

## PRESIDENT'S CORNER

by Dell Vance

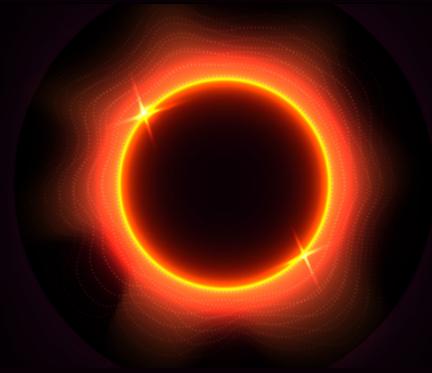


*Ann-Maree Vance*

September was a good month. We had several nights with clear skies. I was able to image M101, the Pinwheel Galaxy, in Ursa Major. The STEM Fairs have started up again, along with some star parties. Byron Ray and I had a good night at the Birch Creek Elementary STEM Fair. We had a lot of action, with some activities for the students. I found that the old demonstration of relative distance between the planets gave us plenty of time to talk to the students about our solar system and the planets. I went through a lot of calculator printer paper for the activity but was worth it. Byron demonstrated three telescopes and what they are used for. I'm always impressed with the curiosity of students.

Annual elections were held at our September meeting, and the executive committee remains the same as last year. We did have a great presentation by Alannah Darrington. She told about the Greek myths and their

*cont'd on p. 2*



*Vecteezy*

## THE ANNULAR ECLIPSE ISSUE

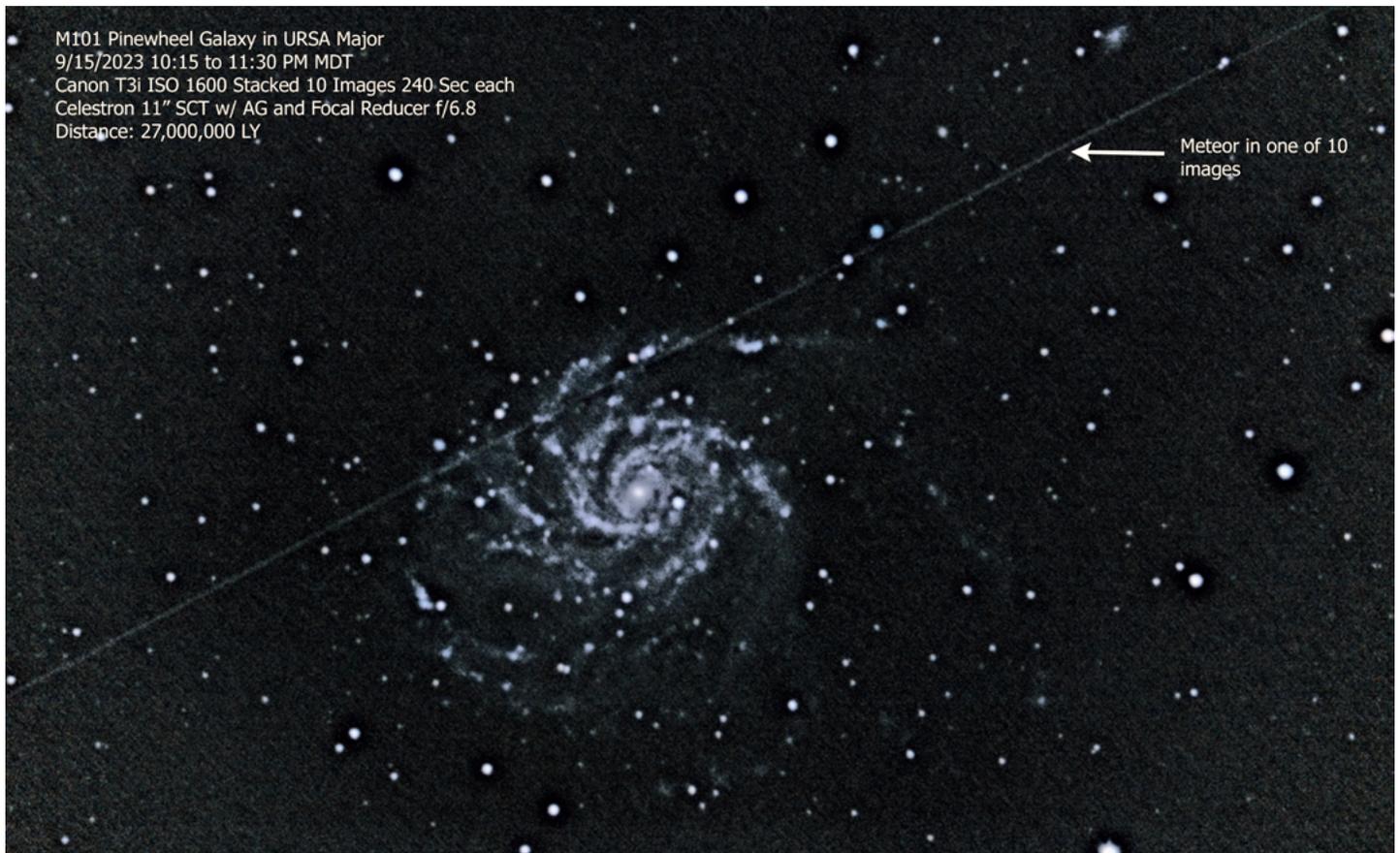
### Upcoming Events

- Oct. 4: Star party at North Park Elementary (North Logan).
- Oct. 14: Annular solar eclipse.
- Oct. 20: Club meeting. 7:00 p.m. at USU Engineering Lab, room 107. Topic: The annular eclipse! Bruce Horrocks will give us a brief presentation on the sun. Then, we will show-and-tell our eclipse images. If you have images to share, please let the Exec Comm know. You can email them to Dell ahead of time, or bring them with you on a thumb drive.
- Oct. 23: Star party at River Heights Elementary.
- Nov. 10: Club meeting, 7:00 p.m. at USU Engineering Lab, room 107. Speakers TBA.
- Nov. 14: STEM Fair at Summit Elementary (Smithfield).

