

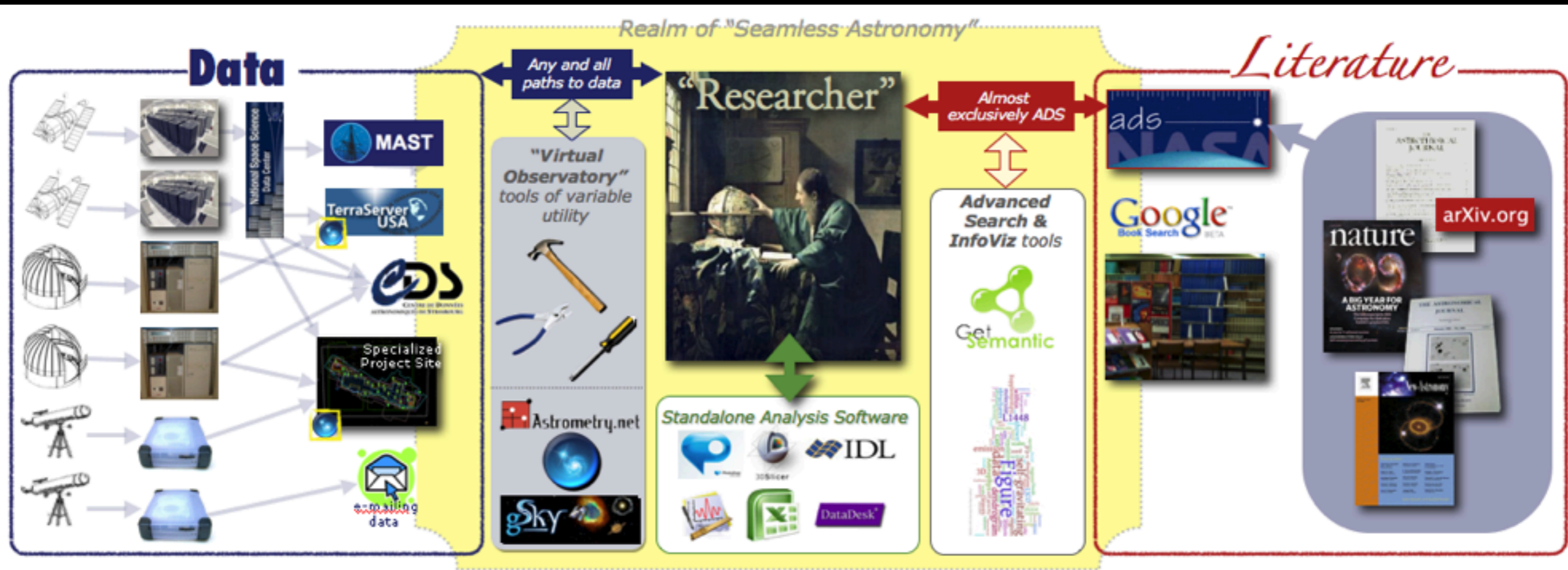
Evermore Seamless Astronomy

Alyssa A. Goodman

Harvard-Smithsonian Center for Astrophysics

with Alberto Accomazzi, Douglas Burke, Gus Muench & Michael Kurtz
(Harvard-Smithsonian CfA); Eli Bressert (U. Exeter); Tim Clark
(Massachusetts General Hospital/Harvard Medical School); Chris
Borgman (UCLA); Jonathan Fay & Curtis Wong (Microsoft Research)

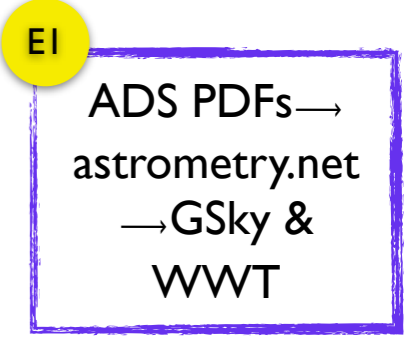
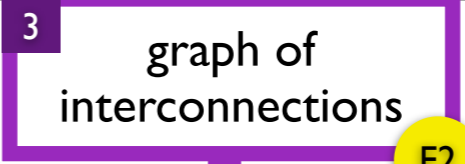
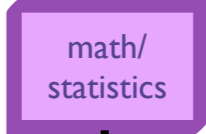
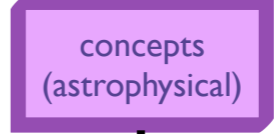
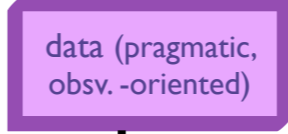
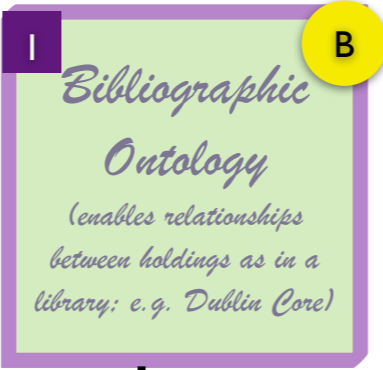
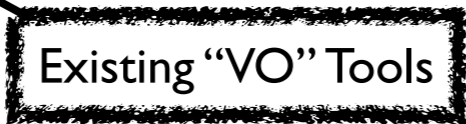
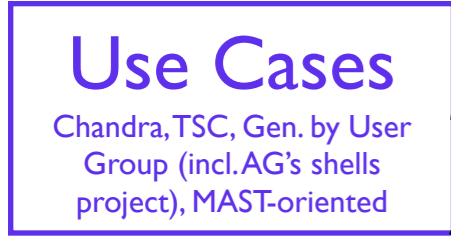
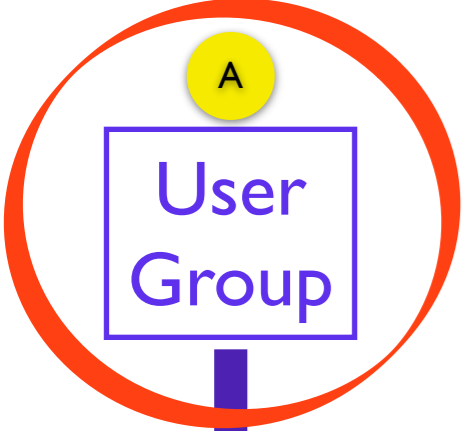
Realm of Seamless Astronomy



Does VAO cover the whole box?

Discourse Ontology

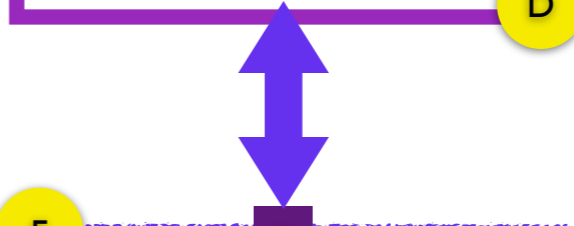
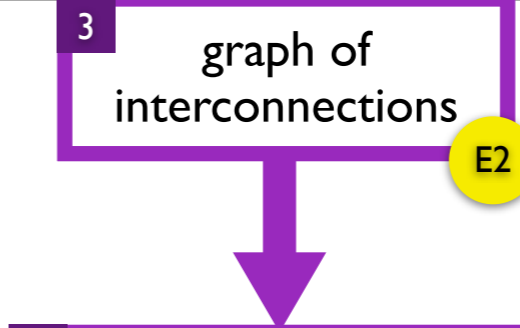
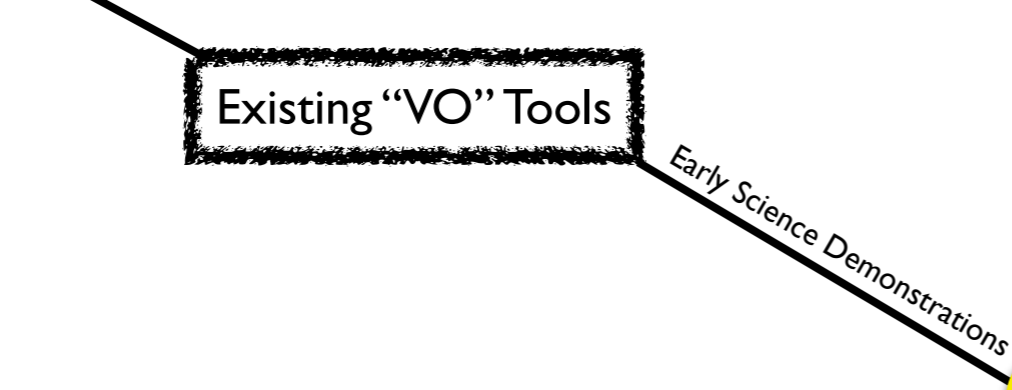
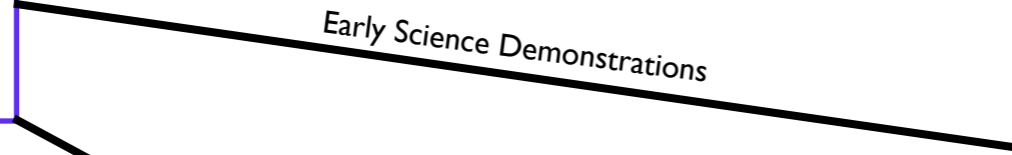
Workflow Ontology
(e.g. myexperiment)



Disclaimer: I will only show some of what Arnold was talking about...

