

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

04/03/2017 00:00:00 - 05/03/2017 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 04/03/2017 00:00:00 - 05/03/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 04/03/2017 00:00:00 - 05/03/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	467	-
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)	1918	2153	20170304000001.955	20170304000104.873
PX1 (130)	2153	2166	20170304000104.873	20170304000107.686
PX1 (130)	2167	2169	20170304000107.901	20170304000108.330
PX1 (130)	2171	2173	20170304000108.764	20170304000110.713
PX1 (130)	2174	2177	20170304000110.928	20170304000111.576
PX1 (130)	2177	2180	20170304000111.576	20170304000112.225
PX1 (130)	2182	2185	20170304000112.654	20170304000113.307
PX1 (130)	2186	2189	20170304000113.522	20170304000114.170
PX1 (130)	2189	2192	20170304000114.170	20170304000114.819
PX1 (130)	2192	2194	20170304000114.819	20170304000115.252
PX1 (130)	2194	2197	20170304000115.252	20170304000115.901
PX1 (130)	2198	2201	20170304000116.115	20170304000116.764
PX1 (130)	2201	2204	20170304000116.764	20170304000118.928
PX1 (130)	2207	2211	20170304000119.576	20170304000120.440
PX1 (130)	2211	2213	20170304000120.440	20170304000120.873
PX1 (130)	2213	2215	20170304000120.873	20170304000121.303
PX1 (130)	2215	2219	20170304000121.303	20170304000122.170
PX1 (130)	2219	2222	20170304000122.170	20170304000122.819

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	2242	2244	20170304000128.654	20170304000129.088
PX1 (130)	2252	2254	20170304000130.819	20170304000131.248
PX1 (130)	2256	2265	20170304000131.686	20170304000135.143
PX1 (130)	2265	2268	20170304000135.143	20170304000135.791
PX1 (130)	2268	2274	20170304000135.791	20170304000137.088
PX1 (130)	2278	2284	20170304000137.955	20170304000139.252
PX1 (130)	2284	2288	20170304000139.252	20170304000140.115
PX1 (130)	2288	2319	20170304000140.115	20170304000148.330
PX1 (130)	2319	2321	20170304000148.330	20170304000148.764
PX2 (135)	1918	2143	20170304000001.955	20170304000102.709
PX2 (135)	2143	2153	20170304000102.709	20170304000104.873
PX2 (135)	2153	2160	20170304000104.873	20170304000106.385
PX2 (135)	2160	2169	20170304000106.385	20170304000108.330
PX2 (135)	2171	2173	20170304000108.764	20170304000110.713
PX2 (135)	2173	2180	20170304000110.713	20170304000112.225
PX2 (135)	2182	2184	20170304000112.654	20170304000113.088
PX2 (135)	2186	2190	20170304000113.522	20170304000114.385
PX2 (135)	2192	2197	20170304000114.819	20170304000115.901
PX2 (135)	2197	2201	20170304000115.901	20170304000116.764
PX2 (135)	2201	2204	20170304000116.764	20170304000118.928
PX2 (135)	2205	2211	20170304000119.143	20170304000120.440
PX2 (135)	2211	2213	20170304000120.440	20170304000120.873
PX2 (135)	2214	2217	20170304000121.088	20170304000121.736
PX2 (135)	2217	2222	20170304000121.736	20170304000122.819
PX2 (135)	2222	2225	20170304000122.819	20170304000123.467
PX2 (135)	2234	2236	20170304000126.924	20170304000127.358
PX2 (135)	2242	2244	20170304000128.654	20170304000129.088
PX2 (135)	2252	2254	20170304000130.819	20170304000131.248
PX2 (135)	2256	2258	20170304000131.686	20170304000132.115
PX2 (135)	2258	2265	20170304000132.115	20170304000135.143
PX2 (135)	2266	2268	20170304000135.358	20170304000135.791
PX2 (135)	2269	2278	20170304000136.006	20170304000137.955
PX2 (135)	2278	2280	20170304000137.955	20170304000138.385
PX2 (135)	2280	2282	20170304000138.385	20170304000138.818
PX2 (135)	2285	2309	20170304000139.467	20170304000146.170
PX2 (135)	2309	2321	20170304000146.170	20170304000148.764
PX3 (140)	1918	2138	20170304000001.955	20170304000100.115
PX3 (140)	2138	2140	20170304000100.115	20170304000100.549
PX3 (140)	2140	2142	20170304000100.549	20170304000100.979
PX3 (140)	2142	2147	20170304000100.979	20170304000103.576
PX3 (140)	2147	2164	20170304000103.576	20170304000107.252
PX3 (140)	2164	2168	20170304000107.252	20170304000108.115
PX3 (140)	2168	2173	20170304000108.115	20170304000110.713
PX3 (140)	2173	2176	20170304000110.713	20170304000111.358
PX3 (140)	2176	2178	20170304000111.358	20170304000111.791
PX3 (140)	2182	2184	20170304000112.654	20170304000113.088
PX3 (140)	2186	2190	20170304000113.522	20170304000114.385
PX3 (140)	2193	2195	20170304000115.033	20170304000115.467
PX3 (140)	2197	2203	20170304000115.901	20170304000118.709
PX3 (140)	2205	2211	20170304000119.143	20170304000120.440
PX3 (140)	2211	2217	20170304000120.440	20170304000121.736
PX3 (140)	2218	2221	20170304000121.955	20170304000122.604
PX3 (140)	2222	2225	20170304000122.819	20170304000123.467

