

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

20/09/2015 00:00:00 - 21/09/2015 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-B satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 20/09/2015 00:00:00 - 21/09/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 20/09/2015 00:00:00 - 21/09/2015 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)	0	e

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2199	2201	20150920130049.296	20150920130051.245
PX1 (130)	2201	2230	20150920130051.245	20150920130059.026
PX1 (130)	2234	2236	20150920130059.893	20150920130100.323
PX1 (130)	2237	2240	20150920130100.538	20150920130101.190
PX1 (130)	2249	2252	20150920130103.136	20150920130103.784
PX1 (130)	2263	2267	20150920130107.675	20150920130108.542
PX1 (130)	2269	2274	20150920130108.971	20150920130110.054
PX1 (130)	2275	2279	20150920130110.268	20150920130111.136
PX1 (130)	2280	2284	20150920130111.350	20150920130112.214
PX1 (130)	2285	2290	20150920130112.432	20150920130115.026
PX1 (130)	2291	2293	20150920130115.241	20150920130115.675
PX1 (130)	2294	2296	20150920130115.893	20150920130116.323
PX1 (130)	2296	2298	20150920130116.323	20150920130116.757
PX1 (130)	2298	2300	20150920130116.757	20150920130117.190
PX1 (130)	2301	2304	20150920130117.405	20150920130118.054
PX1 (130)	2305	2307	20150920130118.268	20150920130118.702
PX1 (130)	2311	2315	20150920130119.565	20150920130120.432
PX1 (130)	2315	2335	20150920130120.432	20150920130126.268

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	2201	2225	20150920130051.245	20150920130056.432
PX2 (135)	2225	2229	20150920130056.432	20150920130057.296
PX2 (135)	2232	2234	20150920130059.460	20150920130059.893
PX2 (135)	2237	2239	20150920130100.538	20150920130100.972
PX2 (135)	2243	2245	20150920130101.839	20150920130102.268
PX2 (135)	2245	2247	20150920130102.268	20150920130102.702
PX2 (135)	2266	2268	20150920130108.323	20150920130108.757
PX2 (135)	2268	2271	20150920130108.757	20150920130109.405
PX2 (135)	2271	2274	20150920130109.405	20150920130110.054
PX2 (135)	2280	2285	20150920130111.350	20150920130112.432
PX2 (135)	2286	2290	20150920130112.647	20150920130115.026
PX2 (135)	2293	2297	20150920130115.675	20150920130116.538
PX2 (135)	2299	2303	20150920130116.971	20150920130117.835
PX2 (135)	2305	2307	20150920130118.268	20150920130118.702
PX2 (135)	2307	2309	20150920130118.702	20150920130119.136
PX2 (135)	2311	2313	20150920130119.565	20150920130119.999
PX2 (135)	2313	2336	20150920130119.999	20150920130126.483
PX3 (140)	2199	2201	20150920130049.296	20150920130051.245
PX3 (140)	2201	2227	20150920130051.245	20150920130056.866
PX3 (140)	2237	2239	20150920130100.538	20150920130100.972
PX3 (140)	2243	2245	20150920130101.839	20150920130102.268
PX3 (140)	2246	2248	20150920130102.487	20150920130102.921
PX3 (140)	2249	2251	20150920130103.136	20150920130103.565
PX3 (140)	2254	2256	20150920130104.218	20150920130104.647
PX3 (140)	2264	2266	20150920130107.889	20150920130108.323
PX3 (140)	2266	2269	20150920130108.323	20150920130108.971
PX3 (140)	2269	2272	20150920130108.971	20150920130109.620
PX3 (140)	2273	2275	20150920130109.839	20150920130110.268
PX3 (140)	2275	2277	20150920130110.268	20150920130110.702
PX3 (140)	2278	2280	20150920130110.917	20150920130111.350
PX3 (140)	2282	2286	20150920130111.784	20150920130112.647
PX3 (140)	2286	2290	20150920130112.647	20150920130115.026
PX3 (140)	2295	2297	20150920130116.108	20150920130116.538
PX3 (140)	2298	2301	20150920130116.757	20150920130117.405
PX3 (140)	2301	2303	20150920130117.405	20150920130117.835
PX3 (140)	2304	2307	20150920130118.054	20150920130118.702
PX3 (140)	2309	2312	20150920130119.136	20150920130119.784
PX3 (140)	2312	2314	20150920130119.784	20150920130120.218
PX3 (140)	2314	2336	20150920130120.218	20150920130126.483
PX4 (145)	2199	2229	20150920130049.296	20150920130057.296
PX4 (145)	2229	2231	20150920130057.296	20150920130059.241
PX4 (145)	2239	2241	20150920130100.972	20150920130101.405
PX4 (145)	2241	2246	20150920130101.405	20150920130102.487
PX4 (145)	2249	2251	20150920130103.136	20150920130103.565
PX4 (145)	2253	2256	20150920130103.999	20150920130104.647
PX4 (145)	2258	2260	20150920130105.081	20150920130107.026
PX4 (145)	2261	2263	20150920130107.245	20150920130107.675
PX4 (145)	2268	2272	20150920130108.757	20150920130109.620
PX4 (145)	2272	2275	20150920130109.620	20150920130110.268
PX4 (145)	2277	2280	20150920130110.702	20150920130111.350
PX4 (145)	2280	2282	20150920130111.350	20150920130111.784
PX4 (145)	2284	2286	20150920130112.214	20150920130112.647
PX4 (145)	2288	2291	20150920130113.081	20150920130115.241

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	2292	2294	20150920130115.460	20150920130115.893
PX4 (145)	2296	2298	20150920130116.323	20150920130116.757
PX4 (145)	2298	2300	20150920130116.757	20150920130117.190
PX4 (145)	2301	2303	20150920130117.405	20150920130117.835
PX4 (145)	2304	2306	20150920130118.054	20150920130118.487
PX4 (145)	2306	2308	20150920130118.487	20150920130118.917
PX4 (145)	2312	2334	20150920130119.784	20150920130126.053
PX4 (145)	2334	2336	20150920130126.053	20150920130126.483
IMG (150)	15432	15458	20150920130051.026	20150920130056.647
IMG (150)	15460	15462	20150920130057.081	20150920130057.729
IMG (150)	15472	15474	20150920130100.323	20150920130100.757
IMG (150)	15478	15481	20150920130101.620	20150920130102.268
IMG (150)	15485	15487	20150920130103.136	20150920130103.565
IMG (150)	15491	15493	20150920130104.432	20150920130104.866
IMG (150)	15498	15500	20150920130106.378	20150920130107.026
IMG (150)	15504	15506	20150920130107.889	20150920130108.323
IMG (150)	15506	15508	20150920130108.323	20150920130108.757
IMG (150)	15510	15512	20150920130109.186	20150920130109.620
IMG (150)	15512	15514	20150920130109.620	20150920130110.054
IMG (150)	15519	15523	20150920130111.136	20150920130112.003
IMG (150)	15524	15526	20150920130112.214	20150920130112.647
IMG (150)	15535	15539	20150920130115.241	20150920130116.108
IMG (150)	15540	15542	20150920130116.323	20150920130116.757
IMG (150)	15545	15547	20150920130117.405	20150920130117.835
IMG (150)	15550	15552	20150920130118.487	20150920130118.917
IMG (150)	15552	15554	20150920130118.917	20150920130119.350
IMG (150)	15556	15559	20150920130119.784	20150920130120.432
IMG (150)	15559	15582	20150920130120.432	20150920130126.053
IMG (150)	15583	15585	20150920130126.268	20150920130126.702
VER (160)	225	230	20150920130049.296	20150920130057.296
VER (160)	231	235	20150920130105.296	20150920130105.296
VER (160)	236	240	20150920130113.296	20150920130113.296
VER (160)	240	246	20150920130113.296	20150920130129.296
AUX (180)	3310	3312	20150920130113.729	20150920130129.729

