

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 146
Week 27
11.07.05
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 02.07.05 until 08.07.05 (both dates inclusive) and covers the revolutions 332, 333 and 334

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 galactic plane; 4U 0142+614 (RA 01:46:22.42; DEC +61:45:02.8); an OMC Flat Field target (RA 13:01:12.00; DEC +06:48:00.0) and an Extragalactic Survey. The activities consisted of GPS, raster (5x5) and rectangular (5x12) dithering and staring observations.

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.

4 slews (CSL) were not executed from the Timeline during this period, due to problems on IMCS.

The fuel consumption over the period between 01/07/2005 and 06/07/2005 was 0.077 kg. The remaining propellant is in the order of 160.5889 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 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 is nominal.

One PSAC temperature is out of range since 24th May. This is still currently under investigation.

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. The Stirling compressors are working well, maintaining the detector cold-plate temperature within 85+/-1K.

Due to ongoing upgrade of the IMCS and off-line data retrieval system (TDRS), the TM bandwidth occupation information is not available this week.

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

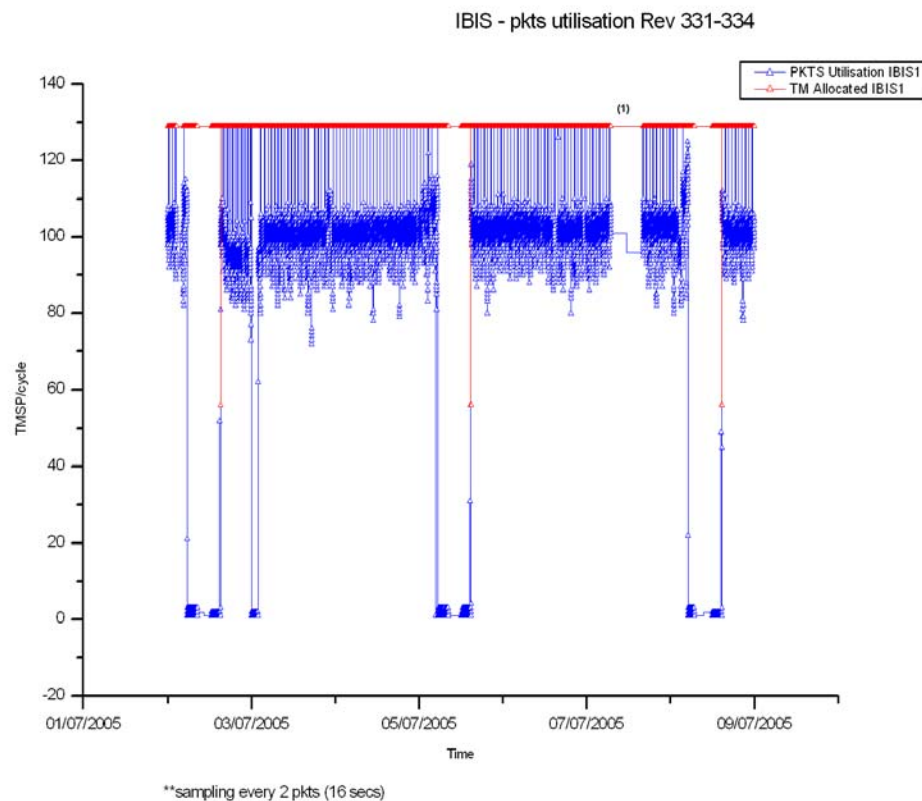
3.2.2 IBIS

The Overall status of the unit is Nominal.

The week was characterised by low solar activity.

During the reporting period, the PST allocation to IBIS was most of the time 129 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 102.38 TMPS/cycle, down 4.06 on last week.

A plot of the IBIS TM utilisation during the observation period is shown below:



(1) See IBIS Appendix

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.

On 2005-07-03, due to problems with the IMCS, a Data Taking command failed from the Timeline at 00:00:26Z. Once the problems were resolved, JEM-X1 was commanded to Data Taking mode manually at 01:43:20Z.

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 this reporting period, 138 of the 144 planned science pointings for OMC were executed nominally, 6 were lost.

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

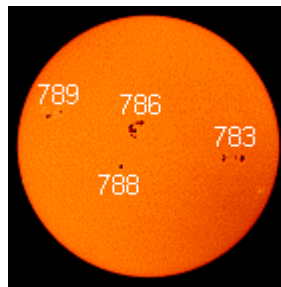
3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by moderate solar activity.

Lots of small sunspots appeared on the sun at the beginning of the observing period. During the whole week sunspots 783 and 786 posed threats of solar flare. On the 7th of July, sunspot 786 unleashed an M4-class solar flare that had no impact on the satellite environment (see picture from SOHO/MDI).



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 better this week, 145 pointings were executed correctly, and 4 slews, and science from 2 further pointings were lost due to problems on the new MCS release.

4.1 Mission Operations Centre

The performance of the MOC was fair this week. 6 pointings were however lost due to problems at the MOC.

4.1.1 Upgrade of IMCS.

The CPD Caches on the IMCS continue to cause some problems. On DoY 183 at 20:35, later that day at 23:57, DoY 185 at 00:31 and DoY 187 at 05:21, the CPD TM Cache on imca died, each time it was restarted. The impact was the loss of pointings 03320009, 03320014 through to 03320017 and 03330016. During week 29 an update to the MCS will be installed to cure this problem

During the reporting period the Integral NCTRS-A was upgraded to version 9.2.1, NCTRS-B will be during week 29

The IMCS B-chain will be upgraded during week 29, completing the upgrade of all chains.

4.2 Ground Stations & Network

The performance of the ground stations and Network was excellent this week. There were brief TM drops from Redu, DSS-16 & DSS-24, none of which had any impact. The overall performance was nearly 100%.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSF's for up to rev 342 have been received. The corresponding POS's have been generated but are awaiting internal approval before being sent to MOC. No ToO or replanning has been performed. TSF for rev 334, 335 and 336 were received.

2. Observation status

ECS's up to rev 320 have now been received except rev 316. The corresponding OCS's have been sent to ISDC. No extra time has been credited.

3. ISOC science data archive

The beta testing of the ISDA version 2.0 has been finished this week. This included testing by external (to ISOC) users. In general the testers have been very happy with the implementation. In particular users also using the XMM-Newton archive expressed their appreciation of the ISDA. Some very constructive suggestions were received. They will be taken into account for future releases. Based on the results from the beta testing it was concluded that the ISDA version 2.0 is now ready for release to the public. A couple of minor problems and some help text updates will be fixed before the ISDA becomes open to the public. This is now planned for Monday next week. The archive today contains sufficient data to allow meaningful use of the ISDA by the public.

4. ISOC system

The version 10.9.4 is still used. The next version 11.0 will be installed early next week.

5. Problems

None

4.3.2 ISDC

Status of ISDC observation processing on 11/07/2005:

- Latest Standard Analysis completed: observation 03200150002 (NGC 2992, Revolution 312-314) on 11/07/2005

- Latest products archived: observation 03200150002 (NGC 2992, Revolution 312-314) on 11/07/2005

- Latest observation products sent to the observer: observation 03201090009 (Gal. Bulge region, Revolution 295) on 06/06/2005

