SDS

- Staffing:
    - Welcome Nina Bonaventura on the Helpdesk team
    - All CIAO tickets now handled by SDS (Liz, Nick, Nina)
- Focus this year has been (and will be) on source catalog
- Release of CIAO4 complete, planning for CIAO4.1

CIAO - current

- CIAO 4.0 released 2007 Dec 14

  – CIAO 3.4 (released 2006 Dec) still available

- CIAO 4.0.1 patch released 2008 Feb 22 with enhancement to ObsVis

- CIAO 4.0.2 patch April, for Leopard support on Mac Intel (not Mac PPC)

- Fedora Core 8 now our SDS internal reference test

  – Solaris, Mac PPC, Mac Intel machines also used; will retain an FC4

- CIAO 4 outreach (re suggestions of last CUC):

  session at HEAD meeting: presented data analysis review, did demos, created CIAO 1-pager handouts

  CIAO workshop tentatively planned for the fall

  Thread additions continuing

CIAO - downloads

- CIAO 4.0 released 2007 Dec 14

- Since then:
  - 376 downloads of CIAO4.0
    - Fedora Core 234
    - Intel Mac 88
    - Intel PPC 37
    - Solaris 17
  - Continued interest in CIAO3.4:
    - 57 downloads in this period (even split Linux/Mac)
  - CIAO 4.0.1 obsvis patch
    - 88 downloads

CIAO - future

- CIAO 4.1 baselined for end of year
  - Not a major release
  - Move Sherpa, DM Ascii kernel out of beta status
  - Will include a few catalog tools adapted for users
  - Afterglow algorithm
  - Improvements to prism file viewer

- Longer term plan: themes (improvements to CIAO and Catalog in parallel)
  - Point and mildly extended sources: improvements to analysis (chip gaps, messy cases)
  - Coadded data for coaligned pointings: scripts to improve usability and characterization of calibration issues
  - Mosaics and other misaligned cases
  - Extended source analysis
  - MIT team will continue to improve gratings analysis software

Analysing Repro 3 ACIS imaging data

- Investigating easier way for users to see what corrections they need to do to archive data
    - Repro 3 data allows us to remove many of the messy footnotes in the thread

- Remove afterglow correction and run hot pixels - NOT NEEDED (but: new afterglow code in prototyping)

- acis_process_events:
    - VFAINT data still needs check_vf_pha
    - TGAIN correction - especially for recent data
        - CALDB 3.4.1 TGAIN epoch 30: 2007 May 1- Jul 31
        - CALDB 3.4.2 TGAIN epoch 31: 2007 Aug 1 - Oct 31
        - CALDB 3.4.3 TGAIN epoch 32: 2007 Nov 1- 2008 Jan 31 (release imminent)
    - CTI correction - NOT NEEDED (already applied) except for BI chips (some obsids)
    - Contam correction has not changed, 2004 extrapolation still used
- Aspect known processing offset correction NOT NEEDED (applying reproject_aspect to incorporate external astrometry can still be useful)

- Eliminate high background times - still recommended (analyse_ltcrv.sl, soon to be upgraded)

Cosmic ray afterglow update

- acis_run_hotpix (in pipeline) misses some faint (4-7 count) afterglows that can then show up in wavdetect as spurious faint sources

- acis_detect_afterglow can be run to eliminate these, but it can also delete real x-ray events

- afterglow events will be close together in time - we can use this to distinguish them from a steady source - Glenn Allen is prototyping a new algorithm

- For more details, see the 'why topic' on afterglow:

    - http://cxc.harvard.edu/ciao/why/afterglow.html

Improvements to Afterglow Correction

G. Allen working on a time-dependent version.

Uses sliding time window to search for events in the same pixel.

Key is to flag afterglow, but leave astrophysical sources alone.

Tests (right) show that one can tune the test to ~4 count events, down from ~8 with current, spatial-only algorithm.