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	2234	2236	20170304000126.924	20170304000127.358
PX3 (140)	2239	2241	20170304000128.006	20170304000128.440
PX3 (140)	2242	2244	20170304000128.654	20170304000129.088
PX3 (140)	2252	2254	20170304000130.819	20170304000131.248
PX3 (140)	2256	2261	20170304000131.686	20170304000132.764
PX3 (140)	2261	2264	20170304000132.764	20170304000134.928
PX3 (140)	2265	2268	20170304000135.143	20170304000135.791
PX3 (140)	2273	2282	20170304000136.873	20170304000138.818
PX3 (140)	2282	2289	20170304000138.818	20170304000140.330
PX3 (140)	2289	2295	20170304000140.330	20170304000143.143
PX3 (140)	2296	2320	20170304000143.358	20170304000148.545
PX4 (145)	1917	2140	20170304000001.741	20170304000100.549
PX4 (145)	2140	2155	20170304000100.549	20170304000105.307
PX4 (145)	2156	2163	20170304000105.522	20170304000107.033
PX4 (145)	2163	2168	20170304000107.033	20170304000108.115
PX4 (145)	2168	2176	20170304000108.115	20170304000111.358
PX4 (145)	2176	2178	20170304000111.358	20170304000111.791
PX4 (145)	2182	2184	20170304000112.654	20170304000113.088
PX4 (145)	2186	2190	20170304000113.522	20170304000114.385
PX4 (145)	2190	2192	20170304000114.385	20170304000114.819
PX4 (145)	2192	2195	20170304000114.819	20170304000115.467
PX4 (145)	2195	2197	20170304000115.467	20170304000115.901
PX4 (145)	2198	2200	20170304000116.115	20170304000116.549
PX4 (145)	2200	2203	20170304000116.549	20170304000118.709
PX4 (145)	2206	2211	20170304000119.358	20170304000120.440
PX4 (145)	2212	2221	20170304000120.658	20170304000122.604
PX4 (145)	2222	2224	20170304000122.819	20170304000123.252
PX4 (145)	2239	2241	20170304000128.006	20170304000128.440
PX4 (145)	2256	2263	20170304000131.686	20170304000134.709
PX4 (145)	2265	2272	20170304000135.143	20170304000136.654
PX4 (145)	2272	2277	20170304000136.654	20170304000137.736
PX4 (145)	2277	2281	20170304000137.736	20170304000138.600
PX4 (145)	2281	2295	20170304000138.600	20170304000143.143
PX4 (145)	2295	2320	20170304000143.143	20170304000148.545
PX4 (145)	2327	2329	20170304000151.572	20170304000152.006
IMG (150)	8085	8368	20170304000001.741	20170304000108.115
IMG (150)	8368	8383	20170304000108.115	20170304000112.010
IMG (150)	8385	8388	20170304000112.440	20170304000113.088
IMG (150)	8388	8390	20170304000113.088	20170304000113.522
IMG (150)	8392	8401	20170304000113.951	20170304000115.901
IMG (150)	8401	8404	20170304000115.901	20170304000116.549
IMG (150)	8404	8409	20170304000116.549	20170304000118.061
IMG (150)	8409	8412	20170304000118.061	20170304000118.928
IMG (150)	8412	8414	20170304000118.928	20170304000119.358
IMG (150)	8414	8420	20170304000119.358	20170304000120.658
IMG (150)	8420	8429	20170304000120.658	20170304000122.604
IMG (150)	8429	8431	20170304000122.604	20170304000123.033
IMG (150)	8431	8433	20170304000123.033	20170304000123.467
IMG (150)	8444	8446	20170304000126.279	20170304000126.924
IMG (150)	8449	8451	20170304000127.576	20170304000128.006
IMG (150)	8451	8453	20170304000128.006	20170304000128.440
IMG (150)	8467	8470	20170304000131.467	20170304000132.115
IMG (150)	8470	8472	20170304000132.115	20170304000132.549
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	8472	8475	20170304000132.549	20170304000133.412
IMG (150)	8476	8480	20170304000133.631	20170304000134.928
IMG (150)	8480	8482	20170304000134.928	20170304000135.358
IMG (150)	8482	8510	20170304000135.358	20170304000141.627
IMG (150)	8510	8540	20170304000141.627	20170304000148.545
IMG (150)	8551	8553	20170304000151.572	20170304000152.006
IMG (150)	8565	8567	20170304000154.600	20170304000155.033
VER (160)	3787	3798	20170304000100.979	20170304000124.983
VER (160)	3802	3807	20170304000124.983	20170304000132.764
VER (160)	3807	3813	20170304000132.764	20170304000148.979
AUX (180)	13837	13840	20170304000101.412	20170304000125.412
AUX (180)	13841	13843	20170304000133.412	20170304000149.412

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
04/03/2017 00:01:06	-	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	467	-
GQisFlagQual set (PX1)	99.54 %	-
GQisFlagQual set (PX2)	99.58 %	-
GQisFlagQual set (PX3)	99.60 %	-
GQisFlagQual set (PX4)	99.52 %	-
GQisFlagQual set (all)	99.56 %	-

