

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OAI
No. 282
Week 07
18.02.08
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 09.02.08 until 15.02.08 (both dates inclusive) and covers the revolutions 651 and 652.

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 hexagonal dither of the Galactic Bulge Region (RA 17:45:36.00, DEC -28:56:00.0), a sequence of 6 Galactic Disk Latitude Scan at 3 attitudes: (RA 14:55:04.80, DEC -61:24:00.0), (RA 14:25:31.20, DEC -58:40:12.0) and (RA 14:12:48.00, DEC -63:27:00.0), and a Target of Opportunity: a raster dither of SN 2008S (RA 20:34:45.35, DEC +60:05:59.6).

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.

The wrap around of the COBT occurred as expected on the 09/02/2008.

Seven slews were missed from TL, during the observation period due to problems on IMCS, NCTRS, REDU station and loss of guide star.

The fuel consumption over the period between 07/02/2008 and 14/02/2008 was 0.1621 Kg. The remaining propellant is in the order of 142.2431Kg.

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.

The wrap around of the COBT occurred as expected on the 09/02/2008 at 21:04:20z.

A PST with an over-allocation of 3 packets - all of which were assigned to SPI - was in use the entire week during the instrument window

No build of TM buffer occupancy was observed, SPI used the extra allocation for about 35% of all TM cycles.

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

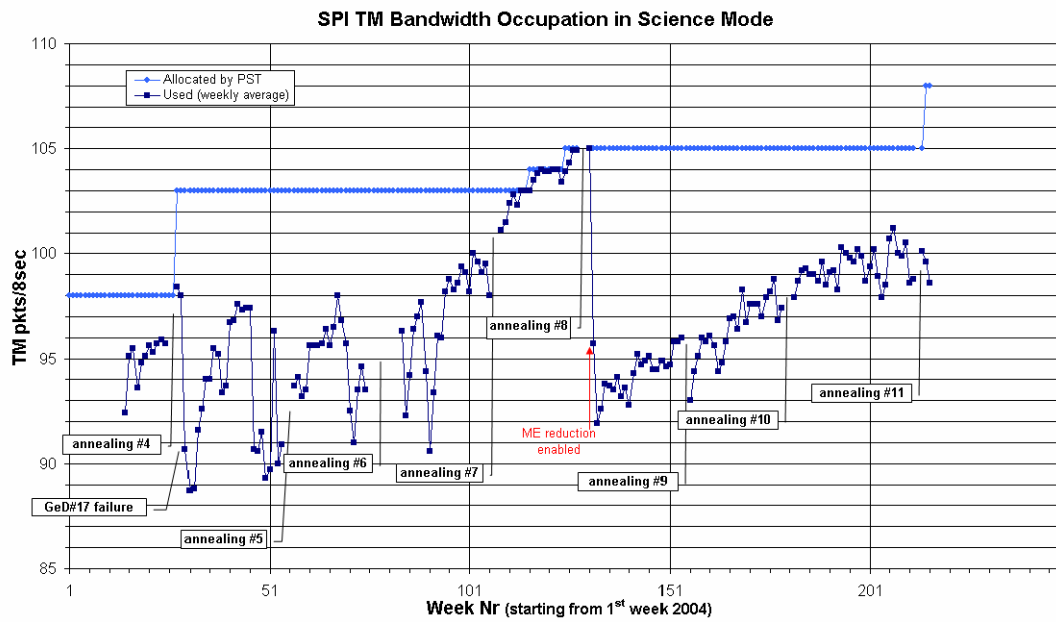
3.2.1 SPI

Following the 11th annealing, which ended on 30th January, the overall status of the gamma-ray spectrometer is nominal, except for the Ge detector #12 which, although its energy resolution improved since the previous annealing, is still showing a slightly degraded energy resolution compared to the other detectors and is therefore operating at a lower HV setting of 3.5kV (instead of 4kV). 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.

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, however the over-allocated PST with 108 packets/cycle for SPI was used. The average telemetry occupation in the science windows was 98.6 packets/cycle.

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



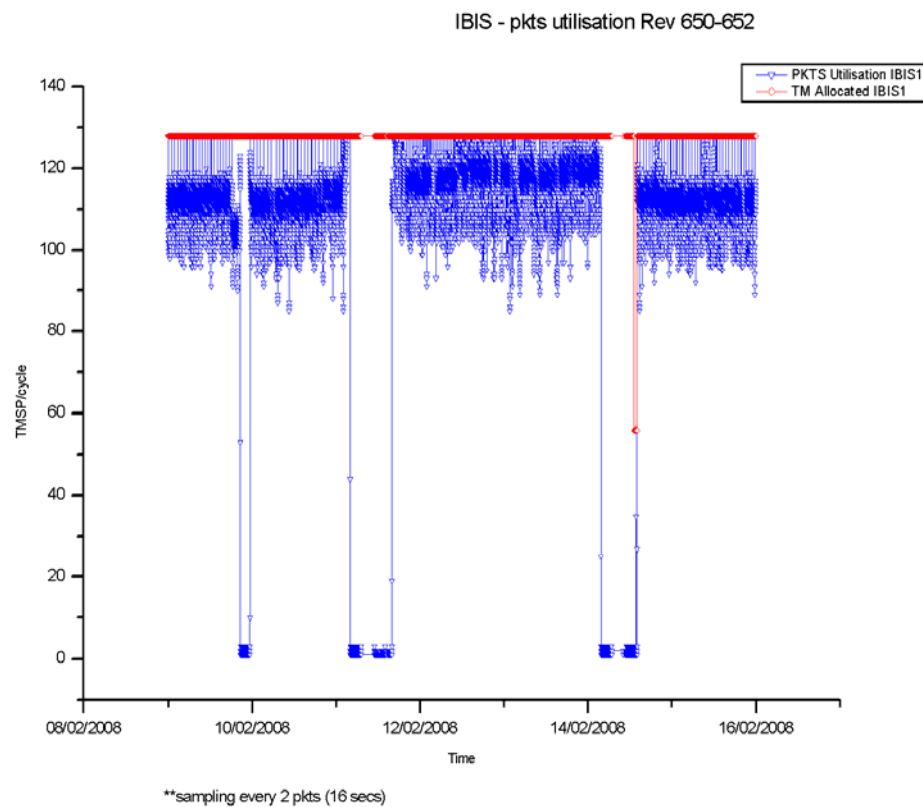
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

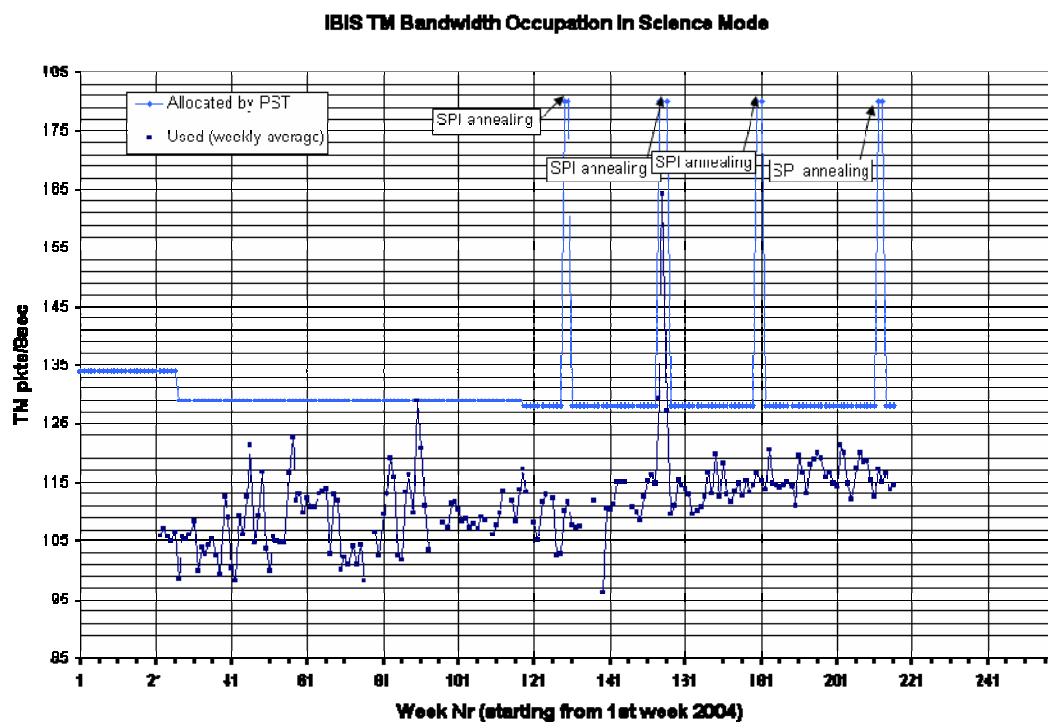
The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS above the radiation belts was 128 packets/cycle. The IBIS mean bandwidth utilisation during the observation period (when IBIS was in Science mode) was 114.59 packets/cycle, up 0.90 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. JEM-X2 was dormant (DPE OFF) with no TM slots allocated.

Note: Some more information concerning the JEM-X operations is provided in the Appendix.

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, 179 of the 184 planned science pointings for OMC were executed nominally, 1 was severely shortened and 4 were lost.

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

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity. The sun was blank all week. There was only a low risk of solar flares.



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

4.1 Mission Operations Centre

The performance of the MOC was good this week. There was one occasion where the Command Verifier crashed, without impact, and an incorrect NCTRS swap forced a suspension of the Timeline, during the recovery further problems were encountered, see below and section 6. Anomalies for details.

4.2 Ground Stations & Network

The performance of the ground stations and Network was good this week. There was, however, two occasions where the links with Redu dropped, one of which occurred during a recovery, forcing a swap to VIL2. The impact was the loss of 5 pointings. There was also two occasions where the links to ISDC dropped, without impact.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

New PSFs have been received for revolutions 659 and 660.

Observations were planned for revolutions 655 and 656. Further planning was waiting to allow implementation of new PICsIT parameters during slews.

TSFs have been received for revolution 652 to 654.

2. Observation status

New ECSs have been received and processed for revolutions 643 to 647.

3. ISOC Science Data Archive

Data has been ingested up to revolution 638.

4. ISOC system

Version 18.0 testing and updating, especially PGT, has continued. Most issues have been fixed.

5. Problems

None.

4.3.2 ISDC

Status of ISDC observation processing on 18/02/2008:

- Latest Standard Analysis completed: observation 05200320001 (X Per, Revolutions 646) on 18/02/2008.

- Latest products archived: observation 05200470001 (M31, Revolutions 641 & 642) on 12/02/2008.

- Latest observation products sent to the observer: observation 05200470001 (M31, Revolutions 641 & 642) on 14/02/2008.

5 Special Events

6 Anomalies

There were no problems reported this week that impacted operations.

- On DoY 042, at 13:45, there was a problem on the MCS, in that the CLCW was not received, which caused the first slew of rev 651 to fail release. It was likely that the problem was due to a NCTRS swap that affected the MCS tasks. A recovery was performed from the attitude of pointing 06500068 to the attitude of pointing 06510005. During the recovery a drop in TM/TC links from REDU, which forced a swap to VIL2 further delayed things. The Timeline was rejoined at 16:08. The impact was the loss of pointings 06510001, 06510002, 06510003, 06510004 & 06510005.

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

AR id	Date Created	Subject	Segment	Status
INT-2976	2007-12-10	Time correlation inaccuracy in rev. 629	FDS	Pending
INT-2977	2008-02-08	AOCS: RMU-A pitch and Yaw drifts exceeded limits set in FDS	FDS	Pending
INT-2978	2008-02-01	Duplicated TM Frames in Consolidator Archive	IMCS	Pending
INT-2979	2008-02-12	OMCH task has task launcher display dependency	IMCS	Pending
INT-2980	2008-01-27	TCs released from ASTACK to disabled Subsystem	IMCS	Pending

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7 Future Milestones

The following activities are foreseen in the next few weeks.

Appendix

The appendix includes various detailed information.

