

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

14/12/2013 00:00:00 - 15/12/2013 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 14/12/2013 00:00:00 - 15/12/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 14/12/2013 00:00:00 - 15/12/2013 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)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	1897	1904	20131214164107.968	20131214164109.479
PX1 (130)	1951	1956	20131214164121.155	20131214164123.749
PX1 (130)	1982	1994	20131214164129.397	20131214164133.518
PX1 (130)	2018	2021	20131214164140.222	20131214164140.870
PX1 (130)	2021	2047	20131214164140.870	20131214164148.003
PX1 (130)	2101	2128	20131214164201.194	20131214164208.546
PX1 (130)	2165	2176	20131214164218.057	20131214164221.948
PX1 (130)	2195	2211	20131214164226.057	20131214164231.030
PX2 (135)	1896	1904	20131214164107.753	20131214164109.479
PX2 (135)	1950	1956	20131214164120.940	20131214164123.749
PX2 (135)	1982	1994	20131214164129.397	20131214164133.518
PX2 (135)	2020	2047	20131214164140.651	20131214164148.003
PX2 (135)	2100	2128	20131214164200.975	20131214164208.546
PX2 (135)	2165	2173	20131214164218.057	20131214164221.300
PX2 (135)	2173	2175	20131214164221.300	20131214164221.733
PX2 (135)	2195	2211	20131214164226.057	20131214164231.030
PX3 (140)	1896	1903	20131214164107.753	20131214164109.265
PX3 (140)	1950	1956	20131214164120.940	20131214164123.749

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	1982	1994	20131214164129.397	20131214164133.518
PX3 (140)	2018	2047	20131214164140.222	20131214164148.003
PX3 (140)	2097	2099	20131214164200.327	20131214164200.761
PX3 (140)	2100	2127	20131214164200.975	20131214164208.327
PX3 (140)	2165	2175	20131214164218.057	20131214164221.733
PX3 (140)	2195	2211	20131214164226.057	20131214164231.030
PX3 (140)	2211	2213	20131214164231.030	20131214164231.464
PX4 (145)	1896	1903	20131214164107.753	20131214164109.265
PX4 (145)	1951	1956	20131214164121.155	20131214164123.749
PX4 (145)	1982	1993	20131214164129.397	20131214164133.300
PX4 (145)	2018	2020	20131214164140.222	20131214164140.651
PX4 (145)	2020	2046	20131214164140.651	20131214164147.788
PX4 (145)	2098	2100	20131214164200.542	20131214164200.975
PX4 (145)	2100	2127	20131214164200.975	20131214164208.327
PX4 (145)	2165	2175	20131214164218.057	20131214164221.733
PX4 (145)	2195	2213	20131214164226.057	20131214164231.464
IMG (150)	13640	13647	20131214164107.753	20131214164109.265
IMG (150)	13698	13704	20131214164120.940	20131214164122.452
IMG (150)	13733	13749	20131214164129.179	20131214164133.300
IMG (150)	13779	13809	20131214164140.436	20131214164147.354
IMG (150)	13813	13815	20131214164148.436	20131214164148.870
IMG (150)	13850	13852	20131214164157.085	20131214164157.518
IMG (150)	13866	13868	20131214164200.542	20131214164200.975
IMG (150)	13869	13899	20131214164201.194	20131214164208.327
IMG (150)	13941	13954	20131214164218.057	20131214164221.518
IMG (150)	13975	13996	20131214164226.057	20131214164231.245
VER (160)	10616	10618	20131214164114.022	20131214164121.155
VER (160)	10621	10627	20131214164121.155	20131214164138.058
VER (160)	10631	10636	20131214164138.058	20131214164140.870
VER (160)	10636	10638	20131214164140.870	20131214164154.057
VER (160)	10641	10647	20131214164154.057	20131214164210.057
VER (160)	10653	10662	20131214164218.057	20131214164234.057
AUX (180)	15225	15227	20131214164122.452	20131214164138.491
AUX (180)	15229	15231	20131214164154.491	20131214164210.491
AUX (180)	15231	15234	20131214164210.491	20131214164234.491

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
14/12/2013 00:00:01	-	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)	99.41 %	-
GQisFlagQual set (PX2)	99.40 %	-
GQisFlagQual set (PX3)	99.45 %	-
GQisFlagQual set (PX4)	99.46 %	-
GQisFlagQual set (all)	99.43 %	-

