EPIC MOS monitoring

EPIC calibration meeting

Saclay, 24-25 September 2003

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XMM

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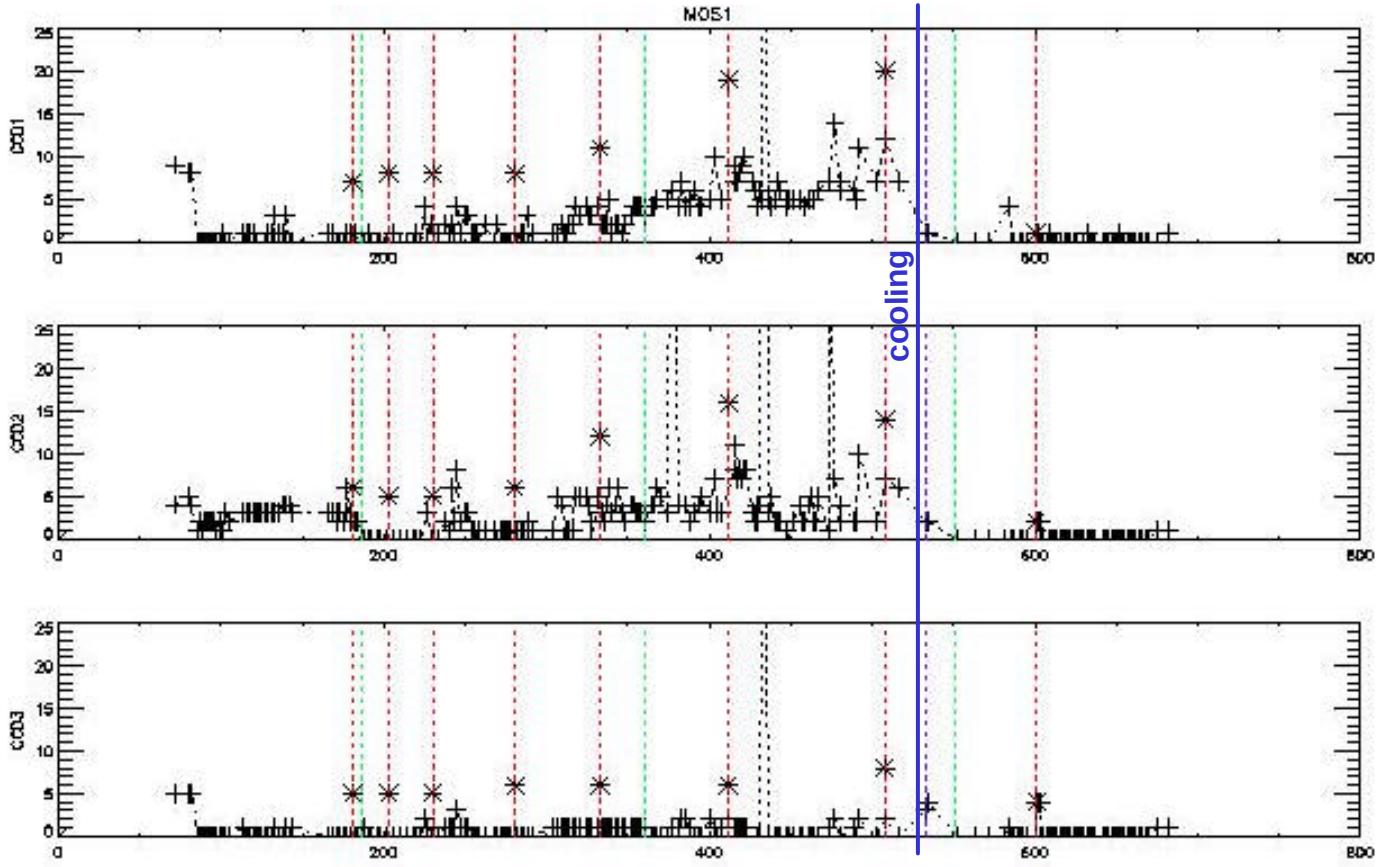
MOS operations

