EUROPEAN SPACE AGENCY
DIRECTORATE OF TECHNICAL & OPERATIONAL SUPPORT
MISSION OPERATIONS DEPARTMENT

INTEGRAL
Mission Report

INT-MOC-SYS-RP-1001-OPS-OF

No. 203
Week 32

14.08.06

Routine Phase

Prepared by: M. Walker (OPS-OFO)

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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 05.08.06 until 11.08.06 (both dates inclusive) and covers the revolutions 465, 466 and 467.

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 raster dithers of the galactic Mid-latitude North region (RA 16:18:13.65; DEC -14:13:46.6) and Cas A/Tycho (RA 23:51:43.00; DEC +62:03:55.0), a staring observation, at an attitude of (RA 16:49:12.00; DEC -14:36:00.0) and a Galactic Plane Survey.

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 during the observation period.

The fuel consumption over the period between 04/08/2006 and 10/08/2006 was 0.0860 Kg. The remaining propellant is in the order of 152.6066 Kg.

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

3.1.2 Power

The EPS is 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.

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.

3.2 Payload

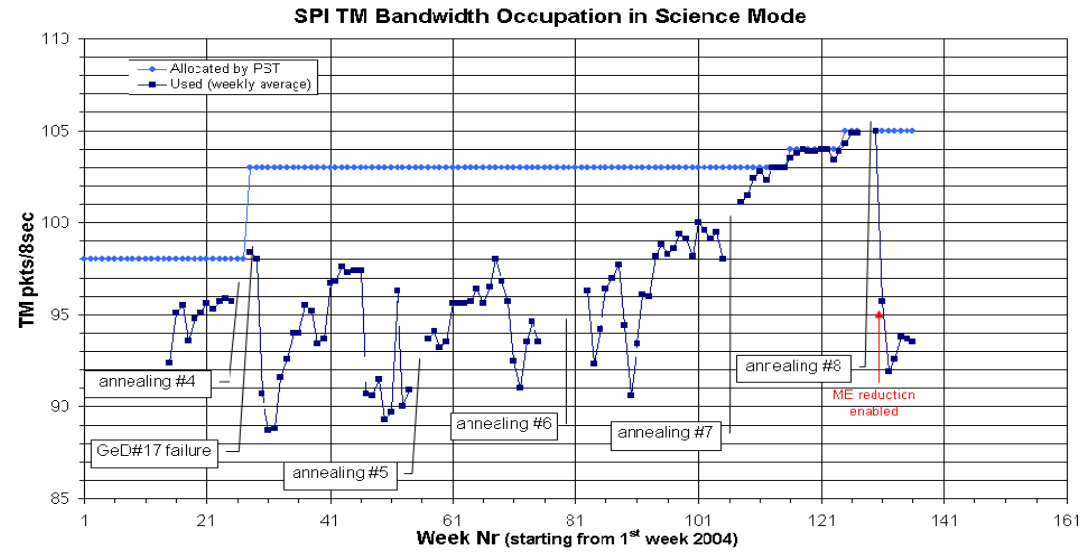
3.2.1 SPI

Following the 8th annealing, which ended on 26th June, the overall status of the gamma-ray spectrometer is nominal, except for the Ge detectors #4 and #12 which are showing a slightly degraded energy resolution. The energy resolution of GeD#15 has been recovered with this annealing. Detector #2 is failed since 06.12.2003 and detector #17 since 17.07.2004.

The Stirling compressors are working nominally, maintaining the Germanium detectors at 82 +/-1K.

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 105 pkts/cycle, except during the OMC Flat Field Calibration (from 2006-08-09 at 15:42:53Z to the end of revolution 466), when it had a TM allocation of 85 packets/cycle. The average telemetry occupation, with an allocation of 105 pkts/cycle, was 93.5 packets/cycle.

The following plot shows the assigned and the average occupation of the SPI TM bandwidth.



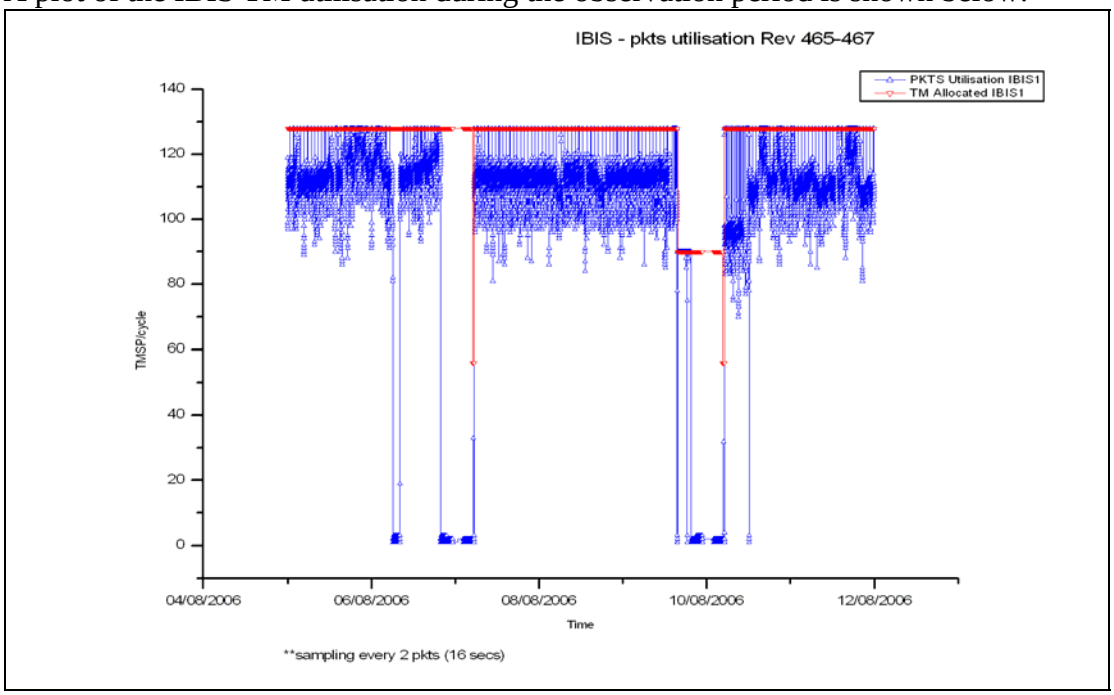
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle. However from 2006-08-09 15:43:08Z until the Belts entry of revolution 466, it was 90 TMPS/cycle due to an OMC Flat Field Calibration. The IBIS mean bandwidth utilisation during the observation period was 111.78 TMPS/cycle, up 2.33 on last week.

A plot of the IBIS TM utilisation during the observation period 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 during science observations and JEM-X2 was dormant (DPE OFF) with no TM slots allocated.

Due to high count rates during the galactic Mid-latitude North observation, several OOLs were received on the TM parameters K5136 BUFFER LOSS; K5449 HARDWARE TRIGGER and K5119 SOFTWARE TRIGGER during the week. Due to these high count rates, JEM-X1 made 3 autonomous transitions to Safe mode as follows:

- On 2006-08-05 at 16:27:52Z, recovered back to Data taking at 17:54:27Z
- On 2006-08-05 at 21:12:57Z, recovered back to Data taking at 22:51:29Z
- On 2006-08-11 at 13:42:09Z, recovered back to Data taking at 15:32:34Z

From 2006-08-11 at 15:32Z onwards the Software Trigger limit was set to 55000 counts/8secs.

Further information on the JEM-X operations can be found 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/cycle, except during the OMC FF & DC calibrations from 2006-08-09T15:43:36Z to 2006-08-09T19:40:48Z, when the allocation was 63 packets/cycle.

During this reporting period, all of the 141 planned science pointings for OMC were executed nominally, none were lost.

Note: Some more information concerning the OMC operations is provided in the Appendix Section 8.3.5.

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity
The observation period was characterised by low solar activity.

The beginning of the observation period was particularly quiet with a blank sun.
On 09/08/2006 sunspot 903 appeared but posed no threat of strong solar flare. It disappeared on 11/08/2006.

On 10/08/2006 a large sunspot (cf. picture below) appeared and posed threat for M-class solar flares until the end of the observation period.

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 excellent this week, with no pointings lost to ground problems. The overall performance was nearly 100%.

4.1 Mission Operations Centre

The performance of the MOC was much excellent this week, no pointings were lost. There was still, however, an error reported with the Command Verifier, but this had no impact. The overall performance was nearly 100%.

4.2 Ground Stations & Network

The performance of the ground stations and Network was excellent this week. With no pointings lost to ground problems. There were, however, a few occasions of bad frames and brief link drops with Redu and Vil2, but these had no impact. There was also one occasion when the link to ISDC dropped. The overall performance though was nearly 100%.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

Since an updated PSF for revolution 470 was received, revolutions 470-472 had to be replanned. No further planning was done due to a significant risk of a TOO on EXO 2030+375.

2. Observation status

ECS have been received up to revolution 459 and processed up to 458.

3. ISOC science data archive

The previously existing problems with ingestion have been fixed and work is ongoing to catch up on ingesting all data. Work is progressing well on the ISDA visualization tool.

4. ISOC system

Version 12.6 has been installed and used successfully. A minor update of the Web application led to the release of 12.6.1 (not relevant for operational system).

5. AO 4

The AO-4 Long-Term Plan has been published on the ISOC web pages. ISDC has received a list with possible INTEGRAL triggers for TOO observations.

6 Extra AO for AO 5 Key programme

No news.

7. Problems

No problems.

4.3.2 ISDC

Status of ISDC observation processing on 14/08/2006:

- Latest Standard Analysis completed: observation 03201100004 (XMM LSS, Revolution 456-457) on 11/08/2006.

- Latest products archived: observation 03200760003 (Mrk 421, Revolution 450) on 06/08/2006.

- Latest observation products sent to the observer: observation 03201090063 (Galactic Bulge, Revolution 426) on 01/06/2006.

5 Special Events

6 Anomalies

There were no problems reported this week that impacted operations.

The following anomaly report was entered into the ARTS system this week:

AR id	Date Created	Subject	Segment	Status
INT_SC-156	07/08/2006	IBIS: PICsIT PDM6 Latch-up Mode	Payload	Pending
INT-2870	10/08/2006	IMCS: disabling SCC function fails when applied to TC with CEV based on TM para type 6,1	IMCS	Open

7 Future Milestones

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 465

The observations in revolution 465 consisted entirely of a raster dither of the galactic Mid-latitude North region (RA 16:18:13.65; DEC -14:13:46.6), lasting ~61 hours.

Revolution 466

The observations in revolution 466 consisted of a raster dithering observation of Cas A/Tycho (RA 23:51:43.00; DEC +62:03:55.0) lasting ~56 hours, followed by a staring observation, at an attitude of (RA 16:49:12.00; DEC -14:36:00.0) lasting ~3.5 hours, during which OMC Flat Field and Dark Current observations were performed.

Revolution 467

The observations in revolution 467 began with a Galactic Plane Survey lasting ~5.5 hours. This was followed by a raster dither of the Mid-latitude North region, (RA 16:18:13.65, DEC -14:13:46.6), lasting ~52.2 hours, until the end of the revolution.

Throughout these observations, SPI, IBIS and JEM-X1 were in their nominal science modes and the JEM-X2 DPE was OFF, and the TM allocation was IBIS 128; SPI 105; JEM-X1 8; JEM-X2 0; OMC 5. During the OMC FF & DC Calibrations from 2006-08-09T15:43:36Z to 2006-08-09T19:40:48Z (Instrument Close), the TM allocation was IBIS 90; SPI 85; JEM-X1 8; JEM-X2 0; OMC 63.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

```
2006-07-23T19:33:16.000Z     152.9396    F   Automatic TM processing.
2006-07-24T14:57:02.000Z     152.9342    F   Automatic TM processing.
2006-07-25T20:51:37.000Z     152.9143    F   Automatic TM processing.
2006-07-25T23:49:54.000Z     152.9056    F   Automatic TM processing.
2006-07-26T03:59:46.000Z     152.8887    F   Automatic TM processing.
2006-07-27T14:07:42.000Z     152.8731    F   Automatic TM processing.
2006-07-29T20:32:19.000Z     152.8213    F   Automatic TM processing.
2006-07-31T23:12:33.000Z     152.7870    F   Automatic TM processing.
2006-08-02T13:30:04.000Z     152.7278    F   Automatic TM processing.
2006-08-03T03:47:18.000Z     152.7045    F   Automatic TM processing.
2006-08-04T03:09:44.000Z     152.6926    F   Automatic TM processing.
2006-08-05T13:52:36.000Z     152.6617    F   Automatic TM processing.
2006-08-07T02:55:36.000Z     152.6367    F   Automatic TM processing.
2006-08-09T20:01:12.000Z     152.6180    F   Automatic TM processing.
2006-08-10T11:24:18.000Z     152.6066    F   Automatic TM processing.

This report was generated  Fri Aug 11 08:00:32 GMT 2006
```

