

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 201
Week 30
31.07.06
Routine Phase

Prepared by: O. Bergogne (OPS-OFO)

LIST OF CONTENTS

1	General.....	3
2	Summary of Activities.....	3
3	Satellite Status.....	3
3.1	Platform.....	3
3.1.1	AOCS.....	3
3.1.2	Power.....	3
3.1.3	Thermal.....	3
3.1.4	OBDH.....	3
3.1.5	RFS.....	4
3.2	Payload.....	4
3.2.1	SPI.....	4
3.2.2	IBIS.....	5
3.2.3	JEM-X.....	5
3.2.4	OMC.....	6
3.2.5	IREM.....	6
4	Ground Facilities.....	6
4.1	Mission Operations Centre.....	6
4.2	Ground Stations & Network.....	6
4.3	Science Ground Segment.....	7
4.3.1	ISOC.....	7
4.3.2	ISDC.....	7
5	Special Events.....	8
6	Anomalies.....	8
7	Future Milestones.....	8
8	Appendix.....	9
8.1	Overview of Revolutions.....	9
8.2	Consumables.....	9
8.2.1	Detailed Fuel Book-keeping.....	9
8.3	Detailed Satellite Information.....	9
8.3.1	AOCS SUMMARY OPERATIONS REPORT, 22/07/2006 – 28/07/2006.....	9
8.3.2	SPI Operations.....	14
8.3.3	IBIS Operations.....	19
8.3.4	JEM-X Operations.....	23
8.3.5	OMC Operations.....	25
8.3.6	IREM Operations.....	26

DISTRIBUTION LIST

Addressees	Copy	Addressees	Copy
D/OPS		ESA HQ	
G. Winters D/OPS	1	D. Southwood D/SCI	1
J. F. Kaufeler OPS-G	1		
N. Bobrinsky OPS-ON	1	ESTEC	
J. Dodsworth OPS-OA	1	J. Louet SCI-P	1
		A. Gimenez-Canete SCI-S	1
M. Schmidt	1		
R. Southworth	1		
F. Di Marco	1	ESTEC / PG	
F. Cordero	1	G. Sarri	1
M. Walker	1		
P. Lippi	1		
R. Lemme	1		
S. Fahmy	1		
SPACONs	1		
O. Bergogne	1	ESTEC/RSSD	
I. Bayliss	1	M. Kessler SCI-SD	1
G. Di Girolamo	1	C. Winkler	1
F. Dreger	1	A. Parmar	1
G. Gienger	1	L. Hansson	1
S. Pallaschke	1	E. Kuulkers	1
W. Hell	1		
K.J. Schulz	1	ISDC	
M.A. Larsen	1	T. Courvoisier	1
K. Capelle	1	R. Walter	1
M. Butkovic	1	N. Mowlavi	1
D. Heinzer	1	ISDC Shift Team	1
U. Feucht	1		
Shift - Coord	1	ALENIA	
Scheduling Office	1	M. Montagna	1
T. Beck	1	F. Ravera	1
J. Wardill	1		
M. Unal	1	PI / Instrument Teams	
P. Maldari	1	J. P. Roques – SPI	1
		G. La Rosa – IBIS	1
		P. Ubertini – IBIS	1
		S. Brandt – JEM X	1
		E. De Miguel - OMC	1
		W. Hajdas – IREM	1
Redu			
B. Demellenne	1	JPL / Goldstone	
		D. Holmes	1
Vilspa		J. Valencia	1
P. Kretschmar	1	Jesse Velasco	1
		DSN - MPSETD	1
ESTEC/SCI-A			
Nicola Rando	1		

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 22.07.06 until 28.07.06 (both dates inclusive) and covers the revolutions 461 and 462.

2 Summary of Activities

The operations were performed according to the planning inputs from ISOC combined with some manual commanding by MOC.

The targets of these revolutions consisted of raster dithers of Field_9 (RA 03:14:20.00, DEC +17:39:13.0), SN1006 (RA 15:02:48.40, DEC -41:54:42.0), and Cygnus X-3 (RA 20:32:25.50, DEC +40:57:27.7).

Note: Some further information concerning the activities is provided in the Appendix.

3 Satellite Status

3.1 Platform

The performance of the platform was good. No new unexpected behaviour / malfunction was identified.

3.1.1 AOCS

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

No slews were lost during the observation period.

The fuel consumption over the period between 20/07/2006 and 27/07/2006 was 0.1681 kg. The remaining propellant is in the order of 152.8731 Kg.

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

3.1.2 Power

The EPS is working nominally, available power from the arrays is of the order of 2100W.

3.1.3 Thermal

The thermal control of the satellite is working well. The temperatures are currently all within the specified operational limits.

3.1.4 OBDH

The OBDH subsystem is working flawlessly. No on-board communications problem has been identified.

3.1.5 RFS

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

3.2 Payload

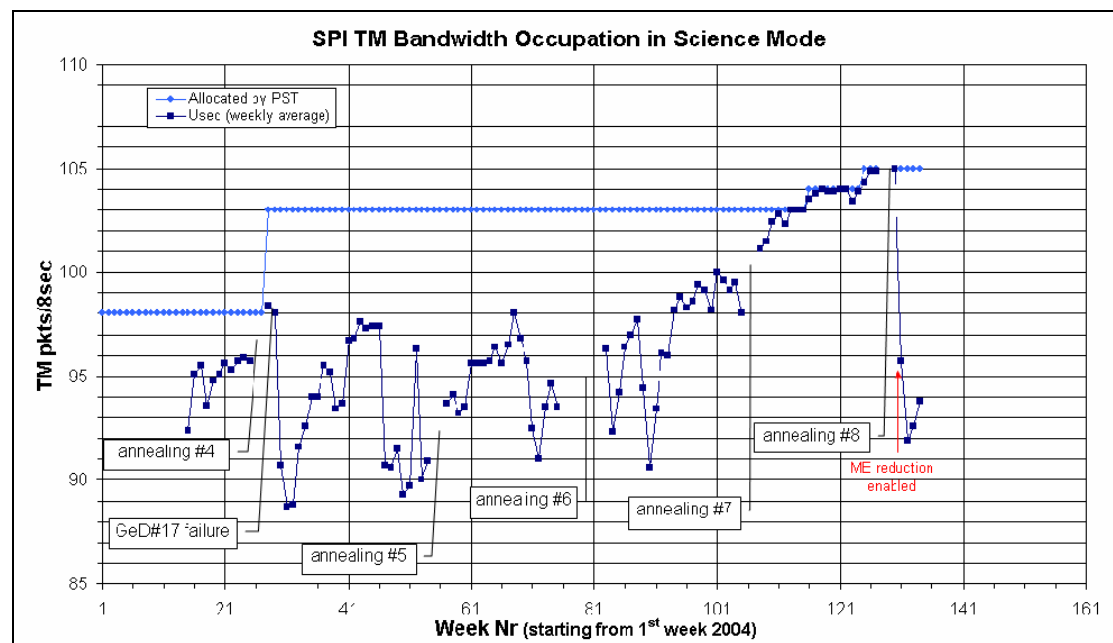
3.2.1 SPI

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

The Stirling compressors are working nominally, maintaining the Germanium detectors at 82 +/-1K. On 2006-07-28 at 21:29Z the stroke of all four compressors was increased from 37 to 38.

During science operations, the instrument was kept in photon-by-photon mode with spectra TM enabled. The assigned TM bandwidth in the science observation windows was 105 pkts/cycle. The average telemetry occupation was 93.8 packets/cycle.

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



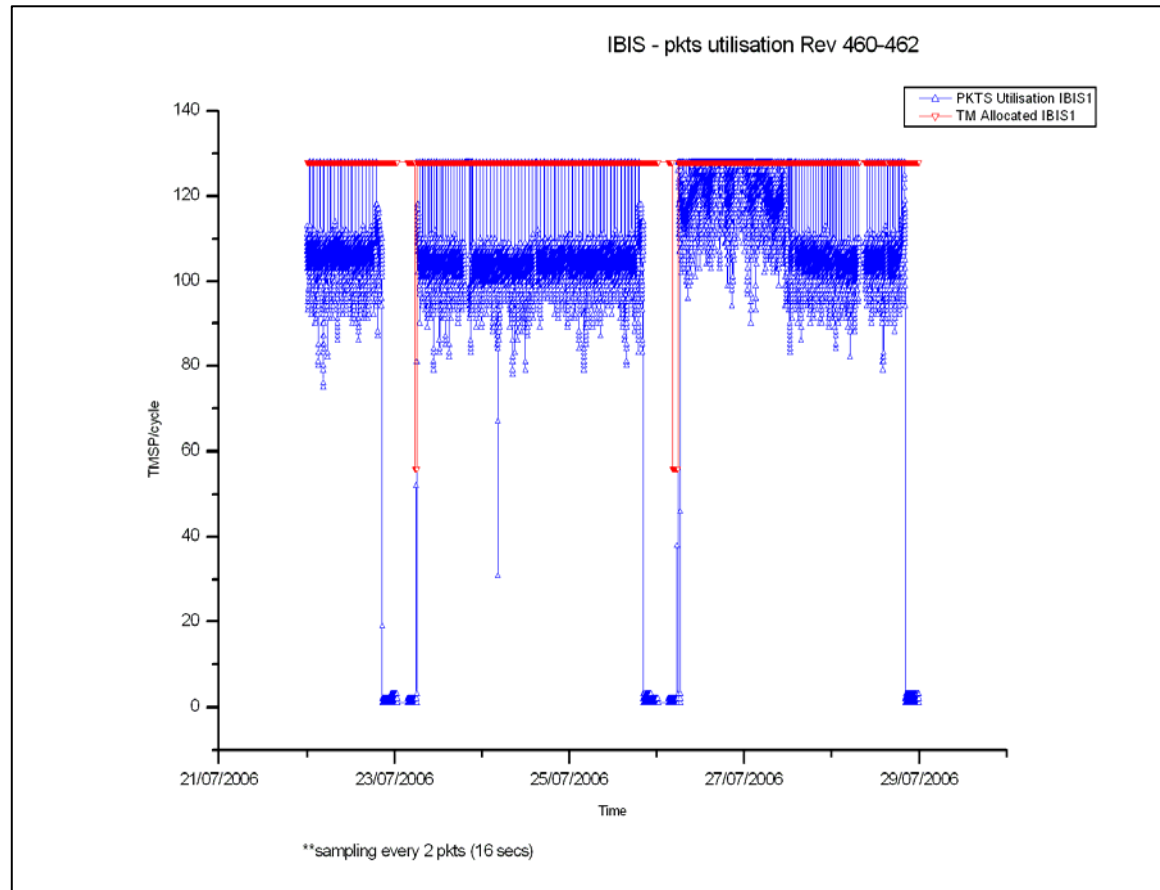
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 108.90 TMPS/cycle, up 3.89 on last week.

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



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

3.2.3 JEM-X

The status of both JEM-X units is nominal.

JEM-X operations were performed by the automatic Timeline.

JEM-X1 was operated in Data Taking mode with a TM allocation of 8 packets/cycle during science observations and JEM-X2 was dormant (DPE OFF) with no TM slots allocated.

Due to a problem with the IMCS, the JEM-X1 activation at the start of revolution 462 was interrupted. JEM-X1 was then activated manually and reached Data Taking ~1 hour later than planned.

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, 173 of the 174 planned science pointings for OMC were executed nominally. One pointing (04620005) was missed due to IMCS 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.

From 23/07/2006 to 27/07/2006, sunspot 901 has appeared, grown and started decaying. This sunspot did not pose a threat for strong solar flare.

Reference: www.spaceweather.com

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

4 Ground Facilities

The Operational ground facilities performance was very good this week, with 1 pointing lost due to ground problems. The overall performance was nearly 100% requirement.

4.1 Mission Operations Centre

The performance of the MOC was excellent this week. The overall performance was nearly 100%.

4.2 Ground Stations & Network

The performance of the Ground Stations and Network was very good this week. There were, however, a few occasions of bad frames and brief link drops with Redu. There were also few problems reported in sending data to ISDC and PI ECOE workstations. The overall performance though was nearly 100%.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSF up to revolution 472 have been received. Due to a TOO on Cyg X-3 revolutions 462 to 469 (first of AO-4) had to be replanned. Further planning will be done after the installation of the ISOC system 12.6.

