IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

20/08/2015 00:00:00 - 21/08/2015 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 20/08/2015 00:00:00 - 21/08/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 20/08/2015 00:00:00 - 21/08/2015 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)	480	-

Table 1: Data quantity

APID	**Seq from**	**Seq to**	**Time from**	**Time to**
PX1 (130)	1888	1896	20150820163503.631	20150820163505.362
PX1 (130)	1971	2185	20150820163524.608	20150820163622.983
PX1 (130)	2231	2238	20150820163634.440	20150820163635.955
PX1 (130)	2320	2331	20150820163658.225	20150820163700.604
PX1 (130)	2436	2447	20150820163729.358	20150820163731.736
PX2 (135)	1888	1896	20150820163503.631	20150820163505.362
PX2 (135)	1970	2185	20150820163524.389	20150820163622.983
PX2 (135)	2231	2238	20150820163634.440	20150820163635.955
PX2 (135)	2320	2331	20150820163658.225	20150820163700.604
PX2 (135)	2436	2447	20150820163729.358	20150820163731.736
PX3 (140)	1888	1896	20150820163503.631	20150820163505.362
PX3 (140)	1970	2185	20150820163524.389	20150820163622.983
PX3 (140)	2230	2238	20150820163634.225	20150820163635.955
PX3 (140)	2320	2330	20150820163658.225	20150820163700.385
PX3 (140)	2436	2447	20150820163729.358	20150820163731.736
PX4 (145)	1888	1895	20150820163503.631	20150820163505.147
PX4 (145)	1970	2185	20150820163524.389	20150820163622.983
PX4 (145)	2231	2238	20150820163634.440	20150820163635.955

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	2320	2330	20150820163658.225	20150820163700.385
PX4 (145)	2436	2447	20150820163729.358	20150820163731.736
IMG (150)	648	655	20150820163503.631	20150820163505.147
IMG (150)	738	981	20150820163524.389	20150820163621.686
IMG (150)	1034	1042	20150820163634.225	20150820163635.955
IMG (150)	1136	1146	20150820163658.225	20150820163700.385
IMG (150)	1268	1279	20150820163729.358	20150820163731.736
VER (160)	14847	14885	20150820163517.256	20150820163524.608
AUX (180)	16075	16083	20150820163517.686	20150820163621.686

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
20/08/2015 00:00:12	-	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)	99.49 %	-
GQisFlagQual set (PX2)	99.45 %	-
GQisFlagQual set (PX3)	99.47 %	-
GQisFlagQual set (PX4)	99.47 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

