

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 246
Week 23
11.06.07
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 02.06.07 until 08.06.07 (both dates inclusive) and covers the revolutions 566, 567 and 568.

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 a raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), and a hexagonal dither of the object MCG -05-23-016 (RA 09:47:40.10, DEC -30:56:56.0).

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.

Three slews were missed from TL during the observation period, due to FD system problems.

The fuel consumption over the period between 01/06/2007 and 08/06/2007 was 0.0958 Kg. The remaining propellant is in the order of 146.1569 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

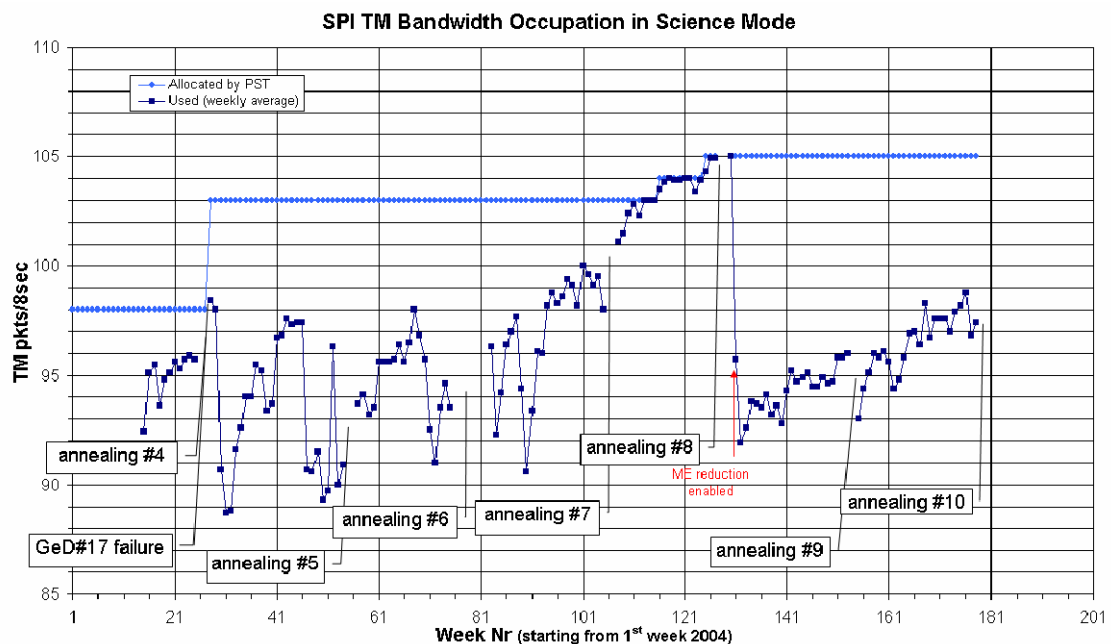
3.2.1 SPI

The overall status of the gamma-ray spectrometer is nominal. The 10th annealing started on 29th May and this annealing is progressing nominally. The summary annealing timeline is included in the future activities section of this report. The following table reports the major events/steps performed so far (i.e. up to 8th June) since the start of the annealing:

Date/Time	Activity
29/05/2007 22:16Z	Configure SPI for start of Annealing and stop SPI active cooling
29/05/2007 23:30Z	Annealing Heater Main ON
30/05/2007 01:30Z	Annealing Heater Redundant ON
31/05/2007 10:39Z	Cold plate temperature reached 373K (100degC)
08/06/2007 20:39Z	Stop SPI Annealing

Throughout the reporting period SPI was in CONF mode due to the annealing and the assigned TM bandwidth was 46 packets/cycle.

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



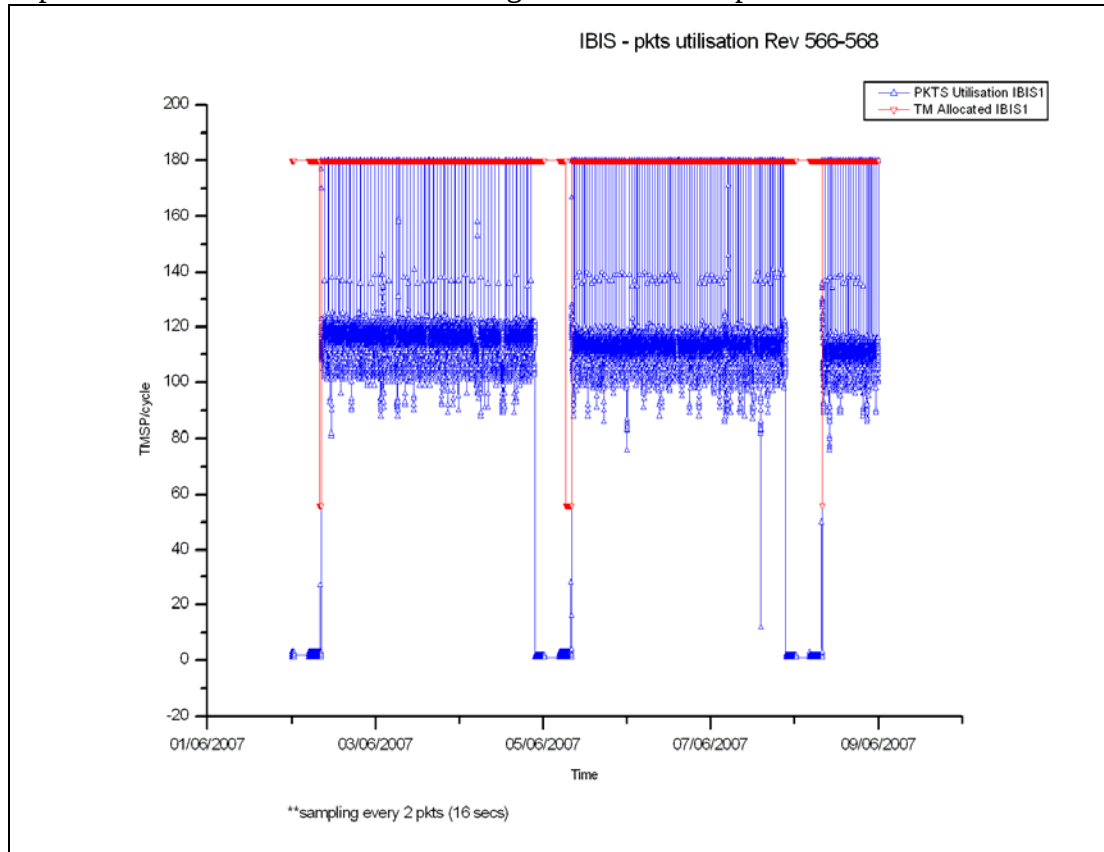
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

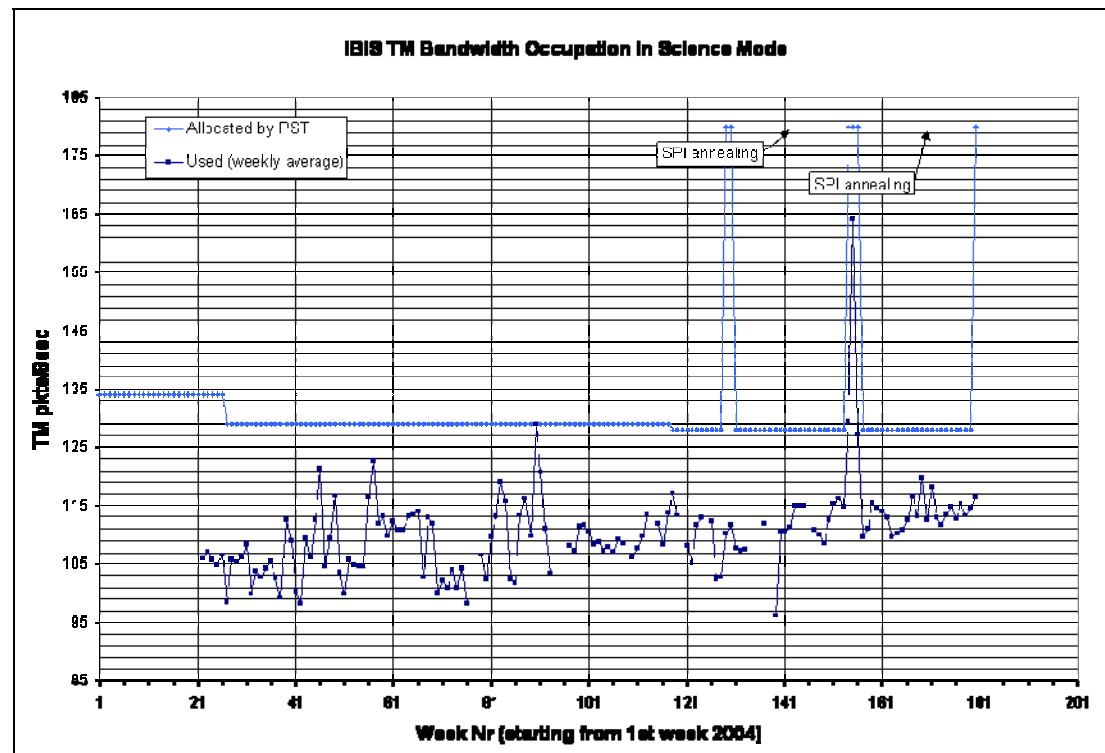
The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle. From beginning of revolution 565 on 30/05/2007, it was 180 TMPS/cycle due to SPI annealing. The IBIS mean bandwidth utilisation during the observation period (when IBIS was in Science mode) was 116.48 TMPS/cycle, up 2.02 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 15 packets/cycle. 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, 160 of the 163 planned science pointings for OMC were executed nominally, 3 were lost.

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

3.2.5 IREM

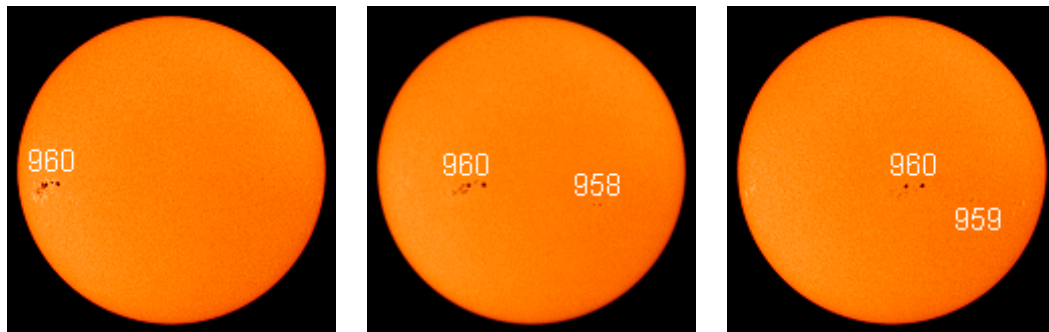
The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by high solar activity.

Sunspot 960 was very active during the whole week releasing X-class and M-class solar flares.

The following pictures show sunspot 960 on the sun respectively on 03/06/2007, 06/06/2007 and 08/06/2007.



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. Three pointings were lost to ground problems. The overall performance was still over the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was very good this week. An FD problem led to the loss of 3 pointings, but that was all. The overall performance was still over the 95% requirement.

4.2 Ground Stations & Network

The performance of the ground stations and Network was excellent this week. There was only 1 occasion of a data drop from Redu without impact and none from Goldstone. The overall performance was nearly 100%.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSFs are available up to revolution 576. No new observations have been planned this week.

TSFs up to revolution 569 have been received.

2. Observation status

ECS files have been received and processed up to revolution 561.

3. ISOC Science Data Archive

The functionality of the next INVITE release, the last during the YGT period for P.J. Baeck, has been scoped. Work is ongoing to set up mosaics at the observation level.

4. ISOC system

Version 15 has been released and used successfully for the post-TAC activities. Work is ongoing on version 15.1

5. Problems

The firewall migration of the whole system at ESAC is continuing to upset file transfer from/to MOC.

4.3.2 ISDC

Status of ISDC observation processing on 11/06/2007:

- Latest Standard Analysis completed: observation 04700020001 (1E 1048.1-5937, Revolution 554) on 08/06/2007.
- Latest products archived: observation 04700020001 (1E 1048.1-5937, Revolution 554) on 08/06/2007.
- Latest observation products sent to the observer: observation 04700020001 (1E 1048.1-5937, Revolution 554) on 08/06/2007.

5 Special Events

6 Anomalies

The following problems were reported that impacted operations:

- On DoY 159, at 08:11, the FD system stopped refreshing. The AOCS subsystem was then disabled, and a manual star mapping was performed. At 09:42, the resulting TPF failed to transfer to the manual stack. A restart of the IFTS task on the FDS system failed due to the new configuration not being reflected in the procedure. At 10:19, the tasks were restarted and a recovery performed, and the Timeline rejoined at 11:04. The impact was the loss of pointings 05680002, 05680003 & 05680004.

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

AR id	Date Created	Subject	Segment	Status
INT-2924	08/06/2007	Out-of-Date IFTS_FDS Procedure	FDS	Open

AR id	Date Created	Subject	Segment	Status
		with CCC		

7 Future Milestones

The following activities are foreseen in the next few weeks.

