

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

12/07/2014 00:00:00 - 13/07/2014 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 12/07/2014 00:00:00 - 13/07/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 12/07/2014 00:00:00 - 13/07/2014 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)	4821	4823	20140712090845.840	20140712090846.269
PX1 (130)	4837	4839	20140712090850.812	20140712090851.246
PX1 (130)	4839	4841	20140712090851.246	20140712090851.676
PX1 (130)	4842	4845	20140712090851.890	20140712090852.543
PX1 (130)	4845	4847	20140712090852.543	20140712090852.972
PX1 (130)	4847	4871	20140712090852.972	20140712090859.676
PX1 (130)	4871	4876	20140712090859.676	20140712090900.758
PX1 (130)	4876	4879	20140712090900.758	20140712090901.406
PX1 (130)	4879	4885	20140712090901.406	20140712090902.703
PX1 (130)	4885	4887	20140712090902.703	20140712090903.136
PX1 (130)	4889	4891	20140712090903.566	20140712090904.000
PX1 (130)	4895	4897	20140712090904.863	20140712090906.812
PX2 (135)	4838	4840	20140712090851.027	20140712090851.461
PX2 (135)	4840	4842	20140712090851.461	20140712090851.890
PX2 (135)	4848	4851	20140712090853.191	20140712090853.840
PX2 (135)	4852	4857	20140712090854.054	20140712090855.136
PX2 (135)	4857	4873	20140712090855.136	20140712090900.109
PX2 (135)	4873	4881	20140712090900.109	20140712090901.840

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX2 (135)	4881	4886	20140712090901.840	20140712090902.918
PX2 (135)	4888	4890	20140712090903.351	20140712090903.785
PX2 (135)	4894	4896	20140712090904.648	20140712090906.593
PX3 (140)	4824	4826	20140712090846.488	20140712090846.922
PX3 (140)	4830	4832	20140712090847.785	20140712090848.219
PX3 (140)	4841	4845	20140712090851.676	20140712090852.543
PX3 (140)	4847	4849	20140712090852.972	20140712090853.406
PX3 (140)	4850	4865	20140712090853.621	20140712090856.867
PX3 (140)	4865	4875	20140712090856.867	20140712090900.539
PX3 (140)	4877	4884	20140712090900.972	20140712090902.488
PX3 (140)	4888	4890	20140712090903.351	20140712090903.785
PX3 (140)	4892	4894	20140712090904.218	20140712090904.648
PX3 (140)	4894	4896	20140712090904.648	20140712090906.593
PX4 (145)	4838	4840	20140712090851.027	20140712090851.461
PX4 (145)	4842	4845	20140712090851.890	20140712090852.543
PX4 (145)	4849	4852	20140712090853.406	20140712090854.054
PX4 (145)	4853	4859	20140712090854.273	20140712090855.570
PX4 (145)	4859	4862	20140712090855.570	20140712090856.215
PX4 (145)	4862	4870	20140712090856.215	20140712090859.461
PX4 (145)	4870	4877	20140712090859.461	20140712090900.972
PX4 (145)	4879	4883	20140712090901.406	20140712090902.269
PX4 (145)	4887	4889	20140712090903.136	20140712090903.566
PX4 (145)	4889	4891	20140712090903.566	20140712090904.000
PX4 (145)	4892	4894	20140712090904.218	20140712090904.648
PX4 (145)	4894	4896	20140712090904.648	20140712090906.593
IMG (150)	2214	2216	20140712090852.758	20140712090853.191
IMG (150)	2218	2231	20140712090853.621	20140712090856.433
IMG (150)	2231	2238	20140712090856.433	20140712090858.593
IMG (150)	2238	2244	20140712090858.593	20140712090859.894
IMG (150)	2244	2254	20140712090859.894	20140712090902.054
IMG (150)	2254	2256	20140712090902.054	20140712090902.488
IMG (150)	2256	2258	20140712090902.488	20140712090902.918
IMG (150)	2261	2263	20140712090903.566	20140712090904.000
VER (160)	8997	9003	20140712090848.867	20140712090904.863
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
12/07/2014 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)	99.48 %	-
GQisFlagQual set (PX2)	99.56 %	-
GQisFlagQual set (PX3)	99.59 %	-
GQisFlagQual set (PX4)	99.52 %	-
GQisFlagQual set (all)	99.54 %	-