A TOO on EXO 2030+375 has been rejected as the TAC criteria were not yet met, but it remains possible that this will have to be done.

2. Observation status

No new ECS processed since last week.

3. ISOC science data archive

Ongoing cleanup activities due to problems with the Ingest software in the past, which have now been resolved. P.J. Baeck (YGT) has started working on a prototype visualization tool.

4. ISOC system

Version 12.6 of the ISOC system has been finished and is expected to be installed on the test system for Monday, 31 July.

5. AO 4

The Core Programme and Key Programme observations have been set up.

The TOO strategy documents have been accepted by the Project Scientist, observers will be informed about the details in the first days of August.

6. Extra AO for AO 5 Key programme

No news.

7. Problems

No new problems encountered.

4.3.2 ISDC

Status of ISDC observation processing on 31/07/2006:

- Latest Standard Analysis completed: observation 03200760002 (Mrk 421, Revolution 449) on 14/07/2006.

- Latest products archived: observation 03201080013 (Field_13, Revolution 446-447) on 15/07/2006.

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

5 Special Events

6 Anomalies

The following problems impacted operations this week:

- On DoY 207 (26/07/2006), at 05:58Z, the Command Verifier crashed. Consequently several commanding activities were missed from the timeline. Slew #0005 was manually updated, and all missed TC were manually uplinked. The recovery was completed at 07:19Z.
- On DoY 207 (26/07/2006), since 10:25Z, problems on the machine responsible of the data distribution to PI ECOE have been observed. The Software Support team has been investigating the whole day. At 19:20Z, the problem was fixed and PI ECOE machines were receiving data. Note that server ISDS-A was rolled back to previous Software. (INT-2867).
- On DoY 209 (28/07/2006) at 15:18Z both TM and TC links dropped due to a station power break down in REDU. This implied slew #0091 to be manually updated.

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

AR id	Date Created	Subject	Segment	Status
INT-2867	2006-07-27	IMCS: ISDS no data distributed to ISDC	IMCS	Open

7 Future Milestones

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 461

The observations in revolution 461 began with a raster dither of Field_9 (RA 03:14:20.00, DEC +17:39:13.0), lasting ~12.6 hours. This was followed by another raster dither was performed, this time of SN1006 (RA 15:02:48.40, DEC -41:54:42.0), lasting ~44.5 hours, until the end of the revolution.

Revolution 462

The observations in revolution 462 consisted of a raster dithering observation of Cygnus X-3 (RA 20:32:25.50; DEC +40:57:27.7) lasting ~29.5 hours followed by a raster dithering observation of Field_9 (RA 03:14:20.00; DEC +17:39:13), performed for the remaining ~30.5 hours of observation time.

Throughout these observations all instruments were in their nominal science modes, except JEM-X2 for which the DPE was OFF. The TM allocation was IBIS 128; SPI 105; JEM-X1 8; JEM-X2 0; OMC 5.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2006-07-18T15:12:06.000Z	153.1361	F	Automatic TM processing.
2006-07-19T21:07:05.000Z	153.0944	F	Automatic TM processing.
2006-07-20T04:33:38.000Z	153.0664	F	Automatic TM processing.
2006-07-20T13:20:51.000Z	153.0543	F	Automatic TM processing.
2006-07-20T14:27:47.000Z	153.0412	F	Automatic TM processing.
2006-07-21T14:50:13.000Z	153.0321	F	Automatic TM processing.
2006-07-22T21:03:54.000Z	152.9929	F	Automatic TM processing.
2006-07-23T00:07:46.000Z	152.9747	F	Automatic TM processing.
2006-07-23T04:14:50.000Z	152.9556	F	Automatic TM processing.
2006-07-23T19:33:16.000Z	152.9396	F	Automatic TM processing.
2006-07-24T14:57:02.000Z	152.9342	F	Automatic TM processing.
2006-07-25T20:51:37.000Z	152.9143	F	Automatic TM processing.
2006-07-25T23:49:54.000Z	152.9056	F	Automatic TM processing.
2006-07-26T03:59:46.000Z	152.8887	F	Automatic TM processing.
2006-07-27T14:07:42.000Z	152.8731	F	Automatic TM processing.

This report was generated Fri Jul 28 08:00:29 GMT 2006.

8.3 Detailed Satellite Information

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

8.3.1 AOCS SUMMARY OPERATIONS REPORT, 22/07/2006 – 28/07/2006

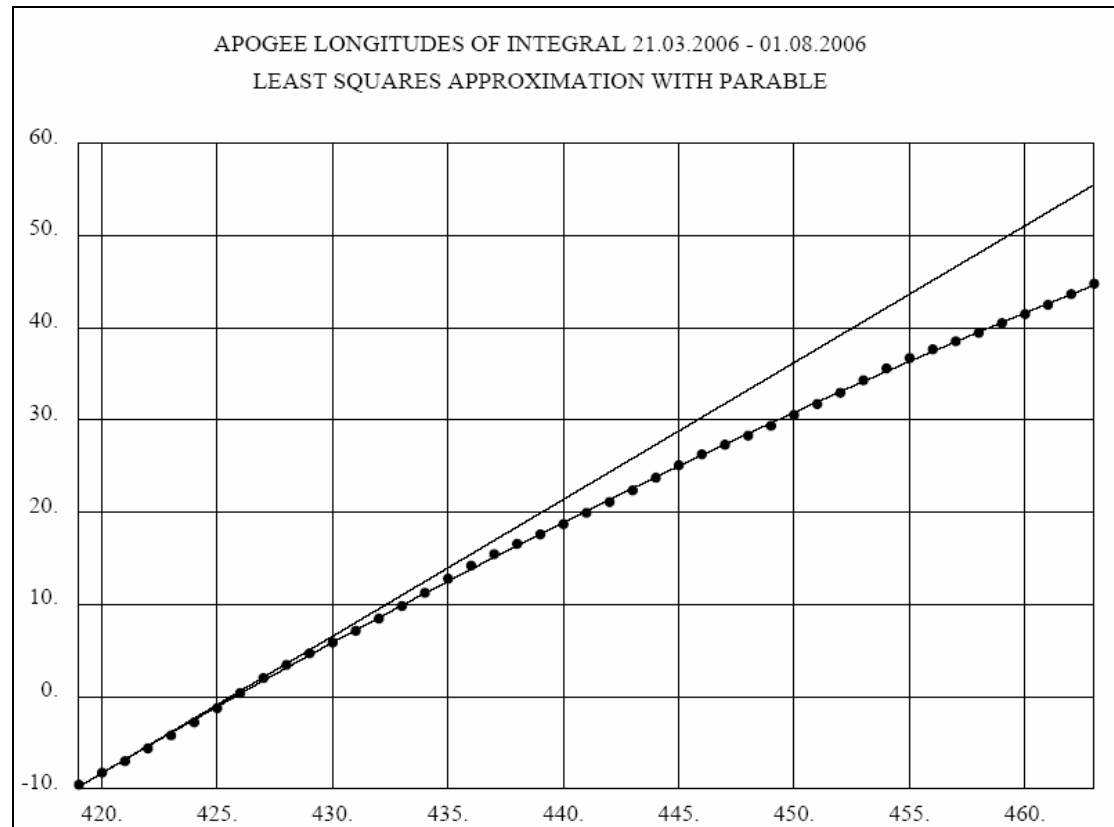
AOCS operations were executed from the Automatic Timeline.

During this period, 75 Open Loop Slews, 118 Closed Loop Slews and 9 Momentum Biases were executed.

No slews were lost during the observation period.

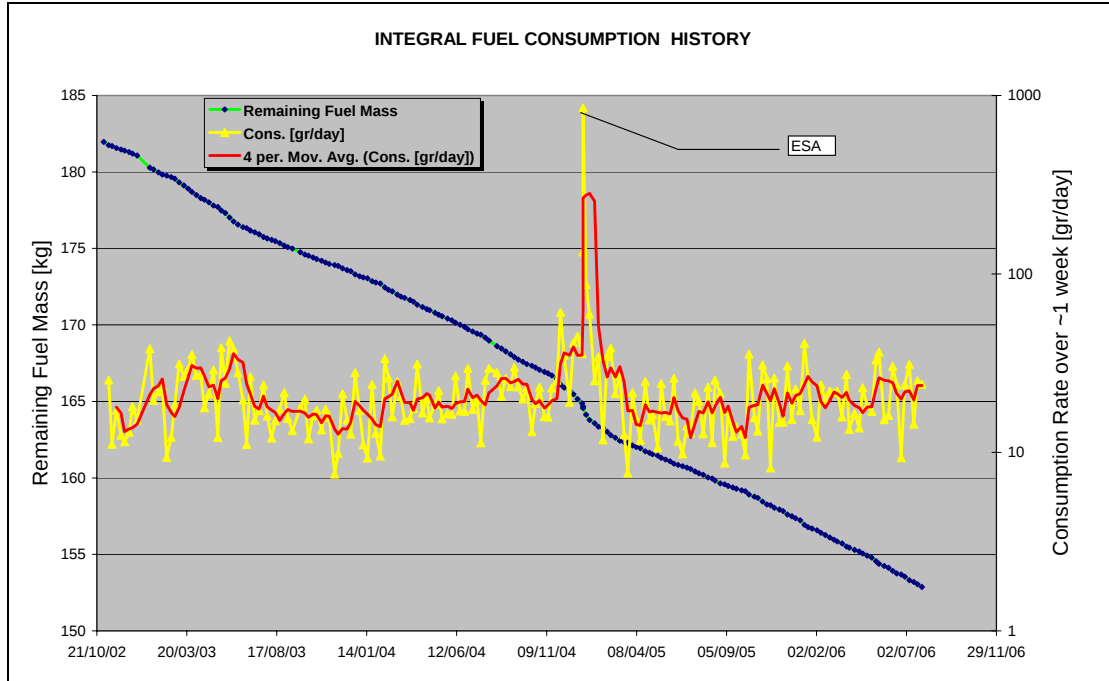
Orbit Control

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

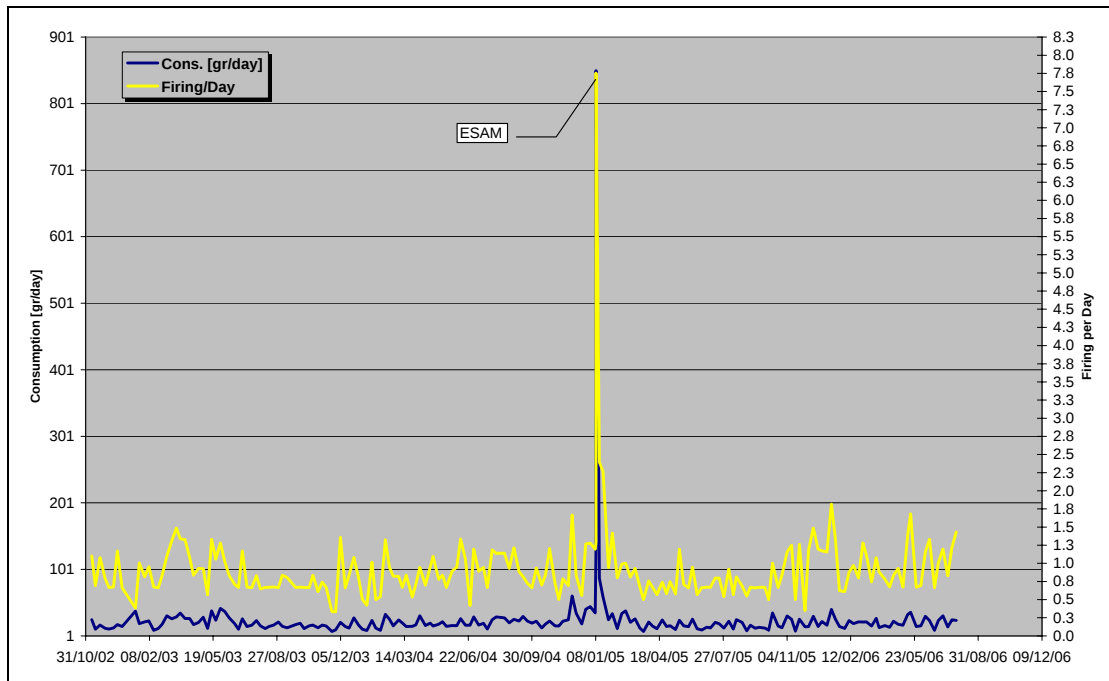


Fuel consumption

The fuel consumption (total, grams/day) over the period between 01/11/2002 and 27/07/2006 is reported in the plot below.

