# CSCview

Chandra Source Catalog (CSC)
Data Access GUI

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There are 2 interfaces available for accessing the catalog:
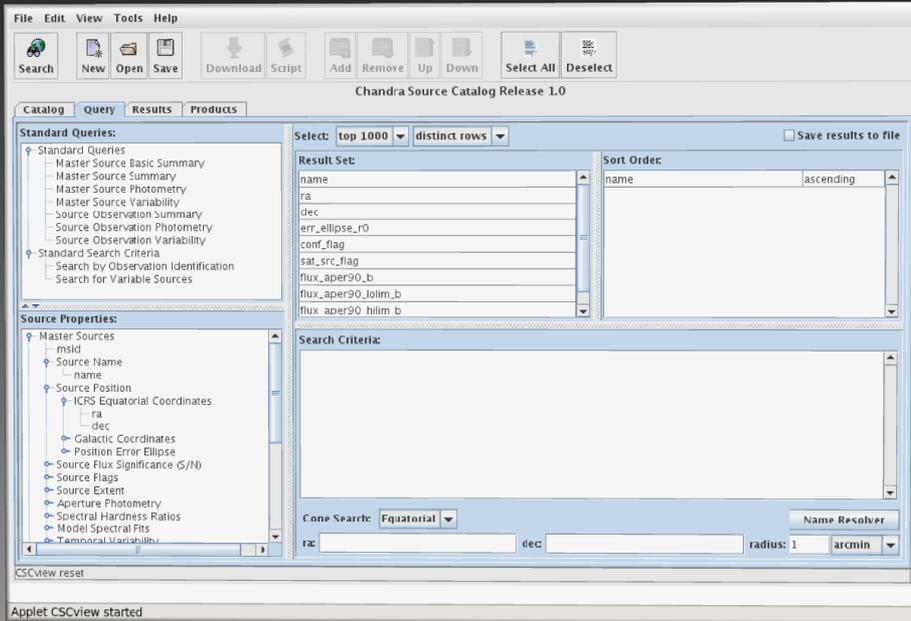
Graphical User Interface (GUI):

CSCview, *a Java applet*
which runs in a web browser

Command-line Interface (CLI):

Non-interactive access from the Unix command line using

cURL, Wget, …

```
                     Terminal
unix% curl -form query='SELECT m.name, m.ra,
 m.dec, m.flux_aper_b, FROM master_source m
 WHERE dbo.cone_distance(m.ra, m.dec, 83.7733,
 -5.68464)<=10' http://cda/cscli/getProperties

unix% wget -O out.file
'http://cda.cfa.harvard.edu/csccli/getProperties?
query=SELECT m.name, m.ra, m.dec, m.flux_aper_b
FROM master_source m WHERE
dbo.cone_distance(m.ra,m.dec,83.77333,-5.68464)<=10'
```

Before searching CSC Release 1 for your favorite source(s), be sure to ask yourself the following questions:

Am I looking for <u>point and compact sources</u> no greater than ~30 arcsec in extent?

Am I looking for sources in <u>ACIS imaging observations</u> made during the first ~8 years of the Chandra mission?

If the answer to both questions is "yes," proceed on to *CSCview*!

If the answer to either question is "no," stay tuned for future releases of the catalog...
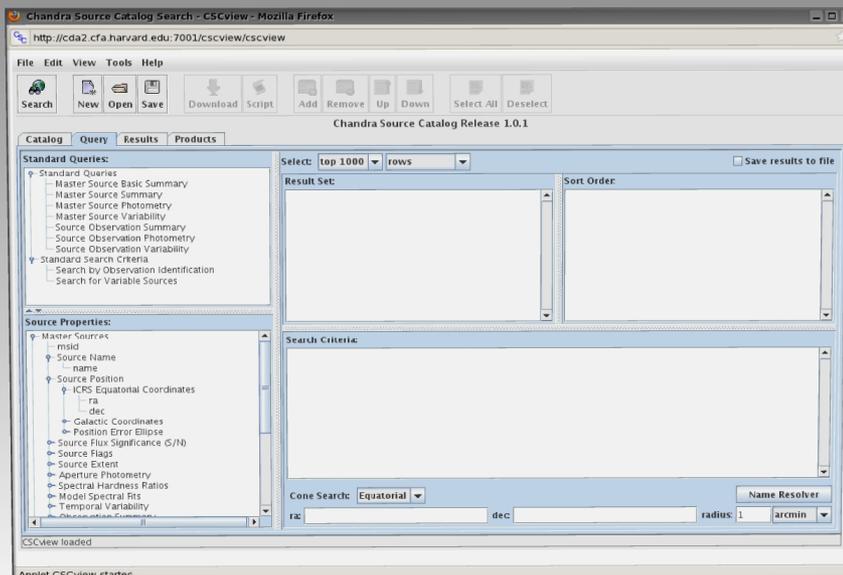
CSC Release 1.0.*: point and compact sources from ACIS imaging observations through the first ~8 years of the Chandra mission. *(current)*

CSC Release 1.1: HRC and ACIS point and compact sources (imaging) through the beginning of 2010 *(coming soon)*

*Future releases of the catalog will include grating data and very extended sources.*

