

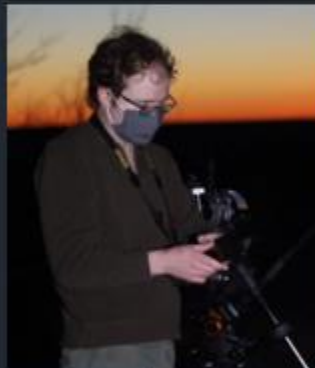
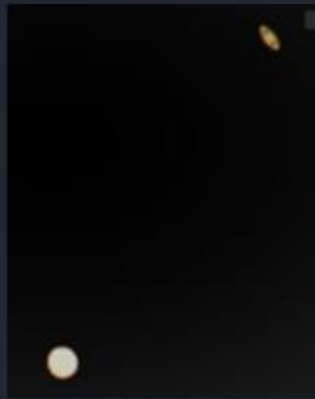


# OBSERVER

JANUARY 2021

*Bringing Stars to the eyes of Tulsa*

*since 1937 Editor - John Land*



**Grand Conjunction**  
**Jupiter / Saturn Dec 21, 2020**



Hope you all got an opportunity to enjoy the Grand Conjunction of Jupiter and Saturn on December 21, 2020 passing 0.1 degree apart. Their next conjunction is Nov. 1, 2040 a bit more than 1 degree. Our club was well represented in the News. Bryan Kyle (right) did an interview on Ch 6 TV.

Adam Koloff (Left) had an interview on KRMG radio.

Adam also did a Facebook Live viewing of the event with images of the planets and the moon through his camera and his 5 inch Celestron telescope.

Up to 390 people were viewing it at one time. Adam said as of Dec 30 the recording had more than 22,000 viewers.

You too can scroll through the hour-long [Planet Conjunction video](#) or on our club [Facebook page](#).

**Contents:**

- 1 Images from Dec. 21 Planet Conjunction
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See our [2020 Newsletter INDEX](#) to all the 2020 Astronomy Club Newsletters at

### ***Astronomy Club Events***

Check our website [www.AstroTulsa.com](http://www.AstroTulsa.com) events section for updates

### **Members ONLY Events continue with Social Distancing Guidelines in Effect**

We are limiting our Observatory nights to our MEMBERS ONLY. Please observe Social Distancing and we strongly recommend wearing a mask when around other people. PLEASE WEAR a MASK when in the heated CLASSROOM. Please keep minor family members within your observing area.

With the return to Central Standard Time, Sunset is very early in winter months. We have CHANGED the START TIME to 6:30 making our opening time AFTER DARK. Be sure to review the map directions carefully. When you arrive be aware of people on the field and telescopes set up. If a backup date on Saturday is used due to weather cancellation, the Start Time will move closer to sunset. Check website for changes.

<b>Friday, Jan 8, 6:30 PM</b>	<b>Friday, Jan 15, 6:30 PM</b>
<b>Saturday, Jan 9, 5:00 PM (backup)</b>	<b>Saturday, Jan 16, 5:00 PM (backup)</b>

**NOTE: If weather conditions predict hazardous driving conditions events may be postponed or cancelled. Please check our website before heading out.**

<b>Friday, Feb 5, 6:30 PM</b>	<b>Friday, Feb 12, 6:30 PM</b>
<b>Saturday, Feb 6, 5:30 PM (backup)</b>	<b>Saturday, Feb 13, 5:30 PM (backup)</b>

**Tuesday January 19 at 7:00 PM** - Next Club ZOOM meeting - Topic to be announced later.

Check our website [www.AstroTulsa.com](http://www.AstroTulsa.com) events section for updates

Observatory ONLY OPEN for SCHEDULED EVENTS. [Click for Observatory Map](#)

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

### **Guidelines for Members Only Observing Night**

**No guests – other than immediate family – no large family groups.**

**Additional details will be sent via membership emails**

# PRESIDENT'S MESSAGE

BY TAMARA GREEN



Hey Y'all !!