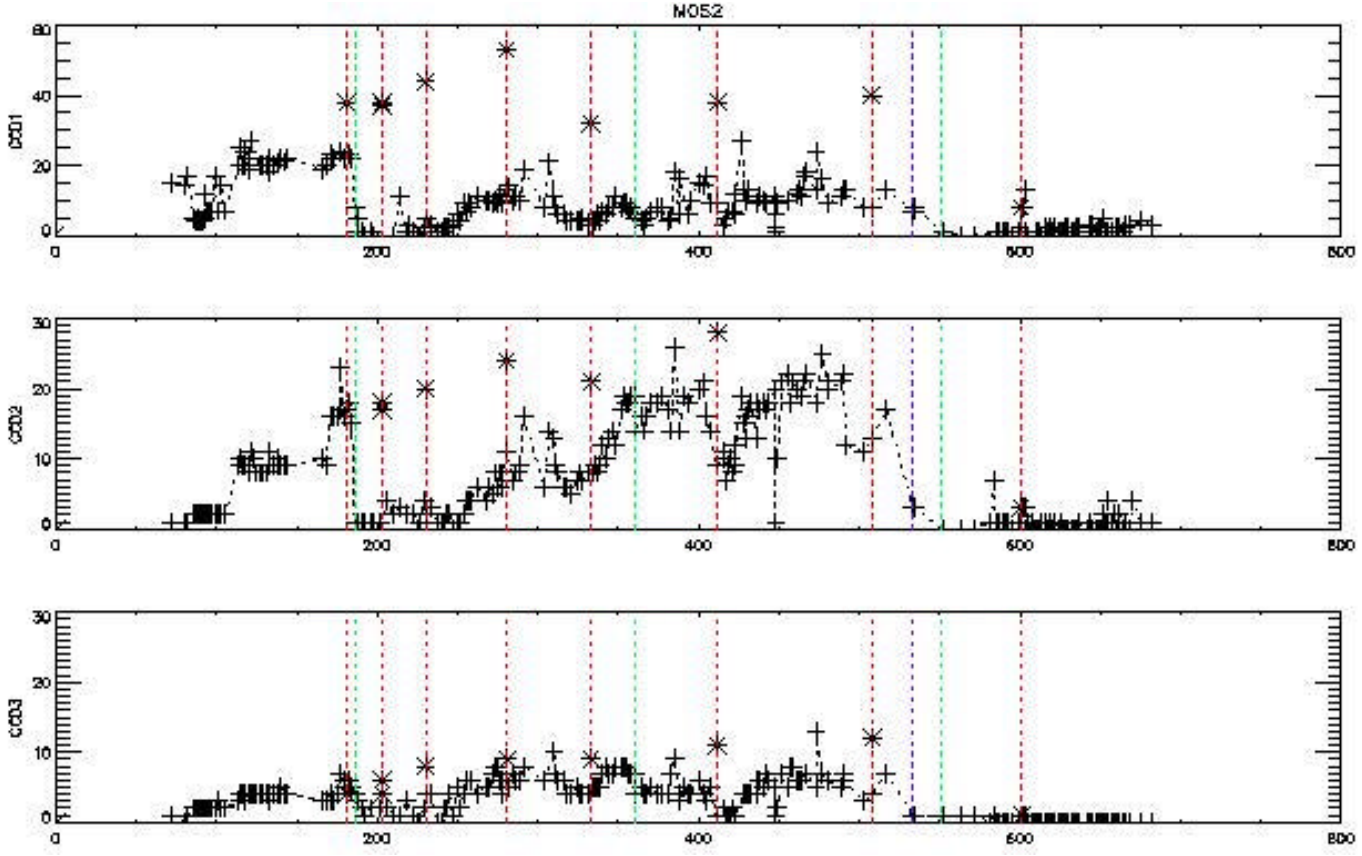
- **Smooth operations**
- **A lot of time lost due to radiation, especially at the end of revolution in of revolutions**

MOS1 bad pixel monitoring



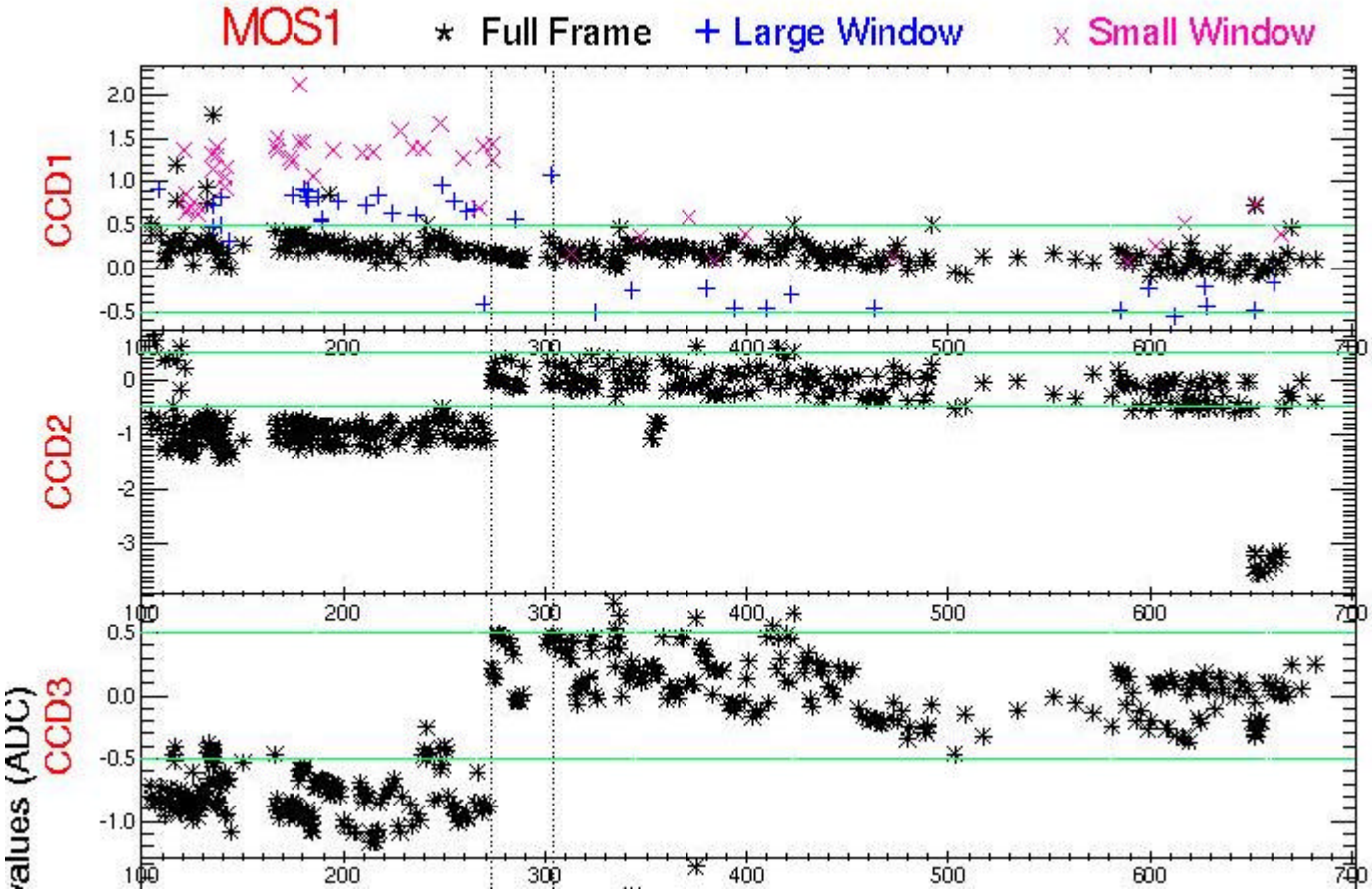
Number of hot pixels at >1% recurrence frequency per CCD

