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

INTEGRAL
Mission Report

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

No. 136
Week 17

02.05.05

Routine Phase

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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 23.04.05 until 29.04.05 (both dates inclusive) and covers the revolutions 308, 309 & 310.

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 were the Scutum Arm of the Galaxy; an OMC Flat Field target (RA 17:05:12.00; DEC +50:47:60.0) and M51 (RA 13:29:52.37; DEC +47:11:40.8). The activities consisted of grid, staring and raster dithering observations. In addition, OMC Flat Field and Dark Current calibrations were performed.

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.

2 slews were missed from the Timeline due to a problem at the DSS-16 ground station after the station handover on DoY 114.

An undetected False Event on the STR caused the flickering of the pointing-bit on DoY 116. The event was however not seen at the BCP level and therefore had no impact on the observations.

The fuel consumption over the period between 22/04/2005 and 29/04/2005 was 0.104 kg. The remaining propellant is in the order of 161.638 kg on the 29th of April.

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 was identified.

3.1.5 RFS

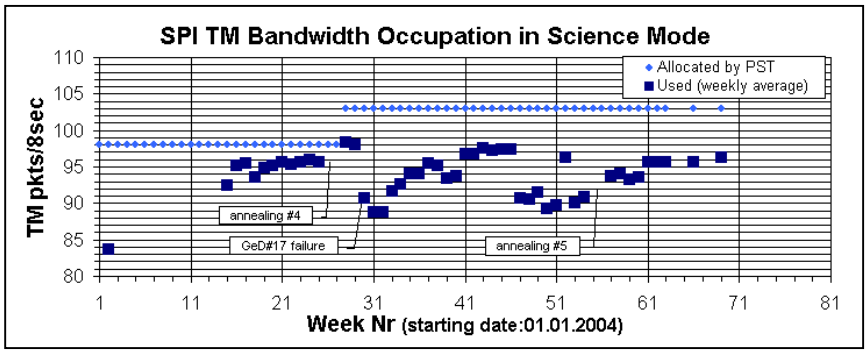
The RF subsystem is working properly. The link margin is sufficient to ensure proper TM reception and execution of commands with the ranging channel enabled.

3.2 Payload

3.2.1 SPI

The overall status of the instrument in this week is nominal.

During the reporting period, the instrument has been kept in photon-by-photon mode, with spectra TM enabled, an assigned TM bandwidth in the science observation windows of 103 pkts/cycle (but only 102 effective due to TM leakage anomaly INT_SC-107) and an actual occupation of 96.8 pkts/cycle average. The Stirling compressors are working well, maintaining the detector cold-plate temperature within 85+/-1K.
The following plot shows the allocated and the actual telemetry bandwidth occupation evolution since January 2004.



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

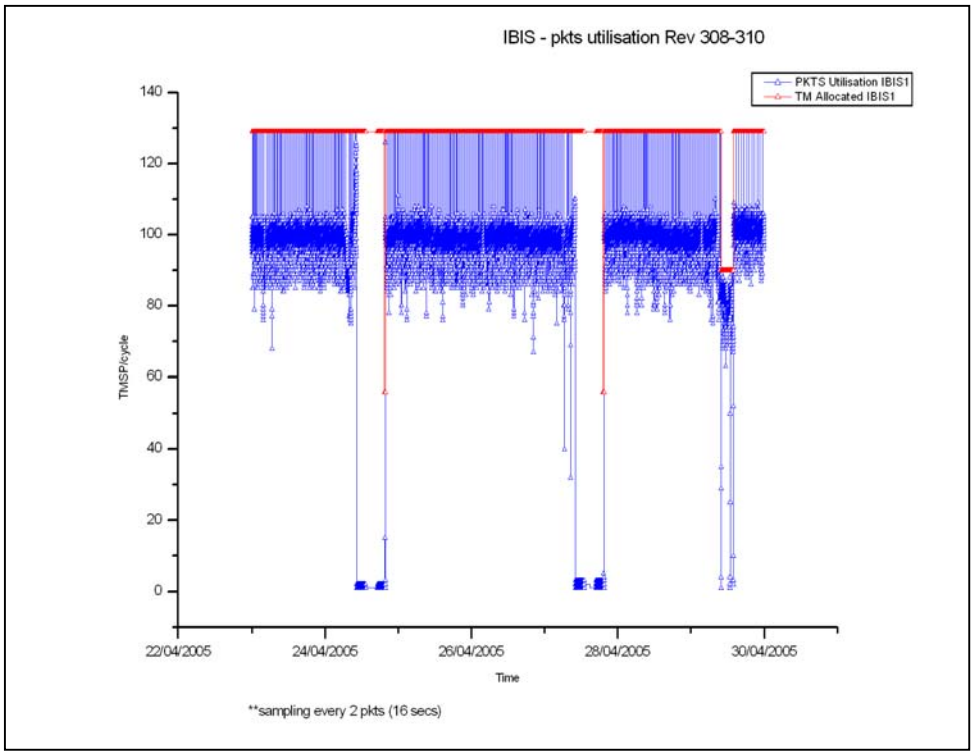
3.2.2 IBIS

The Overall status of the unit is Nominal.

The week was characterised by low to moderate solar activity.

During the reporting period the PST allocation to IBIS was most of the time 129 TMPS/cycle, except the period between 2005-04-29 10:03:19 and 2005-04-29 13:55:35, during the execution of OMC FFC, when the allocation was 90 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 100.00 TMPS/cycle, down 11.95 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 during science observations with a TM allocation of 8 packets/cycle and JEM-X2 was dormant (DFEE OFF) with a TM allocation of 1 packet/cycle.

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. During the period from 2005-04-29T10:02Z to 2005-04-29T13:54Z (revolution 310), OMC Flat Field and Dark Current calibrations were performed and therefore OMC was in FFCalibration followed by DCCalibration modes and had a TM allocation of 63 packets/cycle.

During this reporting period, 232 of the 235 planned science pointings for OMC were executed nominally. Two pointings (PID 03080100 and 03080101) were missed due to a problem with DSS-16 on 2005-04-24 and one pointing (PID 03090103) on 2005-04-27 was started late, also due to a problem with DSS-16.

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low several times throughout the week, but always returned within limits after a few minutes (between 3-7 minutes). In addition, on 2005-04-25 at 08:31:13Z an under-temperature was detected on this thermistor by the SECL task, resulting in an issuing of the TCs to close the TSW OMC LNSA, which was already closed.

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 to moderate solar activity.

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

4 Ground Facilities

The performance of the Operational ground facilities was very good this week, well above the system performance requirements, 245 pointings were executed correctly, 2 were lost.

4.1 Mission Operations Centre

The performance of the MOC was excellent this week, with no pointings lost.

4.2 Ground Stations & Network

The performance of the ground stations and Network was good this week. Two pointings were lost due to problems with DSS-16. There were few occasions when the TM/TC line both from REDU and DSS-16 dropped. The overall performance was well above the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning
Mission planning for revolutions 316 - 318 generated and sent to MOC. No ToO request was received. PSF's up to rev 318 have been received. TSF for rev 310 and 311 were received.

2. Observation status
No input received from ISDC.

3. ISOC science data archive

Development ongoing. The plan to have a beta version available by mid May was confirmed in a progress meeting this week.

4. ISOC system
The version 10.8.2 of the ISOC system is still in use without problems. The ISOC web pages, both external ones and internal ones including ISOC configuration control system have now moved to a dedicated server in ESAC. The new domain integral.esac.esa.int has been created.

5. Problems
The problem reported last weeks with unavailable science staff in ISOC, is still not yet fully resolved. For one company the finalisation is still pending.

4.3.2 ISDC

Status of ISDC observation processing on 02/05/2005:

- Latest Standard Analysis completed: observation 02297000002 (NGC6240, Revolution 280-282) on 30/04/2005

- Latest products archived: observation 02297000013 (CAS A, Revolution 261-269) on 23/03/2005

- Latest observation products sent to the observer: observation 02297000013 (CAS A, Revolution 261-269) on 24/03/2005

5 Special Events

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 113, at 08:22Z the TC link was dropped. Consequently TC A2561 failed release from the timeline.
- On DoY 113, at 08:36Z the TC link was dropped. AGC level was unstable (several peaks).
- On DoY 113, at 16:09Z both receivers were locked (OOL TM RD0001D: Rx1 and Rx2 lock alarm). The reason is unknown, and investigation is on-going.
- On DoY 114, at 07:25Z the ground station handover from REDU to DSS-16 was delayed due to problems with TC link.
- On DoY 114, at 07:30Z the timeline was stopped due to TC problem at DSS-16. Consequently pointings 03080100 and 03080101 were missed. The timeline was restarted at 08:25Z after resweeping the uplink to DSS-16 (DR # G105569).
- On DoY 116, at 11:22Z there were several drops of the TC link due to problem at the GS, “no decoder bitlock” indication was received in CLCW telemetry. The reason is unknown, and investigation is on-going.
- On DoY 116, at 19:21Z “no decoder bitlock” indication was received in CLCW telemetry. The reason is unknown, and investigation is on-going.
- On DoY 117, at 07:02Z a TM drop at REDU was reported due to the DSS-16 carrier-up 2 min earlier than requested.

- On DoY 117, at 07:52Z the AD commanding mode was lost.
- On DoY 117, there were several drops in TM link from DSS-16, and several bad frames reception as well.
- On DoY 118, at 08:14Z, 08:20Z and 08:28Z, "no decoder bitlock" indication was received in CLCW telemetry. The reason is unknown, and investigation is on-going.
- On DoY 118, at 09:59Z, there were several TC/TM link drop from REDU (GFCC reported power problem on one modem).

The following anomaly report was entered into the ARTS system.

AR id	Date Created	Subject	Segment	Status
INT-2726	26/04/2005	IMCS E1.2 - Inconsistent VPD displays	IMCS	Pending

7 Future Milestones

The next Eclipse season will start on 18th May.

Upgrade of the NCTRS (Network Controller and Telemetry Router System) for Integral to release 9.1.4. This will cure some known problems with the current release and is also compatible with TCP IP communications to ESA Stations as well as X25. The upgrade is currently planned to take place in May.

Upgrade of the IMCS, to use S2K release 3.1, a major update of the MCS is currently undergoing acceptance testing. A date for installation on the operational machines has not yet been decided.

Change of communication protocol to ESA Station from X25 to TCP IP, testing of this change will start in April. It will be used operationally only once testing is complete and the operational machines have been upgraded with the latest versions of the NCTRS and MCS.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 309

The observations in revolution 309 consisted of a grid observation of the Scutum Arm of the Galaxy, performed throughout the available observation time (~61.5 hours).

Throughout this observation all instruments were in their nominal science modes, except for JEM-X2 for which the DFEE was off, and the TM allocation was IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5.

Revolution 310

The observations in revolution 310 began with a grid observation of the Scutum Arm of the Galaxy lasting ~37 hours, followed by a ~3.5 hour staring observation at the OMC Flat Field target (RA 17:05:12.00; DEC +50:47:60.0), during which OMC Flat Field and Dark Current calibrations were performed. A raster dithering observation of

M51 (RA 13:29:52.37; DEC +47:11:40.8) was then performed for the remaining ~19.5 hours of observation time.