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, 05/08/2006 – 11/08/2006

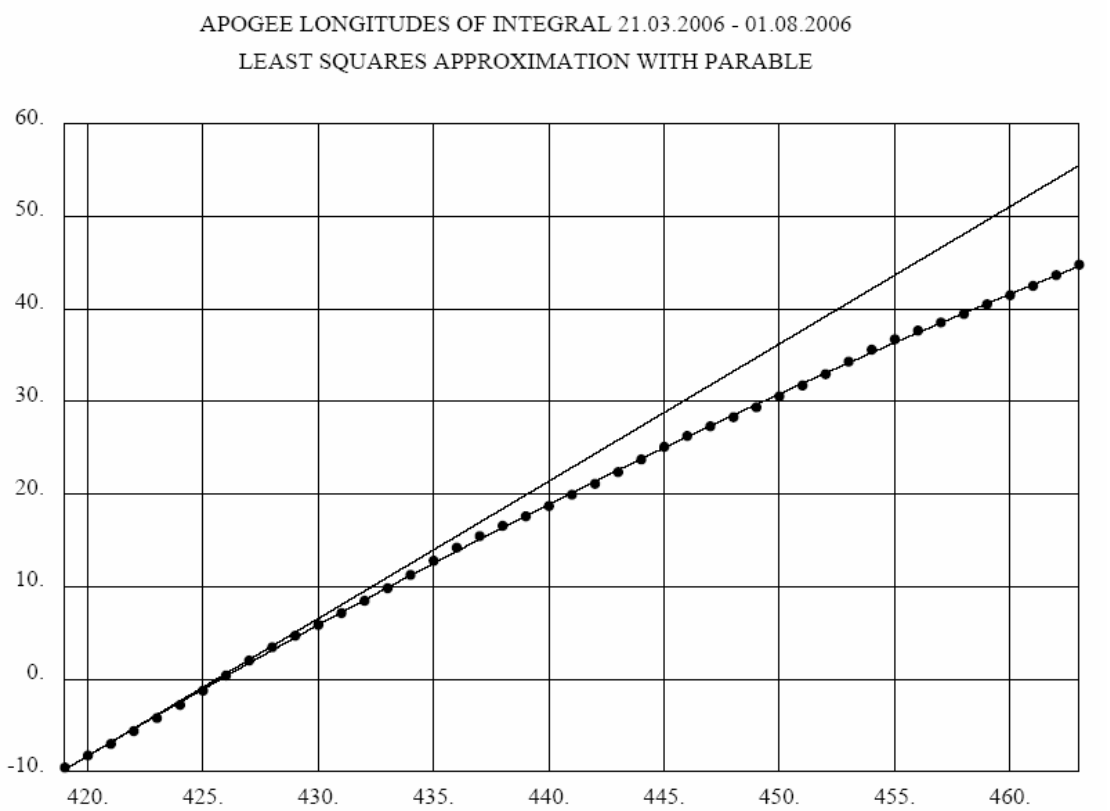
AOCS operations were executed from the Automatic Timeline.

During this period, 71 Open Loop Slews, 84 Closed Loop Slews and 5 Momentum Biases were executed.

No slews were missed during the observation period.

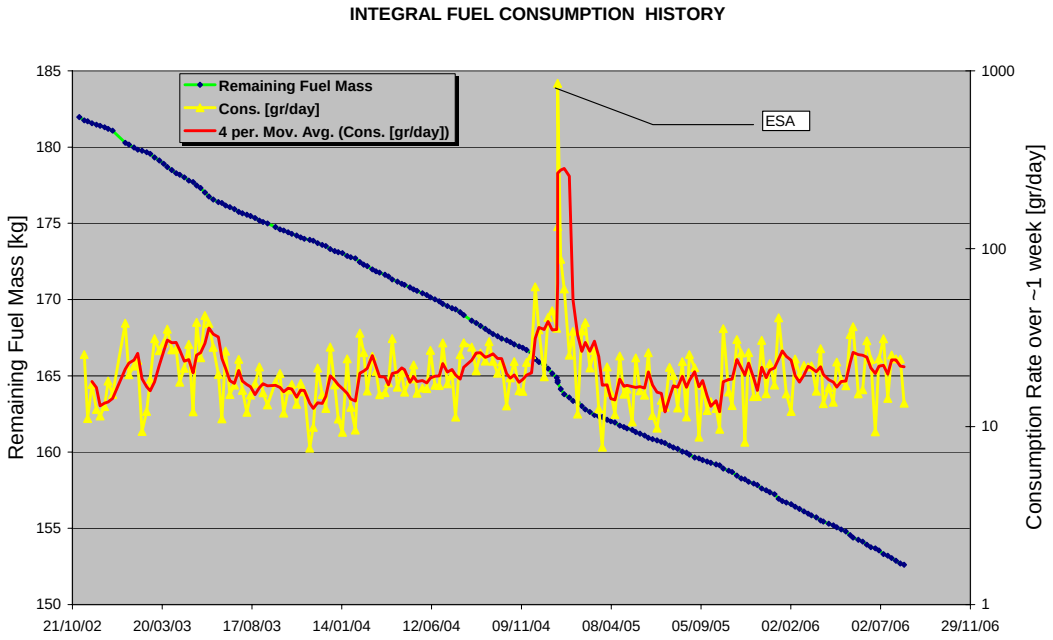
Orbit Control

The attached plot shows the apogee longitude of Integral as a function of the orbit number. From the approximation of the apogee longitudes with a parable, the average semi-major axis increase, due to momentum dumping manoeuvres, is estimated to have been 596 m per orbital revolution.

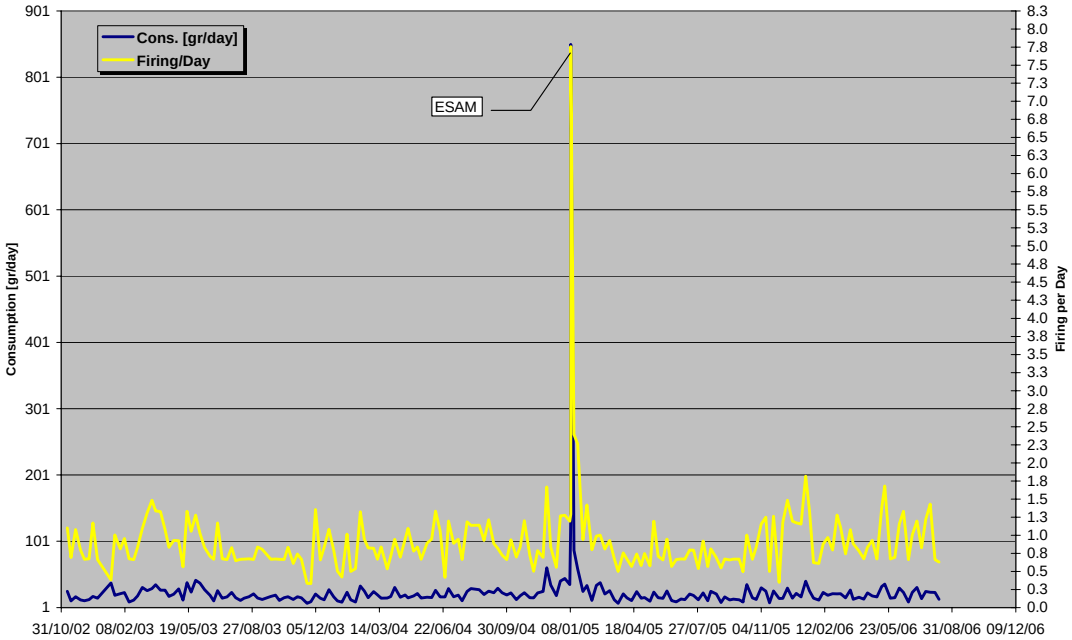


Fuel consumption

The fuel consumption (total, grams/day) over the period between 01/11/2002 and 10/08/2006 is reported in the plot below.

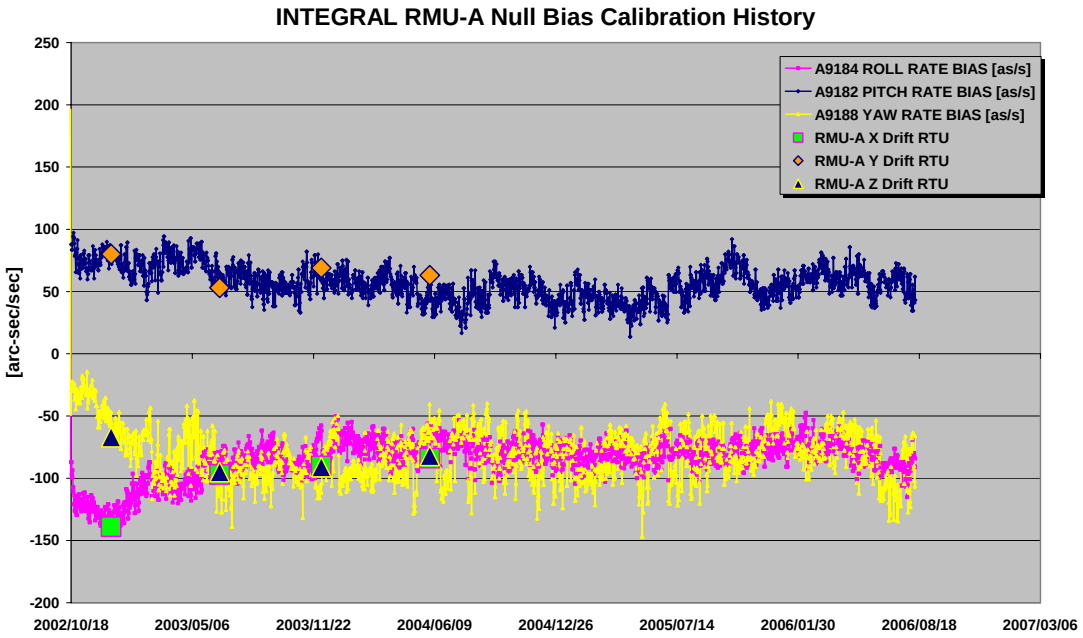


The firing\day over the period between 01/11/2002 and 10/08/2006 is reported in the plot below.

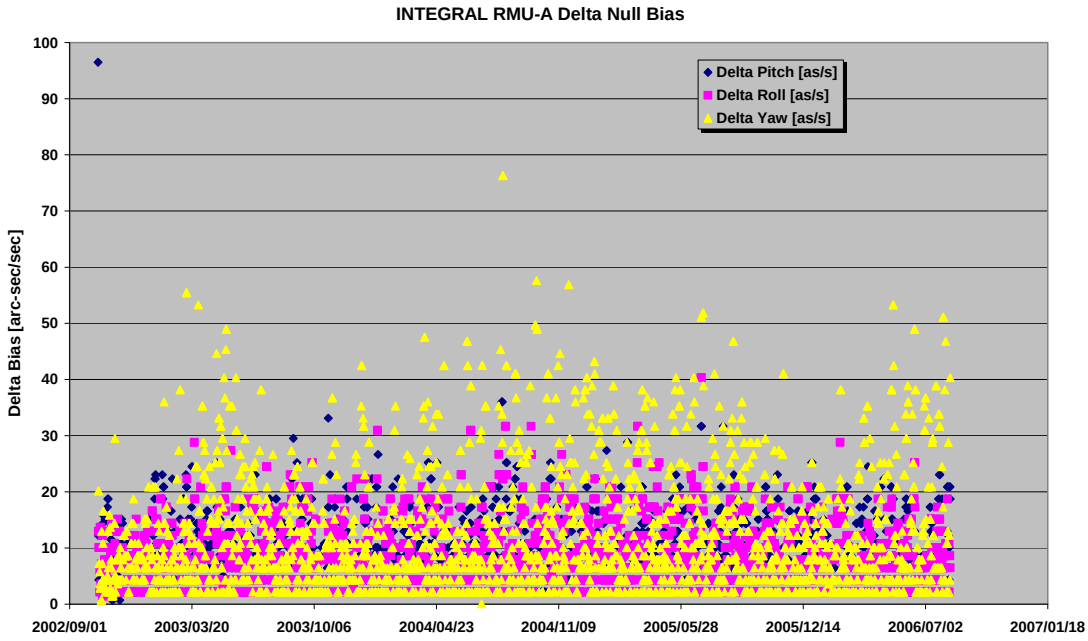


The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 11/08/2006 is reported in the plot below.



The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 11/08/2006 is reported in the plot below.



05/08/06 (Day of Year 217, Revolution 465)

Nothing to report.

06/08/06 (Day of Year 218, Revolution 465)

Nothing to report.

07/08/06 (Day of Year 219, Revolution 465-466)

Nothing to report.

08/08/06 (Day of Year 220, Revolution 466)

Nothing to report.

09/08/06 (Day of Year 221, Revolution 466)

Nothing to report.

