

The Focal Point

Vol. 30 No. 7

The Atlanta Astronomy Club
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Editor: Tom Faber

Table of Contents

- Page 1... March AAC Mtg
- Page 2... February AAC Meeting Report
- Page 3... February AAC Meeting Report
- Page 4... Next CEA Meeting, CE Feb Meeting Minutes
- Page 5... New Constellation Hunters, Titan's Seas
- Page 6... Large Amount of Water in an Exoplanet's Atmosphere
- Page 7... AAC Online, Memberships, Contact Info
- Page 8... Calendar, AAC List Serv Info, Focal Point Deadline

The March AAC Meeting

*** Note Location & Day Change ***

The March meeting of the Atlanta Astronomy Club will be held on **Thursday, March 15th beginning at 7:30PM**, in the Howey Physics Building on the Georgia Tech campus (see maps). The meeting will be in Lecture Room 3. Parking will be available in the lots north and west of the Physics Building, accessible from Ferst Drive at the intersection with State Street. There may be a nominal parking charge.

The program will be a presentation about the James Webb Space Telescope, scheduled to be launched next year. The program will be presented by representatives of Northrop Grumman Corporation. Northrop Grumman is the prime contractor for the spacecraft portion of the JWST.

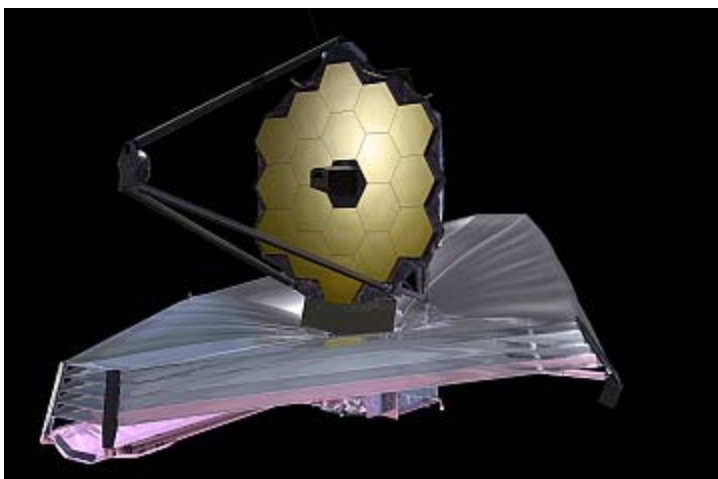


Illustration of the James Webb Space Telescope after deployment. NASA

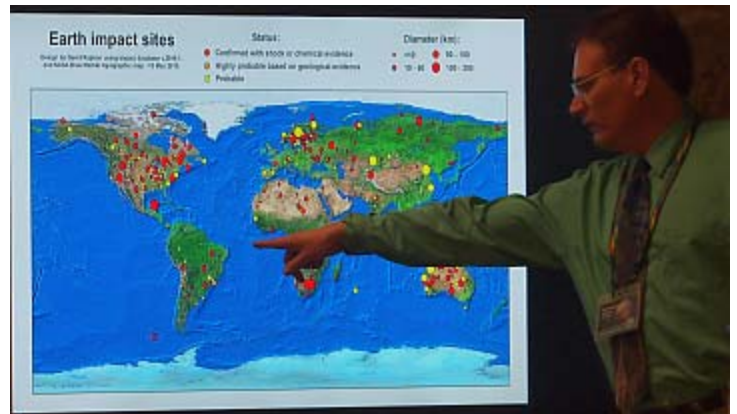
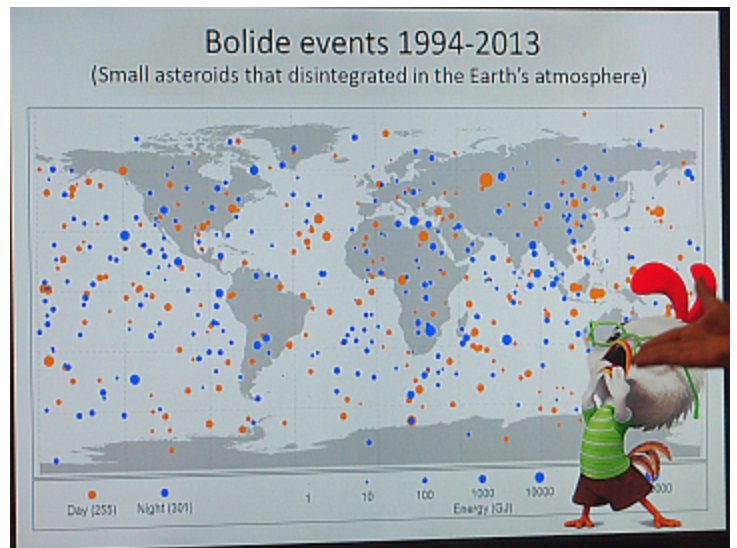
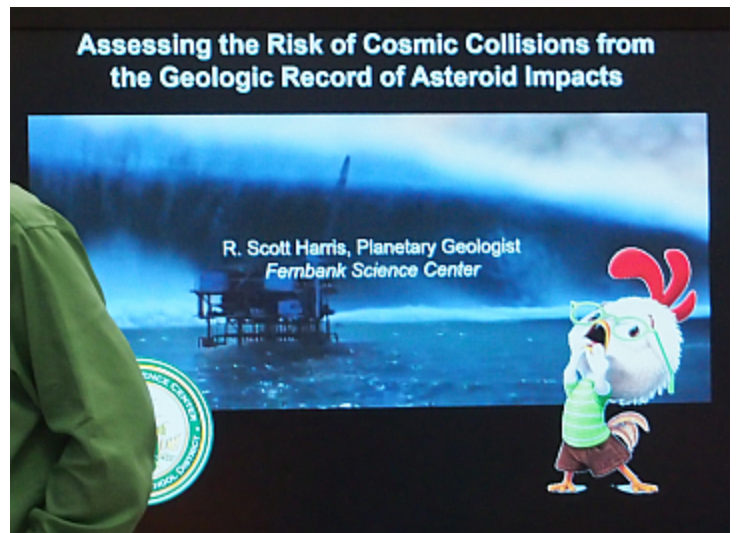


