

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

15/11/2013 00:00:00 - 16/11/2013 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 15/11/2013 00:00:00 - 16/11/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 15/11/2013 00:00:00 - 16/11/2013 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	478	-
L0 IASI PDUs	478	-
L1 ENG PDUs	477	-
L1 ENG distinct GEPSGranule	478	-
L1 DPX PDUs (RM: IASI-HIRS)	477	-
L1 DPS Files (RM: OBS-CAL NWP based)	477	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	7455	7469	20131115164057.810	20131115164100.837
PX1 (130)	7514	7673	20131115164112.079	20131115164155.540
PX1 (130)	7730	7778	20131115164210.888	20131115164222.782
PX1 (130)	14094	207	20131115171027.743	20131115172133.237
PX2 (135)	7455	7468	20131115164057.810	20131115164100.622
PX2 (135)	7514	7673	20131115164112.079	20131115164155.540
PX2 (135)	7731	7778	20131115164211.106	20131115164222.782
PX2 (135)	7783	7785	20131115164223.860	20131115164225.809
PX2 (135)	14094	207	20131115171027.743	20131115172133.237
PX3 (140)	7454	7468	20131115164056.079	20131115164100.622
PX3 (140)	7514	7672	20131115164112.079	20131115164155.321
PX3 (140)	7730	7778	20131115164210.888	20131115164222.782
PX3 (140)	7783	7785	20131115164223.860	20131115164225.809
PX3 (140)	14094	207	20131115171027.743	20131115172133.237
PX4 (145)	7455	7468	20131115164057.810	20131115164100.622
PX4 (145)	7514	7672	20131115164112.079	20131115164155.321
PX4 (145)	7675	7677	20131115164155.974	20131115164156.403
PX4 (145)	7731	7778	20131115164211.106	20131115164222.782

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	7783	7785	20131115164223.860	20131115164225.809
PX4 (145)	14093	207	20131115171027.528	20131115172133.237
IMG (150)	12418	12432	20131115164057.376	20131115164100.622
IMG (150)	12482	12664	20131115164112.079	20131115164155.321
IMG (150)	12667	12669	20131115164155.974	20131115164156.403
IMG (150)	12731	12782	20131115164211.106	20131115164222.782
IMG (150)	12787	12789	20131115164223.860	20131115164224.513
IMG (150)	3557	6387	20131115171027.528	20131115172133.237
VER (160)	2119	2148	20131115164112.079	20131115164200.079
VER (160)	2157	2167	20131115164208.079	20131115164224.079
VER (160)	3217	3633	20131115171024.071	20131115172136.050
AUX (180)	13529	13536	20131115164104.513	20131115164200.509
AUX (180)	13537	13539	20131115164208.513	20131115164224.513
AUX (180)	13749	13833	20131115171024.501	20131115172136.483

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
15/11/2013 00:00:07	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	478	-
L1 ENG PDUs	477	-
L1 ENG distinct GEPSGranule	478	-
GQisFlagQual set (PX1)	99.42 %	-
GQisFlagQual set (PX2)	99.38 %	-
GQisFlagQual set (PX3)	99.46 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.43 %	-

