IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

14/03/2018 00:00:00 - 15/03/2018 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 14/03/2018 00:00:00 - 15/03/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 14/03/2018 00:00:00 - 15/03/2018 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)	4326	4334	20180314143427.670	20180314143429.396
PX1 (130)	4365	4367	20180314143437.615	20180314143438.045
PX1 (130)	4370	4384	20180314143438.697	20180314143443.236
PX1 (130)	13456	13464	20180314151501.832	20180314151503.563
PX1 (130)	13507	13512	20180314151515.887	20180314151516.969
PX2 (135)	4326	4334	20180314143427.670	20180314143429.396
PX2 (135)	4370	4384	20180314143438.697	20180314143443.236
PX2 (135)	13455	13464	20180314151501.617	20180314151503.563
PX2 (135)	13504	13506	20180314151515.238	20180314151515.672
PX2 (135)	13507	13511	20180314151515.887	20180314151516.754
PX3 (140)	4326	4334	20180314143427.670	20180314143429.396
PX3 (140)	4367	4369	20180314143438.045	20180314143438.478
PX3 (140)	4370	4384	20180314143438.697	20180314143443.236
PX3 (140)	13455	13464	20180314151501.617	20180314151503.563
PX3 (140)	13507	13511	20180314151515.887	20180314151516.754
PX4 (145)	4326	4334	20180314143427.670	20180314143429.396
PX4 (145)	4370	4384	20180314143438.697	20180314143443.236
