

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 200
Week 29
24.07.06
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.....	5
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, 15/07/2006 – 21/07/2006.....	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 15.07.06 until 21.07.06 (both dates inclusive) and covers the revolutions 459 and 460.

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_14 (RA 05:17:33.00, DEC -40:53:55.0), SN1006 (RA 15:02:48.40, DEC -41:54:42.0), and Field_10 (RA 04:05:42.00, DEC -23:36:23.0), plus two short Galactic Plane Surveys.

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

3 Satellite Status

3.1 Platform

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

3.1.1 AOCS

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

4 slews were lost during the observation period due to problems on the link with REDU station and problems on FDS.

The fuel consumption over the period between 14/07/2006 and 20/07/2006 was 0.1657 kg. The remaining propellant is in the order of 153.0412 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

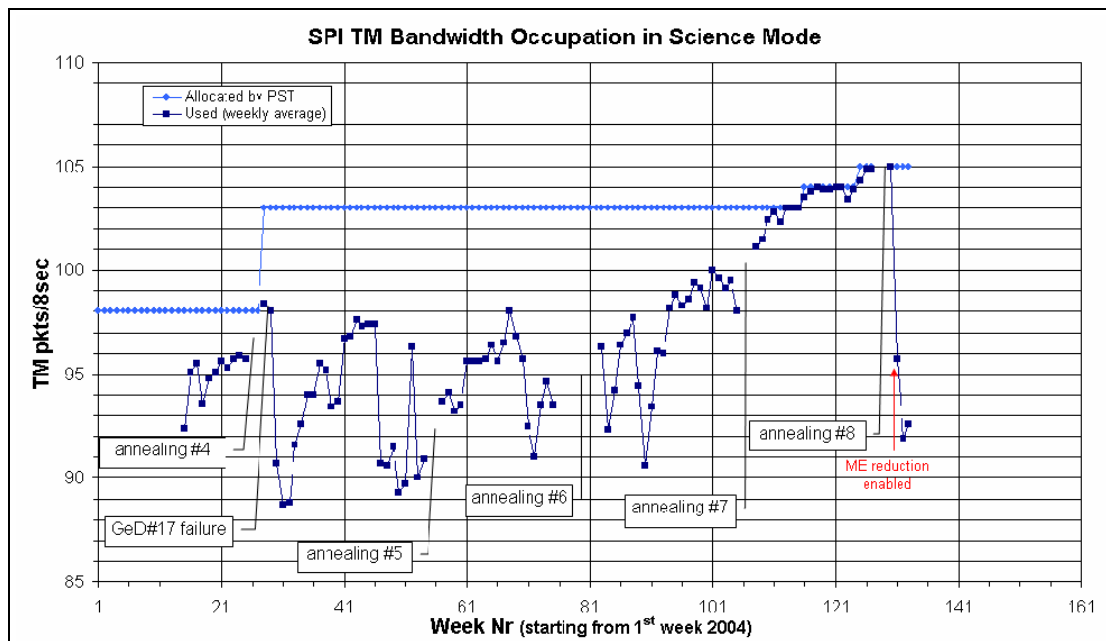
3.2.1 SPI

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 2006-07-18 at 21:12:45Z the stroke of CDE1 was increased from 36 to 37.

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 92.6 packets/cycle.

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



On 2006-07-21 at 11:48Z TM parameter E3674 R PD LOW-TH L4 changed its value autonomously from 80 to 208. This was probably due to an SEU on the PSD. The nominal configuration was restored before the next radiation belt entry. This anomaly is recorded as INT_SC-155.

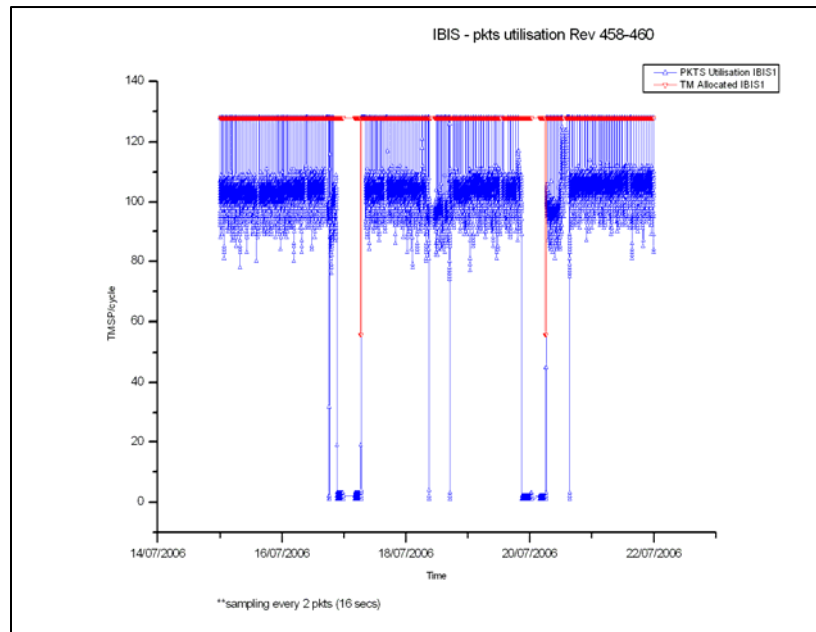
Note: Some more information concerning the SPI operations is provided in the Appendix.

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 105.01 TMPS/cycle, down 2.50 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.

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, 170 of the 173 planned science pointings for OMC were executed nominally. 1 pointing (04580077) was started late due to ground station problems and 2 pointings (04590002 and 04590003) were missed due to problems with the Flight Dynamics System.

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

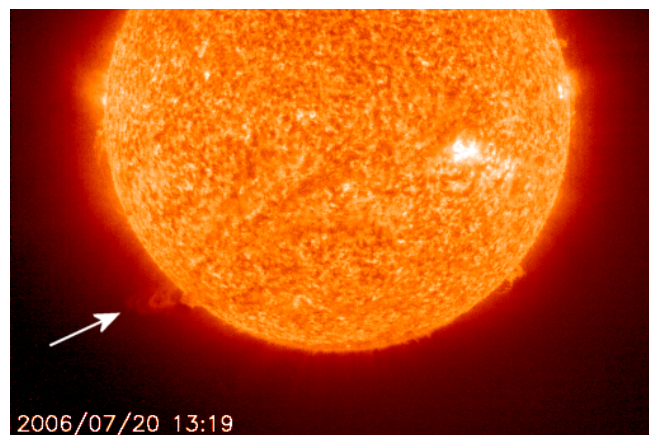
3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity.

From 15/07/2006 to 20/07/2006, sunspot 900 has appeared, grown and dissolved. This sunspot did not pose a threat for strong solar flare. On 21/07/2006 the sun was blank. It can also be noted that on 20/07/2006 a magnetic filament snapped (cf. picture) and this created a Coronal Mass Ejection. However no effect was reported on INTEGRAL.



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 2 pointings 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 good this week. There were, however, a few occasions of bad frames and brief link drops with Redu and

Vilspa. There were also few problems reported in sending data to ISDC. The overall performance though was nearly 100%.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSF for revolutions 466 to 469 were delivered. Planning up to revolution 469 has been performed and the corresponding output has been sent to MOC and ISDC. No ToO request was received, but the planning files for revolution 466 had to be regenerated to correct the SPI TM setting during the OMC FF calibration. TSF for revolutions 461 to 466 were received from MOC.

2. Observation status

ECS up to revolution 450 received and processed. No extra time was granted.

3. ISOC science data archive

The implementation of the version 2.6 is ongoing. No other activity due to holidays.

4. ISOC system

The ISOC system 12.5 has tested in detail by the scientists with minor issues found.

5. AO 4

A preliminary Long Term Plan has been created for AO-4 and is internally available for planning purposes. It will be finalized and made public in early August.

A test data file with the changed PAD format corresponding to the updated ISOC/ISDC ICD has been sent to ISDC for evaluation and appeared fine.

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 24/07/2006:

- 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

On 17/07/2006 (DoY 198), during Perigee passage between revolution 458 and revolution 459, an updated version of the Mission Control System was installed on the A-chain after successful testing on the C-chain.

6 Anomalies

The following problems impacted operations this week:

- On DoY 197 (16/07/2006), at 17:52Z, due to problems at REDU, both TM and TC links were lost. Consequently slew 04580077 was lost and the payload configuration sequences were missed. The links were back at about 18:00Z. The recovery was then performed manually. Everything was back to nominal at 18:28Z.
- On DoY 198 (17/07/2006) at 05:59Z, due to problems to restart the FDS, slews 04590001, 04590002 and 04590003 were missed. The recovery was performed manually to update slew 04590004 and rejoin the timeline.

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

AR id	Date Created	Subject	Segment	Status
INT_SC-155	2006-07-26	SPI: Autonomous Change in PSD Low Threshold for detector 4	Payload	Open
INT-2866	2006-07-20	Communications error in NRT TM flow to ISDC	ISDC	Pending

7 Future Milestones

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 459

The observations in revolution 459 began with a raster dither of Field_14 (RA 05:17:33.00, DEC -40:53:55.0), lasting ~24.4 hours. This was followed by a Galactic Plane Survey lasting ~6.7 hours. Finally another raster dither was performed, this time of SN1006 (RA 15:02:48.40, DEC -41:54:42.0), lasting ~25.9 hours, until the end of the revolution.

Revolution 460

The observations in revolution 460 began with a Galactic Plane Survey lasting ~6.7 hours. This was followed by a raster dither of SN1006 (RA 15:02:48.40, DEC -41:54:42.0), lasting ~50.0 hours, until the end of the revolution.

Throughout these observations all instruments were in their nominal science modes, except JEM-X2, which is switched 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

2006-07-06T18:44:49.000Z	153.3115	F	Automatic TM processing.
2006-07-08T05:33:16.000Z	153.3006	F	Automatic TM processing.
2006-07-09T18:19:20.000Z	153.2536	F	Automatic TM processing.
2006-07-11T01:11:55.000Z	153.2456	F	Automatic TM processing.
2006-07-12T15:52:39.000Z	153.2369	F	Automatic TM processing.
2006-07-13T17:41:06.000Z	153.2281	F	Automatic TM processing.
2006-07-14T01:00:27.000Z	153.2069	F	Automatic TM processing.
2006-07-15T15:05:59.000Z	153.1832	F	Automatic TM processing.
2006-07-16T17:08:17.000Z	153.1522	F	Automatic TM processing.
2006-07-17T00:42:50.000Z	153.1480	F	Automatic TM processing.
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.

This report was generated Fri Jul 21 08:00:34 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, 15/07/2006 – 21/07/2006

AOCS operations were executed from the Automatic Timeline.

During this period, 94 Open Loop Slews, 89 Closed Loop Slews and 9 Momentum Biases were executed.

4 slews (3 OSL, 1 CSL) were lost during the observation period due to problem on TM link with REDU station and problem on FDS (restart of GTPs processors).

This is equivalent to a ~ 2.1 % of the total number of slews planned (185).