Check your email for more info about upcoming star and solar parties!

Keep up to date by visiting our website:





**President’s Corner, cont’d from p. 1**

relationship to the constellations.

I want to encourage each of you to watch the annular eclipse on October 14. Many of us are planning to travel down south to get the best view of the eclipse. Because of the eclipse our October meeting will be on October 20. Bruce Horrocks will give a presentation on our sun. We plan to give everyone the opportunity to tell what they saw or images that they took of the eclipse. Sort of a show-and-tell. It should be a great opportunity.

Be sure to check the calendar on the [NASA Night Sky Network](#) or our [CVAS club website](#) for the upcoming star parties and STEM Fair nights.

Thanks again for all your support.

Clear Skies,  
Dell Vance

*Image courtesy of the author.*

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Classroom Clipart

You can see CVAS events on the NASA Night Sky Network calendar at <https://nightsky.jpl.nasa.gov/clubs-and-events.cfm>. If you don't yet have access to the NSN website, please let a member of the Executive Committee know! We can add you to the roster and help you create a login and password.

# WHAT TO EXPECT DURING THE ANNULAR ECLIPSE

by Blaine Dickey

Are you ready for the October partial eclipse of the sun that will be visible here in Cache Valley? If you are able to travel several hours south toward central Utah, you will be able to see the partial eclipse turn into an annular eclipse.

On the morning of October 14, here in Cache Valley, the moon will begin to cut into the sun at 9:09 a.m.

The following simulations are close to what you could see through a telescope with a proper solar filter (figure 1).

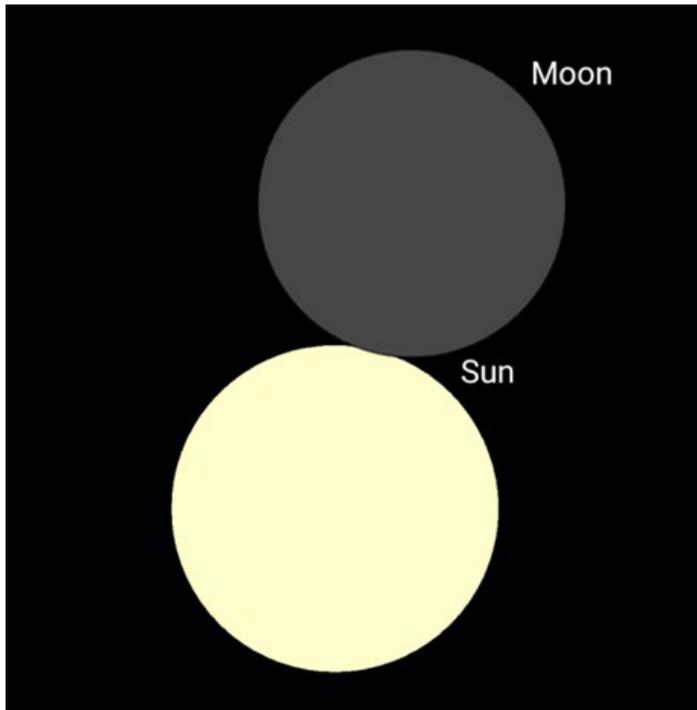


Figure 1

The slice will continue to maximum coverage at about 10:29 a.m. (figure 2).

At this point the moon will begin to move off the sun and leave it completely at 11:59 a.m. (figure 3).

Here are some other things you could look for as the partial eclipse progresses. At near maximum, small copies of the eclipse will appear on the ground as the light passes through the tree limbs, bushes, and leaves. The temperature will noticeably drop by up to 20 degrees during the eclipse. You will be glad you have a coat, hat, and gloves to keep you warm. You will also

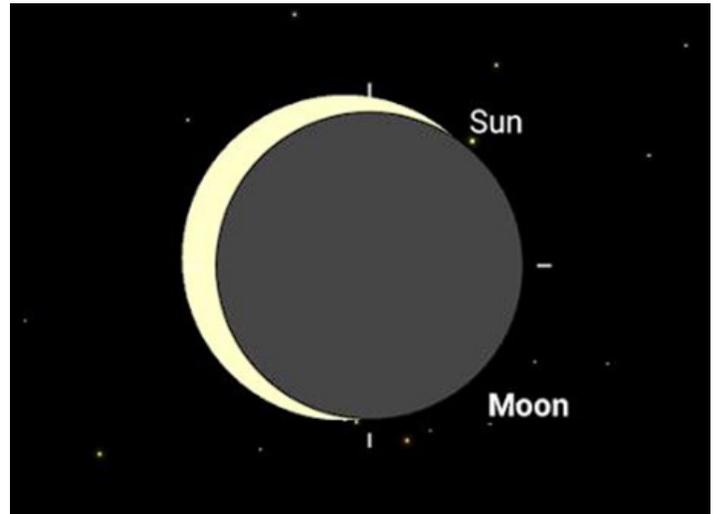


Figure 2

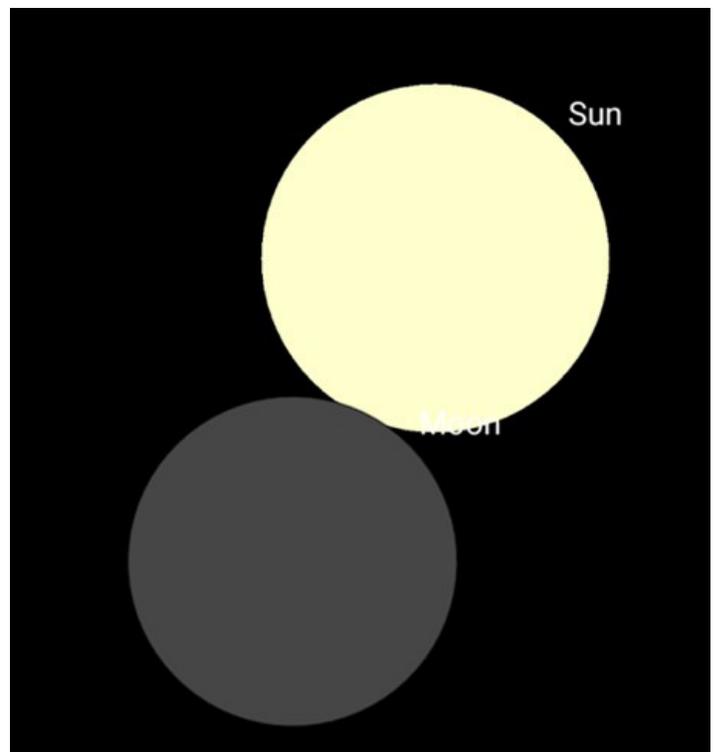


Figure 3

notice the sky (if it's clear) turning a deeper blue.