Early Science Demonstrations

Early Science Demonstrations



Astronomy research tools should work
as seamlessly as travel research tools.

Astronomy research tools should work as seamlessly as travel research tools.

When the concept of a "**Virtual Observatory**" (**VO**) was first discussed by future-looking astronomers in the mid-1990s, all thoughts were about **distributed data** and a **common system** to access it. But, information access on today's web primarily works in the **reverse**: **distributed tools** accessing **common data centers**. Capability and ease-of-use improvements to the web typically now come in the form of **nesting, aggregating or connecting tools**. Think **kayak.com**, iGoogle, or Bing Maps. In the "Seamless Astronomy" view to be discussed, today's "VO" should be thought of as the **ever-improving set of data archives, tools, interconnections**, and **standards** that strive to make astronomical research as "seamless" as travel research. The good news is that the cutting-edge of the astronomical research environment is moving rapidly in this seamless direction. The most savvy institutions are beginning to realize that the original VO model of data distributed on thousands of individual researchers' desktop hard drives is not a sustainable model, and that they need to offer **data hosting, archiving, and stewardship** services the way libraries offer such services for printed matter. **Software tools** are becoming much more **interoperable** thanks to protocols for message-passing such as "**SAMP**." And, the improved speed of **web applications** is to some extent removing platform-dependence as an obstacle to programmers and users alike. The bad news is that **most astronomers are largely unaware** of the tools that this new nirvana offers, and instead still conduct online research in the same way they did a decade ago. In this talk, I will focus in particular on how our recent work on connecting Microsoft's **WorldWide Telescope** program to other commonly-used astronomical research tools--most notably literature searching tools--has made the astronomical research environment more seamless. More generally, I will emphasize and demonstrate that an **ever-increasing diversity of tools** allow researchers to carry out a particular research task, so that the **important research** for the future lies in figuring out **how to make the tools, their interconnections, and their connections to data and literature resources useful and well-known to the astronomical community**.

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[2010ApJ...713..269F](#): Federrath,- Collapse and Accretion in Turbulent Molecular Clouds: Implementation and Comparison with Sink Particles in AMR and SPH

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[2010A&A...511A..90B](#): Breddels,+ Distance determination for RAVE stars using stellar

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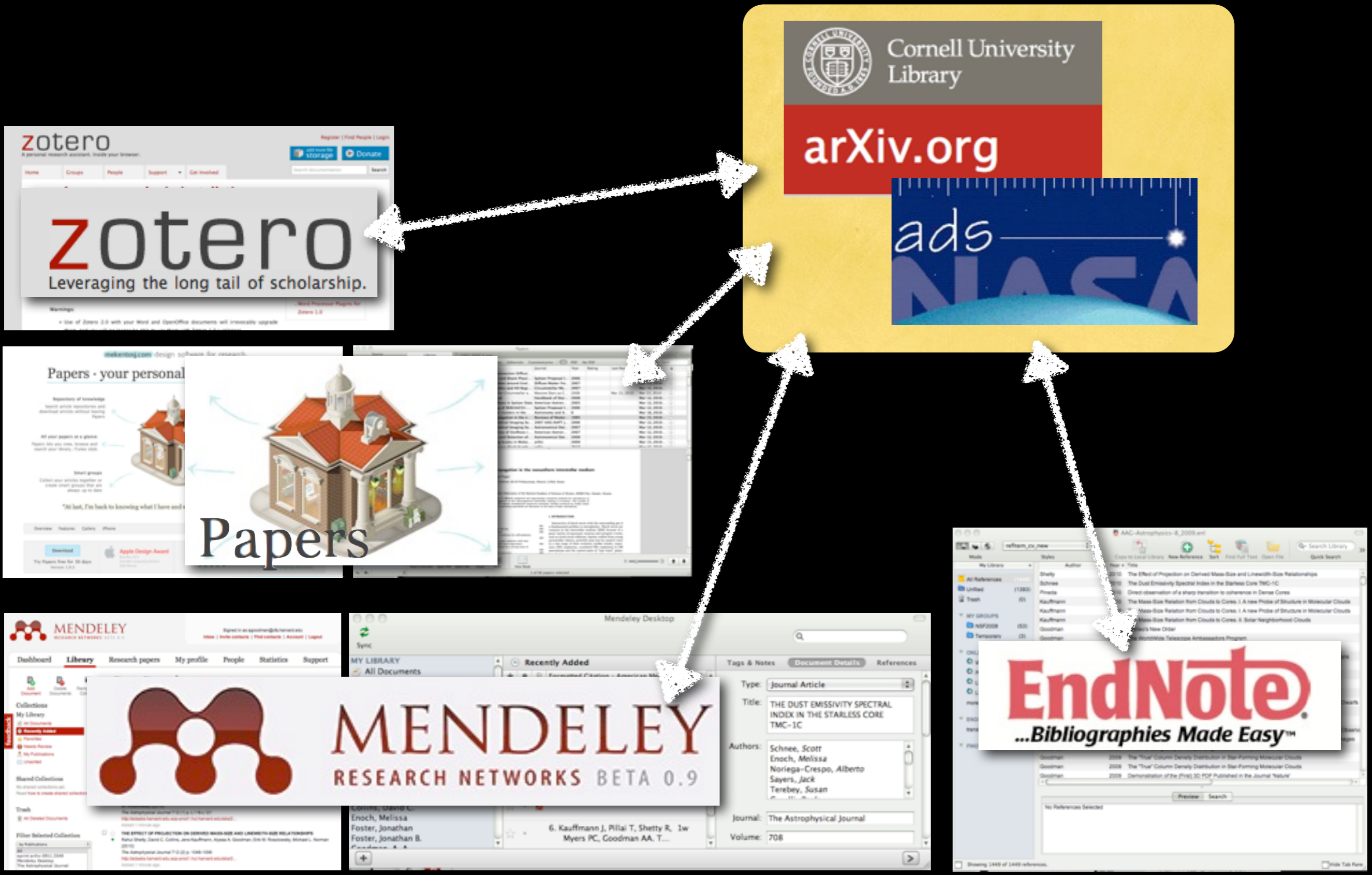
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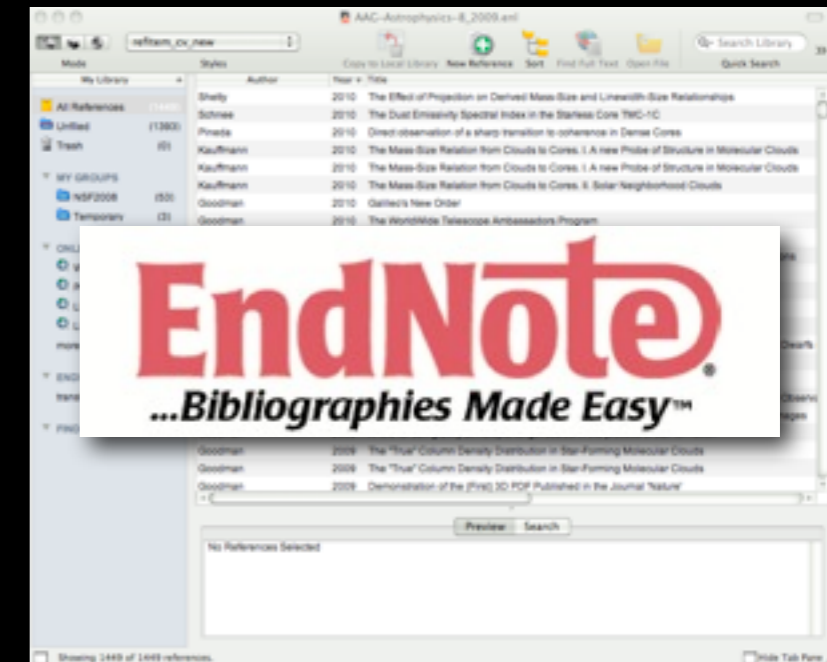
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We're getting there...