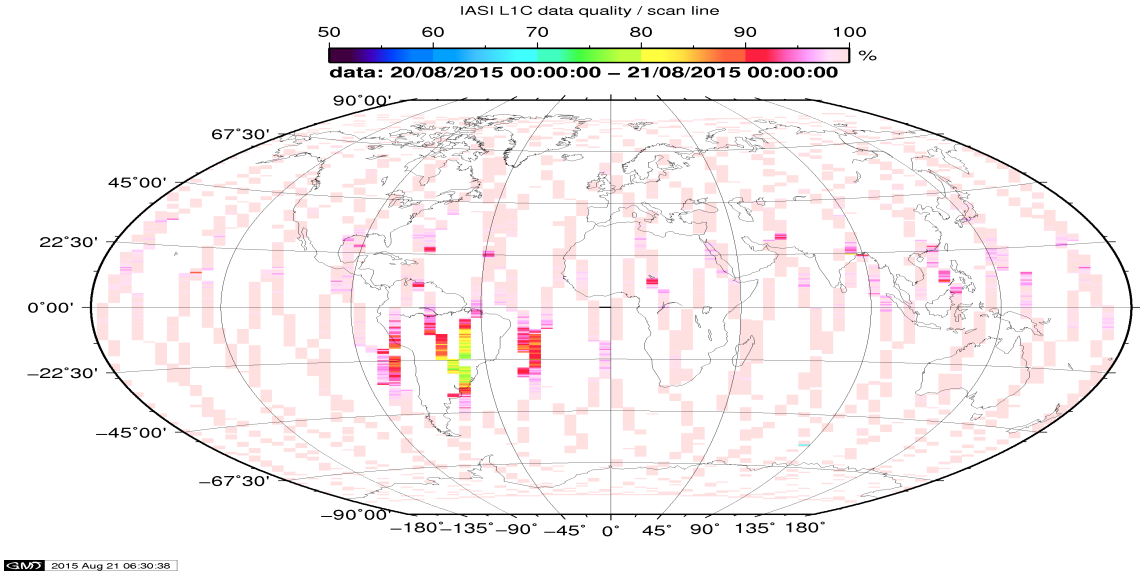

Figure 1: L1C data quality

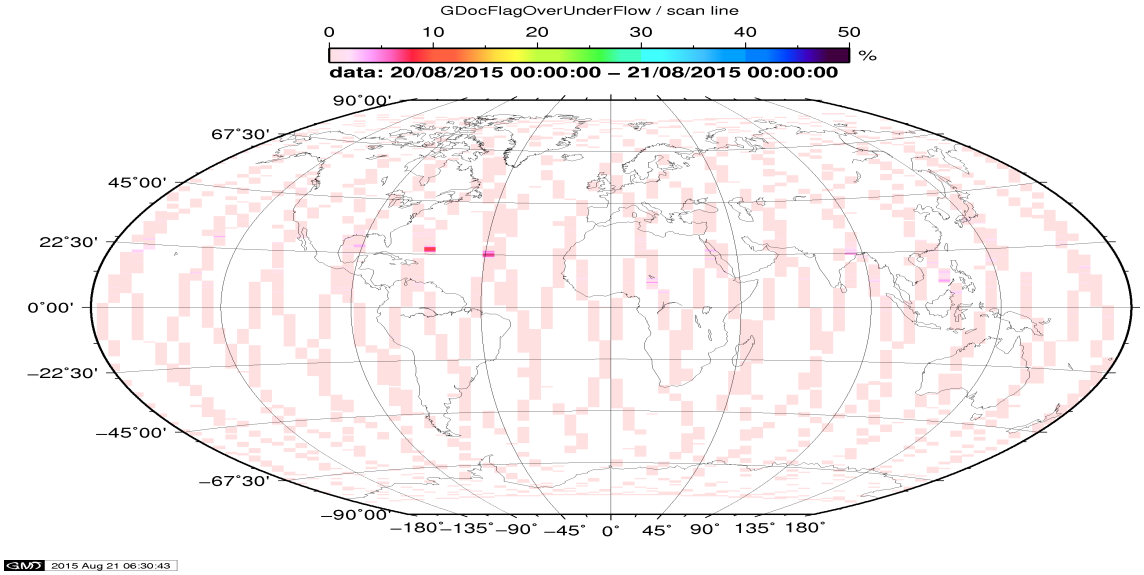

Figure 2: Flag of Over and Under Flows

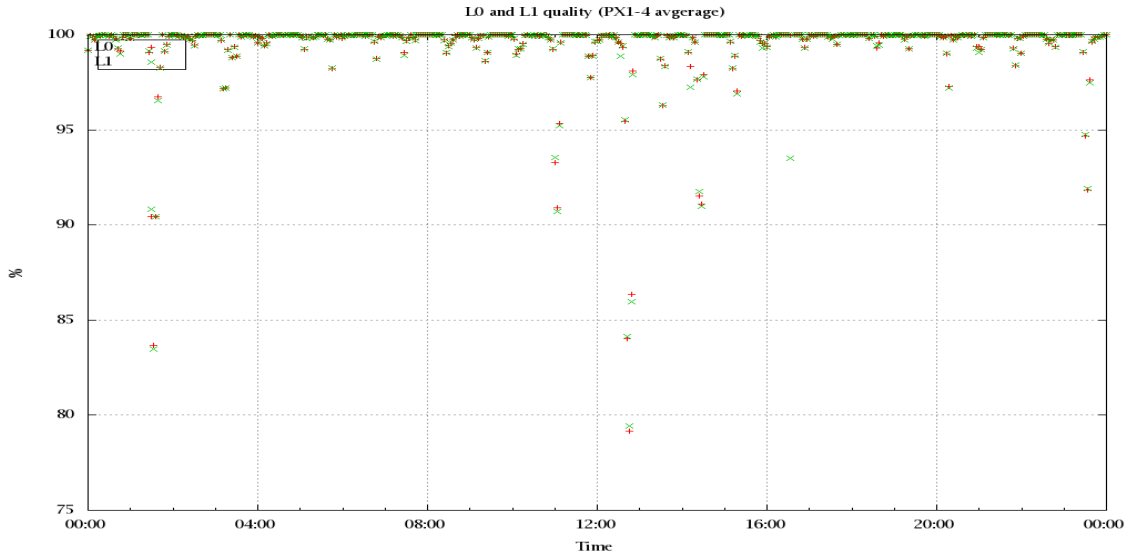

Figure 3: Level 0 and 1C overall quality

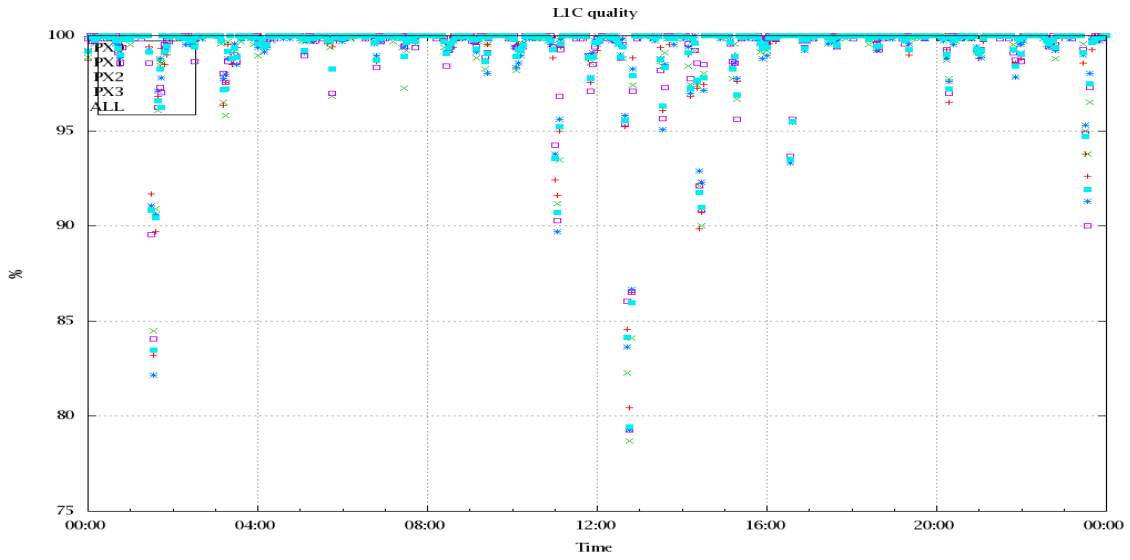

Figure 4: Level 1C quality

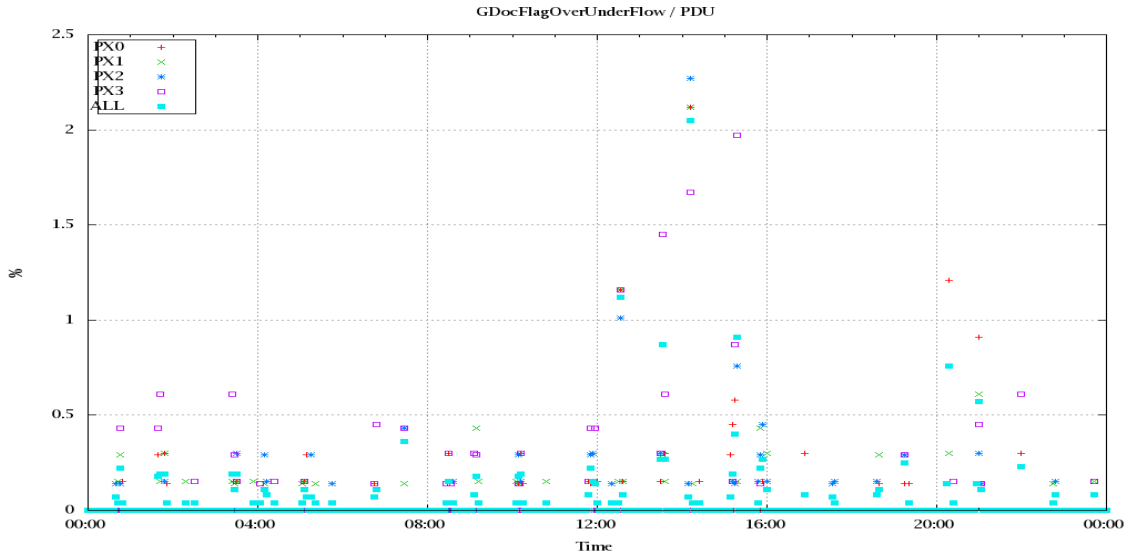

Figure 5: OverUnderFlowFlag timeseries

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 indentification 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.