Table 4: Quality flags

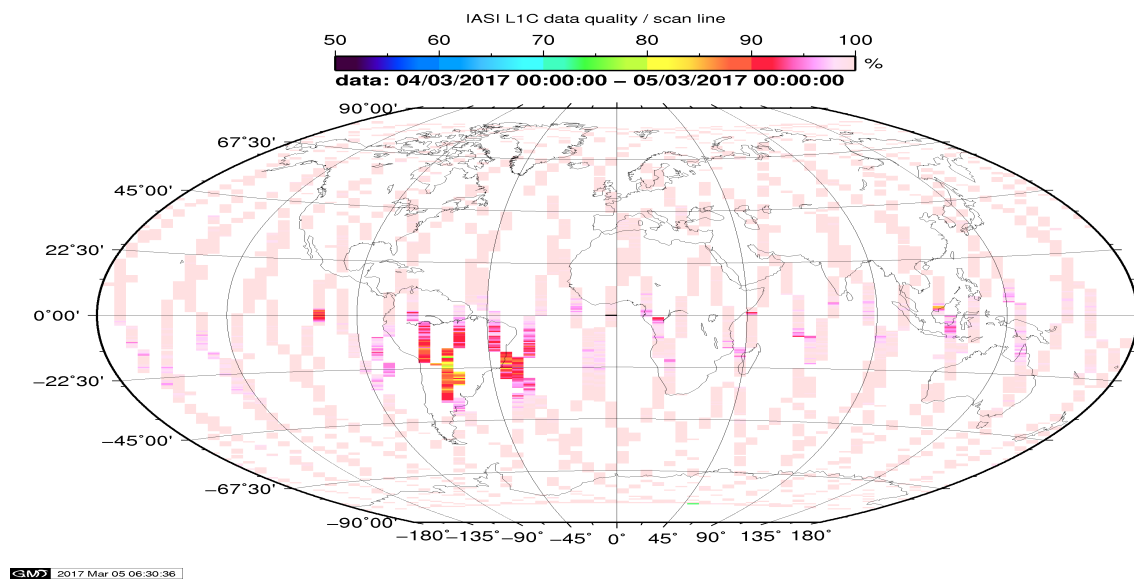


Figure 1: L1C data quality

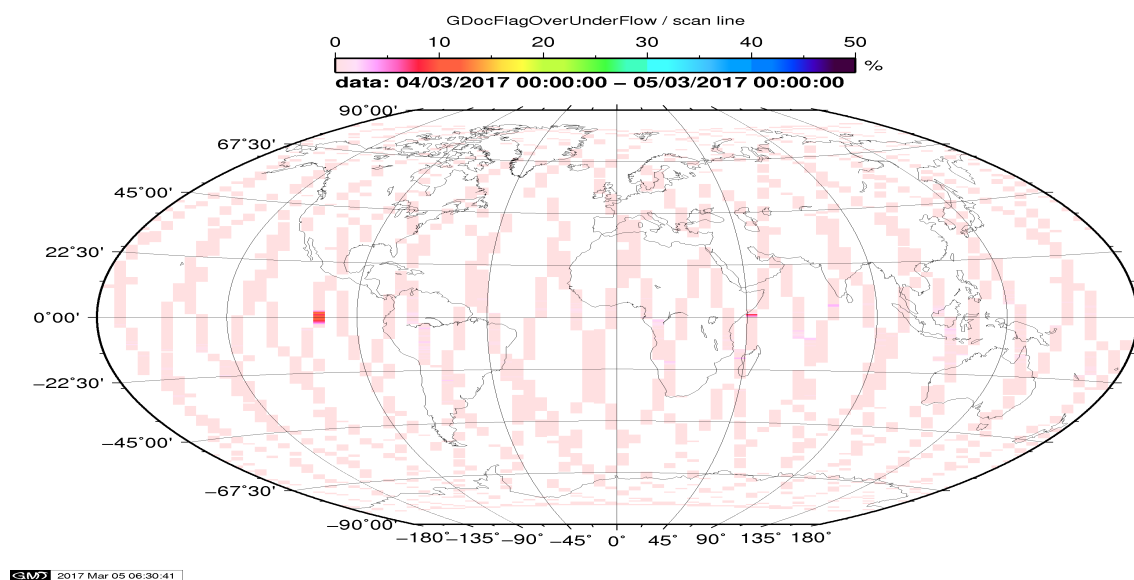


Figure 2: Flag of Over and Under Flows

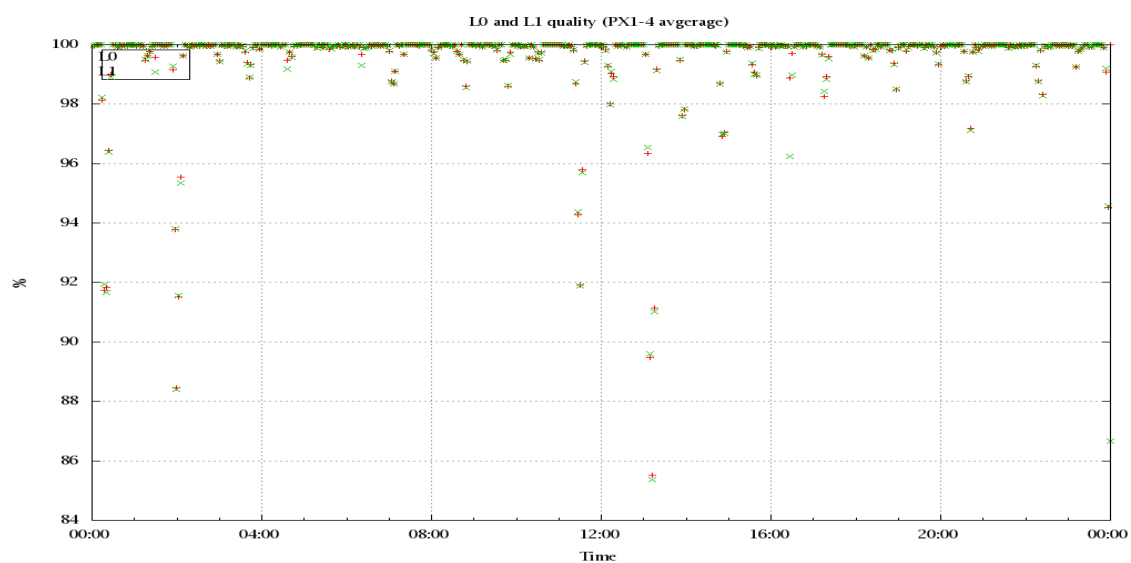


Figure 3: Level 0 and 1C overall quality

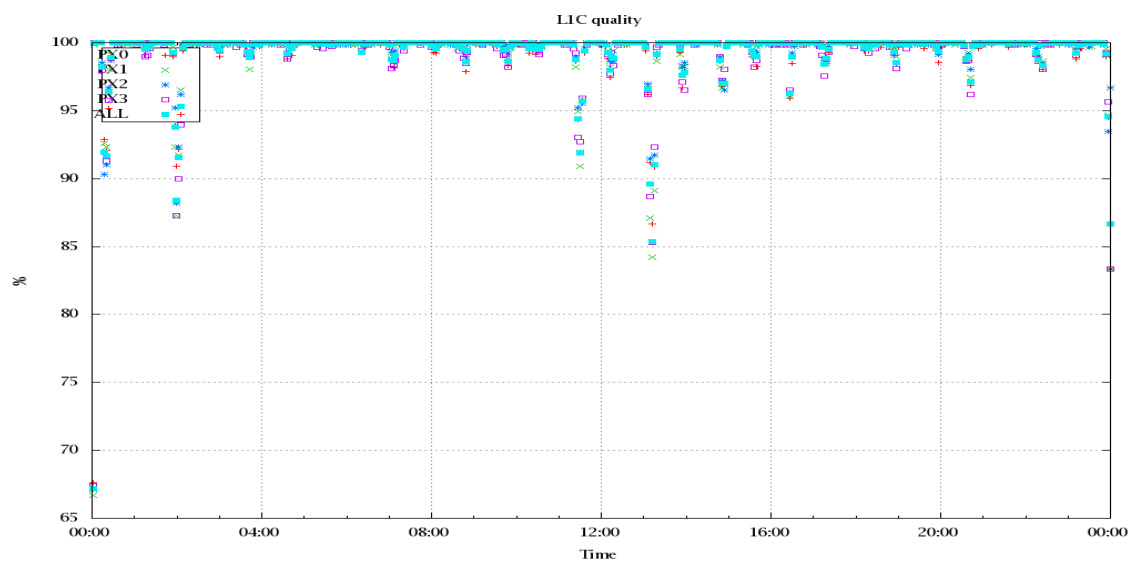


Figure 4: Level 1C quality

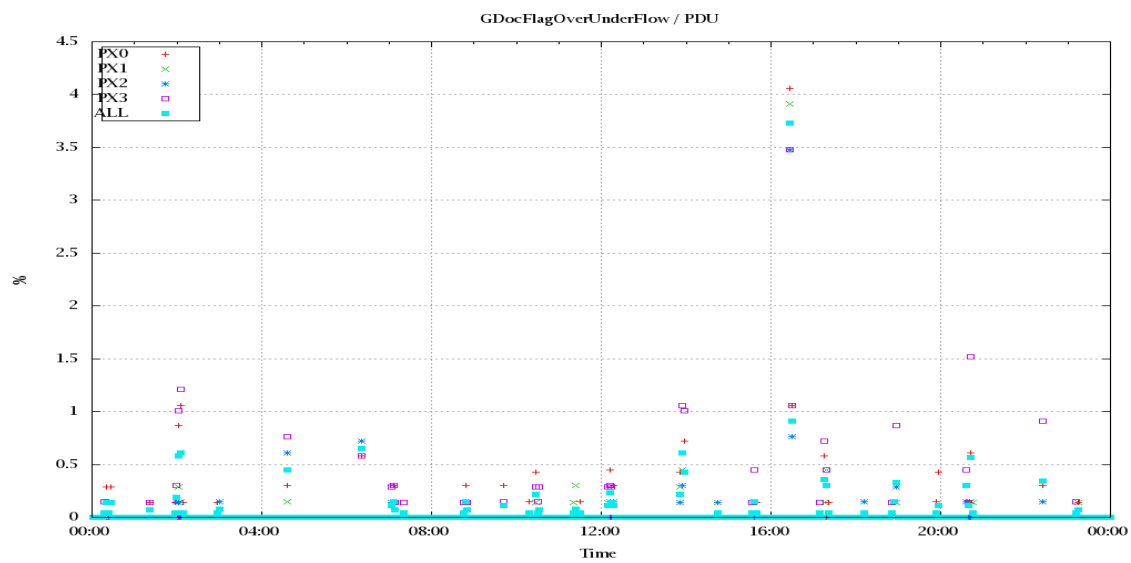


Figure 5: OverUnderFlowFlag timeseries

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.

