

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 243
Week 20
21.05.07
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 12.05.07 until 18.05.07 (both dates inclusive) and covers the revolutions 559, 560 and 561.

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 two hexagonal dithers of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), two raster dithers of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), an OMC Flat Field Calibration, which was a staring observation at attitude (RA 19:19:12.00, DEC +61:54:00.0), a hexagonal dither of the object 1E 1048.1-5937 (RA 10:50:08.93, DEC -59:53:20.0), and a hexagonal dither of the object NGC 4151 (RA 12:10:32.60, DEC +39:24:20.6).

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.

One slew was missed from TL during the observation period, due to a problem with the Search and Track on-board process.

The fuel consumption over the period between 11/05/2007 and 18/05/2007 was 0.1073 Kg. The remaining propellant is in the order of 146.4543 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

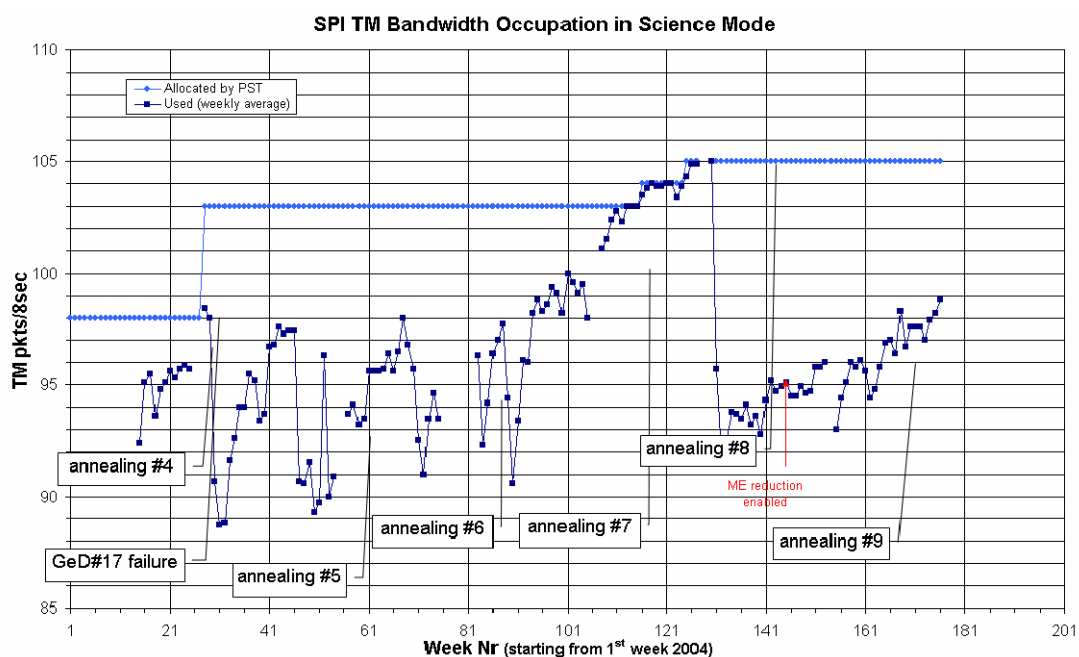
3.2.1 SPI

Following the 9th annealing, which ended on 22nd December, the overall status of the gamma-ray spectrometer is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution and is therefore operating at a lower HV setting of 3.5kV (instead of 4kV). The energy resolution of GeD#4 was 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 80 +/-1K. The stroke of all four compressors has remained at 41 since 2007-05-10 at 07:33Z.

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 packets/cycle except for the period from 2007-05-12T23:30:45Z to 2007-05-13T03:16:00Z (OMC Flat Field Calibration), when the TM allocation was 85 packets/cycle. The average telemetry occupation when the TM allocation was 105 packets/cycle was 98.8 packets/cycle.

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



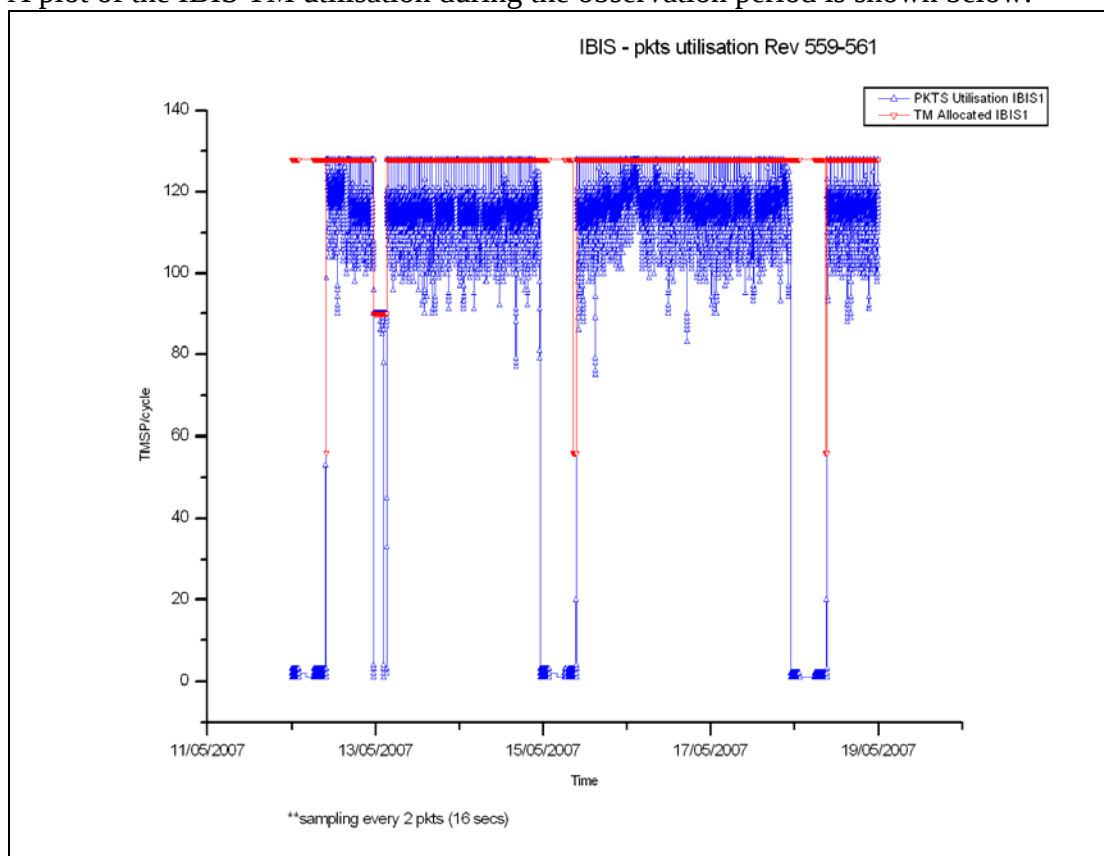
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

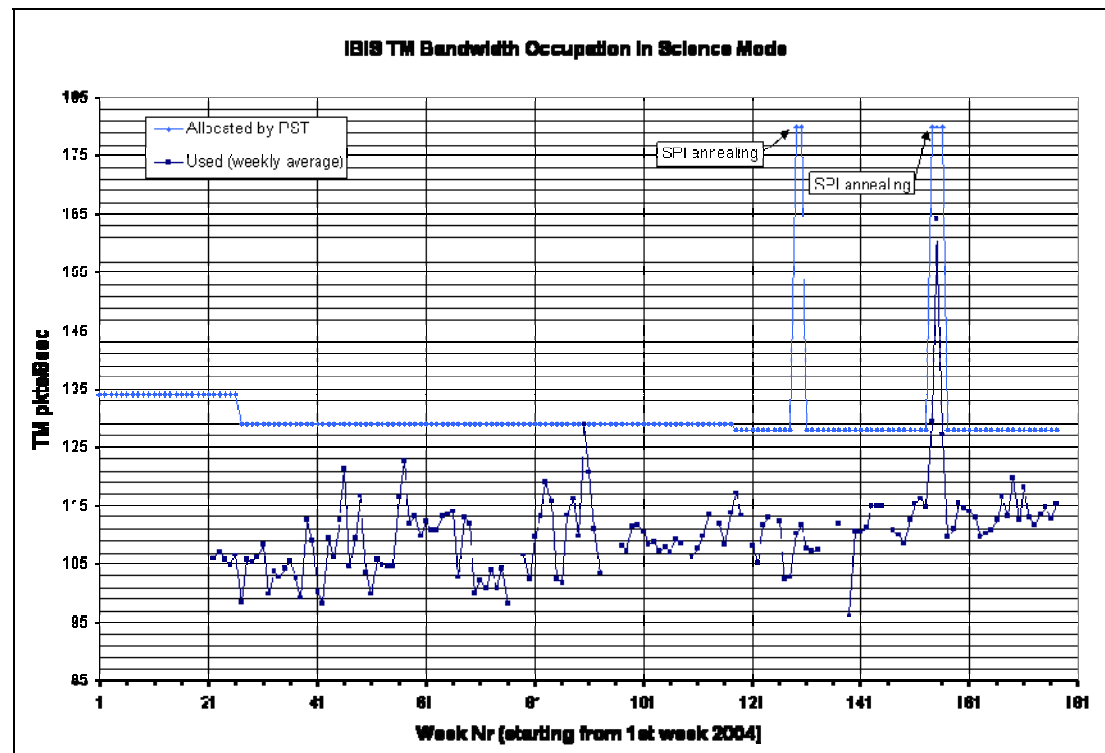
The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle. However between 12/05/2007 23:31:49Z and 13/05/2007 03:17:09Z, it was 90 TMPS/cycle due to an OMC flat field Calibration. The IBIS mean bandwidth utilisation during the observation period (when IBIS was in Science mode) was 115.07 TMPS/cycle, up 2.42 on last week.

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



A plot of the IBIS weekly bandwidth utilisation since 2004 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. 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, except from 2007-05-12T23:30:00Z to 2007-05-13T03:15:00Z, during the OMC Flat Field Calibration, when it was 63 packets/cycle.

During this reporting period, 163 of the 164 planned science pointings for OMC were executed nominally, 1 was lost.

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

3.2.5 IREM

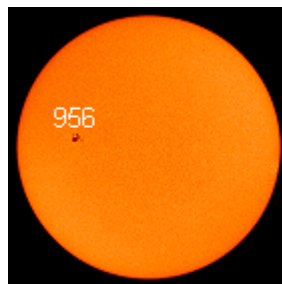
The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity.

At the beginning of the observation period, sunspot 955 was present on the surface of the sun but posed no threat for strong solar flares.

On 15/05/2007, new sunspot 956 appeared and grew rapidly. On 16/05/2007 it already posed a threat for M-class solar flares. At the end of the week (17 & 18/05/2007) it posed X-class solar flares (see sun picture below). However, nothing happened during the whole reported period.



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 good this week. No pointings were lost to ground problems. The overall performance was well over the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was very good this week. However, the Command Verifier crashed twice, and there was a TM RT cache disconnect, without impact. The overall performance was well over the 95% requirement.

4.2 Ground Stations & Network

The performance of the ground stations and Network was good this week. There was, however, 6 occasions of data drops from Redu, and a delayed hand-over from Redu to DSS-27, all without impact. The overall performance was well over the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSFs are available up to revolution 566. Observations have been planned and send to MOC up to revolution 564.

TSF's up to revolution 561 have been received.

2. Observation status

ECS files have been received and processed up to revolution 551.

3. ISOC Science Data Archive

No news.

4. ISOC system

ISOC system V14.5.2, with a fix of roll angle handling has been released. Work is ongoing on V15. From Friday 18 May, 16:00 to Monday 21 May, 08:00 the migration of all ESAC computers within the new firewall scheme effectively put ISOC out of service for this period.

5. Problems

The IFTS system got stuck on a partially processed file and did not work correctly for some time after being accidentally killed in the preparation of the firewall migration.

4.3.2 ISDC

Status of ISDC observation processing on 21/05/2007:

- Latest Standard Analysis completed: observation 04200160003 (SGR1806-20, Revolution 547) on 20/05/2007.

- Latest products archived: observation 04200080003 (Orion OB1, Revolution 548 & 551) on 20/05/2007.

- Latest observation products sent to the observer: observation 04200340020 (GRS 1915+105, Revolution 551) on 18/05/2007.

5 Special Events

6 Anomalies

The following problems were reported that impacted operations:

- On DoY 133, at 23:10, a problem with the Search and Track algorithm within the Star Tracker led to the suspension of the Timeline. A recovery was performed, and the Timeline rejoined at 23:56. The impact was the loss of pointing 05590049.

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

AR id	Date Created	Subject	Segment	Status
INT-2920	15/05/2007	ISDSA disc 100% full	IMCS	Pending
INT-2921	15/05/2007	Restart of IFTS instance SDS on	IMCS	Pending

AR id	Date Created	Subject	Segment	Status
		ISDSA only by rebooting server		
INT-2922	15/05/2007	Wrong TM playback link terminated TM reception on AutoStk	IMCS	Pending

7 Future Milestones

The following activities are foreseen in the next few weeks.

- The FSS/STR misalignment calibration has been postponed to 21st May 2007, in Rev. 562
- Periodic Thruster Torque rescaling 24th July 2007 Rev. 583
- On Board Clock wrap around due in Rev. 585.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 559

The observations in revolution 559 began with a hexagonal dither of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), lasting ~5.6 hours. This was followed by a raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), lasting ~6.2 hours. After this, an OMC Flat Field Calibration, which was a staring observation at attitude (RA 19:19:12.00, DEC +61:54:00.0), lasting ~3.4 hours was executed. Finally, another raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), lasting ~39.9 hours, was executed until the end of the revolution.

