IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

06/01/2018 00:00:00 - 07/01/2018 00:00:00

1 Introduction

This report provides summary monitoring plots and figures from IASI instrument on the MetOp-B satellite retrieved from the IASI L0 and L1 ENG product (3 minute data packet) for 06/01/2018 00:00:00 - 07/01/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 06/01/2018 00:00:00 - 07/01/2018 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)	431	e
L1 DPS Files (RM: OBS-CAL NWP based)	480	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	-	-	-	-
PX2 (135)	-	-	-	-
PX3 (140)	12529	12531	20180106024011.995	20180106024012.428
PX4 (145)	14834	14836	20180106025134.138	20180106025134.572
PX4 (145)	14979	14981	20180106064749.923	20180106064750.353
IMG (150)	-	-	-	-
VER (160)	9865	987	20180106062625.812	20180106080841.784
VER (160)	987	886	20180106080841.784	20180106094944.064
VER (160)	886	891	20180106094944.064	20180106094944.064
VER (160)	891	896	20180106094944.064	20180106094944.064
VER (160)	896	901	20180106094944.064	20180106094944.064
VER (160)	901	906	20180106094944.064	20180106094944.064
VER (160)	906	911	20180106094944.064	20180106094944.064
VER (160)	911	916	20180106094944.064	20180106094944.064
VER (160)	916	921	20180106094944.064	20180106094944.064
VER (160)	921	926	20180106094944.064	20180106094944.064
VER (160)	926	887	20180106094944.064	20180106094944.064
VER (160)	887	892	20180106094944.064	20180106094944.064
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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
VER (160)	892	897	20180106094944.064	20180106094944.064
VER (160)	897	902	20180106094944.064	20180106094944.064
VER (160)	902	907	20180106094944.064	20180106094944.064
VER (160)	907	912	20180106094944.064	20180106094944.064
VER (160)	912	917	20180106094944.064	20180106094944.064
VER (160)	917	922	20180106094944.064	20180106094944.064
VER (160)	922	927	20180106094944.064	20180106094944.064
VER (160)	927	888	20180106094944.064	20180106094944.064
VER (160)	888	893	20180106094944.064	20180106094944.064
VER (160)	893	898	20180106094944.064	20180106094944.064
VER (160)	898	903	20180106094944.064	20180106094944.064
VER (160)	903	908	20180106094944.064	20180106094944.064
VER (160)	908	913	20180106094944.064	20180106094944.064
VER (160)	913	918	20180106094944.064	20180106094944.064
VER (160)	918	923	20180106094944.064	20180106094944.064
VER (160)	923	928	20180106094944.064	20180106094944.064
VER (160)	928	889	20180106094944.064	20180106094944.064
VER (160)	889	894	20180106094944.064	20180106094944.064
VER (160)	894	899	20180106094944.064	20180106094944.064
VER (160)	899	904	20180106094944.064	20180106094944.064
VER (160)	904	909	20180106094944.064	20180106094944.064
VER (160)	909	914	20180106094944.064	20180106094944.064
VER (160)	914	919	20180106094944.064	20180106094944.064
VER (160)	919	924	20180106094944.064	20180106094944.064
VER (160)	924	929	20180106094944.064	20180106094944.064
VER (160)	929	890	20180106094944.064	20180106094944.064
VER (160)	890	895	20180106094944.064	20180106094944.064
VER (160)	895	900	20180106094944.064	20180106094944.064
VER (160)	900	905	20180106094944.064	20180106094944.064
VER (160)	905	910	20180106094944.064	20180106094944.064
VER (160)	910	915	20180106094944.064	20180106094944.064
VER (160)	915	920	20180106094944.064	20180106094944.064
VER (160)	920	925	20180106094944.064	20180106094944.064
VER (160)	925	930	20180106094944.064	20180106094944.064
AUX (180)	-	-	-	-

Table 2: L0 data gaps

3   Instrument modes

Time	Transition from	Transition to
06/01/2018 00:00:07	-	Normal operation
06/01/2018 00:44:07	Normal operation	Auxiliary ASE synchronised
06/01/2018 00:46:15	Auxiliary ASE synchronised	External calibration
06/01/2018 01:16:55	External calibration	Auxiliary ASE synchronised
06/01/2018 01:18:47	Auxiliary ASE synchronised	Normal operation
06/01/2018 02:25:59	Normal operation	Auxiliary ASE synchronised
06/01/2018 02:27:51	Auxiliary ASE synchronised	External calibration
06/01/2018 05:52:55	Normal operation	Auxiliary ASE synchronised
06/01/2018 05:55:03	Auxiliary ASE synchronised	External calibration
06/01/2018 06:19:35	External calibration	Auxiliary ASE synchronised
06/01/2018 06:21:27	Auxiliary ASE synchronised	Normal operation
06/01/2018 07:37:59	Normal operation	Auxiliary ASE synchronised
06/01/2018 07:39:51	Auxiliary ASE synchronised	External calibration
06/01/2018 08:00:07	External calibration	Auxiliary ASE synchronised

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)	98.88 %	-
GQisFlagQual set (PX2)	99.22 %	-
GQisFlagQual set (PX3)	98.99 %	-
GQisFlagQual set (PX4)	99.36 %	-
GQisFlagQual set (all)	99.11 %	-