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
20/09/2015 00:00:14	-	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)	99.46 %	-
GQisFlagQual set (PX2)	99.56 %	-
GQisFlagQual set (PX3)	99.61 %	-
GQisFlagQual set (PX4)	99.55 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

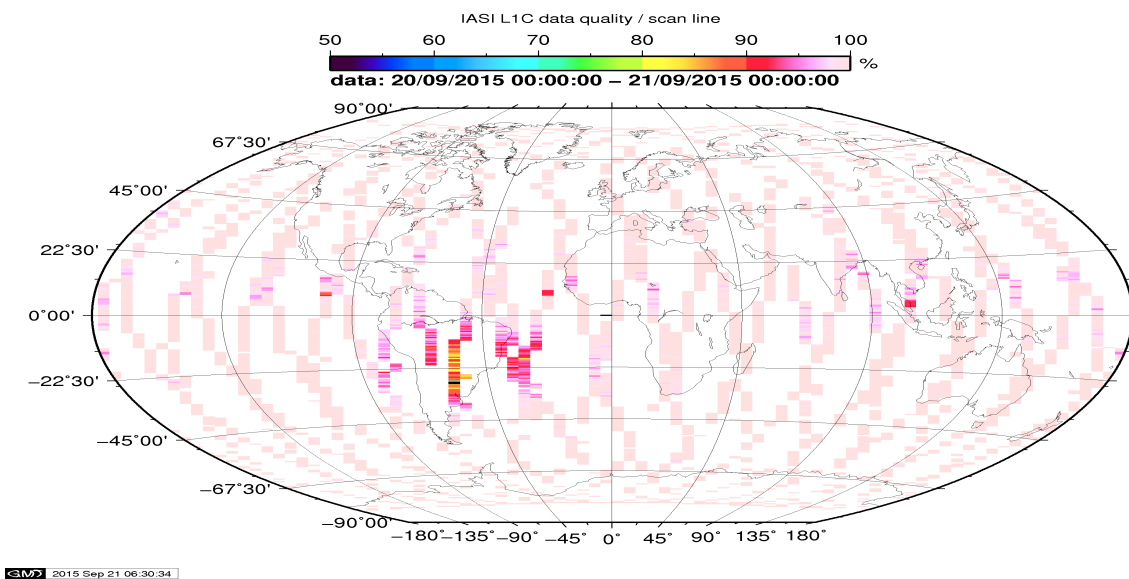


Figure 1: L1C data quality

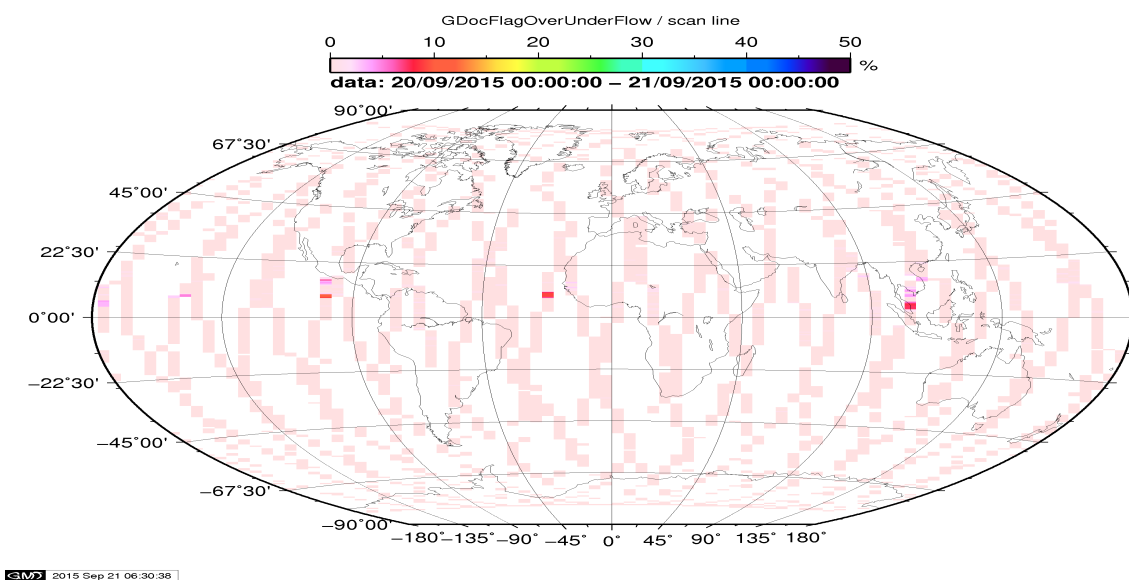


Figure 2: Flag of Over and Under Flows

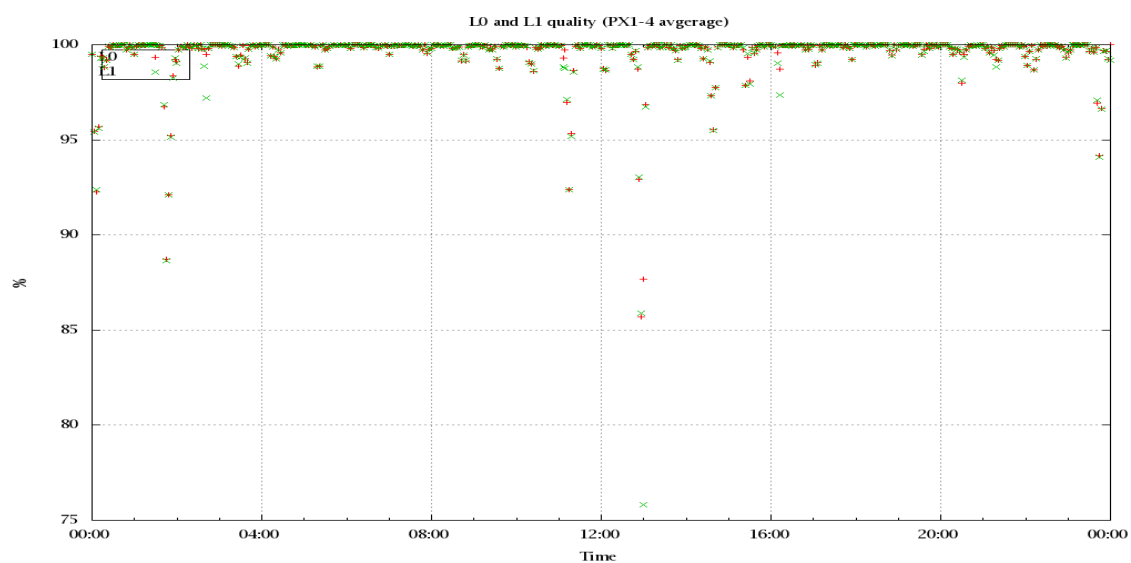


Figure 3: Level 0 and 1C overall quality

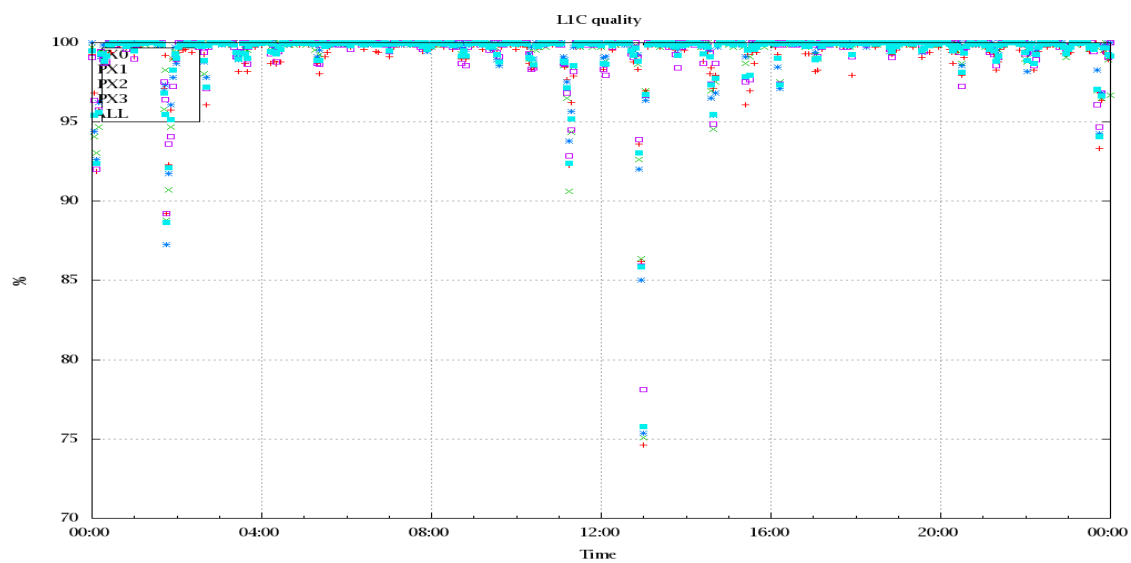


Figure 4: Level 1C quality

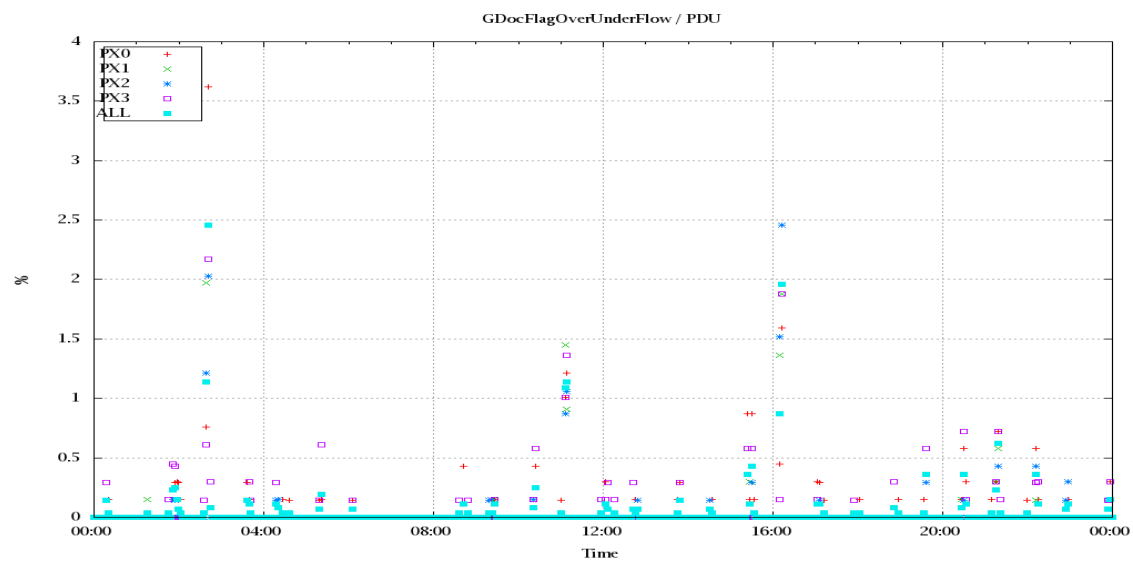


Figure 5: OverUnderFlowFlag timeseries

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.

