



North Central Florida's
Amateur Astronomy Club
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Member
Astronomical
League



Member
International
Dark-Sky Association

Firstlight

Newsletter of the Alachua Astronomy Club

The Equation of Time

The **equation of time** is the difference between **apparent solar time** and **mean solar time**, both taken at a given place (or at another place with the same geographical longitude) at the same real instant of time.

Apparent (or true) solar time can be obtained for example by measurement of the current position (hour angle) of the Sun, or indicated (with limited accuracy) by a sundial. **Mean** solar time, for the same place, would be the time indicated by a steady clock set so that its differences over the year from apparent solar time average to zero (with zero net gain or loss over the year).

The equation of time varies over the course of a year, in a way that is almost exactly reproduced from one year to the next. Apparent time, and the sundial, can be ahead (fast) by as much as 16 min 33 s (around 3 November), or behind (slow) by as much as 14 min 6 s (around 12 February).

The equation of time results mainly from two different superposed astronomical causes (explained below), each causing a different non-uniformity in the apparent daily motion of the Sun relative to the stars, and contributing a part of the effect:

- the obliquity of the ecliptic (the plane of the Earth's annual orbital motion around the Sun), which is inclined by about 23.44 degrees relative to the plane of the Earth's equator; and
- the eccentricity and elliptical form of the Earth's orbit around the Sun.

The equation of time is also the east or west component of the analemma, a curve representing the angular offset of the Sun from its mean position on the celestial sphere as viewed from Earth.

The equation of time was used historically to set clocks. Between the invention of accurate clocks in 1656 and the advent of commercial time distribution services around 1900, one of two common land-based ways to set clocks was by observing the passage of the sun across the local meridian at noon. The moment the sun passed overhead, the clock was set to noon, offset by the number of minutes given by the equation of time for that date. (The second method did not use the equation of time, it used stellar observations to give sidereal time, in combination with the relation between sidereal time and solar time.) The equation of time values for each day of the year, compiled by astronomical observatories, were widely listed in almanacs and ephemerides.

Naturally, other planets will have an equation of time too. On Mars the difference between sundial time and clock time can be as much as 50 minutes, due to the considerably greater eccentricity of its orbit. (Wikipedia.com, 2-25-2010; see website for references).

Visit the AAC website at floridastars.org for the local Variation in the Equation of Time During the Year in Gainesville. These tables along with other local astronomical information are produced by our webmaster Howard Cohen. Email us at firstlight@floridastars.org and let us know how/when you use the local website information.



Everything you have ever done in your life started with a first time. Some things became a first and only, others the first of many. First breath, first step, first day of school, first date, first job. How many firsts do you recall?

My column last month was my first of any kind. While it is not my destiny to be an editor, a writer, or anything associated with the written language, I am enjoying this opportunity to put some of my thoughts in writing to share with the club. In writing my column last December, I found myself in a little free-association exercise. My thoughts ran from first column, to First Light (our newsletter), to first light (astronomy term), to my first 'first light', meaning the first time I ever looked through a telescope.

I solicited experiences from our club membership and got one taker. I would like to share this member's story, and then one of my own. The first story comes from Tim Malles, who is well known to all of us for his space themed artwork. Here is his story.

"My first ever look through a telescope and stargazing are among my very first memories. Our family would sit out on the patio in the backyard of our home in Miami, pre-air conditioning days, to cool off at night. Reclining in our lawn chairs, we would stare up at the sky and wait for Echo, a very bright weather satellite which crossed the sky at the zenith.

My dad would take us kids to the Museum of Science, where we would climb the circular stairs to the rooftop observatory then wait in line to look through the large telescopes. My first view through them was of the Sun with a very impressive group of sunspots. We came back at night and I saw Jupiter and the Ring Nebula. Needless to say, I was hooked then and forever on the beauty that exists in the universe. I got my first telescope, A 60mm Tasco for Christmas that year."

I thank Tim for sharing his experience.

My personal first 'first light' is associated with a lot of firsts for me. For example, the first address I recall- 26 Alexis Road in Woodbridge, Virginia. There were no zip codes back then. The first phone number I recall- 373-2764. There were no area codes back then. But we did have 'party lines' and what fun it was to listen in when you shouldn't. And my first 'first light' occurred at this address.

My dad had just left the Air Force and was training to be an Air Traffic Controller. Back then I had excellent hearing, and I remember my parent's quiet talks about how hard it was going to be to afford this expensive home they just bought, as I recall for about \$6000. This was pretty heavy stuff for a 5 year old.

While I cannot pin down the exact day, nor is that level of precision important, I do recall a special event that occurred after the Christmas of 1959 but before my 6th. birthday in February of 1960. Back then, there was no preschool, thus leaving little mystery as to why I was at home when one afternoon, a very large box was delivered to our house. My mom would not tell me what it was, other than it was something special my dad had ordered. I remember his excitement when he got home. It was apparent he knew what it was. Dinner was handled quickly and then, the box was opened.

Inside was the first telescope I ever saw. It was a Kalimar Astronomical Telescope, model T-7, with a Kaligar 60mm objective and 900mm focal length. It came with a beautifully crafted wooden GEM with setting circles. For a period of time, my dad was lost to the world. It was not long before he had it set up in the back yard for a test drive. In retrospect, I am mildly humored that his first night with the scope was crystal clear whereas most of my scope purchases coincide with the start of monsoon season.

