

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

15/07/2015 00:00:00 - 16/07/2015 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 15/07/2015 00:00:00 - 16/07/2015 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 15/07/2015 00:00:00 - 16/07/2015 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	479	-
L1 ENG distinct GEPSGranule	480	-
L1 DPX PDUs (RM: IASI-HIRS)	479	-
L1 DPS Files (RM: OBS-CAL NWP based)	479	-

Table 1: Data quantity

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	385	561	20150715011113.009	20150715011200.142
PX1 (130)	8248	8250	20150715063725.069	20150715063727.014
PX1 (130)	8250	8252	20150715063727.014	20150715063727.448
PX1 (130)	8252	8255	20150715063727.448	20150715063728.096
PX1 (130)	8255	8263	20150715063728.096	20150715063729.826
PX1 (130)	8266	8269	20150715063730.475	20150715063731.119
PX1 (130)	8269	8272	20150715063731.119	20150715063731.772
PX1 (130)	8272	8275	20150715063731.772	20150715063732.420
PX1 (130)	8283	8287	20150715063735.662	20150715063736.526
PX1 (130)	8287	8290	20150715063736.526	20150715063737.174
PX1 (130)	8292	8295	20150715063737.608	20150715063738.256
PX1 (130)	8295	8297	20150715063738.256	20150715063738.690
PX1 (130)	8298	8300	20150715063738.905	20150715063739.338
PX1 (130)	8305	8307	20150715063740.420	20150715063740.850
PX1 (130)	8310	8314	20150715063743.014	20150715063743.877
PX1 (130)	8316	8319	20150715063744.311	20150715063744.959
PX1 (130)	8321	8323	20150715063745.393	20150715063745.826
PX1 (130)	8324	8326	20150715063746.041	20150715063746.471

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	8380	8382	20150715063801.174	20150715063801.608
PX2 (135)	385	561	20150715011113.009	20150715011200.142
PX2 (135)	8248	8250	20150715063725.069	20150715063727.014
PX2 (135)	8250	8255	20150715063727.014	20150715063728.096
PX2 (135)	8256	8261	20150715063728.311	20150715063729.393
PX2 (135)	8261	8263	20150715063729.393	20150715063729.826
PX2 (135)	8265	8269	20150715063730.256	20150715063731.119
PX2 (135)	8269	8271	20150715063731.119	20150715063731.553
PX2 (135)	8277	8279	20150715063732.850	20150715063733.283
PX2 (135)	8283	8287	20150715063735.662	20150715063736.526
PX2 (135)	8287	8289	20150715063736.526	20150715063736.959
PX2 (135)	8292	8295	20150715063737.608	20150715063738.256
PX2 (135)	8295	8297	20150715063738.256	20150715063738.690
PX2 (135)	8315	8319	20150715063744.092	20150715063744.959
PX2 (135)	8319	8321	20150715063744.959	20150715063745.393
PX2 (135)	8321	8323	20150715063745.393	20150715063745.826
PX3 (140)	385	561	20150715011113.009	20150715011200.142
PX3 (140)	8248	8250	20150715063725.069	20150715063727.014
PX3 (140)	8250	8255	20150715063727.014	20150715063728.096
PX3 (140)	8255	8261	20150715063728.096	20150715063729.393
PX3 (140)	8261	8263	20150715063729.393	20150715063729.826
PX3 (140)	8265	8269	20150715063730.256	20150715063731.119
PX3 (140)	8269	8274	20150715063731.119	20150715063732.201
PX3 (140)	8277	8279	20150715063732.850	20150715063733.283
PX3 (140)	8281	8287	20150715063735.229	20150715063736.526
PX3 (140)	8287	8289	20150715063736.526	20150715063736.959
PX3 (140)	8295	8297	20150715063738.256	20150715063738.690
PX3 (140)	8302	8304	20150715063739.768	20150715063740.201
PX3 (140)	8315	8318	20150715063744.092	20150715063744.744
PX3 (140)	8319	8321	20150715063744.959	20150715063745.393
PX3 (140)	8321	8323	20150715063745.393	20150715063745.826
PX3 (140)	8380	8382	20150715063801.174	20150715063801.608
PX4 (145)	385	561	20150715011113.009	20150715011200.142
PX4 (145)	8248	8250	20150715063725.069	20150715063727.014
PX4 (145)	8255	8257	20150715063728.096	20150715063728.526
PX4 (145)	8257	8264	20150715063728.526	20150715063730.041
PX4 (145)	8264	8268	20150715063730.041	20150715063730.905
PX4 (145)	8269	8274	20150715063731.119	20150715063732.201
PX4 (145)	8277	8279	20150715063732.850	20150715063733.283
PX4 (145)	8281	8284	20150715063735.229	20150715063735.877
PX4 (145)	8285	8287	20150715063736.096	20150715063736.526
PX4 (145)	8287	8289	20150715063736.526	20150715063736.959
PX4 (145)	8302	8304	20150715063739.768	20150715063740.201
PX4 (145)	8308	8310	20150715063741.069	20150715063743.014
PX4 (145)	8315	8318	20150715063744.092	20150715063744.744
PX4 (145)	8319	8321	20150715063744.959	20150715063745.393
PX4 (145)	8321	8323	20150715063745.393	20150715063745.826
PX4 (145)	8355	8357	20150715063754.256	20150715063754.690
PX4 (145)	8360	8362	20150715063755.338	20150715063755.768
PX4 (145)	8380	8382	20150715063801.174	20150715063801.608
IMG (150)	2221	2421	20150715011113.009	20150715011200.142
IMG (150)	3483	3485	20150715063724.854	20150715063725.283
IMG (150)	3485	3493	20150715063725.283	20150715063727.662

Continued on next page

Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
IMG (150)	3494	3504	20150715063727.877	20150715063730.041
IMG (150)	3504	3514	20150715063730.041	20150715063732.201
IMG (150)	3518	3520	20150715063733.069	20150715063733.717
IMG (150)	3525	3528	20150715063735.229	20150715063735.877
IMG (150)	3530	3533	20150715063736.311	20150715063736.959
IMG (150)	3535	3538	20150715063737.393	20150715063738.041
IMG (150)	3540	3543	20150715063738.471	20150715063739.123
IMG (150)	3548	3550	20150715063740.201	20150715063740.635
IMG (150)	3552	3554	20150715063741.069	20150715063741.717
IMG (150)	3557	3561	20150715063742.580	20150715063743.662
IMG (150)	3563	3569	20150715063744.092	20150715063745.393
IMG (150)	3569	3573	20150715063745.393	20150715063746.256
IMG (150)	3607	3609	20150715063754.256	20150715063754.690
IMG (150)	3612	3614	20150715063755.338	20150715063755.768
IMG (150)	3620	3622	20150715063757.065	20150715063757.717
IMG (150)	3635	3637	20150715063800.959	20150715063801.389
VER (160)	6394	6425	20150715011109.334	20150715011205.330
VER (160)	2240	2250	20150715063717.283	20150715063733.283
VER (160)	2250	2252	20150715063733.283	20150715063741.283
AUX (180)	4554	4561	20150715011109.763	20150715011205.763
AUX (180)	7000	7002	20150715063717.717	20150715063733.717

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
15/07/2015 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	479	-
L1 ENG distinct GEPSGranule	480	-
GQisFlagQual set (PX1)	99.43 %	-
GQisFlagQual set (PX2)	99.40 %	-
GQisFlagQual set (PX3)	99.40 %	-
GQisFlagQual set (PX4)	99.42 %	-
GQisFlagQual set (all)	99.41 %	-

