IASI L0 and L1 Daily Monitoring Report

IASI monitoring team

05/12/2013 00:00:00 - 06/12/2013 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 05/12/2013 00:00:00 - 06/12/2013 00:00:00 .

The monitoring data are extracted on PDU basis.

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

2 Data quantity 05/12/2013 00:00:00 - 06/12/2013 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)	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)	8962	8964	20131205153024.013	20131205153024.447
PX1 (130)	8965	8981	20131205153024.666	20131205153029.638
PX1 (130)	9233	9354	20131205153136.228	20131205153208.447
PX2 (135)	8966	8981	20131205153024.880	20131205153029.638
PX2 (135)	9233	9354	20131205153136.228	20131205153208.447
PX3 (140)	8966	8981	20131205153024.880	20131205153029.638
PX3 (140)	9232	9354	20131205153136.013	20131205153208.447
PX4 (145)	8966	8981	20131205153024.880	20131205153029.638
PX4 (145)	9232	9354	20131205153136.013	20131205153208.447
IMG (150)	6758	6773	20131205153024.880	20131205153028.337
IMG (150)	7060	7198	20131205153136.013	20131205153208.447
VER (160)	13647	13650	20131205153019.908	20131205153024.880
VER (160)	13692	13713	20131205153131.904	20131205153211.904
AUX (180)	15840	15845	20131205153132.337	20131205153212.337

Table 2: L0 data gaps

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

3 Instrument modes

Time	Transition from	Transition to
05/12/2013 00:00:03	-	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	481	-
GQisFlagQual set (PX1)	99.48 %	-
GQisFlagQual set (PX2)	99.45 %	-
GQisFlagQual set (PX3)	99.50 %	-
GQisFlagQual set (PX4)	99.51 %	-
GQisFlagQual set (all)	99.49 %	-

