

The Focal Point

The Atlanta Astronomy Club
Established 1947
September 2019

Vol. 32 No. 1

Editor: Tom Faber

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The September AAC Meeting

By Ken Poshedly, AAC Program Chair

Saturday, September 21 at 1:30 PM

At the Fernbank Science Center

“Astro-Imaging. Even Newbees Can Outdo Those Professional Photos”

Remember those usually slightly out-of-focus galaxy and planetary images by professionals in text books of so many years ago that were taken with giant instruments in California? How would you like to out-do them yourself with not that much of a financial outlay and truly amaze your friends -- even with almost no experience except picking up a camera and pressing the shutter button?

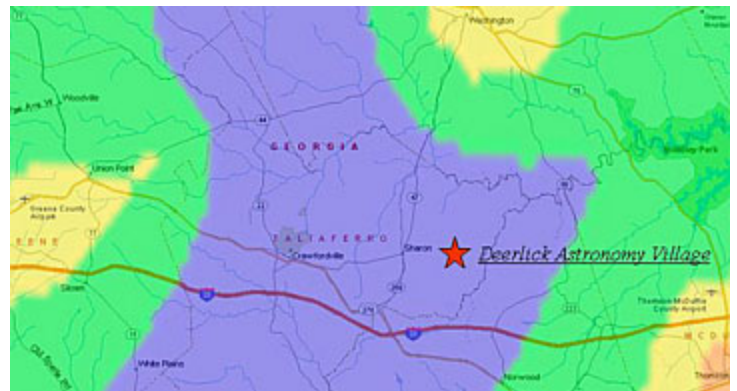
Well, astro-imager Amy Little of Augusta, Georgia, will show you how to do that as the Atlanta Astronomy Club begins its new season of programs with a slight change in meeting days. This year, we're meeting on Saturday afternoons with hopes of increasing the meeting attendance even further than last season. For many, many years (except for a year or so a few years ago), the meetings were held on the third Friday night of each month. Some folks believe Saturday works better for them, so let's try it.

So be there (“or be square”, as they say) at 1:30 p.m. in the Fernbank Science Center’s Resource Room (formerly called the library) for announcements about our club’s upcoming activities. Our featured speaker, Ms. Little, will follow that segment. Afterwards, all paid-up members of the AAC -- and those who join that afternoon -- will be granted free admission to the 3 p.m. planetarium show at the Fernbank facility. If you haven’t been to a Fernbank Science Center planetarium show in the past year or two, you’re in for a big surprise thanks to the major equipment upgrades and so forth.



The 2019 Peach State Star Gaze

Mark your calendars for the 2019 Peach State Star Gaze which will be held from Sunday, October 20 to Sunday, October 27 at the Deerlick Astronomy Village! Information about the programs, speakers, and a link for on-line registration can be found at: <http://atlantaastronomy.org/pssg/> And of course there will be lots of observing under some of the darkest skies in Georgia. The new moon occurs on Sunday, October 27. Micki’s Kitchen is also scheduled to return with meals, sandwiches, hot coffee, hot chocolate and other drinks, and her famous brownies! See you there!



The AAC field at the DAV during the 2016 PSSG - Photo by Tom Faber.

As for Ms. Little, an Instrumentation Designer at an Augusta engineering consulting firm, here is how she describes things: “I was born in western Massachusetts, but raised “southern fried”. Since 2008, I have become a certified “photo-holic”. With my first DSLR, I was hooked photographing everything. By 2010, I started taking workshops and travelling. On one of my trips to Roan Mountain on the Appalachian Trail, I became hooked

