



OBSERVER

February 2018

Bringing Stars to the eyes of Tulsa since 1937



Our January 6 Telescope Workshop at TASM was a great success

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EDITOR – JOHN LAND

Astronomy Club Events

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

FEBRUARY			
PUBLIC NIGHT	SAT FEB 10	5:30 PM	ACT OBSERVATORY
VALENTINE'S DAY	WED FEB 14		
MEMBERS' NIGHT	FRI FEB 16	6:00 PM	ACT OBSERVATORY
MEMBERS' BACKUP NIGHT	SAT FEB 17	6:00 PM	ACT OBSERVATORY
PRESIDENT'S STAR NIGHT	MON FEB 19	6:45 PM	TULSA AIR MUSEUM
GENERAL MEETING	FRI FEB 23	7:00 PM	JENKS PLANETARIUM
SIDEWALK ASTRONOMY	SAT FEB 24	5:15 PM	BASS PRO
MARCH			
PUBLIC NIGHT	SAT MAR 10	6:00 PM	ACT OBSERVATORY
DAYLIGHT SAVING TIME BEGINS SUNDAY, MARCH 11.			
MEMBERS' NIGHT	FRI MAR 16	7:30 PM	ACT OBSERVATORY
ST. PATRICK'S DAY	SAT MAR 17		
MESSIER MARATHON	SAT MAR 17	TBA	TUVA
VERNAL EQUINOX	TUES MAR 20		
SIDEWALK ASTRONOMY	SAT MAR 24	6:30 PM	BASS PRO
GENERAL MEETING	FRI MAR 30	7:00 PM	JENKS PLANETARIUM

2018 Moon Phases Calendar	
Jan	1:○, 8:●, 16:●, 24:○, 31:○
Feb	7:○, 15:●, 23:○
Mar	1:○, 9:○, 17:●, 24:○, 31:○
Apr	8:○, 15:●, 22:○, 29:○
May	7:○, 15:●, 21:○, 29:○
Jun	6:○, 13:●, 20:○, 27:○
Jul	6:○, 12:●, 19:○, 27:○
Aug	4:○, 11:●, 18:○, 26:○
Sep	2:○, 9:●, 16:○, 24:○
Oct	2:○, 8:●, 16:○, 24:○, 31:○
Nov	7:●, 15:○, 22:○, 29:○
Dec	7:●, 15:○, 22:○, 29:○

Planets in February

Jupiter rising about 1:00 AM by mid-month Jupiter is well up in the south an hour before sunrise. Heading for a May 8th opposition Jupiter will begin its retrograde motion in Libra in early March. **Mars** and its look alike rival, the star Antares put on a nice show in the SE sky. **Saturn** in the SE is slowly creeping out to the dawn twilight and well better visible by March. **Venus** and **Mercury** are near the Sun in early February but will become visible in the SW after sunset by month's end. They are in conjunction March 3rd.



A Valentines Celestial Rivalry in the stars.

The bright star Antares in Scorpio name means “Rival of Mars” It gets its name because its red orange color resembles the planet Mars. In the morning sky during February Mars is passing through the constellation of Scorpio giving viewers and excellent opportunity to compare them.

As February opens Mars is in the upper arm of Scorpio. During the week of Valentines pass within Five Degrees apart. To observe Mars and Antares in dark skies look for the pair in the SE sky before 6:00 AM. Compare their color and see if you can tell which one is brighter. The moon passes nearby Feb 9th.

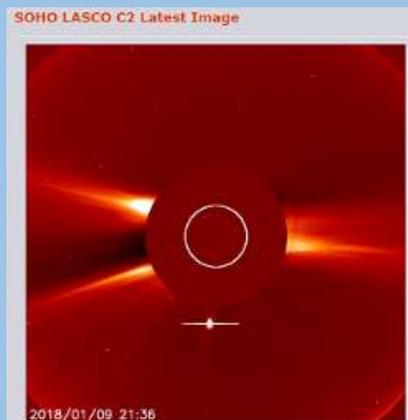
Mars gets its reddish color from its iron rich soil. During February it shines at 1st magnitude at a distance of 1.54 AU (143 million miles) Antares is a super red giant star with a diameter about 500 times larger than the Sun and 9100 times brighter than the Sun. At its distance of 550 Light years it also appears as a 1st magnitude star. Mars reaches opposition July 26 making its closest approach to Earth since 2003. During July it will reach magnitude -2.8 even outshining Jupiter.

