

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 156
Week 37
19.09.05
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 10.09.05 until 16.09.05 (both dates inclusive) and covers the revolutions 356 and 357.

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 were the ToO HETE J1900.1-2455 (RA 19:00:13.00; DEC -24:54:44.0); the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0); GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0); the Scutum Arm and a Galactic Latitude scan. The activities consisted of hexagonal dithering, grid and Galactic Latitude scan observations.

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.

5 slews (4 CSL, 1 OSL) were not executed from the Timeline during this period, due to problem on DSS16 station.

The fuel consumption over the period between 01/09/2005 and 07/09/2005 was 0.0932 kg. The remaining propellant is in the order of 159.3824 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 was 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

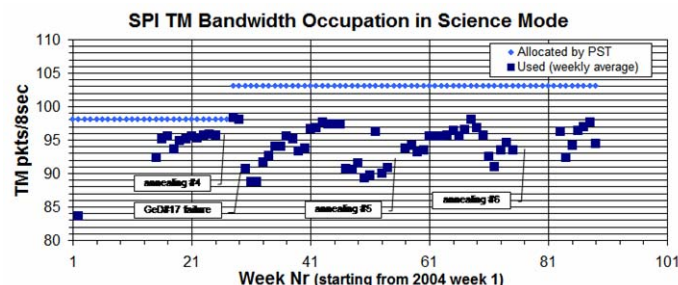
The overall status of the instrument is nominal.

Due to exceptional high radiation conditions caused by solar flares, the instrument ACS high voltages were switched off since Doy252 (9th September) at 15:38z. Nominal science operations resumed on Doy255 (12th September) 10:25z.

During science operations, the instrument was kept in photon-by-photon mode, with spectra TM enabled, an assigned TM bandwidth in the science observation windows of 103 pkts/cycle and an average occupation of 94.3 pkts/cycle.

The Stirling compressors are working well, maintaining the detector cold-plate temperature within 85+/-1K.

The following plot shows the TM bandwidth occupation information.



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

3.2.2 IBIS

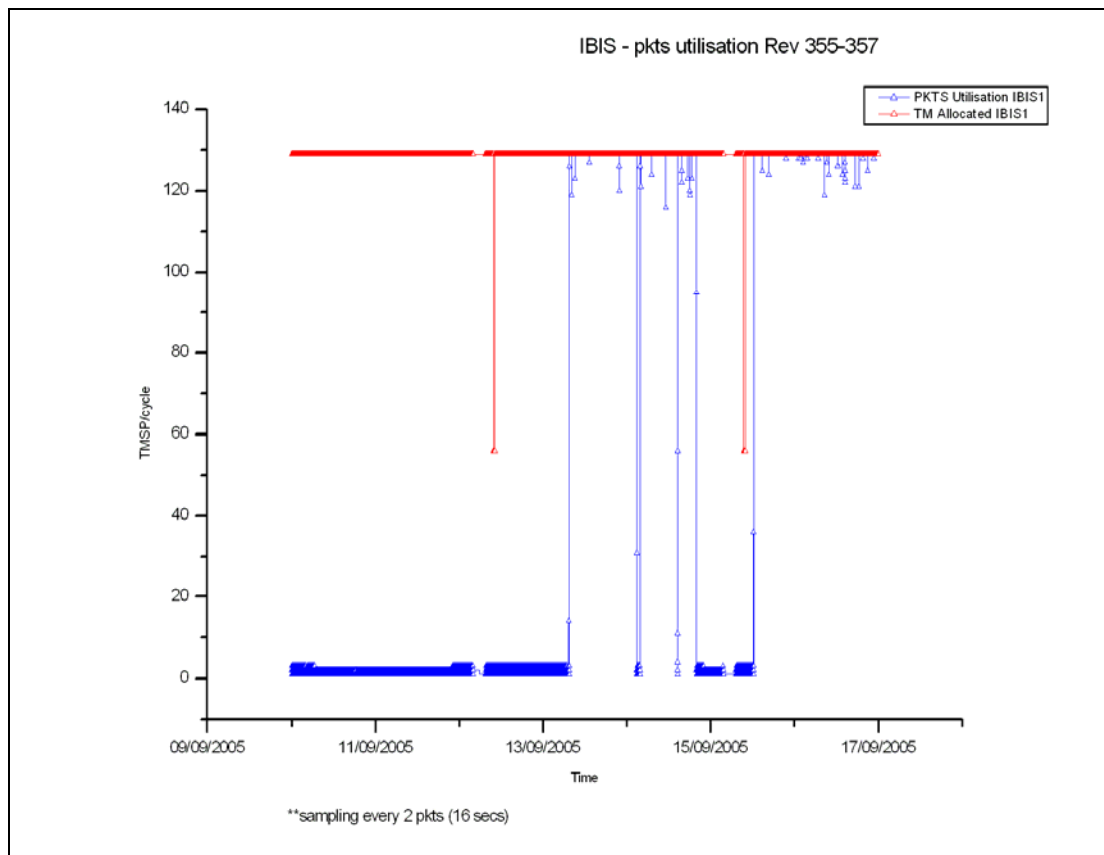
The Overall status of the unit is Nominal.

The week was characterised by high solar activity, which implied to set up IBIS into Stand-by mode in revolution 355 and partially 356.

On 14 September, VETO VDM08 high voltage reported a break down. The recovery was performed following the FDIR, and VETO was set back in Nominal mode with HV ON.

During the reporting period, the PST allocation to IBIS was most of the time 129 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 128.97 TMPS/cycle, up 19.15 on last week.

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



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

3.2.3 JEM-X

The status of both JEM-X units is nominal.

JEM-X operations were performed by the automatic Timeline.

JEM-X1 was operated in Data Taking mode during science observations with a TM allocation of 8 packets/cycle and JEM-X2 was dormant (DFEE OFF) with a TM allocation of 1 packet/cycle.

Due to high background radiation as a result of a solar flare, JEM-X1 began the reporting period in Safe mode and was not activated until 2005-09-16 at 13:21:39Z (JEM-X1 returned to Data Taking mode).

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, 67 of the 181 planned science pointings for OMC were executed nominally, 1 was interrupted, and 113 lost due to high background radiation.

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

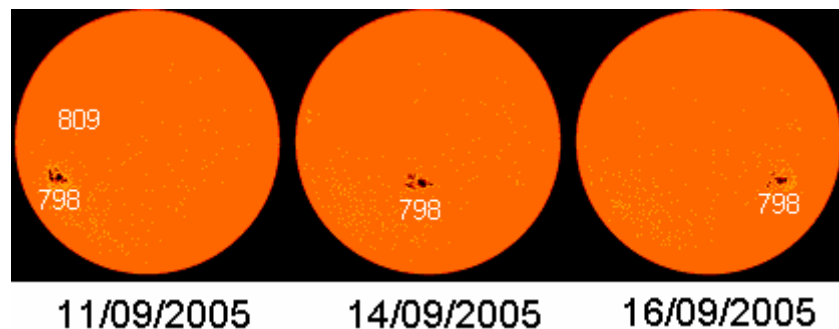
3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by high solar activity.

Sunspot 798 has hurled X and M-class solar flares through the whole observation period.



Reference: www.spaceweather.com

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

4 Ground Facilities

The performance of the Operational ground facilities very good this week, 189 slews were executed correctly, 5 were missed. There were problems with the TM Cache, and Command Verifier, which did not impact operations. There were also problems with DSS-16, which cost 5 pointings, and minor problems with the lines to, and Reed-Solomon errors at, Redu. The overall performance was well above the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was very good this week, there are still problems with the command verifier task, and CPD, but they did not interfere with operations, there were also a couple of occurrences of icons changing colour or disappearing on the global MMI. The overall performance was well above the 95% requirement.

4.2 Ground Stations & Network

The performance of the ground stations and Network was very good this week although there were several problems with the links to Redu. DSS-16 also had problems with the uplink, which lost 5 pointings, but these were impacted anyway by the on-going solar radiation. The overall performance though was well above the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

This week there were no planning activities in ISOC. PSF's were only received late in the week. This was primarily because of the potential impact from the CRYOSAT launch and launch preparations. PSF's were received up to revolution 366. No ToO request has been received. TSF's for revolutions 359 and 360 were received.

2. Observation status

ECS's for revolutions 345 to 348 have been received towards the end of the week. The corresponding OCS's will be processed early next week. No extra time has been credited.

3. ISOC science data archive

Installation of OSA 5 (the INTEGRAL Standard Analysis software package from ISDC) has been installed on archive server to allow generation of ISDA specific products.

Start of generation of images and icons at observation level. This process should be completed before the forthcoming conferences, XMM-Newton and ADASS, both in El Escorial.

4. ISOC system

A version 11.1 of the ISOC system has been used. No problems encountered.

5. Problems

The problem reported last week concerning discrepancy between the constraint checking in ISOC and MOC is still under investigation. As mentioned above it is less critical at the moment since we are performing observations in other area of the sky.

4.3.2 ISDC

Status of ISDC observation processing on 19/09/2005:

- Latest Standard Analysis completed: observation 03200410002 (Her X-1, Revolution 341-342) on 09/09/2005
- Latest products archived: observation 03200410002 (Her X-1, Revolution 341-342) on 12/09/2005
- Latest observation products sent to the observer: observation 03201020003 (Crux Arm, Revolution 330) on 08/09/2005

5 Special Events

None

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 253, at 13:12, and again at 13:26, there were short drops (< 1min) in the VC0 TM link from Redu, there was no impact.
- At 14:53, there were some bad TM frames received from Redu, again there was no impact.
- On DoY 254, at 03:00, the icon for sun129 on the Global MMI disappeared. The MCCM MMI was restarted clearing the problem, there was no impact.
- At 05:37, in the event log, the messages: 'No TM Flow on connection VC-0/Out', immediately followed by 'TM Flow on Connection VC-0/Out' were received, there was no impact.
- On DoY 255, at 12:03, 12:29, 12:34 in the event log, the messages: 'Error sending data to ISDS', immediately followed by 'Link MADDs-ISDS connected', and then by 'Link ISDS-ISDC disconnected', then 'Link ISDS-ISDC connected', were received, there was no impact.
- On DoY 257, at 06:14, there were Reed Solomon alarms from Redu, followed by 21 bad TM frames, there was no impact.
- At 07:03, there was a VC-0 TM gap, there was no impact.
- At 08:53, there were Reed Solomon alarms, followed by 3 VC-0 TM data gaps, there was no impact.
- At 09:36, the Event Log message: 'Missing source packets' was seen, there was no impact.
- At 21:52, due to a problem with the uplink at DSS-16, with no back-up available, all automatic command was manually terminated. Links were re-established at 22:40 using DSS-24. The impact was the loss of pointings 03560071 to 03560075. (These pointings were badly affected by high radiation anyway). The lost Reaction Wheel Bias was executed manually at the start of the following revolution.
- On DoY 258, at 00:53, 00:56, 00:58, 00:59, 01:01, 01:03, 01:05, there were short VC-7 TM drops from DSS-24, there was no impact.
- At 23:32, the event log message: 'IMCA – CMDHverif: Lost connection to TMRTCache' was seen. This was followed by the Telecommand D4005, terminating with an unverified completion, and then another event log message: 'IMCA – CMDHverif: Connected to TMRTCache'. There was no impact.
- On DoY 259, at 08:14, the TM & TC links with Redu dropped. They returned at 08:16, there was no impact.
- At 09:17, in the event log the message: 'CPD on host idda is not receiving packets' was seen. At 09:21, the CPD_TM_A on MADDs (idda) was restarted, there was no impact.
- At 10:00, the icon for sun129 in the Global MMI was yellow, indicating a high cpu usage. The MMI was restarted, clearing the problem.