10/08/06 (Day of Year 222, Revolution 466-467)

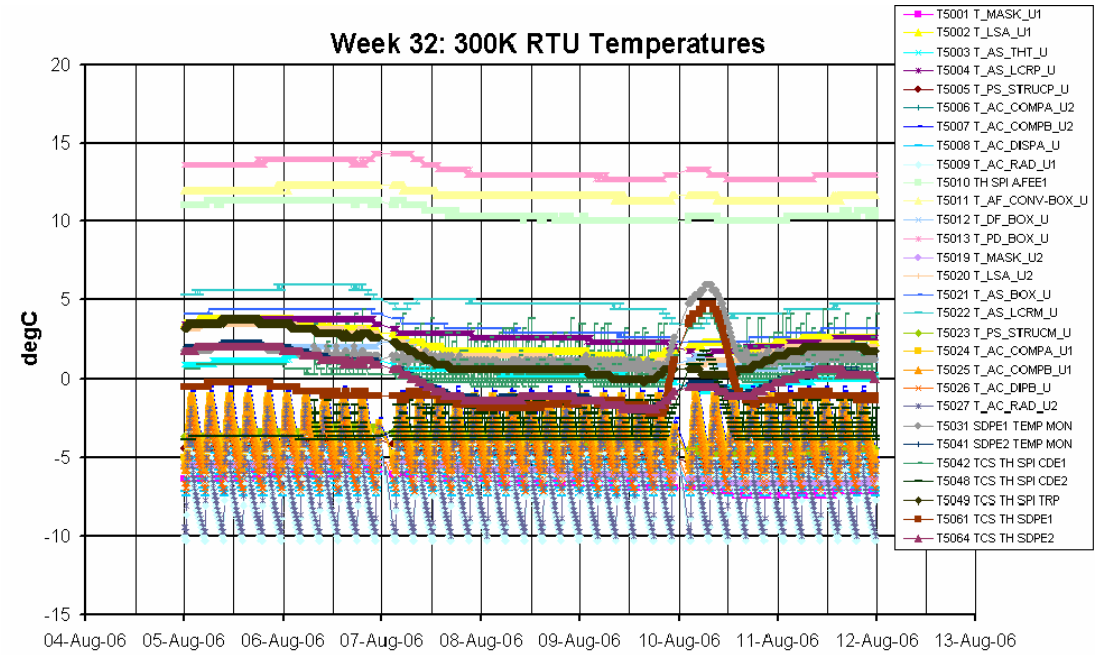
Nothing to report.

11/08/06 (Day of Year 223, Revolution 467)

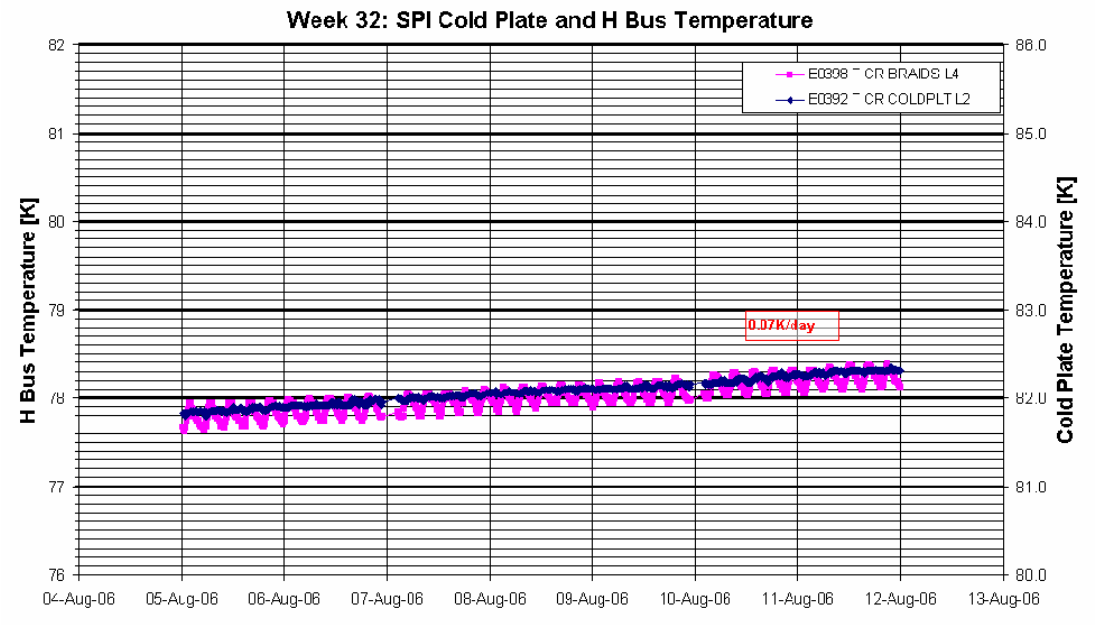
Nothing to report.

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 to 82K +/-1K, with a positive drift of 0.07deg/day. The following plot shows the evolution of the cold plate and H bus temperatures during the reporting period.

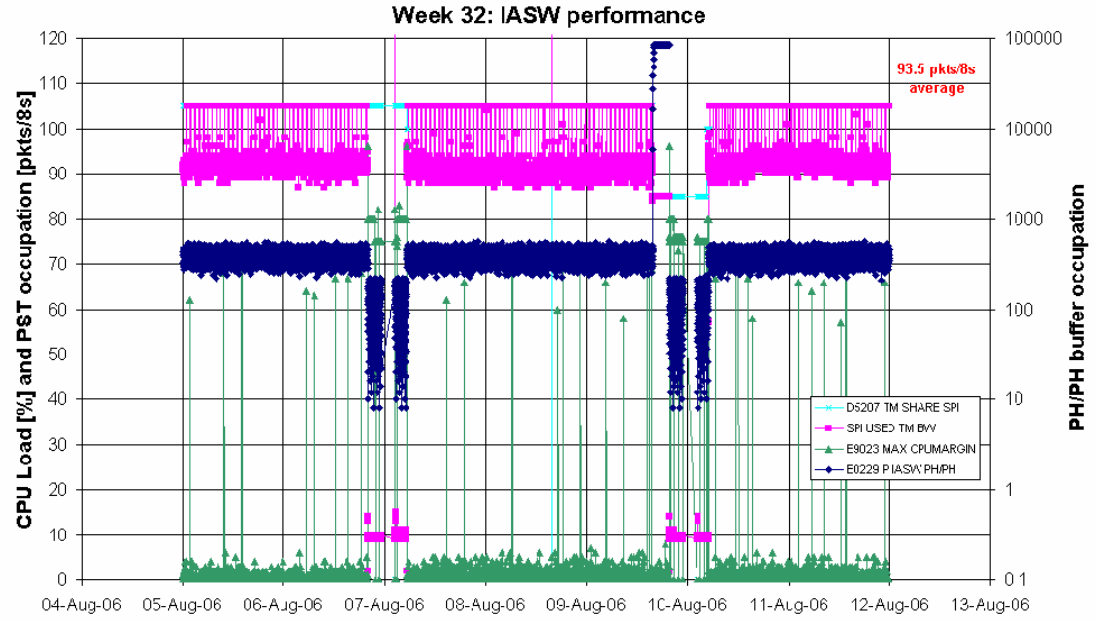


DPE & IASW:

The DPE health and IASW performance is nominal. The current IASW version installed is 432.

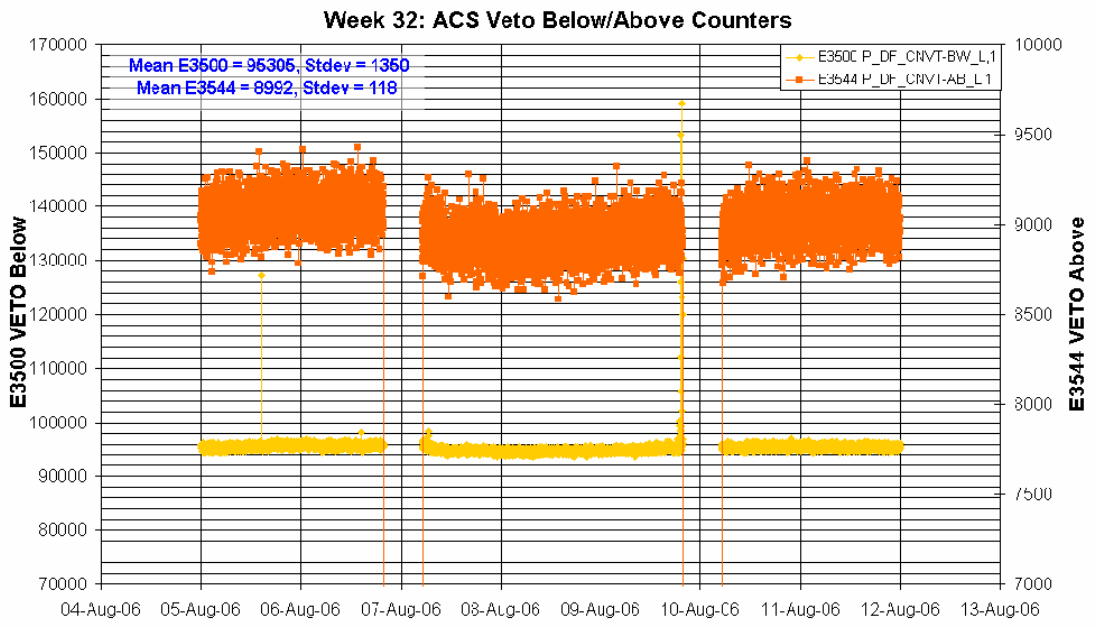
The average TM bandwidth occupation of SPI was 93.5 packets/cycle over the science window, when the TM allocation was 105 pkts/cycle.

The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.



ACS:

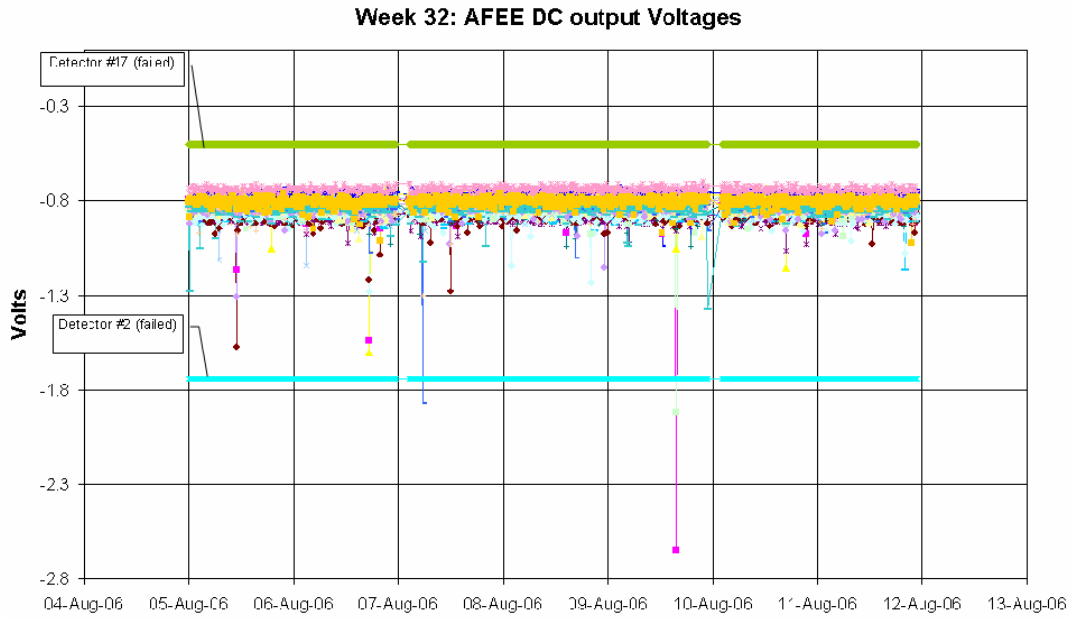
The performance of the ACS is nominal.
The following plot shows the ACS overall count rate evolution during the reporting period:



AFEE:

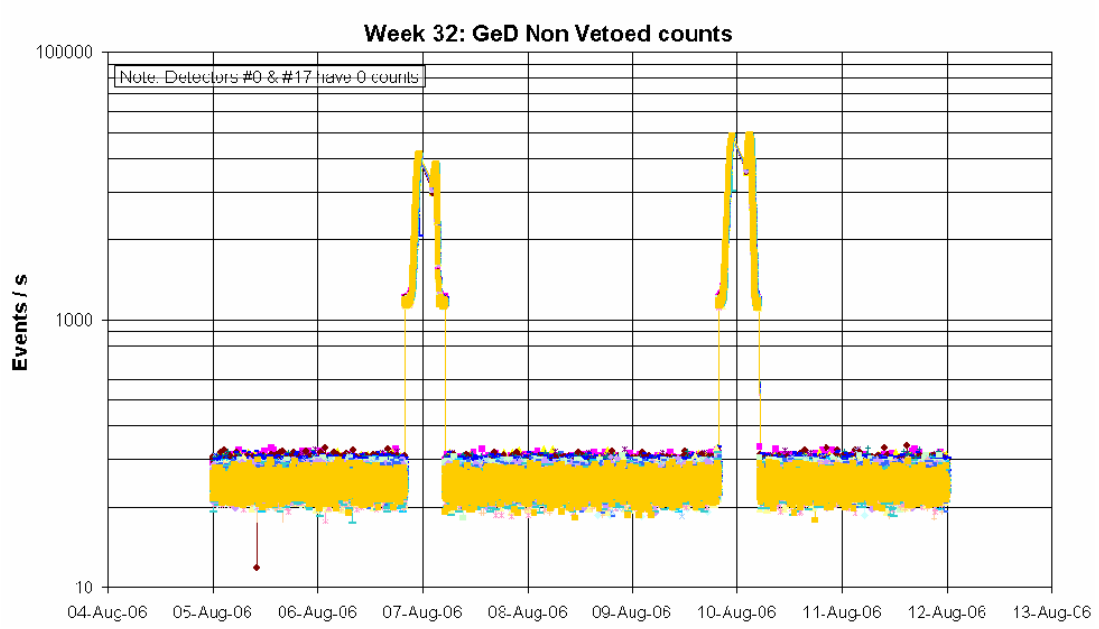
The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detectors #4 and #12 which are showing a slightly degraded energy resolution. The energy resolution of GeD#15 was recovered with this annealing.

