IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

21/02/2013 00:00:00 - 22/02/2013 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 21/02/2013 00:00:00 - 22/02/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 21/02/2013 00:00:00 - 22/02/2013 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)	228	e
L1 DPS Files (RM: OBS-CAL NWP based)	308	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	9646	9650	20130221025320.444	20130221025321.311
PX1 (130)	12385	12389	20130221030531.923	20130221030532.786
PX1 (130)	14214	14223	20130221031338.180	20130221031341.637
PX1 (130)	12944	12951	20130221042048.881	20130221042051.908
PX1 (130)	16048	16055	20130221043437.434	20130221043438.949
PX1 (130)	399	405	20130221043752.671	20130221043753.972
PX2 (135)	9646	9649	20130221025320.444	20130221025321.093
PX2 (135)	12385	12389	20130221030531.923	20130221030532.786
PX2 (135)	14214	14223	20130221031338.180	20130221031341.637
PX2 (135)	12944	12951	20130221042048.881	20130221042051.908
PX2 (135)	16048	16055	20130221043437.434	20130221043438.949
PX2 (135)	399	405	20130221043752.671	20130221043753.972
PX3 (140)	9646	9649	20130221025320.444	20130221025321.093
PX3 (140)	12384	12389	20130221030530.193	20130221030532.786
PX3 (140)	14214	14222	20130221031338.180	20130221031341.422
PX3 (140)	12944	12951	20130221042048.881	20130221042051.908
PX3 (140)	16048	16055	20130221043437.434	20130221043438.949
PX3 (140)	399	404	20130221043752.671	20130221043753.753

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	9646	9649	20130221025320.444	20130221025321.093
PX4 (145)	12384	12389	20130221030530.193	20130221030532.786
PX4 (145)	14214	14222	20130221031338.180	20130221031341.422
PX4 (145)	12944	12951	20130221042048.881	20130221042051.908
PX4 (145)	16047	16055	20130221043437.219	20130221043438.949
PX4 (145)	399	404	20130221043752.671	20130221043753.753
IMG (150)	8078	8081	20130221025320.444	20130221025321.093
IMG (150)	11184	11188	20130221030531.489	20130221030532.571
IMG (150)	13254	13266	20130221031338.180	20130221031341.422
IMG (150)	14000	14007	20130221042048.881	20130221042050.611
IMG (150)	1135	1143	20130221043437.219	20130221043438.949
IMG (150)	1966	1972	20130221043752.456	20130221043753.753
VER (160)	15330	15333	20130221031338.180	20130221031346.180
VER (160)	1463	1467	20130221042042.178	20130221042048.881
AUX (180)	16143	16145	20130221031330.613	20130221031346.609

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
21/02/2013 00:00:01	-	Normal operation
21/02/2013 05:11:29	Normal operation	Auxiliary ASE synchronised
21/02/2013 05:13:37	Auxiliary ASE synchronised	External calibration
21/02/2013 09:07:29	External calibration	Auxiliary ASE synchronised
21/02/2013 09:09:21	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)	99.38 %	-
GQisFlagQual set (PX2)	99.23 %	-
GQisFlagQual set (PX3)	99.30 %	-
GQisFlagQual set (PX4)	99.43 %	-
GQisFlagQual set (all)	99.33 %	-