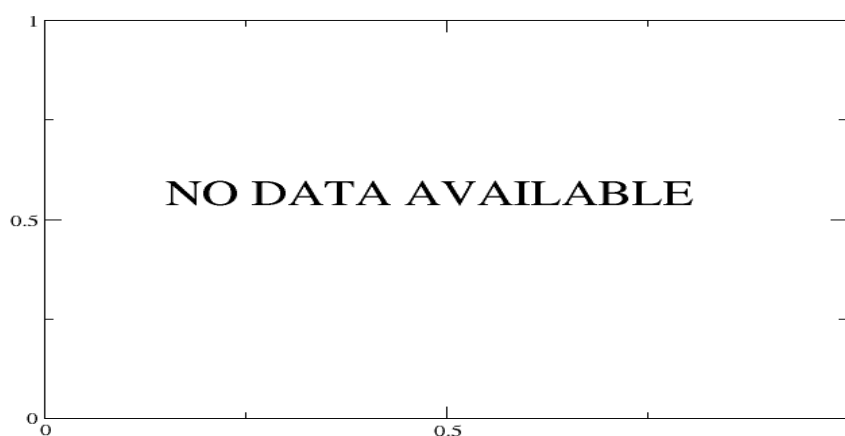


Figure 6: Average Radiance differences: OBS-CAL

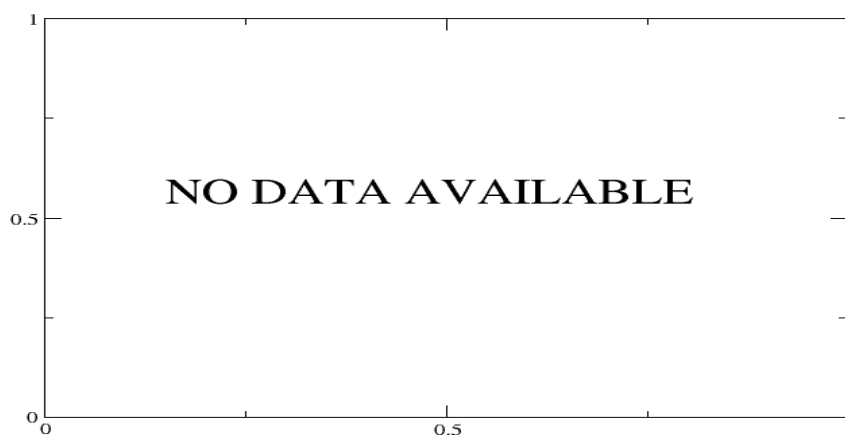


Figure 7: Standard Deviation of Radiance differences



Figure 8: Average Radiance differences: OBS-CAL



Figure 9: Standard Deviation of Radiance differences

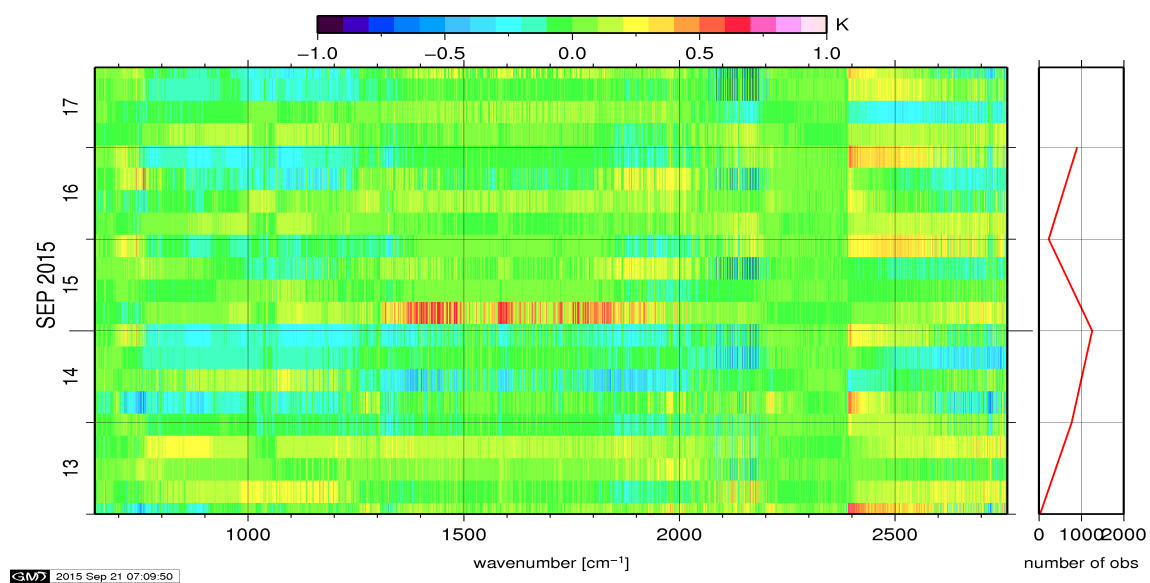