Table 4: Quality flags

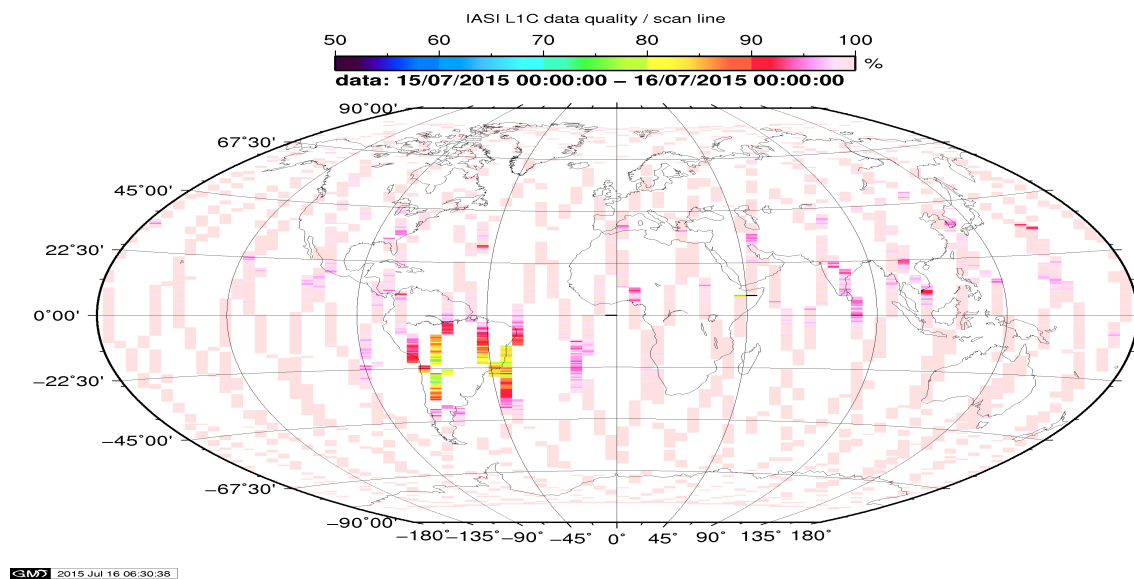


Figure 1: L1C data quality

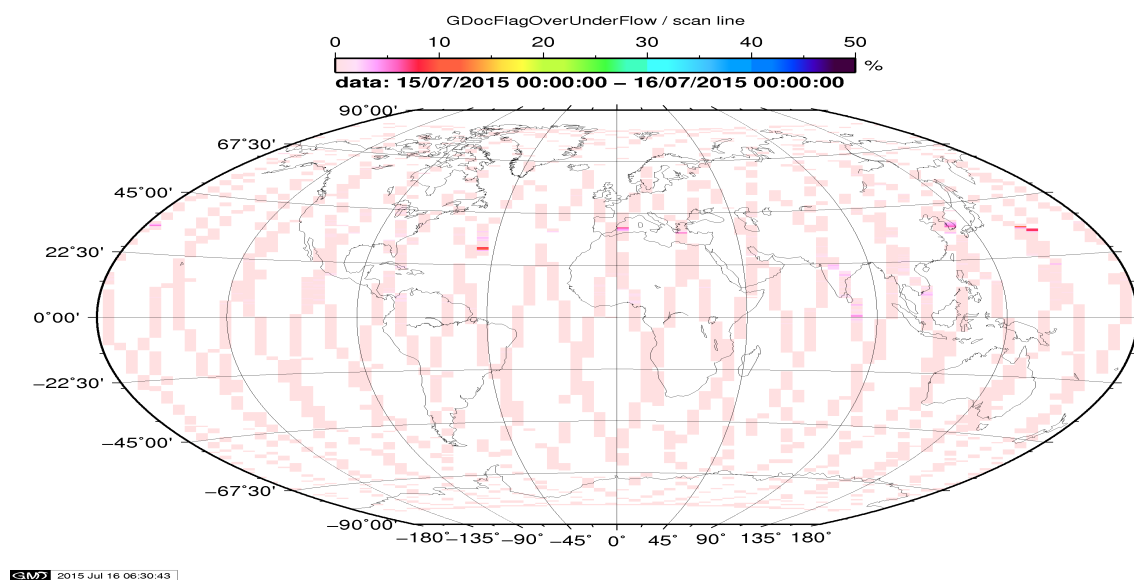


Figure 2: Flag of Over and Under Flows

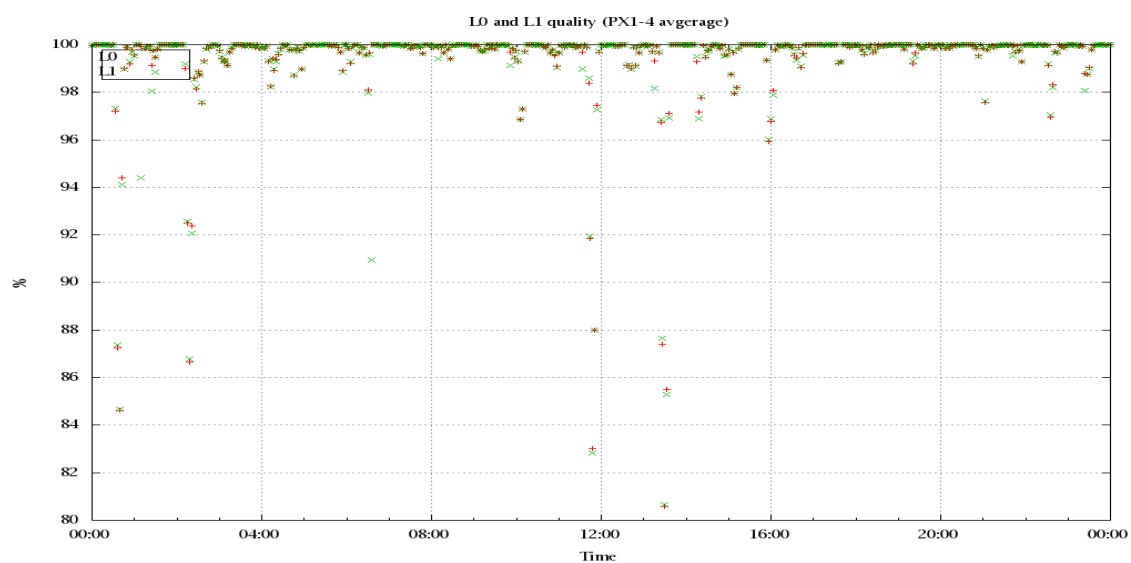


Figure 3: Level 0 and 1C overall quality

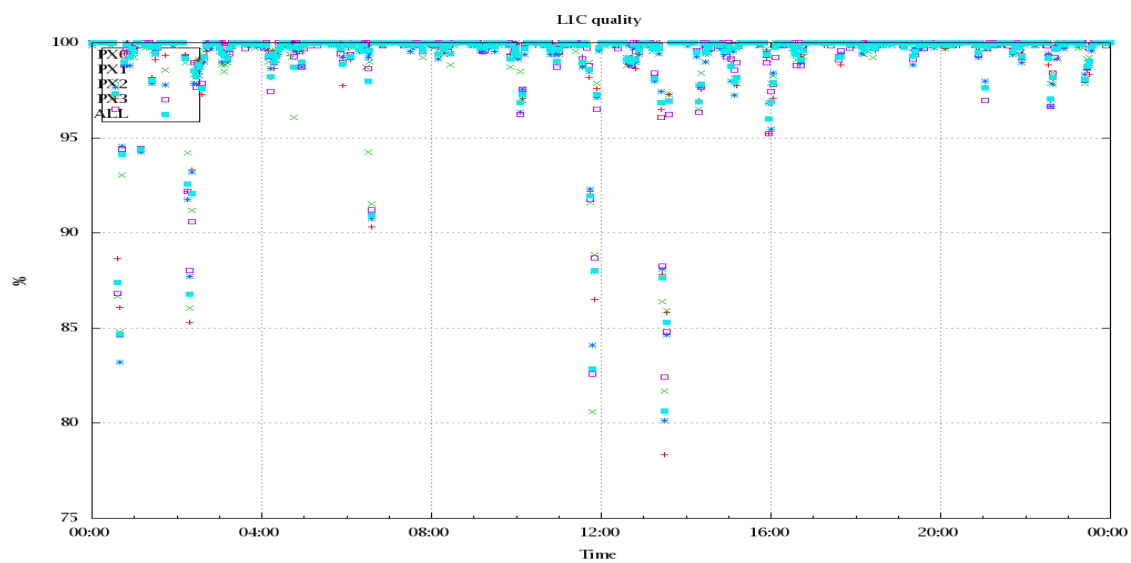


Figure 4: Level 1C quality

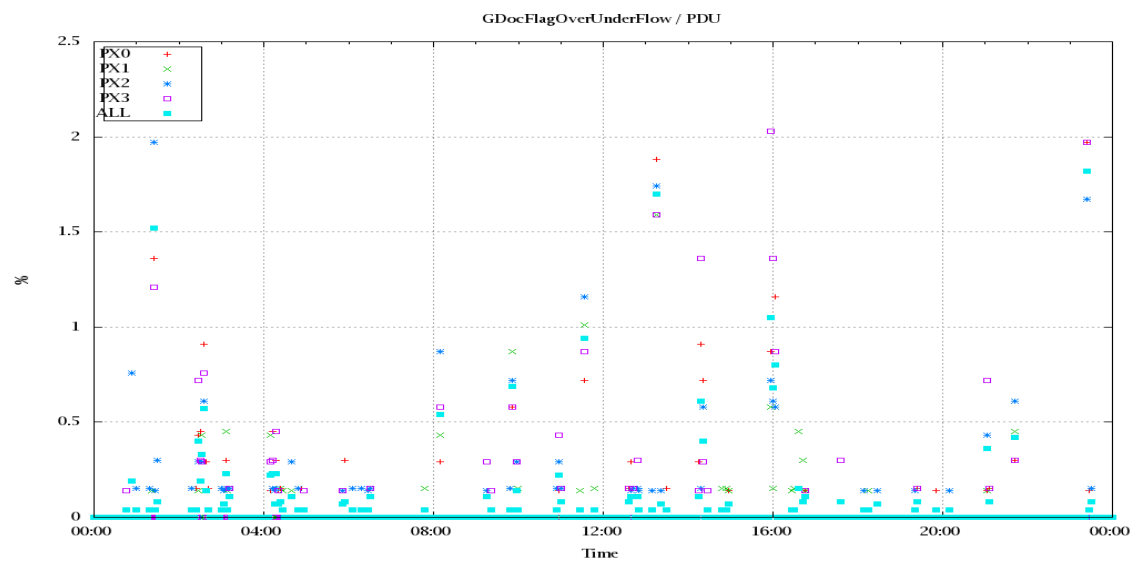


Figure 5: OverUnderFlowFlag timeseries

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.

