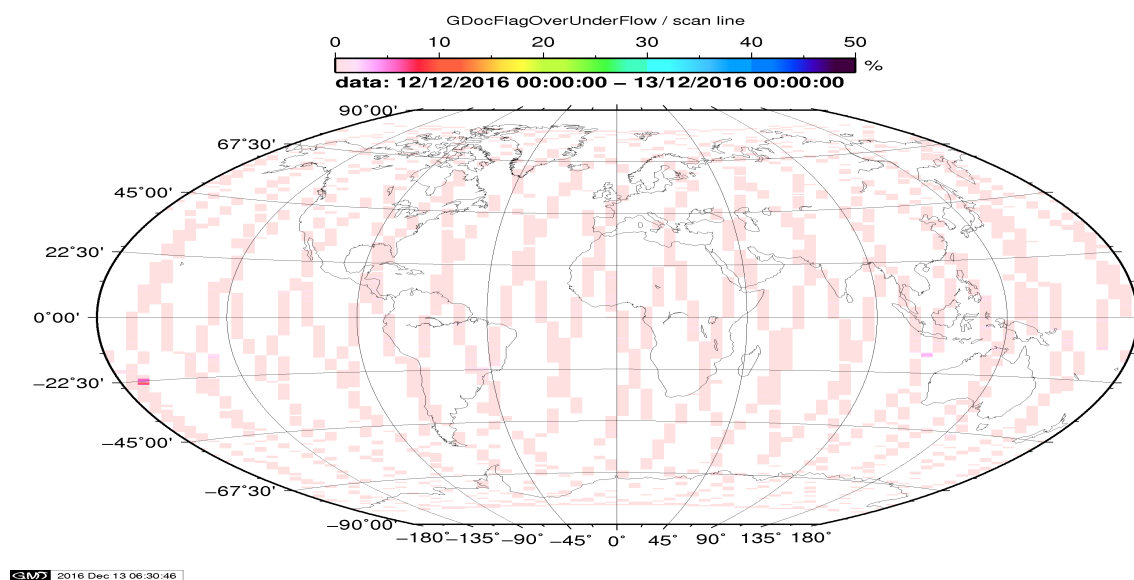


Figure 2: Flag of Over and Under Flows

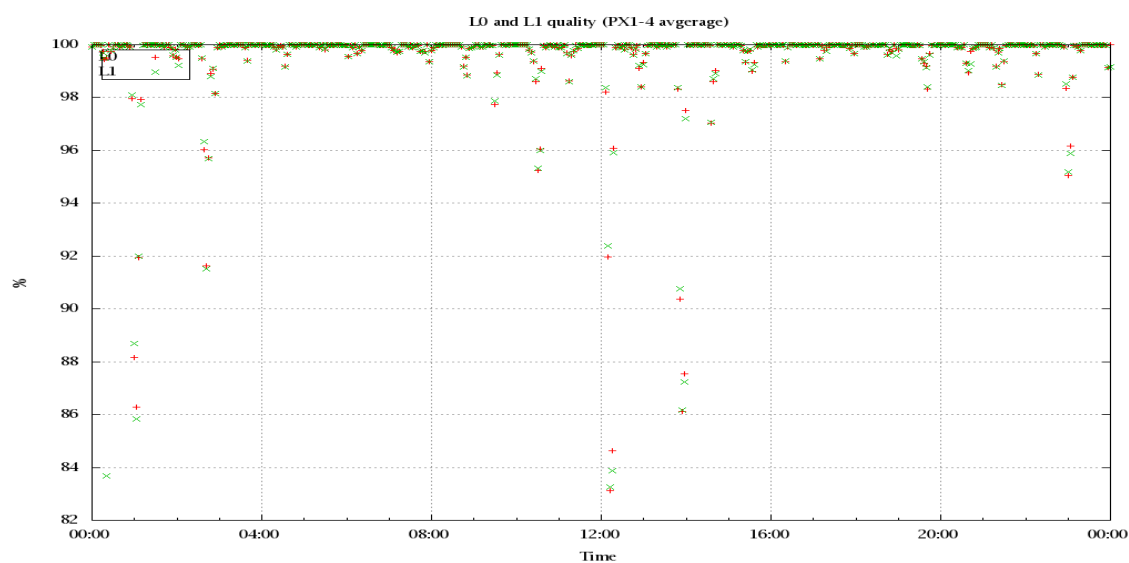


Figure 3: Level 0 and 1C overall quality

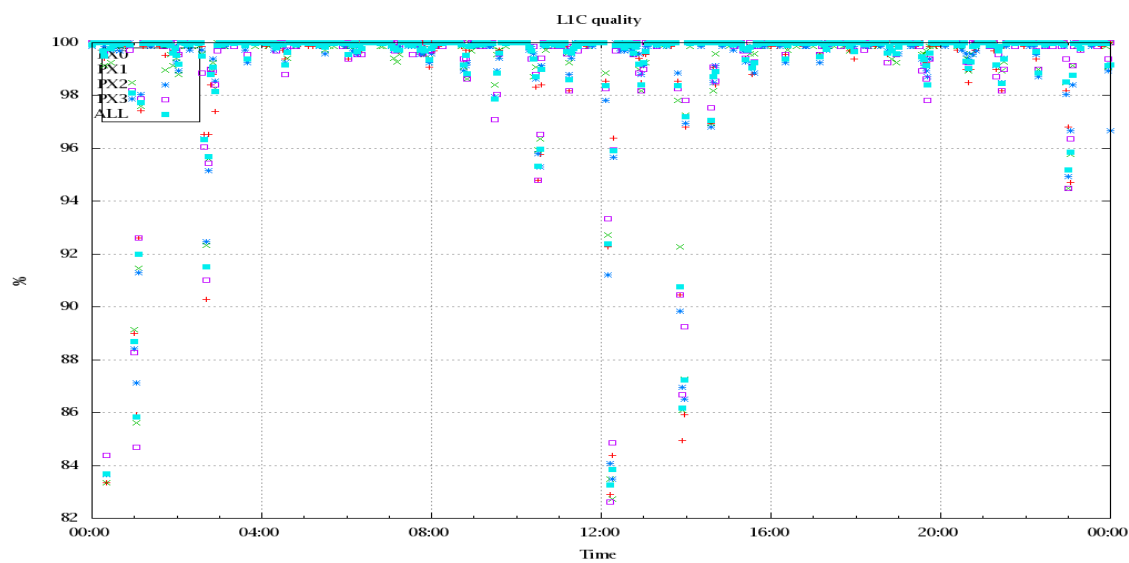


Figure 4: Level 1C quality

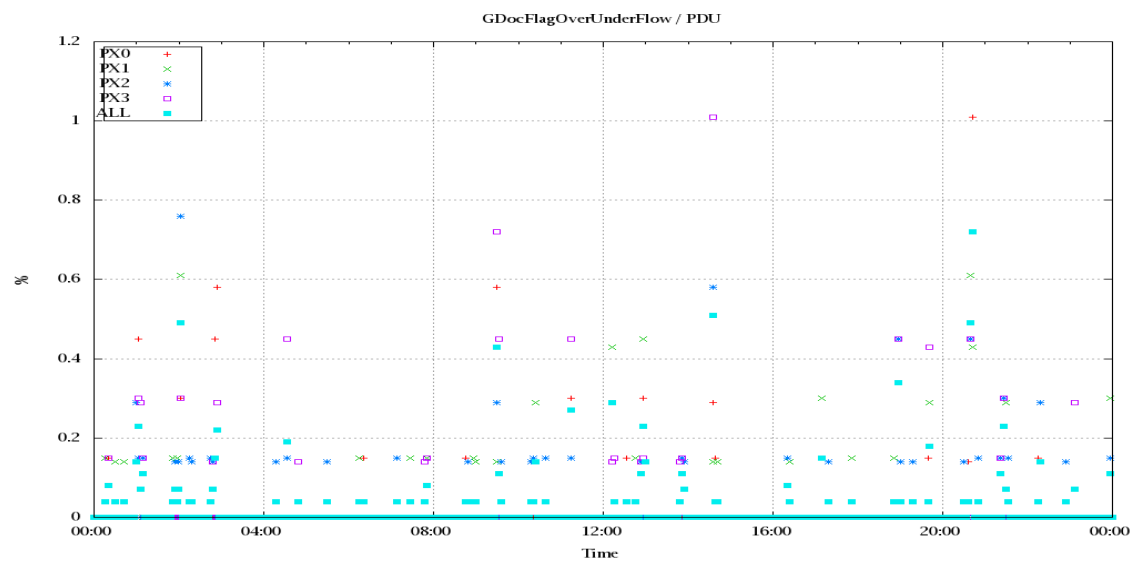


Figure 5: OverUnderFlowFlag timeseries

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.