Table 4: Quality flags

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

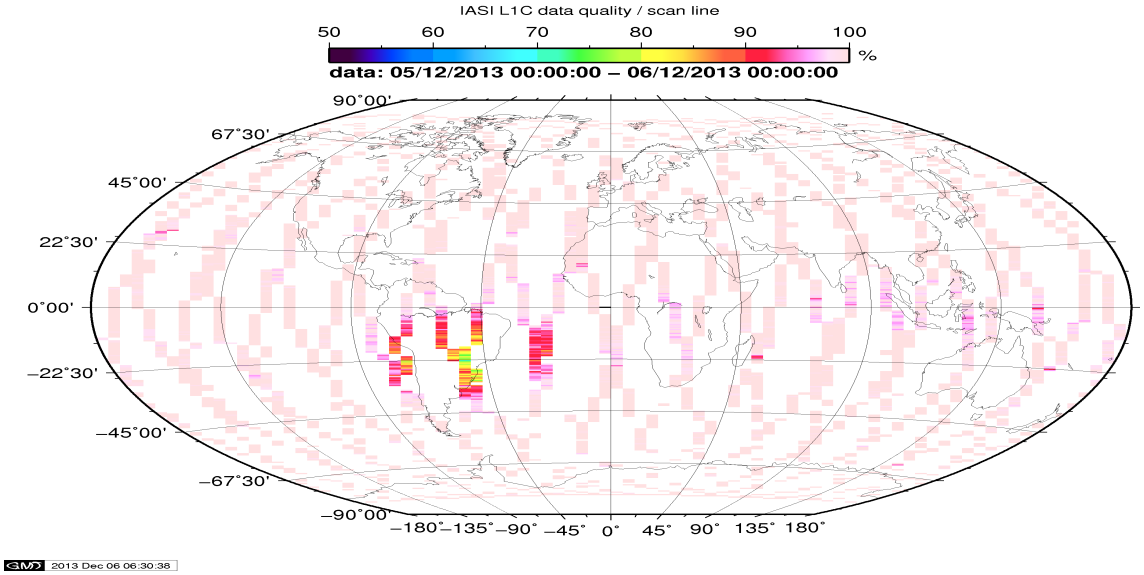

Figure 1: L1C data quality

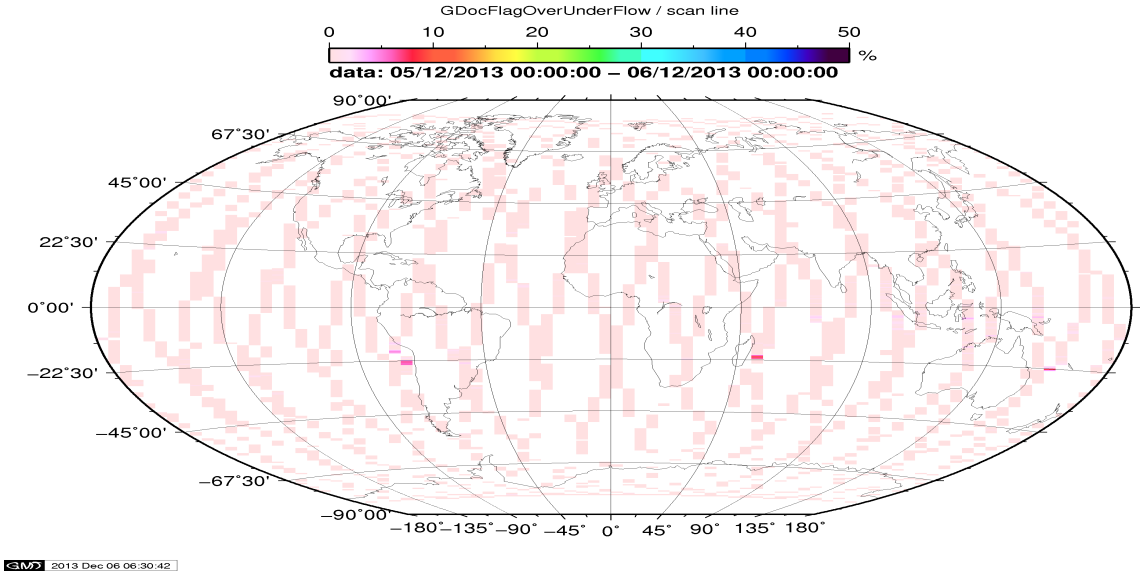

Figure 2: Flag of Over and Under Flows

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

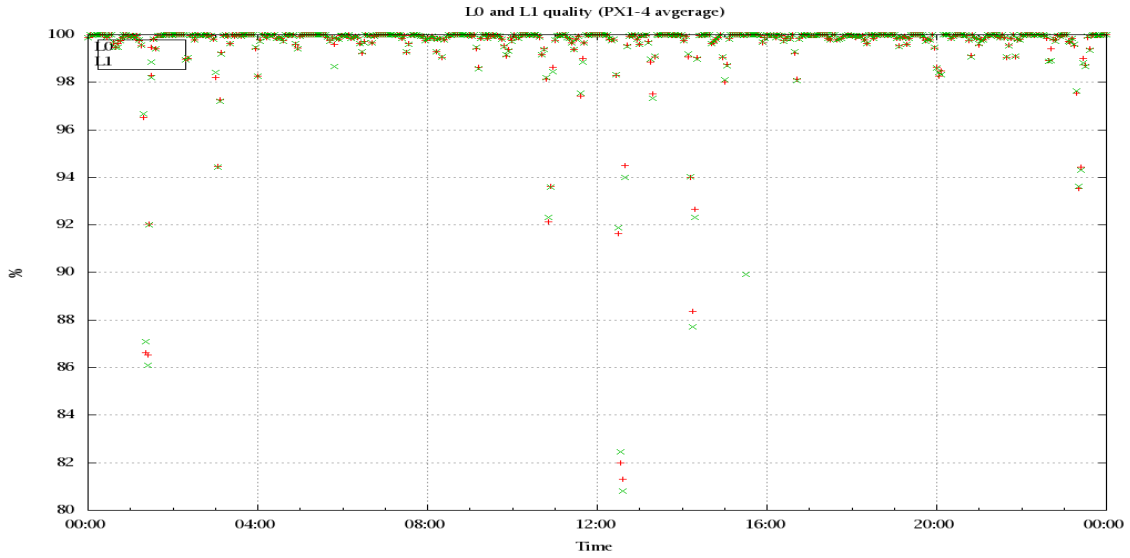

Figure 3: Level 0 and 1C overall quality

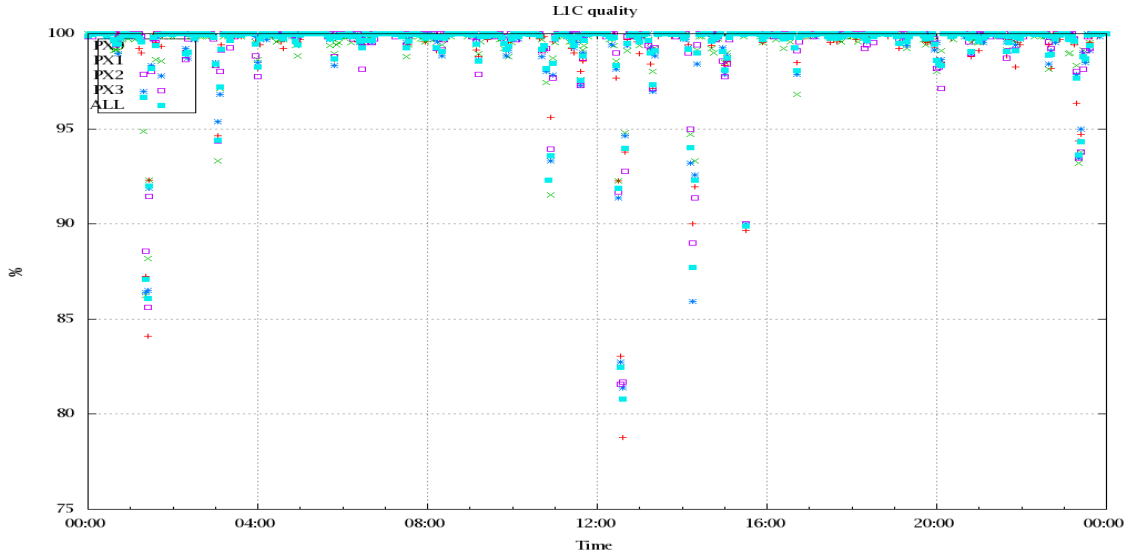

Figure 4: Level 1C quality

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

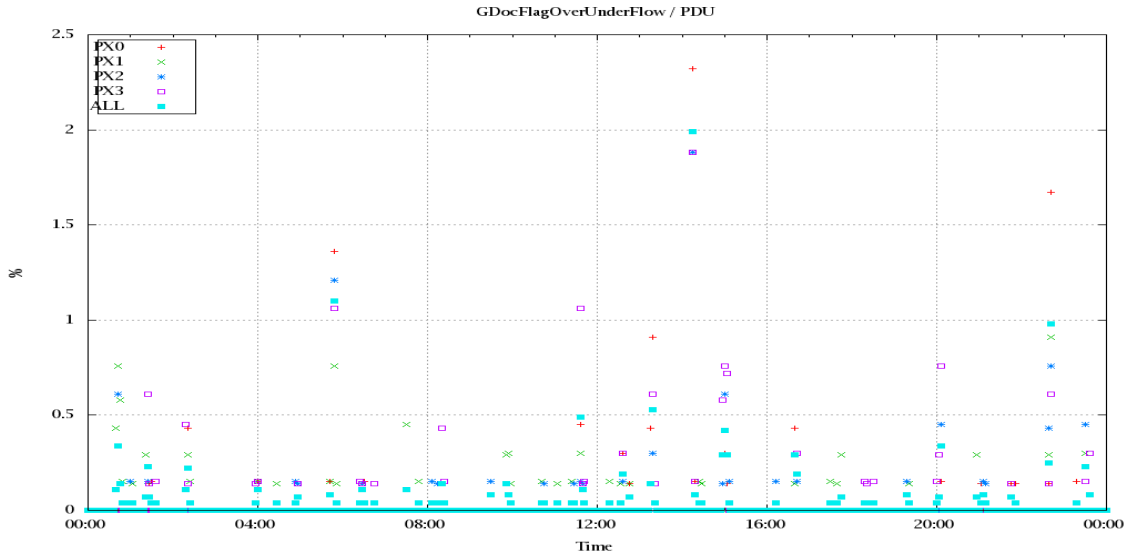

Figure 5: OverUnderFlowFlag timeseries

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

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.

