

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 Booth (#322)



WorldWide Telescope Has a New Home: The AAS | American Astronomical Society

Thursday, January 7, 2016 - 08:45 AM

AAS 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 - 08:45 AM

On January 5, 2016, the Council (<http://aas.org/governance/council/council>) of the American Astronomical Society voted to make the AAS the new home for the WorldWide Telescope. The AAS is a great fit for WWT because it has the resources and the desire to support the development of WWT and to make sure that the software continues to be used and data sets are identified that interests either the 2D or 3D view of our universe. The AAS 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 is also well-positioned to support the continued development and further development of WWT. After the vote, AAS Executive Officer Kevin Maren said, "The AAS is using its resources to guide growth and development of WWT and to support its needs. Taking on the WWT effort will be a tremendous plus for the AAS and a tremendous opportunity for the whole community."

WWT currently connects to a wealth of freely available online data sets, as well as the AAS, DR9, NED, and SIMBAD. WWT is a truly open source project, and the AAS is actively encouraging the community to contribute to the project. In addition, the AAS will be able to expand the wealth of opportunities it offers for new ways to learn and communicate about the universe. The AAS will be able to support the WWT community in a new and more expressive way.

The accompanying image shows just a small sample of the views WWT offers, including a few where user-specified data are visualized to answer specific questions. The AAS is excited to support the continued development of the WWT program. The following video "What Can WorldWide Telescope Do for Me?" (<https://www.youtube.com/watch?v=PhwQjP6d>) clearly summarizes 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 participative, diverse, WWT started as a research project at Microsoft Research (<http://research.microsoft.com/pubs/100000.pdf>) which developed the software for the AAS. Curtis Wilson was the member of WWT, and Jonathan Fay was its principal software architect. The desktop (Windows) version of WWT is very popular, and the mobile version (<http://www.worldwidetelescope.org/mobile/>) several years ago allowed the program to start getting real traction with the general public. The mobile version of WWT is now available on iOS and Android. The mobile version of WWT has been very highly customized and have been used to create interactive tour flights and serve specific survey data, as well as to make viewers that link to relevant data, such as the AAS Sky and Survey (<http://chandra.harvard.edu>) which allows users to zoom which parts of the sky have been observed.

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 to the project. In 2015, the AAS approached the Microsoft Research team, and they, in turn, approached the AAS to see if the AAS would like to host the WWT code. The two teams agreed to proceed and then put a plan together to participate in a Council vote at the 227th AAS meeting in Kissimmee, Florida, on Monday, after debate and discussion.

The WWT Consortium is a federation of individuals and organizations who contribute 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. The AAS is also contributing to the WWT effort by providing the software to the AAS community and making it available under AAS guidance, in early 2016.

WWT related projects have recently received grants from the AAS to further develop the software. The grants WWT related projects have recently received from the American Astronomical Society (<http://www.aas.org/aas-grants>) program, started by Dr. Alyosha Goodman at Harvard, which has been training and inspiring younger PHD students to use WWT to teach STEM topics to the public. The grants will be used to develop a mobile version of WWT for the public to use. The mobile version of WWT will be used to create a mobile version of the "Cosmic Wonder" planetarium show, which highlights modern all-sky multiwavelength images. The mobile version of the "Cosmic Wonder" planetarium show will be developed by the University of Michigan (<http://www.astronomy.umich.edu/cosmicwonder/#>), created in 2014 to demonstrate the new technologies implemented by the AAS.

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 multiwavelength survey images with just one click. (Try <http://www.aas.org/aas-grants/2015/02/10/2015-02-10-aas-grants-wwt>.)

Image, space, in space, Connect, dot, dot! And, in a recent paper highlighted by AAS News (<http://chandra.org/aas>) the authors, "The Station of the Milky Way" (<http://chandra.org/2015/02/10/station-of-the-milky-way-astronomers>), presented the results of the first ever multiwavelength survey of the Milky Way, "stationed" in the center of the galaxy.

Initial AAS efforts will focus on integrating one-click image-contingualization into the Society's journals and the AAS's homepage. The AAS will also encourage the use of WWT to enhance the AAS's public outreach efforts. The AAS will also encourage the use of WWT to enhance public outreach projects and to contribute to progress the 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 WWT to create their own applications. The AAS will be working with the WWT team to develop a mobile application that can be used by iOS-based phones to query astronomical data servers using WWT. The addition of the AAS imperative to the WWT effort will inspire broader participation and support.

The Society's primary driver is to find ways to support the community more 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, research, gathering, coordination and most importantly, effort. This is something that the AAS is very excited about and we are looking forward to working 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

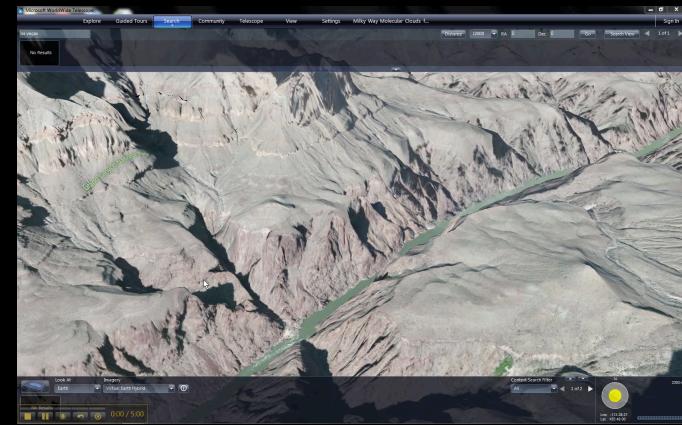
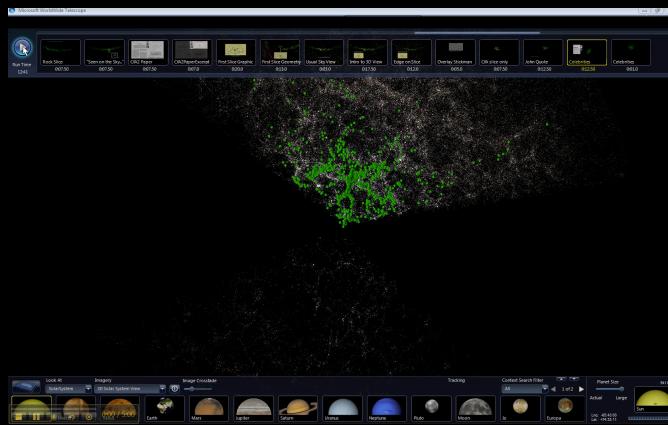
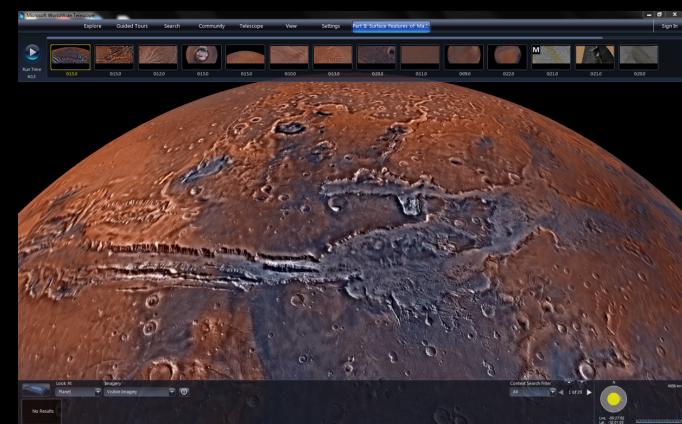
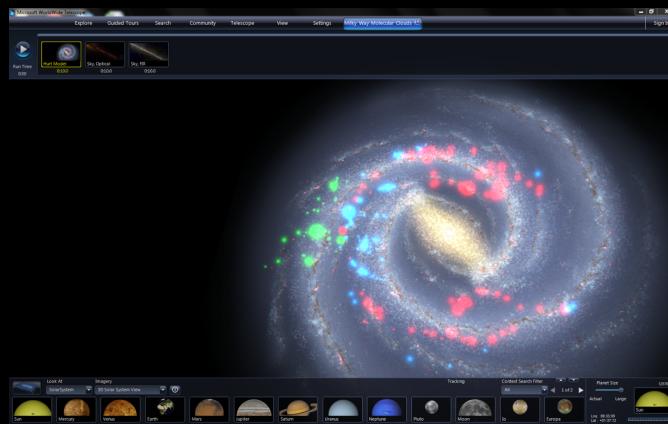
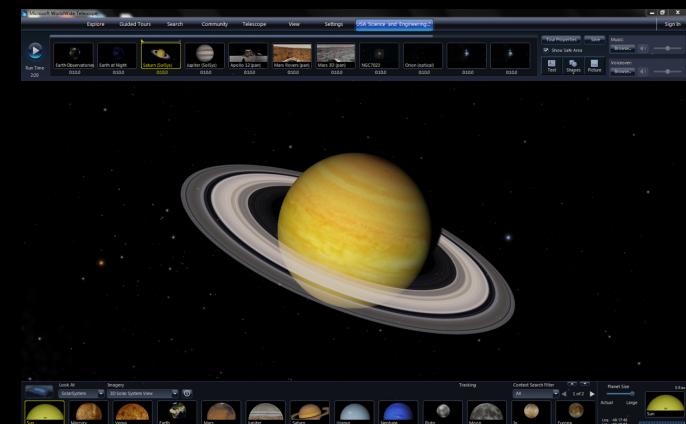
WorldWide Telescope