Table 4: Quality flags

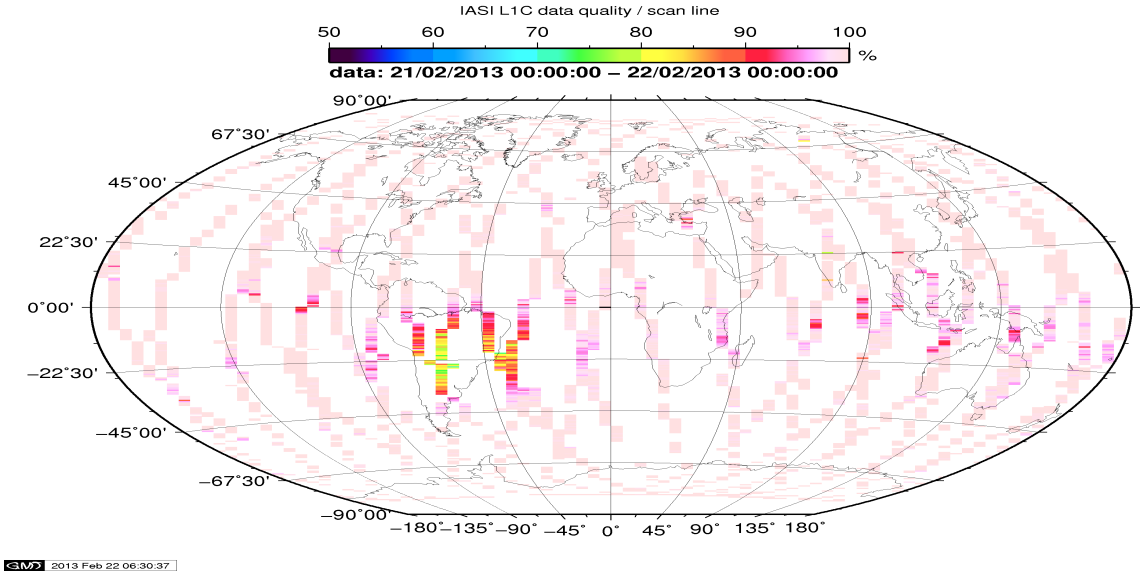

Figure 1: L1C data quality

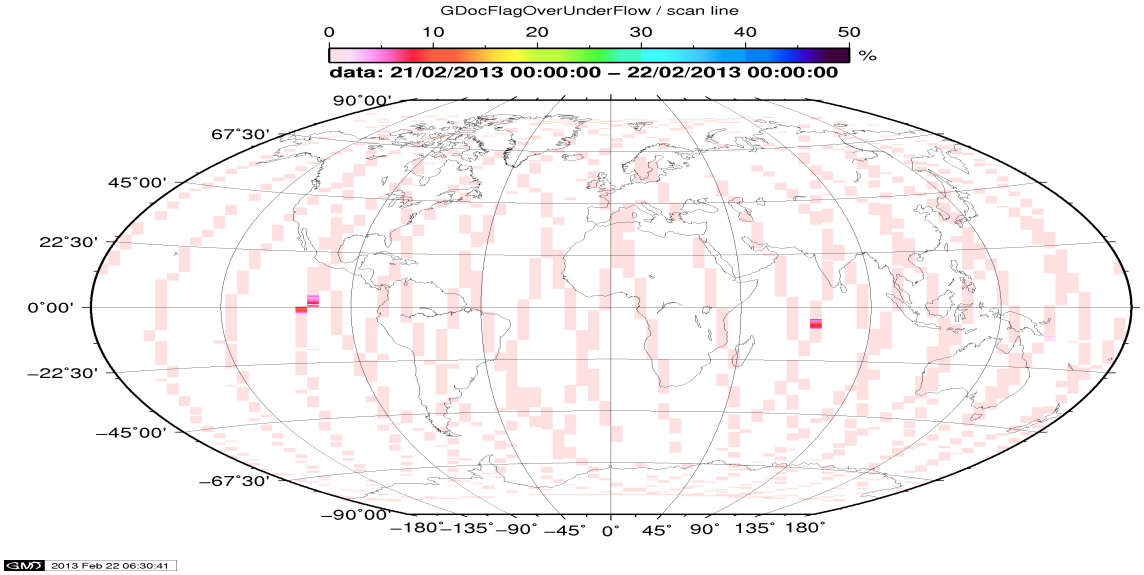

Figure 2: Flag of Over and Under Flows

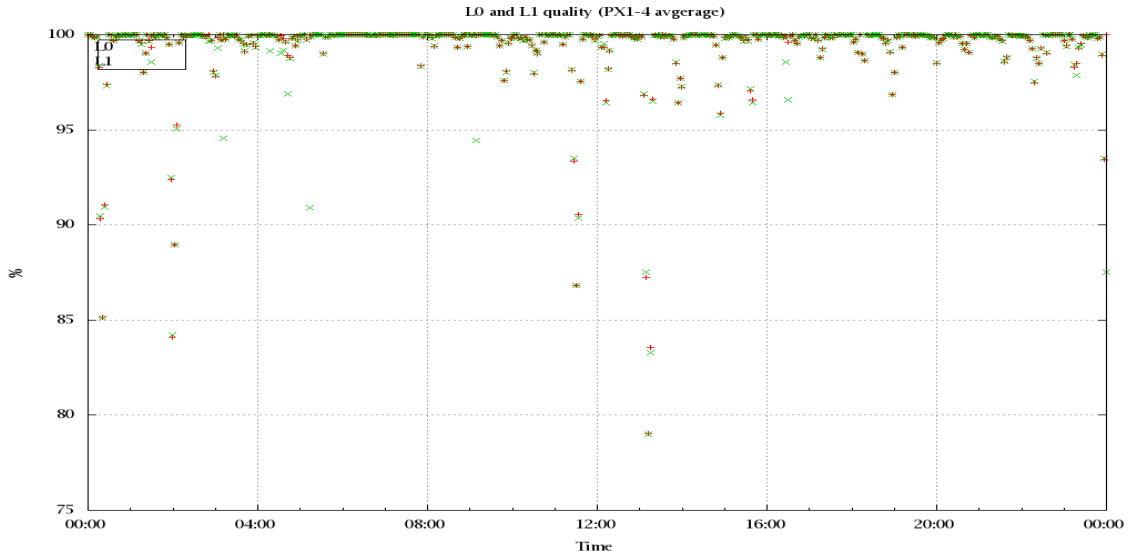

Figure 3: Level 0 and 1C overall quality

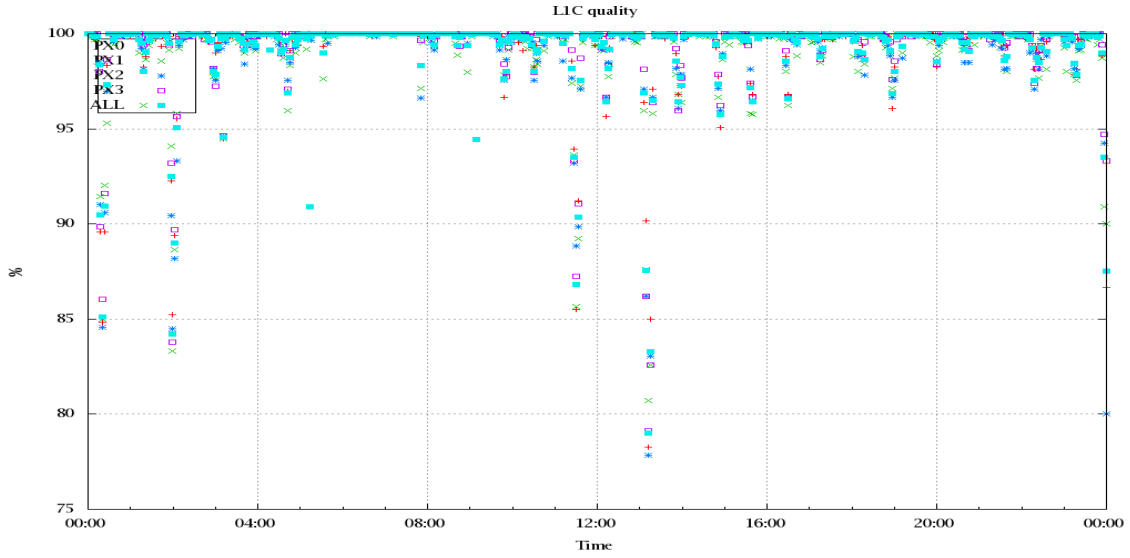

Figure 4: Level 1C quality

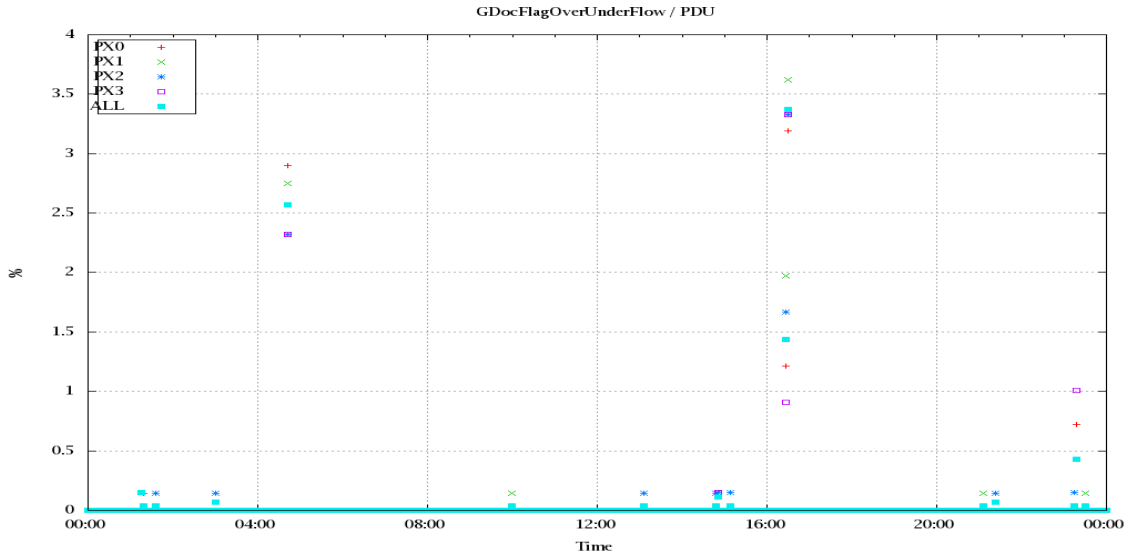

Figure 5: OverUnderFlowFlag timeseries

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 indentification 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.