Continued on page 4

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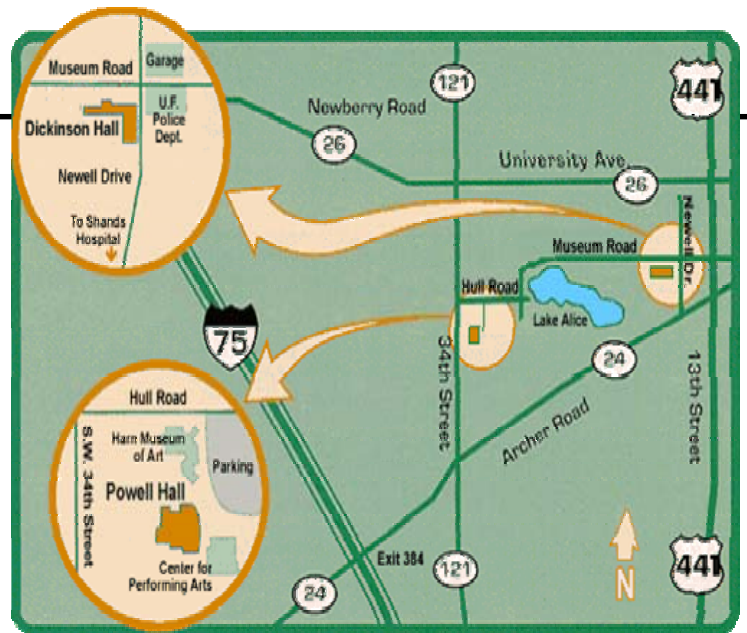
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AAC Meeting Location - AAC regular meetings are held on the second Tuesday of each month at 7:00 p.m. at the Florida Museum of Natural History, **Powell Hall**, in the Lucille T. Maloney Classroom, on UF campus, unless otherwise announced. All meetings are free and open to the public. Join us for some great discussions and stargazing afterwards. Please visit our website for more information (floridastars.org). There is no monthly meeting in December.



Submitting Articles to FirstLight

The AAC encourages readers to submit articles and letters for inclusion in *FirstLight*. The AAC reserves the right review and edit all articles and letters before publication. Send all materials directly to the *FirstLight* Editor.

Materials must reach the *FirstLight* Editor at least 30 days prior to the publication date.

Submission of articles are accepted **by e-mail or on a CD**. Submit as either a plain text or Microsoft Word file. (In addition, you can also send a copy as a pdf file but you also need to send your text or Word file too.) Send pictures, figures or diagrams as separate gif or jpg file.

Mailing Address for Hard Copies or CDs

Note: Since our mailbox is *not* checked daily, mail materials well before the deadline date. (Hence, submission by e-mail is much preferred!)

c/o FirstLight Editor
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By E-Mail; Send e-mail with your attached files to **FirstLight@floridastars.org**.

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First Time — The President's Corner (continued)

Mom and I watched from the house as he got his legs under him. I recall the scope pointing in every direction as excitement brewed. He could not have been out there even ten minutes when he came running back to the house with a sense of urgency and all he said was "you need to come look".

That night was a triple first- the first time my dad, my mom, or I had ever looked through a telescope. I recall looking at a planet, probably Jupiter, the moon, and a group of stars which I am guessing were the Pleiades. It was an experience rarely duplicated later in life. And it was one not to be forgotten.

I am pleased to report that his scope served him well over the years and now rests peacefully in an attic. He was always happy to see me setting it up in the yard. I still recall my feelings of wonderment from seeing the night sky in a totally new way. It is a feeling that has never left me.

With time, I have also come to realize that a lesson was taught that night. I find it amazing that within minutes of setting up his telescope, my dad was sharing the experience with his family, and later the neighborhood. For me, that's what this hobby is all about.

I hope you have enjoyed these first 'First Light' stories. For my next column, I am asking again for your contribution. Many of us like to dabble in our hobby while traveling. If you have a story about an astronomy experience you have had while on the road, please send it to me for my next column. If you have some pictures, send them as well and I will try to incorporate them, space permitting.

Rich Russin,
President, Alachua Astronomy Club
president@floridastars.org

STAR PARTY / OBSERVATION SCHEDULE: Upcoming Events - 2010

<u>Star Party Event</u>	<u>Date</u>	<u>Location</u> Check the website for directions	<u>Start/End Time</u>
AAC March Star Party	March 13th, Saturday (rain date Mar 20th)	Dudley Farm Historic State Park	Sunset approx. 6:35 pm EST Please park before dark
AAC April Star Party	April 10th, Saturday (rain date Apr 17th)	The Villages Polo Fields, Ocala	5:00 pm to 11:00 pm
Celestial Celebrations Gainesville Chamber Orchestra and Telescope Viewing by AAC	May 7th, Friday	Phillips Center for the Performing Arts	Musical Performance begins at 7:30 p.m., Sunset approx. 8:10 p.m. EDT

March Club Meeting

Tuesday, March 9, 2010, 7:00 p.m. ET

Speaker: Dr. Howard Eskildsen

Title: *Hooked on the Moon—A Light-hearted Look at the Joys of Lunar Observing.*

Location: Powell Hall, Florida Museum of Natural History
(*Lucille T. Maloney Classroom*), UF Campus, Gainesville FL

Preview: Howard grew up under clear, dark skies in the heartland of Nebraska where the Milky Way appeared as a great, shining veil across the summer skies. It lured him to study the stars, and as an adolescent he frequently obsessed over small things, like which one of “those two stars” was alpha Capricorni. Later he learned that it was a double star and they both were—sort of. Wow, that was a long time ago.