MOS2 bad pixel monitoring



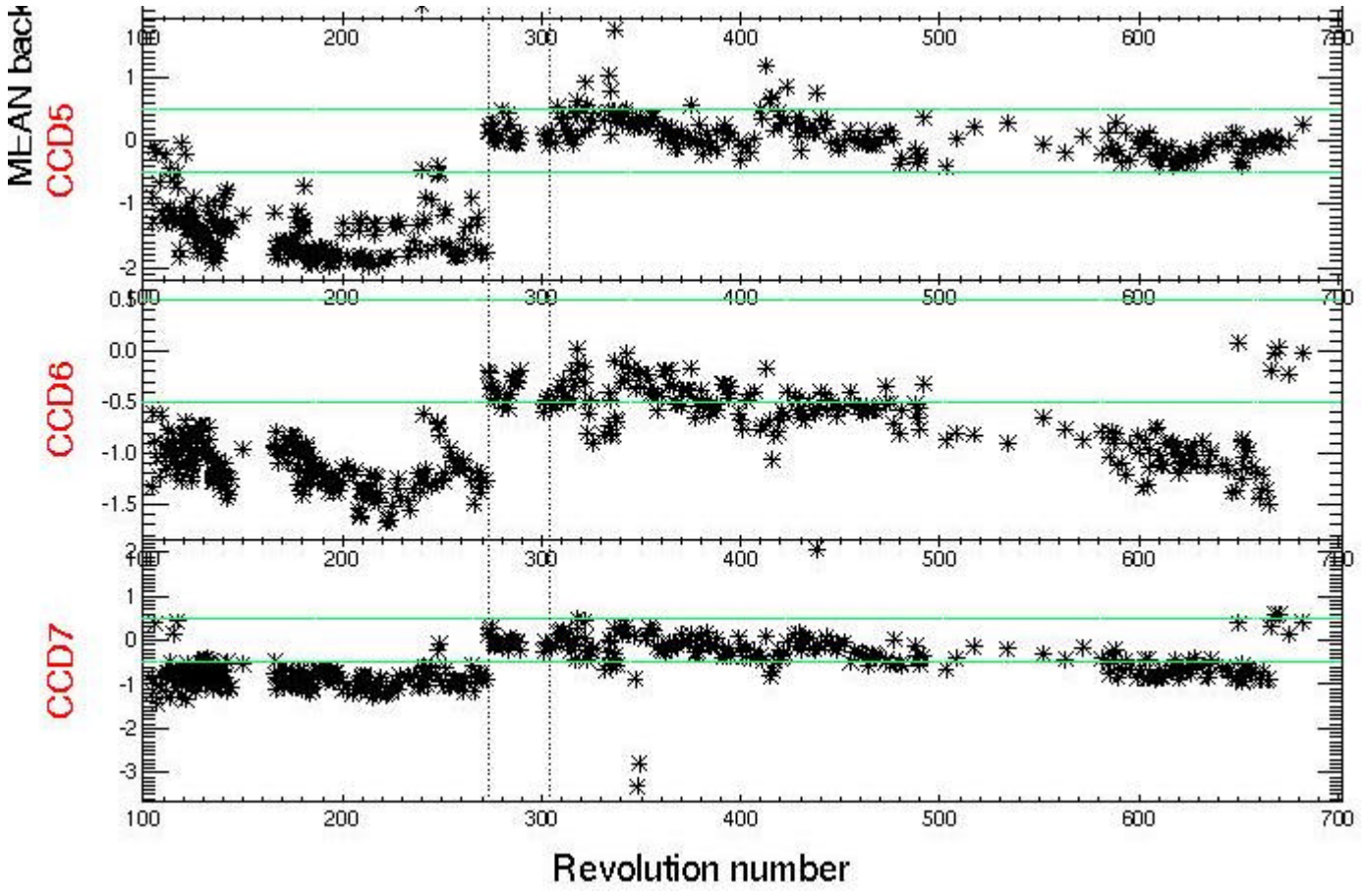
Number of hot pixels at >1% recurrence frequency per CCD

MOS background monitoring (1)