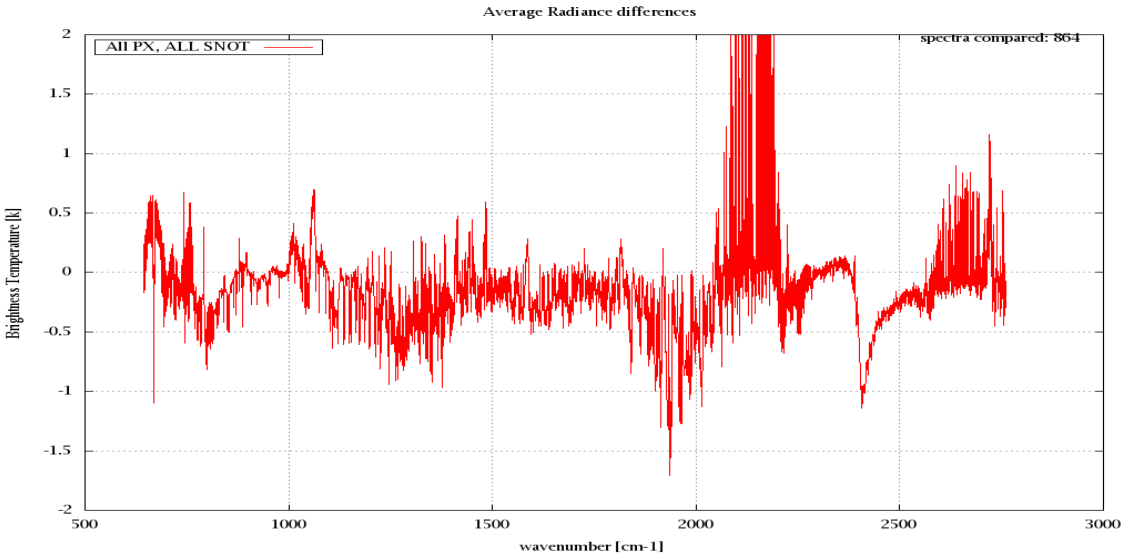

Figure 6: Average Radiance differences: OBS-CAL

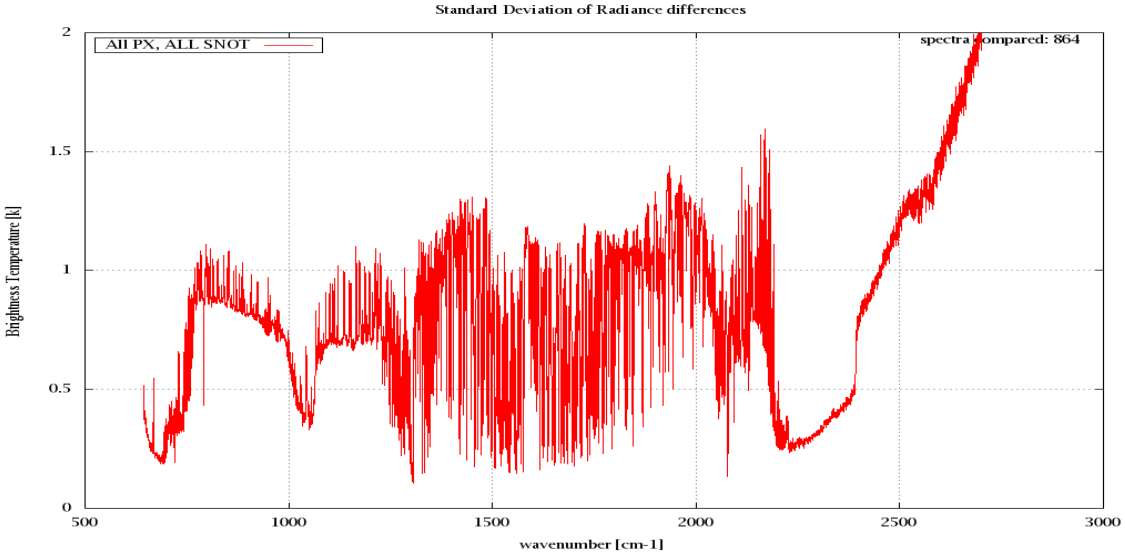

Figure 7: Standard Deviation of Radiance differences

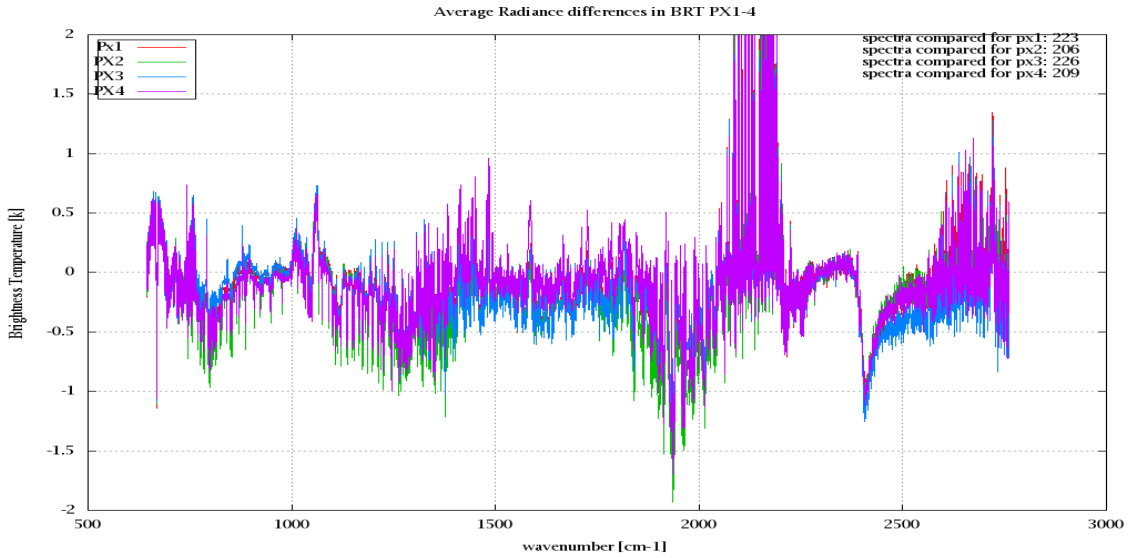

Figure 8: Average Radiance differences: OBS-CAL

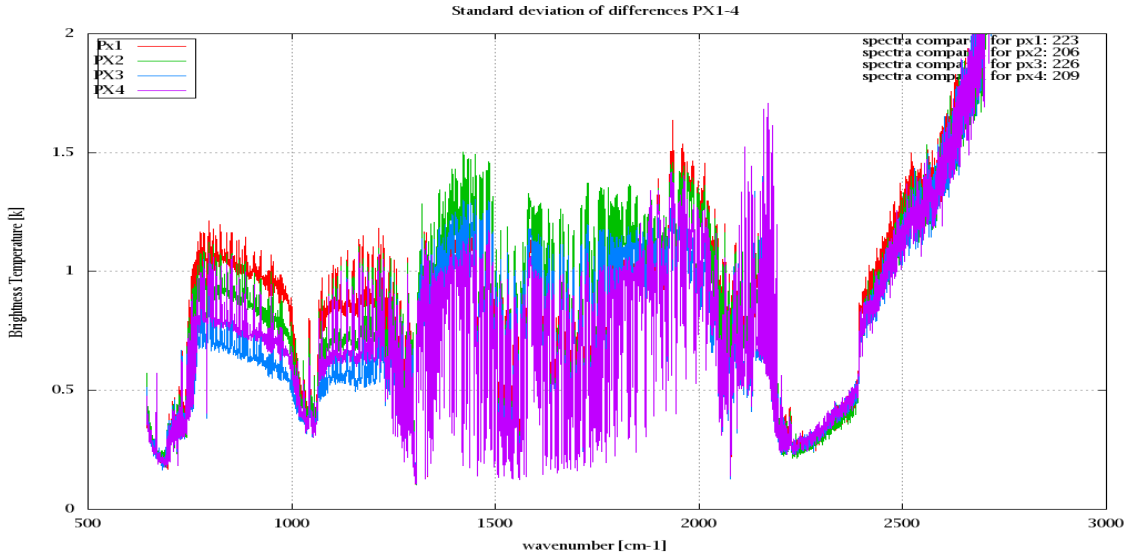

Figure 9: Standard Deviation of Radiance differences

