

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

21/12/2013 00:00:00 - 22/12/2013 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 21/12/2013 00:00:00 - 22/12/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 21/12/2013 00:00:00 - 22/12/2013 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)	412	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	13068	13072	20131221105531.229	20131221105532.096
PX1 (130)	13141	13143	20131221105550.042	20131221105550.475
PX1 (130)	13143	13185	20131221105550.475	20131221105602.581
PX1 (130)	13185	13187	20131221105602.581	20131221105603.014
PX1 (130)	13856	13931	20131221105900.955	20131221105920.225
PX1 (130)	13939	14094	20131221105923.479	20131221110004.557
PX2 (135)	13067	13072	20131221105531.014	20131221105532.096
PX2 (135)	13142	13185	20131221105550.257	20131221105602.581
PX2 (135)	13188	13190	20131221105603.229	20131221105603.663
PX2 (135)	13856	13931	20131221105900.955	20131221105920.225
PX2 (135)	13939	14094	20131221105923.479	20131221110004.557
PX3 (140)	13067	13071	20131221105531.014	20131221105531.882
PX3 (140)	13142	13185	20131221105550.257	20131221105602.581
PX3 (140)	13186	13190	20131221105602.796	20131221105603.663
PX3 (140)	13855	13931	20131221105900.740	20131221105920.225
PX3 (140)	13939	14094	20131221105923.479	20131221110004.557
PX4 (145)	13067	13071	20131221105531.014	20131221105531.882
PX4 (145)	13141	13184	20131221105550.042	20131221105602.366

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	13184	13186	20131221105602.366	20131221105602.796
PX4 (145)	13188	13190	20131221105603.229	20131221105603.663
PX4 (145)	13855	13931	20131221105900.740	20131221105920.225
PX4 (145)	13938	14094	20131221105923.264	20131221110004.557
IMG (150)	5547	5551	20131221105531.014	20131221105531.882
IMG (150)	5630	5682	20131221105550.257	20131221105602.796
IMG (150)	6440	6522	20131221105900.955	20131221105920.006
IMG (150)	6534	6709	20131221105923.264	20131221110004.342
VER (160)	15213	15224	20131221105544.635	20131221105608.635
VER (160)	15333	15344	20131221105856.631	20131221105920.658
VER (160)	15348	15363	20131221105920.658	20131221105923.479
VER (160)	15363	15374	20131221105923.479	20131221110008.666
AUX (180)	6313	6315	20131221105545.069	20131221105601.069
AUX (180)	6337	6340	20131221105857.061	20131221105921.092
AUX (180)	6340	6343	20131221105921.092	20131221105945.100
AUX (180)	6343	6346	20131221105945.100	20131221110009.100

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
21/12/2013 00:00:00	-	Normal operation
21/12/2013 11:40:00	Normal operation	Auxiliary ASE synchronised
21/12/2013 11:42:08	Auxiliary ASE synchronised	External calibration
21/12/2013 12:04:00	External calibration	Auxiliary ASE synchronised
21/12/2013 12:06:08	Auxiliary ASE synchronised	Normal operation
21/12/2013 13:20:00	Normal operation	Auxiliary ASE synchronised
21/12/2013 13:22:08	Auxiliary ASE synchronised	External calibration
21/12/2013 13:48:00	External calibration	Auxiliary ASE synchronised
21/12/2013 13:50:08	Auxiliary ASE synchronised	Normal operation
21/12/2013 15:00:00	Normal operation	Auxiliary ASE synchronised
21/12/2013 15:01:52	Auxiliary ASE synchronised	External calibration
21/12/2013 15:33:04	External calibration	Auxiliary ASE synchronised
21/12/2013 15:34:56	Auxiliary ASE synchronised	Normal operation
21/12/2013 16:39:12	Normal operation	Auxiliary ASE synchronised
21/12/2013 16:41:20	Auxiliary ASE synchronised	External calibration
21/12/2013 17:13:52	External calibration	Auxiliary ASE synchronised
21/12/2013 17:15:44	Auxiliary ASE synchronised	Normal operation
21/12/2013 18:21:36	Normal operation	Auxiliary ASE synchronised
21/12/2013 18:54:24	External calibration	Auxiliary ASE synchronised
21/12/2013 18:56:16	Auxiliary ASE synchronised	Normal operation
21/12/2013 20:34:40	External calibration	Auxiliary ASE synchronised
21/12/2013 20:36:32	Auxiliary ASE synchronised	Normal operation
21/12/2013 22:14:24	External calibration	Auxiliary ASE synchronised
21/12/2013 22:16:32	Auxiliary ASE synchronised	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)	98.71 %	-
GQisFlagQual set (PX2)	98.68 %	-
GQisFlagQual set (PX3)	99.01 %	-
GQisFlagQual set (PX4)	99.21 %	-
GQisFlagQual set (all)	98.91 %	-