To find *CSCview*, go to the CSC website:

http://cxc.harvard.edu/csc/
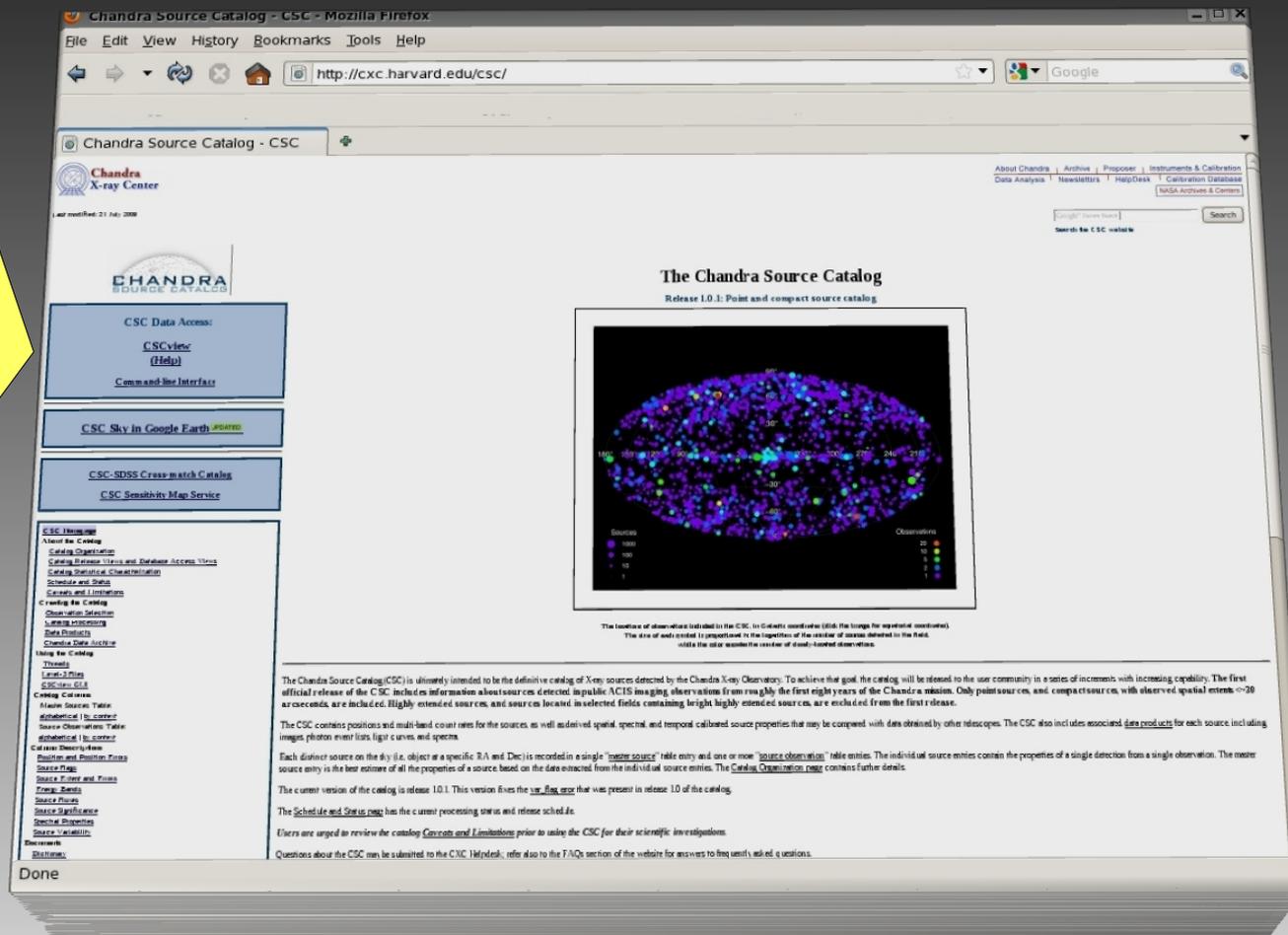
and click the "**CSCview**" link found in the upper-left corner of most of the 50+ pages in the site.

