



BACK BAY OBSERVER

July
2019

The official newsletter of the Back Bay Amateur Astronomers

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UPCOMING

- July 5 **Cornwatch**
Dusk-Dawn
Cornland Park, Chesapeake
- July 6 **Nightwatch**
Dusk-Dawn
Chippokes Plantation, Surry
- July 9 **Boardwalk Astronomy**
6-11PM
24th Street, Virginia Beach
- July 10 **Universe of Stories**
3-4PM
Currituck Library, Barco, NC
- July 12 **Ghent Summer Party**
5-9:30PM
Muse Writers Center, Norfolk

*For more information, go to
www.backbayastr.org/*



The sun sets on East Beach on June 21st—summer solstice 2019. From this day on, we will have fewer and fewer minutes of daylight, and more time under the stars.

Photo by Tina Waring

LOOKING UP! *a message from the president*

Hello, fellow amateur astronomers. The BBAA board members have researched some suggestions from the Night Sky Network about making our club meetings more enjoyable for everyone, and we want to institute some changes for the betterment of the club. To make sure the club meetings are as informative as possible for the BBAA members, the officers will meet at 7:00pm to take care of the regular club business. We will then start the club meeting at 7:30pm with the rest of the members. Any matters that should be brought before membership will be done at that time. We will also do the ALCOR, RRRT, and Observing reports as normal. The 7:00pm start time is an open meeting, so please know that all club members are more than welcome to attend. Hopefully this will facilitate a more enjoyable experience for our members who only wish to attend the presentation section of the meeting.

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The BBAA is a member organization of the Astronomical League.



The Veil Nebula in Cygnus

By Russell Hippert

This was by far the most difficult image I've ever captured and processed. With its very low surface brightness, I had to use a narrowband UHC just to get it to show up through our severely light-polluted skies. I also shot it with a color camera, so it took almost two days of processing to get it to this point due to color shift.

Shot in the Camelot/Geneva Park area of Chesapeake on June 15.

Pentax SMC 200/4 on Meade LXD55
UHC filter
183C (119s @ 1912 gain)
22 lights, 9 darks, 10 flats
Seeing: fair
Transparency: fair
Sky Glow- 17.5 arcsec/min²

Observers cont'd page 7



Looking Up! cont'd

As we roll into the month of July, I want to remind everyone that there are many opportunities to do outreach and help our club fulfill our motto of "Bringing Astronomy to the People of Hampton Roads." In fact, some of the other research we have been doing on the Night Sky Network is how to get our club members more involved in outreach and volunteering overall.

Since some of our club members may not know what's involved in sharing astronomy with the public, they may be hesitant to volunteer. To alleviate that, we would like to introduce our members to public outreach by inviting them to attend as observers. No telescope or interacting with the public is required. Instead, we want them to simply observe the different ways that they might want to participate. All they need to do is watch and learn, so they can make an informed decision about participating in a way that fits their interests and skills.

This is a no-obligation introduction to public outreach.

Another idea is to have a Volunteer Coordinator who can send general emails to the membership encouraging participation and offering support for new "outreachers." They could start an outreach training program and make sure our members are aware of it. There are many resources in the Night Sky Network Toolkits to conduct training that gives members ideas to excite and inform the public. We can take advantage of those resources to help further our club's motto.

I know that is a lot of information to take in, so if you have any questions please feel free to reach out to us. In the meantime, I look forward to seeing everyone at the club's summer picnic and until then, keep Looking Up.