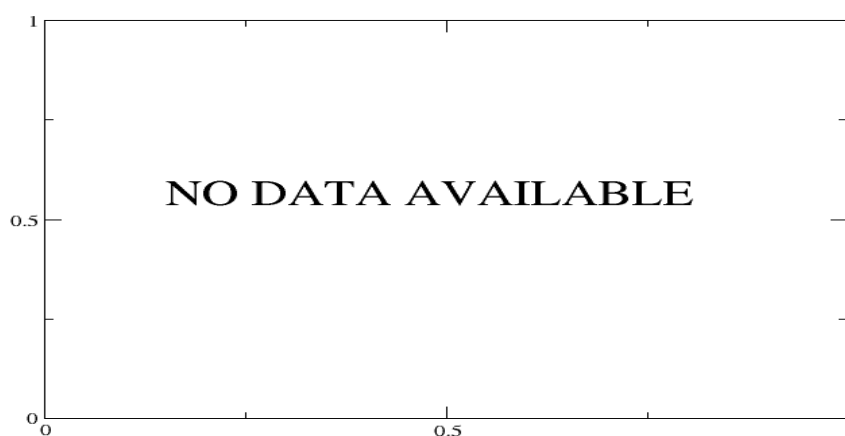


Figure 6: Average Radiance differences: OBS-CAL

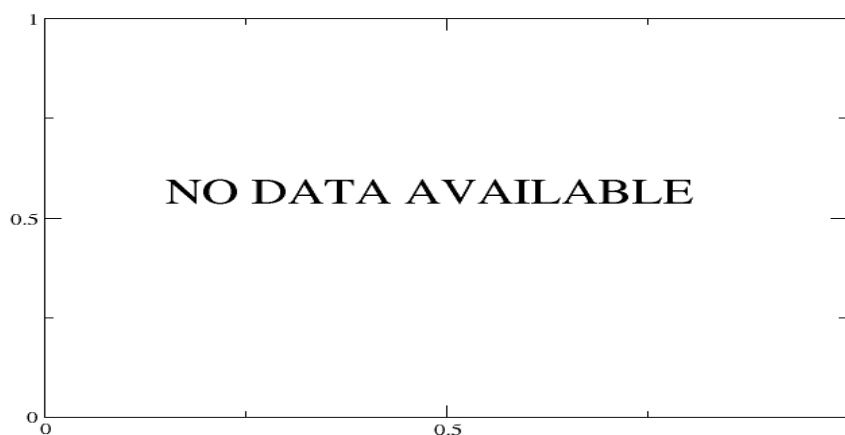


Figure 7: Standard Deviation of Radiance differences



Figure 8: Average Radiance differences: OBS-CAL



Figure 9: Standard Deviation of Radiance differences

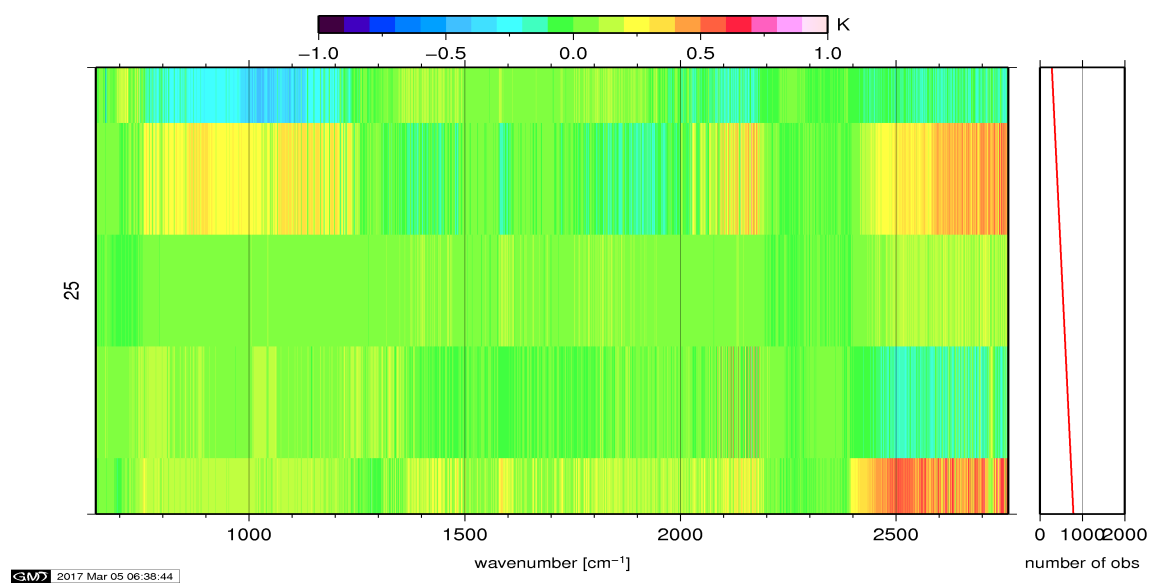


Figure 10: Radiance Anomaly in BRT: All Channels

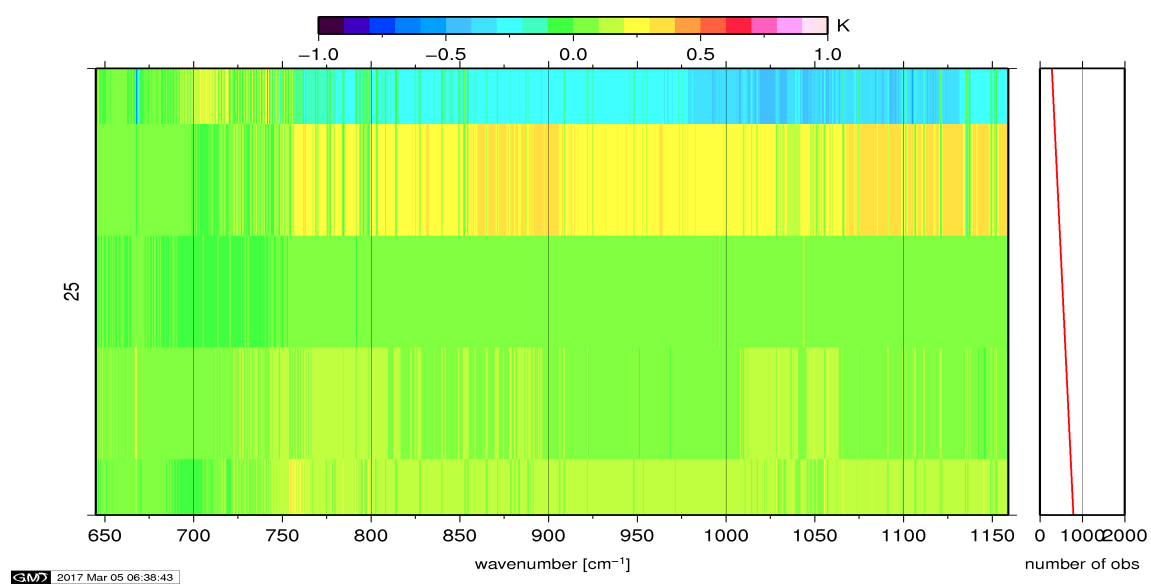


Figure 11: Radiance Anomaly in BRT: IASI Band 1

