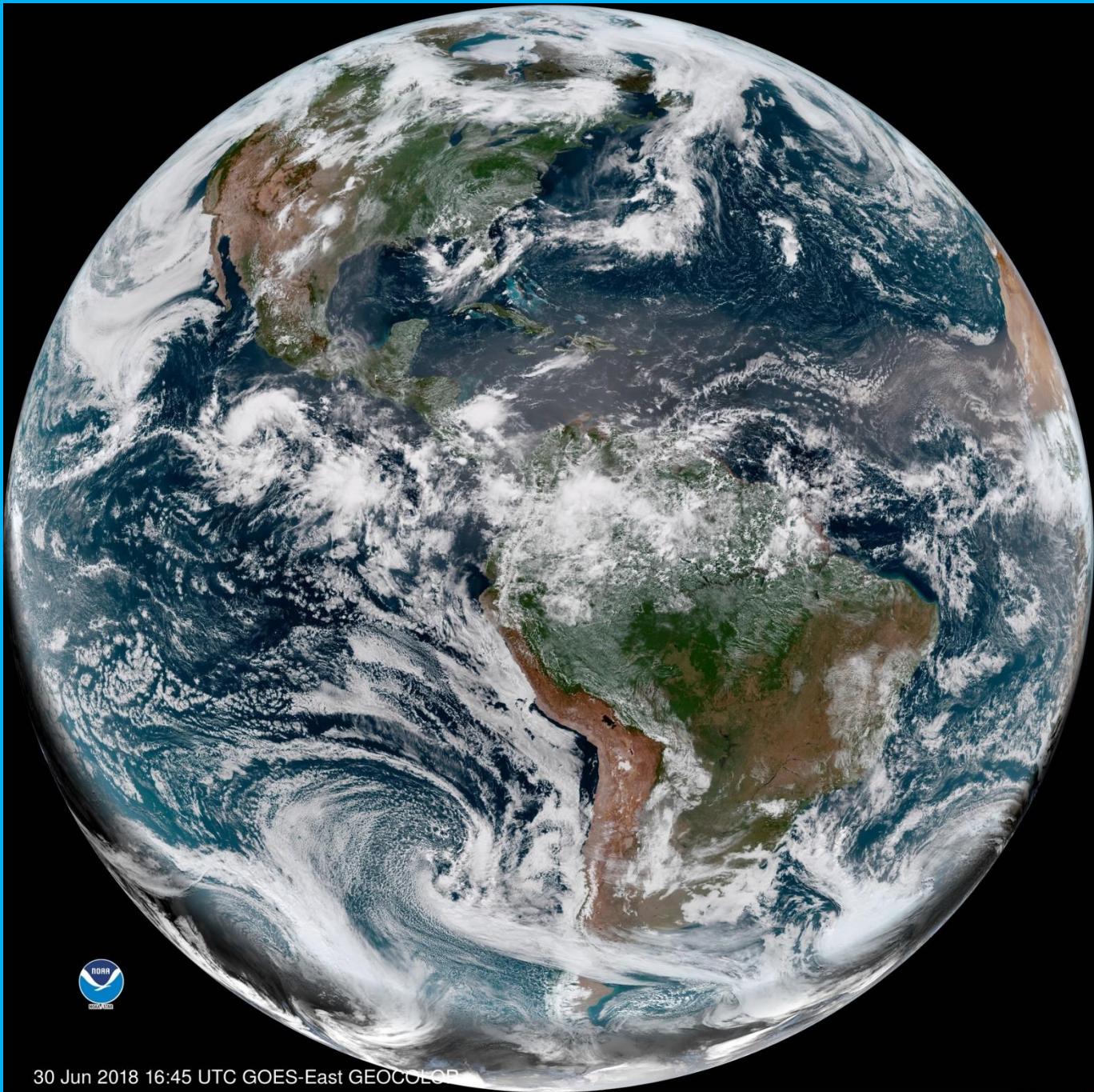


OBSERVER

JULY 2018

Bringing Stars to the eyes of Tulsa since 1937



30 Jun 2018 16:45 UTC GOES-East GEOCOLOR

New GOES 16 Weather satellite takes multi-spectrum images every five minutes. Provides astronomers new tools to plan their observing sessions. Details on page 3

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PLUTO SPACE HUMOR by David Levy