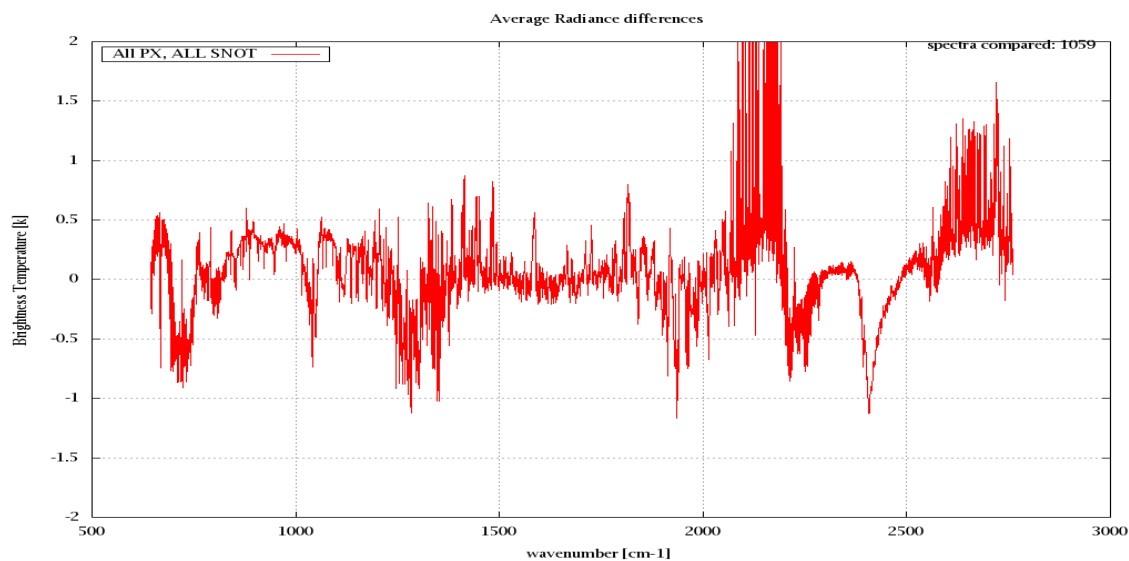


Figure 6: Average Radiance differences: OBS-CAL

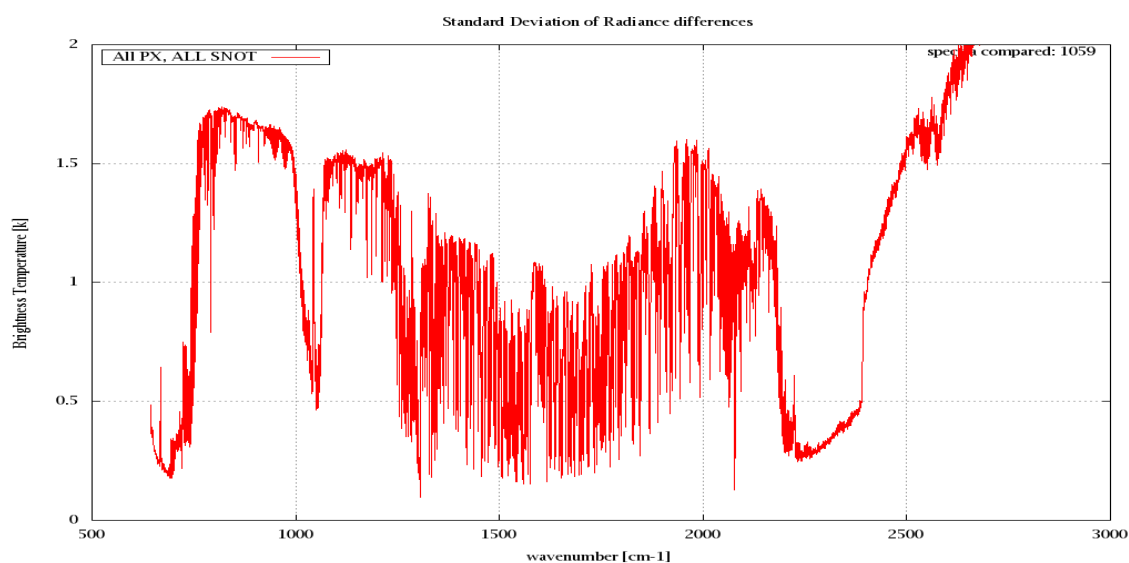


Figure 7: Standard Deviation of Radiance differences

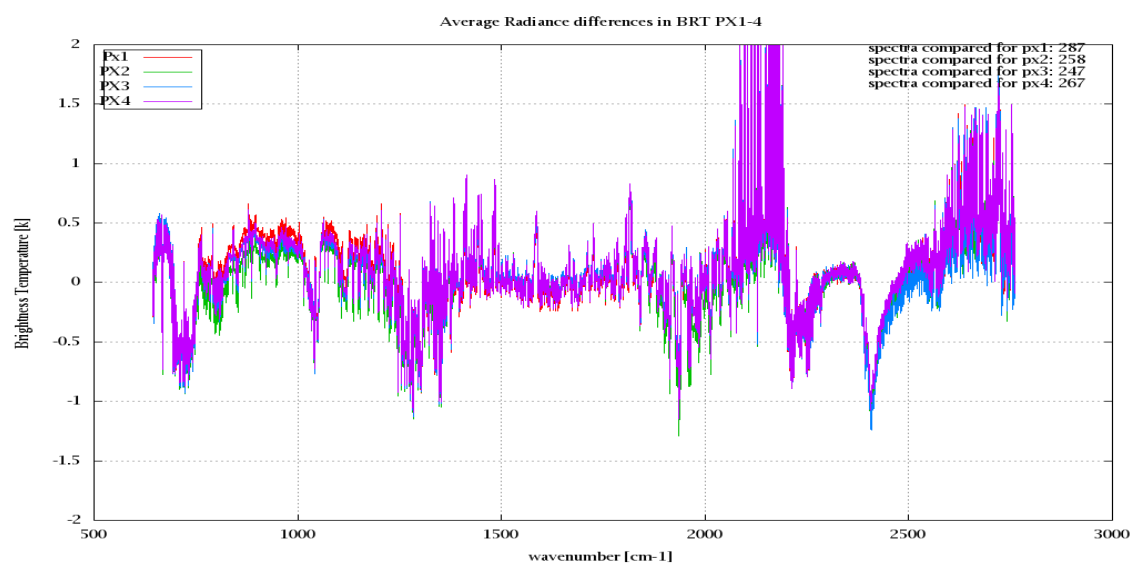


Figure 8: Average Radiance differences: OBS-CAL