& why should **researchers** care?

Alyssa A. Goodman

Harvard-Smithsonian Center for Astrophysics, @aagie





WorldWide Telescope: Open Source

worldwidetelescope.org

WorldWide Telescope Web Client

www.worldwidetelescope.org/webclient/

WorldWide Telescope Web Client

Explore Guided Tours Search View Settings

m31 J2000 RA Dec Go

Three Faces of Andromeda M31

Classification: Spiral Galaxy
Constellation: Andromeda
Names: M31

RA: 00h42m42s Rise: 06:02
Dec: +41°16'00" Transit: 15:41
Alt: 48°47'16" Set: 01:23
Az: 71°46'30"

Image Credit

Look At Sky Imagery Digitized Sky Survey (Color)

Image Crosstfade

Tracking Andromeda Galaxy 1 of 2 N Andromeda 01:53:45

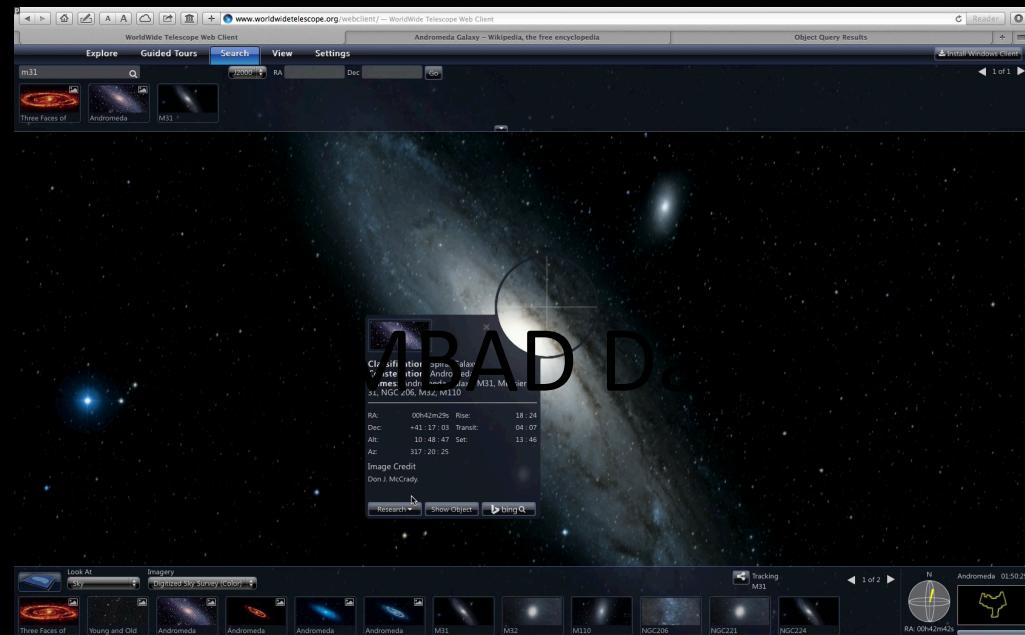
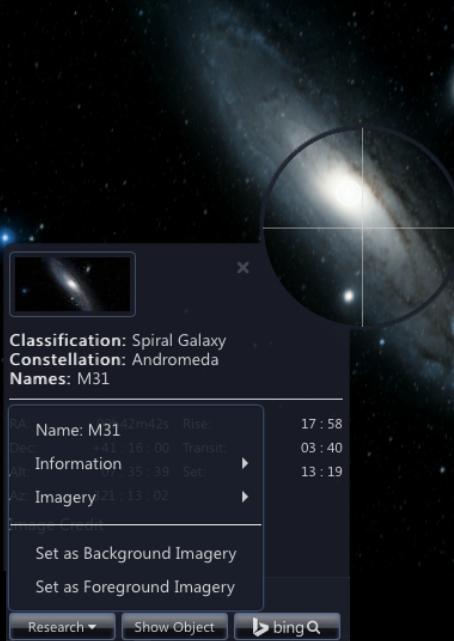
R.A: 00h43m09s Dec: +41°12'54"

Three Faces of Young and Old Andromeda Andromeda Andromeda Andromeda M31 M32 M110

WorldWide Telescope: On the Web

worldwidetelescope.org

Finder Scope



WorldWide Telescope: Data↔Literature

Web or Windows: “right-click”