- The 10th SPI annealing started on 29th May at radiation belt entry of revolution 564. A summary of the timeline of the planned annealing activities is given below:

10th SPI ANNEALING - revs 564-571									
ID	Task Name	Duration	Start	Resource Names	28 May '07	29 May '07	30 May '07	31 May '07	01 Jun '07
2	Start SPI Annealing - Warm-up Phase	36.5 hrs	29 May 22:09	PST[20 pkts]	May 22:09				
16	Annealing at 104degC	202 hrs	31 May 10:39	PST[20 pkts]	31 May 10:39				
28	Stop SPI Annealing - Passive Cooling Phase	64.02 hrs	08 Jun 20:39	PST[20 pkts]					
36	ACS Calibration	40.4 hrs	11 Jun 08:39	PST[20 pkts]					
44	Start Cryocoolers - Active Cooling Phase	139 hrs	11 Jun 12:40	PST[20 pkts]					
57	Camera Switch on & Performance Tests	11.3 hrs?	15 Jun 17:40	PST[105 pkts]					
74	Test of OEM 243 generation and Single Event Filtering	11.2 hrs	16 Jun 04:58	PST[105 pkts]					
96	Active Cooling Fine Tuning	61 hrs	17 Jun 07:40	PST[105 pkts]					
99	Resume SPI POS Observations	61 hrs	17 Jun 07:22	PST[105 pkts]					

- Periodic Thruster Torque rescaling 24th July 2007 in Rev. 583
- On Board Clock wrap around due 30th July 2007 in Rev. 585.

Appendix

The appendix includes various detailed information.

7.1 Overview of Revolutions

Revolution 566

The observations in revolution 566 consisted entirely of a hexagonal dither of the object EXO 0748-676 (RA 07:48:33.30, DEC -67:45:00.0), lasting ~57.5 hours.

Revolution 567

The observations in revolution 567 consisted entirely of a raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), lasting ~57.1 hours.

Revolution 568

The observations in revolution 568 consisted entirely of a raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), lasting ~56.4 hours.

Throughout these observations, all instruments were in their nominal science modes, except JEM-X2, which is switched off and SPI, which is undergoing annealing. The TM allocation was IBIS 180; SPI 46; JEM-X1 15; JEM-X2 0; OMC 5.

7.2 Consumables

7.2.1 Detailed Fuel Book-keeping

2007-05-18T06:30:34.000Z	146.4543	F	Automatic TM processing.
2007-05-19T16:21:01.000Z	146.4186	F	Automatic TM processing.
2007-05-21T06:19:55.000Z	146.3921	F	Automatic TM processing.
2007-05-21T23:44:52.000Z	146.3551	F	Automatic TM processing.
2007-05-24T06:05:14.000Z	146.3398	F	Automatic TM processing.
2007-05-25T06:35:41.000Z	146.3172	F	Automatic TM processing.
2007-05-27T05:52:34.000Z	146.3022	F	Automatic TM processing.
2007-05-28T15:24:53.000Z	146.2570	F	Automatic TM processing.
2007-05-30T05:38:49.000Z	146.2527	F	Automatic TM processing.
2007-05-31T15:29:01.000Z	146.2420	F	Automatic TM processing.
2007-06-02T05:27:53.000Z	146.2320	F	Automatic TM processing.
2007-06-03T15:21:00.000Z	146.1950	F	Automatic TM processing.
2007-06-05T05:17:20.000Z	146.1800	F	Automatic TM processing.
2007-06-06T14:48:12.000Z	146.1635	F	Automatic TM processing.
2007-06-08T05:07:44.000Z	146.1569	F	Automatic TM processing.

This report was generated Fri Jun 8 15:15:21 GMT 2007

7.3 Detailed Satellite Information

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

7.3.1 AOCS SUMMARY OPERATIONS REPORT, 02/06/2007 –08/06/2007

AOCS operations were executed from the Automatic Timeline.

During this period, 72 Open Loop Slews, 94 Closed Loop Slews and 5 Momentum Biases were executed.

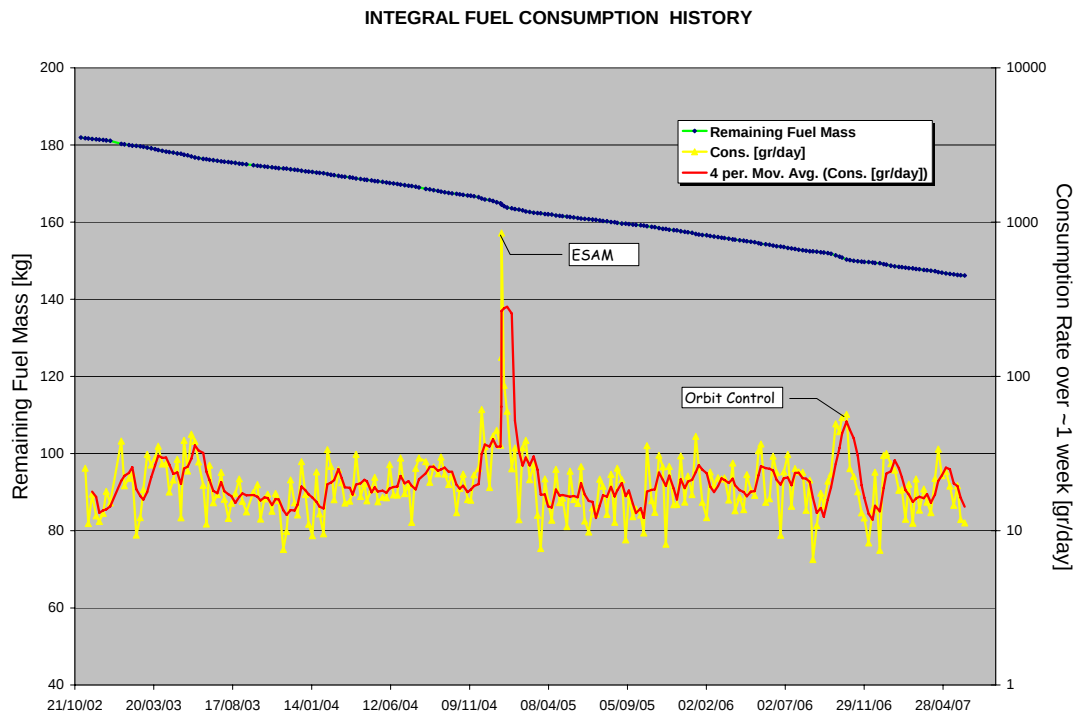
3 (2 OSL & 1 CSL) slews were missed from TL, during the observation period, due to FD system problems, slew IDs 05680002, 05680003 & 05680004.

Orbit Control

No update.

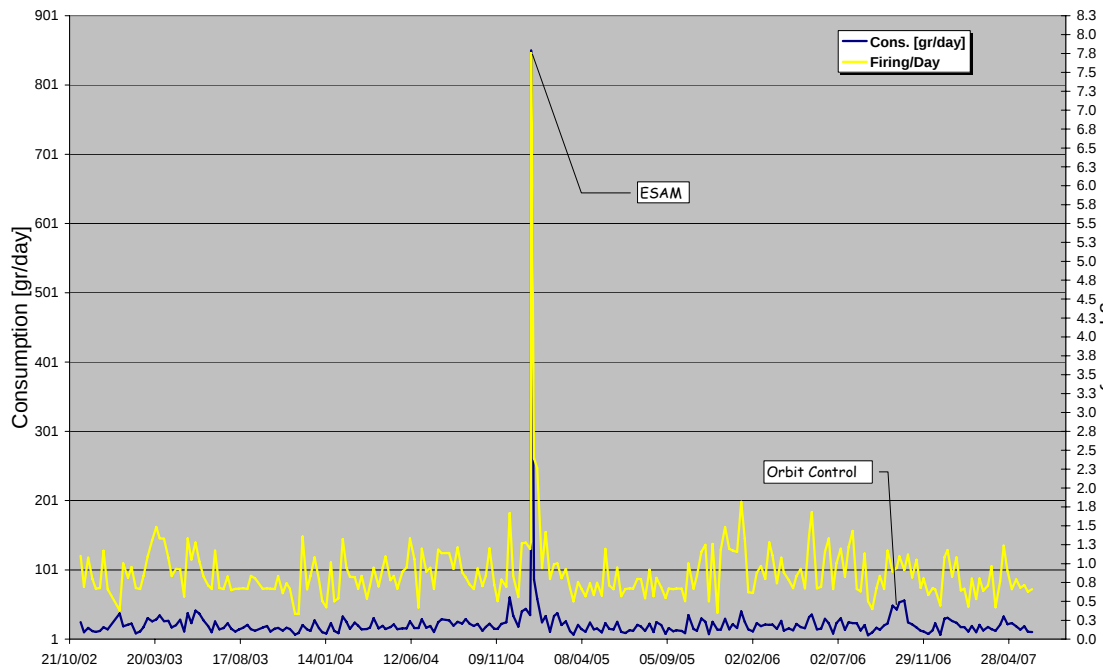
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 08/06/2007 is reported in the plot below.



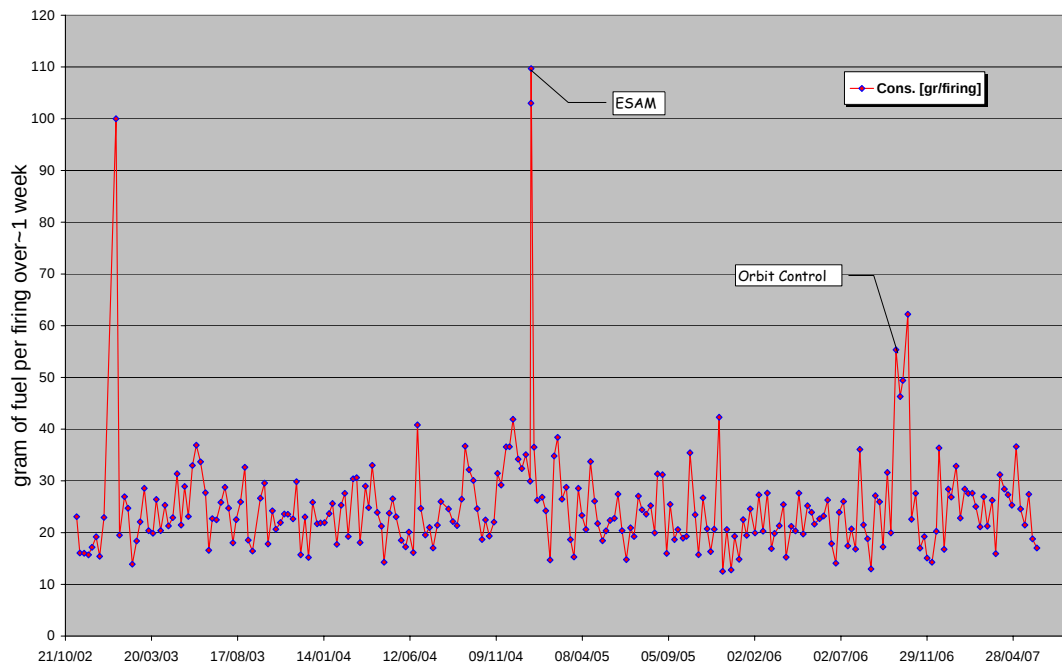
The firing per day over the period between 01/11/2002 and 08/06/2007 is reported in the plot below.

INTEGRAL FIRING PER DAY HISTORY



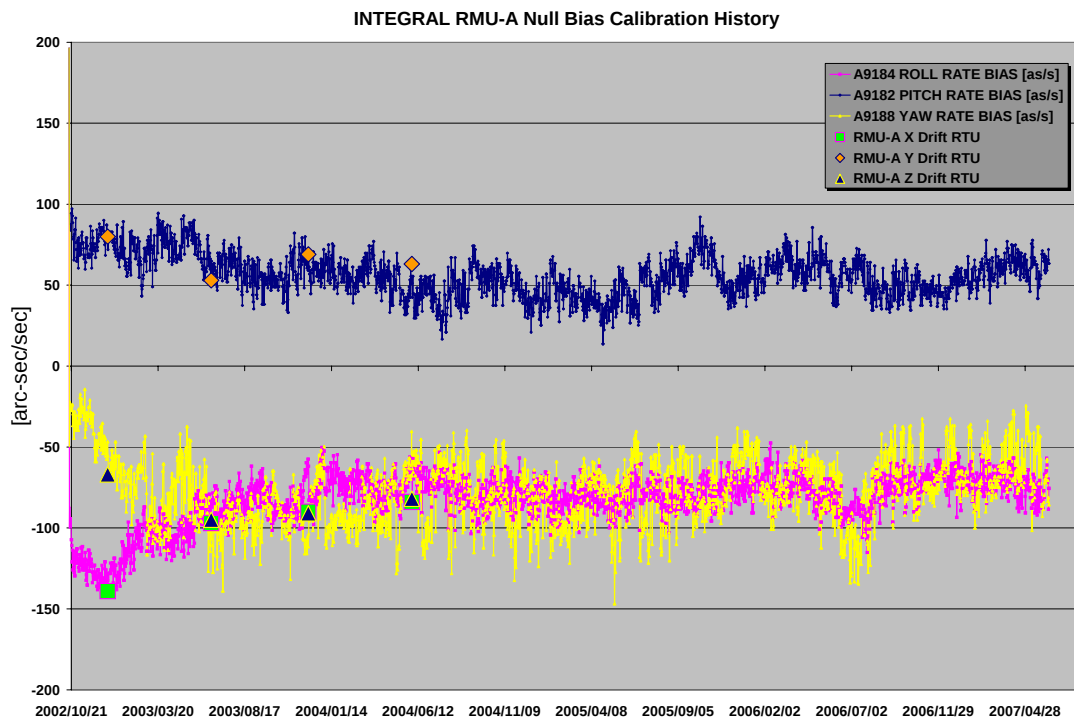
The fuel per firing over the period between 01/11/2002 and 08/06/2007 is reported in the plot below.