Table 4: Quality flags

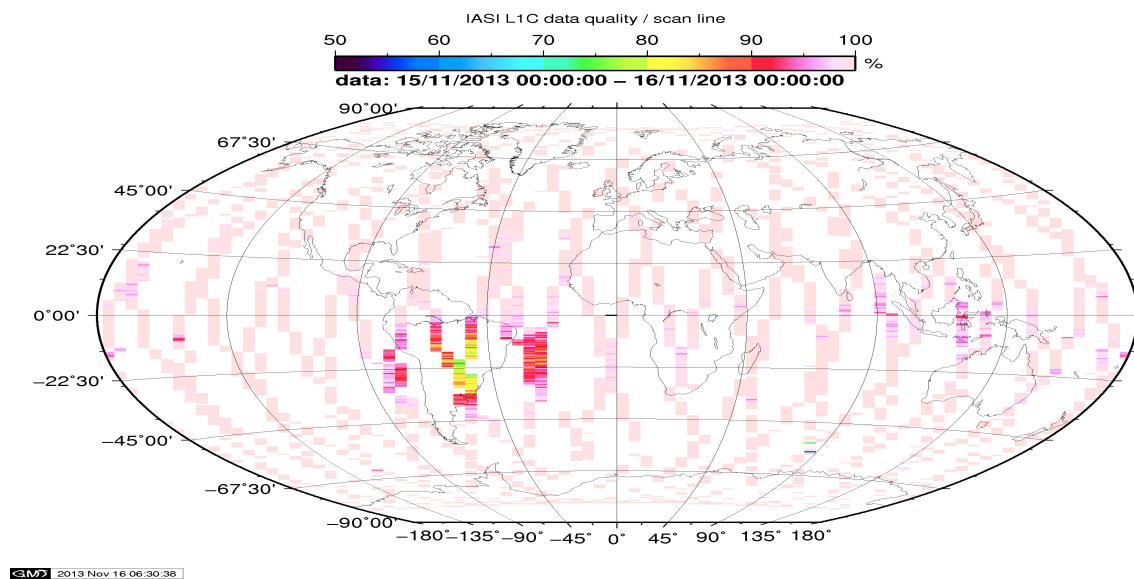


Figure 1: L1C data quality

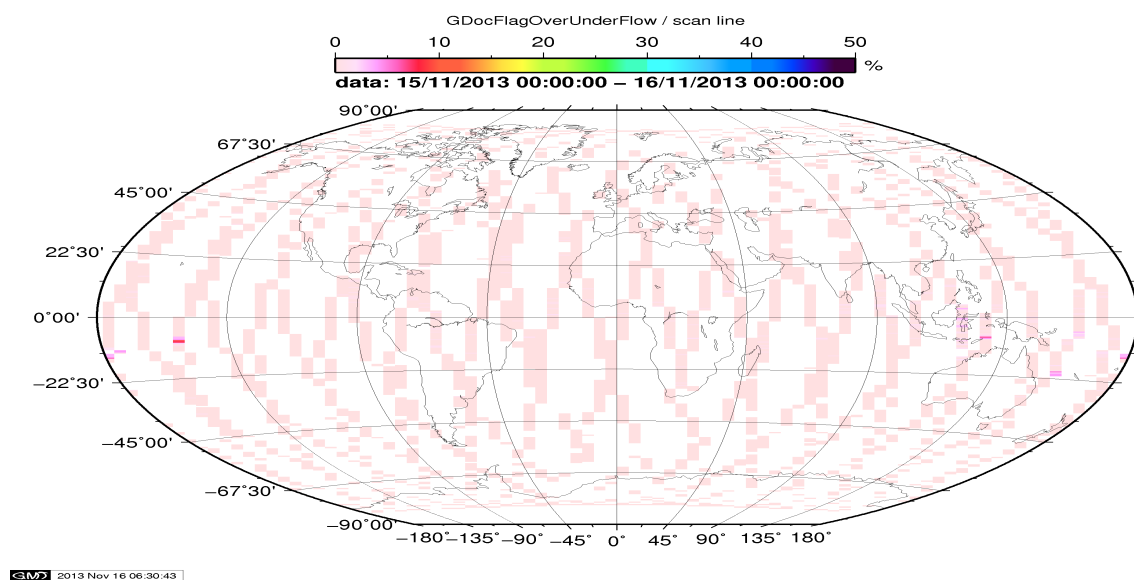


Figure 2: Flag of Over and Under Flows

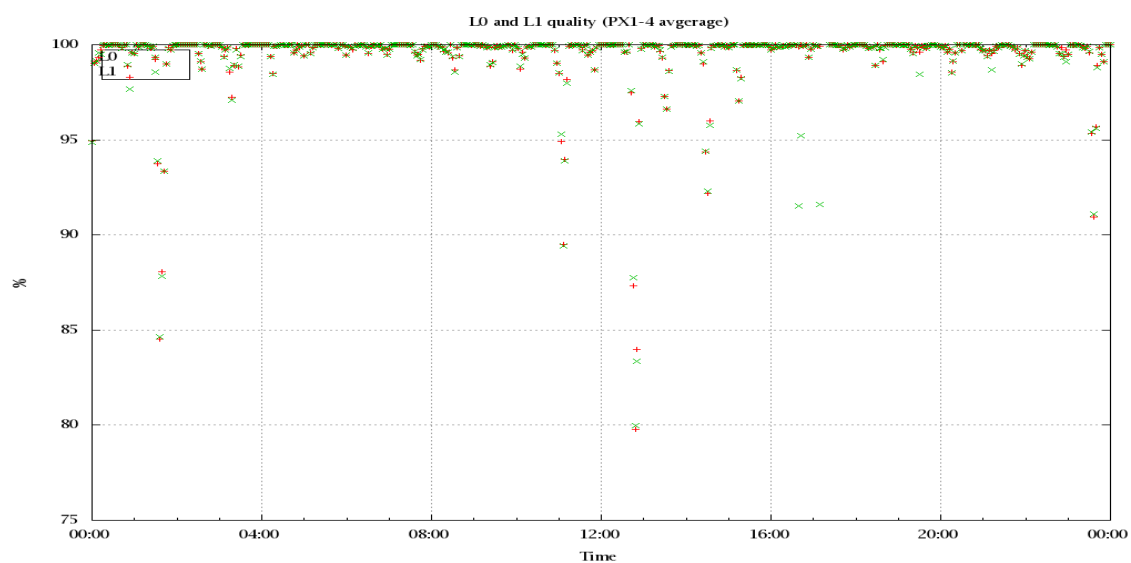


Figure 3: Level 0 and 1C overall quality

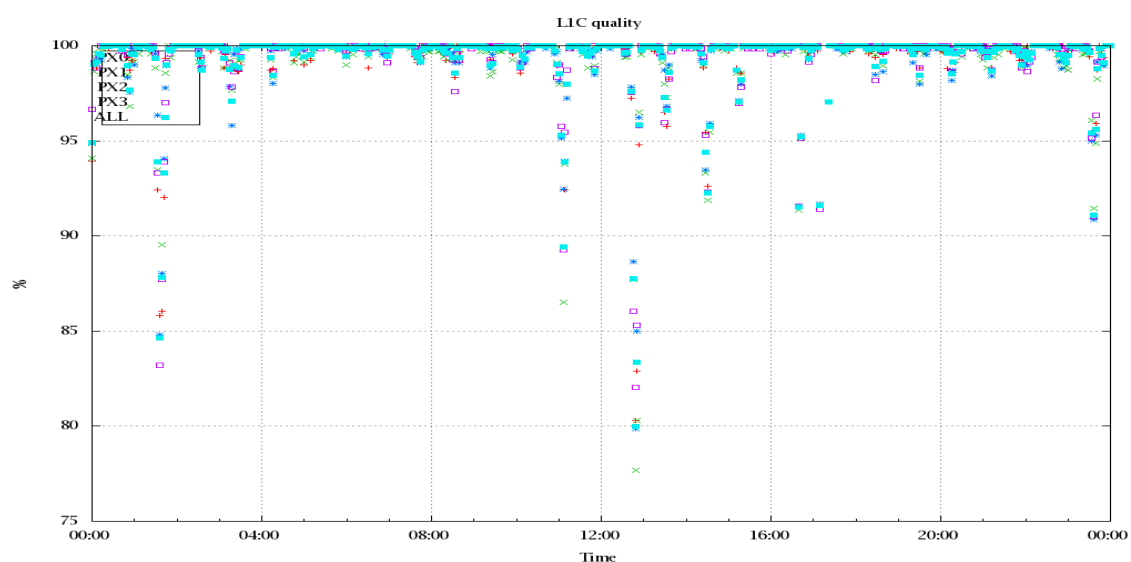


Figure 4: Level 1C quality

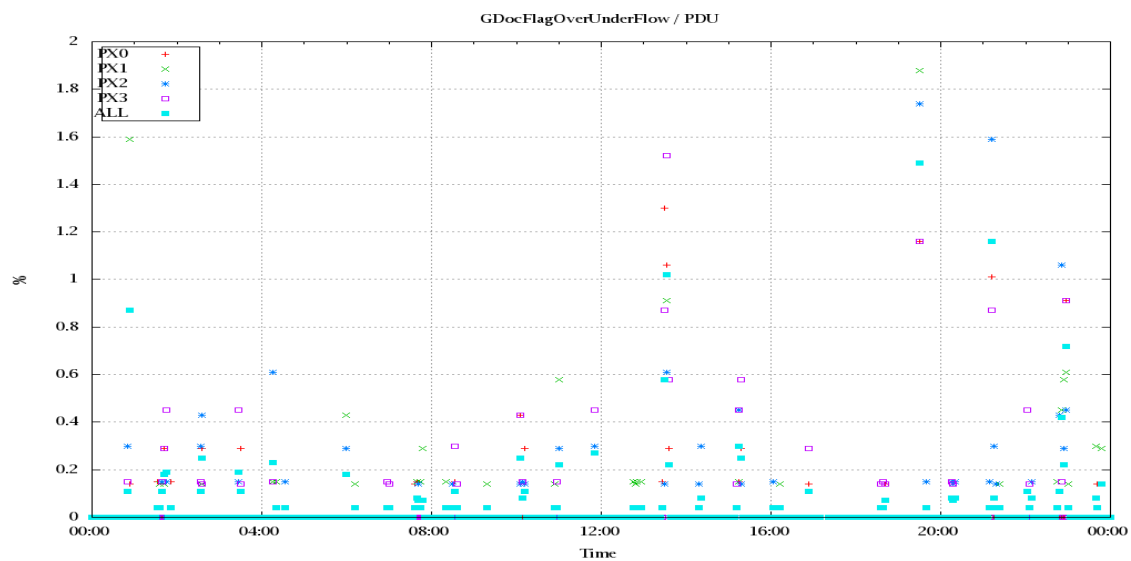


Figure 5: OverUnderFlowFlag timeseries

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.