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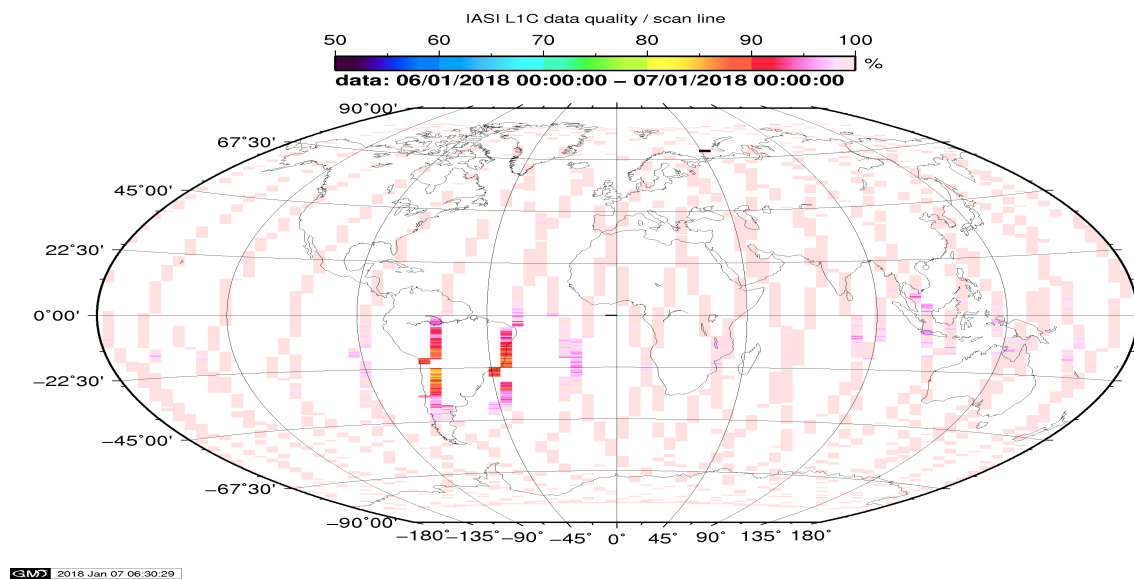
Figure 1: L1C data quality
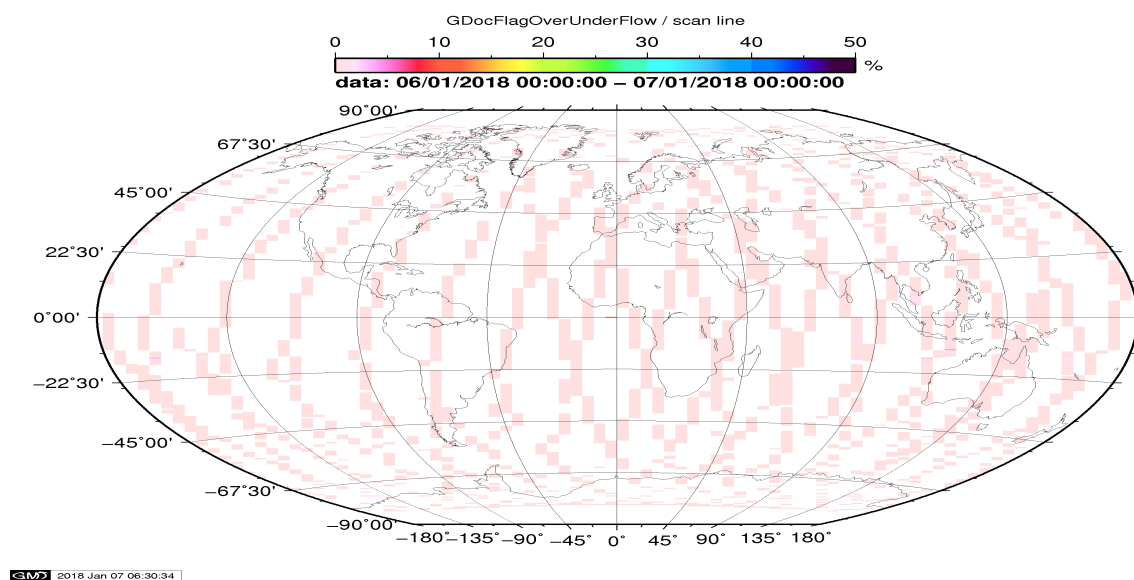
Figure 2: Flag of Over and Under Flows
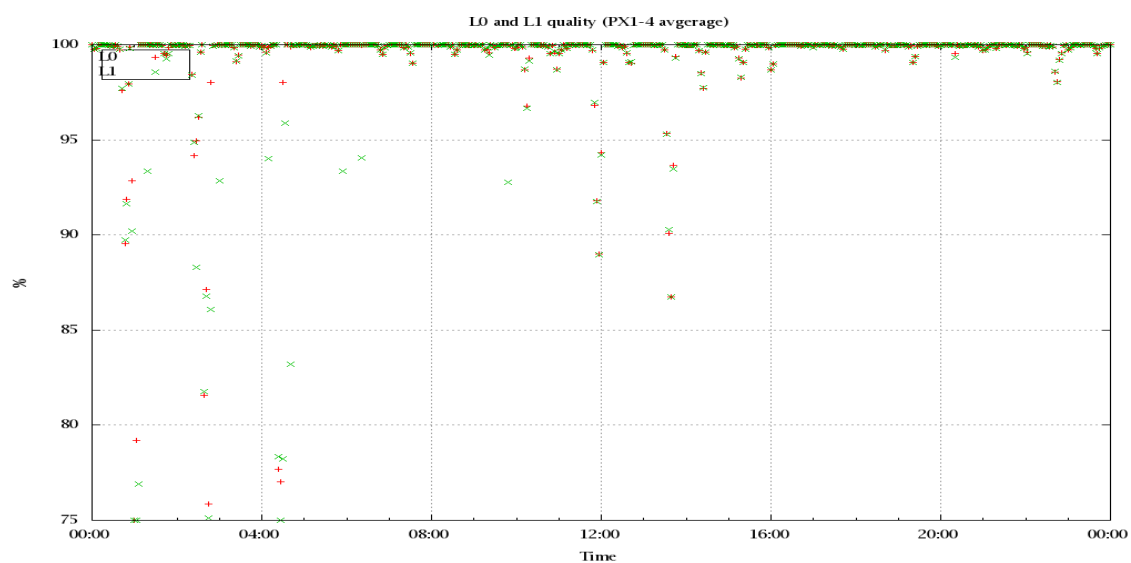
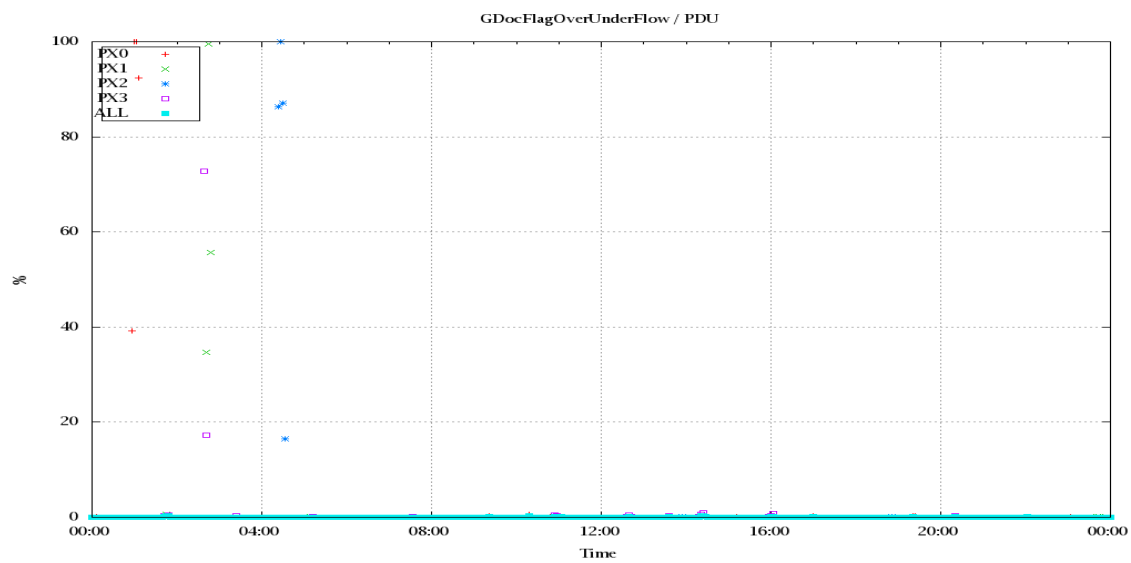Figure 3: Level 0 and 1C overall quality
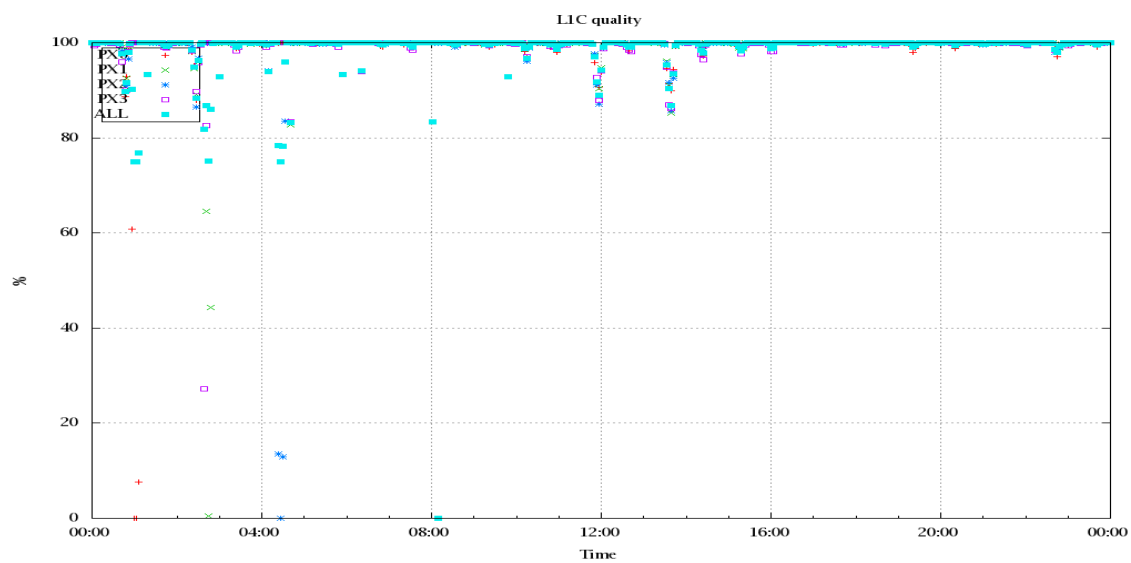
Figure 4: Level 1C quality

