EUROPEAN SPACE AGENCY
DIRECTORATE OF TECHNICAL & OPERATIONAL SUPPORT
MISSION OPERATIONS DEPARTMENT

INTEGRAL
Mission Report

INT-MOC-SYS-RP-1001-OPS-OAI

No. 252
Week 29

23.07.07

Routine Phase

Prepared by: O. Bergogne (OPS-OAI) and INTEGRAL FCT

LIST OF CONTENTS

1 General ... 3
2 Summary of Activities ... 3
3 Satellite Status ... 3
3.1 Platform ... 3
3.1.1 AOCS ... 3
3.1.2 Power ... 3
3.1.3 Thermal ... 3
3.1.4 OBDH ... 4
3.1.5 RFS ... 4
3.2 Payload ... 4
3.2.1 SPI ... 4
3.2.2 IBIS ... 5
3.2.3 JEM-X ... 6
3.2.4 OMC ... 6
3.2.5 IREM ... 7
4 Ground Facilities ... 7
4.1 Mission Operations Centre ... 7
4.2 Ground Stations & Network ... 7
4.3 Science Ground Segment ... 7
4.3.1 ISOC ... 7
4.3.2 ISDC ... 8
5 Special Events ... 8
6 Anomalies ... 8
7 Future Milestones ... 9
8 Appendix ... 10
8.1 Overview of Revolutions ... 10
8.2 Consumables ... 10
8.2.1 Detailed Fuel Book-keeping ... 10
8.3 Detailed Satellite Information ... 11
8.3.1 AOCS SUMMARY OPERATIONS REPORT, 14/07/2007 – 20/07/2007 ... 11
8.3.2 SPI Operations ... 16
8.3.3 IBIS Operations ... 22
8.3.4 JEM-X Operations ... 26
8.3.5 OMC Operations ... 27
8.3.6 IREM Operations ... 29

DISTRIBUTION LIST

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

1 General

The Flight Control Team at MOC has compiled this report with some input provided by the Flight Dynamics Team, ISOC and ISDC.

It addresses the activities from 14.07.07 until 20.07.07 (both dates inclusive) and covers the revolutions 580, 581 and 582.

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 series of Galactic Disk Latitude Scans (RA 14:04:31.20, DEC -59:34:12.0), (RA 14:18:31.20, DEC -63:13:48.0), (RA 14:16:40.80, DEC -59:04:48.0), (RA 13:59:07.20, DEC -63:54:00.0), (RA 14:00:14.40, DEC -59:43:12.0), (RA 13:59:31.20, DEC -63:53:24.0), (RA 13:58:19.20, DEC -63:55:12.0), a raster dither of the Galactic Plane Region 2 (RA 14:08:36.11, DEC -61:30:20.6), a staring for OMC FF #32 (RA 14:33:36.00, DEC -16:24:00.0), and finally a raster of XMM LSS field (RA 02:18:00.00, DEC -07:00:00.0).

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.

2 slews were missed from TL during the observation period, due to problem on Search and Track process.

The fuel consumption over the period between 14/07/2007 and 20/07/2007 was 0.0807 Kg. The remaining propellant is in the order of 145.2964 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

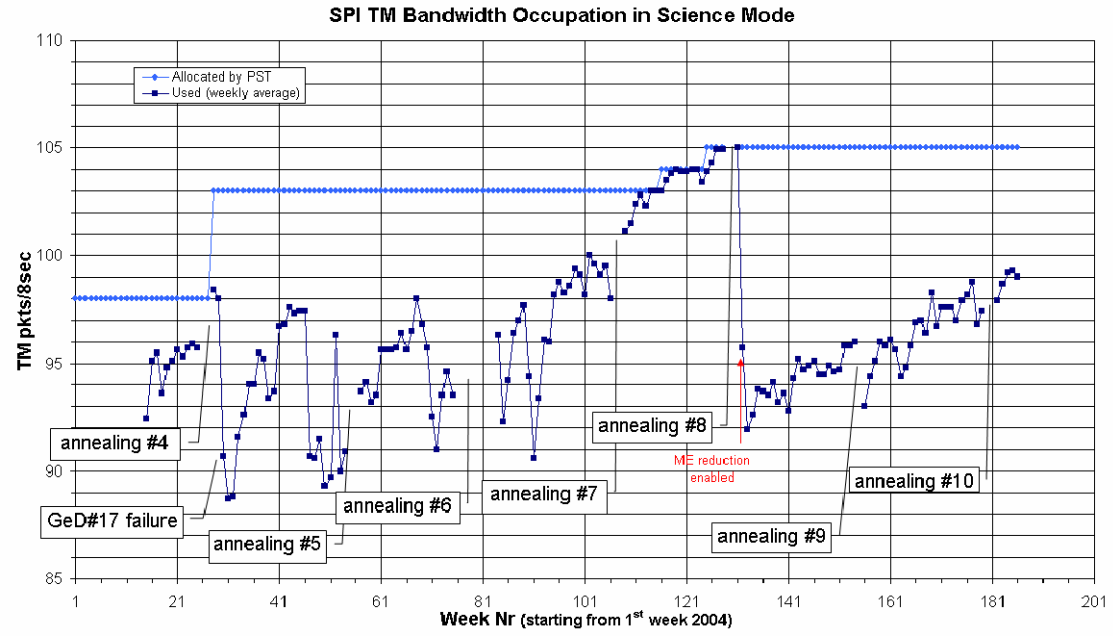
3.2.1 SPI

Following the 10th annealing, which ended on 17th June, 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). 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 except on 20/07/2007 from 16:19:49Z to 21:13:58Z, when the TM allocation was 85 packets/cycle due to an OMC Flat Field Calibration. The average telemetry occupation when the TM allocation was 105 packets/cycle was 99 packets/cycle.

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



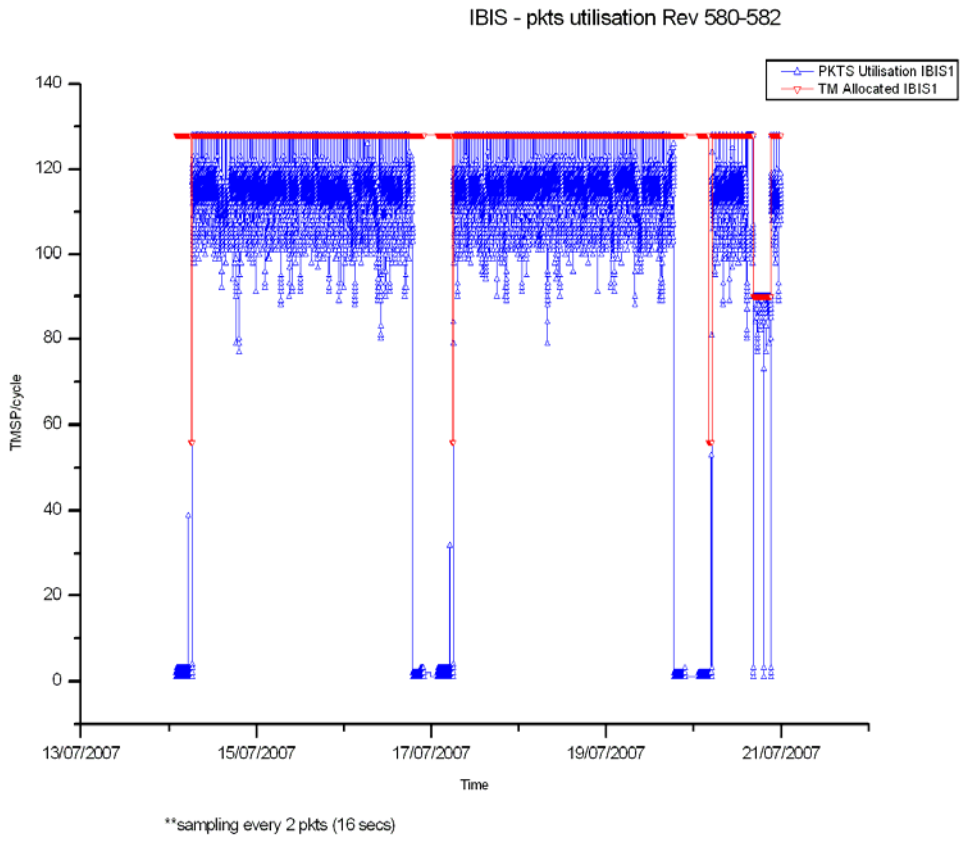
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

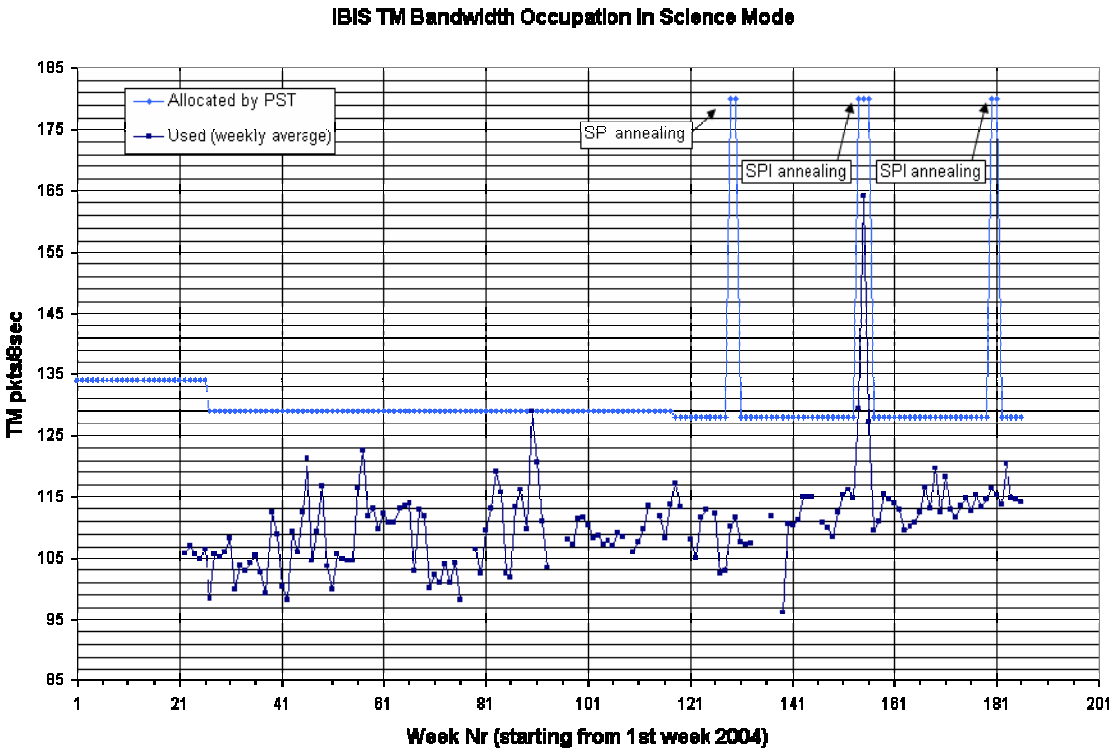
The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle except on 20/07/2007 from 16:19:49Z to 21:13:58Z, when the TM allocation was 90 packets/cycle due to an OMC Flat Field Calibration. The IBIS mean bandwidth utilisation during the observation period (when IBIS was in Science mode) was 114.1 TMPS/cycle, down 0.52 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. On 20/07/2007 from 16:19:49Z to 21:13:58Z the TM allocation was 63 packets/cycle for the purpose of OMC Flat Field and Dark Current Calibrations.

During this reporting period, 202 of the 204 planned science pointings for OMC were executed nominally. Two pointings (05810020 & 05810021) were lost due to problems in acquiring a guide star.

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.

Big sunspot 963 that appeared on 08/07/2007 has been decaying during the week. New sunspot 964 was present on the surface of the sun until 16/07/2007. None of them posed a threat for strong solar flare.

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

4 Ground Facilities

The Operational ground facilities performance was good this week. No pointing was lost due to ground problems. The overall performance was well over the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was good this week.
The FDS was reported having problem in updating TPF. Issues with the MCS, such as TC verifier task crashing, NCTRS swap not working and wrong TM flag in command stacks were also reported. All of this had no operational 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 were however several occasions of a TM drop from Redu but they had no operational 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 590.
Observations were planned and approved up to 590.