PX4 (145)	13455	13464	20180314151501.617	20180314151503.563
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	13506	13511	20180314151515.672	20180314151516.754
IMG (150)	13241	13250	20180314143427.455	20180314143429.396
IMG (150)	13282	13284	20180314143436.967	20180314143437.400
IMG (150)	13289	13304	20180314143438.478	20180314143441.939
IMG (150)	7203	7212	20180314151501.617	20180314151503.563
IMG (150)	7262	7267	20180314151515.672	20180314151516.754
VER (160)	7057	7063	20180314143433.506	20180314143449.506
VER (160)	8577	8583	20180314151505.512	20180314151521.508
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
14/03/2018 00:00:09	-	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)	99.48 %	-
GQisFlagQual set (PX3)	99.48 %	-
GQisFlagQual set (PX4)	99.51 %	-
GQisFlagQual set (all)	99.49 %	-

Table 4: Quality flags
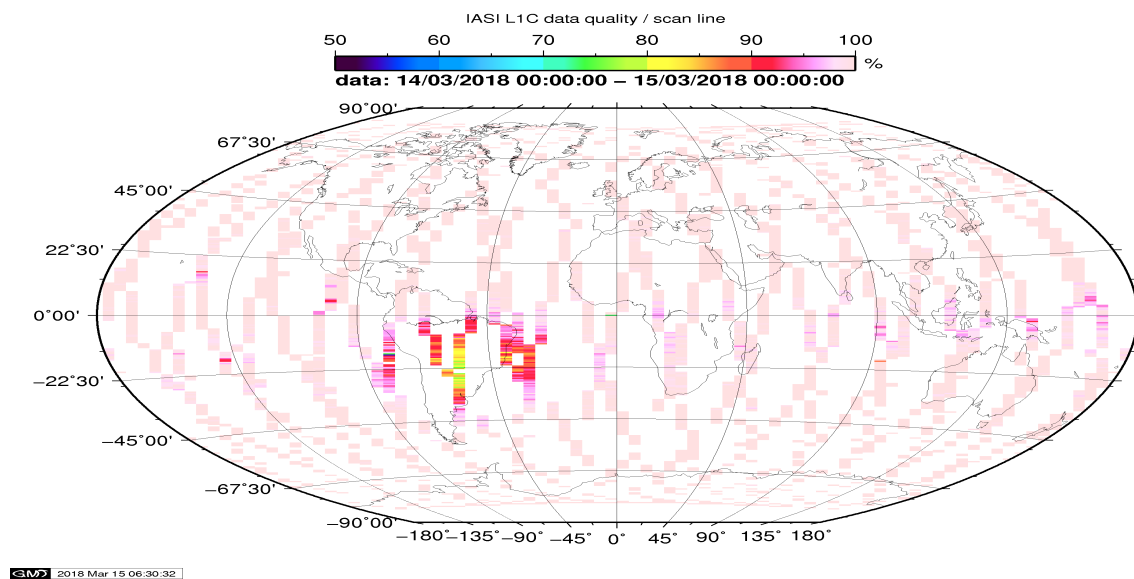
Figure 1: L1C data quality
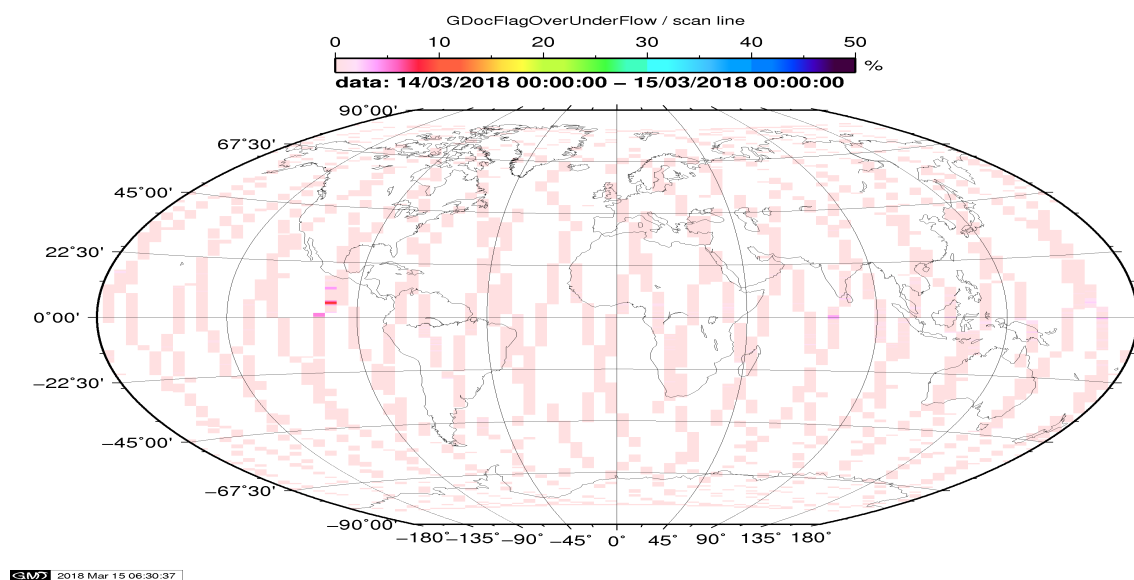
Figure 2: Flag of Over and Under Flows
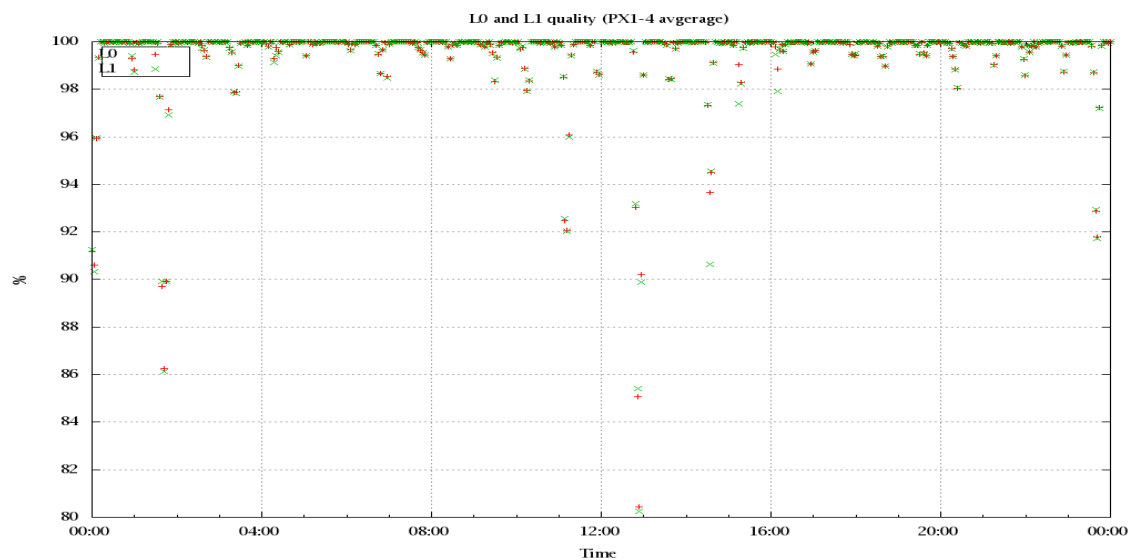
Figure 3: Level 0 and 1C overall quality
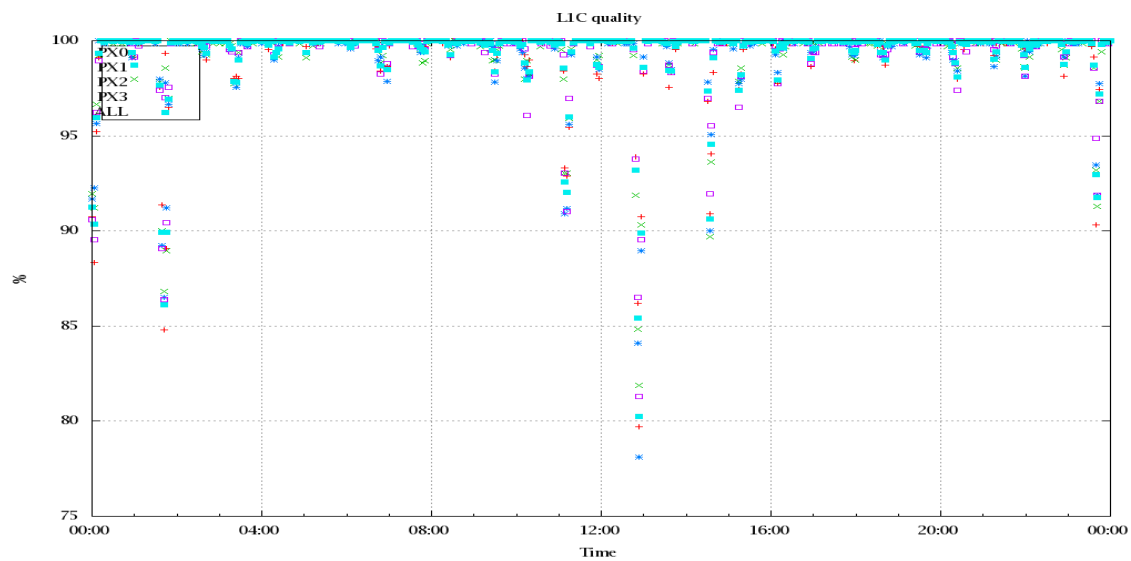
Figure 4: Level 1C quality
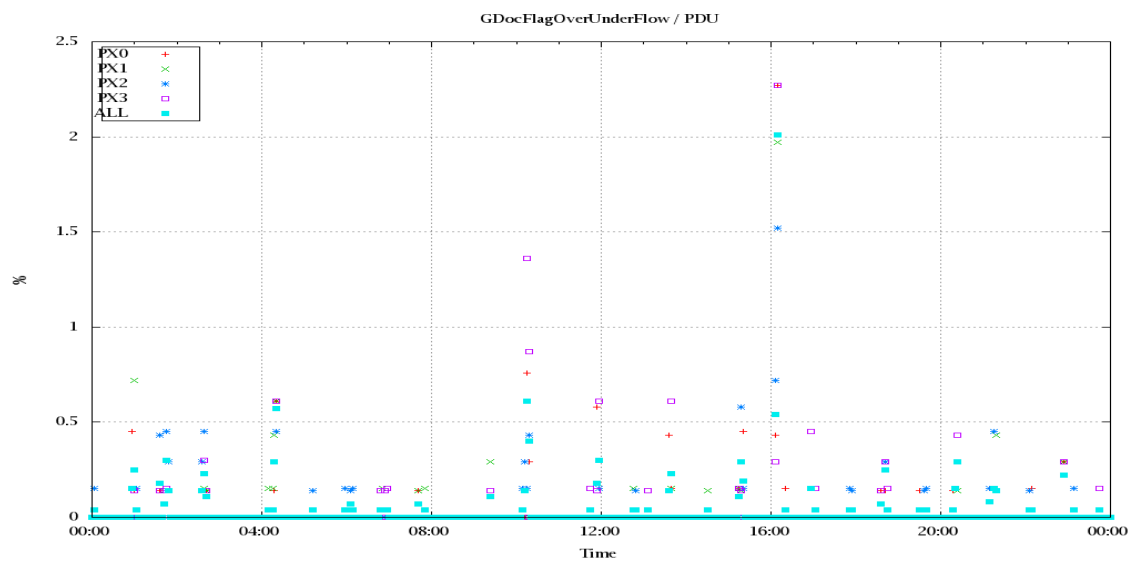
Figure 5: OverUnderFlowFlag timeseries

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.
