# IASI L0 and L1 Daily Monitoring Report Metop-B

IASI monitoring team

*17/06/2018 00:00:00 - 18/06/2018 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 17/06/2018 00:00:00 - 18/06/2018 00:00:00 .

The monitoring data are extracted on PDU basis.

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

## 2 Data quantity 17/06/2018 00:00:00 - 18/06/2018 00:00:00

| Product Type | Number | Action |
|---|---|---|
| L0 HKTM PDUs | 465 | - |
| L0 IASI PDUs | 464 | - |
| L1 ENG PDUs | 461 | - |
| L1 ENG distinct GEPSGranule | 449 | a |
| L1 DPX PDUs (RM: IASI-HIRS) | 455 | e |
| L1 DPS Files (RM: OBS-CAL NWP based) | 461 | - |

Table 1: Data quantity

| APID | Seq from | Seq to | Time from | Time to |
|---|---|---|---|---|
| PX1 (130) | 2861 | 5738 | 20180617012913.738 | 20180617014201.069 |
| PX1 (130) | 7484 | 10360 | 20180617041524.092 | 20180617042811.240 |
| PX1 (130) | 12100 | 14978 | 20180617070134.443 | 20180617071422.024 |
| PX1 (130) | 338 | 3215 | 20180617094744.614 | 20180617100031.944 |
| PX1 (130) | 4961 | 7838 | 20180617123354.968 | 20180617124642.330 |
| PX1 (130) | 7552 | 8178 | 20180617135815.725 | 20180617140102.854 |
| PX2 (135) | 15960 | 15962 | 20180617011438.482 | 20180617011438.915 |
| PX2 (135) | 2861 | 5738 | 20180617012913.738 | 20180617014201.069 |
| PX2 (135) | 7484 | 10360 | 20180617041524.092 | 20180617042811.240 |
| PX2 (135) | 12100 | 14978 | 20180617070134.443 | 20180617071422.024 |
| PX2 (135) | 338 | 3215 | 20180617094744.614 | 20180617100031.944 |
| PX2 (135) | 4961 | 7837 | 20180617123354.968 | 20180617124642.115 |
| PX2 (135) | 7552 | 8178 | 20180617135815.725 | 20180617140102.854 |
| PX3 (140) | 2861 | 5738 | 20180617012913.738 | 20180617014201.069 |
| PX3 (140) | 7484 | 10360 | 20180617041524.092 | 20180617042811.240 |
| PX3 (140) | 12100 | 14978 | 20180617070134.443 | 20180617071422.024 |
| PX3 (140) | 338 | 3215 | 20180617094744.614 | 20180617100031.944 |

Continued on next page

**Table 2 – continued from previous page**

| APID | Seq from | Seq to | Time from | Time to |
|---|---|---|---|---|
| PX3 (140) | 4961 | 7837 | 20180617123354.968 | 20180617124642.115 |
| PX3 (140) | 7552 | 8178 | 20180617135815.725 | 20180617140102.854 |
| PX4 (145) | 2861 | 5738 | 20180617012913.738 | 20180617014201.069 |
| PX4 (145) | 7484 | 10360 | 20180617041524.092 | 20180617042811.240 |
| PX4 (145) | 12100 | 14978 | 20180617070134.443 | 20180617071422.024 |
| PX4 (145) | 338 | 3214 | 20180617094744.614 | 20180617100031.726 |
| PX4 (145) | 4961 | 7837 | 20180617123354.968 | 20180617124642.115 |
| PX4 (145) | 7552 | 8177 | 20180617135815.725 | 20180617140102.639 |
| IMG (150) | 3933 | 7193 | 20180617012913.738 | 20180617014200.850 |
| IMG (150) | 13539 | 416 | 20180617041523.874 | 20180617042811.240 |
| IMG (150) | 6759 | 10018 | 20180617070134.224 | 20180617071420.727 |
| IMG (150) | 16366 | 3242 | 20180617094744.614 | 20180617100031.726 |
| IMG (150) | 9588 | 12849 | 20180617123354.749 | 20180617124642.115 |
| IMG (150) | 14711 | 15421 | 20180617135815.506 | 20180617140102.639 |
| VER (160) | 1343 | 1824 | 20180617012908.336 | 20180617014204.311 |
| VER (160) | 7573 | 8054 | 20180617041516.307 | 20180617042812.322 |
| VER (160) | 13808 | 14287 | 20180617070132.279 | 20180617070134.443 |
| VER (160) | 3654 | 4135 | 20180617094740.290 | 20180617100036.269 |
| VER (160) | 9884 | 10365 | 20180617123348.261 | 20180617124644.279 |
| VER (160) | 13049 | 13155 | 20180617135812.268 | 20180617140108.260 |
| AUX (180) | 267 | 364 | 20180617012908.766 | 20180617014204.745 |
| AUX (180) | 1513 | 1610 | 20180617041516.741 | 20180617042812.751 |
| AUX (180) | 2760 | 2856 | 20180617070132.712 | 20180617071420.727 |
| AUX (180) | 4006 | 4103 | 20180617094740.723 | 20180617100036.702 |
| AUX (180) | 5252 | 5349 | 20180617123348.695 | 20180617124644.709 |
| AUX (180) | 5885 | 5907 | 20180617135812.698 | 20180617140108.694 |

Table 2: L0 data gaps

# 3 Instrument modes

| Time | Transition from | Transition to |
|---|---|---|
| 17/06/2018 00:00:01 | - | Normal operation |

Table 3: Instrument modes

# 4 L0 and L1 Data Quality

| Flag | Value | Action |
|---|---|---|
| L0 IASI PDUs | 464 | - |
| L1 ENG PDUs | 461 | - |
| L1 ENG distinct GEPSGranule | 449 | a |
| GQisFlagQual set (PX1) | 99.59 % | - |
| GQisFlagQual set (PX2) | 99.67 % | - |
| GQisFlagQual set (PX3) | 99.66 % | - |
| GQisFlagQual set (PX4) | 99.58 % | - |
| GQisFlagQual set (all) | 99.63 % | - |

