

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 158
Week 39
05.10.05
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 24.09.05 until 30.09.05 (both dates inclusive) and covers the revolutions 360, 361 & 362.

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 a Galactic Latitude Scan; the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0); GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0); the Scutum Arm; the Galactic Centre field (RA 17:45:40.00; DEC -29:00:28.0) and the Galactic Centre. The activities consisted of hexagonal and raster dithering, Galactic Latitude Scan and grid 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.

12 slews (10 CSL, 2 OSL) were not executed from the Timeline during this period, due to problem on IMCS and REDU station.

The fuel consumption over the period between 01/09/2005 and 30/09/2005 was 0.1135 kg. The remaining propellant is in the order of 159.1865 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

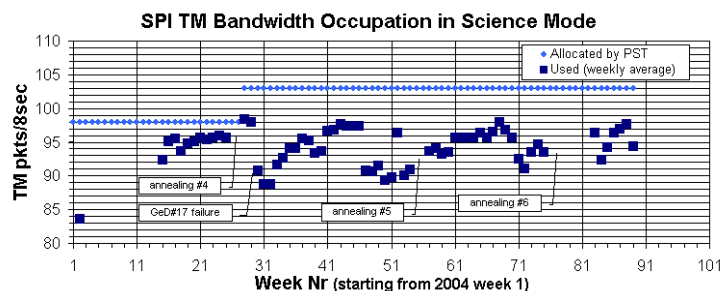
3.2.1 SPI

The overall status of the instrument is nominal.

During science operations, the instrument was kept in photon-by-photon mode, with spectra TM enabled, an assigned TM bandwidth in the science observation windows of 103 pkts/cycle and an average occupation of 93.4 pkts/cycle.

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

The following plot shows the TM bandwidth occupation information.



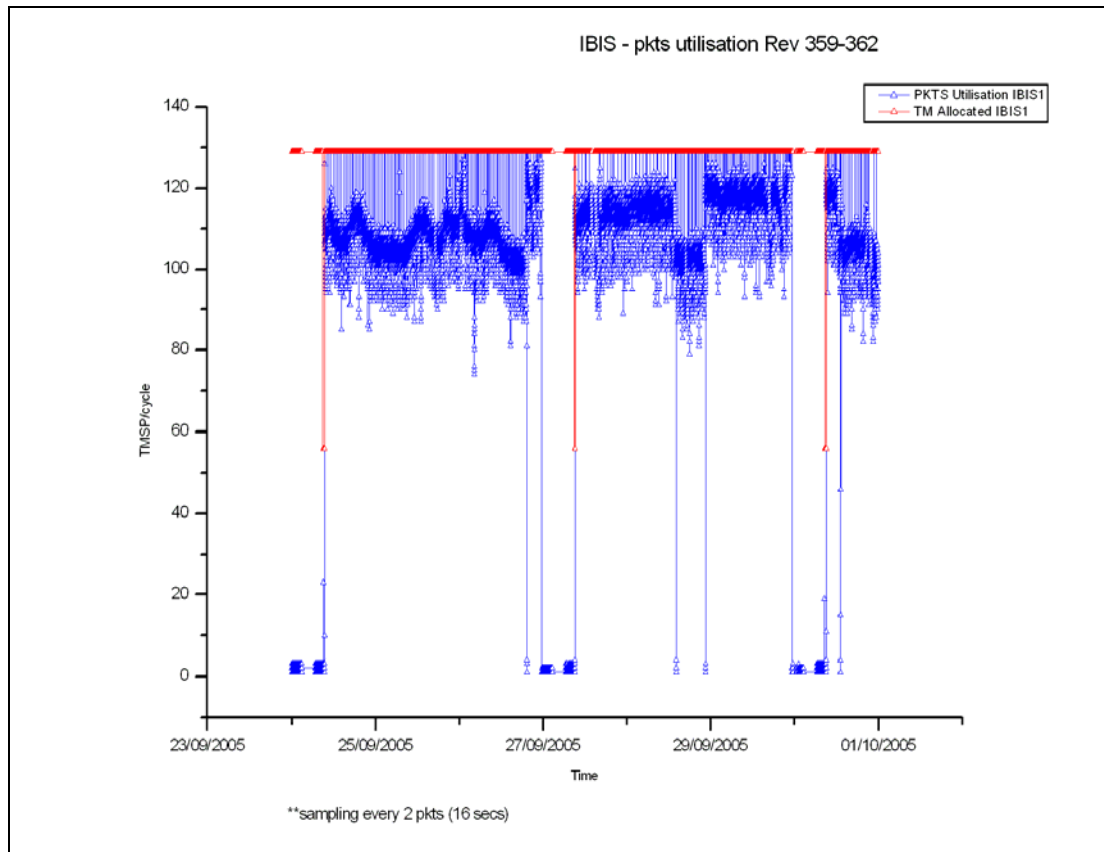
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

The Overall status of the unit is Nominal.

During the reporting period, the PST allocation to IBIS was most of the time 129 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 111.08 TMPS/cycle, down 9.72 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.

In line with OCR 198 (Increase SW Trigger Limit to 40000 for Galactic Latitude Scans), the JEM-X1 SW Trigger Limit was changed from 25000 to 40000 for exposures 03600001 and 03600002 (i.e. from 2005-09-24T09:48Z to 2005-09-26T 19:30Z).

Several Out of Limits were received on the TM parameters K5136 BUFFER LOSS and K5119 SOFTWARE TRIGGER throughout the week.

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, 201 of the 210 planned science pointings for OMC were executed nominally, 8 were lost and 1 delayed by IMCS problems, 1 was lost to ground station problems.

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 sun was very quiet during the observation period. Tiny sunspots appeared but posed no threat of solar flare.

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, 215 slews were executed correctly, 12 were missed, delayed or manually executed. A problem at Redu caused the loss of a pointing, and IMCS anomalies caused the loss of 8 and a delay in another pointing. There were minor problems with the Command Verifier. The overall performance was well above the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was average this week, there are still problems with the command verifier task, although no pointings were lost to this. A problem with the TM cache caused the loss of 6 pointings, and another problem with the segmentation system caused the loss of a further 2 pointings, and a half hour delay in the start of a third. The overall performance was well above the 95% requirement.

The communication protocol has been switched from X25 to TCP/IP at the beginning of the week. No problems have been reported so far.

4.2 Ground Stations & Network

The performance of the ground stations and Network was very good this week although one pointing was lost due to configuration problems with the FEC at Redu, there were also several minor problems with the links to Redu and DSS-16, however none of these led to loss of science data. The overall performance though was well above the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. General

In general the activities in ISOC have been kept to a minimum to allow the scientists to spend as much time as possible at the XMM-Newton conference in El Escorial.

2. Mission planning

No new PSF's received. Hence PSF's up to revolution 367 are available. Planning has been performed of revolutions 365 and 366. Revolution 365 contains CRAB calibration observations for a part of the revolution. A ToO request has been received during the week. No re-planning was deemed necessary for this ToO observation. The decision whether to grant observation time to this request or not is pending. TSF's up to revolution 365 have been received.

3. Observation status

No ECS's received this week and no processing in ISOC.

4. ISOC science data archive

The ISDA was ready in time for the demo in the XMM-Newton conference in El Escorial.

5. ISOC system

A version 11.1 of the ISOC system has been used. A patch was introduced to fix a relatively urgent SPR. The version used is now 11.1.5. No problems encountered.

6. Problems

The problem reported last week concerning discrepancy between the constraint checking in ISOC and MOC is still under investigation. As mentioned above it is less critical at the moment since we are performing observations in other area of the sky.

4.3.2 ISDC

Status of ISDC observation processing on 03/10/2005:

- Latest Standard Analysis completed: observation 02297000020 (galactic disk $l < 0$, Revolution 347) on 03/10/2005
- Latest products archived: observation 02297000020 (galactic disk $l < 0$, Revolution 347) on 03/10/2005
- Latest observation products sent to the observer: observation 03201020003 (Crux Arm, Revolution 330) on 08/09/2005

5 Special Events

None

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 267, at 05:46, after a reboot of the nctrs-a, the MCCM display closed itself down. At 05:50, the MCCM was re-started, with the nctrs-a icon showing blue, but at 06:05, it again closed itself down. At 06:15, the MCCM was again restarted, this time without further problems, there was no impact.
- At 07:16, there were some missing source packets, with an apid of 1664 (Jemx-2), there was no impact.
- At 23:03, the following event log messages were seen: “Error sending data to ISDS”, “Link MADDS-ISDS connected”, “Link ISDS-ISDC disconnected”, “Link MADDS-ISDS TM flow”, and “Link ISDS-ISDC connected”, there was no impact.
- On DoY 268, at 03:21, the message “CPD on host imca is not receiving data” was seen in the event log. At the same time the TC A2552 (RP MAPPING) had an unverified CEV, which caused TC A2549 (AUTHORISE STR TC) to fail release due to the interlock. The AOCS sub-system was then disabled. At 03:28, and 03:30, the CPD_TM_A and PSRVB tasks on idda were restarted, but the IMCA and IDDA icons on the MCCM MMI remained red, with the CPD & TCO clients using ~50% of the cpu. At 03:35, the tasks were again restarted, this time successfully. At 04:10, all tasks on sun129 crashed, and had to be restarted. At 04:35, link test commands were successfully sent. Due to a confusion over 2 different versions of the EPOS 0360_06, the recovery was further delayed. The timeline was eventually recovered at 07:14. The impact was the loss of pointings 03600032 through to 03600037.
- At 17:30, it was noted that the disk lhome/imca was 90% full. There was no impact.
- On DoY 269, at 00:32, 00:35, 00:37 and 00:42, the icon for nctrs-a was showing red on the MCCM MMI. There were no apparent other problems. The MCCM MMI was using ~50% of the cpu, and was restarted clearing the problem. There was no impact.
- At 05:20, the icon for sun121 on the Global MMI turned yellow, with cpu usage above 60%, the TM-desktop, was restarted, which cleared the problem, there was no impact.
- At 06:43 and again at 06:44, there were data gaps on the VC0 onl.TIM from RDTM11 (Redu).
- At 13:11, there was a short interruption in the VC0 TM when the playbacks from Redu started.
- At 14:10, the messages “CMDHveri, imca, ERROR, SYSTEM, Lost connection to TM RT cache” and “Connected to RT TM cache” were seen in the event log. At the same time the TC D4005 Report Packet G2 had an unverified CEV, there was no impact.
- On DoY 270, at 13:58, the message: “PDSserTM, imca, ERROR, SYSTEM, store of packet” appeared in the event log. The PDS task on imca was stopped, but would not restart. An attempt was made to switch commanding to the b-chain before the start of the next slew, but this was unsuccessful. An attempt was made to reboot imca from scratch, but at 14:50, the same message as before appeared in the event log. Commanding was then switched to the b-chain, difficulties were then experienced re-configuring the FD system, which

further delayed the recovery. The problem was traced to a corrupted HFA archive, due to a segmentation failure. The timeline was rejoined at 16:23, with the switch back to the a-chain at 18:35. For a full description see ARTS entry INT-2794. The impact was the loss of pointings 03610006 and 03610007.

