



OBSERVER

May 2020

Bringing Stars to the eyes of Tulsa since 1937

Editor – John Land



Member Adam Koloff contributes beautiful wide angle starry night photo taken Sunday morning March 29. The photo was taken a Tom Steed reservoir near Lawton. Using a Canon T7 camera with a 10mm wide angle Rokinon lens and a 13 second exposure at ISO was 3200. He used his cell phone light to paint the foreground trees with light to create this pleasing aesthetic effect. If you examine the photo carefully you can see Scorpius rising above the limb of the tree on the far right. The brightest star above it is Antares.

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The MidStates Astronomy convention scheduled for June 2020 has been **CANCELLED** due to the uncertainty of the ongoing covid-19 health crisis made planning and facility reservations too uncertain to proceed.

We hope to give you information concerning plans for the 2021 MidStates event later in the fall when they become available.

*National ALCON 2020 is **CLOSED**. Due to the pandemic, It has been rescheduled for August 4th - 7th, 2021 Still to be held in Albuquerque, New Mexico*



Astronomy Club Events

Details at <http://astrotulsa.com/Events.aspx>

Public Events for May are suspended

Our ACT is currently meeting to
Formulated plans for phased in
Member Observing opportunities in May

And

The format of Public Observing during the Summer

Check our website www.AstroTulsa.com events section for updates

All plans are subject to Health Guidelines of State and Local agencies.

PRESIDENT'S MESSAGE

BY TAMARA GREEN



Hey Y'all!

The Club officers and Board had a brief meeting via Zoom on Saturday, April 18. The topic of discussion was what to do with the public and members-only events in the coming weeks.

The Governor is supposed to give all of us Oklahomans an update on the COVID-19 crisis at the end of April, so these events are subject to Governor Stitt's decision on whether or not to extend the shelter-in-place order.

The General Meeting that was originally scheduled for Friday, May 1 has been cancelled due to the schools being closed until the start of the new school year. Also, Sidewalk Astronomy at Bass Pro, originally scheduled for Saturday, May 2, has also been cancelled due to the statewide ban on social and public gatherings of 10 or more people. Public Night, originally scheduled for Saturday, May 16 is also cancelled for the same reasons. Basically, we are not planning public events for May.

DEPENDING ON THE GOVERNOR'S DECISION ON WHETHER OR NOT TO LIFT THE BAN ON SOCIAL GATHERINGS AND WHETHER OR NOT TO LIFT THE SHELTER-IN-PLACE ORDER

WE ARE ACTIVELY MAKING PLANS FOR MEMBERS ONLY OBSERVING OPPORTUNITIES IN MAY ! These will involve some sort of phased in social distancing guidelines. Once we have fully decided on the details, we will be sending out specific details to our members.

Please keep in mind that all of this depends on the Governor's decision. As soon as we know for sure whether or not to open the observatory for members' nights again, we will let you all know. We will be meeting again shortly in early May.

I know that our hobbies are very important for the preservation of our mental health, and we as a board are going to do whatever we can to provide you with opportunities to go out and observe. It is our hope that this worldwide health crisis will go away soon.

As far as June events are concerned, we do not know at this time how those will be handled. We as a board will be meeting from time to time to discuss things as we receive news of further developments. So please stay tuned.

Clear Skies,

Tamara Green

May Sky Show – Planets, Meteors and Comets

May Moon Phases	Full	3 rd Quarter	New	1 st Quarter
	Thurs 7	Thurs 14	Fri 22	Fri 29



Feeling isolated – “locked down” and stuck at home?

Here are some stories of astronomers who used their time
In similar situations to advance science.

[Science Wizards working from home](#)



Say Farewell to Venus

Very bright Venus has been our evening “star” since early November. On June 3 it will pass between Earth and the Sun (inferior conjunction) and then will start appearing as our morning star in late June.