Table 4: Quality flags

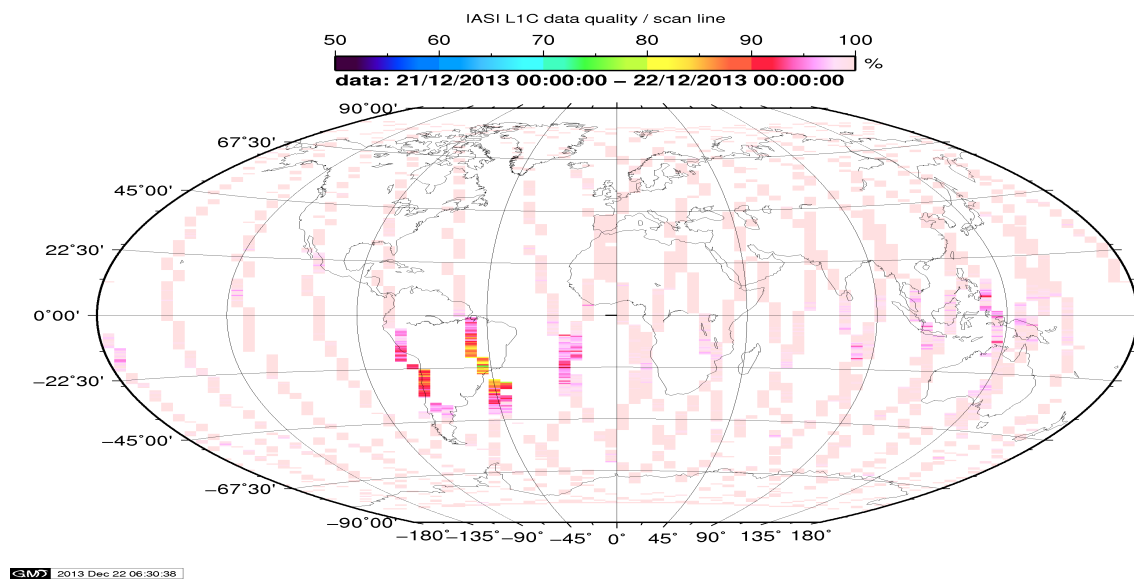


Figure 1: L1C data quality

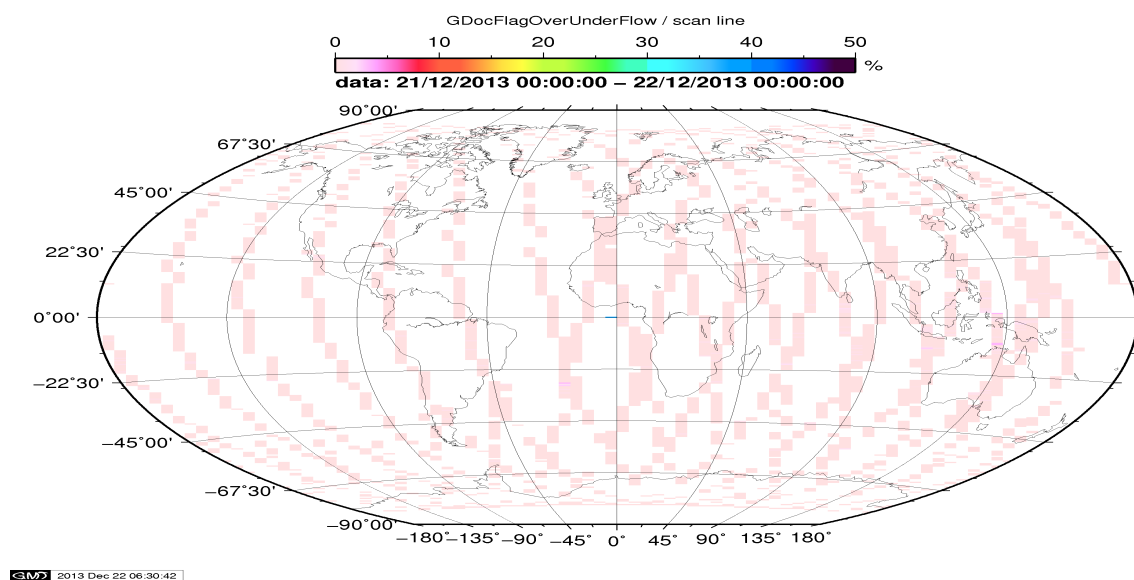


Figure 2: Flag of Over and Under Flows

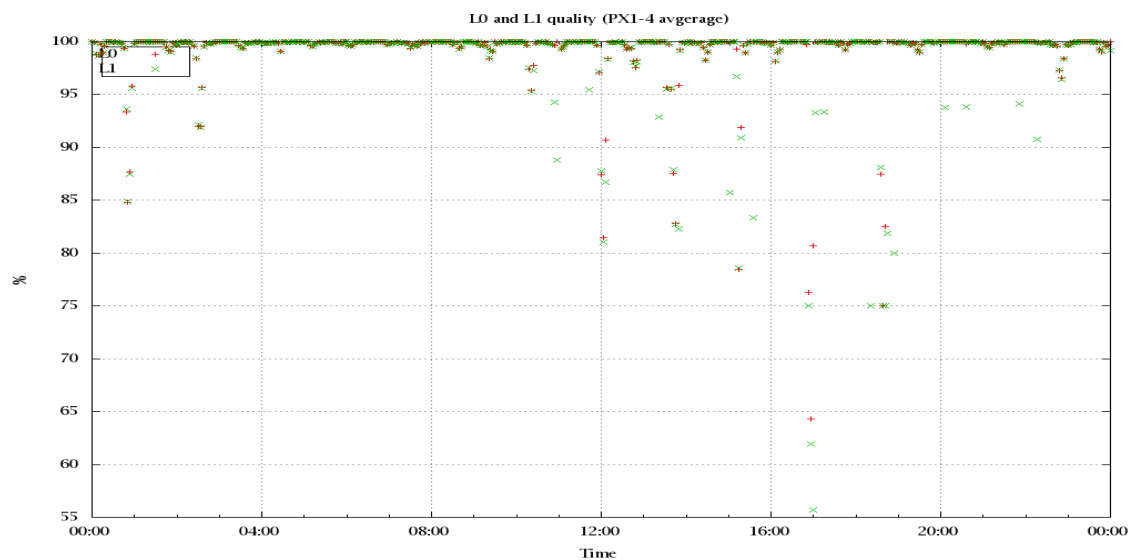


Figure 3: Level 0 and 1C overall quality

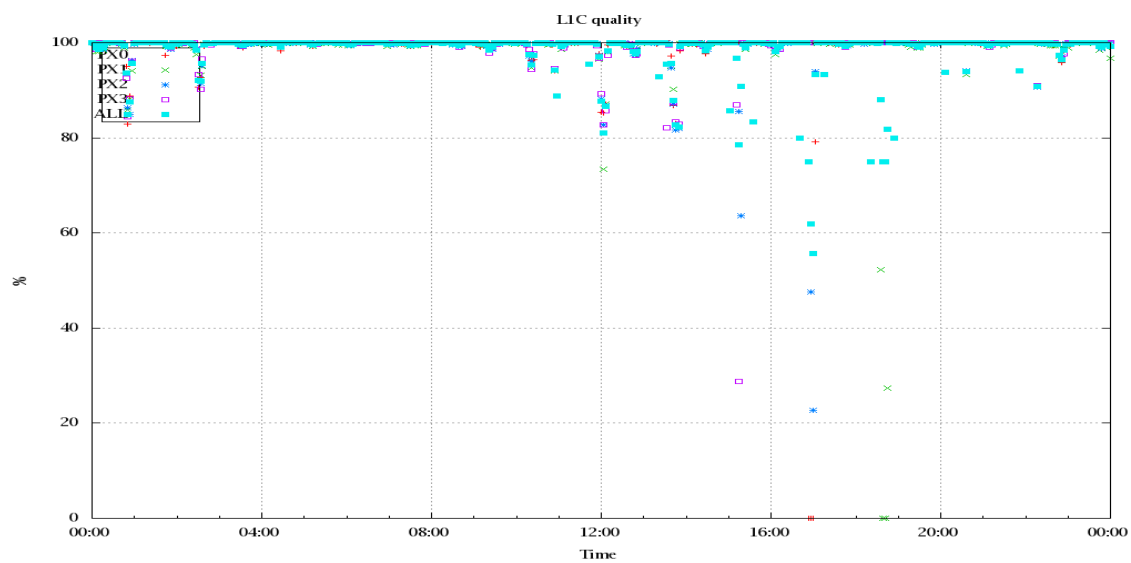


Figure 4: Level 1C quality

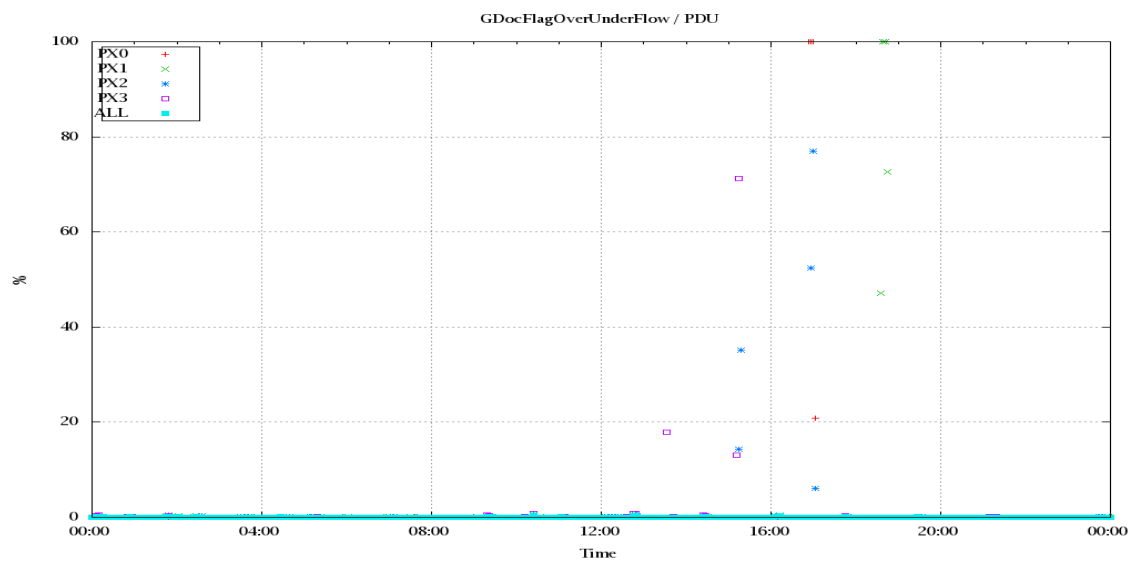


Figure 5: OverUnderFlowFlag timeseries

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.

