

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 121
Week 02
17.01.05
Routine Phase

Prepared by: M. Walker (OPS-OFO)

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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 08.01.05 until 14.01.05 (both dates inclusive) and covers the revolutions 274 & 275.

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 V0332+53 at (RA 03:41:40.80; DEC +53:10:22.8); an OMC Flat Field target (RA 05:00:0.00; DEC -45:30:00.0); the Coma Cluster (RA 12:59:48.70; DEC +27:58:50.0) and the Galactic Plane. The activities consisted of hexagonal and raster dithering; staring and GPS observations. In addition, OMC Flat Field and Dark Current Calibrations and a periodic Thruster Calibration were performed.

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 first ESAM occurred during this period, which took about 12 hours to recover from.

22 slews (11 CSL & 11 OSL) were missed from the Timeline:

- fourteen slews (9 CSL & 5 OSL) were missed in revolution 273 due to the ESAM;
- five slews (2 CSL & 3 OSL) were missed in revolution 273 due to a problem at the ground station;
- three slews (3 OSL) was missed in revolution 275 due to a late AOS from Redu.

The fuel consumption over the period between 08/01/2005 and 14/01/2005 was 0.7540 kg. The remaining propellant is in the order of 164.1277 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

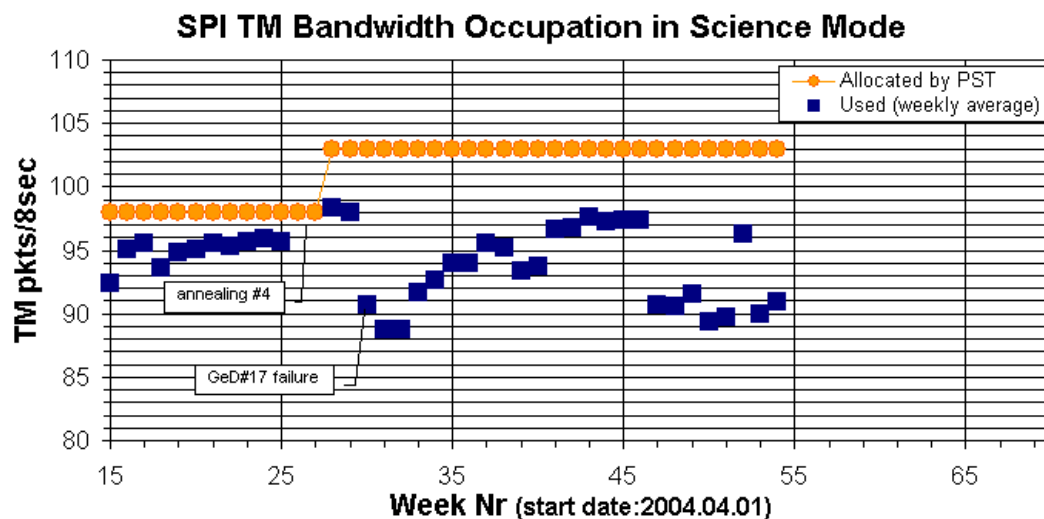
3.2.1 SPI

The overall status of the instrument in this week is nominal.

The instrument reacted nominally to the ESAM on 8th January and resumed nominal operations once the S/C achieved nominal pointing again.

Following the patch of SPIASW431, the PSD channels blocking malfunction, though still continues to randomly reproduce itself, is no longer affecting the operations at MOC.

The instrument was kept in photon-by-photon mode for the whole period, with spectra TM enabled, an assigned TM bandwidth in the science observation windows of 103 pkts/cycle and an actual occupation of 85.8 pkts/cycle average. The following plot shows the evolution of the occupied bandwidth, since beginning of 2004.



The cryo-cooler is working well, maintaining the temperature within 85+/-1K.

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

3.2.2 IBIS

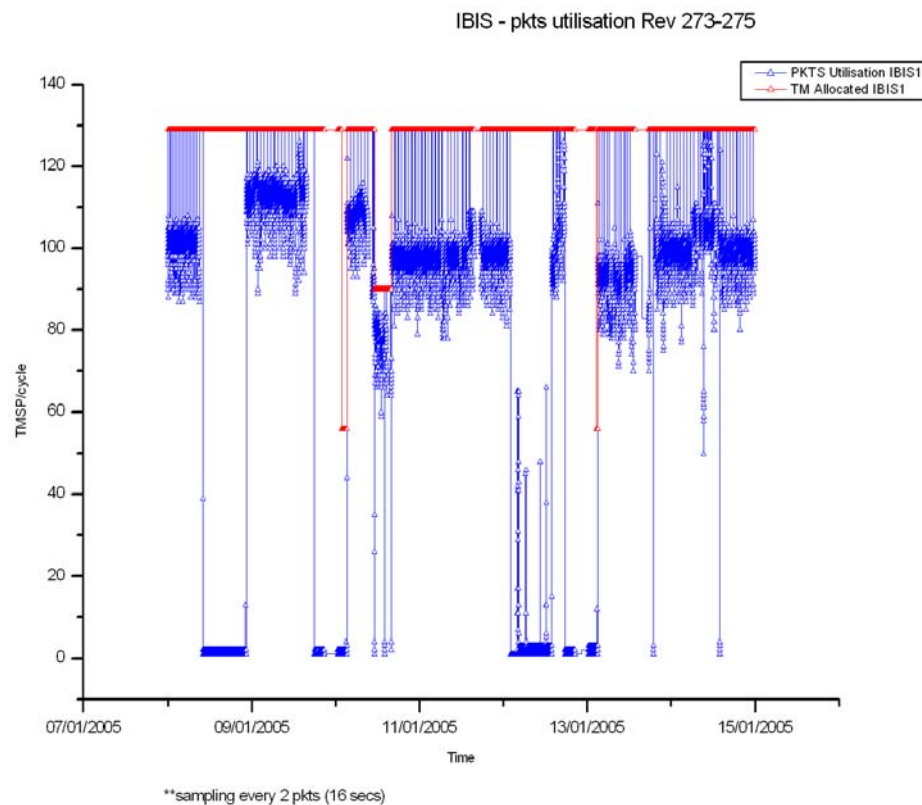
The Overall status of the unit is Nominal.

The week was characterised by low to moderate solar activity.

The week was characterised by moderate to high solar activity.

During the reporting period the PST allocation to IBIS was most of the time 129 TMPS/cycle. On the 10th of January from 11:12 to 16:03, due to an OMC calibration the TM allocation for IBIS was down to 90 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 104.6 TMPS/cycle. Which was the same as 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. JEM-X2 remained dormant (DFEE OFF) with a TM allocation of 1 packet/cycle.

INT_OR_0189 was executed at the start of each revolution to reset the JEM-X1 Broadcast Packet override flags for IREM to DISABLED following the anode calibration ED KEACAL01 in the Timeline.

On 2005-01-08, JEM-X1 operations were interrupted due the Spacecraft entering ESAM (see Anomaly Report INT_SC-109). JEM-X1 entered Safe mode due to the ESAM at 10:04Z and was recovered back to Data Taking mode at 23:08Z.

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.

During the reporting period OMC operations were performed by the automatic timeline, with the TM allocation to OMC of 5 packets/cycle, except from DoY 010 at 11:12:23 until 14:38:22 during the Flat Field and Dark Current calibrations, when the allocation was 63 packets/cycle.

There were 119 OMC pointings executed nominally, 18 were lost.

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

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by moderate to high solar activity. On January 9th sunspot 719 unleashed a M2-class solar flare toward Earth. And from January 12th a fast-growing sunspot (number 720) had posed threat of strong solar flares.

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 was poor this week, although still above the system performance requirements, a total of 22 pointings were lost due to ground problems.

4.1 Mission Operations Centre

The performance of the MOC was marred this week, by the ESAM, which was due to an error at the MOC, a total of fourteen pointings were lost to this.

4.2 Ground Stations & Network

The performance of the ground stations and Network was also not so good this week. 5 Slews were lost to transmitter and axial problems at DSS-16, and 3 due to a late

handover to Redu. There were also two occasions where a series of bad TM formats were received from Redu. The overall performance was below the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSF's received up to rev 288. The PSF's for revolutions 289 to 292 received last week has been discarded. TSF received up to 277.

This week revolutions 278 and 279 have been successfully generated - both in ESAC and ESTEC. However since these revolutions are now earmarked for SPI annealing it has been agreed to perform a re-plan of these revolutions to remove an amalgamated observation using SPI from the schedule. This will be done next week. The parallel planning at ESAC and ESTEC is now working fine.

2. Observation status

ECS's up to rev 260 have been received. Corresponding OCS's sent. No extra time allocated

3. ISOC science data archive

This is still in a transitional phase. Real progress is only expected in early February.

4. ISOC system

Version 10.7 installed last week is the operational version. A patch had to be implemented. This system is now used both in ESTEC and ESAC.

5. AO 3

The approved AO 3 program is now being entered into the ISOC data base. This should be completed during next week. The information to the PI's of the TAC results is now completed.

6. ISOC move to ESAC

This week the software support has also arrived in Spain. Besides installing the system version 10.7 on the operational system there they have also been struggling to set up the software development environment. This is not completed yet.

7. Problems

Nothing to report.

4.3.2 ISDC

Status of ISDC observation processing on 17/01/2005:

- Latest Standard Analysis completed: observation 02201050001 (Cygnus X-1, Revolution 255) on 16/01/2005

- Latest products archived: observation 02201120003 (IC443, Revolution 247-248) on 13/01/2005

- Latest observation products sent to the observer: observation 02297000016 (IGR J16320-4751, Revolutions 226) on 08/12/2004

5 Special Events

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 008, at 06:19, there were Reed Solomon errors at Redu. 45 bad frames were received.
- At 10:04, the spacecraft entered ESAM at the end of slew 02730052. The timeline was stopped, and not rejoined until 21:45. The impact was the loss of pointings 02730052 through to 02730065 inclusive.
- On DoY 009, at 14:02, JPL reported transmitter problems with DSS-16. The transmitter was fixed at 14:38, but JPL report an axis tracking problem. The DR# for this is G105162. The Timeline was stopped, and after a further 3 minute drop in TM at 16:10, the spacecraft was put in a safe attitude for perigee. The impact was the loss of PID 02730083, a science pointing, and 02730084 to 02730087, which were engineering pointings.
- On DoY 011, at 18:04, there were Reed-Solomon alarms in Redu, followed by 46 bad frames. There was no impact.
- On DoY 012, at 12:51, difficulties were experienced with the OBSM tool in storing a large image in the FARC. The image was subsequently exported to a file without further problems.
- At 16:47, the TM dropped from DSS-16, at 17:01, the TC joined the TM in drop. The links returned at 17:04 at 17:12 respectively after the MCP was restarted. The cause was reported as exciter problems.
- At 19:00, there were 363 bad frames from DSS-16, which stopped after DSS-16 changed the loop bandwidth. There was no impact.
- On DoY 013, at 17:40, an interruption in the TC AD service from Redu causes the loss of pointing 02750015, during the recovery, a clash of commanding between the Autostack and the Manualstack causes the loss of pointings 02750016 & 02750017.

