

IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

31/01/2017 00:00:00 - 01/02/2017 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 31/01/2017 00:00:00 - 01/02/2017 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 31/01/2017 00:00:00 - 01/02/2017 00:00:00

Product Type	Number	Action
L0 HKTM PDUs	481	-
L0 IASI PDUs	481	-
L1 ENG PDUs	480	-
L1 ENG distinct GEPSGranule	471	-
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)	3636	3638	20170131140014.504	20170131140014.934
PX1 (130)	8407	8410	20170131142126.717	20170131142127.369
PX1 (130)	8211	8213	20170131153324.148	20170131153324.582
PX1 (130)	10309	10311	20170131154243.702	20170131154244.132
PX1 (130)	10907	10909	20170131154523.264	20170131154523.694
PX1 (130)	13908	13911	20170131155843.493	20170131155844.142
PX1 (130)	14719	14722	20170131160219.704	20170131160220.352
PX1 (130)	14918	14921	20170131160311.809	20170131160312.458
PX1 (130)	15607	15609	20170131160615.587	20170131160616.020
PX1 (130)	13348	13350	20170131170902.511	20170131170902.941
PX1 (130)	13772	13774	20170131171055.370	20170131171055.804
PX1 (130)	14613	14615	20170131171439.581	20170131171440.014
PX1 (130)	15873	15876	20170131172015.572	20170131172016.221
PX1 (130)	1634	1636	20170131172948.349	20170131172948.782
PX1 (130)	6715	6717	20170131175222.726	20170131175223.155
PX1 (130)	6717	6719	20170131175223.155	20170131175223.589
PX1 (130)	7699	7701	20170131190934.270	20170131190934.703
PX1 (130)	7885	7887	20170131191023.566	20170131191024.000

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX1 (130)	9022	9024	20170131191526.910	20170131191527.339
PX1 (130)	11345	11347	20170131192547.253	20170131192547.686
PX1 (130)	12248	12250	20170131192947.893	20170131192948.326
PX1 (130)	12633	12635	20170131193130.811	20170131193131.240
PX1 (130)	13134	13136	20170131193343.346	20170131193343.783
PX2 (135)	3636	3638	20170131140014.504	20170131140014.934
PX2 (135)	8407	8409	20170131142126.717	20170131142127.151
PX2 (135)	8211	8213	20170131153324.148	20170131153324.582
PX2 (135)	10309	10311	20170131154243.702	20170131154244.132
PX2 (135)	10907	10909	20170131154523.264	20170131154523.694
PX2 (135)	13908	13910	20170131155843.493	20170131155843.927
PX2 (135)	14719	14721	20170131160219.704	20170131160220.138
PX2 (135)	14918	14920	20170131160311.809	20170131160312.243
PX2 (135)	15606	15609	20170131160615.372	20170131160616.020
PX2 (135)	13348	13350	20170131170902.511	20170131170902.941
PX2 (135)	13772	13774	20170131171055.370	20170131171055.804
PX2 (135)	14612	14615	20170131171439.366	20170131171440.014
PX2 (135)	15873	15875	20170131172015.572	20170131172016.006
PX2 (135)	1634	1636	20170131172948.349	20170131172948.782
PX2 (135)	6715	6717	20170131175222.726	20170131175223.155
PX2 (135)	6717	6719	20170131175223.155	20170131175223.589
PX2 (135)	7699	7701	20170131190934.270	20170131190934.703
PX2 (135)	7885	7887	20170131191023.566	20170131191024.000
PX2 (135)	9022	9024	20170131191526.910	20170131191527.339
PX2 (135)	11345	11347	20170131192547.253	20170131192547.686
PX2 (135)	12248	12250	20170131192947.893	20170131192948.326
PX2 (135)	12632	12635	20170131193129.080	20170131193131.240
PX2 (135)	13134	13136	20170131193343.346	20170131193343.783
PX3 (140)	2054	2056	20170131041039.858	20170131041040.292
PX3 (140)	3635	3638	20170131140014.289	20170131140014.934
PX3 (140)	8407	8409	20170131142126.717	20170131142127.151
PX3 (140)	8210	8213	20170131153323.933	20170131153324.582
PX3 (140)	10309	10311	20170131154243.702	20170131154244.132
PX3 (140)	10907	10909	20170131154523.264	20170131154523.694
PX3 (140)	13908	13910	20170131155843.493	20170131155843.927
PX3 (140)	14719	14721	20170131160219.704	20170131160220.138
PX3 (140)	14918	14920	20170131160311.809	20170131160312.243
PX3 (140)	15606	15608	20170131160615.372	20170131160615.805
PX3 (140)	13348	13350	20170131170902.511	20170131170902.941
PX3 (140)	13772	13774	20170131171055.370	20170131171055.804
PX3 (140)	14612	14614	20170131171439.366	20170131171439.799
PX3 (140)	15873	15875	20170131172015.572	20170131172016.006
PX3 (140)	1634	1636	20170131172948.349	20170131172948.782
PX3 (140)	6715	6717	20170131175222.726	20170131175223.155
PX3 (140)	6717	6719	20170131175223.155	20170131175223.589
PX3 (140)	7699	7701	20170131190934.270	20170131190934.703
PX3 (140)	7885	7887	20170131191023.566	20170131191024.000
PX3 (140)	9022	9024	20170131191526.910	20170131191527.339
PX3 (140)	11345	11347	20170131192547.253	20170131192547.686
PX3 (140)	12248	12250	20170131192947.893	20170131192948.326
PX3 (140)	12632	12634	20170131193129.080	20170131193131.025
PX3 (140)	13133	13136	20170131193343.131	20170131193343.783
PX4 (145)	3635	3637	20170131140014.289	20170131140014.719

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Table 2 – continued from previous page

APID	Seq from	Seq to	Time from	Time to
PX4 (145)	8407	8409	20170131142126.717	20170131142127.151
PX4 (145)	8210	8212	20170131153323.933	20170131153324.367
PX4 (145)	10309	10311	20170131154243.702	20170131154244.132
PX4 (145)	10907	10909	20170131154523.264	20170131154523.694
PX4 (145)	13908	13910	20170131155843.493	20170131155843.927
PX4 (145)	14719	14721	20170131160219.704	20170131160220.138
PX4 (145)	14918	14920	20170131160311.809	20170131160312.243
PX4 (145)	15606	15608	20170131160615.372	20170131160615.805
PX4 (145)	13347	13350	20170131170902.296	20170131170902.941
PX4 (145)	13771	13774	20170131171055.155	20170131171055.804
PX4 (145)	14612	14614	20170131171439.366	20170131171439.799
PX4 (145)	15873	15875	20170131172015.572	20170131172016.006
PX4 (145)	1634	1636	20170131172948.349	20170131172948.782
PX4 (145)	6714	6719	20170131175222.511	20170131175223.589
PX4 (145)	7698	7701	20170131190934.055	20170131190934.703
PX4 (145)	7885	7887	20170131191023.566	20170131191024.000
PX4 (145)	9022	9024	20170131191526.910	20170131191527.339
PX4 (145)	11345	11347	20170131192547.253	20170131192547.686
PX4 (145)	12248	12250	20170131192947.893	20170131192948.326
PX4 (145)	12632	12634	20170131193129.080	20170131193131.025
PX4 (145)	13133	13135	20170131193343.131	20170131193343.560
IMG (150)	12615	12617	20170131140014.289	20170131140014.719
IMG (150)	1639	1641	20170131142126.717	20170131142127.151
IMG (150)	3602	3604	20170131153323.933	20170131153324.367
IMG (150)	5980	5983	20170131154243.483	20170131154244.132
IMG (150)	6658	6661	20170131154523.045	20170131154523.694
IMG (150)	7807	7809	20170131154952.877	20170131154953.525
IMG (150)	10059	10062	20170131155843.279	20170131155843.927
IMG (150)	10979	10981	20170131160219.704	20170131160220.138
IMG (150)	11202	11204	20170131160311.809	20170131160312.243
IMG (150)	11982	11984	20170131160615.372	20170131160615.805
IMG (150)	11607	11609	20170131170902.296	20170131170902.726
IMG (150)	12062	12067	20170131171049.101	20170131171050.831
IMG (150)	12087	12089	20170131171055.155	20170131171055.589
IMG (150)	13040	13042	20170131171439.366	20170131171439.799
IMG (150)	14469	14471	20170131172015.572	20170131172016.006
IMG (150)	517	520	20170131172948.134	20170131172948.782
IMG (150)	6274	6276	20170131175222.511	20170131175222.941
IMG (150)	6276	6278	20170131175222.941	20170131175223.374
IMG (150)	9574	9576	20170131190934.055	20170131190934.484
IMG (150)	9784	9787	20170131191023.348	20170131191024.000
IMG (150)	11073	11076	20170131191526.691	20170131191527.339
IMG (150)	13708	13711	20170131192547.034	20170131192547.686
IMG (150)	14731	14734	20170131192947.678	20170131192948.326
IMG (150)	15168	15170	20170131193130.377	20170131193131.025
IMG (150)	15733	15735	20170131193343.131	20170131193343.560
VER (160)	15464	15466	20170131154945.092	20170131154953.092
VER (160)	2118	2121	20170131171049.101	20170131171057.101
VER (160)	2452	2454	20170131171945.084	20170131171945.084
AUX (180)	3673	3675	20170131171041.534	20170131171057.534

