IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

06/08/2012 00:00:00 - 07/08/2012 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 06/08/2012 00:00:00 - 07/08/2012 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 06/08/2012 00:00:00 - 07/08/2012 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)	421	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)	4142	4154	20120806025504.893	20120806025507.487
PX1 (130)	4159	4168	20120806025510.081	20120806025512.026
PX1 (130)	4168	4179	20120806025512.026	20120806025514.405
PX1 (130)	4190	4194	20120806025518.295	20120806025519.163
PX1 (130)	4195	4205	20120806025519.377	20120806025521.538
PX2 (135)	4142	4153	20120806025504.893	20120806025507.268
PX2 (135)	4159	4168	20120806025510.081	20120806025512.026
PX2 (135)	4168	4179	20120806025512.026	20120806025514.405
PX2 (135)	4190	4194	20120806025518.295	20120806025519.163
PX2 (135)	4195	4204	20120806025519.377	20120806025521.323
PX3 (140)	4142	4153	20120806025504.893	20120806025507.268
PX3 (140)	4159	4168	20120806025510.081	20120806025512.026
PX3 (140)	4168	4179	20120806025512.026	20120806025514.405
PX3 (140)	4190	4194	20120806025518.295	20120806025519.163
PX3 (140)	4195	4204	20120806025519.377	20120806025521.323
PX4 (145)	4142	4153	20120806025504.893	20120806025507.268
PX4 (145)	4158	4168	20120806025509.862	20120806025512.026
PX4 (145)	4168	4179	20120806025512.026	20120806025514.405

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	4190	4193	20120806025518.295	20120806025518.944
PX4 (145)	4194	4204	20120806025519.163	20120806025521.323
IMG (150)	7178	7190	20120806025504.674	20120806025507.268
IMG (150)	7199	7220	20120806025509.862	20120806025514.405
IMG (150)	7227	7229	20120806025515.916	20120806025516.569
IMG (150)	7234	7238	20120806025518.080	20120806025518.944
IMG (150)	7239	7249	20120806025519.163	20120806025521.323
VER (160)	16186	16189	20120806025508.135	20120806025508.135
VER (160)	16189	16191	20120806025508.135	20120806025516.135
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
06/08/2012 00:00:11	-	Normal operation
06/08/2012 04:30:19	Normal operation	Auxiliary ASE synchronised
06/08/2012 04:32:11	Auxiliary ASE synchronised	External calibration
06/08/2012 04:55:39	External calibration	Auxiliary ASE synchronised
06/08/2012 04:57:47	Auxiliary ASE synchronised	Normal operation
06/08/2012 06:10:35	Normal operation	Auxiliary ASE synchronised
06/08/2012 06:12:27	Auxiliary ASE synchronised	External calibration
06/08/2012 06:40:11	External calibration	Auxiliary ASE synchronised
06/08/2012 06:42:03	Auxiliary ASE synchronised	Normal operation
06/08/2012 07:50:35	Normal operation	Auxiliary ASE synchronised
06/08/2012 07:52:43	Auxiliary ASE synchronised	External calibration
06/08/2012 08:20:59	External calibration	Auxiliary ASE synchronised
06/08/2012 08:22:51	Auxiliary ASE synchronised	Normal operation
06/08/2012 09:30:35	Normal operation	Auxiliary ASE synchronised
06/08/2012 09:32:27	Auxiliary ASE synchronised	External calibration
06/08/2012 10:01:31	External calibration	Auxiliary ASE synchronised
06/08/2012 10:03:39	Auxiliary ASE synchronised	Normal operation
06/08/2012 11:10:03	Normal operation	Auxiliary ASE synchronised
06/08/2012 11:12:11	Auxiliary ASE synchronised	External calibration
06/08/2012 11:42:03	External calibration	Auxiliary ASE synchronised
06/08/2012 11:44:11	Auxiliary ASE synchronised	Normal operation
06/08/2012 12:53:47	Normal operation	Auxiliary ASE synchronised
06/08/2012 12:55:39	Auxiliary ASE synchronised	External calibration
06/08/2012 13:22:19	External calibration	Auxiliary ASE synchronised
06/08/2012 13:24:27	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)	98.63 %	-
GQisFlagQual set (PX2)	98.52 %	-
GQisFlagQual set (PX3)	98.66 %	-
GQisFlagQual set (PX4)	99.00 %	-
GQisFlagQual set (all)	98.70 %	-