Table 4: Quality flags

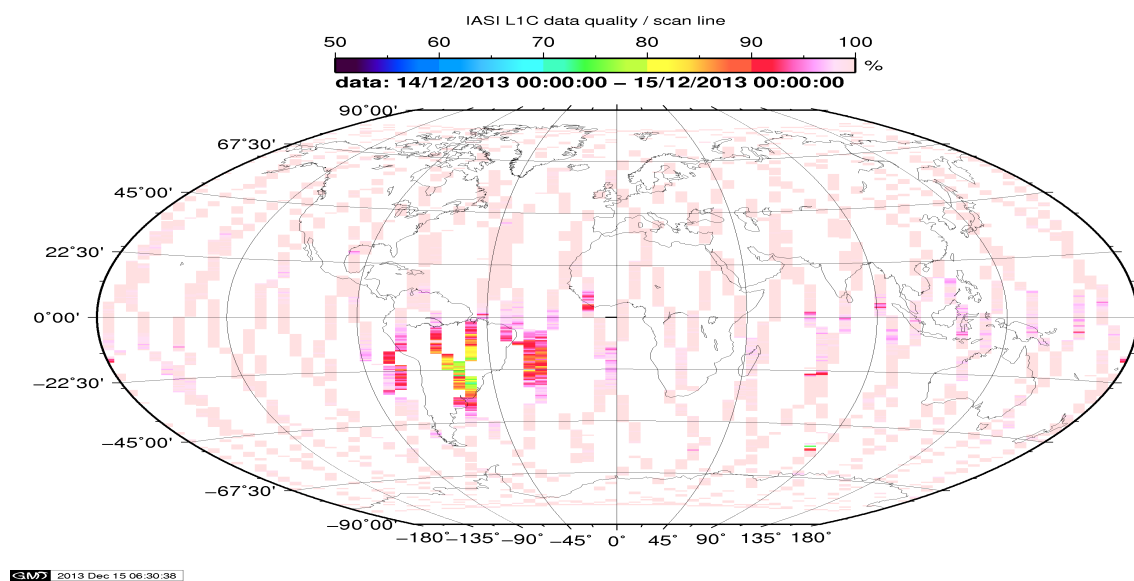


Figure 1: L1C data quality

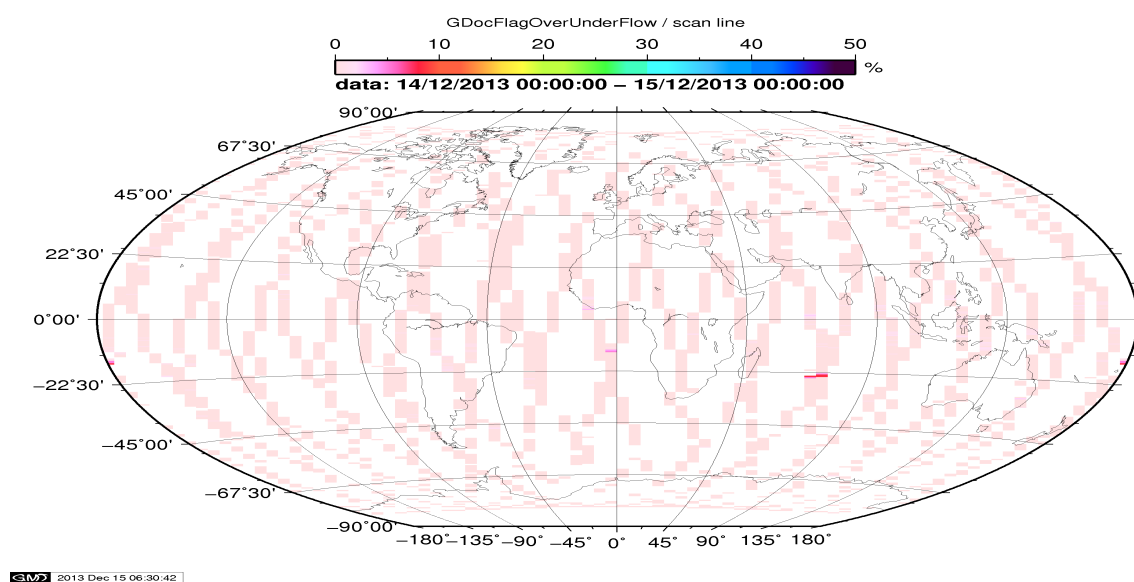


Figure 2: Flag of Over and Under Flows

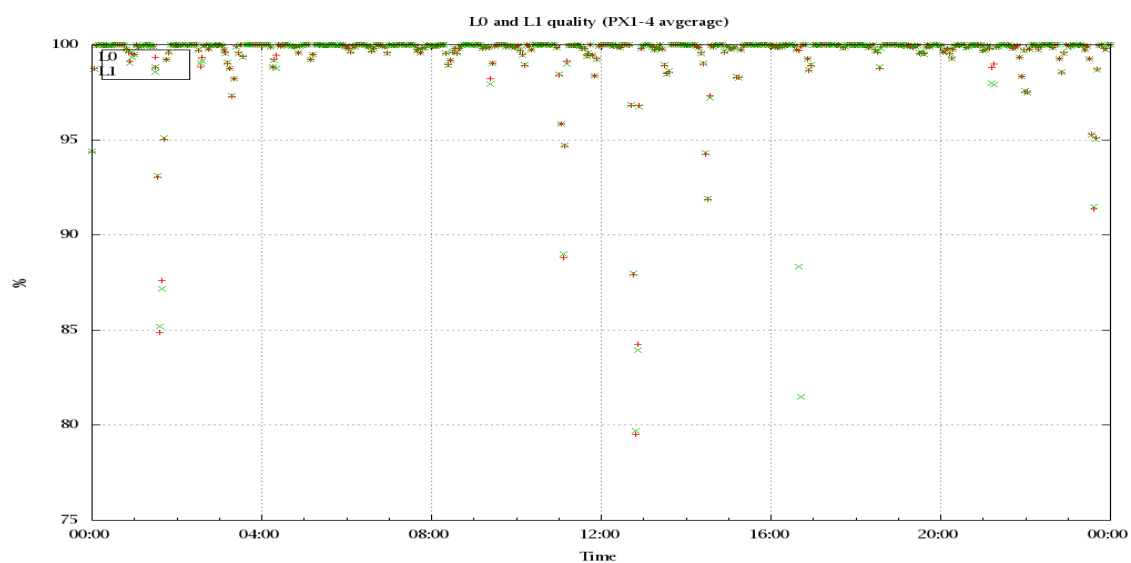


Figure 3: Level 0 and 1C overall quality

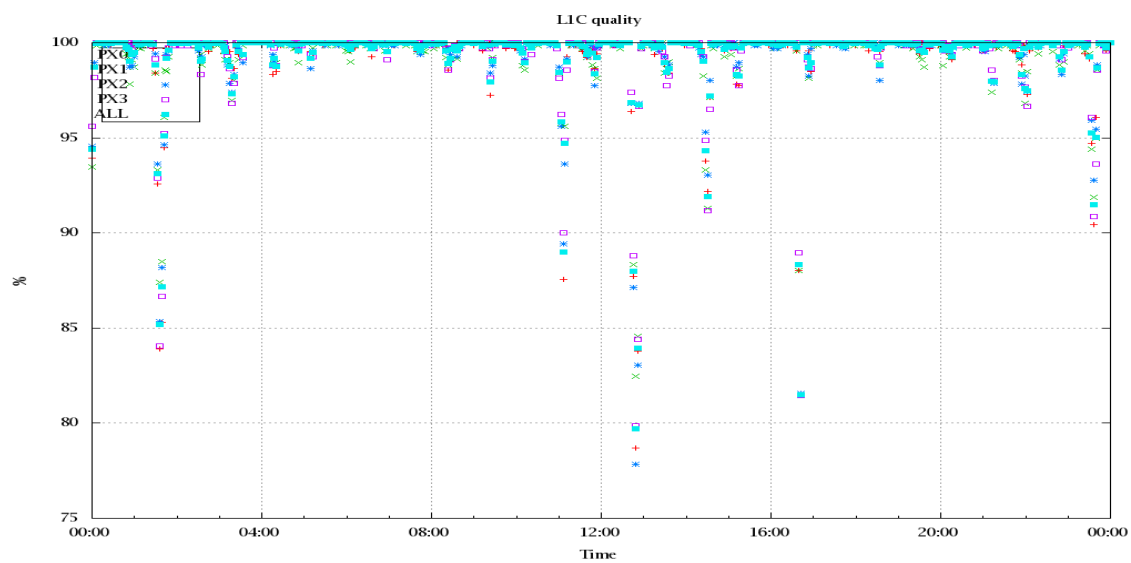


Figure 4: Level 1C quality

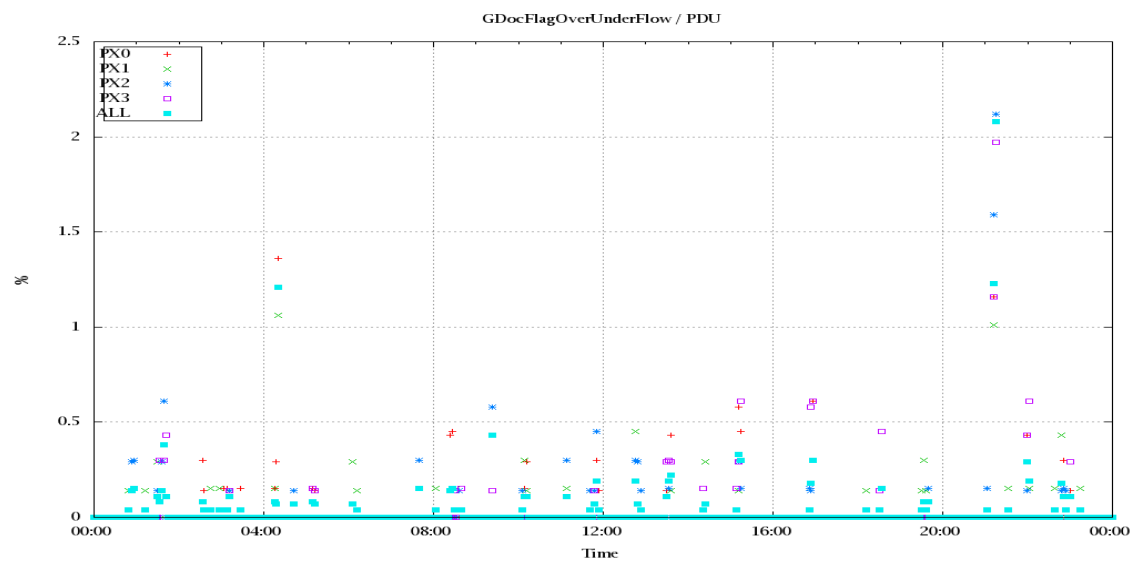


Figure 5: OverUnderFlowFlag timeseries

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.