The following new anomaly reports were entered into the ARTS system.

AR id	Date Created	Subject	Segment	Status
INT_SC-109	10/01/2005	ESAM mode triggered on 08/01/2005	Spacecraft	Pending
INT_SC-110	12/01/2005	IBIS instrument crash on 12/01/2005 at 02:06z	Payload	Pending
INT-2690	12/01/2005	Loss of sync on both REDU CDSs stopped Timeline commanding	ESA Station	Pending
INT-2691	12/01/2005	TM drop stopped Timeline commanding DSS16	NASA Station	Pending
INT-2692	12/01/2005	TM gap at DSS24 stopped Timeline commanding.	NASA Station	Closed
INT-2693	12/01/2005	Power failure at DSS24 stopped TC & TM	NASA Station	Closed
INT-2694	12/01/2005	TM drop stopped Timeline commanding DSS16	NASA Station	Pending
INT-2695	12/01/2005	TC/TM drop DSS16	NASA Station	Closed
INT-2696	12/01/2005	TM drop at DSS16	NASA Station	Pending
INT-2697	12/01/2005	FARC problems encountered trying to save a large	IMCS	Pending

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Date : 17/01/05

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Rev. : 0
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		software image.		
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7 Future Milestones

Appendix

The appendix includes various detailed information.

7.1 Overview of Revolutions

Revolution 274

The activities in revolution 274 began with an off-axis hexagonal dithering observation of V0332+53 at (RA 03:41:40.80; DEC +53:10:22.8) lasting ~6 hours. This was followed by a 3.5 hour staring observation at an OMC Flat Field target (RA 05:00:00.0; DEC -45:30:00.0), during which OMC Flat Field and Dark Current Calibrations were performed. A raster dithering observation of the Coma Cluster (RA 12:59:48.70; DEC +27:58:50.0) was then performed for the remaining ~42 hours of observation time (this remaining available time being less than normal as a result of ground station outages due to Redu maintenance activities).

Throughout these observations SPI, IBIS and JEM-X1 were in their nominal science modes and the JEM-X2 DFEE remained off. During the OMC Flat Field observation, OMC was in FFCalibration and then DCCalibration modes but otherwise was in Science Normal mode. The TM allocation was IBIS 90; SPI 84; JEM-X1 8; JEM-X2 1; OMC 63 during the OMC Flat Field observation and IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5 for the other observations.

Revolution 275

The activities in revolution 275 began with 13 pointings of a GPS lasting ~10 hours. Operations were then interrupted for ~4 hours as a result of a ground station outage due to maintenance of the Redu station. A raster dithering observation of the Coma Cluster (RA 12:59:48.70; DEC +27:58:50.0) lasting ~12.5 hours was then performed. This was followed by a 6 hour engineering window in which the periodic Thruster Calibration was executed. The raster dithering observation of the Coma Cluster (RA 12:59:48.70; DEC +27:58:50.0) was then resumed and performed for the remaining ~27 hours of observation time.

During these observations SPI, IBIS and JEM-X1 were in their nominal science modes and the JEM-X2 DFEE remained off. During the Thruster Calibration, OMC was in Standby mode and otherwise was in Science Normal mode. The TM allocation was IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5.

7.2 Consumables

7.2.1 Detailed Fuel Book-keeping

2005-01-08T09:06:02.000Z	164.8518	F	Automatic TM processing.
2005-01-08T14:40:33.000Z	164.6757	F	ESAM monitoring
2005-01-08T17:46:15.000Z	164.5660	F	Post ESAM SSA to STA
2005-01-08T21:07:12.000Z	164.4900	F	Automatic TM processing.
2005-01-08T22:00:48.000Z	164.4540	F	Automatic TM processing.
2005-01-09T15:50:34.000Z	164.4209	F	Automatic TM processing.
2005-01-09T18:21:54.000Z	164.3959	F	Automatic TM processing.
2005-01-10T01:18:27.000Z	164.3765	F	Automatic TM processing.

2005-01-10T09:27:56.000Z	164.3444	F	Automatic TM processing.
2005-01-10T14:48:04.000Z	164.2878	F	Automatic TM processing.
2005-01-12T18:34:02.000Z	164.2377	F	Automatic TM processing.
2005-01-12T19:57:46.000Z	164.2133	F	Automatic TM processing.
2005-01-13T01:05:55.000Z	164.1910	F	Automatic TM processing.
2005-01-13T10:37:32.000Z	164.1732	F	Automatic TM processing.
2005-01-13T18:07:08.000Z	164.1277	F	Automatic TM processing.

This report was generated Fri Jan 14 08:00:21 GMT 2005

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 08/01/2005-14/01/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 58 Open Loop Slews, 79 Closed Loop Slews and 15 Momentum Bias were scheduled. 18 slews were missed. This is equivalent to a ~13.1% loss.

08/01/05 (Day of Year 008, Revolution 273)

Emergency Sun Acquisition Mode: At 10:04, the spacecraft entered the ESAM. The cause was an incompatibility between the Timeline and the scheduled FD tasks, which occurred after a re-planning. The recovery schedule was as follows:

- Commenced at 10:26.
- Sun Sensor Acquisition (SSA) mode at 14:40:37.
- Star Tracker Acquisition (STA) mode at 17:46:09.
- Inertial Pointing and Slew (IPS) mode at 18:14:07.
- The AOCS re-enabled in the Timeline at 22:33.

The impact was the loss of pointings 02730052 through to 02730065 inclusive. A total of about 0.3978 Kg Fuel was consumed during the ESAM and the recovery.

09/01/05 (Day of Year 009, Revolution 273)

Slews missed from the Timeline: At 14:02, a problem with the ground station necessitated the stopping of the Timeline. Flight Dynamics were called, the recovery to a safe perigee attitude consisted of a Reaction Wheel Bias, 2 Open Loop Slews, and another Reaction Wheel Bias. The impact was the loss of pointings 02730083 through to 02730087, the last four of these were engineering pointings.

10/01/05 (Day of Year 010, Revolution 274)

TC failed uplink: At 10:24, TC A3089 (START SUN STEER INI) failed uplink due to timeouts on transmission verification for the previous command, no action was taken as the next slew was due 10 minutes later.

11/01/05 (Day of Year 011, Revolution 274)

Nothing to report.

12/01/05 (Day of Year 012, Revolution 274)

Nothing to report.

13/01/05 (Day of Year 013, Revolution 275)

Slews missed from the Timeline: Due to a late AOS at Redu, PID 02750015 was missed. During the recovery, the commanding from the auto-stack, which had not been disabled, clashed with the recovery commands from the manual stack causing the loss of PIDs 02750016 and 02750017, they were all Open Loop Slews (OSL).

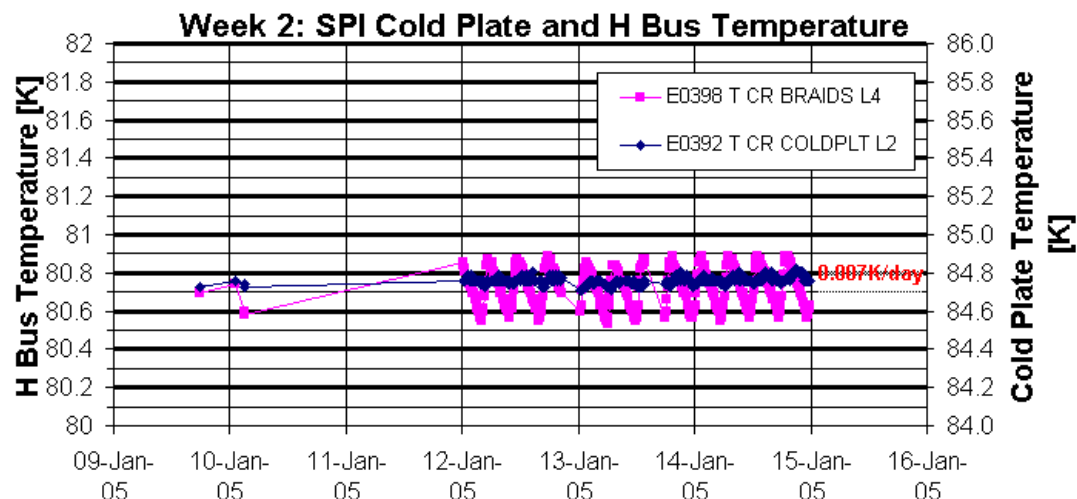
14/01/05 (Day of Year 014, Revolution 275)

Nothing to report

7.3.2 SPI Operations

Cryo-cooler / Detector Cold-Plate:

The performance of the cryo-cooler is nominal. The cold plate temperature was maintained at 85K $\pm$ 1K over the reporting period, showing the expected small positive drift. The following plot shows the evolution of the cold-plate and H bus temperatures during the reporting period.



IASW/DPE:

The IASW performances are nominal. The PST TM bandwidth allocation is 103 pkts/cycle in the science windows; the actual TM bandwidth usage is :
 103 pkts/cycle peak;
 90.9 pkts/cycle average in science mode.

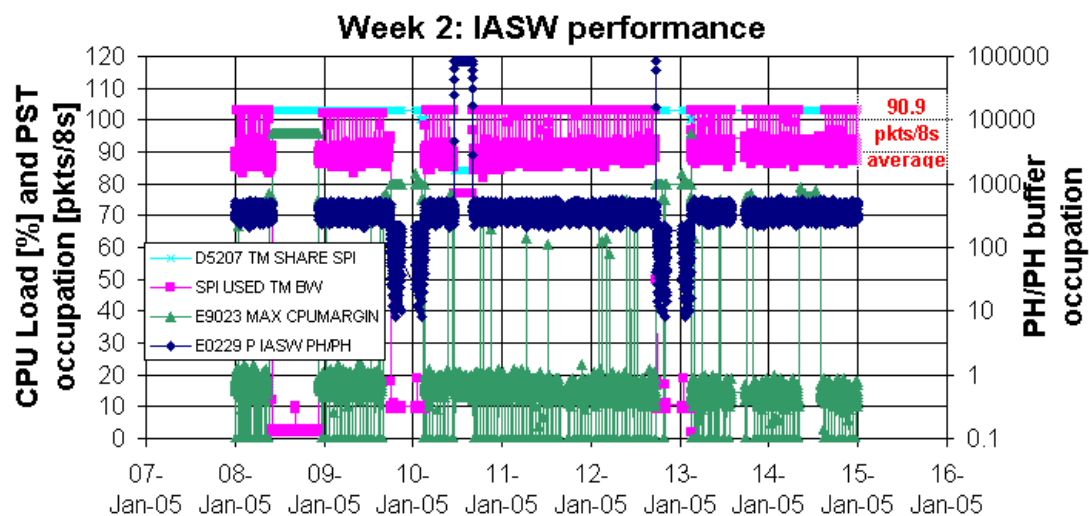
A re-arrangement of the SPI TM slots in the PST, uplinked manually by the SPACON at every revolution, is temporarily used as workaround to the TM leakage anomaly