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

AR id	Date Created	Subject	Segment	Status
INT-2790	15/09/2005	Error on trunk to REDU	ESA Stations	Pending
INT_SC-126	14/09/2005	IBIS: VETO VDM 08 High Voltage break down	Payload	Open

7 Future Milestones

Change of communication protocol to ESA Station from X25 to TCP IP: The testing has been performed. The release is not yet operational because an upgrade of the communications set-up is required.

Another patch of the IMCS is planned for September/October, which should fix a couple of problems.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 356

The observations in revolution 356 began with a hexagonal dithering observation of the ToO HETE J1900.1-2455 (RA 19:00:13.00; DEC -24:54:44.0) lasting ~18.5 hours, followed by a hexagonal dithering observation of the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0) performed for ~3.5 hours. A hexagonal dithering observation of GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0) lasting ~29 hours was then performed, followed by a grid observation of the Scutum Arm, performed for the remaining ~9 hours of observation time.

Revolution 357

The observations in revolution 357 consisted of a Galactic Latitude scan lasting ~57.5 hours, followed by a hexagonal dithering observation of the Galactic Bulge region (RA 17:45:36.00; DEC -28:55:60.0), performed for the remaining ~4 hours of observation time.

Throughout these observations all instruments were in their nominal science modes, except for JEM-X2 for which the DFEE remained off, and the TM allocation was IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2005-08-25T09:32:57.000Z	159.7155	F	Automatic TM processing.
2005-08-25T12:11:29.000Z	159.6414	F	Automatic TM processing.
2005-08-28T09:17:52.000Z	159.6253	F	Automatic TM processing.
2005-08-29T19:34:05.000Z	159.6084	F	Automatic TM processing.
2005-08-31T09:06:33.000Z	159.5876	F	Automatic TM processing.
2005-09-01T19:58:04.000Z	159.5775	F	Automatic TM processing.
2005-09-03T08:51:20.000Z	159.5643	F	Automatic TM processing.
2005-09-04T18:54:20.000Z	159.5491	F	Automatic TM processing.
2005-09-06T08:40:32.000Z	159.5366	F	Automatic TM processing.
2005-09-07T19:01:31.000Z	159.4756	F	Automatic TM processing.
2005-09-09T08:28:55.000Z	159.4656	F	Automatic TM processing.
2005-09-10T18:46:11.000Z	159.4584	F	Automatic TM processing.
2005-09-12T03:19:10.000Z	159.4436	F	Automatic TM processing.
2005-09-12T08:17:59.000Z	159.4162	F	Automatic TM processing.
2005-09-15T08:38:31.000Z	159.3824	F	Automatic TM processing.

This report was generated Fri Sep 16 08:00:25 GMT 2005

8.3 Detailed Satellite Information

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

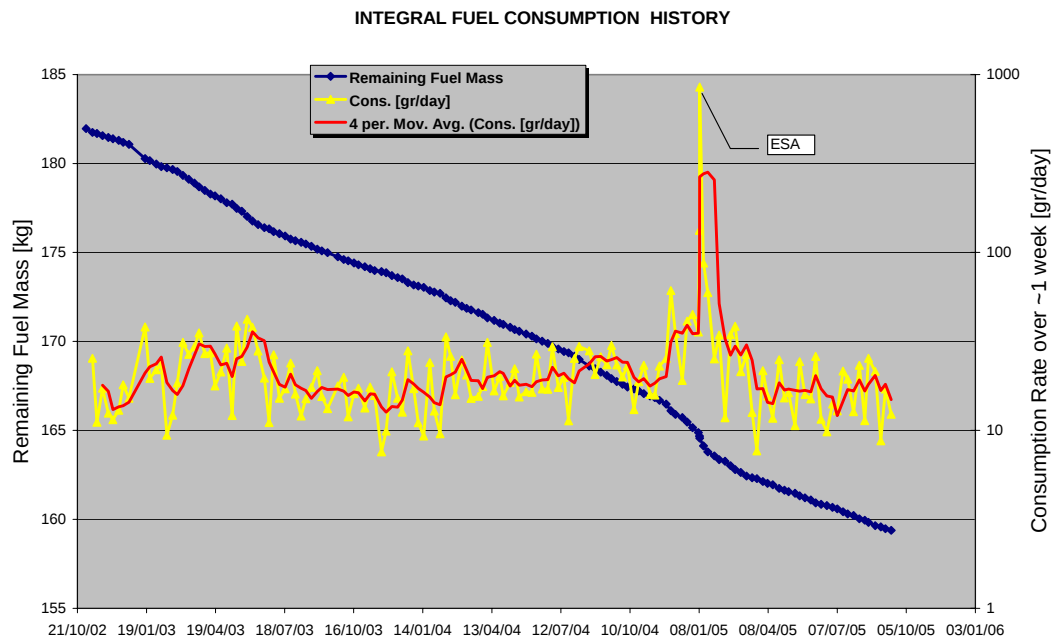
8.3.1 AOCS SUMMARY OPERATIONS REPORT, 10/09/2005 – 16/09/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 50 Open Loop Slews, 139 Closed Loop Slews and 4 Momentum Bias were executed (TL + manual recovery). 5 slews (4 CSL, 1 OSL) were not executed from the Timeline during this period, due to problem on DSS16 station.

This is equivalent to a ~2.6 % of the total number of slews planned (194).

The fuel consumption over the period between 01/11/2002 and 15/09/2005 is reported in the plot below.



10/09/05 (Day of Year 253, Revolution 355)

Nothing to report

11/09/05 (Day of Year 254, Revolution 355)

Nothing to report

12/09/05 (Day of Year 255, Revolution 355-356)

Nothing to report.

13/09/05 (Day of Year 256, Revolution 356)

Nothing to report

14/09/05 (Day of Year 257, Revolution 356)

Divergence in measured wheel speeds wrt the predicted values, no impact on Timeline: a problem was observed at 05.35z on the measured speed of RW#2 and RW#4 (divergence ~80 rpm of the measured wheel speeds wrt the predicted values.).

FD on-call requested no action but only monitoring the wheels speeds evolution. The tolerated divergence on wheels speeds, only during revolution 356, was set by FD to +/-120. No impact on TL reported.

Slows missed from the Timeline(I): Due to a problem on DSS16 station (problem on down converter and DSS24 in maintenance), the nominal pass could not be guaranteed and was partially executed. As preventive action the S/C was set in safe configuration to the attitude of PID 03560070: this attitude (RA 18:54:34.77, DEC - 03:37:43.9, POS 271:51:08.7) remained safe until 2005-09-18 06:10:40Z. FD on-call requested no action on RWs for the end of the revolution but only monitoring the wheels speeds evolution. The guide star picked by the STR was considered safe for the perigee pass and for the RWB at the beginning of new revolution(357).

The AOCS s/s was disabled in TL at 21:26z and remained disabled until the end of revolution (LOS on DoY 258 at 03:52z).

15/09/05 (Day of Year 258, Revolution 356-357)

Slows missed from the Timeline(II): A first manual recovery was then performed after AOS for rev 357 (07:22z) from the attitude of PID 03560070 to the attitude of PID 03560075 followed by the manual execution of the RWB foreseen at the beginning of new revolution. The next slew (OSL) for PID 03570001 was manually updated and executed from the Timeline. The AOCS s/s was re-enabled in TL at 08:55z.

The following slows were not executed from TL while setting the AOCS s/s to a safe attitude during the station outage: 03560071(CSL)-72(CSL)-73(CSL)-74(OSL)-75(CSL).

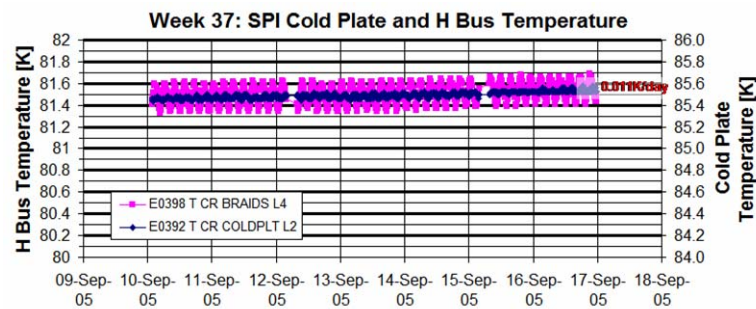
16/09/05 (Day of Year 259, Revolution 357)

Nothing to report.

8.3.2 SPI Operations

Stirling compressors and Cryostat:

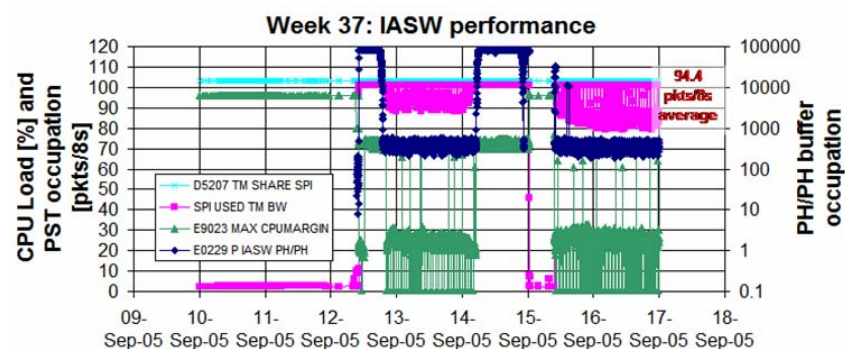
The performance of the compressors is nominal. The cold plate temperature was maintained at 85K+/-1K showing the usual positive drift with the expected slope. The following plot shows the evolution of the cold-plate and H bus temperatures during the reporting period.