Figure 10: Radiance Anomaly in BRT: All Channels

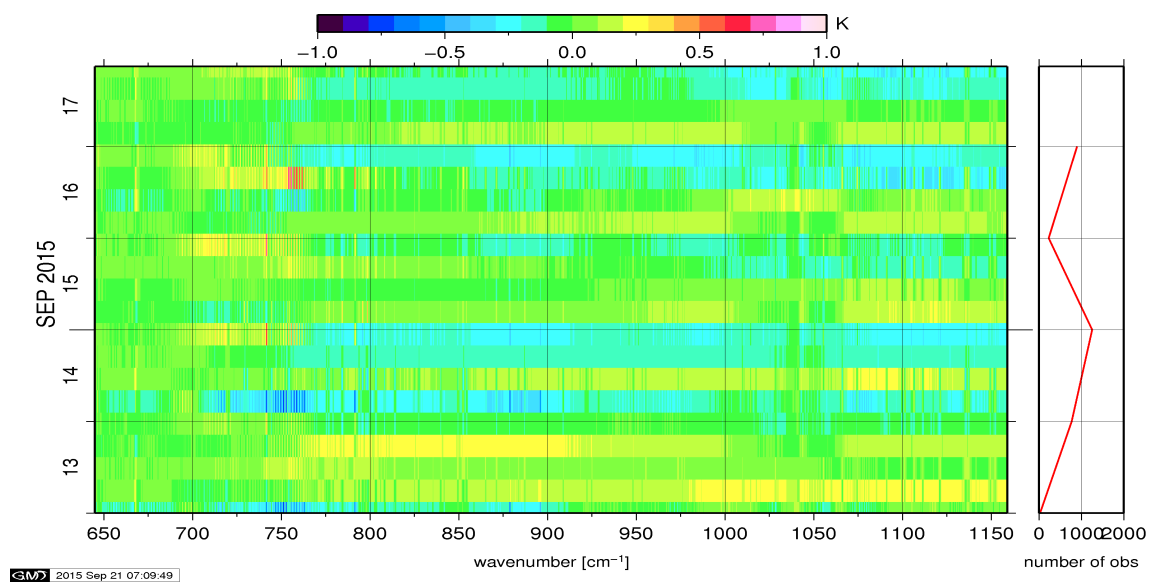


Figure 11: Radiance Anomaly in BRT: IASI Band 1

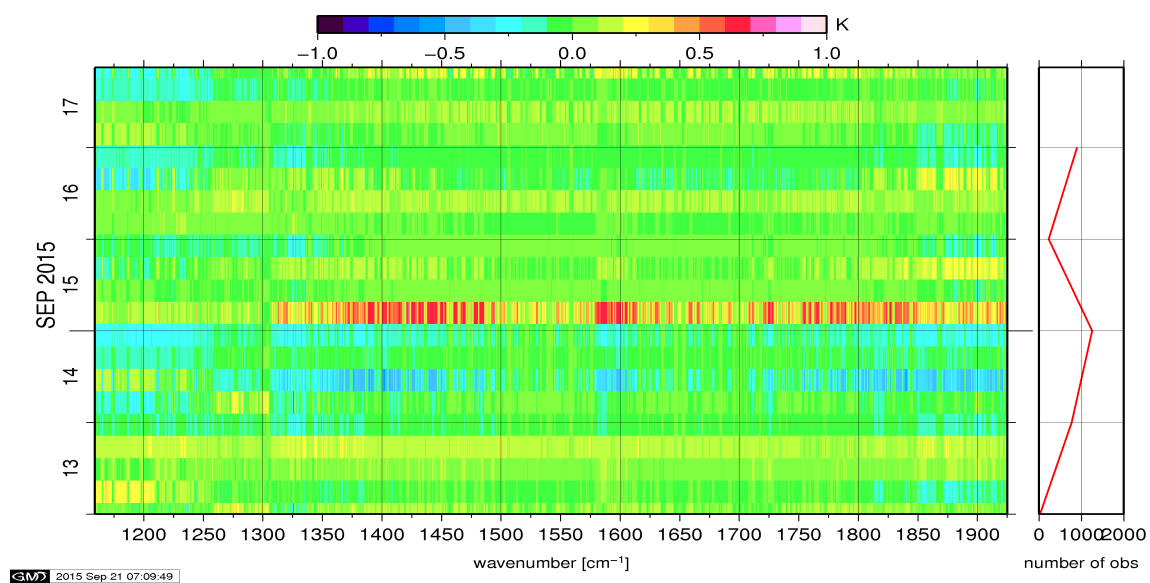


Figure 12: Radiance Anomaly in BRT: IASI Band 2

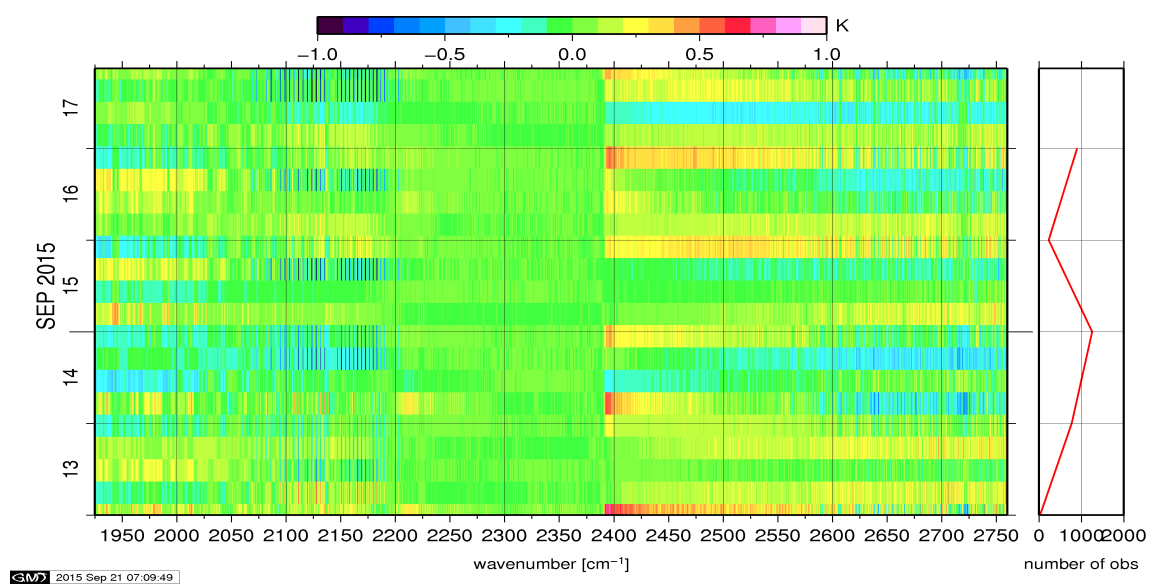


Figure 13: Radiance Anomaly in BRT: IASI Band 3

