

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OAI
No. 319
Week 44
31.10.08
Routine Phase

Prepared by: F.Schmidt (OPS-OAI) and INTEGRAL FCT

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1 General

The Flight Control Team at MOC has compiled this report with some input provided by the Flight Dynamics Team, ISOC and ISDC.

It addresses the activities from 25.10.08 until 31.10.08 (both dates inclusive) and covers the revolutions 736, 737 and 738.

2 Summary of Activities

The operations were performed according to the planning inputs from ISOC combined with some manual commanding by MOC.

The targets of these revolutions consisted of 1 hexagonal dither of the Galactic Bulge region (RA 17:45:36.00, DEC -28:56:00.0), a hexagonal dither of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), 7 pointings of a Galactic disk scan (RA 19:04:22.80, DEC +06:17:13.2), (RA 19:13:22.80, DEC +06:15:10.8), (RA 18:59:58.56, DEC +08:32:09.6), (RA 19:15:14.64, DEC +07:08:20.4), (RA 19:09:01.20, DEC +04:10:01.2), (RA 19:09:56.64, DEC +04:36:39.6), (RA 19:10:52.08, DEC +05:03:14.4), and a Target of Opportunity: a raster dither of H 1743-322 (RA 17:46:15.61, DEC -32:14:00.6).

Note: Some further information concerning the activities is provided in the Appendix.

3 Satellite Status

3.1 Platform

The performance of the platform was good. No new unexpected behaviour / malfunction was identified.

3.1.1 AOCS

The AOCS operations were performed from the timeline during this period.

No slews were missed from TL, during the observation period.

The fuel consumption over the period between 25/10/2008 and 31/10/2008 was 0.1166 Kg. The remaining propellant is in the order of 137.7942 Kg.

Note: Some more information concerning the AOCS operations and the fuel budget is provided in the Appendix.

3.1.2 Power

On 10/10/2008 at 19.04.39z all SPDU-A DS16 TM returned a raw value of 0, at the same time the busy Indication (P1300 to P1362) indicated TM INVALID. In the subsequent HK TM packet the expected values were again displayed. In the SPDU Status TM, parameter P1405 (SPDUA CMDS STA) = ON indicating that the SPDU was executing a command sequence, probably the transition ecl(e/s).

This caused the OBDH OBM task to generate a number of OEMs, as some SPDU statuses of monitored parameters were not as expected.

This is nominal behaviour in case the SPDU is busy when DS16 TM acquisition is requested, but it is the first time that this behaviour has been observed in flight

All the other units of EPS are working nominally; available power from the arrays is of the order of 2100W.

3.1.3 Thermal

The thermal control of the satellite is working well. The temperatures are currently all within the specified operational limits.

3.1.4 OBDH

The OBDH subsystem is working flawlessly. No on-board communications problem has been identified.

The PST was over-subscribed by 3 packets, which were allocated to SPI during the Instrument window for the entire reporting period.

3.1.5 RFS

The RF subsystem is working properly. The link margin is sufficient to ensure proper TM reception and execution of commands with the ranging channel enabled.

Following the XMM anomaly which appears to have been due to faulty RFDN command execution causing an RFDN switch to remain in the intermediate position, temporary modifications have been made to Integral operations. To provide extra security in the case of a faulty RFDN command execution contingency time-tagged RFDN commands are to be loaded on-board.

Shortly after the start of each revolution 2 sets of 5 time tagged commands are loaded on board with execution times at next perigee plus 12 hours and next perigee plus 14 hours. The first set of commands moves the currently operation RF switch to its expected position, the 2nd set of commands, 2 hours later moves it to the other position . Following successful load of time-tagged commands for the next revolution the commands for the current revolution are deleted.

The aim of these commands is try to ensure that if the switch sticks in an intermediate position, it will subsequently be commanded via time-tagged commands to both possible positions.

3.2 Payload

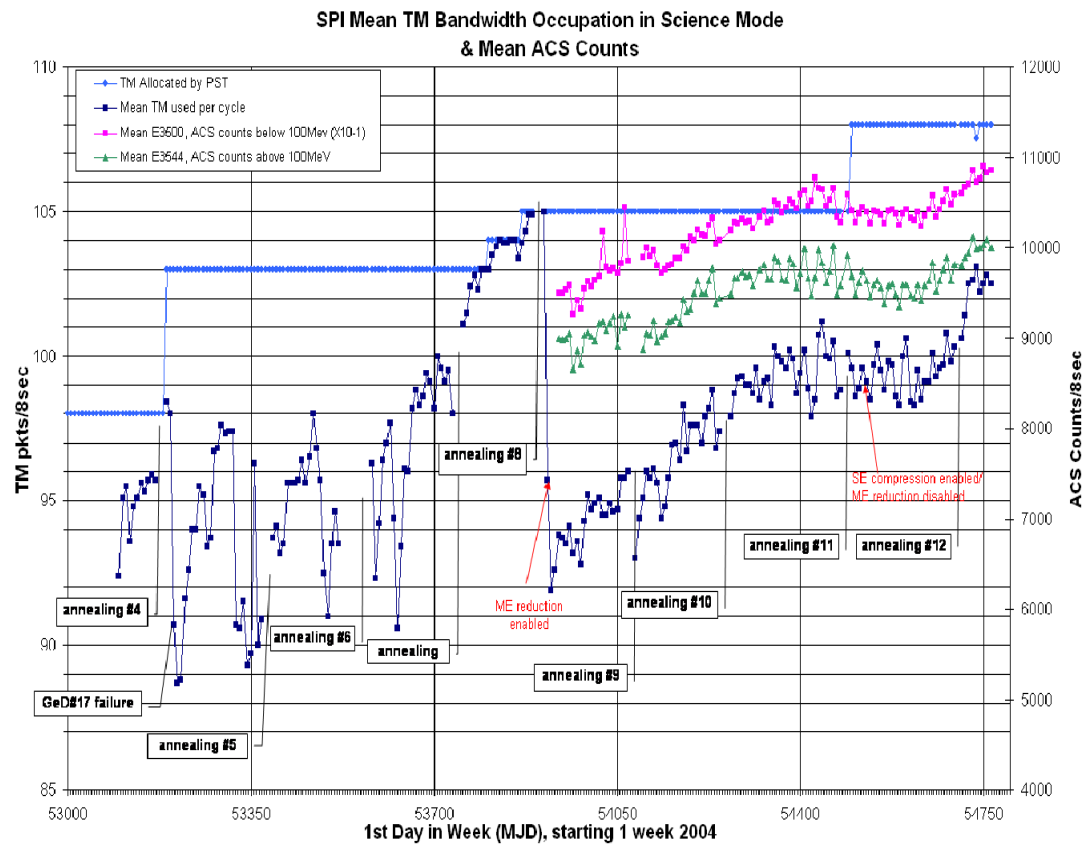
3.2.1 SPI

Following the 12th annealing, ended on 04/09/2008 at 23:50Z, the overall status of the gamma-ray spectrometer is nominal, except for detector #2 (failed since 06/12/2003) and detector #17 (failed since 17/07/2004). The energy resolution of the previously degraded GeD#12 has improved following this annealing and the bias of this detector is now set to 4kV as for the other detectors.

The Stirling compressors are working nominally. The Germanium detectors temperature was kept in the range 80K+/-1K throughout the week.

During science operations, the instrument was kept in photon-by-photon mode with spectra TM enabled. The assigned TM bandwidth in the science observation windows was 108 packets/cycle except from 2008-10-29T15:27:35Z to 2008-10-29T19:12:10Z, when it was 88 packets/cycle due to an OMC Flat Field Calibration. The average telemetry occupation when the allocation was 108 packets/cycle was 102.5 packets/cycle.

The following plot shows the evolution of the assigned and the average occupation of the SPI TM bandwidth along with the mean ACS count rate evolution (since July 2006). As can be seen, there is a strong correlation between the evolution of the background as measured by the ACS and the overall TM bandwidth usage.



Note: Some more information concerning the SPI operations is provided in the Appendix 8.3.2.

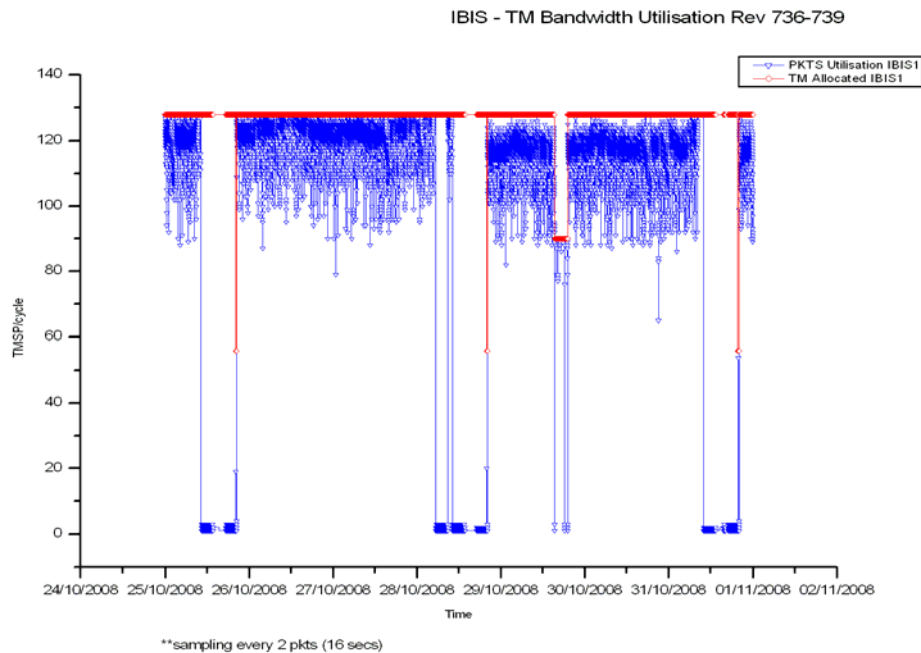
3.2.2 IBIS

The overall status of the unit is nominal.

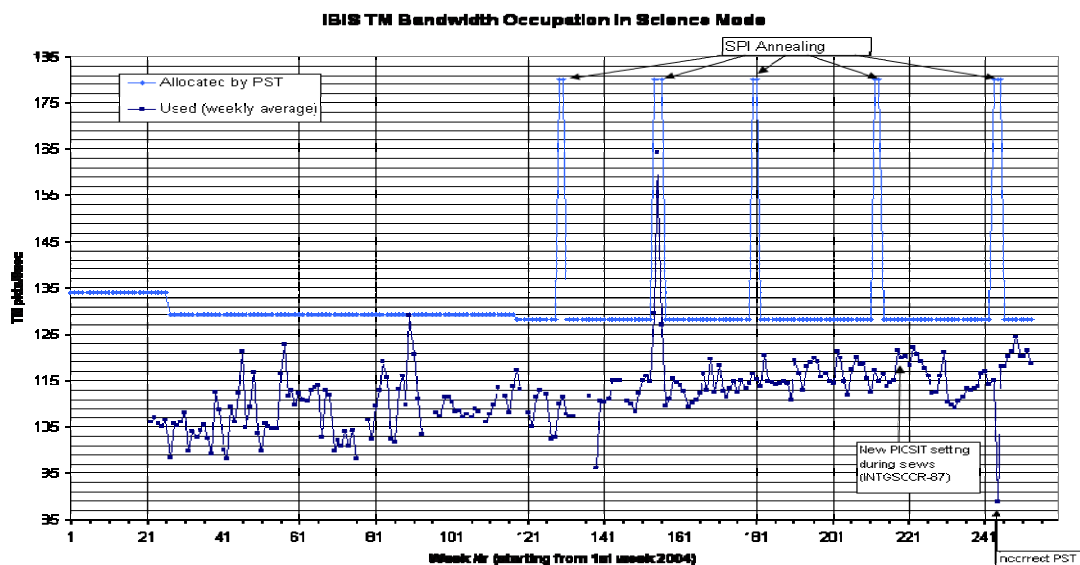
During the reporting period, the TM bandwidth statistics were as follows:

- PST allocation to IBIS above radiation belts: 128 packets/cycle except from 2008-10-29T15:27:35Z to 2008-10-29T19:12:10Z, when it was 90 packets/cycle due to an OMC Flat Field Calibration.
- IBIS mean bandwidth utilisation in science mode: 118.59 packets/cycle (down 2.92 on previous week)
- Percentage of TM cycles in which full bandwidth was used: 12.15%

The plot below shows the IBIS TM utilisation during the observation period.



