IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

26/01/2017 00:00:00 - 27/01/2017 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 26/01/2017 00:00:00 - 27/01/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 26/01/2017 00:00:00 - 27/01/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	447	e
L0 IASI PDUs	446	e
L1 ENG PDUs	446	e
L1 ENG distinct GEPSGranule	447	a
L1 DPX PDUs (RM: IASI-HIRS)	446	e
L1 DPS Files (RM: OBS-CAL NWP based)	446	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	4932	5611	20170126000559.909	20170126000900.010
PX1 (130)	13343	14015	20170126030859.993	20170126031200.094
PX1 (130)	14509	15181	20170126042659.966	20170126043000.106
PX1 (130)	5278	10579	20170126061137.159	20170126074800.055
PX2 (135)	4932	5611	20170126000559.909	20170126000900.010
PX2 (135)	13343	14015	20170126030859.993	20170126031200.094
PX2 (135)	14509	15181	20170126042659.966	20170126043000.106
PX2 (135)	5278	10579	20170126061137.159	20170126074800.055
PX3 (140)	4932	5611	20170126000559.909	20170126000900.010
PX3 (140)	13343	14015	20170126030859.993	20170126031200.094
PX3 (140)	14509	15181	20170126042659.966	20170126043000.106
PX3 (140)	5278	10579	20170126061137.159	20170126074800.055
PX4 (145)	4932	5611	20170126000559.909	20170126000900.010
PX4 (145)	13343	14015	20170126030859.993	20170126031200.094
PX4 (145)	14509	15181	20170126042659.966	20170126043000.106
PX4 (145)	5278	10579	20170126061137.159	20170126074800.055

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	9360	10127	20170126000559.909	20170126000900.010
IMG (150)	6875	7639	20170126030859.993	20170126031200.094
IMG (150)	10381	11145	20170126042659.966	20170126043000.106
IMG (150)	4290	12483	20170126061137.159	20170126074800.055
VER (160)	9768	9879	20170126000557.959	20170126000901.955
VER (160)	244	360	20170126030853.938	20170126031205.934
VER (160)	3169	3285	20170126042653.912	20170126043005.942
VER (160)	7094	10710	20170126061133.913	20170126074805.891
AUX (180)	5202	5225	20170126000558.393	20170126000902.389
AUX (180)	6574	6598	20170126030854.372	20170126031206.363
AUX (180)	7159	7183	20170126042654.345	20170126043006.376
AUX (180)	7944	8668	20170126061134.346	20170126074806.325

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
26/01/2017 00:00:13	-	Normal operation

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	446	e
L1 ENG PDUs	446	e
L1 ENG distinct GEPSGranule	447	a
GQisFlagQual set (PX1)	99.45 %	-
GQisFlagQual set (PX2)	99.47 %	-
GQisFlagQual set (PX3)	99.46 %	-
GQisFlagQual set (PX4)	99.49 %	-
GQisFlagQual set (all)	99.47 %	-

