

Astronomy[®]

THE WORLD'S BEST-SELLING ASTRONOMY MAGAZINE /// MARCH 2026

STAR-STRUCK TWICE

The tale of Meteor Crater and its long-lost sibling



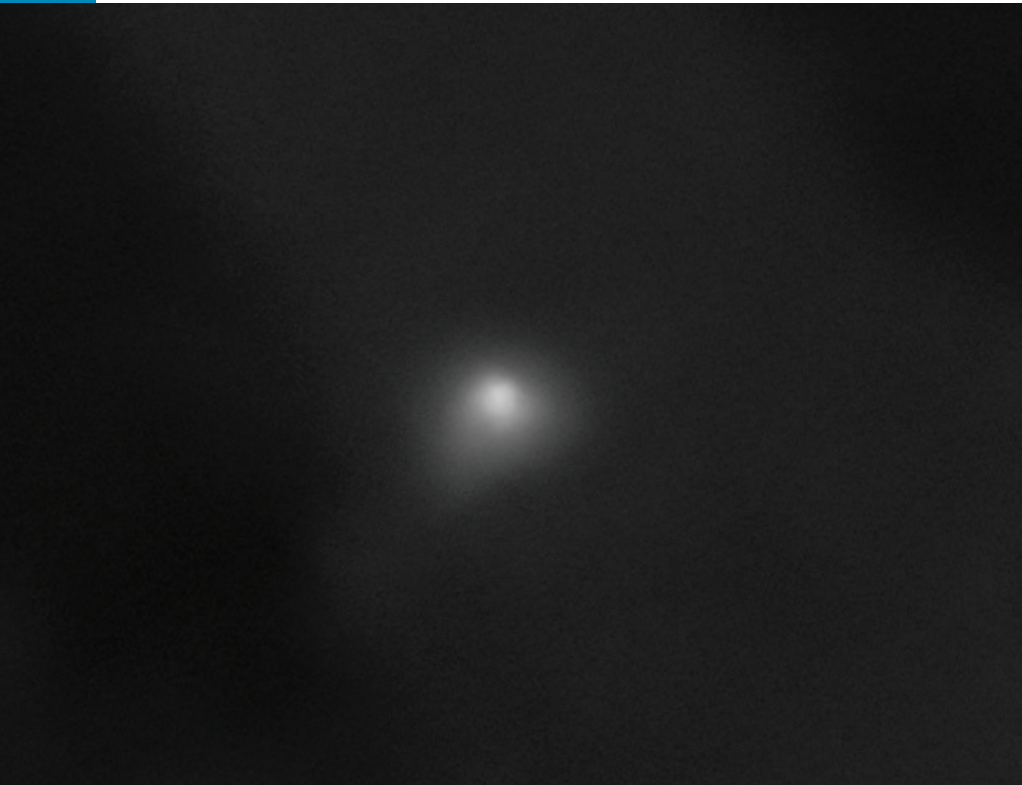
PLUS:

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**BONUS
ONLINE
CONTENT
CODE p. 3**

NASA SPACECRAFT IMAGE INTERSTELLAR COMET 3I/ATLAS

Data from more than a dozen spacecraft highlight the capabilities of NASA's science fleet.



BEST SHOT. NASA's Mars Reconnaissance Orbiter's HiRISE camera captured this image of 3I/ATLAS in early October, as the comet passed Mars. Visible is the coma, a roughly spherical cloud of dust and ice created as material on the comet's surface sublimates under the heat of the Sun.

NASA/JPL-CALTECH/UNIVERSITY OF ARIZONA

» Following the Nov. 12 end of the 43-day U.S. government shutdown, NASA hosted a livestream Nov. 19 to share spacecraft observations of Comet 3I/ATLAS, the third detected interstellar object to traverse our solar system. The unprecedented campaign captured the visitor with a combination of more than a dozen heliophysics, planetary science, and astrophysics instruments.