Table 4: Quality flags

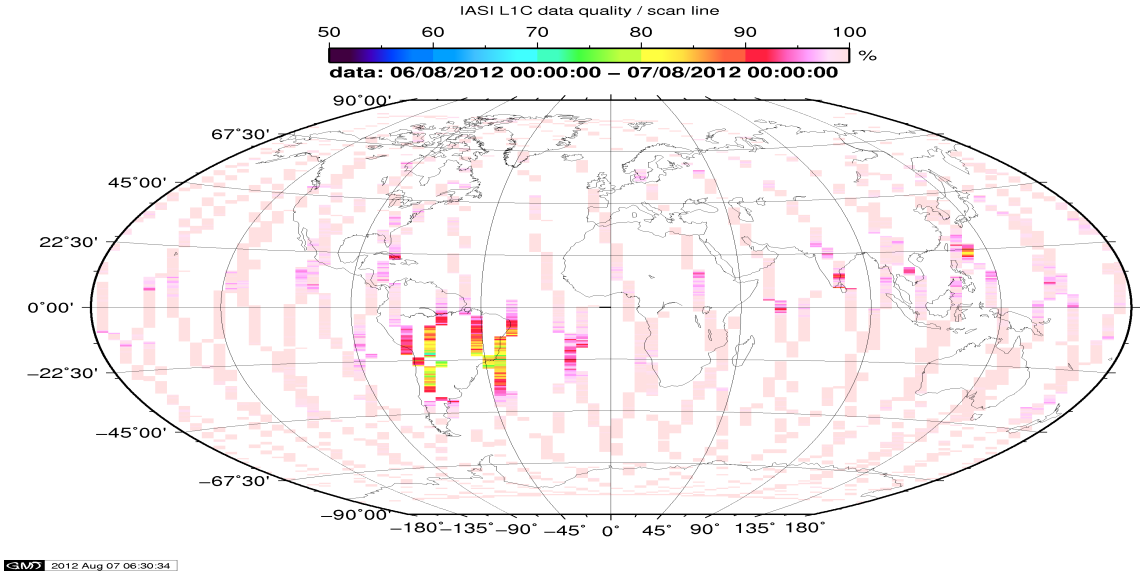

Figure 1: L1C data quality

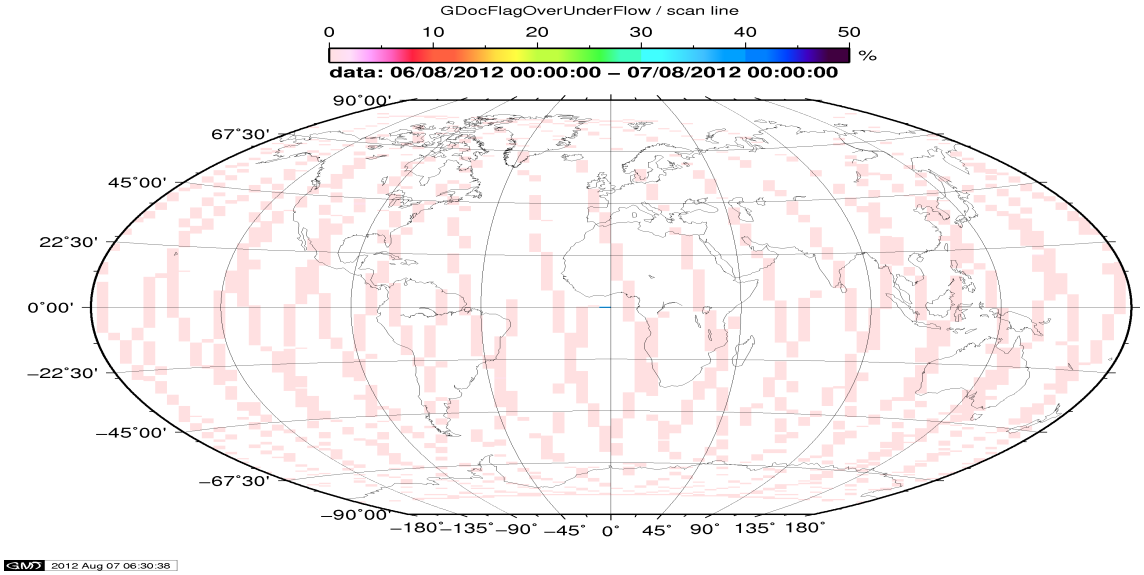

Figure 2: Flag of Over and Under Flows

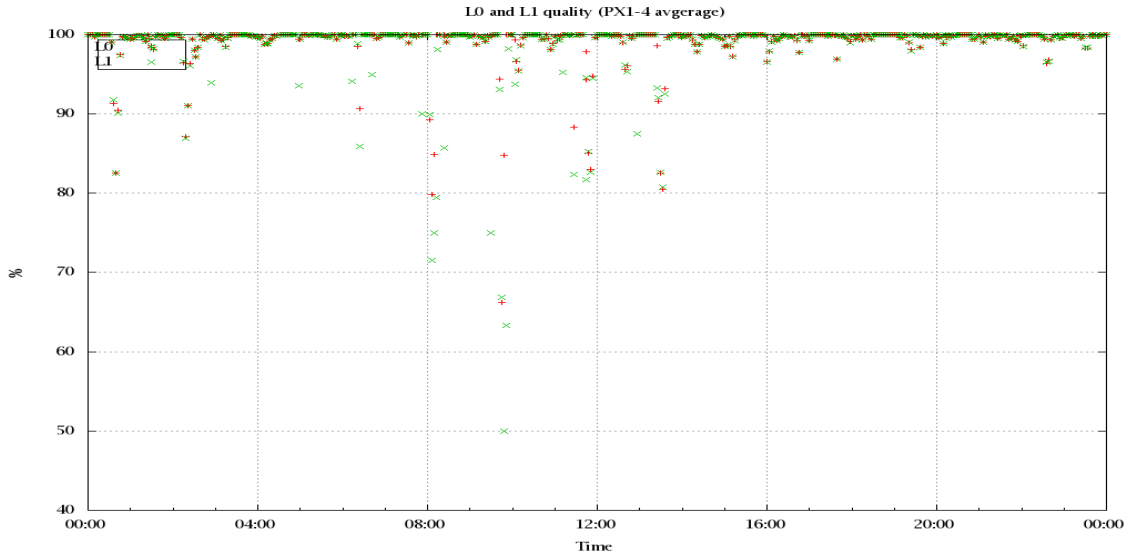

Figure 3: Level 0 and 1C overall quality

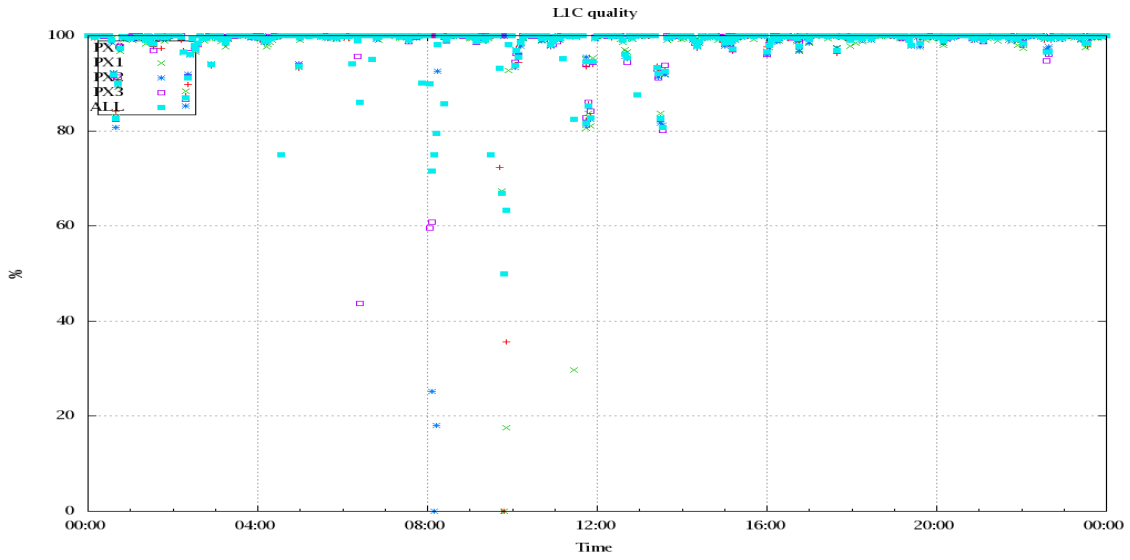

Figure 4: Level 1C quality

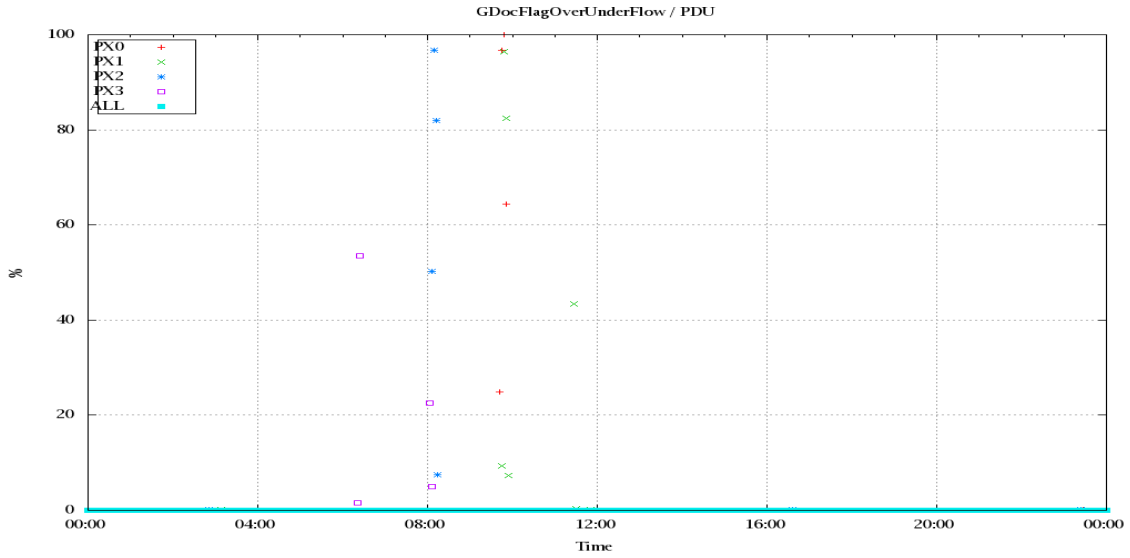

Figure 5: OverUnderFlowFlag timeseries

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.