Table 4: Quality flags

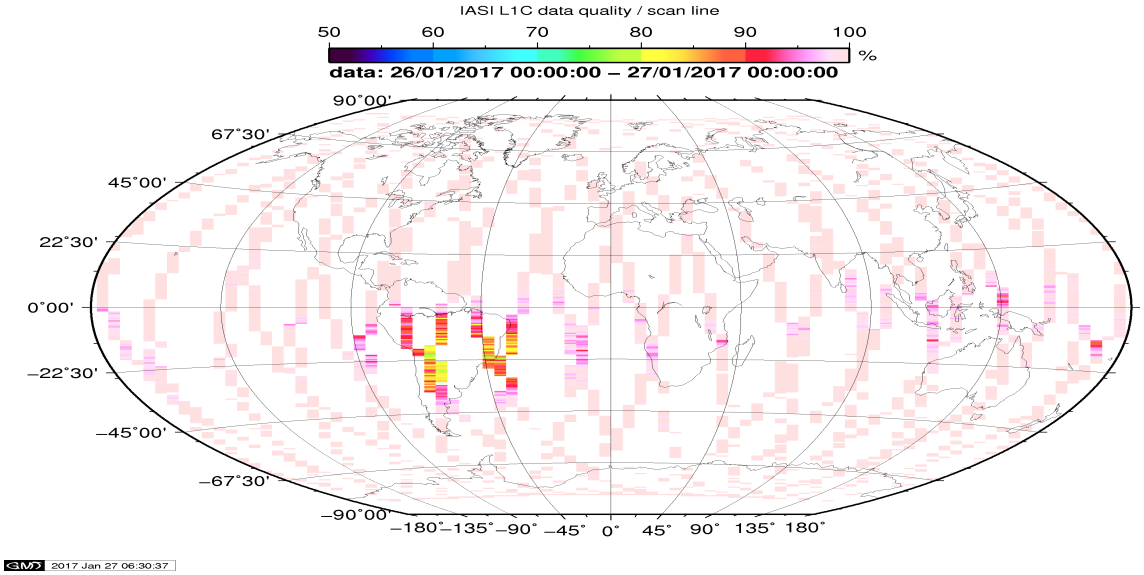

Figure 1: L1C data quality

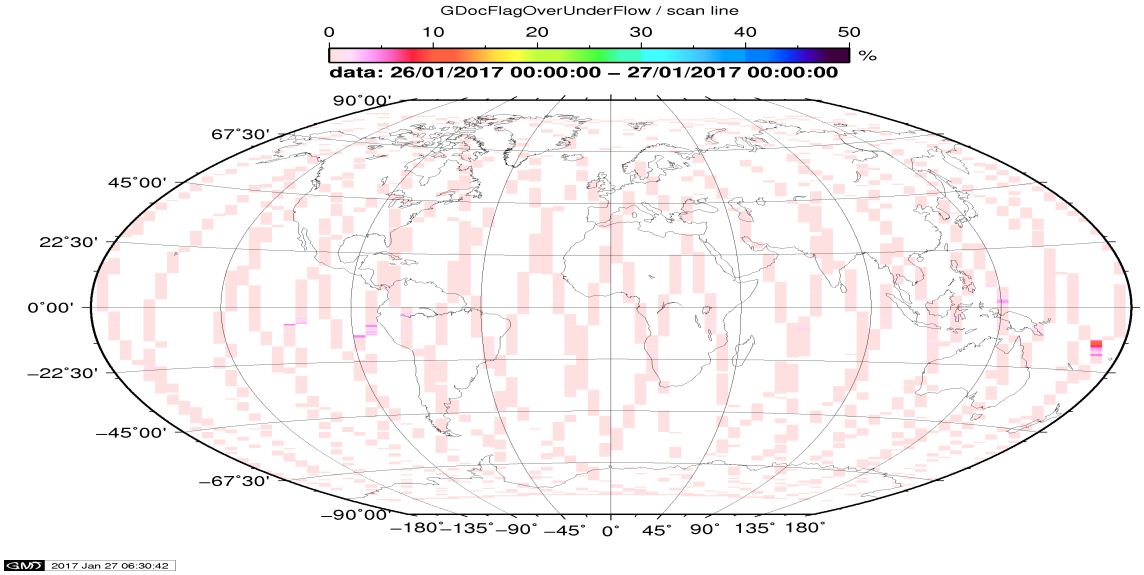

Figure 2: Flag of Over and Under Flows

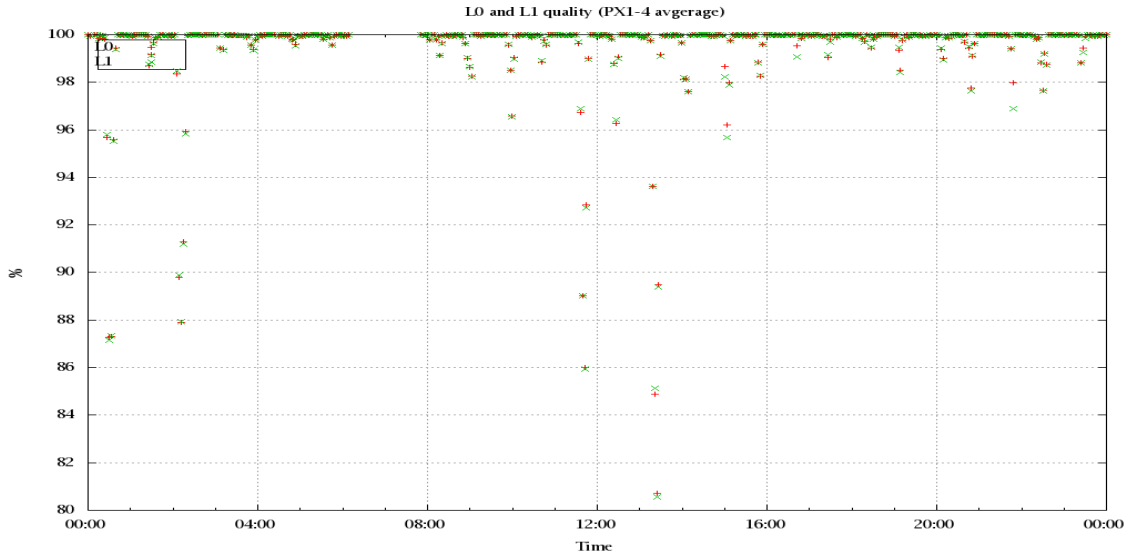

Figure 3: Level 0 and 1C overall quality

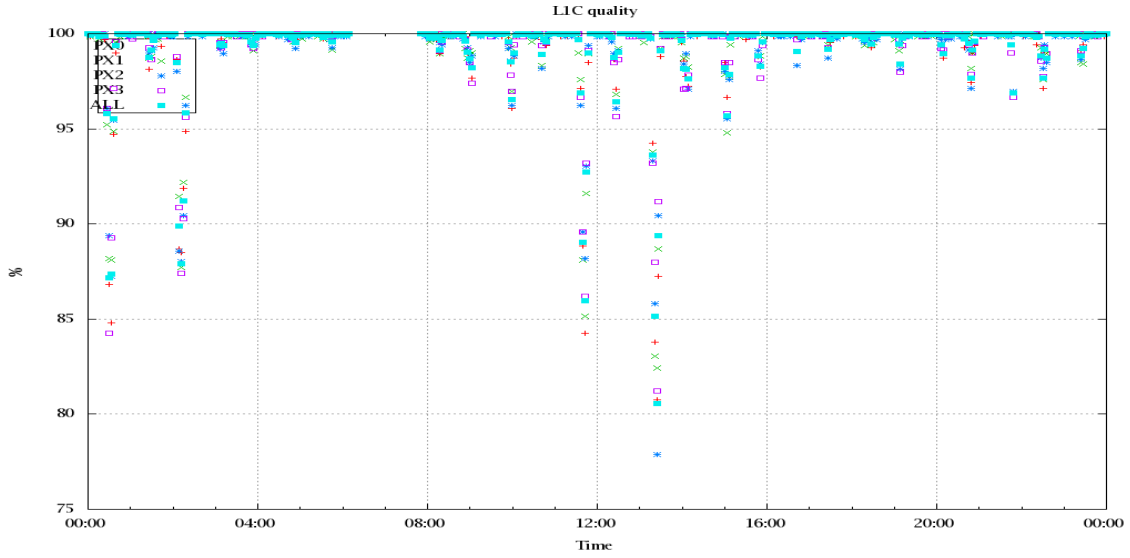

Figure 4: Level 1C quality

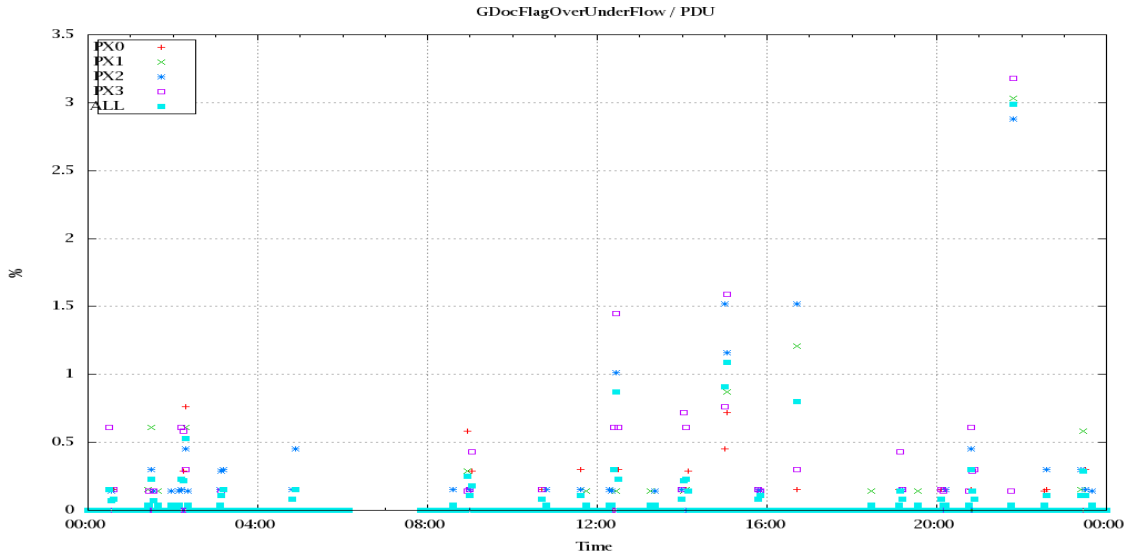

Figure 5: OverUnderFlowFlag timeseries

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.

