

Celestial

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CCAS member Paul Wilson took this photo of The Pinwheel Galaxy (M101), including SN 2023ixf, a new supernova discovered on May 19th. In this image, the supernova is visible as the bright spot near the top of the image, within the top arm of the galaxy.

Star Gazing: In person at Santa Margarita Lake Park!

Saturday, July 15th at 8pm
Saturday, August 19th at 8pm
Saturday, September 16th at 8pm

These events are dependent on weather. For detailed information, visit our website

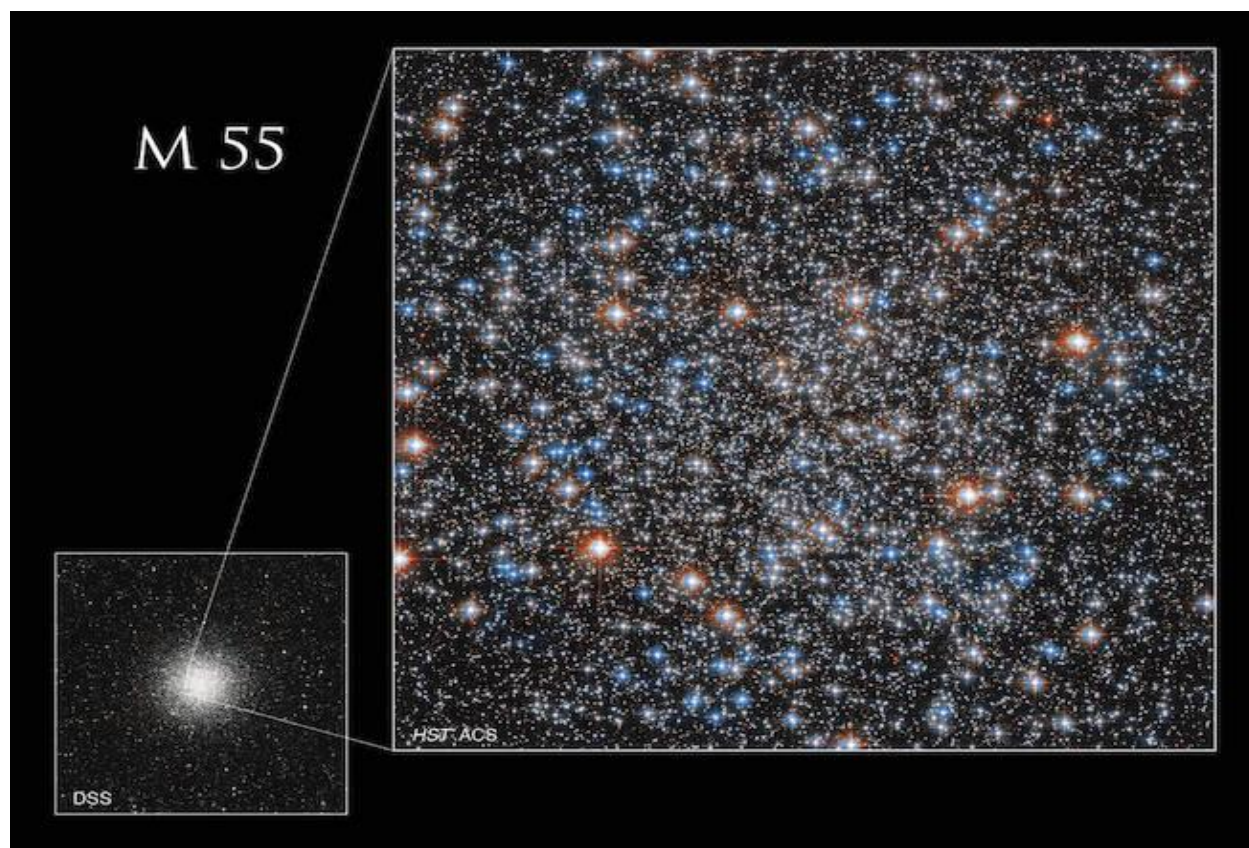
Find out more here:
CentralCoastAstronomy.org/star-parties

Can't make the in person star parties?

CCAS has virtual star gazing tours for each month of the year, linked on our website! Follow along with the one hour tour to learn what's in the night sky and how to find each object with your binoculars or telescope.

Get more information here:
CentralCoastAstronomy.org/stargazing-tours

Find A Ball of Stars by Linda Shore, Ed.D for Night Sky News



The large image shows just the central portion of M55 taken by the Hubble Space Telescope. Above Earth's atmosphere, this magnificent view resolves many individual stars in this cluster. How many can you count through binoculars or a backyard telescope?

[Original Image](#) and Credits: NASA, ESA, A. Sarajedini (Florida Atlantic University), and M. Libralato (STScI, ESA, JWST); Smaller image: Digital Sky Survey; Image Processing: Gladys Kober

French astronomer Charles Messier cataloged over 100 fuzzy spots in the night sky in the 18th century while searching for comets – smudges that didn't move past the background stars so couldn't be comets. Too faint to be clearly seen using telescopes of the era, these objects were later identified as nebulae, distant galaxies, and star clusters as optics improved. Messier traveled the world to make his observations, assembling the

descriptions and locations of all the objects he found in his Catalog of Nebulae and Star Clusters. Messier's work was critical to astronomers who came after him who relied on his catalog to study these little mysteries in the night sky, and not mistake them for comets.

Most easily spotted from the Southern Hemisphere, this “faint fuzzy” was first cataloged by another French astronomer, Nicholas Louis de Lacaille

in 1752 from Southern Africa. After searching many years in vain through the atmospheric haze and light pollution of Paris, Charles Messier finally added it to his catalog in July of 1778. Identified as Messier 55 (M55), this large, diffuse object can be hard to distinguish unless it's well above the horizon and viewed far from city lights.

