

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

15/07/2014 00:00:00 - 16/07/2014 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 15/07/2014 00:00:00 - 16/07/2014 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 15/07/2014 00:00:00 - 16/07/2014 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSSGranule	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)	6754	6769	20140715174811.320	20140715174816.078
PX1 (130)	6780	6859	20140715174818.457	20140715174840.078
PX1 (130)	10971	10997	20140715180656.477	20140715180703.614
PX1 (130)	11026	11028	20140715180711.399	20140715180711.829
PX1 (130)	11028	11111	20140715180711.829	20140715180734.317
PX1 (130)	11126	11128	20140715180737.559	20140715180737.989
PX1 (130)	11128	11193	20140715180737.989	20140715180755.071
PX1 (130)	15518	15548	20140715182708.158	20140715182716.158
PX1 (130)	15560	15690	20140715182720.263	20140715182754.427
PX2 (135)	6754	6769	20140715174811.320	20140715174816.078
PX2 (135)	6780	6858	20140715174818.457	20140715174839.859
PX2 (135)	10971	10998	20140715180656.477	20140715180703.829
PX2 (135)	11026	11111	20140715180711.399	20140715180734.317
PX2 (135)	11127	11193	20140715180737.774	20140715180755.071
PX2 (135)	15518	15546	20140715182708.158	20140715182715.724
PX2 (135)	15560	15690	20140715182720.263	20140715182754.427
PX3 (140)	6755	6769	20140715174811.535	20140715174816.078
PX3 (140)	6779	6858	20140715174818.238	20140715174839.859

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX3 (140)	10971	10998	20140715180656.477	20140715180703.829
PX3 (140)	11027	11111	20140715180711.614	20140715180734.317
PX3 (140)	11126	11193	20140715180737.559	20140715180755.071
PX3 (140)	11242	11244	20140715180808.692	20140715180809.125
PX3 (140)	15519	15547	20140715182708.372	20140715182715.939
PX3 (140)	15560	15690	20140715182720.263	20140715182754.427
PX4 (145)	6754	6768	20140715174811.320	20140715174815.859
PX4 (145)	6779	6858	20140715174818.238	20140715174839.859
PX4 (145)	10970	10998	20140715180656.262	20140715180703.829
PX4 (145)	11027	11110	20140715180711.614	20140715180734.098
PX4 (145)	11127	11192	20140715180737.774	20140715180754.856
PX4 (145)	15518	15547	20140715182708.158	20140715182715.939
PX4 (145)	15559	15690	20140715182720.048	20140715182754.427
IMG (150)	10019	10037	20140715174811.320	20140715174815.859
IMG (150)	10048	10139	20140715174818.238	20140715174839.859
IMG (150)	14800	14831	20140715180656.477	20140715180703.829
IMG (150)	14863	14959	20140715180711.399	20140715180734.098
IMG (150)	14976	15049	20140715180737.774	20140715180754.856
IMG (150)	3567	3600	20140715182708.158	20140715182715.939
IMG (150)	3616	3763	20140715182720.048	20140715182754.427
VER (160)	7	28	20140715174804.402	20140715174844.402
VER (160)	712	718	20140715180652.372	20140715180708.372
VER (160)	722	748	20140715180708.372	20140715180756.368
VER (160)	1467	1473	20140715182700.372	20140715182716.372
VER (160)	1477	1498	20140715182716.372	20140715182756.372
AUX (180)	13103	13108	20140715174804.832	20140715174844.831
AUX (180)	13244	13246	20140715180652.801	20140715180708.801
AUX (180)	13246	13252	20140715180708.801	20140715180756.801
AUX (180)	13395	13397	20140715182700.806	20140715182716.806
AUX (180)	13397	13402	20140715182716.806	20140715182756.806

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
15/07/2014 00:00:04	-	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)	99.41 %	-
GQisFlagQual set (PX2)	99.35 %	-
GQisFlagQual set (PX3)	99.41 %	-
GQisFlagQual set (PX4)	99.44 %	-
GQisFlagQual set (all)	99.40 %	-