7.1 Overview of Revolutions

Revolution 651

The observations in revolution 651 began with a hexagonal dither of the Galactic Bulge Region (RA 17:45:36.00, DEC -28:56:00.0), lasting ~3.5 hours. They continued with a Galactic Disk Latitude Scan (RA 14:55:04.80, DEC -61:24:00.0), for ~8.8 hours. This was followed by another Galactic Disk Latitude Scan (RA 14:25:31.20, DEC -58:40:12.0), for ~8.3 hours. Another Galactic Disk Latitude Scan followed at (RA 14:12:48.00, DEC -63:27:00.0), for ~8.8 hours. Next was a return to the Galactic Disk Latitude Scan (RA 14:55:04.80, DEC -61:24:00.0) for a further ~8.3 hours. After this was a return to the Galactic Disk Latitude Scan (RA 14:12:48.00, DEC -63:27:00.0), for a further ~8.3 hours. Finally, a return to the Galactic Disk Latitude Scan (RA 14:25:31.20, DEC -58:40:12.0), for a further ~6.6 hours was executed until the end of the revolution.

Revolution 652

The observations in revolution 652 consisted entirely of a Target of Opportunity, namely a raster dither of SN 2008S (RA 20:34:45.35, DEC +60:05:59.6), lasting ~56.7 hours.

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.

7.2 Consumables

7.2.1 Detailed Fuel Book-keeping

2008-01-22T22:23:16.000Z	142.6286	F	Automatic TM processing.
2008-01-24T12:52:56.000Z	142.5976	F	Automatic TM processing.
2008-01-27T12:38:32.000Z	142.5840	F	Automatic TM processing.
2008-01-28T22:28:43.000Z	142.5575	F	Automatic TM processing.
2008-01-30T12:27:12.000Z	142.5495	F	Automatic TM processing.
2008-01-31T16:16:51.000Z	142.5346	F	Automatic TM processing.
2008-02-02T12:16:16.000Z	142.5172	F	Automatic TM processing.
2008-02-03T21:51:15.000Z	142.4496	F	Automatic TM processing.
2008-02-05T12:07:51.000Z	142.4190	F	Automatic TM processing.
2008-02-06T21:38:28.000Z	142.4052	F	Automatic TM processing.
2008-02-08T11:50:16.000Z	142.3982	F	Automatic TM processing.
2008-02-09T21:44:12.000Z	142.3444	F	Automatic TM processing.
2008-02-11T11:43:52.000Z	142.2812	F	Automatic TM processing.
2008-02-11T18:13:05.000Z	142.2536	F	Automatic TM processing.
2008-02-14T11:28:16.000Z	142.2431	F	Automatic TM processing.

This report was generated Fri Feb 15 08:00:21 GMT 2008

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, 09/02/2008 – 15/02/2008

The AOCS operations were executed from the Automatic Timeline.

During this period, 82 Open Loop Slews, 114 Closed Loop Slews and 4 Momentum Biases were executed (as reported by ACC OEMs).

7 slews (2 OSL, 5 CSL) were missed in TL, during the observation period, due to problems on IMCS (after NCRTS A-B swap), drop in TC/TM links at REDU station and loss of guide star during slew commanding.

This is equivalent to ~ 3.5 % of the total number of slews planned (200).

The OTF was not reached during PIDs 06510025, 06510056.

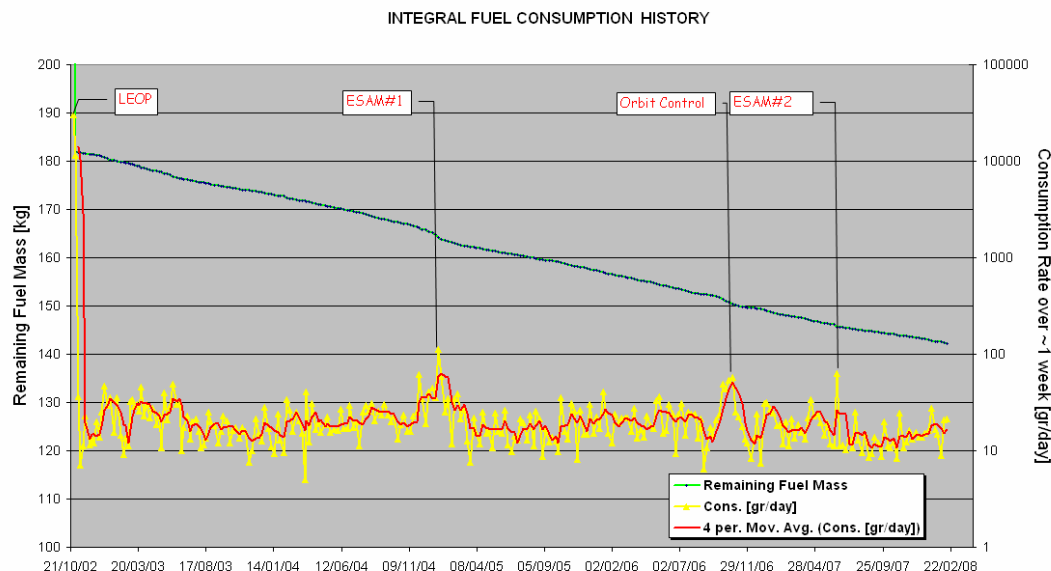
The wrap around of the COBT occurred as expected on the 09/02/2008 at 21:04z.

Orbit Control

No update.

Fuel consumption

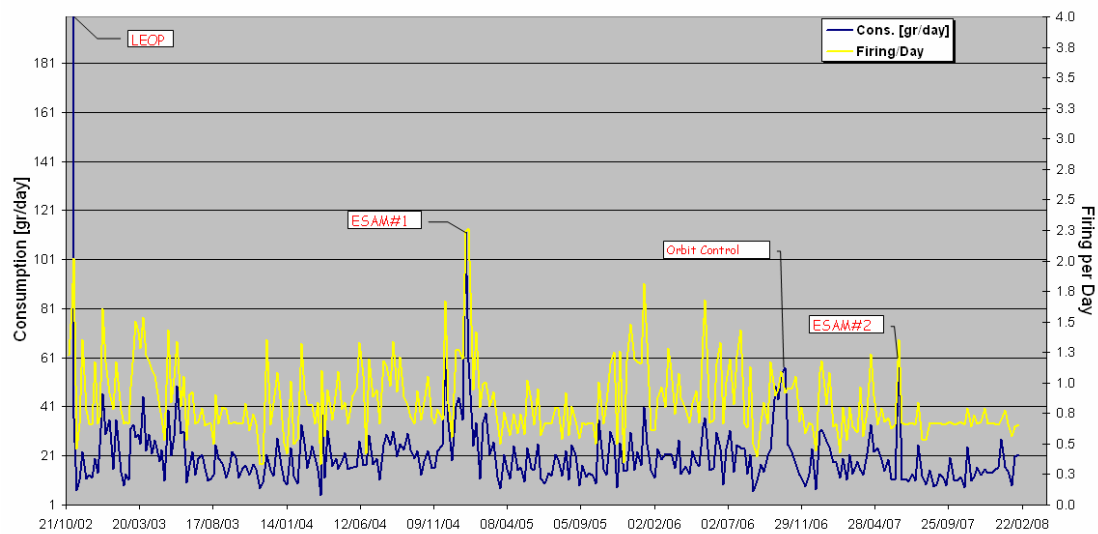
The fuel consumption (total, grams per day) over the period between 01/11/2002 and 14/02/2008 is reported in the plot below.



The above plot considers the ESAM fuel consumption spread over period of ~1 week.

The firing per day over the period between 01/11/2002 and 14/02/2008 is reported in the plot below.

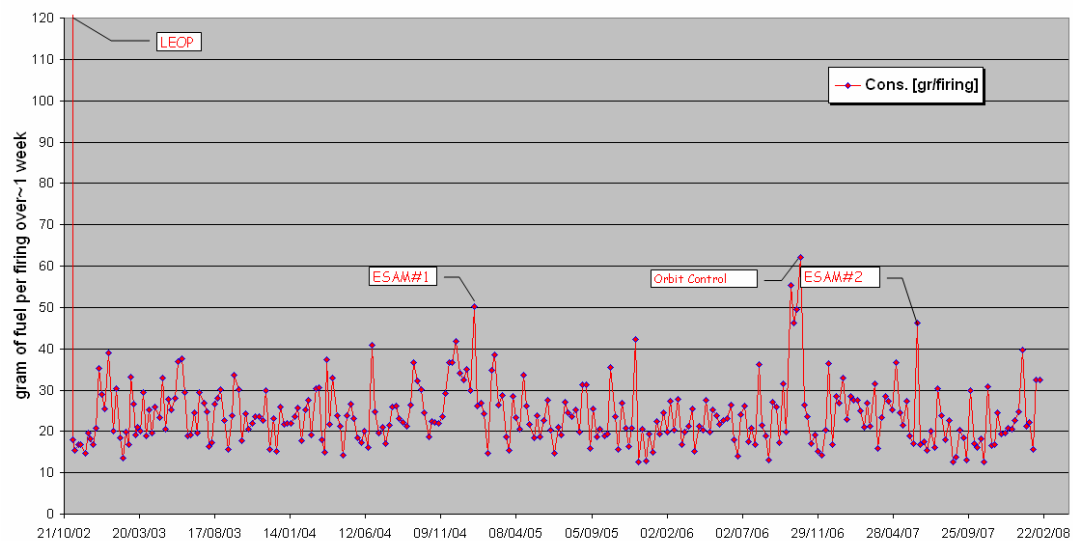
INTEGRAL FIRING PER DAY HISTORY



The above plot considers the ESAM fuel consumption spread over period of ~1 week.

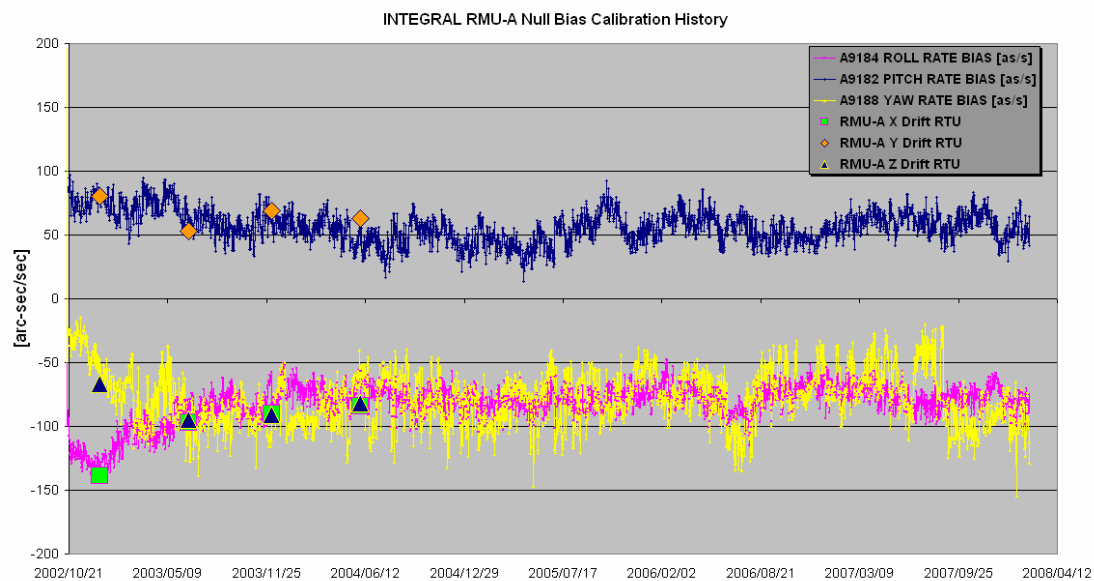
The fuel per firing over the period between 01/11/2002 and 14/02/2008 is reported in the plot below.