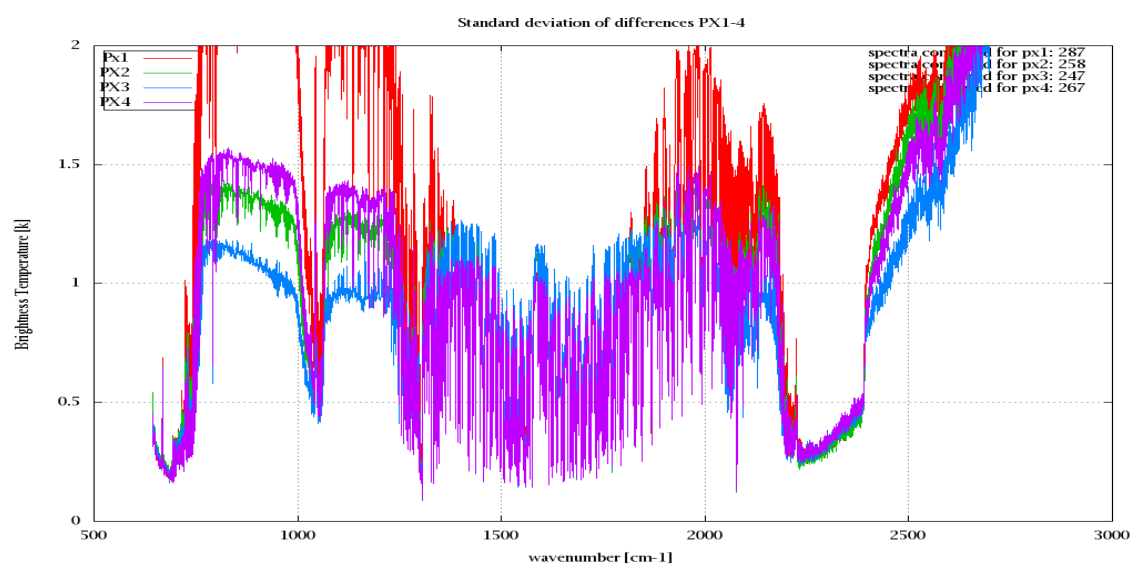


Figure 9: Standard Deviation of Radiance differences

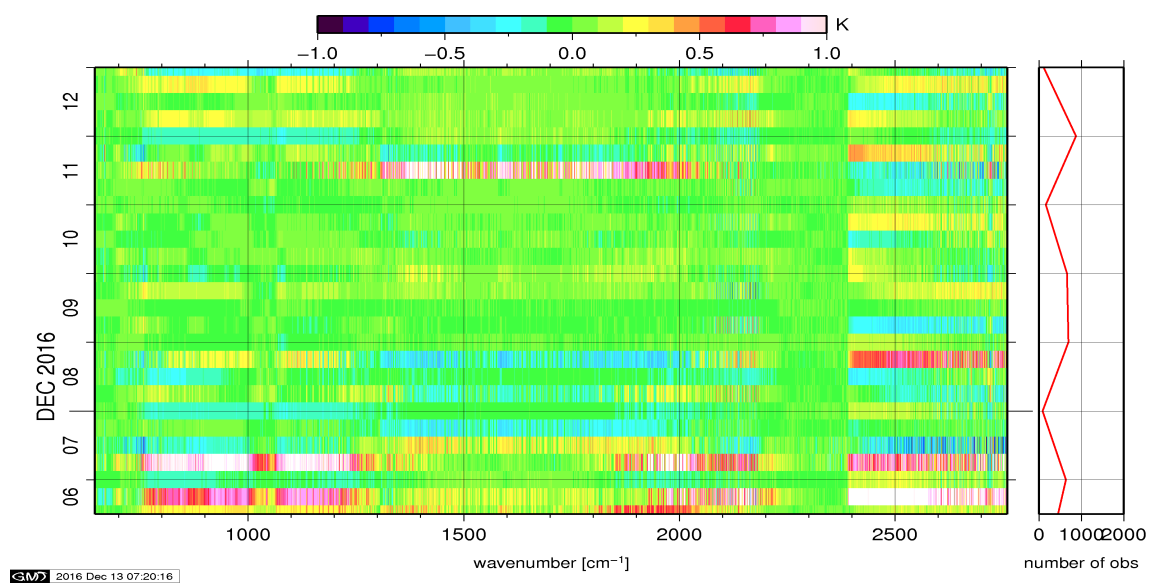


Figure 10: Radiance Anomaly in BRT: All Channels

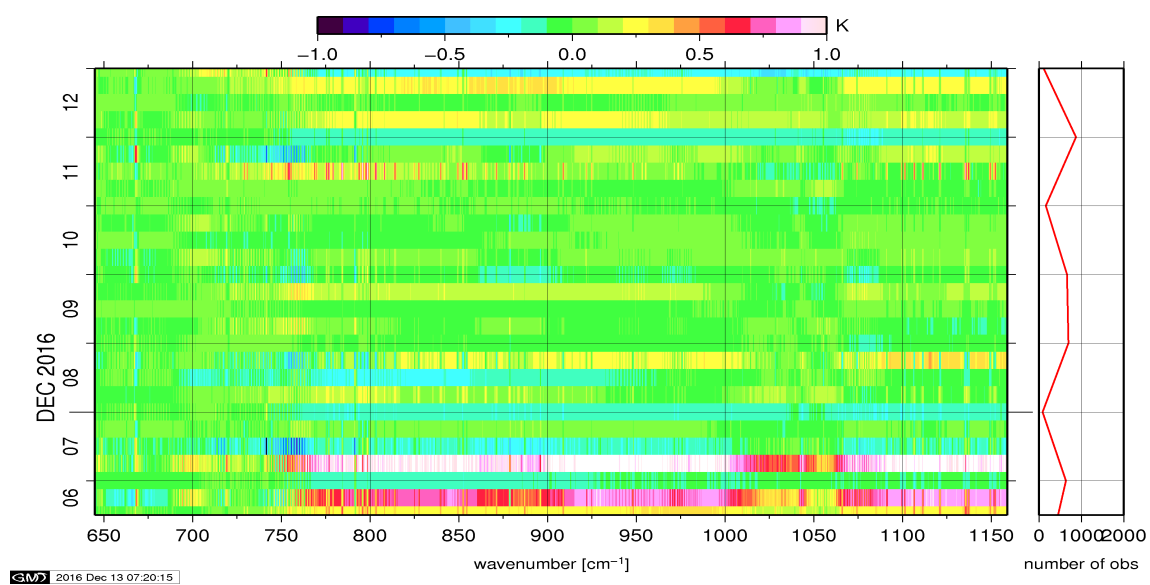