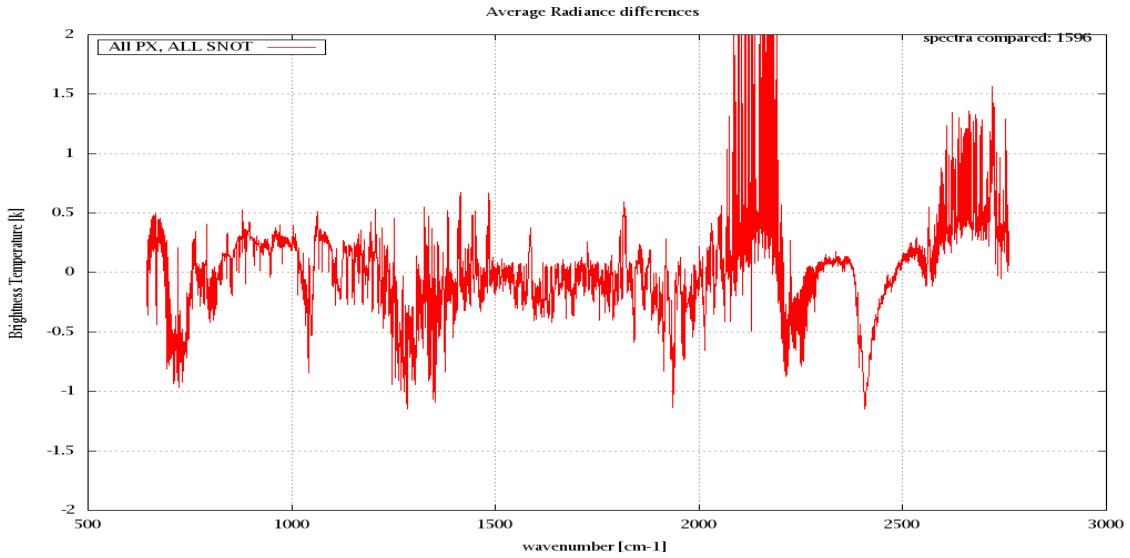

Figure 6: Average Radiance differences: OBS-CAL

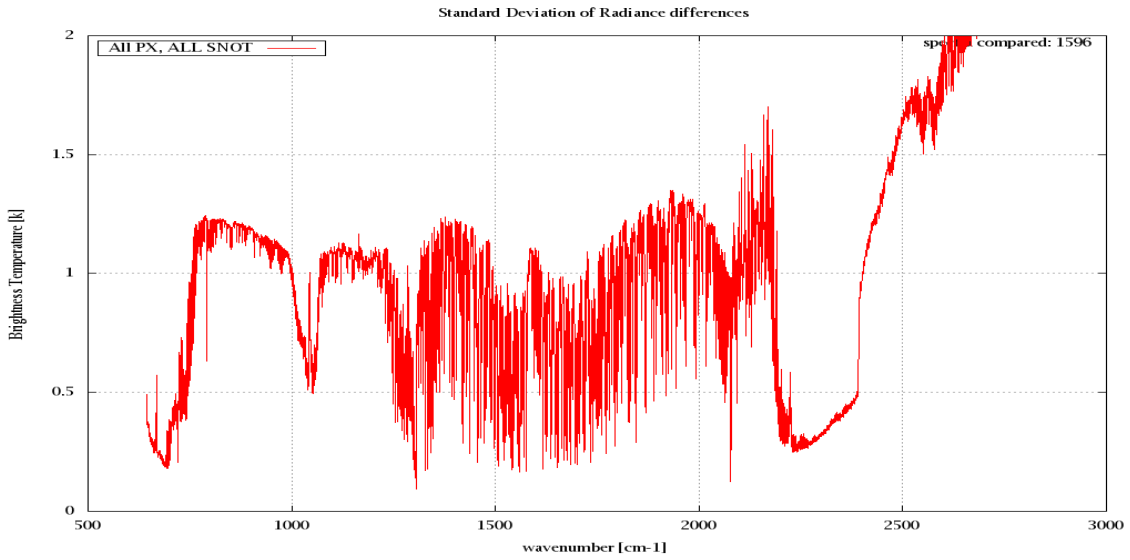

Figure 7: Standard Deviation of Radiance differences

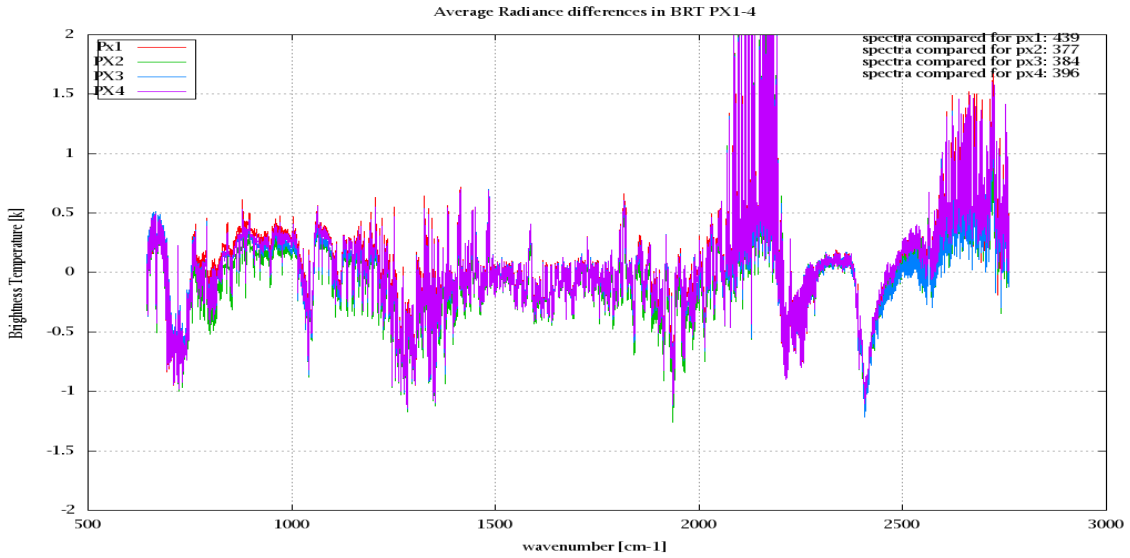

Figure 8: Average Radiance differences: OBS-CAL

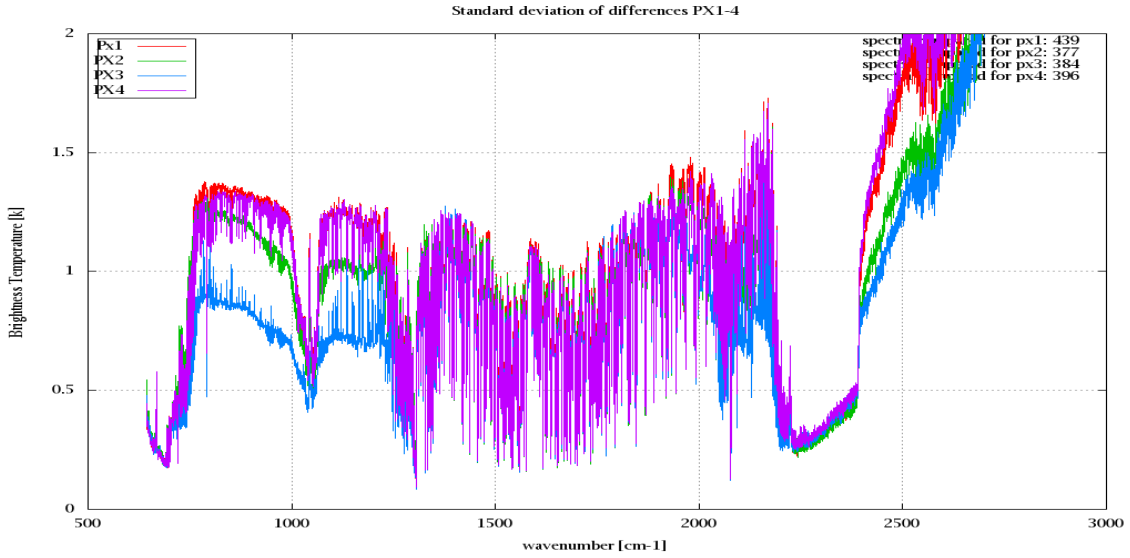

Figure 9: Standard Deviation of Radiance differences

