

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

04/09/2012 00:00:00 - 05/09/2012 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 04/09/2012 00:00:00 - 05/09/2012 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 04/09/2012 00:00:00 - 05/09/2012 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)	14423	14426	20120904025506.770	20120904025507.414
PX1 (130)	14430	14437	20120904025508.281	20120904025509.793
PX1 (130)	14437	14440	20120904025509.793	20120904025511.957
PX1 (130)	14444	14451	20120904025512.821	20120904025514.336
PX1 (130)	14451	14468	20120904025514.336	20120904025519.524
PX1 (130)	14478	14484	20120904025521.688	20120904025522.985
PX1 (130)	14489	14494	20120904025524.067	20120904025525.145
PX1 (130)	14495	14498	20120904025525.363	20120904025527.524
PX2 (135)	14422	14426	20120904025506.551	20120904025507.414
PX2 (135)	14430	14436	20120904025508.281	20120904025509.578
PX2 (135)	14437	14440	20120904025509.793	20120904025511.957
PX2 (135)	14444	14451	20120904025512.821	20120904025514.336
PX2 (135)	14451	14468	20120904025514.336	20120904025519.524
PX2 (135)	14471	14473	20120904025520.172	20120904025520.606
PX2 (135)	14478	14483	20120904025521.688	20120904025522.766
PX2 (135)	14488	14494	20120904025523.848	20120904025525.145
PX2 (135)	14495	14498	20120904025525.363	20120904025527.524
PX3 (140)	14422	14426	20120904025506.551	20120904025507.414

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	14430	14436	20120904025508.281	20120904025509.578
PX3 (140)	14437	14440	20120904025509.793	20120904025511.957
PX3 (140)	14444	14451	20120904025512.821	20120904025514.336
PX3 (140)	14451	14468	20120904025514.336	20120904025519.524
PX3 (140)	14478	14483	20120904025521.688	20120904025522.766
PX3 (140)	14488	14494	20120904025523.848	20120904025525.145
PX3 (140)	14495	14498	20120904025525.363	20120904025527.524
PX4 (145)	14422	14425	20120904025506.551	20120904025507.199
PX4 (145)	14430	14436	20120904025508.281	20120904025509.578
PX4 (145)	14437	14440	20120904025509.793	20120904025511.957
PX4 (145)	14444	14451	20120904025512.821	20120904025514.336
PX4 (145)	14451	14468	20120904025514.336	20120904025519.524
PX4 (145)	14477	14483	20120904025521.469	20120904025522.766
PX4 (145)	14488	14494	20120904025523.848	20120904025525.145
PX4 (145)	14495	14498	20120904025525.363	20120904025527.524
IMG (150)	6110	6113	20120904025506.551	20120904025507.199
IMG (150)	6117	6124	20120904025508.067	20120904025509.578
IMG (150)	6125	6132	20120904025509.793	20120904025511.957
IMG (150)	6135	6160	20120904025512.606	20120904025518.227
IMG (150)	6173	6179	20120904025521.469	20120904025522.766
IMG (150)	6184	6190	20120904025523.848	20120904025525.145
IMG (150)	6190	6198	20120904025525.145	20120904025527.524
VER (160)	6000	6008	20120904025509.793	20120904025514.336
VER (160)	6009	6015	20120904025514.336	20120904025533.793
AUX (180)	14305	14307	20120904025502.227	20120904025518.227
AUX (180)	14307	14309	20120904025518.227	20120904025534.227

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
04/09/2012 00:00:05	-	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)	99.27 %	-
GQisFlagQual set (PX3)	99.34 %	-
GQisFlagQual set (PX4)	99.42 %	-
GQisFlagQual set (all)	99.36 %	-

