

CENTER FOR

ASTROPHYSICS

HARVARD & SMITHSONIAN

Chandra Source Catalog

Douglas Burke, Chandra X-ray Center

May 22, 2025

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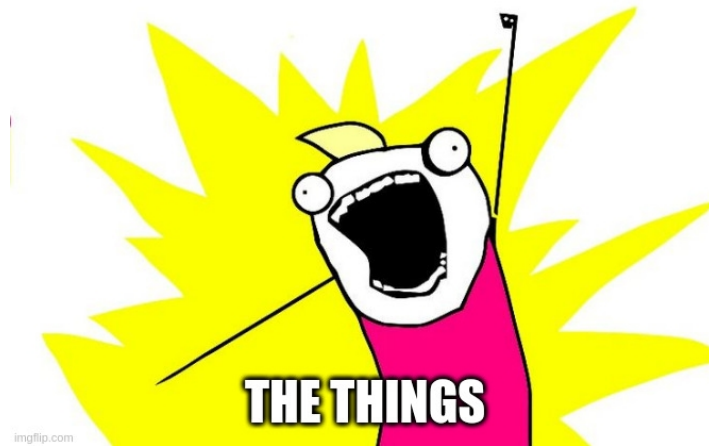
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Chandra Source Catalog

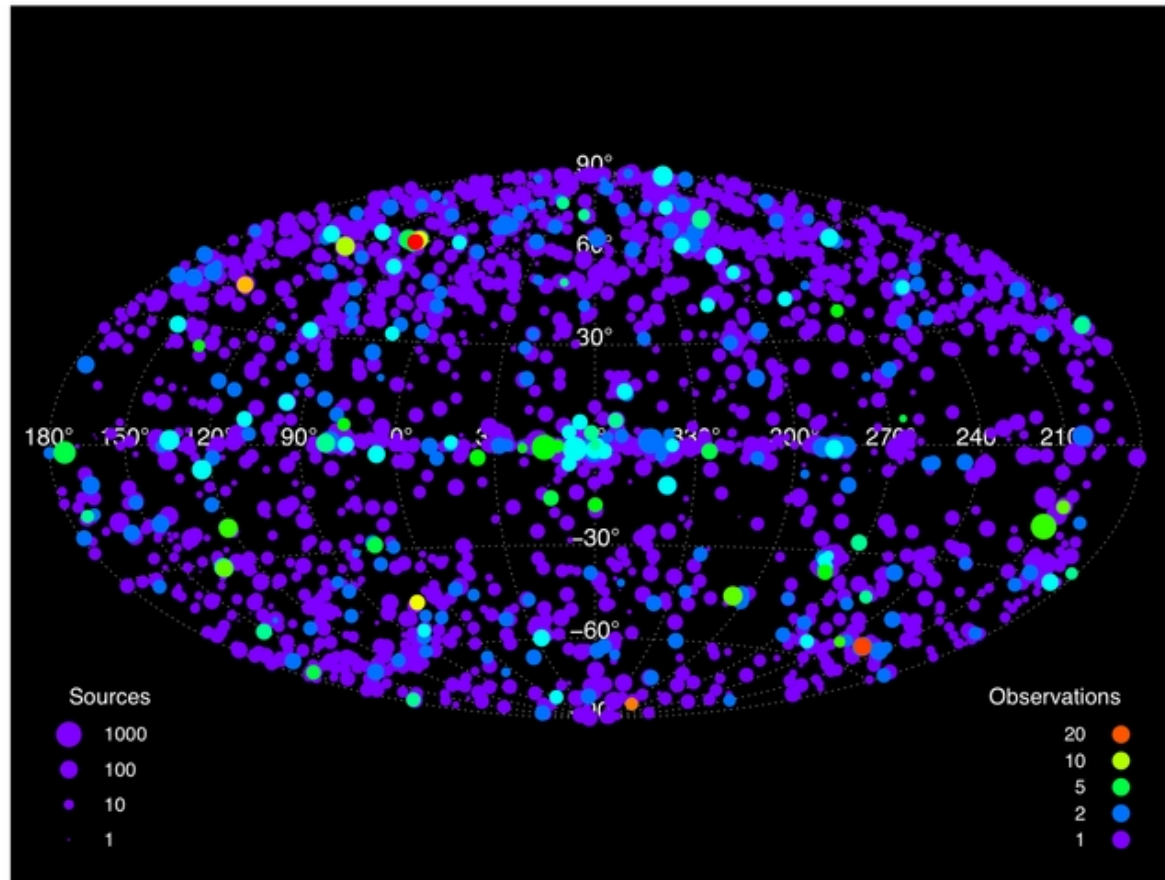
FIND ALL



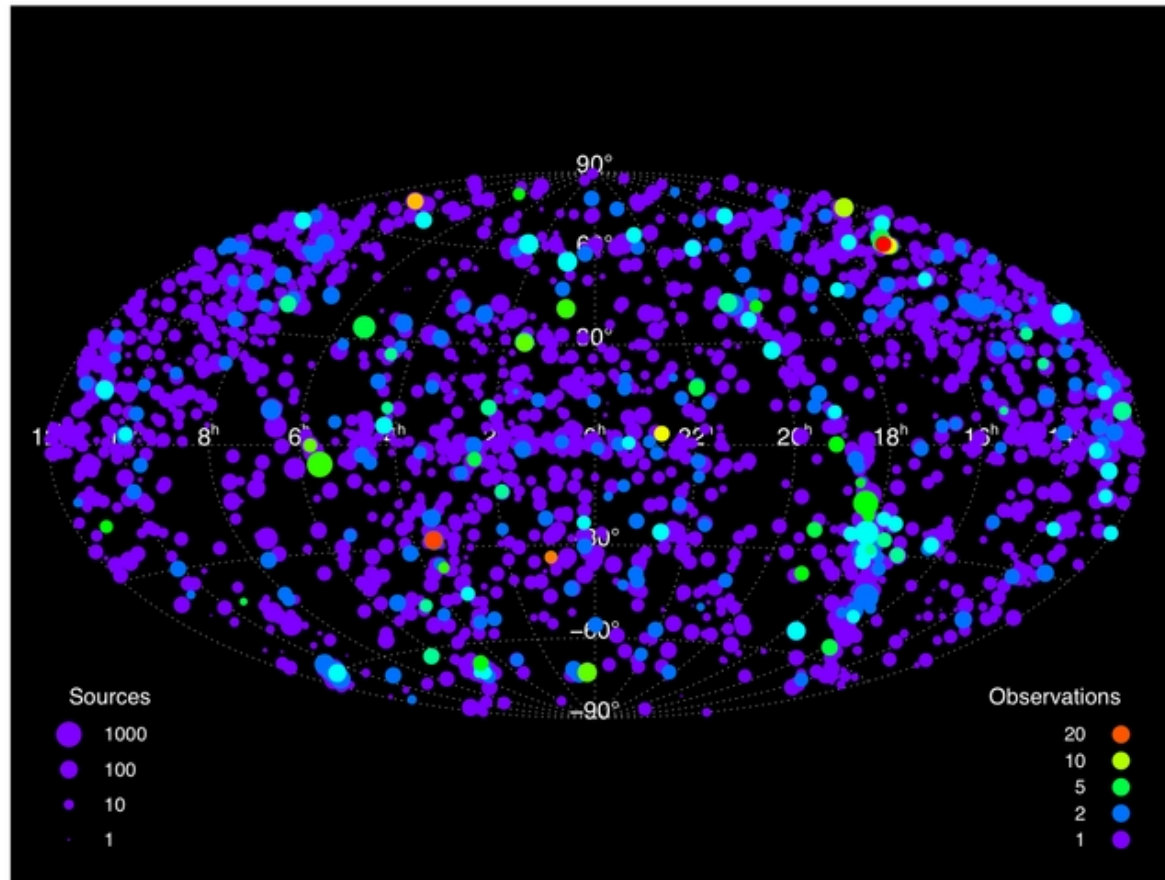
Douglas Burke, Chandra X-ray Center

May 22, 2025

CSC 1.1

