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

INTEGRAL
Mission Report

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

No. 144
Week 25

27.06.05

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 18.06.05 until 24.06.05 (both dates inclusive) and covers the revolutions 327 and 328.

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 and the Crux Arm (RA 11:57:7.00; DEC -59:12:12.0). The activities consisted of GPS and raster dithering observations. In addition, the 6th SPI annealing cycle was 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.

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

6 slews (CSL) were missed from the Timeline during this period, due to problems on NCTRS system.

The fuel consumption over the period between 16/06/2005 and 23/06/2005 was 0.0739 kg. The remaining propellant is in the order of 160.7705 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.

Since 14th June, the instrument Germanium detectors are undergoing their 6th annealing cycle. The whole instrument is therefore configured for the annealing operations, which are progressing smoothly and according to the schedule. An annealing summary timeline is published in this report, under the future activities section.

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

OCR#196 was executed on the 20th June to test a possible DPE software patch to fix the TM leakage malfunction (AR INT_SC-107). Subsequent tests along the week showed that the malfunction, reproducible only in-flight, could not be fully fixed. Additional tests are planned in the upcoming week as part of OCR#196.

Due to a problem in the off-line data retrieval system, the TM bandwidth occupation information is not available this week.

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

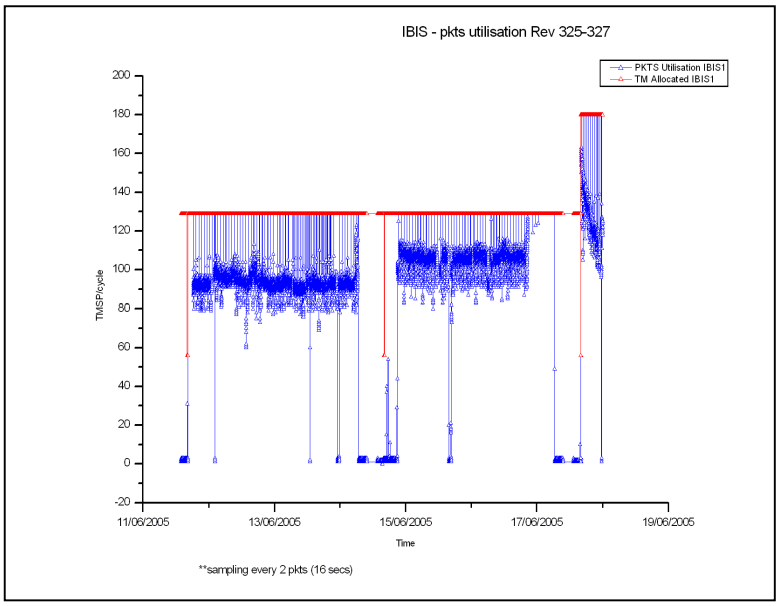
3.2.2 IBIS

The Overall status of the unit is Nominal.
Since the M4-solar flare of the 17th of June, it seems that the electronics of the calibration source have become more sensitive. Actually TM G6061 has kept flagging value below the limit (2500) but higher than 2400 during the whole observation period. If this behaviour persists, lowering the limit to 2400 could be a possibility (PI investigation required).

The week was characterised by low solar activity.

During the previous period (DoY 162 to DoY 168), the PST allocation to IBIS was most of the time 129 TMPS/cycle. It was changed to 180 at the beginning of revolution 327 because of the SPI annealing.
The IBIS mean bandwidth utilisation during this previous period was 105.27 TMPS/cycle, up 7.07 on the previous week.

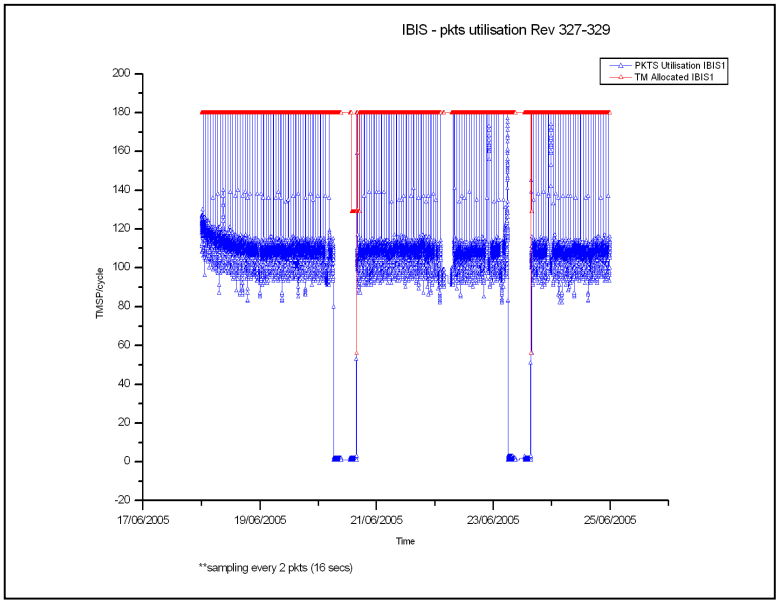
A plot of the IBIS TM utilisation during the previous observation period is shown below:



During the reporting period (DoY 169 to DoY 175), the PST allocation to IBIS was most of the time 180 TMPS/cycle because of the SPI annealing on-going.
However on DoY 2005.171 at 13:44Z the PST was changed manually to 129 for IBIS. It remained there until 15:54Z when the PST allocation was automatically set-up by the time-line to 180 for IBIS. From 16:06Z to 17:06Z, the PST allocation was one more time manually changed to 129 for IBIS. Moreover, on DoY 2005.174, between 15:48Z and 16:00Z the PST allocation was changed manually to 129 for IBIS.

The IBIS mean bandwidth utilisation during the observation period was 111.66 TMPS/cycle, up 6.39 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 15 packets/cycle, except during the period 2005-06-20T16:06Z-2005-06-20T17:06Z, during which the TM allocation was set back to 8 packets/cycle as part of tests being carried out with SPI (see OCR-196 and SPI section). 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 this reporting period, 135 of the 142 planned science pointings for OMC were executed nominally. 5 pointings (PID 03280035 - 03280039) were missed due to loss of TM/TC due to IMCS problems. 1 pointing (PID 03280034) was only partially performed due to the same problems and 1 pointing (PID 03280001) was interrupted due to a forced PID/OTF transition.

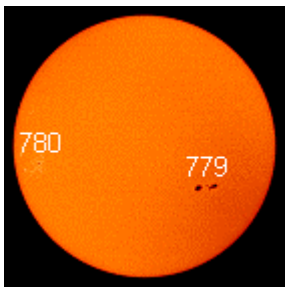
Note: Some more information concerning the OMC operations is provided in the Appendix Section 8.3.5.

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity.
From the 18th to the 19th of June sunspot 779 posed a threat for strong solar flare (see picture below: Sun on 18/06; image credit: SOHO/ MDI). Apart from this, the period was very quiet. The sun was even blank on the 24th of June.



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 excellent this week, 141 slews were executed correctly, and 6 were lost due to problems on NCTRS.

4.1 Mission Operations Centre

The performance of the MOC was good this week. 5 pointings were however lost due to MOC and 1 was partially executed.

4.1.1 Upgrade of IMCS.

On 2nd June during perigee, the prime MCS used for operations was moved from IMCS-A to IMCS-C, following upgrade of IMCS-C with new IMCS software, IMCS version E1.3. Since this time IMCS-C has been used for all operations, with IMCS-A running as hot back up, connected to VC-0 TM stream only.

On 16th June, the IMCS A-chain was dismantled and the upgrade to version E1.3 was started. From perigee on DOY 168 the MCS configuration was: C-chain prime, B-chain hot back-up, A-chain unavailable.

During Perigee on DoY 174, A-chain was configured as prime control with the C-chain as back-up.

4.2 Ground Stations & Network

The performance of the ground stations and Network was excellent this week. There were some minor drops in TM from Redu & DSS-16. DSS16 reported problems which caused a delayed handover. But otherwise, these problems did not have any impact. The overall performance was well above the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning
PSF's for up to rev 338 have been received. Mission planning in ISOC was done up to revolution 336. A bug in the software that led to unchecked constraint violations in the first iteration to plan revolutions 330 and 331 has been found and patched.

SPI annealing is ongoing as planned. The coordinated observations of Her X-1 have been shifted to starting one revolution later on the PI's request, an updated Long Term Plan has been published.

TSF up to rev 331 were received.

2. Observation status
No ECS received this week.

3. ISOC science data archive

The main efforts have been in internal testing and data ingestion to allow the ISDA 2,0 beta version to be released to external testers at ISDC and elsewhere. The following data is now available in the archive:

Raw data (SCW): Up to Rev 189
Processed JEMX obs groups: up to Rev 189
Processed ISGRI obs groups: up to Rev 163 (excl 95-99, 116-123)

The first external testers were contacted on Thursday 24-06-2005 and requested to commence testing.

4. ISOC system
Version 10.9.4 of the software has been installed, allowing surveys as fixed-time observations. Work is ongoing for version 11.0.

5. Problems
The problem of slow network connections to ISDC is still open.

4.3.2 ISDC

Status of ISDC observation processing on 27/06/2005:

- Latest Standard Analysis completed: observation 03201090014 (Gal. Bulge region, Revolution 301) on 18/06/2005

- Latest products archived: observation 03201090020 (Gal. Bulge region, Revolution 307) on 20/06/2005

- 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 169, at 04:17Z, “CPDisTM, iddc, WARNING, SYSTEM, FIFO buffer full” was reported in the Event Logger. It happened again at 08:04Z, 19:25Z, 23:12Z , on DoY 170 at 03:00Z, 09:23Z, and on DoY 171 at 09:23Z and 17:25Z.
- On DoY 170 at 08:16Z bad frames were received from REDU.
- On DoY 170 at 19:27Z “Lost connection to NCTRS/ link TM DDS disconnected” was reported in the Event Logger and MCS link on NCTRS-A (VC7) was toggling in and out.
- On DoY 171 at 03:39Z, due to problem with DSS16, the station handover was from REDU to Goldstone was delayed. Consequently Broadcast Packets commands were missed from the timeline and sent manually.
- On DoY 172 at 19:54Z TM-DSS-VC7RT link was reported toggling between connected and disconnected in the Event logger. This happened again between 20:07Z and 20:42Z.