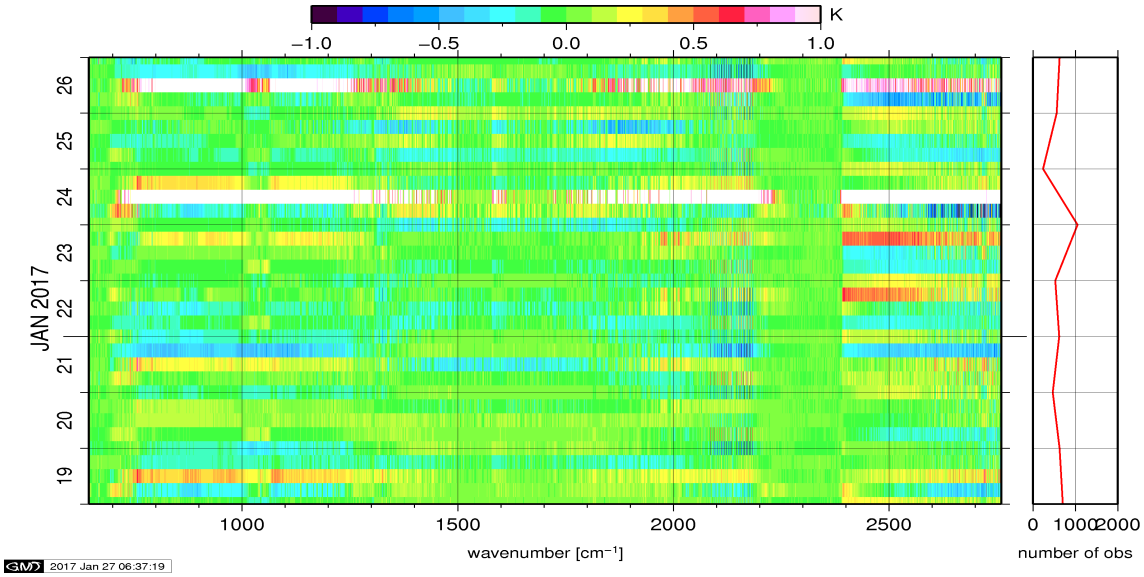

Figure 10: Radiance Anomaly in BRT: All Channels

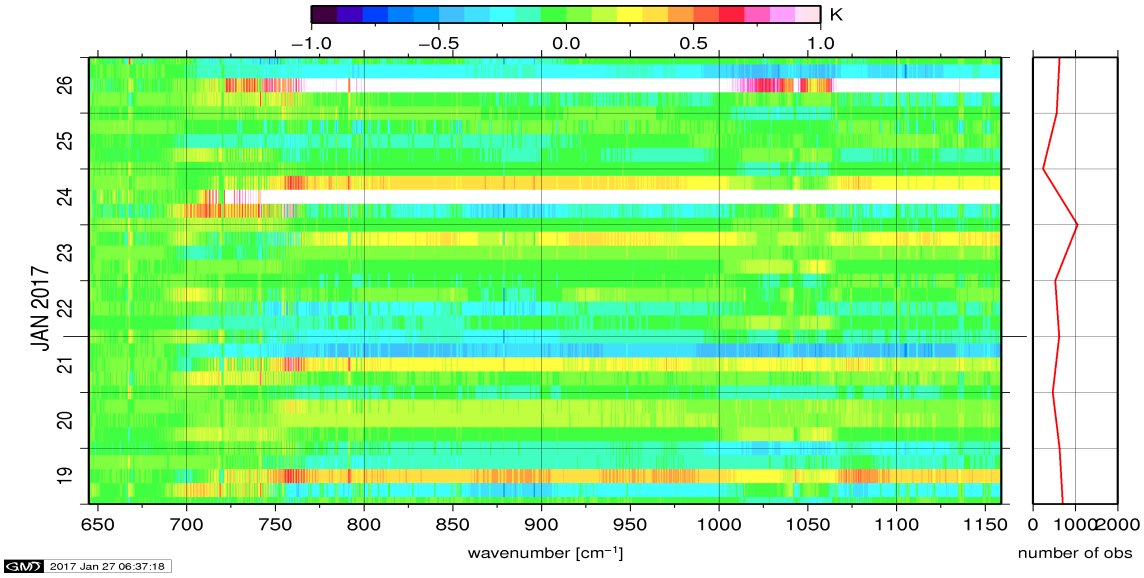

Figure 11: Radiance Anomaly in BRT: IASI Band 1

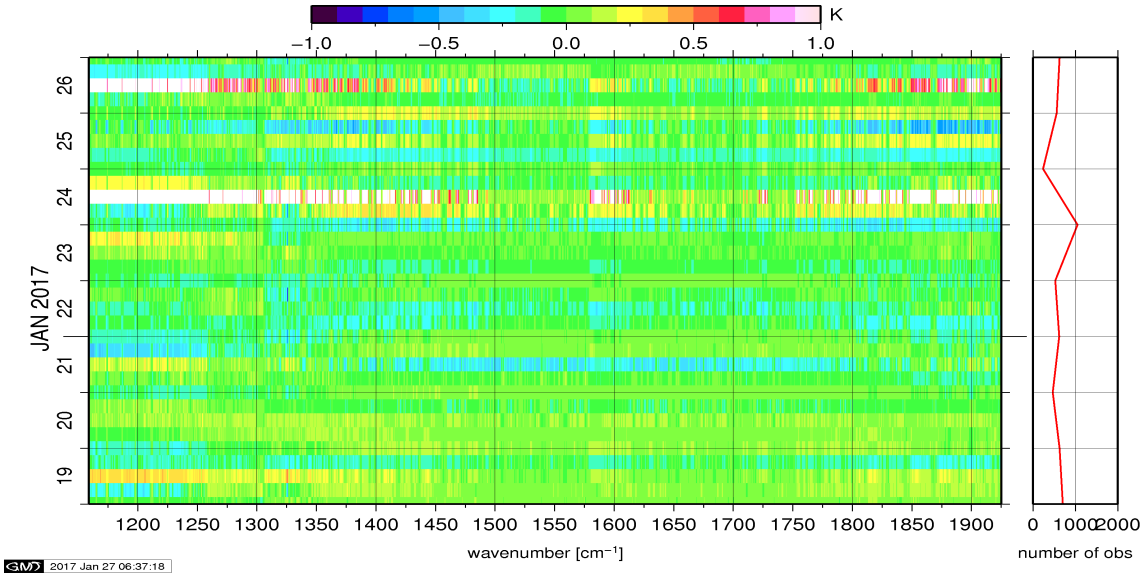

Figure 12: Radiance Anomaly in BRT: IASI Band 2

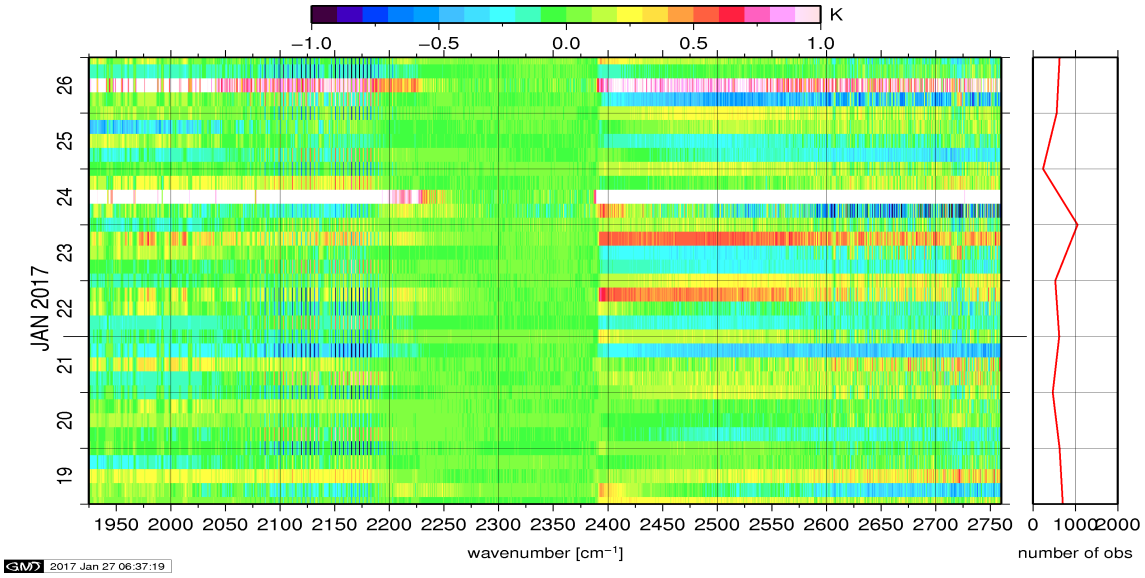