Astronomy Club Events

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

JULY			
INDEPENDENCE DAY	WED JUL 4		
PUBLIC NIGHT	SAT JUL 7	8:15 PM	ACT OBSERVATORY
MEMBERS' NIGHT	FRI JUL 13	8:30 PM	ACT OBSERVATORY
MEMBERS' CLUB PICNIC	SAT JUL 14	6:30 PM	ACT OBSERVATORY
SIDEWALK ASTRONOMY	SAT JUL 21	7:30 PM	BASS PRO
AUGUST			
PUBLIC NIGHT	SAT AUG 4	8:00 PM	ACT OBSERVATORY
MEMBERS' NIGHT	FRI AUG 10	8:15 PM	ACT OBSERVATORY
PUBLIC METEOR SHOWER WATCH	SAT AUG 11	8:15 to 2 AM	EVENTS PARK in BA
Woolaroc Astronomy Day	SAT AUG 11	1 PM to 9 PM	Woolaroc
SIDEWALK ASTRONOMY	SAT AUG 18	7:00 PM	BASS PRO



Public Meteor Shower Watch
Sat Aug 11 - 8:15 PM to Sat Aug 12 - 2:00 AM

Chisholm Trail Events park in Broken Arrow
On E 101st St and the Creek turnpike
Across from NSU BA campus

We'll lots of club volunteers to bring scope or just help out. Contact Tamara Green ASAP



As astronomers we are always concerned about whether clouds are going to move in and spoil our observing plans. Now we have a new high resolution imaging satellite to better observe the weather. The **GOES 16 satellite** was launched in November 2017 and became operational in December.

It takes images of the Earth every FIVE minutes in 16 Wavelengths !

Ranging from Visible light through Infrared wavelengths. By combining portions of the visible and infrared images they can produce almost true color images from space. Or you can view each channel individually to identify different levels of clouds, water content and much more. The night time images use the Infrared wavelengths. A special feature of the night images is they are super imposed on a static map of the USA showing all the lighted cities. You can even watch the terminator sweep across the USA.

In a recent trip to the Tulsa weather office with my grandson, we learned that the satellite can take images of select regions **every minute!** During the rangeland fires in western Oklahoma this spring it was reported the satellite images could identify new fire events before they were reported by ground observers. GOES link at <https://www.youtube.com/watch?v=i1vo8aDs8-s>

To access the satellite information for Tulsa go to <https://www.weather.gov/ta> or just type weather.gov/Tulsa. The site works well on computers or mobile devices. Other locations can be chosen. Other links can be found. The *Past Weather* Tab links to *Astronomical Data* from US Naval Observatory.

The home page has several types of information and icons along the bottom.

Click Icon



To bring up the satellite images. Choose GeoColor Loop. The default is 24 images.

Change the loop to 96 to show 8 full hours of images. Click on the moving bar any place to freeze the image at that point. The parallel bars in the upper right lets you choose different regions.

Band:	GeoColor - True color day / ▾	Loop:	96 ▾		
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July 29, 2018 19:30 CDT

Old GOES - 4 channels every 15 mins

New GOES - 16 channels every 5 mins

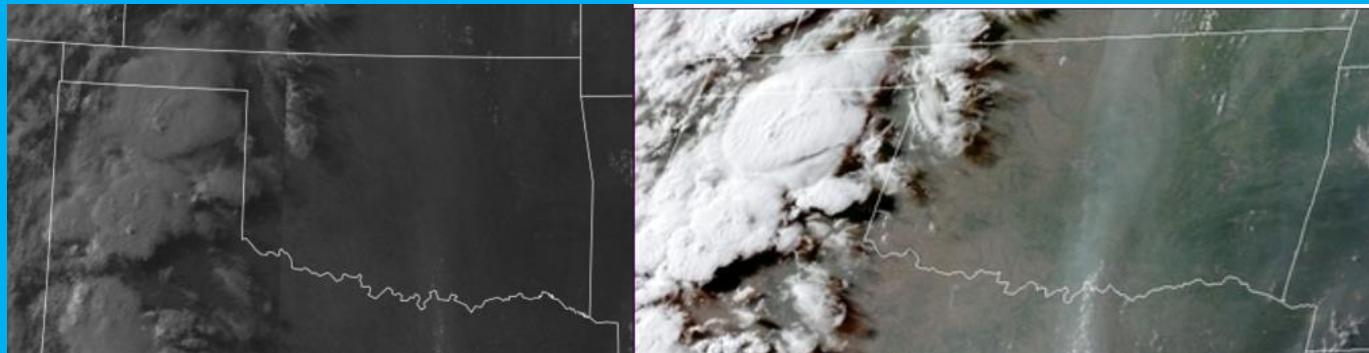


Image of Continental USA
July 29, 2018 21:00 CDT

Once you find a satellite image you like – Save the link separately and you can go directly to it on your phone or computer.

PRESIDENT'S MESSAGE

BY TAMARA GREEN



Hey Y'All!

I want to talk for a bit about volunteerism.