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.
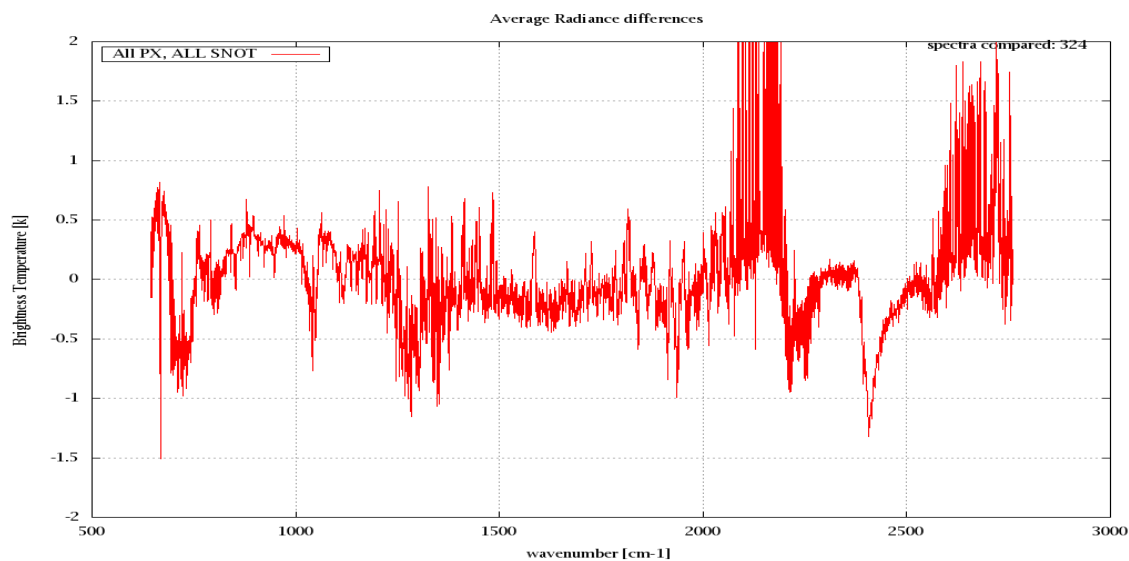
Figure 6: Average Radiance differences: OBS-CAL
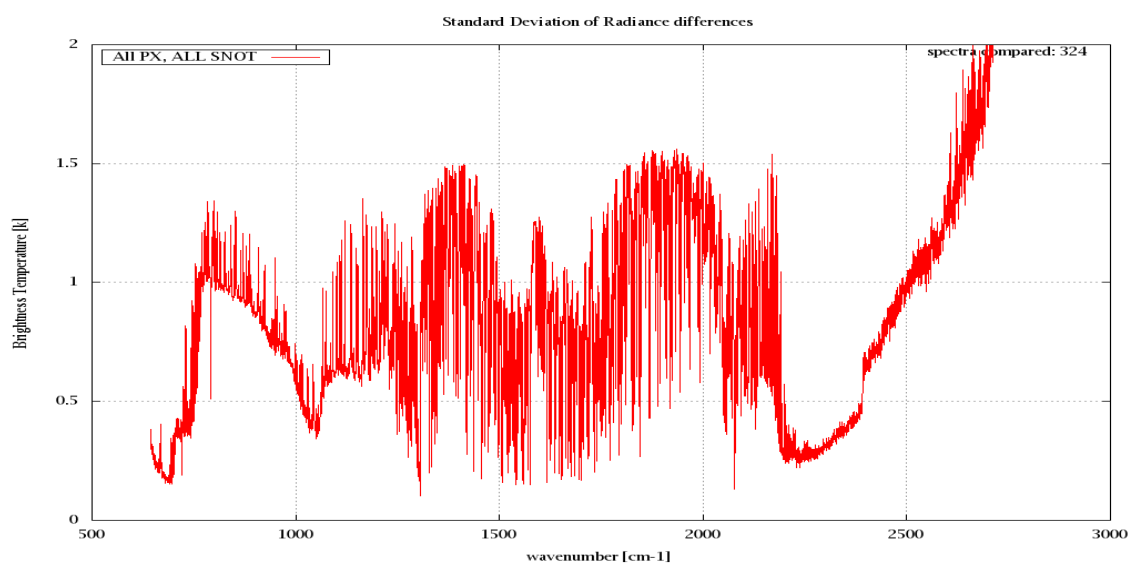
Figure 7: Standard Deviation of Radiance differences
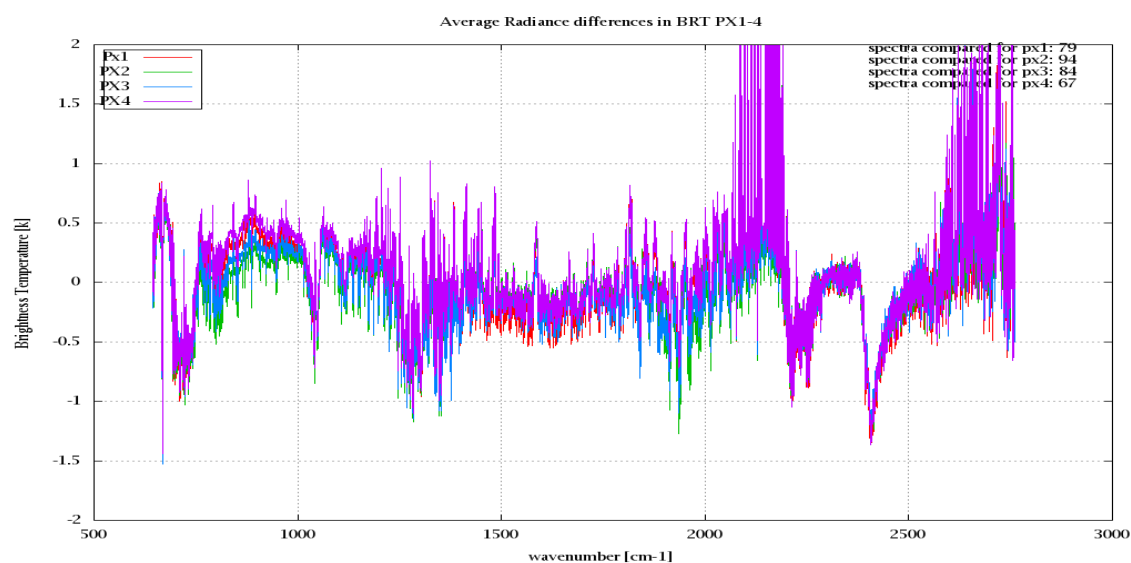
Figure 8: Average Radiance differences: OBS-CAL
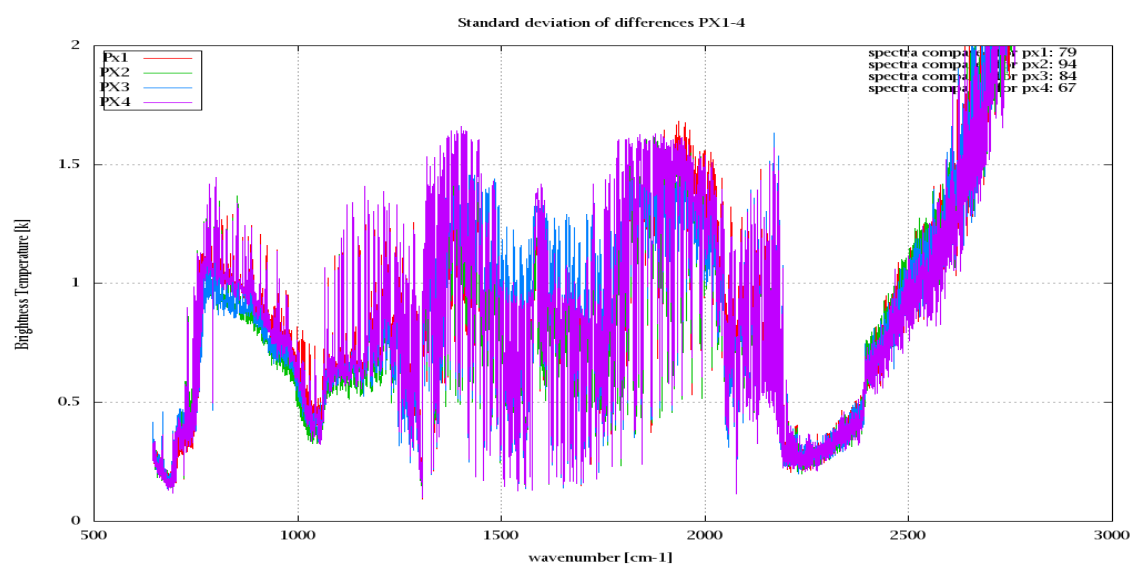
Figure 9: Standard Deviation of Radiance differences
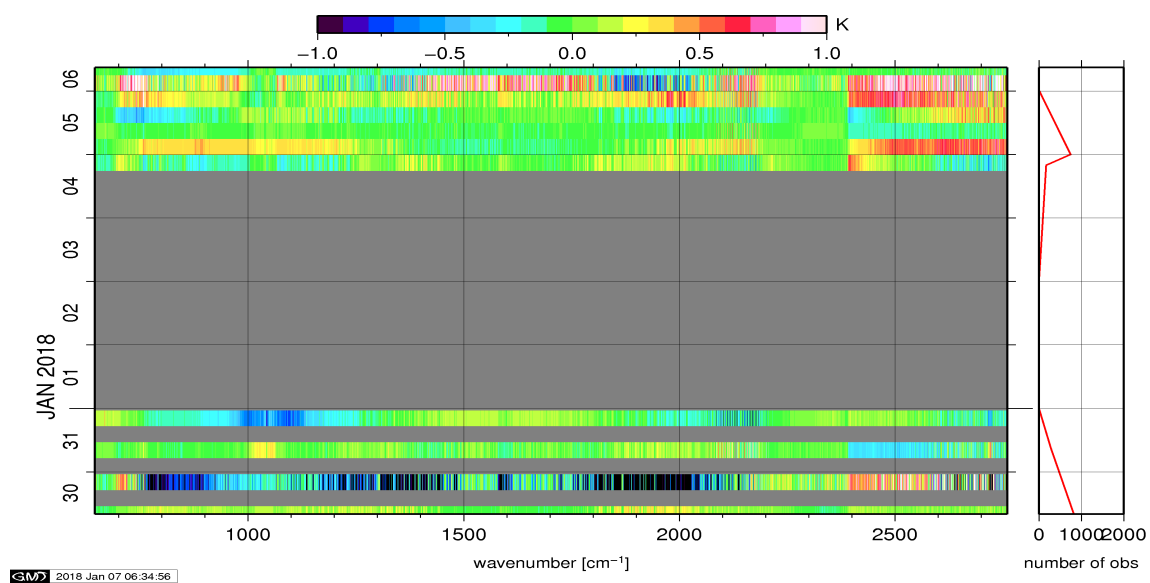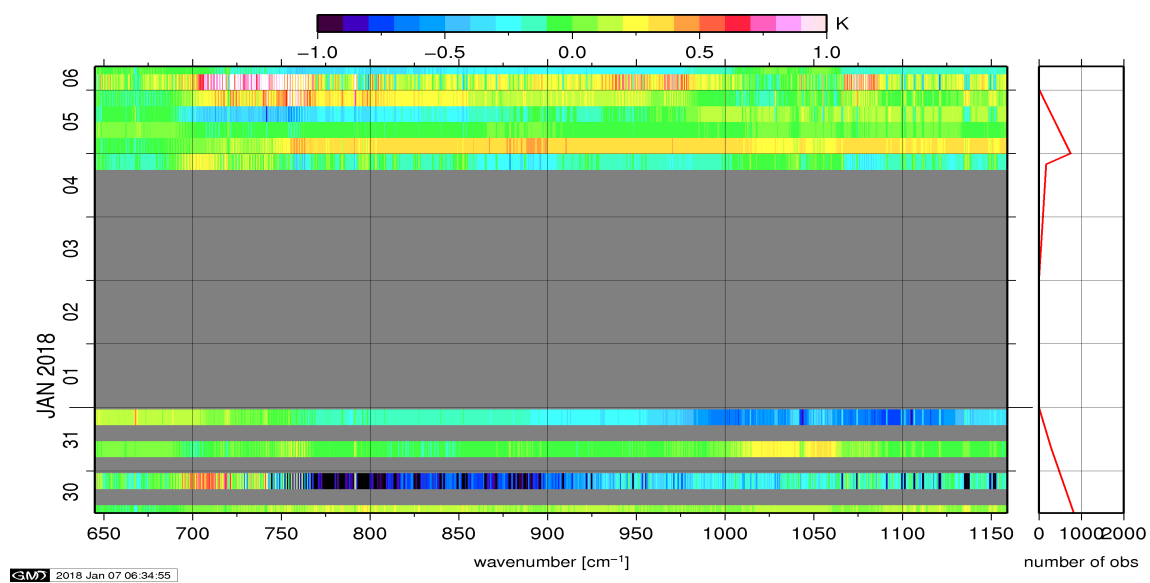
Figure 10: Radiance Anomaly in BRT: All Channels