Literature Handling: *Diverse Apps, Common Data*



What fraction of astronomy researchers know about these tools?



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[34] [arXiv:1003.4900 \[pdf\]](#)

Star-forming gas in young clusters

[Philip C. Myers](#)

Comments: To appear in Astrophysical Journal, May 2010

Subjects: Galaxy Astrophysics (astro-ph.GA)

Initial conditions for star formation in clusters are estimated for protostars whose masses follow the initial mass function (IMF) from 0.05 to 10 solar masses. Star-forming infall is assumed equally likely to stop at any moment, due to gas dispersal dominated by stellar feedback. For spherical infall, the typical initial condensation must have a steep density gradient, as in low-mass cores, surrounded by a shallower gradient, as in the clumps around cores. These properties match observed column densities in cluster-forming regions when the mean infall stopping time is 0.05 Myr and the accretion efficiency is 0.5. The infall duration increases with final protostar mass, from 0.01 to 0.3 Myr, and the mass accretion rate increases from 3 to $300 \times 10^{(-6)}$ solar masses/yr. The typical spherical accretion luminosity is ~ 5 solar luminosities, reducing the luminosity problem to a factor ~ 3 . The initial condensation density gradient changes from steep to shallow at radius 0.04 pc, enclosing 0.9 solar masses, with mean column density $2 \times 10^{(22)}$ $\text{cm}^{(-2)}$, and with effective central temperature 16 K. These initial conditions are denser and warmer than those for isolated star formation.

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#	Bibcode	Score	Date	List of Authors	Title	A	E	F	X	R	C	c	S	U
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2	<input type="checkbox"/> 1999NewAR..43...31F	18.000	May 1999	Frank, A.	Bipolar outflows and the evolution of stars									
3	<input type="checkbox"/> 2007ARA&A..45..177C	13.000	Sep 2007	Crowther, Paul A.	Physical Properties of Wolf-Rayet Stars				X					
4	<input type="checkbox"/> 2002ARA&A..40..439B	13.000	n/a 2002	Balick, Bruce; Frank, Adam	Shapes and Shaping of Planetary Nebulae									
5	<input type="checkbox"/> 2008A&ARv..16..209P	12.000	Dec 2008	Puls, Joachim; Vink, Jorick S.; Najarro, Francisco	Mass loss from hot massive stars				X					
6	<input type="checkbox"/> 2005ApJ...631..435R	12.000	Sep 2005	Ramirez-Ruiz, Enrico; García-Segura, Guillermo; Salmonson, Jay D.; Pérez-Rendón, Brenda	The State of the Circumstellar Medium Surrounding Gamma-Ray Burst Sources and Its Effect on the Afterglow Appearance				X					
7	<input type="checkbox"/> 1992ARA&A..30..235C	12.000	n/a 1992	Chiosi, Cesare; Bertelli, Gianpaolo; Bressan, Alessandro	New developments in understanding the HR di									



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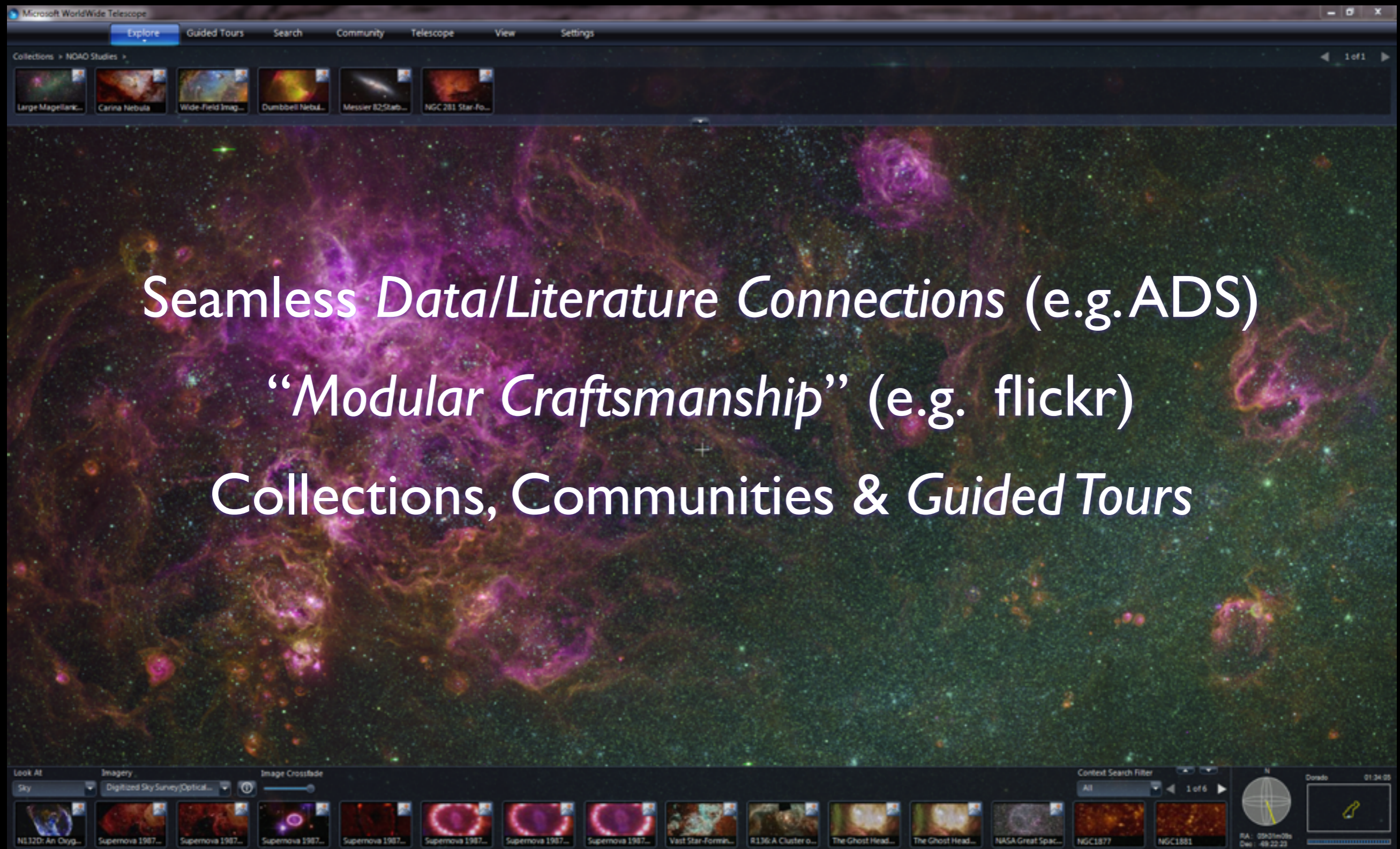
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“WorldWide Telescope”: a UIS from Microsoft Research [UIS=Universe Information System]



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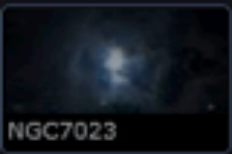
J2000

RA

Dec

Go


1 of 2



NGC7023



Finder Scope



Classification:
Reflection Nebula
in Cepheus

NGC 7023

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Dec:	68 : 10 : 11	Distance:	n/a
Alt:	30 : 55 : 38	Rise:	Circumpolar
Az:	341 : 36 : 56	Transit:	Circumpolar
		Set:	Circumpolar

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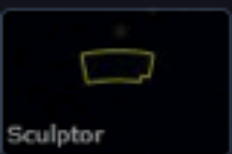
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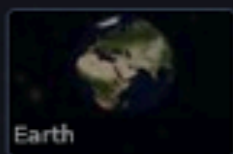
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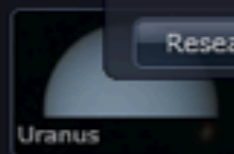
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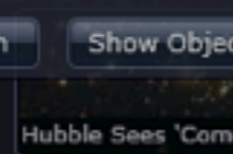
Sculptor



Earth



Uranus



Hubble Sees 'Coma'



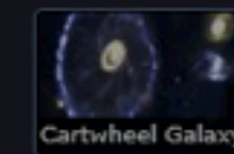
NGC 300



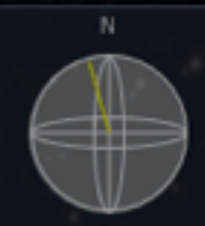
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Cartwheel Galaxy