Figure 13: Radiance Anomaly in BRT: IASI Band 3

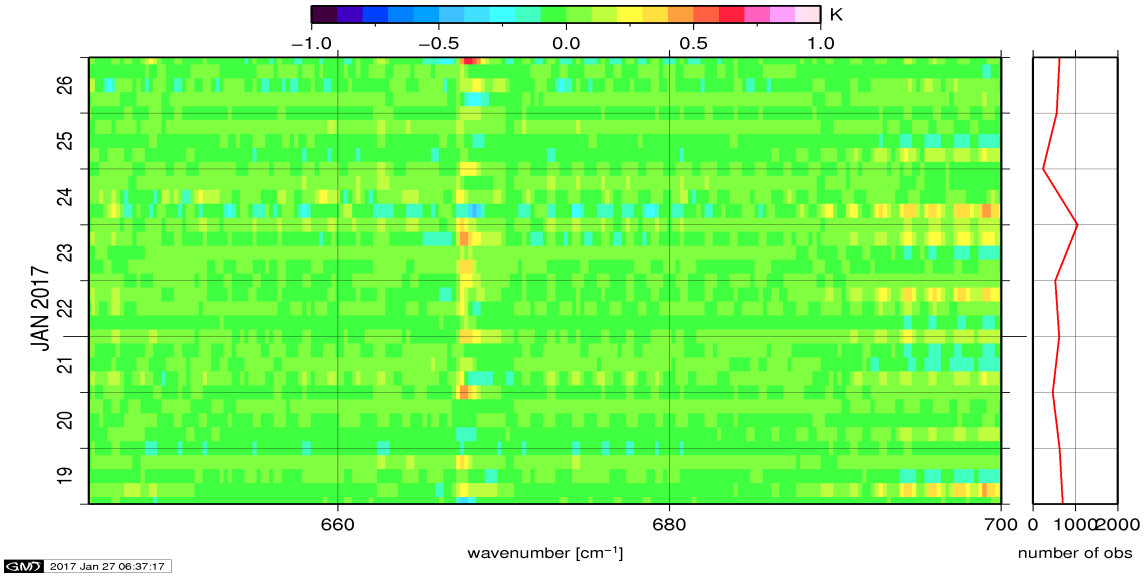

Figure 14: Radiance Anomaly in BRT: CO2 14

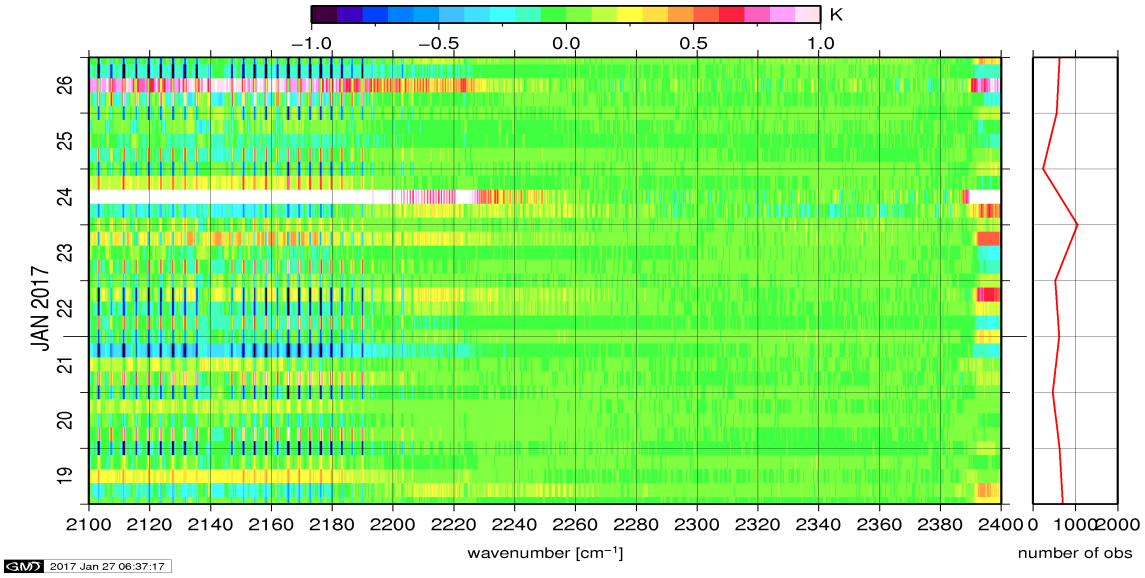

Figure 15: Radiance Anomaly in BRT: CO2 4.3

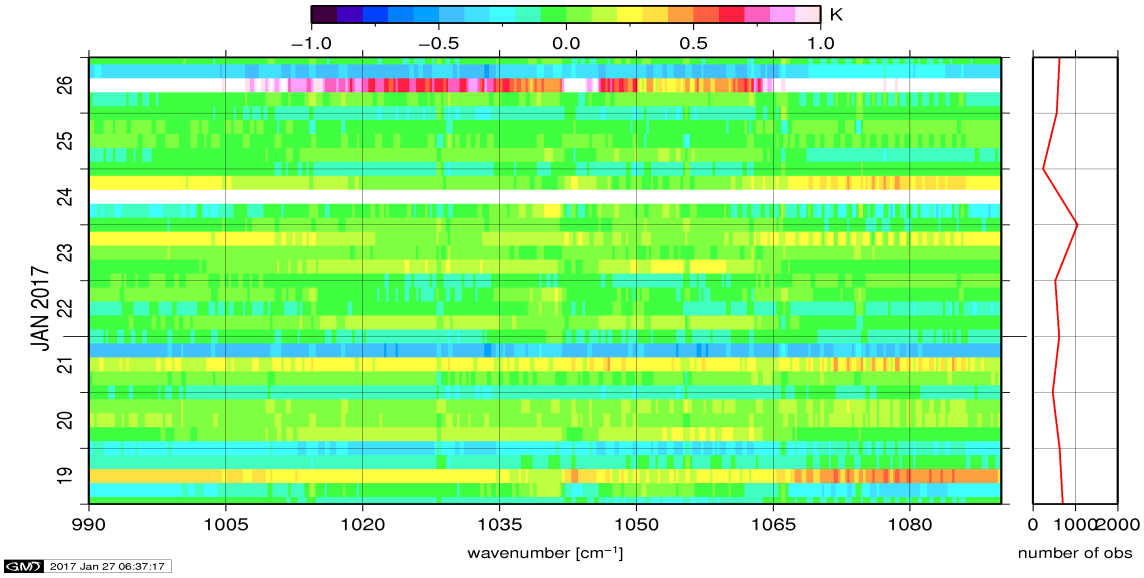

Figure 16: Radiance Anomaly in BRT: O3

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.

