

The Focal Point

The Atlanta Astronomy Club
Established 1947
July 2015

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Editor: Tom Faber

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July General Meeting & Elections

Please join us for the next meeting of the Atlanta Astronomy Club, to be held on Saturday, July 11th at **3PM at the Fernbank Science Center**. Since Fernbank closes at 5PM on Saturdays we will now begin our meetings at 3PM. A short beginner's program will be presented at 2PM. Our featured speaker will be David Yenerall (photos right), a Lecturer of Astronomy at Georgia Perimeter College. David will present a talk about the Gemini South Observatory, located in the Atacama Desert of Chile.

We will again try to hold elections for club officers and board members (Since we didn't have a quorum at the May or June meeting we could not hold elections). Members please attend the July meeting if possible so we will have a quorum for the elections.

After the talk and elections, upcoming club events and programs will be announced by the club officers.

Speaker Bio

David Yenerall is a Lecturer of Astronomy at Georgia Perimeter College, Dunwoody Campus. He is also NASA/JPL SOLAR system ambassador and a regular guest of Gemini Observatory. David has visited Gemini South (photo bottom right & next page), located in the Atacama Desert of Chile, and its operational headquarters in La Serena for the past several summers. While in Chile, he gave numerous public talks throughout the region of Coquimbo, on such topics as the Curiosity Rover and The Van Allen Probes, and conducted various physics workshops for students. David also participated three times as a speaker for the Gemini Observatory's annual ASTRO day. Additionally, David has visited Gemini North in Hawaii (photo top right).

David will be sharing photographs taken by Manuel Paredes, Outreach and Audio Visual Productions Specialist at Gemini Observatory, as well as discussing the observatory site at Cerro Pachon, design and construction, instrumentation, the mirror, multi conjugate adaptive optics and some of

Continued on next page



Photos provided by David Yenerall

Woodruff Scout Summer Camp

Woodruff's Boy Scout Summer Camp program begins in June. This is not only our time to "pay the rent" for our use of Woodruff as a Dark Sky site; but also our best opportunity to fulfill our Club mandate to "educate" and "to promote the public knowledge of and interest in astronomy". Our on-field viewing with the scopes will be on Thursday nights, after dark (from 9:00 – 11 p.m.) You can bring your own telescope or use one from the warm-up shed. We are asking for Club members to volunteer to help out on one or more evenings this summer, Thursday nights, from June 4 – July 23. Please contact Sharon Carruthers (770-941-4640 or scarruthers@AtlantaAstronomy.org) or Daniel Herron (Observing@AtlantaAstronomy.org) if you can help.

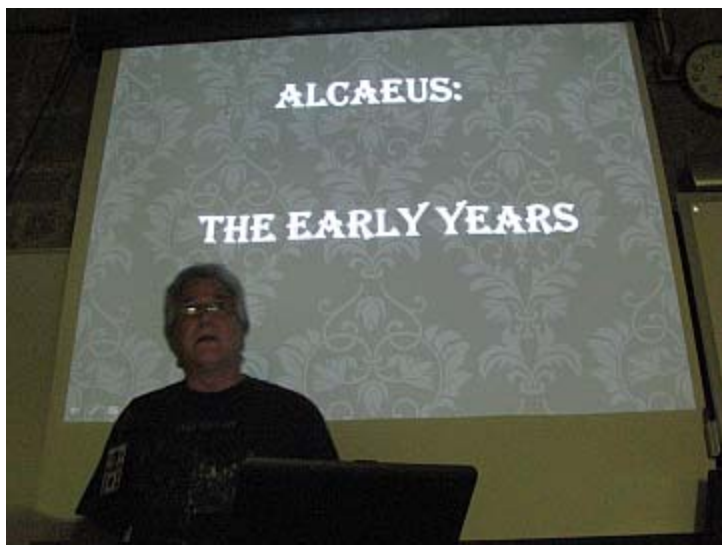
June AAC General Meeting Report

Photos by Tom Faber.