Credit: Google Maps

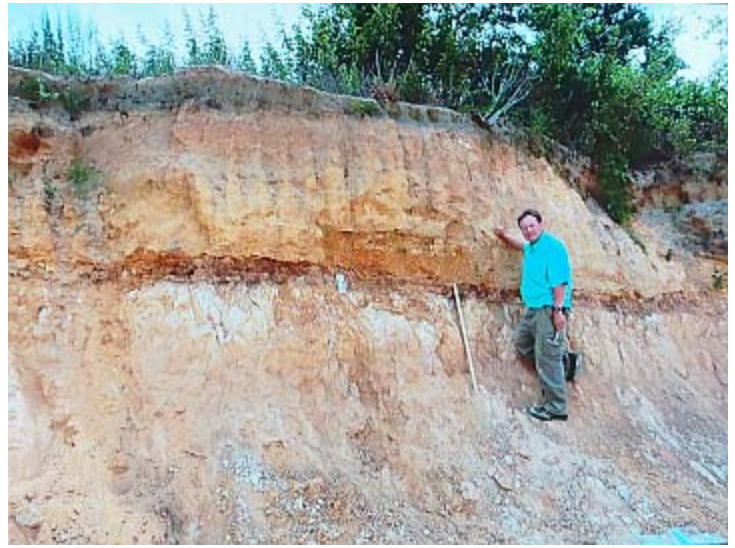
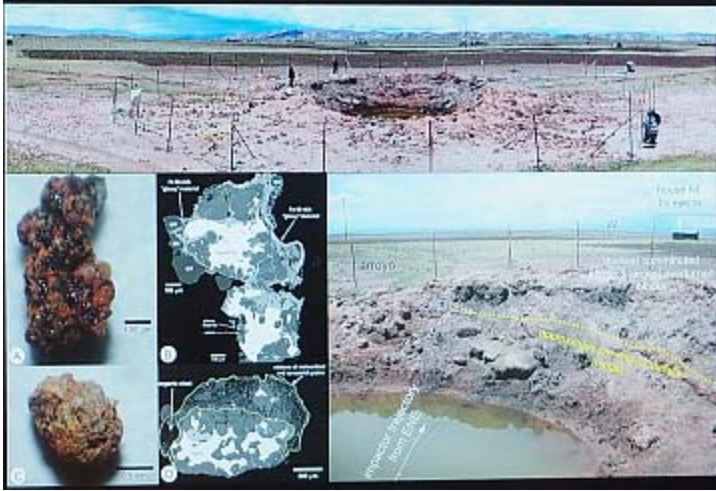
February AAC Meeting Report

Meeting photos by Philip Johnson

The February AAC general meeting was held on Friday, February 16th at the Fernbank Science Center. About 20 members and guests were present. Our featured speaker was Scott Harris (photo bottom), resident Planetary Geologist at Fernbank Science Center. Scott talked about meteorite and asteroid impacts on Earth, from impacts billions of years ago up to the present time. He talked about a recent small impact near the village of Carancas in Peru, that happened on September 15, 2007. Scott then answered questions. After the Q&A there were announcements by AAC officers about upcoming events and activities.