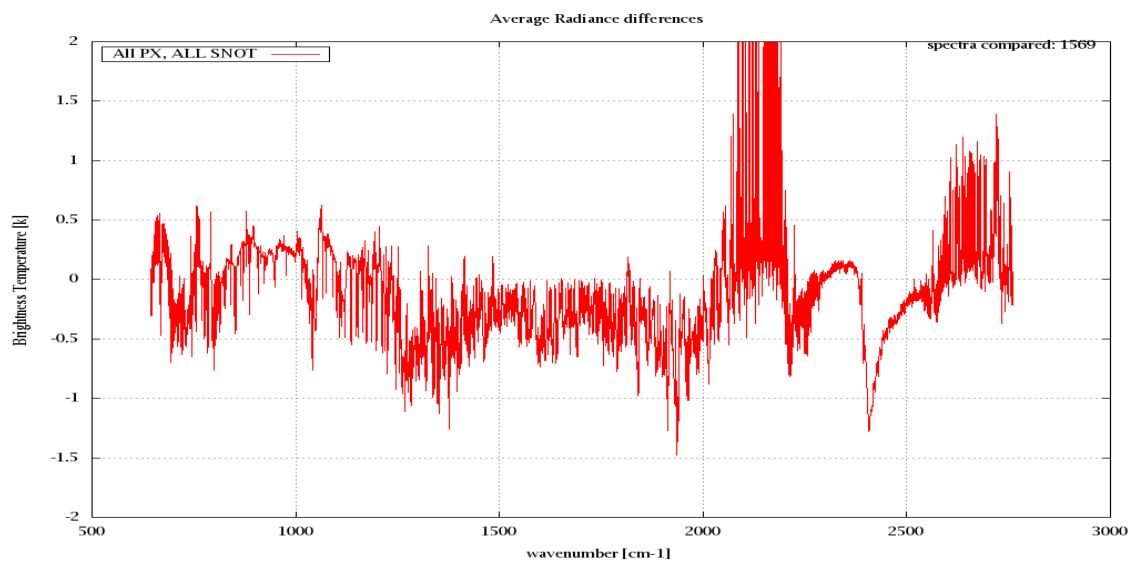


Figure 6: Average Radiance differences: OBS-CAL

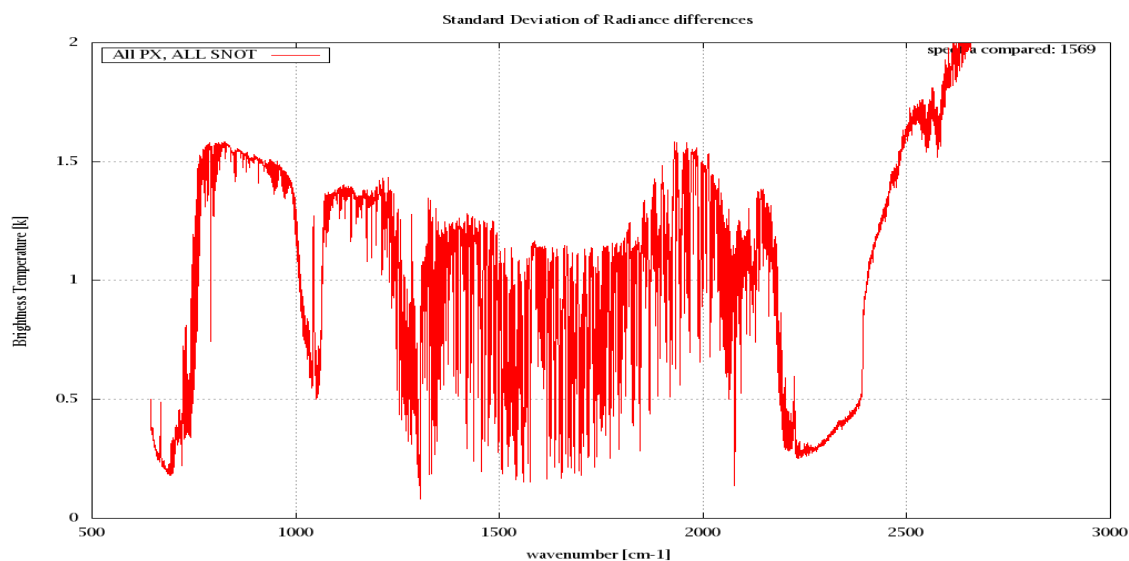


Figure 7: Standard Deviation of Radiance differences

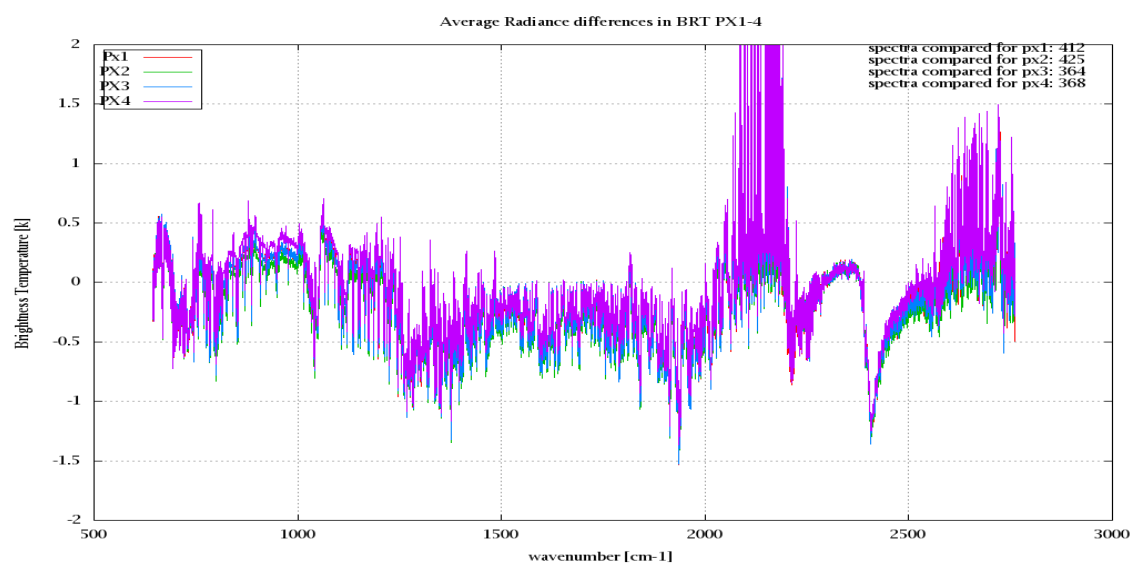


Figure 8: Average Radiance differences: OBS-CAL

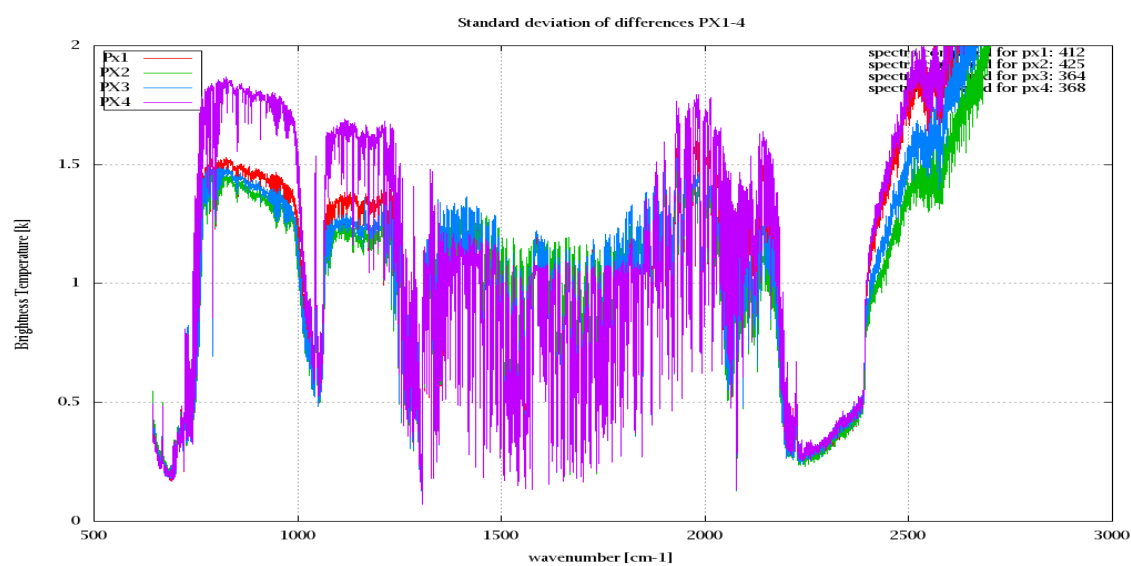


Figure 9: Standard Deviation of Radiance differences