Venus at Superior conjunction.

On Jan 9, 2018 at 3:36 PM Tulsa time, Venus passed on the opposite side of the Sun from the Earth. This is called **Superior conjunction**. During most of 2017 Venus has been the "morning star" by the end of February Venus will be become visible in the west after sunset and become 2018's "evening Star"

The image on the left of the Sun was taken with the SOHO (Solar and Heliospheric Observatory) A central occultation disc hides the sun allowing images of the Sun's outer atmosphere, the Corona. The white circle on the center disc shows the size of the Sun. Just below the Sun we can see Venus passing below the Sun on the opposite side from Earth.

On June 5, 2012 the planet Venus was at **Inferior conjunction** passing between the Earth and the Sun. In the image on the right the black dot is the Venus. It shows a rare **Transit of Venus** as it passes directly in front of the Sun. Venus' orbit is inclined slightly to the Earth's orbit and normally passes above or below the Sun as in the left image. But when the nodes of its orbit line up perfectly with the Sun and it passes directly in front of it. The last pair of transits took place June 8, 2004 and June 5, 2012. There is a 105.5 year wait for the next pair Dec 10, 2117 and Dec 8, 2125. Only the 2125 transit will be visible from Oklahoma. So leave you great grandchildren a time capsule to share your astronomical delights with future generations. Member Stan Davis took the right image of the Venus Transit in 2012.



No Full Moon in February 2018



There will be no Full Moon the month of February this year. January had a full moon on Jan 1st and again on Jan 31st. Hopefully you got to see part of the Lunar Eclipse just before dawn on the 31st. The lunar phase cycle from one Full Moon to the next averages around 29.5 days. But since the moon and Earth both travel in elliptical orbits at independent rates the exact time the two line up with the Sun to produce a Full Moon varies a by a few hours. Since February only has 28 days this year, the next Full Moon won't occur until March 1st.

Interestingly March will have another Full Moon on the 31st. There are 12 lunar months in 354 days causing the dates of the lunar phases to drift backwards through the calendar each succeeding year. Doing a little research I found there were no Full Moons in February 1980, 1999, 2018 and 2037. Also Lunar Eclipses occurred on Jan 31st of 1999, 2018 and 2037.

One popular definition of a “**Blue Moon**” is the second full moon occurring in the same calendar month. So by that definition both January and March this year have “Blue Moons”. However there is an older less frequently used definition of a “Blue Moon” as the fourth Full Moon in a calendar quarter. So the March 31st Full Moon is a “Blue Moon” by both definitions. Sounds like a good night to be “Singing the Blues” For more about Blue Moons check out the website <https://www.space.com/15455-blue-moon.html>



The Chinese New Year, the **Year of the DOG**, begins **Feb 16th**. The Chinese calendar which is far older than our western Gregorian calendar is based on their Lunar New Year celebration that begins at the new moon that falls between 21 January and 20 February. (in our western calendar) In our 2018 calendar New Moon is on the 15th but since China is across the dateline the date is the 16th. Many ancient cultures calendars marked time by the phases of the moon. Farmers, hunters and travelers used the light of the full moon for activities after sunset. Religious calendars such Jewish and Muslim are also based on the lunar cycle.

