The High Desert Observer

May 2022

This Month's Meeting - May 27, 2022

Meeting will be virtual via Zoom®
Friday at 7 p.m.

Speaker for the Month - Ranimo Bush

Here Come the Sun…spots

Solar Cycle 25 began in December 2019 and the 11-year cycle has been building ever since. I began sketching sunspots daily in October of 2021 with pencil and paper. Come with me on a journey making peace with my $60 Celestron EclipSmart Sun Scope and making friends with our closest star.

Rani "Mo" Bush is currently the town clerk/ treasurer of Mesilla, NM. She has been a space enthusiast all her life ever since she watched her first re-run of the original Star Trek in the late 60's. Her interest grew during high school in Las Vegas, NV where she was a member of the Las Vegas Astronomical Society. Mo had aspirations of becoming an astronaut but unfortunately that didn't come to be. But in 2012 she visited Spaceport America, and with her 50th birthday in 2013, she decided to dedicate the second half of her life to her first love, space exploration. Mo moved to New Mexico in 2018 and became a member of the Astronomical Society of Las Cruces (ASLC) in 2019. She currently serves on the board of the ASLC and the Las Cruces Space Festival and is a member of the Planetary Society and NewSpace New Mexico. She owns two telescopes and currently documents sunspots daily.

Astronomical Society of Las Cruces

In This Issue

Masthead Image: M82 & M81 Galaxies in Ursa Major - courtesy of ASLC Member Jeff Johnson

From the Desk of Ed Montes ASLC President

It's Possible - "Meteor Outburst"

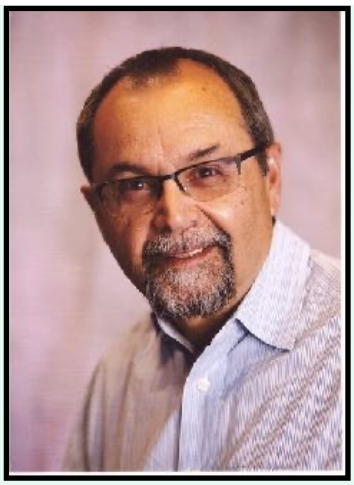
I just saw this and found it intriguing, it's from the American Meteor Society:

https://www.amsmeteors.org/2022/05/possible-meteor-outburst-on-may-3031/

The basic story is that due to a fragmentation event of comet 73P/Schwassmann-Wachmann in 1995 there may be a big debris field that we're going cross at the end of May. It could result in a spate of activity on the evening of May 30 / morning of May 31. Check out the article for details and a more complete discussion of the possibility. I'll be staying up for it.

Free Astronomy Text

I came across an article describing a newly updated Astronomy text that is available free online. The book, titled "Astronomy 2e" is the product of work by Andrew Fraknoi, David Morrison and Sidney Wolff. It is the updated, second edition of an astronomy text first issued in 2017; the 2e version became available in March 2022. I've perused it and it seems to be a remarkably comprehensive text. Its 30 chapters cover topics from the scale of the Universe, to the birth of Astronomy to celestial distances to the H-R diagram to the Big Bang. I dove deeper into Chapter 17 – Analyzing Starlight and found detailed explanations of the magnitude scale, the colors of stars, the OBAFGKMLTY classification system, and how to use spectra to discern physical properties of the stars. It seems to me that this is a fine reference work. If you already know a lot about astronomy, this is a great refresher. If you are a beginner, this is an excellent introduction, clear, concise and definitely NOT "dumbed down". I'm definitely bookmarking access to this and will be accessing it often. The book may be found at the following link: https://openstax.org/details/books/astronomy-2e



Speaker this Month

I am very happy to announce that our speaker this month, May 2022, is the club's very own Ranimo Bush. She will be talking about her adventures in becoming a die-hard solar observer and documenter. She as spent the last 6 months dedicated to observing the sun every day and sketching what she has seen. I'm looking forward to this!

That's it for now. Clear skies!

Coming Events

Monthly, on an evening close to the first-quarter moon, ASLC hosts a public "MoonGaze" observing session in Las Cruces. We also hold periodic special evening sessions at Tombaugh Observatory on the NMSU campus.

Also monthly, the ASLC welcomes public viewing at the Walter Haas Observatory in Leasburg Dam State Park, located just 20 miles north of Las Cruces. Our 16-inch Meade LX200 telescope at this site is used to observe under rather dark skies.