INT_SC-107. The SPI team is currently working on the IASW, to find a permanent solution

Reactions to ESAM:

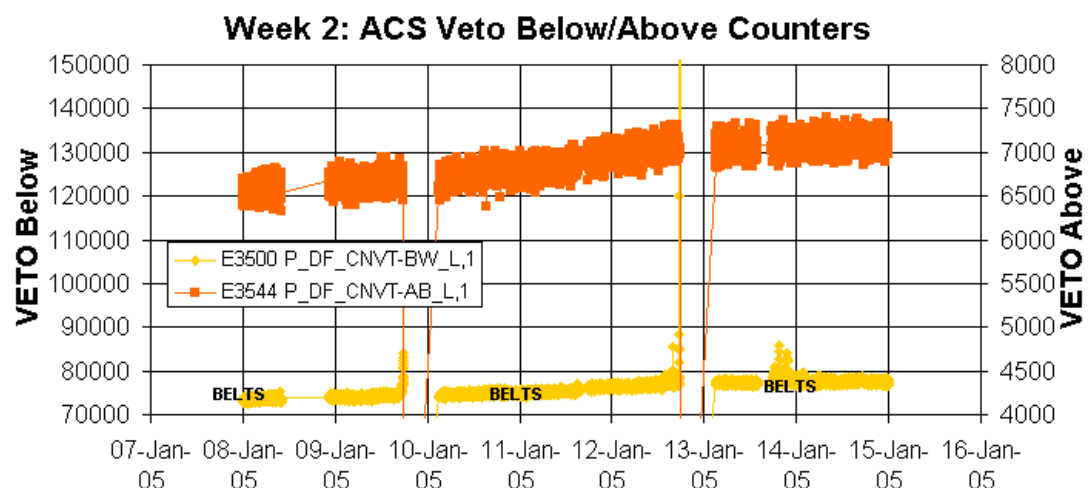
When Integral entered to ESAM on 8th January at 10:03z SPI reacted nominally to the ESAM flag, by automatically reconfiguring itself into CONF - PROTECTED mode, and then automatically going into COMMANDED state, once the recovery from ESAM was over. At this point the PHOTON mode was resumed from ground, followed by a forced OTF transition to re-start Spectra accumulation.

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



ACS:

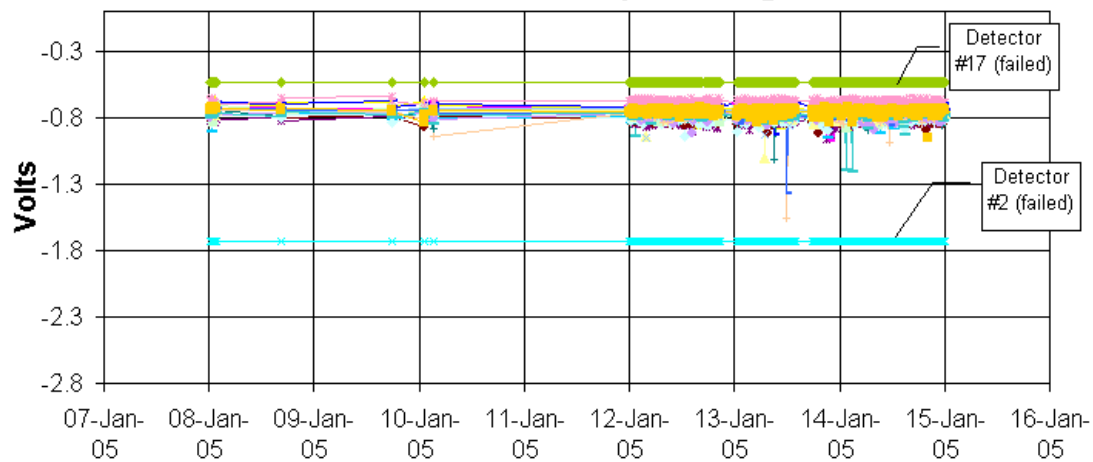
The performance of the ACS is nominal. The following plot shows the ACS overall count rate evolution during the reporting period.



AFEE:

The performance of 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 AFEE dc output signals during the reporting period.

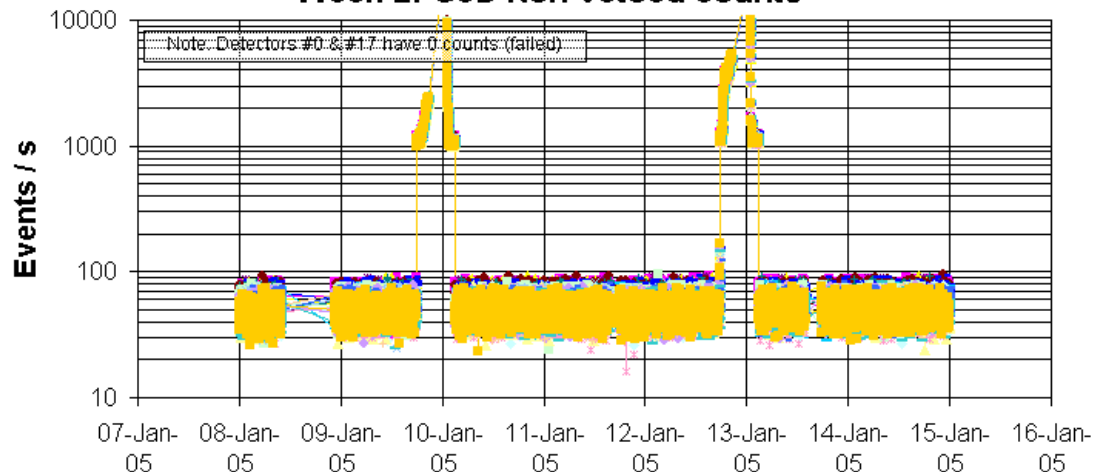
Week 2: AFEE DC output Voltages



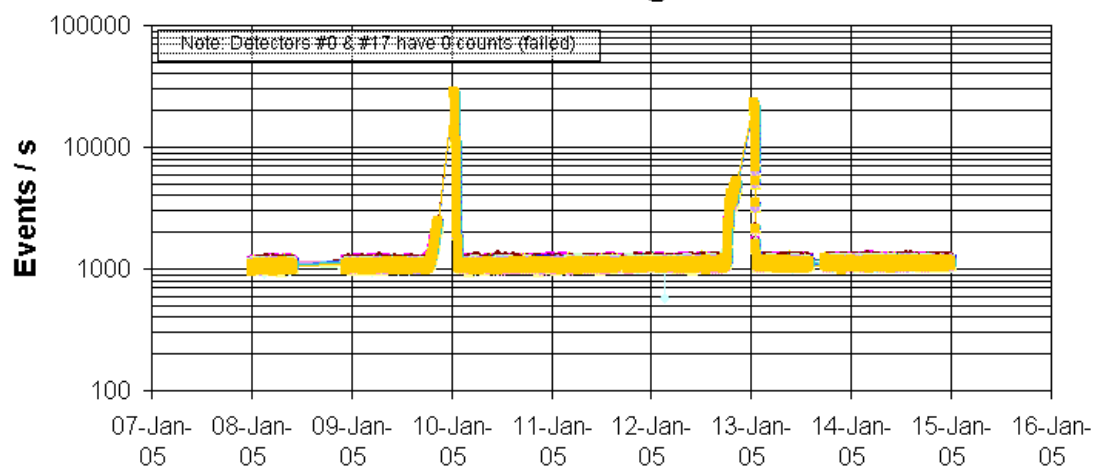
DFEE:

The performance of the unit is nominal. The following plot shows the Non Vetoed event rates, processed by the DFEE during the reporting period. The count rate of each detector is within the expected range, except for the failed detector #2 and #17.

Week 2: GeD Non Vetoed counts



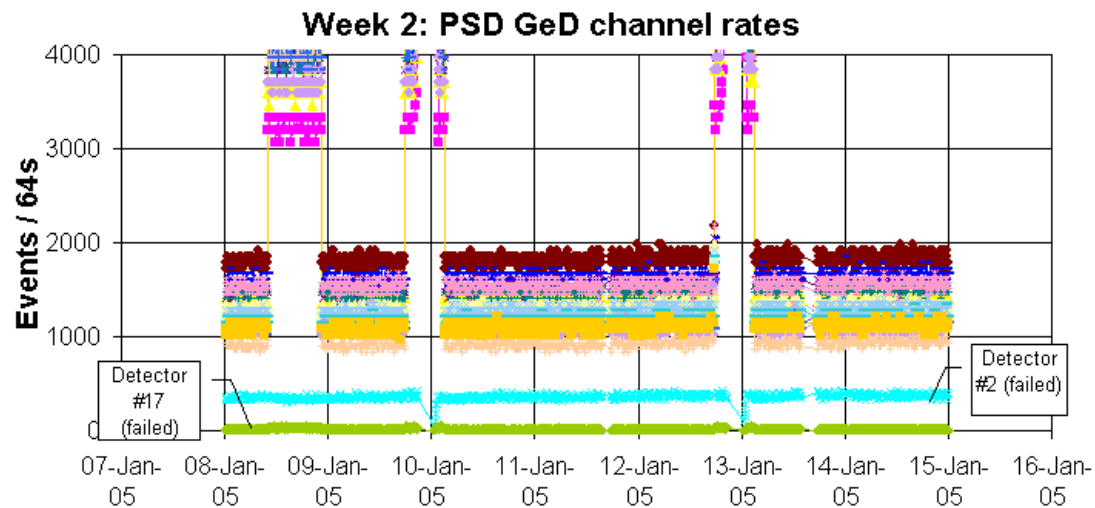
Week 2: GeD Time Tag counts



PSD:

The performance of the unit is nominal although the malfunction of the channel rates blanking reproduced itself also this week (see AR INT_SC-90 for a detailed description of the anomaly).

The following plot shows the PSD channel rates during the reporting period.