DPE & IASW:

The IASW performance is nominal.

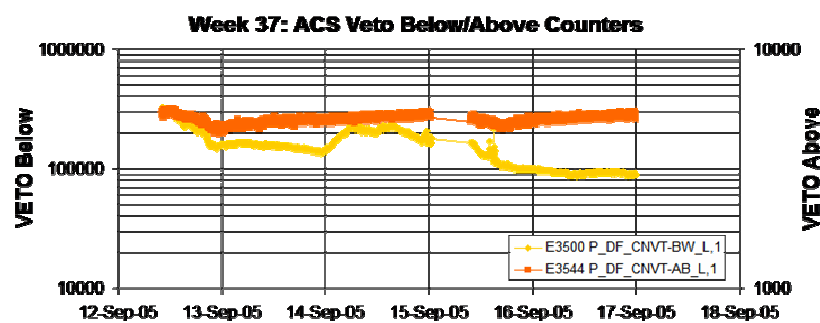
The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.



ACS:

The performance of the ACS is nominal. High solar radiation is evident between 23rd and 25th August.

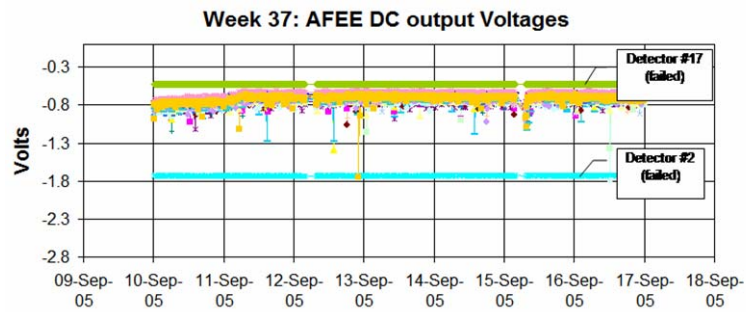
The following plot shows the ACS overall count rate evolution during the reporting period.



AFEE and Germanium Detectors:

The performance of the AFEE and the detectors is nominal except for the detector #2, failed since 06.12.2003, and detector #17, failed since 17.07.2004.

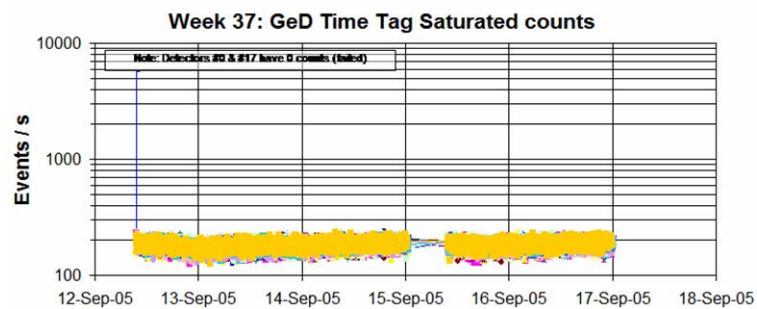
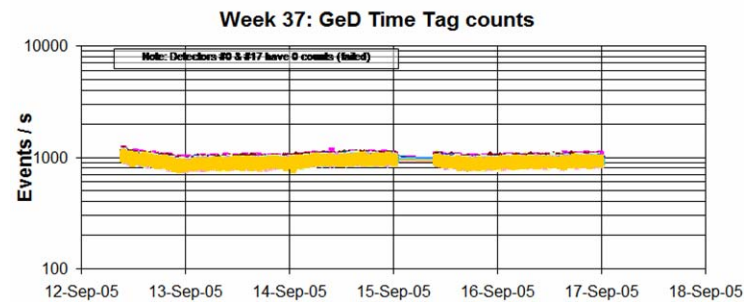
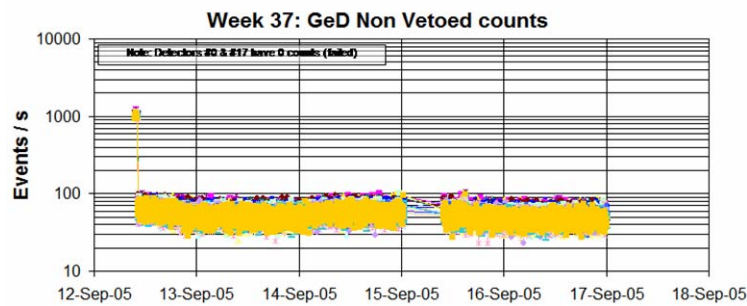
The following plot shows the dc voltage offset of the detector channels during the reporting period.



DFEE:

The performance of the unit is nominal.

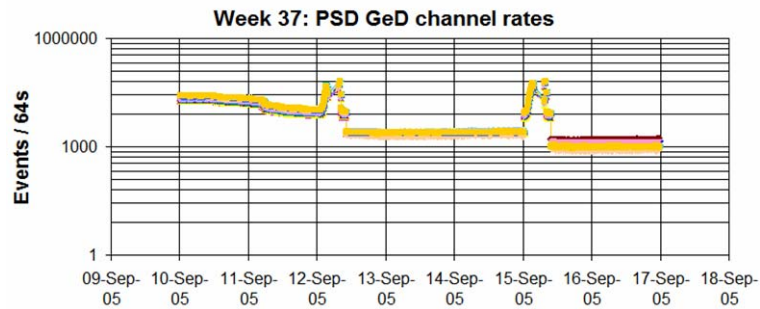
The following plots show the count rates of the detectors during the reporting period (due to problems in the data retrieval tool, some gaps could be present).



PSD:

The performance of the unit is nominal.

The following plots show the PSD channel rates during the reporting period.



SPI EVENTS LOG

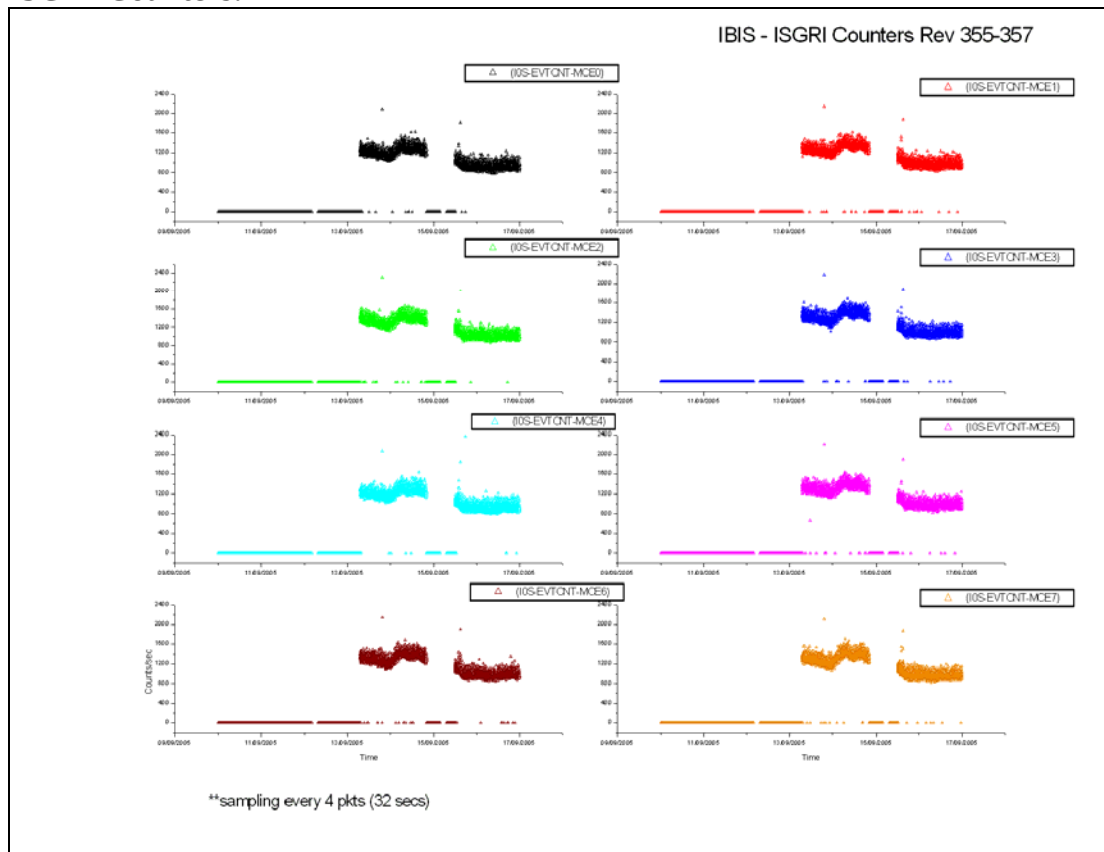
NOTE: The events log is extracted from the revolution pass summaries (courtesy of the Integral Analysts).

DOY Time	Event
252 / 14:39	OEM: "SPI1 Partial Flag Overflow".
252 / 15:38	OEM: "SPI1 Partial Flag Overflow".
252 / 15:38	Seq. EEACOF02 "SPI Force ACS HV Off" uplink. TM E3944 "R SW RCONF-CAP L" violating the fix check with the value "Disabled"
252 / 21:52	OEM: "SPI1 Failure in analyzing HSL Data.
252 / 22:07	Execution of: FCP_SPI_0160" SPI transition to Configuration Mode.
252 / 22:18	SPI disabled on the A/S.
253 / 01:17	TM E2115 "T AS PSAC L1" Warning Low.
255 - 10:25	SPI commanding enabled in Timeline
255 - 12:03	EV ERROR SENDING DATA TO ISDC, TM-FLOW back @ 12:03
255 - 12:29	EV ERROR SENDING DATA TO ISDC, TM-FLOW back @ 12:34
255 - 23:52	TM E2065 OOL, back in limits @ 00:04 (DOY 256)
256 - 00:24	TM E2390 OOL, back in limits @ 00:36
258 / 00:41	Seq. EEORTM01 "Report all SPI TM" uplinked from the M/S.
258 / 08:20	TM E2115 "T AS PSAC L2" OOL Alarm Low at -46° Celsius.
258 / 09:55	TM E3500 "P_DF_CNVT-BW_L,1" OOL Alarm High.
261 - 00:09	TM E3854 OOL, back in limits @ 00:11
261 - 00:19	TM E3853 OOL, back in limits @ 00:20