2020 is not a year on which I shall look back with complete joy. Personally, I experienced not only not being able to enjoy observing with you all and MidState Regional convention being postponed, not to mention Okie-Tex being cancelled. I also lost a job, got COVID and suffered from post-COVID complications that I am JUST NOW getting over. My husband Owen also got it and along with its complications. Lastly my mother lost her job due to the closure of the business she worked for. So, NO I will not be looking back fondly at 2020 nor likely will many of you.

There are some happy things that have occurred for me though. I got a new job in October that is even better than the one I was laid off from in April, and it pays nearly \$3 an hour more, Owen and I both recovered from COVID and are both recovering from our post-COVID complications, and I am sure that despite her age, Mama will get a new job. The important thing to do is count your blessings!

With a new year comes new hope. There are vaccines out now, which will hopefully reduce the number of new cases and begin to "flatten the curve". I hope that this pandemic will begin to wane and that we can soon get together again. Earlier this year, I watched England's Queen Elizabeth's address on YouTube about the pandemic, and burst into tears when she said "*we will all meet again*"!. Damn, she makes me wish I was British! **We Will** all meet again! Hopefully sooner rather than later! We'd love to meet all the new people who have joined us this year just to learn more about our wonderful night skies. Even with the pandemic the club has set a **new high of 201 members** with 84 joining just this year. A net gain of 48 new people!

Speaking of that, we are continuing to hold our Members-Only nights at the Observatory until further notice. We will not be holding Sidewalk or other public or group events until we see how the pandemic progresses. We are going to continue having our monthly club General Meetings via Zoom. I will be sending out the new calendar I have created to the Board this week for review and approval. I HOPE that by the end of 2021 we will be able to have our General Meetings in person at the Planetarium again, and return to Bass Pro for our Sidewalk events, and have group events once more. I also hope that those of us who attend Okie-Tex will be able to go and enjoy it. We, in the meantime, just need to keep up the handwashing, cleaning of common surfaces, social distancing, wearing of masks, and exercising of common sense.

As far as special events are concerned, the Messier Marathon, usually held in March, will be up in the air. It will depend on how the pandemic is progressing, and how comfortable (or uncomfortable) Ron and Maura are with having people come to their property, despite the event being members-only. We will just have to see. We did not have our Annual Dinner Meeting in

November because of the pandemic. We are thinking about the possibility of a Spring or Summer picnic of some kind to make up for that, again, depending on the progress of the pandemic. We want to get together, but still we want to all be safe and have our friends and family safe as well. It is too early to tell whether or not we will be able to do our Annual Dinner Meeting in November. Updates will be coming.

I hope that you all got to see the Grand Conjunction of Jupiter and Saturn on the evening of December 21. We did! It was really cool! Owen and I saw it from the parking lot of the QuikTrip at 23<sup>rd</sup> St. and Southwest Blvd., and later got a better look at it from our backyard, looking in between neighbors' trees. I thought that was a nice present from the cosmos!

I hope that all of you all had a very Merry Christmas and have a Fantastic New Year! See you all soon!

*Clear Skies, Tamara Green*

**During the Fall of 2020 we held our club meetings using the Zoom app.**

**Invited presenters discussed interesting topics.**

**You can find links to YouTube recordings of those meetings below**

***Note: Some of these links may not be working if viewing a year or more later.***

Sept 22 - [\*Electronically Assisted Astronomy\*](#) - Presenter – Robbin Jones

Robbin shows us how he enjoys astronomy from his suburban home using video cameras

Oct 26 - [\*Understanding the Active Sun through satellite observations\*](#)

Presenter – Dr. Aaron Coyner is a solar physicist by trade and the physics faculty at Southwestern Oregon Community College in Coos Bay, OR

Nov 12 - [\*Ocean Worlds: NASA's Europa Clipper Mission\*](#) &  
the Search for Habitability Beyond Earth