- On DoY 173 at 01:38Z SPI TC E0567 failed release. Network tried to restart the TC link on NCTRS-A, but unsuccessfully. Consequently CCC was asked to reboot NCTRS-A but it was not possible. At 01:55Z TC link is configured on NCTRS-B with imcc. Due to this operation, slew 03280034 was missed. At 02:32Z the swap back to NCTRS-A/imcb failed. At 03:20Z CCC tried to reboot imcc, but unsuccessfully. At 03:35Z operations are moved to the B-chain with imcb. The recocery of the C-chain took several hours, and at 06:56Z operations were back on the C-chain with NCTRS-B. The system stayed in this configuration until perigee (see INT_2753).
- On DoY 173 at 12:41Z link to ISDS disconnected for 1min.
- On DoY 173 at 13:11Z "TCOServer, imcc, ERROR, LOG, Time Correlator couple not valid" was reported in the Event Logger. It happened again at 18:16Z.
- On DoY 174 at 04:24Z during 30 sec drops on the TC link VC7 from DSS16 were reported.
- On DoY 174 at 08:20Z RF lock was lost from DSS16. The TC link was back at 08:27Z. The RF lock was again lost at 08:42Z and back at 08:50Z, and lost one more time at 08:52Z and back at 08:58Z.
- On DoY 174 during perigee a new IODB was imported on operational machines.
- On DoY 174, at 14:18Z "TPKT, imca, ERROR, SYSTEM, No TM flow" as well as "CMDHmplx, imca, ERROR, LOG, Commanding link set to TC: RDTCE2" were reported in the Event Logger. It happened again at 17:33Z.
- On DoY 174 at 23:36Z drop on TM link bad frame from REDU was reported for 2 sec.
- On DoY 175 at 08:15Z "IADDS-B-ARC, ERROR, MADDS B/ AUX is not extracting ASF files" was reported in the Event Logger.
- On DoY 175 at 08:30Z "idda, FIFO Buffer full" was reported in the Event Logger.
- On DoY 175 at 13:51Z "no TM flow on connection VC0/ onT" was reported in the Event Logger.
- On DoY 175 at 16:21, "all links lost due to node error" was reported in the Event Logger". All links were reestablished by Network at 16:24Z.
- On DoY 175 at 17:52Z "no TM flow on connection VC0/ OnT" was reported in the Event Logger.

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

AR id	Date Created	Subject	Segment	Status
INT_2753	2005-06-22	C-Chain not operational after reboot of imcc and iddc	IMCS	Pending
INT_2754	2005-06-30	Observed inconsistent on-board generation\\reception time for S/C PTs pkts since rev 324	IMCS	Open

7 Future Milestones

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 has been delayed due to configuration problems encountered during testing, it will be made after completion of the IMCS upgrade.

Upgrade of the IMCS, to use S2K release 3.1. A major update of the MCS is currently in progress, see section 4.1.1.

Change of communication protocol to ESA Station from X25 to TCP IP, testing of this change will start once the IMCS-C is available again. 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 327

The observations in revolution 327 consisted of 10 pointings of a GPS lasting ~6.5 hours, followed by a raster dithering observation of the Crux Arm (RA 11:57:7.00; DEC -59:12:12.0), performed for the remaining ~54 hours of observation time.

Throughout these observations IBIS, JEM-X1 and OMC were in their nominal science modes, SPI was undergoing annealing and the JEM-X2 DFEE remained off. The TM allocation was IBIS 180; SPI 45; JEM-X1 15; JEM-X2 1; OMC 5.

Revolution 328

In revolution 328 a raster dithering observation of the Crux Arm (RA 11:57:7.00; DEC -59:12:12.0) was performed throughout the available observation time (~61 hours).

Throughout these observations IBIS, JEM-X1 and OMC were in their nominal science modes, SPI was undergoing post-annealing activities (passive cooling and ACS switch-on and calibration) and the JEM-X2 DFEE remained off. The TM allocation was IBIS 180; SPI 45; JEM-X1 15; JEM-X2 1; OMC 5.

Revolution 329

In revolution 329 a raster dithering observation of the Crux Arm (RA 11:57:7.00; DEC -59:12:12.0) was performed throughout the available observation time (~62 hours).

Throughout these observations IBIS, JEM-X1 and OMC were in their nominal science modes, SPI was undergoing post-annealing activities (active cooling) and the JEM-X2 DFEE remained off. The TM allocation was IBIS 180; SPI 45; JEM-X1 15; JEM-X2 1; OMC 5.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

```
2005-06-04T01:16:08.000Z     161.0309    F   Automatic TM processing.
```

```
2005-06-05T15:45:00.000Z     161.0175    F   Automatic TM processing.
2005-06-06T00:12:05.000Z     160.9965    F   Automatic TM processing.
2005-06-06T02:39:41.000Z     160.9714    F   Automatic TM processing.
2005-06-08T15:16:52.000Z     160.9580    F   Automatic TM processing.
2005-06-08T23:47:25.000Z     160.9259    F   Automatic TM processing.
2005-06-11T14:31:48.000Z     160.9049    F   Automatic TM processing.
2005-06-12T01:16:13.000Z     160.8749    F   Automatic TM processing.
2005-06-14T14:20:28.000Z     160.8608    F   Automatic TM processing.
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.

This report was generated  Fri Jun 24 08:00:26 GMT 2005
```

8.3 Detailed Satellite Information

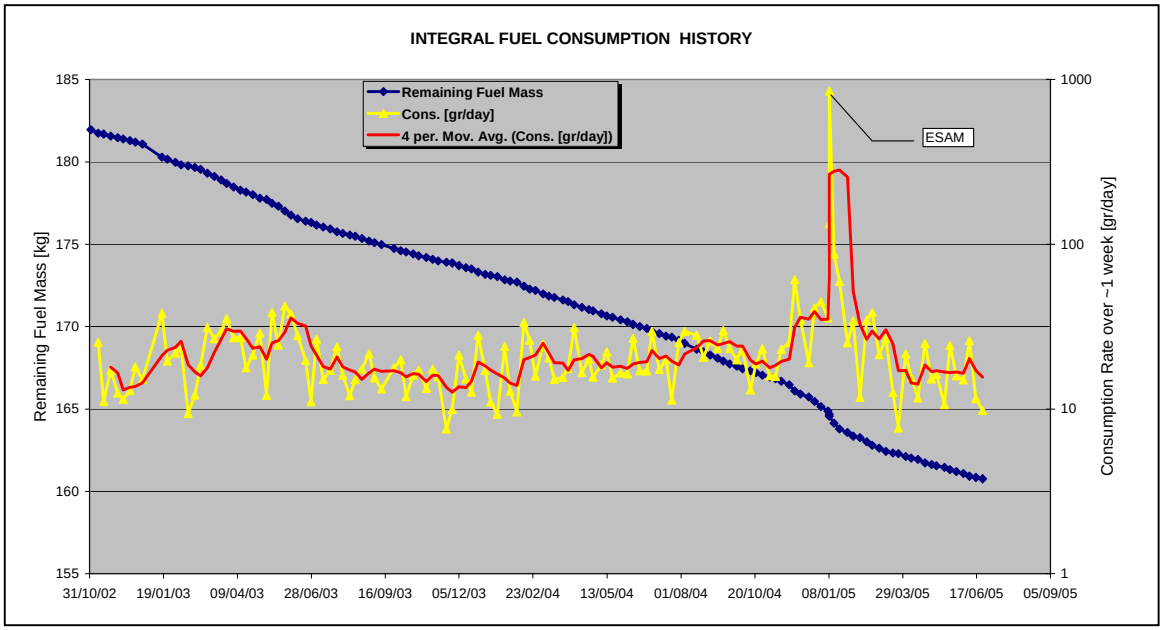
This section contains some detailed information concerning the various subsystems of the satellite and instruments.

8.3.1 AOCS SUMMARY OPERATIONS REPORT, 18/06/2005 – 24/06/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 29 Open Loop Slews, 112 Closed Loop Slews and 3 Momentum Bias were executed. 6 (CSL) slews were missed due problem on NCTRS. This is equivalent to a ~ 4 %.

The fuel consumption over the period between 01/11/2002 and 23/06/2005 is reported in the plot below.



18/06/05 (Day of Year 169, Revolution 327)

Nothing to report.

19/06/05 (Day of Year 170, Revolution 327)

Nothing to report.

20/06/05 (Day of Year 171, Revolution 327-328)

Nothing to report.

21/06/05 (Day of Year 172, Revolution 328)

Nothing to report.

22/06/05 (Day of Year 173, Revolution 328)

Slews missed from the Timeline: Due to a problem on NCTRS (not possible to restart TC link on NCTRS-A and B), the slew sequence ID 03280034 (CSL) failed release. The AOCS s/s was disabled in TL at 01:54z. A first attempt to manual recovery was then performed to the attitude of PID 03280034. Due to persistent problems on NCTRS the following slews IDs 03280035-36-37-38-39 were not performed. A second attempt to manual recovery was then performed to the attitude of PID 03280039. The next slew (OSL) for PID 03280040 was executed from the TL without update, because the PREQ reached through an OSL and corrective CSL and errors considered by FD very small. The AOCS s/s was re-enabled in TL at 07:59z.
The following slews were not executed from TL while recovering the AOCS s/s: 03280034(CSL)-35(CSL)-36(CSL)-37(CSL)-38(CSL)-39(CSL).

No impact reported on the TL.

Guide star released by the STR SEU Filter: at 21:29:57z the SEU Filter threshold of the ACC was exceeded, the guide star released, Mi 7.4 at CCD location [11026,21937] and the IMU1 switched ON. The guide star Mi 8.05 at CCD location [7391, 1243] was picked in the first automatic mapping, which was kept afterwards.

No impact reported on the TL.

23/06/05 (Day of Year 174, Revolution 328-329)

STR 1750 processor fault: at 22:51:57z a STR1750 processor fault occurred during the execution of the PID 03290008. The sequence of the events was:

22:50:38z	Close Loop Slew End for PID 03290008
22:51:44z	Mapping start
22:51:54z	Mapping End prematurely (aborted)
22:51:54z	IMU 1 ON
22:51:54z	New automatic mapping commanded by the ACC.

23:01:54z IMU 1 OFF

The Fault is likely due to the presence of extended objects (cluster NGC 4349 and cluster NGC 4103 in the constellation of Cru) in the same CCD column of the guide star, Mi 7.4 at CCD location [16446, -9071], determining a mapping duration shortened to few secs.

No impact reported on the TL.

24/06/05 (Day of Year 175, Revolution 329)

Nothing to report.

8.3.2 SPI Operations

Stirling compressors and Cryostat:
The performance of the compressors is nominal.
The four Stirling compressors were successfully restarted after the annealing, on 23rd June at 23:30z, after the foreseen period of passive cooling following the end of the detector annealing.