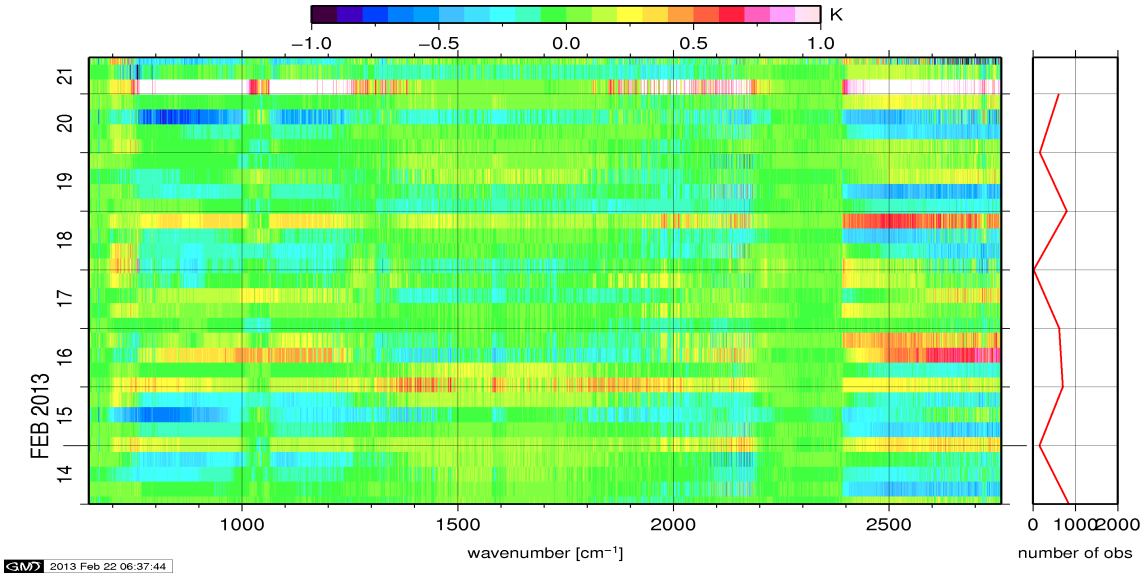

Figure 10: Radiance Anomaly in BRT: All Channels

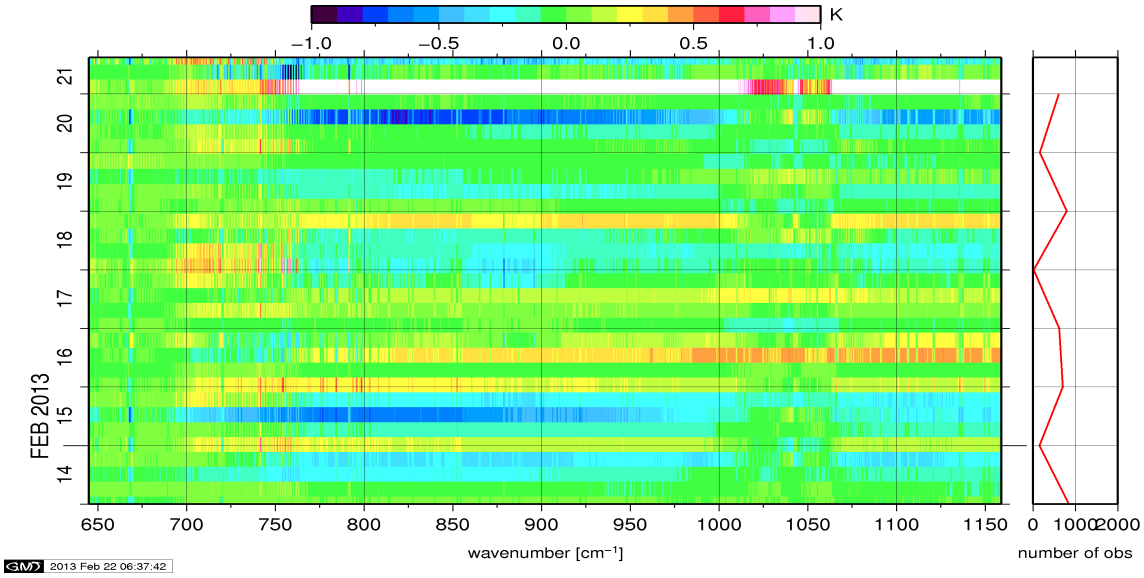

Figure 11: Radiance Anomaly in BRT: IASI Band 1

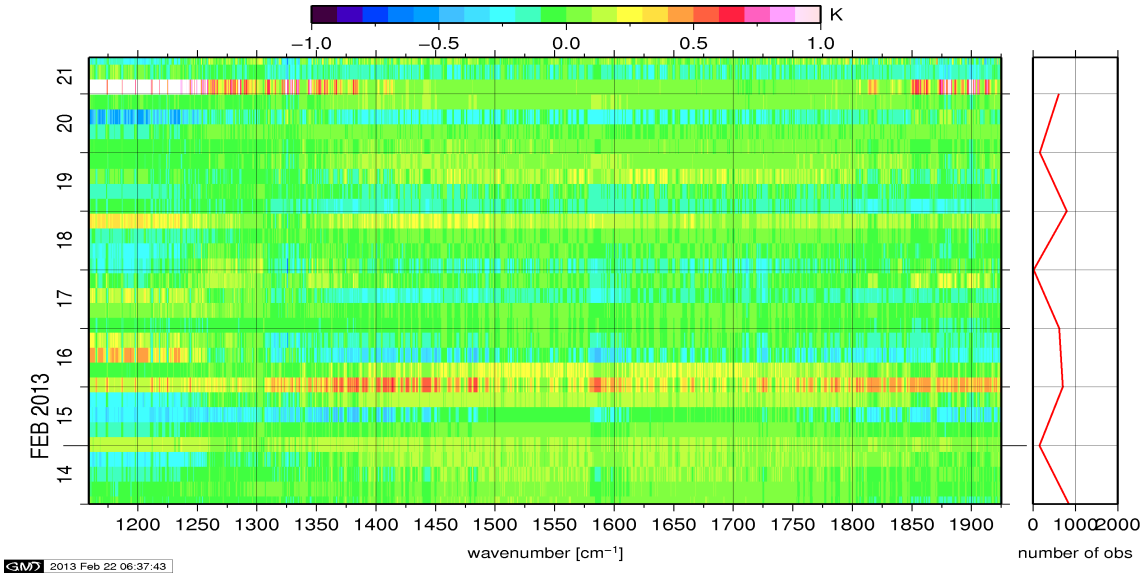

Figure 12: Radiance Anomaly in BRT: IASI Band 2

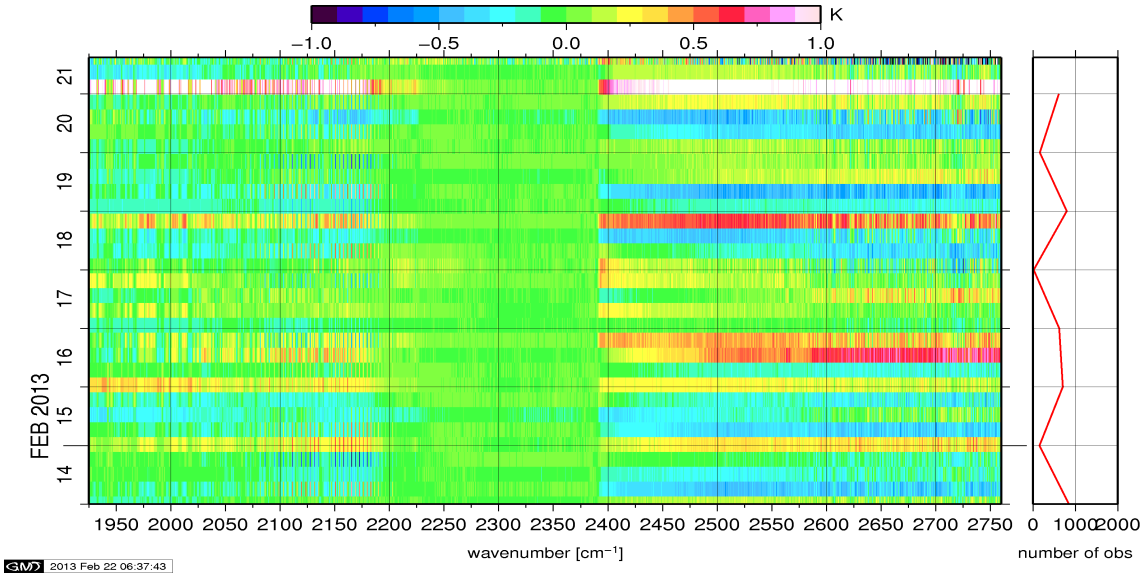

Figure 13: Radiance Anomaly in BRT: IASI Band 3