- At 19:25, the TC A3087 (AUTH SUN STEER) failed release due to the static PTV = NOT GO. This was caused by most of the constants being reset to zero following the previous difficulties. After the recovery, the timeline was rejoined at 20:08, the impact was a half hour delay in the start of pointing 03610011.
- On DoY 271, at 10:10, the nctrs-a icon on the Global MMI turned red, at returned to green after the alarm was acknowledged, no other action was taken, and there was no impact.
- At 10:59, in the event log, the message “CPDisTM, idda, WARNING – CPDclientHandlersendData: Cannot send message to the client” was seen, there was no impact.
- At 18:31, there was a data gap in the VC0 onl.COMP from Redu-2, this was followed by 10 bad frames.
- On DoY 272, at 00:27, there was a brief drop in the VC0 & VC7 TM from Redu, there was no impact.
- At 17:38, the Global MMI on sun129 disappeared, probably due to an on-going restart of the imcb. At 17:48, the MMI was restarted, there was no impact.
- At 20:35, just after the station handover from Redu to DSS-16, all the links went to drop. At 20:38, the links were back, there was no impact.
- On DoY 273, at 01:17, the icon for nctrs-a on the Global MMI turned red, the reason was not clear, there was no impact.
- At 02:22, the TC U4921 (UEGROF01) failed CEV completion, there was no impact.
- At 21:56, all links with Redu dropped, they returned at 22:17, the cause being the configuration of the FEC at Redu. The timeline was rejoined at 22:57, the impact was the loss of pointing 03620024.

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

AR id	Date Created	Subject	Segment	Status
INT-2796	05/10/2005	TC/TM links lost to REDU (corrupt STDM files)	ESA Stations	Pending
INT-2797	05/10/2005	TC/TM links lost from DSS-16	NASA Station	Pending

7 Future Milestones

A patch of the IMCS is planned for September/October, which should fix a couple of problems.

DSS-16 is to be decommissioned, and replaced by DSS-27, the testing of which started last week, and is on-going.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 360

The observations in revolution 360 consisted of a Galactic Latitude scan lasting ~57.5 hours, followed by a hexagonal dithering observation of the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0), performed for the remaining ~4 hours of observation time.

Revolution 361

The observations in revolution 361 began with a hexagonal dithering observation of GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0) lasting ~28.5 hours, followed by a grid observation of the Scutum Arm lasting ~8 hours. A hexagonal dithering observation of the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0) lasting ~3.5 hours was then performed, followed by a raster dithering observation of the Galactic Centre field (RA 17:45:40.00; DEC -29:00:28.0), performed for the remaining ~21 hours of observation time.

Revolution 362

The observations in revolution 362 consisted of a hexagonal dithering observation of the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0) lasting ~3.5 hours, followed by a Galactic Centre observation, performed for the remaining ~57.5 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.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2005-09-09T08:28:55.000Z	159.4656	F	Automatic TM processing.
2005-09-10T18:46:11.000Z	159.4584	F	Automatic TM processing.
2005-09-12T03:19:10.000Z	159.4436	F	Automatic TM processing.
2005-09-12T08:17:59.000Z	159.4162	F	Automatic TM processing.
2005-09-15T08:38:31.000Z	159.3824	F	Automatic TM processing.
2005-09-18T02:43:27.000Z	159.3733	F	Automatic TM processing.
2005-09-18T07:53:51.000Z	159.3490	F	Automatic TM processing.
2005-09-21T02:29:58.000Z	159.3366	F	Automatic TM processing.
2005-09-21T07:44:15.000Z	159.3000	F	Automatic TM processing.
2005-09-24T02:27:26.000Z	159.2919	F	Automatic TM processing.
2005-09-24T07:27:34.000Z	159.2661	F	Automatic TM processing.
2005-09-27T02:04:37.000Z	159.2414	F	Automatic TM processing.
2005-09-27T07:14:14.000Z	159.2233	F	Automatic TM processing.
2005-09-30T02:03:41.000Z	159.2068	F	Automatic TM processing.
2005-09-30T07:02:37.000Z	159.1865	F	Automatic TM processing.

8.3 Detailed Satellite Information

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

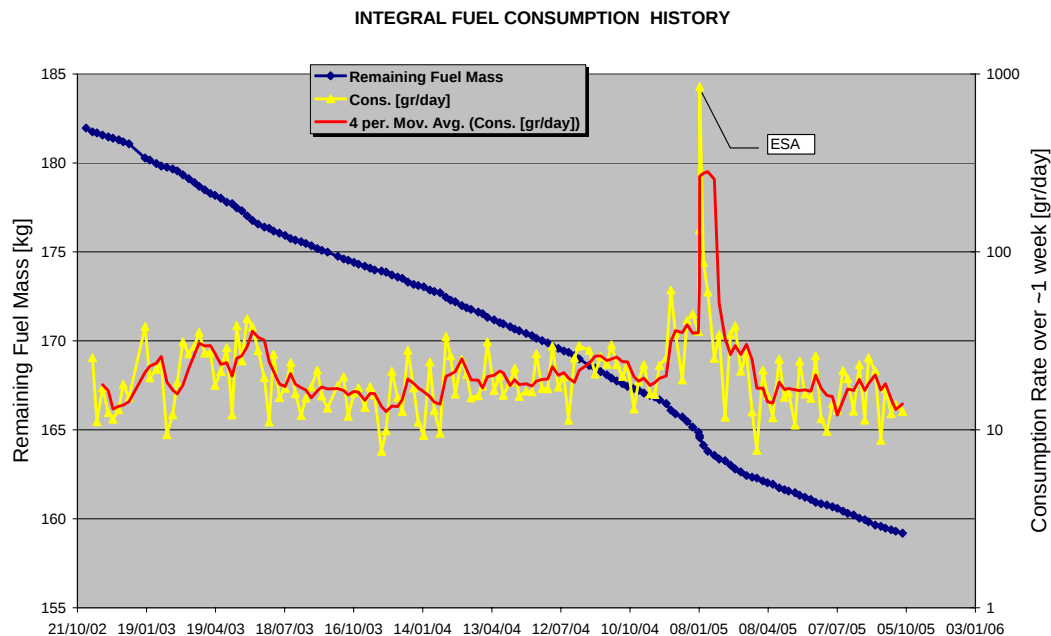
8.3.1 AOCS SUMMARY OPERATIONS REPORT, 24/09/2005 – 30/09/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 93 Open Loop Slews, 122 Closed Loop Slews and 6 Momentum Bias were executed (TL + manual recovery). 12 slews (10 CSL, 2 OSL) were not executed from the Timeline during this period, due to problem on different tasks of IMCS and tracking on REDU station.

This is equivalent to a ~5.4 % of the total number of slews planned (223).

The fuel consumption over the period between 01/11/2002 and 30/09/2005 is reported in the plot below.



24/09/05 (Day of Year 267, Revolution 359-360)

Nothing to report

25/09/05 (Day of Year 268, Revolution 360)

Slews missed from the Timeline: Due to a problem on IMCS (CPD task not receiving data), the slew ID 03600031(CSL) failed release for the part concerning the mapping but was executed correctly. In order to prevent further problem, the AOCS s/s was disabled in TL at 03:21z. Additional problems (found two version of the epos file for rev 360) on the FDS, further delayed the recovery of the S/C.

A manual recovery was then performed to the attitude of PID 03600037. The next slew (CSL) for PID 03600038 was manually updated and executed from the Timeline.

The AOCS s/s was re-enabled in TL at 07:14z.

The following slews were not executed from TL while recovering the AOCS s/s: 03600032(CSL)-33(CSL)-34(CSL)-35(CSL)-36(OSL)-37(CSL).

26/09/05 (Day of Year 269, Revolution 360)

Nothing to report.

27/09/05 (Day of Year 270, Revolution 360-361)

OOl in measured wheel speed RW#3, no impact on Timeline: a problem was observed at 01.27z on the measured speed of RW#3 (measured value = 3670 rpm) exceeding the warning high limit set to 3660, due to a limited divergence (~50 rpm). The predicted value was set to 3610 rpm.

No action was taken but only monitoring the wheels speeds evolution during the last part of the revolution 360 and starting of rev 361.

Slews missed from the Timeline: Due to a problem on segmentation of the archive on IMCS-A, the A-chain reported problem to execute the TL as planned. The switch to the B-chain could not be executed in time and the AOCS s/s was disabled in TL at 14:13z. Due to this the slew ID 03610006(CSL) failed release. The FDS was then re-configured to access TM from the B-chain and a manual recovery was then performed, on the B-chain, to the attitude of PID 03610008. The next slew (CSL) for PID 03610009 was manually updated and executed from the Timeline.