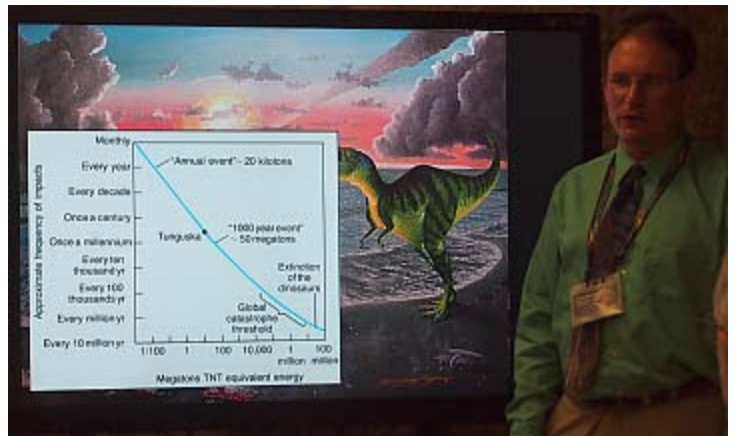
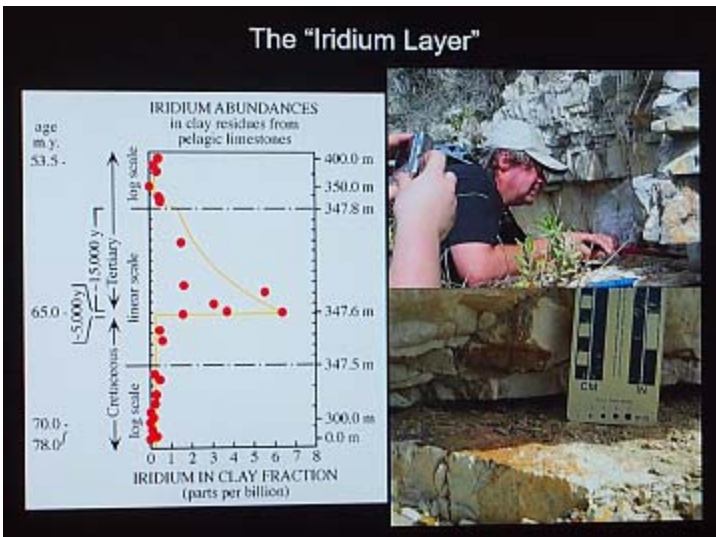
Carancas (9/15/07)



South Carolina

	Ir	Pt (ppb)
Huber Formation (Middle Eocene)	bdl	bdl
spherule bed	6.6	11.7
clay layer	24.8	61.9
Sawdust Landing Fm (Upper Maastrichtian)	15.4	40.6

CI-Normalized Pt/Ir = 0.9-1.3



The Next Charlie Elliott Meeting

Meeting Details - Quarterly Potluck Dinner

The next gathering of the Charlie Elliott chapter of the AAC will be the group's quarterly potluck dinner at 4:30 p.m., Saturday, March 17, at the Campbell Aquatics Building at the Charlie Elliott Wildlife Center. The CE Wildlife Center is located off Hwy 11, a few miles south of I-20. The Aquatics Building is located on Murder Creek Church Rd inside the CE Wildlife Center. The CE Wildlife Center phone is 770-784-3059.

If you have already been to any of our potlucks, you're probably looking forward to the good food (banana pudding!!) and good company these events have become known for. Potlucks are great when everyone chips in, and ours are no different. In addition to all of the good things like banana pudding, barbecue, and mac & cheese, we need help with set-up and clean-up as well. Please take a moment to sign up for something to contribute



Credit: Google Maps

and help out.. The website with a link to a sign-up sheet is at ceastronomy.org

As is the usual custom, there will be no formal program. However, David Whalen, our CE Astronomy Observing Supervisor, will give a talk about what you can expect to see in the sky this month using binoculars and small telescopes, as well as the monthly observing challenge.

If you've been to any of our meetings, you know that Dave is a dynamic and engaging speaker and always delivers a lot of great information with plenty of laughs! Be sure to ask for the monthly target list and a SkyMap! Dave will be joined by Astrophotography Coordinator Mark Woolridge who will cover the imaging challenges of the month and tips on how to image them. If we ask nicely, we might even get Dave to do the astro dance again. Mark? Maybe not.