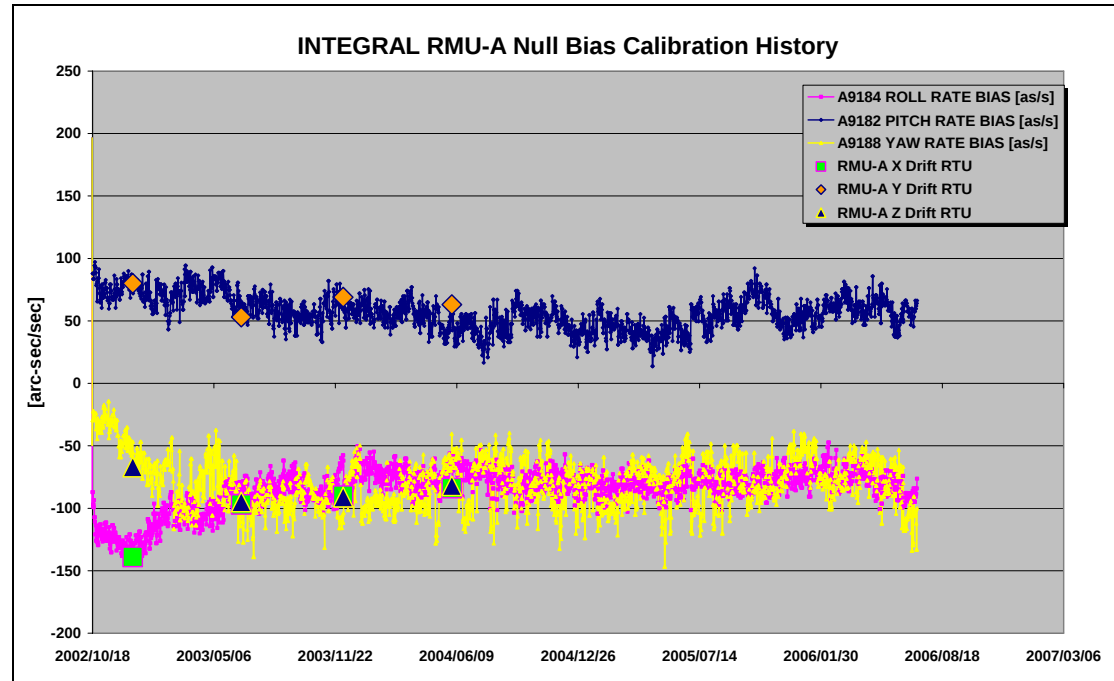


The firing/day over the period between 01/11/2002 and 27/07/2006 is reported in the plot below.

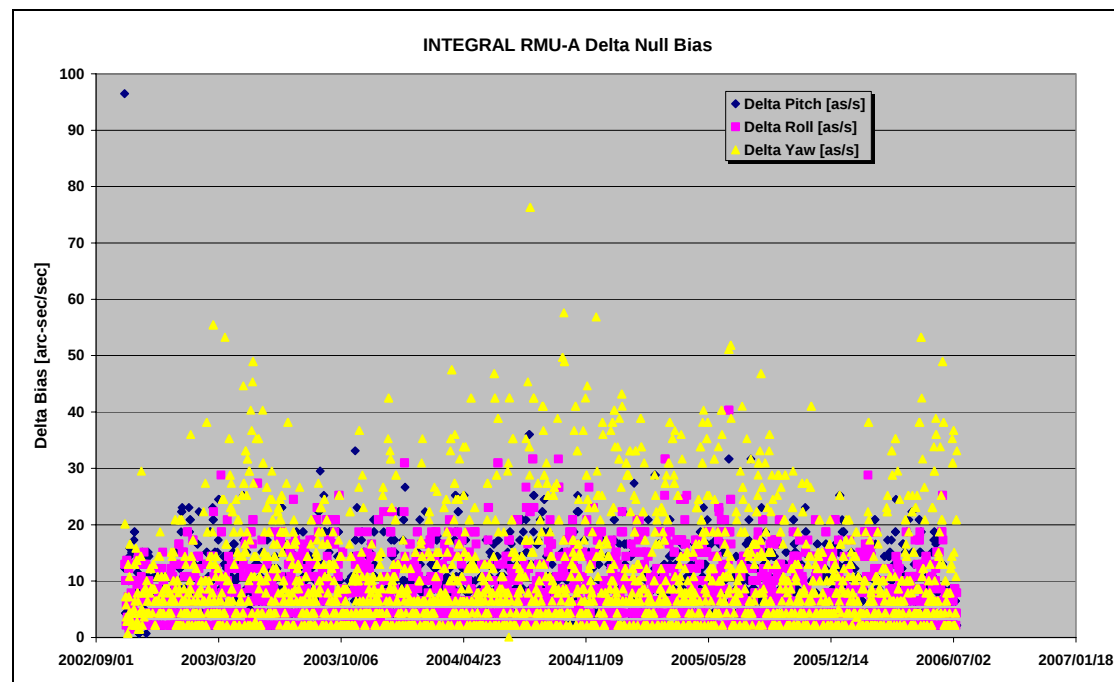


The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 07/07/2006 is reported in the plot below.



The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 07/07/2006 is reported in the plot below.



Doc. Title : INTEGRAL Mission Report #201
Doc. Ref. : INT-MOC-SYS-RP-1001-OPS-OF
Date : 31/07/06

Issue : 1
Rev. : 0
Page : 13

22/07/06 (Day of Year 203, Revolution 460)

Nothing to report.

23/07/06 (Day of Year 204, Revolution 460-461)

Nothing to report.

24/07/06 (Day of Year 205, Revolution 461)

Nothing to report.

25/07/06 (Day of Year 206, Revolution 461)

Nothing to report.

26/07/06 (Day of Year 207, Revolution 461-462)

Problem on IMCS Command Verifier: due to a problem on the IMCS Command Verifier Task, the mapping after slew 04620004 failed release.

A recovery was then started at 06:05z and the next slew in TL (04620005) manually updated.

The AOCS s/s was re-enabled at 06:16z.

No impact reported on TL.

27/07/06 (Day of Year 208, Revolution 462)

Nothing to report.

28/07/06 (Day of Year 209, Revolution 462)

Power Brake Down on REDU station: at 15:30z due to a problem on the REDU station (power brake) , the AOCS s/s was disabled in TL.

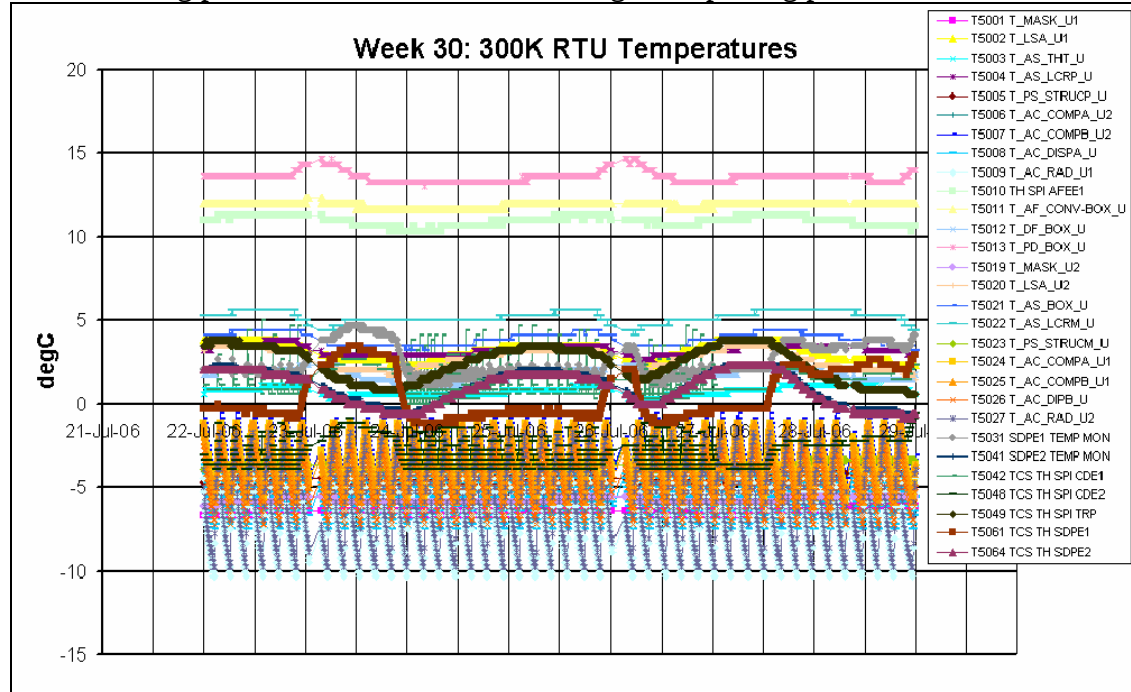
A recovery was then started at 15:36z, the next slew in TL (04620091) was manually updated at 15:42z.

The AOCS s/s was re-enabled at 15:44z.

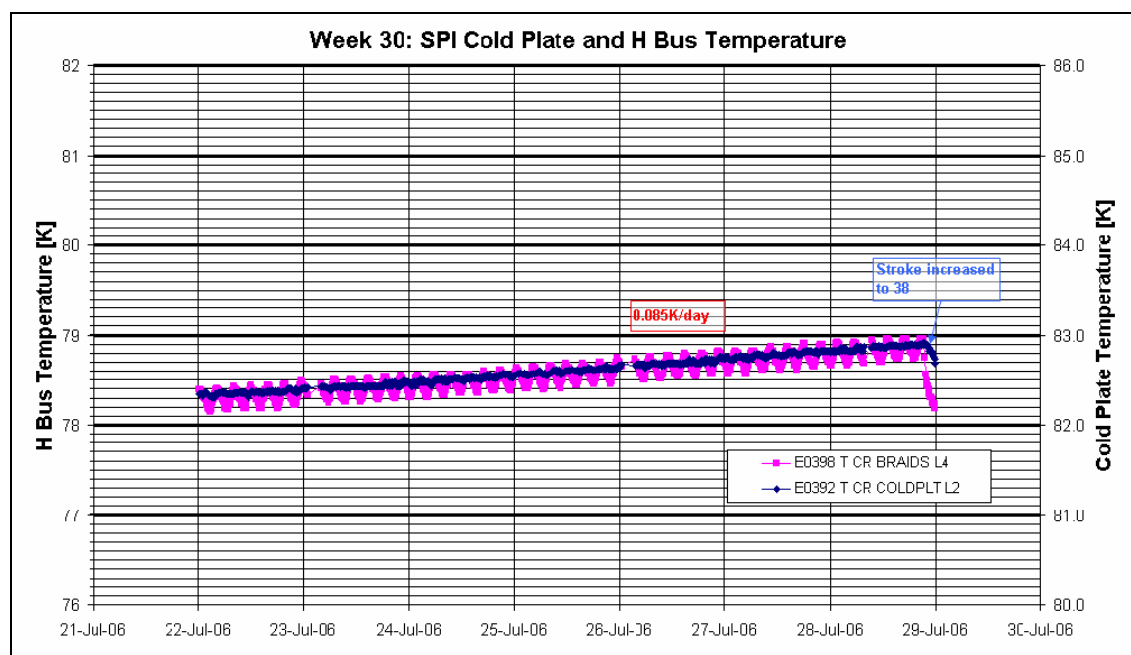
No impact reported on TL.