INTEGRAL FUEL MASS PER FIRING HISTORY

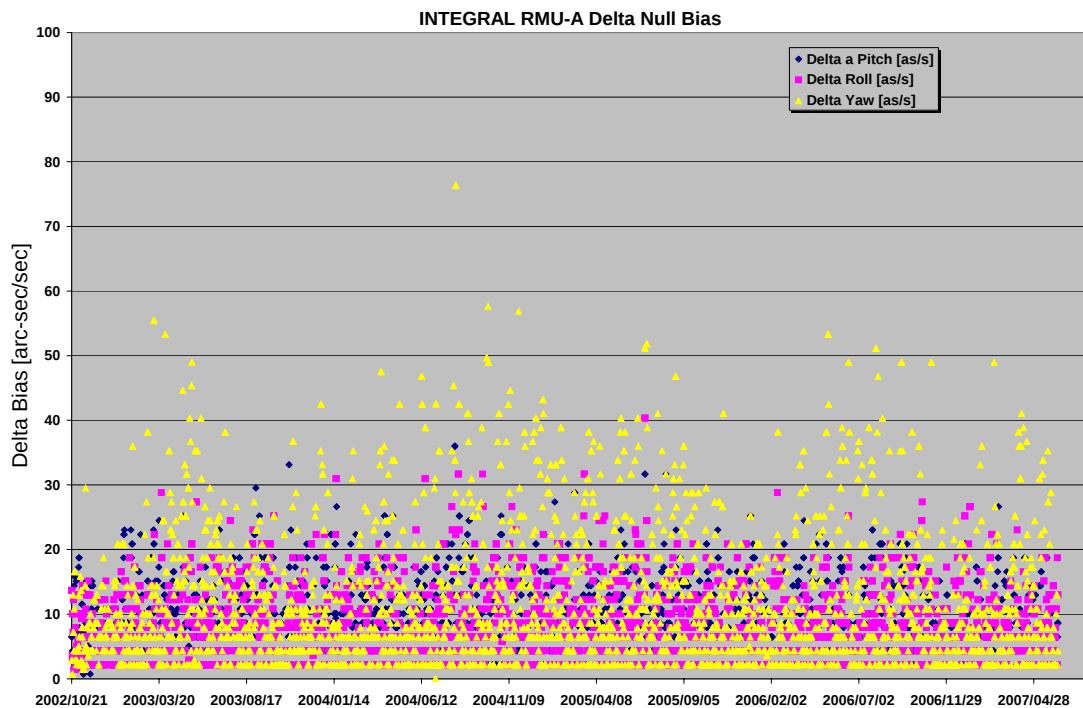


The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 08/06/2007 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 08/06/2007 is reported in the plot below



02/06/2007 (Day of Year 153, Revolution 565-566)

Nothing to report

03/06/2007 (Day of Year 154, Revolution 566)

Nothing to report

04/06/2007 (Day of Year 155, Revolution 566)

Nothing to report

05/06/2007 (Day of Year 156, Revolution 566-567)

Nothing to report.

06/06/2007 (Day of Year 157, Revolution 567)

Nothing to report.

07/06/2007 (Day of Year 158, Revolution 567)

Nothing to report

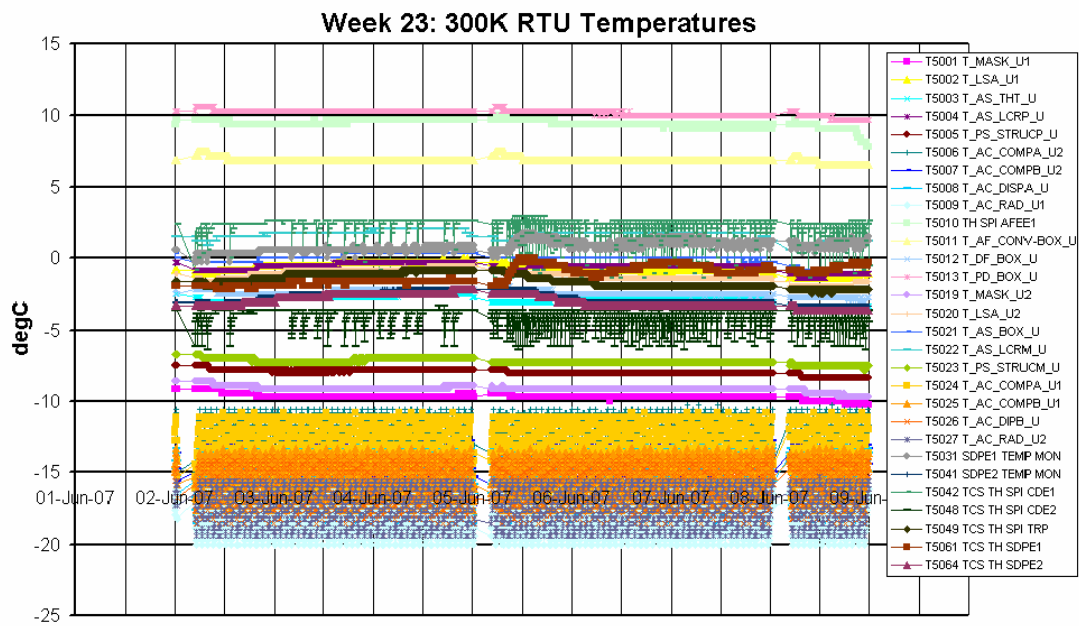
08/06/2007 (Day of Year 159, Revolution 567-568)

Slews lost to FD IFTS interruption: At 08:11, the FD system stopped refreshing. The AOCS subsystem was then disabled, and a manual star mapping was performed. At 09:42, the resulting TPF failed to transfer to the manual stack. A restart of the IFTS task on the FDS system failed due to the new configuration not reflected in the procedure. At 10:19, the tasks were restarted and a recovery performed, and the Timeline rejoined at 11:04.

The impact was the loss of slews IDs 05680002 (OSL), 05680003 (OSL) & 05680004 (CSL).

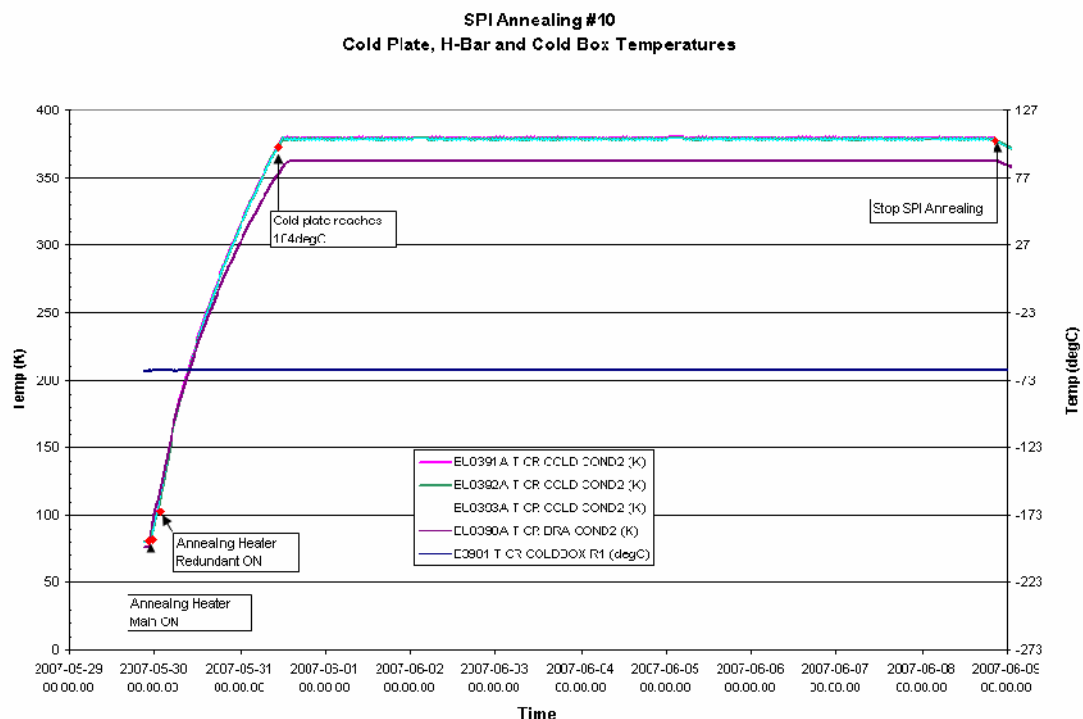
7.3.2 SPI Operations

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

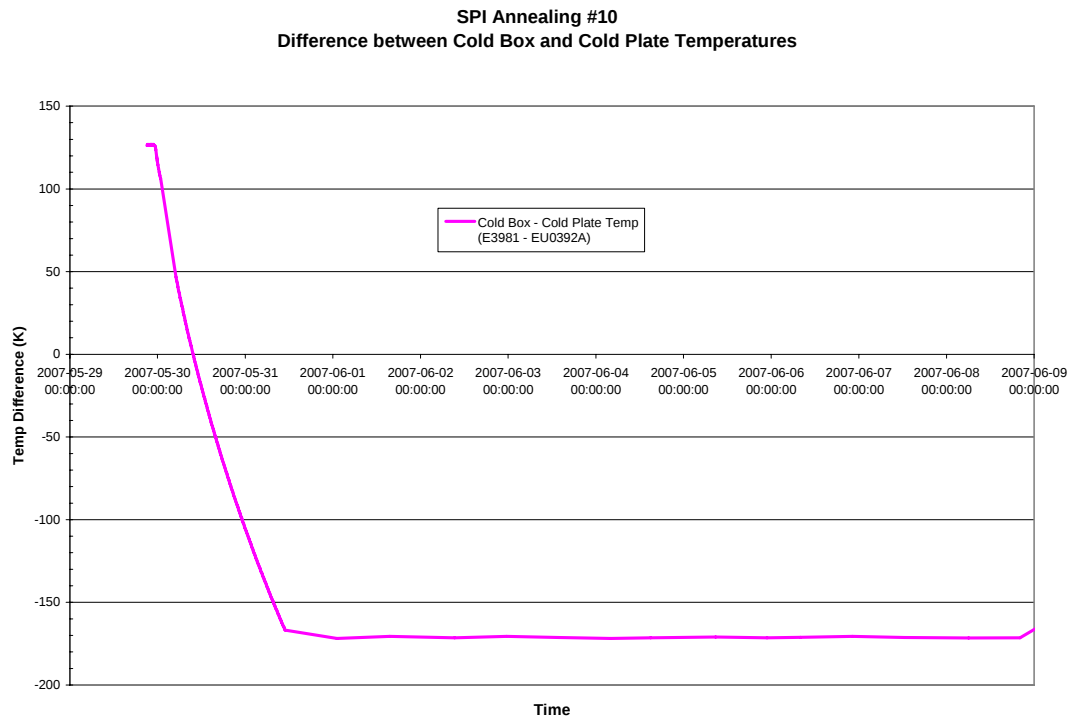


Stirling Compressors and Cryostat: The performance of the compressors is nominal. Due to the ongoing annealing operations, the cryocooler was in Standby during the reporting period.

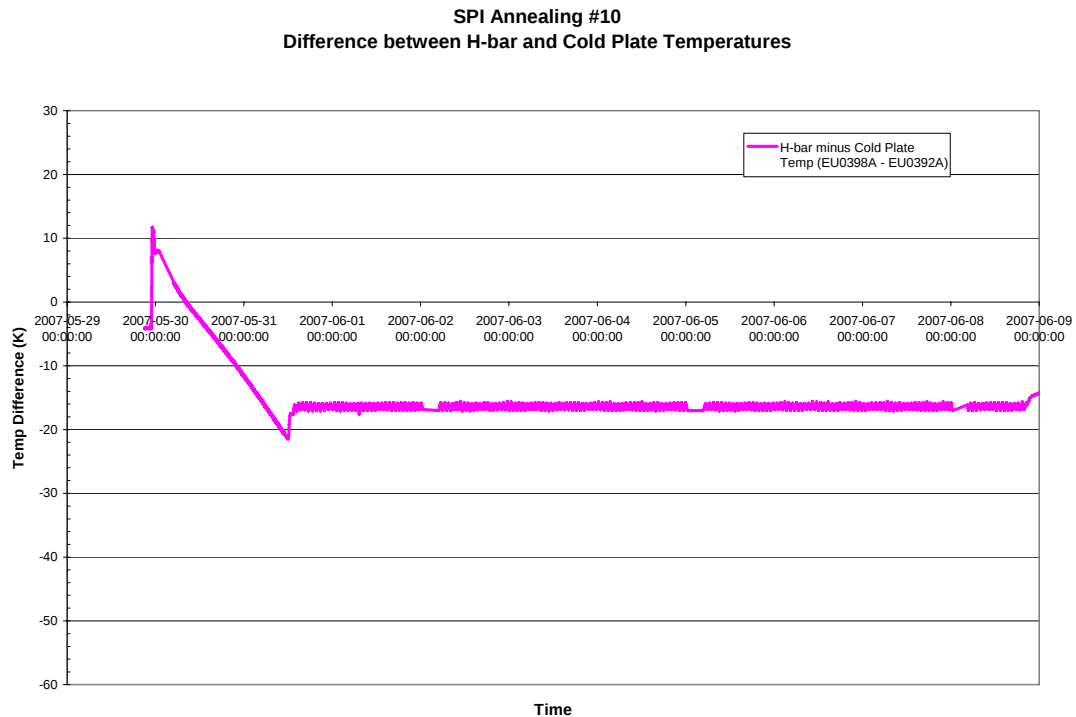
The following plot shows the evolution of the cold plate, H bar and cold box temperatures since the start of annealing.