CUC MAR 2008
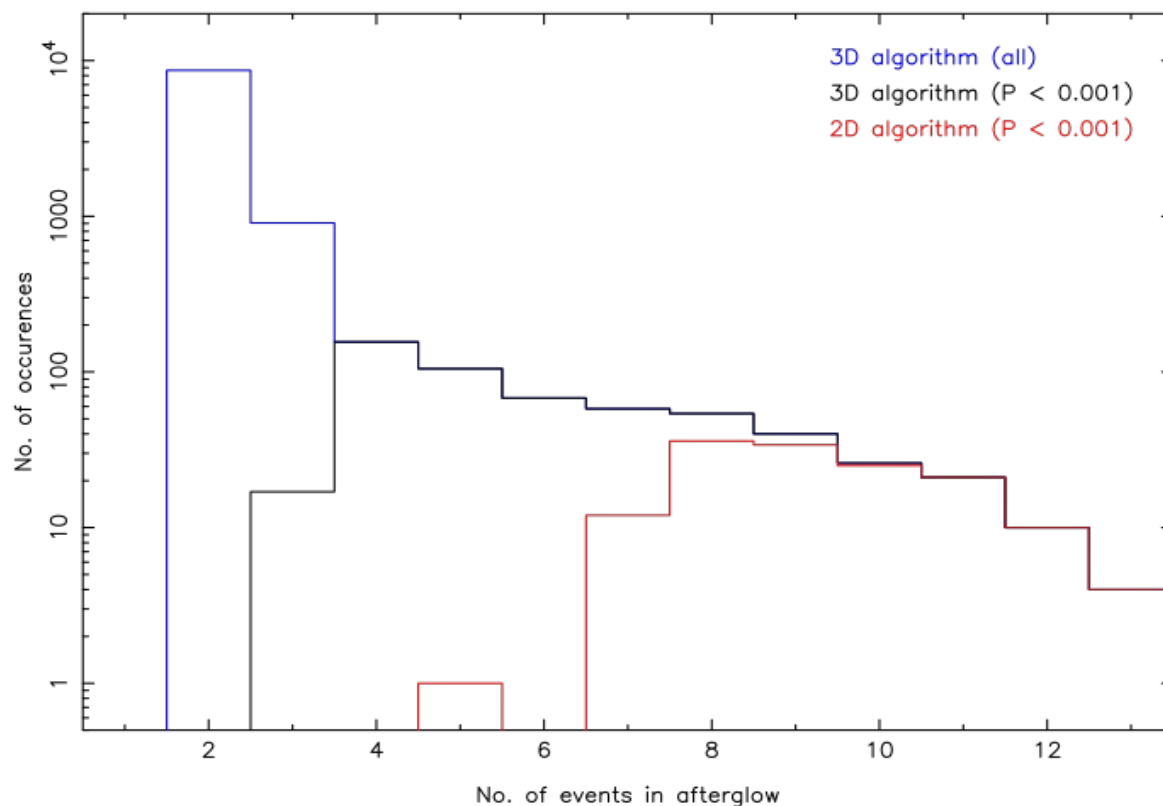
Filtering text files:
Data Model Ascii Kernel beta release

- Filtering columns:
  - dmcopy "sample.dat[col3=11:20][cols col4,col5]" copy.dat"[opt kernel=text/simple]"

- Making a FITS file from a text file
  - dmcopy sample.dat sample.fits

- Handling a variety of text formats
  - dmcopy 'data.csv[time=100:200][opt sep=","]' "data.tex[opt kernel=text,sep=&]"

- Support for a multi-table (multi-extension) text format equivalent to a FITS bintable file, "DTF' (Data Text Format)
  - TTYPE, TUNIT, etc. in header

- Support for fixed format files for Fortran fans: DTF-FIXED
  - TBCOLn and TDISPn header keywords

