

CACHE VALLEY CLEAR SKIES



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<https://cvas-utahskies.org>

PRESIDENT'S CORNER **Dale Hooper**

I truly want to thank Jeff Clayton again for his great presentation at our April meeting. Jeff walked us through acquisition and processing of narrow band imaging. I found it very helpful. I think that all of our presentations this year have been great – including our show & tell presentations. On May 16th, we will have another very interesting presentation by our club Vice President Randy Jost. He will be speaking to us about the Parker Solar Probe. So, this will be an opportunity to learn a lot of new information about this fascinating space probe. May will finish up our club meetings for the fiscal year. We really appreciate Randy Jost making it possible for us to meet on campus. I think it has worked out very well for the club.

On June 20th we are planning to have our annual club potluck dinner and solar party at the same place in Willow Park – west of the zoo. More details will be provided as this gets closer. We are also planning to have one or more club member star parties in July. In March and April I was able to pursue something that has been on my bucket list. Of course, what really happened is that it whet my appetite for more. I'm speaking about my trip to Australia for OzSky 2025 near Coonabarabran. We were in Coonabarabran for seven nights, but unfortunately for us this was the most cloudy and rainy OzSky that there has ever been in over 30 years of its existence. Fortunately, it did clear up for the final night and it was a REAL treat! It is so dark there that when clouds pass by, they are black and the stars just wink out. Observing the southern sky for us northerners is definitely disorienting. Orion and Leo looked rather odd "upside down". When Scorpius came up it was on its side, rather than rising pincers first. They mentioned to us that usually there are about five clear nights at OzSky, so by the end people are suffering from "photon fatigue" because of lack of sleep.

It was a real treat to see the large and small Magellanic clouds and the Eta Carina area of the Milky Way was spectacular. As I mentioned, it whet my appetite for more, so I am planning to go back to Australia (in their winter) for the July 2028 Total Solar Eclipse. I was informed by Lachlan Macdonald, who organizes OzSky, that they are planning to have a special OzSky centered around the total eclipse. If this is something



Executive Committee

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2. Cont'd from pg 1.

you would also like to pursue, please let me know, and I will send more details as we get closer to when we can make reservations.

I hope this isn't too much of a travelogue, but I thought I would share the images I managed to get on the clear night with my SeeStar S50 as well a few really interesting astronomy related sites in New South Wales, Australia.

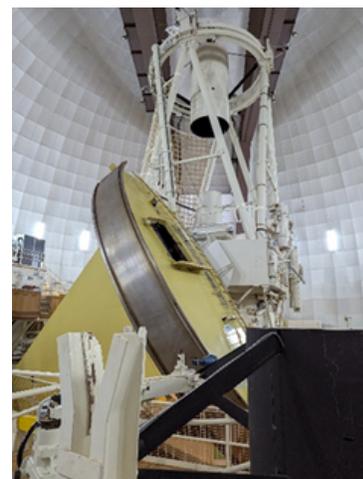
Fortunately, I was able to use the new "plan mode" feature of the SeeStar to image Centaurus A, Omega Centauri and the Eta Carinae Nebula region while I was able to observe visually through the 25-inch and 20-inch scopes that were available for the OzSky participants.



*Omega Centauri globular cluster (NGC 5139, Caldwell 80)
- 50 minutes - processed using Siril*



Centaurus A - merging galaxies - (NGC 5128, Caldwell 77) - 50 minutes - processed using Siril



Siding Spring Observatory 3.9 Meter Telescope



Dome for Siding Spring 3.9 Meter Scope

The Homunculus nebula is in the right-most part of the triangular section just to the left of center in my Eta Carinae Nebula photo. I plan to process the NGC 3372 mosaic image in Siril once version 1.4 becomes fully available. I attempted to process it with the beta version of the software and there are still a few issues.

The Siding Spring Observatory is just a 15-minute drive from the location for OzSky. This is home of the 3.9-meter Anglo-Australian Telescope. It is not large by today's standards but it still remains the largest optical telescope in Australia and is still actively used for research. There are many other telescopes located at Sliding Springs,

Cont'd on pg 3



Questions? Email:

cvastrosociety@gmail.com

Star Party

- May 2-
- Smithfield Library

Club Meetings

- May 16-
- Room 107 of the Engineering Lab Building on the USU Campus
- 3rd Friday of the month
- Randy Jost will be presenting about the Parker Solar Probe.

but one of the most intriguing observatories is the roll-off roof home to many iTelescope.net telescopes. Many of these are very premium telescopes and are available for rented observing time.