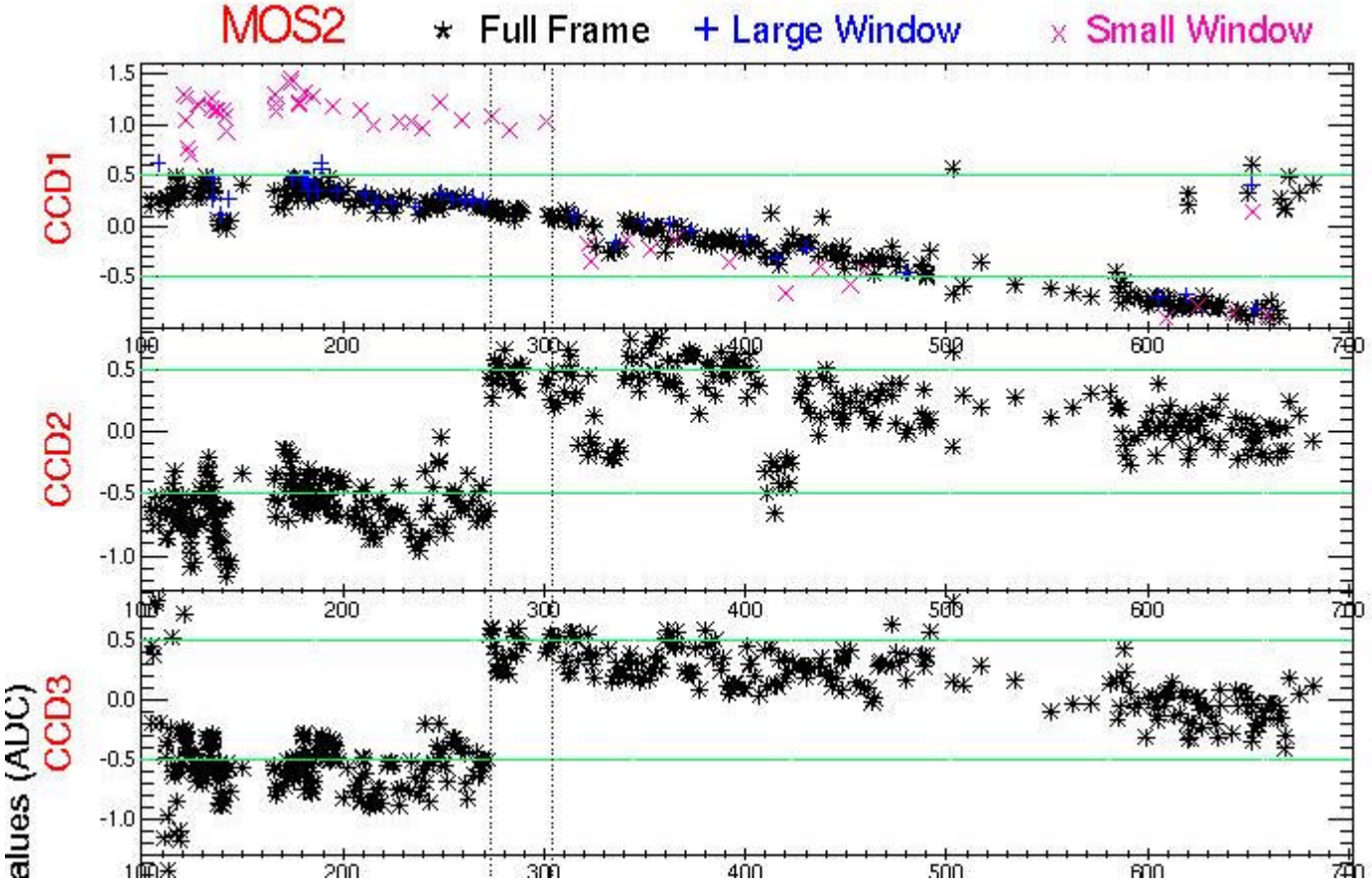


MOS background monitoring (2)