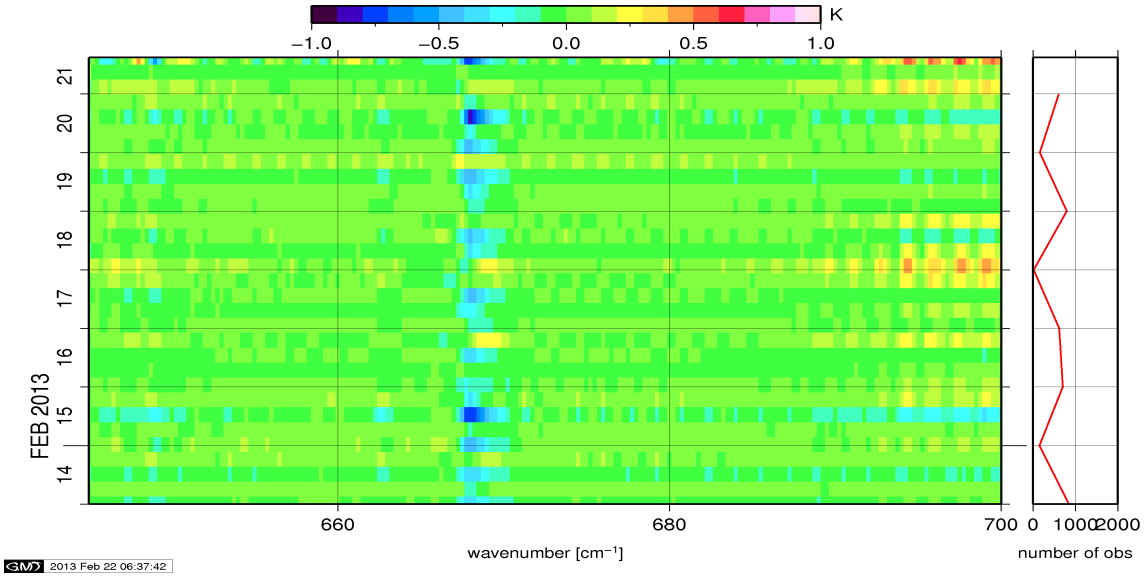

Figure 14: Radiance Anomaly in BRT: CO2 14

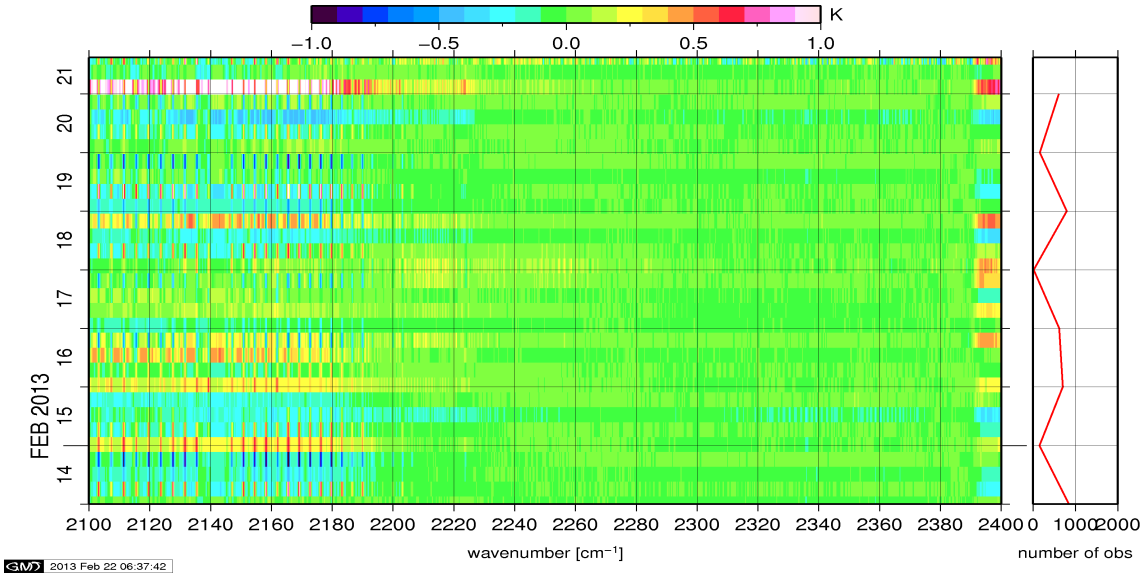

Figure 15: Radiance Anomaly in BRT: CO2 4.3

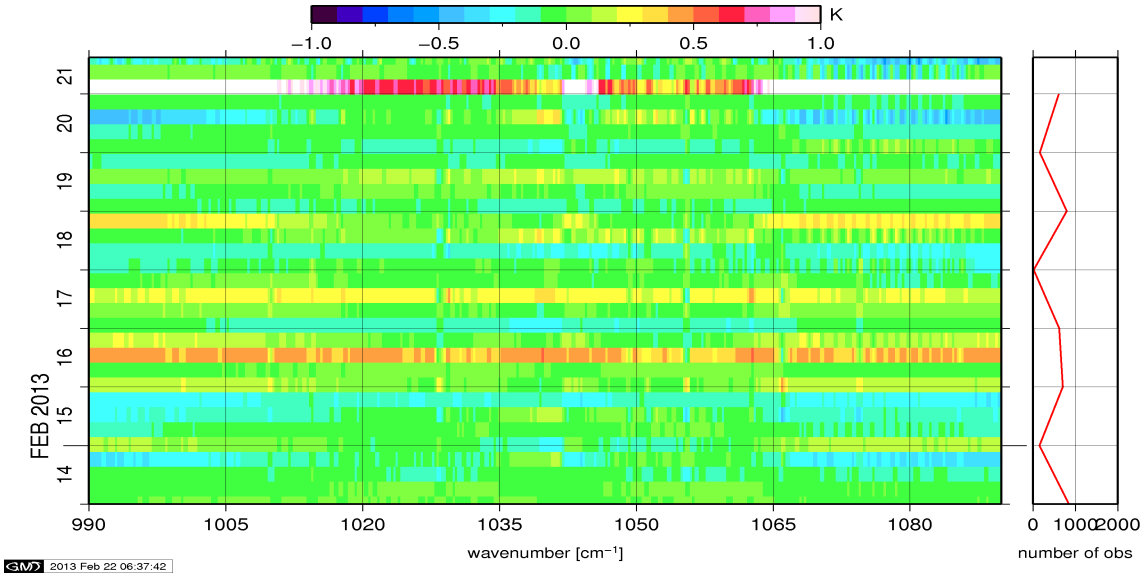

Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparision Channel 1-19

The radiance comparision 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.