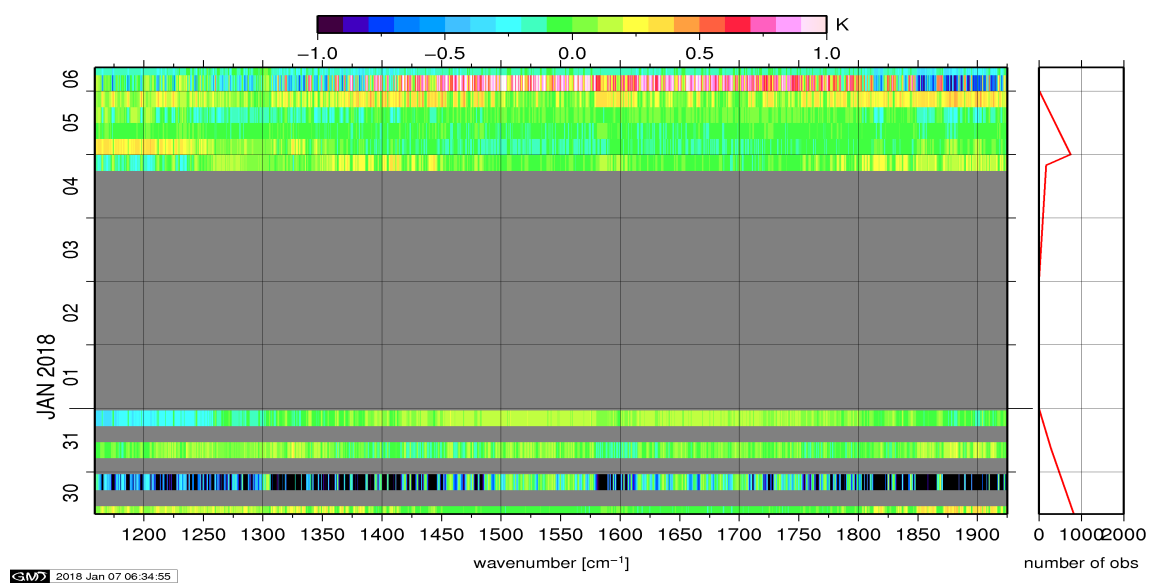Figure 11: Radiance Anomaly in BRT: IASI Band 1

Figure 12: Radiance Anomaly in BRT: IASI Band 2
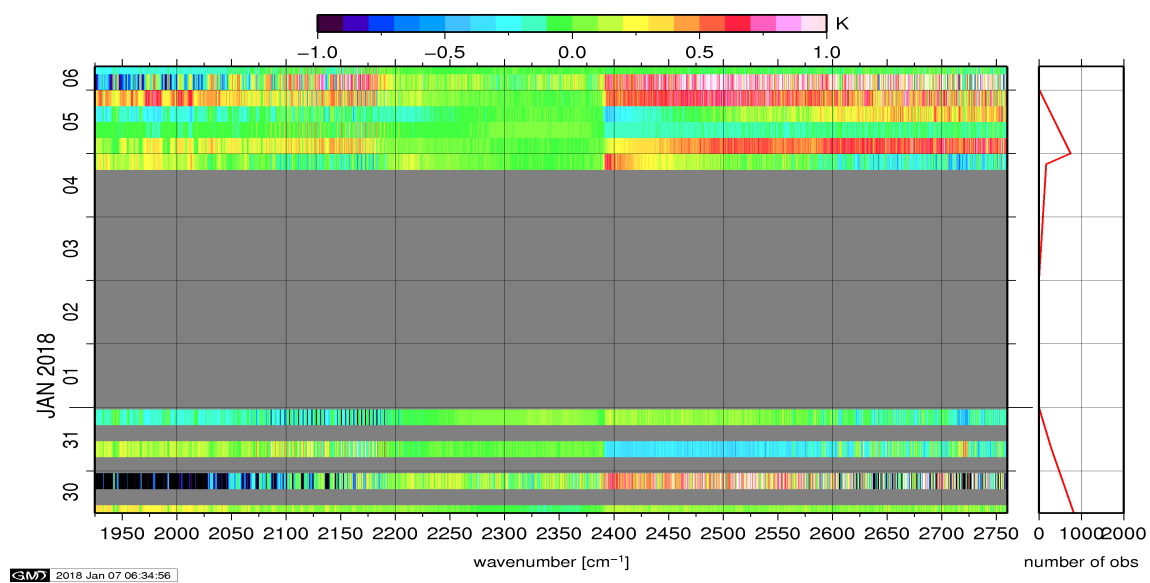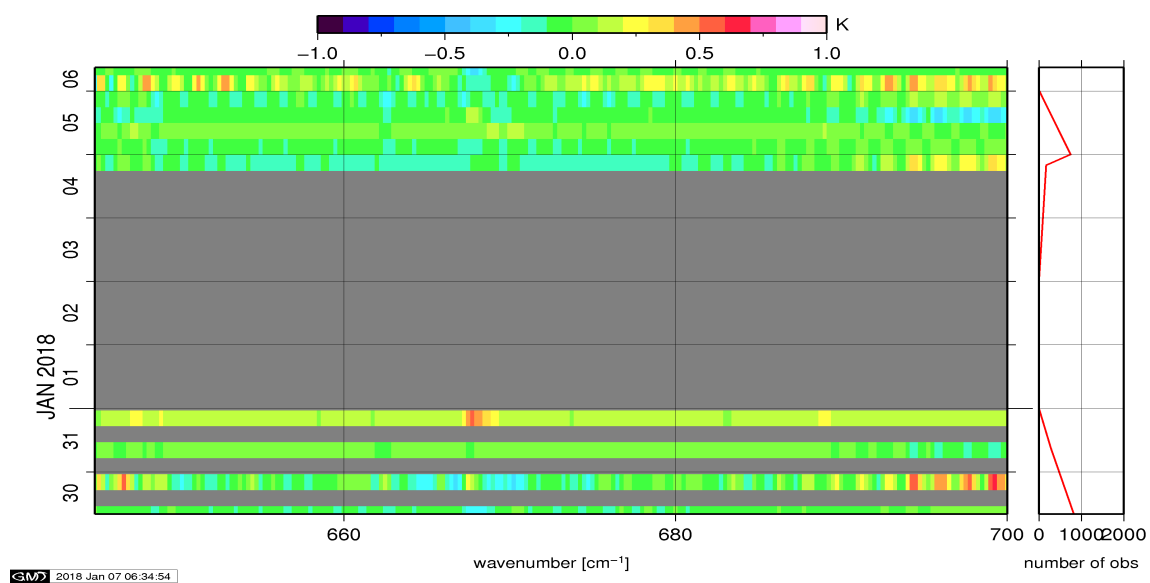

Figure 13: Radiance Anomaly in BRT: IASI Band 3
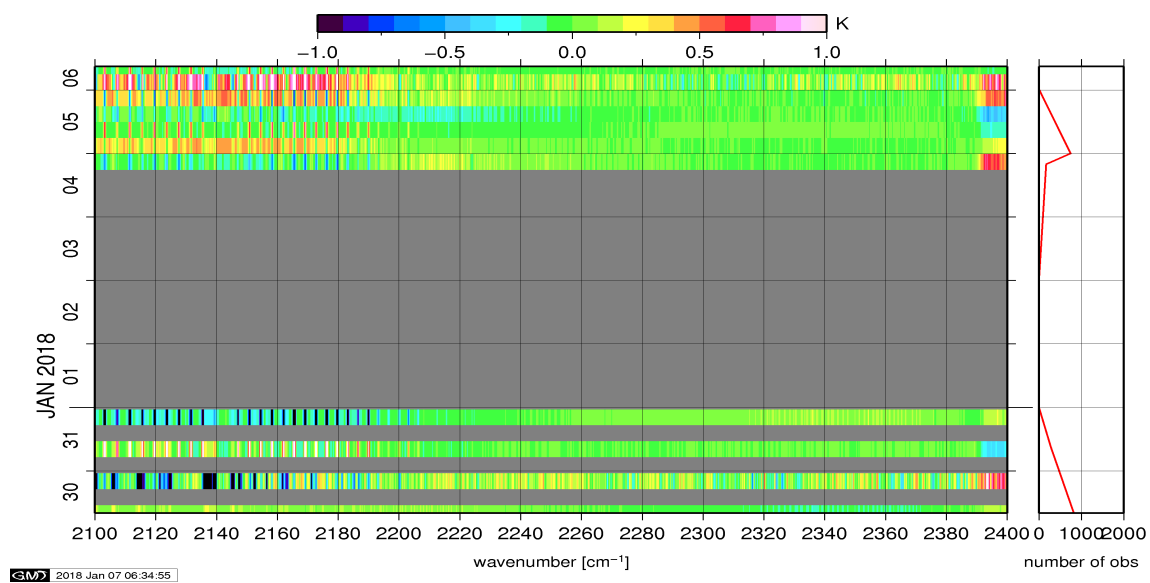
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Figure 14: Radiance Anomaly in BRT: CO2 14

Figure 15: Radiance Anomaly in BRT: CO2 4.3
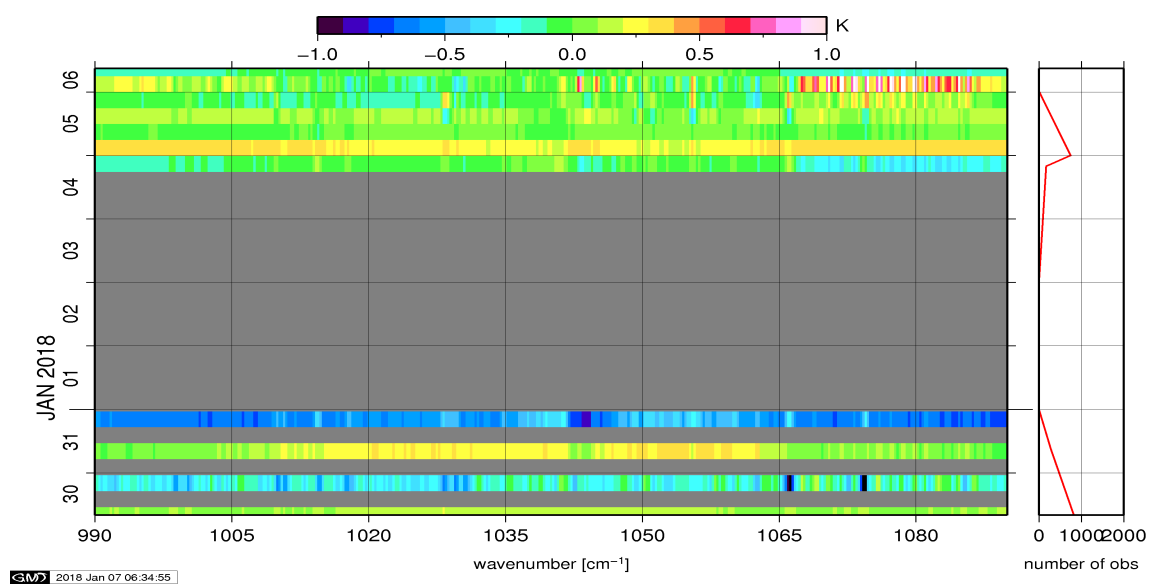
Figure 16: Radiance Anomaly in BRT: O3

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.
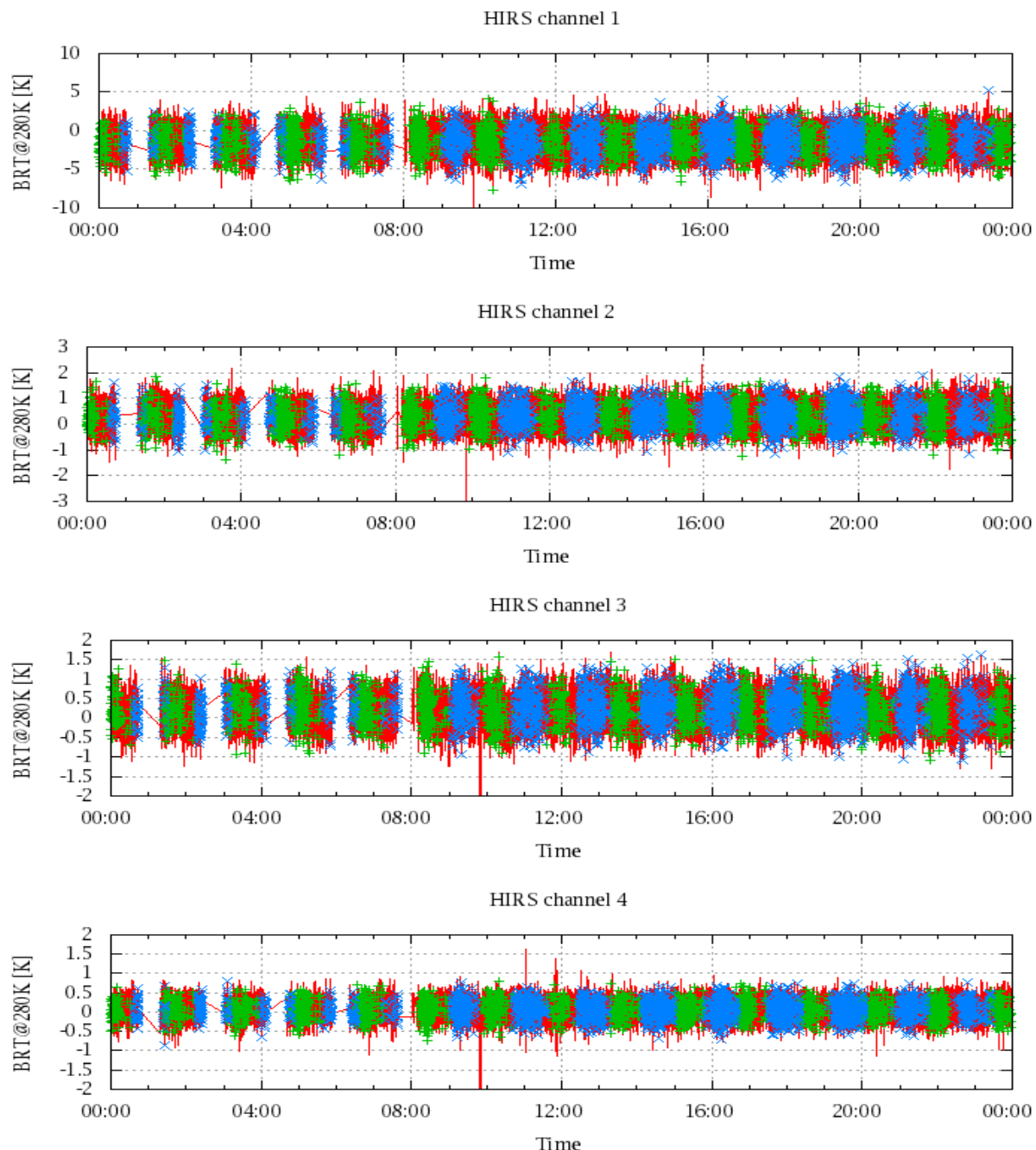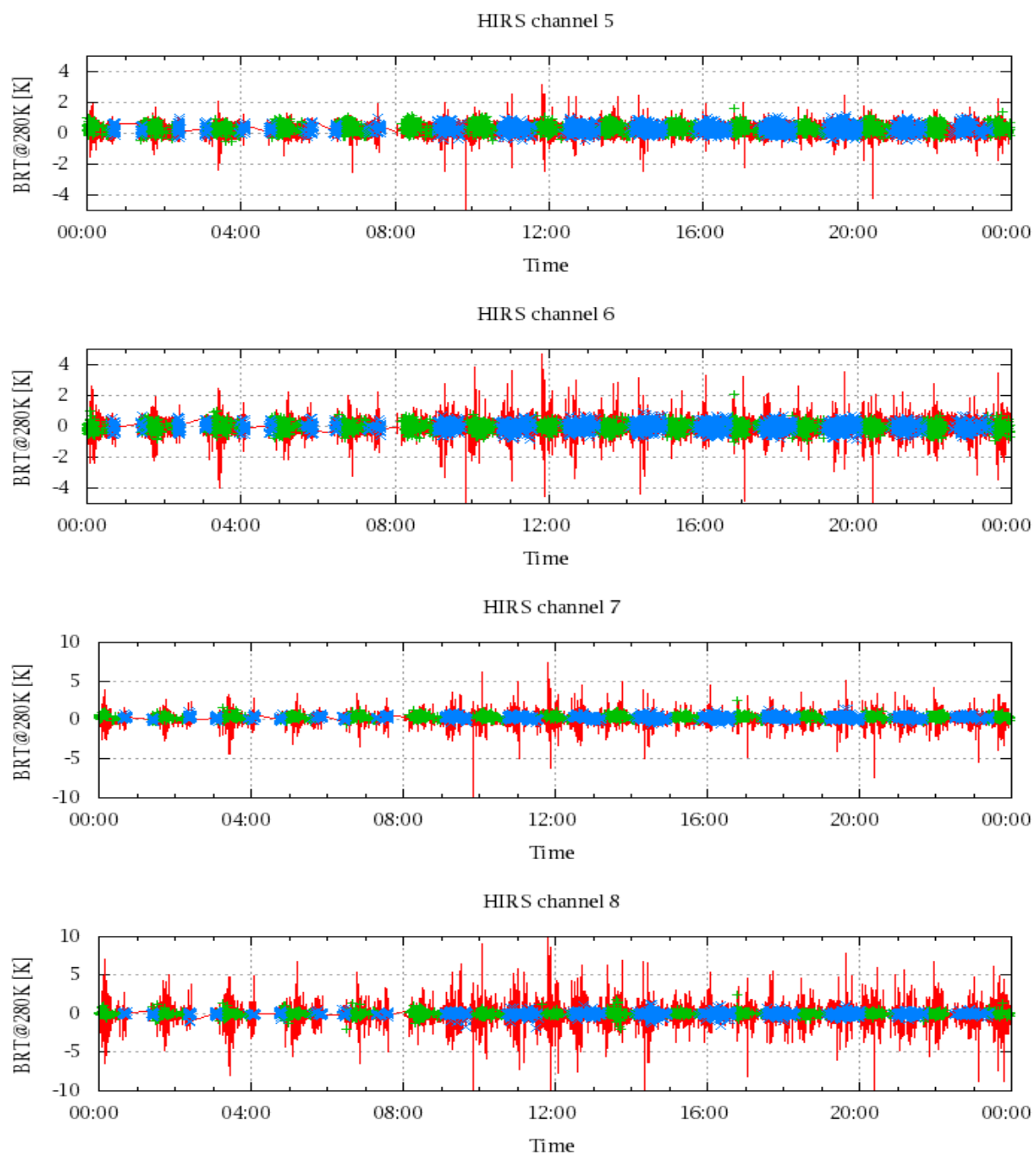

Figure 17: Radiance Differences in BRT
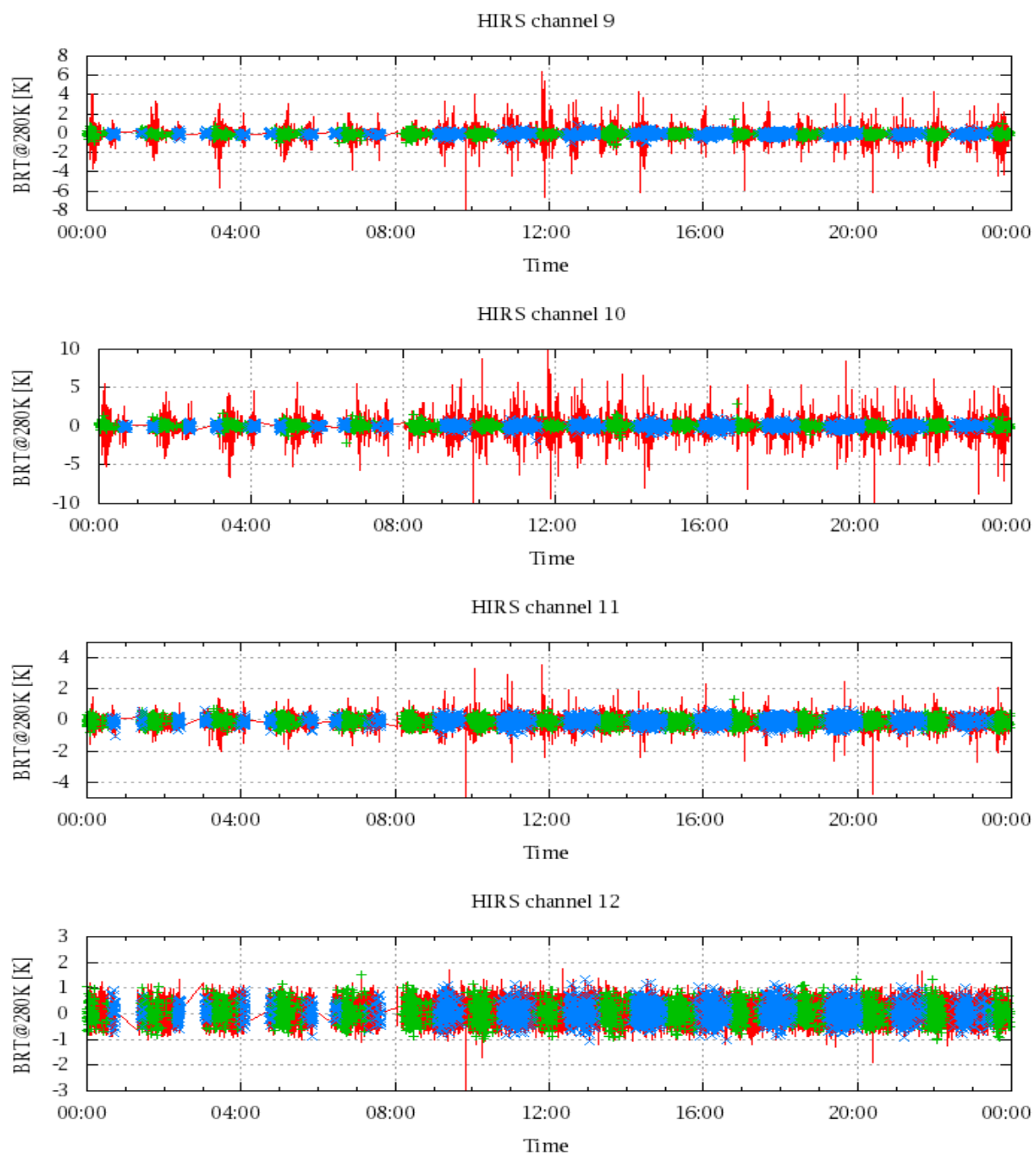
Figure 18: Radiance Differences in BRT

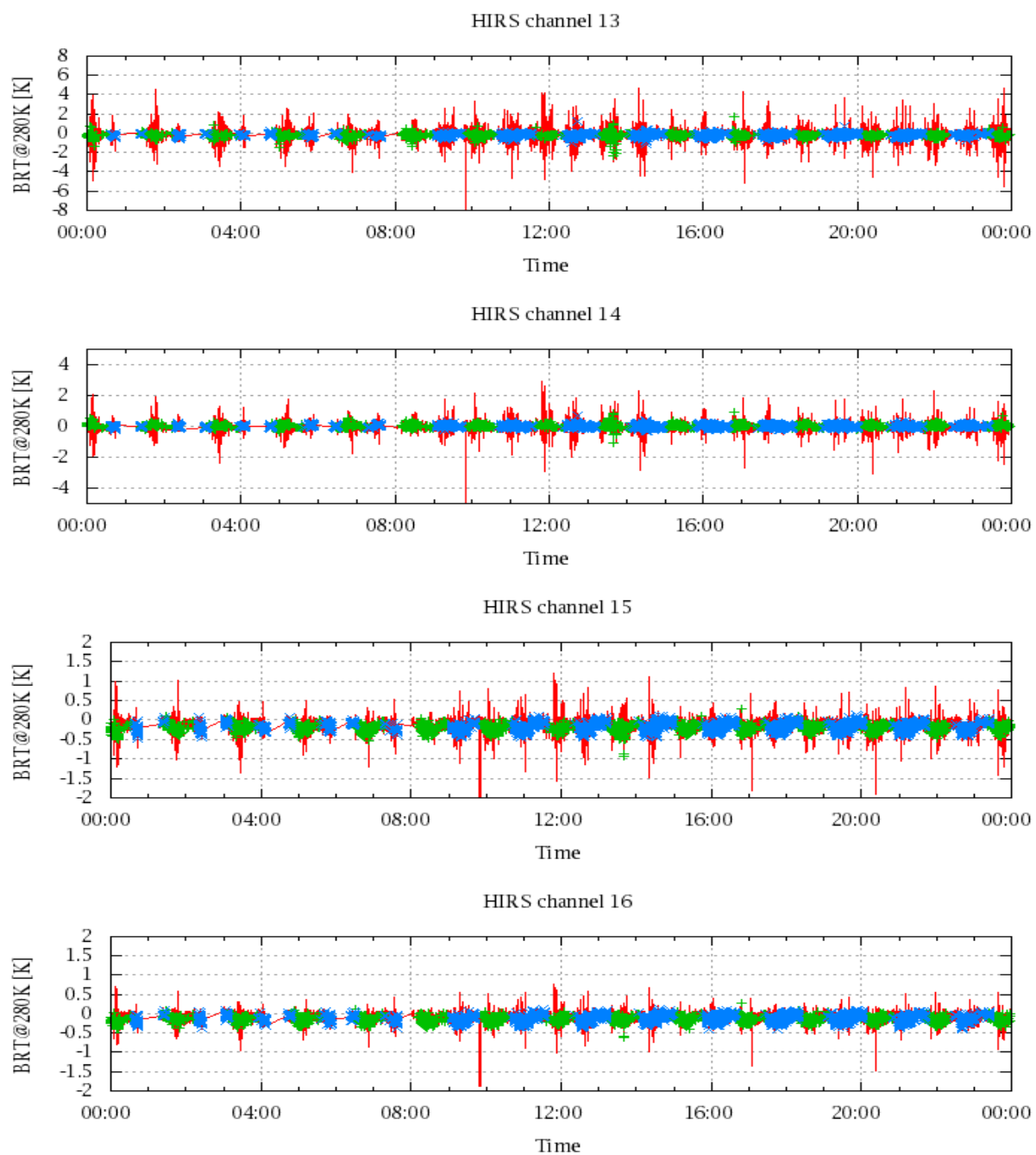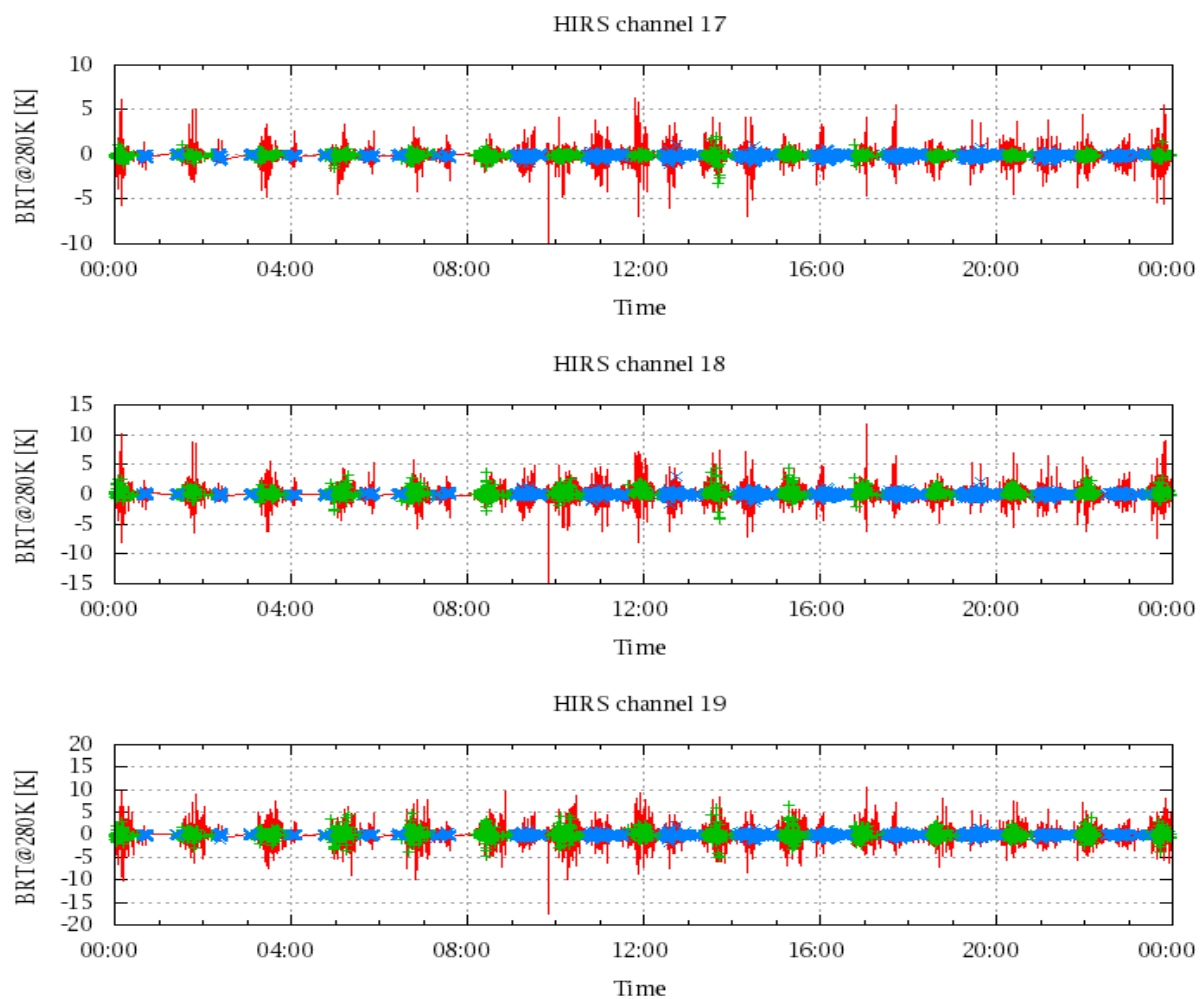Figure 19: Radiance Differences in BRT

Figure 20: Radiance Differences in BRT

Figure 21: Radinace Differences in BRT