The AOCS s/s was re-enabled in TL at 16:27z. The execution of the TL was performed through the B-chain until 18:35z when the TC/TM links were switched back to IMCS A-chain. At 19:25 due to a problem on the re-initialization of some user defined constants after IMCS A-chain restart, the slew ID 03610011 failed release (due to static PTV NO GO).

The AOCS s/s was disabled in TL at 19:25z.

The constants were re-initialized to the proper values and a manual recovery was then performed from the attitude of PID 03610010 to the attitude of PID 03610011. The next slew (OSL) for PID 03610012 was manually updated and executed from the Timeline.

The AOCS s/s was re-enabled in TL at 20:08z.

The following slews were not executed from TL while recovering the AOCS s/s: 03610006(CSL)-07(CSL)-08(CSL)-11(CSL).

28/09/05 (Day of Year 271, Revolution 361)

Nothing to report.

29/09/05 (Day of Year 272, Revolution 361)

Nothing to report.

30/09/05 (Day of Year 273, Revolution 361-362)

Slews missed from the Timeline: Due to a tracking problem on REDU (problems in the TC-FEC configuration), the slew ID 03620024(OSL) failed release and the AOCS s/s was disabled in TL at 21:56z.

A manual recovery was then performed to the attitude of PID 03610025. The next slew (CSL) for PID 03610026 was manually updated and executed from the Timeline.

The AOCS s/s was re-enabled in TL at 22:57z.

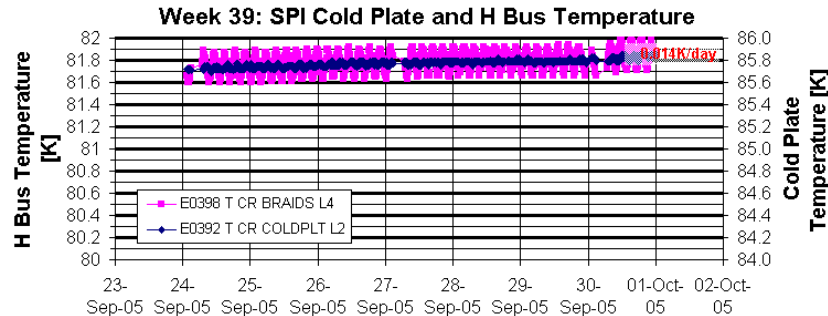
The following slews were not executed from TL while recovering the AOCS s/s: 03610024(OSL)-25(CSL).

8.3.2 SPI Operations

Stirling compressors and Cryostat:

The performance of the compressors is nominal. The cold plate temperature was maintained at 85K $\pm$ 1K showing the usual positive drift with the expected slope

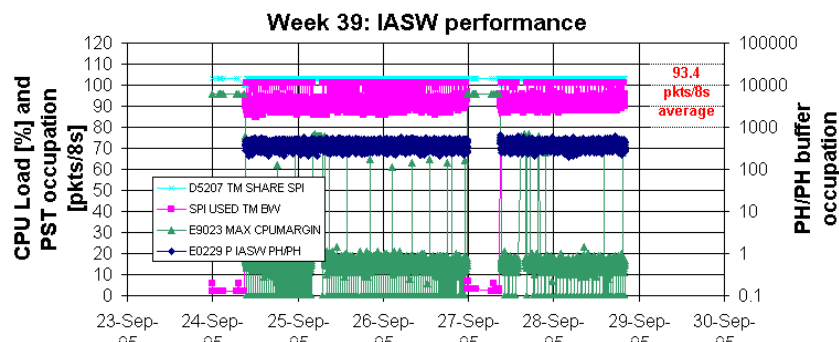
The following plot shows the evolution of the cold-plate and H bus temperatures during the reporting period.



DPE & IASW:

The IASW performance is nominal.

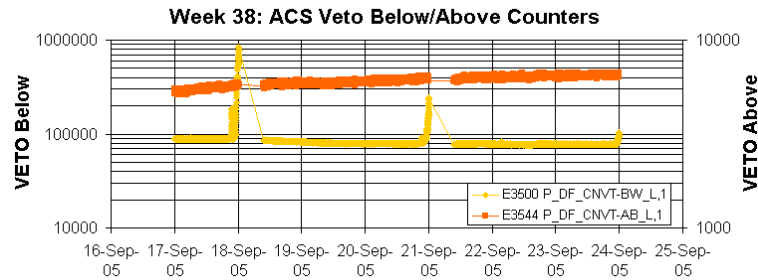
The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.



ACS:

The performance of the ACS is nominal.

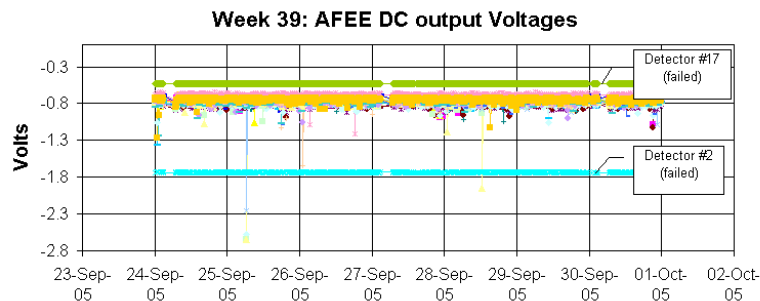
The following plot shows the ACS overall count rate evolution during the reporting period.



AFEE and Germanium Detectors:

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

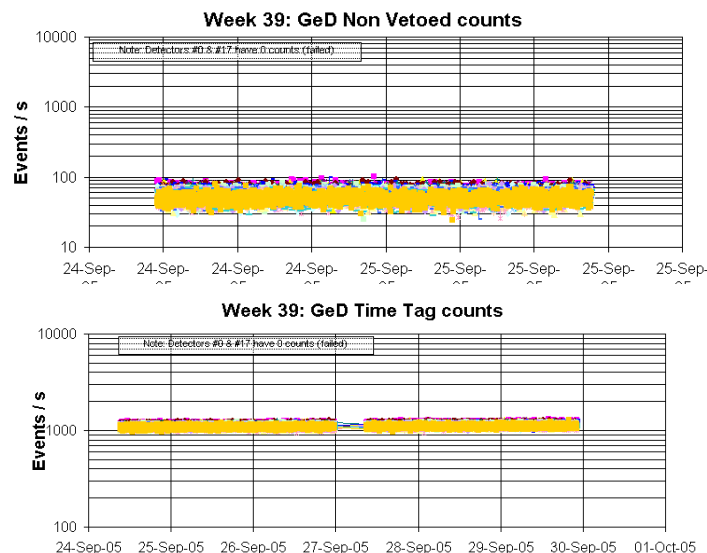
The following plot shows the dc voltage offset of the detector channels during the reporting period.

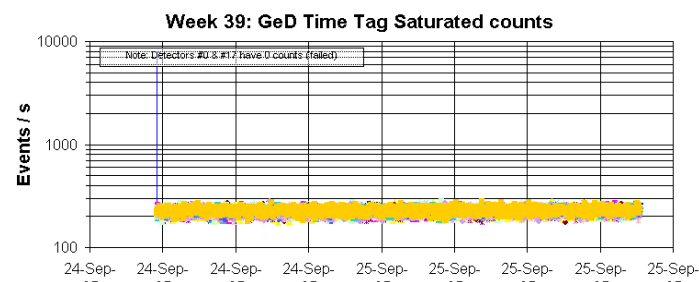


DFEE:

The performance of the unit is nominal.

The following plots show the count rates of the detectors during the reporting period (due to problems in the data retrieval tool, some gaps could be present).

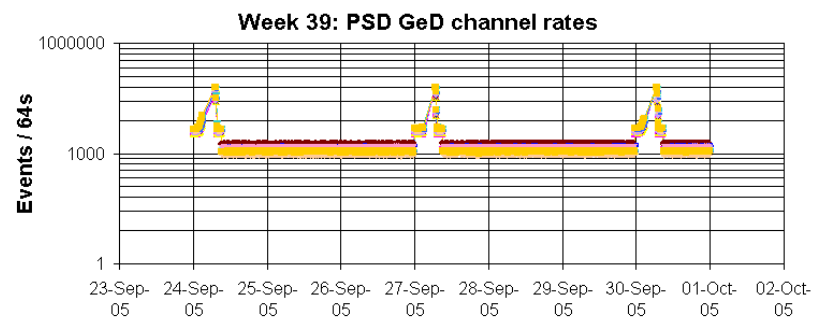




PSD:

The performance of the unit is nominal.

