

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

11/12/2016 00:00:00 - 12/12/2016 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 11/12/2016 00:00:00 - 12/12/2016 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 11/12/2016 00:00:00 - 12/12/2016 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	468	-
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)	12158	12160	20161211221619.723	20161211221620.153
PX1 (130)	12166	12168	20161211221621.450	20161211221621.883
PX1 (130)	12170	12172	20161211221622.317	20161211221622.747
PX1 (130)	12183	12186	20161211221626.641	20161211221627.290
PX1 (130)	12194	12196	20161211221629.016	20161211221629.450
PX1 (130)	12197	12199	20161211221629.669	20161211221630.098
PX1 (130)	12203	12205	20161211221630.965	20161211221631.399
PX1 (130)	12211	12213	20161211221632.696	20161211221634.637
PX1 (130)	12213	12215	20161211221634.637	20161211221635.071
PX1 (130)	12217	12221	20161211221635.504	20161211221636.368
PX1 (130)	12223	12226	20161211221636.801	20161211221637.450
PX1 (130)	12227	12230	20161211221637.665	20161211221638.317
PX1 (130)	12230	12232	20161211221638.317	20161211221638.747
PX1 (130)	12233	12237	20161211221638.961	20161211221639.829
PX1 (130)	12239	12242	20161211221640.262	20161211221642.422
PX1 (130)	12244	12248	20161211221642.856	20161211221643.719
PX1 (130)	12248	12253	20161211221643.719	20161211221644.801
PX1 (130)	12254	12258	20161211221645.016	20161211221645.883

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	12258	12260	20161211221645.883	20161211221646.313
PX1 (130)	12260	12264	20161211221646.313	20161211221647.180
PX1 (130)	12264	12272	20161211221647.180	20161211221650.422
PX2 (135)	12158	12160	20161211221619.723	20161211221620.153
PX2 (135)	12170	12173	20161211221622.317	20161211221622.965
PX2 (135)	12178	12180	20161211221624.047	20161211221624.477
PX2 (135)	12183	12187	20161211221626.641	20161211221627.504
PX2 (135)	12202	12205	20161211221630.747	20161211221631.399
PX2 (135)	12211	12213	20161211221632.696	20161211221634.637
PX2 (135)	12213	12215	20161211221634.637	20161211221635.071
PX2 (135)	12217	12220	20161211221635.504	20161211221636.153
PX2 (135)	12223	12226	20161211221636.801	20161211221637.450
PX2 (135)	12227	12230	20161211221637.665	20161211221638.317
PX2 (135)	12230	12232	20161211221638.317	20161211221638.747
PX2 (135)	12233	12238	20161211221638.961	20161211221640.044
PX2 (135)	12244	12247	20161211221642.856	20161211221643.504
PX2 (135)	12249	12251	20161211221643.938	20161211221644.368
PX2 (135)	12251	12253	20161211221644.368	20161211221644.801
PX2 (135)	12254	12258	20161211221645.016	20161211221645.883
PX2 (135)	12258	12264	20161211221645.883	20161211221647.180
PX2 (135)	12264	12266	20161211221647.180	20161211221647.614
PX2 (135)	12267	12269	20161211221647.829	20161211221648.262
PX2 (135)	12269	12271	20161211221648.262	20161211221648.692
PX3 (140)	12161	12163	20161211221620.368	20161211221620.801
PX3 (140)	12170	12173	20161211221622.317	20161211221622.965
PX3 (140)	12178	12180	20161211221624.047	20161211221624.477
PX3 (140)	12185	12187	20161211221627.071	20161211221627.504
PX3 (140)	12188	12190	20161211221627.719	20161211221628.153
PX3 (140)	12202	12204	20161211221630.747	20161211221631.180
PX3 (140)	12208	12210	20161211221632.044	20161211221632.477
PX3 (140)	12211	12213	20161211221632.696	20161211221634.637
PX3 (140)	12218	12220	20161211221635.719	20161211221636.153
PX3 (140)	12221	12223	20161211221636.368	20161211221636.801
PX3 (140)	12223	12226	20161211221636.801	20161211221637.450
PX3 (140)	12233	12235	20161211221638.961	20161211221639.395
PX3 (140)	12235	12238	20161211221639.395	20161211221640.044
PX3 (140)	12241	12243	20161211221640.692	20161211221642.641
PX3 (140)	12247	12249	20161211221643.504	20161211221643.938
PX3 (140)	12249	12253	20161211221643.938	20161211221644.801
PX3 (140)	12259	12271	20161211221646.098	20161211221648.692
PX4 (145)	12161	12164	20161211221620.368	20161211221621.020
PX4 (145)	12170	12173	20161211221622.317	20161211221622.965
PX4 (145)	12176	12180	20161211221623.614	20161211221624.477
PX4 (145)	12185	12187	20161211221627.071	20161211221627.504
PX4 (145)	12188	12190	20161211221627.719	20161211221628.153
PX4 (145)	12202	12204	20161211221630.747	20161211221631.180
PX4 (145)	12208	12210	20161211221632.044	20161211221632.477
PX4 (145)	12211	12213	20161211221632.696	20161211221634.637
PX4 (145)	12213	12215	20161211221634.637	20161211221635.071
PX4 (145)	12221	12223	20161211221636.368	20161211221636.801
PX4 (145)	12233	12235	20161211221638.961	20161211221639.395
PX4 (145)	12241	12243	20161211221640.692	20161211221642.641
PX4 (145)	12247	12249	20161211221643.504	20161211221643.938

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	12249	12253	20161211221643.938	20161211221644.801
PX4 (145)	12253	12256	20161211221644.801	20161211221645.450
PX4 (145)	12256	12258	20161211221645.450	20161211221645.883
PX4 (145)	12263	12265	20161211221646.965	20161211221647.399
PX4 (145)	12265	12268	20161211221647.399	20161211221648.044
PX4 (145)	12268	12272	20161211221648.044	20161211221650.422
IMG (150)	13226	13228	20161211221619.504	20161211221619.938
IMG (150)	13230	13233	20161211221620.368	20161211221621.020
IMG (150)	13234	13237	20161211221621.235	20161211221621.883
IMG (150)	13237	13240	20161211221621.883	20161211221622.532
IMG (150)	13245	13248	20161211221623.614	20161211221624.262
IMG (150)	13249	13251	20161211221624.477	20161211221625.126
IMG (150)	13258	13260	20161211221627.071	20161211221627.504
IMG (150)	13261	13263	20161211221627.719	20161211221628.153
IMG (150)	13263	13265	20161211221628.153	20161211221628.587
IMG (150)	13265	13268	20161211221628.587	20161211221629.235
IMG (150)	13269	13271	20161211221629.450	20161211221629.883
IMG (150)	13275	13278	20161211221630.747	20161211221631.399
IMG (150)	13280	13283	20161211221631.829	20161211221632.477
IMG (150)	13287	13289	20161211221633.774	20161211221634.422
IMG (150)	13289	13292	20161211221634.422	20161211221635.071
IMG (150)	13293	13295	20161211221635.290	20161211221635.719
IMG (150)	13295	13297	20161211221635.719	20161211221636.153
IMG (150)	13298	13300	20161211221636.368	20161211221636.801
IMG (150)	13303	13306	20161211221637.450	20161211221638.098
IMG (150)	13306	13308	20161211221638.098	20161211221638.532
IMG (150)	13309	13312	20161211221638.747	20161211221639.395
IMG (150)	13312	13314	20161211221639.395	20161211221639.829
IMG (150)	13315	13319	20161211221640.044	20161211221641.126
IMG (150)	13322	13330	20161211221641.989	20161211221643.938
IMG (150)	13330	13332	20161211221643.938	20161211221644.368
IMG (150)	13334	13340	20161211221644.801	20161211221646.098
IMG (150)	13340	13342	20161211221646.098	20161211221646.532
IMG (150)	13343	13348	20161211221646.747	20161211221647.829
IMG (150)	13348	13353	20161211221647.829	20161211221649.126
VER (160)	9657	9660	20161211221616.696	20161211221616.696
VER (160)	9660	9662	20161211221616.696	20161211221624.692
VER (160)	9662	9665	20161211221624.692	20161211221624.692
VER (160)	9665	9670	20161211221624.692	20161211221632.696
VER (160)	9670	9672	20161211221632.696	20161211221640.692
VER (160)	9673	9675	20161211221640.692	20161211221640.692
VER (160)	9675	9679	20161211221640.692	20161211221648.692
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
11/12/2016 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	468	-
GQisFlagQual set (PX1)	99.61 %	-
GQisFlagQual set (PX2)	99.68 %	-
GQisFlagQual set (PX3)	99.66 %	-
GQisFlagQual set (PX4)	99.62 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