If you travel southward and you are fortunate enough to be located near the central line of the eclipse, you will have a similar experience as you would here in Cache Valley, but there are some major differences. The most notable difference is how the

**cont'd on p. 4**

### What to Expect, cont'd from p. 3

eclipse will look in the sky. Below is a simulation of how the eclipse will look as seen at 10:28 a.m. in Kanosh, Utah, on October 14 (figure 4).

In addition to the sky looking a deeper blue, it will also be noticeably darker because more of the sun will be covered. You may be able to see both the planets Mercury and Venus to the upper right. Mercury will be 4 degrees, and Venus 44 degrees, above the sun.

This is a good time to practice your photography skills if you are planning on observing the total eclipse next spring on April 8, 2024, in the eastern United States.

The total eclipse will be the last total eclipse of the sun in the United States until August 12, 2045. That is just 23 years from now. Fortunately, at that time the total eclipse of the sun will pass right over Utah.

*All images are from the SkySafari 7 Pro Android App.*

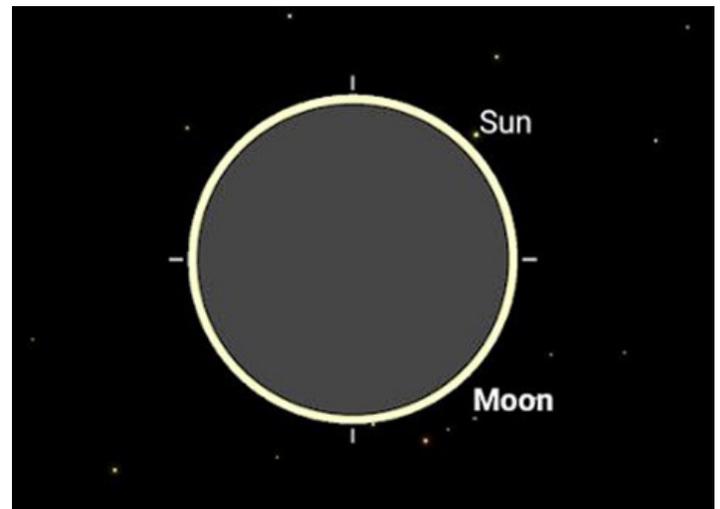


Figure 4

The temperature will noticeably drop by up to 20 degrees during the eclipse. You will be glad you have a coat, hat, and gloves to keep you warm.



Clipart World and Cliparts Zone

Need a quick astronomy fix?  
Tune in to CVAS's astronomy show on Utah Public Radio!

## UTAH SKIES

Every Tuesday at 4:48 p.m.  
91.5 KUSU-FM (west Cache Valley)  
89.5 KUSR (east Cache Valley)

You can also download the UPR app or listen to the livestream [here](#).  
Check out our past radio shows [here](#).

# A SPECIAL ECLIPSE: THE RING OF FIRE

by Tom Westre

On the morning of Saturday October 14, an annular eclipse will take place in the western United States. It will begin on the coast of Oregon and sweep across northern Nevada, central Utah, New Mexico, and Texas.

This event is not a total solar eclipse, which won't happen until April 8, 2024. This event is an annular eclipse. The moon will be too far from Earth, so its disc will only cover about 90% of the sun. Technically, this is a partial eclipse but a special

one. As the moon moves in front the sun, there will be a small outer ring of the sun called a ring of fire. There are three phases: first contact, annularity, and last contact.

In Utah, the path of annularity will be about 125 miles wide.

Richfield is located in the direct center of the path. Partial eclipse begins there at 9:09 a.m.; maximum eclipse occurs at 10:28 a.m. Annularity ends there at 10:32 a.m. The total event ends about noon. These times will vary in other locations along the path.

The best locations to view this event will be Bryce Canyon, Capitol Reef, and cites like Richfield, Delta, Filmore, Beaver, and Blanding.

Cities outside the path will see a partial eclipse. Salt Lake City and St. George will see about 90%. However, they will not see the ring of fire.



*Wikimedia Commons*

While viewing this annular eclipse, it is important to protect your eyes. Even though the sun is 90% covered, enough of the sun is seen to damage eyes. Eclipse glasses are a necessary item to use. Taking these glasses off at any time during the eclipse is unsafe. NASA warns that regular sunglasses will not protect your eyes.



This article was originally a script for CVAS's UPR radio show, broadcast on Oct. 3, 2023.

*Clipart World*

## Annular Eclipse Sun Safety Is Different from a Total Eclipse!



*FreeImages*

Always wear eclipse glasses to protect your eyes when viewing an eclipse. In 2017, it was safe to look directly at the corona during totality. That will not be true of the annular eclipse in 2023. Portions of the sun's surface will still be visible at totality. **Be sure children and friends understand that they should not take off their eclipse glasses or try to film the eclipse without a sun filter at any time on October 14.**

# COOL ASTRONOMY RESOURCES TO ENHANCE YOUR ECLIPSE EXPERIENCE

by Bonnie Schenk-Darrington

I generally feel that most people in the club are more experienced and knowledgeable astronomers than I am, and so I wondered what I could tell you about the upcoming annular eclipse that you don't already know. Many of you have been making eclipse plans for months already. I decided to share some cool astronomy resources with you, in hopes I could help enhance your eclipse experience.

The annular eclipse will happen on October 14, 2023, and here in Cache Valley, we'll only see about 80% totality. That doesn't mean we won't have fun, though.