Figure 11: Radiance Anomaly in BRT: IASI Band 1

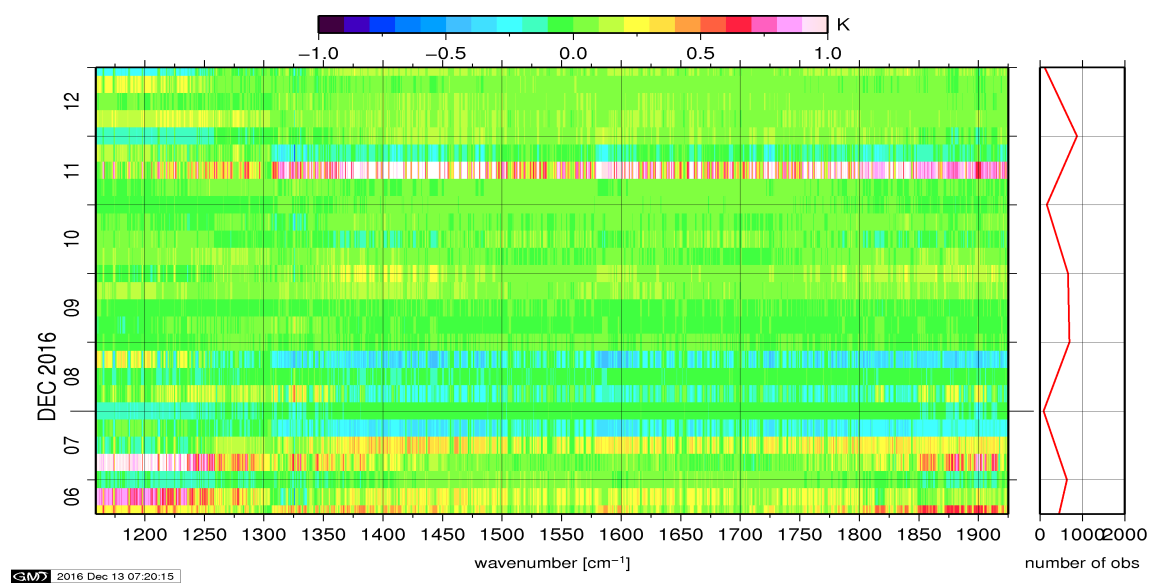


Figure 12: Radiance Anomaly in BRT: IASI Band 2

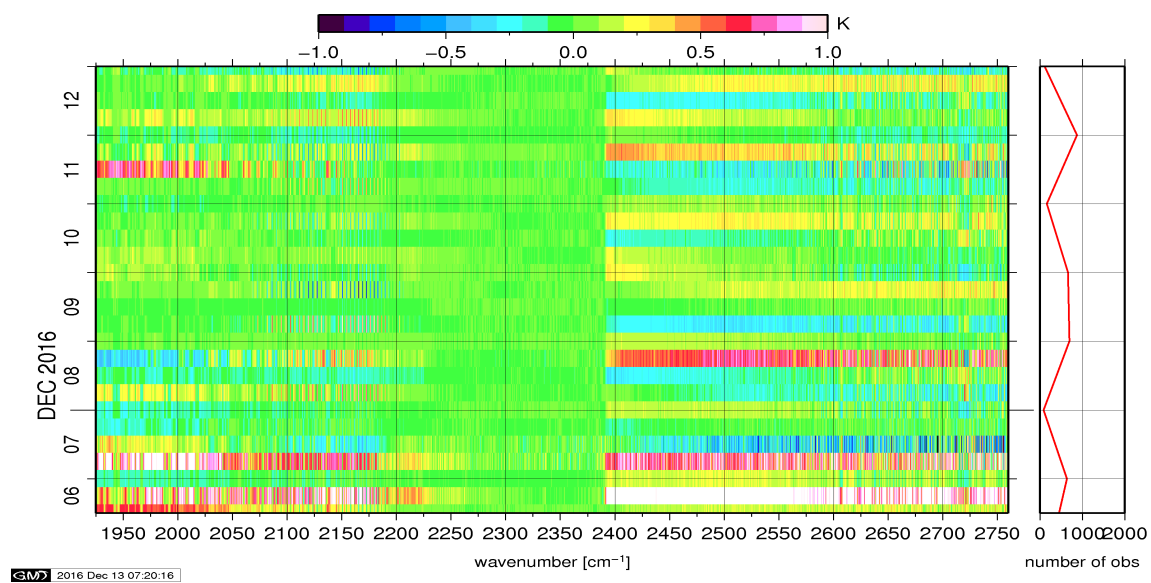


Figure 13: Radiance Anomaly in BRT: IASI Band 3

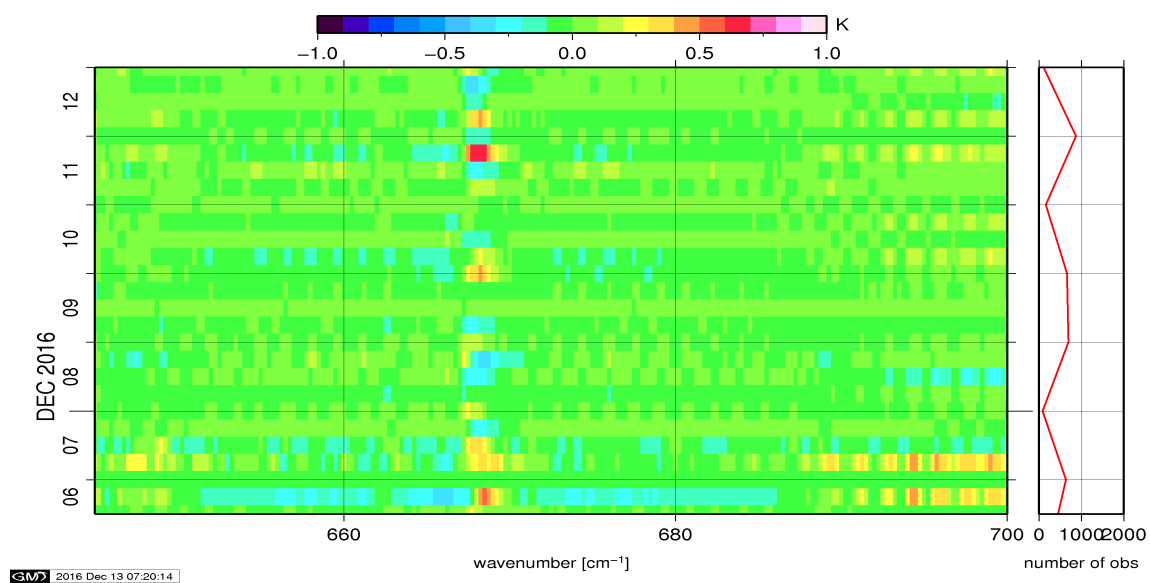