The Long Term Plan for AO-5 has been published on the web.

TSFs received up to revolution 584.

2. Observation status
ECS files have been received up to revolution 576.

3. ISOC Science Data Archive

No news.

4. ISOC system
Version 15.2 has been tested and will soon be installed.

5. Problems
None.

4.3.2 ISDC

Status of ISDC observation processing on 23/07/2007:

- Latest Standard Analysis completed: observation 04200030002 (MCG -05-23-016, Revolution 565) on 23/07/2007.

- Latest products archived: observations 04200730023 (Gal disk lat scans, Revolution 576) and 04200030002 (MCG -05-23-016, Revolution 565) on 23/07/2007.

- Latest observation products sent to the observer: observation 04700020002 (1E 1048.1-5937, Revolution 560) on 14/06/2007.

5 Special Events

6 Anomalies

The following problems were reported that impacted operations:

- On DoY 2007.197 (16/07/2007) at 19:14Z, a TM drop (~3min) apparently due to TMP problem was reported during REDU1 tracking. This occurred again at 21:03Z.
- On DoY 2007.198 (17/07/2007) at 06:10Z, the TC verifier died. Some instrument configuration commands went “Unverified” and the mapping sequence failed release due to the interlock. FDS was however able to produce autonomously the updating TPF and no impact was reported.
- On DoY 2007.198 (17/07/2007) at 07:21Z, tests were performed to support SLE links to VIL2. For this reason, INCTR-A & B were swapped. Problems occurred while swapping back to nominal configuration but had no impact on operations.
- On DoY 2007.198 (17/07/2007) at 12:58Z, both the auto-stack and manual stack were wrongly showing “No TM flow”. Despite this issue, FDS was able to produce automatically the updating TPF and no impact was reported.

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

AR id	Date Created	Subject	Segment	Status
INT-2938	2007-07-23	FDS: guide star ID 9034-2416 caused several S/T processes to fail	FDS	Pending

7 Future Milestones

The following activities are foreseen in the next few weeks.

- Periodic Thruster Torque rescaling 27th July 2007 in Rev. 584
- On Board Clock wrap around due 30th July 2007 in Rev. 585.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 580

The observations in revolution 580 began with a series of Galactic Disk Latitude Scans (RA 14:04:31.20, DEC -59:34:12.0), for ~8.8 hours, then (RA 14:18:31.20, DEC -63:13:48.0), for ~8.8 hours, then (RA 14:16:40.80, DEC -59:04:48.0), for ~17.1 hours, then back to (RA 14:04:31.20, DEC -59:34:12.0), for a further ~8.3 hours, then back to (RA 14:18:31.20, DEC -63:13:48.0), for a further ~8.3 hours. Finally, a raster dither of the Galactic Plane Region 2 (RA 14:08:36.11, DEC -61:30:20.6), which lasted ~1.4 hours was performed, until the end of the revolution.

Revolution 581

The observations in revolution 581 began with a series of Galactic Disk Latitude Scans (RA 13:59:07.20, DEC -63:54:00.0), for ~8.3 hours, then (RA 14:00:14.40, DEC -59:43:12.0), for ~8.3 hours, then (RA 13:59:31.20, DEC -63:53:24.0), for ~17.1 hours, then back to (RA 13:59:07.20, DEC -63:54:00.0), for a further ~8.8 hours, then back to (RA 14:00:14.40, DEC -59:43:12.0), for a further ~8.8 hours. Finally, a raster dither of the Galactic Plane Region 2 (RA 14:08:36.11, DEC -61:30:20.6), which lasted ~2.1 hours was performed, until the end of the revolution.

Revolution 582

The observations in revolution 582 began with a series of Galactic Disk Latitude Scans (RA 13:58:19.20, DEC -63:55:12.0), for ~17.1 hours, then a raster dither of the Galactic Plane Region 2 (RA 14:08:36.11, DEC -61:30:20.6), for ~21.2 hours, then a staring for OMC FF #32 (RA 14:33:36.00, DEC -16:24:00.0), for ~3.4 hours, and finally a raster of XMM LSS field (RA 02:18:00.00, DEC -07:00:00.0).

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

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2007-06-29T03:45:16.000Z	145.5390	F	Automatic TM processing.
2007-06-30T13:24:31.000Z	145.5236	F	Automatic TM processing.
2007-07-02T03:32:19.000Z	145.5176	F	Automatic TM processing.
2007-07-03T13:08:55.000Z	145.4912	F	Automatic TM processing.
2007-07-05T03:21:55.000Z	145.4772	F	Automatic TM processing.
2007-07-06T13:16:55.000Z	145.4531	F	Automatic TM processing.
2007-07-08T03:09:39.000Z	145.4370	F	Automatic TM processing.
2007-07-09T13:00:23.000Z	145.4184	F	Automatic TM processing.
2007-07-11T03:07:49.000Z	145.4060	F	Automatic TM processing.
2007-07-12T12:47:34.000Z	145.3770	F	Automatic TM processing.
2007-07-14T02:37:38.000Z	145.3630	F	Automatic TM processing.

2007-07-15T12:13:43.000Z	145.3441	F	Automatic TM processing.
2007-07-17T02:26:03.000Z	145.3345	F	Automatic TM processing.
2007-07-18T12:19:51.000Z	145.3074	F	Automatic TM processing.
2007-07-20T02:14:35.000Z	145.2964	F	Automatic TM processing.

This report was generated Fri Jul 20 08:00:19 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, 14/07/2007 – 20/07/2007

AOCS operations were executed from the Automatic Timeline.

During this period, 78 Open Loop Slews, 152 Closed Loop Slews and 7 Momentum Biases were executed.

2 slews (CSL) were missed from TL, during the observation period, due to problem on S/T process: the selected guide star resulted to be a variable star with magnitude at limit of the S/T magnitude threshold.

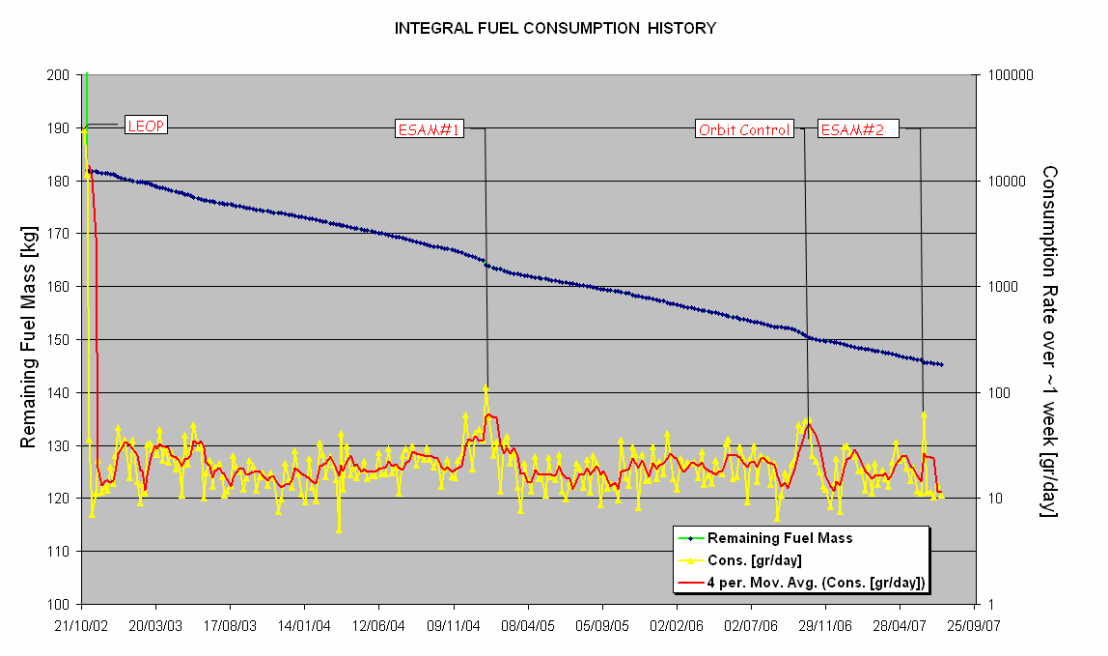
This is equivalent to ~ 0.9 % of the total number of slews planned (231).

Orbit Control

No update.

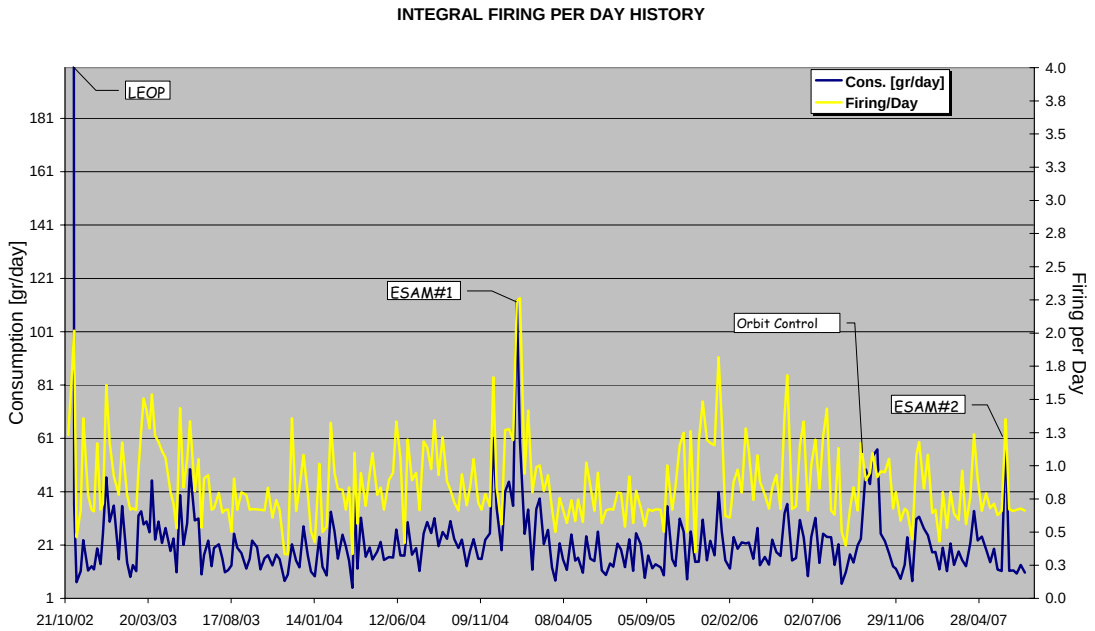
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 20/07/2007 is reported in the plot below.



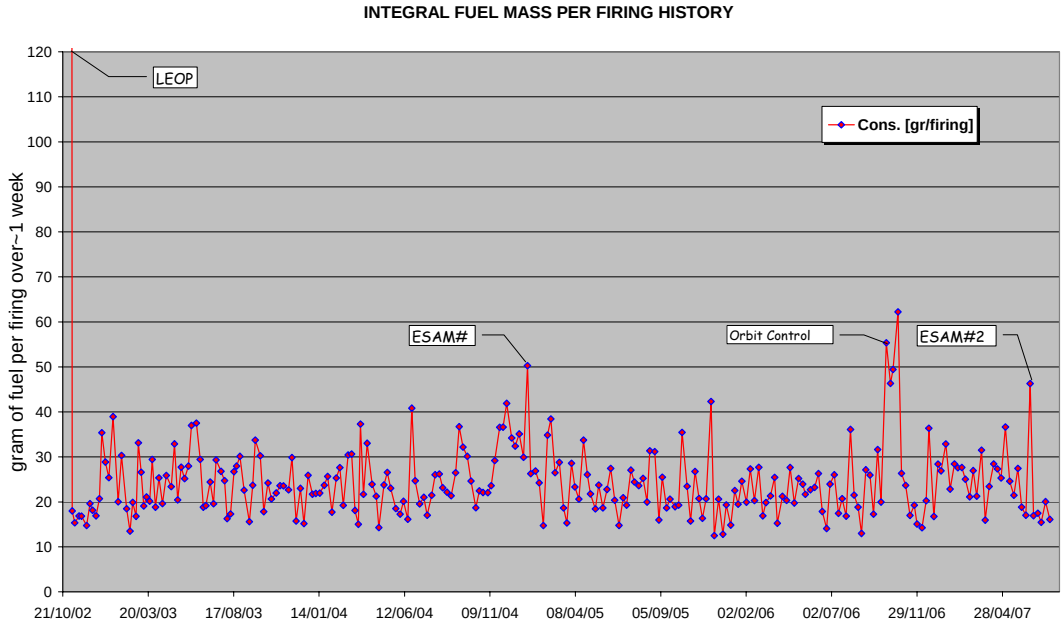
The plot above consider the ESAM fuel consumption spread over period of ~1 week.