Table 2: L0 data gaps

3 Instrument modes

Time	Transition from	Transition to
31/01/2017 00:00:06	-	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	471	-
GQisFlagQual set (PX1)	99.60 %	-
GQisFlagQual set (PX2)	99.66 %	-
GQisFlagQual set (PX3)	99.68 %	-
GQisFlagQual set (PX4)	99.61 %	-
GQisFlagQual set (all)	99.64 %	-

Table 4: Quality flags

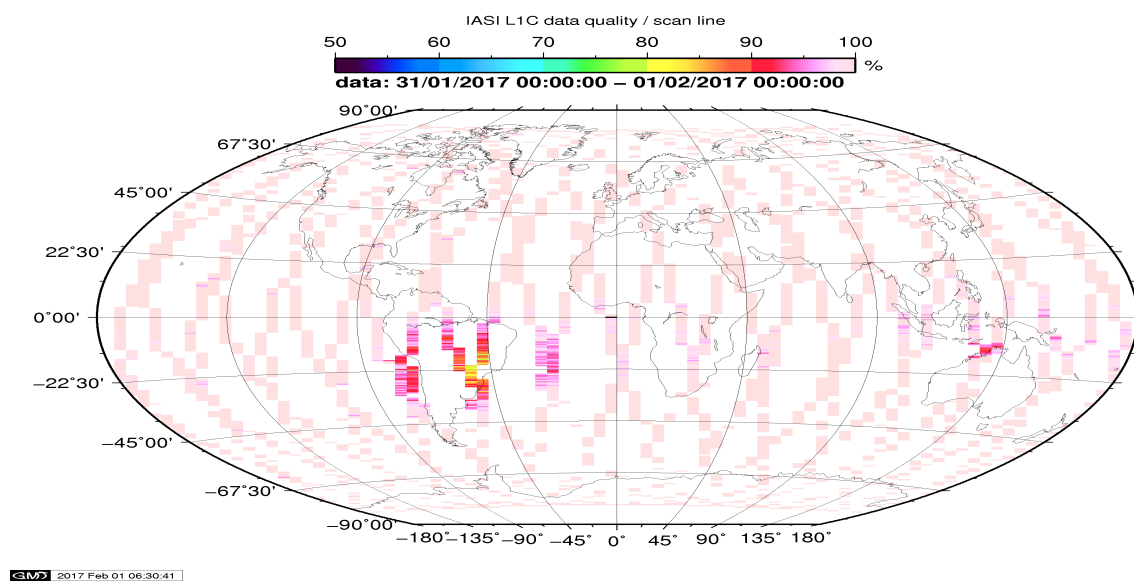


Figure 1: L1C data quality

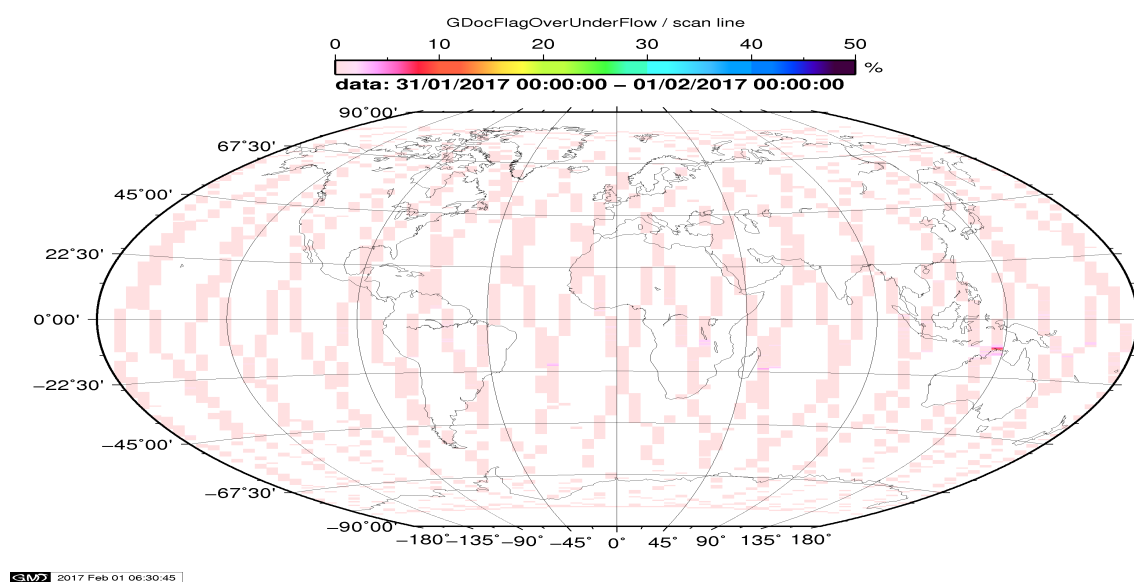


Figure 2: Flag of Over and Under Flows

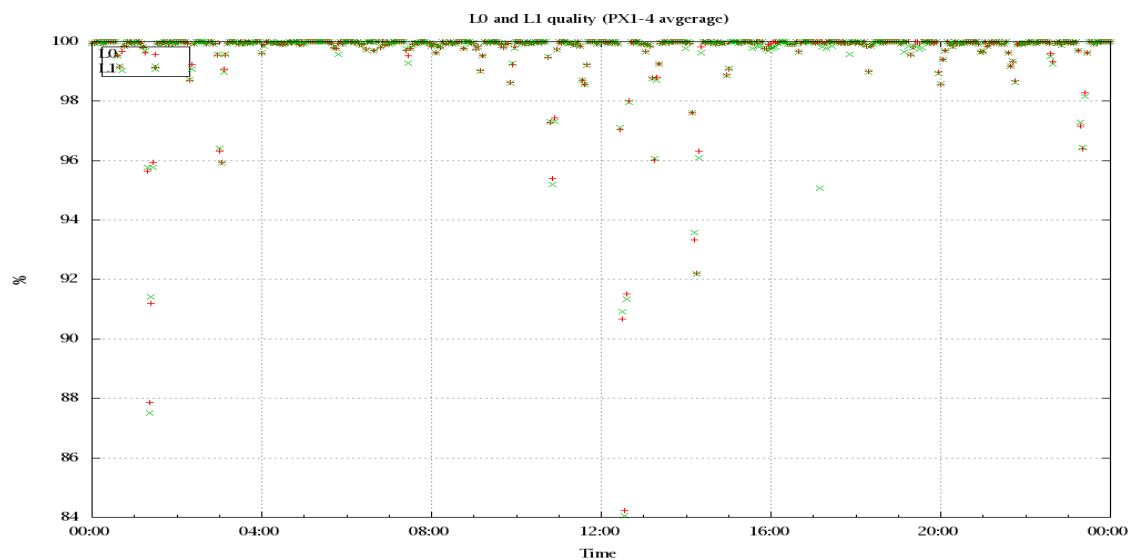


Figure 3: Level 0 and 1C overall quality

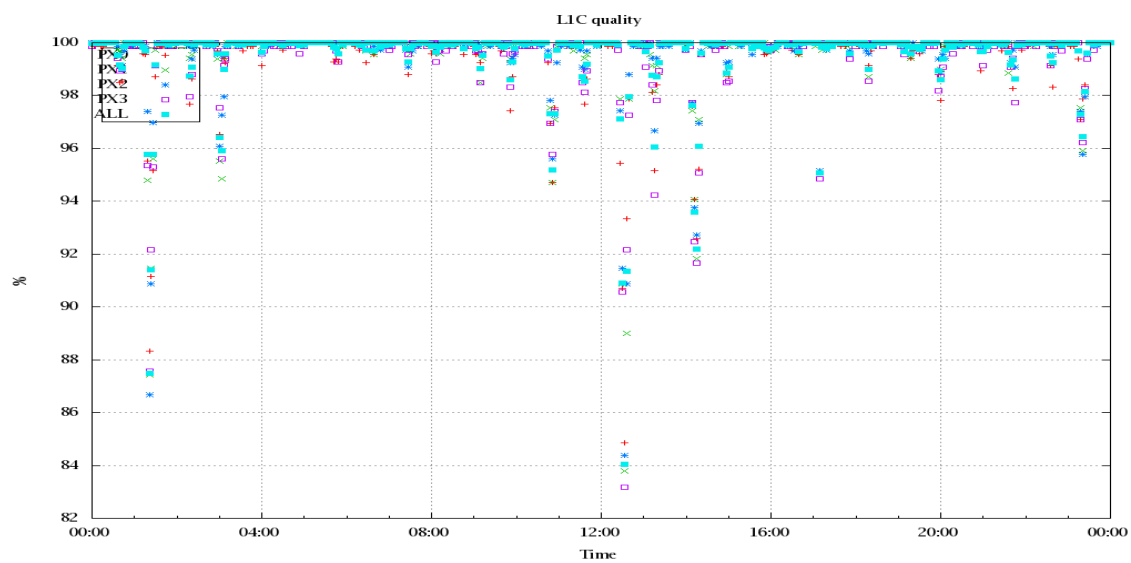


Figure 4: Level 1C quality

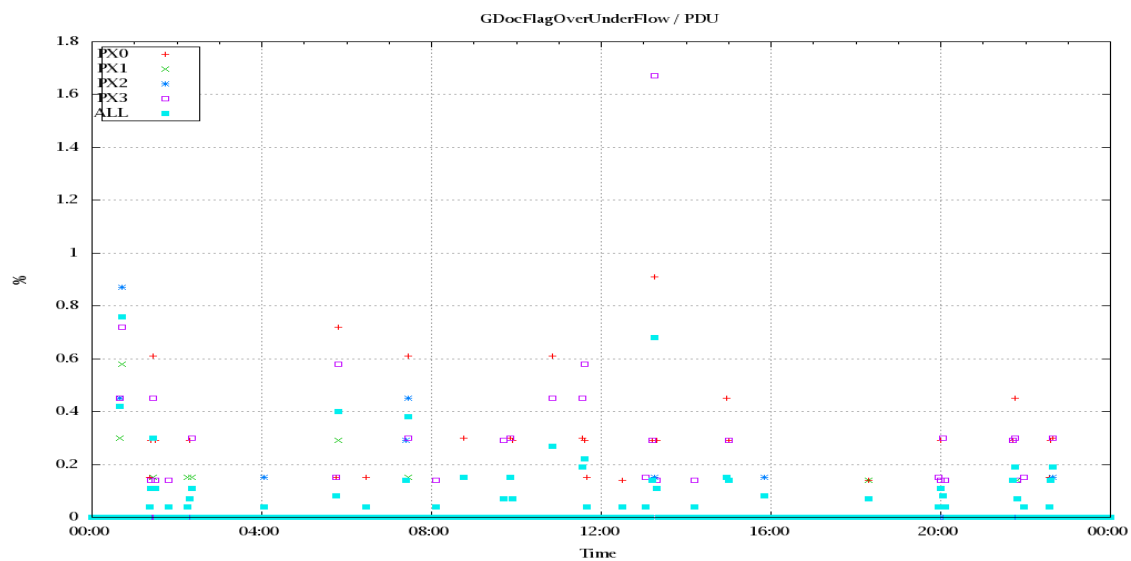


Figure 5: OverUnderFlowFlag timeseries

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.