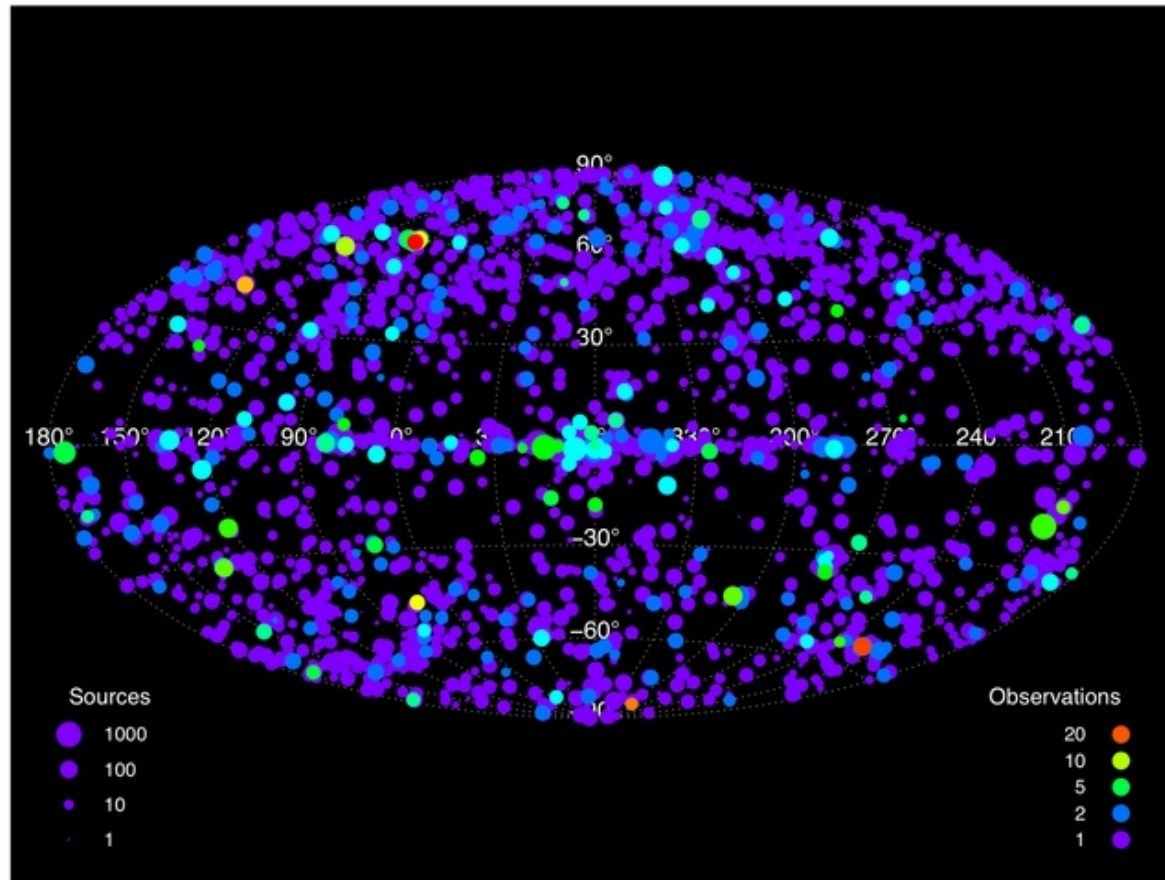


CSC 1.1

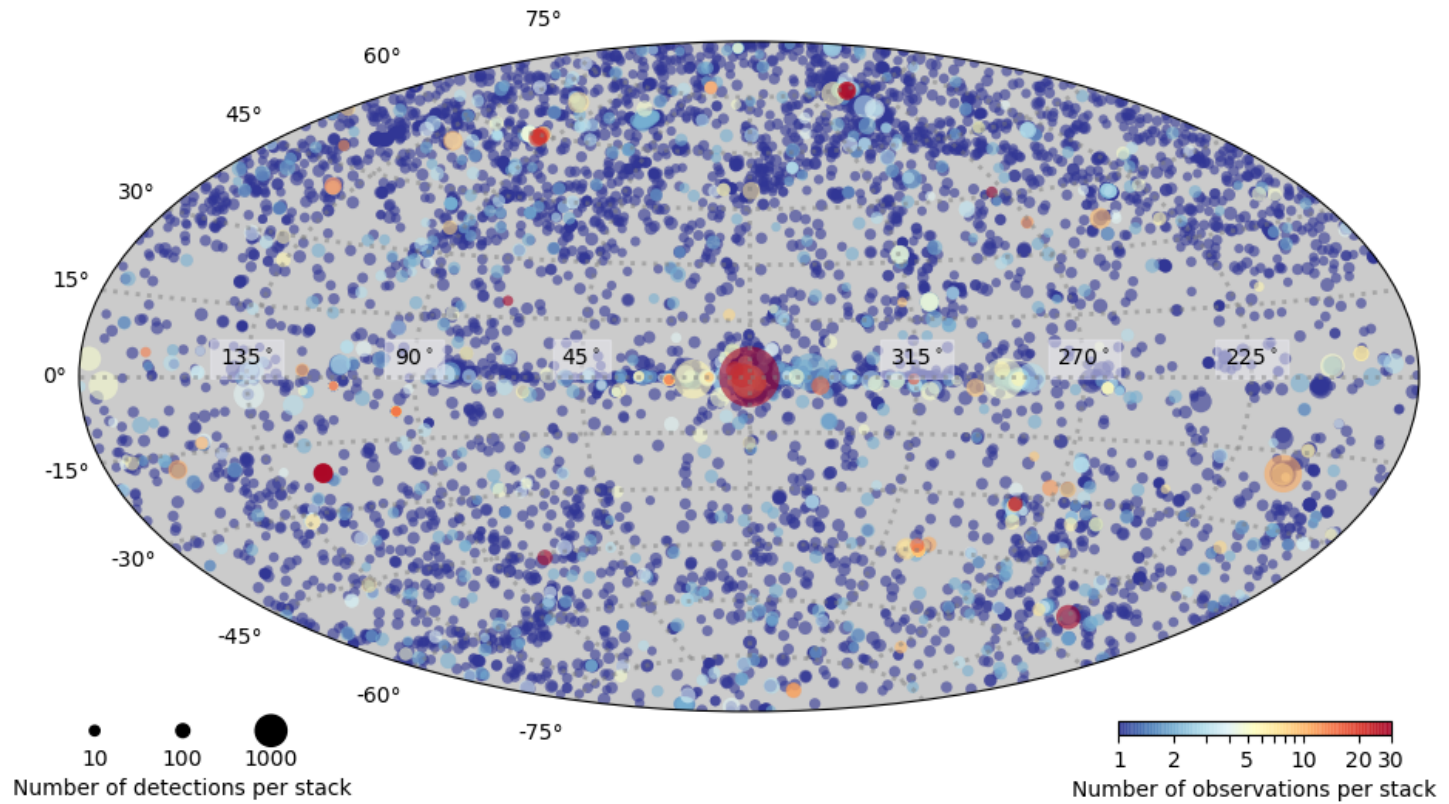


Equatorial coordinates

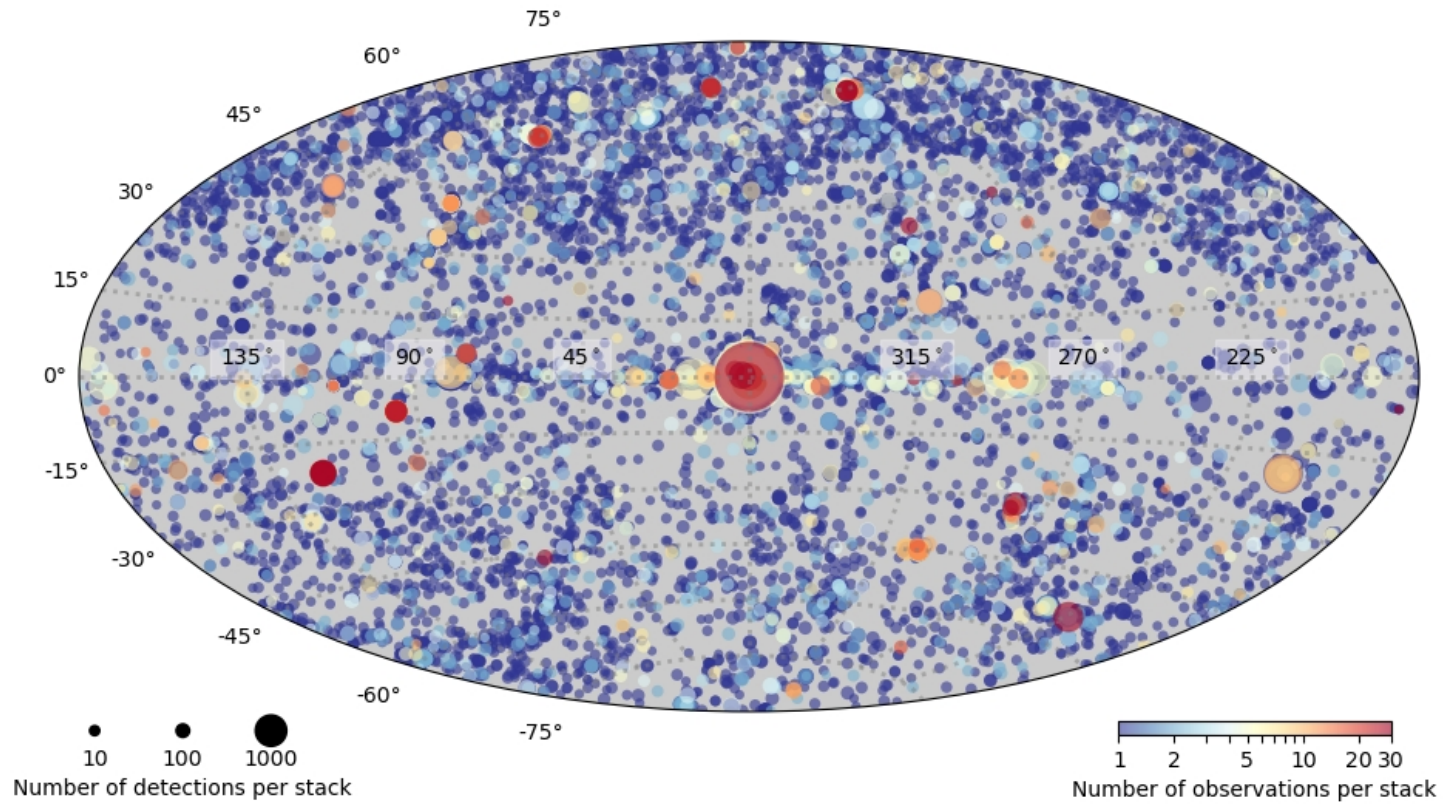
CSC 1.1



CSC 2.0



CSC 2.1



CSC 2.1

- ✓ Data up to the end of 2021.
- ✓ 407,806 sources.
- ✓ 1.3 million detections.
- ✓ ~2% of the sky (730 square degrees).
- ✓ Tabular data (source properties).
- ✓ Data products (images, spectra, light curves, ...).

CSC 2.1

- ✓ Data up to the end of 2021.
 - ✓ 407,806 sources.
