

# The Focal Point

The Atlanta Astronomy Club  
Established 1947  
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Editor: Tom Faber

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## February General Meeting

Join us for the January meeting of the Atlanta Astronomy Club. The meeting takes place on Friday February 18th at 8PM. The location is in room 207 of White Hall on the Emory University Campus. The meeting will run for about 2 hours. If you have any announcements you want to make during the meeting, please contact our President Mark Banks, so that he can schedule the time for you during the meeting. His contact information is on page 7.

### The Program:

The speaker for the January meeting is Dr. Bram Boroson of Clayton State University. Dr. Boroson will present a talk titled "X-raying the Universe." X-ray astronomy started when Geiger counters were sent on a rocket in the early 1960s to look for solar X-rays reflected from the Moon. The field culminated with observations of the Chandra X-ray Observatory, which for the last decade has provided sub-arcsecond resolution images of the X-ray sky. I will review this history and research I have participated in from stellar to extragalactic scales: accreting black holes and neutron stars, winds from hot stars, and hot gas in elliptical galaxies.

### Speaker Bio:

Bram Boroson has B.As in math and physics from Oberlin College, a PhD in astrophysics from the University of Colorado at Boulder, and has done postdoctoral research at the Harvard-Smithsonian Center for Astrophysics and NASA Goddard Space Flight Center. He has taught astronomy,



## March is Membership Renewal Month

**MEMBERSHIP RENEWALS:** The AAC has moved to a "one-date-for-all" membership renewal. ALL CLUB MEMBERS, with some exceptions, should submit their \$30 (\$42 if you wish to receive the *Focal Point* by mail) dues for 2011 by March 20th - The Vernal Equinox. (There will be an R1 in the upper right corner of your *Focal Point* mailing label if you receive it in the mail. If you receive the *Focal Point* online you will receive an email - be sure we have your current email address). If you see either an RF or an xxx on your mailing label that means that your membership is about to expire or has expired. Please send your renewal right away. Please note that as of January 1, 2011 the dues for receiving the mailed *Focal Point* have increased to \$42 per year. This increase is to cover the cost of printing and postage. Dues for members receiving the online version of the *Focal Point* will remain at \$30 per year. If you have questions, need to update your contact information, or wish to switch to receiving the *Focal Point* online (and save \$12 per year) please contact the AAC Treasurer Sharon Carruthers. Sharon's contact information is on p. 7.

physics, and mathematics at The College of Wooster, The Claremont Colleges, and Bowling Green State University. He now teaches at Clayton State University.

### Upcoming AAC Meetings:

March 18th, April 15th, May 20th, and June 17th - Lecture topics TBA.

### Parking News Update at Emory University

The parking deck behind the admissions building is now open. There is a Barnes and Noble and other shops on the top floor of the parking deck, so there will be some things to do while waiting for the meeting to start. This new facility and parking area is located next to the Math and Science Building and directly behind the Admissions building.

## The Focal Point Archives

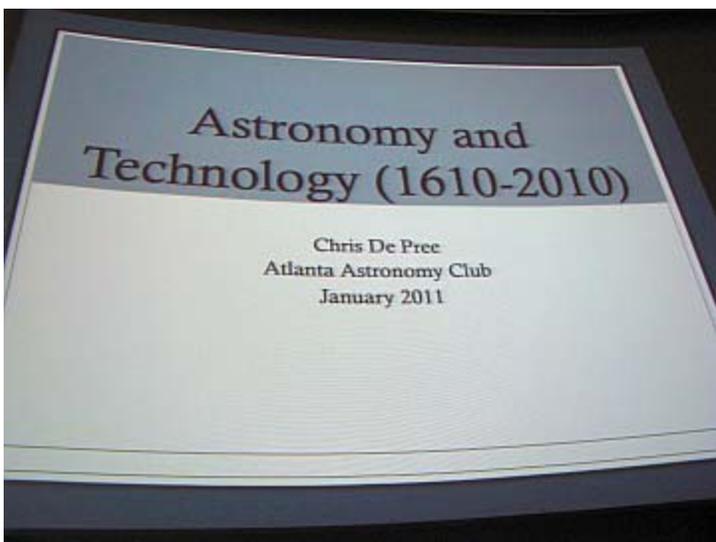
The AAC began publishing the *Focal Point* as a PDF online in June 1998. Since then every issue has, and still is, available for download from the club's web page. Recently that archive has expanded. Sharon Carruthers has scanned 61 issues of the AAC's newsletter (then called *The Atlanta Astronomers' Report*) from 1948 to 1977. Although many issues from this period are still missing these provide a valuable record of the club's early years. In addition I (Tom Faber) came across 19 issues of the *Focal Point* from the years 1995-1998 that I scanned to make available on the club's web site. Again not every issue during this period is available but it is another step in maintaining and making available to all a record of the AAC's history. Our web master Daniel Herron has uploaded these to the web site as PDF's for download. Just visit [www.atlantaastronomy.org](http://www.atlantaastronomy.org) and click on the "Focal Point Archives" link on the right side of the page. If you have any of the missing issues of the club's newsletter that you would like to scan and submit to Daniel as a PDF please do!

