

Seamless Astronomy

Alyssa A. Goodman

*Harvard-Smithsonian Center for Astrophysics
Initiative in Innovative Computing @ Harvard*

Collaborators

*Harvard-Smithsonian Center for Astrophysics & SEAS: Alberto **Accomazzi**, Eli **Bressert**, Douglas **Burke**,
Rahul **Davé**, Pepi **Fabbiano**, Michael **Kurtz**, Gus **Muench**, Pavlos **Protopapas***

*Massachusetts General Hospital: Tim **Clark** & Sudeshna **Das***

*Microsoft Research: Jonathan **Fay**, Curtis **Wong***

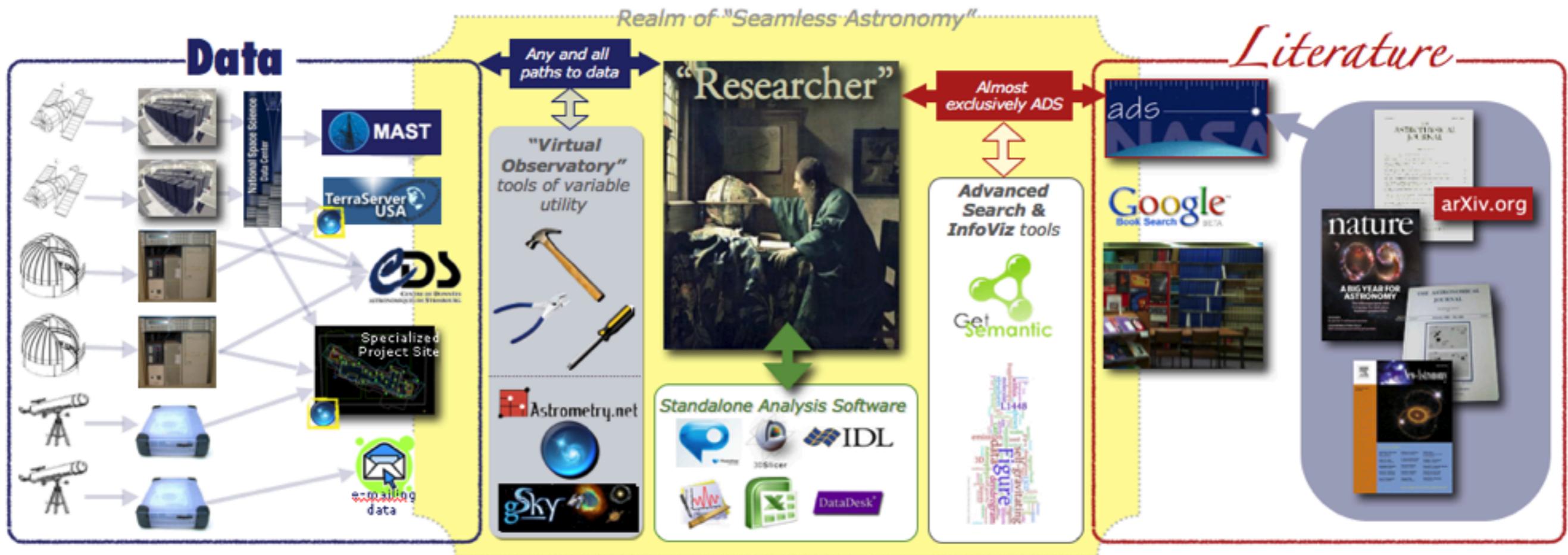
*RPI: Jim **Hendler** & Deborah **McGuinness***

*STScI: Alberto **Conti** & Carol **Christian***

*UCLA: Christine **Borgman***

Seamless Astronomy

www.cfa.harvard.edu/~agoodman and worldwidetelescope.org



What (the) “Virtual Observatory” meant/means/should mean to...

Jim Gray & Alex Szalay

Typical Astronomers Today

Me

Astronomers who travel & use facebook...

Astronomers & the V.O. c. 2006



astrobitz?

terabitz every bit on real estate

Getting Started | Sign I

Enter Location

Street optional City, State or Zip Ocala, FL

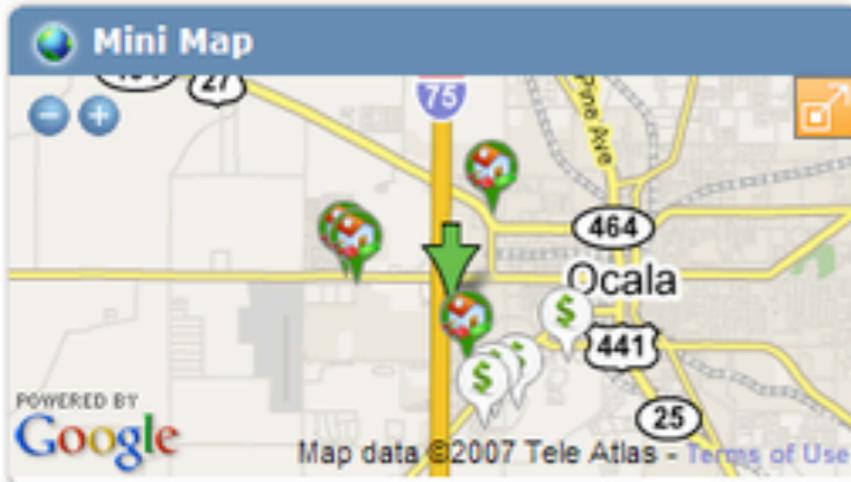
Go filter listings

Drag and Drop icon to workspace below

Take Snapshot

Dashboard Map

Local Search Local Photos Airports Banks Cafes Cinemas Fast Food Gas Stations Grocery Stores Health Care Libr



For Sale Listings

2-Br 1-Ba	\$ 49,900
3116 Nw 17th St, Ocala, FL 34475	
3-Br 2-Ba	\$ 109,900
375 Nw 55th Ave, Ocala, FL 34482	
3-Br 2-Ba	\$ 124,900
280 Nw 53rd Ct, Ocala, FL 34482	
2-Br 2-Ba	\$ 150,000
3459 Sw 18th Pl, Ocala, FL 34474	

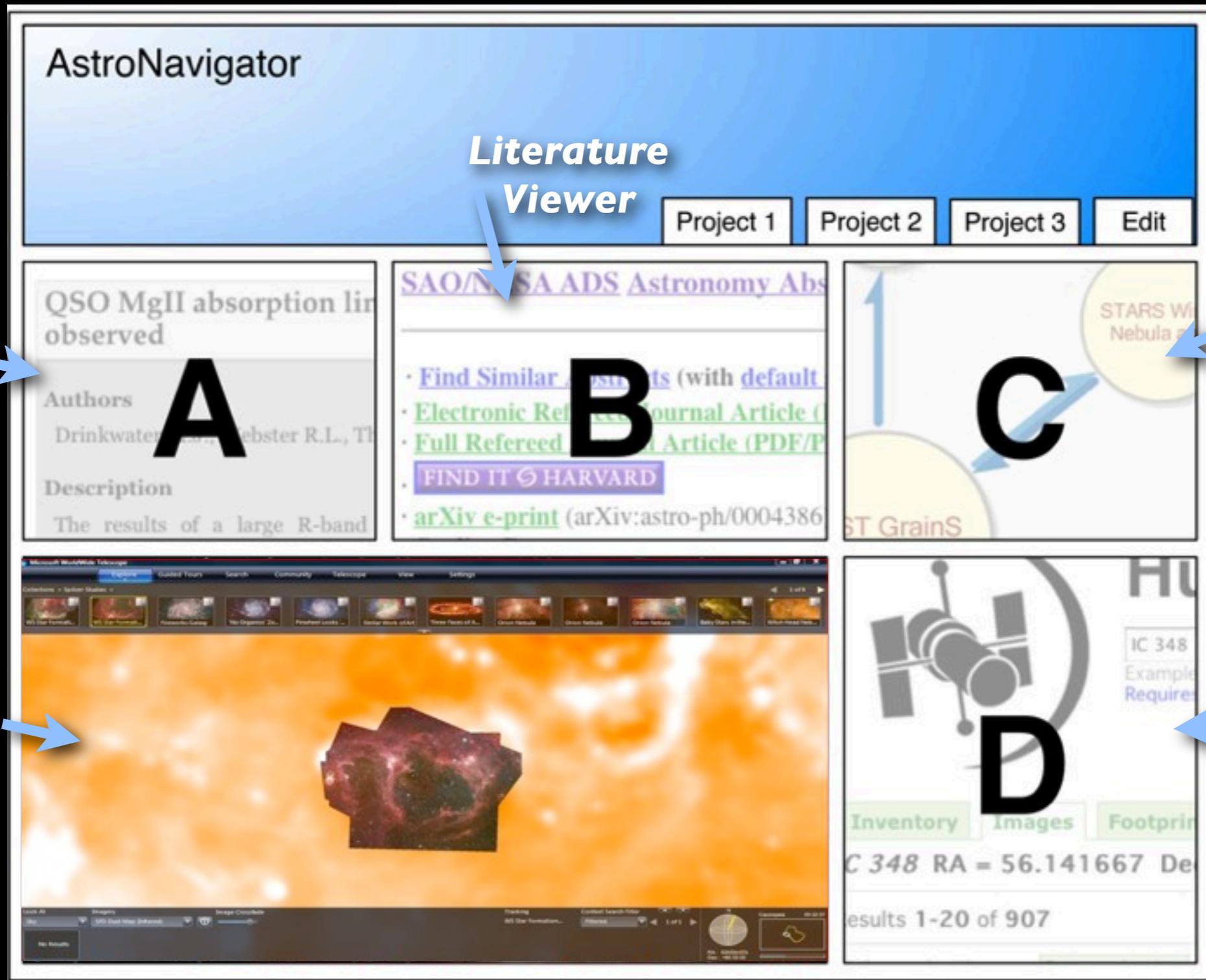
[filter listings](#) [Map](#) | 90 results

Banks

Regions Bank	352-291-2965
3101 Sw College Rd, Ocala, FL	
Regions Bank	352-861-2342
2811 Sw 27th Ave, Ocala, FL	
Wachovia Bank	352-873-5010
3201 Sw College Rd, Ocala, FL	
Community Bank & Trust of ...	352-369-1000
1603 Sw 19th Ave, Ocala, FL	

[Map](#) | 20 results

Seamless Astronomy



Semantic Search

Literature Viewer

Info Viz for Search Results

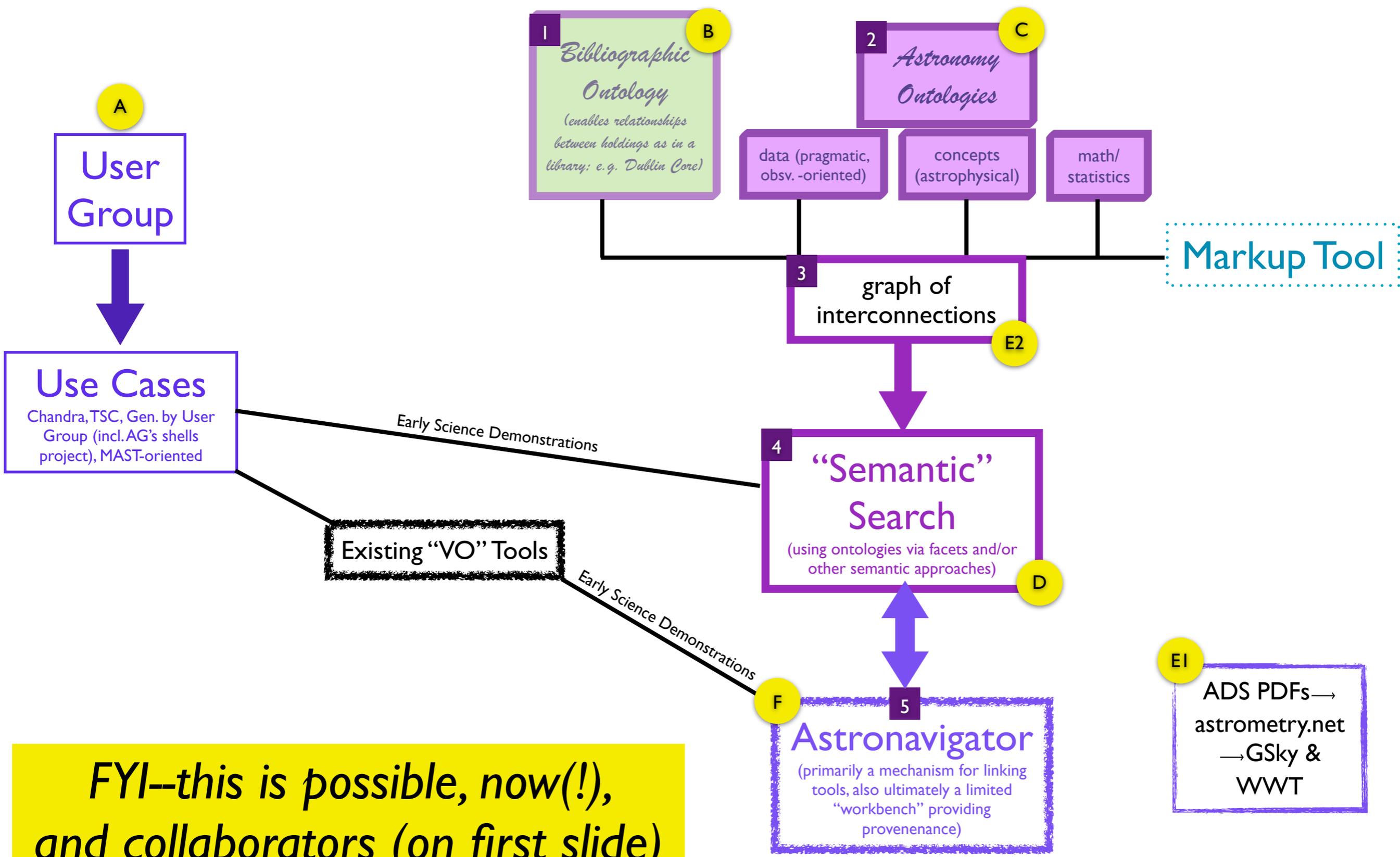
Data Viewer (e.g. WWT)

Archive 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

Discourse Ontology

Workflow Ontology
(e.g. myexperiment)



FYI--this is possible, now(!), and collaborators (on first slide) are actually working on it..