New South Wales is also the home of the 64-meter Parkes Radio Telescope which is about an hour drive from the city of Dubbo. The Parkes Radio Telescope was used for relaying the imagery for the Apollo 11 moonwalk as well as some other Apollo missions and was used for downlinking data from several NASA deep space probes. Parkes' role with Apollo 11 was made famous in the movie "The Dish". The movie does take a few Hollywood "liberties" with the facts. "The Dish" is now in the public domain and you can (and should) watch it at <https://archive.org/details/TheDish2000>. Parkes is still actively used for research and a journal is available in the visitor's center which shows what programs are currently being pursued.

The 22-meter MOPRA radio telescope is also near Coonabarabran but it has no visitor center and we didn't get a chance to stop and look at it. The Australia Telescope Compact Array set of six 22-meter radio telescopes is also in New South Wales, but we just didn't have time for the four-hour round-trip drive.

While we were in Sydney we also took a walk up to the historic Sydney Observatory. This observatory dates back to the 1850's and is Australia's oldest observatory. It was originally used for shipping navigation, meteorology and timekeeping. Today it is mainly a museum with a couple telescopes available for public outreach. However, the "time-ball" is still dropped every day at 1pm.

So you can see that there is a lot to do and see related to astronomy down under – in addition to the fabulous southern skies. Getting back there still remains on my bucket list.

Clear skies!



Unprocessed image of Eta Carinae Nebula



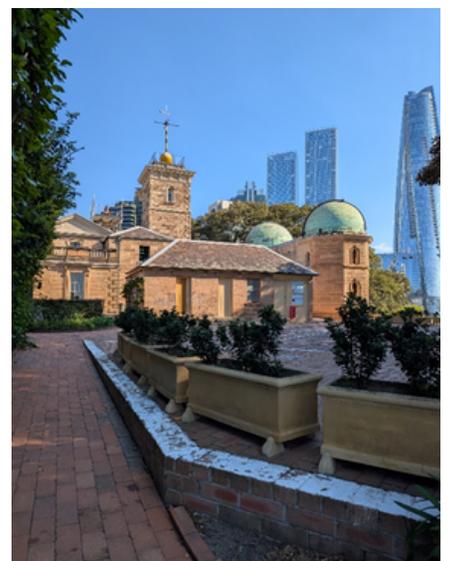
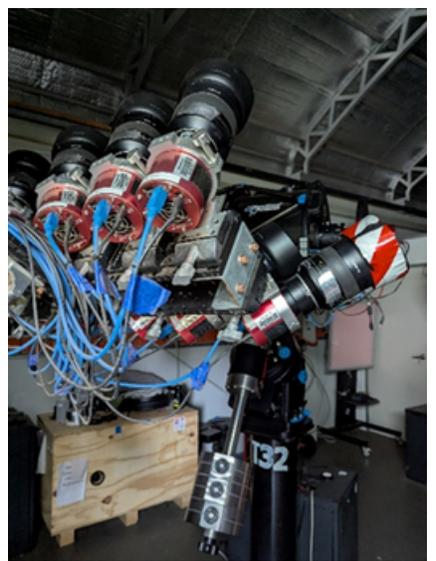
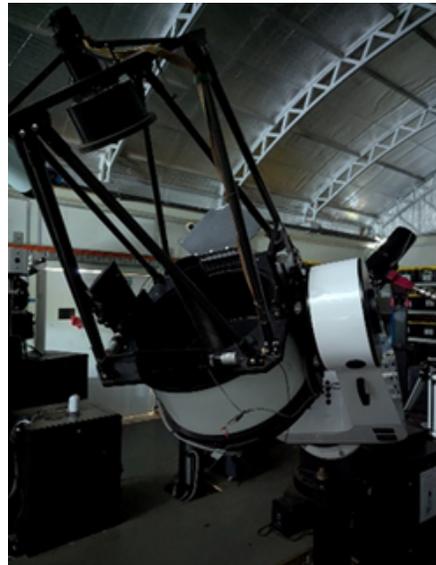
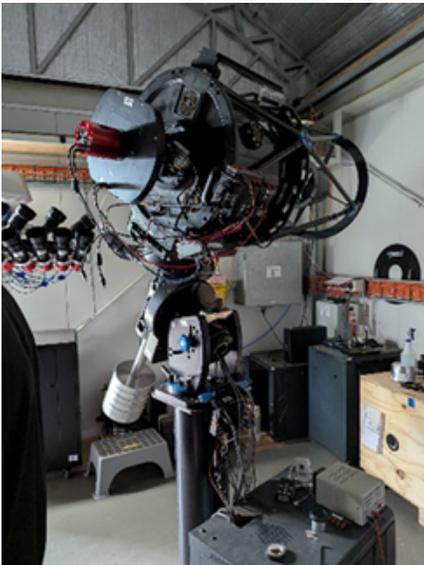
Parkes Radio Telescope