## January Meeting Minutes

by Julie Moore, AAC Recording Secretary.

Photos by Tom Faber

The January Meeting of the Atlanta Astronomy Club was held on Friday, January, 21, at 8:00 PM at Emory University's White Hall. Approximately 40 members and visitors attended the meeting. Dr. Chris De Pree of Agnes Scott College spoke on the History of Technology in Astronomy from 1610-2010 (photos below). Thanks, Chris, it was a great talk!



A short business meeting was held after the talk. Art Zorka, our ALCOR representative, presented Alex Langoussis with his Astronomical League Lunar pin (photo top right). Great job, Alex! There's always something to learn from an AL observing list, no matter how advanced you may be in your skills behind the scope!

Art also reminded us that we are now a part of the Night Sky Network. We can use this for promoting club activities and obtaining teaching tools. Art plans to send club member e-mail addresses to the network for information dissemination, so if you don't want your email address sent, please contact Art at [artzorka@yahoo.com](mailto:artzorka@yahoo.com).

All membership dues are due on the Vernal Equinox now. That's March 20th, by the way. Be sure you get yours in!



## November Board of Directors Meeting

By Julie Moore, AAC Recording Secretary.

The Board of the Atlanta Astronomy Club met on Sunday, November 7, 2010 at 3:00 P.M. The meeting was brought to order by President Mark Banks. Six board members attended. Marie Lott was elected Board Chairman upon the resignation of Jim Moore.

The Board expressed regret for miscommunication surrounding this year's PSSG. It was done without malice and without proper thought or procedure.

Minutes of the previous Board Meeting were discussed and approved. Treasurer's Report was accepted as corrected. Final report for 2010 will be presented in January.

The calendar for the year is to be posted in January.

The following motion was made, seconded and passed: "No club sponsored events shall be scheduled by the club to take place during the PSSG." This wording is designed to allow participation in outreach events sponsored by external organizations and informal get-togethers of individual club members.

December 11, 2010 is our Holiday Party. Sharon will post to list and website concerning food.

December 21, 2010 will see a Lunar Eclipse from 1-5 AM. There will be an all-nighter at Tellus. The club will contact Dave Dundee at Tellus regarding a discount or reciprocal relationship for AAC members.

Motion made, seconded and passed "AAC will wave membership fees for any AAC member and grant honorary membership for the time that a member is deployed overseas in the Armed Forces."

AAC will attempt to advance our relationships with Georgia Tech and Georgia State Universities in hopes of finding speakers among their students and faculty.

The Board Meeting Minutes shall be circulated on the Board list one month before the next Board Meeting.

The next meeting is scheduled for January 9, 2010, 3:00PM. (Addendum: Moved to January 30 due to room availability.)

## January Charlie Elliott Chapter Minutes

by Marie Lott, CE Chapter Recording Secretary

The January meeting of the Charlie Elliott Chapter of the Atlanta Astronomy Club was held on Saturday, January 8 in the Wildlife Center's Shepherd Room at 3 PM. Fifty seven people were in attendance, including a number of physics students visiting from Monroe Area High School.

Chapter director Theo Ramakers started off the meeting by welcoming Jim Soboleski back from service in Afghanistan. Theo also welcomed the students from Monroe to our meeting and immediately involved them in a demonstration of the Earth's distance from the sun. Theo congratulated the chapter on sponsoring over 50 outreach events in 2010. See the CE chapter calendar at <http://ceastronomy.org> for details of upcoming events. Contact Theo if you'd like to help.

Guest speaker Anita Westlake, president and co-founder of the Meteorite Association of Georgia, gave a talk about the types of meteorites and how to do simple tests to determine if a found object is a meteorite or a "meteor-wrong". Anita had two tables full of meteorites on display as well as a few pieces for sale.