- See: ahelp dmascii

Gratings Analysis

- We want to make the gratings more accessible to users
  - Improved organization of existing material
  - Capture tricks and tips from MIT grating experts
  - Provide analysis scripts and prototype high level products to simplify the analysis process – the gratings equivalent of the psextract type script
- Existing introductory thread: Analysis guide for high resolution spectroscopy
- Existing detailed threads updated fro CIAO4.0 for each detector/grating combination.
- New proposal-oriented threads in development – John's talk
- Analysis threads for advanced ("tricky") topics – John's talk
- TGCat - a first cut at the next level of products (processing script and calibrated spectra) – Joy's talk
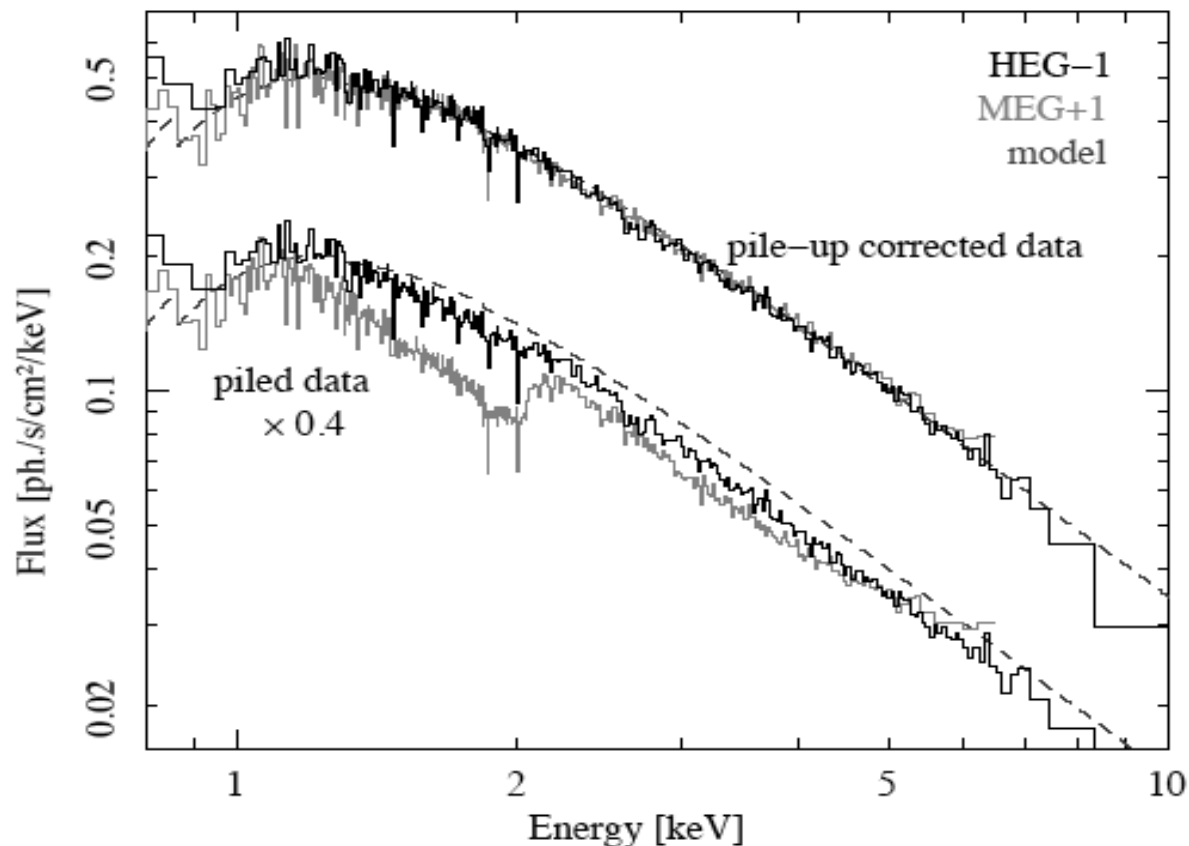- HEAD special session – Norbert's talk