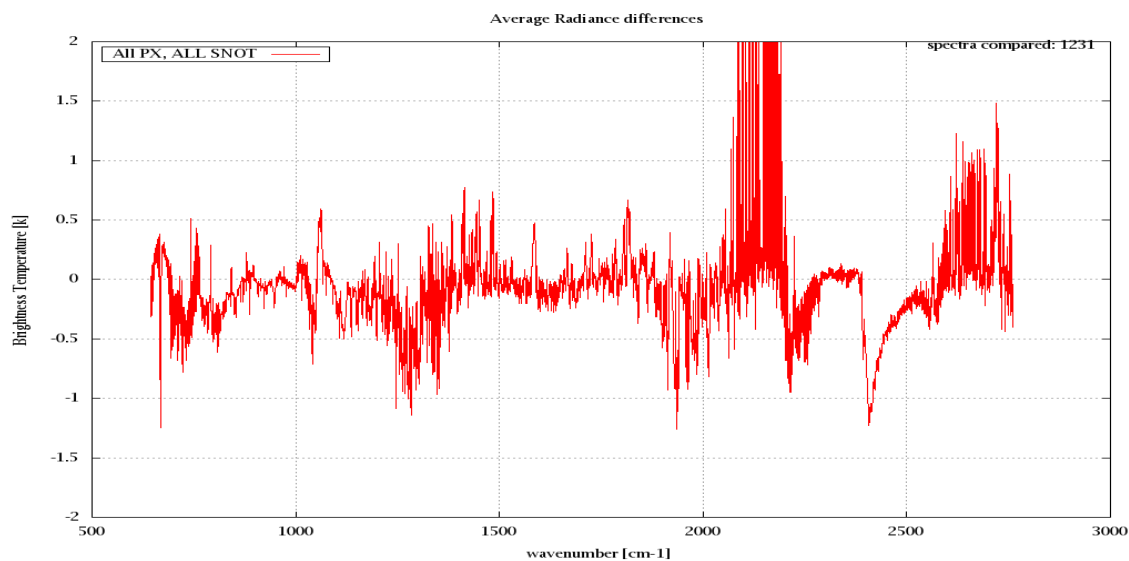


Figure 6: Average Radiance differences: OBS-CAL

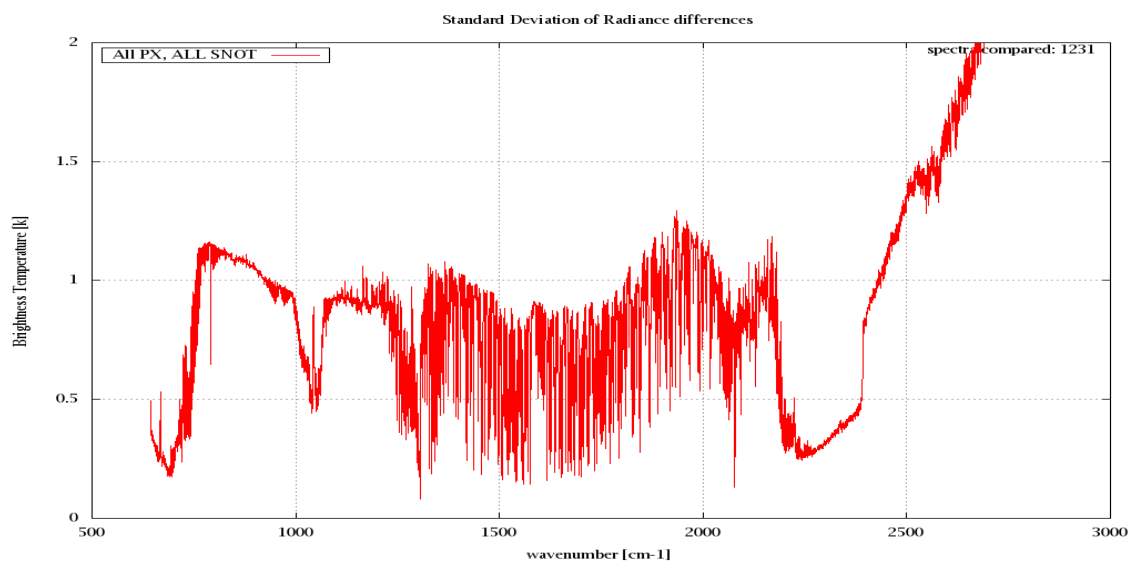


Figure 7: Standard Deviation of Radiance differences

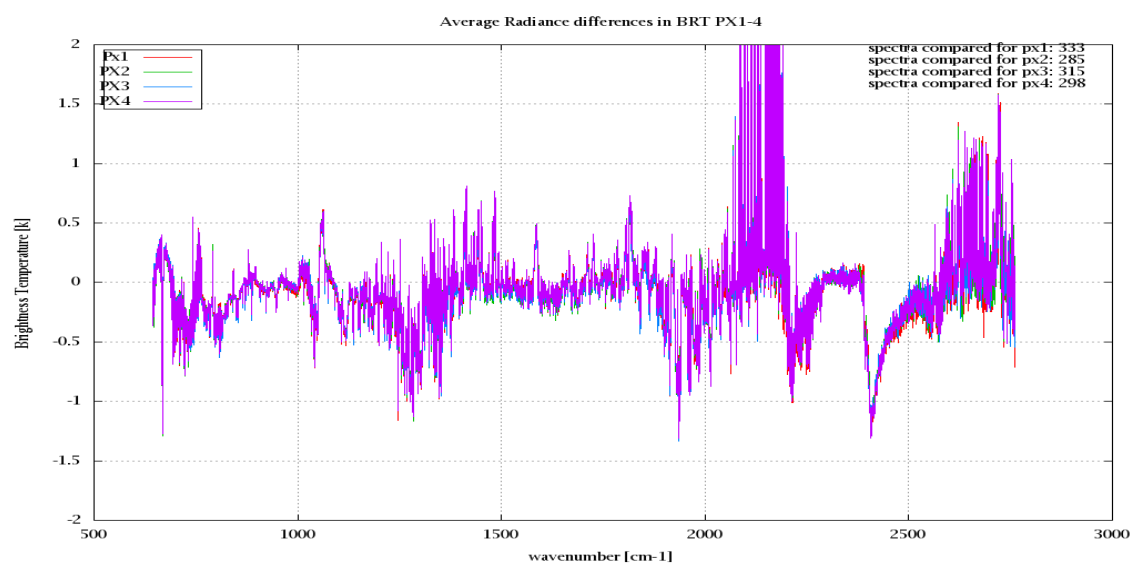


Figure 8: Average Radiance differences: OBS-CAL

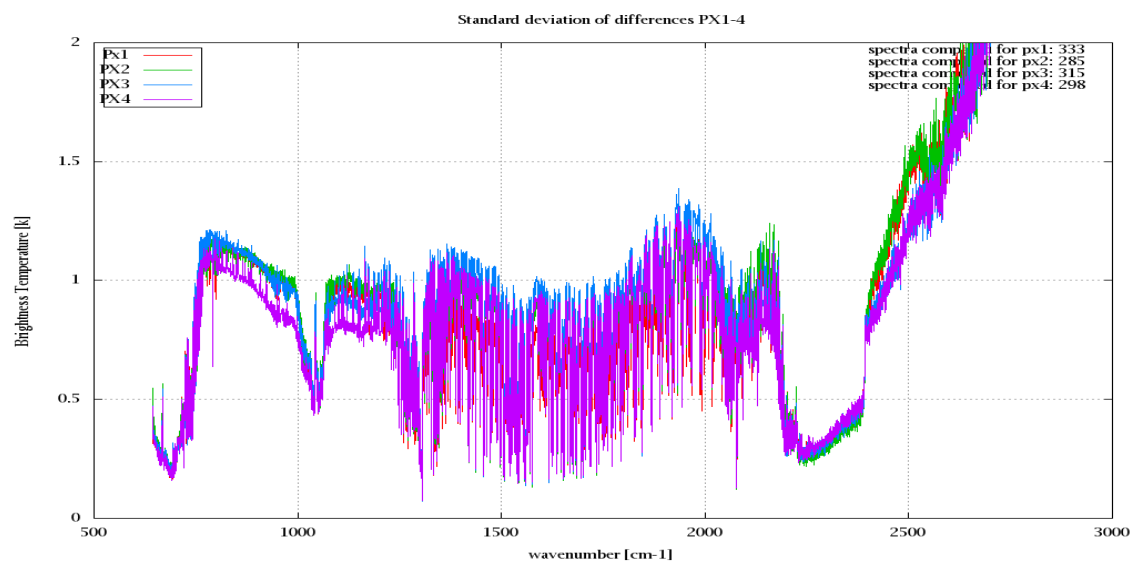


Figure 9: Standard Deviation of Radiance differences