Now that we are into the swing of Summer, I want to announce some upcoming events, some of which we will need volunteers for.

Public Night is on Saturday, July 7 at the Observatory, starting at 8:15 PM. Sunset is at 8:44 PM, and the Moon is one day past Last Quarter. During our Summer Public Nights, we expect to have quite a crowd, so the more of our members come to this event with telescopes, the better!

Members' Night is on Friday, July 13 at the Observatory, starting at 8:45 PM. Sunset is at 8:42 PM and the Moon is 1 day after New. Since this event is members and immediate family only, we do not expect guests, **but the more member participation we have, the merrier.**

OUR CLUB MEMBERS' PICNIC IS ON SATURDAY, JULY 14 at the Observatory.
Festivities will begin at 6:00 PM. This will be a members and immediate family only event. The Club is providing burgers, hot dogs, condiments, etc., but if you wish to bring a side item (potato salad, macaroni salad, chips, dessert, etc.) you are more than welcome to! Of course, weather permitting, we will do some observing afterwards! We will need volunteers to help prepare food and to stay and clean up afterwards. Volunteers who are helping to prepare the food should arrive by 5:30 PM. Please come out to this one if at all possible! The more members we have come out and participate, the better! **I would especially like for our new/newer members to come to this fun event. It will give you an opportunity to meet and get to know other club members and have a good time!**

Sidewalk Astronomy is Saturday, July 21 at Bass Pro, starting at 7:30 PM. Sunset is at 8:38 PM, and the Moon is 2 days after First Quarter. Owen will most likely have his solar rig out, so if you want to come earlier and do some solar observing with Owen, or if you have your own solar rig and want to set it up, you are more than welcome to do so. Because Los Cabos has live music on Saturday nights during the Summer, and Bass Pro does a lot of business during this season, we expect to have quite a crowd of people looking through our telescopes. Again, the more members we have come out with telescopes and participate, the better!

The August dates for Public Night, Members' Night and Sidewalk will be announced in next month's newsletter; however, **we do have two major events coming up** that we will definitely need as many club volunteers as possible!

The first one is the Perseid Meteor Watch event, which is set for Saturday, August 11 at the Broken Arrow Chisholm Trails Park. This will be a huge public event. We will need a lot of club volunteers for this one. It starts at 8:15 PM and goes until 2:00 AM on Sunday, August 12. More information will be forthcoming!

The next one is Astronomy Day at Woolaroc. This will be on Saturday, August 18. This will be a joint event between us and the Bartlesville Astronomical Society! We need volunteers for this event too, to run various astronomy-related activities such as solar observing, demonstrations, etc. **We plan to arrive at 1:00 PM to set up.** Plan is to have activities during the day, then a talk at 6:30 PM about astronomy equipment, then starting at 7:00 and going till 9:00 PM, do as much telescope viewing as we can, because they want us to start breaking down at 9:00 PM and be off the property by 10:00 PM. The Moon will be up at 2:23 PM, plus, we should see some of the brighter planets after sunset at 8:00 PM. I know this will only give us basically an hour to observe, but this is what Woolaroc was asking us for. Again, as many people as possible to come help will be very much appreciated!

Volunteering to help at our events is a fun way to get to know older/longer-time club members and make some friends! And, in case you are not aware, the **Astronomical League has certificates and pins for outreach!** There are three levels, Basic, Stellar and Master. The Basic and Master come with a certificate and pin, the Stellar comes with a certificate. If you are working on a Master Observer certificate, I believe (if I remember right) that the Master Outreach counts as one of the “five observing clubs of your choice” in addition to the required Honorary Messier, Binocular Messier, Lunar, Double Star and Herschel 400. Plus, you are doing good for the community by way of sharing views of the night sky that most people would not get an opportunity to see! Since Owen and I are also our Club’s Observing Co-Chairs, if you are interested in volunteering, and earning an outreach certificate, please contact me at astrotulsa.pres@gmail.com or Owen at darthnewo@yahoo.com.

*Clear Skies!
Tamara*

SECRETARY'S MESSAGE

BY JOHN NEWTON



A Letter from the Astronomy Club Secretary

The elected officers and directors of the Astronomy Club of Tulsa (ACT) held a regularly scheduled Board Meeting on Saturday, June 2nd, 2018 with officers and board members in attendance.

The framework for this meeting includes discussions on upcoming events, updates on created committees, and general topics on ACT business-at-hand. Also, the formed committees are designed to help improve the club member experience. We encourage and welcome club member participation within each committee. If you are interested in assisting on behalf of improving the club you will find the committee chairperson listed in this letter to contact as well.