When you look at Venus in a telescope you will see that it too has phases like the moon. Galileo first observed these phases during 1610 and used it as one of his proofs that planets orbit the Sun and not the Earth. Now is a great time to observe Venus’ phases. As it swings around between Earth and Sun it appears larger and its phase shrinks rapidly toward a very thin crescent. This crescent phase can be seen even in binoculars if you hold them steady. Its best to observe soon after sunset when the contrast with the bright Venus and the sky are better. If you observe with a telescope, try using a moon filter.

Venus is sinking rapidly lower each evening. On May 1 it is 26 degrees up in the west at 9:00 PM by May 21 it will be only 11 degrees up.

On **May 21 & 22 Venus passes about a degree left of Mercury.** They are joined by the **thin crescent moon on May 23 & 24.** You will need a good low horizon and likely binoculars to find Mercury. Mercury continues to rise high each evening reaching its highest of only 15 degrees June 4th. Mercury also has phases, but they are much more challenging to observe. How late into May can you see Venus?

(Caution: be sure the sun is completely below the horizon for this challenge.) [Phases of Venus](#)



Morning Planets - Jupiter, Saturn rise by 2:00 AM the SE in early May but are best visible between 3:30 and 5:30 AM By the end of May they rise shortly after midnight and are visible for several hours. However, **Mars** will rapidly separate from the pair toward the east. The moon joins Jupiter & Saturn May 12th and Mars on May 15th.



Fragments of Comet Halley will streak through our morning sky during the **Eta Aquarid Meteor** shower peaking on May 6th. Best time to observe will be around 3:30 to 5:00 AM In dark sky this shower can produce a good show. Sadly, this year a bright nearly full moon will still be up in the SW. Look for them low in the SE to the left of Mars.



Happy Birthday Hubble Space Telescope

The Hubble telescope was launched on April 24, 1990

Celebrate the Hubble Telescope's 30th Birthday with a one hour recording of a webinar https://youtu.be/VBJ_JJbAGWE



May 27, 2020 First American astronauts will be launched on American soil on an American rocket for the first time since the end of the Space Shuttle program in 2011. Doug Hurley and Bob Behnken, two veterans of the Space Shuttle program, will ride SpaceX's Crew Dragon spacecraft to the ISS on top of a Falcon 9 rocket from pad 39A at NASA's Kennedy Space Center in Florida.

See more details and a great video at [First Dragon Crew](#) Spaceflight Thanks to Abbie Bollenbach of the Bartlesville Youth Astronomers for sharing this link.



FOUR Comets traverse the May skies. [Charts & Details at Sky & Telescope](#)

You can find excellent current observation data and orbit details on these comet at [Gideon van Buitenen's](http://astro.vanbuitenen.nl/comets) very excellent page <http://astro.vanbuitenen.nl/comets>

Comet **PanSTARRS (C/2017 T2)** is circumpolar in May. Currently at 8th magnitude it is moving from through the constellation of Camelopardalis into Ursa Major. On May 23 it passes within 1 degree of the well known galaxies M 81-82, By June 3-5 it skims by the beautiful double star Dubhe in the tip of the Big Dippers' bowl.



Comet ATLAS C/ 2019 Y4 that earlier looked to put on a good show this spring is disintegrating. ☹️ Guess that's what we get when we let a mountain size dirty snowball get too close to the Sun. This Hubble [telescope image](#) from April 20 clearly shows multiple fragments. Observers are still reporting it at about 10th mag at the end of April. Amateur imagers are posting images of the fragments too. Look for it near 4th mag Beta Camelopardalis May 1st

8th mag Comet **ATLAS C/ 2019 Y1** is also circumpolar. It passes 6 degrees left of Polaris May 1st and continues along a track toward the Big Dipper by mid-May. Surprisingly it mirrors the path of comet Y4 passing near M 81-82 May 13 and only 1/4 degree from Dubhe May 20.