Observations began in early autumn, as the comet plunged toward the inner solar system to make its closest approach to the Sun Oct. 29.

EYES IN THE SKY

The earliest shots came from NASA's Psyche, currently nearly 262 million miles (422 million kilometers) from Earth on its journey to the metal-rich asteroid 16 Psyche, which captured images of 3I/ATLAS on Sept. 8 and 9 from a distance of 33 million miles (53 million km). The photos helped astronomers refine the fast-moving comet's trajectory so other missions could more precisely target it. 3I/ATLAS entered the solar system at some 137,000 mph (221,000 km/h), but briefly sped up as it approached the Sun,

reaching a speed of about 153,000 mph (246,000 km) through the inner solar system.

The Solar Terrestrial Relations Observatory (STEREO), which studies solar storms, tracked 3I/ATLAS from Sept. 11 to Oct. 2, when the comet's position behind the Sun hid it from ground-based telescopes. These observations, along with those from the Polarimeter to Unify the Corona and Heliosphere (PUNCH) from Sept. 20 to Oct. 3 and the Solar and Heliophysics Observatory from Oct. 15 to 26, mark the first time NASA's heliophysics fleet was used to view an object from beyond our solar system. The Parker Solar Probe also observed the comet, although its data were not included in the release.

On Sept. 16, the Lucy spacecraft, en route to Jupiter's Trojan asteroids, imaged 3I/ATLAS from 240 million miles (386 million km) away. It captured the comet backlit by the Sun, revealing details in the coma and tail. But the most scientifically rich data came as the comet swept past the Red Planet. The Mars Atmosphere and Volatile EvolutionN (MAVEN) orbiter observed 3I/ATLAS Sept. 28. The data, showing hydrogen gas billowing off the nucleus, "will help determine the water production rate — how much water vapor is released from the comet when the comet is warmed by the Sun — which provides insight into the formation of the comet and its journey through our galaxy," said Tom Statler, lead scientist for solar system small bodies at NASA's Planetary Science Division, during the livestream. (On Dec. 6, NASA lost contact with MAVEN and was still investigating the incident at the time of this writing.)

The photo closest to the comet was

QUICK TAKES

IMPACTFUL DISCOVERY

Last year, on the side of a hill in Zhaoqing, Guangdong Province, Chinese researchers discovered a 2,590-foot-wide (900 meters) impact crater, the largest modern impact crater found to date. It was likely formed by a meteorite during the early-to mid-Holocene epoch.

NEW GLENN'S NEW ESCAPE

Blue Origin's New Glenn rocket sent the twin spacecraft of NASA's Escape and Plasma Acceleration and Dynamics Explorers (ESCAPE) mission on their journey to Mars Nov. 13, marking the rocket's second successful launch and landing of its reusable booster.

LVK WAVES O4 GOODBYE

On Nov. 18, the international LIGO-Virgo-KAGRA collaboration completed O4, its fourth observational run since launching in May 2023. O4 comprises around 250 new gravitational-wave signals — a staggering two-thirds of the roughly 350 signals seen thus far by the network.