Table 4: Quality flags

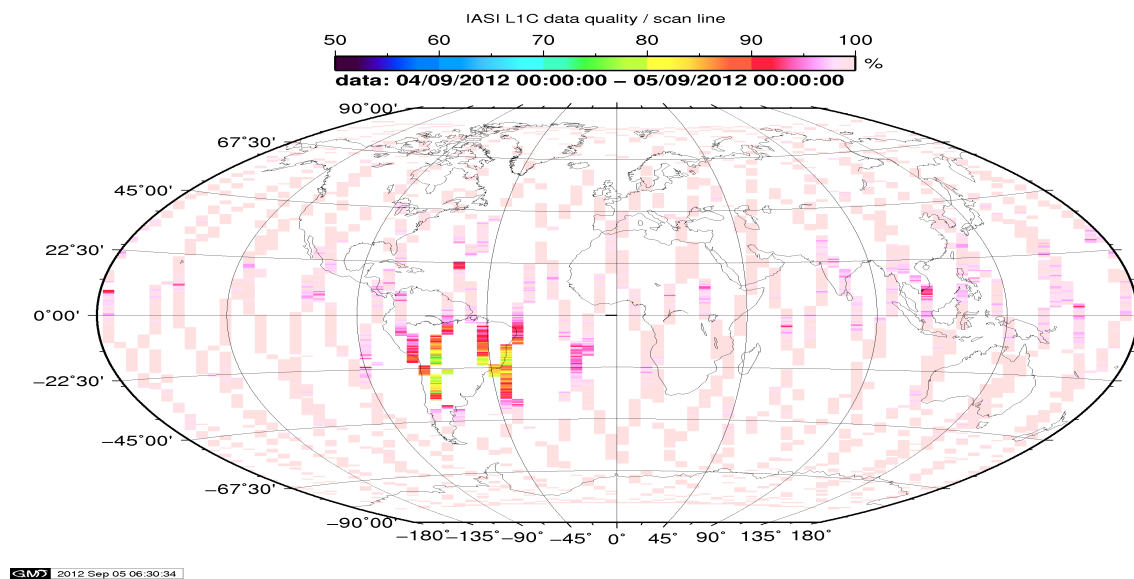


Figure 1: L1C data quality

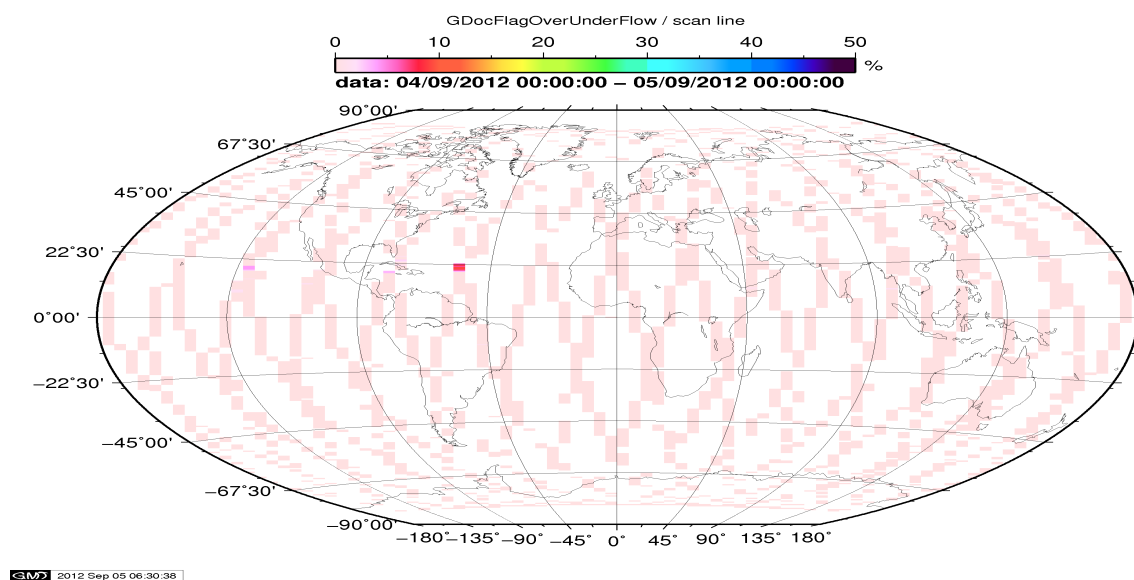


Figure 2: Flag of Over and Under Flows

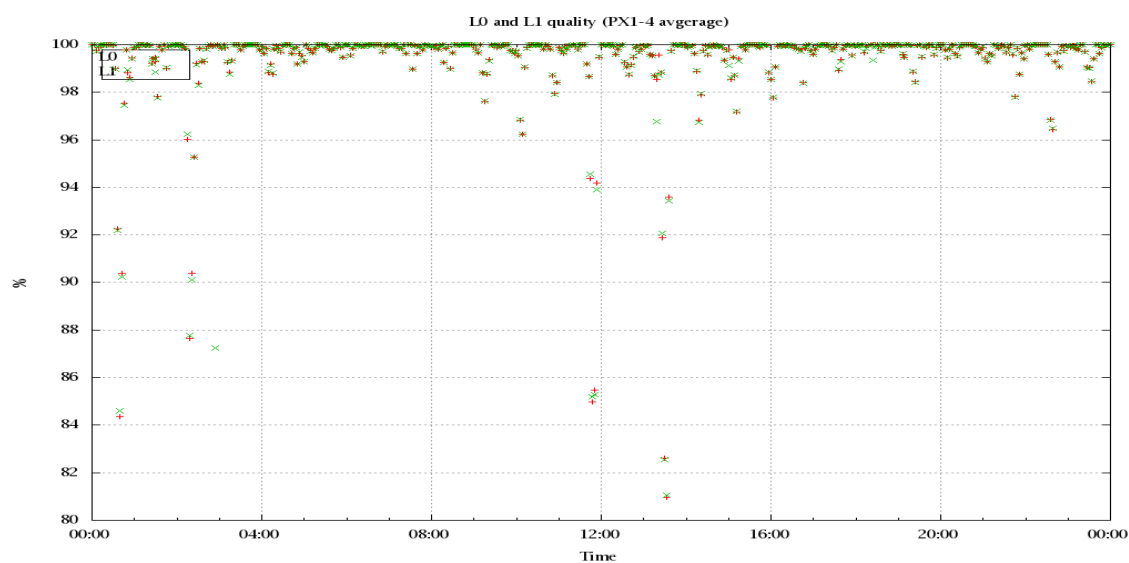


Figure 3: Level 0 and 1C overall quality

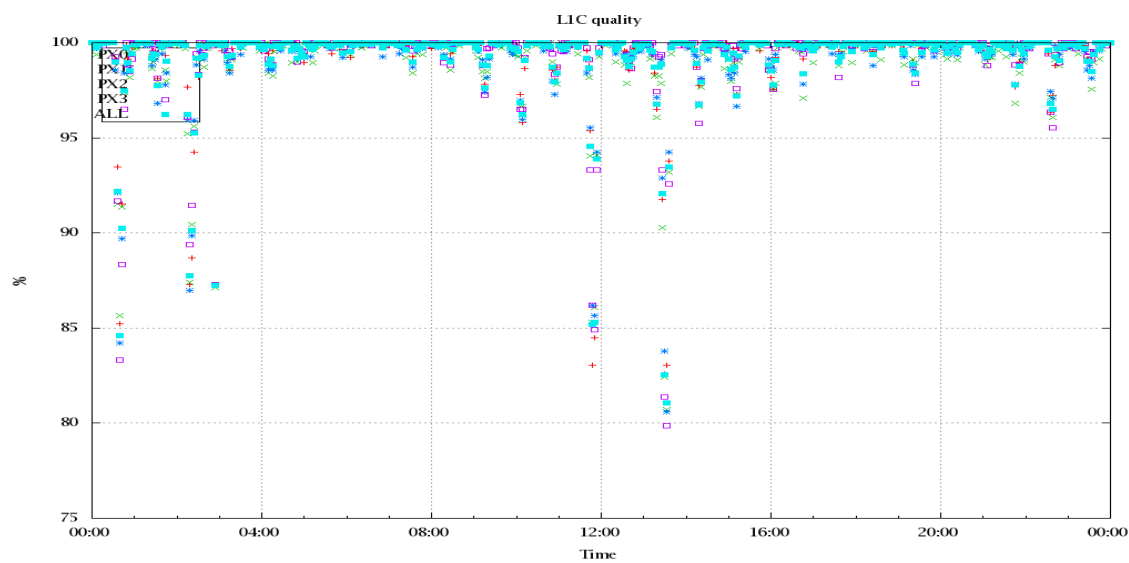


Figure 4: Level 1C quality

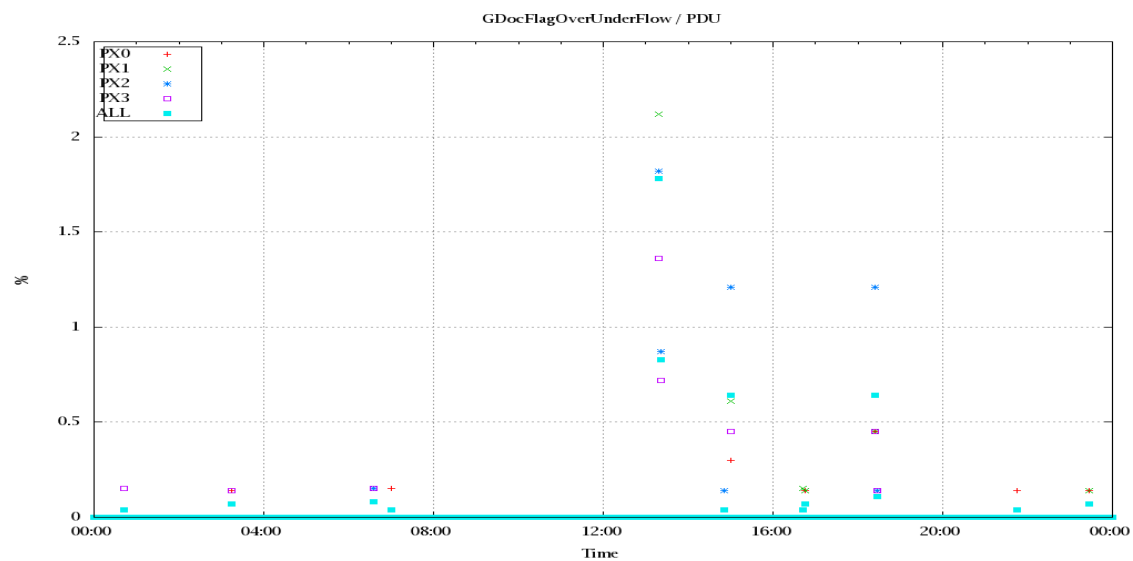


Figure 5: OverUnderFlowFlag timeseries

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.