Figure 14: Radiance Anomaly in BRT: CO2 14

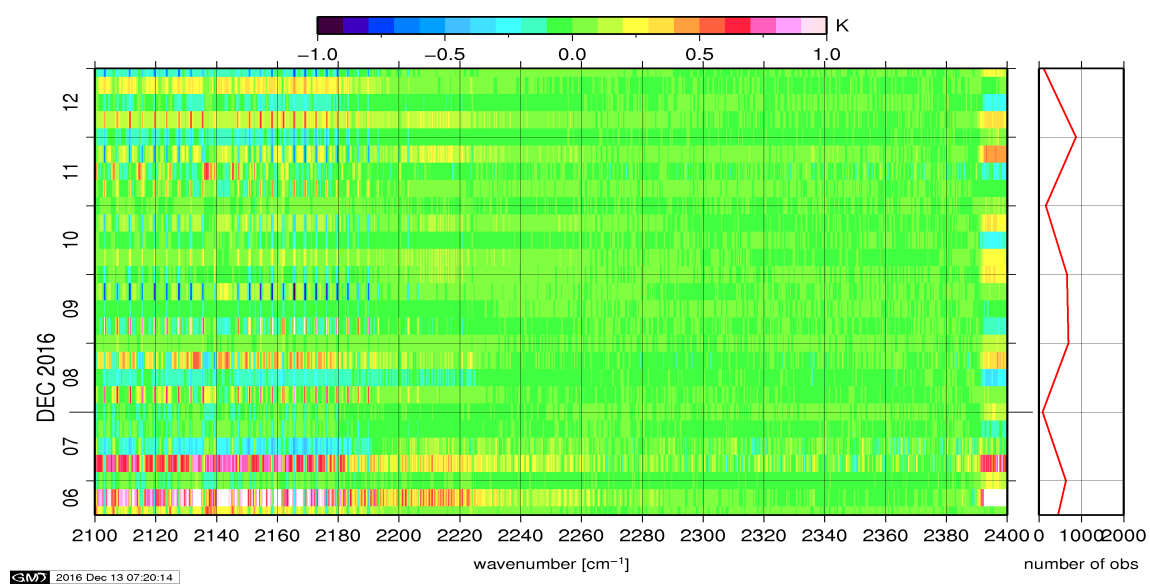


Figure 15: Radiance Anomaly in BRT: CO2 4.3

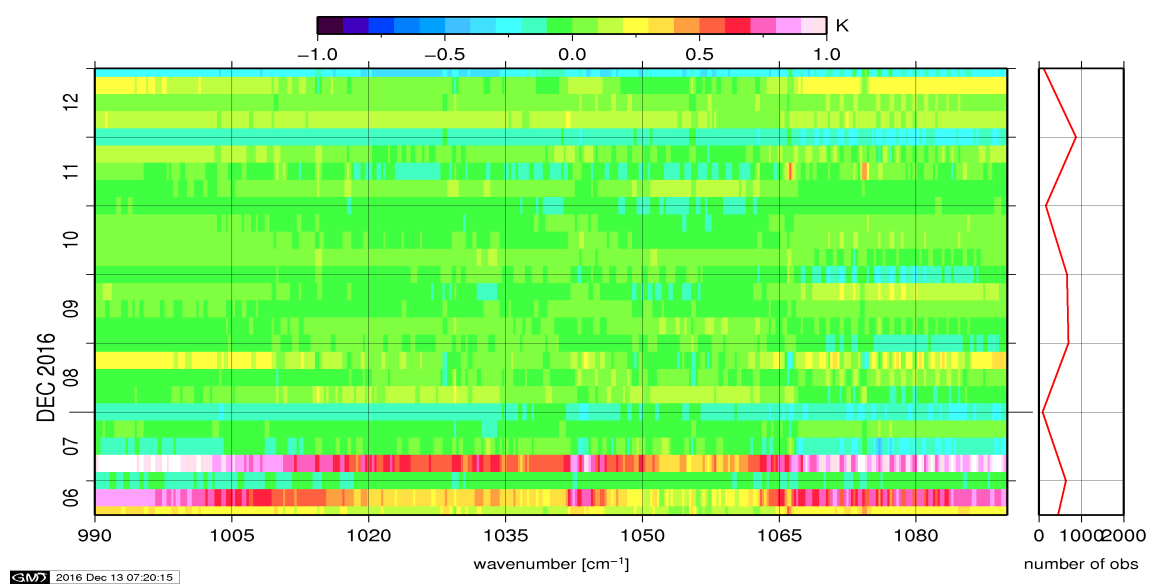


Figure 16: Radiance Anomaly in BRT: O3

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.