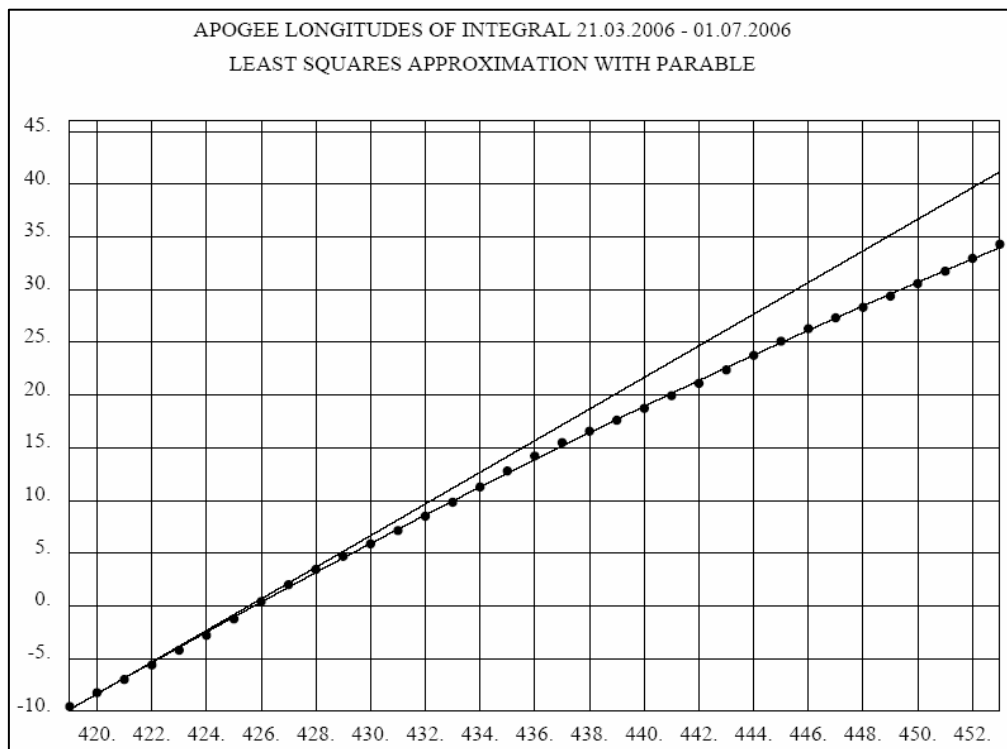
Orbit Control

The following table shows the shortening of the necessary Goldstone pass:

Orbit number	Apogee passage date	Time from LOS Redu to 40000 km altitude
362	2005/10/01	284 min
372	2005/10/31	268 min
382	2005/11/30	244 min
393	2006/01/02	213 min
402	2006/01/29	188 min
412	2006/02/28	159 min
422	2006/03/30	122 min
433	2006/05/01	80 min
443	2006/05/31	46 min
453	2006/06/30	16 min

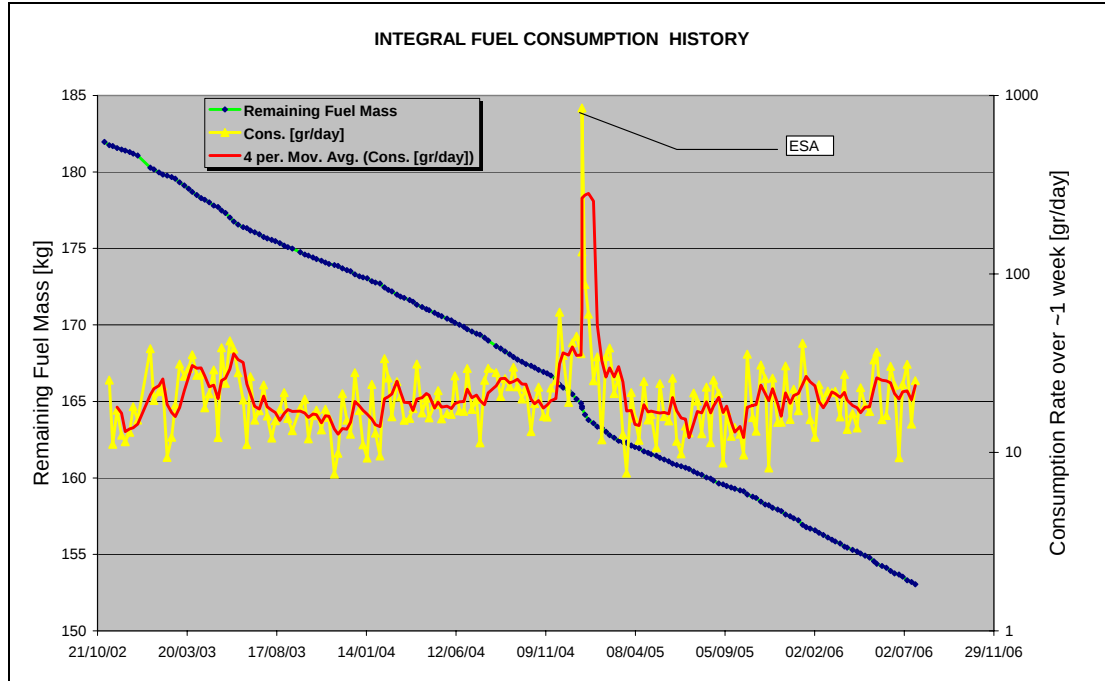
From orbit 461 and onwards Redu will give coverage down to 40000 km altitude.

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 parabola, the average semi-major axis increase, due to momentum dumping manoeuvres, is estimated to be 670 m per orbital revolution.

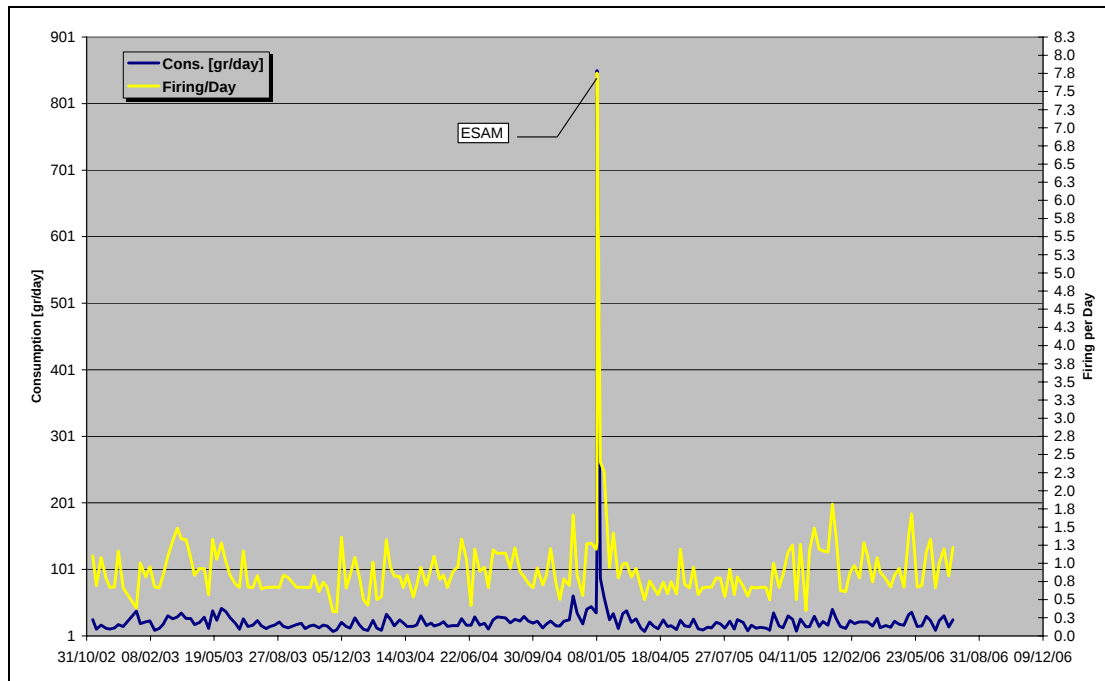


Fuel consumption

The fuel consumption (total, grams/day) over the period between 01/11/2002 and 20/07/2006 is reported in the plot below.

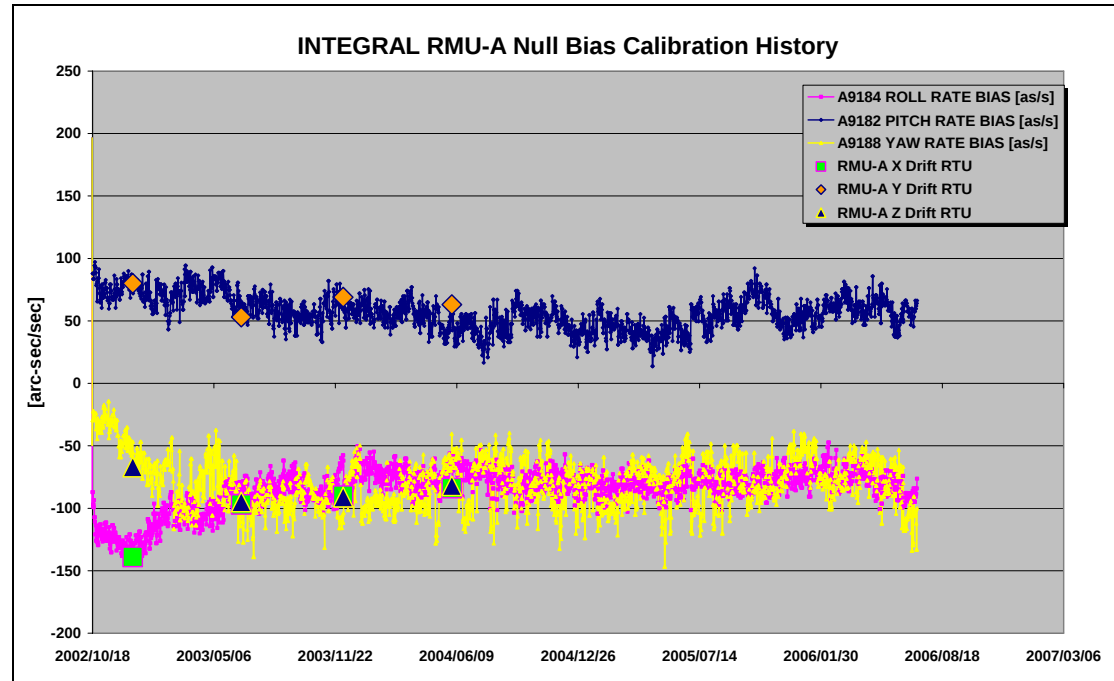


The firing\day over the period between 01/11/2002 and 20/07/2006 is reported in the plot below.

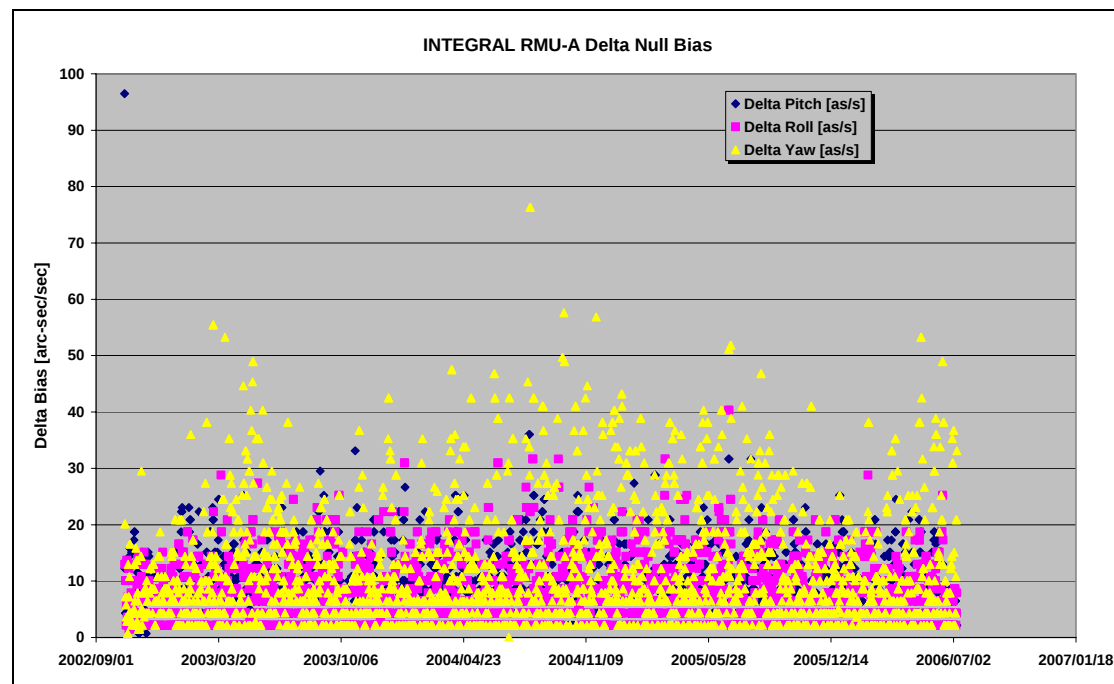


The RMU-A null bias calibration

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.



