

The Focal Point

Vol. 31 No. 9

The Atlanta Astronomy Club
Established 1947
May 2019

Editor: Tom Faber

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Atlanta Astronomy Club

Friday, May 17, 2019
8:00 p.m.

Fernbank Science Center

Where on the Moon?

Lunar Geography 101

Presented by R. Scott Harris
Planetary Geologist



The May AAC Meeting

By Ken Poshedly, AAC Program Chair

Friday, May 17 at 8 PM - Fernbank Science Center

"Lunar Geography 101"

The Atlanta Astronomy Club's final meeting of the season will be a real treat. On Friday, May 17, Fernbank Science Center Planetary Geologist Scott Harris will do a presentation about geologic lunar features located at and near the Apollo 11 landing site. Titled "Where on the Moon: Lunar Geography 101", this talk will tie in beautifully with the 50th anniversary of the Apollo 11 event which occurred on July 20, 1969 -- especially for those interested in telescopic observations of the Moon.

The Moon will be one day shy of Full that evening the evening of this presentation, so be prepared for some very bright views of Earth's nearest celestial neighbor.

The program will be in the Fernbank Science Center's Resource Center (formerly the library) at 8 p.m. Afterwards, and weather-permitting, all present will be invited upstairs to Ralph Buice Observatory to view through the 0.9 meter (36-inch) Cassegrain reflector beneath a 10 meter (30 ft.) dome. This is the largest telescope in the southeastern United States and one of the largest instruments ever dedicated to education and public viewing.

The Fernbank Science Center is located at 156 Heaton Park Dr. NE, Atlanta, GA 30303. (Phone: 678-874-7102).



Credit: Google Maps

April AAC Meeting Report

Photos by Tom Faber

The April meeting of the AAC was held at the Fernbank Science Center Resource Center, beginning at 8PM, on Friday, April 19. There were about 30 members and guests present. AAC President David Lumpkin (photo bottom) opened the meeting and gave various announcements.

Then AAC Program Chair Ken Poshedly (photo right, 2nd from top) introduced our guest speaker, Jon Dolan (bottom right), a senior at Georgia Tech, who presented a talk titled "Putting the 'Amateur' in 'Amateur Astrophotography'".

Jon talked about how he started in astrophotography while in high school using very simple equipment (the camera of an Iphone on a homemade mount) and how he has moved up to using a DSLR and Orion ED80 telescope on a tracking mount. He also talked about how to use a low cost (\$35) Raspberry Pi computer and open source software to accomplish everything from go-to control, polar alignment, image sequencing, camera focusing, auto-guiding, observatory dome control, and more.



No Summer AAC Meetings

Due to a decision made by the AAC Board of Directors, the Atlanta Astronomy Club will not hold meetings during the summer months of June, July, and August. This decision was made due to low attendance at the summer meetings and the difficulty in finding speakers for the summer months. So the next meeting of the Atlanta Astronomy Club will be in September at a time and location to be announced. Check out the AAC web page and Facebook page for updates about the September meeting, and summer activities such as the dark sky observing dates.

The Charlie Elliott Astronomy chapter of the Atlanta Astronomy Club will hold meetings during the summer and have observing after their meetings, weather permitting. AAC members are encouraged to attend these meetings. The CEA summer meetings will be on Saturday June 1, July 6, August 3, & August 31.

Because of not having meetings during the summer, the *Focal Point* will not be published during the summer months either. The next issue of the *Focal Point* will be the September issue, which will be published in late August or early September. Have a great summer, and clear skies!

June Charlie Elliott Meeting

Join us June 1st, 6:30PM, in the Campbell Aquatics Building at Charlie Elliott Wildlife Center (see map right) for our quarterly potluck! If you have been to one of our potlucks, you're probably looking forward to the good food 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 setup and clean up. Please take a moment to sign up for something and help out.

Potluck Sign-Up: <https://perfectpotluck.com/meals.php?t=CZLN6350>

If you haven't found it already, check out our Facebook Page. You'll find a welcoming group of people sharing ideas and tips as well as organizing ad-hoc observing and imaging sessions on Jon Wood Astronomy Field.