Table 4: Quality flags

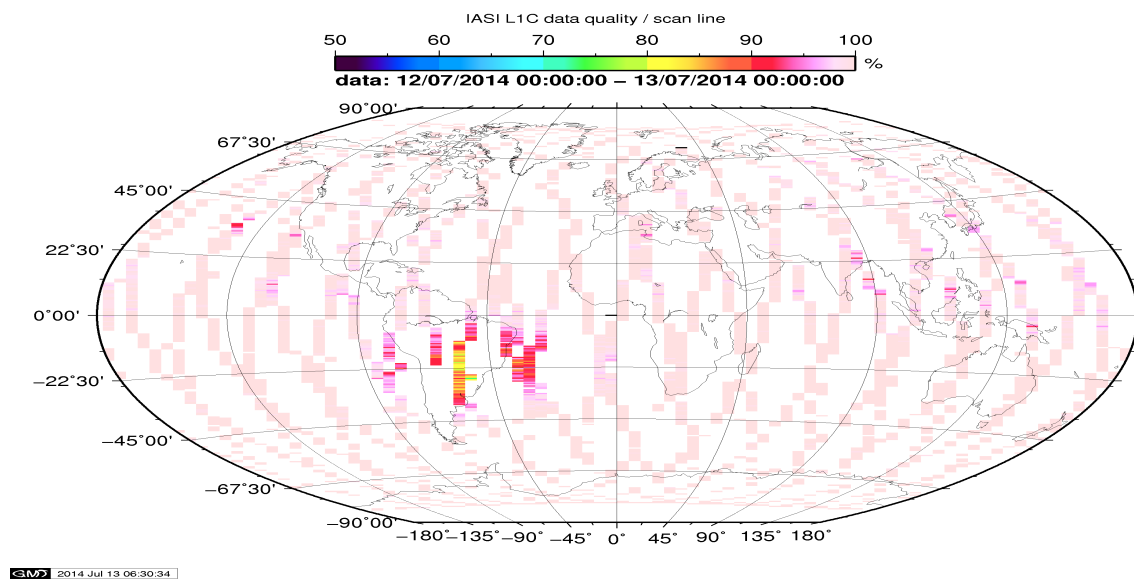


Figure 1: L1C data quality

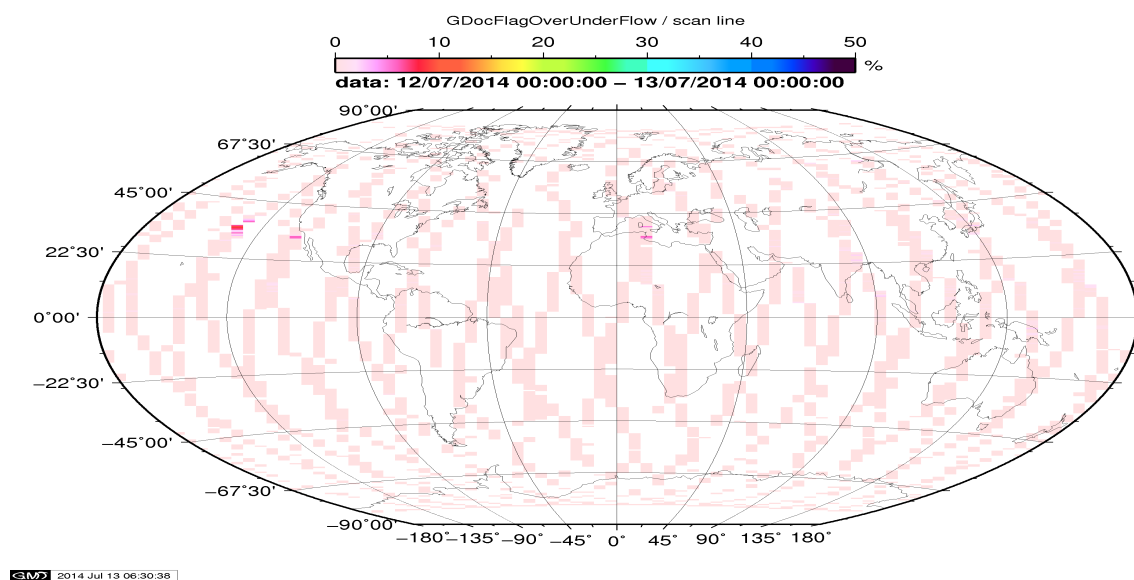


Figure 2: Flag of Over and Under Flows

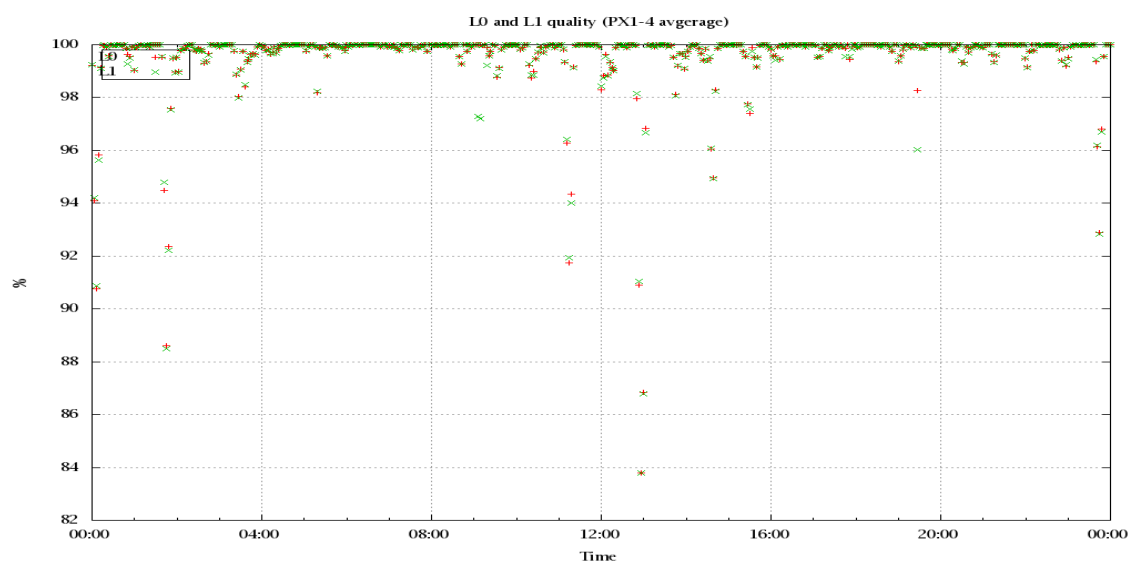


Figure 3: Level 0 and 1C overall quality

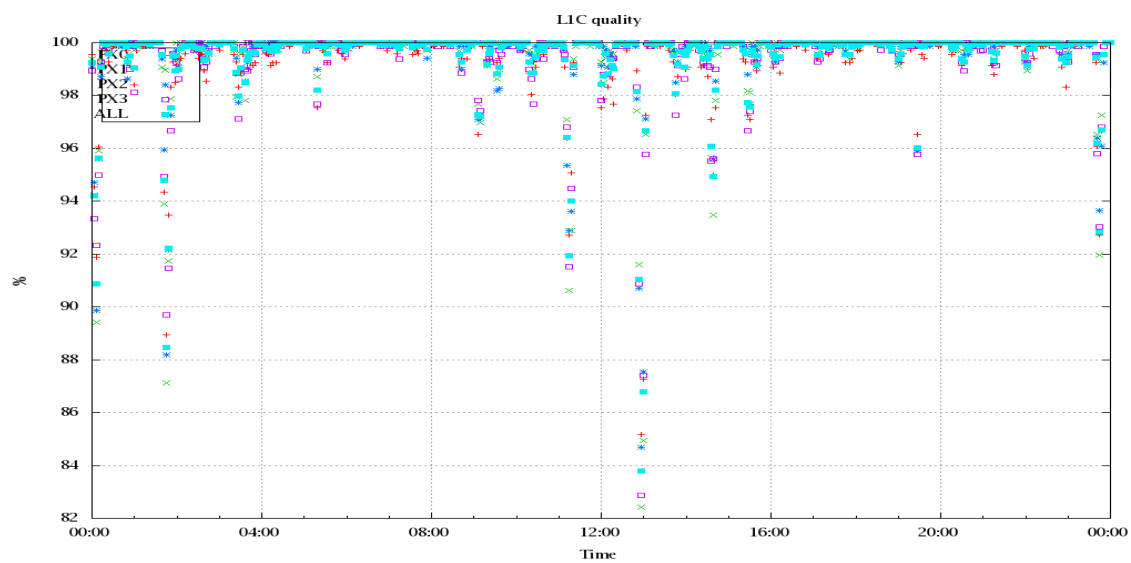


Figure 4: Level 1C quality

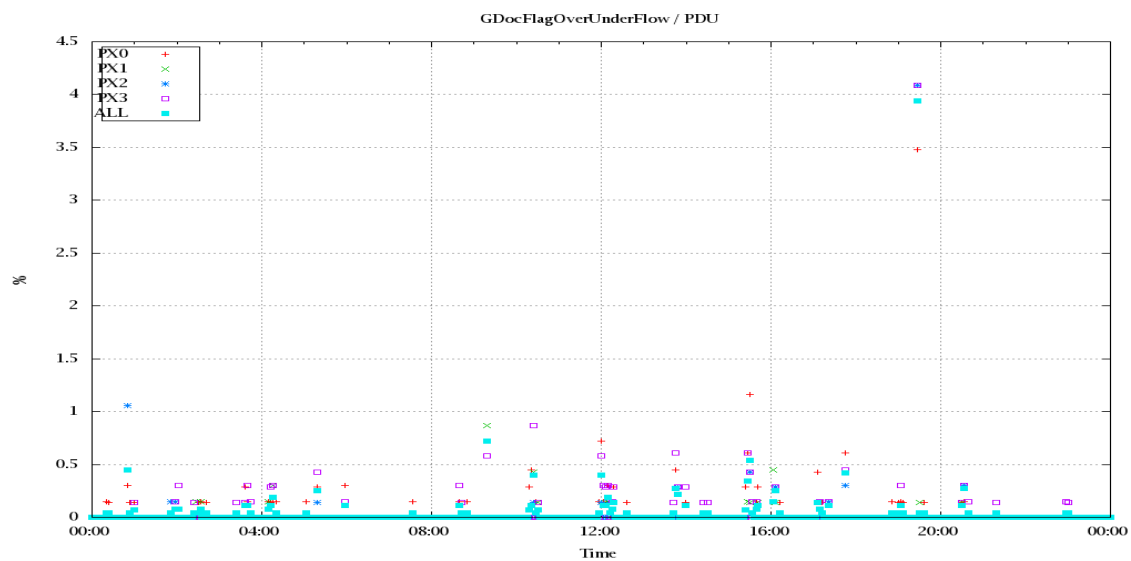


Figure 5: OverUnderFlowFlag timeseries

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.