 - ✓ 1.3 million detections.
 - ✓ ~2% of the sky (730 square degrees).
 - ✓ Tabular data (source properties).
 - ✓ Data products (images, spectra, light curves, ...).
- ✗ No grating data (see Mel's talk), no “funky” data, must be released to the public.

Explore CSC 2.1 using x +

https://cxc.harvard.edu/csc2.1/wwwt.html

CHANDRA SOURCE CATALOG 2.1

CHANDRA
SOURCE CATALOG

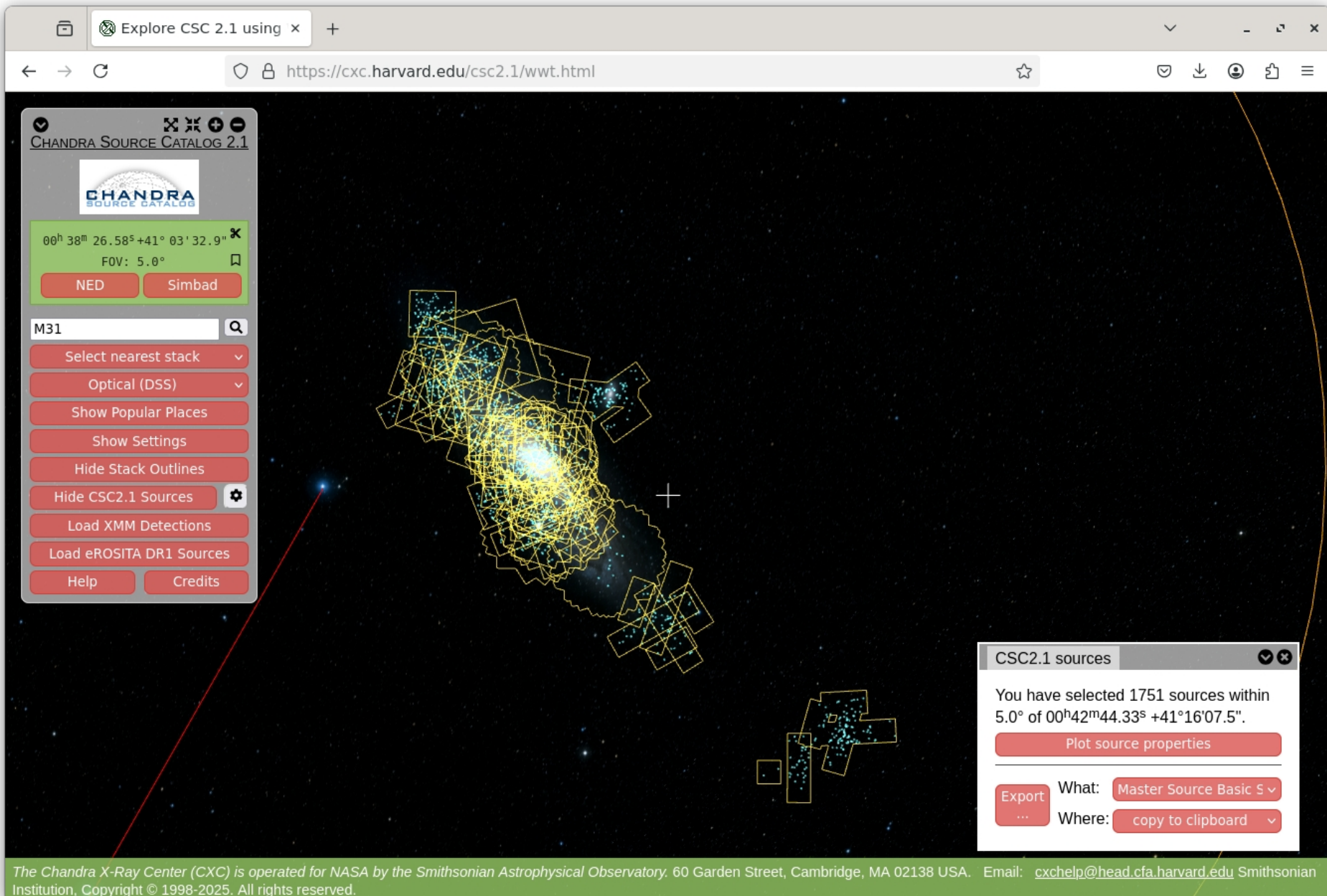
00^h 42^m 44.33^s +41° 16' 07.5" ✕
FOV: 5.0° 📌