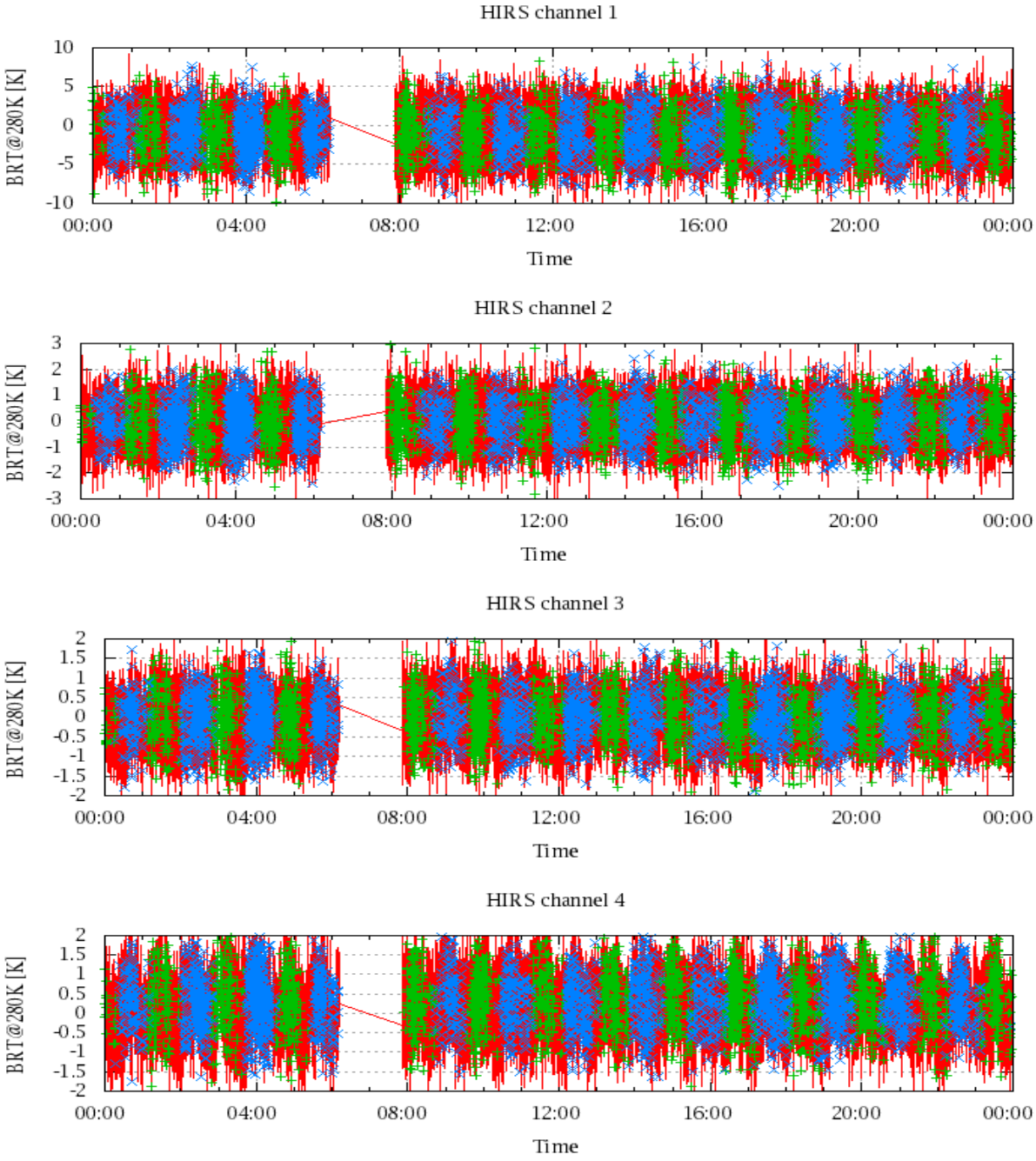

Figure 17: Radiance Differences in BRT

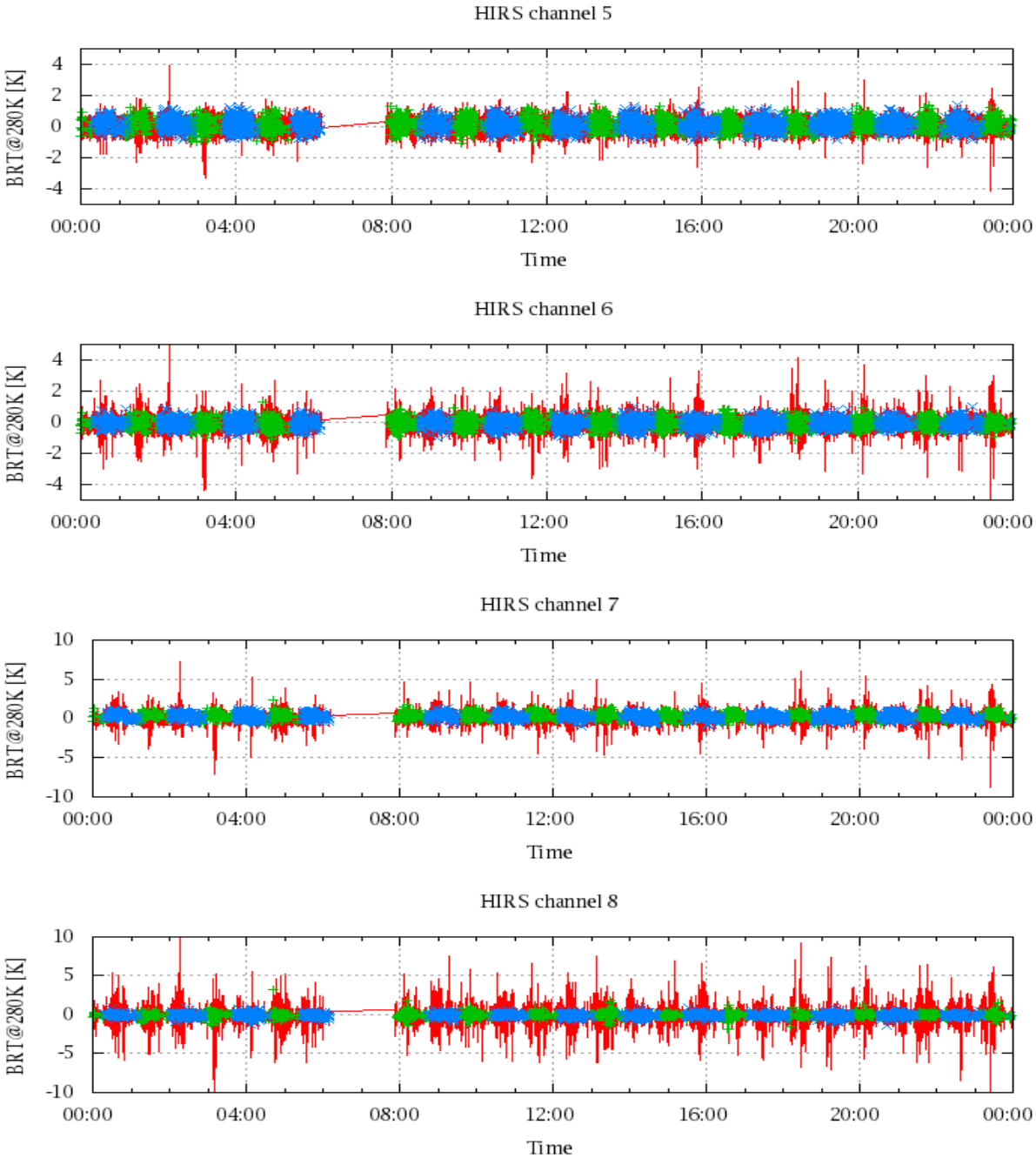