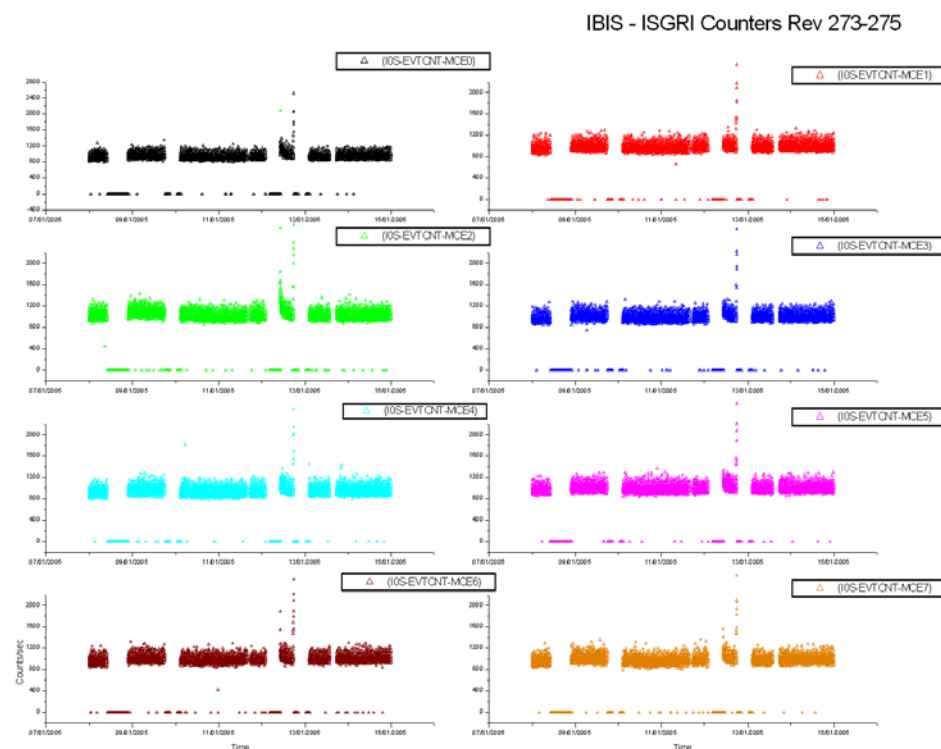


7.3.3 IBIS Operations

IBIS Event Counters Plots.

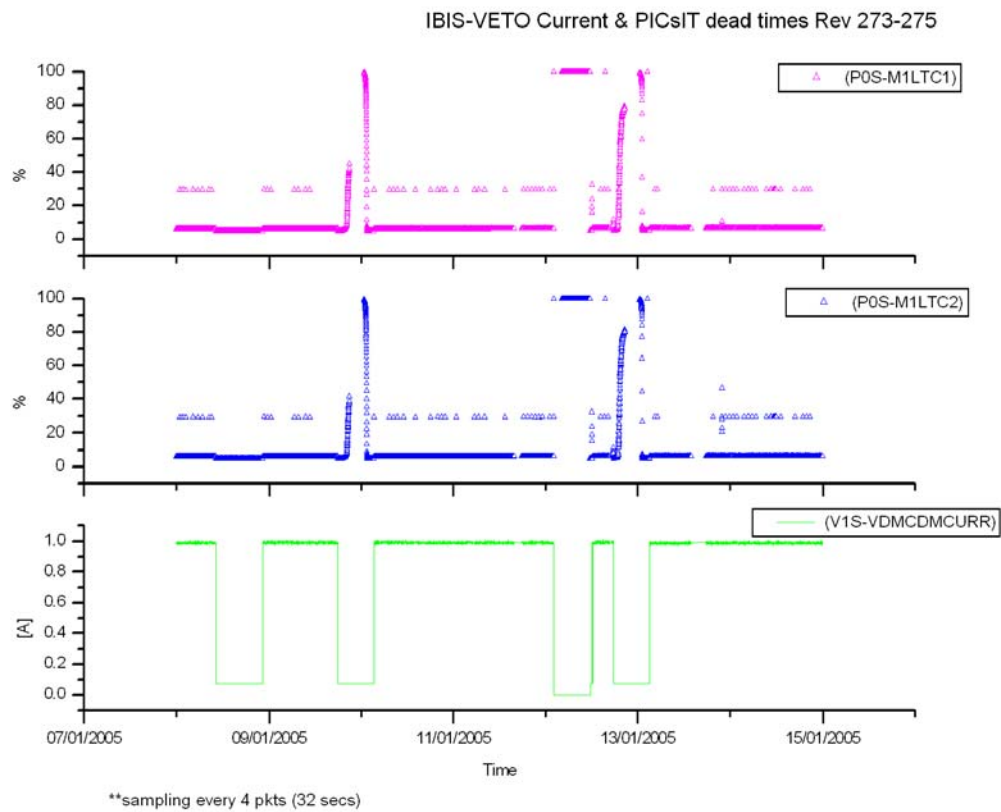
On January 8th, due to an ESAM, data were not collected for IBIS. Similarly, on January 12th due a DPE reset, IBIS reported a gap of data.

ISGRI Counters:

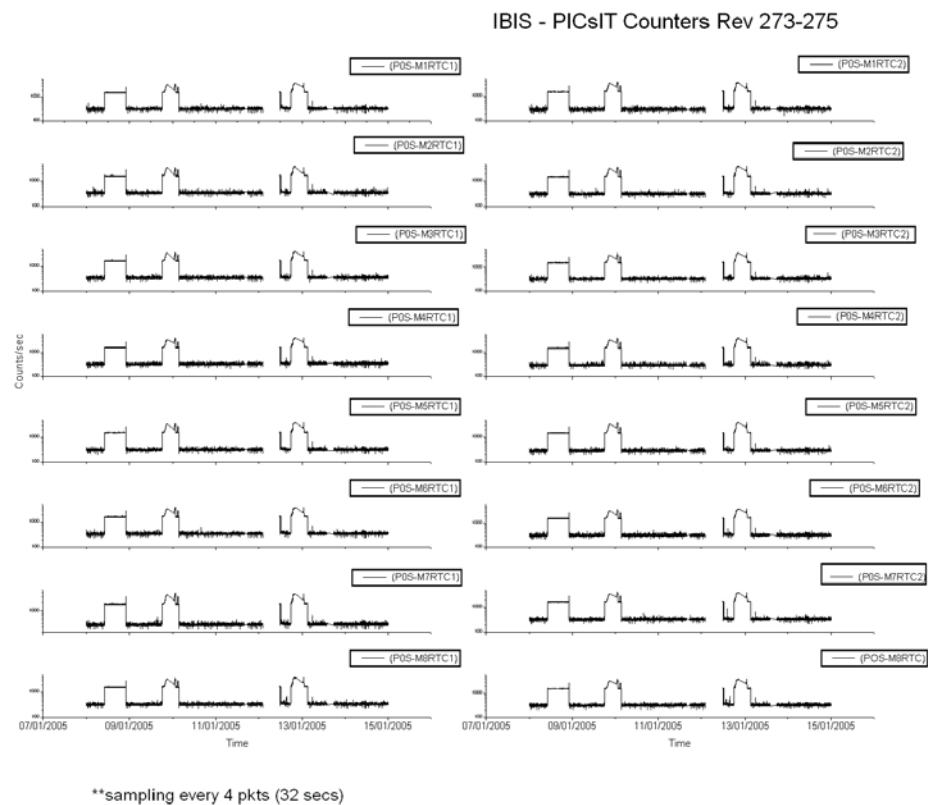


**sampling every 4 pkts (32 secs)

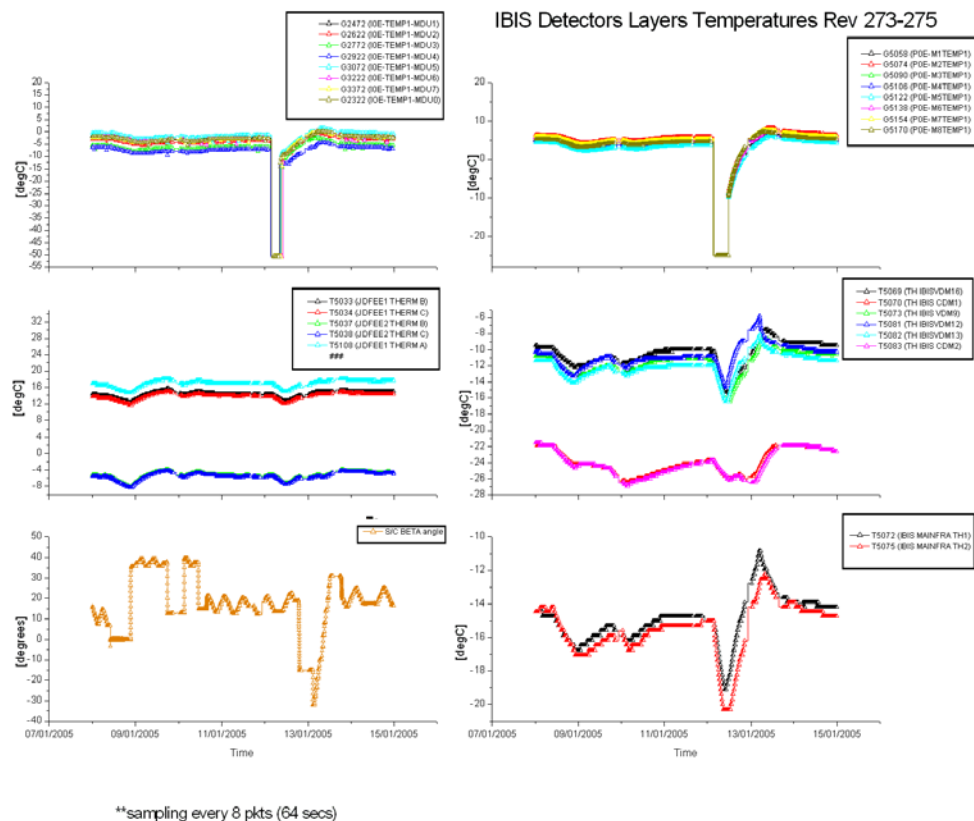
Veto Current:



Picsit Counters:



IBIS Detectors Layers Temperatures



IBIS daily report

DoY 008 (08/01/2005)

At 10:04Z, the S/C entered the Emergency Mode (ESAM) at the end of the open loop slew 0273_0052. Consequently the IBIS ESAM automatism reacted properly performing a transition of IBIS to Stand-by mode with VETO HV off and ISGRI Bias voltage off.

At 20:51Z IBIS ISGRI Context Tables were uploaded to the spacecraft.

Based on CRP_IBIS1_5110 (IBIS recovery from ESAM condition), the sequence GEISCL03 (ISGRI Calibration) was sent at 21:49Z. At 22:16Z sequence GEBEXT01 (IBIS reconfiguration after belts exit) was sent, followed by GESTAN02 at 22:28Z to put back IBIS in Scientific Standard Mode.

At 22:32 IBIS was enabled in the timeline.

DoY 012 (12/01/2005)

At 02:06Z IBIS DPE1 reported a reset of the DPE (cause of CPU reset POWER SAVING) causing the crash of the IASW, while the CSSW still running.

The anomaly was preceded by the following On Event Messages:

From CDMU APID 129:

Exception ID 82 <<EX OBIH TM ST11 WRONG RBI STATUS>>

Exception ID 91 <<EX OBIH TC ST9 WRONG RBI STATUS 2>>

From DPE APID 1280:

Event ID 0 <<IBIS1 CAUSE OF CPU RESET>> with parameter G9072 = POWER SAVING

The anomaly occurred at the end of a slew, a few second after the On Target Flag transition to high. After a preliminary analysis of the available CSSW TM and the instrument status preceding the problem, it was concluded that it was triggered by an "empty boot" of the DPE (i.e. a power reset affecting only the CPU while the DPE RAM still powered).