The firing per day over the period between 01/11/2002 and 20/07/2007 is reported in the plot below.



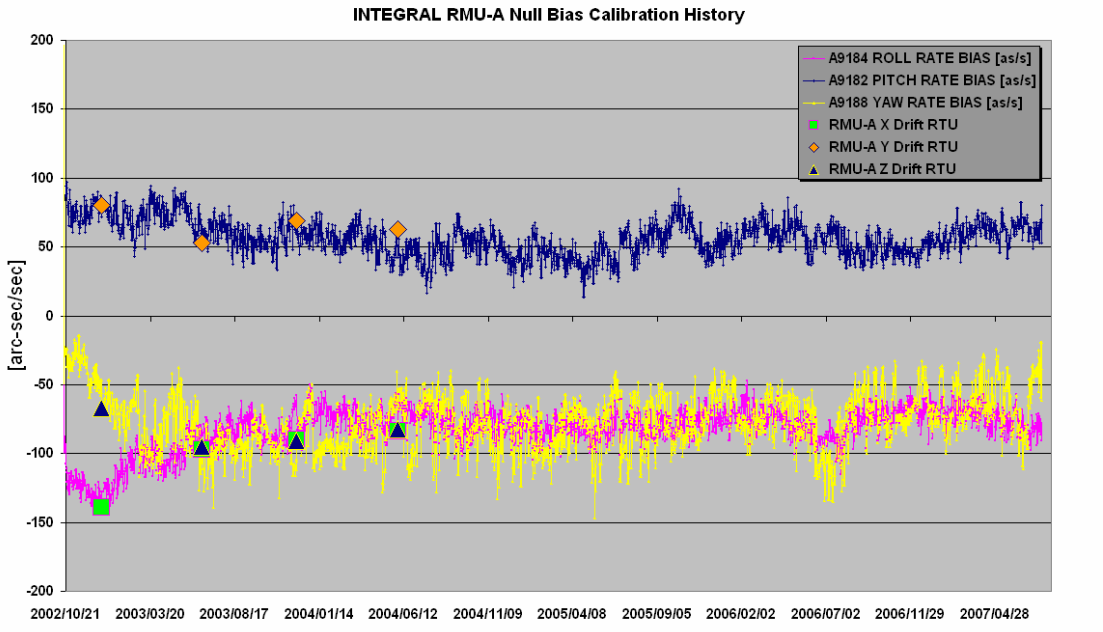
The plot above consider the ESAM fuel consumption spread over period of ~1 week.

The fuel per firing over the period between 01/11/2002 and 20/07/2007 is reported in the plot below.

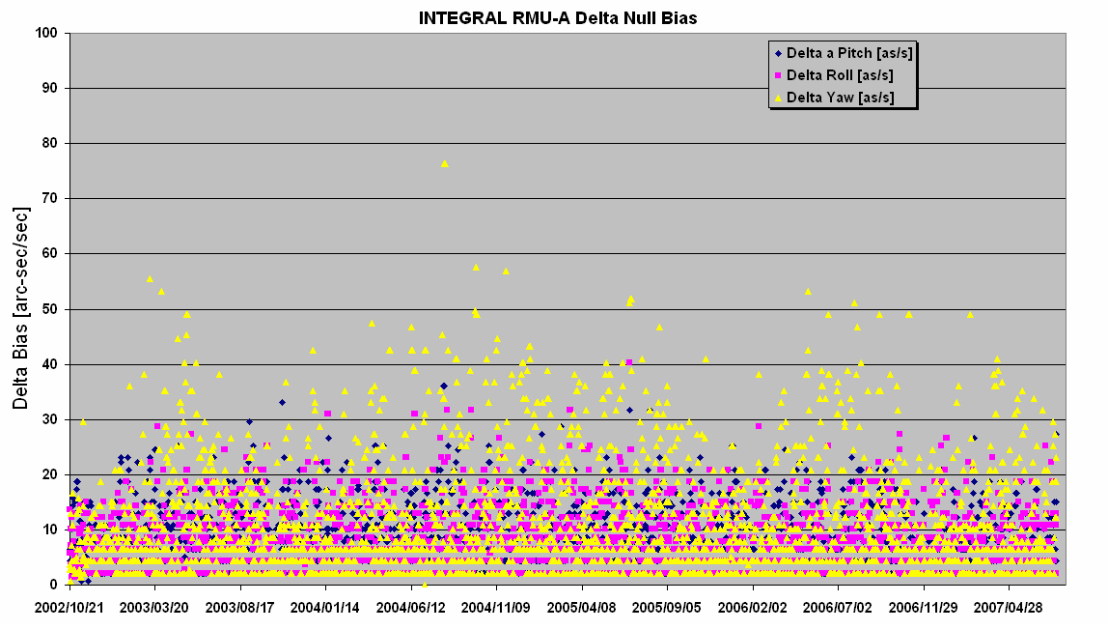


The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 20/07/2007 is reported in the plot below.



The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over period between 01/11/2002 and 20/07/2007 is reported in the plot below.



14/07/2007 (Day of Year 195, Revolution 579-580)

Nothing to report.

15/07/2007 (Day of Year 196, Revolution 580)

Nothing to report.

16/07/2007 (Day of Year 197, Revolution 580)

Nothing to report.

17/07/2007 (Day of Year 198, Revolution 580-581)

FDS failed slew update: at 14:33z the FDS failed the update of slew ID 05810018. FDS reported an error during the update process: the TPF update software spotted a constraint violation on the initial attitude of pointing 05810017 at 2007-07-17T15:18:14Z (STR occultation by earth). That is about two minutes before starting the slew at 2007-07-17T15:20:18Z to attitude 05810018. The TPF generation was aborted. The TPF could be produced by running Recover Schedule some minutes later.

A manual recovery was performed at 14:42z and the slew 05810018 manually updated in TL.

No impact on TL.

Search/Track process failed, start guide star failed PTV: at 16:27z, the sequence for slew ID 05810020 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 8676-3594. This star was reported in the mission catalogue and not found in the mapping of the STR FOV after slew 05810019.

An investigation on the Hipparcos star catalogue resulted in a variable star with average Mi 8.37 and with magnitude fluctuation over Mi 8.5, likely at the limit of the requested S/T limit magnitude (8.5).

A new mapping was manually commanded and a manual recovery performed from the attitude of PID 05810019 to the attitude of PID 05810021 by OSL.

The next slew ID 05810022 was manually updated at 17:19Z.

The following slews were missed in TL: 05810020 (CSL) -21 (CSL)

18/07/2007 (Day of Year 199, Revolution 581)

FDS failed slew update: at 18:43z the FDS failed the update of slew ID 05810065. FDS reported an error during the update process: the TPF update software spotted a constraint violation on the initial attitude of pointing 05810064 at 2007-07-18T18:36:16Z (STR occultation by earth). That is about two minutes before starting the slew at 2007-07-18T19:26:14Z to attitude 05810065. The TPF generation was aborted. The TPF could be produced by running Recover Schedule some minutes later.

A manual recovery was performed at 18:53z and the slew 05810065 manually updated in TL.

No impact on TL.

19/07/2007 (Day of Year 200, Revolution 581)

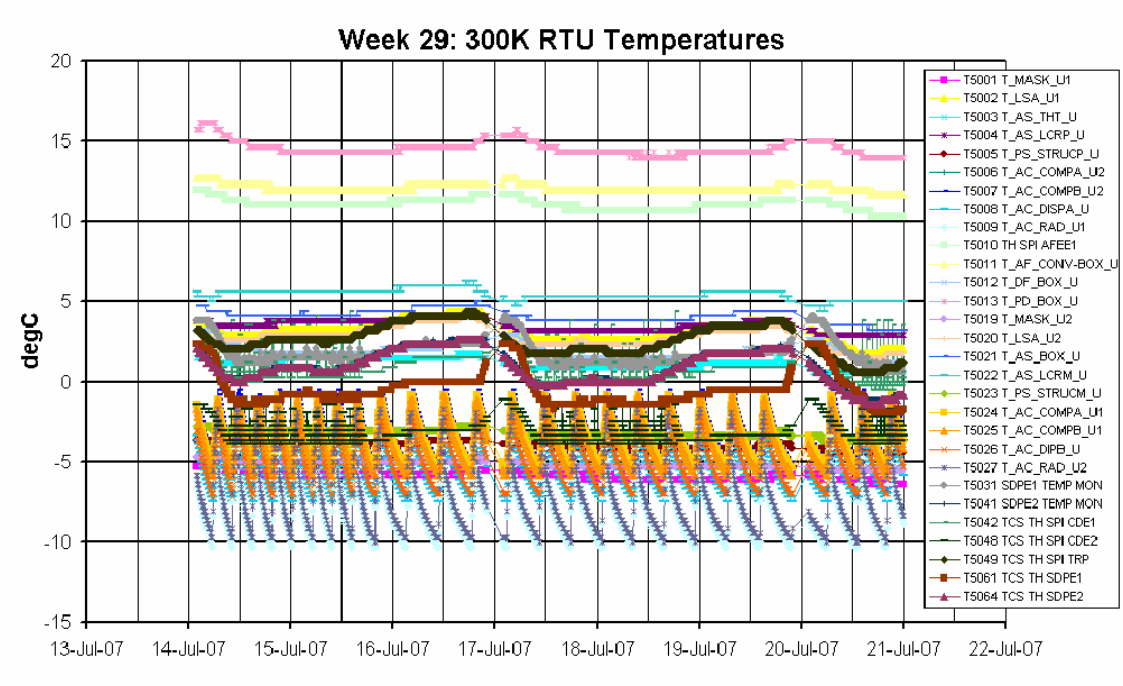
Nothing to report.

20/07/2007 (Day of Year 201, Revolution 581-582)

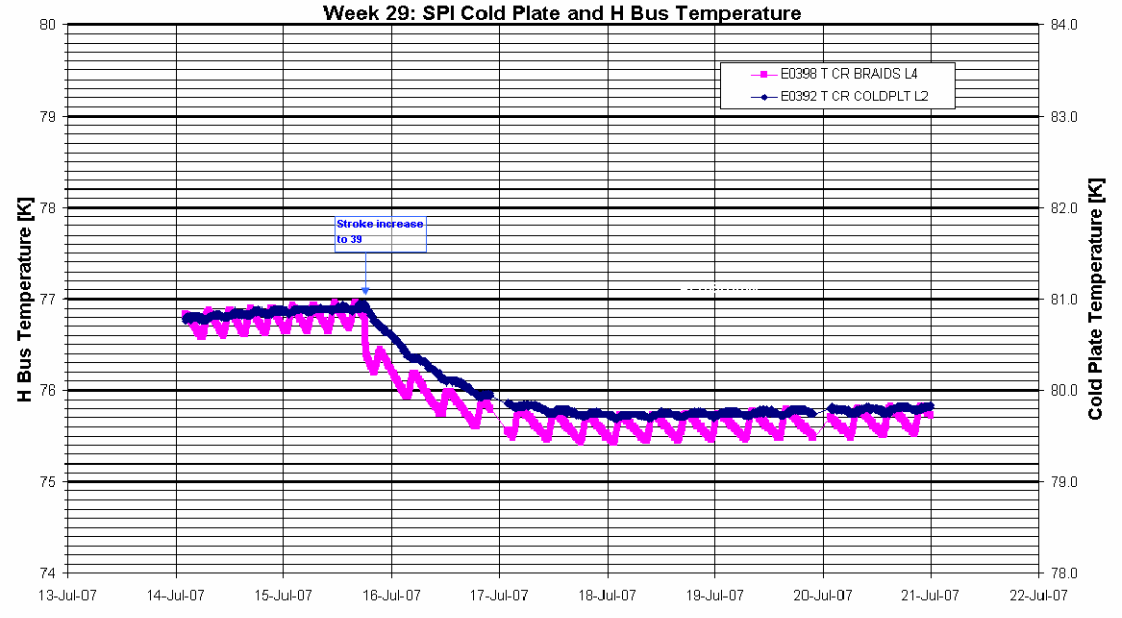
Nothing to report.