8.3.2 SPI Operations

Unit Temperatures: All the equipment temperatures are inside the operational limits. The following plot shows their evolution during the reporting period:



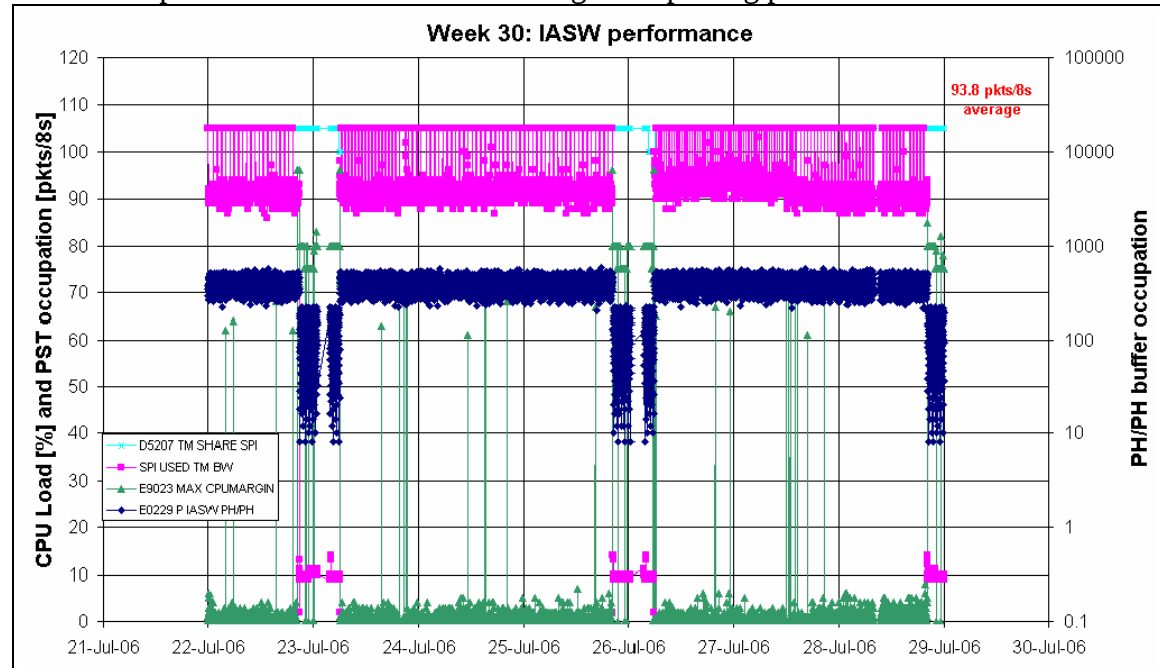
Stirling Compressors and Cryostat: The performance of the compressors is nominal. The cold plate temperature was maintained in the range to 82K +/-1K. The temperature drift was positive with a rate of 0.085deg/day until 2006-07-28 at 21:29Z, when the stroke of all four compressors was increased from 37 to 38 after the Cold Plate Temperature had reached 82.9K. The following plot shows the evolution of the cold plate and H bus temperatures during the reporting period.



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

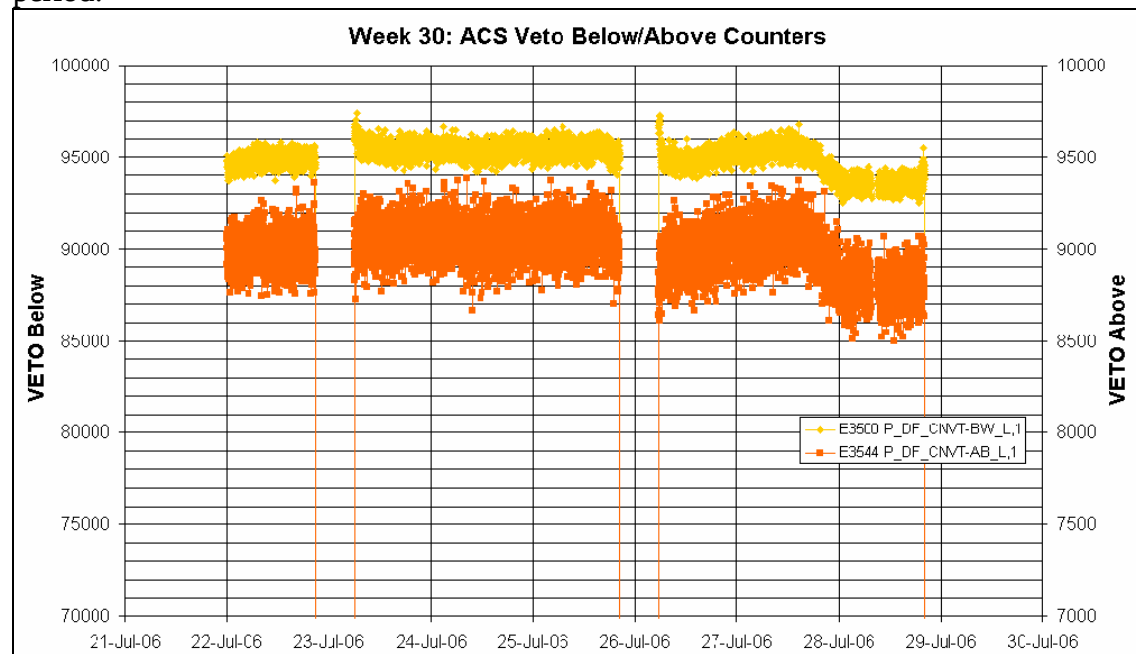
The average TM bandwidth occupation of SPI is 93.8 packets/cycle over the science window.

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



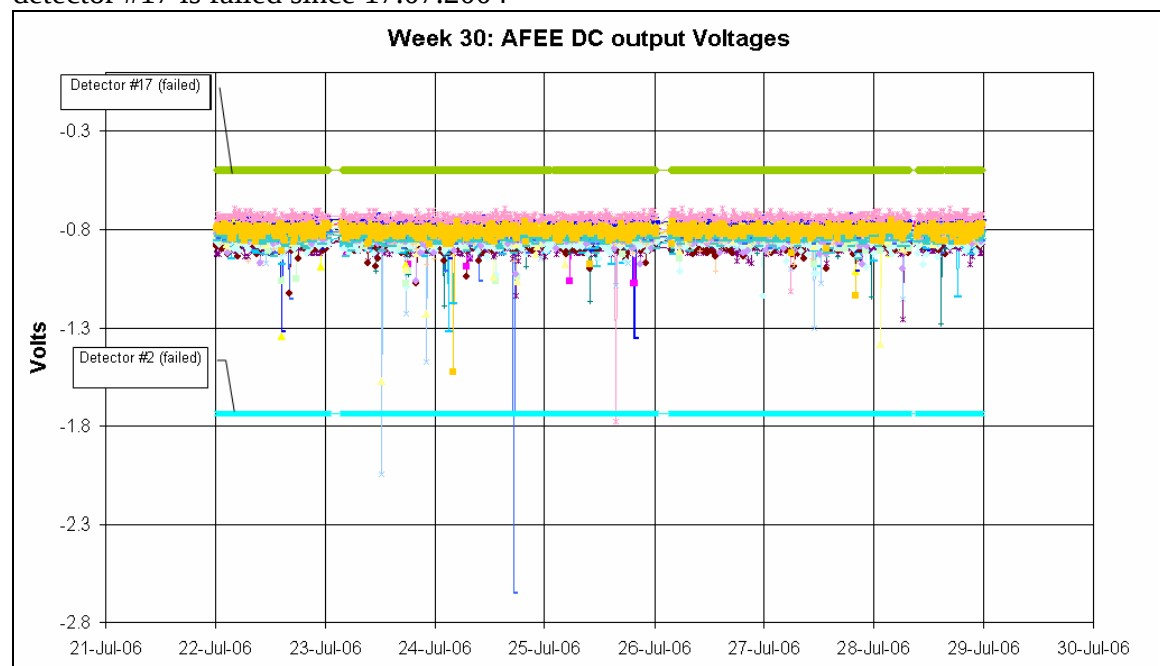
ACS: The performance of the ACS is nominal.