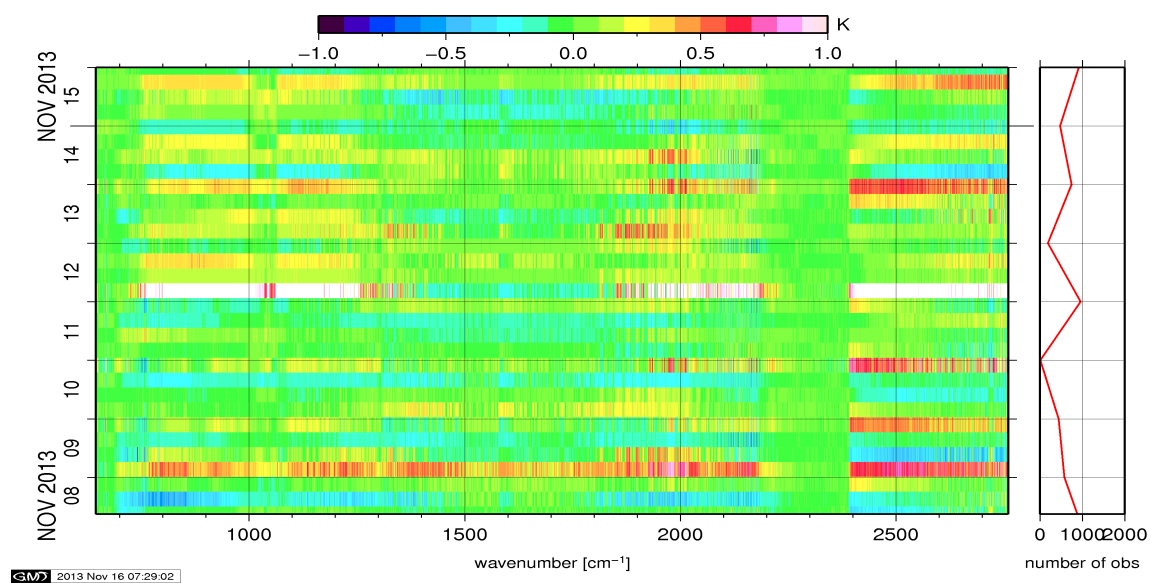


Figure 10: Radiance Anomaly in BRT: All Channels

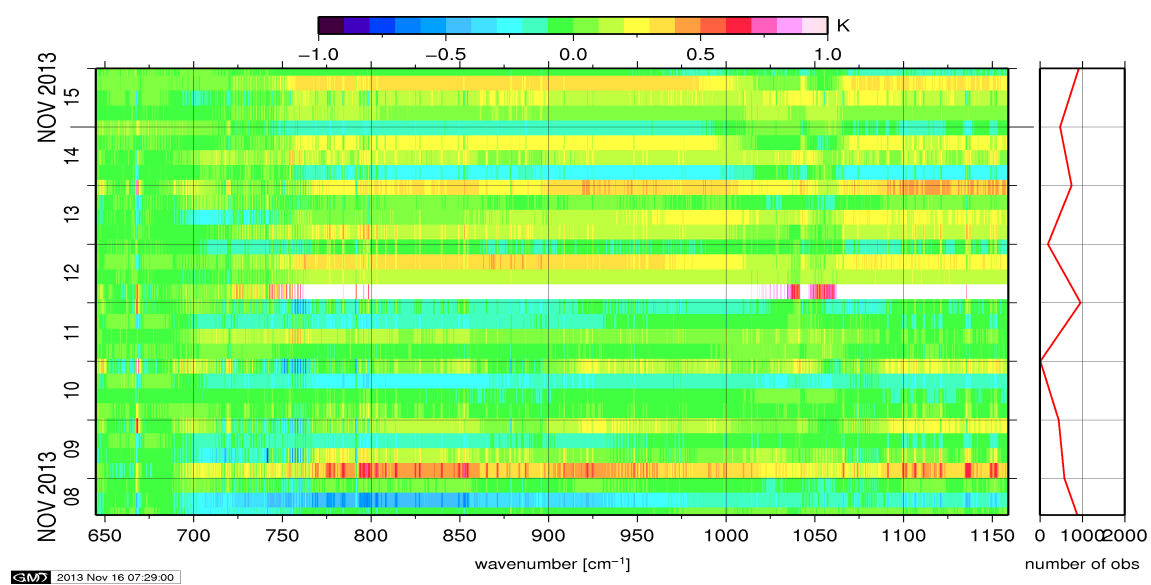


Figure 11: Radiance Anomaly in BRT: IASI Band 1

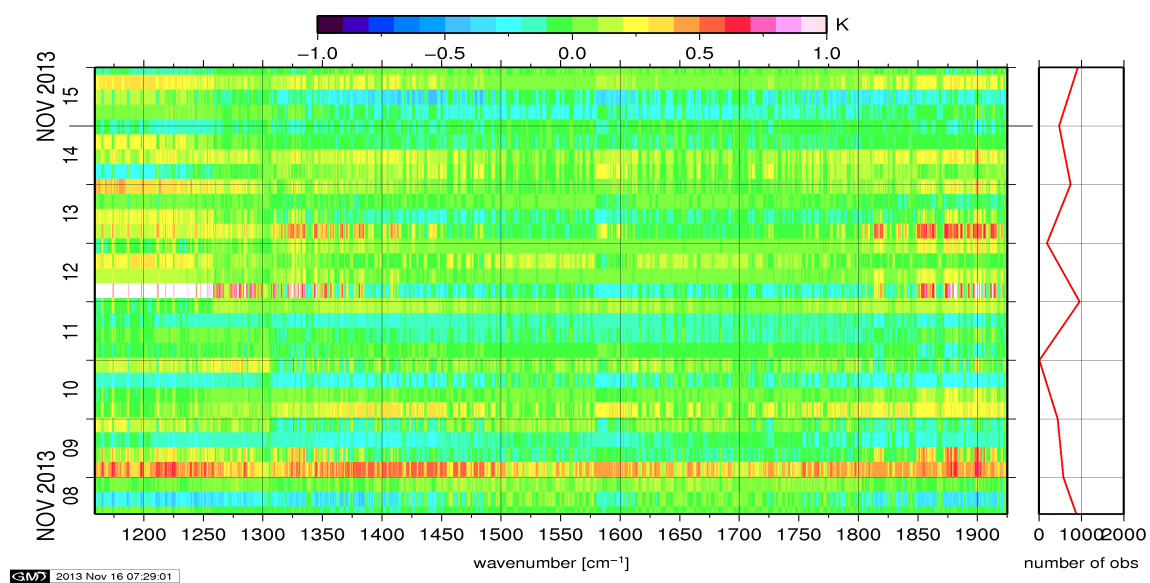


Figure 12: Radiance Anomaly in BRT: IASI Band 2

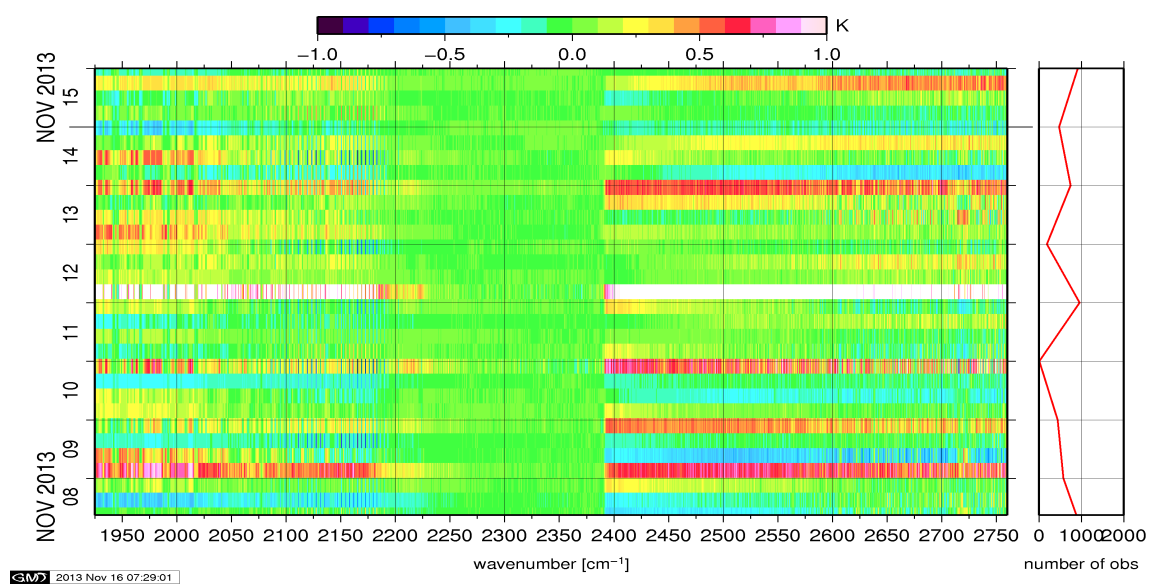