Astronomy
image explorer

ZOONIVERSE

Article Density on the Sky

Journal Images in the Sky



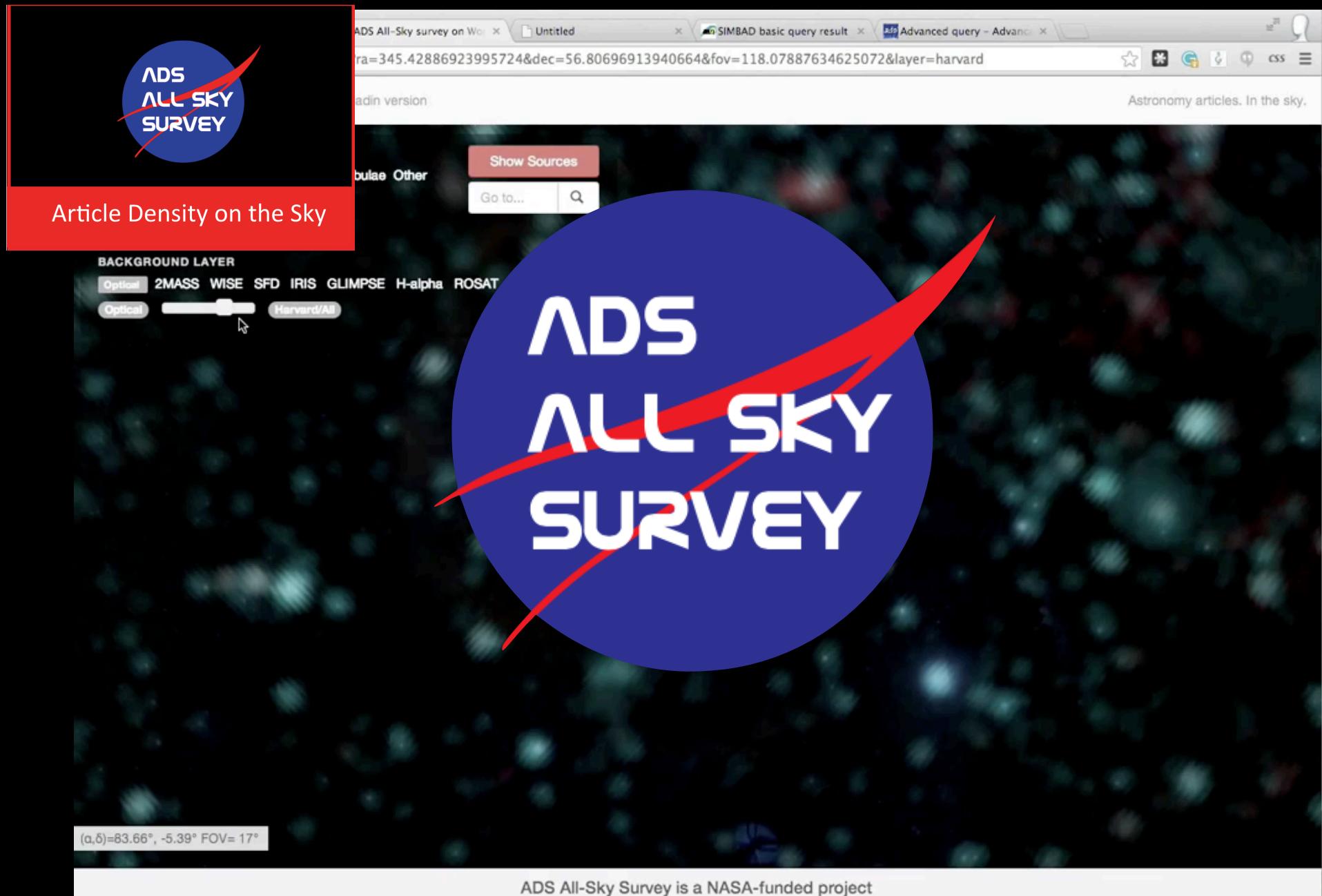
COMPLETE

AAS NOVA

Research highlights from the journals
of the American Astronomical Society

Your data in WWT

WWT Tours to Communicate



www.authorea.com/users/23/articles/8762/_show_article — Authorea | The "Paper" of the Future

Authorea

PUBLIC ROUGH DRAFT

INSTITUTIONS ARTICLES ABOUT PL

Index Settings Fork Quicedit Word Co

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](#).

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ZOONIVERSE

Astronomy image explorer

Journal Images in the Sky

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Preamble

Collaborative authoring

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Linking and executing ...

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Better storytelling

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3d in 2d

Nature screen shot

Images in context

Barnardsample

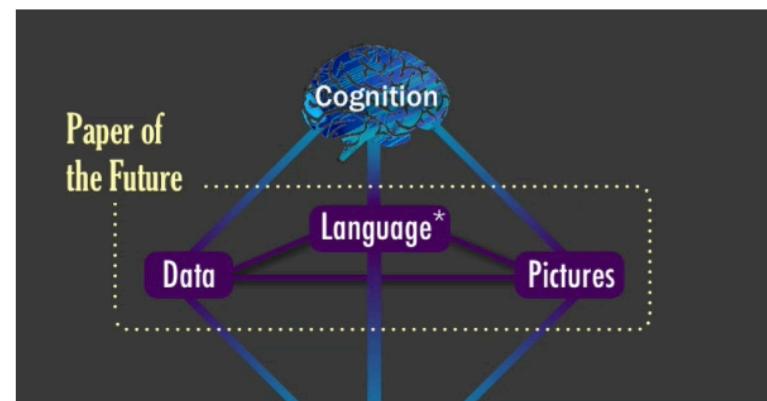
Deeper easier citations

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 communicate 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.

+ Insert + Insert Figure Edit Delete Lock



Journal Images in the Sky

YOU SELECTED: Clear all

SEARCH TERM(S):

ophiuchus

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

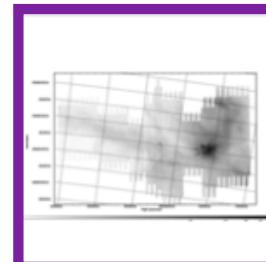
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Figure sets (3)

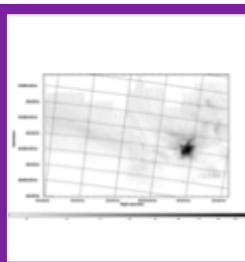
AUTHOR

1664 images found

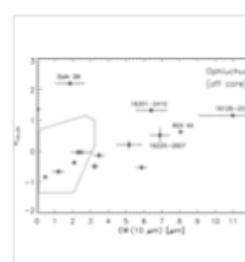
Term(s) to search within



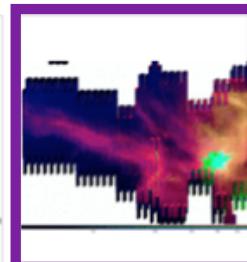
Spitzer MIPS 70 μ m
mosaic of Ophiuchus



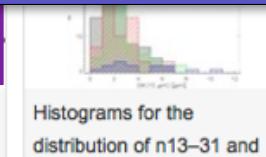
Spitzer MIPS 24 μ m
mosaic of Ophiuchus



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



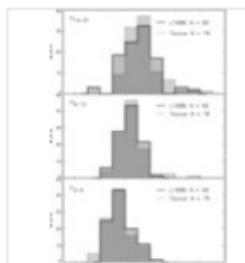
A 24 (blue), 70 (green), and 160 μ m (red) mosa...



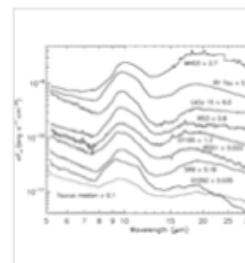
Histograms for the
distribution of n13-31 and



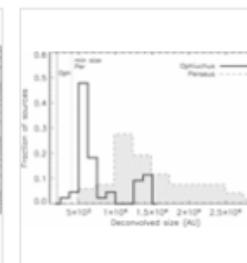
SEDs of WTTS disks in
Ophiuchus.



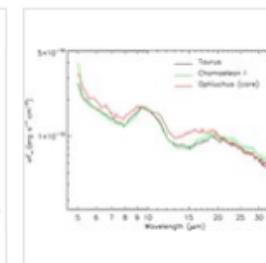
Distribution of n13-31
values for samples in the...



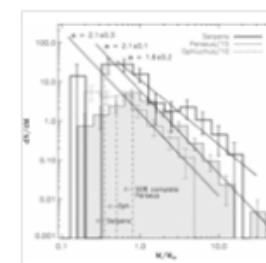
Most prominent outliers in
terms of EW(10 μ m) i...



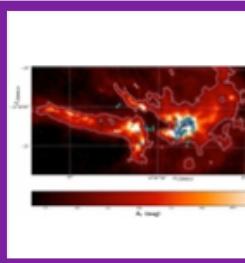
Comparison of the
distribution of sizes of



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



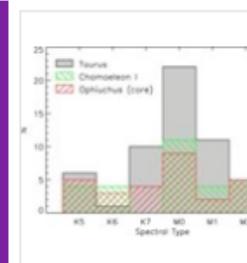
Comparison of the
differential CMDs of



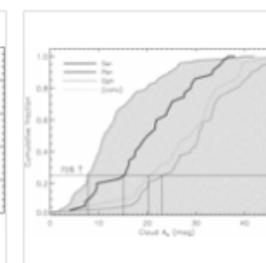
Location of the YSO (blue
circles) and candidat...