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

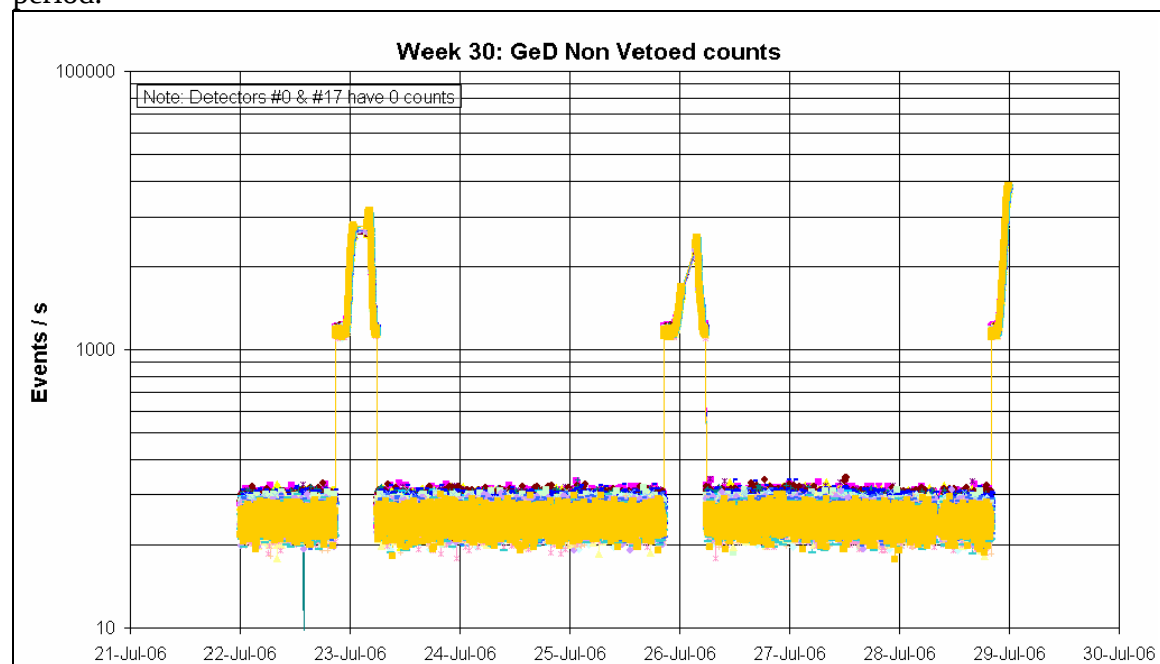


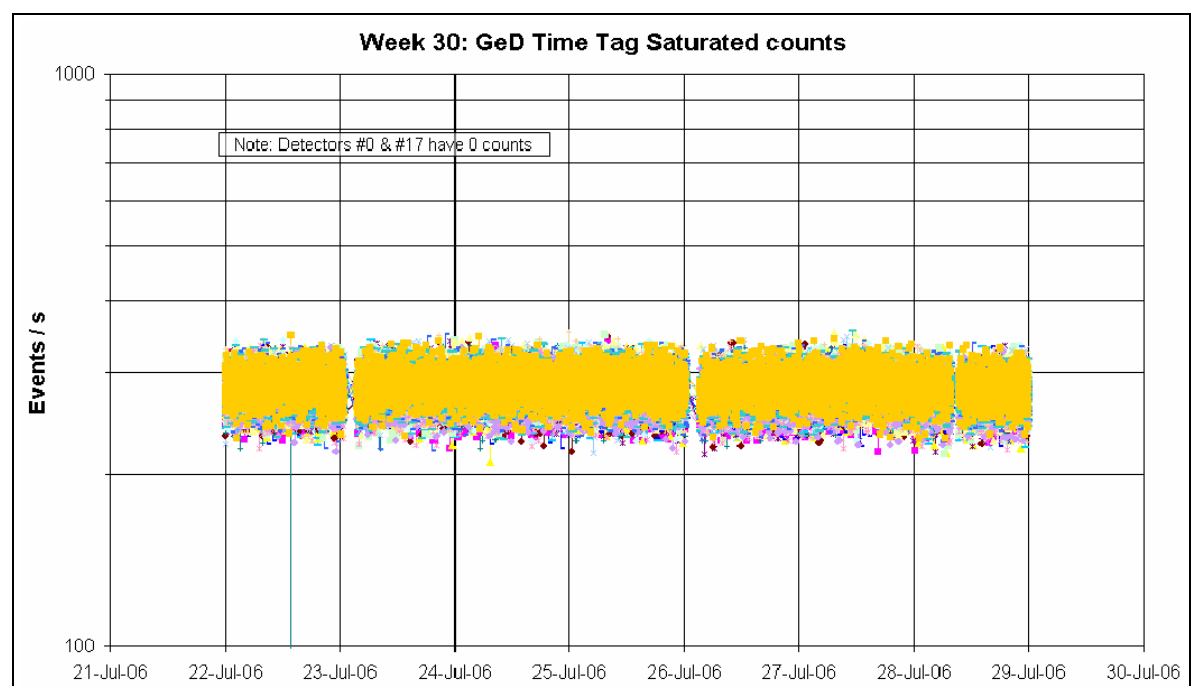
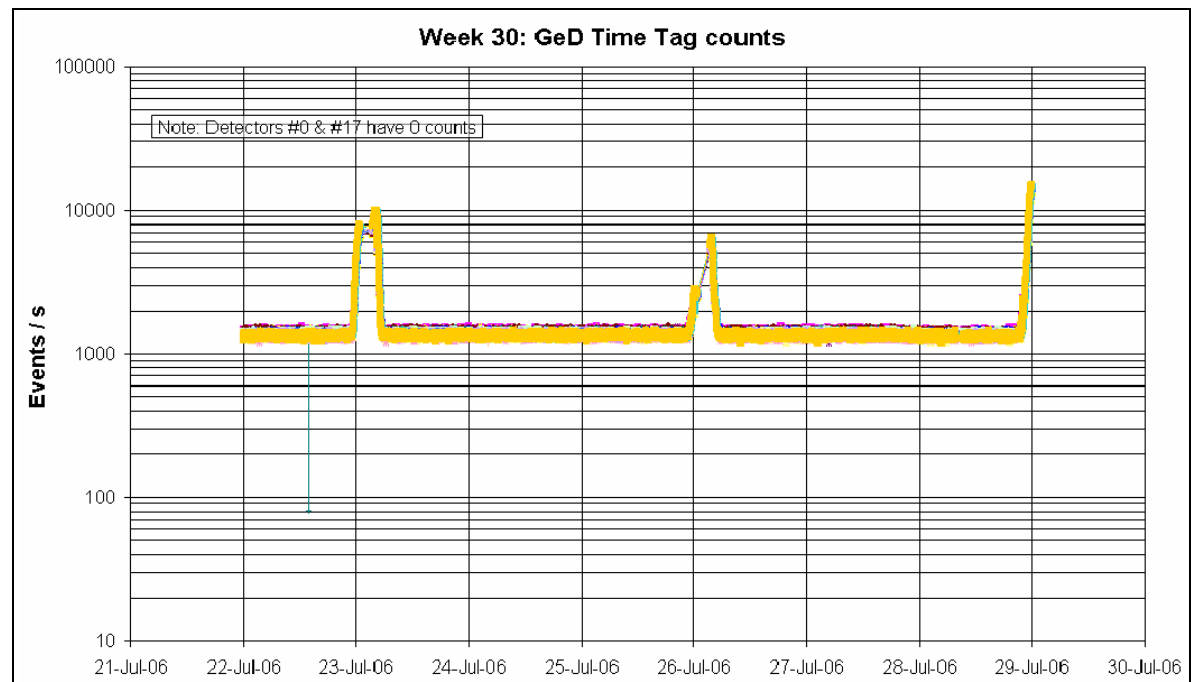
AFEE: The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detectors #4 and #12 which are showing a slightly degraded energy resolution. The energy resolution of GeD#15 was recovered with this annealing.

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



DFEE: The performance of the unit is nominal. The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event Count Rates during the reporting period.



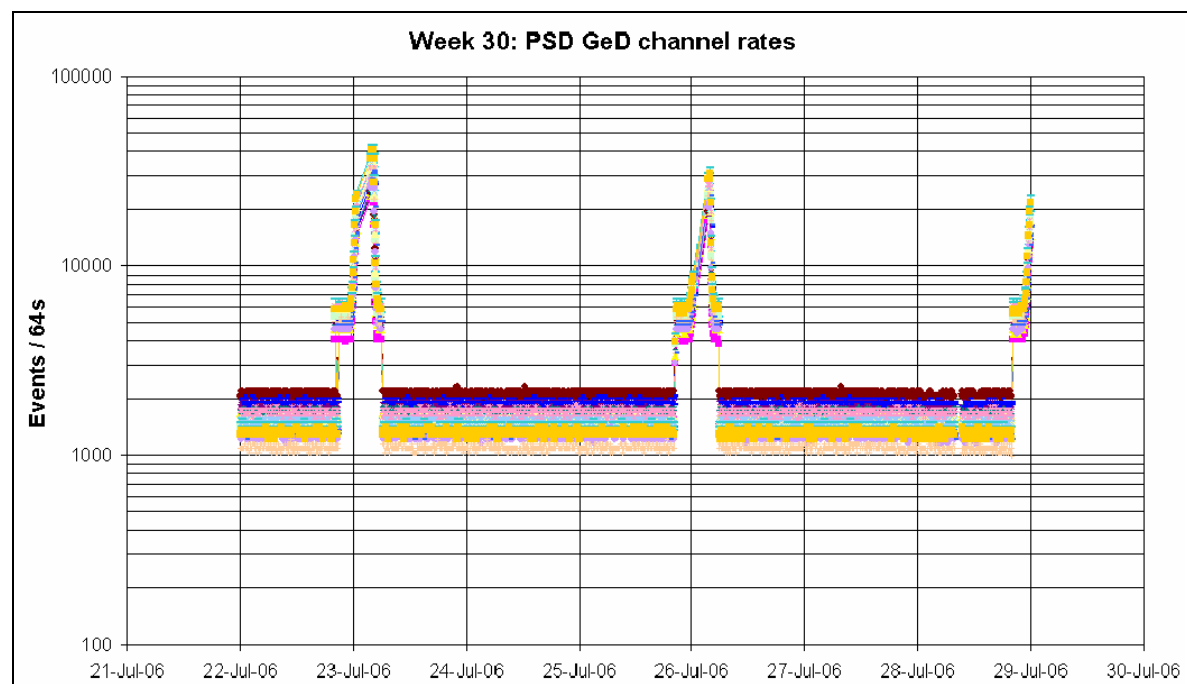


PSD: The health of the unit is nominal.

As reported in the previously weekly report, on 2006-07-21 at 11:48Z TM parameter E3674 R PD LOW-TH L4 (Low Threshold for detector 4) changed its value autonomously from 80 to 208 (AR INT-SC-155). The value was set back to nominal on 2006-07-22, shortly before radiation belt entry of the ongoing revolution (460), as follows:

- 20:12Z FCP_SPI1_0160 SPI BACK TO CONFIGURATION MODE
- 20:14Z TPF ES1741_PD_LWTHR_FMCONFIG_0003.TPF uplinked to set the nominal PSD low energy thresholds
- 20:15Z FCP_SPI1_0130 SPI TRANSITION TO PHOTON MODE.

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



Event Log:

The following non-nominal OEMs and OOLs were received from SPI during the reporting period:

- On 2006-07-23 at 00:25:20Z OEM 1 EXCEPTION SPI1 FIXED POINT OVERFLOW. This was during the LOS_CHK window of revolution 460, when the SPI1 DPE time verification TC was sent. This OEM is sometimes received when this TC is sent and no action was taken.
- From 2006-07-23 at 06:05Z the TM parameter E3500 (ACS CntVetoBelow) started to regularly go OOL High. This is due to the ACS/GeD count rates having generally increased due to the increasing radiation background. On 2006-07-24 at 12:02Z the High limit for E3500 was changed from 95000 to 105000 on the IMCS. After this time, the parameter remained within limits. This change will be made permanent in the IODB.
- On 2006-07-24 at 17:17:38Z TM parameter E0365 went OOL Low

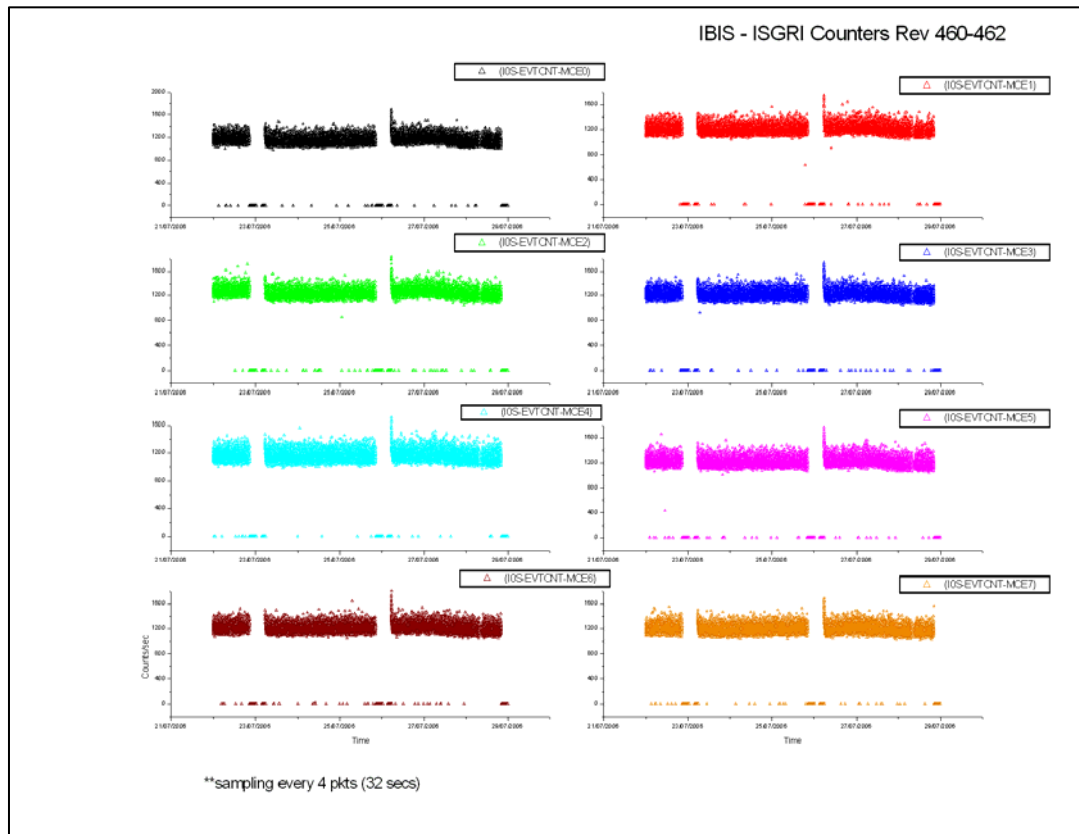
(value = -2.652). This is the Detector #15 AFEE DC output voltage. It returned within limits when the next packet was received at 17:28:18Z.

- On 2006-07-28 at 10:53:38Z TM parameter E2218 went OOL (value = PARAM > SPEC [0]). This is the FEE digital status 5 V #68. It returned within limits when the next packet was received at 11:04:18Z.