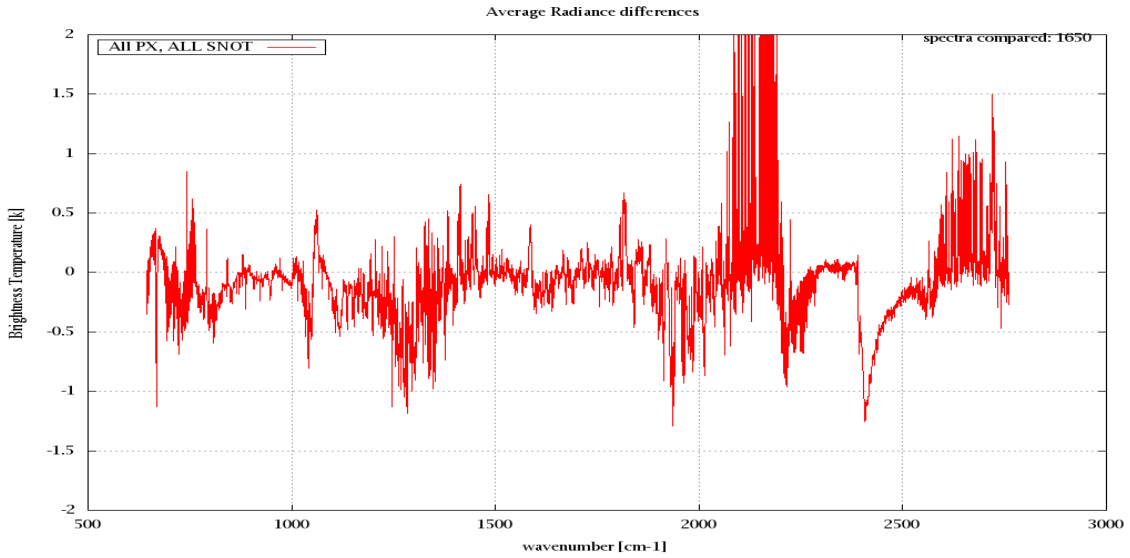

Figure 6: Average Radiance differences: OBS-CAL

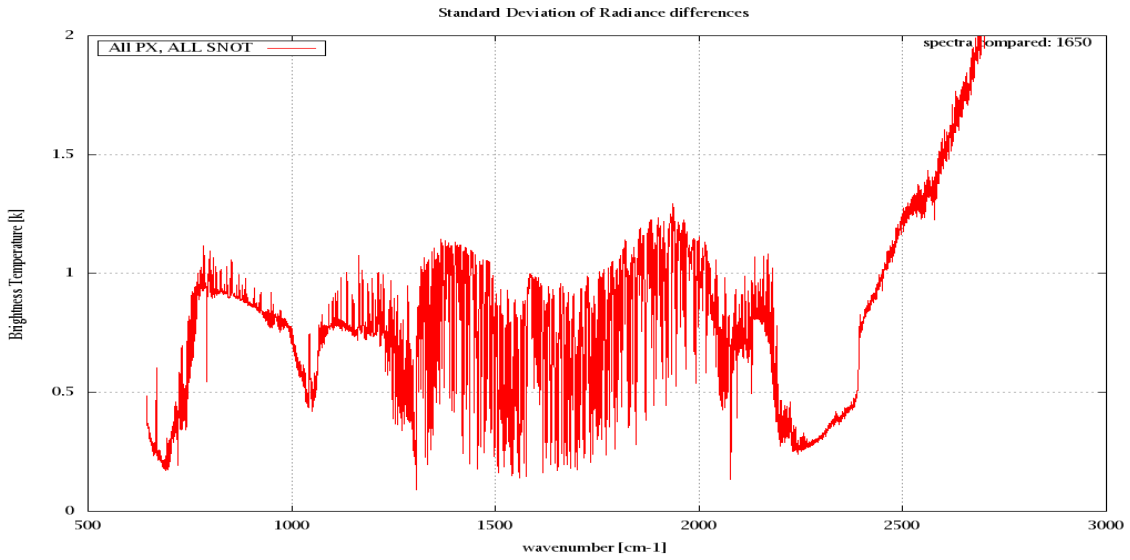

Figure 7: Standard Deviation of Radiance differences

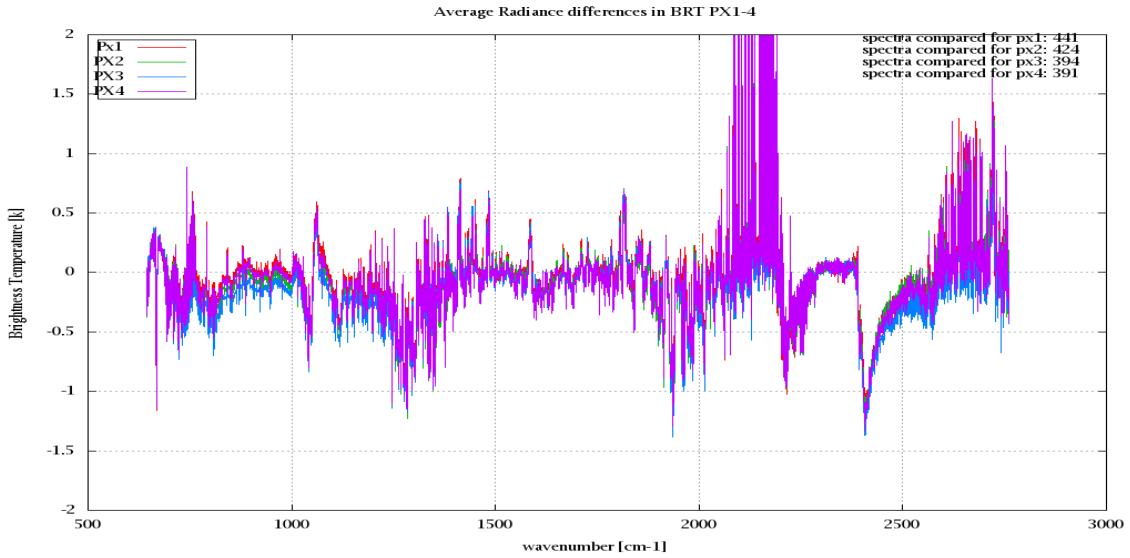

Figure 8: Average Radiance differences: OBS-CAL

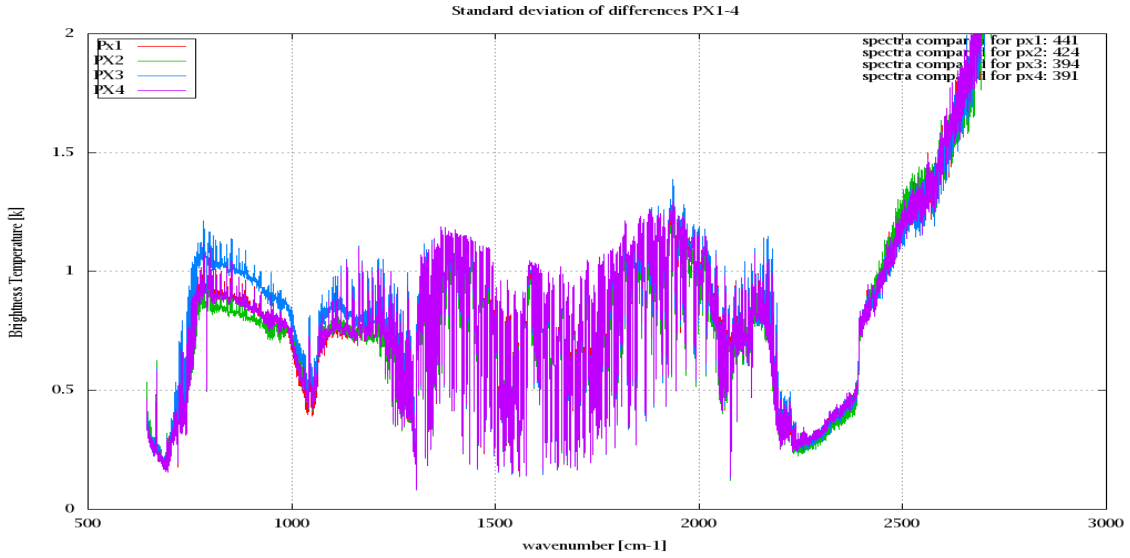

Figure 9: Standard Deviation of Radiance differences