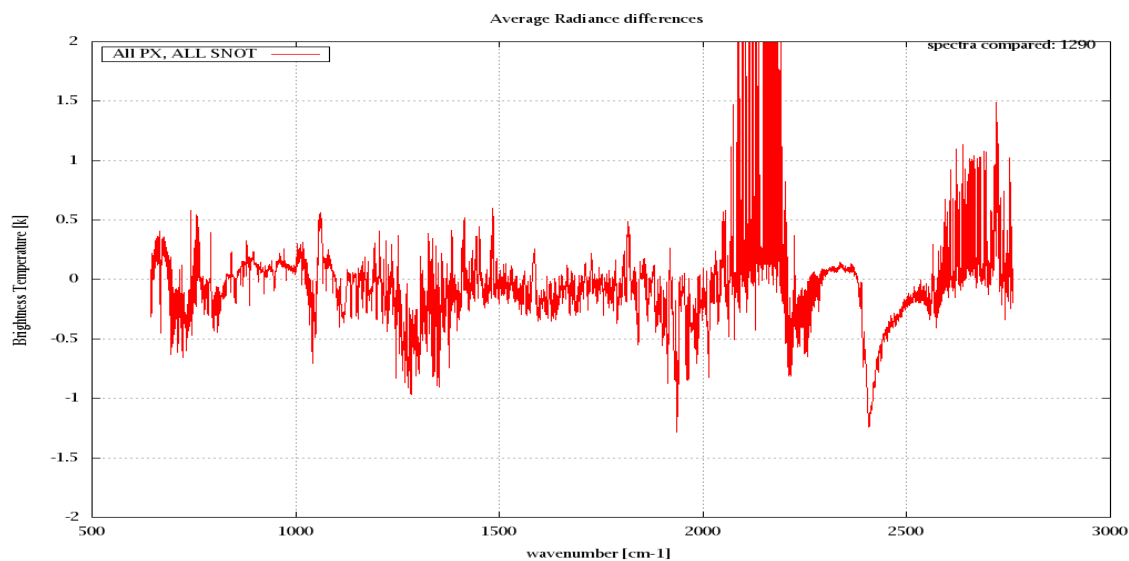


Figure 6: Average Radiance differences: OBS-CAL

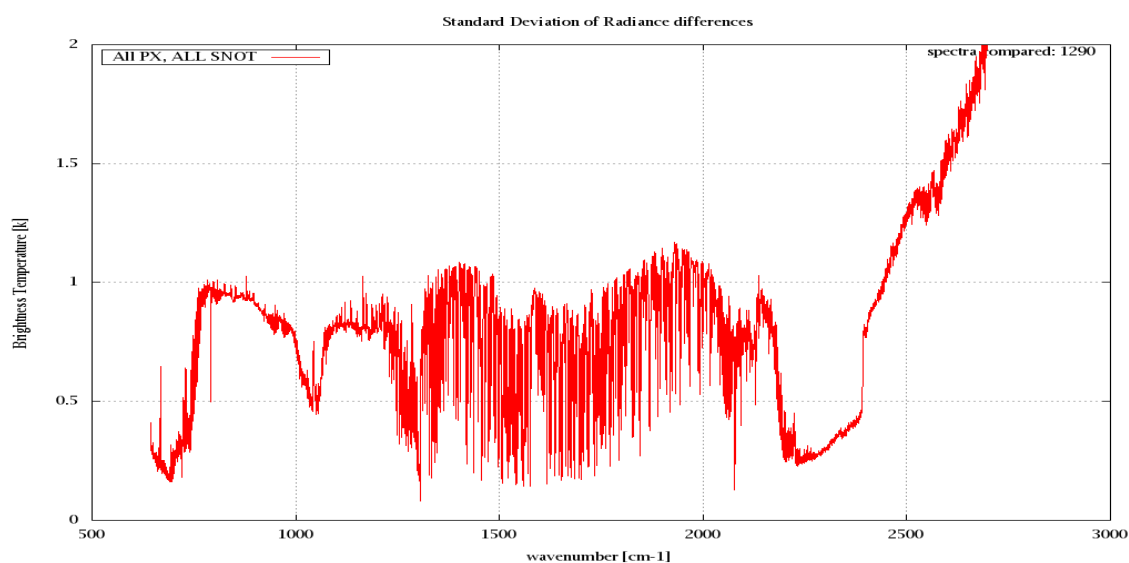


Figure 7: Standard Deviation of Radiance differences

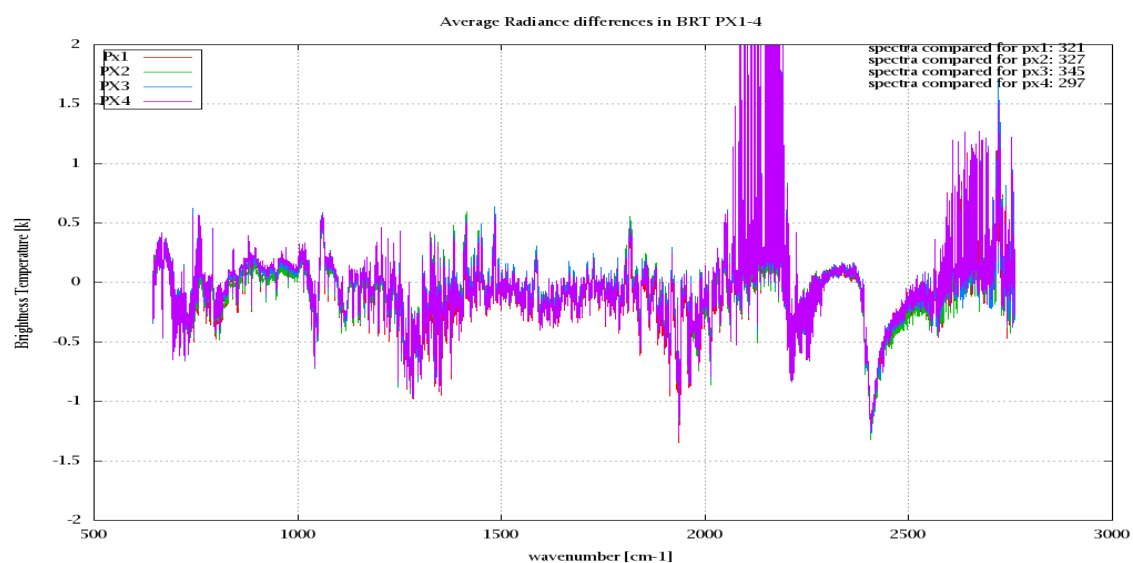


Figure 8: Average Radiance differences: OBS-CAL

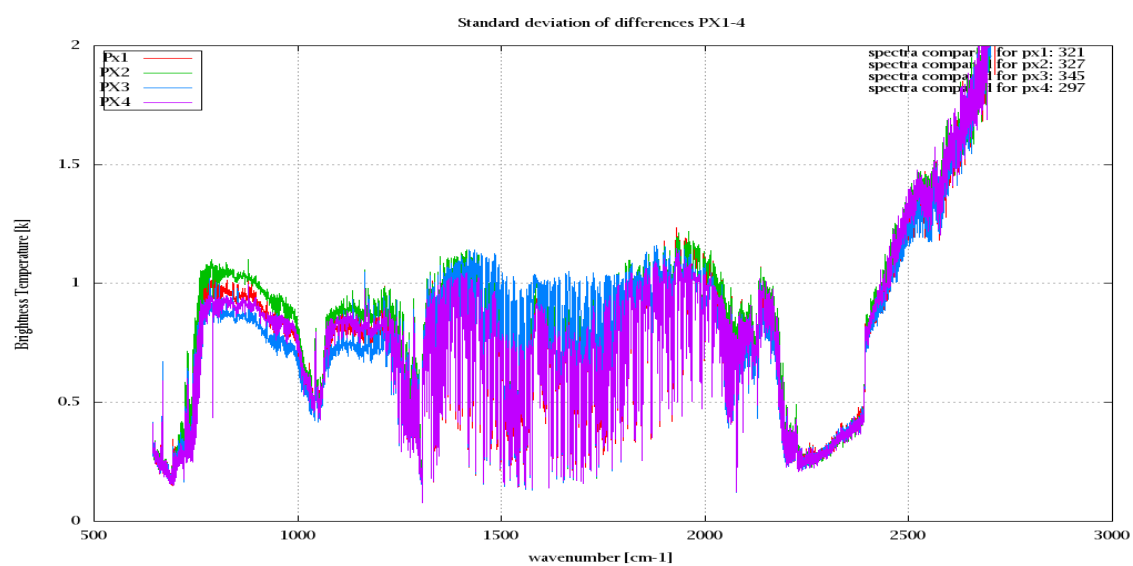


Figure 9: Standard Deviation of Radiance differences