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.
OCR#196 was submitted to test the effectiveness of a possible fix of the SPI TM packet leakage anomaly (INT_SC-107). The patch was preliminarily validated on-ground, where, however, the anomaly is not reproducible.
The OCR was executed on DOY 171 (20th June) at 13:45z. The first in-flight test showed positive results, however, subsequent tests with different PST slot distributions showed that the malfunction could not be fully recovered.

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

AFEE and Germanium Detectors:

The detectors have been switched off at the annealing start (14th June) and will be re-activated when the camera operational temperature will be achieved again (foreseen on 27th June).

DFEE:
The performance of the unit is nominal.

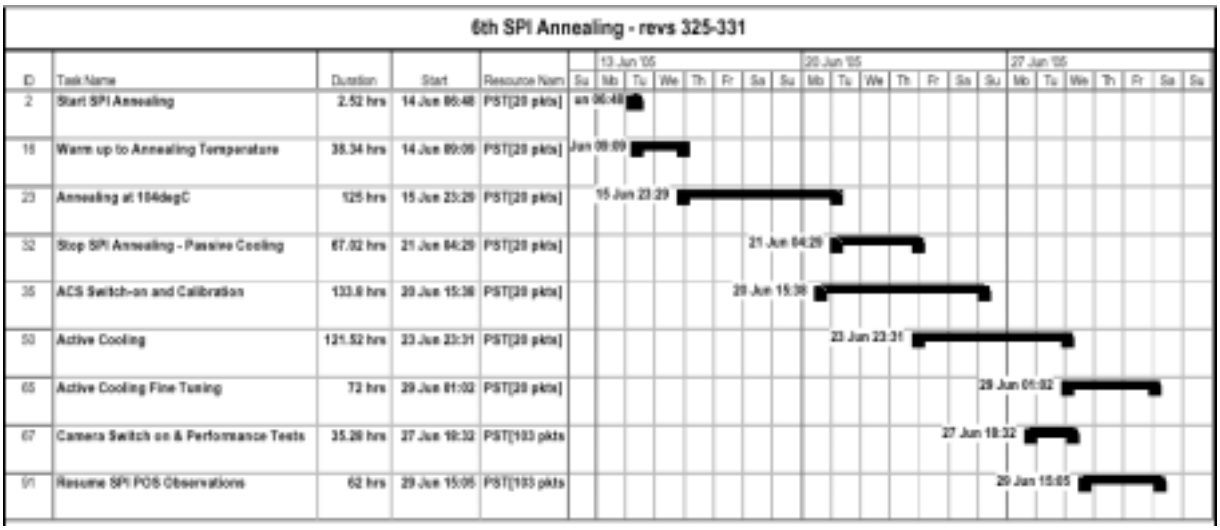
PSD:
The performance of the unit is nominal.

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

DOY Time	Event
170 – 05:06	TM E2101 OOL
172 – 04:30	TM T8503, T8603 SCC OOL as part of SPI annealing, SCC reset @ 04:33
172 – 16:52	TC E0567 failed release (part of annealing procedure)
172 – 19:54	NCTRS-A restarted because of a continues disconnection of VC7RT link
172 – 22:55	TC E0567 failed release (part of annealing procedure)
172 – 23:56	TC E0567 failed release (part of annealing procedure)
173 – 01:38	TC E0567 failed release (part of annealing procedure)
174 – 07:11	TM E2115 OOL
174 – 15:28	TM E1293 OOL

Future activities:
The 6th SPI annealing started on 14th June (rev.325 belts entry) and will last until 29th June (rev 331 belts exit). The annealing schedule includes 125hours at 104degC, several calibration runs of the ACS and a special configuration of the AFEE to monitor the faulty Ge detectors during the warm phase.

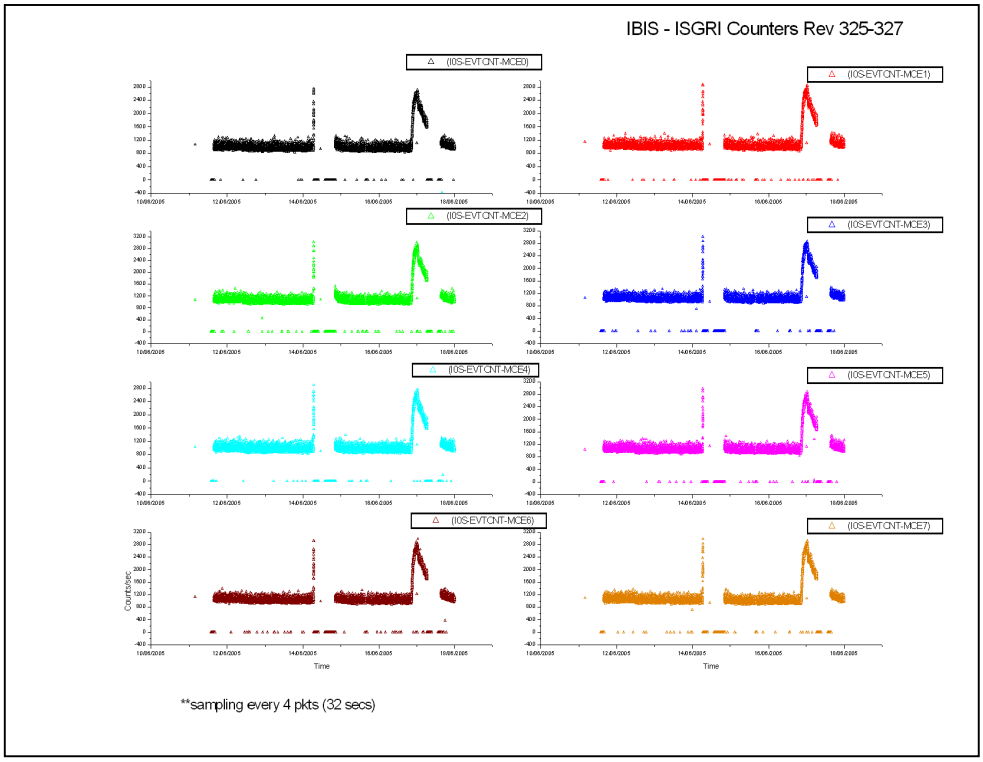
Here follows the summary view of the updated timeline:

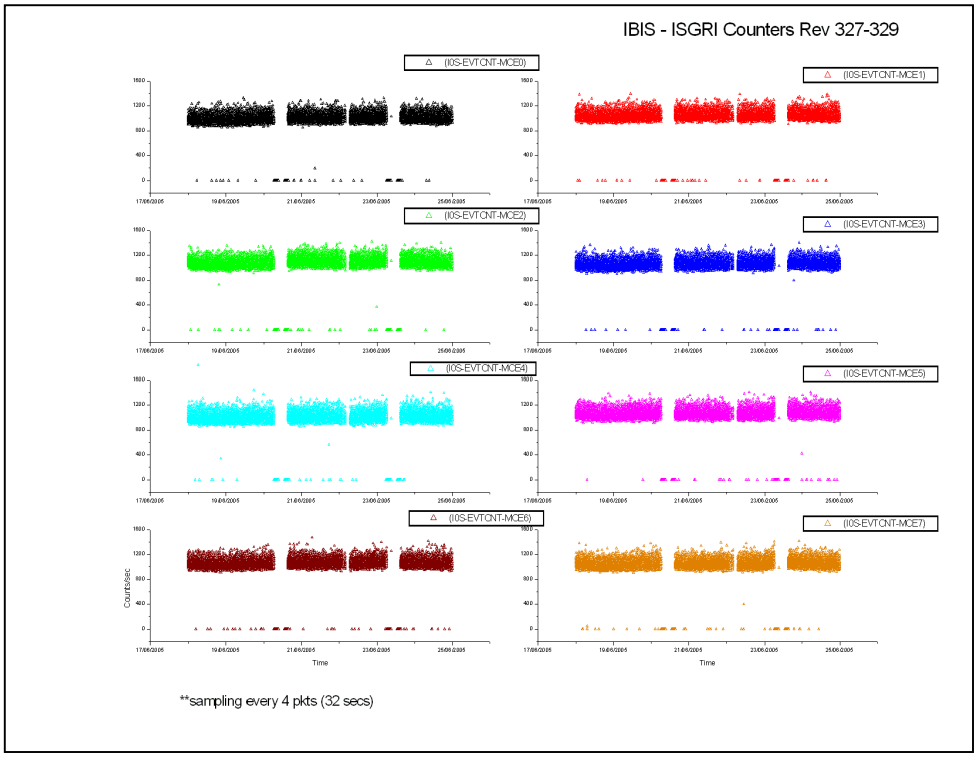


8.3.3 IBIS Operations

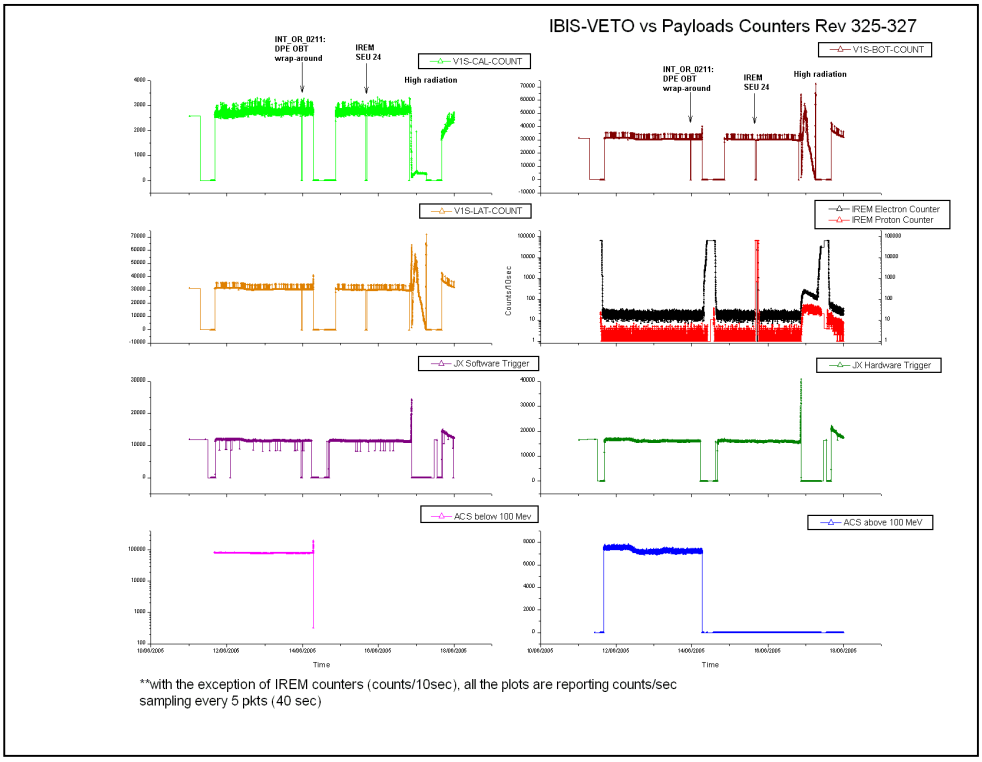
IBIS Event Counters Plots.
Missing plots from last week are provided hereby.