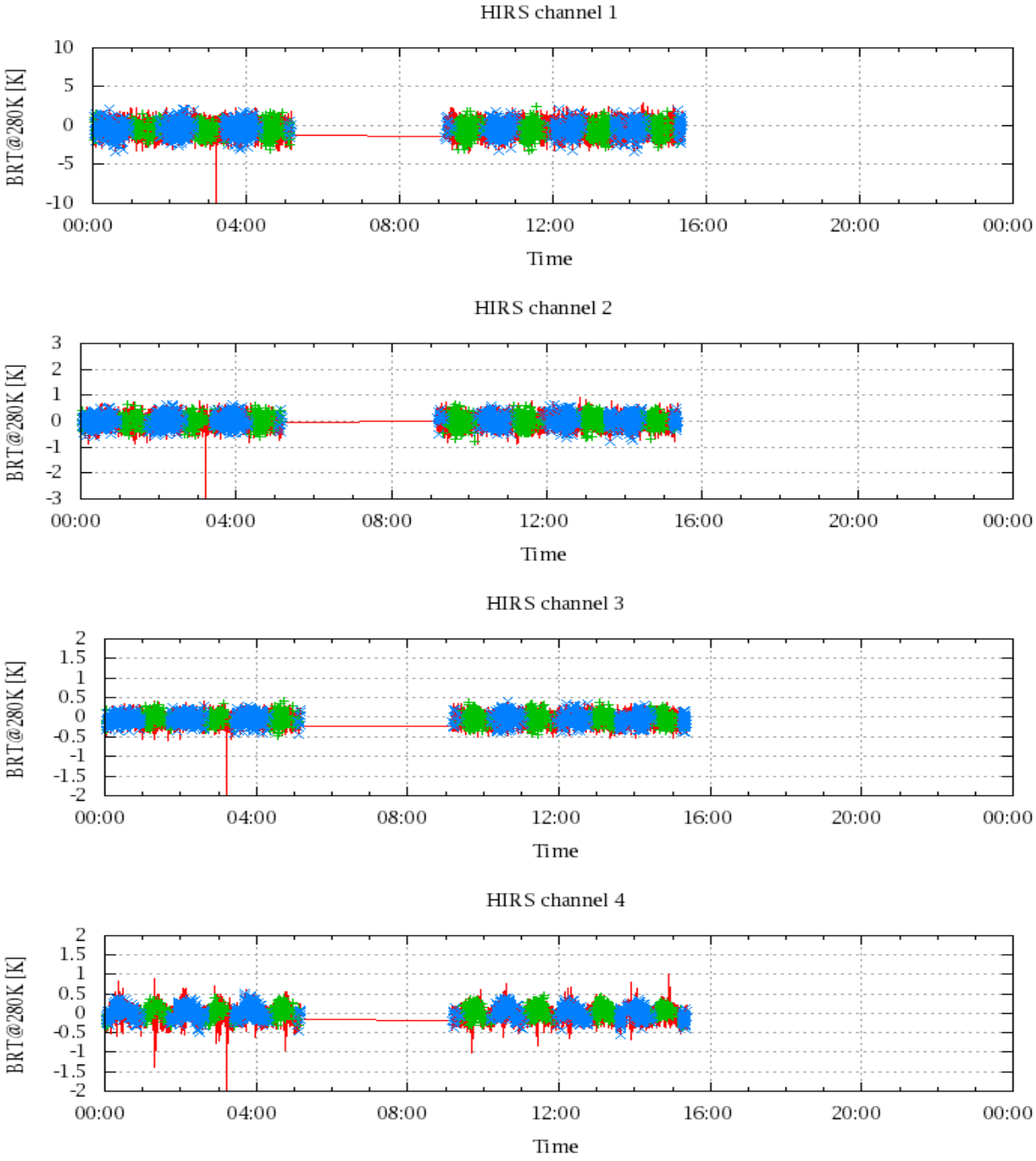

Figure 17: Radiance Differences in BRT

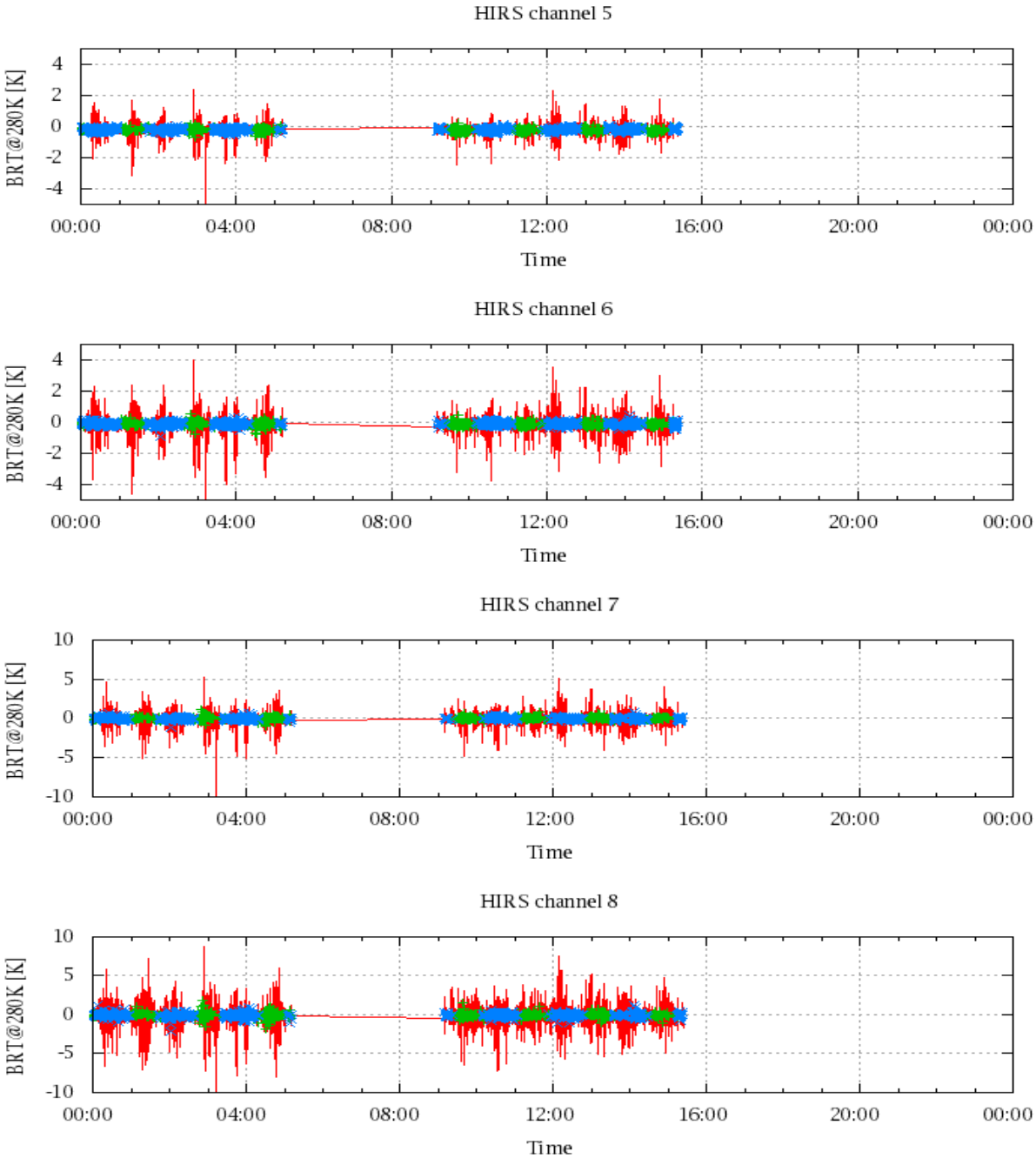