Upcoming Events and Activity Awareness:

This summer promises to be one of the best naked eye planetary viewing opportunity as Mars will be very bright in the sky this year during opposition to the Earth. The closest point for Mars to Earth is on July 27th.

Saturn with its rings is always interesting to see through a telescope. Saturn should be visible in the night sky starting all night in July, or best in the evenings from August through the second half of the year.

Jupiter with its bands, diminishing red spot, and moons is always worth a look. Jupiter will be best viewed in the evening sky until midnight from June thru the summer months.

Saturday, July 14th – Club Members' Picnic and Social. Weather permitting, this event will be held at the ACT's observatory where gates will open at 6 PM. On the menu, we plan to serve burgers, hot dogs and all the fix'ins. We ask our members to bring a potluck side dish or dessert.

Saturday, August 11th – Planning a Public Meteor Watch Night to be held on Saturday, August 11 at the BA Chisholm Trails Park starting at 8:15 PM and ending at 2 AM Sunday morning.

The Perseids meteor shower annual event will peak this year on the night of August 12, and early morning hours of August 13. Considering a new Moon (August 11th), we should have unobstructed dark skies presenting us with excellent conditions to see shooting stars. This year during peak observers should see about 60-70 meteors per hour. In addition to the meteors, Jupiter, Mars, Saturn and Venus should be visible.

Saturday, August 18th – Plans are firming up for Astronomy Day at Woolaroc in Bartlesville. Current outlook is to arrive at Woolaroc at about 1 PM and hold astronomy-related activities during the day. The moon will rise at about 2:23 PM. Woolaroc director Jan Tucker is suggesting a 6:30 PM talk in their Events Center about astronomy equipment, and then heading out at 7 PM to begin observing. Sunset that night will be at 8 PM. With clear skies, we should be able to see the Moon, Venus and Jupiter with unaided equipment.

Woolaroc is a museum and wildlife preserve located in the Osage Hills of Northeastern Oklahoma along Oklahoma State Highway 123 about 12 mi southwest of Bartlesville, Oklahoma and 45 miles north of Tulsa, Oklahoma.

Woolaroc was established in 1925 as the ranch retreat of oilman Frank Phillips of Phillips 66.

ACT Business-at-Hand:

Committees - updates:

1. Several improvements have been made to the observatory this Spring. Many thanks go to James Taggart and volunteers, thank you!
2. Still looking at Pawhuska as an alternate dark sky site. Committee for finding Alternate Dark Sky Sites is still investigating. Stay tuned as we hope to report positive news on this key item soon.
3. Classroom space has improved thanks to Sheldon Padawer's help in building new shelving making space for actual classroom use. Sheldon currently has his sights on using a laptop to project images in the classroom now.

As the many listed committees undergo their assigned research, the board will continue to monitor progress and post their findings in future newsletters.

Want to help shape the future of this wonderful club? As a director, your opportunity for holding a Club board position are opening to our members this year. Per ACT Bylaws, member qualifications include that the nominee be an eligible member in good standing for at least one (1) year. And, the nominee must be the minimum legal age for signing legal contracts and documents.

- ACT Treasurer, Tim Davis has announced that after having served as club Treasurer for 5 years, he plans to step down at the end of the year.
- ACT Secretary, John Newton has announced that after having served as club Secretary for 2 years, he plans to step down at the end of the year.

General elections are usually held in October.

For consideration, please contact Tamara Green if you are interested.

Please feel free to contact me with any questions or comments at astrotulsa.sec'y@gmail.com.

Sincerely,

John Newton - ACT Secretary

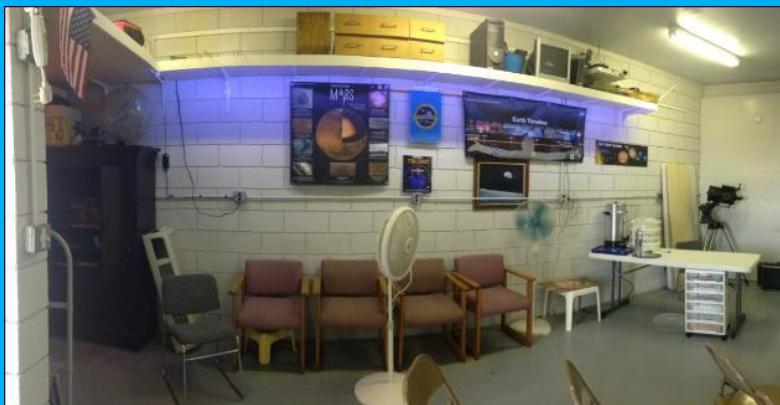
New Remodeling Improvements at the Observatory

Lots of changes have taken place at our observatory this year. If you haven't been out lately you'll be pleased with all the modifications. The classroom space has been new shelving and rearrangements to make it a friendlier place.