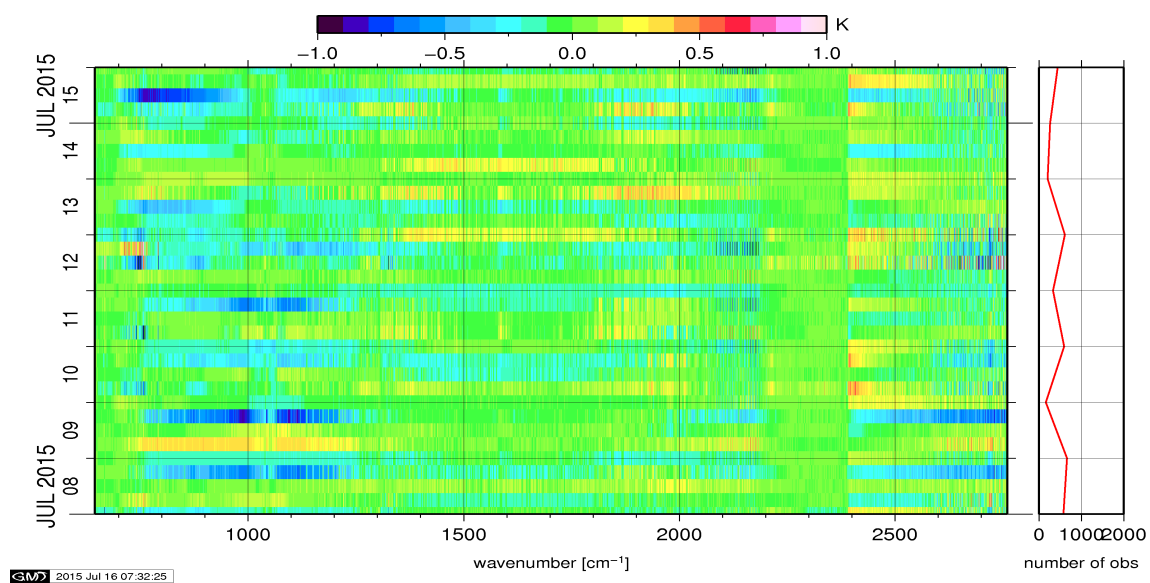


Figure 10: Radiance Anomaly in BRT: All Channels

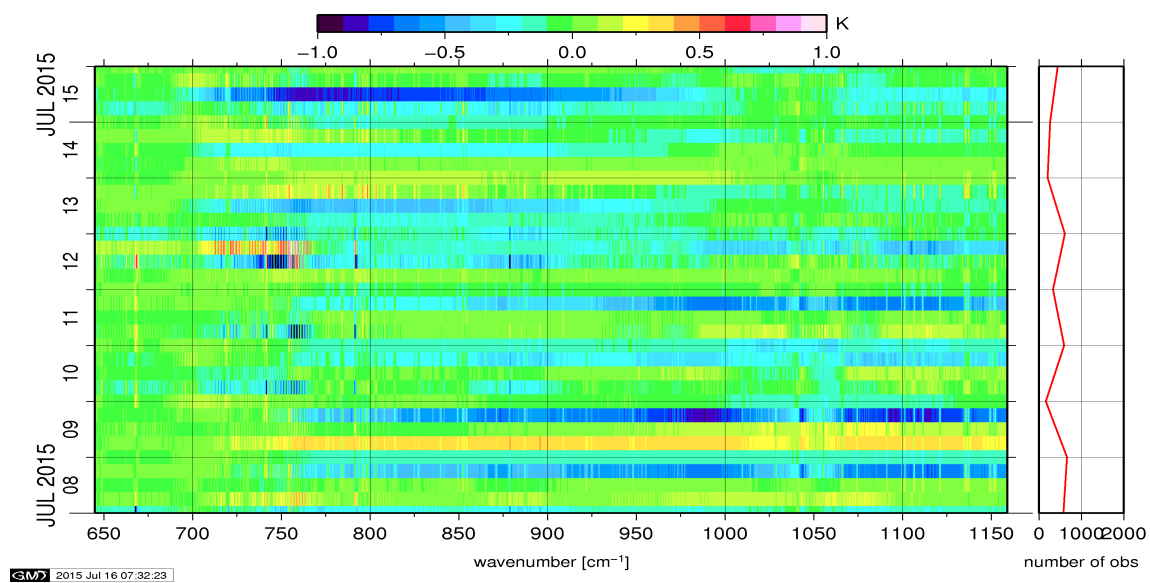


Figure 11: Radiance Anomaly in BRT: IASI Band 1

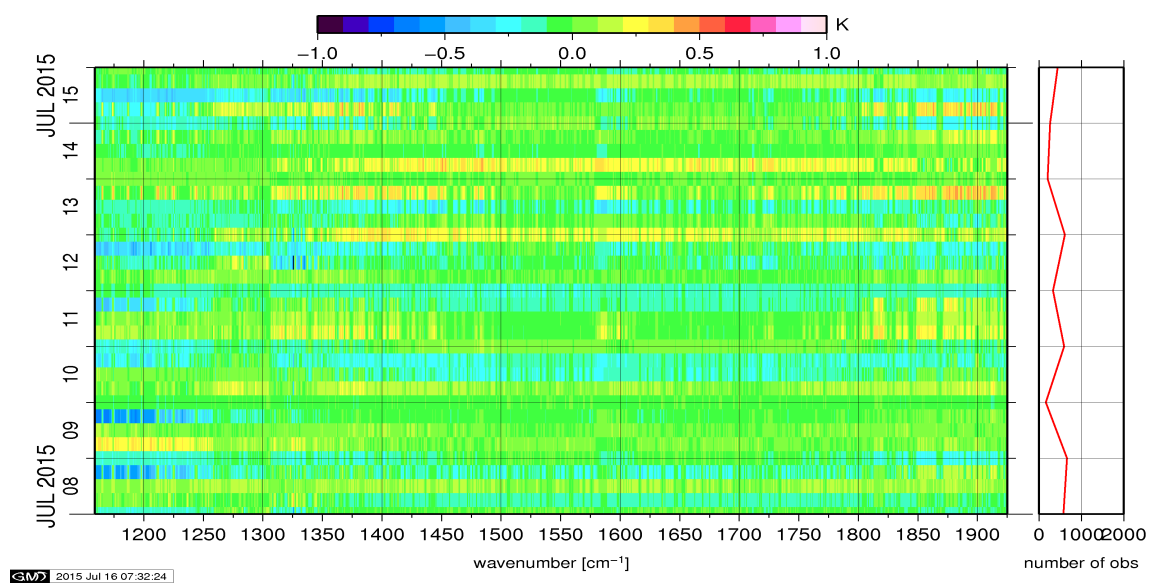


Figure 12: Radiance Anomaly in BRT: IASI Band 2

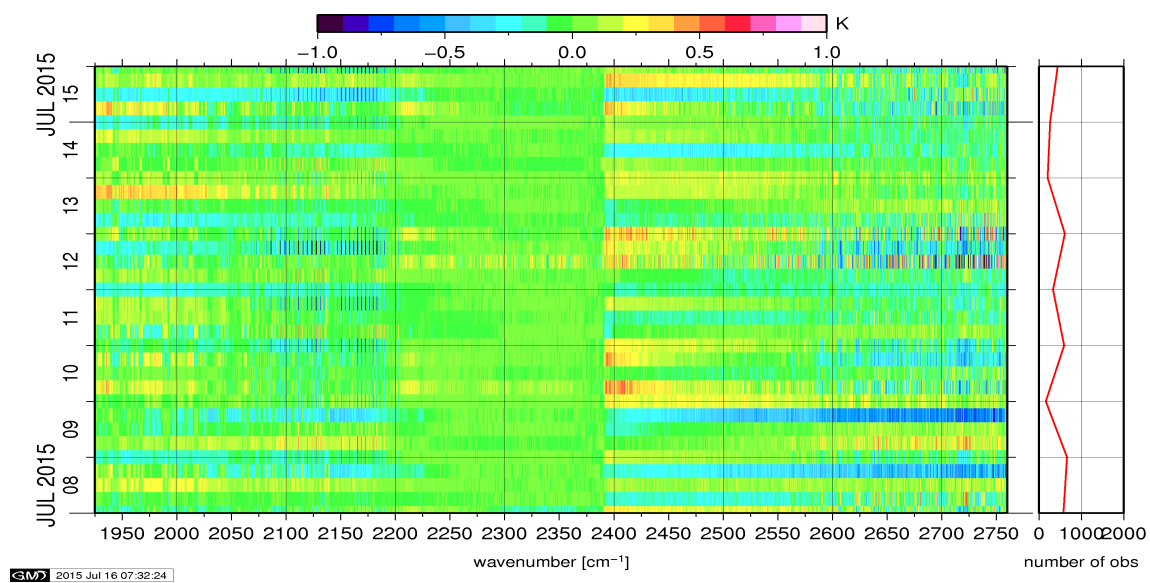