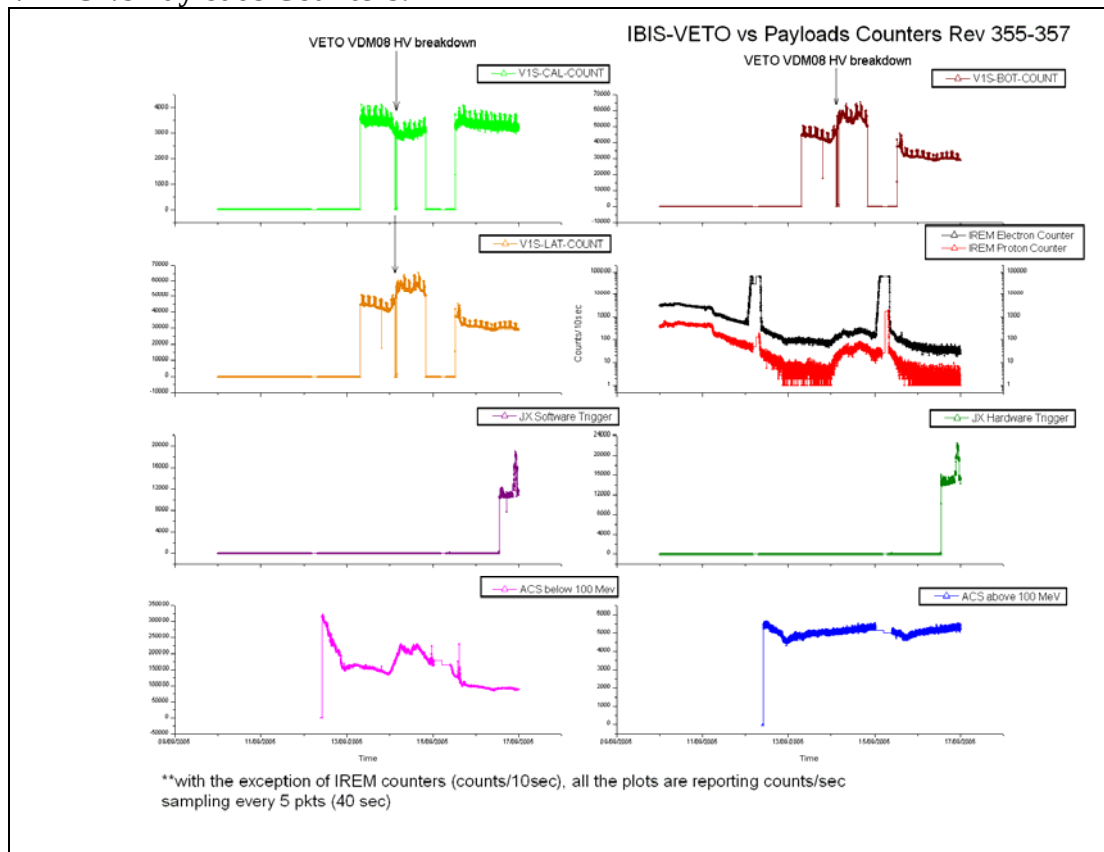
8.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

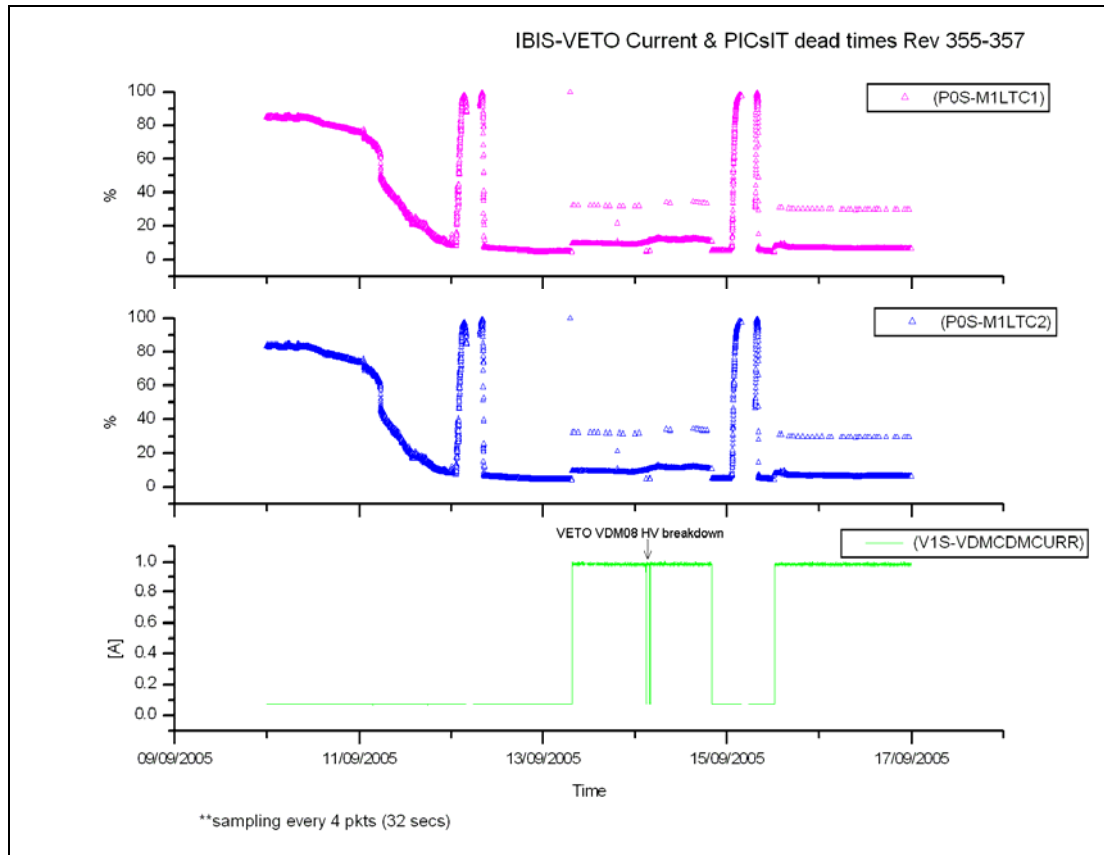


VETO vs Payloads Counters:

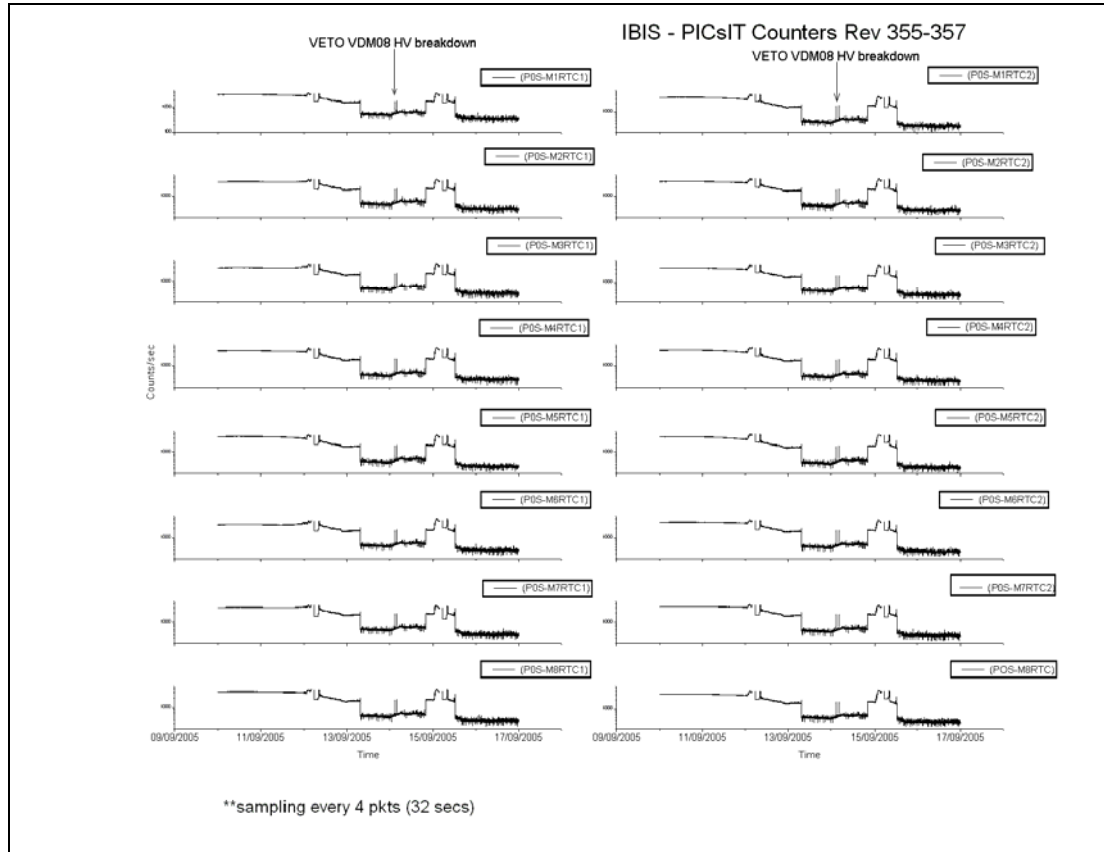


The week was characterised by high radiation.

