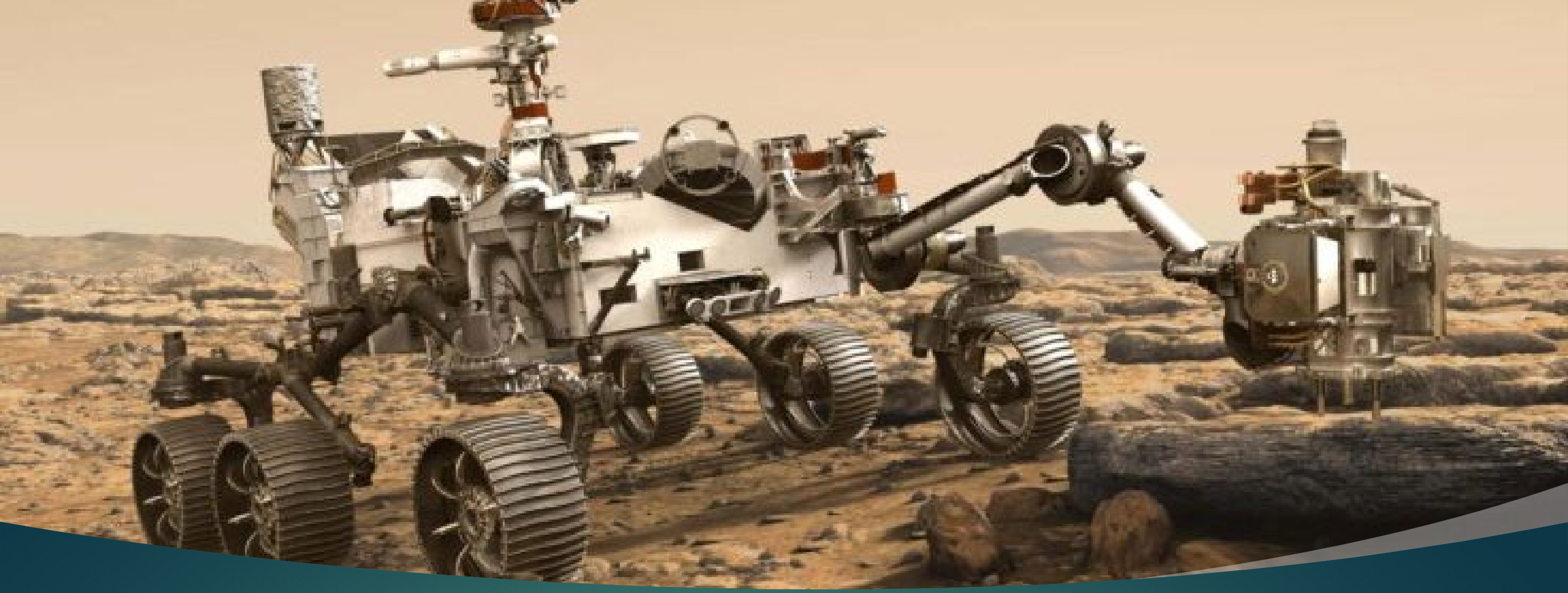


Astronomy News

KW RASC FRIDAY MARCH 12 2021

JIM FAIRLES


WHISTLER BLACKCOMB
CANADA

With nearly $2 million in support, U of T astronomer to upgrade telescope in hunt for dark matter

- https://www.utoronto.ca/news/
- An innovative, ground-breaking telescope named Dragonfly is about to undergo a major transformation thanks to nearly $2-million in support from the Canada Foundation for Innovation (CFI).
- The Dragonfly Telephoto Array is a unique telescope designed to observe astronomical phenomenon such as extremely faint galaxies and the dark filaments of gas associated with many of them.
- Dragonfly is the brainchild of Roberto Abraham, a professor of astronomy and chair of the David A. Dunlap department of astronomy and astrophysics in the University of Toronto's Faculty of Arts & Science, and Pieter Van Dokkum, a professor of astronomy at Yale University.
- The upgraded Dragonfly will be able to better observe nearly invisible and incredibly diffuse hydrogen and helium gas-surrounding galaxies that are associated with dark matter.