Figure 13: Radiance Anomaly in BRT: IASI Band 3

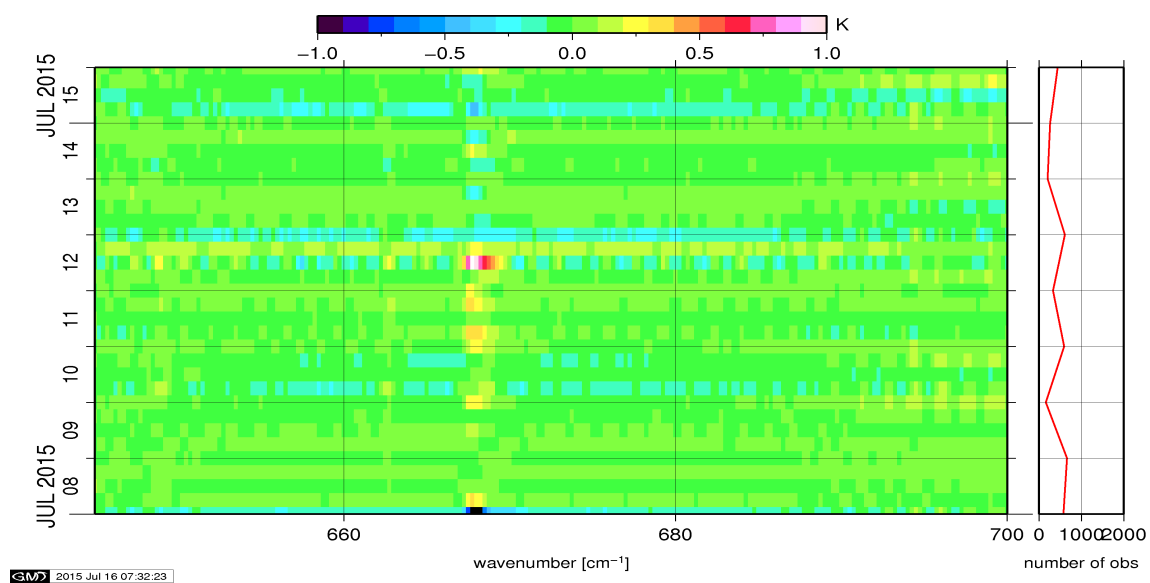


Figure 14: Radiance Anomaly in BRT: CO2 14

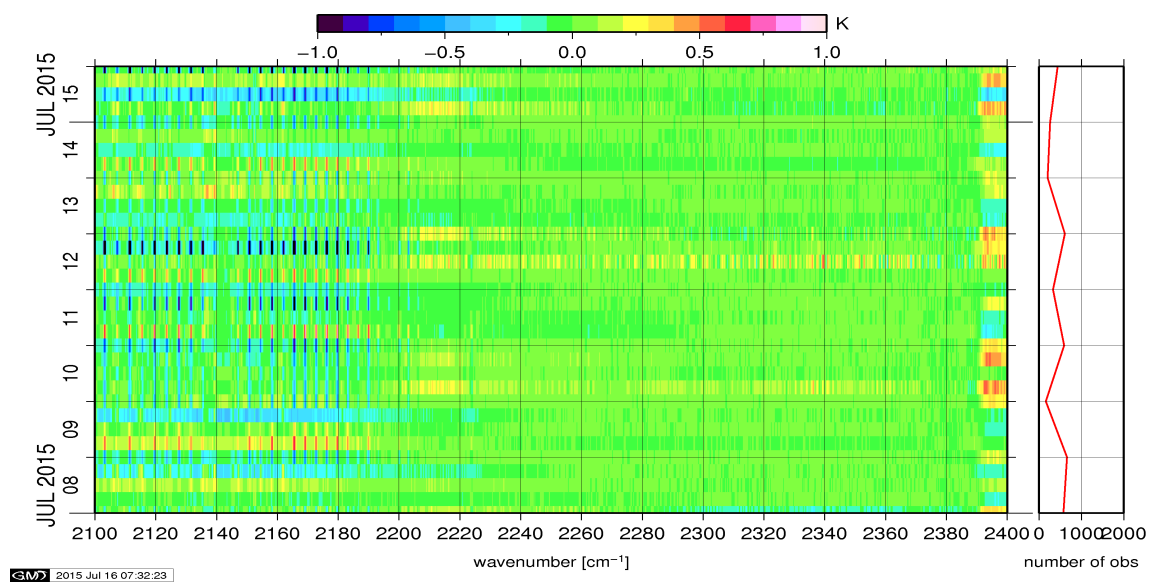


Figure 15: Radiance Anomaly in BRT: CO2 4.3

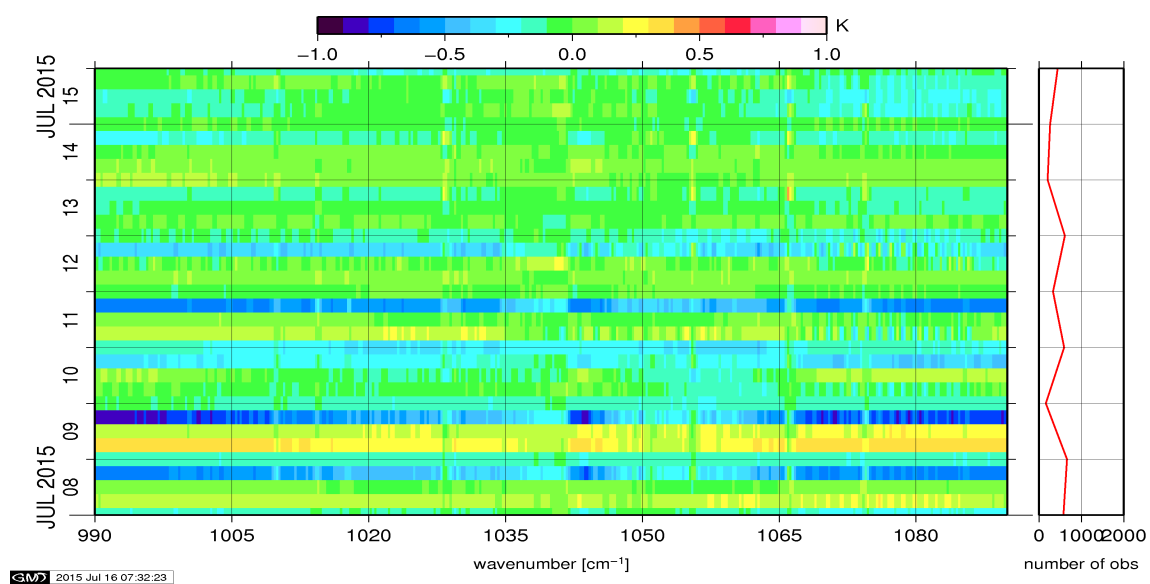


Figure 16: Radiance Anomaly in BRT: O3

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.