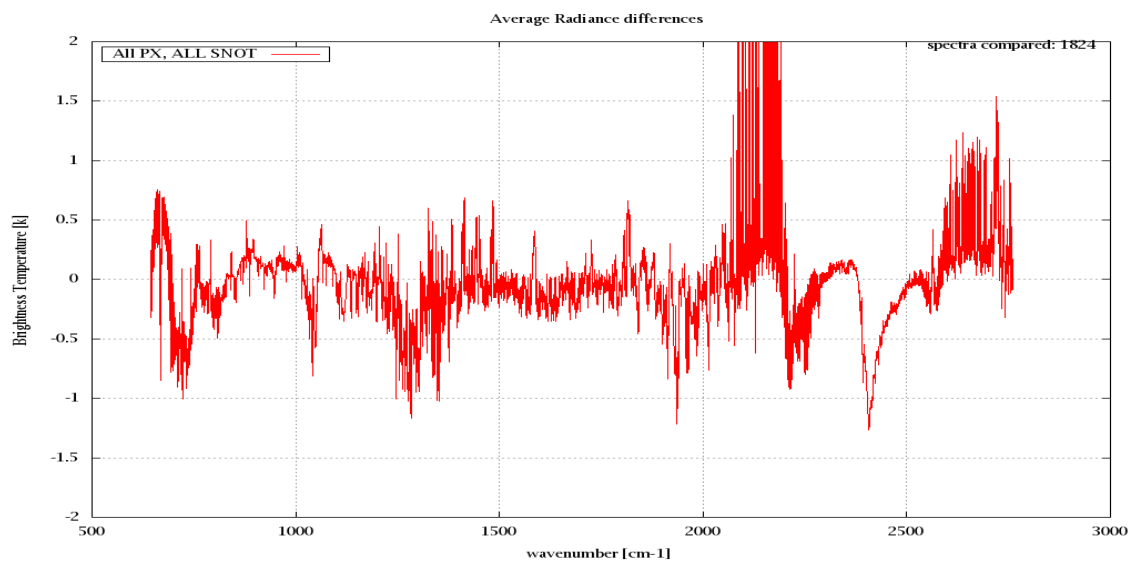
Figure 6: Average Radiance differences: OBS-CAL
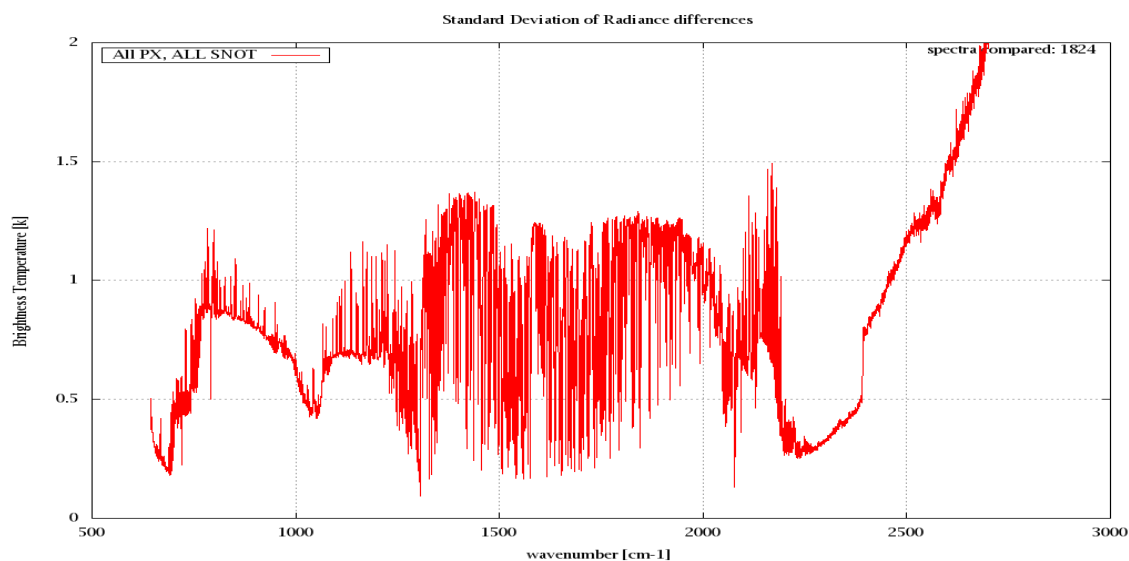
Figure 7: Standard Deviation of Radiance differences
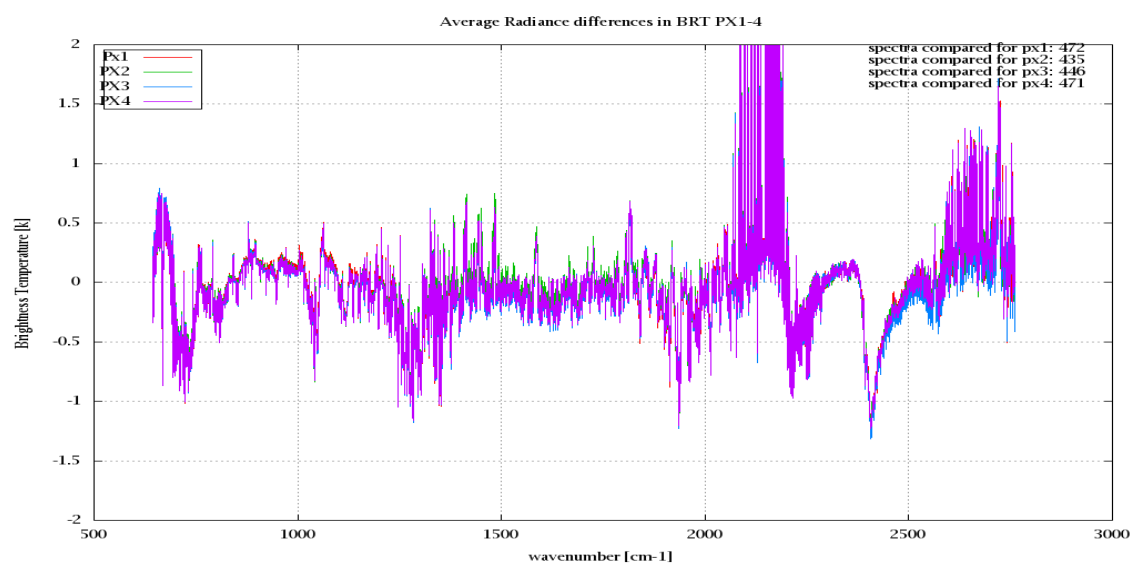
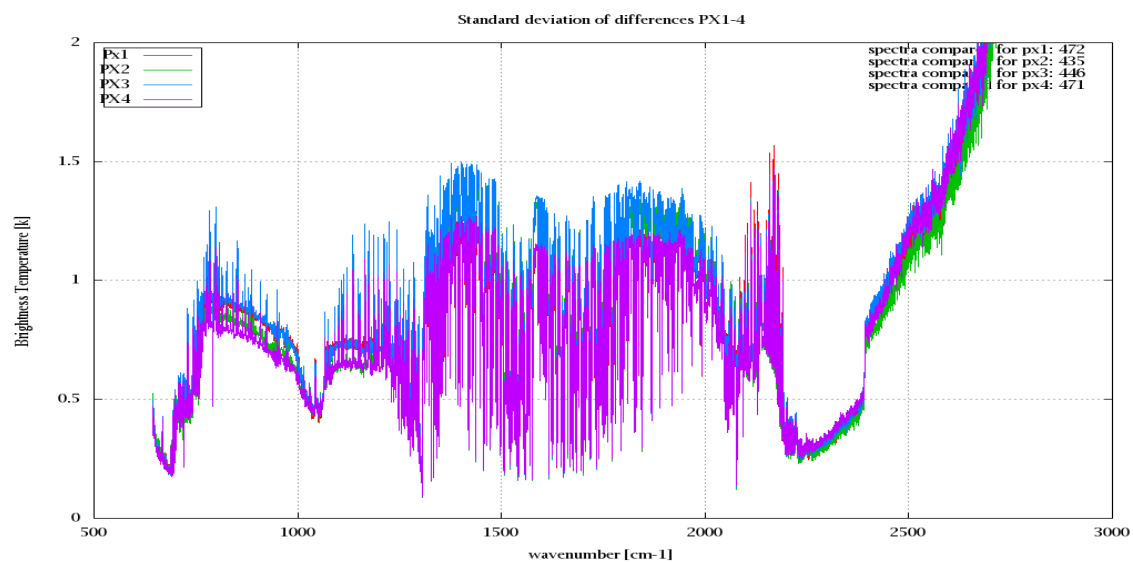Figure 8: Average Radiance differences: OBS-CAL

