

Chandra

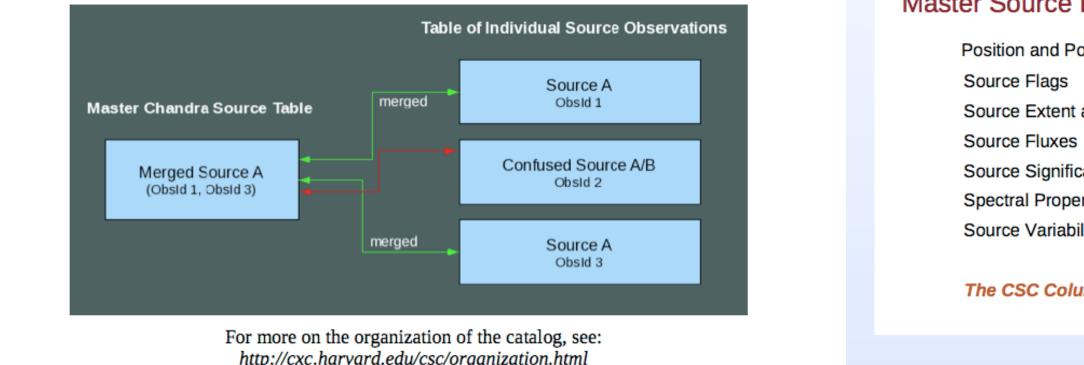
X-ray Center

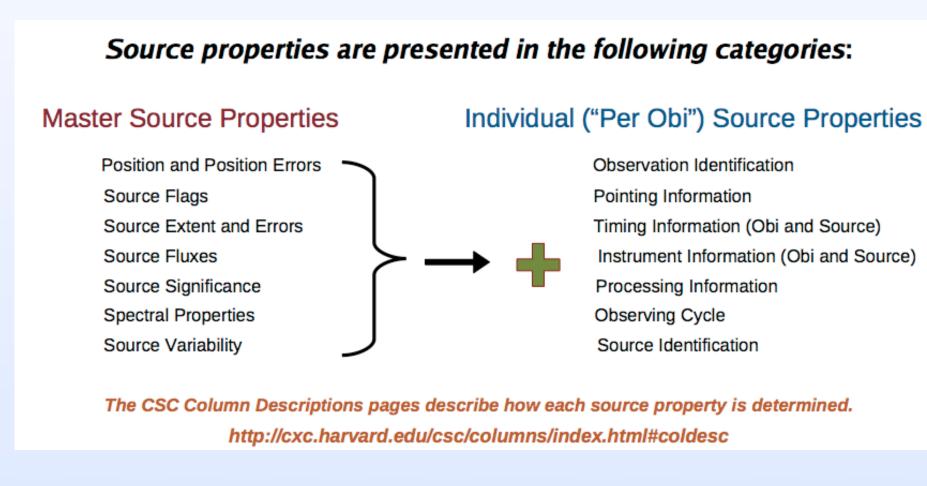
THE CHANDRA SOURCE CATALOG: USER INTERFACE

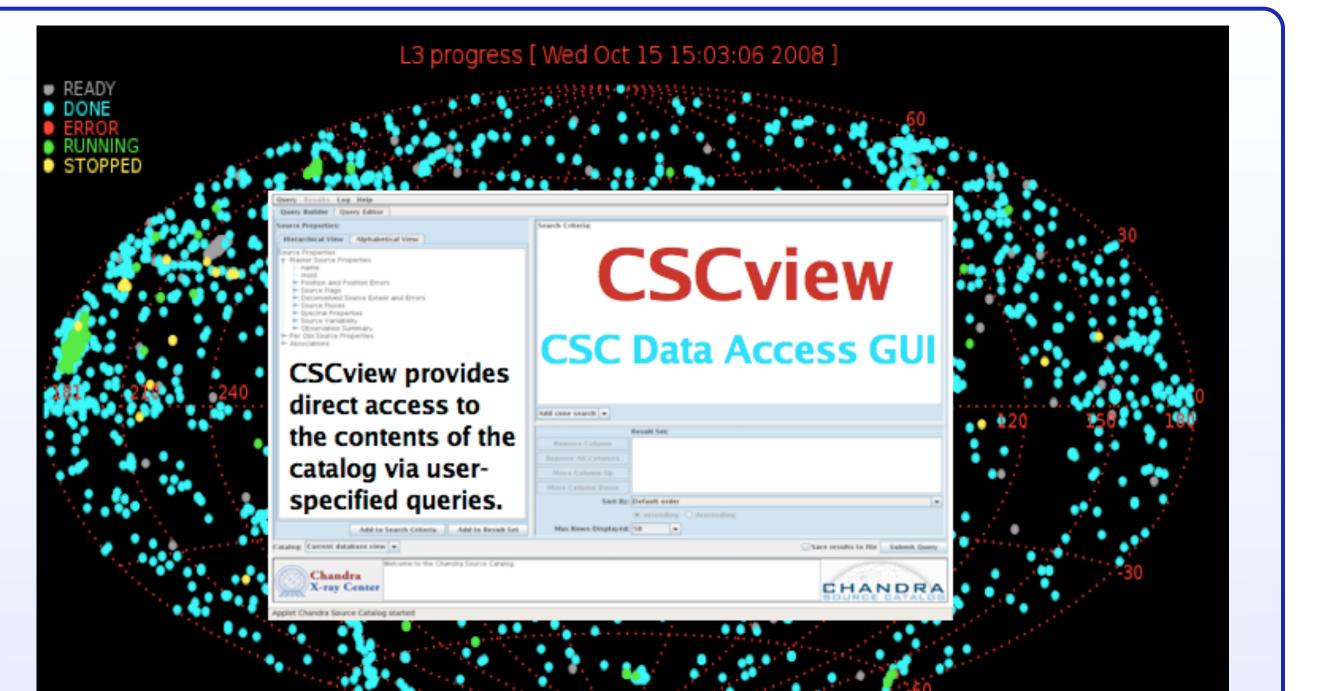
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The Chandra Source Catalog (CSC) is ultimately intended to be the definitive catalog of all X-ray sources detected by Chandra. The CSC is presented to the user in two tables: the Master Chandra Source Table and the Table of Individual Source Observations. Each distinct X-ray source identified in the CSC is represented by a single "master source" entry and one or more individual ("per obi") source entries. If a source is unaffected by confusion or pile-up in multiple observations, the individual source observations are merged to produce a master source. In each table, a row represents a source, and each column a quantity that is officially part of the catalog.