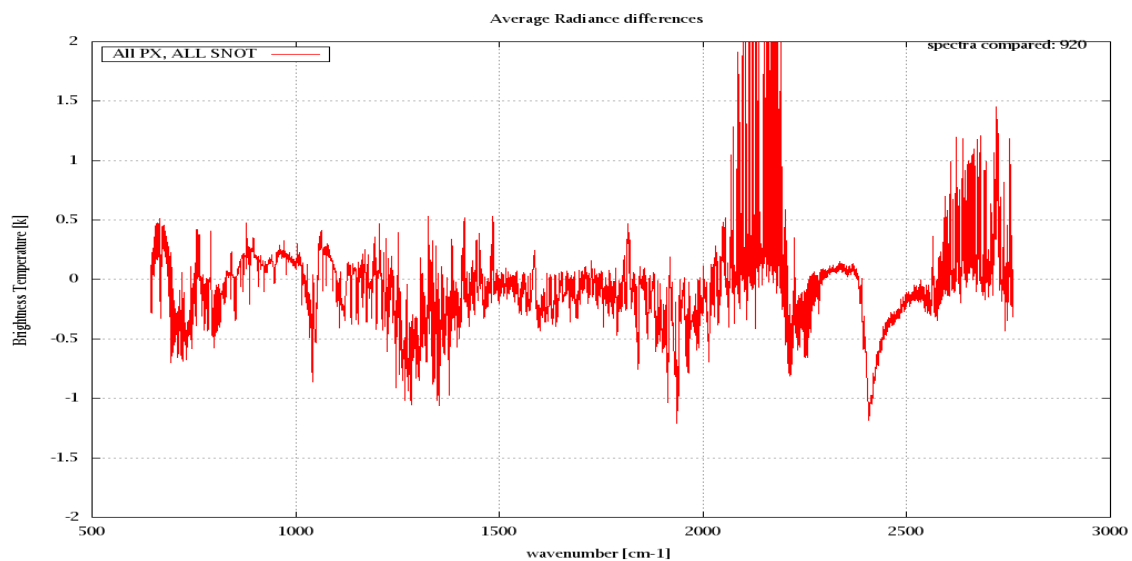


Figure 6: Average Radiance differences: OBS-CAL

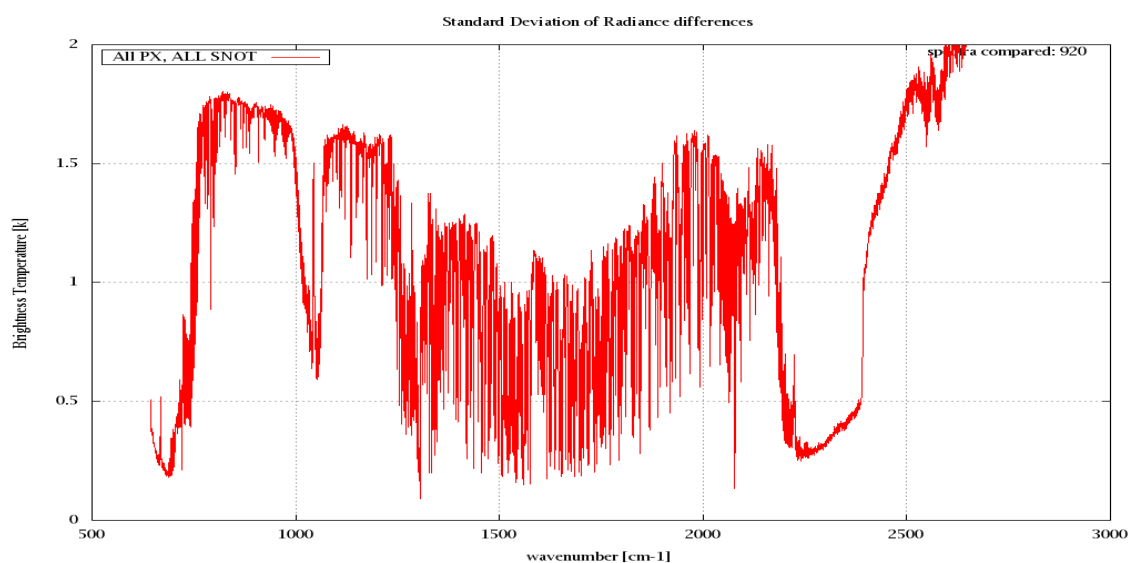


Figure 7: Standard Deviation of Radiance differences

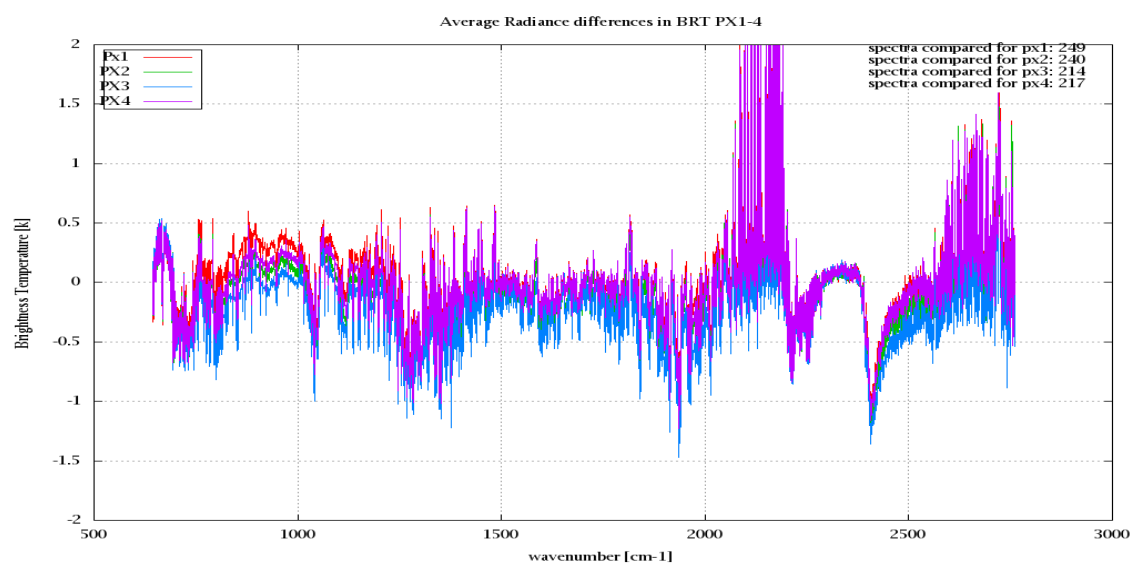


Figure 8: Average Radiance differences: OBS-CAL

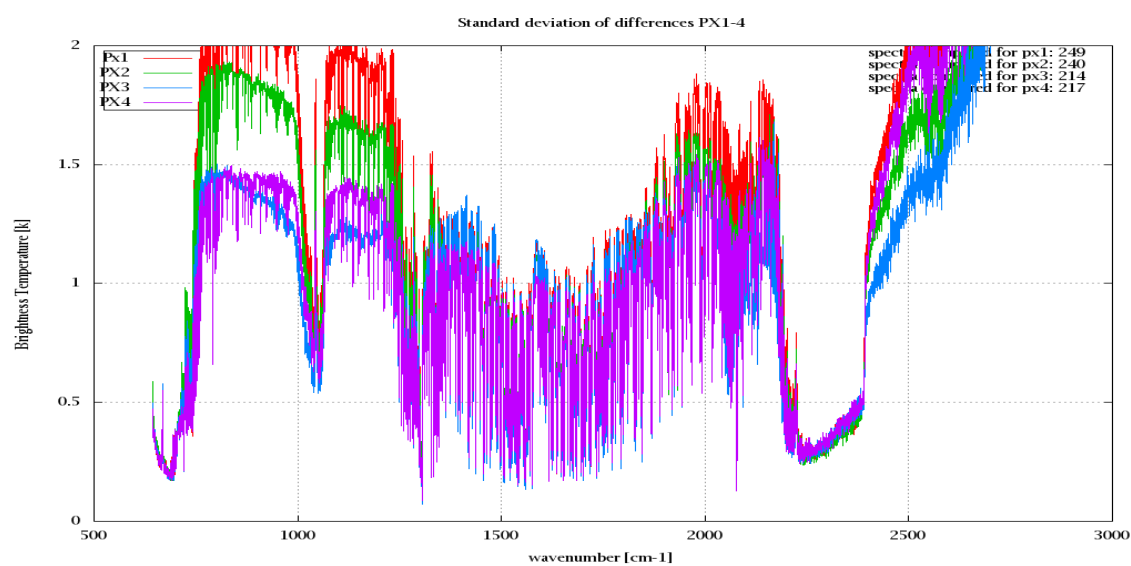


Figure 9: Standard Deviation of Radiance differences