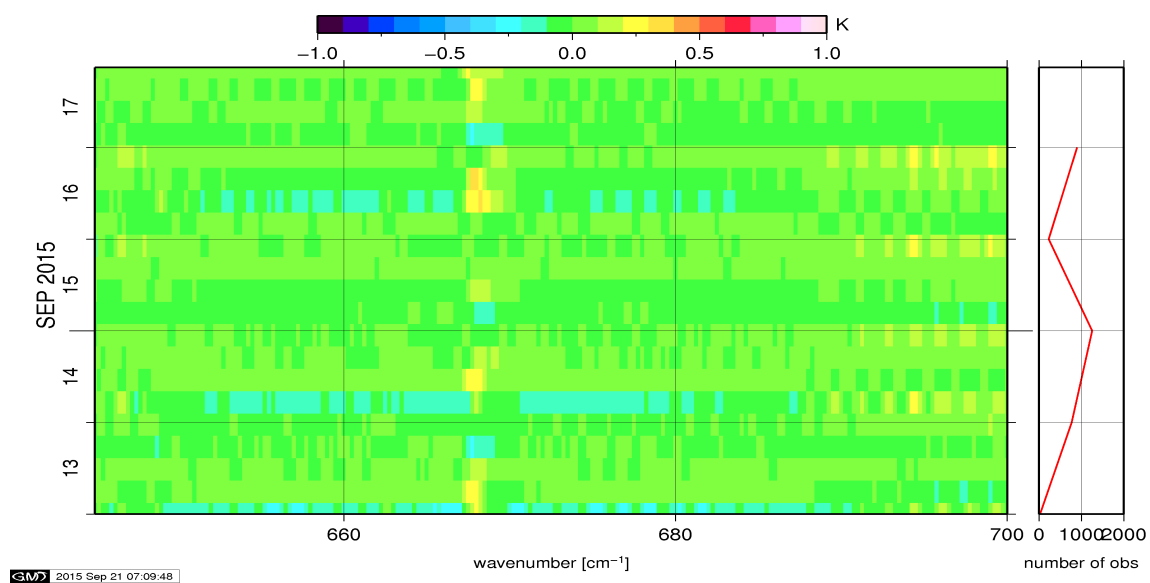


Figure 14: Radiance Anomaly in BRT: CO2 14

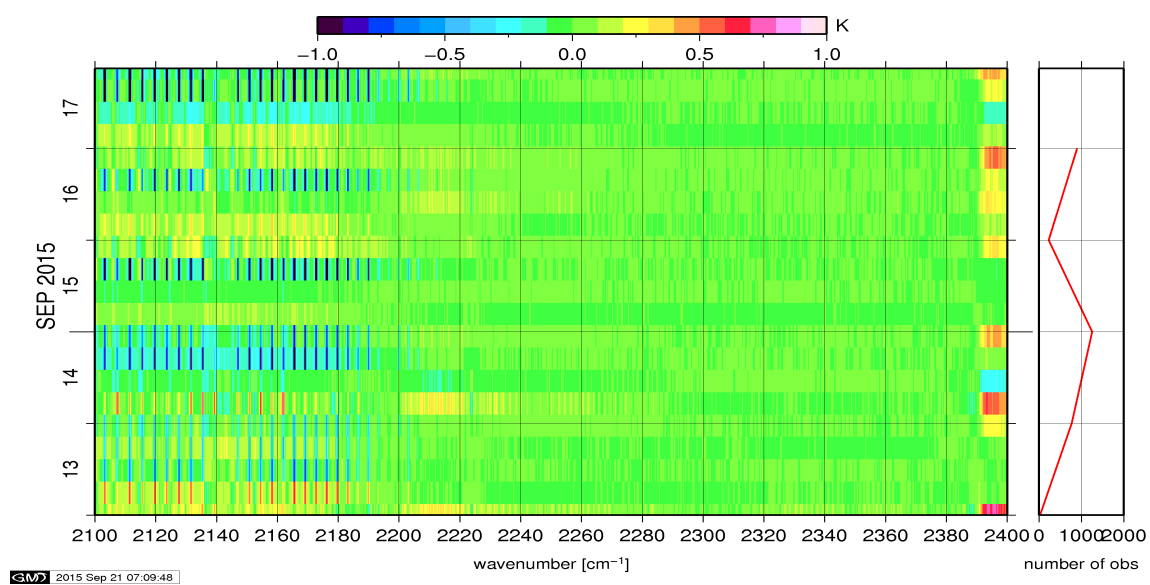


Figure 15: Radiance Anomaly in BRT: CO2 4.3

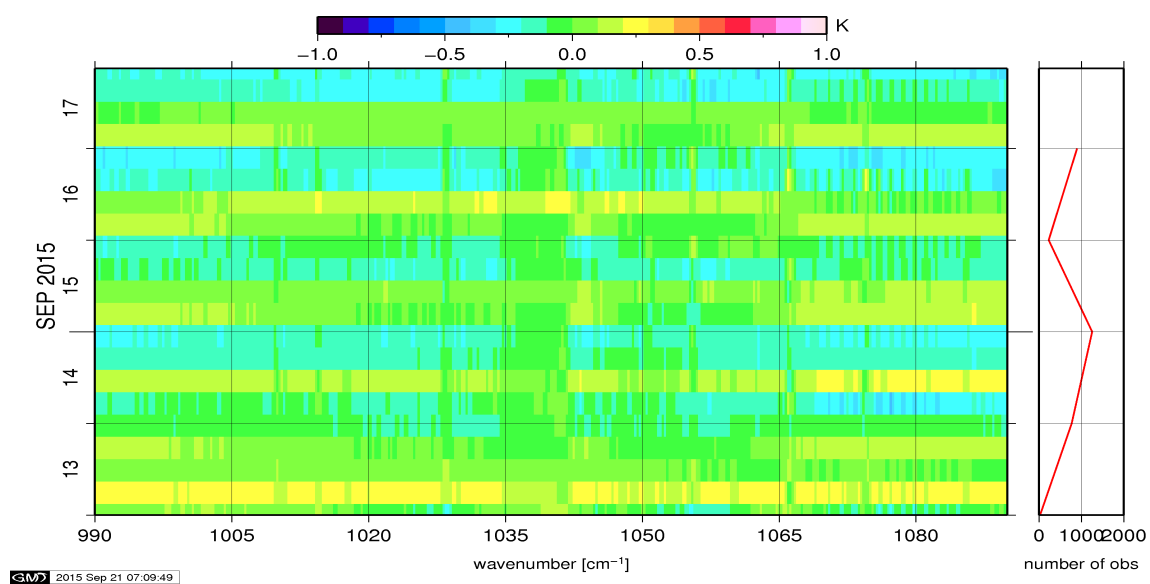


Figure 16: Radiance Anomaly in BRT: O3

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.