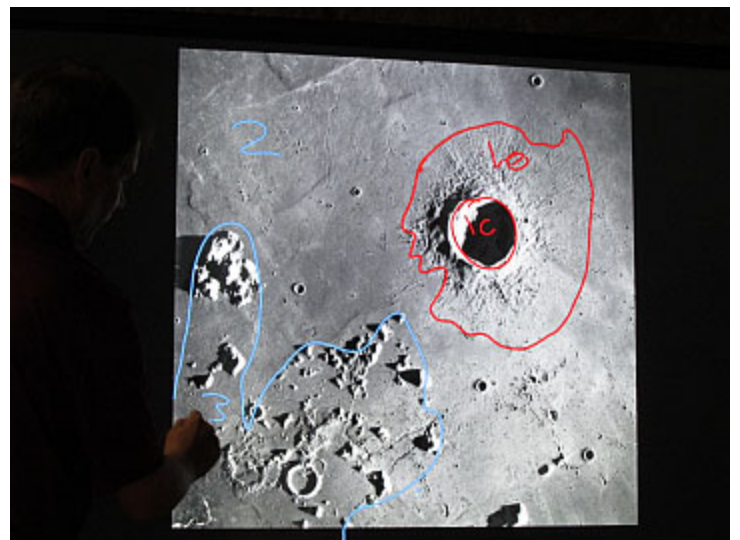
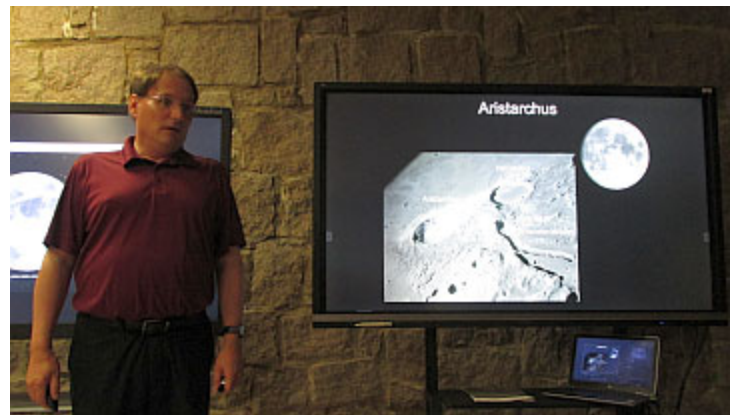
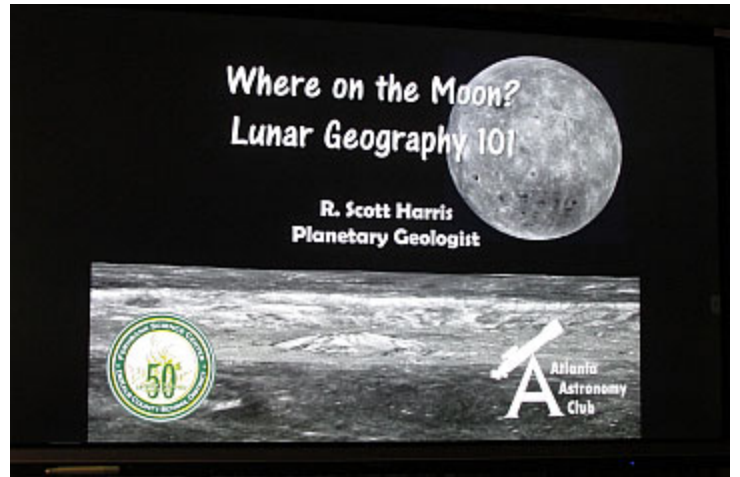
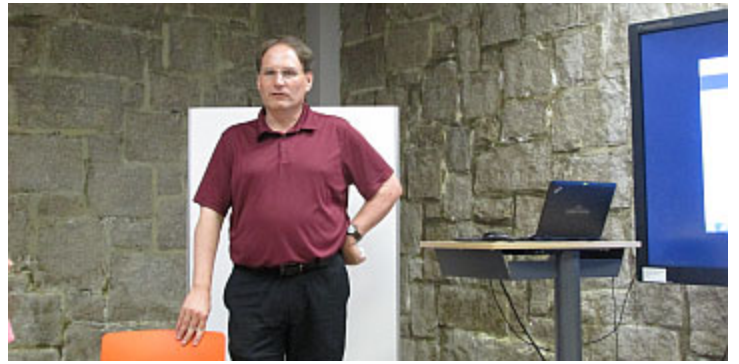
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May AAC Meeting Report

Photos by Tom Faber

The May meeting of the AAC was held at the Fernbank Science Center Resource Center, beginning at 8PM, on Friday, May 17. There were about 25 members and guests present. AAC President David Lumpkin (photo below) opened the meeting and gave various announcements.