Table 4: Quality flags

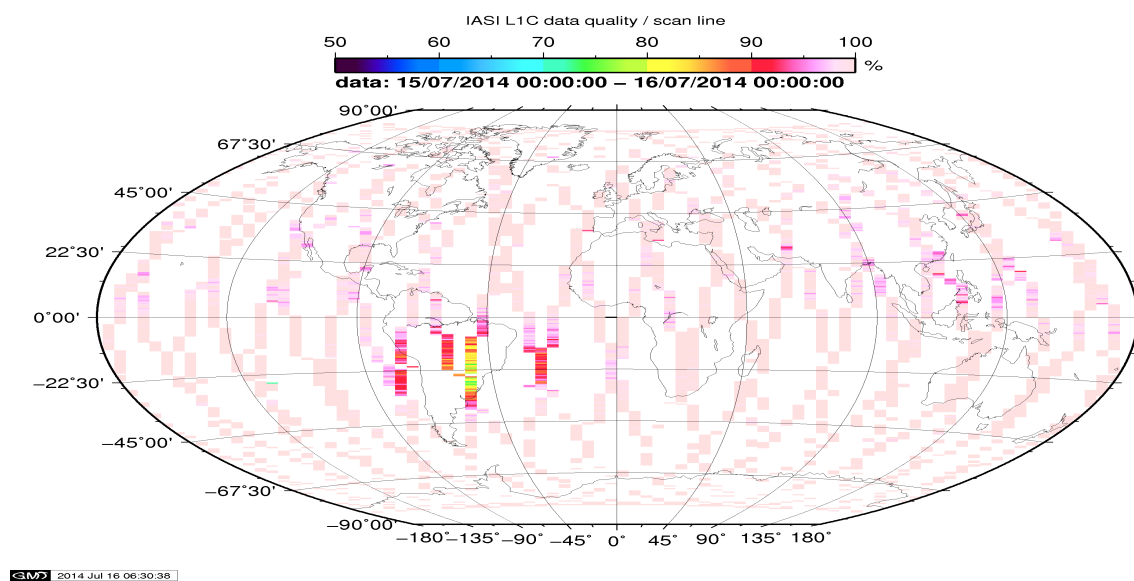


Figure 1: L1C data quality

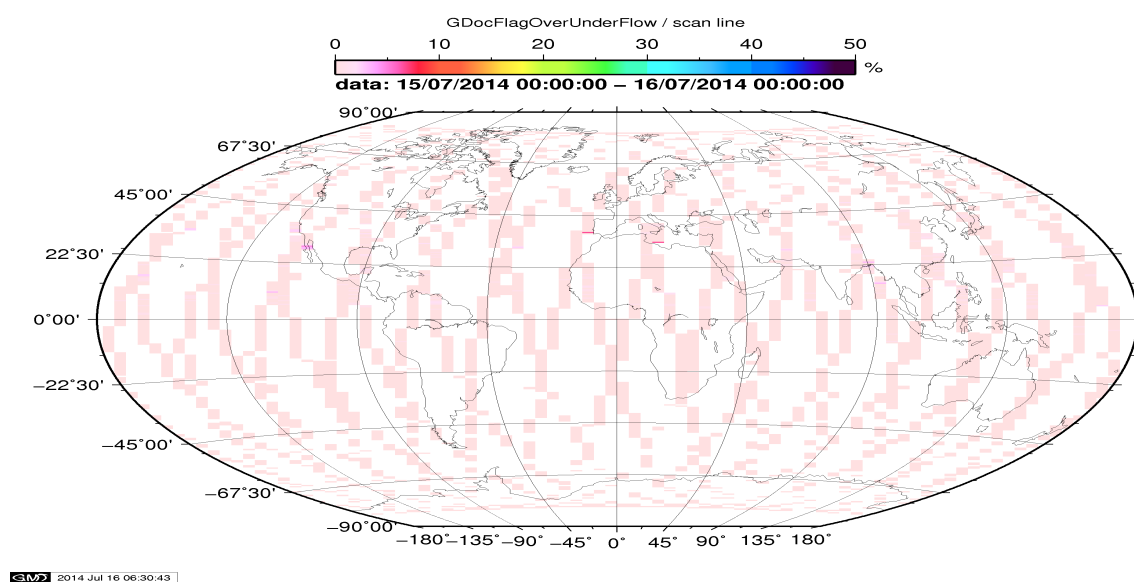


Figure 2: Flag of Over and Under Flows

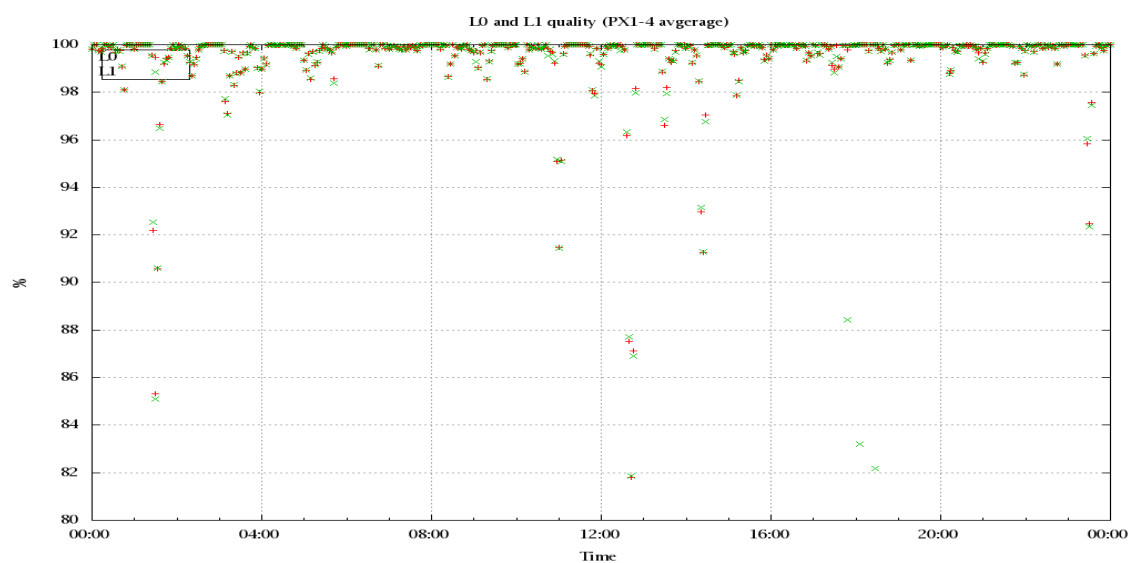


Figure 3: Level 0 and 1C overall quality

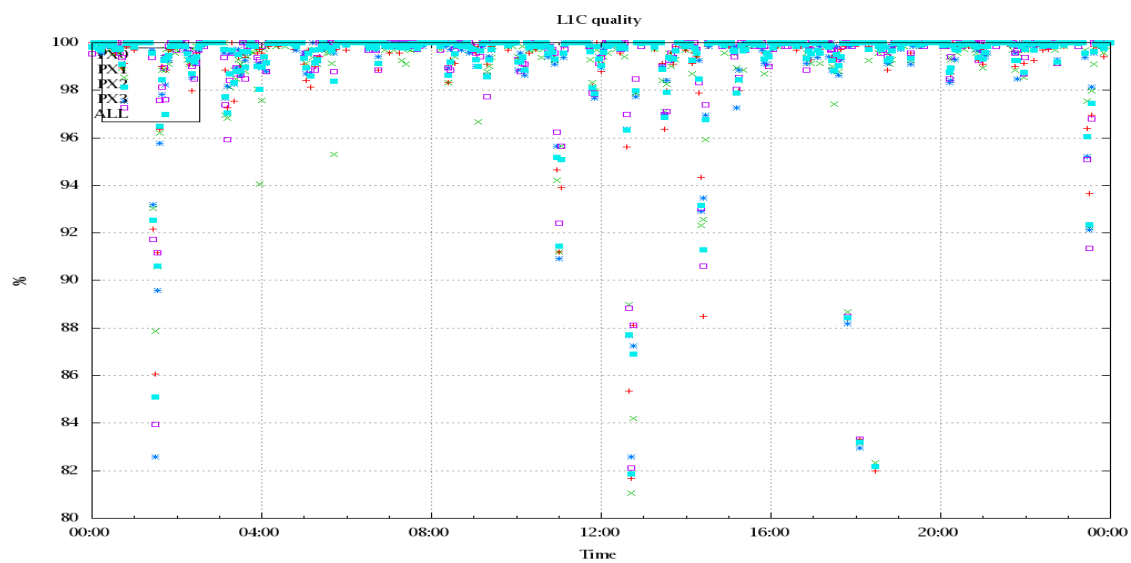


Figure 4: Level 1C quality

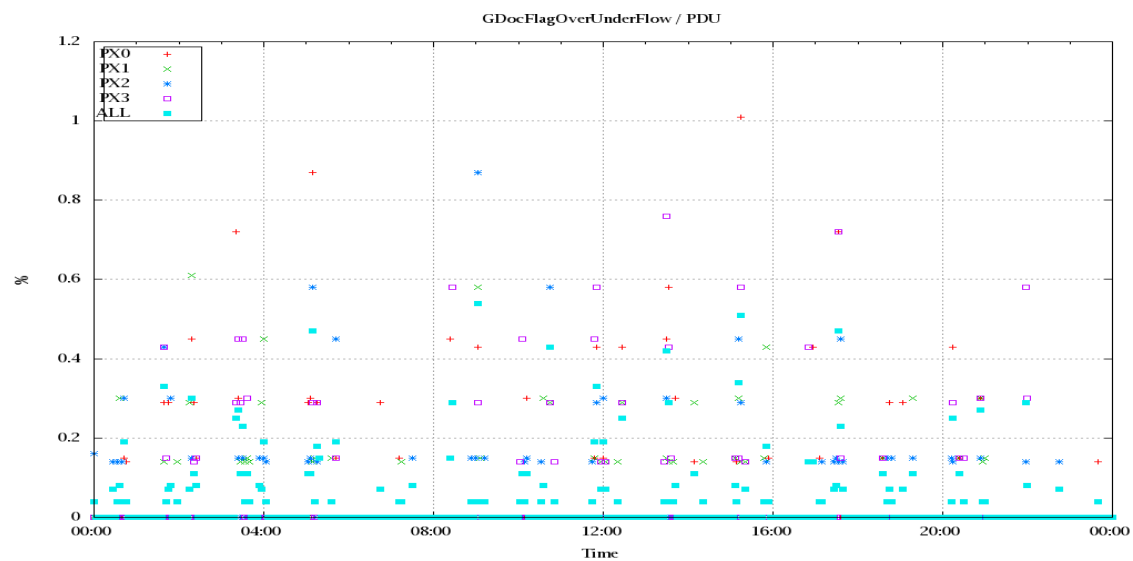


Figure 5: OverUnderFlowFlag timeseries

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.