The recovery action was performed using CRP_IBIS1_5140. The following steps were executed:

- Stand-by Command G0125: rejected as expected;
- CSSW test command G9043;
- Execution of the contingency procedure CRP_IBIS1_0061 Unconditioned Peripheral Switch Off (VETO, PICSIT and ISGRI subsystems);
- Time Verification: The time was found completely out of sync wrt to COBT, thus confirming the power reset;
- Time re-synchronisation;
- restart IASW using procedure FCP_IBIS1_0010 from step 5;
- Full reactivation of the instrument following procedure FCP_IBIS1_0005 (IBIS Nominal Activation).

The final part of the re-activation was however slowed down by a last dump of the IASW image, safely executed before going to Standard Mode, which showed differences of 11 words wrt the reference IASW image. These differences resulted belonging to the data memory area (i.e. NOT WP), after the go-ahead of IBIS\IASW team IBIS was back in Scientific Standard Mode at 14:00Z.

An AR has been generated accordingly (AR INT_SC-110).

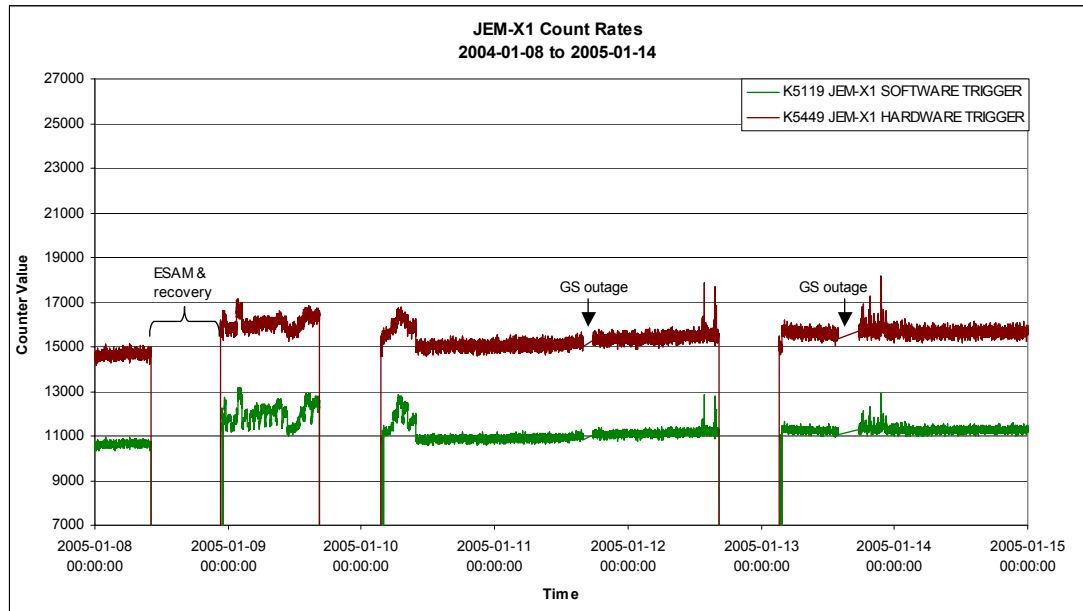
DoY 013 (13/01/2005)

At 21:54Z G5068 family (PDMi: semi-module #1 FIFO Error flag) and G5072 family (PDMi: semi-module #2 FIFO Error flag) went OOL and back. According action P-FIF-1, no action was taken.

7.3.4 JEM-X Operations

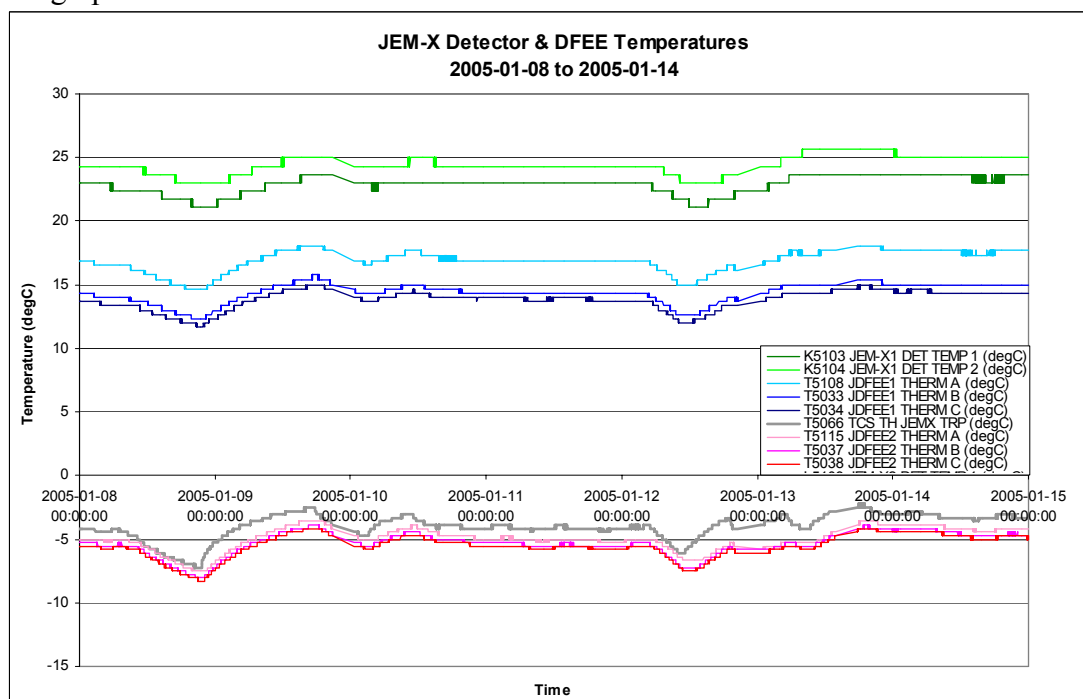
8.3.4.1 JEM-X Count Rates

JEM-X1 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

2005-01-08 (DOY 008, Rev 273)

As reported in Anomaly Report INT_SC-109, at 10:03:37Z the spacecraft entered ESAM (Emergency Safe Attitude Mode). This caused JEM-X1 to immediately transition to Safe mode autonomously, issuing OEM 231 JEM-X1 AUTO EVENT 1. The Active and Wanted Shutdown levels (TM parameters K5381 and K5382 respectively) changed from NORMAL [0] to GOTO SAFE [96] as expected.

At 10:33Z the Timeline was stopped.

At 14:40:33Z the AOCS exited ESAM and transitioned to SSA mode. At this time, the Wanted Shutdown Level (TM parameter K5382) went to NORMAL [0], but the Active Shutdown Level (K5381) remained GOTO SAFE [96] and thus an Out of Limits was correctly received on the synthetic parameter KD5380D EQ SHTDWN LEV.

At 16:21Z FCP_JEM1_0040 JEMX1 TRANSITION TO SAFE was executed. At this time, the Active Shutdown Level was reset to NORMAL [0] and the parameter KD5380D went back within limits.

Once the AOCS was recovered to IPS mode and the required operations performed to rejoin the automatic Timeline, the Timeline was started at 21:45Z, with commanding to AOCS, SPI, IBIS and JEM-X1 disabled. (Timeline operations for the AOCS then resumed at 22:33Z.)

At 22:10Z CRP_JEM1_5100 JEMX1 RECOVERY FROM ESAM was started, with JEM-X1 being commanded to SETUP mode. At 22:31Z the ED KEACT_03 was re-uplinked to activate JEM-X1 and configure it for science operations. At 23:08Z the last ED KEDATA01 was also re-uplinked to ensure JEM-X1 was in Data Taking mode with the correct observation parameters and commanding to JEM-X1 from the automatic Timeline was then re-enabled.

JEM-X1 operations continued nominally.

2005-01-09 (DOY 009, Rev 273-274)

Nothing to report

2005-01-10 (DOY 010, Rev 274)

At the start of revolution 274, at 02:58.06Z, FCP_JEM1_0120 was executed to disable the JEM-X1 reactions to the IREM count rates in the Broadcast Packet as per INT_OR_0189.

2005-01-11 (DOY 011, Rev 274) to 2005-01-12 (DOY 012, Rev 274-275)

Nothing to report

2005-01-13 (DOY 013, Rev 275)

At the start of revolution 275, at 10:56:15Z, FCP_JEM1_0120 was executed to disable the JEM-X1 reactions to the IREM count rates in the Broadcast Packet as per INT_OR_0189.

2005-01-14 (DOY 014, Rev 275)

Following the periodic Thruster Calibration (ending at 13:51:30Z), CCCFs were enabled in order to ensure the correct configuration of JEM-X1 for the resumption of science observations and thus the CCCF block starting at 13:55:49Z (including the ED KEDATA01 at 13:56:19Z) was executed.

7.3.5 OMC Operations

On DoY 008 from 10:03 to 22:30 the spacecraft was in ESAM, or recovering from it. The effect on OMC was an immediate transition to SAFE mode, which occurred at 10:03:59. At 14:40:47, the instrument was put back in STAND-BY, at 21:47:43, the Read Out Electronics were reset, and at 22:30:54, the unit was back in SCIENCE mode. The impact was pointings 02730052 through to 02730065 were lost.

On DoY 009, at 12:52, the OMC Lens Temp1 (T5016) dropped out of soft limits. No action was taken.

On DoY 009, at 14:02, a problem with the ground station caused the loss of pointing 02730083.

On DoY 010, at 11:11, the TC M1500 (OMC to stand-by) failed the static PTV, as the unit was already in stand-by. There was no impact.

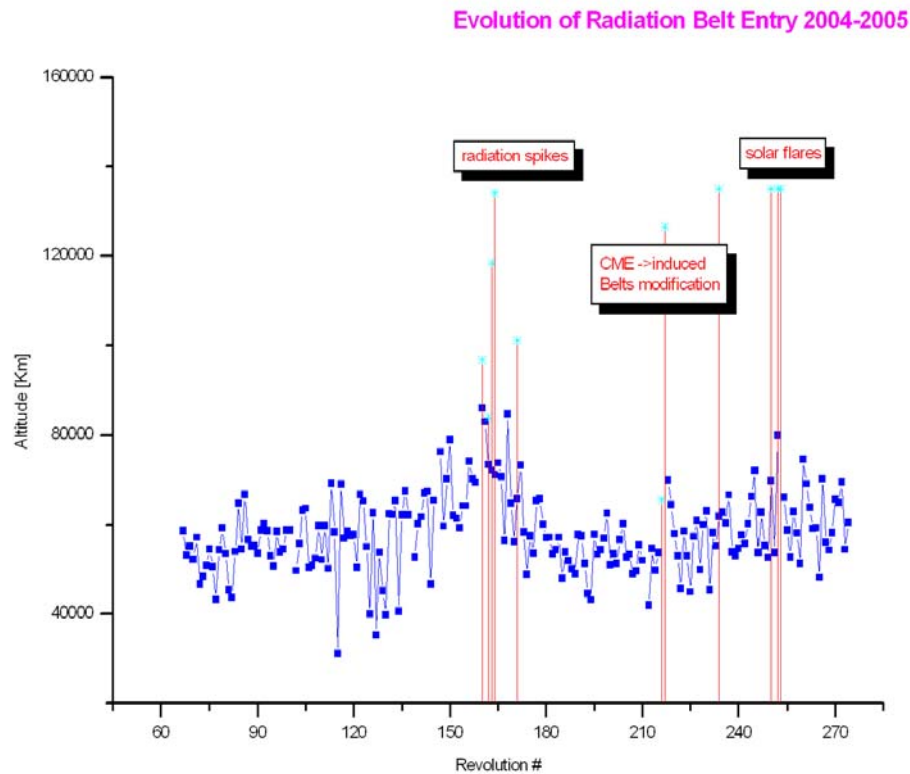
On DoY 010, at 14:02, the lens temperature again indicated warning low, but returned within limits at 14:06. No action was taken

On DoY 013, at 17:40, an interruption in the TC caused the loss of pointing 02750015, a problem during the recovery, led to the further loss of pointings 02750016 & 02750017.