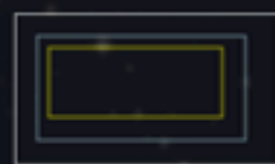


Cartwheel Galaxy



RA : 21h01m36s

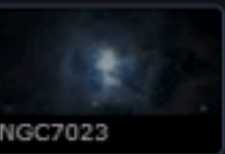
Cepheus 00:14:04



1 of 23

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ngc 7023 Plot Results VO Search J2000 RA Dec Go 1 of 2



NGC7023



Finder Scope



Classification:
Reflection Nebula
in Cepheus

NGC 7023

RA: 21h01m36s Magnitude: n/a
Dec: 68 : 10 : 11 Distance: n/a
Alt: 30 : 53 : 38 Rise: Circumpolar

Name: NGC 7023

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Sculptor Earth Uranus

1 of 23

Cepheus 00:1

RA : 21h01m36s
Dec : 68:10:11

Sculptor Galaxy Cartwheel Galaxy Cartwheel Galaxy

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ngc 7023

Plot Results

VO Search

J2000

RA

Dec

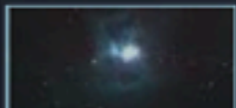
Go

1 of 2

NGC7023



Finder Scope



Classification:
Reflection Nebula
in Cepheus

NGC 7023

RA: 21h01m36s Magnitude: n/a
Dec: 68 : 10 : 11 Distance: n/a
Alt: 30 : 53 : 38 Rise: Circumpolar

Az: 341.5 Alt: 30.9 Az: 341.5 Alt: 30.9
Set: 10:00 Set: 10:00

- Name: NGC 7023
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Look At

Imagery

Sky

Digitized Sky Survey (Optical)

Sculptor

Earth

Uranus

Properties

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1 of 23



Cepheus

00:1

RA : 21h01m36s
Dec : 68:10:11

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Basic data :

NGC 7023 -- Open (galactic) Cluster

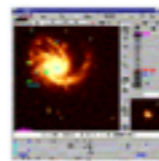
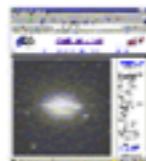
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 ICRS coord. (ep=2000): **21 01 36.9 +68 09 48 (-) [- - -] D -**
 FK5 coord. (ep=2000 eq=2000): **21 01 36.9 +68 09 48 (-) [- - -] D -**
104.0616 +14.1926 (-) [- - -] D -
 Fluxes (I): **B 7.20 [-] D -**

Identifiers (11) :

NGC 7023	IRAS 20599+6755	LBN 487	IBDB20031 G104.06+14.19
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C1 VDB 139	LBN 104.08+14.21	OCl 235	

Plots and Images

 radius arcmin


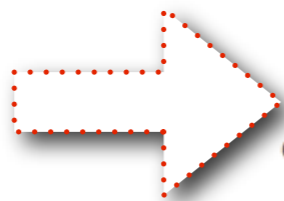
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(courtesy of Michael Kurtz & Alberto Accomazzi)*

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- [NGC 7714 \(7\)](#)
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- [NGC 292 \(5\)](#)
- [NAME RHO OPH REGION \(5\)](#)
- [NAME LMC \(5\)](#)
- [MCG+10-14-025 \(5\)](#)
- [4C 47.36A \(5\)](#)
- [VV 65 \(4\)](#)
- [SBSG 0335-052 \(4\)](#)
- [QSO B2300+086 \(4\)](#)
- [NGC 7331 \(4\)](#)
- [NGC 4151 \(4\)](#)
- [NGC 1808 \(4\)](#)
- [NGC 1097 \(4\)](#)
- [NAME CAMPBELL'S HYDROGEN STAR \(4\)](#)
- [Mrk 273 \(4\)](#)
- [M 81 \(4\)](#)
- [M 42 \(4\)](#)
- [GSC 02342-00359 \(4\)](#)
- [\[KIB2003\] G29.957-0.018 \(3\)](#)
- [\[KIB2003\] G23.955+0.150 \(3\)](#)

#	Bibcode	Score	Date	List of Links	Access Control Help
1	<input type="checkbox"/> 2007ApJ...657..810D Draine, B. T.; Li, Aigen	100.000	Mar 2007	A E F X	R C c S N O U
2	<input type="checkbox"/> 2007ApJ...663..866D Draine, B. T.; Dale, D. A.; Bendo, G.; Gordon, K. D.; Smith, J. D. T.; Armus, L.; Engelbracht, C. W.; Helou, G.; Kennicutt, R. C., Jr.; Li, A.; and 10 coauthors	96.842	Jul 2007	A E F X	R C c S N U
3	<input type="checkbox"/> 2007ApJ...654L..49S Spoon, H. W. W.; Marshall, J. A.; Houck, J. R.; Elitzur, M.; Hao, L.; Armus, L.; Brandl, B. R.; Charmandaris, V.	95.232	Jan 2007	A E F X	R C c S N U
4	<input type="checkbox"/> 2005ApJ...628L..29E Engelbracht, C. W.; Gordon, K. D.; Rieke, G. H.; Werner, M. W.; Dale, D. A.; Latter, W. B.	95.090	Jul 2005	A E F X	R C c S N U

Open "http://www.worldwidetelescope.org/wwtweb/goto.aspx?object=NGC%20%207023&ra=21.026913&dec=58.163300" in a new window

list of objects with links to WWT browser
(thanks to ADS team & Jonathan Fay)

And now we got to NGC 7023 by using the literature as a filter.

The screenshot displays the Microsoft WorldWide Telescope Web Client interface. At the top, the browser address bar shows the URL <http://www.worldwidetelescope.org/webclient/default.aspx?wtml=http%3a%2f%2f>. The navigation menu includes 'Explore', 'Guided Tours', 'Search', 'View', and 'Settings'. Below the menu, a breadcrumb trail reads 'Collections > Open Collections > Link Collection >'. A small thumbnail of NGC 7023 is visible in the top left corner, labeled 'NGC 7023'. The main viewing area shows a large, detailed image of the star cluster NGC 7023, which is a bright, blue, multi-colored star cluster. The bottom control panel features a 'Look At' dropdown set to 'Sky', an 'Imagery' dropdown set to 'Digitized Sky Survey (Optical)', and an 'Info' icon. Below these are three thumbnails: 'Cepheus', 'NGC 7023', and 'NGC7023'. On the right side of the control panel, there is a '1 of 1' indicator, a compass rose, and a map of the constellation Cepheus with a yellow box indicating the location of NGC 7023. The coordinates for NGC 7023 are displayed as RA : 21h01m37s and Dec : 68:09:48. The bottom left corner of the interface shows the text 'Done'.

NEWSROOM

- Press Releases
 - Chronological
 - By Subject
 - Outside Institutions
- What's Happening Archive
- Visuals
 - Image Use Policy
- Update Notifications
 - Mailing List
 - RSS Feed (XML)
- References
 - Fast Facts
 - Press Kit (.pdf)
 - Fact Sheet (.pdf)
 - Field Guides
 - Glossary
- Media Contacts

INTRODUCTION PRESS RELEASE VISUALS QUICK FACTS



Embedded Outflow in HH 46/47 Spitzer Space Telescope • IRAC
NASA / JPL-Caltech / A. Noriega-Crespo (SSC/Caltech) ssc2003-06f

Credit: NASA/JPL-Caltech/A. Noriega-Crespo (SSC/Caltech), Digital Sky Survey

HH46/47

This image from NASA's Spitzer Space Telescope transforms a dark cloud into a silky translucent veil, revealing the molecular outflow from an otherwise hidden newborn star. Using near-infrared light, Spitzer pierces through the dark cloud to detect the embedded outflow in an object called HH 46/47. Herbig-Haro (HH) objects are bright, nebulous regions of gas and dust that are usually buried within dark clouds. They are formed when supersonic gas ejected from a forming protostar, or embryonic star, interacts with the surrounding interstellar medium. These young stars are often detected only in the infrared.

The Spitzer image was obtained with the infrared array camera. Emission at 3.6 microns is shown as blue, emission from 4.5 and 5.8 microns has been combined as green, and 8.0 micron emission is depicted as red.

HH 46/47 is a striking example of a low-mass protostar ejecting a jet and creating a bipolar or two-sided outflow. The central

Seamlessness
through...

flickr
+
astrometry.net
+
WWT !?