Table 4: Quality flags

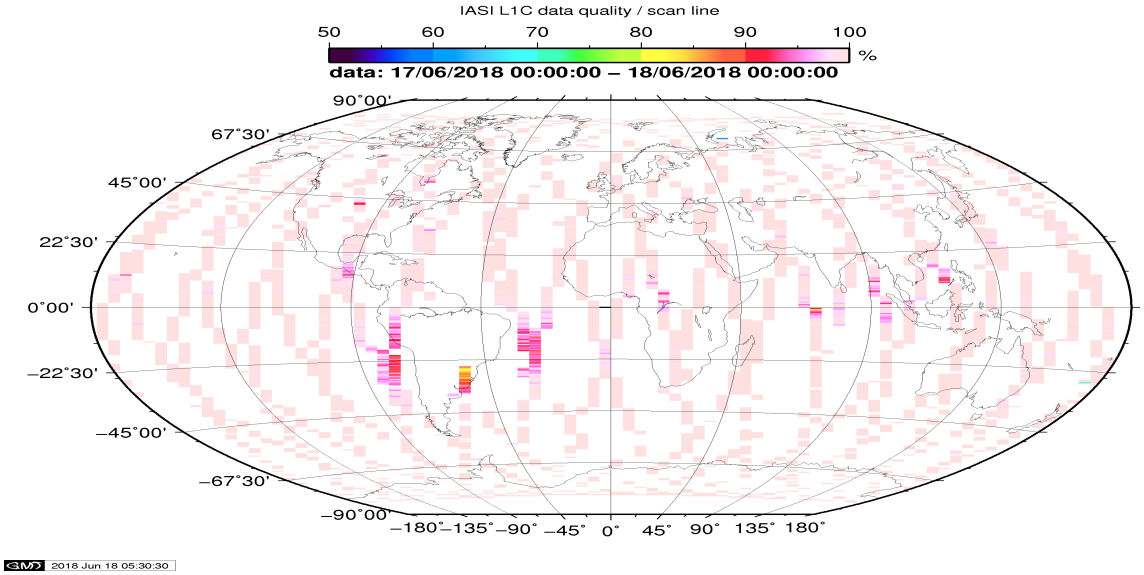


Figure 1: L1C data quality

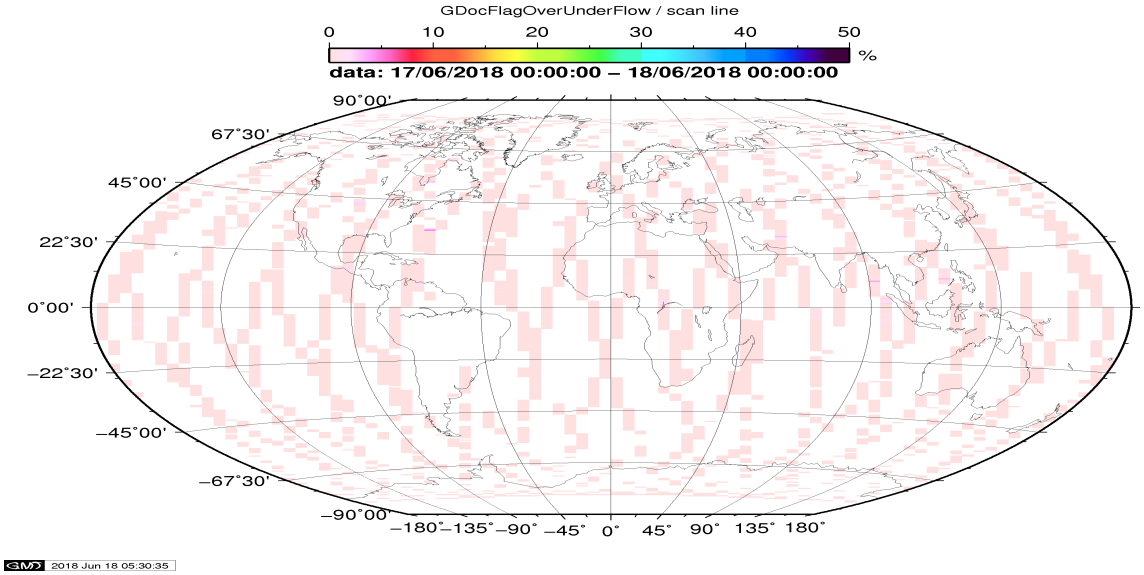


Figure 2: Flag of Over and Under Flows

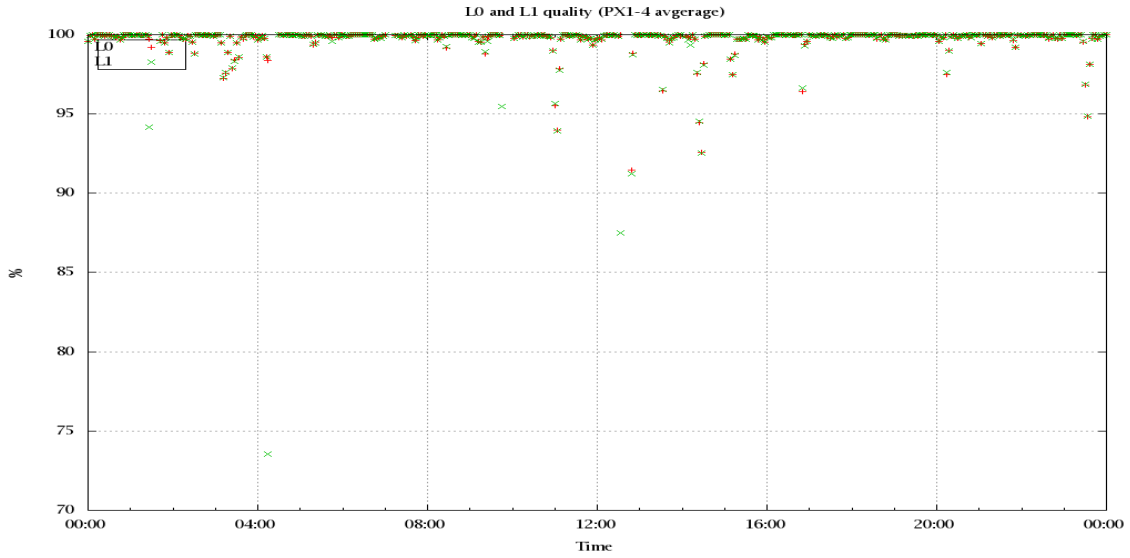


Figure 3: Level 0 and 1C overall quality