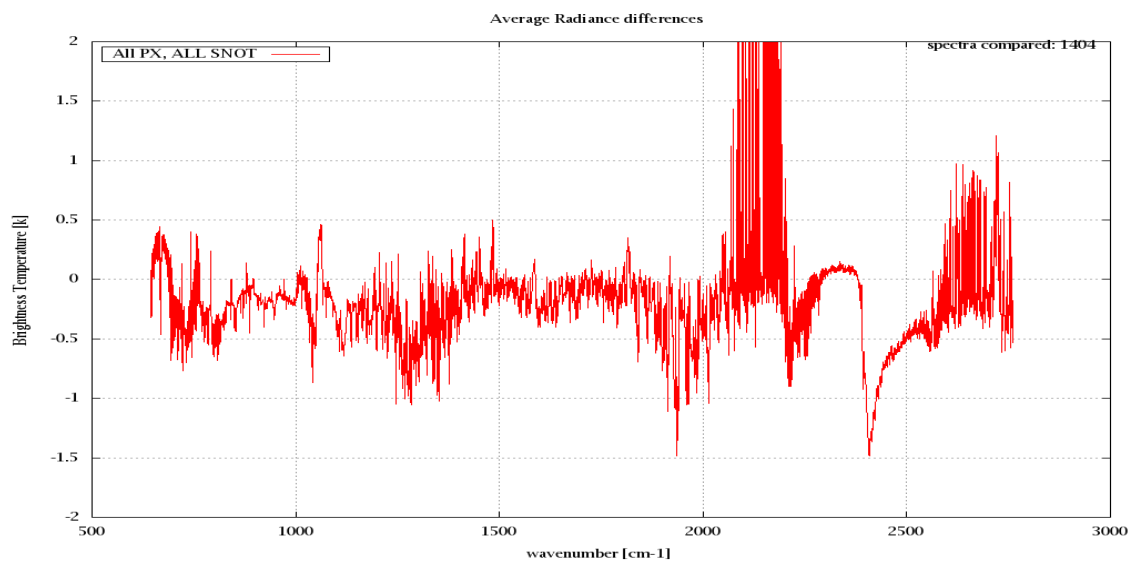


Figure 6: Average Radiance differences: OBS-CAL

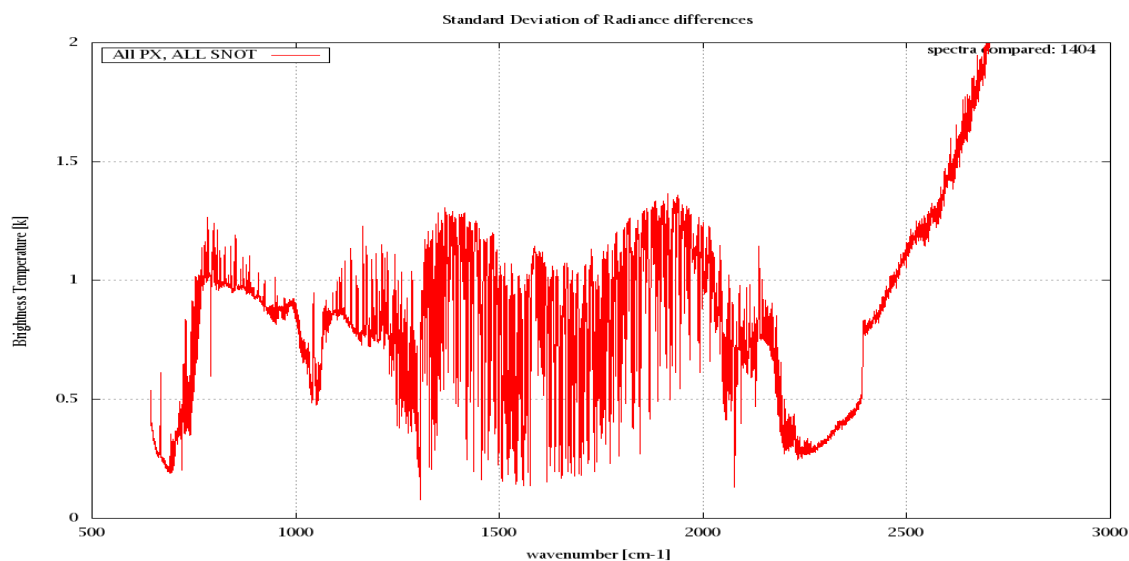


Figure 7: Standard Deviation of Radiance differences

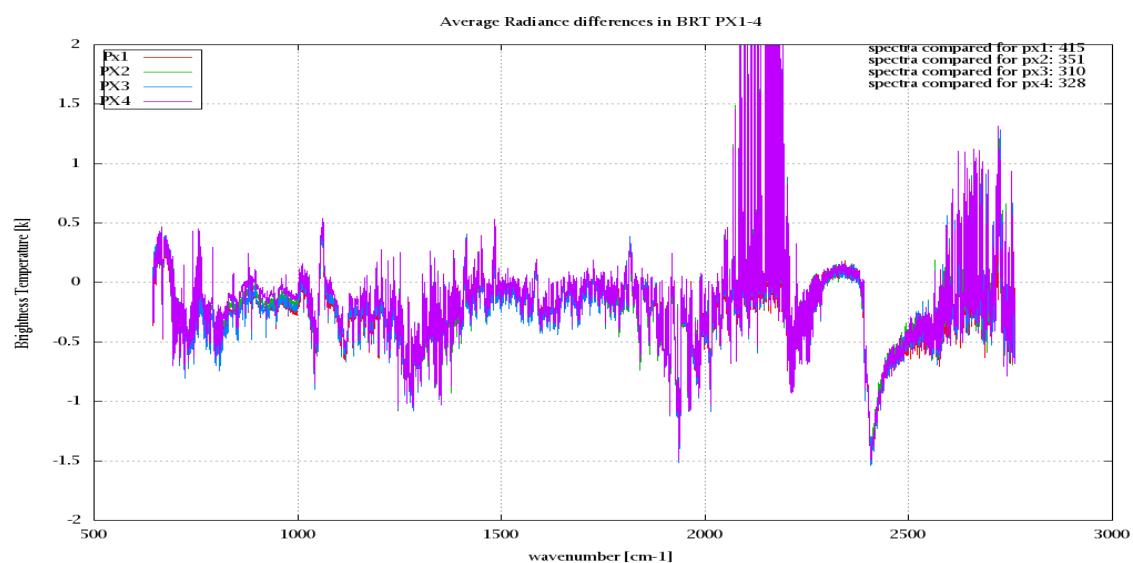


Figure 8: Average Radiance differences: OBS-CAL

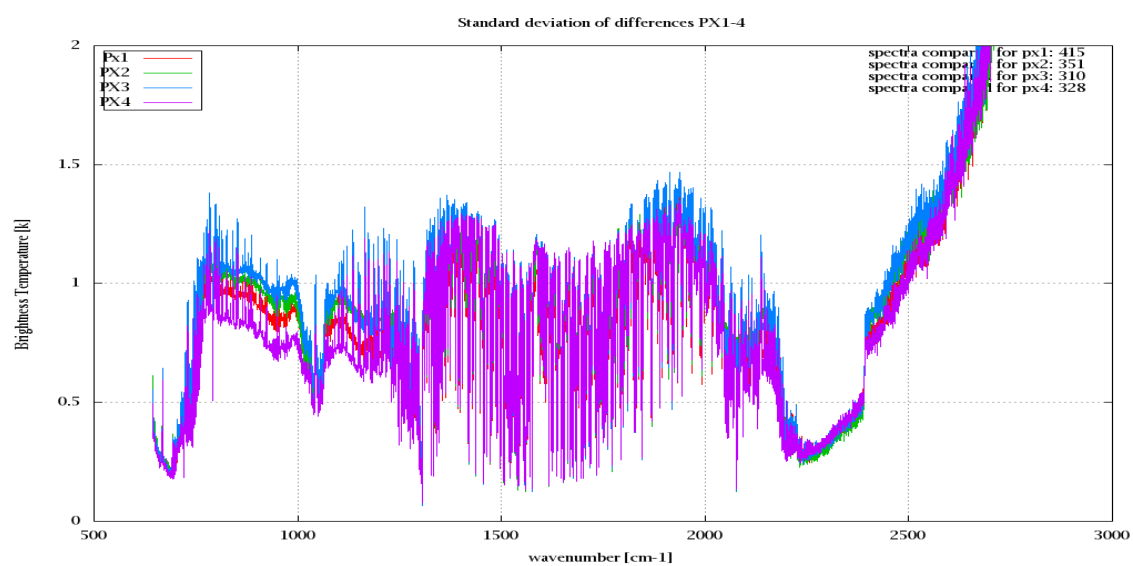


Figure 9: Standard Deviation of Radiance differences