Revolution 560

The observations in revolution 560 were devoted entirely to a hexagonal dither of the object 1E 1048.1-5937 (RA 10:50:08.93, DEC -59:53:20.0), lasting ~55.6 hours.

Revolution 561

The observations in revolution 561 began with a hexagonal dither of the object NGC 4151 (RA 12:10:32.60, DEC +39:24:20.6), lasting ~50.6 hours. It continued with a hexagonal dither of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), lasting 5.6 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, except from 2007-05-12T23:30:00Z to 2007-05-13T03:15:00Z, during the OMC Flat Field Calibration, when it was: IBIS 90; SPI 85; JEM-X1 8; JEM-X2 0; OMC 63.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2007-04-28T18:05:43.000Z	146.7980	F	Automatic TM processing.
2007-04-30T08:26:51.000Z	146.7868	F	Automatic TM processing.
2007-05-01T17:20:47.000Z	146.7659	F	Automatic TM processing.
2007-05-03T08:18:04.000Z	146.7091	F	Automatic TM processing.
2007-05-04T17:34:48.000Z	146.6880	F	Automatic TM processing.
2007-05-06T08:03:16.000Z	146.6771	F	Automatic TM processing.
2007-05-06T16:14:21.000Z	146.6410	F	Automatic TM processing.
2007-05-09T07:38:43.000Z	146.6192	F	Automatic TM processing.
2007-05-09T10:32:20.000Z	146.5987	F	Automatic TM processing.
2007-05-10T22:14:07.000Z	146.5616	F	Automatic TM processing.
2007-05-12T06:56:59.000Z	146.5438	F	Automatic TM processing.
2007-05-12T15:49:32.000Z	146.5271	F	Automatic TM processing.
2007-05-15T06:44:42.000Z	146.4902	F	Automatic TM processing.
2007-05-16T16:15:02.000Z	146.4690	F	Automatic TM processing.
2007-05-18T06:30:34.000Z	146.4543	F	Automatic TM processing.

This report was generated Fri May 18 08:00:23 GMT 2007

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, 12/05/2007 –18/05/2007

AOCS operations were executed from the Automatic Timeline.

During this period, 77 Open Loop Slews, 101 Closed Loop Slews and 5 Momentum Biases were executed.

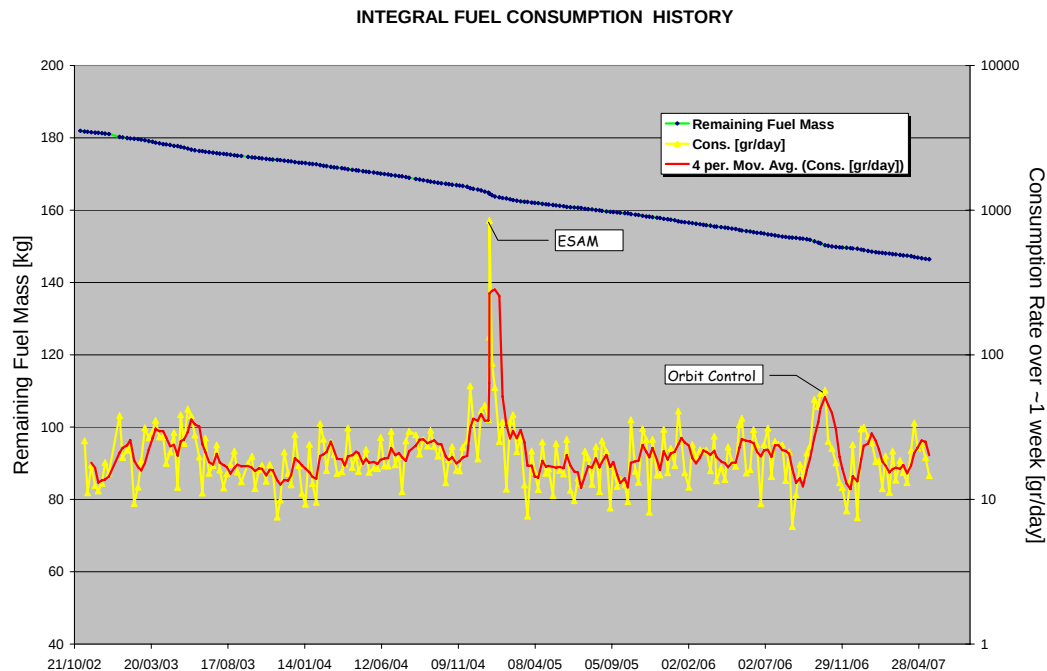
1 (CSL) slew was missed from TL, during the observation period, due to slew star not found in the STR FOV, during the S/T process, for slew ID 05590049.

Orbit Control

No update.

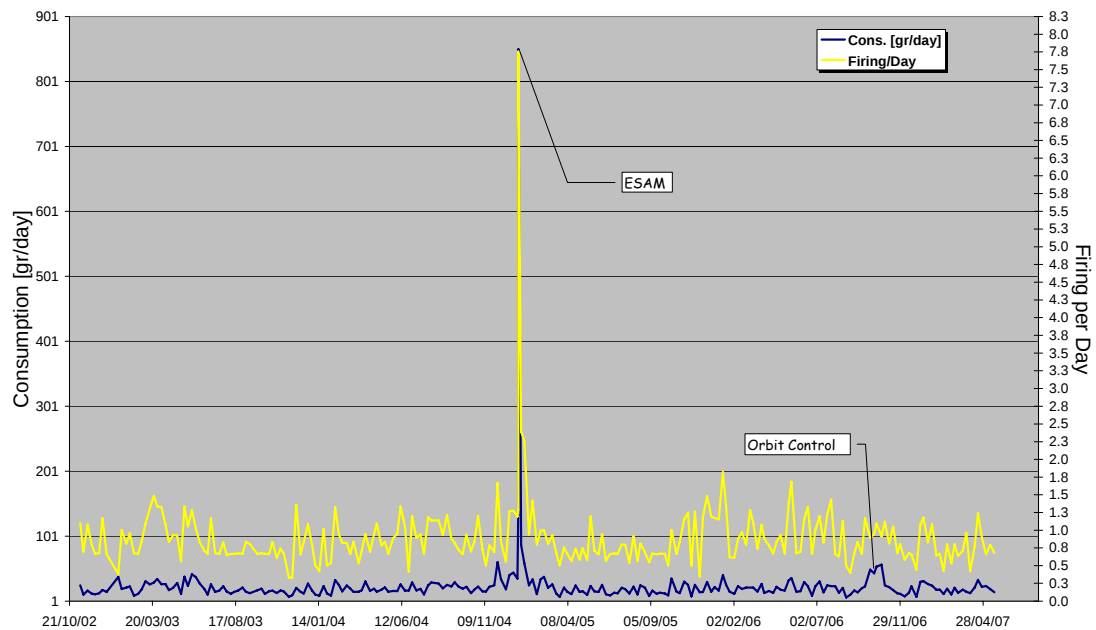
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 18/05/2007 is reported in the plot below.



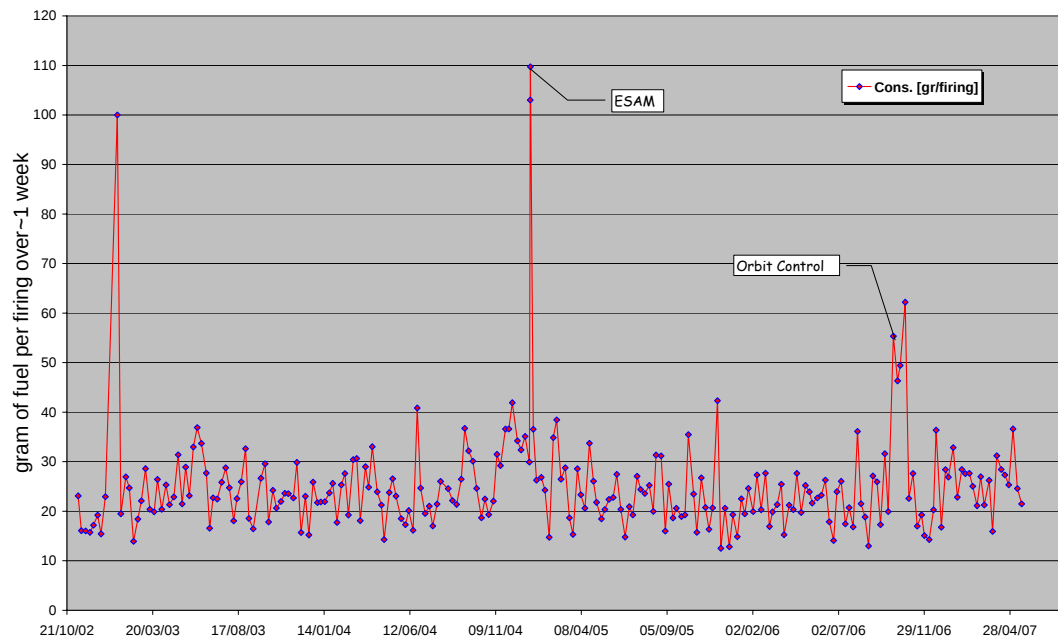
The firing per day over the period between 01/11/2002 and 18/05/2007 is reported in the plot below.

INTEGRAL FIRING PER DAY HISTORY



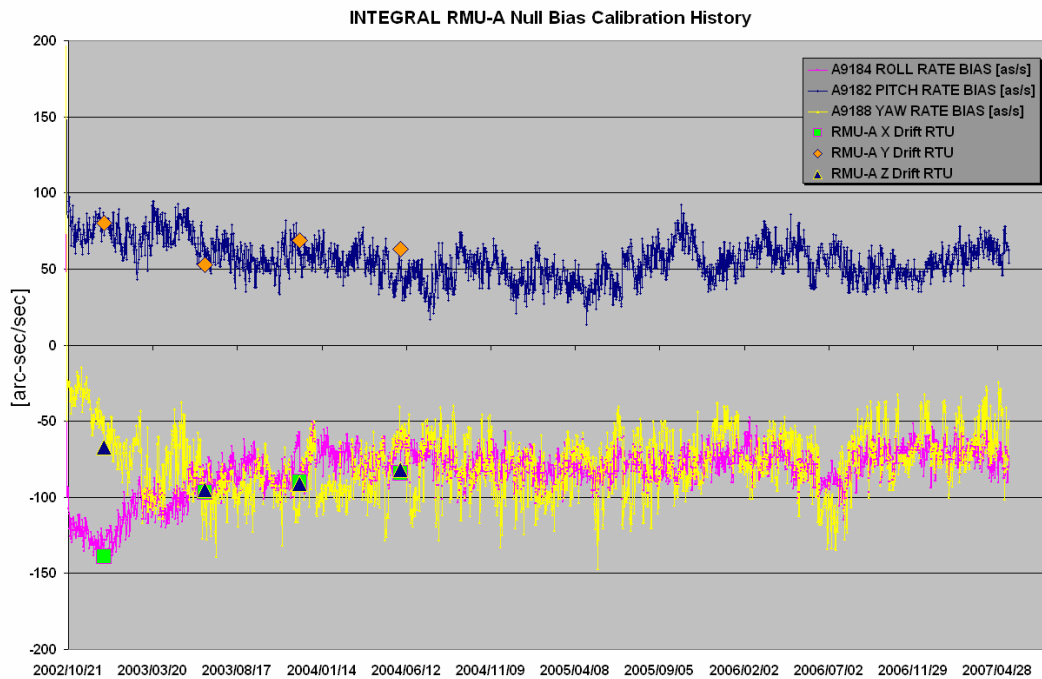
The fuel per firing over the period between 01/11/2002 and 18/05/2007 is reported in the plot below.

INTEGRAL FUEL MASS PER FIRING HISTORY

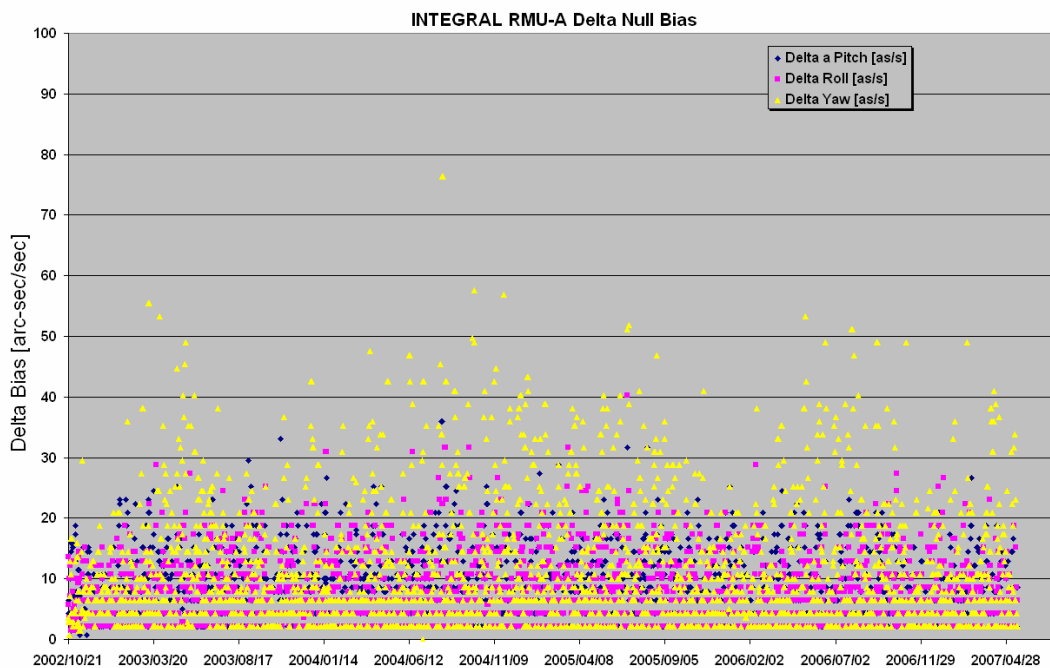


The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 18/05/2007 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 18/05/2007 is reported in the plot below



12/05/2007 (Day of Year 132, Revolution 558-559)

Nothing to report.