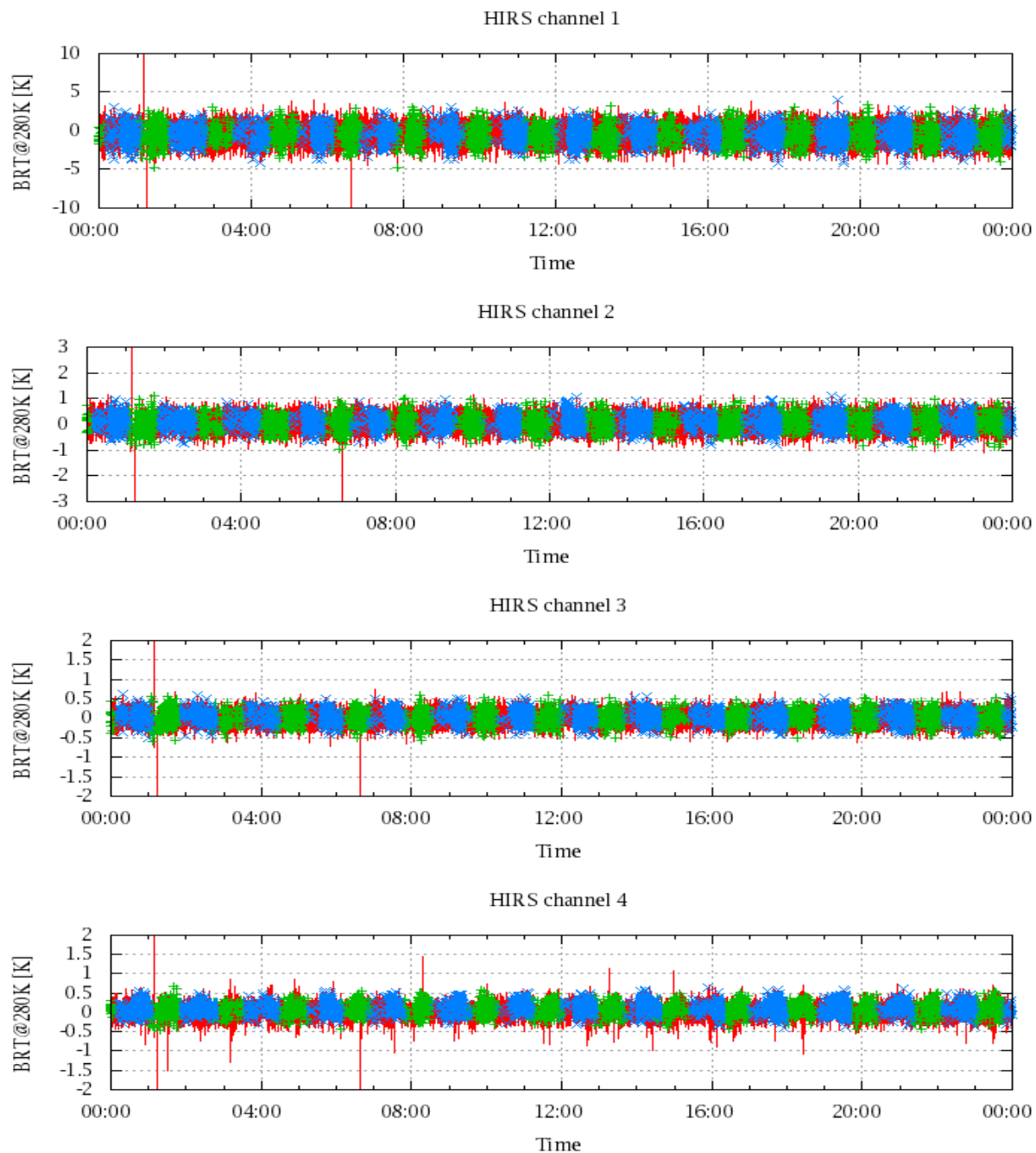


Figure 17: Radiance Differences in BRT

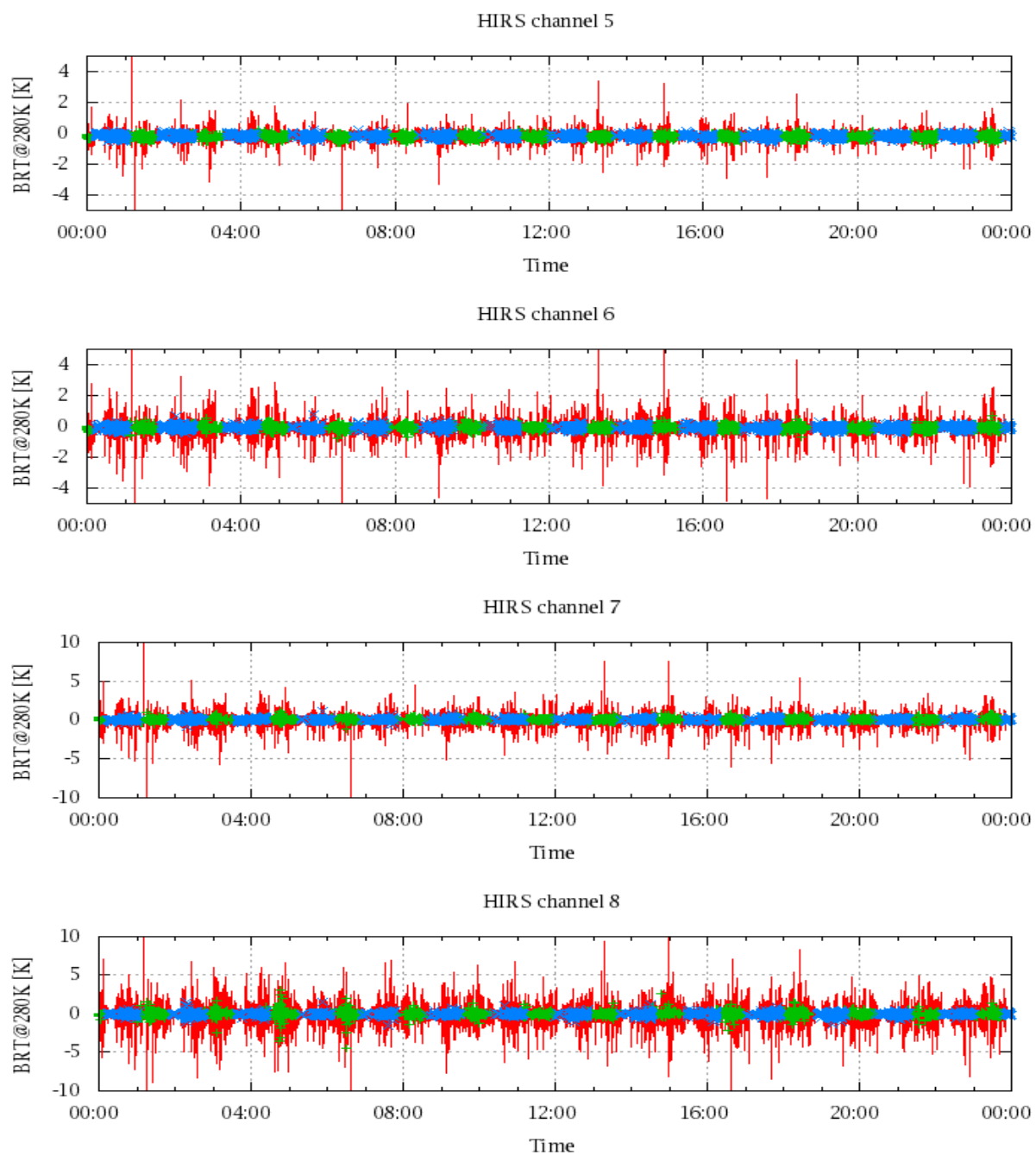


