



The Chandra Source Catalog Release 2.0



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Highlights

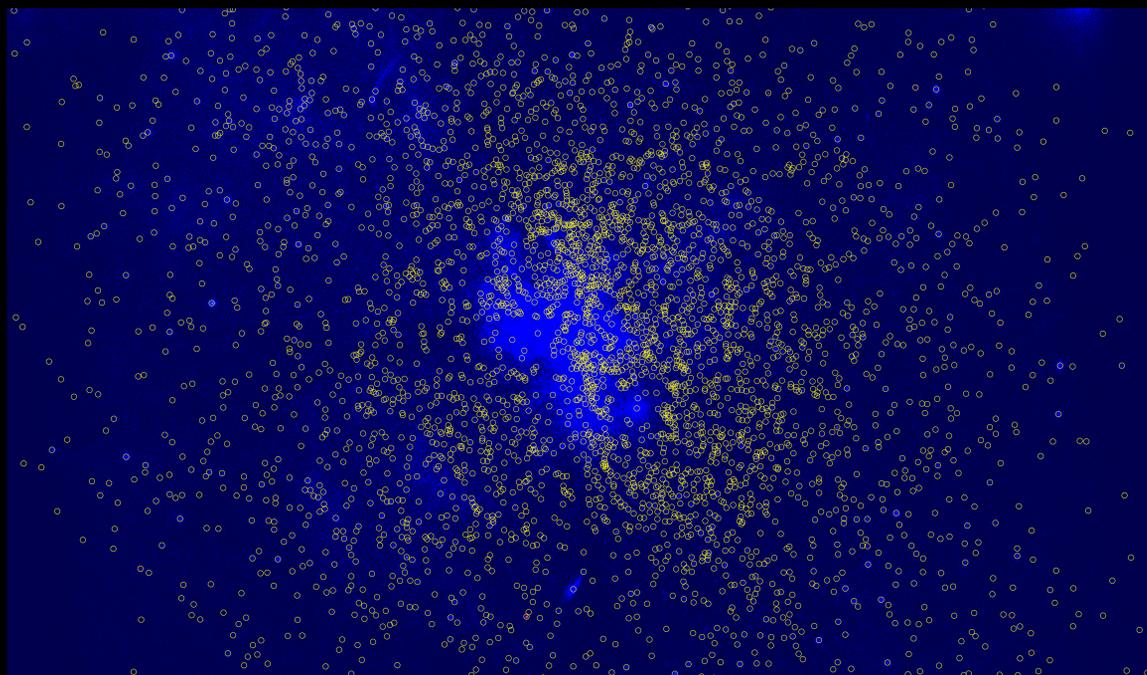
- Includes almost all ACIS and HRC-I imaging observations from the period 1999–2014 (~560 deg² sky coverage).
- Source detection is performed on stacked (co-added) observations obtained using the same instrument, and with pointings co-located within a 60" diameter circle (because the *Chandra* PSF varies significantly with off-axis angle).
- The detection limit is ~5 net counts for on-axis sources with low-background exposures (typically < ~15 ks).
- Detection properties are evaluated at both the stack and single observation level, and are combined to compute "best estimate" properties for each source on the sky.
- Key databased properties include positions and position errors, significance, processing flags/codes, extent, multi-band aperture photometry (total and net counts, count rates, photon and energy fluxes, model fluxes [multiple spectral models]), hardness ratios, multiple spectral model fits, inter- and intra-observation temporal variability.
- Numeric properties have associated independent lower and upper confidence limits; most properties are evaluated in 5 energy bands for ACIS, 1 for HRC-I.
- ~25 million science-ready FITS data products (~32 TB), including merged detection lists, detection region event lists, exposure maps, responses, spectra, light curves, aperture photometry PDFs, position error MCMC draws, per-Bayesian blocks properties, limiting sensitivity maps.