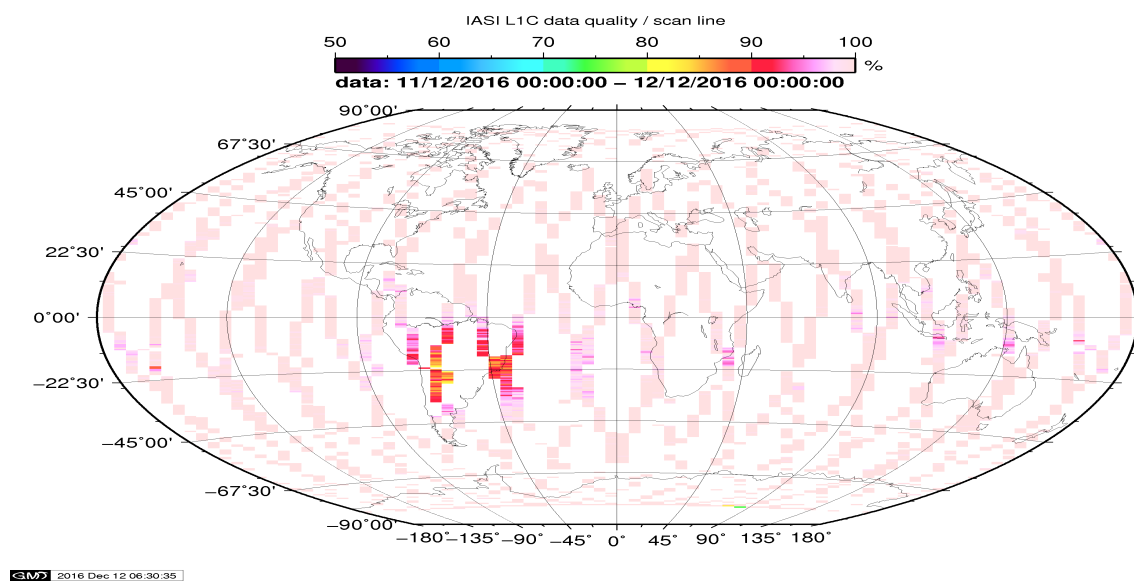


Figure 1: L1C data quality

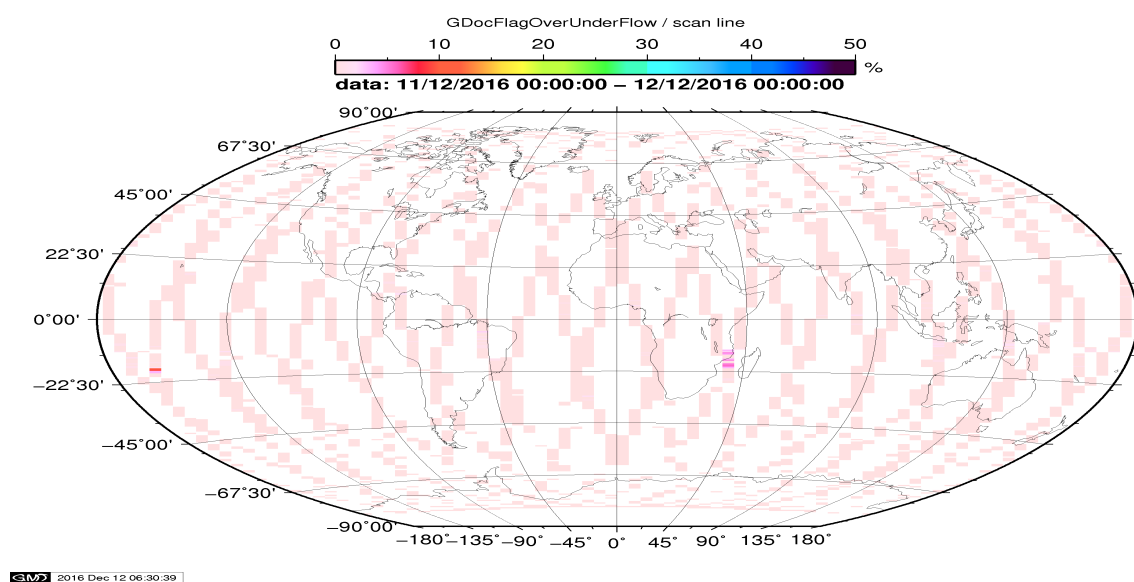


Figure 2: Flag of Over and Under Flows

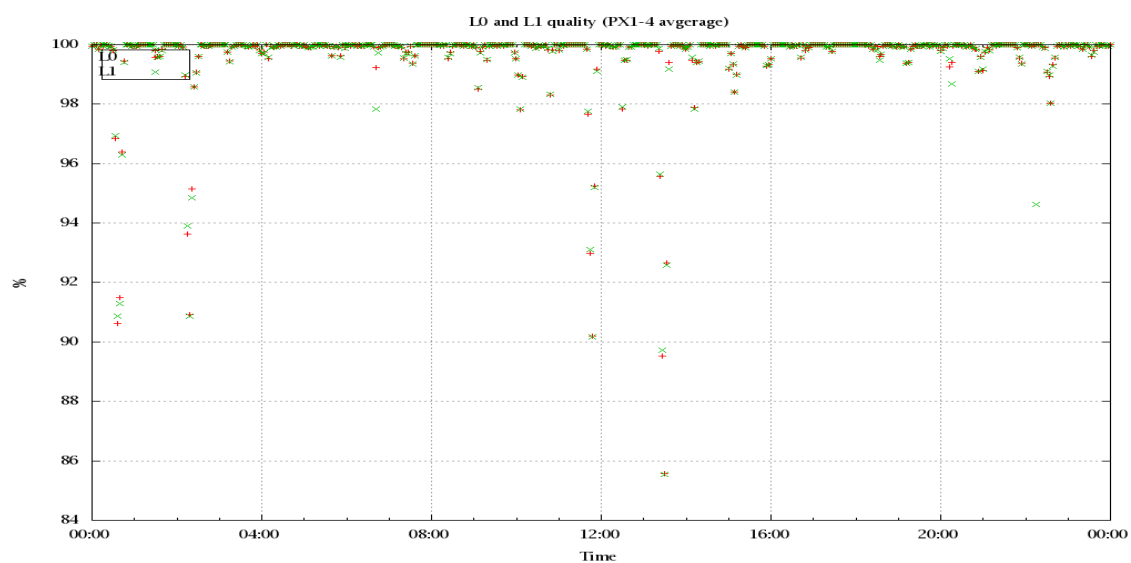


Figure 3: Level 0 and 1C overall quality

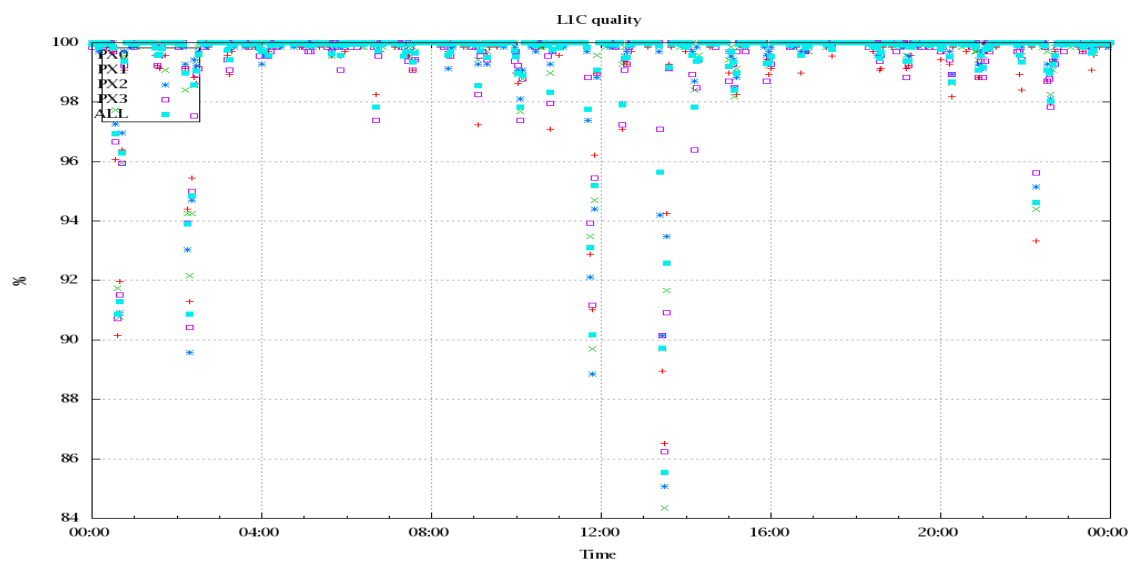


Figure 4: Level 1C quality

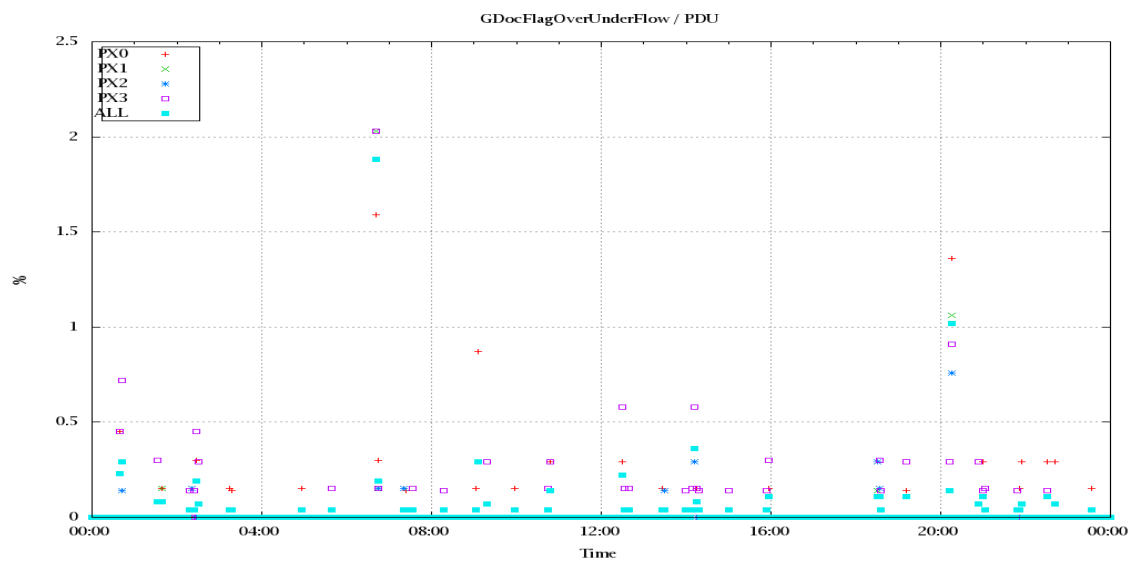


Figure 5: OverUnderFlowFlag timeseries

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.