# *CSCview* opens on the Query page
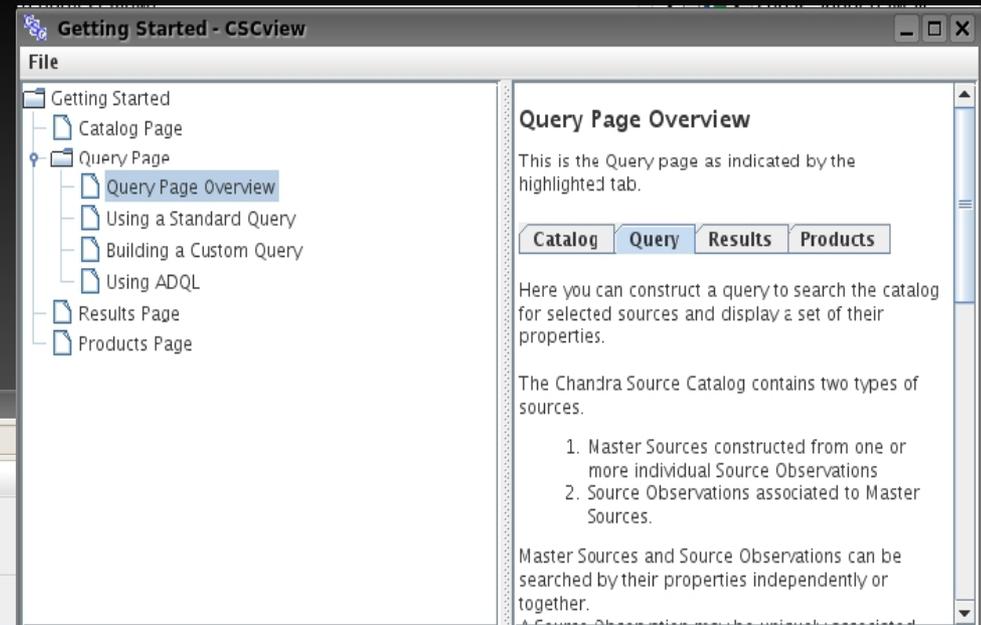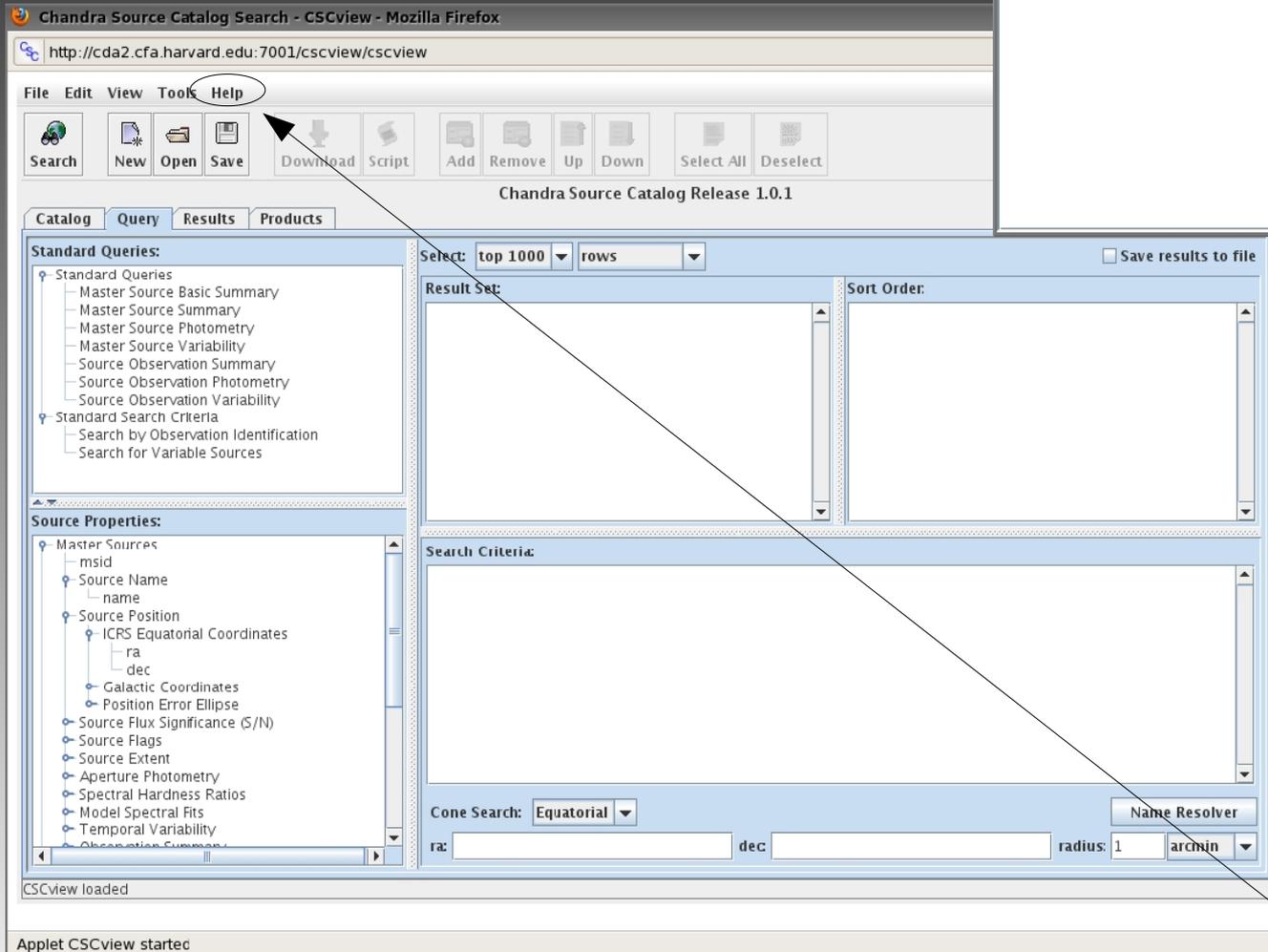
The *CSCview* **Getting Started** guide pops up alongside the GUI to help you construct queries; separate help documents are available on the CSC website, linked to the Help menu:

http://cxc.harvard.edu/csc/gui/

The best way to begin your search of the catalog is to familiarize yourself with the four "tabs" of *CSCview*:

Catalog tab → Query tab → Results tab → Products tab
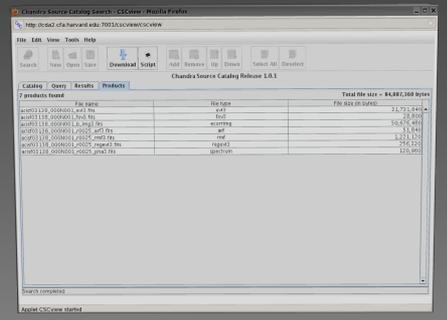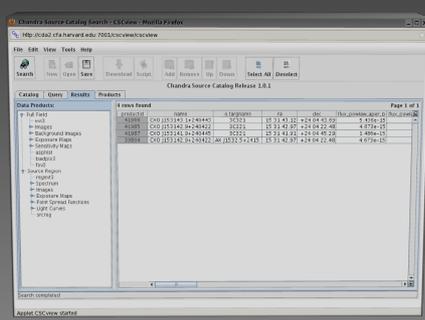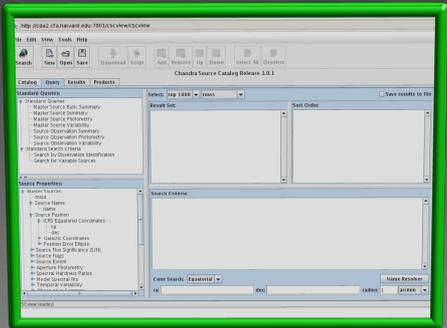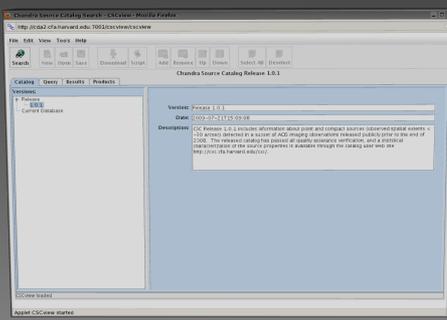
Choose which "view" of the catalog to access, a *release view* or the *current database view*

(1)
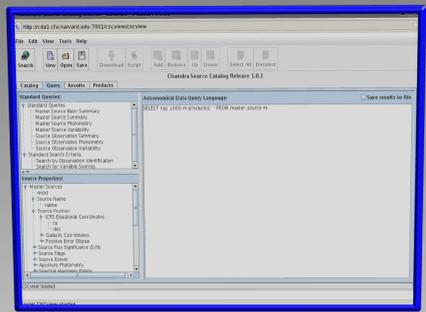
Submit a query in the main page or the ADQL entry page

(2)

Save the output table of source properties to a text file.

(3)

Download source data files such as light curves, spectra, event files, images, background maps, ...

(4)

CSCview <u>Catalog</u> tab

CSCview <u>Query</u> tab → *main view*

Submit, clear, load, and save queries.

Use these buttons instead of a mouse cursor to move source properties around.

Chandra Source Catalog Search - CSCview - Mozilla Firefox

http://cda2.cfa.harvard.edu:7001/cscview/cscview

File Edit View Tools Help

Search New Open Save Download Script Add Remove Up Down Select All Deselect

Chandra Source Catalog Release 1.0.1

Catalog Query Results Products

Standard Queries:
Standard Queries
— Master Source Basic Summary
— Master Source Summary
— Master Source Photometry
— Master Source Variability

Source Properties:
— ra
— dec
Galactic Coordinates
Position Error Ellipse
Source Flux Significance (S/N)
Source Flags
Source Extent
Aperture Photometry
Source Region Aperture Fluxes
Photon Fluxes
Energy Fluxes
Spectral Model Energy Fluxes
Power-Law Model Energy Fluxes
Black-Bocy Model Energy Fluxes
PSF 90% ECF Aperture Fluxes
Spectral Hardness Ratios
Model Spectral Fits
Power-Law Model Spectral Fit
Black-Body Model Spectral Fit
Galactic Neutral Hydrogen Column Density

Select: top 1000 ▼ distinct rows ▼   ☐ Save results to file

Result Set: **Sort Order:**
name   o.targname   ascending
o.targname   o.src_cnts_aper_b   descending
ra
dec
flux_powlaw_aper_b
flux_powlaw_aper_lolim_b
flux_powlaw_aper_hilim_b
flux_powlaw_aper_b

Build a custom query:
Use the provided source properties to specify your desired results and optional search conditions.

Search Criteria:
(| extent_flag | = | False |) | AND
(| conf_flag | = | False |)

Name Resolver
Name: 3c321
Resolver: Simbad/NED ▼
Resolve   Cancel

Cone Search: Equatorial ▼   Name Resolver

ra: 15 31 43.39   dec +24 04 19.92   radius: 1   arcmin ▼

Name resolver succeeded

Applet CSCview started

*Search with a **Standard Query** by choosing one from the list and dragging it towards the right.*

