

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

13/12/2012 00:00:00 - 14/12/2012 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 13/12/2012 00:00:00 - 14/12/2012 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 13/12/2012 00:00:00 - 14/12/2012 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)	4027	4029	20121213033000.537	20121213033002.482
PX1 (130)	4051	4058	20121213033007.236	20121213033010.264
PX1 (130)	4059	4067	20121213033010.482	20121213033012.213
PX1 (130)	4086	4090	20121213033016.318	20121213033018.697
PX2 (135)	4051	4058	20121213033007.236	20121213033010.264
PX2 (135)	4059	4064	20121213033010.482	20121213033011.560
PX2 (135)	4064	4067	20121213033011.560	20121213033012.213
PX2 (135)	4086	4090	20121213033016.318	20121213033018.697
PX3 (140)	4051	4058	20121213033007.236	20121213033010.264
PX3 (140)	4059	4064	20121213033010.482	20121213033011.560
PX3 (140)	4064	4067	20121213033011.560	20121213033012.213
PX3 (140)	4086	4089	20121213033016.318	20121213033018.478
PX4 (145)	4050	4058	20121213033007.021	20121213033010.264
PX4 (145)	4058	4066	20121213033010.264	20121213033011.994
PX4 (145)	4085	4089	20121213033016.103	20121213033018.478
IMG (150)	13139	13144	20121213033000.537	20121213033002.264
IMG (150)	13166	13174	20121213033007.021	20121213033008.967
IMG (150)	13178	13186	20121213033010.264	20121213033011.994

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	13205	13213	20121213033016.103	20121213033018.478
VER (160)	7367	7373	20121213033000.537	20121213033007.236
VER (160)	7375	7381	20121213033007.236	20121213033024.533
AUX (180)	14565	14567	20121213032952.967	20121213033008.967
AUX (180)	14567	14569	20121213033008.967	20121213033024.967

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
13/12/2012 00:00:00	-	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)	99.39 %	-
GQisFlagQual set (PX2)	99.24 %	-
GQisFlagQual set (PX3)	99.31 %	-
GQisFlagQual set (PX4)	99.44 %	-
GQisFlagQual set (all)	99.34 %	-