These days (40 years later) he likes to obsess about the moon with questions like why is the Western Chain on the east side of the moon and why is Mare Orientale (the Eastern Sea) on the west side. Or other things like: How old are the craters? Are there volcanoes on the moon? Do impacting objects ever skip over the moon like a rock on a pond? Why are some areas smooth and some pockmarked? What are those bright streaks on the full moon? What the heck is a swirl, a basin, a rille, a dome? And so on... He did eventually find some of the answers and is willing to share this and other amazing, mostly-true bits of information about the moon to anyone who attends his light-hearted presentation of “Hooked on the Moon.”

When not practicing medicine, Howard has photographed the moon and the sun regularly since 2003 and has had photos appear on the Lunar Photo of the Day, Astronomy.com, Spaceweather.com and on the ALPO Solar Section website. Several have been published in *Selenology*, *The Lunar Observer*, and

on the cover of the spring 2008 issue of the *The Journal of the Association of Lunar and Planetary Observers*. He has also written several articles and some poetry about the moon and the sun that have been read by almost a dozen people, including his mother who didn't really understand it, but was “really proud.”

So, if you are interested in the moon, possess a morbid curiosity of the speaker, or if you are just plain bored, attend “Hooked on the Moon.” Don't worry, you don't have to be “really proud” to attend; Howard will understand.

Dr. Howard Eskildsen—Hooked on the Moon



Lucky Me: A Special Valentine

By Howard Eskildsen

Some time ago, I gently gathered up “Bouncer,” my five-inch Maksutov telescope, and carefully eased it down the hallway and through the family room where my wife, Fairy, reclined near the television. In passing I asked if she would like to see the thin crescents of the Moon and Venus through the telescope. With a quick glance she raised one brow and rolled her eyes.

“But honey, this is the last time that the Moon and Venus will be together in the evening sky for a long, long time.” I said, with a mischievous grin.

“No! I want to watch TV; now go away.” The pseudo-stern look on her face softened, and she chuckled as she added, “Have fun out there.” She had never shared my love of the stars nor other scientific interests, but she accepted them.

The Moon and Venus blinked through branches as I made my way across the front yard to a spot near the street where they came into full view above the trees. I photographed the thin, crescent Venus as it gleamed in the twilight above the western tree line. Next I turned the telescope and camera towards the crescent Moon a few degrees farther east. I barely had it focused when a voice called from the street, “Hi, what are you looking at?”

I explained to the young lady and her two children that the Moon and Venus took the same shape through the telescope. “Wow! Can we look too?” her 7-year-old son gushed. I put the camera aside and assured the hesitant mother that she and her children could look as much as they wanted. They took turns gazing at the moon with the young lad commandeering most of the eyepiece time. Then we turned the telescope to Venus which hovered just above the treetops.

“Oh boy, it’s like a miniature moon.” he exclaimed as he reluctantly yielded the view to his 10-year-old sister. Though much more reserved, she also marveled at the view. Finally the mom timidly approached the scope for a look, and then thanked me for taking the time to share the sight. The young lad had to have one more last look.

“That sure is a great telescope; where did you get it? I’ll bet it cost a thousand dollars.” He blurted. His mom apologized for his precocious prodding, but I assured her that no apology was needed. I explained that the telescope had been a Christmas present from my wife, and though it cost less than a thousand dollars, it had been a good guess.

“Wow,” he bubbled, “you sure are lucky to have a wife who buys you luxury telescopes!”

My skyward mind returned firmly, happily to earth as I thought of the loving lady who so solidly supported my pursuit of an interest that she did not share. Me lucky? You have no idea, kid.

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ATM-Observers Group for 2010

by C.S. Broward, ATM Coordinator

The ATM-Observers group meets monthly (usually on the third Tuesday of the month) to discuss and get hands on experience with a variety of astronomical hardware. Sometimes we join forces with the LOG (Lunar Observing Group) to take a long hard look at our closest neighbor, the Moon.

A variety of activities are planned for the coming 2010 astro season. January's meeting focused on a really great method of collimating your telescope using a laser and a barlow lens. A bit of handi-work is required to complete a target plate using a bit of file folder paper and some tape. The result is a almost foolproof way of adjusting your telescope for perfect viewing. It really does work!



ATM Observers at the January meeting learning to use a laser collimation technique. The meeting was hosted by Bob and Edna Lightner. Photo by Rich Russin.

February 2010 meeting will take place at Howard Cohen's house in SW Gainesville. It will feature an observing shoot-out between the venerable Celestron C-8 telescope and Celestron's newest offering---the HD telescope, which is advertised to provide a near perfect image across the viewing field! David Liles is providing the new Celestron telescope. This may be the first opportunity for an astronomy club in the US to directly compare the two telescopes.

March and April meetings will center on using inexpensive webcams to produce astronomical images. Member Sandon Flowers will first show us how to take a cheap webcam and turn it into a imaging device to connect to your telescope. the following month we will use the camera to image the Moon.

Another component of each meeting will be an assessment of a club telescope. The AAC owns a number of telescopes to lend to members each month. The club has decided to assess the quality and usefulness of each of our telescopes and then decide to either keep them for immediate use, to modify them to improve their effectiveness, or to sell or trade them for something more useful. By the end of the year we hope to have a stable of telescopes to use as loaners that members will want to borrow. You, as active members can help assess the usefulness of each scope and help us decide their use.