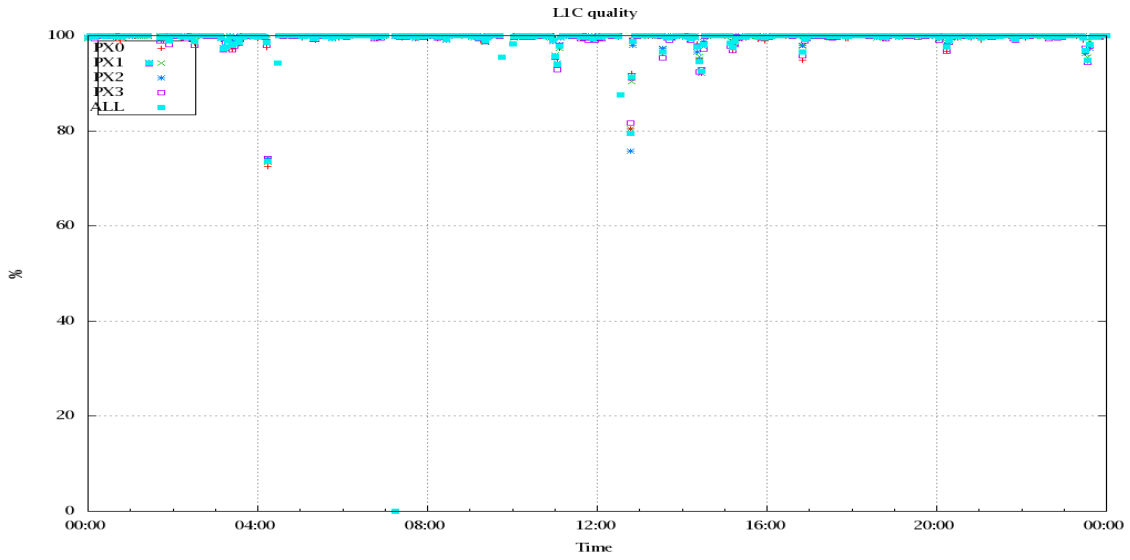


Figure 4: Level 1C quality

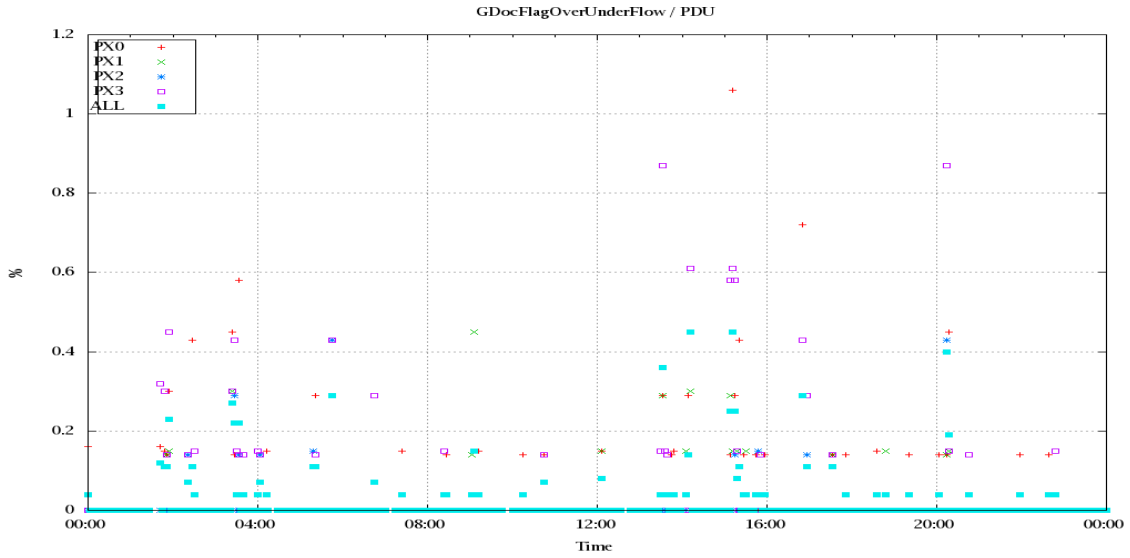


Figure 5: OverUnderFlowFlag timeseries

# 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.

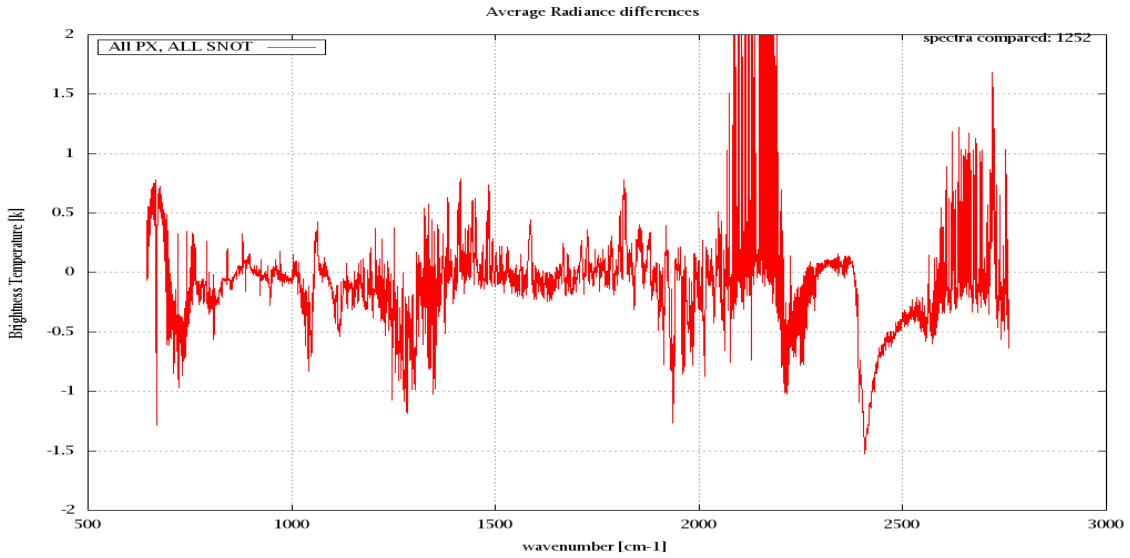


Figure 6: Average Radiance differences: OBS-CAL