HH4647

Share This

- ADD NOTE
- SEND TO GROUP
- ADD TO SET
- BLOG THIS
- ALL SIZES
- ORDER PRINTS
- ROTATE
- EDIT PHOTO
- DELETE



Embedded Outflow in HH 46/47

Spitzer Space Telescope • IRAC

NASA / JPL-Caltech / A. Noriega-Crespo (SSC/Caltech)

Inset: visible light (DSS) bsc2003-06f

Uploaded on January 6, 2009 by Alyssa_Goodman

Alyssa_Goodman's photostream



16 uploads

browse

This photo also belongs to:

astrometry (Pool) x

Tags

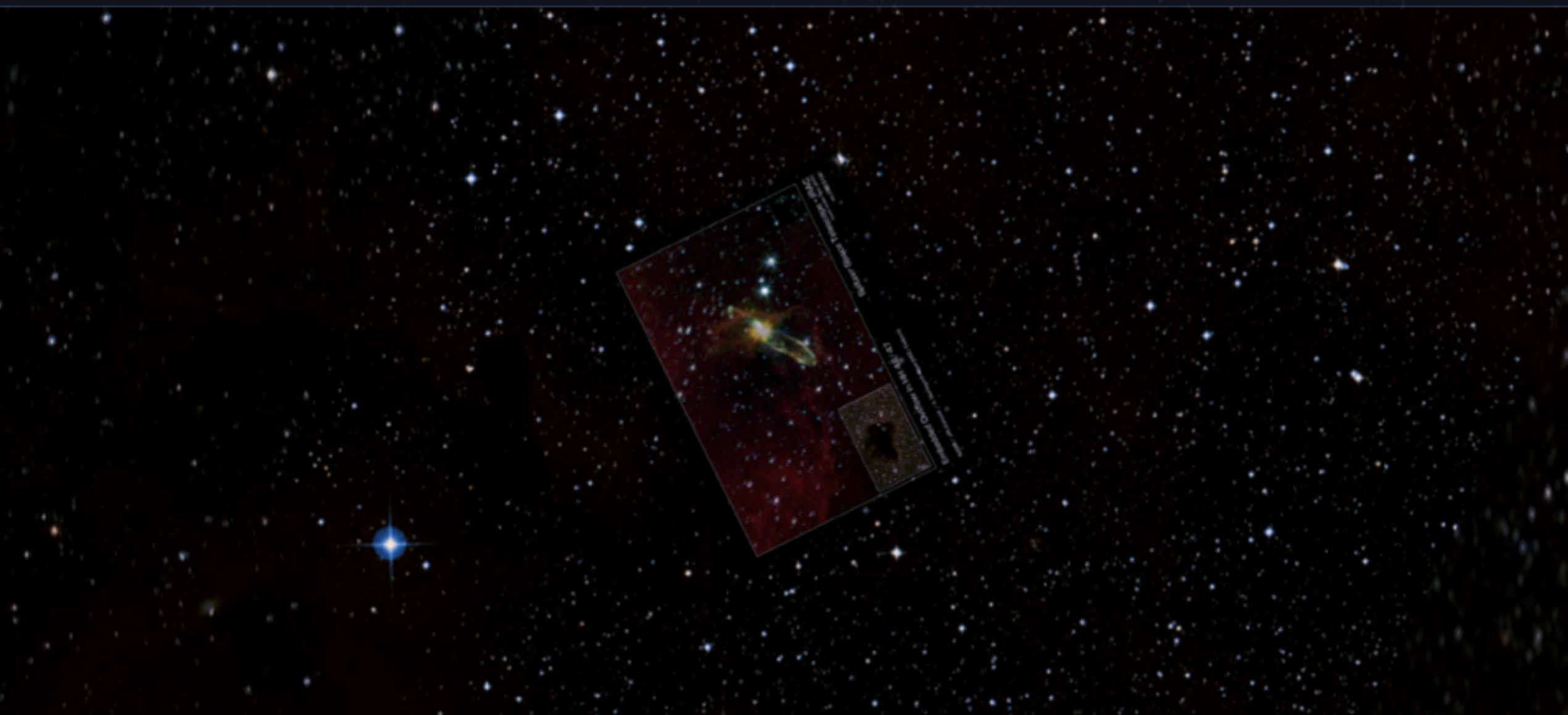
- Astrometrydotnet:version=10145 x
- Astrometrydotnet:id=alpha-200901-20629873 x
- Astrometrydotnet:status=solved x

Add a tag

Additional Information

- All rights reserved (edit)
- Anyone can see this photo (edit)
- Add to your map
- Taken on December 12, 2003 (edit)
- Photo stats
- Viewed 7 times (Not including you)
- Edit title, description, and tags

Flag your photo



Look At: Sky | Imagery: Digitized Sky Survey (Optical) | Info: ⓘ | Image Crossfade: [Slider]

Navigation: 1 of 1

Map: Vela 00:35:33

Coordinates: RA : 08h25m39s, Dec : -51:01:10

Thumbnail: Bubbly Little Star

Coming Soon from ADS (I hope!)

Historical Image Layer
Extracted from ALL
ADS holdings (using
astrometry.net)

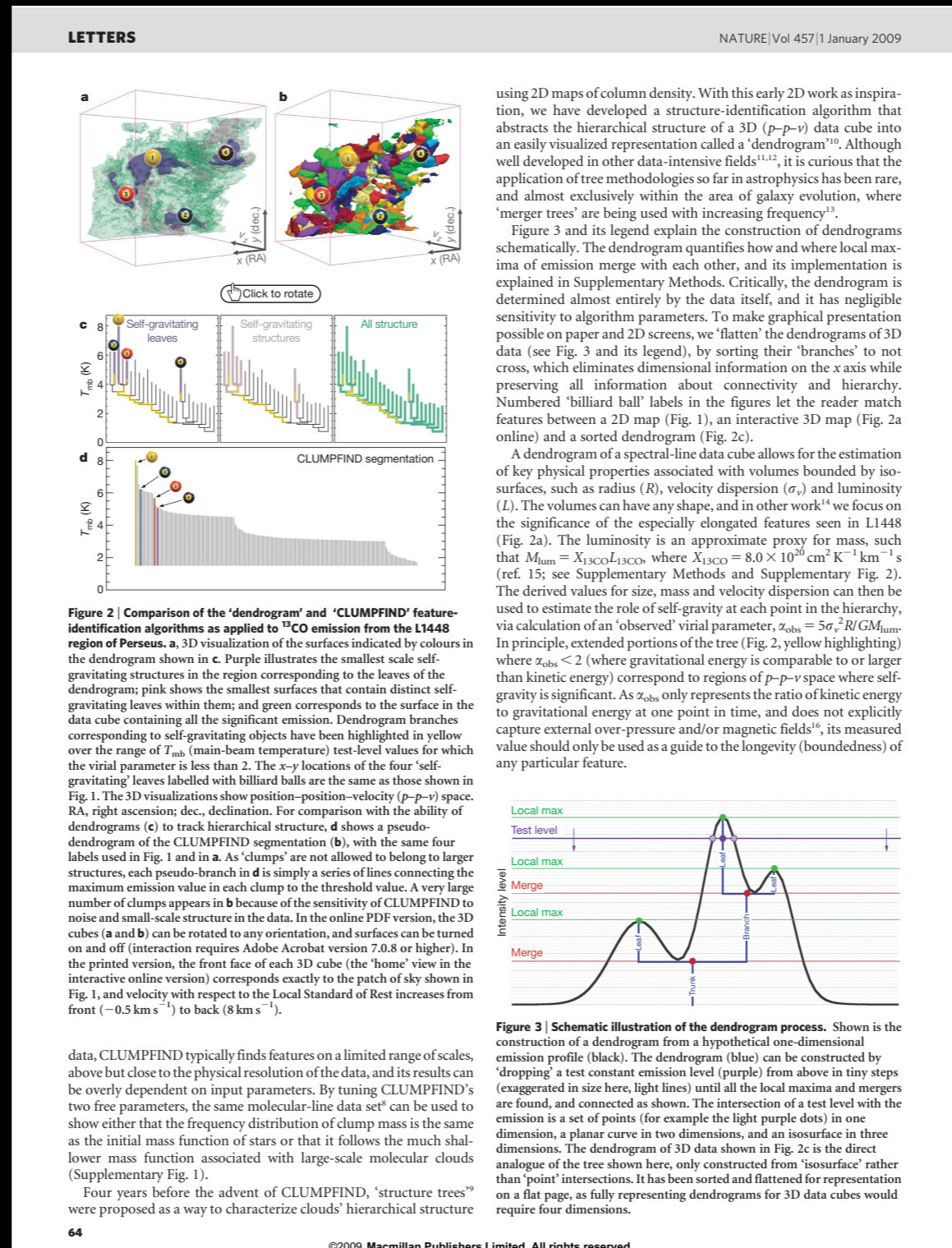


Faceted Heat
Map of Articles
on the Sky



The future is here... data *IN* articles

FYI... as per Eric's comments, this came from our "AstroMed" project am.iic.harvard.edu



using 2D maps of column density. With this early 2D work as inspiration, we have developed a structure-identification algorithm that abstracts the hierarchical structure of a 3D (p - p - v) data cube into an easily visualized representation called a 'dendrogram'¹⁰. Although well developed in other data-intensive fields^{11,12}, it is curious that the application of tree methodologies so far in astrophysics has been rare, and almost exclusively within the area of galaxy evolution, where 'merger trees' are being used with increasing frequency¹³.