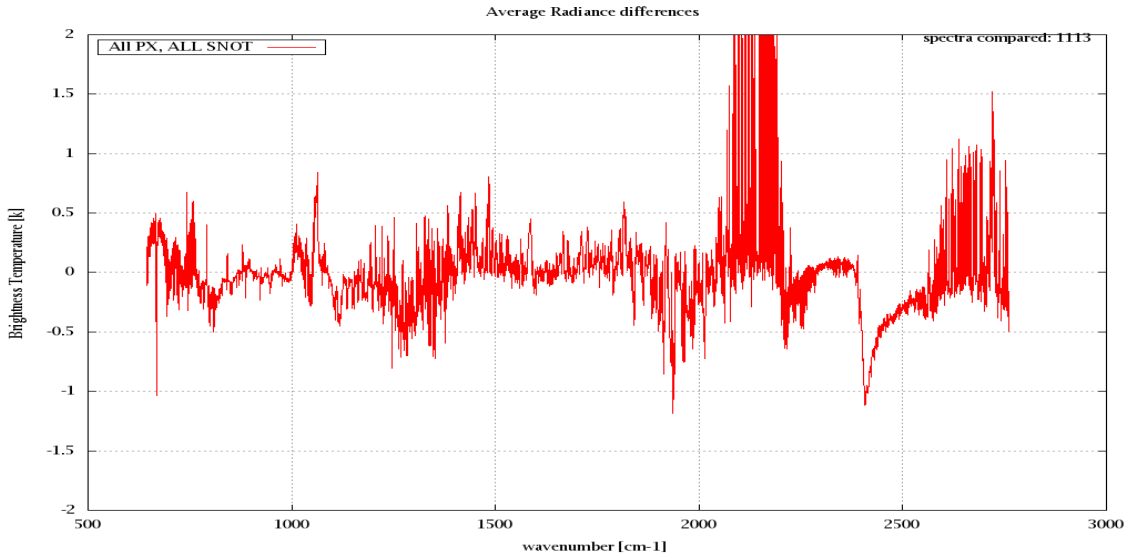

Figure 6: Average Radiance differences: OBS-CAL

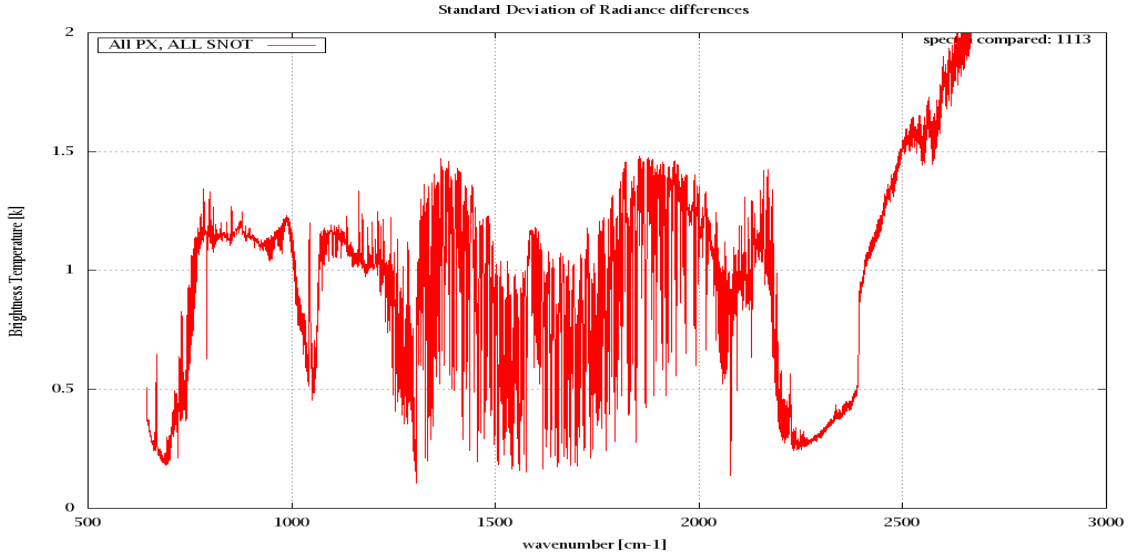

Figure 7: Standard Deviation of Radiance differences

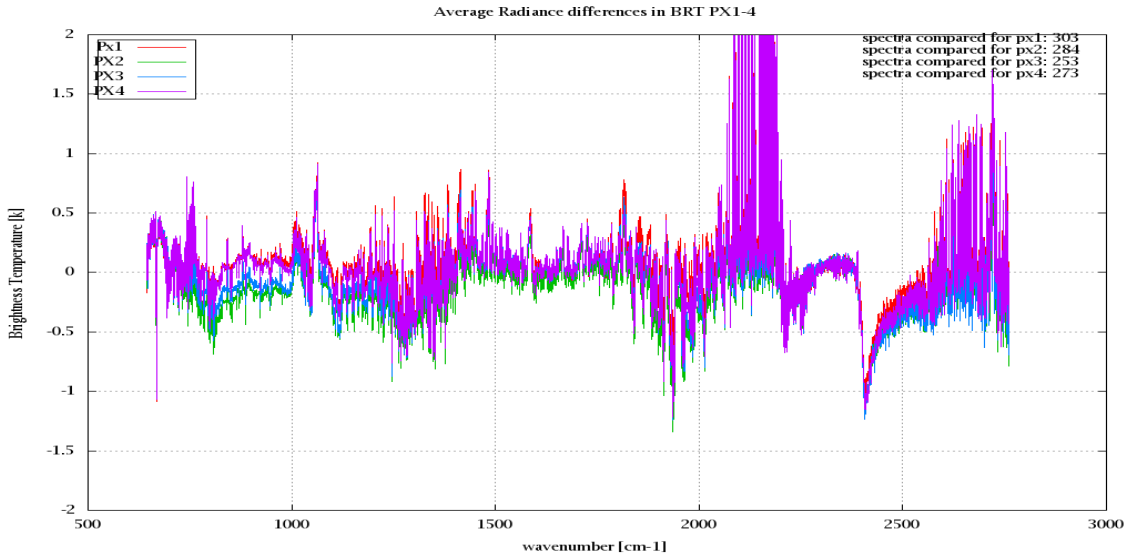

Figure 8: Average Radiance differences: OBS-CAL

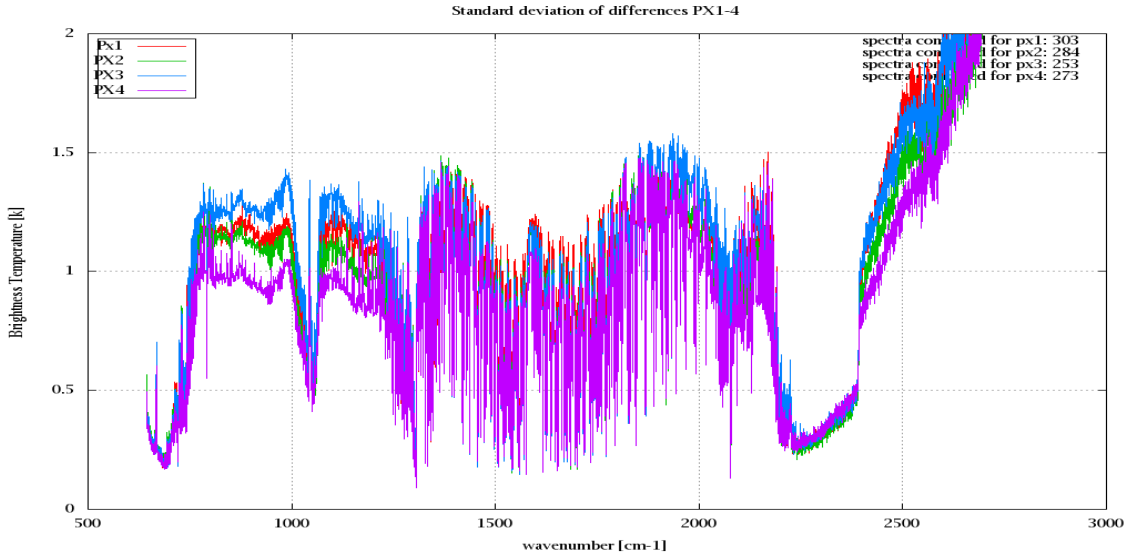

Figure 9: Standard Deviation of Radiance differences