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



Histogram for the
distribution of spectral



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



PLANCK

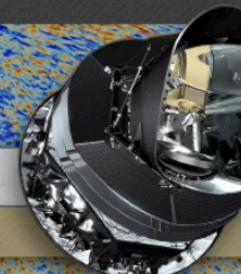
U.S. DATA CENTER AT IPAC

ABOUT

NEWS

GALLERY

FOR RESEARCHERS



COMPLETE

Your data in WWT

Interactive Planck Data Viewer (WorldWide Telescope)

 Galactic Plane Mode Galactic Grid Equatorial Grid Constellation Figures

Background

Planck Thermal Dust

Our Milky Way galaxy is filled with sooty particles of

Foreground

Planck Dust & Gas

A composite view of our Milky Way displays a





COMPLETE

Your data in WWT



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		✓	✓	✓	Data
JCMT: 850 microns	<input checked="" type="checkbox"/>	✓	✓	∅	Data
Spitzer c2d: IRAC 1,3 (3.6,5.8 μ m)	<input checked="" type="checkbox"/>	✓	✓	✓	Data
Spitzer c2d: IRAC 2,4 (4.5,8 μ m)	<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

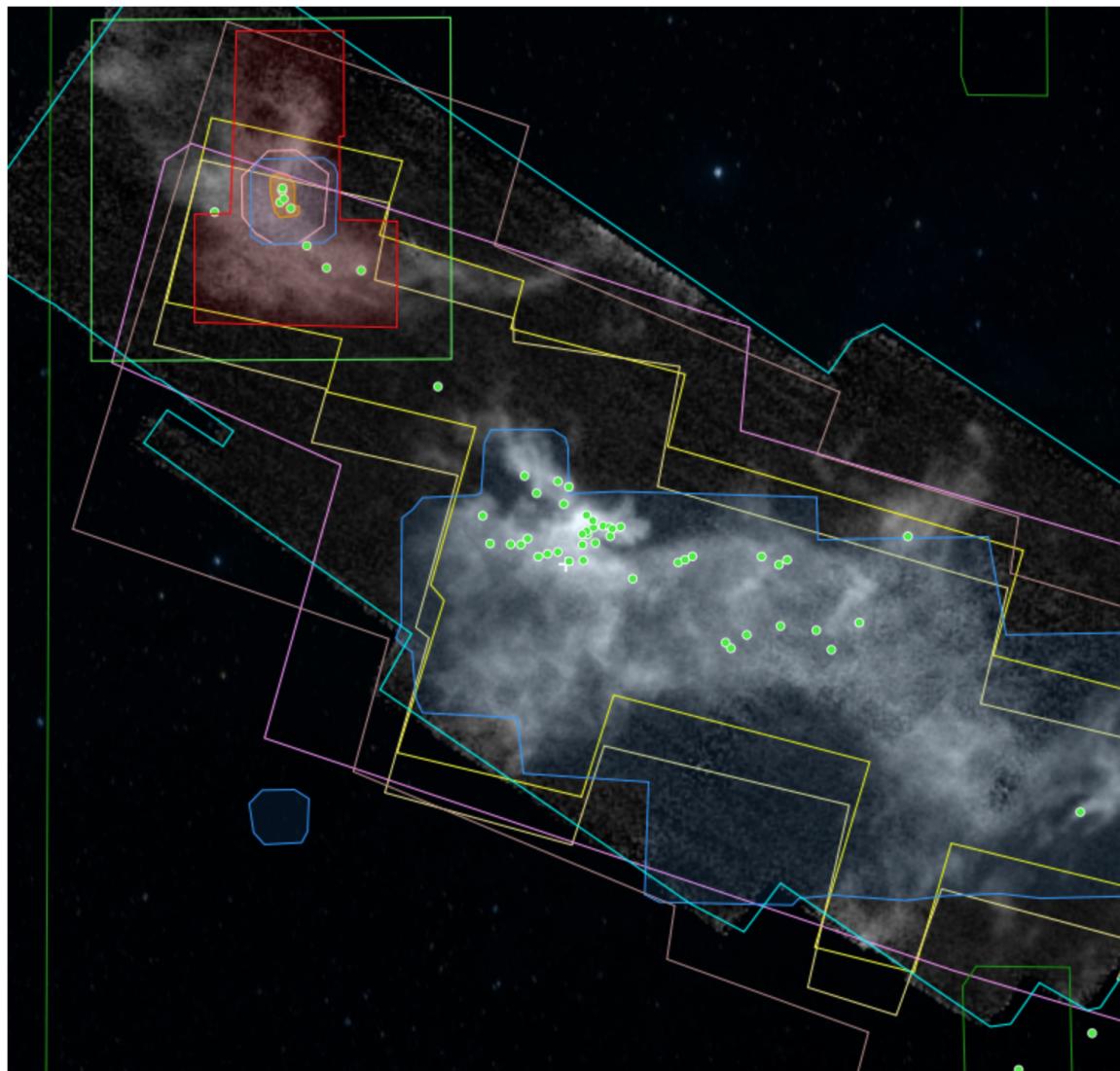
Catalogs & Pointed Surveys

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



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	<input checked="" type="checkbox"/>	✓	✓	∅	Data
IRAS: Av/Temp Maps	<input checked="" type="checkbox"/>	✓	✓	✓	Data
FCRAO: 12CO	<input checked="" type="checkbox"/>	✓	✓	✓	Data
FCRAO: 13CO		✓	✓	✓	Data
JCMT: 850 microns	<input checked="" type="checkbox"/>	✓	✓	∅	Data
Spitzer c2d: IRAC 1,3 (3.6,5.8 μ m)	<input checked="" type="checkbox"/>	✓	✓	✓	Data
Spitzer c2d: IRAC 2,4 (4.5,8 μ m)	<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

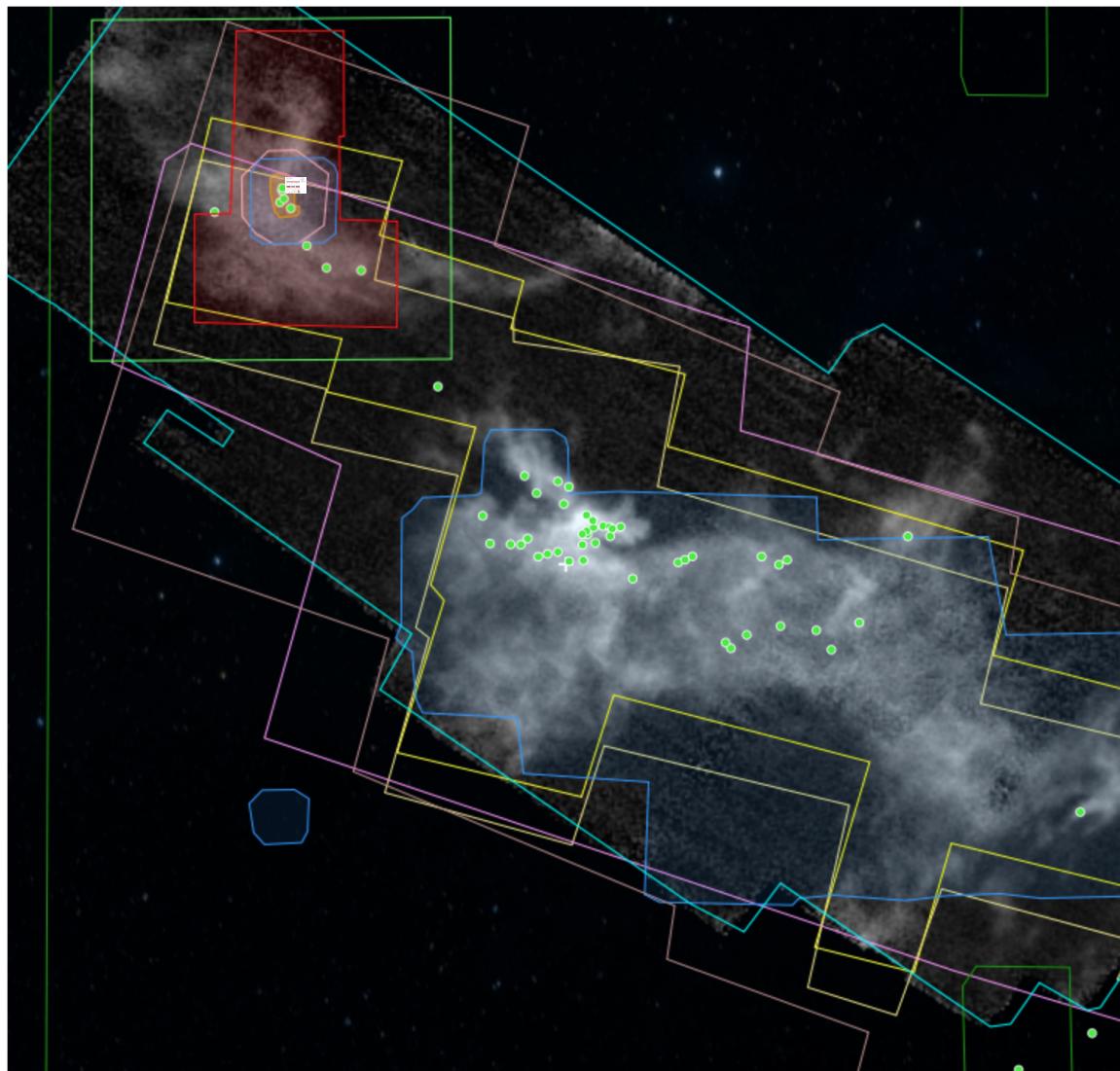
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YSO Candidate list (c2d)	<input type="checkbox"/>	✓	✓	✓	Data