8.3.2 SPI Operations

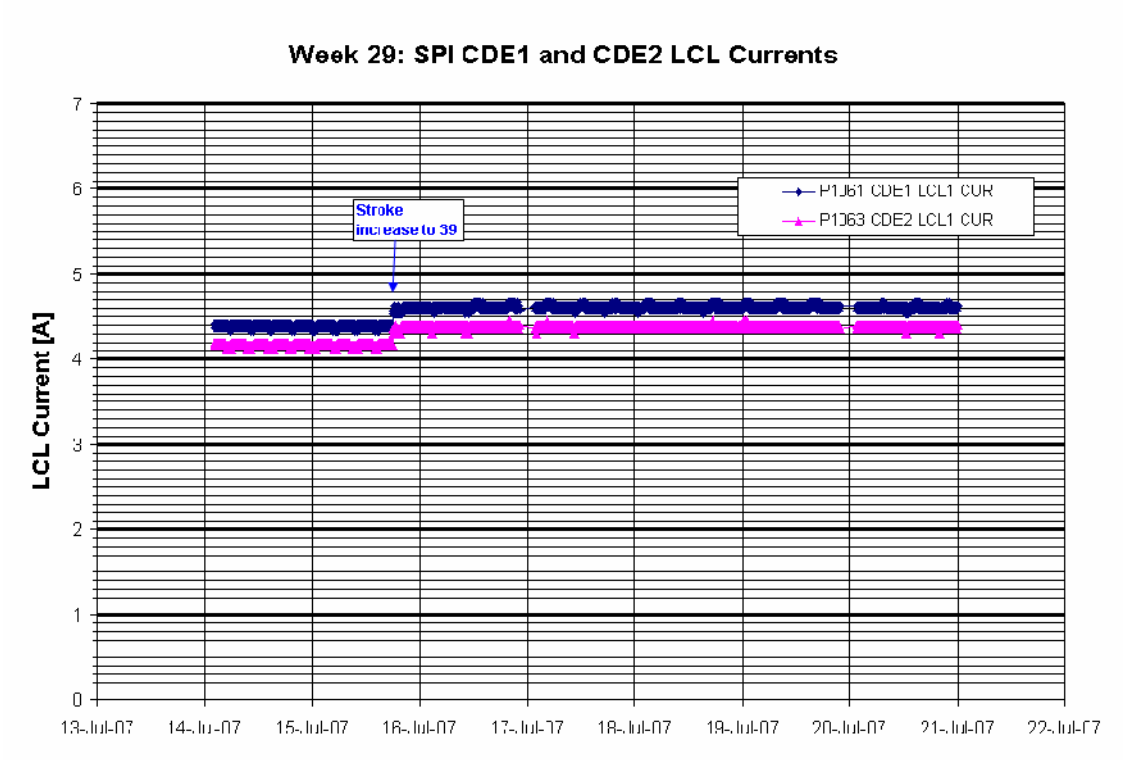
Unit Temperatures: All the equipment temperatures are inside the operational limits. The following plot shows their evolution during the reporting period.



Stirling Compressors and Cryostat: The performance of the compressors is nominal. The cold plate temperature was maintained in the range 80K +/-1K. On 2007-07-15 at 18:05Z the stroke of both CDEs was increased to 39, as the cold plate temperature TM parameter E0392 had reached the Warning High limit of 80.9K. The following plot shows the evolution of the cold plate and H bus temperatures during the reporting period.



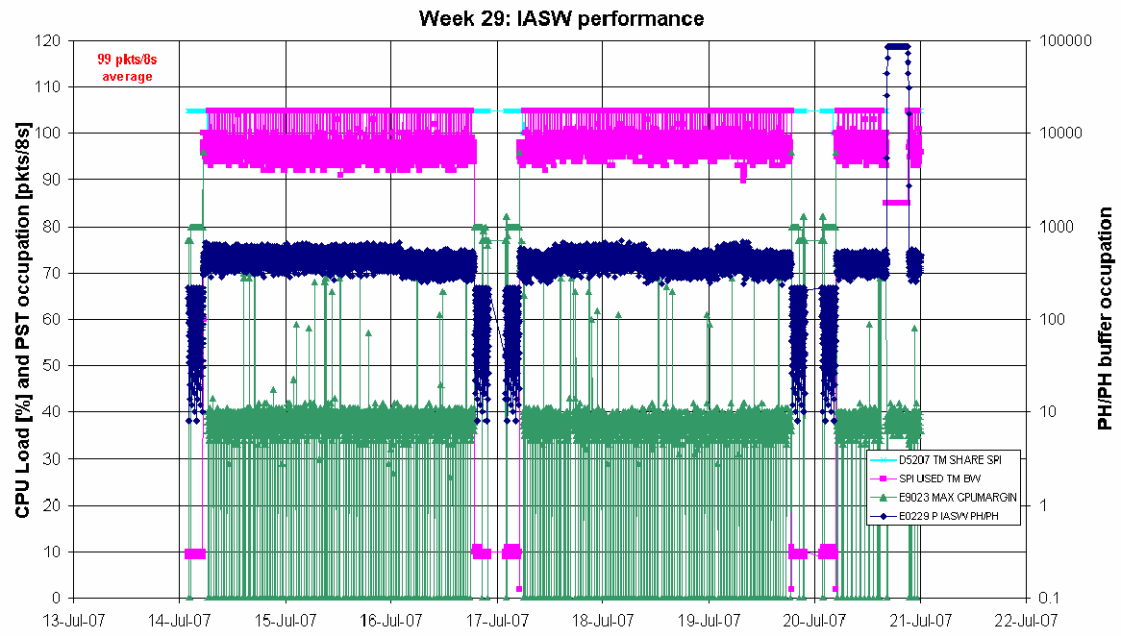
The following plot shows the evolution of the CDE currents during the reporting period.



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. The average TM bandwidth occupation of SPI was 99 packets/cycle over the science window, when the TM allocation was 105 packets/cycle.

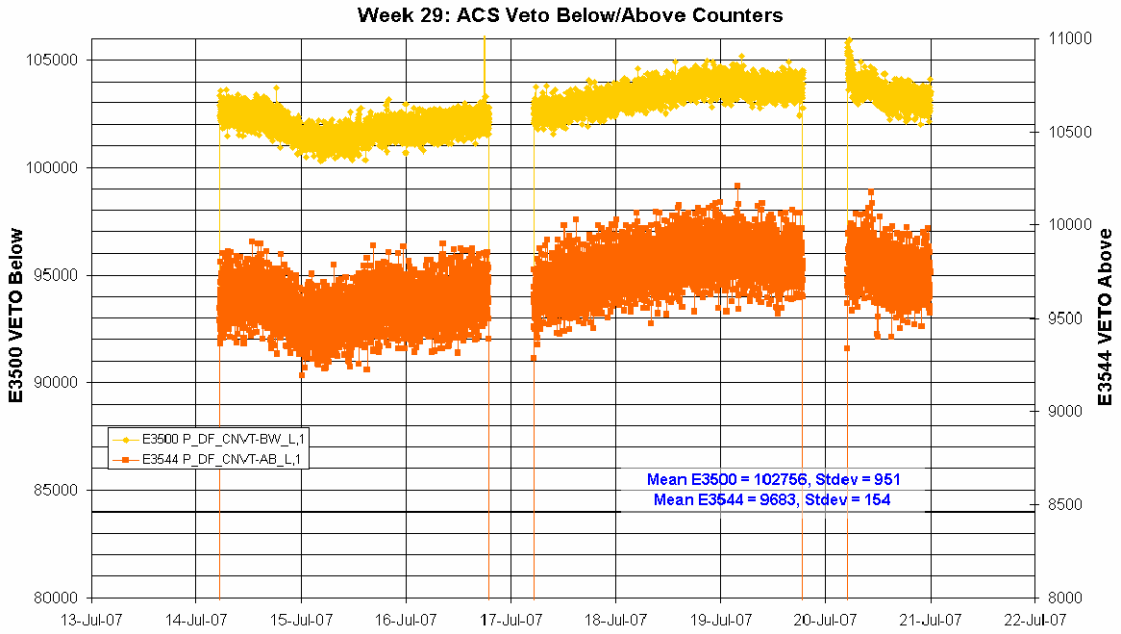
The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.

Note that on 20/07/2007 from 16:19:49Z to 21:13:58Z the TM allocation was 85 packets/cycle due to an OMC Flat Field Calibration.



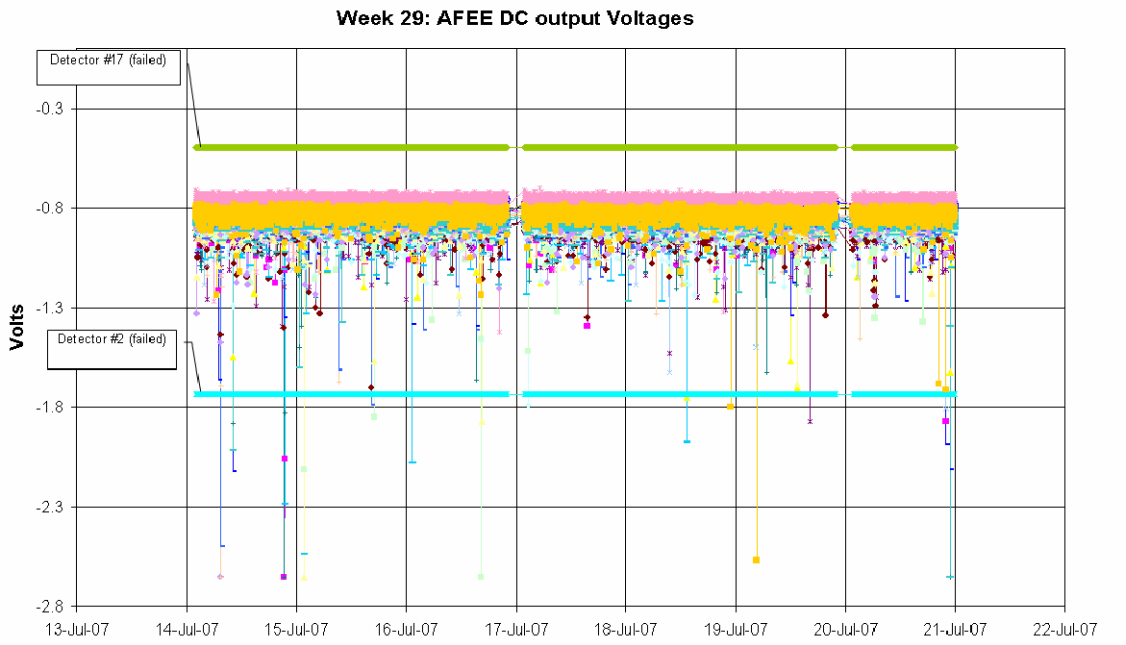
ACS: The performance of the ACS is nominal, except for FEE #81 which remains switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is still OFF due to the anomaly on 5/8/2003 (INT_SC-61).