A plot of the IBIS weekly bandwidth utilisation since 2004 is shown below:



Note: Some more information concerning the IBIS operations is provided in the Appendix.

3.2.3 JEM-X

The status of both JEM-X units is nominal.

JEM-X operations were performed by the automatic Timeline.

JEM-X1 was operated in Data Taking mode with a TM allocation of 8 packets/cycle. JEM-X2 was dormant (DPE OFF) with no TM slots allocated.

Note: Some more information concerning the JEM-X operations is provided in the Appendix Section 8.3.4.

3.2.4 OMC

The status of OMC is nominal.

OMC operations were performed by the automatic Timeline. OMC was operated in Science Normal mode during science observations, with a TM allocation of 5 packets per cycle.

During this reporting period, all of the 212 planned science pointings were executed nominally.

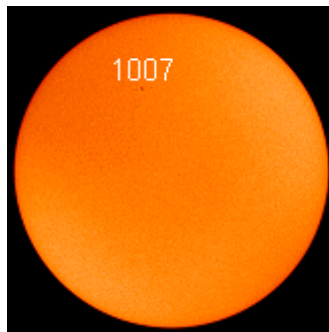
Note: Some more information concerning the OMC operations is provided in the Appendix.

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity. A small sun spot, #1007 appeared on the 31st October. The risk of solar flares was very low.



Reference: www.spaceweather.com

Note: Some more information concerning the IREM operations is provided in the Appendix Section 8.3.6.

4 Ground Facilities

The Operational ground facilities performance was good this week. No pointings were lost due to ground problems. The overall performance though was above the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was very good this week. No pointings were lost to MOC related issues.

4.2 Ground Stations & Network

The performance of the ground stations and Network was good this week. There was one link drop reported from Redu for a few seconds with no impact.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

New PSFs have been received for revolutions 744-747.
Observations have been planned for revolution 744.

New TSFs have been received for revolutions 738 to 740.

2. Observation status

No new ECS files have been received. The last available ECS is for revolution 727, received last week.

3. ISOC Science Data Archive

Data has been ingested up to revolution 727.

4. ISOC system

ISOC system v20 has been released for testing. This is the software to support proposal submission in AO-7 and will be tested intensively in week 45.

5. Problems

Transmission of TOO requests to mobile phones is still not reliable and under investigation. First responses from Telefonica have not been helpful.

4.3.2 ISDC

Status of ISDC observation processing on 03/11/2008:

- Latest Standard Analysis completed: observation 06200210002 (GRS 1915+105, Revolution 726) on 29/10/2008.
- Latest products archived: observation 05200320004 (X Per, Revolutions 724) on 30/10/2008.
- Latest observation products sent to the observer: observation 05297000004 (Perseus OB2 Cloud, Revolutions 706-710) on 13/09/2008.

5 Special Events

6 Anomalies

The following problem was reported this week that impacted operations:

- At 04:52:00Z, the TM parameter G6038 for the VETO VDM04 HV monitor went OOL Alarm Low (value = 383.1V). In addition, the VETO Calibration counter, TM parameter G6061, went OOL Warning Low at 04:52:08Z (value = 824 /s). However, the current remained nominal, e.g. at 04:55:05Z TM parameter G6013 (VETO VDM/CDM current) = 0.96A. The anomaly was recovered at 08:53:44Z. Some more detailed information concerning the IBIS anomaly is provided in the Appendix.

The following anomaly reports were entered into the ARTS system this week.

AR id	Date Created	Subject	Segment	Status
INT-3035	2008-10-12	DSS27 - NO TM & TC (DOY 274 - 275)	NASA Station	Pending
INT-3034	2008-10-16	DSS27 - NO TM & TC (DOY 286)	NASA Station	Pending
INT_SC-239	2008-10-14	SPDU-A TM Invalid due to Busy Status.	Spacecraft	Pending
INT_SC-240	2008-10-17	IREM Anomaly: Reset of IREM_CSCI S/W #67, 27/09/2008	Payload	Pending
INT_SC-241	2008-10-29	IREM Anomaly: Reset of IREM_CSCI S/W #68, 04/10/2008	Payload	Pending

7 Future Milestones

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 736

The observations in revolution 736 began with a hexagonal dither of the Galactic Bulge region (RA 17:45:36.00, DEC -28:56:00.0), lasting ~3.5 hours. They continued with a Target of Opportunity a raster dither of H 1743-322 (RA 17:46:15.61, DEC -32:14:00.6) lasting ~35.4 hours. Finally a Galactic disk scan (RA 19:04:22.80, DEC +06:17:13.2) lasting ~16.8 hours was performed until the end of the revolution.

Revolution 737

The observations in revolution 737 began with a hexagonal dither of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), lasting ~5.6 hours. This was followed by 3 pointings of a Galactic disk scan (RA 19:13:22.80, DEC +06:15:10.8), (RA 18:59:58.56, DEC +08:32:09.6) both lasting ~16.8 hours and (RA 19:15:14.64, DEC +07:08:20.4) lasting ~15.7 hours until the end of the revolution.

Revolution 738

The observations in revolution 738 began with one pointing of a Galactic disk scan (RA 19:09:01.20, DEC +04:10:01.2), lasting ~16.8 hours. They continued with an OMC Flat-field calibration #33 (RA 19:57:12.00, DEC -22:36:00.0) lasting ~3.4 hours. Finally 2 pointings of a Galactic disk scan (RA 19:09:56.64, DEC +04:36:39.6) and (RA 19:10:52.08, DEC +05:03:14.4) both lasting ~16.8 hours, were performed until the end of the revolution.

Throughout these observations, all instruments were in their nominal science modes, except JEM-X2, which is switched off. The TM allocation was IBIS 128; SPI 108; JEM-X1 8; JEM-X2 0; OMC 5, except from 2008-10-29T15:27:35Z to 2008-10-29T19:12:10Z during the OMC Flat-field calibration, when it was IBIS 90; SPI 88; JEM-X1 8; JEM-X2 0; OMC 63.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2008-10-21T03:57:21.000Z	137.9492	F	Automatic TM processing.
2008-10-22T18:12:22.000Z	137.9326	F	Automatic TM processing.
2008-10-24T03:31:13.000Z	137.9108	F	Automatic TM processing.
2008-10-25T17:57:17.000Z	137.8982	F	Automatic TM processing.
2008-10-27T03:15:21.000Z	137.8806	F	Automatic TM processing.
2008-10-28T17:45:49.000Z	137.8618	F	Automatic TM processing.
2008-10-30T03:38:56.000Z	137.8052	F	Automatic TM processing.
2008-10-31T17:35:24.000Z	137.7942	F	Automatic TM processing.
2008-11-02T02:58:40.000Z	137.7738	F	Automatic TM processing.
2008-11-03T17:23:08.000Z	137.7612	F	Automatic TM processing.
2008-11-05T02:44:56.000Z	137.7177	F	Automatic TM processing.
2008-11-06T17:13:16.000Z	137.7047	F	Automatic TM processing.

8.3 Detailed Satellite Information

This section contains some detailed information concerning the various subsystems of the satellite and instruments.

8.3.1 AOCS SUMMARY OPERATIONS REPORT, 25/10/2008 – 31/10/2008

The AOCS operations were executed from the Automatic Timeline.

During this period, 115 Open Loop Slews, 123 Closed Loop Slews and 5 Momentum Biases were executed (as reported by ACC OEM).

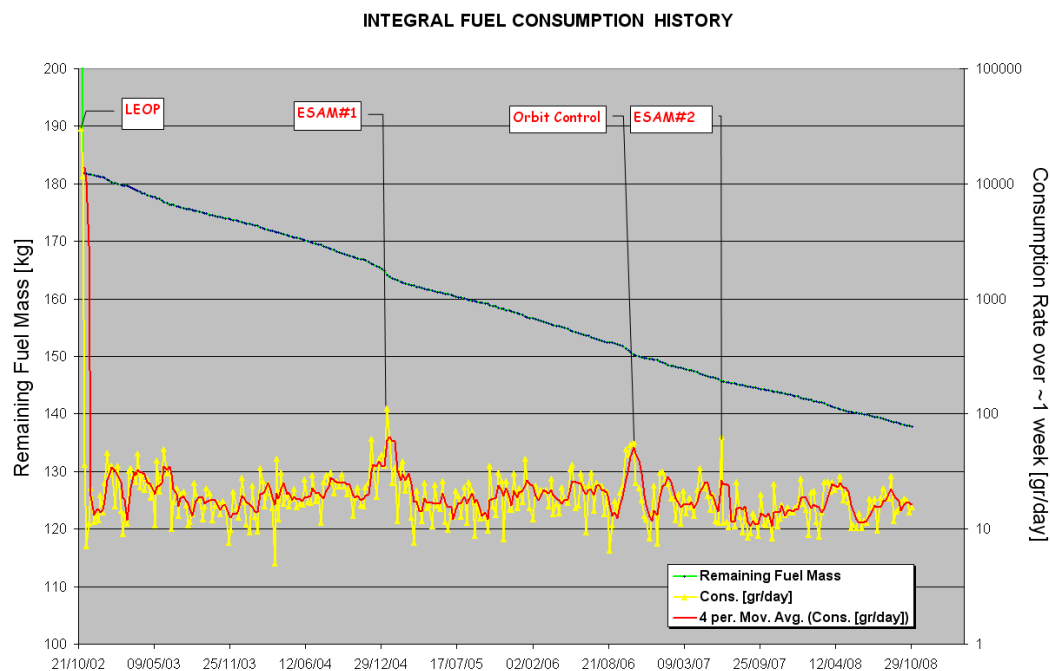
No slews were missed from TL, during the observation period.

Orbit Control

No update

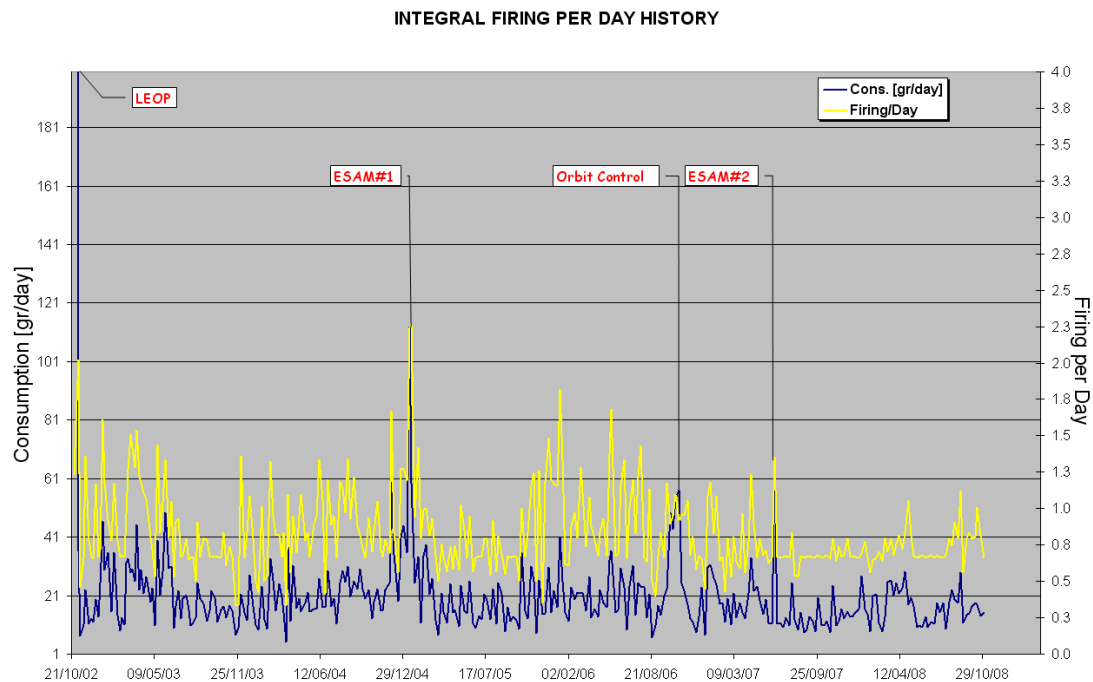
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 31/10/2008 is reported in the plot below.