COMPLETE Survey

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

WorldWide Telescope: Customize (API)



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		✓	✓	✓	Data
JCMT: 850 microns	<input checked="" type="checkbox"/>	✓	✓	∅	Data
Spitzer c2d: IRAC 1,3 (3.6,5.8 μ m)	<input checked="" type="checkbox"/>	✓	✓	✓	Data
Spitzer c2d: IRAC 2,4 (4.5,8 μ m)	<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

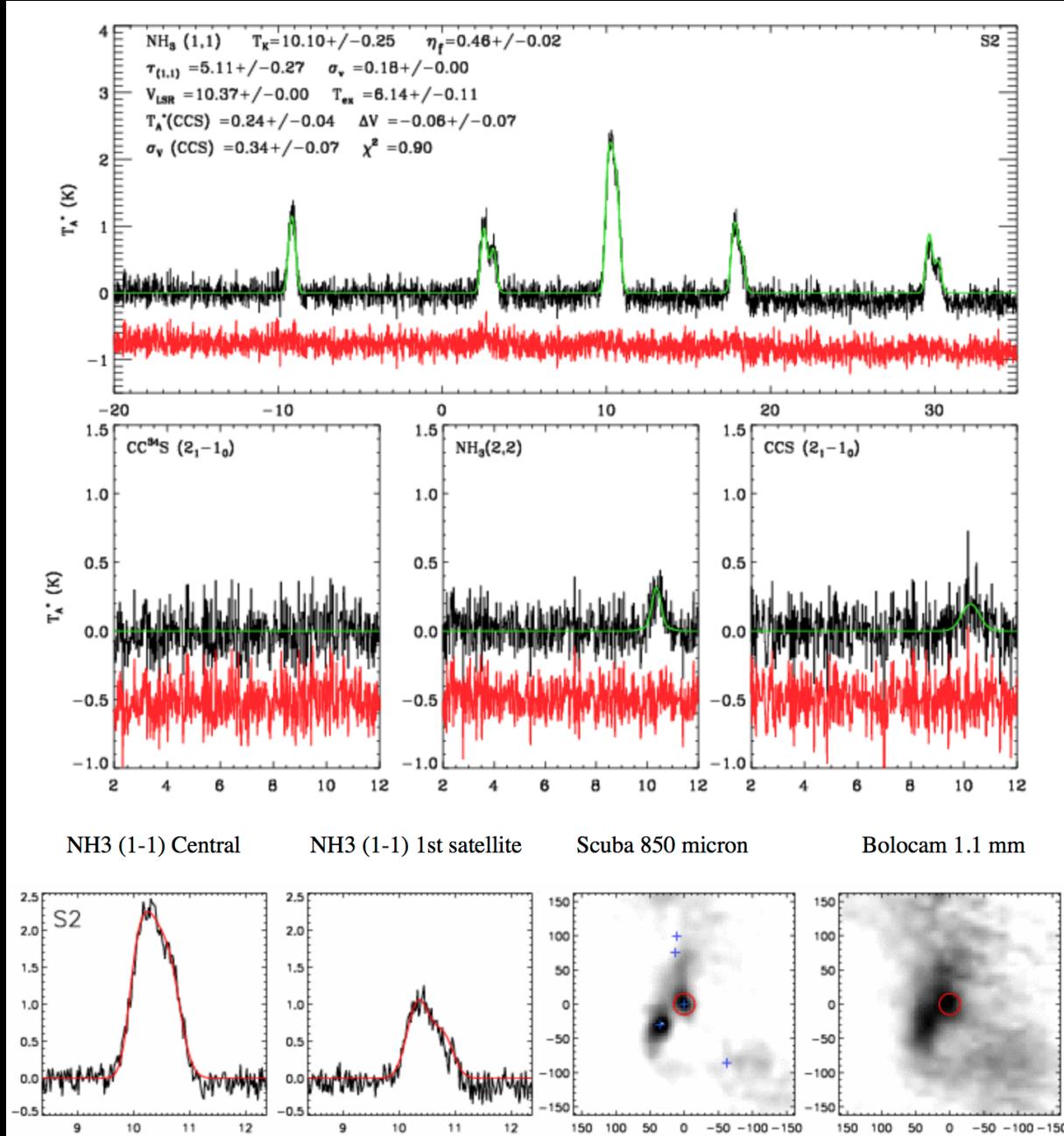
NH3 Pointed Survey	<input checked="" type="checkbox"/>	✓	∅	∅	Data
YSO Candidate list (c2d)	<input type="checkbox"/>	✓	✓	✓	Data



COMPLETE Survey

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

WorldWide Telescope: Customize (API)



