

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

02/09/2015 00:00:00 - 03/09/2015 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 02/09/2015 00:00:00 - 03/09/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 02/09/2015 00:00:00 - 03/09/2015 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	480	-
L0 IASI PDUs	480	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSGranule	478	-
L1 DPX PDUs (RM: IASI-HIRS)	391	e
L1 DPS Files (RM: OBS-CAL NWP based)	478	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	6708	7583	20150902060440.139	20150902060900.670
PX1 (130)	9768	10223	20150902073559.911	20150902073800.989
PX2 (135)	6708	7583	20150902060440.139	20150902060900.670
PX2 (135)	9768	10223	20150902073559.911	20150902073800.989
PX3 (140)	6708	7583	20150902060440.139	20150902060900.670
PX3 (140)	9768	10223	20150902073559.911	20150902073800.989
PX4 (145)	6708	7583	20150902060440.139	20150902060900.670
PX4 (145)	9768	10223	20150902073559.911	20150902073800.989
IMG (150)	7263	8271	20150902060439.921	20150902060900.670
IMG (150)	12992	13506	20150902073559.911	20150902073800.774
VER (160)	4800	4966	20150902060434.299	20150902060906.291
VER (160)	8137	8213	20150902073554.504	20150902073802.500
AUX (180)	4234	4268	20150902060434.948	20150902060906.943
AUX (180)	4901	4917	20150902073554.938	20150902073802.934

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
02/09/2015 00:00:10	-	Normal operation
02/09/2015 04:19:54	Normal operation	Auxiliary ASE synchronised
02/09/2015 04:22:02	Auxiliary ASE synchronised	External calibration
02/09/2015 04:45:14	External calibration	Auxiliary ASE synchronised
02/09/2015 04:47:06	Auxiliary ASE synchronised	Normal operation
02/09/2015 06:02:18	Auxiliary ASE synchronised	External calibration
02/09/2015 06:31:22	External calibration	Auxiliary ASE synchronised
02/09/2015 06:33:14	Auxiliary ASE synchronised	Normal operation
02/09/2015 07:40:25	Normal operation	Auxiliary ASE synchronised
02/09/2015 07:42:17	Auxiliary ASE synchronised	External calibration
02/09/2015 08:12:41	External calibration	Auxiliary ASE synchronised
02/09/2015 08:14:33	Auxiliary ASE synchronised	Normal operation
02/09/2015 09:23:05	Auxiliary ASE synchronised	External calibration
02/09/2015 09:53:45	External calibration	Auxiliary ASE synchronised
02/09/2015 09:55:53	Auxiliary ASE synchronised	Normal operation
02/09/2015 11:06:33	Normal operation	Auxiliary ASE synchronised
02/09/2015 11:08:41	Auxiliary ASE synchronised	External calibration
02/09/2015 11:35:05	External calibration	Auxiliary ASE synchronised
02/09/2015 11:37:13	Auxiliary ASE synchronised	Normal operation
02/09/2015 18:27:05	Normal operation	Auxiliary ASE synchronised
02/09/2015 18:28:57	Auxiliary ASE synchronised	External calibration
02/09/2015 19:03:21	External calibration	Auxiliary ASE synchronised
02/09/2015 19:05:29	Auxiliary ASE synchronised	Normal operation
02/09/2015 20:07:05	Normal operation	Auxiliary ASE synchronised
02/09/2015 20:09:13	Auxiliary ASE synchronised	External calibration
02/09/2015 20:57:45	External calibration	Auxiliary ASE synchronised
02/09/2015 20:59:37	Auxiliary ASE synchronised	Normal operation
02/09/2015 22:13:29	Normal operation	Auxiliary ASE synchronised
02/09/2015 22:15:21	Auxiliary ASE synchronised	External calibration
02/09/2015 22:44:09	External calibration	Auxiliary ASE synchronised
02/09/2015 22:46:01	Auxiliary ASE synchronised	Normal operation
02/09/2015 23:54:33	Normal operation	Auxiliary ASE synchronised
02/09/2015 23:56:25	Auxiliary ASE synchronised	External calibration

Table 3: Instrument modes

4 L0 and L1 Data Quality

Flag	Value	Action
L0 IASI PDUs	480	-
L1 ENG PDUs	478	-
L1 ENG distinct GEPSSGranule	478	-
GQisFlagQual set (PX1)	99.13 %	-
GQisFlagQual set (PX2)	98.76 %	-
GQisFlagQual set (PX3)	99.09 %	-
GQisFlagQual set (PX4)	98.86 %	-
GQisFlagQual set (all)	98.96 %	-