Then AAC Program Chair Ken Poshedly (photo bottom) introduced our guest speaker, Fernbank's Planetary Geologist Scott Harris. Scott presented a very interesting talk titled "Where on the Moon? Lunar Geology 101".



October Charlie Elliott Meeting

Measuring Star Spectra in the Magellanic Cloud!

Meeting Details

Join us at the Charlie Elliott Conference Center, Conference Room B, on October 5th, 2019 at 5 p.m. for a discussion with GSU PhD candidate Katherine Shepard as she presents her research on star spectra in the Magellanic Cloud!

Katherine's interest in astronomy was sparked in the fifth grade when learned about and began to contemplate the "big bang." She wrestled with the idea that all of the matter in the universe was wrapped up in a singularity that violently expanded for reasons unknown. To her fifth grade mind, and many of ours, that matter had to come from somewhere. She didn't solve the mysteries of the universe in the fifth grade, but she realized she loved chasing questions that had no clearly defined answers.

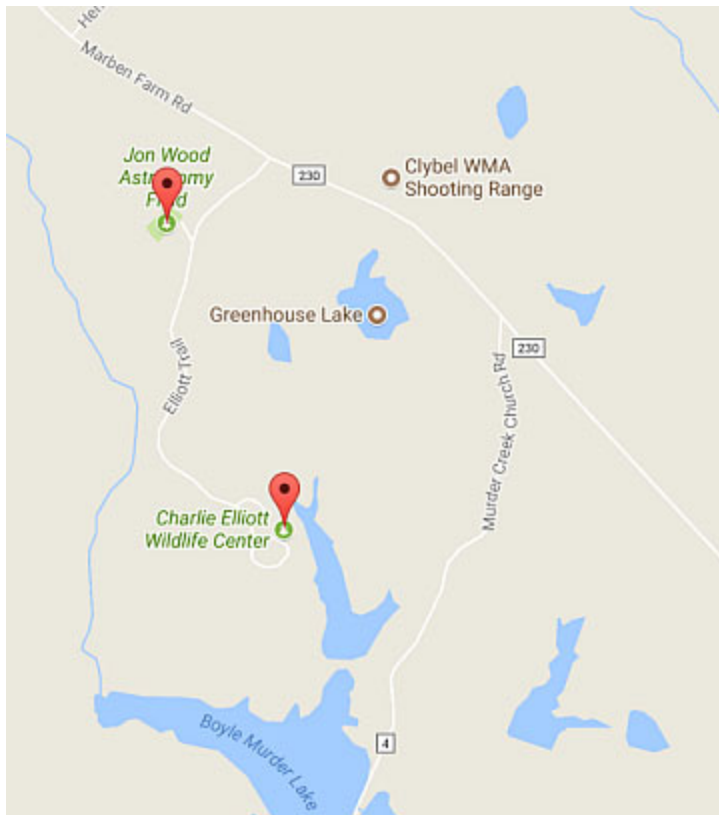
Katherine didn't consider astronomy as a career until her junior year of college when she participated in an REU (Research Experience for Undergraduates) at the University of Oklahoma where she worked on solving discrepancies between the models and simulations of the Oort Cloud. During this project, she realized she was where she needed to be...doing research in astronomy.

For all of us, free time is a commodity. Katherine enjoys spending hers working on her photography skills, reading sci-fi novels, playing video games, and enjoying the company of her dogs, cats, and hamster.

Check out our Facebook Page! You'll find a welcoming group of people sharing ideas and tips as well as organizing ad-hoc observing and imaging sessions on Jon Wood Astronomy Field.

The Peach State Star Gaze!

Woo hoo!! The Peach State Star Gaze is upon us! Registration is open and it looks like we're going to have some very cool door prizes this year. It's an awesome star party with wifi, real bathrooms, hot showers, a food



Credit: Google Maps

truck on site all week, a grill if you want to cook your own food, a pavilion so you can gather with your closest friends, lots of space if gathering isn't your thing, great company, and dark skies at Deerlick Astronomy Village! If you want to bring an RV, get registered sooner rather than later as power and water hookups are first come, first served.