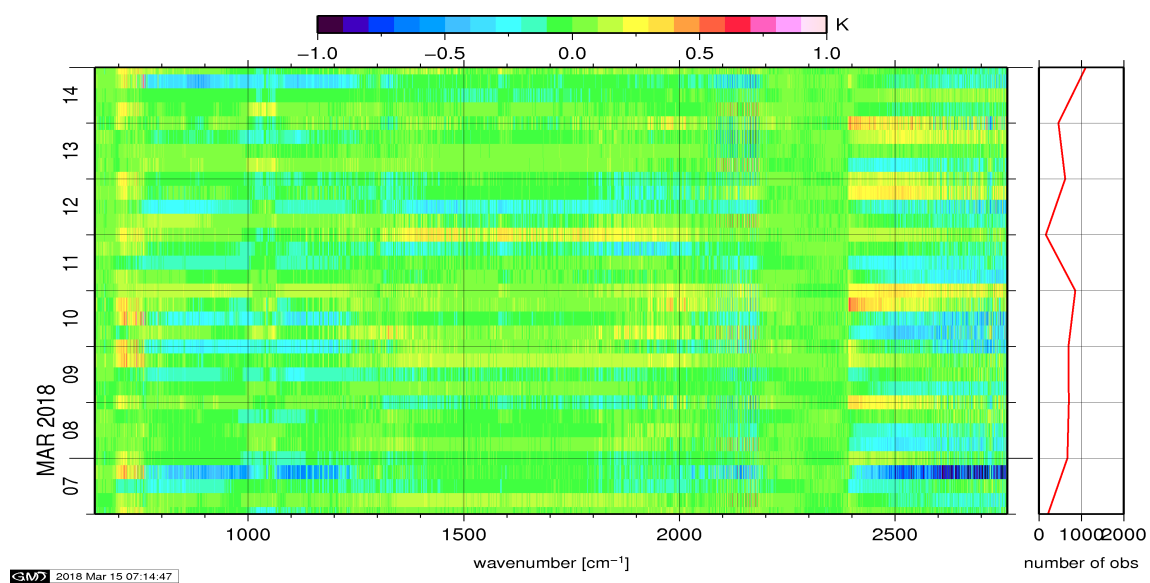Figure 9: Standard Deviation of Radiance differences
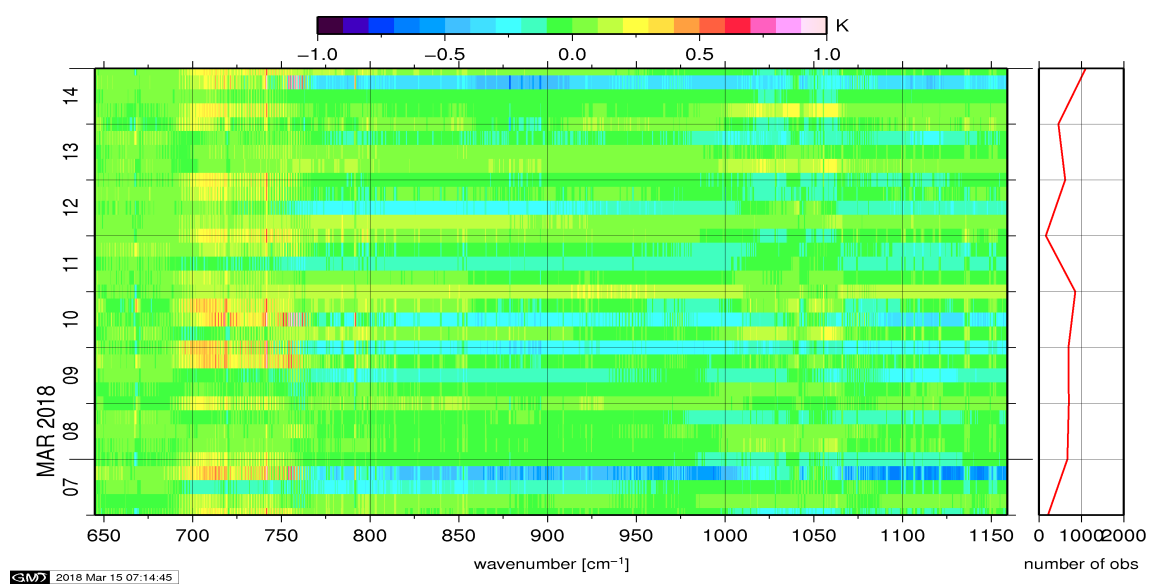
Figure 10: Radiance Anomaly in BRT: All Channels

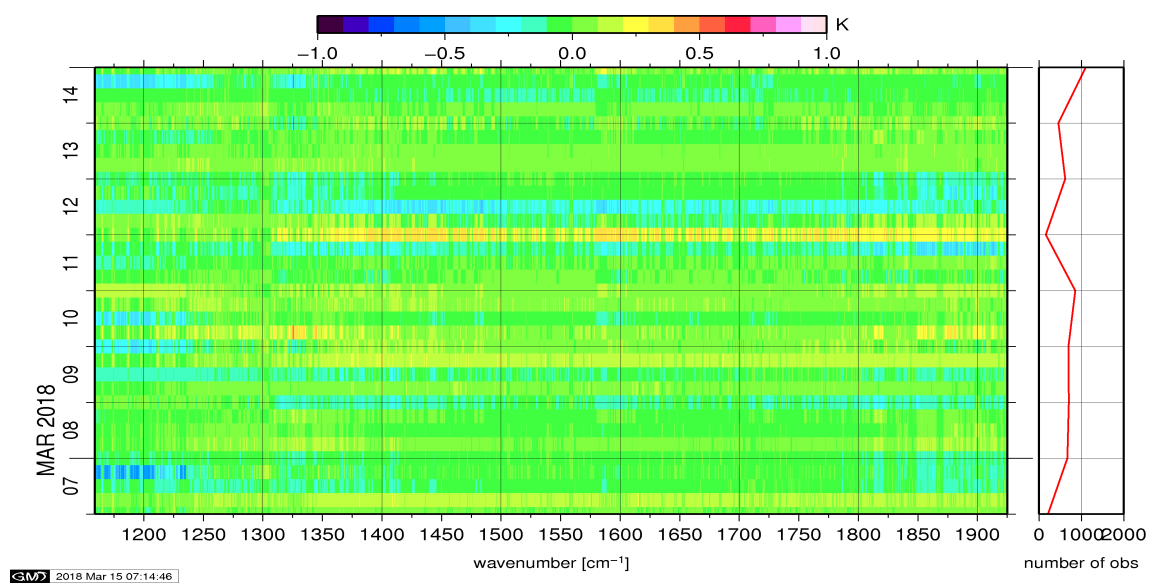Figure 11: Radiance Anomaly in BRT: IASI Band 1

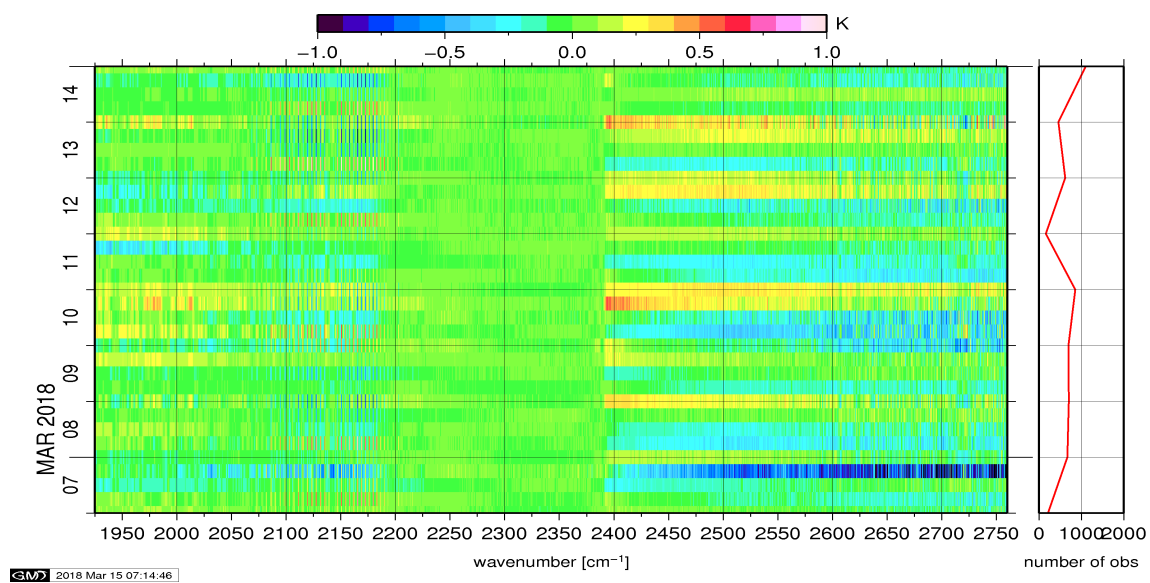Figure 12: Radiance Anomaly in BRT: IASI Band 2