Figure 18: Radiance Differences in BRT

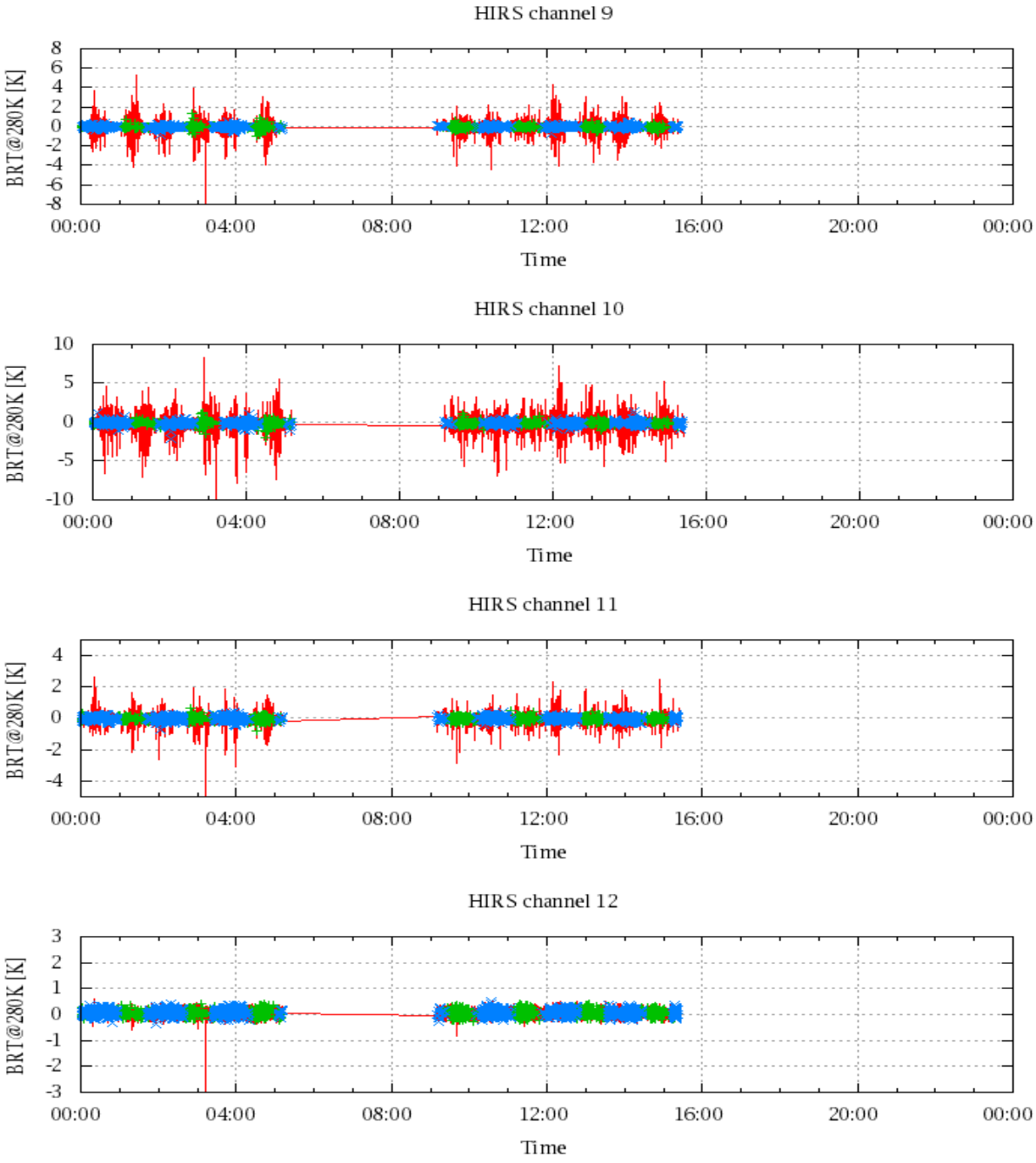

Figure 19: Radiance Differences in BRT

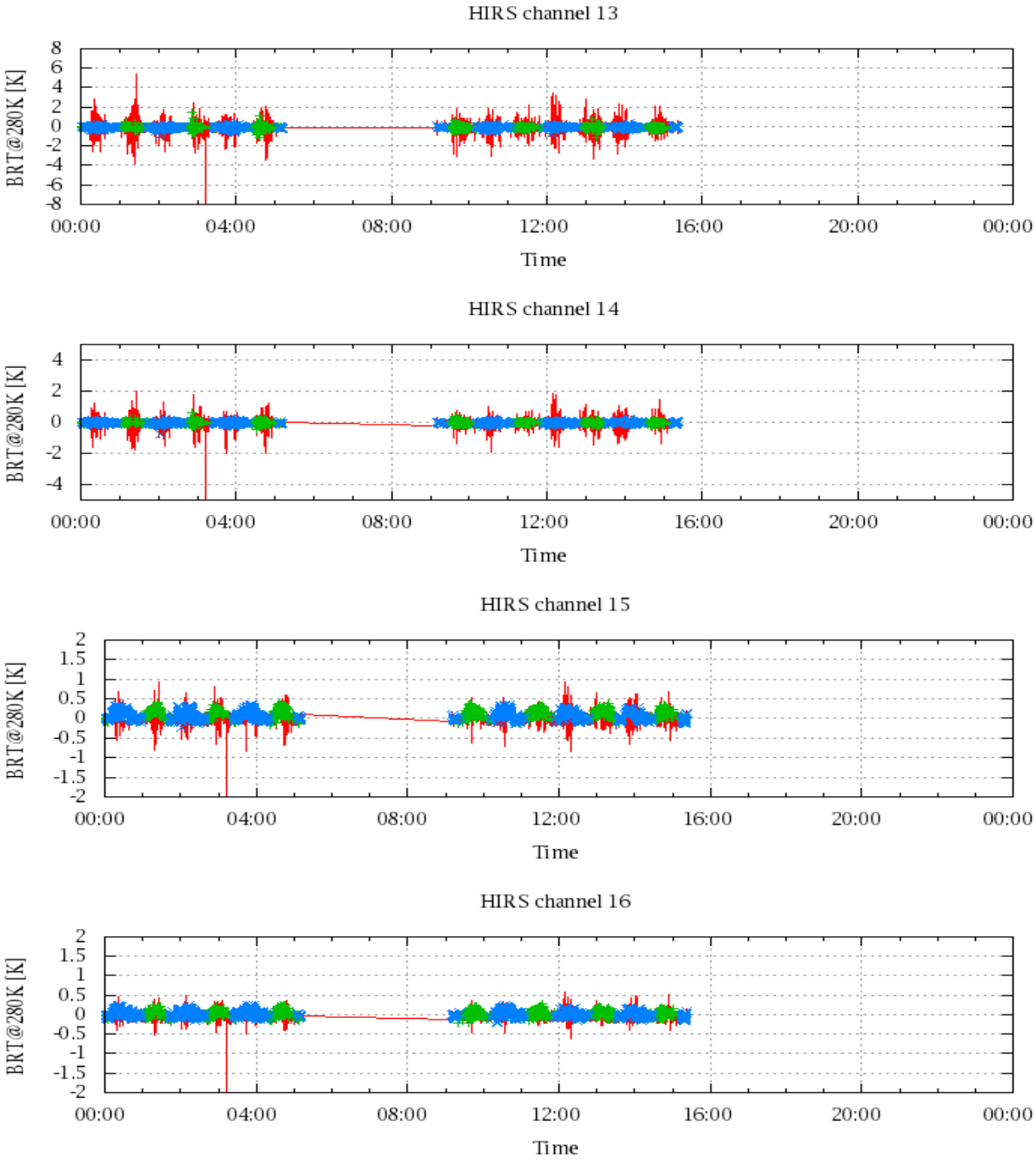