Table 4: Quality flags

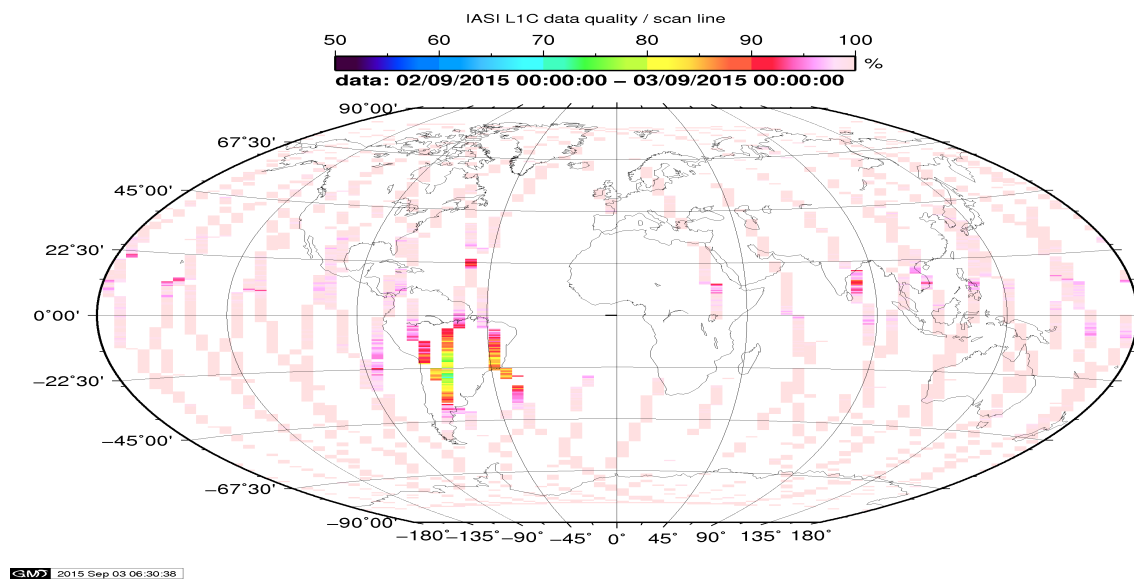


Figure 1: L1C data quality

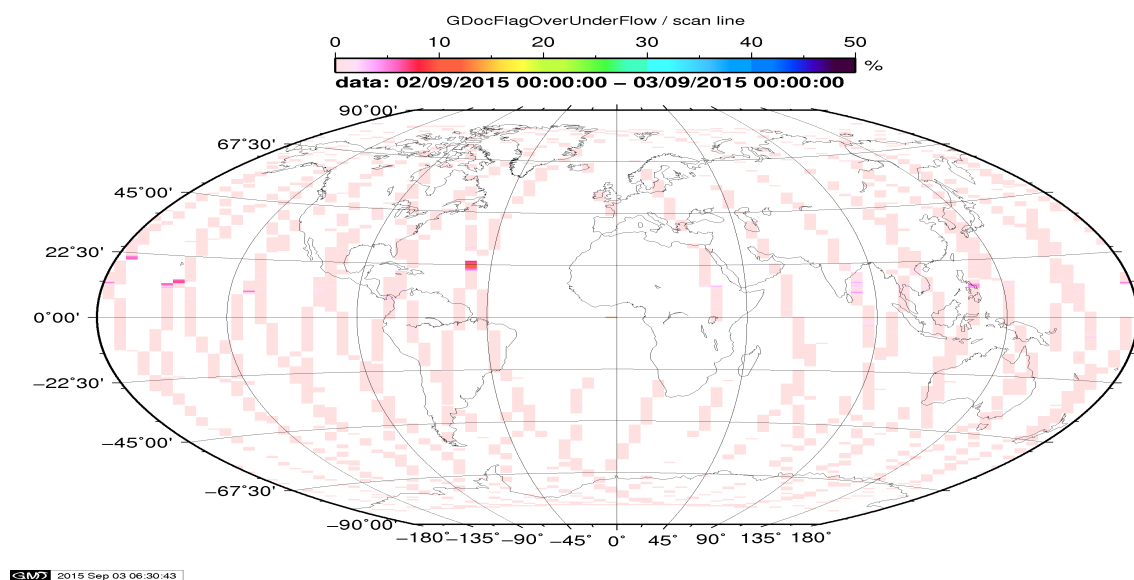


Figure 2: Flag of Over and Under Flows

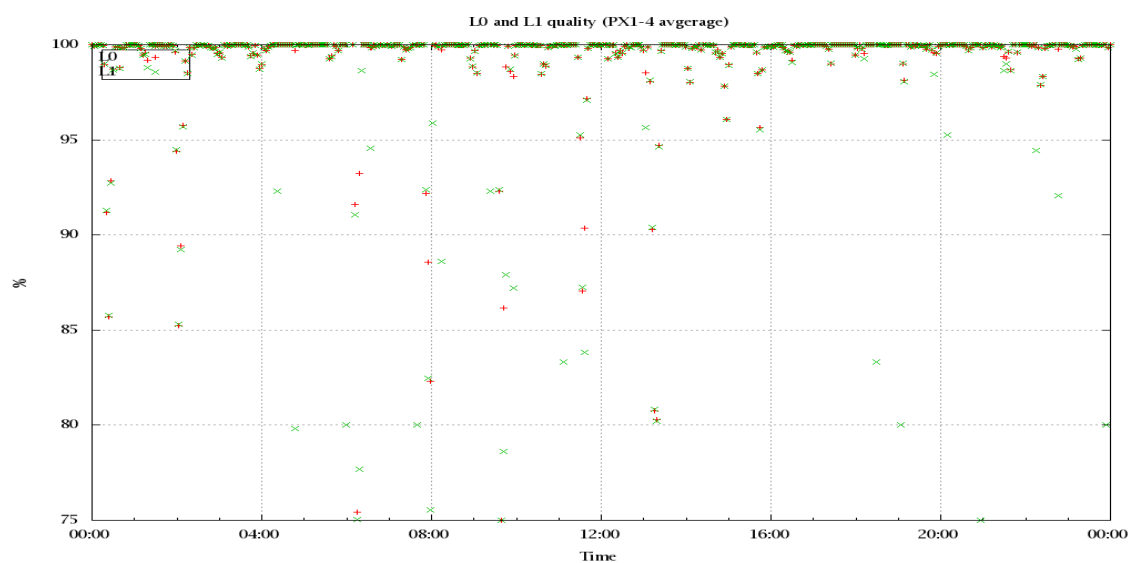


Figure 3: Level 0 and 1C overall quality

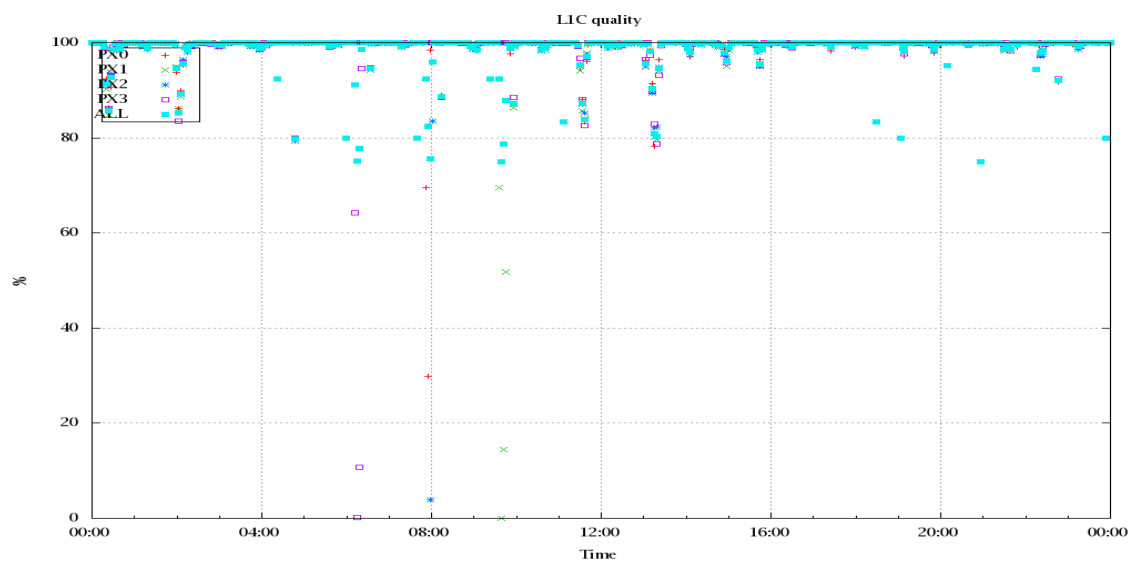


Figure 4: Level 1C quality

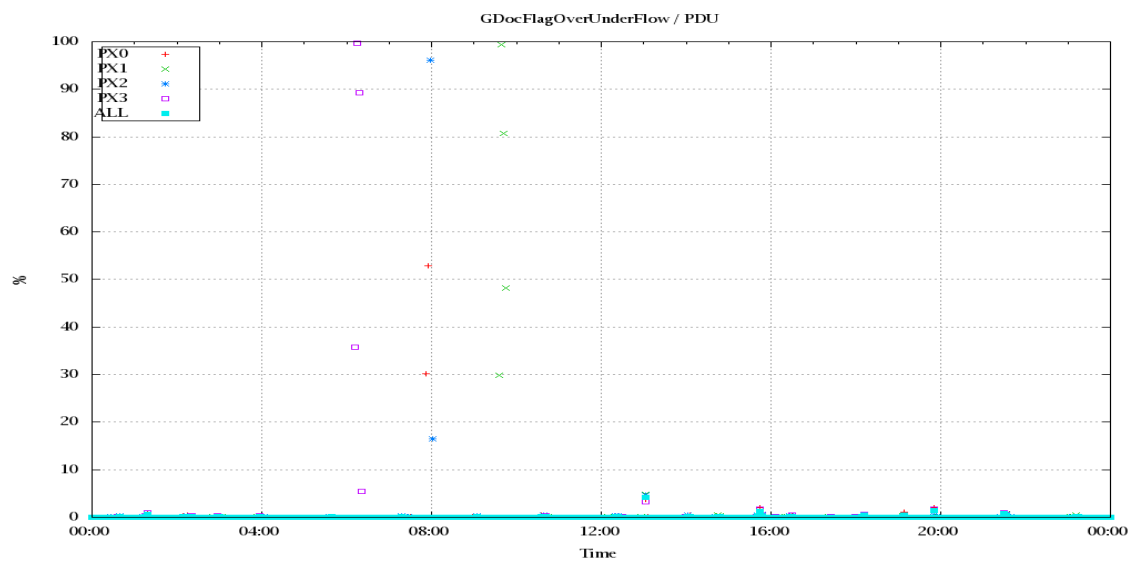


Figure 5: OverUnderFlowFlag timeseries

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.