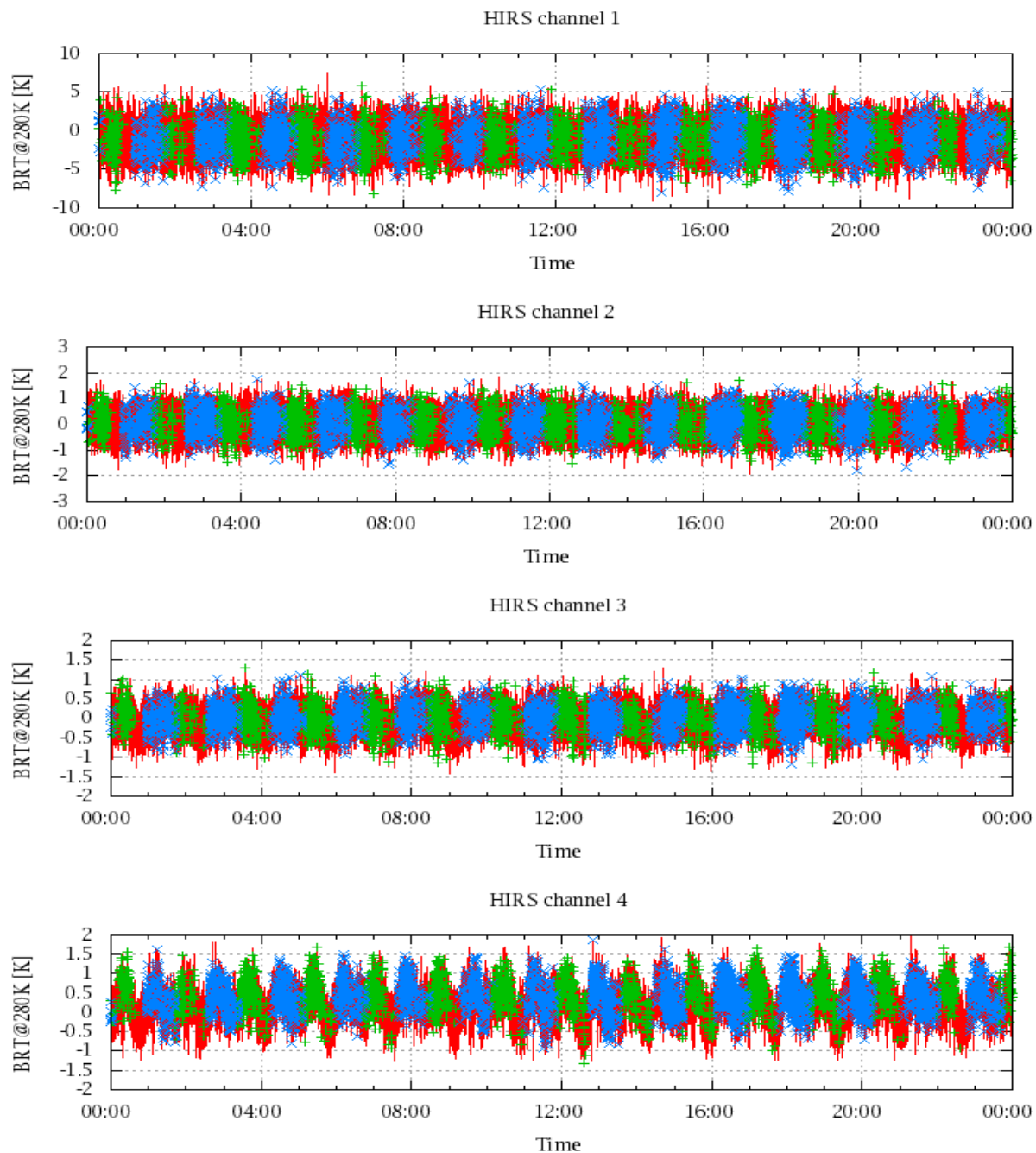


Figure 17: Radiance Differences in BRT

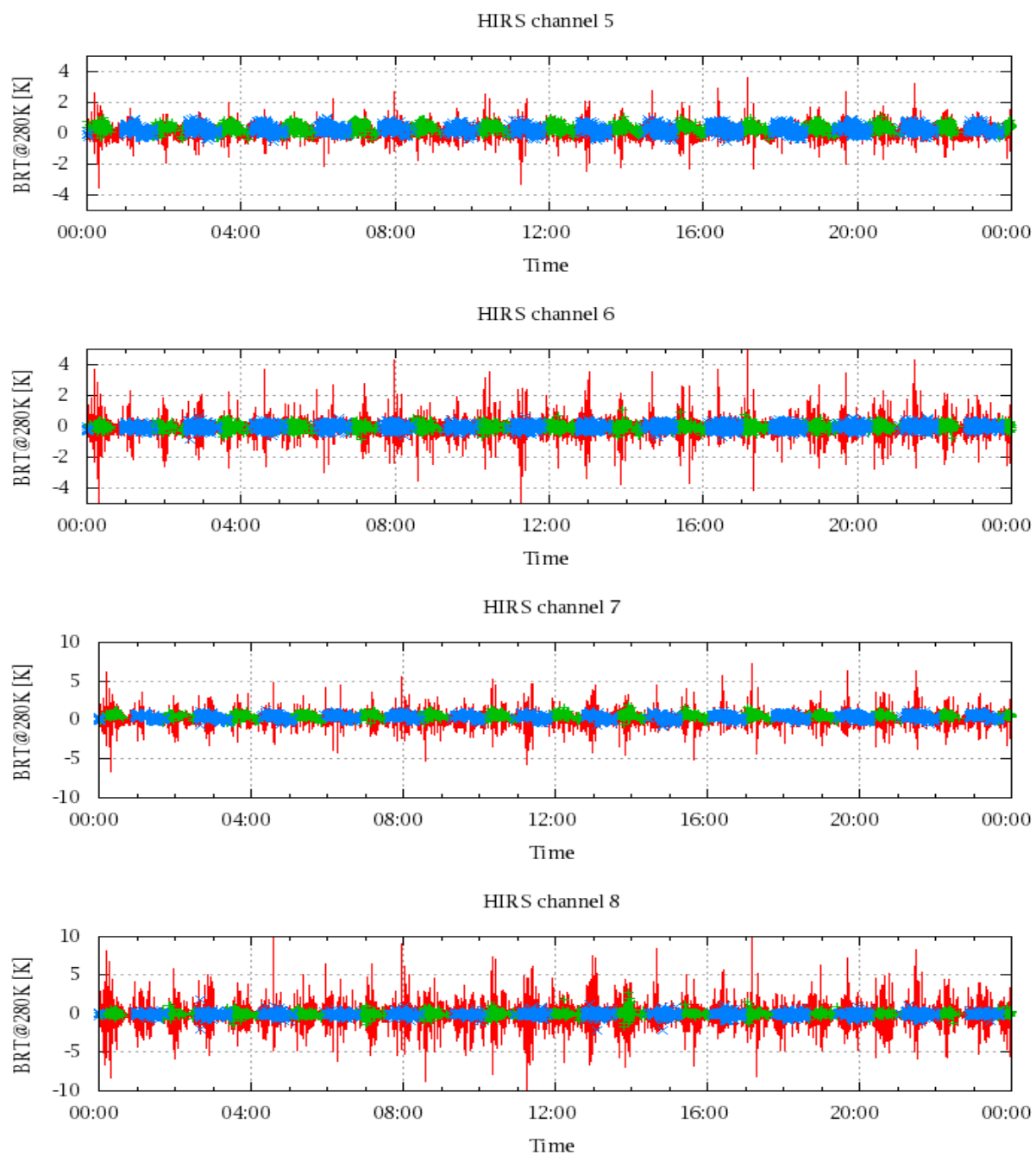