Morning Comet - Astronomers in Australia are reporting a newly discovered **Comet C/2020 F8**. Currently at mag 8, it is predicted to **reach mag 3.5 by mid-May**. You'll need to find a pot with a clear view to the E – NE horizon before dawn. Look for it 8 to 10 degrees above the horizon and hour before dawn (5:00 AM) Its track takes it rapidly past Triangulum to Perseus May 12 to 20 A half degree from Algal in Perseus on May 20.



New Sunspots appearing from Solar Cycle 25

Solar Cycles 23 and 24 have shown some of the lowest activity since the early 1900's Solar cycle 23 had 801 days without sunspots - lowest since about 1910 The current cycle 24 has also been low 728 days so far and activity is still low. But a few members of cycle 25 have started to appear this year. See more at [TWO SOLAR CYCLES ARE ACTIVE AT ONCE](#)



< Space X
Starlink
Satellites

International >
Space Station
pass over



Learning the “Sport” of Satellite Tracking for Fun and Science

by John Land and Brad Young

Frequently at our public observing events seeing a bright satellite passing overhead is a highlight of the event. Watching the International Space Station passed or the bright flares of an Iridium satellite spark excited conversations. During these days of “Safer at Home” I’ve been enjoying Virtual Star Parties with my grandkids who live about 20 miles away. On our first event we saw a string of 15 or more of the SpaceX Starlink satellites going over. My 8 year old granddaughter exclaimed *“This is better than Technology”!*

Watching satellites can also be a teaching experience. You can explain that we see the satellite because their orbits are so high that sunlight is reflecting off their bright surfaces down to us. Sometimes a satellite will flare becoming very bright for a few seconds. This happens when sunlight hitting their solar power panels acts like a giant mirror shining directly at the observer. As the satellites travel overhead they often fade out and disappear as they travel eastward. This happens as the satellite travels into the Earth’s own shadow.

There are two general patterns of their orbits. **Polar Orbits** – they travel S to N or N to S. Many of these are observing the earth for scientific purposes (or “Spy” satellites) The other group travel from a **westward direction toward the east**. The ISS and HST are examples of these. They launch toward the east to take advantage of Earth’s already rapid rotation to the east giving them an extra 850+ mph boost into orbit. Lastly how fast the satellite is moving through the stars gives you a clue to how high it is orbiting. The slower its motion – the higher the orbit.

When and Where to Look – There are many resources to finding satellite predictions.

<https://www.heavens-above.com/> Has information on all sorts of satellites. You can choose the ISS, HST, Starlink groups or just ask all satellites tonight and set a visible magnitude. It gives you times, direction, Altitude Magnitude and link to a star chart map.

When you first open the site, you **MUST CHOOSE YOUR OBSERVING LOCATION** or you can even set up a login to go directly there each time you open.

<https://in-the-sky.org/satpasses.php> also shows a list of visible satellites – not quite as selective but good choice.

See a Satellite Tonight - **Great and Simple Site to finding Starlink** satellite passages.

Site automatically picks up your device IP location or you can choose one. Tells you the times to look for your location. Has great animation of how they will appear in the sky.

<https://spotthestation.nasa.gov/sightings/> **NASA** site for tracking the Space Station.

There are many other sites and free phone apps for finding the ISS and satellites.

See a [StarLink Video pass](#)

How will Starlink Satellites Impact Astronomy? - Observers Wanted !

The goal of the Starlink satellite project by Space X Corp is to provide worldwide Internet access regardless of one's location on Earth. Having received authorization by the FCC they began launching 60 satellites at a time on their Falcon 9 rockets on May 24, 2019. The 7th launch took place on April 22, 2020 bringing the total number now in orbit to 422. Their initial phase I goal is 12,000 with final plans as high as **30,000** ! Obviously, astronomers are greatly concerned about the impact of so many low orbit satellites blanketing the sky. See a great explanation from and [Real Engineering link](#)

At our March 2020 meeting member **BRAD YOUNG** presented a program on how observers using nothing more than naked eye observations and recording the time and magnitude can contribute valuable data to about the objects orbiting our planet. Initially formed to track space debris they are now collecting data on the Starlink satellites. To be fair Space X has not turned a blind eye to the concerns of science. They have begun trying new designs with lower reflectivity but the success of that is still to be determined. That's where YOU COME IN ! - your knowledge of the night sky and observing skills can provide scientifically useful data.