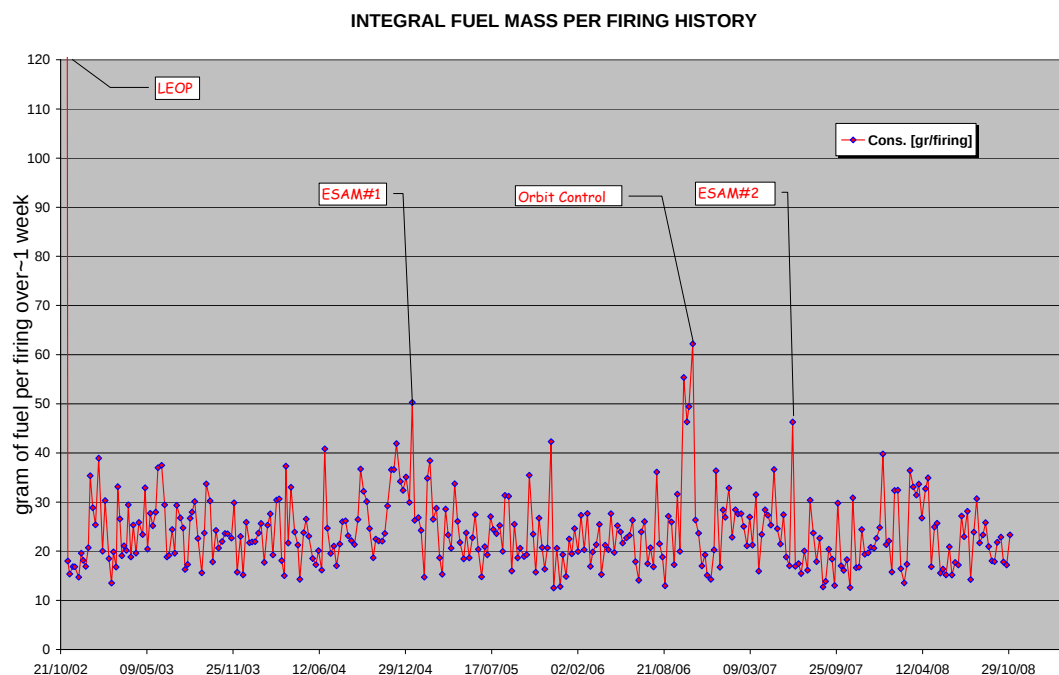
The above plot considers the ESAM fuel consumption spread over period of ~1 week.

The firing per day over the period between 01/11/2002 and 31/10/2008 is reported in the plot below.



The above plot considers the ESAM fuel consumption spread over period of ~1 week.

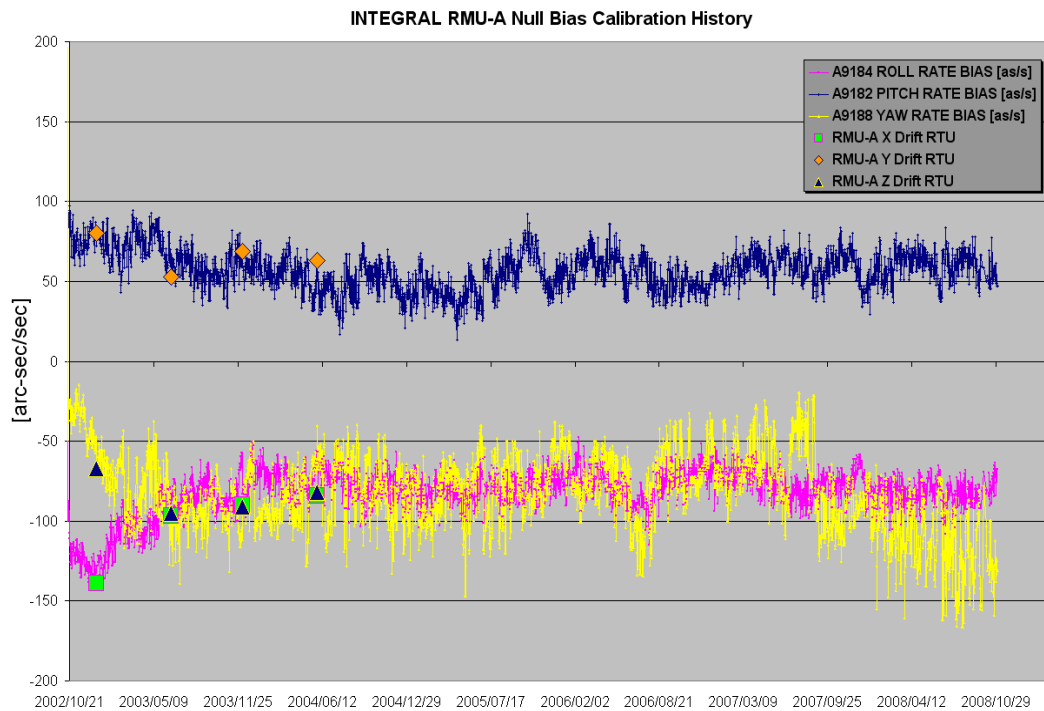
The fuel per firing over the period between 01/11/2002 and 31/10/2008 is shown in the plot below.



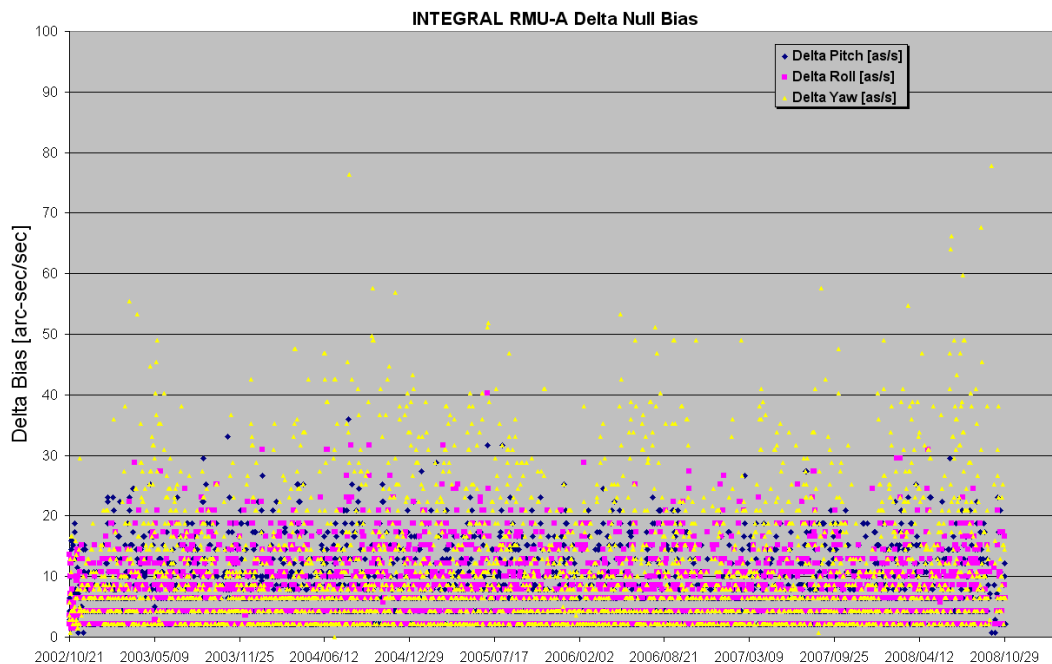
The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 31/10/2008 is reported in the plot below.

The evolution of the drift on yaw channel is under constant monitoring but the values are still well within the specs. At moment the current constraints (for drift update generation) on the FDS have been relaxed to cope with the current situation.



The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over period between 01/11/2002 and 31/10/2008 is reported in the plot below.



25/10/2008 (Day of Year 299, Revolution 736-737)

Nothing to report.

26/10/2008 (Day of Year 300, Revolution 737)

Nothing to report.

27/10/2008 (Day of Year 301, Revolution 737)

Nothing to report.

28/10/2008 (Day of Year 302, Revolution 737-738)

Nothing to report.

29/10/2008 (Day of Year 303, Revolution 738)

Nothing to report.

30/10/2008 (Day of Year 304, Revolution 738)

Nothing to report.

31/10/2008 (Day of Year 305, Revolution 738-739)

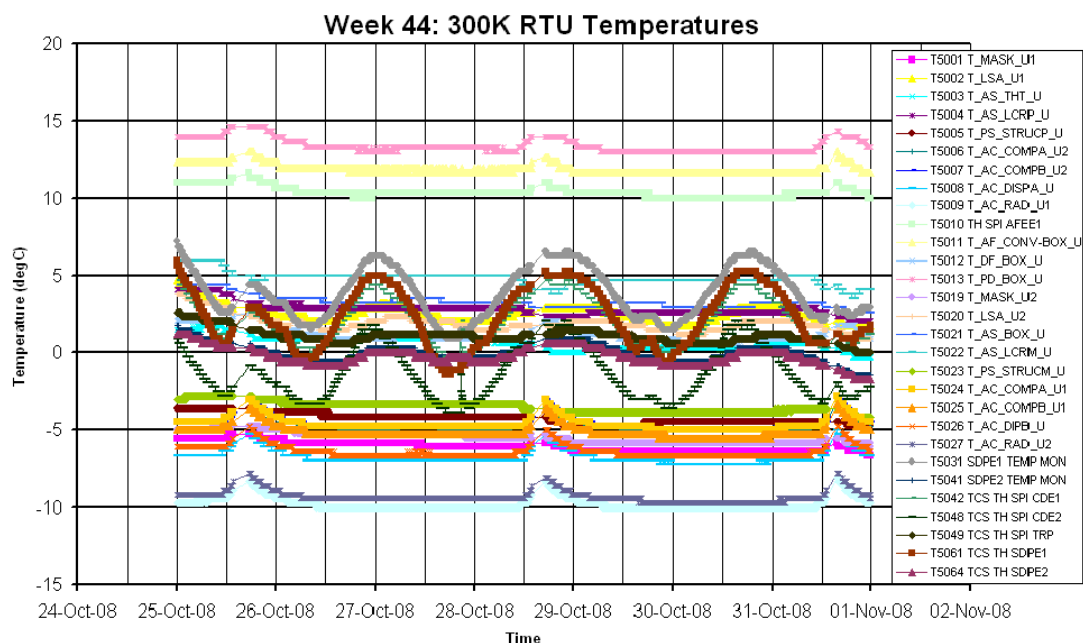
FDS problem during slew update: at 08:22z a problem on FDS caused the slew update to fail for slew ID 07380106.

A manual recovery was then performed and the next slew (ID 07380106) in TL updated.

No impact on TL.

8.3.2 SPI Operations

Unit Temperatures: All the equipment temperatures are inside the operational limits. The following plot shows their evolution during the reporting period.



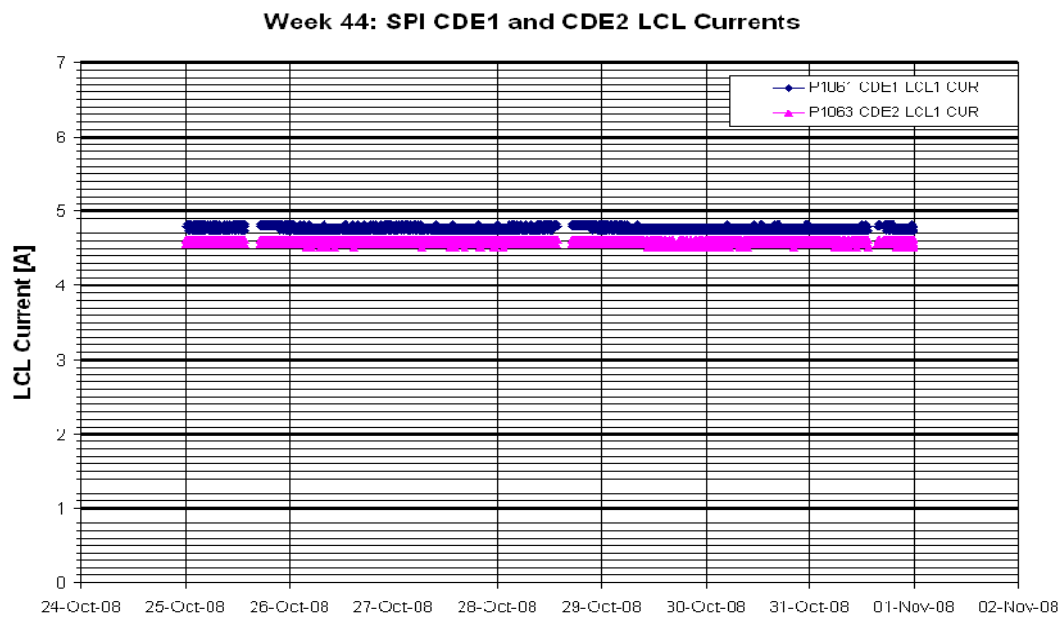
Stirling Compressors and Cryostat: The performance of the compressors is nominal.