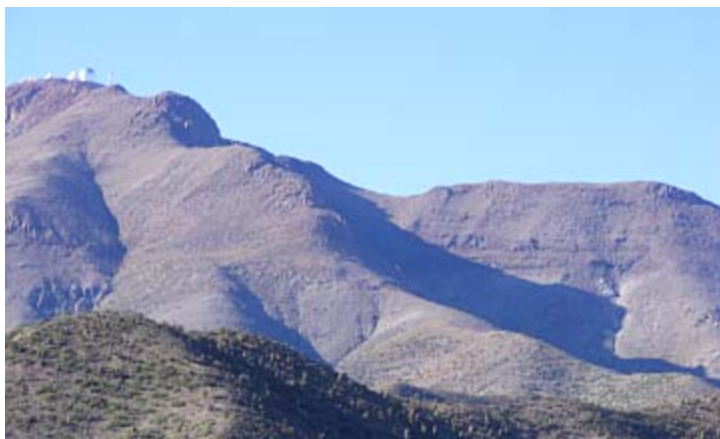
The June meeting of the Atlanta Astronomy Club was held at 3PM on June 13 at the Fernbank Science Center. Approximately 40 members and guests were present (photo bottom and right). Our featured speaker was Philip Sacco.

Philip (photo below) presented a very interesting talk about the mythology of the night sky, focusing on the myths of Hercules (the Roman name for the Greek hero Heracles) and how these stories relate to the night sky. Philip's talk specifically focused on the "Twelve Labors" of Hercules and how each labor is represented by a constellation, group of constellations, or some other aspect of the night sky. Those 12 labors were: Slaying the Nemean Lion, Slaying the nine-headed Lernaean Hydra, Capture of the Golden Hind of Artemis, Capture of the Erymanthian Boar, Cleaning of the Augean stables in a single day, Slaying the Stymphalian Birds, Capture of the Cretan Bull, Stealing the Mares of Diomedes, Obtaining the girdle of Hippolyta (Queen of the Amazons), Obtaining the cattle of the monster Geryon, Stealing the apples of the Hesperides, and the Capture and bringing back of Cerberus.

After Philip's talk Club officers made announcements about upcoming Club activities and events. Once again we were not able to hold elections for Club officers because of lack of a quorum. Club members are encouraged to please try to attend the July meeting so that we can hold elections.



July Meeting - Continued from page 1



the efforts of the Education and Public Outreach Department. He will also talk about a few of the scientific findings made through Gemini observations.

Future Meetings

The AAC meetings are now on the second Saturday of each month, still at the Fernbank Science Center and at 3PM. The next couple of meeting dates are: Aug 8, & Sept 12. There will be no meeting in October due to the Peach State Star Gaze. Monthly meetings will resume in November.

The Charlie Elliott Summer Schedule

Join us for “Summer Under the Stars” at Charlie Elliott! Instead of regular meetings or potlucks this summer, the Charlie Elliott Chapter will be hosting monthly stargazing sessions at the Jon Wood Astronomy Field in Mansfield, GA on the nights of June 20, July 18, and August 22 weather permitting. Members and visitors are invited to the field for observing, beginning about 30 minutes before sundown. Bring your telescopes and come enjoy the night sky! If you’d like, you may bring a sack supper to picnic around the edges of the field before sundown. Hosts for these stargazing sessions will be interim co-directors Jack Fitzmier and Marie Lott. A “Walk and Talk” to point out the summer constellations and planets will be held once the skies darken. No Chapter business will be conducted, except as outlined below, until the next regular meeting of the Charlie Elliott Chapter, which will be held on September 19 with a potluck supper and general elections. Meeting place and time of that gathering will be announced at a later date.

Leadership Transition

The Board of the Charlie Elliott Chapter has accepted a proposal from Marie Lott and Jack Fitzmier to provide interim leadership and summer programming until the fall, when the Chapter will elect new Officers, including Chapter Director, Observing Supervisor, and Recording Secretary. Marie and Jack have two goals for this interim period. First, they will provide the leadership necessary for the Chapter to continue, uninterrupted, our monthly observing sessions on Jon Wood Field (see above). Members and guests are welcome to join the Chapter on the field about 30 minutes before sundown. Marie and Jack, and other volunteers they enlist, will provide some “Walk and Talk” tours of the night skies. Otherwise, it’s time behind the eyepiece! Second, Marie and Jack will serve as a Nominations Committee, and will form a slate of candidates for Chapter Director, Observing Supervisor, and Recording Secretary, to be voted on at the September 19 Potluck and Chapter Meeting (time and place TBD). They will consult broadly with the CE membership to form the slate of candidates, and will also consult with members about possible adjustments to our Chapter bylaws. Open meetings for discussion will be scheduled in advance of the September meeting as necessary. If you have interest in assisting Marie and Jack over the summer, or if you have questions, please contact either of them at lott.marie@gmail.com or jfitzmier@gmail.com.