Figure 3 and its legend explain the construction of dendrograms schematically. The dendrogram quantifies how and where local maxima of emission merge with each other, and its implementation is explained in Supplementary Methods. Critically, the dendrogram is determined almost entirely by the data itself, and it has negligible sensitivity to algorithm parameters. To make graphical presentation possible on paper and 2D screens, we 'flatten' the dendrograms of 3D data (see Fig. 3 and its legend), by sorting their 'branches' to not cross, which eliminates dimensional information on the x axis while preserving all information about connectivity and hierarchy. Numbered 'billiard ball' labels in the figures let the reader match features between a 2D map (Fig. 1), an interactive 3D map (Fig. 2a online) and a sorted dendrogram (Fig. 2c).

A dendrogram of a spectral-line data cube allows for the estimation of key physical properties associated with volumes bounded by isosurfaces, such as radius (R), velocity dispersion (σ_v) and luminosity (L). The volumes can have any shape, and in other work¹⁴ we focus on the significance of the especially elongated features seen in L1448 (Fig. 2a). The luminosity is an approximate proxy for mass, such that $M_{\text{lum}} = X_{13\text{CO}} L_{13\text{CO}}$, where $X_{13\text{CO}} = 8.0 \times 10^{20} \text{ cm}^{-2} \text{ K}^{-1} \text{ km}^{-1} \text{ s}$ (ref. 15; see Supplementary Methods and Supplementary Fig. 2). The derived values for size, mass and velocity dispersion can then be used to estimate the role of self-gravity at each point in the hierarchy, via calculation of an 'observed' virial parameter, $\alpha_{\text{obs}} = 5\sigma_v^2 R / GM_{\text{lum}}$. In principle, extended portions of the tree (Fig. 2, yellow highlighting) where $\alpha_{\text{obs}} < 2$ (where gravitational energy is comparable to or larger than kinetic energy) correspond to regions of p - p - v space where self-gravity is significant. As α_{obs} only represents the ratio of kinetic energy to gravitational energy at one point in time, and does not explicitly capture external over-pressure and/or magnetic fields¹⁶, its measured value should only be used as a guide to the longevity (boundedness) of any particular feature.

data, CLUMPFIND typically finds features on a limited range of scales, above but close to the physical resolution of the data, and its results can be overly dependent on input parameters. By tuning CLUMPFIND's two free parameters, the same molecular-line data set⁸ can be used to show either that the frequency distribution of clump mass is the same as the initial mass function of stars or that it follows the much shallower mass function associated with large-scale molecular clouds (Supplementary Fig. 1).

Four years before the advent of CLUMPFIND, 'structure trees'⁹ were proposed as a way to characterize clouds' hierarchical structure



How do we increase the fraction of astronomy researchers who know about these tools?



User Groups
(CfA now has one)



+Suggestions?!

WikiBooks

The image shows a screenshot of the WikiBooks website. The top left features the WikiBooks logo with the tagline "Open books for an open world". The main content area is split into two columns. The left column displays the "General Astronomy" book page, which includes a navigation menu, a search box, and a table of contents. The right column displays the "Aladin Sky Atlas" article page, which includes a description of the software, a screenshot of the Aladin interface, and external links. The top right of the page has a navigation bar with links like "Try Beta", "Aage", "my task", "my preferences", "my watchlist", "my contributions", and "log out".

General Astronomy
From Wikibooks, the open-content textbooks collection

Astronomy is the scientific study of celestial bodies and the underlying physical processes that govern their formation and evolution. In some sense one of the oldest of the sciences, having been practiced by even very ancient civilizations, it has been modernized of the sciences, having in technology and the rise of space technology has dramatically improved. It reveals a richer tapestry than had been known, and the advanced student to that tapestry and the process of presenting astronomy not only as a human endeavor in science.

Table of Contents

1. The Modern View of the Cosmos
 1. The Big Picture
 2. Short History of the Universe
 3. Scientific Notation
 4. The Scientific Method
 5. What People do in Astronomy
 6. Current Unsolved Mysteries
2. Observational Astronomy
 1. The Celestial Sphere
 2. Coordinate Systems
 3. Phases of the Moon
 4. Eclipses
 5. Daily Motions

Aladin Sky Atlas
From Wikipedia, the free encyclopedia

Aladin is an interactive software sky atlas allowing the user to visualize digitized astronomical images, superimpose entries from astronomical catalogues or databases, and interactively access related data and information from the SIMBAD database, the VizieR service and other archives for all known sources in the field.

Created in 1999, **Aladin** has become a widely-used VO portal capable of addressing challenges such as locating data of interest, accessing and exploring distributed datasets, visualizing multi-wavelength data. Compliance with existing or emerging VO standards, interconnection with other visualisation or analysis tools, ability to easily compare heterogeneous data are key topics allowing **Aladin** to be a powerful data exploration and integration tool as well as a science enabler.

Aladin is developed and maintained by the Centre de Données astronomiques de Strasbourg (CDG).

See also

- Centre national de la recherche scientifique
- Observatory of Strasbourg
- SKY-MAP.ORG
- Stellarium

External links

- The Aladin Sky Atlas home page
- The ALADIN interactive sky atlas. A reference tool for identification of astronomical sources. *Astron. Astrophys., Suppl. Ser.*, 143, 33-40 (2000) - 05.04.00 10.04.00 April(!) 2000


This astronomy-related article is a stub. You can help Wikipedia by expanding it.

This scientific software article is a stub. You can help Wikipedia by expanding it.

Screenshot of Aladin displaying a star cluster.

Astronomy portal

Wikiversity has learning materials about Aladin Sky Atlas at: [Observational astronomy](#)

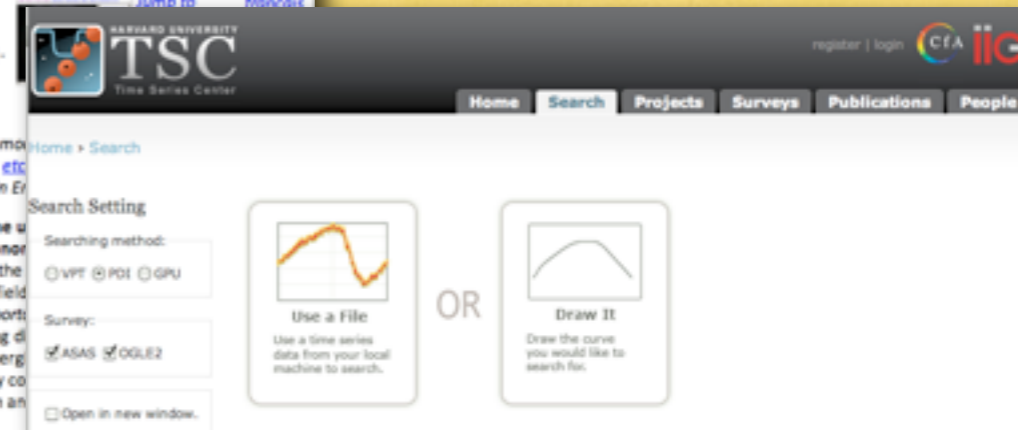




User Groups (CfA now has one)



oGrid is the doorw
ple astronomers to
OSpace, query dat
automate sequences



How do we increase the number of people who create and interlink new tools?

Kiva model.. with VAO funding?



“Associates”?

How do we organize such diverse tools, so as to make them interoperably useful?....

“SAMP” is a great technical start, but offers a very significant user interface challenge.