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

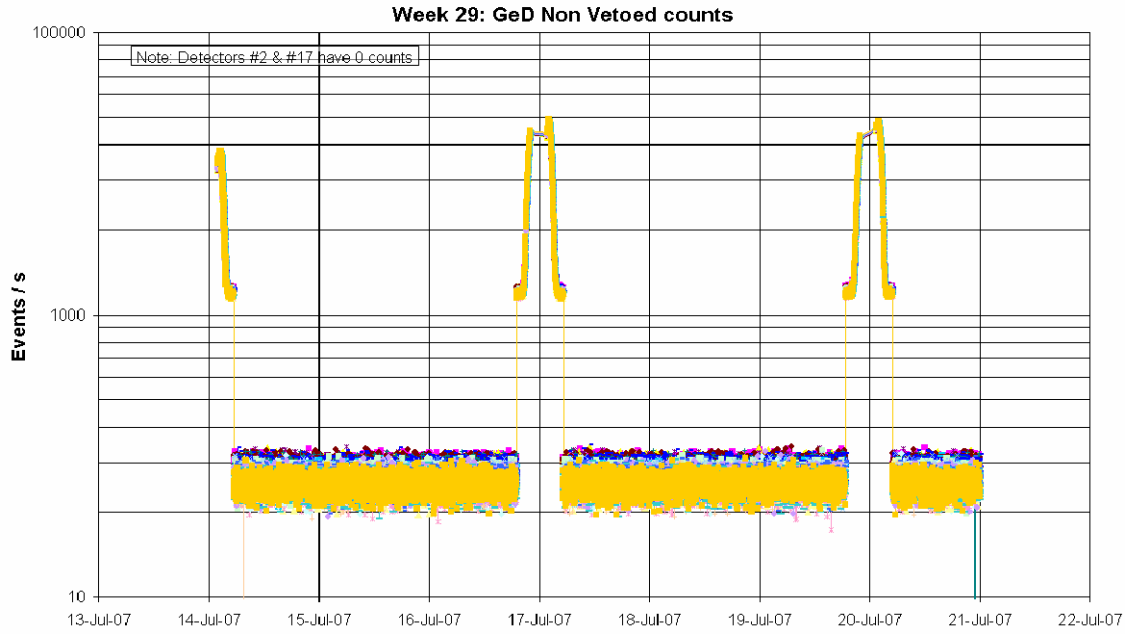


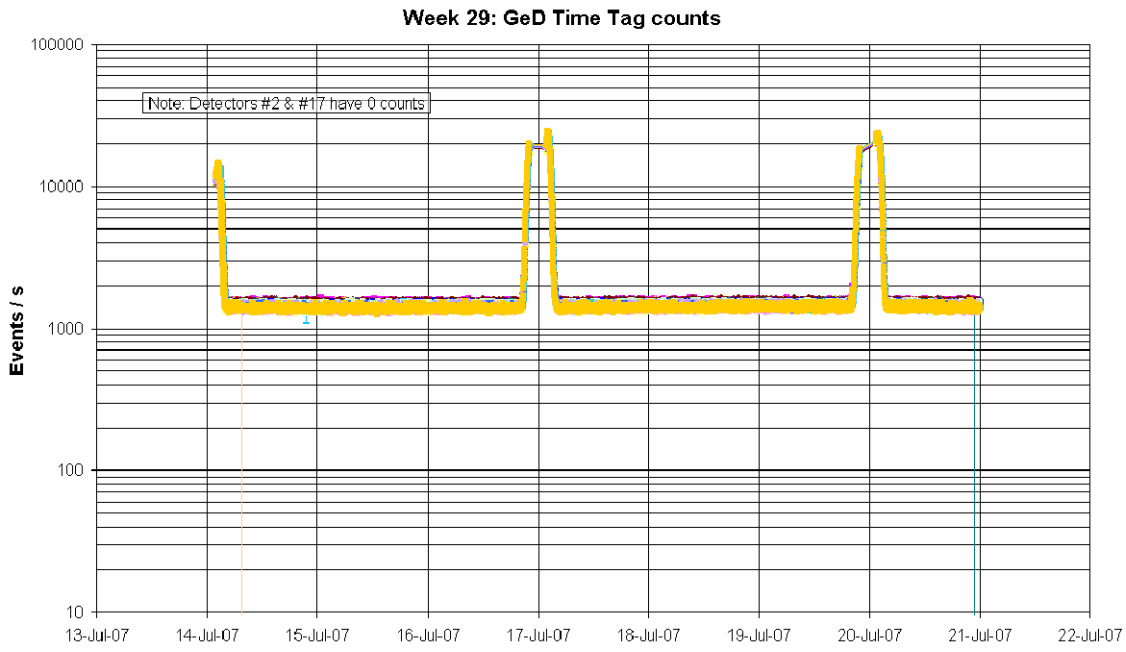
AFEE: The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution and is therefore operated at a lower HV setting of 3.5kV (instead of 4kV).

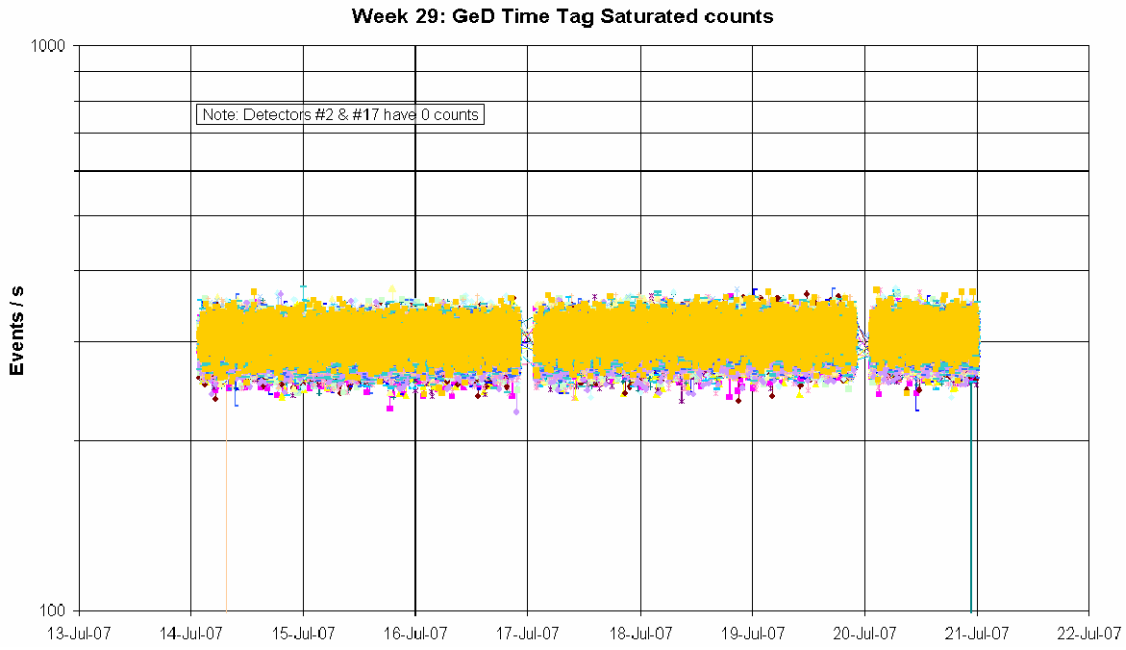
The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06.12.2003 and detector #17 is failed since 17.07.2004.



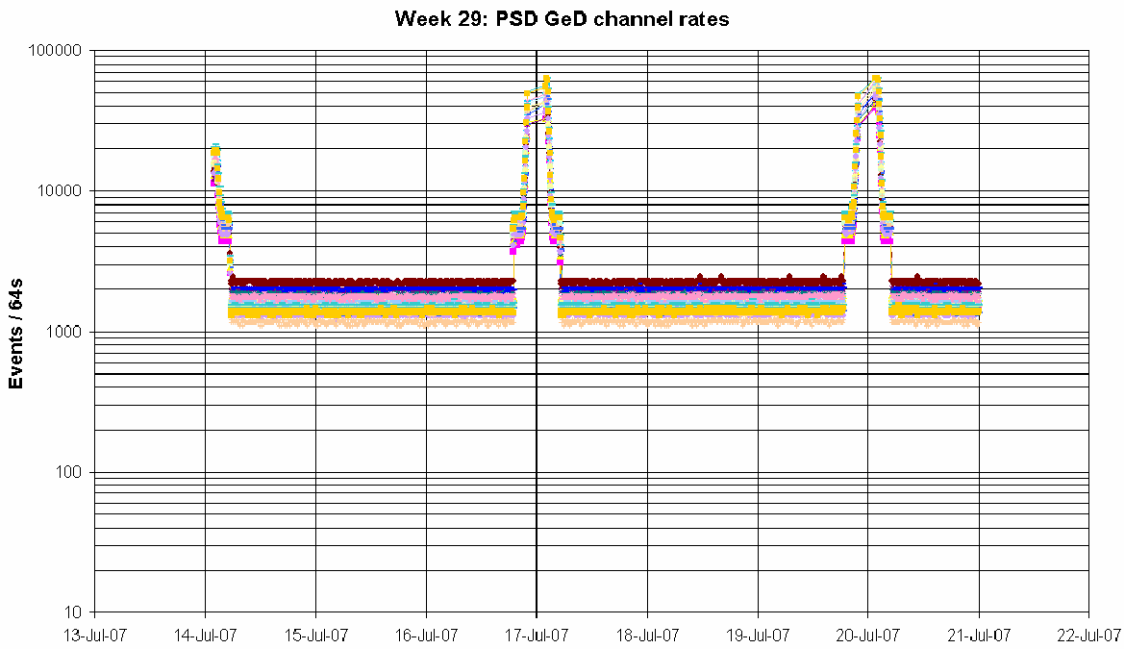
DFEE: The performance of the unit is nominal. The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event Count Rates during the reporting period.







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:

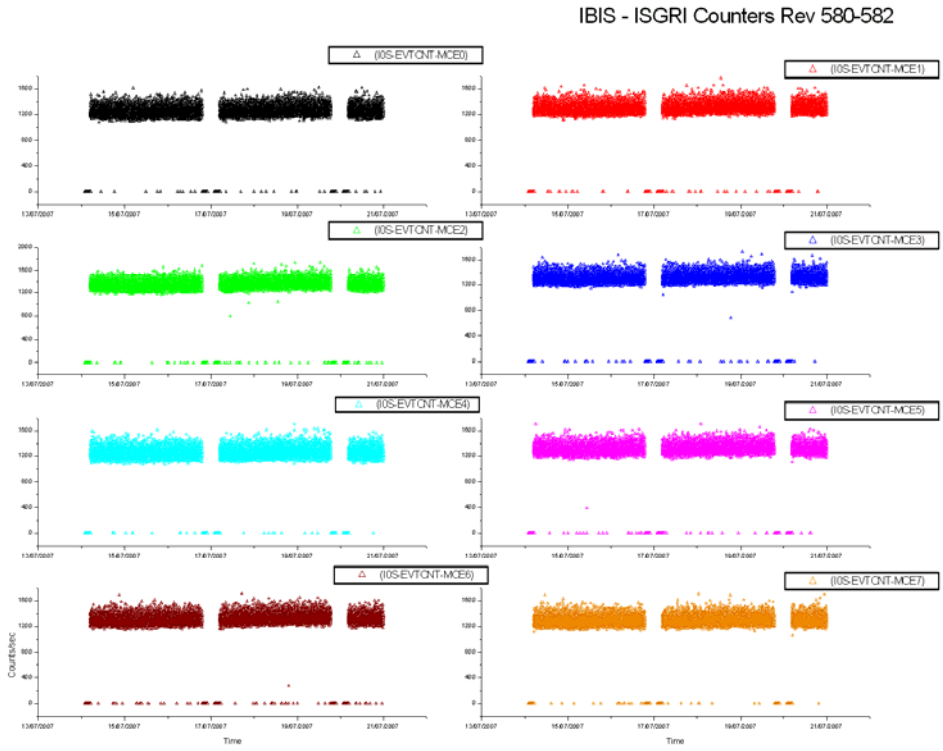
- On 2007-07-18 at 03:06:04Z and again at 22:07:23Z OEM APID 1024 ID 243 EXCEPTION SPI1 SPECTRA BUILDING NOT COMPLETED was received. This was during Pointing IDs 05810038 and 05810069. As they were single occurrences, no action was taken.
- On 2007-07-19 at 07:57:12Z TM parameters E3840 P PD CHL-RTE L0 to E3858 P PD CHL-RTE L18 (except for E3842 and E3857) all went OOL Alarm Low, with value 0. These are the PSD channel rates for all detectors except the failed GeD#2 and GeD#17 (which have no OOL defined as they are permanently zero). They remained at zero until 08:12:08Z, when they returned to a nominal value of their own accord. This is a re-occurrence of a previously observed anomaly recorded as INT_SC-179 PSD Channel Rates Malfunction. A new AR will be opened to cover this.
- On 2007-07-20 at 02:00:11Z OEM APID 1024 ID 1 EXCEPTION SPI1 FIXED POINT OVERFLOW was received. This was during the AOS_CHK window of revolution 582, when the time verification TC was sent. This OEM is sometimes received when this TC is sent and no action was taken.
- On 2007-07-20 at 05:29:56Z TM parameter E3500 ACS CntVetoBelow went OOL High (value = 105636). This was shortly after radiation belt exit of revolution 582. It returned within limits of its own accord at 05:31:40Z.
- On 2007-07-20 from 21:30:43Z to 21:35:15Z, 17 occurrences of OEM APID 1024 ID 245 EXCEPTION SPI1 SPECTRA COMPRESSION OVERFLOW were received followed at 21:35:15Z by OEM APID 1024 ID 244 EXCEPTION SPI1 SPECTRA COMPRESSION NOT COMPLETED. This was following 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 previous OMC Flat Field Calibrations with IASW 433. These OEMs indicate

a problem with the spectra compression due to insufficient bandwidth and can be considered nominal behaviour when insufficient bandwidth has been allocated to SPI to allow the spectra compression. They stopped of their own accord and therefore no action was taken.