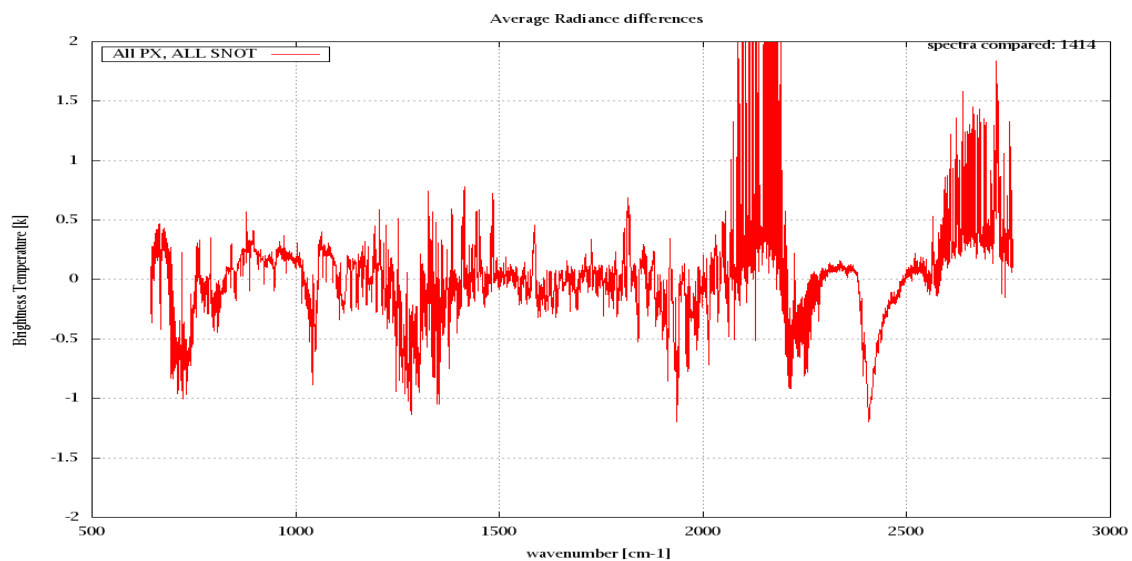


Figure 6: Average Radiance differences: OBS-CAL

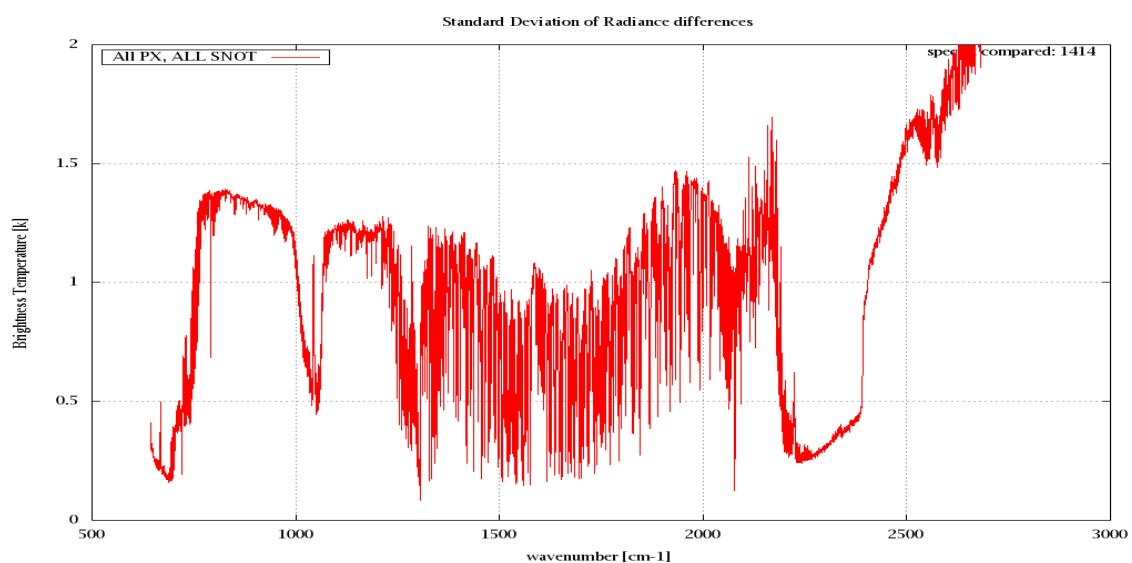


Figure 7: Standard Deviation of Radiance differences

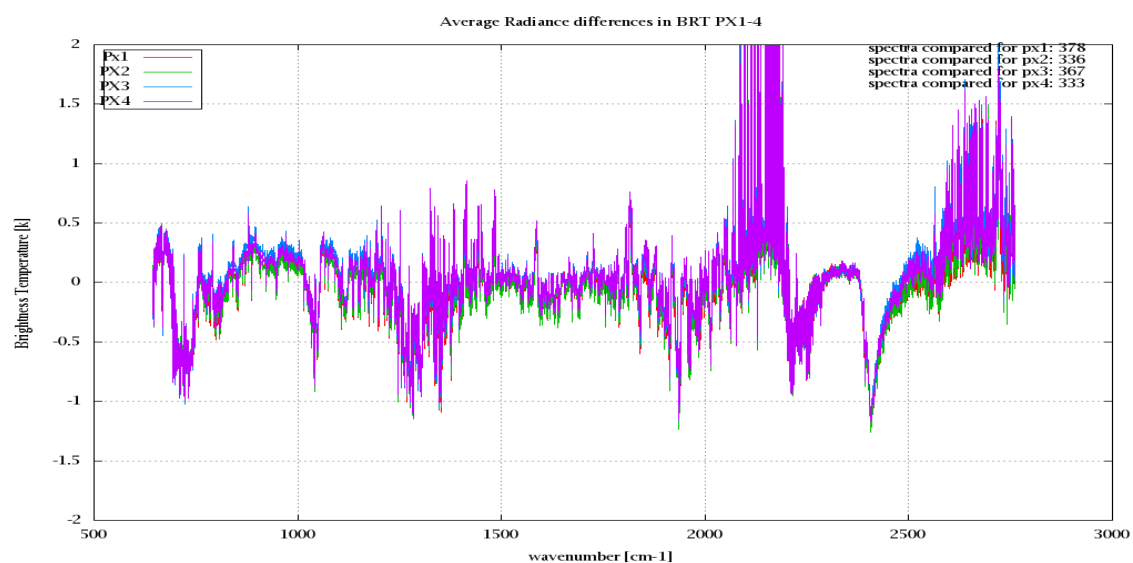


Figure 8: Average Radiance differences: OBS-CAL

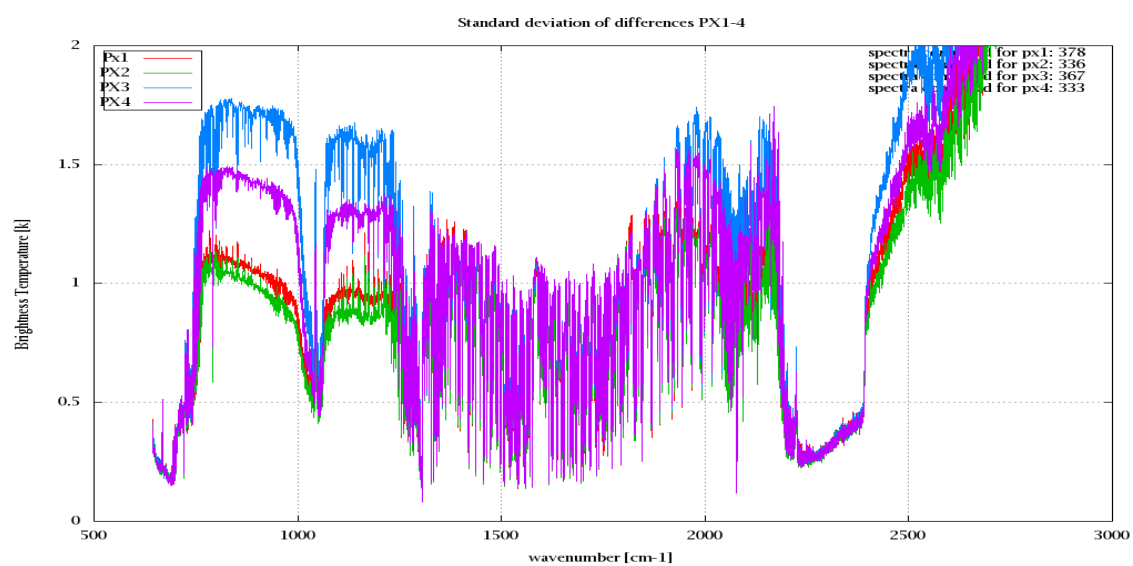


Figure 9: Standard Deviation of Radiance differences