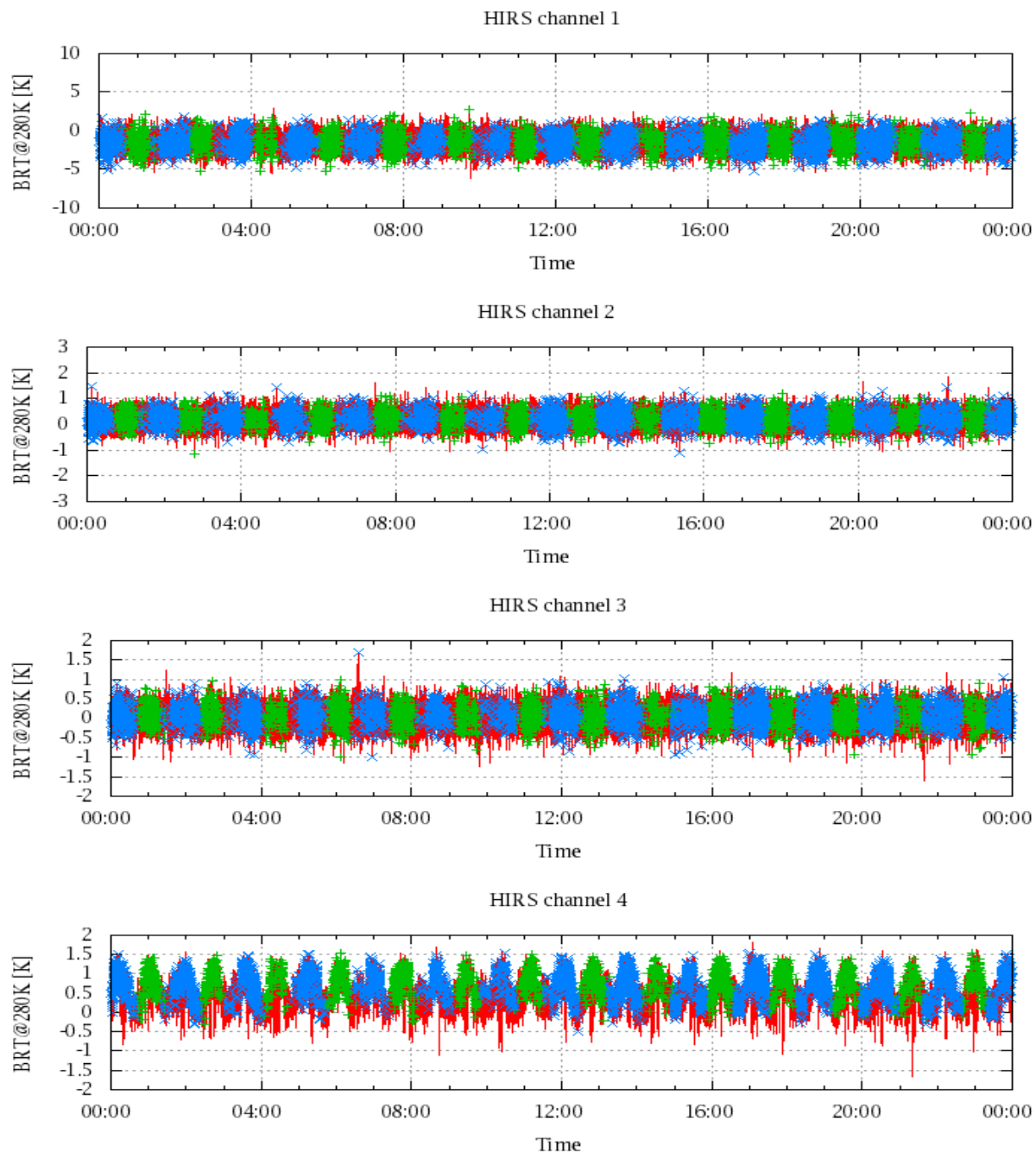


Figure 17: Radiance Differences in BRT

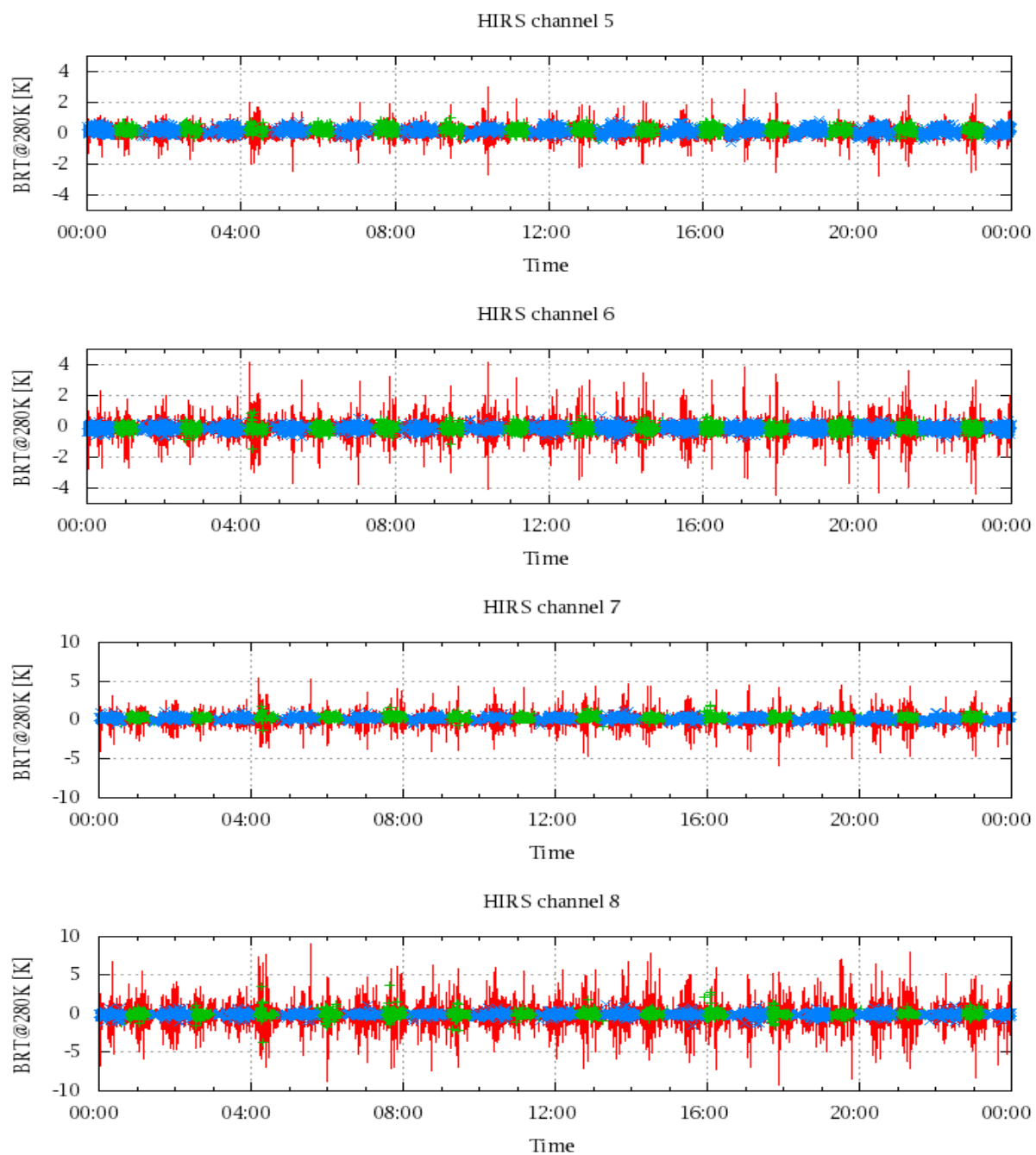