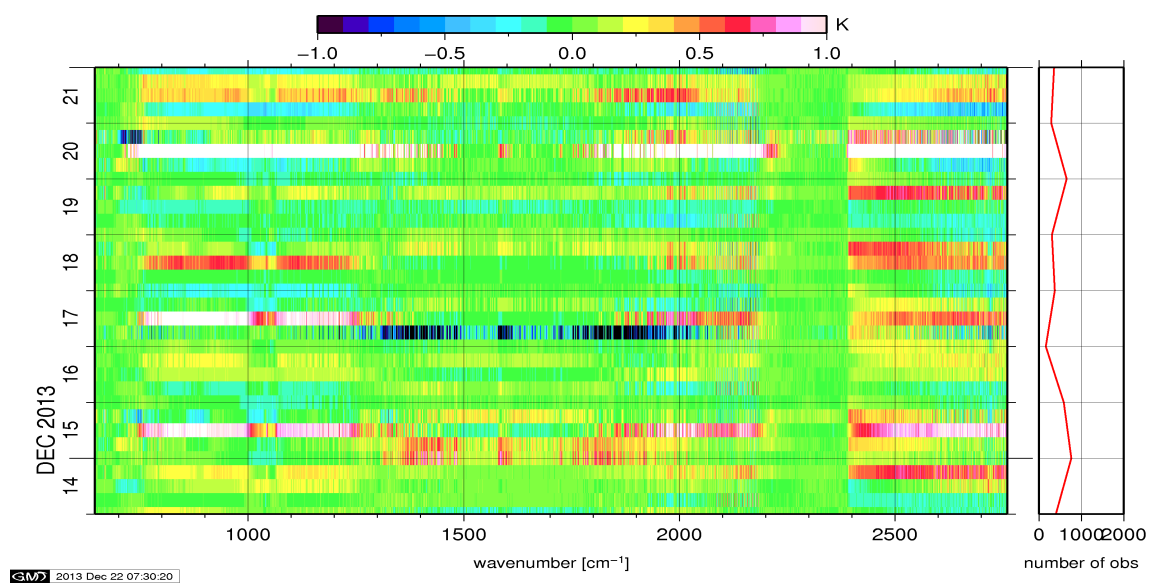


Figure 10: Radiance Anomaly in BRT: All Channels

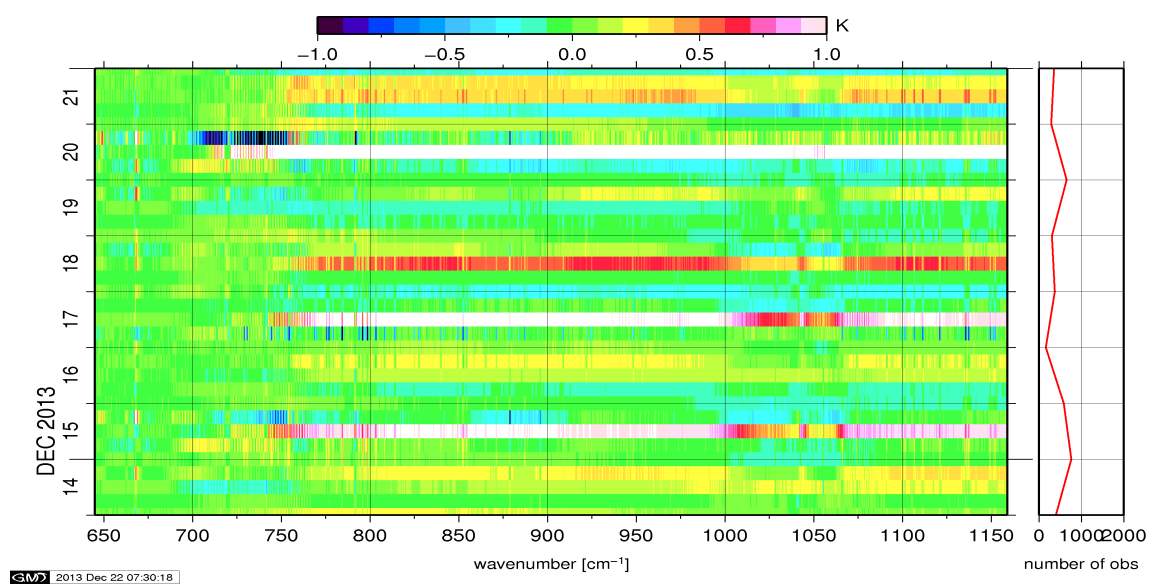


Figure 11: Radiance Anomaly in BRT: IASI Band 1

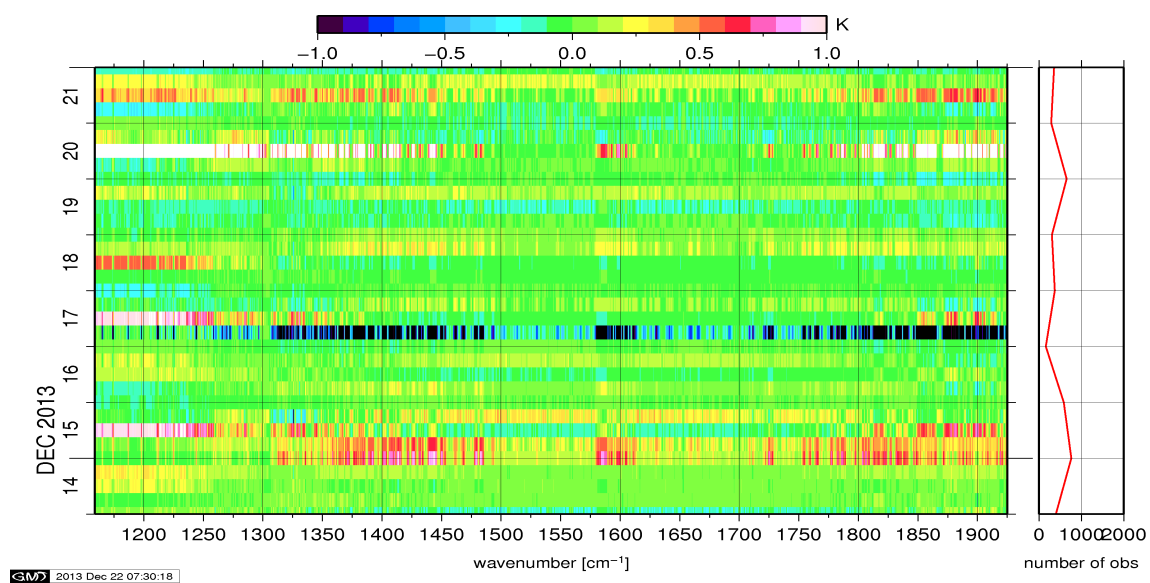


Figure 12: Radiance Anomaly in BRT: IASI Band 2

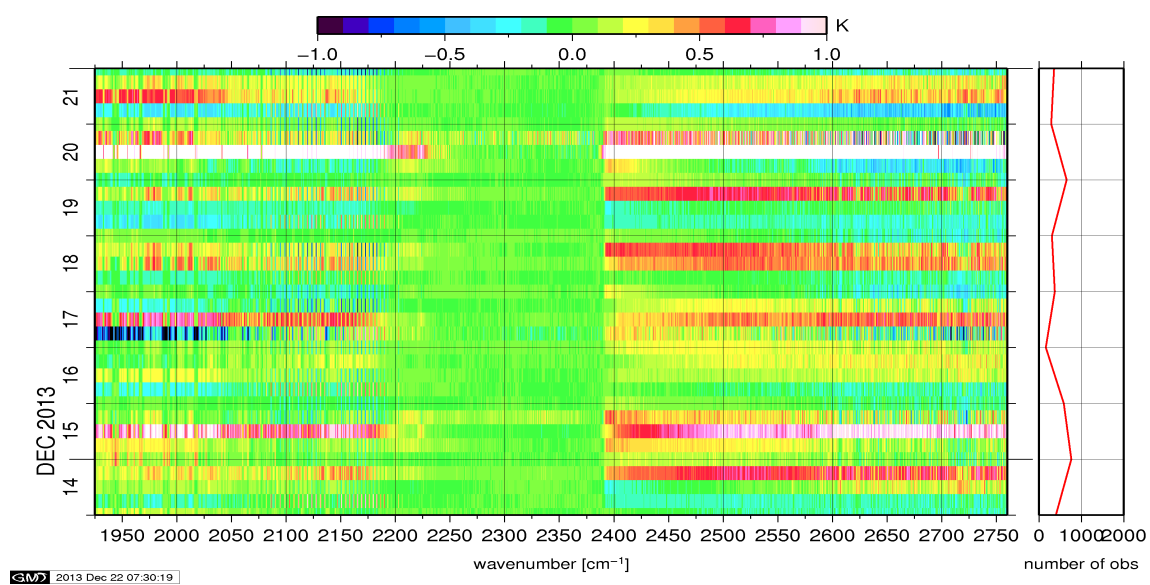