Shawn Loescher



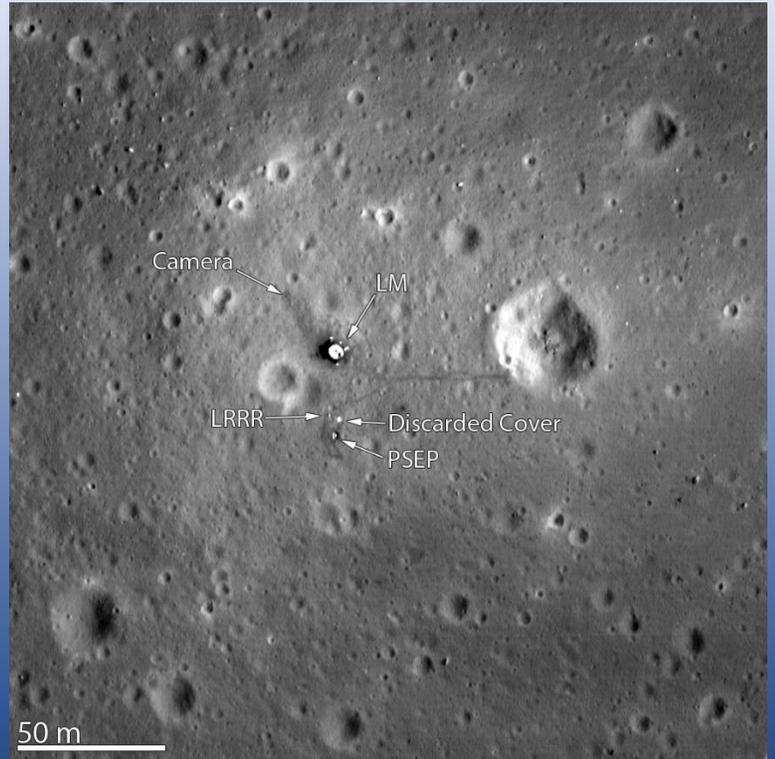
OBSERVE THE MOON AND BEYOND: APOLLO 11 AT 50

By David Prosper

Saturn is at opposition this month, beckoning to future explorers with its beautiful rings and varied, mysterious moons. The **Moon** prominently passes Saturn mid-month, just in time for the 50th anniversary of **Apollo 11!**

Saturn is in opposition on July 9, rising in the east as the Sun sets in the west. It is visible all night, hovering right above the teapot of Sagittarius. Saturn is not nearly as bright as Jupiter, next door in Scorpius, but both giant planets are easily the brightest objects in their constellations, making them easy to identify. A full **Moon** scrapes by the ringed planet late in the evening of the 15th through the early morning of the 16th. Some observers in South America will even see the Moon occult, or pass in front of, Saturn. Observe how fast the Moon moves in relation to Saturn throughout the night by recording their positions every half hour or so via sketches or photos.

While observing the Saturn-Moon celestial dance the early morning of the 16th, you can also contemplate the 50th anniversary of the launch of the **Apollo 11** mission! On June 16, 1969, Apollo 11 blasted off from Cape Canaveral in Florida on a journey of almost a quarter million miles to our nearest celestial neighbor, a mission made possible by the tremendous power of the Saturn V rocket – still the most powerful rocket ever launched. Just a few days later, on July 20, 1969 at 10:56 pm EDT, Neil Armstrong and Buzz Aldrin set foot on the lunar surface and became the first people in history to walk on another world. The astronauts set up equipment including a solar wind sampler, laser ranging retroreflector, and seismometer, and gathered up almost 22 kilograms (48 pounds) of



Earth-based telescopes can't see any equipment left behind at the Apollo 11 landing site, but the cameras onboard NASA's Lunar Reconnaissance Orbiter (LRO) can. This is Tranquility Base as seen from the LRO, just 24 kilometers (15 miles) above the Moon's surface, with helpful labels added by the imaging team. Image Credit: NASA Goddard/Arizona State University. See more landing sites at: bit.ly/ApolloLRO

precious lunar rocks and soil samples. After spending less than a day on the Moon's surface, the duo blasted off and returned to the orbiting Columbia Command Module, piloted by Michael Collins. Just a few days later, on July 24, all three astronauts splashed down safely in the Pacific Ocean. You can follow the timeline of the Apollo 11 mission in greater detail at bit.ly/TimelineApollo11 and dig deep into mission history and science on NASA's **Apollo History Site**: bit.ly/ApolloNASA.

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Have you ever wanted to see the flag on the Moon left behind by the Apollo astronauts? While no telescope on Earth is powerful enough to see any items left behind the landing sites, you can discover how much you can observe with **the Flag on the Moon** handout: bit.ly/MoonFlag

The Moon

Copernicus

This crater (left) is easy to spot. It formed about 800 million years ago, and is 57 miles (92 km) wide. Note central peaks and terraced walls, caused by impact.

Aristarchus

Young crater. So bright that Sir William Herschel thought it was an active volcano.

Kepler

Small version of Copernicus

Grimaldi

Lava-filled crater is one of the darkest spots you can see on the Moon. It's 145 miles wide (233 km).