5 Special Events

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 183, at 20:35, the TC A3129 START SLEW manoeuvre had an unknown completion. At the same time, the command A3132, RC SLEW MAN was also unverified. Then the OMC command MU 1321 IMAGING B1 for ISOC failed release. Next the message CPD on host imca is not receiving packets appeared, followed by the message “TCOserver, imca, ERROR, LOG, Time Correlator status changed to inaccurate” appeared in the event log. The CPD tasks on imca were stopped and re-started, which seemed to clear the problem. The impact was the loss of science data for pointing 03320009.
- At 23:57, the TC A3192 RC GUIDE STAR and TC A3084 RP SUN STEER INI had an unverified completions. Next at the same time, the TC A3087 AUTH SUN STEER failed release, followed at 23:59 by the GESTAN02 sequence failing release, and the PSTREQ with unverified completion. At 00:00, the K0011 STATE DATA TAKE from sequence KEDATA01 failed. At 00:09, the following day, there were many messages in the event log indicating the connection to the CPD had been lost. At 00:10, the Timeline was stopped. All tasks on the imca were then stopped and re-started. There were then problems bringing up sun122, so operations were transferred to sun121, then problems with Caches still running, then the FD system not updating, then the recovery tool crashing. The timeline was eventually recovered at 03:16. The impact was the loss of pointings 03320014 through to 03320017.
- On DoY 184 at 05:11, the MADDS-ISDS connection on TM Spacon shows disconnected. At 05:21, the FD Tool on sun126 was not refreshing, and the wheel profile on sun125 was not in real time. At 06:02, the IFRD & ISDS-A were stopped and re-started. At 06:07, the tasks were again stopped and re-started, this time the FD tasks were restored to nominal. Also, the MADDS – ISDS connection indicated TM Flow, ISDS – ISDC showed connected, but IFRD indicated disconnected. At 06:15, all application on the ISDS-A were stopped, and the machine rebooted. At 06:23, all systems were nominal. There was no science impact.
- On DoY 185, at 00:31, TC A2552 RP MAPPING had an unverified completion. At the same time TC A2549 AUTHORISE STAR TC failed release. At 00:34, during a manual star mapping, the command A2549 again failed release. At this time the message: “CPD on host imca is not receiving packets” followed by many messages concerning CPD, PDSserTM, TCOserver, BEHVLimC, MISCdynsrv were seen in the event log. At 00:36, the CPD tasks on imca were stopped and re-started, which cleared the problem. The timeline was recovered at 00:55. There was no impact on science return.

- At 08:53, there were Reed-Solomon alarms in Redu, followed by 4 bad frames. There was no impact.
- On DoY 186, at 03:20, the idda was yellow on the Global MMI, with only 5GB of free disk space available..
- At 04:06, there was a brief drop in VC7 TM from DSS24, there was no impact.
- At 07:35, the application NCDU Admin died. It was restarted a minute later without impact.
- At 05:21, the messages: “PDSSetm, imca, system, CPD on host imca is not receiving packets, suspending transmission to imca for 2 seconds”, then “TCOserver, imca, ERROR, Log, Time Correlation status changed to inaccurate”, were seen in the event log. At the same time the TC A2542 STAR MAPPING had an unverified completion, then the TC A2549 AUTHORISE STAR TC failed release. At 05:29, the CPD tasks on imca were stopped and re-started clearing the problem. At 05:41, the autostack was manually updated using the recover tool, and the Timeline enabled. The impact was loss of science data for pointing 03330016.
- On DoY 188, from 01:04 to 01:06, the VC0 TM link from Redu dropped due to hits on the line.
- On DoY 189, at 03:23, and again at 03:30, there were drops in the VC7 TM link from DSS-16.
- At 12:13, an Event Log message: CPDisTM idda, Warning, System, FIFO Buffer full: loosing 999 packets was seen. There was no apparent impact.
- From 13:15 to 13:17, the TM from Redu dropped out. There was no impact.

There were no new anomaly reports entered into the ARTS system this week:

7 Future Milestones

Upgrade of the NCTRS (Network Controller and Telemetry Router System) for Integral to release **9.2.1**

Change of communication protocol to ESA Station from X25 to TCP IP, testing of this change has restarted following the upgrade of the A-chain, allowing the C-chain to be used for test purposes again. It will be used operationally only once testing is complete and all operational machines have been upgraded with the latest versions of the NCTRS and MCS.

On 13/7/2005 Integral will have been 1000 days in orbit.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 332

The observations in revolution 332 consisted of 12 pointings of a GPS lasting ~8.5 hours, followed by an amalgamated raster dithering observation of 4U 0142+614 (RA 01:46:22.42; DEC +61:45:02.8), performed for the remaining ~52.5 hours of observation time.

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

Revolution 333

In revolution 333 an amalgamated raster dithering observation of 4U 0142+614 (RA 01:46:22.42; DEC +61:45:02.8) was 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 remained off, and the TM allocation was IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5.

Revolution 334

The observations in revolution 334 began with an amalgamated raster dithering observation of 4U 0142+614 (RA 01:46:22.42; DEC +61:45:02.8) lasting ~18 hours, followed by a staring observation at the OMC Flat Field target (RA 13:01:12.00; DEC +06:48:00.0) lasting ~3.5 hours. A Deep Extragalactic Survey was then performed for the remaining ~38 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 intended to be in FFCalibration followed by DCCalibration mode, however the relevant commands to put OMC in FFCalibration mode were omitted at planning level (This event will be covered in next week's report). The TM allocation during this observation 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

2005-06-16T00:53:43.000Z	160.8444	F	Automatic TM processing.
2005-06-17T14:05:55.000Z	160.8378	F	Automatic TM processing.
2005-06-17T22:59:00.000Z	160.8185	F	Automatic TM processing.
2005-06-20T13:52:59.000Z	160.8050	F	Automatic TM processing.
2005-06-22T00:36:07.000Z	160.7858	F	Automatic TM processing.

2005-06-23T13:39:06.000Z	160.7705	F	Automatic TM processing.
2005-06-25T00:22:22.000Z	160.7476	F	Automatic TM processing.
2005-06-26T13:28:34.000Z	160.7300	F	Automatic TM processing.
2005-06-28T00:21:02.000Z	160.6930	F	Automatic TM processing.
2005-06-29T13:21:46.000Z	160.6854	F	Automatic TM processing.
2005-07-01T00:03:50.000Z	160.6659	F	Automatic TM processing.
2005-07-02T13:12:26.000Z	160.6464	F	Automatic TM processing.
2005-07-02T22:02:51.000Z	160.6237	F	Automatic TM processing.
2005-07-05T12:56:09.000Z	160.6110	F	Automatic TM processing.
2005-07-06T23:38:52.000Z	160.5889	F	Automatic TM processing.

This report was generated Fri Jul 8 08:00:31 GMT 2005

8.3 Detailed Satellite Information

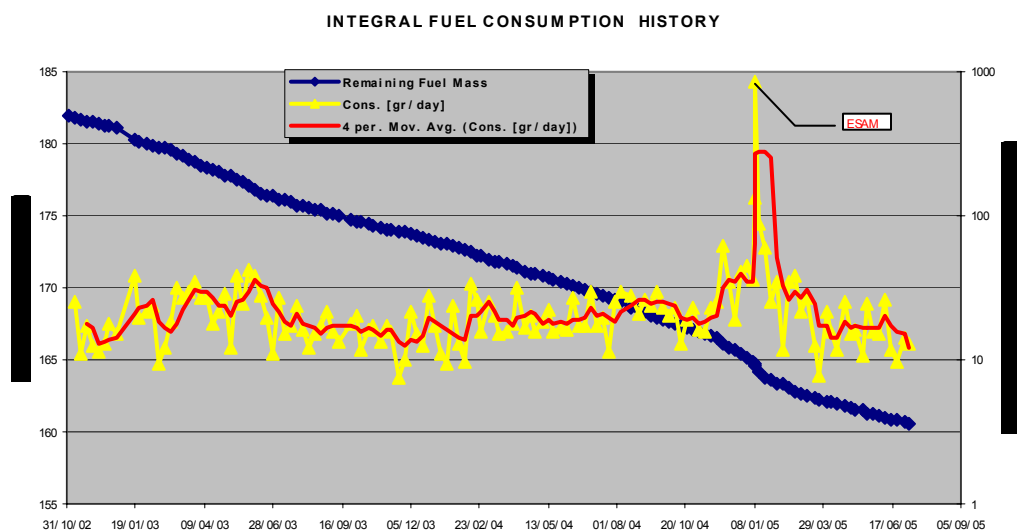
This section contains some detailed information concerning the various subsystems of the satellite and instruments.

8.3.1 AOCS SUMMARY OPERATIONS REPORT, 02/07/2005 – 08/07/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 74 Open Loop Slews, 73 Closed Loop Slews and 5 Momentum Bias were executed. 4 (CSL) slews were not executed from TL due problem on IMCS. This is equivalent to a ~ 2.6 % of the total number of slews planned (150).