Theo had prepared two multimedia shows of current events in astronomy and our local club but technical difficulties with the conference center's equipment prevented their projection. Theo's movie of recent images made by our members is now posted on the chapter's web. Go to <http://bit.ly/eAZAPz> to see Jimmy Choy's Orion Nebula and Andromeda Galaxy, Tim Geib's first solar image with his new H-alpha scope, the recent lunar eclipse as photographed by Clevis Jones and Larry Owens, and Theo's CaK solar flare movie. Also in the video is the same flare captured by the SDO, French photographer Thierry Legault's fantastic shot of the ISS transit over the eclipsed sun, Brian Combs' recent images of the return of Jupiter's SEB and Anthony Wesley's capture of the storm on Saturn. Theo also put together a multimedia clip of the chapter's Images of the Month for 2010, available for viewing at <http://bit.ly/gidEga>. All of the featured images were made by chapter members.

Next, Art Zorka presented all three levels of Astronomical League Outreach awards (requiring over 100 volunteer hours) to Theo Ramakers & Frank Garner. Well done!

Steven Philips, Observing Supervisor, followed with "Observing 101", a highlight of current sun, moon and planet rise & set times, observing targets and challenges. January will see the final conjunction of Jupiter & Uranus. Saturn rises after midnight and Venus rises before dawn. Asteroid 17 Fides will be passing though the Pleiades and comet 103P/Hartley is in Canis Major this month.

Small Telescope/Binocular Target List for January: M31 (Andromeda Galaxy), M33 (Pinwheel Galaxy); Supernova remnant M1 (the Crab Nebula); Diffuse Nebula M42 (Orion Nebula); Open Clusters M34, M35, M36, M37, M38, and M45 (the Pleiades); and variable star Mira.

Two telescopes were given away at the end of the meeting. Lunt Solar Systems and Stephen Ramsden's "Charlie Bates Solar Astronomy Project" donated a Meade ETX60 to Charlie Elliott Wildlife Center's Outdoor Discovery School and an 8 inch Newtonian to Monroe Area High School.

The meeting was adjourned at 5:30 PM followed by observing on the field. The next meeting of the chapter will be February 5, 2011 at 3 PM in the Charlie Elliott Visitor Center.

## CE Chapter Outreach Programs

by Theo Ramakers, CE Chapter Director

Our chapter is fortunate to present 8 members who have participated in last year's outreach events and have qualified for the Night Sky Network outreach award: Steve Bieger, Alan Bolton, Frank Garner, Marie Lott, Steven Phillips, Stephen Ramsden, Art Zorka, and Theo Ramakers. Thanks everyone who participated. Also who did not meet the qualifications. The awards will be presented in the February meeting.

Our chapter did start early this year again with reaching out to the community. The Chapter did host a number of bussed in physics students from the Monroe Area High School at their meeting and the observing session following the meeting. In addition to this group, we had a large number of interested individuals. In fact CEWC did give us a larger room to accommodate all. (Thanks Julie). In addition, the school did receive a telescope donated by Lunt Solar Telescopes through Stephen Ramsden's Charlie Bates Solar Astronomy Project. Now they are really energized!! :-)) We also did our first event with Hopewell Middle School who received three telescopes last year and were ready for their "First Light". They set up the scopes on equatorial mounts all by themselves!! They did a great job. In addition, Marie Lott held two events at the yearly Mountain Magic Girlscout leaders event which also included a Globe at Night presentation. We are getting ready for a busy winter and spring. The local news papers are stepping up again to promote our activities. See the article in the Covington News of January 26.



# Night Sky Network



## The Night Sky Network

by Art Zorka, AAC ALCOR and NSN Coordinator

By now, you may have heard that the Atlanta Astronomy Club has joined the Night Sky Network. And if you couldn't tell by my announcement at the general membership meeting on January 21, I am really excited about it.

The Night Sky Network is a partnership of over 200 astronomy clubs around the country, the National Aeronautics and Space Administration (NASA), Astronomical Society of the Pacific and other organizations. Its purpose is simply to educate and excite the public about space and space travel. This is being accomplished with the help of the internet, on a website <http://nightsky.jpl.nasa.gov>.

The website serves both astronomers and the public. A person can find a member club nearest to them by simply typing the name of their city. A list of clubs and an event calendar tells them when and where astronomical programs and events will be taking place. There is also a link to the local club's website and an application for requesting astronomers to present an event at their school, scout meeting, state park or neighborhood.

In addition, educators have access to monthly NASA feature articles, forming an after school astronomy club, downloading photos of planets, galaxies and spacecraft, and low cost multimedia materials produced by NASA. This includes more than 200 video, slide, CD-ROM and DVD programs.

The most exciting thing to me is what the Network makes available to club members. There are downloadable videos on promoting local clubs, increasing membership, and holding on to the members we have. How to enhance the public outreach we already do and encourage more membership participation is high on the list. The Network will also supply us with Outreach Tool Kits on themed topics in astronomy and provide downloadable online handouts and program resources.