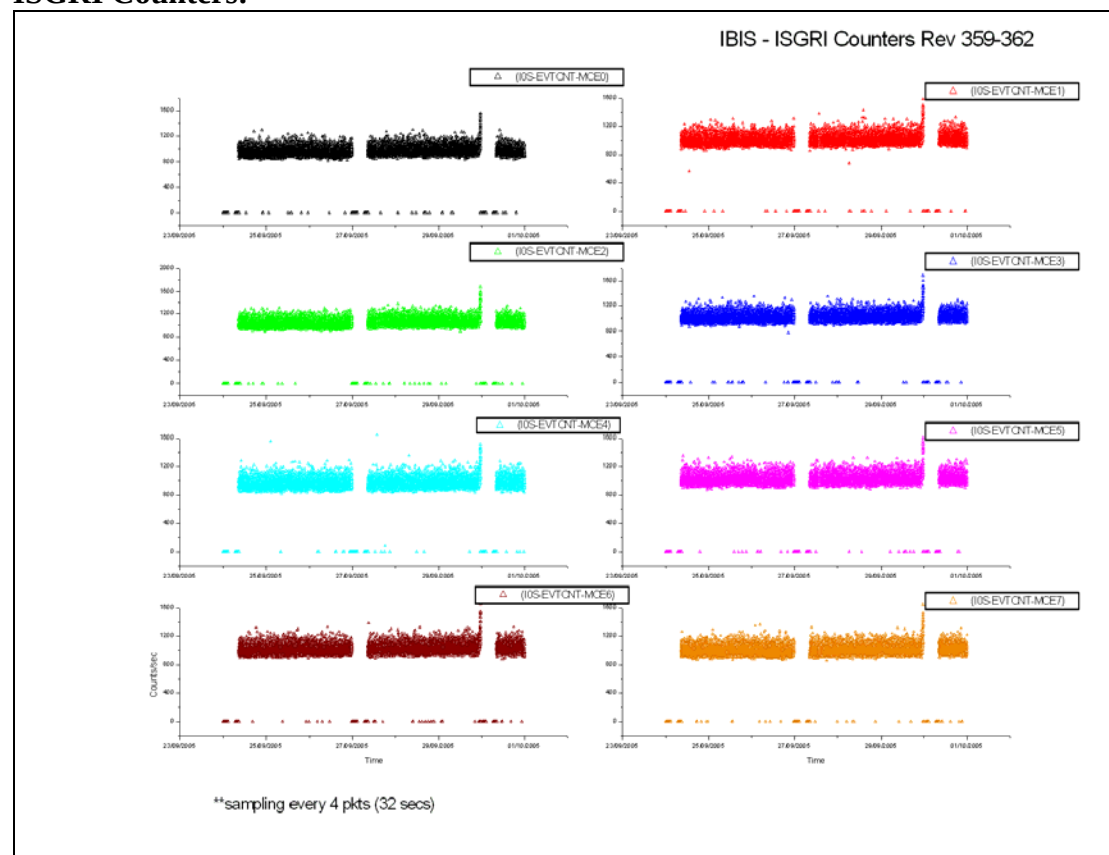
The following plots show the PSD channel rates during the reporting period.



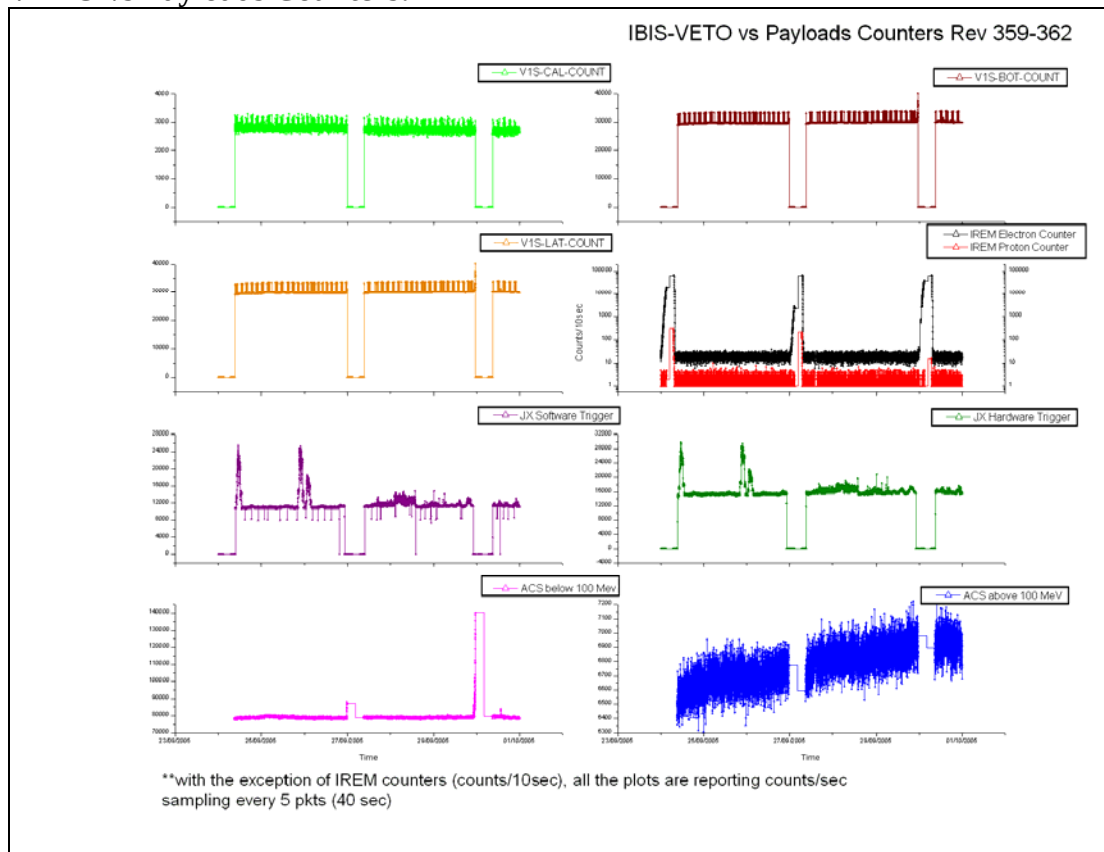
8.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

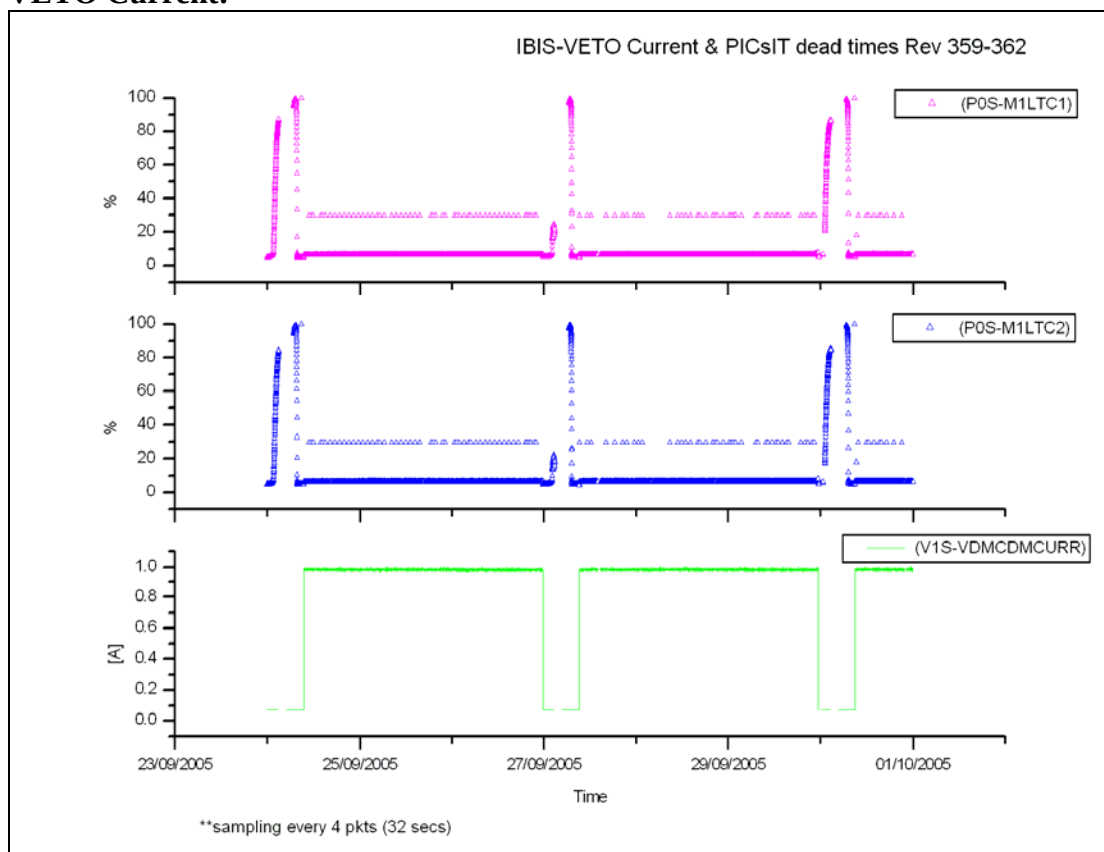


VETO vs Payloads Counters:

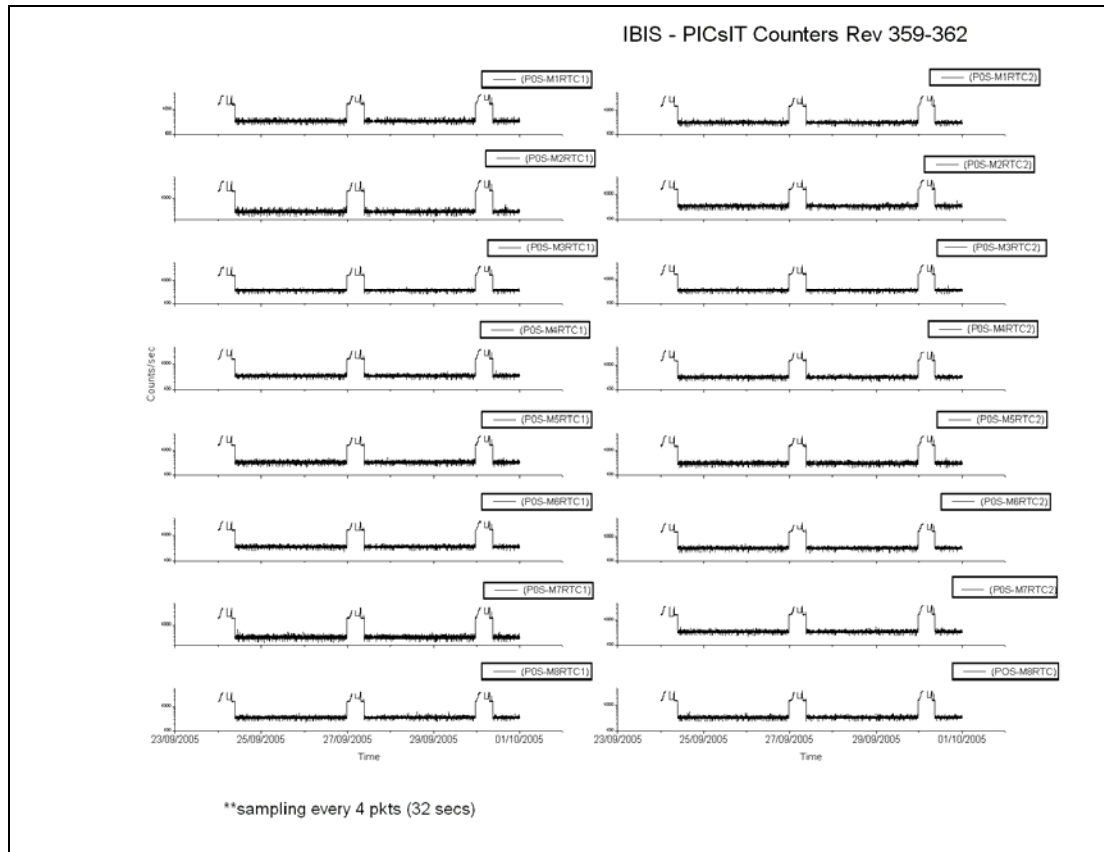


The week was characterised by low radiation.