Upcoming DSO Dates and Locations

These are the dates for the next few AAC Dark Sky Observing events. All of these events are scheduled at Grier’s Field at the Deerlick Astronomy Village: June 20, July 18, Aug 15. DSOs will usually be on the weekend closest to new moon. The locations and dates of the DSOs may change - check the AAC web page for updates.

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>

The Night Sky Network (NSN)

As a member of the Atlanta Astronomy Club, you have a free membership in NASA’s Night Sky Network (NSN). The Night Sky Network was started in 2004 and is a nationwide coalition of more than 400 amateur astronomy clubs that was developed and is operated for NASA by the Astronomical Society of the Pacific.

It functions to educate the public about NASA missions through local astronomy clubs by providing the clubs with information and outreach materials about NASA activities. Only members of registered astronomy clubs can become members of the NSN.

On a more practical level, the NSN provides the AAC with a website on which the AAC can maintain a club roster of members, maintain a calendar of events and send out e-mails to our members about Club activities. (In these days of anti-spam filters on most e-mail programs, this has been an invaluable resource for keeping members informed.)

When you are enrolled on the NSN you receive an e-mail from them on behalf of the AAC, with your User ID and your password. You can then go in and edit your membership information. If, for example, you do not wish to receive e-mails about upcoming events, you can check the box requesting no e-mails; or you can delete your e-mail address if you do not want ANY e-mails sent to you from the NSN.

If you do this, or make other changes (such as updating your contact information), PLEASE either forward a note to me at Treasurer@AtlantaAstronomy.org, or make a note in the “Notes on Membership” box, as I may think the change was an oversight when you were registered and not a deliberate choice on your part and I would re-enter the information.

Daniel Herron, Mark Banks and Sharon Carruthers are the AAC’s NSN coordinators. If you have a problem or question, contact us for help.

Sharon Carruthers

Treasurer@AtlantaAstronomy.org

The 2015 Peach State Star Gaze

Mark your calendars for the 2015 Peach State Star Gaze which is scheduled for Sunday October 11 through Sunday October 18 at the Deerlick Astronomy Village! Stay tuned to upcoming issues of the *Focal Point* and the AAC web sites for details on the talks, speakers, and other activities that will be held during the Star Gaze. And of course there will be lots of observing under some of the darkest skies in Georgia. The new moon occurs on Tuesday, October 13. Micki’s Kitchen is also scheduled to return with meals, sandwiches, hot coffee and hot chocolate and other drinks, and her famous brownies! See you there!



The Deerlick Astronomy Village, located about 100 miles east of Atlanta and 50 miles west of Augusta, has some of the darkest skies in the state.

It's Been a Long Road Getting From There to Here

By Tom Faber

This is it... This is the last "first encounter" with a major Solar System body that will happen for a long time. The largest world closer than Neptune we haven't seen close up yet is the asteroid Pallas and it is only one quarter the size of Pluto. Not until we visit one of the big Kuiper belt objects beyond Pluto (perhaps Orcus, Haumea, Makemake, or Quaoar) will there be another first encounter like this.

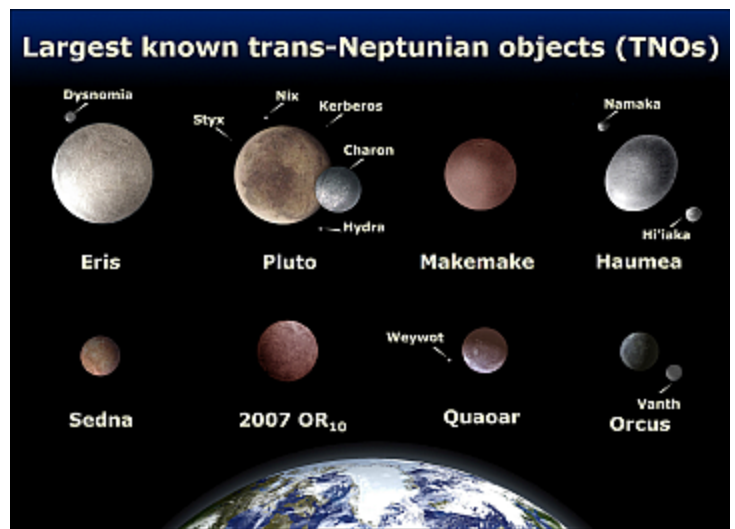
The long road to the edge of the Solar System began in 1959 with the Soviet Probes Luna 1 (the first spacecraft travel to the vicinity of the moon), Luna 2 (the first spacecraft to impact the moon), and Luna 3 (the first spacecraft to photograph the far side of the Moon). Then in 1962 the US spacecraft Mariner 2 became the first spacecraft to successfully visit another planet when it passed by Venus in August of that year. Next up was Mars' turn in 1965 when Mariner 4 performed the first successful flyby of the planet (Coincidentally Mariner 4's flyby of Mars was July 14, 1965, exactly 50 years before New Horizons' Pluto flyby).

