EPIC operations Status 2014

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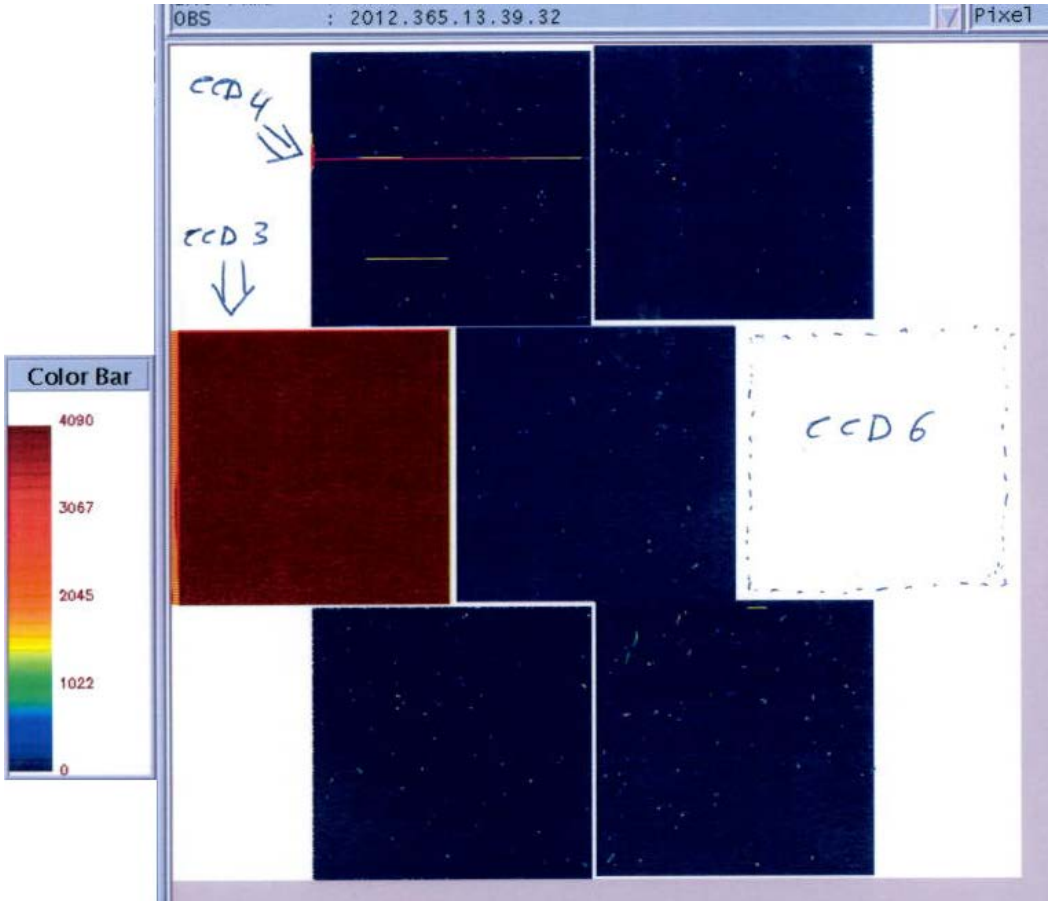
MOS1 micrometeorite