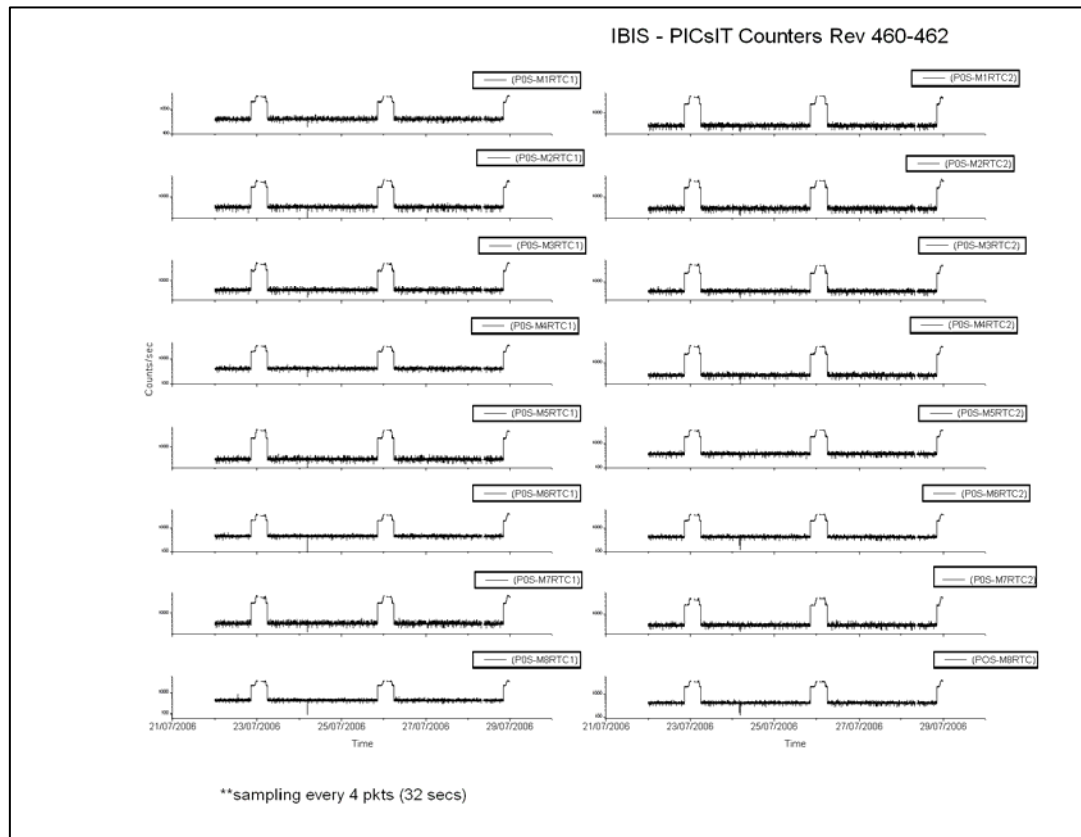
8.3.3 IBIS Operations

IBIS Event Counters Plots.

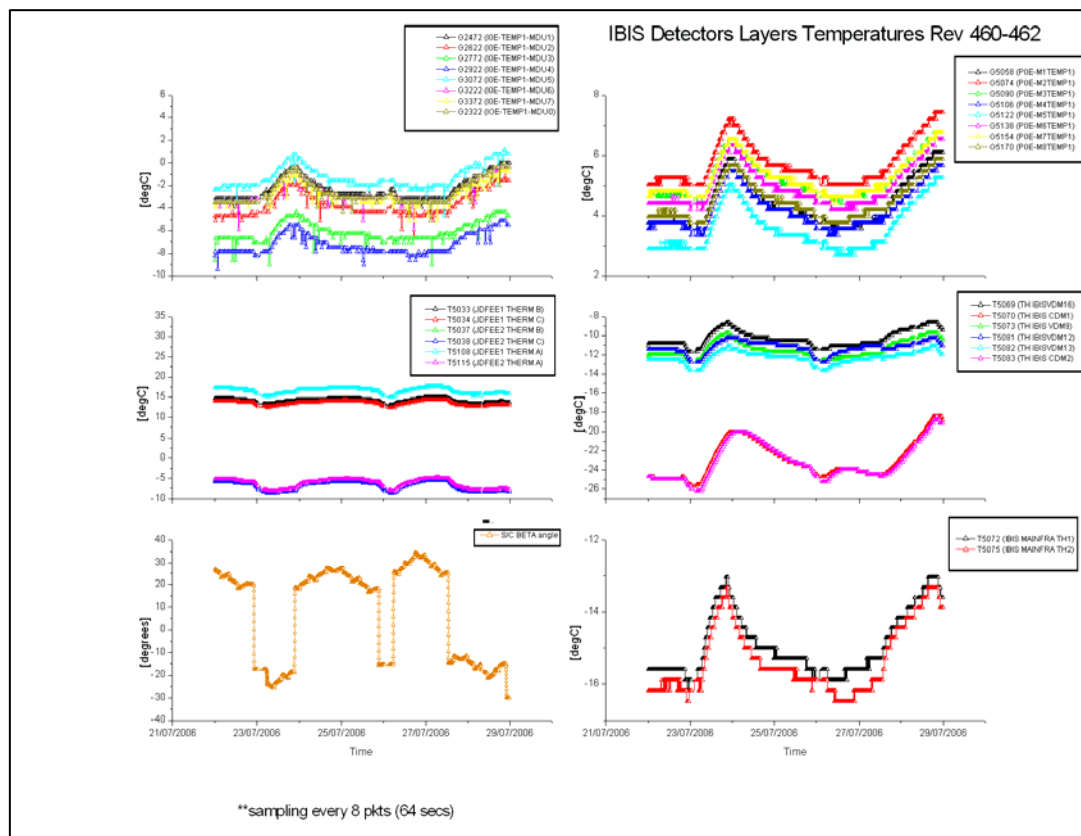
ISGRI Counters:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report:

DoY 203 (22/07/2006):

At 20:43Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 204 (23/07/2006) at 06:12Z. As this happened inside the radiation belts (following VETO Stand-By mode), according to V-VLT-1 no action was taken.

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

DoY 204 (23/07/2006):

At 05:43Z TM parameter G2070 (I0E-OVFWPXADD-M5) failed SCC and back. At 05:48Z TM parameter G2014 (I0E-OVFWPXADD-M1) failed SCC and back. At 05:51Z TM parameter G2084 (I0E-OVFWPXADD-M6) failed SCC and back. According to I-OVF-1, no action was taken.

At 05:41Z, TM parameter G2097 (I0S-EVTCNT-MCE6) was reported OOL Low-Low with the value 0 and back. At 06:07Z, TM parameter G2083 (I0S-EVTCNT-MCE5) was reported OOL Low-Low with the value 0 and back. According to I-CNT-1, as this alarm was reported only for 1 cycle, no action was taken.

DoY 205 (24/07/2006):

At 04:21Z, TM families G5068 (P0S-MiF1ERRF) and G5072 (P0S-MiF2ERRF) failed SCC. At 04:24Z, TM families G5002 (P0S-MiRTC1) and G5003 (P0S-MiRTC2) were reported OOL low-low. At 04:27Z, OEM id 132, class 0, "IBIS1 IASW HEPI RESYNCHRONIZED" was reported.

According to F-DIR the occurrence of these 3 events flags an automatic HEPI resynchronisation, no action is required.

DoY 206 (25/07/2006):

At 20:27Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 207 (26/07/2006) at 05:55Z. As this happened inside the radiation belts (following VETO Stand-By mode), according to V-VLT-1 no action was taken.

DoY 207 (26/07/2006):

At 05:24Z TM parameter G2014 (I0E-OVFWPXADD-M1) failed SCC and back. According to I-OVF-1, no action was taken.

At 05:29Z, TM parameter G2027 (I0S-EVTCNT-MCE1) was reported OOL Low-Low with the value 0 and back. According to I-CNT-1, as this alarm was reported only for 1 cycle, no action was taken.

At 05:58Z, the Command Verifier crashed as ED GESTAN02 started to be uplinked. After the recovery of the task, the operator manually re-sent the configuration ED at 06:33Z.

DoY 209 (28/07/2006):

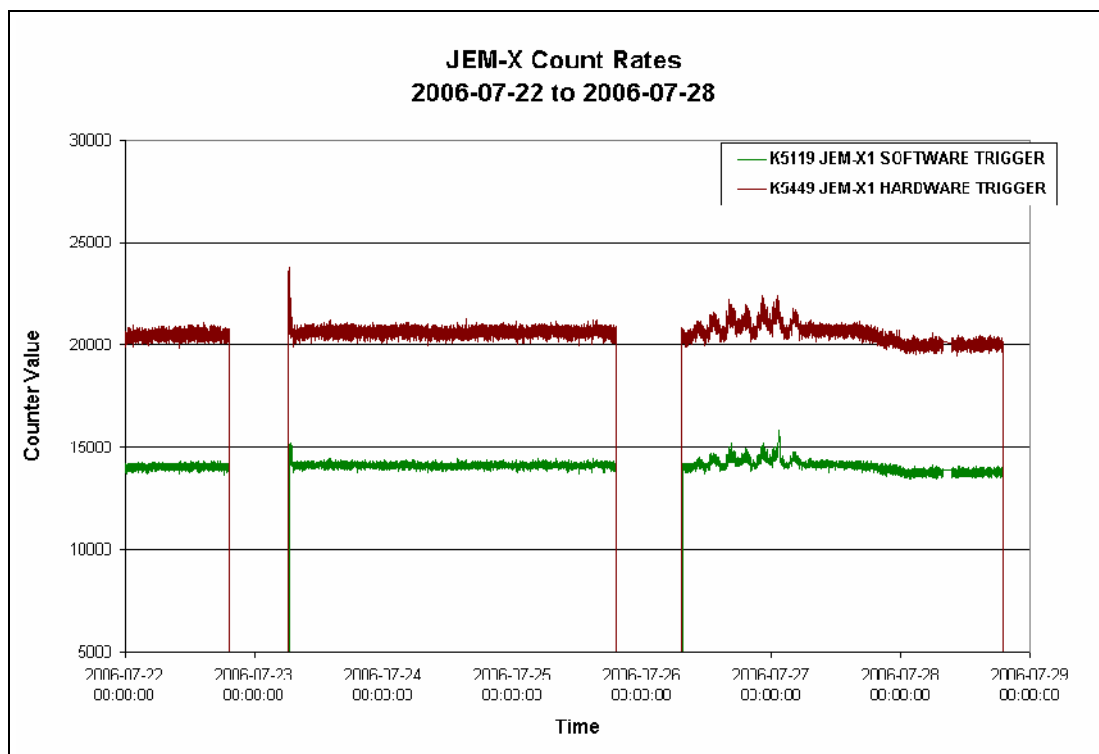
At 20:11Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 210 (29/07/2006). As this happened inside the radiation belts (following VETO Stand-By mode), according to V-VLT-1 no action was taken.

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

8.3.4 JEM-X Operations

8.3.4.1 JEM-X Count Rates

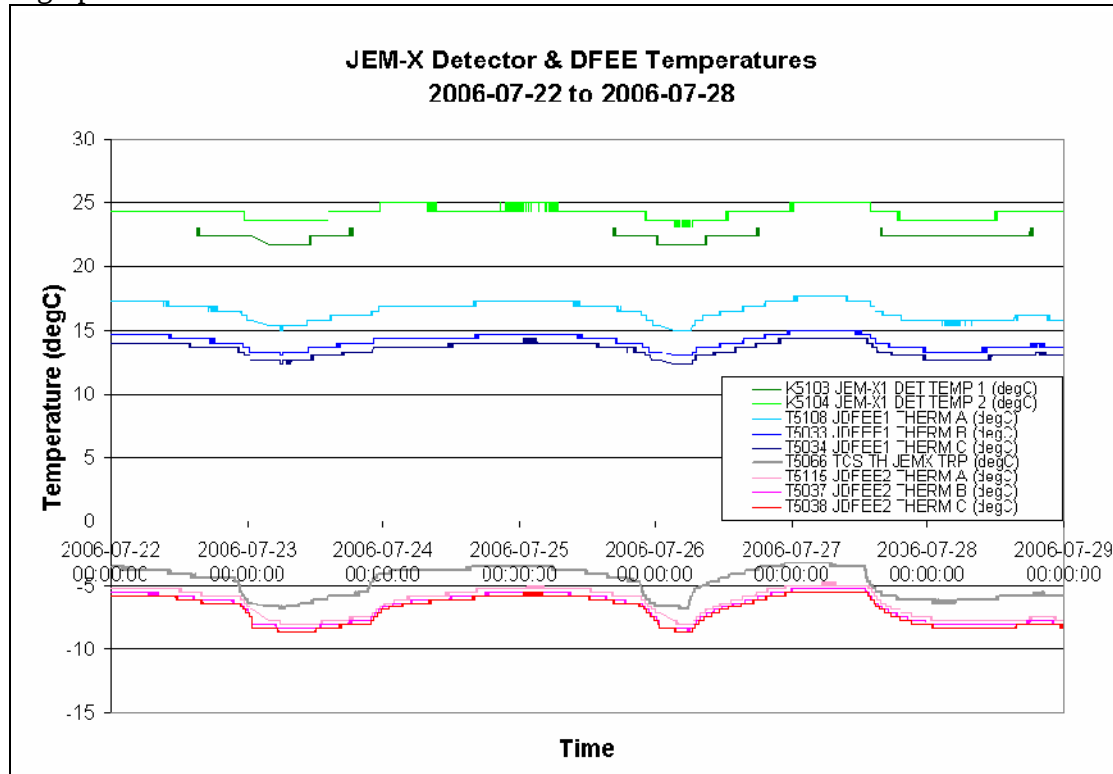
JEM-X count rates over the reporting period are displayed in the following graph¹.