The fuel consumption over the period between 01/11/2002 and 06/07/2005 is reported in the plot below.



02/07/05 (Day of Year 183, Revolution 331-332)

Slew missed from the Timeline: at 23:57z due to a problem on IMCS (CPD task on IMCA not receiving packets), the slew sequence ID 03320014 (CSL) failed release. The AOCS s/s was disabled in TL at 23:57z.

03/07/05 (Day of Year 184, Revolution 332)

Slews missed from the Timeline: due to the problem occurred on day before (see DoY 183), a manual recovery was then performed to the attitude of PID 03320017. The next slew (CSL) for PID 03320018 was manually updated and executed from the TL. The AOCS s/s was re-enabled in TL on DoY 184 at 03:16z. The following slews were not executed from TL while recovering the AOCS s/s: 03320014(CSL)-15(CSL)-16(CSL)-17(CSL).

04/07/05 (Day of Year 185, Revolution 332)

Nothing to report.

05/07/05 (Day of Year 186, Revolution 332-333)

Nothing to report.

06/07/05 (Day of Year 187, Revolution 333)

Nothing to report.

07/07/05 (Day of Year 188, Revolution 333)

Nothing to report.

08/07/05 (Day of Year 189, Revolution 333-334)

ACC Yaw and Pitch Errors: reported after OSL ID 03330064 several occurrences of OEMs APID 640 ID 50 <<ACC YAW ERR>> and ID 49 <<ACC PITCH ERR>>. The Mi 8.4 guide star (ID 4034-428) was located at CCD location [2240, -1125]. A neighbour star ID 4034-703 of Mi 8.6 at CCD location [2013, -970] likely caused the problem. The STR could not determine the barycentre of the system, separated by few arcmins (~1 pixels), with the expected accuracy and this caused the generation of the OEMs above and the flickering of the ACC pointing bit, not seen anyway at OTF level. The inaccuracy in Y position resulted in ~200 ccd units= 50 arcsec=1 pixel. The situation was cleared at the execution of the following CSL (ID 03330065). No impact on TL reported.

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 with the expected drift. Due to the accumulated effects of the temperature drift, the stroke had to be adjusted from 4x34dec raw to 4x35 dec raw on DOY 187 at 13:53z.

The plot showing the evolution of the cold-plate and H bus temperatures during the reporting period is not available this week.

DPE & IASW:

The IASW performance is nominal.

The plot showing the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load is not available.

ACS:

The performance of the ACS is nominal.

A temperature sensor in the PSAC (TM E2116) is exceeding its higher operational limit since 27th May (after an ACS post-eclipse reactivation). The PI and the ACS experts have been contacted: according to preliminary analysis, the malfunction could be in the sensor measurement chain as all other temperature readings, close to E2116, show nominal values. It has been decided to wait for the end of the upcoming annealing cycle to see if the temperature returns in limit, before drawing final conclusions.

ACS calibrations (more than 50 runs) were performed starting from 21st June. Details on execution times are available on request.

The plot showing the ACS overall count rate evolution is not available.

AFEE and Germanium Detectors:

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

The plot showing the dc voltage offset of the detector channels is not available.

DFEE:

The performance of the unit is nominal.

The plot showing the count rates of the detectors is not available.

PSD:

The performance of the unit is nominal.

SPI DAILY EVENTS

NOTE: The events log is extracted from the revolution pass summary.

DOY Time	Event
182 – 13:13	TM E0391 OOL
183 – 20:52	TM E2116 OOL
184 – 21:23	TM E3206 OOL, back in limits @ 21:35
187 - 13:24	TM E0392 OOL, back in limits @ 14:39

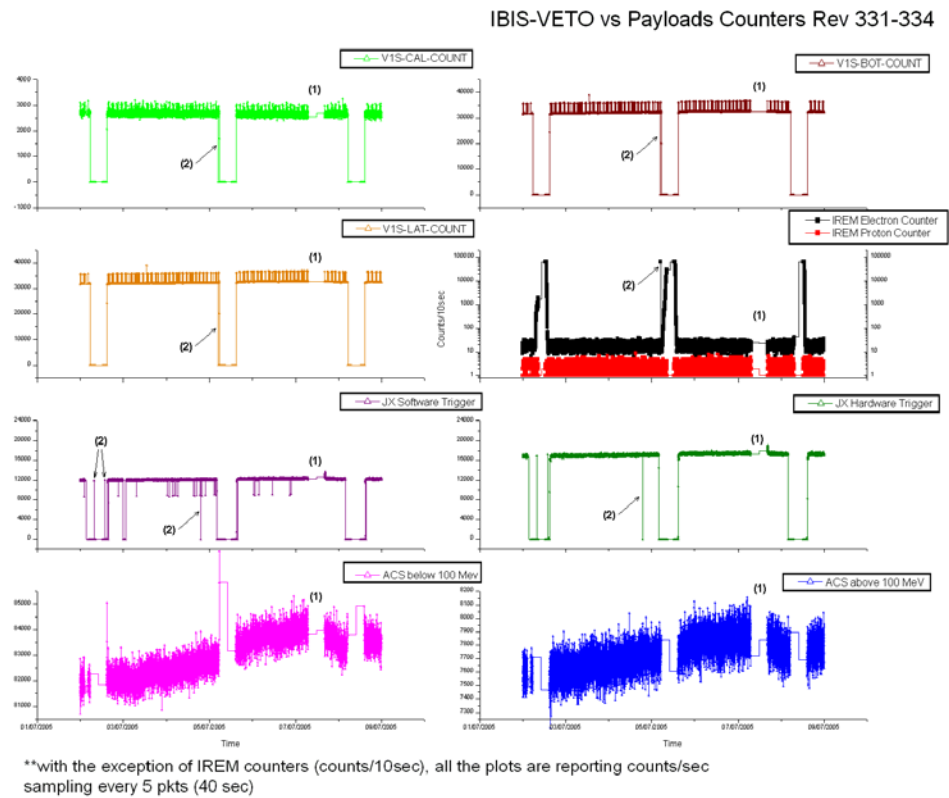
8.3.3 IBIS Operations

IBIS Event Counters Plots.

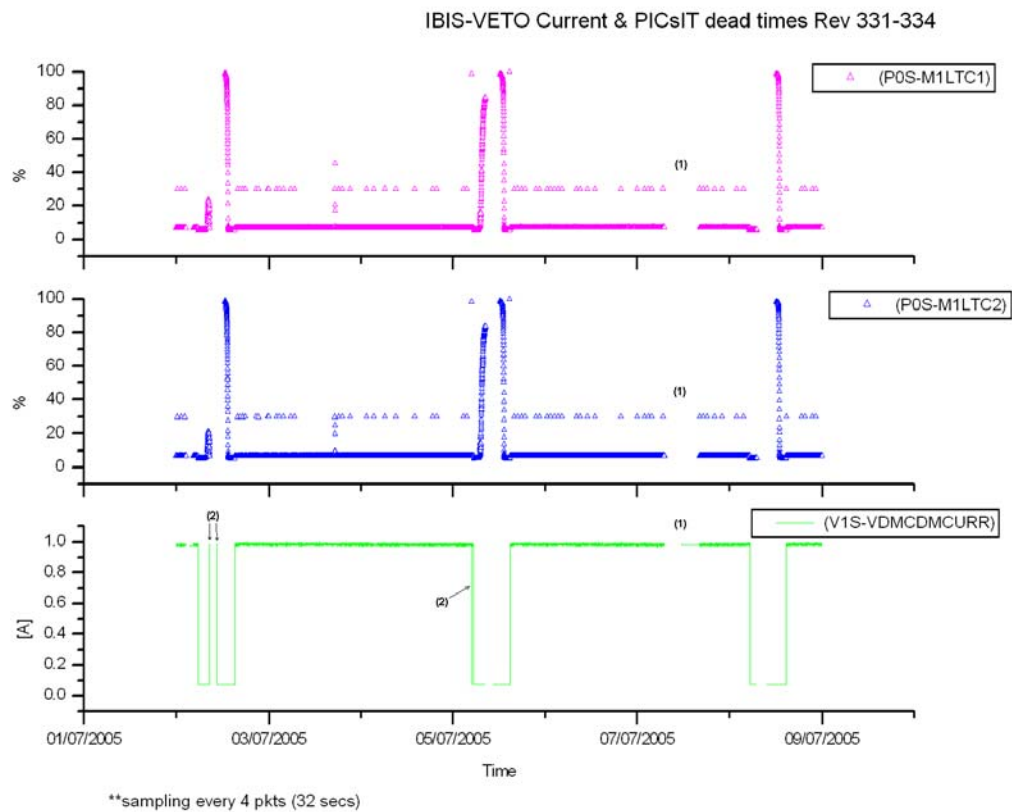
ISGRI Counters:



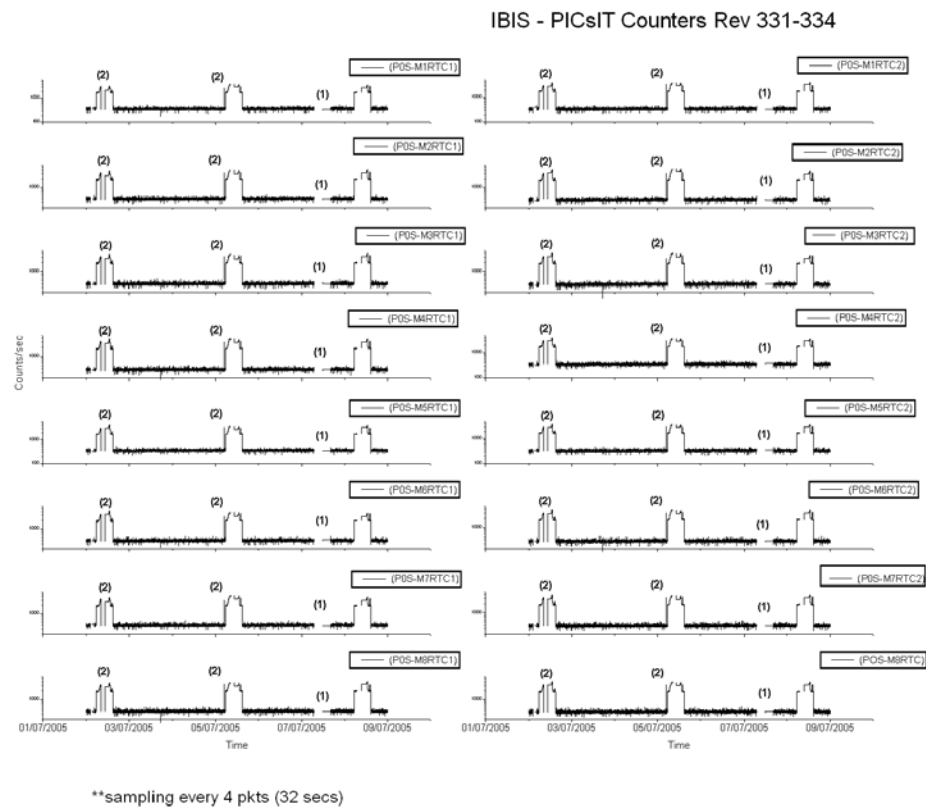
VETO vs Payloads Counters:



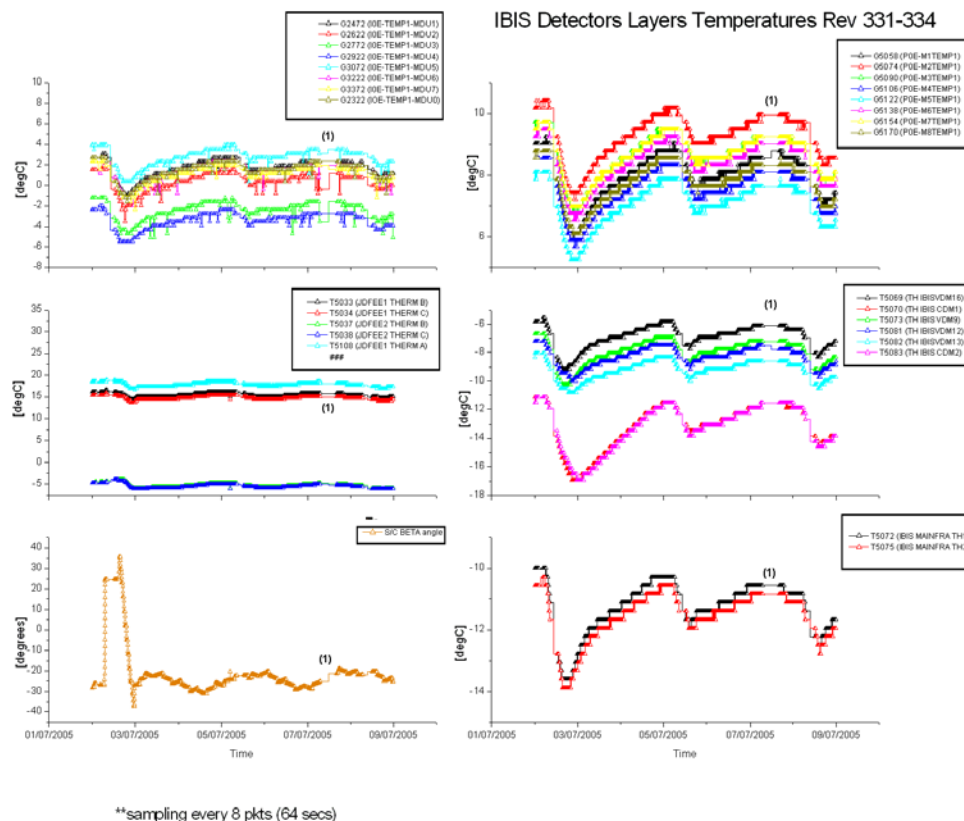
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report:

(1):

During the observation period, TCP/IP tests have been performed on the C-chain. However the problem rose last week with the filing option of the new MCS release (INT_2762) was still present. Therefore irrelevant data have been stored on iddc on DoY 188 (07/07/2005) between 07:15Z and 16:30Z, and on DoY 189 (08/07/2005) during perigee, between 07:11Z and 07:17Z.

These data have been removed from the above plots that now feature gaps instead.

(2):

During the observation period, problems with packet generation/reception time were reported as detailed in the anomaly report INT_2754.

Most switched packets with PSS data (from TCP/IP test, see (1)) were deleted. Switched packets with nominal data are indicated by (2).

As last week, during the observation period this week, OEM id 169 “HK OUT OF SYNC” occurred only twice per revolution whereas it used to be about 12 times per revolution since April. The previous pattern seems to have reappeared.

DoY 2005.183 (02/07/2005):

At 05:37Z TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V. It went back inside limit at 15:07Z. As this happened inside the Radiation Belts, according to V-VLT-1, no action was taken.

At 12:58Z TM parameters G5027 (P0S-M6RTC1), G5008 (P0S_M2RTC2), G5022 (P0S_M5_RTC1) and G5038 (P0S_M8RTC2) went OOL High and back within 10 minutes. According to P-CNT-1, as this happened inside radiation belts, no action was taken.

At 14:52Z TM parameter G2084 (IOE_OVTWPXADD_M6) failed SCC. No action was taken.

At 23:59Z due to problem with the client sun122, GESTAN02 failed release. Operations were transferred to sun121 at 01:00Z and at 01:57Z GESTAN02 was copied from the command history display and up-linked successfully via the manual task.

DoY 2005.184 (03/07/2005):

At 17:16Z TM families G5068 and G5072 failed SCC. No action was taken.

DoY 2005.186 (05/07/2005):

At 05:24Z TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V. It went back inside limit at 14:53Z. As this happened inside the Radiation Belts, according to V-VLT-1, no action was taken.