Observing After the Meeting

All are invited to Jon Wood Astronomy Field immediately after the meeting for observing (weather-permitting).

Tech Talks

If you have an idea for a 15-30 minute discussion or presentation that you would like to see or would like to give, contact the Charlie Elliott Program Coordinator, Steve Siedentop - program@ceastronomy.org.

Our Monthly Meetings and Public Observing Nights for 2018

Future Charlie Elliott meetings will be held on: April 14, May 12, June 16, July 14, August 11, September 8, October 6, November 10, December 8, 2018. Meetings start approximately 2 hours before sunset. Meeting rooms and start times vary, so please check back for updates or changes at: <http://ceastronomy.org/blog/home>

The February Charlie Elliott Meeting

Stephanie Dickson, Secretary, Charlie Elliott Chapter

Meeting Minutes: 2/17/18

Attendees: Meeting 37, Field 0

Meeting time: 4PM

Meeting called to order by: Mike Shaw

Outreach by Dan Thoman: 2 weeks Astronomy Night at Summer High School?, 3/22 - 7th Annual Kites, 3/26 - Grayson Elem (Steve will be there).

AL Awards: Awards by Valerie Whalen/Dan Thoman, Constellation Hunters, Cynthia and Daniel Culver, Richard and Stephanie Dickson, Mike and Terri Shaw.

Event Volunteers: Mike, Terri, Thomas, David, Linda, Marie, Bob, Frank, Valerie, Dan (more than 5 events).

ALPO by Ken Poshedly: Podcasts, ALPO Issues, ATL club information

Other news/events: Mike Shaw: Membership, March Potluck, welcome new guests, no viewing due to weather

David Whalen gave his presentation on "All of the Above" at: 4:28pm, Month of no full moon, next is 3/1/18, Daylight savings time 3/11/18, 3/17 18 new moon and next meeting, Morning is the time to view planets, Mercury 3/15 greatest elongation, Constellation updates, Target lists: Easy, Small/Medium, Light Buckets: Challenge of the month: NCG 2237/2244 Rosette Nebula & Cluster, Neptune in conjunction with Sun on 3/4/18

AP Targets by Mark Woolridge: Advise creating target lists before going out to simplify the experience.

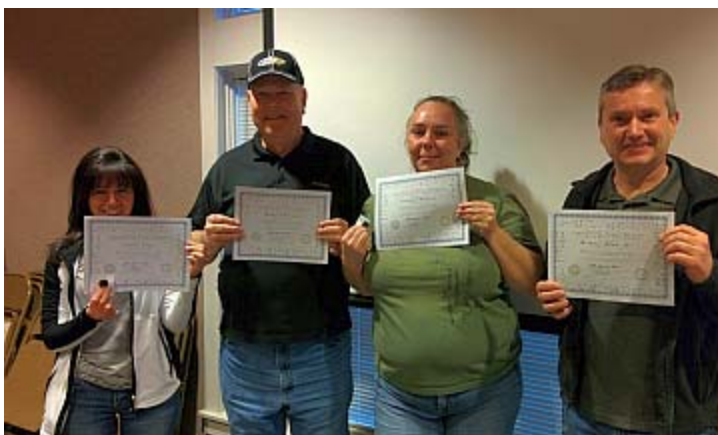
Beginner Target List - 3/7-3/10 moon with planet(s), Intermediate Target - M81 & M82 (Bode and Cigar Galaxies), Narrowband Target - N/A, Advanced Target - Owl Nebula M97 and Galaxy M108.



Continued on next page



Main Presentation: Started at: 5:08pm, Intro by Steve Sidentop
 Presenter: Crystal Gnilka. Subject: Narrow Line Region (NLR) and Blackholes. Notes: IGM - Intergalactic medium, AGN - Active galactic nucleus, A galaxy with an AGN is called an active galaxy. AGN components: Supermassive black hole, accretion disk, dusty (clumpy) torus that is shaped like a donut and can vary in size and height, sometime light peaks through, scattering region the reflect light from the disk, BUR is 10 light days, NUR is about 1,000-1,000,000 light days, radio jet created by magnetic fields and is made of blobs of plasma and is moving near the speed of light. AGN Classification and types. There are a lot of them. All really the same just depend on our view. We care about super massive black holes because they are connected to a host galaxy, control star formation and interact with the IGM. Black holes are billions of time the mass of our own Sun. They may or may not have a torus. So far only 7 have been seen, and that is from acting on neighbors not direct viewing. Also nothing can escape one.
 Meeting Ended: 6:05pm.
 Field conditions: Cloudy, rain expected. No viewing.