Then there was a long gap until the 1970s when we visited three more planets for the first time. Launched in March 1972, Pioneer 10 became the first spacecraft to traverse the unknown territory of the asteroid belt on its way to visit the king of the planets, Jupiter, in December 1973. Mariner 10, launched in November 1973, flew by Mercury three times in 1974 and 1975, after doing a flyby of Venus in early 1974 thus becoming the first spacecraft to use a gravitational "slingshot" to go from one planet to another.

In April 1973 Pioneer 11 was launched to follow the track of Pioneer 10 through the asteroid belt and on to Jupiter. Pioneer 11 reached Jupiter in December 1974, making a much closer approach than its twin did a year earlier. So close that the gravity of the massive planet slung Pioneer 11 back across the Solar System to make the first encounter with Saturn in September 1979. At the time of Pioneer 11's Jupiter flyby Saturn was nearly on the other side of the Solar System. I remember thinking during the Jupiter encounter that it's going to take forever to get to Saturn! The Pioneers served as pathfinders for the grand adventure of the Voyagers.

In the summer of 1977 the twin Voyager Spacecraft were launched toward the outer planets. Reaching Jupiter in 1979 the Voyagers showed that the big moons of the outer planets were just as interesting as the planets themselves, or maybe even more so. Although the Pioneers took low resolution images of Jupiter's four big moons, the Voyagers turned them into worlds in their own right, each with unique and amazing features! Jupiter's gravity slung the probes on toward Saturn which Voyager 1 reached in late 1980 and Voyager 2 in mid 1981. The moons of Saturn proved to be just as interesting and diverse as Jupiter's. Voyager 1's path through the Saturnian system, required for the close flyby of Titan, flung it north out of the plane of the Solar System precluding any other planetary encounters. But with the goals at Titan satisfied Voyager 2 was free to take a different route. Its trajectory through the Saturnian system kept it in the plane of the Solar System and sent it on toward Uranus, a distant 5 years into the future. Voyager 2 reached the Uranian system in January 1986 and while Uranus itself looked rather bland to Voyager's cameras, once again the system of moons stole the show. Uranus' gravity bent Voyager 2's trajectory and sped it up enough to reach its final target, Neptune, arriving in the summer of 1989. Neptune was much more photogenic than Uranus and its big moon, Triton, proved equally interesting. Triton gave tantalizing hints of what Pluto might look like to a visiting spacecraft, if only...

The 1990s provided no first visits to major Solar System bodies, although the Galileo probe, on its way to orbit Jupiter, provided our first close-up views of a couple of the minor bodies of the Solar System, the asteroids Gaspra and Ida. And another surprise - Ida has a moon!



By A. Feild (Space Telescope Science Institute) [Public domain], via Wikimedia Commons

Through the 1990s several proposals were made for spacecraft to visit the last unexplored planet in our solar system, Pluto. Finally in 2001 New Horizons was approved to proceed. In January 2006 the New Horizons spacecraft was poised for launch on a massive Atlas V 551/Centaur launch vehicle, one of the largest launch vehicles available for one of the smallest planetary probes ever launched. On January 19, 2006 the Atlas leapt off its Florida launch pad and propelled New Horizons out of the grasp of Earth's gravity. So fast was New Horizons leaving Earth that it passed the moon's orbit in just 9 hours (Apollo took 3 days to get there) and reached Jupiter only 13 months later, in February 2007, becoming the 8th spacecraft to visit the realm of the giant. New Horizons' cameras and other instruments made numerous investigations of the planet and its moons, but the main purpose of the encounter was to use Jupiter's gravity to fling New Horizons on toward its distant target. Then the long wait began - 8 and a half years to Pluto.