Individual source observations are linked to a corresponding single, merged master source. However, the properties of confused and/or piled-up individual sources do not contribute to the reported master source properties.

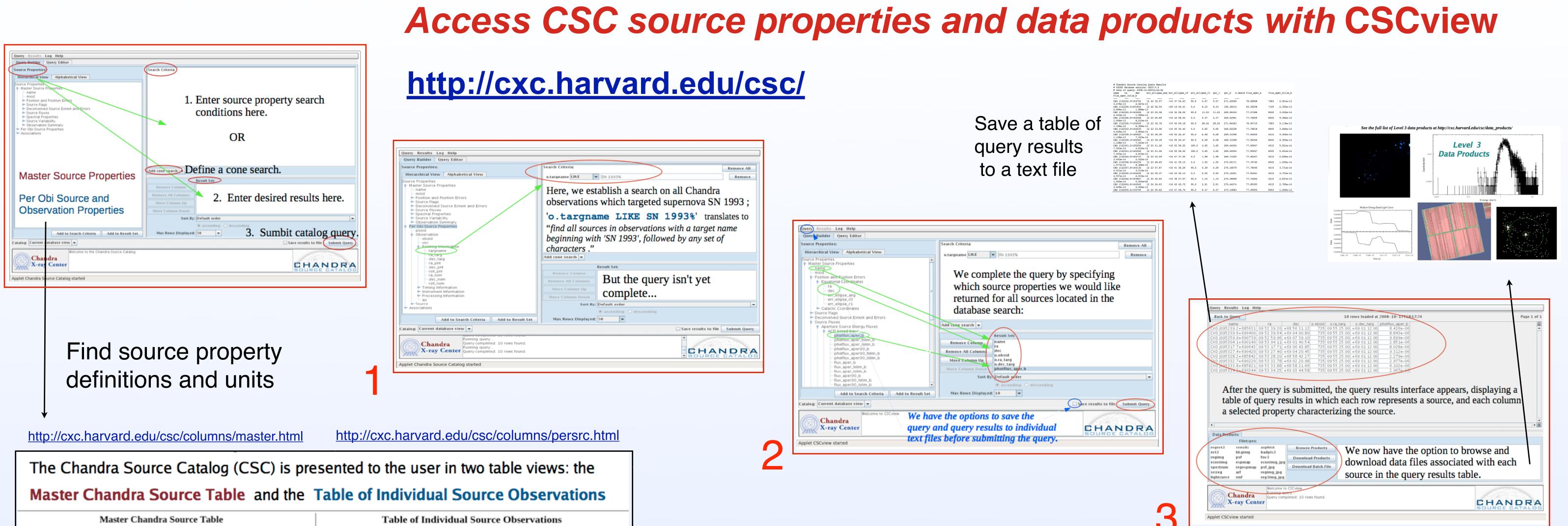


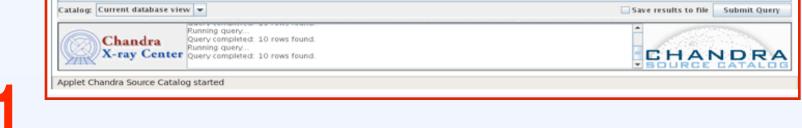




The CSC contains positions and multi-band fluxes for the sources, as well as derived spatial, spectral, and temporal source properties. The CSC also includes associated source region and full-field data products for each source, including images, photon event lists, light curves, and spectra. The master source properties represent the best estimates of the properties of a source, and are presented in the following categories: Position and Position Errors, Source Flags, Source Extent and Errors, Source Fluxes, Source Significance, Spectral Properties, and Source Variability.

CSCview provides direct access to the source properties and data products contained in the catalog. The user may query the catalog database via a web-style search or an SQL-like command-line query. Each query returns a table of source properties, along with the option to browse and download associated data products. The GUI is designed to run in a web browser with Java version 1.5 or higher, and may be accessed via a link on the CSC website homepage (http:// <u>cxc.harvard.edu/csc/</u>). As an alternative to CSCview, the contents of the CSC may be accessed directly through a URL, using the command line tools cURL and Wget.





Context	Column Name	Type	Units	Description
Source Name	name	string		source name in the form "CXO Jhhmmss.s+ddmmss" [Chandra source names use the ICRS position to an accuracy of 0.1s in RA and 1.0s in Dec.]
Position and Position Errors	n	double	deg	Source position, ICRS right ascension
	dec	double	deg	Source position, ICRS declination
	en_ellipse_r0	double	arcseconds	major radius of the <u>Lo error ellipse</u> of the source position
	err_ellipse_r1	double	arcseconds	minor radius of the <u>Lo error ellipse</u> of the source position
	en_ellipse_ang	double	deg	position angle of the major axis of the <u>10</u> error ellipse
	gaLb	double	deg	Source position, galactic longitude
	gal_l	double	deg	Source position, galactic latitude

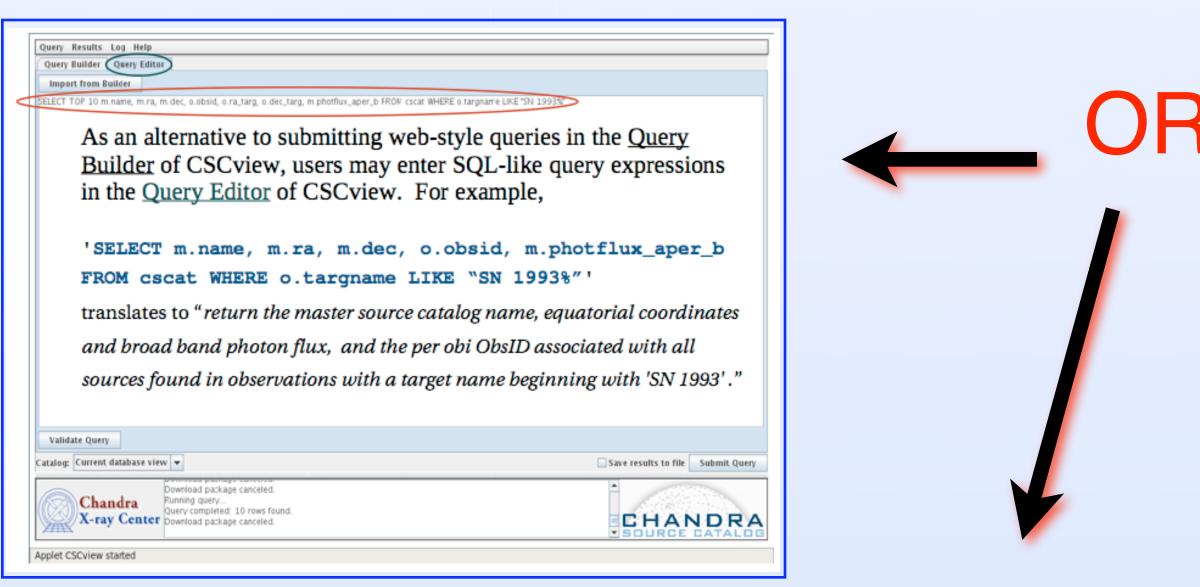
Each identified distinct X-ray source on the sky is represented in the catalog by one or more "individual source" entries, one for each observation in which the source has been detected, and a single "master source" entry. The individual source entries record all of the properties about a detection extracted from a single observation, as well as associated file-based data products, which are observation-specific

Context	Column Name	Type	Units	Description
Observation Identification	obsid	integer		Observation Id (ObsID)
	obi	integer		Observation Interval (ObI)
Pointing Information	targname	string		target name for the observation
	ra_targ	double	deg	ICRS right ascension of the target
	dec_targ	double	deg	ICRS declination of the target
	ra_pnt	double	deg	ICRS right ascension of the mean pointing
	dec_pnt	double	deg	ICRS declination of the mean pointing
	roll_pnt	double	deg	roll angle of the mean pointing
	ra_nom	double	deg	ICRS right ascension of the tangent point
	dec_nom	double	deg	ICRS declination of the tangent point
	rol_nom	double	deg	roll angle of the tangent point

Master source properties represent the best estimates of the properties of a source, based on data derived from all observations in which a source has been detected.