Figure 13: Radiance Anomaly in BRT: IASI Band 3

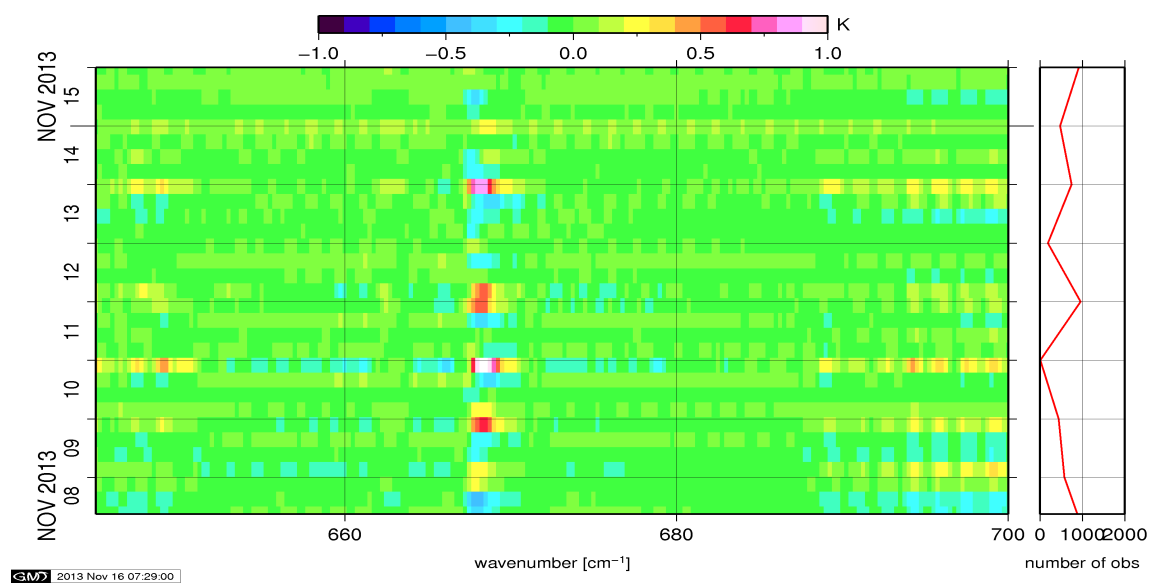


Figure 14: Radiance Anomaly in BRT: CO2 14

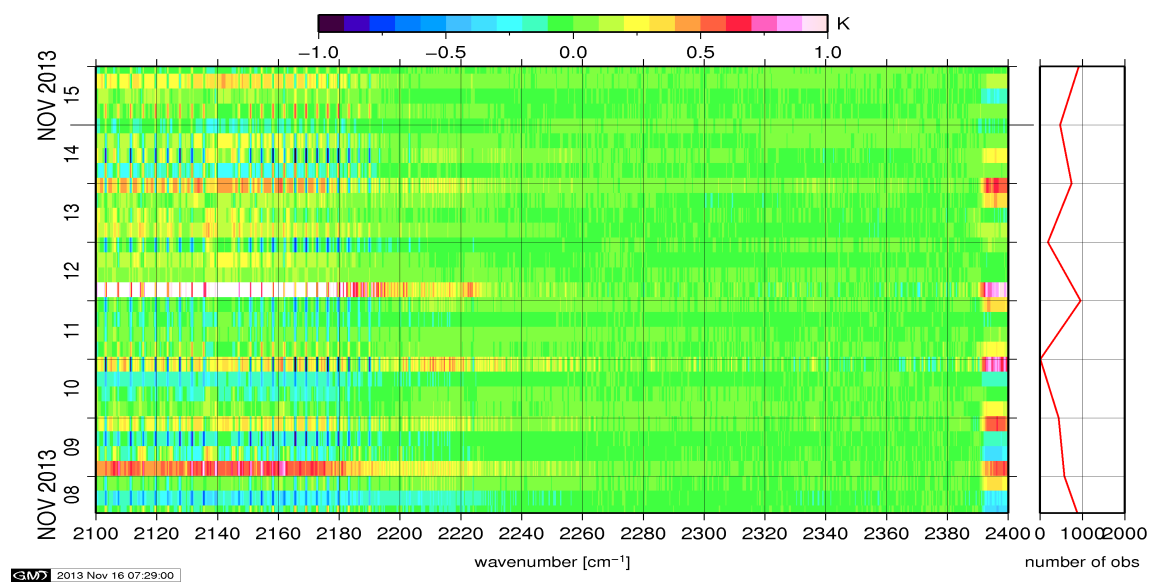


Figure 15: Radiance Anomaly in BRT: CO2 4.3

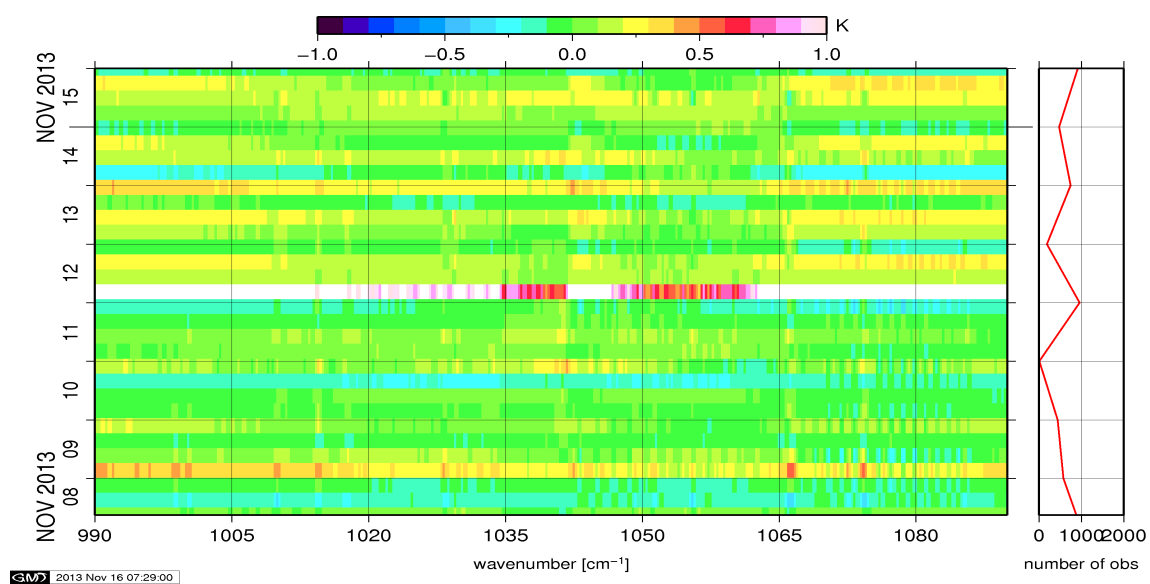


Figure 16: Radiance Anomaly in BRT: O3

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.