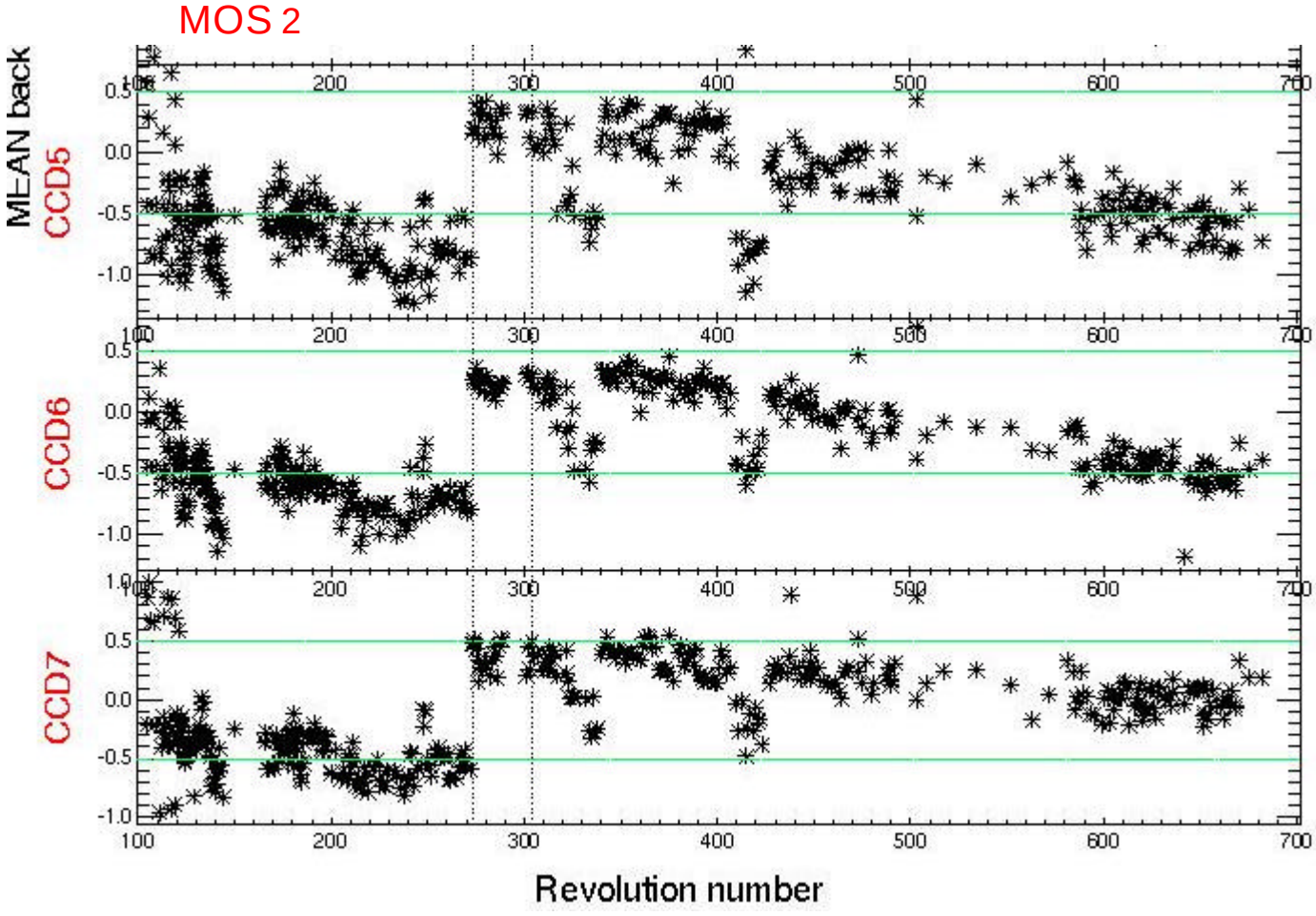
MOS1



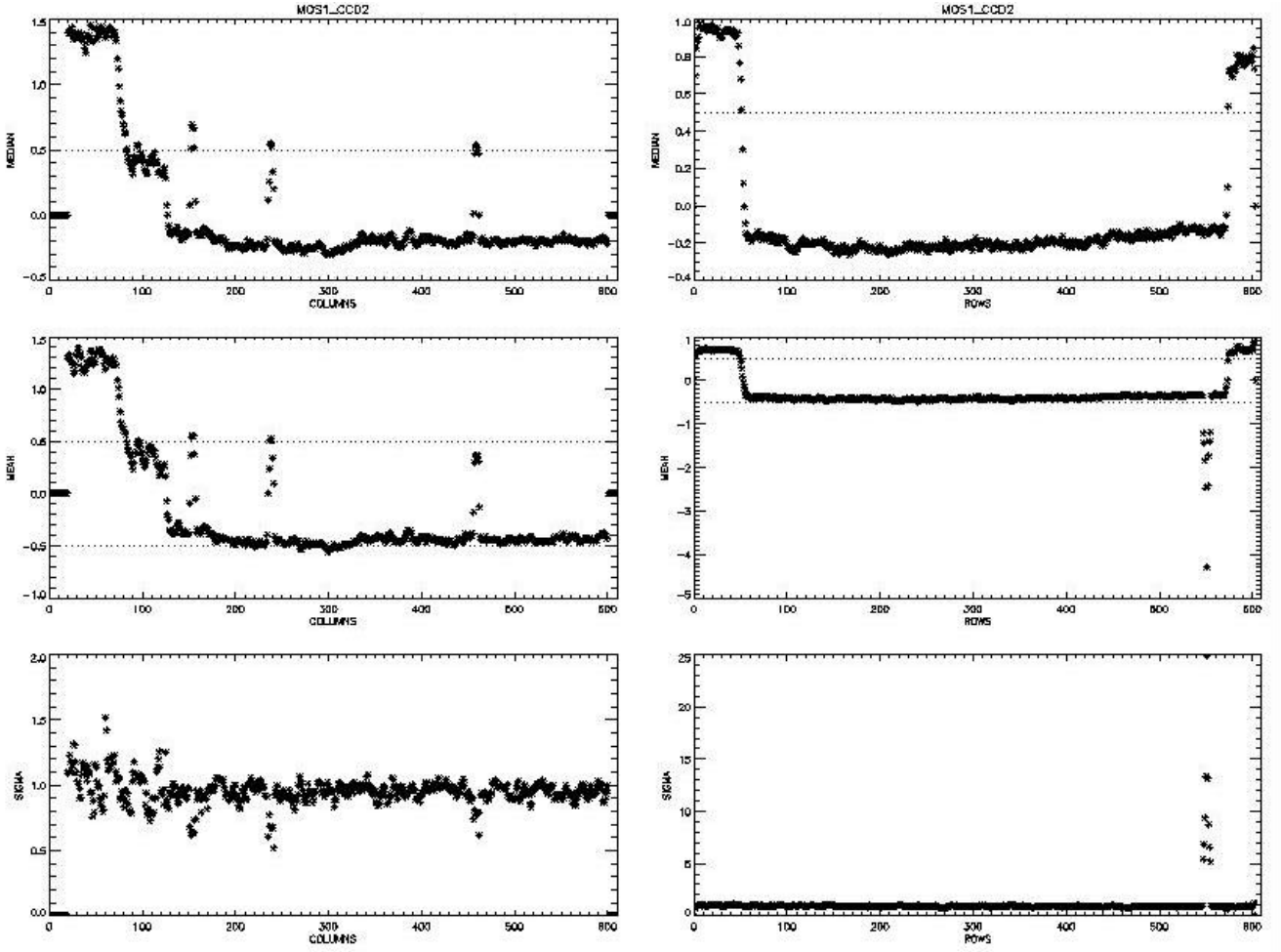
MOS background monitoring (3)