Source Information

NH3 (1-1): Detected

NH3 (2-2): Detected

CCS (2-1): Detected

Flags : 0

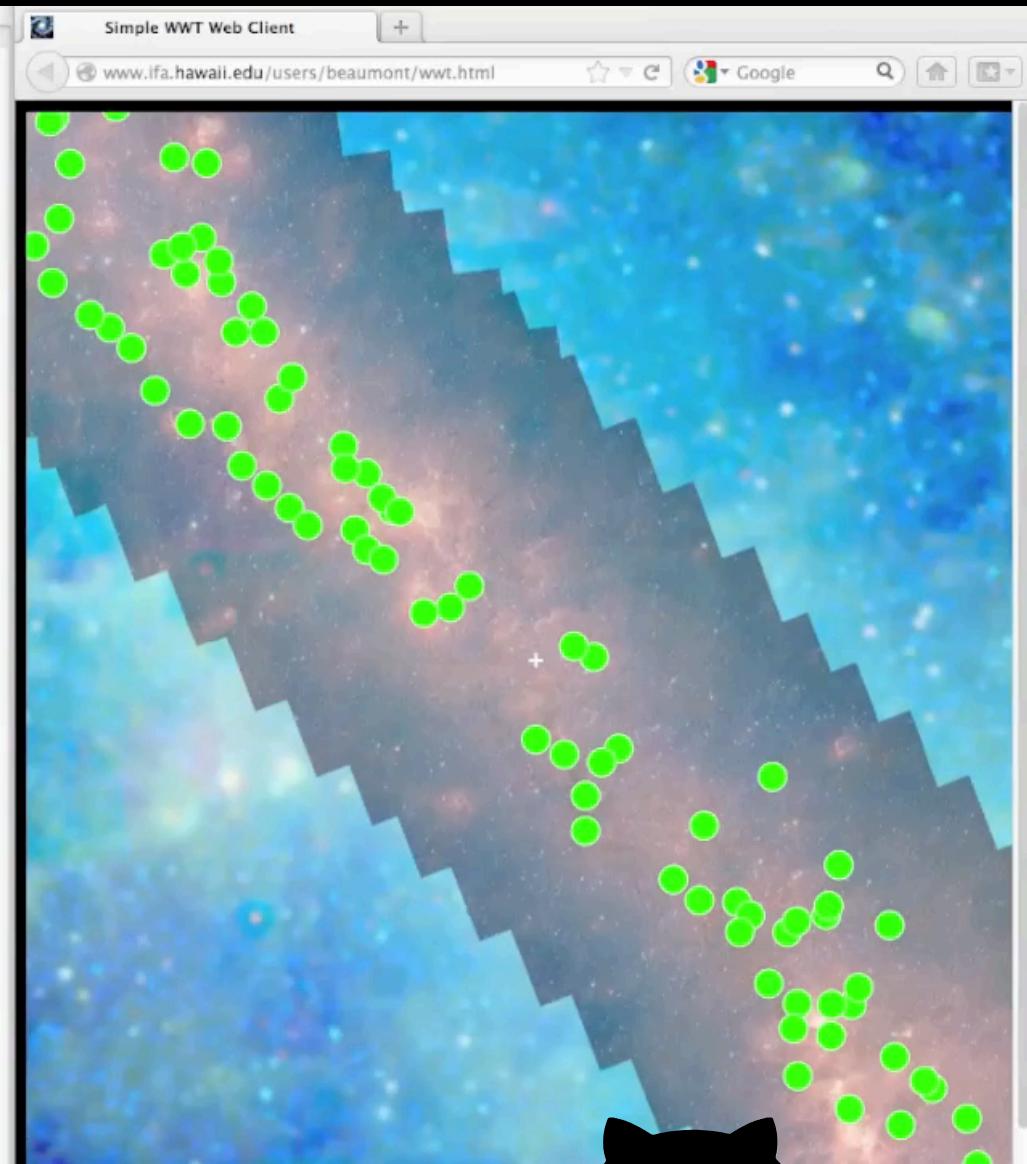
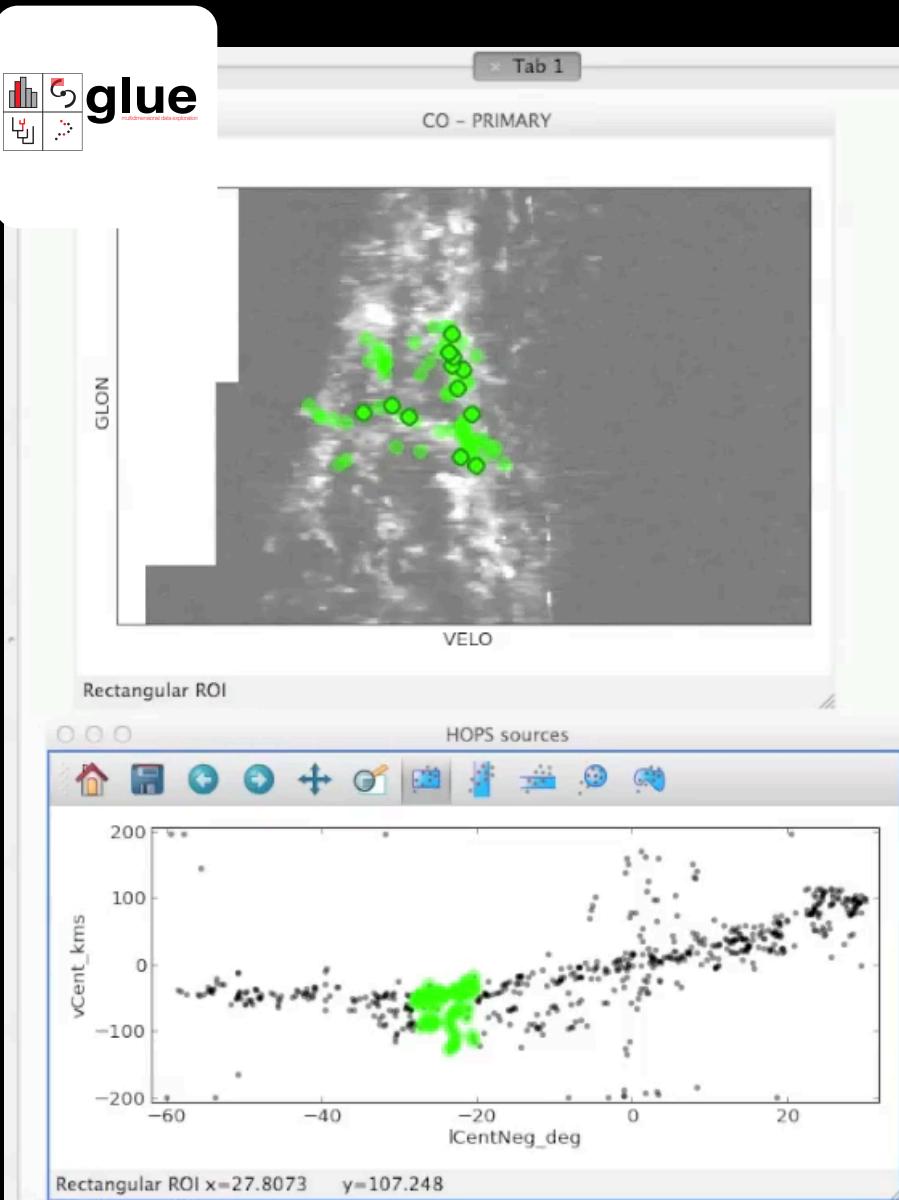
RA: 03:47:38.6

Dec: +32:52:18.8

(1-1) Spectrum ([Download ASCII](#))

(2-2) Spectrum ([Download ASCII](#))

[Back to Data Browser](#)



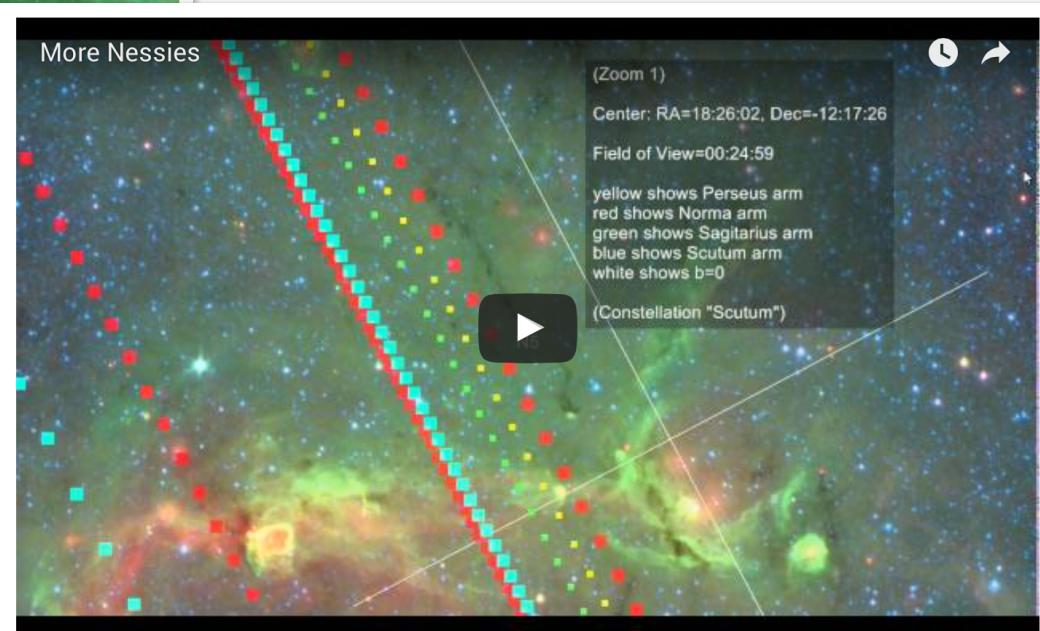
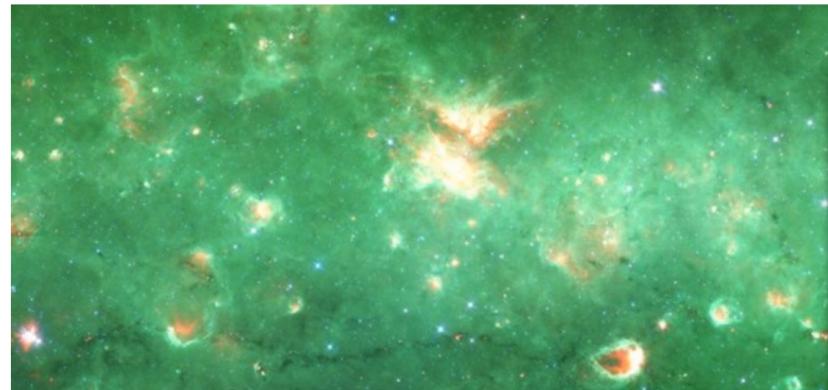
WorldWide Telescope: Customize (API)