ATM Observers Meeting - January. Photo by Bob Lightner.

Also, we are continuing to help those who want to design and build their own telescopes. The ATM group has an inventory of parts that can be procured and incorporated into their own designs. We will be ready at each meeting to help scope builders achieve success.

Future meetings will depend on YOUR wishes...the AAC membership consists of an extraordinary group of talented individuals. We have a lot to learn from one another.

So, set aside the third Tuesday of each month to take part in active astronomy....viewing and construction of telescopes and accessories.

Clear sky

Chuck

Not Your Father's Moon

By Bob O'Connell, Chair, Lunar Observing Group

On November 13th last year, NASA announced there was water on the Moon. This discovery was based on an analysis of the debris plume generated by the October 9th impact of the *Lunar Crater Observation and Sensing Satellite (LCROSS)* mission into the 98 km South Pole crater Cabeus, (Fig. 1). "NASA finds Lunar Water" appeared on the cover of the February 2010 issue of *Sky and Telescope Magazine (S&T)*. This issue ran a five-page story, "NASA Slams the Moon," written by J. Kelly Beatty, senior contributing editor. After reading this article, it occurred to me that it might better be titled "Sky and Telescope Slams the Moon." Unfortunately, the article's sub-title and coverage minimize the discovery by incorrectly implying that the LCROSS scientists were disappointed with the amount of water detected. The article's subtitle states:

"NASA's 'crash and splash' gambit dredged up water from a darkened lunar crater -- but not nearly as much as scientists expected to find."
S&T Feb. 2010

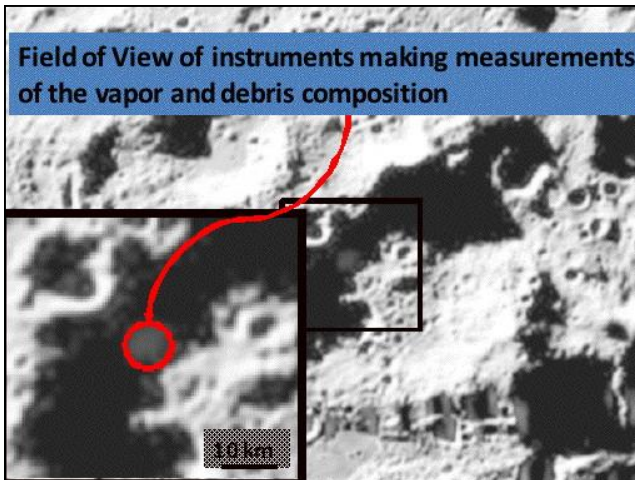


Figure 1: LCROSS debris plume circled in red.
Photo credit: NASA

It is not until page four of the article that Kelly contradicts the subtitle's assertion by using a slightly shorter version of the following quotation which I recorded from video of the two-hour press conference. Dr. Anthony Colaprete, LCROSS project scientist and principal investigator (Fig. 2), stated:

"Yes, we found water. And, we didn't just find a little bit, we found a significant amount."

It is clear from watching the press conference that Dr. Colaprete and his team were obviously pleased with the results. He reminded reporters that a month before the impact, the LCROSS team was anticipating only "teaspoons" of water. He also emphasized that the surprising 25 gallons (220 pounds) detected in the form of water vapor was probably a "lower bound" initial estimate that was going to be revised upward. It seems S&T's Kelly confused the surprisingly low amount of

material kicked up in the debris plume (expected to be ~350 tons by some) with *the large amount of water detected within the feeble plume itself.*

Kelly's take was apparently colored by the fact that, for Earth-bound observers, this event was a "bust" -- not visually spectacular as had been anticipated. This was due to a change in target selection from the crater Cabeus A to Cabeus. The viewing geometry of the Cabeus plume was blocked by a high ridge on the crater's rim. Shortly before the event, the LCROSS team had apologetically announced this last-minute target change that would affect what would be seen by observing networks poised to capture the event in Arizona, New Mexico, California and Hawaii. *It is important to note that an absence of lunar fireworks does not equate to an absence of water.* But author Kelly apparently wishes it did. Just consider the opening sentence of his article:

"If you look up 'dry' in a dictionary, you won't find the Moon's picture next to the definition -- but it should be."

Is this an appropriate way to set the tone for an article announcing an historic discovery of water on the Moon? As final impressions are often formed by scanning headlines and the first paragraph, this article may well leave many S&T readers with the misconception that scientists were disappointed with the amount of water detected. This is not true.



Figure 2: Dr. Anthony Colaprete holding a bucket of water at the press conference.
Photo credit: NASA

Kelly's article also fails to fully convey the excitement of the research team during the press conference. Besides the focus on buckets of water, perhaps the most interesting aspect was watching the body language, gestures and facial expressions of these scientists as they *tiptoed* around their discovery of a ". . . whole lot more beyond the water . . ." in the plume's data. These "whole-lot-more" findings will be announced in future press conferences once the team has had more time to analyze the data.

Another problem with the *S&T* article is that it leaves the reader with the impression that the only explanation for the water discovered is permanently shadowed cold traps containing accumulated frozen volatile debris from eons of cometary lunar impacts. But the LCROSS team's thinking is not limited to this simple explanation alone. Dr. Gregory T. Delory, Senior Fellow at the University of California at Berkeley's Space Sciences Laboratory (Fig. 3) offered some interesting speculation during the press conference:

"Another intriguing possibility is that the Moon itself may be a source of the water through internal activity."