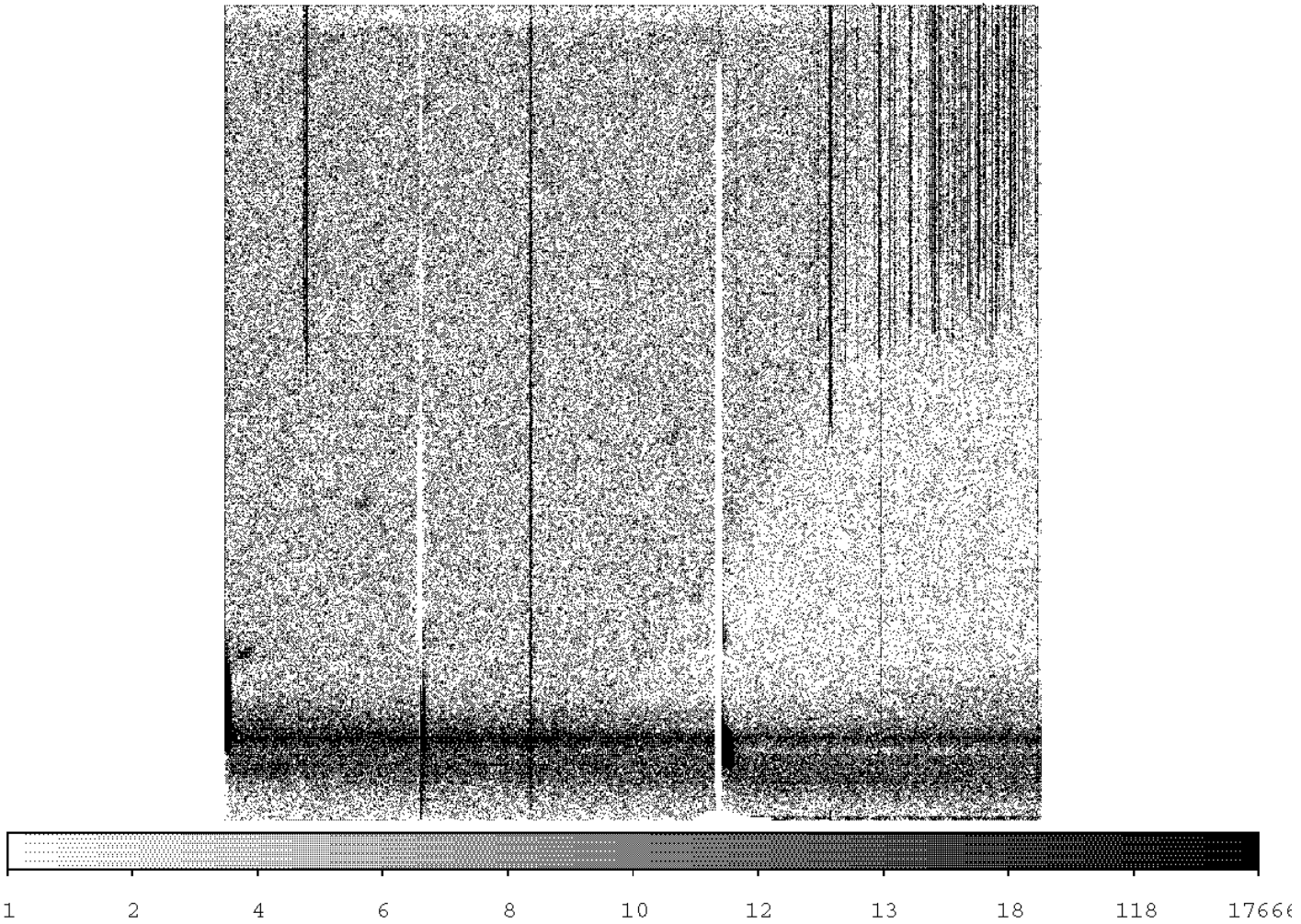
On 11th December 2012 a micrometeorite cause a big damage on CCD 3 and a little one on CCD4.

CCD 3 is declared dead, as was CCD 6 on it times.

Since revolution 2516 MOS1 is operated without use CCDs 3, 6, and the related electronics. So now MOS1 is a bit quicker than MOS2 starting observations.