iTelescope.Net Rolloff Roof Observatory (at right)



iTelescope.Net Observatory Front



Premium Telescopes Housed in iTelescope.Net Observatory

Historic Sydney Observatory

Deep Sky Treasures by Blaine Dicky

There are so many great deep sky objects to view and image. A lifetime may not be long enough to see or image them all. Below are some of those impressive objects I have imaged recently with my ZWO SeeStar S-50.



AE Aurigae is a runaway star believed to be ejected from the Great Orion Nebula and IC405, the Flaming Star Nebula, is a reflection nebula illuminated by AE Aurigae. Both star and nebula are shown in the above image.



The Flame Nebula NGC 2024, an emission nebula, is located near the bright star Zeta Orionis one of the three stars of the Orion Belt. A dark lane divides the nebula into two areas.

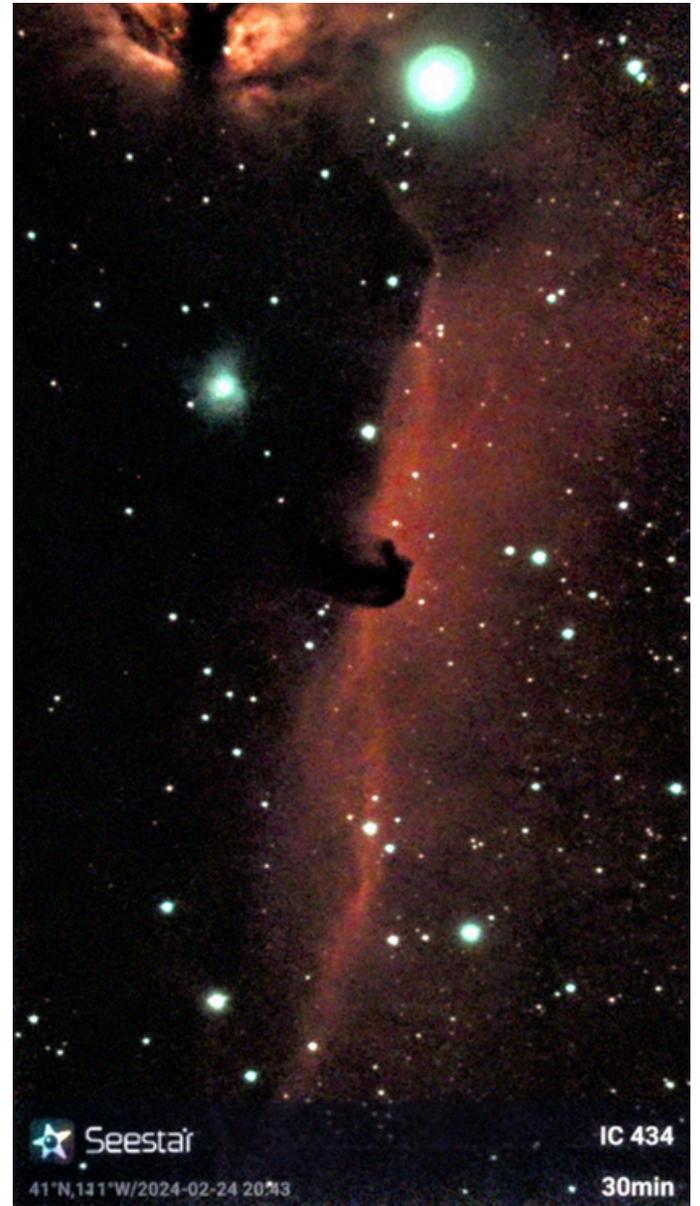


Messier 104 is a beautiful edge wise galaxy that looks visually majestic in a 6 to 10 inch telescope. You may note that its appearance resembles a sombrero hat, hence its name. It hosts a massive black hole in its center and is home to about 2000 globular clusters. It resides in the constellation Virgo. It is estimated to be 31 million light years distant.



whose young stars illuminate the nebula. It spans 130 light-years and contains about 2,500 stars. You will find it in the lesser known constellation of Monoceros, and contains about 2500 stars.