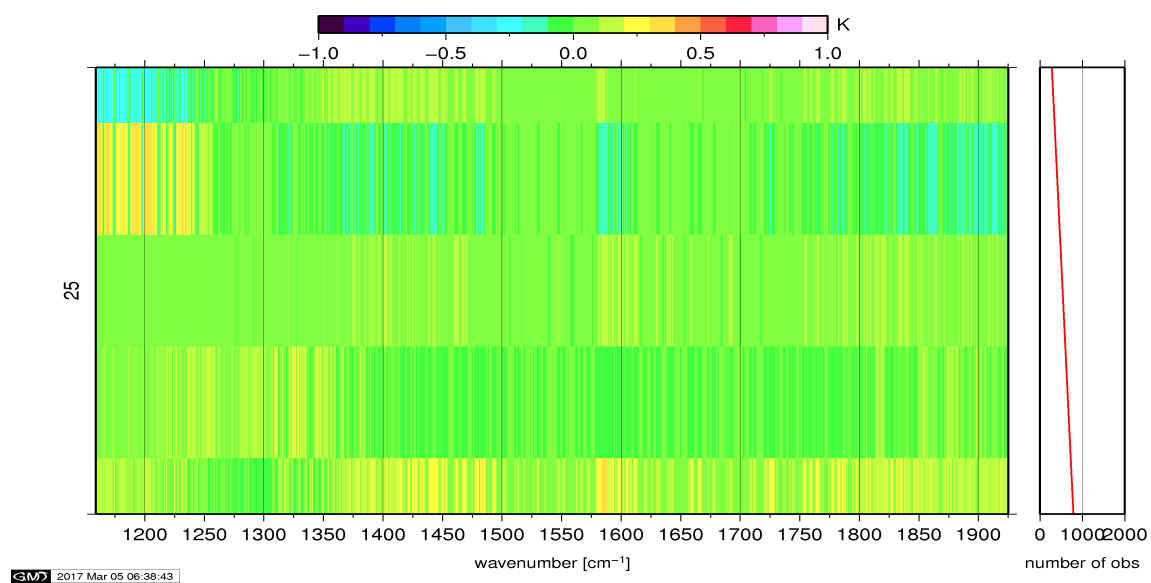


Figure 12: Radiance Anomaly in BRT: IASI Band 2

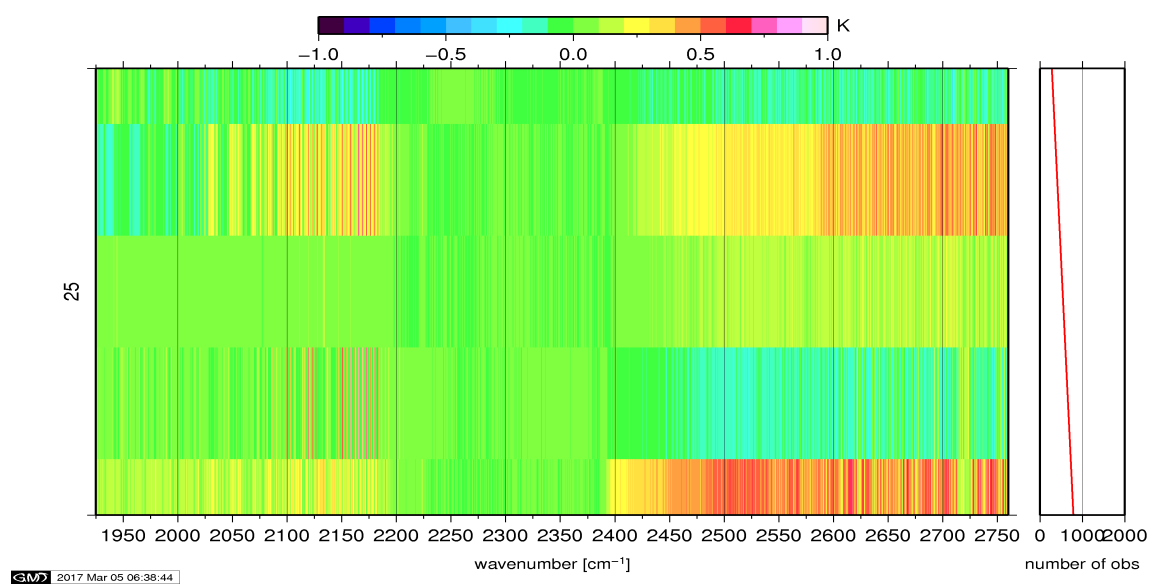


Figure 13: Radiance Anomaly in BRT: IASI Band 3

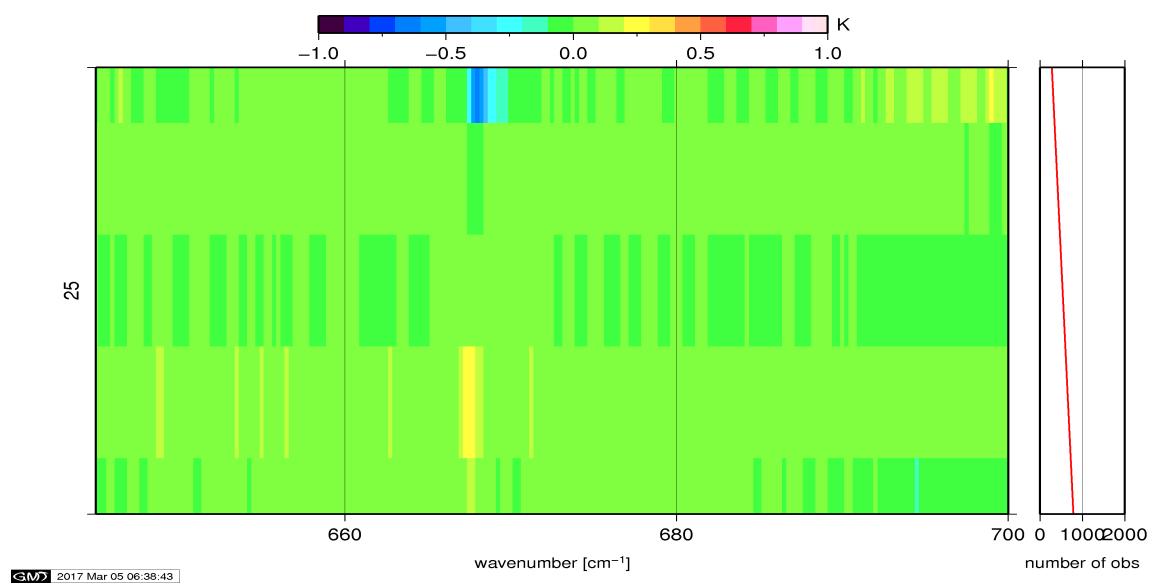


Figure 14: Radiance Anomaly in BRT: CO2 14

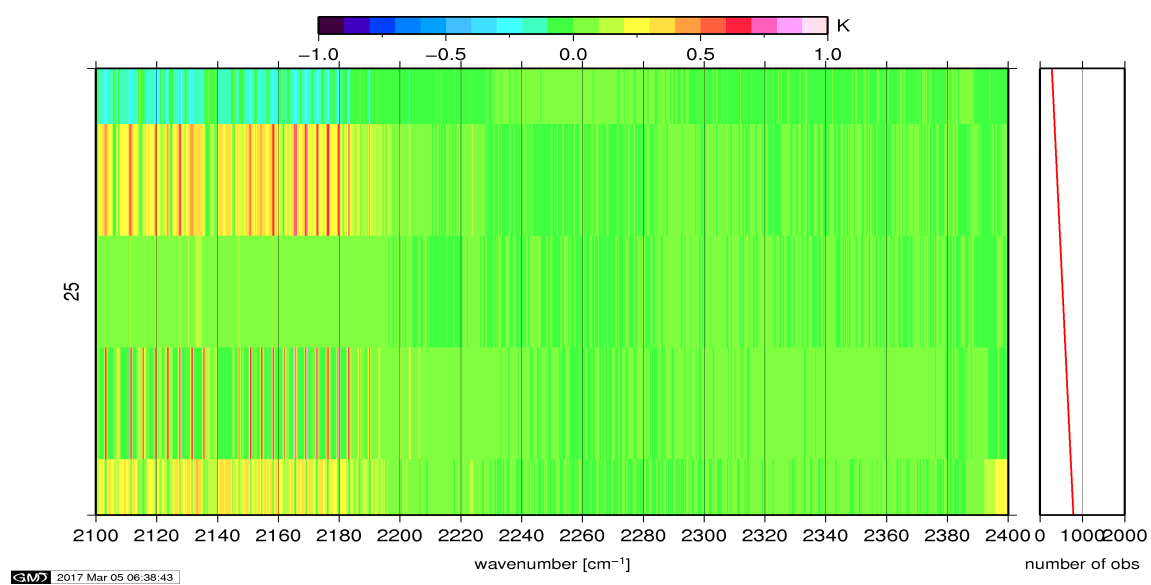


Figure 15: Radiance Anomaly in BRT: CO2 4.3

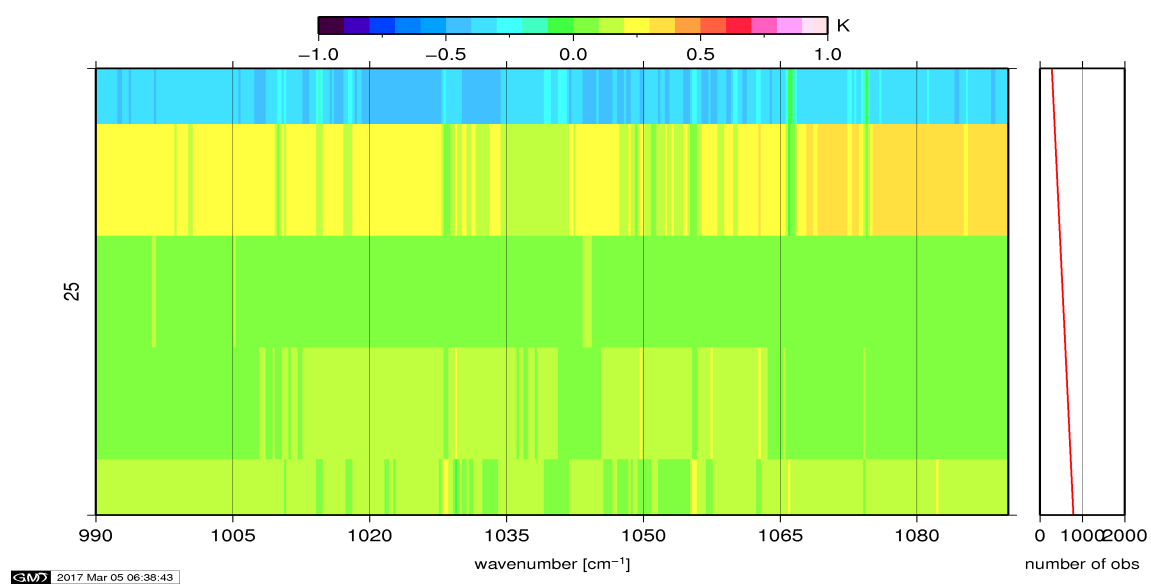


Figure 16: Radiance Anomaly in BRT: O3

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.