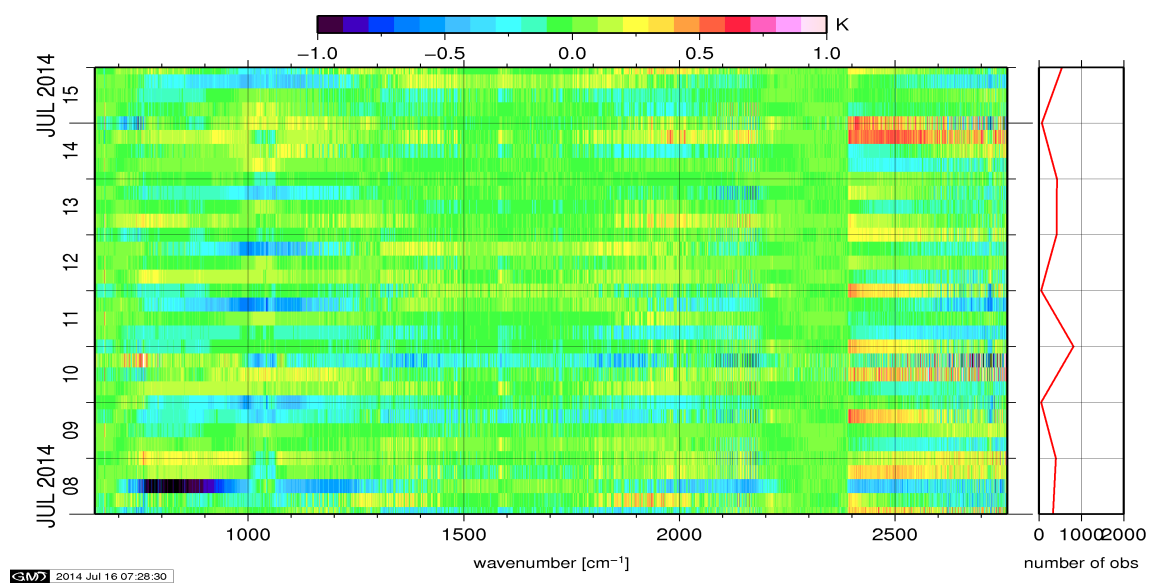


Figure 10: Radiance Anomaly in BRT: All Channels

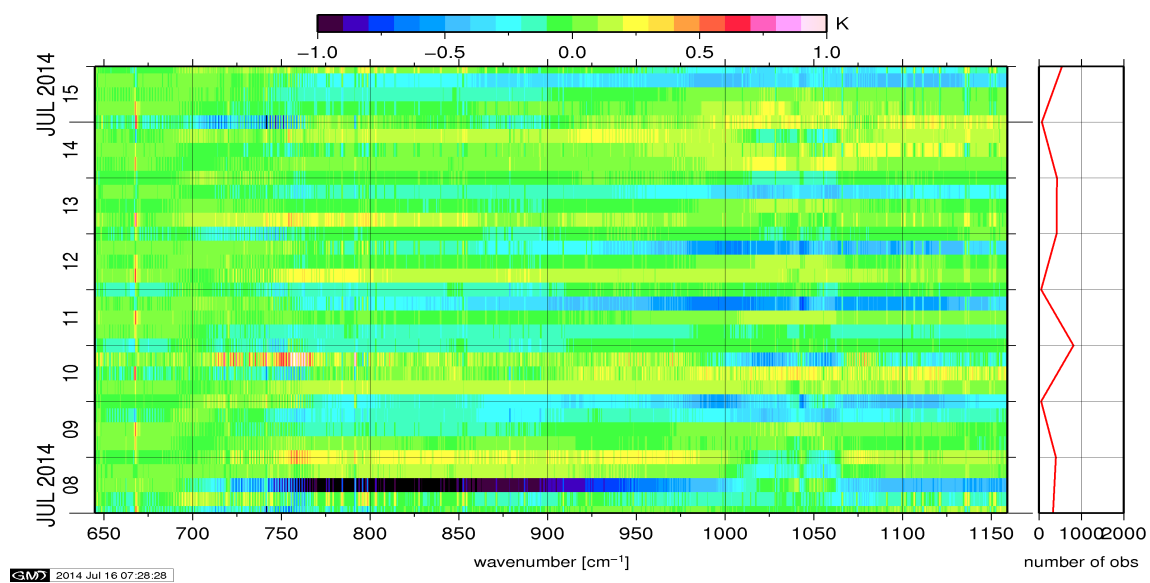


Figure 11: Radiance Anomaly in BRT: IASI Band 1

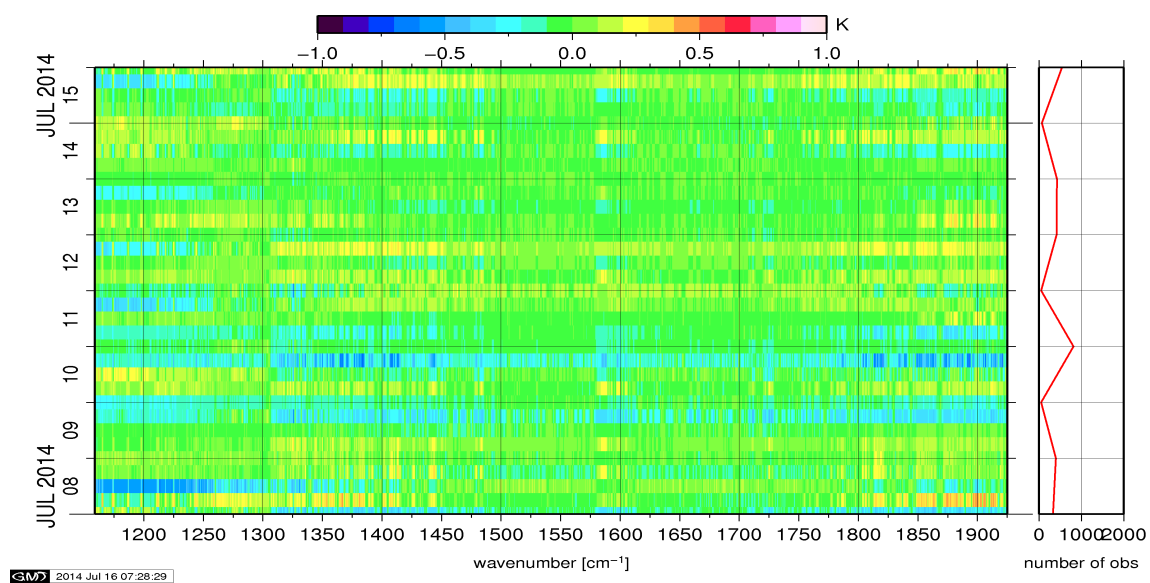


Figure 12: Radiance Anomaly in BRT: IASI Band 2

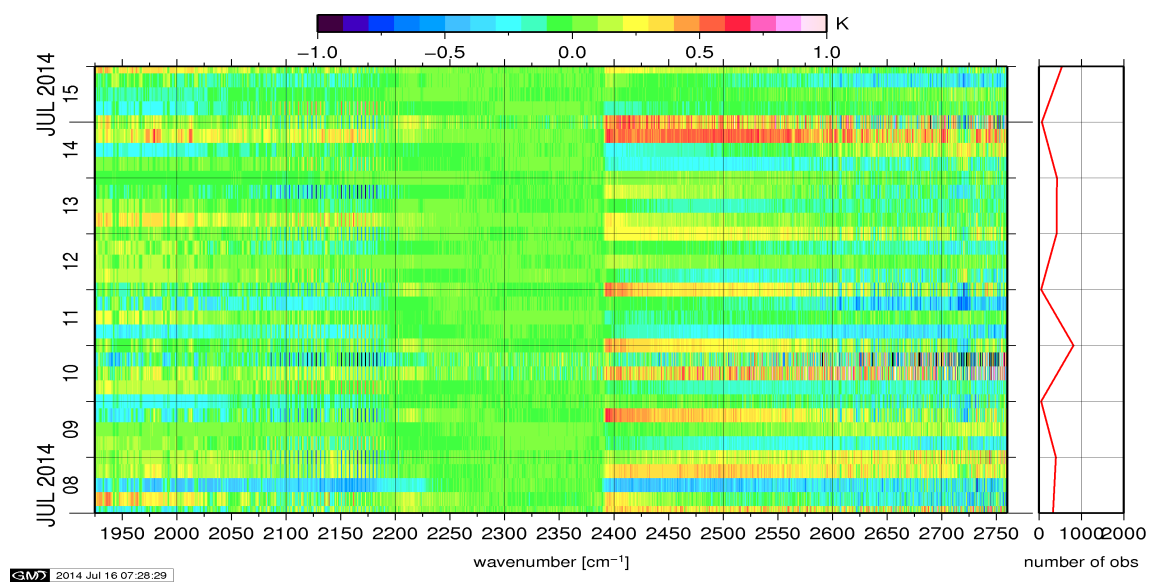