New Constellation Hunters

By Valorie Whalen

Congratulations to our newest Constellation Hunter awardees (l-r): Terrie Brown Shaw, Richard Dickson, Stephanie Dickson, Michael Shaw. A year in the making, all their hard work paid off. Also receiving the award was Cynthia Culver and Daniel Culver. Proud of all you guys! Congratulations!

Cassini Finds Saturn Moon Has 'Sea Level' Like Earth

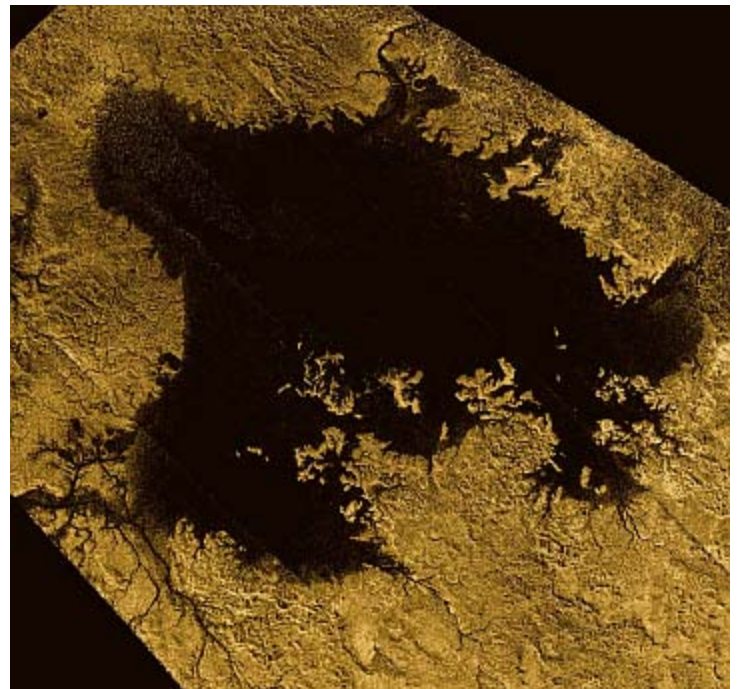
NASA/JPL News Release - January 17, 2018

Saturn's moon Titan may be nearly a billion miles away from Earth, but a recently published paper based on data from NASA's Cassini spacecraft reveals a new way this distant world and our own are eerily similar. Just as the surface of oceans on Earth lies at an average elevation that we call "sea level," Titan's seas also lie at an average elevation.

This is the latest finding that shows remarkable similarities between Earth and Titan, the only other world we know of in our solar system that has stable liquid on its surface. The twist at Titan is that its lakes and seas are filled with hydrocarbons rather than liquid water, and water ice overlain by a layer of solid organic material serves as the bedrock surrounding these lakes and seas.

The new paper, led by Alex Hayes at Cornell University in Ithaca, New York, and published in the journal *Geophysical Research Letters*, finds that Titan's seas follow a constant elevation relative to Titan's gravitational pull -- just like Earth's oceans. Smaller lakes on Titan, it turns out, appear at elevations several hundred feet, or meters, higher than Titan's sea level. Lakes at high elevation are commonly found on Earth. The highest lake navigable by large ships, Lake Titicaca, is over 12,000 feet [3,700 meters] above sea level.

The new study suggests that elevation is important because Titan's liquid bodies appear to be connected under the surface in something akin to an aquifer system at Earth. Hydrocarbons appear to be flowing underneath Titan's surface similar to the way water flows through underground porous rock or gravel on Earth, so that nearby lakes communicate with each other and share a common liquid level.



Ligeia Mare, shown in here in data obtained by NASA's Cassini spacecraft, is the second largest known body of liquid on Saturn's moon Titan. It is filled with liquid hydrocarbons, such as ethane and methane, and is one of the many seas and lakes that bejewel Titan's north polar region. Cassini has yet to observe waves on Ligeia Mare and will look again during its next encounter on May 23, 2013. Credits: NASA/JPL-Caltech/ASI/Cornell

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The paper was based on data obtained by Cassini's radar instrument until just months before the spacecraft burned up in the Saturn atmosphere last year. It also used a new topographical map published in the same issue of *Geophysical Research Letters*.

For more details on the two papers, visit: <https://news.cornell.edu/stories/2018/01/saturns-moon-titan-sports-earth-features>

The Cassini-Huygens mission is a cooperative project of NASA, ESA (European Space Agency) and the Italian Space Agency. NASA's Jet Propulsion Laboratory, a division of Caltech in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington. JPL designed, developed and assembled the Cassini orbiter. The radar instrument was built by JPL and the Italian Space Agency, working with team members from the U.S. and several European countries.