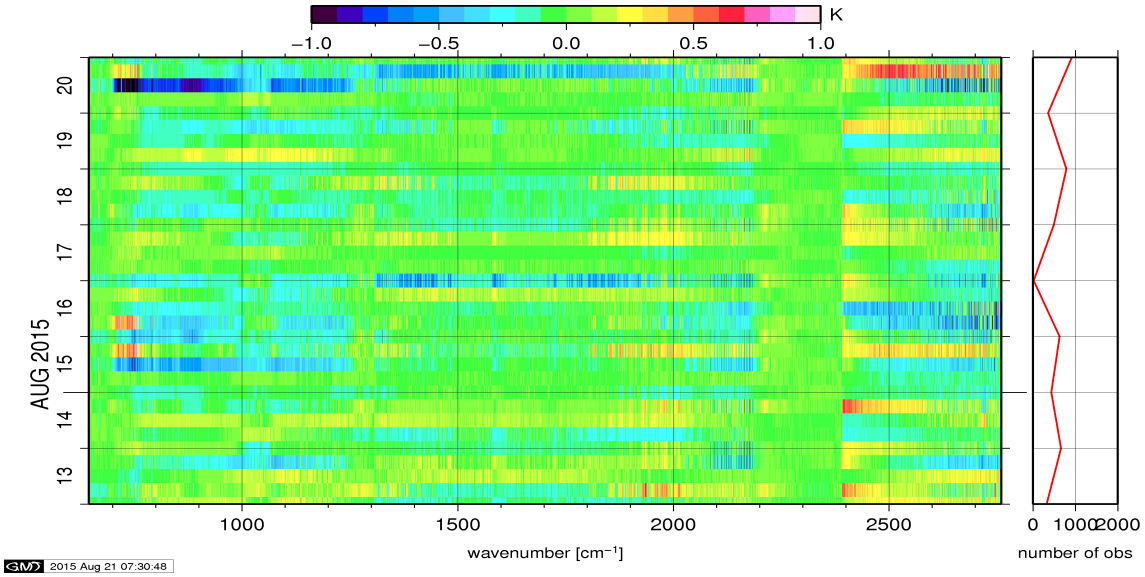

Figure 10: Radiance Anomaly in BRT: All Channels

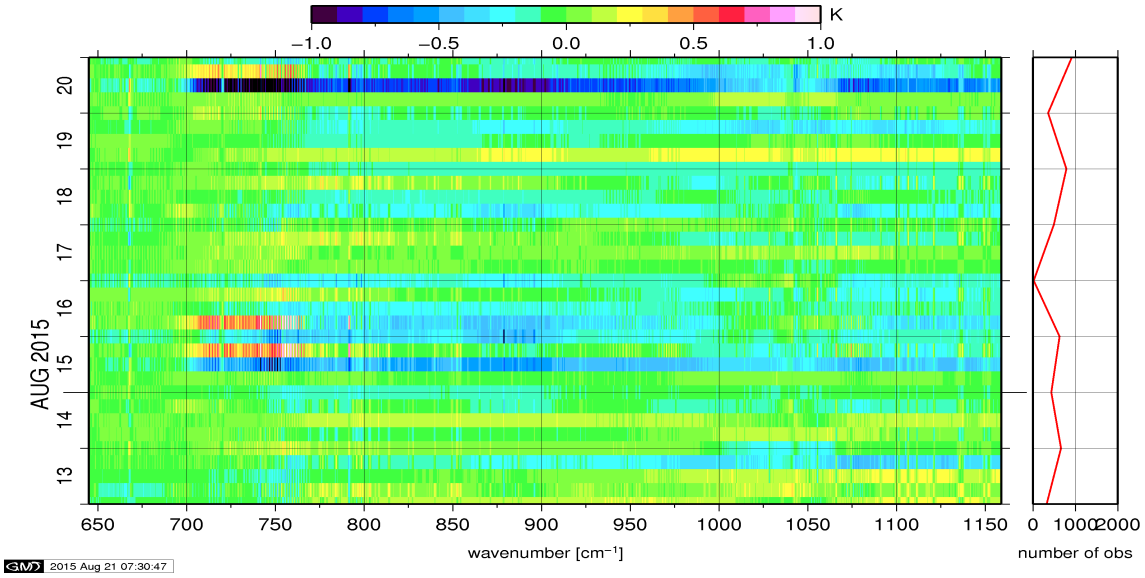

Figure 11: Radiance Anomaly in BRT: IASI Band 1

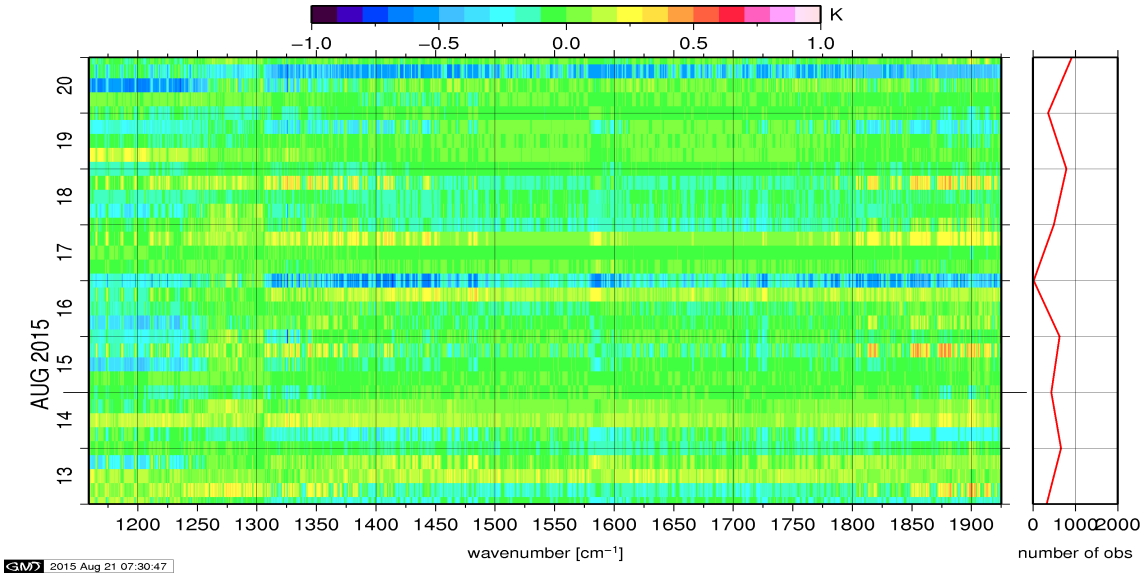

Figure 12: Radiance Anomaly in BRT: IASI Band 2

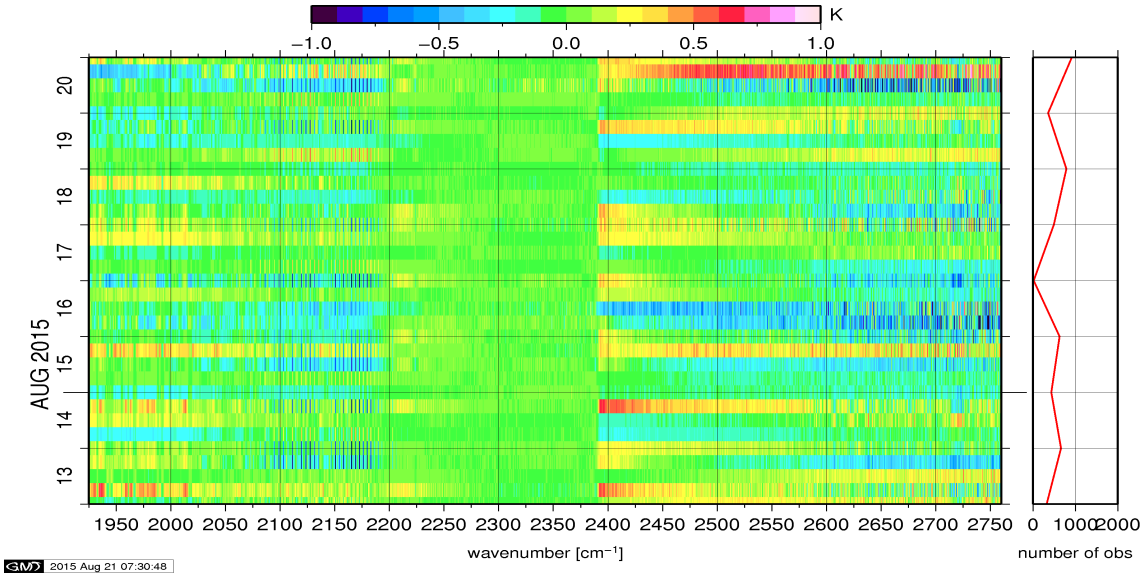

Figure 13: Radiance Anomaly in BRT: IASI Band 3