Table 4: Quality flags

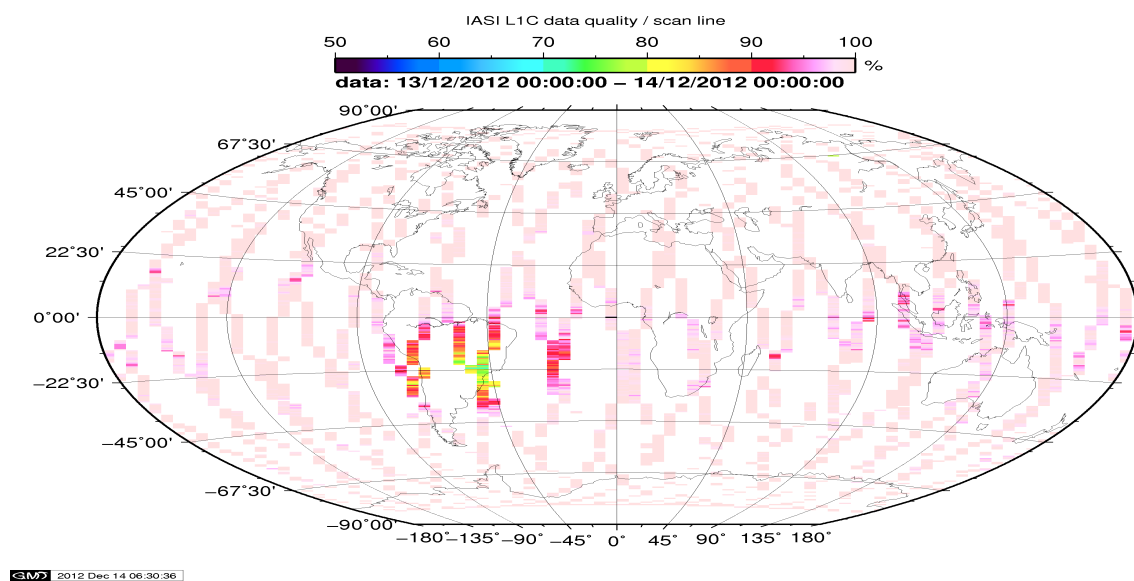


Figure 1: L1C data quality

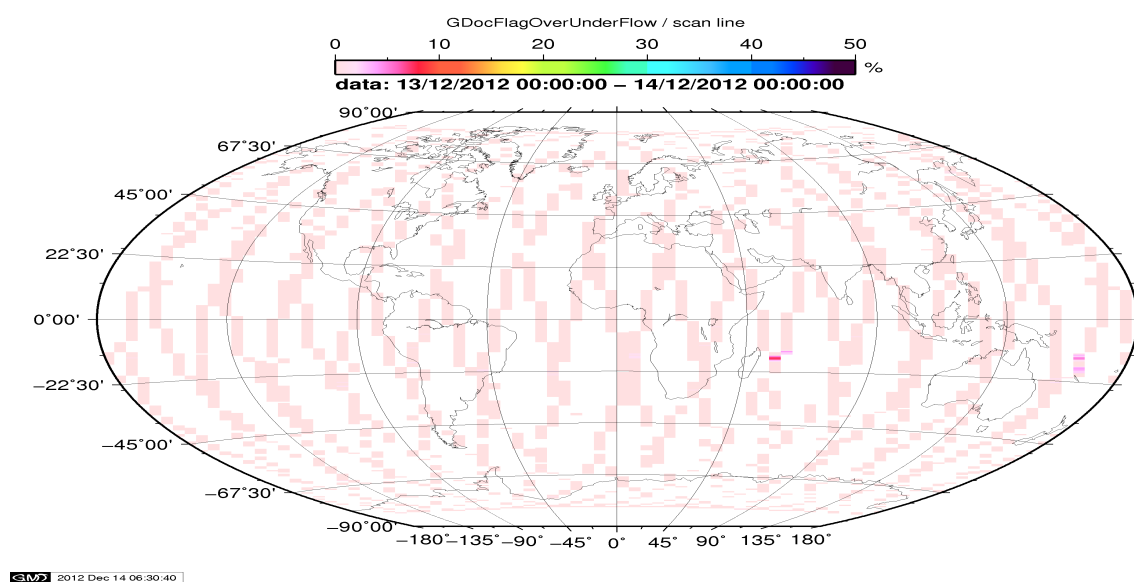


Figure 2: Flag of Over and Under Flows

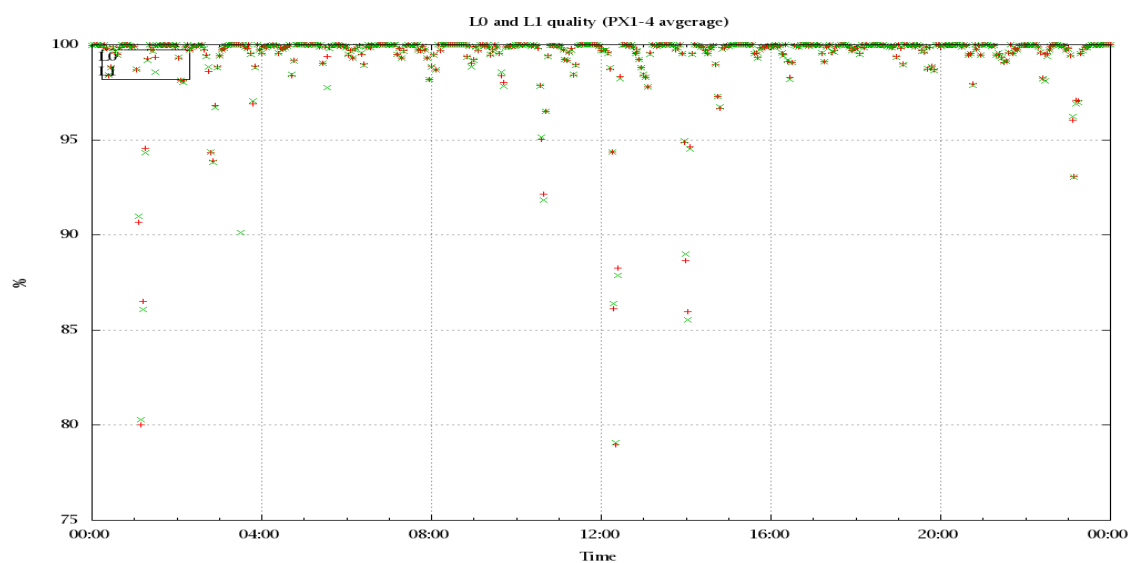


Figure 3: Level 0 and 1C overall quality

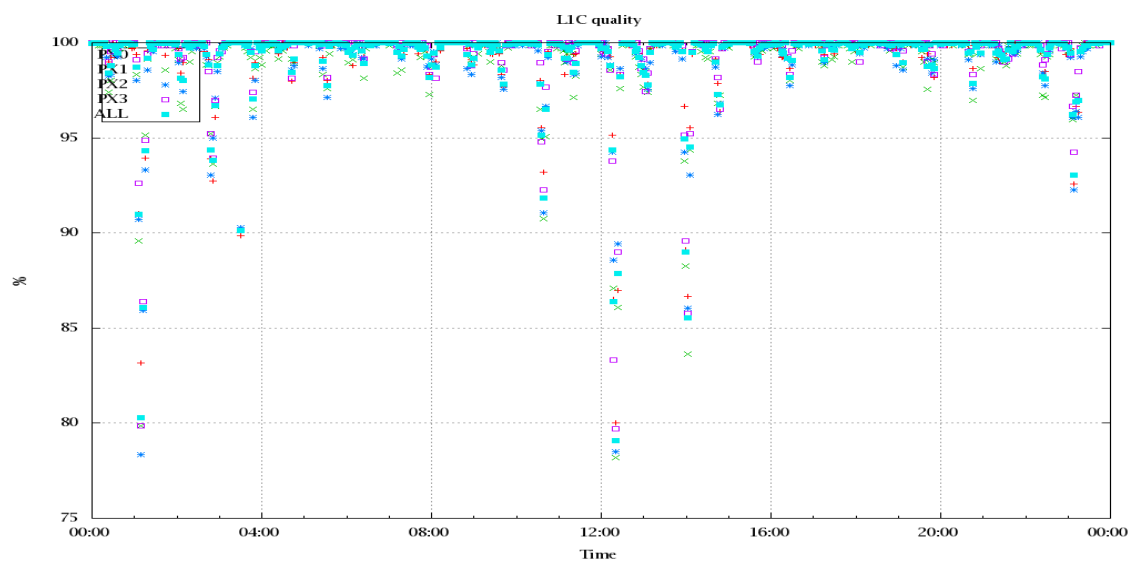


Figure 4: Level 1C quality

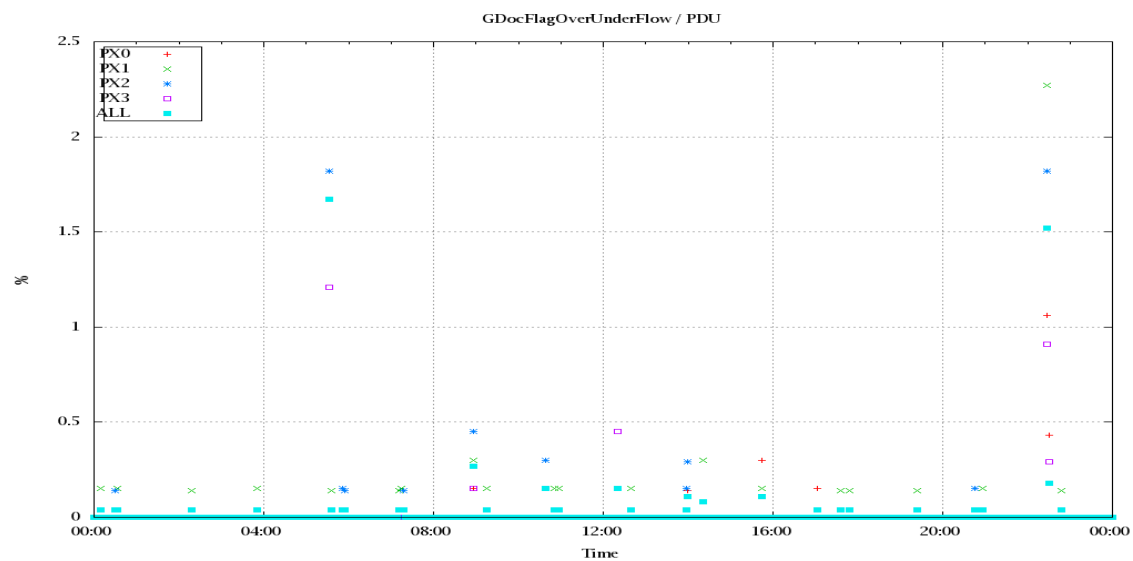


Figure 5: OverUnderFlowFlag timeseries

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.