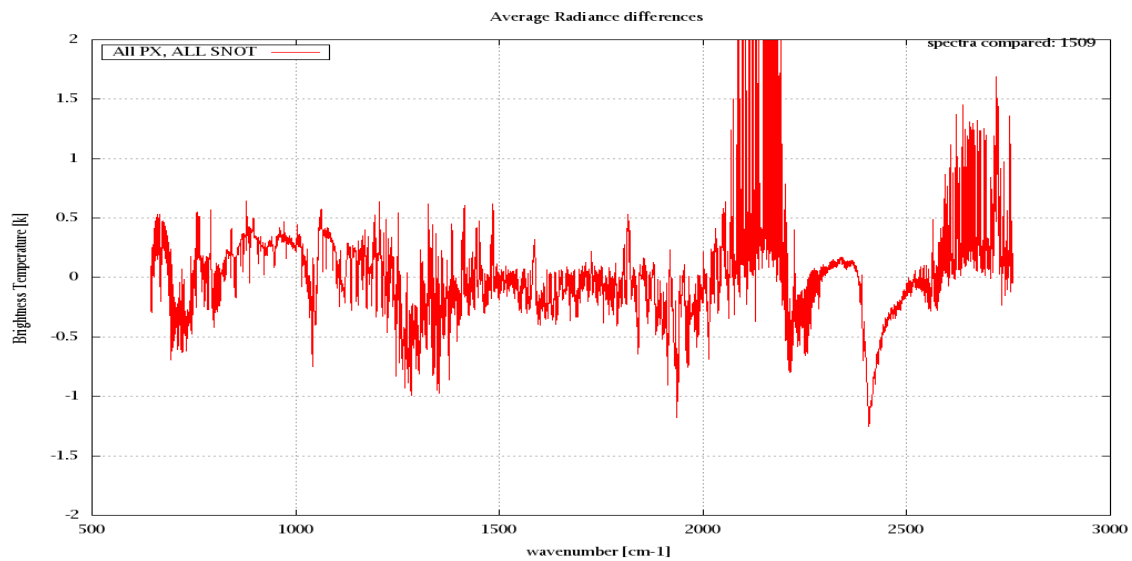


Figure 6: Average Radiance differences: OBS-CAL

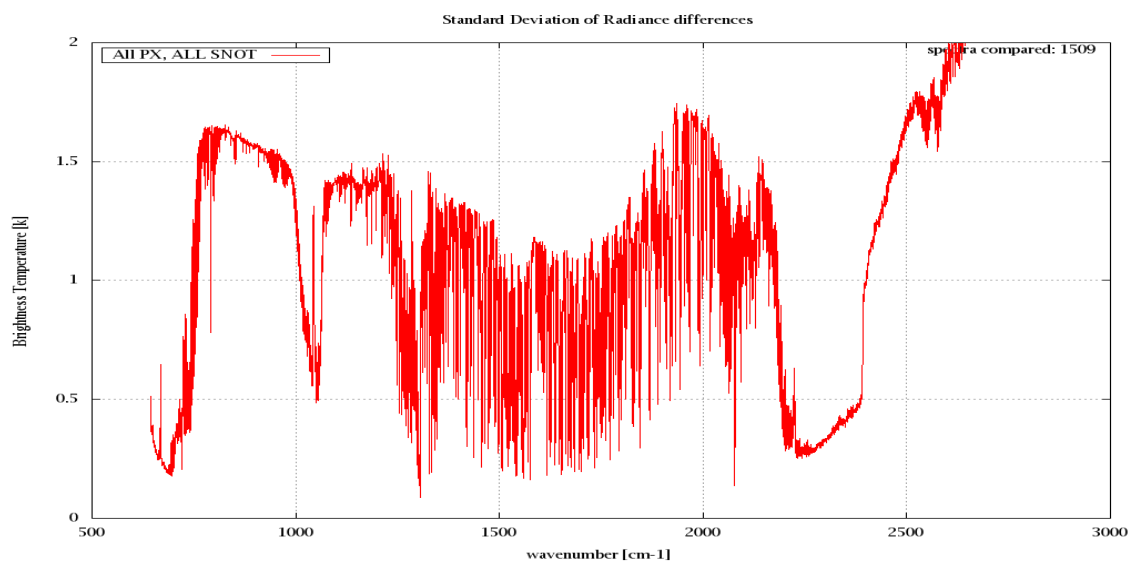


Figure 7: Standard Deviation of Radiance differences

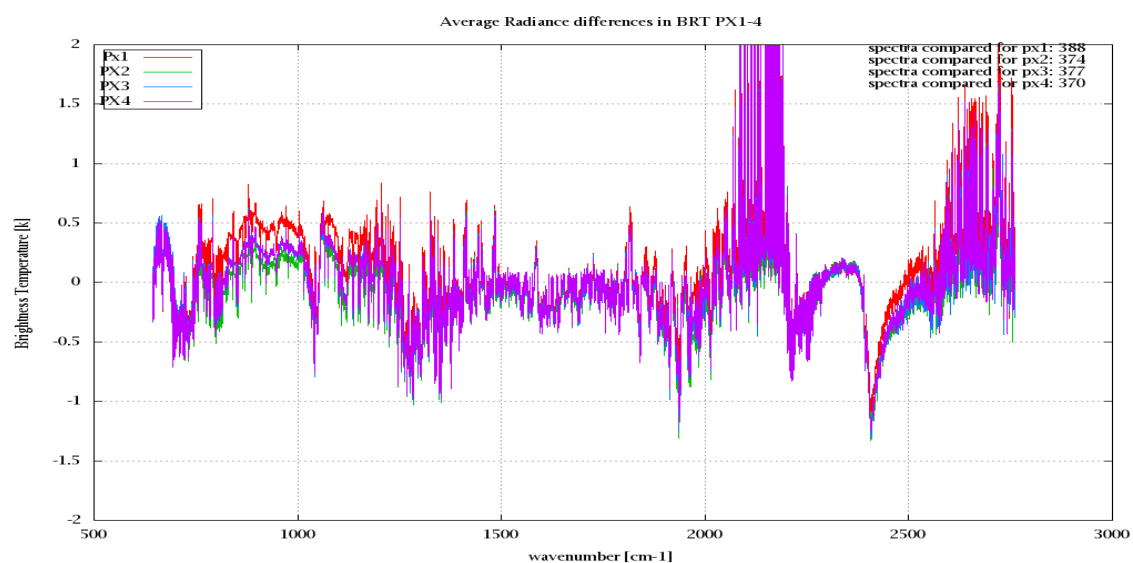


Figure 8: Average Radiance differences: OBS-CAL

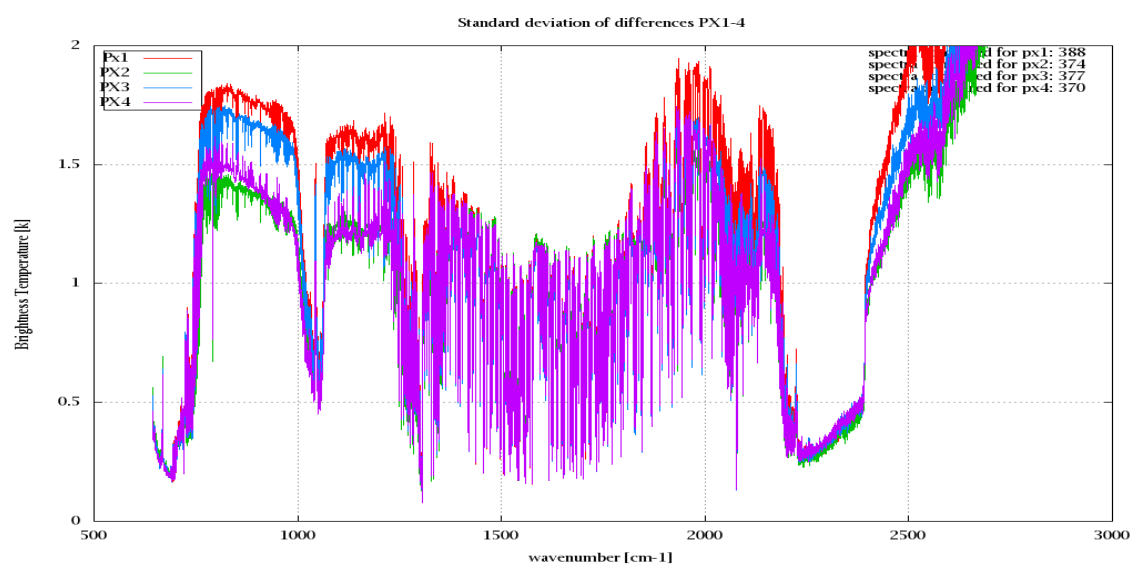


Figure 9: Standard Deviation of Radiance differences