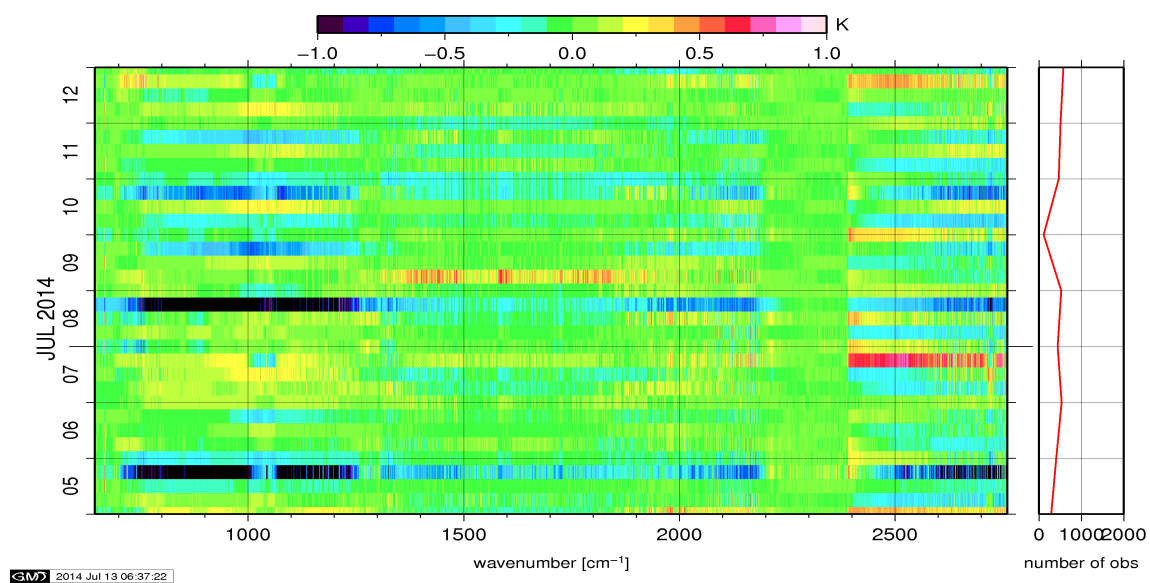


Figure 10: Radiance Anomaly in BRT: All Channels

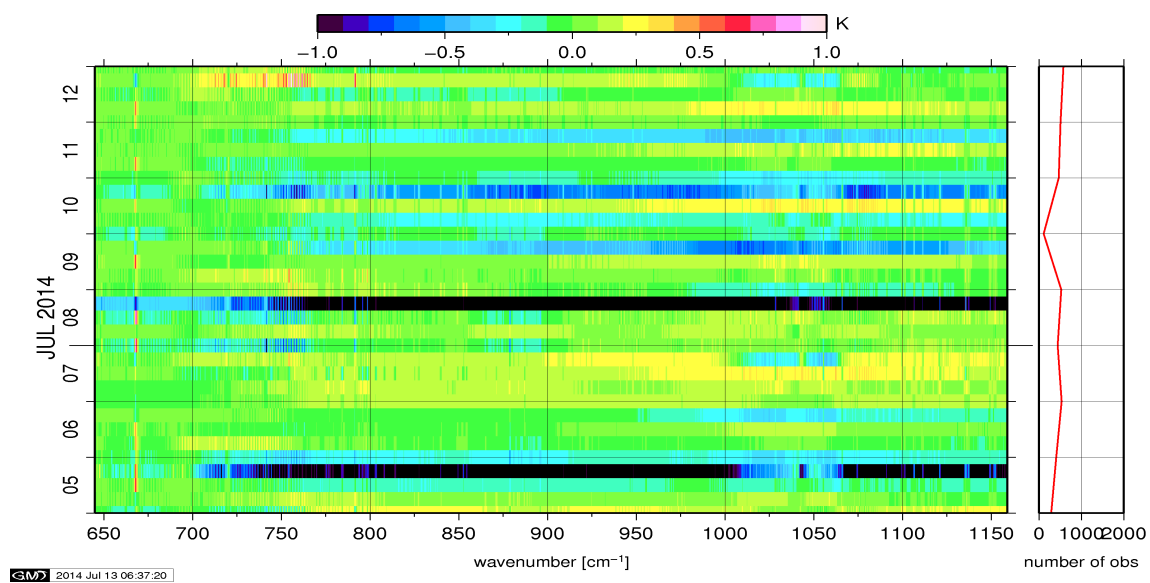


Figure 11: Radiance Anomaly in BRT: IASI Band 1

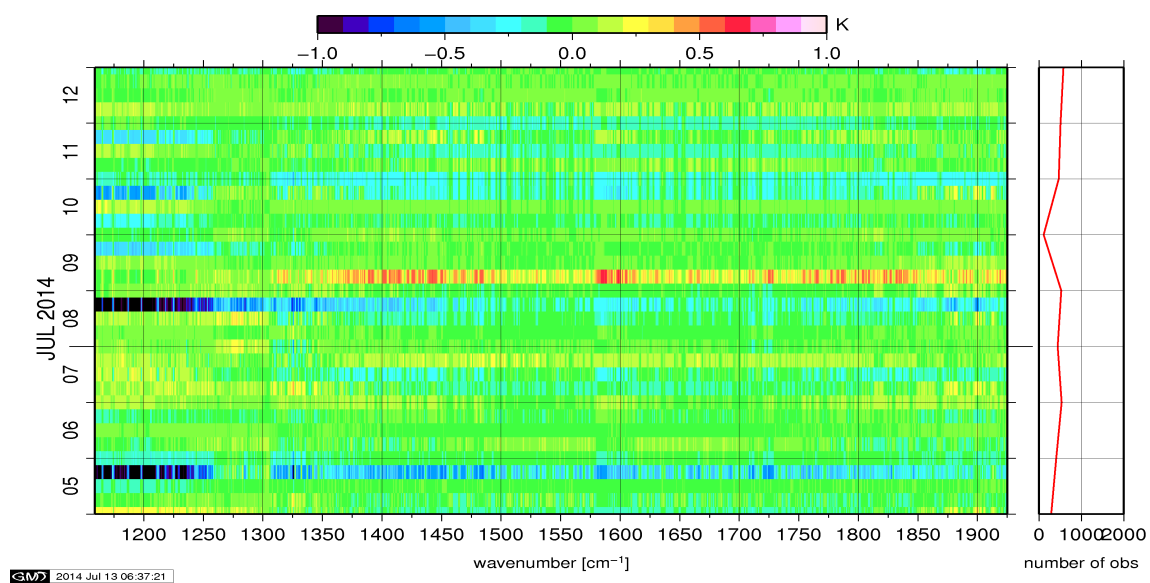


Figure 12: Radiance Anomaly in BRT: IASI Band 2

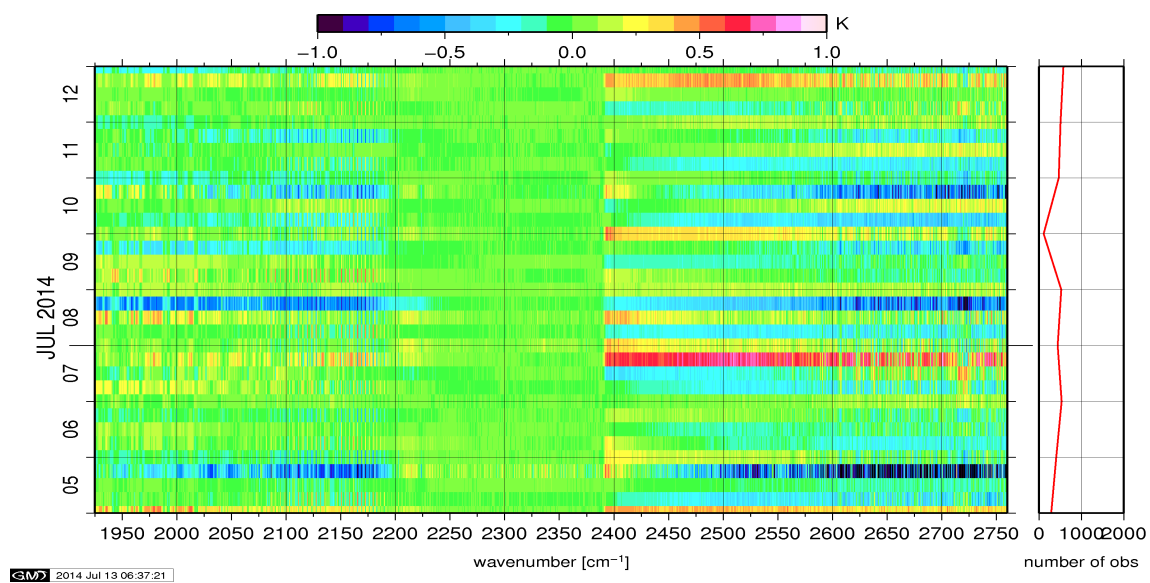