8.3.3 IBIS Operations

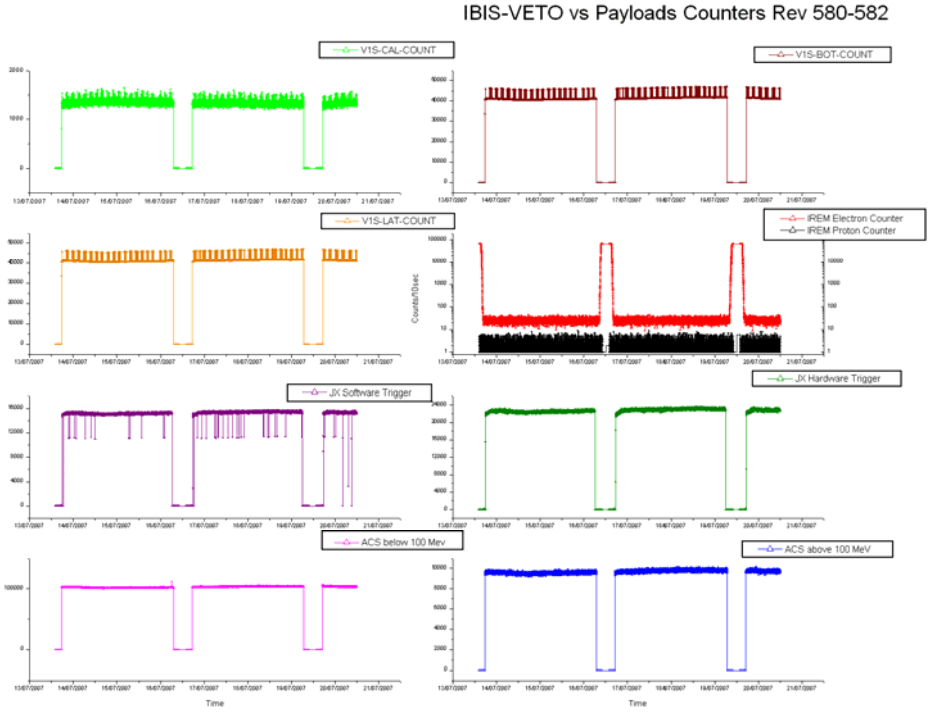
IBIS Event Counters Plots

ISGRI Counters:



**sampling every 4 pkts (32 secs)

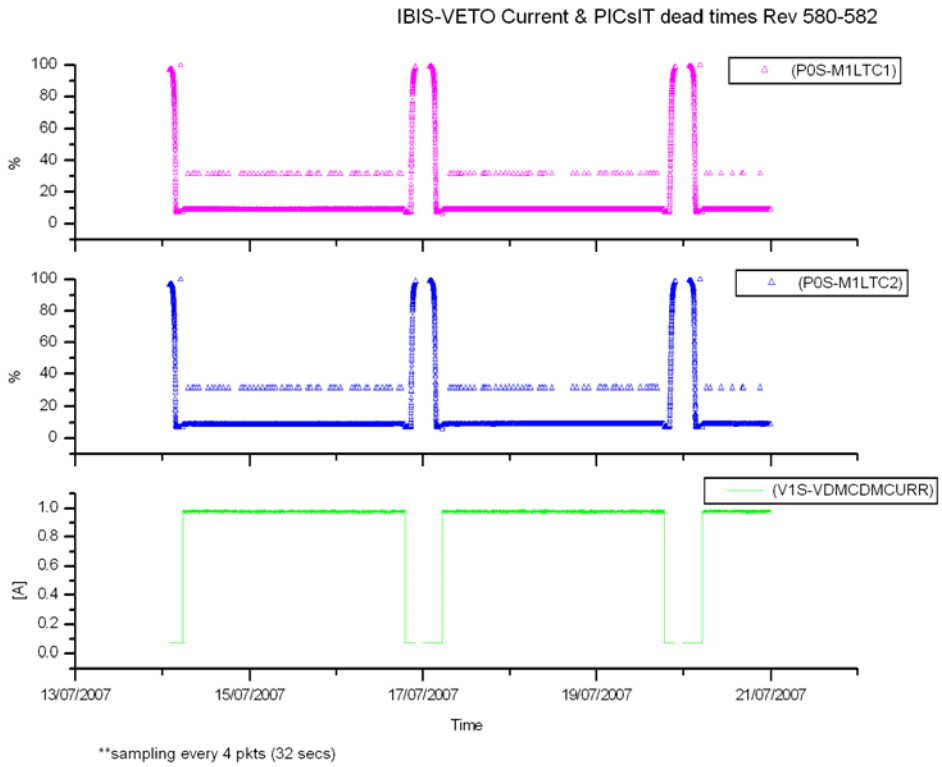
VETO vs Payloads Counters:



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

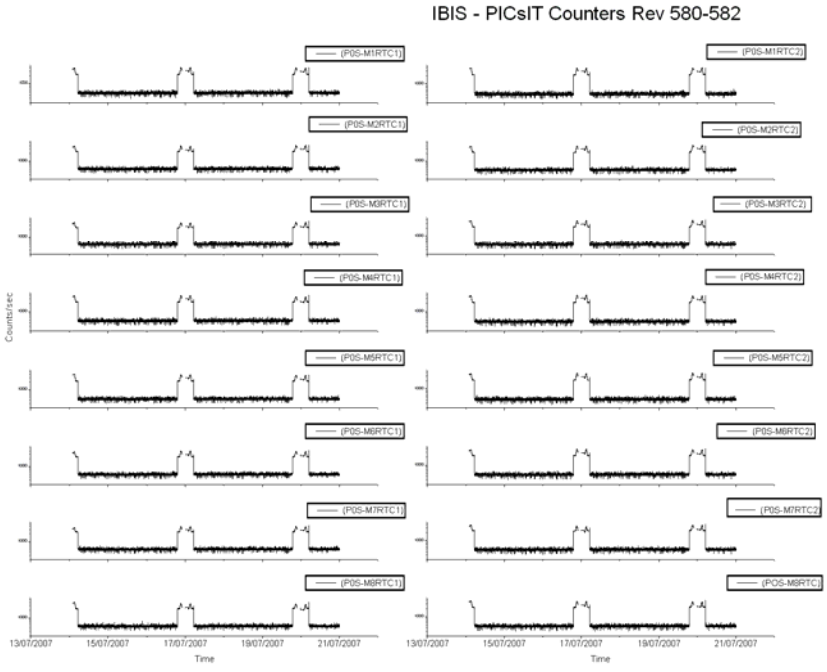
The week was characterised by low radiation as reported by the payload.

VETO Current:



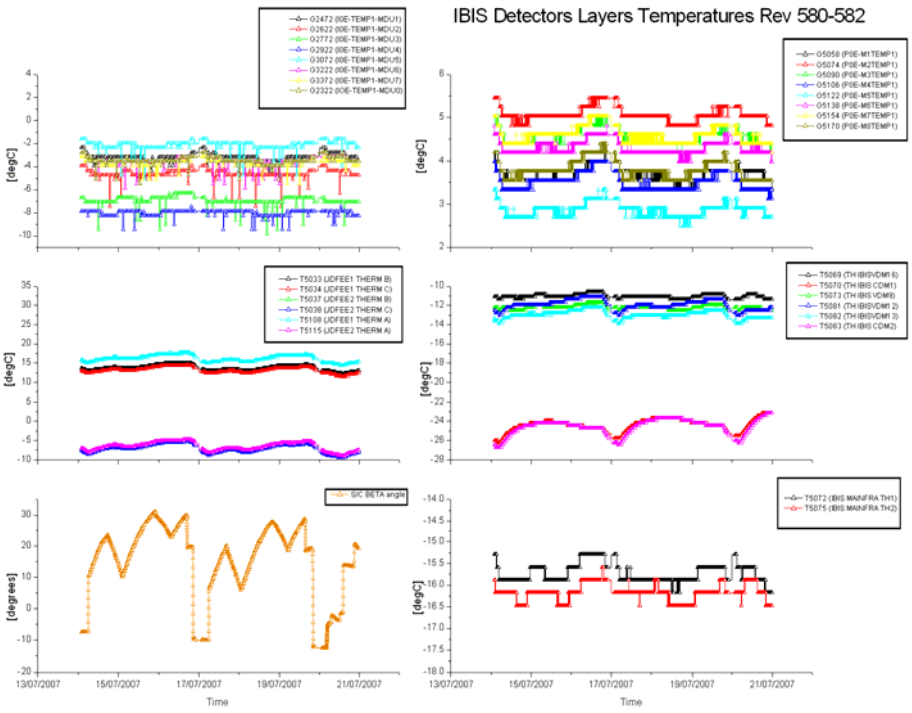
**sampling every 4 pkts (32 secs)

PICsIT Counters:



**sampling every 4 pkts (32 secs)

IBIS Detectors Layers Temperatures:



**sampling every 8 pkts (64 secs)

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 G2000 (I0E-OVFWPXADD-Mi) were reported at Radiation Belts passage.

2007-07-14 (DOY 195, Rev 579-580) to 2007-07-16 (DOY 197, Rev 580)

IBIS operations executed nominally.

2007-07-17 (DOY 198, Rev 580-581)

At 06:11:49Z several parameters from the G5068 and G5072 families failed Status Consistency Check (value = TRUE). These are the PICsIT PDM Semimodule FIFO Error Flags. This occurred at the start of pointing ID 05810002, just after the ED GESTAN02 to put IBIS in Standard mode at the start of the revolution. They returned within limits of their own accord at 06:12:20Z and therefore no action was taken.

2007-07-18 (DOY 199, Rev 581)

IBIS operations executed nominally.

2007-07-19 (DOY 200, Rev 581)

At 15:06:51Z, the following OEM APID 1280 ID 133 CLASS 2 (ANOMALY) was received:

"IBIS1 IASW LSL TRANSFER FAILED (LOW LEVEL)"

together with OEM APID 1280 ID 131 CLASS 2 (ANOMALY):

"IBIS1 IASW LSL TRANSFER FAIL REPORT FOR HIGH-LEVEL MODULE RESET".

These 2 OEMs were followed at the next TM cycle by OEM APID1280 ID 238 CLASS 3 (TC REJECT) IBIS1 MCE5 TIME OUT.

This anomaly is similar to the previous ones that flagged a Time-Out in several peripherals and is reported in Anomaly Report INT_SC-113. This time, according to G1581 (parameter of OEM ID 131), the anomaly occurred with ISGRI MCE5.

Summarising, IBIS incurred a timing problem on the Low Speed Line that affected the communication with the peripheral. During this time, a request for HK1 was sent to the MCE5 without any answer due to a black out in communication between the peripheral and the DPE. The IASW flagged the lack of generation of HK1 data from MCE5 as an on-board rejection (time-out) of the internal TC for HK1 acquisition. During this time no valid HK was collected from MCE5, therefore what was reported in the HK1 for MCE5 was simply the IASW default (i.e all 0000...). This is confirmed by the reading of some TM parameters reporting the raw value 0. The unit solved the internal conflict on the LSL autonomously and reported the valid HK1 for MCE5 in the next cycle and no further action was required as per recovery action I-REJ-1.