Figure 13: Radiance Anomaly in BRT: IASI Band 3

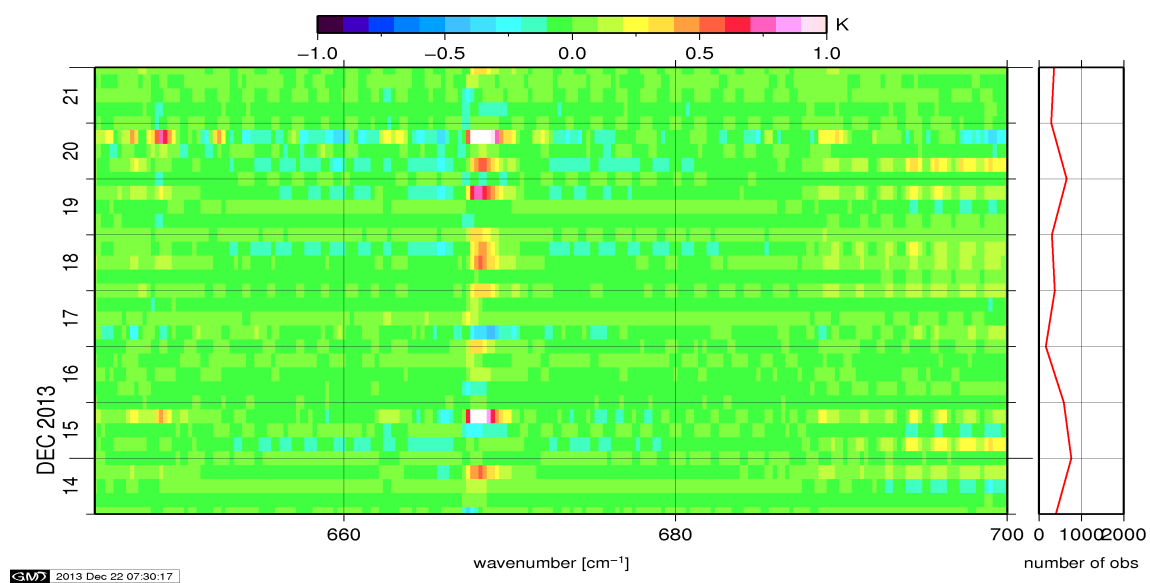


Figure 14: Radiance Anomaly in BRT: CO2 14

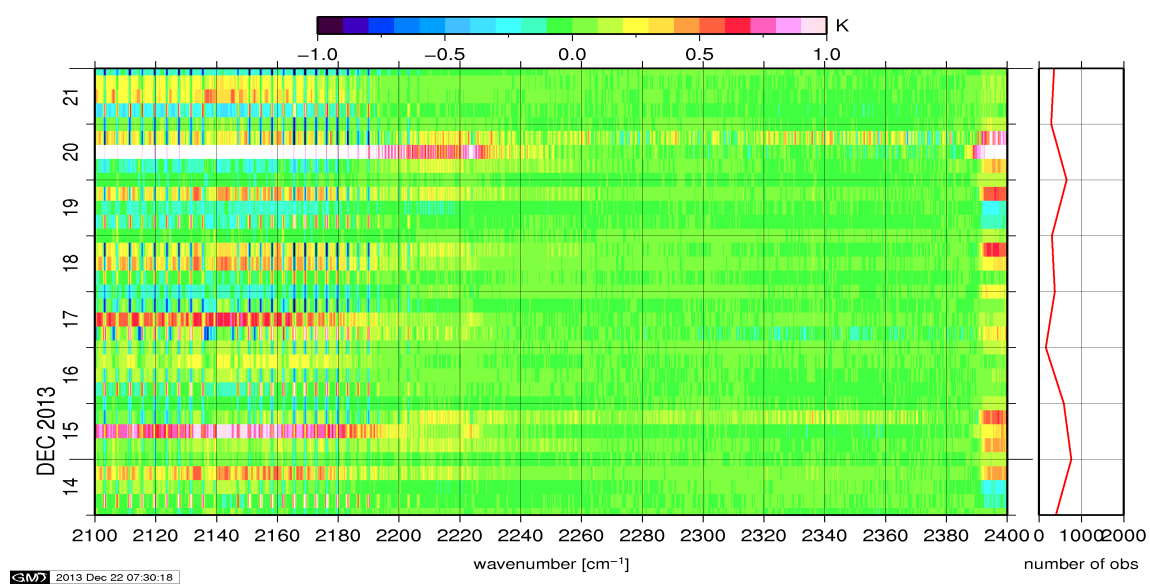


Figure 15: Radiance Anomaly in BRT: CO2 4.3

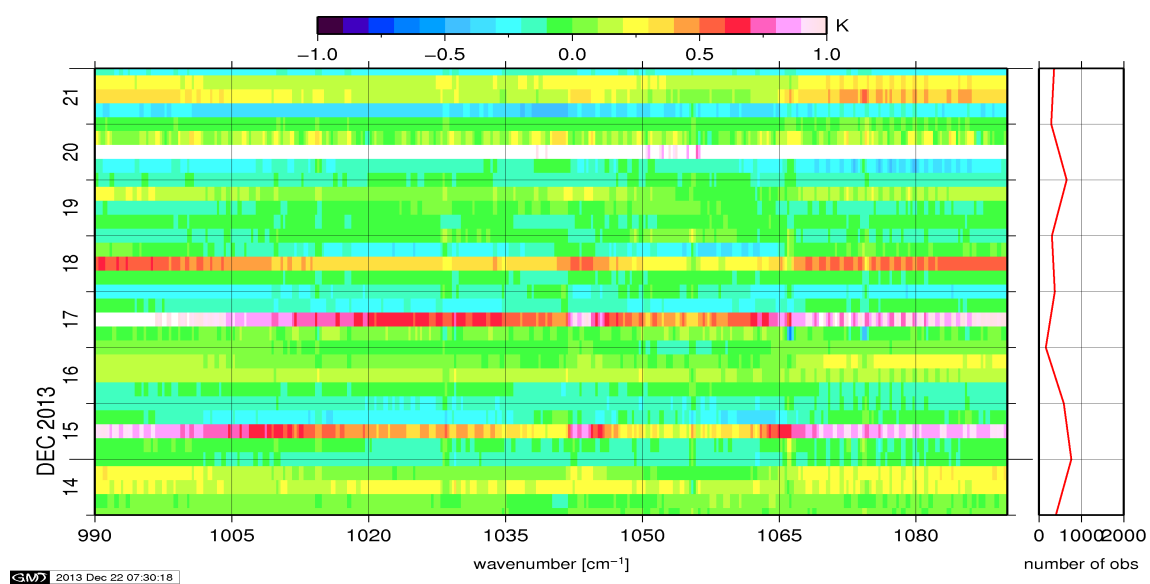


Figure 16: Radiance Anomaly in BRT: O3

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.