13/05/2007 (Day of Year 133, Revolution 559)

Search/Track process failed, start guide star failed PTV: at 23:10z, the sequence for slew ID 05590049 failed release due to static PTV. The expected slew star was not

found in slot #2, during the S/T process, and the static PTV blocked the sequence execution.

The guide star selected for the S/T was ID 3616-1547. This star was reported in the mission catalogue and not found in the mapping of the STR FOV at CCD location [- 12290 , - 20817] and $M_i < 8.5$.

An investigation on a different star catalogue resulted in a dim star (ID 3616-2147, M_i 11.9) at ~ 43 arcsec from the slew star. This do not clarify the event therefore the reason of the S/T process failed is still to be identified. At moment the slew star ID 3616-1547 is classified and monitored to verify its validity to the next occasion.

A new mapping was manually commanded and a manual recovery performed from the attitude of PID 05590048 to the attitude of PID 05590049 by CSL.

The sequence failed again release due to static PTV because the same star (3616-1547) was again selected as slew star and not found during the S/T.

A new mapping was manually commanded and a manual recovery performed from the attitude of PID 05590048 to the attitude of PID 05590049 by OSL.

The next slew ID 05590050 was manually updated at 00:09z of DoY 134.

The following slew was missed in TL: 05590049 (CSL)

14/05/2007 (Day of Year 134, Revolution 559)

Nothing to report.

15/05/2007 (Day of Year 135, Revolution 559-560)

Nothing to report.

16/05/2007 (Day of Year 136, Revolution 560)

Nothing to report.

17/05/2007 (Day of Year 137, Revolution 560)

Nothing to report.

18/05/2007 (Day of Year 138, Revolution 560-561)

FDS failed slew update: at 19:48z the FDS failed the update of slew ID 05610013. FDS reported an error during the update process: no suitable guide star was found for the attitude determination process and OSL generation.

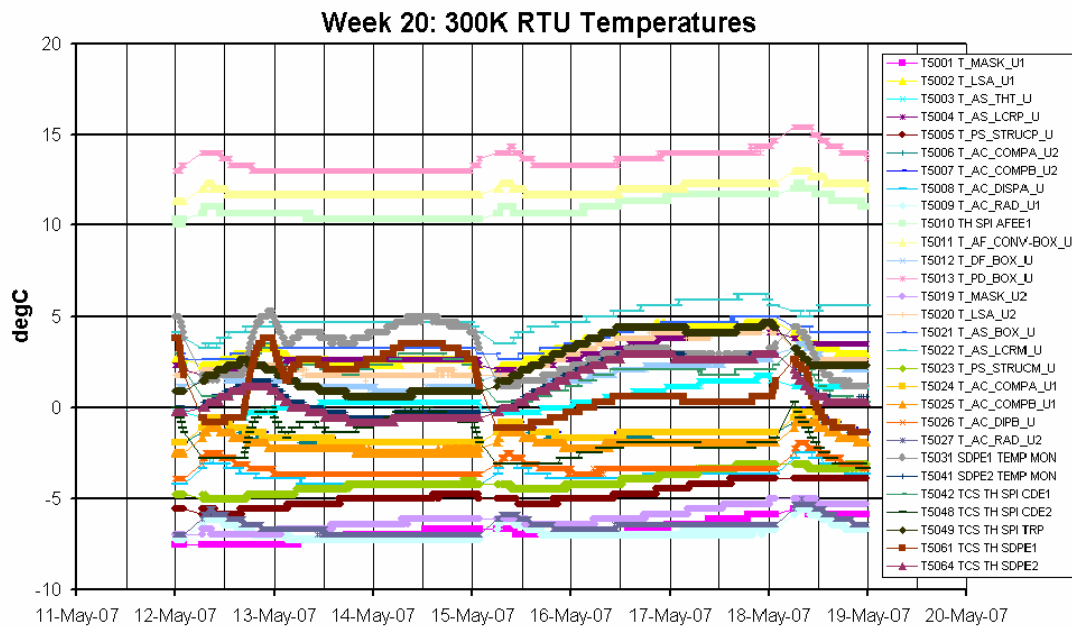
A new mapping was manually commanded but the manual update process failed execution again for the above reason.

Following the recommendations from FD-on call, the next slew (OSL) ID 05610013 was left executing without update.

No impact on TL.

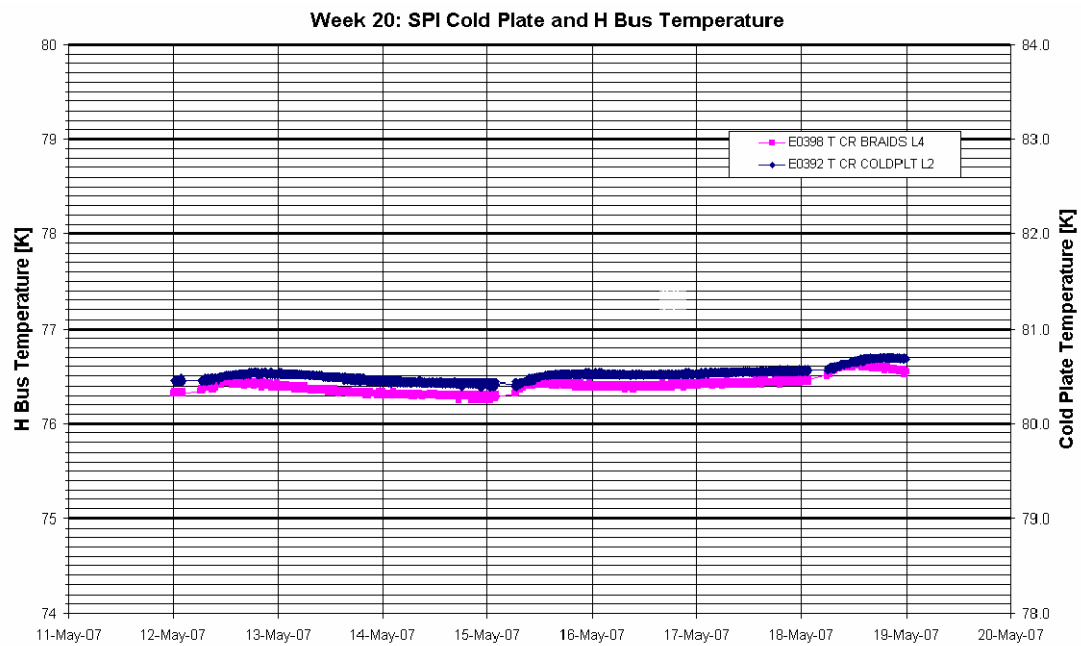
8.3.2 SPI Operations

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 80K +/-1K.

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

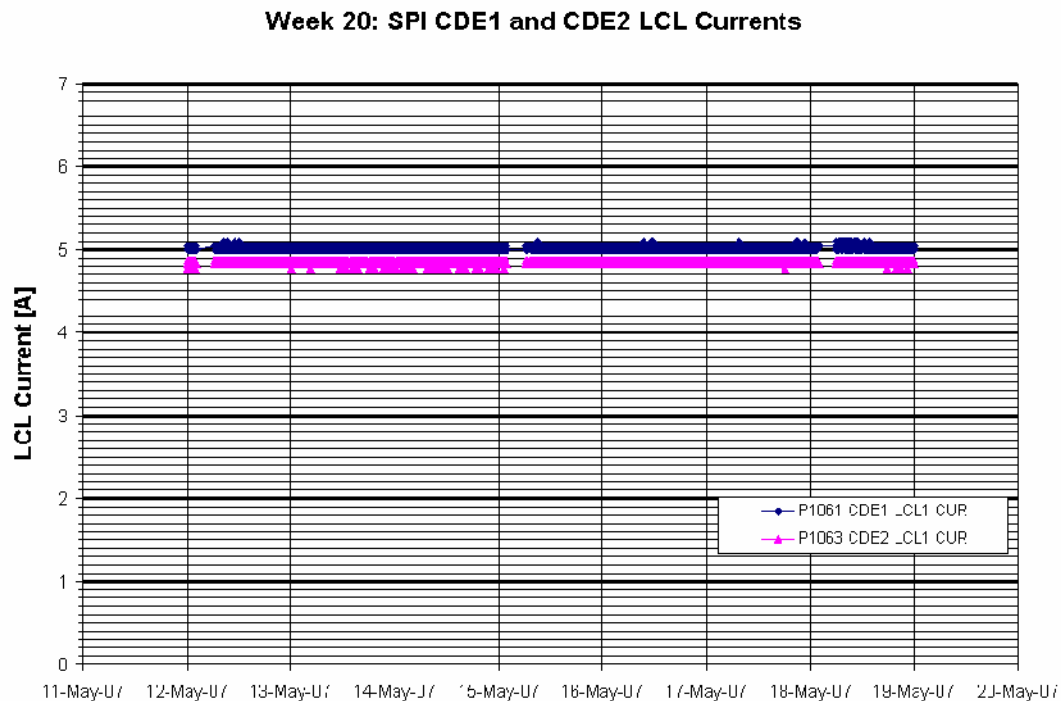


The stroke of all four compressors has remained at 41 since 2007-05-10 at 07:33Z.

The average LCL currents of the CDEs over the week were:

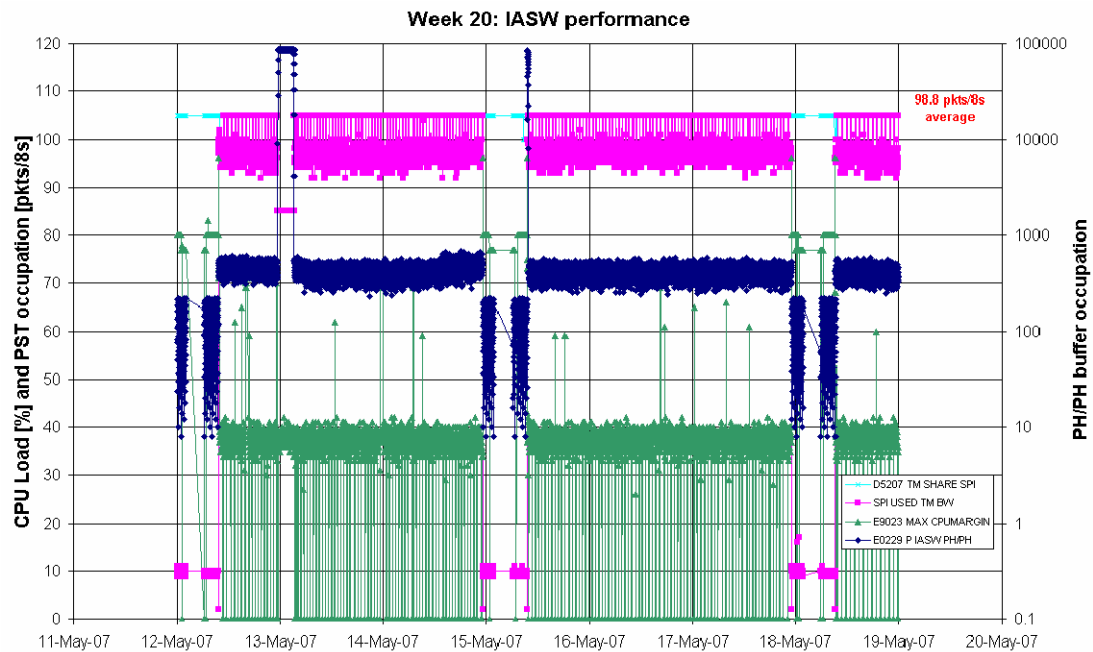
- Average CDE1 LCL Current = 5.03A
- Average CDE2 LCL Current = 4.83A

The following plot shows the evolution of the CDE currents during the reporting period.



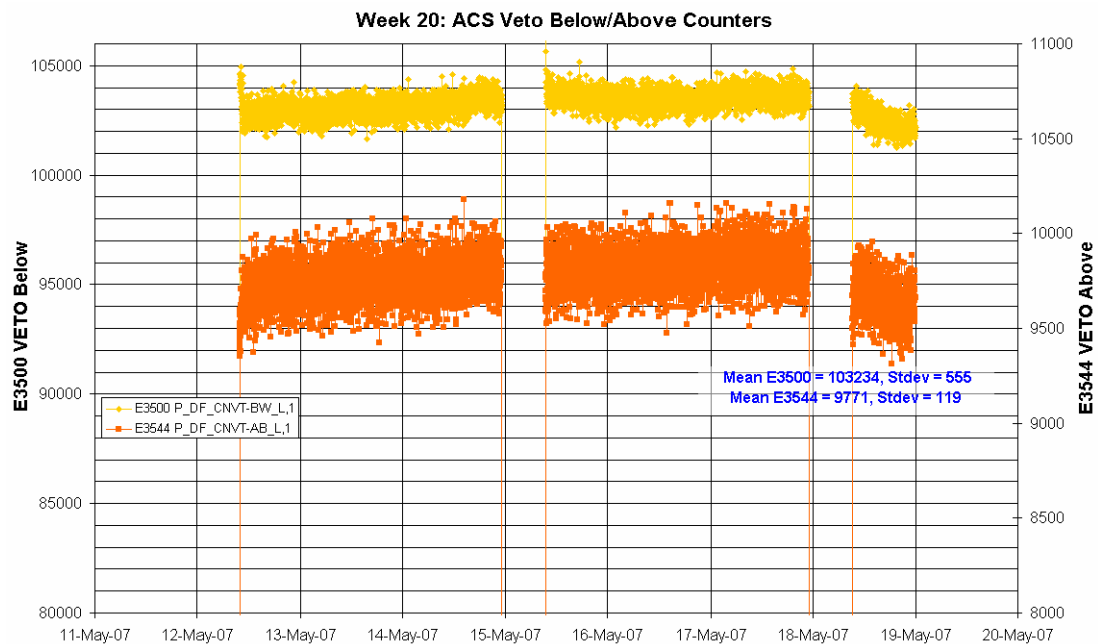
DPE & IASW: The DPE health and IASW performance is nominal. The IASW version installed is v433 patch #1. The spectra scaling factor was set to 9/19 SE throughout the week.