The cold plate temperature was maintained in the range 80K +/-1K.

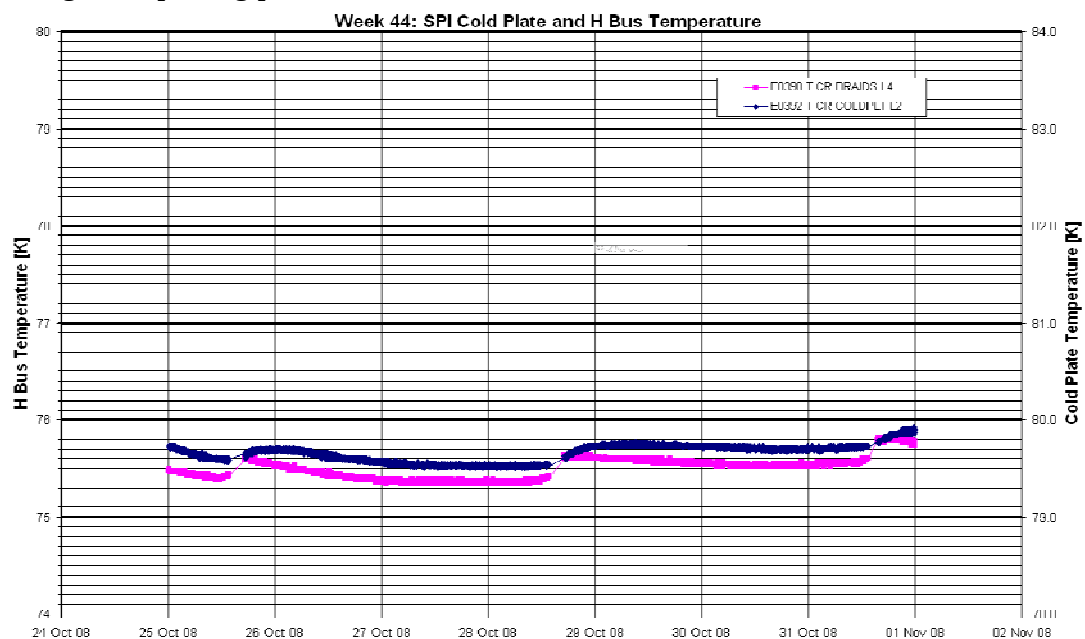
The stroke of all four compressors was set to 40 throughout the week and the average CDE LCL currents were as follows:

- CDE1 LCL Current = 4.78A
- CDE2 LCL Current = 4.57A

The following plot shows the evolution of the CDE LCL currents during the reporting period.



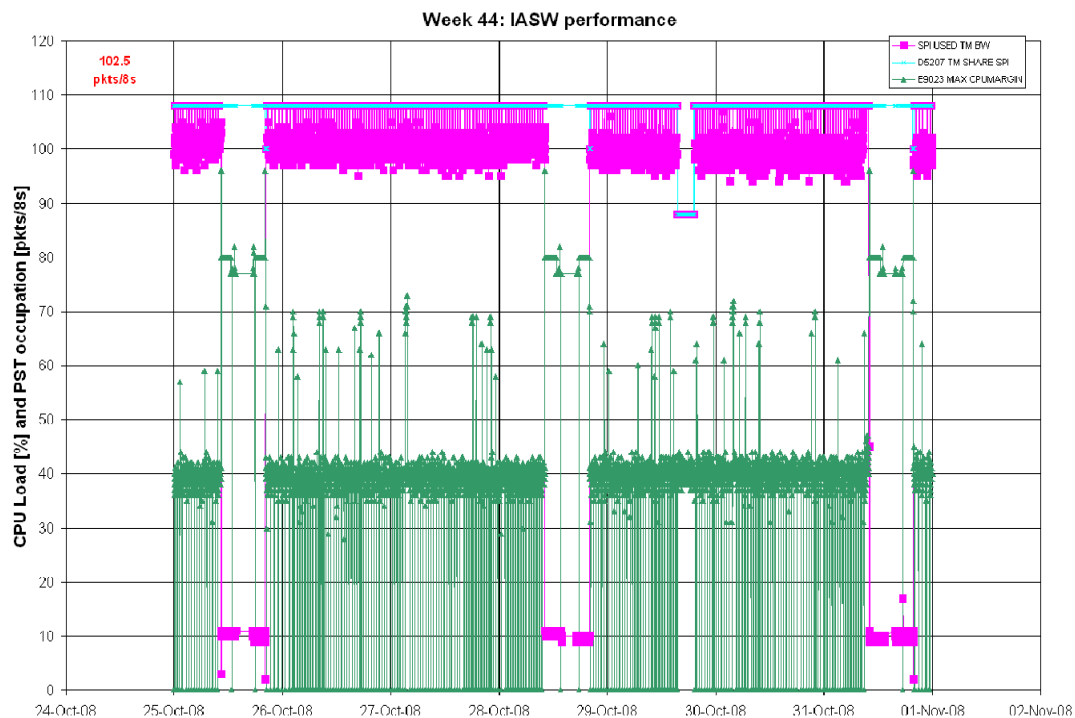
The following plot shows the evolution of the cold plate and H bus temperatures during the reporting period.



DPE & IASW: The DPE health and IASW performance are nominal.

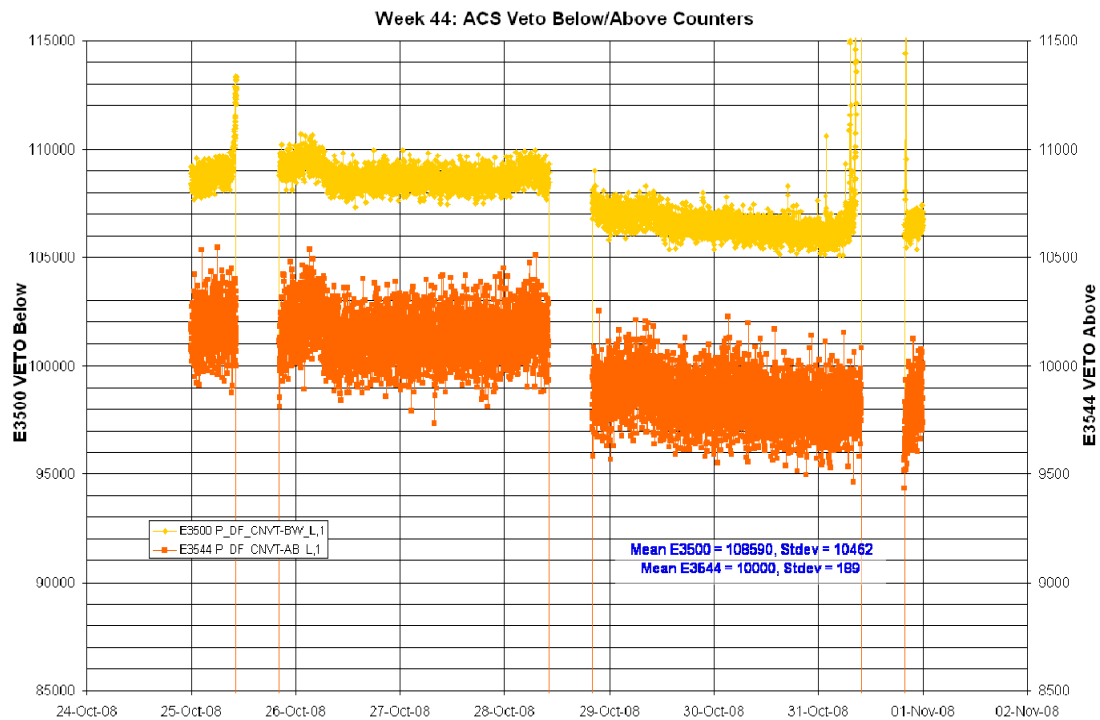
The IASW version installed is v4.3.4 with SE compression only enabled and the spectra scaling factor set to 8/19 SE. The average TM bandwidth occupation of SPI was 102.5 packets/cycle over the science window when the TM allocation was 108 packets/cycle.

The following plot shows the IASW performance in terms of TM bandwidth occupation and DPE CPU load during the reporting period. Note that from 2008-10-29T15:27:35Z to 2008-10-29T19:12:10Z the TM allocation was 88 packets/cycle due to an OMC Flat Field Calibration.

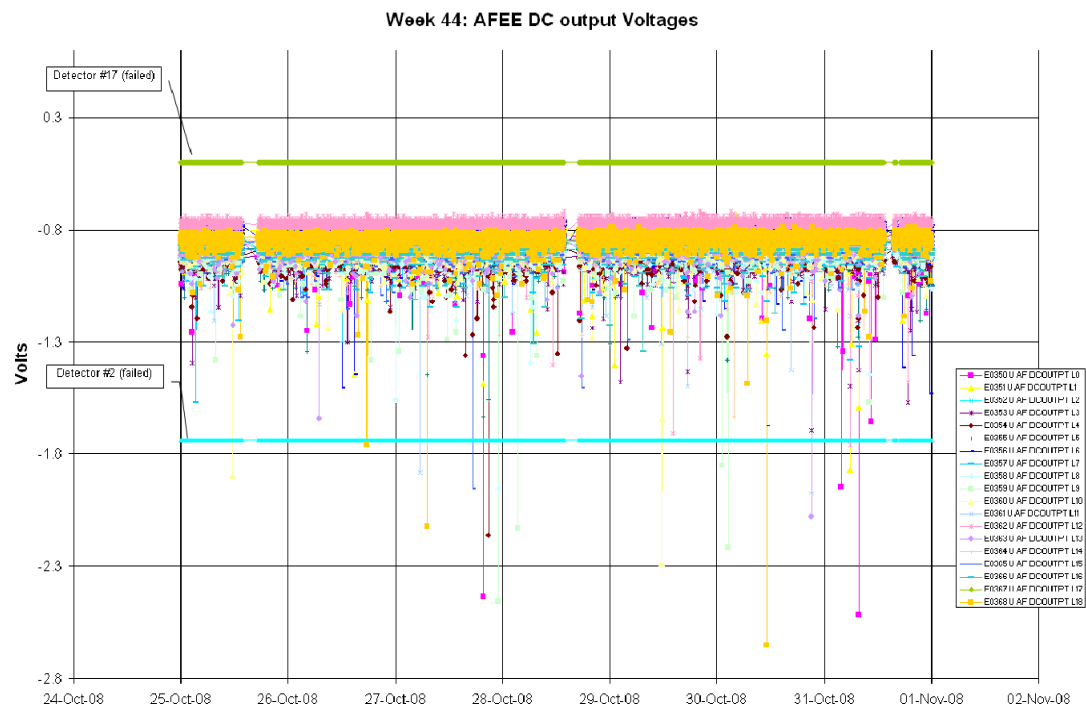


ACS: The performance of the ACS is nominal, except for FEE #81 which remains nominally switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is nominally OFF due to the anomaly on 5/8/2003 (INT_SC-61).