And with regard to the Moon in general, he stated:

"This is not your father's Moon. Rather than a dead and unchanging world, it could in fact be a very dynamic and interesting one . . ."



Figure 3: Dr. Gregory T. Delory
Photo credit: NASA



Figure 4: Dr. Doug Cooke
Photo credit: NASA

Delory's speculation runs contrary to the view held by most post-Apollo baby-boomer scientists who for the past 40+ years have considered the Moon as nothing more than a bone dry, dead rock. Dr. Doug Cooke, Associate Administrator for Exploration Systems Mission Directorate (Fig. 4), put his finger on this Apollo-era *idée fixe* by stating during the press conference:

"Many have said that we learned most or all of what we needed to learn about the Moon from the Apollo Missions, (but) LCROSS is demonstrating that there is much more to learn and there always is . . . So

stay tuned, the Moon has more secrets."

Besides *vaporizing* the idea that our Moon is "bone dry," final LCROSS results may also contribute to a growing body of scientific evidence overturning Project Apollo's "dead rock" verdict. The common belief that our Moon is a celestial corpse may eventually be relegated to no more than a footnote in future lunar history books.

Those who stubbornly cling to this idea may well be described as intransigent adherents of an anachronistic school of thought called *Necroselenology*. In this regard it is interesting to note the comments during the press conference of Dr. Michael Wargo, chief lunar scientist at NASA Headquarters in Washington (Fig. 5):

"As we find out more and more about the Moon, we realize that it is not a closed book for lunar science and lunar exploration -- but it is just the first chapter of the book that we were able to do with Apollo . . . the rest of those chapters are yet to be written and I think they are going to be really exciting chapters."



Figure 5: Dr. Michael Wargo
Photo credit NASA

Dr. Delory's earlier statement on the possibility that the Moon may turn out to be a "dynamic and interesting" world (Fig. 3) is in agreement with another line of current lunar research from Columbia University on the highly controversial topic of Transient Lunar Phenomena (TLP). In 2008-2009, the *Astrophysical Journal* published three research papers by Dr. Arlin Crotts who also suggests the Moon may not be dead after all. TLP catalogs containing more than 2000 reports over hundreds of years include many observations of mysterious, highly localized reddish glows which Crotts and others suspect as being produced by lunar outgassing and dust lofting.

Not Your Father's Moon - continued

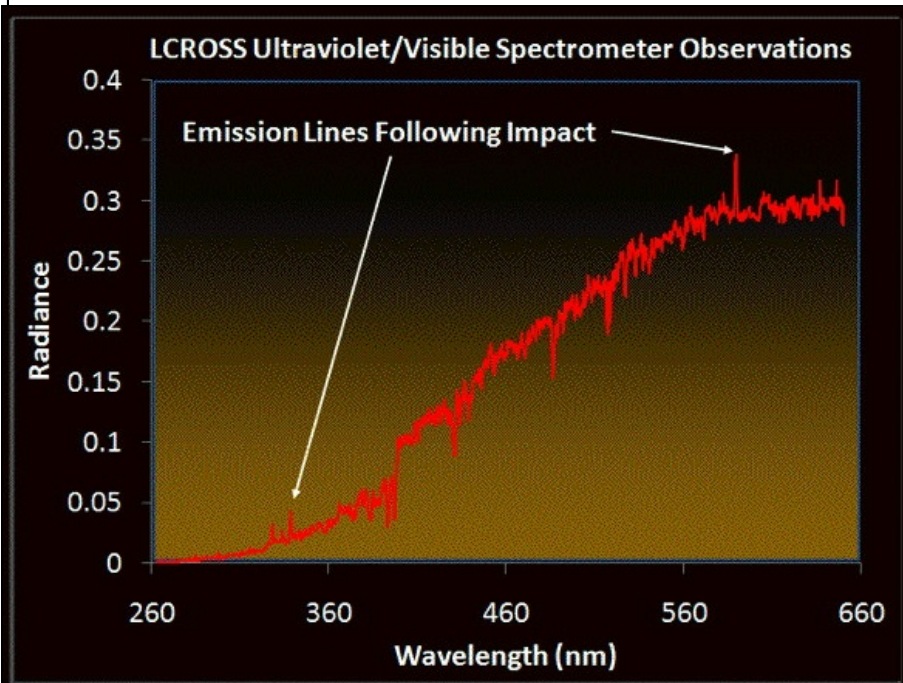


Figure 6: Radiance as a function of wavelength of the debris plume containing "dust and vapor." Plume is brightest in red portion of the spectrum.
Photo credit: NASA

Curiously, as the *LCROSS* dust-and-vapor debris plume emerged into sunlight, it was brightest in the red portion of the spectrum (Fig. 6).

On April 13th, I will be giving a TLP presentation to the Alachua Astronomy Club's (AAC) general meeting and will cover some of Crofts' intriguing research findings. See AAC meeting page for details at this link: <http://www.floridastars.org/meets10.html>.

And, for interested AAC members who want a more

accurate characterization of the *LCROSS* findings than that presented in *S&T's* damning-with-faint-praise article, they are encouraged to watch the entire press conference titled "*LCROSS Science Briefing November 13th 2009*," at this link: <http://www.youtube.com/watch?v=5xVIBa6YKH4>.