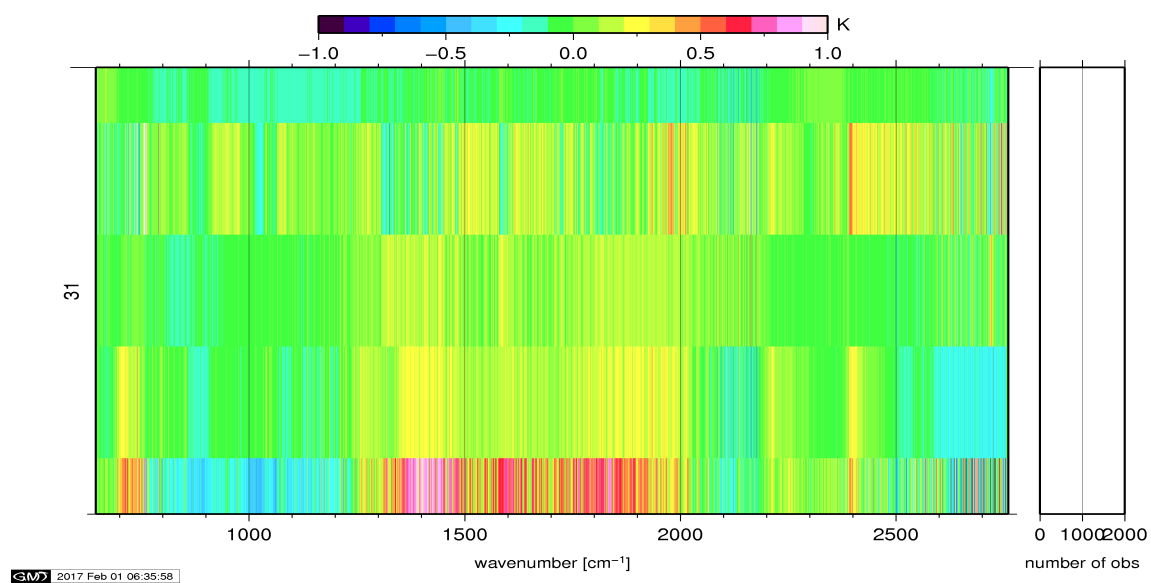


Figure 10: Radiance Anomaly in BRT: All Channels

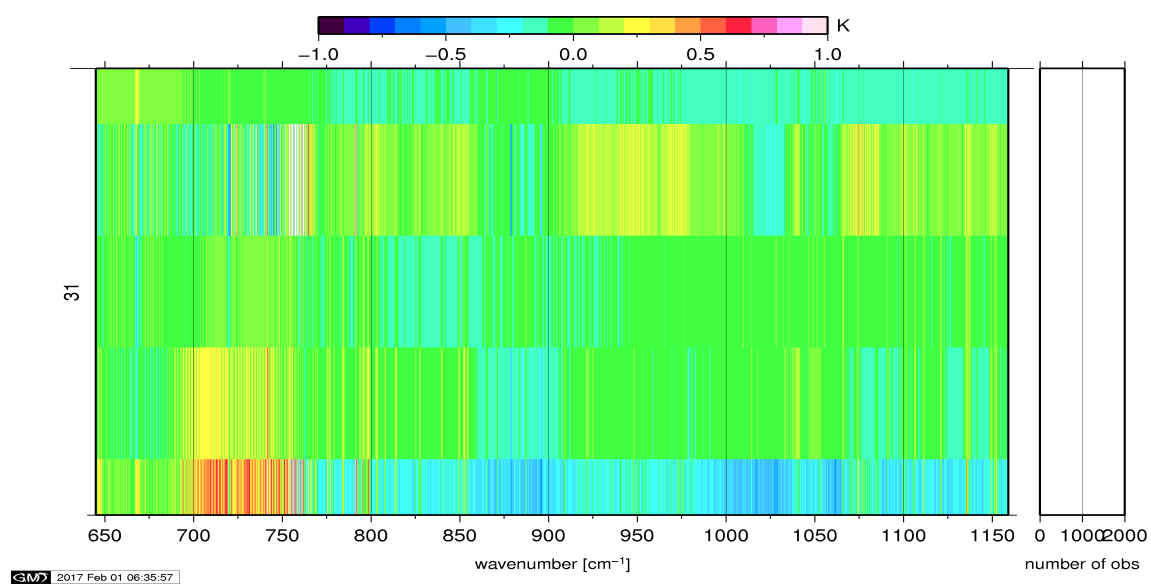


Figure 11: Radiance Anomaly in BRT: IASI Band 1

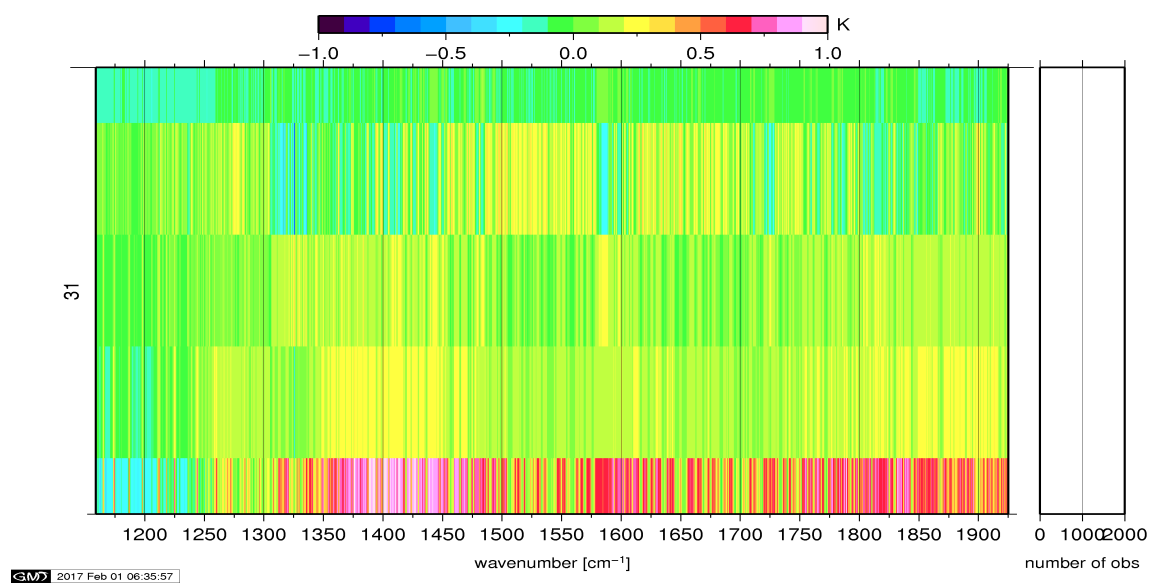


Figure 12: Radiance Anomaly in BRT: IASI Band 2

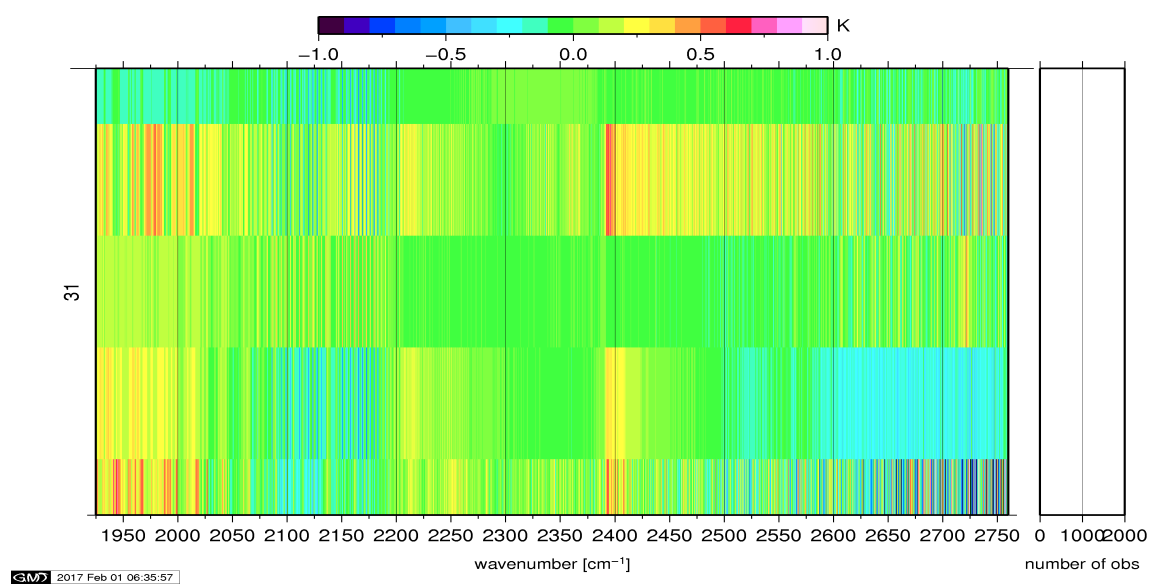