Also known as the "Silver Coin Galaxy," NGC 253 is a starburst galaxy, meaning it is undergoing intense star formation. It's one of the brightest galaxies visible in the night sky and can even be seen with binoculars! It is found in the constellation Sculptor at a relatively close distance of 11.4 million light years.



Finally IC 434 known as the Horse Head Nebula is an emission nebula in the constellation Orion. It is a region known as a stellar nursery.

I hope you have enjoyed this group of deep sky images. Many more are within reach of the amateur astronomer.

My favorite image in this series is the Rosette Nebula. It is home to the open cluster NGC 2244,

Telescope and Camera Compatibility

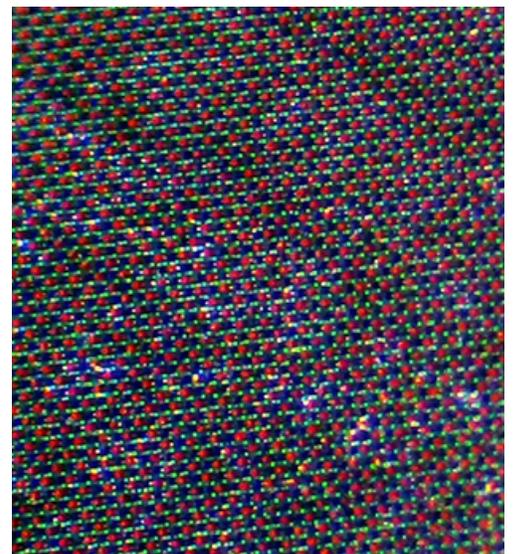
By Bruce Horrocks

I think that all of us really enjoyed Dr. Boyd Edwards presentation at one of our meetings this spring. His images were outstanding, and I would definitely leave it to a professor to derive that constant of 206.3 in the equation to determine your image resolution. I had done it previously, as being an engineer, I was curious about where this came from so I won't bother to go through it here again. As I first got going in astrophotography, I was talking to a sales staff at one of the many websites we all have used for getting equipment and he was quite helpful in selecting a camera that would help me get started on the right track. As he was explaining to me the whole concepts of "undersampling" and "oversampling", to be honest it was kind of just going over my head. Now years later, I have found most of this information to be helpful in putting together the combination of telescope and camera performance that is balanced and functional.

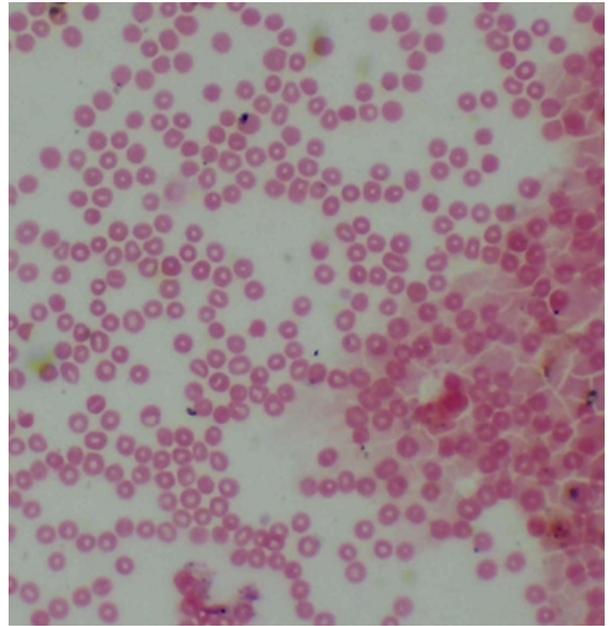
I have also realized that maybe the most important factor in all this is, what is it you want to take a picture of? If you want to take pictures of planets that is a whole lot different than taking pictures of large nebulae and galaxies. For planets you need to have a very long focal length and most smaller sensors on the cameras will work fine. I think the benefits of knowing this may help you save some money on the equipment you select. There are so many different cameras out there for sale that it can be difficult to know where to start and what to look for. Most manufacturers or sales websites will have some sort of calculators or recommendations that can help you. I have used many of the ZWO cameras over the years and they have produced a buyer guide that can help you select the ideal camera for your needs.