On DoY 009 at 17:52:13 and DoY 012 at 17:42:00, the OMC was switched by the Timeline to SAFE mode, at the nominal times.

7.3.6 IREM Operations

Radiation Belts Entry



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]
273	RAD ENTR R 2005-01-09T17:51:58Z	2005-01-09 18:34:02	54452.3	2005-01-09 18:41:31	53405.72
274	RAD EXIT R 2005-01-10T03:03:50Z	2005-01-10 01:34:50	>>24888.1	2005-01-10 01:51:31	28624.36
274	RAD ENTR R 2005-01-12T17:41:44Z	2005-01-12 17:38:42	60426.9	2005-01-12 18:30:47	53606
275	RAD EXIT R 2005-01-13T02:52:45Z	2005-01-13 01:13:22	<24878.1	2005-01-13 01:40:47	28482.85

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

Proton Belts

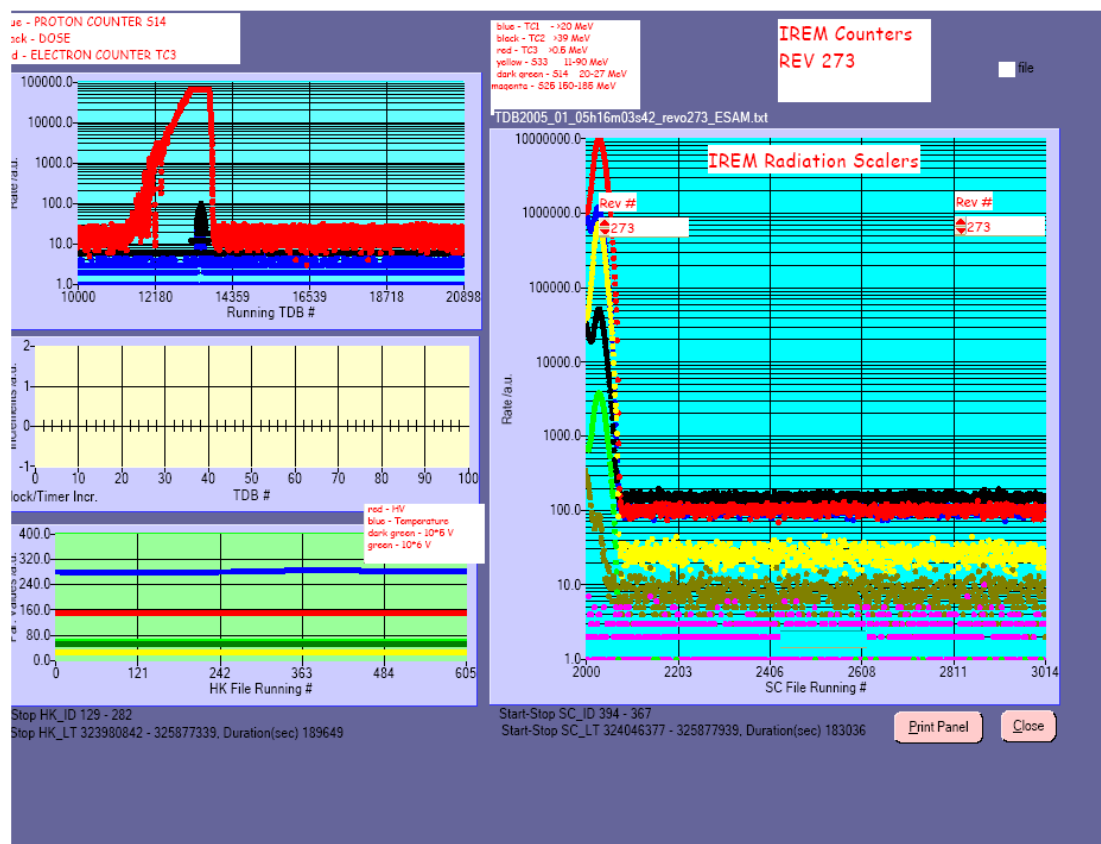
The flux of protons >8MEV computed by RadMon, did not exceed the threshold. Therefore, no predicted proton cut-off is provided for this week.

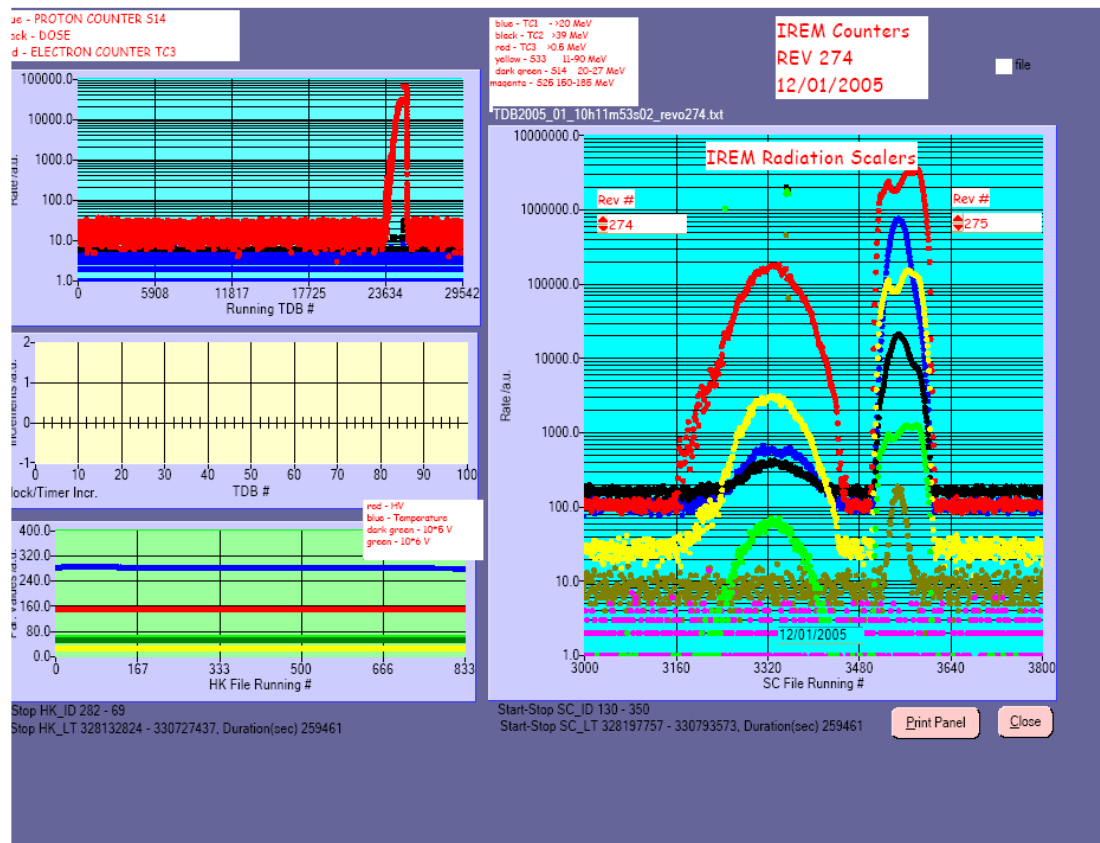
IREM daily report

Nothing to report.

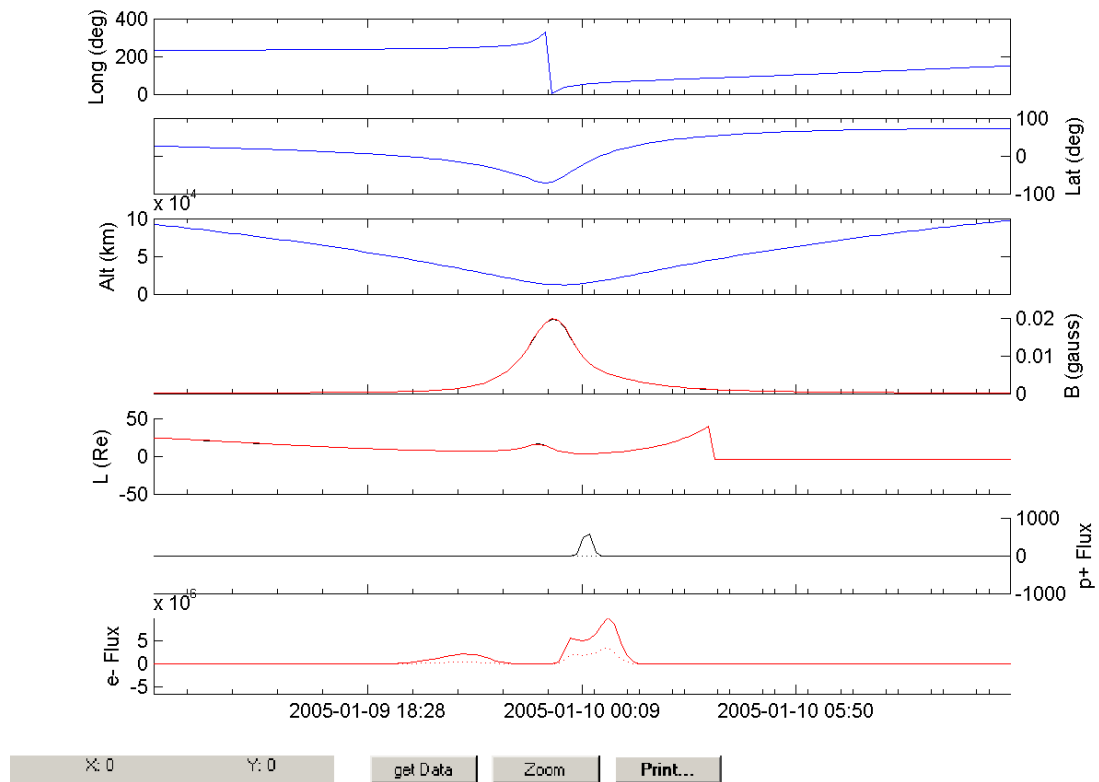
IREM radiation counters

Due to a disconnection from the TCPIP server from January 07th 18:56 to January 10th 11:53, most of revolution 273 is missing, including the belt passage from revolution 273 to revolution 274.