Perspective & All of the Above

Observing Coordinator Steve Siedentop will be on hand to discuss what you can see and image in the night sky. His presentation will cover observing from both a visual and a contemplative perspective. Steve started out as an observer, moved into astrophotography and enjoys doing both, finding observing particularly therapeutic. That's a good thing, because he needs all the therapy he can get!

Observing After the Meeting

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

Tech Talks

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

Continued from page 1

with the night sky. I walked away with a only single Milky Way photo that night, but the passion was lit. Fast-forward to the Great American Total Solar Eclipse of 2017. Like most of us, I spent months studying how to capture it with no clue just how amazing it was to be. I purchased my first star tracker for the event. When the eclipse was over, I had no idea what to do with the tracker. Then someone said I could capture deep space images with the tracker and a telephoto lens. Well that only lasted three months and I then purchased a big telescope mount, followed by everything I needed to follow my new passion. I've been chasing space for two years now. I'm still learning the sky and fine-tuning my imaging and editing. Every image and person I meet just fuels me more.

"I'm hoping to show you where I started with astrophotography, what pot holes I fell into deep and the light I found in space and others. Everyone can photograph the stars if you take the first step and try."

Follow Amy's astro-adventures on Facebook as Amy Astro and on YouTube for processing tutorials as AmyAstro.

As always, the AAC program is FREE and open to the public.

The program will be in the Fernbank Science Center's Resource Center (formerly the library). The Fernbank Science Center is located at 156 Heaton Park Dr. NE, Atlanta, GA 30303. (Phone: 678-874-7102).



The June Charlie Elliott Meeting

Submitted by Mike Mardis, Secretary, Charlie Elliott Chapter

Meeting Minutes: 6/1/2019 at the Charlie Elliott Aquatic Center.

Pre-meeting start time: N/A

Meeting:

Date/Time 3/9/2019 at 1830-2200

Facilitator Steve Seidentop

Meeting Attendees 26

Agenda: Announcements, Briefings, Q&A / discussion

Field Participants 36

Outreach:

Reported by Marie Lott

6/10 Collinswood, 6/21 Watkinsville Library

Awards Reported by David Whalen - N/A.

Briefing Speaker/Topic:

David Whalen Jupiter The King

Ken Poshedly ALPO Journal

Handouts:

Steve Seidentop Evening Sky Map, June Target List

Other News:

Next meeting Charlie Elliott Conference Room B at 7pm on 7/6/2019

The July Charlie Elliott Meeting

Meeting Minutes 7/6/2019 at the Charlie Elliott Conference Room B:

Pre-meeting: Start time N/A

Meeting:

Date/Time 7/6/2019 at 1900-2200

Facilitator Steve Seidentop

Meeting attendees 21

Agenda:

David Whalen — ANNOUNCEMENTS / Upcoming talks & speakers

- 2019 ALPO Conference (July 12 & 13)
- Steve Seidentop - guest speaker at conference
- Barnesville, GA (Gordon State College) at Instructional Conference
- New ownership - Sky & Telescope
- ALCON
- Peach State Star Gaze (October 20-27)
- Plus other misc. announcements

Matt Harvey - Announcement on what is being considered

- CE new sticker (Prototype)
- T-shirts & Polo's
- Banner for Outreach events
- EEA fundraiser considerations being contemplated
- Gate lock & code will be changed SEPT 1st (members only)
- Shed code has already been changed (limited distribution)

Steve Seidentop - PERSPECTIVE Presentation

- The Overview Effect
- The Neighbor: Jupiter

- Io (and its shadow) visible transiting across Jupiter 7/12/19 0045 am
- The Neighbor: Saturn
- Locations of Sky elements tonight
- The Wandering Earth
- Constellation: Aquila
- Messier 27: Dumbbell Nebula
- Messier 13: Hercules cluster
- Objects in Aquila (4)
- Objects to view this month...
- Imaging and processing
- Q&A

Field participants N/A

Outreach by Marie Lott UPCOMING OUTREACH EVENTS

7/12/19 from 2030-2230 — Summer reading: A Universe of Stories at W.H. Stanton Memorial Library (Social Circle, GA)

7/21/19 from 2100-2300 — Garden Club of Georgia Youth Camp at Charlie Elliott Wildlife Center, Astronomy Field (Mansfield, GA)

