Level 3 Processing

Level 3:

- Creates catalog of reliable Chandra results
- Uses uniform processing criteria, conservative data screening
- Populates archive database
- Archive supports interactive data extraction
- Is an additional ACIS, HRC processing pipeline, run after Level 2

L3 Features

More zealous *data screening* than in L2:

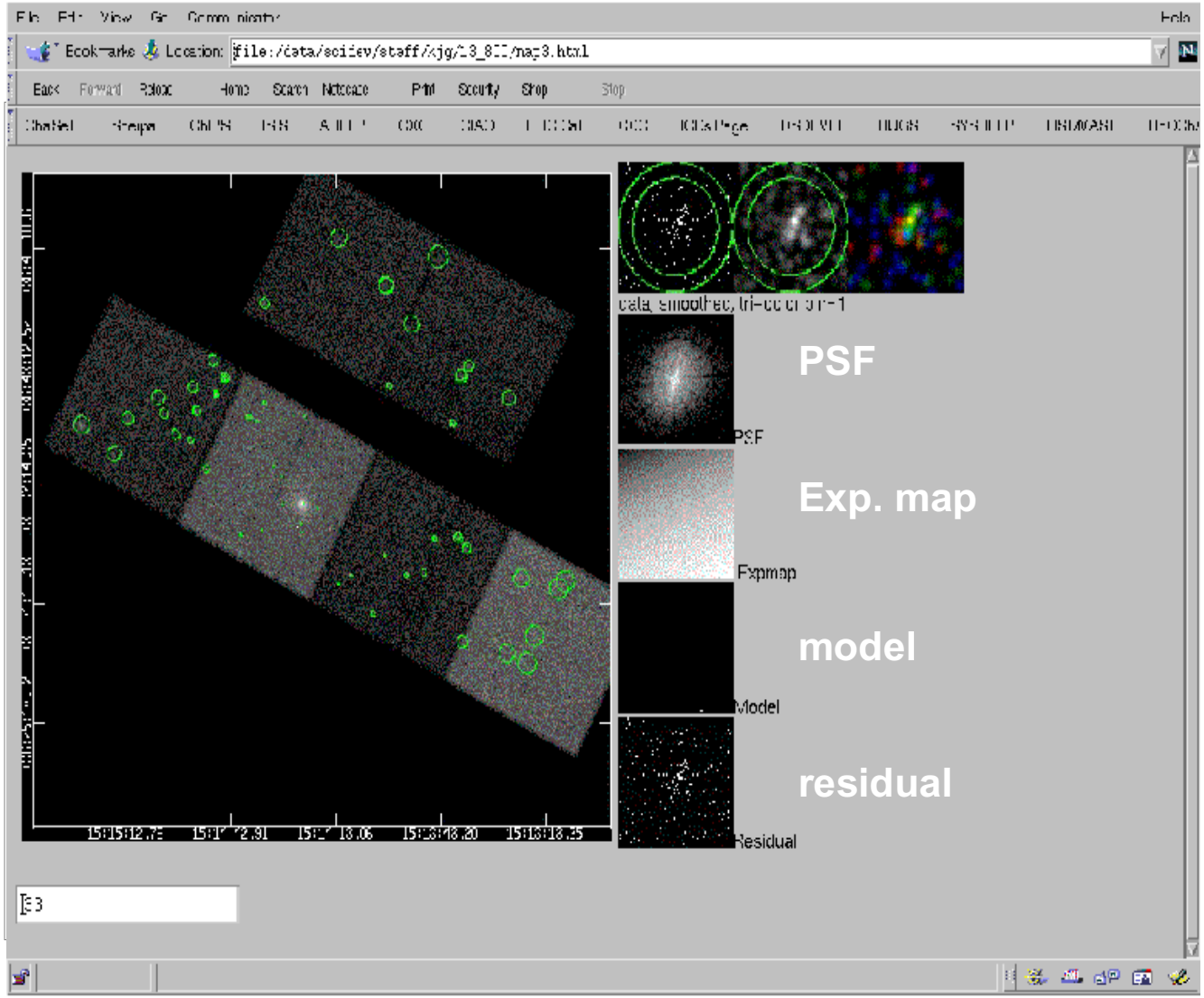
- Background flare rejection
- Improved hot pixel and afterglow rejection
- Serial readout streak removal
- CTI correction
- Improved HRC event position reconstruction
- Automated acisreadcorr

L3 'Results' Catalog

Highly processed data products:

- **Individual sources**
  - Positions
  - Fluxes, hardness ratios
  - Variability flag, light curves, barycentered events
  - Extent flag, shape parameters
  - Spectra with arfs, rmfs
  - Postage stamps
- **Field results**
  - Images, exposure maps, and background maps in standard bands
  - Background-subtracted,exposure-corrected images (adaptively smoothed)
- **Aggregate results**
  - “All-Sky” mosaics of exposure, limiting sensitivity in standard bands
- **Links to L1, L1.5, L2 data for rigorous analysis**

L3 Single-OBI Example



L3 Status

- Database Design Complete
- Single-OBI pipeline prototype in place
- Detection tool `SExtractor' (Bertin&Arnouts, 1996, A&AS) modified by CXC for
  - **Low count statistics regime**
  - **exposure maps use**
  - **now testing**
- Calibration of `SExtractor' begun
  - **Simulations to establish statistical significance of sources (estimates of Type 1 and Type 2 errors)**

L3 Issues

- Processing speed - source detection, exposure map generation
- Full-field background maps - need tool
- Image deconvolution - forward fitting using PSF shape for position, intensity, extent in crowded source regions
- Absolute astrometry - improve by registering with astrometric catalogs?
- Hot pixel/afterglow rejection – improvement spec'd, not coded