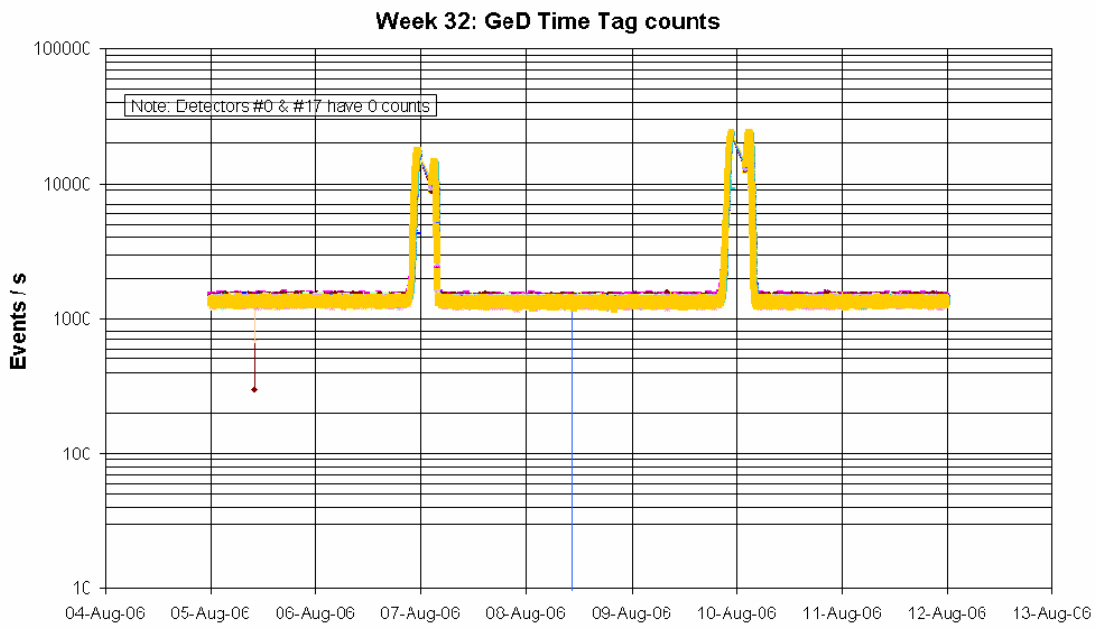
The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06.12.2003 and detector #17 is failed since 17.07.2004

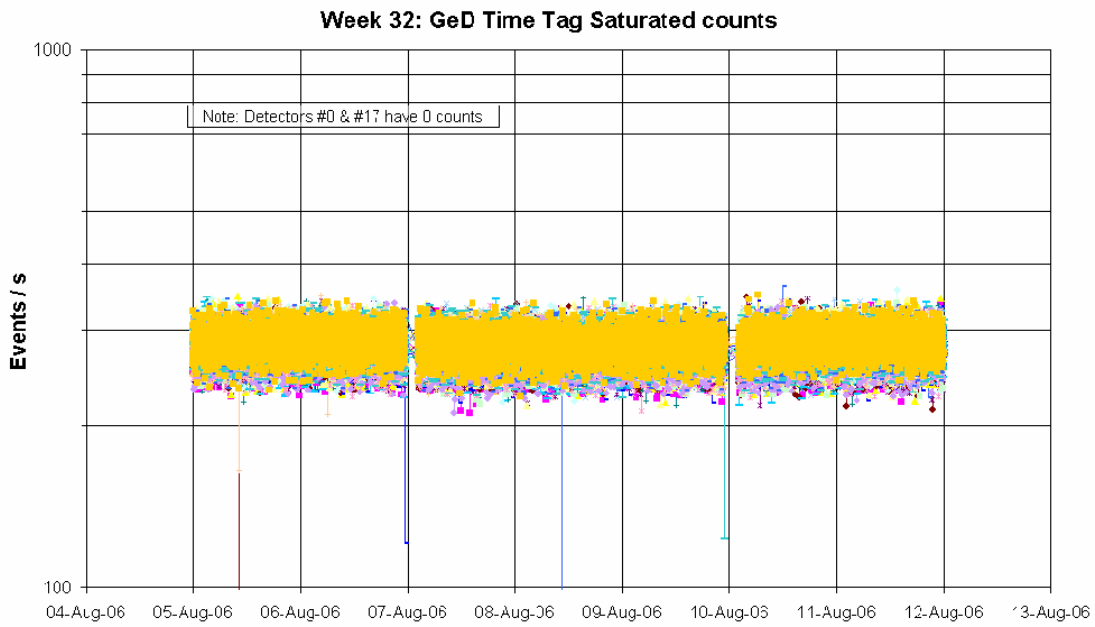


DFEE:

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.

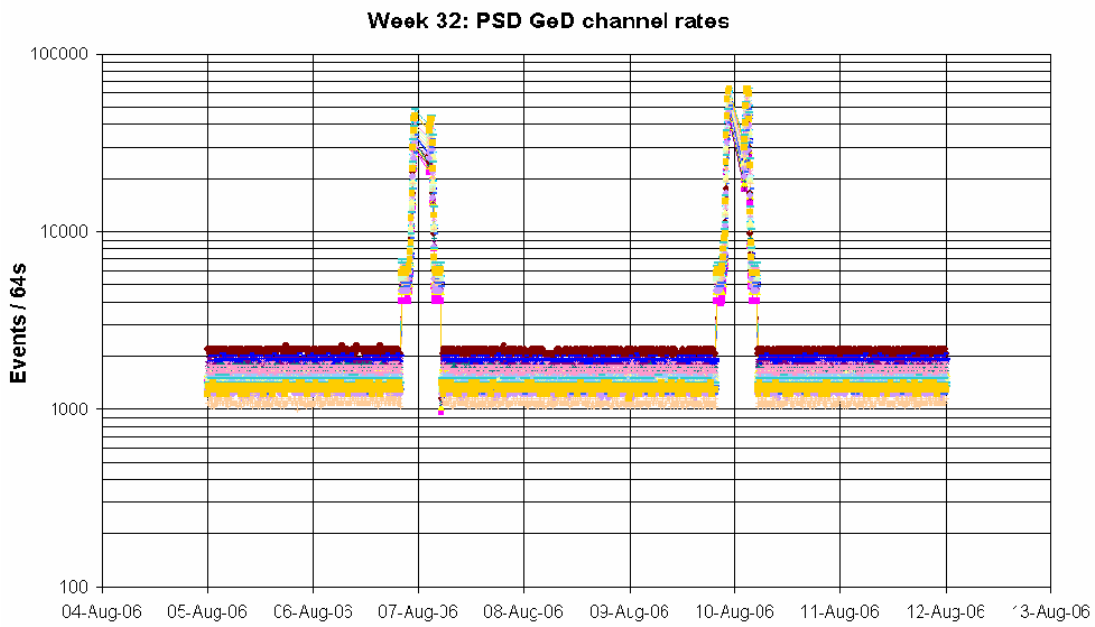

Week 32: GeD Non Vetoed counts
Note: Detectors #0 & #17 have 0 counts
Events / s
100000
1000
10
04-Aug-06
05-Aug-06
06-Aug-06
07-Aug-06
08-Aug-06
09-Aug-06
10-Aug-06
11-Aug-06
12-Aug-06
13-Aug-06


Week 32: GeD Time Tag counts
Note: Detectors #0 & #17 have 0 counts
Events / s
100000
1000
100
10
1
04-Aug-06
05-Aug-06
06-Aug-06
07-Aug-06
08-Aug-06
09-Aug-06
10-Aug-06
11-Aug-06
12-Aug-06
13-Aug-06



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 OEMs and OOLs were received from SPI during the reporting period:

- On 2006-08-06 at 22:57:14Z OEM APID 1024 ID 1 EXCEPTION SPI1 FIXED POINT OVERFLOW was received. This was during the LOS_CHK window of revolution 465, when the SPI1 DPE time verification TC was sent. This OEM is sometimes received when this TC is sent and no action was taken.
- On 2006-08-09 at 15:41:39Z TM parameter E0350 went OOL Low

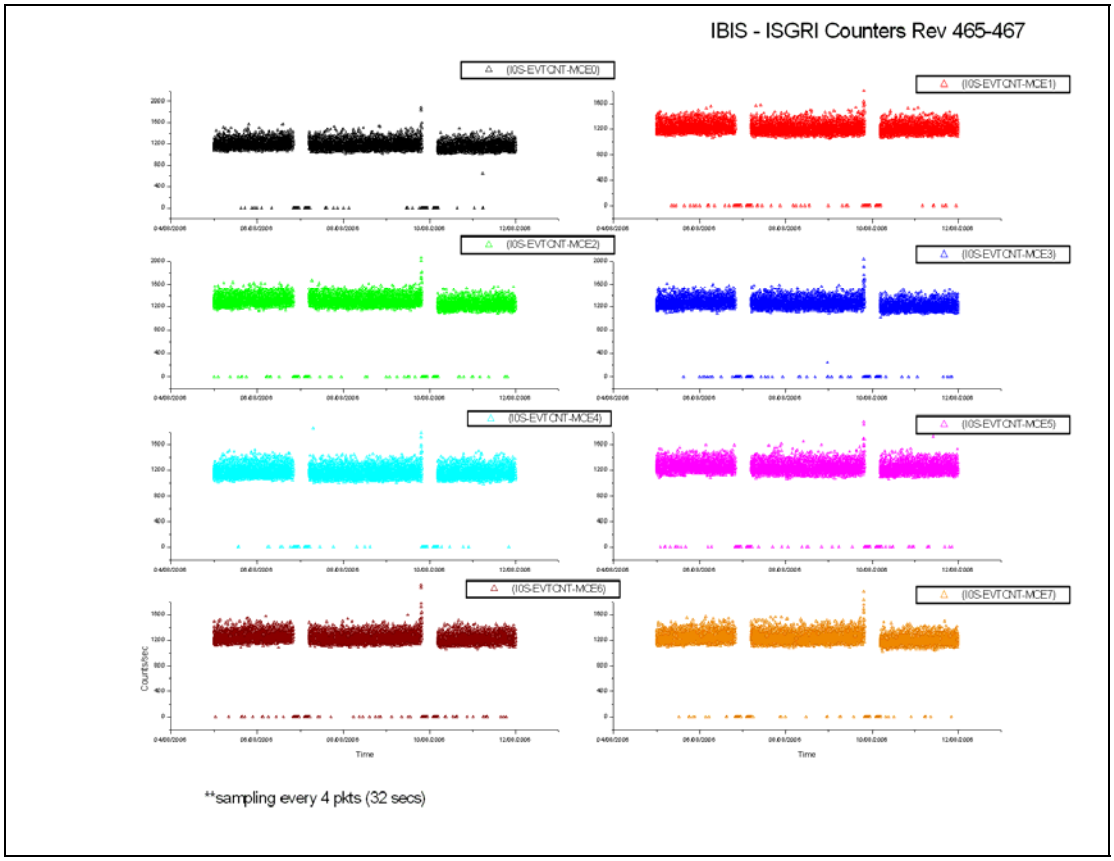
(value = -2.652). This is the DC output voltage for Detector #0. It returned within limits when the next packet was received at 15:52:19Z.

- On 2006-08-09 at 19:20:58Z TM parameter E3500 went OOL High (value = 174006). This is the ACS Veto Below Counter. As this was ~20 minutes before radiation belt entry of revolution 466 no action was taken. This parameter returned within limits at 19:24:10Z.