Awards by: David Whalen N/A

Briefing speaker/topic:

Richard Jakiel Member of AAC; published author; Instructor; and Guest Speaker talking about JUPITER and SATURN: Summer 2019

- A tour of the Gas Giants
- A guide to Observing and imaging
- Differential rotation
- Atmospheres
- What observers expected and did not
- Similarities between Jupiter & Saturn
- Internal heat and its impact on the atmosphere
- The Great Red Spot: change over time
- Storms on Saturn and durations
- Dragon Storm (2010-2011)
- Saturn's Polar Hexagon Storm
- Magnetospheres
- Rings, division and gaps
- Satellite Systems (Jupiter 79; Saturn 62)
- Galilean Moons (Io, Europa, Ganymede, Callisto, Amalthea, Himalia)
- Jupiter — A world in Chaos
- Saturn — Opposition July 9th
- The Seeliger Effect

Post Mtg - Field Participation:

Field Participants: 18. Notes: Conditions somewhat compromised by partial cloud cover. Limited viewing, but a good turn out.

Upcoming Charlie Elliott Meetings

Upcoming Charlie Elliott meetings will be held on: October 5, November 2, and December 7, 2019, January 25, February 22, March 21, April 18, May 23, 2020. Meetings start approximately 2 hours before sunset. Meeting rooms and start times vary, so please check back for updates or changes at: <http://ceastronomy.org/blog/home> Public stargazing on Jon Wood Astronomy Field follows the meeting, weather permitting.

The August Charlie Elliott Meeting

Daniel de la Reza, Secretary, Charlie Elliott Chapter

Meeting Minutes 8/3/2019 at the Charlie Elliott Conference Room B:

Pre-meeting: Start time 1845

Presenter Timothy "Tim" Higginboth

Topic The Itty Bitty (Radio) Telescope

Presentation on Radio telescopes...

- History
- LNB (Low Noise Block)
- How it works: Signal Capture, transmission, and processing.
- Basics Supply voltage, oscillator frequency, typical Sat frequency, and output
- Electromagnetic signal conversion to visual movement & noise.
- How I built my Itty Bitty Solar Radio Telescope...
- SDR - Software Defined Radio receiver



- Struggles & Hurdles
- Arecibo Observatory
- Q&A

Meeting:

Date/Time 8/3/2019 at 1900-2200

Facilitator Mike Shaw

Meeting attendees 19

Agenda:

Mike Shaw — ANNOUNCEMENTS / Upcoming talks & speakers

- New Visitors
- Upcoming Outreach
- Alcon - Astronomical League
 - Awards CE Master Observers: Valorie Whalen, David Whalen, Marie Lott
 - Youth Award Winner - including 15 yr old lady who is discovering exoplanets
 - Pranvera Hyseni - Astronomy Outreach brining astronomy to Kosvo
- Our New Logo - interest poll
- Observing Field Gate Code change - effective 9-1-19
- Peach State Star Gaze (October 20-27)
- Next Mtg... Time, Date & Location

Ken Poshedly - ALPO

Steve Seidentop - **PERSPECTIVE Presentation**

- Black Moon...
- The Neighborhood
- Jupiter - the gas giant that acts as a vacuum cleaner...
- Transit of Io — Tonight at 1 am
- Earth vs. Red Spot on Jupiter...
- Saturn - Tonight at 10 pm
- Perseids meteor shower - peak 8-12-19 (however, also a full moon)
- Deep Sky - Sagittarius (DSLR 3200 iso, 15-20 seconds)... targets,

history, Greek

mythology, home....

- Deep Sky - Objects for August
- NGC 6822 • Messier 22 • Sigma Sagittarii • Messier 24 •
- Sci-Fi shows extracting and speculation on reality...

Upcoming Events

David Whalen - UPCOMING OUTREACH EVENTS

Hard Labor Creek State Park — Perseids Meteor Shower 8-10-19 from 2100 - 2359

Awards by: David Whalen N/A

Briefing speaker/topic: David Whalen

Experiments in Radio Astronomy

- Since it's been cloudy... built and used a series of radio telescopes...
- Solar Radiation, Meteor Radio Reflection, Jupiter Radio Emissions, & Observing Neutral Hydrogen in the Galactic Plane

- Solar Radiation - IBT (Itty Bitty Telescope) concept & use...