MOS1 CCD4 damage

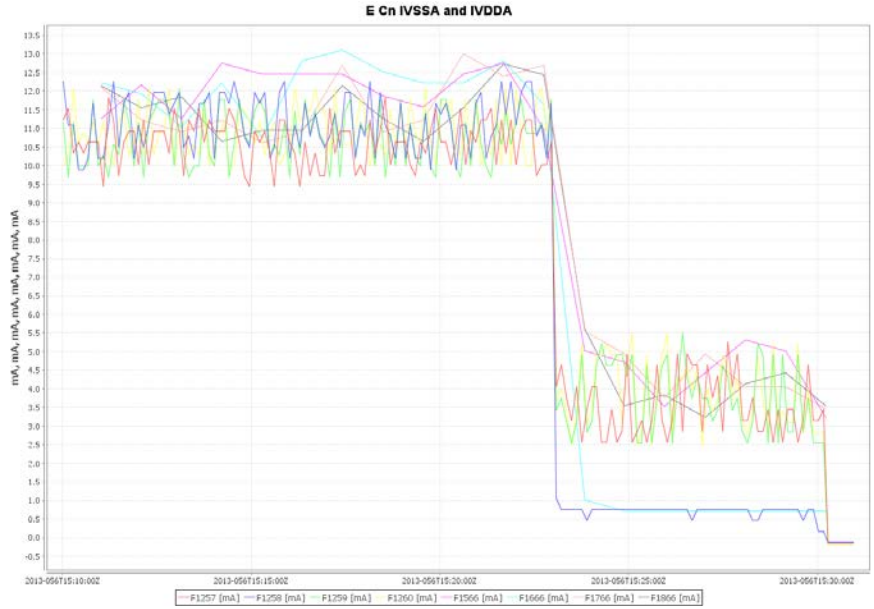


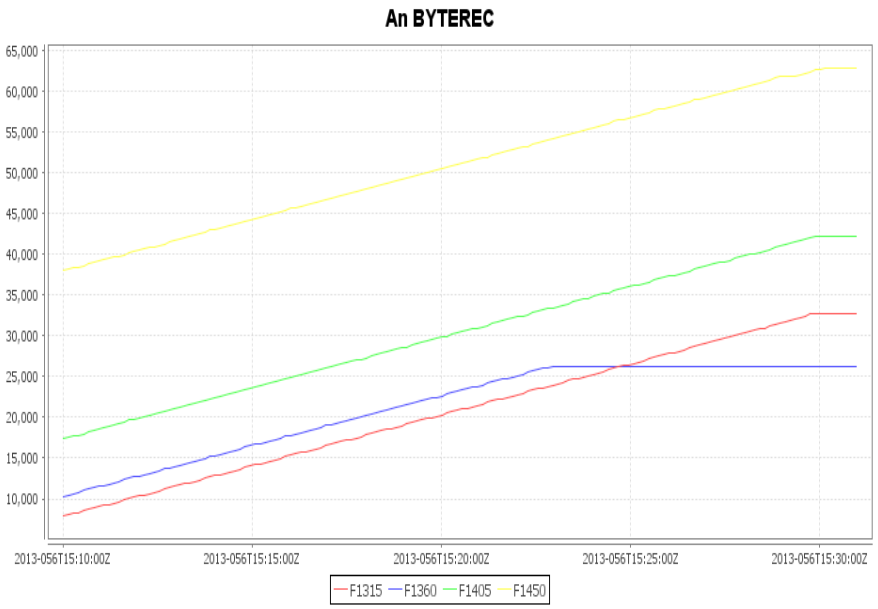
MOS1 CCD4 noise

- A lot of noise is being generated into CCD4 since micrometeorite impact.
- So much noise as for require the increase to 2.7 seconds of the integration time for allow the EMCR to process it. (Since rev 2412)
- Also the Offset Table version 18 is being used since rev 2553 for delete on-board part of the noisy rows from the border of the CCD, mostly out of the field of view of the telescope.
- A further layer of cleaning is performed on ground within the CCF files for SAS processing.

PN NCR#138 (low CCD currents)

- The PN events happened on 25th February and 11th April 2013.
  a. Alarm on CCD currents too low, but not 0.
  b. Instrument set on Safe Standby, them recover, OK.





PN NCR#138 (low CCD currents)

- The PN events did not repeated later.

- The tests performed show no failure. All the EPEA and EPCE memories are OK.
- As no new data is available, the provisional conclusion of software glitch on EPCE to EPEA communications, leading to stopped CCD reading that cause the low currents, is still the main suspected cause of the events.

- An OCR is ready to be send in case of a repetition of this event. It instruct how further investigate the memories CRCs and a softer EPEA reboot as a way to find new clues of the nature of the problem.

Others

1. PN Timing and Burst modes are using offsets calculated with the filter wheel in Close position since revolution 2301 (3rd Jun 2012).
2. MOS1 suffered some damage on a few pixels on 7th Nov 2012, rev 2370. Was it a nano-meteorite?
3. MOS 2 A (redundant) autonomously ON (7th Dec 2012). LCL trip-on. It was necessary switch OFF both MOS 2 and then power ON only the correct one (MOS 2 B).
4. Another case of NCR#133 on 6th March 2013. This time the false alarm was on MOS1 door HOP circuit.