NASA Finds a Large Amount of Water in an Exoplanet's Atmosphere

NASA/ESA/STScI News Release - March 1, 2018

Much like detectives study fingerprints to identify the culprit, scientists used NASA's Hubble and Spitzer space telescopes to identify the "fingerprints" of water in the atmosphere of a hot, bloated, Saturn-mass exoplanet some 700 light-years away. And, they found a lot of water. In fact, the planet, known as WASP-39b, has three times as much water as Saturn does.

Though no planet like this resides in our solar system, WASP-39b can provide new insights into how and where planets form around a star, say researchers. This exoplanet is so unique, it underscores the fact that the more astronomers learn about the complexity of other worlds, the more there is to learn about their origins. This latest observation is a significant step toward characterizing these worlds.

Although the researchers predicted they'd see water, they were surprised by how much water they found in this "hot Saturn." Because WASP-39b has so much more water than our famously ringed neighbor, it must have formed differently. The amount of water suggests that the planet actually developed far away from the star, where it was bombarded by a lot of icy material. WASP-39b likely had an interesting evolutionary history as it migrated in, taking an epic journey across its planetary system and perhaps obliterating planetary objects in its path.

"We need to look outward so we can understand our own solar system," explained lead investigator Hannah Wakeford of the Space Telescope Science Institute in Baltimore, Maryland, and the University of Exeter in Devon, United Kingdom. "But exoplanets are showing us that planet formation is more complicated and more confusing than we thought it was. And that's fantastic!"

Wakeford and her team were able to analyze the atmospheric components of this exoplanet, which is similar in mass to Saturn but profoundly different in many other ways. By dissecting starlight filtering through the planet's atmosphere into its component colors, the team found clear evidence for water. This water is detected as vapor in the atmosphere.

Using Hubble and Spitzer, the team has captured the most complete spectrum of an exoplanet's atmosphere possible with present-day technology. "This spectrum is thus far the most beautiful example we have of what a clear exoplanet atmosphere looks like," said Wakeford.

"WASP-39b shows exoplanets can have much different compositions than those of our solar system," said co-author David Sing of the University of Exeter in Devon, United Kingdom. "Hopefully this diversity we see in exoplanets will give us clues in figuring out all the different ways a planet can form and evolve."

Located in the constellation Virgo, WASP-39b whips around a quiet, Sun-like star, called WASP-39, once every four days. The exoplanet is currently positioned more than 20 times closer to its star than Earth is to the Sun. It is tidally locked, meaning it always shows the same face to its star.

Its day-side temperature is a scorching 1,430 degrees Fahrenheit (776.7 degrees Celsius). Powerful winds transport heat from the day-side around the planet, keeping the permanent night-side almost as hot. Although it is called a "hot Saturn," WASP-39b is not known to have rings. Instead, it has a puffy atmosphere that is free of high-altitude clouds, allowing Wakeford and her team to peer down into its depths.

Looking ahead, Wakeford hopes to use the James Webb Space Telescope — scheduled to launch in 2019 — to get an even more complete spectrum of the exoplanet. Webb will be able to give information about the planet's atmospheric carbon, which absorbs light at longer, infrared wavelengths than Hubble can see. By understanding the amount of carbon and oxygen in the atmosphere, scientists can learn even more about where and how this planet formed.

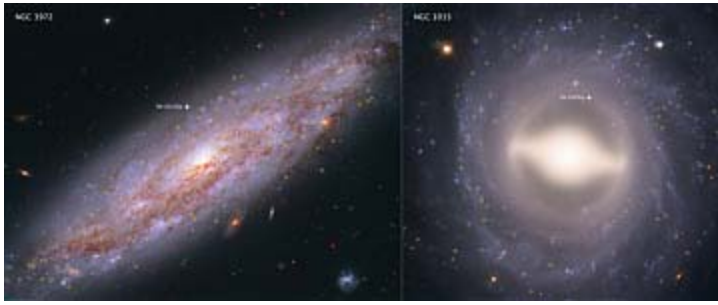
The Hubble Space Telescope is a project of international cooperation between NASA and ESA (European Space Agency). NASA's Goddard Space Flight Center in Greenbelt, Maryland, manages the telescope. The Space Telescope Science Institute (STScI) in Baltimore conducts Hubble science operations. STScI is operated for NASA by the Association of Universities for Research in Astronomy, Inc., in Washington, D.C.