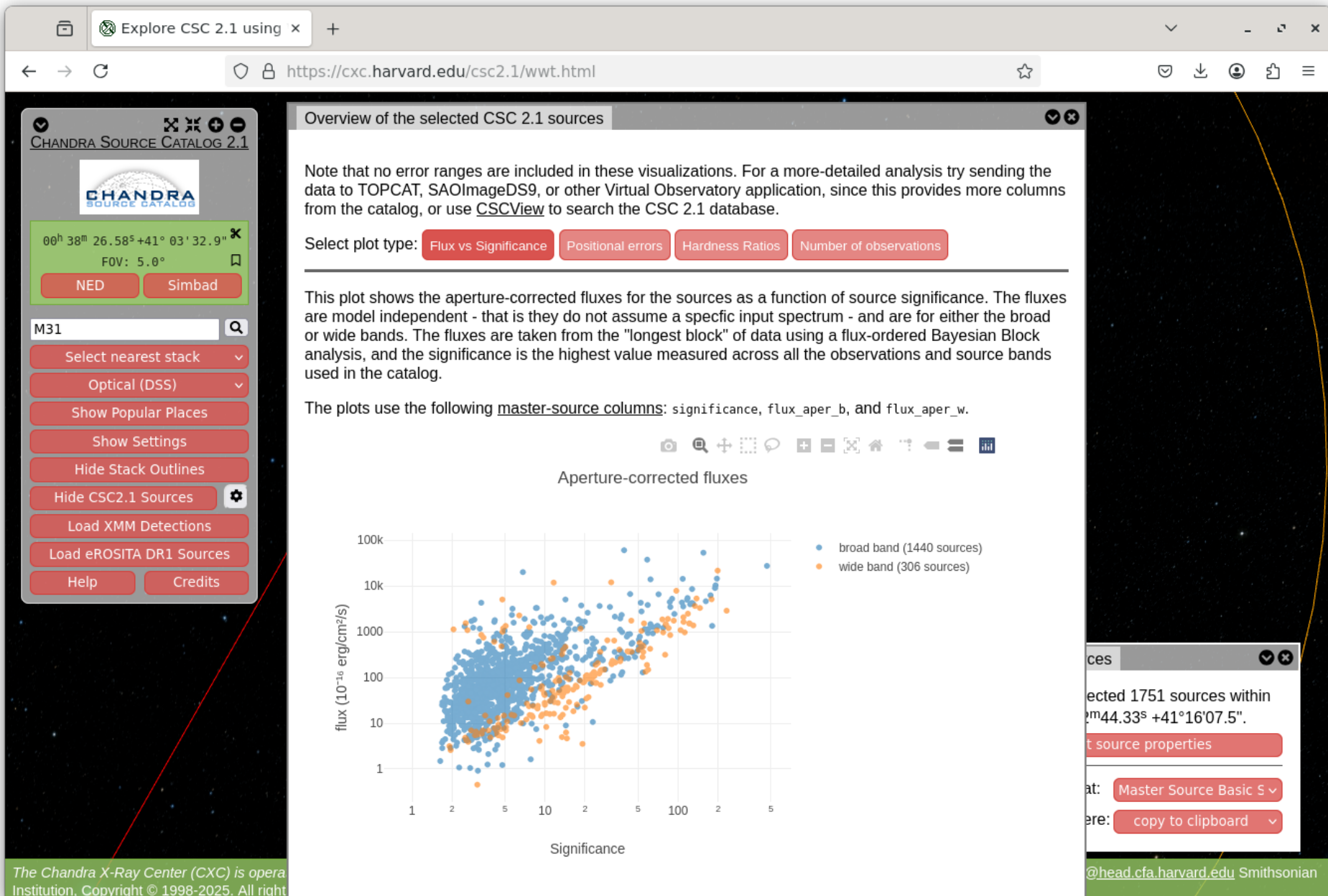
NED Simbad

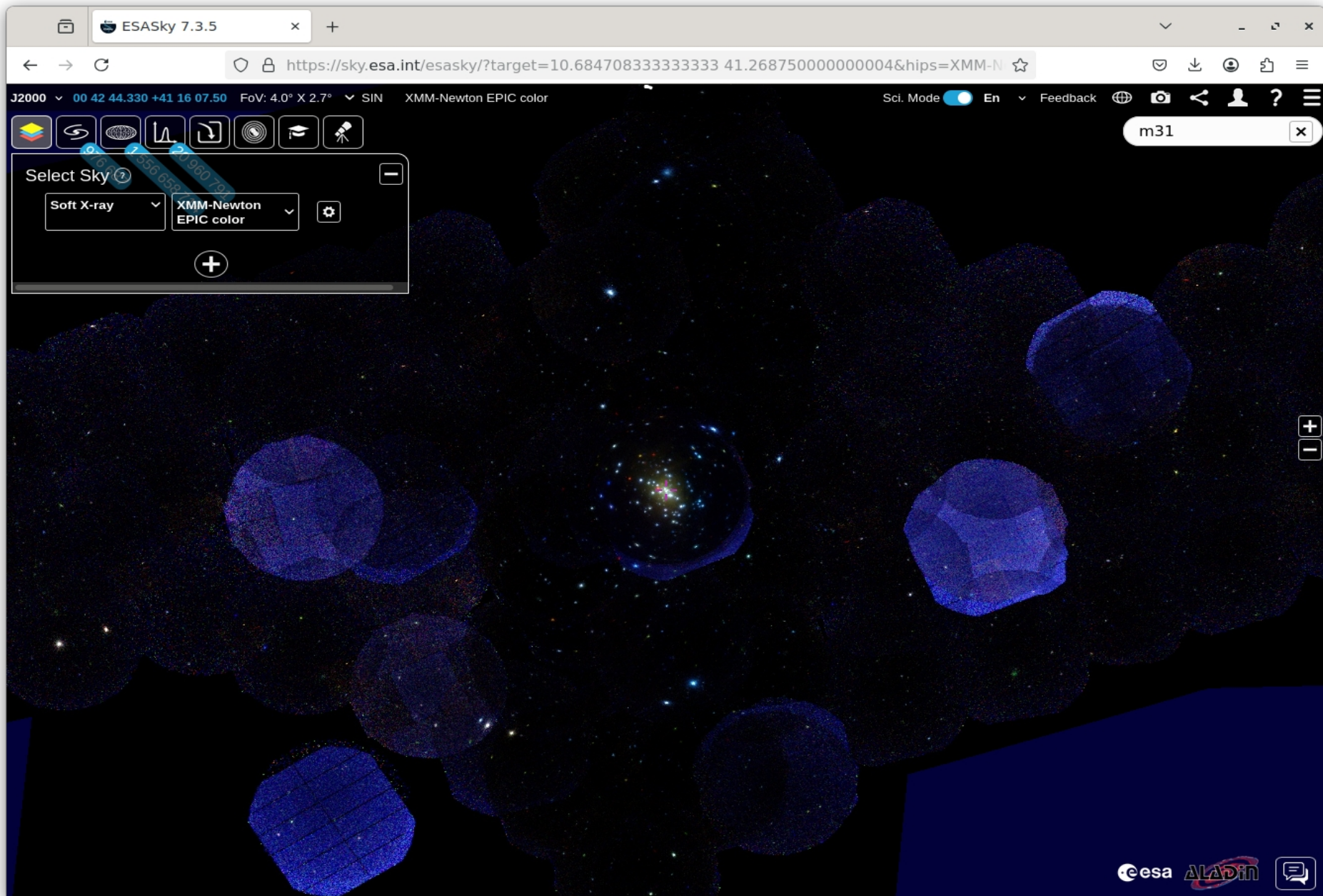
M31 🔍

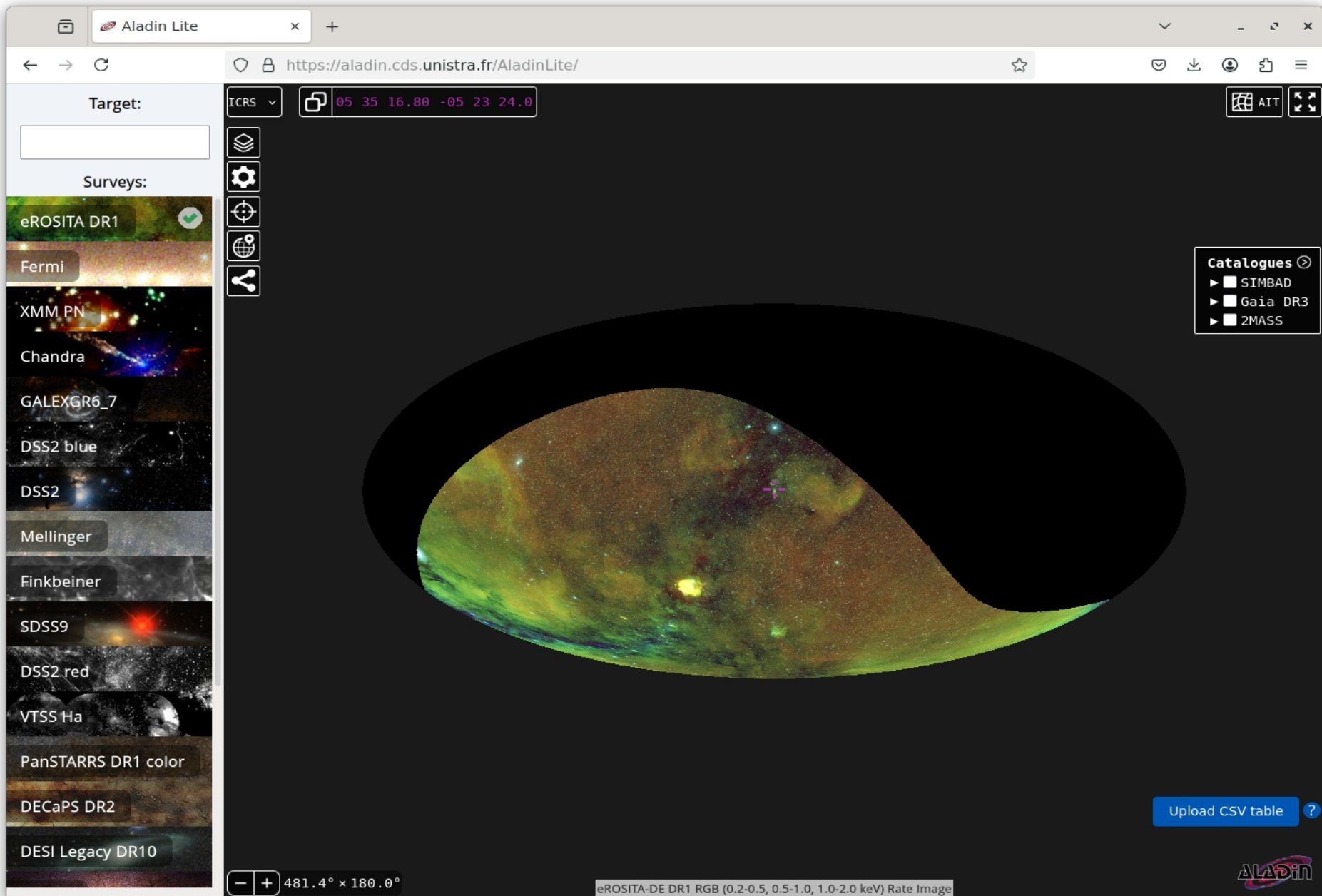
- Select nearest stack ▾
- Optical (DSS) ▾
- Show Popular Places
- Show Settings
- Hide Stack Outlines
- Load CSC2.1 Sources
- Load XMM Detections
- Load eROSITA DR1 Sources
- Help Credits