Keep updated on the dates, times, and locations through this link with additional information available at our website www.aslc-nm.org as well as our Facebook page.

Featured Article:

Solstice Shadows

This article is distributed by NASA Night Sky Network. The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit https://nightsky.jpl.nasa.gov/ to find local clubs, events, and more.

By David Prosper

Solstices mark the changing of seasons, occur twice a year, and feature the year's shortest and longest daylight hours - depending on your hemisphere. These extremes in the length of day and night make solstice days more noticeable to many observers than the subtle equality of day and night experienced during equinoxes. Solstices were some of our earliest astronomical observations, celebrated throughout history via many summer and winter celebrations.

Solstices occur twice yearly, and in 2022 they arrive on June 21 at 5:13 am EDT (9:13 UTC), and December 21 at 4:48pm EST (21:48 UTC). The June solstice marks the moment when the Sun is at its northernmost position in relation to Earth's equator, and the December solstice marks its southernmost position. The summer solstice occurs on the day when the Sun reaches its highest point at solar noon for regions outside of the tropics, and those observers experience the longest amount of daylight for the year. Conversely, during the winter solstice, the Sun is at its lowest point at solar noon for the year and observers outside of the tropics experience the least amount of daylight- and the longest night – of the year. The June solstice marks the beginning of summer for folks in the Northern Hemisphere and winter for Southern Hemisphere folks, and in December the opposite is true, as a result of the tilt of Earth's axis of rotation. For example, this means that the Northern Hemisphere receives more direct light from the Sun than the Southern Hemisphere during the June solstice. Earth's tilt is enough that northern polar regions experience 24-hour sunlight during the June solstice, while southern polar regions experience 24-hour night, deep in Earth's shadow. That same tilt means that the Earth's polar regions also experience a reversal of light and shadow half a year later in December, with 24 hours of night in the north and 24 hours of daylight in the south. Depending on how close you are to the poles, these extreme lighting conditions can last for many months, their duration deepening the closer you are to the poles.

While solstice days are very noticeable to observers in mid to high latitudes, that's not the case for observers in the tropics - areas of Earth found between the Tropic of Cancer and the Tropic of Capricorn. Instead, individuals experience two "zero shadow" days per year. On these days, with the sun directly overhead at solar noon, objects cast a minimal shadow compared to the rest of the year. If you want to see your own shadow at that moment, you have to jump! The exact date for zero

Zero Shadow Day Demonstration

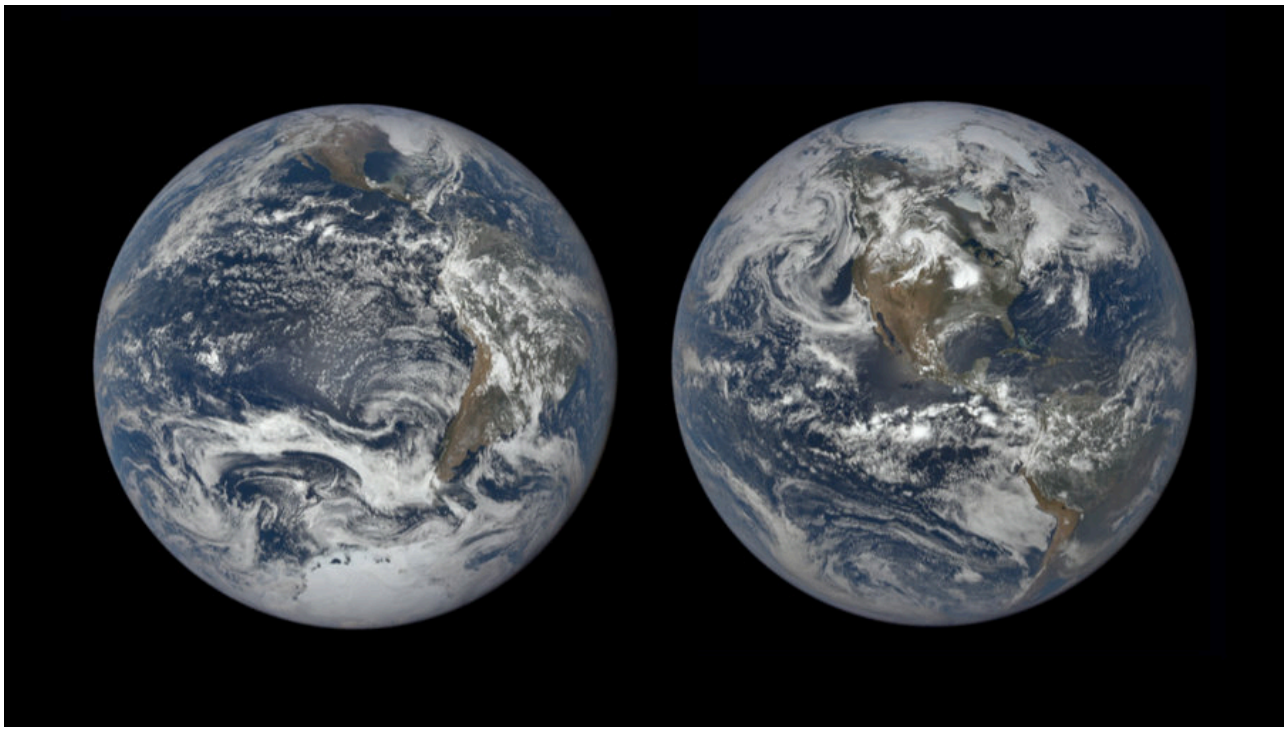
Globes are a handy and practical way to help visualize solstices and equinoxes for large outdoor groups, especially outdoors during sunny days! Credit & Source: Juan Velázquez / San Antonio Astronomy Club