Others (cont.)

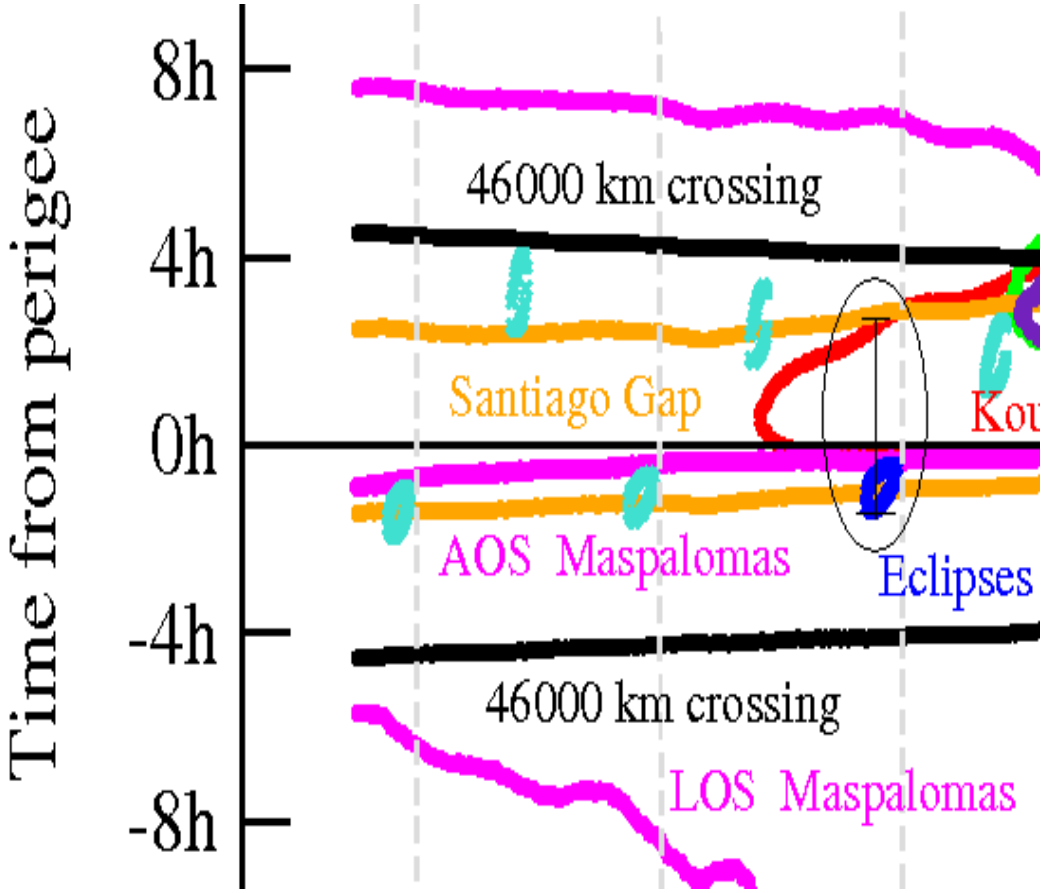
5. 4 Wheel Drive; no impact on nominal or first level (NSO) de-caging maneuvers. Second level maneuvers (fast wheel speed change) caused a de-pointing of less than 5 arc seconds along less than 10 minutes on the only 5 cases performed up to now. Theses fast maneuvers are executed only out of the PN Offset calculation time.

Future perigee gaps

Due to a slow change on the orbit we expect have gaps on ground station coverage at perigee from summer 2014 to 2020.

The instruments may be idle up to 4 hours per revolution. No major impact as on perigee the instruments are already idle.

But on eclipse seasons the instruments may be OFF up to 3 hours



Future eclipses with gaps

- As consequence a change in the concept of instruments operations on eclipse is being developed. The new idea is left the instruments powered OFF after eclipse and until the ground station is available again.
- For be able to do so a new thermal control is being implemented for – among others- maintain PN CCD temperature on -90 to -80 degC.
- The limited resources cause that MOS CCD temperatures will change from nominal -120 degC to about -80 degC on each eclipse and post eclipse period. The temperature will be restored just in time for start observing. But some periodic impact on calibration is possible.

End

xmm-newton