NASA's Jet Propulsion Laboratory, Pasadena, California, manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington, D.C. Science operations are conducted at the Spitzer Science Center at Caltech in Pasadena. Spacecraft operations are based at Lockheed Martin Space Systems Company, Littleton, Colorado. Data are archived at the Infrared Science Archive housed at IPAC at Caltech. Caltech manages JPL for NASA.



Using Hubble and Spitzer space telescopes, scientists studied the "hot Saturn" called WASP-39b — a hot, bloated, Saturn-mass exoplanet located about 700 light-years from Earth. By dissecting starlight filtering through the planet's atmosphere into its component colors, the team found clear evidence for a large amount of water vapor. In fact, WASP-39b has three times as much water as Saturn does. Although the researchers predicted they'd see water, they were surprised by how much they found. This suggests that the planet formed farther out from the star, where it was bombarded by a lot of icy material. Because WASP-39b has so much more water than Saturn, it must have formed differently from our famously ringed neighbor.

Credits: Artist's Concept: NASA, ESA, and G. Bacon (STScI). Science: NASA, ESA, and H. Wakeford (STScI/Univ. of Exeter)



Hubble Helps Astronomers Measure Accurate Distances to Galaxies

NASA/STScI News Release - Feb 22, 2018

These Hubble Space Telescope images showcase 2 of the 19 galaxies analyzed in a project to improve the precision of the universe's expansion rate, a value known as the Hubble constant.

The color-composite images show NGC 3972 (left) and NGC 1015 (right), located 65 million light-years and 118 million light-years, respectively, from Earth. The yellow circles in each galaxy represent the locations of pulsating stars called Cepheid variables. These stars blink at a rate matched closely by their intrinsic brightness, making them ideal cosmic lighthouses for measuring accurate distances to relatively nearby galaxies.

Another reliable milepost marker is a special class of exploding star called a Type Ia supernova. All of these supernovae peak at the same brightness and are brilliant enough to be seen over relatively longer distances. The small cross-shaped feature in each galaxy denotes the location of a Type Ia supernova.

Astronomers search for Cepheid variables in nearby galaxies containing a Type Ia supernova so they can compare the true brightness of both types of stars. That brightness information is used to calibrate the luminosity of Type Ia supernovae in far-flung galaxies so that astronomers can calculate the galaxies' distances from Earth. Once astronomers know accurate distances to galaxies near and far, they can determine and refine the universe's expansion rate.

The observations for NGC 3972 were taken in 2015; for NGC 1015 in 2013. Both galaxies were observed by Hubble's Wide Field Camera 3.

For the full story see:

http://hubblesite.org/image/4121/news_release/2018-12

Credits: NASA, ESA, A. Riess (STScI/JHU)

The **Atlanta Astronomy Club, Inc.**, one of the South's largest and oldest astronomical society, meets at **3:00 P.M.** on the 2nd Saturday of each month at the Fernbank Science Center in Decatur, or occasionally at other locations or times. Membership fees are **\$30** for a family or single person membership. College Students membership fee is **\$15**. These fees are for a one year membership.

Magazine subscriptions to *Sky & Telescope* or *Astronomy* can be purchased through the club for a reduced rate. The fees are **\$33** for Sky & Telescope and **\$34** for Astronomy. Renewal forms will be sent to you by the magazines. Send the renewal form along with your check to the Atlanta Astronomy Club treasurer.

The Club address: Atlanta Astronomy Club, Inc., P.O. Box 76155, Atlanta, GA 30358-1155. AAC Web Page: <http://www.AtlantaAstronomy.org>. Send suggestions, comments, or ideas about the website to webmaster@AtlantaAstronomy.org. Also send information on upcoming observing events, meetings, and other events to the webmaster.

Atlanta Astronomy Club Online

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is posted. So if you want more up to date information, go to our club's website. The website contains pictures, directions, membership applications, events, updates, and other information. <http://www.atlantaastronomy.org> You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at <http://twitter.com/atlaastro>.