https://en.wikipedia.org/wiki/Chinese_New_Year

Data Table from <https://www.timeanddate.com/moon/phases/>

Moon Phases for Tulsa, Oklahoma, USA in 2018									
Showing moon phases for: 2018							Go		
Lunation	New Moon		First Quarter		Full Moon		Third Quarter	Duration	
1175					Jan 1	8:24 pm	Jan 8	4:25 pm	29d 19h 47m
1176	Jan 16	8:17 pm	Jan 24	4:20 pm	Jan 31	7:26 am	Feb 7	9:53 am	29d 18h 48m
1177	Feb 15	3:05 pm	Feb 23	2:09 am	Mar 1	6:51 pm	Mar 9	5:19 am	29d 16h 06m
1178	Mar 17	8:11 am	Mar 24	10:35 am	Mar 31	7:36 am	Apr 8	2:17 am	29d 12h 46m
1179	Apr 15	8:57 pm	Apr 22	4:45 pm	Apr 29	7:58 pm	May 7	9:08 pm	29d 9h 51m
1180	May 15	6:47 am	May 21	10:49 pm	May 29	9:19 am	Jun 6	1:31 pm	29d 7h 55m
1181	Jun 13	2:43 pm	Jun 20	5:50 am	Jun 27	11:53 pm	Jul 6	2:50 am	29d 7h 05m
1182	Jul 12	9:47 pm	Jul 19	2:52 pm	Jul 27	3:20 pm	Aug 4	1:17 pm	29d 7h 10m
1183	Aug 11	4:57 am	Aug 18	2:48 am	Aug 26	6:56 am	Sep 2	9:37 pm	29d 8h 04m
1184	Sep 9	1:01 pm	Sep 16	6:14 pm	Sep 24	9:52 pm	Oct 2	4:45 am	29d 9h 45m
1185	Oct 8	10:46 pm	Oct 16	1:01 pm	Oct 24	11:45 am	Oct 31	11:40 am	29d 12h 15m
1186	Nov 7	10:01 am	Nov 15	8:54 am	Nov 22	11:39 pm	Nov 29	6:18 pm	29d 15h 18m
1187	Dec 7	1:20 am	Dec 15	5:49 am	Dec 22	11:48 am	Dec 29	3:34 am	29d 18h 08m

* All times are local time for Tulsa. Time is adjusted for DST when applicable. They take into account refraction. Dates are based on the Gregorian calendar.

TASM Telescope Workshop

On Saturday Jan 6 our club teamed up with the Tulsa Air and Space Museum to hold a Telescope Workshop for new or novice telescope owners. We had a great turn out! Over 50 groups were helped with their telescopes. Their ages ranged from 9 year olds to almost 80 year olds. We want to thank our 13 club volunteers who spent more than two hours helping our guests.



Jerry Cassidy helps a young astronomer John Moore helps a couple with their reflector



John Land helps an enthusiastic 9 year old with her first telescope.

She has a 70 / 700 mm refractor made by Explore Scientific that carries the National Geographic logo.

**I was very pleased to see three of these good quality affordable beginner scopes
Good optics – eyepieces and sturdy tripod.
Had a nifty device to use a smart phone for images too.**



Steve Farwell adjusts a telescope



Owen Green inspects a Meade ETX

Below a capacity crowd awaits their turn for telescope assistance.





Celebrate President's Day with the Stars



**Tulsa Air & Space Museum Planetarium
Monday Feb. 19, 2018 from 7:00 to 8:30 PM
Doors open at 6:30 – Show starts at 7:00**

Come see a brand new planetarium show



**Then go outside to view the
Moon and Stars
with Telescopes hosted by
members of the
Astronomy Club of Tulsa**



**Admission is only \$5 each
Reserve your seat - Sign Up Today!
Call 918-834-9900 Ext 219 to reserve your spot.
www.tulsaairandspacemuseum.org**

**The Air Museum is open 10 to 4 pm Mon. – Sat.
Come enjoy their many Air & Space exhibits**

PRESIDENT'S MESSAGE

BY TAMARA GREEN

Hey Y'all !

It looks like we finally got the leak at the observatory fixed! We should be up and functional for events now. I want to give a BIG thank you to James Taggart, John Newton, John Moore and anybody else I may have forgotten for their help in getting this done.

We have some exciting events coming up! We have Public Night on Saturday, Feb 10, Members' Night on Friday, Feb 16, our General Meeting on Friday, Feb. 23 (which I will try my best to get a good guest speaker for), and Sidewalk Astronomy at Bass Pro on Saturday, Feb. 24. In addition to those, we have a special event coordinated with Tulsa Air and Space Museum on Monday, Feb. 19, starting at 6:30 PM. It is called "Celebrate President's Day With The Stars". They will be featuring a brand new planetarium show called "Faster Than Light – The Dream of Interstellar Flight", which starts at 7:00 PM. Afterwards, we will have telescopes set up for guests to look through!