You can bone up on the **where and when of the eclipse**, courtesy of NASA, [here](#). NASA also has a great article about [types of eclipses](#). And [here is a map](#) that shows the path of both the 2023 and April 8, 2024, eclipses.

*Sky & Telescope* magazine wants to help you [plan your eclipse trip](#). They show helpful maps of cities, national parks, stadiums, planetariums, zoos, and more, to view the eclipses from. They also have a history of recent eclipses, as well as eclipses coming in the next few decades.

If you're interested in **viewing the eclipse from a Utah national park**, you can check out this [DNR website](#) to plan your trip.

You can watch an **eclipse live stream** [here](#).

In-The-Sky.org has [video maps](#) that show **how the sun and moon's shadow will move across the earth**.

Haven't purchased your **eclipse glasses** yet? You can do that [here](#).

The moon is the undisputed star of October! Besides the annular eclipse, **International Observe the Moon Night is coming up on October 21**. If you're

celebrating the eclipse with children or grandchildren, now would be a great time to download and fill in this [moon observation journal](#) together.

You can learn all about eclipses at the **Clark Planetarium DOME Theater**. Watch the movie *Eclipse: The Sun Revealed*. Check [here](#) for times/dates and to buy tickets. While you're at the planetarium, don't forget



Vecteezy

to stop at the Planet Fun store—they have eclipse glasses and binoculars and telescopes with sun filters. You'll be able to stock up on all your eclipse needs! Also, the planetarium is holding Eclipse Extravaganzas at multiple locations. Check out their [calendar page](#) for more details.

**USU's College of Science** is host-

ing a family-friendly event on the Quad for eclipse enthusiasts. Learn more [here](#).

Here's a [useful article](#) on **photographing a solar eclipse**.

I can't speak for the rest of the club, but eclipse watching gives me the MUNCHIES! Now that you've got your annular eclipse activities planned, why not make some **fun eclipse recipes** for when you inevitably get a black hole in your stomach? You can find easy recipes for such treats as galaxy mini cheesecakes, a lunar landing cake, and sunshine swizzle punch [here](#). I also love [this webpage](#); how about an eclipse sandwich, a galaxy pretzel treat, or some delicious eclipse party mix? If you're on the road, *The Oregonian* has you covered with some easy, make-ahead [eclipse party brunch recipes](#).

**And please don't forget to share your images at our next CVAS meeting!**

Happy eclipse watching, astronomy friends!

## WHAT IS THE DIFFERENCE BETWEEN A TOTAL AND ANNULAR ECLIPSE?

The eclipse that took place on August 21, 2017, was a total eclipse. The moon completely blocked the sun and only the sun's corona was visible. This was possible because the moon's orbit is elliptical, not perfectly circular. On August 21, 2017, the moon was at or near perigee (the moon's closest approach to earth in its orbit). Because the moon was nearer to Earth, it looked bigger and blocked out more of the sun, leaving only the corona exposed at totality.

The October 14 eclipse will be an annular eclipse. The moon's apogee (farthest distance from Earth) will be on October 9—just five days before the eclipse. Therefore, the moon will look smaller to us, and at totality, the moon will appear to be surrounded by a ring of fire (also called an annulus). Part of the sun's surface—not just the corona—will be exposed.

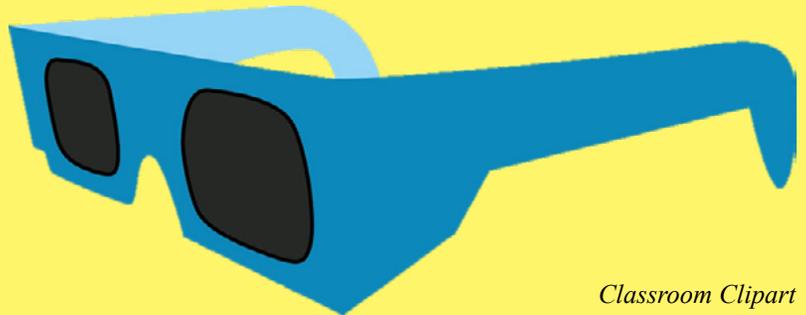
## ECLIPSE SAFETY MYTH DEBUNKED

Some people think that the sun is somehow “stronger” or “brighter” or “more dangerous” during an eclipse than it usually is, and they may even fear being out in the sunshine during an eclipse if it's not necessary. This is not true. Wear your sunscreen as usual on the day of the eclipse, especially if you plan to spend multiple hours outdoors. But the sun will not give you a worse sunburn, or burn your eyes as you do normal activities outside, just because it's an eclipse.

The key here is that most people don't spend a lot of time looking at the sun on a normal day. They drive to work, walk their dog, or mow the lawn with no real danger of burning their eyes because they aren't actively looking at the sun.

The danger during an eclipse is that people *are* more likely to be looking at the sun.

Sunglasses alone won't protect your eyes. Put your eclipse glasses firmly on, keep them on, and carefully check that your children and friends are doing the same. And do not try to take photographs of the eclipse through a camera or look through a telescope without a sun filter!



*Classroom Clipart*

# ASTROPHOTOGRAPHY GALLERY

## Recent Images by Club Members



### Jeff Clayton

Some of my best images of 2023, all taken from my backyard in Hyrum.