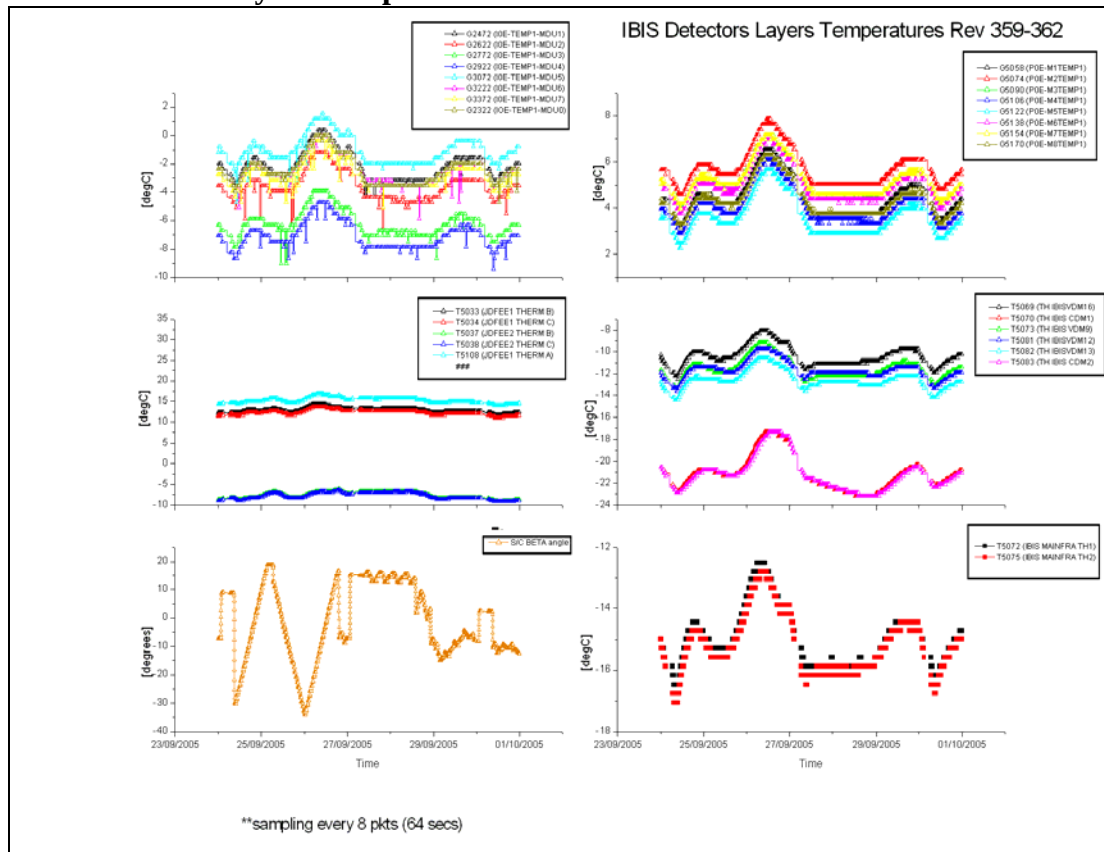
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report

DoY 2005.267 (24/09/2005)

On DoY 2005.266 at 23:56Z, TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V. It went back inside limits at 09:23Z on DoY 267. As this happened inside the radiation belts, according to V-VLT-1 no action was taken.

At 02:58Z, TM parameter G5018 (P0S-M4_RTC2) went OOL High and back. It occurred again at 07:31Z. As this happened inside the radiation belts, according to P-CNT-1 no action was taken.

DoY 2005.269 (26/09/2005)

At 23:43Z, TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V. It went back inside limits on DoY 270 at 09:10Z. As this happened inside the radiation belts, according to V-VLT-1 no action was taken.

DoY 2005.270 (27/09/2005)

At 07:07Z, TM parameters G5037 (P0S-M8_RTC1) and G5028 (P0S-M6_RTC1) were toggling OOL High for 5 minutes. As this happened inside the radiation belts, according to P-CNT-1 no action was taken.

At 13:42Z, TM family G2056 (I0E-OVFWPXADD-M4) failed SCC. According to reaction I-OVF-1, no action was taken.

DoY 2005.272 (29/09/2005)

At 23:30Z, TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V. It went back inside limits on DoY 273 at 08:57Z. As this happened inside the radiation belts, according to V-VLT-1 no action was taken.

DoY 2005.273 (30/09/2005)

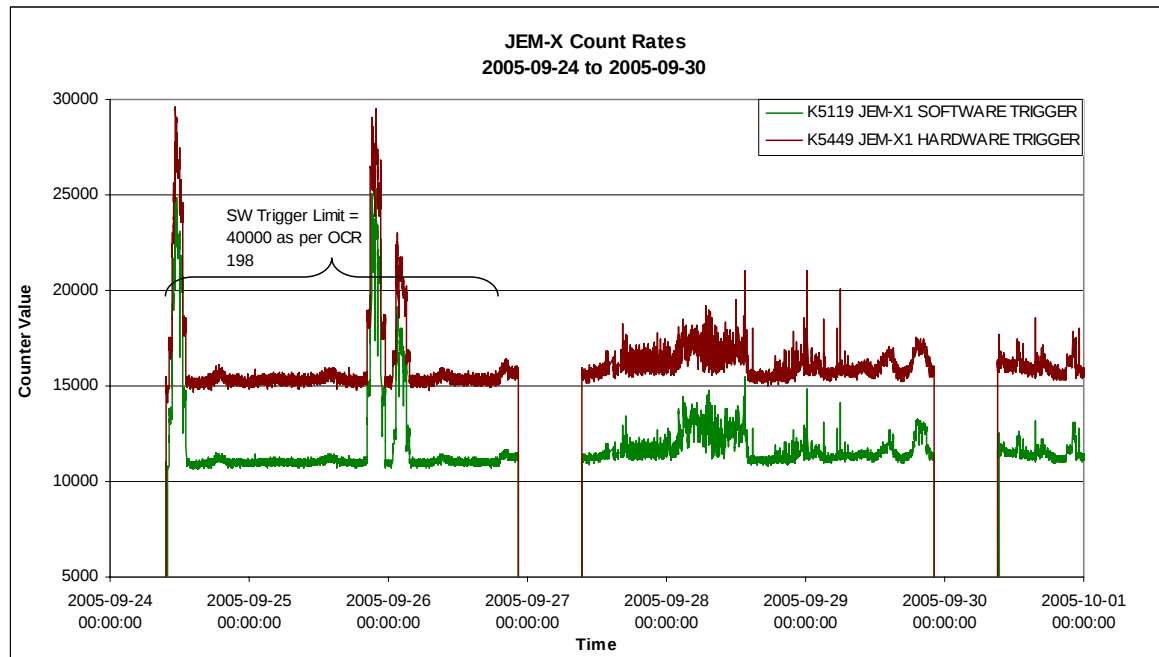
At 02:12Z, TM parameters G5032 (P0S-M7_RTC1) and G5012 (P0S-M3_RTC1) were toggling OOL High for 30 minutes. As this happened inside the radiation belts, according to P-CNT-1 no action was taken.

At 08:37Z, TM family G2084 (I0E-OVFWPXADD-M6) failed SCC. According to reaction I-OVF-1, 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.