Figure 13: Radiance Anomaly in BRT: IASI Band 3

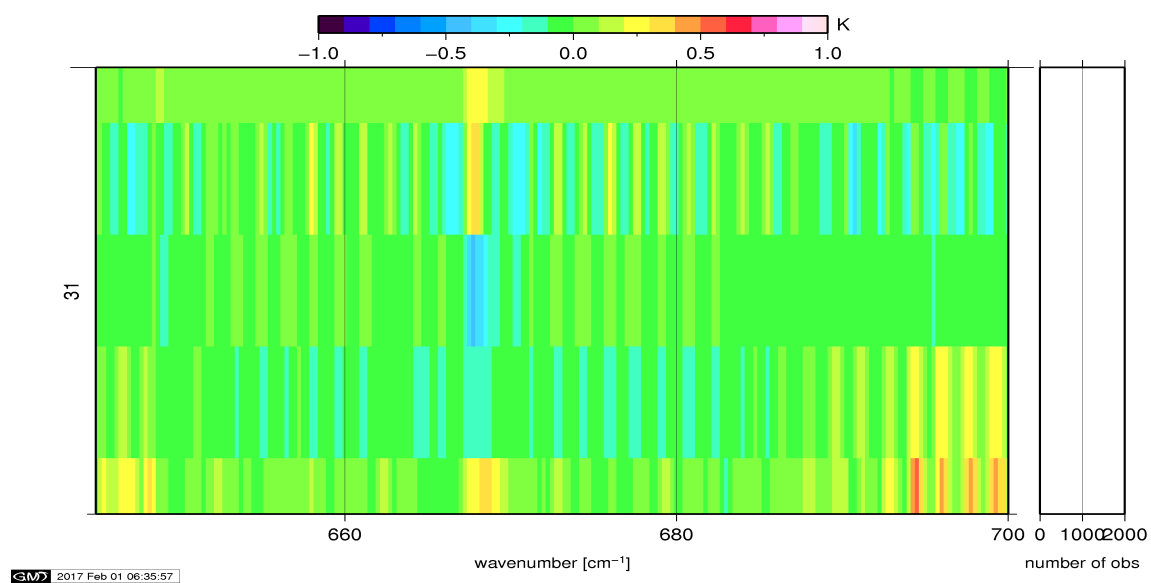


Figure 14: Radiance Anomaly in BRT: CO2 14

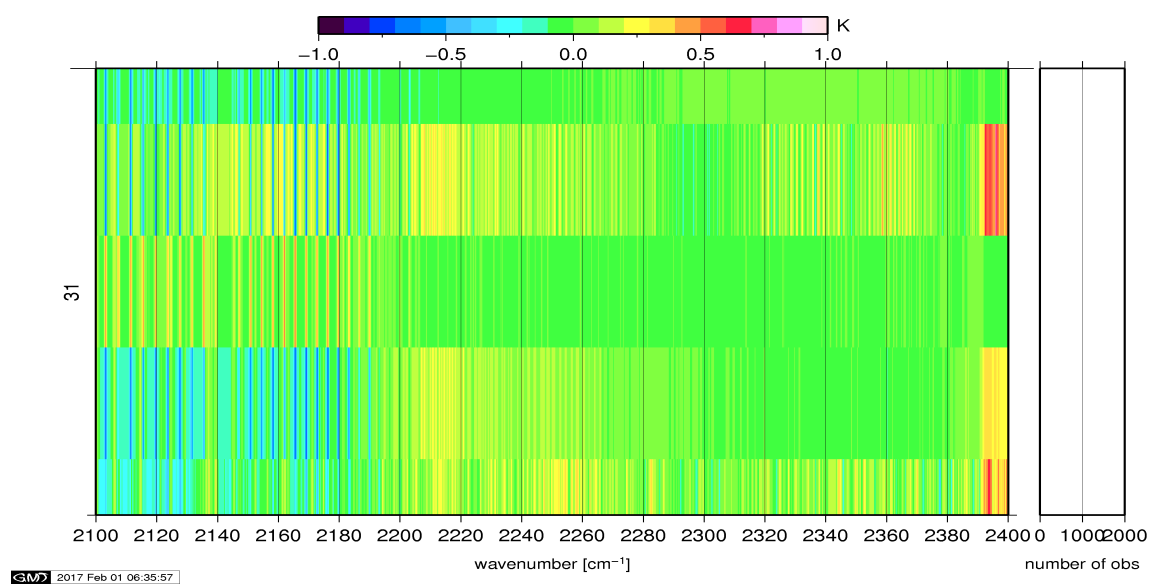


Figure 15: Radiance Anomaly in BRT: CO2 4.3

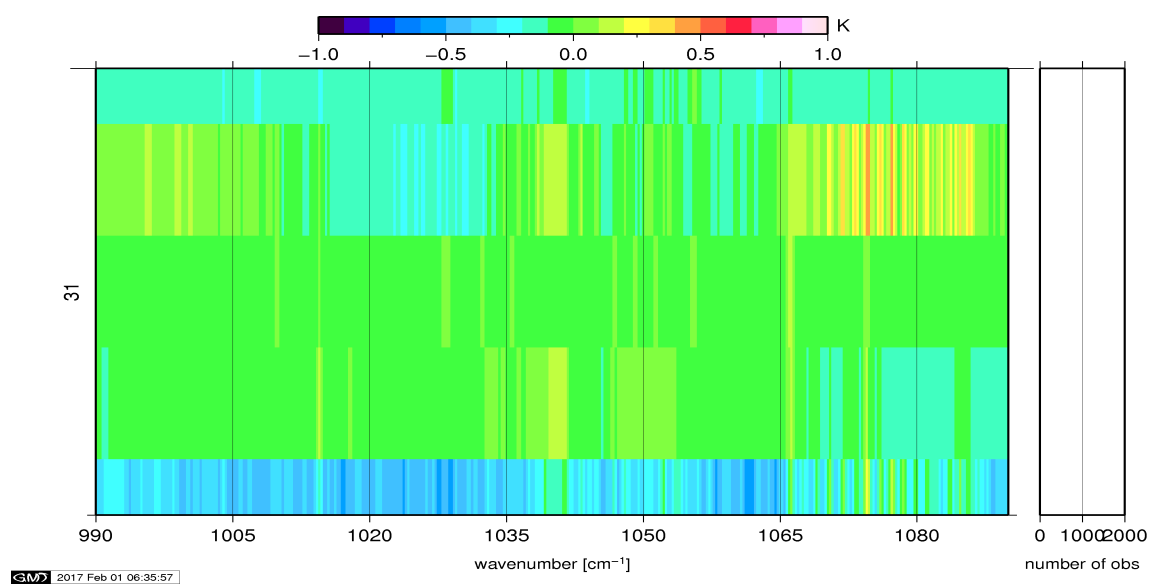


Figure 16: Radiance Anomaly in BRT: O3

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.