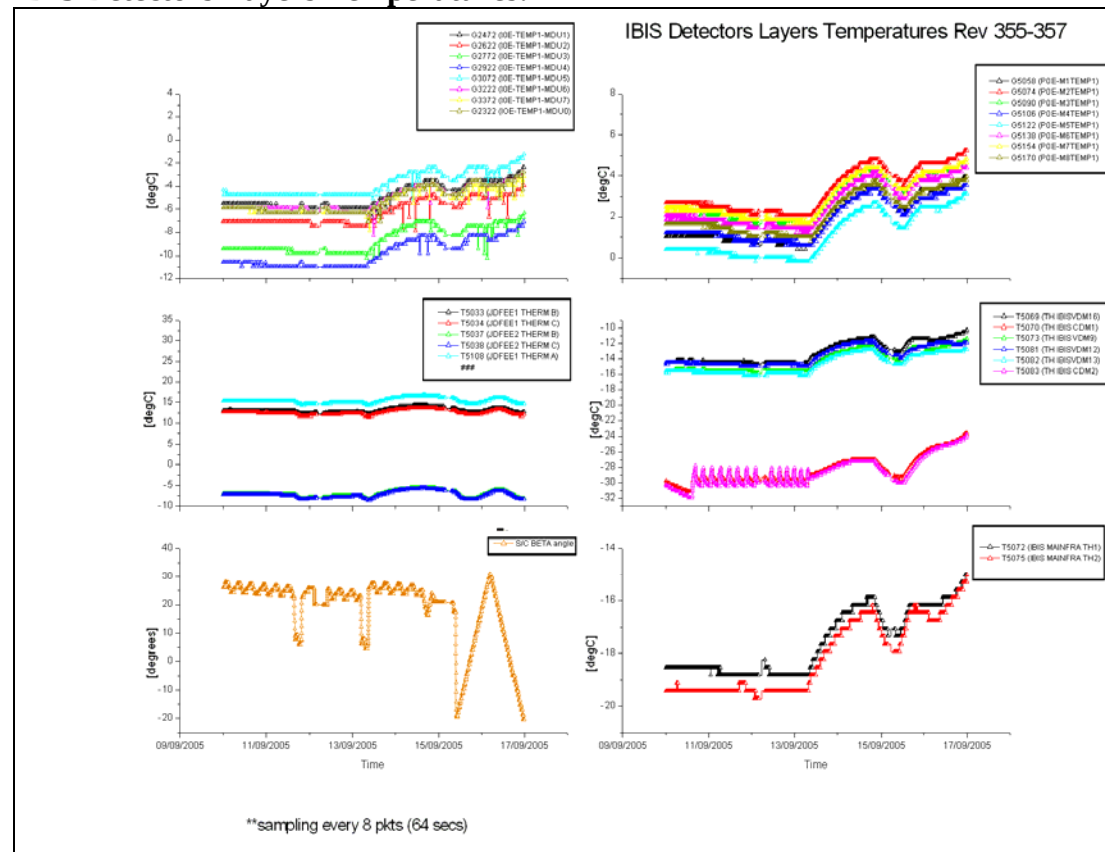
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report

DoY 2005.253 (10/09/2005)

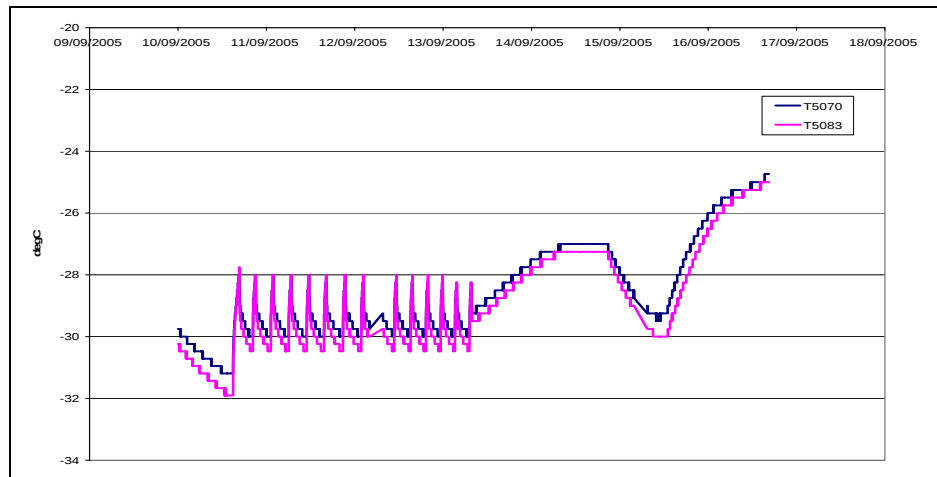
At 02:36Z, two “MS EVE SECL OEM1” OEMs were reported with the following parameters:

- CURRENT HTR ID 23, PID T5070
- CURRENT HTR ID 24, PID T5070.

They flagged the activation of the IBIS Calibration Unit Heater A that follows thermistor TCS_TH_IBIS_CU (TM T5054) behaviour (ON at -30degC and OFF at -24degC).

Indeed, since DoY 251 at 07:54Z, IBIS has been set in Stand-By mode due to high radiation. Consequently, the temperatures of the Calibration Unit monitored by TM parameters T5070 (TH IBIS CDM1) and T5083 (TH IBIS CDM2), have been decreasing and reached the minimum level that triggered the heater activation.

Due to thermal inertia, the temperature rise was only noticed around 15:00Z. The heater continued working and both thermostats (T5070 and T5083) monitored the temperatures fluctuations (as shown below), until DoY 256 at about 07:40Z, when IBIS was returned to science mode, and able to maintain temperature.



DoY 2005.254 (11/09/2005)

From DoY 2005.251 at 11:29Z to DoY 2005.254 at 10:13Z, TM parameter G5079 (P0E-M2 ASICLINE) was toggling OOL High and back.

DoY 2005.255 (12/09/2005)

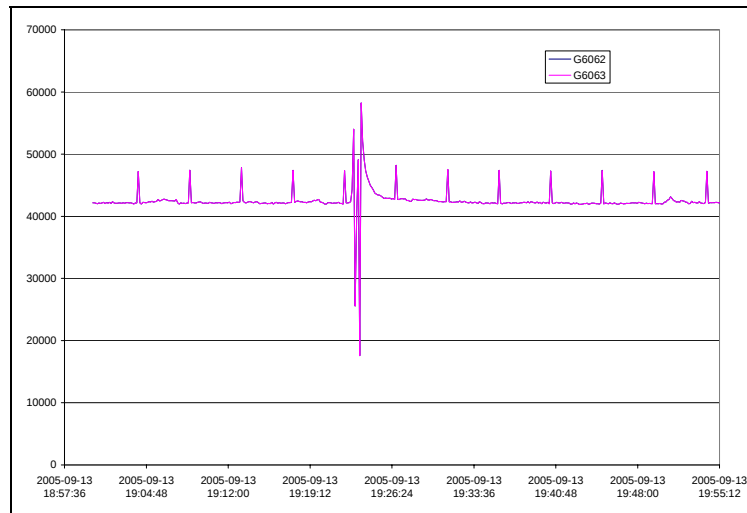
From 02:25Z to 08:31Z, TM parameters G5003 (P0S-M1RTC2), G5013 (P0S-M3RTC2), G5018 (P0S-M4RTC2) and G5038 (P0S-M8RTC2) were toggling OOL high. As this happened inside the radiation belts, according to P-CNT-1, no action was taken.

DoY 2005.256 (13/09/2005)

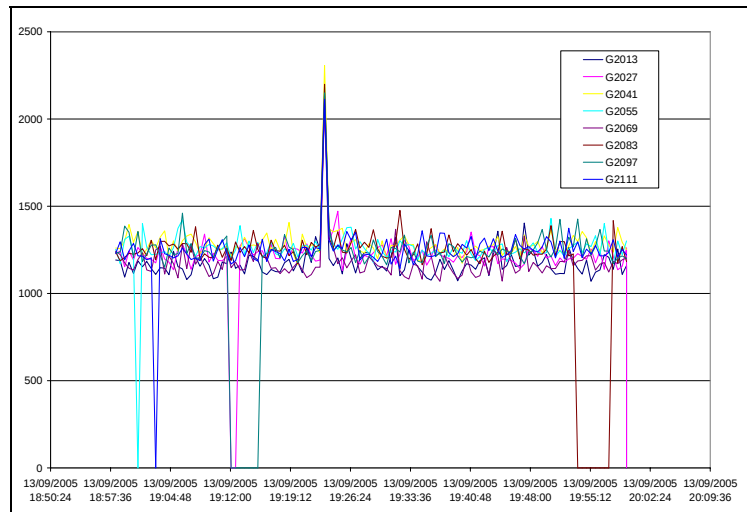
Since DoY 2005.251 at 07:54Z, TM G8015 went OOL high and remained OOL until DoY 2005.256 at 07:34Z, when ED GEBEXT01 (VETO to Nominal) was sent manually to reactivate IBIS after this long period of high radiation. GEISCL03 was sent manually at 07:04Z and GESTAN02 at 07:38Z.

From 07:41Z until DoY 2005.257 at 02:02Z, TM parameter G8080 (S1E-VS_HBRA-RT) was toggling OOL high. According to H-OVF-2, no action was taken.

At 19:23Z, TM parameters G6062 (V1S-BOT-COUNT) and G6063 (V1S-LAT-COUNT) went OOL high. They seemed to wrap-around indicating a spike. According to V-BOT-1 and V-LAT-1, no action was taken.



At the same time ISGRI counters flagged a spike as well. According to ISOC website, INTEGRAL was observing GRS1915+105 in Pointing 03560011 at this time.



DoY 2005.257 (14/09/2005) - **VETO VDM 08 HV breakdown:**

At 02:45Z TM parameter G6042 (VDM 08 HV) was reported out of limits ALARM low, the value was -35.70V. This flagged the first break down of module number 08 (cf. INT_SC-126).

The VDM 08 temperatures were in limits and consistent with the others VDMs. The S/C altitude was well far from the Belts coming from apogee (144619.3km). High radiations were reported by IREM but they were very far from the IBIS thresholds:

- proton counts = 11,
- dose counts = 0,
- electron counts = 111.

At the time of the break-down, the VETO lateral and bottom count rates dropped from ~47000 cts/s to 45000 cts/s. The VETO current changed from 1.62A to 1.59A. The VDM/CDM current changed from 0.98A to 0.94A and the VEB current from 1.48A to 1.42A.

At 02:46Z the IASW generated OEM id 186 class 2 "IBIS1 VETO PMTXX IS ON AND CORRESPONDING HV MONIT IS ABOUT ZERO" regarding the HV of the VDM08.

At 02:59Z, following the OOL & OEM reaction (V-HV-1) in the Payloads Recovery Document (FDIR), VETO was set in Stand-By mode switching off all HVs with:

- FCP_IBIS1_0313 IBIS Transition to Stand-By (TC G0125)
- FCP_IBIS1_0203 VETO Transition to Stand-By (TC G0601).

At 03:02Z, still following V-HV-1, VETO was set in Maintenance mode and was monitored for 45 minutes. The value of HV for VDM08 remained nominal during the whole monitoring period and the anomaly did not occur again.

At 03:57Z, VETO was set back in Nominal and IBIS in Scientific Standard mode. The unit reported the following nominal values:

- VDM 08 HV = 995.38V (nominal)
- VETO counters both ~52250 cts/sec (due to high radiation environment).

DoY 2005.257 (14/09/2005)

From 03:18Z to 20:06Z, TM parameters G6062 (V1S-BOT-COUNT) and G6063 (V1S-LAT-COUNT) went OOL high. According to V-BOT-1 and V-LAT-1, no action was taken as radiations were still high.

At 02:59Z, TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V and back. This occurred when VETO was set into Stand-By mode due to the HV breakdown recovery. It happened again at 03:54Z for the same reason.