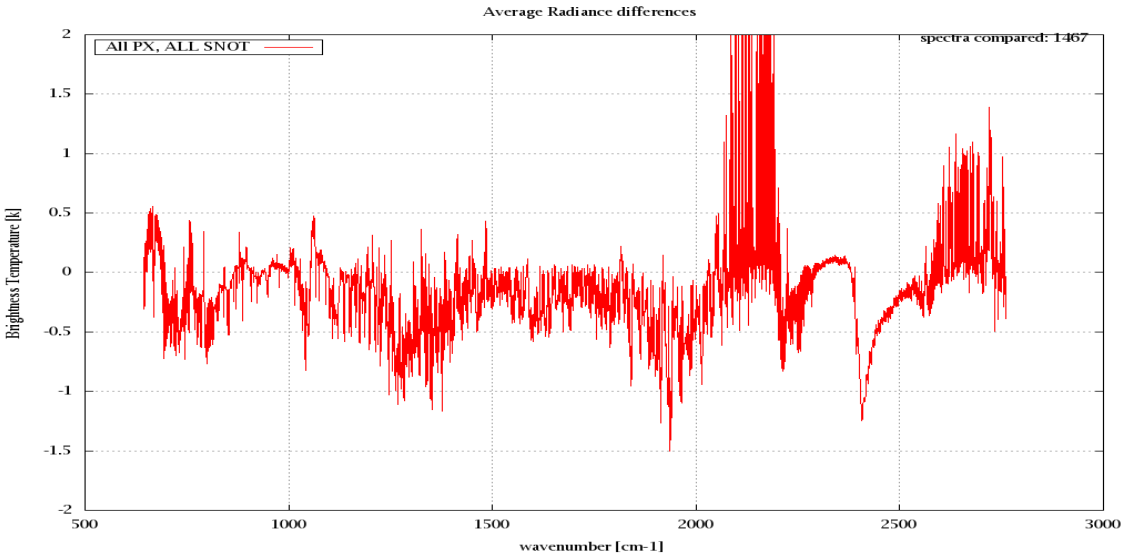

Figure 6: Average Radiance differences: OBS-CAL

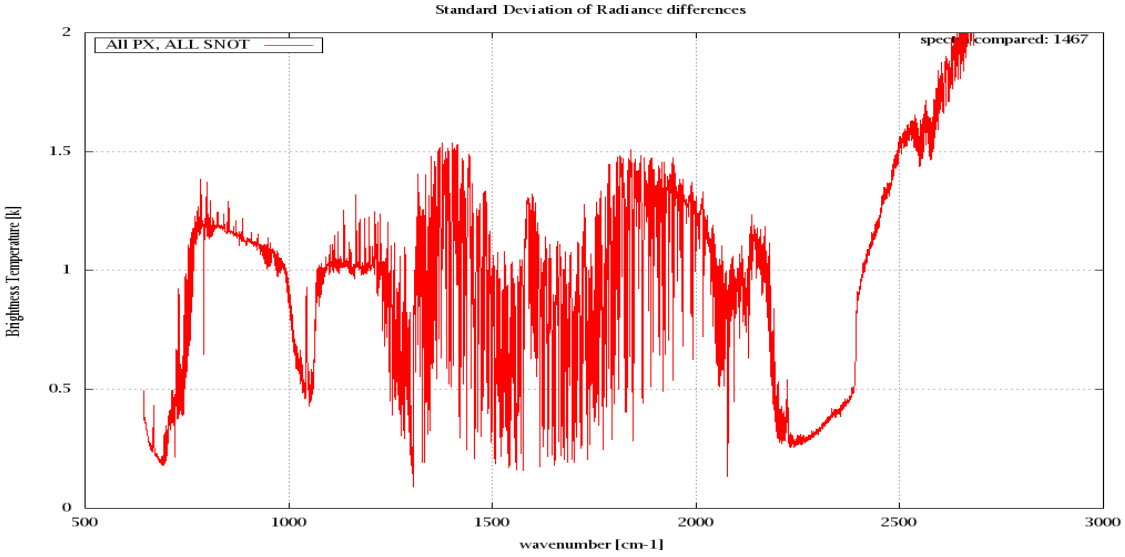

Figure 7: Standard Deviation of Radiance differences

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

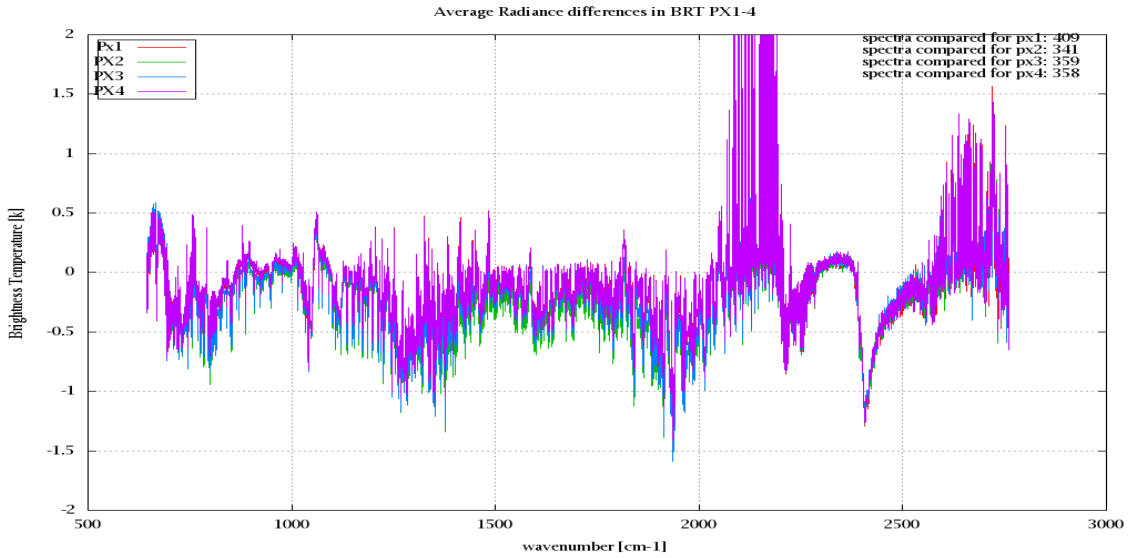

Figure 8: Average Radiance differences: OBS-CAL

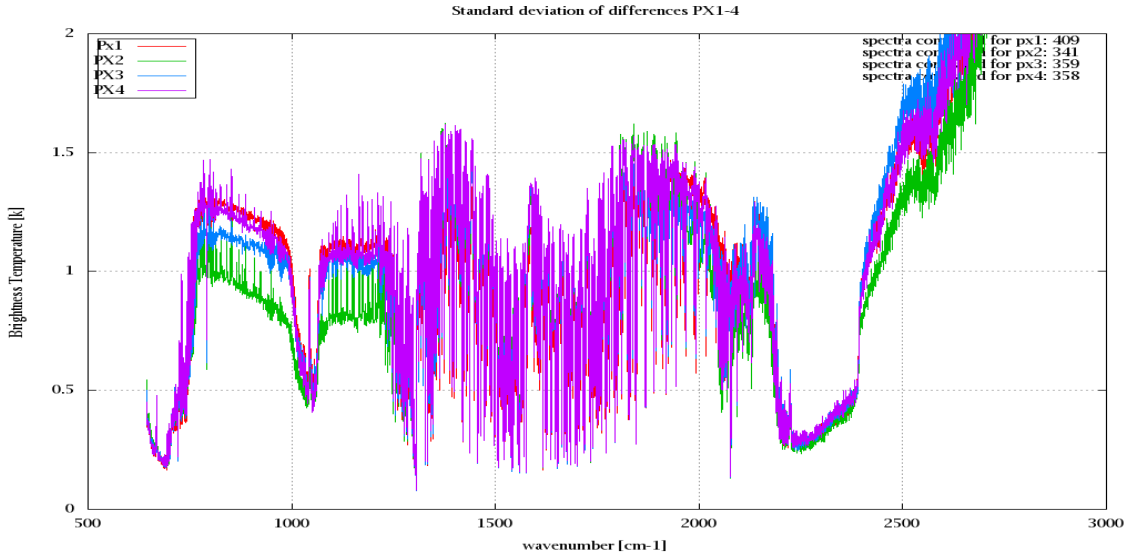

Figure 9: Standard Deviation of Radiance differences

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