While the United States has cancelled its plans to return humans to the Moon, a great deal of unmanned lunar exploration has recently taken place and continues today. Japan, India, China and the United States have all sent probes to the Moon during the past several years. The next major release of scientific results from these efforts is expected in March at the *41st Lunar and Planetary Science Conference* in Texas. See this link: <http://www.lpi.usra.edu/meetings/lpsc2010/>.

Sadly, it now appears that Chinese lunar taikonauts will be the first to enjoy a refreshing glass of (purified) Moon water as American astronauts are evidently not going back anytime soon. But, don't despair -- at least humanity is going back and as club member Chuck Broward recently pointed out - - "*We can still go to the Moon through our telescopes.*" In this regard, the AAC's *Lunar Observing Group* (LOG) has four observing sessions planned later in 2010 on lunar geologic processes. See details of the 2010 LOG schedule at this link: http://www.floridastars.org/LOG/log_main.html.

Members who attend these LOG sessions should enjoy a richer lunar observing experience by understanding the processes that formed the scarred and tortured surface of our nearest celestial neighbor. *Water* will be served at these sessions to enjoy along with *Moon Pies* as we observe the lunar surface and contemplate the possibility that it is "*Not our father's Moon.*"

Bob O'Connell
Chair, Lunar Observing Group

Public Night at UF Observatory

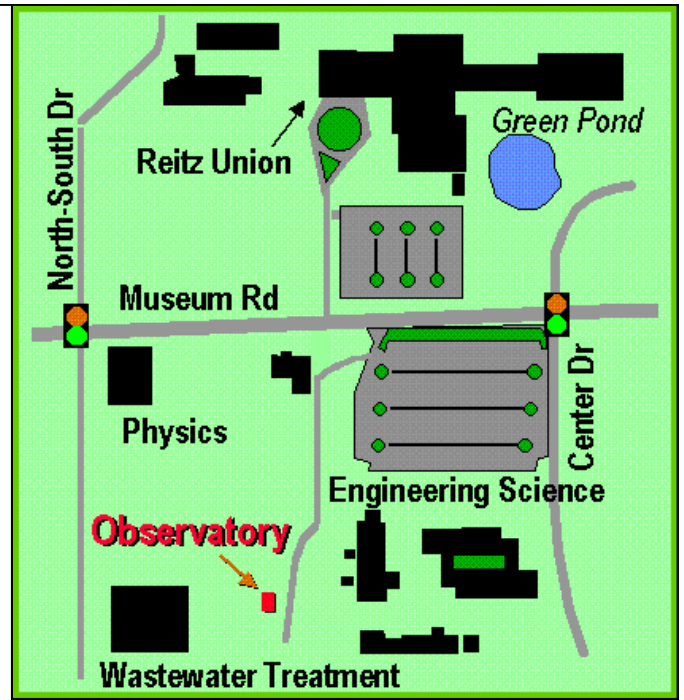
The University of Florida, Department of Astronomy and Dr. Francisco Reyes hosts an on-campus Teaching Observatory for educational and public programs. These events are free to the public. The observatory is open Friday evenings, from 8:30 to 10:00, whenever UF classes are in session.

The March schedule features:

- March 5 Mars, Saturn, M42 Orion Nebula, M45 Pleiades star cluster, M44 Beehive cluster and more.
- March 12 No Public Night—Spring Break
- March 19 Moon, Mars, Saturn, M42, M45, M44, Castor multiple star system, Mizar binary star, and more.
- March 26 Moon, Mars, Saturn, M42, M45, M44, M3 globular cluster, Castor and Mizar

The April schedule features:

- April 2 Mars, Saturn, M42, M44, Mizar, Alcor, Castor, M3 and M45 early.
- April 9 Mars, Saturn, M42, M44, Mizar, Alcor, Castor, M3 and M45 early.
- April 16 Moon, Mars, Saturn, M42, M44, Alcor, Castor and M3 globular cluster.
- April 23 Moon, Mars, Saturn, M42, M44, Mizar, Alcor, Castor and M3 globular cluster.
(Last Public Night of the Semester)



Visit the Alachua Astronomy Club website for quick links to Gainesville astronomy information:

March 2010							
Sun	Mon	Tues	Wed	Thur	Fri	Sat	
	1 Moon 19:55 07:14 Sun 06:55 18:28	2 Moon 21:02 07:51 Sun 06:54 18:29	3 Moon 22:08 08:28 Sun 06:53 18:30	4 Moon 23:13 09:08 Sun 06:52 18:30	5 Moon ----- 09:51 Sun 06:51 18:31	6 Moon 00:15 10:37 Sun 06:49 18:32	
7 Moon 01:14 11:28 Sun 06:48 18:32	8 Moon 02:07 12:21 Sun 06:47 18:33	9 Moon 02:54 13:17 Sun 06:46 18:34	10 Moon 03:37 14:12 Sun 06:45 18:34	11 Moon 04:13 15:07 Sun 06:44 18:35	12 Moon 04:47 16:01 Sun 06:43 18:36	13 Moon 05:18 16:55 Sun 06:41 18:36	
14 Last Qtr., 10:43 Moon 05:47 17:48 Sun 06:40 18:37	15 Moon 06:15 18:41 Sun 06:39 18:38	16 Moon 06:43 19:36 Sun 06:38 18:38	17 Moon 07:14 20:32 Sun 06:37 18:39	18 Moon 07:47 21:30 Sun 06:35 18:39	19 Moon 08:24 22:30 Sun 06:34 18:40	20 Moon 09:06 23:31 Sun 06:33 18:41	
	21 New Moon, 16:03 Moon 09:55 ----- Sun 06:32 18:41	22 Moon 10:51 00:30 Sun 06:31 18:42	23 Moon 11:53 01:28 Sun 06:29 18:42	24 Moon 12:59 02:20 Sun 06:28 18:43	25 Moon 14:07 03:08 Sun 06:27 18:44	26 Moon 15:16 03:51 Sun 06:26 18:44	27 Moon 16:23 04:30 Sun 06:25 18:45
28 Moon 17:31 05:07 Sun 06:23 18:45	29 Moon 18:38 05:43 Sun 06:22 18:46	30 First Qtr., 06:01 Moon 19:46 06:20 Sun 06:21 18:47	31 Moon 20:52 06:59 Sun 06:20 18:47				
		Full Moon, 21:27					