Brad Young Writes - I know that Trusat's main purpose is to track satellite positions. However, as many of you have probably heard, there is some debate as to the brightness the Starlink satellites as they are being launched into ultimately a constellation of world girdling orbits. You can make valuable observations of these even if you can't pinpoint the position.

For instance, I have been printing out the nightly list of visible satellites from heavens-above.com and comparing satellite magnitudes I observe vs. what is predicted at the highest point in the path of a satellite (culmination). Even if you're not comfortable making brightness reports, it would be very valuable if you report whether or not it flared up very brightly for a short time, or just stayed steady the entire pass.

Then for your report to TruSat, you can just pick off the altitude and direction from the list, and then type in a magnitude, or just whether it flared or not in the optical behavior or notes part of the form. And don't forget, imaging is certainly a great way to record them also. It's a little harder to determine their brightness from the trails they leave as they pass across the sky, but with practice you can certainly do this to. And, you can easily tell if they flared up or not from the image.

This would be very helpful in gathering more data on these fascinating satellites. And if you don't choose to report them here, at least go out and look at them, because they can be very interesting to watch as they pass across the sky.

Report your findings to <https://trusat.org/> or sat newbie friendly FaceBook Group "[So you Want to Track Satellites](#)"

12" Meade LX 90 GPS Telescope for Sale **Contact Eric at erickingery@cox.net**



Purchased in 2007 the scope is in virtually brand-new condition. It's only been used 3-4 times. I also have the original shipping case and the manual. As a retiree I'm looking for something more portable.



TREASURER'S and MEMBERSHIP Report

BY JOHN NEWTON



As April 20, 2020, the Astronomy Club of Tulsa has **154 members**

We welcome our newest members **Marjorie Satterfield** and **Matt Housley**

'Thank You!' also goes out to our long-term members for their continued membership, commitment to the club and support as we go through this unprecedented time.

Please be aware that in this era of the Novel Coronavirus (COVID-19) outbreak, we appreciate your patience as we all get through this together. Access our website to learn about event status and to links related to astronomical resources (www.astrotulsa.com).

Accounts as of April 20, 2020

Checking: \$ 7,947.81

Savings: \$ 5,784.05

Investments: \$ 22,762.05 (Value tends to fluctuate with markets).

The club now has PayPal available for you to start or renew memberships and subscriptions using your credit or debit cards. Fill out the registration form at <http://astrotulsa.com/page.aspx?pageid=16> **Click Submit** and you will be given the choice of either **mailing in your dues** with a check or using **PayPal** which accepts most major credit cards. A modest processing fee is added to PayPal transactions.

You may also renew your membership or join at one of our club events using your credit card by seeing one of our officers. We can take payments with the Square card reader. A small fee is also added on to these transactions.

ALSO NOTE: For our current members who are renewing their memberships, you can now go to a new link on the website to start your renewal process. On the home page, hover over the "Member" tab on the ribbon menu near the top of the page. Then select the "Membership Renewal" link and this will take to a page to fill out your information. Fill this out, submit it, then pay your dues by whatever method you choose.

NEWS NOTE: Both Sky & Telescope and Astronomy have free Digital subscriptions available with print subscriptions, or Digital subscriptions may be purchased separately. Details - Contact their websites

Membership rates for **2020** are as follows:

Adults: \$ 45 per year, includes Astronomical League Membership.

Sr. Adult: \$ 35 per year for those 65 or older, includes Astro League Membership.

Students: \$ 30 with League membership; Students: \$ 25 without League membership.

Additional Family membership: \$ 20 with voting rights and League membership.

\$ 15 with voting rights but without League Membership.

The regular membership allows all members in the family to participate in club events but only ONE Voting Membership and one Astronomical League membership.