Throughout these observations SPI, IBIS and JEM-X1 were in their nominal science modes and the JEM-X2 DFEE remained off. During the OMC Flat Field observation OMC was in FFCalibration followed by DCCalibration mode and the TM allocation was IBIS 90; SPI 84; JEM-X1 8; JEM-X2 1; OMC 63. For the other observations OMC was in Science Normal mode and the TM allocation was IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

```
2005-04-07T03:56:51.000Z     162.0269    F   Automatic TM processing.
2005-04-09T18:55:29.000Z     162.0095    F   Automatic TM processing.
2005-04-11T05:15:09.000Z     161.9784    F   Automatic TM processing.
2005-04-12T18:43:53.000Z     161.9711    F   Automatic TM processing.
2005-04-14T05:01:01.000Z     161.9445    F   Automatic TM processing.
2005-04-15T18:31:38.000Z     161.9368    F   Automatic TM processing.
2005-04-17T04:38:13.000Z     161.8691    F   Automatic TM processing.
2005-04-18T18:14:09.000Z     161.8549    F   Automatic TM processing.
2005-04-19T03:08:34.000Z     161.8321    F   Automatic TM processing.
2005-04-21T18:05:29.000Z     161.7674    F   Automatic TM processing.
2005-04-22T07:26:26.000Z     161.7421    F   Automatic TM processing.
2005-04-24T17:49:45.000Z     161.7361    F   Automatic TM processing.
2005-04-26T04:17:40.000Z     161.7159    F   Automatic TM processing.
2005-04-27T17:36:16.000Z     161.6996    F   Automatic TM processing.
2005-04-29T04:05:16.000Z     161.6378    F   Automatic TM processing.

This report was generated  Fri Apr 29 08:00:23 GMT 2005
```

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, 23/04/2005 - 29/04/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 110 Open Loop Slews, 135 Closed Loop Slews and 4 Momentum Bias were executed. 2 slews were missed. This is equivalent to a 0.8 %.

23/04/05 (Day of Year 113, Revolution 308)

Nothing to report.

24/04/05 (Day of Year 114, Revolution 308-309)

Slews/pointings missed due to problems at the station, Goldstone DSS-16: At 07:25 and after station handover to DSS-16, a problem at the station (DR# G105569) caused the uplink verification stage of the sent test commands to timeout on the "Onboard Reception" stage. The problem was apparently cured by an antenna re-

sweep. The interruption thus resulted in the missing of slews/pointings 03080100 and 03080101 from the timeline. The schedule was rejoined by a manual open loop slew, followed by a manual close loop slew. Slew 03080102 was executed from the Automatic Timeline.

25/04/05 (Day of Year 115, Revolution 309)

Nothing to report.

26/04/05 (Day of Year 116, Revolution 309)

Flickering of the Pointing-Bit due Pitch and Yaw errors, caused by an undetected False Event on the STR: At 00:54:59, an undetected False Event on the STR caused jumps of 38.6 arc-sec and –93.98 arc-sec in the Y and Z positions of the Guide Star. These are both higher than the OTF thresholds on the pitch and yaw axis and resulted in the pointing-bit to drop for one cycle. The magnitude 8.05 Guide Star was picked by the ACC after an open loop slew and was located at CCD coordinates [-18254, -16247]. The event had no impact on the observation, as it was not seen at the BCP level.

27/04/05 (Day of Year 117, Revolution 309-310)

Nothing to report.

28/04/05 (Day of Year 118, Revolution 310)

Nothing to report.

29/04/05 (Day of Year 119, Revolution 310)

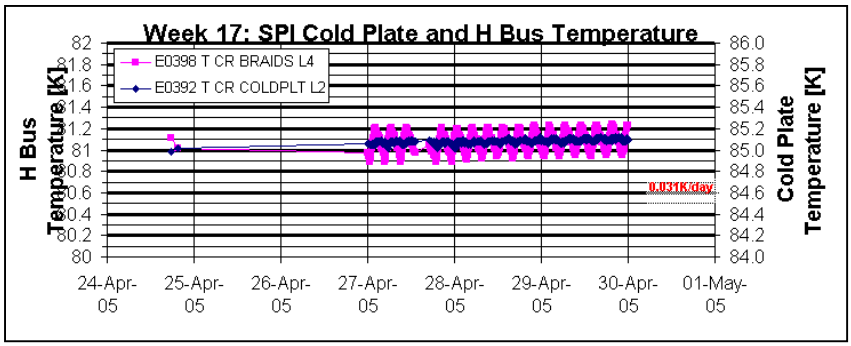
Nothing to report.

8.3.2 SPI Operations

Stirling compressors and Cryostat:

The performance of the compressors is nominal. The cold plate temperature was maintained at 85K+/-1K over the reporting period, showing the expected positive drift.

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



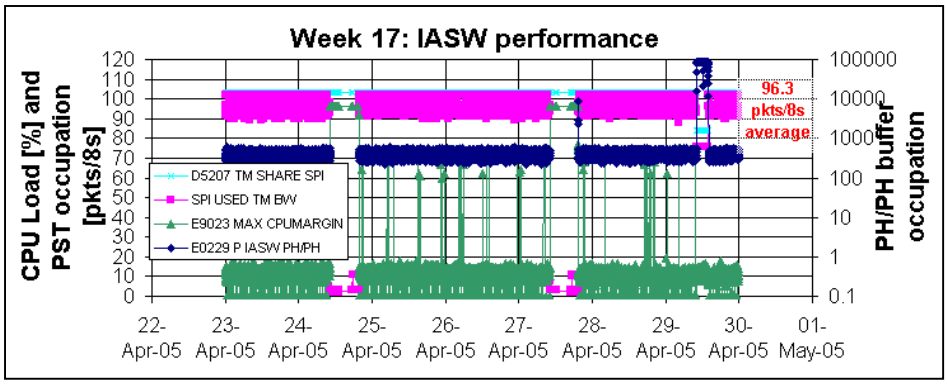
DPE & IASW:

The IASW performance is nominal. The PST TM bandwidth allocation was 103 pkts/cycle in the science windows; the actual TM bandwidth usage was:

- 102 pkts/cycle peak, due to the TM leakage anomaly;
- 96.8 pkts/cycle average in science mode.

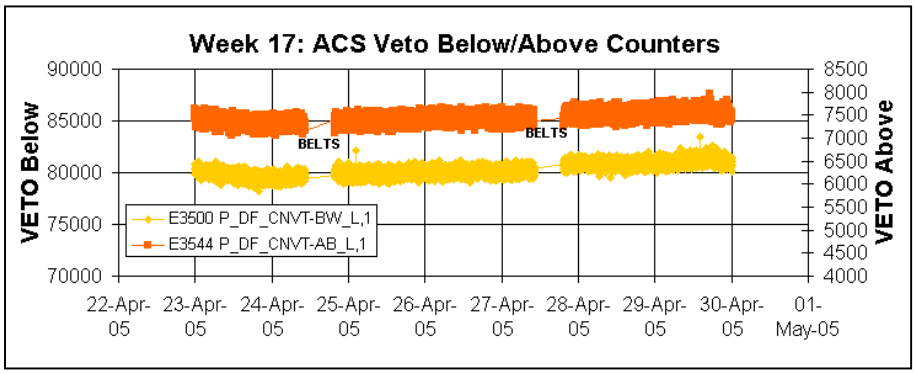
The temporary workaround to the TM leakage anomaly (INT_SC-107), consisting in the manual upload at every beginning of revolution of a new PST rearranged to avoid the problem, is still applied.
Due to the failure of the ground DPE used for testing, activities with the SPI simulator in Toulouse are suspended and validation of software fixes to the anomaly is stopped.

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



ACS:

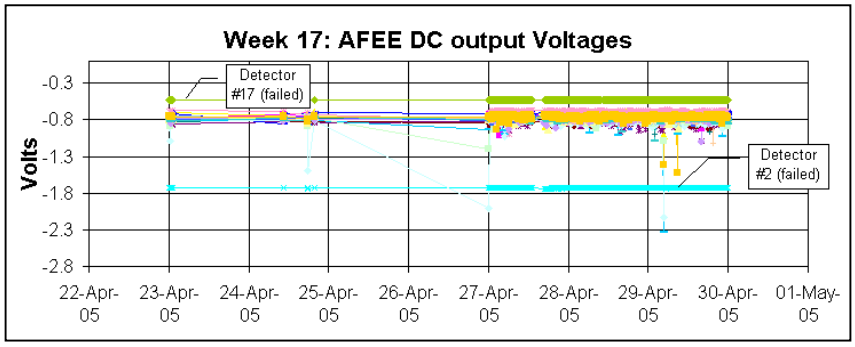
The performance of the ACS is nominal.
The following plot shows the ACS overall count rate evolution during the reporting period.



AFEE and Germanium Detectors:

The performance of the detectors is nominal except for the detector #2, failed since 06.12.2003, and detector #17, failed since 17.07.2004.

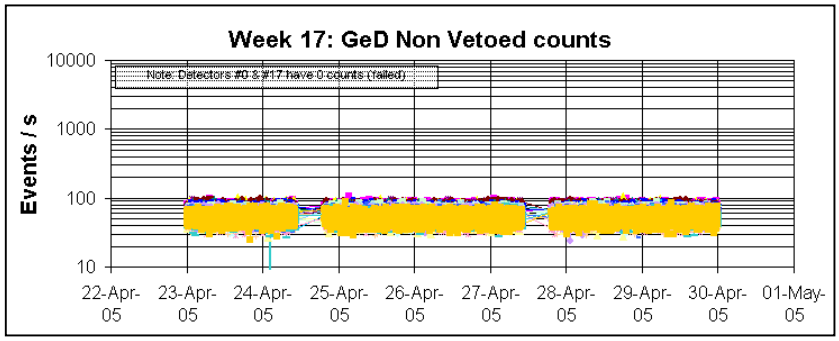
The following plot shows the AFEE dc output signals during the reporting period.