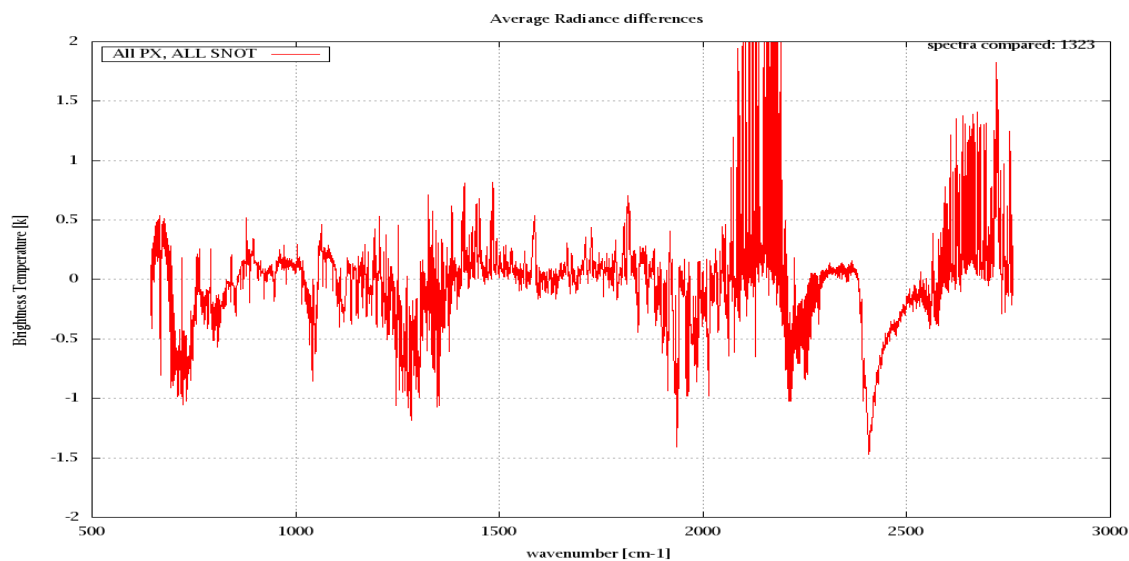


Figure 6: Average Radiance differences: OBS-CAL

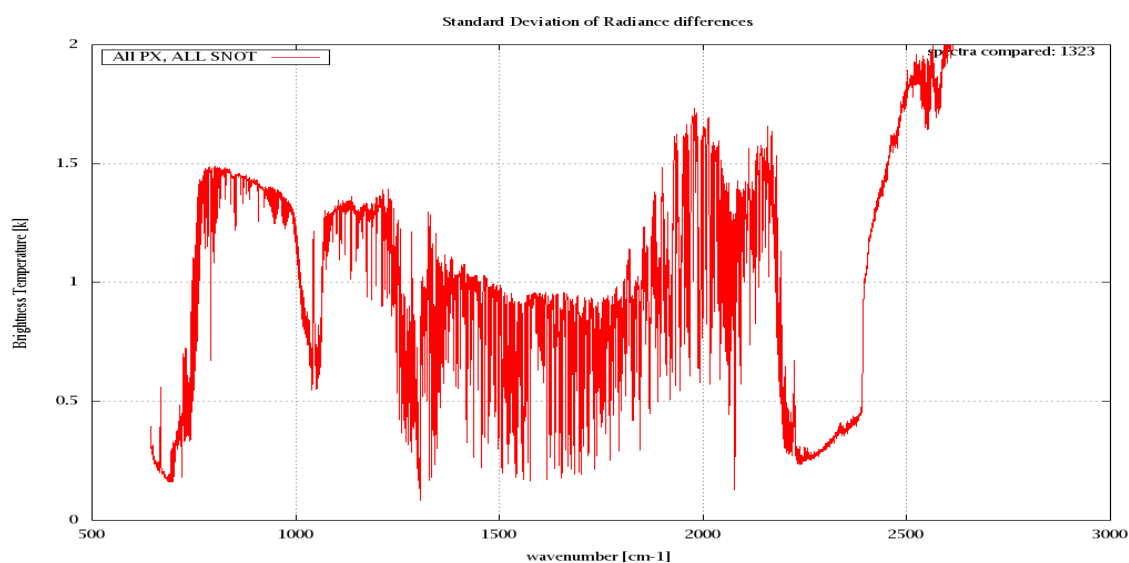


Figure 7: Standard Deviation of Radiance differences

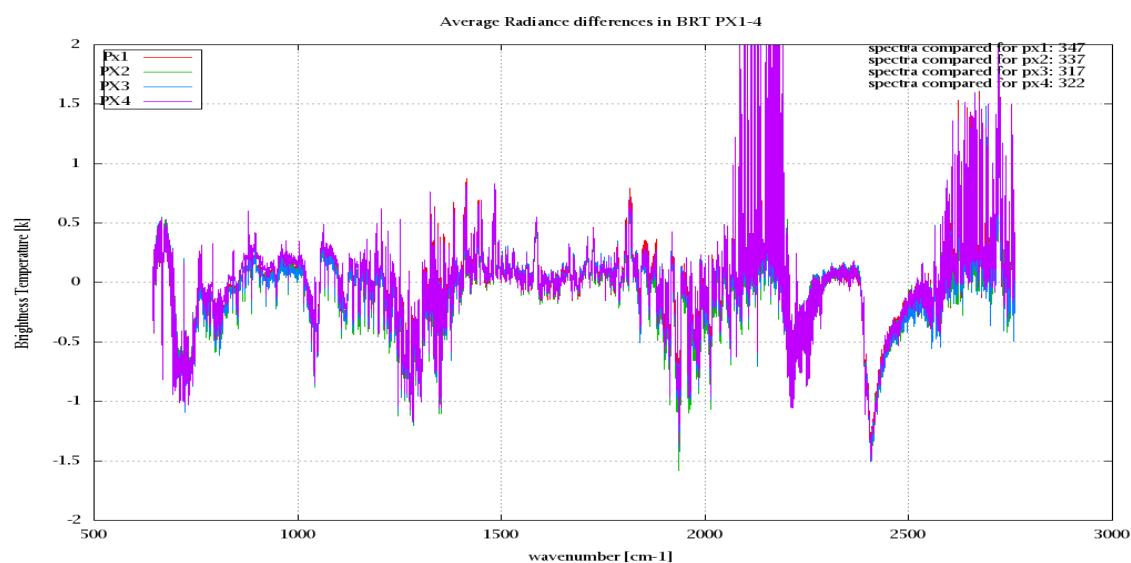


Figure 8: Average Radiance differences: OBS-CAL

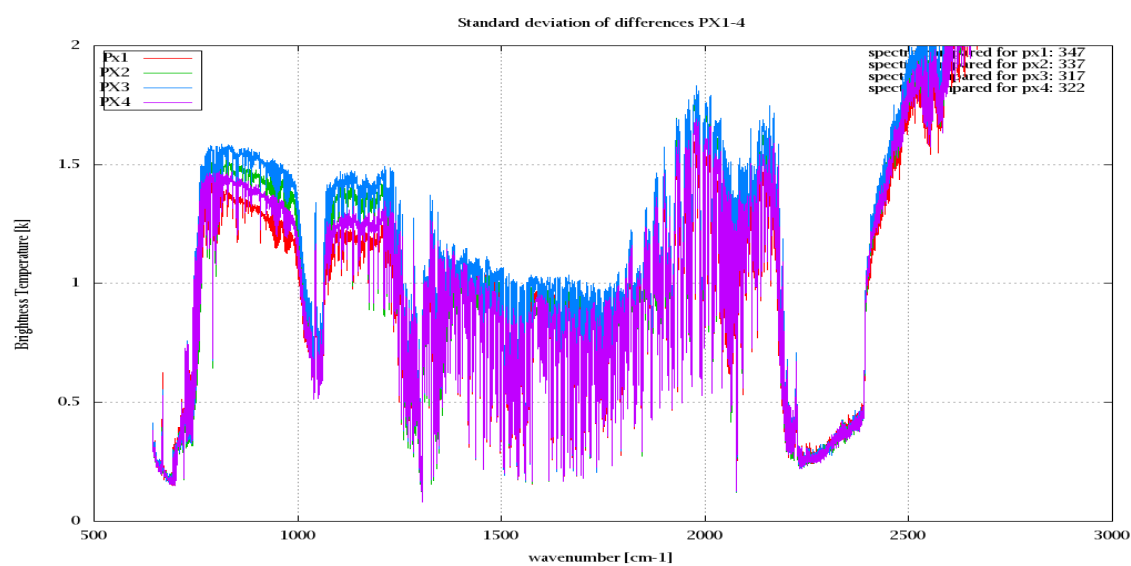


Figure 9: Standard Deviation of Radiance differences