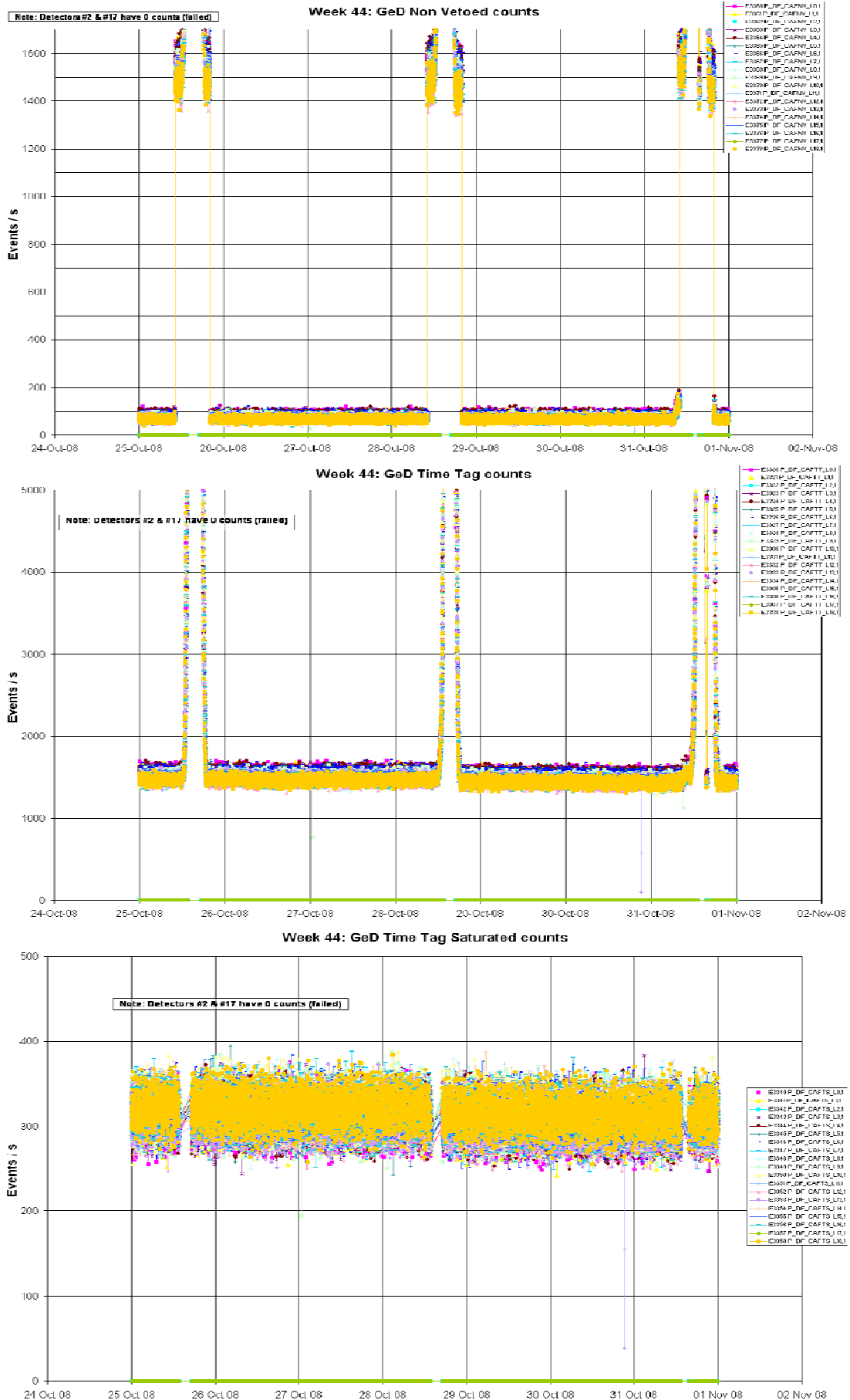
The following plot shows the ACS overall count rate evolution during the reporting period:



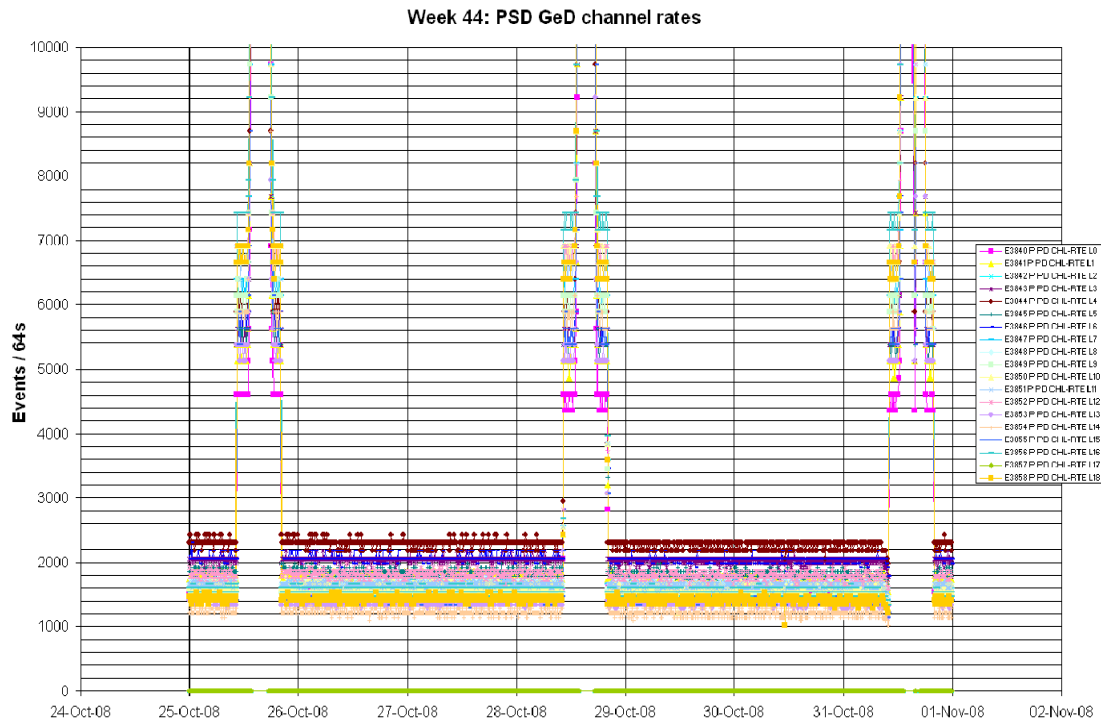
AFEE: The health of the AFEE is nominal. The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06/12/2003 and detector #17 is failed since 17/07/2004.



DFEE: The performance of the unit is nominal. The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event count rates during the reporting period.



PSD: The health of the unit is nominal. The following plot shows the PSD channel rates during the reporting period.



Event Log:

The following non-nominal event occurred on SPI over the reporting period:

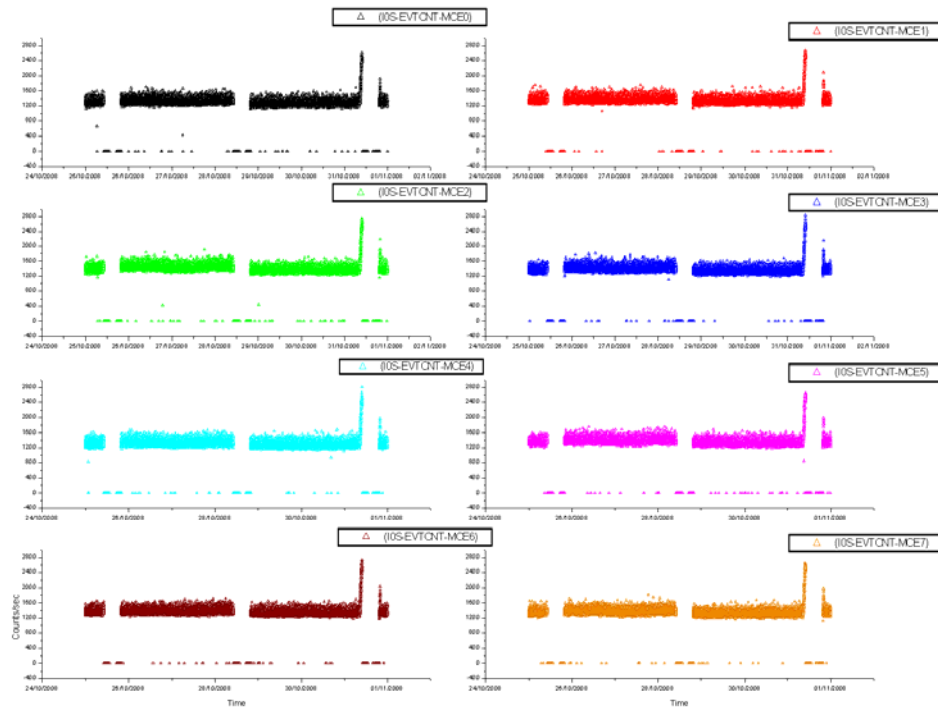
- On 2008-10-28 at 05:47:58Z TM parameter E2004 went OOL (value = PARAM > SPEC). This is the ACS FEE HV status #2. As it returned within limits of its own accord when the next packet was received at 05:58:38Z, no action was taken.
- On 2008-10-29 at 01:31:58Z TM parameter E2295 went OOL (value = PARAM > SPEC). This is the ACS FEE analogue status 5 V #45. As it returned within limits of its own accord when the next packet was received at 01:42:38Z, no action was taken.
- Due to high radiation before the expected radiation belt entry of revolution 738, on 2008-10-31 at 08:48:46Z TM parameter E3500 (ACS CntVetoBelow) went OOL, remaining OOL until radiation belt entry at 10:00:03Z.

8.3.3 IBIS Operations

IBIS Event Counters Plots

ISGRI Counters:

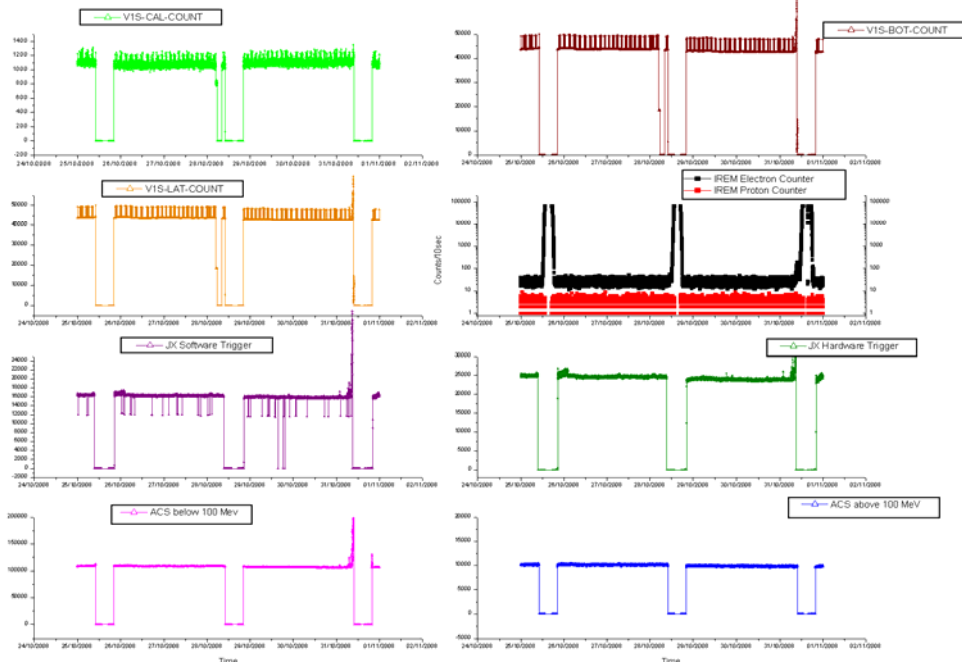
IBIS - ISGRI Counters Rev 736-739



**sampling every 4 pkts (32 secs)

VETO vs Payload Counters:

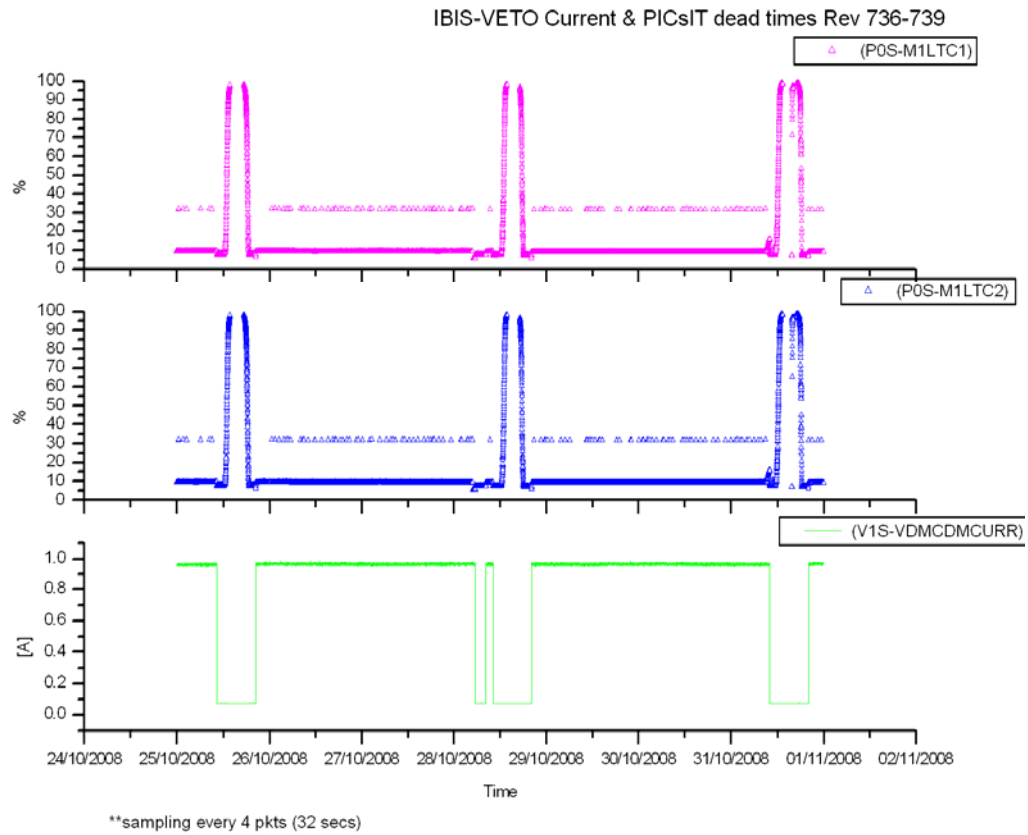
IBIS-VETO vs Payloads Counters Rev 736-739



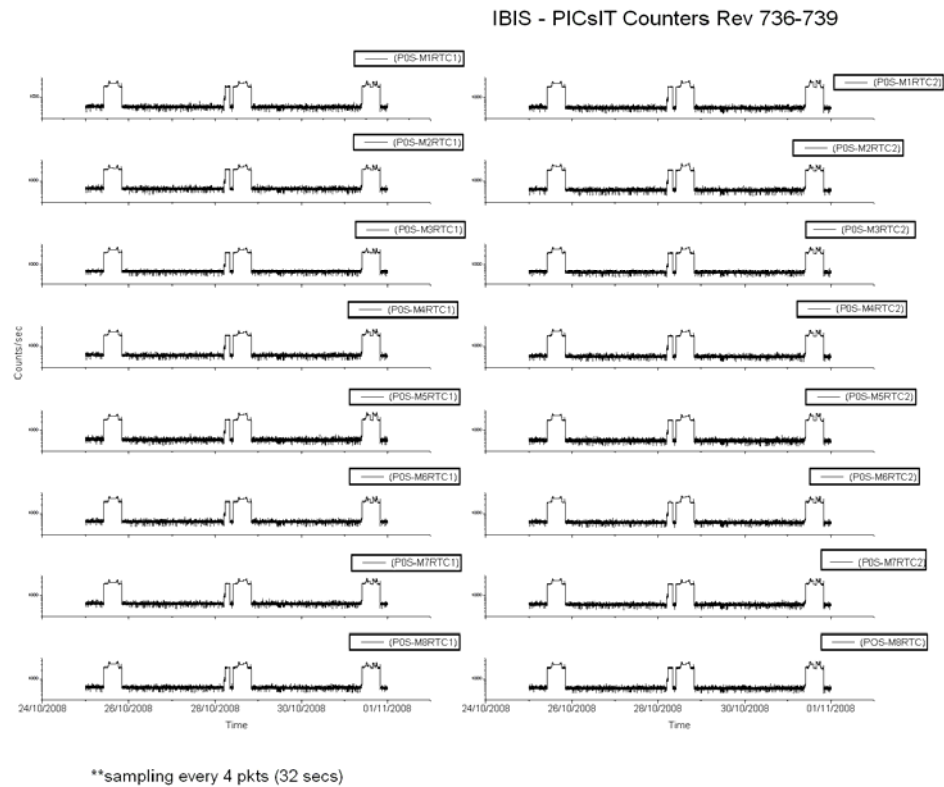
**with the exception of IREM counters (counts/10sec), all the plots are reporting counts/sec sampling every 5 pkts (40 sec)

The week was characterised by slightly high radiation before the expected radiation belt entry of revolution 738 as reported by the payload.

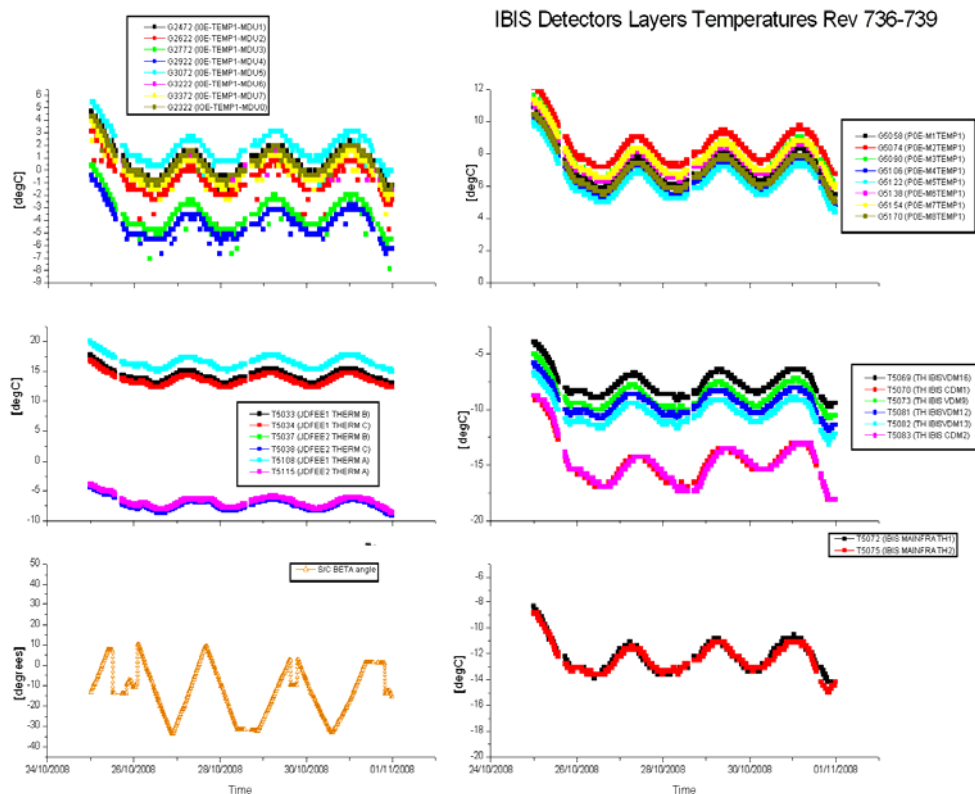
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



**sampling every 8 pkts (64 secs)

IBIS daily report:

The usual Out Of Limits on TM parameter G8015 (S1E-A2_PMT_V), G5002 (POS-Mi_RTC1) and G5003 (POS-Mi_RTC2) families and G2000 family (IOE-OVFWPXADD-Mi) were received during the radiation belt passages.

2008-10-25 (DOY 299, Rev 736-737) to 2008-10-27 (DOY 301, Rev 737)

IBIS operations executed nominally.

2008-10-28 (DOY 302, Rev 737-738)

At 04:52:00Z, the TM parameter G6038 for the VETO VDM04 HV monitor went OOL Alarm Low (value = 383.1V). In addition, the VETO Calibration counter, TM parameter G6061, went OOL Warning Low at 04:52:08Z (value = 824 /s). However, the current remained nominal, e.g. at 04:55:05Z TM parameter G6013 (VETO VDM/CDM current) = 0.96A.

At 05:00:56Z G6038 VDM04 HV recovered to its nominal value (983.04V) however the VETO count rates had dropped to lower values than normal and remained at these lower values even after the VDM04 HV had recovered, e.g. at 05:12:25Z:

G6061 (V1S-CAL-COUNT) = 828 /s
 G6062 (VETO BOT counter) = 18576 /s
 G6063 (VETO LAT counter) = 18576 /s

As can be expected considering the reduced VETO count rates, the PICsIT counters were also higher than normal (approx. 800-1000/s for each semi-module versus a nominal value of approx. 400-600/s). However, the reduction in the VETO bottom and lateral counters and the increase in the PICsIT counters were not large enough to generate an OOL on these parameters.

Note that before the anomaly (e.g. at 04:50:49Z) the VETO parameters were all nominal:

G6038 (V1S- VDM04 HV) = 983.04V
G6061 (V1S-CAL-COUNT) = 1024 /s
G6062 (VETO BOT counter) = 44072 /s
G6063 (VETO LAT counter) = 44048 /s
G6013 (VETO VDM/CDM current) = 0.97A

The situation remained as such until the anomaly was recovered as follows:

- 1- At 05:30:30Z, set IBIS-IASW in Stand-By (TC G0125)
- 2- At 05:32:51Z, set IBIS-VETO in Stand-By (TC G0601)
- 3- At 08:18:27Z, set IBIS-VETO in Nominal (TC G0600)
- 4- At 08:53:44Z, set IBIS-IASW in Science Standard (TC G0129)

Following the recovery VETO was in Nominal and the main VETO parameters and PICsIT counters also returned to nominal values.

IBIS operations continued nominally.

2008-10-29 (DOY 303, Rev 738)

At 23:19:12Z TM parameter G2098 went OOL, indicating an overflow of the noisy pixel address buffer in MCE7. As it returned within limits of its own accord at 23:19:20Z, no action was taken.

2008-10-30 (DOY 304, Rev 738)

IBIS operations executed nominally.

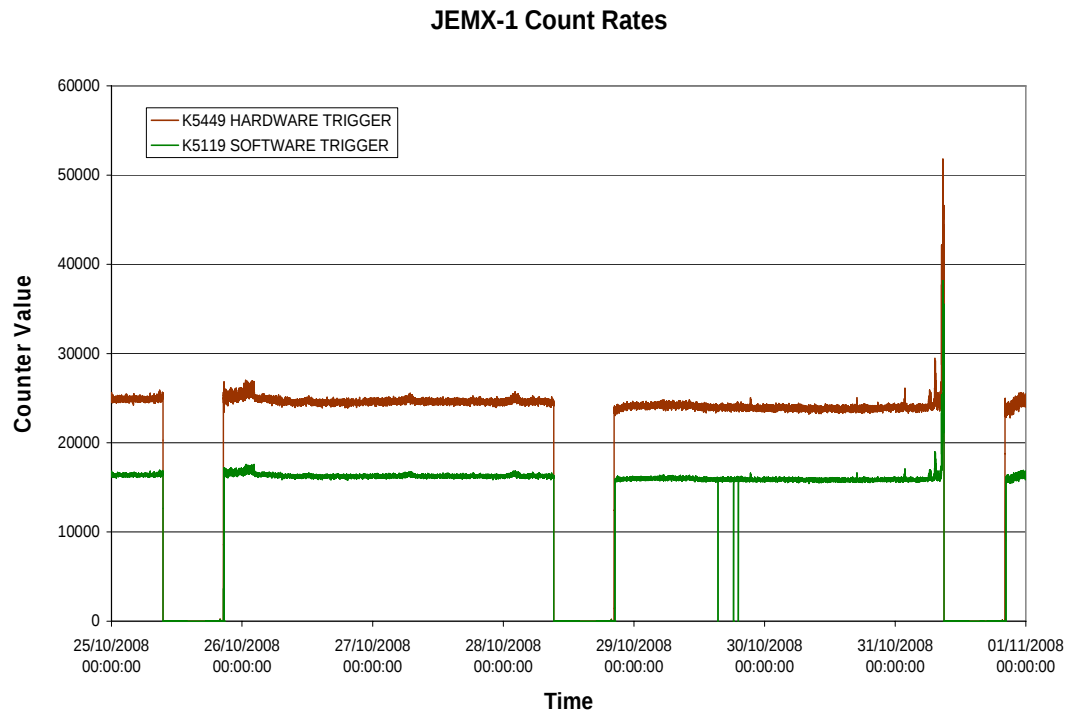
2008-10-31 (DOY 305, Rev 738-739)

Due to slightly high radiation before the expected radiation belt entry at 10:00:09Z, TM parameters G6062, G6063 and GU6062 (VETO bottom and lateral counters) toggled OOL High from 08:59:13Z until radiation belt entry. In addition, from 09:22:25Z TM parameter family G2013 (Number of events triggering the MCEi per second) started toggling OOL High until radiation belt entry.