The following plot shows the difference between the cold box and cold plate temperatures since the start of annealing.



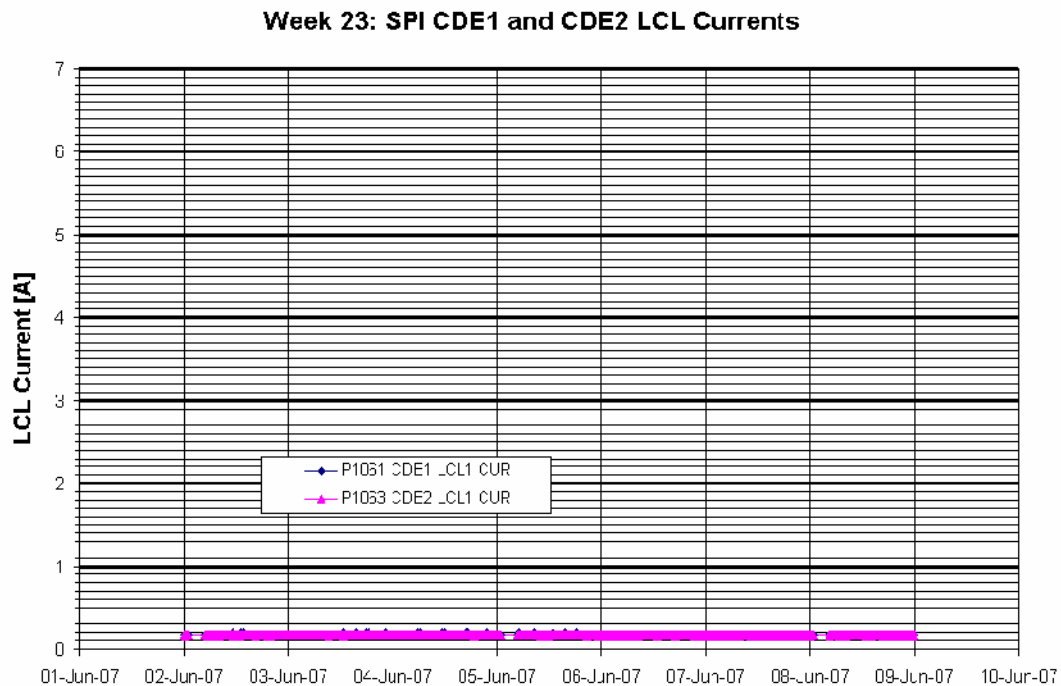
The following plot shows the difference between the H-bar and cold plate temperatures since the start of annealing.



Due to the annealing, the stroke of all four compressors were set to 0 throughout the reporting period, with both CDEs in Standby mode, and the average LCL currents of the CDEs were:

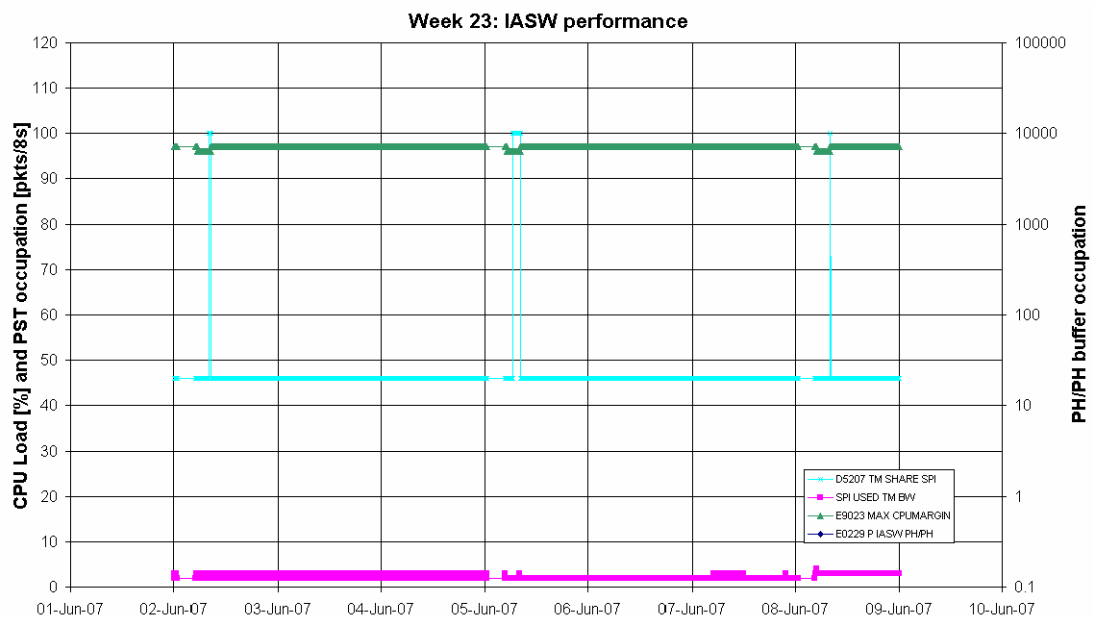
- Average CDE1 LCL Current = 0.17A
- Average CDE2 LCL Current = 0.17A

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 with the spectra scaling factor set to 9/19 SE. Due to the ongoing annealing operations, started on 29th May, the TM allocation was 46 packets/cycle and the IASW was in CONF mode.

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

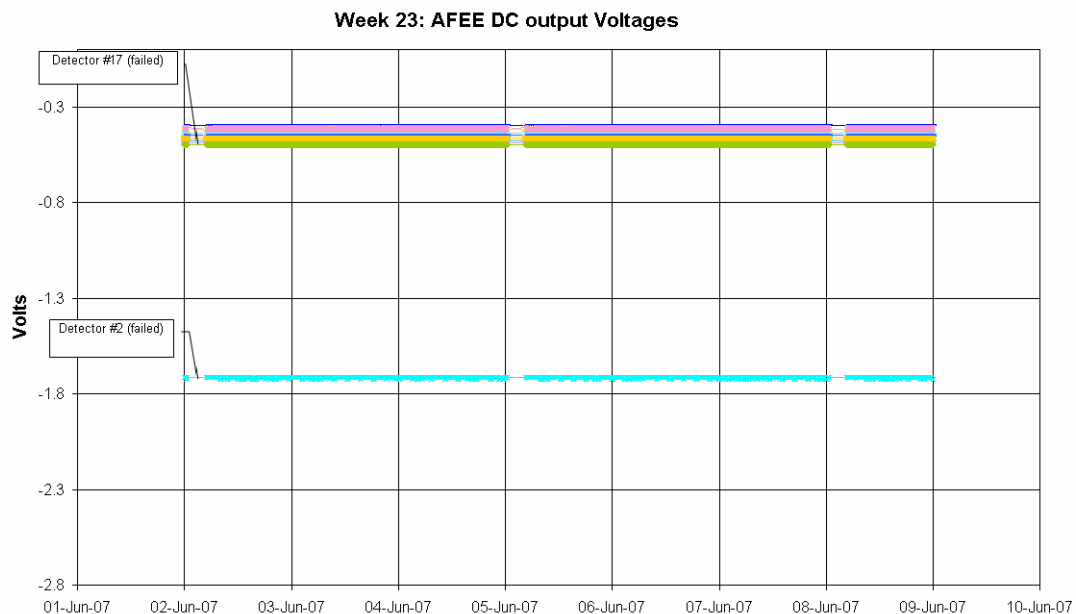


ACS: The performance of the ACS is nominal, except for FEE #81 which remains switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is still OFF due to the anomaly on 5/8/2003 (INT_SC-61).

Due to the ongoing annealing operations, started on 29th May, the ACS HVPSs have been set to the minimum voltage (~980V) and the ACS was in CONF mode.

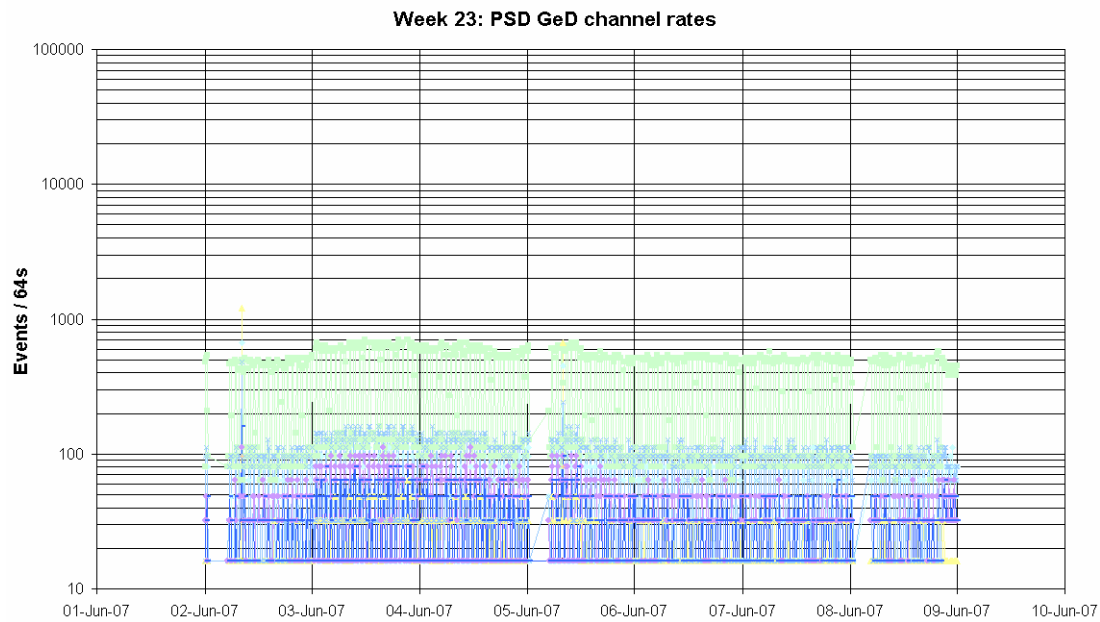
AFEE: The health of the AFEE is nominal. For the 10th annealing operations, started on 29th May, all detector HVPSs were switched off and only the LVPs are left on.

The following plot shows the dc voltage offset of the detector channels during the reporting period. 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. Due to the ongoing annealing operations, started on 29th May, the DFEE was in CONF mode.

PSD: The health of the unit is nominal. Due to the ongoing annealing operations, started on 29th May, the PSD was in CONF mode. The following plot shows the PSD channel rates during the reporting period.



Event Log:

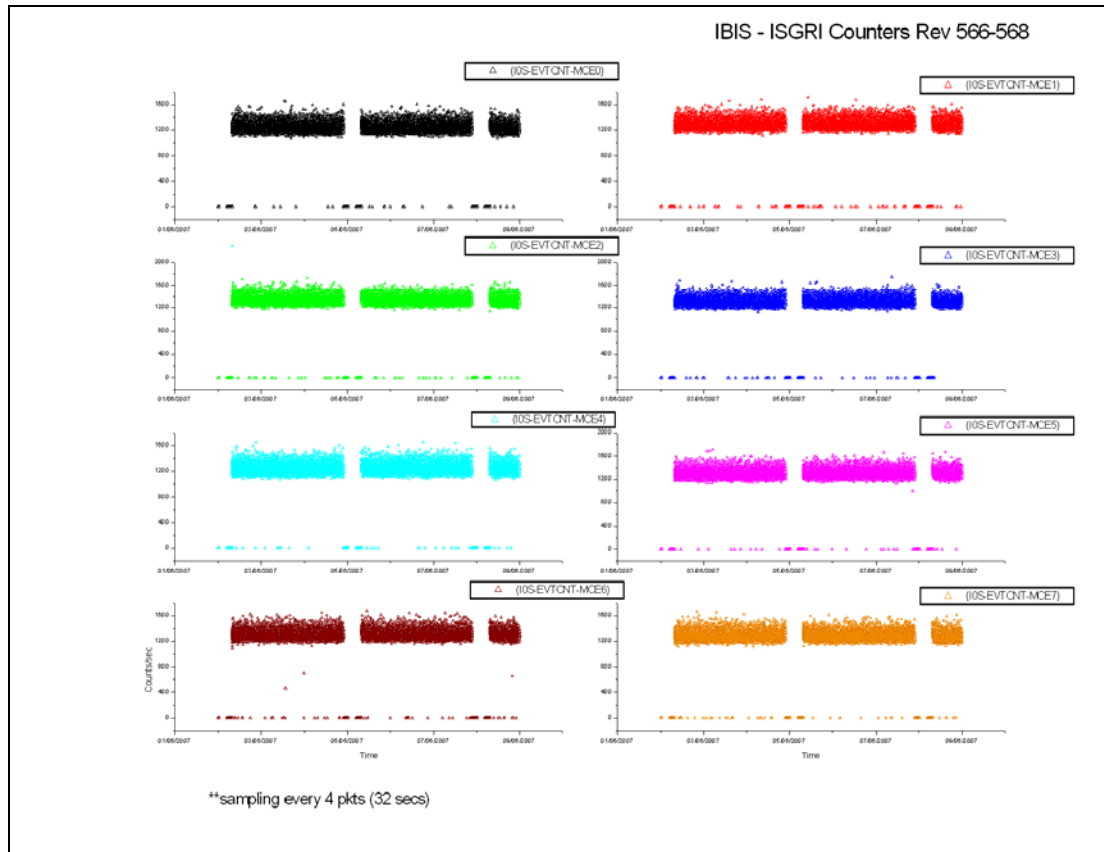
The following non-nominal events occurred on SPI during the reporting period:

- On 2007-06-05 at 05:02:56Z OEM APID 1024 ID 1 EXCEPTION SPI1 FIXED POINT OVERFLOW was received. This was during the AOS_CHK window of revolution 567, when the time verification TC was sent. This OEM is sometimes received when this TC is sent and no action was taken.
- On 2007-06-08 at 09:51:23Z TM parameter E2101 (ACS UCR temperature n.0) went OOL Warning Low (value = -3.66301961 degC). It returned within limits when the next packet was received at 10:02:03Z and so no action was taken.
- The TM parameter E2115 PSAC temperature toggled OOL Warning Low several times during the reporting period. It returned within limits of its own accord and no action was taken.