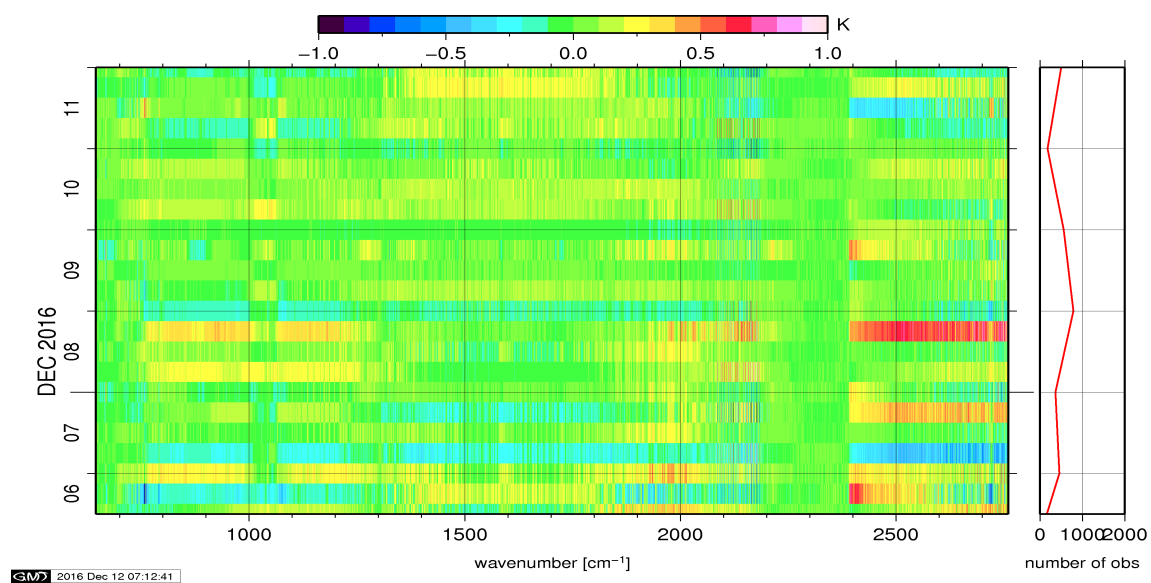


Figure 10: Radiance Anomaly in BRT: All Channels

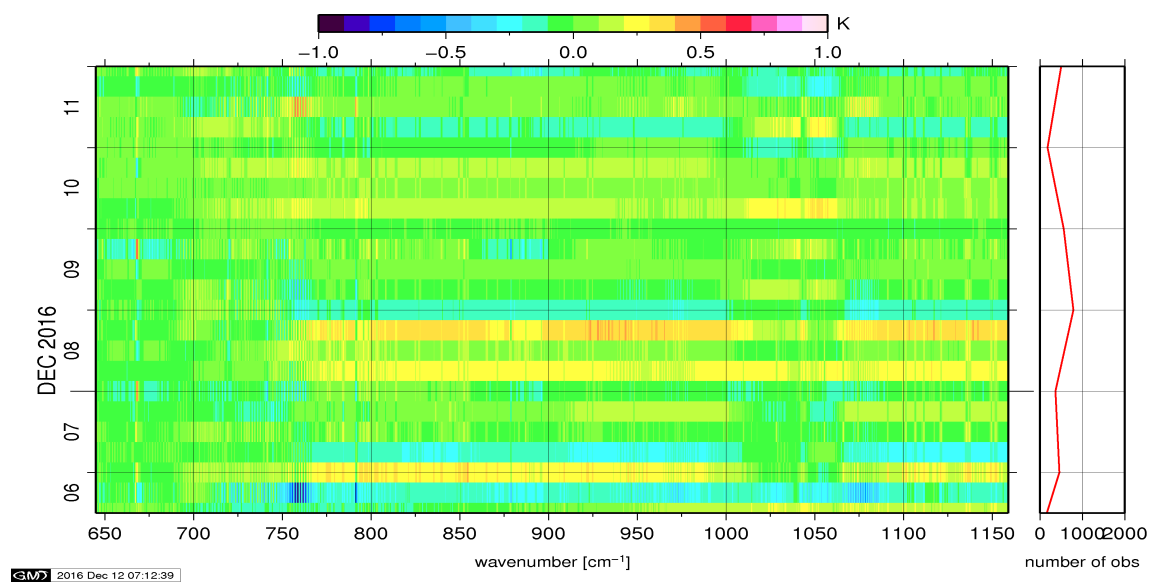


Figure 11: Radiance Anomaly in BRT: IASI Band 1

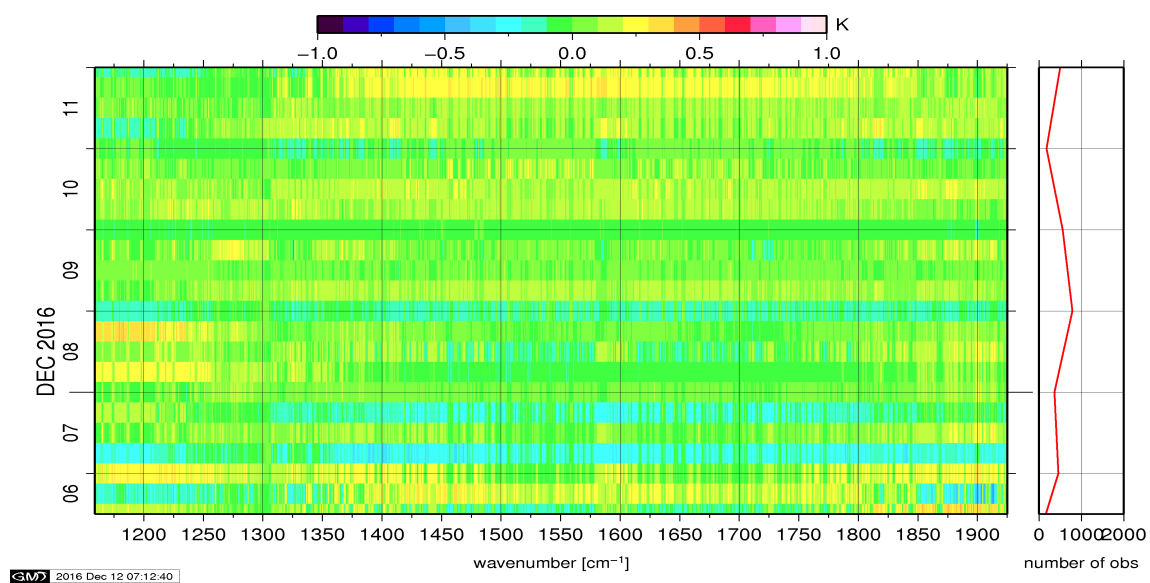


Figure 12: Radiance Anomaly in BRT: IASI Band 2

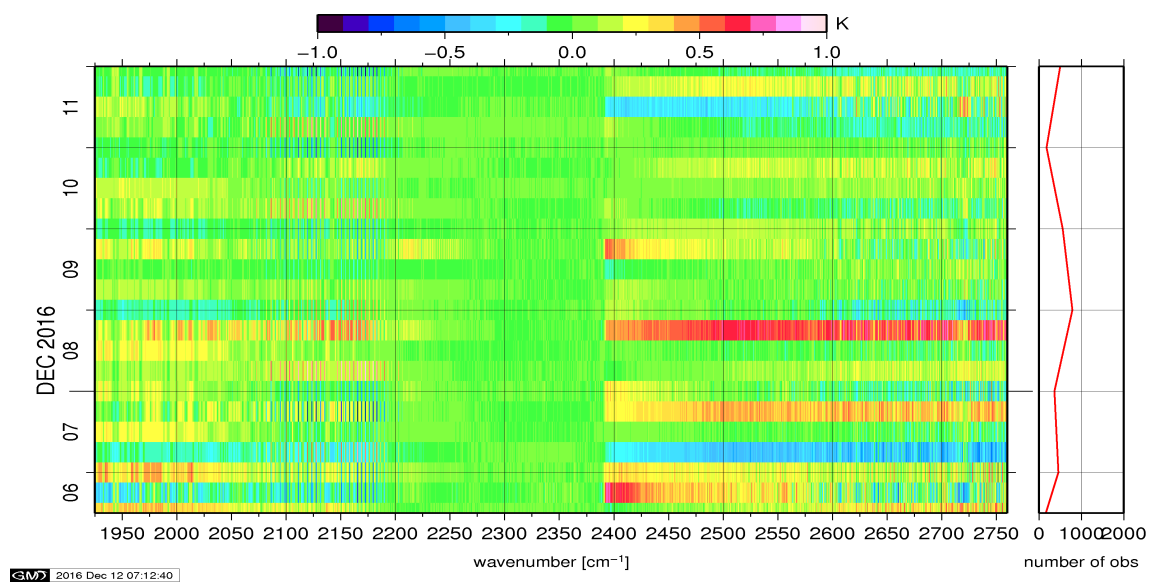