Figure 13: Radiance Anomaly in BRT: IASI Band 3

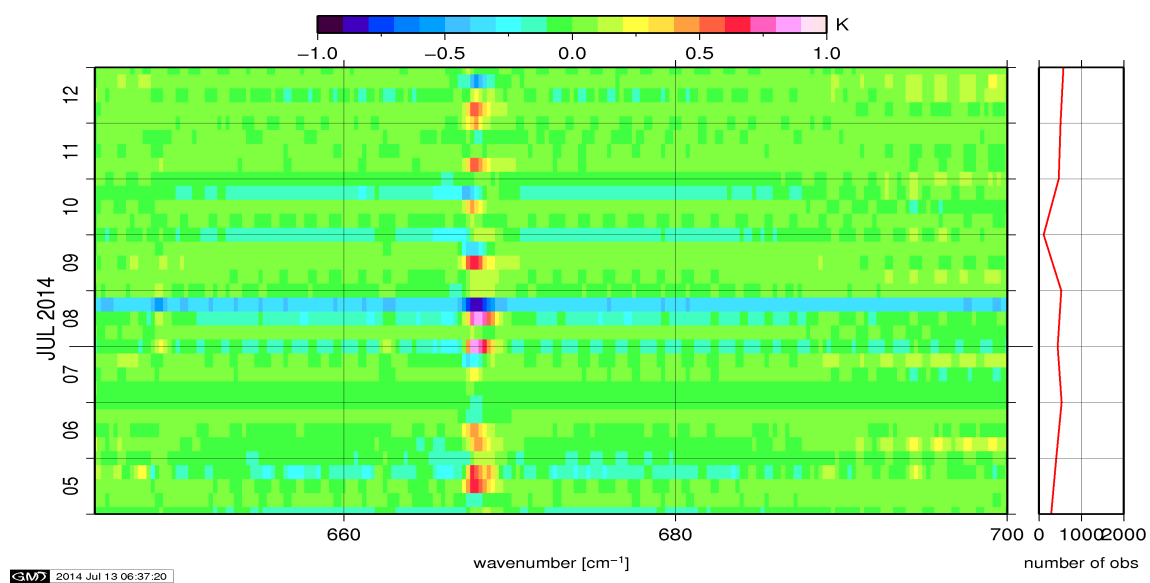


Figure 14: Radiance Anomaly in BRT: CO2 14

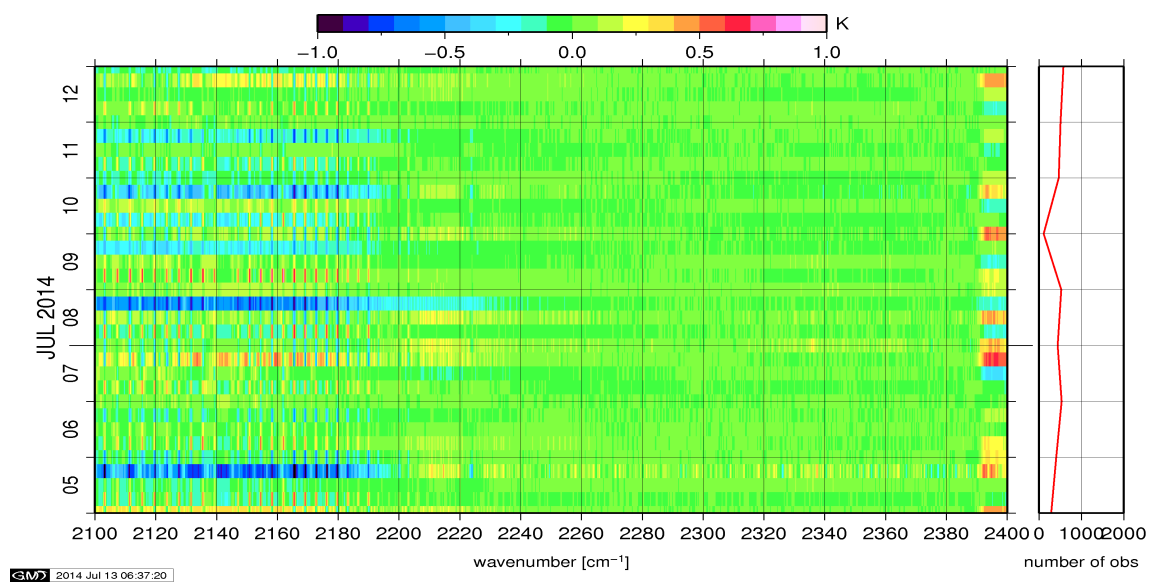


Figure 15: Radiance Anomaly in BRT: CO2 4.3

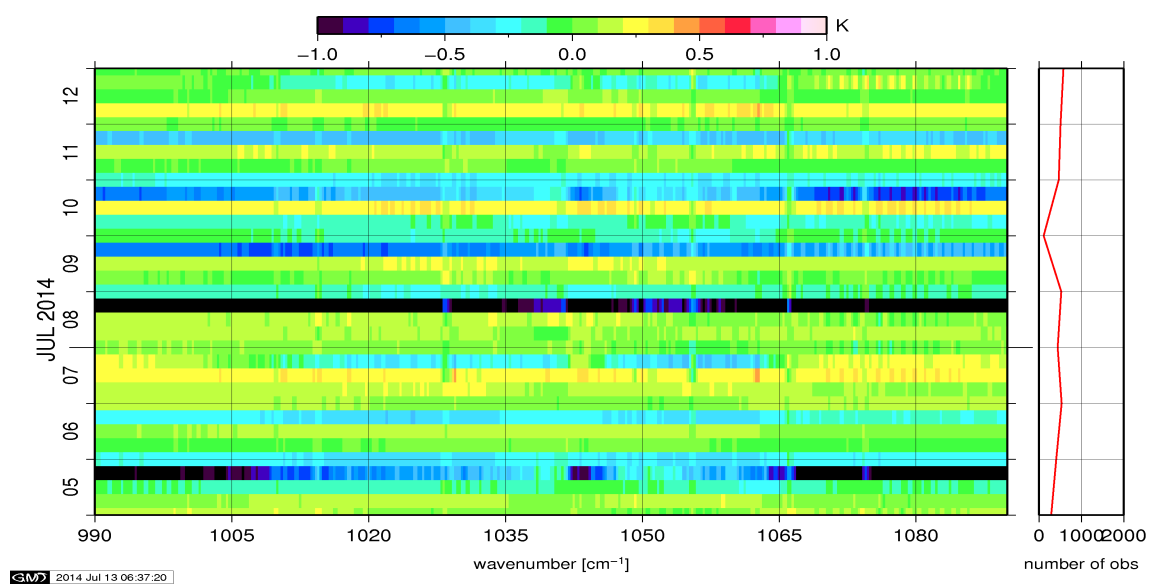


Figure 16: Radiance Anomaly in BRT: O3

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.