Mare Humorum

The Sea of Moisture is about 220 miles (350 km) across. You can spot it with the naked eye. With a telescope, you might notice two craters along its edge.

Tycho

Young crater best seen during a full Moon. Rays of bright material are ejecta blasted out of the crust when a large asteroid struck about 109 million years ago.

Mare Serenitatis

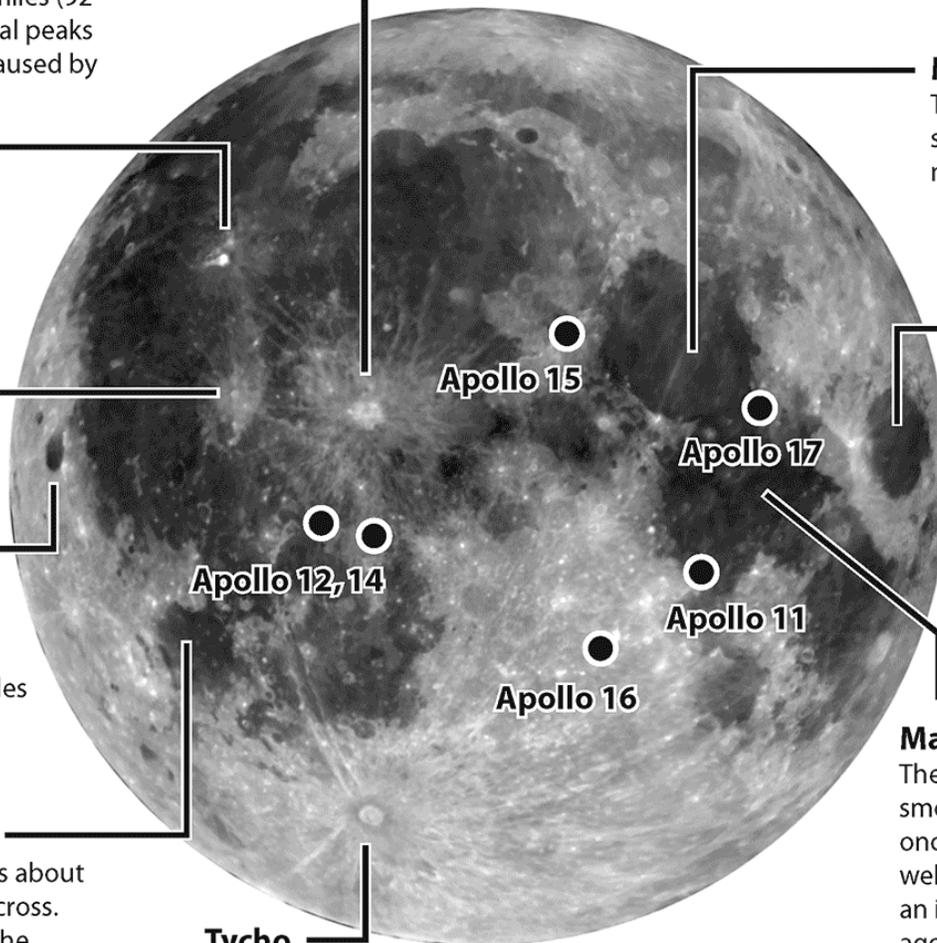
The Sea of Serenity is solid lava, some 380 miles (610 km) across.

Mare Crisium

The Sea of Crisis is about 340 miles wide (550 km) and visible to the naked eye.

Mare Tranquillitatis

The Sea of Tranquility is a smooth plain filled with once-molten lava that welled up from below after an impact billions of years ago. The first humans to walk on the Moon, Apollo 11 astronauts, landed near the edge.



SOURCES: NASA; ADVANCED SKYWATCHING; CAMBRIDGE ATLAS OF ASTRONOMY; DK VISUAL ENCYCLOPEDIA

Photos: James Scala. Layout and text for Moon map used with permission: Robert Roy Britt/SPACE.com.

Observe the larger details on the Moon with help from this map, which also pinpoints the Apollo landing site. Full handout available at bit.ly/MoonHandout

FINDING PLUTO: JUST KEEP BLINKING

By Jeff Goldstein

Ever since I was a teenager, I wanted to see our 9th planet through a telescope. Well, it *was* a planet in the 1960s! I have been interested in astronomy since my father bought me my first 50mm Tasco refractor 10x–60x telescope. I remember seeing the moon, Jupiter, Mars, Saturn, and some double stars, but that’s about it. I had never seen Uranus, Neptune, nor Pluto.