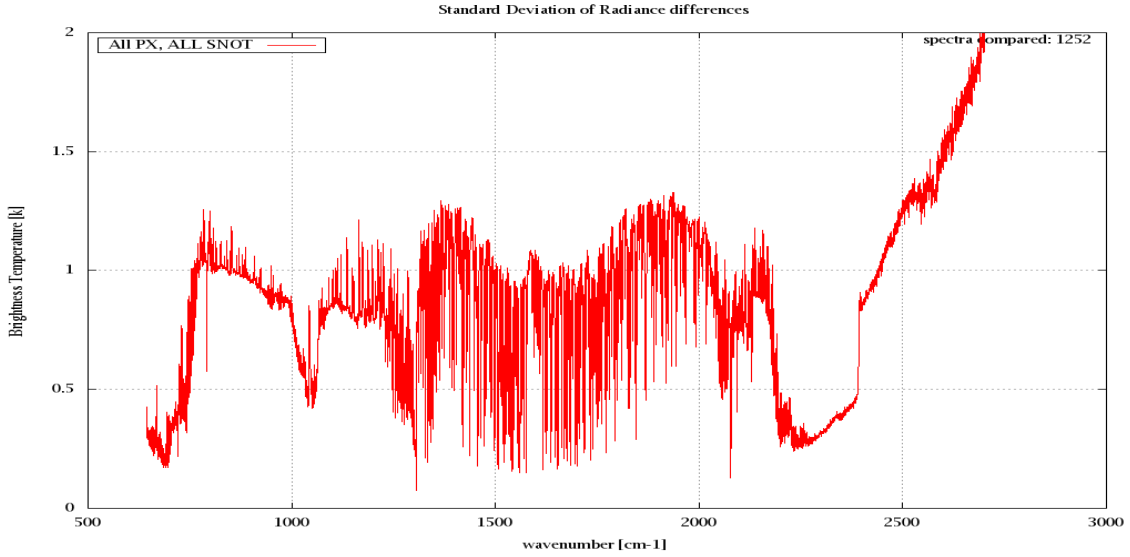


Figure 7: Standard Deviation of Radiance differences

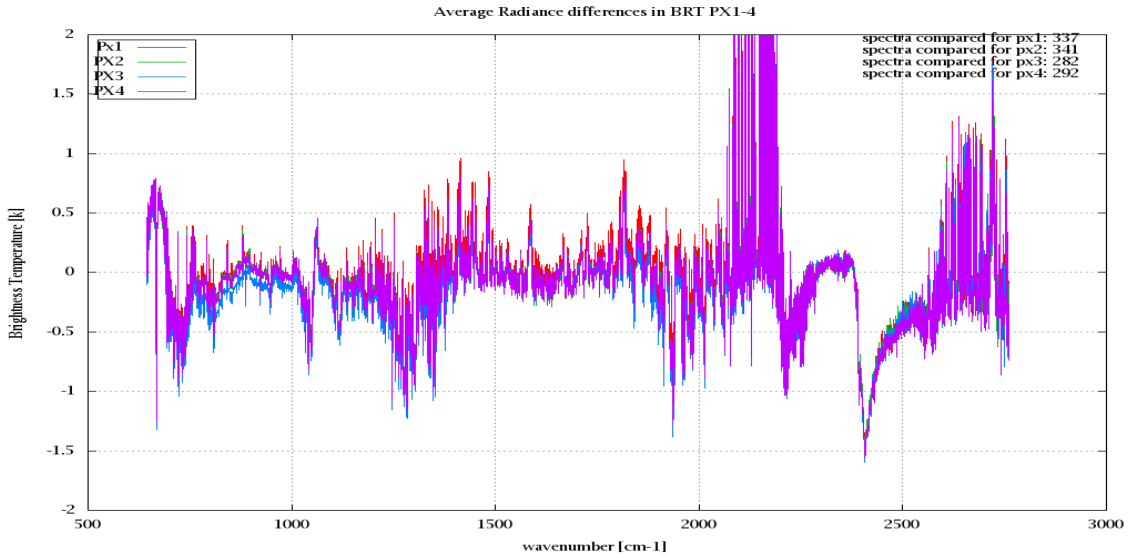


Figure 8: Average Radiance differences: OBS-CAL

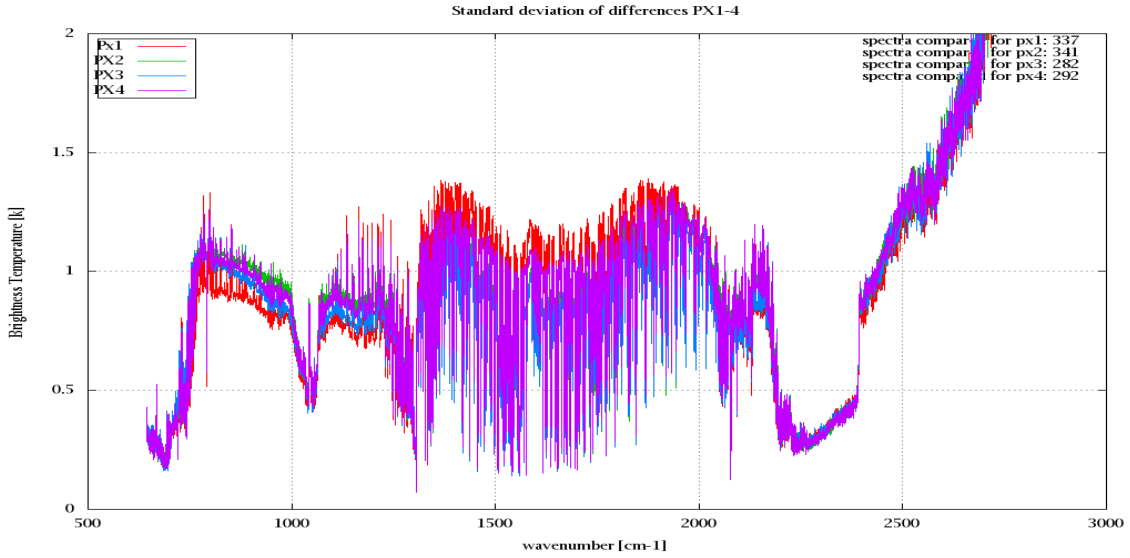


Figure 9: Standard Deviation of Radiance differences