A few months after New Horizons' launch, the International Astronomical Union adopted a new definition of a planet. Pluto was demoted from planet to "dwarf planet" and the largest main belt asteroid, Ceres, was promoted to dwarf planet. In 2007 the Dawn spacecraft was launched to visit the asteroid Vesta and Ceres. Dawn reached Vesta in 2011 and orbited that asteroid for a year before heading on to Ceres. Dawn became the first spacecraft to visit a dwarf planet when it reached Ceres and entered orbit earlier this year.

But now the long wait is nearly over. As I write these words it is only 12 days and 8 hours until New Horizons makes its speedy pass through the Plutonian system. The last body considered to be a planet prior to the space age will finally have its turn. Savor the events and discoveries of this "first encounter". Another like it won't come for a long, long time.





Countdown to Pluto

Encounter!

The PI's Perspective

By Alan Stern, New Horizons Principle Investigator, June 25, 2015

Build the Buzz!

We are now deep in the encounter, and already seeing just how interesting Pluto and Charon promise to be. There's only one Pluto flyby planned in all of history, and it's happening next month!

New Horizons is healthy and has so far been conducting a textbook approach—all systems are 'Go' for the flyby! The mission team is very, very busy now, simultaneously planning and testing the last stages of flyby instructions for the spacecraft, analyzing daily data downlinks, navigating the spacecraft to its precise aim point near Pluto, and searching for possible hazards in the Pluto system — though, so far, the coast is clear. As to mission navigation, we performed a successful engine maneuver on June 14, and there is a good chance we'll do another small trim maneuver on July 1 to line up for the best possible Pluto science at closest approach on July 14. Stay tuned for more on that engine burn possibility.

One of my fondest hopes for the flyby, apart from the great science we'll do, is that we'll excite a lot of people about the power of exploration, the sheer audacity of our species and the great things we can achieve. And it's working — the exciting and historic nature of New Horizons is catching on! We can see that in everything from its cameo in "Big Bang Theory" to its appearance on the covers of magazines as diverse as Astronomy, Sky and Telescope, New Scientist, Nature and National Geographic. We also see it in editorials, cartoons, and the four planned TV specials about New Horizons by PBS/Nova, Discovery Channel, National Geographic Channel and NHK (Japan). We also see it in the form of the approximately 200 press that have registered (so far) to cover the flyby at APL in mid-July.

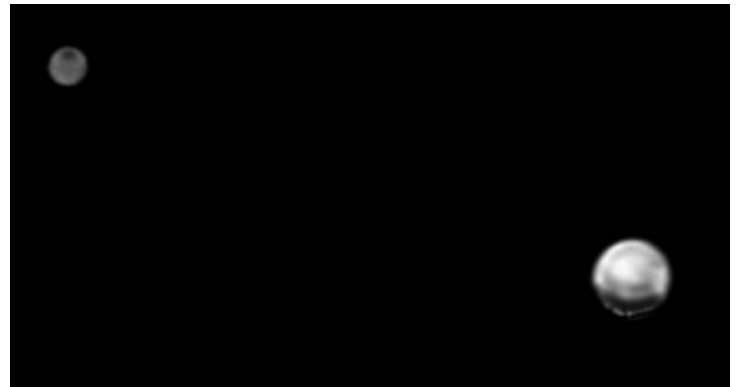
You can help build the buzz and will make New Horizons impact even more people. How? Tell your friends and neighbors, tell your family, talk about it at work, post about it with your favorite social media, and call up your local newspaper and TV stations and tell them you want to see coverage.

New Horizons is rapidly approach its date with destiny, our moment of truth in a one-shot, must-work flyby of Pluto and its system of moons on Tuesday, July 14. Over 2,500 Americans worked to design, build, launch and fly New Horizons. The major partners of that NASA-industry-academia team include the Johns Hopkins Applied Physics Laboratory, the Southwest Research Institute, Ball Aerospace, Boeing, Lockheed Martin, United Launch Alliance, Aerojet Rocketdyne and NASA Jet Propulsion Laboratory, but dozens of universities and small companies were also involved. New Horizons is truly an American-made product to be proud of.