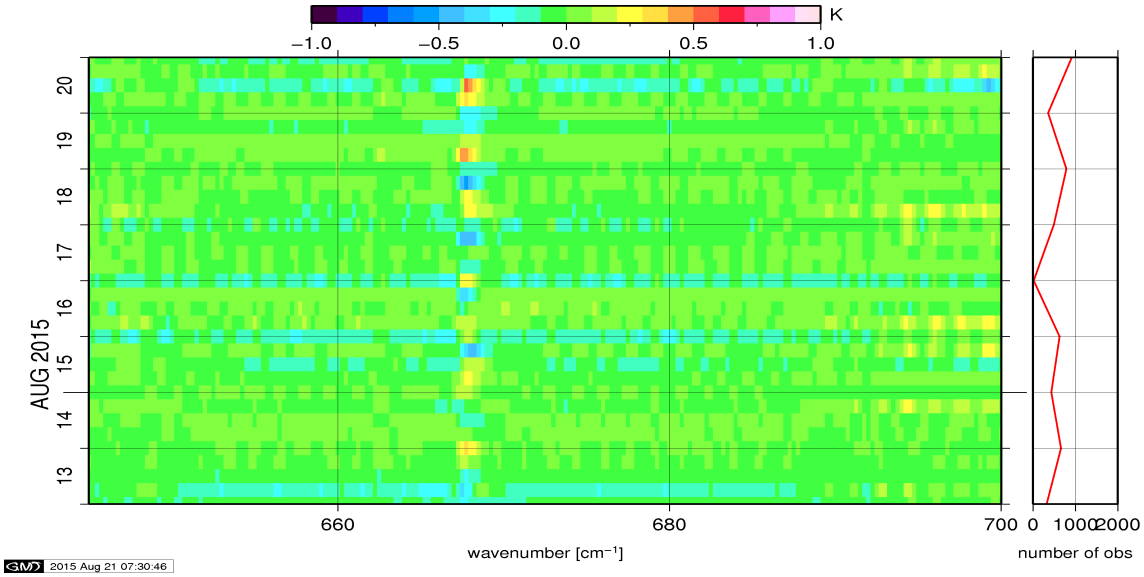

Figure 14: Radiance Anomaly in BRT: CO2 14

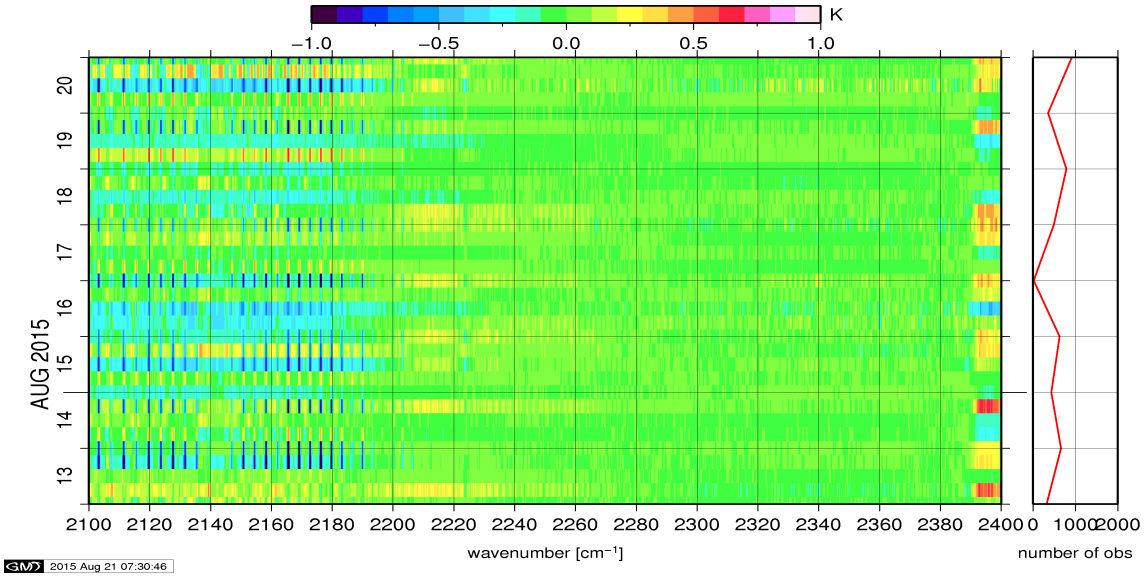

Figure 15: Radiance Anomaly in BRT: CO2 4.3

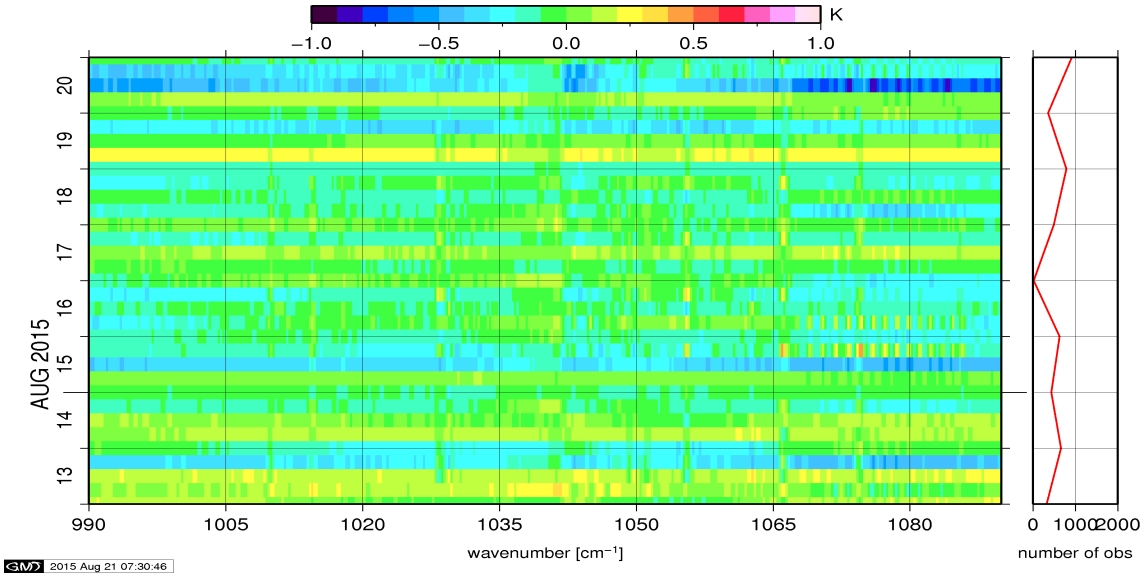

Figure 16: Radiance Anomaly in BRT: O3

6 IASI-HIRS radiance comparision Channel 1-19

The radiance comparision 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.