Figure 13: Radiance Anomaly in BRT: IASI Band 3

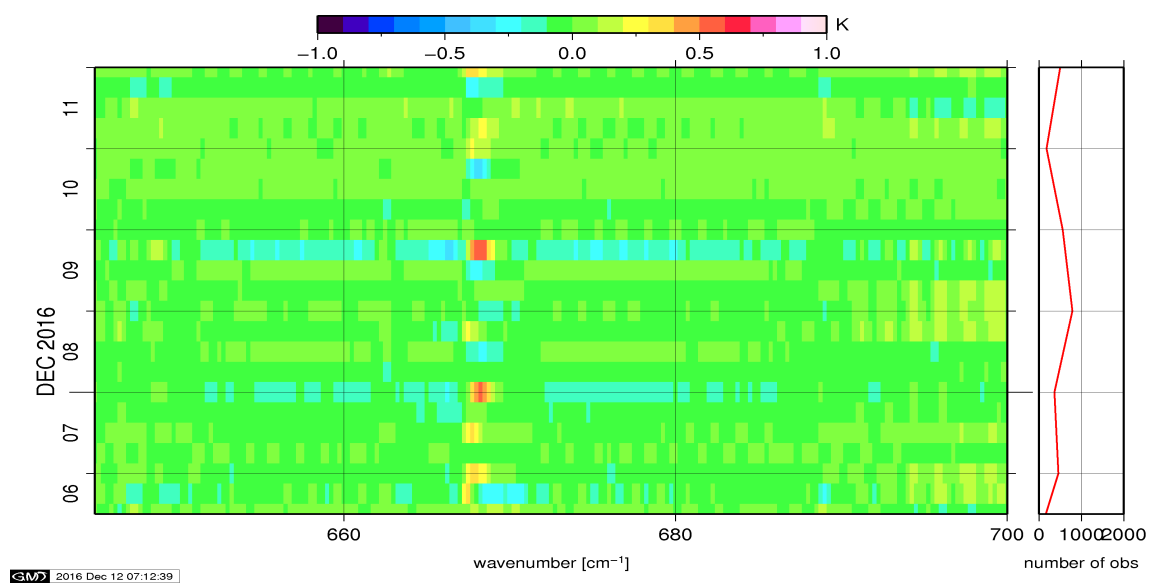


Figure 14: Radiance Anomaly in BRT: CO2 14

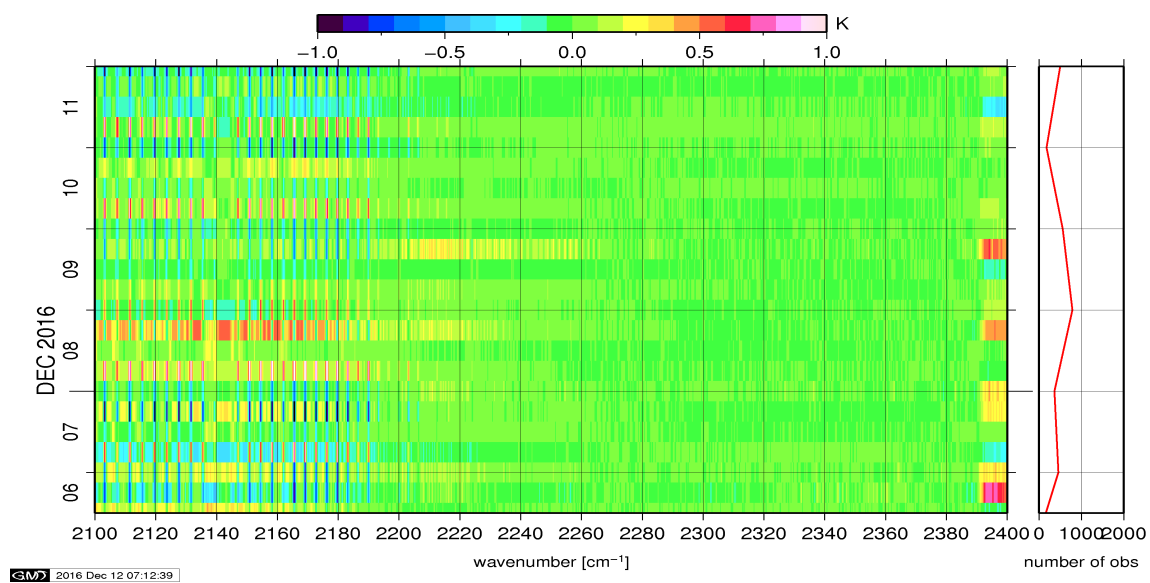


Figure 15: Radiance Anomaly in BRT: CO2 4.3

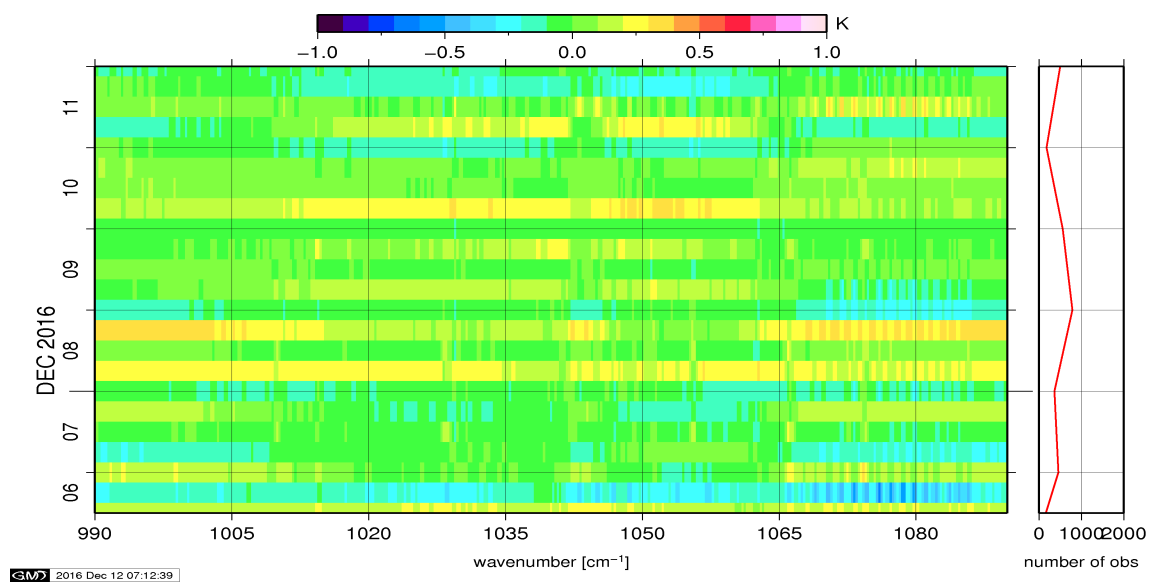


Figure 16: Radiance Anomaly in BRT: O3

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.