From 07:58Z TM parameters G5008 (P0S_M2RTC2), G5032 (P0S_M7_RTC1) and G5038 (P0S_M8RTC2) were toggling OOL High until 13:12Z. According to P-CNT-1, as this happened inside radiation belts, no action was taken.

At 14:33Z TM parameter G2014 (IOE_OVTWPXADD_M1) failed SCC. No action was taken.

At 17:58Z TM parameter G6061 went OOL low-low with the value 2456. No action was taken. It happened again on DoY 187 at 08:42Z and on DoY 188 at 00:09Z.

According to PI suggestion, it was decided to lower the low limit of this parameter to 2200 instead of 2500.

DoY 2005.189 (08/07/2005):

At 05:11Z TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V. It went back inside limit at 14:39Z. As this happened inside the Radiation Belts, according to V-VLT-1, no action was taken.

At 12:42Z TM parameters G5007 (P0S_M2RTC1), G5037 (P0S_M8_RTC1) and G5038 (P0S_M8RTC2) went OOL High and back within 10 minutes. According to P-CNT-1, as this happened inside radiation belts, no action was taken.

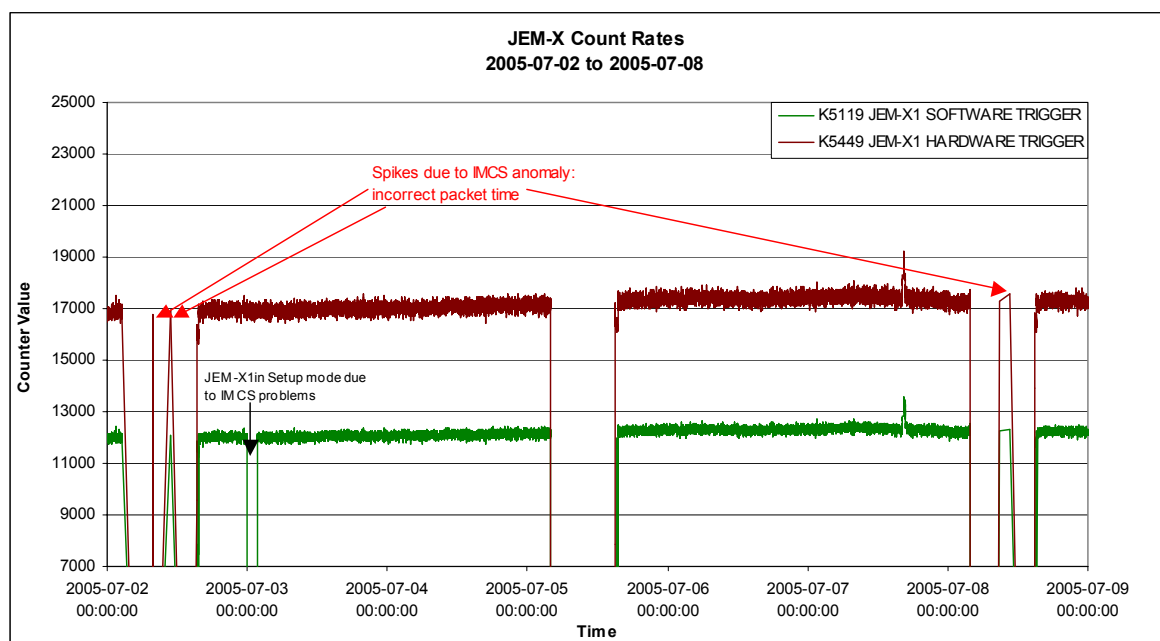
At 14:21Z TM parameter G2070 (IOE_OVTWPXADD_M5) failed SCC. No action was taken.

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 graph¹.

The apparent spikes in the count rates are artefacts of an IMCS anomaly (see Anomaly Report INT-2754) consisting of an **occasional** incorrect calculation of the packet



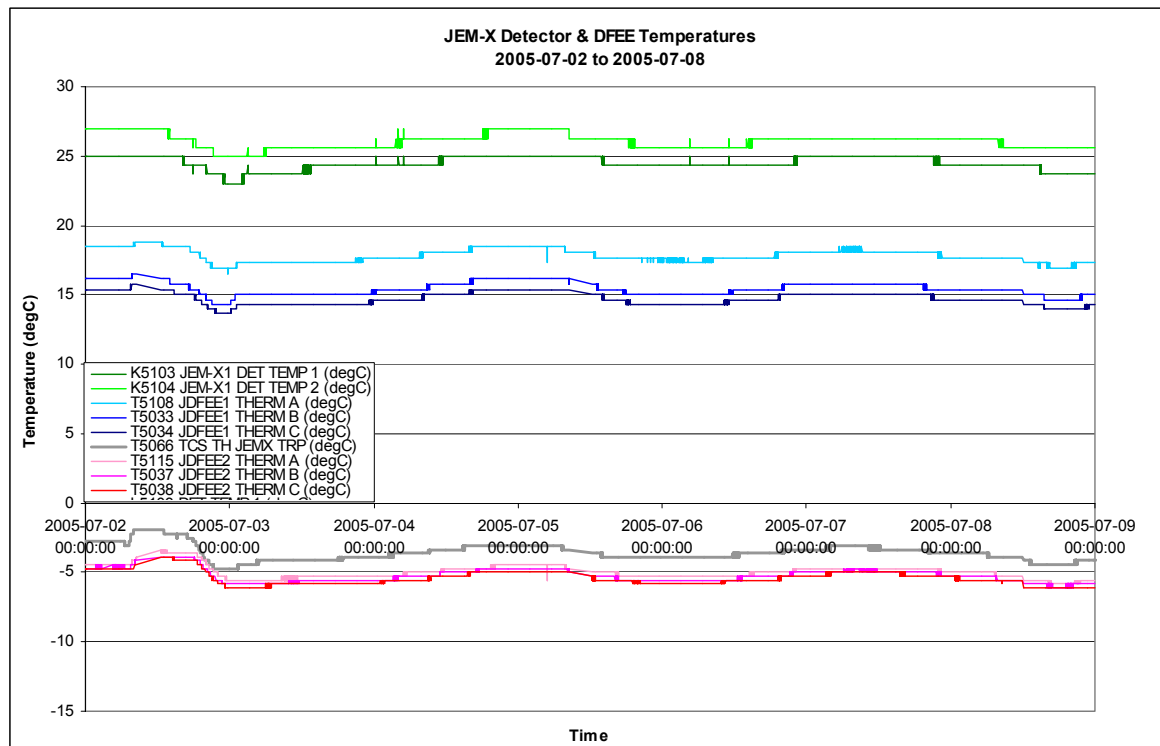
8.3.4.2 JEM-X Temperatures

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 graph².

This data is also affected by the anomaly INT-2754 reported above, although this is not as evident as in the case of the count rates as the temperature values remain fairly steady over the week.

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

2005-07-02 (DOY 183, Rev 331-332)

Nothing to report

2005-07-03 (DOY 184, Rev 332)

Due to problems with the control system (CPD task; see Anomaly Report INT-2756), the TC K0011 scheduled at 00:00:26Z, as part of the ED KEDATA01, failed release from the Timeline. As other commands from the Timeline were also failing, the Timeline was stopped at 00:10Z. Once the problem was fixed and the control system recovered, JEM-X1 was commanded to Data Taking mode manually via FCP_JEM1_0044 at 01:43:20Z. JEM-X1 operations then continued nominally.

2005-07-04 (DOY 185, Rev 332) to 2005-07-08 (DOY 189, Rev 333-334)

Nothing to report

8.3.5 OMC Operations

2005-07-02 (DOY 183, Rev 332)

At 20:35, a problem with the CPD subsystem within the IMCS caused the loss of pointing 03320009.

At 23:57, another problem with the CPD coupled with difficulties re-starting the system caused the loss of pointings 03320014 through to 03320017.