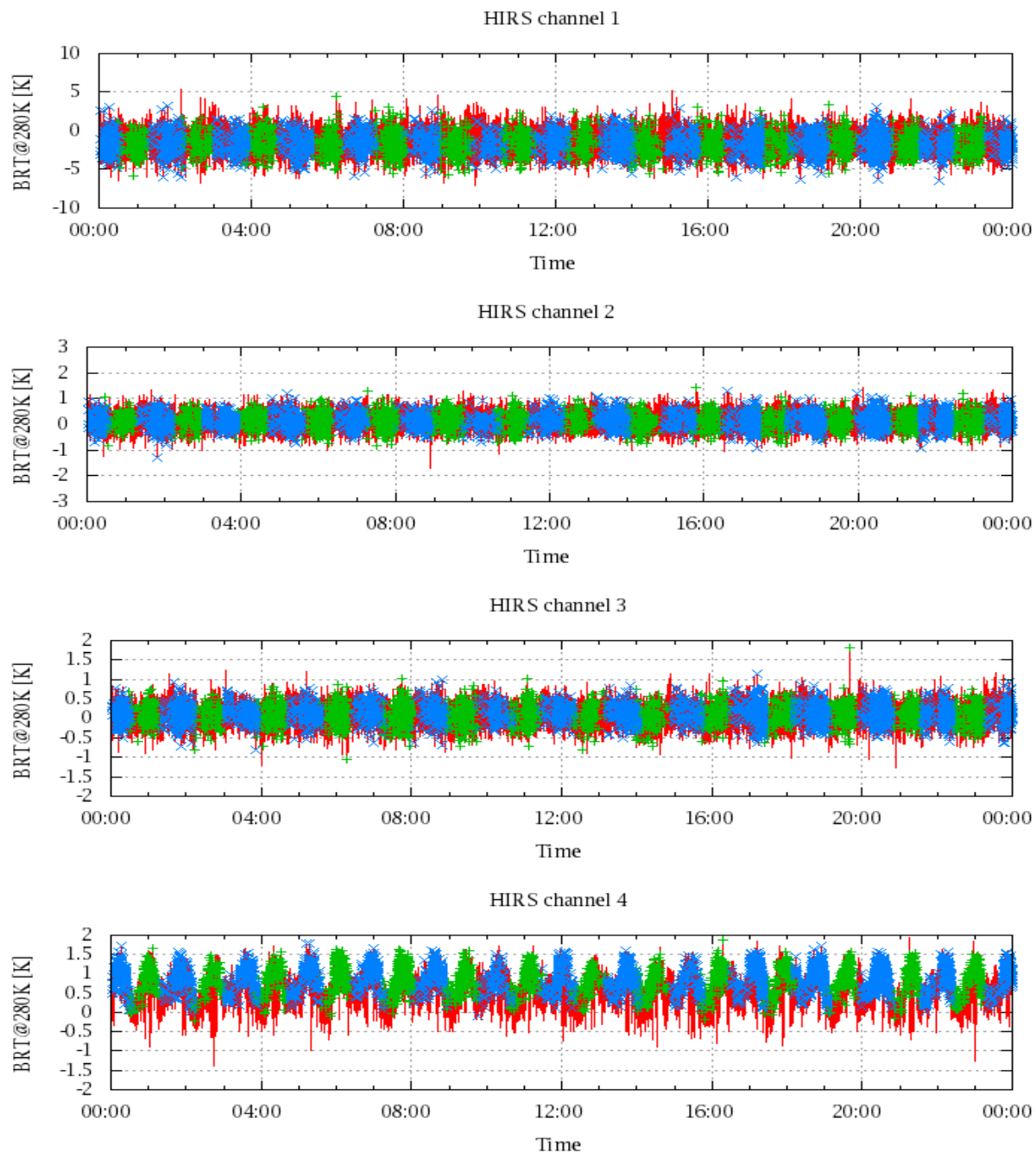


Figure 17: Radiance Differences in BRT

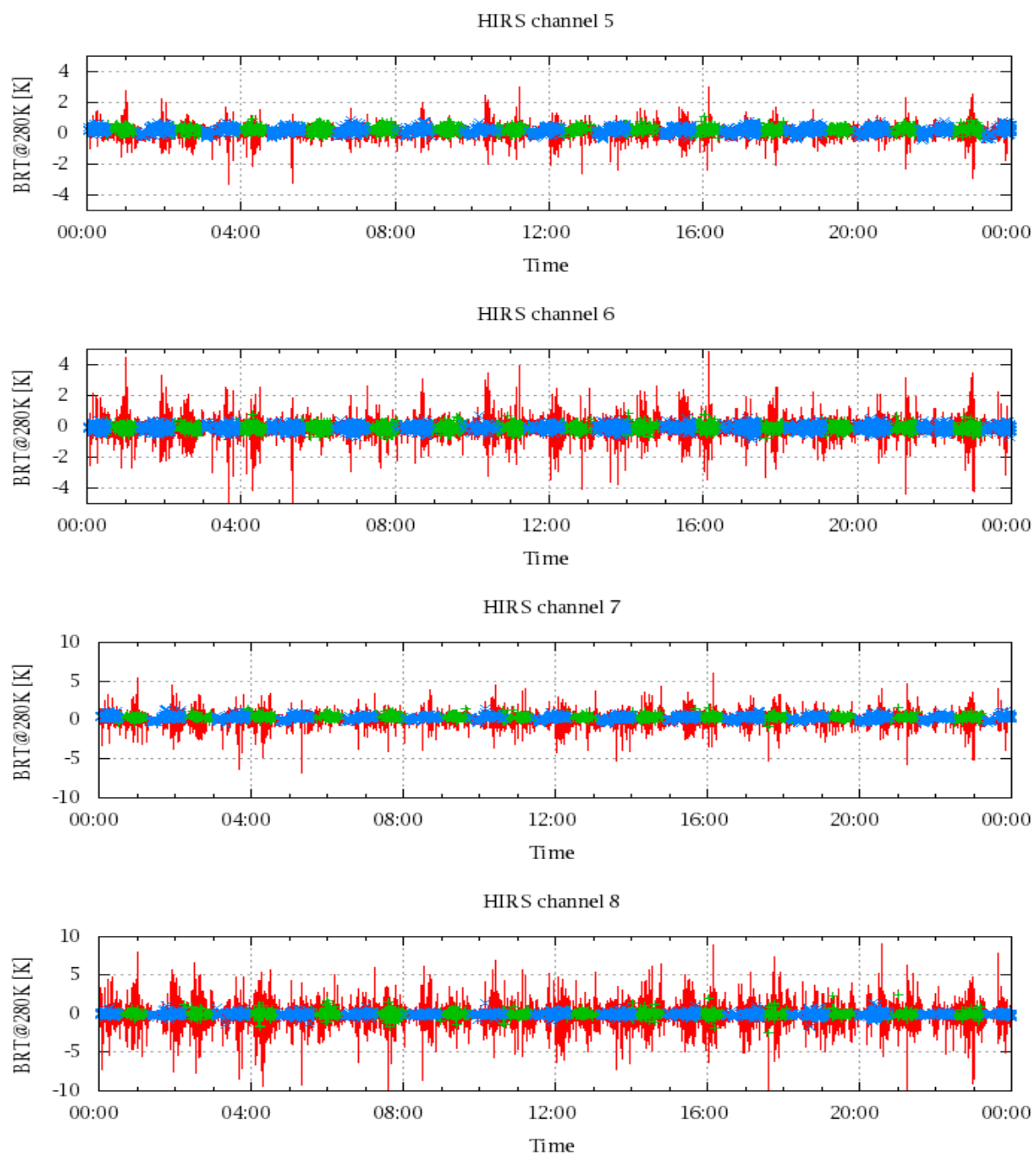