'Oumumamua and the search for life in the universe

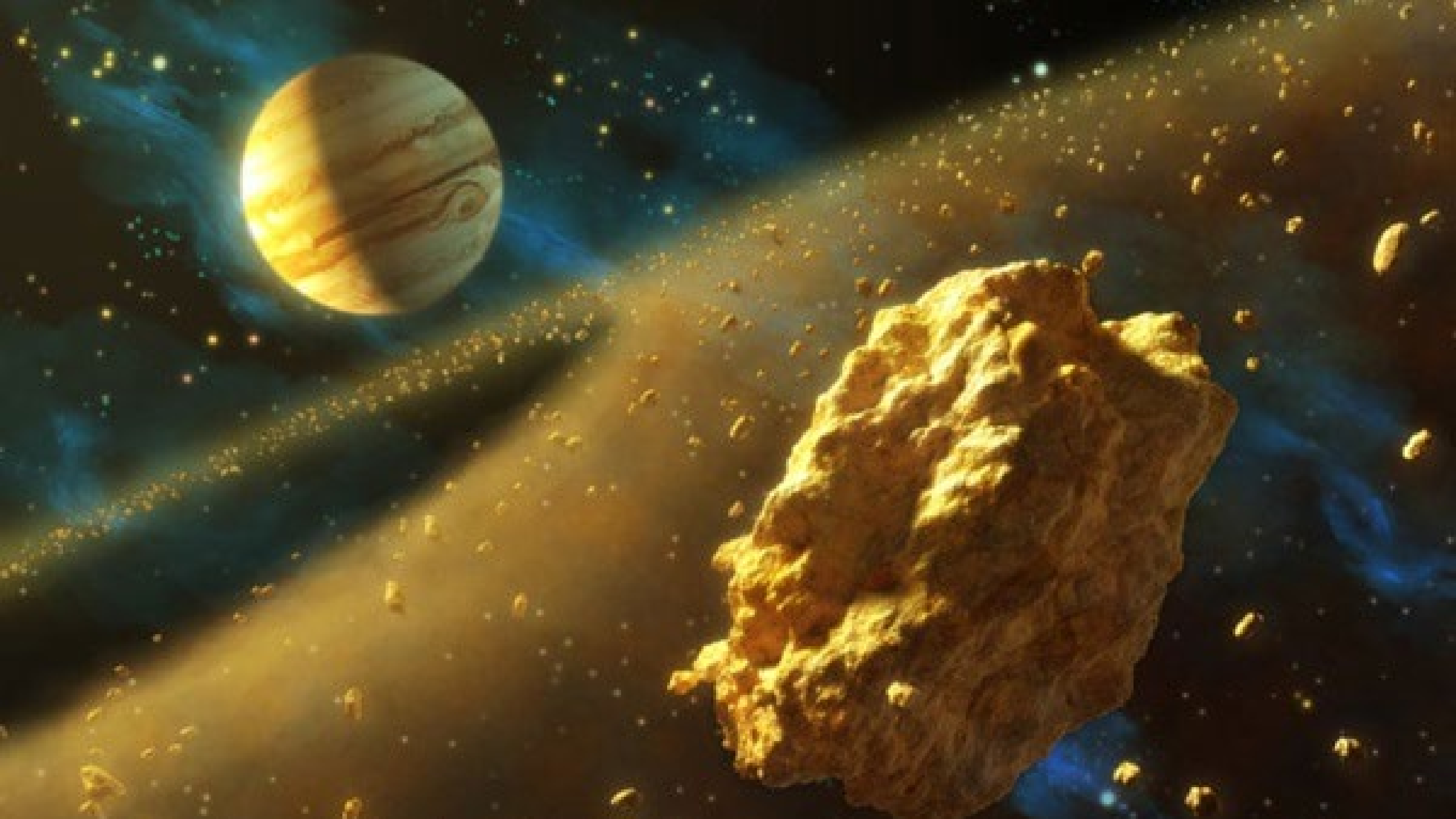
- https://astronomy.com/news/2021/03/oumumamua-and-the-search-for-life-in-the-universe
- There are three important things you should know regarding that story that just keeps buzzing about the Harvard astronomer who says an alien spacecraft may have passed through our solar system:

• The search for alien intelligence is one of the most compelling and important endeavors in modern science, but...