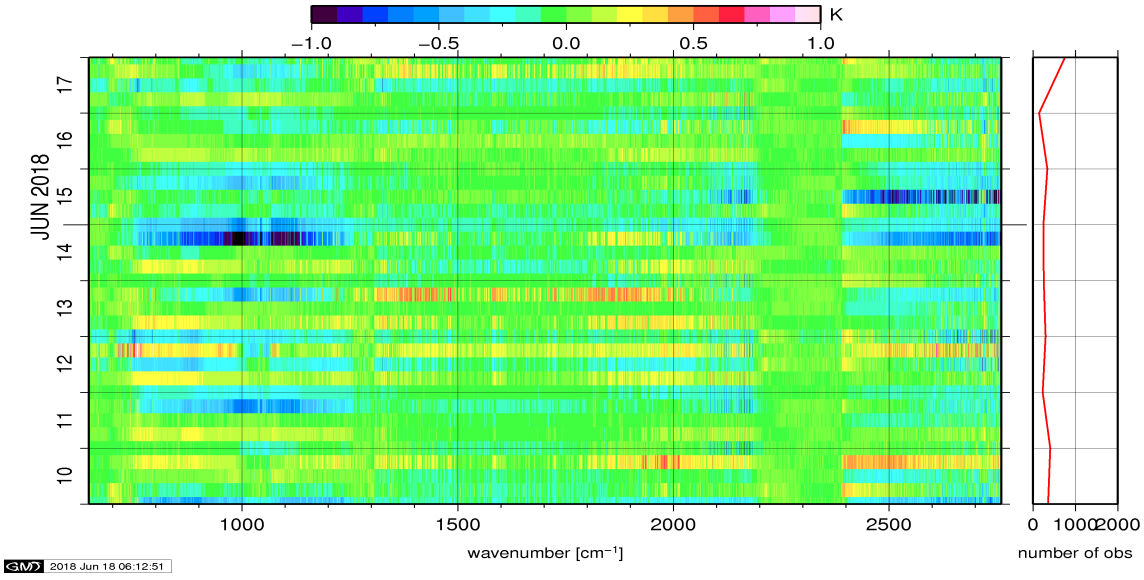


Figure 10: Radiance Anomaly in BRT: All Channels

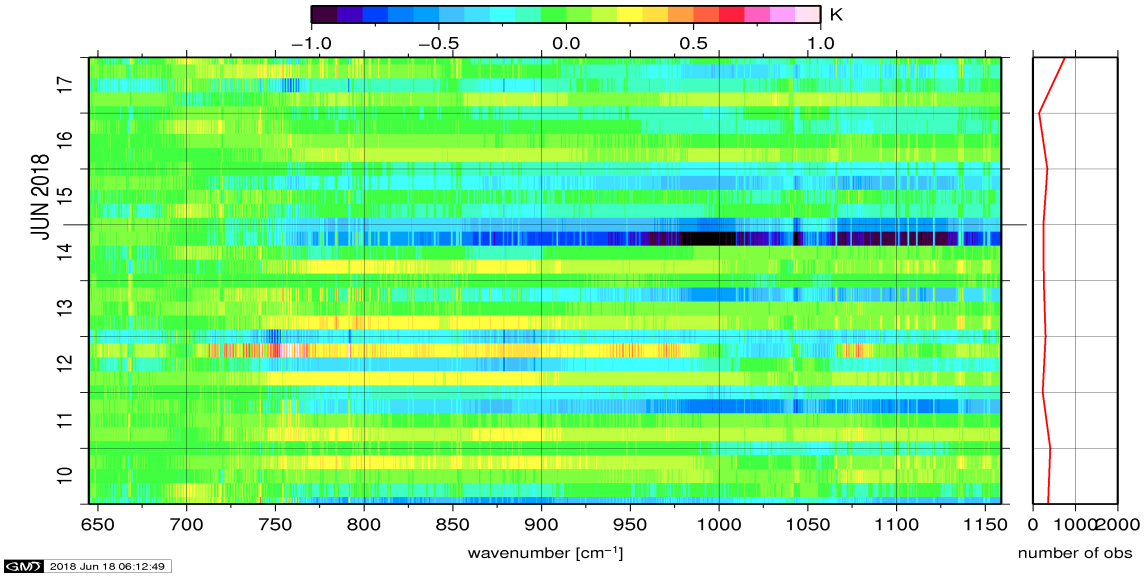


Figure 11: Radiance Anomaly in BRT: IASI Band 1

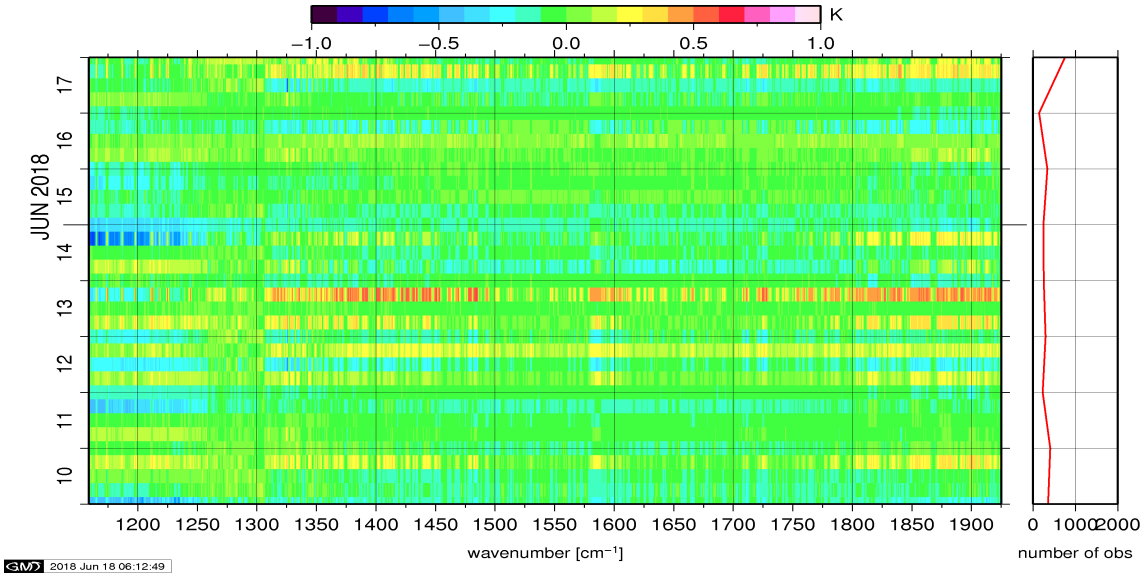


Figure 12: Radiance Anomaly in BRT: IASI Band 2