Of course, volunteers are needed for the TASM event. If you are interested, please contact John Land at tulsaastrobiz@gmail.com. The more volunteers, the merrier!

Our Messier Marathon is scheduled for Saturday, March 17. There will be a caravan to TUVA, which I will be leading again this year. There will be a potluck dinner before the marathoning begins, so if you would like to, you are welcome to bring a dish or dessert to share. I plan to bring both!

I am also putting together a packet for the Messier Marathon this year. It will include the search sequence, finder charts, and a "things to know" page, plus a map and directions to TUVA for those not interested in the caravan, and a map and directions to the meeting place for the caravan for those who wish to join in.. I will be emailing this to the membership soon. If you do not have e-mail, please get with me and I will make arrangements to mail you a packet if you want to attend the marathon.

And, of course, in the event the March date is rained/clouded out, the backup date will be Saturday, April 14. We might not be able to get all 110 objects that late in the Messier Marathon Season, but even a partial marathon is better than none! Also, if either date is rained/clouded out, we will have our "contingency plan", which is getting together to go eat somewhere. I heard that those who came out to eat with us the last couple of times really liked Taqueria La Cabana!

I hope that you all will be able to come out and have a good time with us at these upcoming events.

*Clear Skies,
Tamara*



Can You NAME a STAR for someone SPECIAL?

By John Land

With Valentines just around the corner the radio and social media will be full of advertising to “NAME A STAR” for your special loved one. If you do a Google search you’ll find dozens of websites that purport to let you PAY to name a star for someone special. Prices range from a \$30 to well over \$100.

For your money you’ll generally get some sort of certificate, a star map and some coordinates numbers for a star. Then for EXTRA \$\$ you can buy additional options. One site lets you chose options like picking the constellation you want or even choosing a Binary star to name for “Johnny & Susie”. Another has a “Super Nova” package that includes “Two Acres of Lunar Land in your name”. You’ll even find *official* Star naming companies in several different countries. I did a quick search and found them in USA, UK, Canada, Germany, even Australia. Didn’t see one for Antarctica – so maybe you can get in on the action too. The old adage “**if it sounds too good to be true, it probably isn’t**” applies.

The International Astronomical Union is the governing body that approves and recognizes the official names for all astronomical objects. They have some rather stringent rules about what kind of names can be used for particular kinds of objects. **You can’t BUY a scientifically recognized star names on the Internet.**

Some companies say “Your Star Name” will be published in a book registered in the LIBRARY of Congress. It’s the BOOK not the star names that has a listing in the Library of Congress. One site says your star is “visible from the United States” but doesn’t mention how big a telescope it would take to see it.

So what about paying to name a star for a person. **Basically it’s a matter of sentimental value only.** A way to let someone know you think they are special or to remember someone who was special to you. It has no status in the scientific world. Sadly most of these companies are just making money off by appealing to your sentiment and lack of knowledge.

I’ve helped people find their “special star” several times. Most people who contact us are young people wanting to impress a special person in their lives. Others are family members who have lost a loved one. The stars they’ve named are 10th magnitude or dimmer, so it’s not visible except through a good telescope in dark skies, and it takes a pretty good star chart to identify them. Nowadays they may show your star on a computer generated map once you’ve paid for the package. A few years back the charts were pretty crude printouts. Often the star is only visible during certain seasons to be viewed in the evening. My personal opinion is there are better ways to impress your gal; a gift to a charity or medical research would be much better way to commemorate a lost loved one.

I did find one website that lets you pick and name a star for free and print your own certificate just for fun. <https://www.staracle.com/> The site does make it clear these are not official names.

The 7000 or so stars that are visible to the naked eye already have names. The brighter stars have common names handed down from antiquity. Names like Rigel, Sirius, Castor, Pollux and such. Others were named by Arab astrologers, thus we have Altair (eye of the eagle Aquila) and Betelgeuse (shoulder of the hunter Orion). Stars also have Greek letter Bayer names and Flamsteed numbers. So the 2nd brightest star in Orion has its common name Rigel, Bayer name Beta Orionis and the Flamsteed number of 19 Ori.