• ...the interstellar object known as 'Oumuamua is not the long-sought evidence demonstrating the existence of intelligent life elsewhere in the universe.

• And FYI, you don't have to feel shy about not knowing how to pronounce 'Oumuamua. Just say, "oh MOO uh MOO uh," as if you were greeting two cows.

- In October of 2017, a postdoc researcher named Robert Weryk, working with the Pan-STARRS telescope in Hawaii, detected a peculiar object moving away from the Sun at high speed. Its extreme, hyperbolic orbit indicated that the object was not a member of our solar system. It must have originated from far beyond, somewhere in interstellar space.



The asteroid belt: Wreckage of a destroyed planet or something else?

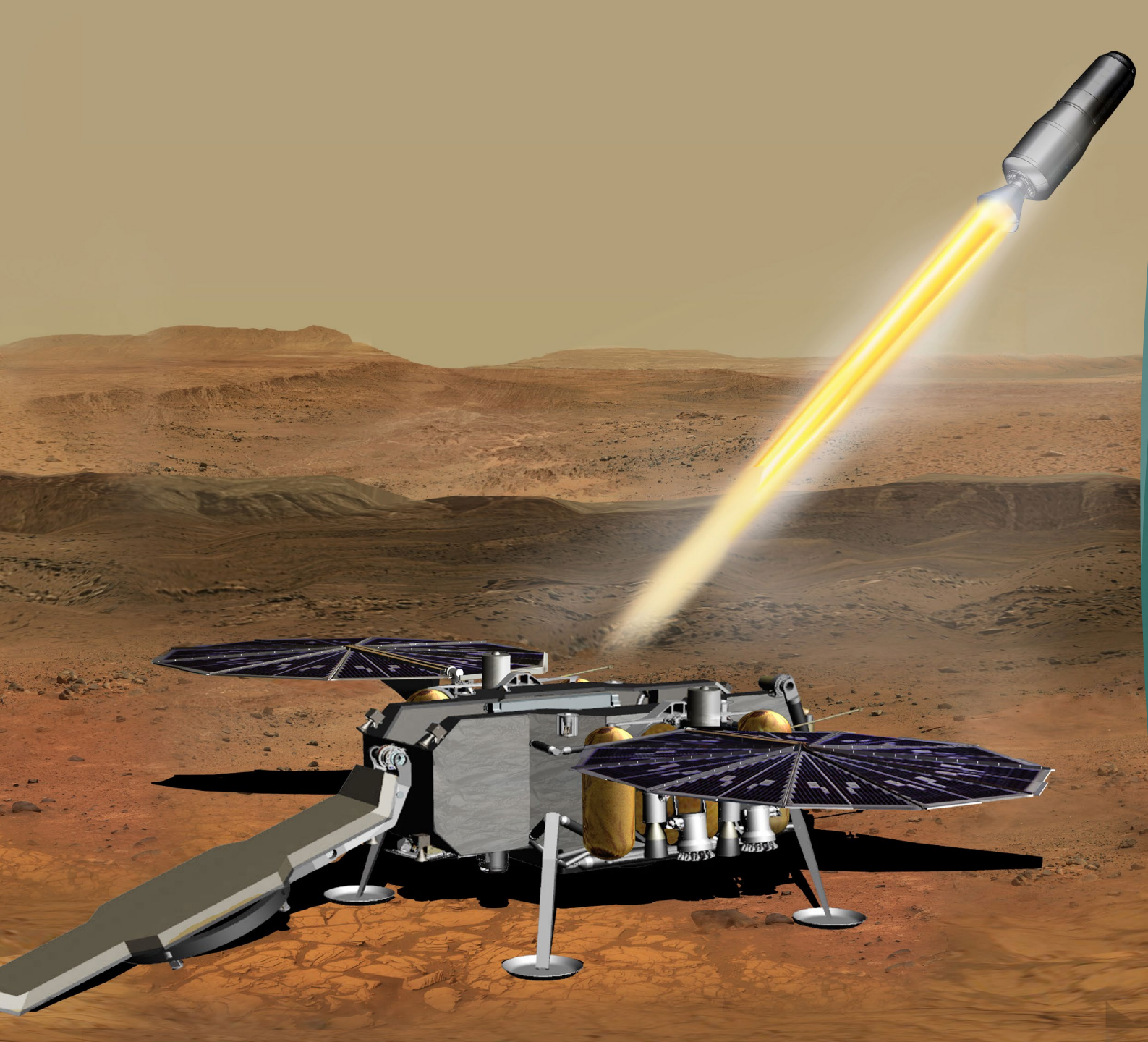
- https://astronomy.com/news/2021/03/the-asteroid-belt-wreckage-of-a-destroyed-planet-or-something-else
- Just outside the orbit of Mars sits our Sun's premier collection of space rocks. The asteroid belt has captivated the imaginations of science fiction authors and scientists alike who have considered the possibilities of mining ore, water and other material from the region to boost further space exploration.
- But how was this orbiting field of debris formed? Does it represent the rocky bones of a former planet from eons past, or is it a type of gathering place for a planet-to-be?
- Scientists have considered both responses as possibilities over the decades. But more recent theories contend that the vast ring of space rocks likely never was a whole planet and is unlikely to be so in the relatively near galactic future. Why? There simply isn't enough material there.