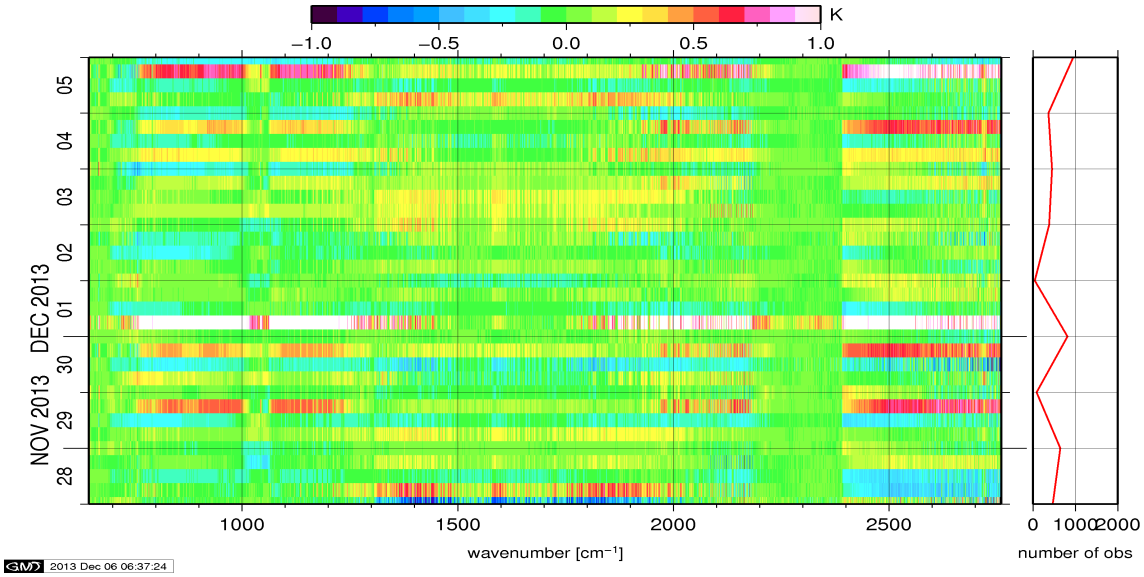

Figure 10: Radiance Anomaly in BRT: All Channels

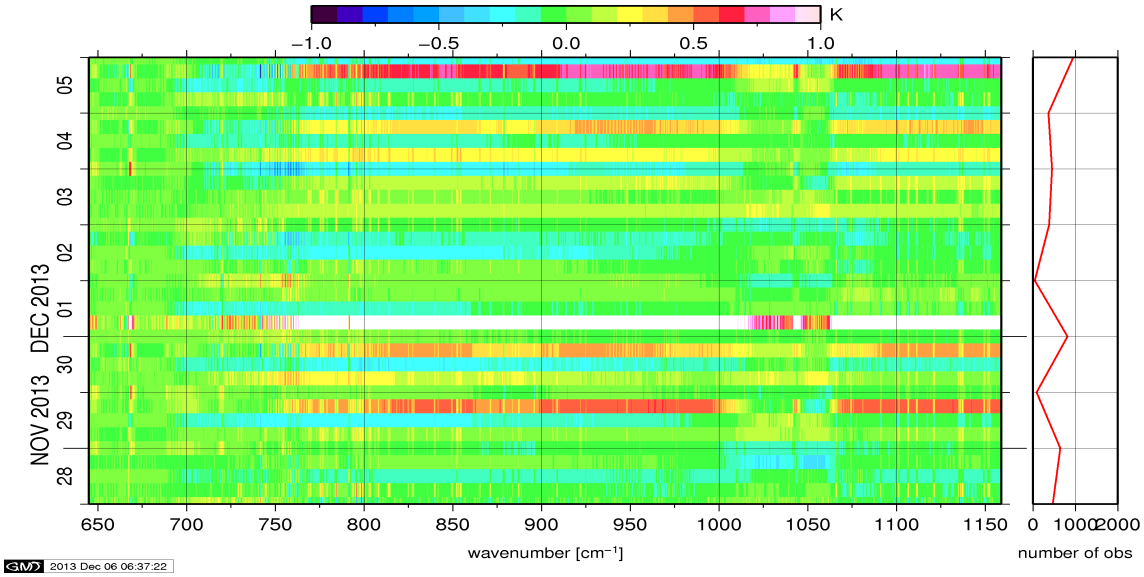

Figure 11: Radiance Anomaly in BRT: IASI Band 1

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

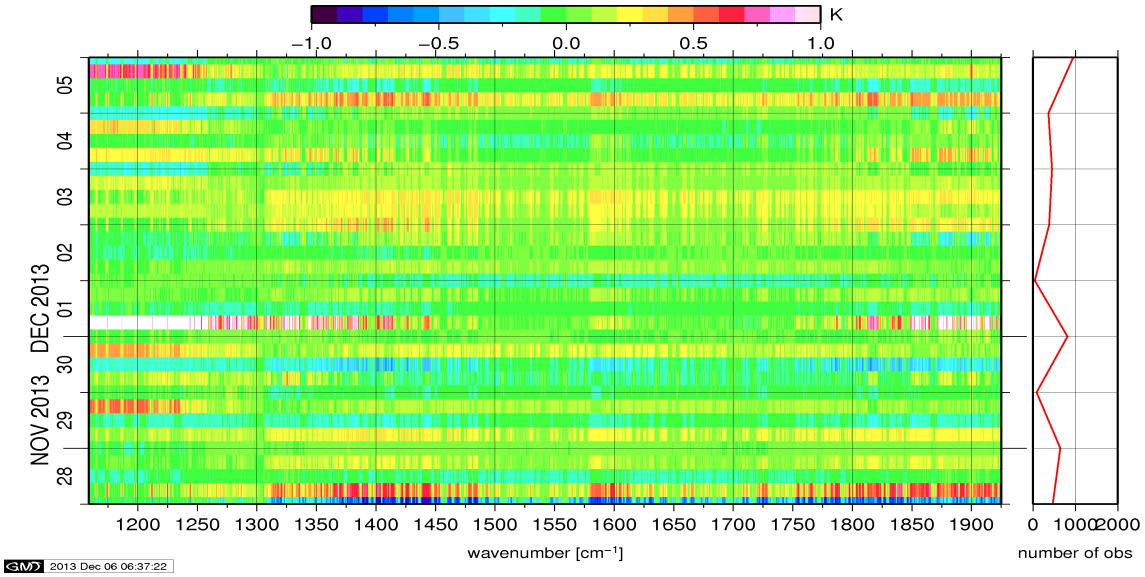

Figure 12: Radiance Anomaly in BRT: IASI Band 2

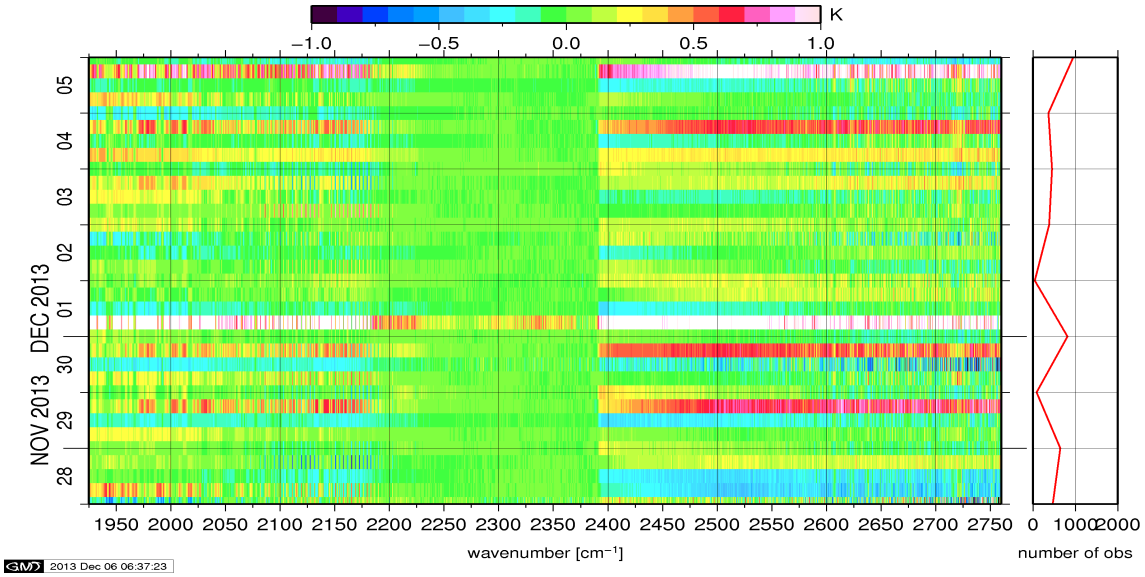

Figure 13: Radiance Anomaly in BRT: IASI Band 3