Relatively recently, in 2004, I joined SLOOH remote telescope, located on Mt. Teide in the Canary Islands. At the time it had two domes: a 18” narrow field SCT and a 6” wide field refractor telescope. Each of these were capable of taking spectacular images and saving them to .JPG format. For a \$25 yearly fee, I could target objects of my choice from a list of hundreds of spectacular objects such as all the Messier objects, planets, and many others Deep Sky Objects that I was not even aware. Note: this is a bargain, as the 2019 price has gone up, accordingly.

In March 2005, I set up the SLOOH remote telescope and Pluto was in the menu of targets. I watched the images appear. They all looked like stars. Which one was Pluto? I had absolutely no clue! I had read that Clyde Tombaugh discovered Pluto by “blinking” two of his plates taken a day or so apart. I was amazed to find one of the “stars” had moved. Obviously, it must have been Pluto! It was not in the exact center, but that would be too much to expect, wouldn’t it! Photographing these would require at least a 10” aperture telescope, excellent photographic instruments, and a precise location to several arc-seconds of precision in order to put Pluto within the frame. I used the asterism in Figure 1. Notice it has a quadrilateral shape of relatively brighter stars than the background stars.

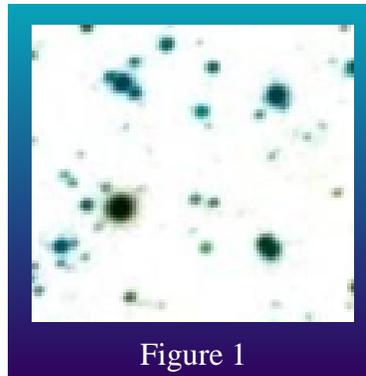


Figure 1

By superimposing this common asterism (I call “quad”), one quickly finds that one image seems to “jump” when compared to hundreds of stars in the other image. This jumping image is the minor planet Pluto. Without using this technique, it would not be possible to differentiate Pluto from the neighboring stars in the same field. Compare figures 2 and figure 3.

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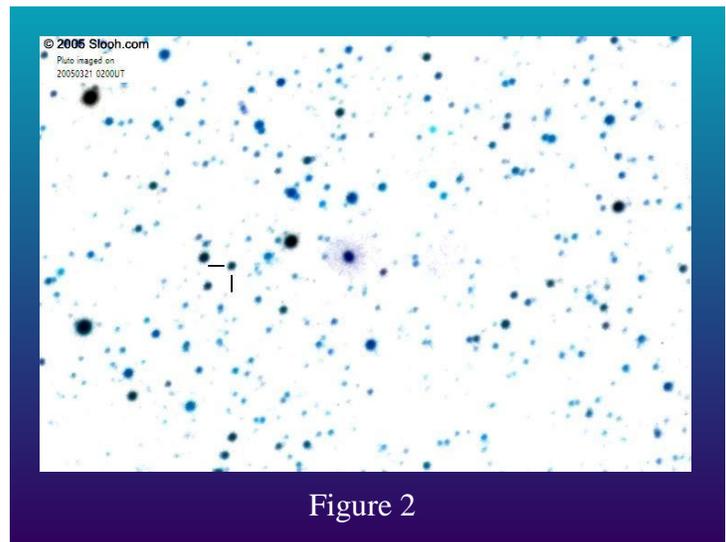


Figure 2

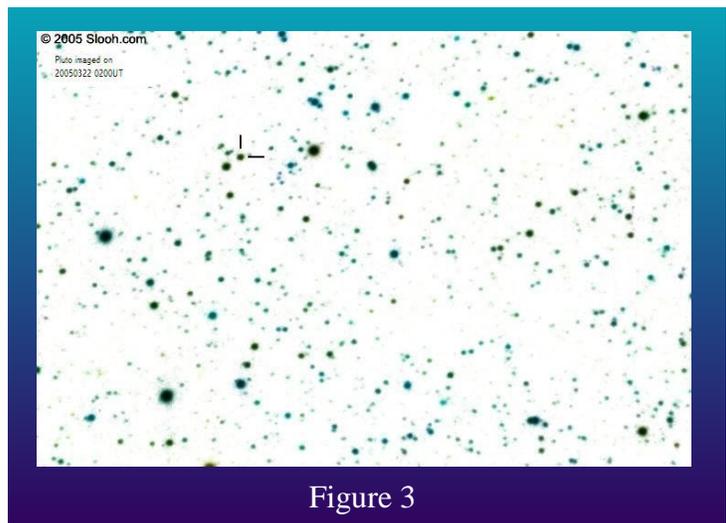


Figure 3



Astronomers Without Borders

ONE PEOPLE + ONE SKY

It's Time To Enter the 2019 Lunar Selfies Contest!