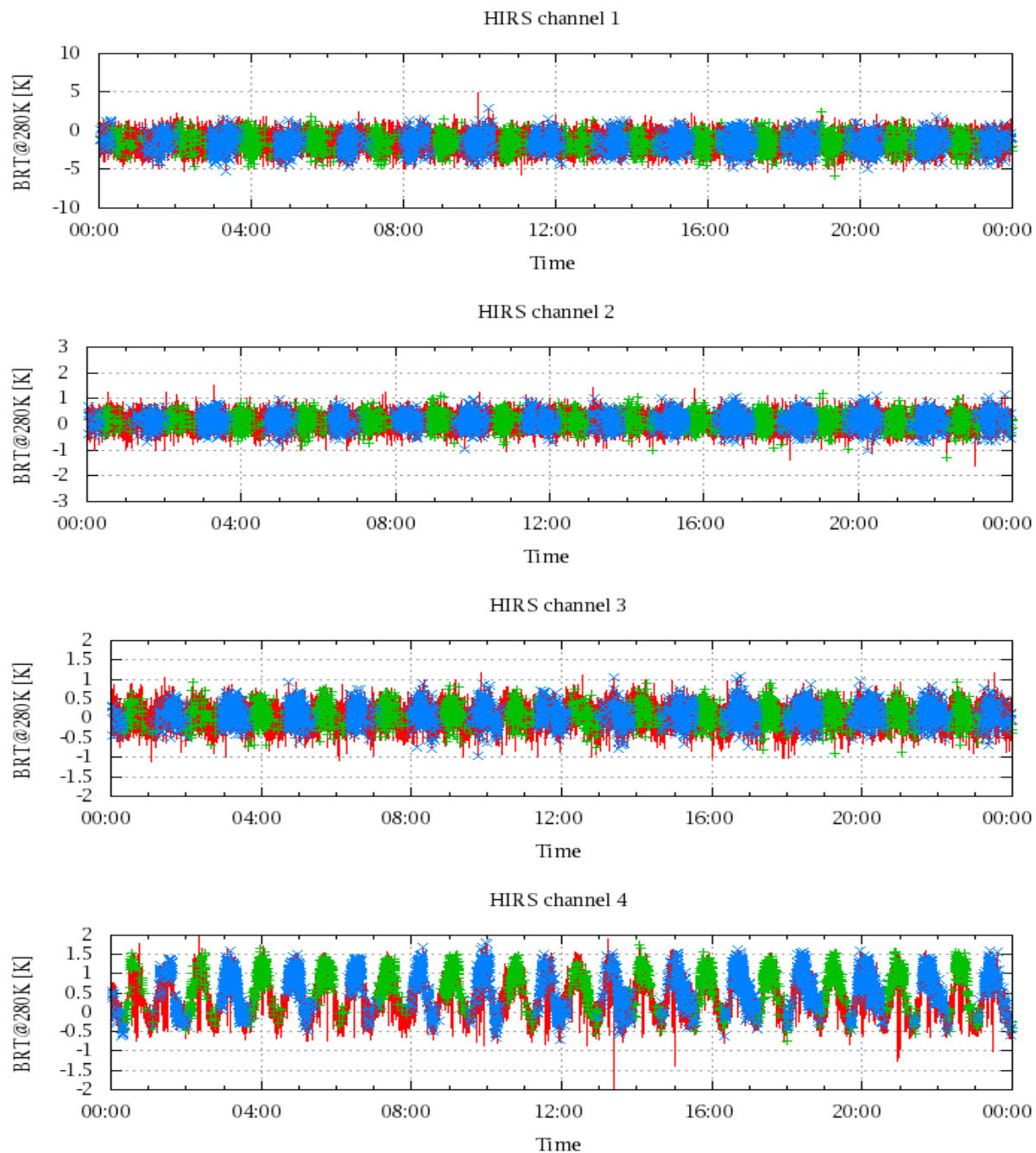


Figure 17: Radiance Differences in BRT

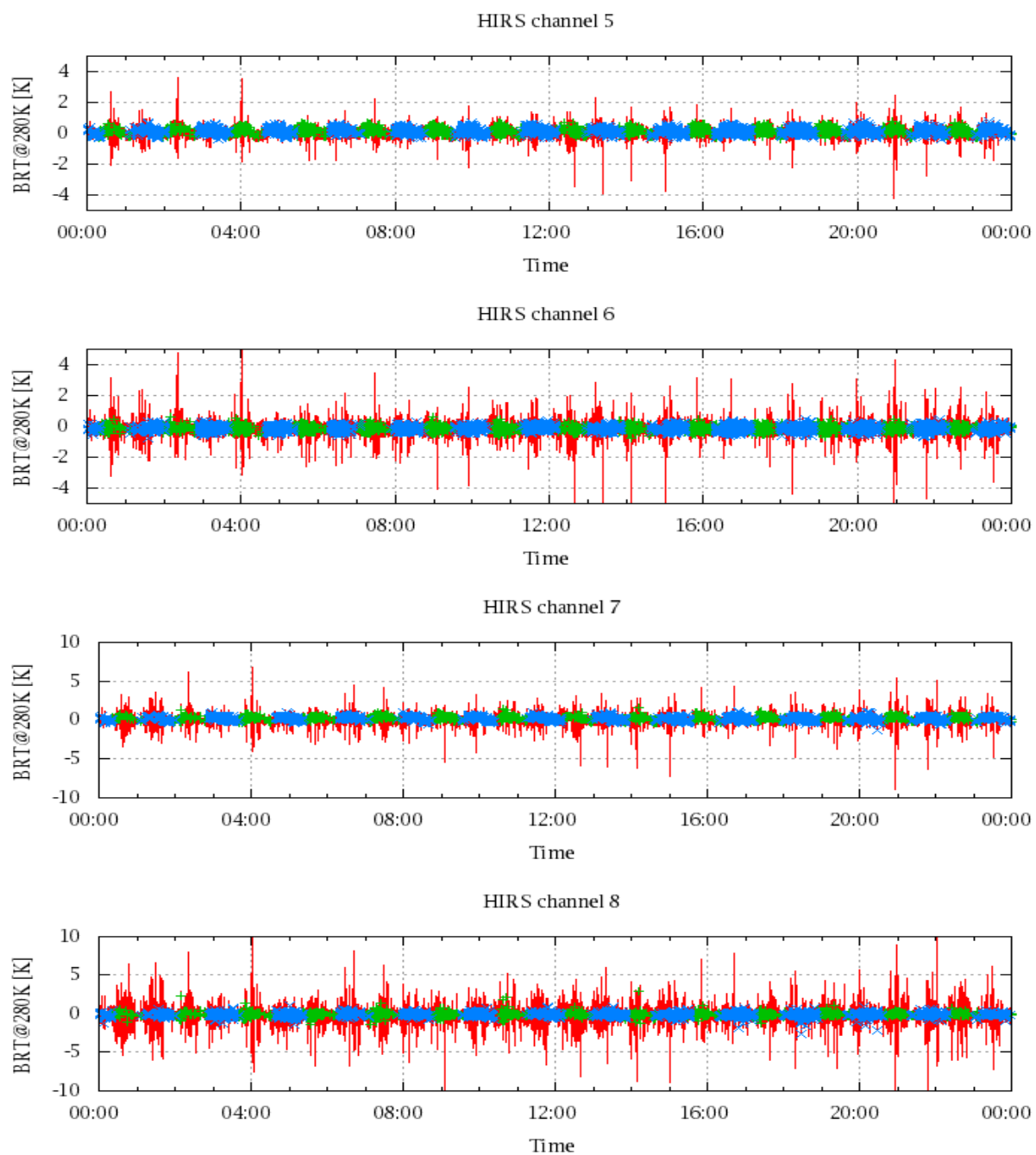