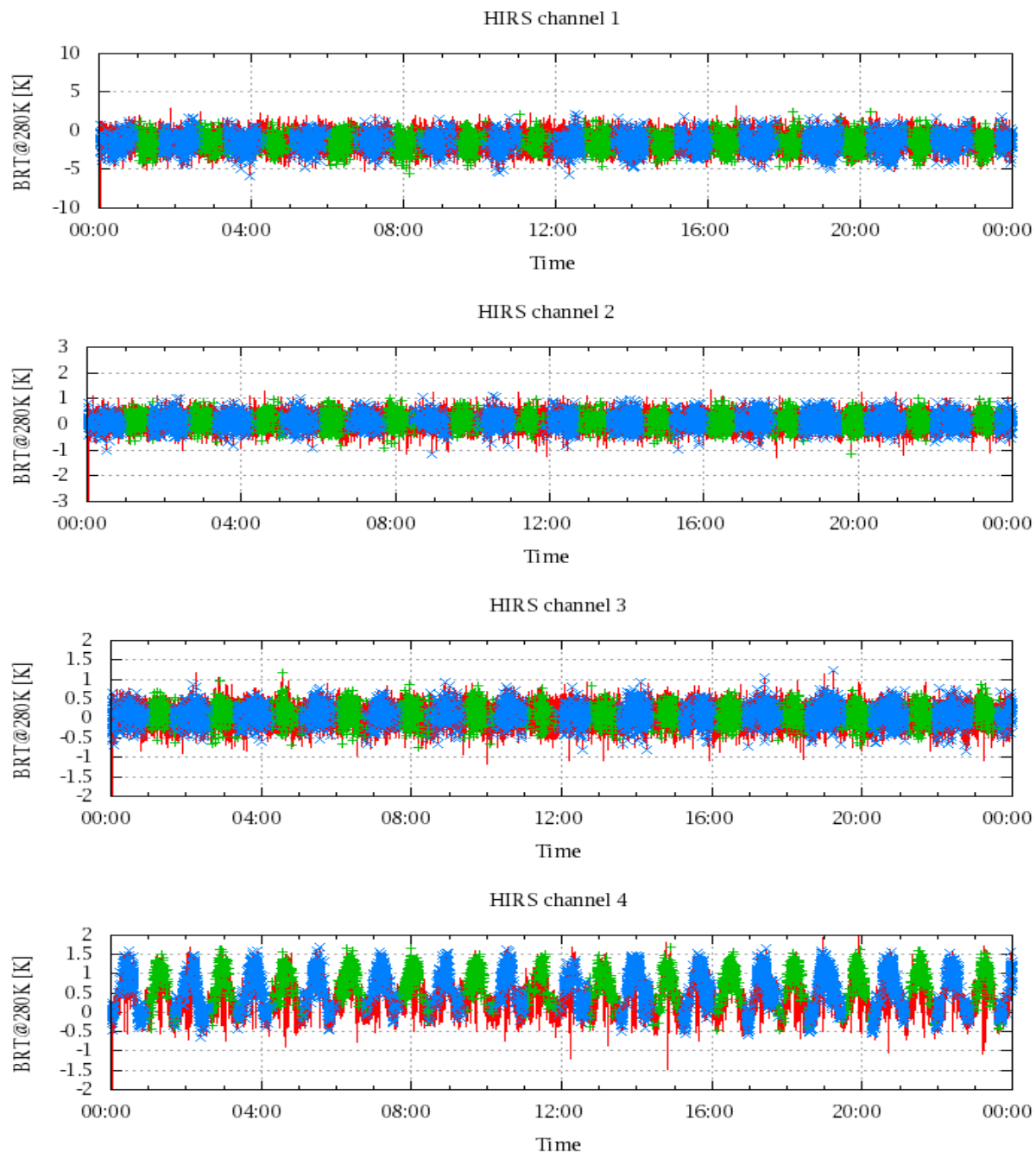


Figure 17: Radiance Differences in BRT

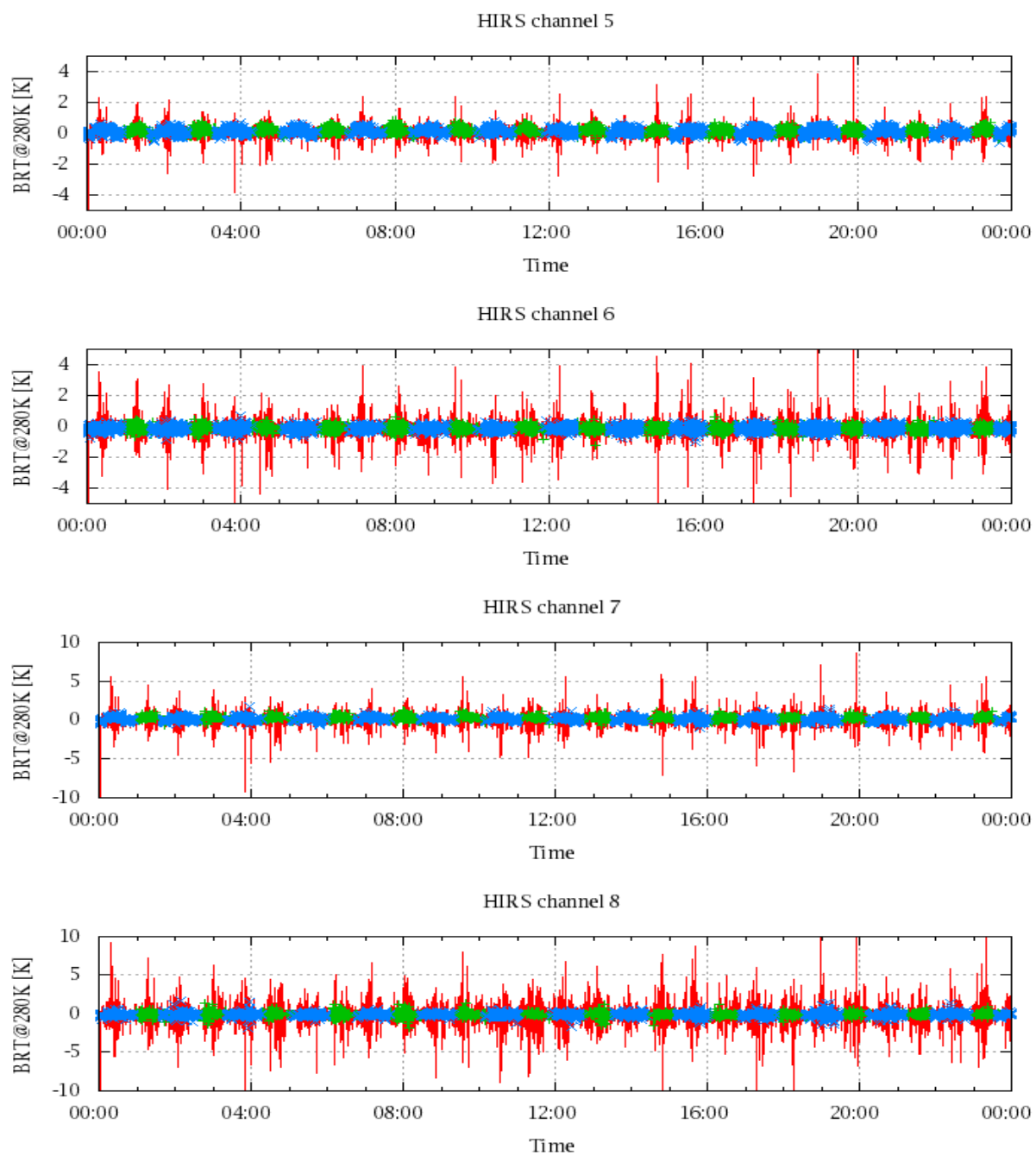