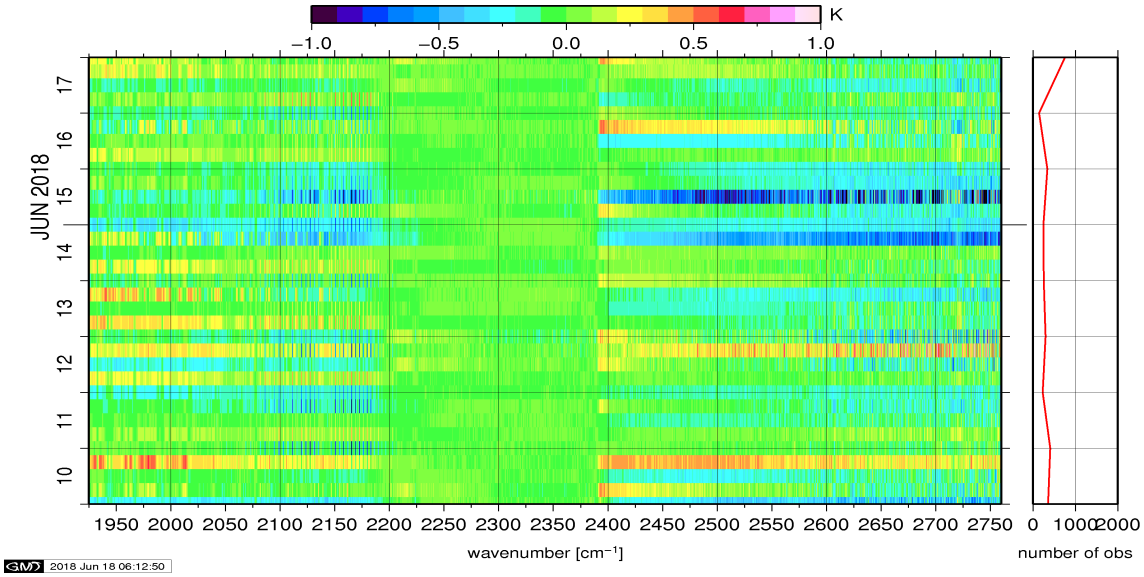


Figure 13: Radiance Anomaly in BRT: IASI Band 3

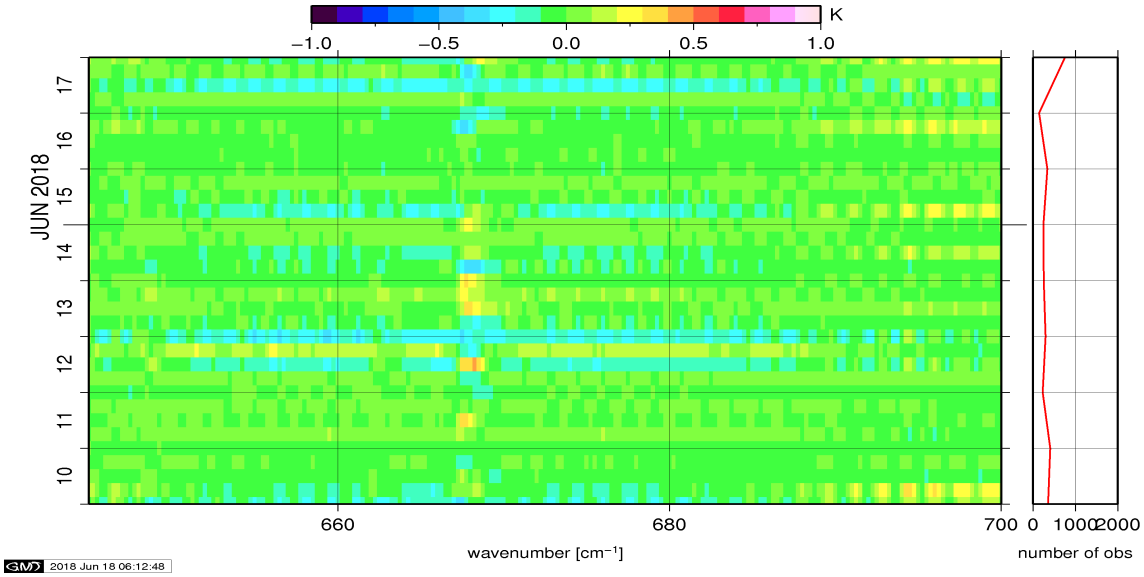


Figure 14: Radiance Anomaly in BRT: CO2 14

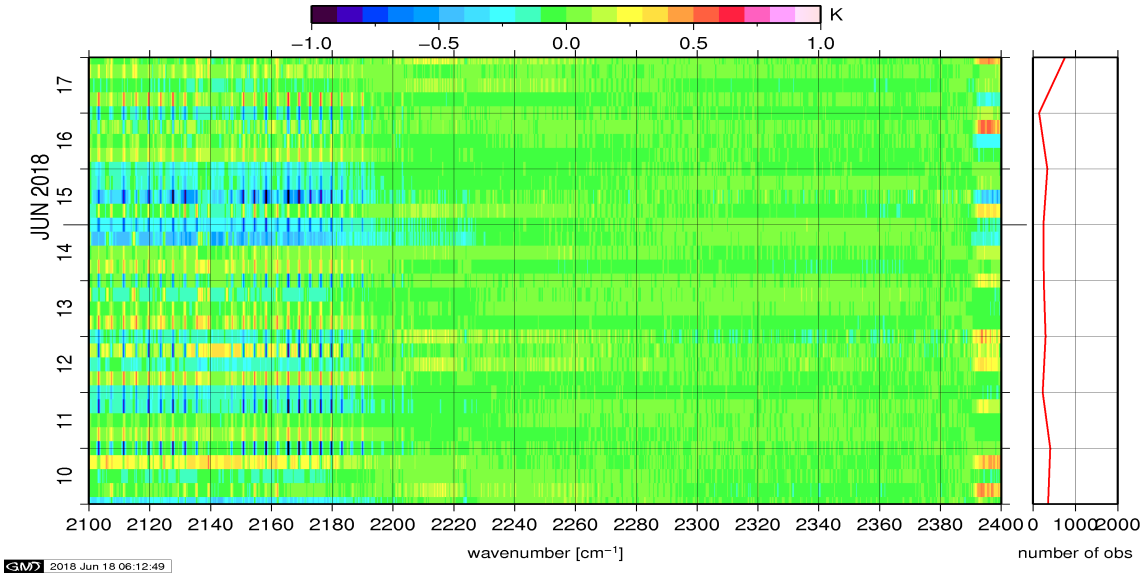


Figure 15: Radiance Anomaly in BRT: CO2 4.3