By filling out a checklist and selecting program topics, age of audience, location (indoors or outside) and type of audience (students, educators, scouts, etc.) the resource program will suggest which activities and handouts to use, including a script, if you like. And MEMBERSHIP IS FREE. But, in order for you to log on, and go beyond the areas for the general public, your AAC membership has to be verified and you have to be issued a temporary password, which you change to a secret password.

If you would like to be listed with Night Sky Network and have access to all this material and more, it will happen automatically. If you DO NOT want the club to supply NSN with your name and email address, and have NSN email a temporary password, just drop me a note at [artzorka@yahoo.com](mailto:artzorka@yahoo.com) and I will remove your name from the list. Deadline is Friday, February 18, 2011 (General Membership Meeting).



## Bradley Observatory Open Houses

### 2010-2011 Open House Lecture Series

#### Astronomy Since Galileo (1610 – 2010)

The 400 years since the first astronomical use of the telescope have brought enormous progress to the science of astronomy. Technologies and new areas of science have been brought to bear on outstanding astronomical questions. The development of photography, spectroscopy, quantum mechanics, to name just a few have had profound impacts on our understanding of the universe. This year's lectures will explore the development of astronomy since Galileo. Lectures/Concerts begin at 8 PM. There will be observing with the Beck Telescope afterwards weather permitting.

February 11, 2011 - "Sugar and spice and everything nice - is that what space is made of?", Susanna Widicus Weaver (Emory University)

March 25, 2011 - Spring Equinox Concert and Open House

April 15, 2011 - "Jupiter's Galilean Satellites", Melissa McGrath (NASA Marshall Space Flight Center)

May 13, 2011 - "An Evening at the Edge of the Universe", James Webb (Florida International University)

## 2012 - DOOM OR DUMB?

By Sharon Carruthers, AAC Treasurer

(Opinions expressed in this series are those of the author; not of the Atlanta Astronomy Club, its Board, its membership, nor the editors of the *Focal Point*.)

### Part 1: Introduction

As amateur astronomers, you are bound, sometime over the next two years, to be asked questions about the "2012 Doomsday" scenario(s), predicted to befall us on or about December 21, 2012. All of the scenarios deal with some aspect of astronomy, so you may find yourself "the answer guy" to the curious or frightened. While I have been casually following many of the claims for several years, I have been asked about some new variation that left me scratching my head and running to do a Google search. Over the next few months I will describe, in a series of articles, the major scenarios and their scientific basis, so you may be better prepared.

Be forewarned, this is a task of epic proportions. The earliest versions of cosmic doom, notably by Immanuel Velikovsky (*Worlds in Collision*, pub. 1950) and Zecharia Sitchin (*The 12th Planet*, pub. 1976), while somewhat convoluted and bizarre in their own right, have been overlaid, thanks to the Internet, with almost every possible variation of lunacy imaginable. Every pet "woo" ever dreamed up - from ancient gods were aliens, fallen angels (the Nephilim) impregnating humans, Biblical prophecy, the Apocalypse, Nastrodamus; UFO's and crop circles; and cosmic disasters; plus a happy "New Age" variation that has mankind entering a new age of peace, harmony and understanding - have been thrown into the mix.

The primary scenario, crafted by Velikovsky, was that some planets went rouge and careened around our Solar System, creating the planets as we now know them today and also causing a series of Earth wide disasters (floods, famines & extinctions) recorded in the Bible and other ancient mythologies. Sitchin's refinement was that a rogue planet orbits our outer Solar System and returns to the inner Solar System to wreck havoc on a periodic basis. Sometime in the nineties, the date for the return of this planet, called Nibiru or Planet X, was predicted for the Winter Solstice (December 21st) 2012, which is the date that extant copies of the Mayan calendar end. Sitchin based his predictions on Sumerian resources and did

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## Seven Signs of Bogus Science

1. The discoverer pitches the claim directly to the media.
2. The discoverer says that a powerful establishment is trying to suppress his or her work.
3. The scientific effect involved is always at the very limit of detection.
4. Evidence for a discovery is anecdotal.
5. The discoverer says a belief is credible because it has endured for centuries.
6. The discoverer has worked in isolation.
7. The discoverer must propose new laws of nature to explain an observation.

### ***Voodoo Science: The Road from Foolishness to Fraud***

(Oxford University Press, 2002)

Robert L. Park, Ph.D

<http://www.quackwatch.com/01QuackeryRelatedTopics/signs.html>

not think Nibiru would return until after 2090. (I cannot find who was the first person to link the Sumerian Nibiru with the Mayan calendar.)