Comparison With Release 1.1

| | Release 1.1 | Release 2.0 |
|----------------------------------|-------------------------|----------------------|
| Number of Sources | 106,586 | 315,875 * |
| Number of Detections | 158,071 | 374,349 * |
| Observation Dates | 1999–2009 | 1999–2014 |
| Source Detection Performed On | Individual Observations | Stacked Observations |
| Number of Observations | 5,110 | 10,382 |
| Number of Stacks | N/A | 7,287 |
| Largest Stack | N/A | 81 Observations |
| Longest Effective Exposure | 190 ks | 5.8 Ms |
| Limiting Source Counts (on-axis) | ~10 | ~5 |

* The number of sources and detections included in the CSC 2.0 release may be reduced by <0.1% following final quality assurance processing.

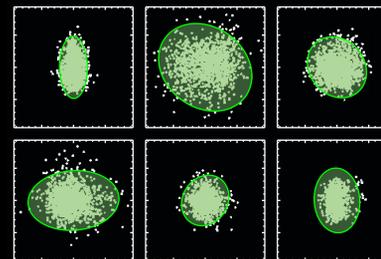
Compact Source Detections In The Core Of Sgr A*



1 arcmin

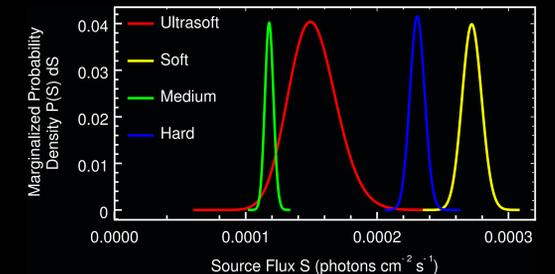
CSC 2.0 includes ~3900 compact sources detected in this image of the central region of the deepest Sgr A* stacked image (71 observations totaling ~2.2 Ms). The entire Sgr A* ensemble includes ~16,000 compact sources that were detected in 379 stacks (534 observations).

Position error ellipses computed from position confidence MCMC draws

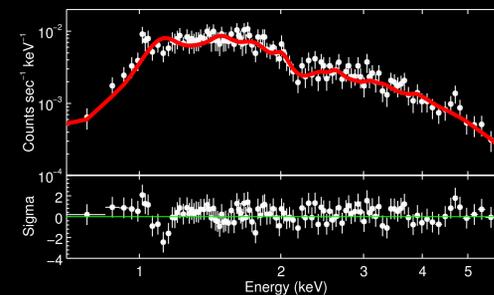


0.25 arcsec

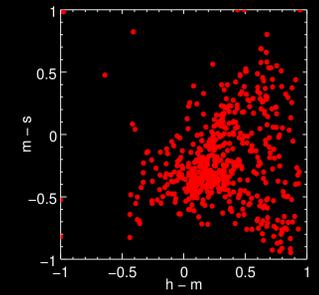
Multi-band X-ray aperture photometry with Bayesian probability density functions



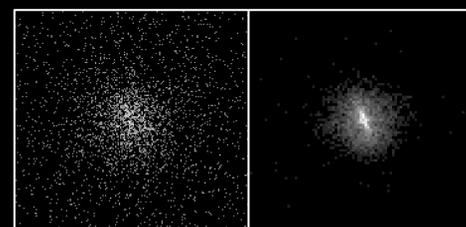
Spectral model fits and model energy fluxes determined using multiple source models



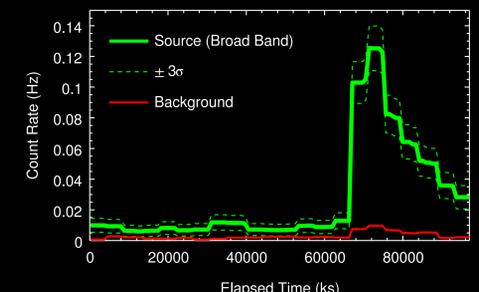
Hardness ratios



Source extent and local PSF models for every detection and energy band



Intra- and inter-observation variability measures and light curves



For more information about CSC 2.0, see <http://cxc.cfa.harvard.edu/csc2/>



CHANDRA
SOURCE CATALOG



Acknowledgement. This work has been supported by NASA under contract NAS 8-03060 to the Smithsonian Astrophysical Observatory for operation of the Chandra X-ray Center.