Invite the moon into your portraits! Join our free photo contest providing an opportunity for photographers to take an artistic portrait(s) of the moon anytime during an entire lunar cycle.

The contest runs from February 19, 2019 to July 21, 2019, inspiring young and old alike to go outdoors and record the beautiful silvery-orb of the moon in the sky, framed with objects in the foreground like trees, buildings, sculptures, and people. Have fun and be creative!



Click here for more information and to upload your photo: [Astronomers Without Borders](#)

Winning images will be featured in an online gallery and prizes will be awarded.

Enter soon! Contest Closes on July 21st

Pluto cont'd

Notice the difference in Fig. 2 and Fig. 3 on the previous page. I have already annotated the location of Pluto. It is now possible to see that this star-like object is not a star, but rather the dwarf planet, Pluto. It is only 14th magnitude, and therefore would not be possible to differentiate without star charts down to this magnitude. Even then, it would be most difficult to differentiate between Pluto and a star.

This blinking technique has also been used by astronomers to find asteroids, comets, and other minor planets in our solar system.

Therefore, by using the same well-known “blinking” system that has been used so successfully in the past, we can easily move these pictures into a common application such as a PowerPoint, and successfully find previously undiscovered bodies.

Please email me or ask me questions on this subject at any BBAA Club meeting or at my home email below.

Author contact: JeffGold1@cox.net

Source: www.SLOOH.com

Jeff Goldstein has been an amateur astronomer since age 14 when he was elected President of the Astrogators Astronomy Club of Jacksonville, Florida (58 years ago). In high school he was active in Civil Air Patrol and was very interested in aviation.

Jeff received a Bachelor of Science in Mathematics at Jacksonville University. He flew for the United States Navy for 22 years, retiring as a Lieutenant Commander. While serving in the US Navy, he received his Master's Degree in Systems Analysis at the University of West Florida. Following his Navy career, Jeff was hired as a Computer Science Instructor at Old Dominion University. After three years, Jeff took a second career with Virginia Beach City Public Schools and taught Mathematics and Computer Science for 21 years. He retired with VBCPS in 2015.

Jeff was the BBAA's Secretary from 2016 through 2019. He has continued to teach Computer Science as an Adjunct Professor at Tidewater Community College, part-time.



Time is Running Out!

Register for ALCon 2019

50th Anniversary of
the First Moon Landing

July 25-29

**Kennedy Space Center and
Southern Skies
Cruise to the Bahamas.**

<https://alcon2019.astroleague.org/>



CLUB MEETING

We met for our monthly meeting on June 6th at TCC Virginia Beach. After normal business, members watched “[Explorer One](#),” a 2008 Jet Propulsion Laboratory production about the first U.S. Satellite that launched from Cape Canaveral.

Full meeting minutes are posted on our [website](#). There will not be a July meeting. Instead, we will meet for our annual club picnic at Elizabeth River Park on July 13th. Please sign up to bring a dish to pass here: [Sign Up Genius](#).

Our next regular club meeting will be held on August 1st and will feature guest presenter, Dr. Kunio Sayanagi of Hampton University.

The Back Bay Amateur Astronomers meet on the first Thursday of each month from 7:30 – 9pm.

Typically, we meet at TCC Virginia Beach on the second floor of **Building J—the Science Building**, in room JC-11. (June meeting will be held in JC-16)

Occasionally, we meet at either TCC’s planetarium on the first floor, or at the Plaza Middle School planetarium.

All meetings are free and open to the public. After normal business, there is usually a presentation.



On Friday, June 14th—despite some pretty unstable seeing conditions from my heavily light polluted front yard in Indian River, and the Moon only being about 11 - 12 degrees to the west—I managed this shot of Jupiter:

Vixen VMC200L, Vixen
SXD2, Highpoint
Scientific 2" ED-2x barlow
and ZWO ASI-178mc
Cooled camera.