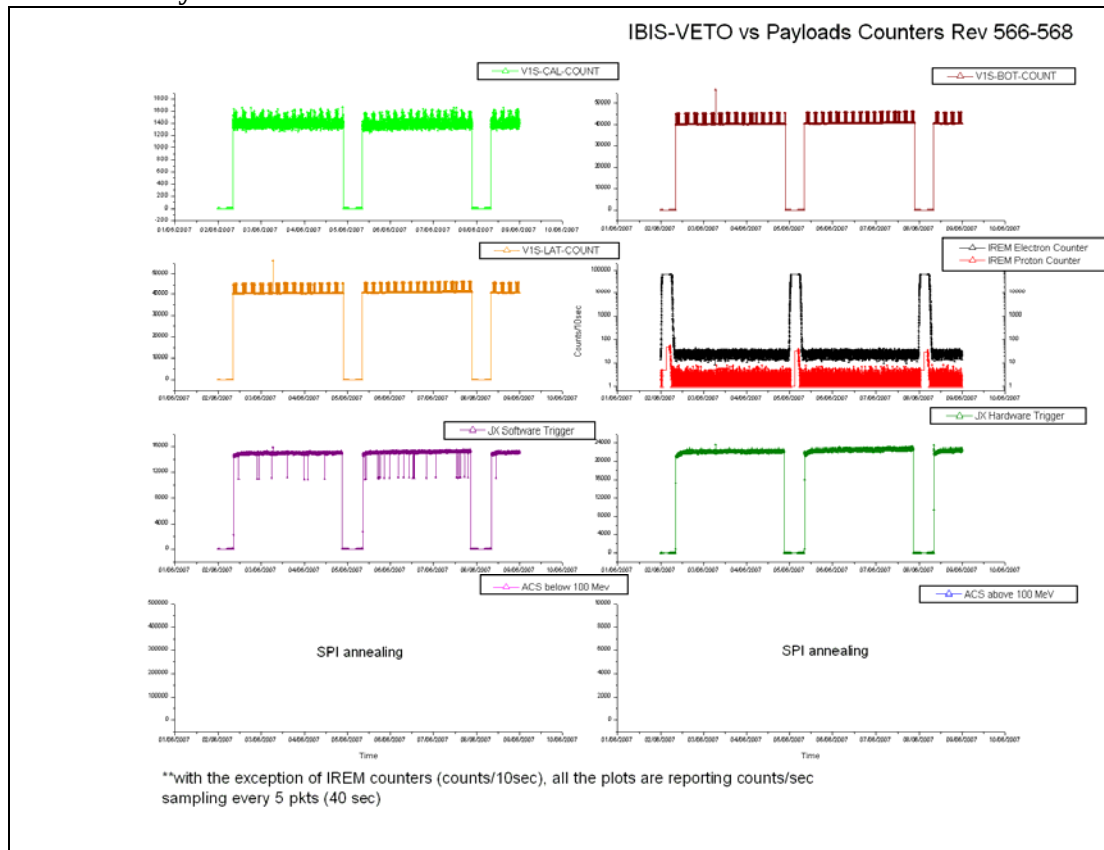
7.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

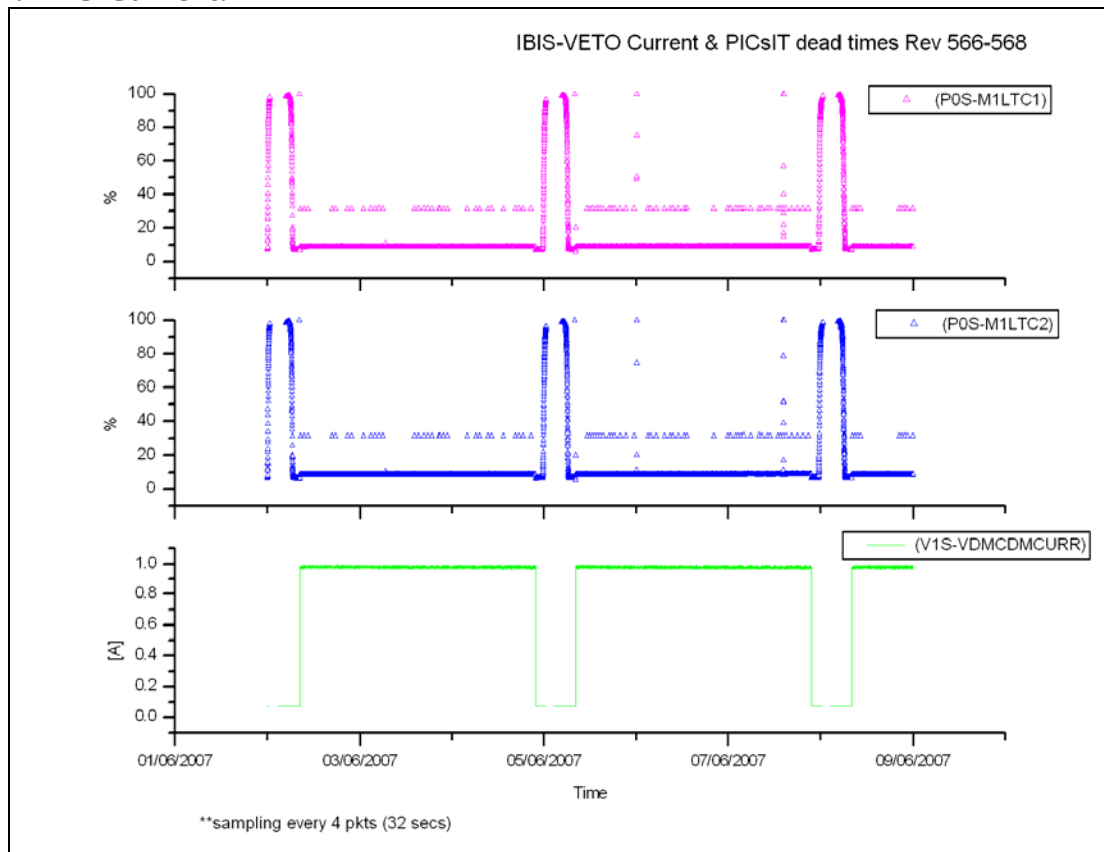


VETO vs Payloads Counters:

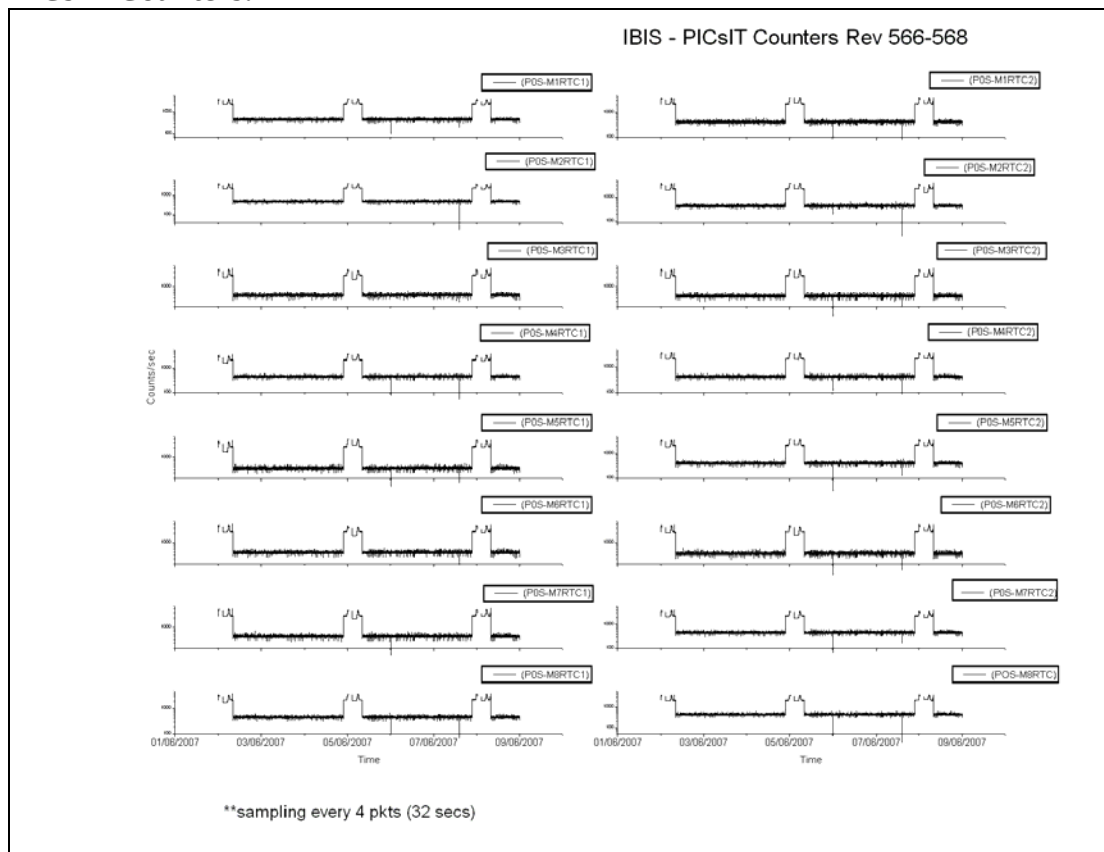


The week was characterised by low radiation as reported by the payload.

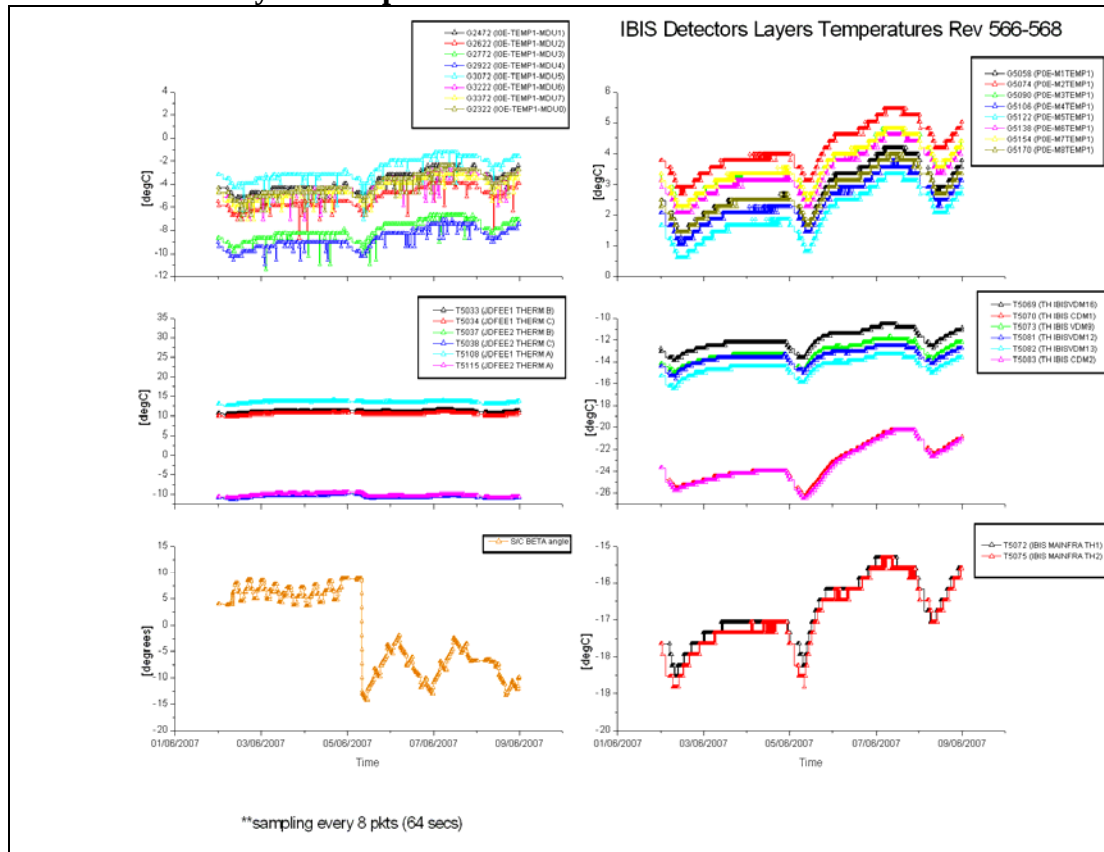
VETO Current:



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 2007.157 (06/06/2007):

At 00:09Z, 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 %) as expected when the slew/pointing flag changes.