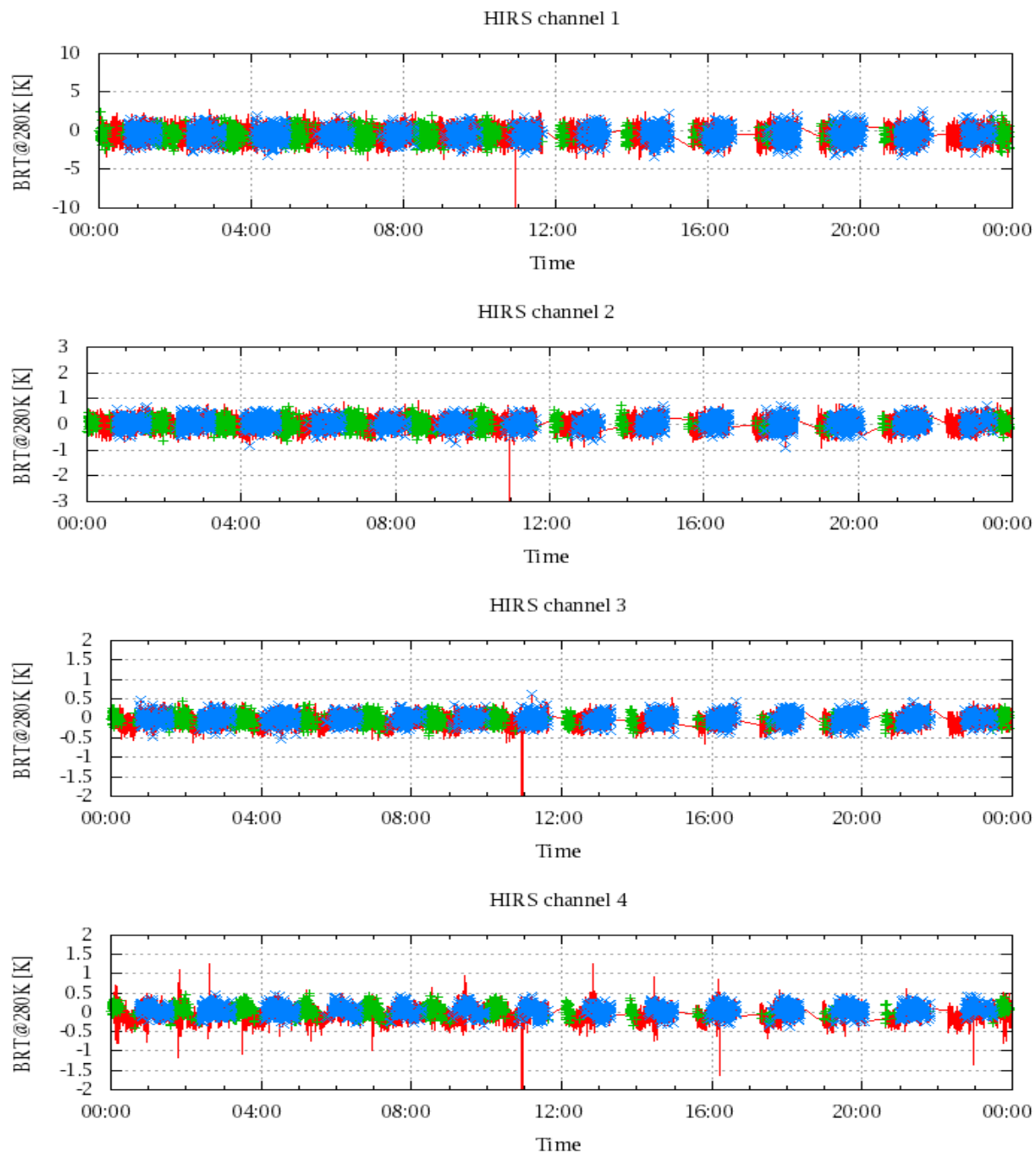


Figure 17: Radiance Differences in BRT

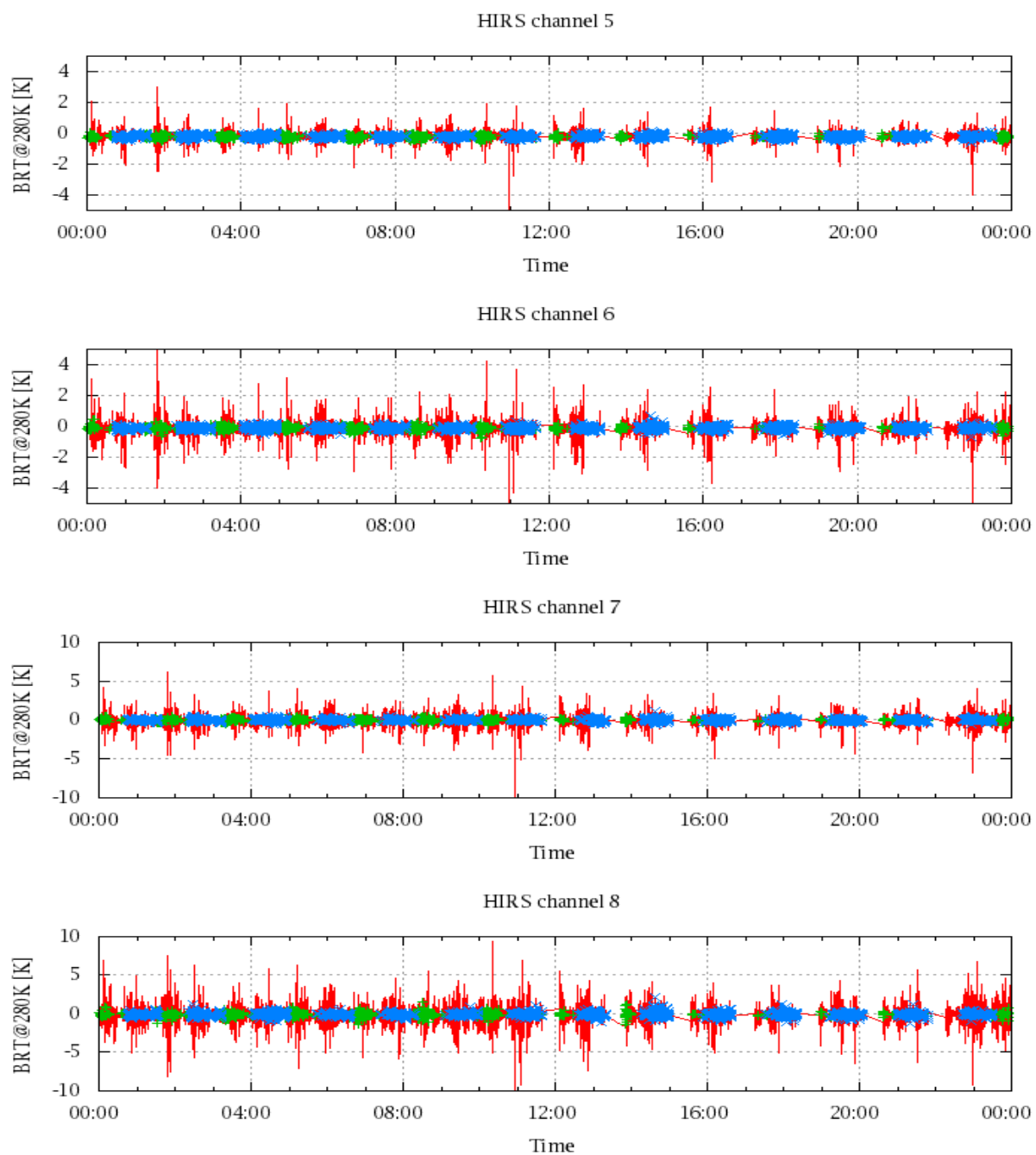