15/07/06 (Day of Year 196, Revolution 458)

Nothing to report.

16/07/06 (Day of Year 197, Revolution 458)

ACC STR threshold exceeded: at 09:29:06z the STR SEU threshold was exceeded, when the guide star was Mi 8.5 at CCD location [13458, 20793]. The OTF went low during PID 04580066.

A new guide star Mi 6.4 was found after the automatic mapping commanded by ACC, at CCD location [-1133, 3401].

A recovery was performed by executing a mapping and manually updating the parameters for the next slew 04580067.

No impact reported on TL. The OTF was not reached during PID 04580066.

Dynamic PTV failed due to problem on TM link: at 17:57z due to a problem on the TM link with REDU station (hit on the REDU's trunk), the sequence for slew ID 04580077 failed release due to dynamic PTV.

A manual recovery was then started at 18:06z, from attitude of PID 04580076 to the attitude of PID 04580077. The next slew in TL (04580078) was manually updated at 04:30z.

The following slew was not executed from TL: ID 04580077 (CSL).

17/07/06 (Day of Year 198, Revolution 458-459)

Problem on FDS processors: at 05:59z due to a problem on the FDS GPTs processors, the AOCS s/s was disabled in TL.

A manual recovery was then started at 07:19z, from attitude of PID 04580082 to the attitude of PID 04590003. The next slew in TL (04590004) was manually updated at 08:19z.

The following slews were not executed from TL: ID 04590001 (OSL), 04590002 (OSL), 04590003 (OSL).

ACC STR lost of guide star: at 16:13:43z a lost of guide star was reported when the guide star was Mi 6.25 at CCD location [-12979, -21910]. The OTF went low during PID 04590014.

A new guide star Mi 8.15 was found after the automatic mapping commanded by ACC, at CCD location [2220, -3381].

A recovery was performed by executing a mapping and manually updating the parameters for the next slew 04590015.

No impact reported on TL. The OTF was not reached during PID 04590014.

18/07/06 (Day of Year 199, Revolution 459)

Nothing to report.

19/07/06 (Day of Year 200, Revolution 459)

Nothing to report.

20/07/06 (Day of Year 201, Revolution 459-460)

Nothing to report.

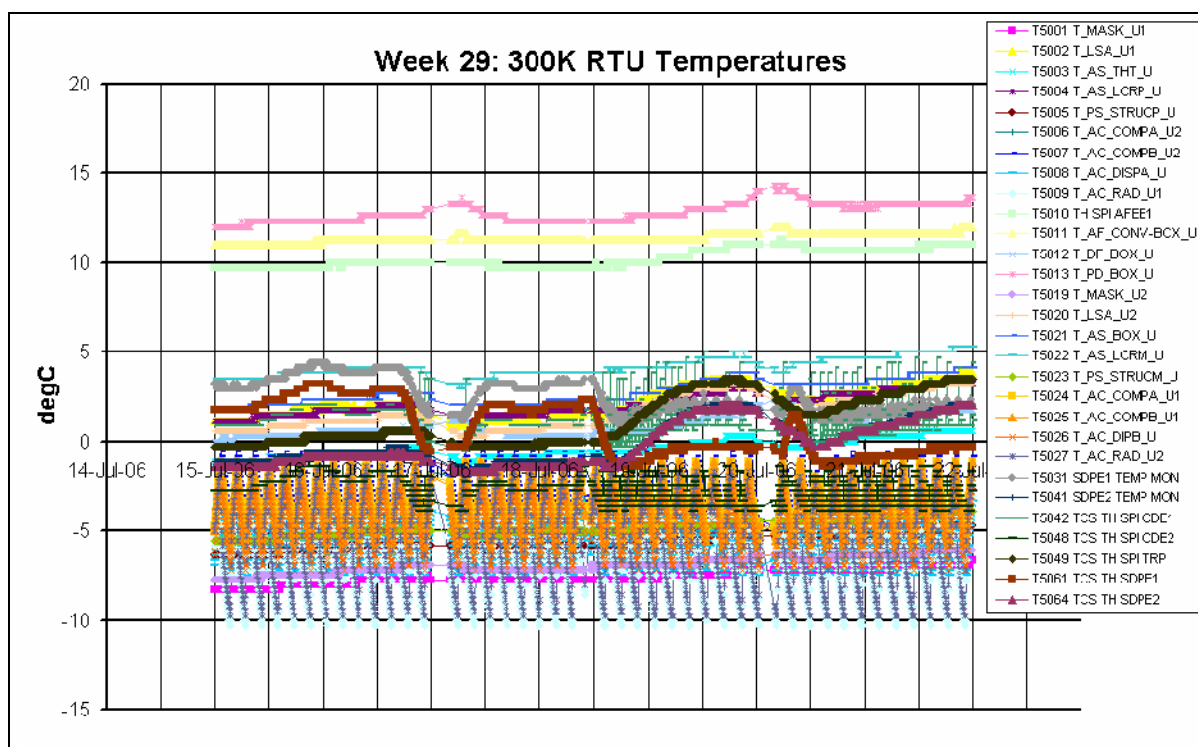
21/07/06 (Day of Year 202, Revolution 460)

Nothing to report.

8.3.2 SPI Operations

Unit Temperatures:

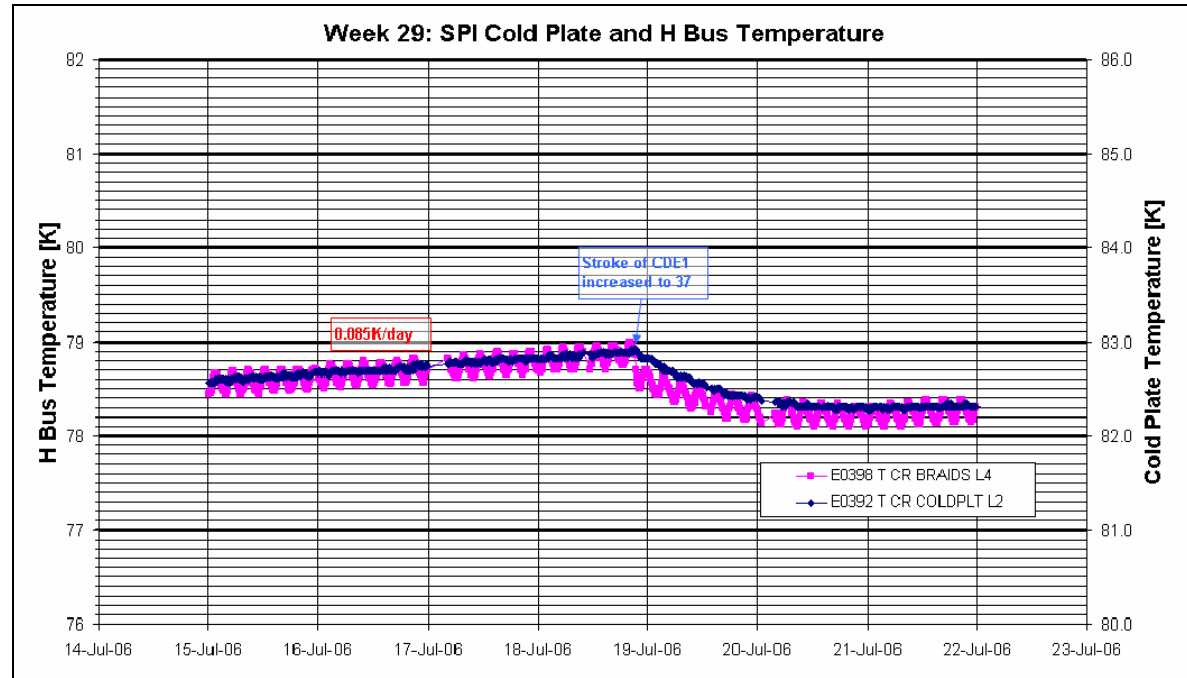
All the equipment temperatures are inside the operational limits. The following plot shows their evolution during the reporting period:



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 2006-07-18 at 21:12:45Z, when the stroke of CDE1 was increased from 36 to 37 (at the time of the stroke increase, the Cold Plate Temperature, TM E0392, was 82.92K). The following plot shows the evolution of the cold plate and H bus temperatures during the reporting period.

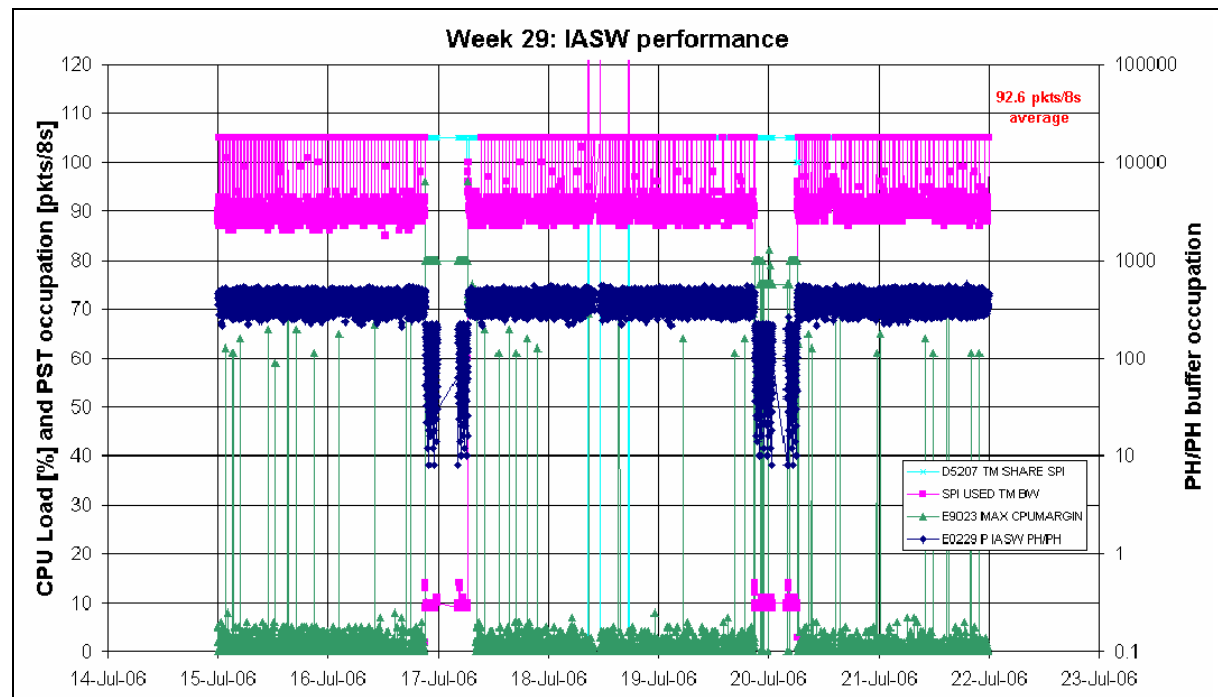


DPE & IASW:

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

The average TM bandwidth occupation of SPI is 92.6 packets/cycle over the science window.