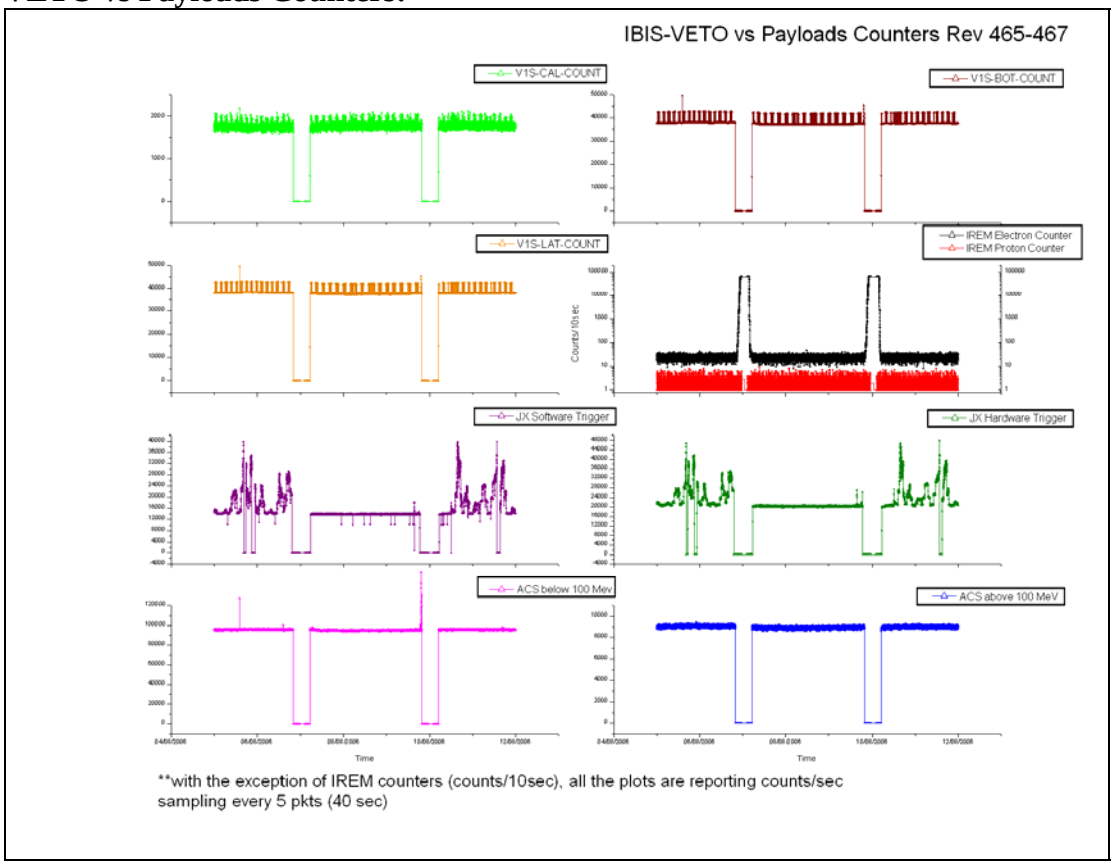
8.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

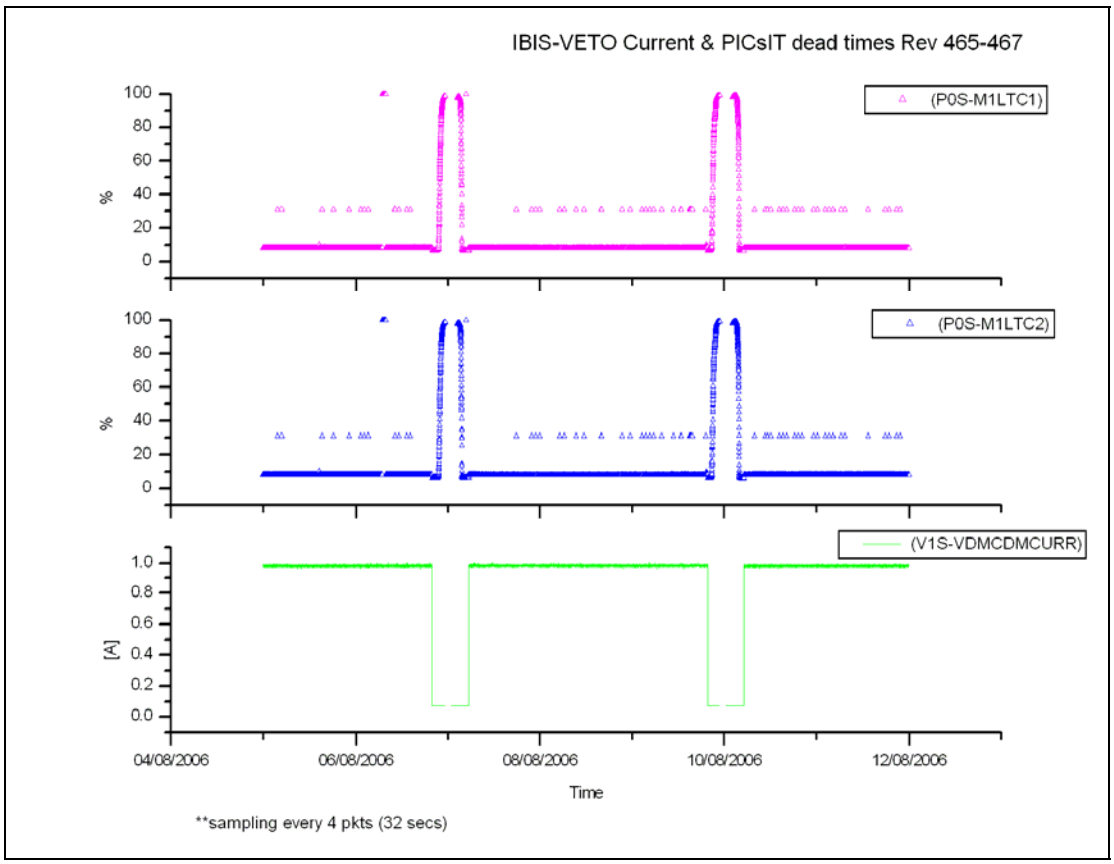


VETO vs Payloads Counters:

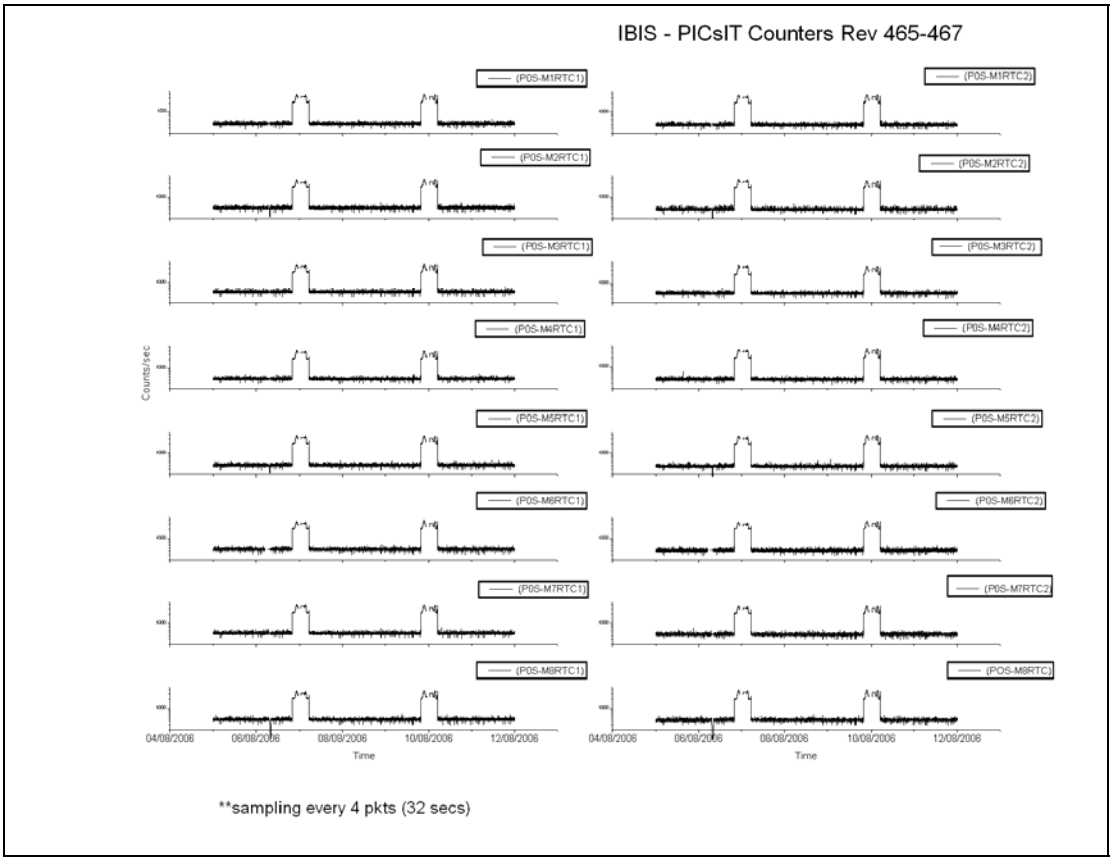


The week was characterised by low radiation.

VETO Current:

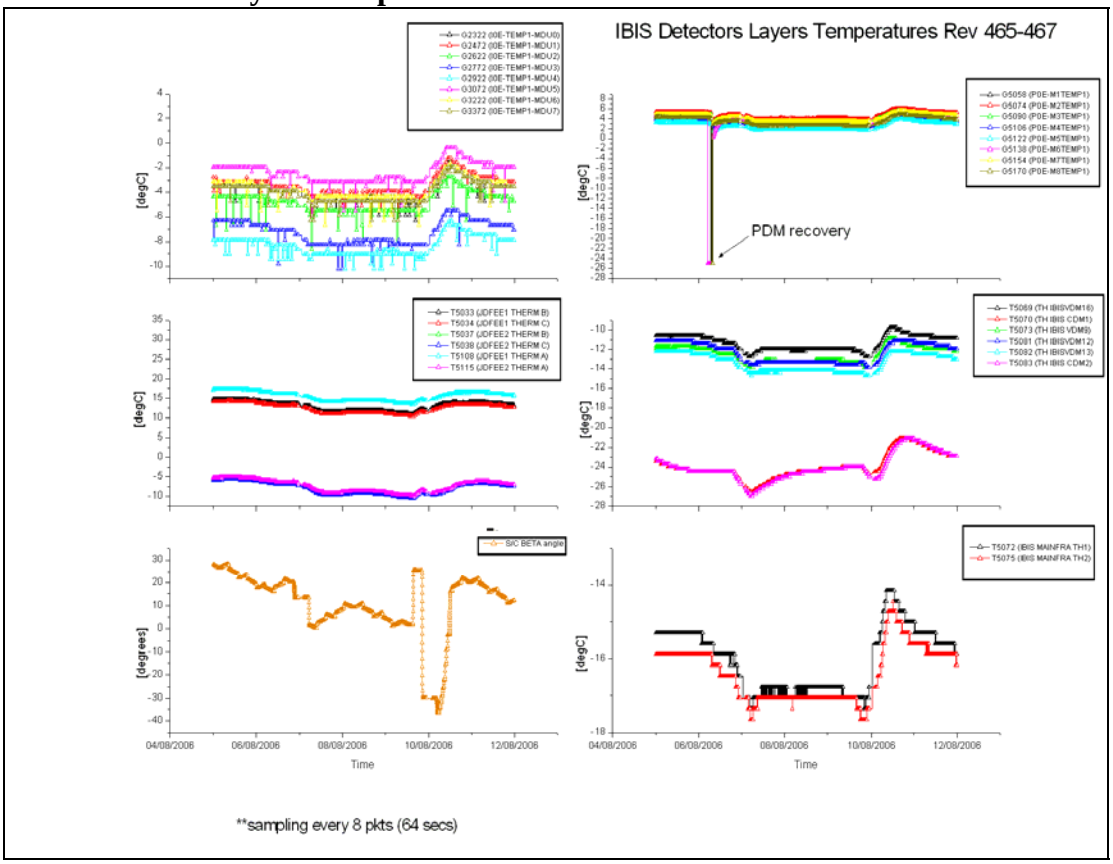


PICsIT Counters:



**sampling every 4 pkts (32 secs)

IBIS Detectors Layers Temperatures:



**sampling every 8 pkts (64 secs)

IBIS daily report

DoY 218 (06/08/2006): IBIS PICsIT PDM #6 Latch-Up mode (INT_SC-156)

At 05:04:21Z, the following OEM was reported:

<< APID 1280, class 1, id 170, IBIS1 PICSIT LATCHED UP MODULE NOTIFICATION>>.

It concerned PDM #6 that reported at the same time TM parameter G5042 (P0E-PDM6STB) OFF. All others PDM were working nominally, and PICsIT was in Nominal mode.
The reason for this change of status remains unknown at the time being.
No radiation was reported by the Payload counters or IREM, at the time of the anomaly.

Following the action in FDIR, the recovery consisted in switching OFF PDMs, then switching them ON and enabling them.

1. At 06:11Z IBIS was set in Stand-By mode with TC G0125.

2. From 06:55Z to 07:21Z, all PDMs were switched OFF with FCP_IBIS1_0315 to FCP_IBIS1_0329.

3. From 07:40Z to 07:48Z, all PDMs were switched ON with FCP_IBIS1_0103 to FCP_IBIS1_0110 steps 3.3. Note that the requirements of these procedures were not met since PICsIT was still in Nominal and the thermal configuration was also the Nominal one (in particular HTR CSI B CLOSE and HTR CSI A OPEN). In fact the recovery concerned only the PDMs not the PFDM or PEB; and, since the detectors had not been OFF for a long time, it was not needed to change the Heaters status (therefore only steps 3.3 were relevant).