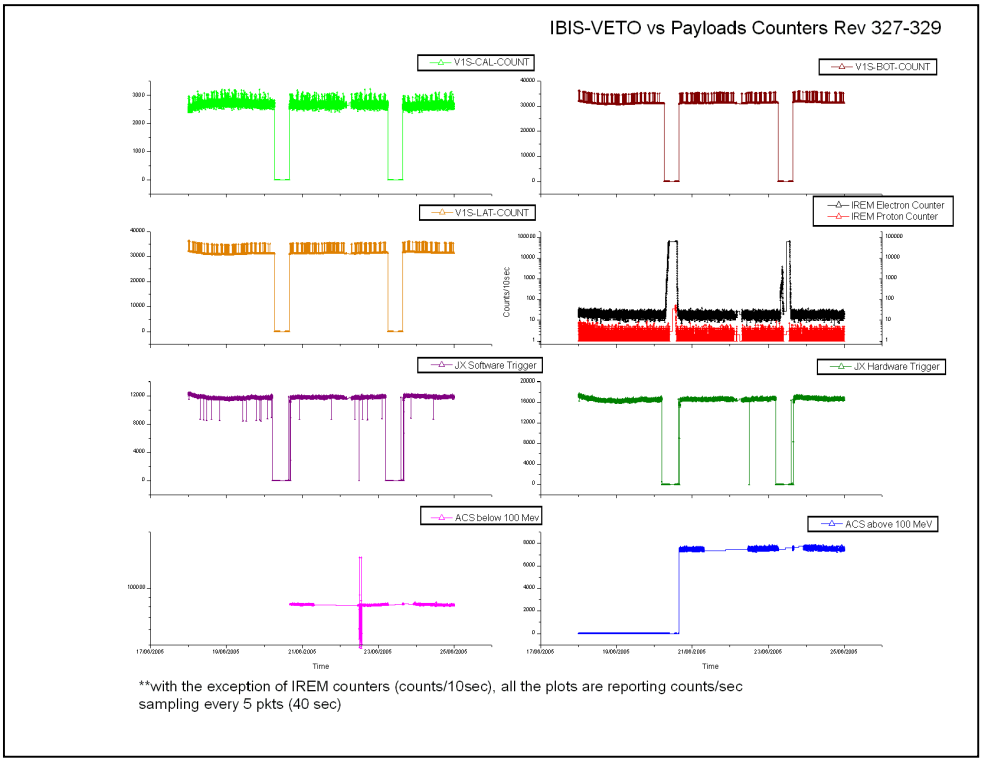
ISGRI Counters:





VETO vs Payloads Counters:





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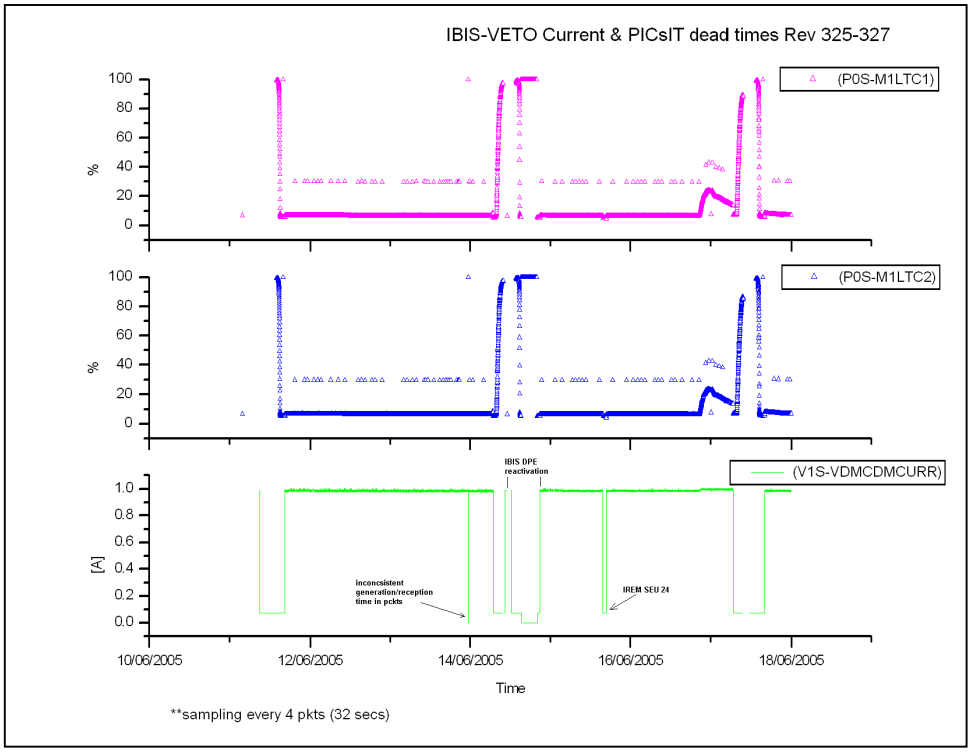
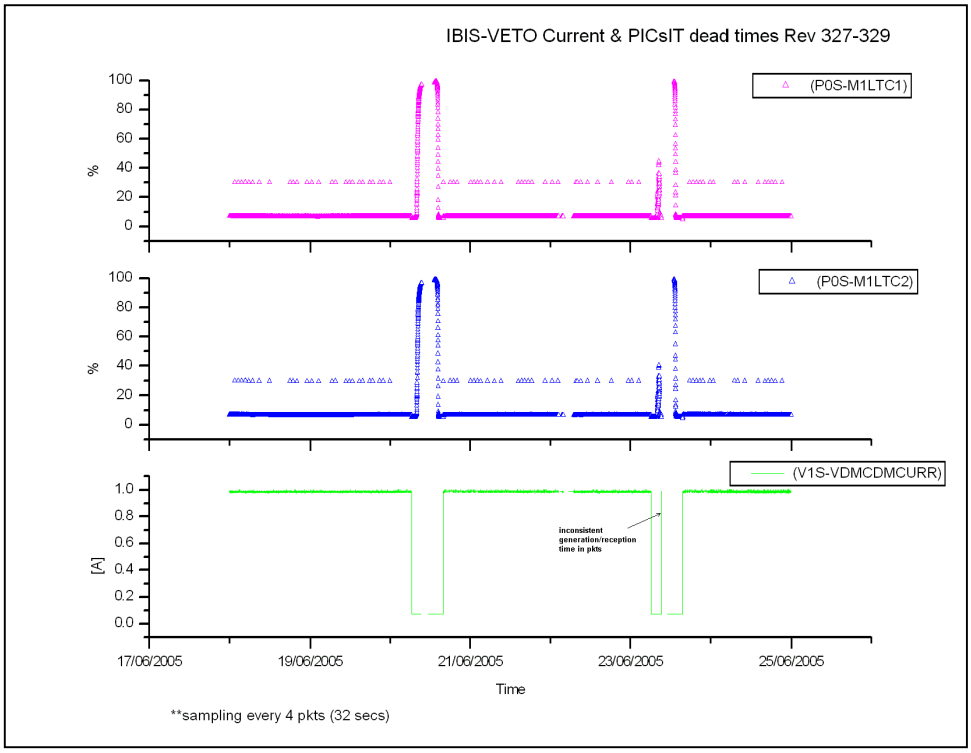
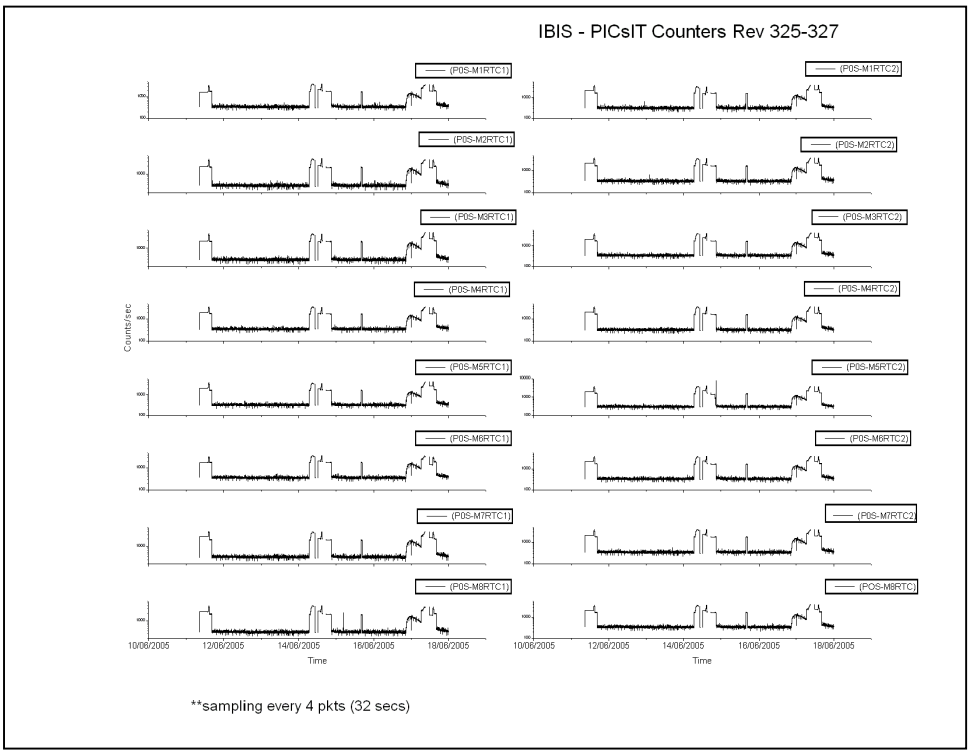
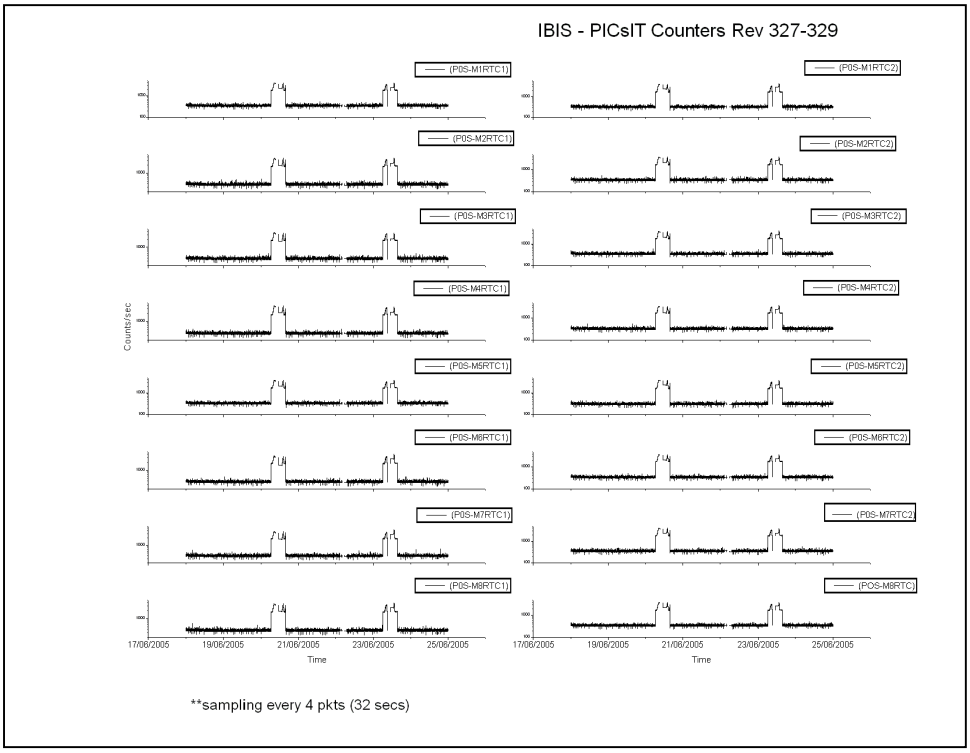
VETO Current:



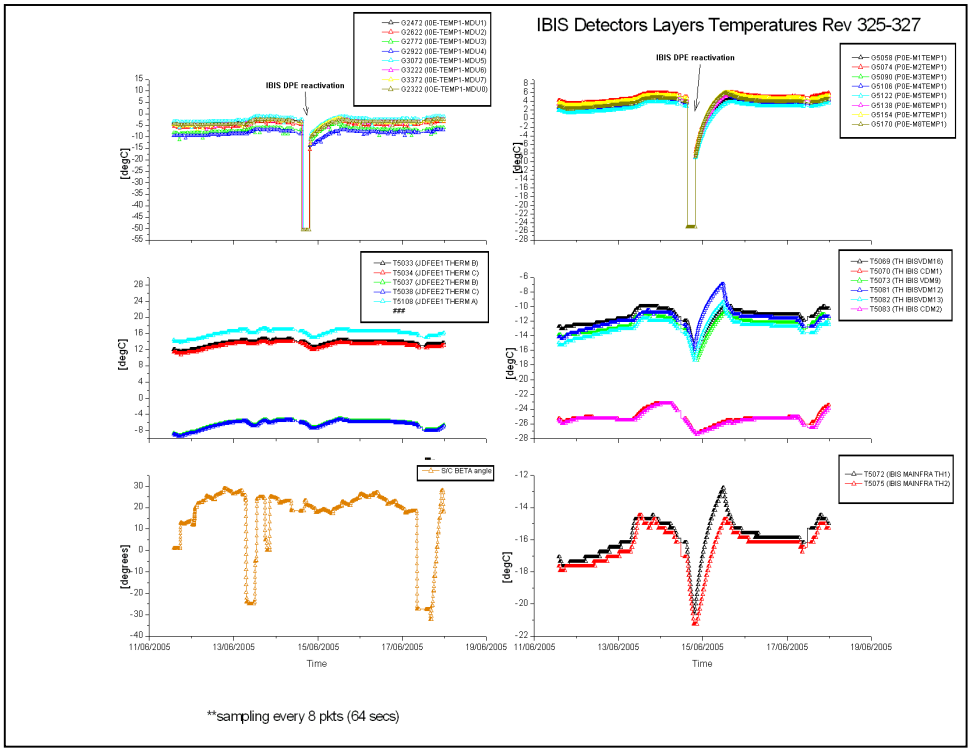


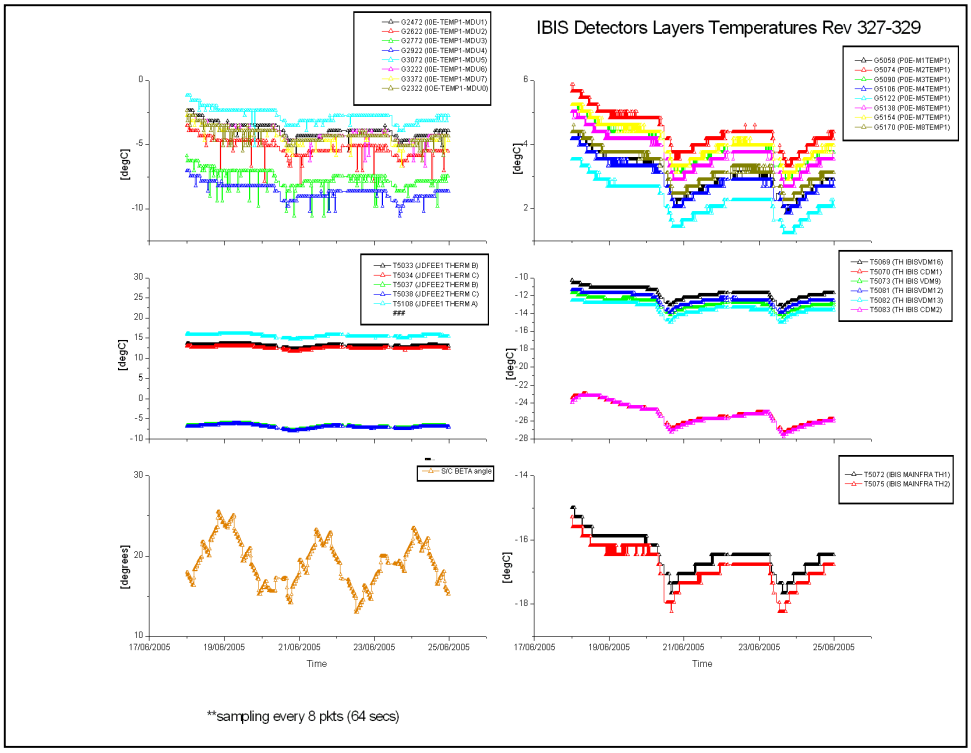
PICsIT Counters:





IBIS Detectors Layers Temperatures:





IBIS daily report:

DoY 2005.169 (18/06/2005):
Since DoY 168 at 16:05Z, when IBIS went back in Scientific Standard after belts passage, TM parameter G6061 (V1S-CAL-COUNT) was toggling OOL Low-low flagging the still high environment until DoY 169 at 03:51Z.

Since this solar flare, this parameter G6061 has been regularly flagging value between 2400 and 2500 during the whole observation period, which consequently triggered the OOL low-low. It seems that the electronics of the calibration source have become more sensitive. If this behaviour persists, lowering the limit to 2400 could be a possibility (PI investigation required).

DoY 2005.171 (20/06/2005):
At 06:22Z TM parameter G8015 (S1E-A2 PMT-V) went out of limit 'high'. It went back inside limit at 15:51Z (after belt exit). As this happened close to the radiation belts, according to V-VLT-1 no action was taken.

DoY 2005.174 (23/06/2005):
At 06:0Z TM parameter G8015 (S1E-A2 PMT-V) went out of limit 'high'. It went back inside limit at 15:38Z (after belt exit). As this happened close to the radiation belts, according to V-VLT-1 no action was taken.

At 13:21Z TM parameters G5003 (P0S-M1RTC2), G5032 (P0S-M7RTC1), G5013 (P0S-M3RTC2) and G5027 (P0S-M6RTC1) went OOL High for 10 minutes. As this happened inside radiation belts, according to P-CNT-1, no action was taken.

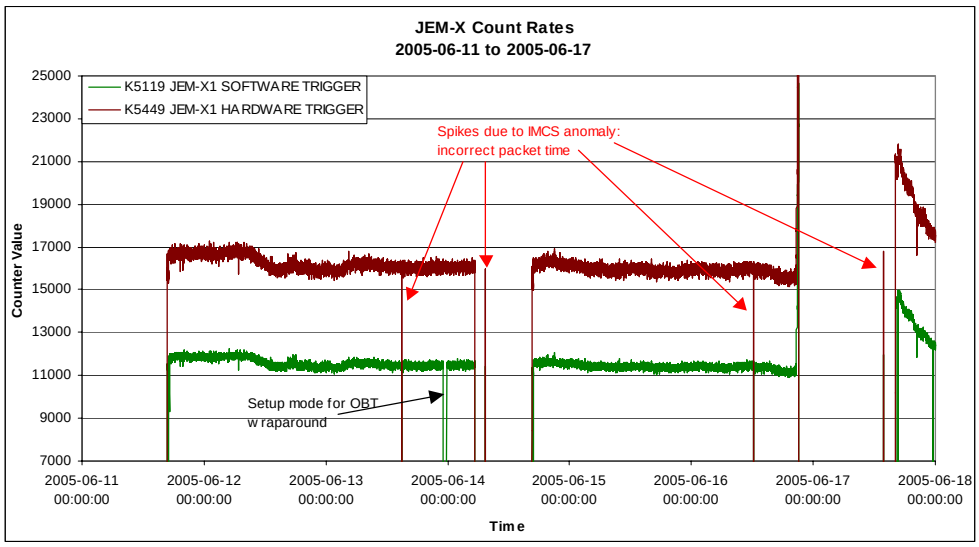
8.3.4 JEM-X Operations

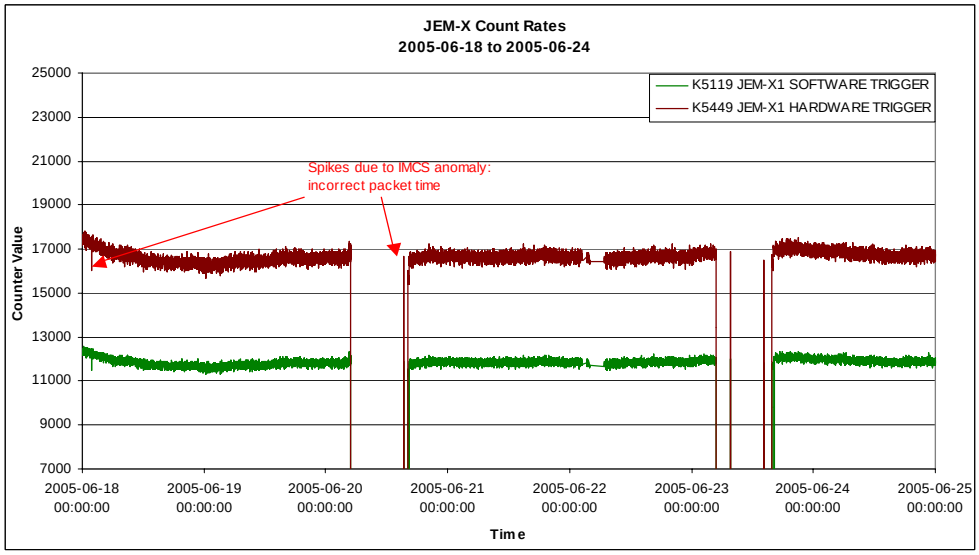
8.3.4.1 JEM-X Count Rates

JEM-X count rates over the current and previous reporting periods are displayed in the following graphs[1].