But July is a great month for getting your own glimpse of M55 – especially if you live in the southern half of the US (or south of 39°N latitude). Also known as the “Summer Rose Star,” M55 will reach its highest point in northern hemisphere skies in mid-July. Looking towards the south with a pair of binoculars well after sunset, search for a dim (mag 6.3) cluster of stars below the handle of the “teapot” of the constellation Sagittarius. This loose collection of stars appears about 2/3 as large as the full Moon. A small telescope may resolve the individual stars, but M55 lacks the dense core of stars found in most globular clusters. With binoculars, let your eyes wander the “steam” coming from the teapot-shaped Sagittarius (actually the plane of the Milky Way Galaxy) to find many more nebulae and clusters.

As optics improved, this fuzzy patch was discovered to be a globular cluster of over 100,000 stars that formed more than 12 billion years ago, early in the history of the Universe. Located 20,000 light years from Earth, this ball of ancient stars has a diameter of 100 light years. Recently, NASA released a magnificent image of M55 from the Hubble Space Telescope, revealing just a small portion of the larger

cluster. This is an image that Charles Messier could only dream of and would have marveled at! By observing high above the Earth's atmosphere, Hubble reveals stars inside the cluster impossible to resolve from ground-based telescopes. The spectacular colors in this image correspond to the surface temperatures of the stars; red stars being cooler than the white ones; white stars being cooler than the blue ones. These stars help us learn more about the early Universe. Discover even more:

<https://www.nasa.gov/feature/goddard/2023/hubble-messier-55>

The Hubble Space Telescope has captured magnificent images of most of Messier's objects. Explore them all:

<https://www.nasa.gov/content/goddard/hubble-s-messier-catalog/>



This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

NASA's Perseverance Rover Captures View of Mars' Belva Crater

by NASA JPL



This view of the interior of Belva Crater was generated using data collected by the Mastcam-Z instrument aboard NASA's Perseverance Mars rover on April 22, 2023, the 772nd Martian day, or sol, of the mission. When the 152 individual images that make up this mosaic were taken, the rover was parked at the west side of the crater's rim, on a light-toned rocky outcrop the science team is calling "Echo Creek." Credit: NASA/JPL-Caltech/ASU/MSSS [Full Image Details](#)

The six-wheeled scientist encountered the crater during its latest science campaign in search of rock samples that could be brought to Earth for deeper investigation.

The Mastcam-Z instrument aboard NASA's Perseverance Mars rover recently collected 152 images while looking deep into Belva Crater, a large impact crater within the far larger Jezero Crater. Stitched into a dramatic mosaic, the results are not only eye-catching, but also provide the

rover's science team some deep insights into the interior of Jezero.

"Mars rover missions usually end up exploring bedrock in small, flat exposures in the immediate workspace of the rover," said Katie Stack Morgan, deputy project scientist of Perseverance at NASA's Jet Propulsion Laboratory in Southern California. "That's why our science team was so keen to image and study Belva. Impact craters can offer grand views and vertical cuts that provide important clues to the origin of these rocks with a perspective and at a scale that we don't usually experience."

On Earth, geology professors often take their students to visit highway “roadcuts” –places where construction crews have sliced vertically into the rock to make way for roads – that allow them to view rock layers and other geological features not visible at the surface. On Mars, impact craters like Belva can provide a type of natural roadcut.

Signs of Past Water

Perseverance took the images of the basin on April 22 (the 772nd Martian day, or sol, of the mission) while parked just west of Belva Crater’s rim on a light-toned rocky outcrop the mission’s science team calls “Echo Creek.” Created by a meteorite impact eons ago, the approximately 0.6-mile-wide (0.9-kilometer-wide) crater reveals multiple locations of exposed bedrock as well as a region where sedimentary layers angle steeply downward.

These “dipping beds” could indicate the presence of a large Martian sandbar, made of sediment, that billions of years ago was deposited by a river channel flowing into the lake that Jezero Crater once held.

The science team suspects the large boulders in the foreground are either chunks of bedrock exposed by the meteorite impact or that they may have been transported into the crater by the river system. The scientists will search for answers by continuing to compare features found in bedrock near the rover to the larger-scale rock layers visible in the distant crater walls.

To help with those efforts, the mission also created an anaglyph, or 3D version,

of the mosaic. “An anaglyph can help us visualize the geologic relationships between the crater wall outcrops,” said Stack. “But it also provides an opportunity to simply enjoy an awesome view. When I look at this mosaic through red-blue 3D glasses, I’m transported to the western rim of Belva, and I wonder what future astronauts would be thinking if they were to stand where Perseverance once stood when it took this shot.”

More About the Mission

A key objective for Perseverance’s mission on Mars is astrobiology, including caching samples that may contain signs of ancient microbial life. The rover will characterize the planet’s geology and past climate, pave the way for human exploration of the Red Planet, and be the first mission to collect and cache Martian rock and regolith.

Subsequent NASA missions, in cooperation with ESA, would send spacecraft to Mars to collect these sealed samples from the surface and return them to Earth for in-depth analysis.

The Mars 2020 Perseverance mission is part of NASA’s Moon to Mars exploration approach, which includes Artemis missions to the Moon that will help prepare for human exploration of the Red Planet.

JPL, which is managed for NASA by Caltech, built and manages operations of the Perseverance rover.

For more about Perseverance:
<https://mars.nasa.gov/mars2020/>

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CCAS Information

Founded in 1979, the Central Coast Astronomical Society (CCAS) is an association of people who share a common interest in astronomy and related sciences.

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CCAS member Dave Majors took this photo of The Lagoon Nebula (M8). Located 5,000 light-years from Earth near the constellation Sagittarius, this nebula can be seen through binoculars and is best seen during the Summer months.