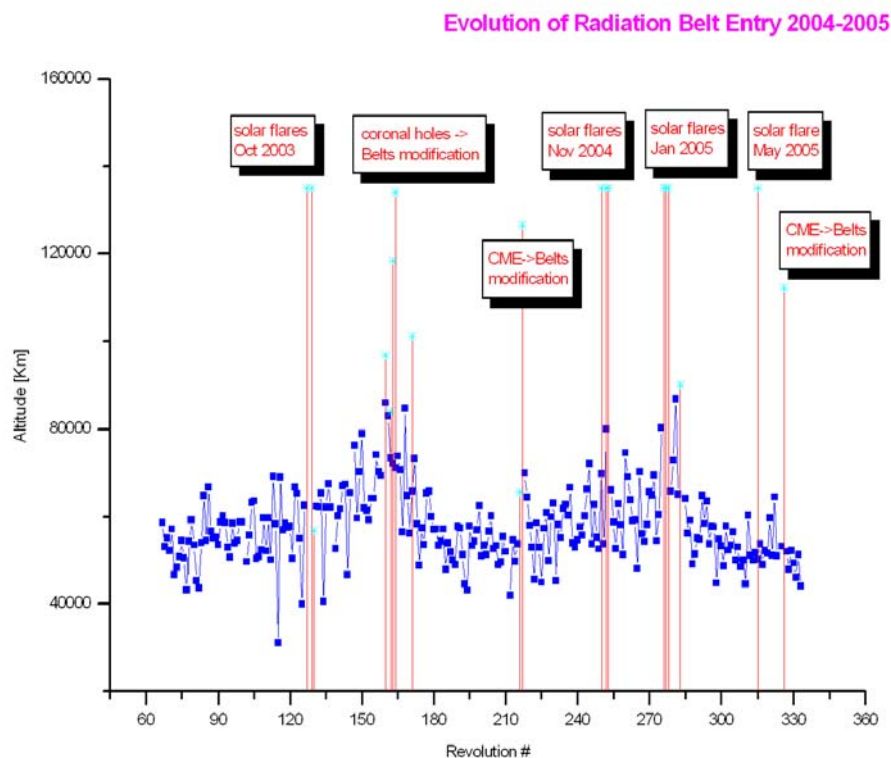
2005-07-06 (DOY 187, Rev 333)

At 05:21, more problems with the CPD subsystem caused the loss of pointing 03330016.

On DoY 183 at 05:37:16, DoY 186 at 05:24:36 and DoY 189 at 05:11:40, OMC was switched by the Timeline to SAFE mode, at the nominal times.

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]
324	RAD_ENTR R 2005-06-11T07:02:01Z	-	-	2005-06-11 07:54:26	53043
331	RAD_ENTR R 2005-07-02T05:37:14Z	2005-07-02 07:21:08	46075.9	2005-07-02 06:35:30	52220
332	RAD_EXIT R 2005-07-02	2005-07-02	>>26539.6	2005-07-02	29634

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]
	02T14:52:52Z	13:57:08		13:45:30	
332	RAD_ENTR R 2005-07-05T05:24:34Z	2005-07-05 06:32:28	51321.7	2005-07-05 06:16:50	53066
333	RAD_EXIT R 2005-07-05T14:40:17Z	2005-07-05 13:54:36	>>24933.8	2005-07-05 13:36:50	30213
333	RAD_ENTR R 2005-07-08T05:11:39Z	2005-07-08 07:11:54	<44083.8	2005-07-08 06:06:50	52877
334	RAD_EXIT R 2005-07-08T14:26:55Z	2005-07-08 13:30:12	<<42356.7	2005-07-08 13:26:50	30488

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)

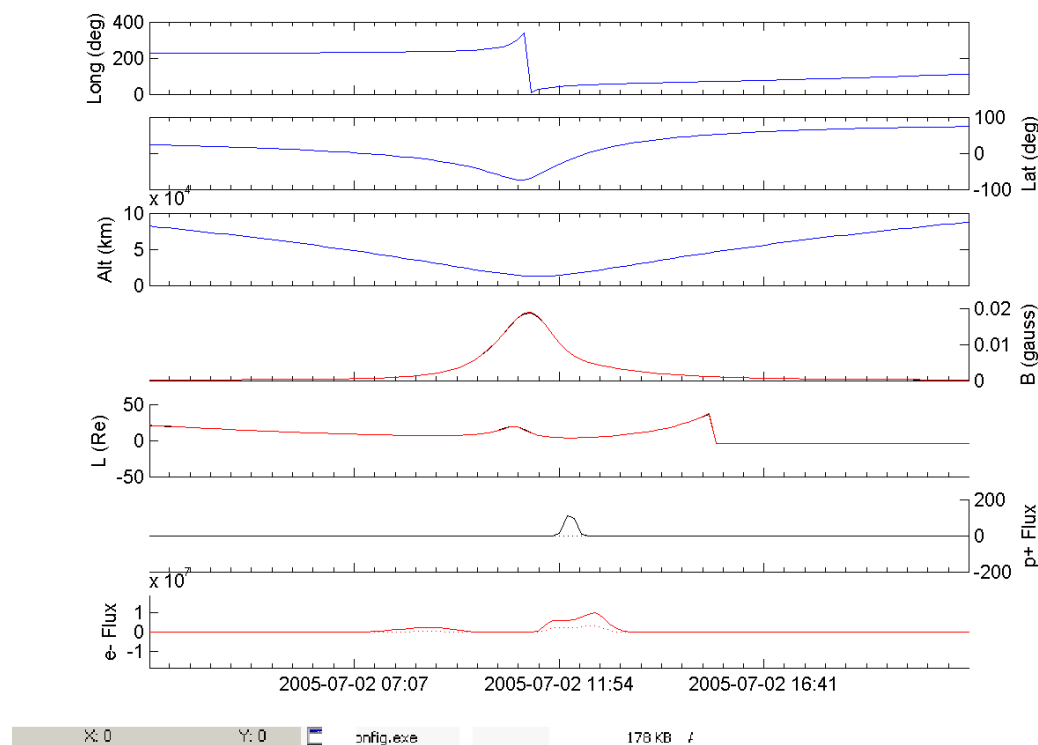
Radiation Spike

IREM radiation counters:

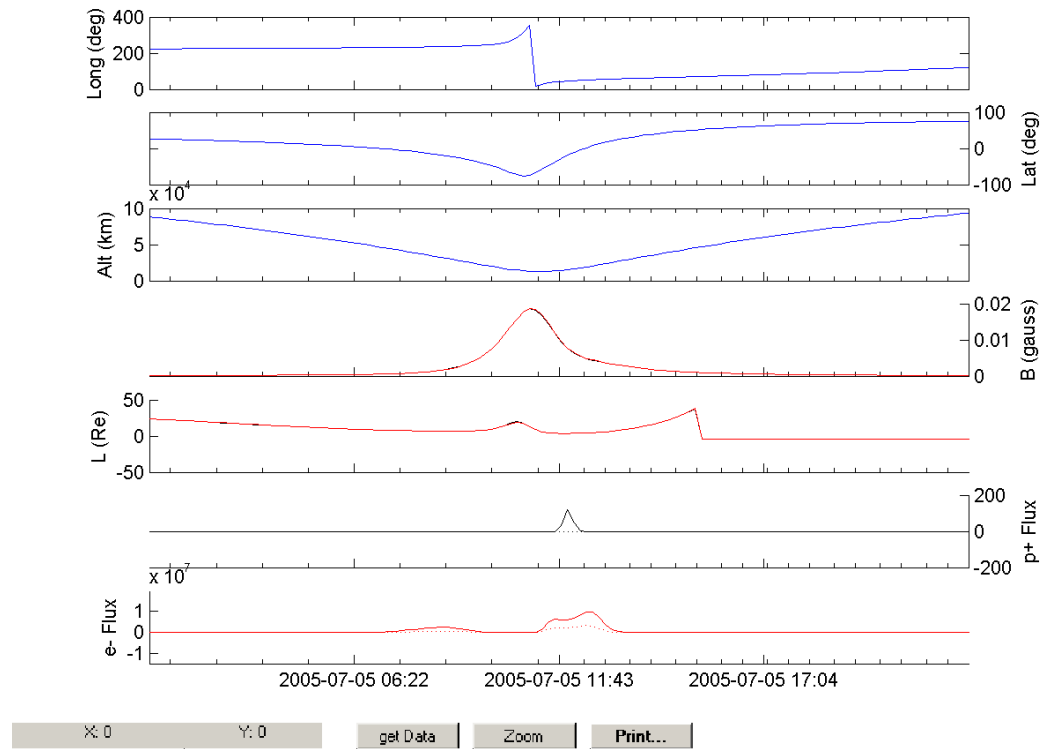
Due to a problem with the ECOE machine, no data are available this week.

