CLEVELAND MUSEUM *of* NATURAL HISTORY

THE STARGAZER

FALL 2025

THE **OBSERVATORY**

This image, captured by the NSF-DOE Vera C. Rubin Observatory, highlights a mesmerizing portion of the Virgo Cluster, the nearest major group of galaxies to our own Local Group. Two delightful blue spirals are displayed prominently beneath a trio of interacting galaxies, locked in a gravitational dance. This is merely a fraction of the full image released—one that contains a whopping 10 million galaxies!

The Rubin Observatory, which boasts the largest digital camera ever built, achieved "first light" in June of this year. It will continue to scan the southern sky for an entire decade in an effort to catalog the solar system, map the Milky Way, and probe the nature of dark matter and dark energy. By the end of this intensive survey, the observatory is expected to observe a total of 20 billion galaxies.

Part of Rubin Observatory's view of the Virgo Cluster, dubbed "Cosmic Abundance"; June 5, 2025

SHAFRAN **PLANETARIUM NEWS**

Join us at the Nathan and Fannye Shafran Planetarium as we debut our new fall planetarium shows: *Eyes on the Sky* and *The Falling Stars*. These immersive journeys through the cosmos are sure to spark wonder and curiosity. Come and experience the night sky like never before!

Children's Planetarium Show:
The Falling Stars
Weekends: 1pm

Experience the wonder of meteors streaking across the night sky—without waiting for a clear night! Discover what causes these dazzling displays, how to spot them during crisp fall evenings, and what these "falling stars" reveal about the vast Universe around us.

Eyes on the Sky
Weekdays: 11am, 1pm & 3pm
Weekends: Noon, 3pm & 4pm

Travel the globe to visit towering telescopes in some of the planet's most remote locations. Learn why these mountaintop and desert observatories are perfect for exploring the cosmos, and see the breathtaking discoveries they're making right now.

Come and see both—only at the Nathan and Fannye Shafran Planetarium!

The Astronomy Team is Growing:
We're thrilled to welcome Nicole Fedor as the newest member of the Museum's Astronomy Department! Since joining us in mid-August, Nicole has hit the ground running—adding her talents, energy, and passion to the "cosmic flair" of our Astro team. Together, we continue to share the stories of the cosmos with our community... and now, with Nicole on board, our trusty Astro tripod has transformed into a full deck of cards—four suits strong and ready to play!

PERIOD **PANORAMA**

The season of autumn is a prime time to view meteor showers! Check out what other cosmic events the night sky has to offer:

End of September: The Juno Mission has come to an end. The Juno Spacecraft is a NASA mission sent to Jupiter in 2011 and was the first mission sent to the gas giant to investigate the planet's interior. The orbiter arrived at Jupiter in 2016 and has helped humans explore some of the deep questions about the inside of the planet and its moons. Juno's mission was extended in 2021 to continue research on the planet. Juno's mission will officially end when the spacecraft is no longer working or continuing to send back data. This fate is predicted to occur this September.

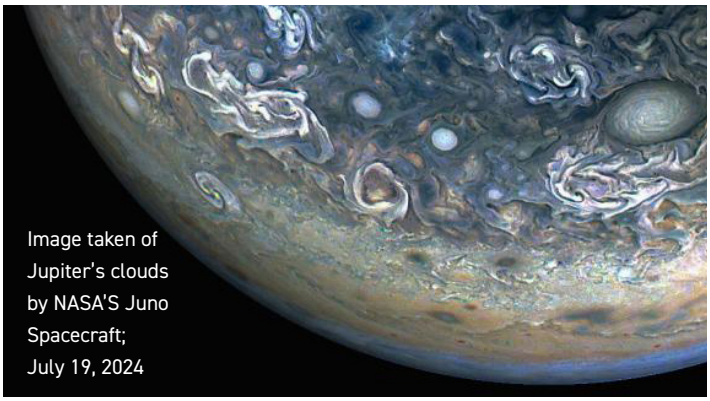

Image taken of Jupiter's clouds by NASA'S Juno Spacecraft; July 19, 2024

September 23: Neptune's anniversary of discovery coincides with the planet at opposition. Neptune, the last of the main planets in our Solar System, was discovered this day in 1846—becoming the first planet discovered using mathematics. Coincidentally, on this day in the year 2025, the planet will look exceptionally bright with a telescope due to it being opposite of the Sun. Best viewing time: Dusk to dawn.