Sheldon Padawer designed and installed elevated shelving clearing the floor space for teaching areas as well as areas for members to socialize.

Posters decorate the wall and an area for showing video presentations can be set up.



Tim and Teresa Davis welcome guests -

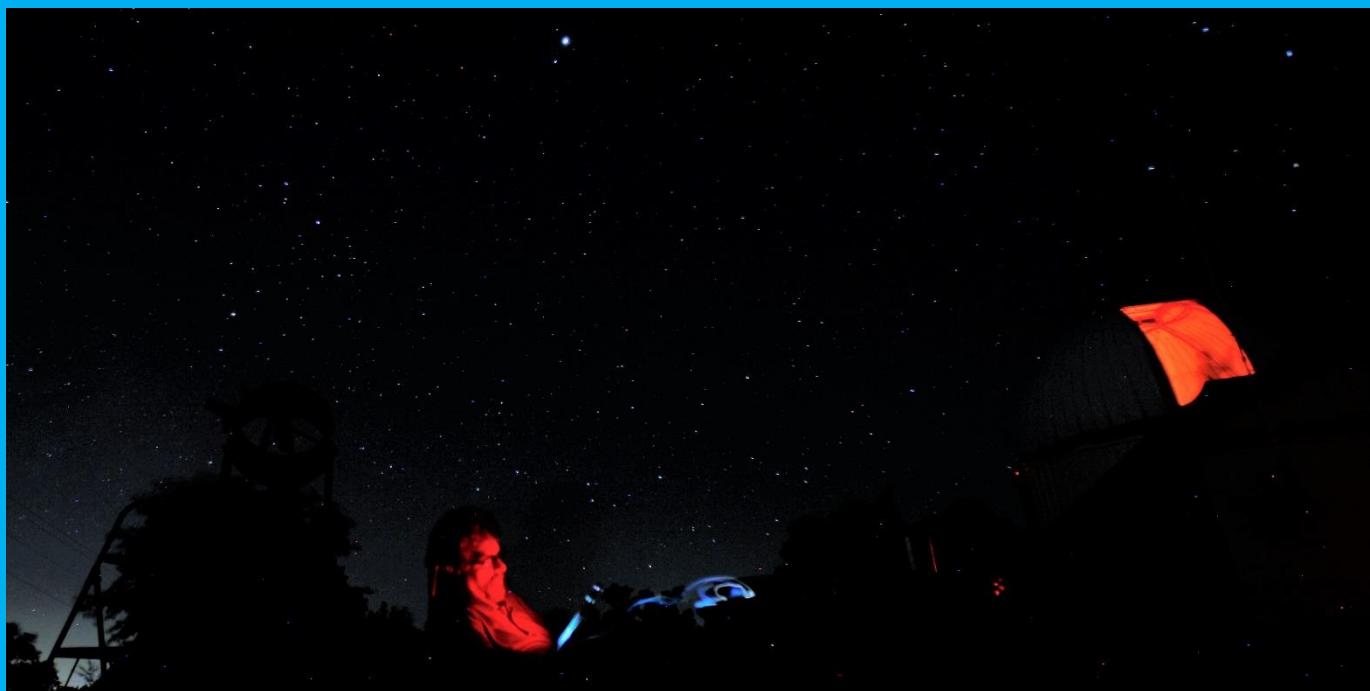
Teresa is teaching guests about the posters.



The Dome has seen improvements too. James Taggart and his dad Davis installed new skirting to keep out the weather. Skip Whitehurst and John Newton helped paint the decking and stairs with a water resistant textured paint. New member James Plumlee shared this video of his evening in the dome.