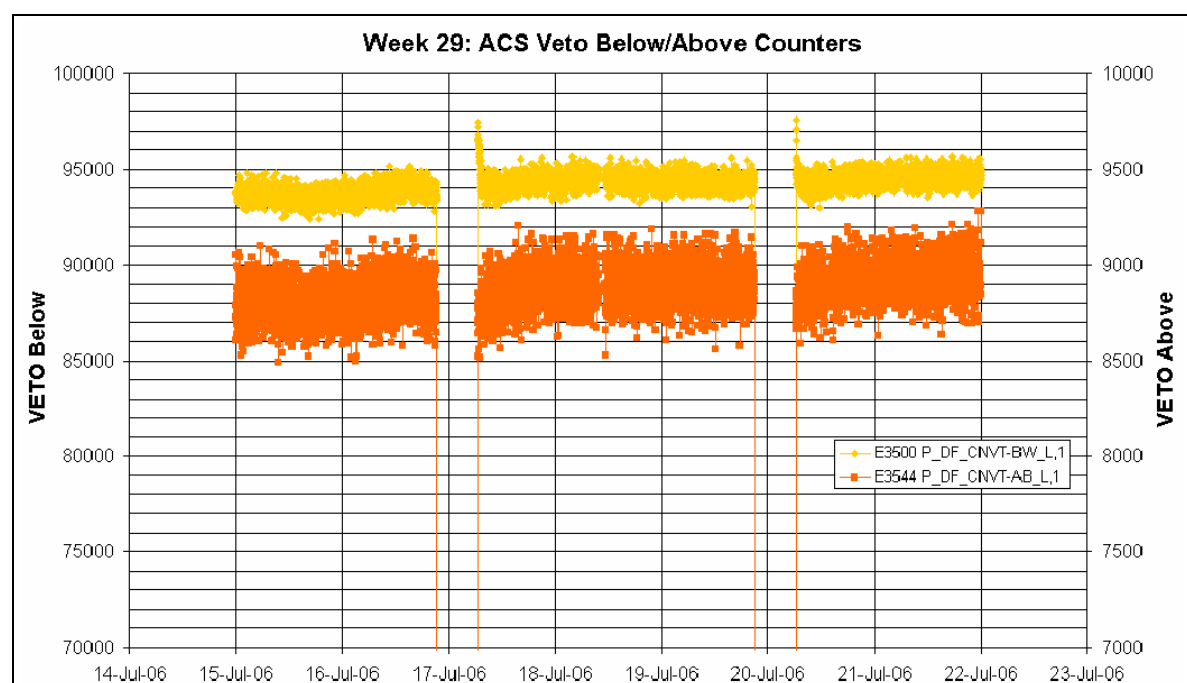
The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.



ACS:

The performance of the ACS is nominal.

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

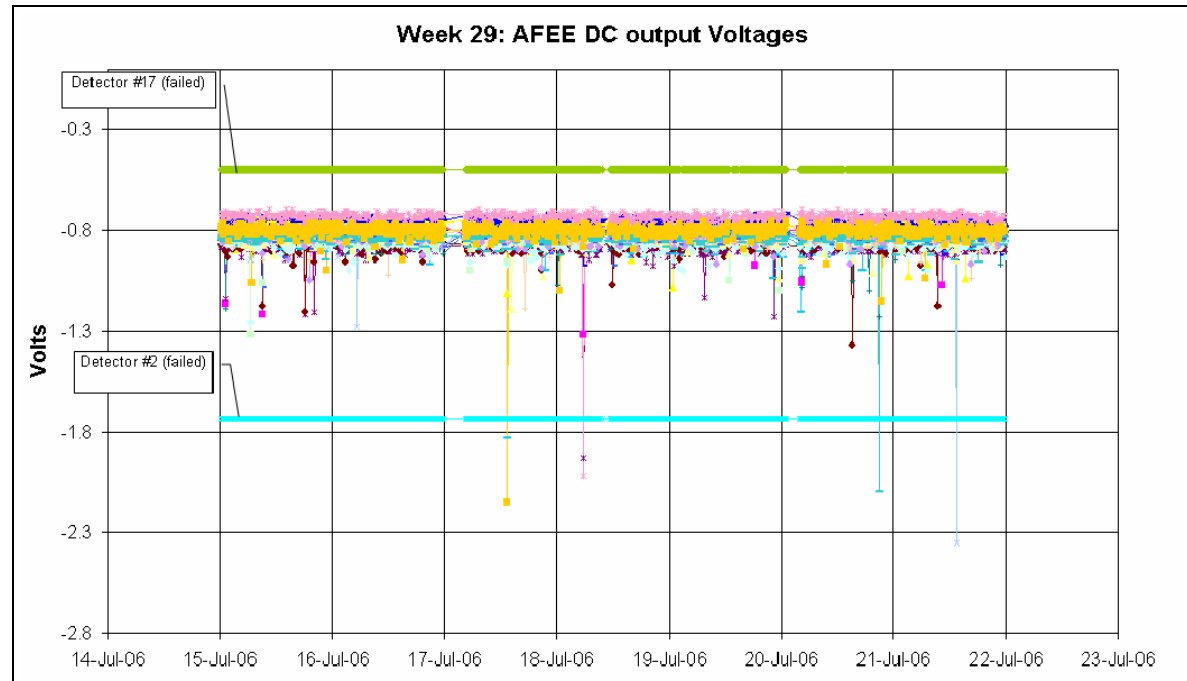


AFEE:

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

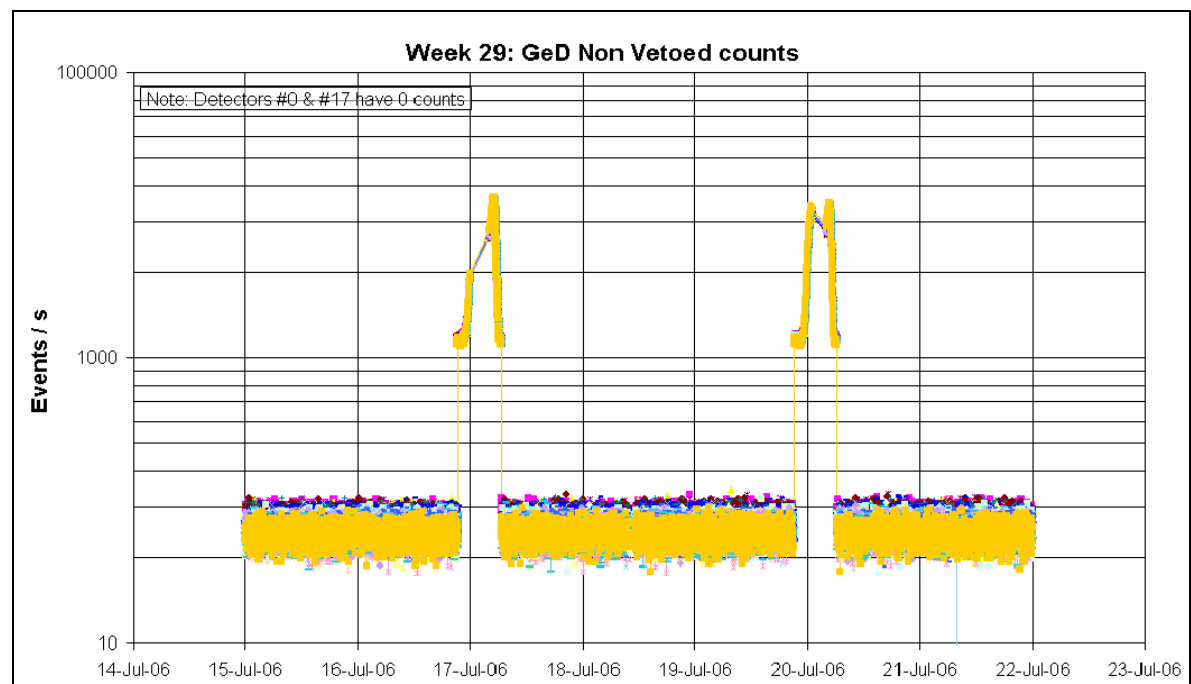
degraded energy resolution. The energy resolution of GeD#15 was recovered with this annealing.

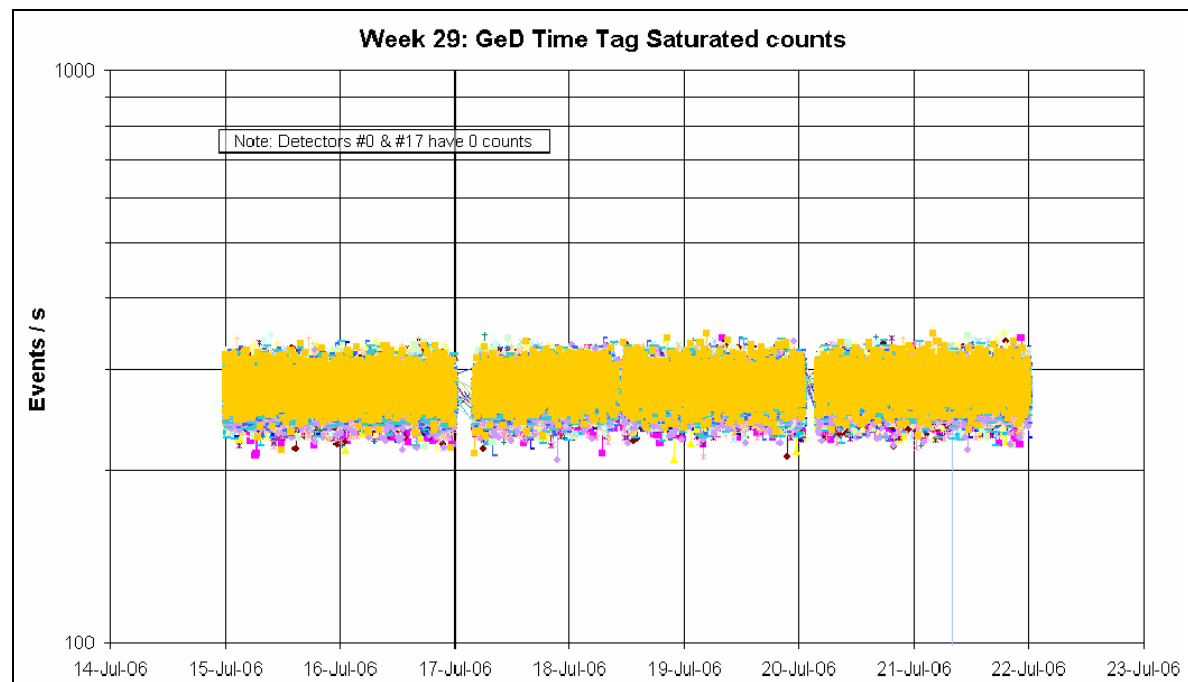
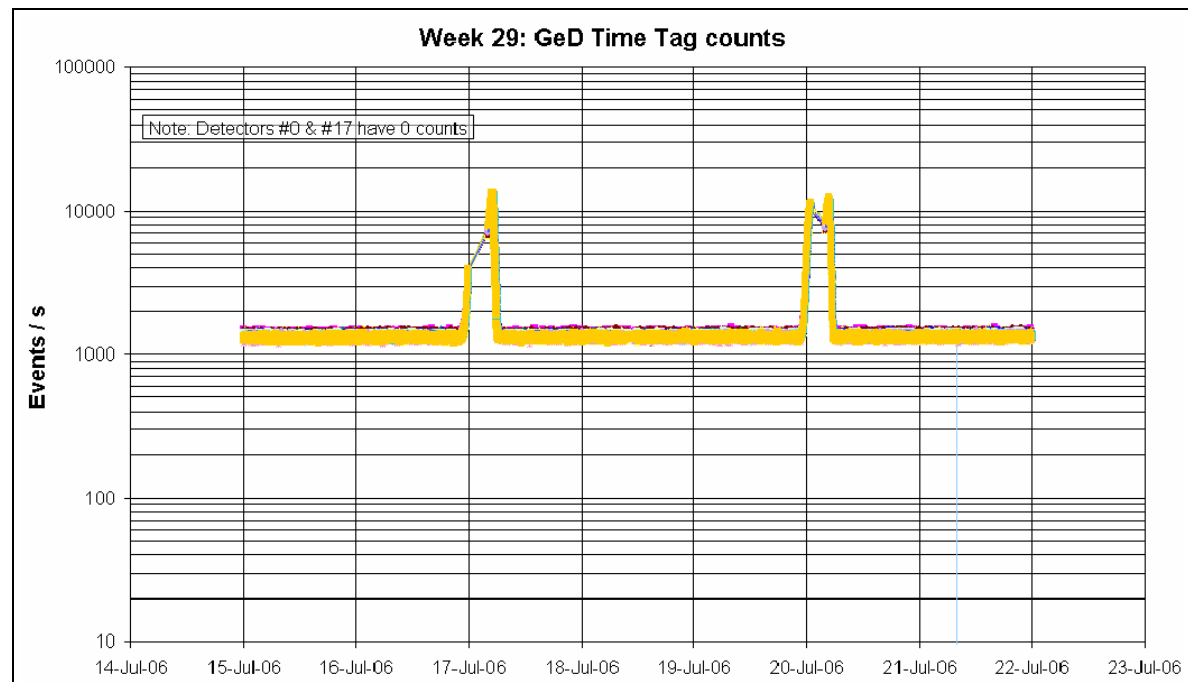
The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06.12.2003 and detector #17 is failed since 17.07.2004.