The apparent spikes in the count rates are artefacts of an IMCS anomaly (see Anomaly Report INT-2754) consisting of an incorrect calculation of the packet Generation Time (calculated to be about 18hours 12 minutes in the past with respect to the Reception Time). The anomaly affected more packets than are evident in these plots (as in some cases the parameter values at the two times were similar). This anomaly is under investigation.

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





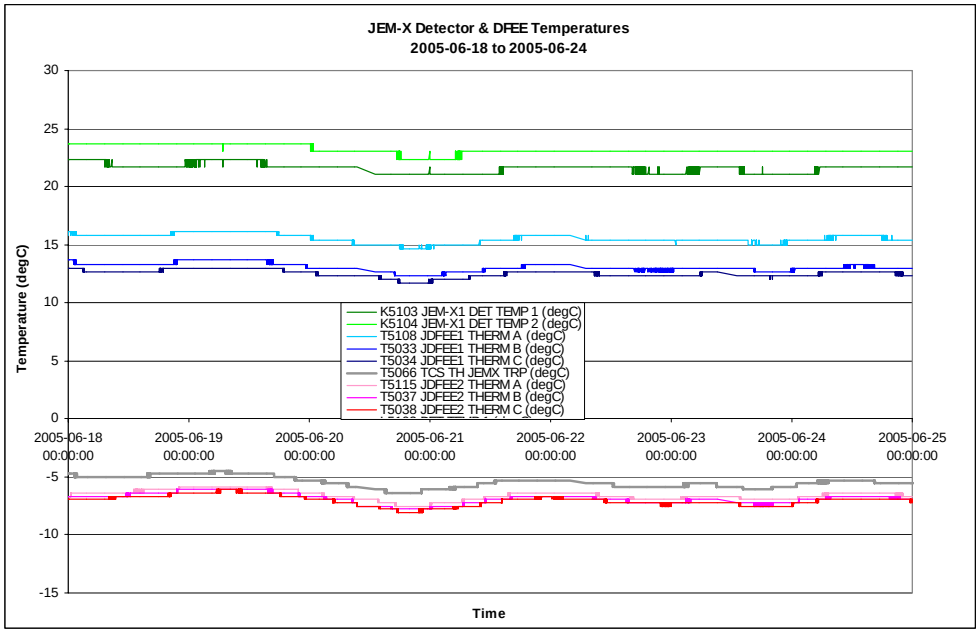
Due to unavailability of the data at the current time, this plot will be included in next week's report.

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].

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

[2] Data sampled (1 frame in 8)



8.3.4.3 JEM-X Daily Report

2005-06-18 (DOY 169, Rev 327) to 2005-06-24 (DOY 175, Rev 329)

Nothing to report

8.3.5 OMC Operations

2005-06-18 (DOY 169, Rev 327) to 2005-06-19 (DOY 170, Rev 327)

Nothing to report

2005-06-20 (DOY 171, Rev 327-328)

At 16:16Z, during PID 03280001, OMC transitioned to Standby mode due to the manual forcing of a transition of the broadcast packet PID and OTF through zero and back again as part of test being performed with SPI (see SPI section and OCR-196).
At 16.31Z the OMC Imaging EDs for this pointing were re-uplinked and OMC transitioned back to Normal Science mode and the rest of the pointing was continued.

2005-06-21 (DOY 172, Rev 328)

Nothing to report

2005-06-22 (DOY 173, Rev 328)

At 01:53Z the slew to PID 03280034 failed release from the Timeline due to a lack of commanding capability as a result of IMCS problems. The OMC Imaging EDs for PID 03280034 were also missed from the Timeline. At 02:14Z a manual slew to the attitude of PID 03280034 was uplinked, however OMC remained in Science Normal mode as there had been no transition of the Broadcast Packet PID to 0 (the Broadcast

Packet EDs had also been missed from the Timeline). Therefore, when an attempt was made to re-uplink the Imaging ED MEIM-A01 at 02:19Z, this failed on-board acceptance, with the OEM 131 REJECTED TC1 being issued. OMC was then commanded to Standby mode via FCP_OMC_0042 at 02:20Z. The OMC imaging EDs and Broadcast Packet EDs for this pointing were then resent manually and OMC transitioned to Science Normal mode at 02:23Z, about 23 minutes later than planned for this pointing.

However, further problems with the control system resulted in another loss of TM/TC at 02:32Z and therefore pointings 03280035 to 03280039 were lost from the Timeline while recovery activities on the control system were carried out. Once stable TM/TC was regained, manual recovery slews were then performed, starting at 07:34Z. Until this time, the attitude (and OMC imaging parameters) remained that of PID 03280034.

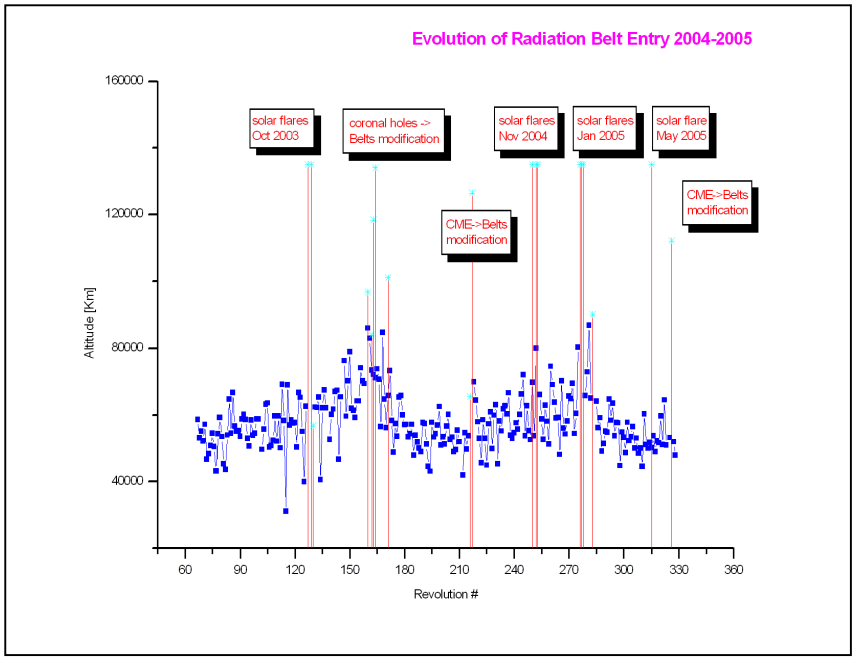
Once the recovery was completed, the Timeline was restarted at 07:59Z and OMC operations continued nominally from PID 03280040 onwards.

2005-06-23 (DOY 174, Rev 328-329) to 2005-06-24 (DOY 175, Rev 329)

Nothing to report

8.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

On DoY 171 at 09:15Z TC U4921 (Ground Link OFF) failed completion due to a late update of Command Verifier Task. The execution of the TC was verified against the relevant TM parameter (U9902) using the monitoring task and no further action was taken.

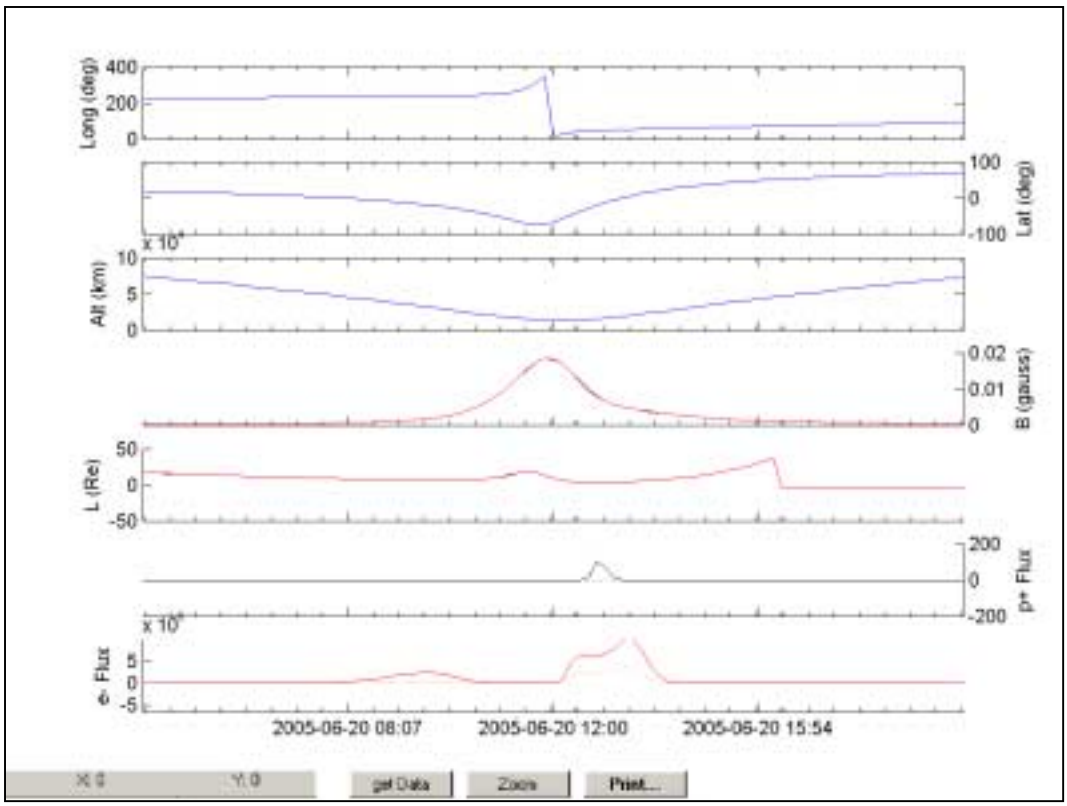
Electron Belts

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]
324	RAD_ENTR R 2005-06-11T07:02:01Z	-	-	2005-06-11 07:54:26	53043
327	RAD_ENTR R 2005-06-20T06:22:45Z	2005-06-20 07:23:31	52005.2	2005-06-20 07:11:35	53250
328	RAD_EXIT R 2005-06-20T15:38:58Z	2005-06-20 15:01:31	>>24943.2	2005-06-20 14:31:35	29952
328	RAD_ENTR R 2005-06-23T06:10:23Z	2005-06-23 07:36:59	47899.9	2005-06-23 07:01:04	53245
329	RAD_EXIT R 2005-06-23T15:25:53Z	2005-06-23 14:16:11	>24932.1	2005-06-23 14:21:04	30055