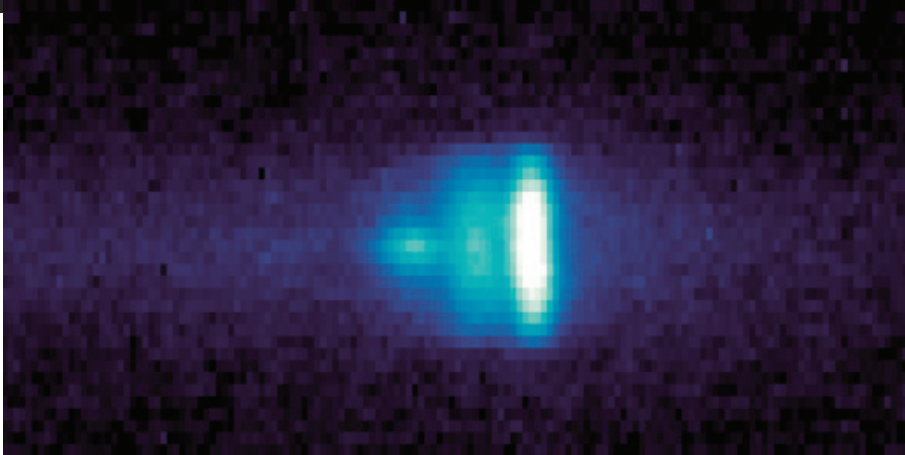
LIGHTNING ZAPS

Recordings from the Perseverance rover's SuperCam microphone yielded the first evidence of electrical activity on the Red Planet in the form of small static sparks in dust devils and dust storms. The find informs models of Mars' climate and provides critical insight for future robotic and human exploration.

YOU'RE GROUNDED

Airbus temporarily grounded over 6,000 of its A320 family of aircraft in November after a software glitch, reportedly stemming from solar radiation, caused a JetBlue flight to suddenly lose altitude Oct. 30, hospitalizing 15 passengers.

— B.M.



GAS GLOW. This image from MAVEN's Imaging Ultraviolet Spectrograph shows light generated by glowing hydrogen from three sources: the martian atmosphere (brightest signal, at right), interplanetary gas in our solar system (fainter middle signal), and 3I/ATLAS (circular signal at left). NASA/GODDARD/LASP/UCU BOULDER

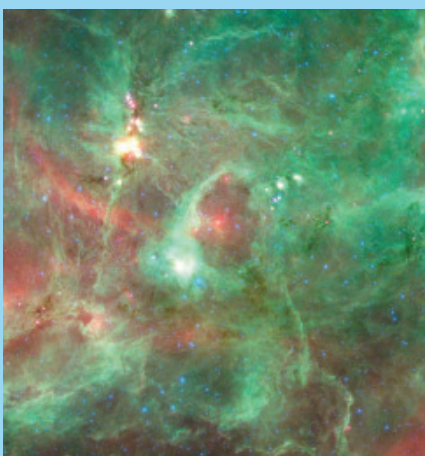
taken by the High Resolution Imaging Science Experiment (HiRISE) camera aboard NASA's Mars Reconnaissance Orbiter, which imaged 3I/ATLAS from 19 million miles (30 million km) away on Oct. 2. But perhaps the most novel observation came Oct. 4, when the Perseverance rover spotted 3I/ATLAS as a faint smudge against the martian sky — the first ever shot of an interstellar object from the surface of another world.

A UNIQUE OPPORTUNITY

Nicky Fox, associate administrator for

NASA's Science Mission Directorate, said the chance to study the visitor on its journey through the solar system is a testament to the power and extent of NASA's science fleet. "Everything we're learning about the comet is possible because of the distribution of all of the different instruments on our spacecraft with different capabilities. And I'll note that for some of them, we've even pushed our scientific instruments beyond ... the things that they were designed to achieve to allow us to capture this amazing glimpse at this interstellar traveler," she said. — BROOKS MENDENHALL, A.K.

DIAMOND RING IS A BURST BUBBLE



NASA/JPL-CALTECH/HARVARD-SMITHSONIAN CFA

THE SO-CALLED DIAMOND RING visible at the center of this infrared image of a small portion of the larger Cygnus X star-forming region has perplexed astronomers for decades. The slowly expanding ring-shaped structure of gas and dust is 20 light-years across and was formed by the intense radiation from a long-gone massive star. What makes it odd is that the Diamond Ring is truly a flat circle of gas, rather than the spherical expanding shell usually formed by such stars. A paper published Sept. 2 in *Astronomy &*

Astrophysics has finally explained why: It was once a spherical shell, but ultimately popped as gas escaped into the thinner regions perpendicular to the structure we now see, leaving the flattened Diamond Ring behind. The study also discovered the "diamond" is actually a foreground cluster of stars, and is not associated with the ring of gas and dust at all. — A.K.