IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

02/07/2012 00:00:00 - 03/07/2012 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 02/07/2012 00:00:00 - 03/07/2012 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 02/07/2012 00:00:00 - 03/07/2012 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)	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)	4681	4697	20120702032457.300	20120702032502.269
PX1 (130)	4699	4707	20120702032502.702	20120702032504.433
PX1 (130)	4707	4718	20120702032504.433	20120702032506.812
PX1 (130)	4719	4733	20120702032507.026	20120702032511.569
PX1 (130)	4734	4744	20120702032511.784	20120702032513.944
PX1 (130)	4745	4758	20120702032514.163	20120702032518.487
PX1 (130)	4758	4769	20120702032518.487	20120702032520.866
PX1 (130)	4769	4794	20120702032520.866	20120702032527.784
PX2 (135)	4681	4696	20120702032457.300	20120702032502.054
PX2 (135)	4699	4707	20120702032502.702	20120702032504.433
PX2 (135)	4707	4718	20120702032504.433	20120702032506.812
PX2 (135)	4719	4733	20120702032507.026	20120702032511.569
PX2 (135)	4734	4744	20120702032511.784	20120702032513.944
PX2 (135)	4744	4758	20120702032513.944	20120702032518.487
PX2 (135)	4758	4794	20120702032518.487	20120702032527.784
PX3 (140)	4681	4692	20120702032457.300	20120702032459.675
PX3 (140)	4692	4696	20120702032459.675	20120702032502.054
PX3 (140)	4699	4707	20120702032502.702	20120702032504.433

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	4707	4718	20120702032504.433	20120702032506.812
PX3 (140)	4718	4733	20120702032506.812	20120702032511.569
PX3 (140)	4734	4743	20120702032511.784	20120702032513.729
PX3 (140)	4744	4758	20120702032513.944	20120702032518.487
PX3 (140)	4758	4794	20120702032518.487	20120702032527.784
PX4 (145)	4681	4696	20120702032457.300	20120702032502.054
PX4 (145)	4699	4707	20120702032502.702	20120702032504.433
PX4 (145)	4707	4718	20120702032504.433	20120702032506.812
PX4 (145)	4718	4732	20120702032506.812	20120702032511.351
PX4 (145)	4734	4743	20120702032511.784	20120702032513.729
PX4 (145)	4744	4758	20120702032513.944	20120702032518.487
PX4 (145)	4758	4794	20120702032518.487	20120702032527.784
IMG (150)	4216	4236	20120702032457.081	20120702032502.054
IMG (150)	4238	4258	20120702032502.487	20120702032506.812
IMG (150)	4258	4276	20120702032506.812	20120702032511.351
IMG (150)	4277	4287	20120702032511.569	20120702032513.729
IMG (150)	4288	4334	20120702032513.944	20120702032524.972
IMG (150)	4334	4346	20120702032524.972	20120702032527.784
VER (160)	11801	11822	20120702032451.894	20120702032531.893
AUX (180)	12171	12176	20120702032452.327	20120702032532.323

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
02/07/2012 00:09:07	-	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)	99.31 %	-
GQisFlagQual set (PX2)	99.12 %	-
GQisFlagQual set (PX3)	99.19 %	-
GQisFlagQual set (PX4)	99.36 %	-
GQisFlagQual set (all)	99.24 %	-