Figure 18: Radiance Differences in BRT

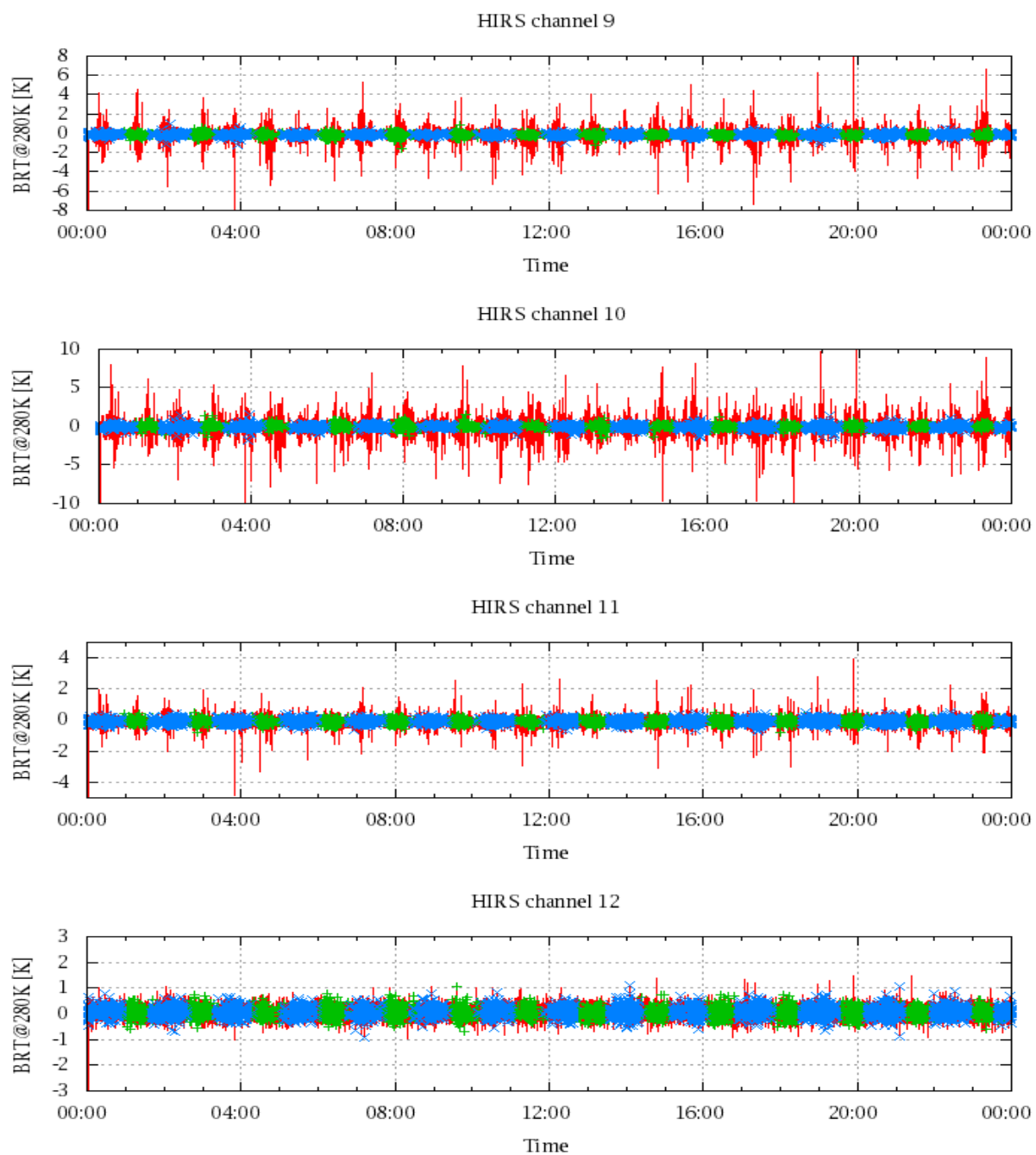


Figure 19: Radiance Differences in BRT

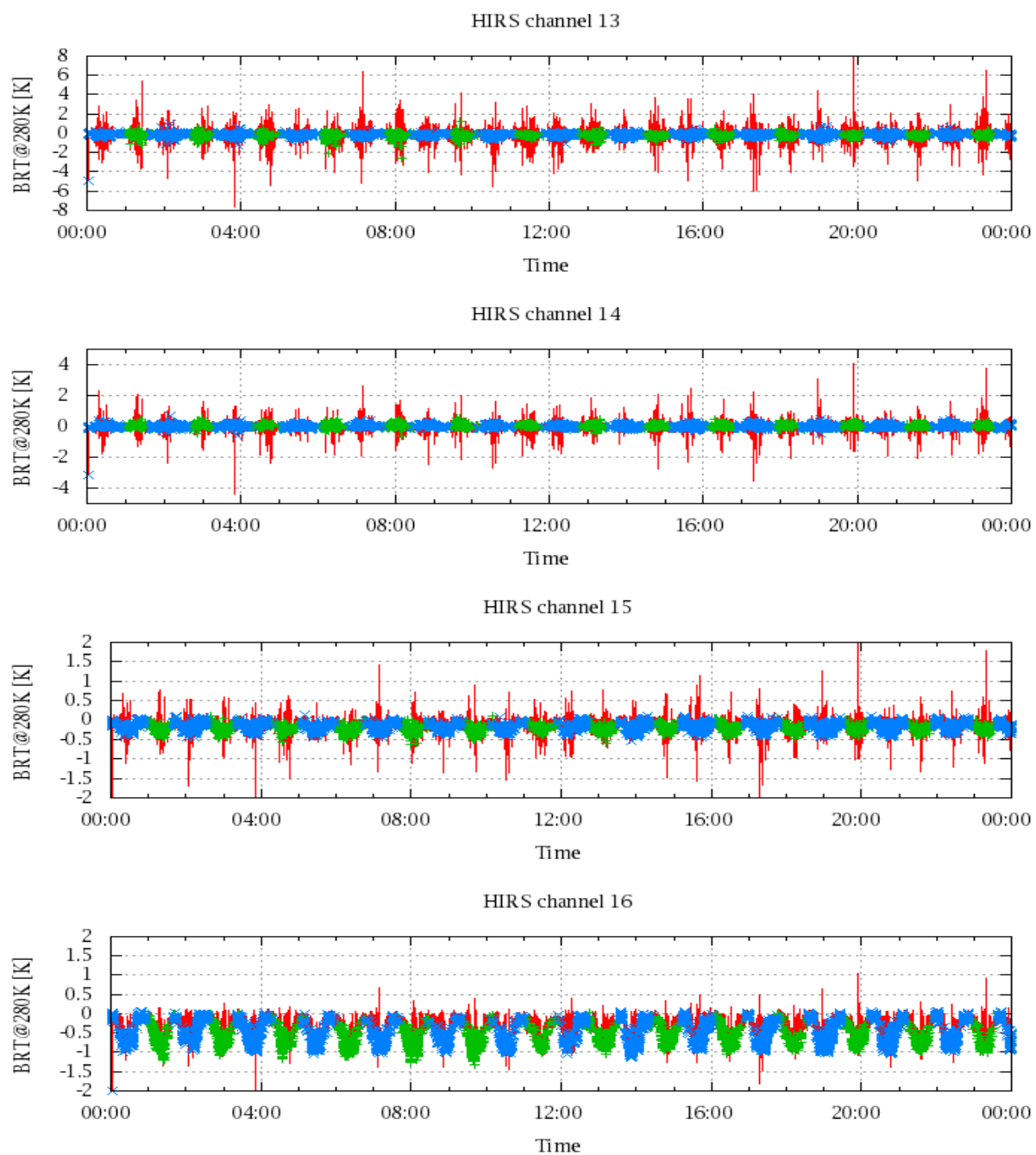