AAC Officers and Contacts

President: Dave Lumpkin President@AtlantaAstronomy.org

Program Chair: Open Programs@AtlantaAstronomy.org

Observing Chair: Daniel Herron Observing@AtlantaAstronomy.org

Corresponding Secretary: Tom Faber

Focalpoint@AtlantaAstronomy.org

Treasurer: Sharon Carruthers Treasurer@AtlantaAstronomy.org

Recording Secretary: Lilli Lindbeck,

Secretary@AtlantaAstronomy.org

Board Chair: Sharon Carruthers Treasurer@AtlantaAstronomy.org

Board: Brigitte Fessele, bhfessele1@gmail.com

Board: Open

Board: Steve Phillips sandsphillips@att.net

ALCor: Ken Olson, keneolson@yahoo.com

Elliott Chapter Director: Mike Shaw director@ceastronomy.org

Elliott Observing Chair: David Whalen

observing@ceastronomy.org

Elliott Recording Secretary: Stephanie Dickson

secretary@ceastronomy.org

Elliott Astrophotography Coordinator: Mark Wolridge

Elliott Chapter ALCor: Jack Fitzmier

Elliott Coordinator: Lacy Mitchell, Lacy.Mitchell@dnr.ga.gov

Elliott Webmaster: Larry Owens webmaster@CEastronomy.org

Elliott Outreach Coordinator: Dan Thoman

outreach@ceastronomy.org

Georgia Astronomy in State Parks: Sharon Carruthers

Treasurer@AtlantaAstronomy.org

PSSG Chairman: Peter Macumber pmacumber@nightsky.org

PSSG Co-Chair: Open

Sidewalk Astronomy: Open

sidewalkastronomy@AtlantaAstronomy.org

Light Trespass: Ken Edwards, Contact info TBA

Woodruff Observ. Coordinator: Sharon Carruthers

Treasurer@AtlantaAstronomy.org

AAC Webmaster: Daniel Herron

Observing@AtlantaAstronomy.org

Calendar by Tom Faber (Times EDT/EST unless noted)

AAC Events are listed in BOLD

- Mar 1st, Thursday: Full Moon.
- Mar 2nd, Friday: Mercury near Venus in evening.
- Mar 4th, Sunday: Neptune in conjunction with Sun.
- Mar 9th, Friday: Moon Last Quarter.
- Mar 10th, Saturday: Moon between Mars and Saturn morning.
- Mar 11th, Sunday: Daylight Saving Time Begins at 2:00AM.
- Mar 15th, Thursday: **AAC Meeting at Georgia Tech Physics Bldg, 7:30PM.**
- Mar 17th, Saturday: **CEA Chapter Meeting.** New Moon.
- Mar 18th, Sunday: Moon near Mercury and Venus evening.
- Mar 20th, Tuesday: Spring Equinox at 12:15PM.
- Mar 22nd, Thursday: Moon near Aldebaran evening.
- Mar 24th, Saturday: Moon First Quarter.
- Mar 31st, Saturday: Full Moon.
- Apr 1st, Sunday: Mercury at Inferior Conjunction.
- Apr 2nd, Monday: Mars near Saturn morning.
- Apr 7th, Saturday: Grouping of moon, Mars, and Saturn morning.
- Apr 8th, Sunday: Moon Last Quarter.
- Apr 12th, Thursday: **AAC Zombie Party at DAV Begins.**
- Apr 14th, Saturday: **CEA Chapter Meeting.**
- Apr 15th, Sunday: **AAC Zombie Party at DAV Ends.** New Moon.
- Apr 17th, Tuesday: Moon near Venus evening.
- Apr 18th, Wednesday: Moon in Hyades evening. Uranus conjunction with Sun.
- Apr 21st, Saturday: **Astronomy Day and AAC Meeting at Tellus Science Museum.**
- Apr 22nd, Sunday: Lyrid Meteor Shower peaks morning. Moon first quarter.

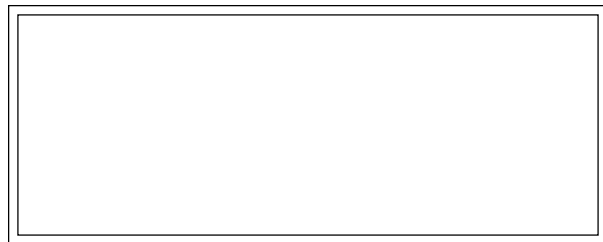
For more event listings see the calendar at www.atlantaastro.org.

Atlanta Astronomy Club Listserv

Subscribe to the Atlanta Astronomy Club Mailing List: The name of the list is: AstroAtlanta. The address for messages is: AstroAtlanta@yahoo.com. To add a subscription, send a message to: AstroAtlanta-subscribe@yahoo.com.

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastro.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files with images separate but Word documents or PDFs are okay. **The deadline for April is Saturday, March 24. Submissions received after the deadline will go in the following issue.**



FIRST CLASS



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We're here to help! Here's how to reach us:

Newsletter of The Atlanta Astronomy Club, Inc.



The Focal Point

FROM: Tom Faber
506 Treeridge Parkway
Alpharetta, GA 30022

Atlanta Astronomy Club

P.O. Box 76155

Atlanta, GA 30358-1155

www.atlantaastro.org

On Twitter at <http://twitter.com/atlastro>