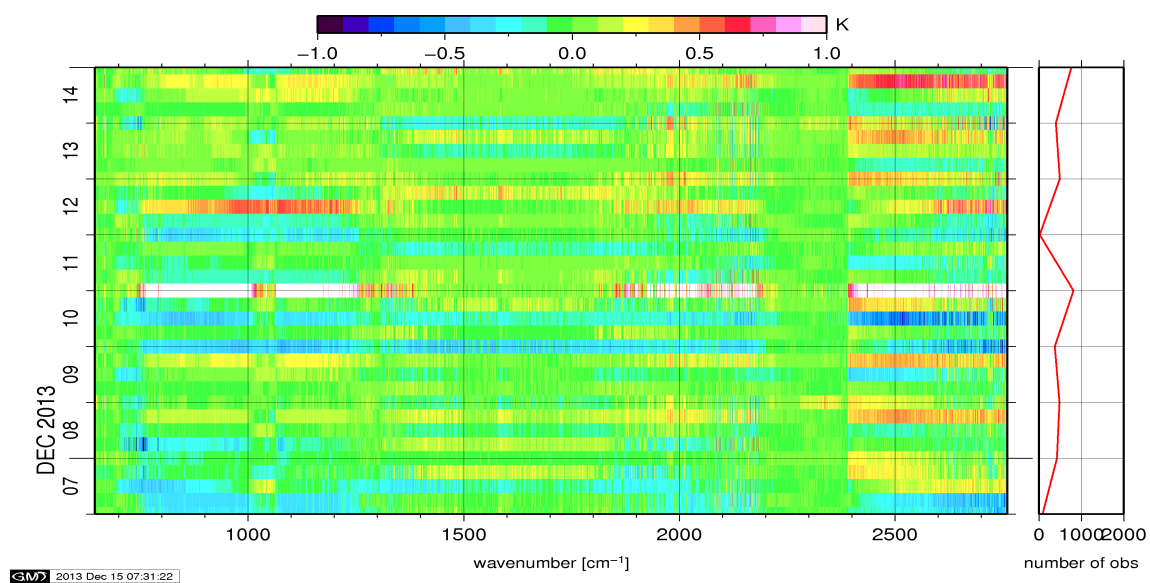


Figure 10: Radiance Anomaly in BRT: All Channels

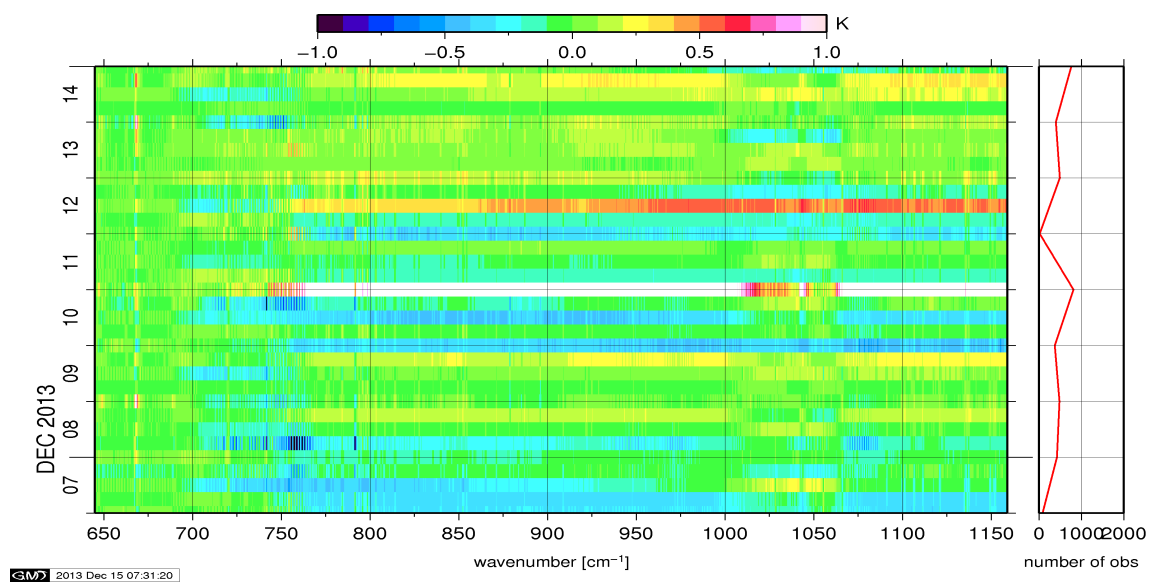


Figure 11: Radiance Anomaly in BRT: IASI Band 1

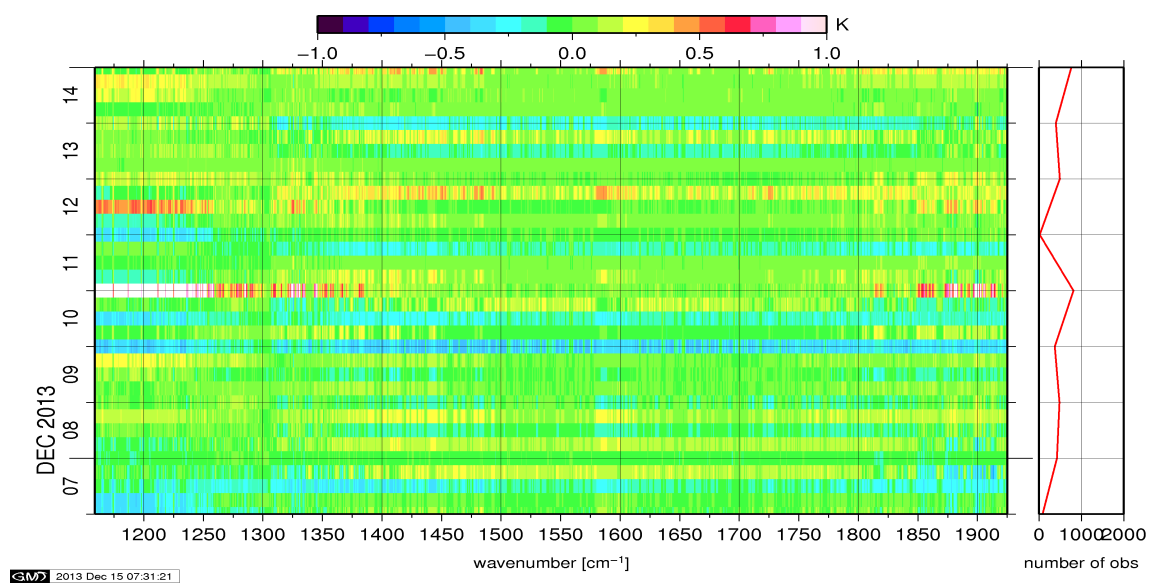


Figure 12: Radiance Anomaly in BRT: IASI Band 2

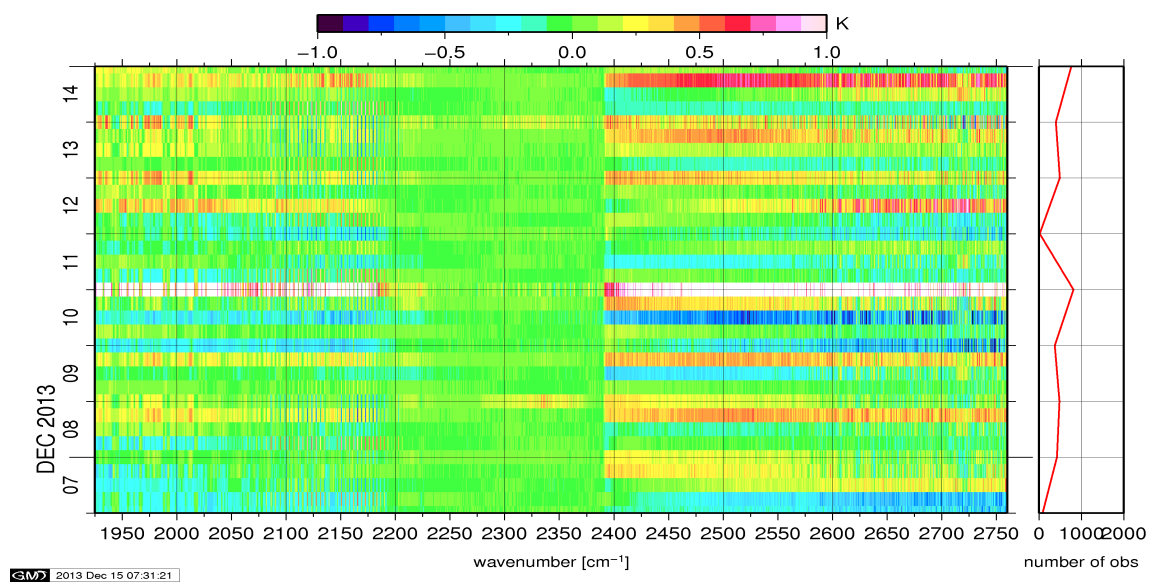