*Search by source position: Enter **RA** & **Dec** and **search radius**, or let the **Name Resolver** do it automatically.*
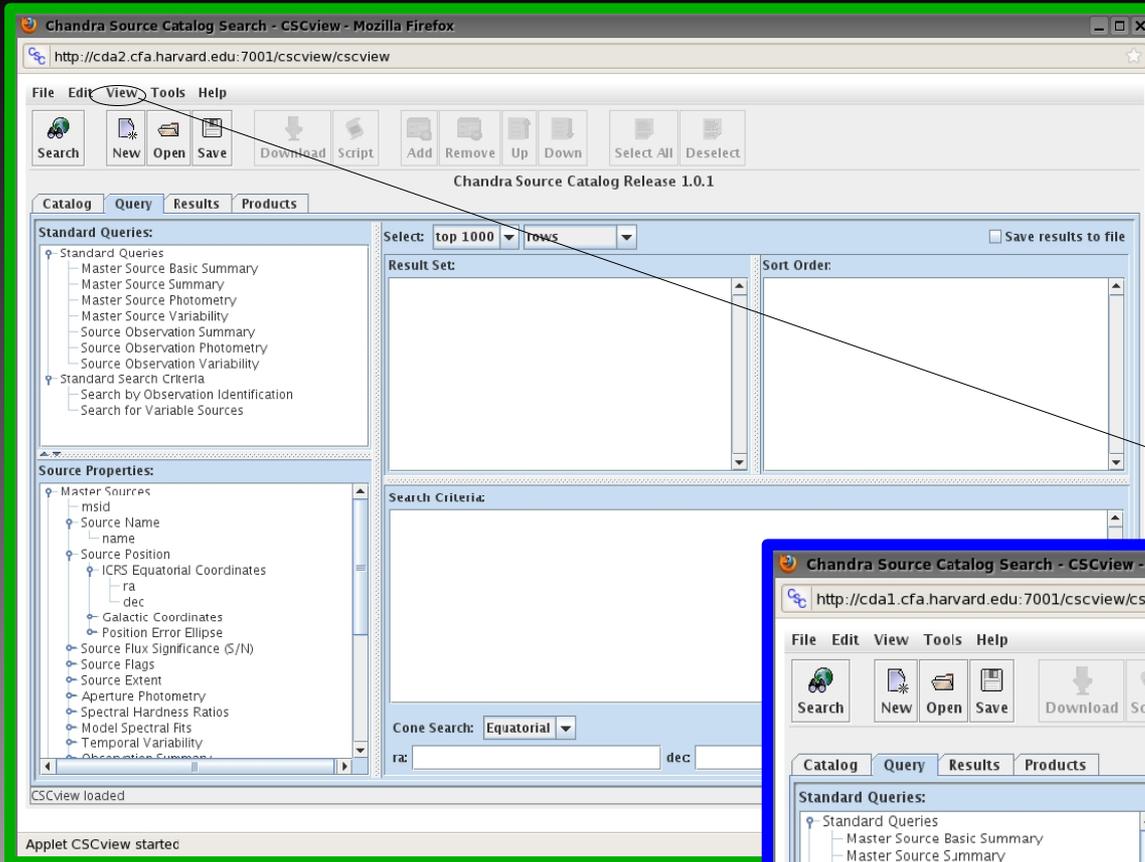
CSCview
<u>Query</u> tab

Enter a query in the *main view* *of the Query tab and see its ADQL 2.0 translation in the* **alternate view**.
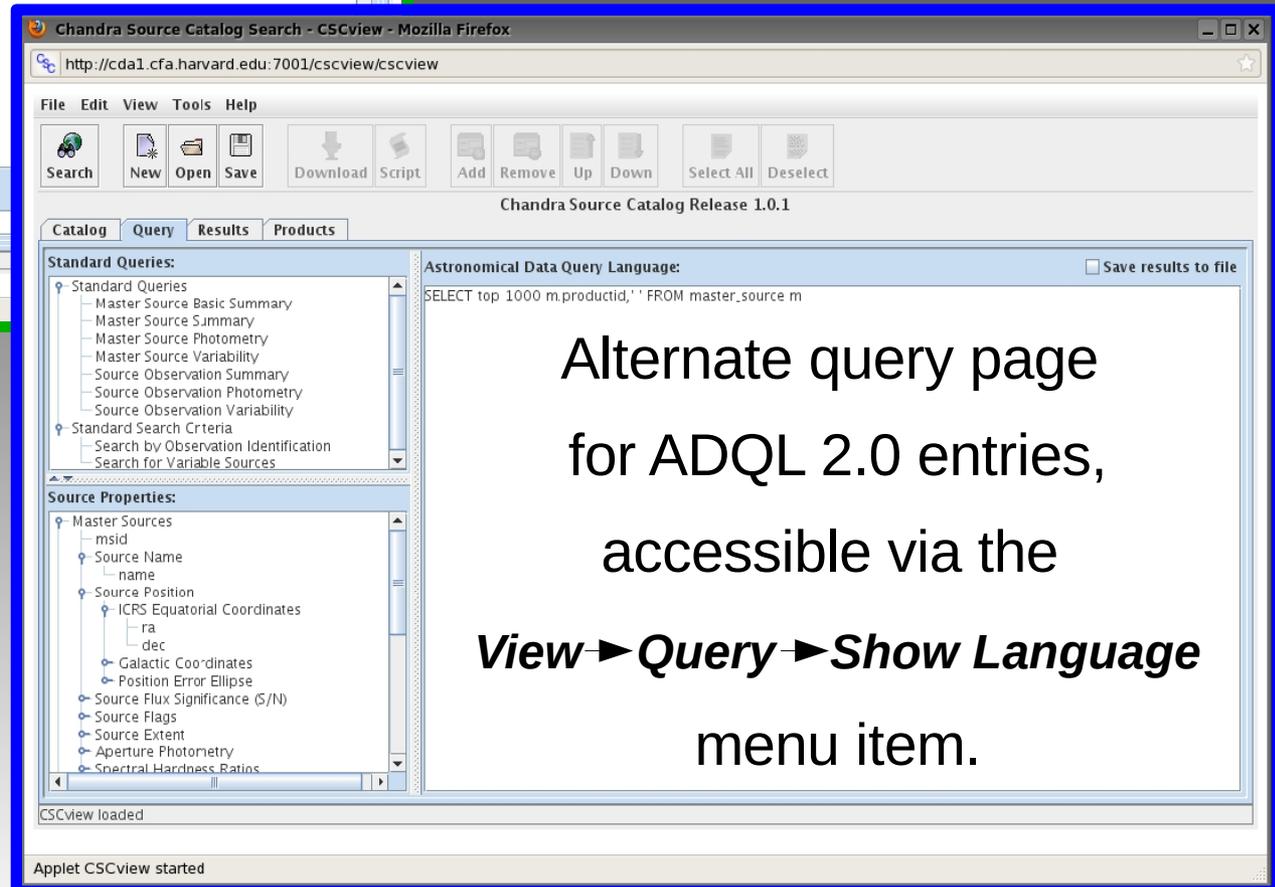
Alternate query page for ADQL 2.0 entries, accessible via the ***View►Query►Show Language*** menu item.