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

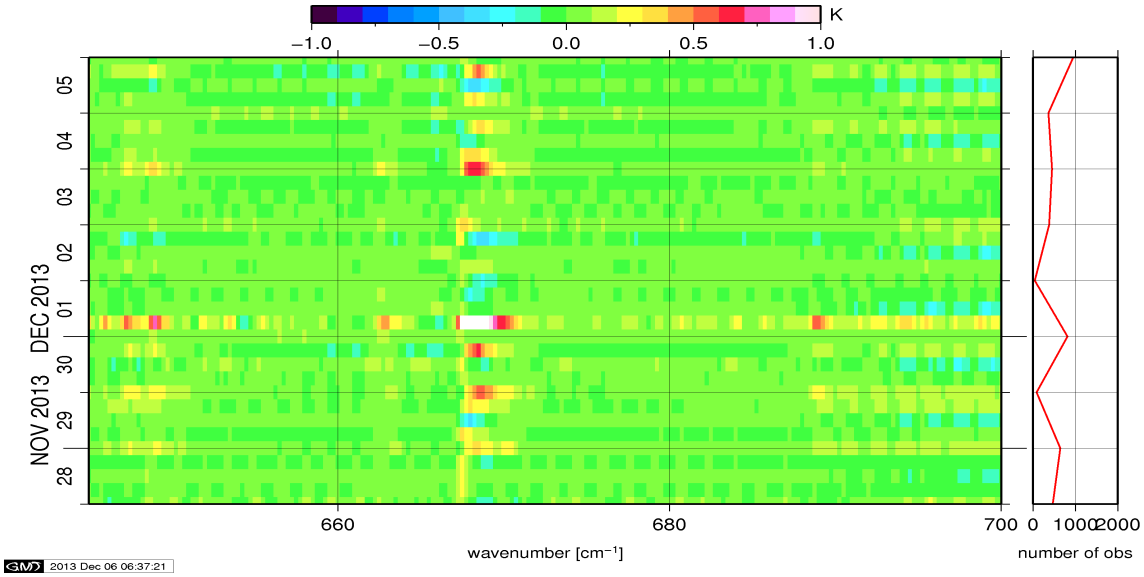

Figure 14: Radiance Anomaly in BRT: CO2 14

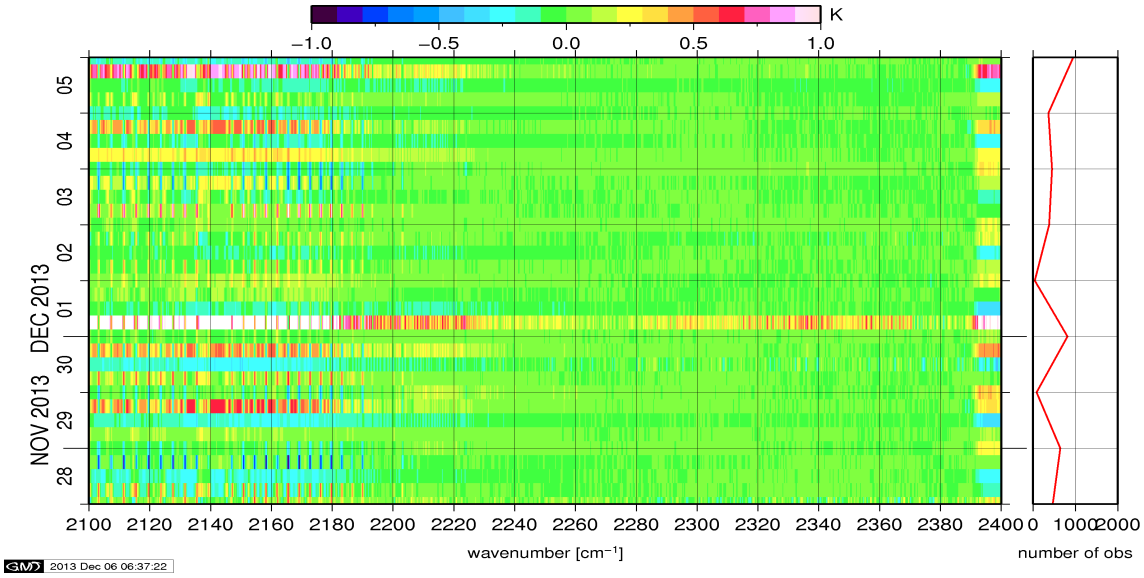

Figure 15: Radiance Anomaly in BRT: CO2 4.3

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

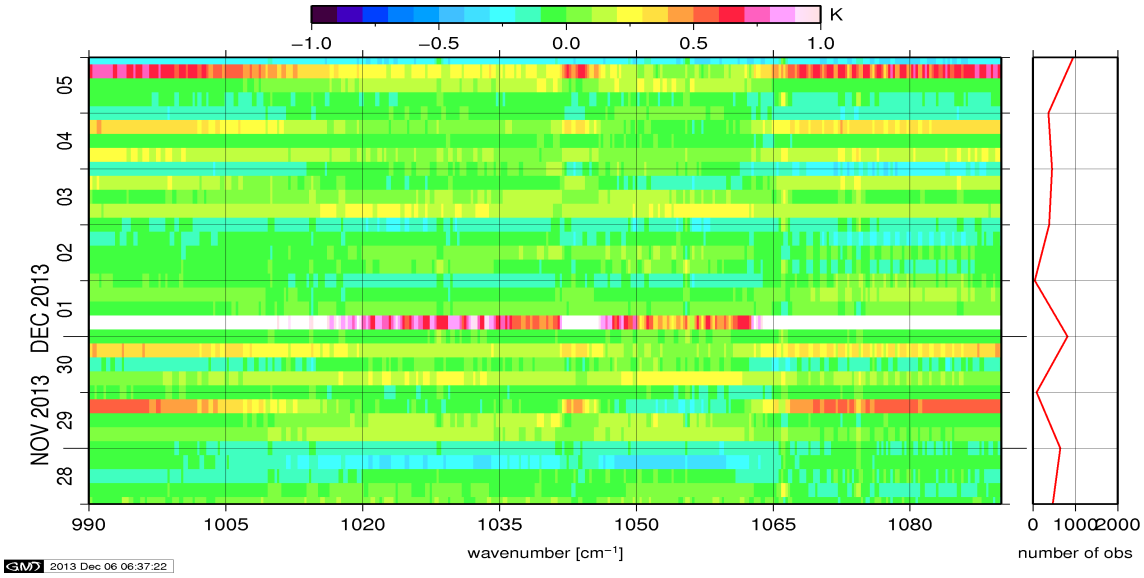

Figure 16: Radiance Anomaly in BRT: O3

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

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.