Figure 13: Radiance Anomaly in BRT: IASI Band 3

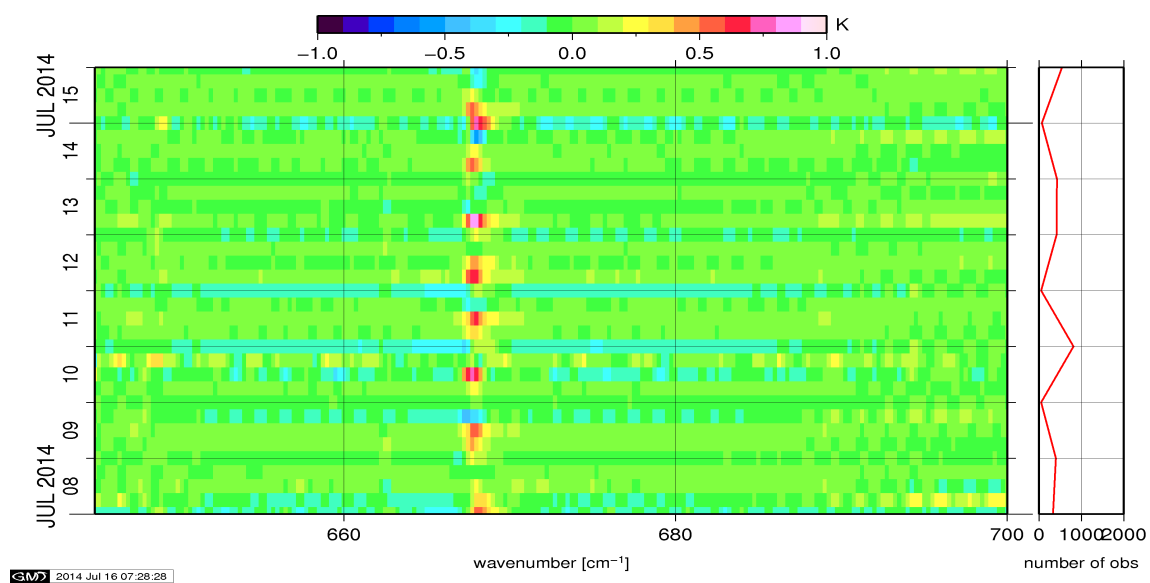


Figure 14: Radiance Anomaly in BRT: CO2 14

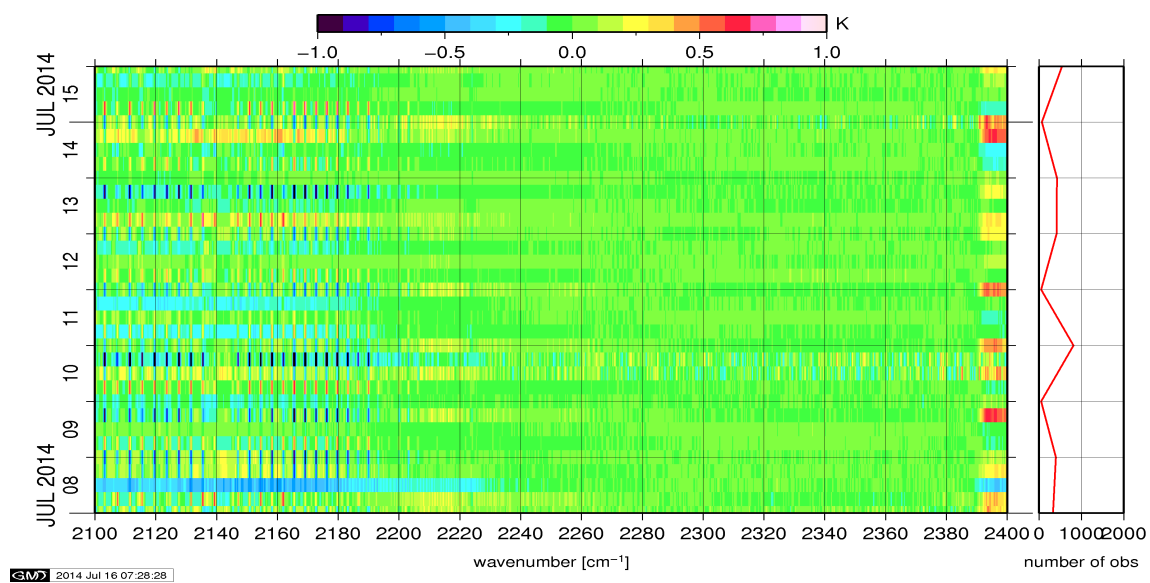


Figure 15: Radiance Anomaly in BRT: CO2 4.3

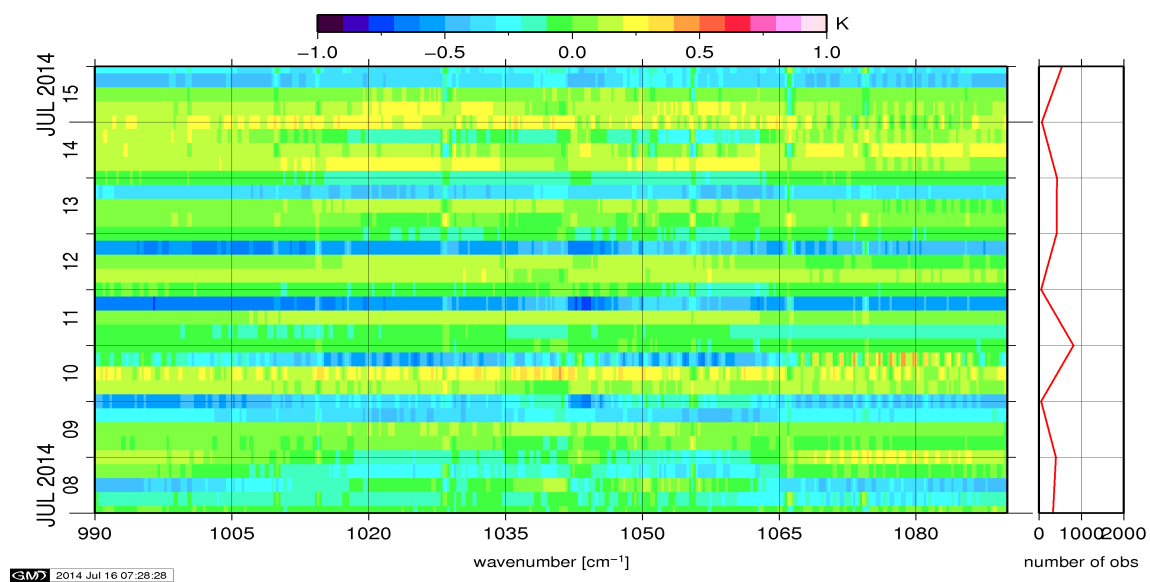


Figure 16: Radiance Anomaly in BRT: O3

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.