Since then, variations have used comets, black holes, supernovae, planetary alignments, a galactic alignment, magnetic pole reversals (and alien invasions!) replacing the rogue planet as the Doomsday device.

Next month, I will describe the writings of Immanuel Velikovsky, compare them to known scientific knowledge; and see how many of the “Seven Signs of Bogus Science” can be attributed to him.

## Hubble Finds Most Distant Galaxy Candidate Ever Seen in Universe

STScI News Release Number - January 26, 2011

Astronomers have pushed NASA's Hubble Space Telescope to its limits by finding what they believe is the most distant object ever seen in the universe. Its light traveled 13.2 billion years to reach Hubble, roughly 150 million years longer than the previous record holder. The age of the universe is 13.7 billion years.

The dim object, called UDFJ-39546284, is a compact galaxy of blue stars that existed 480 million years after the Big Bang, only four percent of the universe's current age. It is tiny. Over one hundred such mini-galaxies would be needed to make up our Milky Way.

Astronomers were surprised to find evidence that the rate at which the universe was forming stars grew precipitously in about a 200-million-year time span.

“We’re seeing huge changes in the rate of star birth that tell us that if we go a little further back in time we’re going to see even more dramatic changes,” says Garth Illingworth of the University of California at Santa Cruz. The rate of star birth increased by about a factor of ten going from 480 million years to 650 million years after the Big Bang.

“These observations provide us with our best insights yet into the earlier primeval objects that have yet to be found,” adds Rychard Bouwens of the Leiden University in the Netherlands.

Astronomers don't know exactly when the first stars appeared in the universe, but every step farther from Earth takes them deeper into the early universe's “formative years” when stars and galaxies were just beginning to emerge in the aftermath of the Big Bang. “We’re moving into a

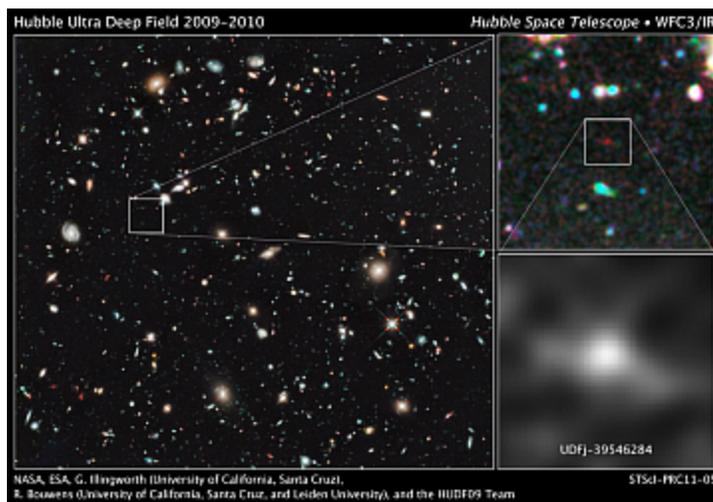
regime where there are big changes afoot. Another couple of hundred million years toward the Big Bang, that will be the time where the first galaxies really are starting to get built up,” says Illingworth.

Bouwens and Illingworth are reporting the discovery in the January 27 issue of the British science journal Nature.

The even more distant proto-galaxies that Illingworth expects are out there will require the infrared vision of NASA's James Webb Space Telescope, which is the successor to Hubble. Planned for launch later this decade, Webb will provide confirming spectroscopic measurements of the object's tremendous distance being reported today.

After over a year of detailed analysis, the object was positively identified in the Hubble Ultra Deep Field – Infrared (HUDF-IR) data taken in the late summer of both 2009 and 2010. This observation was made with the Wide Field Camera 3 (WFC3) starting just a few months after it was installed into the Hubble Space Telescope in May of 2009, during the last NASA space shuttle servicing mission to Hubble.

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*About this image:*

*The farthest and one of the very earliest galaxies ever seen in the universe appears as a faint red blob in this ultra-deep-field exposure taken with NASA's Hubble Space Telescope. This is the deepest infrared image taken of the universe. Based on the object's color, astronomers believe it is 13.2 billion light-years away.*

*The most distant objects in the universe appear extremely red because their light is stretched to longer, redder wavelengths by the expansion of the universe. This object is at an extremely faint magnitude of 29, which is 500 million times fainter than the faintest stars seen by the human eye.*

*The dim object is a compact galaxy of blue stars that existed 480 million years after the Big Bang, only four percent of the universe's current age. It is tiny and considered a building block of today's giant galaxies. Over one hundred such mini-galaxies would be needed to make up our Milky Way galaxy.*

*Follow-up spectroscopic observations with the planned James Webb Space Telescope later in this decade will be needed to definitively confirm the object's distance.*