Perspective & All of the Above

Observing Coordinator David Whalen will be on hand to discuss what you can see and image in the night sky. His presentation will cover observing from both a visual and a contemplative perspective. If you've been to one of our meetings, you know that David 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 SkyMap.

Observing After the Meeting

All are invited to Jon Wood Astronomy Field immediately after the meeting (weather-permitting). As always, the event is free and open to the public.

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, Kevin Snedden at program@ceastronomy.org

Upcoming Charlie Elliott Meetings

Upcoming Charlie Elliott meetings will be held on: June 1, July 6, August 3, August 31, October 5, November 2, and December 7, 2019. 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>

Public stargazing on Jon Wood Astronomy Field follows the meeting, weather permitting.



Credit: Google Maps

The March Charlie Elliott Meeting

Submitted by Mike Mardis, Secretary, Charlie Elliott Chapter
Meeting Minutes 3/9/2019 at the Charlie Elliott Aquatics Center:

Meeting Minutes: 2/2/2019 at the Charlie Elliott Conference Room A

Pre-meeting start time: 1600

Presenter Mike Shaw

Topic Facilitated Pot Luck Dinner

Meeting:

Date/Time 3/9/2019 at 1600-2200

Facilitator Mike Shaw

Meeting Attendees 44

Agenda: Announcements, Briefings, Q&A / discussion

Alex Johansen Introduction of twenty four students from Madison High School

Field Participants N/A due to weather

Outreach Reported by

Outreach:

Reported by Mike Shaw Twenty four students from Madison High School attended along with their teacher Alex Johansen

Ruby Falls 4/13, Charlie Elliott 5/18, Mercedes Stadium, Hard Labor Creek 4/13

Awards Reported by David Whalen - N/A.

Briefing Speaker/Topic:

Mike Shaw Welcome and introduction of club to attendees

Steve Seidentop AP Targets and Skymap

Mark Woolridge M81 and M82, Leo Trio, NGC 2403

Mike Shaw Celestial Sphere

Marie Lott Library loaner program, Comet 64P video and howto

Handouts:

Ken Poshedly The Evening Skyap, Celestial Objects.

Continued on next page

Other News:

Ken Poshedly ALPO Update, Atlanta Astronomy Club Meeting upcoming meeting of the AAC at the Fernbank on 3/15/19.
Theo Ramaker Solar images
Mike Mardis Provided analysis of SquareSpace vs GoDaddy for CEA web page hosting
Next Meeting Potluck dinner at Charlie Elliott Aquatic Center on 3/9/2019 at 4:30pm

The April Charlie Elliott Meeting

Submitted by Mike Mardis, Secretary, Charlie Elliott Chapter

Our April meeting in the Charlie Elliott Conference Room B was a success, however we were weathered out and did not have an observing session on the Jon Wood field after the meeting.

Meeting Minutes: 4/6/2019 at the Charlie Elliott Conference Room B

Pre-meeting start time: N/A

Presenter N/A

Topic N/A

Meeting:

Date/Time 4/6/2019 at 1730-2200

Facilitator Mike Shaw

Meeting Attendees 19

Agenda: Announcements, Introduction of twenty four students from Madison High School, Briefings, Q&A / discussion.

Field Participants N/A

Outreach report Mike Shaw 4/13 Anna Ruby Falls, 4/13 Hard Labor Creek, 4/27 Madison Town Park

Awards Reported by David Whalen - N/A.

Briefing Speaker/Topic:

Mike Shaw Welcome and introduction to attendees.
David Whalen Steve at NEAF, Galaxy season 32 of 110 Messier objects, Took non Messier tonight, Solar System, Moon (will ruin Lyrid shower), Lyrid Meteor shower, Constellations
Mark Woolridge Markarian's Chain, DSLR tripod targets, Intermediate target M5, Advanced target NGC5139.
Theo Ramaker Solar cycle 24 and 25 observations
Mike Shaw Elections next month
Marie Lott Anna Ruby Falls overview

Handouts:

Ken Poshedly Sky Chart

Other News:

Ken Poshedly ALPO Update, Atlanta Astronomy Club Meeting upcoming meeting of the AAC at Fernbank 4/19/19.
Mike Mardis Annual membership dues due in March
Next meeting Charlie Elliott Conf Rm B at 1830 on 5/4/2019

2019 Deerlick Astronomy Village Memorial Weekend Picnic

By Marie Lott

The annual Memorial Weekend picnic at Deerlick Astronomy Village will be held on Sunday, May 26th, 2019 from 5-7 PM. Please join us for a great potluck meal and enjoy free camping under the stars afterwards. Atlanta Astronomy Club members should be sure to check out the AAC clubhouse & observatory on the field. This event is open to anyone interested in stargazing under the dark skies at DAV. No membership is required.