I started first with the ZWO 224 MC camera. While this was okay for the moon, it was not great for deep space objects. I then purchased the ZWO294MC. This is an excellent camera and was great for deep space objects and I found it to be easy to use. The one drawback with this camera was the "amp glow" that had to be corrected for. My next camera was the good old ZWO1600MM and a filter wheel. I was apprehensive about going to the monochrome side as now you have to take 4 times as many images as with a one-shot color camera. Once I started doing this, I did, however, see a significant improvement in the quality of my images. After using and then selling much of my earlier equipment I am now using the ZWO 2600MM and MC cameras. I find the color cameras more useful in the summertime when the days are long and I need to get a quick image. In the wintertime with the longer nights the monochrome is my preferred camera.

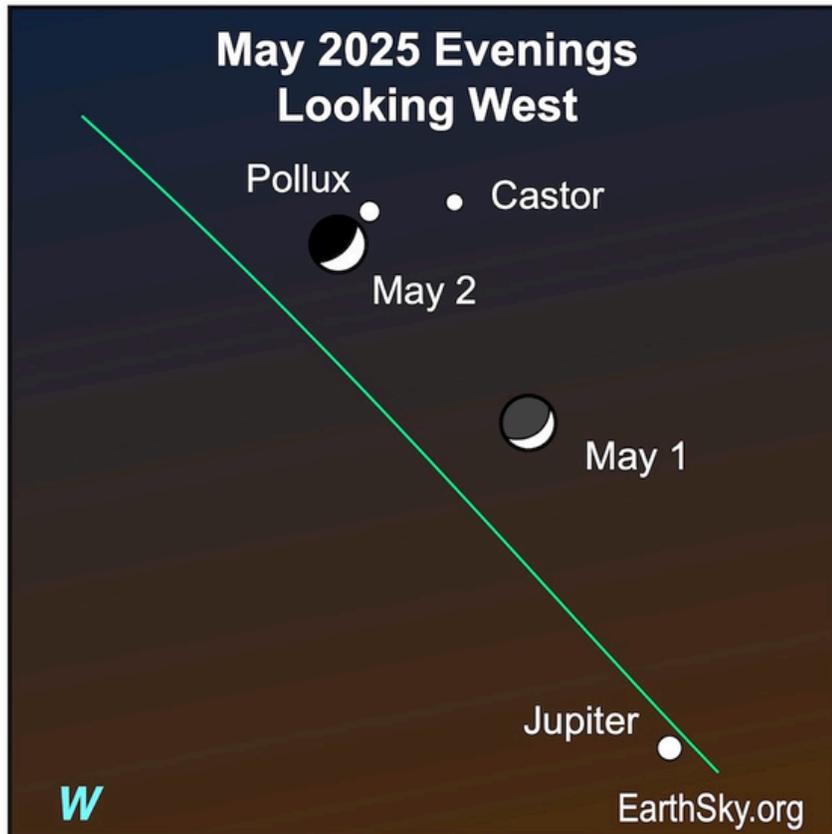
How these little camera sensors work is still very interesting to me. When I think about how many million of little sensors are working to help me get a great image I am still fascinated. How they get 26 million little pixels to gather the light and keep it all straight is for me just amazing. I recently found a used microscope for sale that I purchased. After looking at bug legs and bee wings, I found an old camera sensor that was broken and wanted to look at it. I am able to use a camera and my some astronomy software to take an image of this sensor. The pixel size on this sensor is roughly 3 x 3 microns for each color. For comparison there is an image of some blood cells at the same magnification



You can see on the sensor the Bayer Matrix of Red, Green and Blue. This sensor was from a 2 megapixel camera and the whole sensor is around 4mm x 5mm in size or 0.15" x 0.20". Next time you take that camera out and record that great shot of whatever you are looking at, just be grateful for those very tiny little pixels doing a great job of keeping record of all the photons that come after it.



Night Sky Planner



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.

By signing this application, I acknowledge I have access to the CVAS website, cvas-utahskies.org , and the CVAS constitution. I agree to abide by the constitution.

Signature: _____ **Date:** _____

Bring this form to the meeting or contact **Dell Vance, Membership Coordinator** at avteam.dell@gmail.com.