Presenter - Dr. Tracy Becker – this was an invitation meeting from Dr. Coyner

Dec 8 - *The Last Stargazers: Astronomy Adventures and the Scientific Power of Storytelling*

Presenter - Dr. Emily Levesque from University of Washington

This was a two-part program

Part 1 - Club Zoom with topics on Wide Field Astrophotography and the Jupiter / Saturn Conjunction

<https://www.youtube.com/watch?v=AIZISDKARN8&feature=youtu.be&ab>

Part 2 - Night Sky Network webinar with Dr. Emily Levesque describing adventures of professional astronomers. <https://www.youtube.com/watch?v=nKesmUh2WEc>

Scroll forward to the 3'30" mark to skip to main program

## What's Going on in the Night Sky this month? *By John Land*



Below is great resource night to night things to see and even has **some video links**  
<https://www.beckstromobservatory.com/whats-up-in-tonights-sky-2/>

Also Sky and Telescope has an audio podcast you can listen to while under the night sky.  
<https://skyandtelescope.org/observing/sky-tour-astronomy-podcast/>

**Both websites renew information each month**



While you were chilling out on **Jan 2** with temperatures in the low 40's, our planet was actually at **Perihelion** - its closest distance from the Sun -0.983 AU's ~ 91,400,000 miles Our friends in Australia were celebrating New Years on the beach.



The planets **Jupiter and Saturn** are still close together low in the SW after sunset until mid-month. In fact, we have a **TRIPLE CONJUNCTION** of Jupiter - Saturn joined by **Mercury** on Jan 8 through 11<sup>th</sup>. You'll need binoculars to search about 8 degree up in the SW around 5:45 PM Look for Jupiter and Golden Mercury lastly dimmer Saturn. The thin crescent moon joins the trio on Jan 13.

**Mercury** will make a good showing in January evenings being highest on Jan 23 about 15 degrees up in the SW after sunset. **Mars** is high in the SSW although it is 7.5 times dimmer and smaller than it was at opposition in October. It passes just 1.6 degrees from **Uranus** on Jan 19<sup>th</sup> A first quarter moon passes 6 degrees below them on Jan. 20. **Venus** hugs the SE horizon in the **predawn sky** with the crescent moon nearby on Jan 11.

### Check Out These Awesome Objects in the Night Sky

Get your binoculars (or not) and let's explore the reaches of our galaxy and the craters of the moon. <https://www.wired.com/story/check-out-cool-stuff-in-the-night-sky/>

**Stellarium Web**, is an online planetarium running in your web browser, based on the open source Stellarium Web Engine project It also has links to Stellarium phone apps <https://stellarium-web.org/>





This article is distributed by NASA Night Sky Network

JANUARY 2020

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!

## Check Your Sky's Quality with Orion!

David Prosper

Have you ever wondered how many stars you can see at night? From a perfect dark sky location, free from any light pollution, a person with excellent vision may observe a few thousand stars in the sky at one time! Sadly, most people don't enjoy pristine dark skies – and knowing your sky's brightness will help you navigate the night sky.

The brightness of planets and stars is measured in terms of **apparent magnitude**, or how bright they appear from Earth. Most visible stars range in brightness from 1<sup>st</sup> to 6<sup>th</sup> magnitude, with the lower number being brighter. A star at magnitude 1 appears 100 times brighter than a star at magnitude 6. A few stars and planets shine even brighter than first magnitude, like brilliant Sirius at -1.46 magnitude, or Venus, which can shine brighter than -4 magnitude! Very bright planets and stars can still be seen from bright cities with lots of light pollution. Given perfect skies, an observer may be able to see stars as dim as 6.5 magnitude, but such fantastic conditions are very rare; in much of the world, human-made light pollution drastically limits what people can see at night.