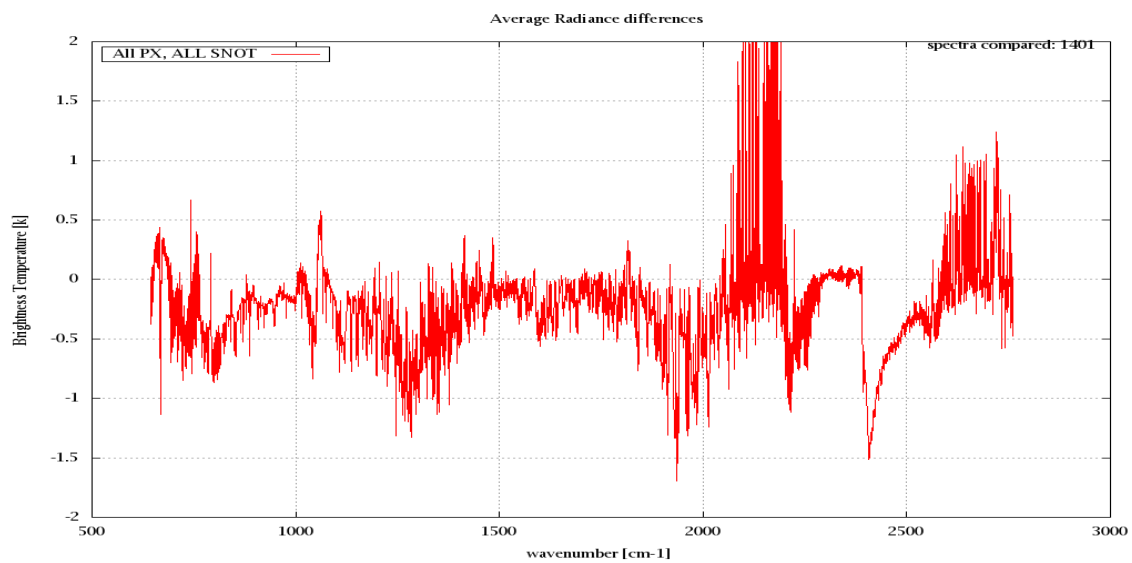


Figure 6: Average Radiance differences: OBS-CAL

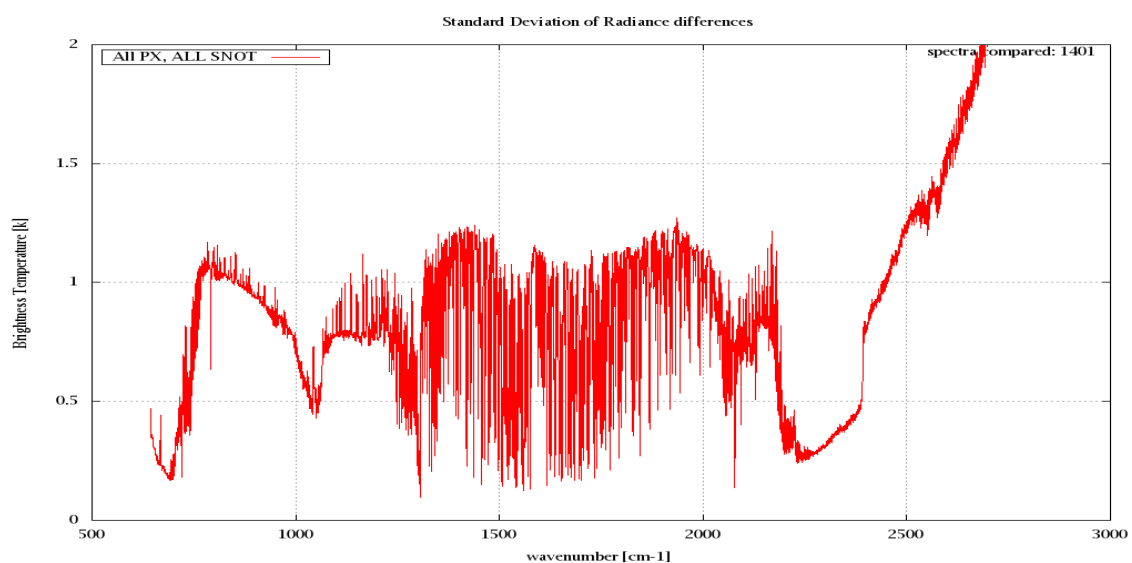


Figure 7: Standard Deviation of Radiance differences

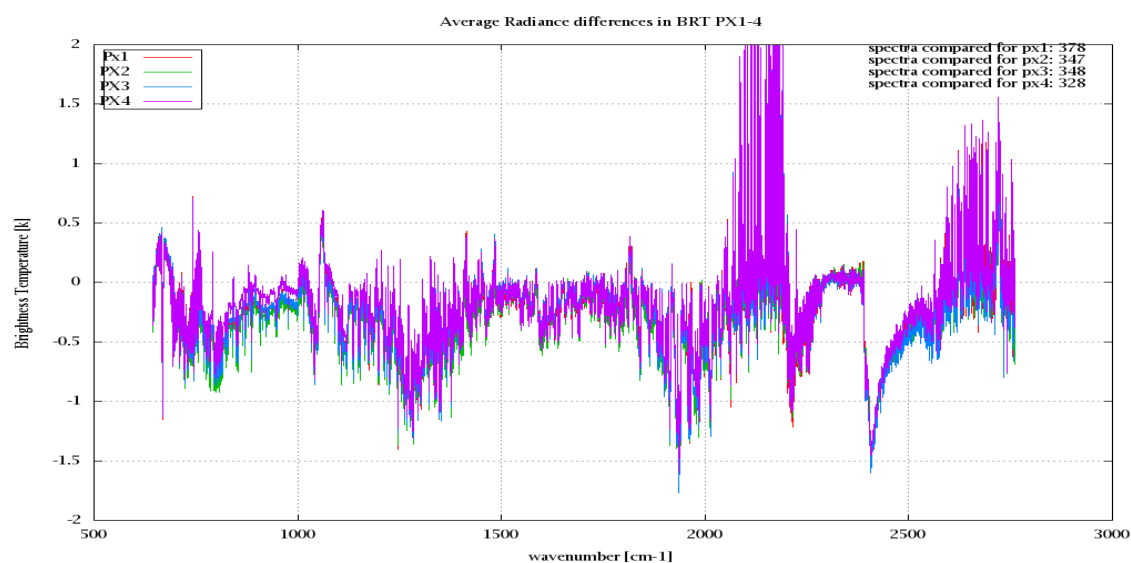


Figure 8: Average Radiance differences: OBS-CAL

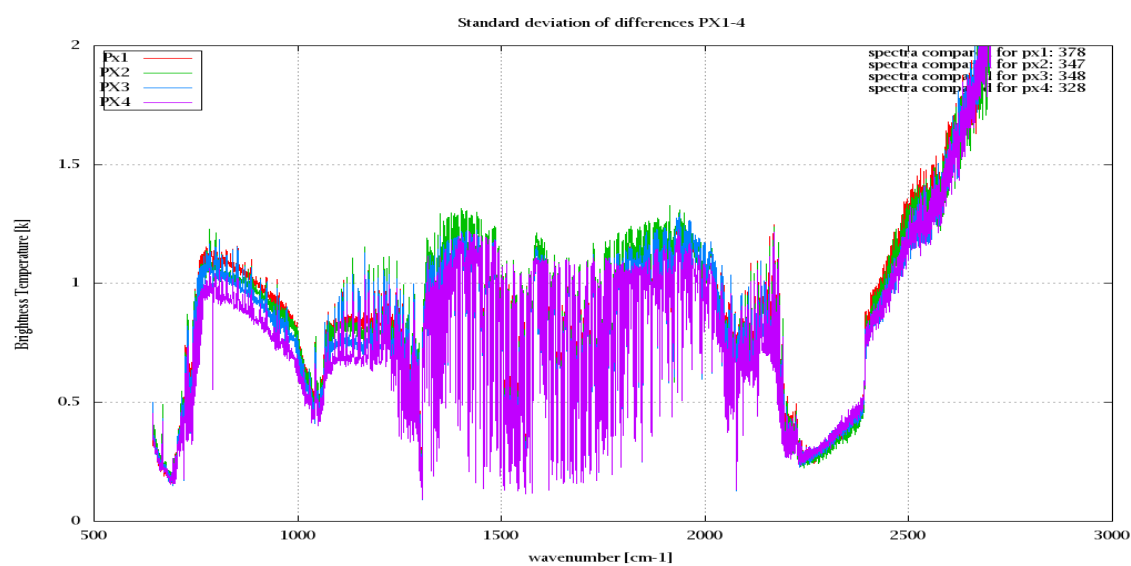


Figure 9: Standard Deviation of Radiance differences