Figure 13: Radiance Anomaly in BRT: IASI Band 3

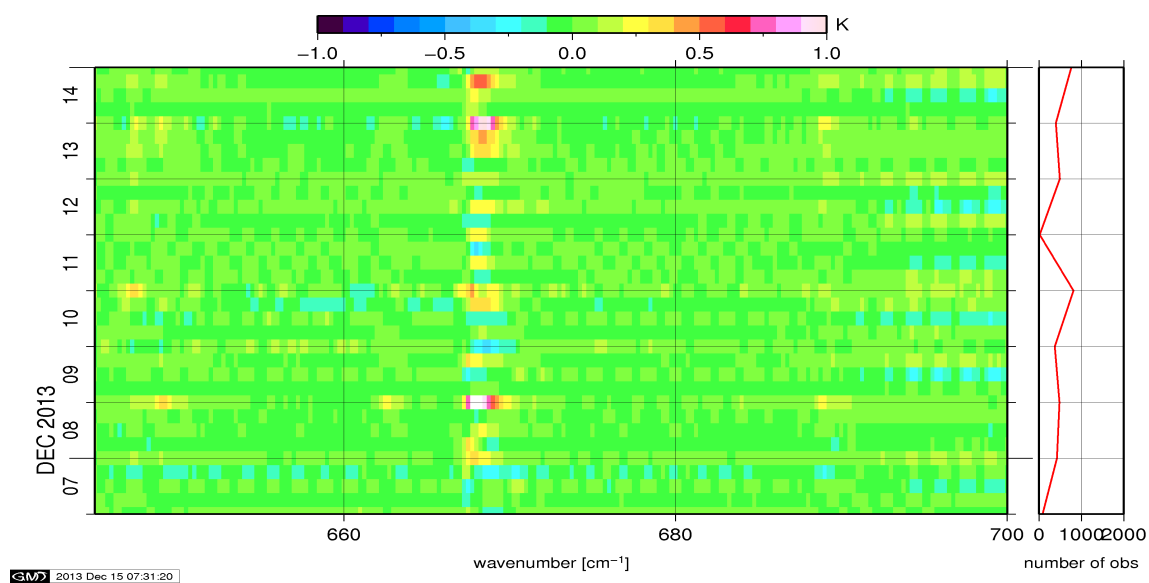


Figure 14: Radiance Anomaly in BRT: CO2 14

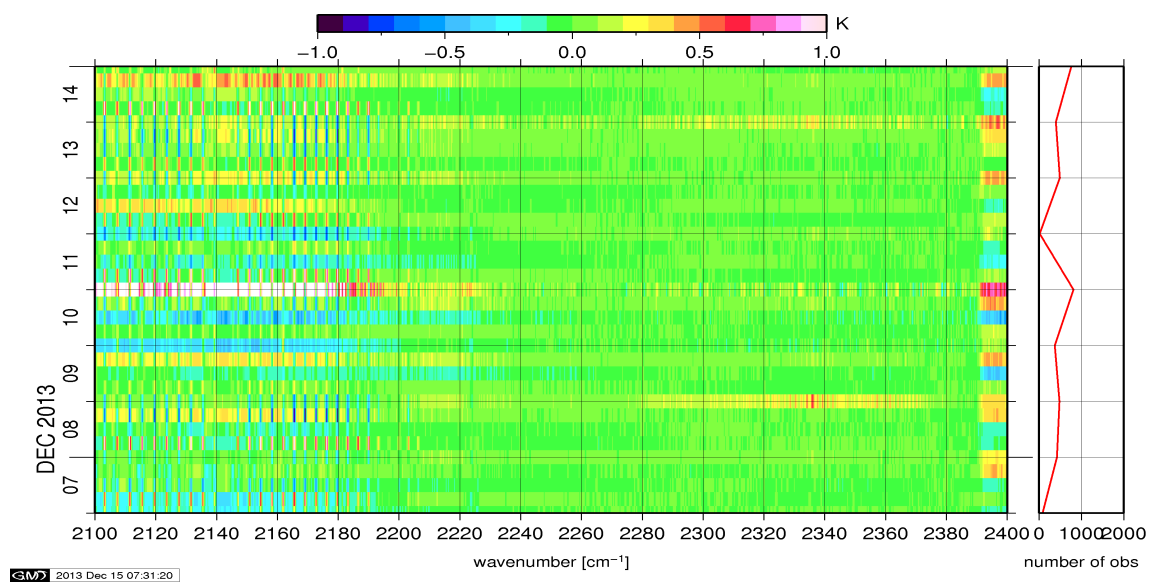


Figure 15: Radiance Anomaly in BRT: CO2 4.3

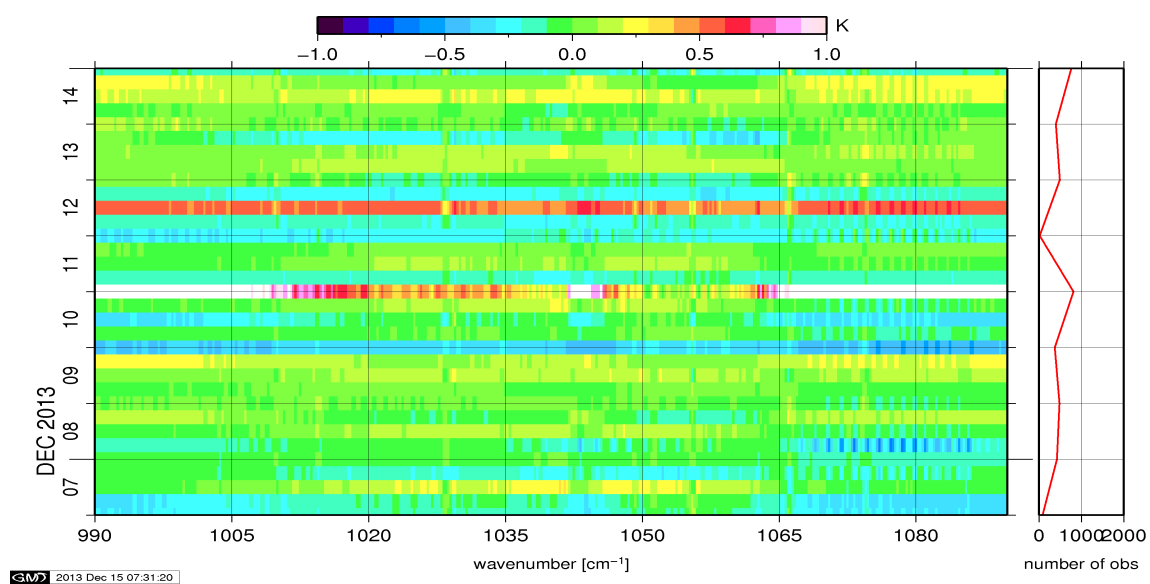


Figure 16: Radiance Anomaly in BRT: O3

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.