- Meteor Reflection - detection concept & how it works...

- Listening to Jupiter - antennae kit & manual... construction... beam steering (how & why)... Jupiter Radio Emission Modes (Io-D, Io-B, non-Io-B, Io-A, non-Io-A, Io-C, non-Io-C)... how Jupiter creates radio emissions... recording of Jupiter singing in the dark...

- Caution: It's all fun and games until you get electrocuted! (Real-life trials and risk)

- Background scatter vs foreground scatter...

- Observing Neutral Hydrogen in the Galactic Plane... What is "Hydrogen Line", Hline signal, Frequency Protected by the FCC - passive reception by code...

- Construction options... Quad Yagi (directional, portable, narrow bandwidth, and looks)... 23 element Yagi-Uda design... Theoretical 3D beam pattern... interface and constructive interference of 4 arrays... Antenna Book by ARRL... How to test... folded di-poles vs straight di-poles... building a chip that no one makes...

- Nothing is ever simple in outer space (galactic arms of the milky way) ... spikes from Milky Way arms...

- Measured frequencies of received signal spikes...

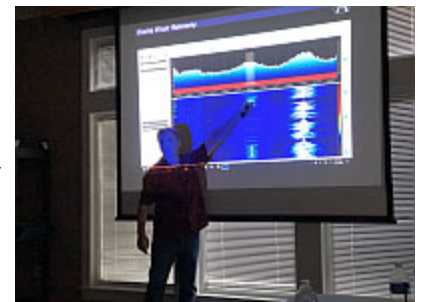
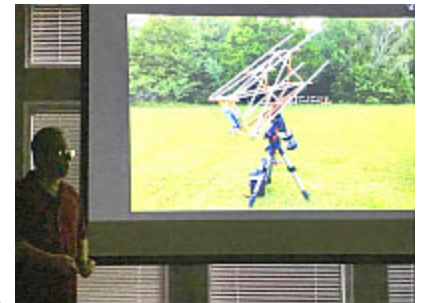
- Spectral scan across Milky Way from RA 16hr 30m to RA 19h 30m

- Unexpected find... outside Milky Way core... Cold Hydrogen in Dark Nebulae!

- Beam pattern of directional antenna

- Astronomical League Radio Observing Program

- Q&A



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Handouts by: Steve Seidentop

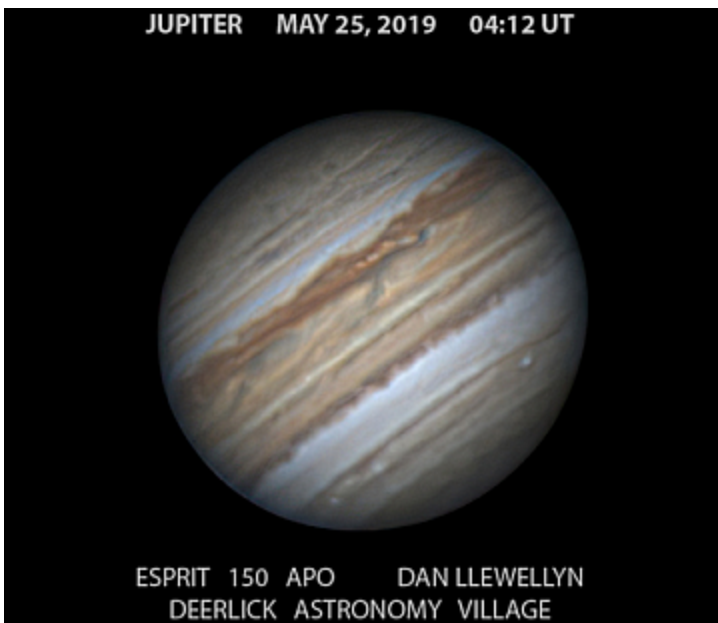
Evening Sky Map August Target List, AAC / CE chapter Membership form,

Other news: Next meeting Charlie Elliott Campbell Aquatic's Building at 6pm on 8/31/2019. Quarterly Potluck Dinner

Post Mtg - Field Participation:

Field participants - 13. Note: Cloudy skies at 9pm with anticipation and hope for clearing skies... nonetheless, great fellowship time... and GREAT skies (skies cleared up and became a great night for viewing!!!)