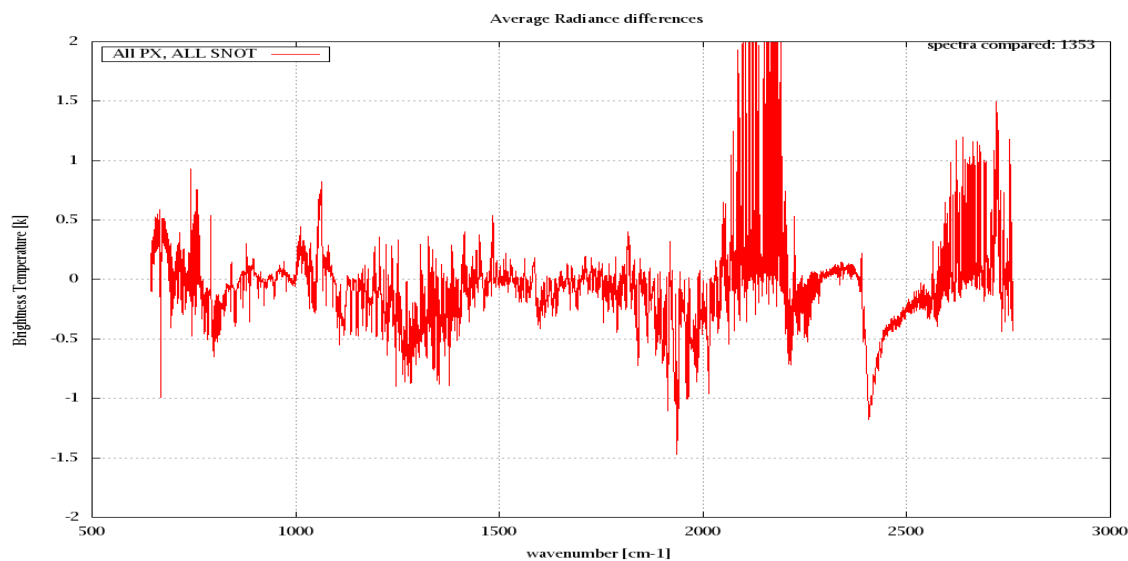


Figure 6: Average Radiance differences: OBS-CAL

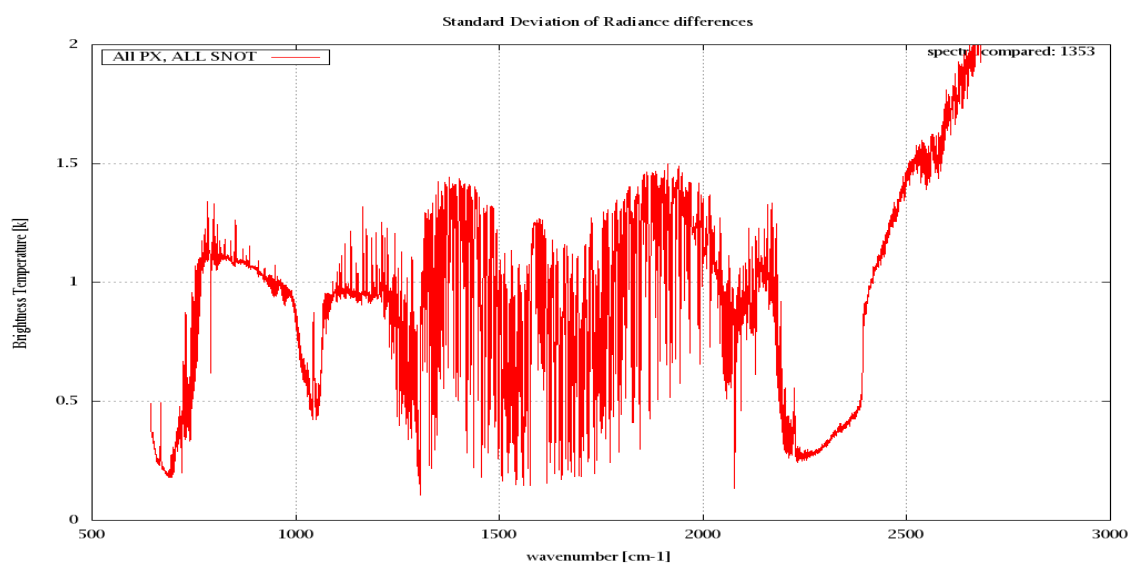


Figure 7: Standard Deviation of Radiance differences

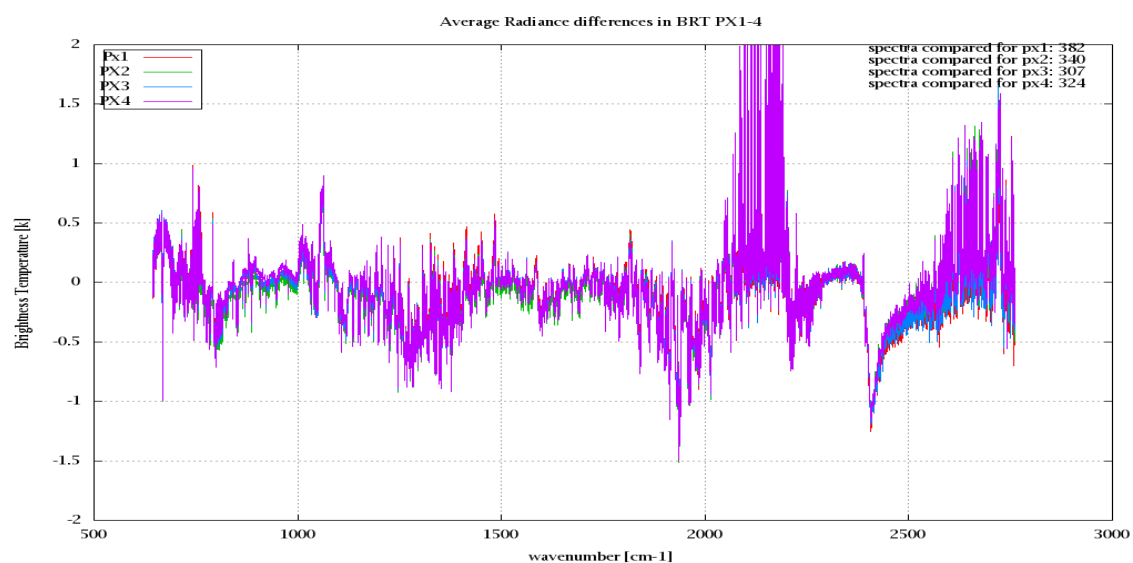


Figure 8: Average Radiance differences: OBS-CAL

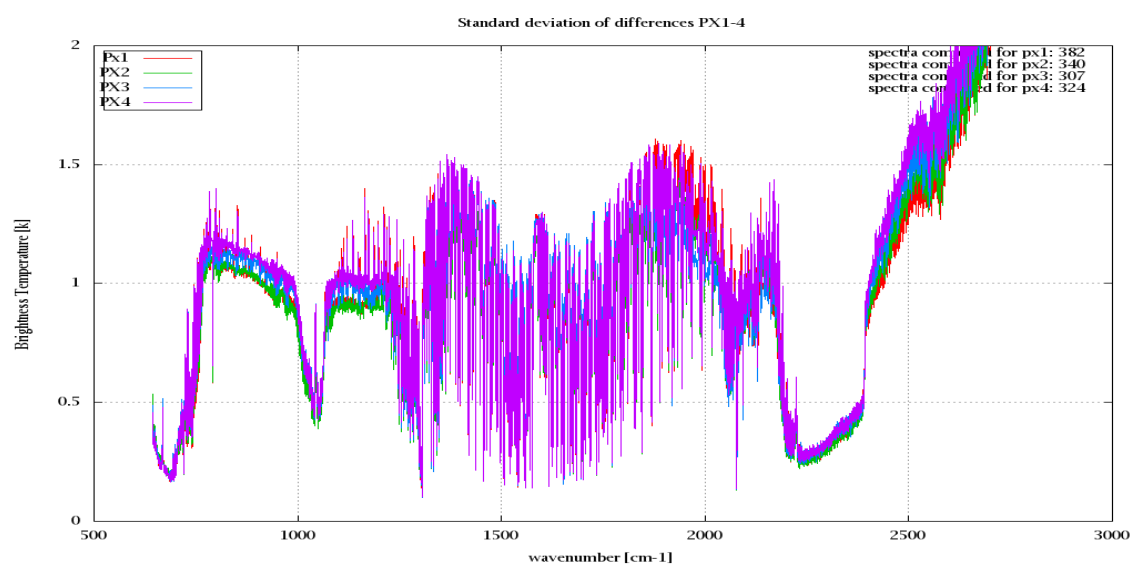


Figure 9: Standard Deviation of Radiance differences

