

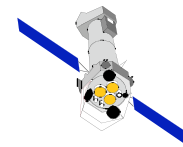


The CCF concept, cifbuild and calview

*Carlos Gabriel & the
SAS Maintenance and Development Team*



XMM-Newton SOC



Carlos Gabriel
Astronomy Science Operations Division
Research & Scientific Support Department



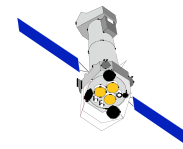
XMM-Newton calibration library

- XMM-Newton calibration data is contained in Current Calibration File (CCF)
 - CCF = the collection of **all** the XMM-Newton calibration files ever made public
 - Note: the calibration files are updated continuously → **NO CCF version number**
but individual calibration files versions

- Calibration Index File (CIF) necessary for data analysis, pointing to the relevant files, according to:
 - observation date
 - analysis date

- **cifbuild** operates on the calibration directory `$SAS_CCFPATH`
 - `setenv SAS_CCFPATH <ccf_dir>`

- Command: `cifbuild`
 - It produces a FITS file `ccf.cif` in the working directory , using :
 - `$SAS_ODF` for observation Date and
 - `'now'` for analysis date, unless explicitly specified



cifbuild & how it works

cifbuild uses single CCF keywords:

- VALDATE as start of calibration validity period
- EVALDATE as end of validity period
- DATE as analysis validity period

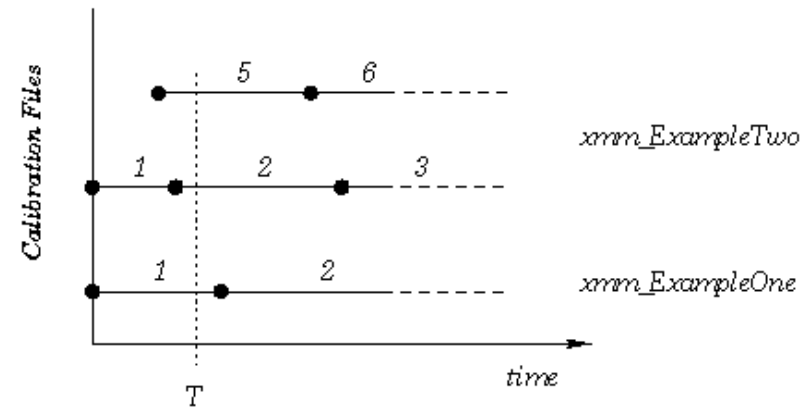


Figure 2: Current calibration file with two files: update. At the time T the current calibration file consists of *xmm_ExampleOne_0001.ccf* and *xmm_ExampleTwo_0005.ccf*

Rule: out of all the CCF calibration files take the highest issue with VALDATE lower **AND** EVALDATE higher than observation date **AND** DATE lower than analysis date.

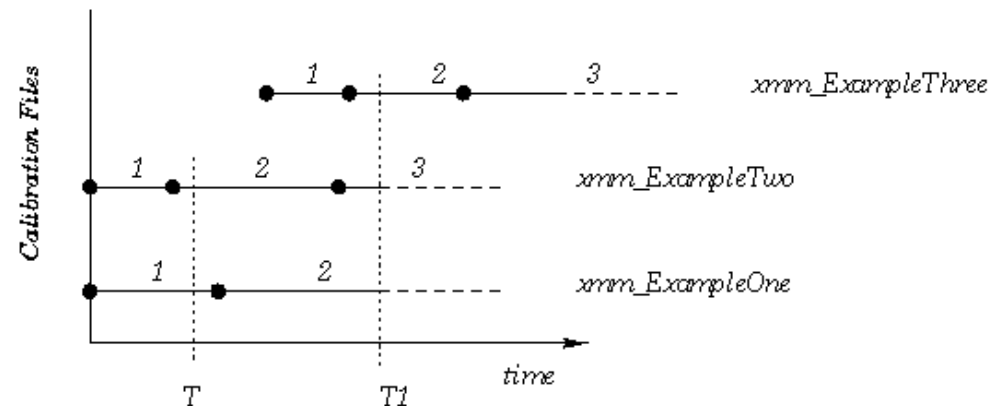
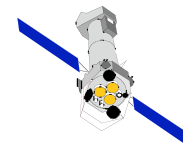


Figure 3: Current calibration file with three files. At the time $T1$ the current calibration file consists of *xmm_ExampleOne_0002.ccf* and *xmm_ExampleTwo_0009.ccf* and *xmm_ExampleThree_0002.ccf*



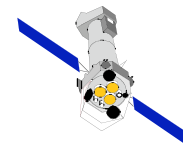


CIF / CCF on the web !