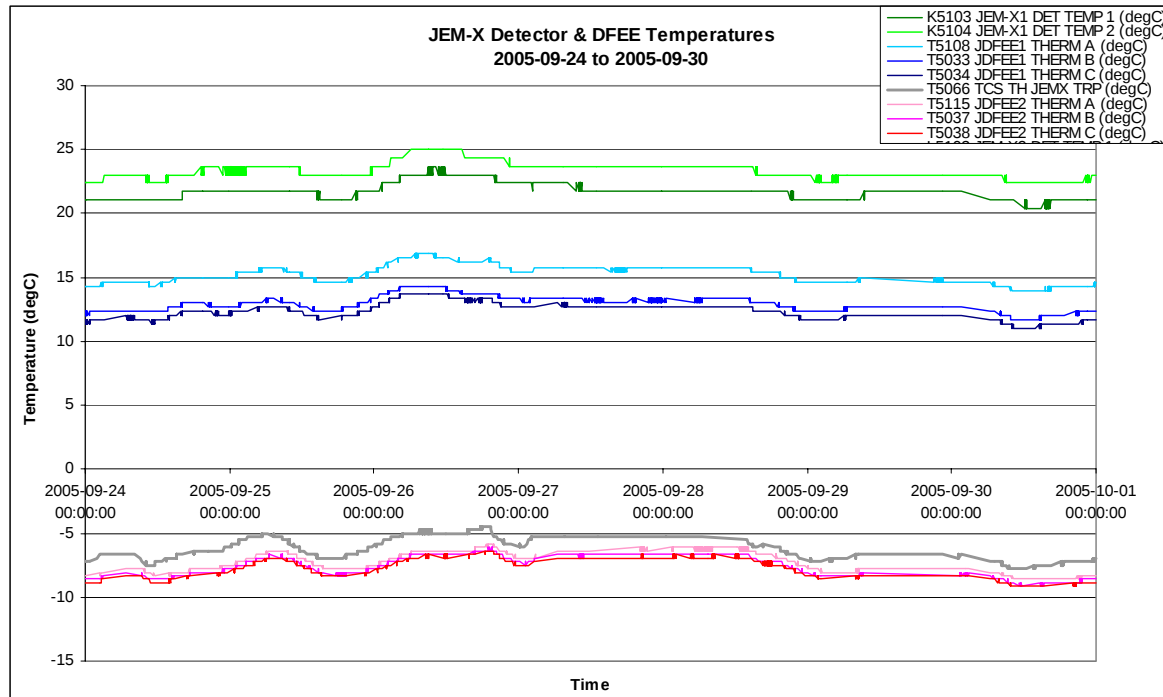


8.3.4.2 JEM-X Temperatures

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.

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

2005-09-24 (DOY 267, Rev 359-360)

In line with OCR 198 (Increase SW Trigger Limit to 40000 for Galactic Latitude Scans), the JEM-X1 SW Trigger Limit (controlled by SW Integer parameter 84) was changed from 25000 to 40000 for the first two exposures in revolution 360, in which higher than normal count rates were expected. The operations were performed according to INT_OR_0220 as follows:

- At 09:41Z, after the last TC of the ED KEHVAC01, commanding to JEM-X1 from the Timeline was disabled.
- At 09:43:45Z procedure FCP_JEM1_0041 was executed to put JEM-X1 in Setup mode
- At 09:47:38Z procedure FCP_JEM1_0070 was executed, setting the parameters of TC K0014 as follows:
 K0014
 K0013 = 84 RAW DEC
 K0014 = 40000 RAW DEC
- At 09:57:00Z procedure FCP_JEM1_0044 was executed to return JEM-X1 to Data Taking mode, with the planned observation parameters for the ongoing observation.

Commanding to JEM-X1 remained disabled to avoid resetting the SW Trigger Limit back to 25000 during this observation (Galactic Latitude Scan).

Between 10:43:58Z and 12:31:02Z the TM parameter K5119 SOFTWARE TRIGGER was often Out of Limits High (Warning and Alarm) due to the higher than normal count rates obtained from the source being observed. In addition, the TM parameter K5136 BUFFER LOSS went Out of Limits High on several occasions as follows:

- at 10:43:02Z (value = 255), returning within limits at 10:44:06Z
- at 11:19:42Z (value = 4187), returning within limits at 11:20:38Z
- at 11:56:46Z (value = 1127), returning within limits at 11:57:50Z

2005-09-25 (DOY 268, Rev 360)

Commanding to JEM-X1 remained disabled throughout the day to ensure that the SW Trigger Limit remained at 40000 during the ongoing Galactic Latitude Scan observation.

Between 20:58:54Z and 22:48:22Z the TM parameter K5119 SOFTWARE TRIGGER was often Out of Limits High (Warning and Alarm) due to the higher than normal count rates obtained from the source being observed. In addition, the TM parameter K5136 BUFFER LOSS went Out of Limits High on several occasions as follows:

- at 20:59:10Z (value = 1377), returning within limits at 21:00:06Z
- at 21:36:06Z (value = 1606), returning within limits at 21:37:02Z
- at 22:13:02Z (value = 946), returning within limits at 22:14:06Z

2005-09-26 (DOY 269, Rev 360)

In line with OCR 198 (and INT_OR_0220) commanding to JEM-X1 from the Timeline was re-enabled at 19:07Z, after the end of Exposure 03600002. The ED KEDATA02 up-linked from the Timeline at 19:29:52Z thus reset the SW Trigger Limit to 25000.

At 01:17:50Z the TM parameter K5136 BUFFER LOSS went Out of Limits High (value = 126), returning within limits at 01:18:46Z.

2005-09-27 (DOY 270, Rev 360-361)

Nothing to report

2005-09-28 (DOY 271, Rev 361)

As can be seen from the plot in section 8.3.4.1, several spikes were present in the Software Trigger (TM parameter K5119) throughout the day and the parameter went Out of Limits High at 13:17:50Z and again at 14:36:14Z, for 1 TM cycle on each occurrence. In addition, there were several instances of high values of the Buffer Loss (TM parameter K5136), however they did not appear Out of Limits as two consecutive occurrences are required for an OOL on this parameter.

2005-09-29 (DOY 272, Rev 361)

At 00:21:10Z and again at 06:04:22Z the TM parameter K5136 BUFFER LOSS went Out of Limits High for 1 TM cycle on each occurrence.

2005-09-30 (DOY 273, Rev 361-362)

Nothing to report

8.3.5 OMC Operations

2005-09-25 (DoY 268, Rev 360)

At 03:21, a problem with the CPD caused an AOCS command to fail release. Further problems delayed the recovery, which was eventually achieved at 07:14. The impact was the loss of pointings 03600032 through to 03600037. It was at this time the following commands were rejected:

2005.268.03.55.09.123	2005.268.03.55.14.216	1792	RealTime	131	TC REJECT
REJECTED TC1		0	0	65535	PR N
E E					
2005.268.03.55.15.248	2005.268.03.55.21.492	1792	RealTime	131	TC REJECT
REJECTED TC1		0	0	65535	PR N
E E					
2005.268.04.32.04.125	2005.268.04.32.09.565	1792	RealTime	131	TC REJECT
REJECTED TC1		0	0	65535	PR N
E E					
2005.268.04.32.10.125	2005.268.04.32.18.353	1792	RealTime	131	TC REJECT
REJECTED TC1		0	0	65535	PR N
E E					

Which correspond to the M1130 (RESET IM) and MU1310 (IMAGING-A) for pointings 03600032 and 03600033.

2005-09-27 (DoY 270, Rev 361)

At 13:58, a problem with the archiving system caused the suspension of the timeline. For a full description see ARTS entry INT-2794. The impact was the loss of pointings 03610006 and 03610007. It was at this time the following commands were rejected:

2005.270.14.20.05.743	2005.270.14.20.09.589	1792	RealTime	131	TC REJECT
REJECTED TC1		0	0	65535	PR N
E E					
2005.270.14.20.11.993	2005.270.14.20.17.562	1792	RealTime	131	TC REJECT
REJECTED TC1		0	0	65535	PR N
E E					

Which correspond to the M1130 (RESET IM) and MU1310 (IMAGING-A) for pointing 03610006.

At 19:25, an AOCS command failed to go due to problems connected with the previous difficulties, the impact was a 30 minute delay in the start of pointing 03610011

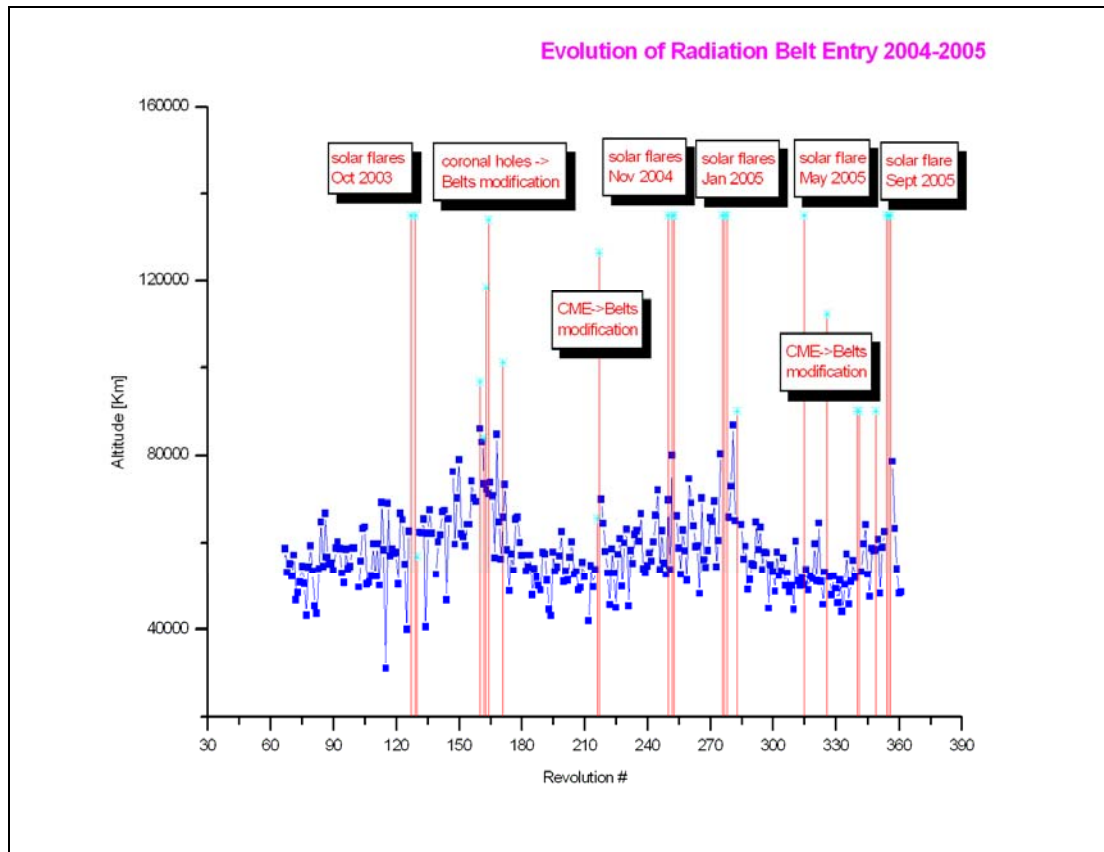
2005-09-30 (DoY 273, Rev 362)

At 21:56, a problem at the ground station caused the loss of pointing 03620024.