October 4: NASA's International Observe the Moon Night. This occasion encourages Moon enthusiasts and fans of astronomy to gather in celebration of our lunar neighbor. International Observe the Moon Night takes place each year in September or October, when the Moon is around its first quarter phase. This day will offer great opportunities to observe prominent features on the lunar surface, where shadows will enhance the Moon's cratered appearance.

October 7: Full Harvest supermoon. The full Moon rises in the sky at sunset this day with Saturn leading the way as a steady golden glow. This full Moon will be a supermoon, and will be the first of three supermoons in a row this year. This full Moon is considered the Harvest Moon, for it is the closest full Moon to the Autumnal Equinox. The Harvest Moon gets its name from the succession of moonrises at this time of year that cause our lunar neighbor to fill the sky with moonlight, which allowed farmers to work late in the fields and finish their harvest of crops before darkness settled. Best viewing times: Dusk to dawn.

Harvest Moon captured by Antonio Tartarini in Tuscany, Italy; September 30, 2023

October 7: Draconids Meteor Shower. The Draconids will be active from October 6 through October 10, with the peak occurring on October 7. The radiant point of the shower (the point in the sky from which the meteors appear to originate) will be found in the constellation Draco the Dragon, with five to seven shooting stars predicted per hour. Draco is a circumpolar constellation for the Northern Hemisphere, meaning it never sets below the horizon and is visible all night throughout the year. Best viewing time: 8pm–midnight.

October 21: New Moon.

October 21–22: Orionids Meteor Shower. The Orionids, one of the most famous meteor showers, occur annually in October when the Earth passes through the path left behind by Halley's Comet. The shower is expected to peak on the nights of October 21–22. Stargazers will be able to spot shooting stars all over the sky, but the shower's radiant point (where the meteors appear to originate) can be found in the constellation Orion the Hunter. This constellation will rise in the east and move higher into the sky as the night goes on. In a dark sky, observers might spot 10 to 20 Orionids per hour. Best viewing time: 2am to 6:30am.

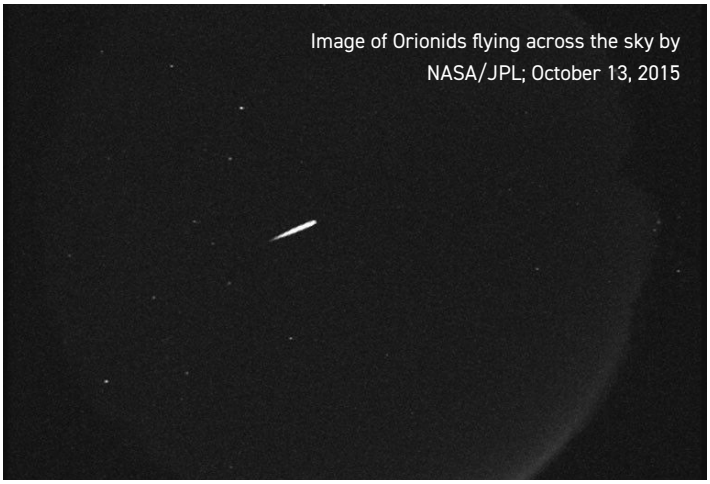

Image of Orionids flying across the sky by NASA/JPL; October 13, 2015

October 29: Mercury at Greatest Eastern Elongation. On this night, Mercury will attain its highest point above the horizon in the evening sky as it reaches its greatest eastern elongation from the Sun. Look for this planet toward the western sky just after sunset. Best viewing time: 7pm.

November 4–5: Southern Taurids Meteor Shower. This meteor shower is one of two showers produced by Comet Encke. This comet leaves behind such a massive debris trail that it takes Earth quite a bit of time to travel all the way through it. The Southern Taurids will be visible from September 7 to December 10, peaking on November 4–5. The shower is predicted to produce about five meteors per hour, with its radiant point (where the meteors appear to originate) located inside the constellation Taurus the Bull. Best viewing time: Midnight–6am.