Table 4: Quality flags

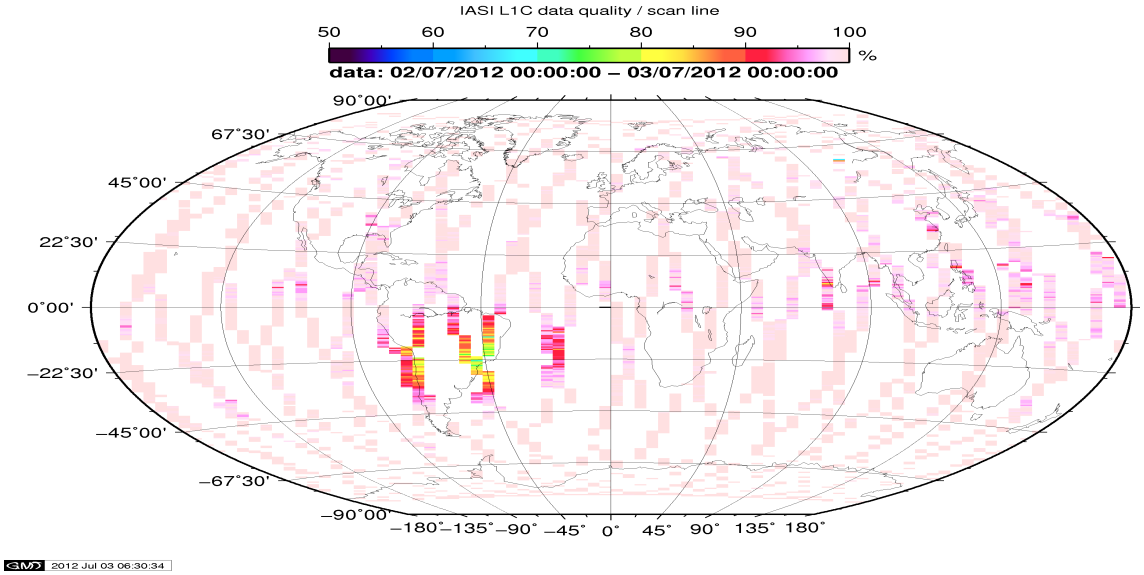

Figure 1: L1C data quality

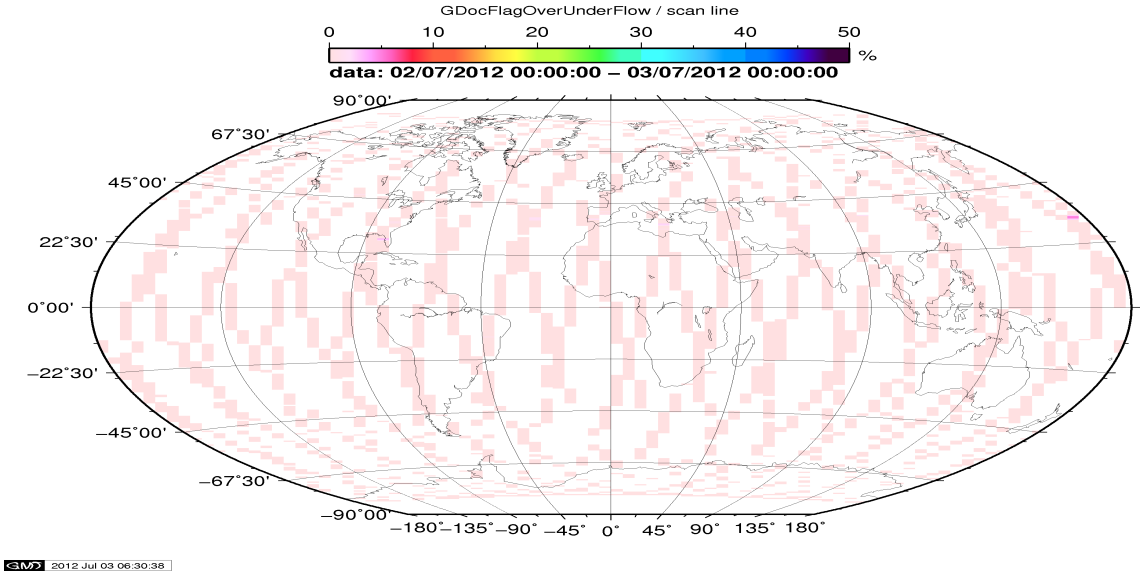

Figure 2: Flag of Over and Under Flows

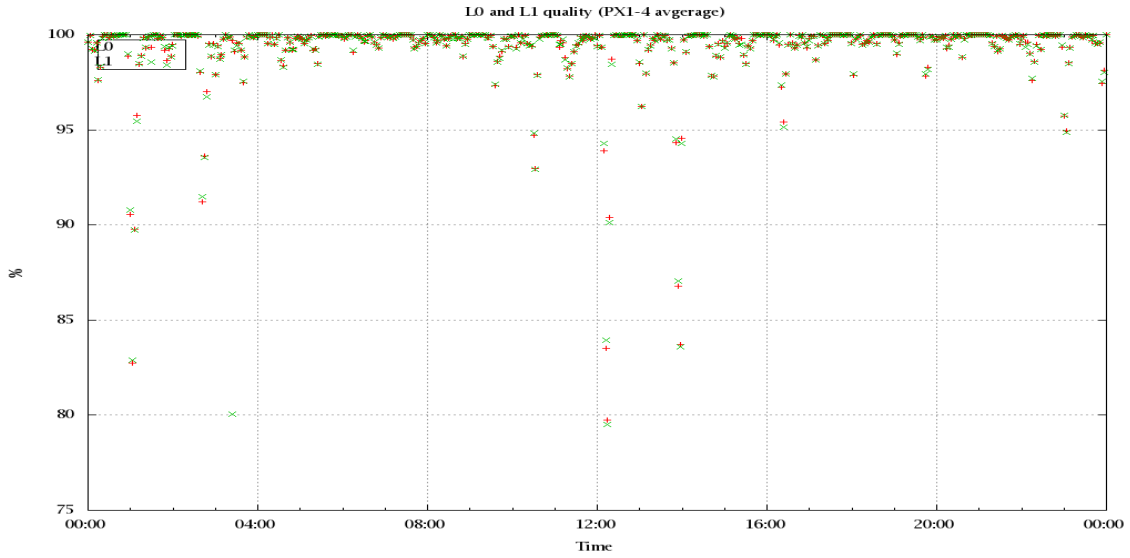

Figure 3: Level 0 and 1C overall quality

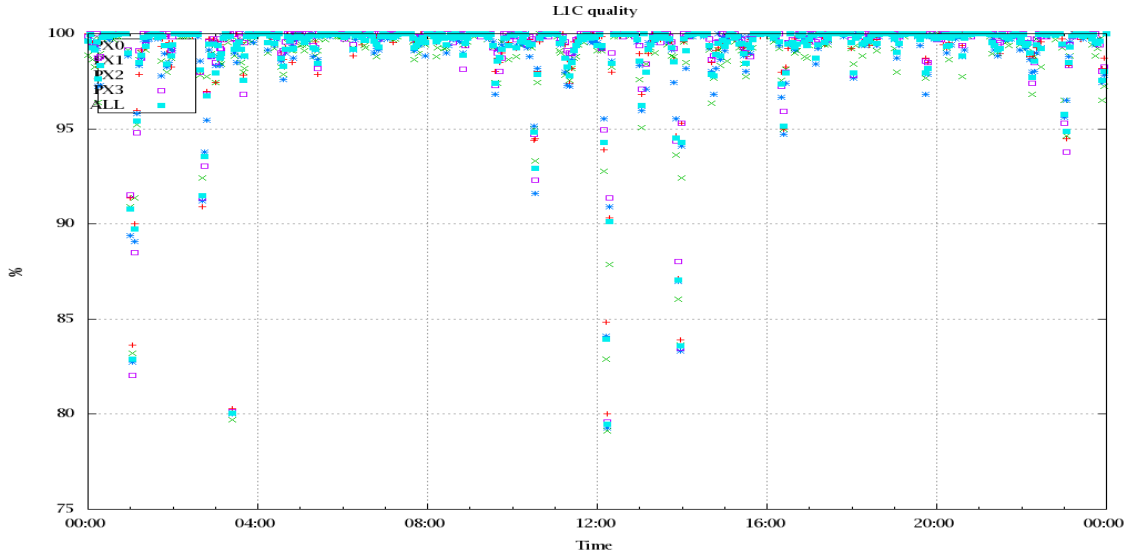

Figure 4: Level 1C quality

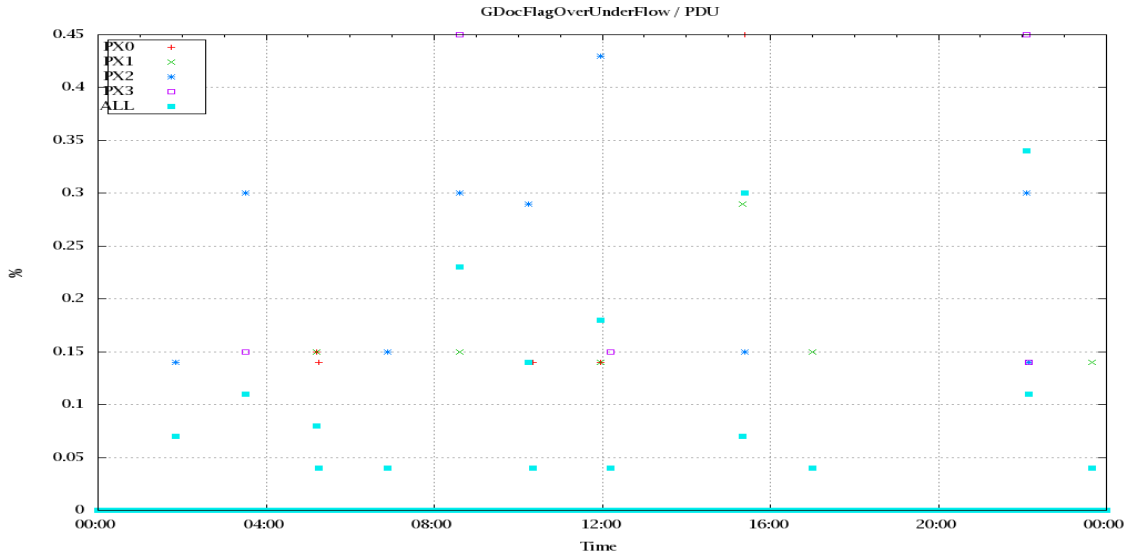

Figure 5: OverUnderFlowFlag timeseries

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.