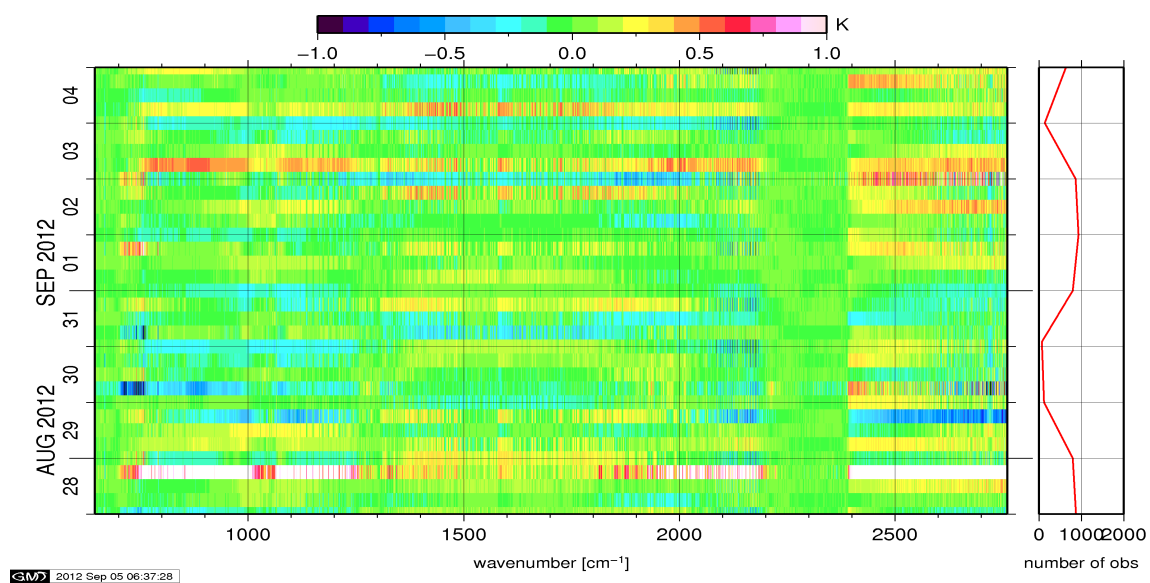


Figure 10: Radiance Anomaly in BRT: All Channels

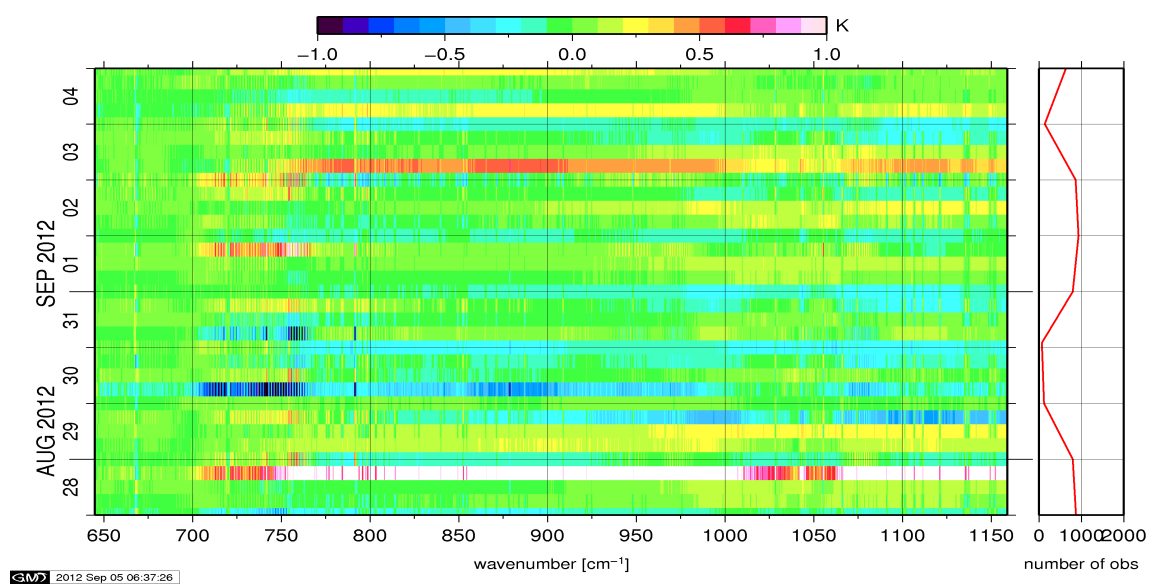


Figure 11: Radiance Anomaly in BRT: IASI Band 1

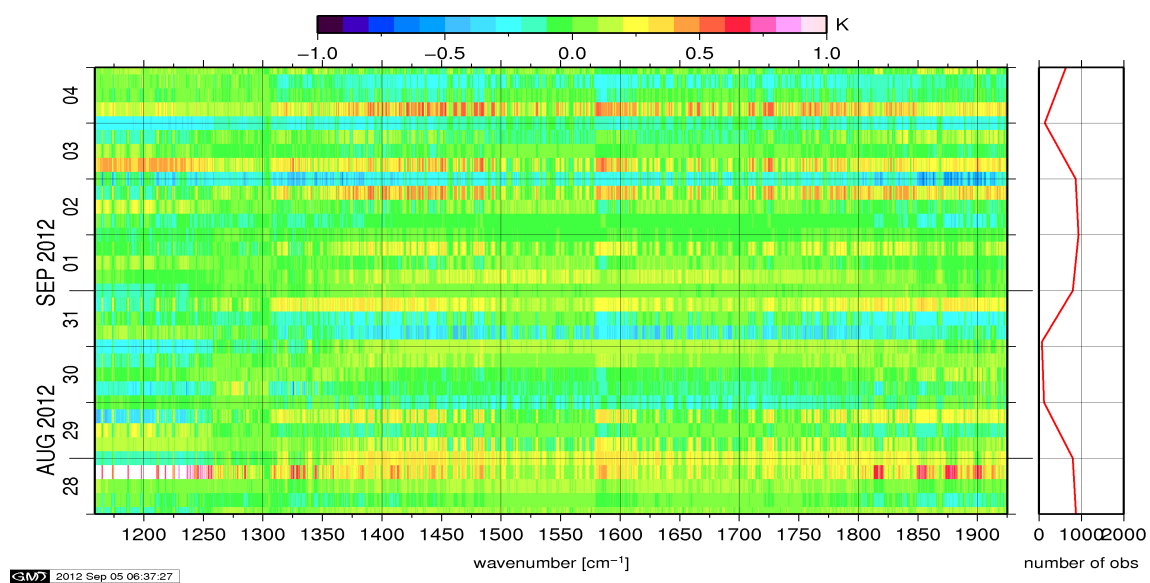


Figure 12: Radiance Anomaly in BRT: IASI Band 2

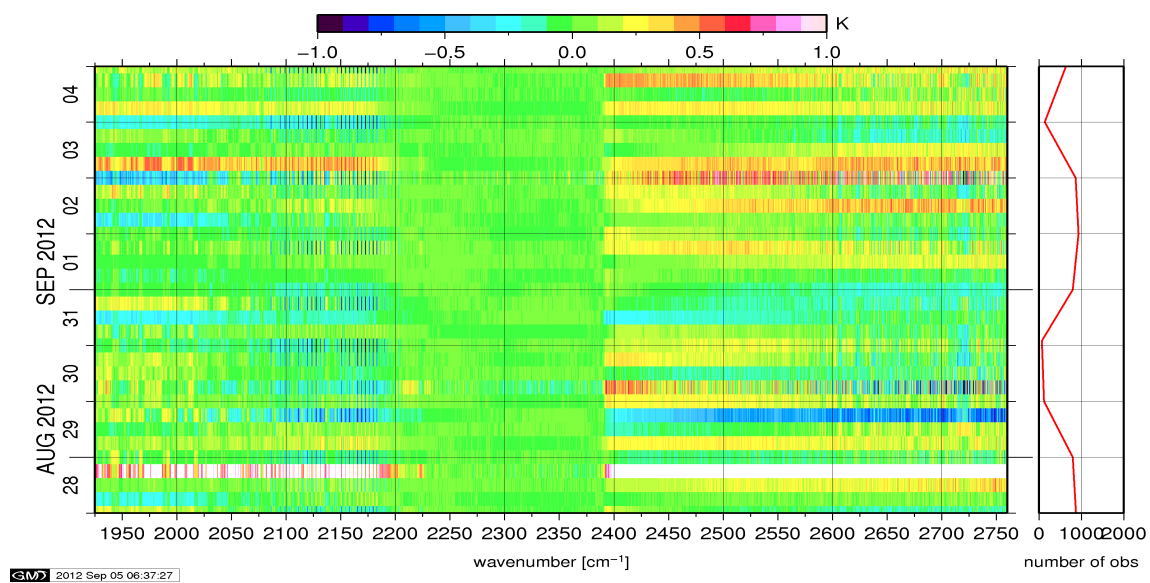