Companions for “Nessie” in the Milky Way’s Skeleton

1

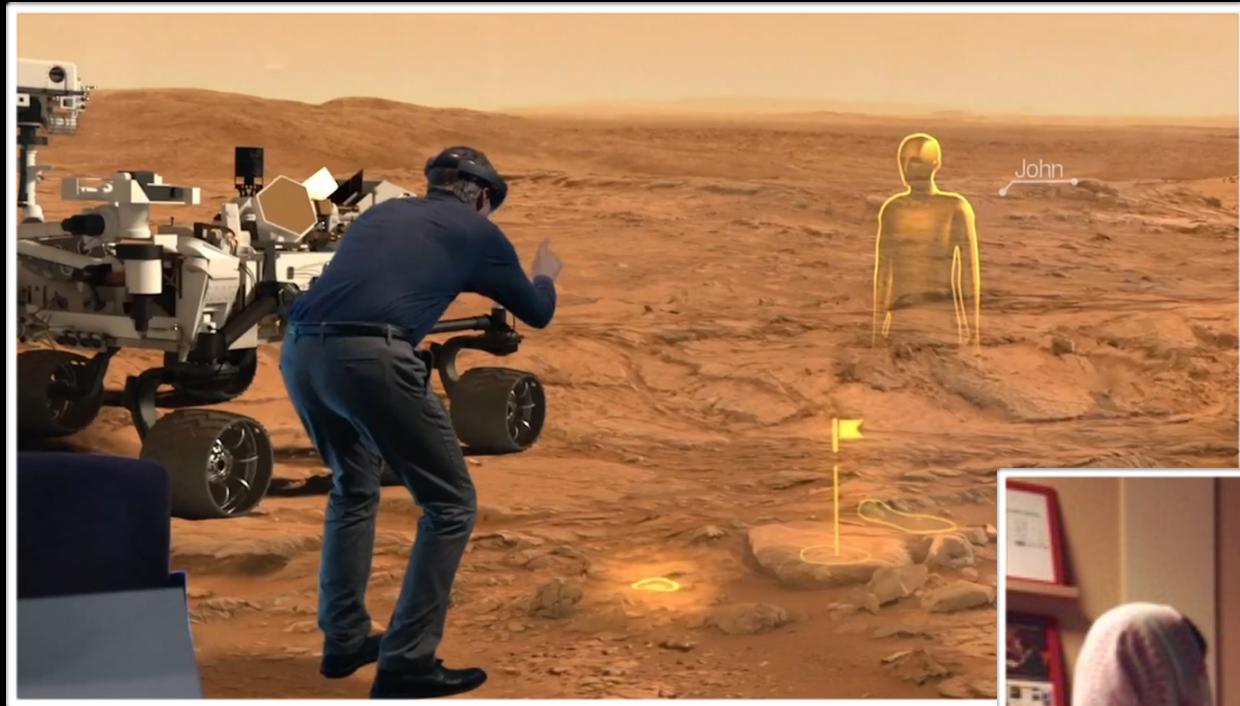
By Susanna Kohler on 7 December 2015

Share: [!\[\]\(d4e92a70a184987c4cee61bbacf99330_img.jpg\)](#) [!\[\]\(770437d80549857bf1ab015f405d7277_img.jpg\)](#) [!\[\]\(5667e36f9dda0bbbe8703f61200caf19_img.jpg\)](#) [!\[\]\(4e5042f5b6db45a0ba8ae1eabdff97aa_img.jpg\)](#) [!\[\]\(f3e58a66084d724f35336c360d0938aa_img.jpg\)](#) [!\[\]\(792ba7d5b54f280826602904d09d22b3_img.jpg\)](#)

Citation

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

WWT Tours to Communicate



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)

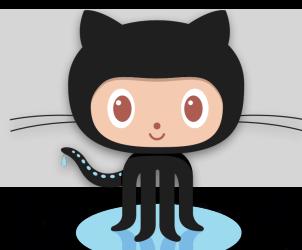


extra



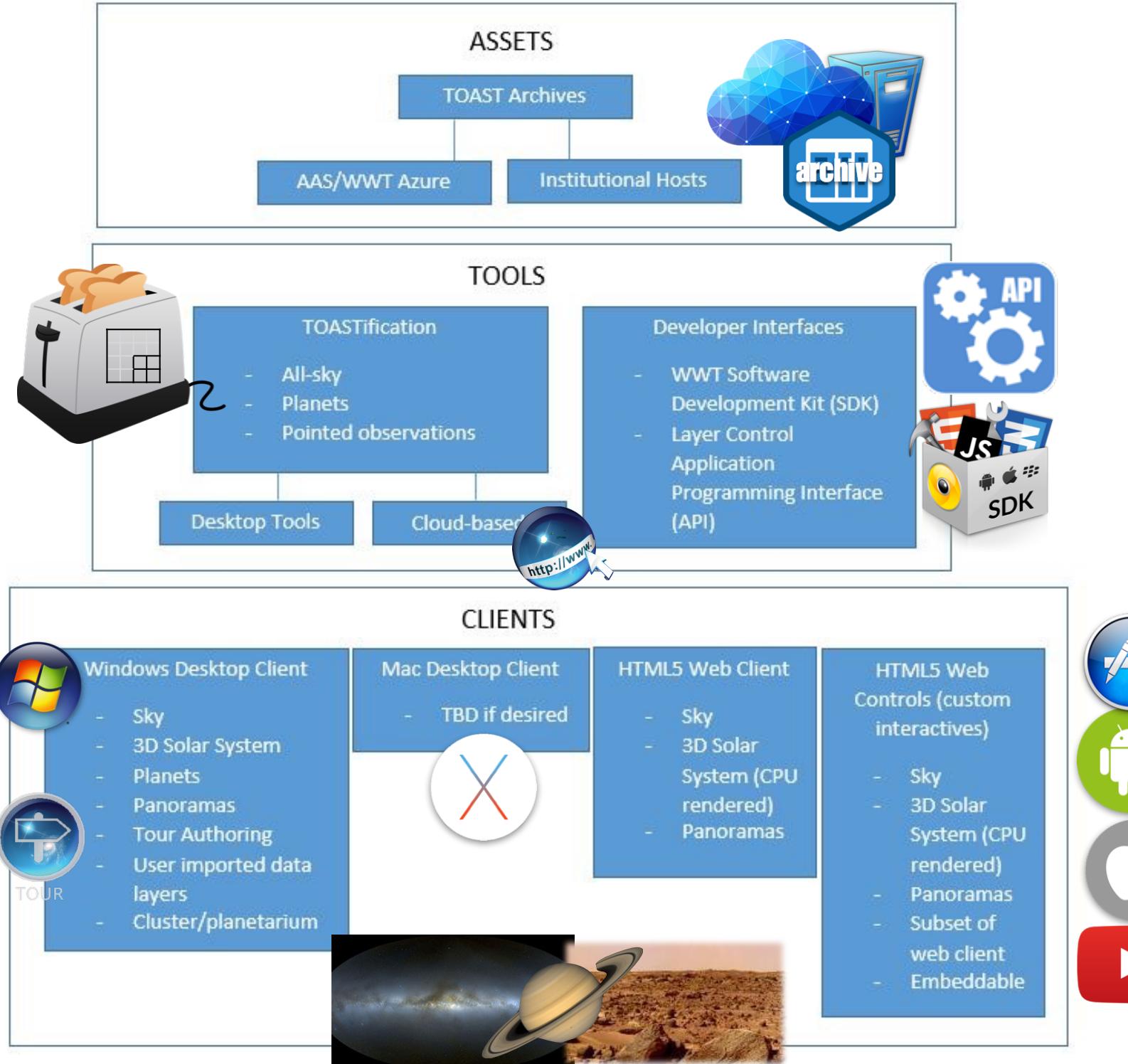
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WWT Web Client lets you explore the universe in your browser!

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wwt-windows-client

WorldWide Telescope Windows Application

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wwt-home

This is the hub for all projects that are a part of WorldWide Telescope.