Top Stories

- [Obama Promotes New Health Care Law](#)
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- [Waste issue hurting US nuclear revival-panel](#)
Reuters - [all 92 related »](#)
- [Dems, GOP Trade Accusations of Politically Exploiting Threats](#)
FOXNews - [all 900 related »](#)
- [Pope accountable for hiding priest abuses: U.S. victim](#)
Reuters - [all 1832 related »](#)
- [NYPD: Powder sent to Congressman non-hazardous](#)
The Associated Press - [all 158 related »](#)

Gmail

Movies: 02421

Astronomy Picture Of the Day (APOD)

NGC 2442: Galaxy in Volans



[Distorted galaxy](#) NGC 2442 can be found in the southern constellation of the [flying fish](#), (Piscis) Volans. [Read More](#)

Facebook

Welcome, Alyssa Goodman [logout](#)



What's on your mind?

[Share](#)



Elissa Stein Cushman



"My Mom's On Facebook" Song Goes Viral

26

Toodledo - Your to-do list

Toodledo

[Add Task](#)

- [Hotlist](#)
- [Starred](#)
- [Folders](#)
- [Due-Dates](#)
- [Priorities](#)
- [Recently Completed](#)
- [All Tasks](#)
- [Settings](#)

Currency Converter

Weather

Cambridge, MA



58°F

Current: Mostly Cloudy
Wind: S at 11 mph
Humidity: 41%

Thu	Fri	Sat	Sun
65° 39°	39° 22°	41° 31°	50° 44°

College Park, MD



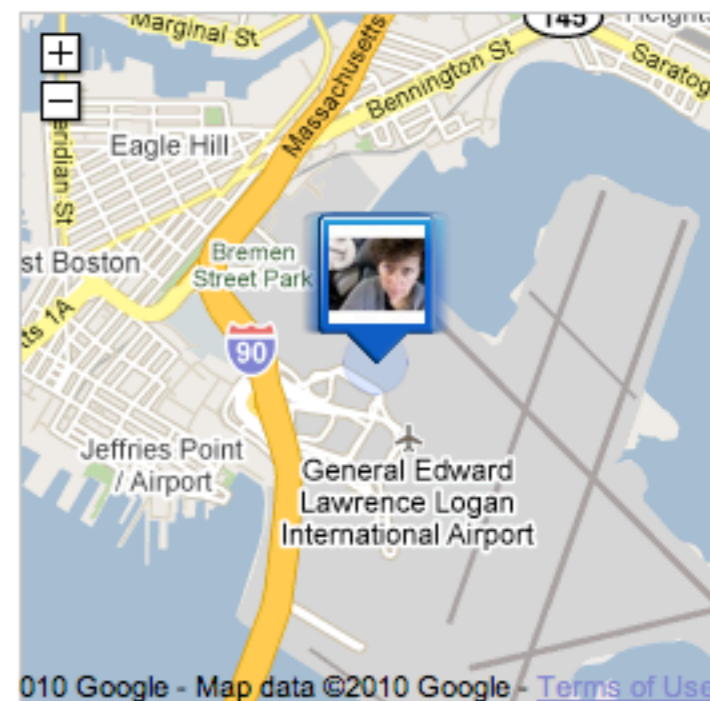
72°F

Current: Sunny
Wind: S at 11 mph
Humidity: 29%

Thu	Fri	Sat	Sun
74° 49°	49° 32°	52° 40°	59° 50°

Google Translate

Google Latitude



Seamless Astronomy

The interface is titled "AstroNavigator" and features a navigation bar with "Project 1", "Project 2", "Project 3", and "Edit" buttons. A "Literature Viewer" window is open, displaying a search result for "QSO MgII absorption lines observed" by Drinkwater and Webster. The result includes a large letter "A" and a description. To the right of the literature viewer is a "Data Viewer" showing a 3D visualization of a galaxy cluster with a central red region. Below the literature viewer is a "Data Viewer (e.g. WWT)" showing a large, colorful image of a galaxy. To the right of the data viewer is a "3D Dive Browser" showing a 3D model of a galaxy cluster. A "Figure" window is also visible, showing a plot of "Fraction of Emission in Self-gravitating Structures" versus "Scale (pc)". The plot compares "Simulation" (red circles) and "L1448" (blue squares) data. The simulation data shows a higher fraction of emission in self-gravitating structures at larger scales compared to the L1448 data.