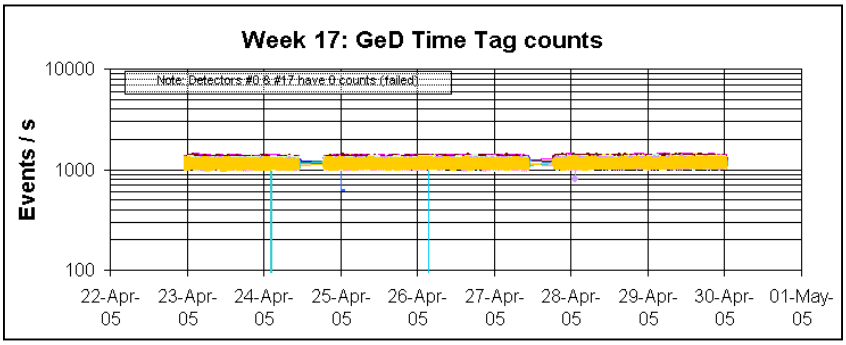


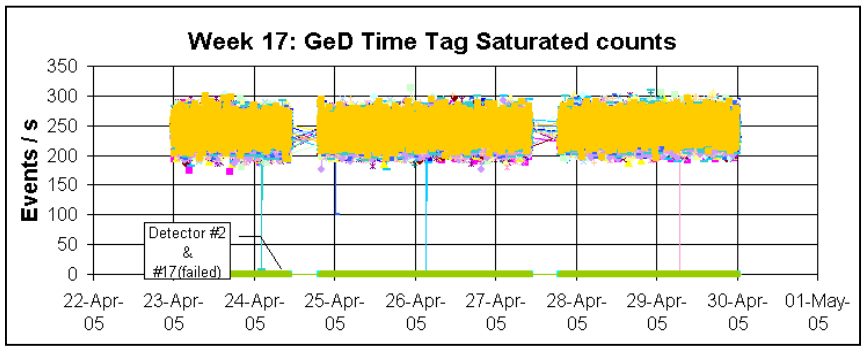
DFEE:

The performance of the unit is nominal.

The following plot shows the Non Vetoed event rates, processed by the DFEE during the reporting period. The count rate of each detector is within the expected range, except for the failed detector #2 and #17.





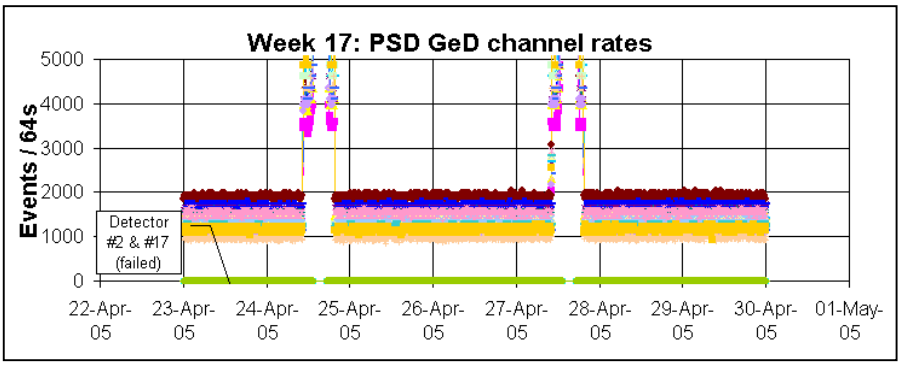


PSD:

The performance of the unit is nominal.

Following the execution of OCR#191 (PSD input channels #2 and #17 disable), executed at belts entry of rev.290), the channel rates blocking malfunction did not appear again. It was therefore decided to keep this setting.

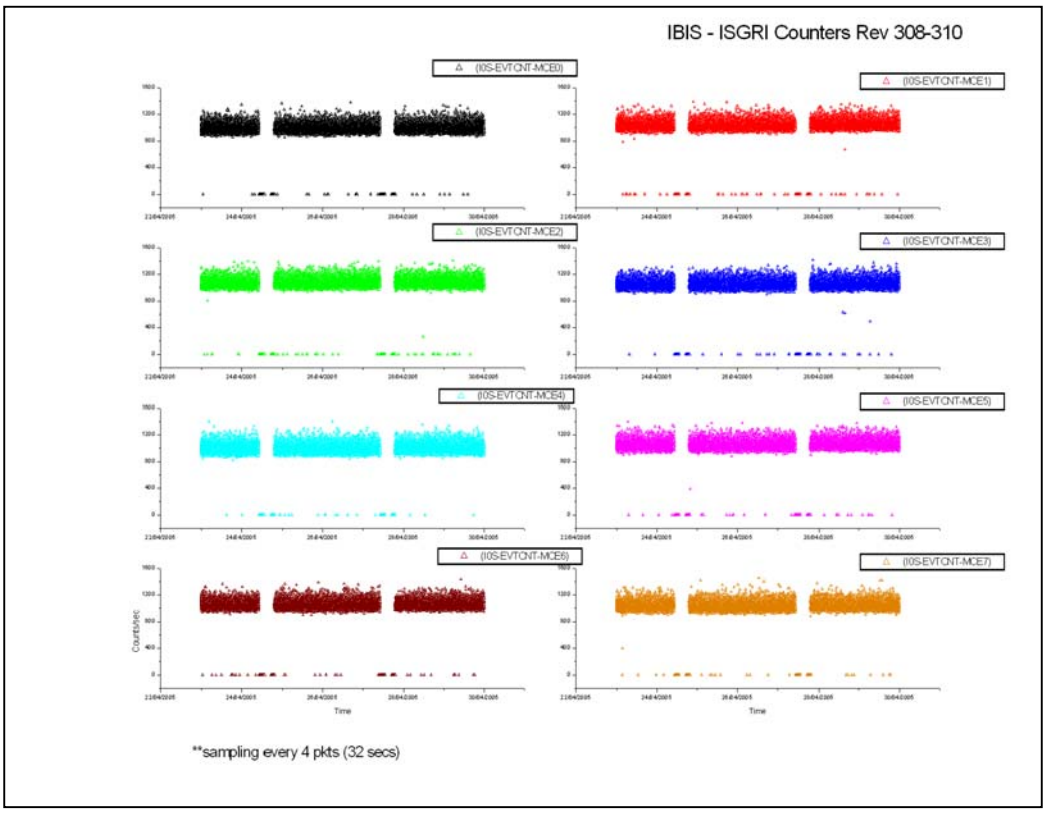
The following plot shows the PSD channel rates during the reporting period.



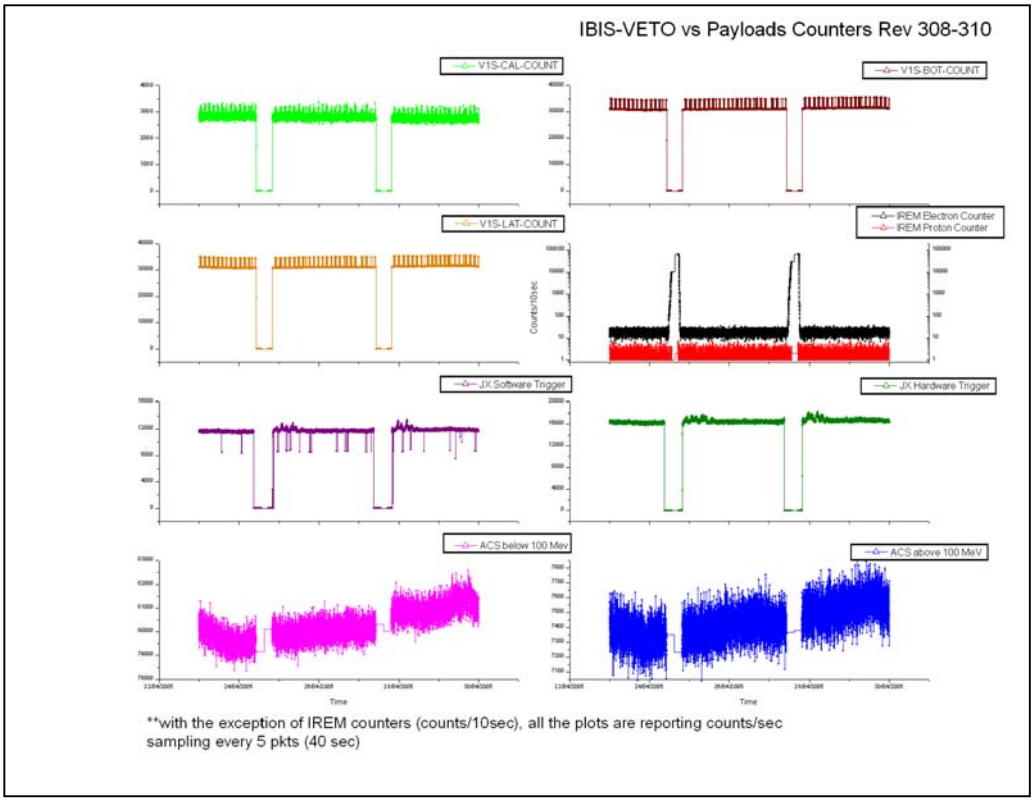
8.3.3 IBIS Operations

IBIS Events Counters Plots.

ISGRI Counters:

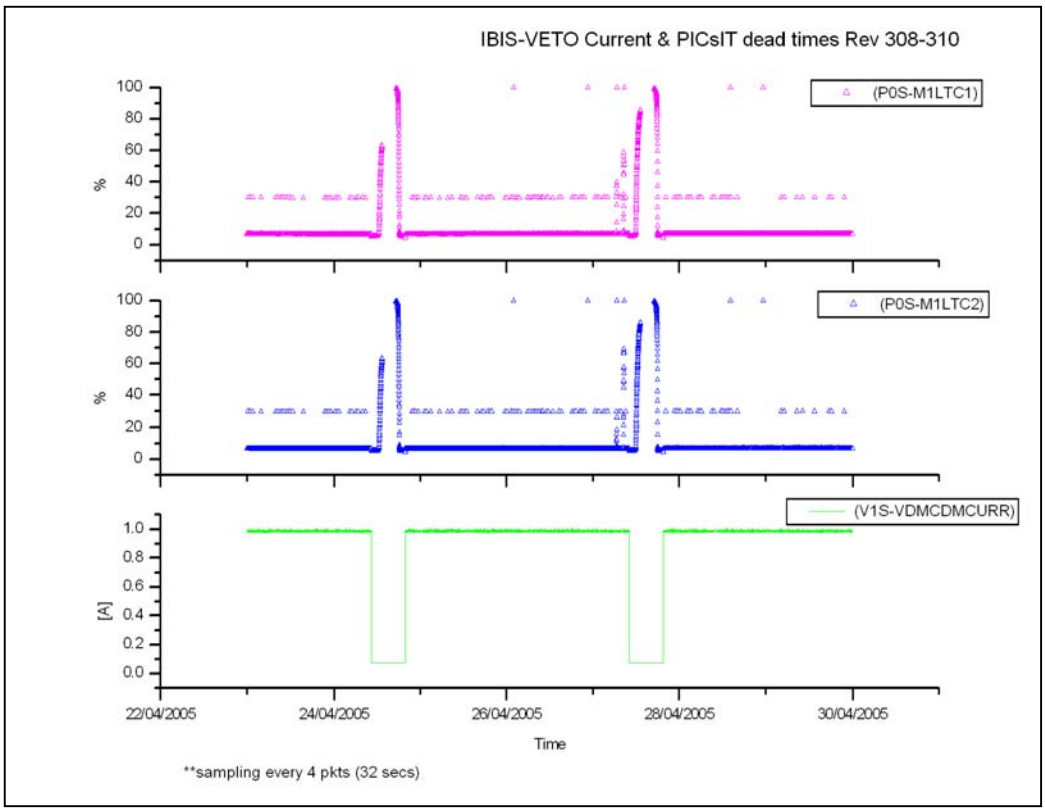


VETO vs Payloads Counters:

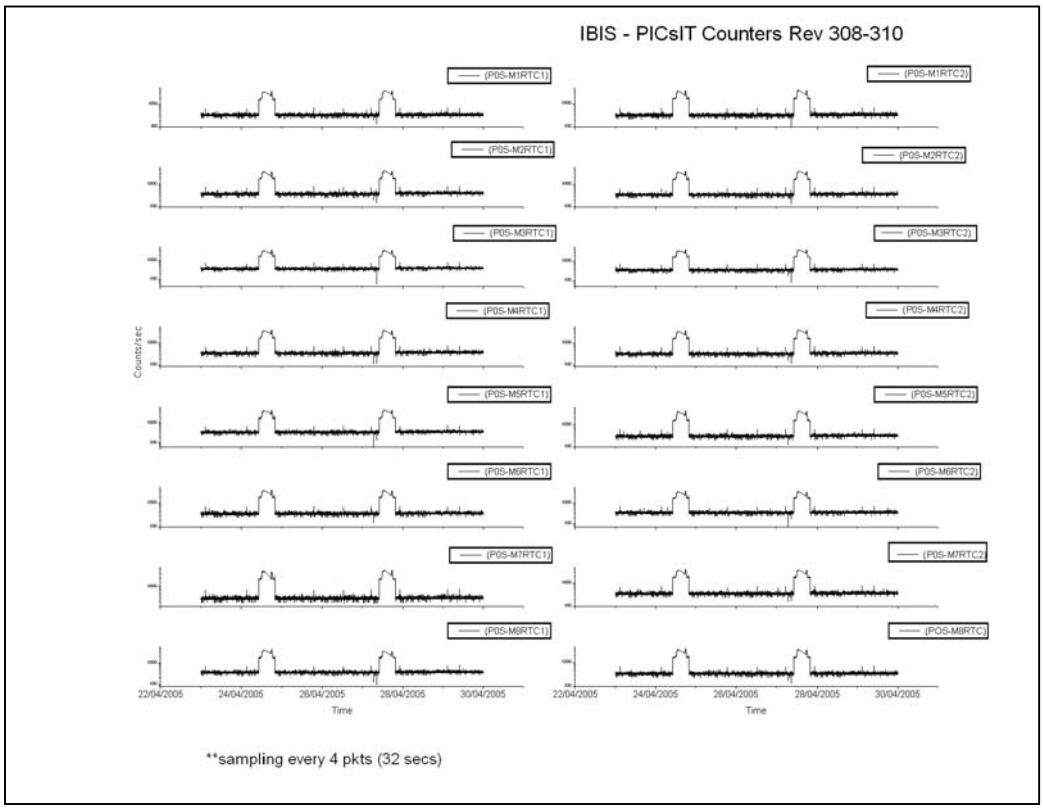


The week was characterised by low to moderate solar activity.

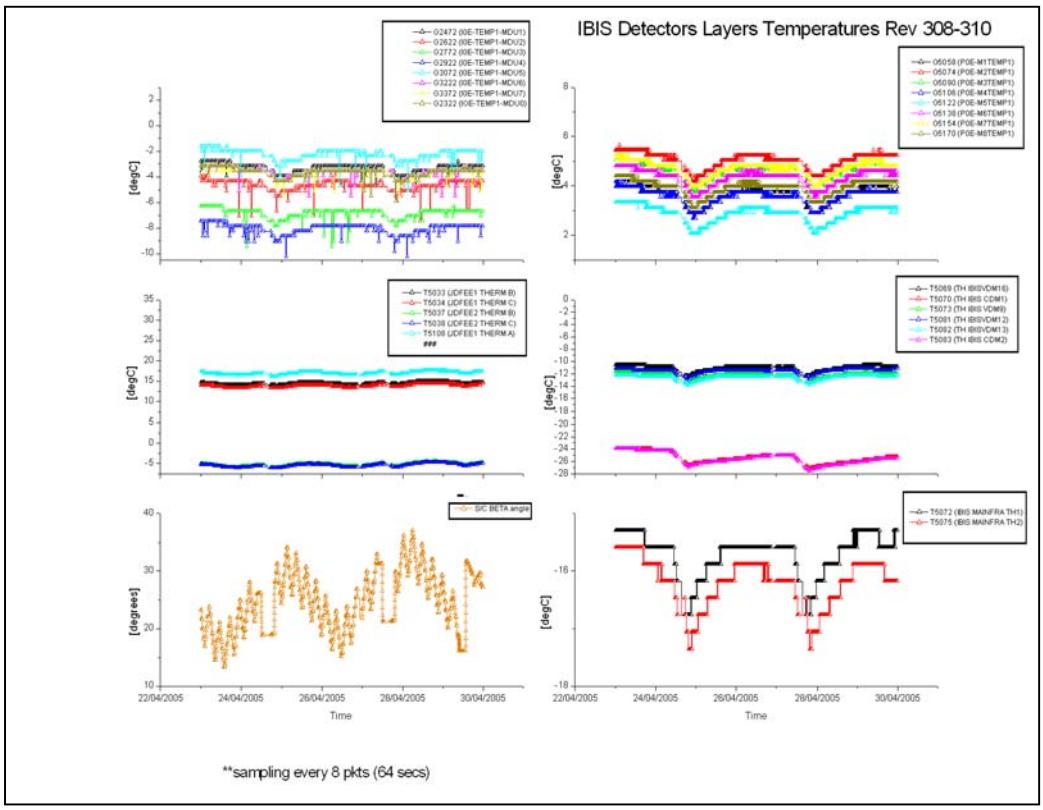
Veto Current:



Picsit Counters:



IBIS Detectors ayers Temperatures:



IBIS daily report:

DoY 2005.113 (23/04/2005):

Nothing to report.

DoY 2005.114 (24/04/2005):

At 10:24Z TM parameter G8015 (S1E-A2 PMT V) went out of limit 'high' with the value of 29.4V (limit value). It went back inside limit at 19:50Z. As this happened inside radiation belts, according to V-VLT-1 no action was taken.

At 17:49Z TM G5013 (POS-M3RTC2), TM G5017 (POS-M4RTC1) and TM G5037 (POS-M8RTC2) toggled OOL high for about one hour. According to OOL reaction P-CNT-1, as this happened during belts passage no action was taken.

DoY 2005.115 (25/04/2005):

Nothing to report.

DoY 2005.116 (26/04/2005):

Nothing to report.

DoY 2005.117 (27/04/2005):

At 06:30Z, TM families G5068 and G5072 (POS-MiF #1 and #2 ERRF) failed SCC.
At 06:37Z, TM families G5002 and G5003 (POS-MiRTC #1 and #2) went OOL 'low-low'.
At 06:40Z the OEM id 132 class 0 "IBIS1 IASW HEPI RESYNCHRONISED" was reported.
According to reaction P-CNT-1 that describes the coincidence of these 3 events outside Radiation Belts, no action was taken. IBIS was monitored for 15 minutes during which all the parameters returned to within their limits.

At 08:30Z, TM families G5068 and G5072 (POS-MiF #1 and #2 ERRF) failed SCC.
At 08:38Z, TM families G5002 and G5003 (POS-MiRTC #1 and #2) went OOL 'low-low'.
At 08:42Z the OEM id 132 class 0 "IBIS1 IASW HEPI RESYNCHRONISED" was reported.
According to reaction P-CNT-1 that describes the coincidence of these 3 events outside Radiation Belts, no action was taken. IBIS was monitored for 15 minutes during which all the parameters returned to within their limits.

At 10:10Z TM parameter G8015 (S1E-A2 PMT V) went out of limit 'high' with the value of 29.4V (limit value). It went back inside limit at 19:36Z. As this happened inside radiation belts, according to V-VLT-1 no action was taken.

At 12:45Z TM G5002 (POS-M1RTC1) TM G5013 (POS-M3RTC2), TM G5018 (POS-M4RTC2) and TM G5022 (POS-M5RTC1) toggled OOL high. According to OOL reaction P-CNT-1, as this happened during belts passage no action was taken.

Similarly, at 17:41Z TM G5002 (POS-M1RTC1) TM G5013 (POS-M3RTC2), TM G5018 (POS-M4RTC2) and TM G5022 (POS-M5RTC1) toggled OOL high. According to OOL reaction P-CNT-1, as this happened during belts passage no action was taken.

DoY 2005.118 (28/04/2005):

Nothing to report.

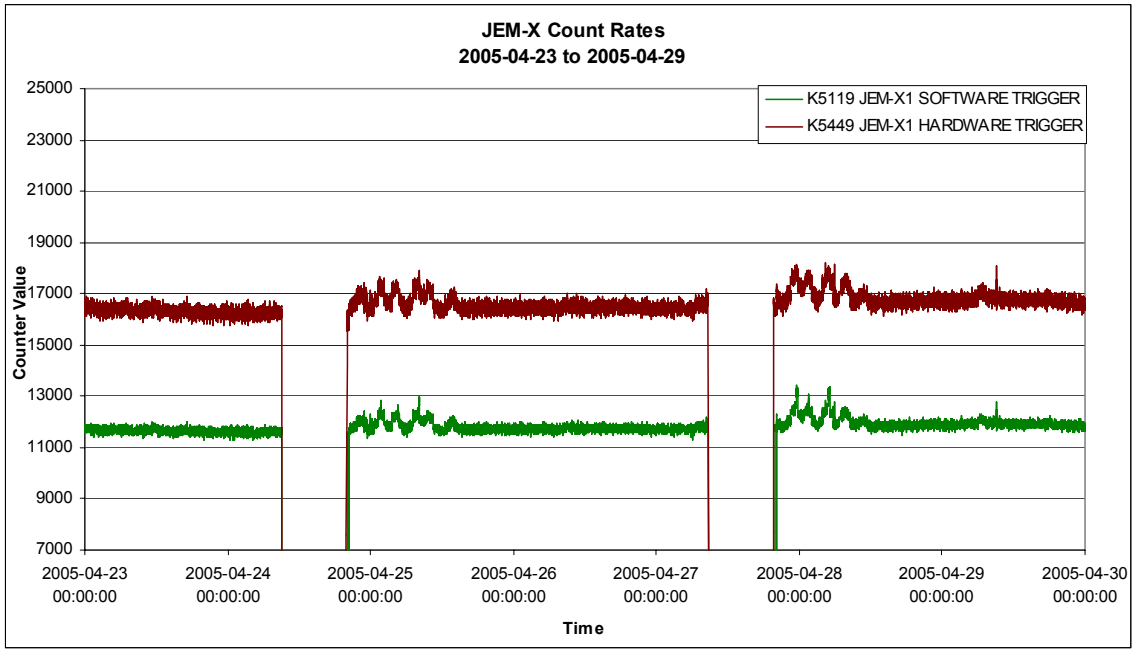
DoY 2005.19 (29/04/2005):

At 12:52Z the OEM id 167, class 2 "IBIS1 PICSIT NOISY SEMIMODULE SIGNALLING: ORIGIN SM COORD (Y, Z)" was reported with parameters: G1512=48 for Y coordinate, and G1513=16 for Z coordinate. No action was taken since the OEM "Killed Pixel Notification" was not reported. Investigation is ongoing.