*Lower left, p. 8:* **Here is a list of the equipment I use:**

- WO Redcat51 APO OTA
- AM5 mount
- ZWO ASI533mm camera
- WO 32mm UniGuide scope
- ASIAIR+ WiFi controller
- ZWO 36mm filter set (Ha, Sii, Oiii, R, G, B, L)
- ZWO 8 pos filter wheel
- ASI120mm guide camera
- ZWO EAF (auto focus)
- Image stacking, calibration and image processing done in Pixinsight



# ASTROPHOTOGRAPHY GALLERY

## Recent Images by Club Members

### Jeff Clayton

*Upper left, p. 8:* **Andromeda - M31**

Ha-LRGB image

Acquisition details:

Ha - 15 x 300sec

L - 20 x 300sec

R,G,B - 20 x 240sec

Calibration frames: 40 Flats,  
60 Bias, 40 Dark  
frames

*Bottom right, p. 8:* **Crescent Nebula  
and some Sadr region (NGC6888)**

SHO narrowband image

Acquisition details:

Ha - 12 x 300sec

Sii - 12 x 300sec

Oiii - 12 x 300sec

Calibration frames: 20 Flats, 40 Bias,  
20 Dark frames

*Upper right, p. 9:* **Heart Nebula  
(IC1805)**

SHO narrowband image

Acquisition details:

Ha - 12 x 300sec

Sii - 12 x 300sec

Oiii - 12 x 300sec

Calibration frames: 20 Flats, 40 Bias,  
20 Dark frames

*Lower right, p. 9:* **Elephant Trunk  
Nebula (IC1396)**

SHO narrowband image

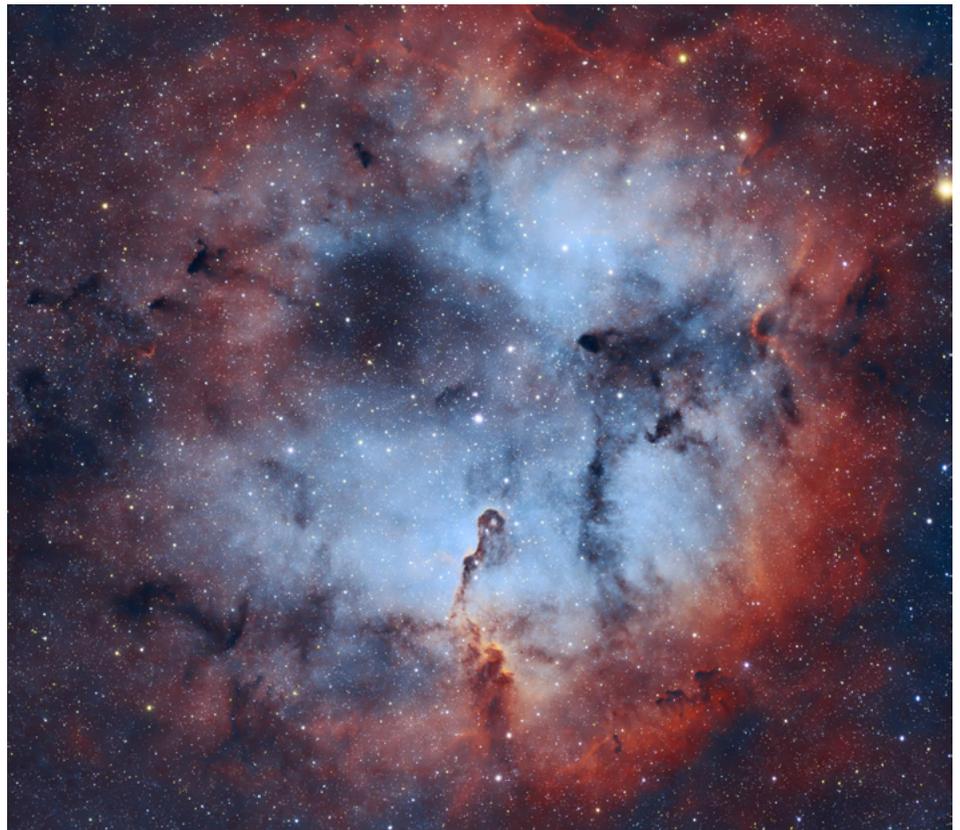
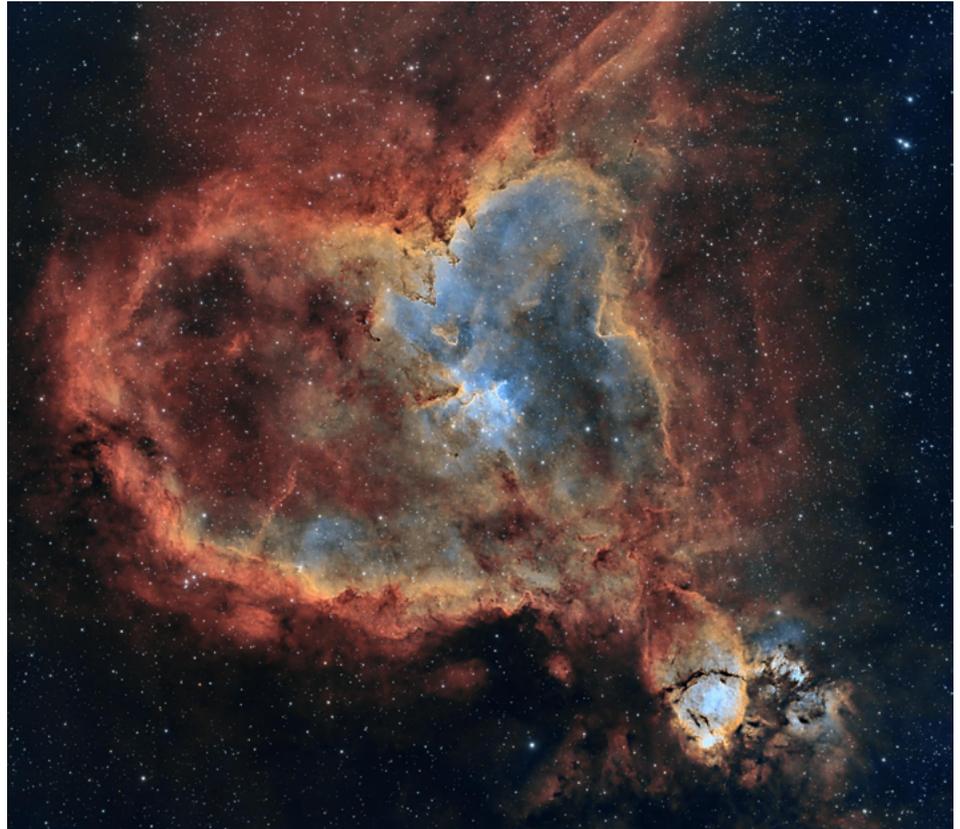
Acquisition details:

Ha - 12 x 300sec

Sii - 12 x 300sec

Oiii - 12 x 300sec

Calibration frames - 20 Flats, 40 Bias,  
20 Dark frames



# ASTROPHOTOGRAPHY GALLERY

## Recent Images by Club Members

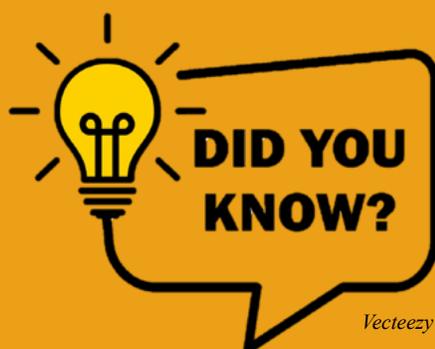
### Dell Vance

M20, the Trifid Nebula  
 7/14/2023 10:30 to 11:30 p.m. MDT  
 Canon T3i ISC 800; 22 images  
 stacked, 240 seconds each  
 Celestron 11-inch SCT w/AG and  
 focal reducer f/6.3  
 Distance: 5,500 light-years



### Your Image Could Be Here Next Month!

We all learn when you share your astrophotography with the club!  
 Send your images to [bschenkdarr@gmail.com](mailto:bschenkdarr@gmail.com) for publication!



### What Is a STEM Night?

“STEM” stands for Science, Technology, Engineering, and Mathematics. Local elementary schools host evenings at which children can learn about STEM topics informally. This is a great chance for us to share our love of astronomy! We only need two to three people for each event. Contact any member of the Executive Committee to volunteer. During the winter, we stay indoors, so you won't have to worry about getting cold! Events last from 6:00 to 8:00 p.m. Please plan to arrive at 5:30.

Is astronomy your  
 world? It's ours, too!



*YoPriceVille Gallery*

**Got a cool photo, story, or  
 article? Please share it with  
 us! Send it to Bonnie at  
[bschenkdarr@gmail.com](mailto:bschenkdarr@gmail.com).**

# HALLOWEEN ASTRONOMY FOR THE SPOOKY-MINDED



Oriental Trading

- BBC *Sky At Night* magazine recommends [celestial objects to look at for Halloween](#), including the Witch Head Nebula, Owl Nebula, Cat's Eye Nebula, and Taurid meteor shower.

- NASA has found the [ideal real exoplanet for all your favorite monsters to live on!](#)

- Read up on [how and why astronauts enjoy candy in space!](#)

- [Celebrate Halloween with NASA](#) by checking out these fun activities, pumpkin stencils, and more!

- Learn about the moon on the [Lunar Reconnaissance Orbiter Camera](#)

[website](#). The Educators tab has an entire history of moon knowledge and exploration, as well as downloadable posters, enrichment activities, and more!

- Oriental Trading sells a super cute [Halloween Character Space Ornament Craft Kit](#). This could be a fun activity for the kids in the days leading up to Halloween and International Observe the Moon Night!

- CVAS vice president, Dale Hooper, often sets up his telescope on Halloween. The kids take a look through his telescope and then receive a treat—creating a special and memorable Halloween experience for them!



YoPriceVille Gallery



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## USU Observatory Public Night

October 6, 2023

8:00 – 10 :00 p.m.

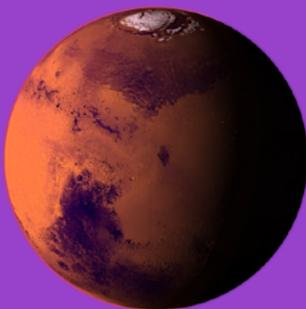
Possible targets: Saturn, Albireo, Ring Nebula, ET Cluster, M22 Globular Cluster, Andromeda Galaxy.

For details about location, weather, and parking, visit the USU Physics Department website [here](#).

# BONNIE'S ASTRONOMY WATCHLIST FOR OCTOBER 2023

October is a special month—astronomy becomes a really pleasurable activity this month, after the heat, late nights, and bugs of summer. The sun goes down early enough to let us get in some stargazing before bedtime. The weather is deliciously crisp but not too cold. The mosquitoes are dying off at long last. And all the mysteries and terror of the dark half of the year come to the fore. This October, we have some special astronomical events to look forward to. But, for those cold, cloudy nights when there's nary a star in sight, here are some fun, scary movies celebrating space science, the moon, eclipses, and more!

- *Moonfall*: An unknown force has knocked the moon onto a collision course with Earth. Disgraced former NASA astronaut Brian Fowler (Patrick Wilson) leads a team into space to find out why. Funny and terrifying!
- *The Wolf Man*: Another fun movie where the moon takes on an ominous role. This 1941 classic, starring Lon Chaney Jr. and Evelyn Ankers, is an ideal Halloween treat. It is not the first werewolf movie ever made, but is probably the most well known of the black-and-white werewolf movies.
- *October Sky*: This 1999 movie is based on the true story of Homer Hickam (played by Jake Gyllenhaal), the son of a coal miner who, through his love of rocketry, became one of NASA's premier engineers. Laura Dern stars as the teacher who helped inspire his love of science.
- *Muppets from Space*: This lighthearted movie, while not based on hard science, is kid friendly and full of exuberant musical numbers. Gonzo begins receiving mysterious messages from the stars and goes on a journey to learn more about his species and origins.
- *Ladyhawke*: A terrible curse keeps two lovers apart; the woman (Michelle Pfeiffer) is a hawk by day, and the man (Rutger Hauer) is a wolf by night, so they can never be together. But an eclipse is fated to end their torment!
- *The Kid Who Would Be King*: A family-friendly movie in which Alex, an ordinary British boy, discovers Excalibur in a construction site. Merlin (Angus Imrie) appears to protect and guide him; Alex must recruit knights to help him fight the evil witch, Morgana (Rebecca Ferguson), who will emerge at the time of an upcoming total solar eclipse to enslave all of Britain.



ClipArtMax

- *The Martian*: Astronaut Mark Watney (Matt Damon) accidentally gets left behind by his crew during a manned mission to Mars and must figure out how to survive with only the structures and supplies the crew left behind until he can be rescued. Fascinating and terrifying!