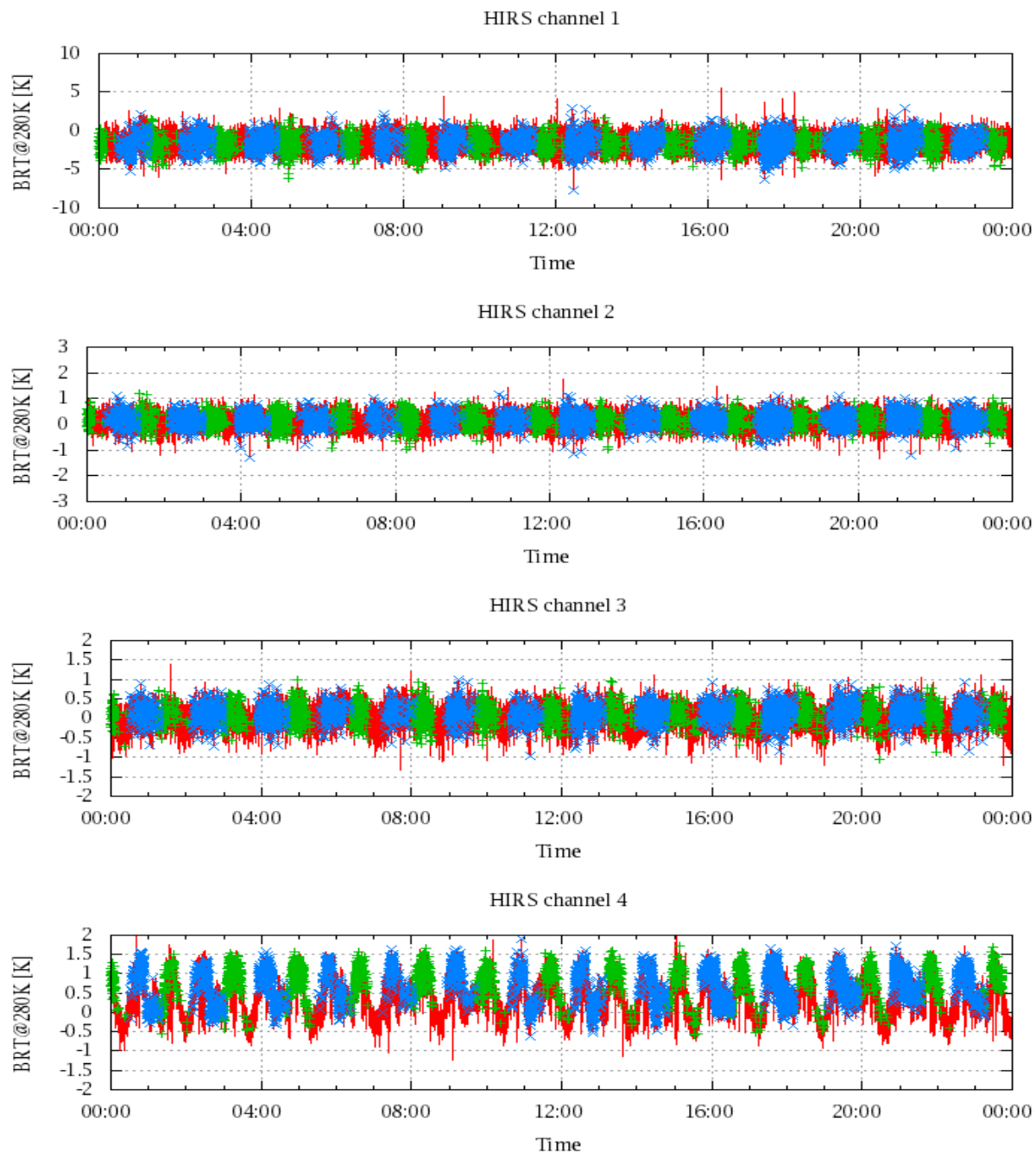


Figure 17: Radiance Differences in BRT

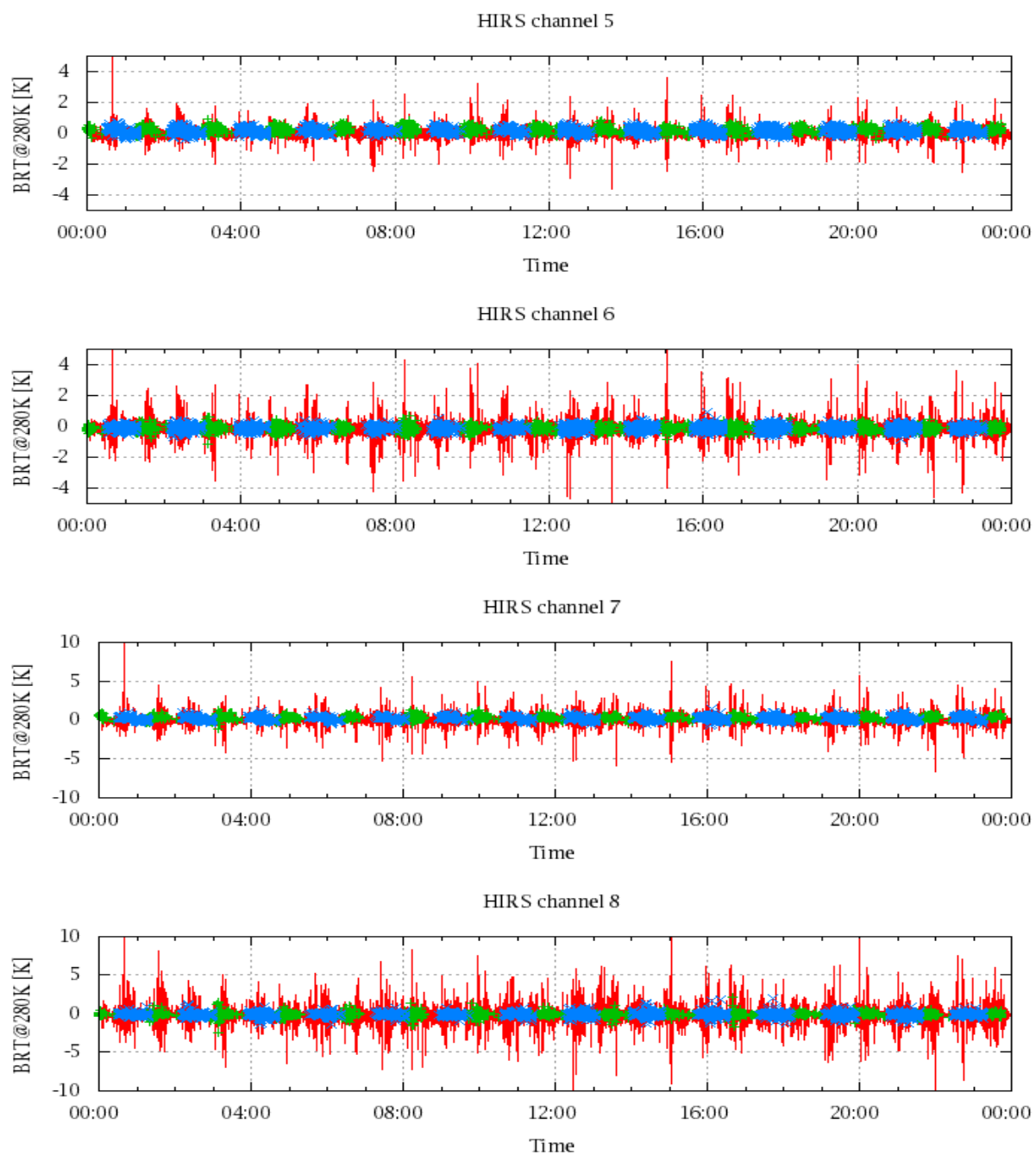