In the Table of Individual Source Observations. source properties are recorded on a perobservation basis; i.e., it contains multiple entries for a source, one for each individual observation in which it has been detected.





Equivalent to steps 1 - 2

If the CSCview GUI is to be avoided altogether, the user may access tables of catalog data and file-based data products from the command line, using cURL or Wget.

high-level source

property descriptio

http://cxc.harvard.edu/csc

<u>columns</u>

	Catalog Processing Status	Source positions in the Master Chan positions are derived directly from i (ra, dec) are determined with an ab: arcminutes of the optical axis; 2.0 a arcseconds (10) for an isolated point
ns	CSC Homepage About the Catalog Catalog Organization Catalog Release Views and Database Access Views Catalog Statistical Properties	The uncertainties of the statisticall celestial sphere onto a common tan; (<i>err_ellipse_ro, err_ellipse_rı</i>), an; major and semi-minor radii corresp
	Schedule and Status Caveats and Limitations Creating the Catalog	Table of Individual Source Obs ra, dec, err_ellipse_ro, err_ellipse_
	Observation Selection Catalog Processing Data Products Chandra Data Archive	The position of each source in an inc determined by <u>wavdetect</u> , and t
<u>c/</u>	Catalog Columns Master Chandra Source Table: <u>alphabetical by context</u> Table of Individual Source Observations: <u>alphabetical by context</u>	Notes: The 10 error ellipse of the sou In the first catalog release, the 10 er parallel to the true North direction
	Column Descriptions Position and Position Errors Source Flags Source Extent and Errors	(dec nom), and roll angle (roll nor Off-Axis Angles
	<u>Energy Bands</u> Source Fluxes Source Significance	Table of Individual Source Obs theta, phi
	Spectral Properties	The appropriation of the course y

<u>Source Variability</u> Jocuments

Dictionary How and Why Topics Memos Publications

the wavelet source detection algorithm (<u>wavdetect</u>) with no further modelling. The ICRS equatorial coordinates of each source solute uncertainty that is not to exceed 1.0 arcsecond (10) for an isolated point source with at least 10 counts located within 3.0 arcseconds (10) for an isolated point source with at least 30 counts located within 10.0 arcminutes of the optical axis; and 5.0 t source with at least 50 counts located within 15.0 arcminutes of the optical axis.

rally averaged source positions are expressed in the form of <u>error ellipses</u> centered upon the source positions, projected from the angent plane. Three of the parameters specifying the geometry of each error ellipse are the semi-major and semi-minor radii and the position angle θ that the major axis of the ellipse makes with respect to the tangent plane y axis (*err_ellipse_ang*). The semi-respond to the 10 confidence intervals along these axes.

Dbservations: se_r1, err_ellipse_ang

ndividual observation is defined by the ICRS right ascension and declination of the center of the <u>source region</u> in which it is located the major and minor radii, and position angle of the <u>error ellipse</u> defining the uncertainty in the source position.

ource position will be approximated by a 10 error circle in the first catalog release. This limitation will be lifted in a future release.

rror ellipse is defined on a tangent plane projection. The o deg position angle reference is defined on that tangent plane to be) at the location of the tangent plane reference (refer to the tangent plane reference right ascension (\underline{ra} nom), declination

servation

he angular location of the source region (that includes a source) relative to the optical axis is defined by the off-axis angle 0 and azimuthal angle 0.

Mean Chip Coordinates

Table of Individual Source Observations

The location of the source region (that includes a source) in chip coordinates is defined by the effective CHIPX and CHIPY pixel positions corresponding to the off-<u>axis angles</u>(θ, φ).

unix% curl --form query='SELECT TOP 10 m.name, m.ra, m.dec, o.obsid, o.ra_targ, o.dec_targ, m.photflux_aper_b FROM cscat WHERE o.targname LIKE "SN 1993%"''http://cda/cscview/getProperties'

cURL and Wget are tools which allow a user to retrieve files with URL syntax from the command line, simulating the user's actions at a web browser.

Equivalent to steps 1 - 3

inix% wget -0 out.file 'http://cda.cfa.harvard.edu/cscview/getPropertiesquery=SELECT TOP 10 m.name, m.ra, m.dec, o.obsid, o.ra_targ, o.dec_targ, m.photflux_aper_b FROM cscat WHERE o.targname LIKE "SN 1993%"''http://cda/cscview/getProperties'

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