Figure 18: Radiance Differences in BRT

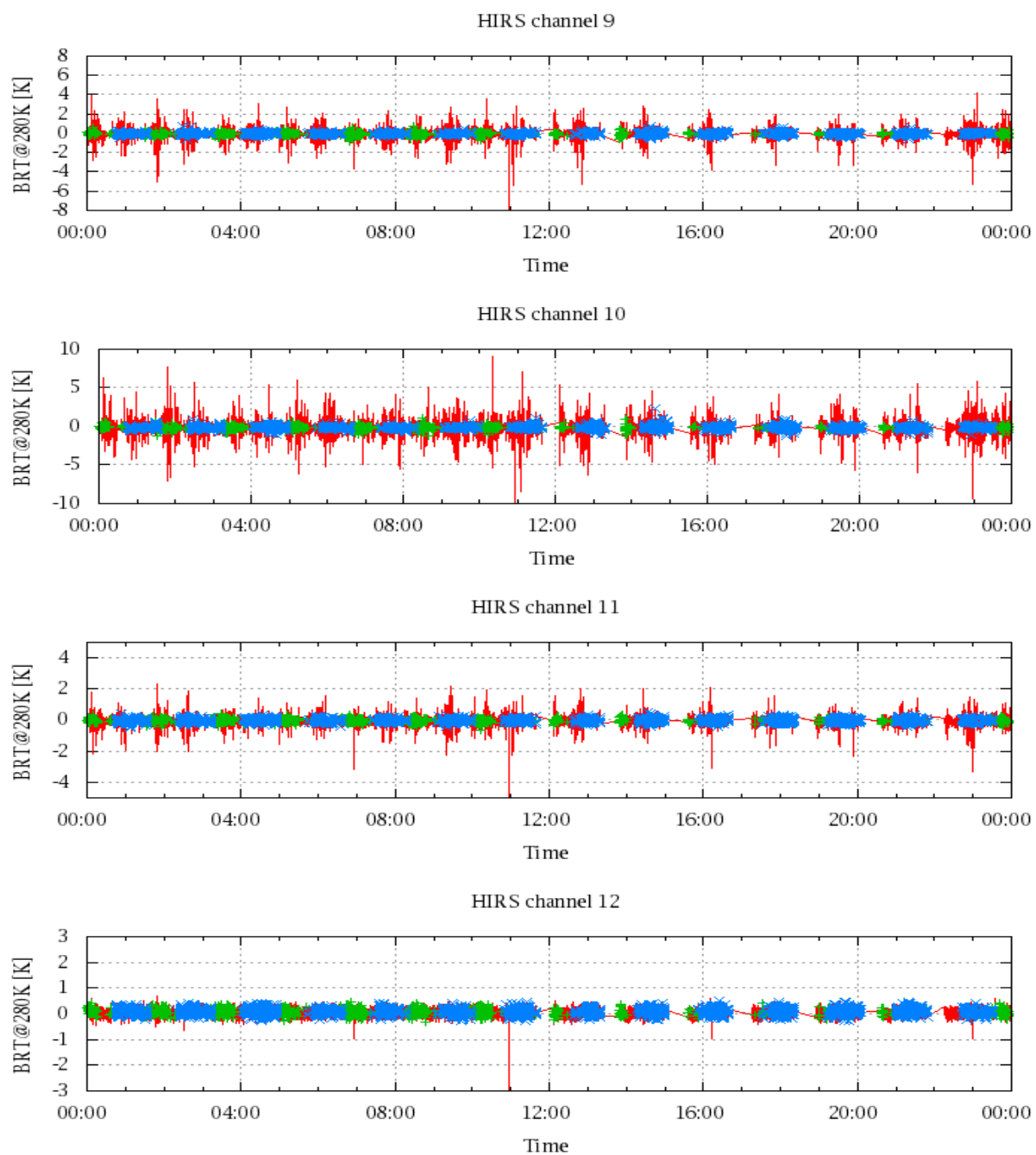


Figure 19: Radiance Differences in BRT

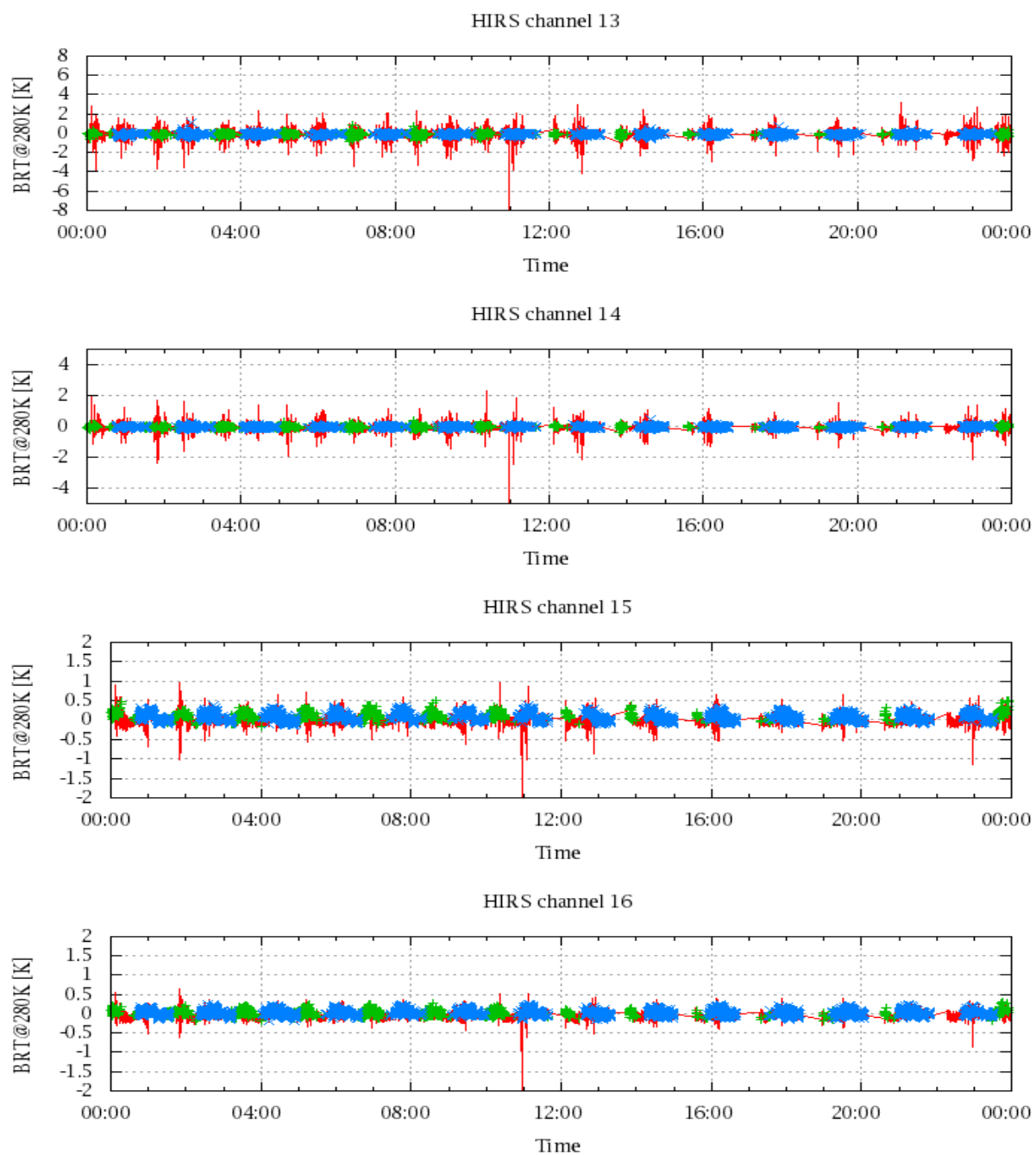