The average TM bandwidth occupation of SPI was 98.8 packets/cycle over the science window, when the TM allocation was 105 packets/cycle. The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period. Note that from 2007-05-12T23:30:45Z to 2007-05-13T03:16:00Z the TM allocation was 85 packets/cycle due to an OMC Flat Field Calibration.



ACS: The performance of the ACS is nominal, except for FEE 81 which remains switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is still OFF due to the anomaly on 5/8/2003 (INT_SC-61).

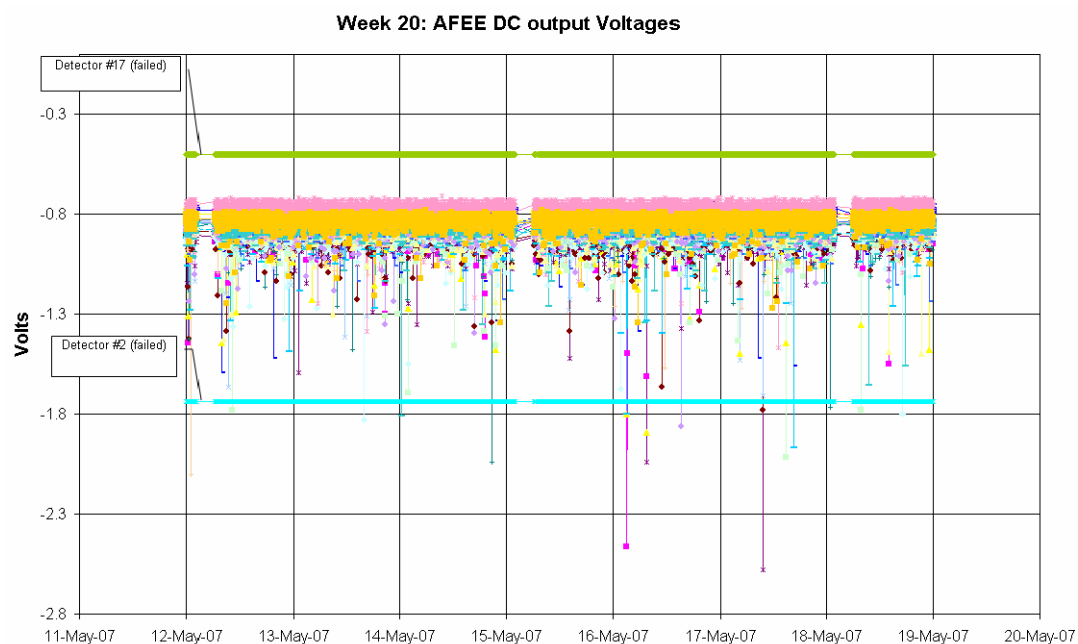
The following plot shows the ACS overall count rate evolution during the reporting period. Note that the scale of the plot is different to previously (shifted towards higher counts):



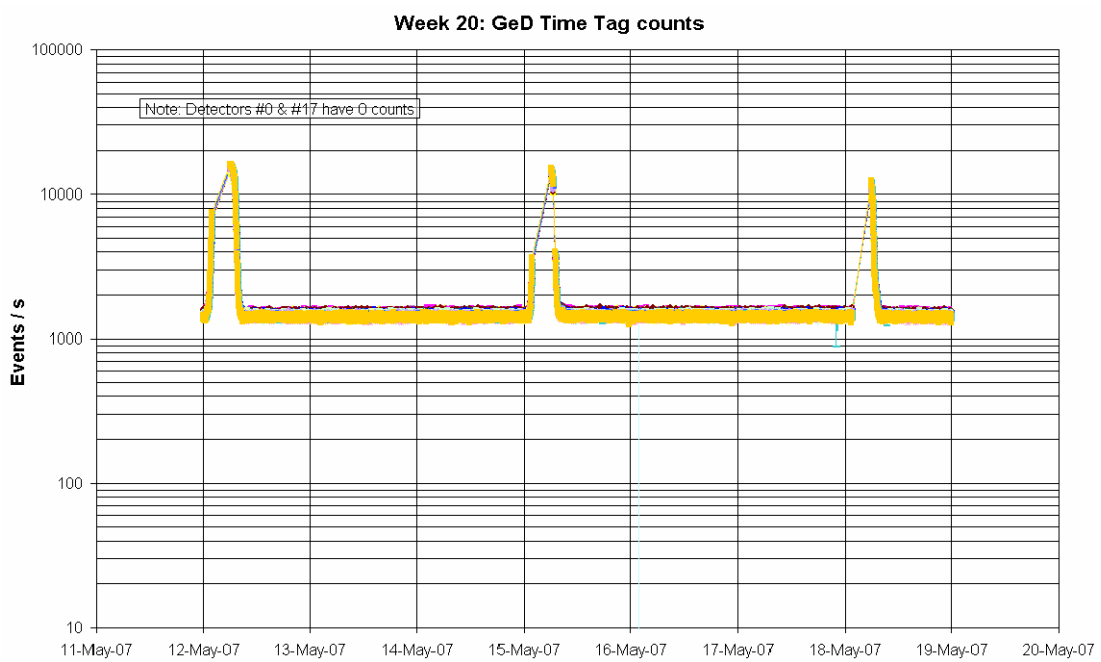
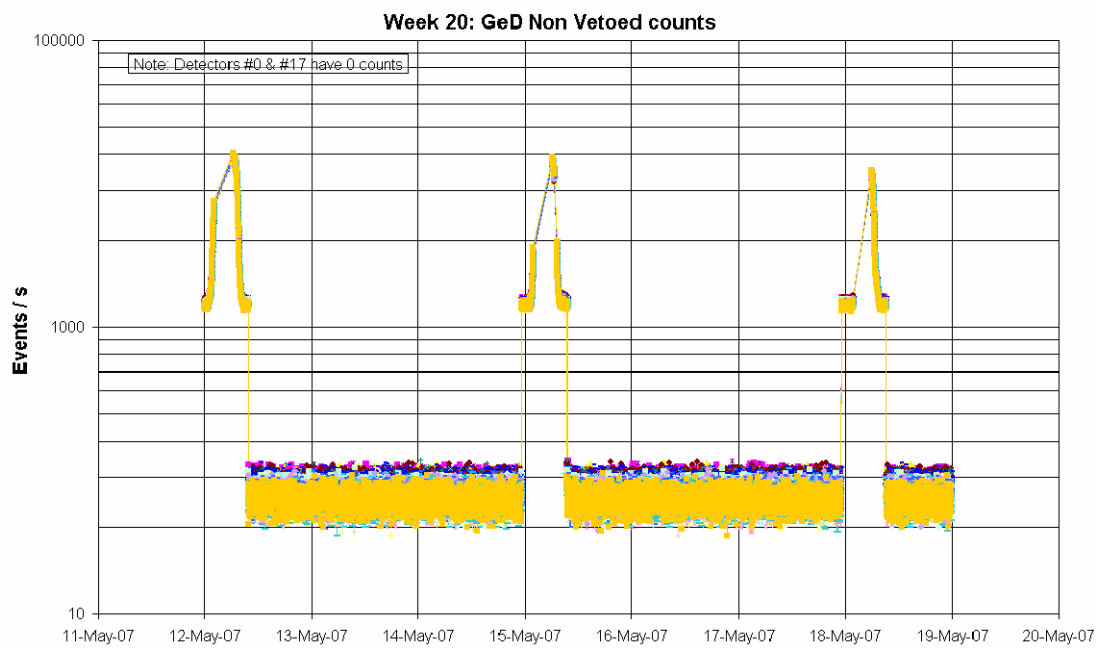
AFEE: The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution. The energy resolution of GeD#4 was recovered with the last annealing.

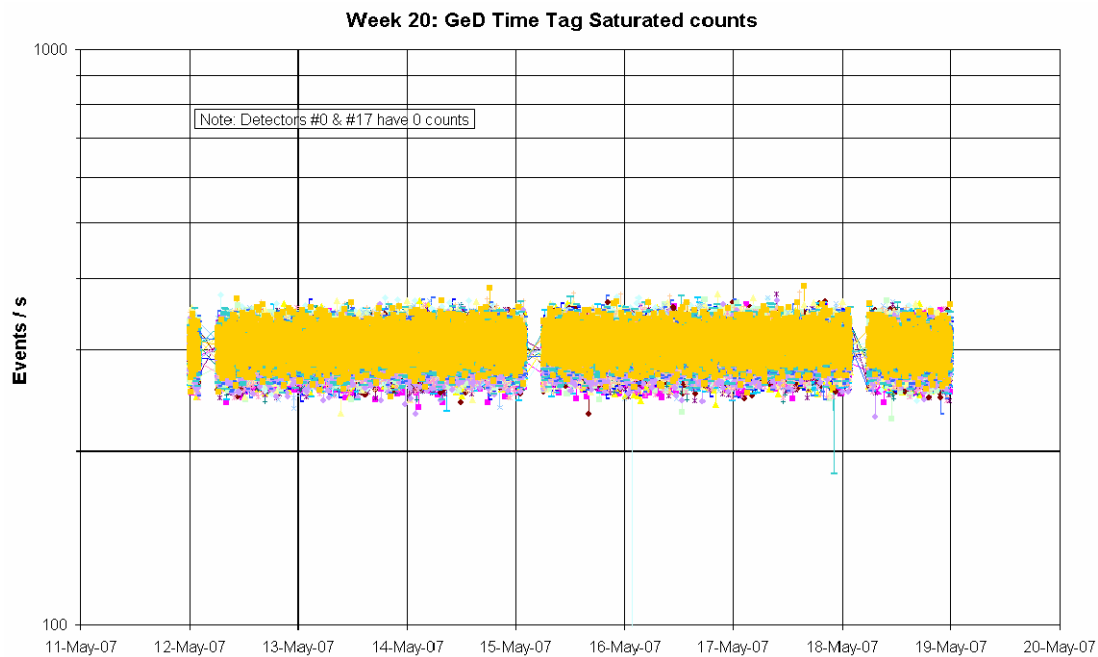
The GeD#12 HV remained at 3.5kV throughout the reporting period.

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.

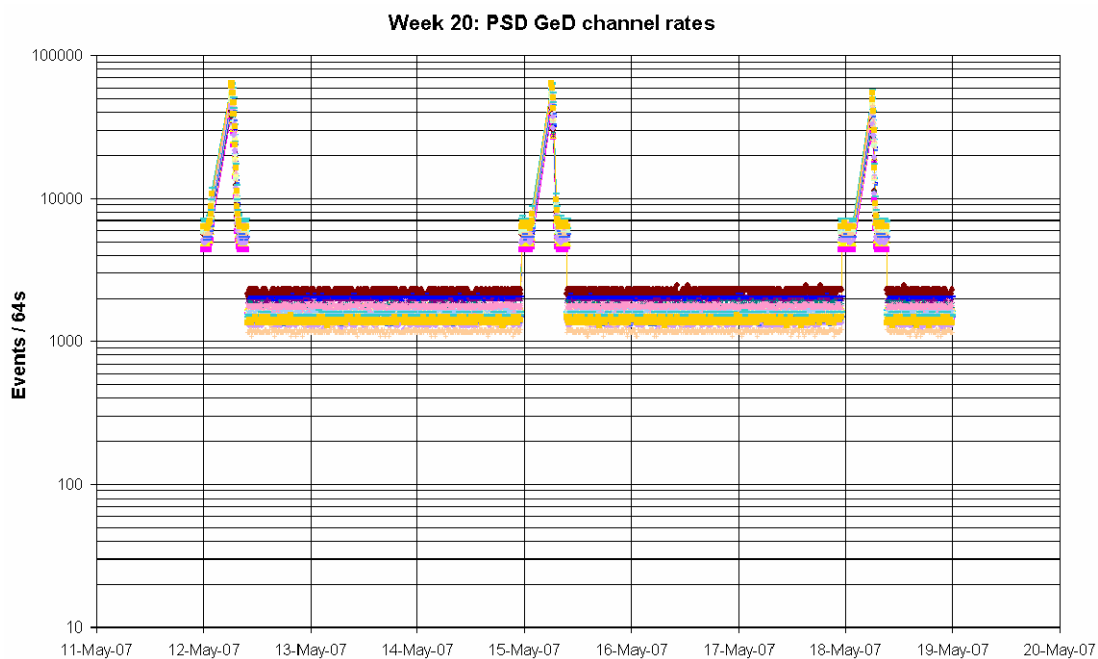


DFEE: The performance of the unit is nominal. The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event Count Rates during the reporting period.





PSD: The health of the unit is nominal. The following plot shows the PSD channel rates during the reporting period.