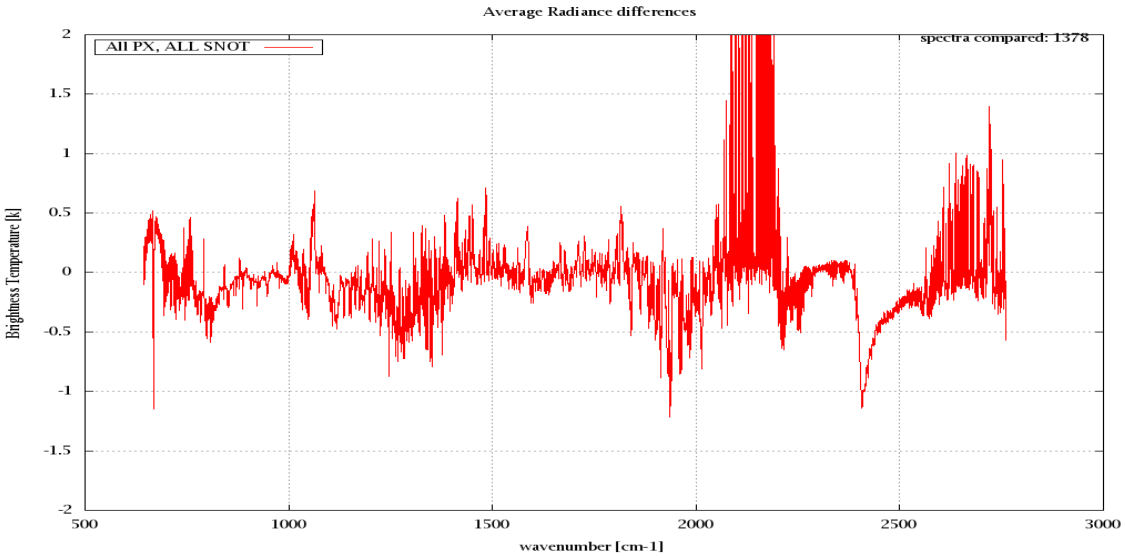

Figure 6: Average Radiance differences: OBS-CAL

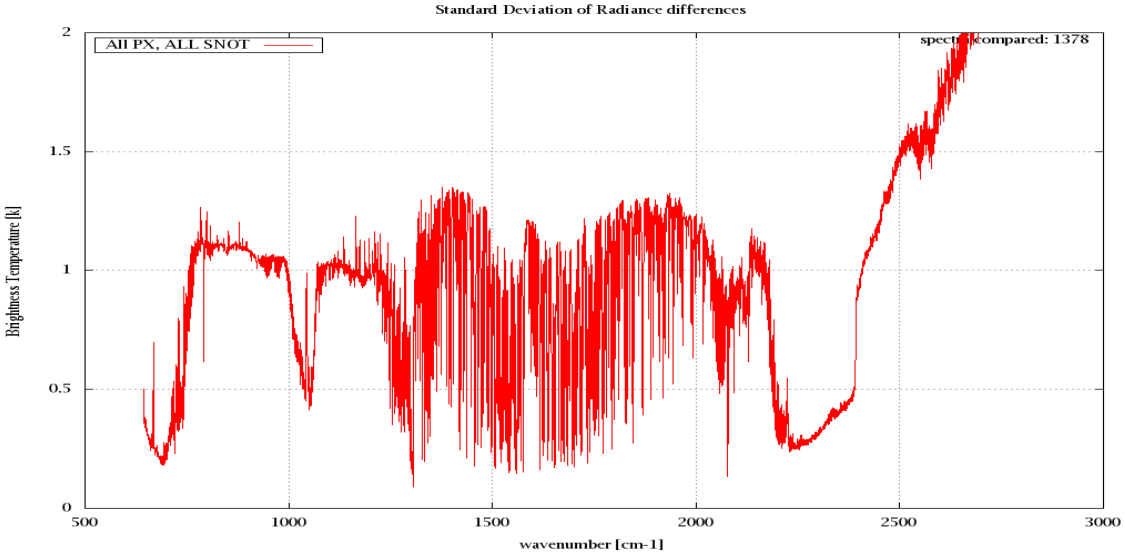

Figure 7: Standard Deviation of Radiance differences

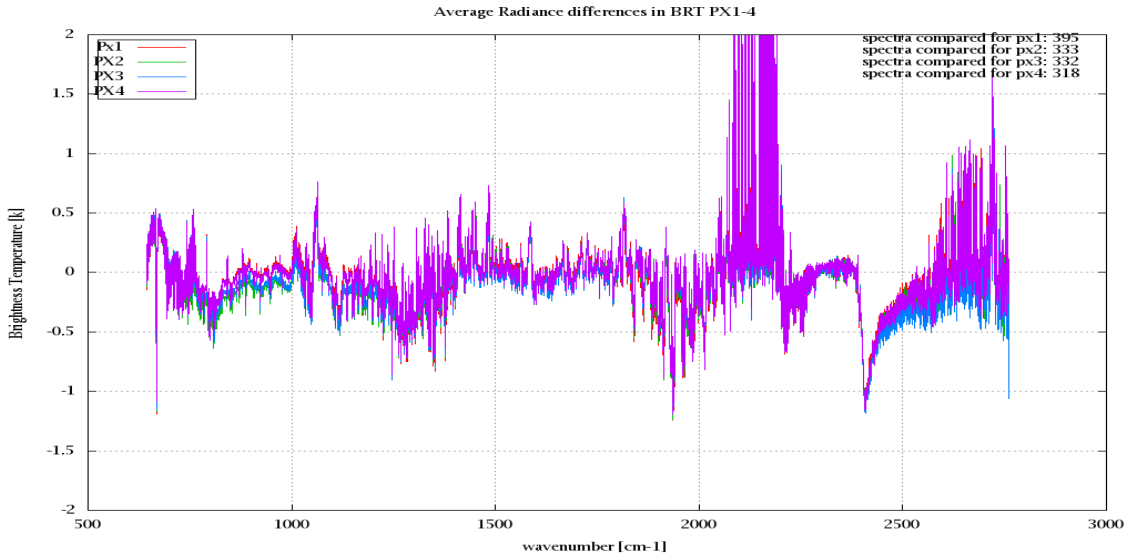

Figure 8: Average Radiance differences: OBS-CAL

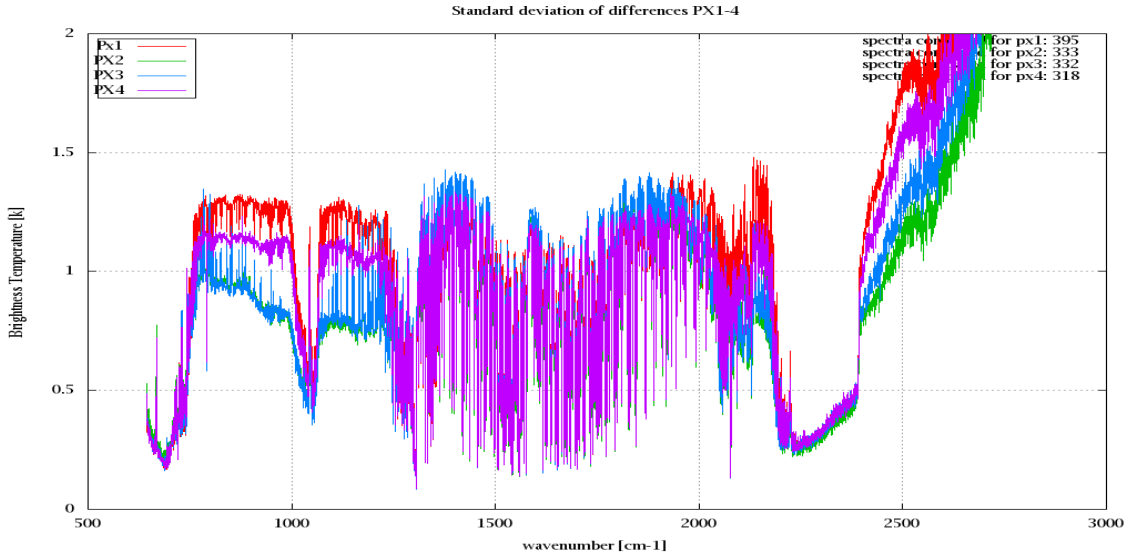

Figure 9: Standard Deviation of Radiance differences