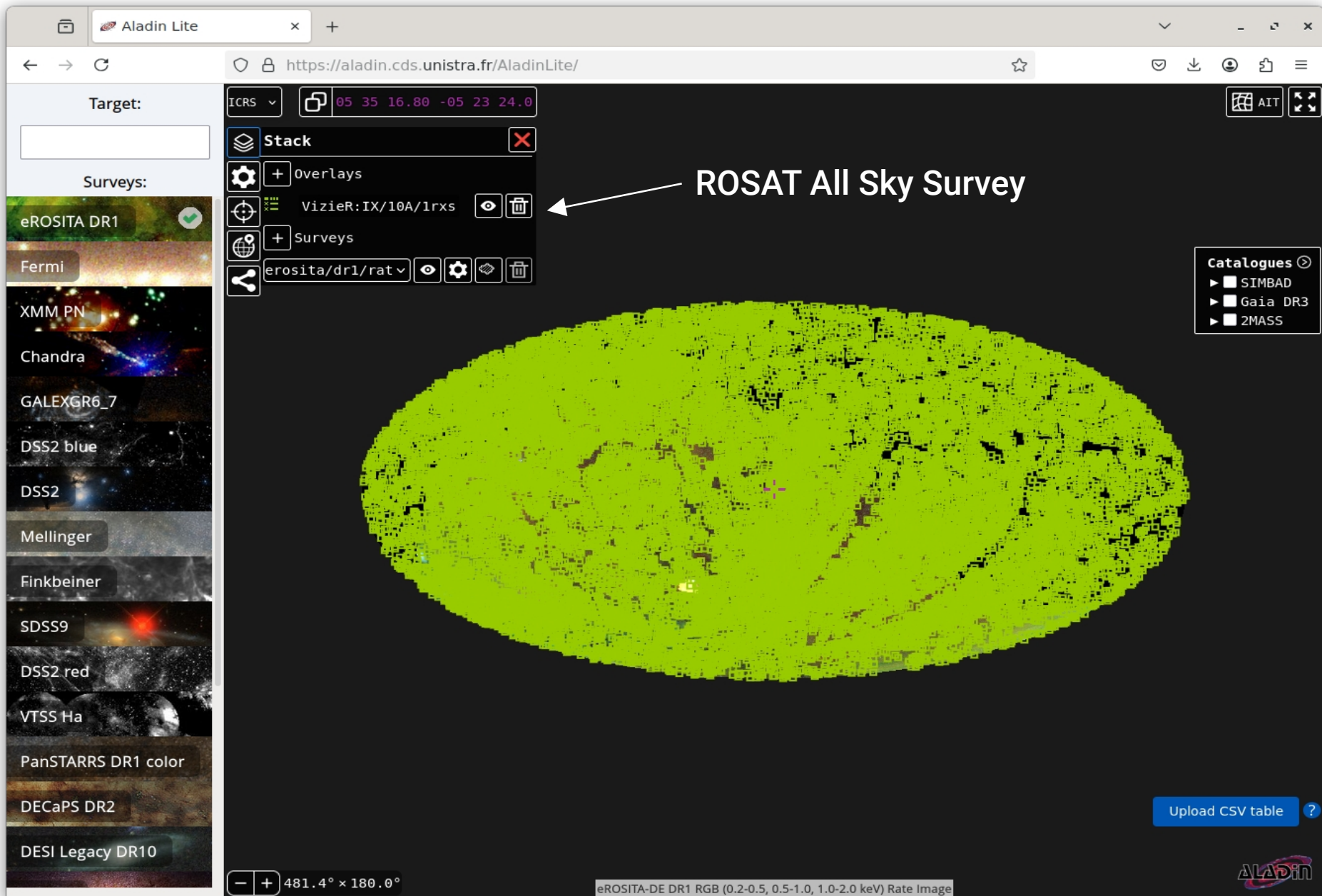
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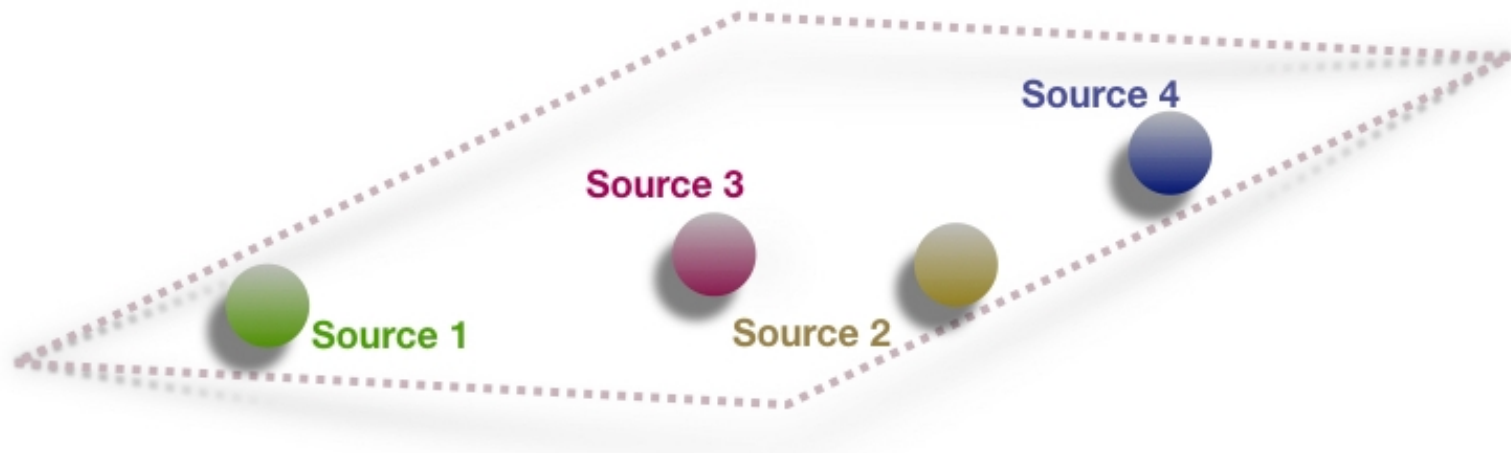




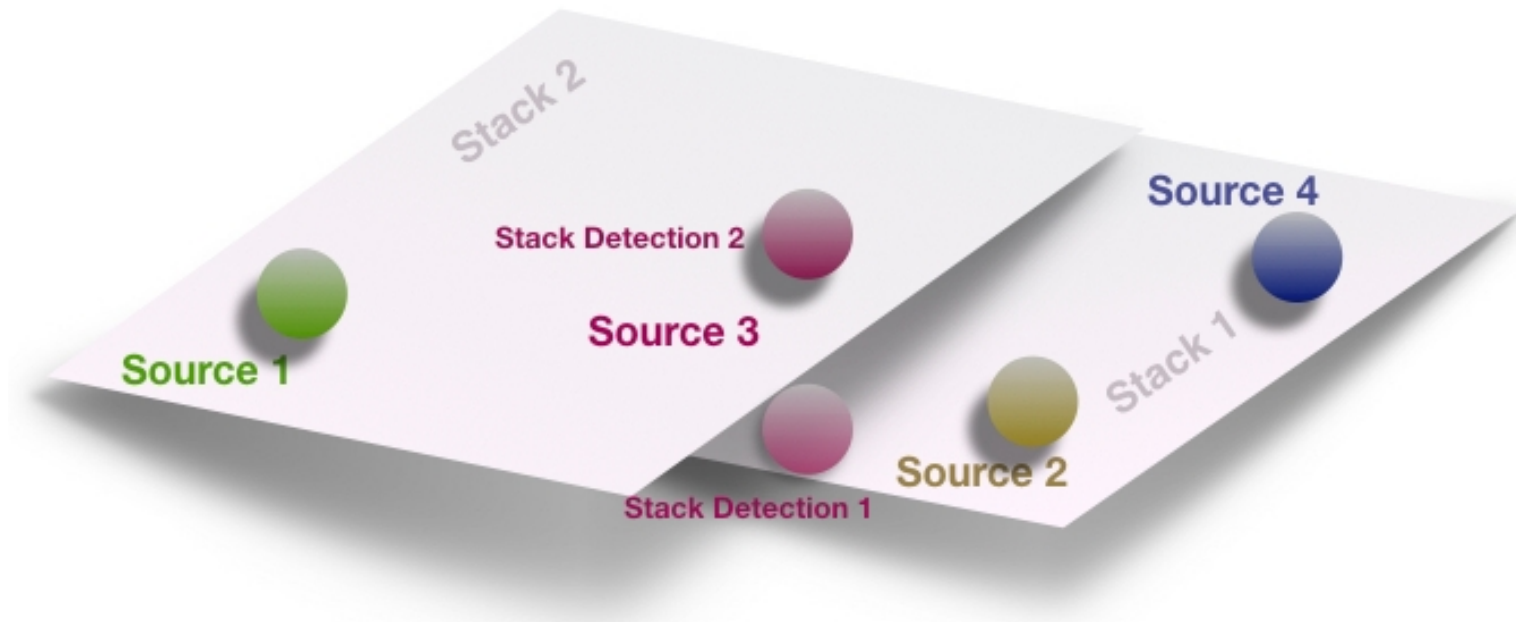




What is a thing?