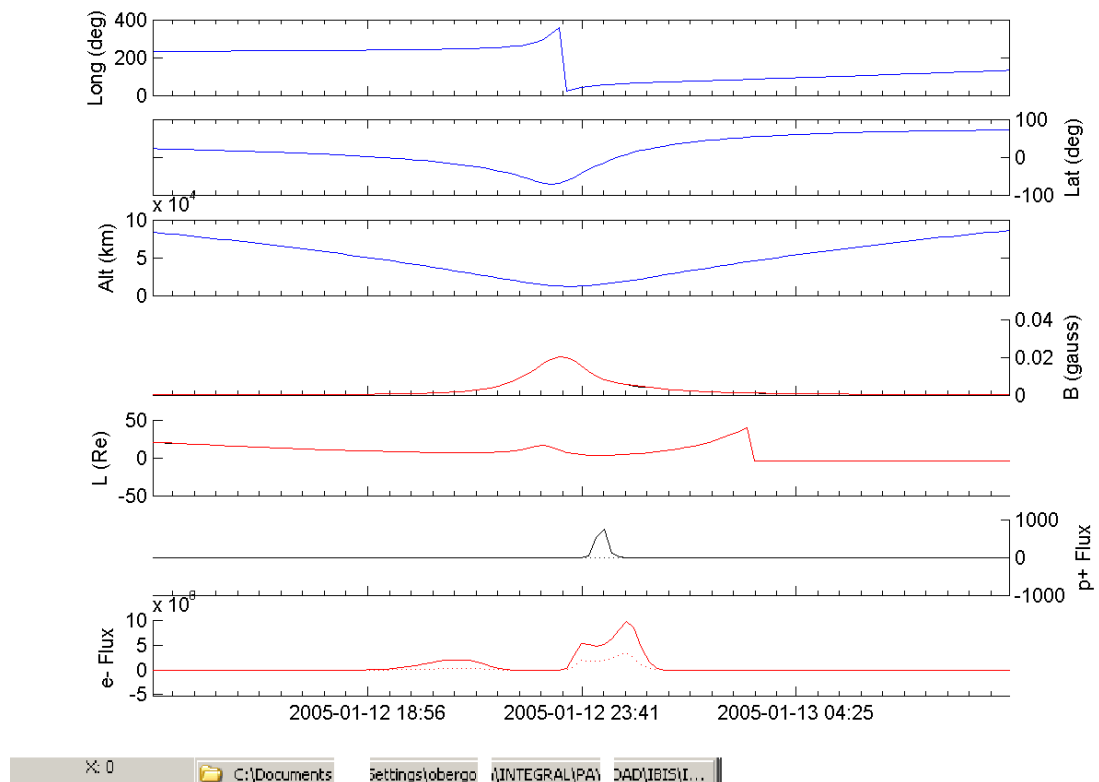




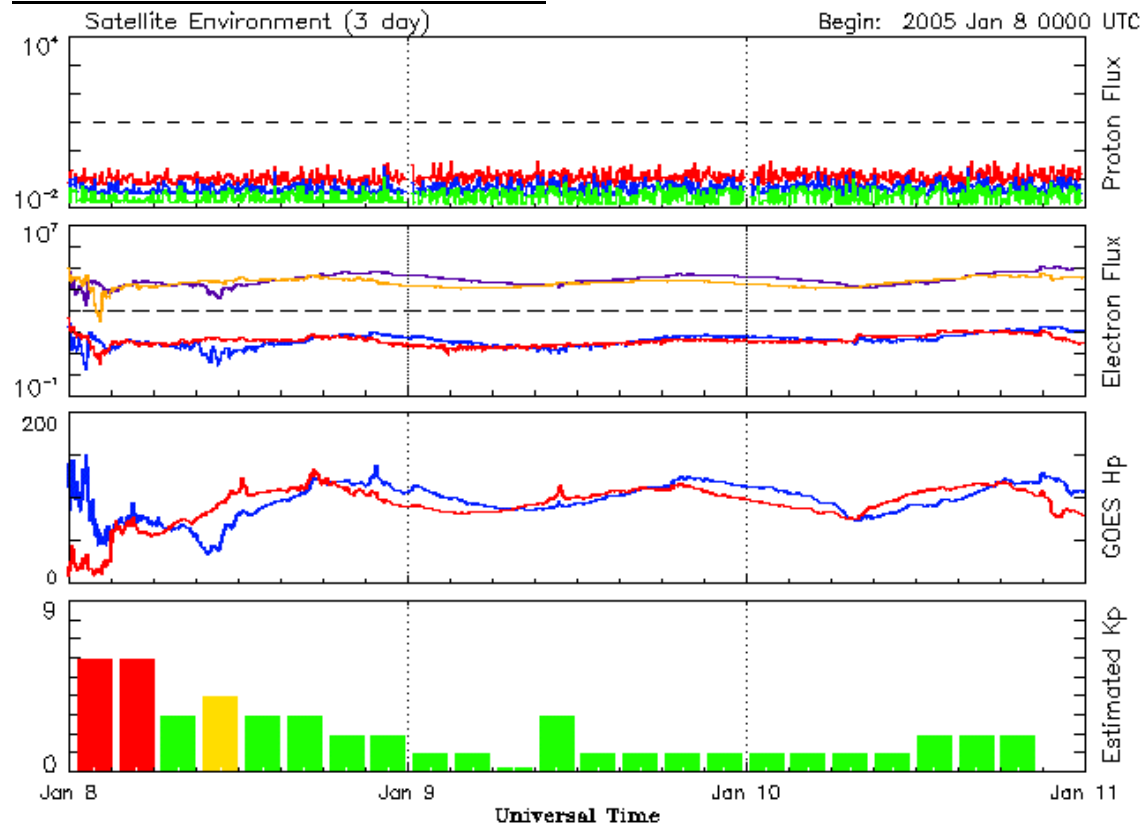
IREM Predicted Radiation Belt Passages.
Rev 273



Rev 274

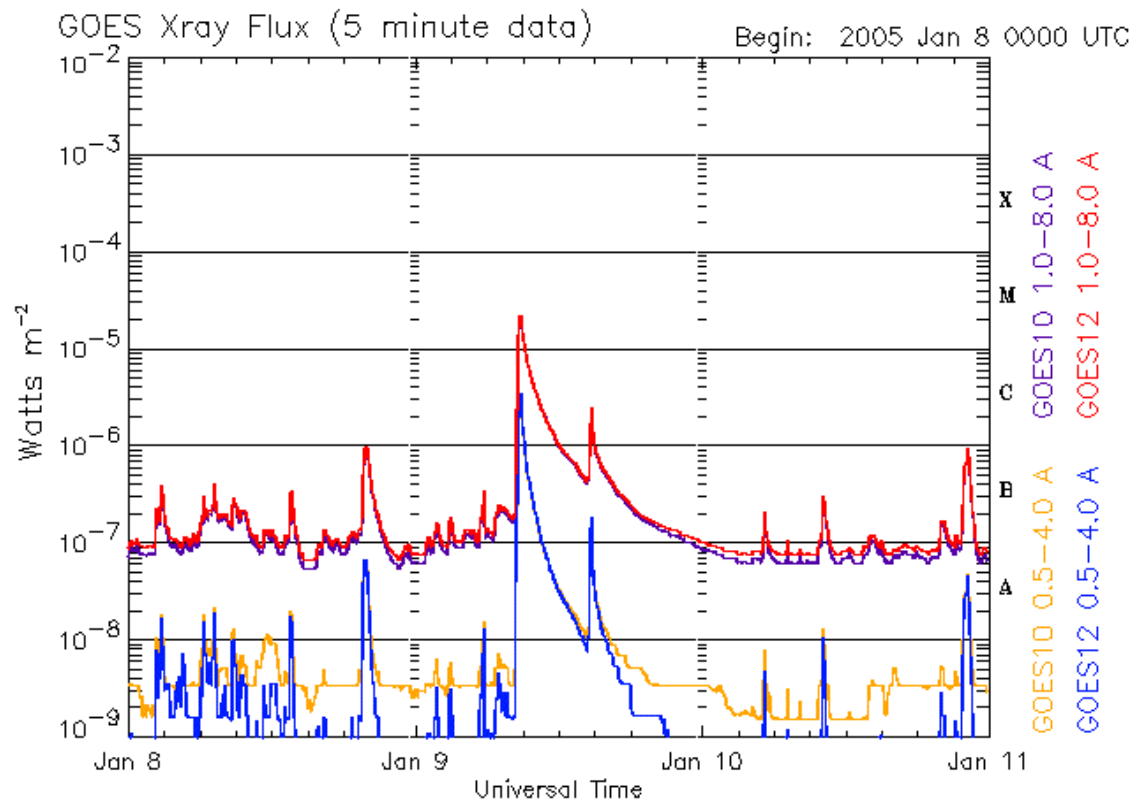


SEC-GOES Observed Particles Fluxes.