Images by Dan Llewellyn



Emory University Library adds the Flight Data from the APOLLO 15 (AS-510) Mission to its Readux Collections.

By Sharon Carruthers, AAC Treasurer

Since 2008 Emory University Libraries has been digitizing thousands of books, many of which are rare, fragile, or otherwise difficult to access. These works are available to the public in pdf format, through their Readux program.

For the last few years they have worked with David R. Scott, Commander of the Apollo 15 mission, to digitize the actual Flight Data File (FDF) and the Lunar Module Cue Cards that were used on the fourth lunar mission that took place between July 26 and August 7, 1971.

The complete FDF, in 24 volumes, is composed of all of the official Flight Plan, checklists, cue cards, maps, and star charts carried aboard Apollo 15, and features handwritten notes made by the crew during the mission.

Readux main page: <https://readux.ecds.emory.edu/>

Readux Apollo 15 Collection: <https://readux.ecds.emory.edu/collections/emory-control:LSDI-Apollo15/>

The Apollo 15 Mission

Apollo 15 was the fourth manned lunar landing and the first time the Lunar Roving Vehicle (LRV) was used. The LRV enabled the astronauts in Apollo 15, 16 and 17 to increase the areas they explored from hundreds of meters during the Apollo 11, 12 and 14 missions, to tens of kilometers during Apollo 15 and 16 and just over 100 kilometers during Apollo 17. (Apollo 13 was aborted before it reached the Moon)

Apollo 15 was the first of three advanced missions planned for the Apollo program. Its primary scientific objectives were to observe the lunar surface, survey and sample material and surface features in a preselected area of the Hadley-Apennine region, setup and activate surface experiments, and conduct inflight experiments and photographic tasks from lunar orbit.

The crew of David R. Scott, commander; Alfred J. Worden, command module pilot; and James B. Irwin, lunar module pilot, was launched on schedule from the NASA Kennedy Space Center, Fla., at 9:34:00 a.m. EST on July 26, 1971.

At 22:04:09 GMT on July 30, the lunar module descent propulsion system was fired to initiate the powered-descent and it landed approximately 12 minutes later with enough propellant left for additional hover time of 103 seconds.

The astronauts were on the Moon for 66 hours 54 min 53 sec, performing four extravehicular activity (EVA), for a total of 18 1/2 hours. The Lunar Rover was used for three EVA periods, traveling an average of 9.6 to 12 km/hr and covering 27.9 km.

Approximately 76 kg of lunar material, including soil, rock, core-tube, and deep-core samples from the low dark plains (maria), the Apennine highlands, and the area along Hadley Rille, a long, narrow winding valley, were collected and returned to Earth.

The LM ascent stage lifted off at 17:11:23 GMT on August 2 and was monitored by a television assembly mounted on the Rover, that was controlled from Earth. The plan was to cover the liftoff and observe a lunar eclipse on August 6. The television assembly operated successfully during all three EVA periods, but the elevation clutch began to slip during the second EVA, and operation deteriorated during the rest of the mission.

Continued on next page

When activated about 40 hr after LM liftoff, the unit operated for 13 minutes then failed.

The Command Module landed safely in a splashdown at 20:45:53 GMT, August 7, 1971.

From NASA SP-289, Apollo 15 Preliminary Science Report

Most of this material is liberally copied from the Smithsonian Air & Space Museum web page:

<https://airandspace.si.edu/explore-and-learn/topics/apollo/apollo-program/landing-missions/apollo15.cfm>

The site has very good overviews of all the Apollo missions, including photographs.