*The Hubble Ultra Deep Field infrared exposures were taken in 2009 and 2010, and required a total of 111 orbits or 8 days of observing. The new Wide Field Camera 3 has the sharpness and near-infrared light sensitivity that matches the Advanced Camera for Surveys' optical images and allows for such a faint object to be selected from the thousands of other galaxies in the incredibly deep images of the Hubble Ultra Deep Field.*

*Credit: NASA, ESA, G. Illingworth (University of California, Santa Cruz), R. Bouwens (University of California, Santa Cruz, and Leiden University), and the HUDF09 Team*

The object appears as a faint dot of starlight in the Hubble exposures. It is too young and too small to have the familiar spiral shape that is characteristic of galaxies in the local universe. Though its individual stars can't be resolved by Hubble, the evidence suggests that this is a compact galaxy of hot stars that first started to form over 100-200 million years earlier, from gas trapped in a pocket of dark matter.

The proto-galaxy is only visible at the farthest infrared wavelengths observable by Hubble. This means that the expansion of the universe has stretched and thereby reddened its light more than that of any other galaxy previously identified in the HUDF-IR, to the very limit of what Hubble can detect. Webb will go deeper into infrared wavelengths and will be at least an order of magnitude more sensitive than Hubble, allowing it to more efficiently hunt for primeval galaxies at even greater distances, at earlier times, closer to the Big Bang.

Astronomers plumb the depths of the universe, and probe its history, by measuring how much the light from an object has been stretched by the expansion of space. This is called the redshift value or "z." In general, the greater the observed "z" value for a galaxy, the more distant it is in time and space as observed from our own Milky Way. Before Hubble was launched, astronomers could only see galaxies out to a z of approximately 1, corresponding to halfway across the universe.

The original Hubble Deep Field taken in 1995 leapfrogged to  $z=4$ , or roughly 90 percent of the way back to the beginning of time. The Advanced Camera for Surveys (ACS) produced the Hubble Ultra Deep Field of 2004, pushing back the limit to  $z\sim 6$ . ACS was installed on Hubble during Servicing Mission 3B in 2002. Hubble's first infrared camera, the Near Infrared Camera and Multi-Object Spectrometer, reached out to  $z=7$ . The WFC3 first took us back to  $z\sim 8$ , and has now plausibly penetrated for the first time to  $z=10$ . The Webb Space Telescope is expected to leapfrog to z of approximately 15, 275 million years after the Big Bang, and possibly beyond. The very first stars may have formed between z of 30 and 15.

The hypothesized hierarchical growth of galaxies — from stellar clumps to majestic spirals and ellipticals — didn't become evident until the Hubble Space Telescope deep-field exposures. The first 500 million years of the universe's existence, from z of 1000 to 10, is now the missing chapter in the hierarchical growth of galaxies. It's not clear how the universe assembled structure out of a darkening, cooling fireball of the Big Bang. As with a developing embryo, astronomers know there must have been an early period of rapid changes that would set the initial conditions to make the universe of galaxies what it is today.

## Mars Exploration Rover Status Report

The team operating NASA's Mars rover Opportunity will temporarily suspend commanding for 16 days after the rover's seventh anniversary next week, but the rover will stay busy.

For the fourth time since Opportunity landed on Mars on Jan. 25, 2004, Universal Time (Jan. 24, Pacific Time), the planets' orbits will put Mars almost directly behind the sun from Earth's perspective.

During the days surrounding such an alignment, called a solar conjunction, the sun can disrupt radio transmissions between Earth and Mars. To avoid the chance of a command being corrupted by the sun and harming a spacecraft, NASA temporarily refrains from sending commands from Earth to Mars spacecraft in orbit and on the surface. This year, the commanding moratorium will be Jan. 27 to Feb. 11 for Opportunity, with similar periods for the Mars Reconnaissance Orbiter and Mars Odyssey orbiter.

Downlinks from Mars spacecraft will continue during the conjunction period, though at a much reduced rate. Mars-to-Earth communication does not present risk to spacecraft safety, even if transmissions are corrupted by the sun.

NASA's Mars Reconnaissance Orbiter will scale back its observations of Mars during the conjunction period due to reduced capability to download data to Earth and a limit on how much can be stored onboard.

Opportunity will continue sending data daily to the Odyssey orbiter for relay to Earth. "Overall, we expect to receive a smaller volume of daily data from Opportunity and none at all during the deepest four days of conjunction," said Alfonso Herrera, a rover mission manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

The rover team has developed a set of commands to be sent to Opportunity in advance so that the rover can continue science activities during the command moratorium.