Master Source



Stack Level



Observation Level



CHANDRA
X-RAY OBSERVATORY

CXC HOME PROPOSER ARCHIVE DATA ANALYSIS

INSTRUMENTS & CALIBRATION FOR THE PUBLIC

Search <http://cxc.harvard.edu/csc2.1/>

ENHANCED BY Google

[Contact the CXC HelpDesk](#)

How to access or download

<https://cxc.harvard.edu/csc2.1/download/index.html>

Last modified: 8 May 2024



CHANDRA
SOURCE CATALOG

CSC [2.1](#) [2.0](#) [1.1](#)

How to access the *Chandra* Source Catalog Release 2.1

[About the CSC](#) | [What's New?](#) | [Watch Out](#)



Check the catalog version

Please check that you are accessing the CSC 2.1 release and not CSC 2.0.

Options for accessing data from release 2.1 of the Chandra Source Catalog (CSC).

Interface	Notes
<u><i>The CSCview application</i></u> Summary: The CSCview Java application is the main interface for accessing the Chandra Source catalog.	The CSCview application facilitates comprehensive searches of the entire CSC 2.1 and previous releases (2.0, 1.1, and 1.0). The application provides access to the <u>data products</u>: both the database tables (e.g., master, stacked, per observation detection) and file-based data products (e.g., full-field, regions). CSCview can be used for a detailed search across multiple tables, to select specific columns, or to set specific search criteria, including cone searches and cross-matches. For more information see the <u>CSCview guide</u>.
	The web interface search is equivalent to the default master-search query in CSCview. We recommend using this tool for basic summaries of master source properties. The resulting table can be downloaded as a VOTable, TSV, or CSV file. The interface also allows the <u>sensitivity limit</u> estimates for the

CSC Homepage

About the Catalog

[Overview](#)

[Catalog Organization](#)

[Catalog Release Views and Database Access Views](#)

[Catalog Statistical Characterization](#)

[Caveats and Limitations](#)

[Version History](#)

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[Catalog Processing](#)

[Data Products](#)

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[Threads](#)

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[CSC CLI](#)

[CSC crossmatches](#)

Catalog Columns

Master Sources Table:

[alphabetical](#) | [by context](#)

What is new in CSC 2.1

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[Caveats and Limitations](#)

[Acknowledgement & Cite CSC](#)

Chandra Source Catalog

Chandra X-ray Center

Chandra Source Catalog 2.1 Quick Search

Chandra Data Archive

A quick search interface to the [Chandra Source Catalog](#).
Full search capabilities are available via the [CSCview application](#).

Home

Single ConeCrossmatch

by coordinates

by name

Right Ascension

value in decimal degrees in [0, 360) or equivalent in sexagesimal in HMS or DMS

Declination

value in decimal degrees in [-90, 90] or equivalent in sexagesimal in DMS

Search Radius

1' arcmin value in: [0, 60]

Display

10 Rows

Search



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Built: 2024-02-23 08:21:09 EST

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Chandra Source Catalog 2.1 Quick Search



Home Results

Displaying at most 10 results for a Cone Search of 1 arcmin around **m31** (resolved to 00h 42m 44.33s +41° 16' 07.50" using *simbad*, *ned*)

Display Options

Save Source Properties

Save Limiting Sensitivity

Source Properties (10 rows)

separation arcsec	name	ra	dec	err_ellipse_r0 arcsec	err_ellipse_r1 arcsec	err_ellipse_ang deg	significance	likelihood_class	co
0.35	2CXO J004244.3+411607	00 42 44.36	+41 16 07.40	0.29	0.29	0.0	83.89	TRUE	
0.82	2CXO J004244.3+411608	00 42 44.32	+41 16 08.31	0.30	0.30	0.0	56.74	TRUE	
1.12	2CXO J004244.3+411608A	00 42 44.34	+41 16 08.62	0.29	0.29	0.0	57.11	TRUE	
1.61	2CXO J004244.4+411607	00 42 44.48	+41 16 07.49	0.32	0.32	0.0	17.39	TRUE	
2.26	2CXO J004244.3+411605	00 42 44.36	+41 16 05.26	0.29	0.29	0.0	58.40	TRUE	
4.28	2CXO J004244.1+411604	00 42 44.11	+41 16 04.03	0.33	0.31	11.7	16.52	TRUE	
5.50	2CXO J004243.9+411610	00 42 43.93	+41 16 10.62	0.29	0.29	0.0	44.76	TRUE	
6.45	2CXO J004244.2+411613	00 42 44.28	+41 16 13.92	0.29	0.29	55.7	26.17	TRUE	
8.55	2CXO J004243.8+411609	00 42 43.88	+41 16 09.77	0.29	0.29	88.8	50.70	TRUE	

Limiting Sensitivity (1 row)

usrid	ra	dec	sr deg	flux_sens_b erg/s/cm^2	flux_sens_w erg/s/cm^2	photflux_sens_b photon/s/cm^2	photflux_sens_w photon/s/cm^2	flux_sens_true_b erg/s/cm^2	flux_sens_true_w erg/s/cm^2
1	00 42 44.33	+41 16 07.50	0.016666666666666666	1.1685476E-15	5.9781415E-16	4.0104547E-7	2.4845357E-7	1.4753546E-15	7.1415415E-16

Displaying at most 10 results for a Cone Search of 1 arcmin around **m31** (resolved to 00h 42m 44.33s +41° 16' 07.50" using *simbad*, *ned*)