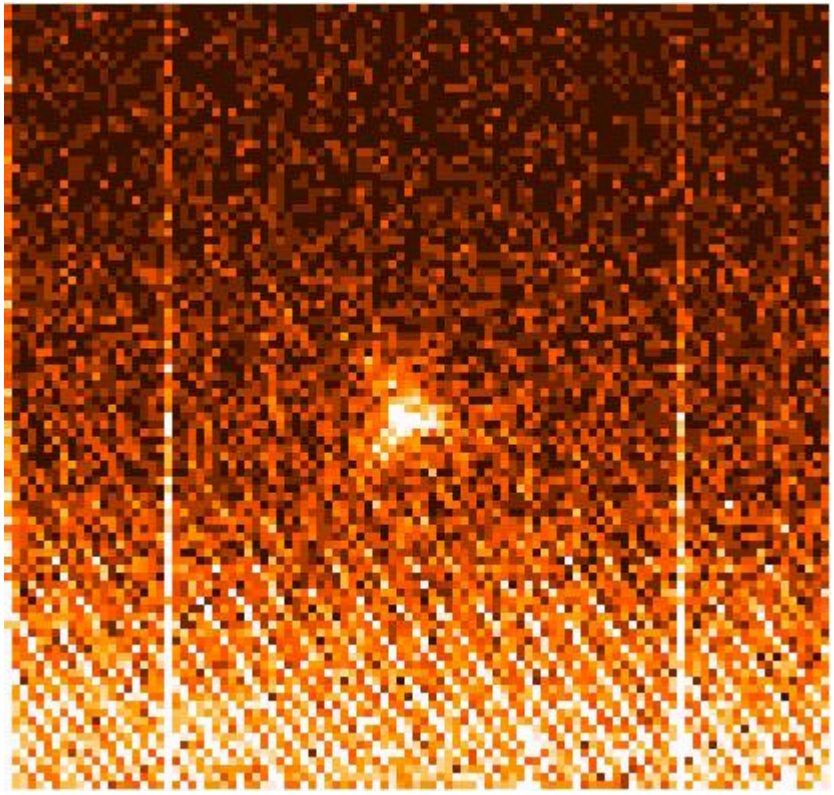
MOS background monitoring (4)



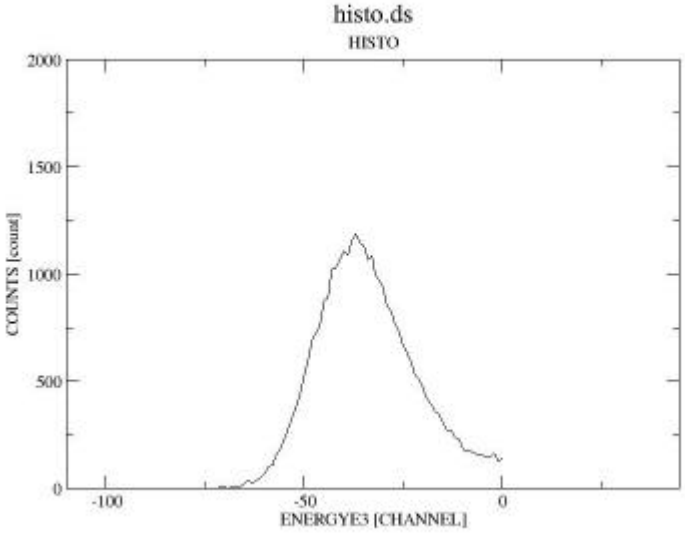
MOS background monitoring (5)