4. From 07:50Z to 08:09Z, all PDMs were enabled with FCP_IBIS1_0213 to FCP_IBIS1_0227 using the dynamic TC GU0512 as advised in steps 3. PDM #6, like all the others, showed nominal TM (temperatures, voltages and counters).

5. As the recovery was successful, IBIS was set back in Scientific Standard mode at 08:14Z.

The impact on the science was: Pointing #48 was interrupted, Pointings #49 to #51 were missed, and Pointing #52 started with a slight delay.

DoY 218 (06/08/2006):

At 19:54Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 219 at 05:25Z. As this happened inside the radiation belts (following VETO Stand-By mode), according to V-VLT-1 no action was taken.

During the Belts, several TM parameters from families G5002 (P0S-Mi RTC1) and G5003 (P0S-Mi RTC2) went OOL High and back. According to P-CNT-1, no action was taken.

DoY 219 (07/08/2006):

At 03:12Z, at the beginning of revolution 466 no ISGRI CTX tables were available from revolution 465. Therefore the operator uploaded the tables compiled from revolution 464.

DoY 221 (09/08/2006):

At 19:19Z, TM parameter G8080 (S1E-VS_HBRA-RT) was reported toggling OOL High for several cycles. This was probably due to the limited TM allocation (OMC Flat Field Calibration) while the radiation environment became noisy close to the Radiation Belts. According to H-OVF-2, no action was taken.

At 19:41Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 222 at 05:11Z. As this happened inside the radiation belts (following VETO Stand-By mode), according to V-VLT-1 no action was taken.

During the Belts, several TM parameters from families G5002 (P0S-Mi RTC1) and G5003 (P0S-Mi RTC2) went OOL High and back. According to P-CNT-1, no action was taken.

DoY 222 (10/08/2006):

At 02:07Z, lots of IBIS parameters were reported failing Status Consistency Checks. This was only a display problem due to the installation of an updated database on the recently updated Mission Control System during the Perigee Passage from revolution 466 to 467.

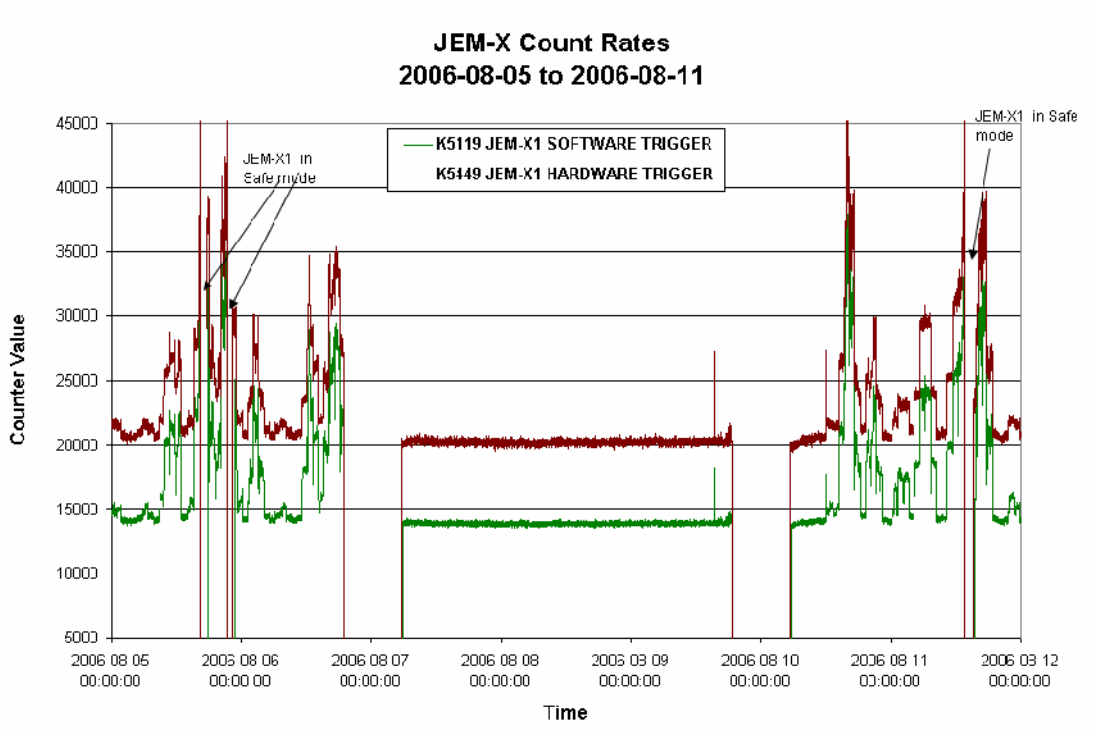
At 04:42Z TM parameter G2084 (I0E-OVFWPXADD-M6) failed SCC and back. At 04:46Z TM parameter G2042 (I0E-OVFWPXADD-M3) failed SCC and back. At 04:55Z TM parameter G2070 (I0E-OVFWPXADD-M5) failed SCC and back. According to I-OVF-1, no action was taken.

8.3.4 JEM-X Operations

JEM-X Count Rates

JEM-X count rates over the reporting period are displayed in the following graph[1]. Note that a smaller scale than normal has been used for this plot to display the very high count rates which were obtained during some of the pointings.

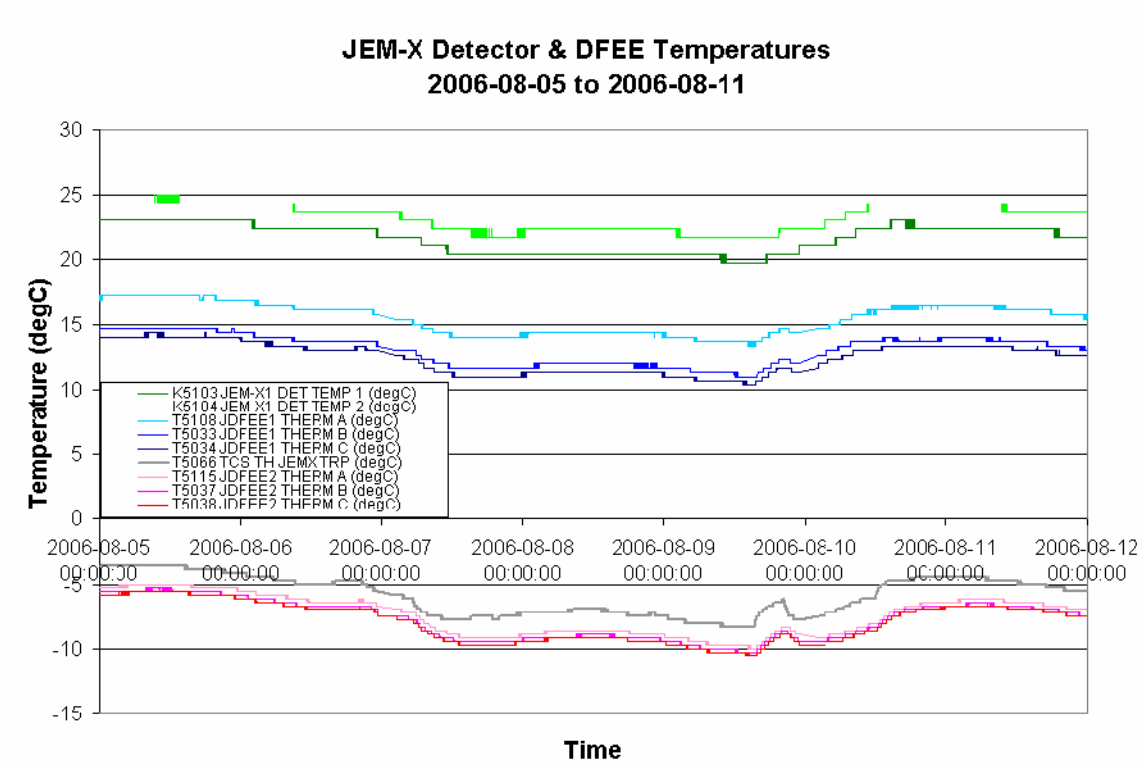
[1] Data sampled (1 frame in 4) and smoothed to remove spikes in S/W Trigger due to flushing of buffer after slews.



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 graph[2].

[2] Data sampled (1 frame in 8)



JEM-X Daily Report

2006-08-05 (DOY 217, Rev 465)

Due to high count rates during the galactic Mid-latitude North observation, from 10:46Z until the end of the day the TM parameters K5136 BUFFER LOSS; K5449 HARDWARE TRIGGER and K5119 SOFTWARE TRIGGER frequently toggled between being OOL High and within limits.

At 16:27:52Z, during pointing ID 04650036, TM parameter K5119 SOFTWARE TRIGGER exceeded the Safe threshold for JEM-X1 of 40000 counts/8sec, causing JEM-X1 to make an autonomous transition to Safe mode. Two occurrences of OEM 189 JEM-X1 PROB DFEE 9 (Unexpected DFEE state reported in housekeeping) were received at this time, as the TM parameter K5462 DFEE STATE IASW was reporting state Setup while K5022 DFEE STATUS was Safe. Commanding to JEM-X1 from the Timeline was disabled and at 16:35:26Z FCP_JEM1_0040 was executed to command JEM-X1 to Safe mode. K5462 DFEE STATE IASW then also went to Safe and OEM 254 ERROR OFF was received. During the following pointing (ID 04650037), JEM-X1 was re-activated as follows:

- 17:22:06Z FCP_JEM1_0041 JEMX1 TRANSITION TO SETUP
- 17:23:11Z FCP_JEM1_1010 JEMX1 CONFIGURATION SETTING FOR SCIENCE OPS
- 17:54:27Z FCP_JEM1_0044 JEMX1 DATA TAKING executed with the planned observation parameters and commanding to JEM-X1 from the Timeline was re-enabled.

At 21:12:57Z, during the slew to pointing ID 04650041, TM parameter K5119 SOFTWARE TRIGGER exceeded the Safe threshold for JEM-X1 again, causing

JEM-X1 to make another autonomous transition to Safe mode, with two occurrences of OEM 189 JEM-X1 PROB DFEE 9. Commanding to JEM-X1 from the Timeline was disabled and at 21:15:21Z FCP_JEM1_0040 was executed to command JEM-X1 to Safe mode and OEM 254 ERROR OFF was received. During the following pointing (ID 04650042) JEM-X1 was re-activated as follows:

- 22:19:58Z FCP_JEM1_0041 JEMX1 TRANSITION TO SETUP
- 22:21:16Z FCP_JEM1_1010 JEMX1 CONFIGURATION SETTING FOR SCIENCE OPS
- 22:51:29Z FCP_JEM1_0044 JEMX1 DATA TAKING executed and commanding to JEM-X1 from the Timeline was re-enabled.

2006-08-06 (DOY 218, Rev 465)

Due to high count rates during the galactic Mid-latitude North observation, from the start of the day until 18:16Z the TM parameters K5136 BUFFER LOSS and K5449 HARDWARE TRIGGER frequently toggled between OOL High and back in limits.

2006-08-07 (DOY 219, Rev 465-466) to 2006-08-08 (DOY 220, Rev 466)

Nothing to report

2006-08-09 (DOY 221, Rev 466)

At 15:27:42Z TM parameter K5136 BUFFER LOSS went OOL High (value = 177), returning within limits at 15:28:22Z.

2006-08-10 (DOY 222, Rev 466-467)

Due to high count rates during the galactic Mid-latitude North observation, from 12:03Z until 17:19Z the TM parameters K5136 BUFFER LOSS; K5449 HARDWARE TRIGGER and K5119 SOFTWARE TRIGGER frequently toggled between OOL High and back in limits.

2006-08-11 (DOY 223, Rev 467)

Due to high count rates during the galactic Mid-latitude North observation, from 05:21Z until 17:46Z the TM parameters K5136 BUFFER LOSS; K5449 HARDWARE TRIGGER and K5119 SOFTWARE TRIGGER frequently toggled between being OOL High and within limits.

At 13:42:09Z, after the reaction wheel bias at the end of pointing ID 04670036, TM parameter K5119 SOFTWARE TRIGGER exceeded the Safe threshold for JEM-X1 again, causing JEM-X1 to make an autonomous transition to Safe mode, with two occurrences of OEM 189 JEM-X1 PROB DFEE 9. Commanding to JEM-X1 from the Timeline was disabled and at 13:54:00Z FCP_JEM1_0040 was executed to command JEM-X1 to Safe mode and OEM 254 ERROR OFF was received. During pointing ID 04670038 JEM-X1 was re-activated as follows:

- 14:55:36Z FCP_JEM1_0041 JEMX1 TRANSITION TO SETUP

- 15:03:46Z FCP_JEM1_1010 JEMX1 CONFIGURATION SETTING FOR SCIENCE OPS
- 15:31:48Z ED KEDATA02 sent, with the Software Trigger limit set to 55000.

Commanding to JEM-X1 from the Timeline was re-enabled and JEM-X1 operations continued with the Software Trigger limit remaining at 55000 counts/8secs for the rest of the revolution to prevent a further transition of JEM-X1 to Safe mode during this observation.