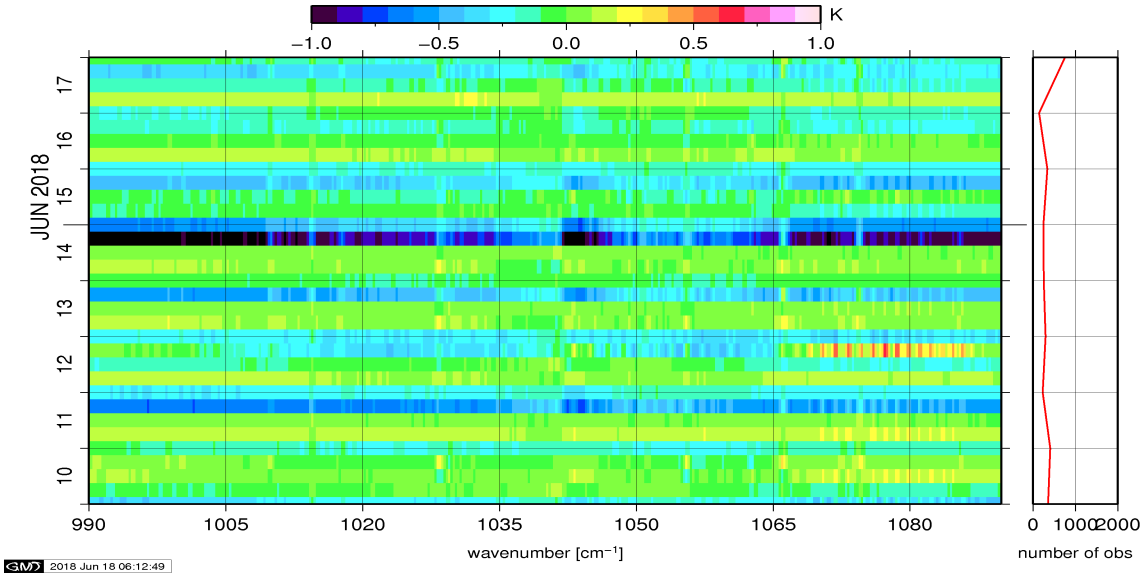


Figure 16: Radiance Anomaly in BRT: O3

# 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.

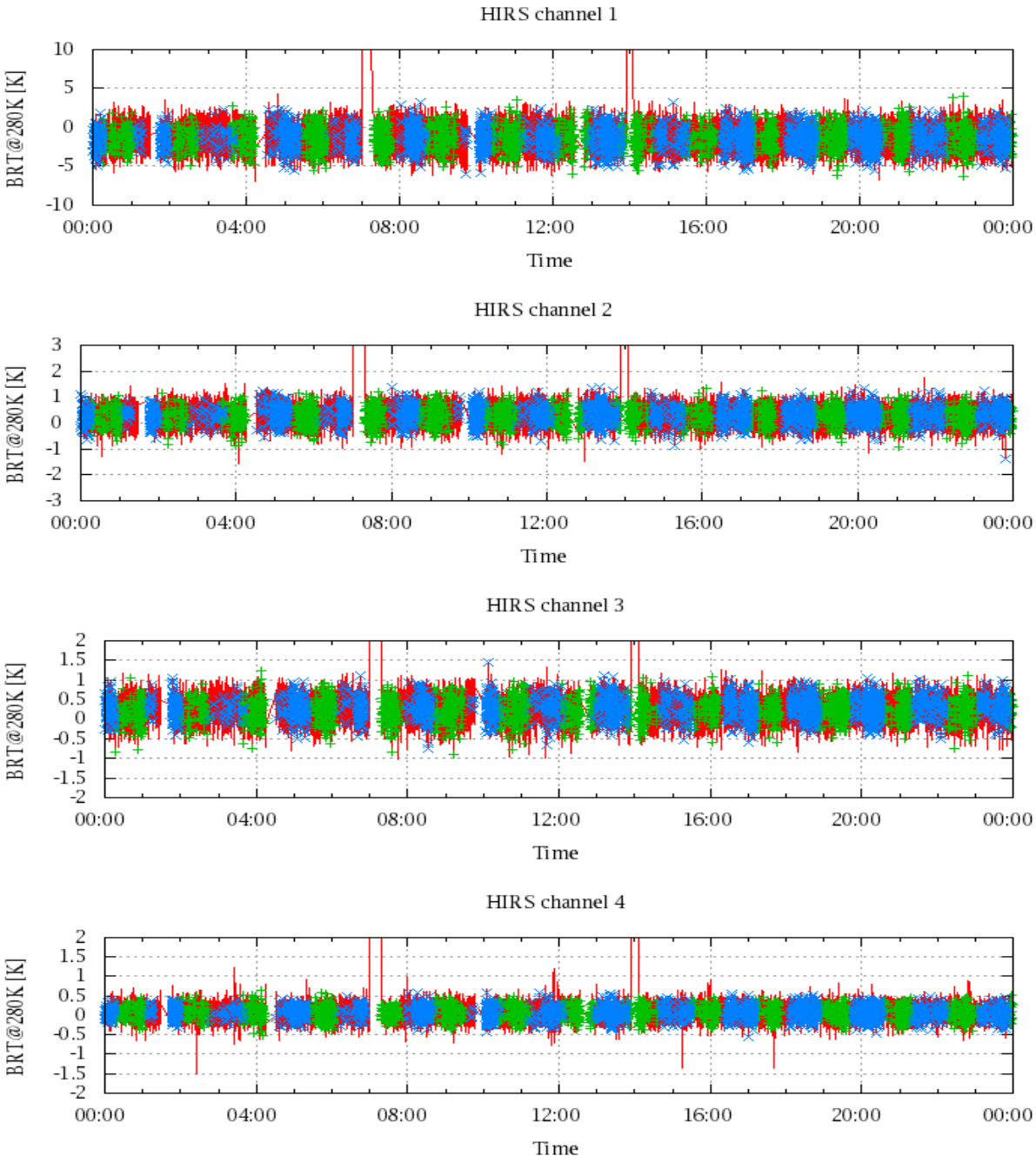


Figure 17: Radiance Differences in BRT

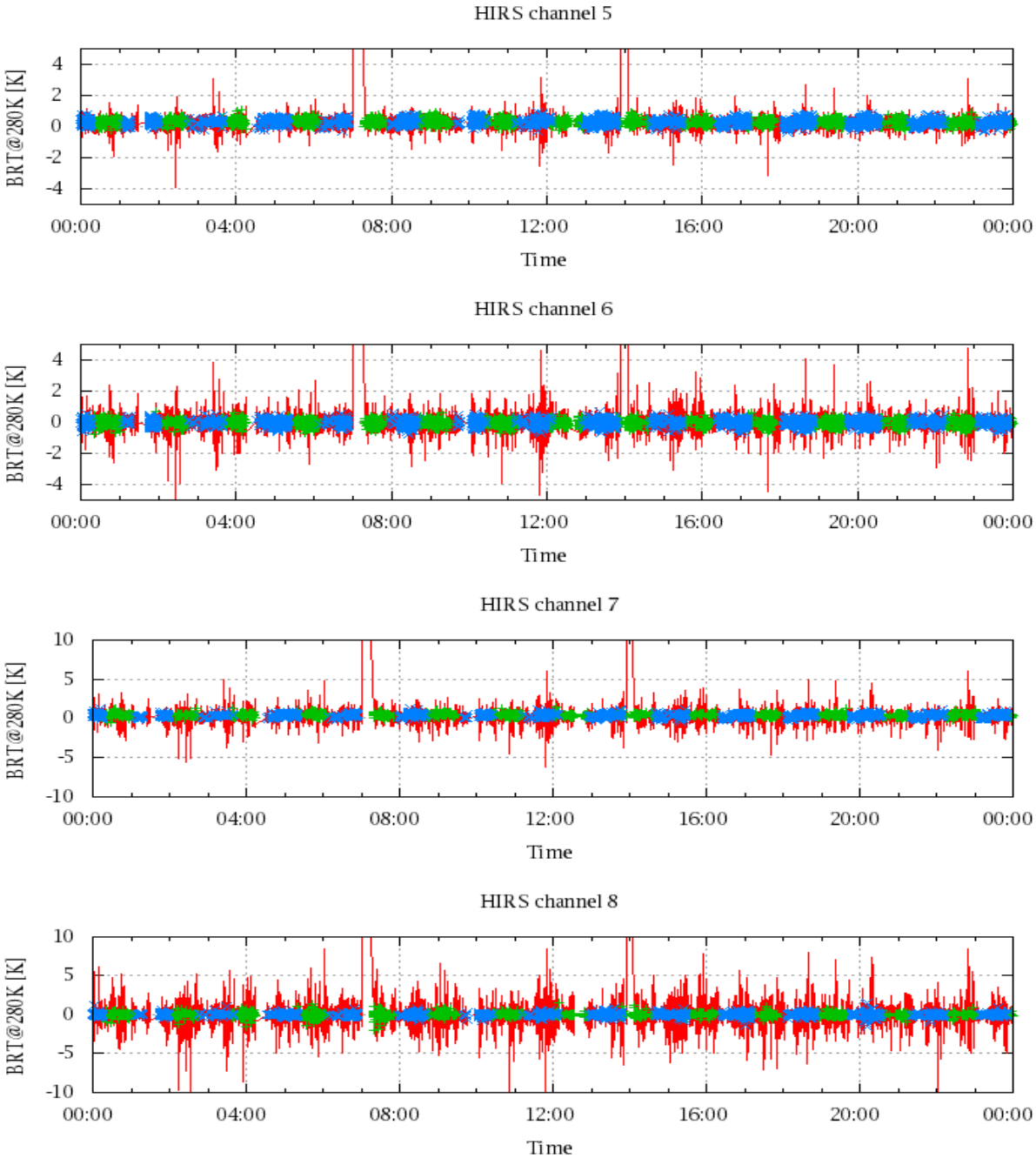