8.3.4 JEM-X Operations

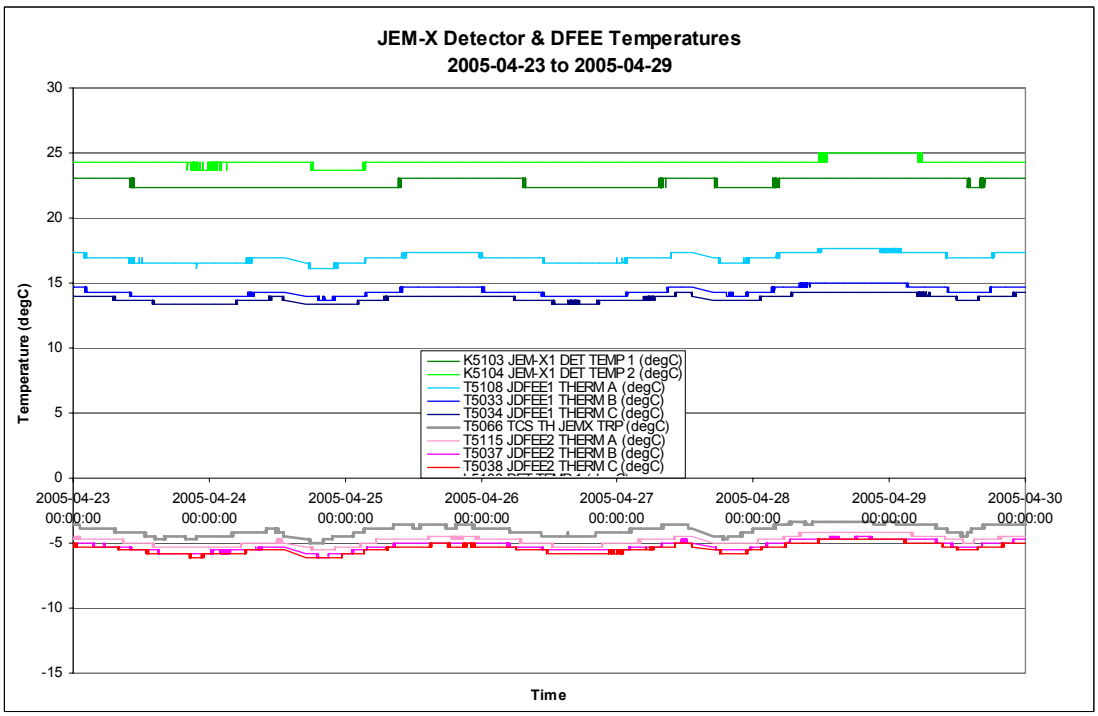
8.3.4.1 JEM-X Count Rates

JEM-X count rates over the reporting period are displayed in the following graph[1].



8.3.4.2 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].



[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)

8.3.4.3 JEM-X Daily Report

2005-04-23 (DOY 113, Rev 308) to 2005-04-29 (DOY 119, Rev 310)

Nothing to report.

8.3.5 OMC Operations

2005-04-23 (DOY 113, Rev 308)

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 11 occasions (at 01:36:22Z; 03:30:54Z; 05:12:46Z; 06:54:38Z; 08:34:38Z; 10:03:58Z; 11:32:14Z; 12:58:38Z; 14:23:26Z; 19:49:10Z and 23:59:26Z). On each occasion, it returned within limits within a few minutes.

2005-04-24 (DOY 114, Rev 308-309)

Due to a problem with establishing the TC link at DSS-16 (see anomaly report INT-2725), commanding to OMC, AOCS and OBDH subsystems was disabled from the Timeline at 07:31Z and therefore the slew to pointing ID 03080100 was not performed and the associated OMC imaging EDs (scheduled starting at 07:33:30Z) failed release from the Timeline. At 07:35Z the Autostack was stopped.

A recovery was then performed to the attitude of pointing 03080101 via manual slews. During this recovery, OMC continued in Science Normal mode as the broadcast packet PID remained equal to the PID of the imaging parameters (i.e. PID 03080099). At 08:17:44Z the ongoing shot (part of which included data taken during a manual slew) was completed and OMC began generating a series of OEM 179 CENT CYCLE as the imaging parameters were still those of pointing 03080099 while the attitude had now changed. (The OMC imaging EDs for pointing 03080101, scheduled starting at 08:08:46Z, were missed as the Timeline was stopped.)

Once the recovery was completed, the Autostack was restarted with commanding to OMC, AOCS and OBDH enabled at 08:23Z. The slew to pointing ID 03080102 along with the OMC imaging EDs for this pointing, scheduled starting at 08:44:03Z, were executed nominally.

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 11 occasions (at 01:33:34Z; 03:07:50Z; 04:41:42Z; 06:26:30Z; 08:23:58Z; 10:29:34Z; 12:47:26Z; 18:32:14Z; 20:00:06Z; 21:27:42Z and 23:11:26Z). On each occasion, it returned within limits within a few minutes.

2005-04-25 (DOY 115, Rev 309)

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 7 occasions (at 01:23:34Z; 04:09:02Z; 08:26:38Z; 12:47:26Z; 16:44:30Z; 19:48:38Z and 22:45:58Z). On each occasion, it returned within limits within a few minutes.

At 08:31:13Z OEM Apid 129 ID 241 MS EVE SECL OEM1 with parameter D5555=39 was issued, indicating that the SECL task had issued the TCs to close the TSW for OMC Lens Barrel Heater loop A to ensure that this heater loop was enabled. The status of TSW OMC LNSA (TM parameter T1023) was already CLOSE and therefore no change in status occurred as a result of the TCs issued by the SECL task.

2005-04-26 (DOY 116, Rev 309)

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 14 occasions (at 01:08:22Z; 03:07:50Z; 05:15:34Z; 07:05:26Z; 08:42:14Z; 10:20:54Z; 11:53:10Z; 13:18:22Z; 14:46:06Z; 16:15:34Z; 17:49:26Z; 19:21:34Z; 20:57:42Z and 22:41:10Z). On each occasion, it returned within limits within a few minutes.

2005-04-27 (DOY 117, Rev 309-310)

Due to problems at DSS-16 resulting in the loss of AD service, the OMC imaging EDs for Pointing ID 03090103 (MEIM-A01; MEIMB101 and MEIMB201, scheduled starting at 07:52:24Z) began to fail on-board reception. Imaging ED MEIMB301 and the ED DEBPG200 for the Broadcast Packet Group 2 parameters then failed release. Once AD service was re-initialised, these EDs were resent manually at 07:55Z and OMC transitioned to Science Normal mode at 07:56:23Z, a few minutes later than planned for this pointing.

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 9 occasions (at 00:40:06Z; 02:39:18Z; 04:55:58Z; 07:40:30Z; 10:46:46Z; 17:08:06Z; 18:57:26Z; 20:33:42Z and 22:27:02Z). On each occasion, it returned within limits within a few minutes.

2005-04-28 (DOY 118, Rev 310)

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 5 occasions (at 00:47:10Z; 05:15:34Z; 14:24:54Z; 19:48:54Z and 23:38:46Z). On each occasion, it returned within limits within a few minutes.

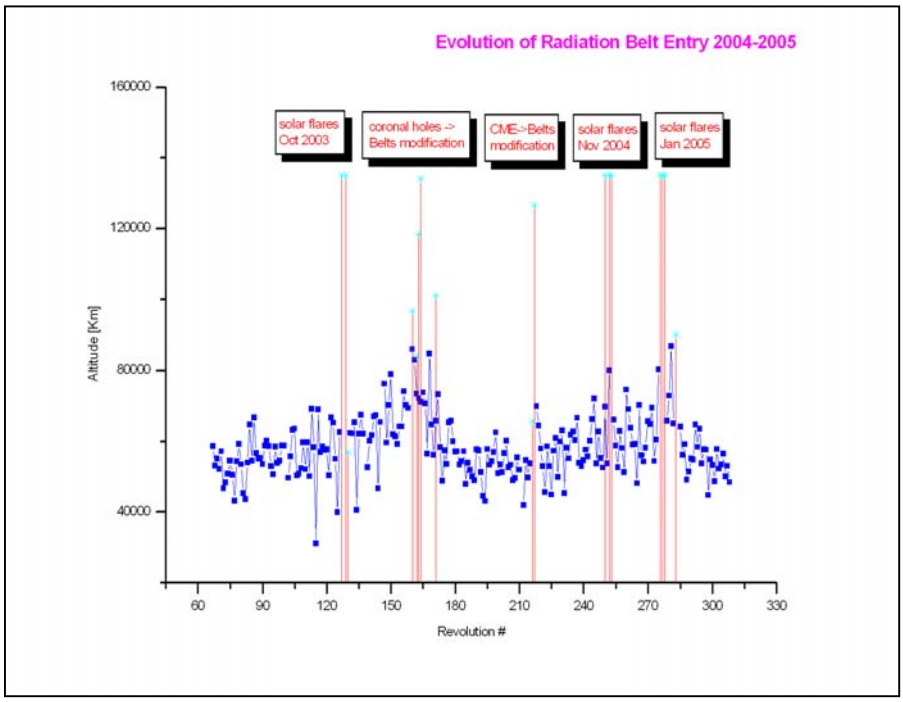
2005-04-29 (DOY 119, Rev 310)

OMC Flat Field and Dark Current Calibrations were executed nominally as follows:
10:02Z to 12:53Z Flat Field Calibration
12:55Z to 13:26Z Dark Current Calibration

The TM parameter T5016 OMC LENS TEMP1 went out of limits Warning Low (value = -10.28degC) on 9 occasions (at 03:07:18Z; 05:36:22Z; 07:48:54Z; 10:06:22Z; 11:53:50Z; 13:24:14Z; 14:51:34Z; 16:33:42Z and 19:15:34Z). On each occasion, it returned within limits within a few minutes.