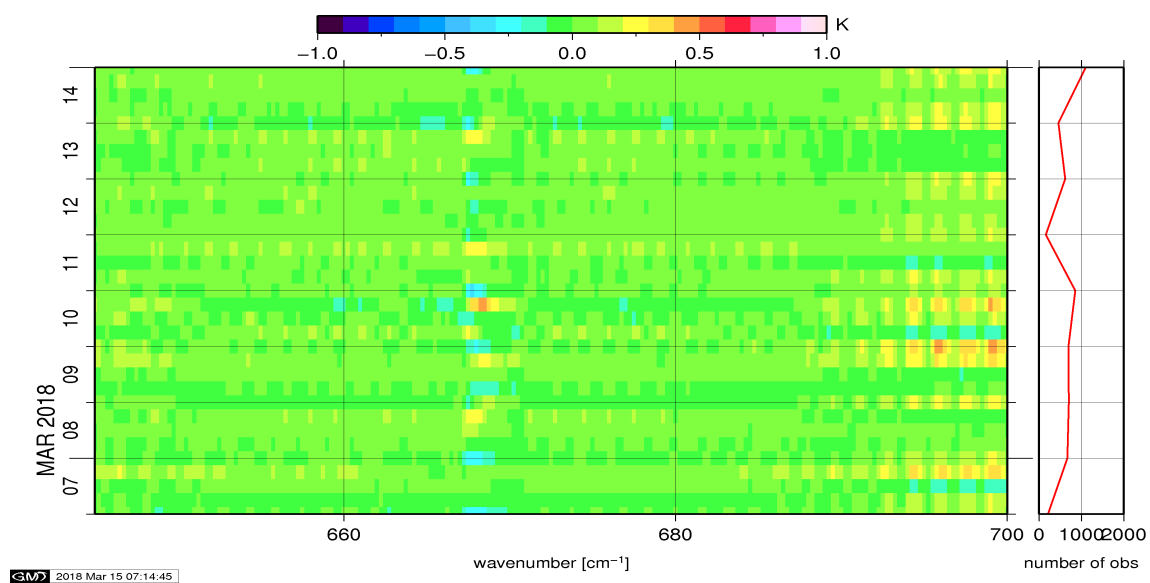

Figure 13: Radiance Anomaly in BRT: IASI Band 3
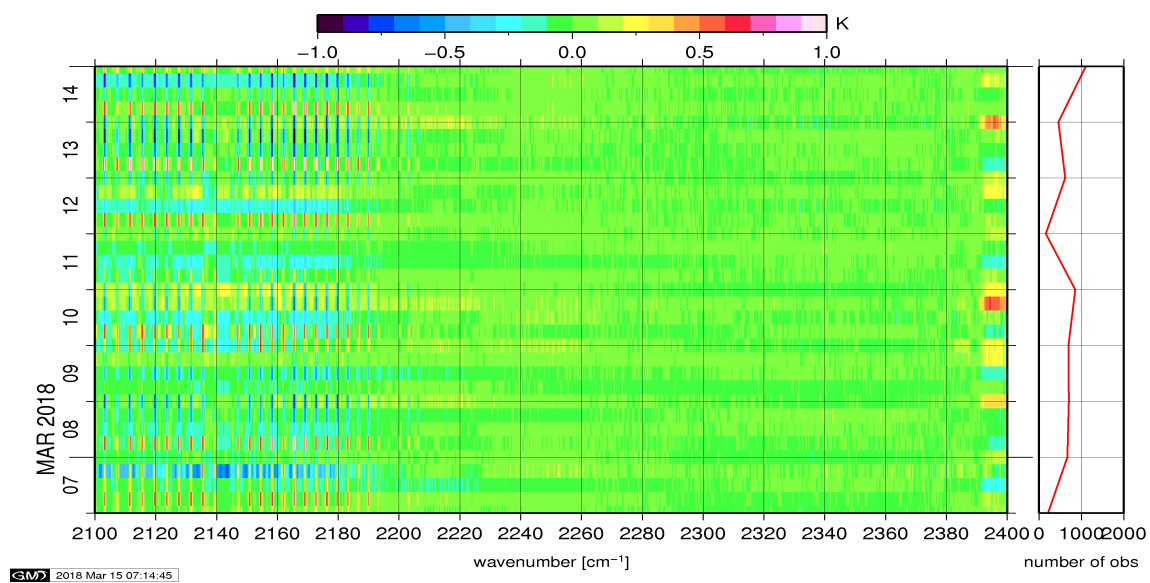
Figure 14: Radiance Anomaly in BRT: CO2 14
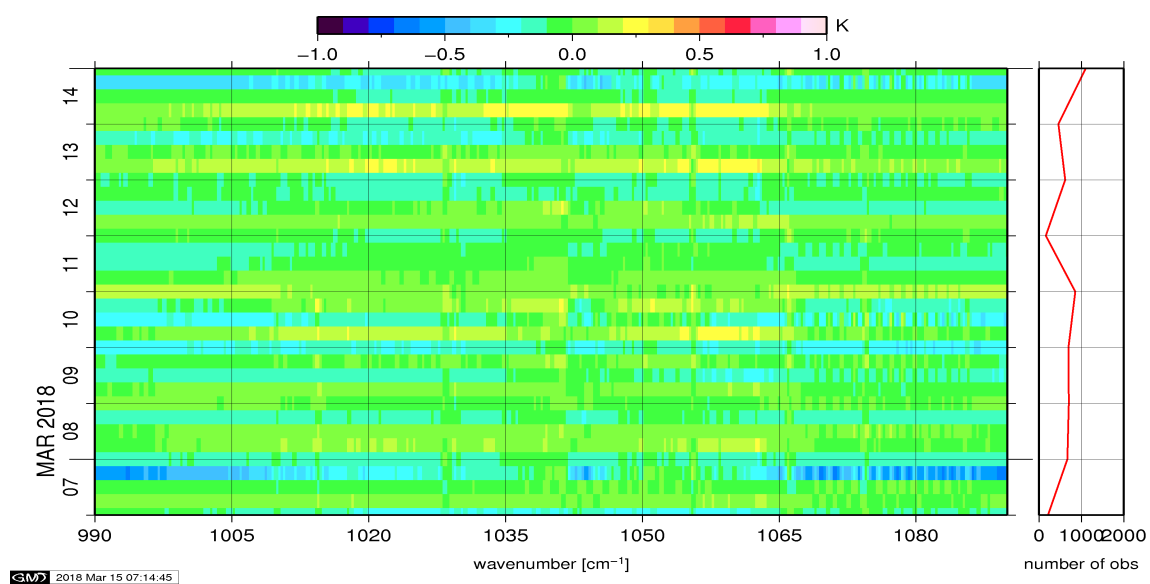

Figure 15: Radiance Anomaly in BRT: CO2 4.3

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.