Large asteroid to pass by Earth on March 21: NASA

- https://phys.org/news/2021-03-large-asteroid-earth-nasa.html
- The largest asteroid to pass by Earth this year will approach within some 1.25 million miles (two million kilometers) of our planet on March 21, NASA said Thursday.
- The US space agency said it will allow astronomers to get a rare close look at an asteroid.
- The asteroid, 2001 FO32, is estimated to be about 3,000 feet in diameter and was discovered 20 years
- "We know the orbital path of 2001 FO32 around the Sun very accurately," said Paul Chodas, director of the Center for Near Earth Object Studies. "There is no chance the asteroid will get any closer to Earth than 1.25 million miles."
- That is roughly 5.25 times the distance of the Earth from the Moon but still close enough for 2001 FO32 to be classified as a "potentially hazardous asteroid."

NASA's Perseverance Drives on Mars' Terrain for First Time

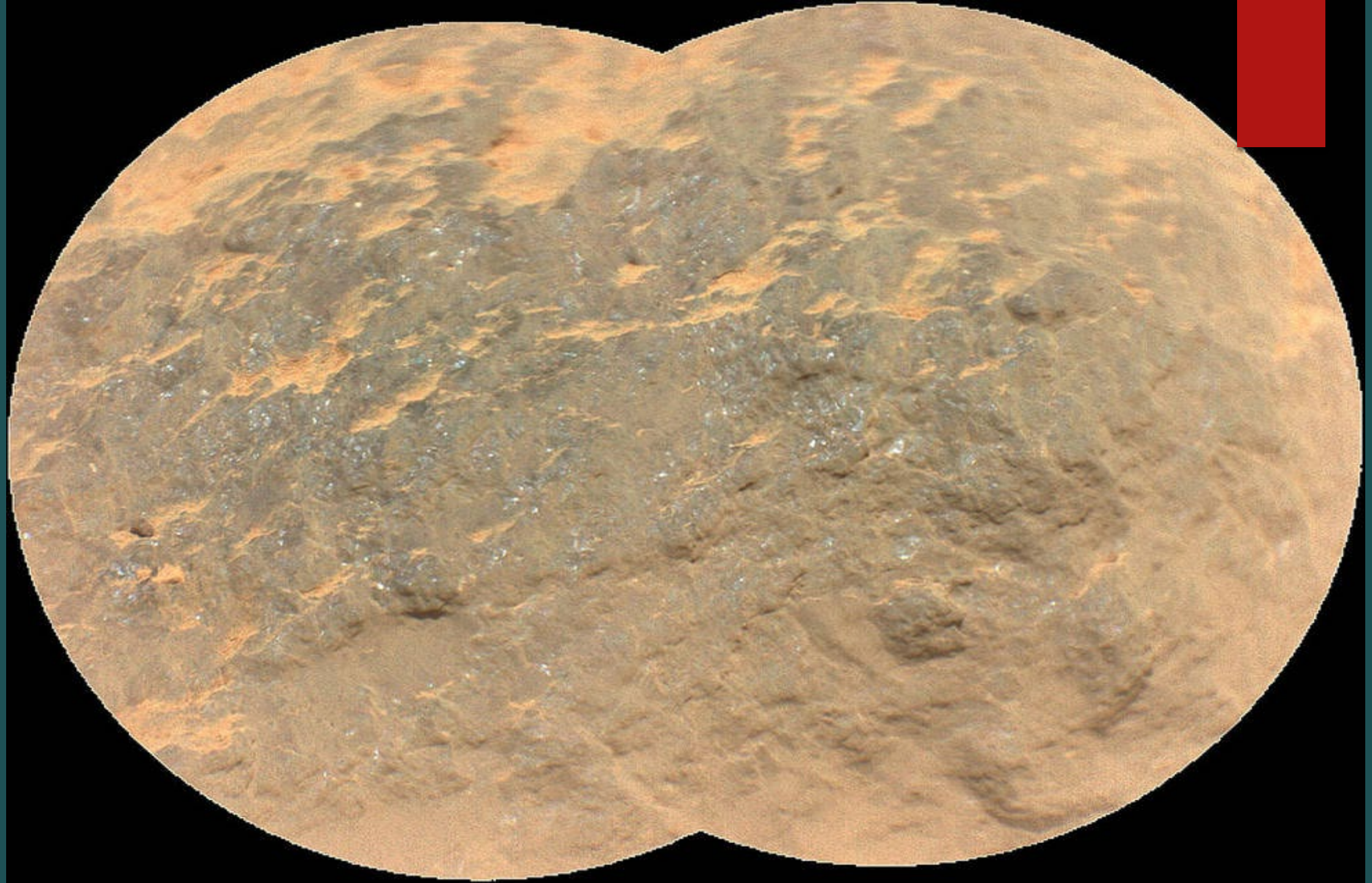
- https://www.nasa.gov/press-release/nasa-s-perseverance-drives-on-mars-terrain-for-first-time
- NASA's Mars 2020 Perseverance rover performed its first drive on Mars March 4, covering 21.3 feet (6.5 meters) across the Martian landscape. The drive served as a mobility test that marks just one of many milestones as team members check out and calibrate every system, subsystem, and instrument on Perseverance. Once the rover begins pursuing its science goals, regular commutes extending 656 feet (200 meters) or more are expected.