Figure 18: Radiance Differences in BRT

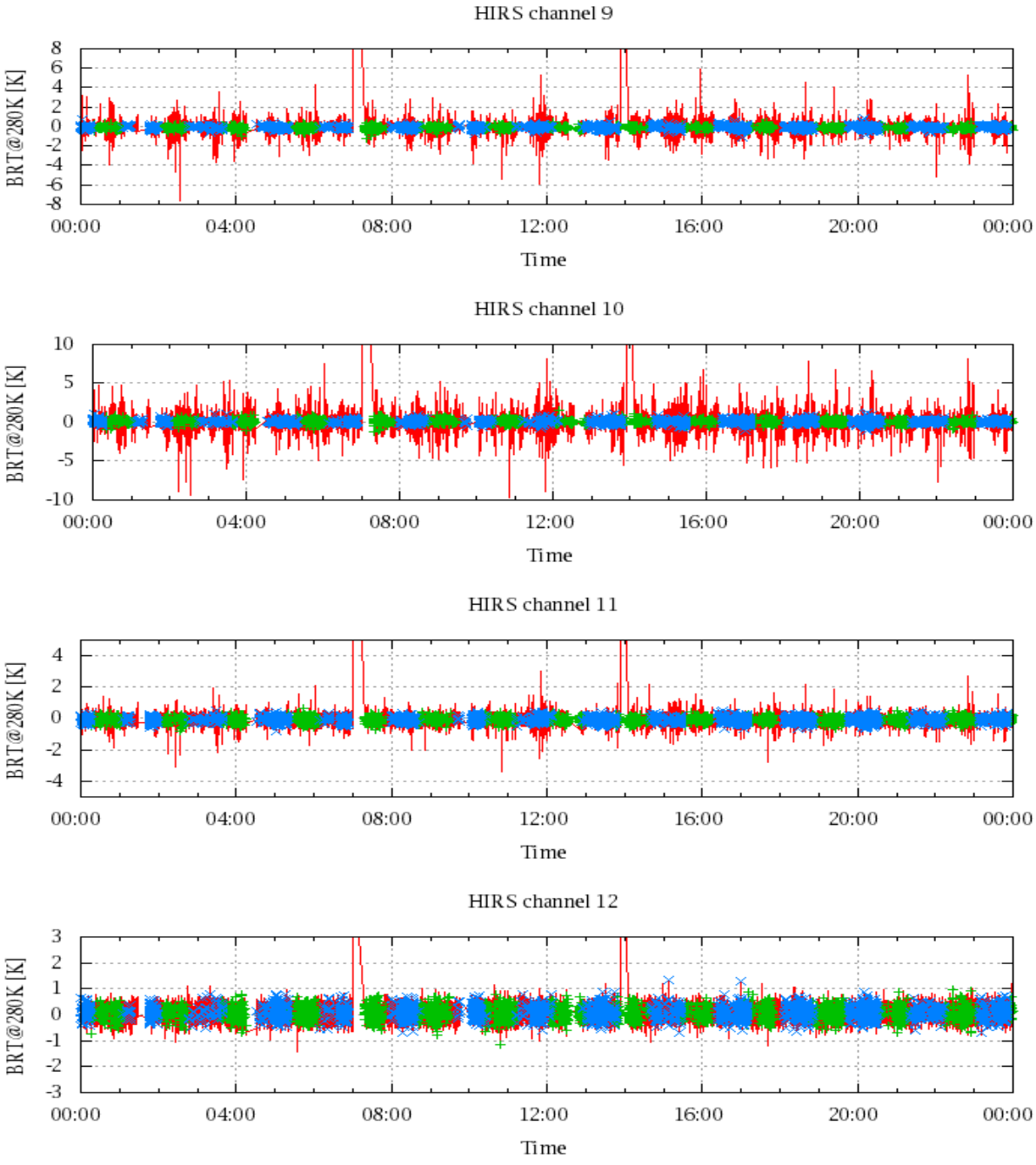


Figure 19: Radiance Differences in BRT

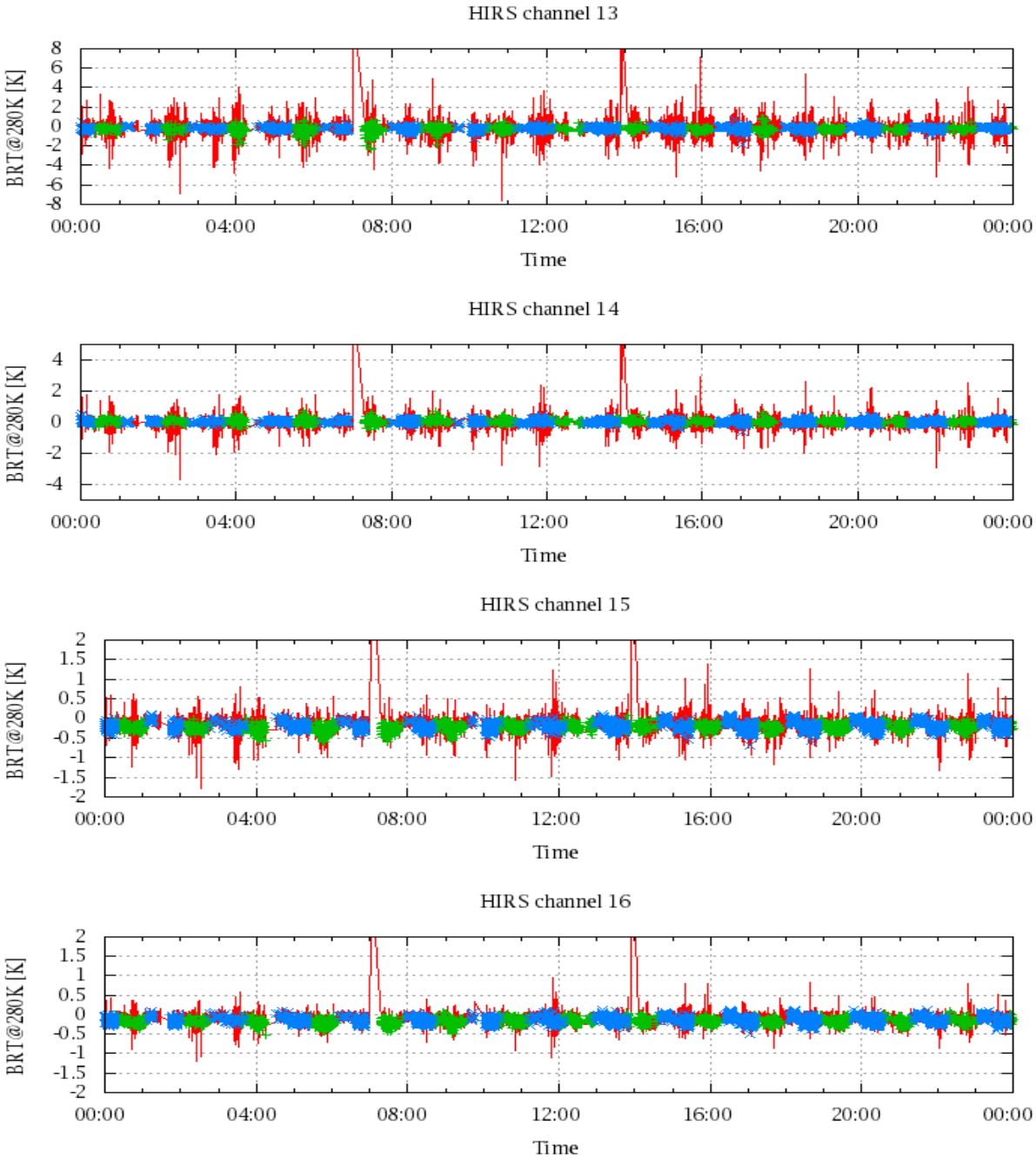


Figure 20: Radiance Differences in BRT

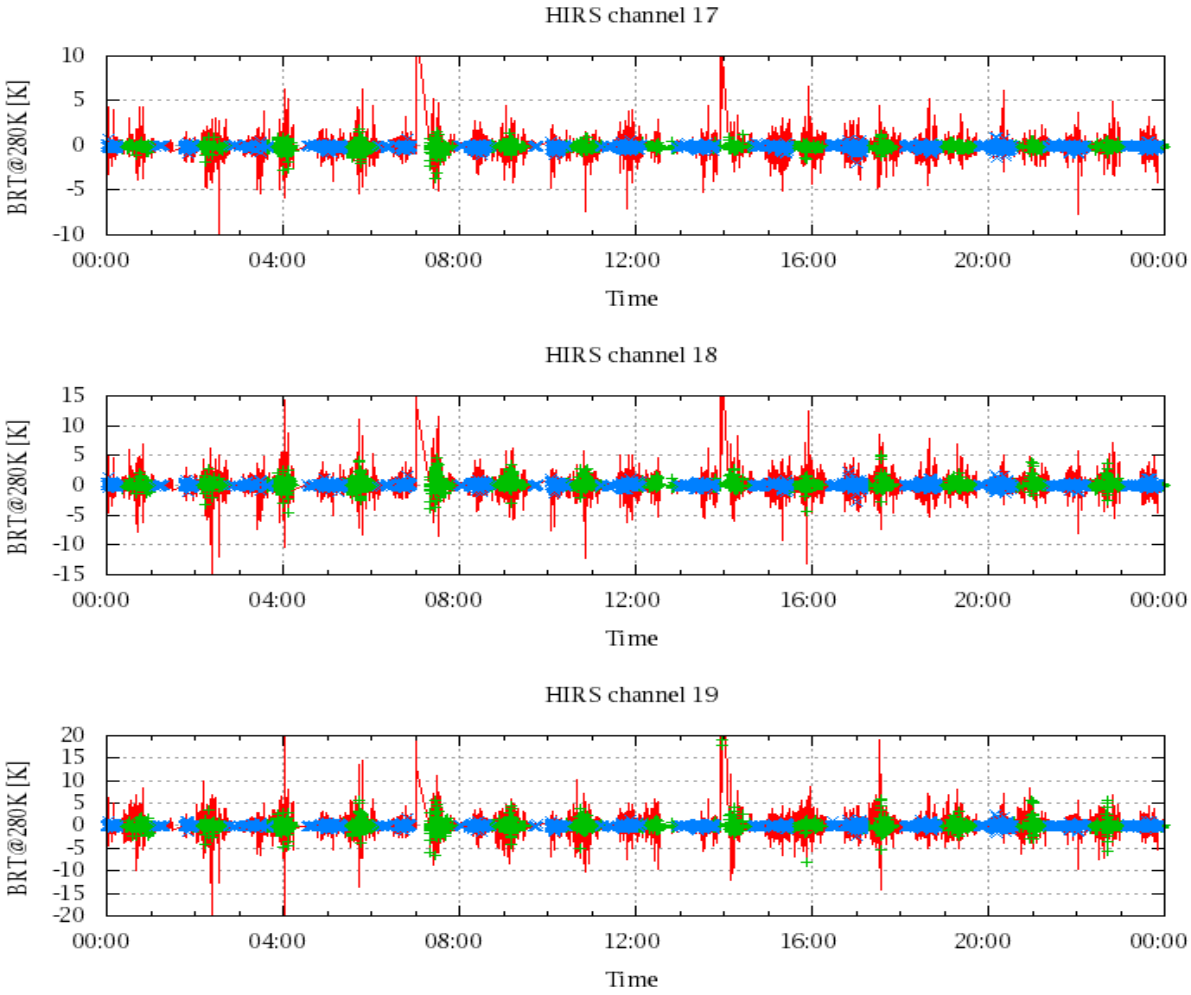


Figure 21: Radinace Differences in BRT