Display Options

Save Source Properties

Save Limiting Sensitivity

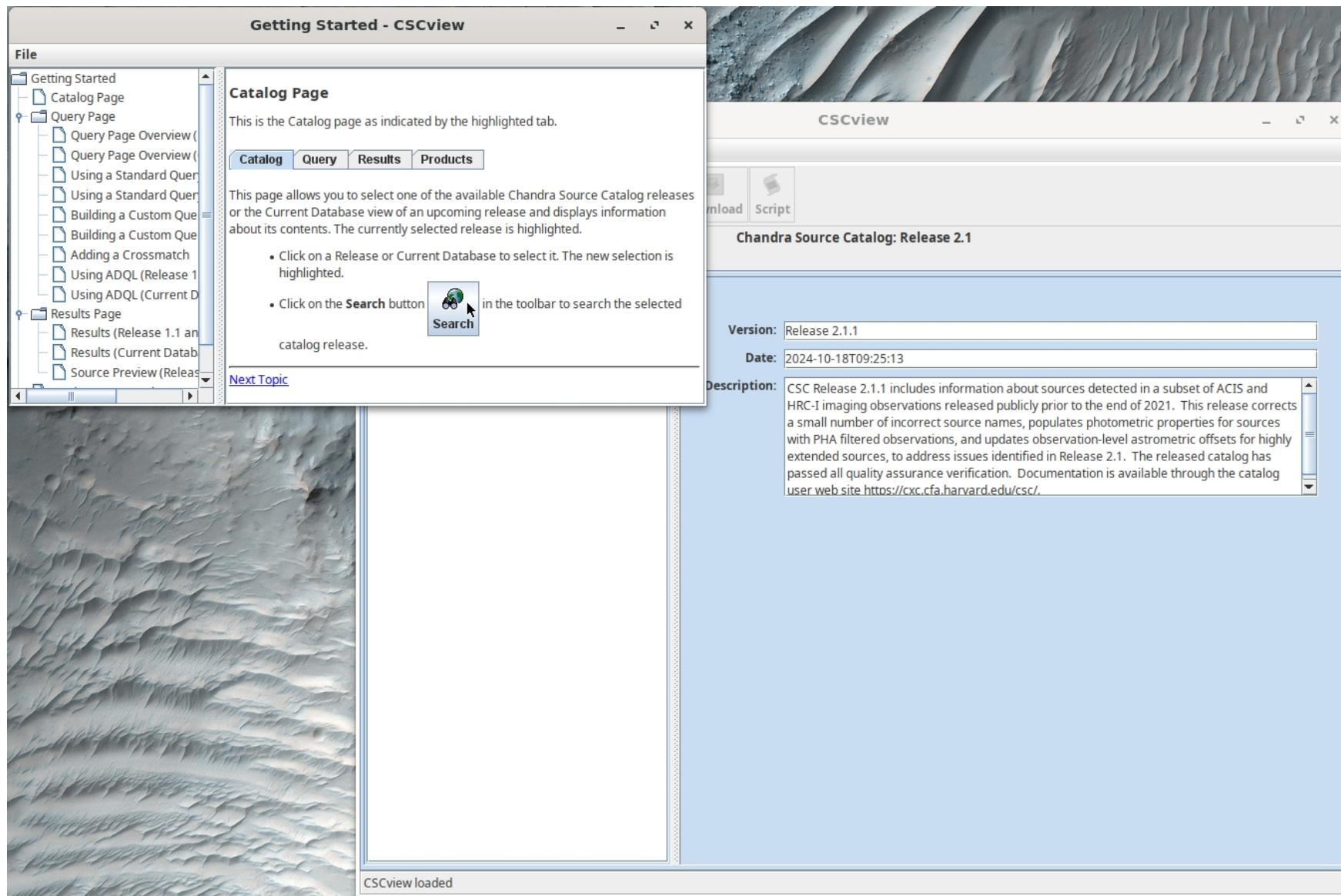
Source Properties (10 rows)									
separation arcsec	name	ra	dec	err_ellipse_r0 arcsec	err_ellipse_r1 arcsec	err_ellipse_ang deg	significance	likelihood_class	co
0.35	2CXO J004244.3+411607	00 42 44.36	+41 16 07.40	0.29	0.29	0.0	83.89	TRUE	
0.82	2CXO J004244.3+411608	00 42 44.32	+41 16 08.31	0.30	0.30	0.0	56.74	TRUE	
1.12	2CXO J004244.3+411608A	00 42 44.34	+41 16 08.62	0.29	0.29	0.0	57.11	TRUE	
1.61	2CXO J004244.4+411607	00 42 44.48	+41 16 07.49	0.32	0.32	0.0	17.39	TRUE	
2.26	2CXO J004244.3+411605	00 42 44.36	+41 16 05.26	0.29	0.29	0.0	58.40	TRUE	
4.28	2CXO J004244.1+411604	00 42 44.11	+41 16 04.03	0.33	0.31	11.7	16.52	TRUE	
5.50	2CXO J004243.9+411610	00 42 43.93	+41 16 10.62	0.29	0.29	0.0	44.76	TRUE	
6.45	2CXO J004244.2+411613	00 42 44.28	+41 16 13.92	0.29	0.29	55.7	26.17	TRUE	
8.55	2CXO J004243.8+411608	00 42 43.88	+41 16 08.77	0.29	0.29	88.8	50.70	TRUE	
Limiting Sensitivity (1 row)									
usrid	ra	dec	sr deg	flux_sens_b erg/s/cm^2	flux_sens_w erg/s/cm^2	photflux_sens_b photon/s/cm^2	photflux_sens_w photon/s/cm^2	flux_sens_true_b erg/s/cm^2	flux_sens_w erg/s/cm^2
1	00 42 44.33	+41 16 07.50	0.016666666666666666	1.1685476E-15	5.9781415E-16	4.0104547E-7	2.4845357E-7	1.4753546E-15	7.1415415E-16

```
% search_csc 'm 31' 1 outfile= radunit=arcsec
search_csc
    pos = m 31
    radius = 1
    outfile =
    radunit = arcsec
    columns = INDEF
sensitivity = no
download = none
    root = ./
    bands = broad,wide
filetypes = regevt,pha,arf,rmf,lc,psf,regexp
    catalog = csc2.1
    verbose = 1
    clobber = no
    mode = ql
```

```
366 rows returned by query
2 Different Master Source(s).
183 Different Observation(s).
```

name	ra	dec	sepn	obsid
2CXO J004244.3+411607	1.068484e+01	4.126872e+01	0.38"	18046
2CXO J004244.3+411607	1.068484e+01	4.126872e+01	0.38"	1577
2CXO J004244.3+411607	1.068484e+01	4.126872e+01	0.38"	2897
2CXO J004244.3+411607	1.068484e+01	4.126872e+01	0.38"	2898
...				

```
% java -jar cscview.jar
```



CSCview

File Edit View Tools Help

Search Stop New Open Save Send Download Script

Chandra Source Catalog: Release 2.1

Catalog Query Results Products

Standard Queries:

- Standard Result Sets
 - Master Source Basic Summary
 - Master Source Summary
 - Master Source Photometry
 - Master Source Variability
 - Stack Source Summary
 - Stack Source Photometry
 - Source Observation Summary
 - Source Observation Photometry

Source Properties:

- Master Sources
 - Source Name
 - name
 - Source Position
 - ICRS Equatorial Coordinates
 - ra
 - dec
 - Galactic Coordinates
 - gal_l
 - gal_b
 - Position Error Ellipse
 - err_ellipse_r0
 - err_ellipse_r1

Select: top 1000 distinct rows ☐ Save results to file

Result Set:

separation	
name	
ra	
dec	
err_ellipse_r0	
err_ellipse_r1	

Sort Order:

separation	ascending
name	ascending

Search Criteria:

Position Search:

☒ By Name
 ☐ By Coordinates
 Equatorial

☒ Cone
 Name: m31
 Resolver: Simbad/NED
 Radius: 1.0 arcmin

☐ Search limiting sensitivity for position(s)

Table	Name	Datatype	Units	Description
	separation	double	arcsec	Distance from master source to center of cone search

CSCview loaded

CSCview

File Edit View Tools Help

Search Stop New Open **Save** Send Download Script

Chandra Source Catalog: Release 2.1

Catalog Query **Results** Products

Data Products:

☐ Region:

☐ Master:

☒ Bayesian Blocks source properties

☐ Per-Master source region aperture photometry

☐ Per-Master extended source region polygon

☐ Stack:

☐ Stack Source Region Event List

☒ **Stack Source Region Image**

☐ Stack Source Region Image 3-color

☐ Stack Source Region Exposure Map

☐ Stack Source Region

☐ Stack Source Region Draws

☐ Valid Stack Source Region Aperture Photometry

☐ Observation:

Energy Bands:

☒ broad [ACIS] ☐ hard [ACIS]

☐ medium [ACIS] ☐ soft [ACIS]

☐ ultrasoft [ACIS] ☒ wide [HRC]

☐ Select all

69 of 1 row matched, 69 rows returned

Select	View	separation (arcsec)	name	ra	dec	err_ellipse_r0 (arcsec)	err_ellipse_r1 (arcsec)	err_ellipse_ang (deg)	significance
☐	Q	0.35	2CXO J004244.3+411607	00 42 44.36	+41 16 07.40	0.29	0.29	0.0	83.89
☐	Q	0.82	2CXO J004244.3+411608	00 42 44.32	+41 16 08.31	0.30	0.30	0.0	56.74
☒	Q	1.12	2CXO J004244.3+411608A	00 42 44.34	+41 16 08.62	0.29	0.29	0.0	57.11
☐	Q	1.61	2CXO J004244.4+411607	00 42 44.48	+41 16 07.49	0.32	0.32	0.0	17.39
☐	Q	2.26	2CXO J004244.3+411605	00 42 44.36	+41 16 05.26	0.29	0.29	0.0	58.40
☐	Q	4.28	2CXO J004244.1+411604	00 42 44.11	+41 16 04.03	0.33	0.31	11.7	16.52
☐	Q	5.49	2CXO J004243.9+411610	00 42 43.93	+41 16 10.62	0.29	0.29	0.0	44.76
☐	Q	6.45	2CXO J004244.2+411613	00 42 44.28	+41 16 13.92	0.29	0.29	55.7	26.17
☐	Q	6.55	2CXO J004243.8+411603	00 42 43.86	+41 16 03.77	0.29	0.29	86.9	50.79
☐	Q	6.70	2CXO J004243.8+411611	00 42 43.83	+41 16 11.12	0.29	0.29	0.0	15.08
☐	Q	7.75	2CXO J004243.8+411612	00 42 43.81	+41 16 12.49	0.30	0.30	19.2	25.56
☐	Q	10.67	2CXO J004245.2+411611	00 42 45.22	+41 16 11.06	0.29	0.29	0.0	37.02
☐	Q	11.20	2CXO J004244.6+411618	00 42 44.66	+41 16 18.06	0.29	0.29	0.0	50.71
☐	Q	11.99	2CXO J004244.1+411619	00 42 44.15	+41 16 19.31	0.30	0.30	0.0	13.57
☐	Q	13.77	2CXO J004246.3+411614X	00 42 45.40	+41 16 00.87	4.88	4.88	0.0	305.98
☐	Q	14.16	2CXO J004245.5+411608	00 42 45.59	+41 16 08.54	0.29	0.29	0.0	51.63
☐	Q	14.20	2CXO J004243.1+411603	00 42 43.11	+41 16 03.92	0.30	0.30	81.0	15.17
☐	Q	16.60	2CXO J004245.1+411621	00 42 45.11	+41 16 21.62	0.29	0.29	0.0	92.85
☐	Q	19.02	2CXO J004242.7+411614	00 42 42.77	+41 16 14.61	0.31	0.31	53.3	9.53
☐	Q	20.42	2CXO J004245.7+411554	00 42 45.73	+41 15 54.47	0.31	0.31	0.0	21.23
☐	Q	22.21	2CXO J004245.9+411619	00 42 45.99	+41 16 19.53	0.29	0.29	83.4	33.74
☐	Q	22.37	2CXO J004243.8+411629	00 42 43.80	+41 16 29.05	0.29	0.29	11.7	23.83
☐	Q	22.74	2CXO J004243.8+411629A	00 42 43.88	+41 16 29.67	0.29	0.29	0.0	42.99