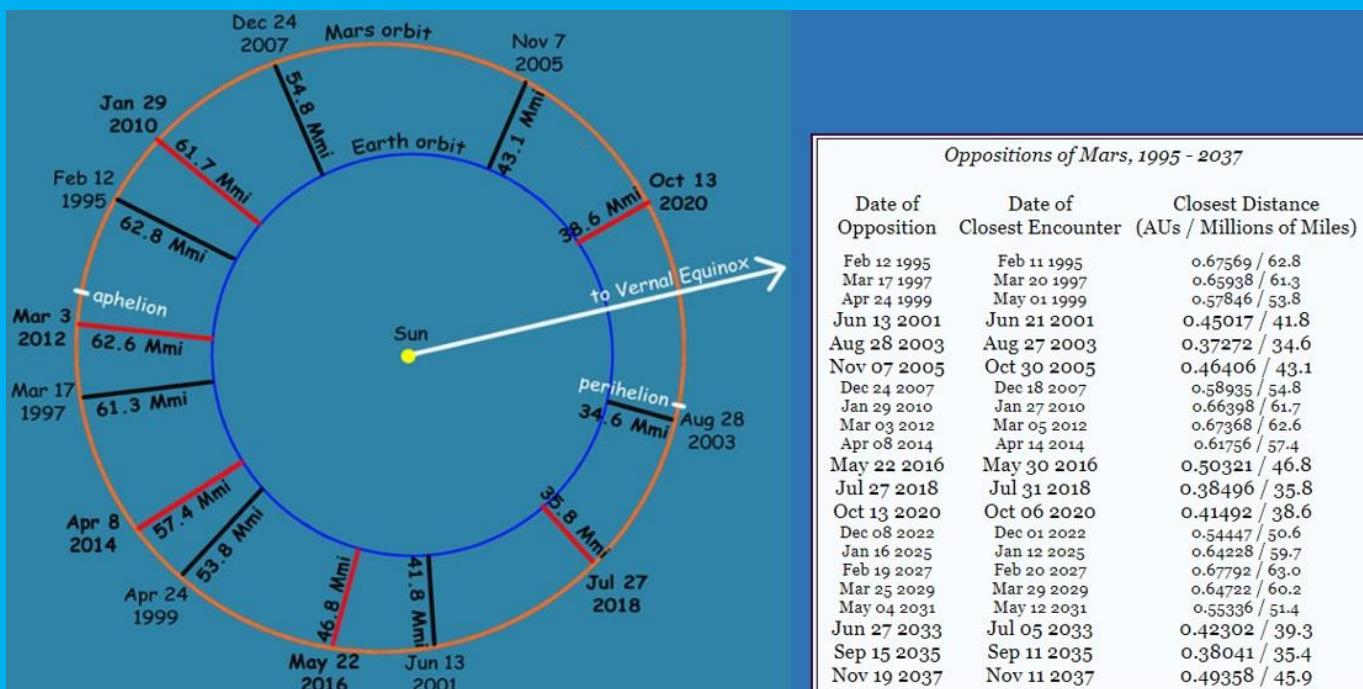
All that's missing is YOU – So come out and enjoy an evening of Starlight Wonders !



Planets in July

All five naked eye planets are visible in the evening sky in July. **Mercury** and **Venus** grace the sky in the west after sunset. **Mercury** is at its greatest evening elongation July 12 about 15 degrees up in the west at sunset. Look for it just below a thin crescent moon on July 14. The moon makes a nice photo op with **Venus** on the evening of July 15th. **Jupiter** still shines bright in the SSW as it ends its retrograde travel near the double star Alpha Libra. Look for the moon nearby on July 20. **Saturn** reached opposition on June 27th and is up all night. Look for it below a bright gibbous moon on the 24th. The brightest **ASTEROID VESTA** is made its best approach in two decades. It won't be this close again until 2040. At opposition on June 19th Vesta was 5.3 mag – viewable with the naked eye if you know where to look. See Details at [VESTA MAPS](#)

Finally, on **Friday July 27th** we have a DOUBLE OPPPOSITION of the **Full Moon and Mars rising in the SE at sunset. The moon will be full (directly opposite the sun from Earth)** and **Mars** reaches opposition the same night. This is the closest Mars has been to the Earth since Aug 2003. It is actually a fraction closer to Earth on the 30th. Read more details about Mars in our June Newsletter. Observers report that global wide dust storms began in mid-May and will likely last several months. **Martian dust storms** are common as it nears perihelion and its atmosphere warms and expands. Mars now shines brighter than Jupiter and its apparent visible disk will appear larger than the disk of Saturn. 24" compared to 18"



TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS



Astronomy Club of Tulsa: 175 members, including 28 new members in 2018.

New Members for June : Richard Bennett, Gail Algeo, James Plumlee, Jim Woods, Vidya Premkumar and Keagan Morgan

Club Accounts as of June 28, 2018:

Checking: \$ 5,305.33

Savings: \$ 6,778.48

Investment accounts: \$ 22,797. (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 **2018** 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

This article is distributed by NASA Space Place.

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

Visit spaceplace.nasa.gov to explore space and Earth science!



A Close-Up View of Mars

By Jane Houston Jones and Jessica Stoller-Conrad

In July 2018, skywatchers can get an up close view of Mars—even without a telescope!

In fact, on July 31, Mars will be closer to Earth than it has been in 15 years.

Why is that?

Like all the planets in our solar system, Earth and Mars orbit the Sun. Earth is closer to the Sun, and therefore it races along its orbit more quickly. Earth makes two trips around the Sun in about the same amount of time that Mars takes to make one trip.