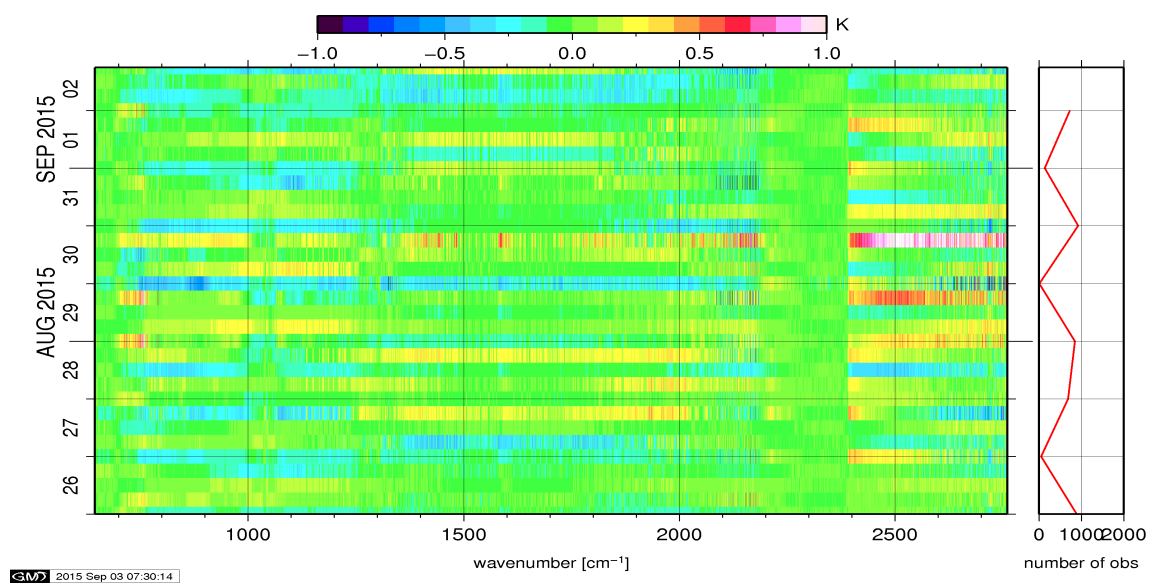


Figure 10: Radiance Anomaly in BRT: All Channels

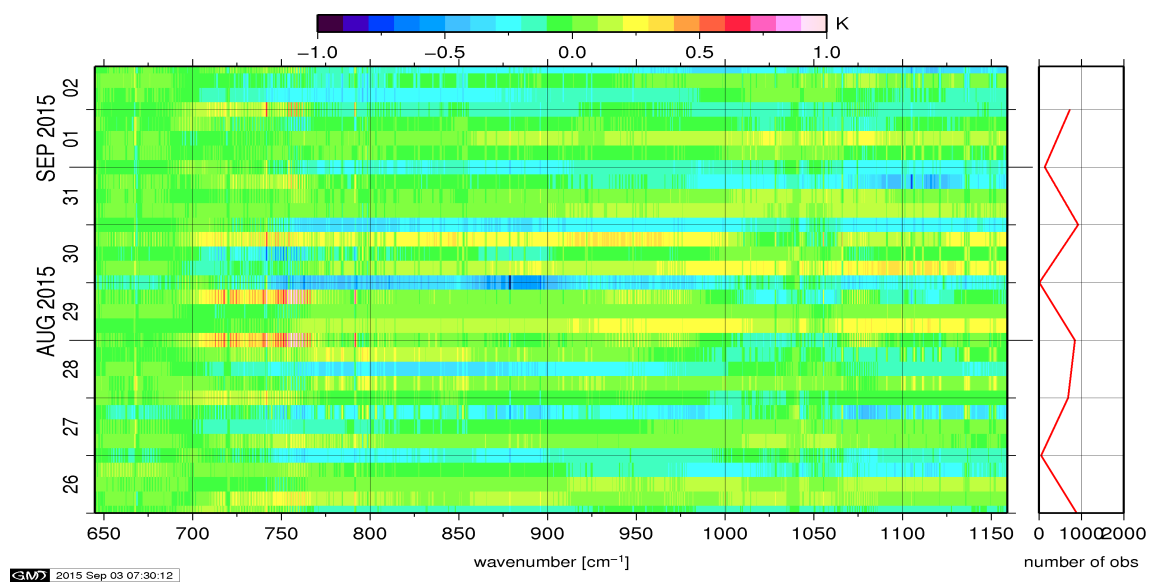


Figure 11: Radiance Anomaly in BRT: IASI Band 1

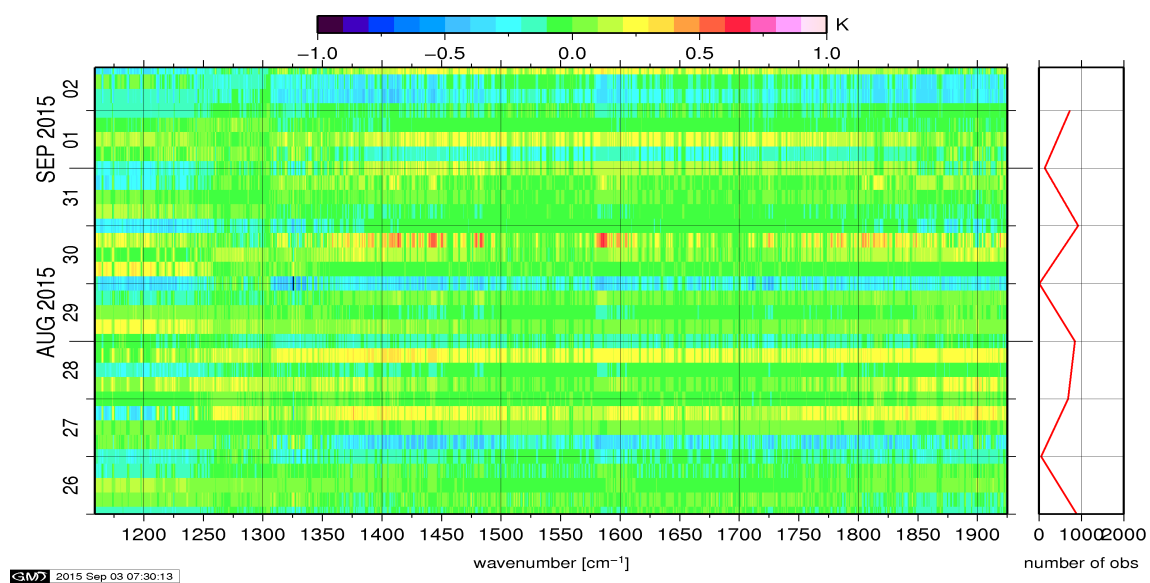


Figure 12: Radiance Anomaly in BRT: IASI Band 2

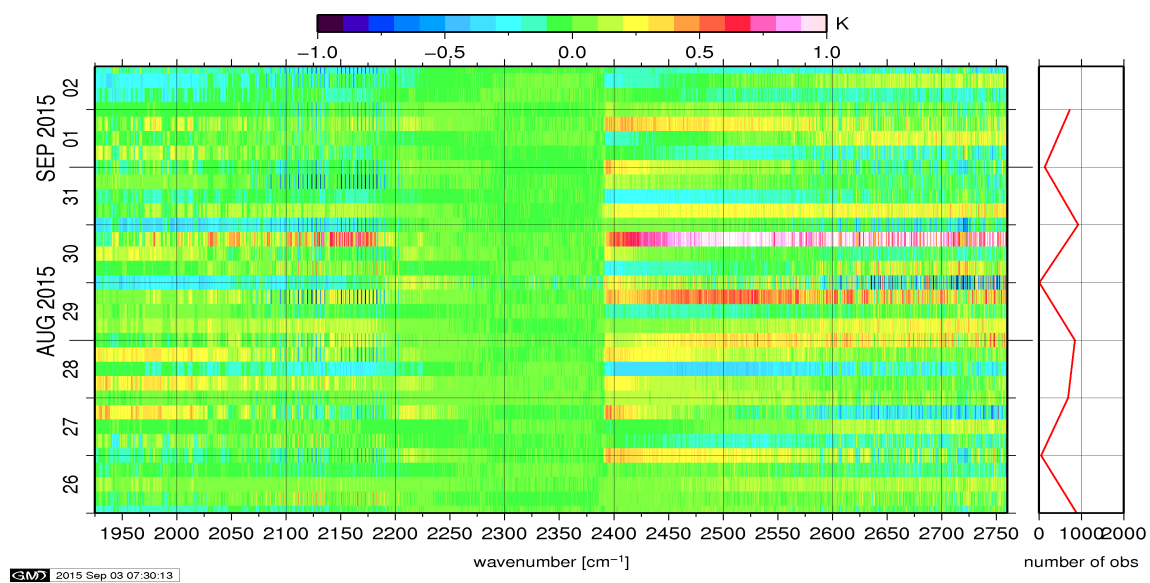


Figure 13: Radiance Anomaly in BRT: IASI Band 3

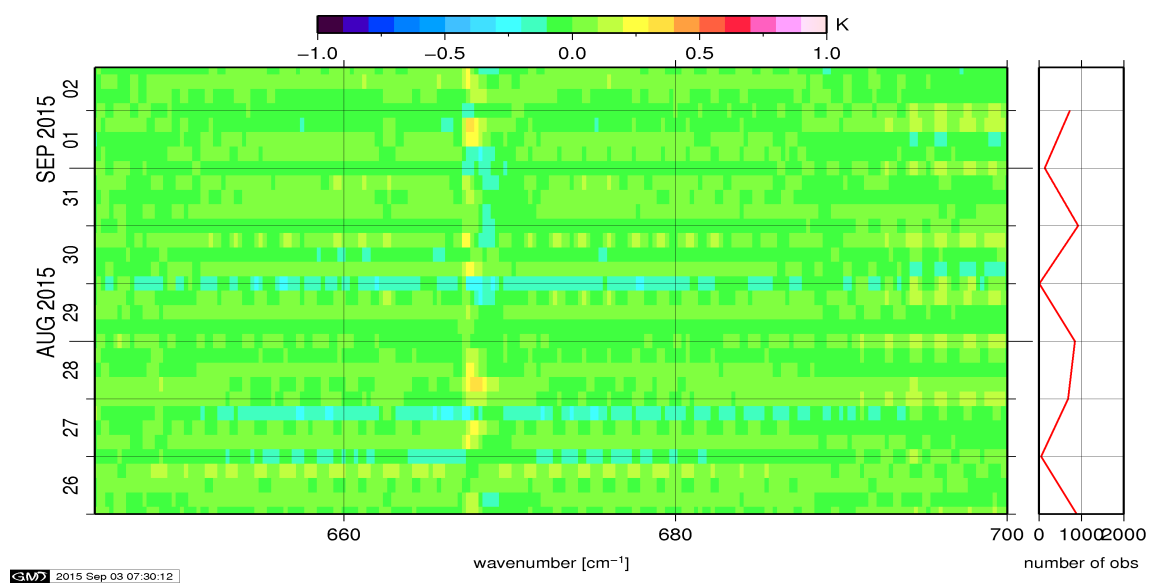


Figure 14: Radiance Anomaly in BRT: CO2 14

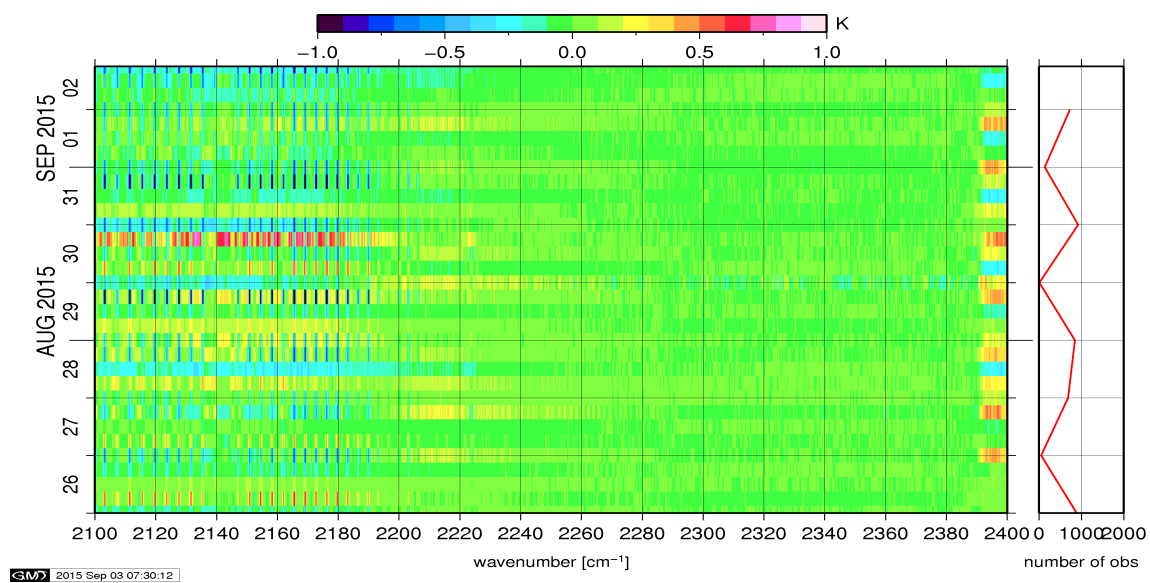


Figure 15: Radiance Anomaly in BRT: CO2 4.3

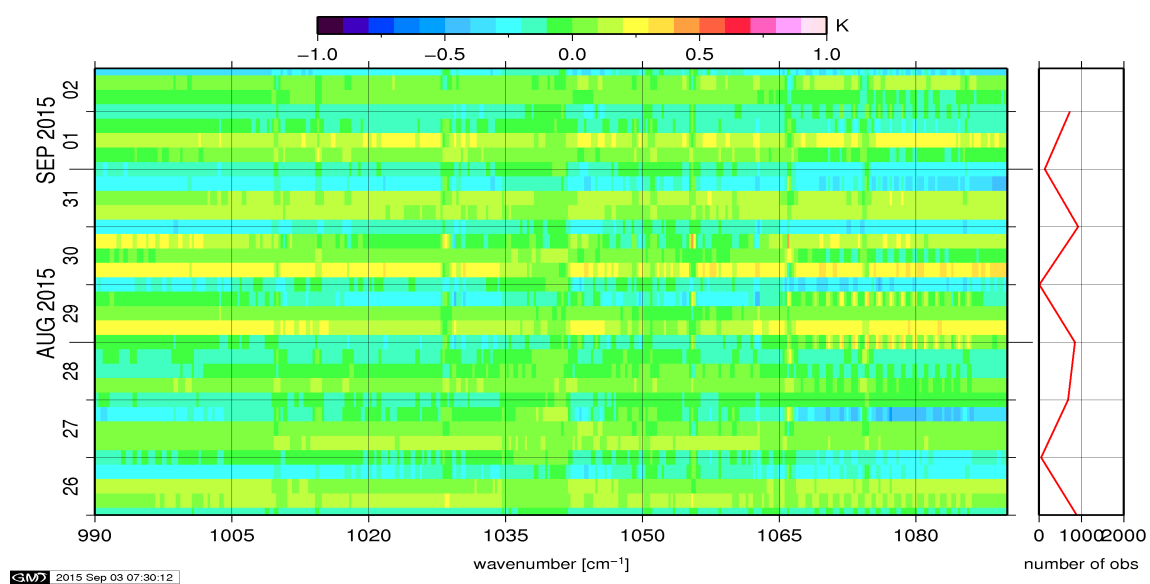


Figure 16: Radiance Anomaly in BRT: O3

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.

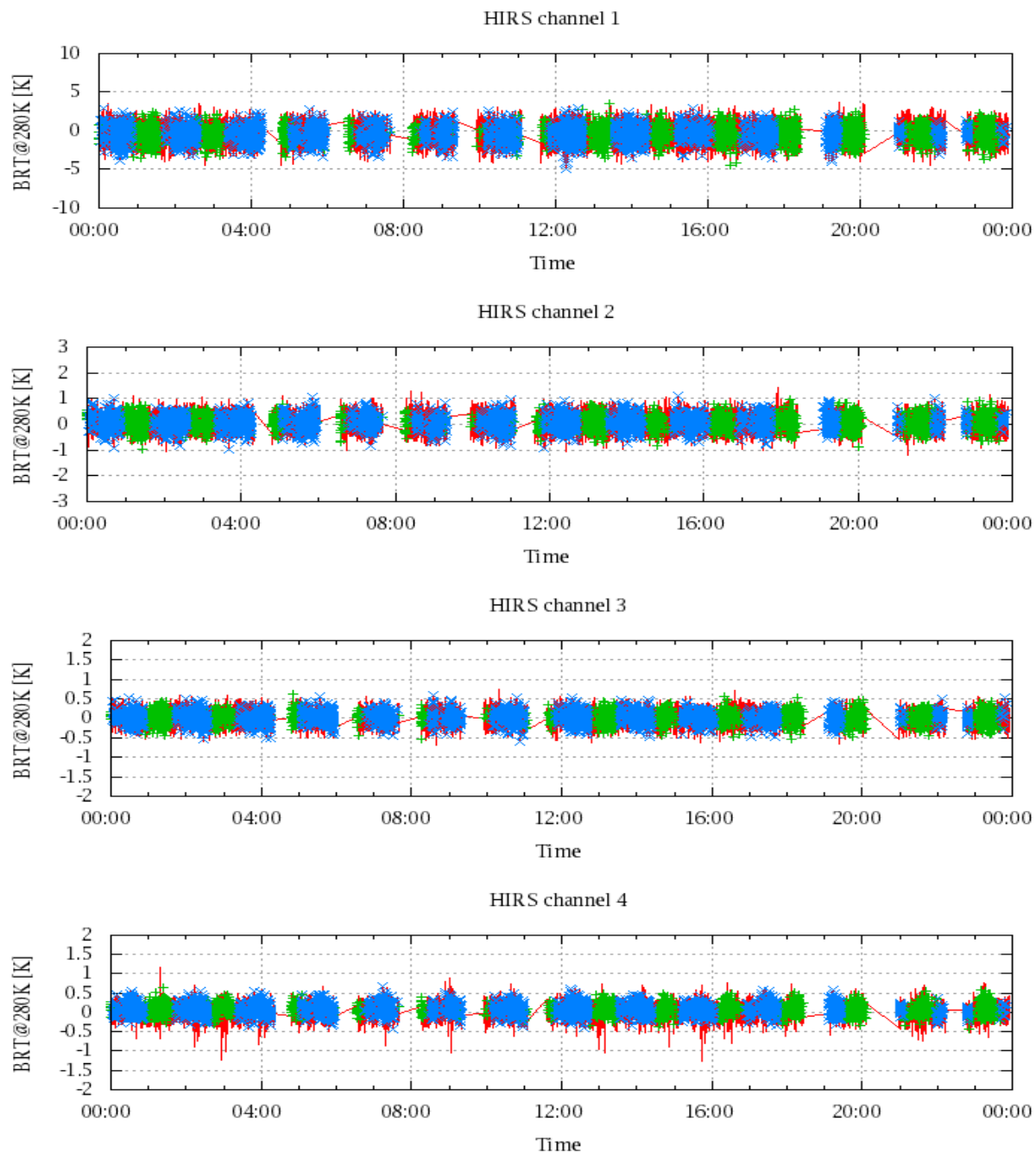


Figure 17: Radiance Differences in BRT

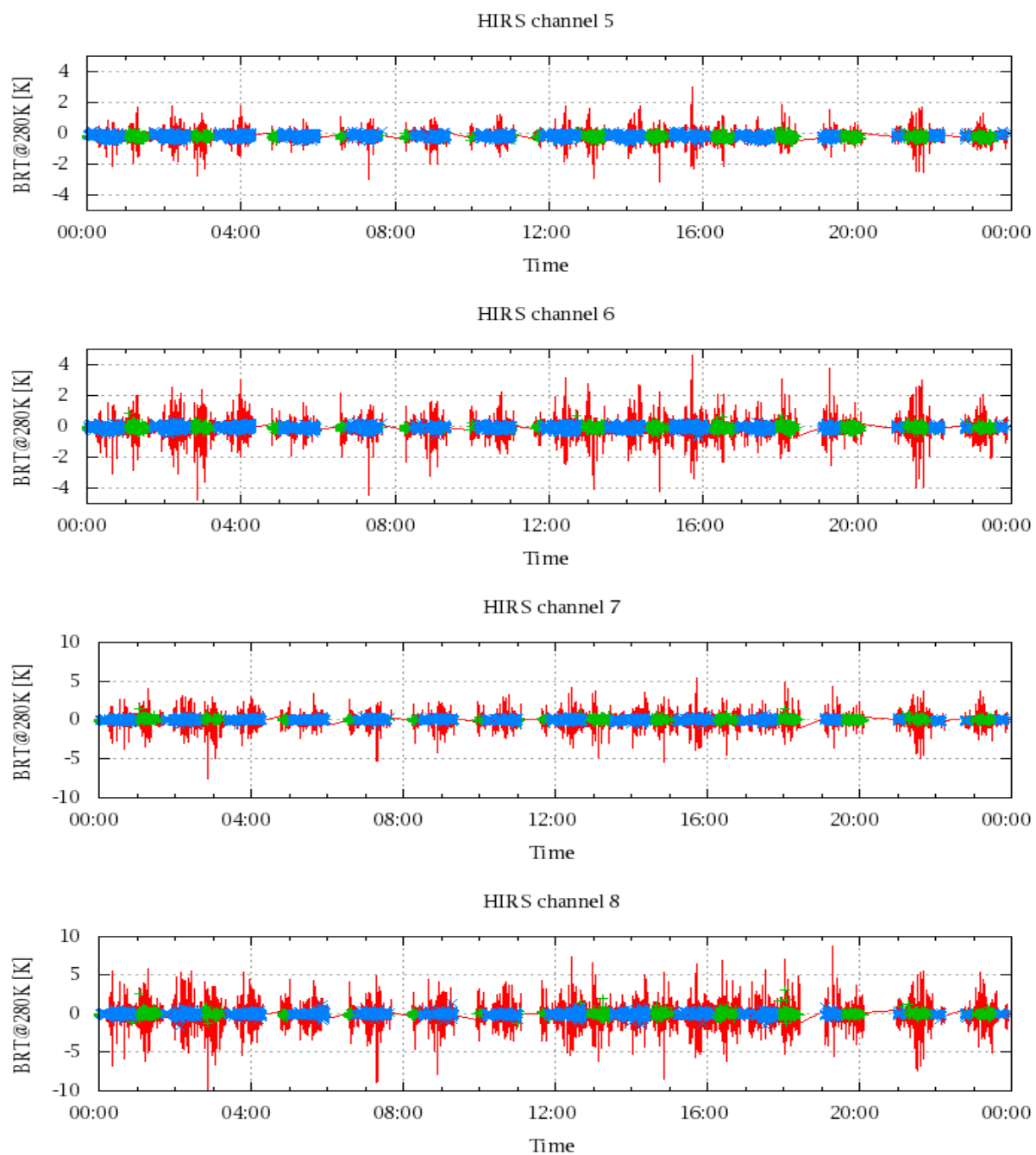


Figure 18: Radiance Differences in BRT

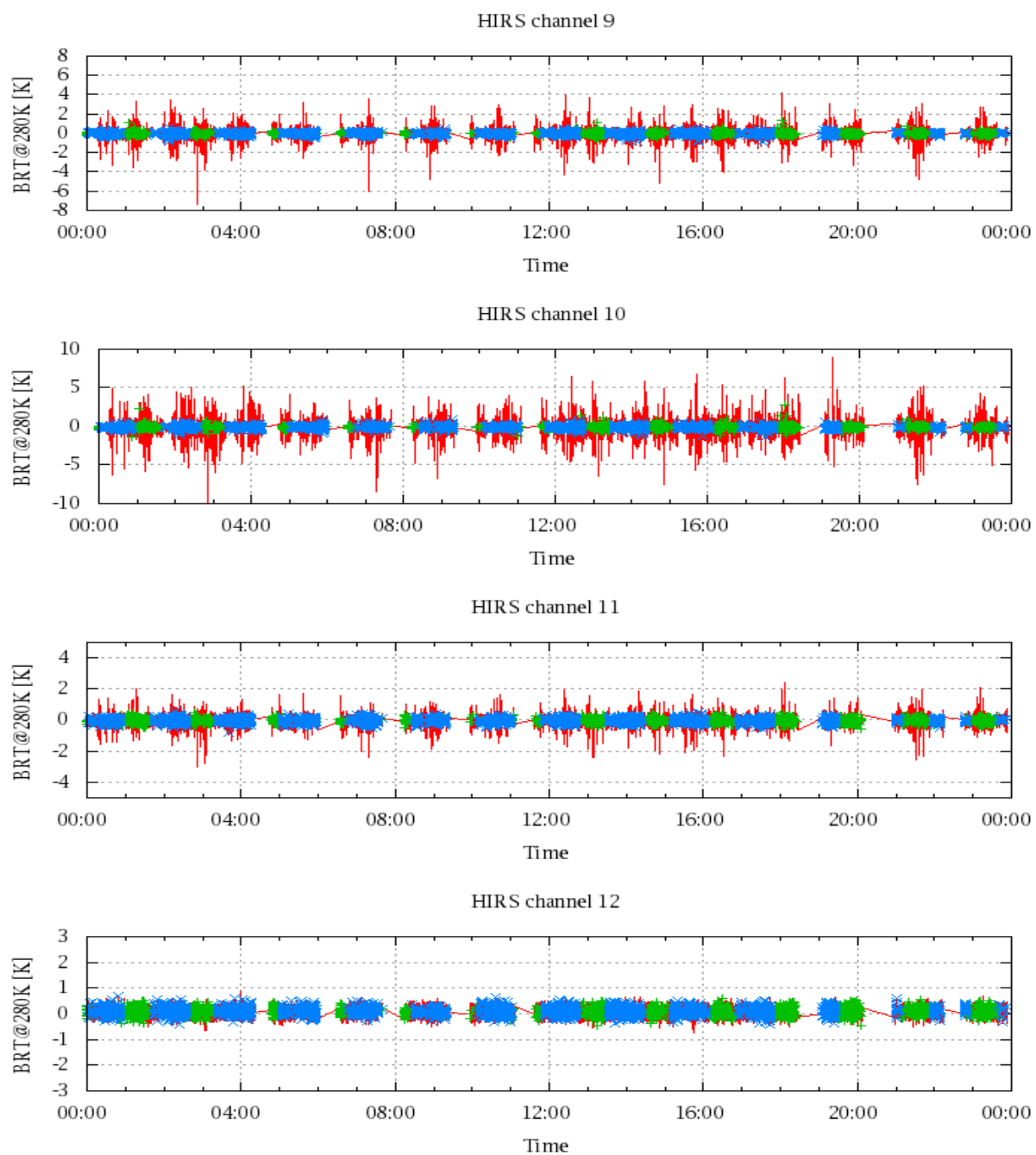


Figure 19: Radiance Differences in BRT

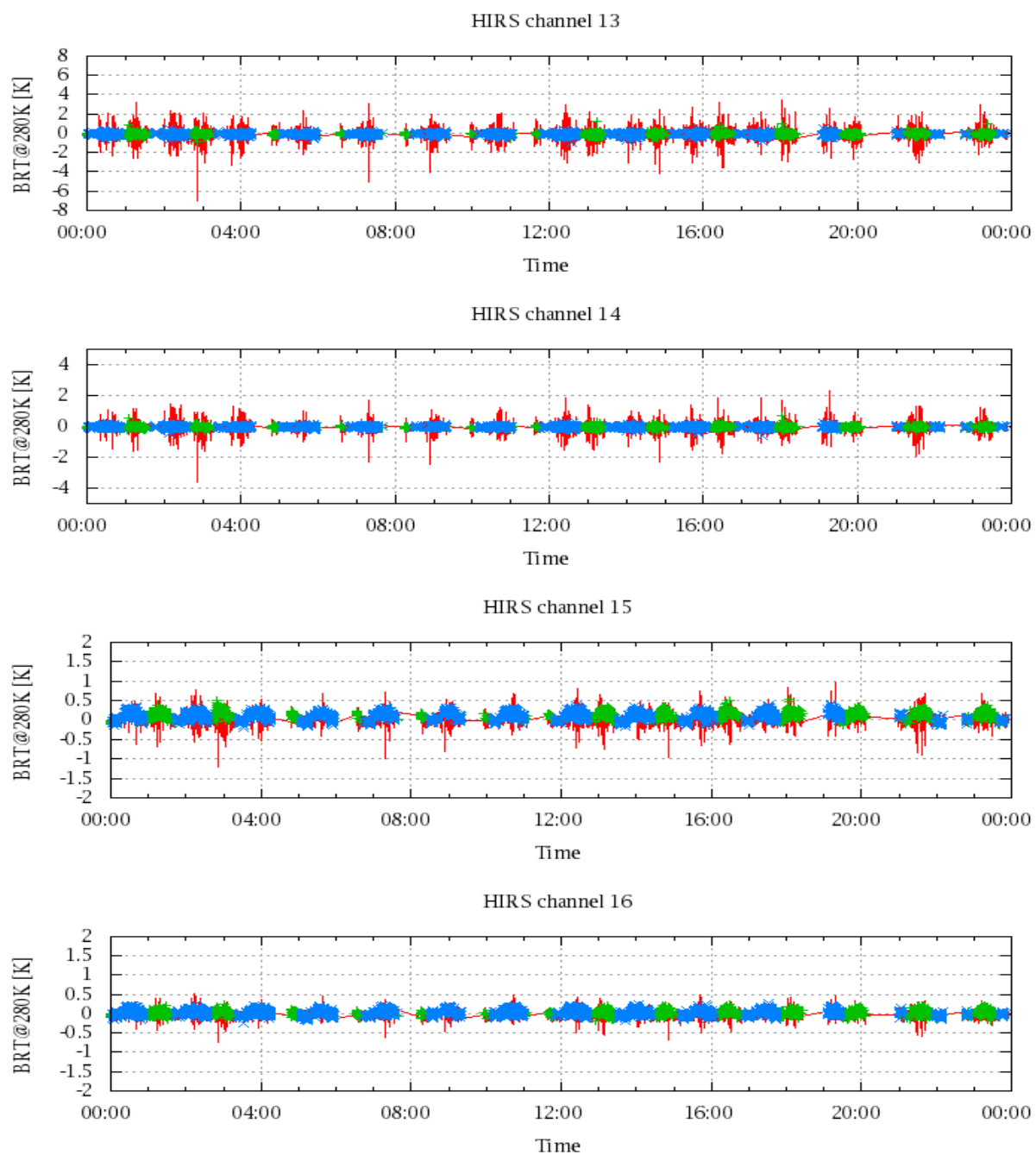


Figure 20: Radiance Differences in BRT

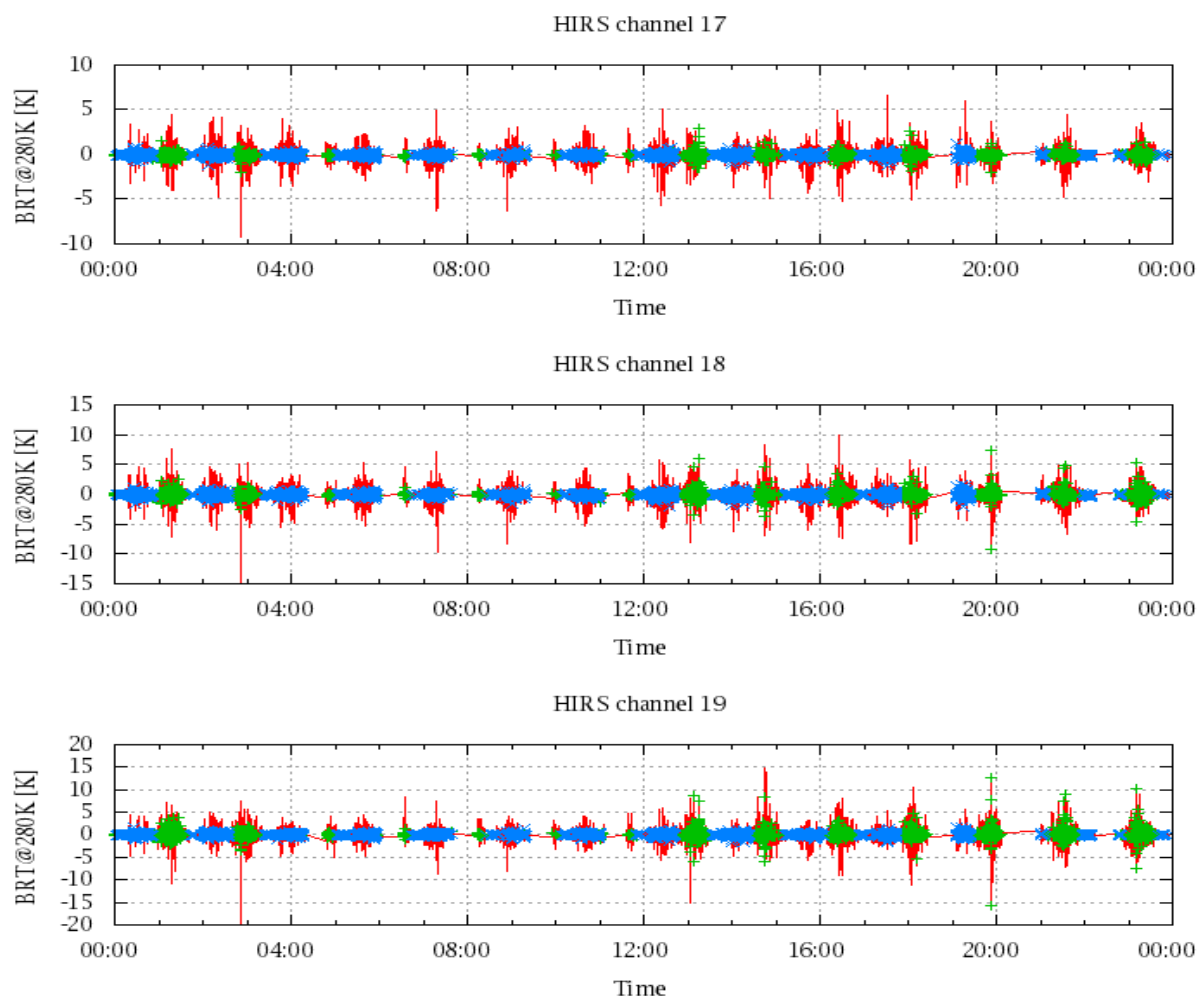


Figure 21: Radinace Differences in BRT