Figure 13: Radiance Anomaly in BRT: IASI Band 3

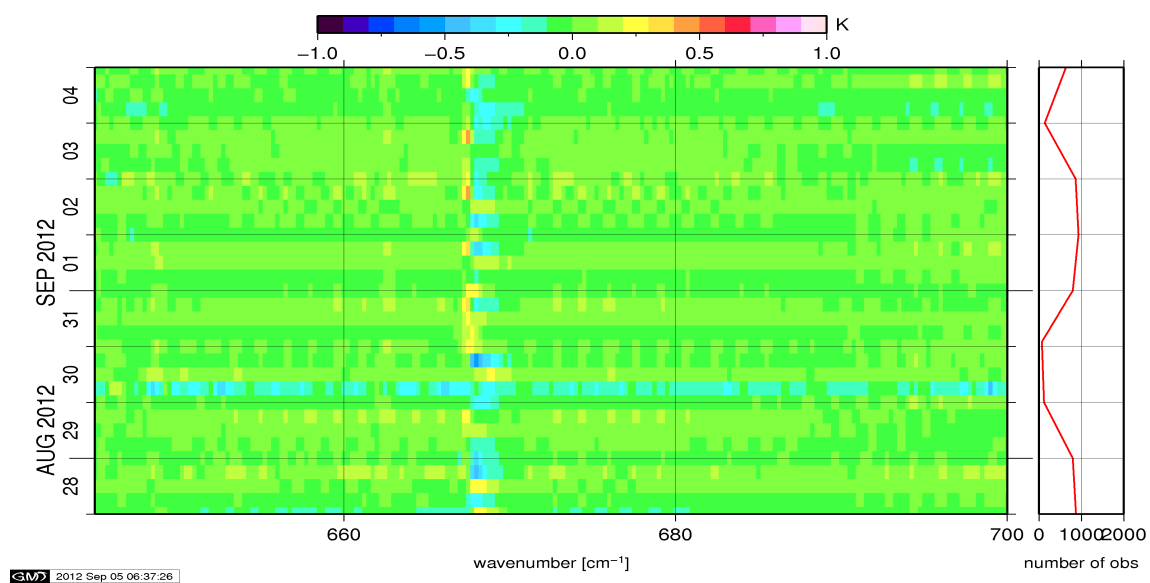


Figure 14: Radiance Anomaly in BRT: CO2 14

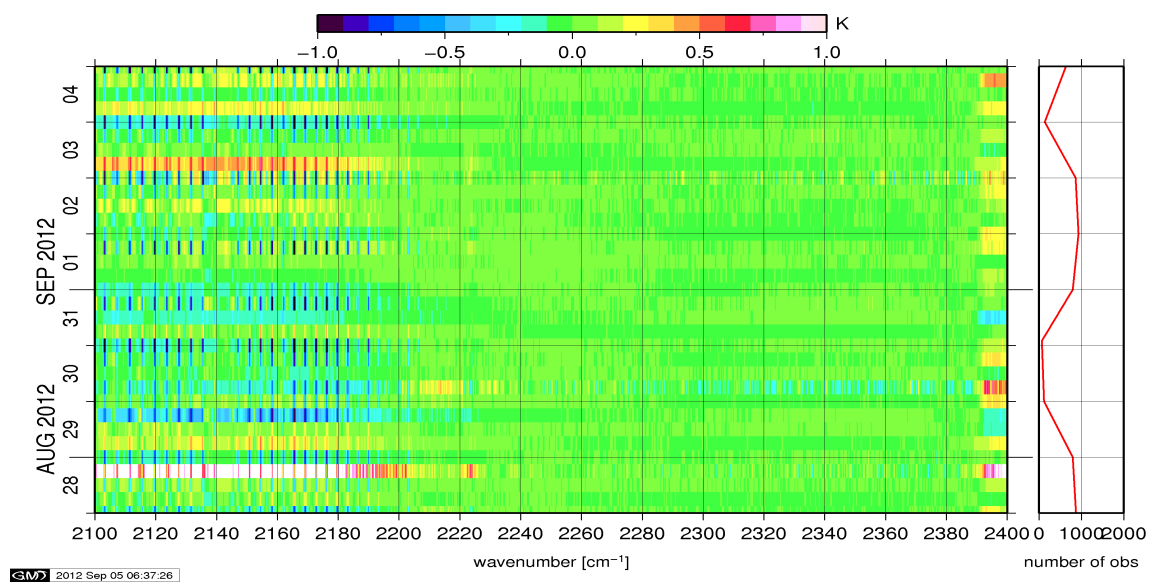


Figure 15: Radiance Anomaly in BRT: CO2 4.3

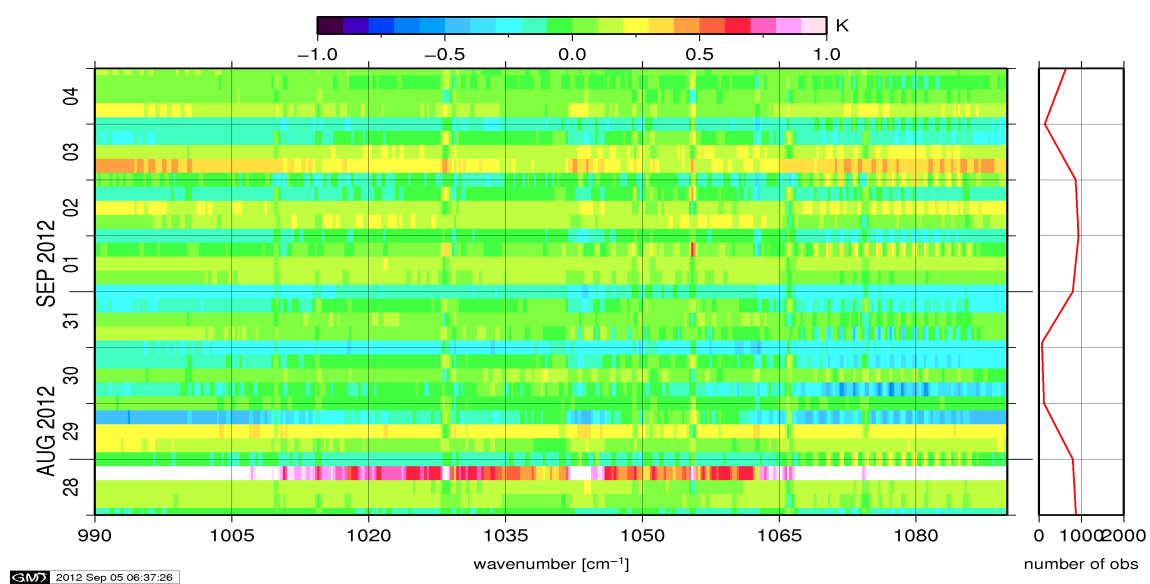


Figure 16: Radiance Anomaly in BRT: O3

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.