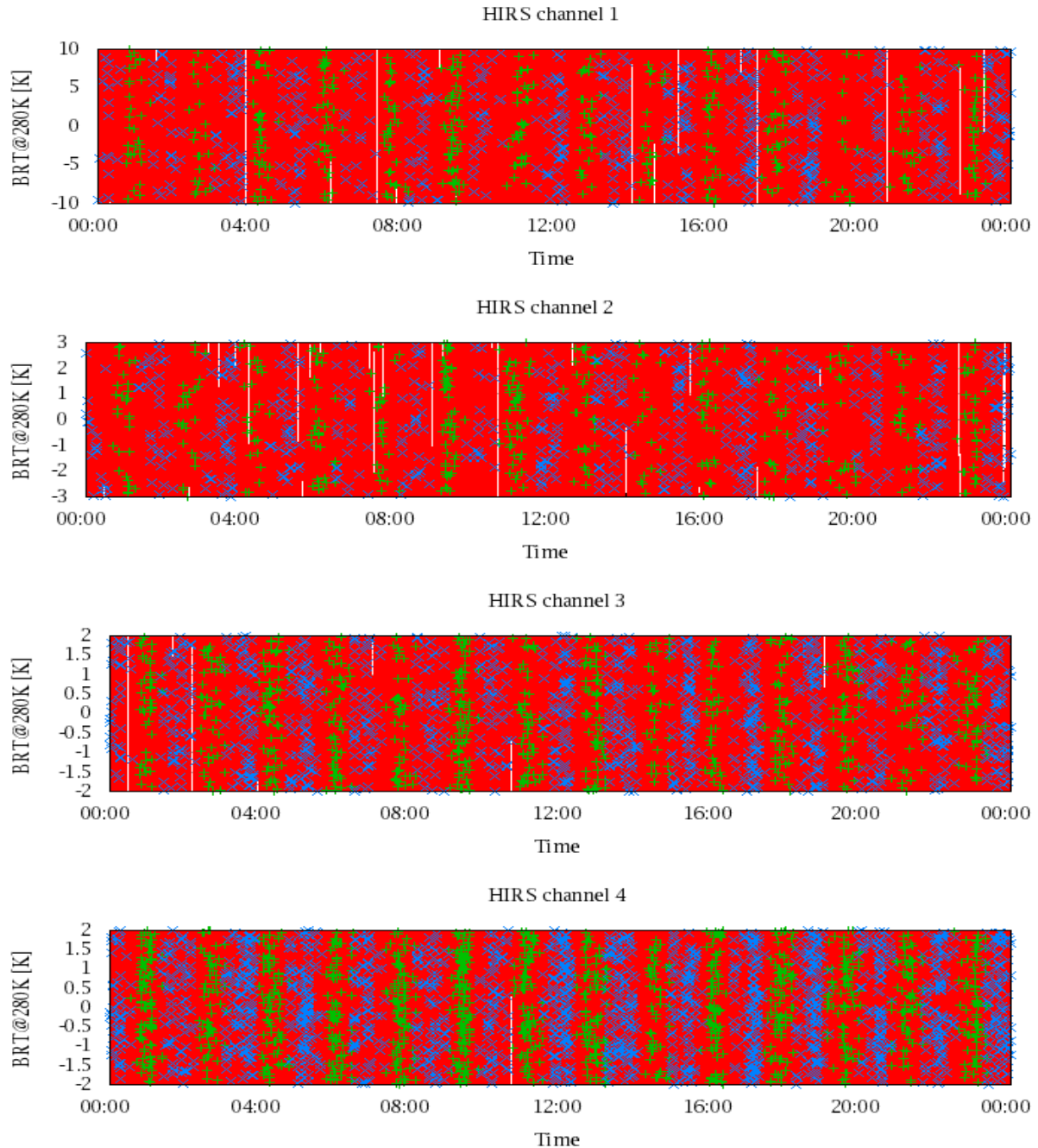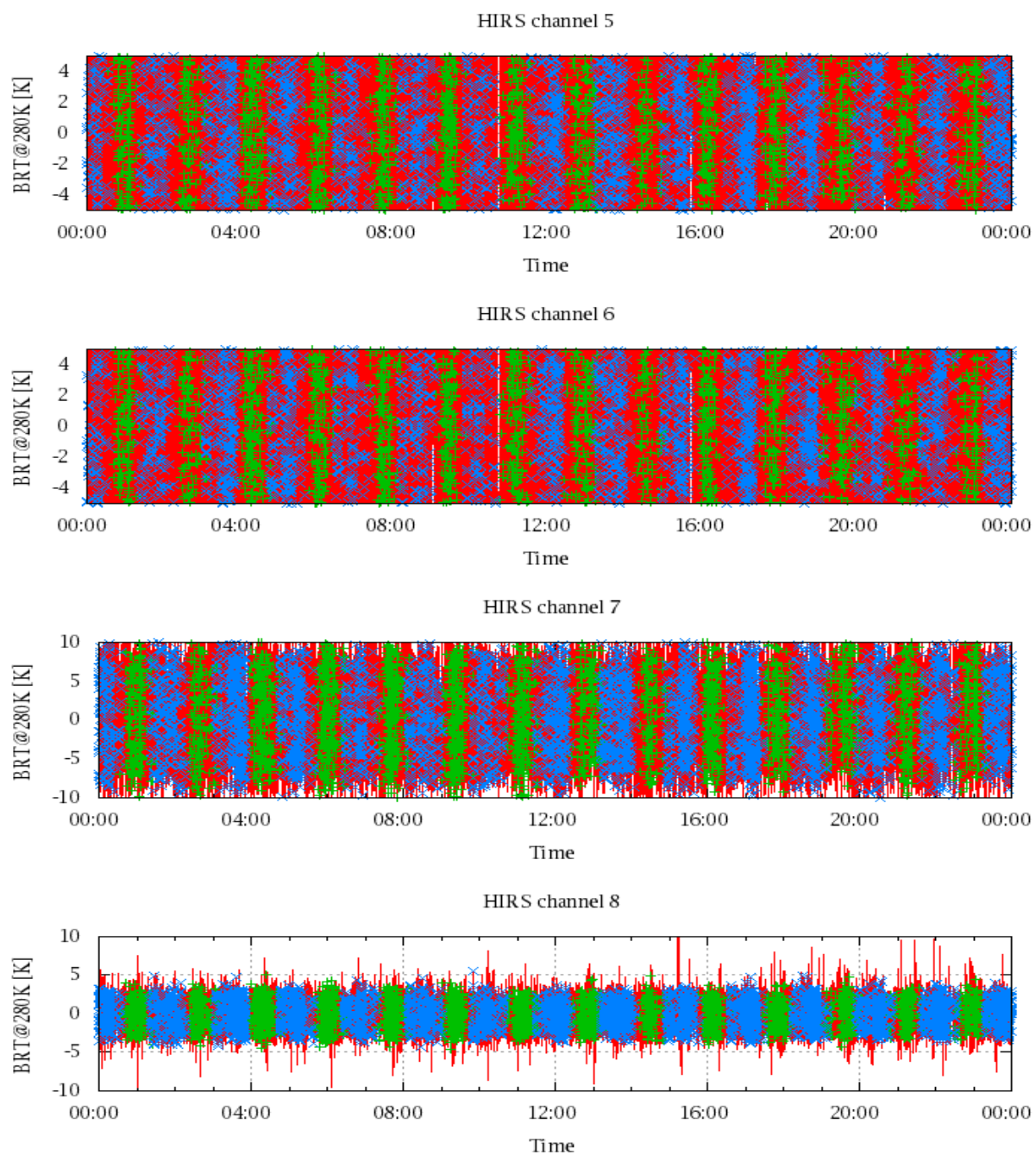

Figure 17: Radiance Differences in BRT