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.





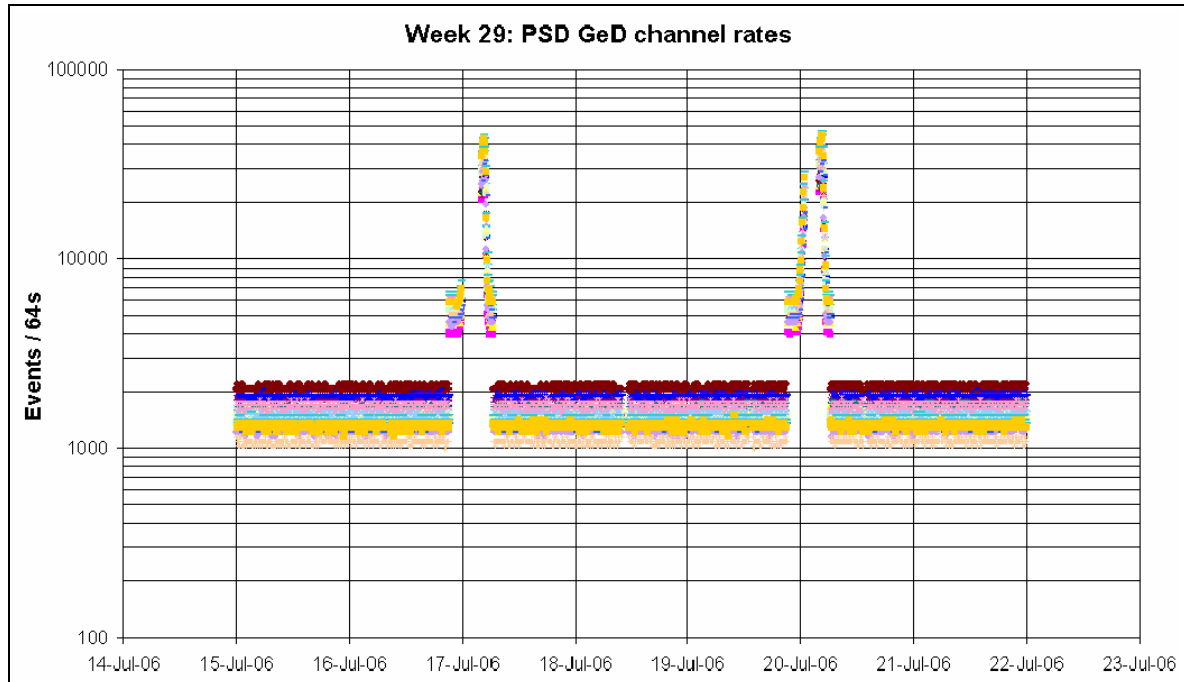
PSD:

The health of the unit is nominal.

On 2006-07-21 at approximately 15:30Z, ISDC informed MOC that at 11:48Z TM parameter E3674 R PD LOW-TH L4 (Low Threshold for detector 4) had changed its value autonomously from 80 to 208. This is the lower energy threshold for the processing of events by the PSD from detector 4. The ED EEORTM01 was uplinked to refresh SPI configuration and HK TM and verify that there were no other

anomalies. It was concluded that the change in this threshold was probably due to an SEU. As it was not critical, and in order not to interrupt the ongoing science observations, it was decided to set the value back to nominal shortly before radiation belt entry of the ongoing revolution (460), on 2006-07-22.

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

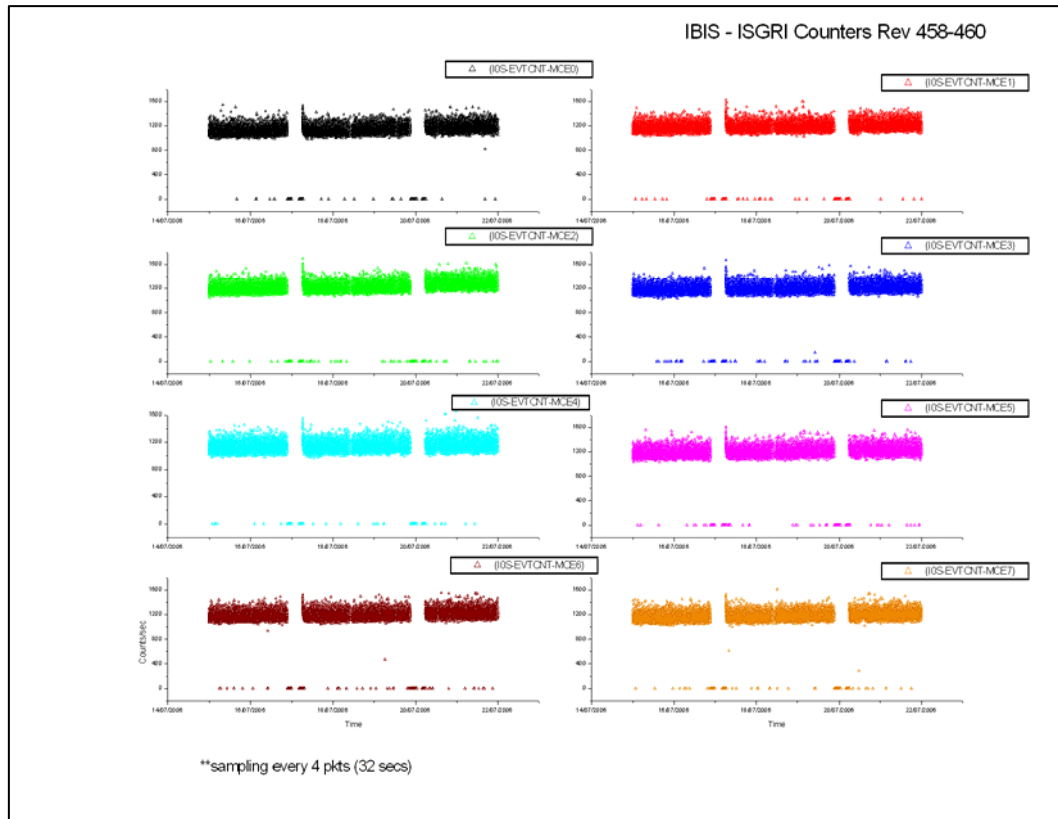


8.3.3 IBIS Operations

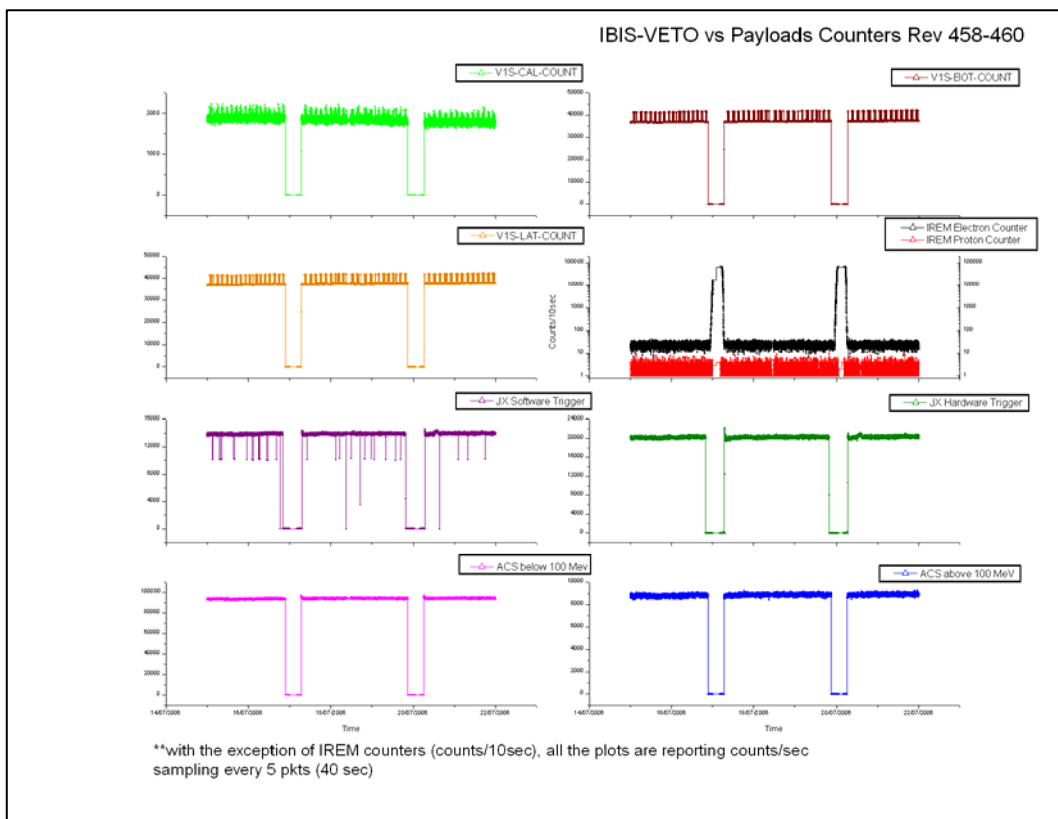
IBIS Event Counters Plots.

IBIS Event Counters Plots

ISGRI Counters:

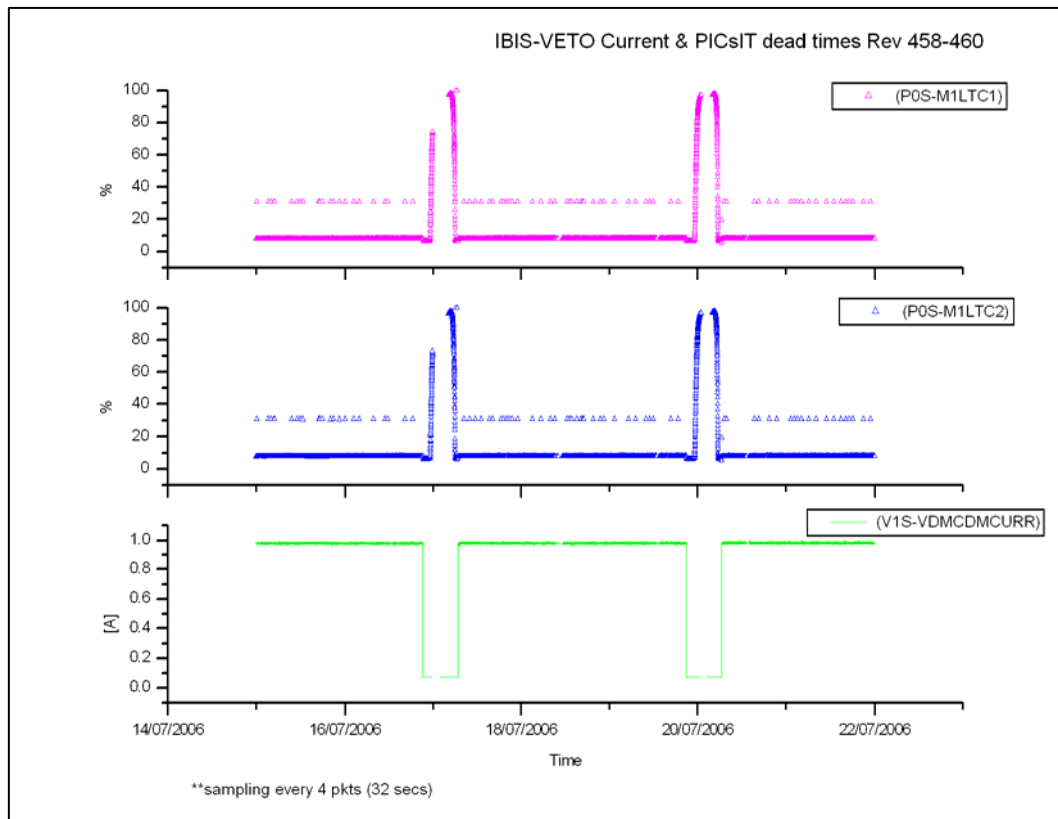


VETO vs Payloads Counters:

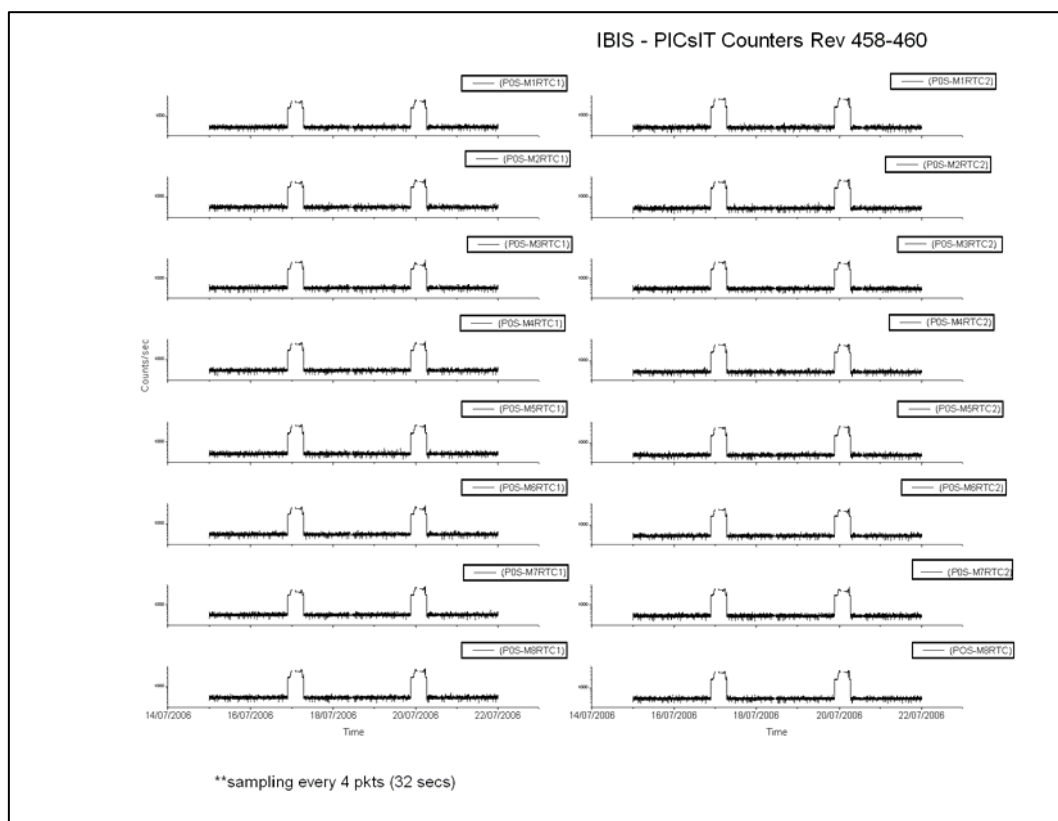


The week was characterised by low radiation.

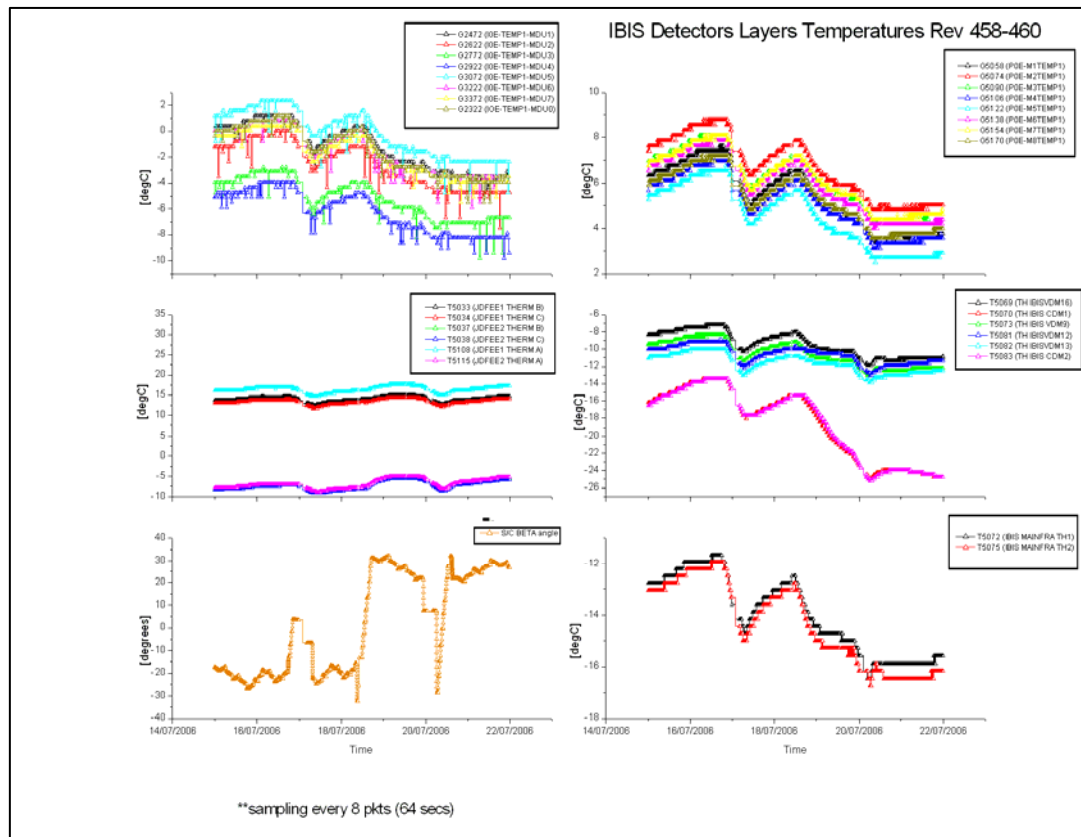
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report:

DoY 2006.197 (16/07/2006):

At 17:57Z, the TC link went down. This implied that, several Event Designators failed the automatic uplink. ED GESTAN02 was recovered manually at 18:17Z.

At 21:17Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 198 (17/07/2006) at 06:47Z. 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 2006.198 (17/07/2006):

At 05:06Z, as the ISGRI CTX tables from revolution 458 were not available, the tables from the previous revolution (457) were uplinked.

At 06:12Z TM parameter G2028 (I0E-OVFWPXADD-M2) failed SCC and back. At 06:19Z TM parameter G2000 (I0E-OVFWPXADD-M0) failed SCC and back. At

06:22Z TM parameter G2014 (I0E-OVFWPXADD-M1) failed SCC and back. According to I-OVF-1, no action was taken.

At 06:40Z, TM parameter G2097 (I0S-EVTCNT-MCE6) 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 2006.199 (18/07/2006):

At 07:56Z, TM parameter G2097 (I0S-EVTCNT-MCE6) 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 2006.200 (19/07/2006):

On DoY 200 (19/07/2006) at 21:01Z, TM parameter G8015 (S1E-A2 PMT V) was reported Out Of Limit high. It went back inside limit on DoY 201 (20/07/2006) at 06:30Z. 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 2006.201 (20/07/2006):

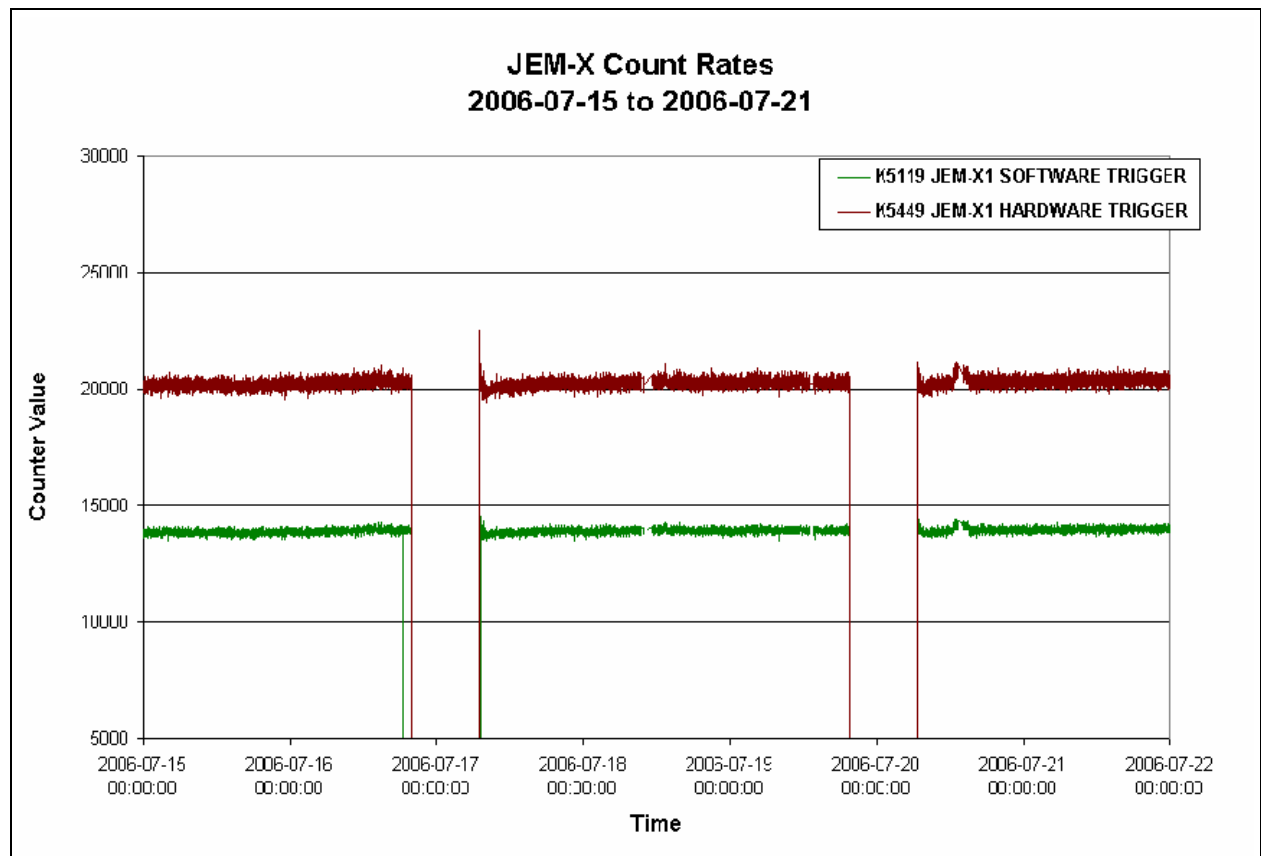
At 06:00Z TM parameter G2014 (I0E-OVFWPXADD-M1) failed SCC and back. At 06:08Z, it occurred again. According to I-OVF-1, no action was taken.

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.