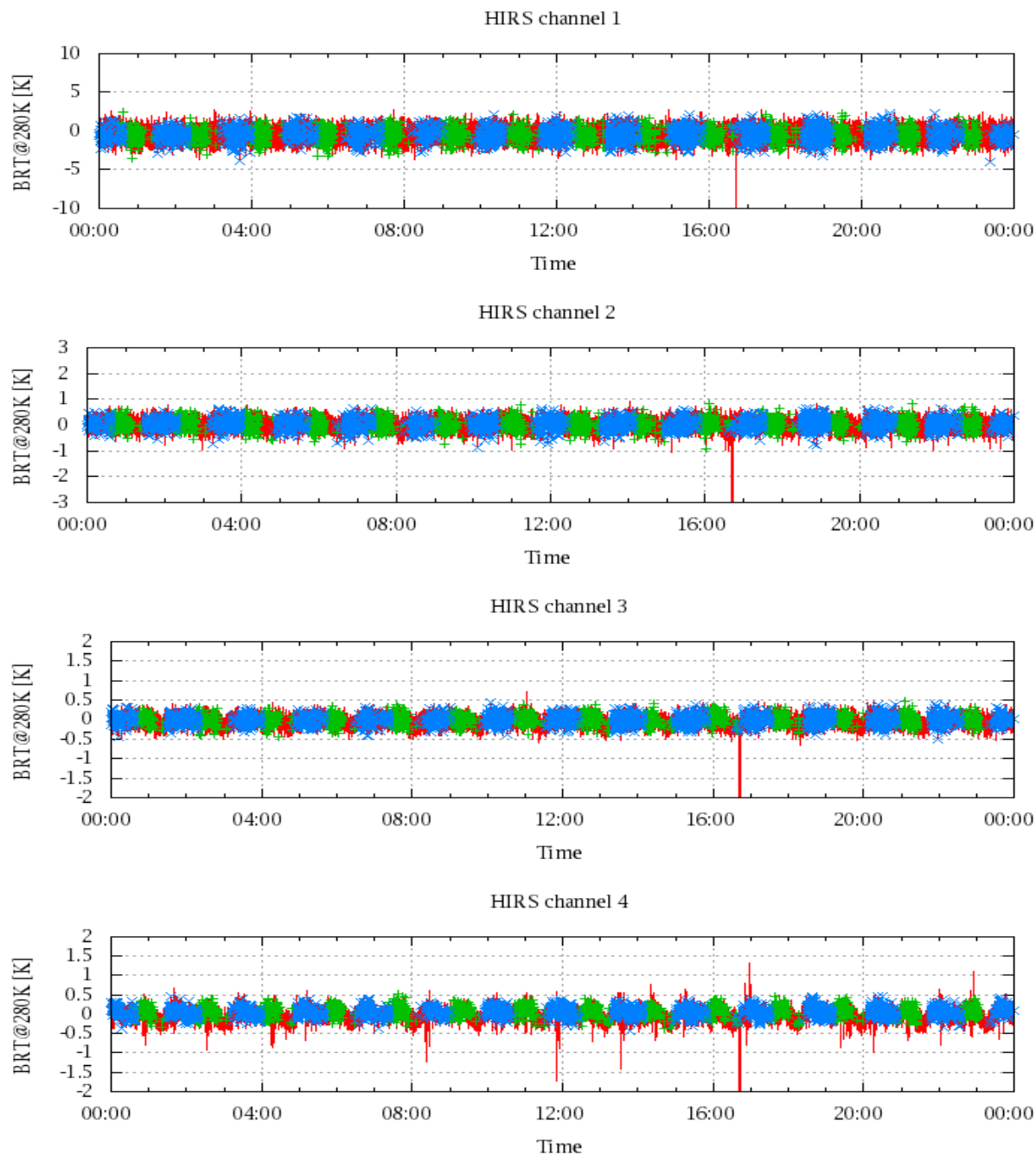


Figure 17: Radiance Differences in BRT

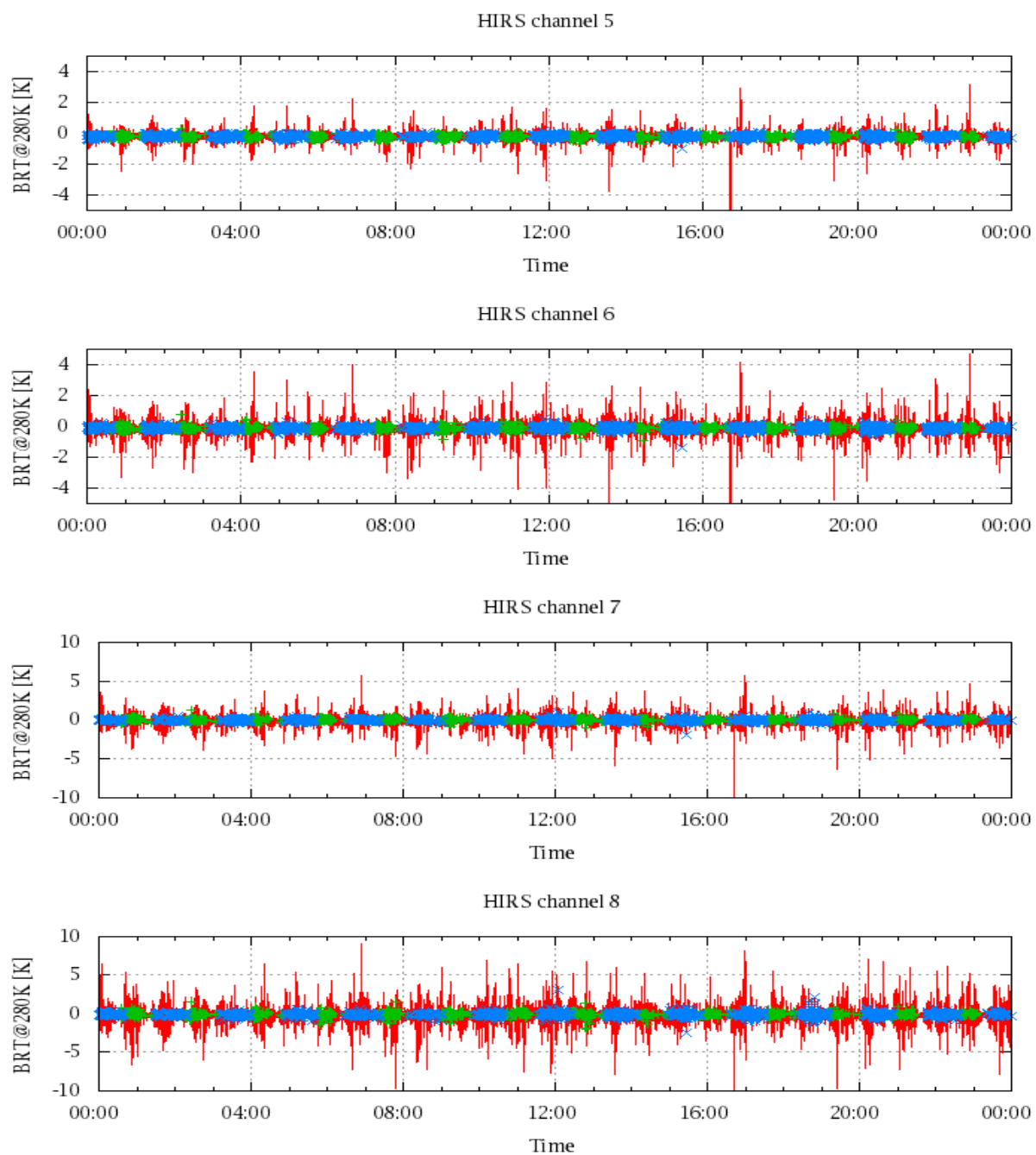