The people who created this capstone mission to complete the first reconnaissance of the planets are very proud, and ready to deliver on the promise we made in 2001 to explore the Pluto system. They have invested 15 years of their careers and lives to do this, to create new knowledge, to show the United States on its game, to inspire kids and adults alike — across the world — and to make you proud. If you know anyone on the New Horizons team, please join me in saying two words to them before the flyby: "Thank you."

That's it for now, I'll write again soon. Until then, I hope you'll keep exploring — just as we do!

-Alan Stern



Pluto and Charon as seen by the New Horizons Long Range Reconnaissance Imager (LORRI) on June 19, 2015, from about 20 million miles. North is up in this image. Pluto is displaying a widely varied range of surface markings and Charon is showing a surprising, unexpected dark spot at its north pole that New Horizons discovered in June.



Daily science team meetings to discuss new results are already taking place at APL, where the New Horizons mission is operated. About one-third of the science team is now in residence at APL; by July 1 that will rise to two-thirds, and by July 6 we'll be at full strength.

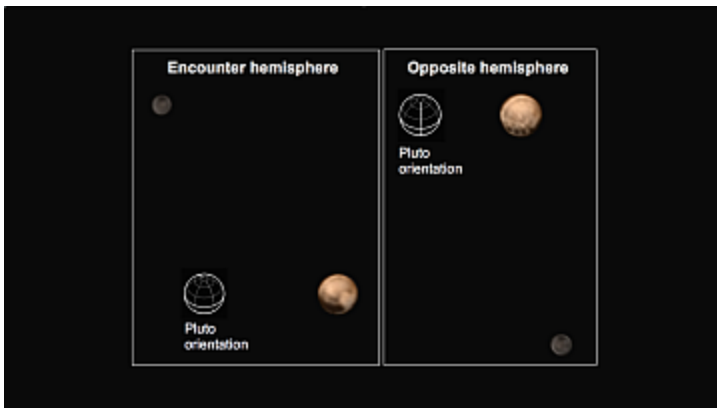
New Horizons Color Images Reveal Two Distinct Faces of Pluto, Series of Spots that Fascinate

July 1, 2015

New color images from NASA's New Horizons spacecraft show two very different faces of the mysterious dwarf planet, one with a series of intriguing spots along the equator that are evenly spaced. Each of the spots is about 300 miles in diameter, with a surface area that's roughly the size of the state of Missouri.

Scientists have yet to see anything quite like the dark spots; their presence has piqued the interest of the New Horizons science team, due to the remarkable consistency in their spacing and size. While the origin of the spots is a mystery for now, the answer may be revealed as the spacecraft continues its approach to the mysterious dwarf planet. "It's a real puzzle—we don't know what the spots are, and we can't wait to find out," said New Horizons principal investigator Alan Stern of the Southwest Research Institute, Boulder. "Also puzzling is the longstanding and dramatic difference in the colors and appearance of Pluto compared to its darker and grayer moon Charon."

New Horizons team members combined black-and-white images of Pluto and Charon from the spacecraft's Long-Range Reconnaissance Imager (LORRI) with lower-resolution color data from the Ralph instrument to produce these views. We see the planet and its largest moon in approximately true color, that is, the way they would appear if you were riding on the New Horizons spacecraft. About half of Pluto is imaged, which means features shown near the bottom of the dwarf planet are at approximately at the equatorial line.



Above: Pluto shows two remarkably different sides in these color images of the planet and its largest moon Charon taken by New Horizons on June 25 and June 27. The images were made from black-and-white images combined with lower-resolution color data. The left image shows the side of Pluto that will be seen at highest resolution when New Horizons makes its close approach on July 14. The hemisphere is dominated by a very dark region that extends along the equator. The right image is of the side that faces Charon; the most dramatic feature on this side of Pluto is a row of dark spots arranged along the equator. (The equator appears near the bottom of the images, as only about half of the planet is shown.) Image credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

Illustration right: The location of New Horizons' Pluto Energetic Particle Spectrometer Science Investigation (PEPSSI) instrument is shown. Image credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

Instruments Prepare to Search for Clouds in Pluto's Atmosphere

July 1, 2015

If Pluto has clouds, New Horizons can detect them. Both the high-resolution LORRI imager and the Ralph color imager will be used to look for clouds across the face of Pluto during its approach and departure from the planet. "We're looking for clouds in our images using a number of techniques," said science team postdoc Kelsi Singer of the Southwest Research Institute, "If we find clouds, their presence will allow us to track the speeds and directions of Pluto's winds."