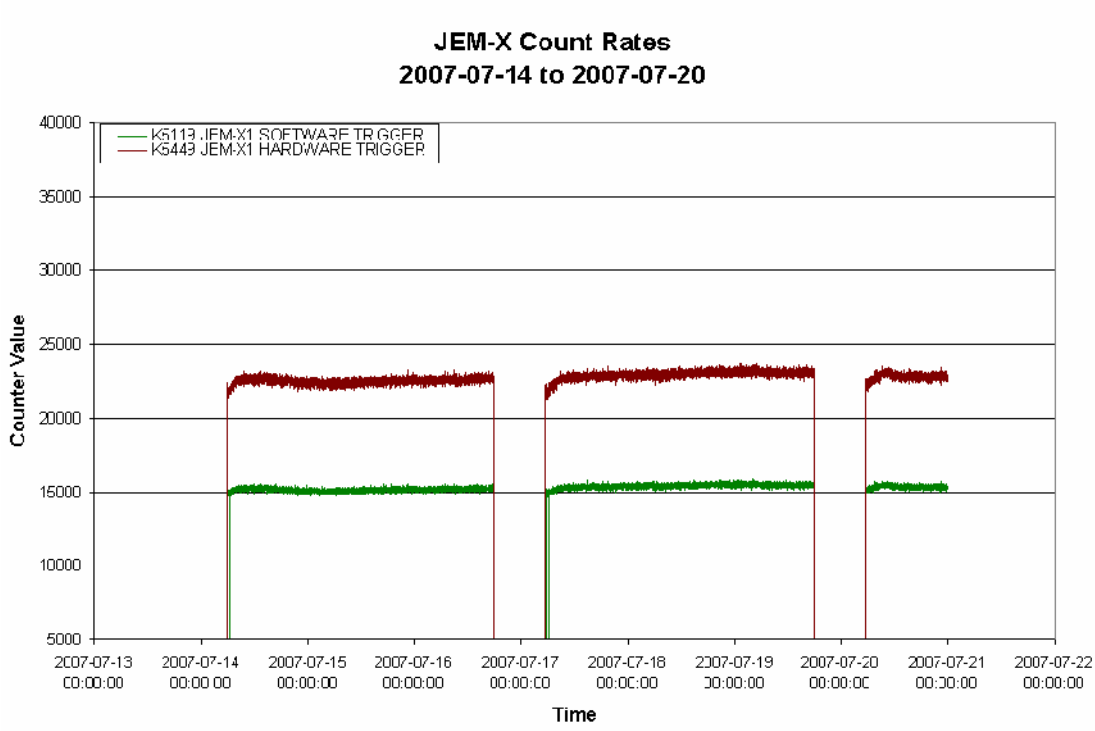
2007-07-20 (DOY 201, Rev 581-582)

At 04:44:15Z the TM parameter G2069 I0S-EVTCNT-MCE4 went OOL Low (value = 0). This is the number of events triggering the MCE4 per second. This was during the execution of the ED GEISCL03 for the ISGRI calibration before radiation belt exit. It returned within limits of its own accord at 04:46:39Z and no action was taken. As a similar incident occurred on MCE2 last week, during normal observations, this should be monitored.

8.3.4 JEM-X Operations

8.3.4.1 JEM-X Count Rates

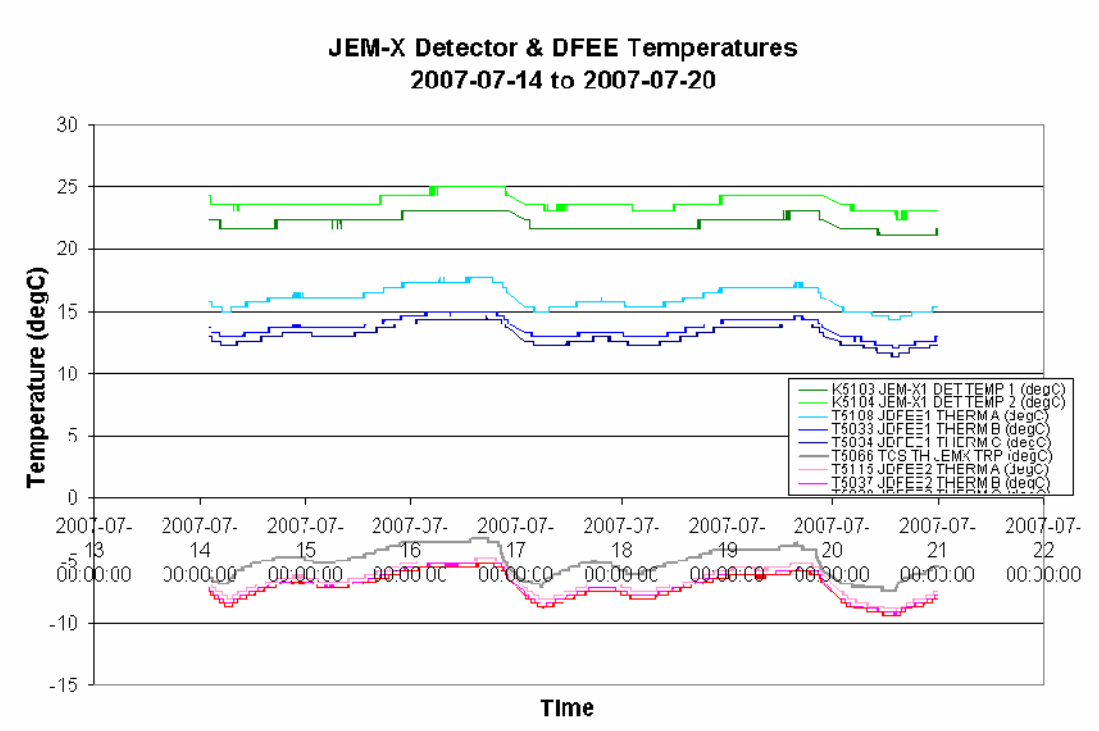
JEM-X count rates over the reporting period are displayed in the following graph[1].



8.3.4.2 JEM-X Temperatures

JEM-X Detector and DFEE temperatures, along with the temperature on the detector bench between the two units, over the reporting period are displayed in the following graph[2].

[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)



8.3.4.3 JEM-X Daily Report

2007-07-14 (DOY 195, Rev 579-580) to 2007-07-20 (DOY 201, Rev 581-582)

JEM-X1 operations executed nominally.

8.3.5 OMC Operations

2007-07-14 (DOY 195, Rev 579-580) to 2007-07-16 (DOY 197, Rev 580)

OMC operations executed nominally.

2007-07-17 (DOY 198, Rev 580-581)

Due to a problem acquiring the guide star for slew ID 05810020, this slew failed from the Timeline and the commands of the OMC ED MEIM-A01 scheduled at 16:30:32Z failed acceptance with OEM 131 REJECTED TC1 as OMC was still in Normal mode. The remaining OMC EDs for this pointing failed release. A manual slew from the attitude of PID 05810019 to the attitude of PID 05810021 was uplinked at 17:04Z, with OMC going to STANDBY (OTF low) at 17:08:11Z. This was after the Imaging EDs scheduled for PID 05810021, at 17:06:14Z, and therefore the commands of the OMC ED MEIM-A01 for PID 05810021 also failed acceptance with OEM 131 REJECTED TC1 as OMC was still in Normal mode and the remaining OMC EDs for this pointing failed release.

OMC operations continued nominally from PID 05810022 onwards.

2007-07-18 (DOY 199, Rev 581) to 2007-07-19 (DOY 200, Rev 581)

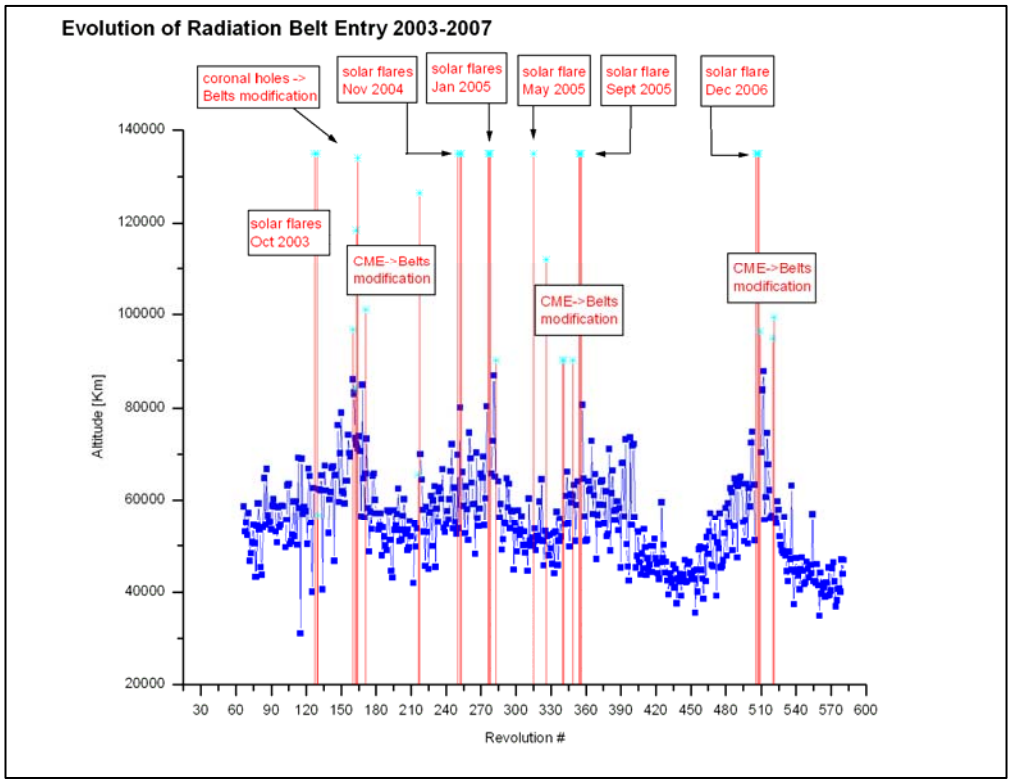
OMC operations executed nominally.

2007-07-20 (DOY 201, Rev 581-582)

OMC operations executed nominally. From 16:24Z to 19:48Z OMC Flat Field and Dark Current Calibrations were performed as planned.

8.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

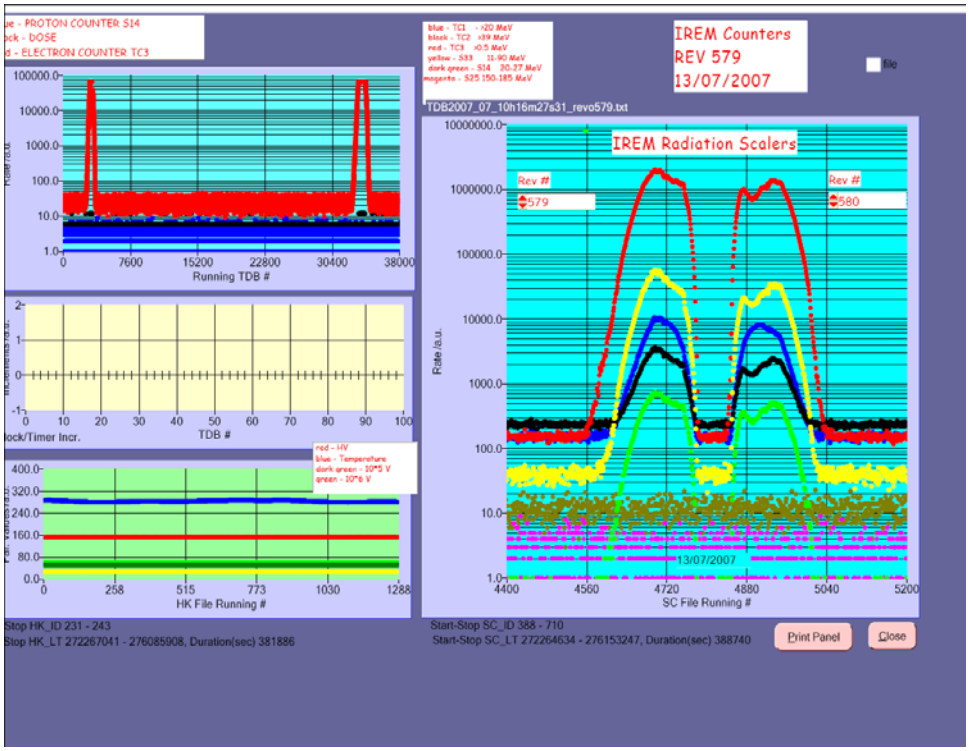
Nothing to report.