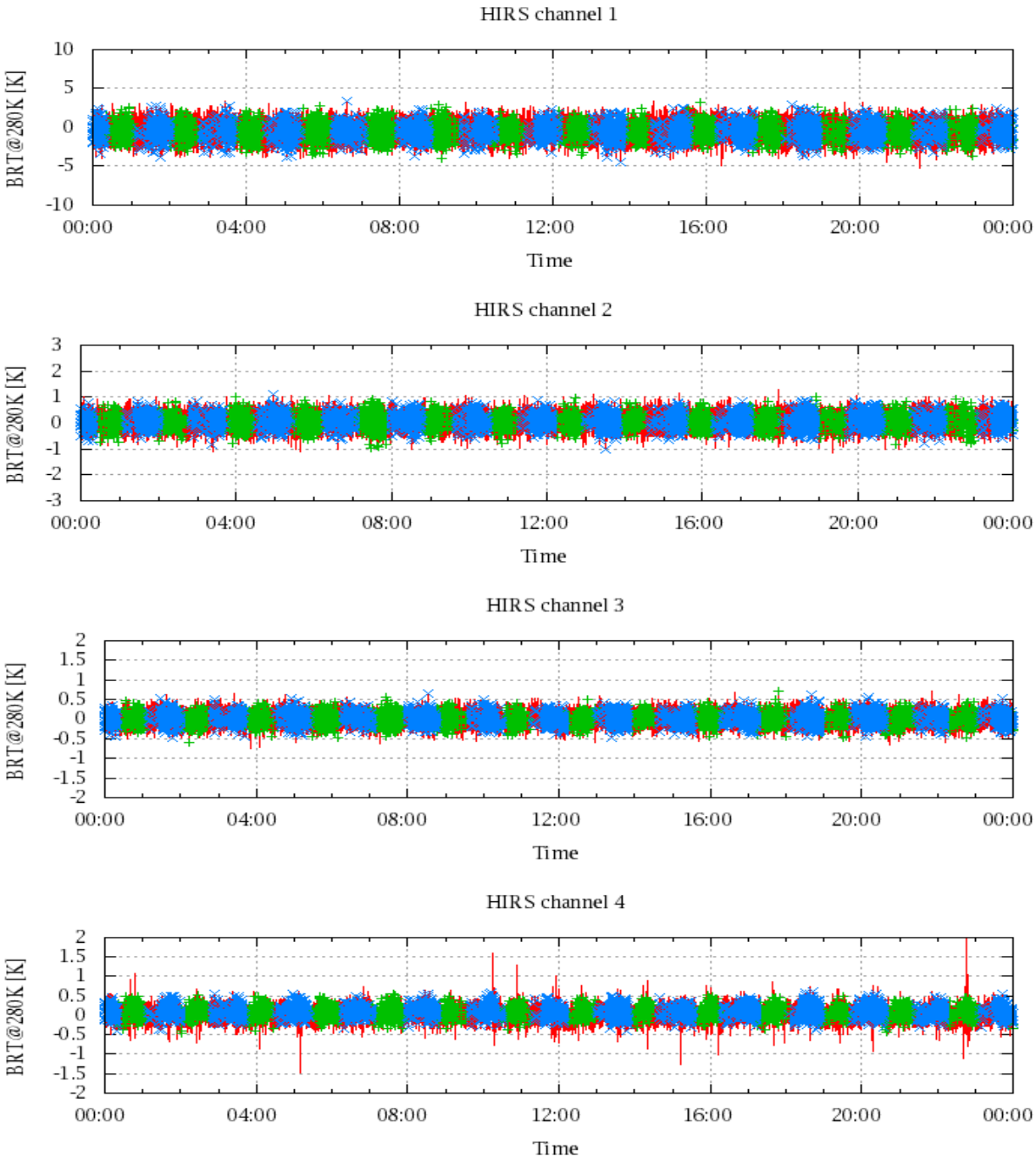

Figure 17: Radiance Differences in BRT

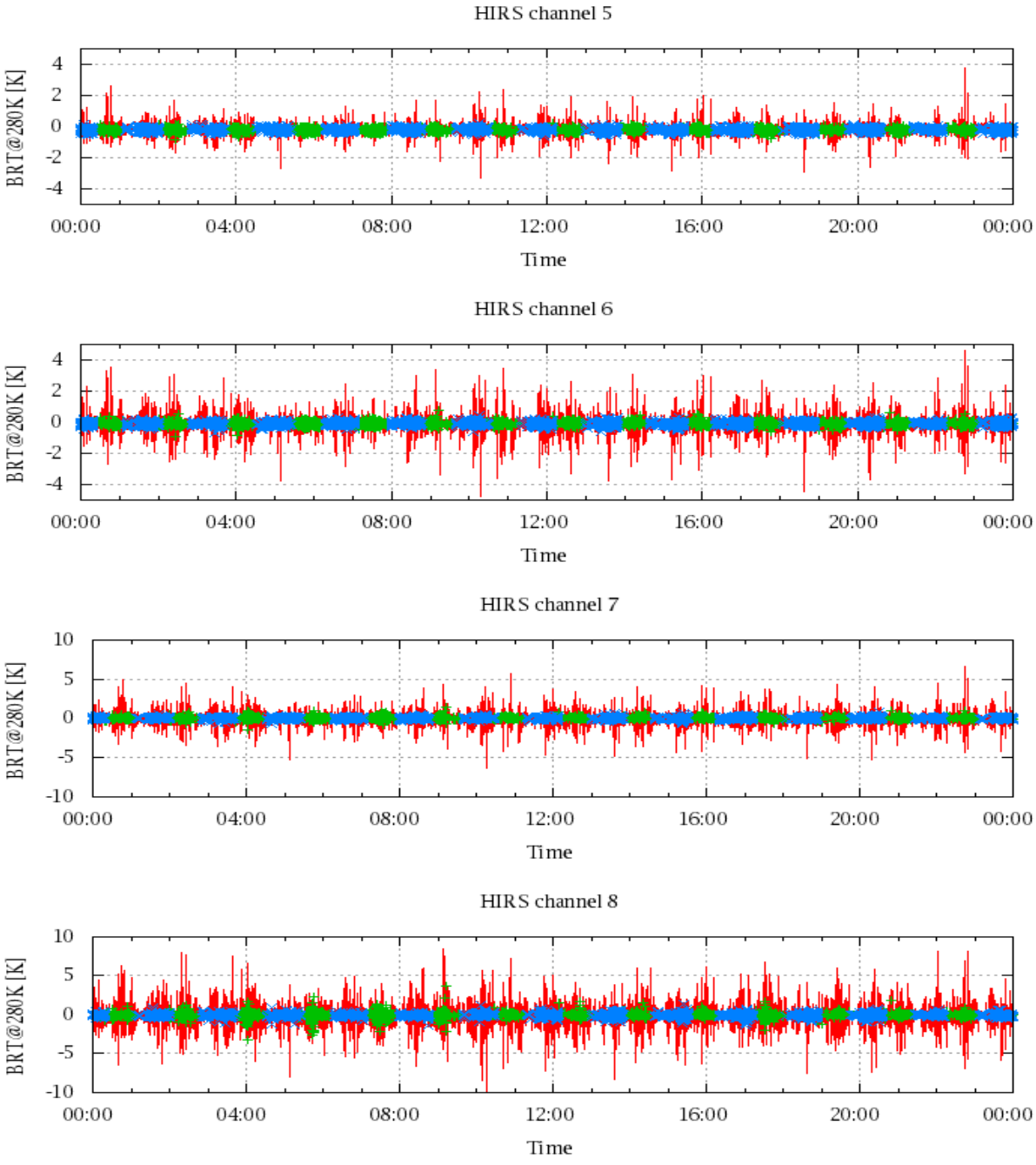

Figure 18: Radiance Differences in BRT

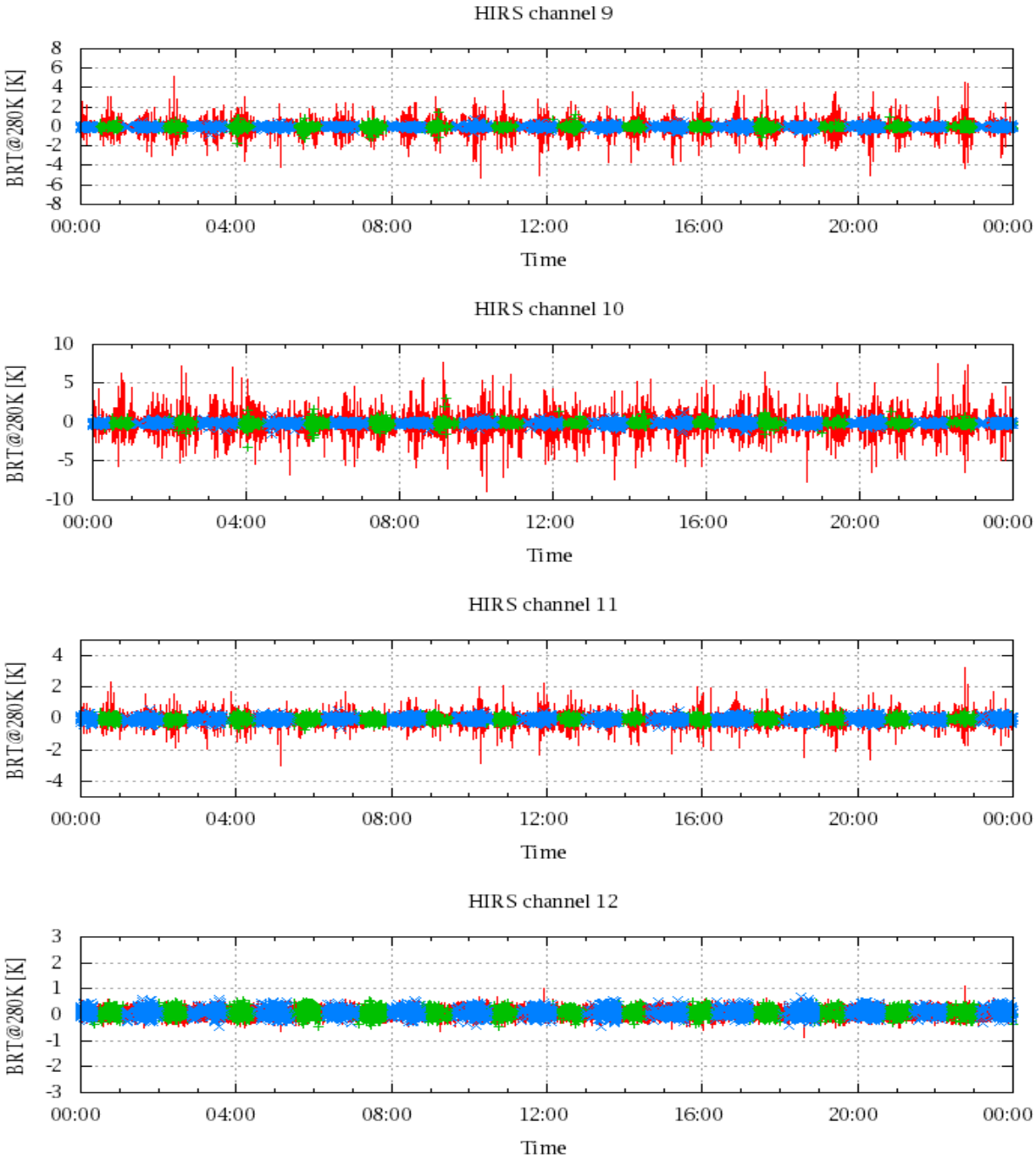

Figure 19: Radiance Differences in BRT

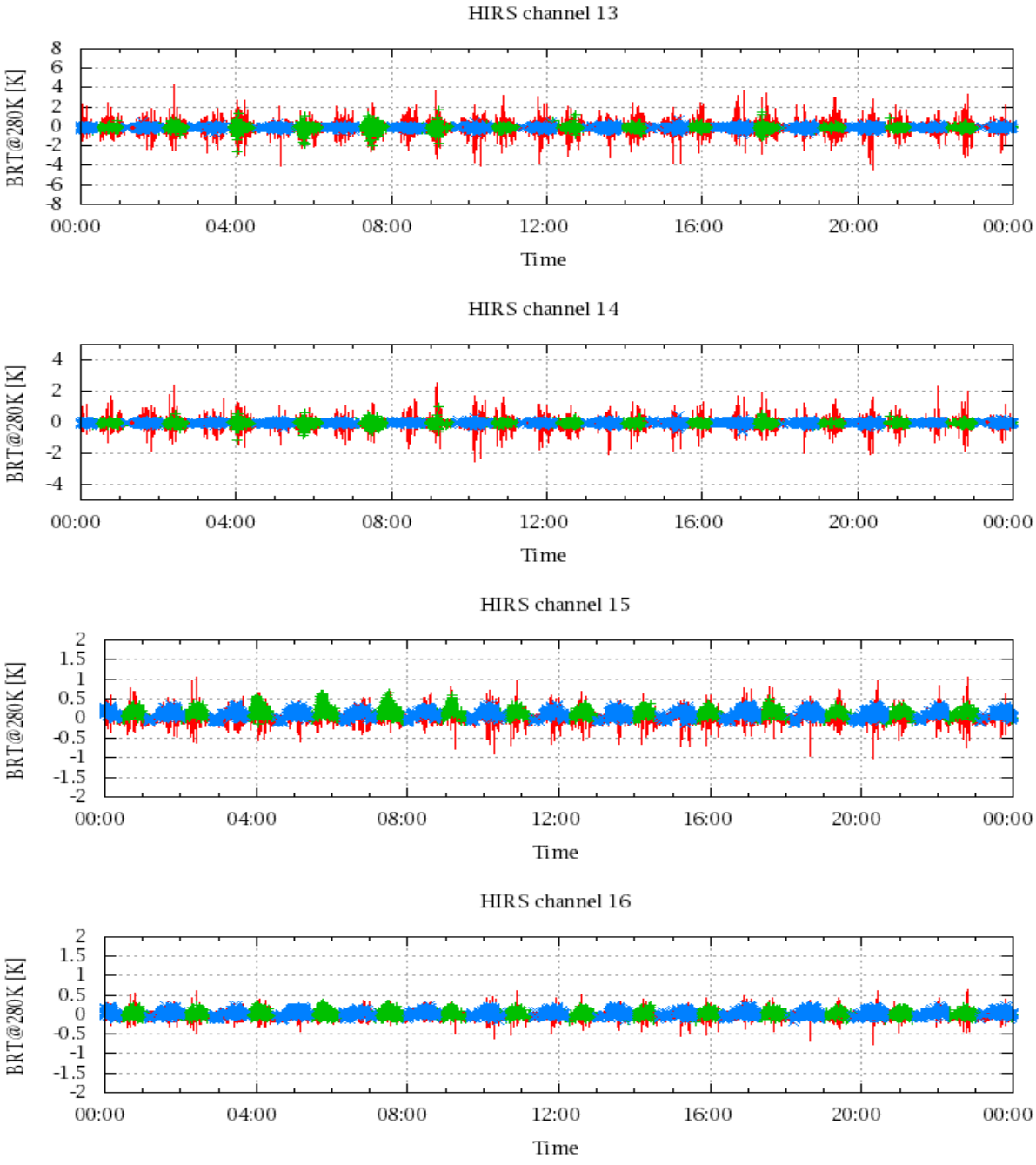