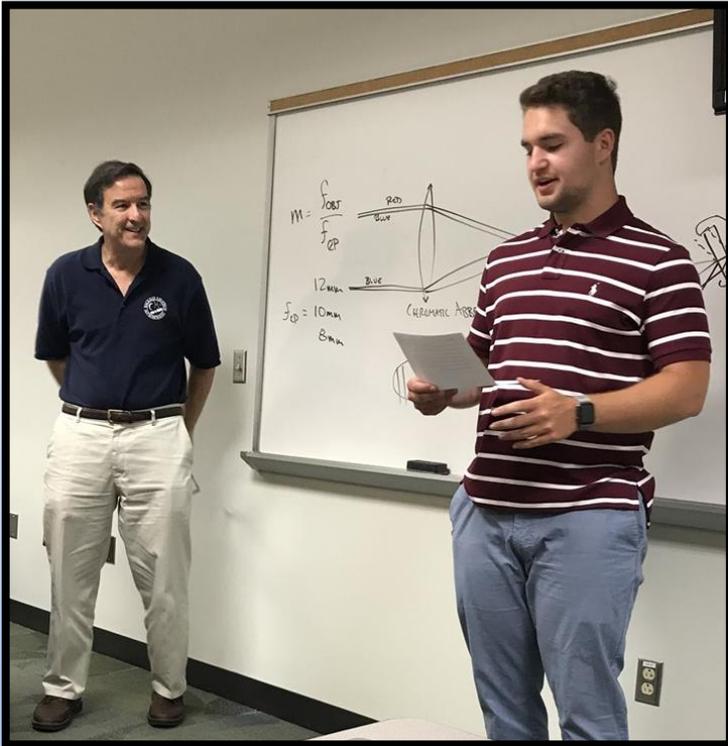
One of these days, I am going to upgrade to a 3x Powermate or maybe the Siebert 3x Barlow for planetary work.

-David Read



2019 Scholarship Recipients

Ben Loyola, chairperson of the BBAA Scholarship Committee, announced the recipients of the BBAA Scholarship and the Georgie June Memorial Scholarship at the June 6th club meeting. Both recipients read their essays aloud and were presented their checks.



Colby Goodwin of Kellam High School, recipient of the BBAA scholarship (\$2000), reads his essay to the club.



Lauren Johansen of Salem High School receives her check in the amount of \$500 for the Georgie June Memorial Scholarship.

Annual Club Picnic

Club members and their guests are invited to join us for our annual club picnic. Come be social, get to know the astronomers with whom you spend so much time under the stars. We'll do some solar viewing and eat plenty of good food.

The BBAA will supply burgers, dogs, and drinks. Members, please bring a dish to pass.

Please follow the link below to SIGN UP so we have a head count, and so we don't get 12 potato salads.

Saturday, July 13th

11AM – 2PM

[Click Here to Sign Up](#)



Jupiter Asteroid Impact Detection Project

Dr. Kunio M. Sayanagi, Ph.D., Associate Professor of Planetary Science Department of Atmospheric and Planetary Sciences at Hampton University, has a research project to image Jupiter in an effort to detect asteroid impacts. He wants to capture and analyze 250 hours of Jupiter imagery of sufficient resolution to be able to detect an asteroid impact. An impact typically lasts for about 1 second, and analyzing several sequenced images with sufficient resolution will reveal it.

Impacts can be detected with amateur grade telescopes and cameras, thus with the right tools anyone can contribute to this research project. All imagery will be accepted!

While any video (high speed images) can be used and will be accepted for analysis, there are some parameters that will enhance the odds of capturing an impact and to detect it using the impact detection software.

If you have done any Jupiter imaging so far, let [Ben Loyola](mailto:Benito@Loyola.com) (Benito@Loyola.com) know so he can forward the files or link to Dr. Sayanagi.

We have also been asked to forward video to the Planetary Virtual Observatory and Laboratory which also has an impact detection software DeTeCt: [Planetary Virtual Observatory and Laboratory Website](#).

Quick Start Guide:

The magic starts in getting the focal length of your set up to match up with the camera pixel size to get Jupiter across at least 120 pixels. In nearly every case, between a 1.5 - 3x Barlow will get you there with most telescopes.