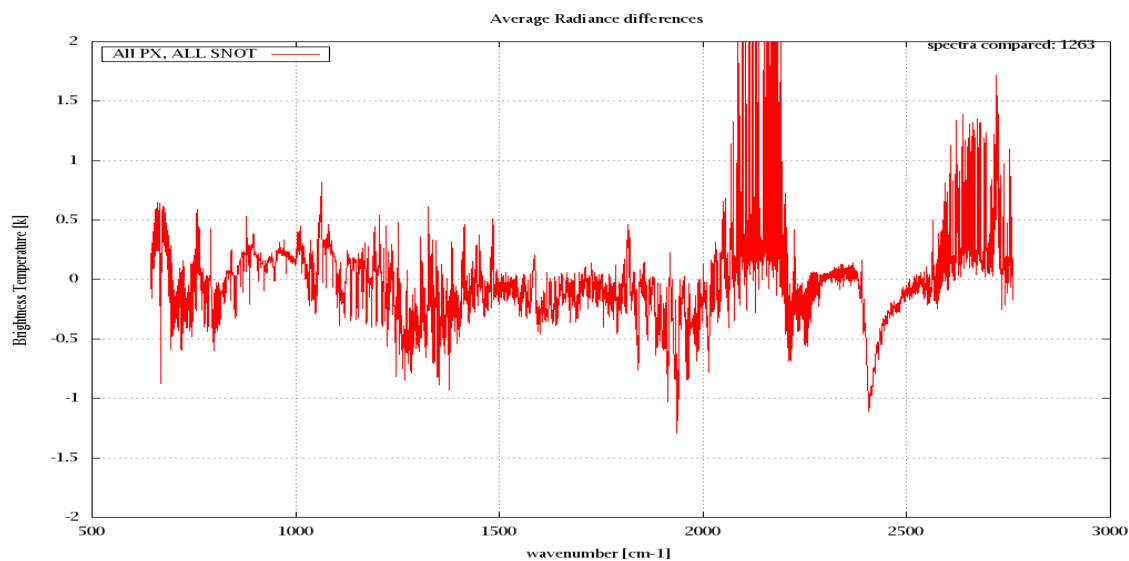


Figure 6: Average Radiance differences: OBS-CAL

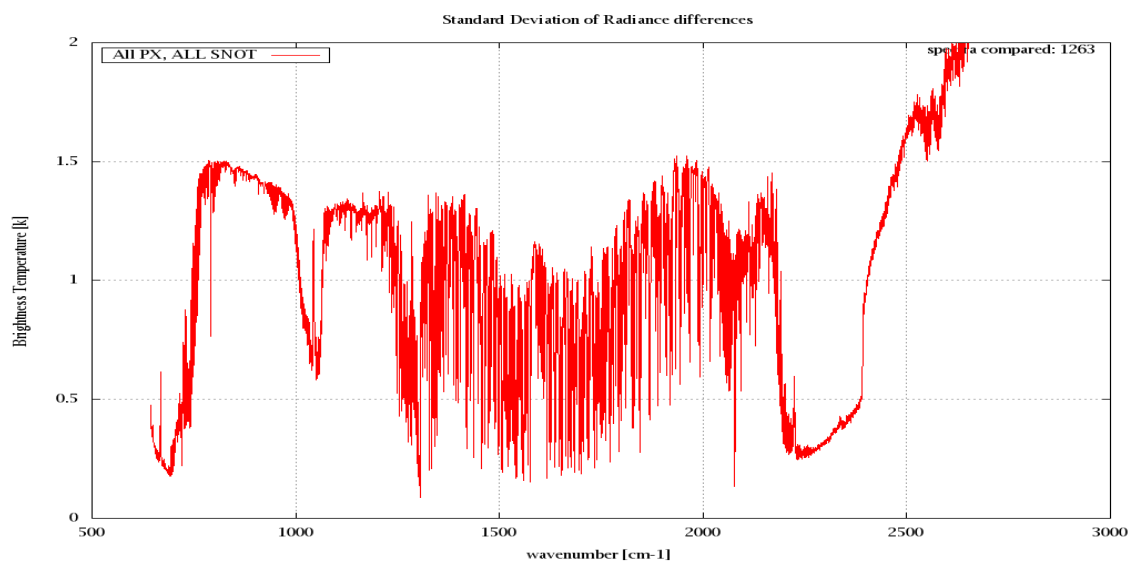


Figure 7: Standard Deviation of Radiance differences

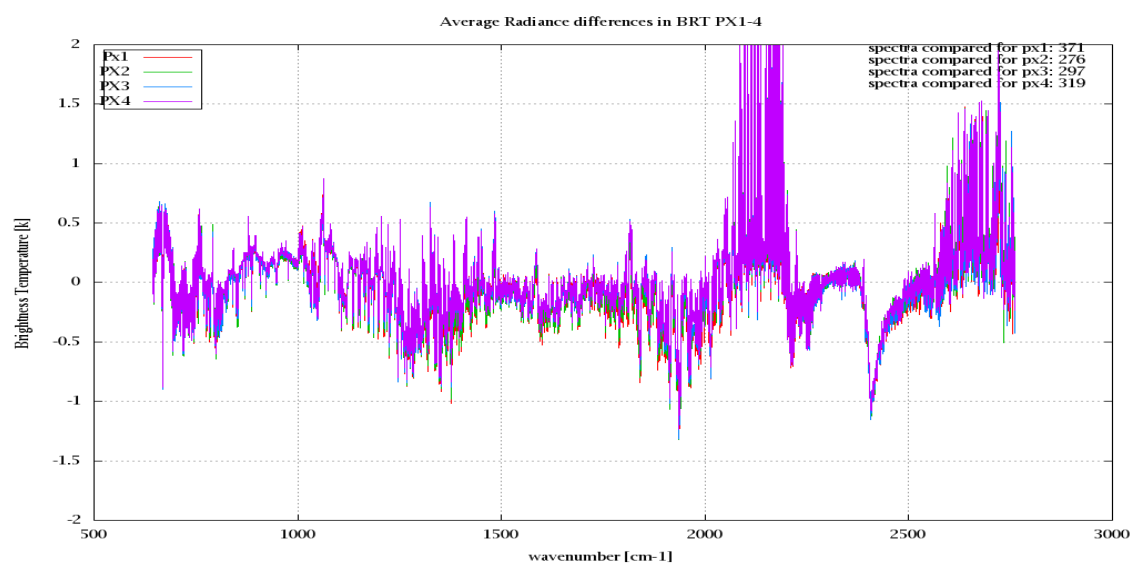


Figure 8: Average Radiance differences: OBS-CAL

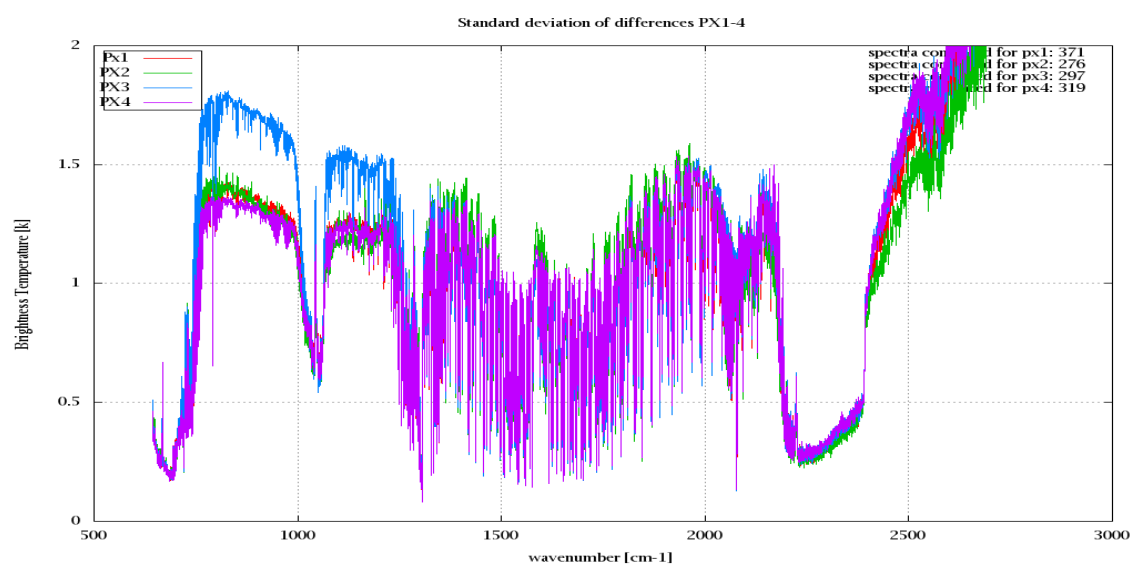


Figure 9: Standard Deviation of Radiance differences