"The goal is to characterize the materials in an area that shows up with a mineralogical signal, as seen from orbit, that's different from anywhere else Opportunity has been," said JPL's Bruce Banerdt, project scientist for Opportunity and its rover twin, Spirit. The area is at the southeastern edge of a crater called "Santa Maria," which Opportunity approached from the west last month.

Drives last week brought Opportunity to the position where it will spend the conjunction period. From that position, the rover's robotic arm can reach an outcrop target called "Luis de Torres." The rover's Moessbauer

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NASA's Mars Exploration Rover Opportunity is spending the seventh anniversary of its landing on Mars investigating a crater called "Santa Maria," which has a diameter about the length of a football field. This scene looks eastward across the crater. Portions of the rim of a much larger crater, Endurance, appear on the horizon. The panorama spans 125 compass degrees, from north-northwest on the left to south-southwest on the right. It has been assembled from multiple frames taken by the panoramic camera on Opportunity during the 2,453rd and 2,454th Martian days, or sols, of the rover's work on Mars (Dec. 18 and 19, 2010).

This view combines images taken through three different Pancam filters admitting light with wavelengths centered at 753 nanometers (near infrared), 535 nanometers (green) and 432 nanometers (violet). This "natural color" is the rover team's best estimate of what the scene would look like if we were there and able to see it with our own eyes. Seams have been eliminated from the sky portion of the mosaic to better simulate the vista a person standing on Mars would see.

After completion of its work at Santa Maria, the rover will resume a long-term trek toward Endeavour.

Image Credit: NASA/JPL-Caltech/Cornell/ASU

spectrometer will be placed onto the target for several days during the conjunction to assess the types of minerals present. The instrument uses a small amount of radioactive cobalt-57 to elicit information from the target. With a half-life of less than a year, the cobalt has substantially depleted during Opportunity's seven years on Mars, so readings lasting several days are necessary now to be equivalent to much shorter readings when the mission was newer.

Opportunity will also make atmospheric measurements during the conjunction period. After conjunction, it will spend several more days investigating Santa Maria crater before resuming a long-term trek toward Endurance crater, which is about 22 kilometers (14 miles) in diameter and, at its closest edge, about 6 kilometers (4 miles) from Santa Maria.

Opportunity's drives to the southeastern edge of Santa Maria brought the total distance driven by the rover during its seventh year on Mars to 7.4 kilometers (4.6 miles), which is more than in any previous year. The rover's total odometry for its seventh anniversary is 26.7 kilometers (16.6 miles).

Opportunity and Spirit, which landed three weeks apart, successfully completed their three-month prime missions in April 2004, then began years of bonus extended missions. Both have made important discoveries about wet environments on ancient Mars that may have been favorable for supporting microbial life. Spirit's most recent communication was on March 22, 2010. On the possibility that Spirit may yet awaken from a low-power hibernation status, NASA engineers continue to listen for a signal from that rover.

## The Next AAC Board Meeting

The next Board meeting of the Atlanta Astronomy Club is scheduled for Sunday, April 17th at 3PM at Emory University in the Math and Science building room N301. Contact President Mark Banks or Board Chair Marie Lott for more information about the meeting agenda.

## 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/atlaastro>.

The **Atlanta Astronomy Club, Inc.**, the South's largest and oldest astronomical society, meets at **8:00 P.M.** on the Friday closest to full moon of each month at Emory University's White Hall or occasionally at other locations or times. Membership fees are **\$30 (\$42)** for a family or single person membership. College Students membership fee is **\$15 (\$27)**. These fees are for a one year membership (\$12 per year extra charge to receive a printed *Focal Point* by mail).

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](mailto:webmaster@AtlantaAstronomy.org). Also send information on upcoming observing events, meetings, and other events to the webmaster.

## AAC Officers and Contacts

**President:** Mark Banks [President@AtlantaAstronomy.org](mailto:President@AtlantaAstronomy.org)

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**Observing Chair:** Daniel Herron [Observing@AtlantaAstronomy.org](mailto:Observing@AtlantaAstronomy.org)

**Corresponding Secretary:** Tom Faber  
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**Treasurer:** Sharon Carruthers [Treasurer@AtlantaAstronomy.org](mailto:Treasurer@AtlantaAstronomy.org)

**Recording Secretary:** Julia Moore 678-531-2134  
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**Board Chair:** Marie Lott [mtlott@comcast.net](mailto:mtlott@comcast.net)

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**Board:** Misty Herron - [mistyherron@gmail.com](mailto:mistyherron@gmail.com)

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**Elliott Recording Secretary:** Marie Lott [mtlott@comcast.net](mailto:mtlott@comcast.net)