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# UPCOMING ASTRONOMY EVENTS AND ANNIVERSARIES

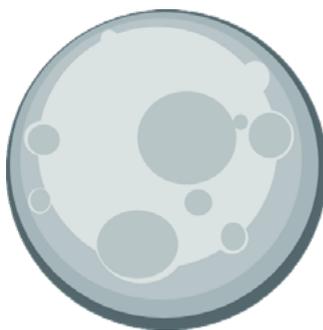
by Bonnie Schenk-Darrington

- October 5: Neil deGrasse Tyson was born in 1958. Tyson is the director of the Hayden Planetarium in New York City and is famous for his TV appearances, books, and magazine columns popularizing astrophysics.
- October 6: Camelopardalid meteor shower peaks. The radiant point will be circumpolar, so you should have a good view of meteors all night long.
- October 8: Frank Herbert was born in 1920. Herbert's series of *Dune* science fiction novels have inspired multiple movies and introduced multiple generations to the excitement of space travel.



Wikimedia Commons

- October 10: Conjunction of the moon and Venus.
- October 14: New moon.
- October 14: Annular eclipse.
- October 17: Moon's perihelion, or closest approach to the sun.
- October 18: [Félicette the cat](#) launched into space by the French space program in 1963.
- October 19: Subrahmanyan Chandrasekhar was



PNGlib

born in 1910. An Indian-American astrophysicist, he received a Nobel prize for his work on stellar structure and evolution.

- October 21: [NASA International Observe the Moon Night](#). Here is an interesting article about [why the two faces of the moon look so different](#).

Here are some moon-centered [learning activities](#) you can do with kids. Here is a guide to [amateur lunar photography](#).



Wikimedia Commons

- October 22: Orionid meteor shower peaks. Its radiant point will be highest in the sky around 6:00 a.m., so it might be worth getting up early for.

- October 23: Venus will be at its greatest separation from the sun, and will shine brightly at magnitude -4.4, at a peak altitude of 42 degrees above the horizon.



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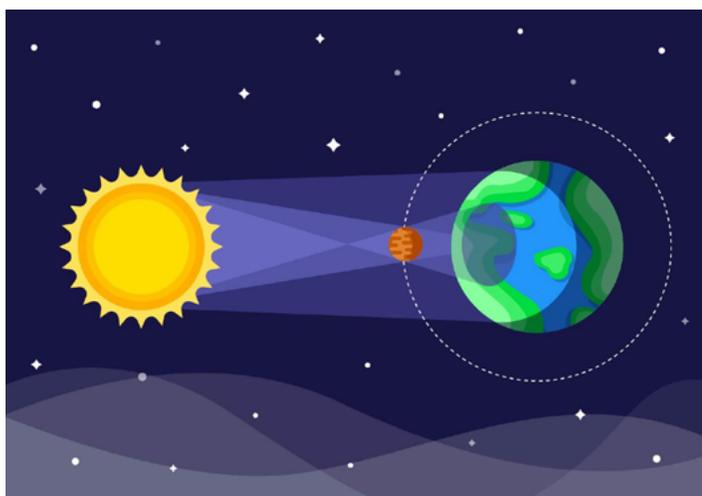
- October 24: Conjunction of the moon and Saturn.
- October 28: Full moon.
- October 29: Conjunction of the moon and Jupiter.
- October 31: Halloween!

Halloween/Samhain is traditionally a "cross-quarter day," which fell midway between autumn equinox and winter solstice in the old Julian calendar. You can read more about it [here](#).

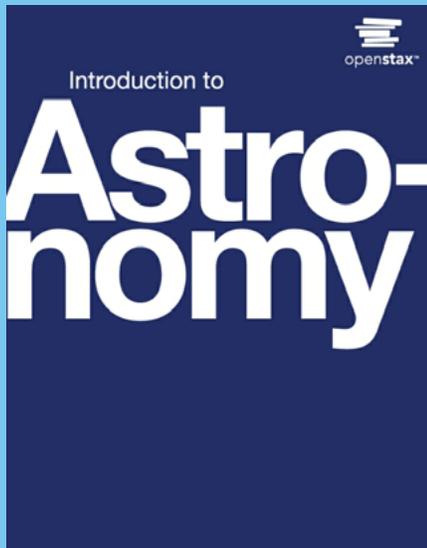
- October 31: The Caltech Rocket Research Group (precursor to the NASA Jet Propulsion Laboratory)



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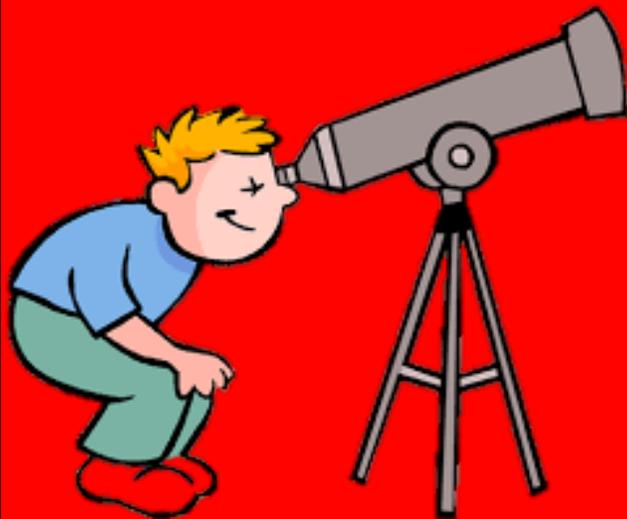
Vecteezy



Amazon Kindle

## New 2nd Edition of Free Astronomy 101 Textbook Now Available!

In an effort to democratize knowledge, the [OpenStax](#) project produces free digital and inexpensive hard-copy college-level textbooks written by professionals in many fields. You do not have to be a college student to request a copy. You can read more about the new astronomy textbook [here](#). And you can download or order a copy [here](#).