Figure 18: Radiance Differences in BRT

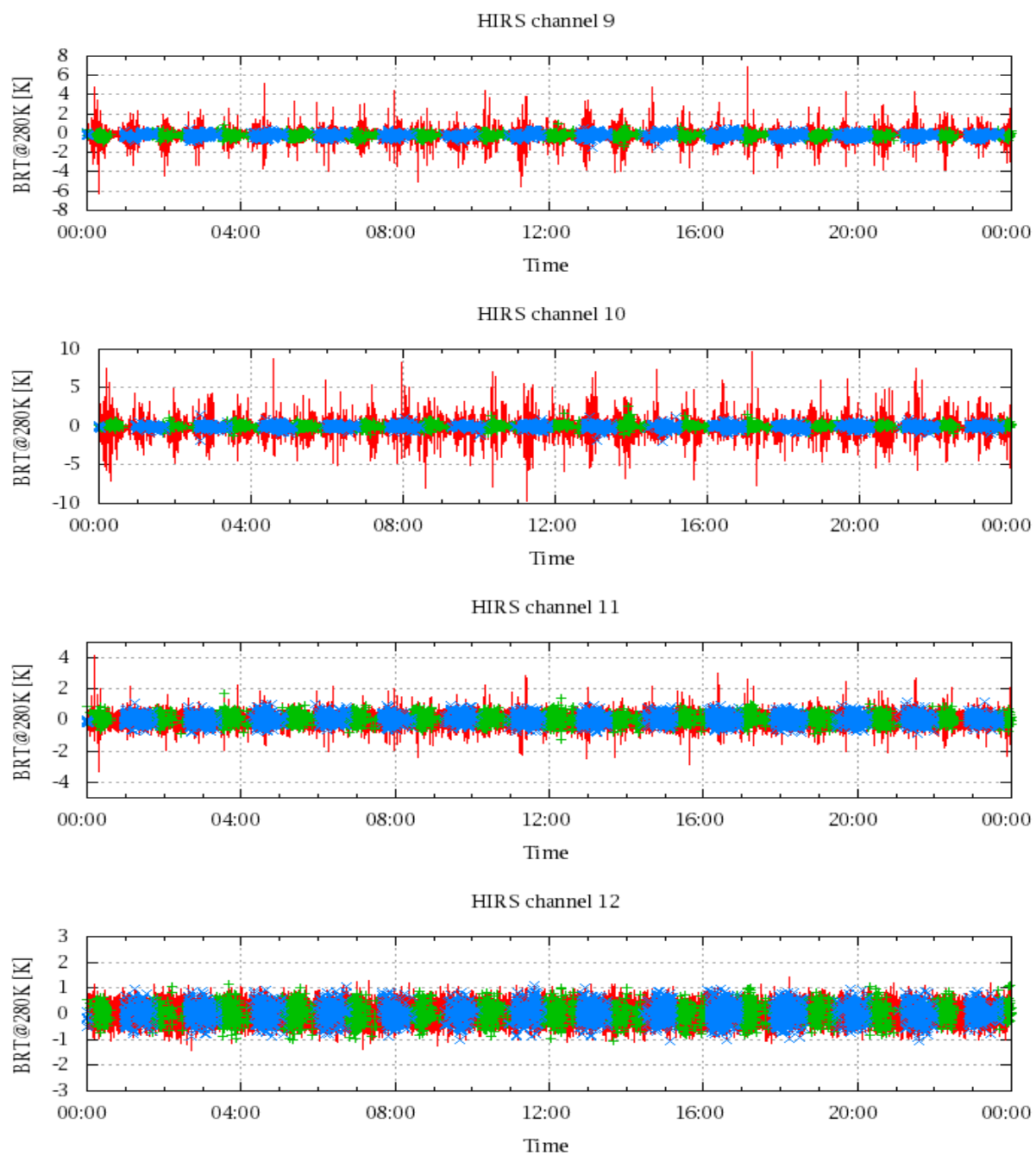


Figure 19: Radiance Differences in BRT

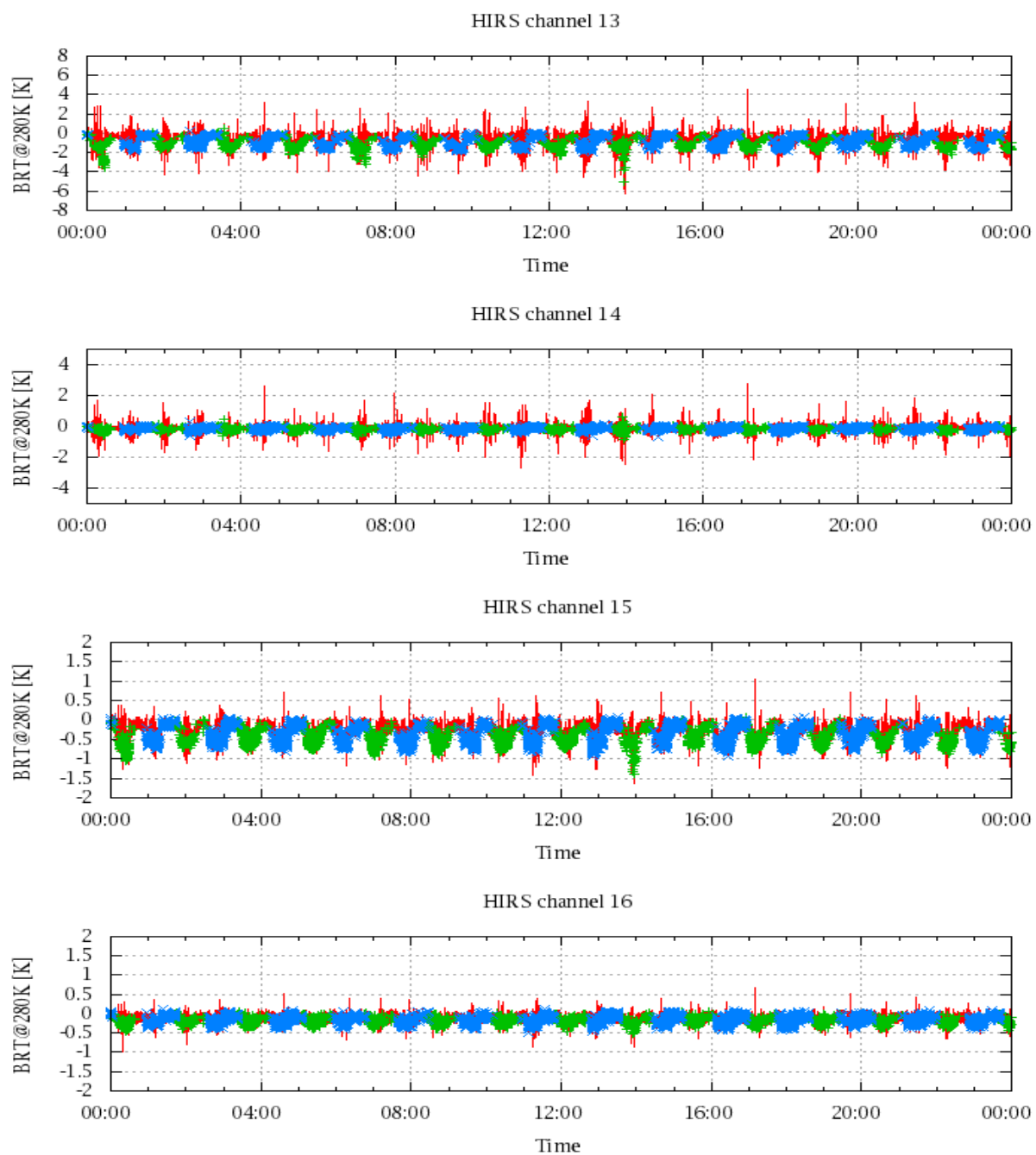