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

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.



8.3.4.3 JEM-X Daily Report

2006-07-22 (DOY 203, Rev 460) to 2006-07-25 (DOY 206, Rev 461)

Nothing to report

2006-07-26 (DOY 207, Rev 461-462)

Due to a loss of connection to the TM cache and crash of the command verifier, the ED KEHVAC01 in the Timeline to activate JEM-X1 at the start of revolution 462 was interrupted after the TC K0002 HV ON at 05:58:33Z. This TC had acceptance unverified and commanding to JEM-X1 from the Timeline was disabled such that the rest of KEHVAC01 along with KEDATA02 were not uplinked.

Once the verifier was recovered and the Timeline rejoined, JEM-X1 was activated manually as follows:

- 07:00:41Z FCP_JEM1_0040 JEMX1 TRANSITION TO SAFE executed
- 07:01:37Z FCP_JEM1_0041 JEMX1 TRANSITION TO SETUP executed
- 07:03:25Z ED KEHVAC01 re-uplinked, leaving JEM-X1 in Data Taking mode with the planned observation parameters.

² Data sampled (1 frame in 8)

Commanding to JEM-X1 from the Timeline was then re-enabled and JEM-X1 operations continued nominally.

2006-07-27 (DOY 208, Rev 462) to 2006-07-28 (DOY 209, Rev 462)

Nothing to report

8.3.5 OMC Operations

2006-07-22 (DOY 203, Rev 460) to 2006-07-25 (DOY 206, Rev 461)

Nothing to report

2006-07-26 (DOY 207, Rev 461-462)

Due to a loss of connection to the TM cache and crash of the command verifier at 05:58Z, the Imaging EDs for PID 04620004 had acceptance stage showing unverified in the TC history (although they were executed on-board as indicated by the On-Event Messages). Commanding from the Timeline to OMC was disabled at 06:02Z. Therefore the Imaging EDs for 04620005 failed release from the Timeline. At 06:38Z, once the verifier was recovered and the Timeline rejoined, commanding to OMC from the Timeline was re-enabled. OMC operations continued nominally from PID 04620006 onwards.

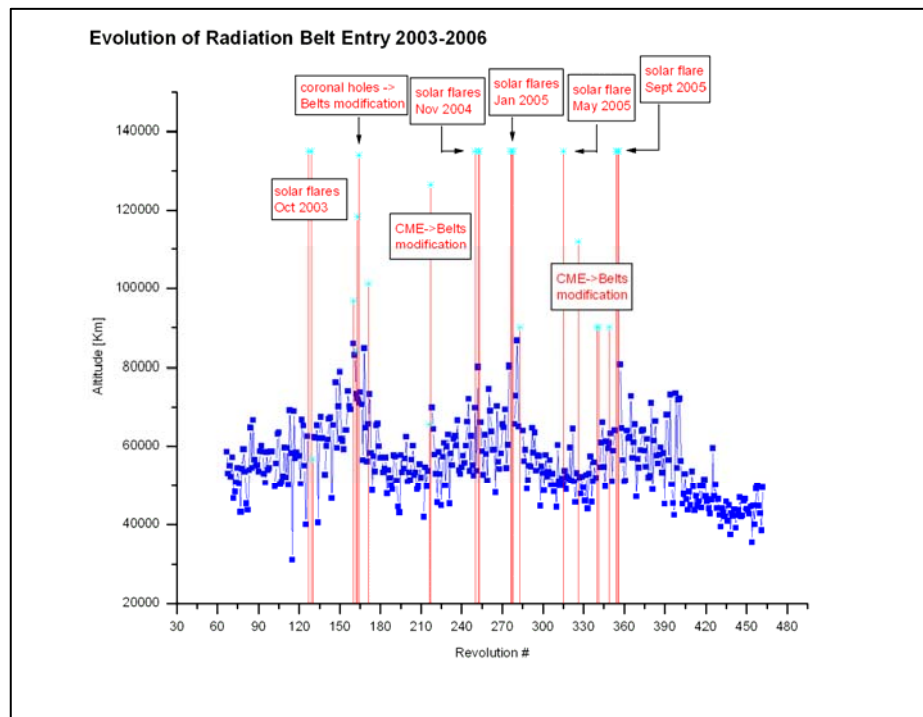
2006-07-27 (DOY 208, Rev 462) to 2006-07-28 (DOY 209, Rev 462)

Nothing to report

On DoY 203 at 20:43:28Z; DoY 206 at 20:27:45Z and DoY 209 at 20:12:02Z OMC went to SAFE mode nominally, at the radiation belt entry time as set in the Broadcast Packet.

8.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

On DoY 207 (26/07/2006), at 00:09Z, TC U4921 (INT GND LINK OFF) failed completion. This was due to a late update of the TM parameter relevant for the CEV. No further action was taken after positive verification of the Ground link Status (TM parameter U9903 = ON).

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]
460	RAD_ENTR R 2006-07-22T20:43:17Z	2006-07-22 22:50:13	<42893.7	2006-07-22 22:13:46	47956
461	RAD_EXIT R 2006-07-23T05:59:55Z	2006-07-23 05:37:01	<<37578.9	2006-07-23 03:03:46	14086
461	RAD_ENTR R 2006-07-25T20:27:33Z	2006-07-25 23:01:01	38562.9	2006-07-25 21:52:13	48497
462	RAD_EXIT R 2006-07-26T05:43:43Z	2006-07-26 04:59:09	33032.9	2006-07-26 02:42:13	13722
462	RAD_ENTR R 2006-07-28T20:11:45Z	2006-07-28 21:35:17	<49501.8	2006-07-28 21:32:13	48817

Reference

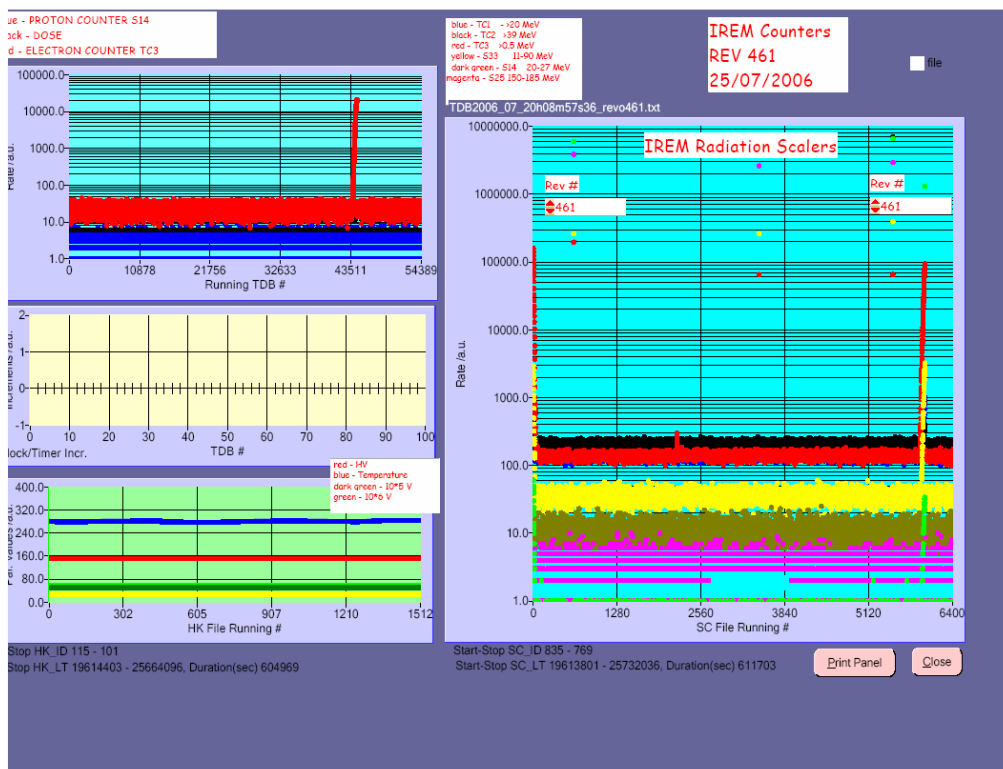
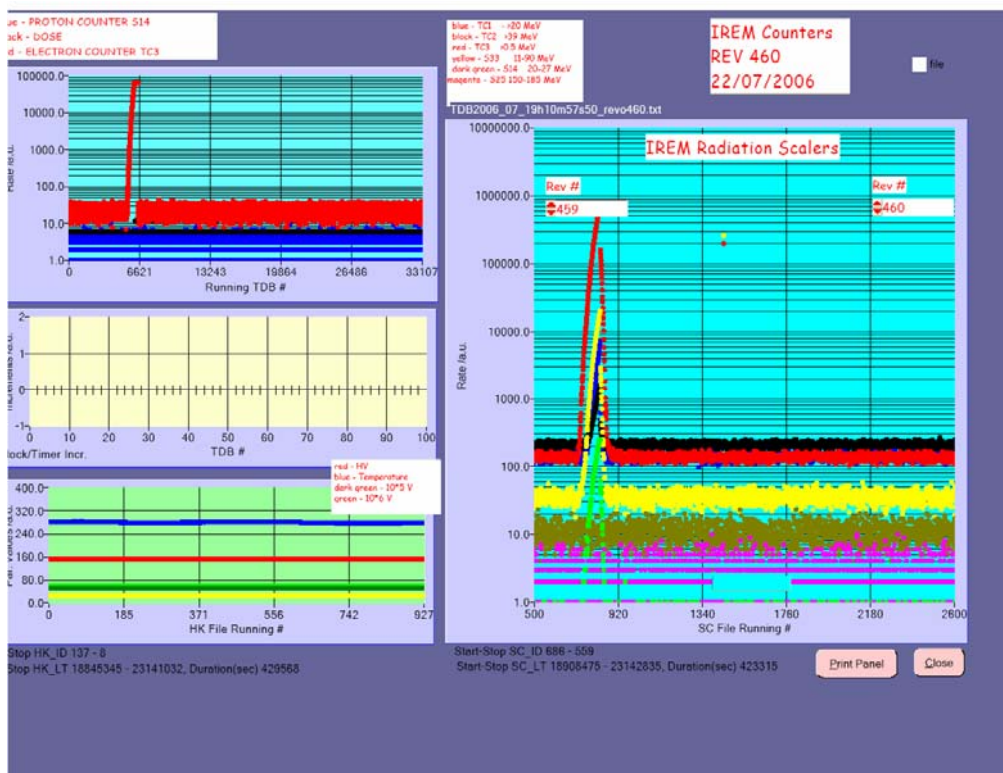
Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