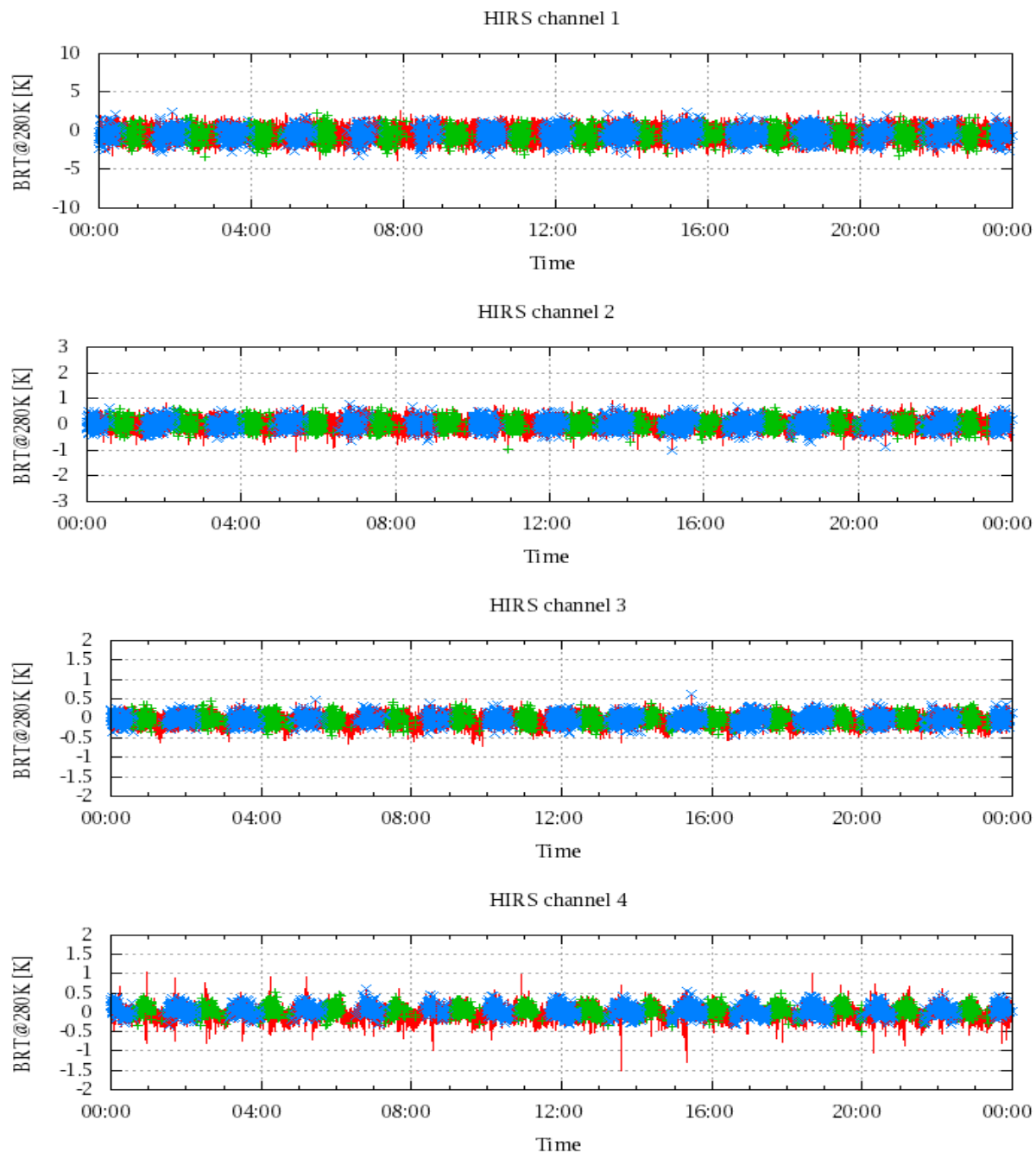


Figure 17: Radiance Differences in BRT

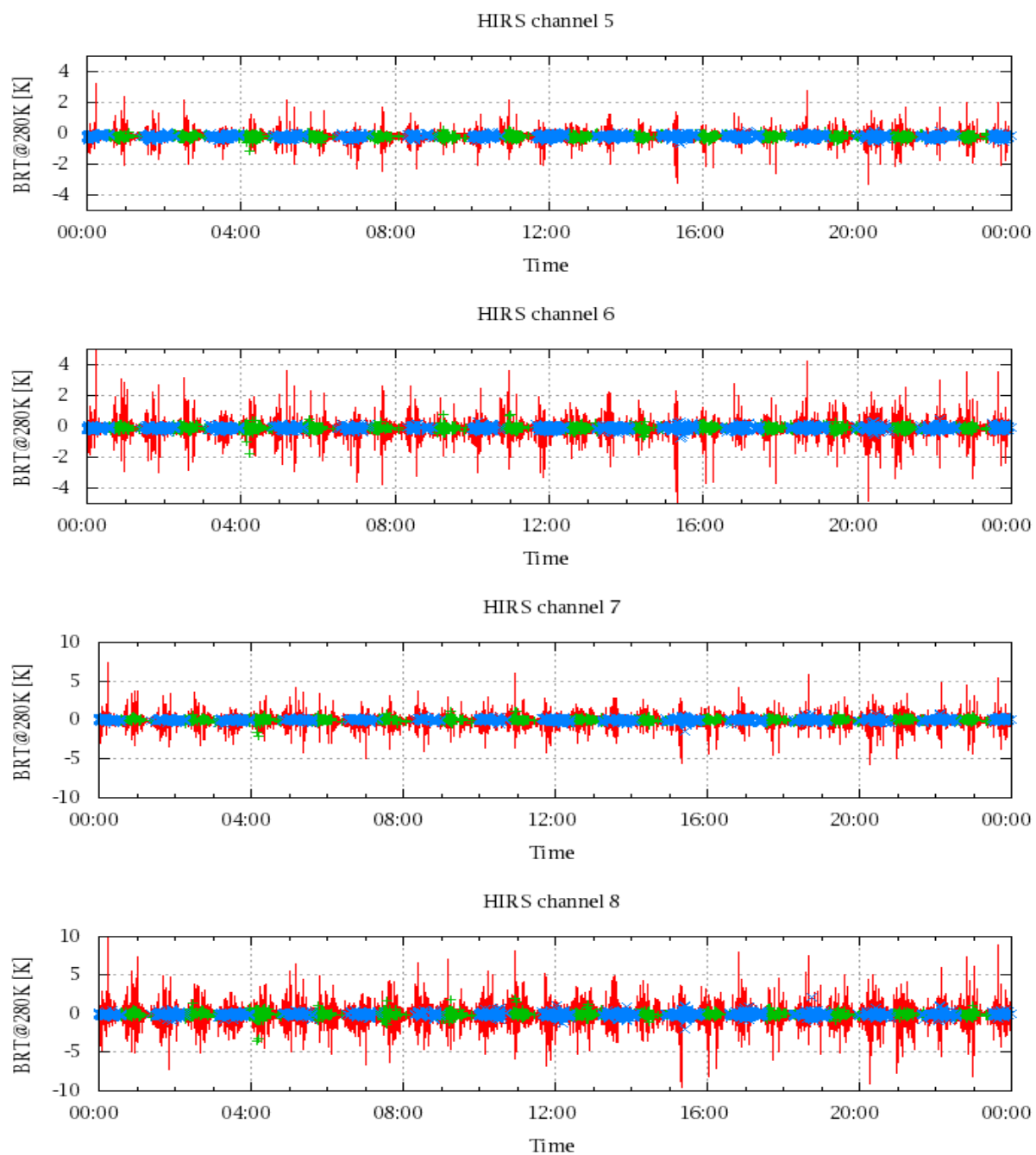