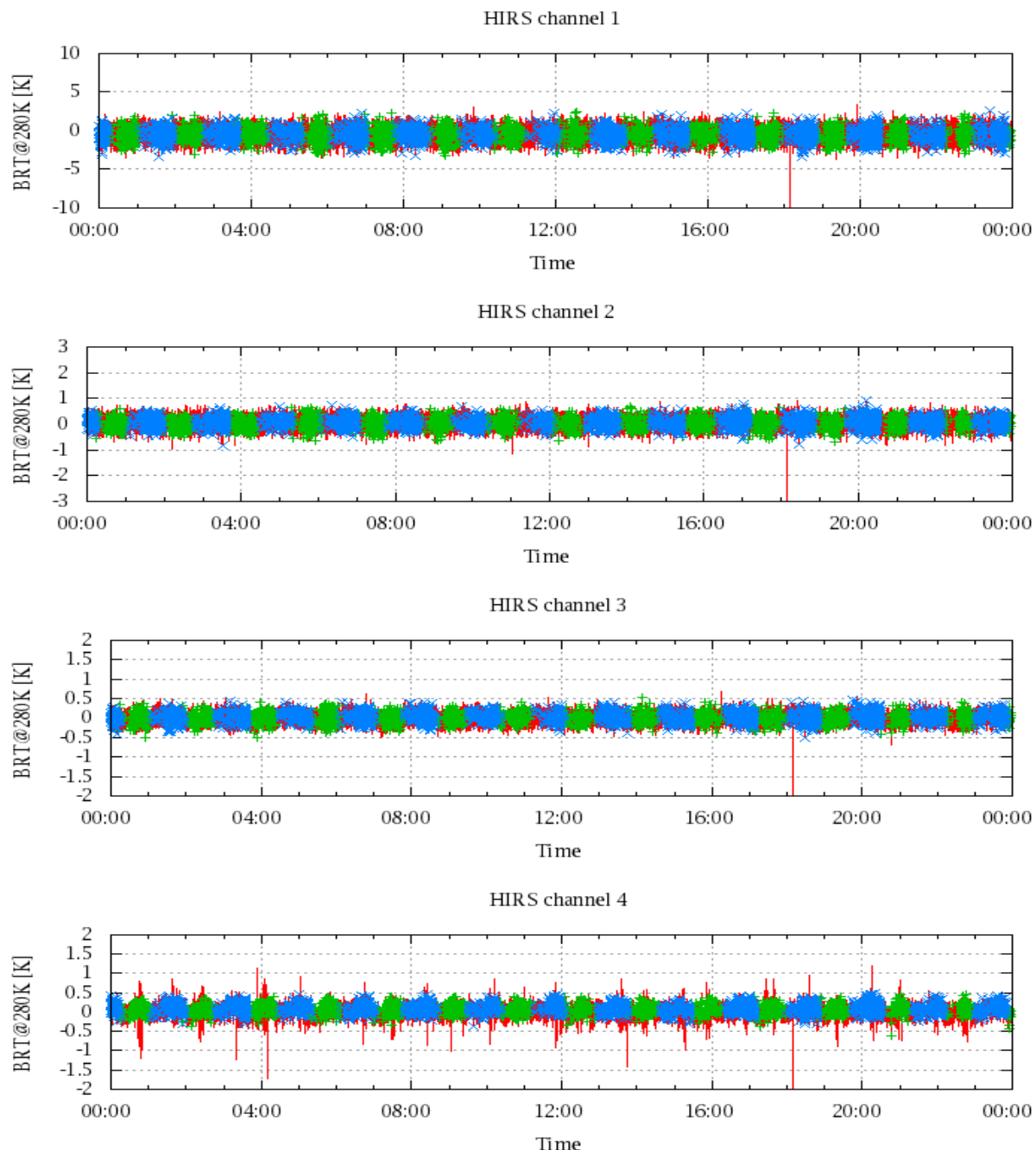


Figure 17: Radiance Differences in BRT

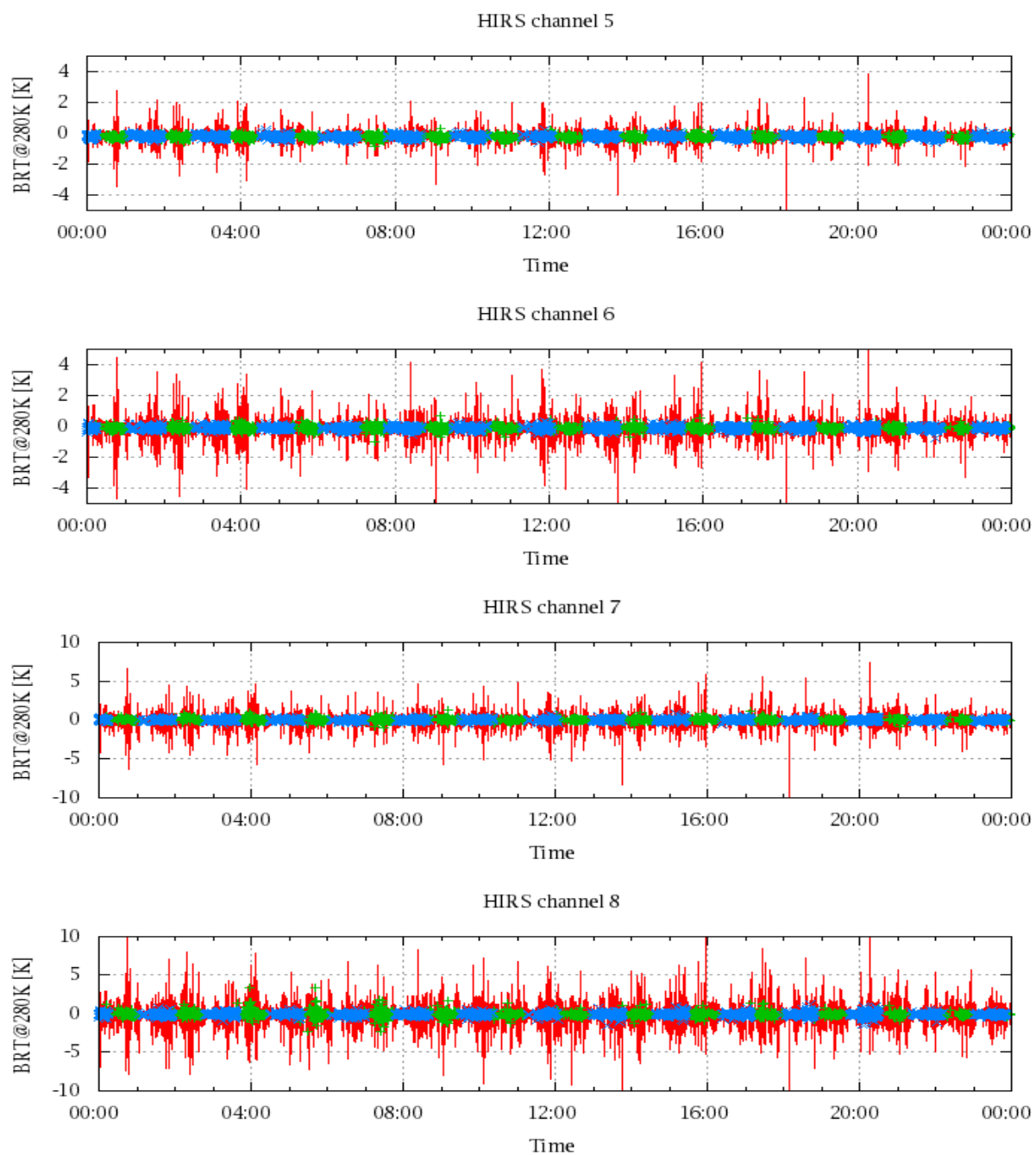