Figure 20: Radiance Differences in BRT

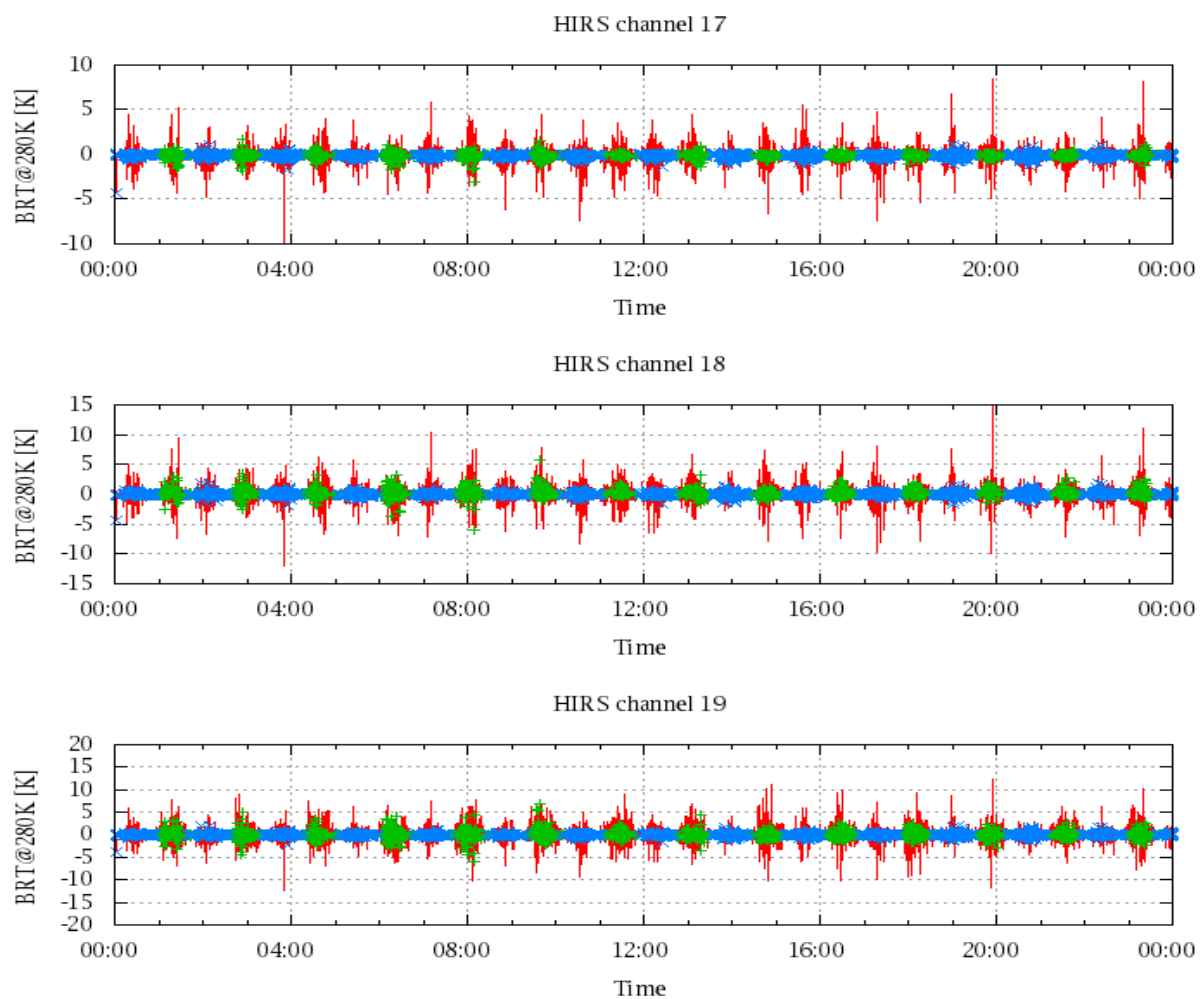


Figure 21: Radinace Differences in BRT