M. Nowak created a simple S
lang script, which is in
"Chandra ABC Guide" (and
described & applied in Nowa
et al. 2008)

Improvements made by gra
student M. Hanke, & applied
to
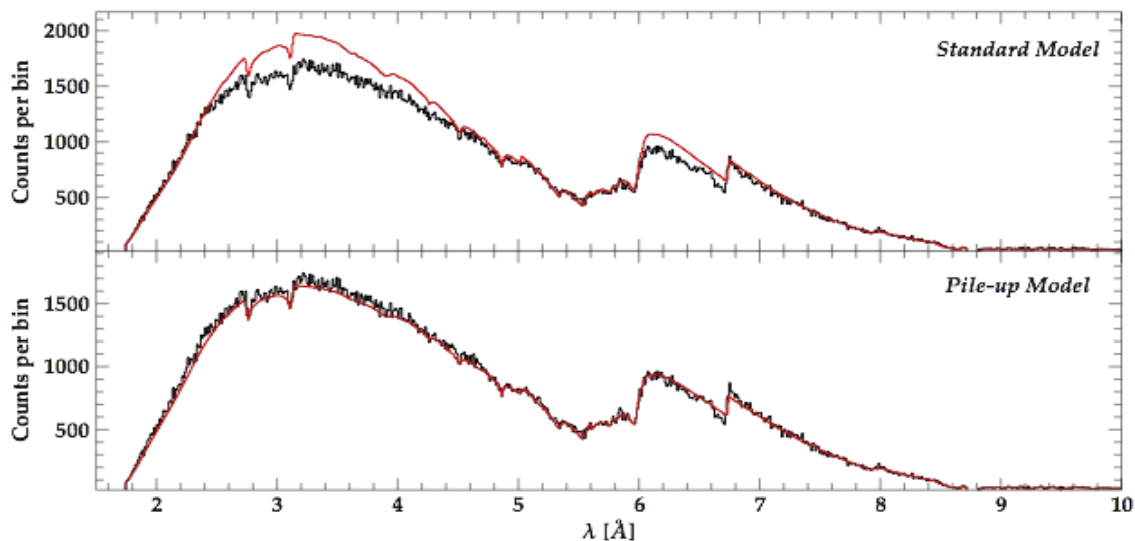Cyg X-1 data (peak pileup
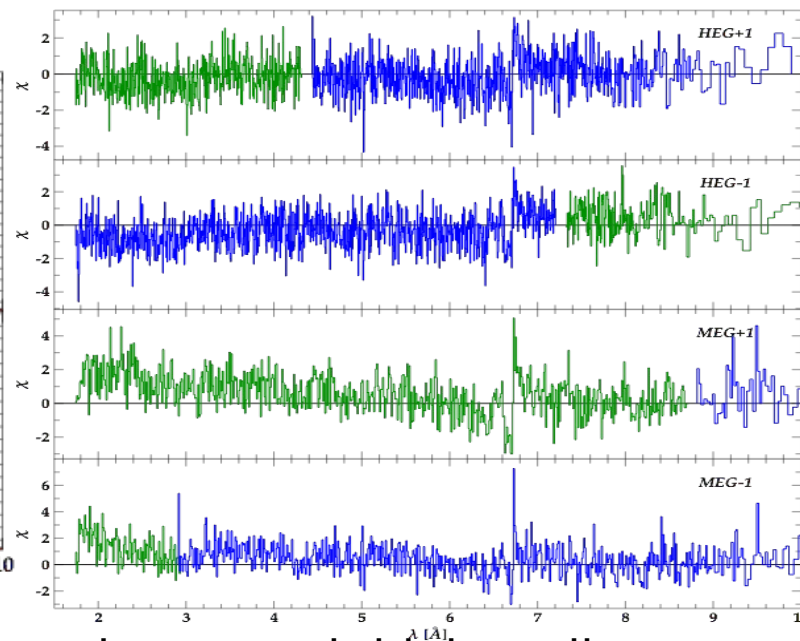~35%).

Pileup fraction is a fit
parameter.

HEG−1
MEG+1
model

pile−up corrected data

piled data
× 0.4

Flux [ph./s/cm²/keV]

Energy [keV]

(Hanke et al. 2008)

J. Davis is finishing an "ab initio" model, that works to much higher pileup fractions.

Pileup is calibrated against existing HETG observations (i.e., pileup fraction is calculated, not fit).