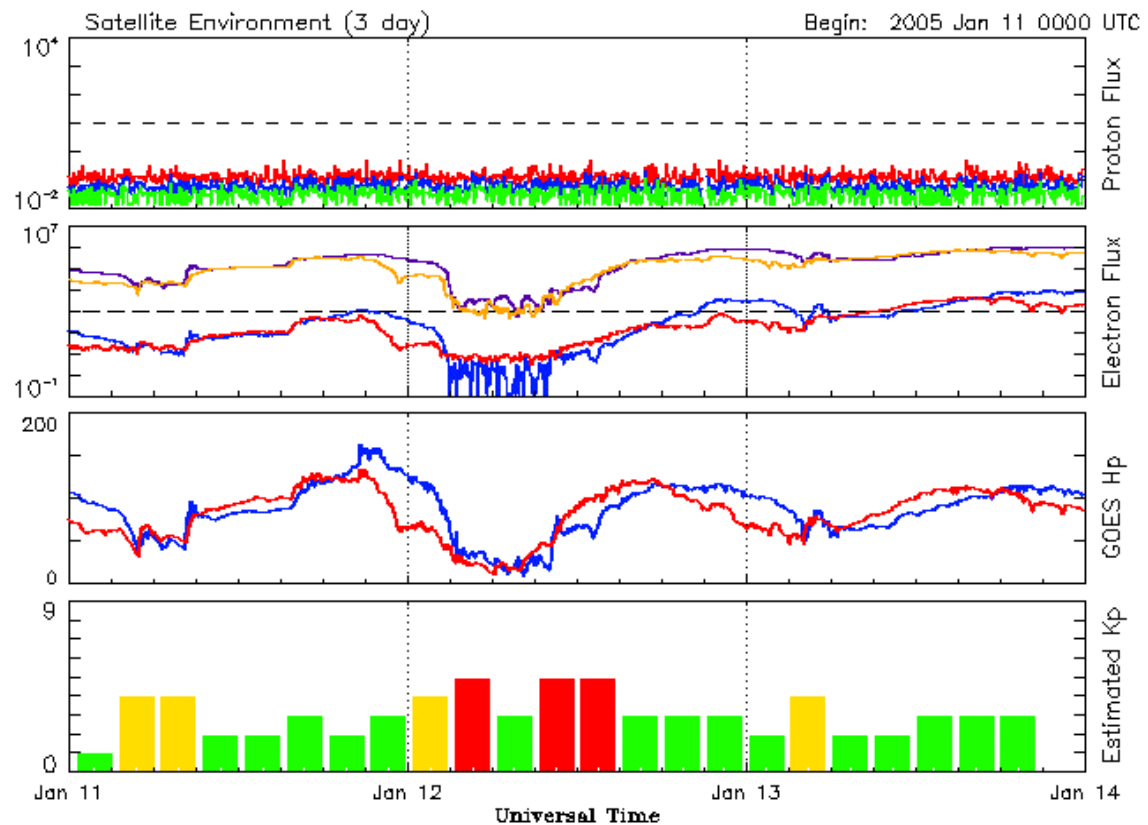
Updated 2005 Jan 10 23:56:12 UTC

NOAA/SEC Boulder, CO USA



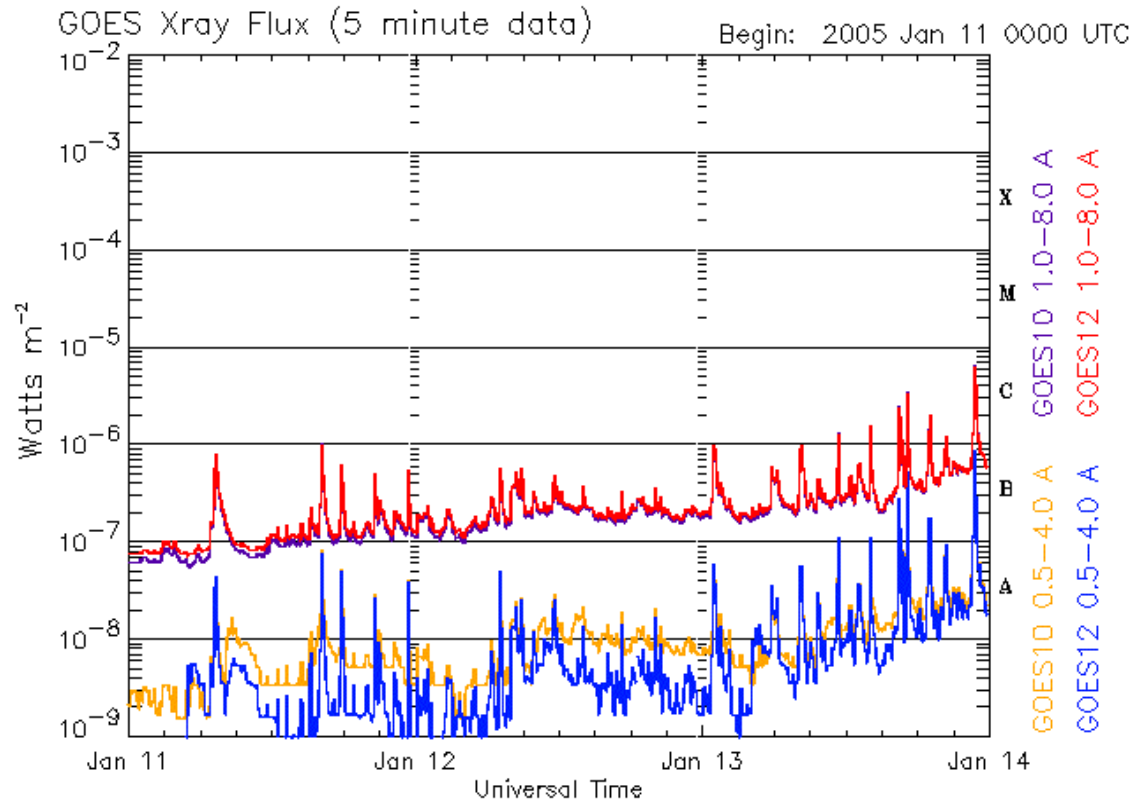
Updated 2005 Jan 10 23:56:04 UTC

NOAA/SEC Boulder, CO USA



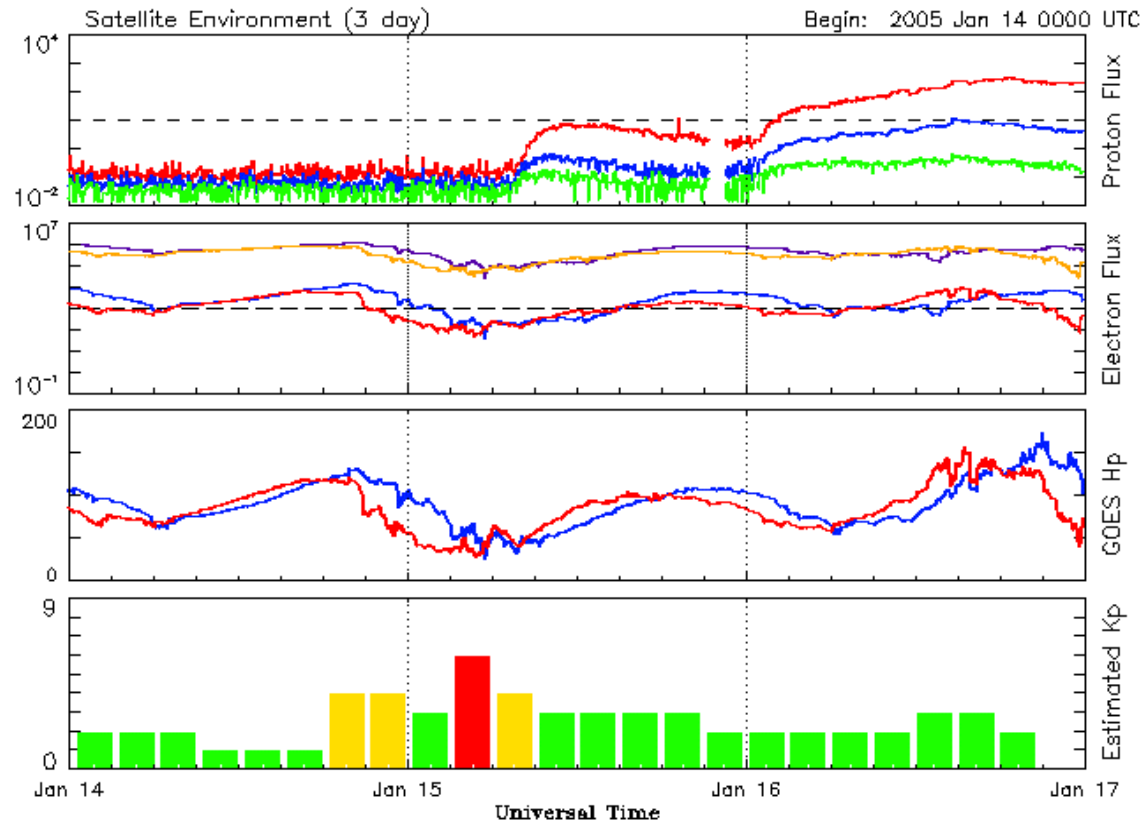
Updated 2005 Jan 13 23:56:11 UTC

NOAA/SEC Boulder, CO USA



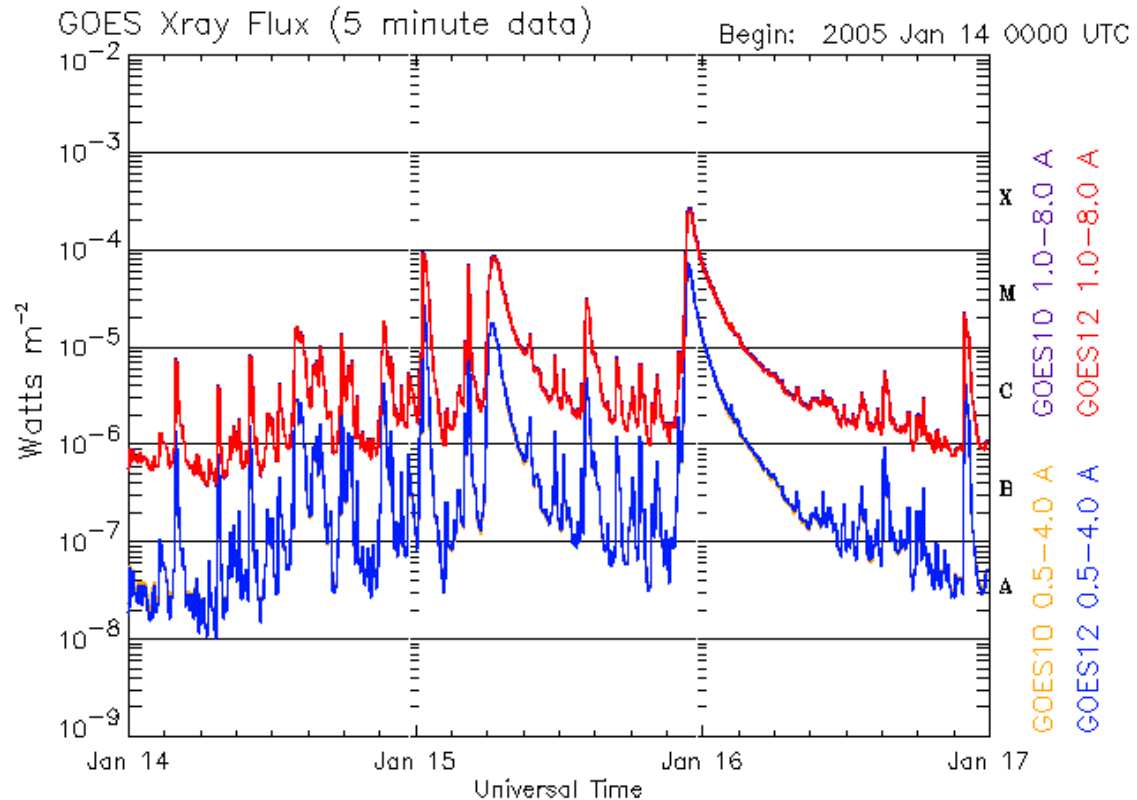
Updated 2005 Jan 13 23:56:04 UTC

NOAA/SEC Boulder, CO USA



Updated 2005 Jan 16 23:56:12 UTC

NOAA/SEC Boulder, CO USA



Updated 2005 Jan 16 23:56:04 UTC

NOAA/SEC Boulder, CO USA