Figure 18: Radiance Differences in BRT

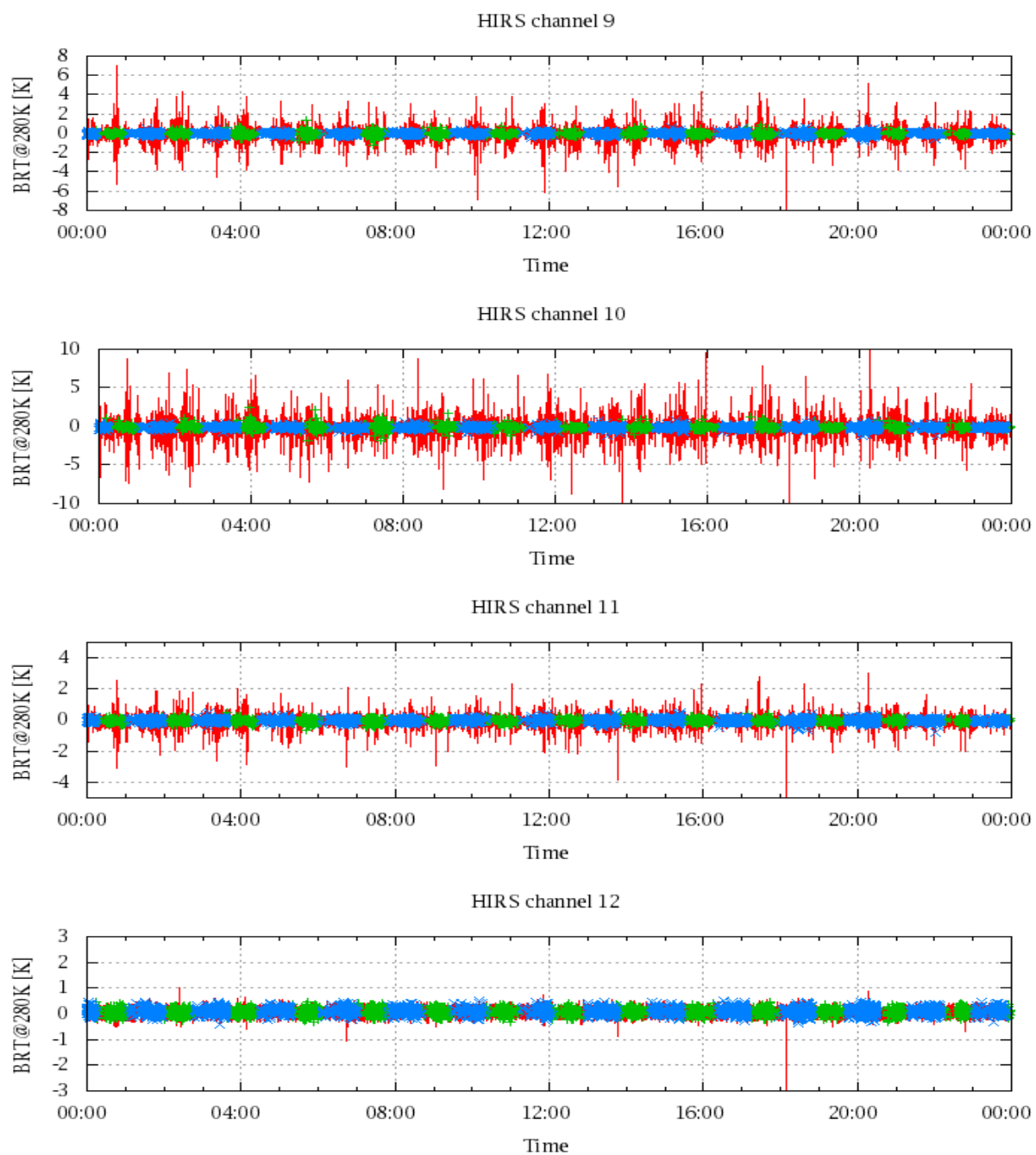


Figure 19: Radiance Differences in BRT

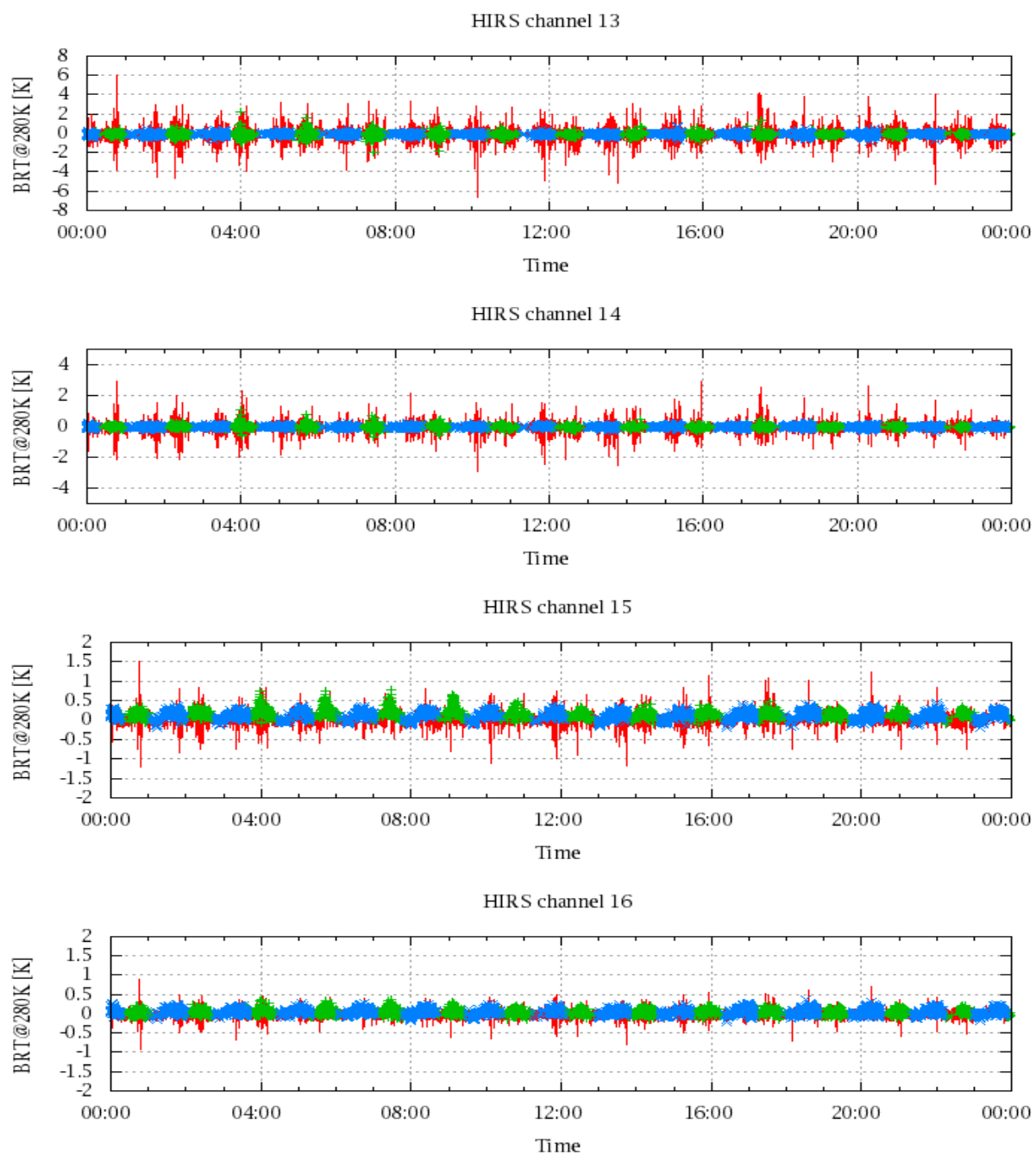