INTEGRAL FUEL MASS PER FIRING HISTORY



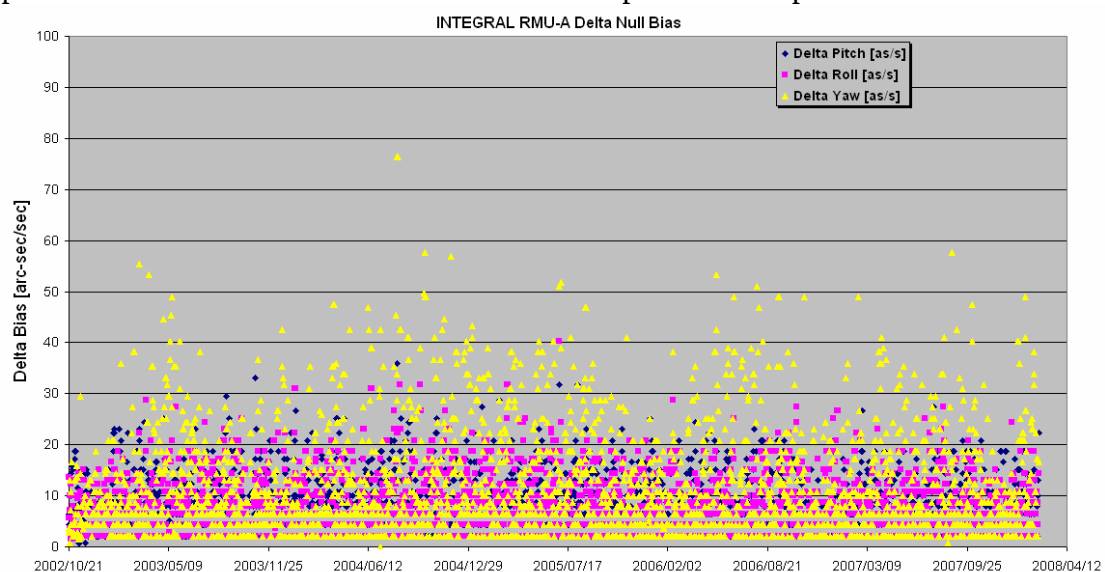
The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 15/02/2008 is reported in the plot below.



The evolution of the drift on yaw channel is under constant monitoring.

The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over period between 01/11/2002 and 15/02/2008 is reported in the plot below.



09/02/2008 (Day of Year 040, Revolution 650)

OBT wrap around: at 21:04z as expected, the wrap around of the COBT (central on-board time) occurred. The AOCS LOBT (local) was synchronised with the CDMU time and no impact for the AOCS s/s reported.

Problem on IMCS: at 23:26z a problem on the IMCS-A Command Verifier task caused the mapping for update of slew 06500039 to fail release.

A manual mapping was performed and the slew ID 06500039 manually updated in TL. At 23:40z the AOCS s/s was enabled in TL.

No impact on TL.

10/02/2008 (Day of Year 041, Revolution 650)

Nothing to report.

11/02/2008 (Day of Year 042, Revolution 650-651)

Several problems on IMCS, NCTRS and REDU drop on TC/TM links: at 13:45z a problem on the MCS, CLCW not received caused the first slew of rev 651 to fail release. The origin of the problem was likely due to a previous not correct NCTRS A-B swap that had impact also on the MCS tasks.

A long manual recovery was performed from the attitude of PID 06500068 to the attitude of PID 06510005. During the recovery an additional problem occurred due to a drop in TM/TC links from REDU station. At 16:08z the next slew ID 06510006 was manually updated in TL.

The following slews were missed in TL: 06510001(OSL)-02(CSL)-03(CSL)-04(OSL)-05(CSL).

Loss of guide star: at 19:33:00z a loss of the selected guide star occurred during commanding for slew 06510011.

As foreseen by the IPS logic, the ACC switched ON the IMU 1, a new automatic mapping was commanded and a new guide star picked.

A manual recovery was performed from the attitude of PID 06510010 to the attitude of PID 06510012. The next slew ID 06510013 was manually updated in TL at 20:23z.

The following slews were missed in TL: 06510011(CSL)-12(CSL).

12/02/2008 (Day of Year 043, Revolution 651)

Loss of guide star: at 03:54:59z a loss of the selected guide star occurred during commanding for slew 06510025.

As foreseen by the IPS logic, the ACC switched ON the IMU 1, a new automatic mapping was commanded and a new guide star picked.

The next slew ID 06510026 was manually updated in TL at 04:03z.

The OTF was not reached during PID 06510025.

Loss of guide star: at 22:55:13z a loss of the selected guide star occurred during PID 06510056.

As foreseen by the IPS logic, the ACC switched ON the IMU 1, a new automatic mapping was commanded and a new guide star picked.

The next slew ID 06510057 was manually updated in TL.

The OTF was not reached during PID 06510056.

13/02/2008 (Day of Year 044, Revolution 651)

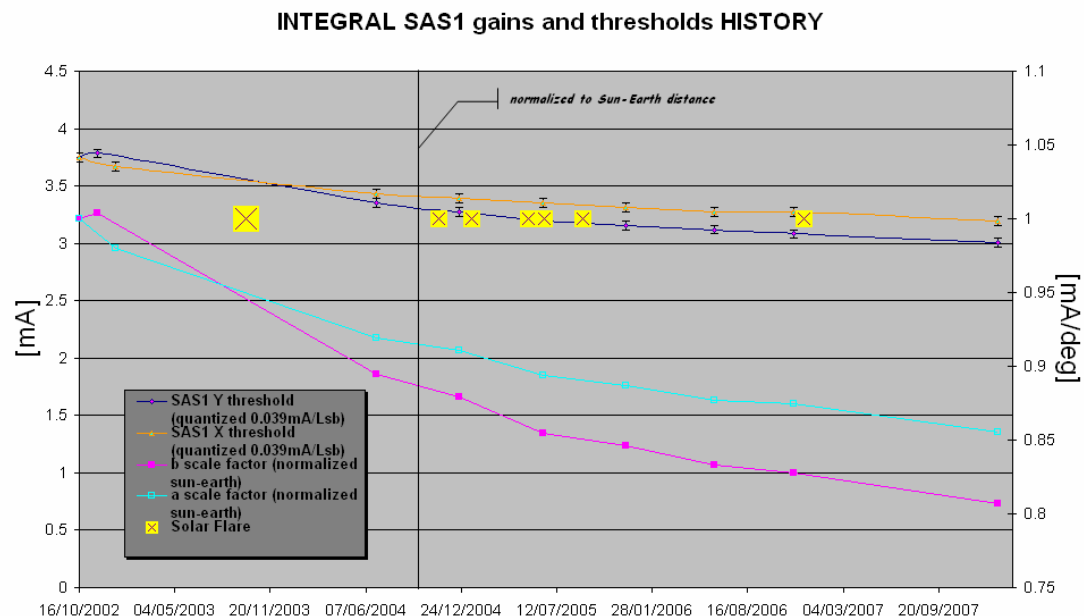
FDE SAS1 X-Y thresholds update: an update of the on-board FDE SAS-1 X and Y thresholds, as result of the SAS calibration on the 22/01/2007, was performed at 11:15z.

The new FDE SAS -1 X and Y thresholds as calculated from the calibration performed on 22/01/2008 and normalized to the square of the earth-Sun distance are:

b= 0.807 new SAS-Y threshold = **3.003 mA (77 dec)**
 a= 0.856 new SAS-X threshold = **3.198 mA (82 dec)**

In the above calculations were considered a and $b \sim 1.0$ and both the X and Y thresholds set to 3.760 mA at BOL.

The results give just an indication of poor degradation, $\sim 2.0\%$ /12 months, for the SAS-X threshold and $\sim 2.2\%$ /12 months) for the SAS-Y threshold, consistent wrt the parameter history and the relatively quiet solar activity. Below is reported the history of SAS1 thresholds for completeness.



14/02/2008 (Day of Year 045, Revolution 651-652)

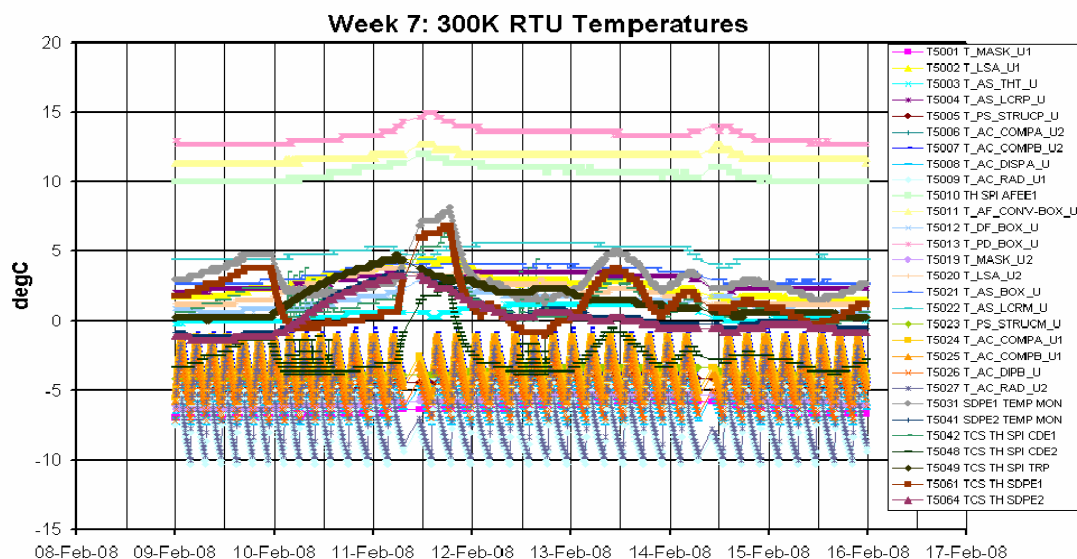
Nothing to report.

15/02/2008 (Day of Year 046, Revolution 652)

Nothing to report.

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.

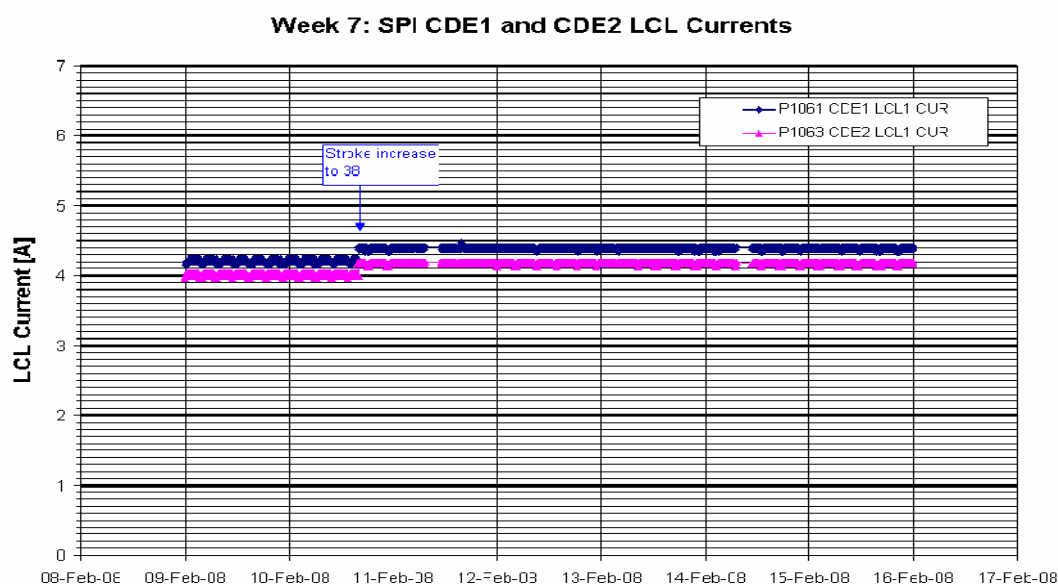


Stirling Compressors and Cryostat: The performance of the compressors is nominal. The cold plate temperature was maintained in the range 80K +/-1K.