New Horizons Team Says "Bravo!" To Earth-Based Pluto Observers

July 1, 2015

For more than two decades, planetary scientists have raced to get a spacecraft to Pluto against predictions that its atmosphere would disappear—literally freezing onto the surface—before it could be explored. This week, planetary scientists using ground-based telescopes and NASA's SOFIA airborne observatory confirmed that "Pluto's atmosphere is alive and well, and has not frozen out on the surface," according to New Horizons deputy project scientist Leslie Young, Southwest Research Institute, Boulder. Added Young, "We're delighted!"

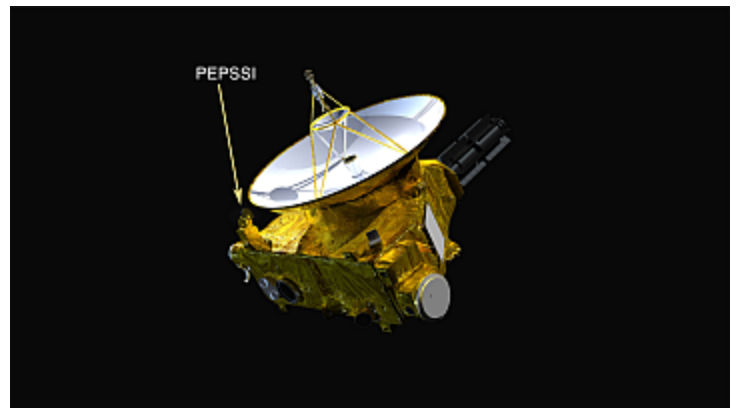
"The SOFIA observations will also be essential for linking ground-based studies to the results from the New Horizons Pluto encounter for decades to come", said Cathy Olkin, Southwest Research Institute, Boulder, co-investigator on NASA's New Horizons mission.

PEPSSI Instrument Tastes Pluto's Atmosphere

July 1, 2015

The Pluto Energetic Particle Spectrometer Science Investigation (PEPSSI) instrument aboard New Horizons is sending back data daily, sampling the space environment near Pluto. PEPSSI is designed to detect ions (atoms that have lost or gained one or more electrons) that have escaped from Pluto's atmosphere. As they depart, these atoms become caught up in the solar wind, the stream of subatomic particles that emanates from the Sun. PEPSSI's job is to tell scientists about the composition of Pluto's escaping atmosphere and how quickly the atmosphere is escaping.

New Horizons is now less than 9.5 million miles (15 million kilometers) from the Pluto system. The spacecraft is healthy and all systems are operating normally.



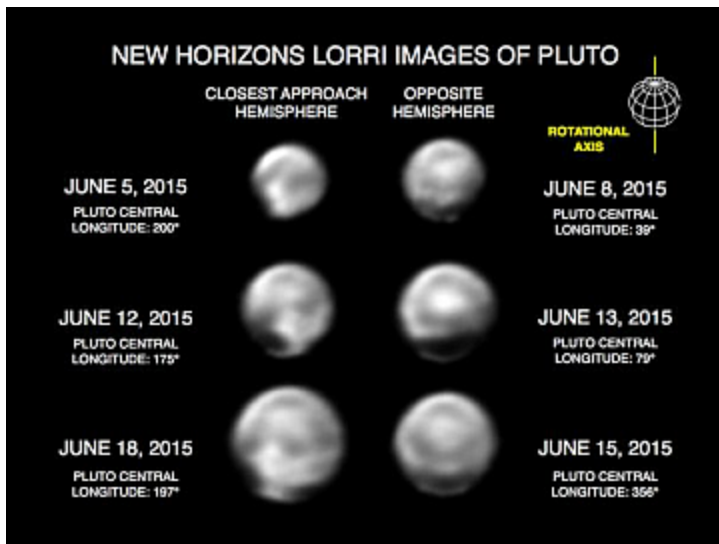
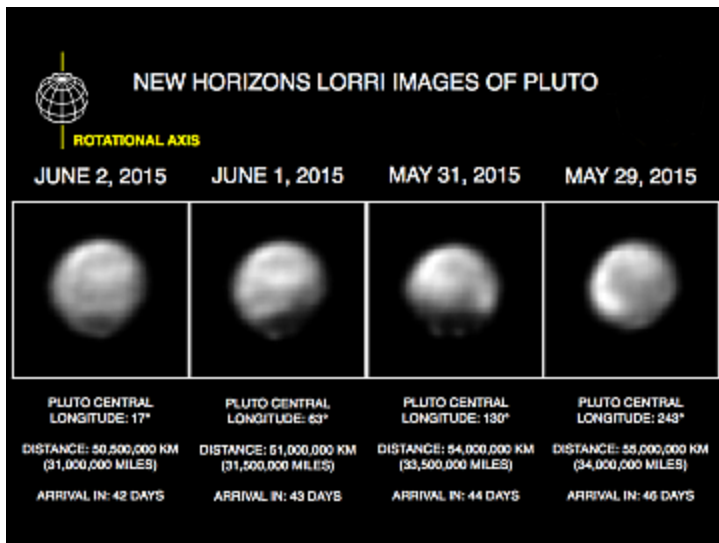