The picnic will be held in the Grier's Field pavilion in Deerlick Astronomy Village, located at the end of Aaron Grier Road near Sharon, GA. If you would like to bring a tent or RV, camping is free on Sunday night. There will be a \$5 camping fee per person per night for those who would like to arrive early and camp on Friday or Saturday night. A full bath house is located on site. For more details, driving directions, and potluck sign-up, go to <http://bit.ly/DAVpicnicRSVP>. No membership is required. Contact Marie at DAVpicnic@yahoo.com if you have any questions.

Call for Volunteers -- Spring Election

By Ken & Karla Poshedly

The Atlanta Astronomy Club, founded in 1947 by the late Dr. William Calder, who came to Agnes Scott College in Decatur, Georgia from the Harvard College Observatory, to promote the collaboration of professional and amateur astronomers and to provide a venue for non-professionals to share their interests, is seeking candidates to run for office in the club's May election.

The AAC has a rich and varied history and is comprised of individuals from all walks of life, from students to professionals of all kinds; from youngsters to senior citizens; from those mildly interested in the night sky to those who "live and breathe this stuff". No matter who you are or what your occupation or stage in life, you're sure to fit in with the AAC.

The only requirement for candidates is to be a dues-paying member of the AAC and at least somewhat familiar with potential officer duties.

The following positions will be open: President, Program Chair, Observing Chair, Corresponding Secretary, Treasurer and Recording Secretary.

Duties are as described below:

- * President -- Serves as the chief executive officer who calls the program meetings to order and keeps things running smoothly.
- * Program Chair -- Books speakers for the club meetings.
- * Observing Chair -- Oversees matters involving the club's observing site and equipment at the Deerlick Astronomy Village.
- * Corresponding Secretary -- Oversees publication of the club newsletter.
- * Treasurer -- Handles the club's financial transactions and prepares an annual budget.
- * Recording Secretary -- Takes notes of the meetings for publication in the club newsletter.

All individuals except for the president may assemble a committee of helpers to assist with the functions of their respective office.

Interested individuals should contact the current AAC president, David Lumpkin at davidlumpkin@comcast.net

March was Membership Renewal Month

The AAC has moved to a “one-date-for-all” membership renewal. ALL CLUB MEMBERS, with certain exceptions, should submit their \$30 dues for 2019 by the end of March. Please send your renewals to AAC Treasurer Sharon Carruthers, renew online using PayPal, or you can bring your renewal to the May Meeting. For more information see: http://atlantaastronomy.org/?page_id=22

Thank You for your support of the AAC!

The Astronomical League

As a member of the **Atlanta Astronomy Club** you are automatically also a member of the **Astronomical League**, a nation wide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you. They include:

- * You will receive *The Reflector*, the AL’s quarterly newsletter.
- * You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.
- * You can participate in the Astronomical League’s Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org>

Hubble Astronomers Assemble Wide View of the Evolving Universe

NASA/STScI News Release - May 2, 2019

Astronomers have put together the largest and most comprehensive “history book” of galaxies into one single image, using 16 years’ worth of observations from NASA’s Hubble Space Telescope.

The deep-sky mosaic, created from nearly 7,500 individual exposures, provides a wide portrait of the distant universe, containing 265,000 galaxies that stretch back through 13.3 billion years of time to just 500 million years after the big bang. The faintest and farthest galaxies are just one ten-billionth the brightness of what the human eye can see. The universe’s evolutionary history is also chronicled in this one sweeping view. The portrait shows how galaxies change over time, building themselves up to become the giant galaxies seen in the nearby universe.

This ambitious endeavor, called the Hubble Legacy Field, also combines observations taken by several Hubble deep-field surveys, including the eXtreme Deep Field (XDF), the deepest view of the universe. The wavelength range stretches from ultraviolet to near-infrared light, capturing the key features of galaxy assembly over time.