CSCview Query tab → *ADQL view*

Chandra Source Catalog Search - CSCview - Mozilla Firefox

http://cda1.cfa.harvard.edu:7001/cscview/cscview

File   Edit   View   Tools   Help

Search | New | Open | Save | Download | Script | Add | Remove | Up | Down | Select All | Deselect

Chandra Source Catalog Release 1.0.1

Catalog | Query | Results | Products

Standard Queries:

Standard Queries
- Master Source Basic Summary
- Master Source Summary
- Master Source Photometry
- Master Source Variability
- Source Observation Summary
- Source Observation Photometry
- Source Observation Variability
Standard Search Criteria
- Search by Observation Identification
- Search for Variable Sources

Astronomical Data Query Language: ☐ Save results to file

```
SELECT DISTINCT top 1000
o.productid,m.name,o.targname,m.ra,m.dec,m.flux_powlaw,m.flux_powlaw_lolim,m.flux_powlaw_hilim,m.alpha,m.al
pha_lolim,m.alpha_hilim,m.nh_powlaw,m.nh_powlaw_lolim,m.nh_powlaw_hilim,m.flux_bb,m.flux_bb_lolim,m.flux_bb
_hilim,m.kt,m.kt_lolim,m.kt_hilim,m.nh_bb,m.nh_bb_lolim,m.nh_bb_hilim,m.nh_gal,o.src_cnts_aper_b,o.src_cnts_ape
r_h,o.src_cnts_aper_m,o.src_cnts_aper_s,o.src_cnts_aper_u,o.src_cnts_aper_w FROM master_obi_assoc a ,
master_source m , obi_source o WHERE ((( ( m.dec BETWEEN 24.055533333333333 AND 24.088866666666664
) AND ( m.ra BETWEEN 232.9125374727768 AND 232.94904586055654 ) ) AND
dbo.cone_distance(m.ra,m.dec,232.93079156666666,24.0722)<=1.0) AND ((m.extent_flag = 0) AND
(m.conf_flag = 0))) AND o.posid=a.posid AND m.msid=a.msid ORDER BY targname ASC, src_cnts_aper_b DESC
```

Source Properties:

Master Sources
- msid
- Source Name
  - name
- Source Position
  - ICRS Equatorial Coordinates
    - ra
    - dec
  - Galactic Coordinates
  - Position Error Ellipse
- Source Flux Significance (S/N)
- Source Flags
- Source Extent
- Aperture Photometry

Query loaded

Enter an ADQL 2.0 query here exactly as you would on the Unix command line with tools like cURL and Wget:

```
unix% curl --form query=' '
'http://cda/cscli/getProperties'
```

Applet CSCview started

CSCview Results tab

CSCview Products tab

```
# Col 1: name (master_source.name)
# Col 2: ra (master_source.ra)
# Col 3: dec (master_source.dec)
# Col 4: err_ellipse_r0 (master_source.err_ellipse_r0)
# Col 5: conf_flag (master_source.conf_flag)
# Col 6: sat_src_flag (master_source.sat_src_flag)
# Col 7: flux_aper90_b (master_source.flux_aper90_b)
# Col 8: flux_aper90_lolim_b (master_source.flux_aper90_lolim_b)
# Col 9: flux_aper90_hilim_b (master_source.flux_aper90_hilim_b)
name          ra          dec          err_ellipse_r0          conf_flag     sat_src_flag  flux_aper90_b          flux_aper90_lolim_b
flux_aper90_hilim_b
-             -           -            -                       -             -             -                      -                     -
CXO J000000.0-093415   00 00 00.00  -09 34 15.83 1.16          FALSE         FALSE         3.201e-14    2.220e-14    4.408e-14
CXO J000000.1+623123   00 00 00.11  +62 31 23.812.66           FALSE         FALSE         5.294e-15    3.717e-15    6.864e-15
CXO J000001.4+623148   00 00 01.41  +62 31 48.351.80           TRUE          FALSE         9.605e-15    7.760e-15    1.147e-14
CXO J000002.0-094649   00 00 02.08  -09 46 49.99 5.94          FALSE         FALSE         8.962e-14    6.761e-14    1.114e-13
CXO J000002.3-552443   00 00 02.35  -55 24 43.25 4.60          FALSE         FALSE         9.562e-15    6.735e-15    1.239e-14
CXO J000002.9+623155   00 00 02.91  +62 31 55.932.78           TRUE          FALSE         1.290e-14    9.809e-15    1.601e-14
CXO J000004.4-552604   00 00 04.49  -55 26 04.07 0.98          FALSE         FALSE         3.456e-14    3.151e-14    3.765e-14
CXO J000005.3+623029   00 00 05.36  +62 30 29.072.01           FALSE         FALSE         5.874e-15    4.419e-15    7.321e-15
CXO J000005.8+622138   00 00 05.80  +62 21 38.342.93           FALSE         FALSE         8.392e-15    6.151e-15    1.063e-14
CXO J000006.7+622621   00 00 06.71  +62 26 21.592.28           FALSE         FALSE         2.529e-15    1.603e-15    3.448e-15
```

A CSCview save file contains the table of search results returned in the Results tab. The save file format is an extension of RDB, consisting of tab-separated columns of data beneath a header commented by '#', with a single line of dashes between the column titles and column data values.