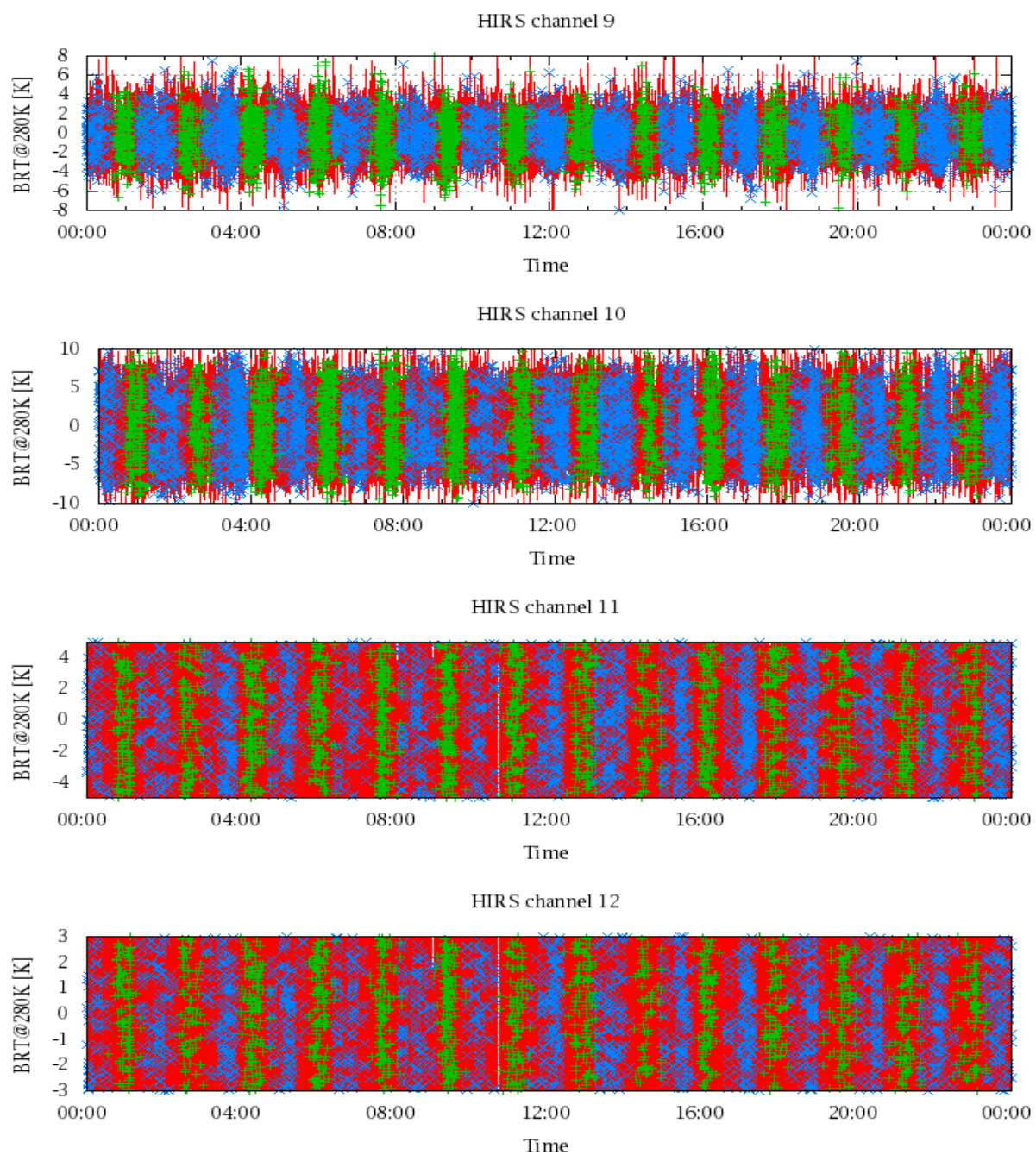
Figure 18: Radiance Differences in BRT

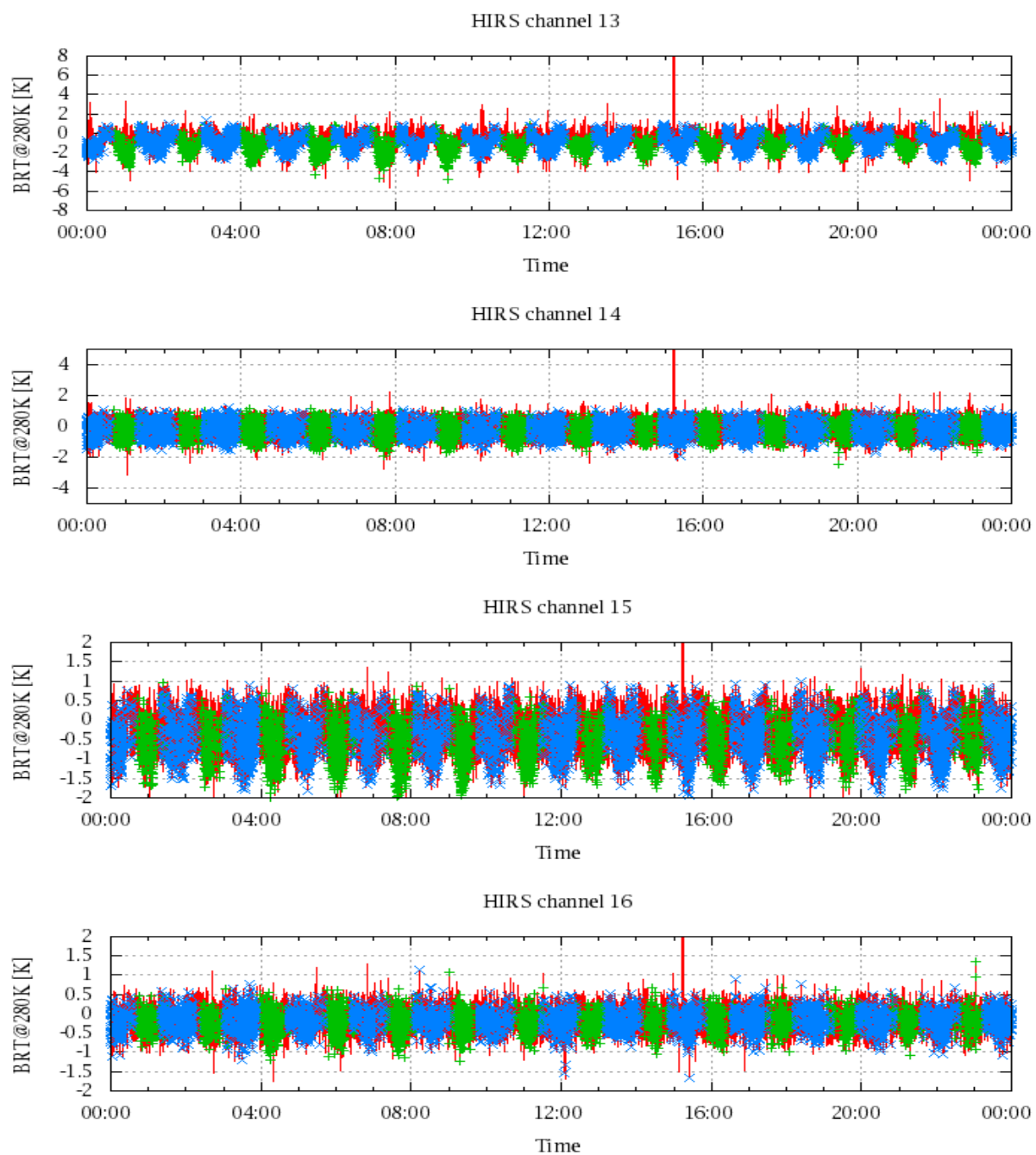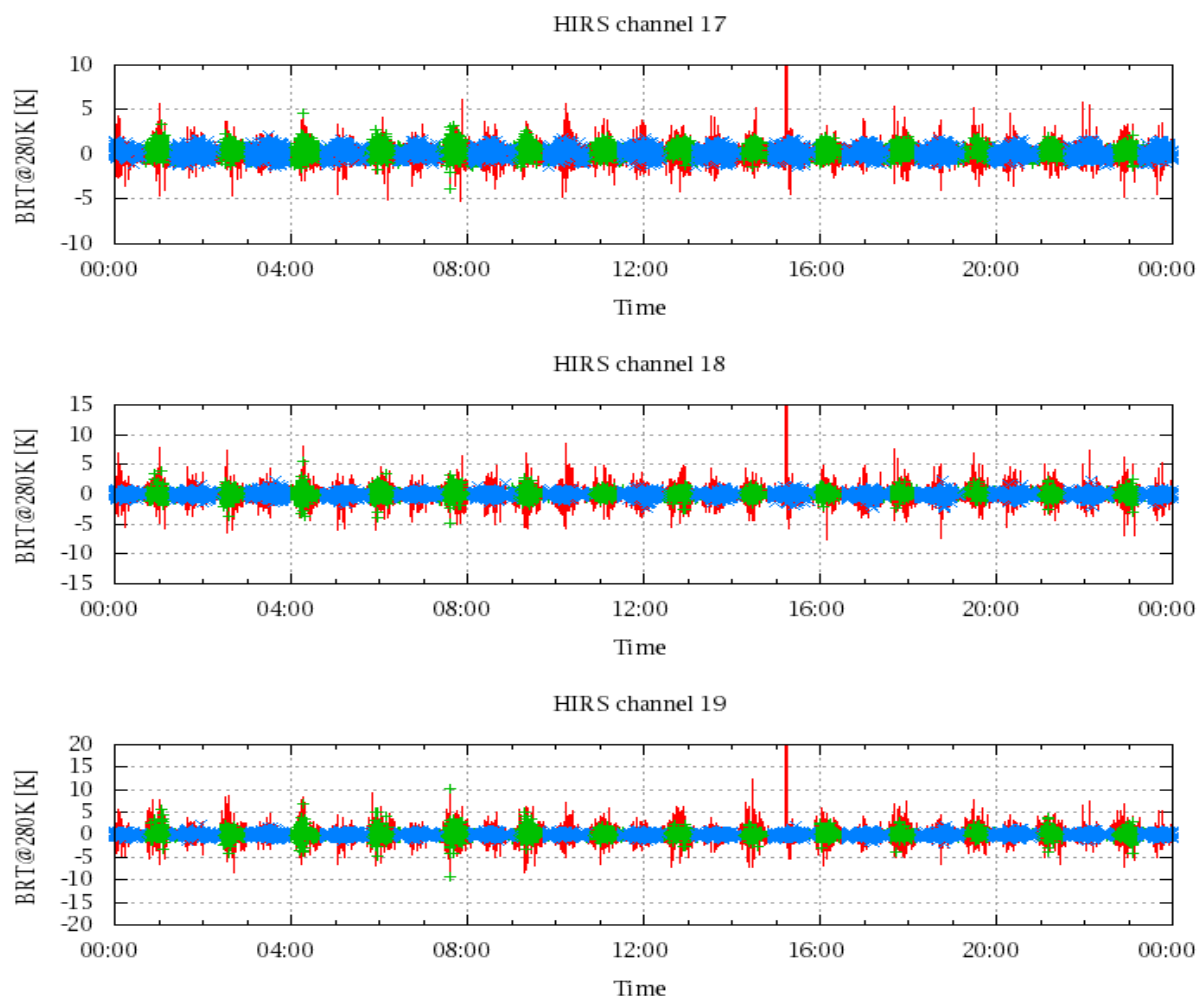Figure 19: Radiance Differences in BRT

Figure 20: Radiance Differences in BRT

Figure 21: Radinace Differences in BRT