Figure 18: Radiance Differences in BRT

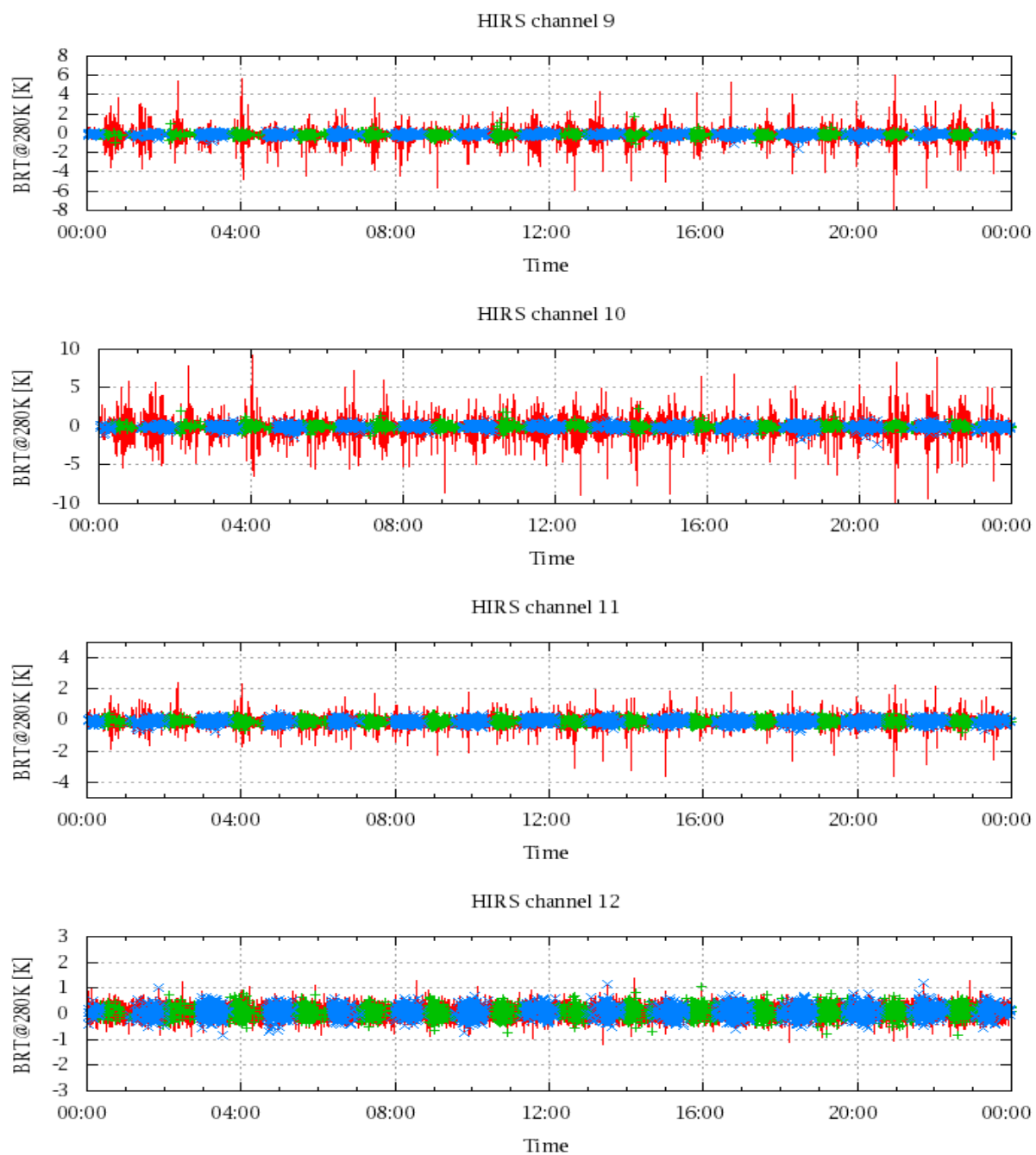


Figure 19: Radiance Differences in BRT

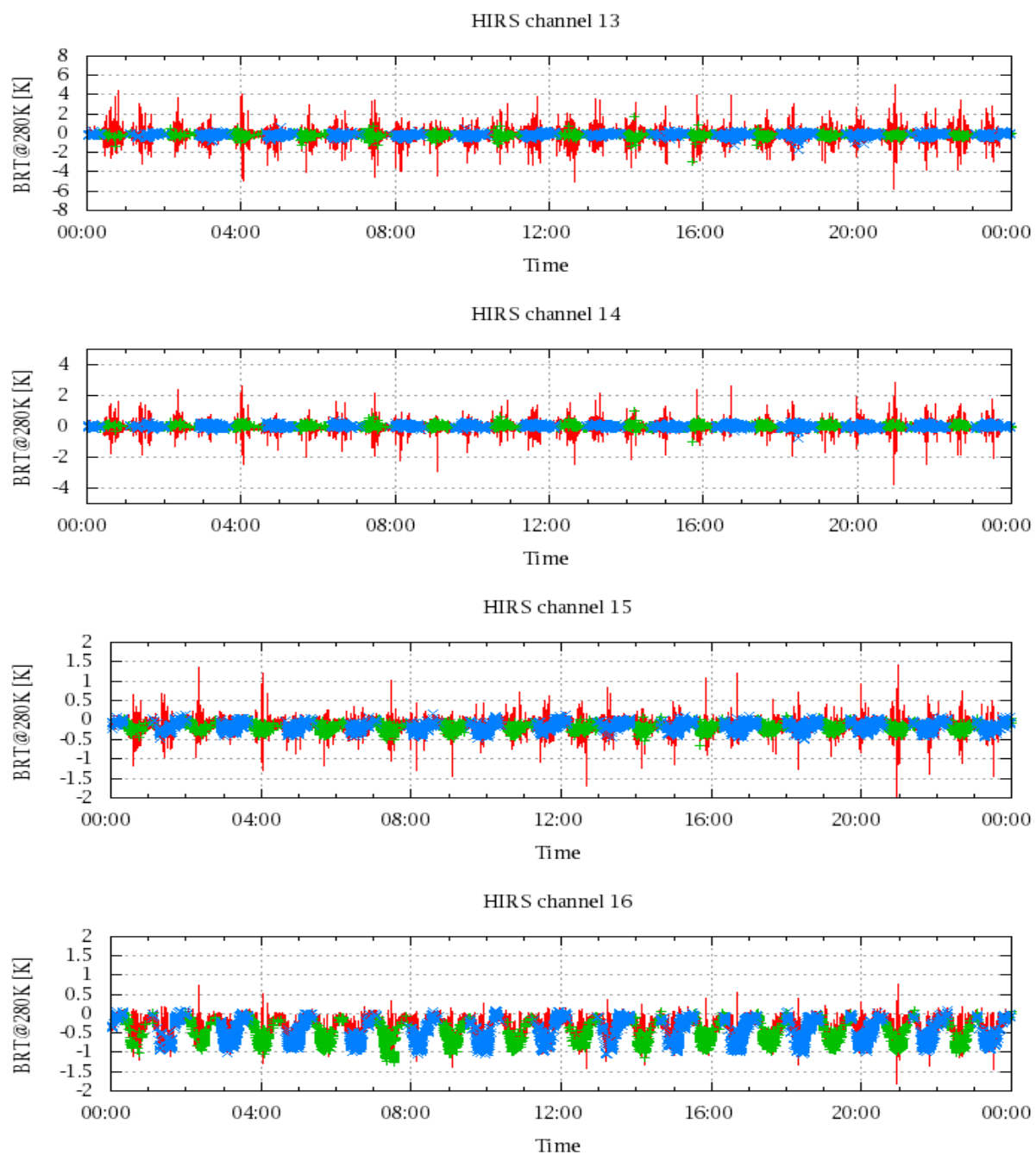