Figure 18: Radiance Differences in BRT

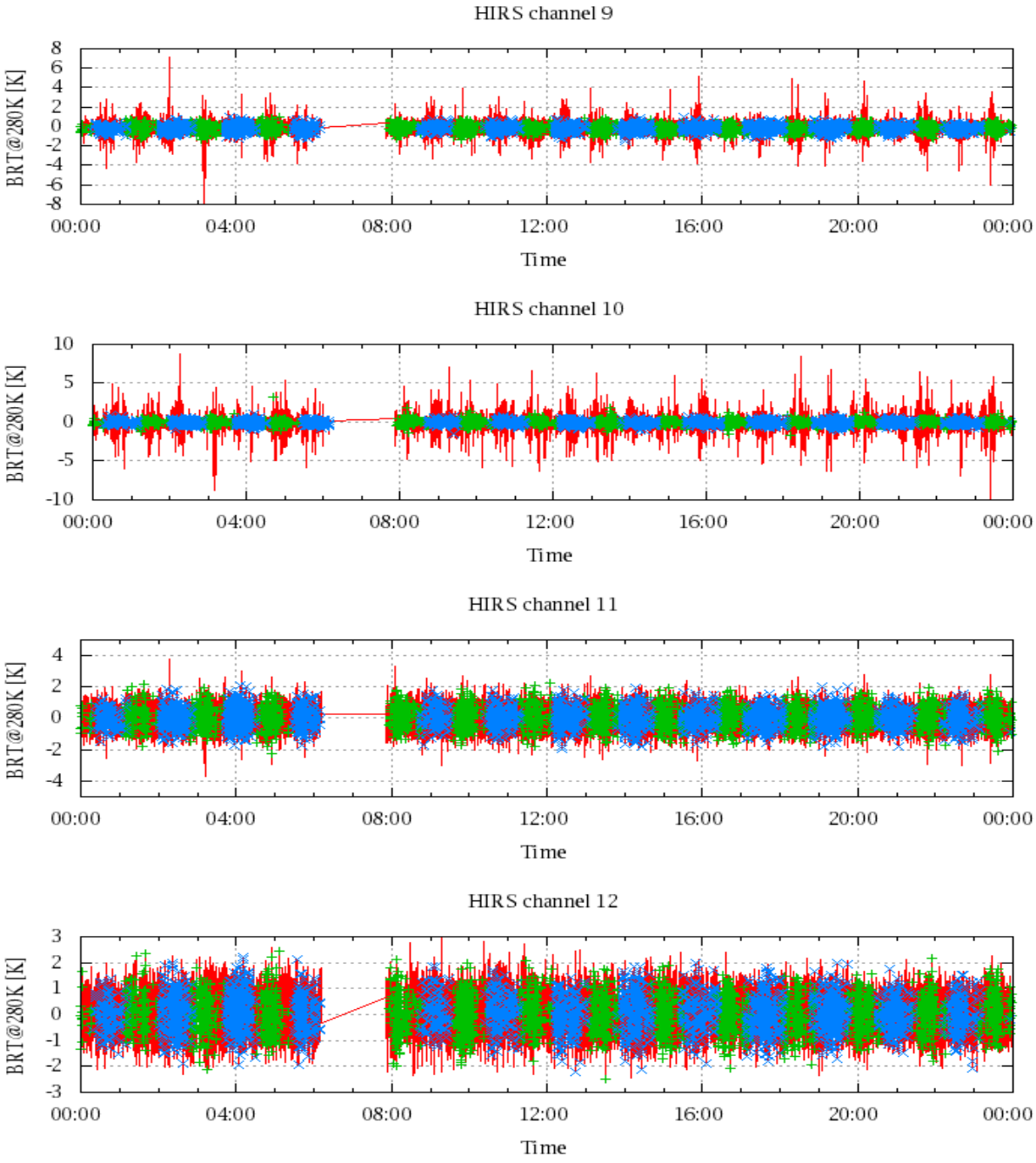

Figure 19: Radiance Differences in BRT

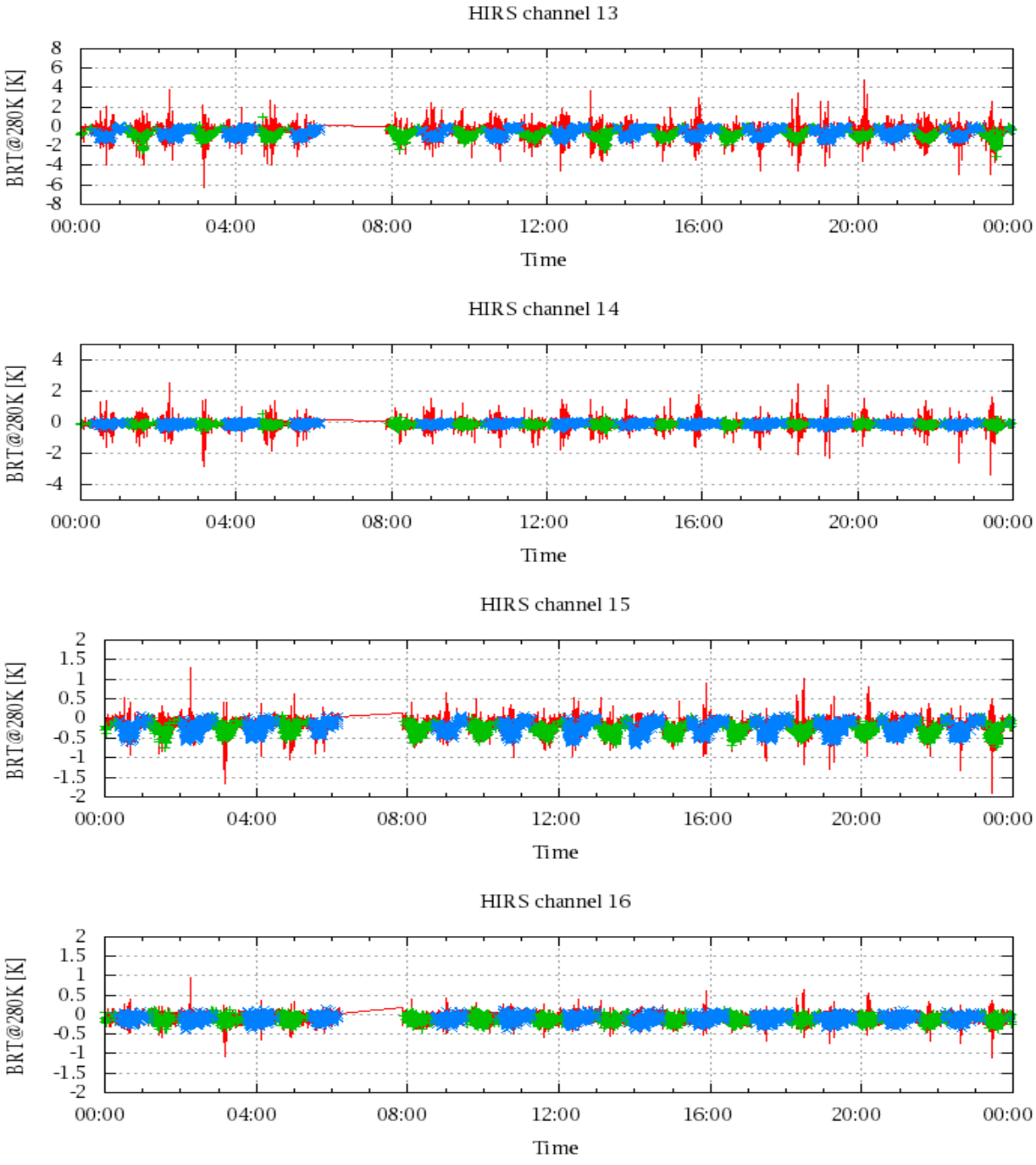