Sometimes the two planets are on opposite sides of the Sun and are very far apart. Other times, Earth catches up with its neighbor and passes relatively close to it. This is called Mars's closest approach to Earth, and it's happening this year on July 31. The Moon will be near Mars on that night, too!

Keep in mind that even during its closest approach, Mars is still more than 35 million miles away from Earth. That's really far. So, Mars won't appear as big as the Moon in the sky, but it will appear bigger than it usually does.

July and August will be a great time to check out Mars. Through a telescope, you should normally be able to make out some of the light and dark features of the Red Planet—and sometimes even polar ice. However, a huge Martian dust storm is obscuring these features right now, so less planetary detail is visible.

There is another important Mars date in July: Mars opposition. Mars opposition is when Mars, Earth and the Sun all line up, with Earth directly in the middle. This event is happening on July 27 this year.

Although you may see news focusing on one of these two dates, Mars will be visible for many months. For about three weeks before and three weeks after opposition and closest approach, the planet will appear the same size to a skywatcher.

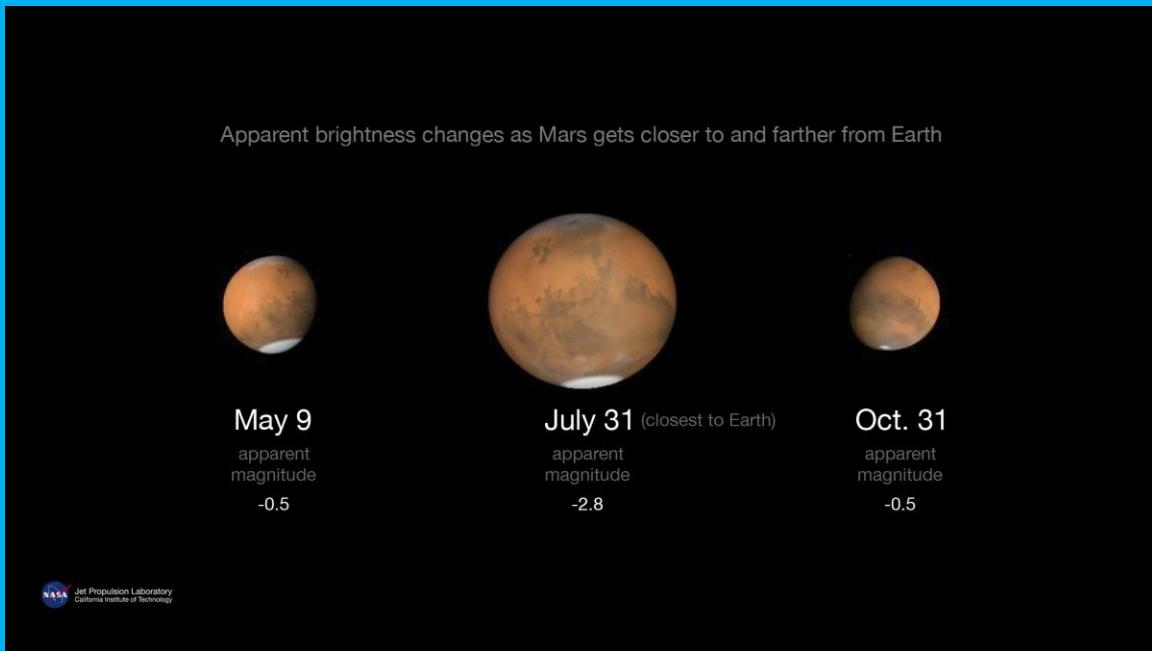
From July 7 through September 7 Mars will be the third brightest object in the sky (after the Moon and Venus), shining even brighter than Jupiter. The best time to view Mars during this time is several hours after sunset, when Mars will appear higher in the sky.

Mars will still be visible after July and August, but each month it will shrink in size as it travels farther from Earth in its orbit around the Sun.

In other sky news, there will be a partial solar eclipse on July 13, but it will only be visible from Northern Antarctica and southern Australia. On July 27 (beginning at 20:21 UTC), a total lunar eclipse will be visible in Australia, Asia, Africa, Europe and South America. For those viewers, Mars will be right next to the eclipsing Moon!

If you're wanting to look ahead to next month, prepare for August's summer Perseid meteor shower. It's not too early to plan a dark sky getaway for the most popular meteor shower of the year!