Figure 18: Radiance Differences in BRT

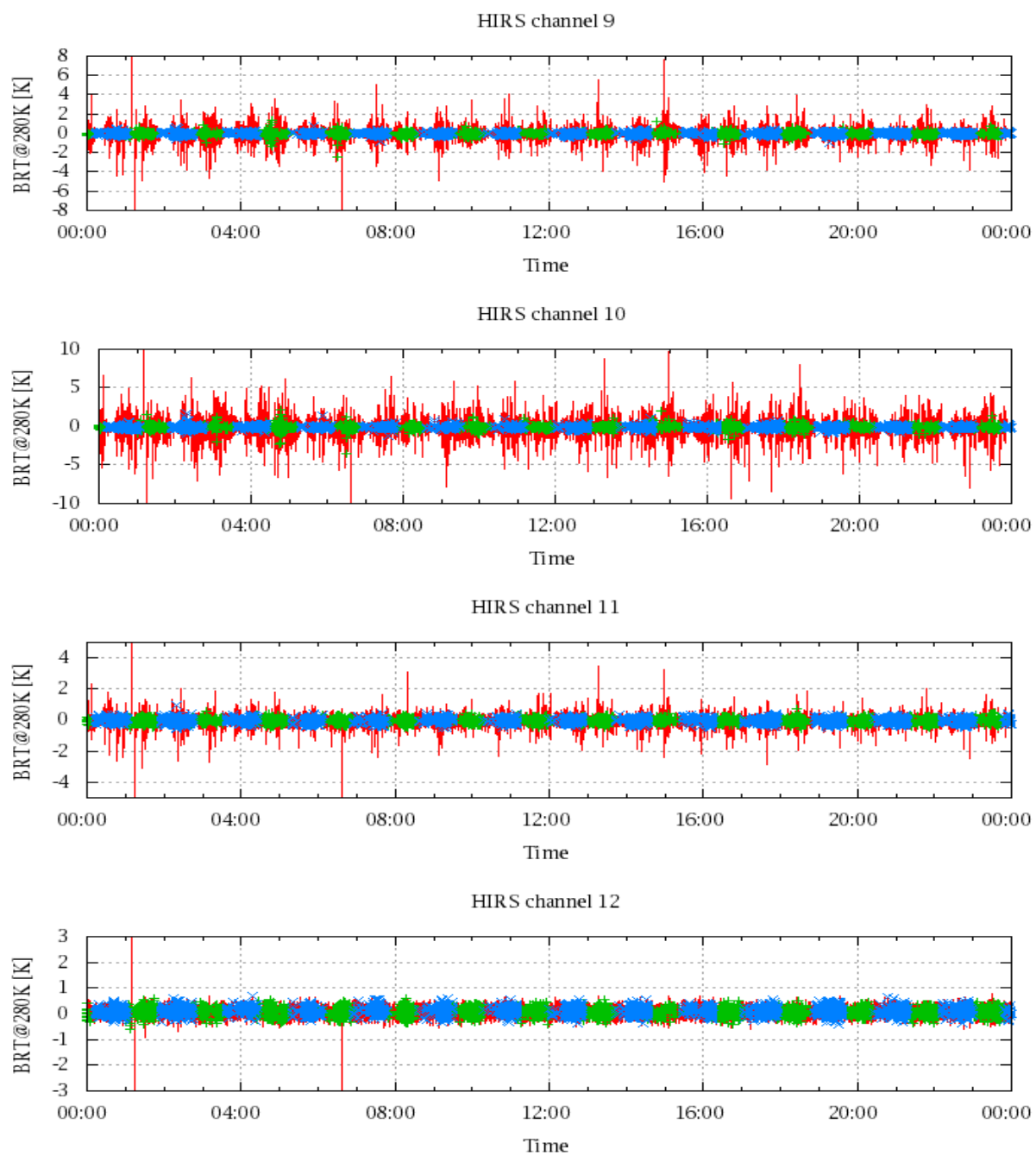


Figure 19: Radiance Differences in BRT

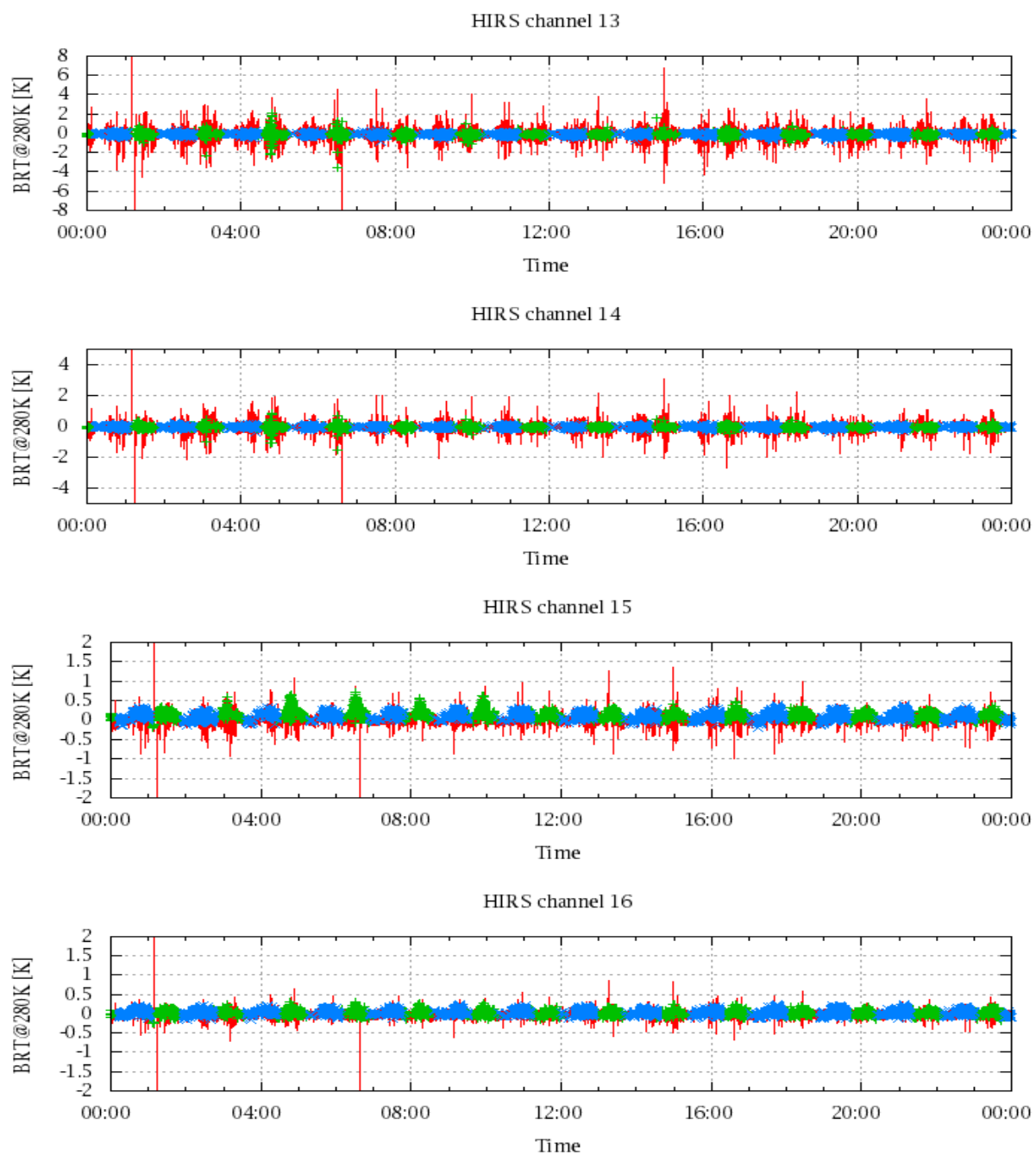