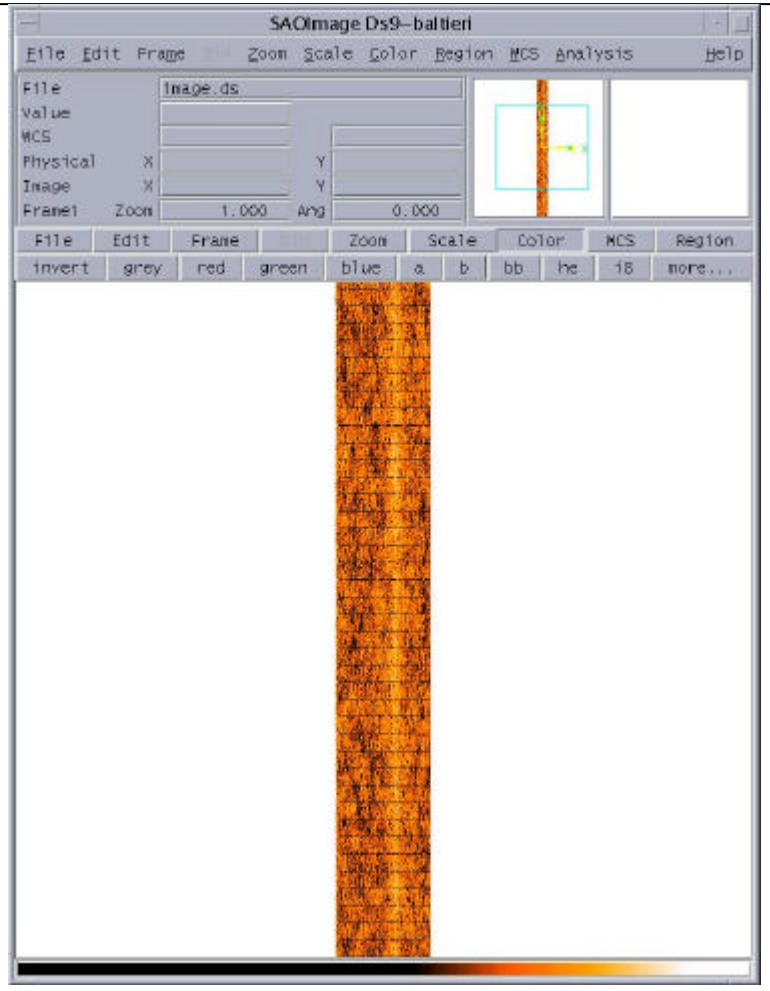
MOS2 SW noise



- **Diagonal pattern**
- **E3 <0**
- **no scientific impact**

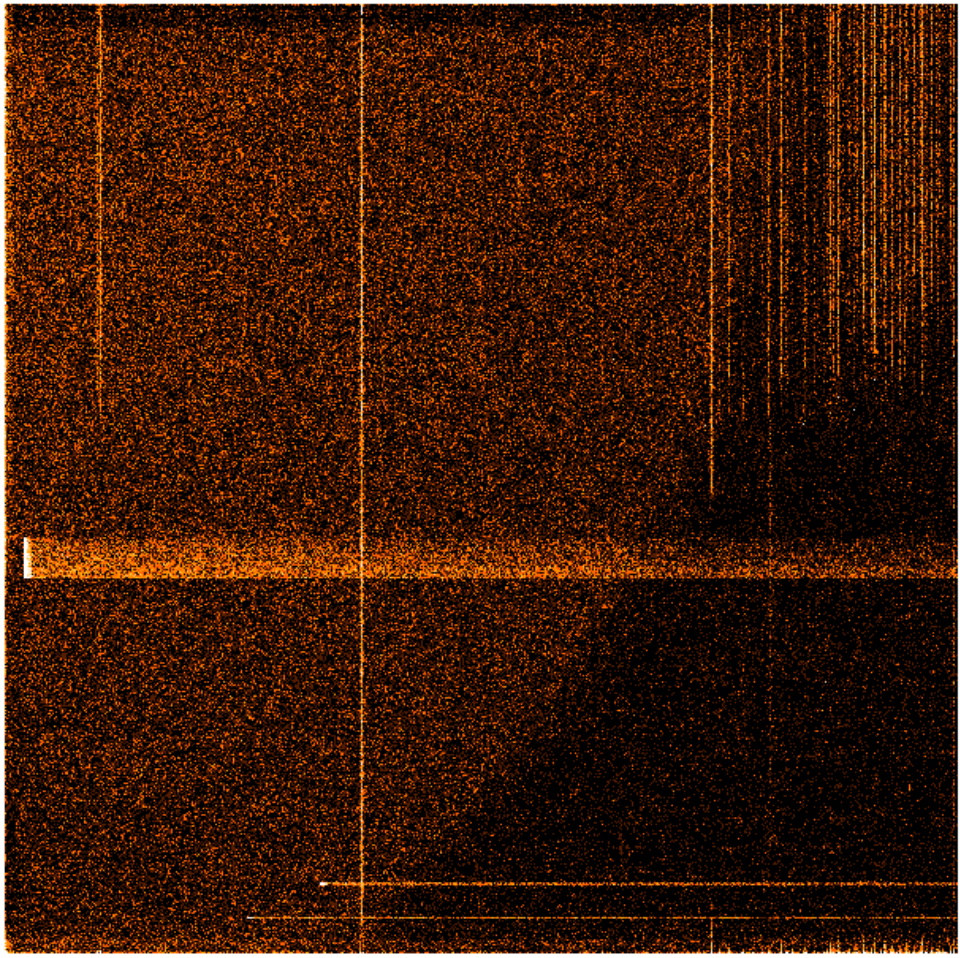


MOS1 timing dark rows



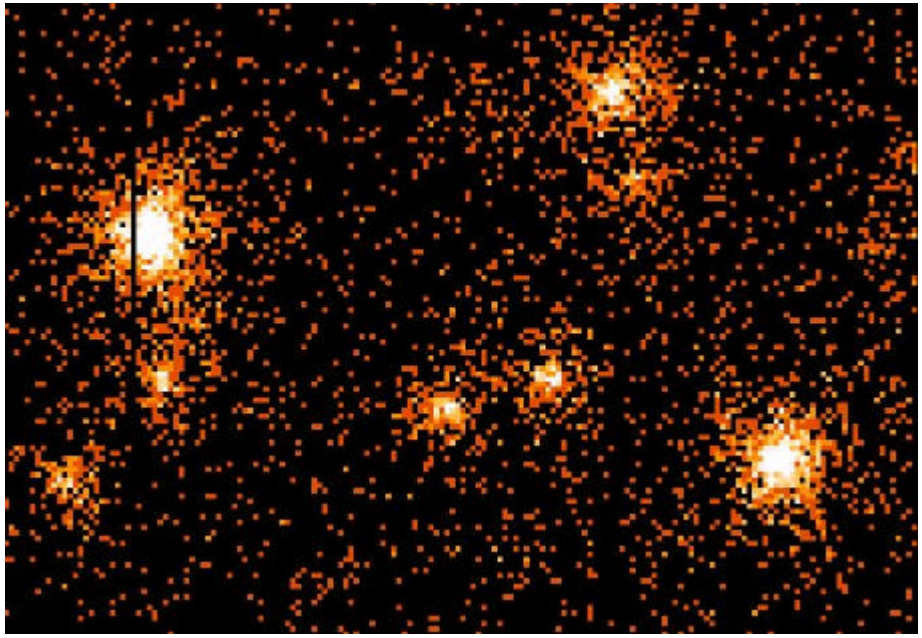
- **every 16 rows**
- **artifact ?**
- **no impact ?**

MOS1 CCD4 segment leak



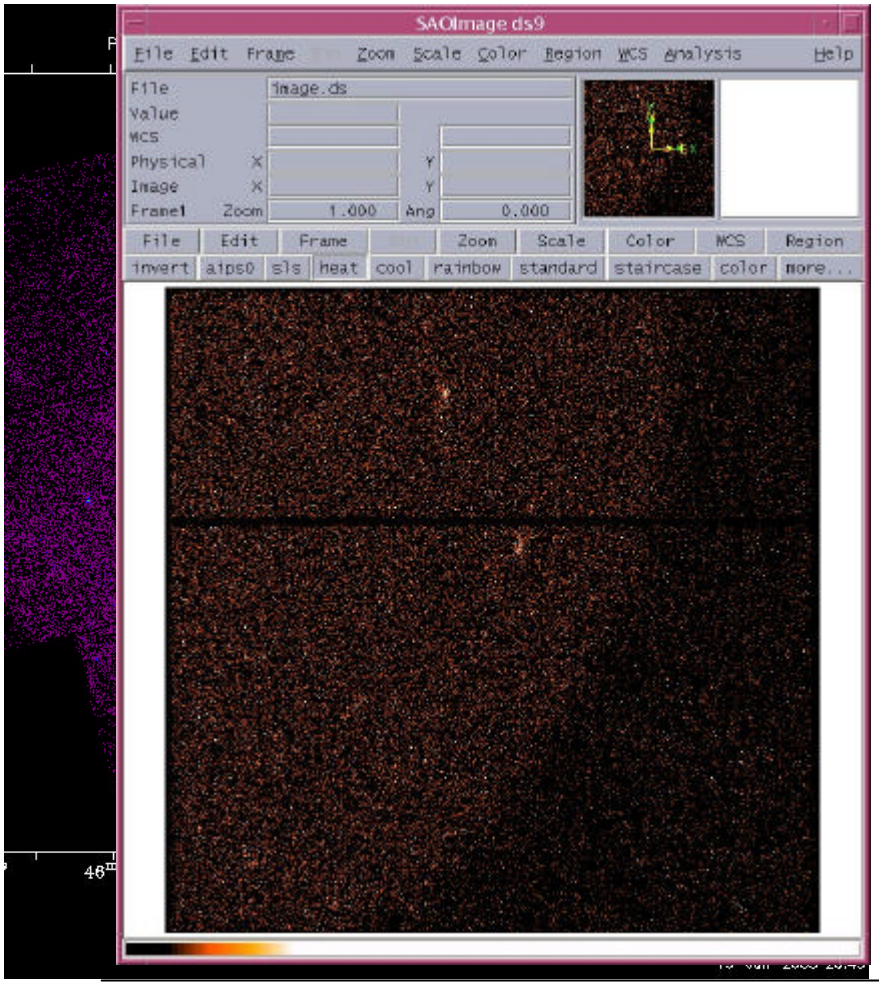
- **started around rev 656**
- **apparently no impact on scientific quality**

MOS bad energy columns



- **88 and 57 columns with shifted energy or dead identified by Saclay (Pratt&Ballet, 2003)**
- **It seems they were always there, although effect is worse after cooling (rev 533)**
- **All segments flagged as "dead" in BADPIX CCV v17, but can be only be accessed with emevents 7.6+, hence with SAS v6.0**
- **Cleaning effect can be clearly seen on extended sources**

MOS Corrupted offsets



- **Revs 576 & 576, MOS2 CCD4 RAWY=384 offset +2048 ADUs**
- **Revs 640 & 641, MOS2 CCD6 RAWY=303 offset: +256 ADUs**

- **Effect from SAS : 3 to 5 empty rows depending on offset shift and event energy (negative E3 and E4)**

- **Detected by SSC screening**

- **Currently no way to monitor and flag systematically these events**

- **If due bit flip in the EDU fixed-offset memory, there is no explanation as why the problem cures by itself.**