**Elliott Coordinator:** Alesia Rast [Alesia\\_Rast@mail.dnr.state.ga.us](mailto:Alesia_Rast@mail.dnr.state.ga.us)

**Elliott Webmaster:** Larry Owens 678-234-5399  
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### Georgia Astronomy in State Parks:

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**PSSG Co-Chair:** Joanne Cirincione  
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**Sidewalk Astronomy:** Brad Isley  
[sidewalkastronomy@AtlantaAstronomy.org](mailto:sidewalkastronomy@AtlantaAstronomy.org)

**Light Trespass:** Open - Contact Mark Banks if you would like to volunteer for this position

**Woodruff Observ. Coordinator:** Sharon Carruthers  
[Treasurer@AtlantaAstronomy.org](mailto:Treasurer@AtlantaAstronomy.org)

**AAC Webmaster:** Daniel Herron [observing@AtlantaAstronomy.org](mailto:observing@AtlantaAstronomy.org)

## Directions to White Hall at Emory

Our meetings are generally held in White Hall on the Emory University campus. White Hall is located on Dowman Drive across the street from the Math & Science building. The best place to park is the new parking deck next to the Math & Science building. It provides easy access to both the Math & Science building and White Hall. There is a Barnes and Noble and other shops on the top floor of the parking deck, so there are some nearby things to do while waiting for the meetings to start. The best way to access this parking deck is to turn onto Oxford Road from the five way intersection across from Everybody's Pizza. The entrance to the parking deck is a short ways down Oxford on the right. For maps of the campus see <http://map.emory.edu>. For more detailed directions to Emory University, visit [www.atlantaastronomy.org](http://www.atlantaastronomy.org) or go to the Emory University web site.

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

## AAC Events are listed in BOLD

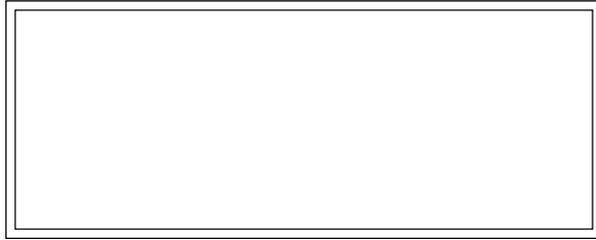
- Feb 1st, Tuesday: Moon near Mercury.
- Feb 2nd, Wednesday: New Moon.
- Feb 5th, Saturday: **Charlie Elliott Chapter Meeting. DSO at DAV.**
- Feb 6th, Sunday: Moon near Jupiter.
- Feb 11th, Friday: Moon First Quarter. Bradley Observatory Open House - see p. 4.
- Feb 18th, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM, Full Moon.**
- Feb 24th, Thursday: Moon Last Quarter.
- Feb 25th, Friday: **Focal Point Deadline.**
- Feb 28th, Monday: Moon near Venus.
- Mar 4th, Friday: New Moon.
- Mar 5th, Saturday: **Charlie Elliott Chapter Meeting. DSO at Woodruff Boy Scout Camp.**
- Mar 12th, Saturday: Moon First Quarter.
- Mar 13th, Sunday: Daylight Saving Time begins at 2:00AM.
- Mar 16th, Tuesday: Mercury near Jupiter.
- Mar 18th, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM.**
- Mar 19th, Saturday: Full Moon.
- Mar 20th, Sunday: Vernal Equinox at 7:21PM.
- Mar 21st, Monday: Uranus conjunction with Sun.
- Mar 22nd, Tuesday: Mercury at Greatest Elongation East.
- Mar 25th, Friday: **Focal Point Deadline.** Bradley Observatory Open House & Equinox concert.
- Mar 31st-Apr 3: **Zombie Party & Messier Marathon at DAV - Contact Daniel Herron.**
- Apr 2nd, Saturday: **Charlie Elliott Chapter Meeting.**
- Apr 3rd, Sunday: Saturn at Opposition.
- Apr 11th, Monday: Moon First Quarter.
- Apr 15th, Friday: **AAC Meeting at White Hall, Emory Univ, 8PM.**

## 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](mailto:AstroAtlanta@yahoogroups.com) . To add a subscription, send a message to: [AstroAtlanta-subscribe@yahoogroups.com](mailto:AstroAtlanta-subscribe@yahoogroups.com) . This list is owned by Lemmy Abbey.

## 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](mailto:focalpoint@atlantaastronomy.org). Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDFs are okay. You can submit articles anytime up to the deadline. **The deadline for March is Friday, Feb 25th at 6:00 PM. Submissions will not be accepted after the deadline.**



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[www.beclage.com](http://www.beclage.com)



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

Newsletter of The Atlanta Astronomy Club, Inc.



*The Focal Point*

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