Figure 20: Radiance Differences in BRT

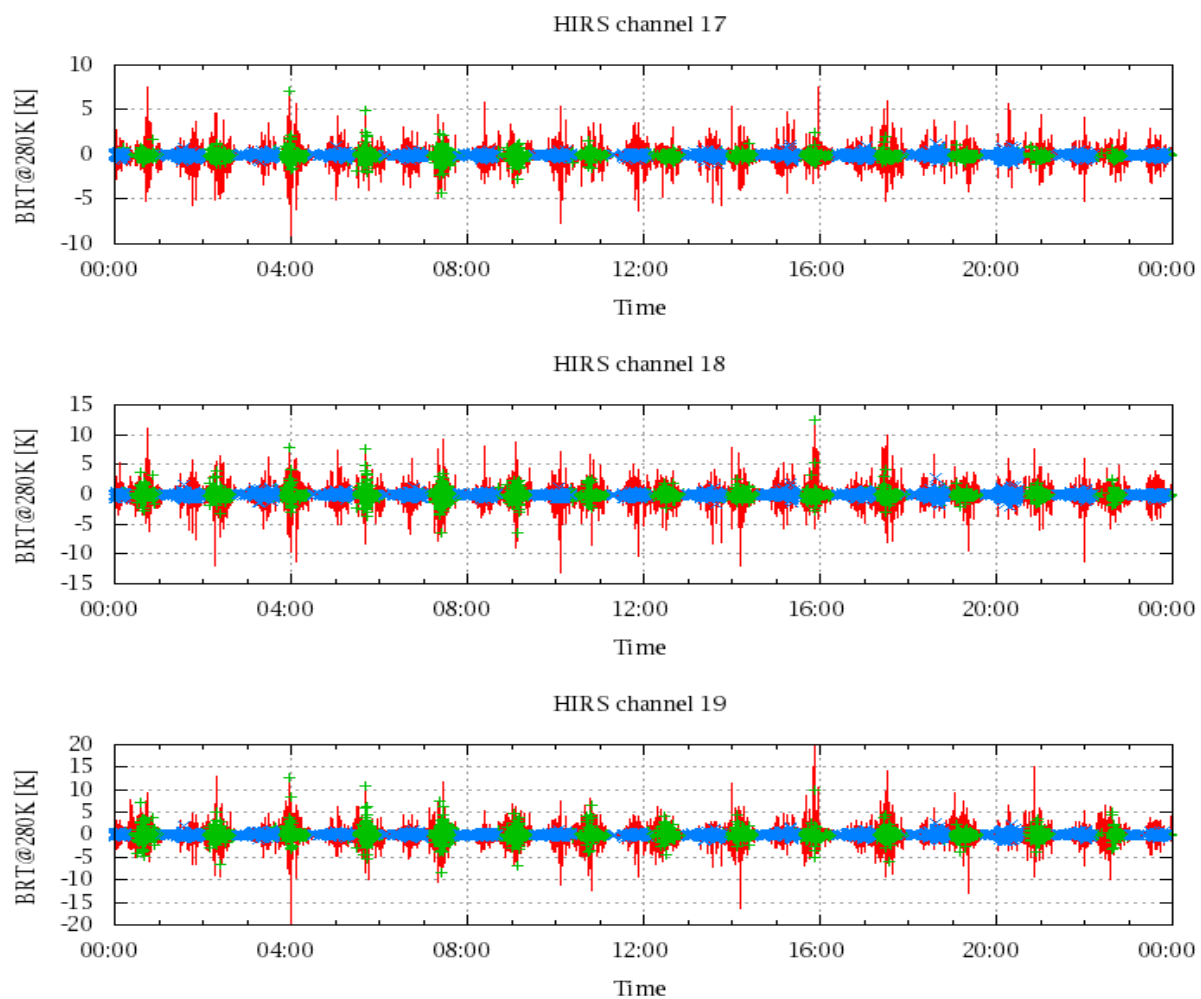


Figure 21: Radinace Differences in BRT