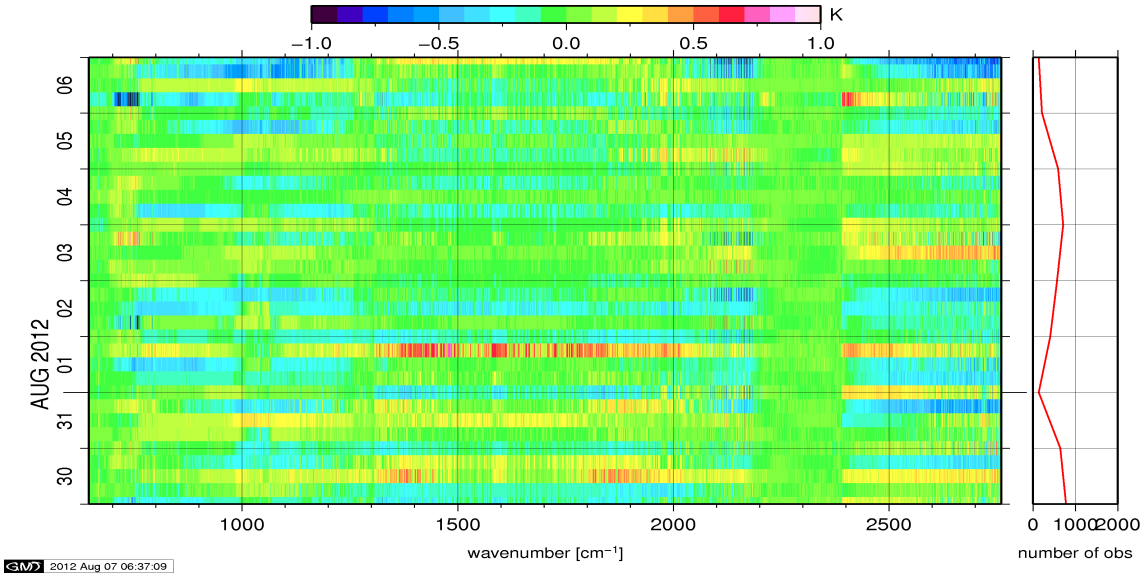

Figure 10: Radiance Anomaly in BRT: All Channels

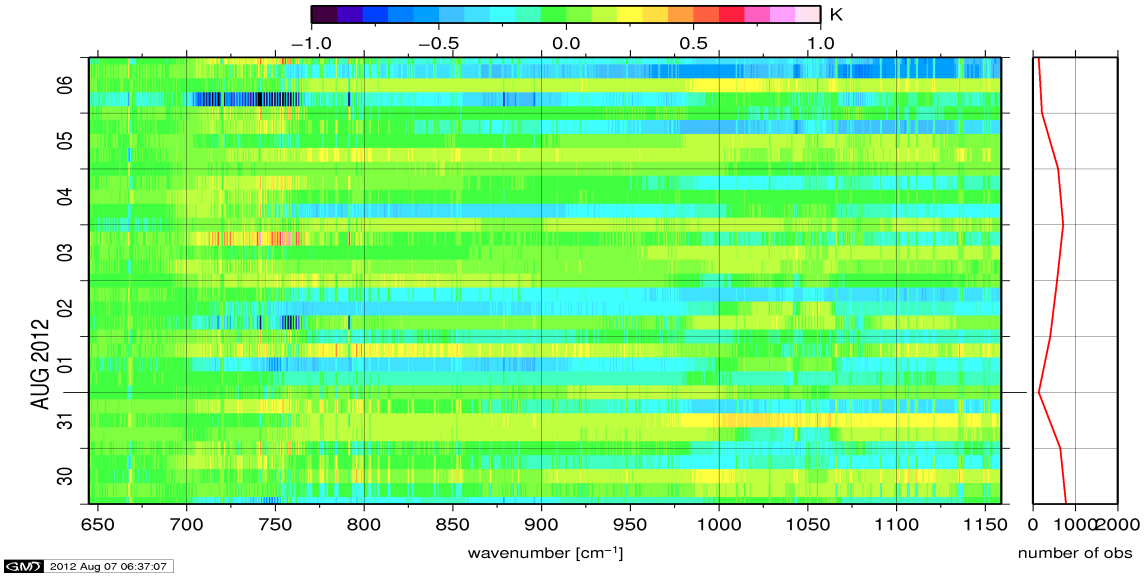

Figure 11: Radiance Anomaly in BRT: IASI Band 1

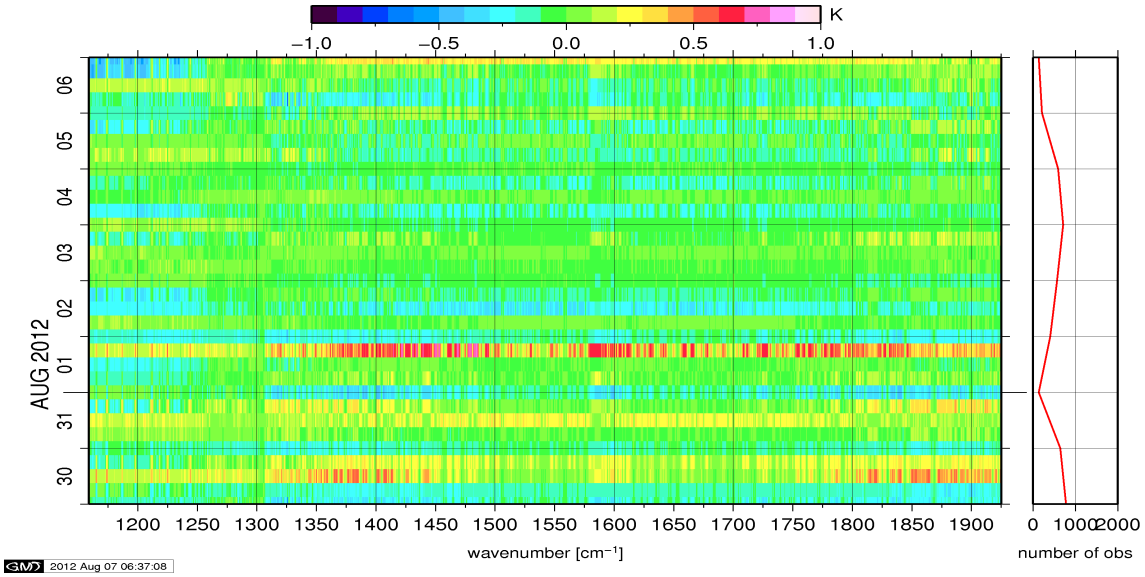

Figure 12: Radiance Anomaly in BRT: IASI Band 2

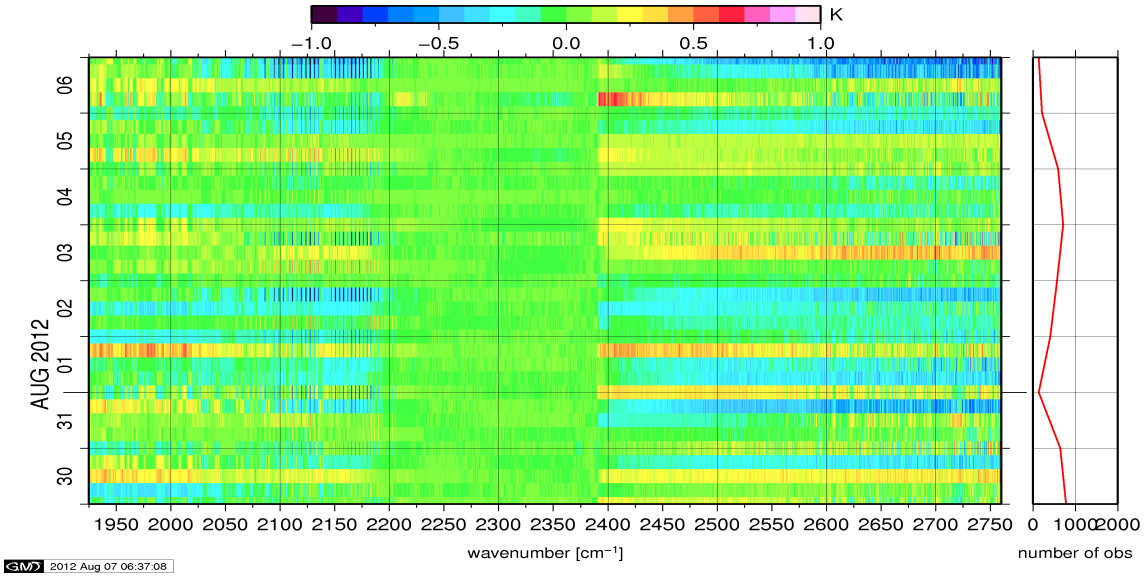