Figure 18: Radiance Differences in BRT

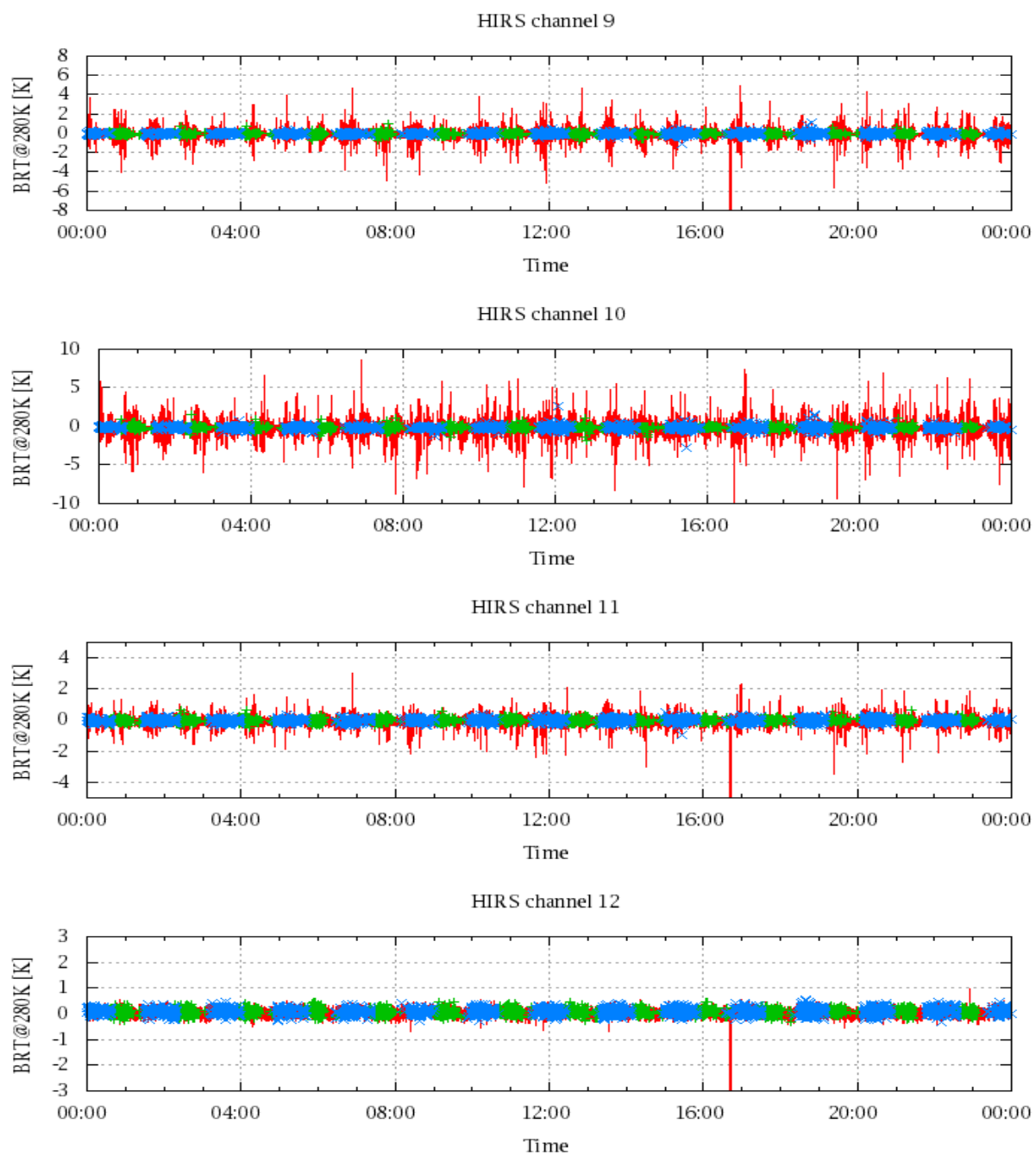


Figure 19: Radiance Differences in BRT

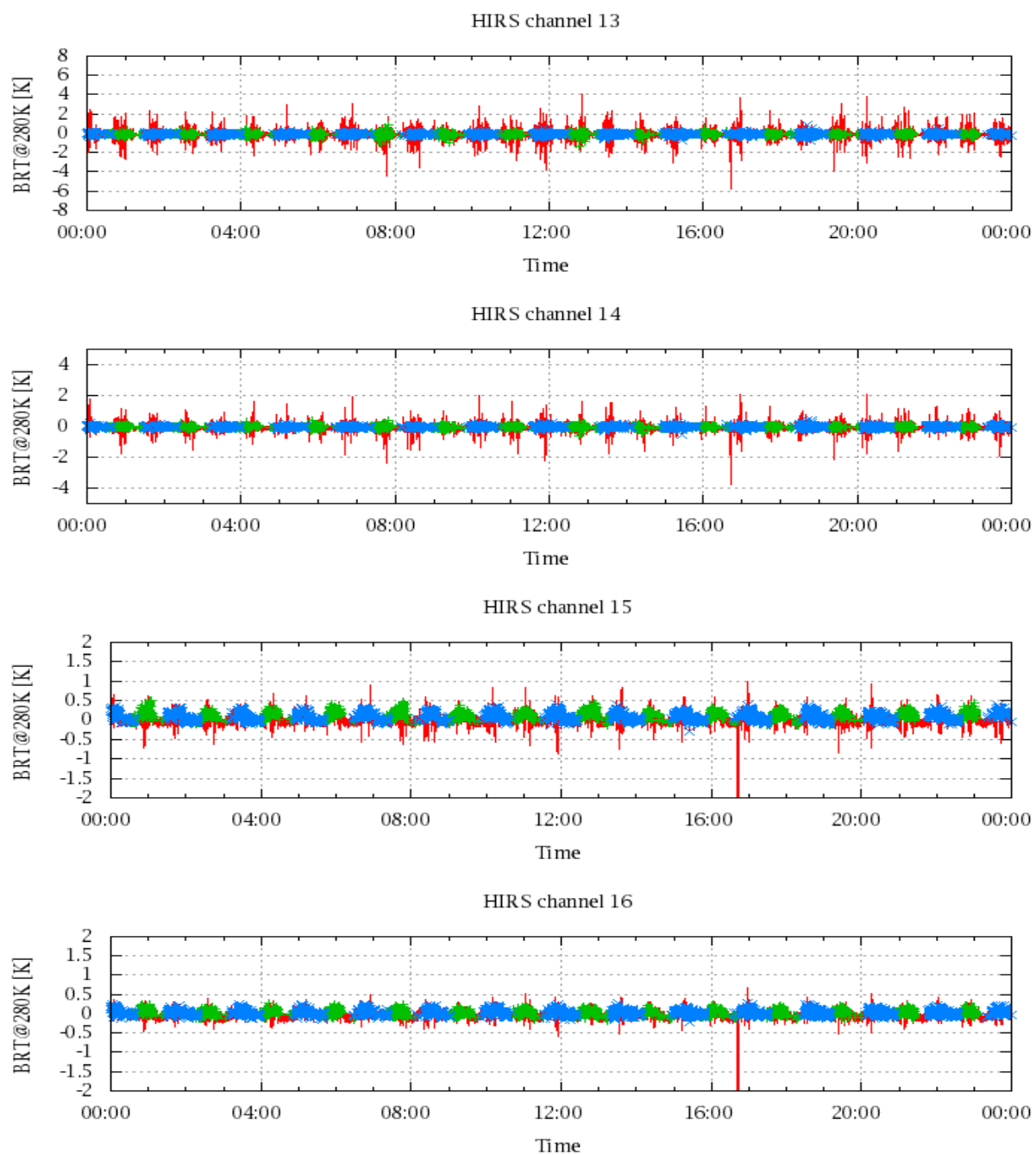