On DoY 269 at 23:43:20 and DoY 272 at 23:30:32 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]
359	RAD_ENTR R 2005-09-23T23:56:35Z	2005-09-24 00:44:00Z	53847.9	2005-09-24 00:50:33	52711
360	RAD_EXIT R 2005-09-24T09:11:05Z	2005-09-24 07:57:52Z	>>24915.8	2005-09-24 08:10:33	30780
360	RAD_ENTR R 2005-09-26T23:43:13Z	2005-09-27 01:10:16Z	>48227.0	2005-09-27 00:40:42	52256
361	RAD_EXIT R 2005-09-27T08:57:41Z	2005-09-27 07:40:32Z	>>24917.1	2005-09-27 07:50:42	29707
361	RAD_ENTR R 2005-09-29T23:30:27Z	2005-09-30 00:53:52Z	>48519.8	2005-09-30 00:30:42	51966
362	RAD_EXIT R 2005-09-30T08:44:51Z	2005-09-30 07:32:00Z	>>24914.1	2005-09-30 07:40:42	30059

Reference

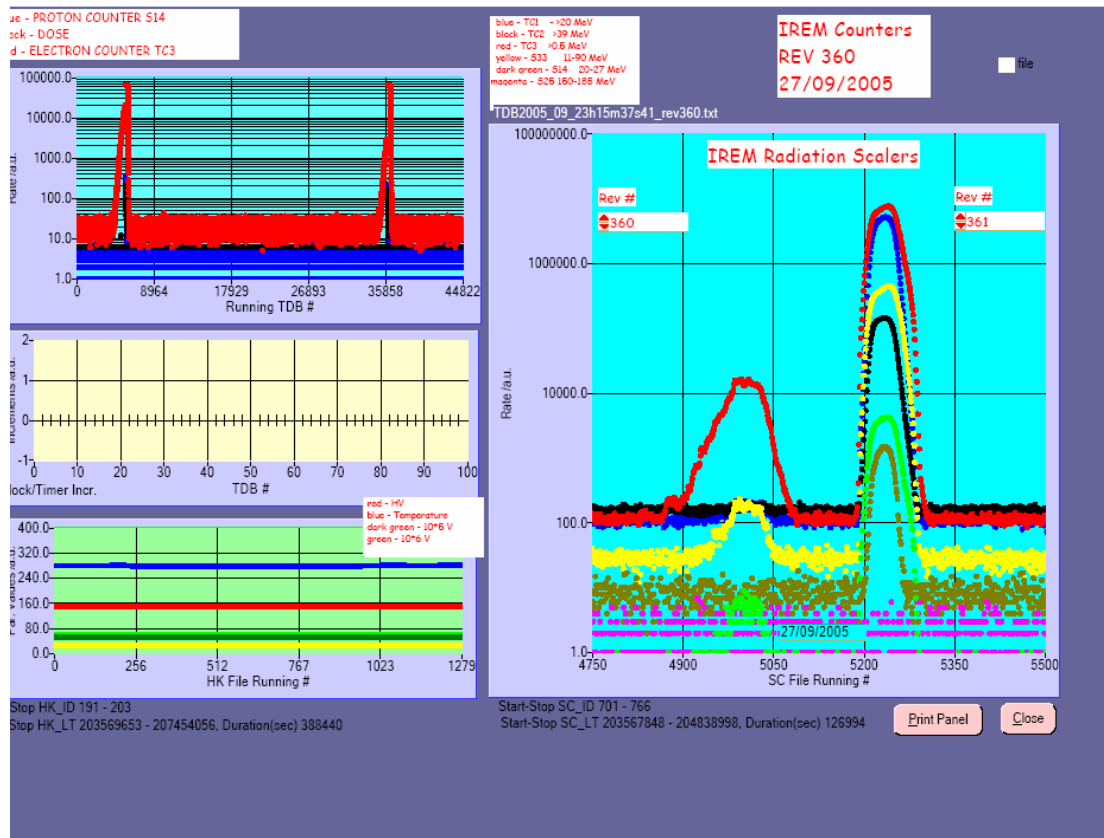
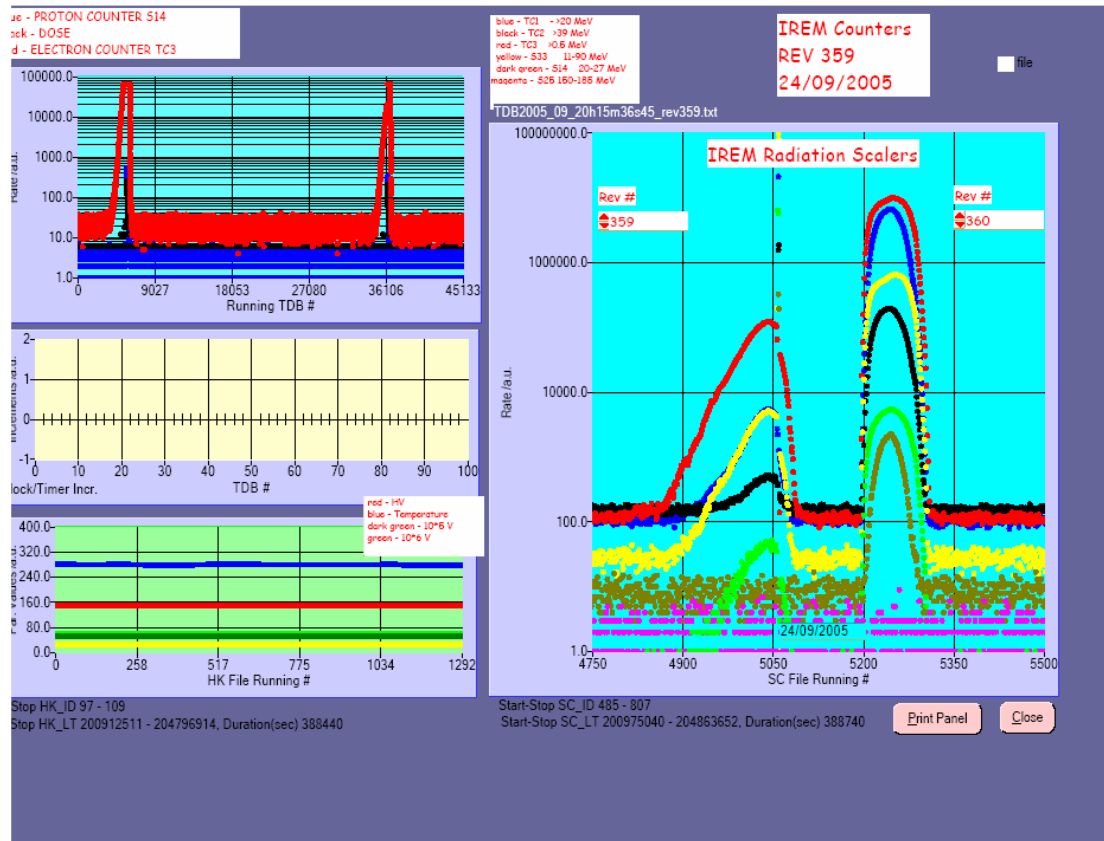
Very small error vs reference (less than 10 minutes)

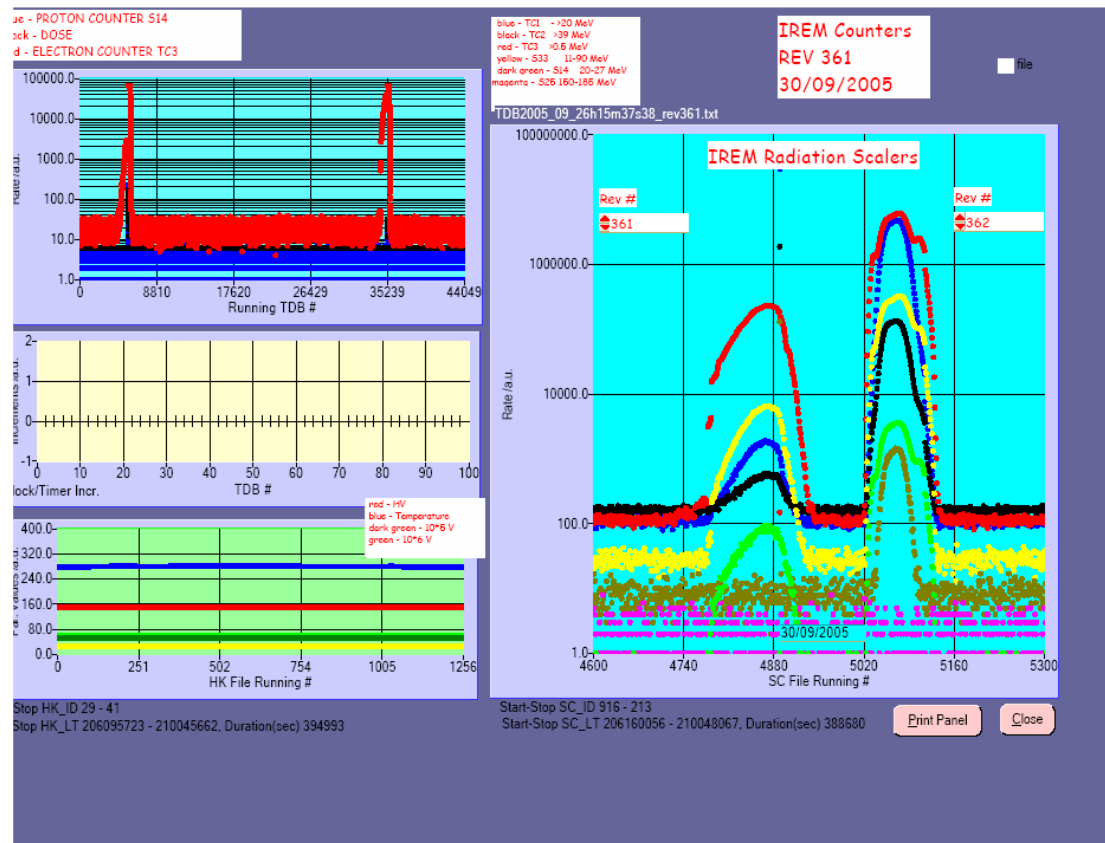
Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