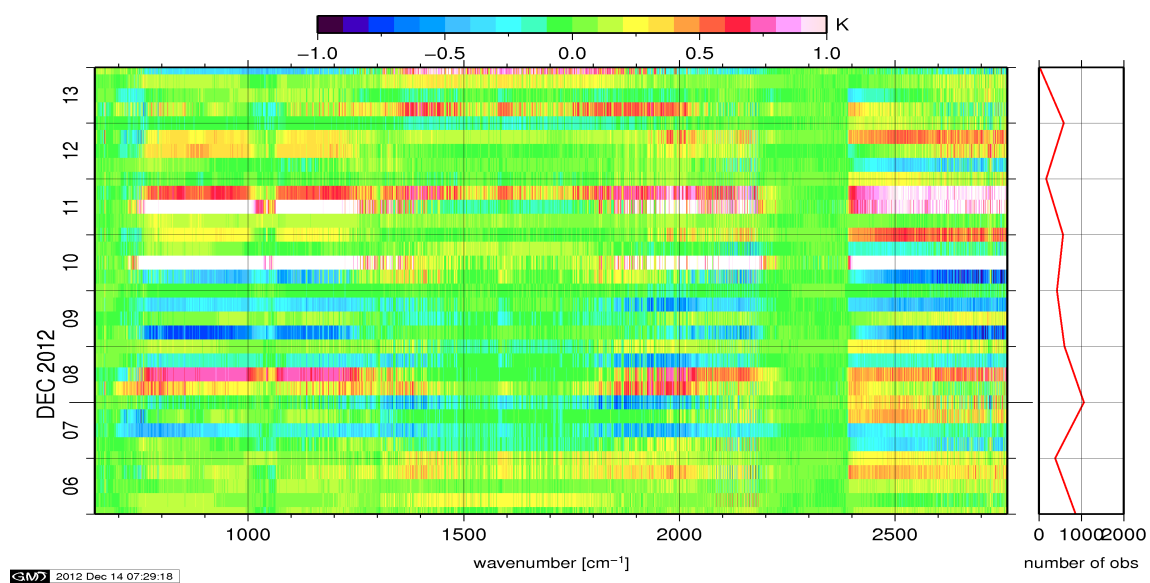


Figure 10: Radiance Anomaly in BRT: All Channels

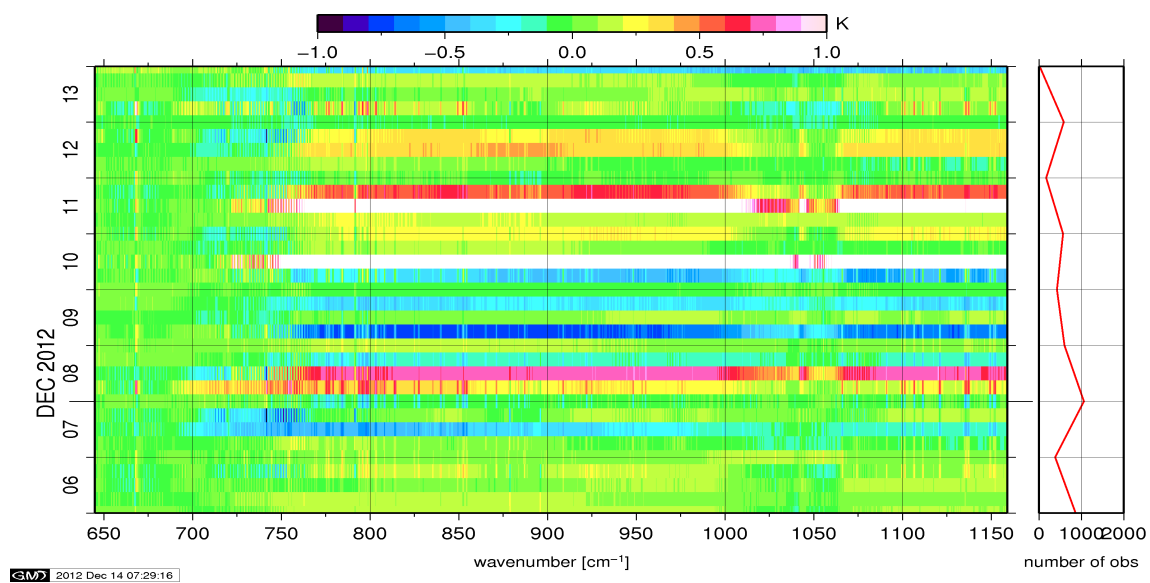


Figure 11: Radiance Anomaly in BRT: IASI Band 1

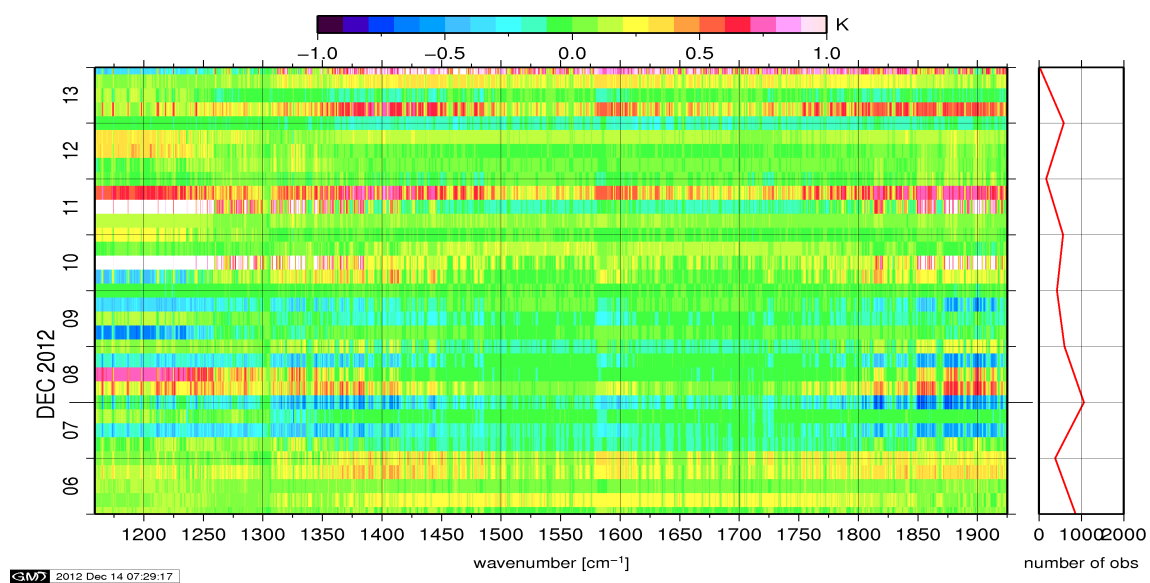


Figure 12: Radiance Anomaly in BRT: IASI Band 2

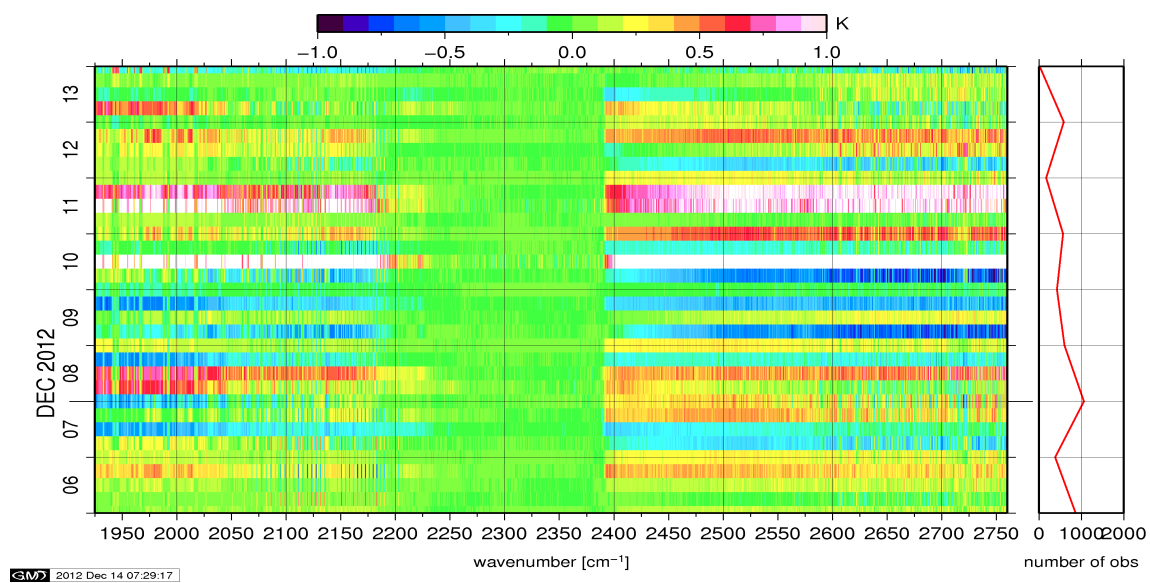


Figure 13: Radiance Anomaly in BRT: IASI Band 3

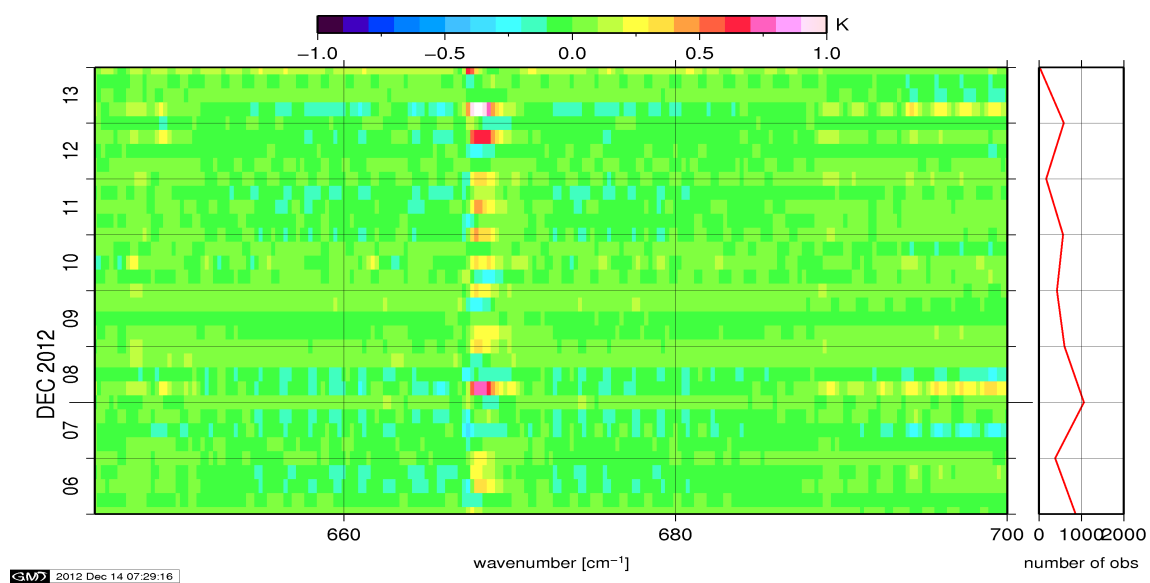


Figure 14: Radiance Anomaly in BRT: CO2 14

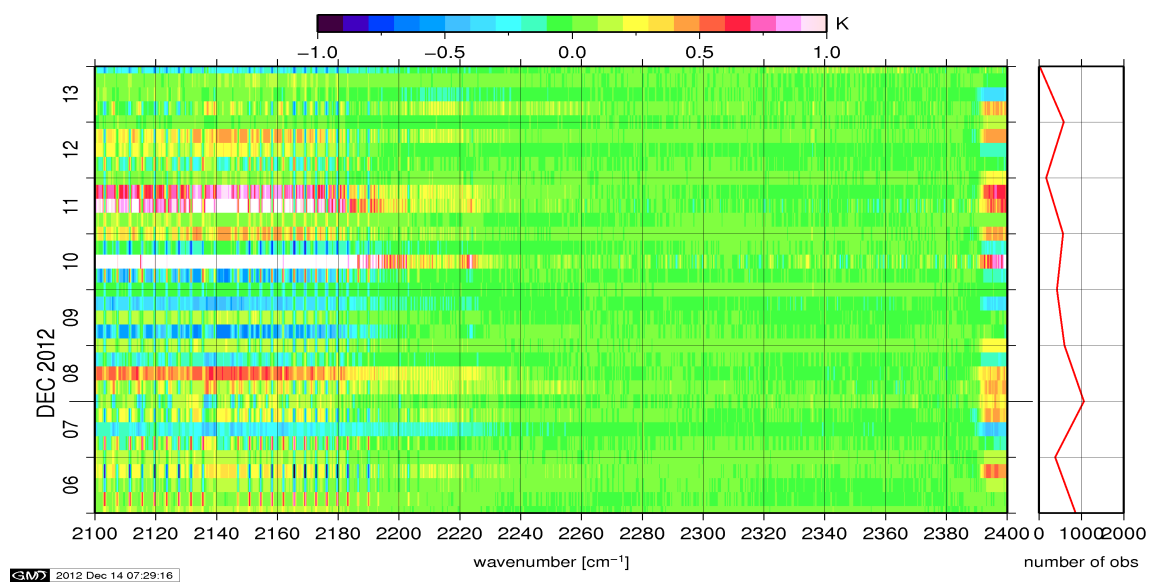


Figure 15: Radiance Anomaly in BRT: CO2 4.3

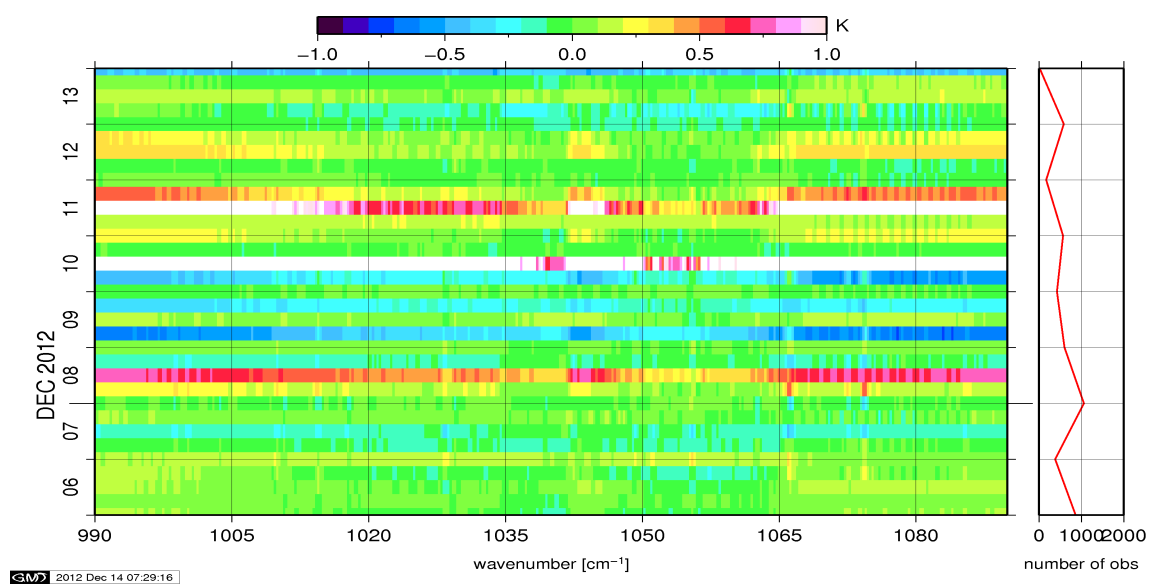


Figure 16: Radiance Anomaly in BRT: O3

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.

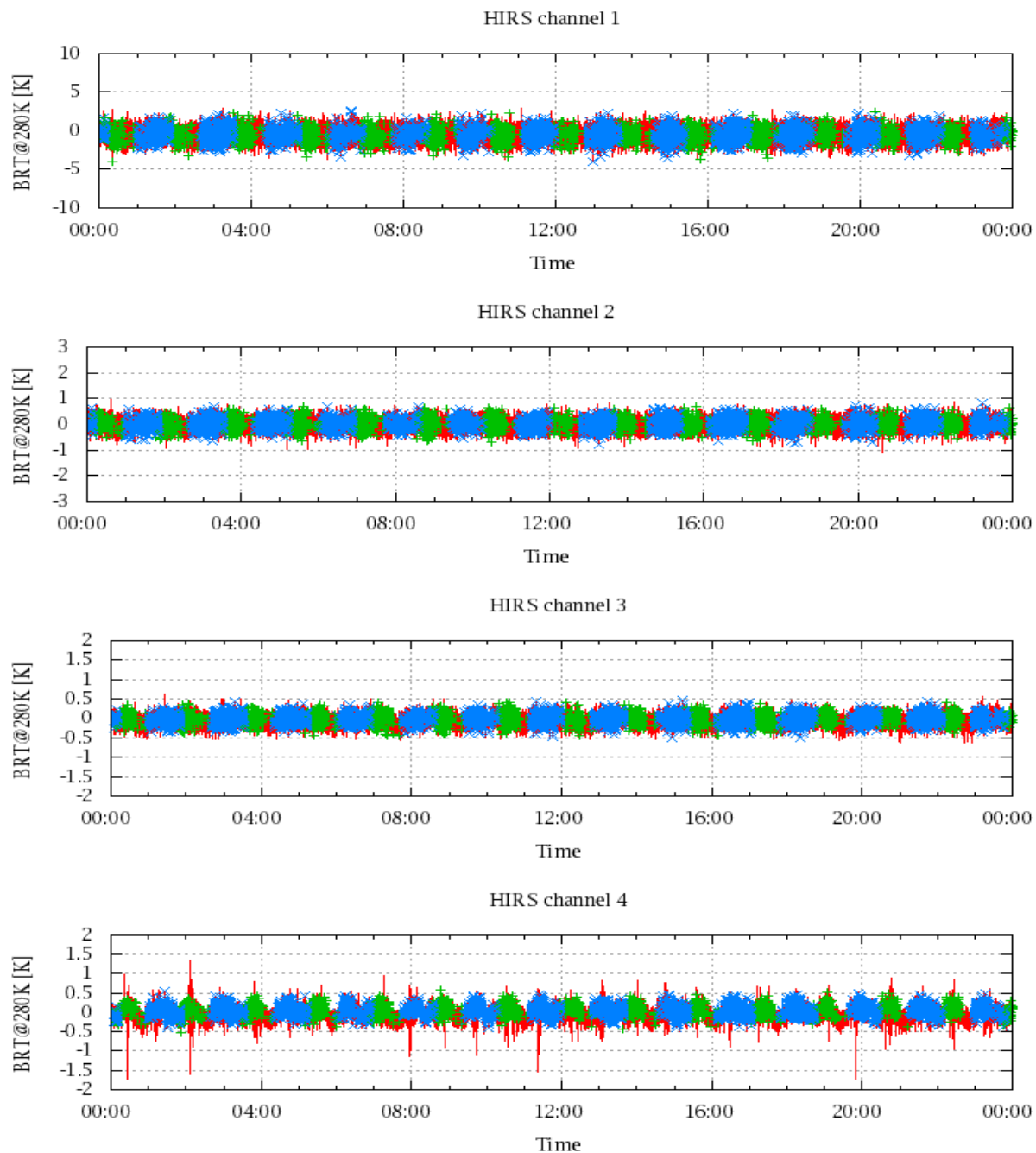


Figure 17: Radiance Differences in BRT

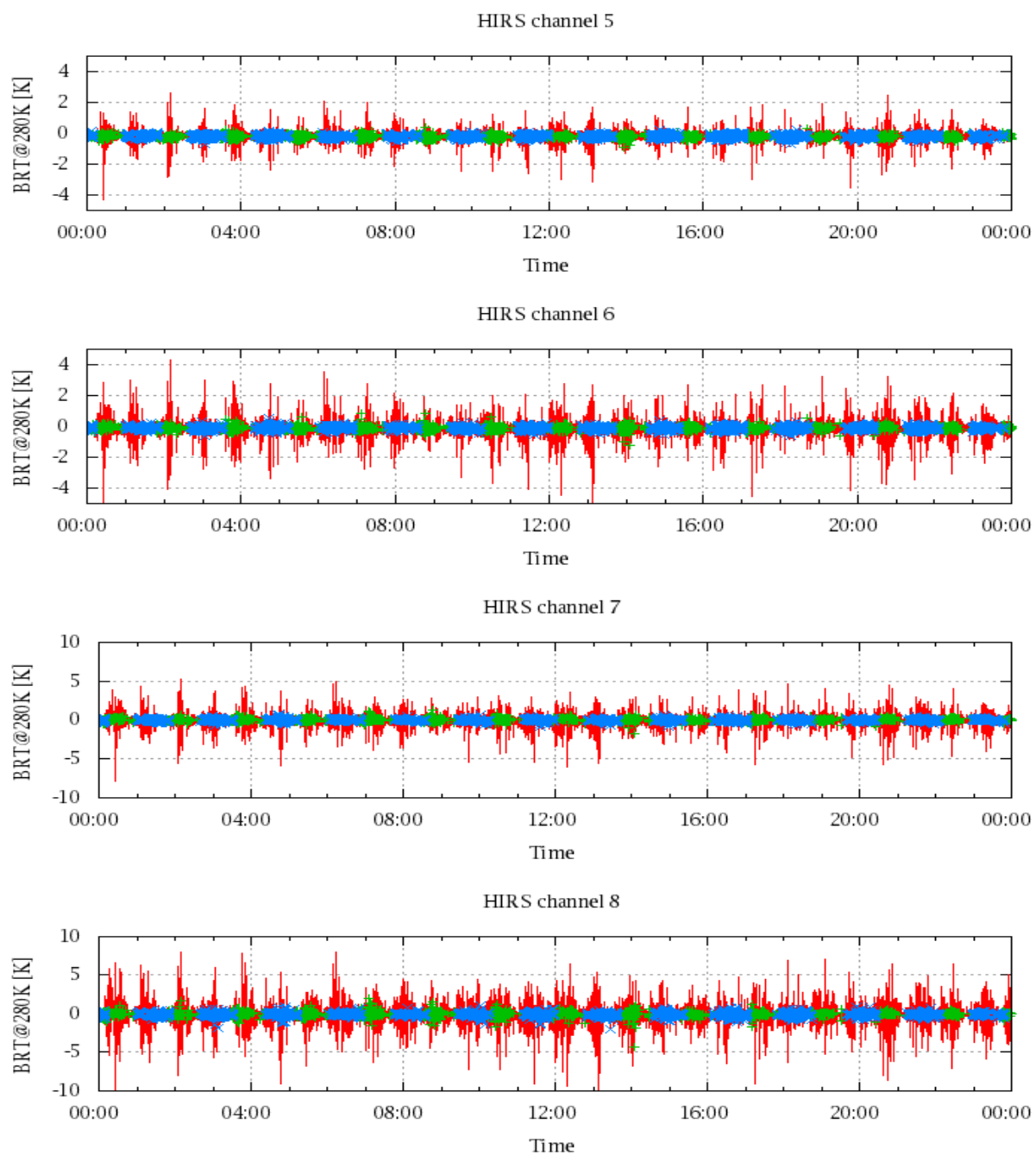


Figure 18: Radiance Differences in BRT

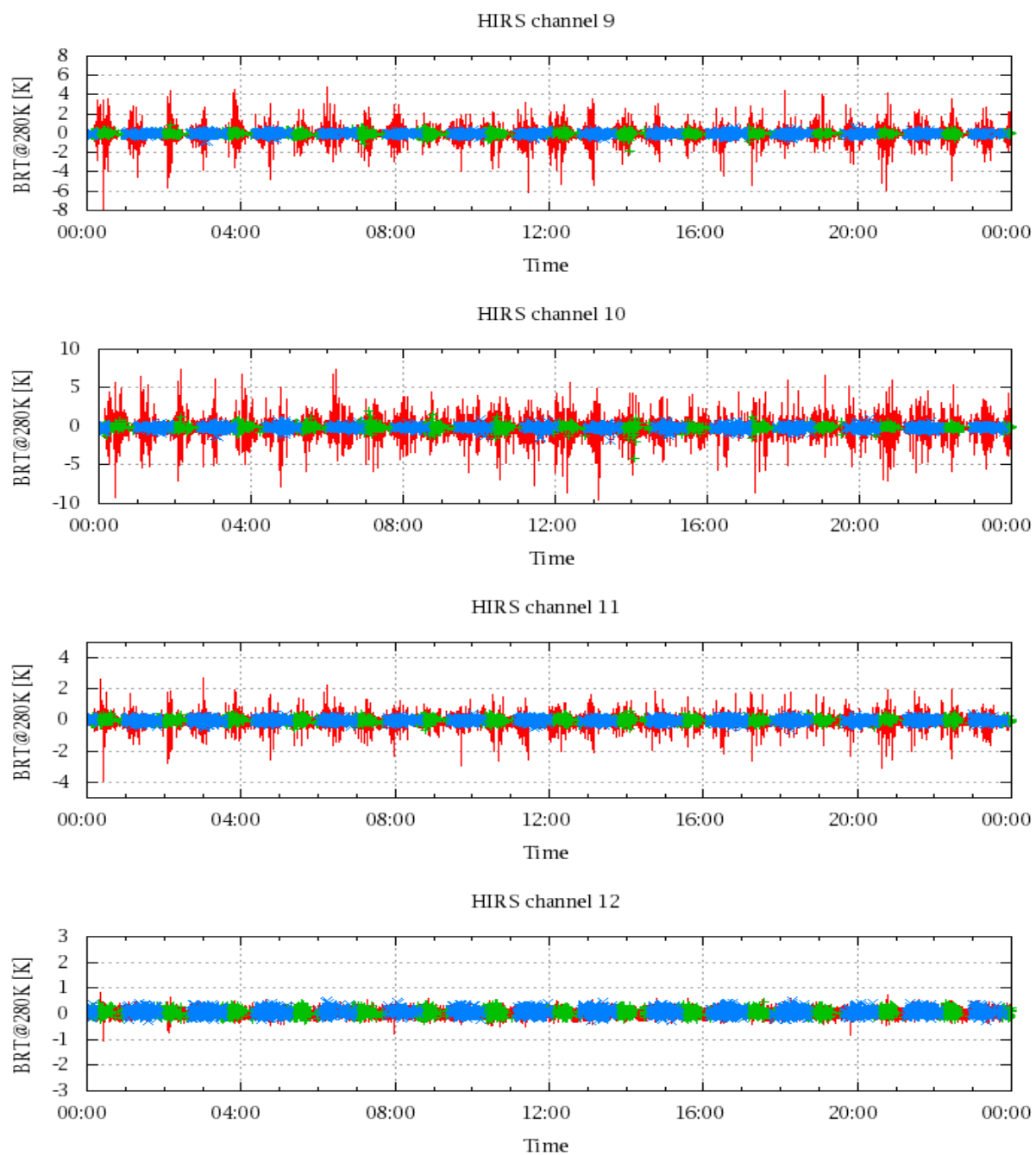


Figure 19: Radiance Differences in BRT

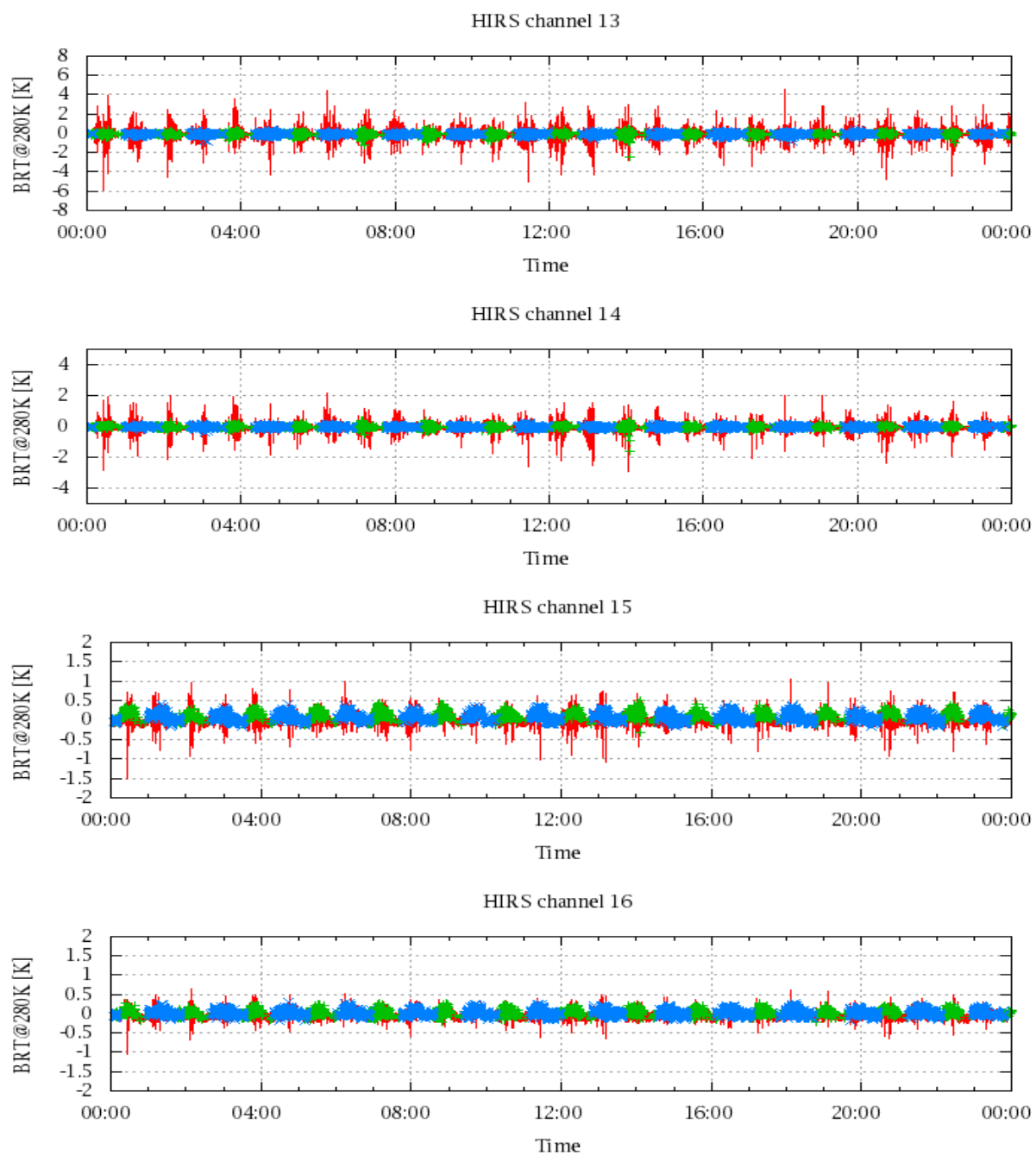


Figure 20: Radiance Differences in BRT

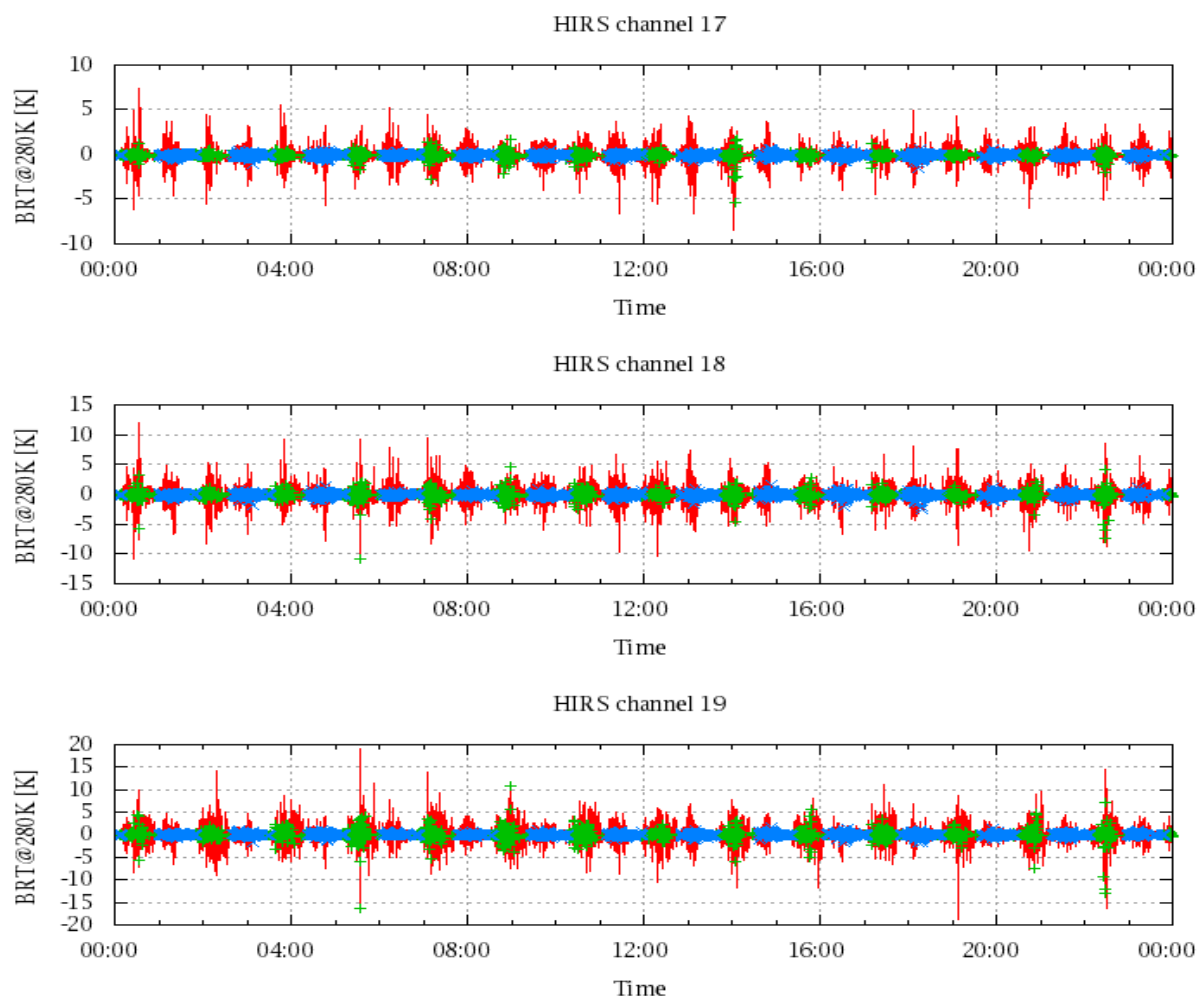


Figure 21: Radinace Differences in BRT