“Now that we have gone wider than in previous surveys, we are harvesting many more distant galaxies in the largest such dataset ever produced by Hubble,” said Garth Illingworth of the University of California, Santa Cruz, leader of the team that assembled the image. “This one image contains the full history of the growth of galaxies in the universe, from their time as ‘infants’ to when they grew into fully-fledged ‘adults.’”

No image will surpass this one until future space telescopes are launched. “We’ve put together this mosaic as a tool to be used by us and by other astronomers,” Illingworth added. “The expectation is that this survey will lead to an even more coherent, in-depth, and greater understanding of the universe’s evolution in the coming years.”

The image yields a huge catalog of distant galaxies. “Such exquisite high-resolution measurements of the numerous galaxies in this catalog enable a wide swath of extragalactic study,” said catalog lead researcher Katherine Whitaker of the University of Connecticut, in Storrs. “Often, these kinds of surveys have yielded unanticipated discoveries which have had the greatest impact on our understanding of galaxy evolution.”

Galaxies are the “markers of space,” as astronomer Edwin Hubble once described them a century ago. Galaxies allow astronomers to trace the expansion of the universe, offer clues to the underlying physics of the cosmos, show when the chemical elements originated, and enable the conditions that eventually led to the appearance of our solar system and life.

This wider view contains about 30 times as many galaxies as in the previous deep fields. The new portrait, a mosaic of multiple snapshots, covers almost the width of the full Moon. The XDF, which penetrated deeper into space than this wider view, lies in this region, but it covers less than one-tenth of the full Moon’s diameter. The Legacy Field also uncovers a zoo of unusual objects. Many of them are the remnants of galactic “train wrecks,” a time in the early universe when small, young galaxies collided and merged with other galaxies.

Assembling all of the observations was an immense task. The image comprises the collective work of 31 Hubble programs by different teams of astronomers. Hubble has spent more time on this tiny area than on any other region of the sky, totaling more than 250 days, representing nearly three-quarters of a year.

“Our goal was to assemble all 16 years of exposures into a legacy image,” explained Dan Magee, of the University of California, Santa Cruz, the team’s data processing lead. “Previously, most of these exposures had not been put together in a consistent way that can be used by any researcher. Astronomers can select the data in the Legacy Field they want and work with it immediately, as opposed to having to perform a huge amount of data reduction before conducting scientific analysis.”

The image, along with the individual exposures that make up the new view, is available to the worldwide astronomical community through the Mikulski Archive for Space Telescopes (MAST). MAST, an online database of astronomical data from Hubble and other NASA missions, is located at the Space Telescope Science Institute in Baltimore, Maryland.

The Hubble Space Telescope has come a long way in taking ever deeper “core samples” of the distant universe. After Hubble’s launch in 1990, astronomers debated if it was worth spending a chunk of the telescope’s time to go on a “fishing expedition” to take a very long exposure of a small, seemingly blank piece of sky. The resulting Hubble Deep Field image in 1995 captured several thousand unseen galaxies in one pointing. The bold effort was a landmark demonstration and a defining proof-of-concept that set the stage for future deep field images. In 2002, Hubble’s Advanced Camera for Surveys went even deeper to uncover 10,000 galaxies in a single snapshot. Astronomers used exposures taken by Hubble’s Wide Field Camera 3 (WFC3), installed in 2009, to assemble the eXtreme Deep Field snapshot in 2012. Unlike previous Hubble cameras, the telescope’s WFC3 covers a broader wavelength range, from ultraviolet to near-infrared.

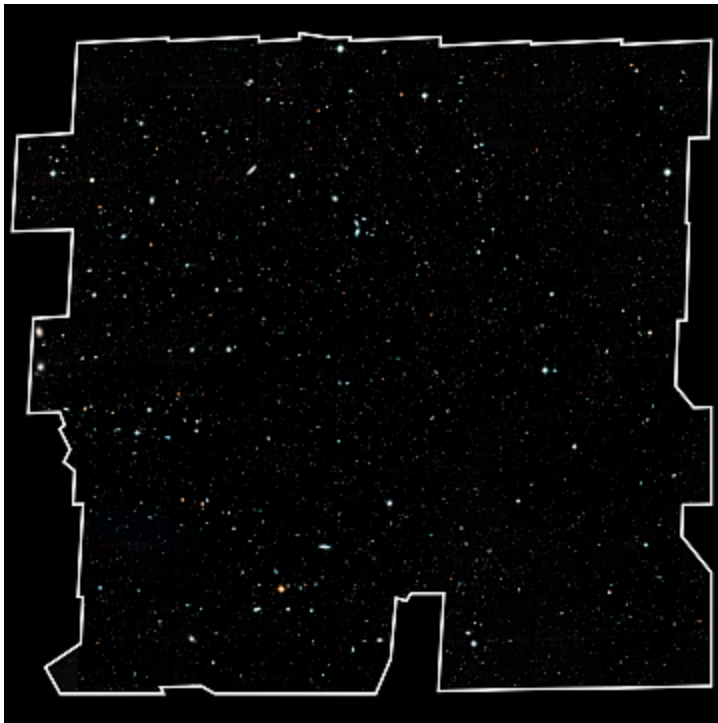
This new image mosaic is the first in a series of Hubble Legacy Field images. The team is working on a second set of images, totaling more than 5,200 Hubble exposures, in another area of the sky. In the future, astronomers hope to broaden the multiwavelength range in the legacy images to include longer-wavelength infrared data and high-energy X-ray observations from two other NASA Great Observatories, the Spitzer Space Telescope and Chandra X-ray Observatory.

The vast number of galaxies in the Legacy Field image are also prime targets for future telescopes. “This will really set the stage for NASA’s

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planned Wide Field Infrared Survey Telescope (WFIRST),” Illingworth said. “The Legacy Field is a pathfinder for WFIRST, which will capture an image that is 100 times larger than a typical Hubble photo. In just three weeks’ worth of observations by WFIRST, astronomers will be able to assemble a field that is much deeper and more than twice as large as the Hubble Legacy Field.” In addition, NASA’s upcoming James Webb Space Telescope will allow astronomers to push much deeper into the legacy field to reveal how the infant galaxies actually grew. Webb’s infrared coverage will go beyond the limits of Hubble and Spitzer to help astronomers identify the first galaxies in the universe.

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, Maryland, conducts Hubble science operations. STScI is operated for NASA by the Association of Universities for Research in Astronomy in Washington, D.C.

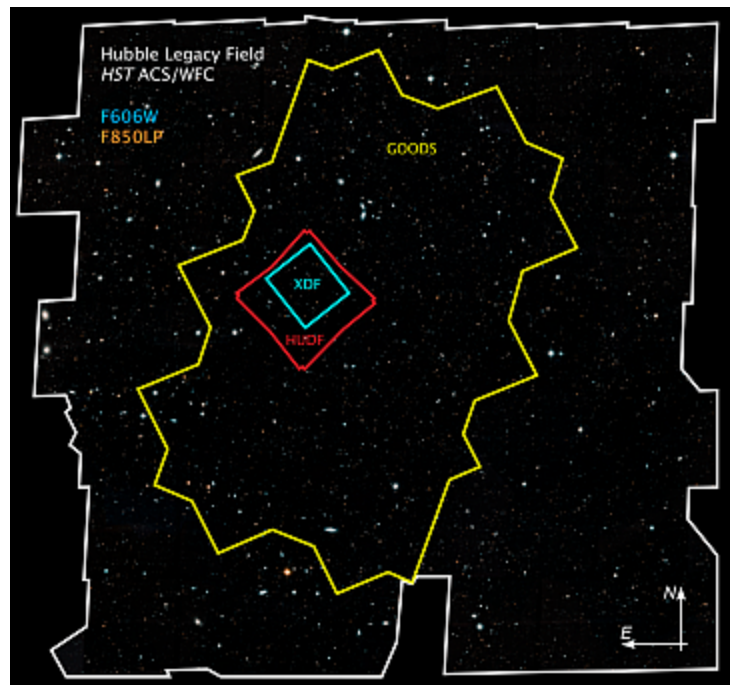


This Hubble Space Telescope image represents the largest, most comprehensive “history book” of galaxies in the universe. The image, a combination of nearly 7,500 separate Hubble exposures, represents 16 years’ worth of observations. The ambitious endeavor, called the Hubble Legacy Field, includes several Hubble deep-field surveys, including the eXtreme Deep Field (XDF), the deepest view of the universe. The wavelength range stretches from ultraviolet to near-infrared light, capturing all the features of galaxy assembly over time. The image mosaic presents a wide portrait of the distant universe and contains roughly 265,000 galaxies. They stretch back through 13.3 billion years of time to just 500 million years after the universe’s birth in the big bang. The tiny, faint, most distant galaxies in the image are similar to the seedling villages from which today’s great galaxy star-cities grew. The faintest and farthest galaxies are just one ten-billionth the brightness of what the human eye can see. The wider view contains about 30 times as many galaxies as in the Hubble Ultra Deep Field, taken in 2004. The new portrait, a mosaic of multiple snapshots, covers almost the width of the full Moon. Lying in this region is the XDF, which penetrated deeper into space than this legacy field view. However, the XDF field covers less than one-tenth of the full Moon’s diameter.

Credits: NASA, ESA, G. Illingworth and D. Magee (University of California, Santa Cruz), K. Whitaker (University of Connecticut), R. Bouwens (Leiden University), P. Oesch (University of Geneva,) and the Hubble Legacy Field team



Hubble Legacy Field Crop. This image is a crop of the upper center portion of the image at the left.

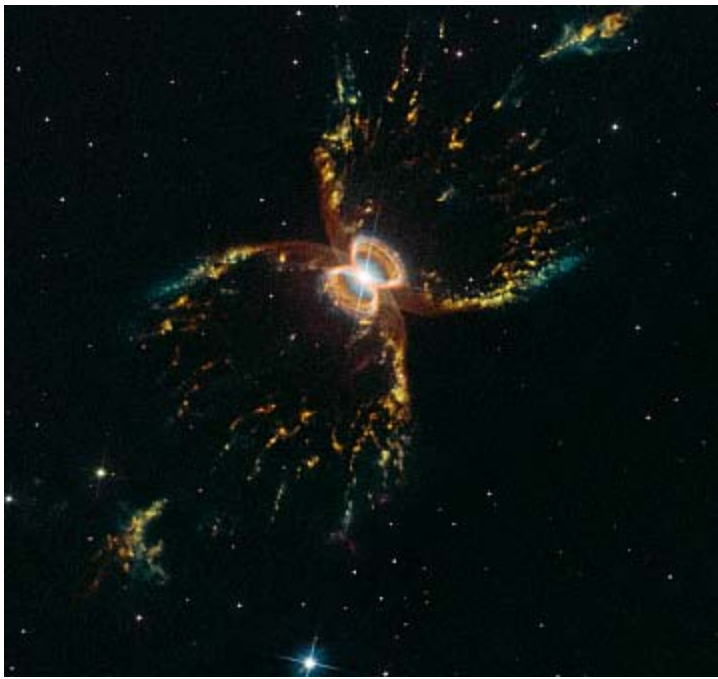


This image shows the sizes and locations within the Hubble Legacy Field of the two areas that Hubble first studied in this region, the Great Observatories Origins Deep Survey (GOODS) and the Hubble Ultra Deep Field (HUDF), along with the deepest image ever taken by Hubble, the eXtreme Deep Field (XDF).

The Hubble Legacy Field is one of the widest views ever taken of the universe with Hubble. Astronomers assembled the image from 16 years’ worth of Hubble observations. The Hubble Legacy Field image combines many Hubble field surveys, including the iconic original HUDF and the first wide-field GOODS, as well as the XDF.

The image’s wavelength range stretches from ultraviolet to near-infrared light, capturing all the features of galaxy assembly over time. The wide view contains about 30 times as many galaxies as in the HUDF. The new portrait, a mosaic of 7,500 exposures, covers almost the width of the full Moon.

Images Credit: NASA, ESA, G. Illingworth and D. Magee (University of California, Santa Cruz), K. Whitaker (University of Connecticut), R. Bouwens (Leiden University), P. Oesch (University of Geneva), and the Hubble Legacy Field team.



Southern Crab Nebula

NASA/STScI News Release - April 18, 2019

In celebration of the 29th anniversary of the launch of NASA's Hubble Space Telescope, astronomers captured this festive, colorful look at the tentacled Southern Crab Nebula.

The nebula, officially known as Hen 2-104, is located several thousand light-years from Earth in the southern hemisphere constellation of Centaurus. It appears to have two nested hourglass-shaped structures that were sculpted by a whirling pair of stars in a binary system. The duo consists of an aging red giant star and a burned-out star, a white dwarf. The red giant is shedding its outer layers. Some of this ejected material is attracted by the gravity of the companion white dwarf.

The object was first reported in the late 1960s, but was assumed to be an ordinary star. In 1989, astronomers used the European Southern Observatory's La Silla Observatory in Chile to photograph a roughly crab-shaped extended nebula, formed by symmetrical bubbles.

Credits: NASA, ESA, and STScI

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: Ken Poshedly Programs@AtlantaAstronomy.org
Observing Chair: Daniel Herron Observing@AtlantaAstronomy.org
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Board: Open
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Elliott Astrophotography Coordinator: Mark Wolridge
Elliott Chapter ALCor: David Whalen
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Elliott Webmaster: Larry Owens webmaster@CEastronomy.org
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PSSG Chairman: Peter Macumber pmacumber@nightsky.org
PSSG Co-Chair: Open
Sidewalk Astronomy: Open
sidewalkastronomy@AtlantaAstronomy.org
Light Tresspass: Ken Edwards, Contact info TBA
Woodruff Observ. Coordinator: Sharon Carruthers
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AAC Webmaster: Daniel Herron
Observing@AtlantaAstronomy.org

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

AAC Events are listed in BOLD

- May 6th, Monday: Moon near Hyades. Eta Aquarid Meteor Shower peak.
- May 11th, Saturday: Moon First Quarter. Astronomy Day at Tellus Museum 1PM-11PM.
- May 17th, Friday: **AAC Meeting 8PM at the Fernbank Science Center.**
- May 18th, Saturday: Full Moon.
- May 19th, Sunday: Mars near M35.
- May 20th, Monday: Moon near Jupiter.
- May 22nd, Wednesday: Moon near Saturn.
- May 26th, Sunday: Moon Last Quarter.
- June 1st, Saturday: **CEA Chapter Meeting.**
- June 3rd, Monday: New Moon.
- June 10th, Monday: Moon First Quarter.
- June 17th, Monday: Full Moon.
- June 18th, Tuesday: Moon near Saturn.
- June 21st, Friday: Solstice at 11:54AM.
- June 25th, Tuesday: Moon Last Quarter.
- June 28th, Friday: Grouping of Mercury, Mars, Pollux, and Castor at dusk.
- June 30th, Sunday: Moon in Hyades morning.
- July 1st, Monday: Moon near Venus morning.
- July 2nd, Tuesday: New Moon.
- July 6th, Saturday: **CEA Chapter Meeting.**
- July 9th, Tuesday: Moon First Quarter.
- July 16th, Tuesday: Full Moon.
- Aug 3rd, Saturday: **CEA Chapter Meeting.**
- Aug 31st, Saturday: **CEA Chapter Meeting.**

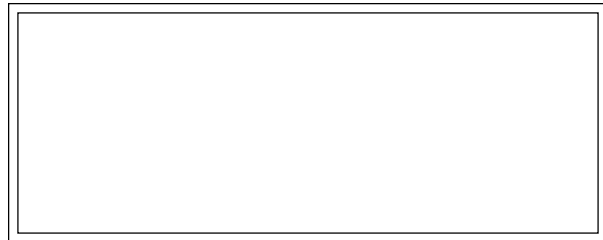
For more event listings and updates see the calendar at www.atlantaastronomy.org

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@yahoogroups.com . To add a subscription, send a message to: AstroAtlanta-subscribe@yahoogroups.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@atlantaastronomy.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 September is Sunday, August 25. Submissions received after the deadline will go in the following issue.**



FIRST CLASS



www.betagg.com



Newsletter of The Atlanta Astronomy Club, Inc.

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



The Focal Point

Atlanta Astronomy Club
P.O. Box 76155
Atlanta, GA 30358-1155
www.atlantaastronomy.org
On Twitter at <http://twitter.com/atlastro>