NASA Awards Mars Ascent Propulsion System Contract for Sample Return

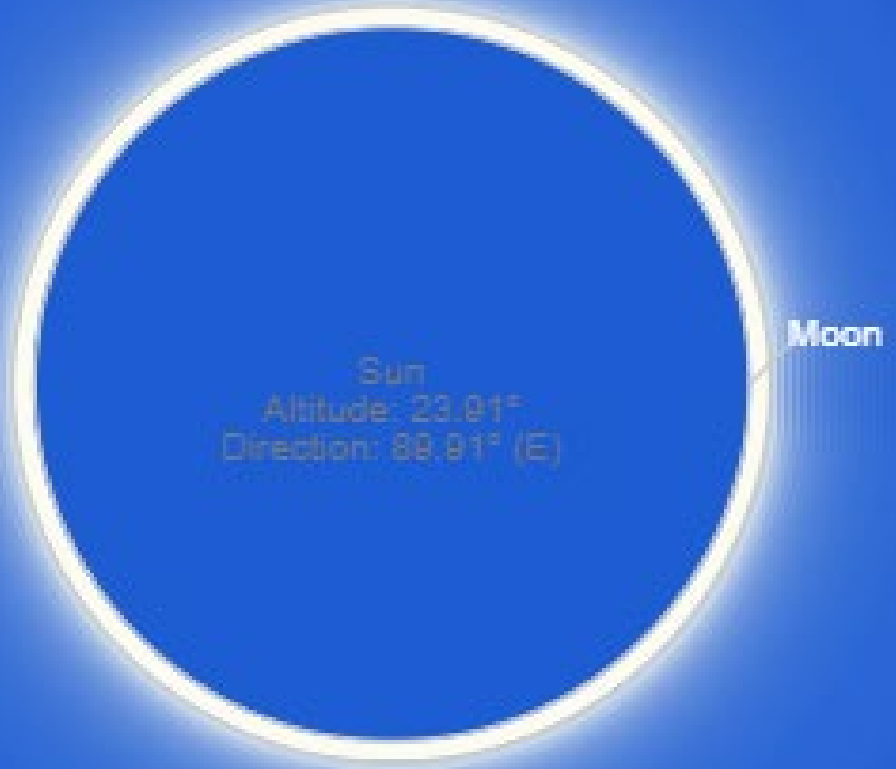
NASA Awards Mars Ascent Propulsion System Contract for Sample Return

- https://www.nasa.gov/press-release/nasa-awards-mars-ascent-propulsion-system-contract-for-sample-return
- NASA has awarded the Mars Ascent Propulsion System (MAPS) contract to Northrop Grumman Systems Corporation of Elkton, Maryland, to provide propulsion support and products for spaceflight missions at the