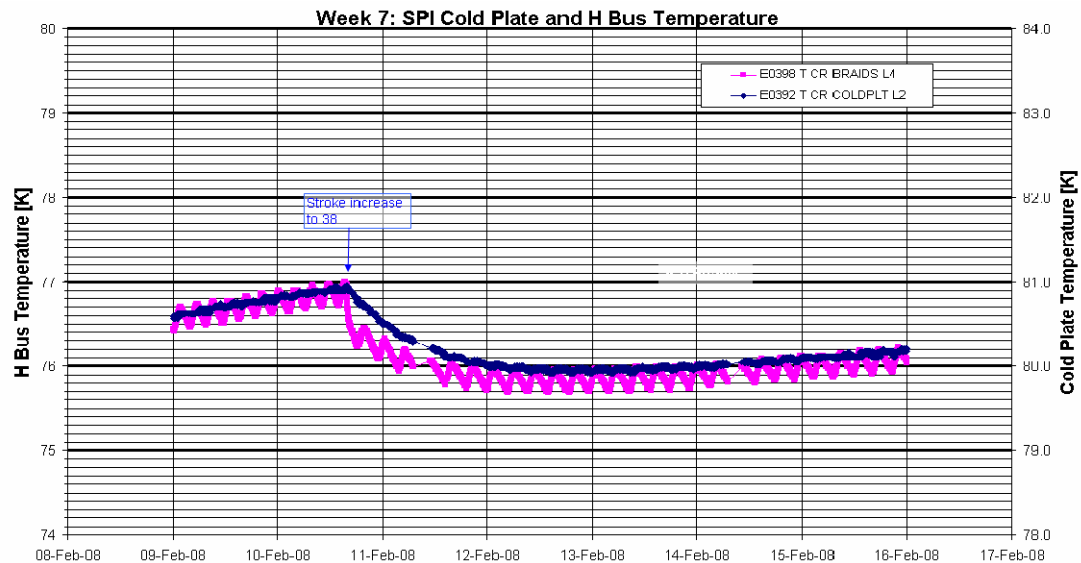
The stroke of all four compressors was set to 37 until 2008-02-10 at 15:57:27Z, when the stroke of all four compressors was increased to 38 as the cold plate temperature, TM parameter E0392, had reached 80.9K. The average CDE LCL currents for the period when the stroke was 38 were as follows:

- CDE1 LCL Current = 4.39A
- CDE2 LCL Current = 4.17A

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



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

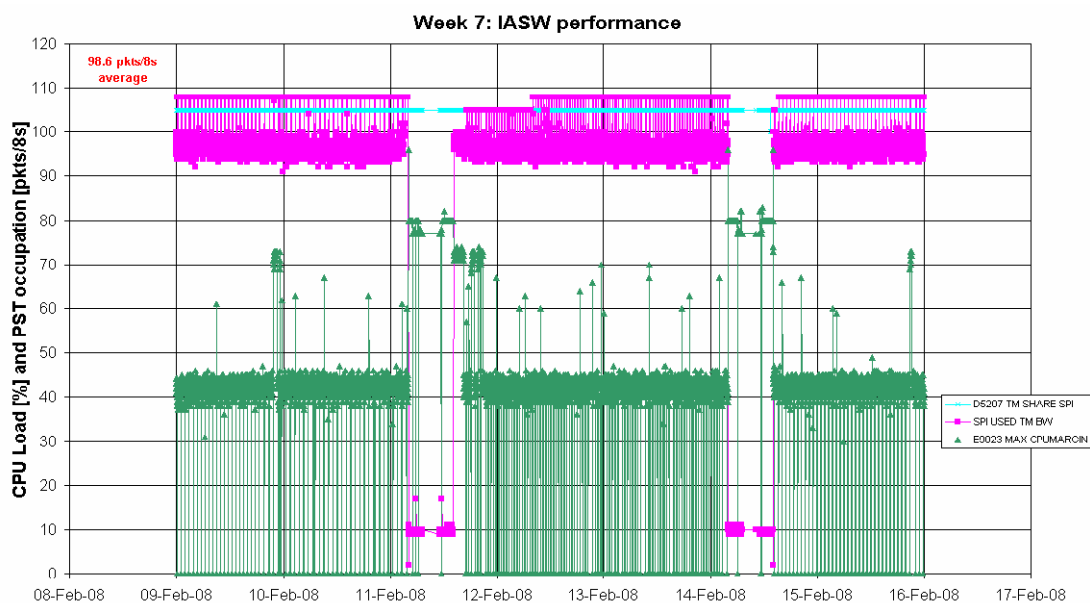


DPE & IASW: The DPE health and IASW performance is nominal.

The IASW version installed is v4.3.4 with ME reduction only enabled and the spectra scaling factor set to 8/19 SE.

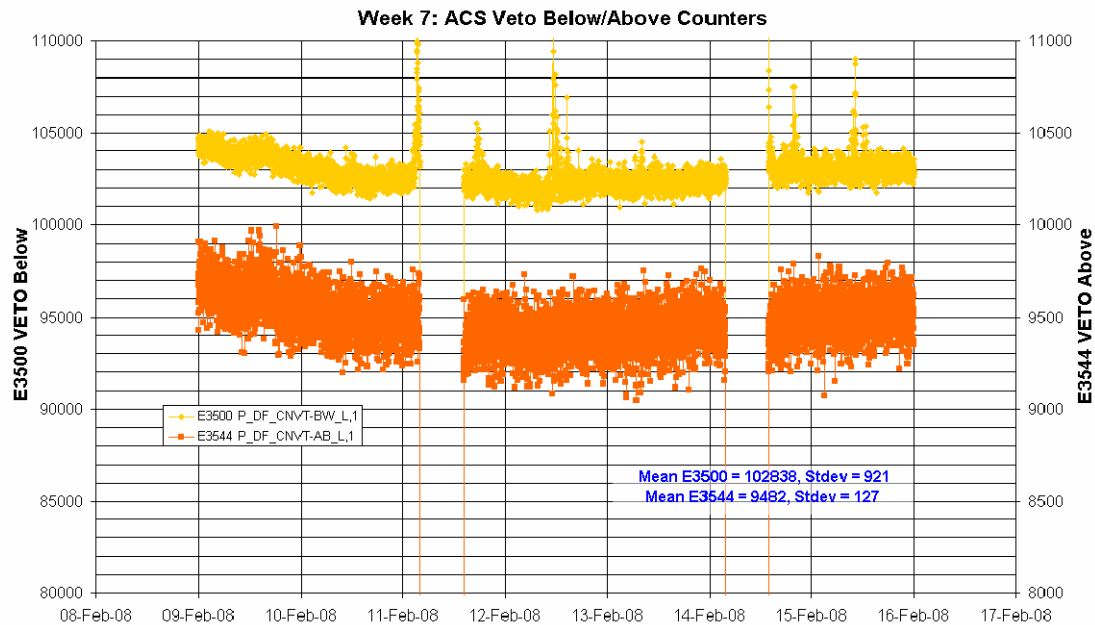
The average TM bandwidth occupation of SPI was 98.6 packets/cycle over the science window. The TM allocation in the science window was 105 packets/cycle, however for most of the reporting period the over-allocated PST with 108 packets/cycle for SPI was used (see plot below). Note that the Broadcast Packet TM allocation was not updated. This did not cause any problems and SPI used the additional TM bandwidth during spectra transmission.

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

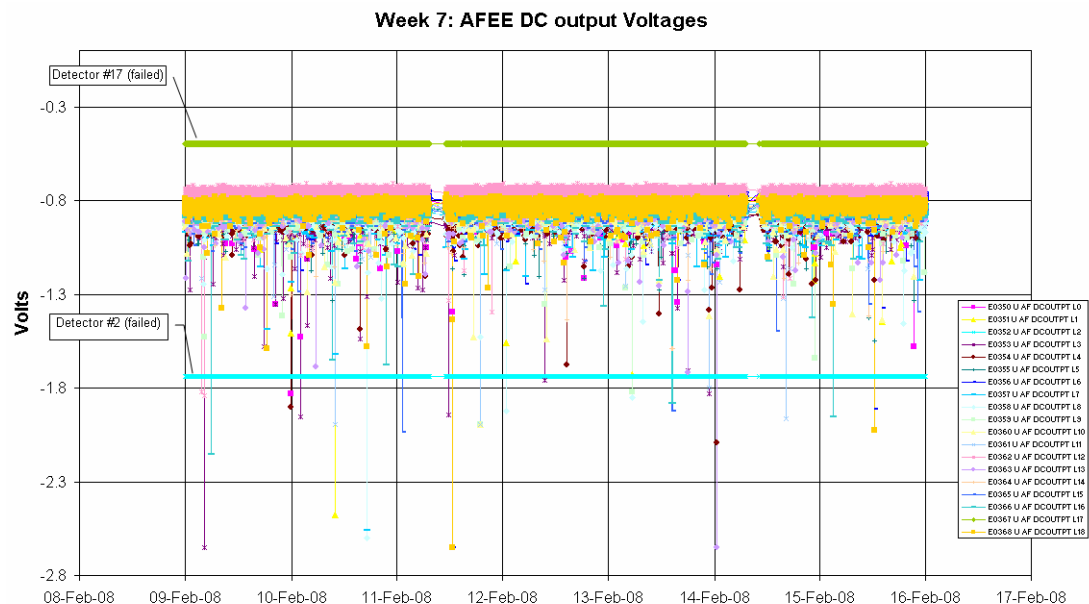


ACS: The performance of the ACS is nominal, except for FEE #81 which remains nominally switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is nominally OFF due to the anomaly on 5/8/2003 (INT_SC-61).