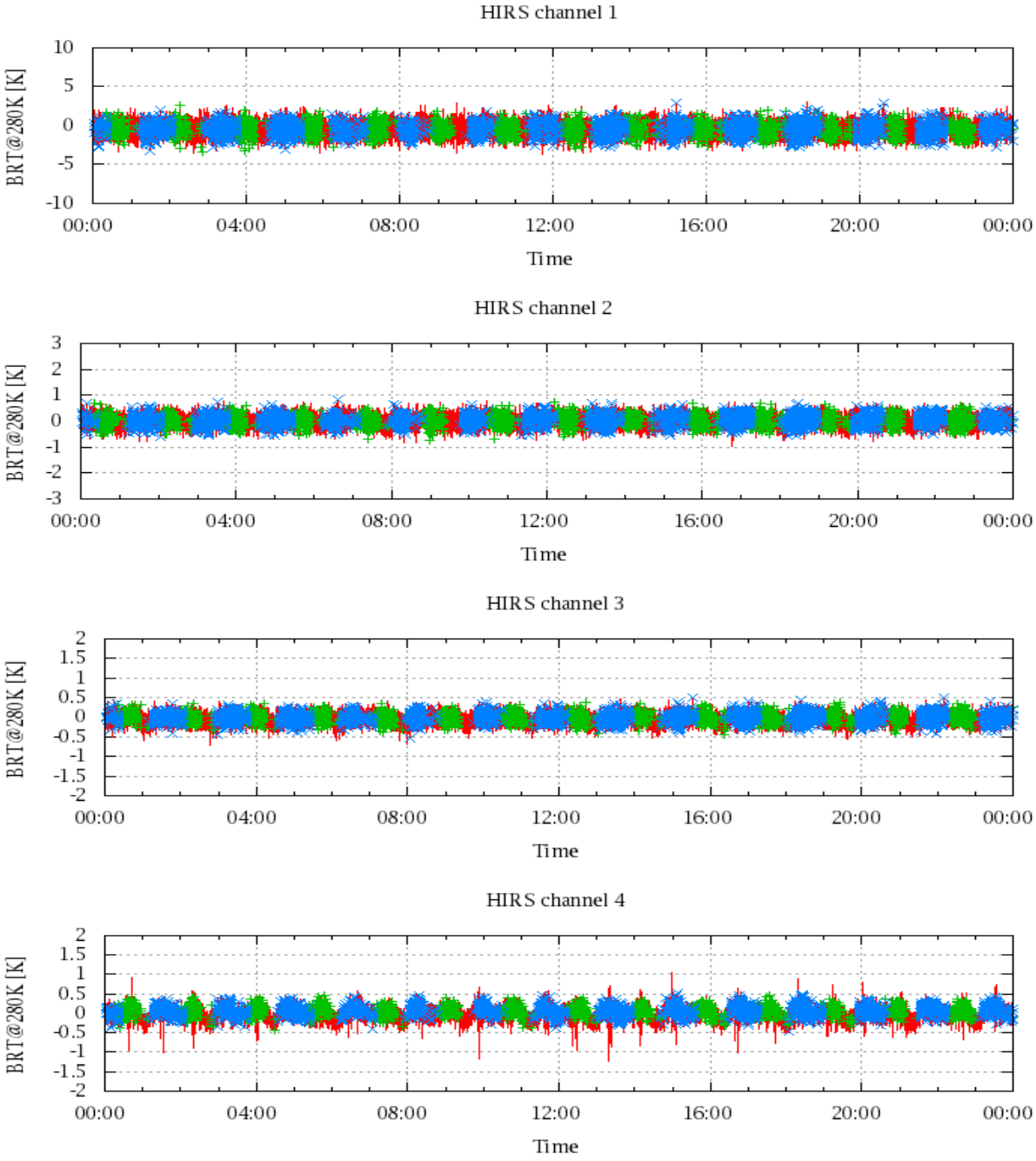

Figure 17: Radiance Differences in BRT

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

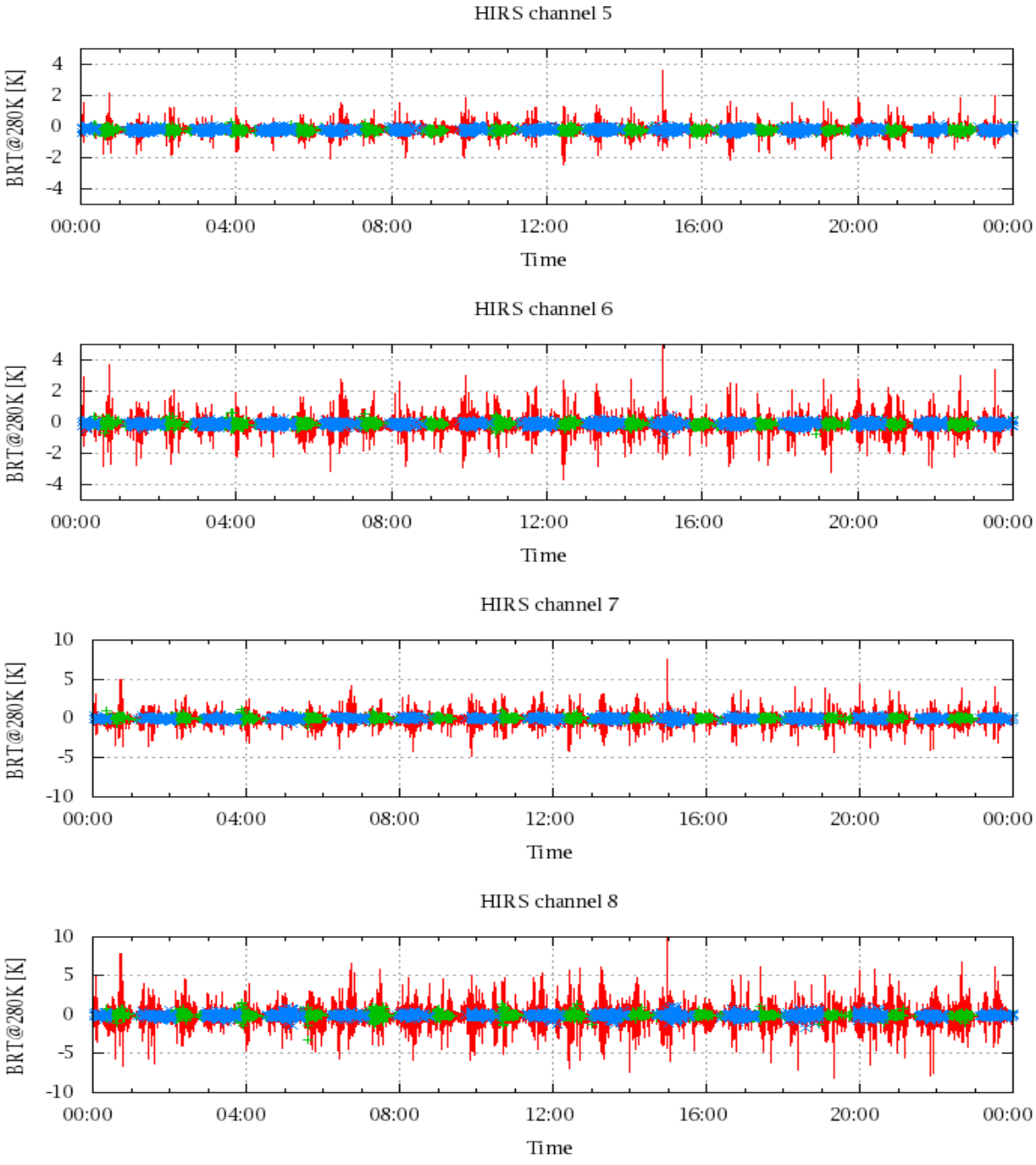

Figure 18: Radiance Differences in BRT

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