Figure 20: Radiance Differences in BRT

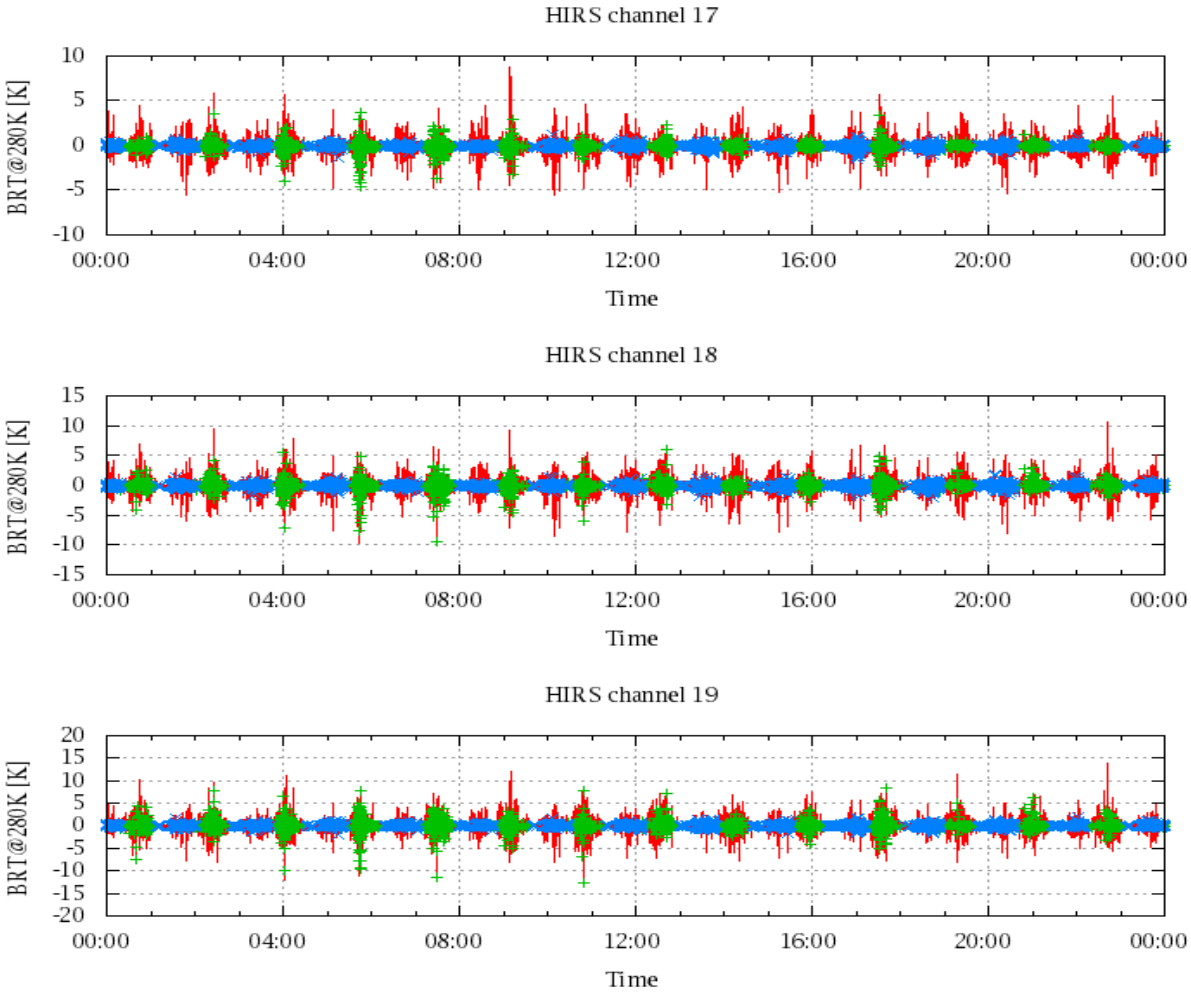

Figure 21: Radinace Differences in BRT