Figure 18: Radiance Differences in BRT

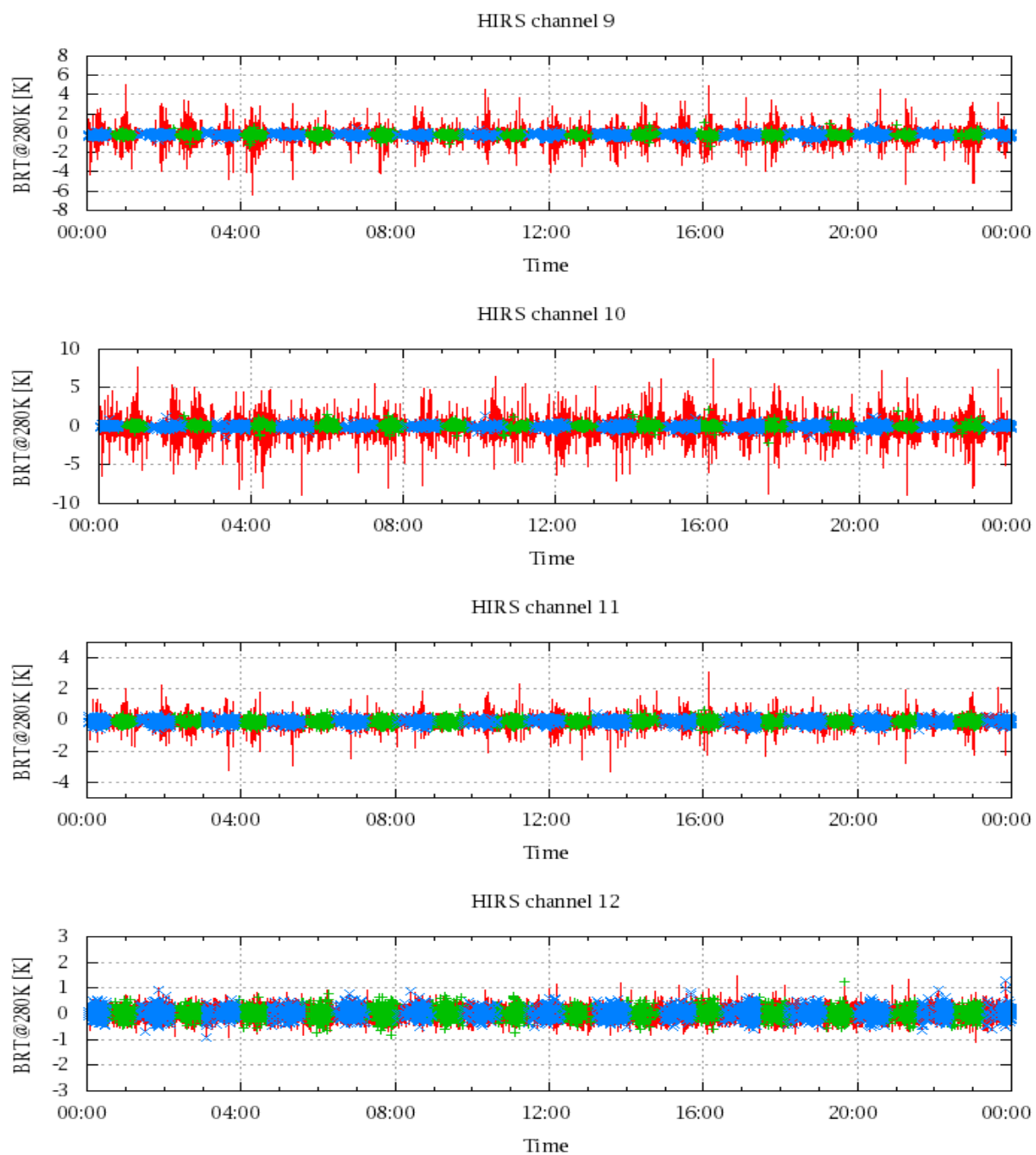


Figure 19: Radiance Differences in BRT

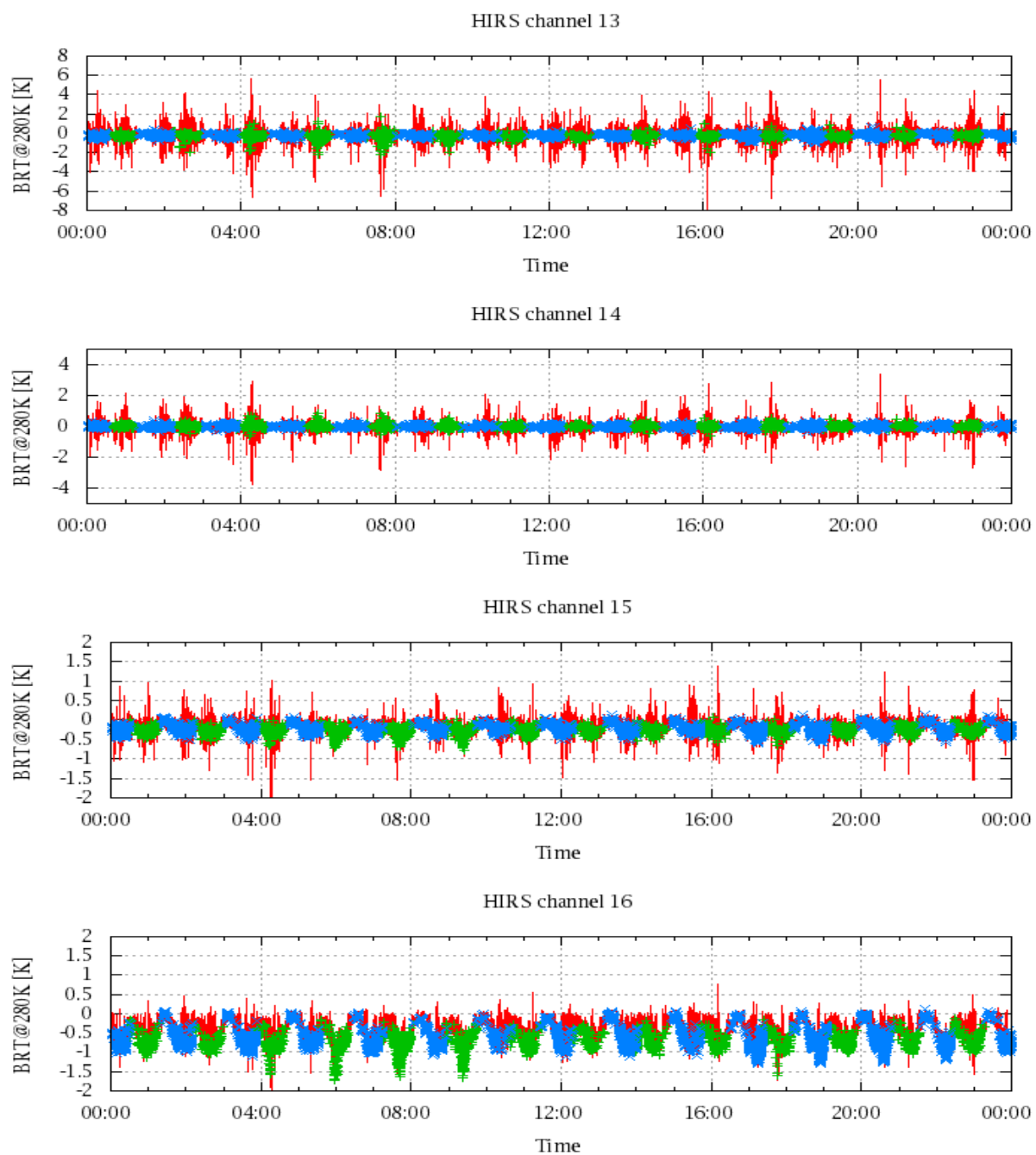