Figure 20: Radiance Differences in BRT

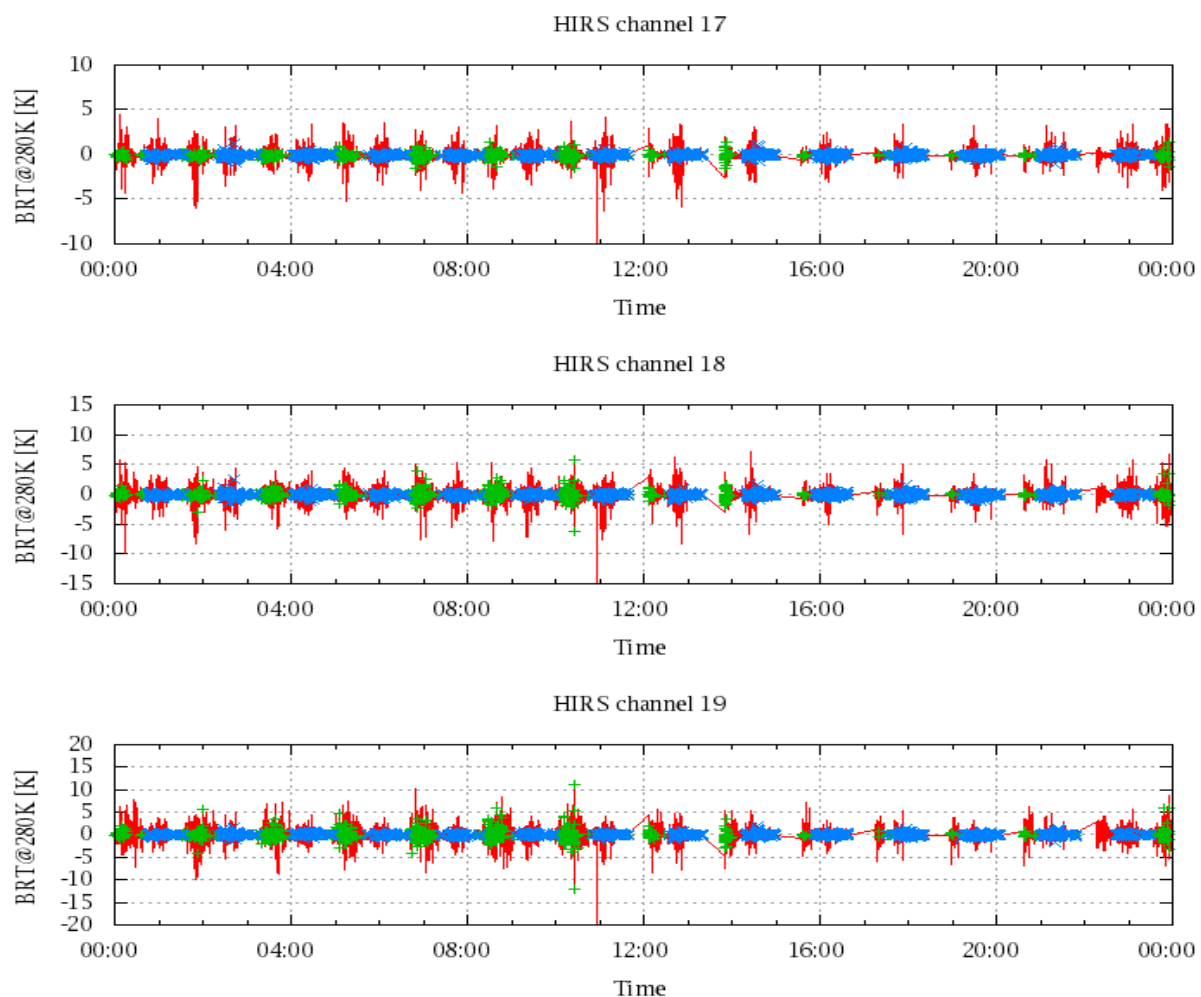


Figure 21: Radinace Differences in BRT