Figure 20: Radiance Differences in BRT

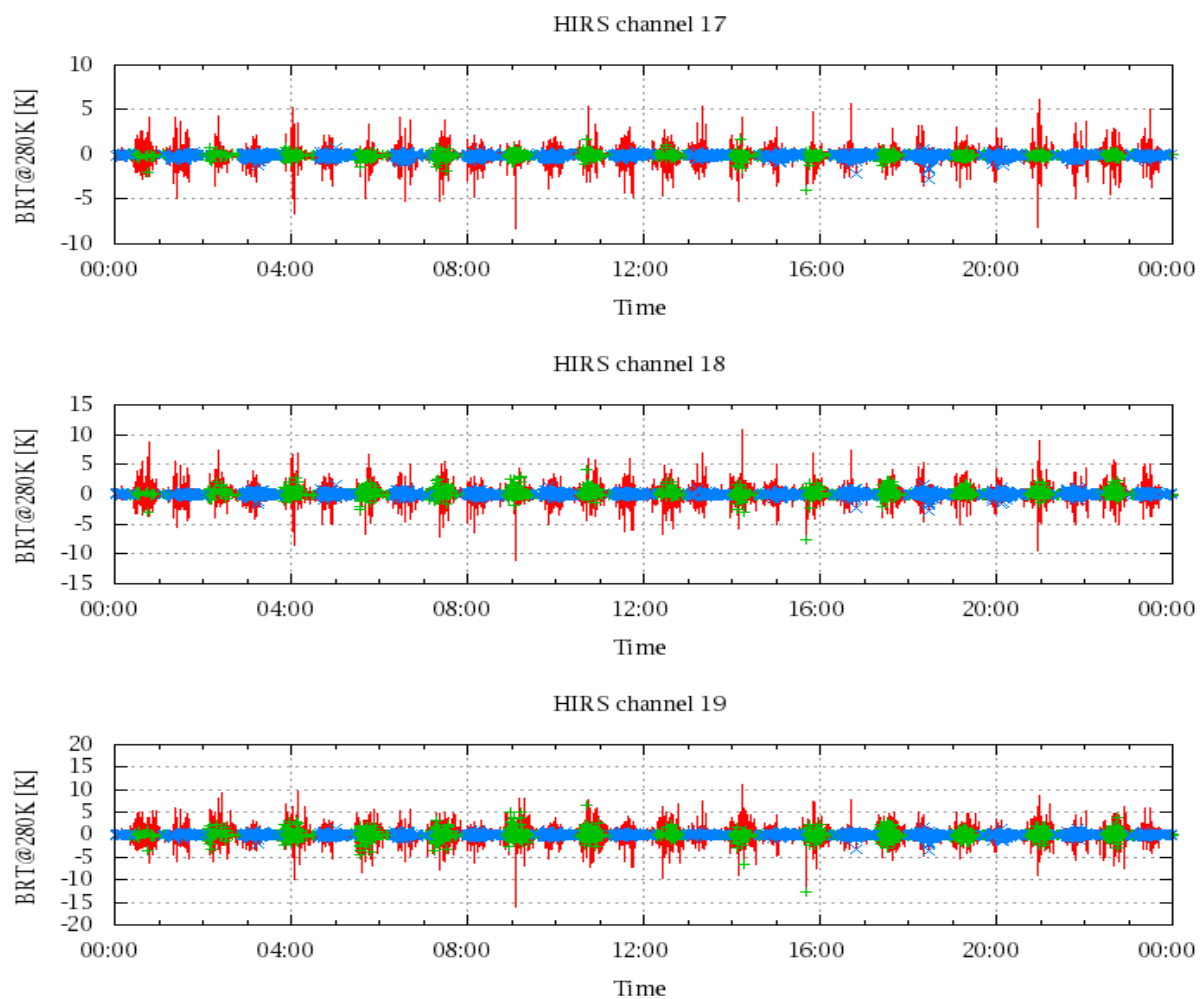


Figure 21: Radinace Differences in BRT