Figure 13: Radiance Anomaly in BRT: IASI Band 3

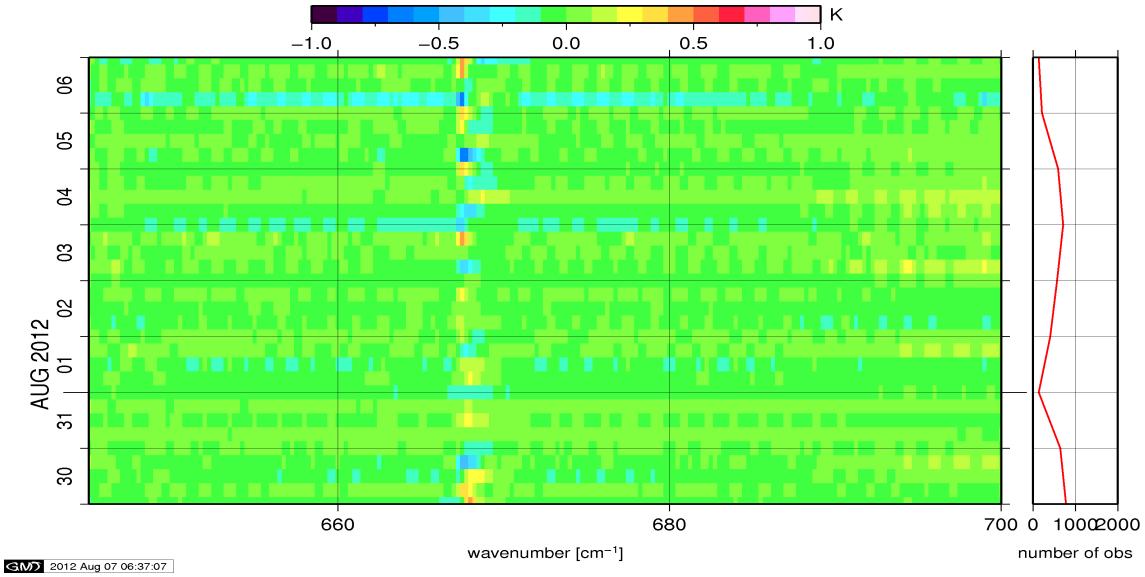

Figure 14: Radiance Anomaly in BRT: CO2 14

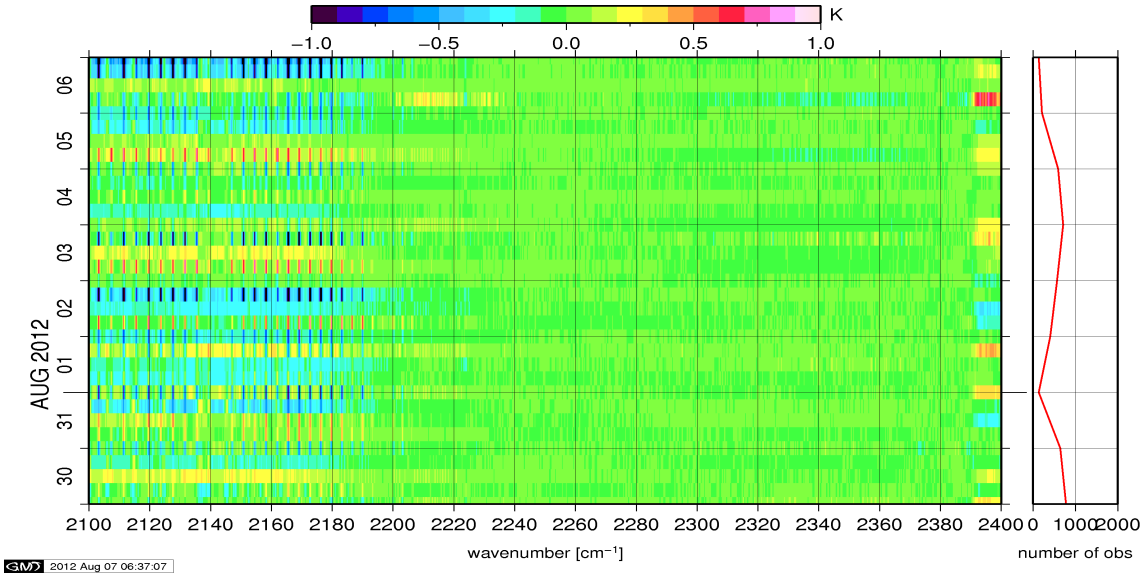

Figure 15: Radiance Anomaly in BRT: CO2 4.3

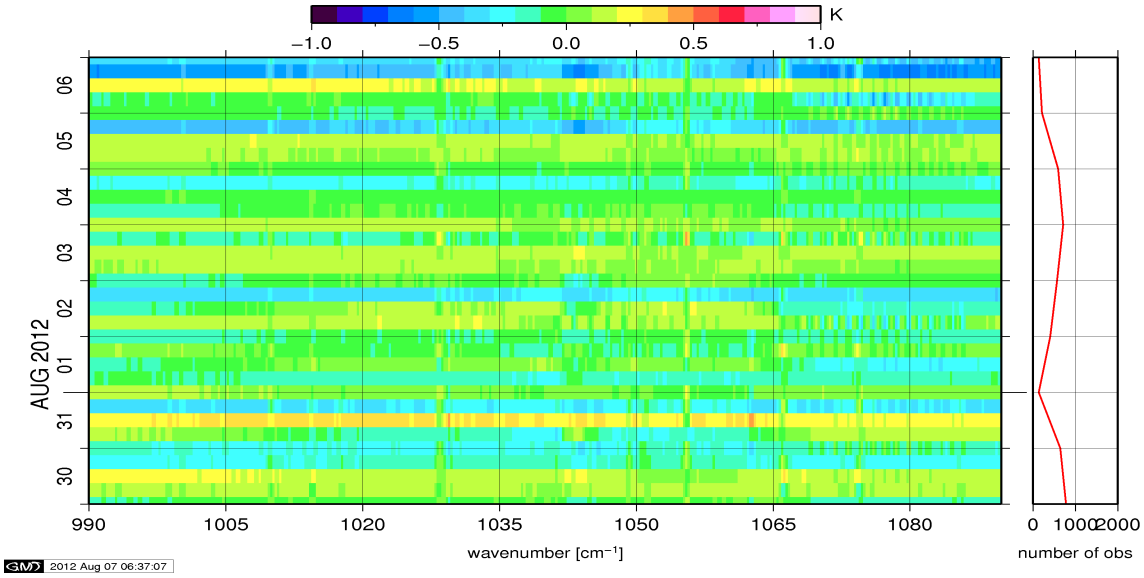

Figure 16: Radiance Anomaly in BRT: O3

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.