At 00:09Z, parameters from TM families G5068 and G5072 (P0S-MiF1 & 2 ERRF) failed the Status Consistency Check. At 00:11Z, 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-M1LTC1	P0S-M1RTC1	P0S-M1F1ERRF	H1S-CSI DET EV	H1S-CDTE DET EV	S1E-IASW-PS
2007-06-06T00:08:34.314933	8.74050111	444.125	FALSE	18189954	3706034	POINTING
2007-06-06T00:08:45.314941	8.76491592	452.625	---	18249087	3718352	POINTING
2007-06-06T00:08:53.314946	8.73439741	432.375	---	18308970	3731002	POINTING
2007-06-06T00:09:01.314951	31.5408795	325.5	---	1435	3510	SLEW
2007-06-06T00:09:06.314953	36724	529.5	FALSE	1443	15602	SLEW
2007-06-06T00:09:17.314960	14.9906919	373.75	---	1450	27665	SLEW
2007-06-06T00:09:25.314965	37.6445814	273.5	---	1462	40031	SLEW
2007-06-06T00:09:33.314969	49.9557482	219	---	1479	52200	SLEW
2007-06-06T00:09:38.314971	49.2355113	230.375	TRUE	1488	64838	SLEW
2007-06-06T00:09:49.314978	51.3840144	216.875	---	1501	77307	SLEW
2007-06-06T00:09:57.314983	63.4357738	162.75	---	1517	89588	SLEW
2007-06-06T00:10:05.314988	53.5813471	204.5	---	1533	102206	SLEW
2007-06-06T00:10:10.314990	50.4257332	228.875	FALSE	1542	114994	SLEW
2007-06-06T00:10:21.314996	45.5061495	252.875	---	1551	127610	SLEW
2007-06-06T00:10:29.315001	47.1144749	245.625	---	1561	140271	SLEW
2007-06-06T00:10:37.315006	62.2486038	171.875	---	1574	153113	SLEW
2007-06-06T00:10:42.315008	75.2372814	101.875	FALSE	1585	166039	SLEW
2007-06-06T00:10:53.315015	78.8201544	98.625	---	1591	178358	SLEW
2007-06-06T00:11:01.315020	78.4936064	91.75	---	1603	190310	SLEW
2007-06-06T00:11:09.315024	88.5921812	51.625	---	1621	202736	SLEW
2007-06-06T00:11:14.776513	100	0	FALSE	1646	215465	SLEW
2007-06-06T00:11:25.315033	100	0	---	1661	227524	SLEW
2007-06-06T00:11:33.315038	100	0	---	17176	3225	POINTING
2007-06-06T00:11:41.315042	33595	524.875	---	77289	16209	POINTING
2007-06-06T00:11:46.315044	8.81374554	474.5	FALSE	136798	28585	POINTING
2007-06-06T00:11:57.315052	8.76186407	449.375	---	197271	41231	POINTING
2007-06-06T00:12:05.315056	8.81374554	474.375	---	256590	53455	POINTING
2007-06-06T00:12:13.315061	8.75576037	434.25	---	315687	65883	POINTING
2007-06-06T00:12:18.315063	8.80153813	460.25	FALSE	375256	78183	POINTING

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

DoY 2007.158 (07/06/2007):

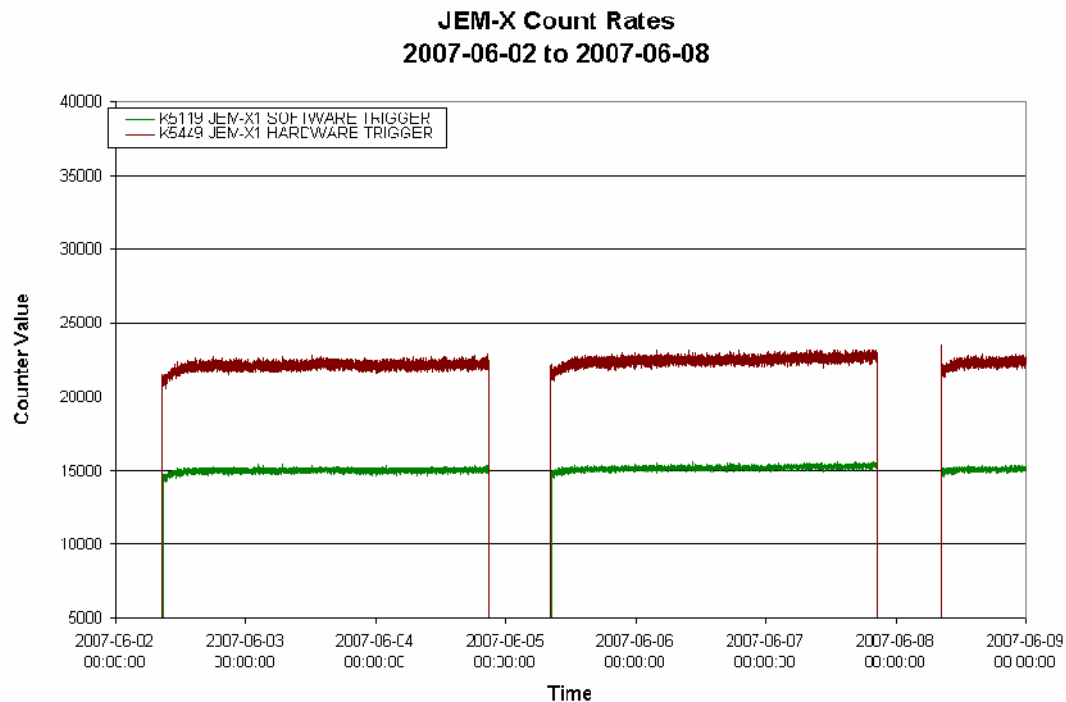
At 14:24Z, TM families G5068 and G5072 (P0S_MiF1 & 2 ERRF) failed SCC.
 At 14:27Z, TM families G5002 and G5003 (P0S_MiRTC1 & 2) were reported OOL Low-Low with the value 0.
 At 14:31Z, the OEM APID 1280, ID 132, class 0, "IASW HEPI RESYNCHRONISED" was reported.
 According to FDIR, the coincidence of these 3 events flagged an automatic resynchronisation between HEPI and the detectors. No reaction was required.

7.3.4 JEM-X Operations

JEM-X Count Rates

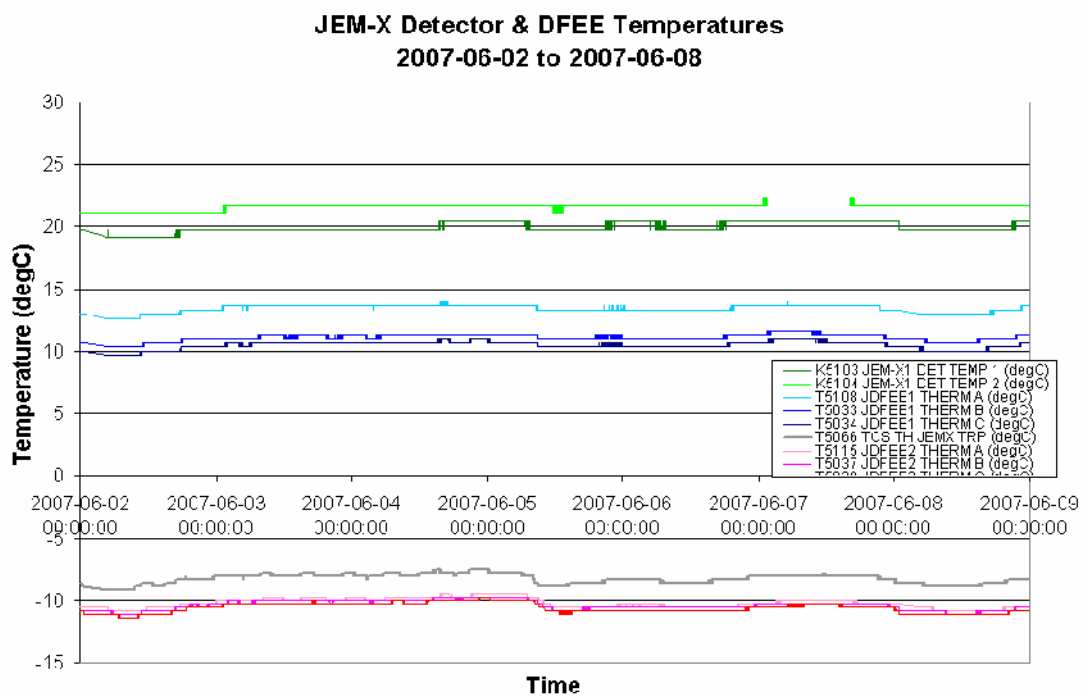
JEM-X count rates over the reporting period are displayed in the following graph¹.

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 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)

JEM-X Daily Report

2007-06-02 (DOY 153, Rev 565-566) to 2007-06-08 (DOY 159, Rev 567-568)

JEM-X1 operations executed nominally.

7.3.5 OMC Operations

2007-06-02 (DOY 153, Rev 566) to 2007-05-07 (DOY 158, Rev 567)

Nothing to report.

2007-06-08 (DOY 159, Rev 568)

At 08:11, a FD problem led to the suspension of the Timeline. A recovery was later performed, and the Timeline rejoined at 11:04. The impact was the loss of pointings 05680002, 05680003 & 05680004. It was at this time the following commands were rejected:

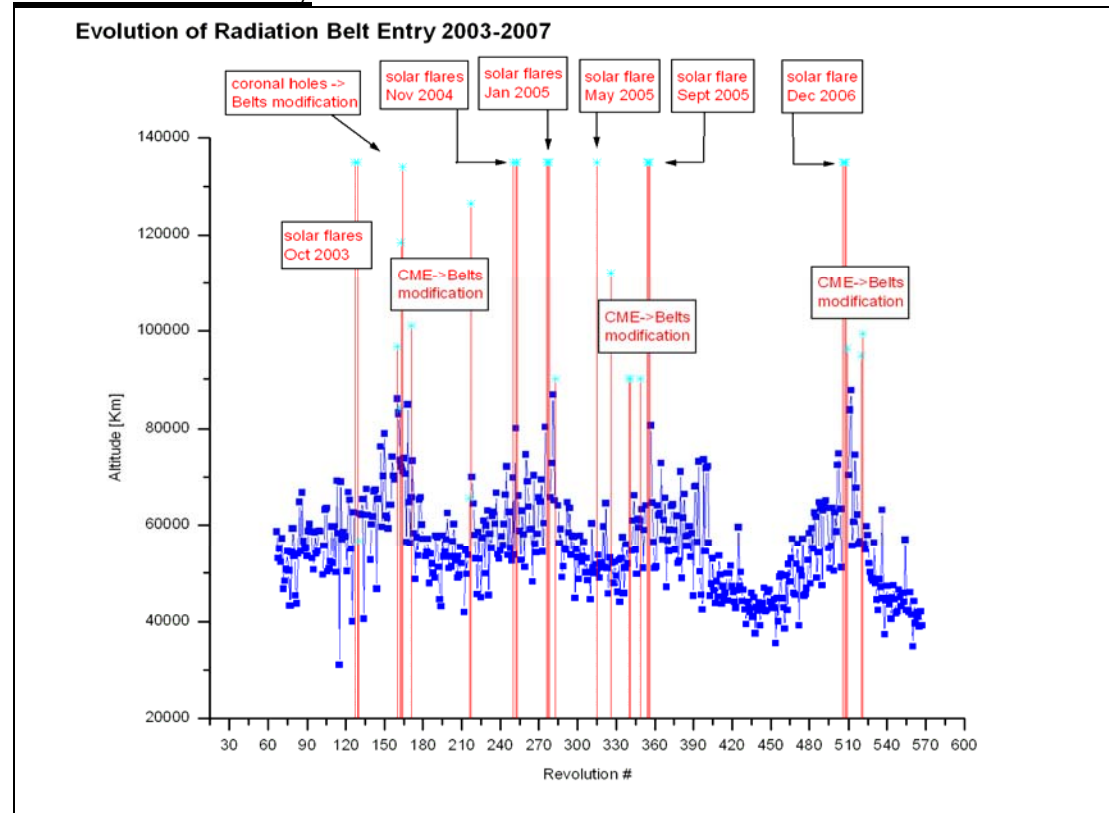
2007.159.08.50.30.853	2007.159.08.50.41.288	1792	RealTime	131	TC REJECT
REJECTED TC1			0	0	65535 PR N
E E					
2007.159.08.50.36.916	2007.159.08.50.41.304	1792	RealTime	131	TC REJECT
REJECTED TC1			0	0	65535 PR N
E E					
2007.159.09.33.42.855	2007.159.09.33.53.304	1792	RealTime	131	TC REJECT
REJECTED TC1			0	0	65535 PR N
E E					
2007.159.09.33.48.917	2007.159.09.33.53.329	1792	RealTime	131	TC REJECT
REJECTED TC1			0	0	65535 PR N
E E					
2007.159.10.16.54.919	2007.159.10.17.05.348	1792	RealTime	131	TC REJECT
REJECTED TC1			0	0	65535 PR N
E E					
2007.159.10.17.01.044	2007.159.10.17.05.380	1792	RealTime	131	TC REJECT
REJECTED TC1			0	0	65535 PR N
E E					

These correspond to the M1130 (RESET IM) and MU1310 (IMAGING-A) commands for those pointings.