shadow days depends on latitude; observers on the Tropic of Cancer (23.5° north of the equator) experience a zero shadow day on the June solstice, and observers on the Tropic of Capricorn (23.5° south of the equator) get their zero shadow day on December's solstice. Observers on the equator experience two zero shadow days, being exactly in between these two lines of latitude; equatorial zero shadow days fall on the March and September equinoxes.

There is some serious science that can be done by carefully observing solstice shadows. In approximately 200 BC, Eratosthenes is said to have observed sunlight shining straight down the shaft of a well during high noon on the solstice, near the modern-day Egyptian city of Aswan. Inspired, he compared measurements of solstice shadows between that location and measurements taken north, in the city of Alexandria. By calculating the difference in the lengths of these shadows, along with the distance between the two cities, Eratosthenes calculated a rough early estimate for the circumference of Earth – and also provided further evidence that the Earth is a sphere!

Are you having difficulty visualizing solstice lighting and geometry? You can build a "Suntrack" model that helps demonstrate the path the Sun takes through the sky during the seasons; find instructions at stanford.io/3FY4mBm. You can find more fun activities and resources like this model on NASA Wavelength: science.nasa.gov/learners/wavelength. And of course, discover the latest NASA science at nasa.gov.

Solstice From Space



These images from NASA's DSCOVR mission shows the Sun-facing side of Earth during the December 2018 solstice (left) and June 2019 solstice (right). Notice how much of each hemisphere is visible in each photo; December's solstice heavily favors the Southern Hemisphere and shows all of South America and much of Antarctica and the South Pole, but only some of North America. June's solstice, in contrast, heavily favors the Northern Hemisphere and shows the North Pole and the entirety of North America, but only some of South America. Credit: NASA/DSCOVR EPIC Source: https://www.nasa.gov/image-feature/goddard/2021/summer-solstice-in-the-northern-hemisphere

Minutes of April 2022 Meeting

John McCullough - Secretary

Ed Montes, President, Astronomical Society of Las Cruces (ASLC, the Society), called the April 2022 meeting to order at 7:03 pm on 22 April 2022. He welcomed attendees to tonight's meeting via ZOOM. Twenty (20) attendees were signed in for the start of the meeting.

Ed welcomed the group to tonight's meeting and announced that the minutes from the March 2022 meeting (thanks to John McCullough, Secretary) were published in the April issue of the Society newsletter, the High Desert Observer (HDO) (thanks to Tim Kostelecky, HDO Editor). Ed asked if there were any required additions, deletions, or corrections to the minutes as submitted. A motion to accept the March 2022 minutes as submitted was offered by Rich Richins, seconded by Bernie Jezercak. There being no objections, the motion was passed by acclamation.

Ed introduced tonight's speaker, Mr. Tyler Cohen.