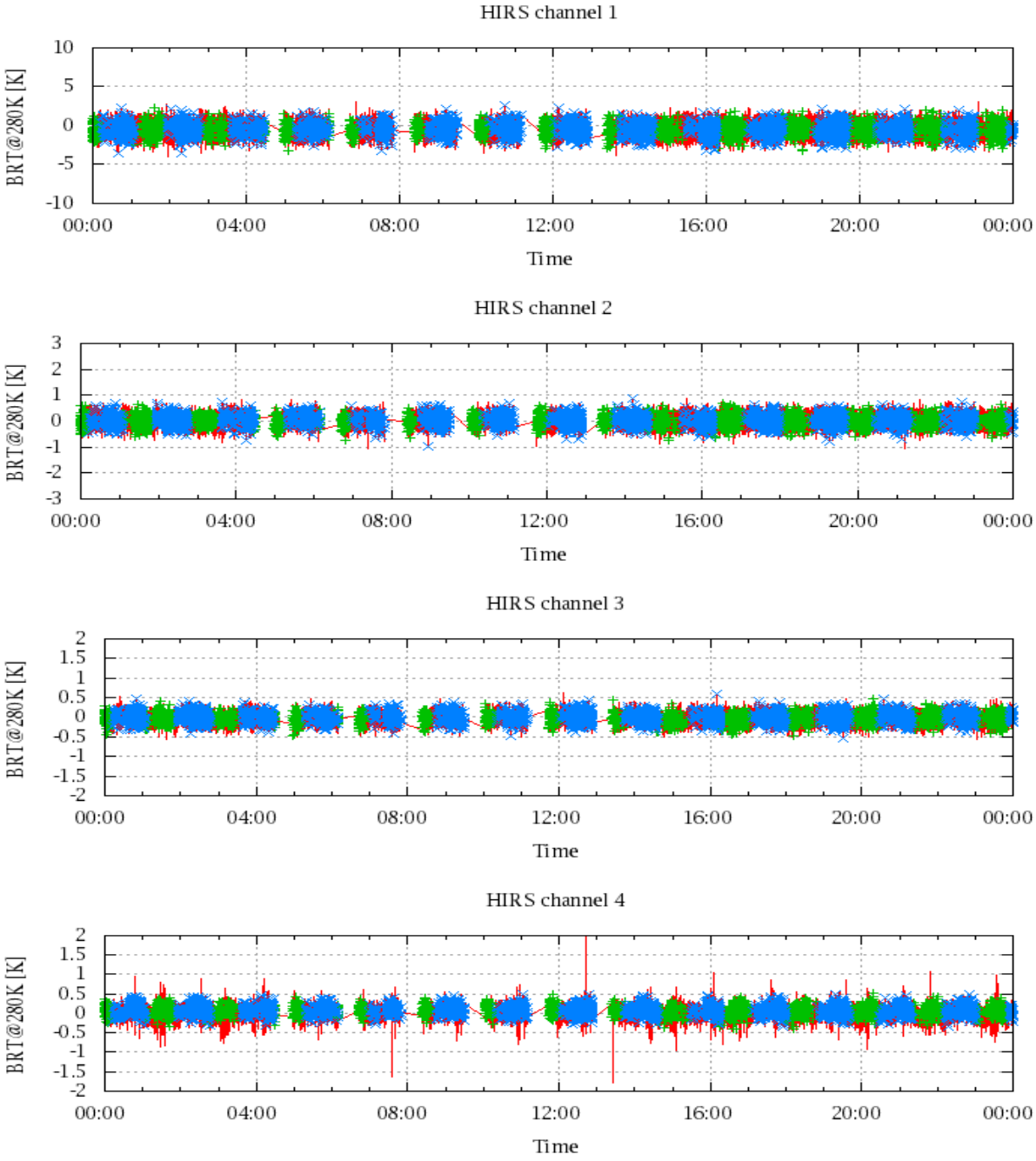

Figure 17: Radiance Differences in BRT

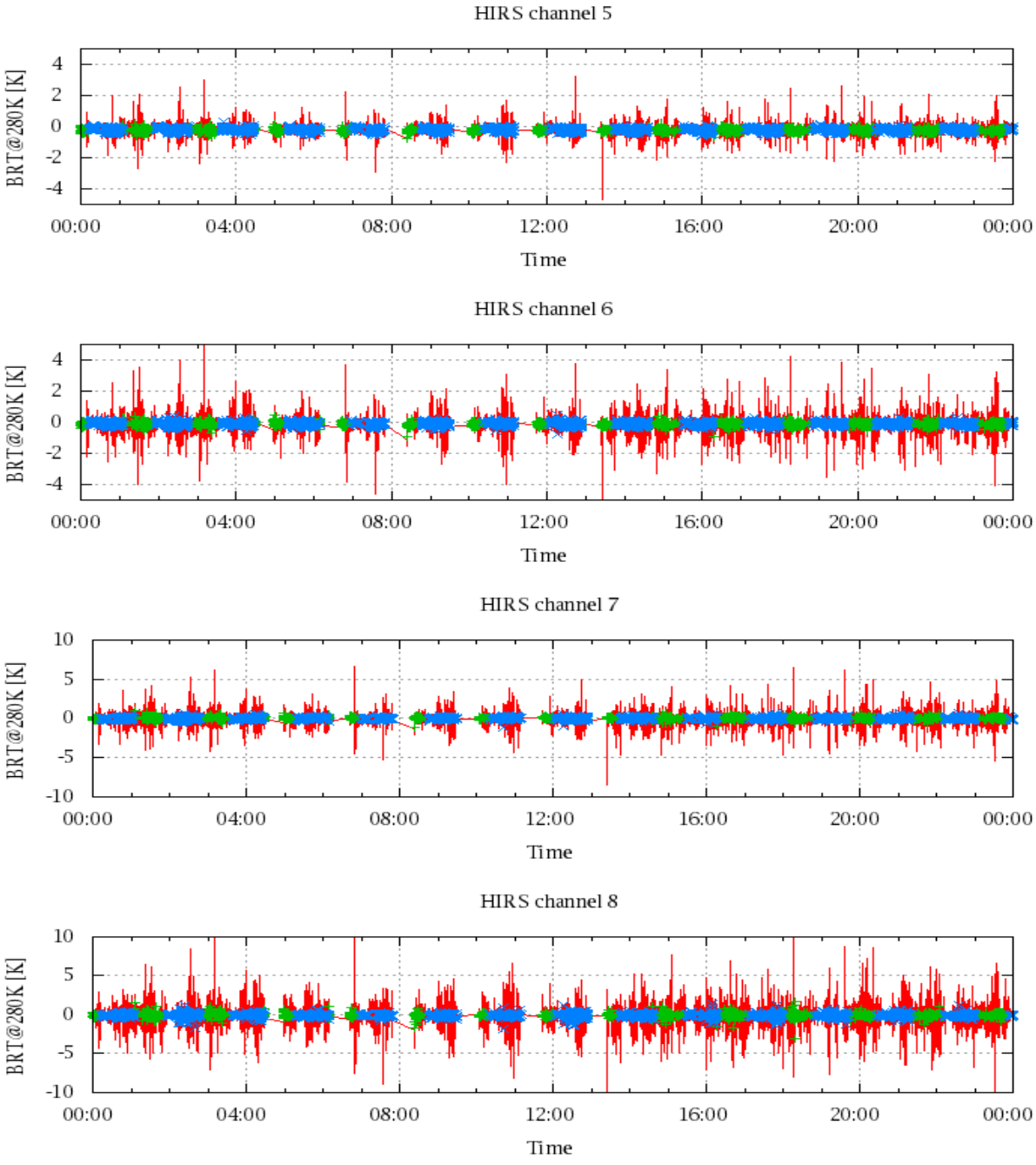