Your sky's **limiting magnitude** is, simply enough, the measure of the dimmest stars you can see when looking straight up. So, if the dimmest star you can see from your backyard is magnitude 5, then your limiting magnitude is 5. Easy, right? But why would you want to know your limiting magnitude? It can help you plan your observing! For example, if you have a bright sky and your limiting magnitude is at 3, watching a meteor shower or looking for dimmer stars and objects may be a wasted effort. But if your sky is dark and the limit is 5, you should be able to see meteors and the Milky Way. Knowing this figure can help you measure light pollution in your area and determine if it's getting better or worse over time. And regardless of location, be it backyard, balcony, or dark sky park, light pollution is a concern to all stargazers!

How do you figure out the limiting magnitude in your area? While you can use smartphone apps or dedicated devices like a Sky Quality Meter, you can also use your own eyes and charts of bright constellations! The Night Sky Network offers a free printable Dark Sky Wheel, featuring the stars of Orion on one side and Scorpius on the other, here: [bit.ly/darkskywheel](https://bit.ly/darkskywheel). Each wheel contains six “wedges” showing the stars of the constellation, limited from 1-6 magnitude. Find the wedge containing the faintest stars you can see from your area; you now know your limiting magnitude! For maximum accuracy, use the wheel when the constellation is high in the sky well after sunset. Compare the difference when the Moon is at full phase, versus new. Before you start, let your eyes adjust for twenty minutes to ensure your night vision is at its best. A red light can help preserve your night vision while comparing stars in the printout.



The Dark Sky Wheel, showing the constellation Orion at six different limiting magnitudes (right), and a photo of Orion (left). What is the limiting magnitude of the photo? For most observing locations, the Orion side works best on evenings from January-March, and the Scorpius side from June-August.

**Large Printable Star Wheel** <https://nightsky.jpl.nasa.gov/docs/OrionWheelPhotoprint.jpg>

Learn more about Orion and its many stars and deep space treasures go to <https://in-the-sky.org/data/constellation.php?id=61>

There are two concepts every stargazer should know to get the best visual views: averted vision and dark adaptation. Here's how it all works.

[How To See – Averted Vision And Dark Adaptation](#)

**How Dark is your Night Sky?** The Globe at Night web site and app lets you measure your limiting magnitude by doing star counts in a well know area of sky. You then compare your count to star charts of the same area to determine the dimmest stars you saw.

Then if you choose you can add your data to a worldwide data base that maps out the skies of the world. <https://www.globeatnight.org/webapp/>

Read [Light Pollution And The Beginner Astronomer](#)

So, you got your new telescope and are eager to try it out. You've found the moon and a few bright planets. But you'd like to see some of those galaxies you've seen in pictures. You study your charts and point your telescope in the right direction but just can't make out much. Part of the problem may be your sky over head may be washed out with too much light scattered around your sky from lights on the ground.

# Some Astronomy Club Highlights of 2020

The Year started with Venus dominating the evening sky. It was joined with a nice conjunction of Mercury in February. Feb 18 Mars was occulted by the crescent moon.



Beginning in the fall of 2019 the red giant star Betelgeuse faded more than 2.5 times – easily noticeably dimmer. This led to all sorts of speculations including that the star may become a Super Nova.

Using [images from the Hubble Space telescope](#) and others, scientists have proposed that the most likely explanation is that the star experienced a traumatic eruption from its surface that cooled forming dust particles that temporarily diminished its magnitude.

Astronomers began to be alarmed at the repeated launches of SpaceX constellations of [Starlink communication satellites](#)



We closed out February with a very successful Telescope 101 workshop at TASM planetarium. Volunteers helped new telescope owners understand their equipment.

We had a very productive observatory workday clearing out brush and cleaning up the area.



The Covid-19 virus brought our complacent day to day to lives to a screeching halt, but the planets and stars continued blissfully on their merry courses in the sky. People began to discover the wonders of nature were all around them.