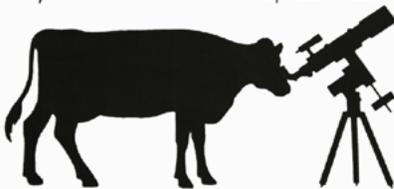
CoolClipart.com

## Stumped? Befuddled?? Bamboozled???

### Telescope Help Is Available!

When even your CVAS friends can't answer your obscure telescope questions, you might find it helpful to call Tom Sevcik at the Clark Planetarium in Salt Lake City! His number is (385) 468-1264. You can read his bio on the [Clark Planetarium website](#).

CACHE VALLEY  
ASTRONOMICAL  
SOCIETY



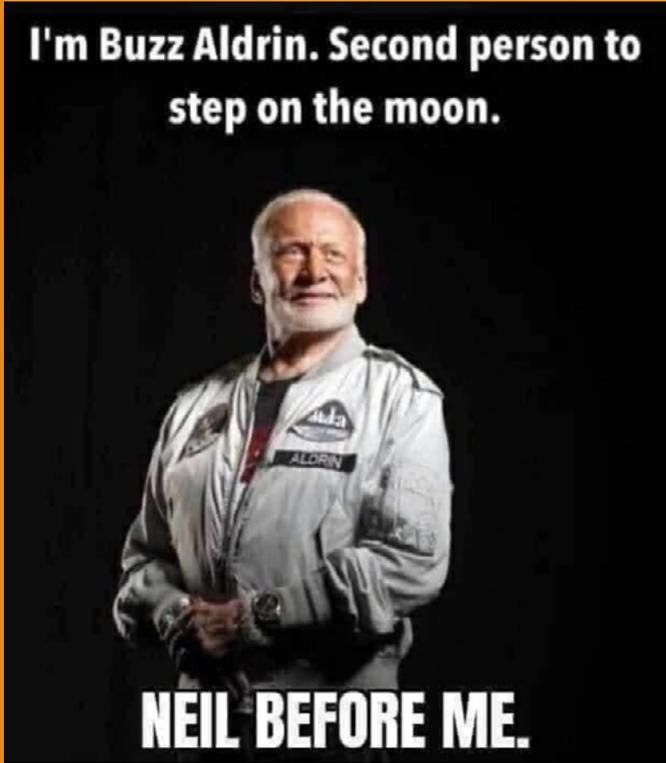
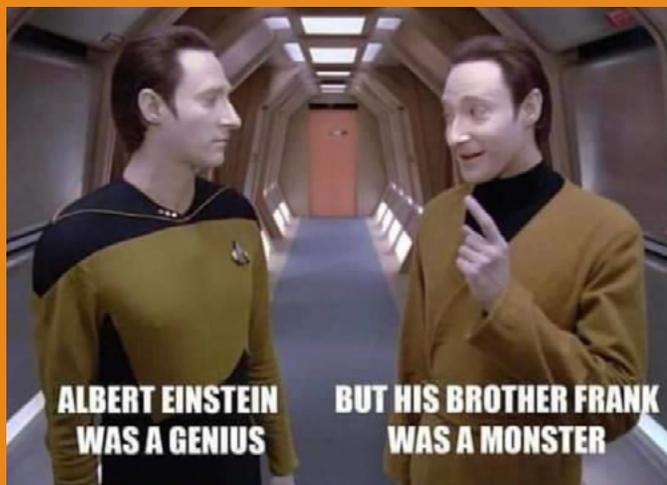
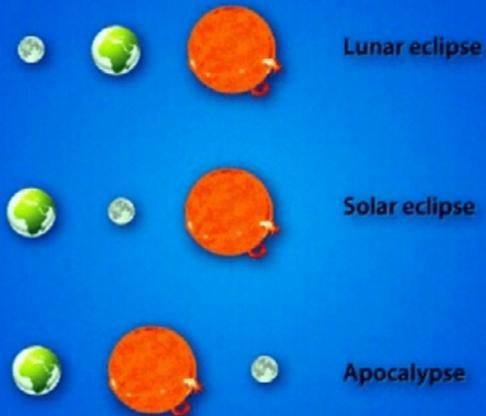
Our Website: CVAS-UTAHSKIES.ORG

## EXECUTIVE COMMITTEE

- President: Dell Vance; [avteam.dell@gmail.com](mailto:avteam.dell@gmail.com)
- Vice President: Dale Hooper; [dchooper5@gmail.com](mailto:dchooper5@gmail.com)
- Secretary-Treasurer: Bonnie Schenk-Darrington; [bschenkdarr@gmail.com](mailto:bschenkdarr@gmail.com)
- Night Sky Network Coordinator: Dell Vance; [avteam.dell@gmail.com](mailto:avteam.dell@gmail.com)
- Public Relations: Bruce Horrocks; [bruceh@gembuildings.com](http://bruceh@gembuildings.com)
- Webmaster-Librarian: Tom Westre; [twestre45@aol.com](mailto:twestre45@aol.com)

# A LITTLE ASTRONOMY HUMOR

Total eclipse of the cat



*Memebase  
Geek Universe  
I Can Has Cheezburger  
Vector4Free*

# CACHE VALLEY ASTRONOMICAL SOCIETY MEMBERSHIP APPLICATION FORM

Member # \_\_\_\_\_

NAME: \_\_\_\_\_  
First Middle Initial Last

Address: \_\_\_\_\_  
Street City State Zip Code

Home Phone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

Work Phone : \_\_\_\_\_ Occupation : \_\_\_\_\_

Email Address: \_\_\_\_\_

How did you learn about CVAS?

\_\_\_\_ Website \_\_\_\_ Star Party \_\_\_\_ CVAS Member \_\_\_\_ Other \_\_\_\_\_

Membership: \$20 lifetime membership

Tell us about yourself: Do you have a special interest in astronomy? Do you have special skills? Are you willing to volunteer on CVAS projects or attend public outreach star parties? Astro equipment owned.

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By signing this application, I acknowledge I have access to the CVAS website, [cvas-utahskies.org](http://cvas-utahskies.org), and the CVAS constitution. I agree to abide by the constitution.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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Bring this form to the meeting or contact **Bonnie Schenk-Darrington, Secretary/Treasurer** at [bschenkdarr@gmail.com](mailto:bschenkdarr@gmail.com).