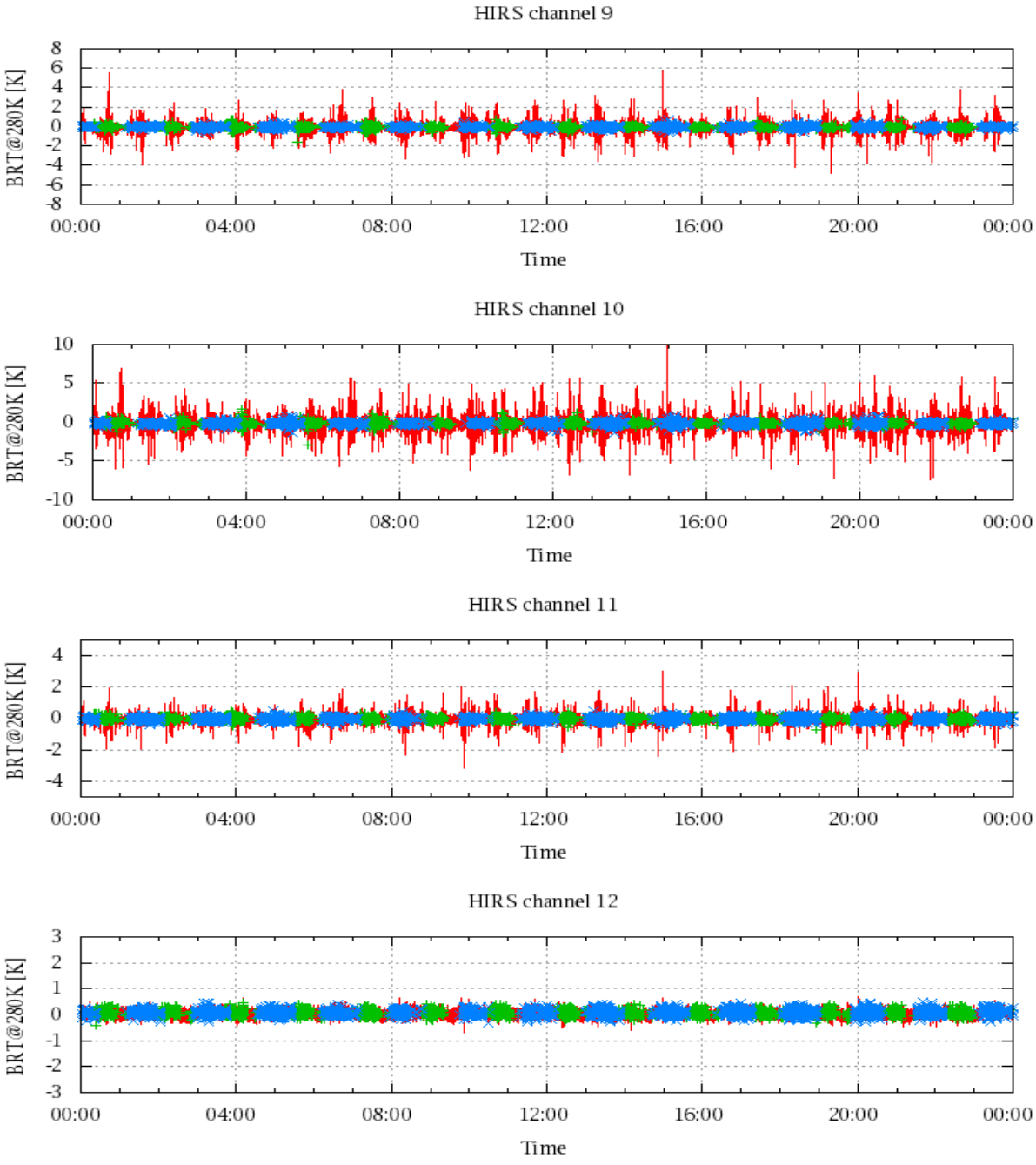

Figure 19: Radiance Differences in BRT

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

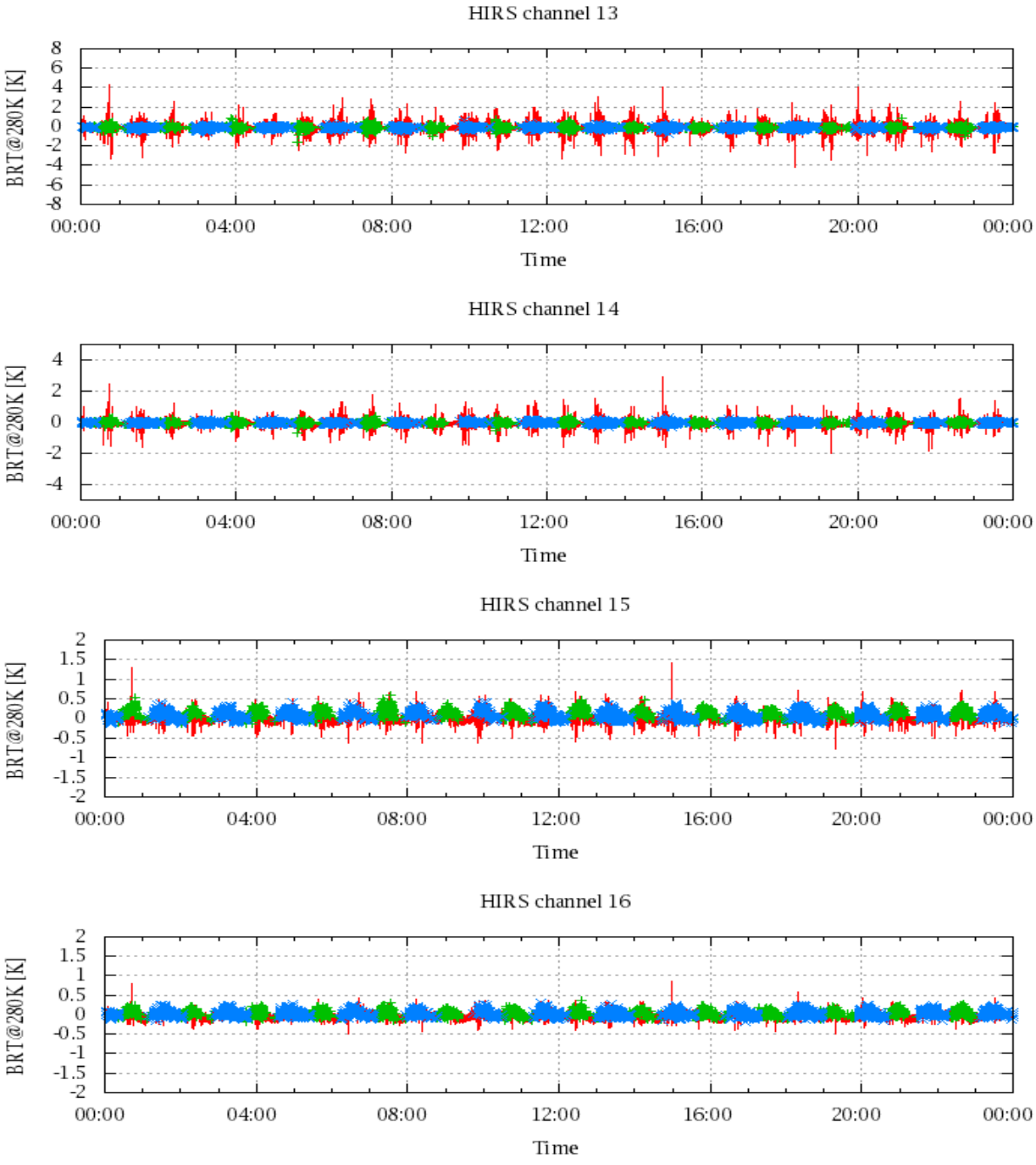

Figure 20: Radiance Differences in BRT