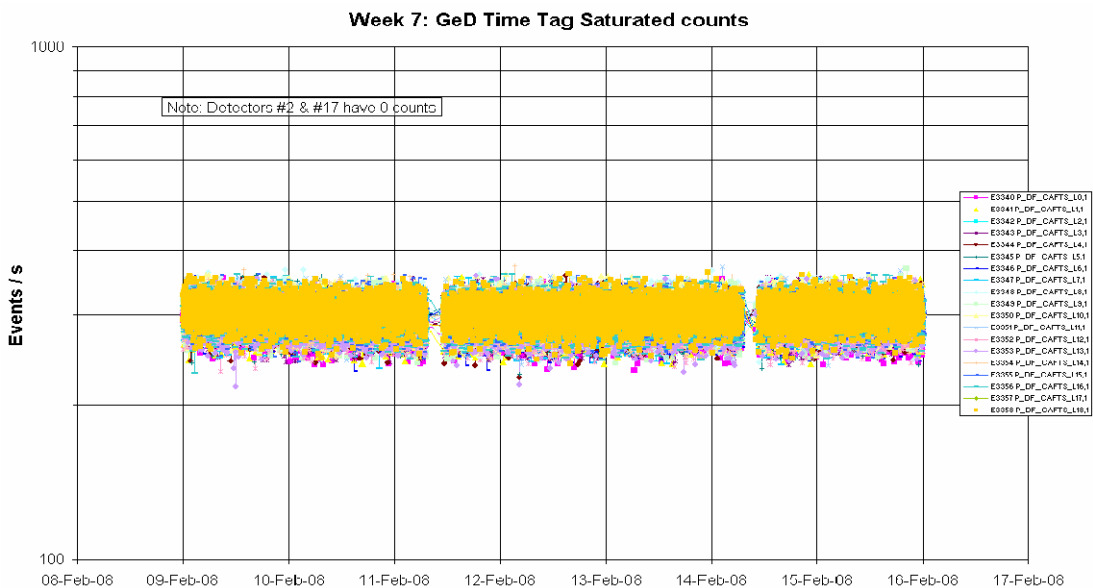
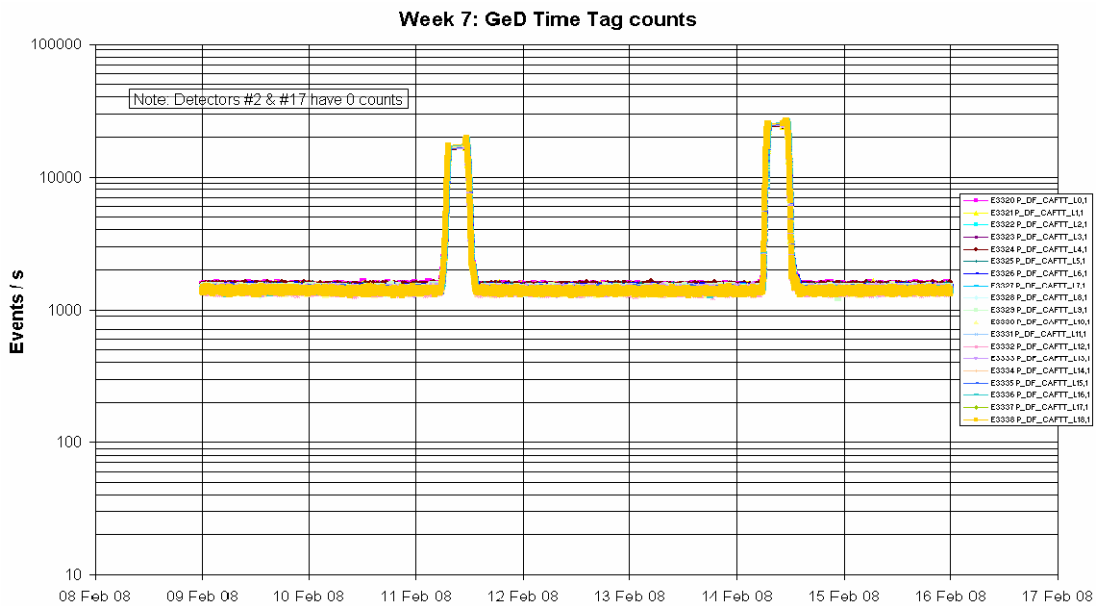
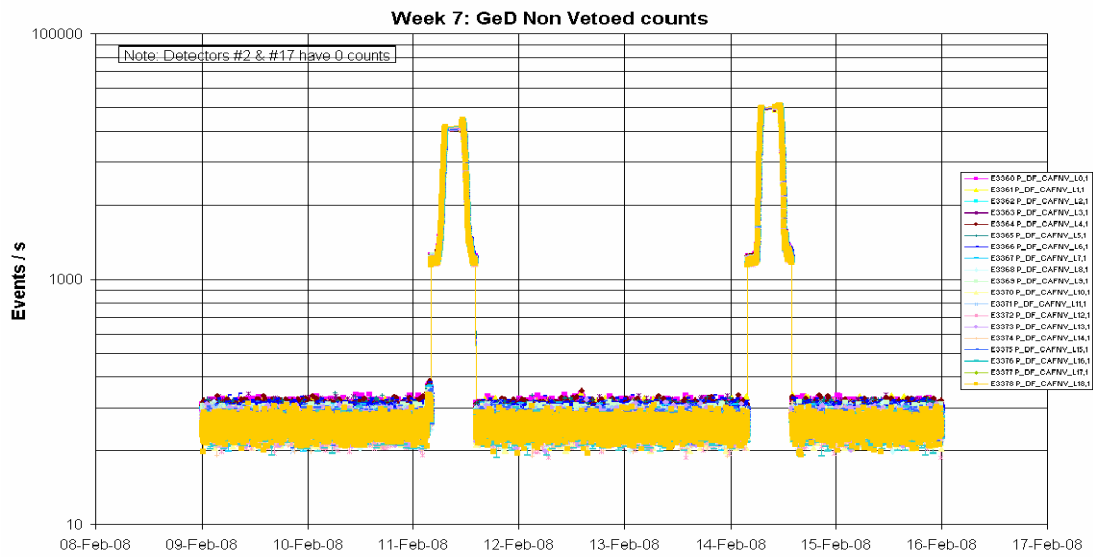
The following plot shows the ACS overall count rate evolution during the reporting period:



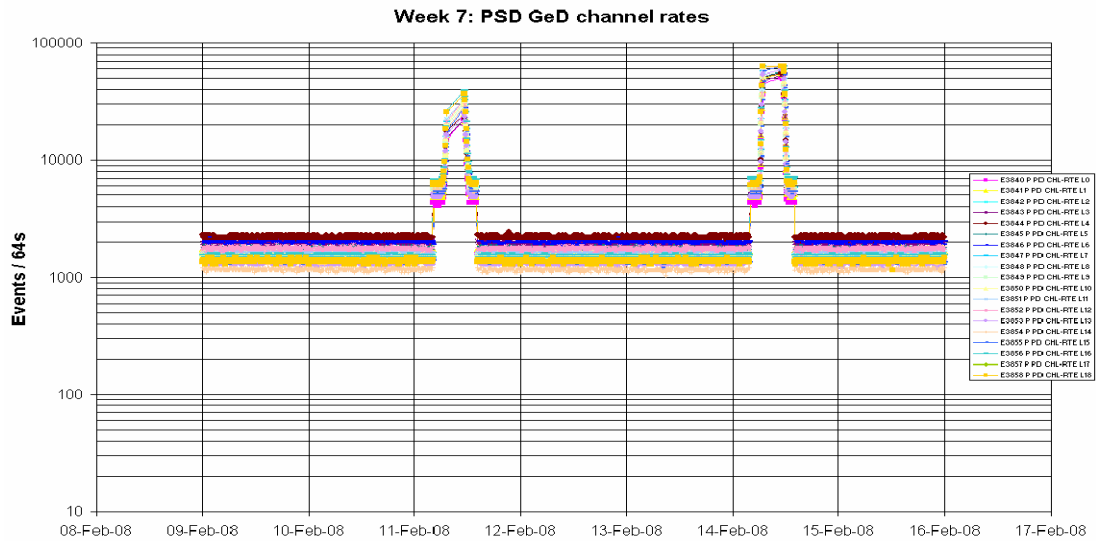
AFEE: The health of the AFEE is nominal. The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06/12/2003 and detector #17 is failed since 17/07/2004.



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:

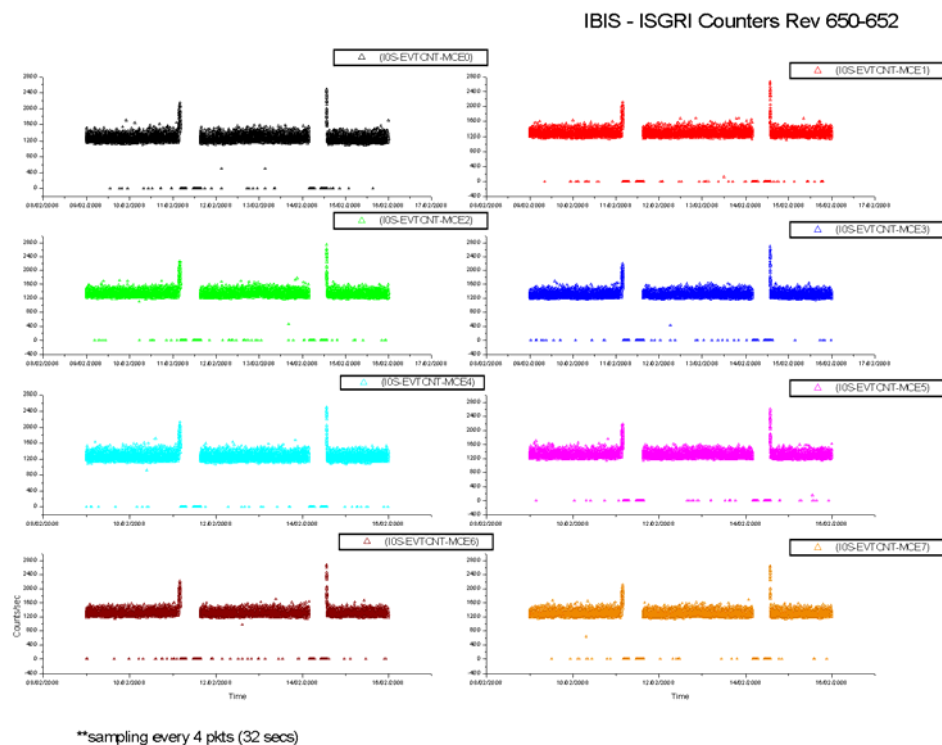
The following non-nominal events occurred on SPI over the reporting period:

- On 2008-02-14 at 11:00:26Z, during the AOS_CHK window of revolution 652, TM parameter E4009 S DF HSLERR L went OOL (value = 1), indicating erroneous HSL transfers. As it returned within limits at the next TM cycle, no action was taken.

7.3.3 IBIS Operations

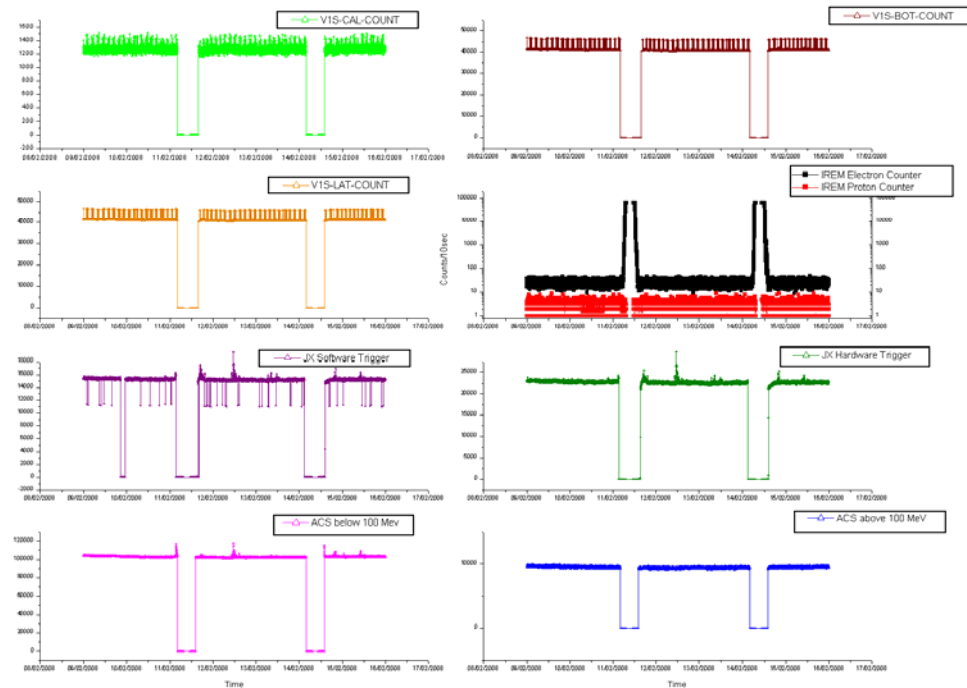
IBIS Event Counters Plots

ISGRI Counters:



VETO vs Payload Counters:

IBIS-VETO vs Payloads Counters Rev 650-652

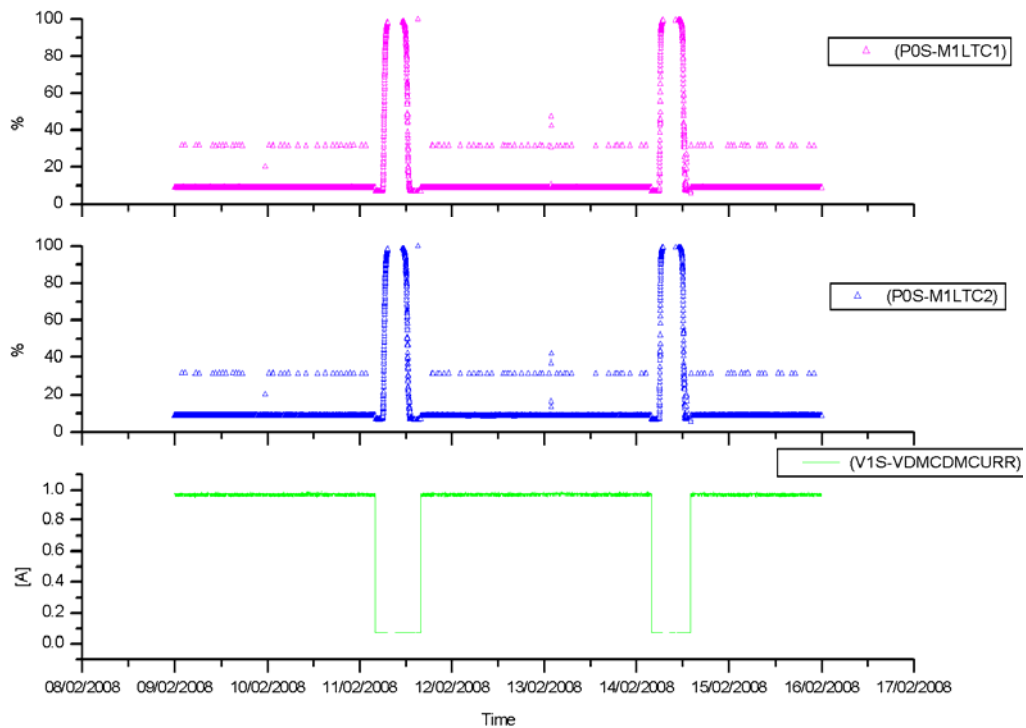


**with the exception of IREM counters (counts/10sec), all the plots are reporting counts/sec sampling every 5 pkts (40 sec)