Figure 18: Radiance Differences in BRT

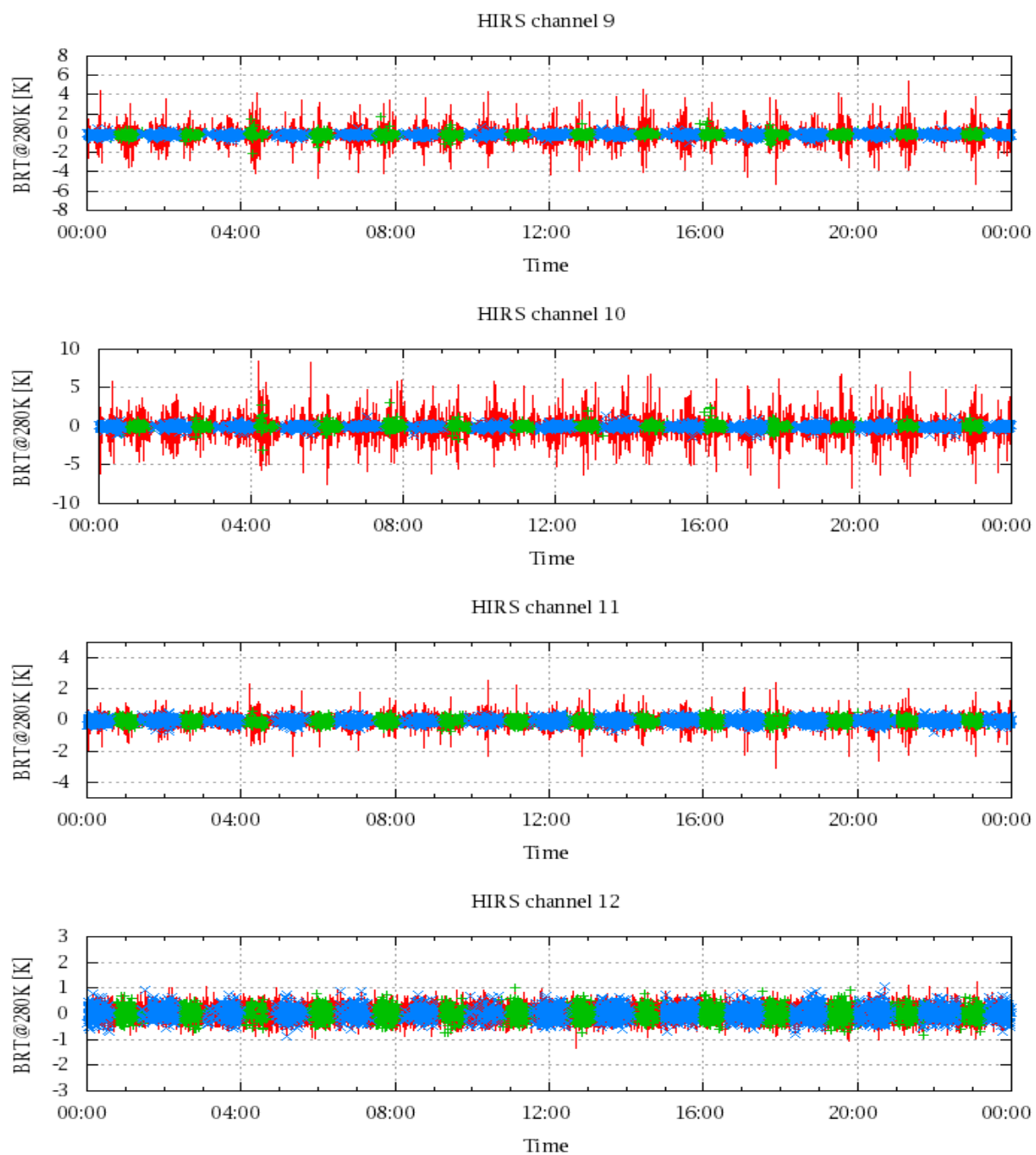


Figure 19: Radiance Differences in BRT

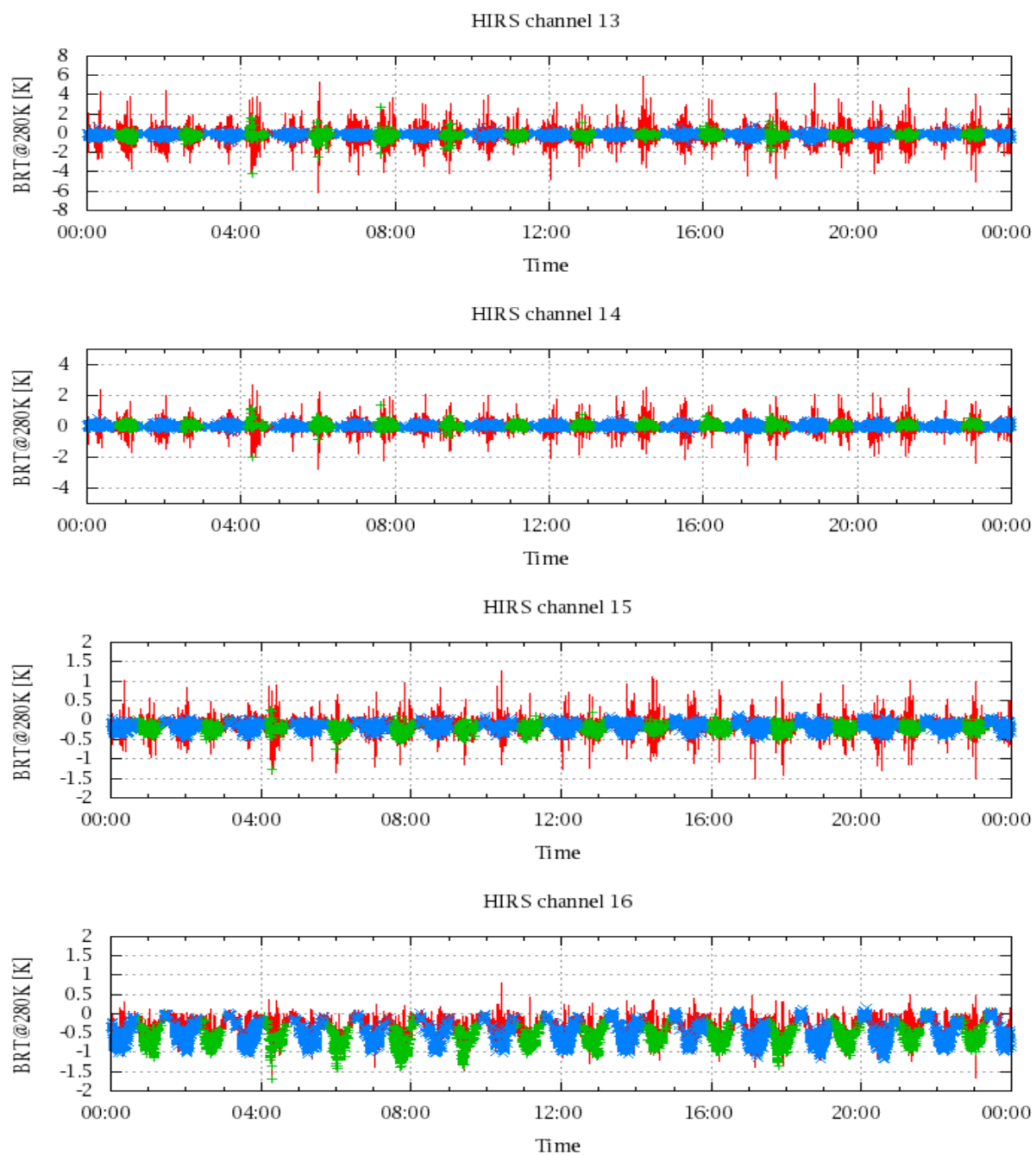