You can catch up on NASA's missions to Mars and all of NASA's missions at www.nasa.gov



Caption: In 2018, Mars will appear brightest from July 27 to July 30. Its closest approach to Earth is July 31. That is the point in Mars' orbit when it comes closest to Earth. Mars will be at a distance of 35.8 million miles (57.6 million kilometers). Credit: NASA/JPL-Caltech



JENKS PLANETARIUM

**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

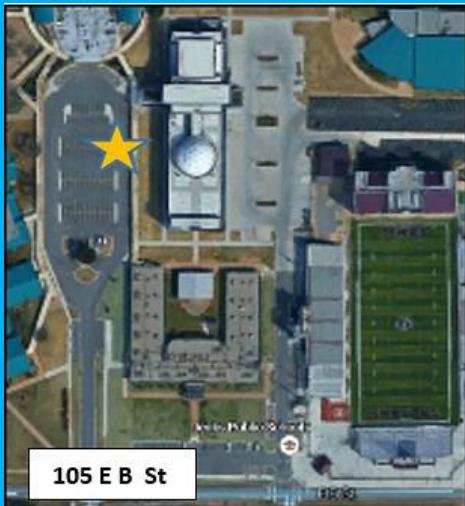
2018 [Go to Show Schedule](#)

Then click the Date Column to sort them by show date



Explore the night sky with engaging, awe-inspiring shows at the Jenks Planetarium. The 50-foot dome provides the ultimate screen for seeing planets up close, flying to distant galaxies, and even rediscovering our own earth in ways never thought possible.

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
205 East B St, Jenks, OK
Located North of the intersection of
1st and B St

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 impossible back roads.



ASTRONOMY CLUB OFFICERS:

PRESIDENT – TAMARA GREEN

astrotulsa.pres@gmail.com

VICE PRESIDENT – JERRY CASSITY

astrotulsa.vp@gmail.com

SECRETARY - JOHN NEWTON

astrotulsa.secyr@gmail.com

TREASURER - TIM DAVIS

astrotulsa.tres@gmail.com

BOARD MEMBERS-AT-LARGE:

RICHARD BRADY

TERESA DAVIS

JOHN LAND

JAMES LILEY

SHELDON PADAWER

JACOB SHEPHERD

JAMES TAGGART

SKIP WHITEHURST

STAFF:

FACILITIES MANAGER –

JAMES TAGGART

astrotulsa.obs@gmail.com

EDITOR - JOHN LAND

astrotulsa.editor@gmail.com

MEMBERSHIP CHAIR - JOHN LAND

tulsaastrobiz@gmail.com

OBSERVING CHAIRS

OWEN AND TAMARA GREEN

darthnewo@yahoo.com

astrotulsa.pres@gmail.com

SIDEWALK ASTRONOMY –

OWEN GREEN

darthnewo@yahoo.com

PR AND OUTREACH –

OWEN GREEN

darthnewo@yahoo.com

GROUP DIRECTOR – OWEN GREEN

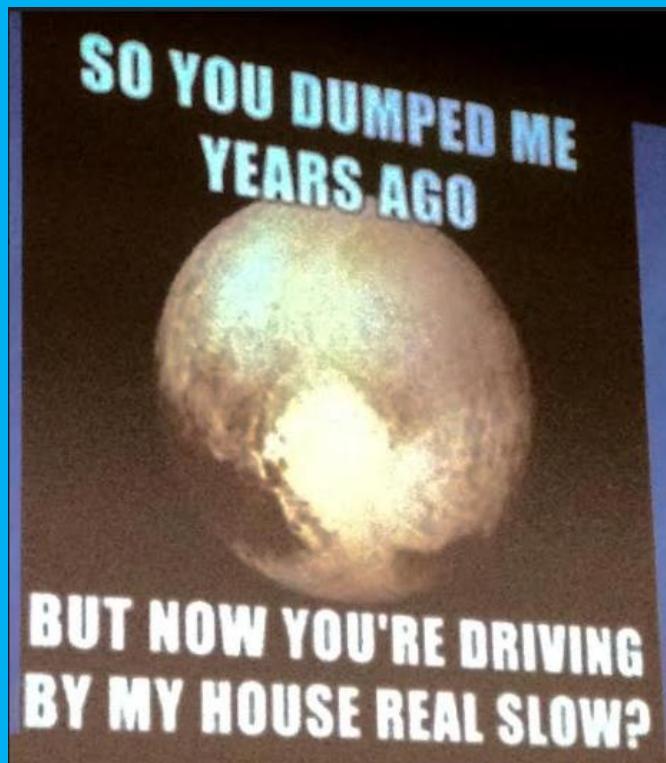
Astrotulsa.outreach@gmail.com

NIGHT SKY NETWORK –

Open Position

WEBMASTER JENNIFER JONES

A final bit of humor from renowned Astronomer, Author and Comet hunter **DAVID LEVY** commenting on the New Horizons mission to Pluto at MidStates Convention in Springdale, AR



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