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

VETO Current:

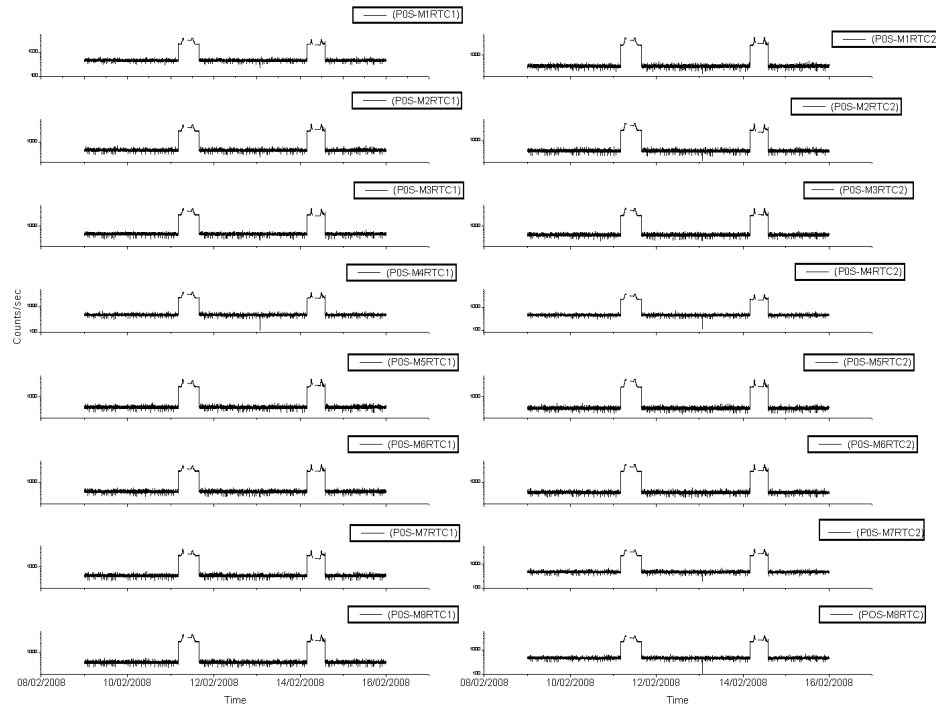
IBIS-VETO Current & PICsIT dead times Rev 650-652



**sampling every 4 pkts (32 secs)

PICsIT Counters:

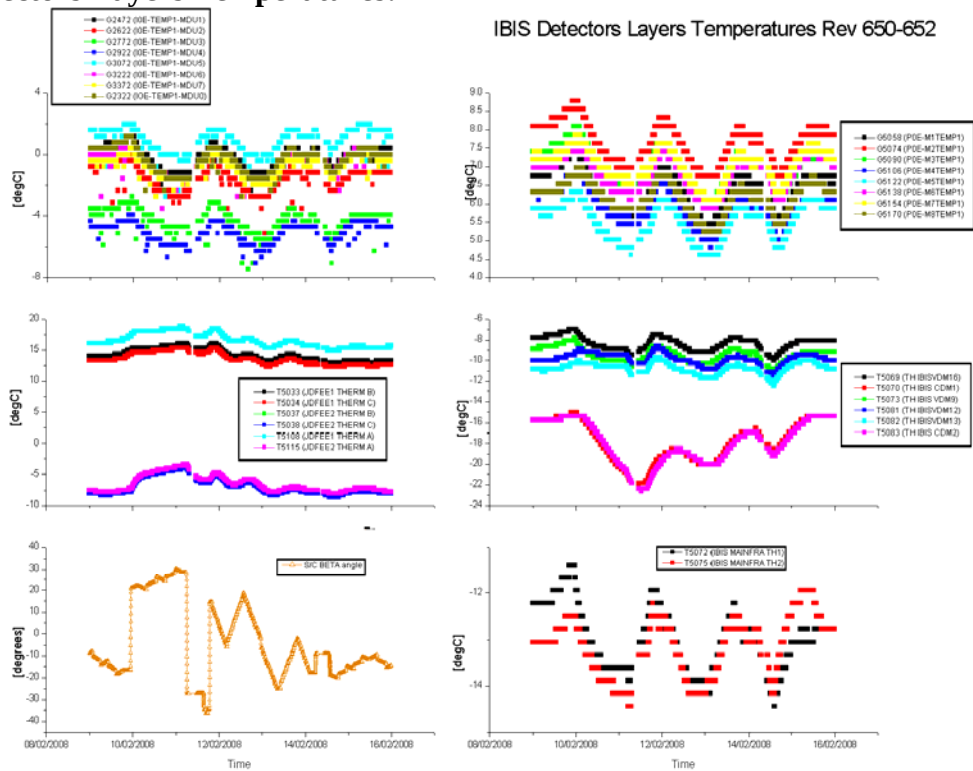
IBIS - PICsIT Counters Rev 650-652



**sampling every 4 pkts (32 secs)

IBIS Detectors Layers Temperatures:

IBIS Detectors Layers Temperatures Rev 650-652



**sampling every 8 pkts (64 secs)

IBIS daily report:

The usual Out Of Limits on TM parameter G8015 (S1E-A2_PMT_V), G5002 (POS-Mi_RTC1) and G5003 (POS-Mi_RTC2) families and G2000 family (IOE-OVFWPXADD-Mi) were received during the radiation belt passages.

2008-02-09 (DOY 040, Rev 650)

In line with INT_OPS_321, due to the upcoming wraparound of the DPE LOBT, IBIS was commanded to Standby mode at 20:42:05Z via FCP_IBIS1_0313. It was commanded back to Scientific Standard mode via the ED GESTAN02 in the Timeline at 23:24:45Z, at the start of the next science exposure.

2008-02-10 (DOY 041, Rev 650)

IBIS operations executed nominally.

2008-02-11 (DOY 042, Rev 650-651)

At 12:13:03Z, before radiation belt exit of revolution 651, TM parameter G5079 went OOL High (value = 2.60509804V). This is the PDM2 +2.5 V. As it returned within limits at 12:13:35Z, no action was taken.

Due to problems with the control system (MCS-NCTRS connectivity following an NCTRS swap), commands of the ED GEISCL03 scheduled at 13:43:45Z did not pass on-board acceptance stage, after which commands began to fail CEV, causing subsequent commands to fail release. As this was a problem affecting all commanding, the Timeline was stopped and a recovery of the control system performed. Following this, a manual recovery of the missed Timeline commands started however, problems with the ground station (TM/TC from Redu lost) resulted in a further delay. Once stable TM/TC capability was regained, a manual recovery to configure IBIS for science observations was performed as follows:

- 14:21:48Z CRP_IBIS1_0010 IBIS SAFE CONFIG (FAST)
- IBIS context tables reloaded
- 15:08:25Z ED GEISCL03 re-uplinked
- 15:39:17Z ED GEBENT02 re-uplinked
- 15:51:22Z ED GEBEXT01 re-uplinked
- 16:03:46Z ED GESTAN02 re-uplinked with the planned observation parameters.

Commanding to IBIS from the Timeline was re-enabled and IBIS operations continued nominally.

2008-02-12 (DOY 043, Rev 651)

IBIS operations executed nominally.

2008-02-13 (DOY 044, Rev 651)

At 01:50:39Z the TM parameter families G5068 and G5072 (PDM Semimodule FIFO error flags) went OOL (Status Consistency Check fail). As they had all returned within limits by 01:52:15Z no action was taken.

2008-02-14 (DOY 045, Rev 651-652)

At 13:35:54Z, during the execution of the ED GEISCL03 before radiation belt exit of revolution 652, all the parameters in the TM parameter family G2013 (number of events triggering the MCEi per second) went OOL warning High. As they had all returned within limits by 13:41:54Z, no action was taken.

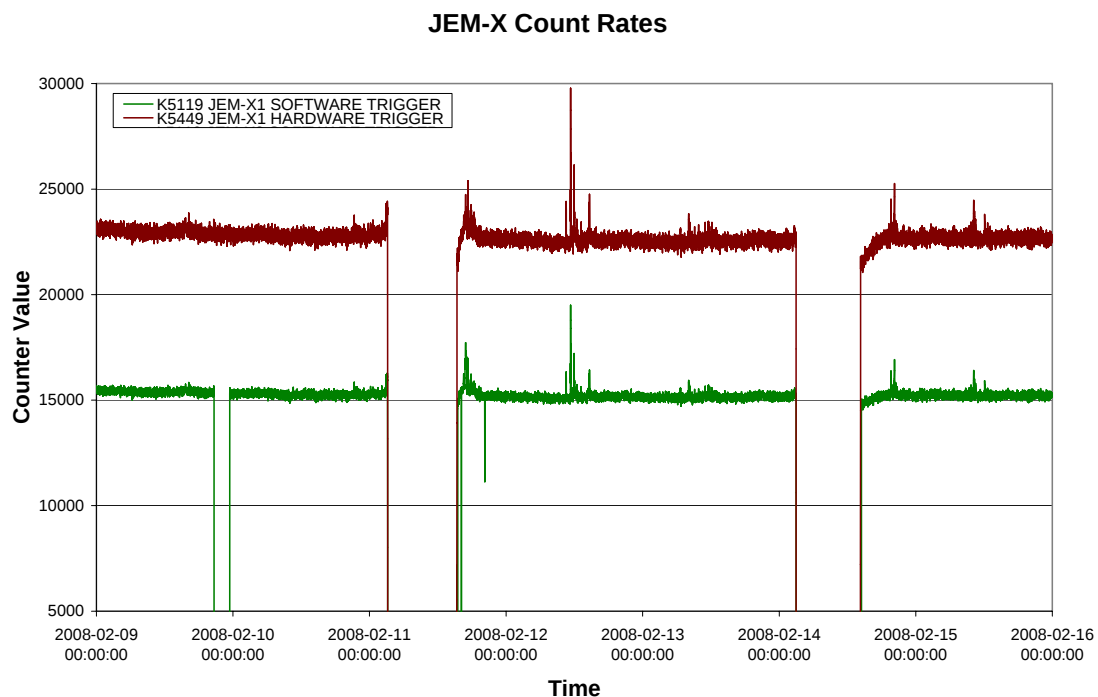
2008-02-15 (DOY 046, Rev 652)

IBIS operations executed nominally.