Updated on Oct 15

github.com/WorldWideTelescope

Java

WorldWide Telescope / wwt-web-client

martinwoodward

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kfogel Clarify open source status. 44dab1f on Jun 11

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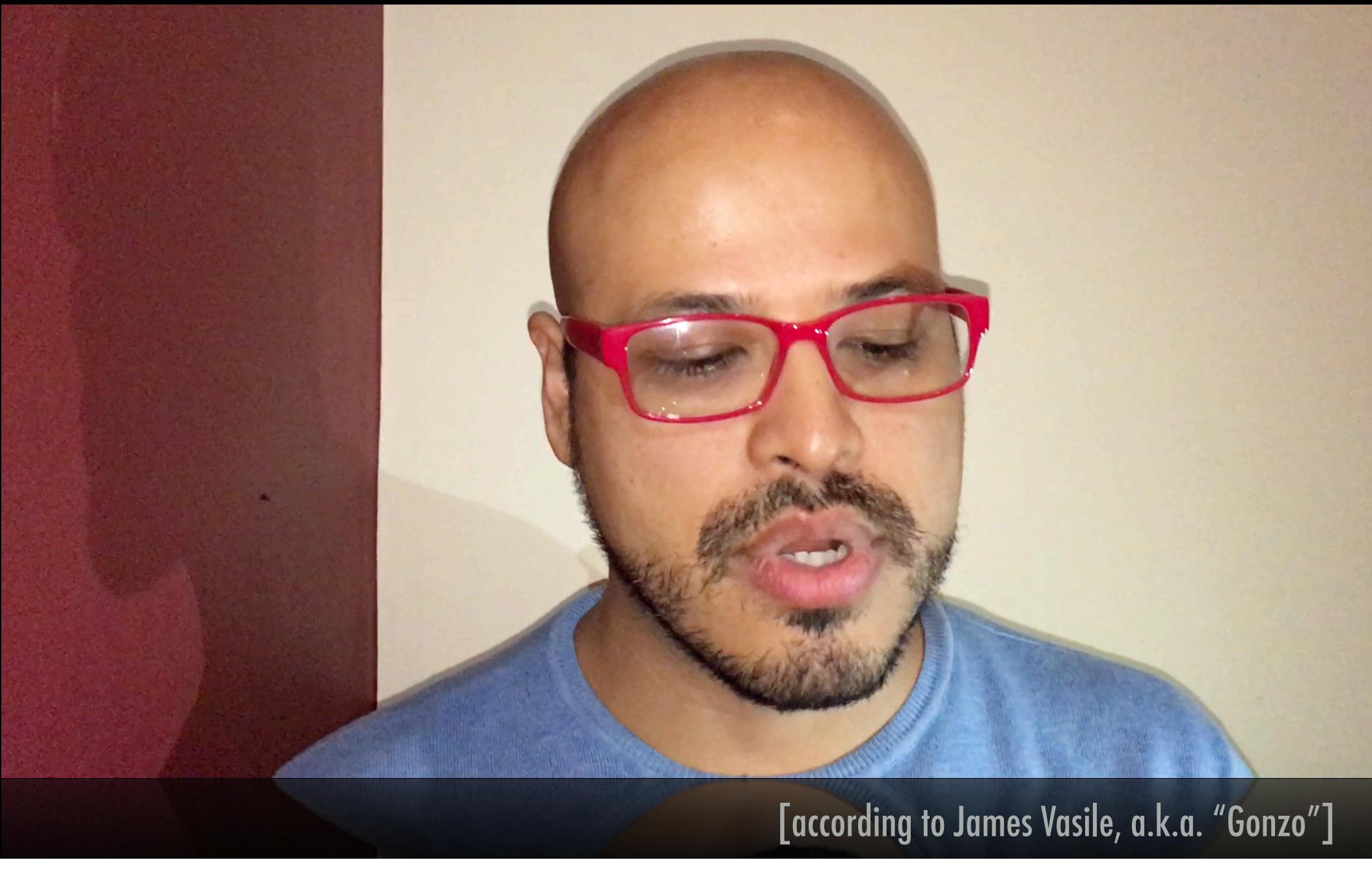
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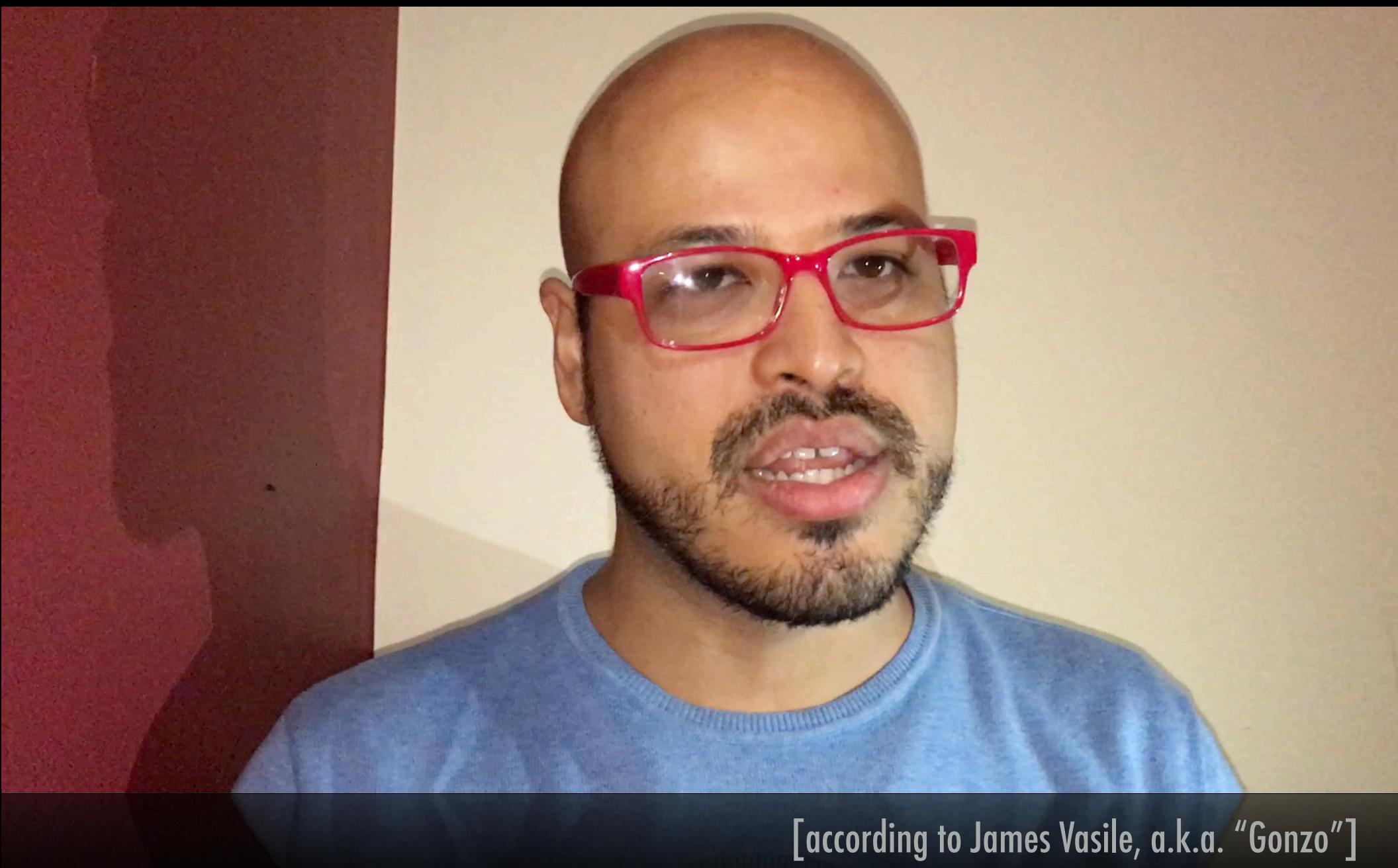
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THE FUTURE?



[according to James Vasile, a.k.a. "Gonzo"]

THE FUTURE?



[according to James Vasile, a.k.a. "Gonzo"]