On DoY 155 at 21:48:55 and DoY 158 at 21:38:40 OMC went to SAFE mode nominally, at the radiation belt entry time as set in the Broadcast Packet.

7.3.6 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]
565	RAD_ENTR R 2007-06-01T21:58:30Z	2007-06-02 00:03:02	38916.2	2007-06-01 23:13:36	45666
566	RAD_EXIT R 2007-06-02T08:12:16Z	2007-06-02 07:18:06	<<51403.6	2007-06-02 07:03:36	43275
566	RAD_ENTR R 2007-06-04T21:48:48Z	2007-06-04 23:31:26	42048.0	2007-06-04 22:56:35	46534
567	RAD_EXIT R 2007-06-05T08:01:55Z	2007-06-05 06:37:02	40902.2	2007-06-05 06:46:35	42452
567	RAD_ENTR R 2007-06-07T21:38:38Z	2007-06-07 23:33:02	39212.1	2007-06-07 22:46:35	46354
568	RAD_EXIT R 2007-06-08T07:51:50Z	2007-06-08 06:39:34	>>29774.4	2007-06-08 06:36:35	42631

Reference

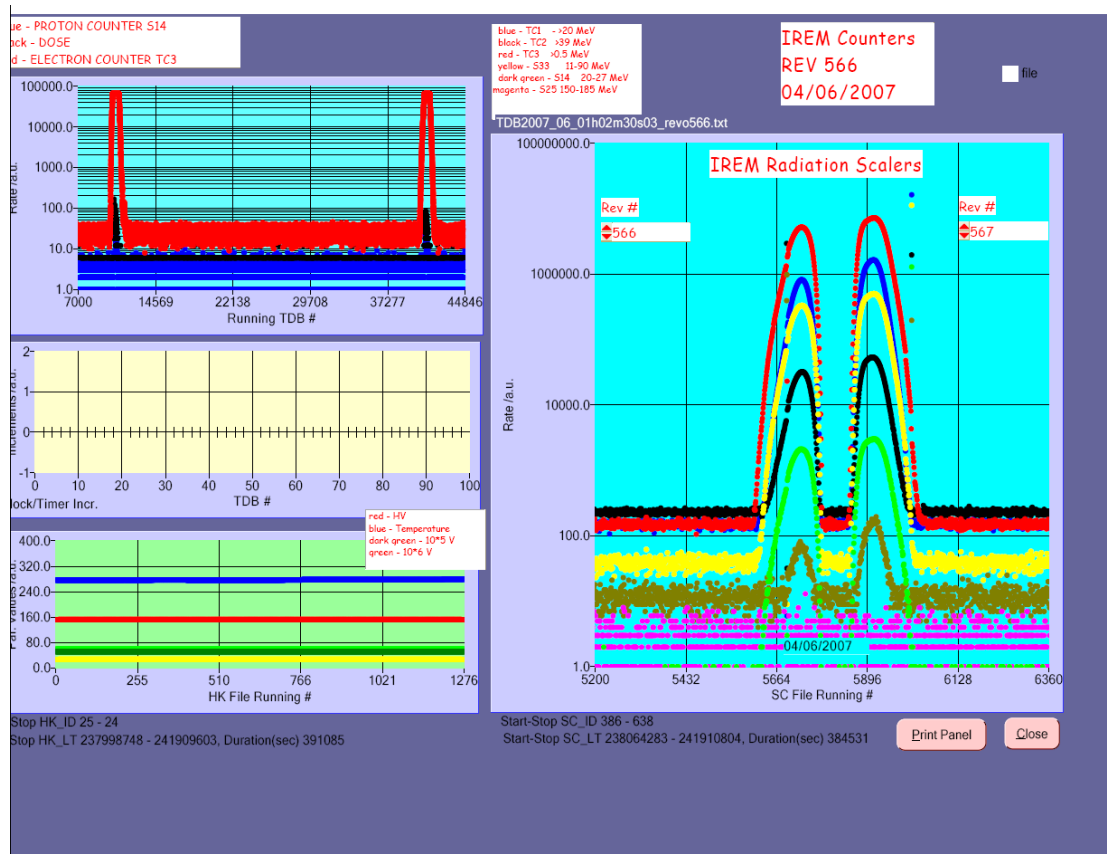
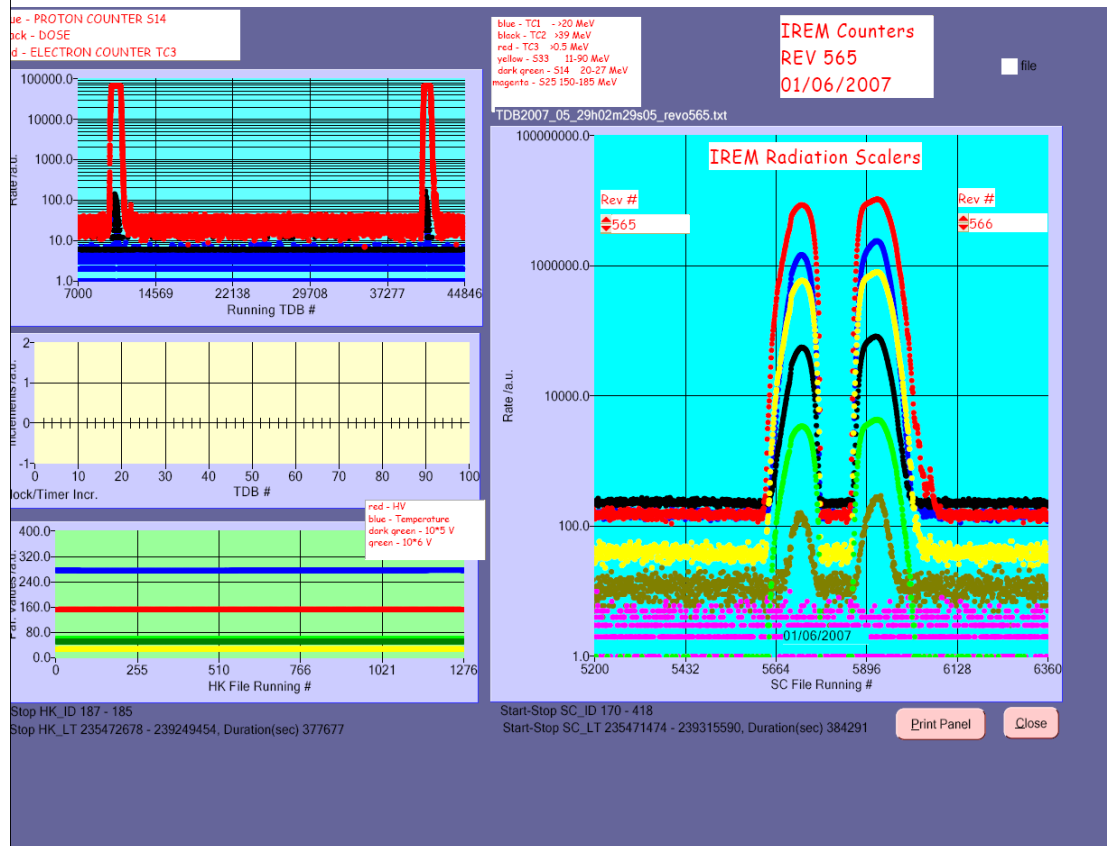
High radiation

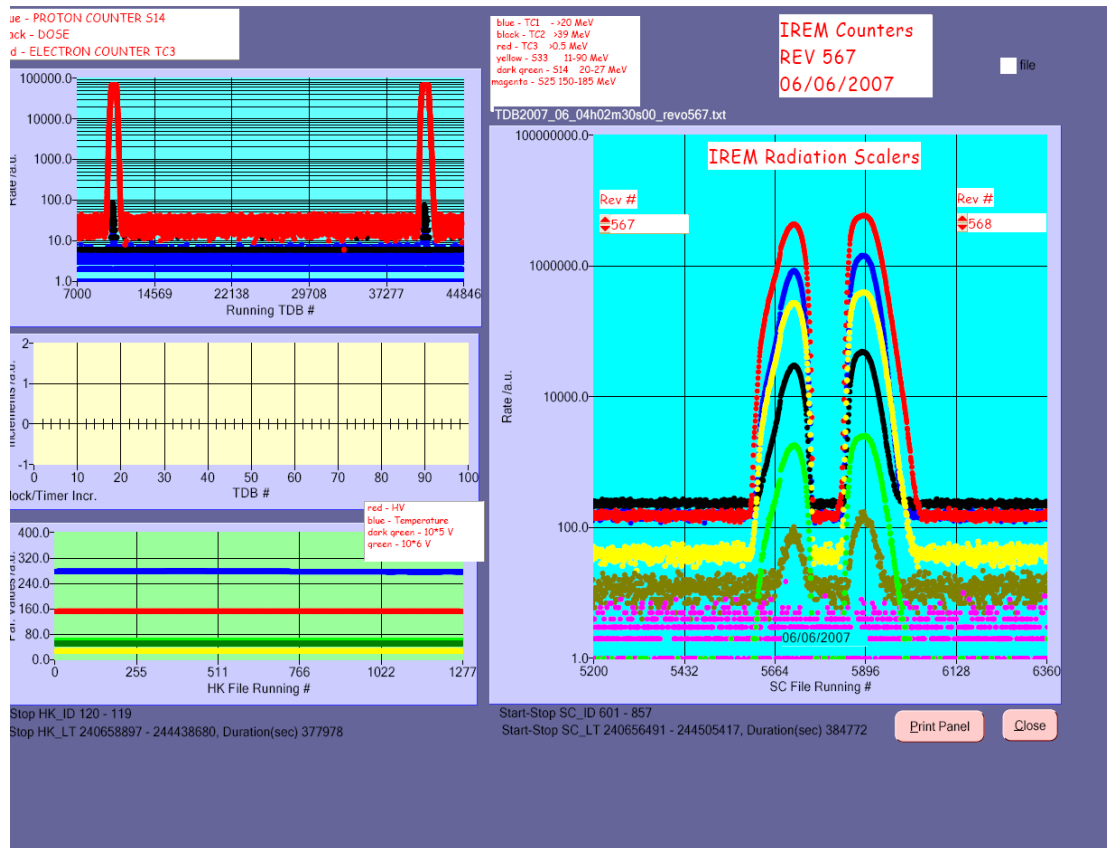
Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

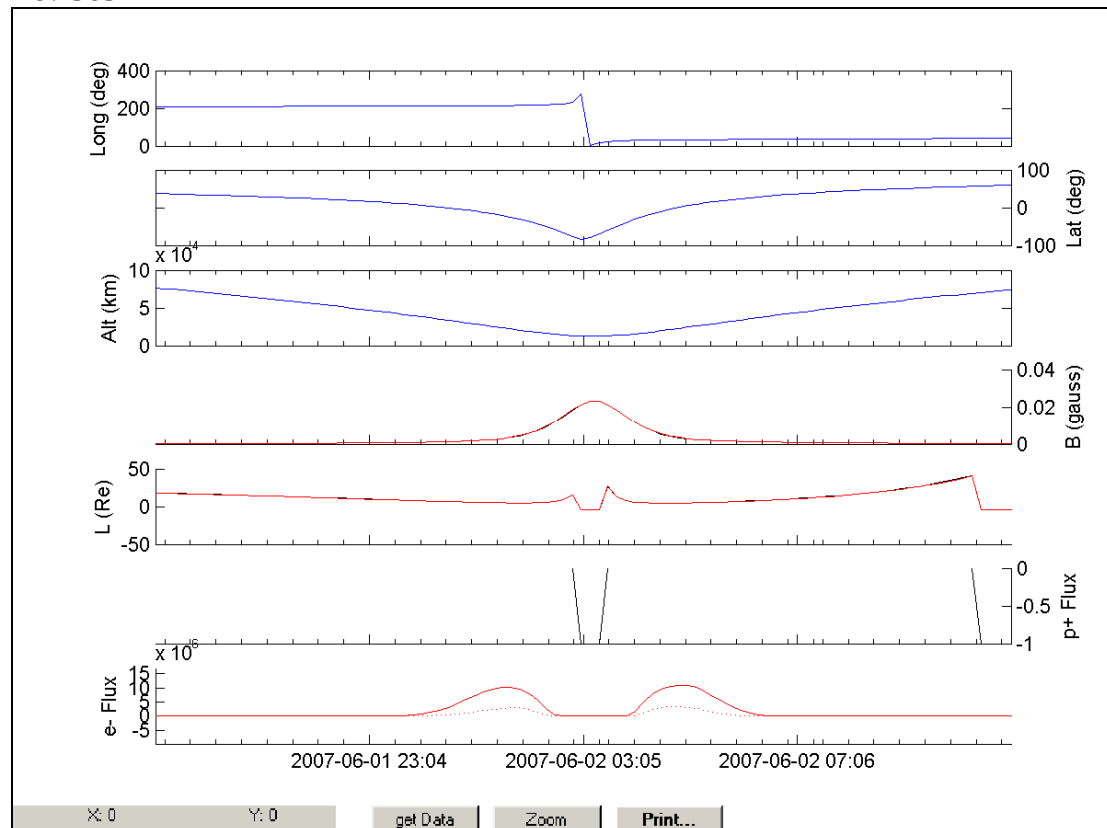
IREM radiation counters:



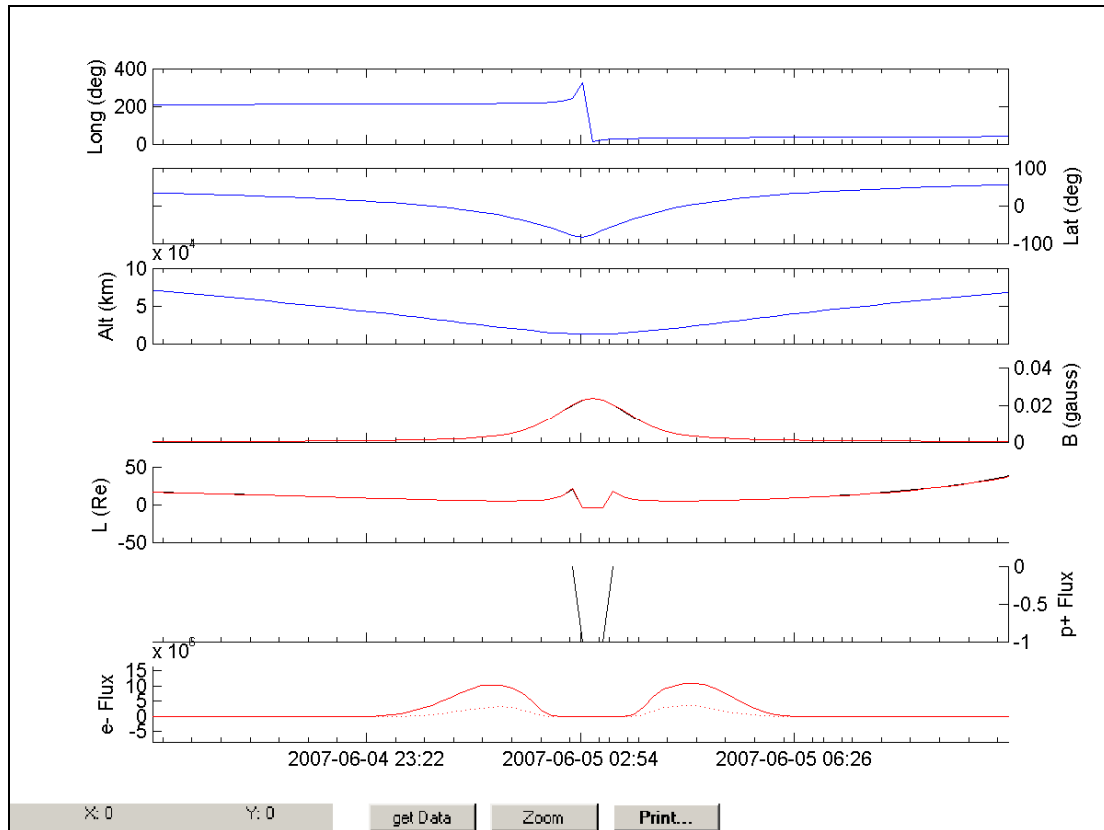


IREM Predicted Radiation Belt Passages

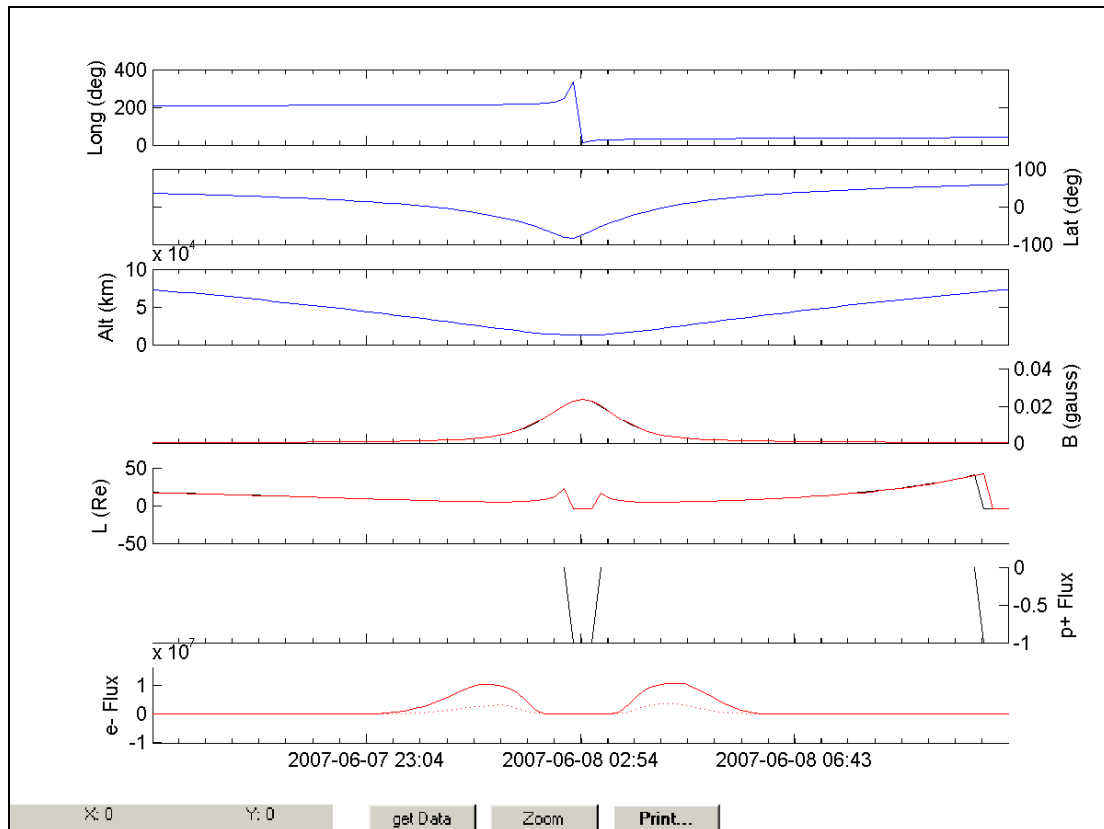
Rev 565



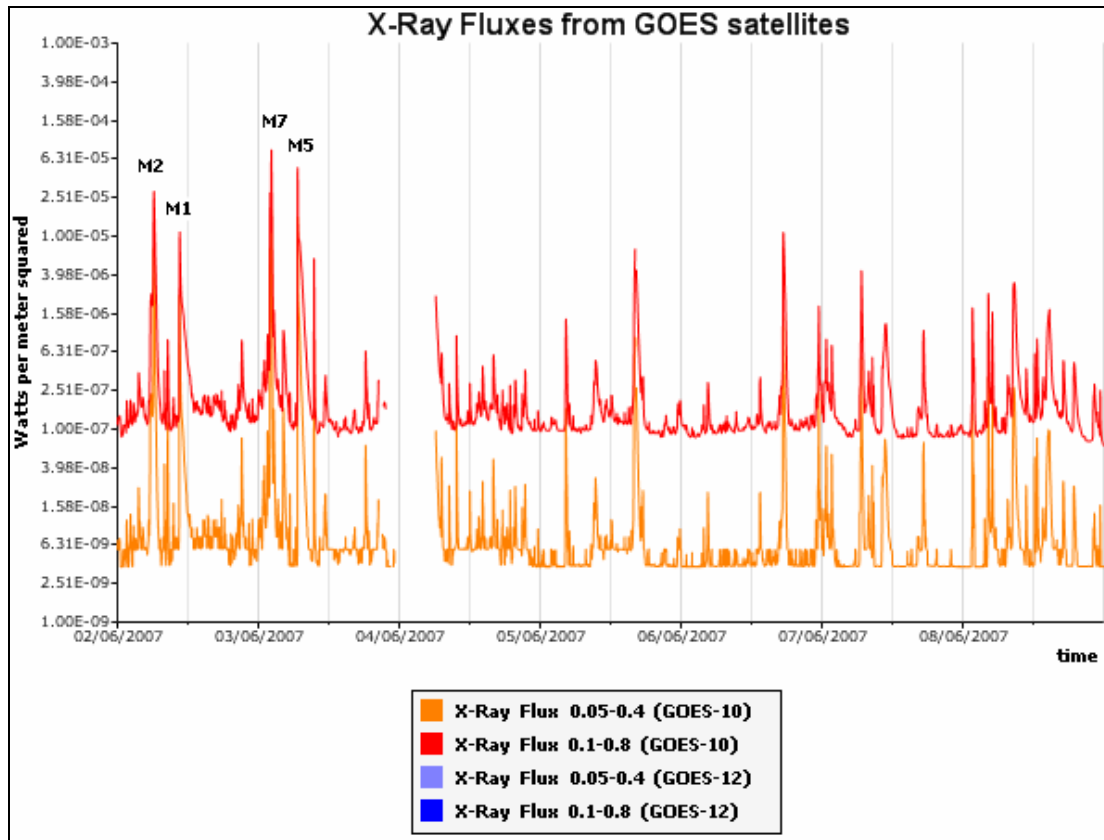
Rev 566



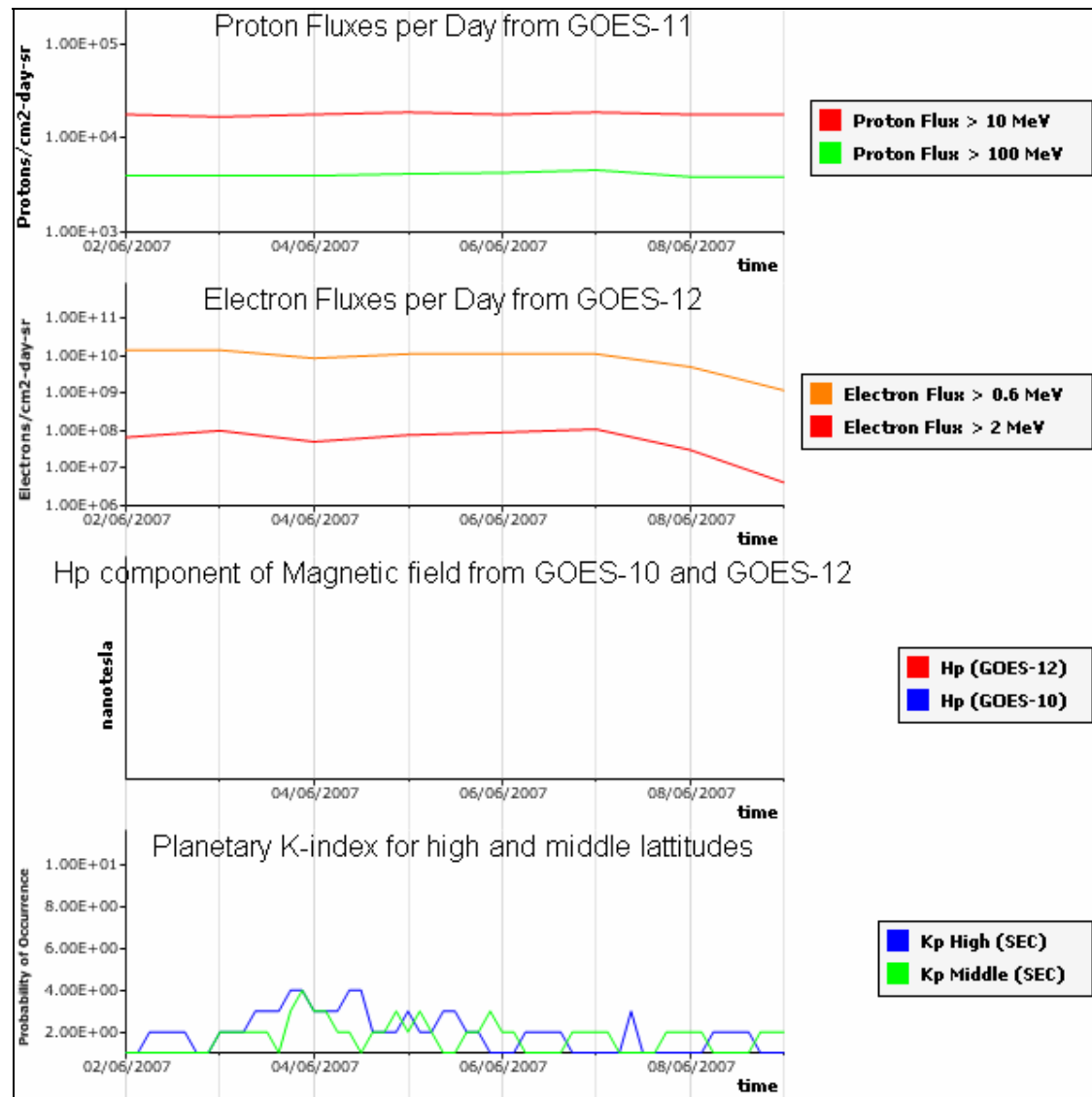
Rev 567



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



X-Ray fluxes start to be significant over 10^{-5} W/m² (corresponding to M-class flares). Above 10^{-4} W /m², they correspond to strong X-class flares. An M8-class solar flare on 04th of June is missing on the plot.



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.