Image Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

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 printed. 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/atlastro>.

AAC Officers and Contacts

- President:** Mark Banks President@AtlantaAstronomy.org
- Program Chair:** Richard Jakiel Programs@AtlantaAstronomy.org
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- Recording Secretary:** Alan Coffelt,
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- PSSG Co-Chair:** Open
- Sidewalk Astronomy:** Brad Isley
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- Light Trespass:** Ken Edwards, Contact info TBA
- Woodruff Observ. Coordinator:** Sharon Carruthers
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Calendar by Tom Faber (Times EDT/EST unless noted)

AAC Events are listed in BOLD

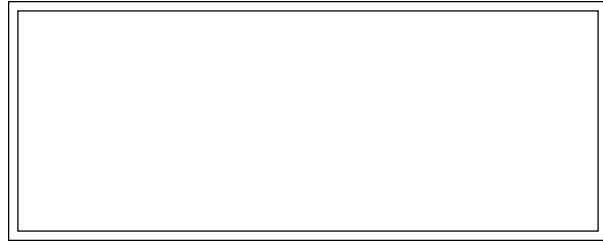
- July 1st, Wednesday: Full Moon.
- July 6th, Monday: Pluto at Opposition. Earth at aphelion at 3:41PM.
- July 8th, Wednesday: Moon Last Quarter.
- July 9th, Thursday: Venus brightest during this evening apparition.
- July 11th, Saturday: **AAC Meeting at Fernbank Science Center 3:00PM.**
- July 15th, Wednesday: New Moon.
- July 18th, Saturday: **Observing at the Jon Wood Astronomy Field.** Grouping of Moon, Venus, Jupiter, & Regulus.
- July 23rd, Thursday: Mercury at Superior Conjunction.
- July 24th, Friday: Moon First Quarter.
- July 25th, Saturday: Ceres at Opposition.
- July 31st, Friday: Full Moon.
- Aug 6th, Thursday: Moon Last Quarter.
- Aug 7th, Friday: Close grouping of Mercury, Jupiter, & Regulus (low).
- Aug 8th, Saturday: **AAC Meeting at Fernbank Science Center 3:00PM.**
- Aug 12th, Wednesday: Perseid Meteor Shower.
- Aug 14th, Friday: New Moon.
- Aug 15th, Saturday: Venus at Inferior Conjunction - moves into morning sky afterwards.
- Aug 21st, Friday: Saturn at Eastern Quadrature - 90° east of the Sun.
- Aug 22nd, Saturday: **Observing at the Jon Wood Astronomy Field.** Moon First Quarter.
- Aug 29th, Saturday: Full Moon.
- Aug 31st, Monday: Neptune at Opposition (Magnitude 7.8).
- Sept 5th, Saturday: Moon Last Quarter.
- Sept 12th, Saturday: **AAC Meeting at Fernbank Science Center 3:00PM.**
- Sept 13th, Sunday: New Moon.

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@atlantaastro.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDF's are okay. You can submit articles anytime up to the deadline. **The deadline for August is Saturday, July 25. Submissions 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:

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Newsletter of The Atlanta Astronomy Club, Inc.

FROM:



The Focal Point