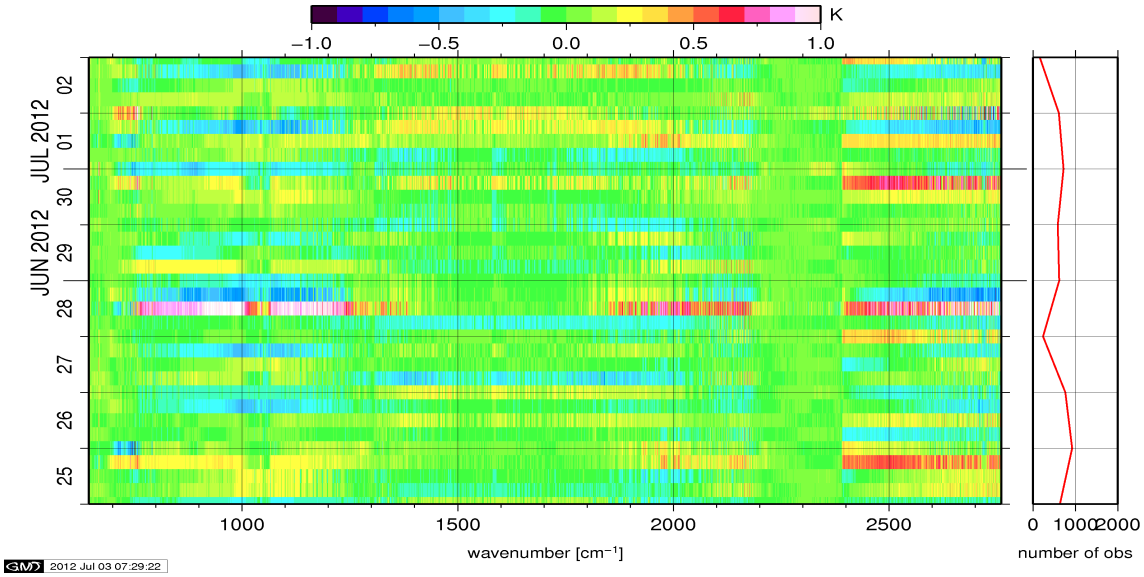

Figure 10: Radiance Anomaly in BRT: All Channels

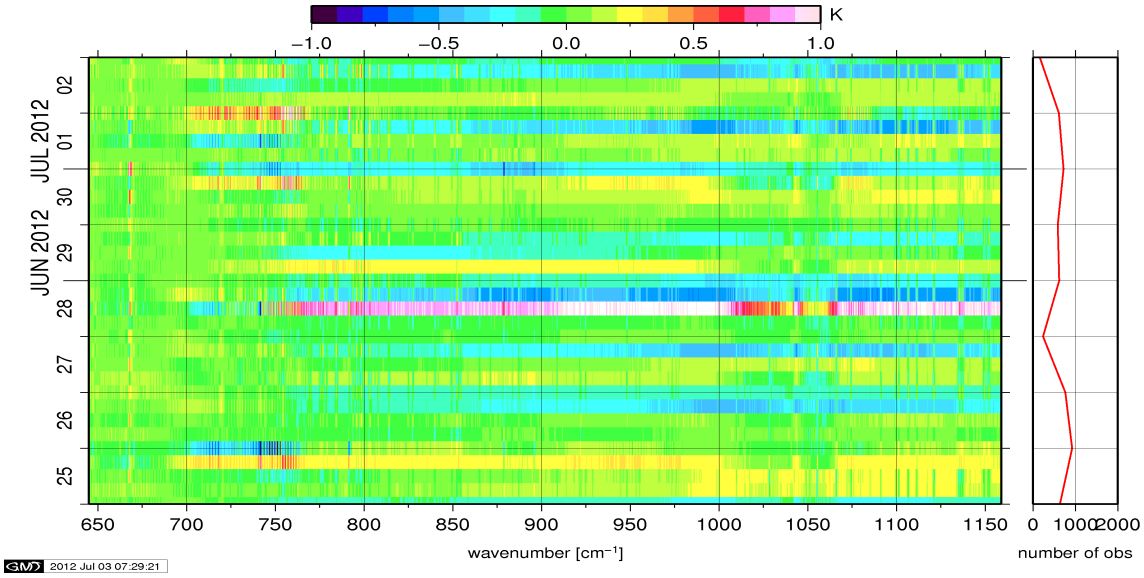

Figure 11: Radiance Anomaly in BRT: IASI Band 1

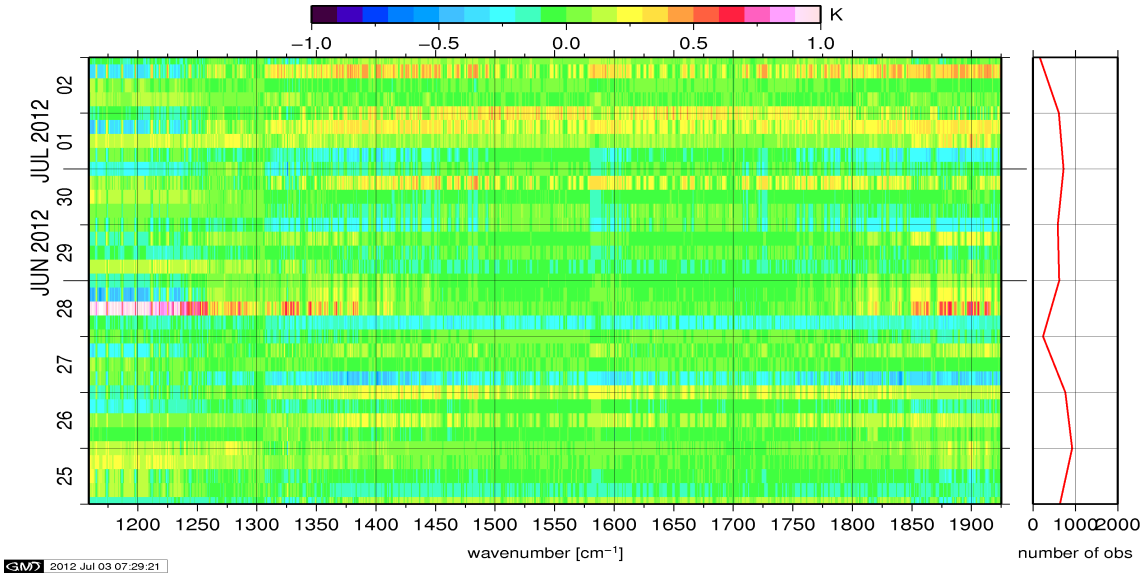

Figure 12: Radiance Anomaly in BRT: IASI Band 2

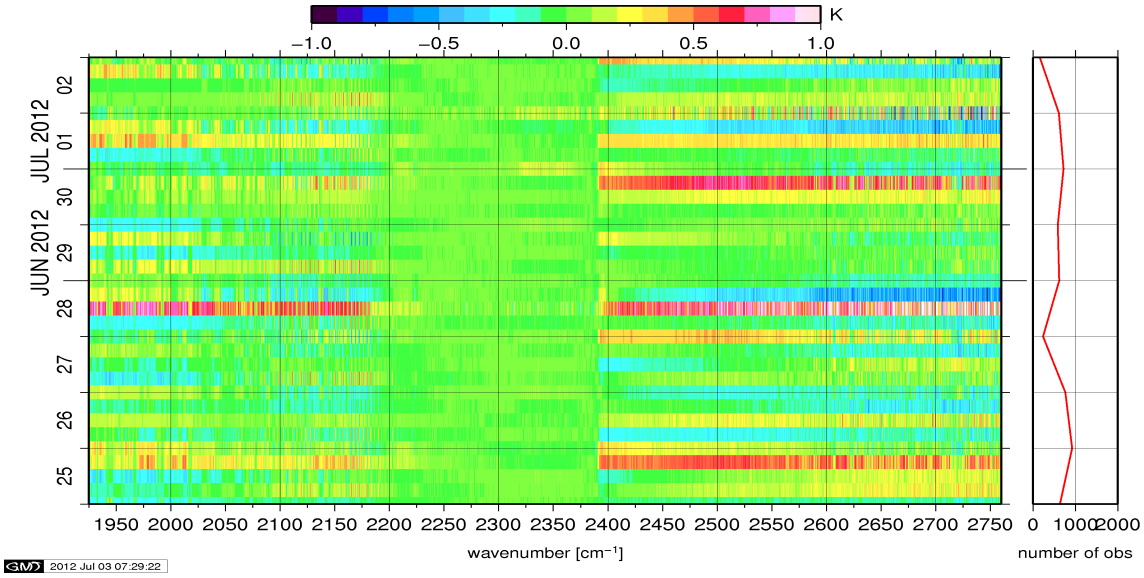