Event Log:

The following non-nominal events occurred on SPI during the reporting period:

- On 2007-05-12 at 09:43:23Z, during the automatic reconfiguration of SPI at radiation belt exit of revolution 559, the TM parameters E3825; E3826 and E3828- E3831 all went OOL (value = 0, i.e. not acquired). These are the PSD +/-5V analogue voltages and PSD board temperatures respectively. These parameters returned within limits when the next packet was received at 09:44:27Z.
- On 2007-05-13 from 03:32:39Z to 03:37:51Z, 17 occurrences of OEM APID 1024 ID 245 EXCEPTION SPI1 SPECTRA COMPRESSION

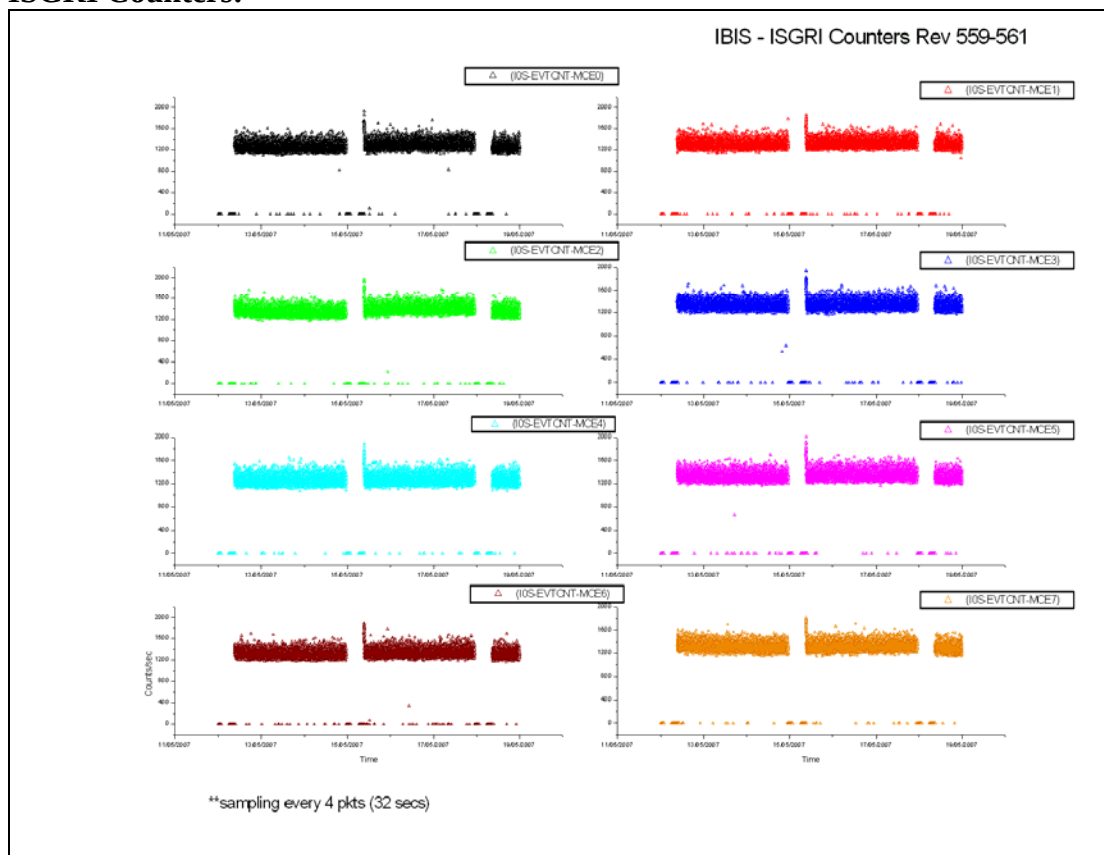
OVERFLOW was received (one for each operational GeD). In addition, at 03:37:51Z OEM APID 1024 ID 244 EXCEPTION SPI1 SPECTRA COMPRESSION NOT COMPLETED was received for GeD#18. This was just after the OMC Flat Field Calibration, about 15 minutes after the TM allocation to SPI had been changed back from 85 packets/cycle to 105 packets/cycle. These were also received following the previous OMC Flat Field Calibration (the first one since the patch to IASW 433). These OEMs indicate a problem with the spectra compression due to insufficient bandwidth. In both cases they stopped of their own accord. This can be considered nominal behaviour of IASW 433 when insufficient bandwidth has been allocated to SPI to allow the spectra compression.

- On 2007-05-14 at 21:43:44Z OEM APID 1024 ID 243 EVENT SPI1 SPECTRA BUILDING NOT COMPLETED was received for GeD#14. As this was a single occurrence, the spectra scaling factor has not been adjusted.

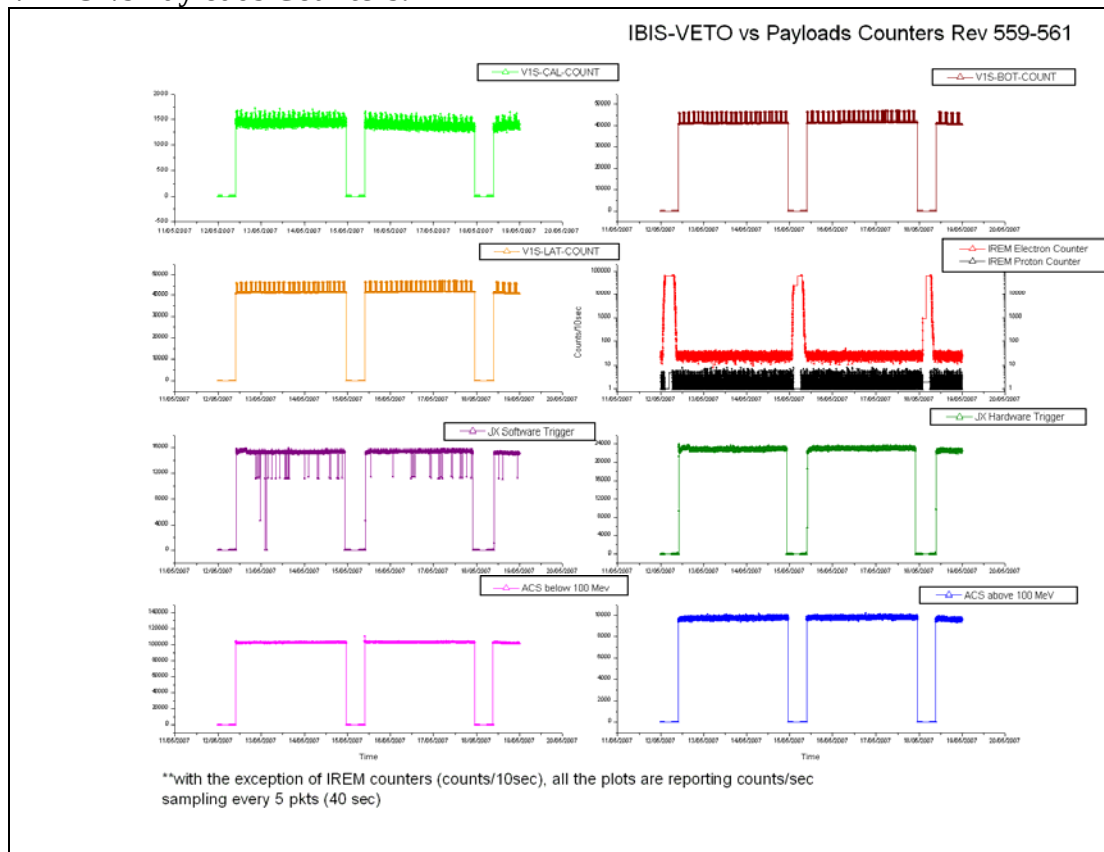
8.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

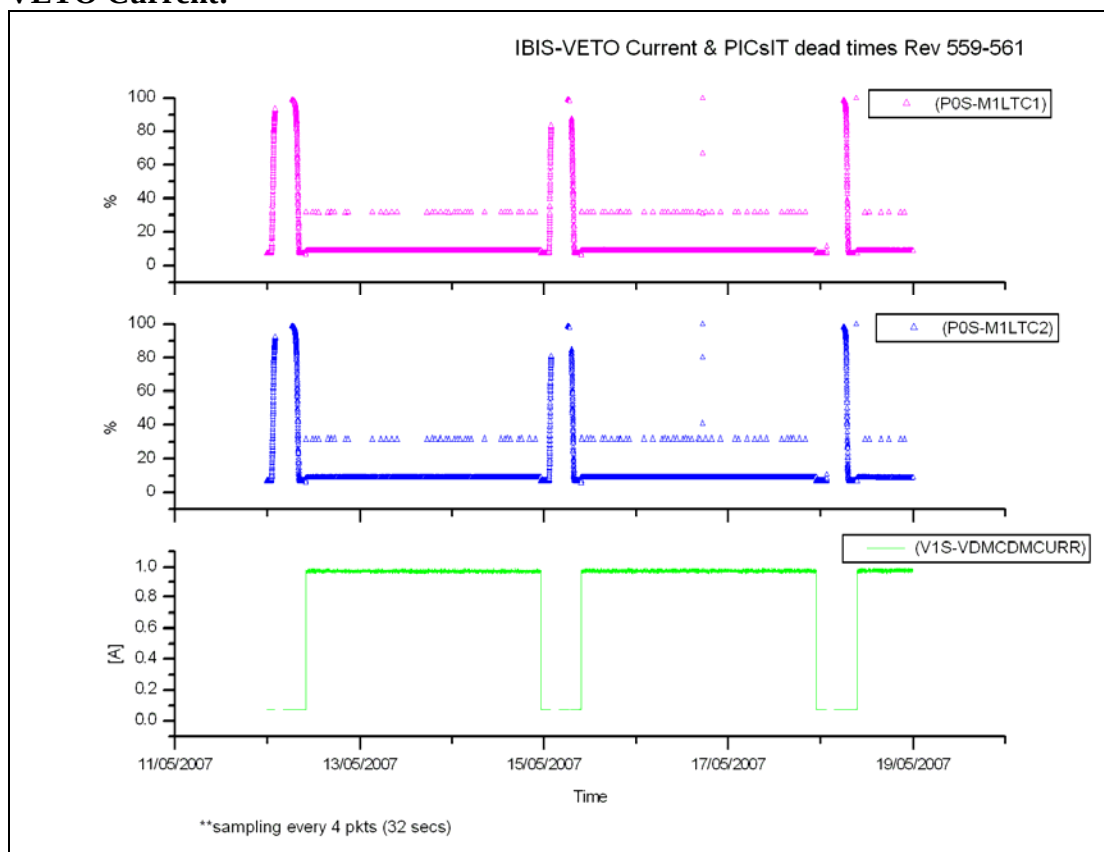


VETO vs Payloads Counters:

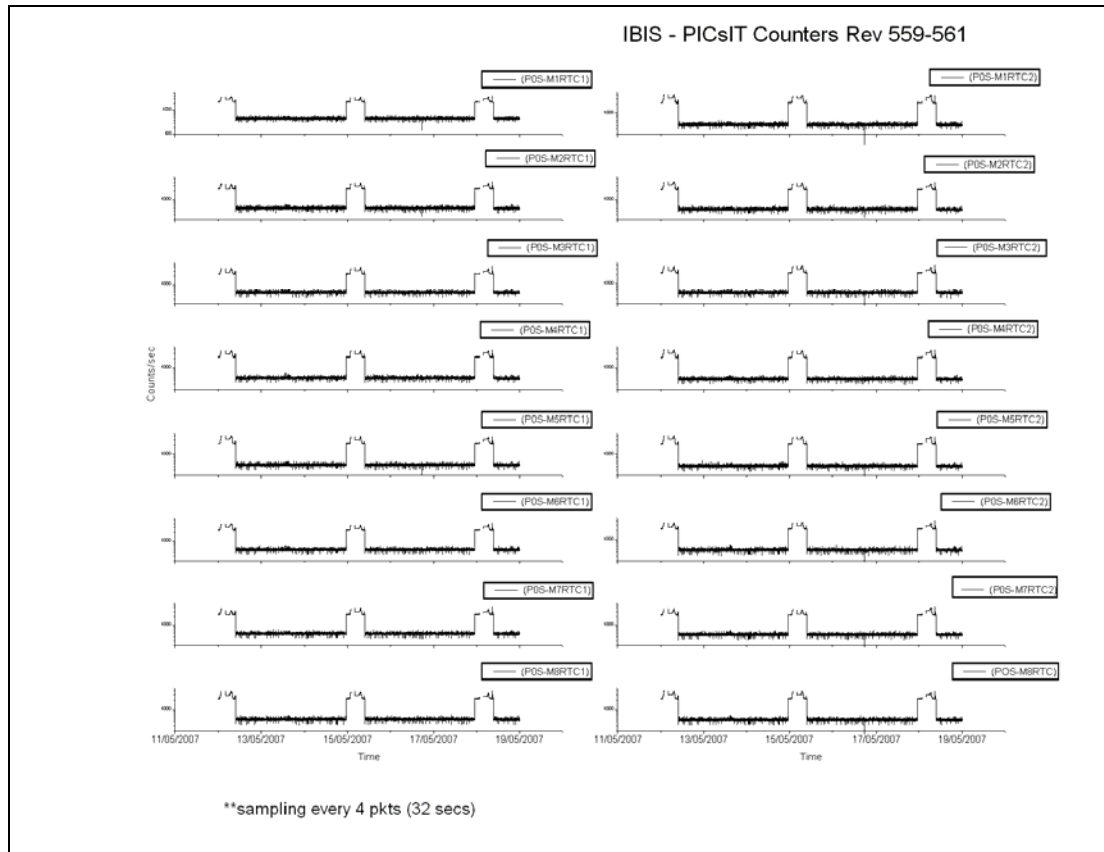


The week was characterised by low radiation.