Figure 20: Radiance Differences in BRT

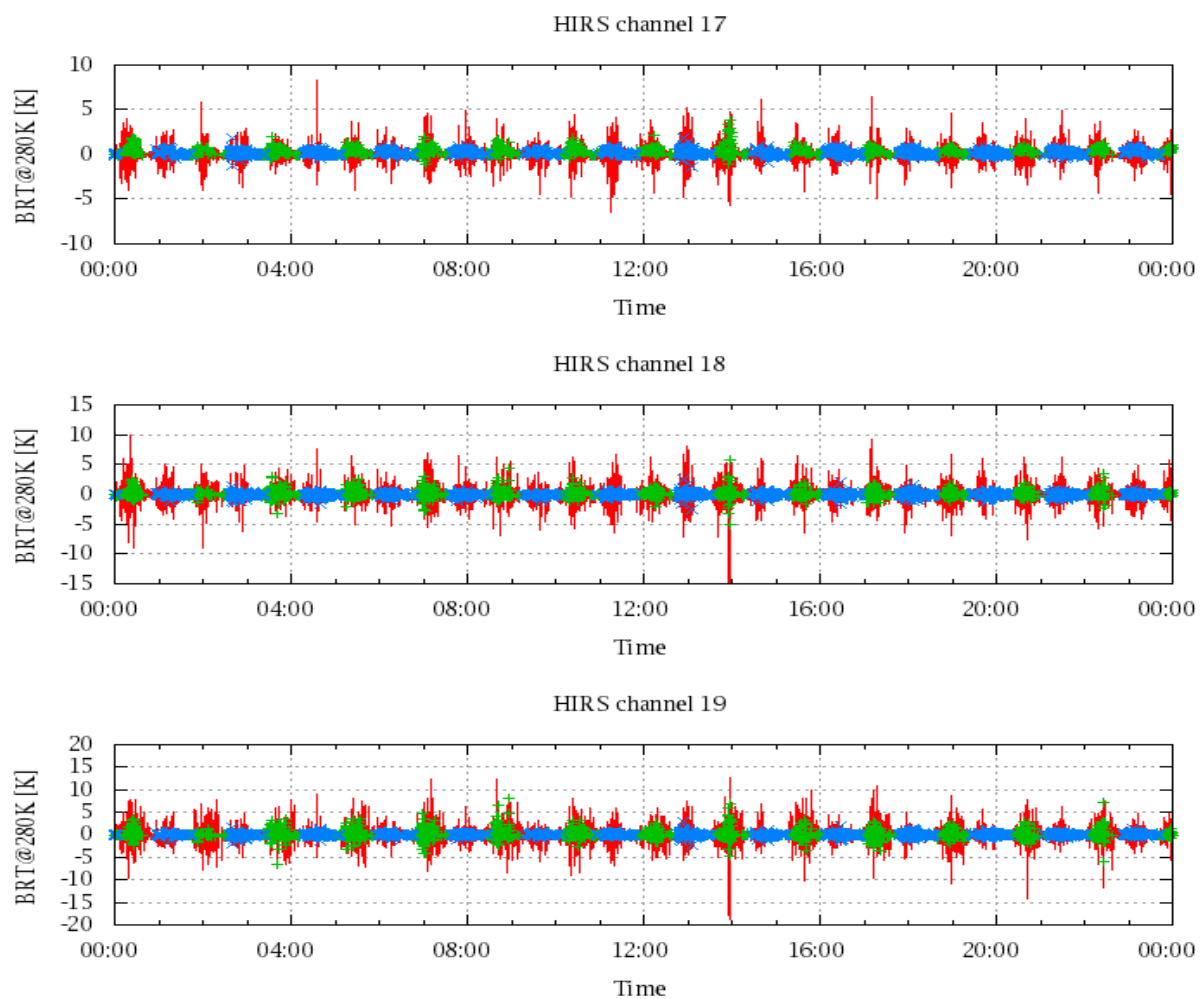


Figure 21: Radinace Differences in BRT