agency's Marshall Space Flight Center in Huntsville, Alabama. Coupled with the successful touchdown of the Mars Perseverance rover, this award moves NASA and ESA (European Space Agency) one step closer to realizing Mars Sample Return (MSR), a highly ambitious planetary exploration program that will build upon decades of science, knowledge, and experience of Mars exploration.



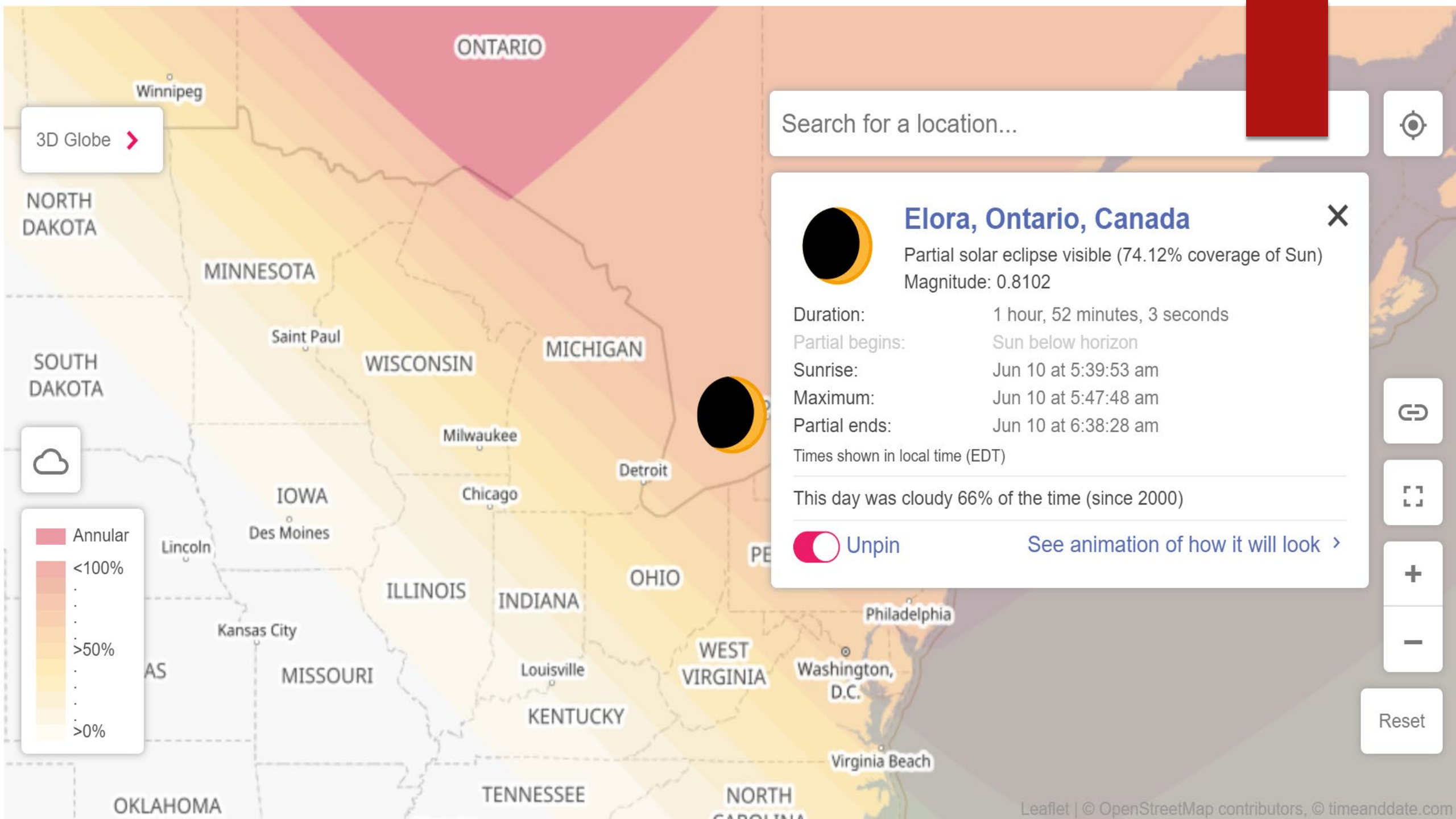
Perseverance Rover's SuperCam Science Instrument Delivers First Results