- * Sunrise/sunset times
- * Moonrise/moonset times
- * Moon Phase Calendars (like the one left)
- * Hours of darkness
- * Times of astronomical twilight
- * Equation of Time

<http://www.floridastars.org>

The above info is now available for 2010. Click on **GO TO « Weather/Time/Astro Info »** (just under "People looking at stars and planets ..." near the top of the AAC home page.) This will jump you down to **WEATHER, TIME AND ASTRONOMICAL INFORMATION.** Then look inside the box with the title, **"GAINESVILLE, FLORIDA"** to see links for the above info.



Alachua Astronomy Club, Inc.
A Not For Profit Organization



2010 Membership Form

Date ____/____/____ (Please CHECK one) New Membership? ____ or Renewal? ____

Name (Primary Applicant) _____

Address _____

City _____ State _____ Zip _____ Country _____

Telephone(s) Home (____) _____ Business (____) _____ Cell (____) _____

E-mail _____ NOTE: Please fill in all information since we are updating our records.

Astronomy Level (CHECK one) Beginner Intermediate Advanced

Own Telescope(s)? (CHECK one) No Yes Type(s) _____

How Long Interested in Astronomy? _____

If new member, how did you learn about us? Web Newspaper Word of Mouth Other (specify) _____

Special Interests/Abilities _____

Any Club Duties Would Like to Volunteer For? _____

Dues Categories: AAC membership allows voting rights and election to club offices for the primary applicant and each included Associate membership.

CHECK ONE dues category under either **A. Individual** or **B. Dual/Family** (includes one Associate membership). CHECK **Additional Associates** under **C. Other** if you want other family members to have voting rights.

A. Individual ¹		B. Dual/Family ^{1,2}		C. Other
<input type="checkbox"/> Member	\$28.00	<input type="checkbox"/> Member	\$40.00	<input type="checkbox"/> Additional Associates \$12.00 each
<input type="checkbox"/> Senior ³	\$20.00	<input type="checkbox"/> Senior ³	\$32.00	
<input type="checkbox"/> Full-time Student ⁴	\$12.00			
<input type="checkbox"/> Supporter ⁵	\$60.00	<input type="checkbox"/> Supporter ⁵	\$72.00	
<input type="checkbox"/> Benefactor ⁵	\$100.00	<input type="checkbox"/> Benefactor ⁵	\$112.00	

New member proration: Remit 50% dues between July 1 – Sept. 30. Remit full dues after Oct. 1 (will be applied toward following year).

¹ Membership includes Astronomical League membership (including one subscription to *Reflector* Magazine) and one subscription to *FirstLight* newsletter. The AAC is a member of the International Dark-Sky Association; please consider individual enrollment.

² Includes one Associate membership with voting privileges.

³ Eligible seniors are 62 years or older. (Seniors can still select regular membership!)

⁴ Student membership includes electronic subscription to *FirstLight* newsletter only.

⁵ The AAC is exempt from federal income tax (IRS Code, Sect. 501). Contributions to the AAC may be tax deductible. See your tax advisor.

Membership in the AAC (CHECK ONE category from Column A or Column B (above) \$ _____

Additional Associate Memberships at \$12.00 each (CHECK Col. C) No. of Assoc. Memberships: _____ x \$12.00 = \$ _____

Names of ALL Associate Members _____

NOTE: AAC Mailing Address Has Changed from Previous Years

Make check out for total amount of dues to the:

Alachua Astronomy Club, Inc.

Total Amount Due \$ _____

Send completed form and check for club dues to:

Treasurer

Check Number _____

(We cannot accept dues without completed dues form)

Alachua Astronomy Club, Inc.
P.O. Box 141591
Gainesville FL 32614-1591 USA

April Club Meeting

Tuesday, April 13, 2010, 7:00 p.m. ET

Speaker: Bob O'Connell

Title: *Revisiting "The 1963 Aristarchus Events"*

Location: Powell Hall, Florida Museum of Natural History
(Lucille T. Maloney Classroom), UF Campus,
Gainesville FL



Bob O'Connell

Preview: Transient Lunar Phenomena [TLP] are unexplained changes in the normal appearance of the Moon which have been reported for hundreds of years. There are more than 1900 catalogued accounts which include: obscurations, areas of increased brightness and highly localized colored glows. This presentation examines the two most credible, well documented observations of reddish and bluish glows. These were seen on the Aristarchus Plateau on two separate nights, from Lowell Observatory, late in 1963.