Try some of the Observing Certificate challenges at [Find an Observing Program for https://nightsky.jpl.nasa.gov/news-display.cfm?News\\_ID=746](#)

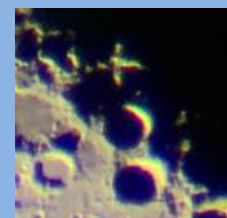


Morning skies featured a succession of encounters between Jupiter, Mars and the Moon. Two reasonably bright telescopic comets ATLAS C/ 2019 Y4 and PANSTARRS C/ 2017 T2 gave us joy tracking them down from our yards. Two more comets joined the quartet in April & May -- ATLAS C/ 2019 Y1 and C/2020 F8



Happy Birthday Hubble Space Telescope

The Hubble telescope was launched on April 24, 1990. Celebrate the Hubble Telescope's 30<sup>th</sup> Birthday with a one hour recording of a webinar [https://youtu.be/VBJ\\_JJbAGWE](https://youtu.be/VBJ_JJbAGWE)



April 29 Many of us got to observe the Lunar X near sunrise on the moon's terminator.



**May 30, 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. [First Dragon Crew](#)



**In June our club began Members Only Observing nights at the observatory as members observed Social Distancing Guidelines. Several new members came to enjoy our dark skies.**

**The two gas giant planets reach opposition Jupiter July 14 and Saturn July 20.** This was the opening act of their six-month long evening show that end with a grand finale as their close conjunction on Dec 21st. Tips for Observing Planets in our August newsletter.

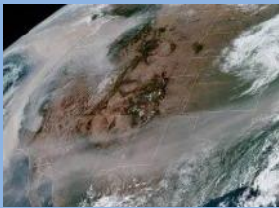
[https://www.astrotulsa.com/CMS\\_Files/08-2020.pdf](https://www.astrotulsa.com/CMS_Files/08-2020.pdf)



New Comets grace the skies [Comet Lemmon C/2019 U6](#) made a closes approach June 29.

Observers had high hopes for [Comet SWAN C/2020 F8](#) before it disintegrated near the sun.

< [Comet NEOWISE C/2020 F3](#) appeared in the sky would soon delight us all with its graceful tail became a naked eye delight and Internet celebrity.



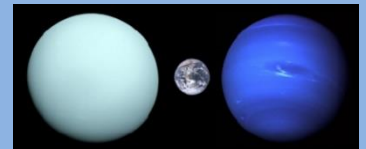
**September – Smoke from California fires spoils our observing night plans.**



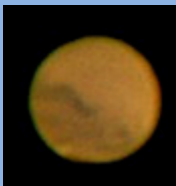
**Brad Young introduces a new observing certificate. *Alternate Constellations Observing Program* featuring the search for older constellation patterns as well as those from other cultures.**



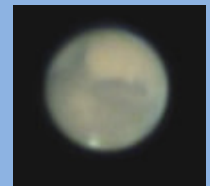
**On October 6 Mars made its closest approach since Aug 2003 – Next one 2035**

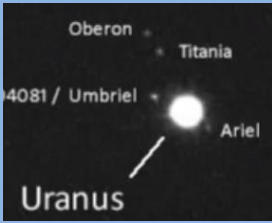


**Neptune reached opposition Sept 11 followed by Uranus Oct 31<sup>st</sup> giving observers plenty of reasons to stay out late under the stars.**