(L) David R. Scott, Commander

(C) Alfred M. Worden, Command Module Pilot (the poor guy who stayed in orbit)

(R) James B. Irwin, Lunar Module Pilot



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

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

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

Atlanta Astronomy Club Online

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

AAC Officers and Contacts

President: Dave Lumpkin President@AtlantaAstronomy.org
Program Chair: Ken Poshedly Programs@AtlantaAstronomy.org
Observing Chair: Daniel Herron Observing@AtlantaAstronomy.org
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Recording Secretary: Lilli Lindbeck,
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Board Chair: Sharon Carruthers Treasurer@AtlantaAstronomy.org
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Board: Open
Board: Steve Phillips sandsphillips@att.net
ALCor: Ken Olson, keneolson@yahoo.com
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Elliott Recording Secretary: Daniel de la Reza
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Elliott Program Coordinator: Steve Siedentop
program@ceastronomy.org
Elliott Outreach Coordinator: Marie Lott
outreach@ceastronomy.org
Elliott Astrophotography Coordinator: Mike Mardis
Elliott Chapter AL Liaison: David Whalen
Elliott Facilities Coordinator: Matt Harvey
facilities@CEastronomy.org
Georgia Astronomy in State Parks: Sharon Carruthers
Treasurer@AtlantaAstronomy.org
PSSG Chairman: Peter Macumber pmacumber@nightsky.org
PSSG Co-Chair: Open
Sidewalk Astronomy: Open
sidewalkastronomy@AtlantaAstronomy.org
Light Tresspass: Ken Edwards, Contact info TBA
Woodruff Observ. Coordinator: Sharon Carruthers
Treasurer@AtlantaAstronomy.org
AAC Webmaster: Daniel Herron
Observing@AtlantaAstronomy.org

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

AAC Events are listed in BOLD

- Sept 10th, Tuesday: Neptune at Opposition.
- Sept 14th, Saturday: Full Moon (Harvest Moon).
- Sept 20th, Friday: Moon in the Hyades.
- Sept 21st, Saturday: **AAC Meeting at Fernbank 1:30PM.** Moon Last Quarter.
- Sept 23rd, Monday: Fall Equinox at 3:50 AM.
- Sept 28th, Saturday: New Moon.
- Oct 3rd, Thursday: Moon near Jupiter evening.
- Oct 5th, Saturday: **CEA Chapter Meeting.** Moon First Quarter - near Jupiter.
- Oct 9th, Wednesday: Southern Taurids Meteor Shower peak.
- Oct 13th, Sunday: Full Moon (Hunters Moon).
- Oct 20th, Sunday: **Peach State Star Gaze starts at 12:00PM.**
- Oct 21st, Monday: Moon Last Quarter. Orionids Meteor Shower peak.
- Oct 26th, Saturday: Moon near Regulus morning.
- Oct 27th, Sunday: **Peach State Star Gaze ends.** New Moon.
- Oct 28th, Monday: Uranus at Opposition.
- Nov 2nd, Saturday: **CEA Chapter Meeting.**
- Nov 4th, Monday: Moon First Quarter.
- Nov 12th, Tuesday: Full Moon.
- Nov 16th, Saturday: **AAC Meeting at Fernbank 1:30PM.** Leonid Meteor Shower peak.
- Nov 19th, Tuesday: Moon Last Quarter.
- Nov 26th, Tuesday: New Moon.
- Dec 4th, Wednesday: Moon First Quarter.
- Dec 7th, Saturday: **CEA Chapter Meeting.**

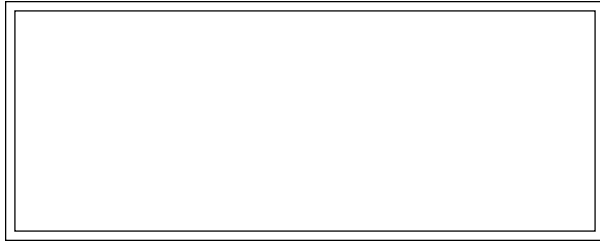
For more event listings and updates see the calendar at www.atlantaastronomy.org

Atlanta Astronomy Club Listserv

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

Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at focalpoint@atlantaastronomy.org. Please send images separate from articles, not embedded in them. Articles are preferred as plain text files with images separate but Word documents or PDFs are okay. **The deadline for October is Sunday, September 29. Submissions received after the deadline will go in the following issue.**



FIRST CLASS



www.betagg.com



Newsletter of The Atlanta Astronomy Club, Inc.

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



The Focal Point

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