Figure 13: Radiance Anomaly in BRT: IASI Band 3

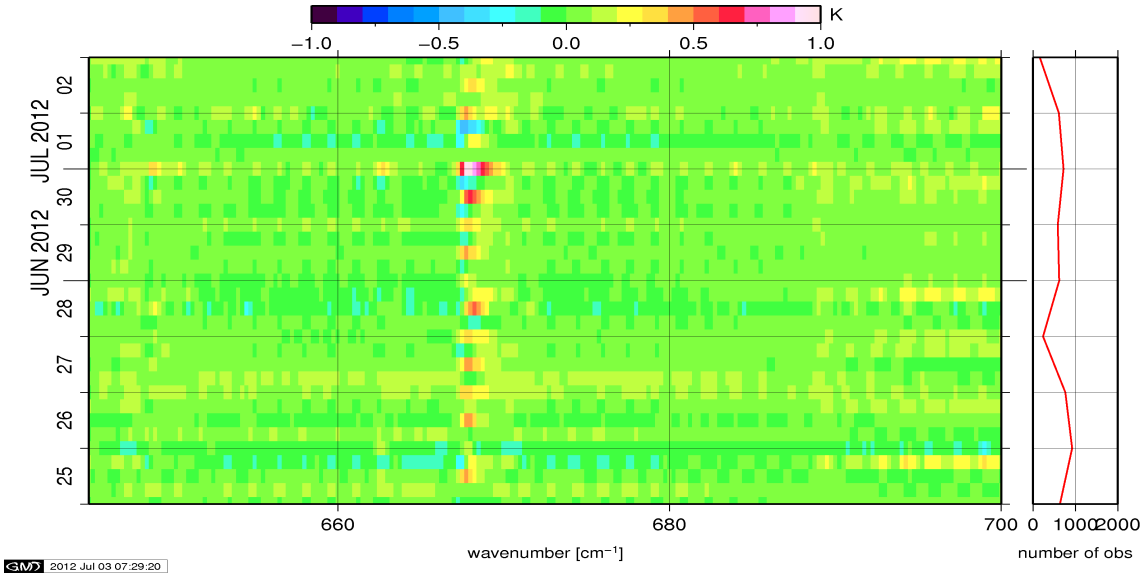

Figure 14: Radiance Anomaly in BRT: CO2 14

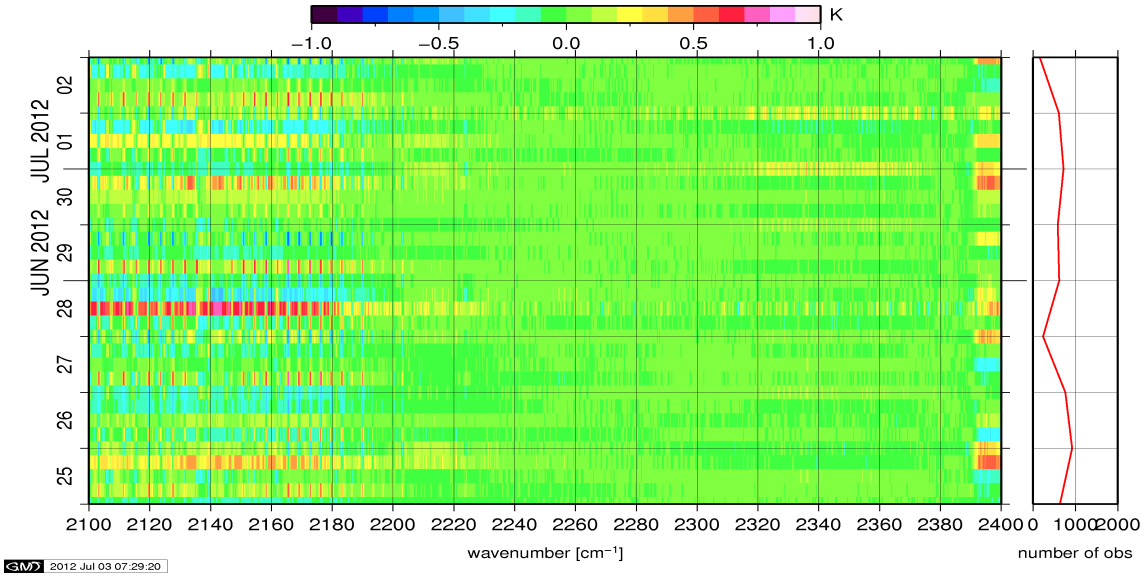

Figure 15: Radiance Anomaly in BRT: CO2 4.3

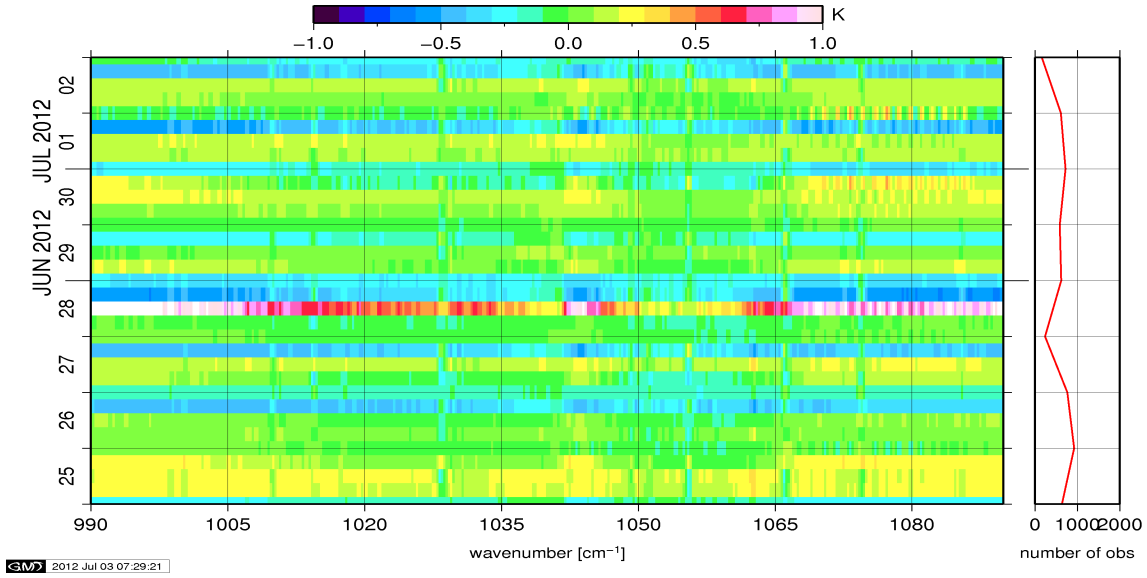

Figure 16: Radiance Anomaly in BRT: O3

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.