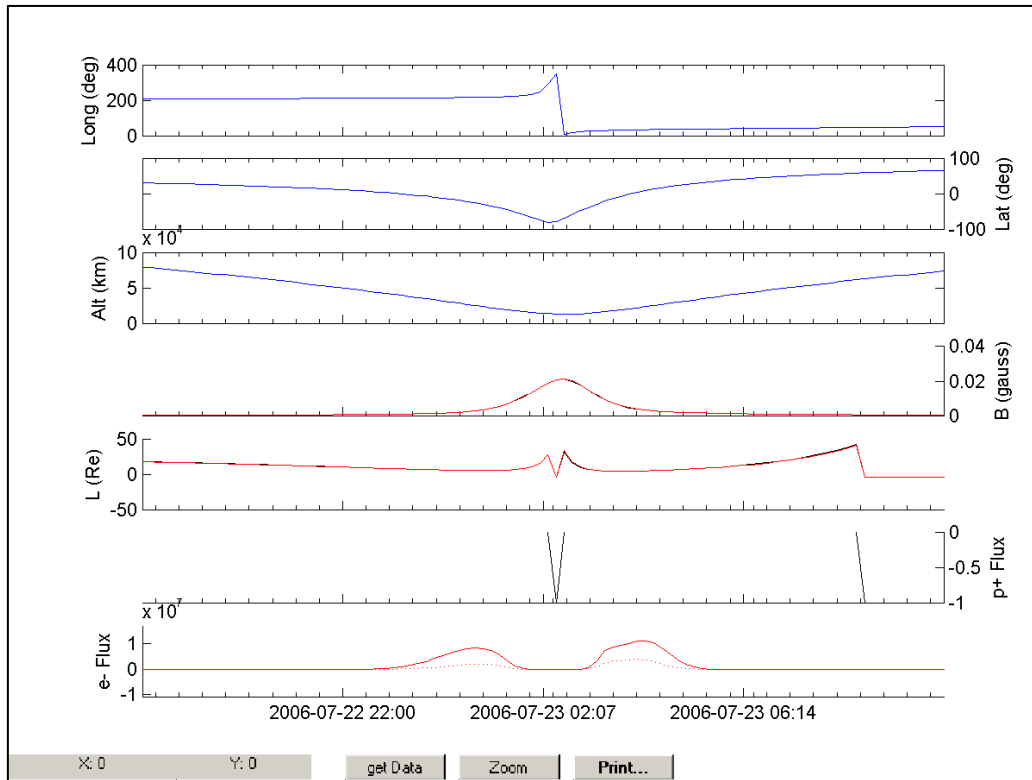
IREM radiation counters:

Due to problem with the task sending data to PI ECOE (IFRD), gaps are reported on the following plots.

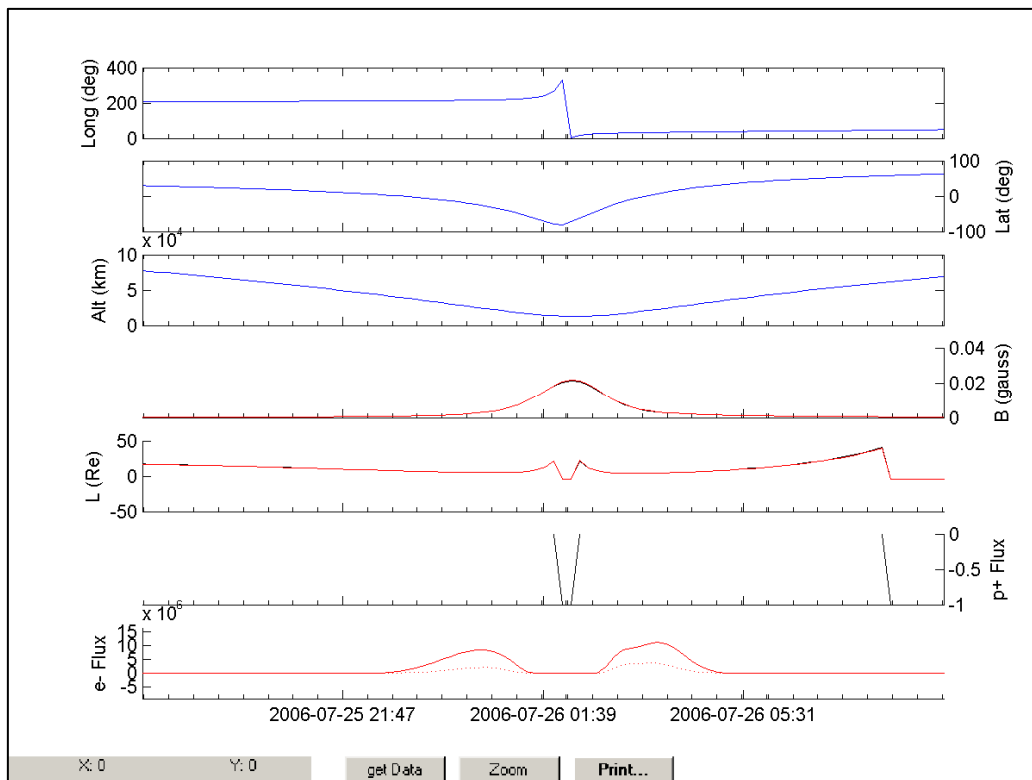


IREM Predicted Radiation Belt Passages

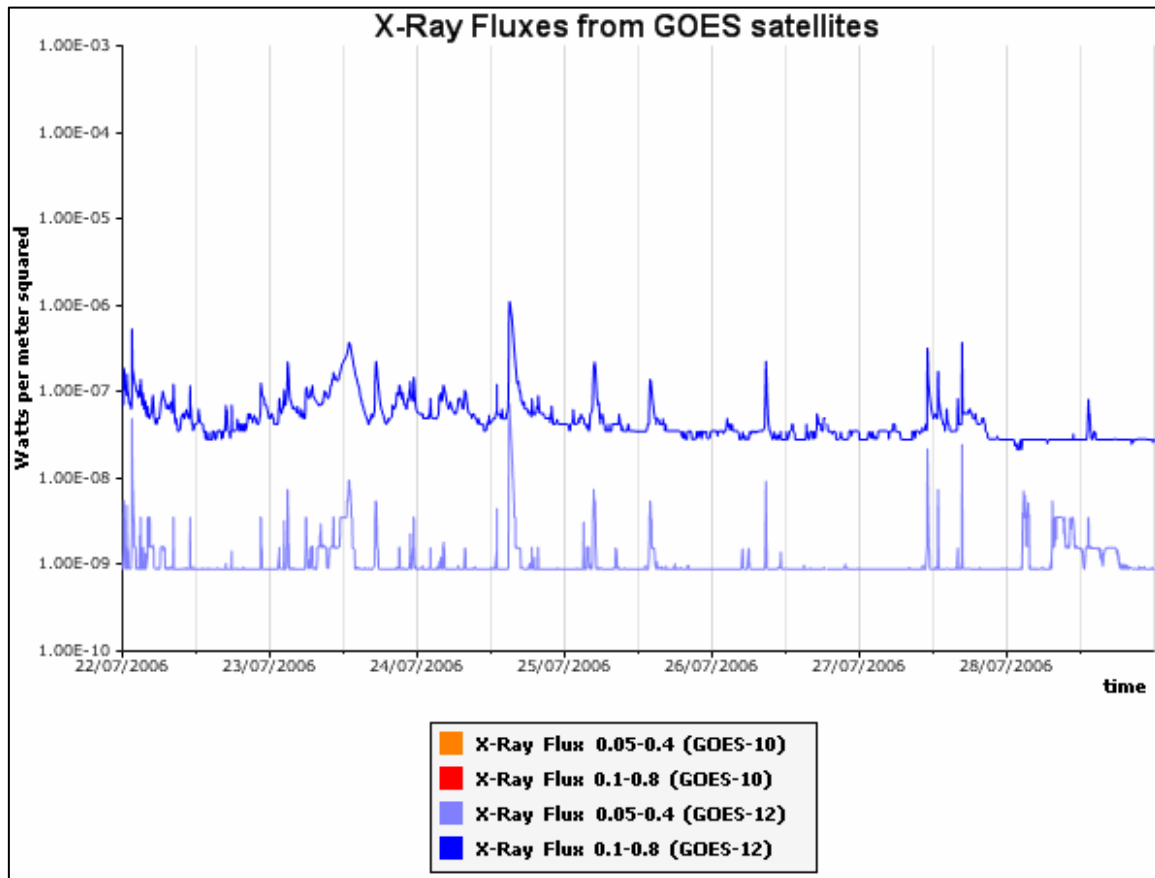
Rev 460



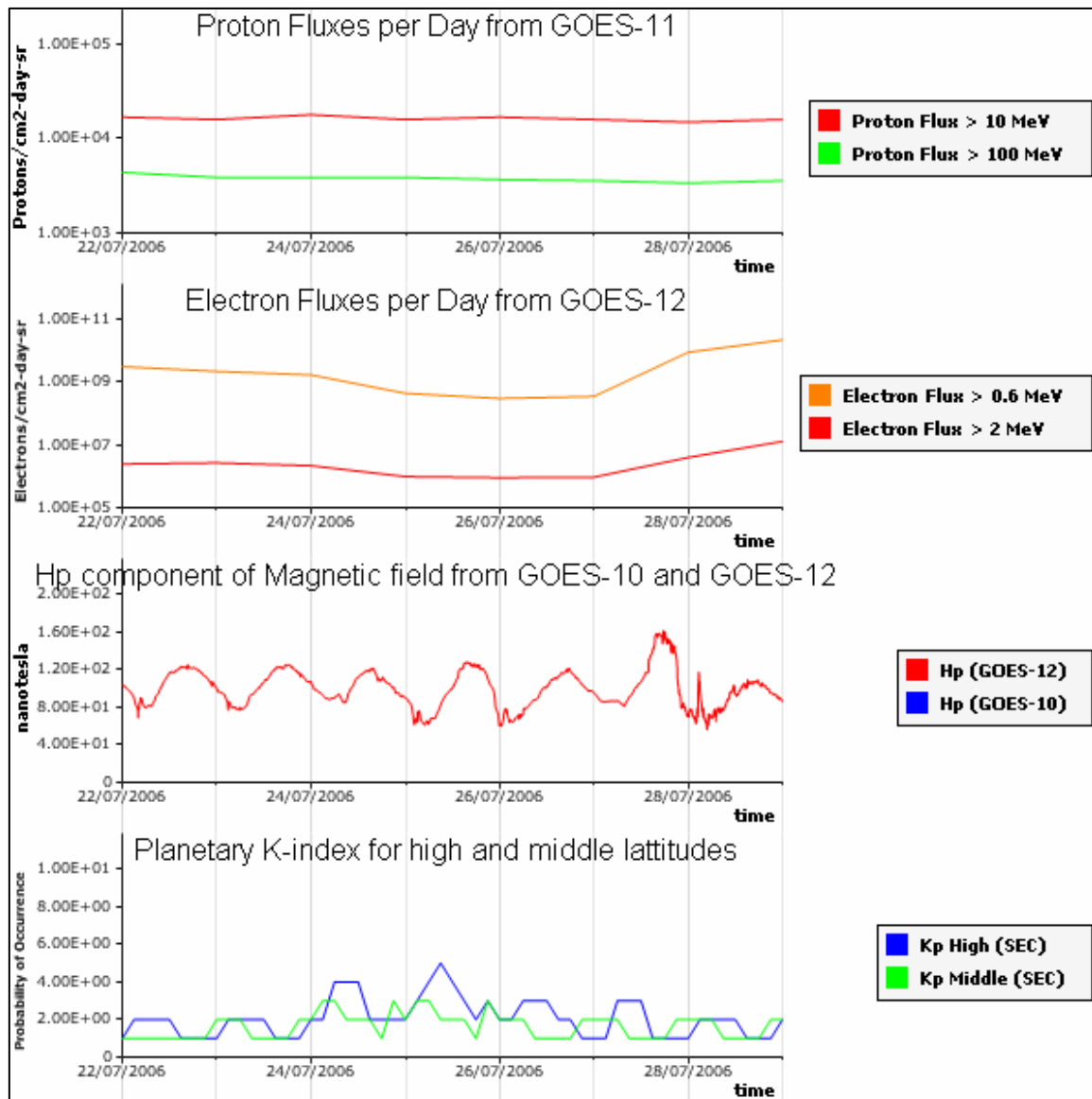
Rev461:



SEC-GOES Observed Particles Fluxes (using SEIS/RAT tool):



X-Ray fluxes start to be significant over 10^{-5} W/m^2 (corresponding to M-class flares). Above 10^{-4} W/m^2 , they correspond to strong X-class flares.



Proton and electron flux report low radiation background.

Hp component of the Geomagnetic Field is essentially parallel to the Earth's rotation axis. A drop near 0 nT is associated with a significant variation in the magnetic field.

Kp index is based on ground magnetometers. Kp ≥ 5 features storm-level geomagnetic activity.