**Members Michael Lunsford and Adam Koloff and others shared their Mars Opposition photos**





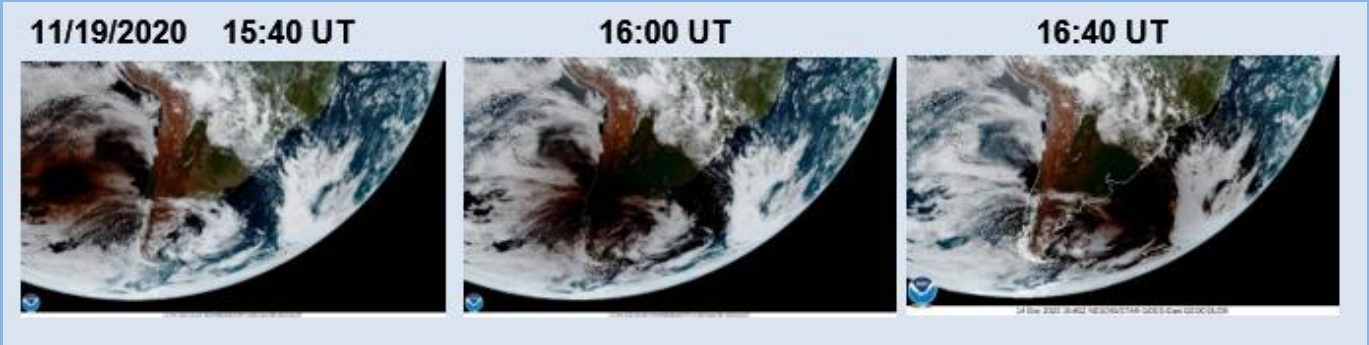
Member John Moore sent us a link to an amazing video of the Occultation by Uranus' moon Umbriel of a distant star.

Jerry Bardecker used a 12" Meade telescope with a focal length of 3000mm to [https://www.youtube.com/watch?v=Rub0hGI\\_FGc](https://www.youtube.com/watch?v=Rub0hGI_FGc)



**Comet ATLAS (C/2020 M3)** made its closest approach on Nov. 14th at 0.358 AU (54 million km) away. Amateur astronomers with small telescopes were able to watch it skim past Orion and upward into Gemini.

November 19<sup>th</sup> a total solar eclipse swept over southern Chile and Argentina. The satellite images below show the moon's umbral shadow sweeping eastward across the tip of South America. To see read more and see ground-based images of the eclipse got to <https://skyandtelescope.org/astronomy-news/totality-reports-from-south-america/>



FYI - Set your calendars for April 8, 2024 to see a more than 4 minute solar eclipse sweep over the SE tip of Oklahoma <https://www.greatamericaneclipse.com/april-8-2024>  
Or sit at home in Tulsa on Aug 12, 2045 to enjoy nearly 6 minutes of Totality.



**The year ended with the Grand Conjunction of Jupiter and Saturn Dec 21, 2020**

**On the night of the winter solstice Dec 21st they were separated by a mere 1/10 degree!** You can still see them low in the SW just after sunset until mid- January. Next encounter Nov1, 2040

*May we all join together to make 2021 one of our best years as we enjoy astronomy and friendships together. Whether in person or virtually. We wish you a Happy New Year*

# TREASURER'S and MEMBERSHIP Report

BY JOHN NEWTON



As of Dec. 21, we had **201 members**. **84 new members for the year a net gain of 48**. Welcome our newest members - **Kenneth Baucum, Mary Anne Thoman, Matthew McDowell, John Irvin, Alex Wiesman, Hanh Nguyen, David Cooper, Andrea Cooper, Robert O'Ferrall, Jennifer Gale Jones, Robert Davenport, Lana Embry, Bob Fissel, Blake Lewellen and Dan Lewellen**.

In addition, we want to recognize our long-term prominent and well-respected members who continue to renew their memberships with the club, even during these restricted times. We look forward to seeing you all at meetings, even if virtual by Zoom, and at club events throughout the year when possible.

## Accounts as of December 21, 2020

Checking: \$ 5,035.29

Savings: \$ 10,784.91

Investments: \$ 27,123.31 (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 <https://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 the 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.** <https://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](http://www.astronomy.com)

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

**Sky & Telescope is \$ 33 per year** <https://skyandtelescope.org/>

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**

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NIGHT SKY NETWORK –  
**Open Position**

WEBMASTER JENNIFER JONES

Do you have ideas for our club ZOOM Meetings?  
Know someone who willing to be a Guest presenter?

We would also welcome YOU to do a short 5-10  
minute section of interest or new equipment you'd  
like to review.

Create a Cartoon on a Space Theme

Contact our Editor John Land  
[Tulsaastrobiz@gmail.com](mailto:Tulsaastrobiz@gmail.com)

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