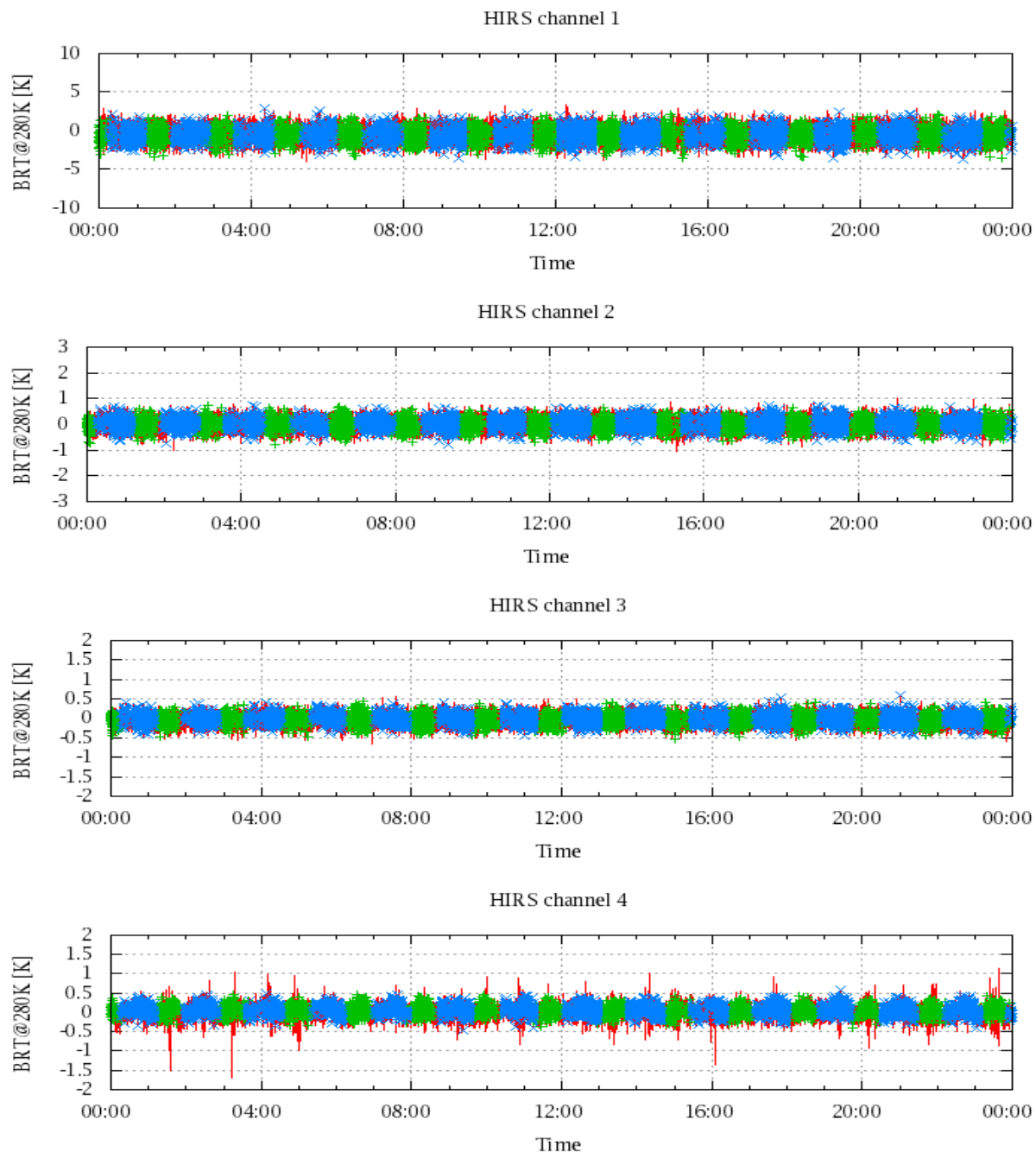


Figure 17: Radiance Differences in BRT

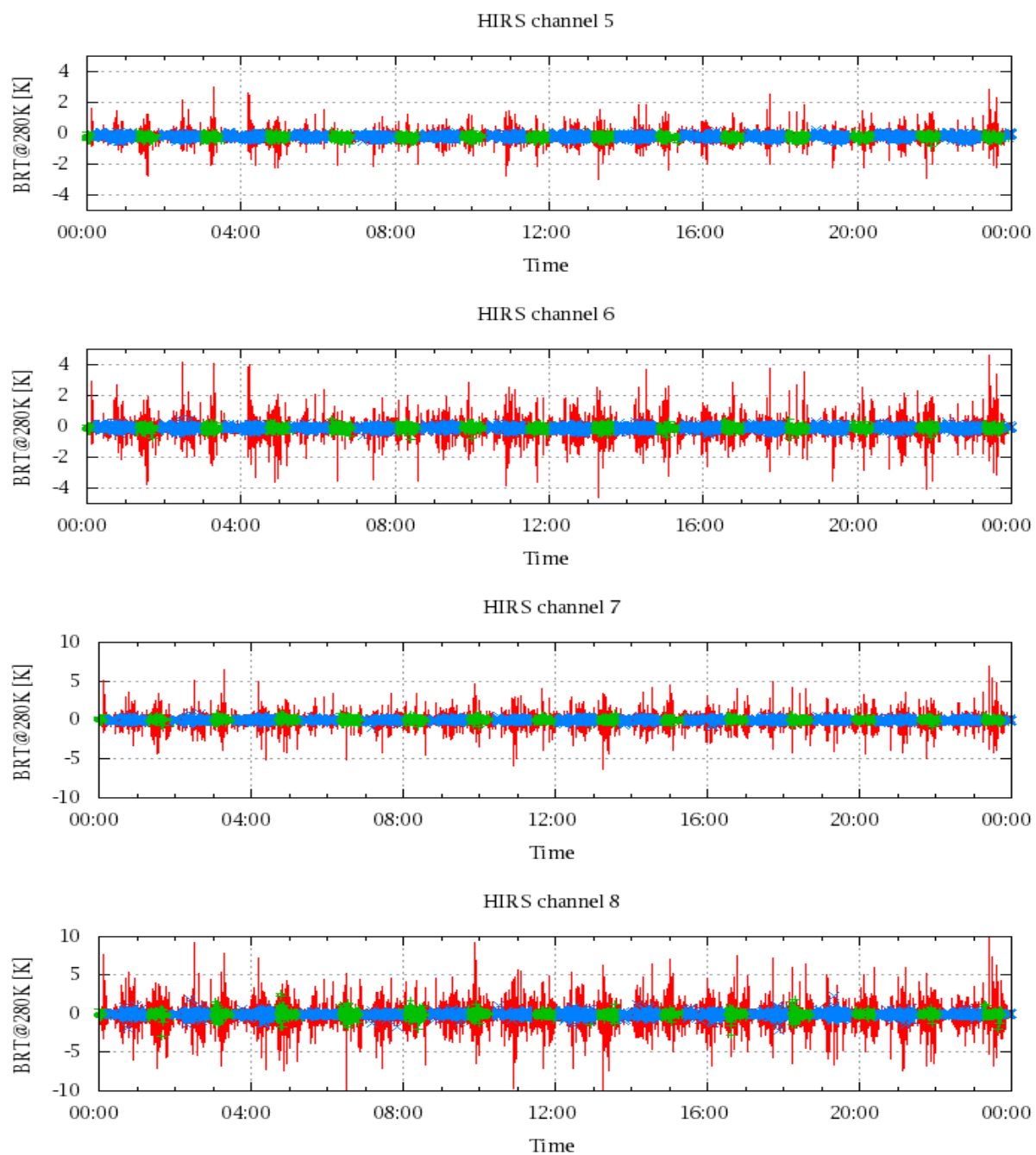