7.3.4 JEM-X Operations

JEM-X Count Rates

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

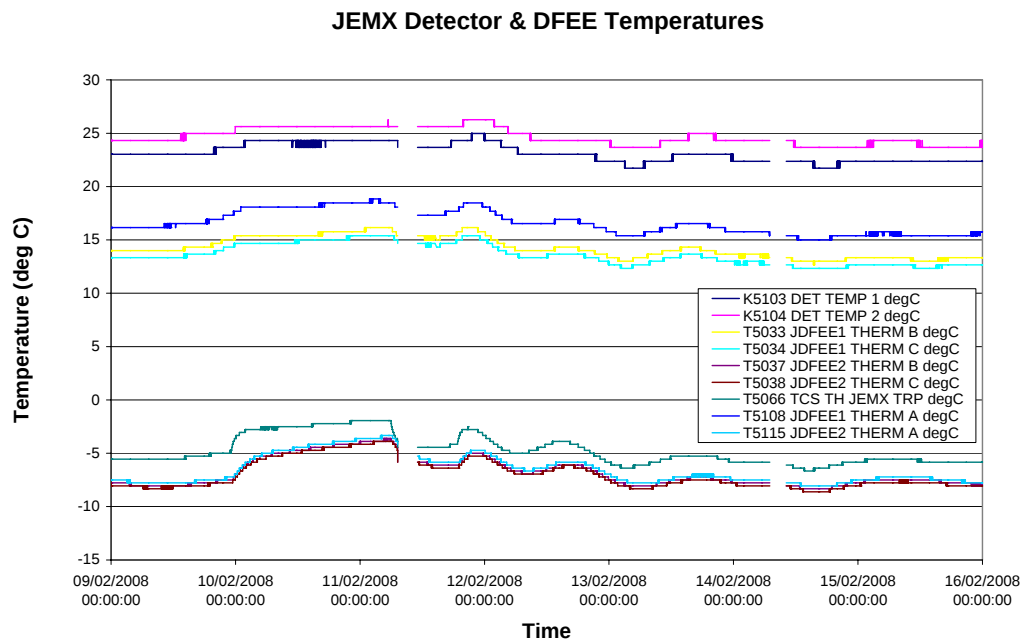


JEM-X Temperatures

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.

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

² Data sampled (1 frame in 8)



JEM-X Daily Report

2008-02-09 (DoY 040, Rev 650)

In line with INT_OPS_321, due to the upcoming OBT wraparound, JEM-X1 was commanded to Setup mode at 20:41:27Z via FCP_JEM1_0041. It was commanded back to Data Taking mode via the Timeline at 23:25:05Z.

At 23:28:36, due to a problem with the Command Verifier, the commands K0011, K0021 & KU0014 (part of the KEDATA02 ED) failed completion. The commands were manually checked against TM, and confirmed to have executed.

2008-02-10 (DoY 041, Rev 650)

JEM-X1 operations executed nominally

2008-02-11 (DoY 042, Rev 650-651)

At 13:53, due to an ongoing imcs problem, the ED KEACAL01 failed to uplink. After the problems were recovered, the instrument was manually recovered, the calibration being performed twice, at 14:27 & 15:00, with the instrument back in Data-taking at 15:30:02, instead of the planned time of about 14:40.

2008-02-12 (DoY 043, Rev 651)

At 11:21:12, there was a single occurrence of the parameter K5449 exceeding its soft limits. No action was taken, and there was no impact.

2008-02-13 (DoY 044, Rev 651) to 2008-02-15 (DoY 046, Rev 652)

JEM-X1 operations executed nominally

7.3.5 OMC Operations

2008-02-09 (DoY 040, Rev 650)

In line with INT_OPS_321, due to the upcoming OBT wraparound, OMC was commanded to Standby at 20:40:09Z via FCP_OMC_0042. It was commanded back to Science mode via the Timeline at 23:26:44Z.

2008-02-10 (DoY 041, Rev 650)

Nothing to Report.

2008-02-11 (DoY 042, Rev 650-651)

At 13:45 a problem with the imcs caused the first slew of rev 651 to fail release. During the subsequent recovery, a TM/TC drop from Redu caused further delays, for details see the Anomalies section of the report.

The impact was the loss of pointings 06510002, 06510003, 06510004 & 06510005.

At 19:33:00, the loss of a guide star forced the interruption of the Timeline. A manual recovery was immediately performed, and the Timeline rejoined at 20:23. The impact was that pointing 06510011 was shortened from a planned 1985 to 103 seconds.

2008-02-12 (DoY 043, Rev 651) to 2008-02-15 (DoY 046, Rev 652)

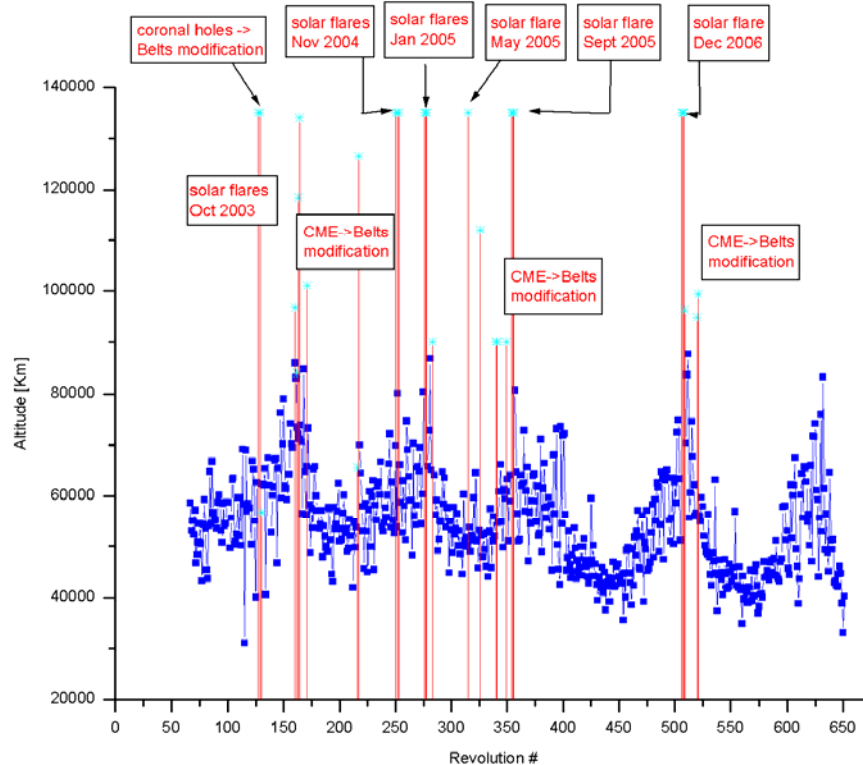
Nothing to Report.

On DoY 042 at 04:05:33 and DoY 045 at 03:51:41 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

Evolution of Radiation Belt Entry 2003-2008



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]
650	RAD_ENTR R 2008-02-11T04:05:30Z	11/02/2008 06:43:40	33110.8	11-Feb-2008 05:37:45	42501.82
651	RAD_EXIT R 2008-02-11T14:08:39Z	11/02/2008 13:33:24	>>31589.2	11-Feb-2008 13:07:45	44450.11
651	RAD_ENTR R 2008-02-14T03:51:40Z	14/02/2008 05:41:00	40253.1	14-Feb-2008 05:22:28	43093.08
652	RAD_EXIT R 2008-02-14T13:54:51Z	14/02/2008 13:40:28	50881.6	14-Feb-2008 13:02:28	45415.83

Reference

High radiation

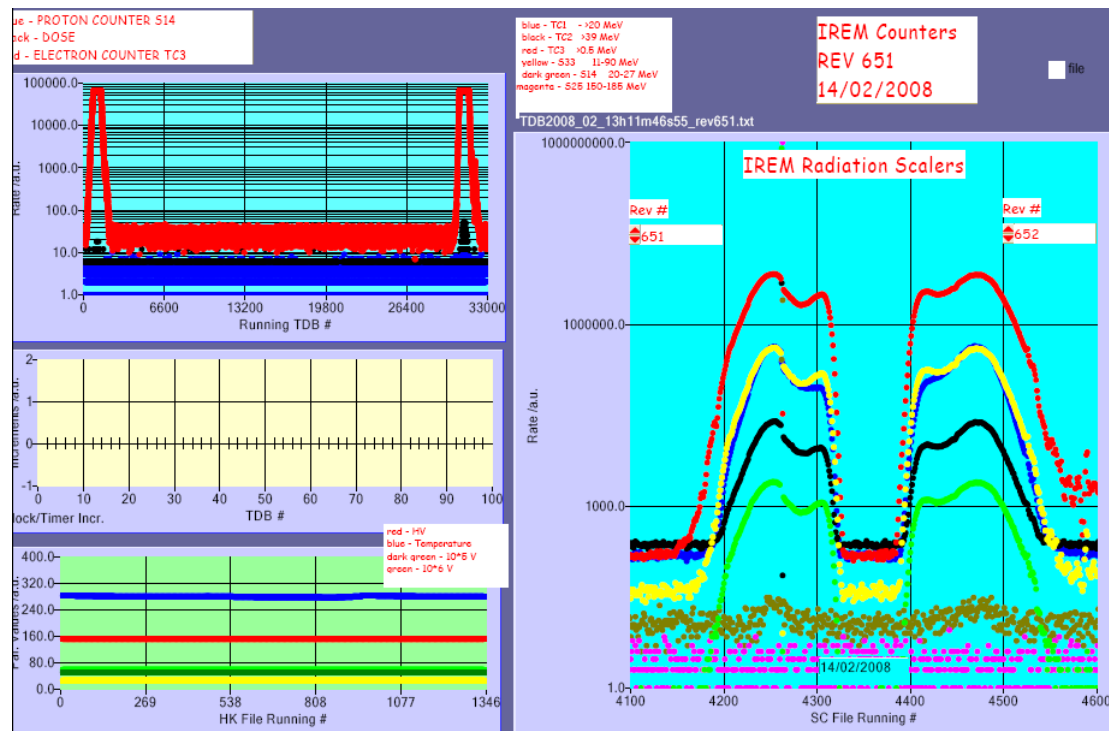
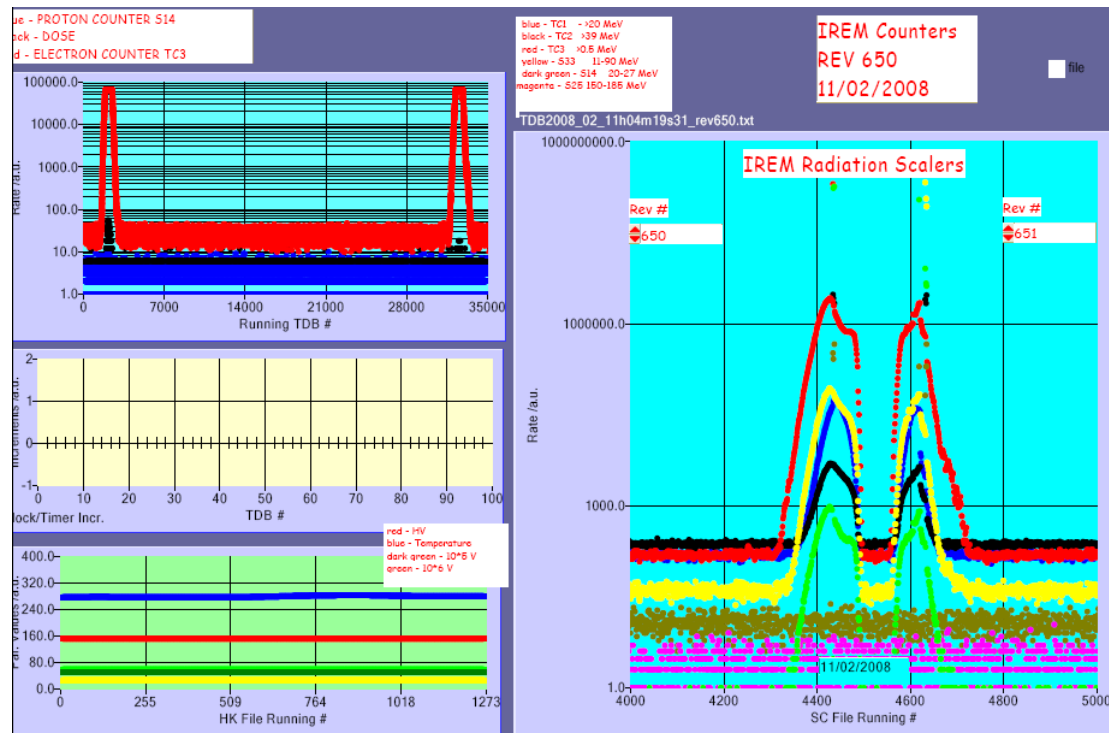
Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