From 04:05Z until 19:56Z, TM parameter G8080 (S1E-VS_HBRA-RT) was toggling OOL high. According to H-OVF-2, no action was taken.

At 20:06Z, TM parameter G8015 (28V PMT set by IASW) went OOL High with the value 29.4V due to IBIS going to Stand-By mode. Actually due to problems with Ground Stations, it was decided to set instruments in Safe mode earlier than expected with respect to the BCPKT Belt entry time.

After belts, radiations were still high, therefore the activation of IBIS was postponed. At 11:57Z GEISCL03 was sent manually. At 12:26Z GEBEXT01 (VETO in Nominal) was sent manually, which implied TM parameter G8015 to go back inside limits. And at 12:27Z GESTAN02 was sent manually, putting IBIS into Science mode.

DoY 2005.258 (15/09/2005)

From 01:55Z to 02:43Z, TM parameters G5017 (P0S-M4RTC1), G5027 (P0S-M6RTC1) and G5038 (P0S-M8RTC2) were toggling OOL high. As this happened inside radiation belts, according to P-CNT-1, no action was taken.

At 11:59Z, TM G2098 (I0E-OVFWPXADD_M7) failed SCC. According to I-OVF-1, no action was taken.

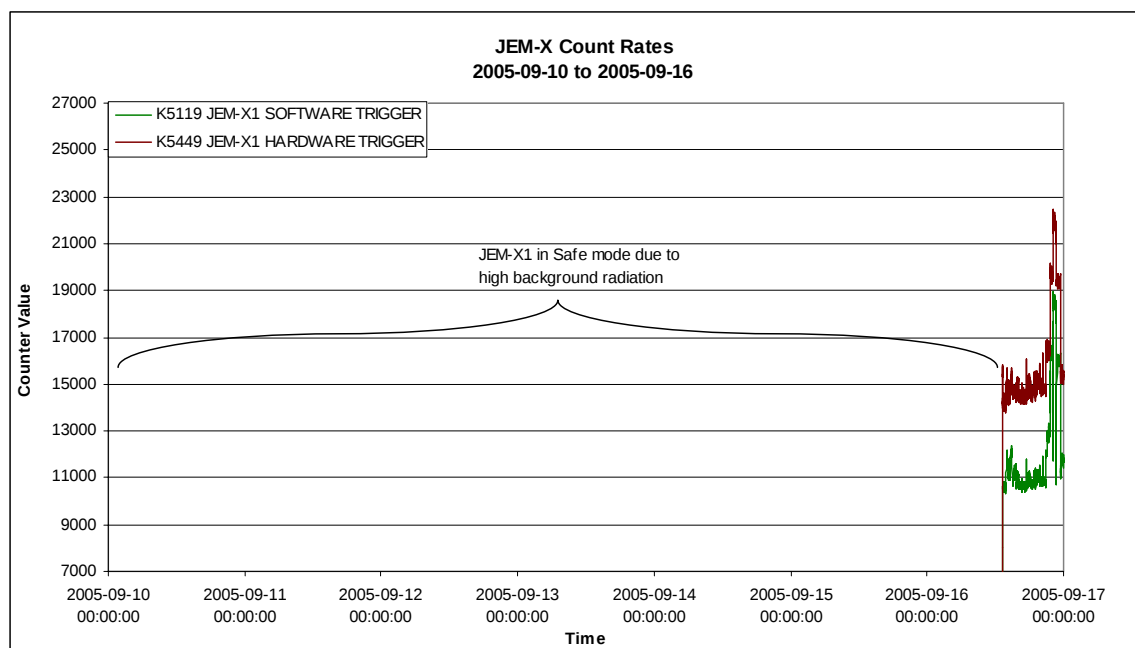
From 12:29Z until 14:20Z, TM parameter G8080 (S1E-VS_HBRA-RT) was toggling OOL high. According to H-OVF-2, no action was taken.

At 14:58Z, TM parameters G6062 (V1S-BOT-COUNT) and G6063 (V1S-LAT-COUNT) went OOL high. According to V-BOT-1 and V-LAT-1, no action was taken as radiations were still high.

8.3.4 JEM-X Operations

8.3.4.1 JEM-X Count Rates

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

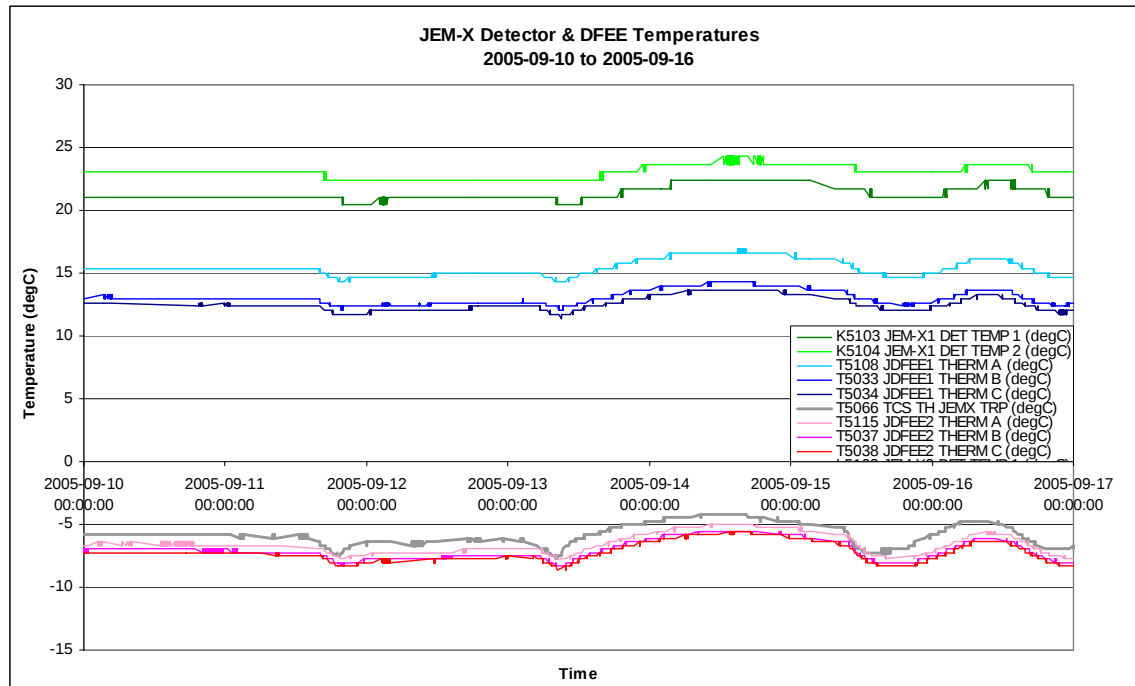


8.3.4.2 JEM-X Temperatures

JEM-X Detector and DFEE temperatures, along with the temperature on the detector bench between the two units, over the reporting period are displayed in the following graph².

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

2005-09-10 (DOY 253, Rev 355) to 2005-09-14 (DOY 257, Rev 356)

JEM-X1 remained in Safe mode, with commanding from the Timeline disabled, throughout these days.

2005-09-15 (DOY 258, Rev 356-357)

JEM-X1 began the day in Safe mode, with commanding from the Timeline disabled.

At the start of revolution 357, the anode Calibration ED KEACAL01 at 09:29:40Z was allowed to run from the Timeline, but as the background radiation conditions were still above the safe thresholds for JEM-X1, commanding to JEM-X1 from the Timeline was then disabled to prevent the activation of the high voltage. At belt exit JEM-X1 transitioned to Setup mode (as reactions to the IREM counters are disabled). JEM-X1 was then commanded back to Safe mode via FCP_JEM1_0040 at 09:47:40Z.

JEM-X1 remained in Safe mode, with commanding from the Timeline disabled, for the rest of the day.

2005-09-16 (DOY 259, Rev 357)

JEM-X1 began the day in Safe mode. Once the background radiation levels, as measured by the IREM counters, had returned stably within the Safe thresholds for JEM-X1, the unit was activated manually by first re-uplinking the anode calibration ED KEACAL01 at 12:52:16Z. At 13:06:53Z the ED KEHVAC01 was up-linked. This put JEM-X1 in Data Taking mode (at 13:21:39Z) and it was verified that the observation parameters were the same as those planned for the ongoing observation,

and thus it was not required to re-uplink the missed Data Taking ED KEDATA02. Commanding to JEM-X1 from the Timeline was then re-enabled and JEM-X1 operations continued nominally.

At 22:10:37Z the TM parameter K5136 BUFFER LOSS went Out of Limits High (value = 346), returning within limits at 22:11:41Z.

8.3.5 OMC Operations

2005-09-10 (DoY 253, Rev 355)

From the start of the week on DoY 253, up to DoY 256 at 07:40:31, the unit was in SAFE mode due to the on-going high solar radiation. The impact was the loss of 75 pointings: 03550016 to 03550055, and 03550057 to 03550063, and 03550065 to 03550068, then in the following revolution, 03560002 to 03560020 and 03560022 to 03560026.

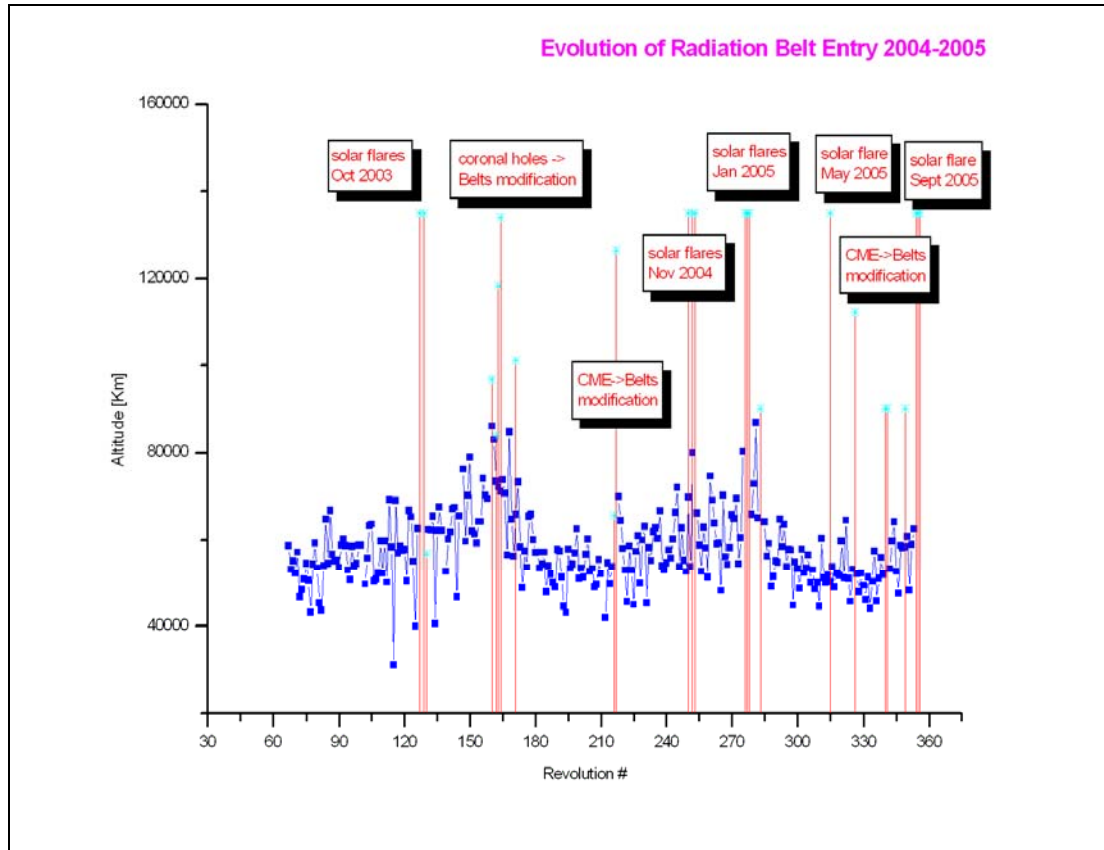
2005-09-14 (DoY 257, Rev 356)