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites

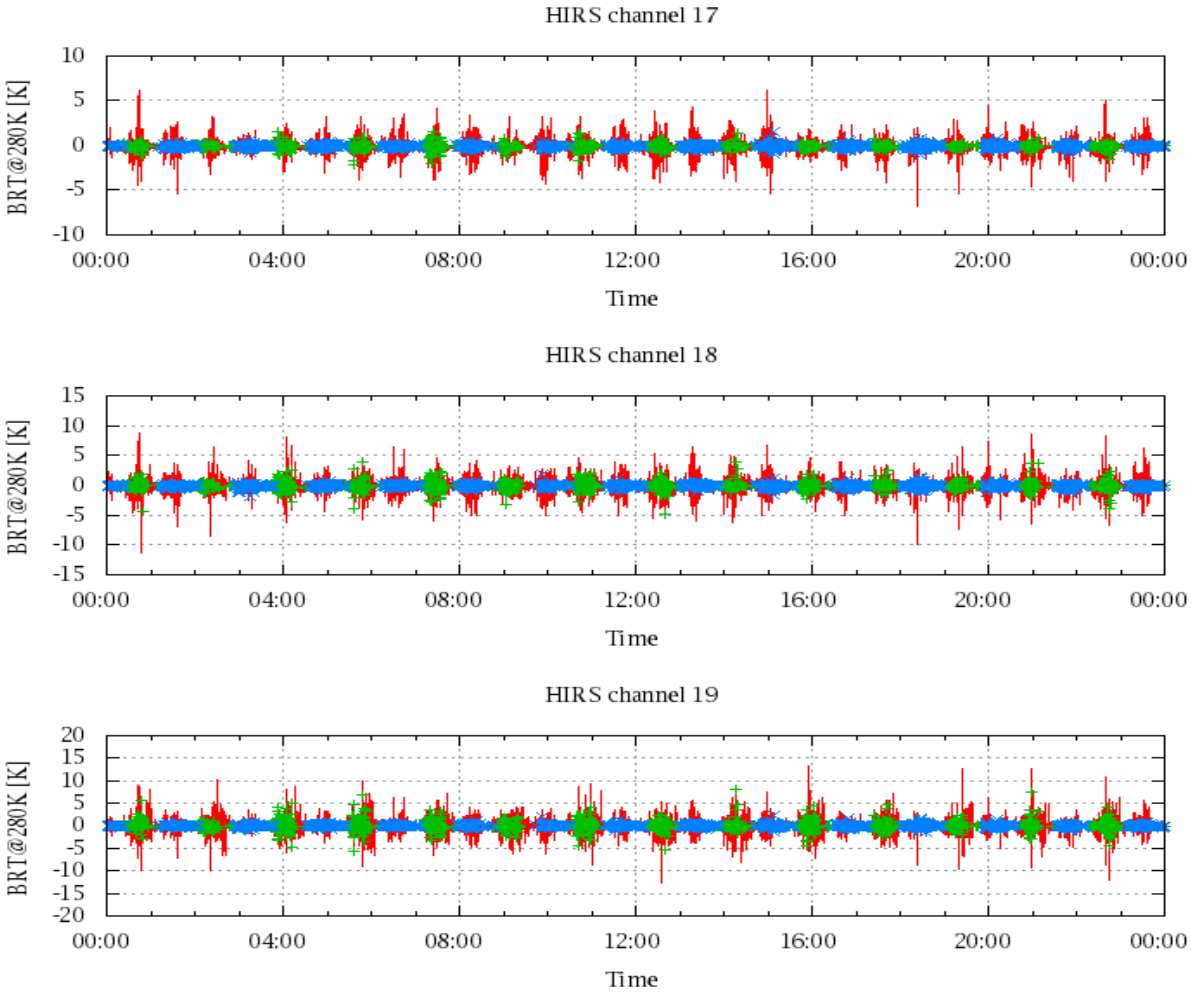

Figure 21: Radinace Differences in BRT

Copyright 2010 ©EUMETSAT. All rights reserved.
European Organisation for the Exploitation of Meteorological Satellites