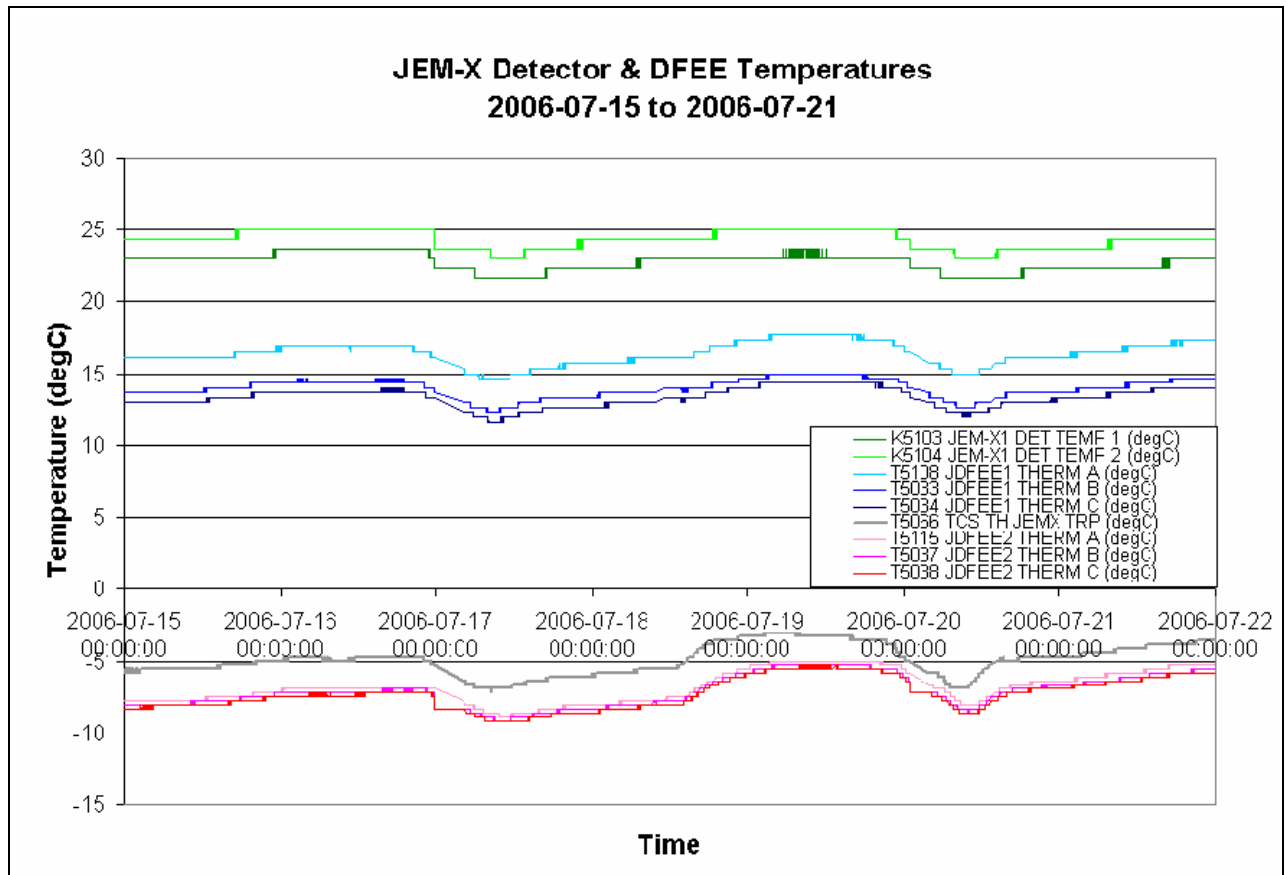
¹ Data sampled (1 frame in 4) and smoothed to remove spikes in S/W Trigger due to flushing of buffer after slews.



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.

² Data sampled (1 frame in 8)



8.3.4.3 JEM-X Daily Report

2006-07-15 (DOY 196, Rev 458)

Nothing to report

2006-07-16 (DOY 197, Rev 458)

Due to the loss of TM/TC links to the ground station, the Autostack was stopped from 17:57Z to 18:05Z and the ED KEDATA02 scheduled in the Timeline at 18:01:35Z was not uplinked. Once the links to the ground station were re-established and the Timeline recovery started, the ED KEDATA02 was resent manually at 18.20.30Z. JEM-X1 operations then continued nominally.

2006-07-17 (DOY 198, Rev 458-459) to 2006-07-21 (DOY 202, Rev 460)

Nothing to report

8.3.5 OMC Operations

2006-07-15 (DOY 196, Rev 458)

Nothing to report

2006-07-16 (DOY 197, Rev 458)

Due to a loss of TM/TC links to the ground station, the Autostack was stopped from 17:57Z to 18:05Z and the slew to PID 04580077 (scheduled at 18:01:05Z), along with the OMC EDs, were not uplinked from the Timeline. Once the links to the ground station were re-established, a manual slew to the attitude of PID 04580077 was performed at 18:14Z and the OMC Imaging EDs were resent starting with MEIM-A01 at 18:20:53Z. Therefore pointing 04580077 started about 20minutes later than planned. OMC operations then continued nominally.

2006-07-17 (DOY 198, Rev 458-459)

Due to problems with the Flight Dynamics system at the start of revolution 459, the slews to PIDs 04590001 and 04590002 were missed from the Timeline. A slew to the attitude of PID 04590003 was then uplinked manually starting at 07:19Z, with commanding to the AOCS from the Timeline disabled such that the slew ID 04590003, scheduled at 07:33:04Z, would not be uplinked from the Autostack. Pointings 04590002 and 04590003 were science pointings for OMC and the corresponding Imaging EDs were uplinked although OMC remained in Standby mode due to the OTF being low.

OMC operations then resumed nominally from PID 04590004 onwards.

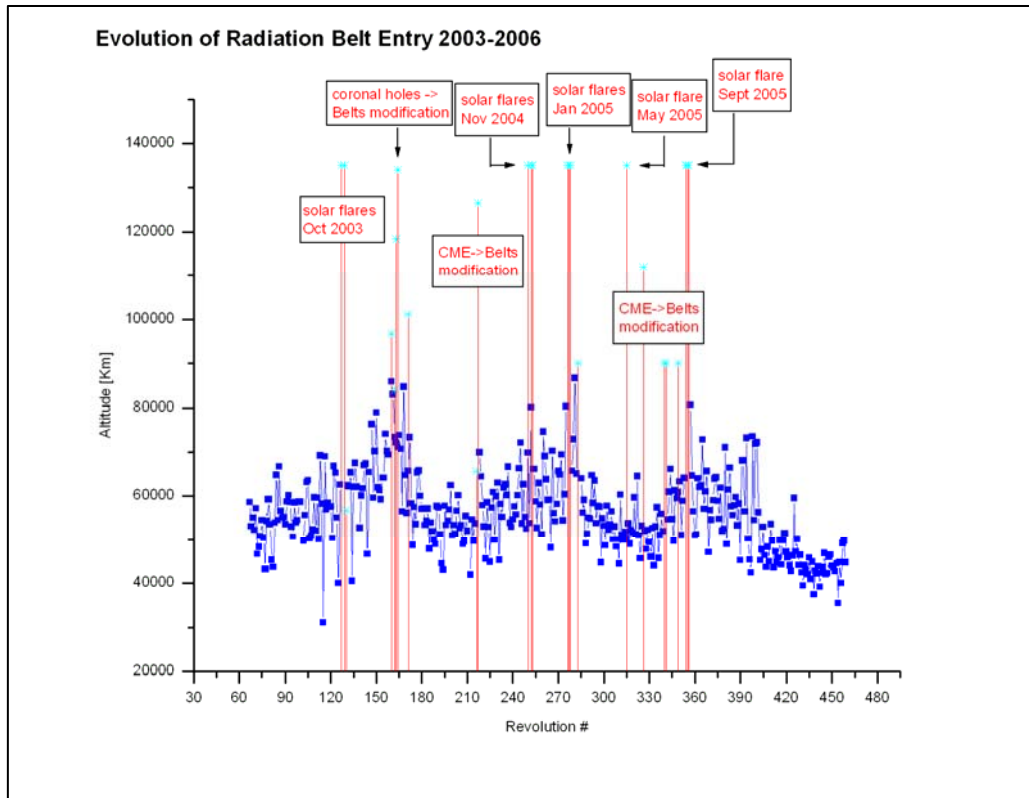
2006-07-18 (DOY 199, Rev 459) to 2006-07-21 (DOY 202, Rev 460)

Nothing to report

On DoY 197 at 21:18:00Z and DoY 200 at 21:01:04Z 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

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]
458	RAD_ENTR R 2006-07-16T21:17:49Z	2006-07-16 22:36:53	<<38151.4	2006-07-16 22:43:56	48406
459	RAD_EXIT R 2006-07-17T06:34:27Z	2006-07-17 06:17:01	<38238.9	2006-07-17 06:23:56	38555
459	RAD_ENTR R 2006-07-19T21:00:46Z	2006-07-19 22:50:29	>44773.1	2006-07-19 22:31:44	47856
460	RAD_EXIT R 2006-07-20T06:17:44Z	2006-07-20 05:50:13	49758.3	2006-07-20 06:11:44	39110

Reference

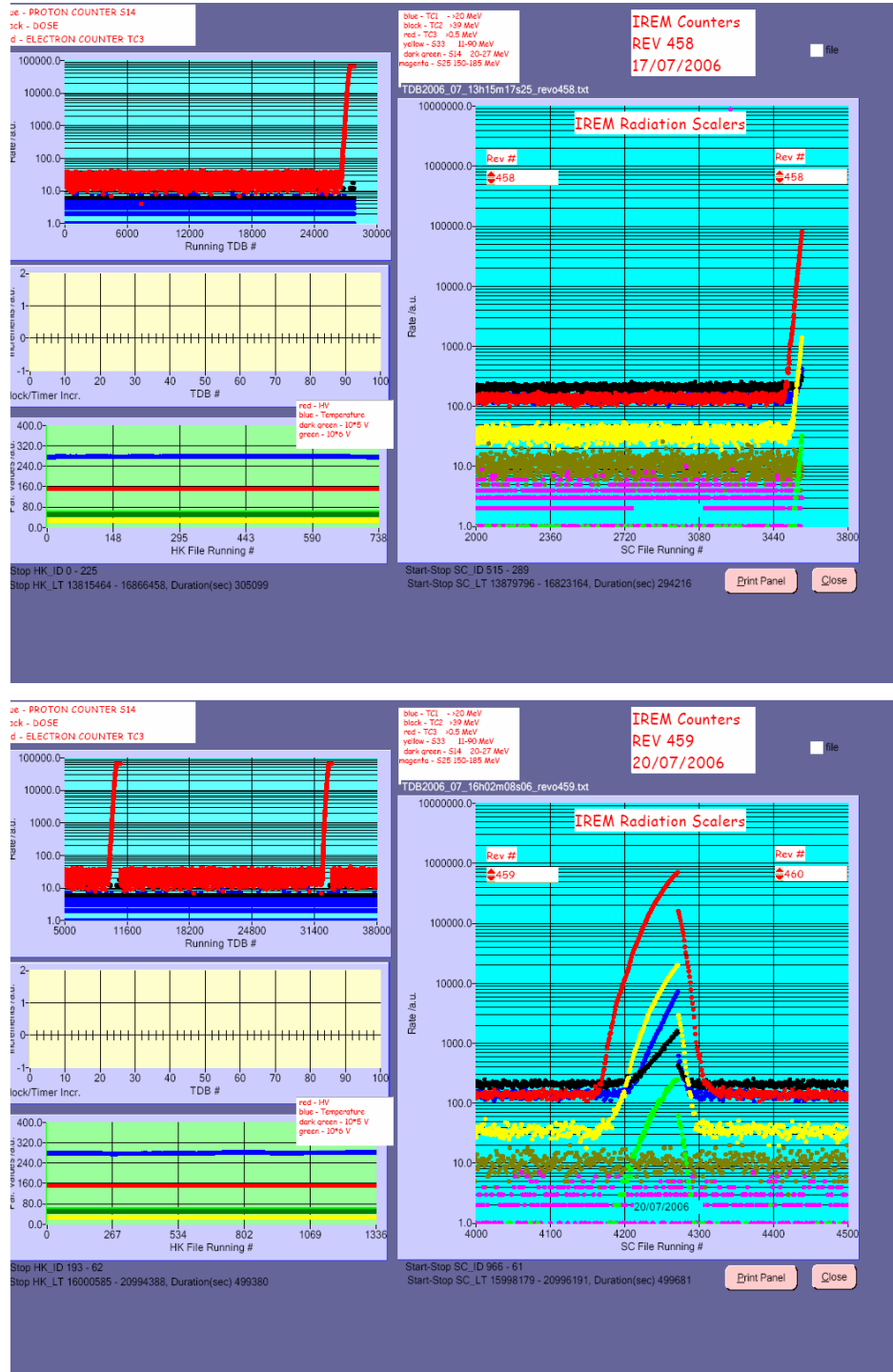
Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