Join Online – Add or renew magazine subscriptions.

<http://www.astrotulsa.com/page.aspx?pageid=16>

Magazine Subscriptions: If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Forms are available on the club website.

Astronomy is \$ 34 for 1 year, or \$ 60 for 2 years. www.astronomy.com

To get the club discount you must go through the club group rate.

Sky & Telescope is \$ 33 per year www.skyandtelescope.com

Sky & Telescope also offers a 10% discount on their products.

You may renew Sky & Telescope subscriptions directly by calling their number -**be sure to ask for the club rate.**

You are invited to come join us to learn more about Astronomy and view the wonderful sights in the night sky.

Check our Events Page of Dates [Link to Events Page](#)



During the school year our club holds a **Monthly General Club meetings** at **Jenks Public Schools Planetarium**
105 East B St, Jenks, OK
Located North of the intersection of 1st and B St
Meetings begin at 7:00 PM

Take the elevator to the 3rd floor.

[Click for Google Map Link](#)

2020 See the [Fall Planetarium Show Schedule](#)
Then click the **Date Column** to sort them by show date



Sidewalk Astronomy Night

East side of Bass Pro in Broken Arrow near the lake.
101 Bass Pro Drive, Broken Arrow, OK

[Click Map Link here](#)

On a Saturday evening near the 1st Quarter moon Astronomy Club volunteers set up telescopes to share views of the moon, planets and other bright objects. It's a come and go event where shoppers and restaurant goers get a chance to experience glimpses of the universe with their own eyes.



ASTRONOMY CLUB OBSERVATORY

Located on a hilltop about 25 miles SW of Tulsa
Features: classroom, restroom, dome with 14-inch telescope and an acre to set up your telescopes.

Weather permitting, we host two types of observing nights.

PUBLIC OBSERVING NIGHT on a Saturday

This event is open to individuals and families.
Club members set up telescope for public viewing.

* Groups need to make separate arrangements.

MEMBERS OBSERVING NIGHT usually on a Friday near new moon
Reserved for club members and their families to allow them to pursue observing projects.

The Observatory is **ONLY OPEN** for SCHEDULED EVENTS. [Link to Events Page](#)
[Click for Observatory Map](#)

CAUTION: **DO NOT** use GPS it will likely send you on some nearly impassible back roads.

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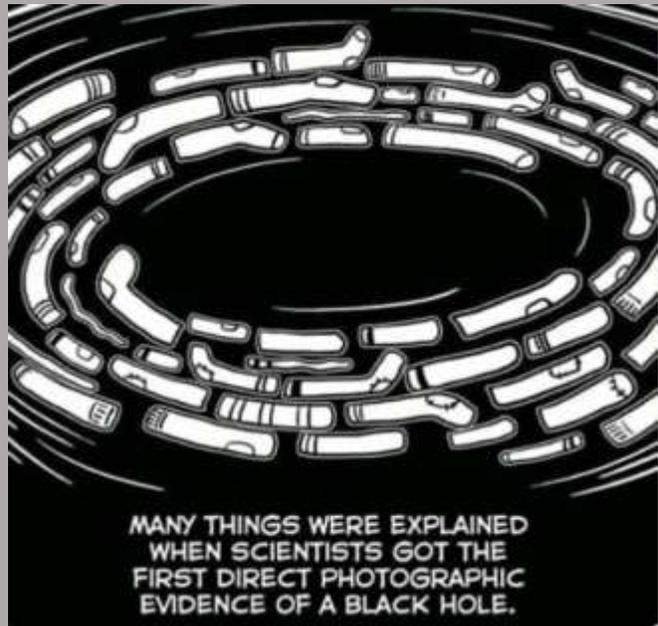
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WEBMASTER JENNIFER JONES

From an anonymous FaceBook post



**Tired of Jokes ReRUNS
Create a Cartoon or Funny line
with an Astronomy theme
and Send in your Best Ones !**

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