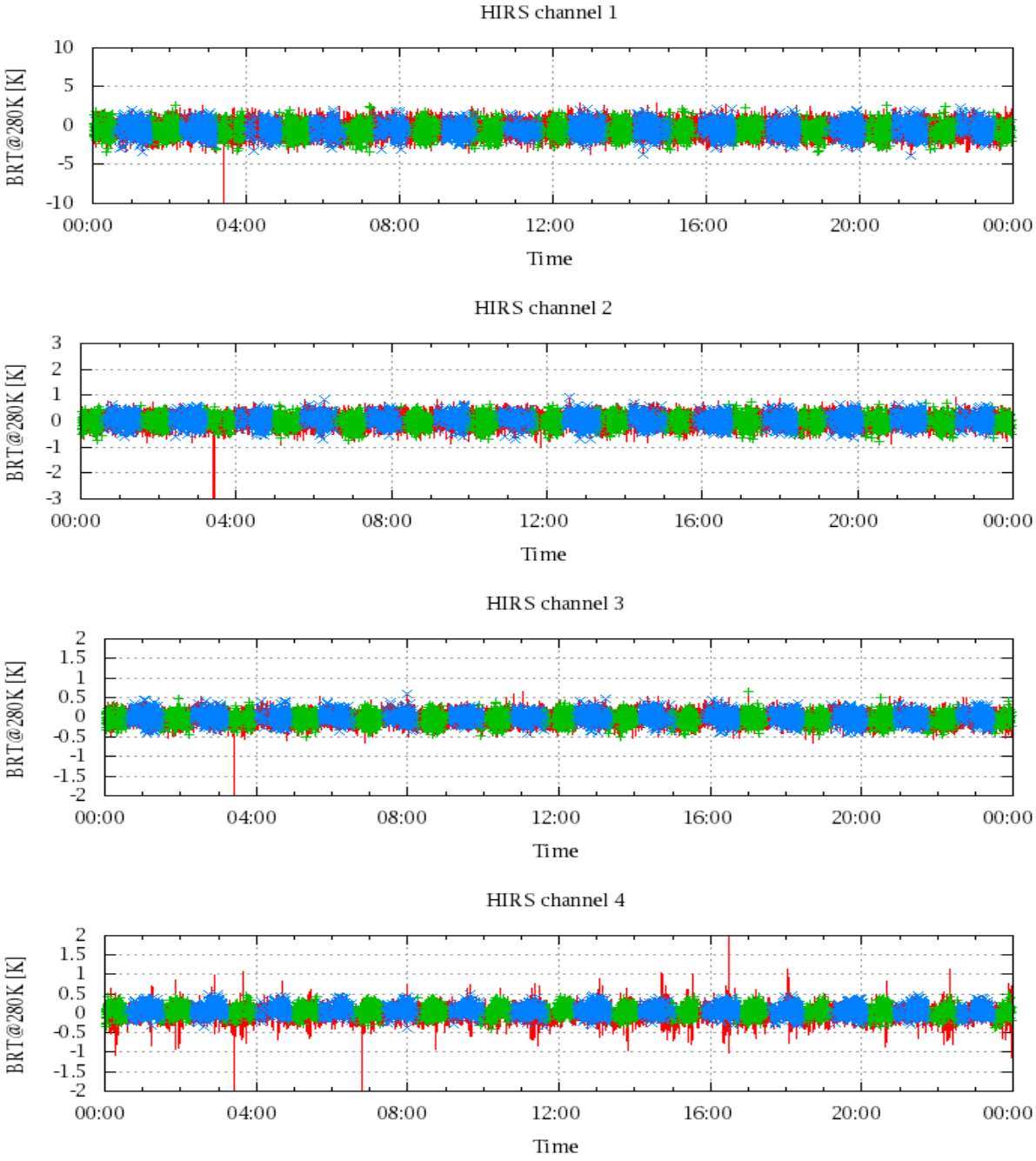

Figure 17: Radiance Differences in BRT

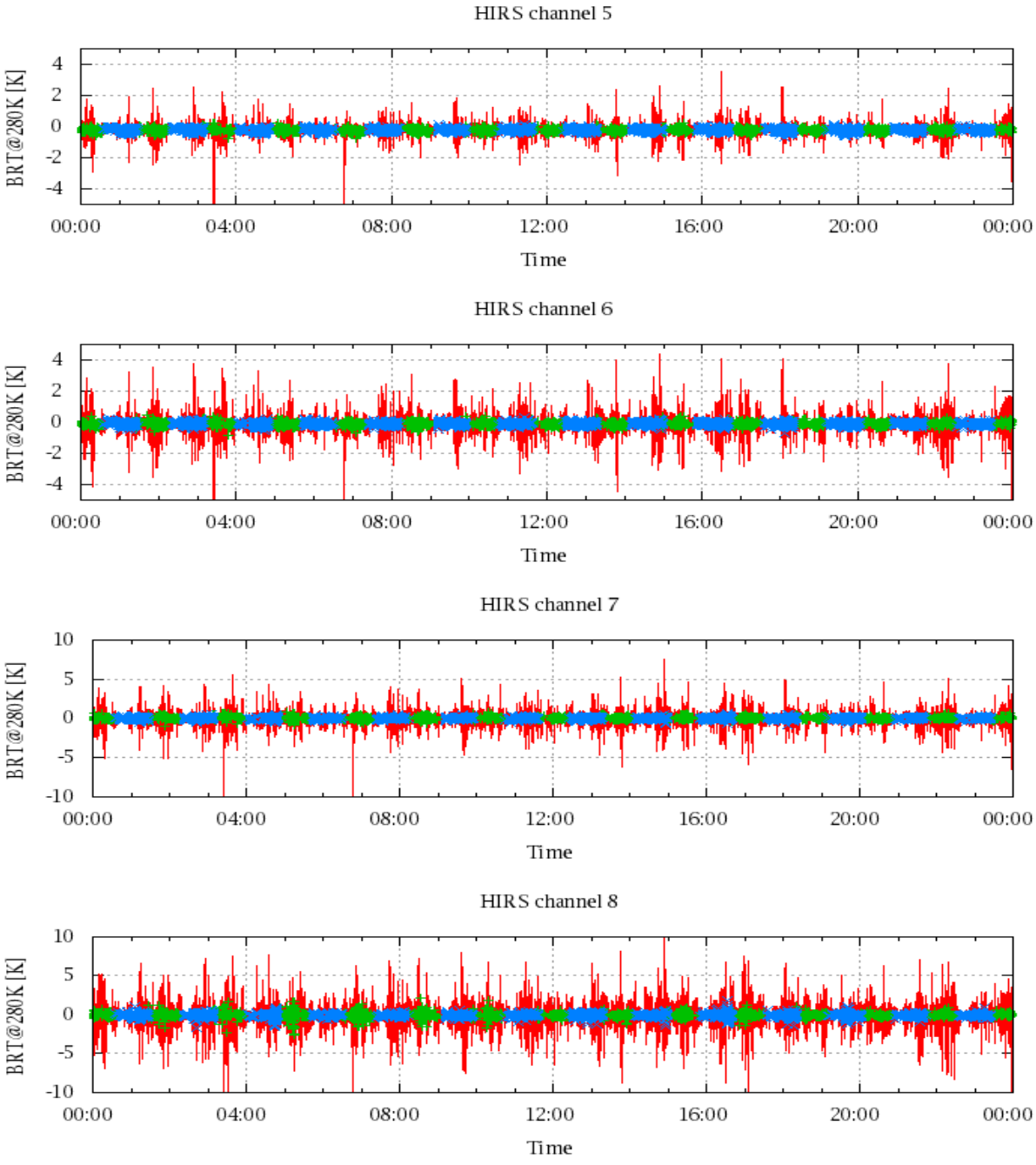