8.3.4 JEM-X Operations

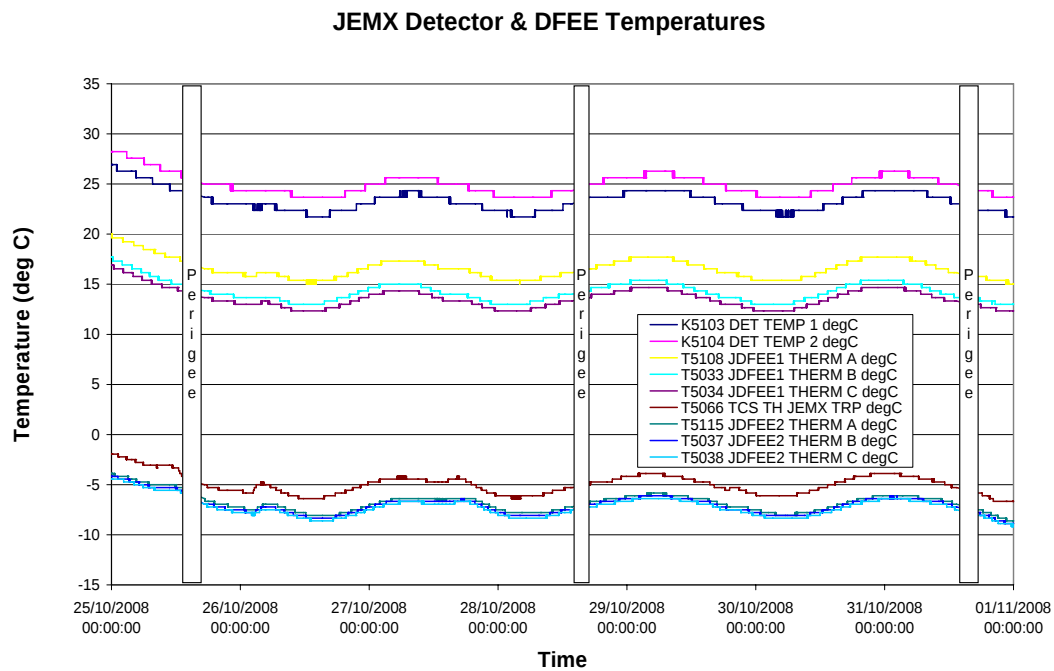
JEM-X Count Rates

JEM-X count rates over the reporting period are displayed in the following graph¹.



JEM-X Temperatures

JEM-X Detector and DFEE temperatures, along with the temperature on the detector bench between the two units, over the reporting period are displayed in the following graph².



¹ Data sampled (1 frame in 4) and smoothed to remove spikes in S/W Trigger due to flushing of buffer after slews.

² Data sampled (1 frame in 8)

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2008-10-25 (DoY 299, Rev 736-737)

At the indicated times, the following anomalous OEMs were received.

2008.299.20.41.43.717	2008.299.20.41.48.493	1536	RealTime	5		EXCEPTION
JEM-X1 EXC IACS INTERF EXID			0	0	65535	PR N
E E						
FIX6		0				
K9079	MESS CLASS	1				
K9080	MESS ID	5				
K9065	CSSW OPERAT ID	START				
K9066	TASK ID 8	IASW				
K9067	LOGICAL ADDRESS	4989				
2008.299.20.41.43.717	2008.299.20.41.48.526	1536	RealTime	6		EXCEPTION
JEM-X1 EXC IACS INTERF CULP			0	0	65535	PR N
E E						
FIX6		0				
K9079	MESS CLASS	1				
K9080	MESS ID	6				
K9065	CSSW OPERAT ID	START				
K9066	TASK ID 8	IASW				
K9067	LOGICAL ADDRESS	19726				

No action was taken, and there was no impact.

2008-10-26 (DoY 300, Rev 737) to 2008-10-30 (DoY 304, Rev 738)

JEM-X 1 operations executed nominally.

2008-10-31 (DoY 305, Rev 738-739)

At 07:18:59, 08:31:33, 08:33:09, 08:40:06, 08:44:13, 08:44:37, 08:46:35 & 08:46:45, parameter K5449 briefly went outside soft limits. At 08:31:39 & 08:54:19, parameter K5136 briefly went outside soft limits. At 08:46:29, 08:53:41; 08:57:49; 08:58:29 parameter K5119 exceeded soft limits, and at 08:58:35, it exceeded hard limits. Also at 08:58:35, parameter K9104 exceeded soft limits. From 09:00:35 to 09:01:24, parameter KD5020D was showing a False state.

In addition to all this activity, the following OEM was received:

2008.305.08.58.40.372	2008.305.08.58.42.874	1536	RealTime	189		EVENT
JEM-X1 PROB DFEE 9			0	0	65535	PR N
E E						

This was followed by the unit going to SAFE mode at 08:59:00. At 09:01:00, the procedure FCP_JEM1_0040 was executed as a precaution (go to SAFE). The following OEM was received:

2008.305.09.01.20.372	2008.305.09.01.23.813	1536	RealTime	254		EVENT
ERROR OFF			0	0	65535	PR N
E E						

JEMX was disabled in the Timeline, so the KESAFE02 ED consisting of commands K0008, K0009, KU0014, K0021 & K0008 failed release. There was no further impact.

8.3.5 OMC Operations

2008-10-25 (DoY 299, Rev 736) to 2008-10-28 (DoY 302, Rev 737)

Nothing to report.

2008-10-29 (DoY 303, Rev 737)

From 15:27:08 to 18:18:39 a Flat-Field calibration was performed. This was followed from 18:19:08 to 18.50.48 by a Dark-Current calibration. Both were executed nominally.

2008-10-30 (DoY 304, Rev 738) to 2008-10-31 (DoY 305, Rev 739)

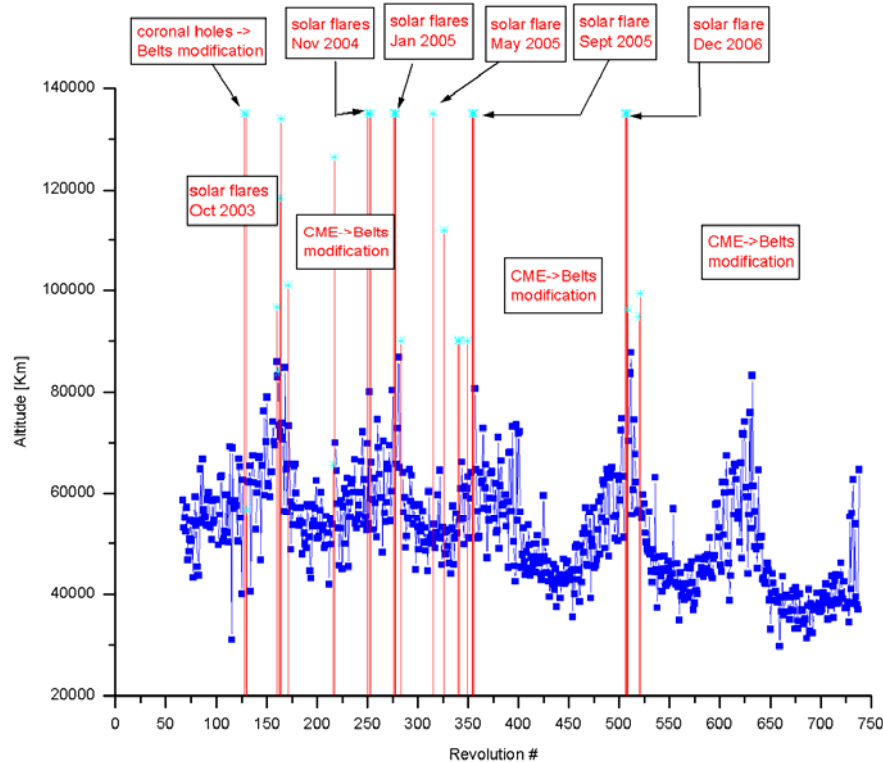
Nothing to report.

On DoY 299 at 10:21:23, DoY 302 at 10:10:03 and DoY 305 at 09:59:55 OMC went to SAFE mode nominally, at the radiation belt entry time as set in the Broadcast Packet

8.3.6 IREM Operations

Radiation Belts Entry

Evolution of Radiation Belt Entry 2003-2008



IREM daily report

Nothing to report.

Electron Belts

REV	S/C BCPKT (electron)	Electron CUT-OFF Observed Entry/Exit	Observed Entry/Exit Altitude [Km]	Electron CUT-OFF Predicted Entry/Exit	Predicted Entry/Exit Altitude [Km]
736	RAD_ENTR R 2008-10- 25T10:21:22Z	25/10/2008 12:21:22	37798.9	25-Oct-2008 12:19:58	38161.97
737	RAD_EXIT R 2008-10- 25T20:11:48Z	25/10/2008 18:37:38	>>33651.4	25-Oct-2008 19:29:58	46942.29
737	RAD_ENTR R 2008-10- 28T10:09:57Z	28/10/2008 12:16:42	36977.5	28-Oct-2008 12:16:41	36986.82
738	RAD_EXIT R 2008-10- 28T19:59:28Z	28/10/2008 18:08:58	33685.5	28-Oct-2008 19:16:41	46647.1
738	RAD_ENTR R 2008-10- 31T09:59:53Z	31/10/2008 08:59:22	64671.9	31-Oct-2008 12:06:41	37620.2
739	RAD_EXIT R 2008-10- 31T19:48:23Z	31/10/2008 18:42:10	>>33723.7	31-Oct-2008 19:06:41	46178.94

Reference

High radiation

Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

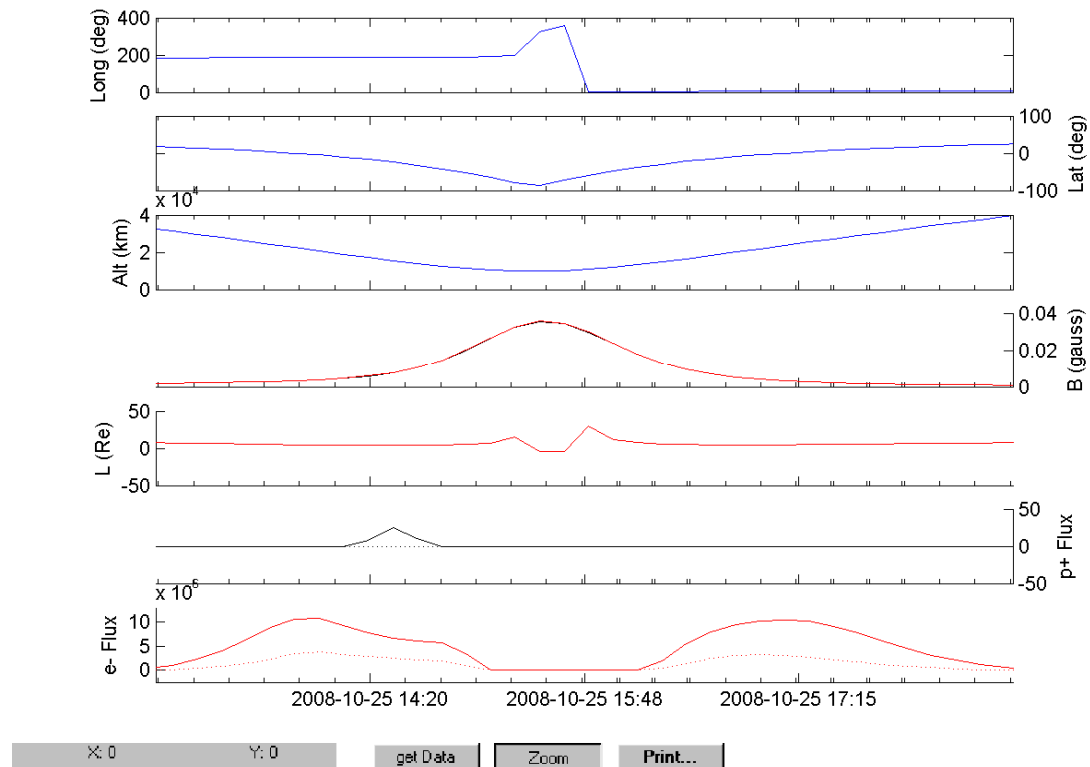
* Rad belt entry time ignoring previous threshold crossings where a gap of more than 30 minutes is present.