Figure 20: Radiance Differences in BRT

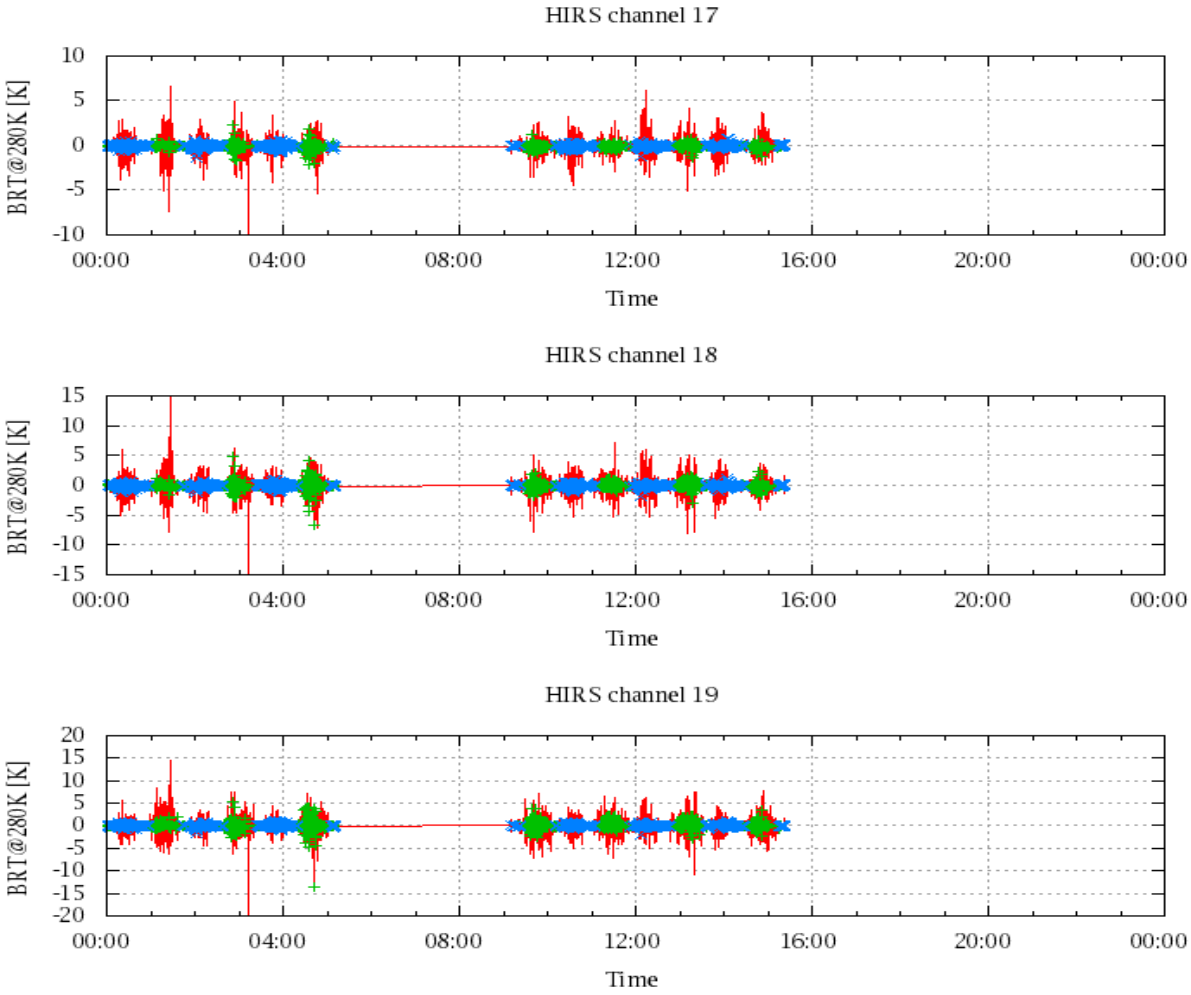

Figure 21: Radinace Differences in BRT