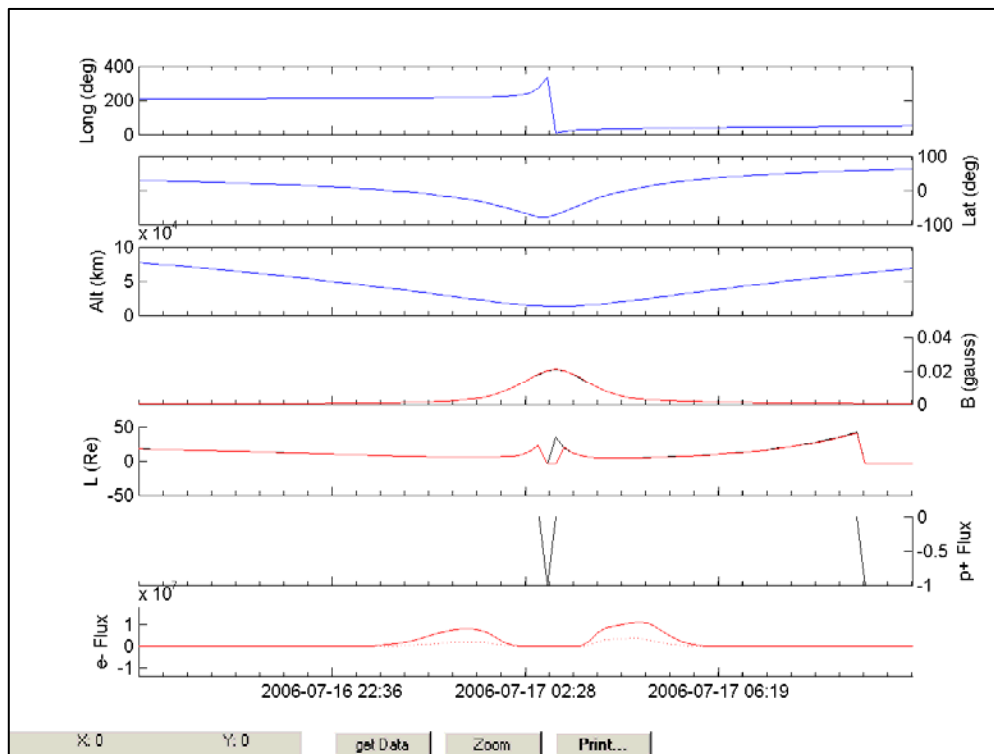
IREM radiation counters:

Due to problems with the Mission Control System (IFRD task), the ECOE machine reported data gaps. Therefore the pictures below present incomplete graphs.

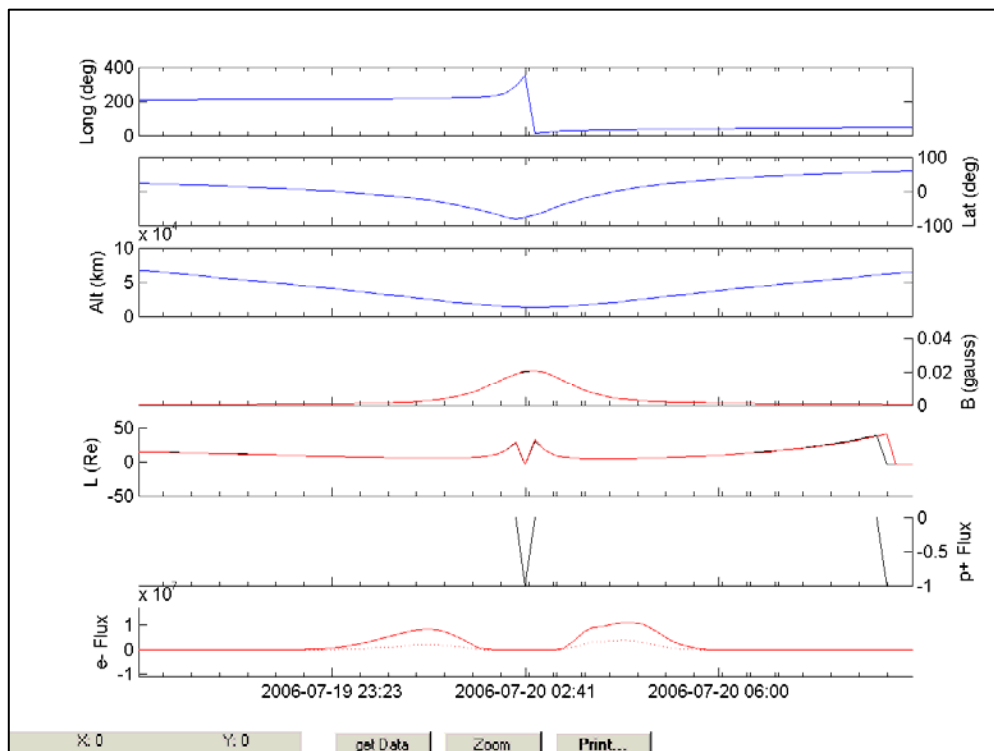


IREM Predicted Radiation Belt Passages:

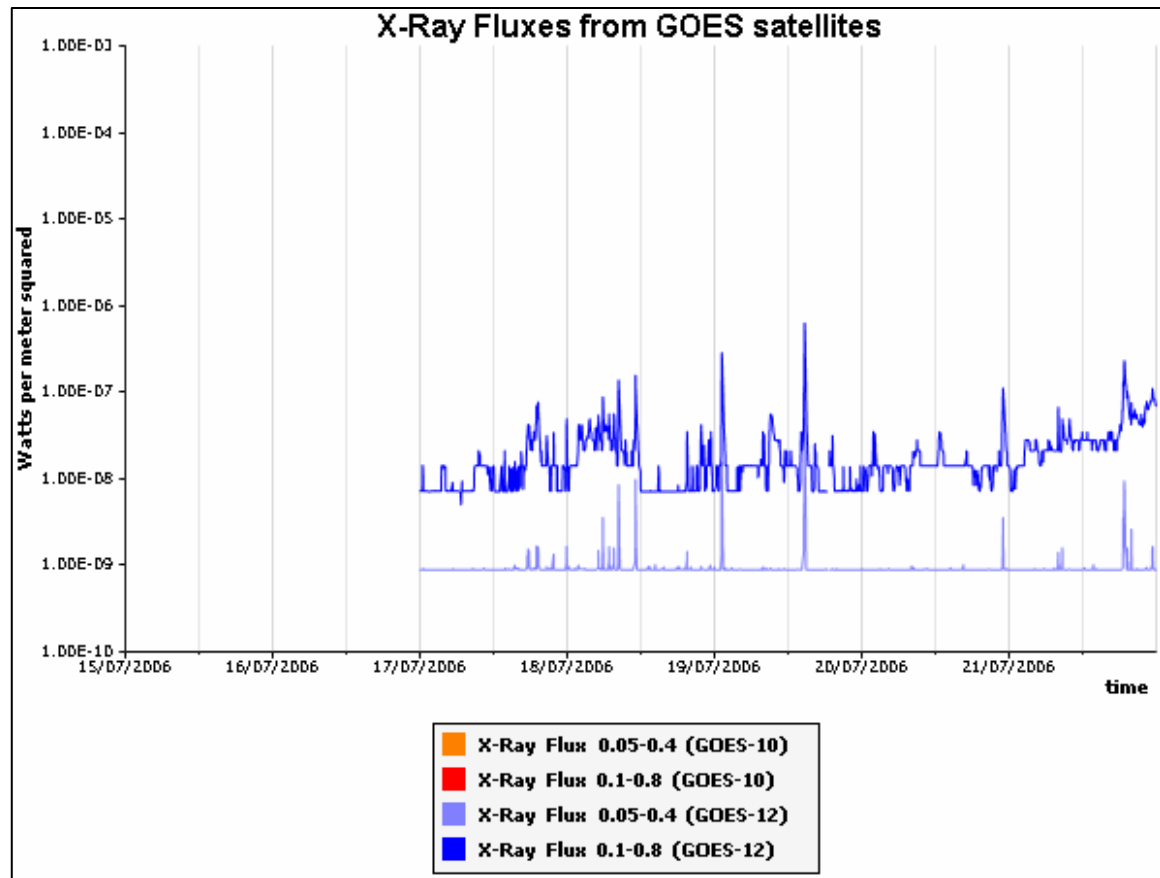
Rev 458



Rev459:

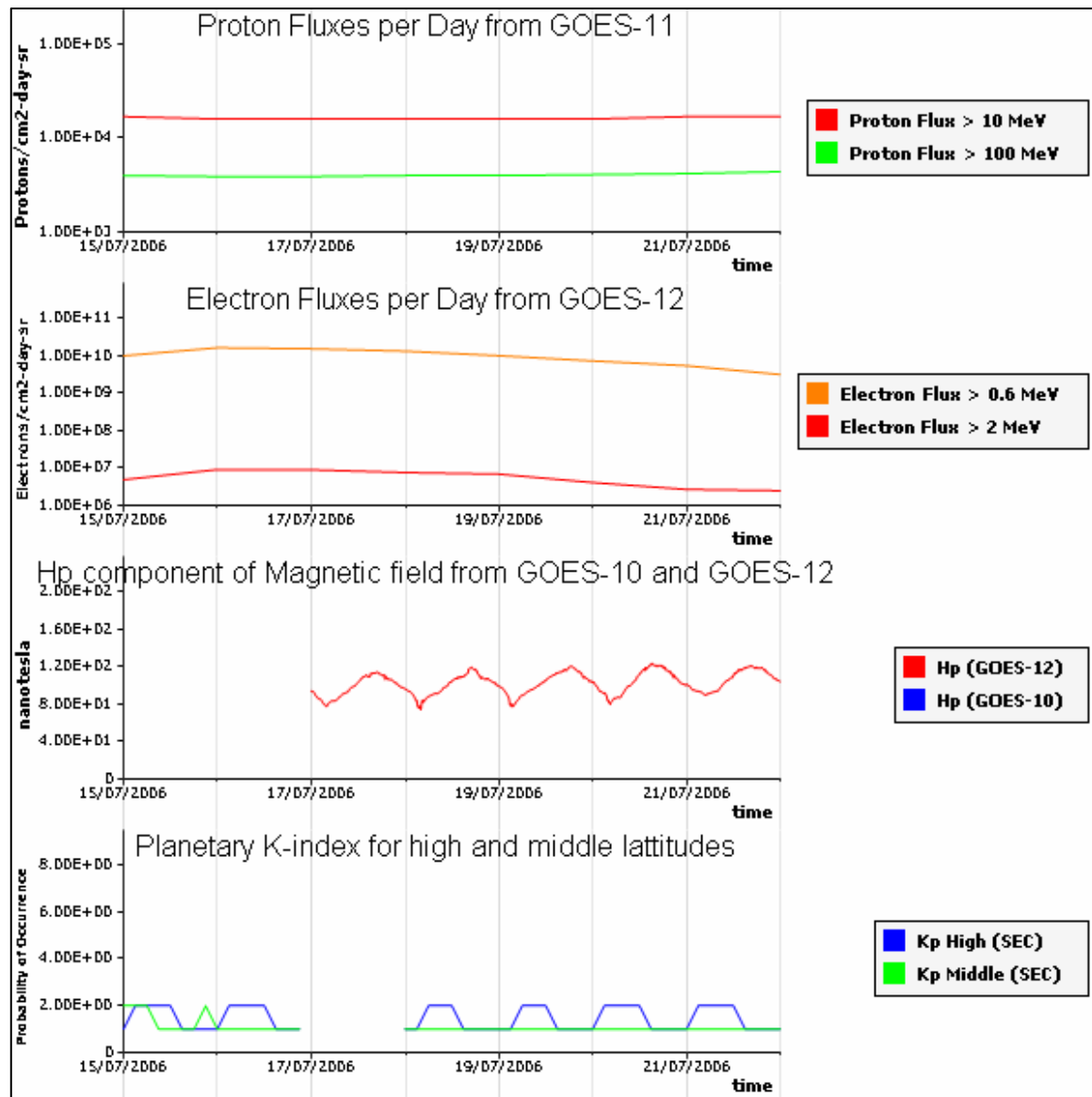


SEC-GOES Observed Particles Fluxes (using SEIS/RAT tool):



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.

Note that data are missing for the beginning of the observation period but it has been checked via another source that the X-ray flux were low at this time.



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.