“Ontology”

“GIS/Layering”

“Search”

What’s needed?

“Progressive Resolve”

“Registration”

“Selection”

**“Side-by-Side
Comparison”**

“Readable Labels”

“Highlighting”

“Zoom”

“Custom Site”

“Measurement”

“Off-the-Desktop”

“Inference”

...and how to explain all
that to Astronomers?



Monday, November 16, 2009

From: Yan Xu
 Subject: RE: (non WWT) press conference attendance for AG or Tuesday AM
 Date: December 31, 2008 2:56:23 AM EST
 To: Yan Xu , Alyssa Goodman , Megan Watzke
 Cc: Becki Culbert (Swift Group) , Curtis G. G. Wong <curtisgwong@msn.com> , Jens Kauffmann , Rosalind Reid

Email with Room Numbers
 (result of search)

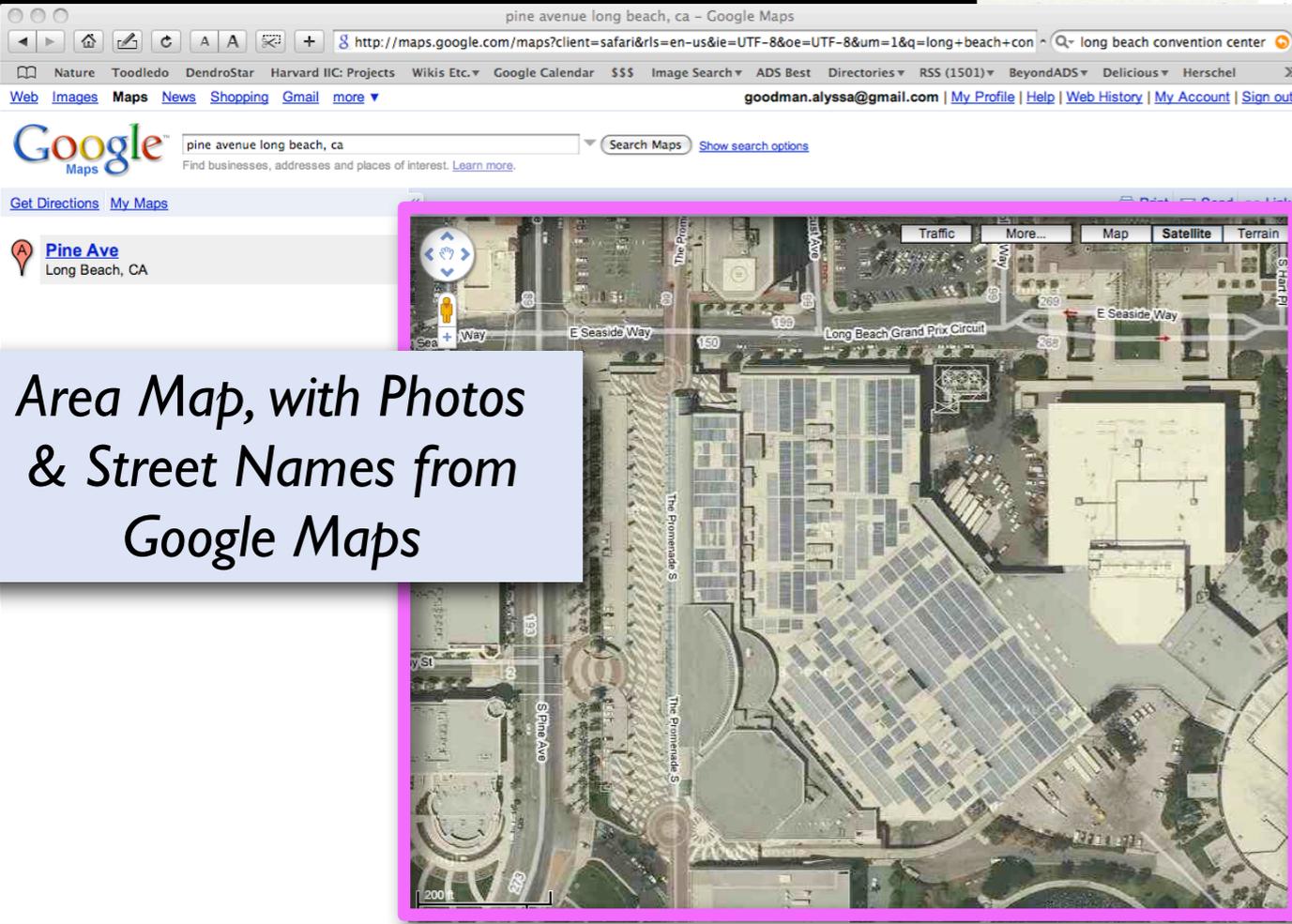
I just found Megan's earlier email, which mentioned that the press will be in room 204 of Convention Center. It is probably not too far from our room 308.
 Our setup and presentation will be in the same room: #308 (Exhibition Hall C).

Requires "Ontology"

Thanks,
 Yan

Interior Map on Long Beach CC Web Site

Requires "GIS/Layering"



Area Map, with Photos & Street Names from Google Maps

Ballroom & Meeting Room

http://www.longbeachcc.com/meeting.h

Nature Toodledo DendroStar Harvard IIC: Projects Wikis Etc. Google Calendar

SPECIAL SERVICES INCLUDED:

- House lighting, ventilation, heat or air conditioning as required during open times. Energy conservation is of prime concern to the Convention Center and minimal light and comfort levels will be maintained during move-in and move-out periods. Rehearsals and similar pre-event activities will be maintained accordingly.
- Housekeeping services during open hours in aisles, lobbies, lobby, open spaces and restrooms, plus one thorough cleaning of these same areas during non-openers. Meeting rooms will be cleaned between 12 AM and 11 PM nightly unless prior arrangements are made with the Event Manager.
- Water service will be supplied to head tables and podiums only. All other water service needs must be arranged through your Catering Sales Manager.
- The basic set up is included with the daily rental. Additional set ups are charged based upon half of the daily rental.
- Real-time basic room set per rented event day. Meeting rooms included with an Exhibit Hall rental include a one-day basic room set for the run of the event.
- Fully equipped first-aid facilities. Does not include a nurse. An Emergency Medical Technician will be scheduled through your Event Manager.
- Use of the outdoor marquee, as available. The marquee is subject to information directly related to Licensee's activities within the Convention Center. All messages must be pre-approved by Convention Center staff. (Please see Marketing Kit for all in-house Marketing and Public Relations details pertaining to your event).

SPECIAL SERVICES NOT INCLUDED:

- First aid staffing with Emergency Medical Technician will be provided at current rates.
- Licensee is responsible for removal of bulk trash, crates, pallets, packing materials, lumber, etc. prior to show opening and following move-out.
- Market sellers, ticket takers, ushers, security, stagehands, and event operations shall be provided by the Convention Center and billed to Licensee.
- Performance stages, exhibit tables and dance floors.

Interior Map on Long Beach CC Web Site

Ballroom Level: RM. 201, 202, 203, 204

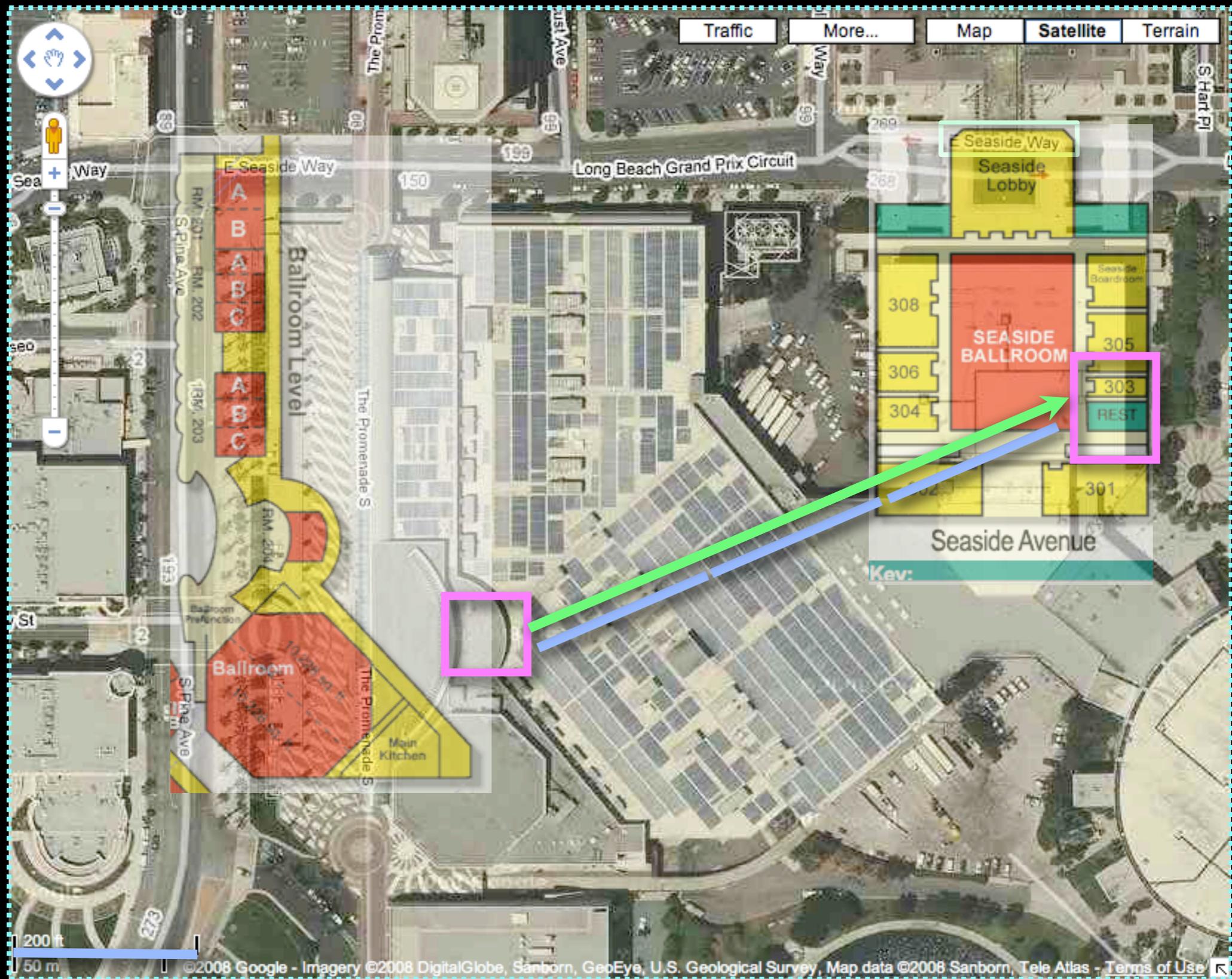
Concourse Level: RM. 101, 102, 103, 104

Ballroom: 10-228 sq. ft., 10-226 sq. ft.

Seaside Meeting Room Key: 308, 306, 304, 302, 305, 303, REST, 301

Seaside Avenue

Requires "Search"



...requires: **“Selection”** ; **“Registration”**;

“Readable Labels” ; **“Highlighting”** ; & **“Measurement”**

in order to yield: **“Inference”**: ...Wow, that’s about 600 feet, hope we can change the room!

And, what about that “custom Triplt site” I made to organize all this? What about the hotel & its location?

The image shows a composite of three overlapping browser windows. The top window is a Triplt travel site with the URL <http://www.tripit.com/trip/show/id/994306>. The middle window is an Expedia page for the Hyatt Regency Long Beach, featuring a navigation menu with options like Home, Flights, Hotels, Cars, and Vacation Packages. The page title is "Hyatt Regency Long Beach" and the subtitle is "Hotel near Long Beach Harbor overlooking lagoon". It includes a star rating of 4.5 and a "Star Rating" link. The bottom window is a Google Maps aerial view of the hotel, showing its location at the intersection of Bay St and S Pine Ave. A blue callout box identifies the "Hyatt Regency Long" building. The map includes a scale bar for 40 yards and copyright information for Microsoft Virtual Earth and the USGS.

Nearby Points of Interest



“Side-by-Side Comparison”

“Zoom”

“Progressive Resolve”

Click

“Inference”: ...Oh, that building with the funky paths outside is the Hyatt... what if I...



My TripAdvisor | Sign in

Register Now!

Over 20 million traveler reviews & opinions of hotels, vacations & more

Hyatt Regency Long Beach Hotel

Home Destinations Fun & Games Free Travel Guides Vacation Ideas International Sites

Home → United States → California (CA) → Long Beach → Long Beach Hotels

Search

Search input field with 'Go' button

- Long Beach Overview
- Long Beach Hotels
 - Hyatt Regency Long Beach
- Flights to Long Beach
- Long Beach Deals
- More On Long Beach
- Before You Go
- Things to Do
- Restaurants
- Map
- Traveler Photos
- Forum

- Long Beach Deals
- Discount Hotels
- Hotel & Air
- All Travel Offers

Free Newsletter

Interested in Hyatt Regency Long Beach and Long Beach?

We'll send you updates with the latest deals, reviews and articles for Hyatt

Hyatt Regency Long Beach



Hotel class: ★★★★★

Rooms: 510

COMPARE PRICES

- Hotel photos
- Map this hotel
- Hotel amenities
- Virtual tour

200 South Pine Avenue, Long Beach, CA 90802

Property Type: Hotel

Full service hotel with water views from rooms. Walking distance to 100 shops and restaurants, Aquarium of the Pacific. Centrally located for easy...

+ more »



Check Rates and Availability: \$236 Avg. Price

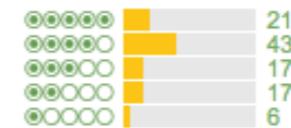
Check-in: 10/2/2009 Check-out: 10/9/2009 Adults: 1

- | | |
|---|--|
| <input checked="" type="checkbox"/> Expedia.com | <input checked="" type="checkbox"/> Orbitz.com |
| <input checked="" type="checkbox"/> LongBeach.Hyatt.com | <input checked="" type="checkbox"/> hotels.com |
| <input checked="" type="checkbox"/> Travelocity | <input type="checkbox"/> HotelClub.com |
| <input checked="" type="checkbox"/> Priceline.com | <input type="checkbox"/> Gtahotels.com |

CHECK RATES! Opens one window for each offer. Please disable pop-up blockers.

TripAdvisor Traveler Rating: ?

104 Reviews



Write a review

TripAdvisor Popularity Index: ?

#14 of 38 hotels in Long Beach

Call now to book: 1-800-45-HOTEL from hotels.com

Click here for best prices for Hyatt Regency Long Beach

- Hyatt Regency Long Beach: Great rooms from \$115 Smart Deal
Expedia.com Photos, Reviews and the Guaranteed Lowest Prices
- Hyatt Regency Long Beach: Save Up To 50% On Hotels Smart Deal
Orbitz.com View Hotel Photos, Reviews & More Compare & Save on Hotels at Orbitz
- Hyatt Regency Long Beach: Official Site Smart Deal
LongBeach.Hyatt.com Best Rates Guaranteed. Book Direct.
- Hyatt Regency Long Beach: Official Site, Smart Deal
Hyatt Regency Long Beach Best Rates

TripAdvisor Traveler Reviews

TripAdvisor Traveler Rating: ★★★★★

What's possible now?

“Progressive Resolve”

“Zoom”

“Search”

“Selection”

“GIS/Layering”

“Registration”

**“Side-by-Side
Comparison”**

“Readable Labels”

“Highlighting”

“Custom Site”

“Inference”

“Off-the-Desktop”

“Ontology”

“Measurement”



Spitzer Space Telescope

• Jet Propulsion Laboratory
• California Institute of Technology
• Vision for Space Exploration

[Home](#)
[Images](#)
[Newsroom](#)
[Podcasts](#)
[Features](#)
[About Spitzer](#)
[Search / Site Info](#)

NEWSROOM

Press Releases

- Chronological
- By Subject
- Outside Institutions

What's Happening Archive

Visuals

- Image Use Policy

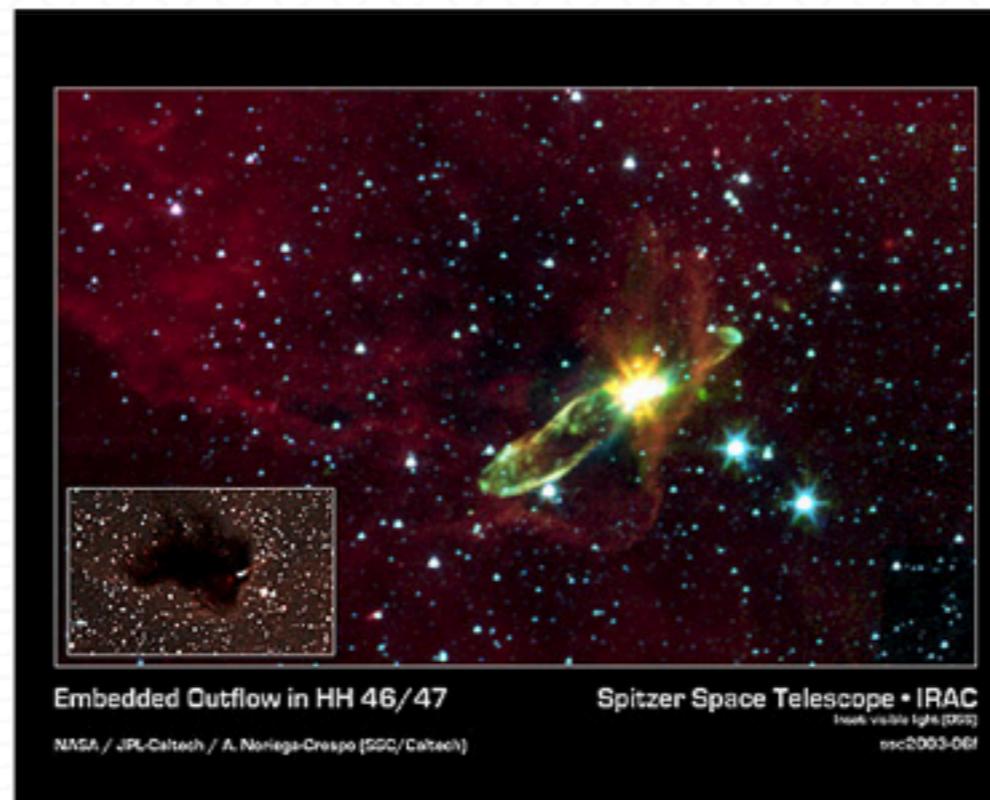
Update Notifications

- Mailing List
- RSS Feed (XML)

References

- Fast Facts
- Press Kit (.pdf)
- Fact Sheet (.pdf)
- Field Guides
- Glossary

Media Contacts



Embedded Outflow in HH 46/47

Spitzer Space Telescope • IRAC

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

IRAC visible light (003)
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

HH4647

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
Inset: visible light (DSS)
NASA / JPL-Caltech / A. Noriega-Crespo (SSC/Caltech) SSC2003-06f

“Search”
“Custom Site”
“Registration”
“Readable Labels”

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

WWT Silverlight “Alpha”

The screenshot displays the Microsoft WorldWide Telescope Web Client interface. The browser address bar shows the URL <http://www.worldwidetelescope.org/webclient/default.aspx?wtml=http%3a%2f%2fwww.worldwidetel>. The navigation menu includes 'Explore', 'Guided Tours', 'Search', 'Community', 'View', and 'Settings'. The 'Explore' tab is active, showing a breadcrumb trail: 'Collections > Open Collections > HH4647 >'. A thumbnail of the current view is shown in the top left corner. The main view area displays a star field with a prominent nebula. A diagonal watermark reads 'Spitzer S...'. A semi-transparent box highlights a region of the star field, with a corresponding inset image showing a zoomed-in view of that region. The bottom control panel includes 'Look At' (Sky), 'Imagery' (Digitized Sky Survey (Optical)), 'Image Crossfade', a 'Done' button, a '1 of 1' indicator, a compass, and celestial coordinates: RA : 08h25m38s, Dec : -51:01:43. A small inset map shows the location of the current view within the constellation Vela.

“Side-by-Side Comparison”

“Readable Labels”

“Highlighting”

“Custom Site”

“Inference”

“Progressive Resolve”

“Zoom”

“Search”

“Selection”

“GIS/Layering”

“Registration”

And to go fully “seamless”?

“Progressive Resolve”

“Zoom”

“Search”

“Selection”

“GIS/Layering”

“Registration”

**“Side-by-Side
Comparison”**

“Readable Labels”

“Highlighting”

“Custom Site”

“Inference”

“Off-the-Desktop”

“Ontology”

“Measurement”

Going “Off-the-Desktop”



Microsoft
Surface

More information: See the SEAS/IIC
“Scientists Discovery Room” [project pages](#)

Slideshow: Tabletop Computers *Continued* By Meredith Ringel Morris

First Published December 2008

[Email](#) [Print](#) [Comments \(1\)](#) [Reprints](#) [Newsletters](#)

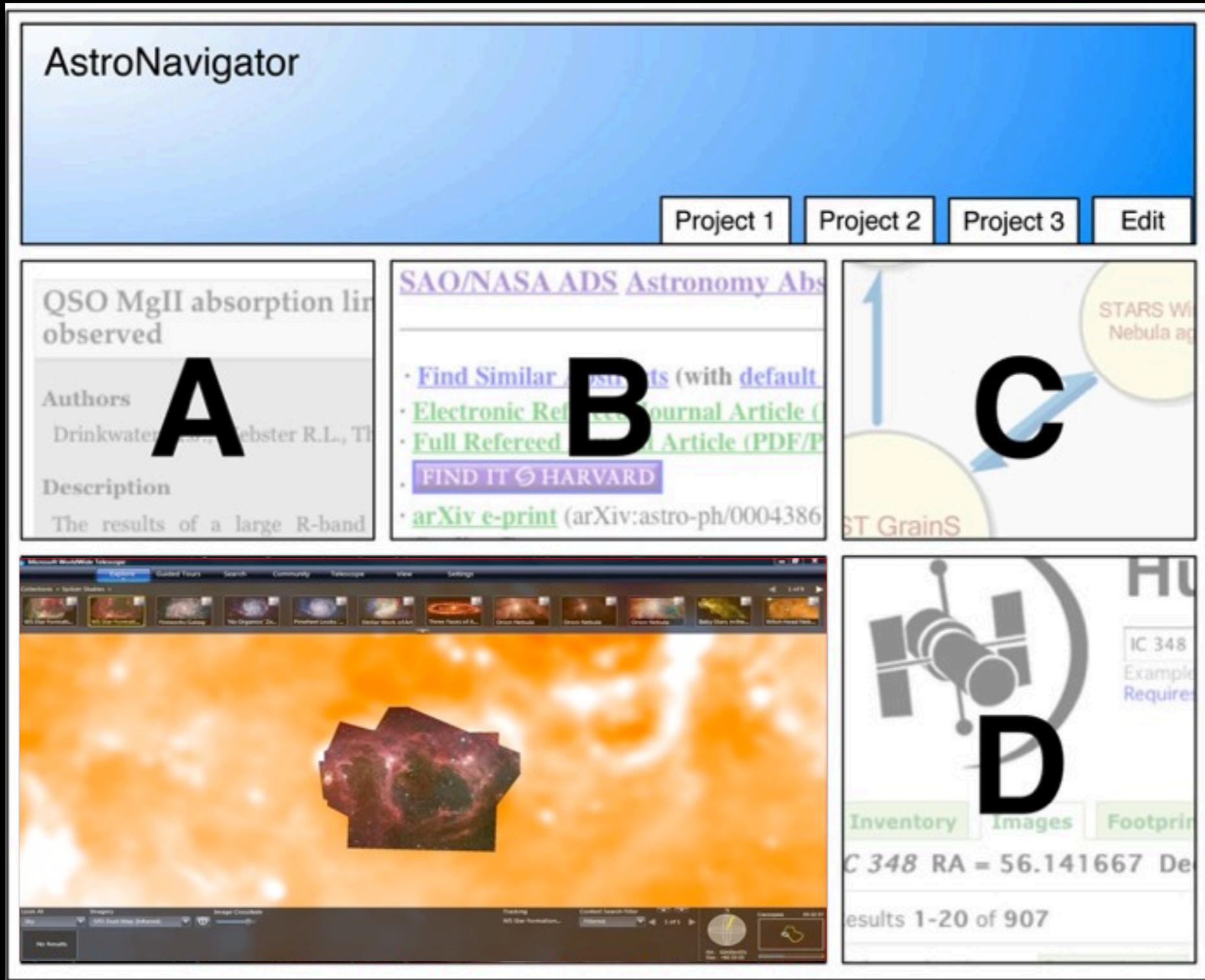


UBITABLE: Users can interact with surface computers through auxiliary devices, such as laptops, phones, and PDAs. The display on the auxiliary device can convey private or sensitive content to a single user, while group-appropriate content can appear on the tabletop display. Chia Shen and her colleagues at Mitsubishi Electric Research Laboratories, in Cambridge, Mass., have explored auxiliary interactions with surface computers in their UbiTable project, in which two people with laptops collaborate over a tabletop display. Recently, Shen expanded the UbiTable into an interactive room called the WeSpace. People can share data on their laptops with other people in the room, using both a table and a large display wall. Here, three Harvard University astrophysicists discuss radio and IR spectrum images using the WeSpace.

“Ontology”

“Measurement”

Seamless Astronomy



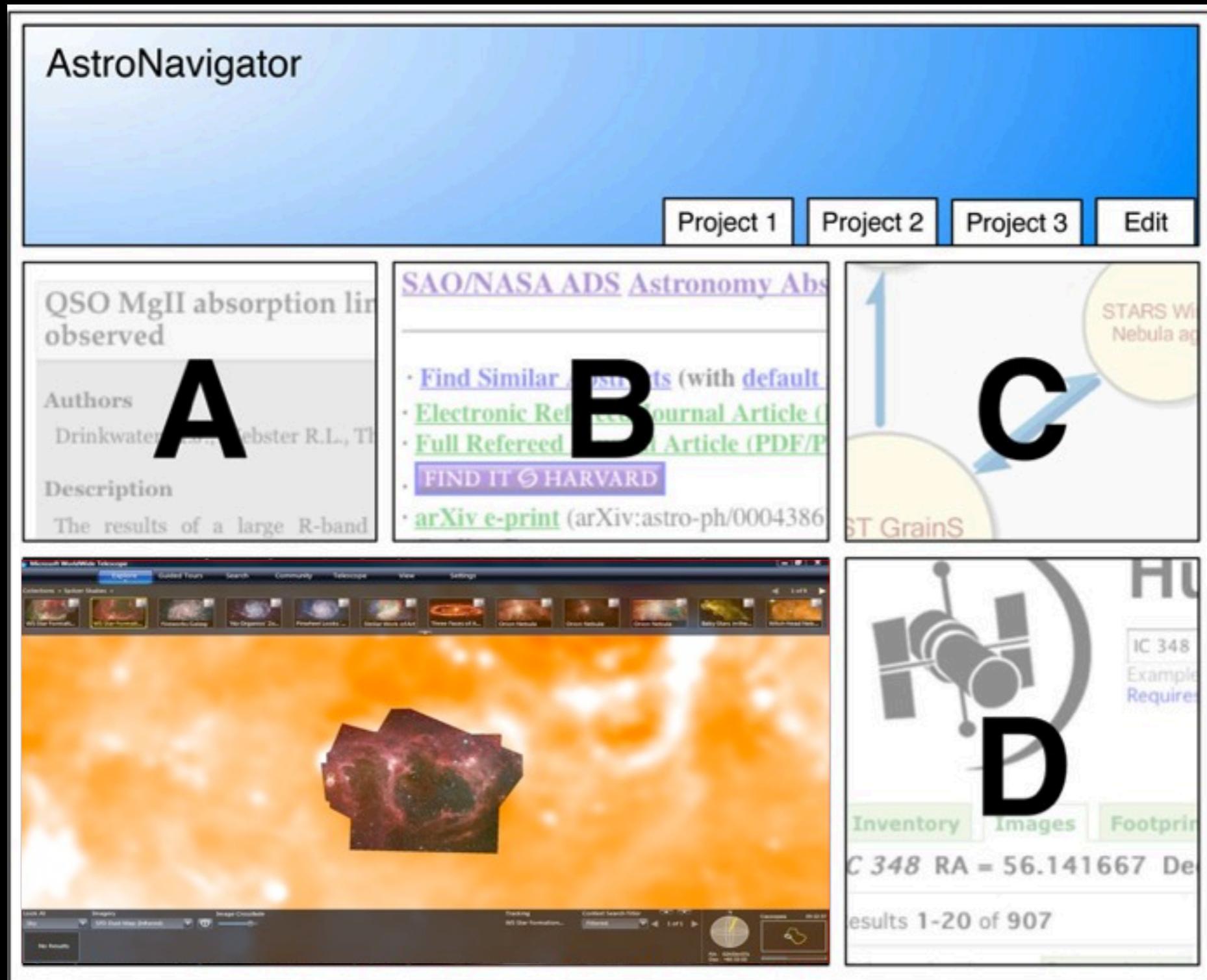
Mockup based on work of Eli Bressert, excerpted from NASA AISRP proposal by Goodman, Muench, Christian, Conti, Kurtz, Burke, Accomazzi, McGuinness, Hendler & Wong, 2008

Prototype “Faceted” Browsing (using very lightweight “**Ontology**”)

The screenshot displays the 'Faceted browsing of the IVOA Registry' interface. At the top, there is a search bar and a 'Start search' link. Below this, a section titled '2 filter criteria' shows active filters: 'Wavelength coverage: Infrared' and 'Text Search: "quasar"'. The main content area shows '40 items sorted by Citation [A to Z]' with a pagination control showing '1(28) 2(12)' and '1 2 3 4' as page numbers. The primary result is 'QSO MgII absorption line systems (Drinkwater+, 1993) - Quasars observed'. This result is expanded to show details: 'Authors' (Drinkwater M.J., Webster R.L., Thomas P.A.), 'Description' (a paragraph about the R-band imaging survey), 'Type' (Catalog), 'Content Level' (Research), 'VizieR collection' (Tables from Astronomical Journal), 'Bibliographic Code' (1993AJ....106..848D), and 'Original data' ([external link]). On the right side, there are three faceted search panels: 'VizieR keyword' (listing QSOs, Redshifts, etc.), 'Wavelength coverage' (listing Radio, Optical, UV, X-ray), and 'VizieR catalog collection' (listing Tables from Astronomical Journal, etc.).

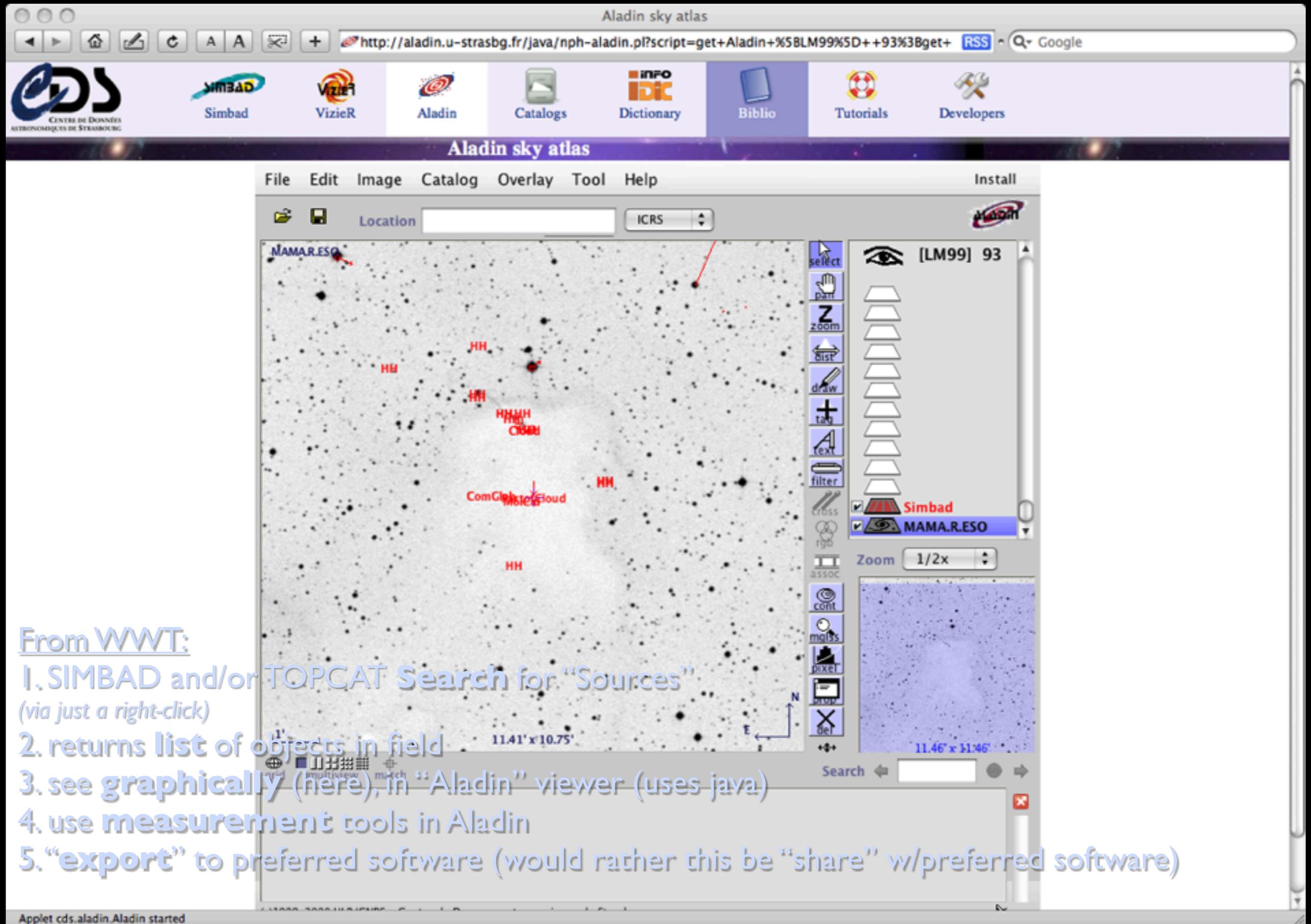
courtesy Douglas Burke, CfA/IIC

Seamless “Measurement” via SAMP?



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

Seamless “Measurement” Options



The screenshot shows the Aladin sky atlas web interface. At the top, there is a navigation bar with logos for Simbad, VizieR, Aladin, Catalogs, Dictionary, Biblio, Tutorials, and Developers. Below this is the main interface with a menu (File, Edit, Image, Catalog, Overlay, Tool, Help) and an 'Install' button. The central area displays a star field with several red labels: 'MAMA.R.E.S.O.', 'HH', 'Com Globule Cloud', and 'M16'. A toolbar on the right contains various tools like 'select', 'pan', 'zoom', 'draw', 'tag', 'text', 'filter', 'cross', 'rgb', 'assoc', 'cont', 'mgls', 'pixel', 'stop', and 'del'. A search bar at the bottom right contains the text 'Search'. The bottom status bar shows 'Applet cds.aladin.Aladin started'.

From [WWT](#):

1. SIMBAD and/or TOPCAT Search for “Sources” (via just a right-click)
2. returns list of objects in field
3. see graphically (here), in “Aladin” viewer (uses java)
4. use measurement tools in Aladin
5. “export” to preferred software (would rather this be “share” w/preferred software)



SIMBAD query result

other query
modes :

[Identifier
query](#)

[Coordinate
query](#)

[Criteria
query](#)

[Bibliography
query](#)

[Basic
query](#)

[Script
submission](#)

[Output
options](#)

[Help](#)

Object query : coord 3.44989898784776h+30.3468458710566d
(FK5, 2000, 2000), radius: 10 arcmin

C.D.S. - SIMBAD4 rel 1.114 -
2009.03.27CET16:11:49

in either Aladin (default...ugly...but quantitative)
or WWT (via SAMP)

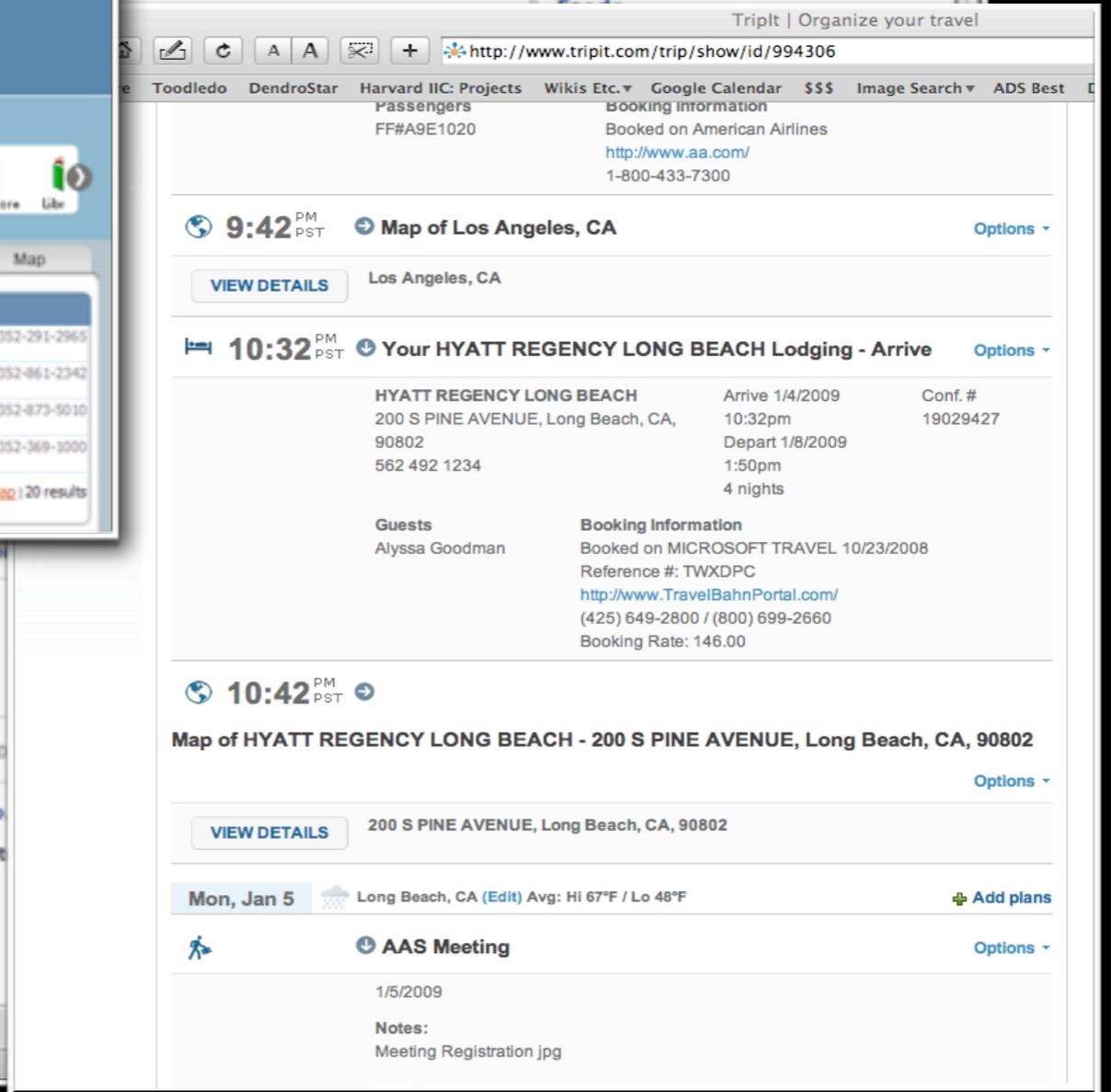
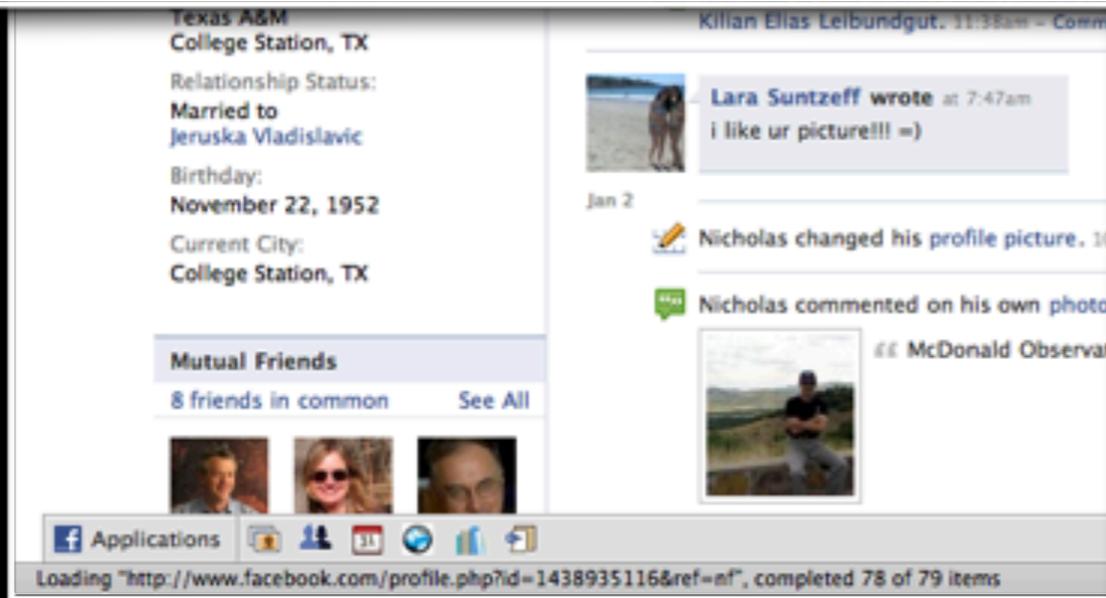
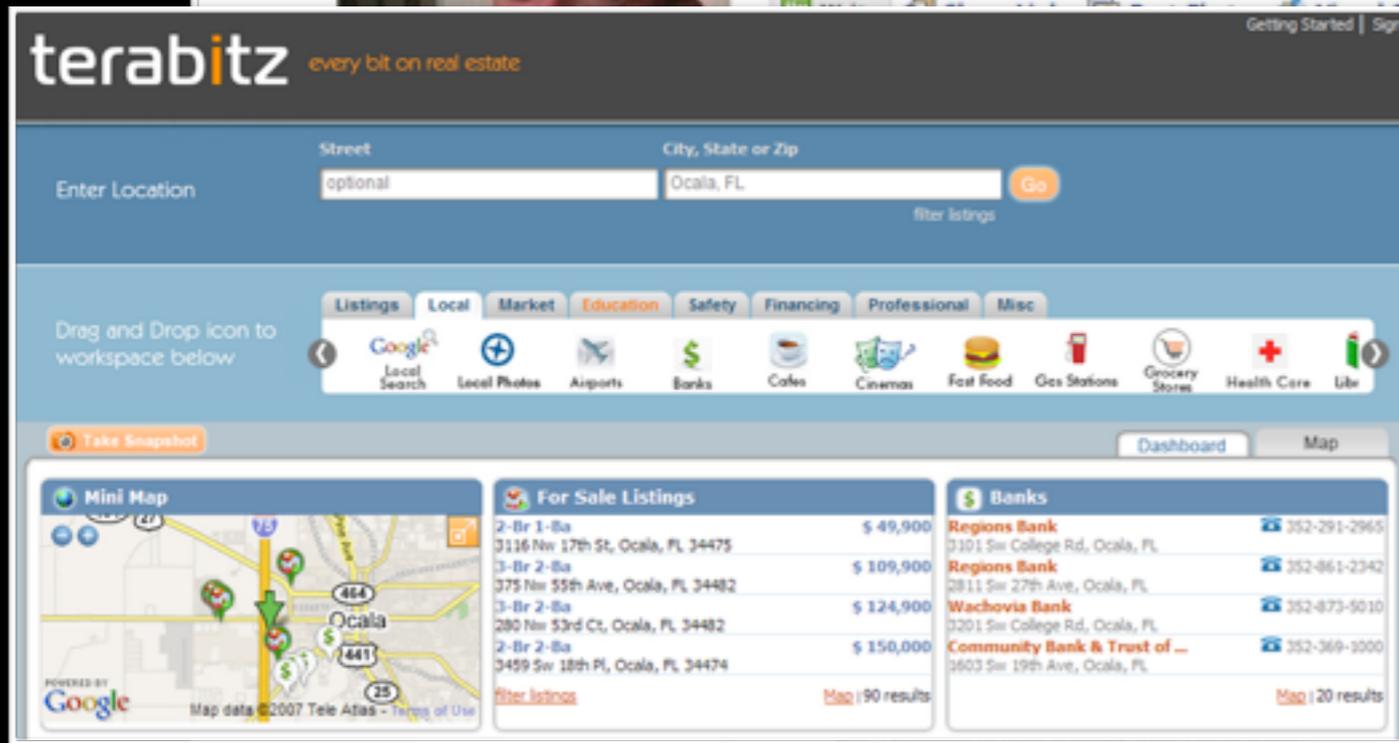
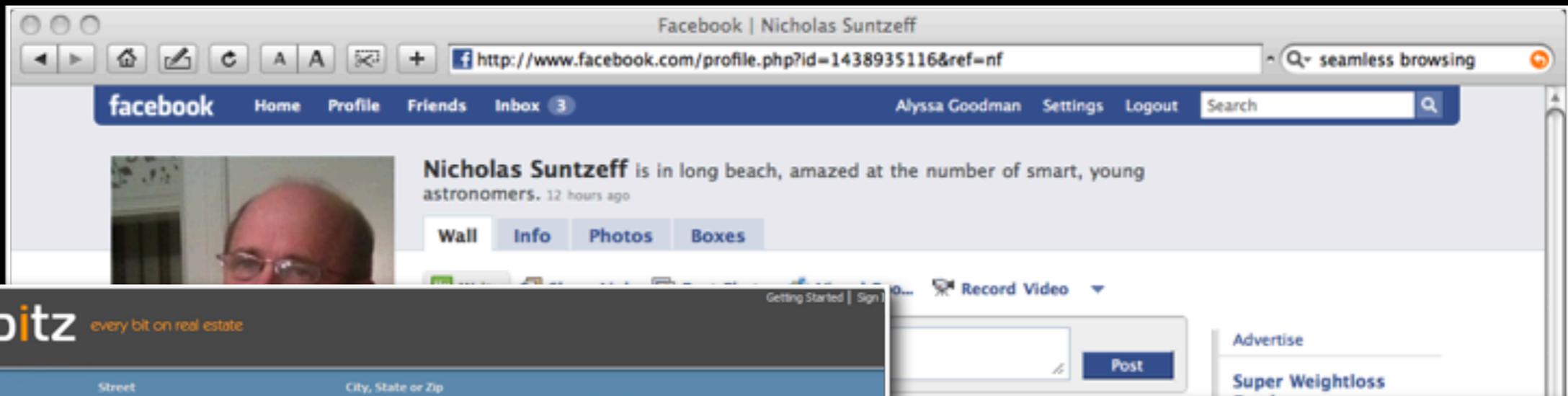
Number of objects : 29

[plot this list of objects](#)

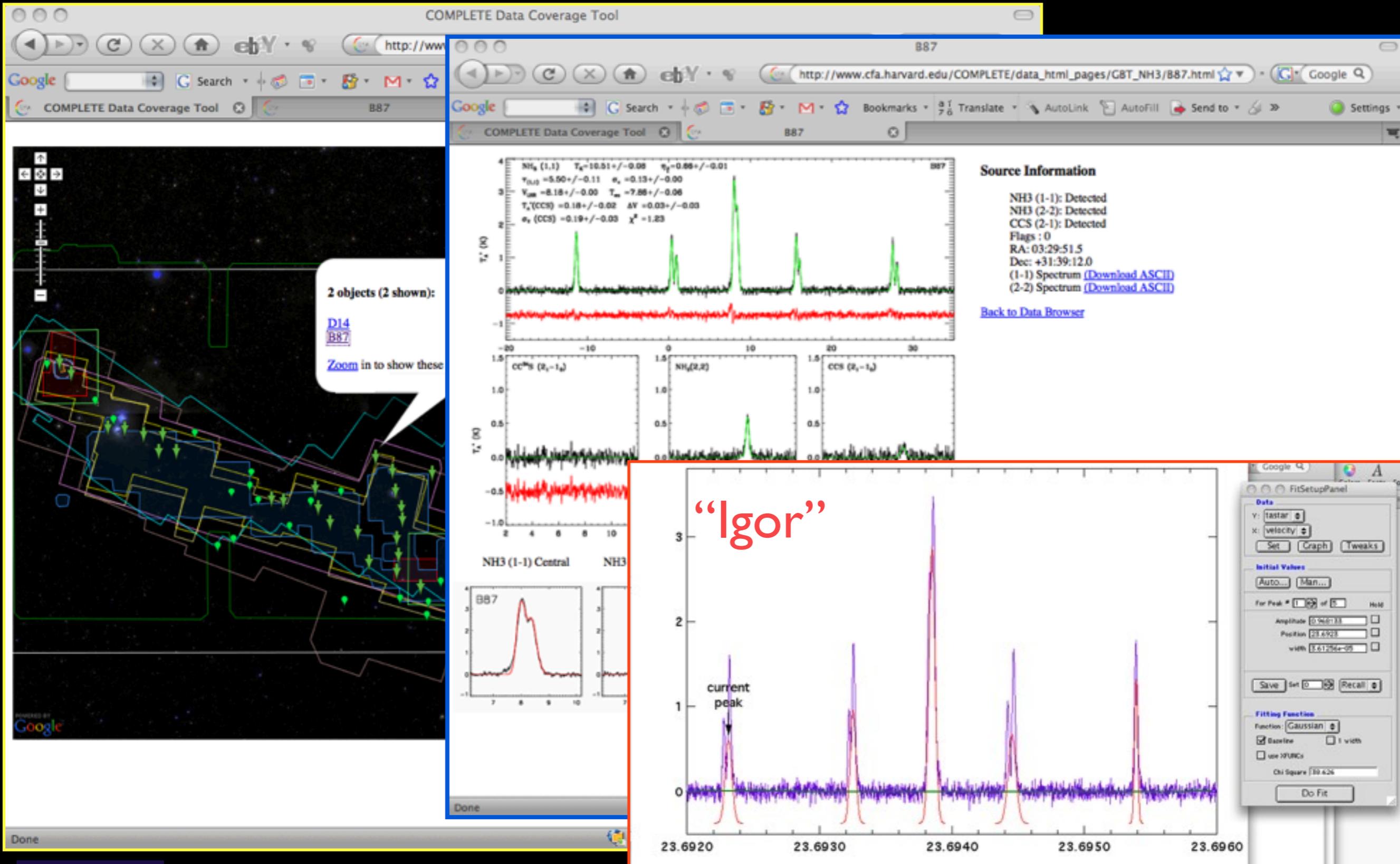
Equat. Gal SGal Ecl

N	Identifier	dist(asec)	Otype	ICRS (2000) coord.	Sp type	#ref 1850 - 2009	#notes
1	HH 279A	82.46	HH	03 26 57.1 +30 19 33	~	1	0
2	HH 279B	127.83	HH	03 26 59.1 +30 18 41	~	1	0
3	HH 278C	289.57	HH	03 27 02.4 +30 25 36	~	1	0
4	HH 278	309.37	HH	03 26 59.4 +30 25 58	~	5	0
5	HH 278A	309.37	HH	03 26 59.4 +30 25 58	~	1	0
6	HH 278B	314.55	HH	03 27 00.5 +30 26 03	~	1	0
7	HH 279	324.83	HH	03 27 18.6 +30 17 16	~	4	0
8	HH 279C	325.81	HH	03 27 18.7 +30 17 16	~	1	0
9	[EYG2006] Bolo 19	342.02	mm	03 27 02.0 +30 15 08	~	2	0
10	HH 493	378.13	HH	03 26 49.3 +30 14 55	~	4	0
11	[JHE2006] J032649+301454	380.46	IR	03 26 49.0 +30 14 54	~	1	0
12	HH 317D	400.22	HH	03 26 56.9 +30 14 10	~	1	0
13	TXS 0323+301	405.25	Rad	03 26 32.9 +30 17 18	~	0	0

We need to catch up to this & go beyond...

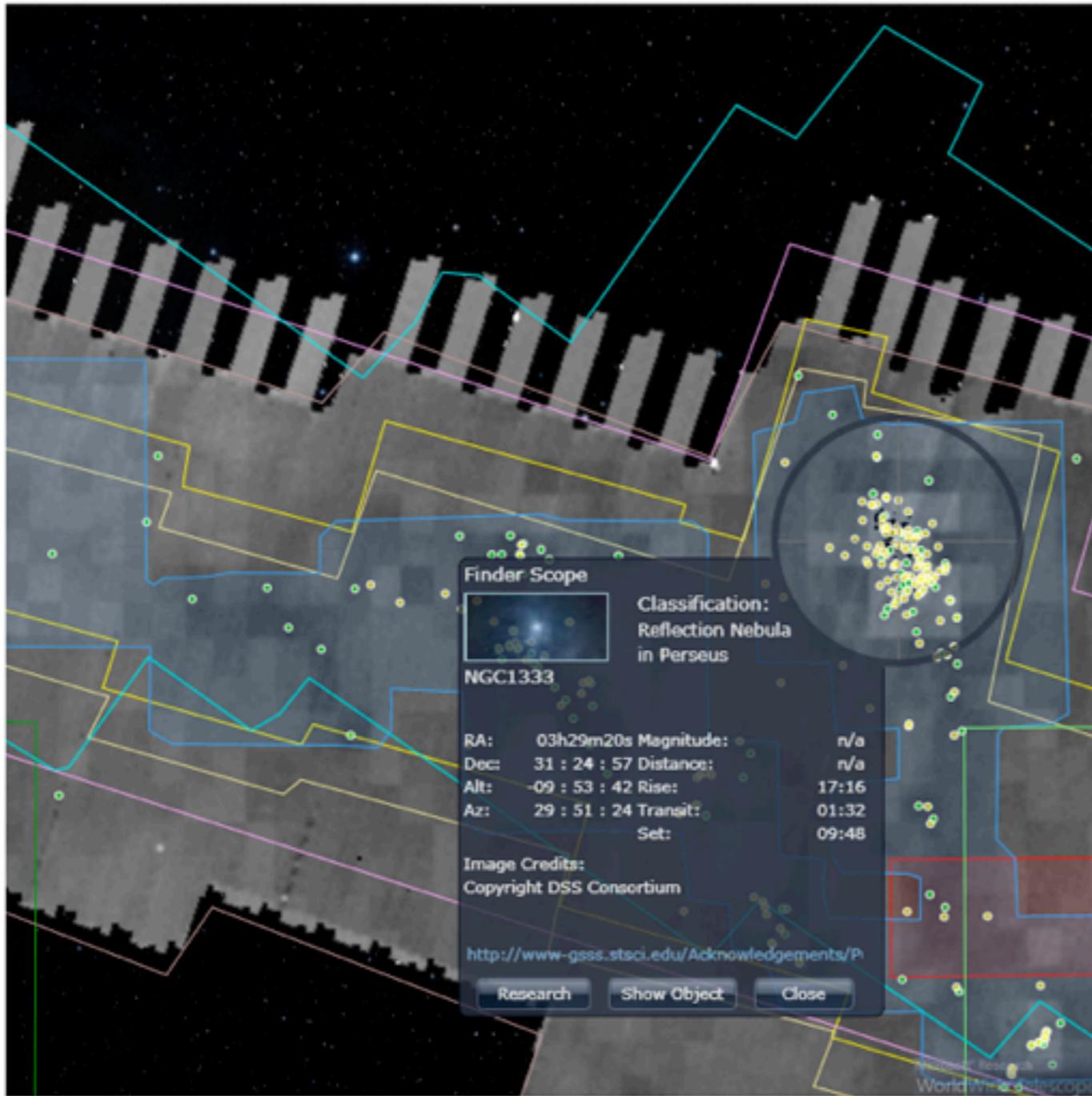


Embedded & Modular Tools



Demo

tools created by Jonathan Foster, CfA/COMPLETE & Jonathan Fay, MSR



COMPLETE Data Available

Center on Perseus Center on Ophiuchus Center on Serpens

Full-Cloud Data (Phase I, All Data Available)

Dataset	Show	Perseus	Ophiuchus	Serpens	Link
GBT: HI Data Cube	<input checked="" type="checkbox"/>	✓	✓	∅	Data
IRAS: Av/Temp Maps	<input checked="" type="checkbox"/>	✓	✓	✓	Data
FCRAO: 12CO	<input checked="" type="checkbox"/>	✓	✓	✓	Data
FCRAO: 13CO	<input checked="" type="checkbox"/>	✓	✓	✓	Data
JCMT: 850 microns	<input checked="" type="checkbox"/>	✓	✓	∅	Data
Spitzer c2d: IRAC 1,3 (3.6,5.8 μm)	<input checked="" type="checkbox"/>	✓	✓	✓	Data
Spitzer c2d: IRAC 2,4 (4.5,8 μm)	<input checked="" type="checkbox"/>	✓	✓	✓	Data
CSO/Bolocam: 1.2-mm	<input checked="" type="checkbox"/>	✓	∅	∅	Data
Spitzer MIPS: Derived Dust Map	<input checked="" type="checkbox"/>	✓	∅	∅	Data

Targeted Regions (Phase II, Some Data Not Yet Available)

CTIO/Calar Alto: NIR (J,H,Ks)	<input checked="" type="checkbox"/>	✓	✓	∅	Data
IRAM 30-m: N2H+ and C18O	<input checked="" type="checkbox"/>	✓	∅	∅	Data
IRAM 30-m: 1.1-mm continuum	<input checked="" type="checkbox"/>	✓	∅	∅	Data
Megacam/MMT: r,i,z images	<input checked="" type="checkbox"/>	✓	∅	∅	Data

Catalogs & Pointed Surveys

NH3 Pointed Survey	<input checked="" type="checkbox"/>	✓	∅	∅	Data
YSO Candidate list (c2d)	<input checked="" type="checkbox"/>	✓	✓	✓	Data

Progress (on the “beyond” bit)!

3D PDF



Goodman et al.
Nature, 1/1/09

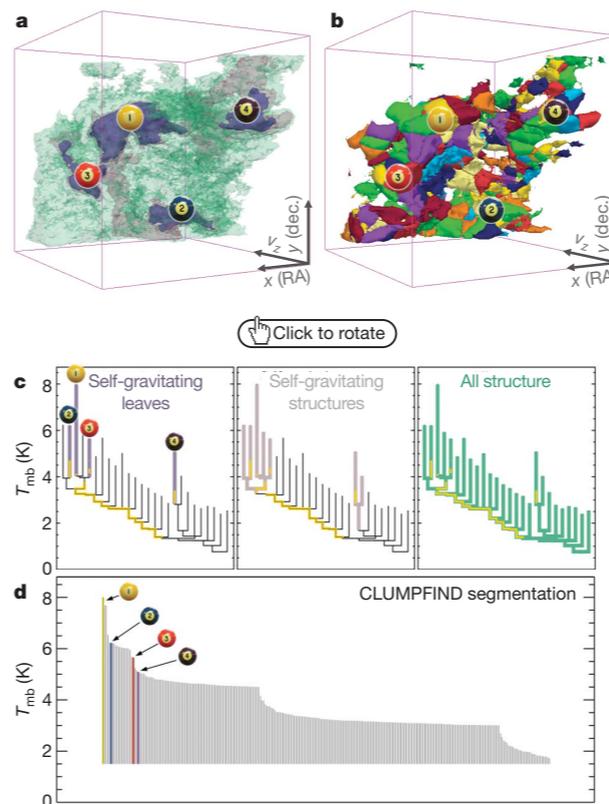


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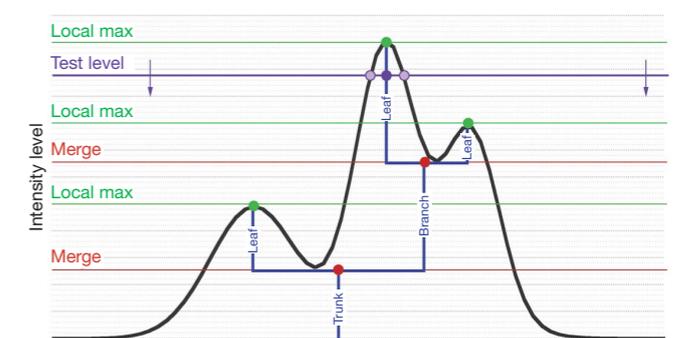
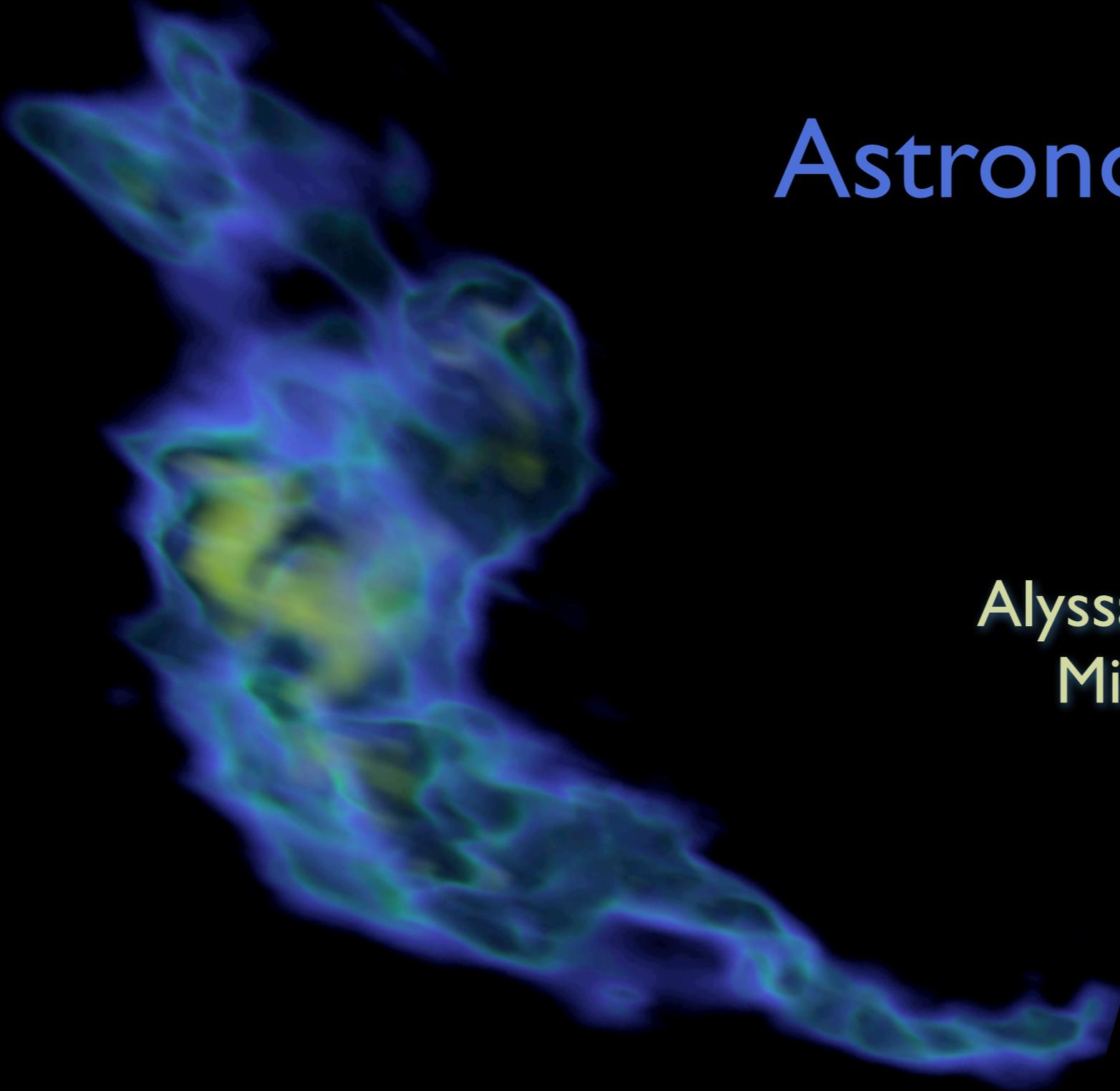


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Astronomical Medicine

Alyssa Goodman (IIC/CfA/FAS)

Michael Halle (IIC/SPL/HMS)

Ron Kikinis (SPL/HMS)

Douglas Alan (IIC)

Michelle Borkin (FAS/IIC)

Jens Kauffmann (CfA/IIC)

Erik Rosolowsky (CfA/UBC Okanagan)

Nick Holliman (U. Durham)



The Astronomical Medicine Story



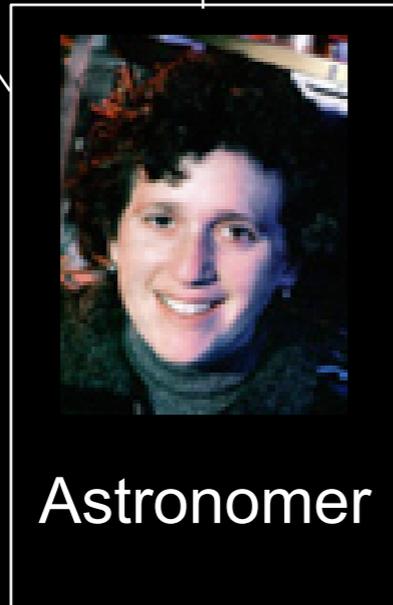
Computer Scientist



Computer Scientist

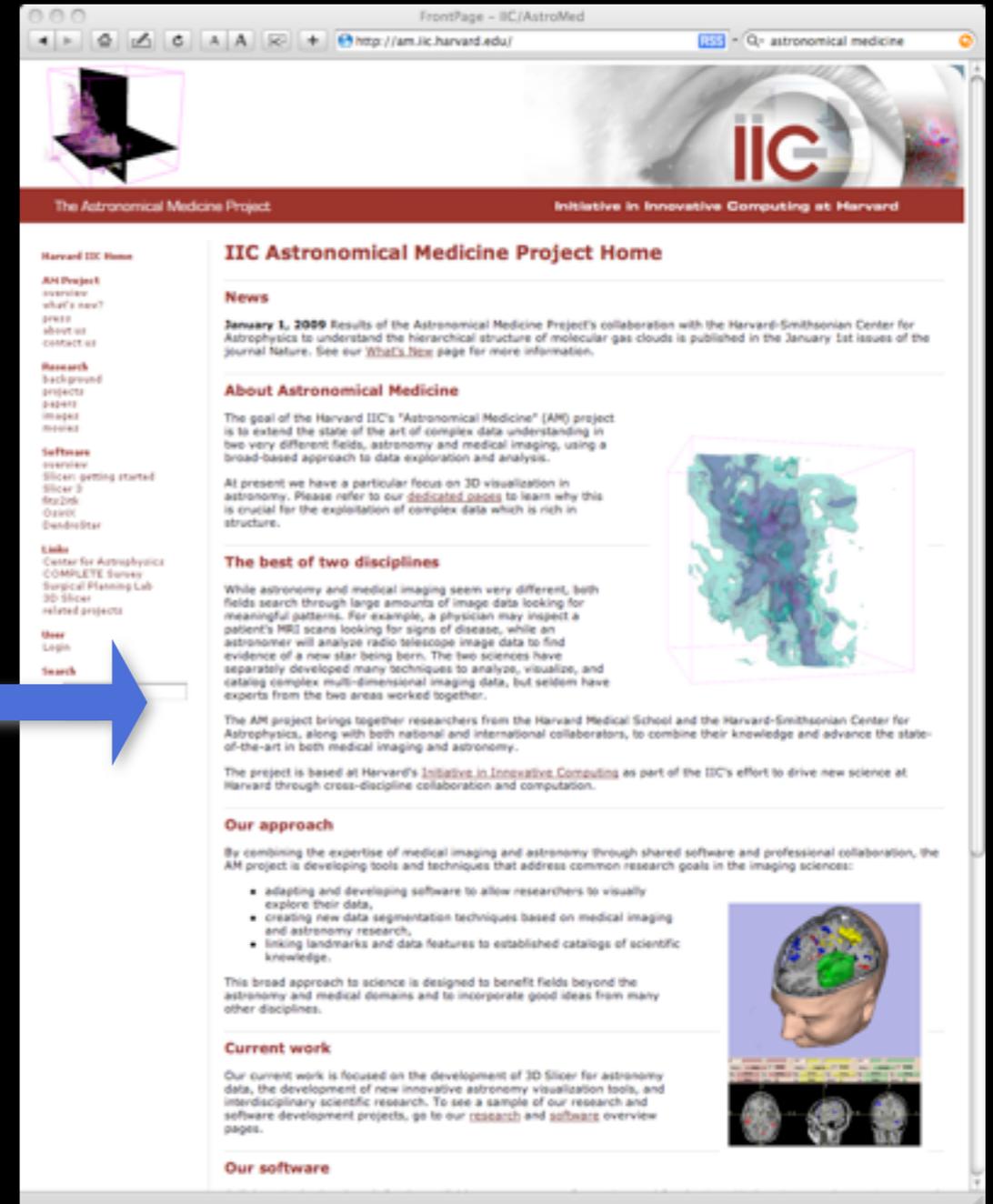


Unsuspecting Undergrad



Astronomer

“Viz has failed the scientific community...”



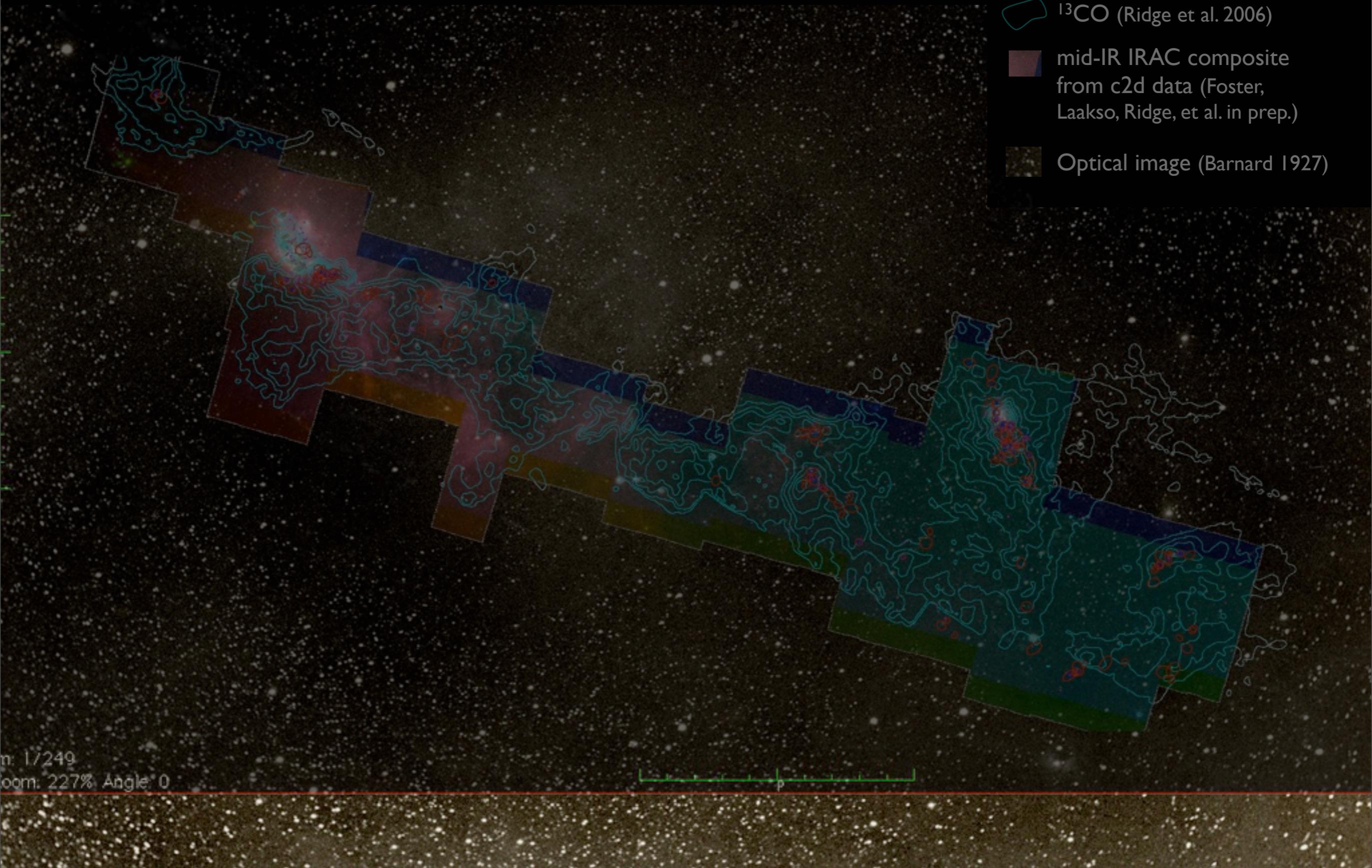
- +Nick Holliman (CS, 3D expert)
- +Doug Alan (S/W Engineer)
- +Jens Kauffmann (postdoc)
- +Erik Rosolowsky (postdoc) + ...



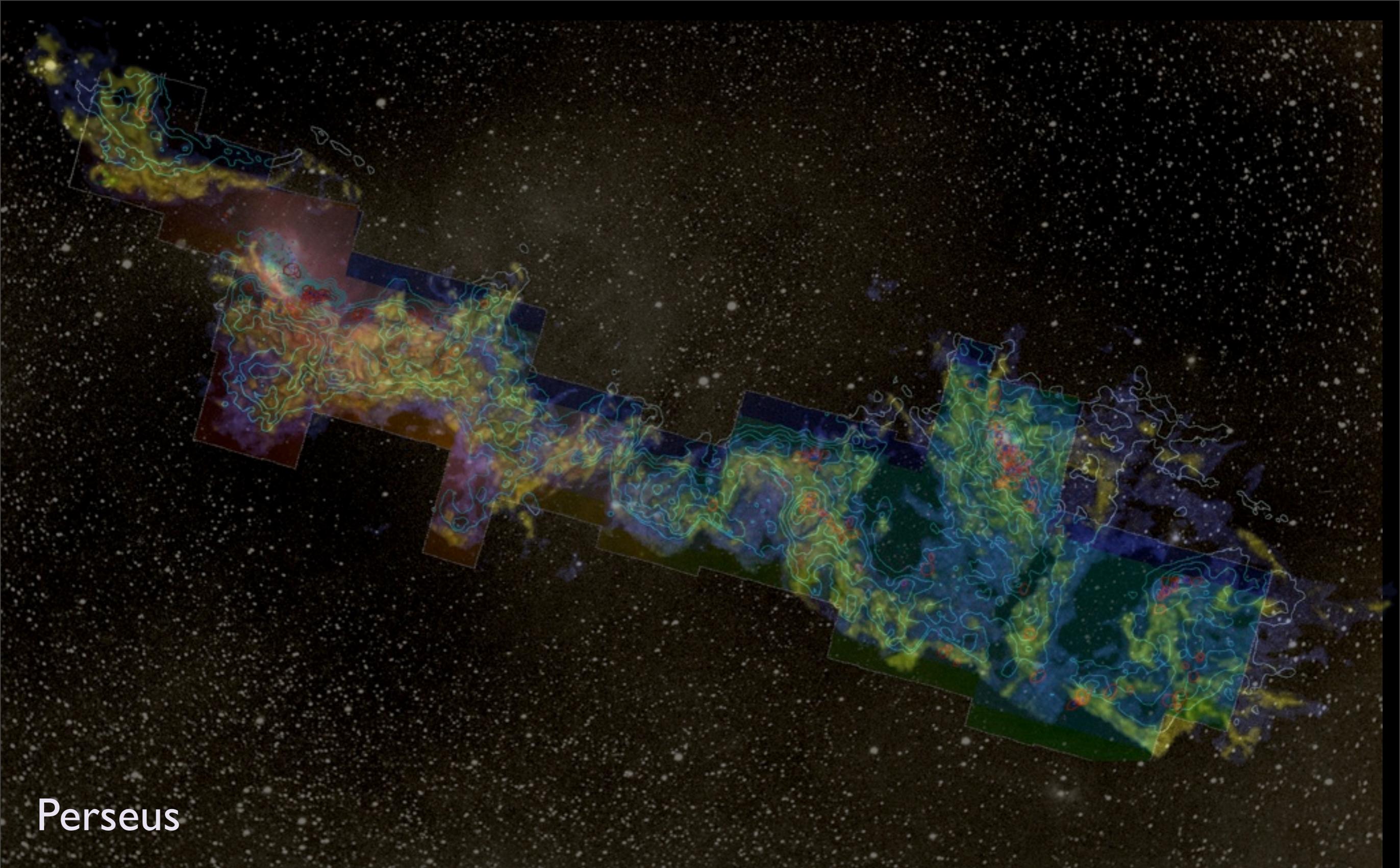
COMPLETE = COordinated Molecular Probe Line Exinction Thermal Emission

image size: 520 x 274
view size: 1305 x 733
VL: 63 WWT 07

-  mm peak (Enoch et al. 2006)
-  sub-mm peak (Hatchell et al. 2005, Kirk et al. 2006)
-  ^{13}CO (Ridge et al. 2006)
-  mid-IR IRAC composite from c2d data (Foster, Laakso, Ridge, et al. in prep.)
-  Optical image (Barnard 1927)



m: 1/249
zoom: 227% Angle: 0



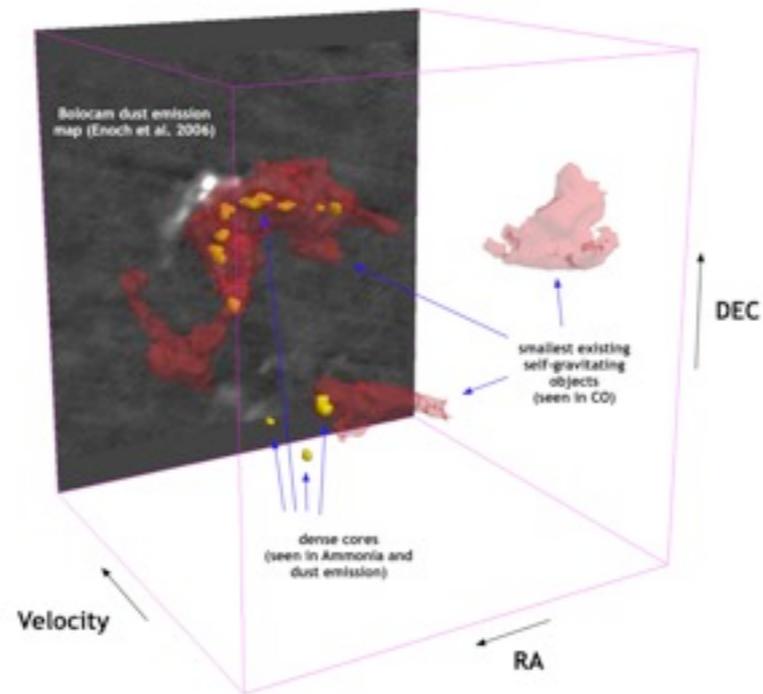
Perseus

3D Viz made with VolView

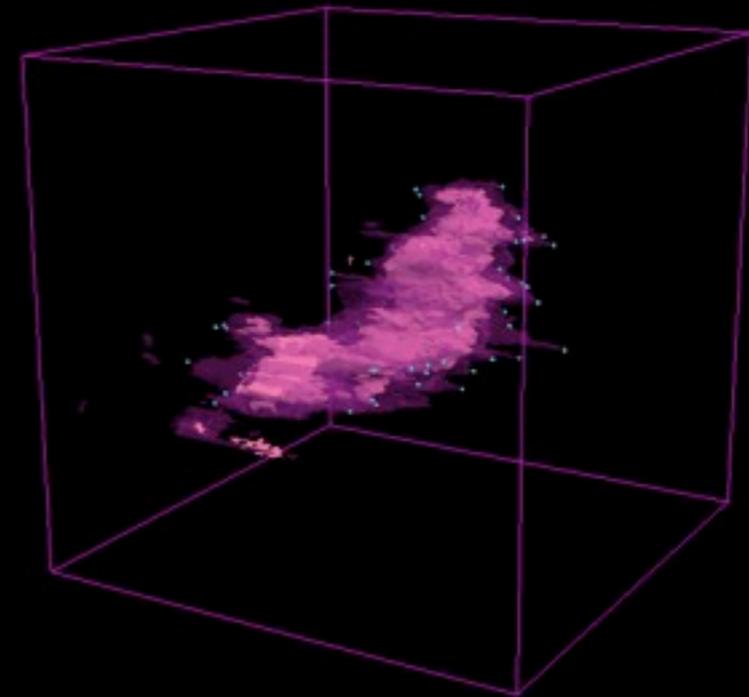
AstronomicalMedicine@iig

COMPLETE

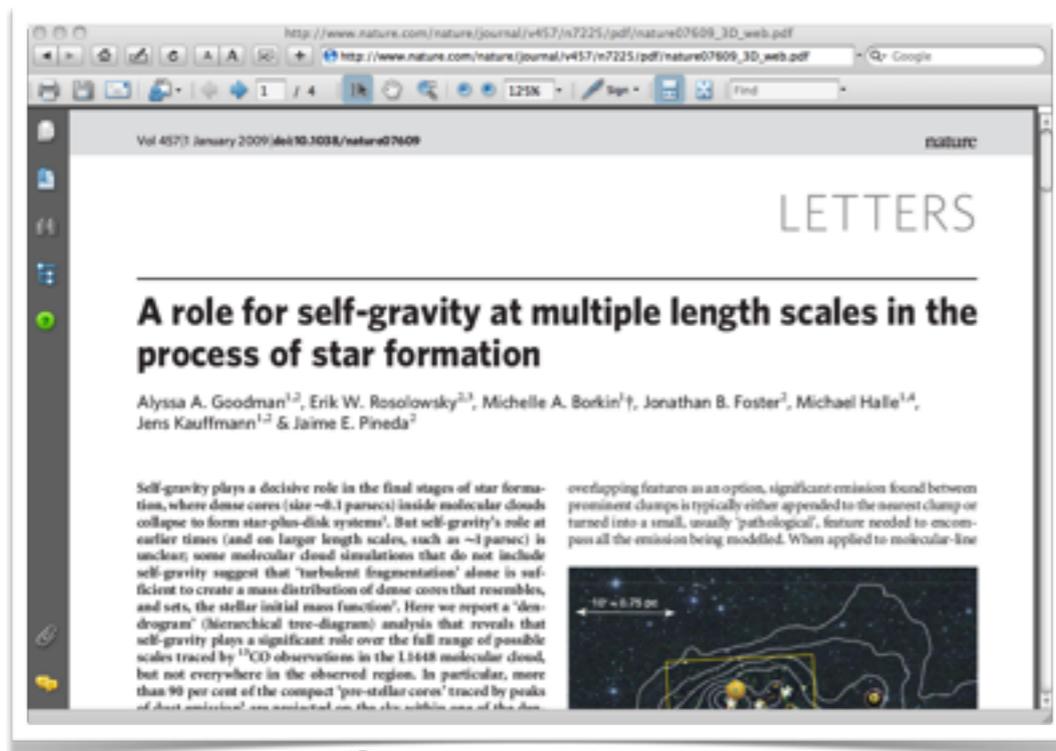
Some of What We've Learned...



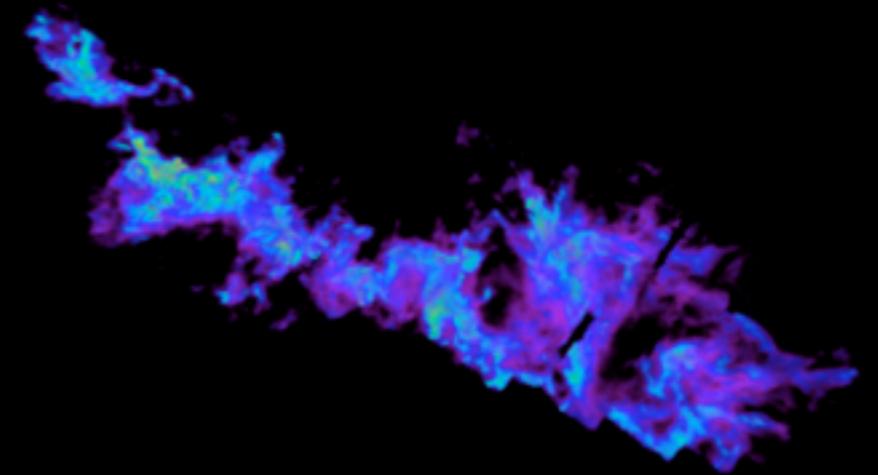
*Cores nest in cocoons
(Kauffmann et al. 2009)*



*Tripled Outflows
(Borkin et al. 2008,9)*



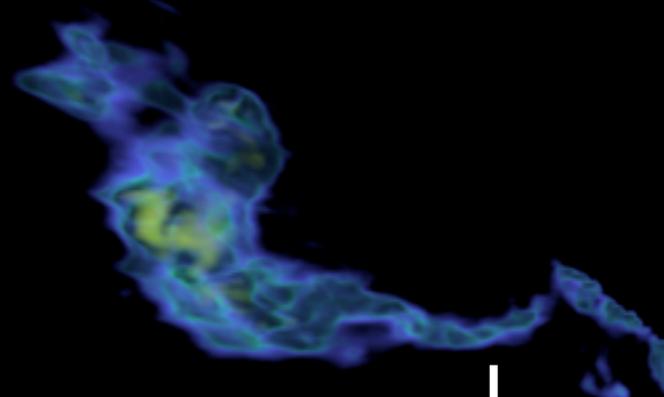
*Gravity Matters
(Goodman et al. 2009)*



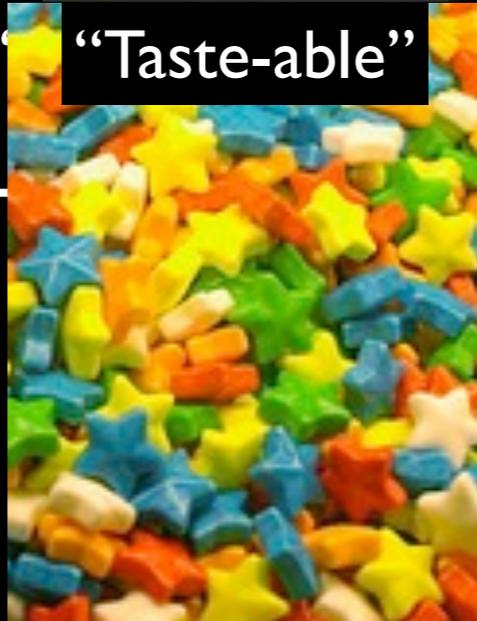
*Shells Rule
(Arce et al. 2009)*

simulations

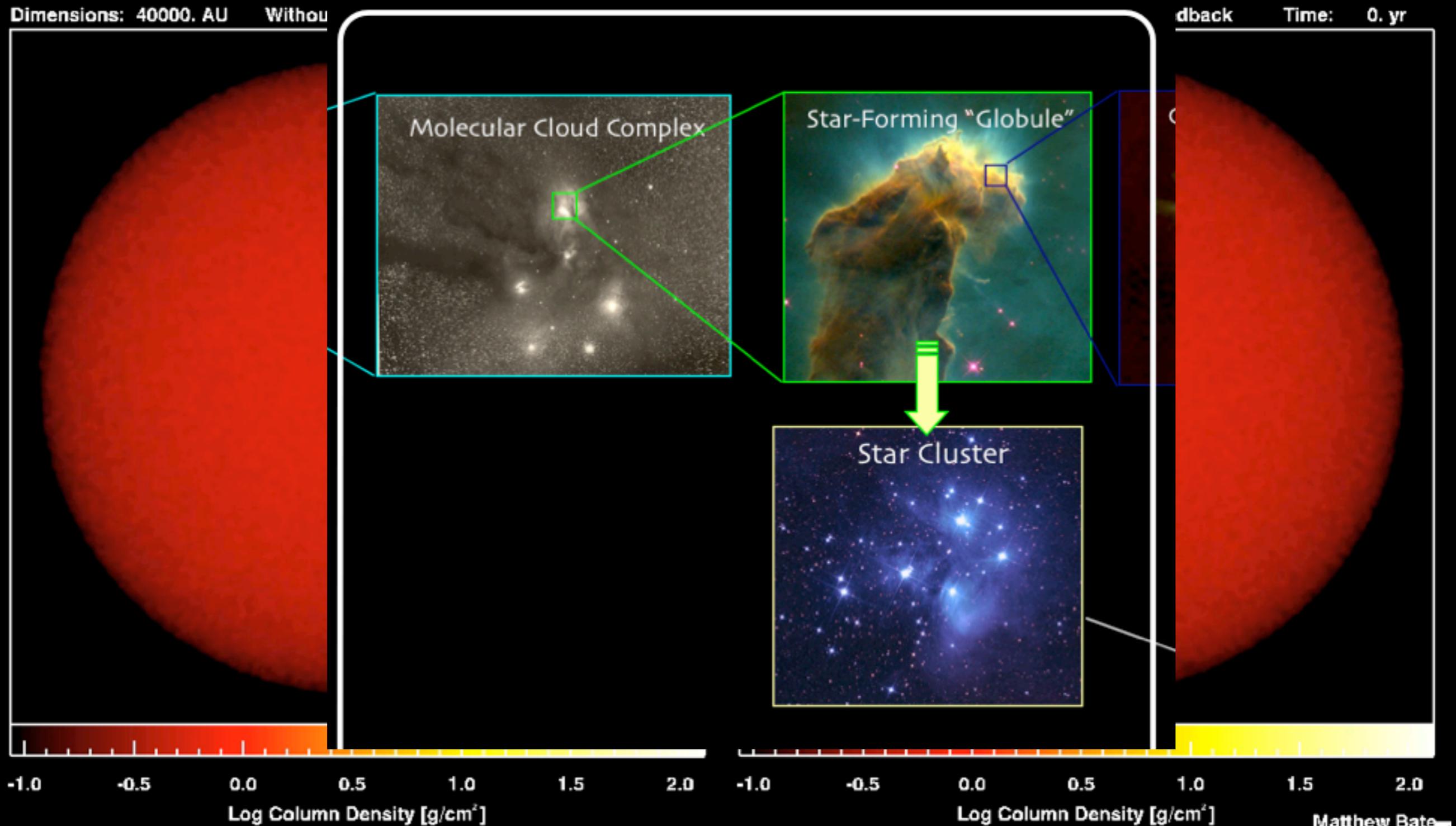
>2D
observations



“Taste-able”



“Tasting” Magnetohydrodynamic Simulations



Simulations of Bate 2009

Tasting

$$I(E, s, \vec{x}, t)$$


Star Formation Taste Tests > Overview

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Welcome to the Tasting Room



This is the collaborative space for those who do simulations of star forming regions, and those who observe them. It was inspired, in the Fall of 2006, by the NSF proposal entitled "Star Formation Taste Tests," by A. Goodman & E. Rosolowsky. Today, it is used to host conversations about and short descriptions of simulations, along with links to longer descriptions (e.g. Journal articles & web sites). In the future, we are planning to connect more enhanced descriptions of those simulations directly to online code bases and sample outputs, via the new [CADAC](#) site. So, stay tuned.

MONDAY, 13 APRIL 2009

Message [Relevant References relating to Bayesian Methods](#) Posted by **Rahul S.**

TUESDAY, 7 APRIL 2009

File  [dustfit_slides.pdf](#) Uploaded by **Rahul S.**

WEDNESDAY, 18 FEBRUARY 2009

Writeboard [Taste Tests we Plan \(COMPLETE Group\)](#) Updated by **Alyssa G.**

To-do ~~Compare PPP and PPV dendrograms to determine the correct "paradigm" for mapping between the two: (Dendrograms and Simulations)~~ Completed by **Alyssa G.**

To-do ~~Taste-Testing delivery to CADAC prior to Ringberg Meeting (Dendrograms and Simulations)~~ Completed by **Alyssa G.**

To-do ~~link to <http://www1.astrophysik.uni-kiel.de/asd/> (Dendrograms and Simulations)~~ Assigned to **Sarah B.**

Writeboard [Re: Heitsch et al: Colliding Flows](#) Comment by **Alyssa G.**

WEDNESDAY, 21 JANUARY 2009

Message [Decadal Survey](#) Posted by **Alyssa G.**

THURSDAY, 20 NOVEMBER 2008

Comment [Re: "Toward a Prescriptive Understanding of Kennicutt-Schmidt Relations"](#) Posted by **Alex L.**

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Rahul Shetty
Latest activity 28 days ago

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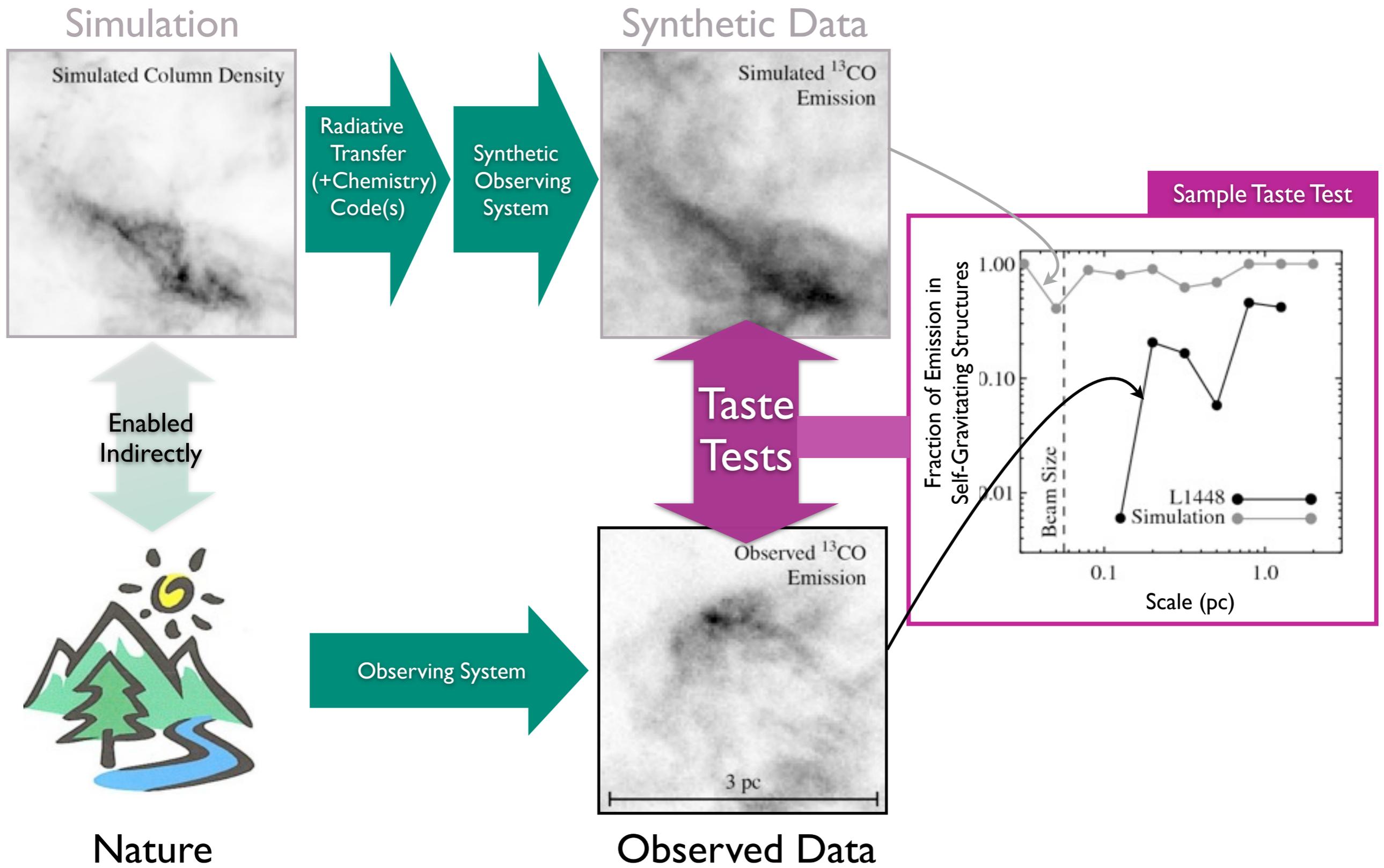
Calar Alto/MPI

Joao Alves
Hasn't logged in recently

Caltech

Scott Schnee
Hasn't logged in recently

The Taste-Testing Process



“Seeing” and “Tasting” The Role Self-Gravity in Star Formation

LETTERS

NATURE | Vol 457 | 1 January 2009

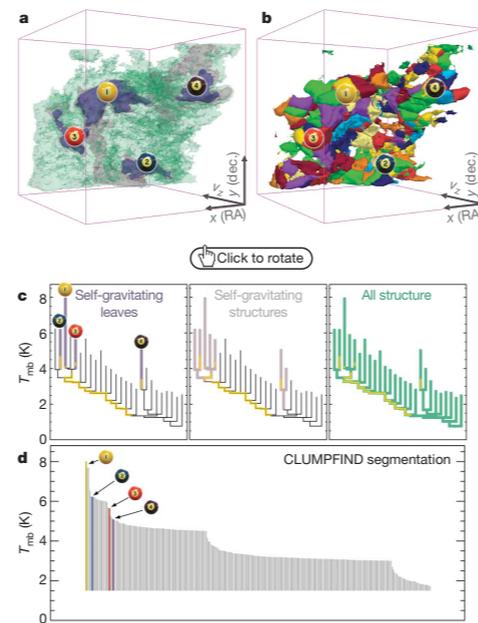


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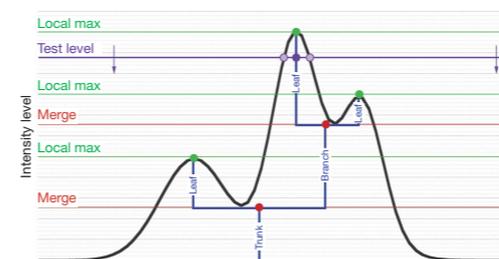


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Goodman et al. Nature, 2009