IREM radiation counters:

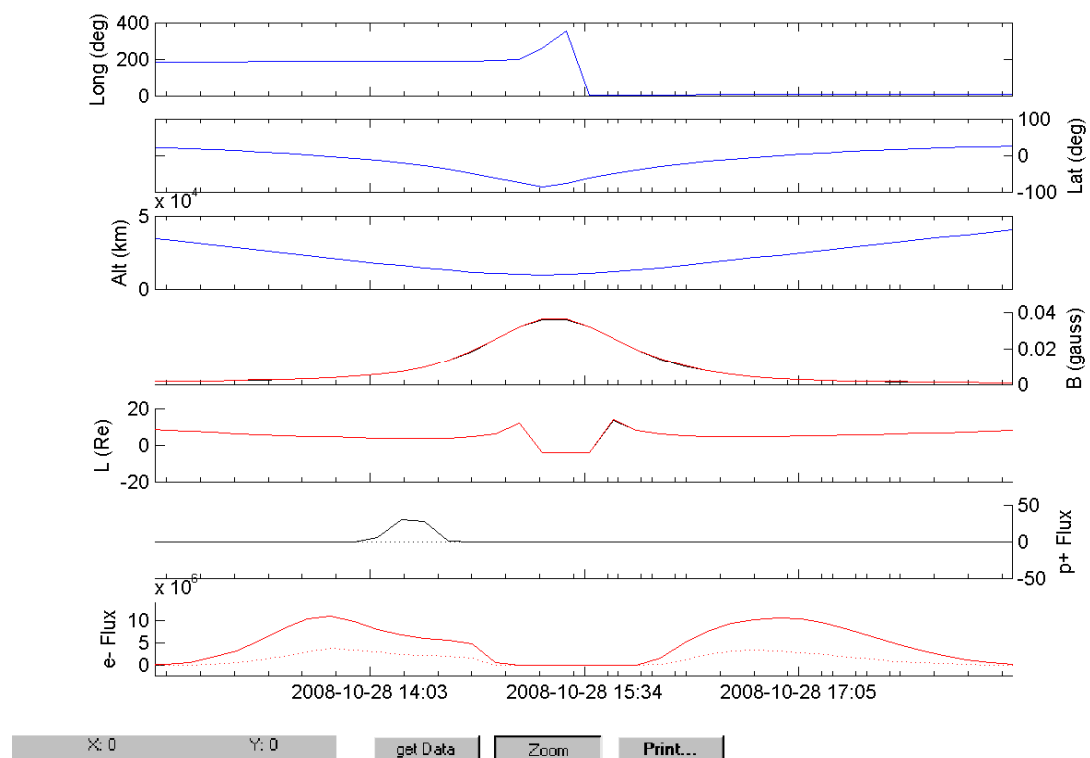
The IREM radiation counter plots are not available this week.

IREM Predicted Radiation Belt Passages

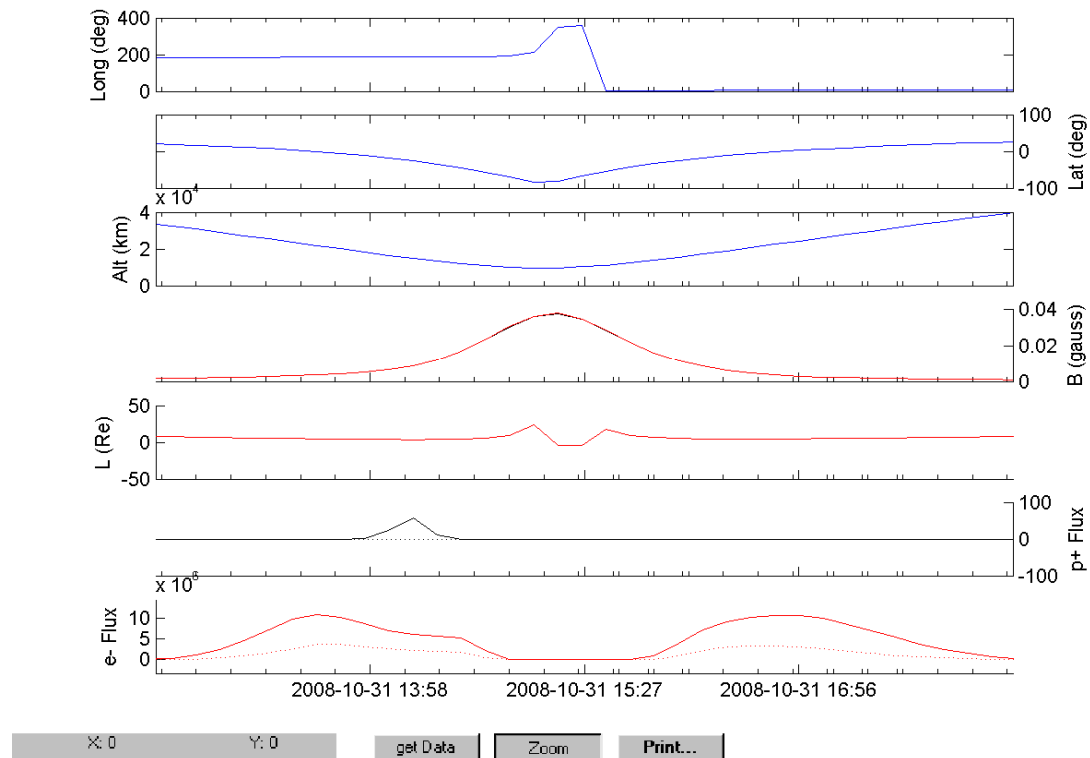
Rev 736



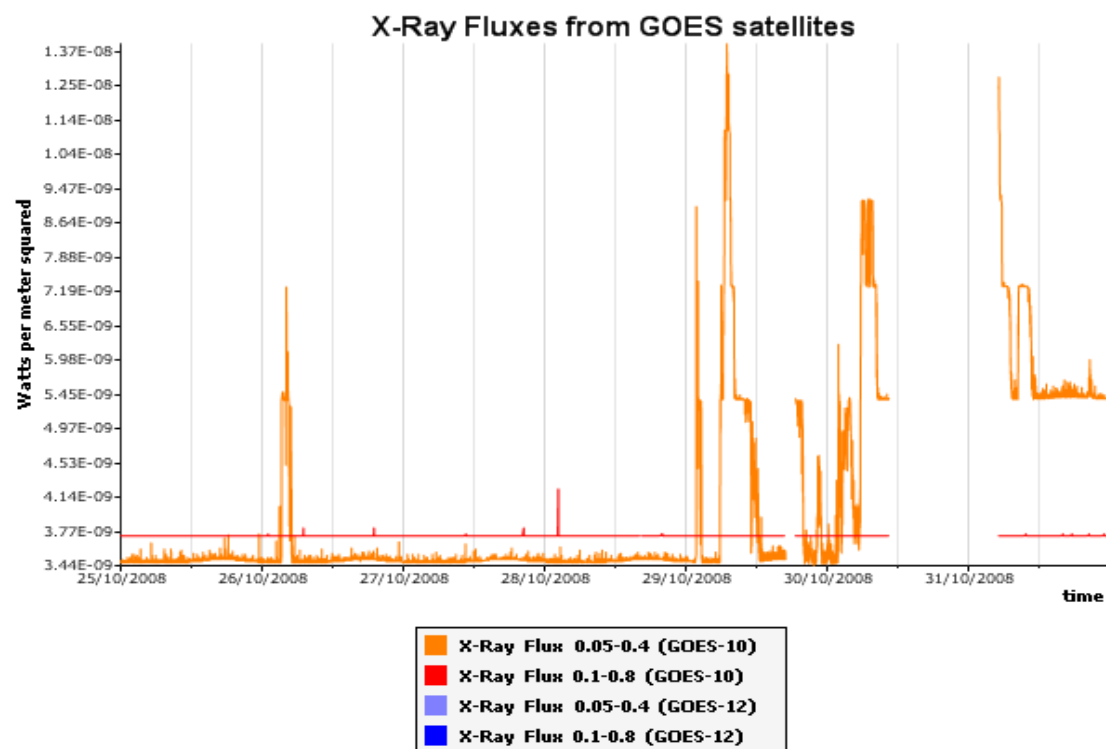
Rev 737



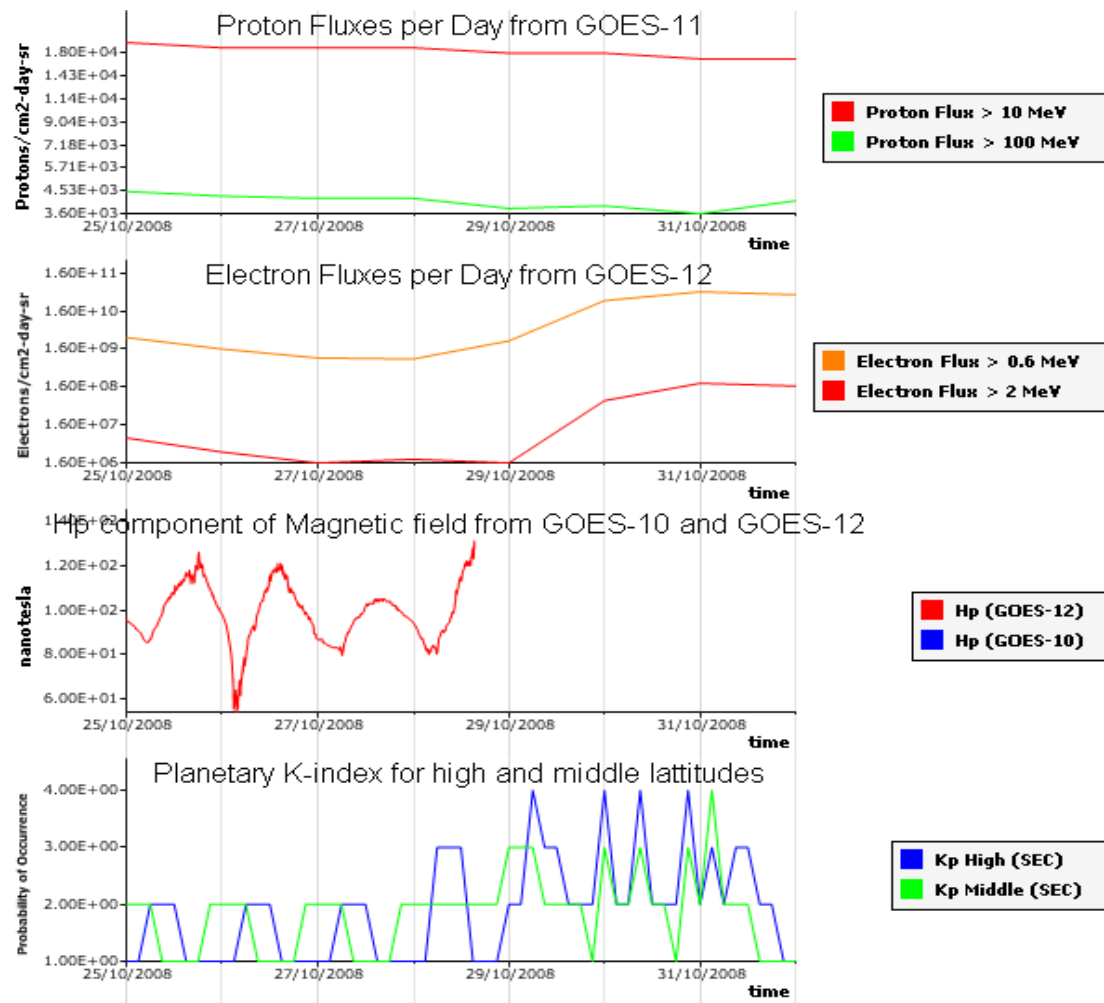
Rev 738



SEC-GOES Observed Particles Fluxes (using SEIS/RAT tool):



X-Ray fluxes start to be significant over 10^{-5} W/m^2 (corresponding to M-class flares). Above 10^{-4} W/m^2 , they correspond to strong X-class flares.



Proton and electron flux report low radiation background.

Hp component of the Geomagnetic Field is essentially parallel to the Earth's rotation axis. A drop near 0 nT is associated with a significant variation in the magnetic field. Kp index is based on ground magnetometers. Kp ≥ 5 features storm-level geomagnetic activity.