The one you use can be calculated by using this formula:

Barlow Magnification = 825 x camera pixel size in microns / telescope focal length.

Continued next page

Left: The bright, two-second flareup appears near Jupiter's left (celestial west) limb in this frame from a video that Anthony Wesley was recording at 20:31:29 UT June 3, 2010.

Watch the video on YouTube here:

[Jupiter Impact video by Anthony Wesley](#)



Jupiter + Fireball

Anthony Wesley, Broken Hill Australia
3 Jun 2010 20:31.6 Z CMI 299 CMII 33 CMIII 209

Jupiter cont'd

- Just insert the Barlow on your telescope, then the camera into the Barlow.
- For the capture session, get your telescope out for at least 30 minutes to get it equalized with the outside temperature.
- Use a regular eyepiece if that is easier and get a decent 2-star or polar alignment depending on your mount.
- If your camera comes with driver and capture software follow the "Read Me" instructions and install both. Once you connect the camera via USB and run the software you should be able to connect to the camera.
- With your software running, adjust the exposure and gain to see stars by adjusting the focus. Then move to a bright star near Jupiter. There, take your time to get your focus as best you can, *then* move the scope to Jupiter. Due to atmospheric Jupiter will still look a bit out of focus, but if you got a good star focus you will be fine.
- Your alignment will drift over time. Not to worry. Just use your manual or electronic controller to keep it centered as best you can. An occasional move will not hurt your data capturing several frames per second.

- Adjust the gain and exposure time as to not saturate Jupiter. It should be bright enough to see the bands, especially when it captures an occasional good still image (not so disturbed by atmospheric).
 - Your camera should save the images as an AVI or SER video file or sequentially numbered JPG images. Run a short capture then go to your default folder and check to make sure all is working. If all looks good, run the capture for as long as you can. You can break it up into blocks of several minutes.
 - Imaging through thin clouds, haze, and near the Moon shouldn't be an issue and there is still plenty of good data captured. The impact detection software is much more forgiving than regular astrophotography.
 - Once you have the data, you will upload it to the folder Dr. Kunio Sayanagi has created, and can run the DeTeCt software locally and forward the report.
 - There are plenty of YouTube videos out there that will walk you through all of this in more detail depending on the camera and mount you have.
 - If you have any issues, you can utilize our club's [Yahoo Group](#) for further guidance.
- Clear skies.

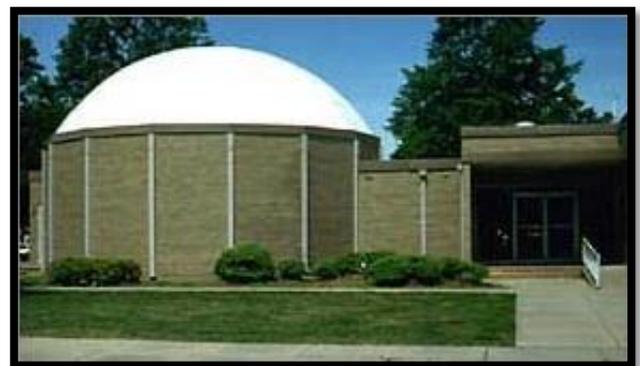
by Ben Loyola

For more information and details, please visit the full [Jupiter Asteroid Impact Detection page](#) on our website.



Our friends at VPAS (Virginia Peninsula Astronomy/Stargazers) offer free star gazing at the Virginia Living Museum, beginning at sunset on **the second Saturday of every month.**

<https://thevlm.org/events/planetarium-shows/evening/>



The Chesapeake Planetarium offers free programs to the general public on Thursday nights at 8:00.

For reservations call Chesapeake Public Schools between 8:00 a.m. and 4:00 p.m. weekdays. (757-547-0153) For more details, visit: <https://cpschools.com/planetarium/public-programs/>

BRINGING ASTRONOMY TO THE PEOPLE *of Hampton Roads*



The Back Bay Amateur Astronomers, Inc. is a 501(c)(3) nonprofit organization dedicated to astronomy outreach.

We are a 100% volunteer-run organization that relies on our dedicated members to *“bring astronomy to the people of Hampton Roads.”*

Anyone who has volunteered at one of our events can tell you that it is incredibly rewarding to show the moon to someone who has never seen it through a telescope. You never know whom you’ll inspire to become the next great astrophysicist. At the very least, you may instill within someone a passion to look up at the sky.