Figure 18: Radiance Differences in BRT

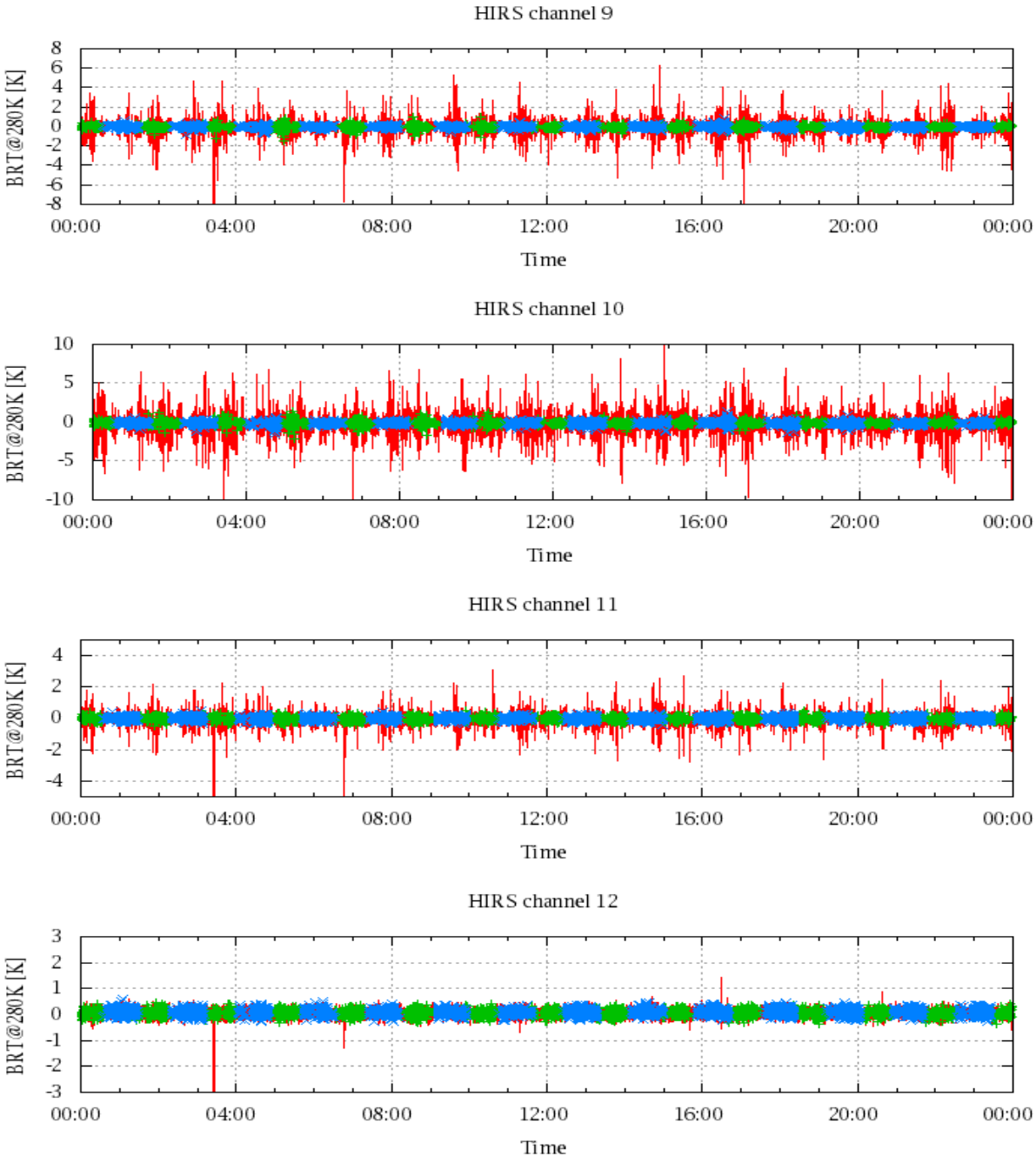

Figure 19: Radiance Differences in BRT

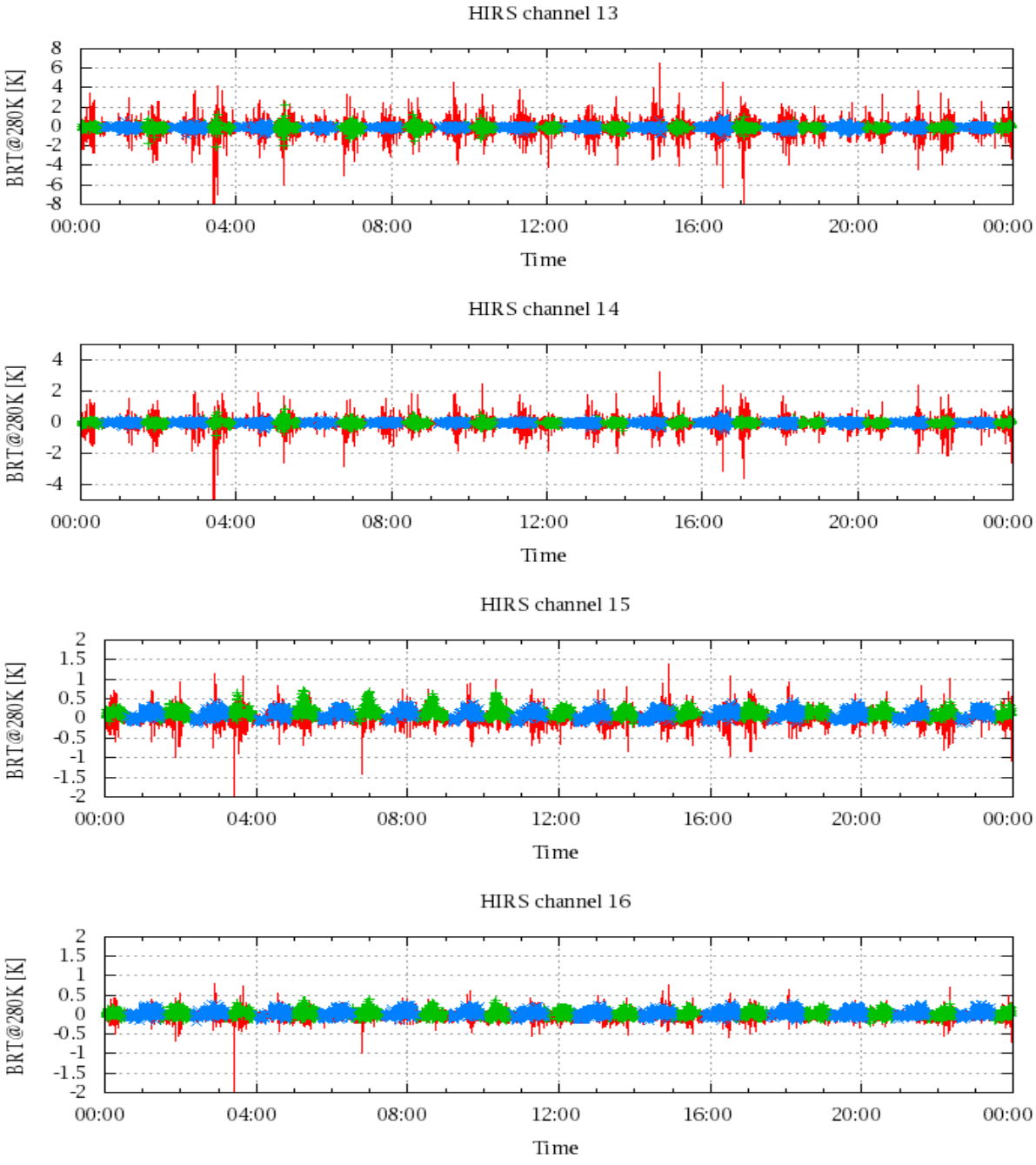