Presentation:

Tonight's Tombaugh Series speaker was Mr. Tyler Cohen, PhD student at the National Radio Astronomy Observatory (NRAO). His topic was "Pulsars and Gravitational Waves".

Gravitational waves are ripples in the fabric of spacetime. A consequence of Einstein's theory of general relativity, they were first detected from inspiraling black holes in 2015 by the Laser Interferometer Gravitational-Wave Observatory (LIGO). Now, another observatory is on the verge of detecting gravitational waves of a different sort. Its detector is the size of the Milky Way galaxy and constructed from some of the most exotic stars in the universe. Tyler discussed how the North American NanoHertz Observatory for Gravitational Waves uses pulsar timing to search for lowfrequency gravitational waves, and the role that the Very Large Array (VLA) plays in this groundbreaking experiment.

Tyler Cohen is not only a PhD student at the National Radio Astronomy Observatory, but he is also a tour guide at the VLA radio telescope in New Mexico. A New York native, he received his BSc. in physics and astronomy at Stony Brook University. He has since worked at the Gemini Observatory on Mauna Kea, Hawaii and, one of his favorites, the Arecibo Observatory in Puerto Rico.

As this is a version of Tyler's doctoral presentation, he requested that ASLC members provide feedback on its detail and clarity.

Officer/Committee Reports:

Treasurer:

Trish Conley, Treasurer, was not present at tonight's meeting; there was no Treasure's report.

The Walter Haas Observatory at Leasburg Dam State Park (LDSP):

Steve Barkes, committee chairman, was not present at tonight's meeting. There was no report. The official naming process continues but still requires signoff by the Governor of New Mexico.

Public Outreach:

Stephen Wood, committee chair, reported good attendance at the last LDSP event. Several hundred people attended the Moon Gaze on the Downtown Plaza, 09 April, as part of the Las Cruces Space Festival. The next LDSP event is 23 April. He hopes for better weather, but poor "seeing" conditions are expected. Directions and event schedules for the ASLCWest events are posted on the ASLC website.

Loaner Telescope:

Tim Kostelecky, program coordinator, had no real update to report. He said that descriptions of the available program telescopes are now a regular, although not monthly, feature in the HDO. The descriptions are also available through the Society web site. He reports that more telescopes are getting used.

ASLCWest (Demingarea) Activity Report:

Mike Nuss reported the 01 April event at Rockhound State Park attracted twentyfour (24) attendees. The City of Rocks State Park event the next night had fiftyfour (54) attendees. The group expects to take a few weeks off, then resume events over Memorial Day weekend.

Old Business:

No old business was offered for consideration.

New Business:

No new business was offered for consideration.

Ed Montes noted a speaker is needed for the May meeting. Gary Starkweather will be the speaker in June. Contact Ed if you would like to make a presentation or can suggest a speaker.

The April 2022 meeting was adjourned at 8:36 pm.

-Respectfully submitted:
John McCullough
Secretary, ASLC

The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties, providing opportunities to work on Society and public educational projects. Members receive electronic delivery of The High Desert Observer, our monthly newsletter, plus membership in the Astronomical League including their quarterly publication, Reflector, available in either paper or digital format. ASLC members are also entitled to a discount on a subscription to Sky and Telescope magazine. Annual Individual Dues are $36; Family $42; Student (Full Time) $24. Dues are payable in January and partial year prorated for new members. Please contact our Treasurer, Patricia Conley, treasurer@aslc-nm.org for further information.

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Member Images

Penumbral Moonrise - Ed Montes

Lunar eclipse in May - taken from Ed's home in Las Cruces

Lunar Eclipse - Rich Richins

I took my Canon and 300mm lens (and a couple of barley pops) over to White Sands to watch/image the eclipse. It was kind of smokey there which seemed to mute the colors. Here's a shot from near U3. A few mag 6-7 stars are in the shot. Also took my 6" dob there and shared views with several people. The place was packed with people literally howling at the eclipsed Moon. Great fun!