Figure 18: Radiance Differences in BRT

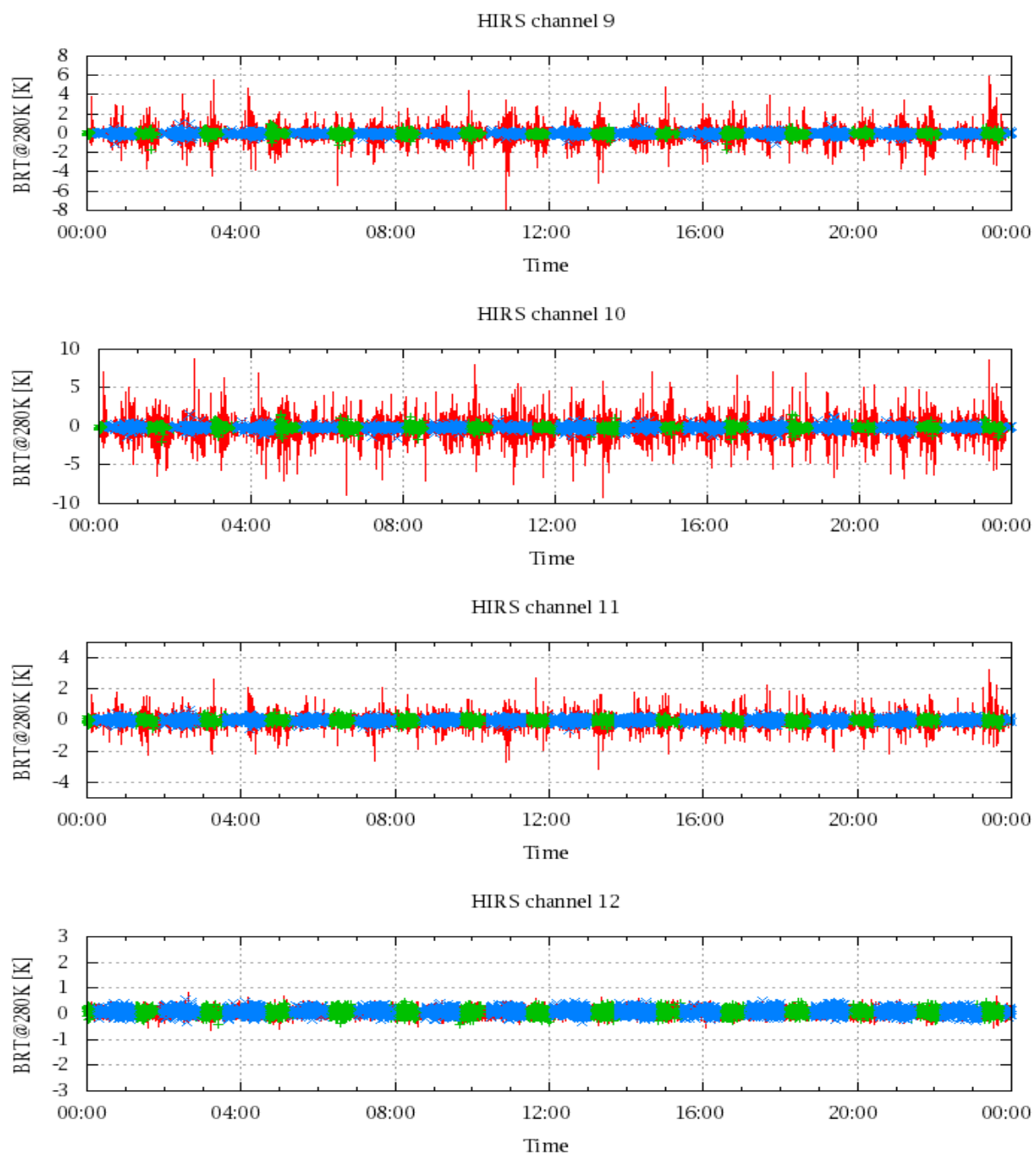


Figure 19: Radiance Differences in BRT

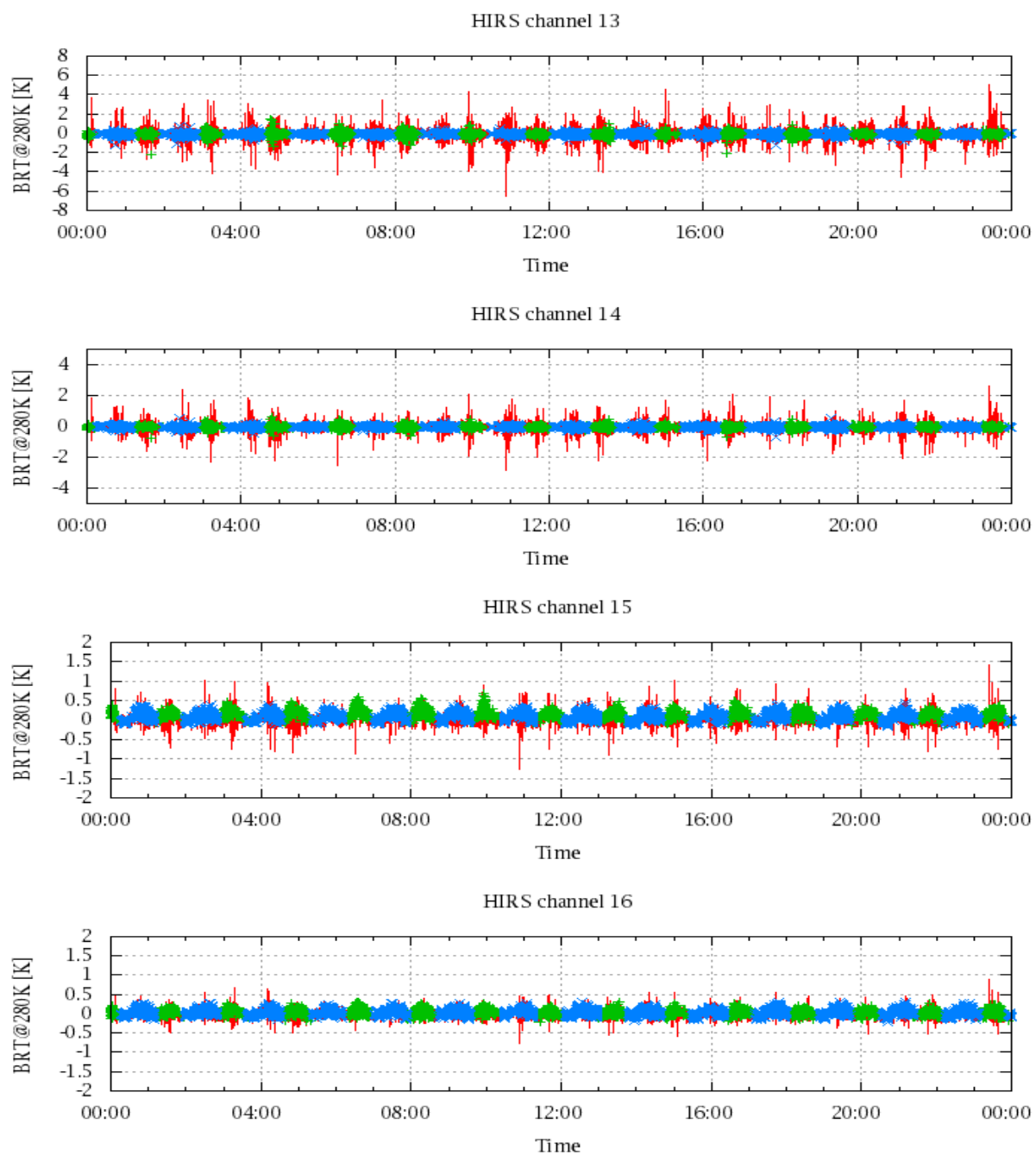