Please help us achieve our mission and sign up to volunteer. **All experience levels welcome.**

See our monthly [calendar](#) for events.



Cloudy... with a Chance of Sucker Holes

We were clouded out for our second Boardwalk Astronomy, but that didn’t stop these optimistic astronomers from setting up at 24th Street. Our next boardwalk event is on July 9th.

Garden Stars



Partly cloudy skies and a gibbous moon did not disappoint for the June 11th Garden Stars at Norfolk Botanical Gardens.



We had several members support Garden Stars in June, including youth volunteer, Samantha.



MAKING CONTACT

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Virginia Beach, VA 23450

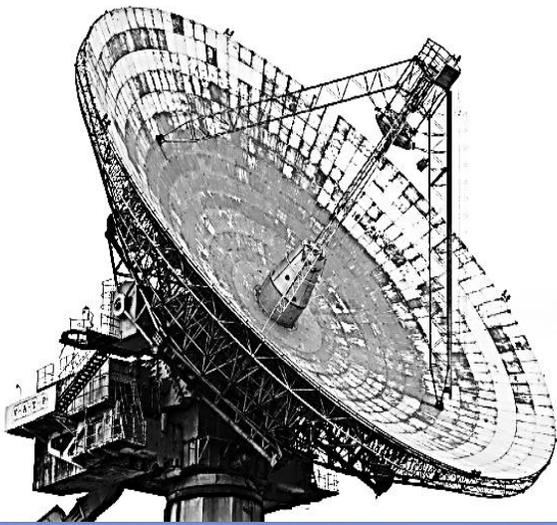
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TELL US ABOUT IT!

Whether you're a seasoned astro-photographer or a beginner enjoying your first view through a telescope, we'd love to hear about your experience at club events or doing astronomy-related activities on your own. Please submit your articles and/or photographs for publication in the Observer.

Email editor@backbayastro.org

Upcoming BBAA Events

July

Jul 5	Dusk-dawn	Cornland Park, Chesapeake	Cornwatch	BBAA members-only observing
Jul 6	dusk-dawn	Chippokes Plantation State Park, Surry	Nightwatch	BBAA members-only observing
Jul 9	6-11PM	24 th Street Boardwalk, Virginia Beach	Boardwalk Astronomy	Public observing
Jul 10	3-4PM	Currituck County Public Library, Barco, NC	Summer Reading “Universer of Stories”	Kids grades K-5 presentation, solar viewing
Jul 12	5-9:30PM	The Muse Writers Center, Norfolk	Ghent Market Summer Party	Public observing
Jul 13	11AM-2PM	Elizabeth River Park, Chesapeake	BBAA Annual Summer Picnic	Members-only and their guests, dish-to-pass picnic
Jul 16	9-11AM	Deep Creek Academy, Chesapeake	DCA Summer Camp	Solar viewing for campers
Jul 17	10:30- 11:30AM	Oceanfront Area Library, VB	Sun Safety and Observing	Public solar viewing
Jul 18	6:30- 9:30PM	Croc’s 19 th Street Bistro, VB	WHRO Apollo 11 Commemoration	Public observing
Jul 19	2-3PM	Kempsville Area Library, VB	Sun Safety and Observing	Public solar viewing
Jul 20	10AM-1PM	Elizabeth River Park, Chesapeake	Saturday “SUN”day	Public solar viewing
Jul 26	Dusk-Dawn	Cornland Park, Chesapeake	Cornwatch	BBAA members-only observing
Jul 27	8PM-12AM	Northwest River Park, Chesapeake	Skywatch	Public observing

August

Aug 1	7:30-9PM	TCC Virginia Beach, Science Bldg J	BBAA Club Meeting	Club business, then presentation by Dr. Kunio Sayanagi
Aug 2	Dusk-Dawn	Cornland Park, Chesapeake	Cornwatch	BBAA members-only observing
Aug 6	3-4PM	Windsor Woods Area Library, VB	Sun Safety and Observing	Public solar viewing
Aug 8	8:30-10PM	Norfolk Botanical Gardens	Garden Stars	Public observing
Aug 13	6-11PM	24 th Street Boardwalk, Virginia Beach	Boardwalk Astronomy	Public observing

Check for details, updates, cancellations, and more on our website

www.backbayastro.org

Click on our [event calendar](#).