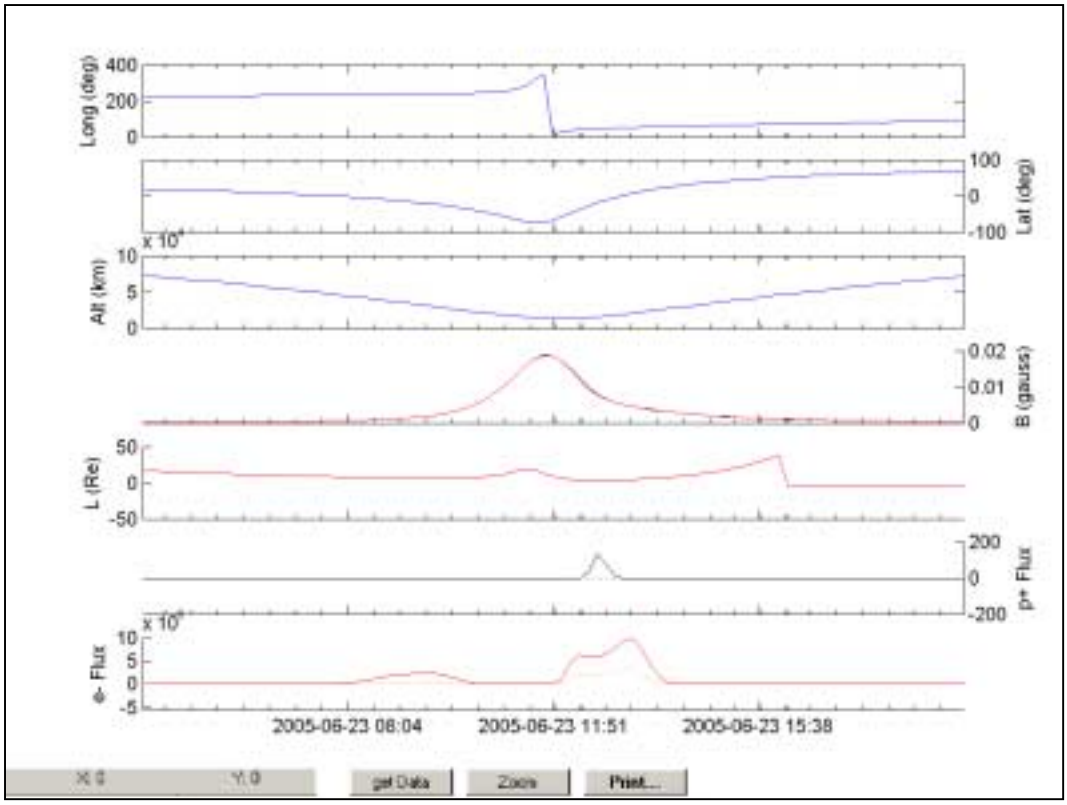
Reference
Very small error vs reference (less than 10 minutes)
Small error vs reference (between 10 and 30 minutes)
Large error vs reference (more than 30 minutes)
Radiation Spike

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

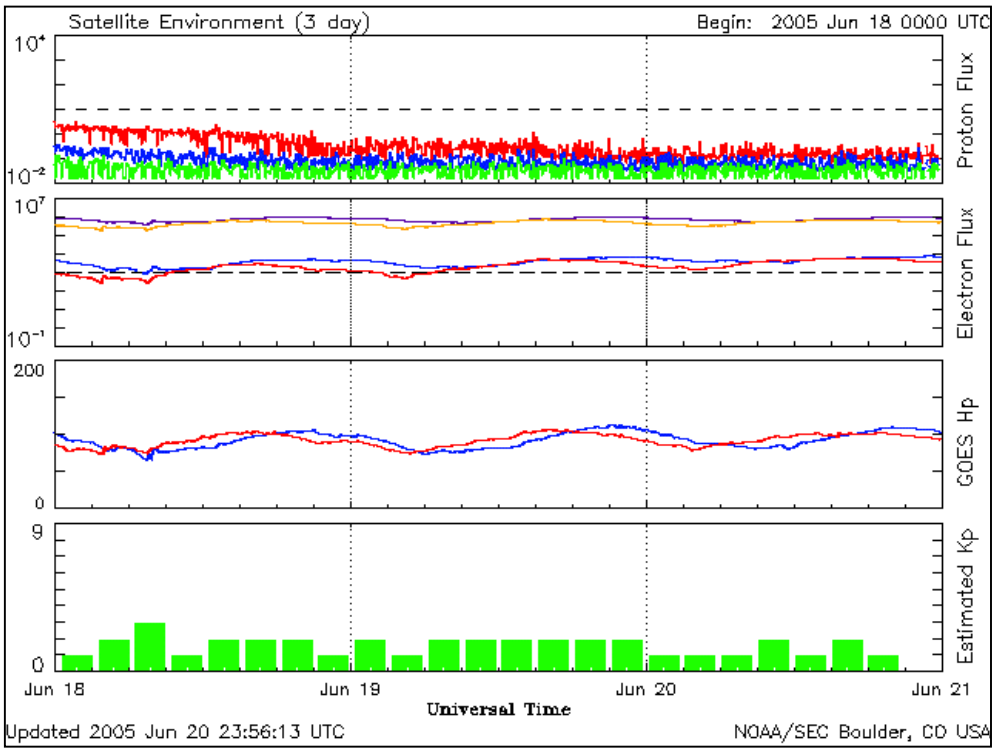
IREM Predicted Radiation Belt Passages:
Rev 327:

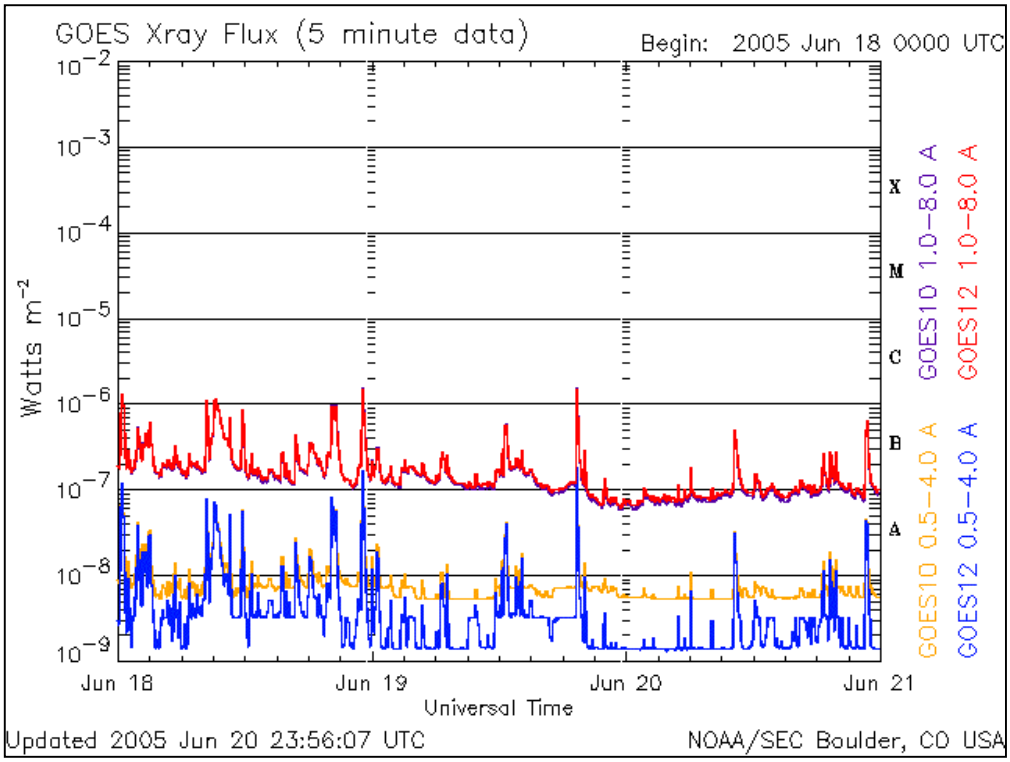


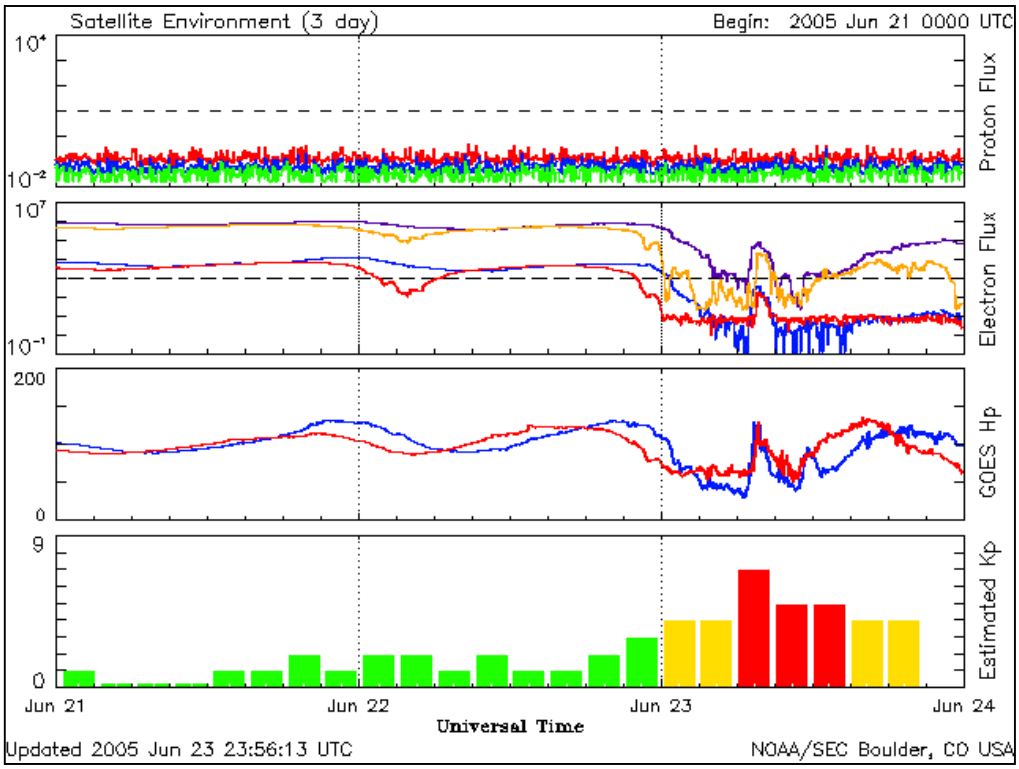
Rev 328:

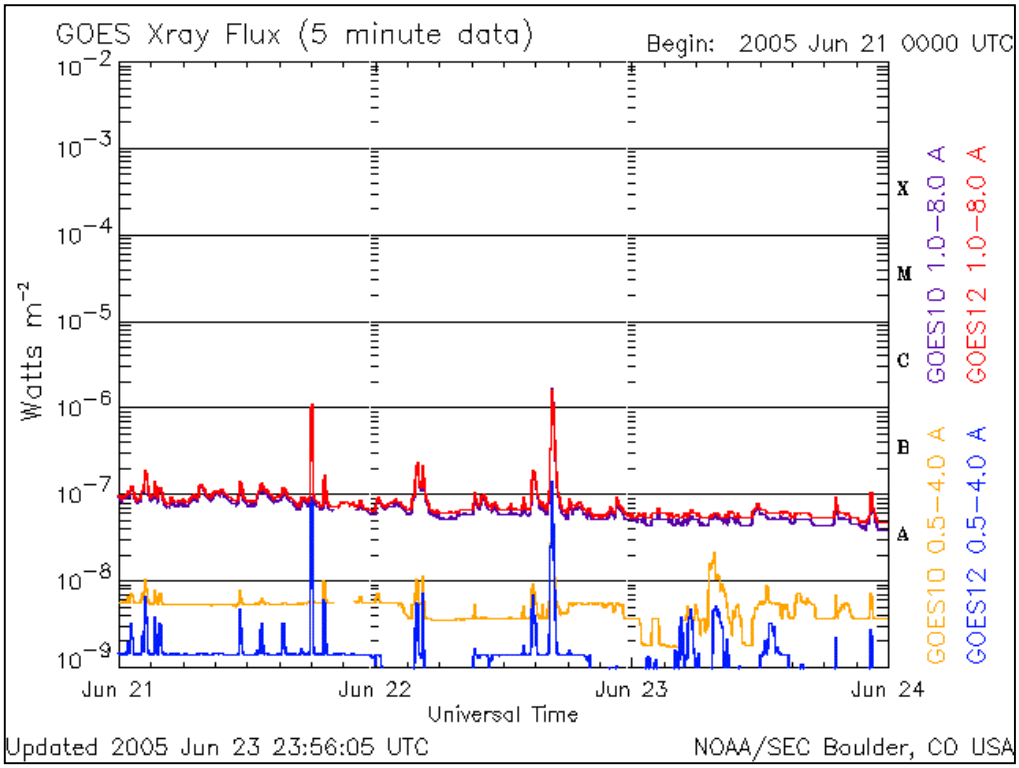

Long (deg)
400
200
0
100
0
-100
Lat (deg)
x 10^4
Alt (km)
10
5
0
0.02
0.01
0
B (gauss)
L (Re)
50
0
-50
200
0
-200
p+ Flux
x 10^4
e- Flux
10
5
0
-5
2005-06-23 08:04
2005-06-23 11:51
2005-06-23 15:38
X: 0
Y: 0
get Data
Zoom
Print...

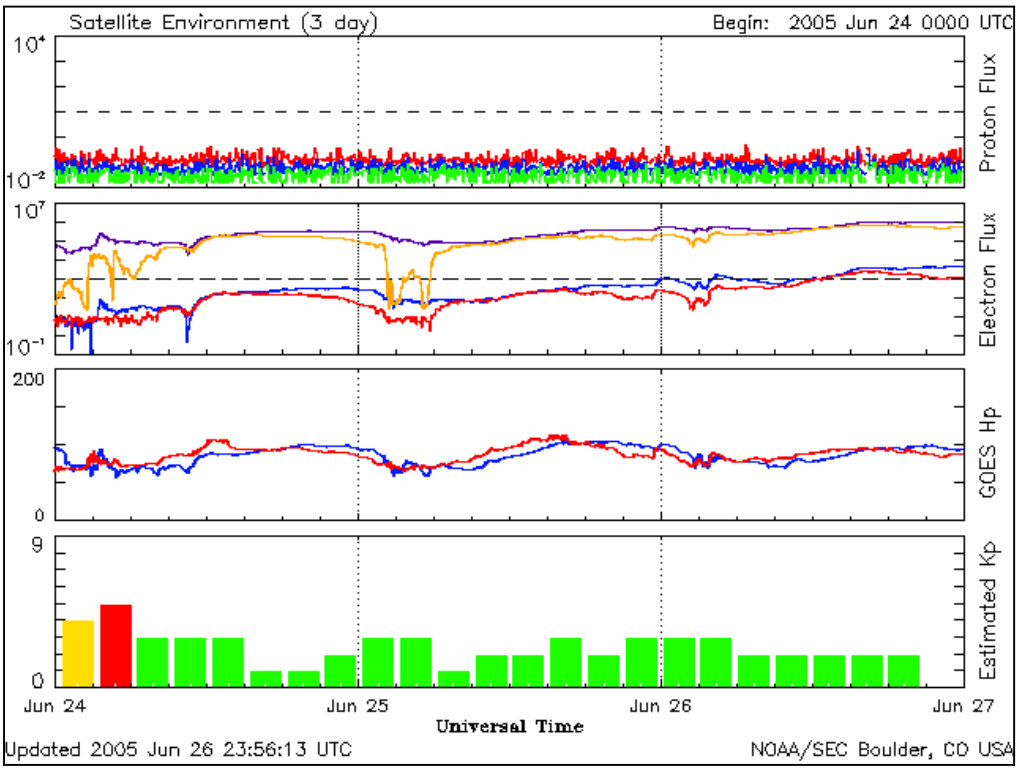
SEC-GOES Observed Particles Fluxes:

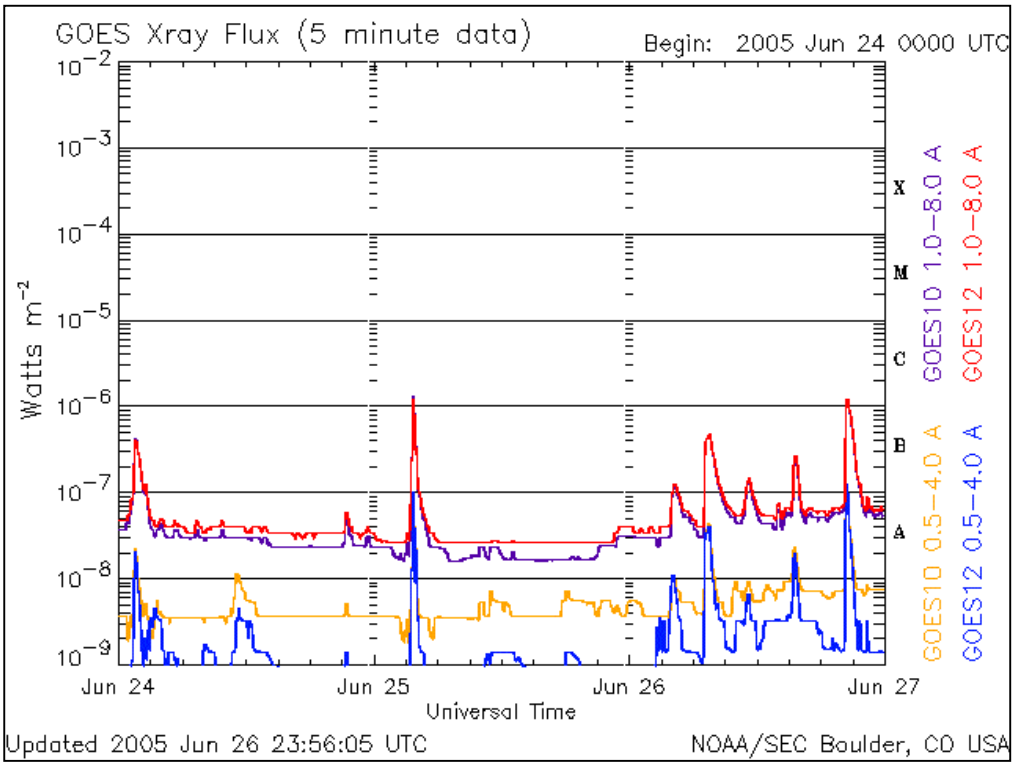





Satellite Environment (3 day)
Begin: 2005 Jun 21 0000 UTC
Proton Flux
Electron Flux
GOES Hp
Estimated Kp
Jun 21
Jun 22
Jun 23
Jun 24
Universal Time
Updated 2005 Jun 23 23:56:13 UTC
NOAA/SEC Boulder, CO USA


GOES Xray Flux (5 minute data)
Begin: 2005 Jun 21 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
Jun 21
Jun 22
Jun 23
Jun 24
Universal Time
Updated 2005 Jun 23 23:56:05 UTC
NOAA/SEC Boulder, CO USA


Satellite Environment (3 day)
Begin: 2005 Jun 24 0000 UTC
Proton Flux
Electron Flux
GOES Hp
Estimated Kp
Jun 24
Jun 25
Jun 26
Jun 27
Universal Time
Updated 2005 Jun 26 23:56:13 UTC
NOAA/SEC Boulder, CO USA


GOES Xray Flux (5 minute data)
Begin: 2005 Jun 24 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
Jun 24
Jun 25
Jun 26
Jun 27
Universal Time
Updated 2005 Jun 26 23:56:05 UTC
NOAA/SEC Boulder, CO USA