Figure 20: Radiance Differences in BRT

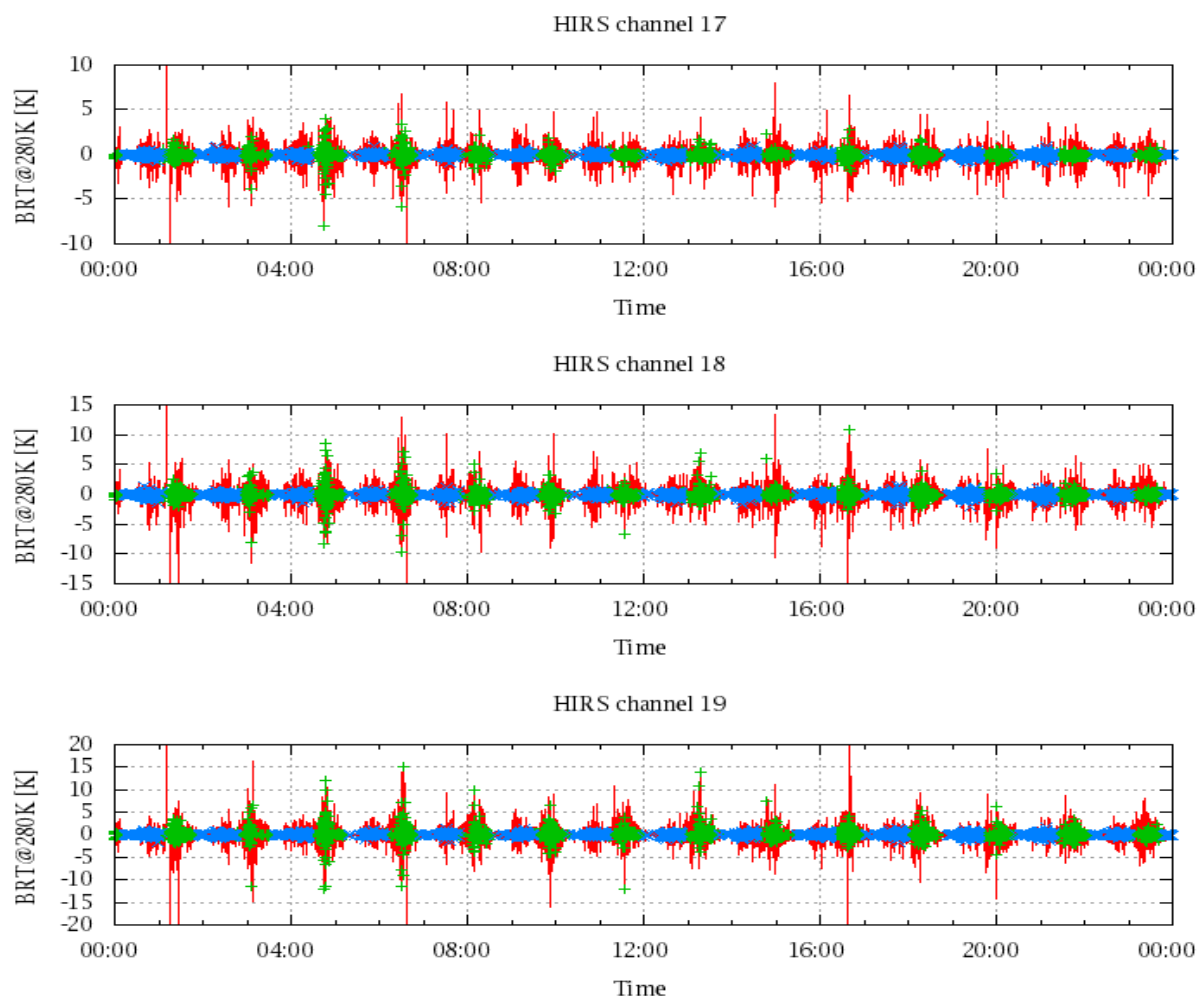


Figure 21: Radinace Differences in BRT