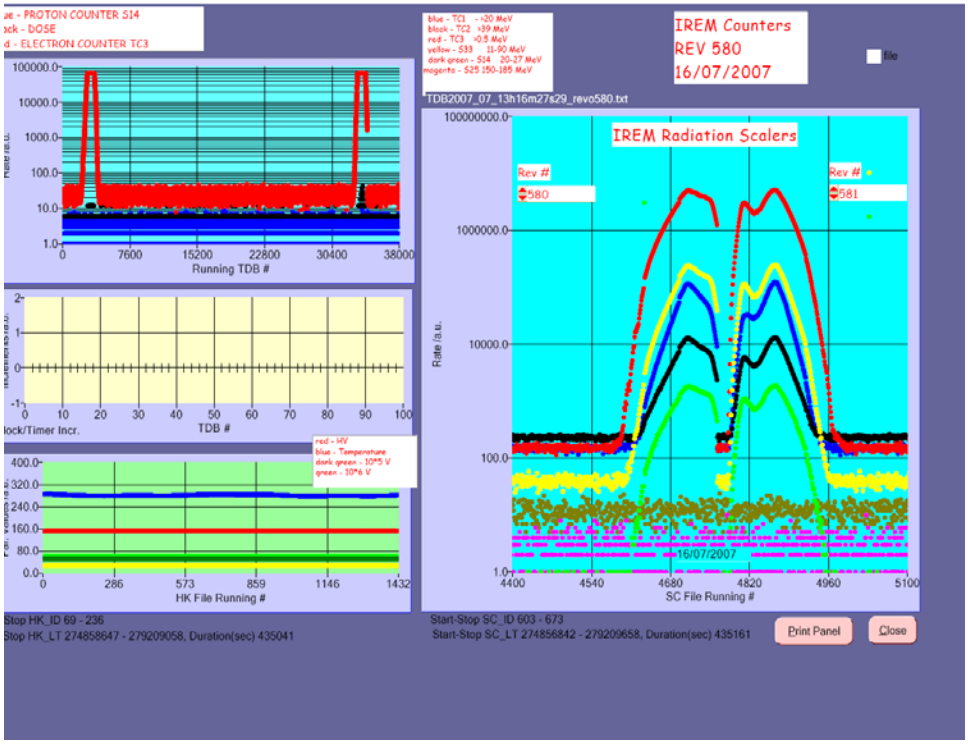
Electron Belts

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]
580	RAD_EXIT R 2007-07-14T05:21:58Z	2007-07-14 04:03:28	>>29810.8	2007-07-14 04:16:56	42768
580	RAD_ENTR R 2007-07-16T18:58:56Z	2007-07-16 20:24:32	43947.0	2007-07-16 20:25:09	44968
581	RAD_EXIT R 2007-07-17T05:09:01Z	2007-07-17 03:52:48	>>29813.5	2007-07-17 04:05:09	42848
581	RAD_ENTR R 2007-07-19T18:45:52Z	2007-07-19 19:54:24	46938.4	2007-07-19 20:15:09	44450
582	RAD_EXIT R 2007-07-20T04:56:08Z	2007-07-20 03:46:32	<<47636.8	2007-07-20 03:55:09	43349

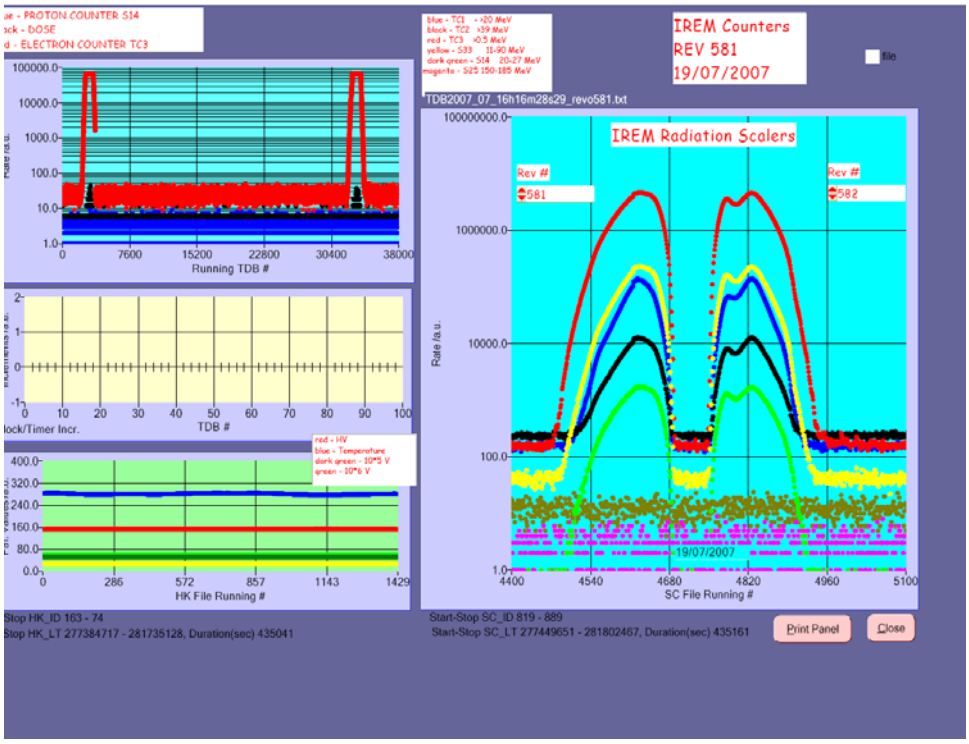
Reference
High radiation
Very small error vs reference (less than 10 minutes)
Small error vs reference (between 10 and 30 minutes)
Large error vs reference (more than 30 minutes)

IREM radiation counters:



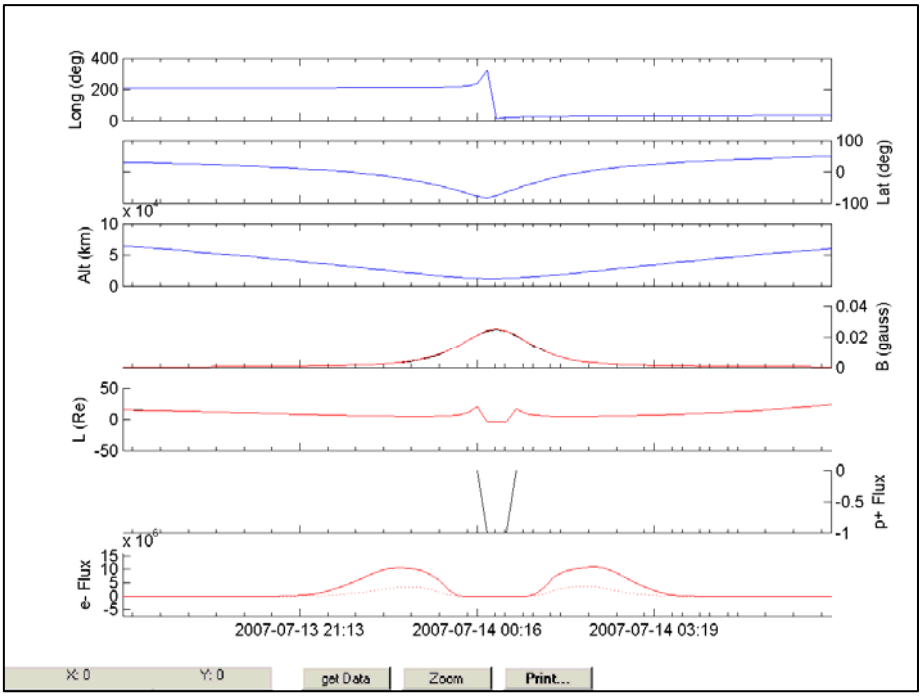


During Radiation Belts passage from revolution 580 to revolution 581, due to MCS issues, some data are missing.

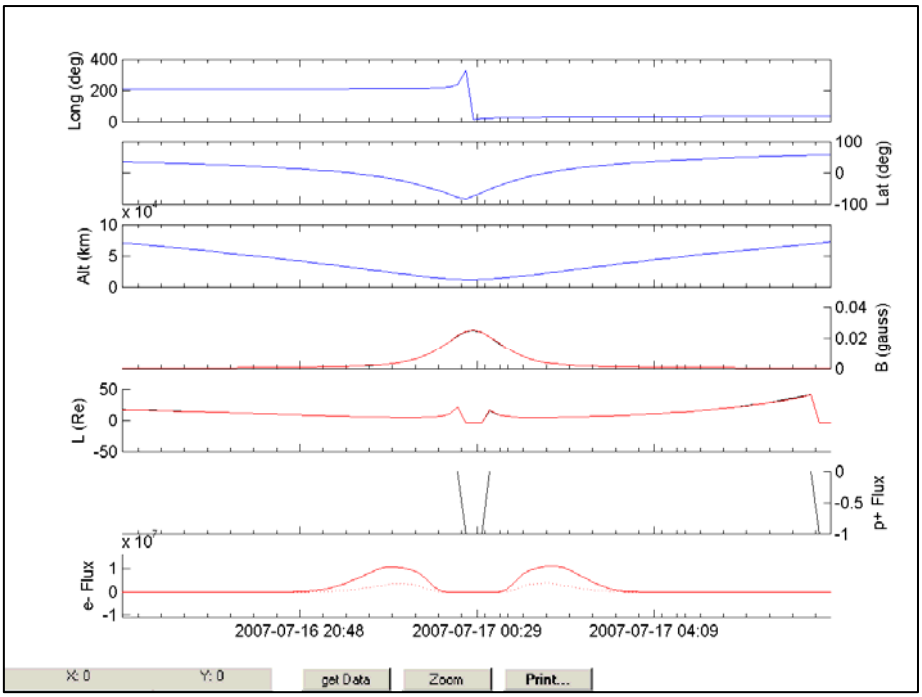


IREM Predicted Radiation Belt Passages

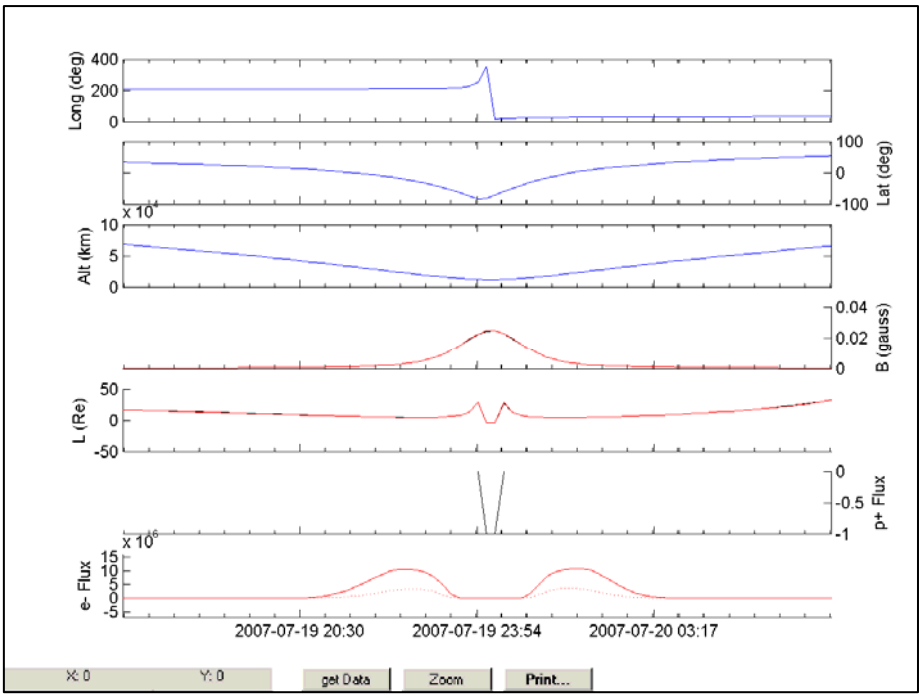
Rev 579



Rev 580



Rev 581



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

Due to problem with the SEIS server, no plots are available this week. However no radiation was reported.