Figure 20: Radiance Differences in BRT

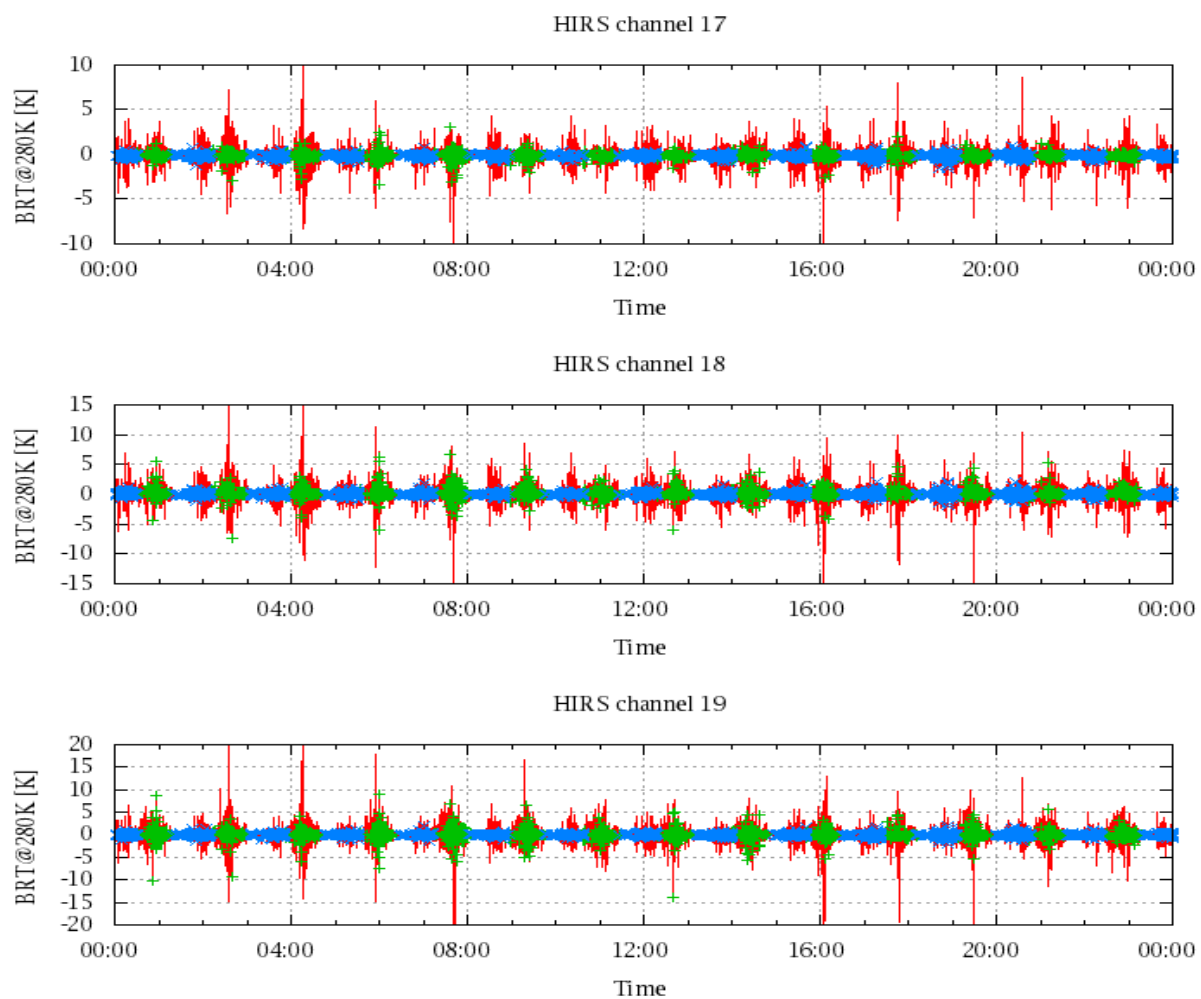


Figure 21: Radinace Differences in BRT