- On the XMM-Newton calibration web pages [http://xmm.esac.esa.int/external/xmm_sw_cal/calib/cifbuild.shtml]:
 - ✓ updated cif can be generated on-line
 - ✓ and compared to the provided one
 - ✓ required (missing) CCF constituents can also be downloaded
 - ✓ Local CCF library can be mirrored from XMM web site.
 - Via the **rsync** or **mirror** commands (see doc web pages)

- CCF release note shall be consulted, at least periodically.
 - ✓ Subscribing to the CCF mailing list is also useful, to get the RNs and CCFs only when there is something new.

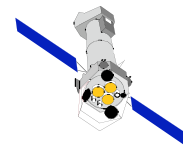
http://xmm.vilspa.esa.es/external/xmm_sw_cal/calib/rel_notes/index.shtml





Reduced CCF set (since Nov. 2006)

- All the calibration files are kept in the CCF repository only to be able to reproduce calibration conditions met in the past (SAS can reduce data as it would have been done with the calibration knowledge of years ago).
- Old CCF files have been superseded by more accurate calibration and will never be used by a normal observer.
- We have produced a reduced repository for all those observers, who do not want to mirror the entire repository but only the relevant part for an up-to-date data reduction.
- All the calibration files from before January 2004, which have been superseded, are not present in this repository.
- The repository has as of June 2008 a volume of ~ 2 GB, while the reduced repository is about 725 MB.
- `rsync -av xmm.esac.esa.int::XMM_RED_CCF`

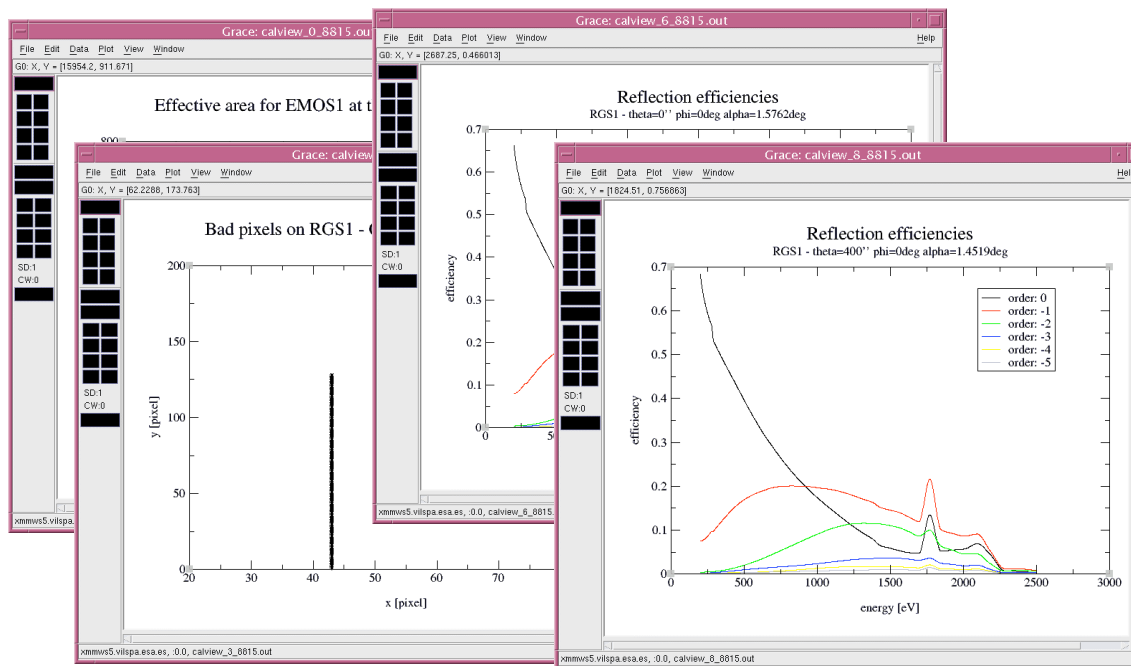


SAS calibration data access

XMM-Newton Calibration DB: **C**alibration **A**ccess **L**ayer
CAL (calibration algorithms & access functions) + **CCF**

calview: SAS task to access the calibration data

- using `$SAS_CCF` to define which calibration files should be using
- using `$SAS_CCFPATH` to locate the files



The screenshot shows the 'CalView' interface with the 'Calibration State Editor' and 'CCF Access Log' sections.

Calibration State Editor

Instrument	EMOS1
CCD	1
Node	PRIMARY
Filter	Medium
Mode	PrimeFullWindow
CCD Temperature (K)	99
Camera Temperature (K)	99
On-Chip Binning	0
Date	1999-12-10T14:32:00
Accuracy Level	LOW
Randomization	yes

Calibration Viewer State Editor

Energy (eV)	99
Theta (arcsec)	0
Phi (deg)	0
Order	0

CCF Access Log

```

/sas/CCFdir/RGS1_LINCOORD_0007.CCF
/sas/CCFdir/RGS1_LINESPREADFUNC_0003.CCF
/sas/CCFdir/RGS1_QUANTUMEF_0006.CCF
/sas/CCFdir/XMM_MISCDATA_0013.CCF
    
```