Figure 20: Radiance Differences in BRT

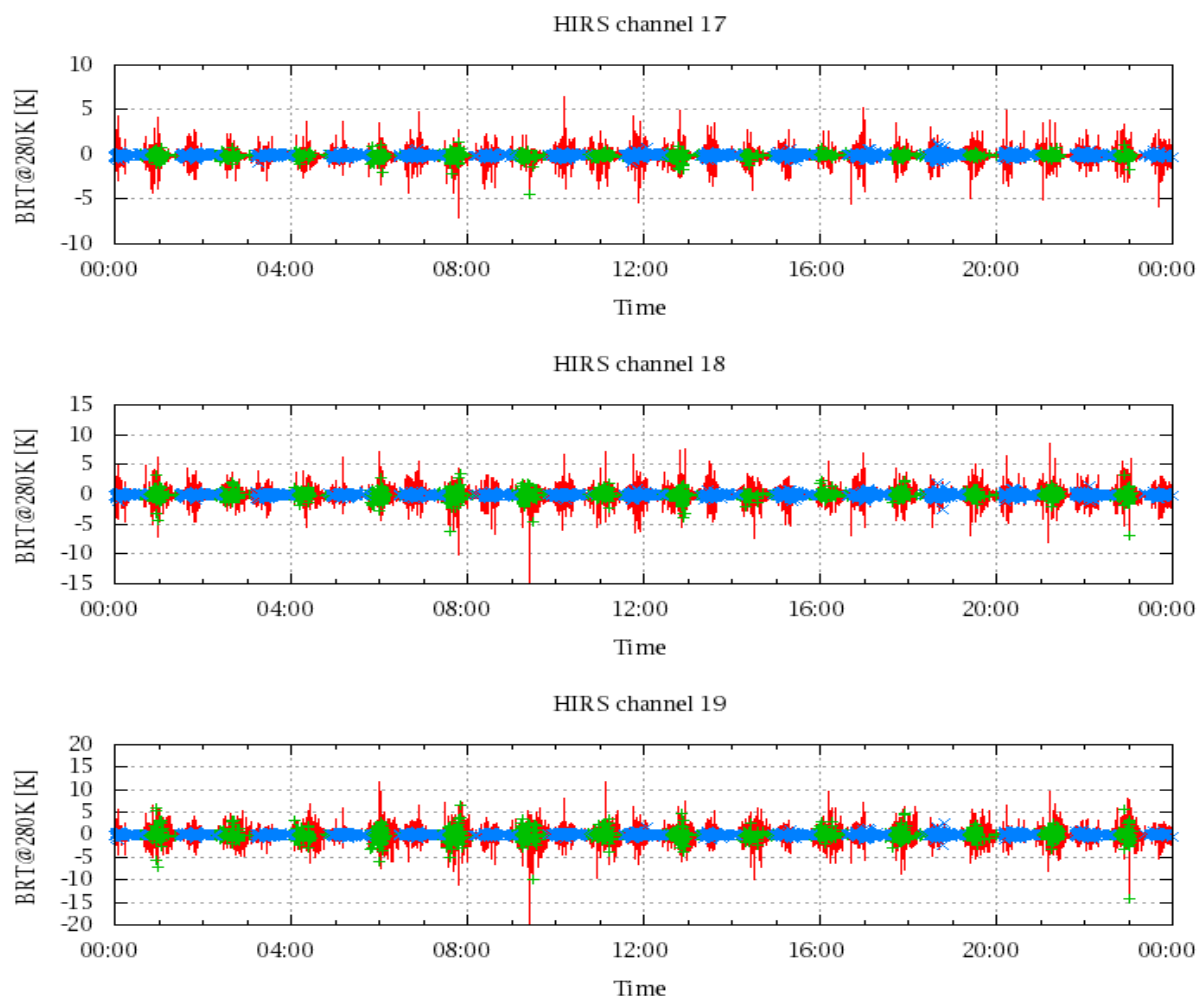


Figure 21: Radiances Differences in BRT