Figure 18: Radiance Differences in BRT

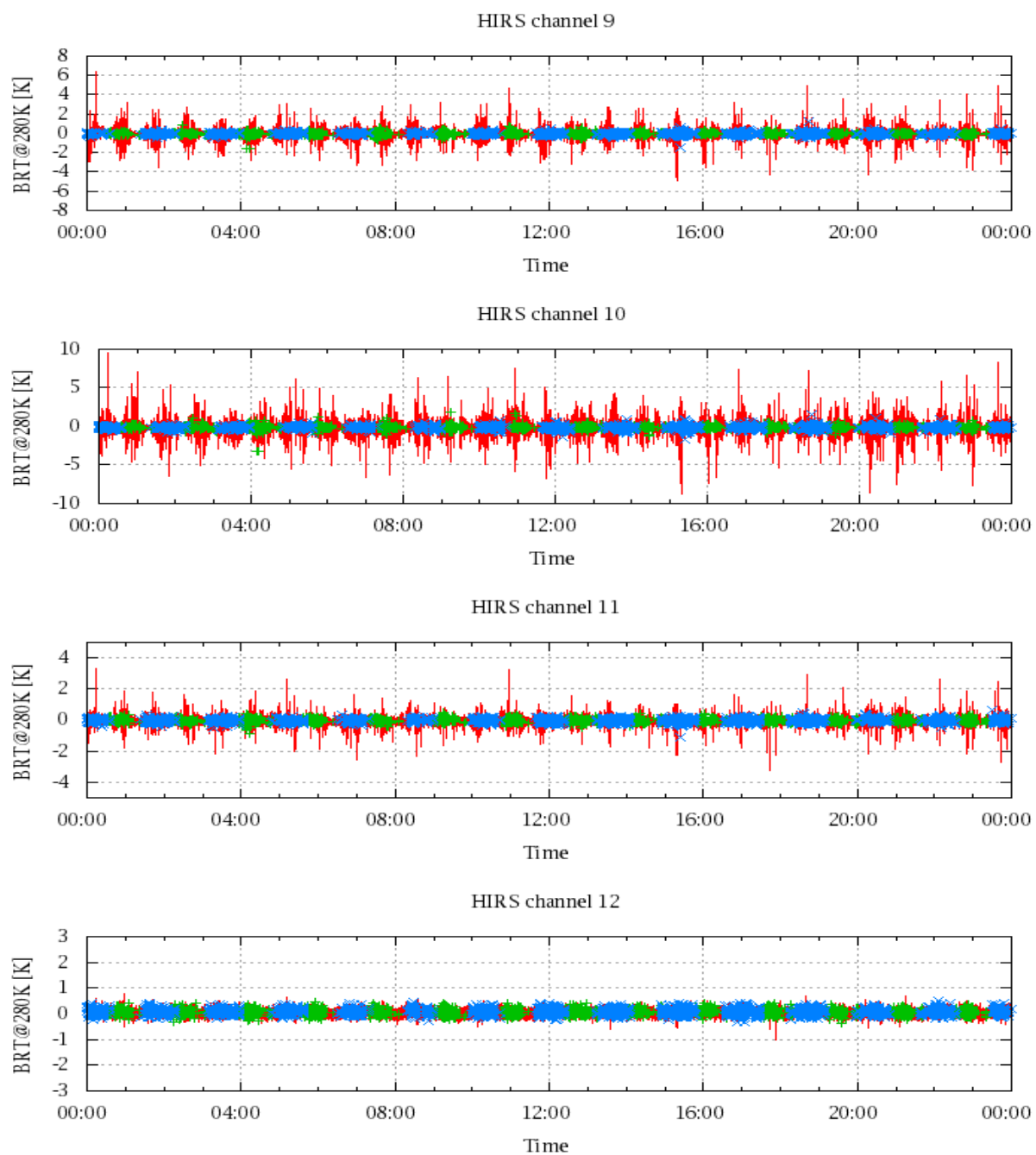


Figure 19: Radiance Differences in BRT

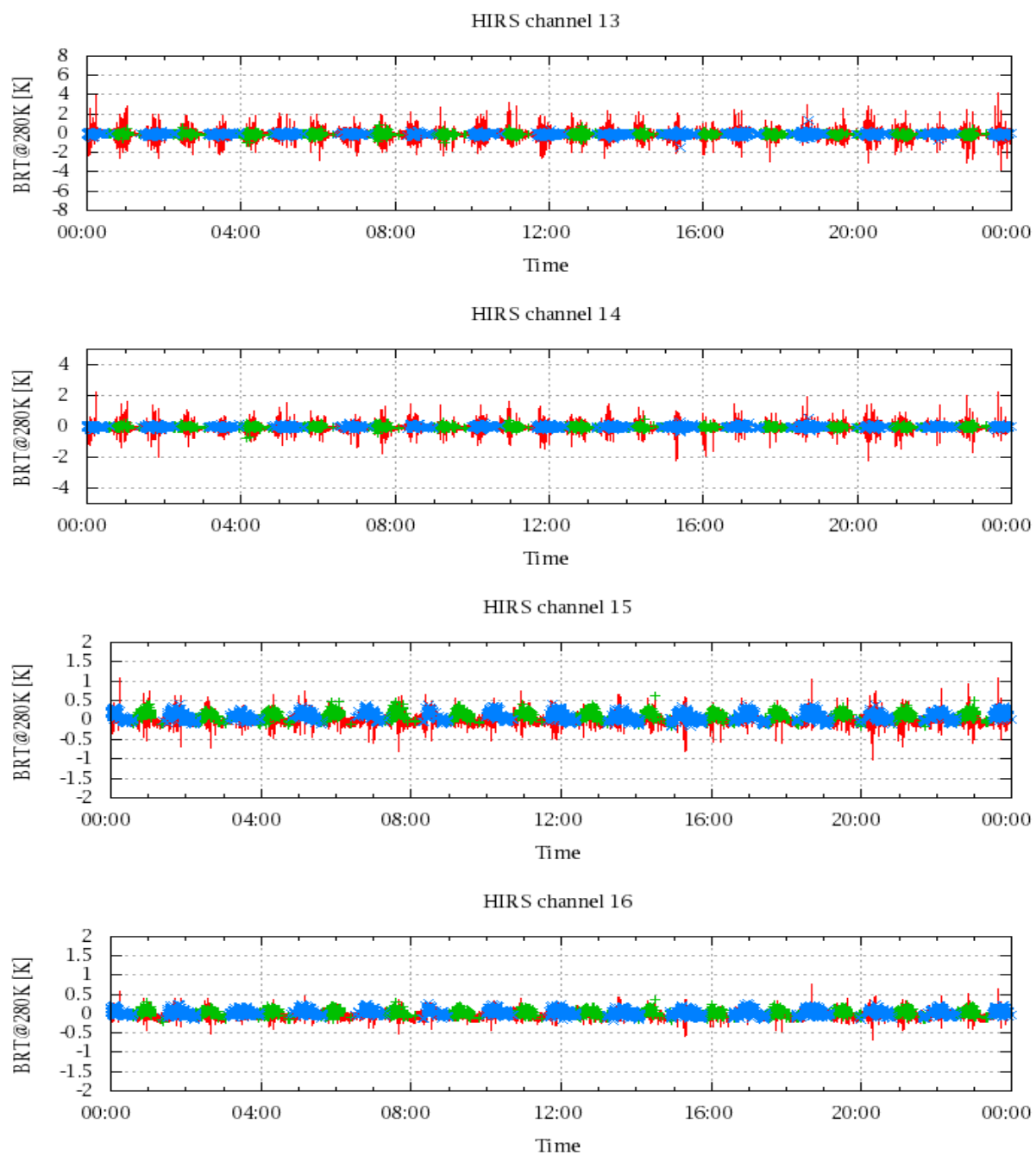