Product Type	Product Specifier	Format	Description
Bayesian Blocks source propert...	bayesblks	FITS table	Bayesian Blocks source properties
Stack Source Region Image	stkregimg_b	FITS image	Per-energy-band background-subtracted, exposure corrected images (photons/s/cm^2); ACIS broad energy band
Stack Source Region Image	stkregimg_w	FITS image	Per-energy-band background-subtracted, exposure corrected images (photons/s/cm^2); HRC wide energy band

Search completed

CSCview

File Edit View Tools Help

Search Stop New Open Save Send Download Script

Chandra Source Catalog: Release 2.1

Catalog Query Results Products

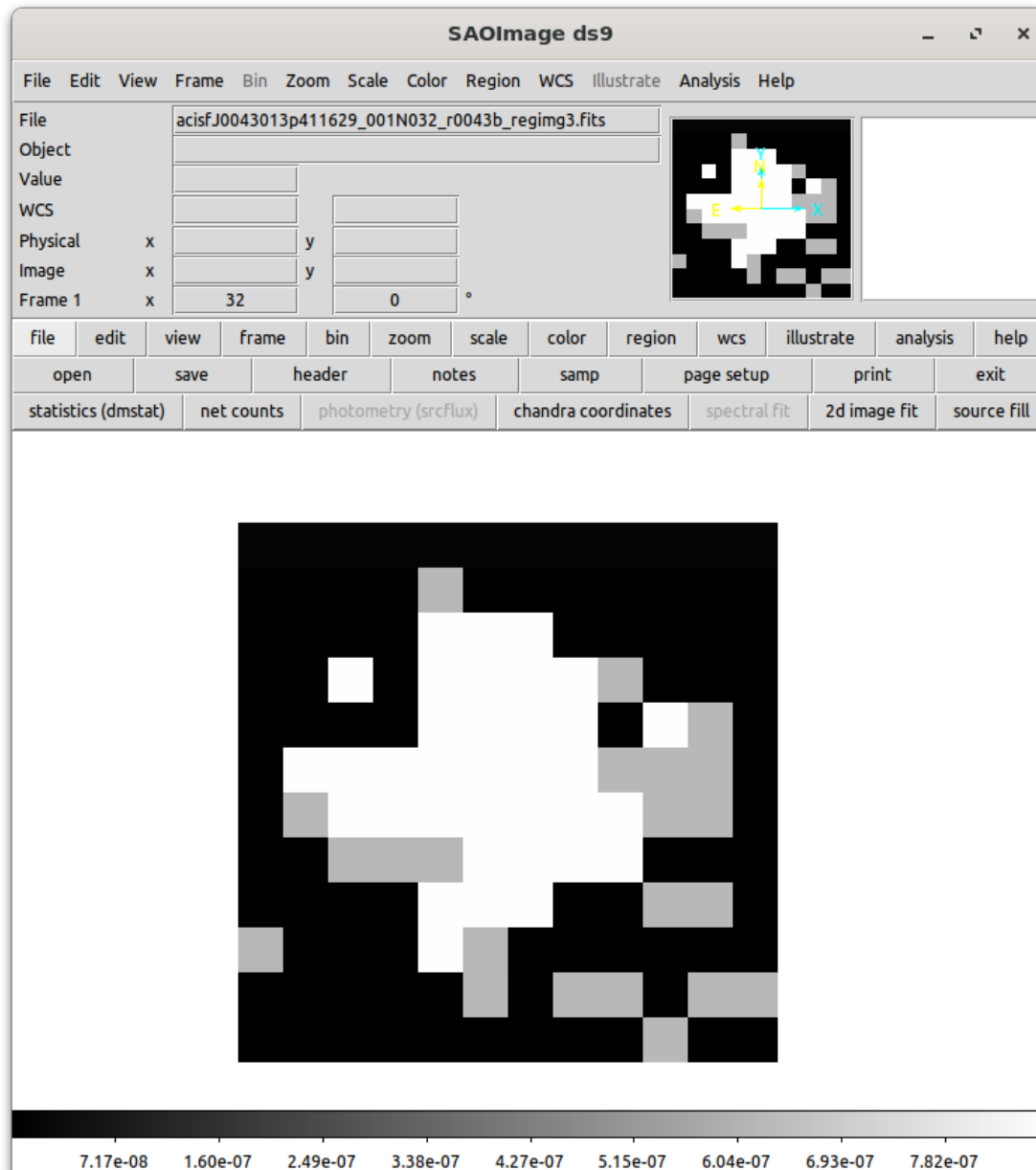
Select all

1 file selected: 97,920 bytes

29 files found

Select	Name	Size (bytes)	Product	Format
☐	acisf0043258p411914_001N032_r0023b_regimg3.jpg	129,669	Stack Source Region Image	JPEG image
☐	acisf0043258p411914_001N032_r0023b_regimg3.fits	233,280	Stack Source Region Image	FITS image
☐	acisf0043091p411905_001N032_r0031b_regimg3.jpg	50,106	Stack Source Region Image	JPEG image
☐	acisf0043013p411629_001N032_r0043b_regimg3.jpg	50,860	Stack Source Region Image	JPEG image
☐	acisf0042454p411652_001N032_r0312b_regimg3.jpg	55,809	Stack Source Region Image	JPEG image
☐	acisf0042432p411544_002N032_r0569b_regimg3.jpg	133,585	Stack Source Region Image	JPEG image
☐	acisf0042455p411524_001N032_r0233b_regimg3.jpg	55,903	Stack Source Region Image	JPEG image
☐	acisf0042433p411643_001N032_r0501b_regimg3.jpg	52,456	Stack Source Region Image	JPEG image
☐	acisf0043091p411905_001N032_r0031b_regimg3.fits	100,800	Stack Source Region Image	FITS image
☒	acisf0043013p411629_001N032_r0043b_regimg3.fits	97,920	Stack Source Region Image	FITS image
☐	acisf0042454p411652_001N032_r0312b_regimg3.fits	218,880	Stack Source Region Image	FITS image
☐	acisf0042432p411544_002N032_r0569b_regimg3.fits	1,347,840	Stack Source Region Image	FITS image
☐	acisf0042455p411524_001N032_r0233b_regimg3.fits	184,320	Stack Source Region Image	FITS image
☐	acisf0042433p411643_001N032_r0501b_regimg3.fits	302,400	Stack Source Region Image	FITS image
☐	hrcf0042441p411559_001N032_r0136w_regimg3.jpg	43,958	Stack Source Region Image	JPEG image
☐	hrcf0042527p413055_001N032_r0439w_regimg3.jpg	43,408	Stack Source Region Image	JPEG image
☐	acisf0042494p411629_001N032_r0521b_regimg3.jpg	50,703	Stack Source Region Image	JPEG image
☐	acisf0041501p410331_001N032_r0269b_regimg3.jpg	59,234	Stack Source Region Image	JPEG image
☐	acisf0043056p411710_001N032_r0581b_regimg3.jpg	49,410	Stack Source Region Image	JPEG image
☐	acisf0042460p411550_001N032_r0437b_regimg3.jpg	55,658	Stack Source Region Image	JPEG image
☐	acisf0042424p411621_002N032_r1013b_regimg3.jpg	139,980	Stack Source Region Image	JPEG image
☐	hrcf0042441p411559_001N032_r0136w_regimg3.fits	69,120	Stack Source Region Image	FITS image
☐	hrcf0042527p413055_001N032_r0439w_regimg3.fits	411,840	Stack Source Region Image	FITS image
☐	acisf0042494p411629_001N032_r0521b_regimg3.fits	115,200	Stack Source Region Image	FITS image
☐	acisf0041501p410331_001N032_r0269b_regimg3.fits	279,360	Stack Source Region Image	FITS image
☐	acisf0043056p411710_001N032_r0581b_regimg3.fits	97,920	Stack Source Region Image	FITS image
☐	acisf0042460p411550_001N032_r0437b_regimg3.fits	872,640	Stack Source Region Image	FITS image
☐	acisf0042424p411621_002N032_r1013b_regimg3.fits	1,889,280	Stack Source Region Image	FITS image
☐	2CXOJ0042443p411608AN027_blocks3.fits	564,480	Bayesian Blocks source properties	FITS table

Search completed



**Insert “Success Kid”
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