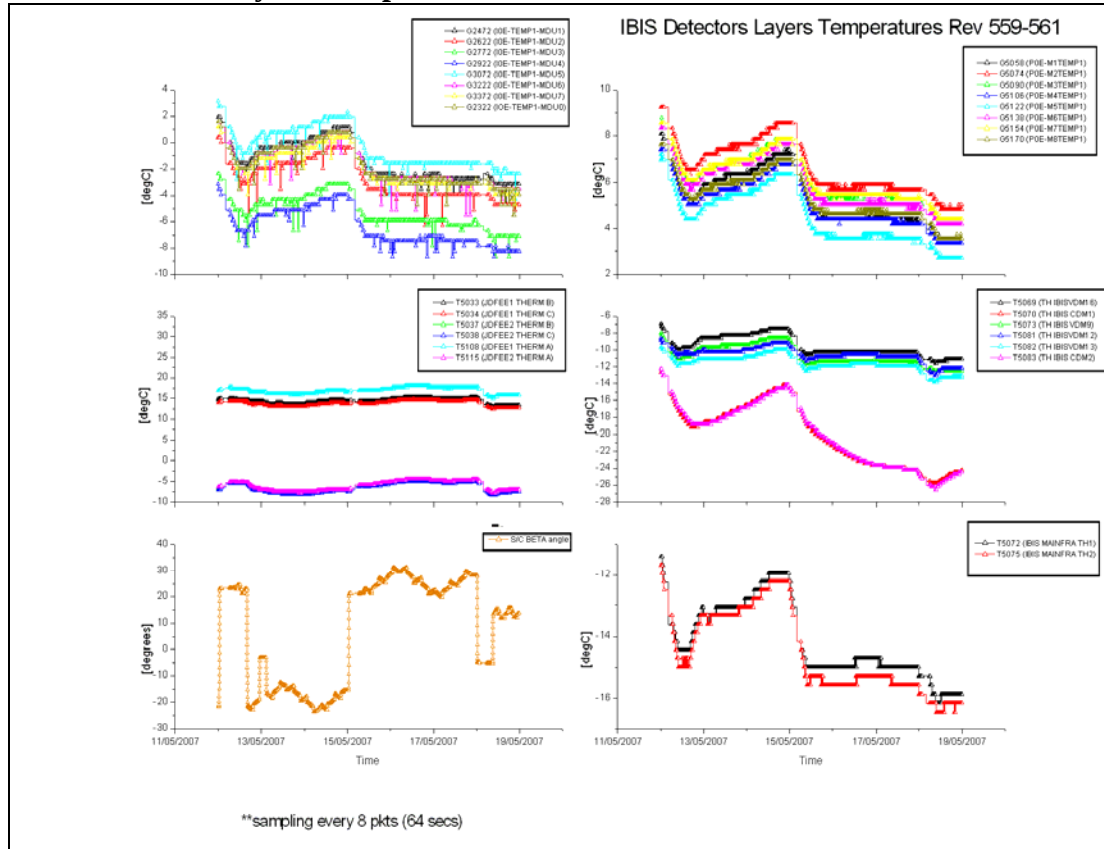
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report:

The usual Out Of Limits on TM parameter G8015 (S1E-A2_PMT_V), families G5002 (P0S-Mi_RTC1) and G5003 (P0S-Mi_RTC2), families G2014 (I0E-OVFWPXADD-Mi) were reported at Radiation Belts passage.

DoY 2007.136 (16/05/2007):

At 17:20Z, the IBIS submode was showing SLEW (TM parameter G8520) but an anomaly was reported with PICsIT which was not using the maximum TM allocated. In fact both ISGRI and PICsIT detectors (TM parameters G7015 and G7014) reported low values (~ few 1000 cnts); and TM families G5000 and G5001 (P0S-MiLTC1 & 2) were reporting high values (~few 10000 %).

At 17:21Z, parameters from TM families G5068 and G5072 (P0S-MiF1 & 2 ERRF) failed the Status Consistency Check. At 17:22Z, parameters from TM families G5002 and G5003 (P0S-MiRTC1&2) were reported OOL low-low with the value 0.

	G5000	G5002	G5068	G7014	G7015	G8520
	P0S-MiLTC1	P0S-MiRTC1	P0S-MiF1ERRF	H1S-CSI DET EV	H1S-CDTE DET EV	S1E-IASW-PS
2007-05-16T17:20:04.261104	8.94497513	451.5	---	20099536	4499965	POINTING
2007-05-16T17:20:12.261110	8.96023438	445	---	20160129	4513007	POINTING
2007-05-16T17:20:20.261116	8.96023438	449.625	---	20220090	4526704	POINTING
2007-05-16T17:20:28.261122	31.675161	327.375	FALSE	1348	4169	SLEW
2007-05-16T17:20:36.261128	36808	548.375	---	1358	17725	SLEW
2007-05-16T17:20:44.261135	10.2633747	403.125	---	1368	31458	SLEW
2007-05-16T17:20:52.261140	20.8258309	382.75	---	1377	45501	SLEW
2007-05-16T17:21:00.261146	29.7616504	314.125	TRUE	1389	58852	SLEW
2007-05-16T17:21:08.261152	31.1807611	312.25	---	1403	72322	SLEW
2007-05-16T17:21:16.261158	58.354442	189.5	---	1414	86416	SLEW
2007-05-16T17:21:24.261163	61.281167	169.625	---	1428	100224	SLEW
2007-05-16T17:21:32.261171	67.5160985	143.5	FALSE	1444	113923	SLEW
2007-05-16T17:21:40.261176	66.8691061	150	---	1454	127636	SLEW
2007-05-16T17:21:48.261182	66.2282174	141.875	---	1463	141316	SLEW
2007-05-16T17:21:56.261190	72.9270302	132.375	---	1474	155085	SLEW
2007-05-16T17:22:04.261195	78.8995025	96	FALSE	1483	168693	SLEW
2007-05-16T17:22:12.261201	100	0	---	1490	182136	SLEW
2007-05-16T17:22:20.261207	100	0	---	1504	195685	SLEW
2007-05-16T17:22:28.261213	100	0	---	1515	209576	SLEW
2007-05-16T17:22:36.261219	100	0	FALSE	1530	223515	SLEW
2007-05-16T17:22:44.261225	100	0	---	1542	237759	SLEW
2007-05-16T17:22:52.261231	100	0	---	1554	252115	SLEW
2007-05-16T17:23:00.261238	100	0	---	17133	3828	POINTING
2007-05-16T17:23:08.261244	33546	503.25	FALSE	77860	17611	POINTING
2007-05-16T17:23:16.261249	8.92666402	447.125	---	138004	30742	POINTING
2007-05-16T17:23:24.261256	8.90530107	429.5	---	198431	44801	POINTING

No On-Event Message corresponding to an HEPI resynchronisation was produced. However the unit went back to nominal behaviour in the next cycles.

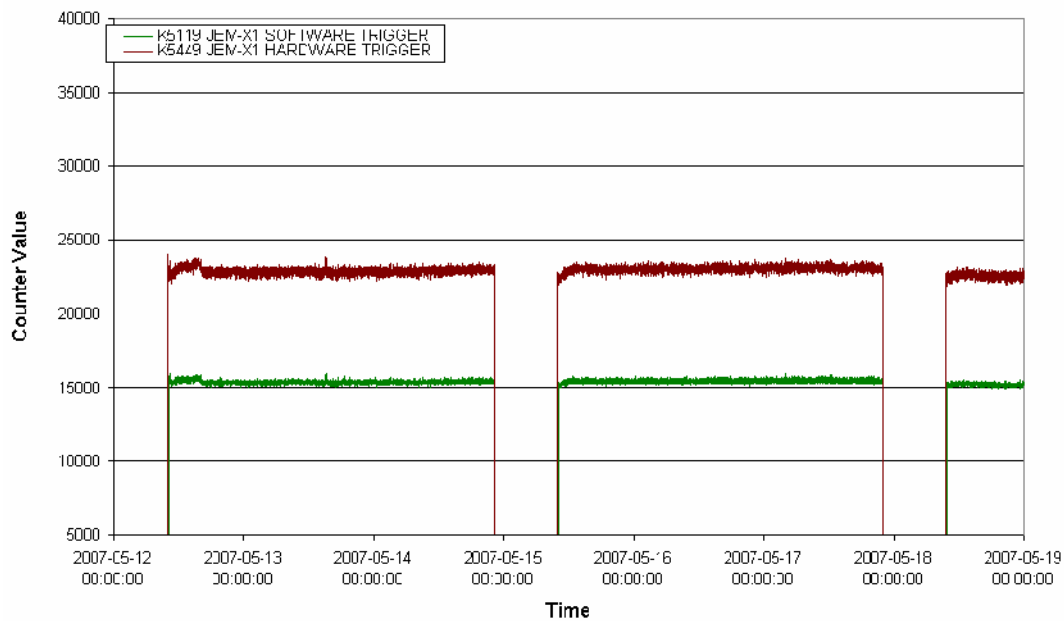
8.3.4 JEM-X Operations

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.

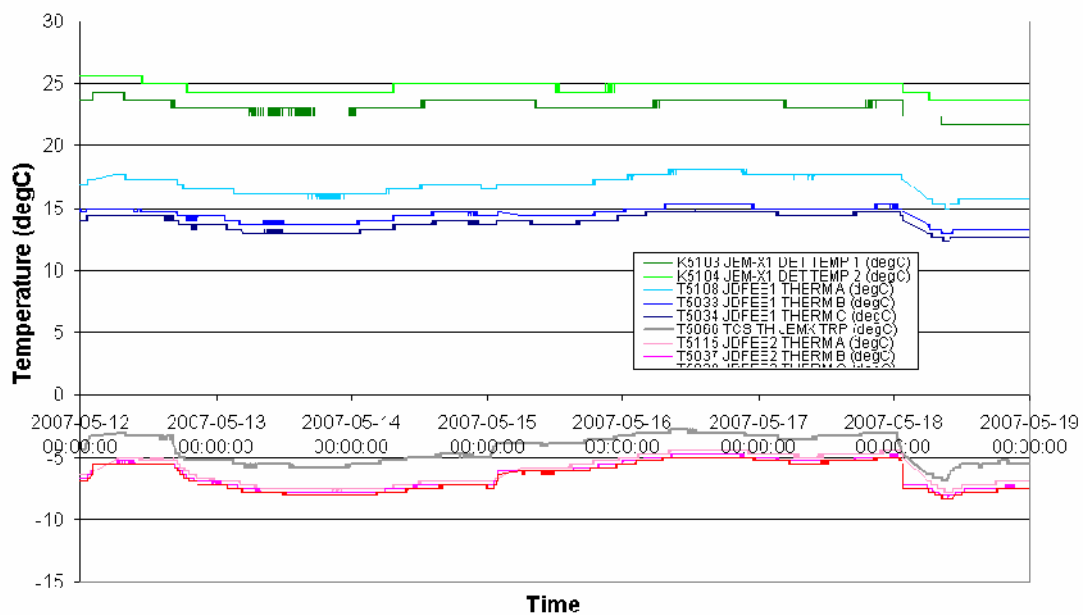
JEM-X Count Rates 2007-05-12 to 2007-05-18



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.

JEM-X Detector & DFEE Temperatures 2007-05-12 to 2007-05-18



² Data sampled (1 frame in 8)

JEM-X Daily Report

2007-05-12 (DOY 132, Rev 558-559) to 2007-05-18 (DOY 138, Rev 560-561)

JEM-X1 operations executed nominally.

8.3.5 OMC Operations

2007-05-12 (DOY 132, Rev 559)

From 23:31 to 02:22 on the following day, a Flat Field Calibration was performed. This was followed from 02:23 to 02:55 by a Dark Current calibration. Both were successfully executed.

2007-05-13 (DOY 133, Rev 559)

At 23:10, an AOCS problem led to the temporary suspension of the Timeline. A recovery was performed, and the Timeline rejoined at 23:56. The impact was the loss of pointing 05590049.

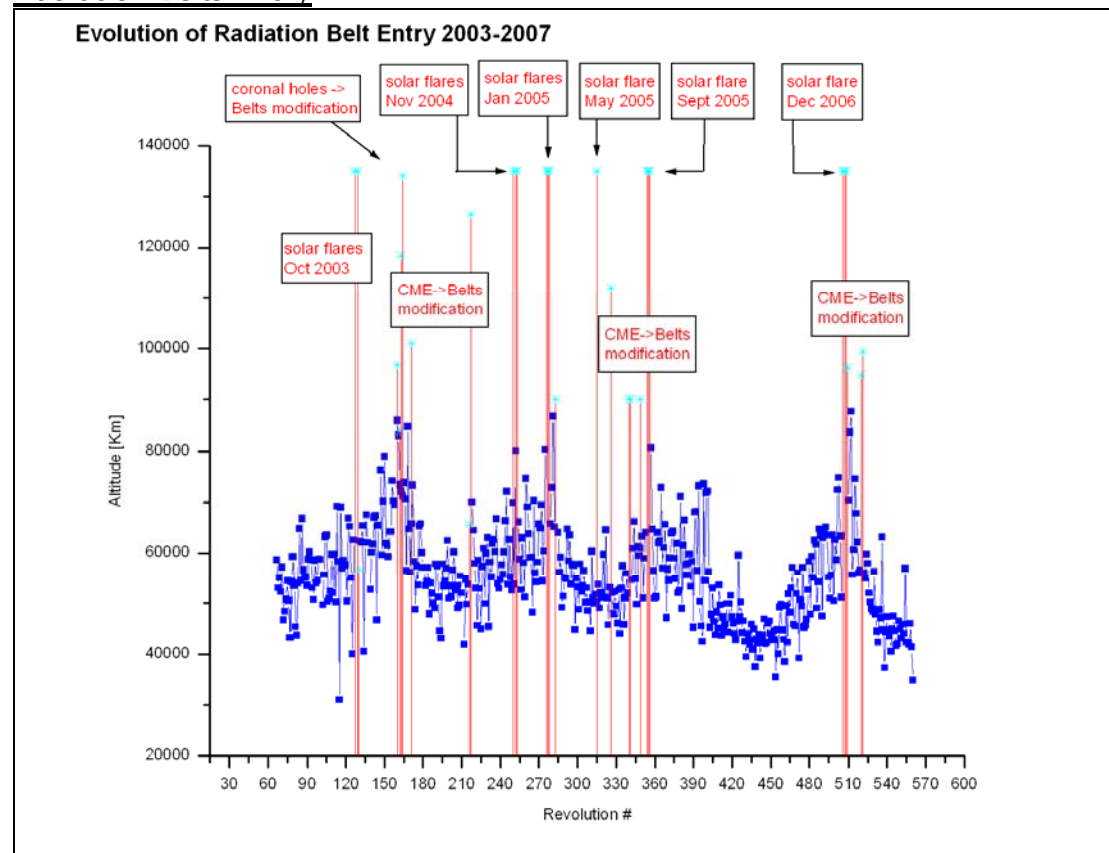
2007-05-14 (DOY 134, Rev 559) to 2007-05-18 (DOY 138, Rev 561)

Nothing to report.