Figure 18: Radiance Differences in BRT

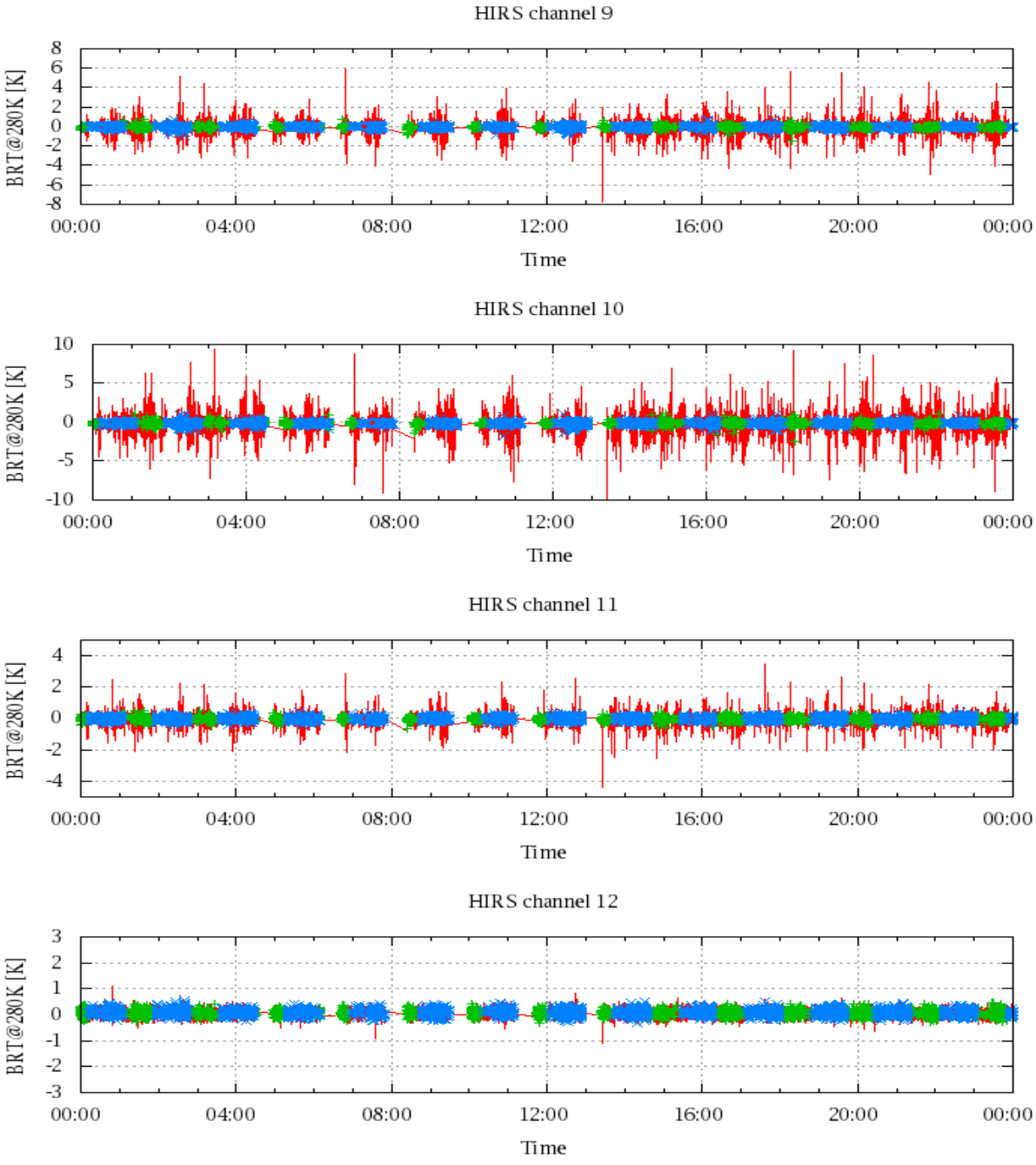

Figure 19: Radiance Differences in BRT

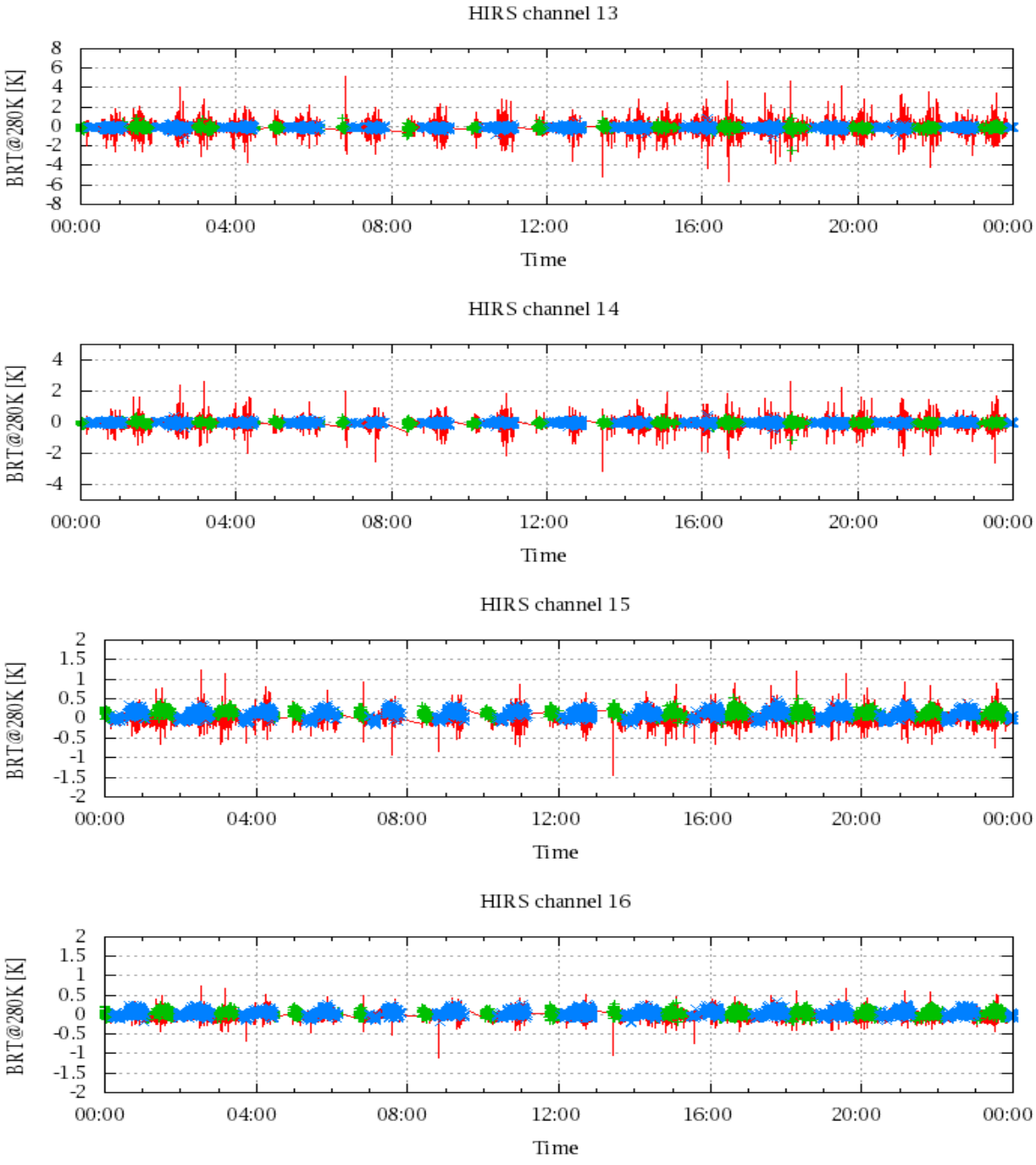