IREM Predicted Radiation Belt Passages:

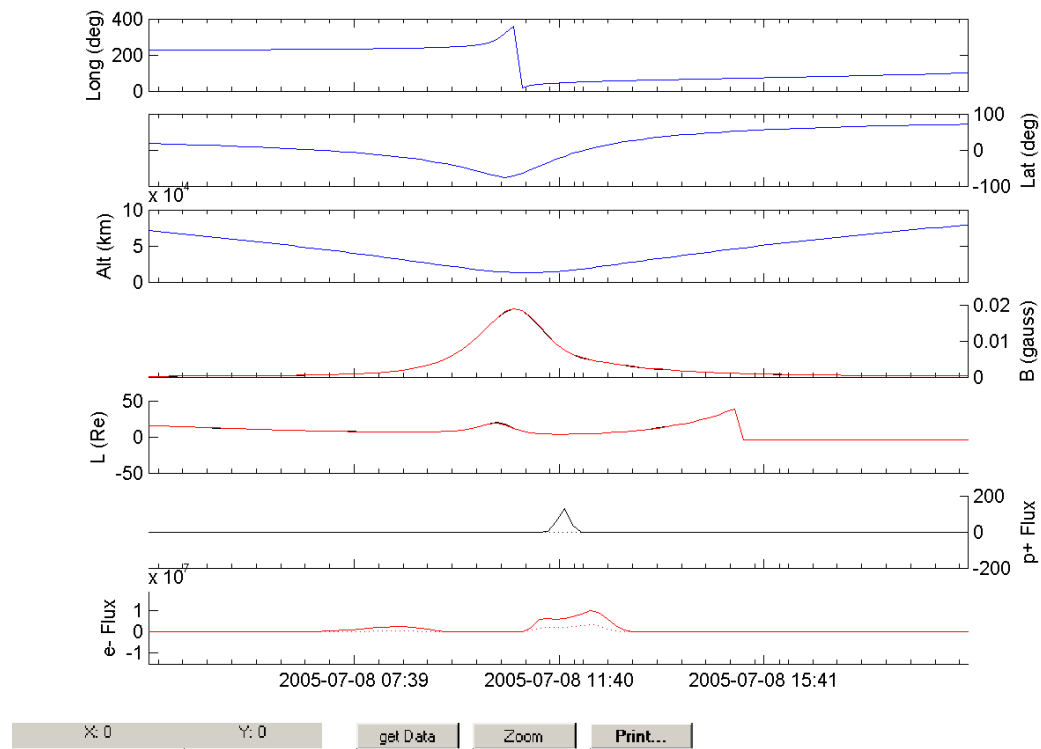
Rev 331:



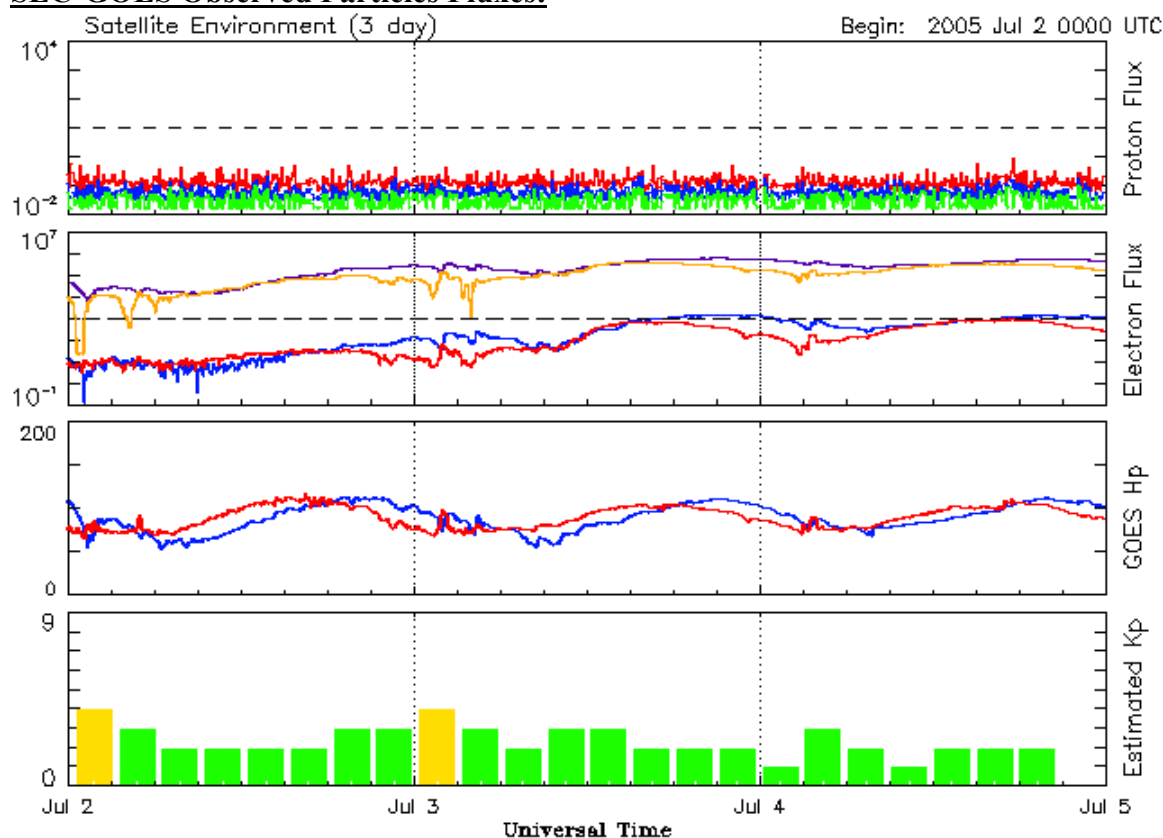
Rev 332:



Rev 333:

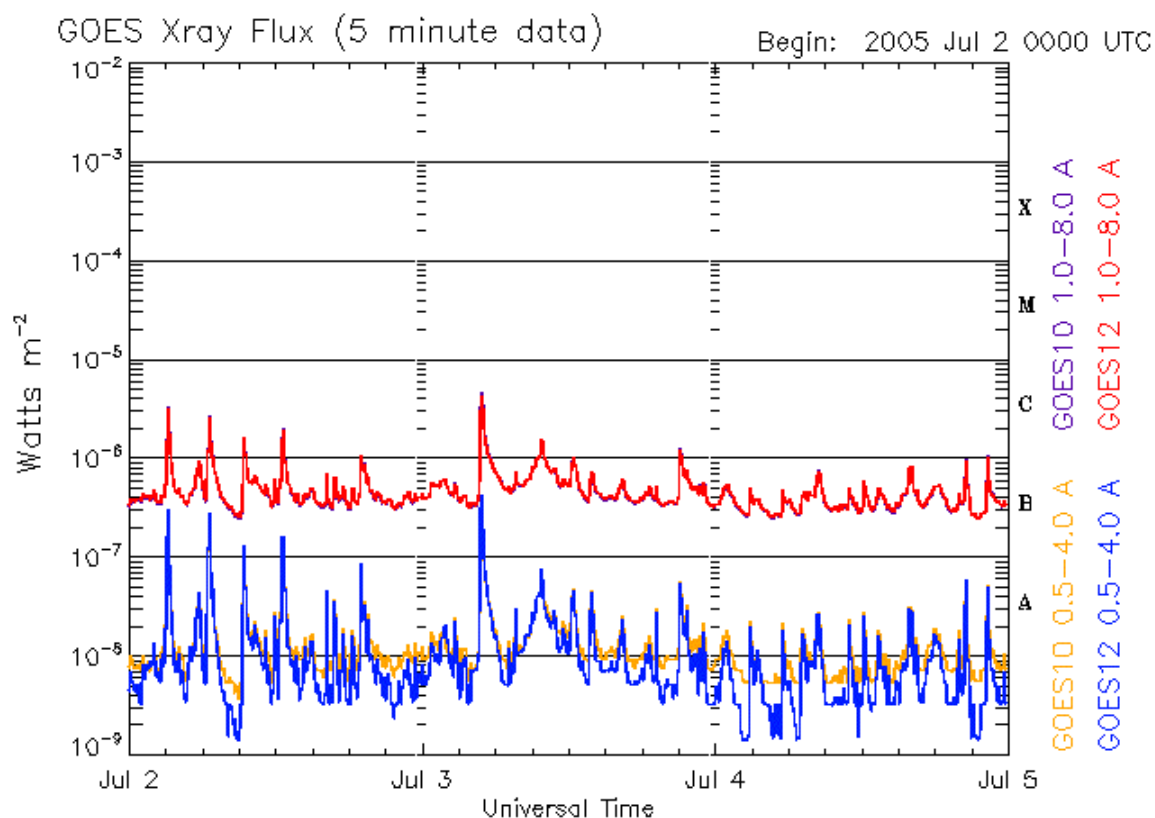


SEC-GOES Observed Particles Fluxes:



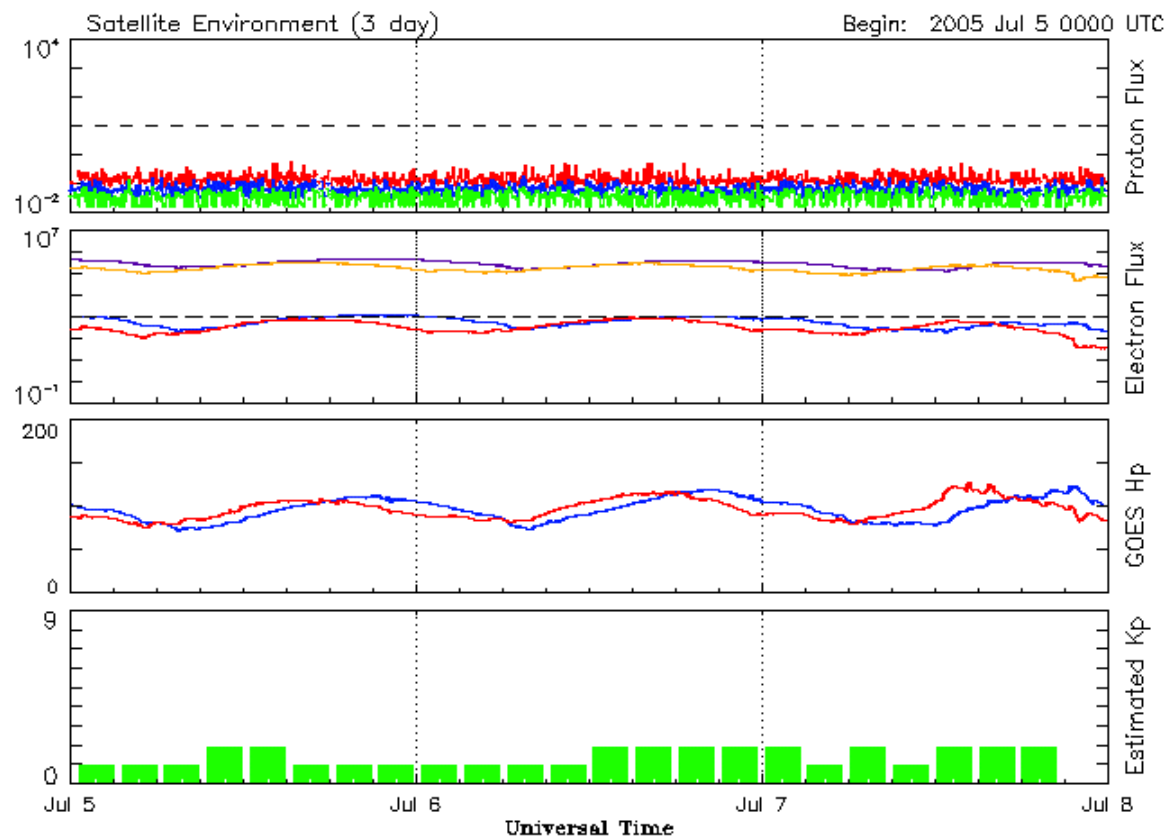
Updated 2005 Jul 4 23:56:23 UTC

NOAA/SEC Boulder, CO USA



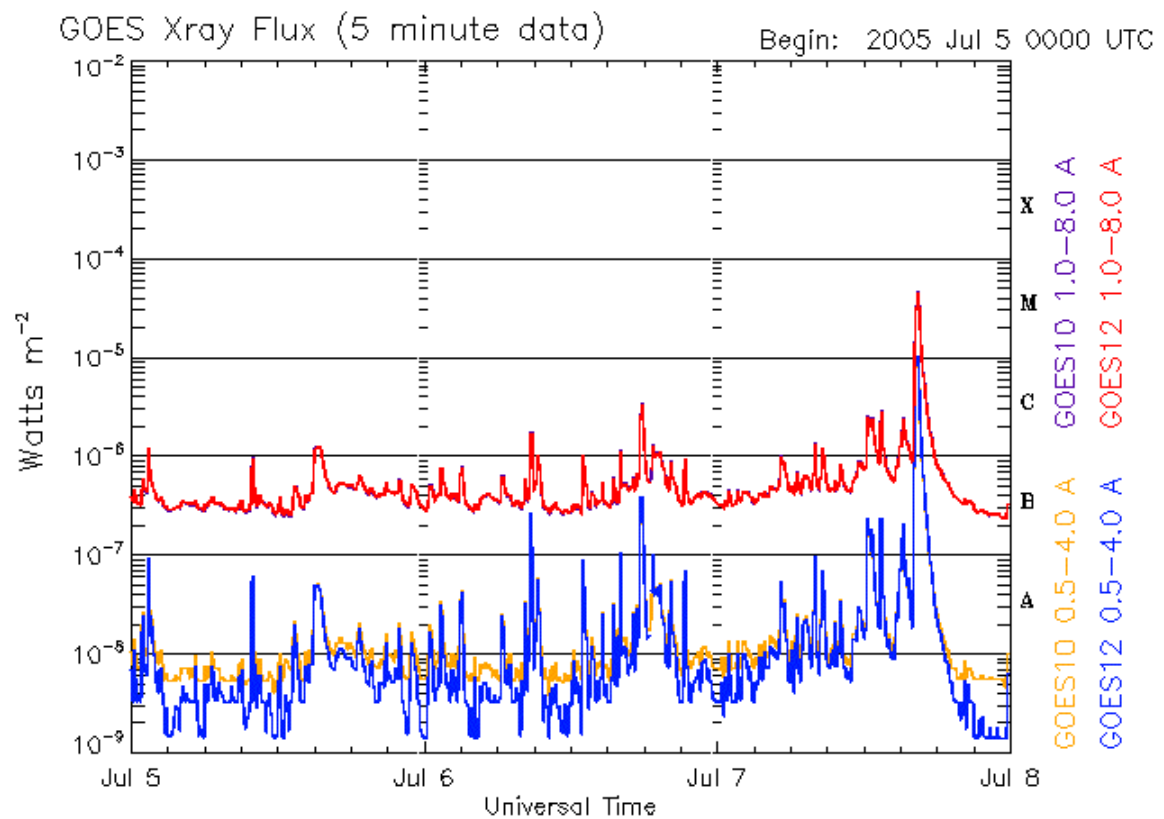
Updated 2005 Jul 4 23:56:10 UTC

NOAA/SEC Boulder, CO USA



Updated 2005 Jul 7 23:56:22 UTC

NOAA/SEC Boulder, CO USA



Updated 2005 Jul 7 23:56:09 UTC

NOAA/SEC Boulder, CO USA