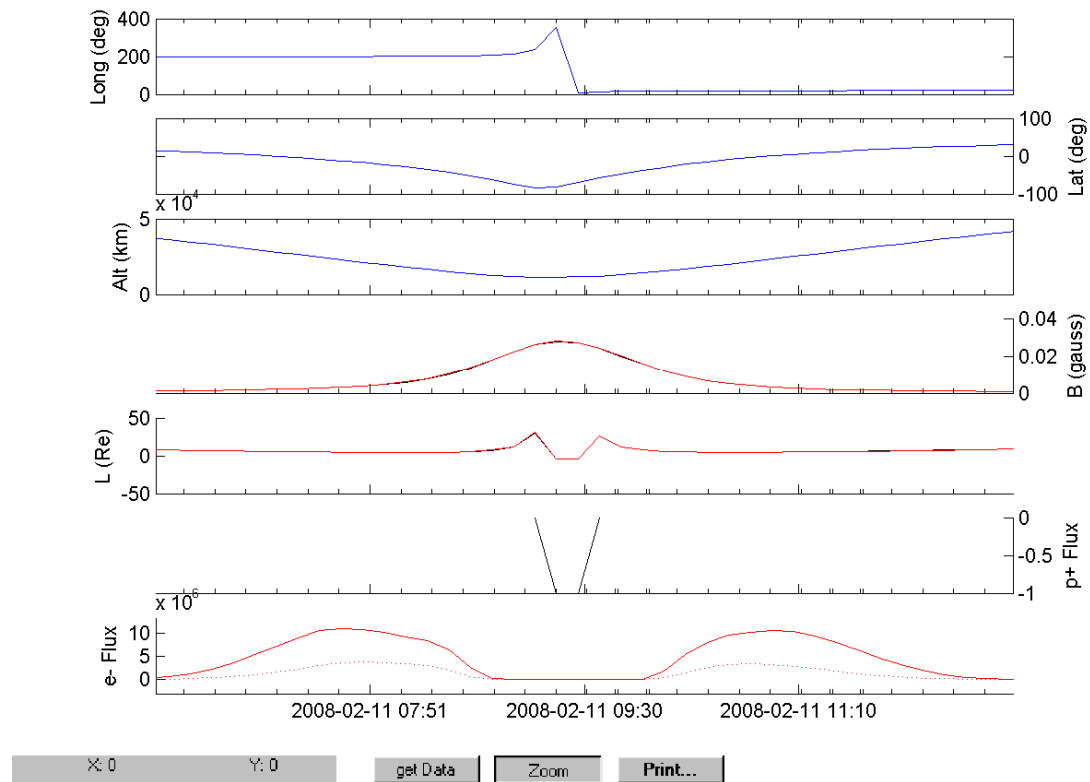
* Rad belt entry time ignoring previous threshold crossings where a gap of more than 30 minutes is present.

IREM radiation counters:

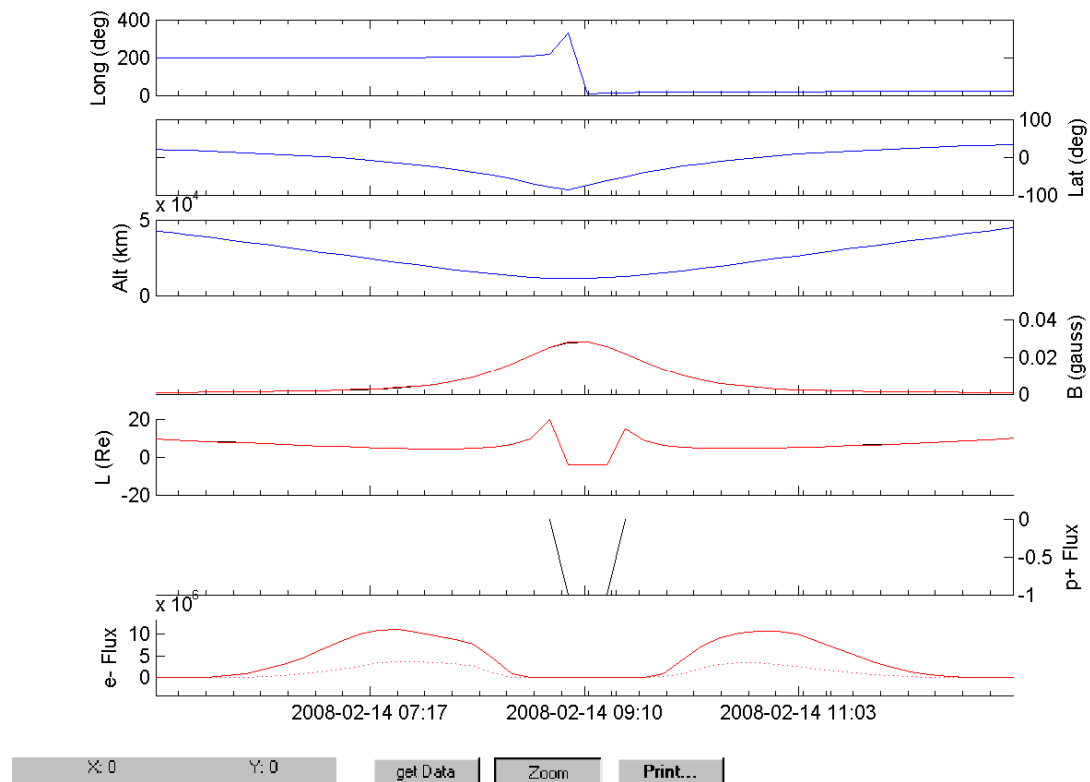


IREM Predicted Radiation Belt Passages

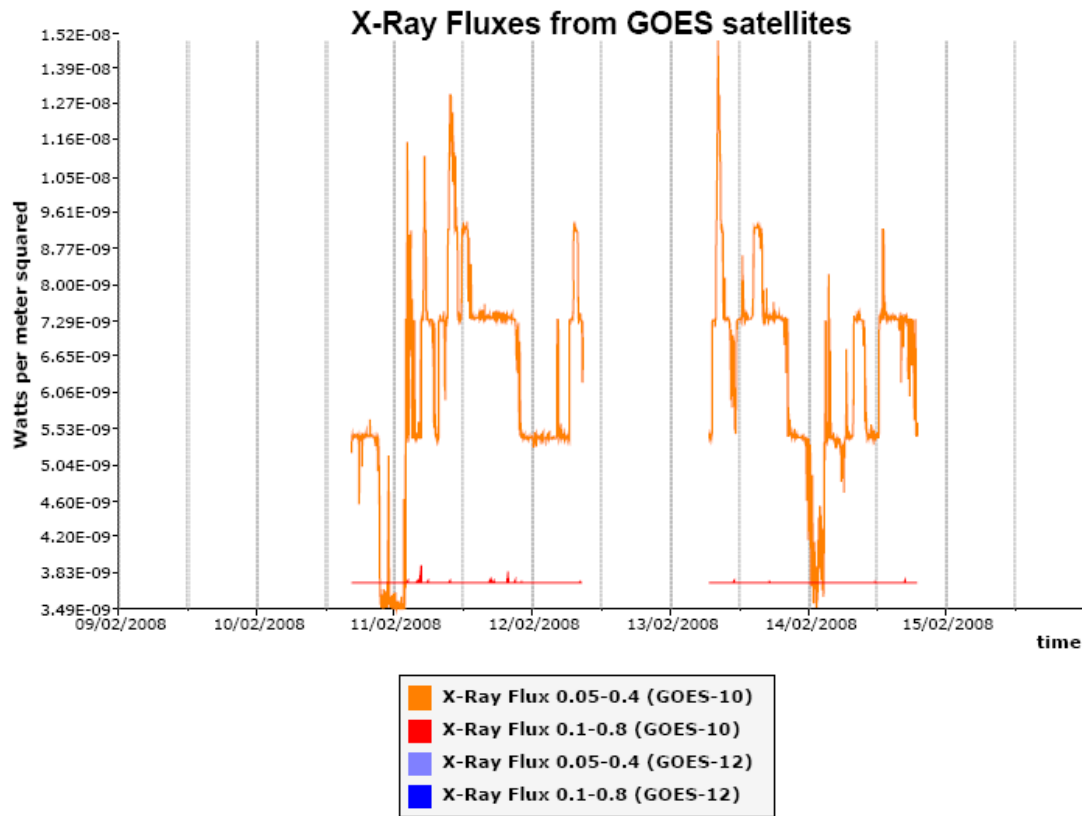
Rev 650



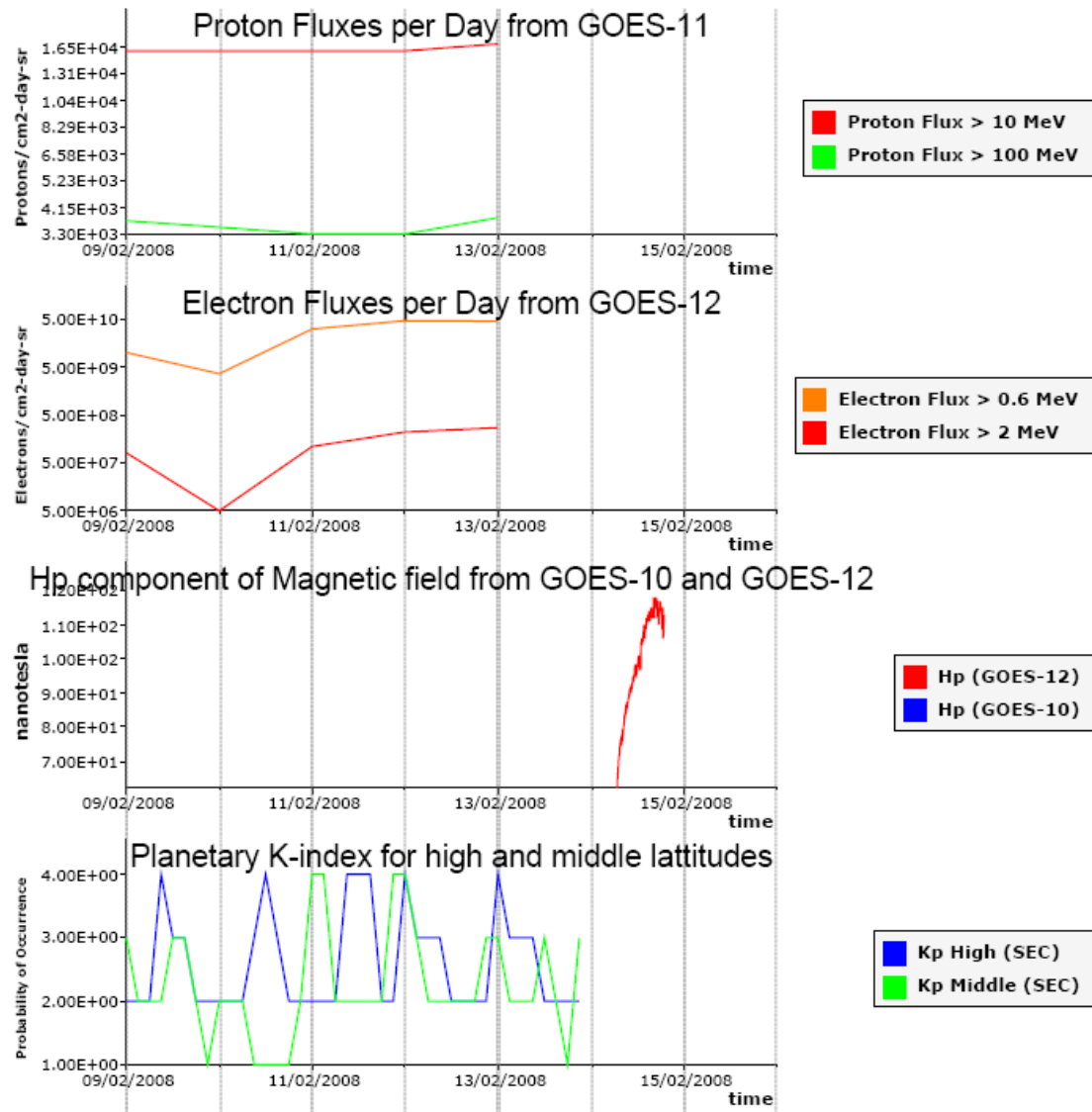
Rev 651



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



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



Proton and electron flux report low radiation background.

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

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