Figure 20: Radiance Differences in BRT

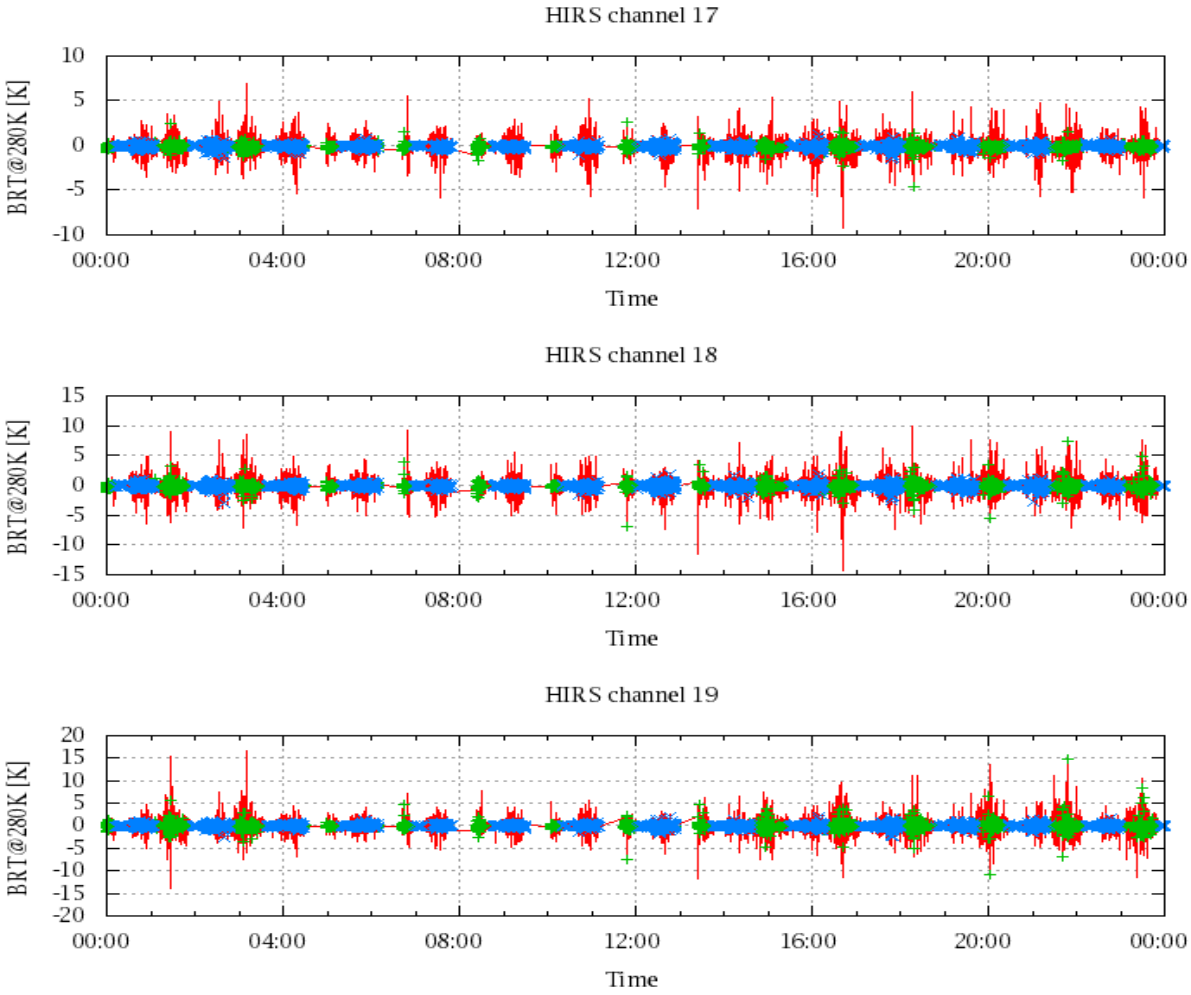

Figure 21: Radinace Differences in BRT