Radiation Spike

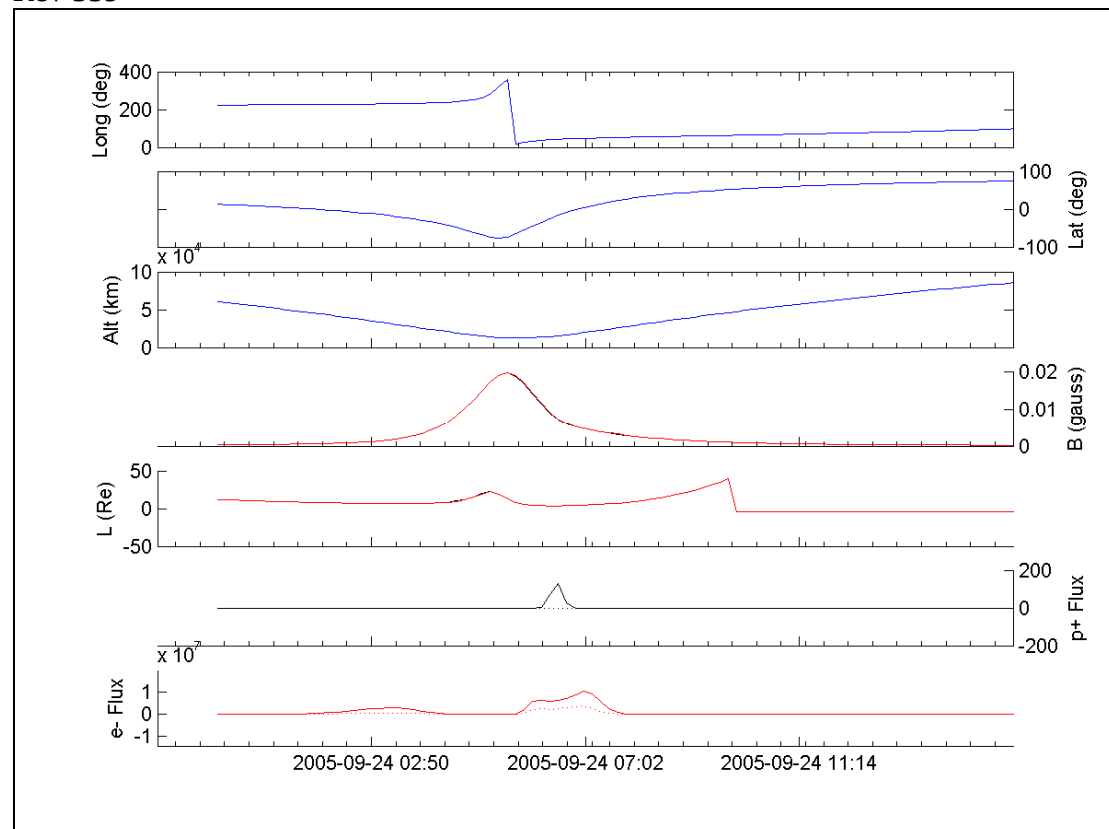
IREM radiation counters:



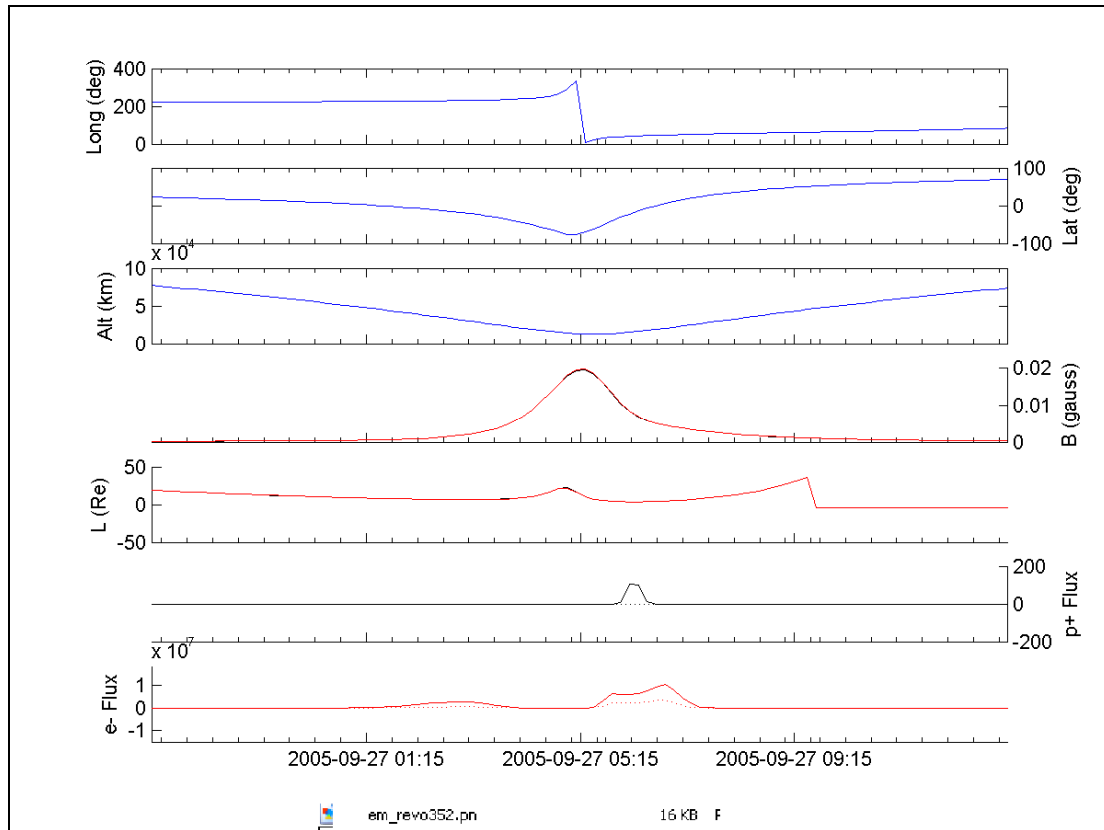


IREM Predicted Radiation Belt Passages:

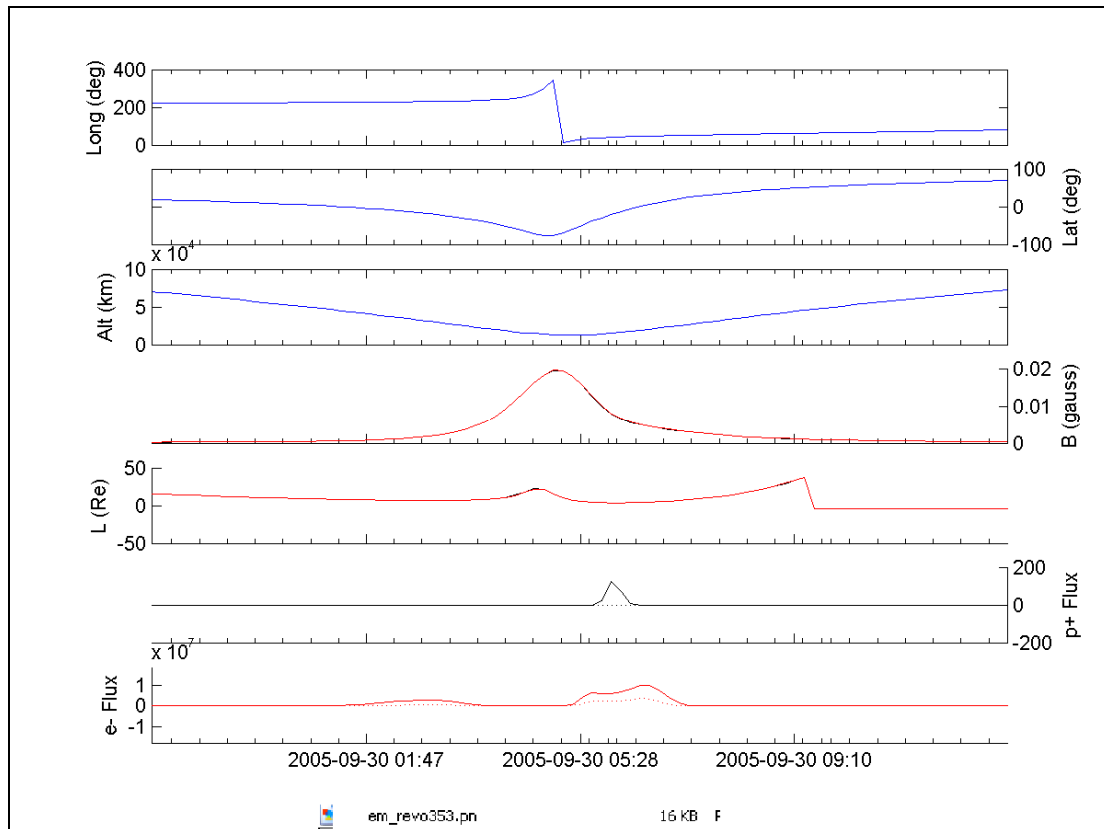
Rev 359



Rev 360



Rev 361



SEC-GOES Observed Particles Fluxes:

