# WWT's new home is your AAS!

## WorldWide Telescope Has a New Home: The AAS

Developed by Microsoft Research, WWT is now an open-source "Universe Information System" whose further development will be led and supported by the AAS.

ask for details at WWTA Both (#322)

AMERICAN ASTRONOMICAL SOCIETY
Enhancing and sharing humanity's scientific understanding of the universe since 1899.

### WorldWide Telescope Has a New Home: The AAS

Thursday, January 7, 2016 - 06:49

On 4 January 2016 the **Council [http://aas.org/governance/current-council]** of the American Astronomical Society voted to make the AAS the institutional home of **WorldWide Telescope (WWT) [http://worldwidetelescope.org/]** , a "Universe Information System" that allows users to retrieve and share data using an interface that resembles either the sky or a 3-D view of our universe. The WWT vote represents a bold step by the AAS, making a commitment to use and adapt new technologies in its stated mission "to enhance and share humanity's scientific understanding of the universe." The AAS leadership role will allow for broad community involvement in further development of WWT. After the vote, AAS Executive Officer Kevin Marvel said, "The AAS is using its mission to guide growth and change in response to community needs. Taking on the WWT effort will be a tremendous plus for the AAS and a tremendous opportunity for the whole community."

WWT already connects to a wealth of openly available online data sets, as well as to ADS, SIMBAD, NED, and Wikipedia. WWT is a helpful tool for researchers due to its ability to fluidly connect images to each other and to literature. It's also a rich resource for educators, given the wealth of opportunities it offers for new ways to learn and communicate about the universe. But WWT's full potential is even greater than its current use -- and this potential can be realized now that WWT has been made open source and the community can be involved in a new and more expansive way.

The accompanying image shows just a small sample of the views WWT offers, including a few where user-added data are visualized as colored points added to imagery or rendered in 3-D coordinates accessible by default from within the program. The 10-minute video "**What Can WorldWide Telescope Do for Me? [https://www.youtube.com/watch?v=_FIlmOjjIBo]** " clearly demonstrates to researchers, educators, and outreach professionals why they might want to use WWT now.

The adoption of WWT by the AAS is a great example of a public-private partnership. WWT started as a research project at **Microsoft Research (MSR) [http://research.microsoft.com/en-us/]** , which distributed the WWT software for free. At MSR, Curtis Wong was the inventor of WWT, and Jonathan Fay was its principal software architect. The desktop (Windows) version of WWT is very popular, with millions of users including amateur astronomers, educators, and planetarium presenters. The advent of a fully **Web-based version of WWT [http://worldwidetelescope.org/webclient]** several years ago allowed the program to start gaining real traction with the professional community. The **WWT Web-based tools (API) [http://www.worldwidetelescope.org/Developers/]** are highly customizable and have been used to create interfaces that highlight and serve specific survey data, as well as to make viewers that link literature and data, such as the **ADS All-Sky Survey [http://adsass.org]** , which allows users to learn which parts of the sky have been studied when, and for what reason.

Microsoft Research, in cooperation with the .NET Foundation, open-sourced WWT in 2015, so that an even broader community of users could begin to contribute both code and guidance to the project. In parallel, the AAS appointed the WWT Task Force, chaired by AAS Vice-President Jack Burns, in early 2015 to review the possibility of taking on the WWT. The task force sought community input and then put a plan for participation to a Council vote at the 227th AAS meeting in Kissimmee, Florida, on Monday. After debate and discussion, the Council agreed to invest significantly in the effort and to implement the plan developed by the task force.

The WWT Consortium is a federation of individuals and organizations who contribute code, data, and services to the larger WWT ecosystem. GitHub is hosting the WWT code at no cost. Microsoft continues to contribute to the WWT effort by hosting data in its Azure cloud. Consortium participants include most major US observatories, and a loose governance and review structure will be established, under AAS guidance, in early 2016.

WWT-related projects have recently received more than $6M in federal funding, and $2M from private sources. The largest WWT education-related effort is the "**WorldWide Telescope Ambassadors [http://wwtambassadors.org]** " program, started by Prof. Alyssa Goodman at Harvard, which has been training and deploying volunteer PhD-level scientists to use WWT to teach STEM subjects in classrooms, at public science events, and online through the creation of WWT tours and shared curricula. The Adler Planetarium in Chicago created its very popular "Cosmic Wonder" planetarium show, which highlights modern all-sky multiwavelength imagery, using only WWT and at 1/10th the cost of a typical show. The "**Paper of the Future [https://www.authorea.com/users/23/articles/8762]** ," created in 2014 to demonstrate the new technologies recommended by the

AAS Journals Task Force, showcased how WWT can be used to place an image from any online source, including a journal article, on the sky in context of multispectral, all-sky survey imagery with just one click. (Try it **here [https://www.authorea.com/users/23/articles/8763/_show_article#article-paragraph-Images__space__in__space__Context__dot__md]** .) And, in a recent paper highlighted by **AAS Nova [http://aasnova.org/]** the authors used WWT to look for, and find, very long infrared dark clouds that can define "**The Skeleton of the Milky Way [http://aasnova.org/2015/12/07/companions-for-nessie-in-the-milky-ways-skeleton/]** ."

Initial AAS efforts using WWT will focus on integrating one-click image-contextualization into the Society's journals and the AAS's "**Astronomy Image Explorer [http://www.astroexplorer.org/]** " service, which is already connected to ADS. The AAS will also encourage use of WWT to enhance public-outreach projects via connections to programs like WorldWide Telescope Ambassadors.

The open-source nature of the WWT project, and the availability of a well-documented Web-based API, means that organizations can use the technology to build custom services as needed. Developers have created, and will continue to create, services ranging from iOS-based games to sky-survey data servers using WWT. The addition of the AAS imprimatur to the WWT effort will inspire broader participation and support.

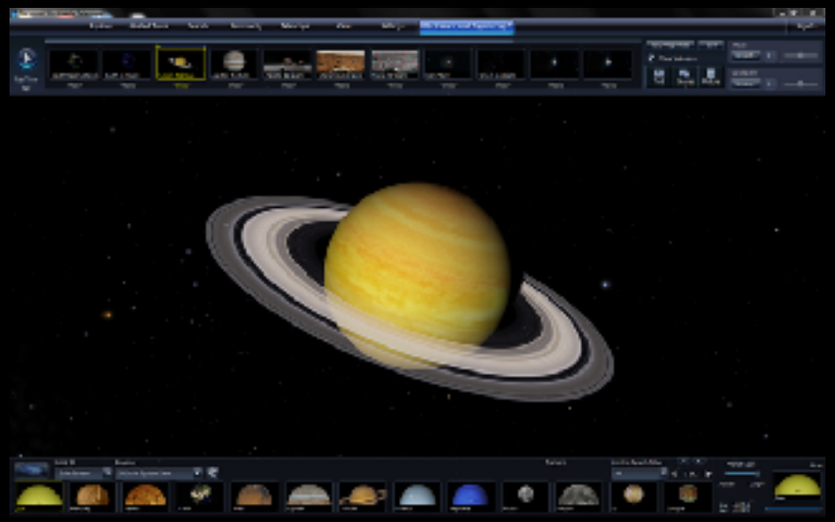
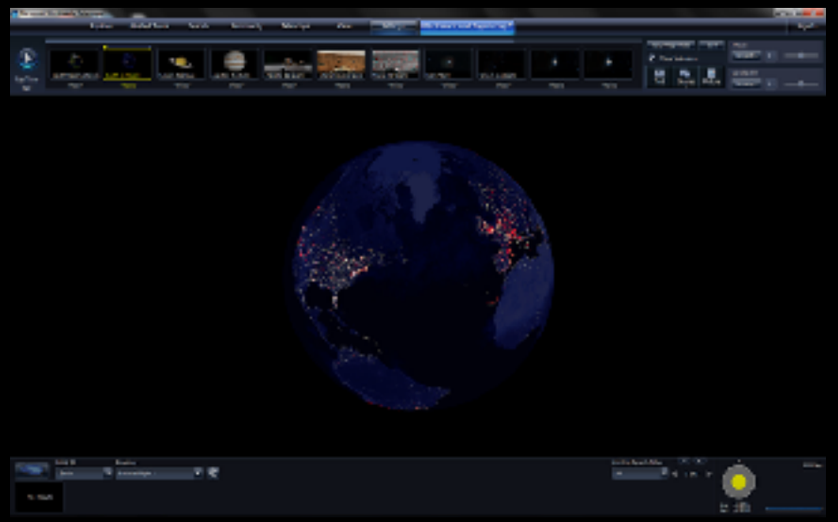
The Society's mission drives it to find ways to support the community now and explore ways to support it in the future. A wide range of exciting possibilities are enabled by the WWT infrastructure, but the full realization of those possibilities can only be achieved through community input, guidance, coordination and most importantly, effort. This is something central to the Society's mission and role. We do not know entirely what applications our creative community of scientists will develop with WWT, but we do know that the American Astronomical Society can help enable their work by taking on the WWT effort. Exciting times lie ahead!

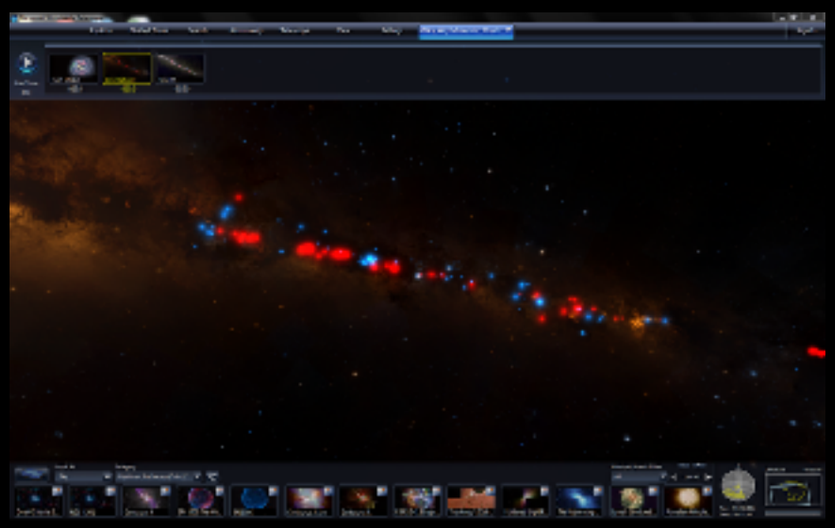
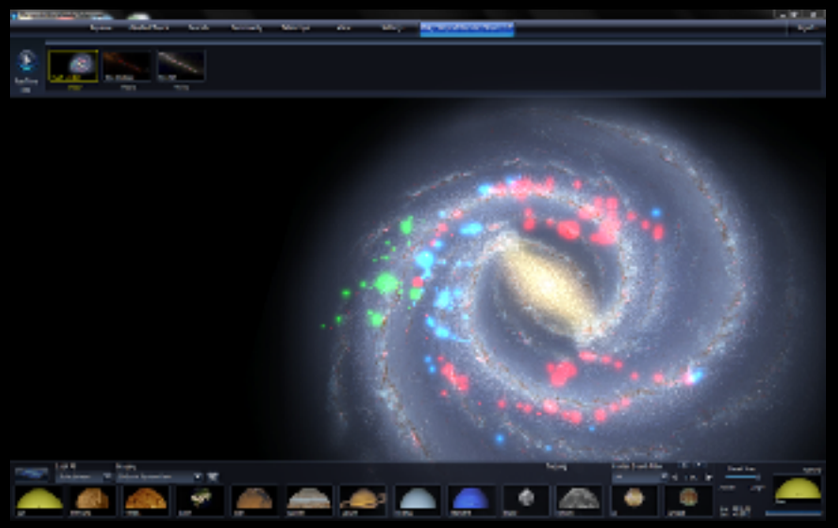
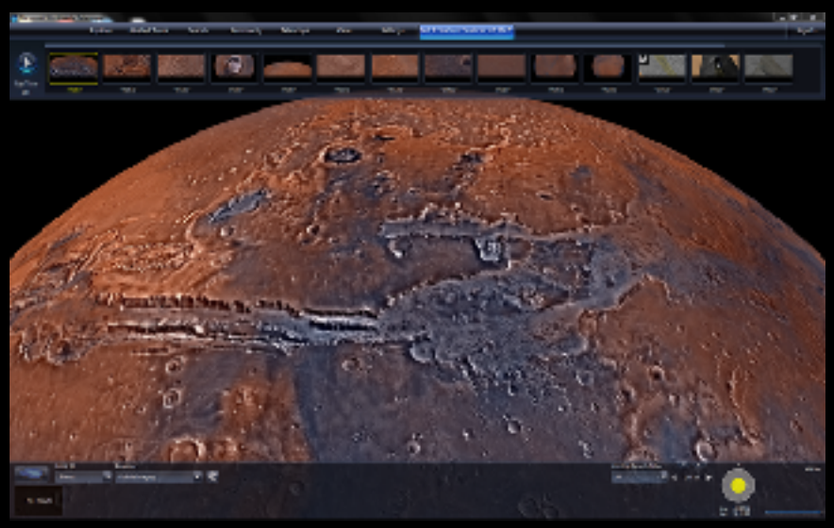
# What is

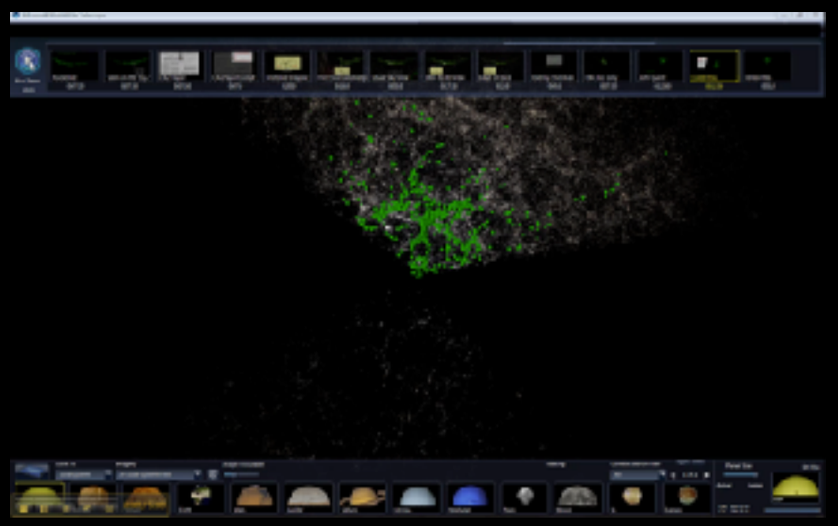
# WorldWide Telescope

## & why should researchers care?

Alyssa A. Goodman
Harvard-Smithsonian Center for Astrophysics, @aagie

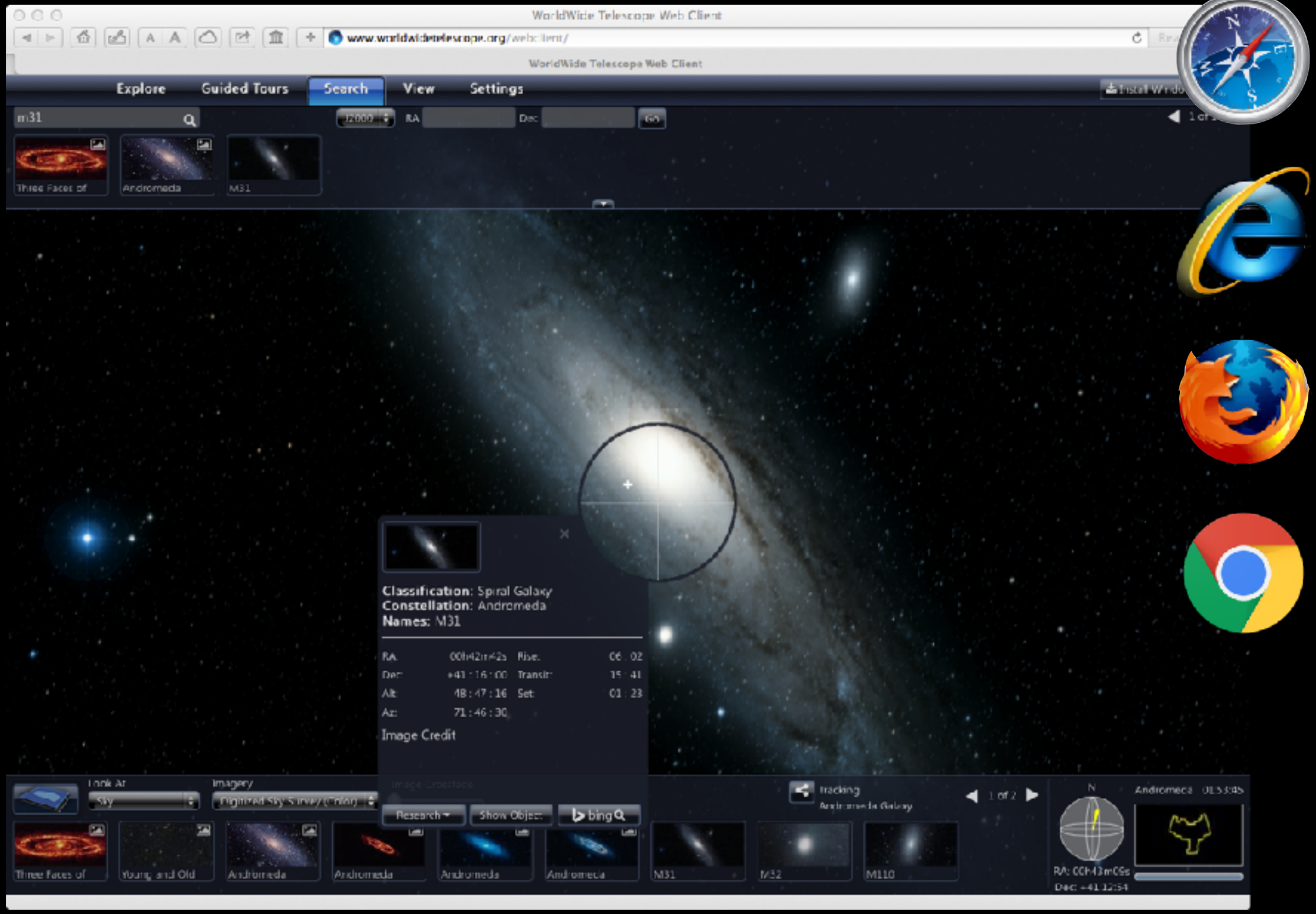





WorldWide Telescope: Open Source

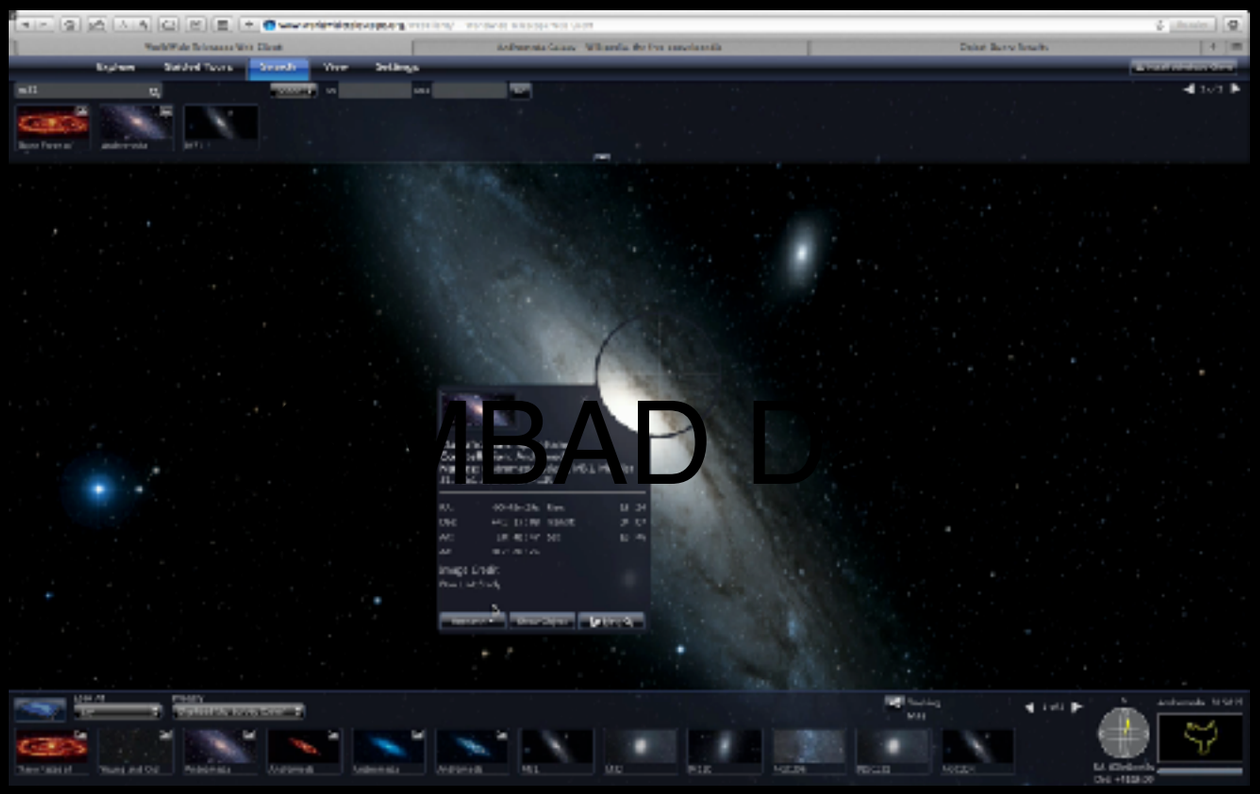
worldwidetelescope.org

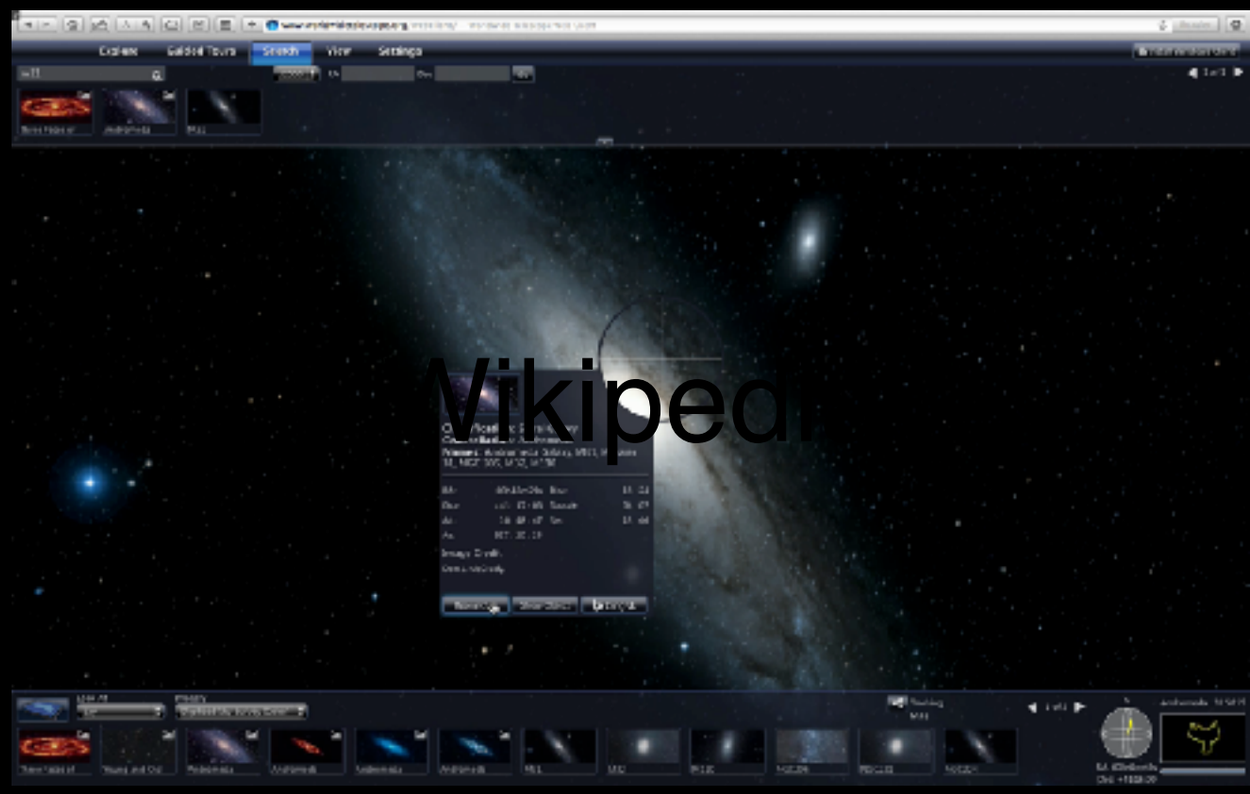



WorldWide Telescope: On the Web

worldwidetelescope.org

Finder Scope




WorldWide Telescope: Data↔Literature

Web or Windows: “right-click”

ADS ALL SKY SURVEY

Article Density on the Sky

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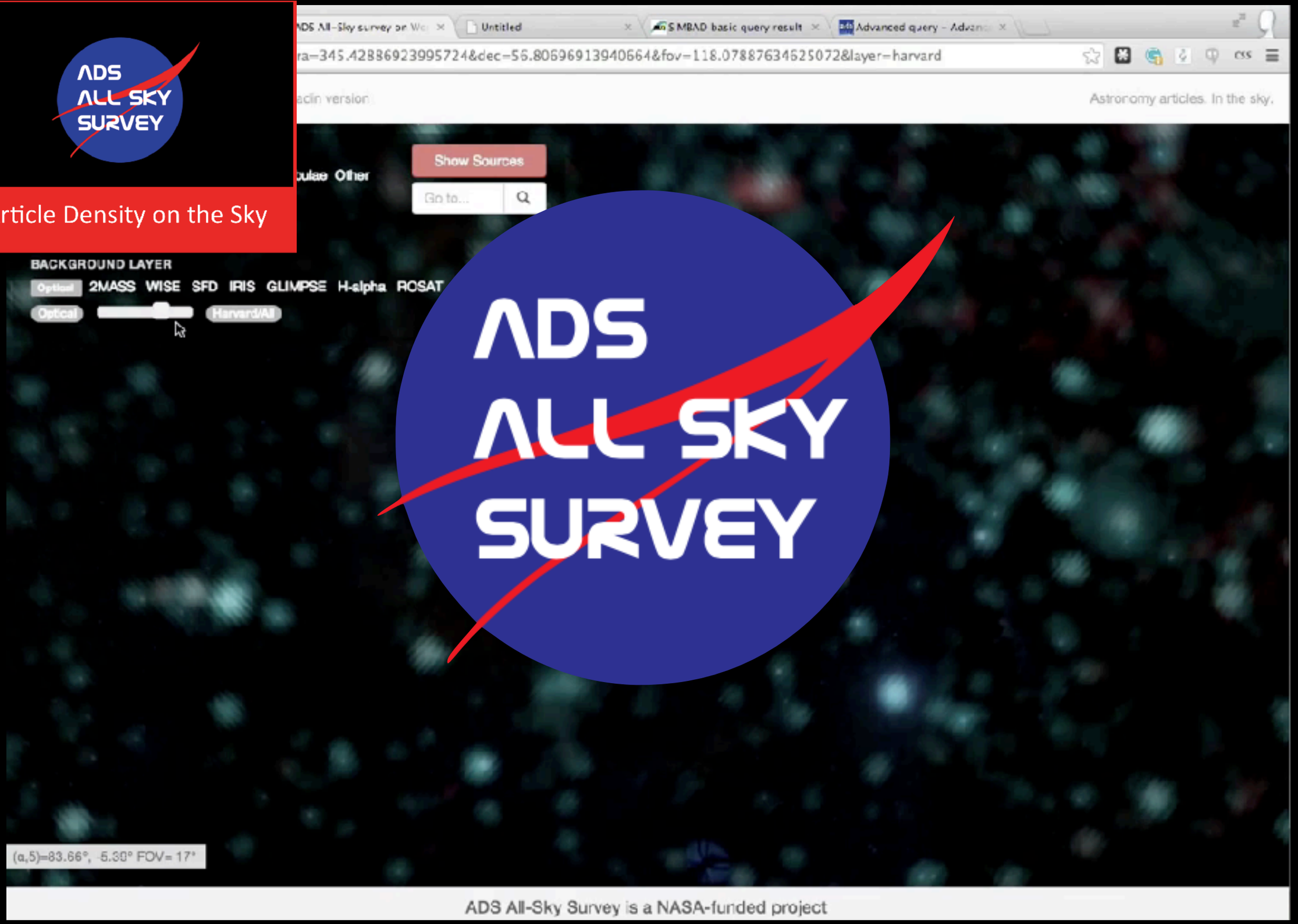
Your data in WWT

AAS NOVA

Research highlights from the journals of the American Astronomical Society

WWT Tours to Communicate

# Article Density on the Sky




WorldWide Telescope: ADS All-Sky Survey adsass.org

# The "Paper" of the Future

Alyssa Goodman, Josh Peek, Alberto Accomazzi, Chris Beaumont, Christine L. Borgman, How-Huan Hope Chen, Merce Crosas, Christopher Erdmann, August Muench, Alberto Pepe, Curtis Wong + Add author

Re-arrange authors

*A 5-minute video demonstration of this paper is available at this YouTube link.*

## 1 Preamble

A variety of research on human cognition demonstrates that humans learn and communicate best when more than one processing system (e.g. visual, auditory, touch) is used. And, related research also shows that, no matter how technical the material, most humans also retain and process information best when they can put a narrative "story" to it. So, when considering the future of scholarly communication, we should be careful not to do blithely away with the linear narrative format that articles and books have followed for centuries: instead, we should enrich it.

Much more than text is used to commuicate in Science. Figures, which include images, diagrams, graphs, charts, and more, have enriched scholarly articles since the time of Galileo, and ever-growing volumes of data underpin most scientific papers. When scientists communicate face-to-face, as in talks or small discussions, these figures are often the focus of the conversation. In the best discussions, scientists have the ability to manipulate the figures, and to access underlying data, in real-time, so as to test out various what-if scenarios, and to explain findings more clearly. **This short article explains—and shows with demonstrations—how scholarly "papers" can morph into long-lasting rich records of scientific discourse,** enriched with deep data and code linkages, interactive figures, audio, video, and commenting.

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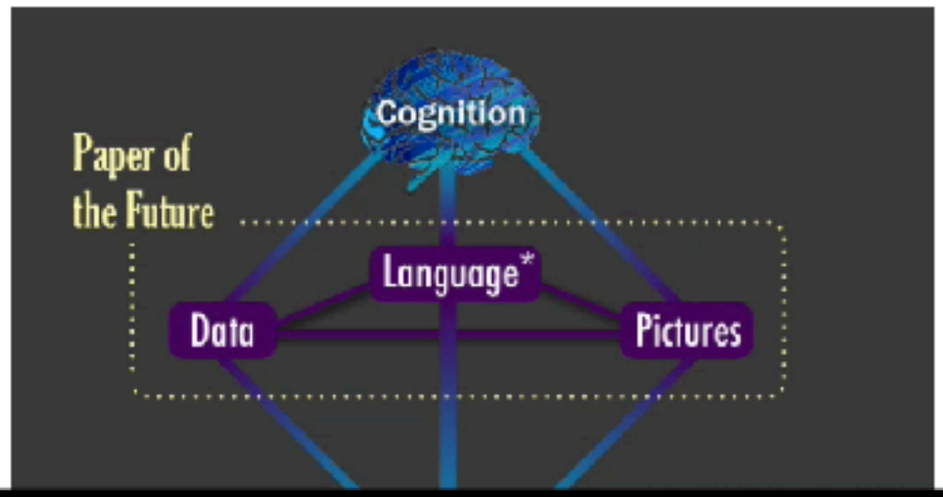
Reverse raster citations




astronomy image explorer

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Journal Images in the Sky

WorldWide Telescope: Images to the Sky

tinyurl.com/paperofthefuture

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Ophiuchus

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AAS

HOME

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CONTENT TYPE:

Images

YEAR RANGE:

2004 - 2015

SEARCH TERM(S)

Enter search term(s)

PUBLICATIONS

| | |
|---|---|
| The Astronomical Journal | 230 |
| The Astrophysical Journal | 1,049 |
| The Astrophysical Journal Letters | 55 |
| The Astrophysical Journal Supplement Series | 330 |

YEAR RANGE: 2004 - 2015

1995 2015

CONTENT TYPE

Images (1,564) Videos (0)

Figure sets (3)

AUTHOR

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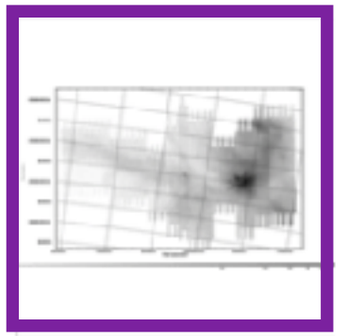
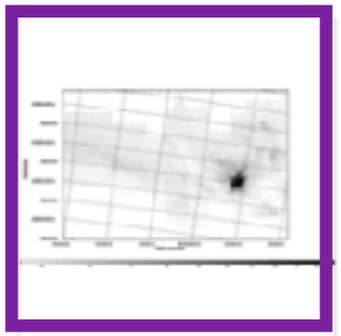
Term(s) to search within



Spitzer MIPS 70 µm mosaic of Ophiuchus



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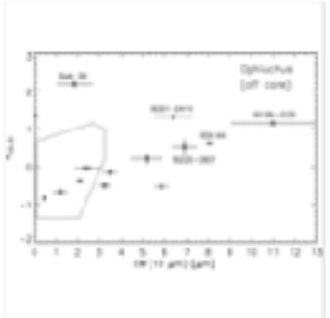
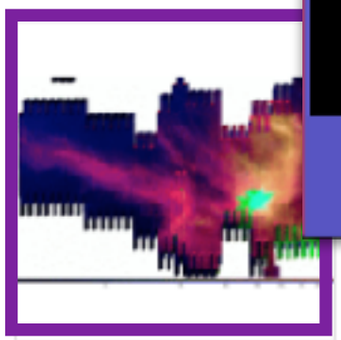


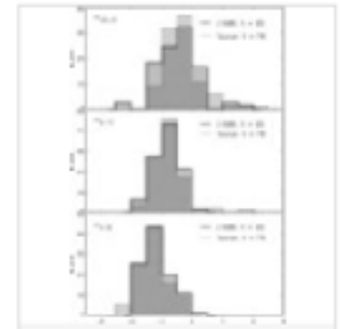
Same as Figure 10, but for the Ophiuchus off-co...



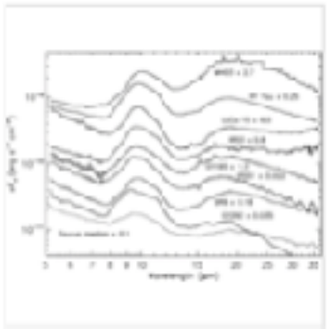
A 24 (blue), 70 (green), and 160 µm (red) mosai...

Histograms for the distribution of n13–31 and

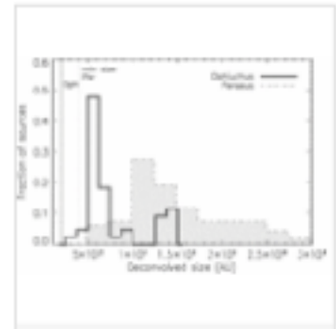
SEDs of WTTS disks in Ophiuchus.



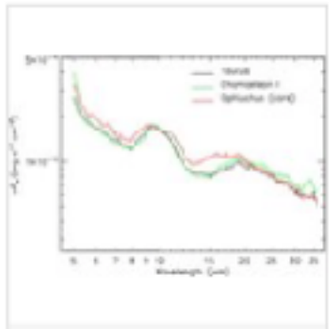
Distribution of n13–31 values for samples in th...



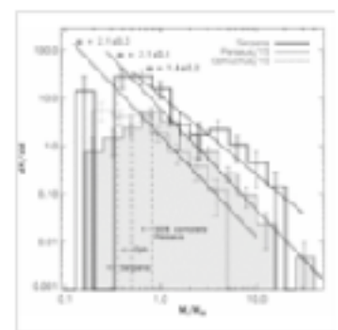
Most prominent outliers in terms of EW(10 µm) i...



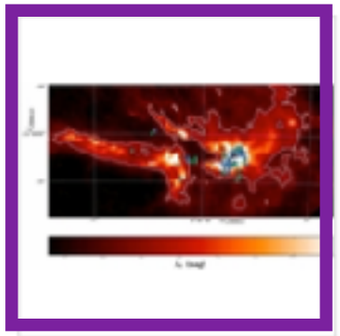
Comparison of the distribution of sizes of



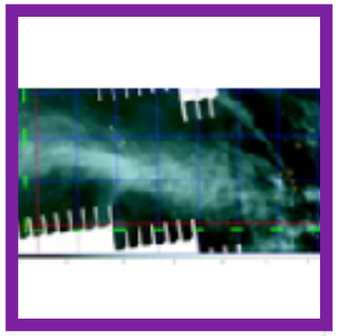
Median IRS spectra for Taurus, the Ophiuchus co...



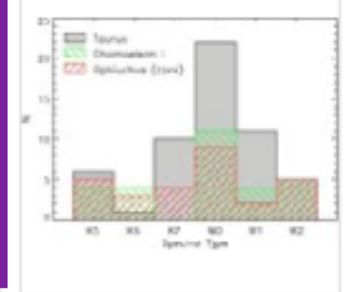
Comparison of the differential CMDs of



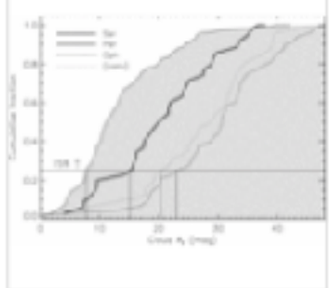
Location of the YSO (blue circles) and candidat...



High-resolution map of the Ophiuchus Streamer a...



Histogram for the distribution of spectral



Cumulative fraction of 1.1 mm cores as a functi...

WorldWide Telescope Publishing

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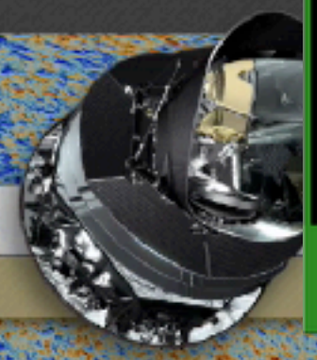
# PLANCK

## U.S. DATA CENTER AT IPAC

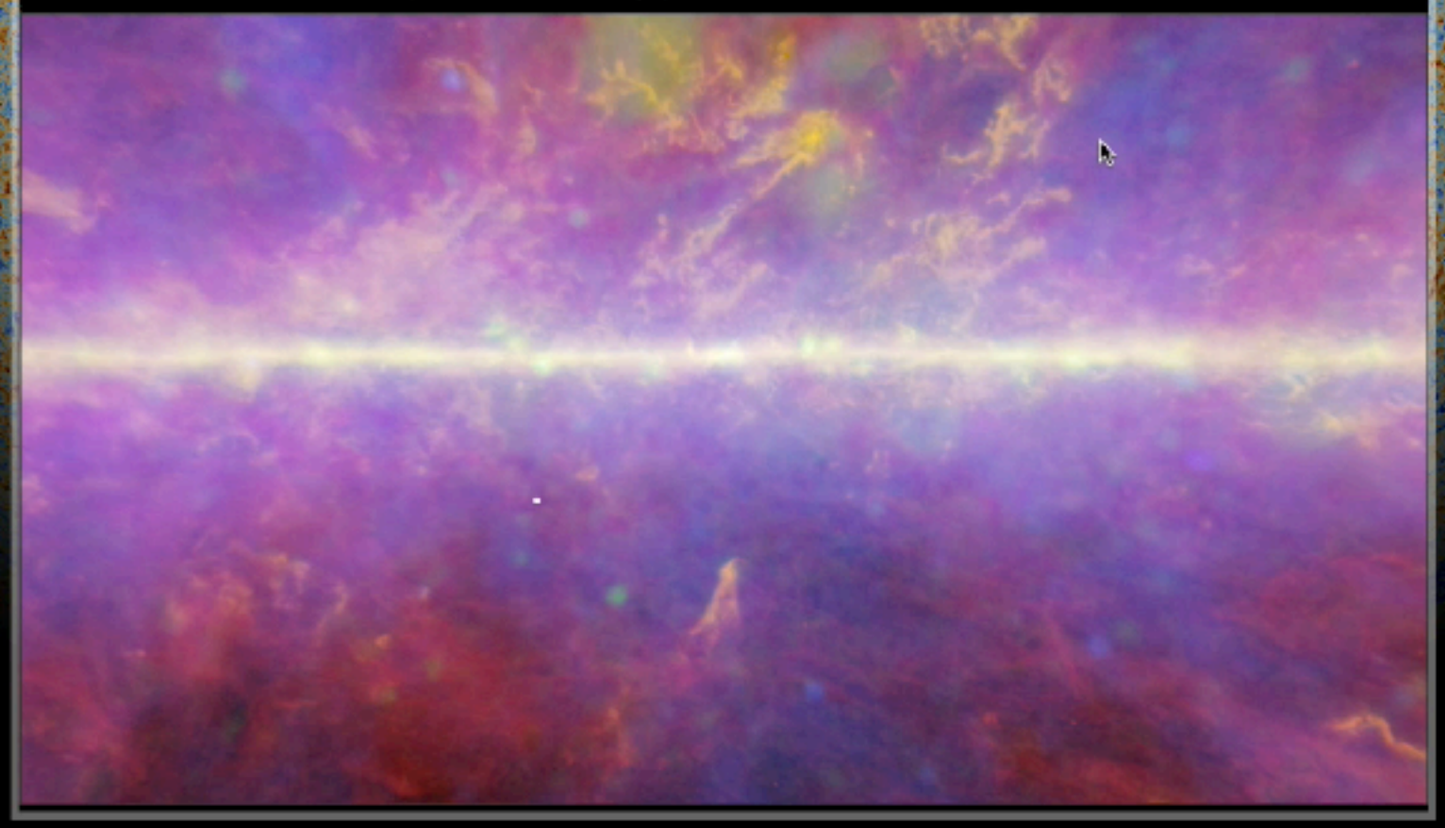
ABOUT NEWS GALLERY FOR RESEARCHERS



COMPLETE

Your data in WWT

Interactive Planck Data Viewer (WorldWide Telescope)



Galactic Plane Mode
Galactic Grid
Equatorial Grid

| Background | Foreground |
| --- | --- |
| Planck Thermal Dust | Planck Dust & Gas |
| Our Milky Way galaxy is filled with sooty particles of | A composite view of our Milky Way displays a |

WorldWide Telescope: Your Data on the Sky

planck.ipac.caltech.edu/wwt

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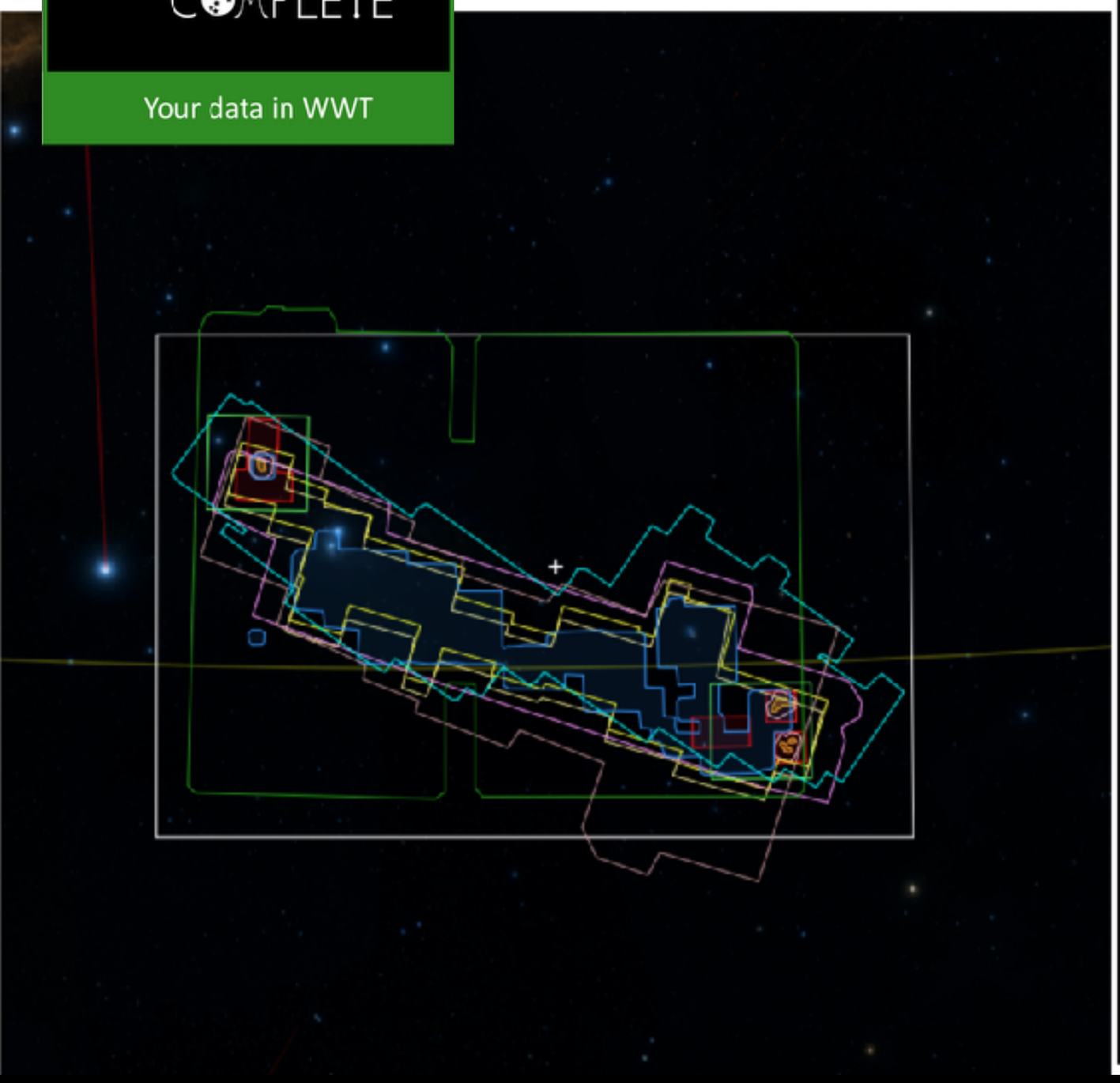
Your data in WWT



# COMPLETE Data Available

Center on Perseus | Center on Ophichus | Center on Serpens

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

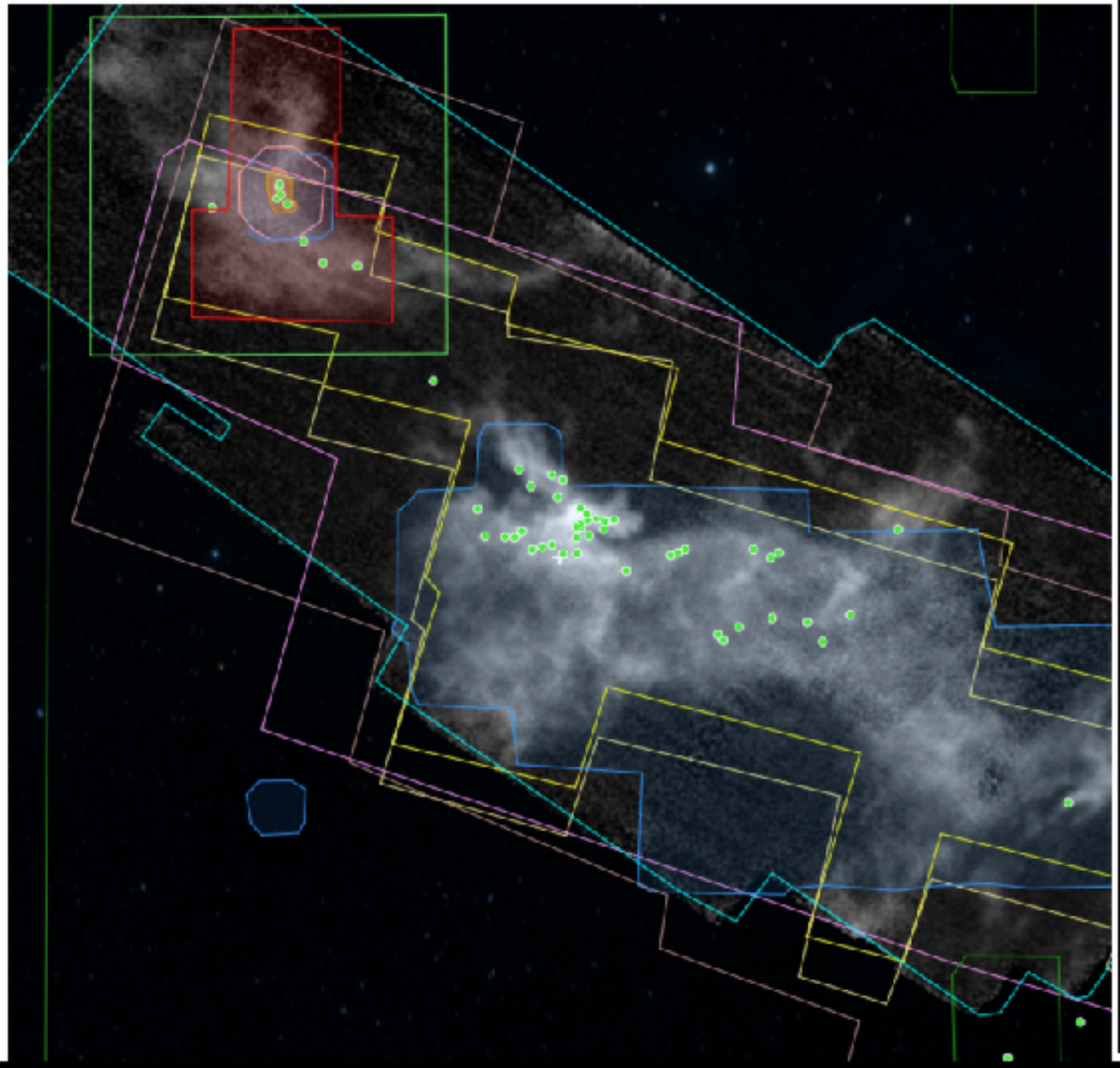
| Dataset | Show | Perseus | Ophiuchus | Serpens | Link |
|---|---|---|---|---|---|
| GBT: HI Data Cube | ☑ | √ | √ | ∅ | Data |
| IRAS: Av/Temp Maps | ☑ | √ | √ | √ | Data |
| FCRAO: 12CO | ☑ | √ | √ | √ | Data |
| FCRAO: 13CO | | √ | √ | √ | Data |
| JCMT: 850 microns | ☑ | √ | √ | ∅ | Data |
| Spitzer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

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

| | | | | | |
|---|---|---|---|---|---|
| CTIO/Calar Alto: NIR (J,H,Ks) | ☑ | √ | √ | ∅ | Data |
| IRAM 30-m: N2H+ and C18O | ☑ | √ | ∅ | ∅ | Data |
| IRAM 30-m: 1.1-mm continuum | ☑ | √ | ∅ | ∅ | Data |
| Megacam/MMT: r,i,z images | ☑ | √ | ∅ | ∅ | Data |

**Catalogs & Pointed Surveys**

| | | | | | |
|---|---|---|---|---|---|
| NH3 Pointed Survey | ☐ | √ | ∅ | ∅ | Data |
| YSO Candidate list (c2d) | ☐ | √ | √ | √ | Data |



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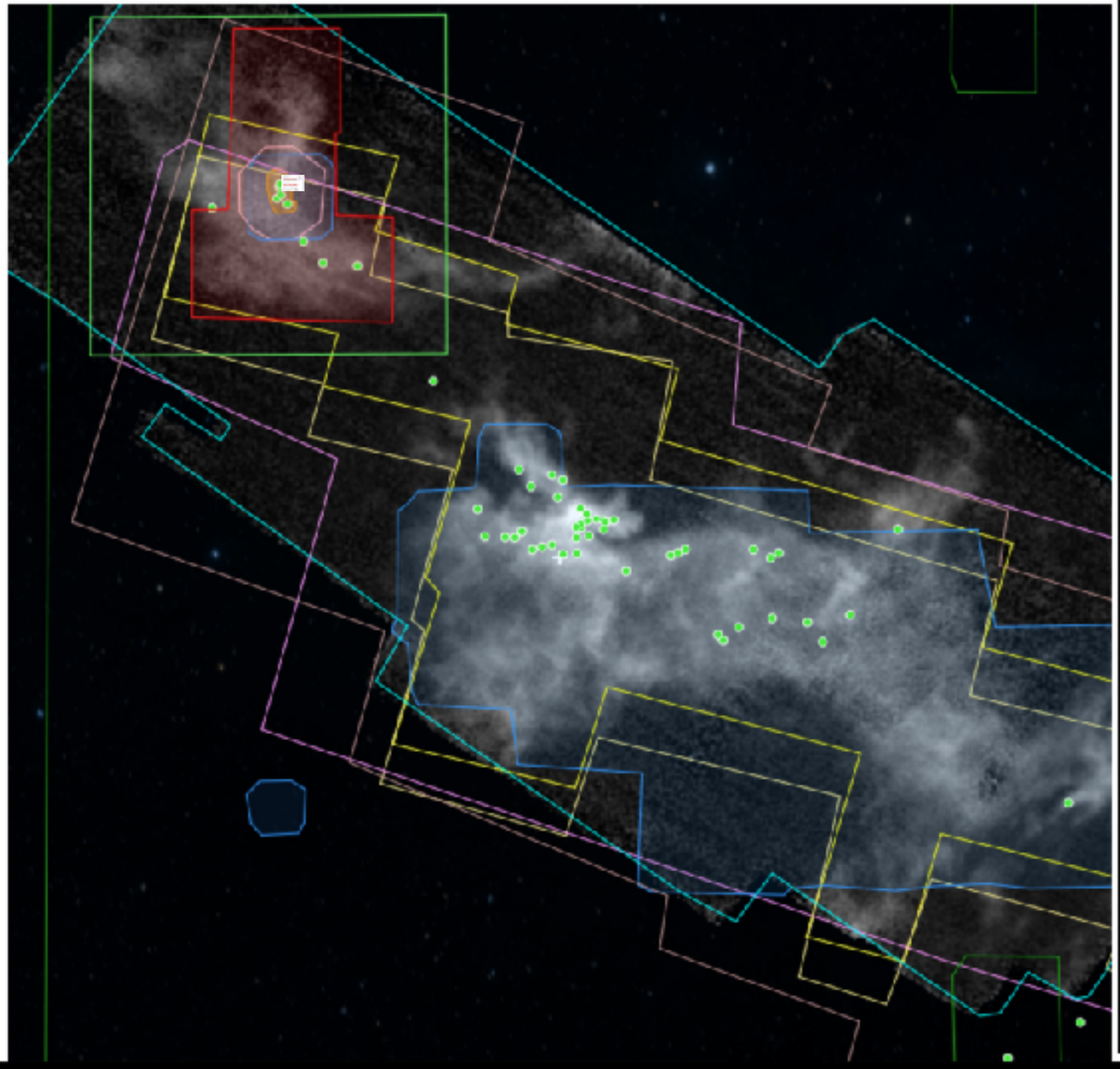
| IRAS: Av/Temp Maps | ☑ | √ | √ | √ | Data |
| FCRAO: 12CO | ☑ | √ | √ | √ | Data |
| FCRAO: 13CO | | √ | √ | √ | Data |
| JCMT: 850 microns | ☑ | √ | √ | ∅ | Data |
| Spitzer c2d: IRAC 1,3 (3.6,5.8 μm) | ☑ | √ | √ | √ | Data |
| Spitzer c2d: IRAC 2,4 (4.5,8 μm) | ☑ | √ | √ | √ | Data |
| CSO/Bolocam: 1.2-mm | ☑ | √ | ∅ | ∅ | Data |
| Spitzer MIPS: Derived Dust Map | ☑ | √ | ∅ | ∅ | Data |
| **Targeted Regions (Phase II, Some Data Not Yet Available)** | | | | | |
| CTIO/Calar Alto: NIR (J,H,Ks) | ☑ | √ | √ | ∅ | Data |
| IRAM 30-m: N2H+ and C18O | ☑ | √ | ∅ | ∅ | Data |
| IRAM 30-m: 1.1-mm continuum | ☑ | √ | ∅ | ∅ | Data |
| Megacam/MMT: r,i,z images | ☑ | √ | ∅ | ∅ | Data |
| **Catalogs & Pointed Surveys** | | | | | |
| NH3 Pointed Survey | ☑ | √ | ∅ | ∅ | Data |
| YSO Candidate list (c2d) | ☐ | √ | √ | √ | Data |

WorldWide Telescope Customize (API)

COMPLETE Survey

http://www.worldwidetelescope.org/COMPLETE/WWTCoverageTool5.htm#



## COMPLETE Data Available

Center on Perseus | Center on Ophiuchus | Center on Serpens

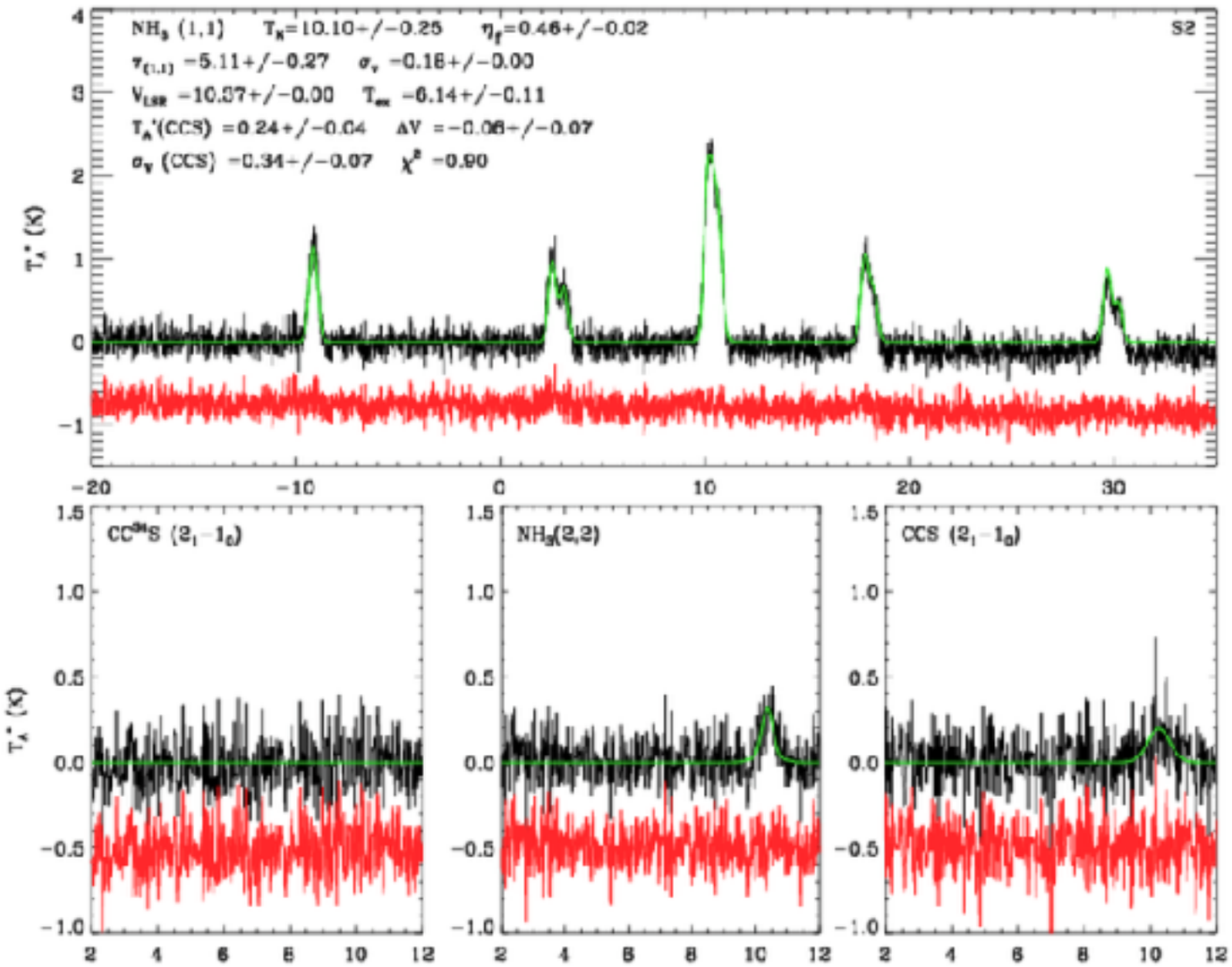
**Full-Cloud Data (Phase I, All Data Available)**

| Dataset | Show | Perseus | Ophiuchus | Serpens | Link |
|---|---|---|---|---|---|
| GBT: HI Data Cube | ☑ | √ | √ | ∅ | Data |
| IRAS: Av/Temp Maps | ☑ | √ | √ | √ | Data |
| FCRAO: 12CO | ☑ | √ | √ | √ | Data |
| FCRAO: 13CO | | √ | √ | √ | Data |
| JCMT: 850 microns | ☑ | √ | √ | ∅ | Data |
| Spitzer c2d: IRAC 1,3 (3.6,5.8 μm) | ☑ | √ | √ | √ | Data |
| Spitzer c2d: IRAC 2,4 (4.5,8 μm) | ☑ | √ | √ | √ | Data |
| CSO/Bolocam: 1.2-mm | ☑ | √ | ∅ | ∅ | Data |
| Spitzer MIPS: Derived Dust Map | ☑ | √ | ∅ | ∅ | Data |
| **Targeted Regions (Phase II, Some Data Not Yet Available)** | | | | | |
| CTIO/Calar Alto: NIR (J,H,Ks) | ☑ | √ | √ | ∅ | Data |
| IRAM 30-m: N2H+ and C18O | ☑ | √ | ∅ | ∅ | Data |
| IRAM 30-m: 1.1-mm continuum | ☑ | √ | ∅ | ∅ | Data |
| Megacam/MMT: r,i,z images | ☑ | √ | ∅ | ∅ | Data |
| **Catalogs & Pointed Surveys** | | | | | |
| NH3 Pointed Survey | ☑ | √ | ∅ | ∅ | Data |
| YSO Candidate list (c2d) | ☐ | √ | √ | √ | Data |

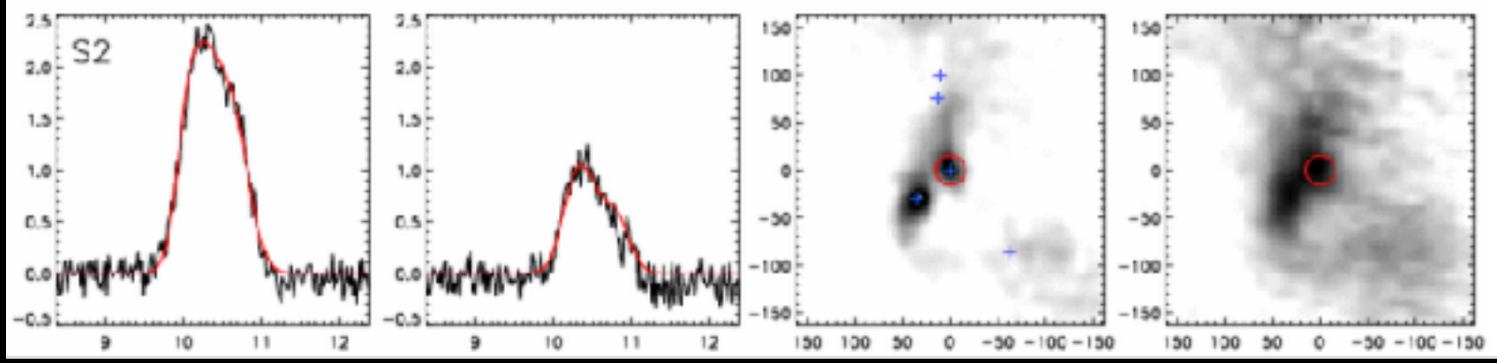
WorldWide Telescope Customize (API)

COMPLETE Survey

http://www.worldwidetelescope.org/COMPLETE/WWTCoverageTool5.htm#




NH3 (1-1) Central | NH3 (1-1) 1st satellite | Scuba 850 micron | Bolocam 1.1 mm

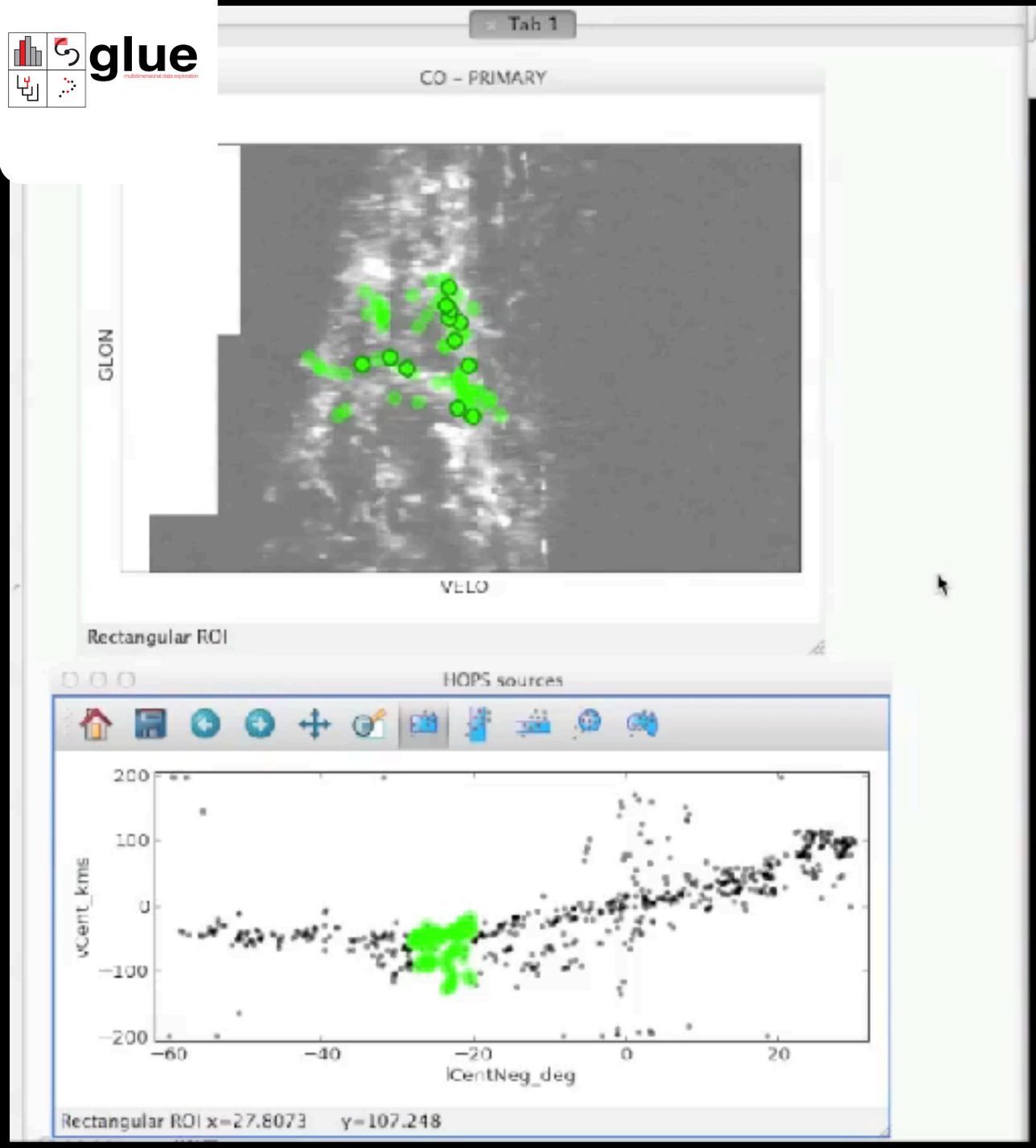


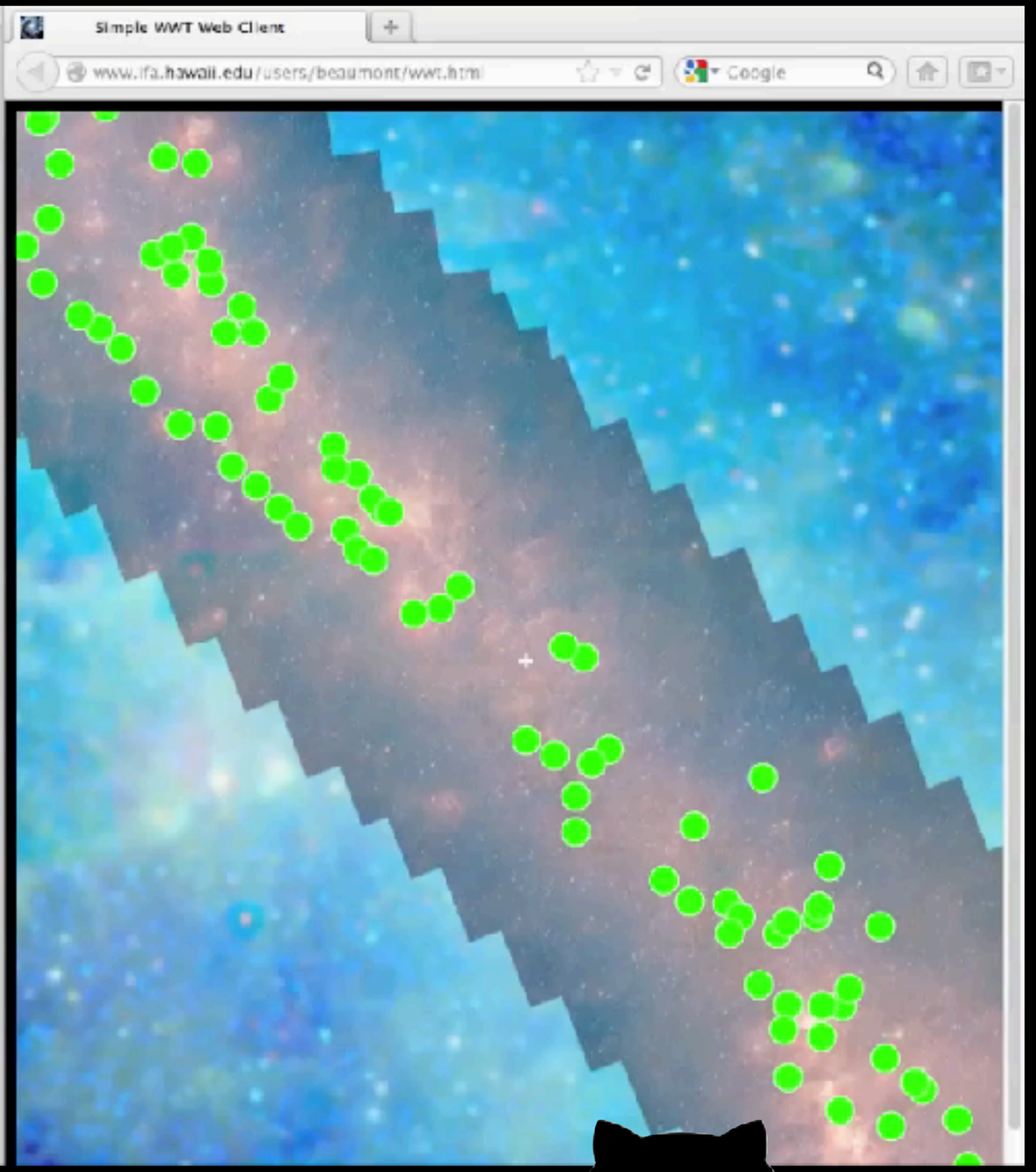

## Source Information

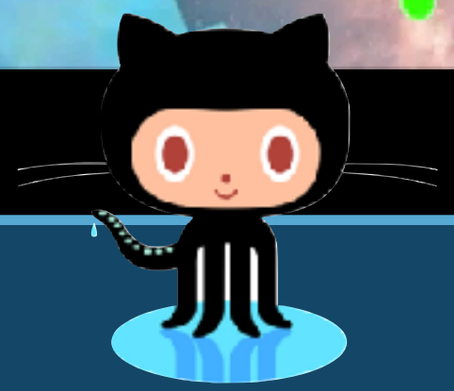
NH3 (1-1): Detected
NH3 (2-2): Detected
CCS (2-1): Detected
Flags : 0
RA: 03:47:38.6
Dec: +32:52:18.8
(1-1) Spectrum (Download ASCII)
(2-2) Spectrum (Download ASCII)

Back to Data Browser

glue
multidimensional data exploration



WorldWide Telescope Customize (API)

AAS NOVA Research highlights from the Journals of the American Astronomical Society

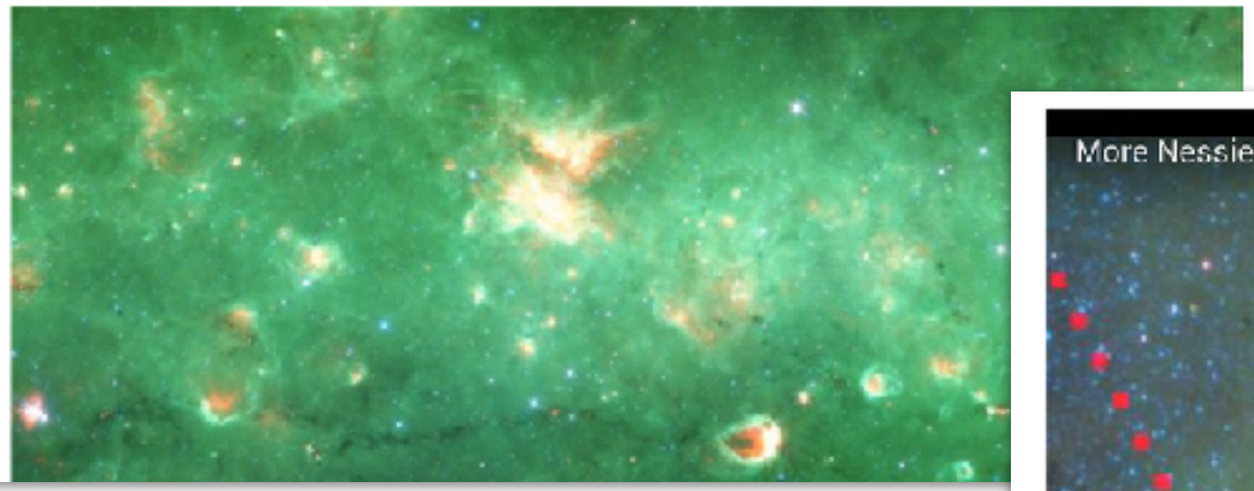
HOME HIGHLIGHTS JOURNALS DIGEST

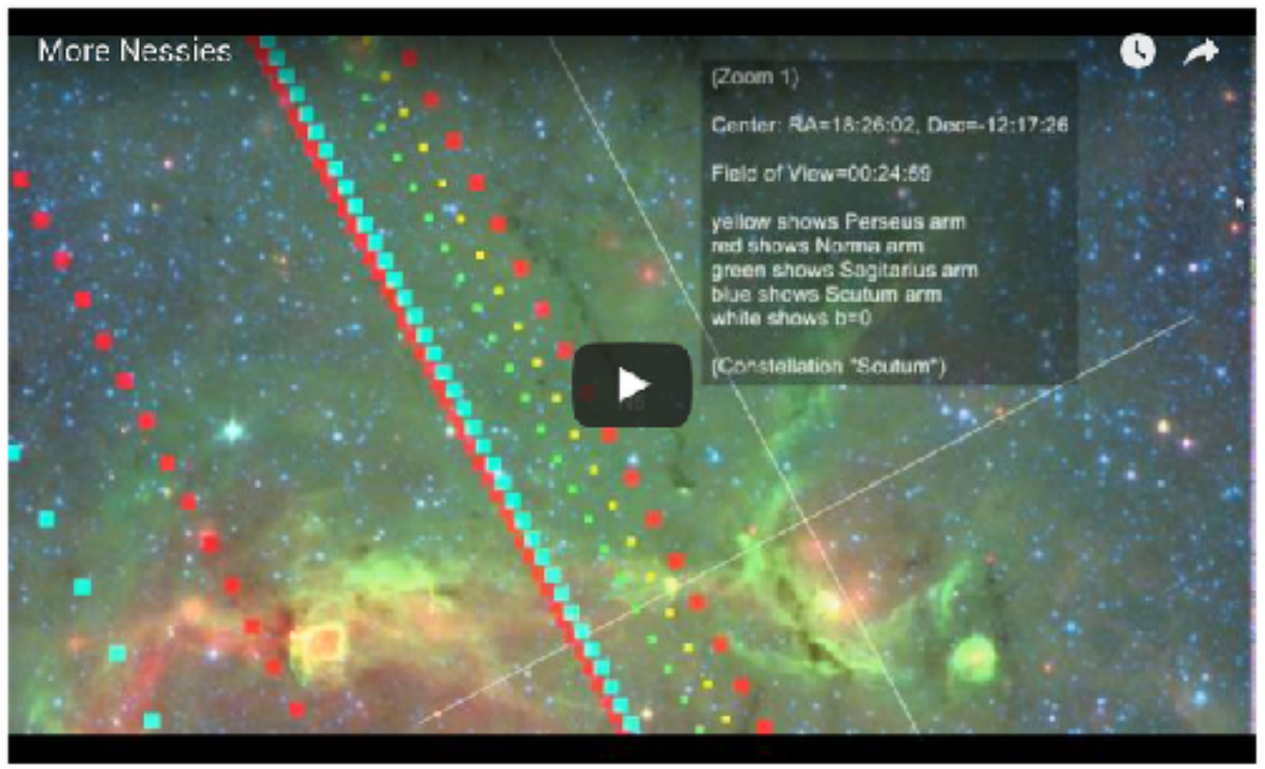
# Companions for "Nessie" in the Milky Way's Skeleton

1

By **Susanna Kohler** on 7 December 2015

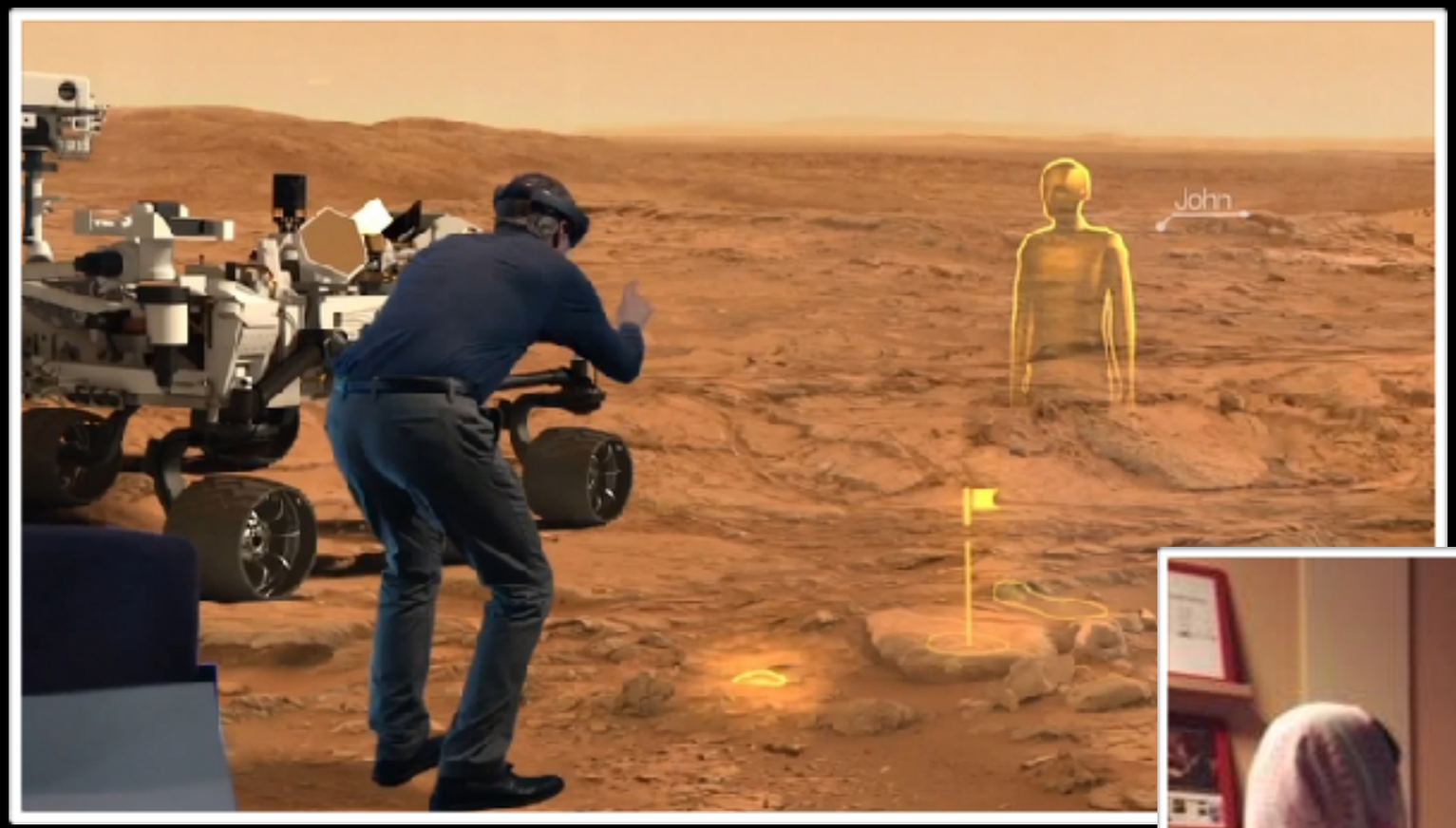
Share:






## Citation

Catherine Zucker et al 2015 *ApJ* **815** 23. doi:10.1088/0004-637X/815/1/23



# WorldWide Telescope: The Future

# WWT's new home is your AAS!

## WorldWide Telescope Has a New Home: The AAS

Developed by Microsoft Research, WWT is now an open-source "Universe Information System" whose further development will be led and supported by the AAS.

ask for details at WWTA Both (#322)

AMERICAN ASTRONOMICAL SOCIETY
Enhancing and sharing humanity's scientific understanding of the universe since 1899.

### WorldWide Telescope Has a New Home: The AAS

Thursday, January 7, 2016 - 06:49

On 4 January 2016 the **Council [http://aas.org/governance/current-council]** of the American Astronomical Society voted to make the AAS the institutional home of **WorldWide Telescope (WWT) [http://worldwidetelescope.org/]** , a "Universe Information System" that allows users to retrieve and share data using an interface that resembles either the sky or a 3-D view of our universe. The WWT vote represents a bold step by the AAS, making a commitment to use and adapt new technologies in its stated mission "to enhance and share humanity's scientific understanding of the universe." The AAS leadership role will allow for broad community involvement in further development of WWT. After the vote, AAS Executive Officer Kevin Marvel said, "The AAS is using its mission to guide growth and change in response to community needs. Taking on the WWT effort will be a tremendous plus for the AAS and a tremendous opportunity for the whole community."

WWT already connects to a wealth of openly available online data sets, as well as to ADS, SIMBAD, NED, and Wikipedia. WWT is a helpful tool for researchers due to its ability to fluidly connect images to each other and to literature. It's also a rich resource for educators, given the wealth of opportunities it offers for new ways to learn and communicate about the universe. But WWT's full potential is even greater than its current use -- and this potential can be realized now that WWT has been made open source and the community can be involved in a new and more expansive way.

The accompanying image shows just a small sample of the views WWT offers, including a few where user-added data are visualized as colored points added to imagery or rendered in 3-D coordinates accessible by default from within the program. The 10-minute video "**What Can WorldWide Telescope Do for Me? [https://www.youtube.com/watch?v=_FIlmOjjIBo]** " clearly demonstrates to researchers, educators, and outreach professionals why they might want to use WWT now.

The adoption of WWT by the AAS is a great example of a public-private partnership. WWT started as a research project at **Microsoft Research (MSR) [http://research.microsoft.com/en-us/]** , which distributed the WWT software for free. At MSR, Curtis Wong was the inventor of WWT, and Jonathan Fay was its principal software architect. The desktop (Windows) version of WWT is very popular, with millions of users including amateur astronomers, educators, and planetarium presenters. The advent of a fully **Web-based version of WWT [http://worldwidetelescope.org/webclient]** several years ago allowed the program to start gaining real traction with the professional community. The **WWT Web-based tools (API) [http://www.worldwidetelescope.org/Developers/]** are highly customizable and have been used to create interfaces that highlight and serve specific survey data, as well as to make viewers that link literature and data, such as the **ADS All-Sky Survey [http://adsass.org]** , which allows users to learn which parts of the sky have been studied when, and for what reason.

Microsoft Research, in cooperation with the .NET Foundation, open-sourced WWT in 2015, so that an even broader community of users could begin to contribute both code and guidance to the project. In parallel, the AAS appointed the WWT Task Force, chaired by AAS Vice-President Jack Burns, in early 2015 to review the possibility of taking on the WWT. The task force sought community input and then put a plan for participation to a Council vote at the 227th AAS meeting in Kissimmee, Florida, on Monday. After debate and discussion, the Council agreed to invest significantly in the effort and to implement the plan developed by the task force.

The WWT Consortium is a federation of individuals and organizations who contribute code, data, and services to the larger WWT ecosystem. GitHub is hosting the WWT code at no cost. Microsoft continues to contribute to the WWT effort by hosting data in its Azure cloud. Consortium participants include most major US observatories, and a loose governance and review structure will be established, under AAS guidance, in early 2016.

WWT-related projects have recently received more than $6M in federal funding, and $2M from private sources. The largest WWT education-related effort is the "**WorldWide Telescope Ambassadors [http://wwtambassadors.org]** " program, started by Prof. Alyssa Goodman at Harvard, which has been training and deploying volunteer PhD-level scientists to use WWT to teach STEM subjects in classrooms, at public science events, and online through the creation of WWT tours and shared curricula. The Adler Planetarium in Chicago created its very popular "Cosmic Wonder" planetarium show, which highlights modern all-sky multiwavelength imagery, using only WWT and at 1/10th the cost of a typical show. The "**Paper of the Future [https://www.authorea.com/users/23/articles/8762]** ," created in 2014 to demonstrate the new technologies recommended by the

AAS Journals Task Force, showcased how WWT can be used to place an image from any online source, including a journal article, on the sky in context of multispectral, all-sky survey imagery with just one click. (Try it **here [https://www.authorea.com/users/23/articles/8763/_show_article#article-paragraph-Images__space__in__space__Context__dot__md]** .) And, in a recent paper highlighted by **AAS Nova [http://aasnova.org/]** the authors used WWT to look for, and find, very long infrared dark clouds that can define "**The Skeleton of the Milky Way [http://aasnova.org/2015/12/07/companions-for-nessie-in-the-milky-ways-skeleton/]** ."

Initial AAS efforts using WWT will focus on integrating one-click image-contextualization into the Society's journals and the AAS's "**Astronomy Image Explorer [http://www.astroexplorer.org/]** " service, which is already connected to ADS. The AAS will also encourage use of WWT to enhance public-outreach projects via connections to programs like WorldWide Telescope Ambassadors.

The open-source nature of the WWT project, and the availability of a well-documented Web-based API, means that organizations can use the technology to build custom services as needed. Developers have created, and will continue to create, services ranging from iOS-based games to sky-survey data servers using WWT. The addition of the AAS imprimatur to the WWT effort will inspire broader participation and support.

The Society's mission drives it to find ways to support the community now and explore ways to support it in the future. A wide range of exciting possibilities are enabled by the WWT infrastructure, but the full realization of those possibilities can only be achieved through community input, guidance, coordination and most importantly, effort. This is something central to the Society's mission and role. We do not know entirely what applications our creative community of scientists will develop with WWT, but we do know that the American Astronomical Society can help enable their work by taking on the WWT effort. Exciting times lie ahead!

extra

# What can WorldWide Telescope do?

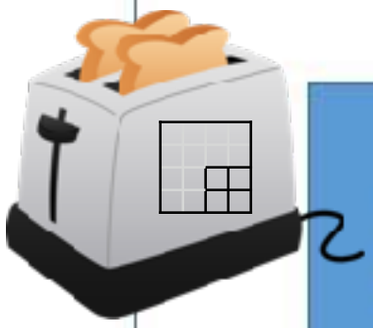
## for me?

v. 2015.1

## ASSETS

- TOAST Archives
  - AAS/WWT Azure
  - Institutional Hosts

## TOOLS



### TOASTification

- All-sky
- Planets
- Pointed observations

- Desktop Tools
- Cloud-based

### Developer Interfaces

- WWT Software Development Kit (SDK)
- Layer Control Application Programming Interface (API)

## CLIENTS

### Windows Desktop Client

- Sky
- 3D Solar System
- Planets
- Panoramas
- Tour Authoring
- User imported data layers
- Cluster/planetarium

### Mac Desktop Client

- TBD if desired

### HTML5 Web Client

- Sky
- 3D Solar System (CPU rendered)
- Panoramas

### HTML5 Web Controls (custom interactives)

- Sky
- 3D Solar System (CPU rendered)
- Panoramas
- Subset of web client
- Embeddable

## Corporate & Industrial Supporters

Microsoft Research

Google

## Government & Foundation Grants

NASA

NSF

ALFRED P. SLOAN FOUNDATION

JOHN TEMPLETON FOUNDATION
SUPPORTING SCIENCE · INVESTING IN THE BIG QUESTIONS

GORDON AND BETTY MOORE FOUNDATION

## Consortium Members

ADLER PLANETARIUM

CALIFORNIA ACADEMY OF SCIENCES

NOAO

Smithsonian Institution

NCSA

AMERICAN MUSEUM OF NATURAL HISTORY

SPACE TELESCOPE SCIENCE INSTITUTE
Operated for NASA by AURA

NRAO

ipac

CHANDRA X-RAY CENTER

Google

HARVARD UNIVERSITY

JOHNS HOPKINS UNIVERSITY

Caltech

THE UNIVERSITY OF CHICAGO

NORTHWESTERN UNIVERSITY

## Publisher & Media Partners

IOP Publishing

WGBH

Google

edX

github SOCIAL CODING

IVOA

ZOONIVERSE

## Technology Partners

ADS NASA

Authorea

glue

Google

Google

PROJECT ASTRO

Astronomy Ambassadors
AAS AMERICAN ASTRONOMICAL SOCIETY

## WWT/AAS Ambassadors

WorldWide Telescope

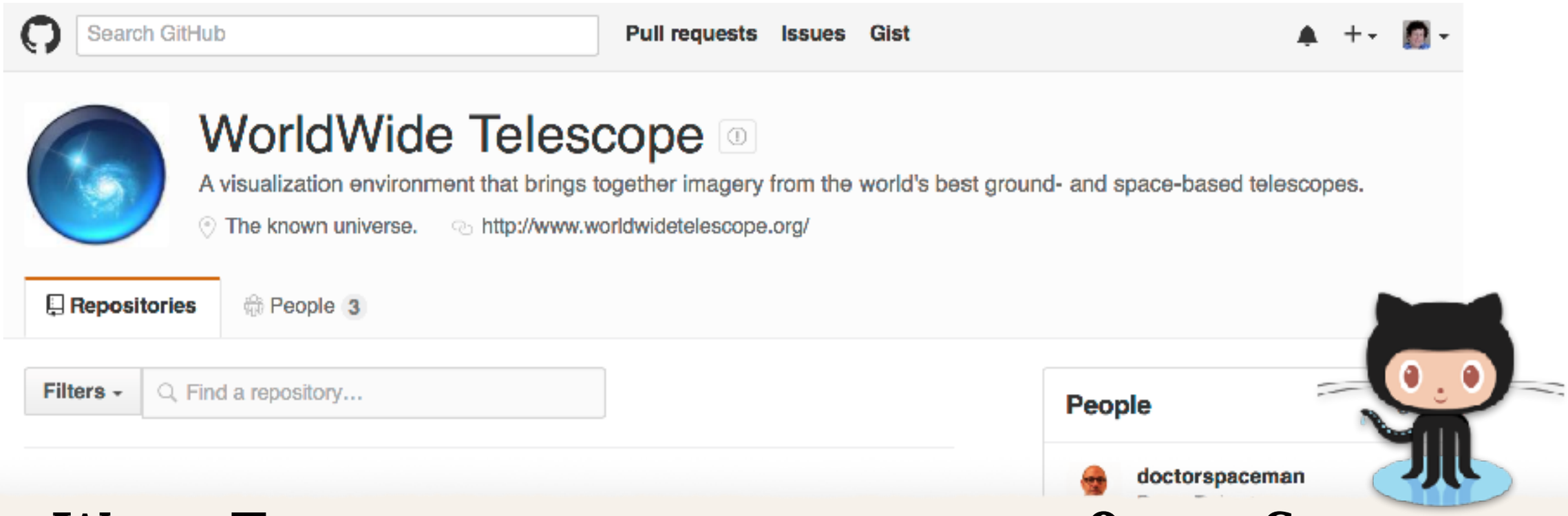
AAS AMERICAN ASTRONOMICAL SOCIETY
[ask January 4, 2016!]

## Staff @ Host Institution

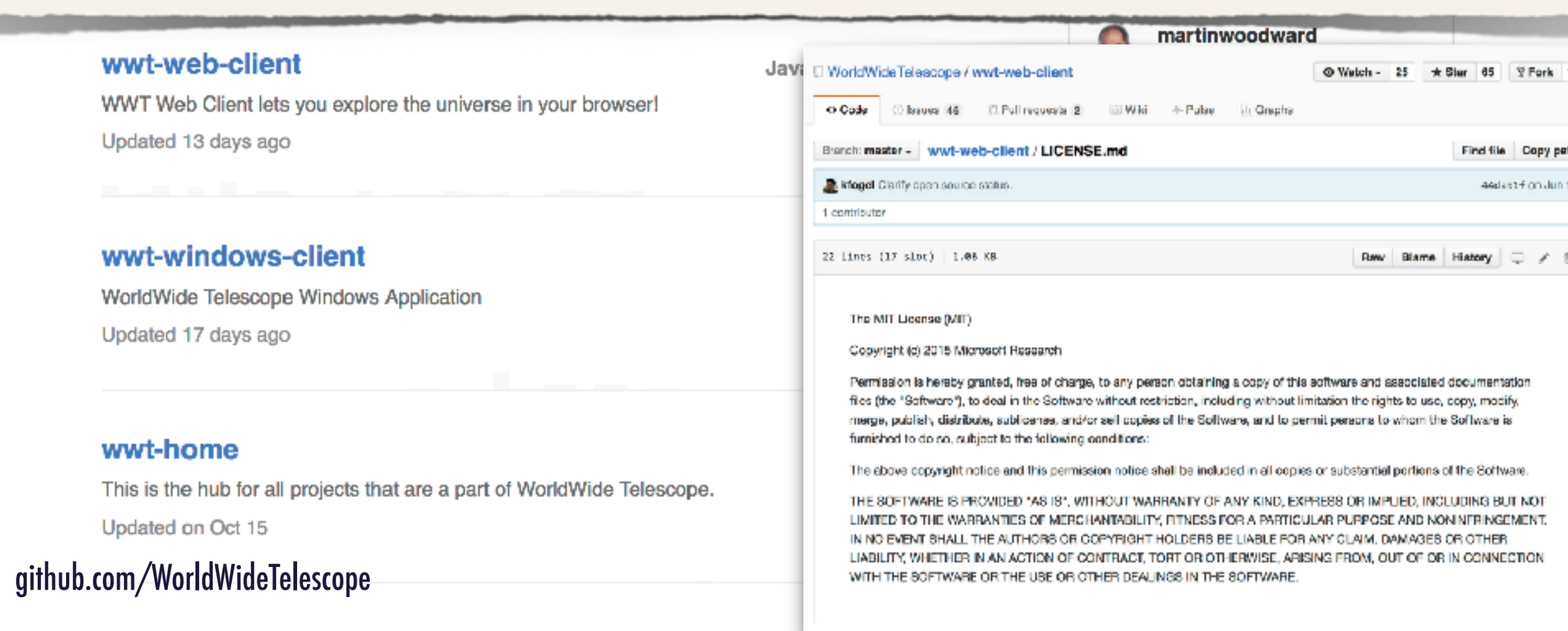
Googlers

SEAMLESS ASTRONOMY

## Open-Source Devlopment (Consortium + ... )




# WorldWide Telescope has been made Open Source by Microsoft Research and has a New Home: AAS!




github.com/WorldWideTelescope

# The future?

[according to James Vasile, a.k.a. “Gonzo”]

# The future?

[according to James Vasile, a.k.a. “Gonzo”]