Figure 18: Radiance Differences in BRT

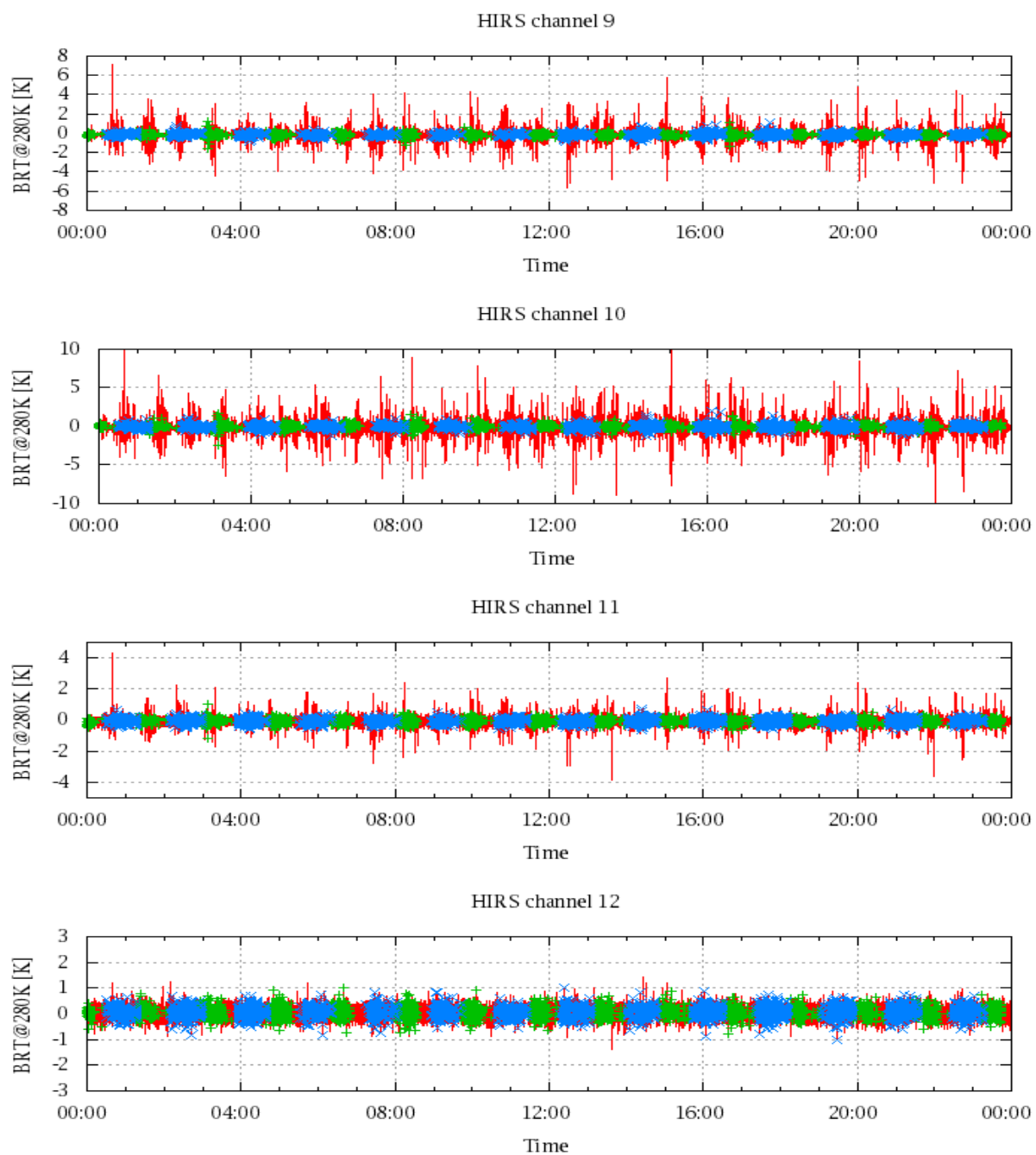


Figure 19: Radiance Differences in BRT

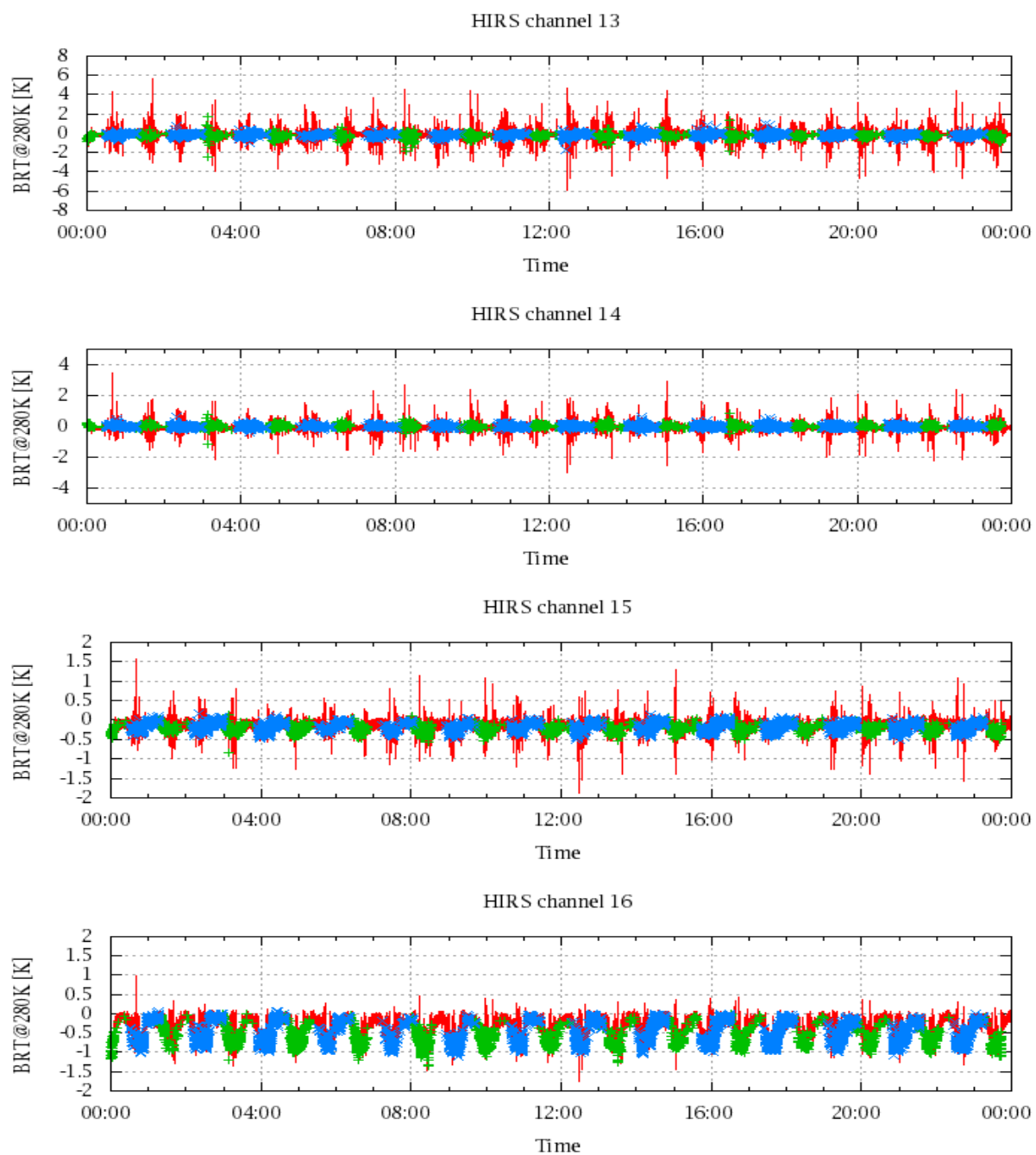