Figure 20: Radiance Differences in BRT

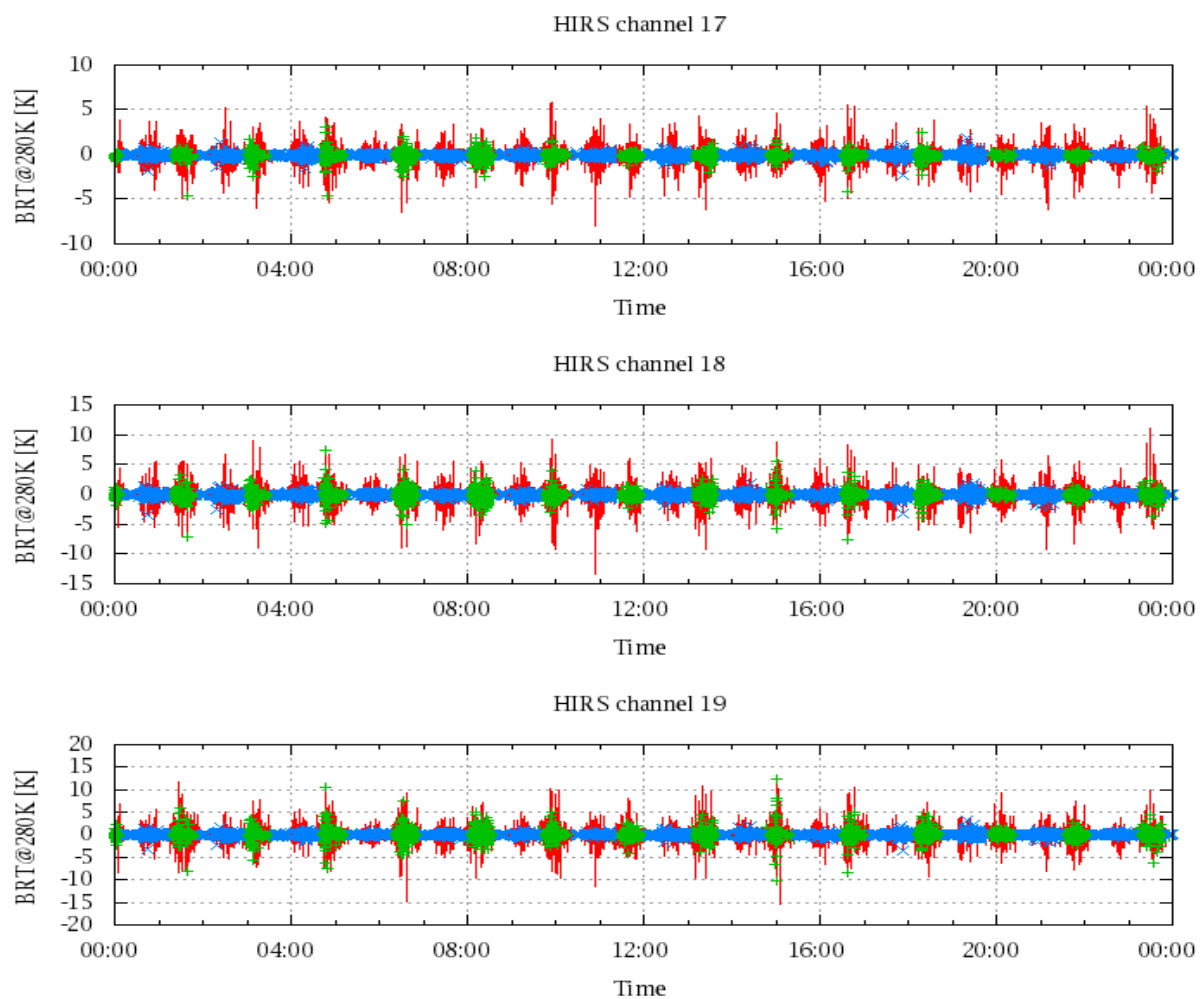


Figure 21: Radinace Differences in BRT