So what about all the millions of stars we see in telescopes. They all have identification numbers in various catalogs. SAO2164 indicates a star in the Smithsonian Astrophysical Observatory catalog. There are several catalogs of various types depending on which institution assembled them or a particular type of object.

Here is a link with more information:

<https://www.wired.com/2001/12/buy-a-star-but-its-not-yours/>

<http://blog.simulationcurriculum.com/articles/2015/5/18/first-night-out-series-how-the-stars-got-their-name>

This links to an article and video about naming stars and how official names are assigned:

<http://www.universetoday.com/104134/can-you-really-name-a-star/>

Plumbing Repairs Update Jan 28

by John Newton

As reported in the January newsletter extensive plumbing repairs were needed at our observatory. The weather warmed up again on the weekend of January 6/7 giving an opportunity to complete the floor. This time, we had John Moore volunteering his time by clearing the bathroom of debris and helping remove the old sink which was falling apart. We mixed and filled the hole with concrete donated by James, smoothed it with a trowel and let cure.

Since the plumber needed to come back to complete his portion of the job once the concrete cured, James Taggart kindly donated a new porcelain sink with stand and faucet in place of the old one. At this time, the plumbing had returned to finish his portion of the job including running the pipes and installing a shut off valve in the bathroom. Also, the toilet was reinstalled with a new seal making the bathroom full functional again.

In all there were three bills associated with the foundation leak (Tim please confirm) - Leak Detection Company \$275, tool rentals from Home Depot to perform the concrete demolition \$243. The final plumber's bill was not available at this writing. John Newton

Our club members would like to thank James Taggart, John Newton and John Moore all their hard work.



TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS



Astronomy Club of Tulsa: 172 members, including 5 new members in 2018.

Welcome to our new members this month:

Robert McDaniel, Courtney Tolson, Michael Hill, Rushton Davis and Timothy Ngo

Club Accounts as of Jan 28, 2018

Checking: \$ 6,690.22

Savings: \$ 6,778.01

Investment accounts: \$ 23,725.63 (*Value Fluctuates with Market*)

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. Contact their websites for details.

Membership rates for 2017 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.

Note: You may renew your Sky & Telescope subscription directly by calling the number on the renewal form, **be sure to ask for the club rate.**

NEW SUBSCRIPTIONS must still be sent to the club

2018 Calendar Sale Reduced price \$ 8.00



2018 Astronomy Magazine Wall Calendars are here. If you would like to reserve one, send me an email at astrotulsa.tres@gmail.com , or call me at 918-665-8134 and let me know how many you would like. Otherwise, they will be available on a first come, first served basis at our upcoming events. Calendars are available for \$8.00 each, cash, check or credit cards accepted. Calendars must be picked up in person at a club event, we cannot ship these to you. If you reserve one, just let me know at which event you will pick it up.

Tim Davis



Enjoy a Planetarium Show
Shows each Tuesday evening
Jenks High School Campus
205 East B Street, Jenks

TICKETS

\$5 online or \$7 at the door
Purchase online at jenkscommunityed.com
or call 918-298-0340

For Show Titles and times

<https://www.jenkscommunityed.com/search-for-a-class&cat=19>

To Sort Click Date or Title Column



Telescope for Sale \$ 450

Contact John at Tulsaastrobiz@gmail.com

A club member is downsizing and has some astronomy equipment for sale

Meade Starfinder 10 inch F 4.5 Dobsonian Telescope (44.7 in - 1,135.4 mm fl)

Makes a good wide field scope for viewing deep sky objects.

Mirror recently cleaned and Laser Collimated

With **Telerad finder** and 6x by 30mm finder scope

1.25 / 2.0 in rack and pinion focuser

Quality Upgraded Eyepieces with a **handy carrying case** and two red light accessories.