8.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

DoY 117 (27/04/2005):

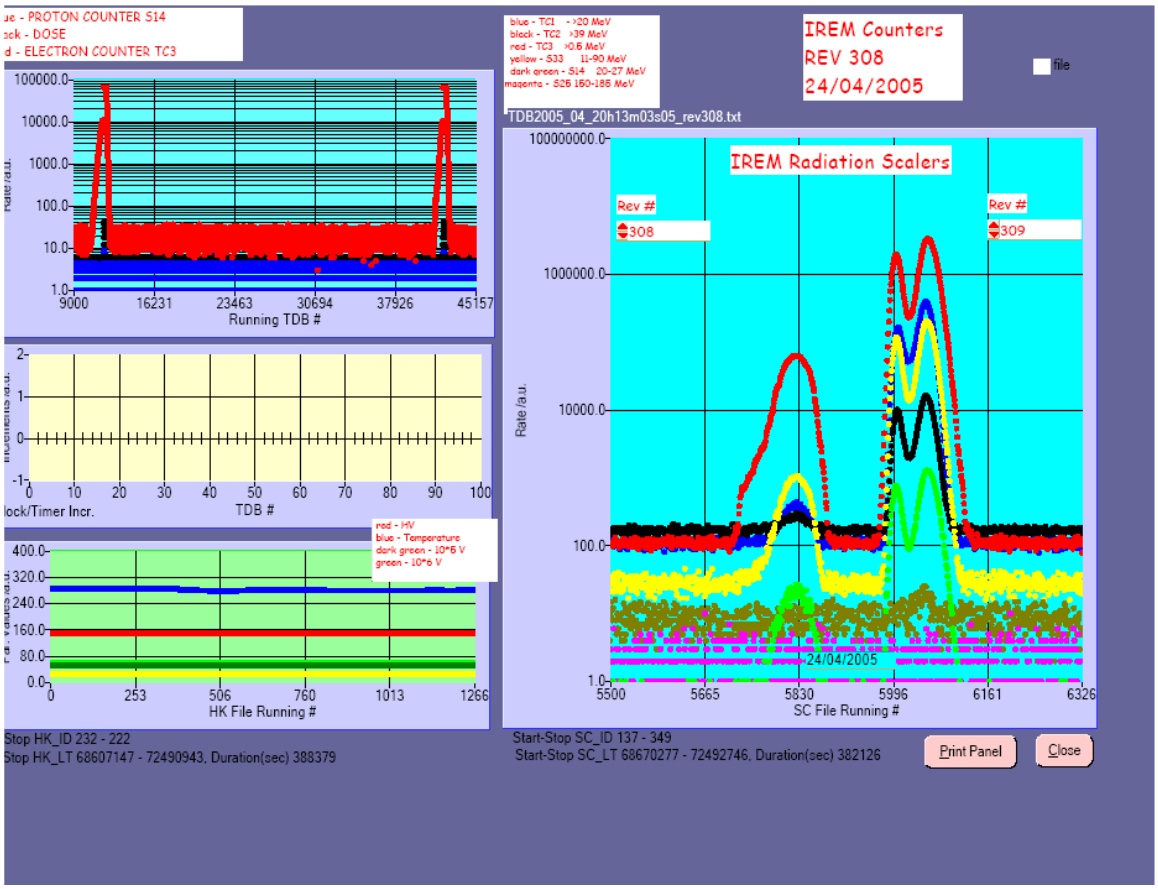
At 12:58Z the IREM TC U4921 (Ground link Off) failed completion. The execution of the TC was verified against the relevant TM parameter using the monitoring task and no further action was taken.

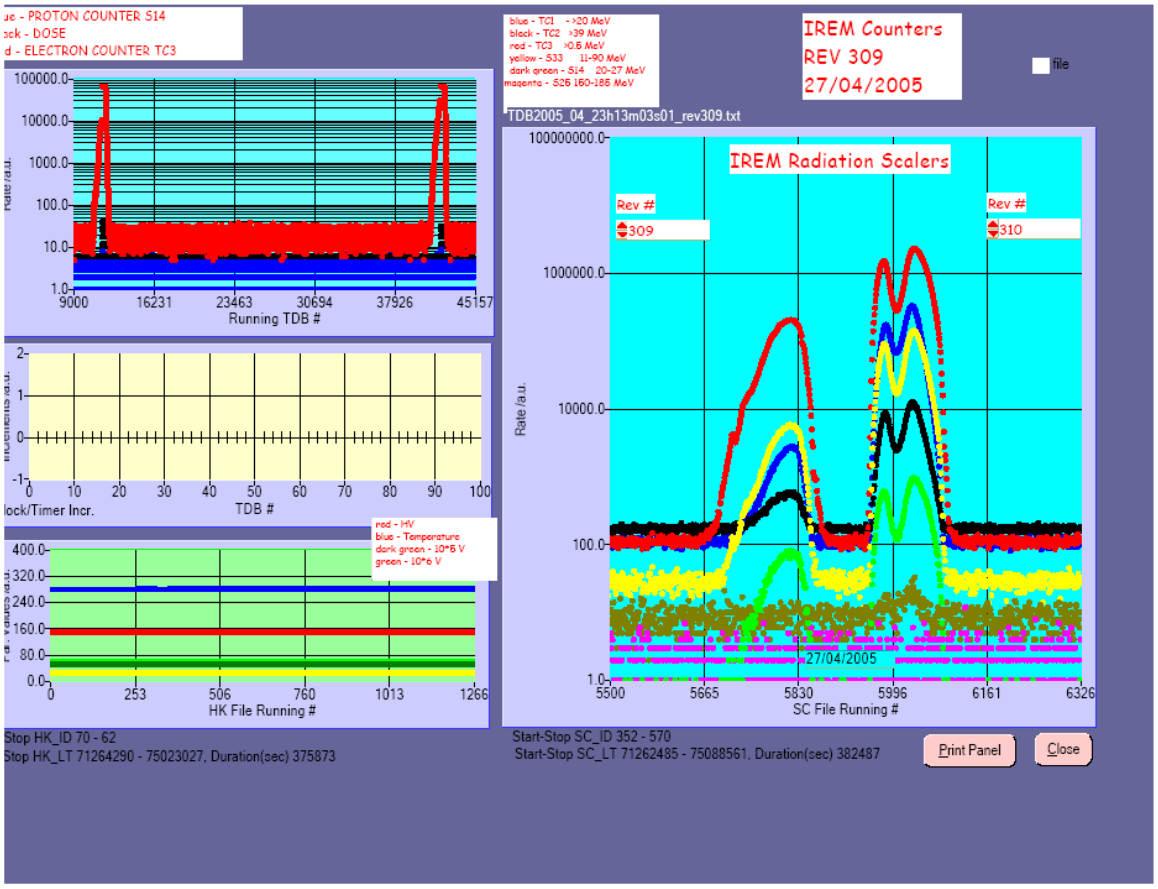
Electron Belts

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]
308	RAD_ENTR R 2005-04-24T10:24:29Z	2005-04-24 11:48:06	48461.9	2005-04-24 11:13:04	53590
309	RAD_EXIT R 2005-04-24T19:37:47Z	2005-04-24 18:28:23	>>24901.8	2005-04-24 18:33:04	29803
309	RAD_ENTR R 2005-04-27T10:10:02Z	2005-04-27 11:20:39	>50099.7	2005-04-27 10:58:02	53670
310	RAD_EXIT R 2005-04-27T19:23:35Z	2005-04-27 18:07:59	>>24905.9	2005-04-27 18:18:02	29701

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

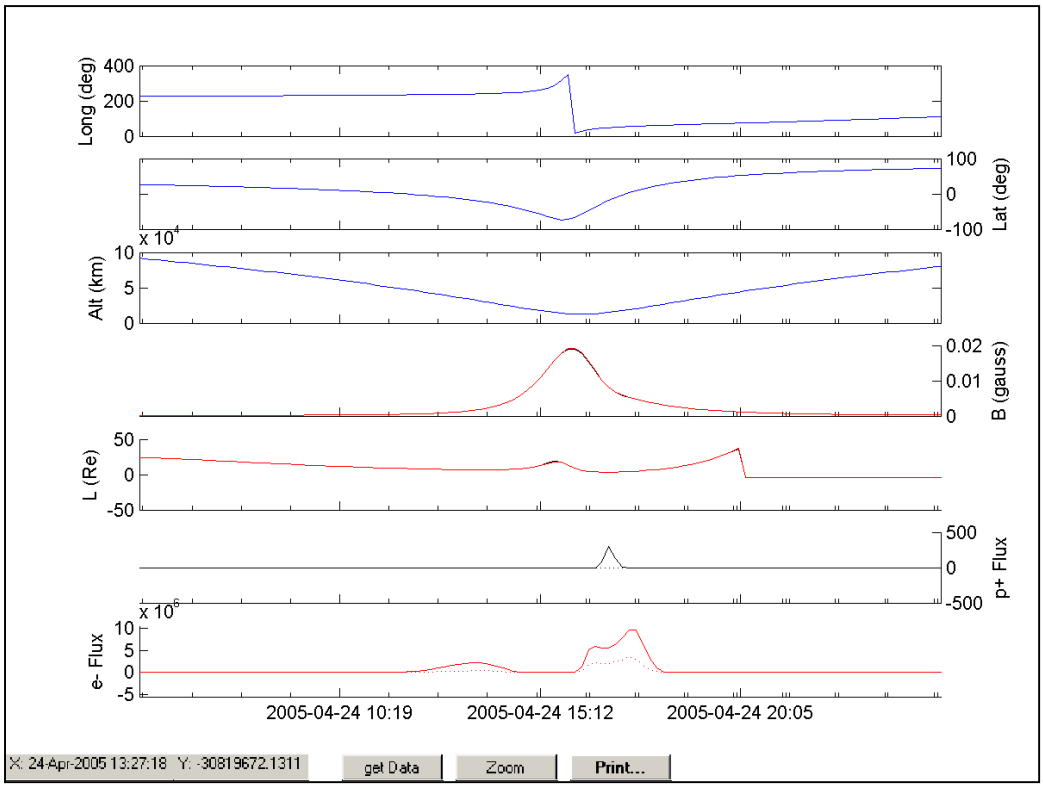
IREM radiation counters:



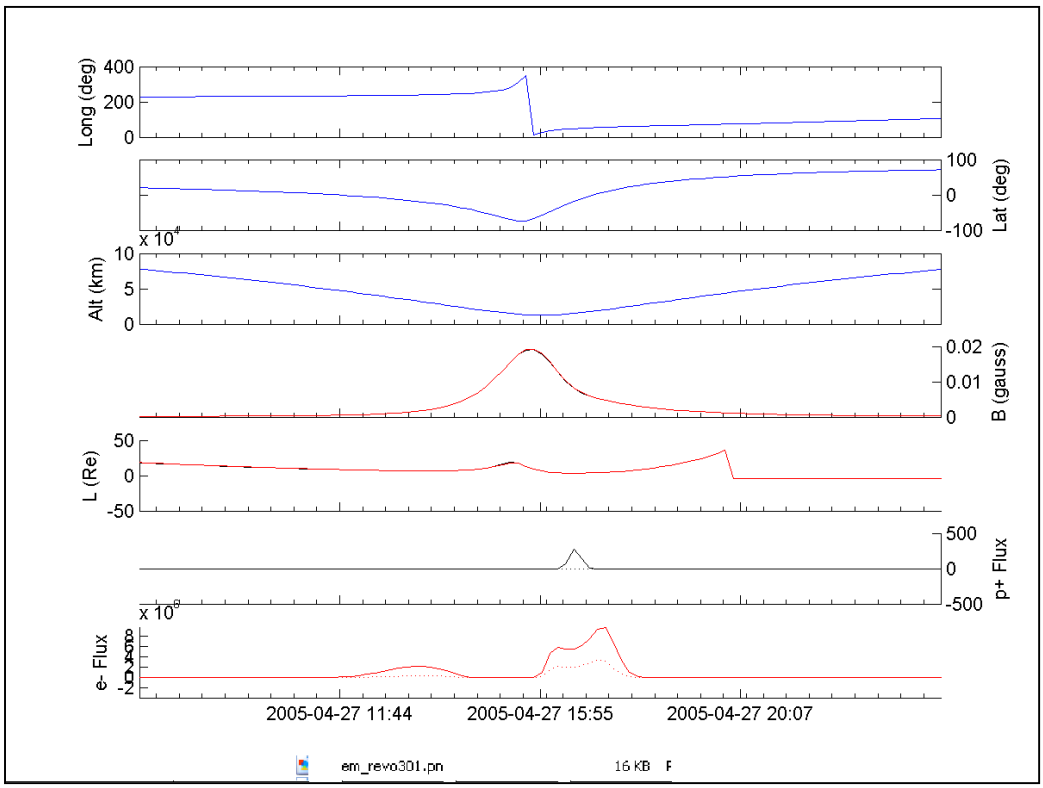


IREM Predicted Radiation Belt Passages:

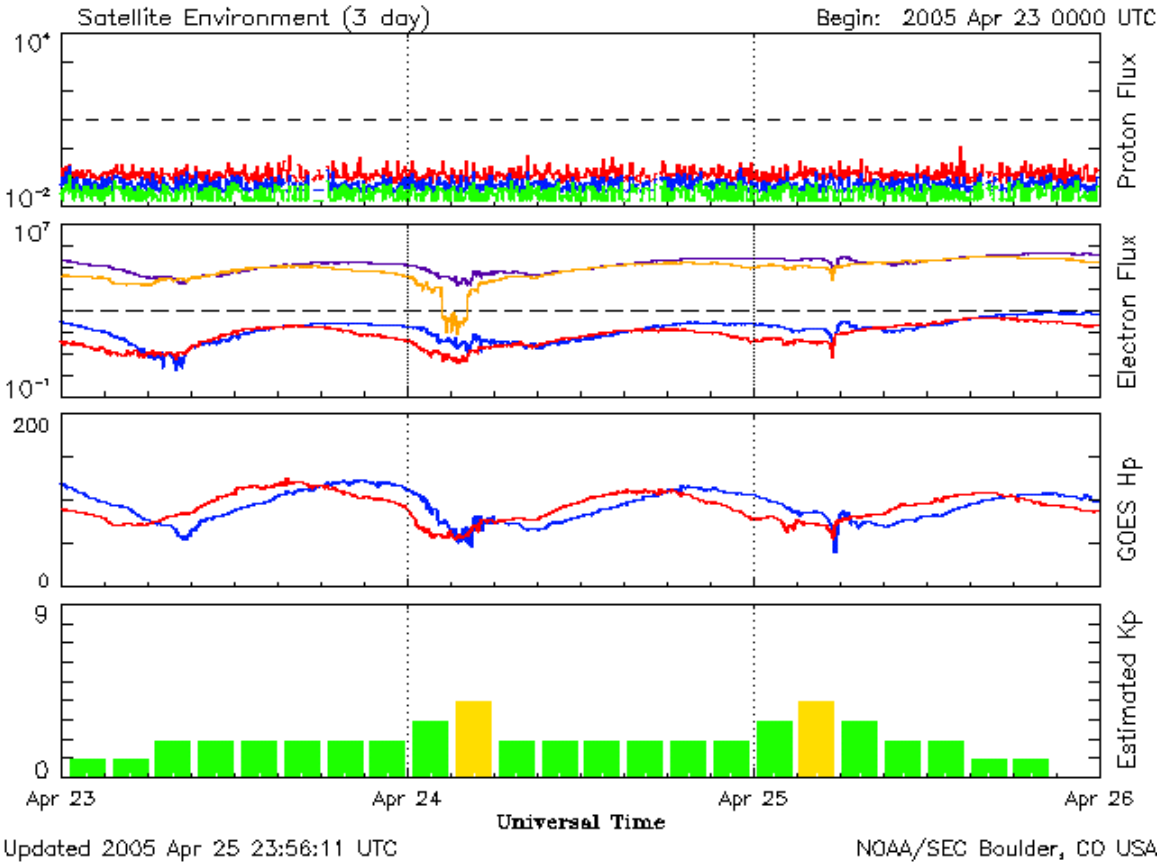
Rev 308:

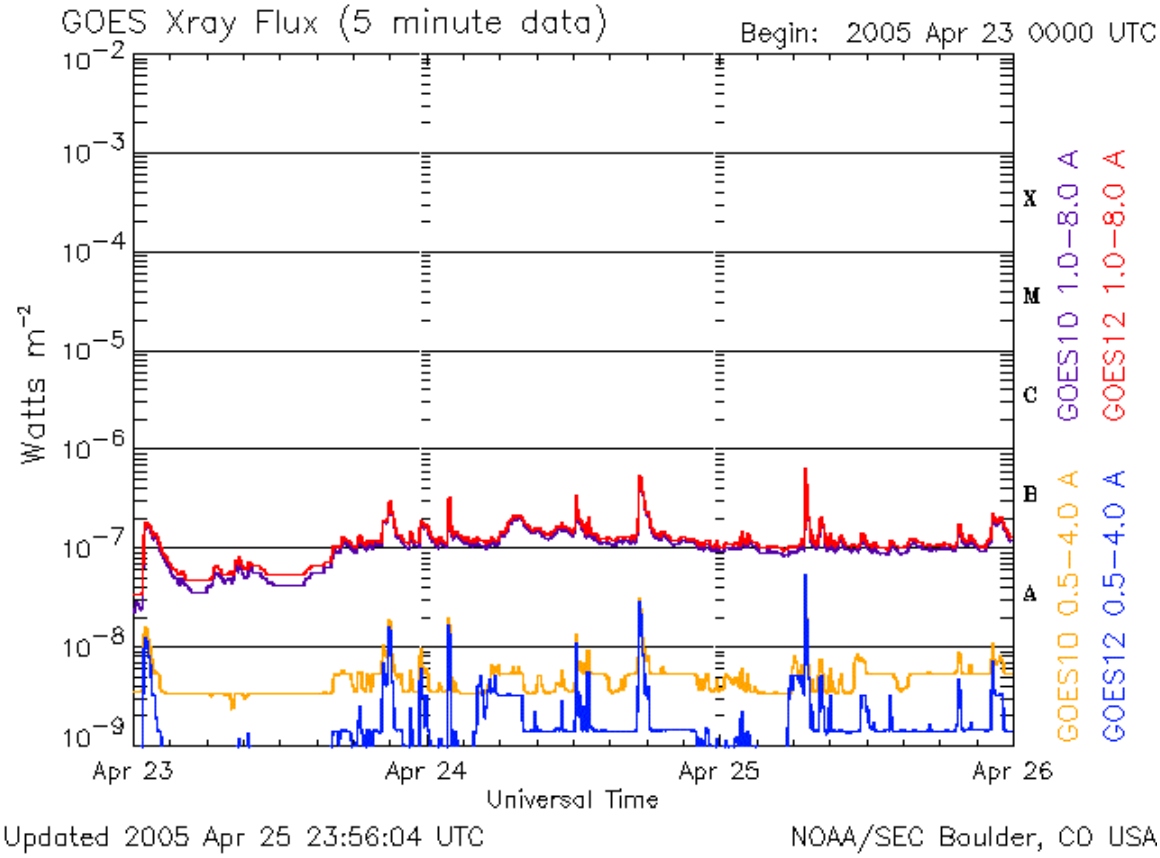


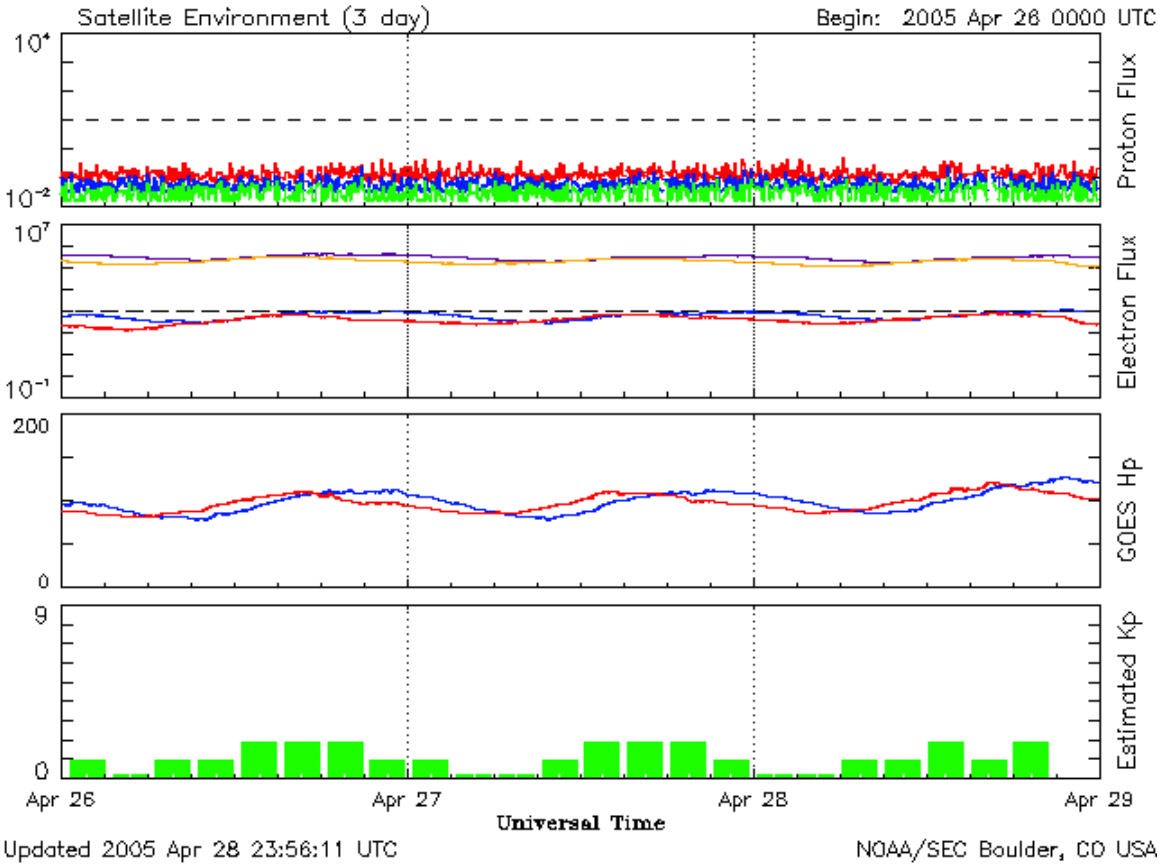
Rev 309:

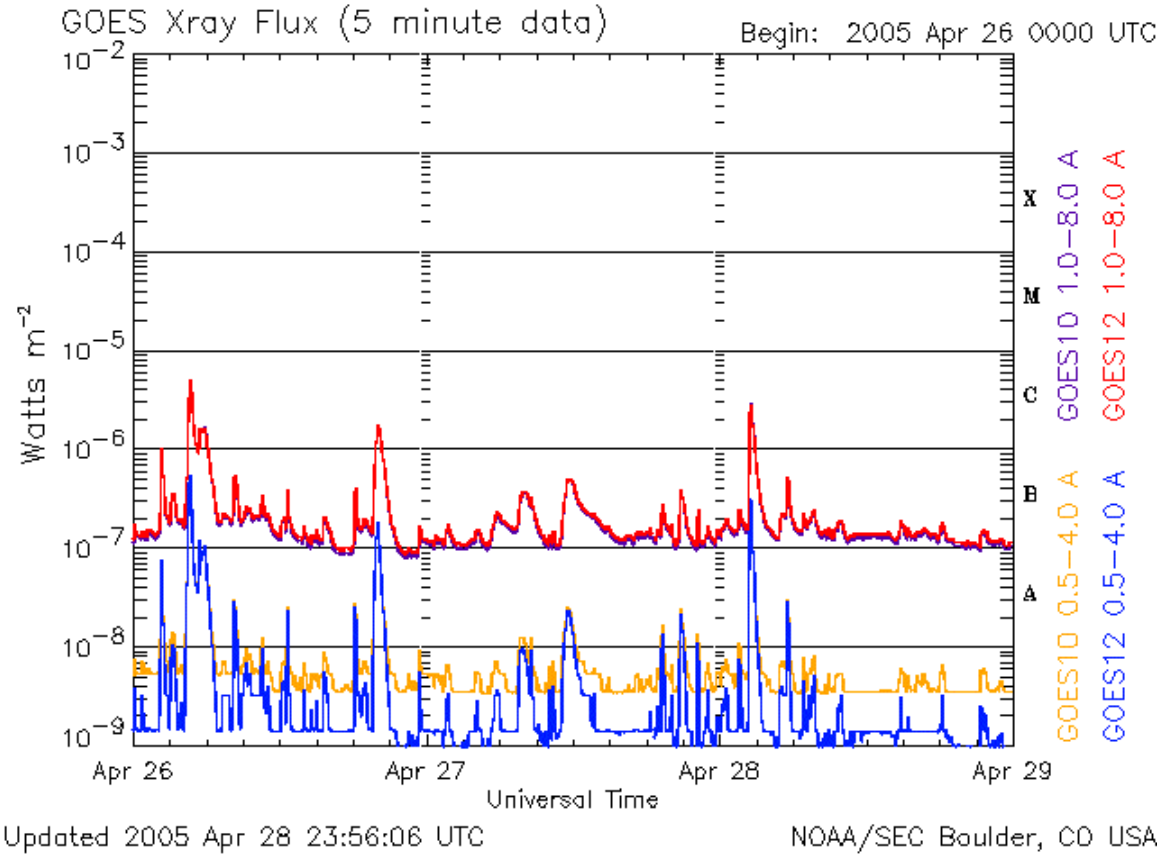


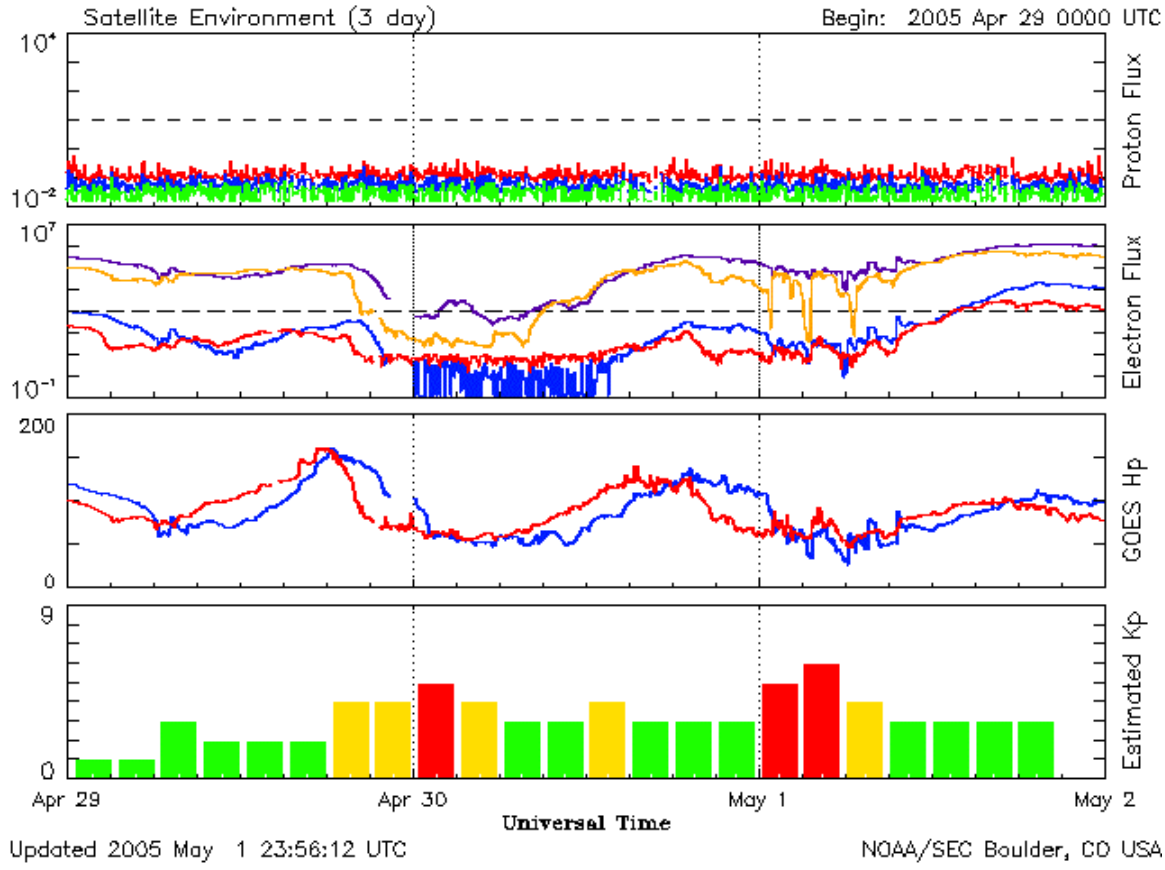
SEC-GOES Observed Particles Fluxes:

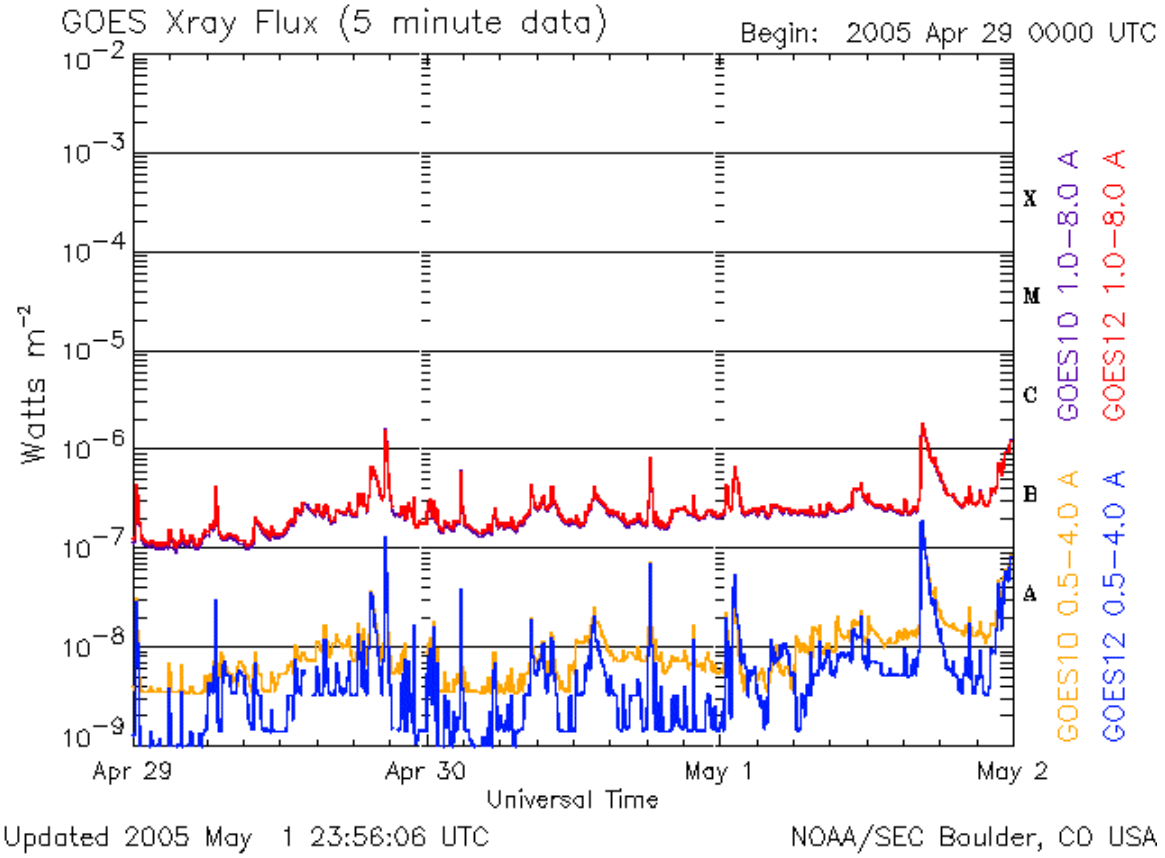





Satellite Environment (3 day)
Begin: 2005 Apr 26 0000 UTC
Proton Flux
Electron Flux
GOES Hp
Estimated Kp
Apr 26
Apr 27
Apr 28
Apr 29
Universal Time
Updated 2005 Apr 28 23:56:11 UTC
NOAA/SEC Boulder, CO USA


GOES Xray Flux (5 minute data)
Begin: 2005 Apr 26 0000 UTC
Watts m-2
X
M
C
B
A
GOES10 1.0-8.0 A
GOES12 1.0-8.0 A
GOES10 0.5-4.0 A
GOES12 0.5-4.0 A
Apr 26
Apr 27
Apr 28
Apr 29
Universal Time
Updated 2005 Apr 28 23:56:06 UTC
NOAA/SEC Boulder, CO USA


Satellite Environment (3 day)
Begin: 2005 Apr 29 0000 UTC
Proton Flux
Electron Flux
GOES Hp
Estimated Kp
Apr 29
Apr 30
May 1
May 2
Universal Time
Updated 2005 May 1 23:56:12 UTC
NOAA/SEC Boulder, CO USA


GOES Xray Flux (5 minute data)
Begin: 2005 Apr 29 0000 UTC
Watts m-2
X
M
C
B
A
GOES10 1.0-8.0 A
GOES12 1.0-8.0 A
GOES10 0.5-4.0 A
GOES12 0.5-4.0 A
Apr 29
Apr 30
May 1
May 2
Universal Time
Updated 2005 May 1 23:56:06 UTC
NOAA/SEC Boulder, CO USA