Semantic Search

Literature Viewer

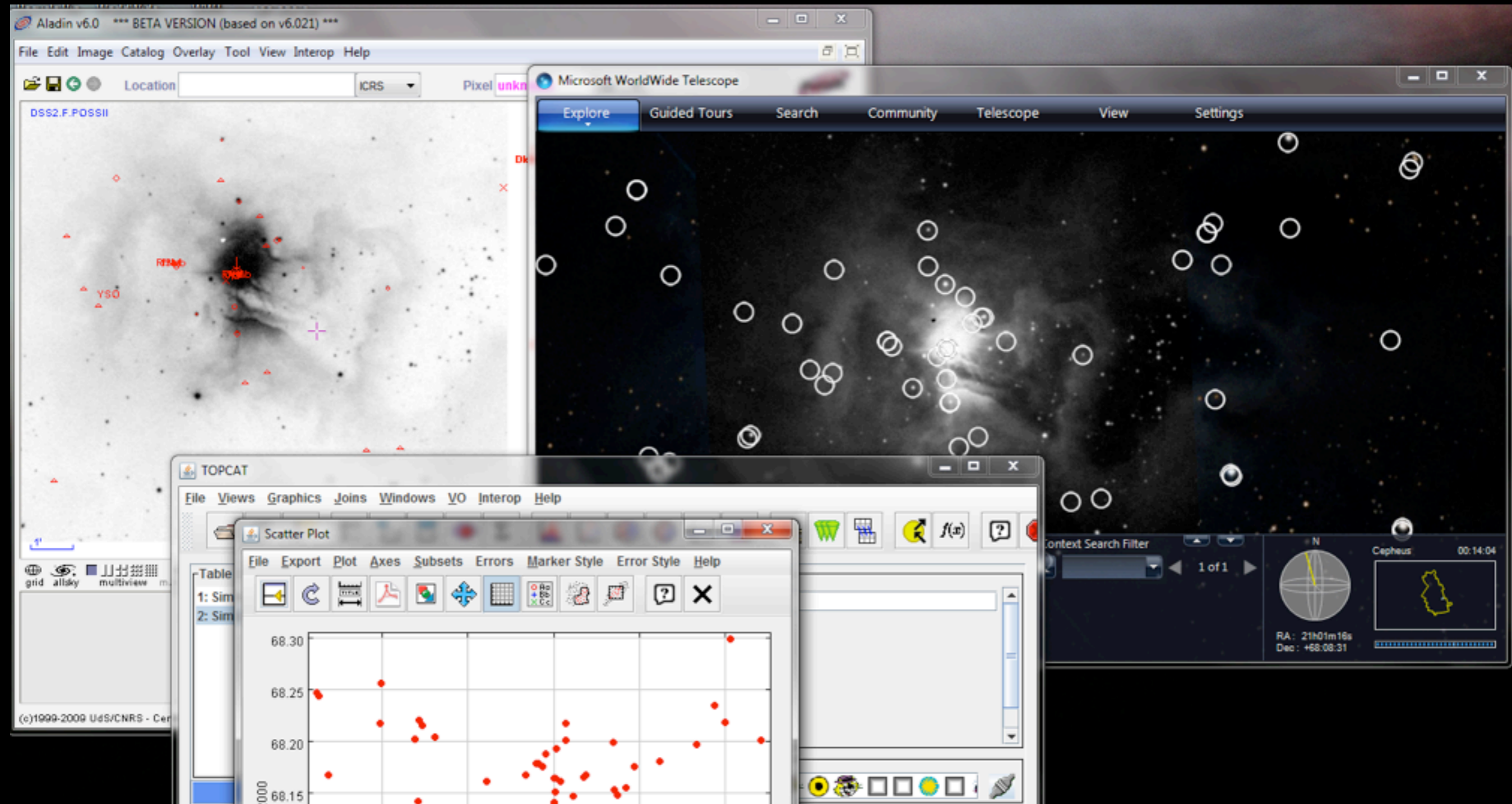
Info-Viz for Analytics Results

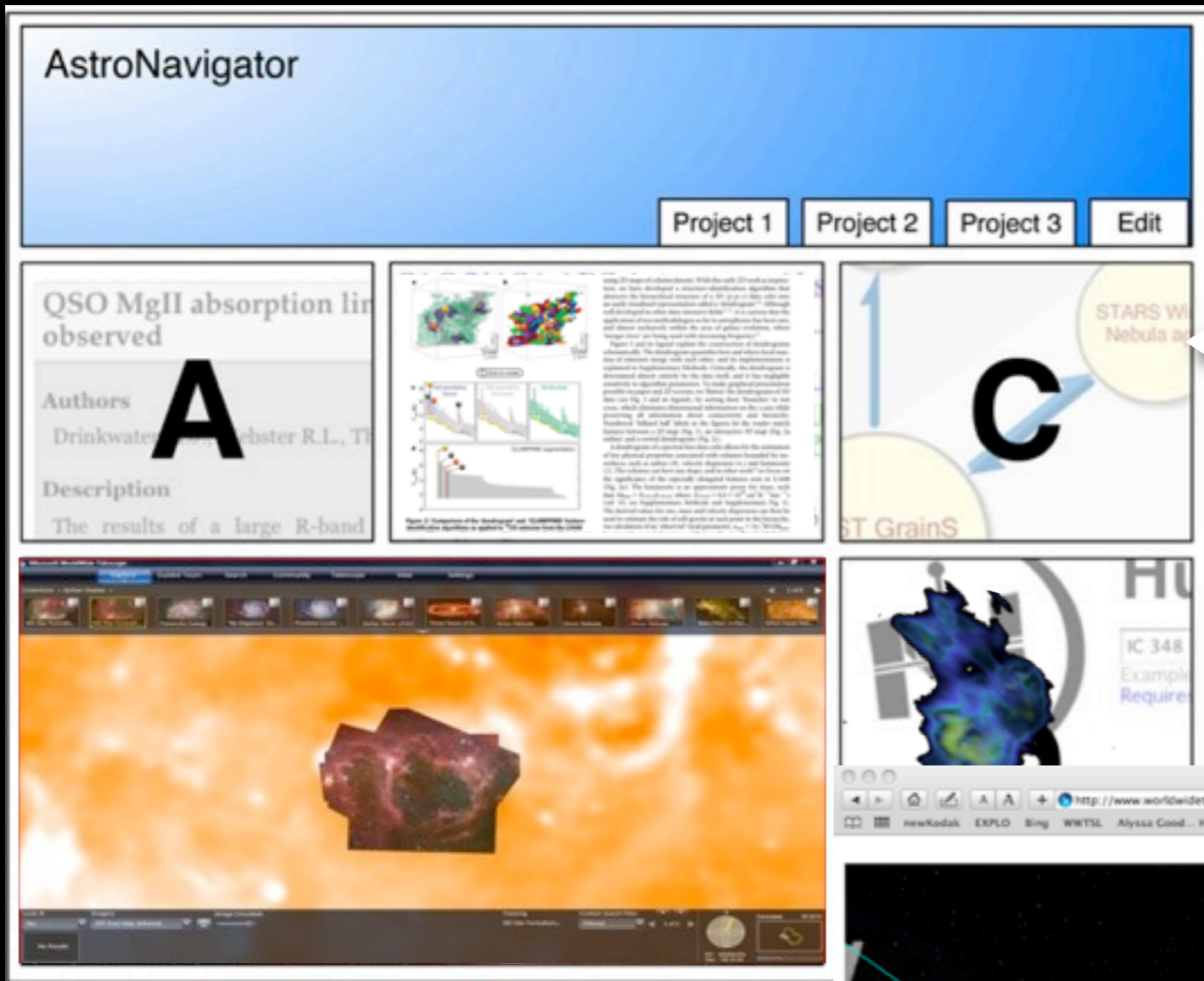
Data Viewer (e.g. WWT)

Ar3Dive Browser

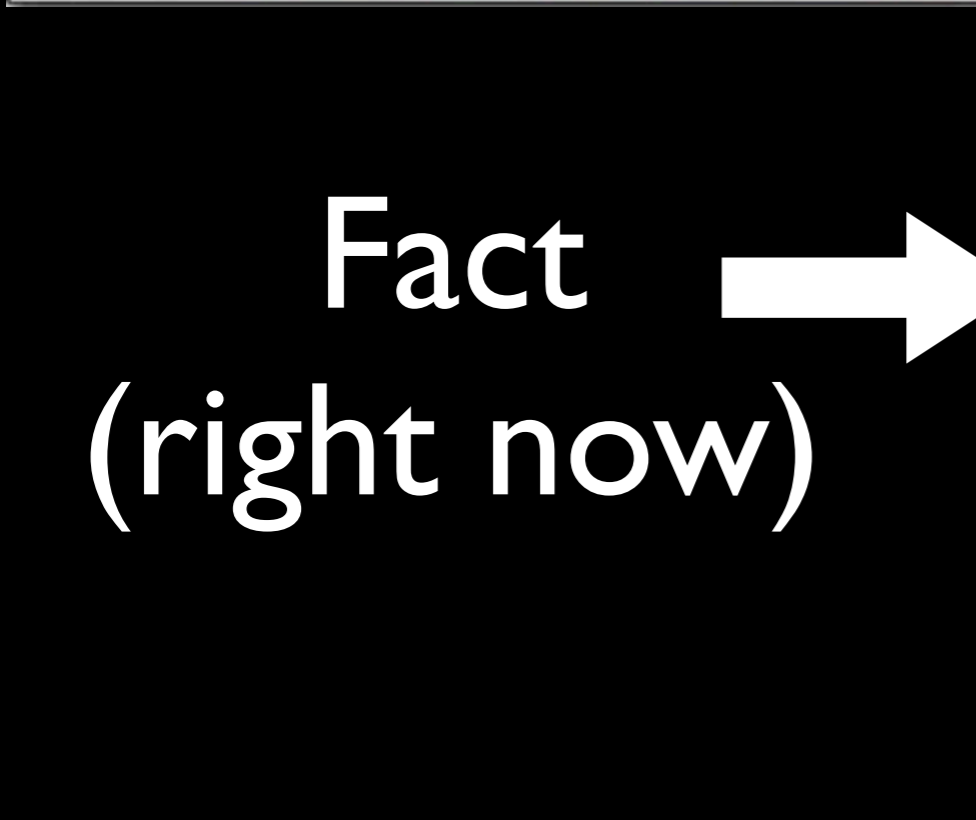
Mockup based on work of Eli Bressert, excerpted from NASA AISRP proposal by Goodman, Muench, Christian, Conti, Kurtz, Burke, Accomazzi, McGuinness, Hendler & Wong, 2008

SAMP





Fiction
(for now)



Fact
(right now)

COMPLETE Data Available					
	Control Panel	Control Database	Control Service		
Full-Cloud Data (Phase I, All Data Available)					
Dataset	Show	Pegasus	Ophiuchus	Serpens	Link
GBT: HI Data Cube	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data
IRAS: Av/Temp Maps	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Data
FCRAO: 12CO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Data
FCRAO: 13CO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Data
JCMT: 850 microns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data
Spitzer c2d: IRAC 1.3 (3.6,5.8 μm)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Data
Spitzer c2d: IRAC 2.4 (4.5,8 μm)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Data
CSO/Bolocam: 1.2-mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data
Spitzer MIPS: Derived Dust Map	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data
Targeted Regions (Phase II, Some Data Not Yet Available)					
CTIO/Calar Alto: NIR (J,H,Ks)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data
IRAM 30-m: N2H+ and C18O	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data
IRAM 30-m: 1.1-mm continuum	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data
Megacam/MMT: r,i,z images	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data
Catalogs & Pointed Surveys					
NH3 Pointed Survey	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Data
YSO Candidate list (c2d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Data



Evermore Seamless Astronomy

Alyssa A. Goodman
Harvard-Smithsonian Center for Astrophysics

with Alberto Accomazzi, Douglas Burke, Gus Muench & Michael Kurtz
(Harvard-Smithsonian CfA); Eli Bressert (U. Exeter); Tim Clark
(Massachusetts General Hospital/Harvard Medical School); Chris
Borgman (UCLA); Jonathan Fay & Curtis Wong (Microsoft Research)

Extra Slides

SciTechBlog

« Back to Blog Main

March 24, 2010

Wikipedia down after server meltdown

Posted: 03:07 PM ET



Wikipedia was offline Wednesday afternoon after an overheating problem at the online encyclopedia's European data center.

Wikipedia's **technical blog** said the site's servers shut themselves down to avoid damage from the heat.

Administrators tried to shift traffic to a cluster of servers in Florida, but "it turned out that this failover mechanism was now broken, causing the DNS resolution of Wikimedia sites to stop working globally," according to the blog.

"This problem was quickly resolved, but unfortunately it may take up to an hour before access is restored for everyone, due to caching effects," the blog said.

Trying to access wikipedia.com and wikipedia.org at about 2:45 p.m. ET produced a navigation error

Wikipedia