The CSC Level 3 data products, downloaded through the CSCview Products tab, include the following files:

Full-field: *events | background | exposure map | sensitivity map | aspect histogram | bad pixel | field-of-view*

Source Region: *events | pha | ARF | RMF | exposure map | PSF | light curve | region*
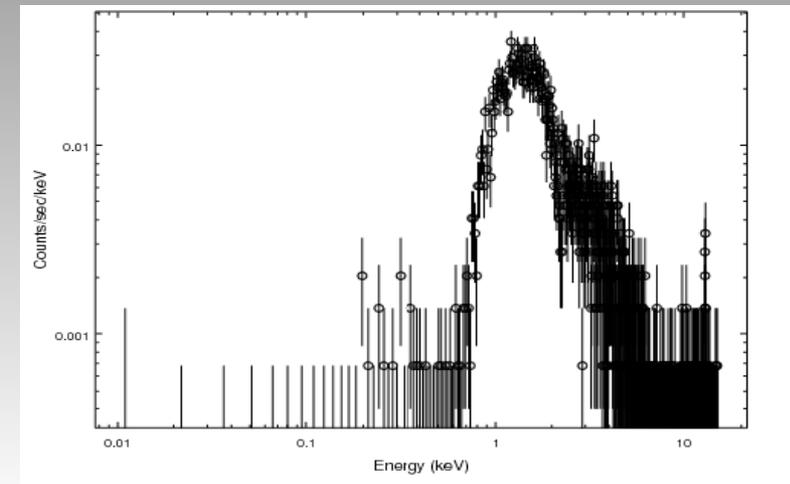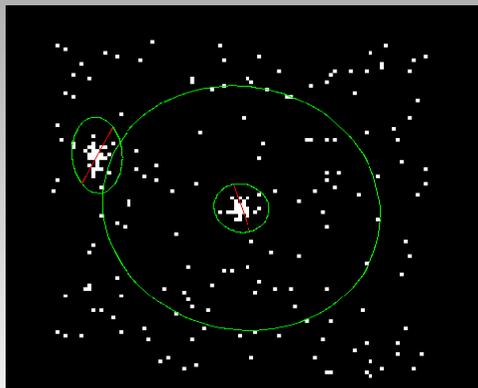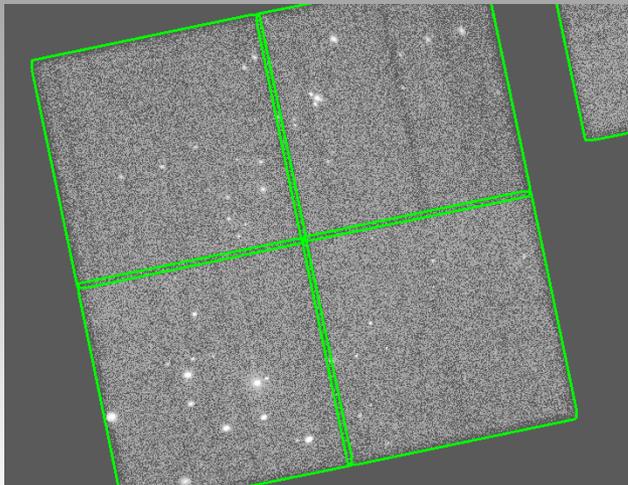
If a catalog query does not return the source you had hoped to find, consider the following:

- *The source is included in the catalog, but your search criteria are too strict:*

  Have you set a flux or counts threshold unrealistically high? Have you used too small a cone search radius in a search on source position? Try relaxing or reducing the number of search conditions to see if this helps turn up your source.

- *The source is <u>not</u> included in the catalog:*

  The source resides in a portion of an observation which is not included in CSC Release 1. In other words, the source was observed by Chandra but the CCD on which it lies was excluded from the catalog, e.g., because it contained extended emission.

  → *If you know the ObsID, <u>check the list of "dropped chips" for CSC Release 1</u> on the CSC website: http://cxc.harvard.edu/csc/faq/dropped_chips.html*

  → *<u>Search for your source in the CSC interface to Sky in Google Earth</u> to visually inspect Chandra observations for dropped chips (http://cxc.harvard.edu/csc/googlecat/):*