Figure 20: Radiance Differences in BRT

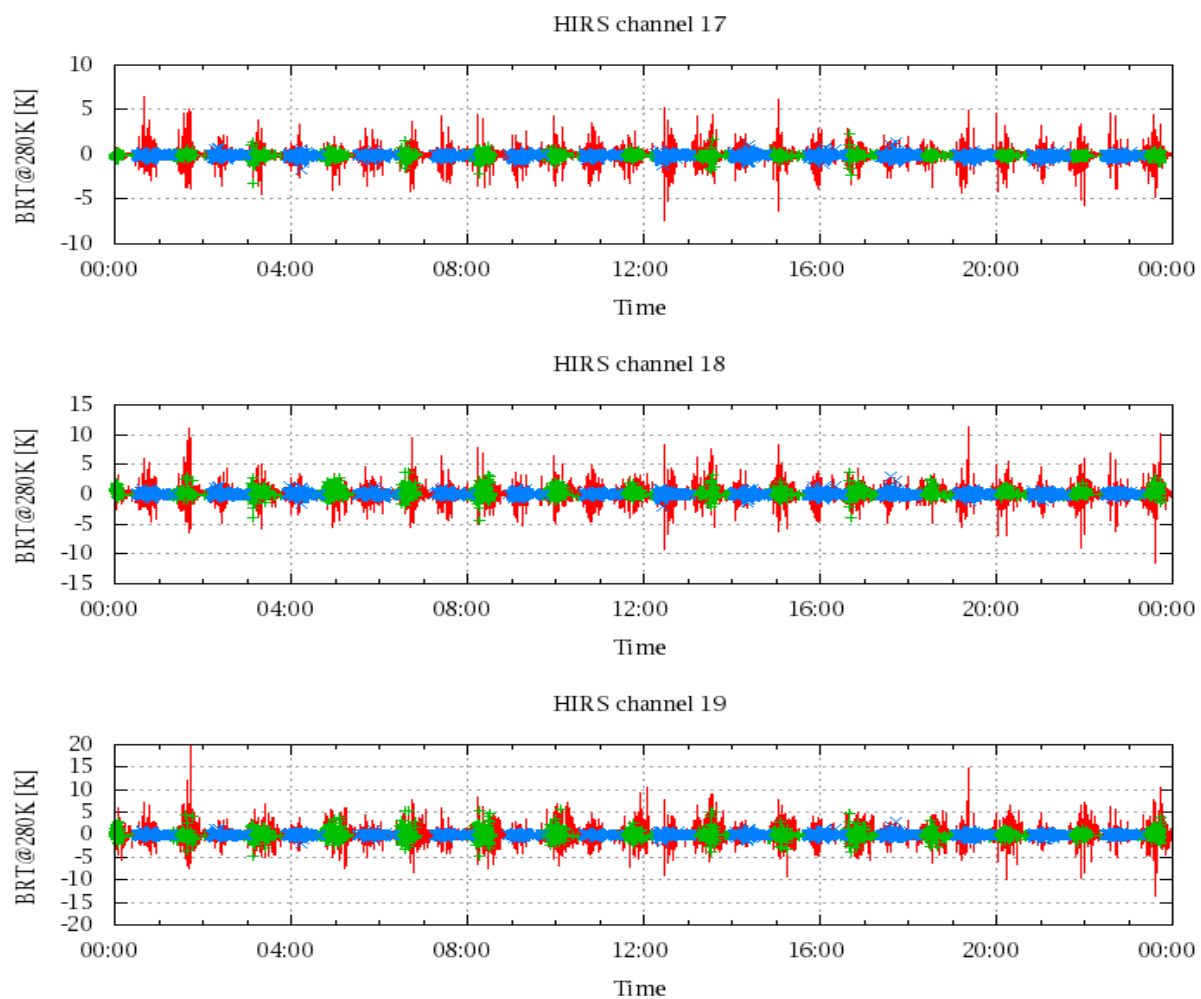


Figure 21: Radinace Differences in BRT