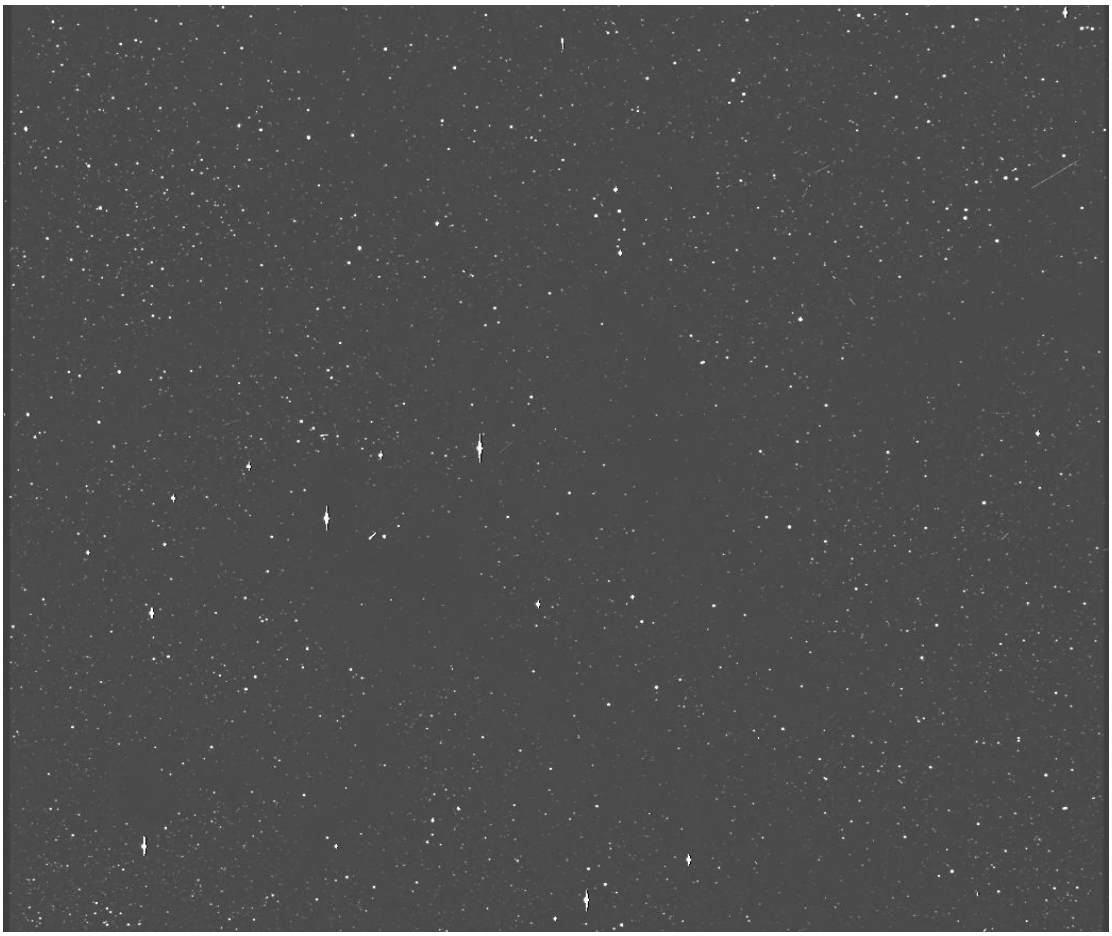
8.3.5 OMC Operations

2006-08-05 (DOY 217, Rev 465) to 2006-08-08 (DOY 220, Rev 466)

Nothing to report

2006-08-09 (DOY 221, Rev 466)

From 15:43:08 to 18:34:38, a Flat Field Calibration was successfully performed, this was followed from 18:35:09 to 19:07:14 by a Dark Current Calibration, both terminated successfully. An image captured during the calibration is shown below:



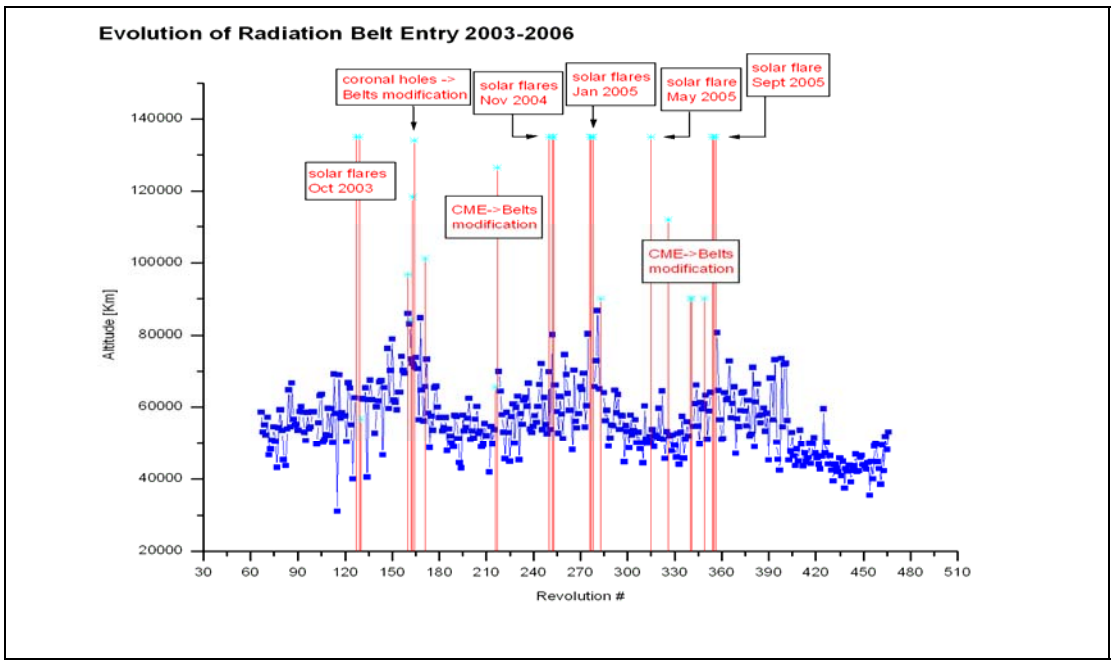
2006-08-10 (DOY 222, Rev 467) to 2006-08-11 (DOY 223, Rev 467)

Nothing to report

On DoY 218 at 19:54:39 and DoY 221 at 19:41:03 OMC was switched by the Timeline to SAFE mode, at the nominal time.

8.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

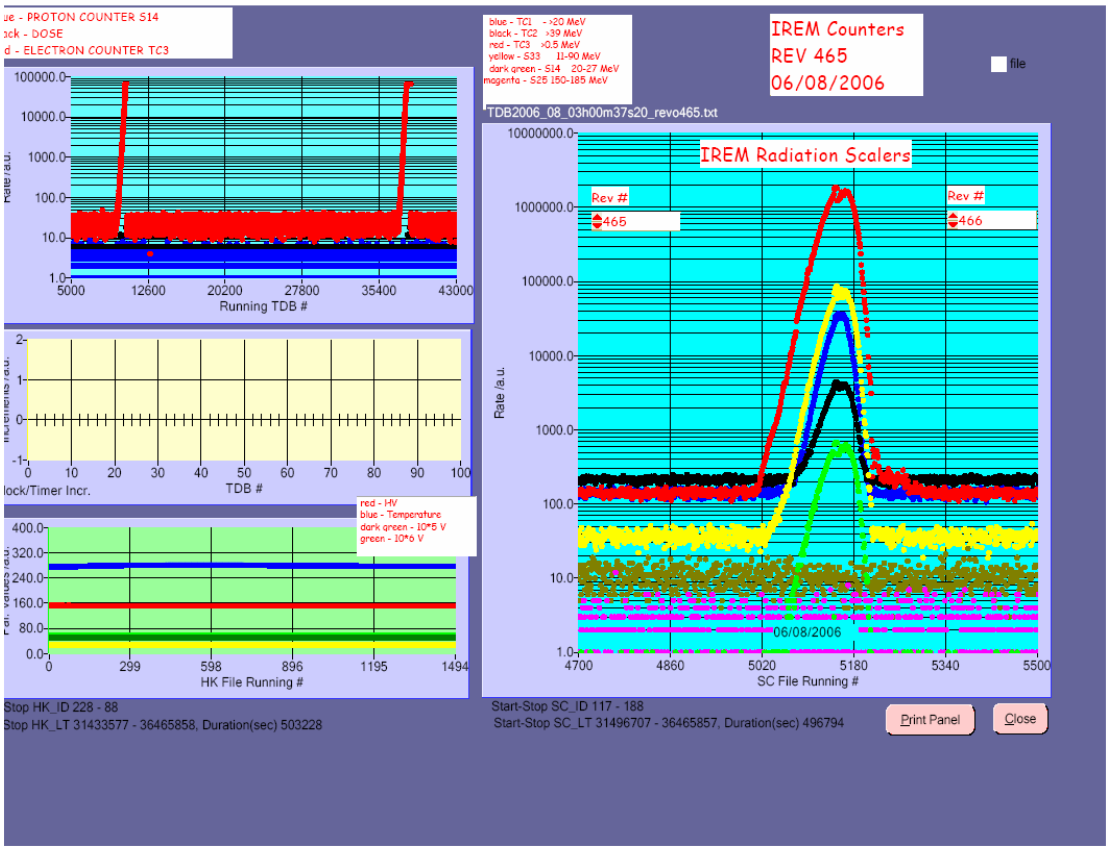
Nothing to report

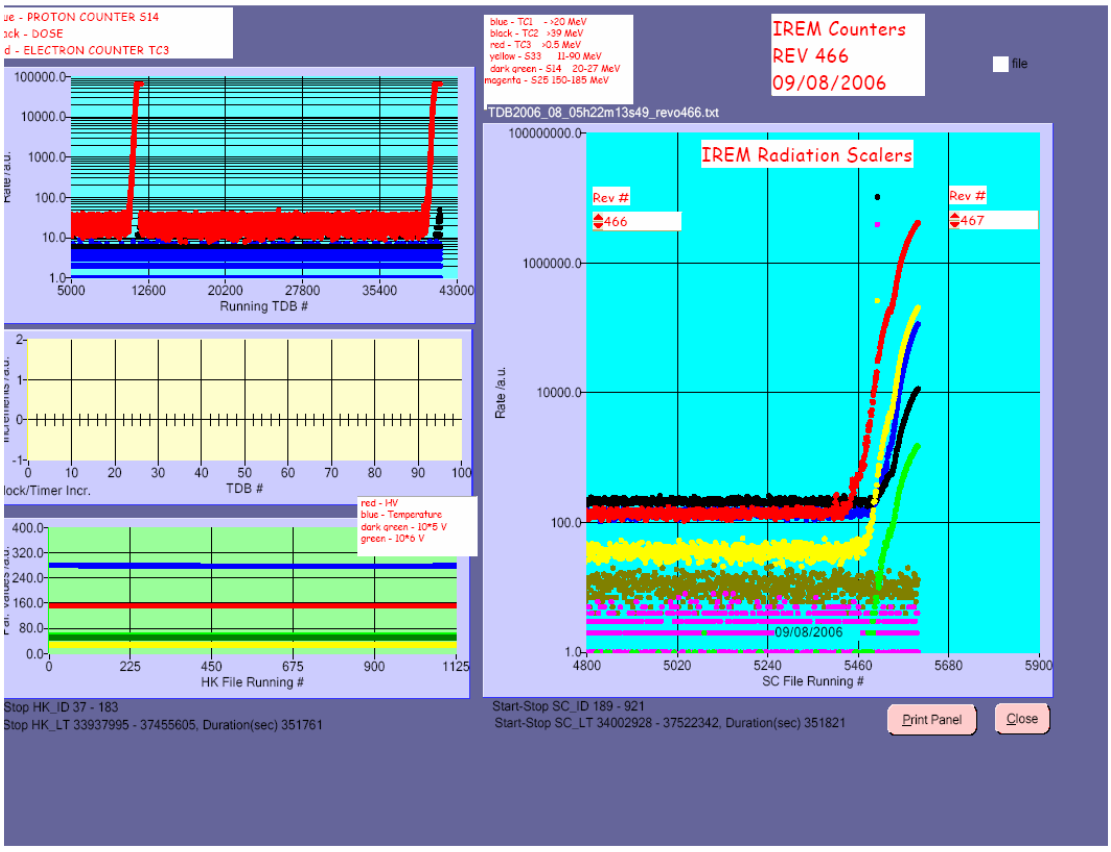
Electron Belts

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]
465	RAD_ENTR R 2006-08-06T19:54:34Z	2006-08 06 20:51:08	48241.1	2006-08-06 20:49:03	48411
466	RAD_EXIT R 2006-08-07T05:12:32Z	2006-08-07 04:18:14	<<44556.0	2006-08-07 04:29:03	38776
466	RAD_ENTR R 2006-08-09T19:41:01Z	2006-08-09 19:59:50	>53124.5	2006-08-09 20:39:54	47664
467	RAD_EXIT R 2006-08-10T04:58:38Z	2006-08-10 04:12:14	<<42293.7	2006-08-10 04:19:54	39584
456	RAD_ENTR R 2006-07-07T22:02:54Z	2006-07-07 23:55:18	44869.8	2006-07-07 23:33:37	48049