November 5: Full Beaver supermoon. Traditionally, this November full Moon is nicknamed the "Beaver Moon" to mark the time of year when beavers begin to take shelter for winter. In more recent times, this full Moon has been coined the "Frost or Freezing Moon," indicating that winter is upon us. Best viewing time: Dusk to dawn.

November 12–13: Northern Taurids Meteor Shower. This shower is the continuation of Earth's journey through the debris path of Comet Encke. This shower is famous for the fireballs that show up during its course, but moonlight from the waxing gibbous Moon will make it difficult to spot its meteors, which will originate from Taurus the Bull. Best viewing time: Midnight–6am.

November 17–18: Leonids Meteor Shower. This meteor shower has produced some of the most beautiful and famous meteor storms in history. The Leonids result from the debris of comet 55P/Temple-Tuttle. Each year, this shower brings 10–15 meteors per hour. The Leonids are named for the constellation Leo the Lion, as the shower's radiant point (where the meteors appear to originate) can be found near the lion's mane. Best viewing time: 2am–5am.

November 19: New Moon

December 4: Full Cold supermoon. This night you will see the Cold Moon, also referred to as the Long Nights Moon—hinting at the long, cold nights that occur this time of year due to the tilt of our planet as the season of fall transitions to winter in the Northern Hemisphere. With the Moon being opposite the Sun, it will shine all night long. Best viewing time: Dusk–dawn.

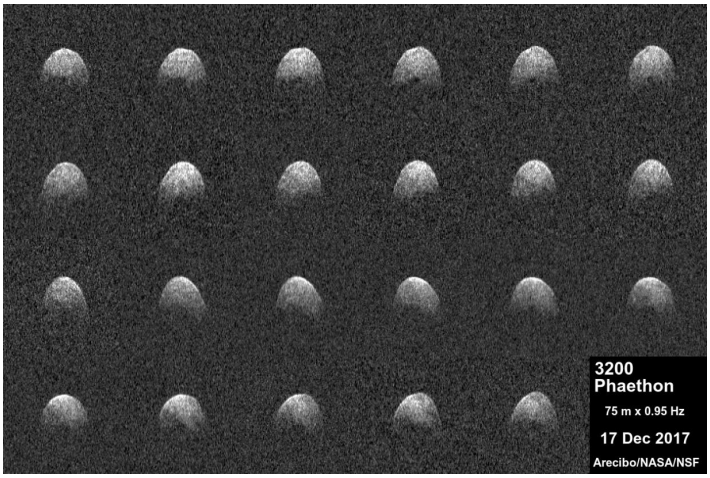

Image of 3200 Phaethon captured using radar at the Arecibo Observatory in Puerto Rico; December 17, 2017

December 13–14: Geminids Meteor Shower. This annual meteor shower, produced by asteroid 3200 Phaethon, will bring bright white shooting stars to our skies from November 19 to December 24, peaking on December 4. You may spot up to 50 meteors per hour, with the chance of up to 120 meteors per hour under a dark sky. The radiant point for this shower is near the star Castor from the constellation Gemini, the Twins. Best viewing times: 2am–6:30am.

December 19: New Moon

Portrait of the Artemis II crew. Left to right: Christina Koch, Victor Glover, Reid Wiseman, and Jeremy Hansen. Via NASA/Josh Valcarcel

LOOK **AHEAD**

Artemis II is the exciting NASA mission that will take humans back to the Moon in a close flyby. Four astronauts, including three from NASA—Reid Wiseman, Victor Glover, and Christina Koch—and one from the Canadian Space Agency, Jeremy Hansen, will be the first crew in Artemis II's Orion spacecraft, and the first crew to travel beyond low Earth orbit since Apollo 17 in 1972.

In April 2026, the crew will launch using the Block 1 Space Launch System rocket and depart on a multi-phase journey to the Moon using the Orion spacecraft. Lasting 10 days, the journey will consist of an Earth orbit, trans-lunar injection, flyby, and a free-return trajectory.

The Artemis initiative will advance humanity's goal of reaching and exploring the Moon more than ever before. Artemis II will test human endurance, life support, navigation, and Deep Space Network communication with Earth, paving the way for long-term deep space exploration.