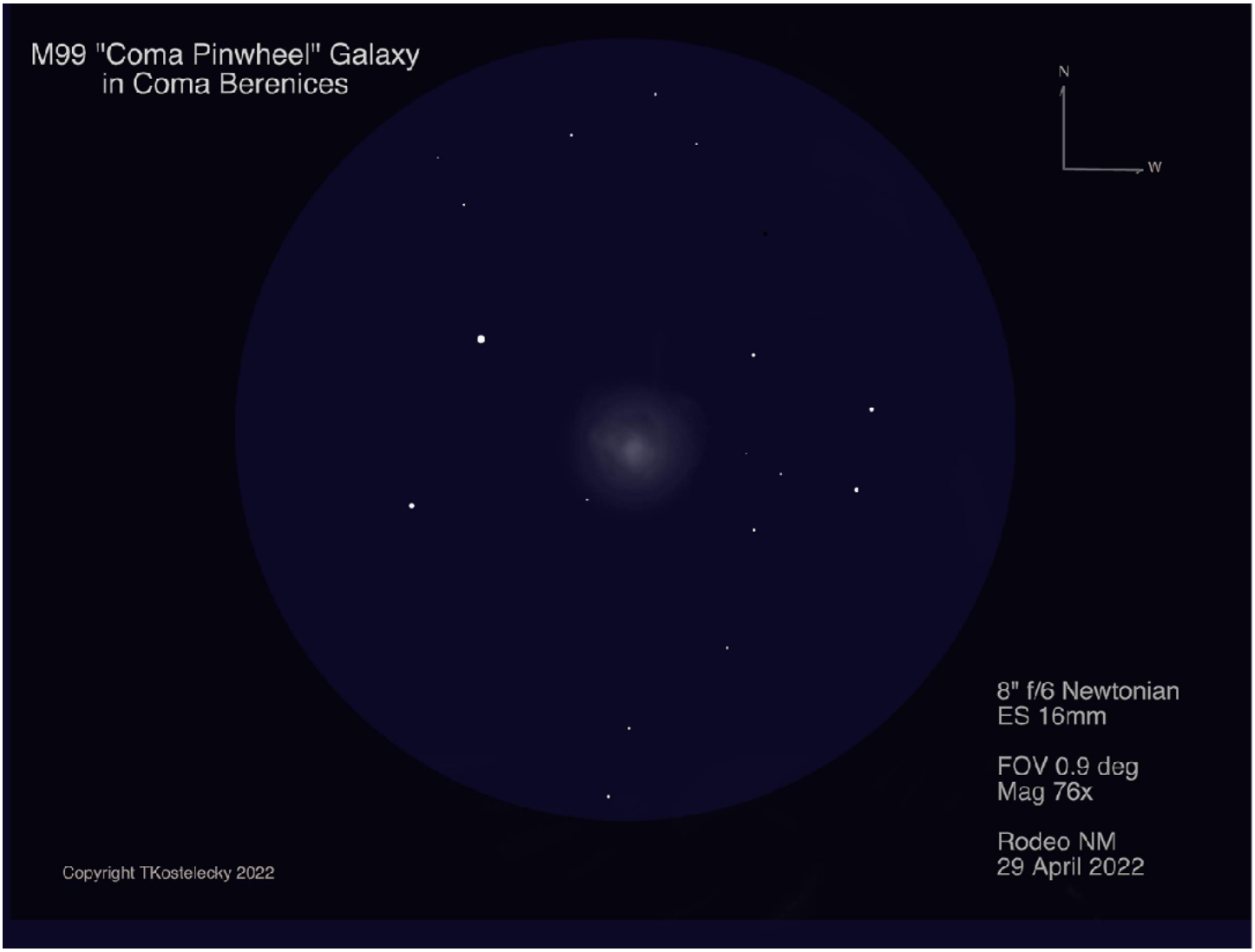
Rho Ophiuchi Region from Rusty's RV - Bob Kimball

This image of the Rho Ophiuchi region taken using a W. O. Redcat. The image was captured at Rusty's RV Ranch in the "boot heal" of southern New Mexico.

M60, NGC 4647-SN 2022hrs, M59 - Kent DeGroff

The supernova shown at the tick marks (galaxies on left) in this image occurred on 16 April 2022. This image was taken 2 1/2 weeks later. It is still exceptionally bright but fading by the day. It is not absolutely known which galaxy the SN occurred in. It could also have been in the M60 galaxy, as the two overlap. M59 is the bright galaxy at the right.

M99 “Coma Pinwheel” Galaxy sketch from Rusty’s RV
Tim Kostelecky



Original sketch made with black pencil to white paper, then that image transferred to Corel Painter software as a trace for the hand-“painted” digital version.