Figure 20: Radiance Differences in BRT

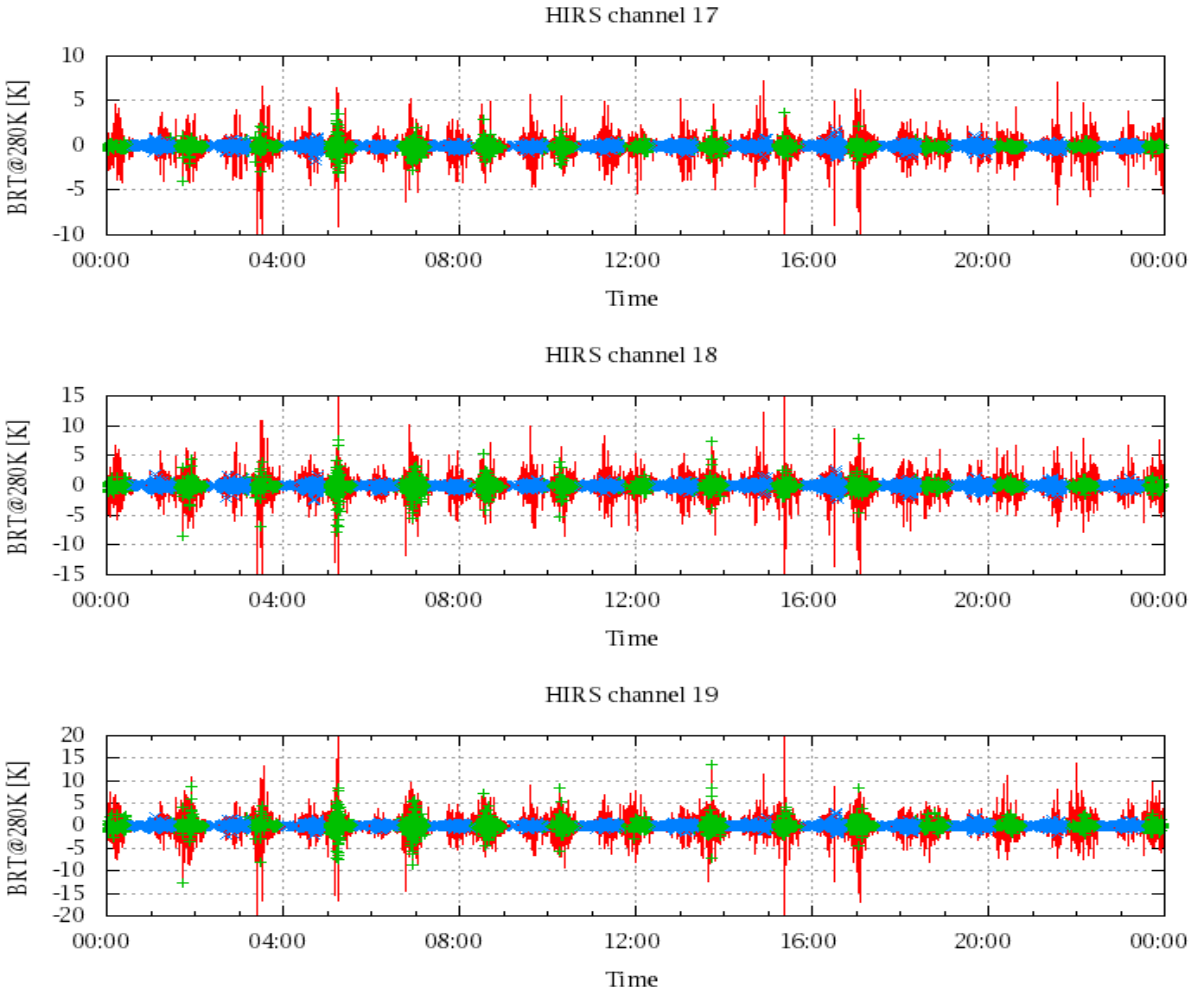

Figure 21: Radinace Differences in BRT