Figure 20: Radiance Differences in BRT

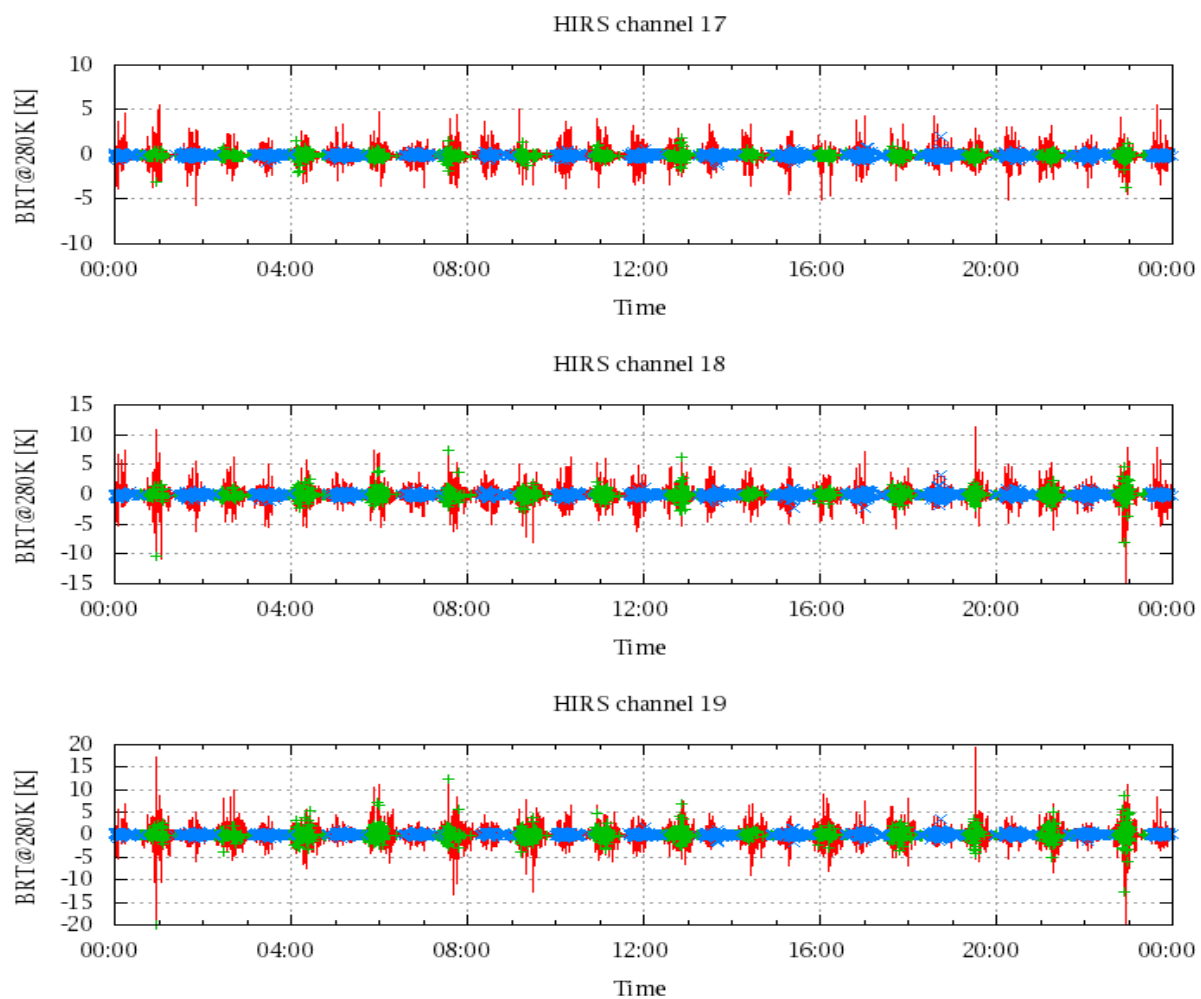


Figure 21: Radinace Differences in BRT