At 01:27:35 OMC autonomously switched to SAFE mode due to the ongoing high solar radiation. The unit was not recovered until the following revolution on DoY 258, at 16:43:09. The impact was the interruption of pointing 03560045 after 1473 from a scheduled 3572 seconds, and the loss of 38 further pointings 03560046 to 03560057, and from 03560059 to 03560073, and from 03570002 to 03570012.

On DoY 246 at 01:23:03 and DoY 249 at 01:10:15 OMC was switched by the Timeline to SAFE mode, at the nominal time.

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]
355	RAD_ENTR R 2005-09-12T00:43:31Z	-	-	2005-09-12 01:42:32	52030
356	RAD_EXIT R 2005-09-12T09:57:01Z	-	-	2005-09-12 08:52:32	30100
356	RAD_ENTR R 2005-09-15T00:32:25Z	-	-	2005-09-15 01:31:52	52033
357	RAD_EXIT R 2005-09-15T09:45:22Z	-	-	2005-09-15 08:41:52	30158

Reference

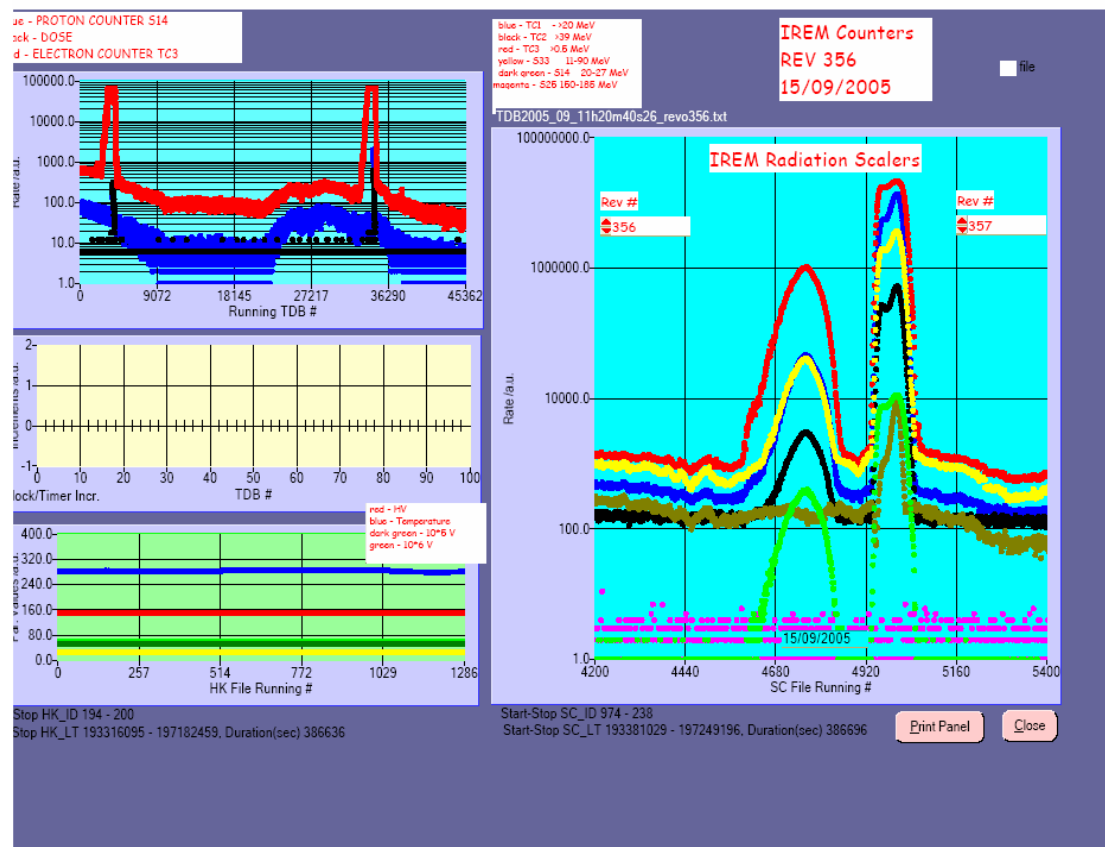
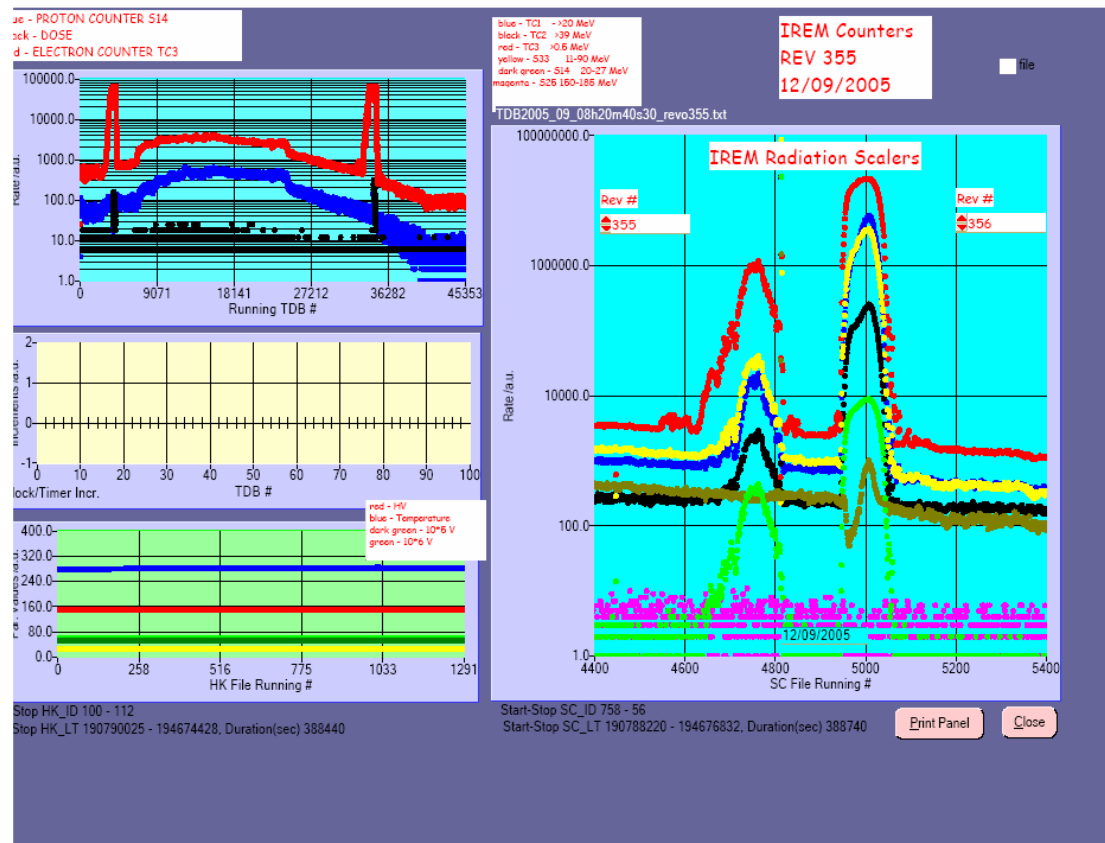
Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

Large error vs reference (more than 30 minutes)

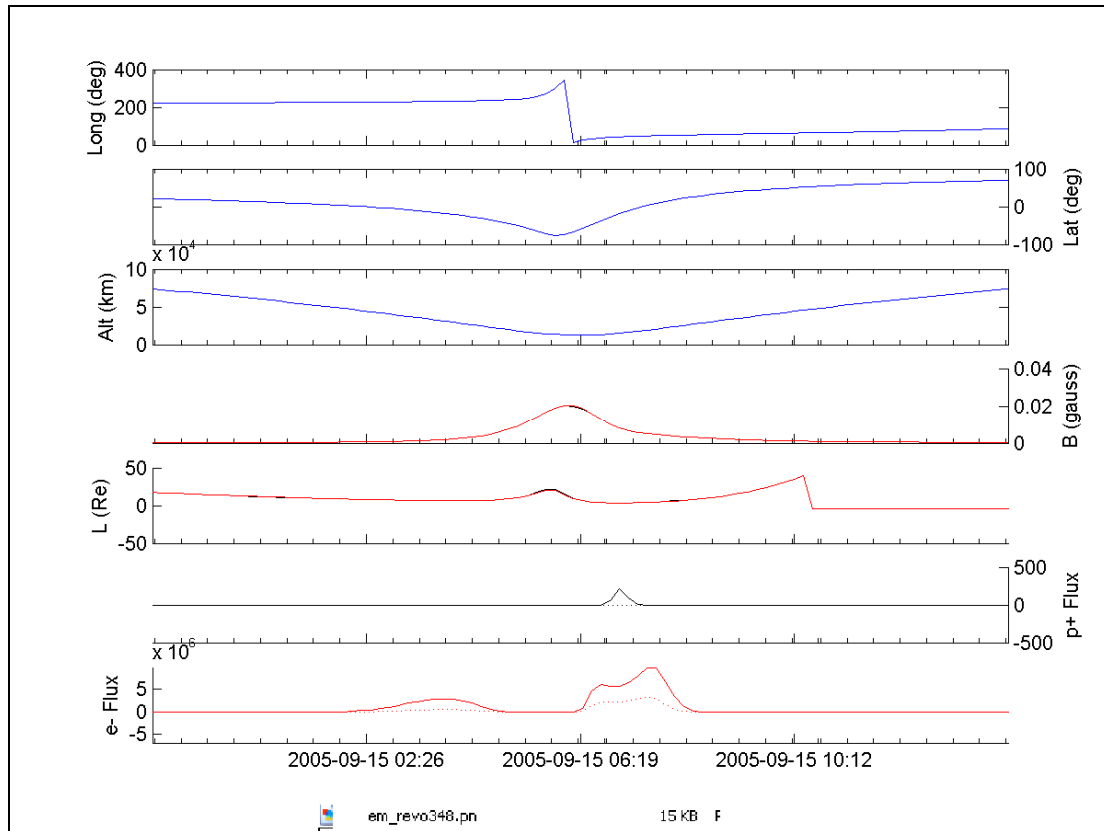
Radiation Spike

IREM radiation counters:

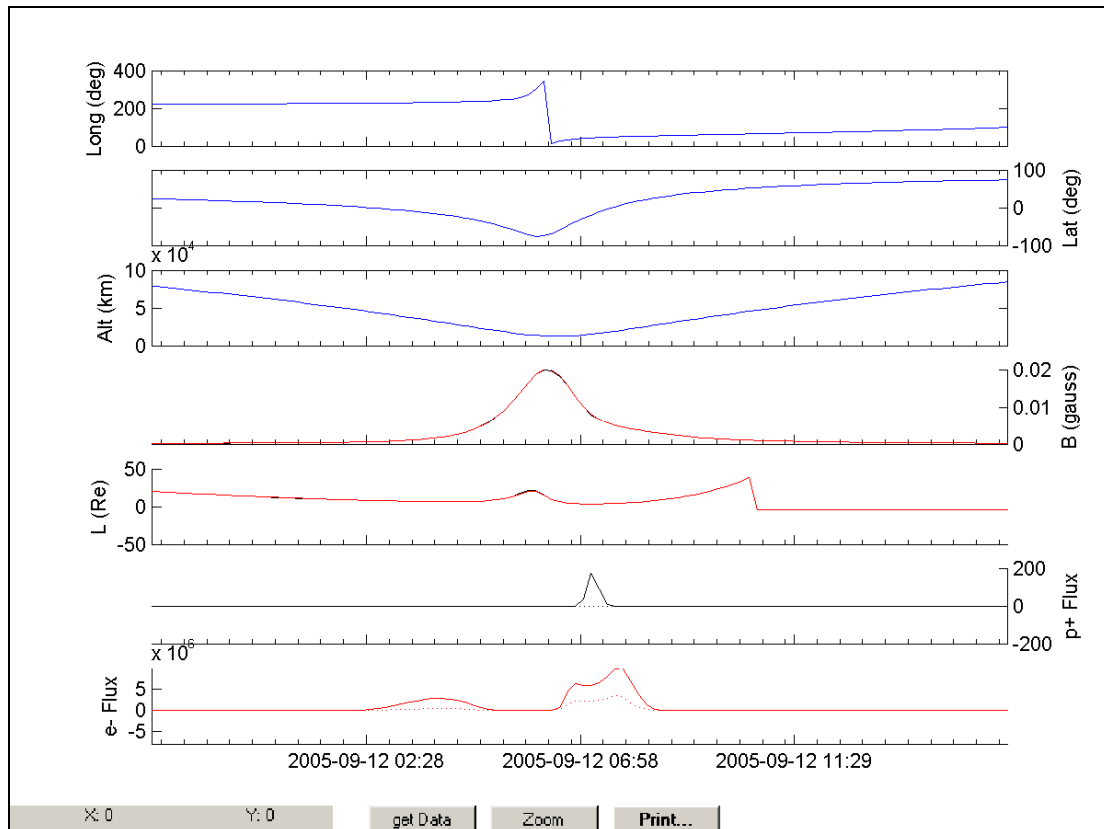


IREM Predicted Radiation Belt Passages:

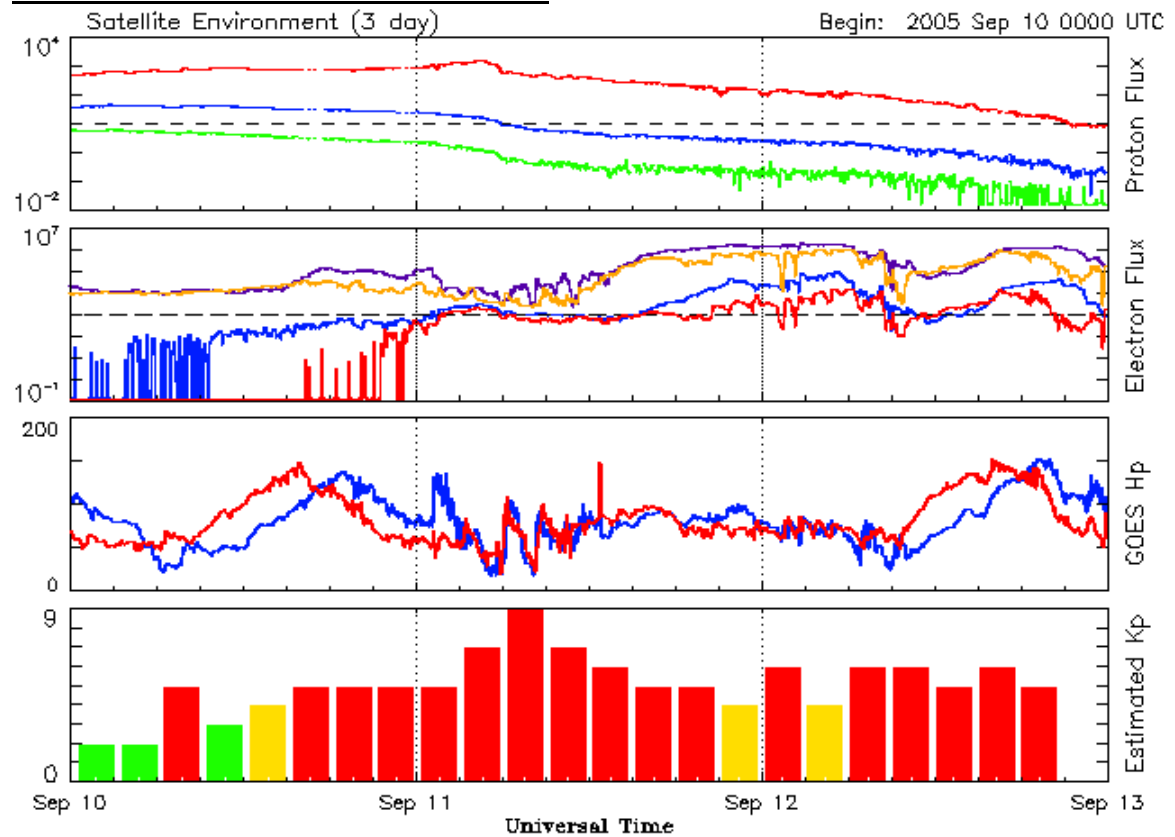
Rev 355



Rev 356

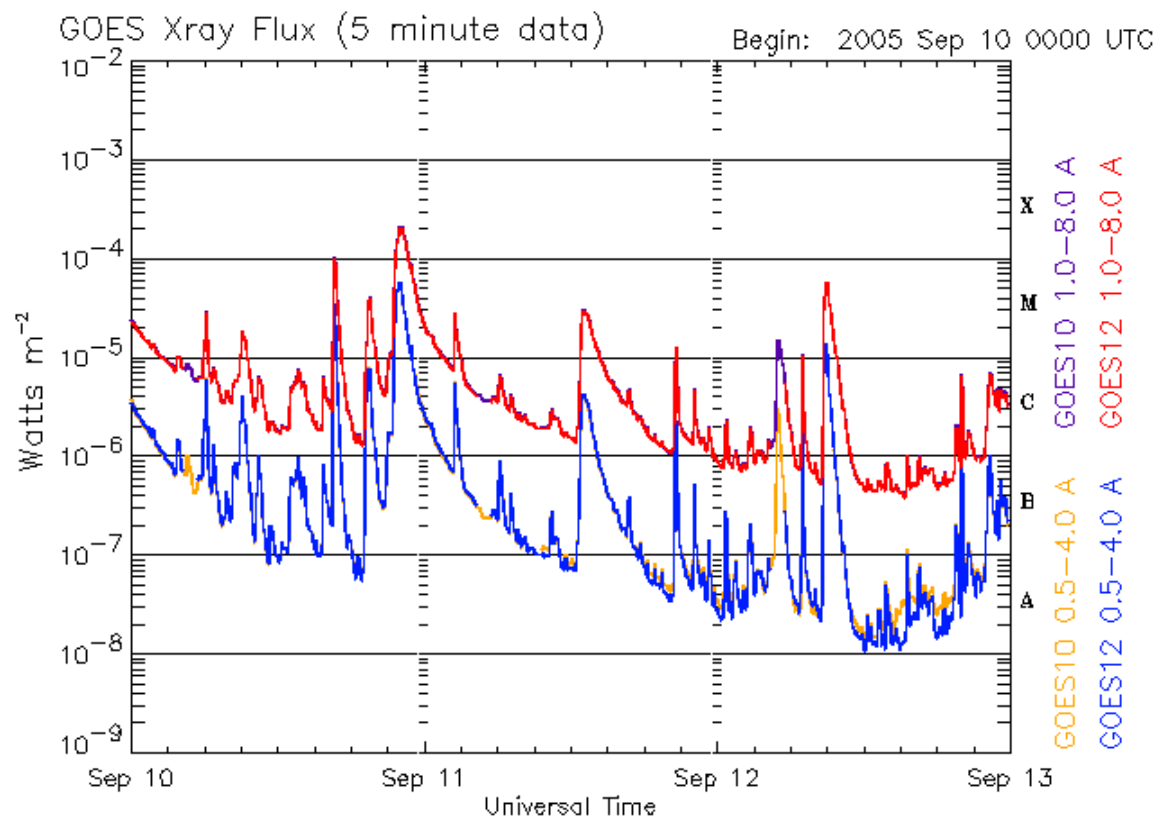


SEC-GOES Observed Particles Fluxes:



Updated 2005 Sep 12 23:56:14 UTC

NOAA/SEC Boulder, CO USA



Updated 2005 Sep 12 23:56:04 UTC

NOAA/SEC Boulder, CO USA