Figure 20: Radiance Differences in BRT

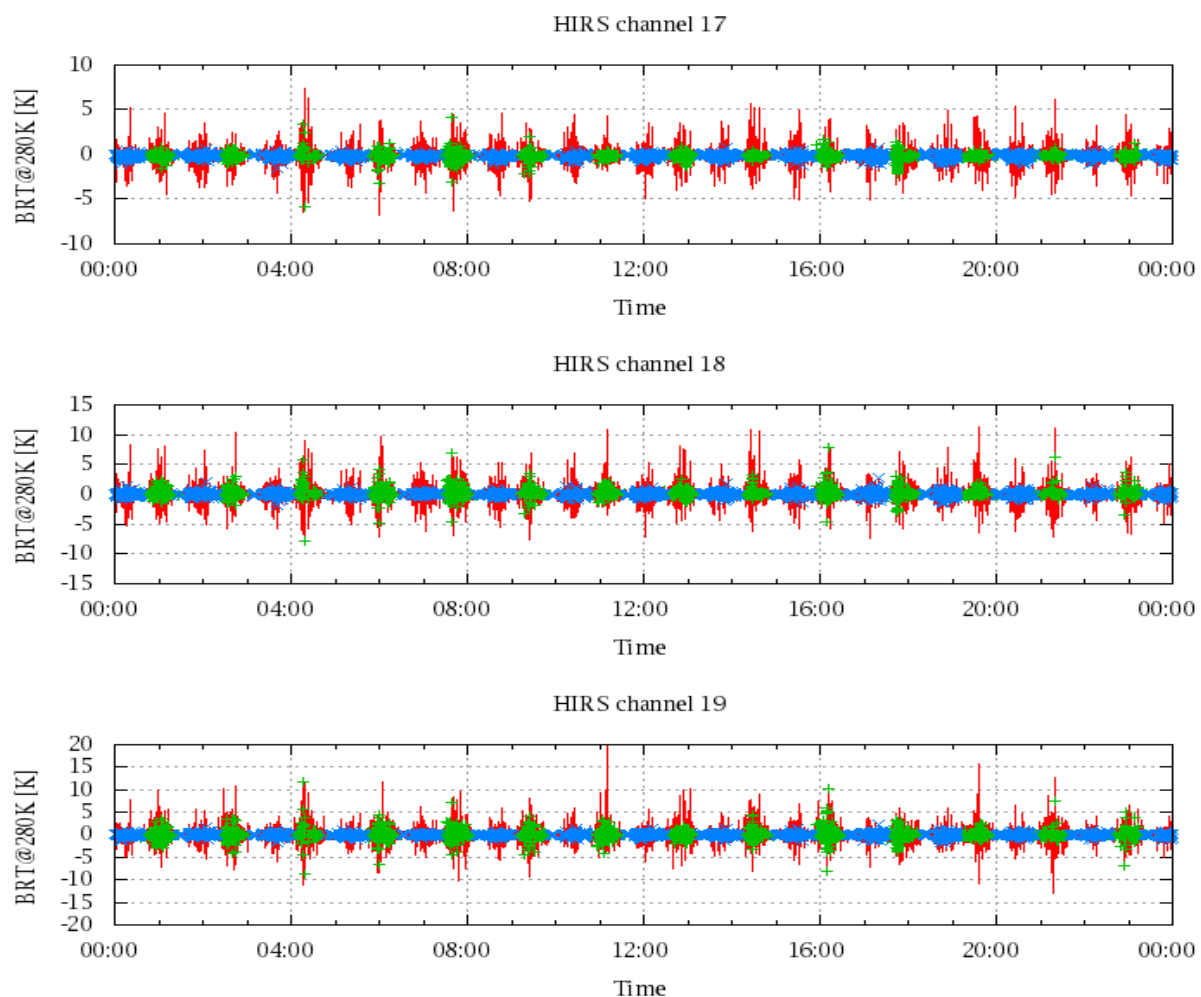


Figure 21: Radinace Differences in BRT