Meade 1.25 " Super Wide Angle 24.5 mm (46X) and 13.8 mm (82X)

Orion 21mm to 7mm Zoom Eyepiece (54x to 162x)

Meade 2X Telenegative amplifier– air spaced triplet – multicoated -model 140



Additional Accessories

\$50 Meade 2" Super Wide Angle 32 mm eyepiece – covers the entire Pleiades in one view



\$ 80 AstroSystems 2 inch Phase 4 Crayford style focuser with custom spacer block

<http://www.company7.com/astrosystems/components/focuser.html>

Make Offer for the entire group.

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit <https://spaceplace.nasa.gov/> to explore space and Earth science! of the brightest objects in our solar system.



Sixty Years of Observing Our Earth

By Teagan Wall



Satellites are a part of our everyday life. We use global positioning system (GPS) satellites to help us find directions. Satellite television and telephones bring us entertainment, and they connect people all over the world. Weather satellites help us create forecasts, and if there's a disaster—such as a hurricane or a large fire—they can help track what's happening. Then, communication satellites can help us warn people in harm's way.

There are many different types of satellites. Some are smaller than a shoebox, while others are bigger than a school bus. In all, there are more than 1,000 satellites orbiting Earth. With that many always around, it can be easy to take them for granted. However, we haven't always had these helpful eyes in the sky.

launch of Explorer 1

The United States launched its first satellite on Jan. 31, 1958. It was called Explorer 1, and it weighed in at only about 30 pounds. This little satellite carried America's first scientific instruments into space: temperature sensors, a microphone, radiation detectors and more.

Explorer 1 sent back data for four months, but remained in orbit for more than 10 years. This small, relatively simple satellite kicked off the American space age. Now, just 60 years later, we depend on satellites every day. Through these satellites, scientists have learned all sorts of things about our planet.

For example, we can now use satellites to measure the height of the land and sea with instruments called altimeters. Altimeters bounce a microwave or laser pulse off Earth and measure how long it takes to come back. Since the speed of light is known very accurately, scientists can use that measurement to calculate the height of a mountain, for example, or the changing levels of Earth's seas.

Satellites also help us to study Earth's atmosphere. The atmosphere is made up of layers of gases that surround Earth. Before satellites, we had very little information about these layers. However, with satellites' view from space, NASA scientists can study how the atmosphere's layers interact with light. This tells us which gases are in the air and how much of each gas can be found in the atmosphere. Satellites also help us learn about the clouds and small particles in the atmosphere, too.

When there's an earthquake, we can use radar in satellites to figure out how much Earth has moved during a quake. In fact, satellites allow NASA scientists to observe all kinds of changes in Earth over months, years or even decades.

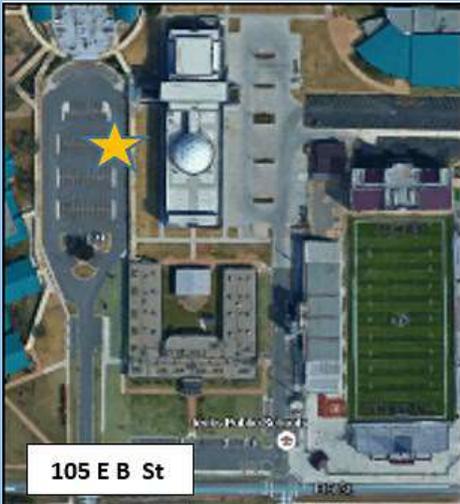
Satellites have also allowed us—for the first time in civilization—to have pictures of our home planet from space. Earth is big, so to take a picture of the whole thing, you need to be far away. Apollo 17 astronauts took the first photo of the whole Earth in 1972. Today, we're able to capture new pictures of our planet many times every day.

Today, many satellites are buzzing around Earth, and each one plays an important part in how we understand our planet and live life here. These satellite explorers are possible because of what we learned from our first voyage into space with Explorer 1—and the decades of hard work and scientific advances since then.

To learn more about satellites, including where they go when they die, check out NASA Space Place: <https://spaceplace.nasa.gov/spacecraft-graveyard>

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

Meetings begin at 7:00 PM

**When you enter the building lobby,
take the elevator to the 3rd floor.**

[Click for Google Map Link](#)



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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