On DoY 134 at 23:13:50 and DoY 137 at 22:59:34 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]
558	RAD_ENTR R 2007-05-11T23:26:46Z	2007-05-12 00:39:00	46001.2	2007-05-12 00:37:27	46934
559	RAD_EXIT R 2007-05-12T09:42:27Z	2007-05-12 08:14:04	>>29750.1	2007-05-12 08:37:27	43217
559	RAD_ENTR R 2007-05-14T23:13:42Z	2007-05-15 00:57:47	41403.9	2007-05-15 00:24:17	47124
560	RAD_EXIT R 2007-05-15T09:29:59Z	2007-05-15 08:21:39	<45690.4	2007-05-15 08:24:17	42921
560	RAD_ENTR R 2007-05-17T22:59:29Z	2007-05-18 01:22:19	>34914.7	2007-05-18 00:14:17	47010
561	RAD_EXIT R 2007-05-18T09:15:26Z	2007-05-18 07:34:03	>>29749.8	2007-05-18 08:14:17	43080

Reference

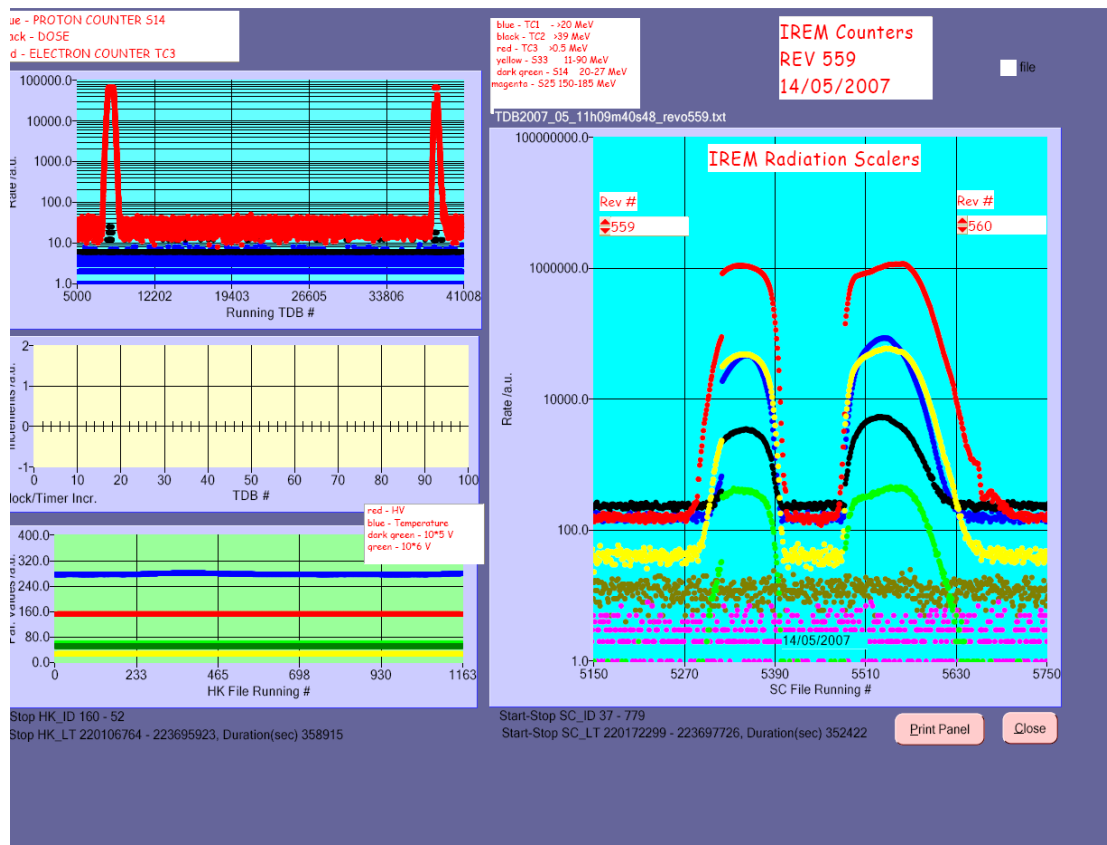
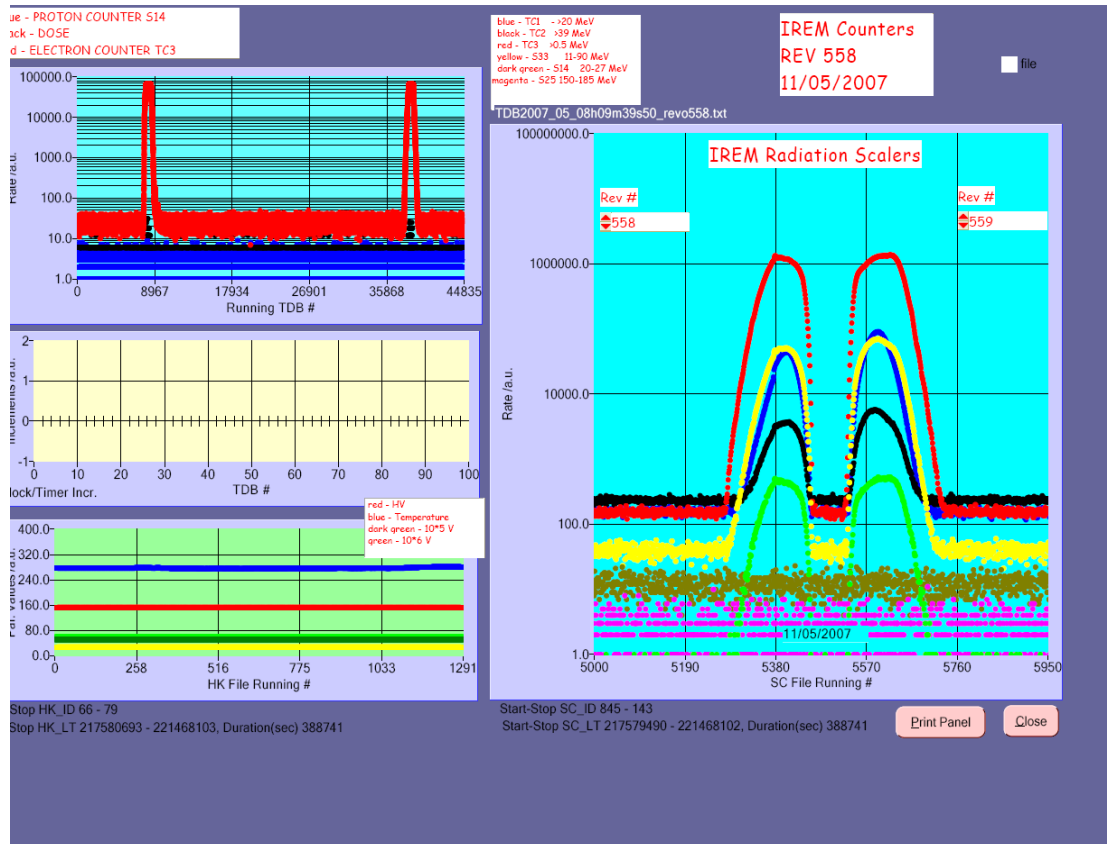
High radiation

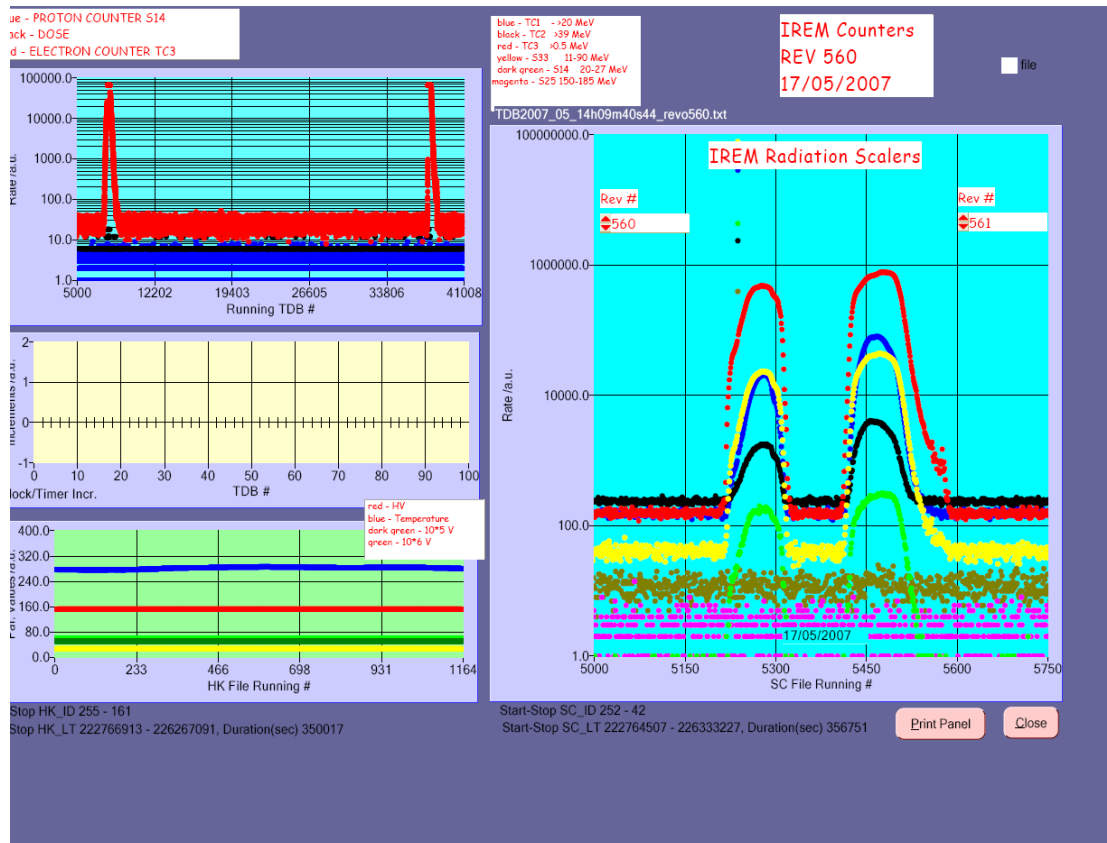
Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

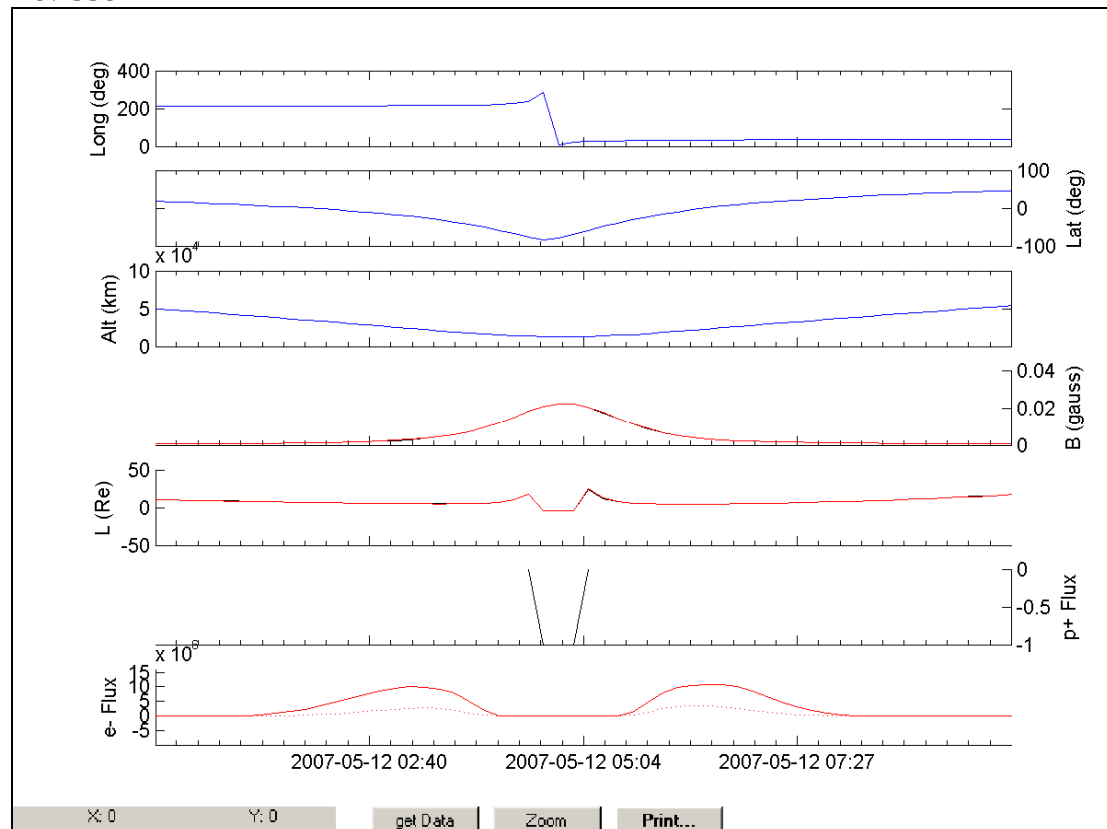
IREM radiation counters:



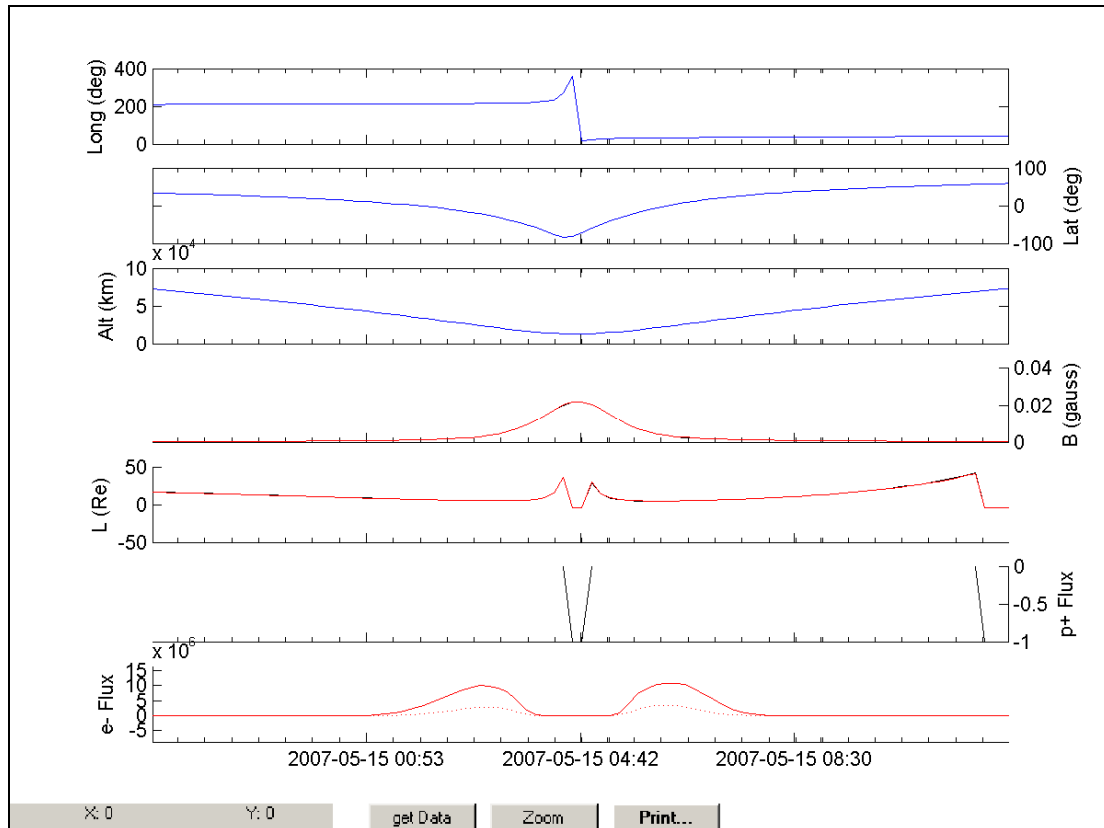


IREM Predicted Radiation Belt Passages

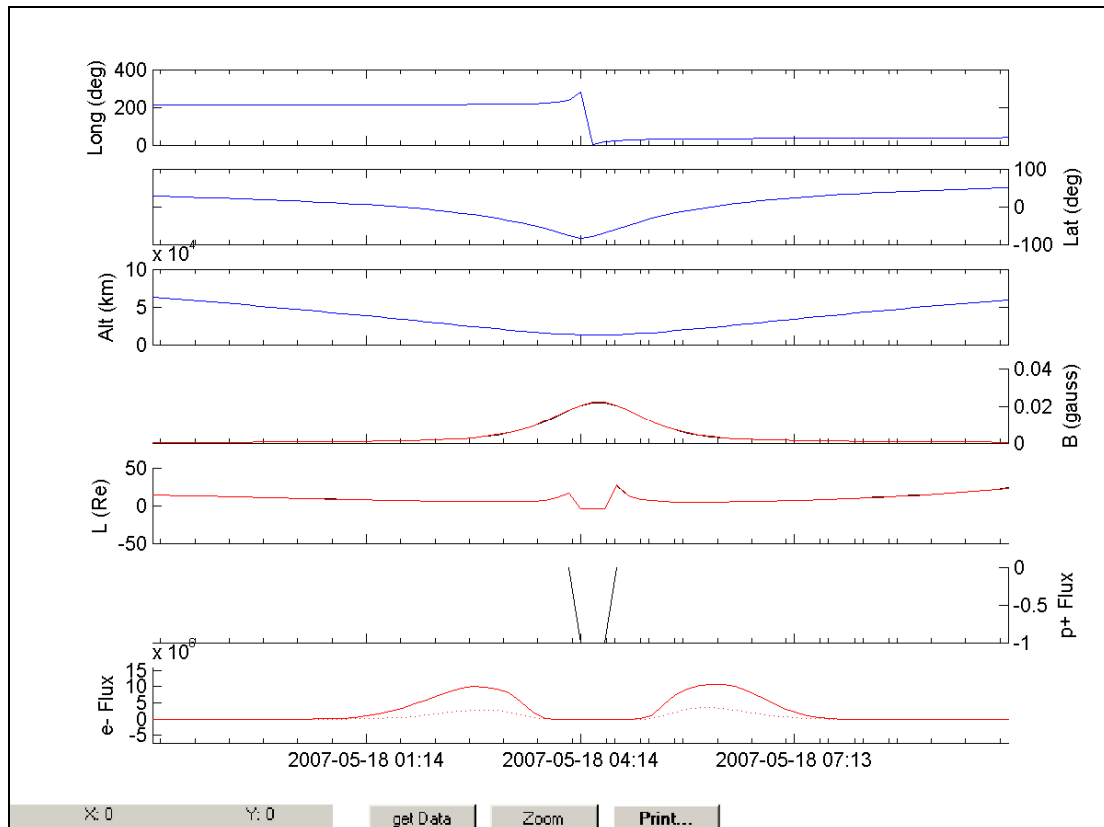
Rev 558



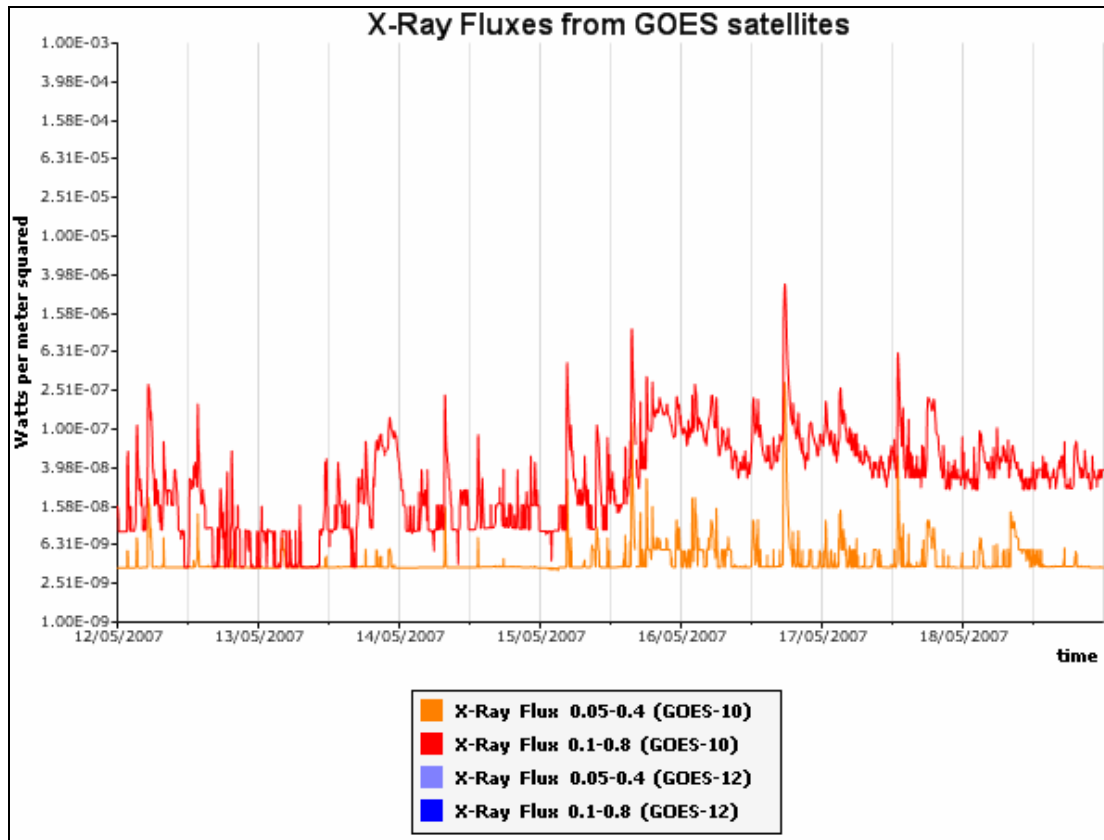
Rev 559



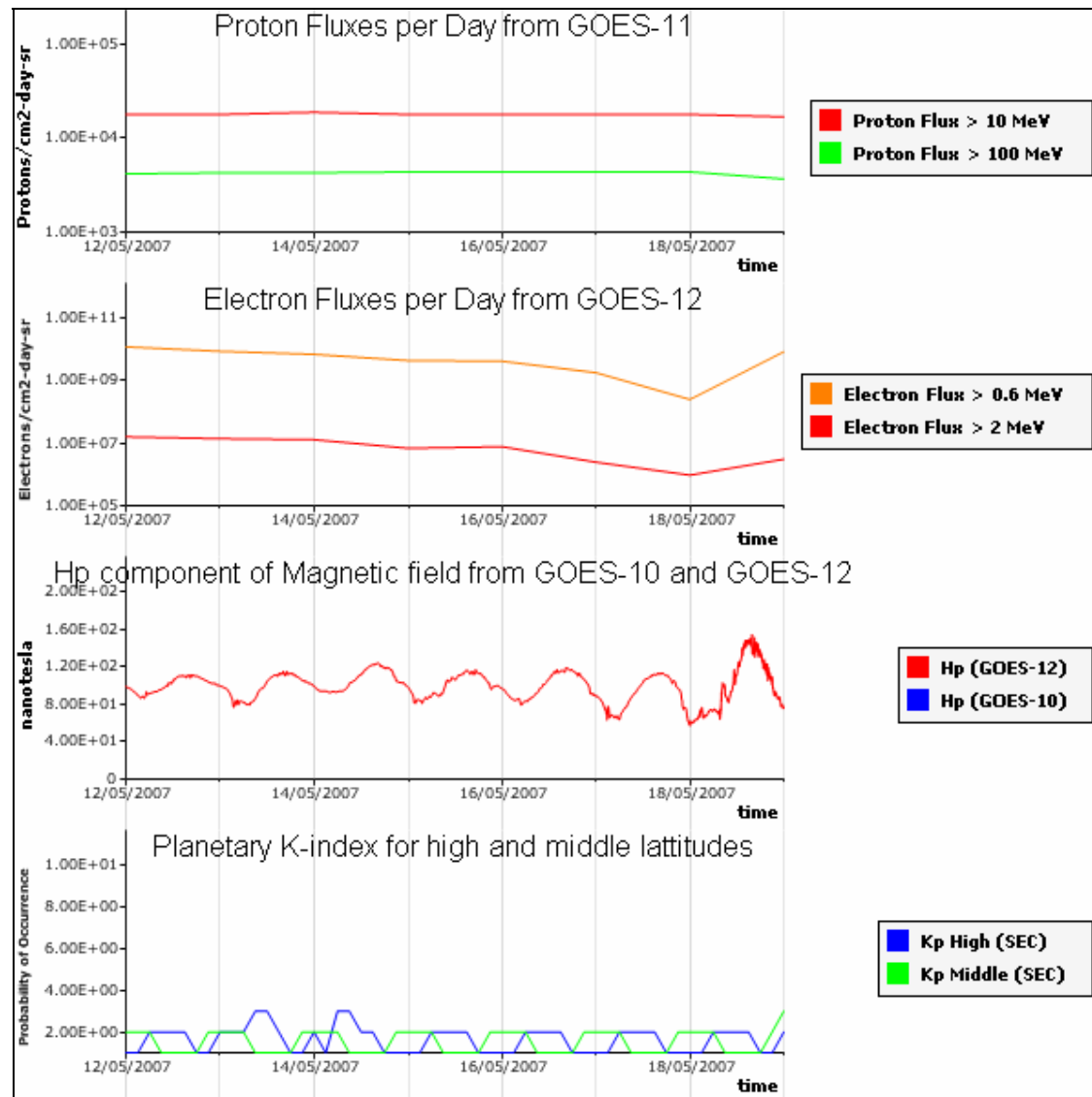
Rev 560



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 are reporting low radiation background this week. 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.