Reference
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)
Radiation Spike

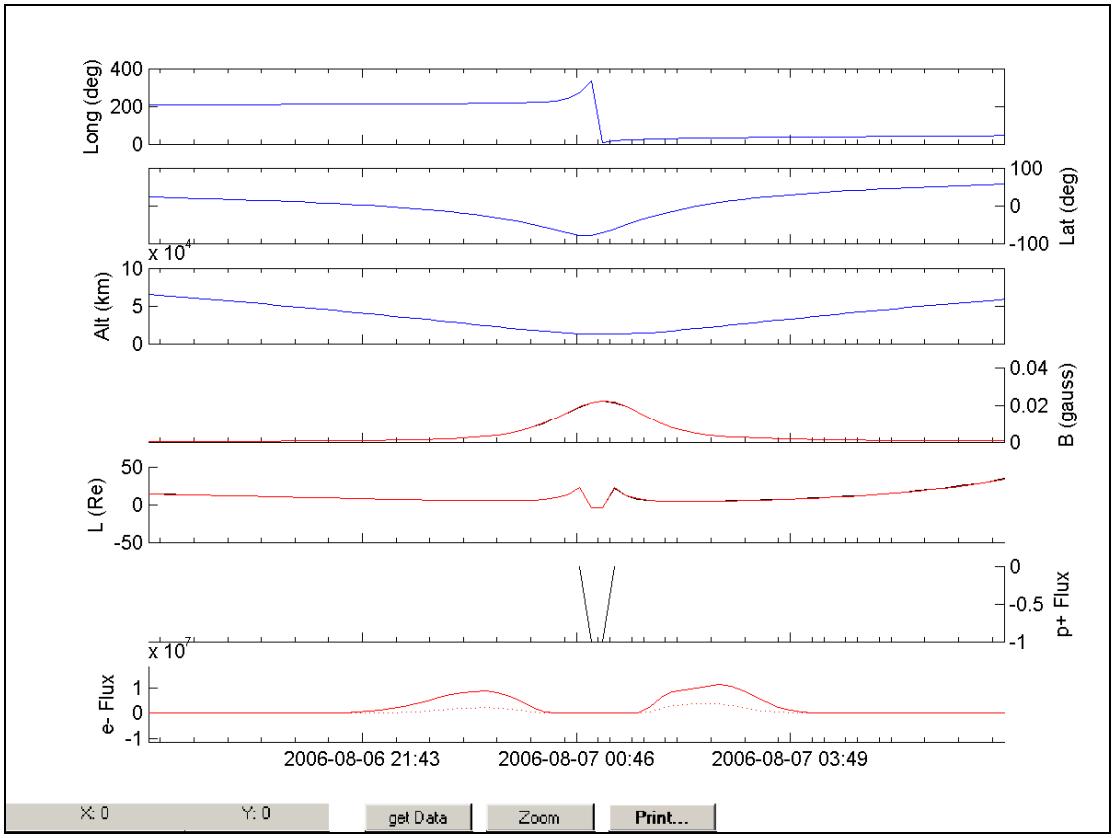
IREM radiation counters:



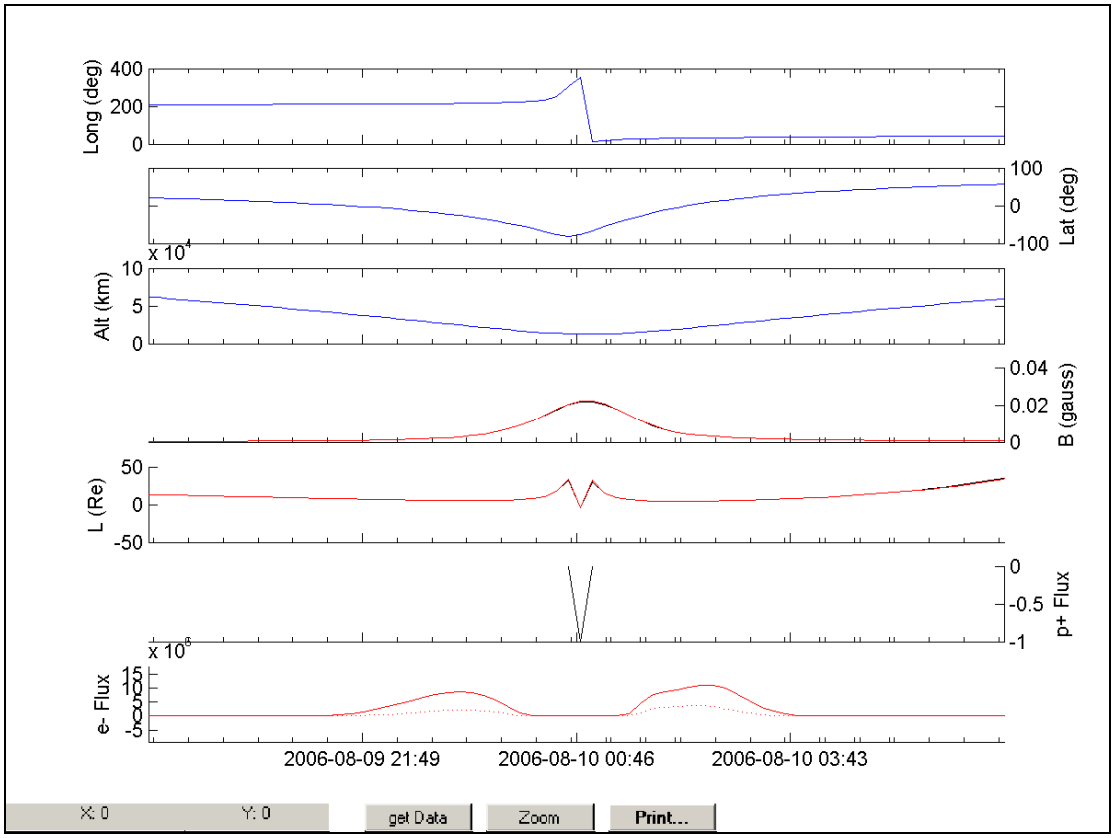


IREM Predicted Radiation Belt Passages:

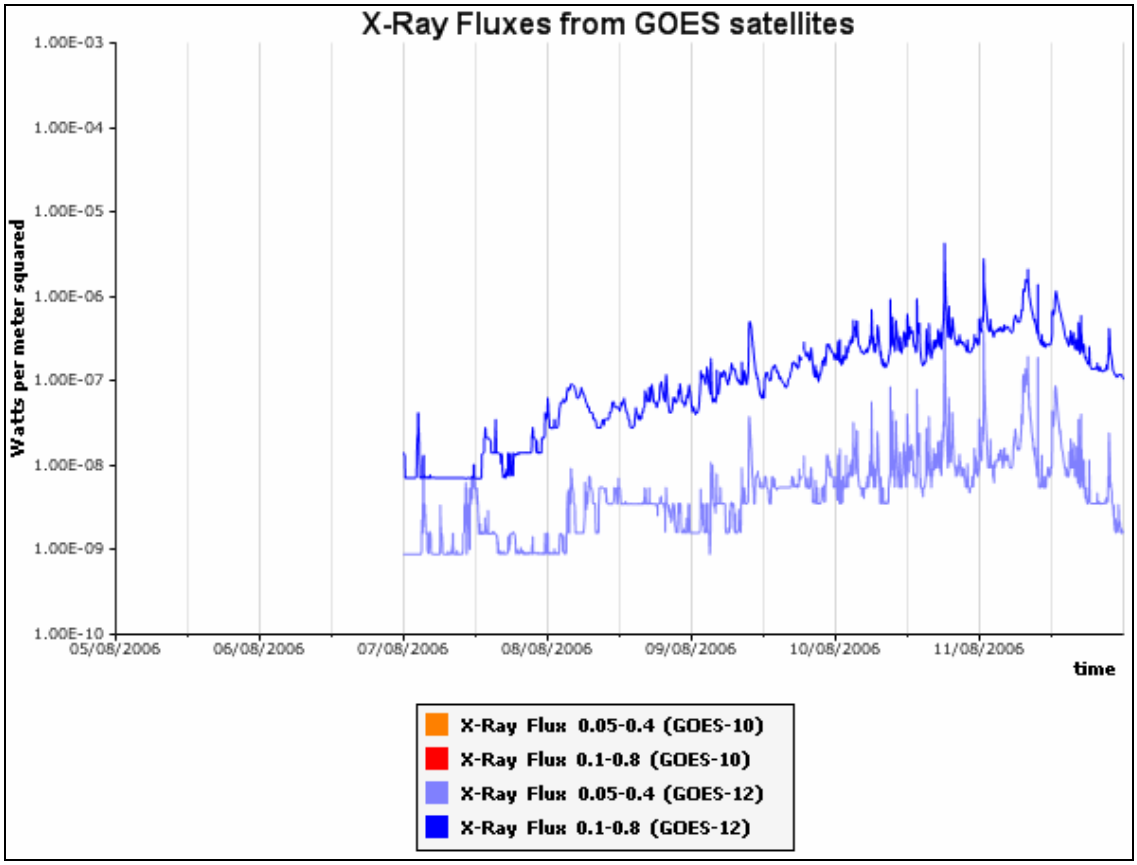
Rev 465



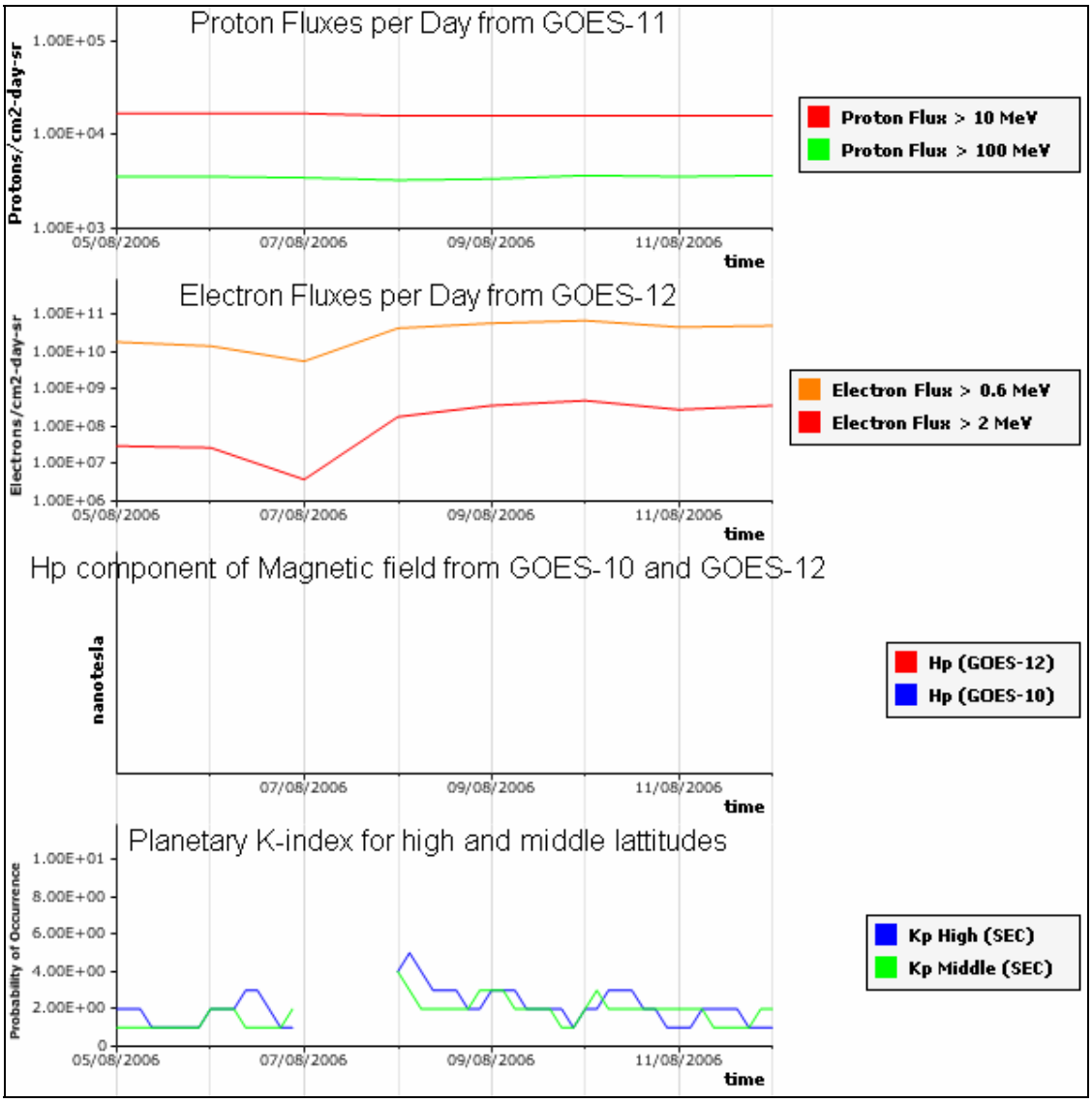
Rev 466



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.