Works on a per chip basis, with separate pileup calibrations by wavelength, order, arm, & frontside (blue residuals) / backside (green residuals) chips.
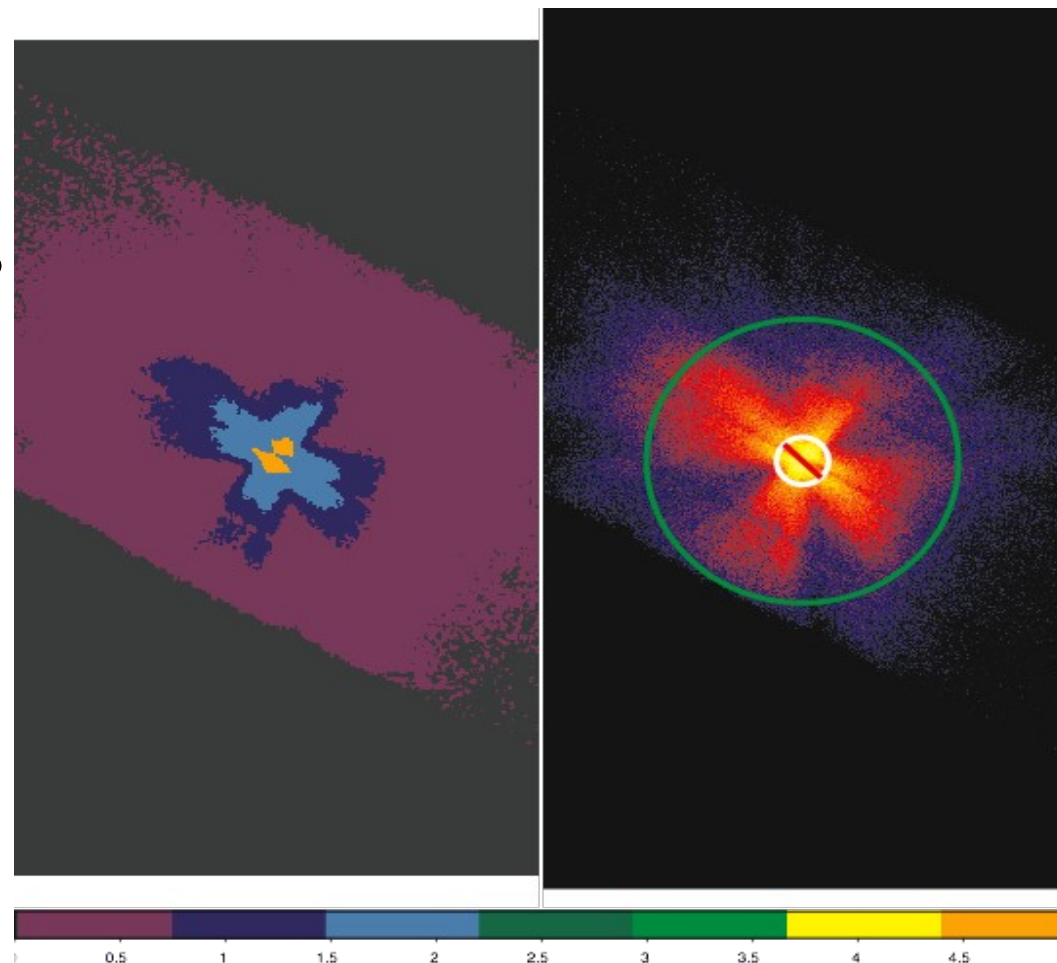
D. Dewey created a simple imaging tool to view pileup in Chandra observations.
`(http://space.mit.edu/HETG/techno tes/pileup/pileup_color.html)`

M. Nowak adapted it to use the S-lang module interface to DS9/XPA, and apply to Suzaku data.

Goal is to create interactive region filter.

D. Huenemoerder exploring similar concepts for gratings region filtering.

See presentation by Joy Nichols.

D. Huenemoerder developing scripts for automated extraction, akin to `psextract`.

Developing plotting scripts to combine arms/orders, & plot units "friendly" to IR, optical, & radio astronomers, & save data to simple ASCII files.

Example Script

```
unix% download_obsid 1234
unix% setup_obsdir Obs1234
unix% isis
isis> run_tg_acis("Obs1234");
isis> hetgs_summary("Obs1234",
      "plots");
isis> quit
unix% display plots*ps
```

Various diagnostic plots are displayed.

Could be converted to a tool with a parameter file interface.

CUC MAR 2008