Figure 20: Radiance Differences in BRT

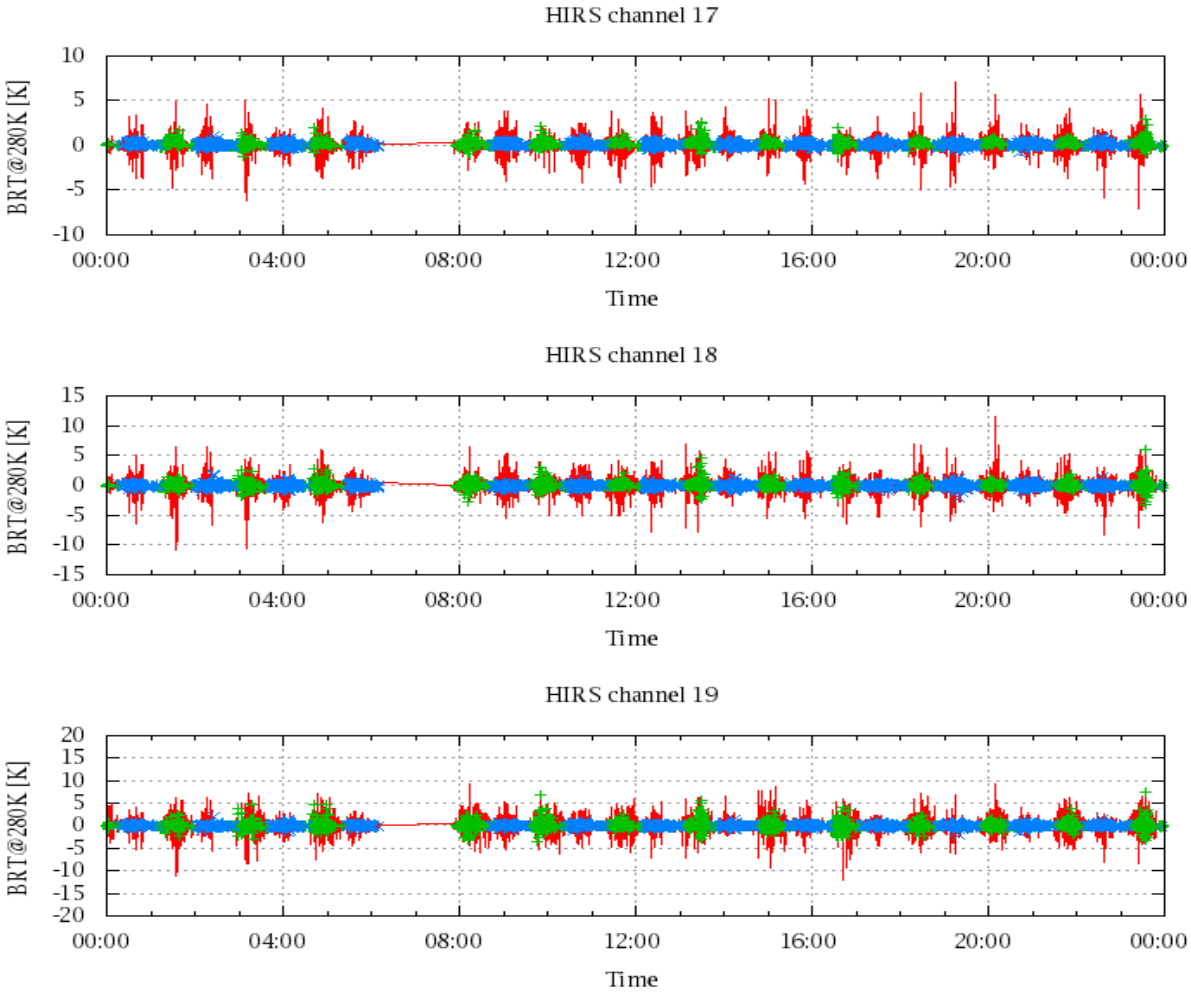

Figure 21: Radinace Differences in BRT