Chandra Archive field of view

CSC Release 1 field of view
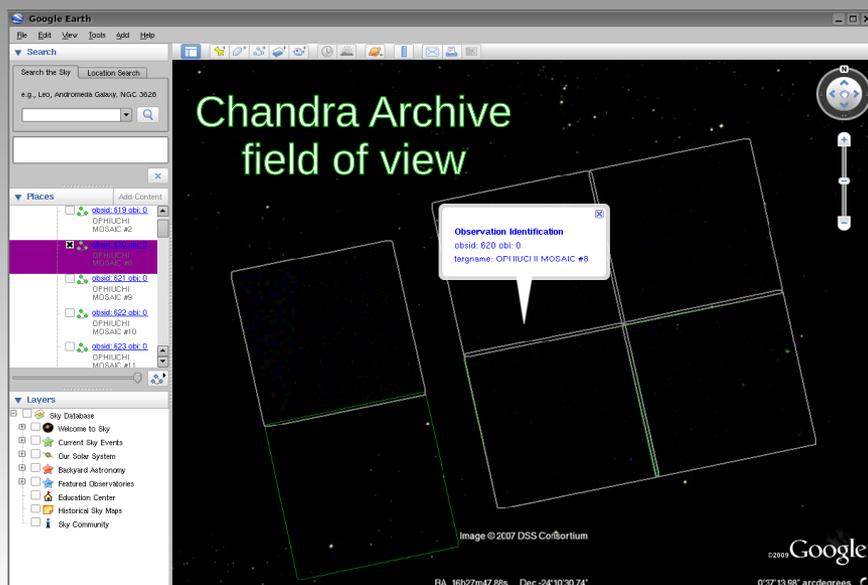
dropped chip
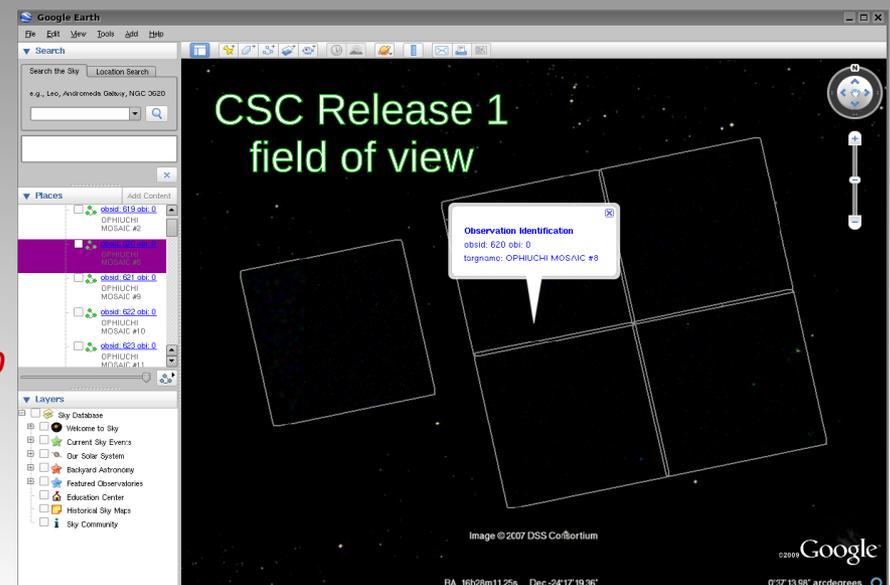
The source is <u>not</u> included in the catalog (continued):

The source did not pass quality assurance tests and filters for inclusion in the catalog, e.g., the signal-to-noise was too low, or the source flux was fainter than the Chandra limiting sensitivity (learn more here: *http://cxc.harvard.edu/csc/faq/src_inclusion.html*).

CSC Sensitivity Map Values (Broadband)

Sensitivity values returned typically represent the most sensitive value from all observations binned on a 32" x 32" resolution map. In certain cases, indicated in the results, only lower resolution values are available. Sensitivity is reported in units of photons cm^{-2} s^{-1}.

Enter RA and Dec. in degrees:

R.A. [_____]
Dec. [_____]

[Submit Data]

Choose a file to upload:
[_____] [Browse...] [Upload]

Note: Large files (> ~20,000 sources) may need to be split into multiple, smaller files if an upload error occurs.

### CSC Limiting Sensitivity Service

CSC Sensitivity Data for File: test4_radec.txt

Healpix #	Input RA	Input Dec	Healpix RA	Healpix Dec	Sensitivity	Quality
7533742	123.456	78.9				
19330742	150.4800	72.1700	150.4800	72.1700	4.986351e-06	2
57586858	162.3310	58.9800	162.327875	58.975742	1.090689e-06	1
372641545	222.295	4.275	222.295	4.275	5.356784e-06	3

Use the ***CSC Limiting Sensitivity Service*** to retrieve the Chandra limiting sensitivity in photons/s/cm2 (0.5-7.0 keV) at a specified location on the sky (32"x32" resolution). The file upload option is especially useful if you have a long list of source positions to check.

To retrieve Chandra sensitivity values at higher resolution, download the appropriate CSC Level 3 sensitivity maps through ***CSCview.***

ACIS-I full-field sensitivity map
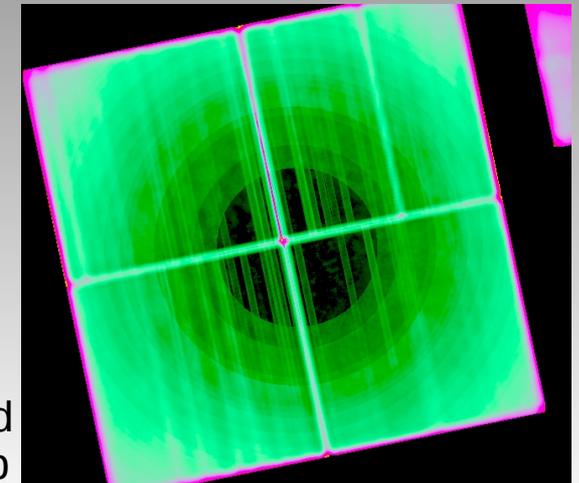
Refer to the CSC website for high-level descriptions of each source property and data product included in the catalog, as well as step-by-step CSCview and data analysis tutorials, answers to FAQs, *How & Why* topics, catalog science requirements and specifications, and a thorough summary of the catalog statistical characterization.

http://cxc.harvard.edu/csc/

Submit questions
about the CSC to the
CXC Helpdesk
http://cxc.harvard.edu/helpdesk