Since project Apollo's verdict that our Moon is a volcanically inert "dead world," TLP reports have been dismissed by mainstream lunar science. However, an examination of the appearance and behavior of the Lowell phenomena suggests they were real objective events on, or local to, the lunar surface. This conclusion is supported by Columbia University TLP research, published in the 2009 *Astrophysical Journal*, which suggests a possible non-volcanic explanation for these long dismissed, unexplained lunar color phenomena.

About the Speaker: Alachua Astronomy Club member Bob O'Connell has been fascinated with astronomy since his first view of the Moon through a small refractor, at the age of five. His interest for the past five years has been researching the controversial issue of Transient Lunar Phenomena. Bob, along with Don Loftus, gave a presentation on TLP at the August 2006 meeting. Bob also gave a presentation, *Why and How to Observe the Moon* in August 2007. He currently uses a 7.1" Maksutov-Cassegrain for lunar observing.

Bob has been instrumental in developing the club's **Lunar Observing Group**. The activities have grown steadily over the past three years. If your interest is piqued by Bob's presentation, you're invited to attend the April LOG Session on lunar imaging.

Bob is a registered nurse in Gainesville, and holds a degree in Political Science from the University of Colorado at Denver. He lives in Keystone Heights, FL with his wife Jane, and their cats: Kitty, Crater and Aristarchus.

RENEW YOUR AAC MEMBERSHIP FOR 2010!

If you haven't renewed your AAC membership for 2010, fill out and return the form on the adjacent page so you won't miss a single issue of FirstLight.

If you prefer to receive the newsletter by email, email us at treasurer@floridastars.org. Past members who have already elected the online option do not need to notify the treasurer.



My Astronomical Experience of December 2008

Bob Lightner

During the month of December 2008, I had an extraordinary opportunity to visit an orphanage located on Mindanao, the southern island of the Philippines. My wife is from this country, and as such, we have visited the Philippines numerous times; however, *this* trip was different, because this time we visited "Uncle Dick's Home (or UDH)," an orphanage where tremendous work is being done by the Tebow family. It was our great privilege to get a first-hand view of some of the work being done at the orphanage and to lend an astronomical hand.

First off, it's not easy to find UDH. All we knew was that it is located in Southern Cotabato, Lamsugod, Surallah, and to make things worse, we did not have a GPS or a map! We must have stopped 50 times along the way asking for directions before we finally stumbled upon the orphanage. It is located about a 2-1/2 hour drive northwest of General Santos City. UDH is on top of a mountain looking out over the river Allah, down at the bottom of a deep ravine. I'm guessing that it is 50 acres of property, and the residency houses 49 orphans and 13 staff members.



That afternoon, armed with my laptop and "Stellarium" (a free planetarium program), I began teaching the children about the planets, our solar system, stars and constellations. I showed them the main constellations, and everyone drew pictures and learned various astronomical names. The location of UDH is right around 6 degrees north of the equator, so seeing Polaris was a bit difficult, but the kids correctly pointed it out. Ursa Major was 50% below the horizon but Cassiopeia was easy to spot. With the clear mountain air, you could make out the blur of M31. Canopus was high in the southern sky, and it was sure bright! The quarter moon was in Leo along with Saturn with Orion at the zenith and Taurus standing out with its jewel, Aldebaran. I even enjoyed seeing

the "Southern Pleiades" just above the southern horizon for the first time!

Believe it or not, naming the stars (Sirius, Betelgeuse, Rigel, Capella, Pollux, etc.) was made a little difficult because I wasn't accustomed to such great seeing conditions! There were so *many* stars visible that I believe you could see to 6th or 7th magnitude. Having no telescope, I couldn't estimate an exact Pickering scale number, but there were very little star quivers, so it could have been between 7-10. Imagine being at a place with relatively NO LIGHT POLLUTION!

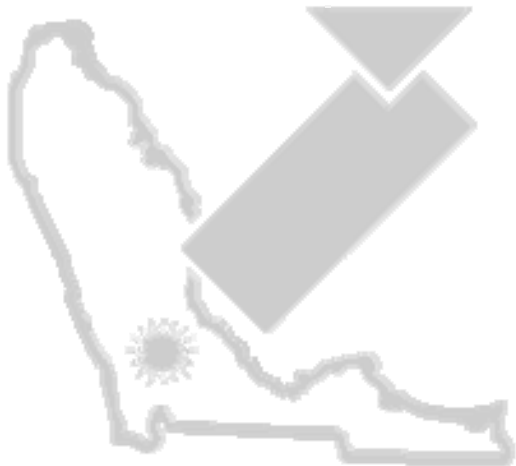
At any rate, the children and staff had a fabulous time and invited me back. Next time I hope to bring them some more enjoyment of the heavens. However, it was I who came away with the biggest blessing. For four or five hours, I had 49 attentive and curious children taking turns sitting on my lap and enthusiastically learning about the heavens!



For more information about UDH, their website URL is: <http://www.btea.org/orphanage.asp>

Help Further Their Education:

Bob Lightner is looking for any used binoculars, star charts, a green laser pointing pen, etc., for his next trip to the Philippines to work with the orphans at "Uncle Dick's Home." The orphanage was established in 1991 by Robert Tebow, Tim Tebow's father. When Bob visits, he tries to teach the 49 children and staff about the heavens. The orphanage is located on the top of a mountain, so the seeing conditions are superb. If anyone has any small items that might be donated (and easily carried) contact Bob Lightner at 352-373-3055. He'll take them on his next trip to the Philippines this Spring or Summer.



FirstLight
Newsletter of the Alachua Astronomy Club, Inc.
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