- https://www.nasa.gov/feature/jpl/perseverance-rover-s-supercam-science-instrument-delivers-first-results
- The first readings from the SuperCam instrument aboard NASA's Perseverance rover have arrived on Earth. SuperCam was developed jointly by the Los Alamos National Laboratory (LANL) in New Mexico and a consortium of French research laboratories under the auspices of the Centre National d'Etudes Spatiales (CNES). The instrument delivered data to the French Space Agency's operations center in Toulouse that includes the first audio of laser zaps on another planet.
- Perched atop the rover's mast, SuperCam's 12-pound (5.6-kilogram) sensor head can perform five types of analyses to study Mars' geology and help scientists choose which rocks the rover should sample in its search for signs of ancient microbial life. Since the rover's Feb. 18 touchdown, the mission has been performing health checks on all of its systems and subsystems. Early data from SuperCam tests – including sounds from the Red Planet – have been intriguing.


Sun
Altitude: 23.01°
Direction: 88.91° (E)
Moon

June 10, 2021 Annular Solar Eclipse

- https://www.timeanddate.com/eclipse/solar/2021-june-10
- The annular phase of this solar eclipse is visible from parts of Russia, Greenland, and northern Canada. Weather permitting, those in Northern Asia, Europe, and the United States will see a partial eclipse.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Lincoln
ILLINOIS
INDIANA
OHIO
Kansas City
MISSOURI
Louisville
WEST VIRGINIA
Philadelphia
Washington, D.C.
KENTUCKY
Virginia Beach
TENNESSEE
NORTH
OKLAHOMA
Annular
<100%
>50%
>0%
Elora, Ontario, Canada
Partial solar eclipse visible (74.12% coverage of Sun)
Magnitude: 0.8102
Duration: 1 hour, 52 minutes, 3 seconds
Partial begins: Sun below horizon
Sunrise: Jun 10 at 5:39:53 am
Maximum: Jun 10 at 5:47:48 am
Partial ends: Jun 10 at 6:38:28 am
Times shown in local time (EDT)
This day was cloudy 66% of the time (since 2000)
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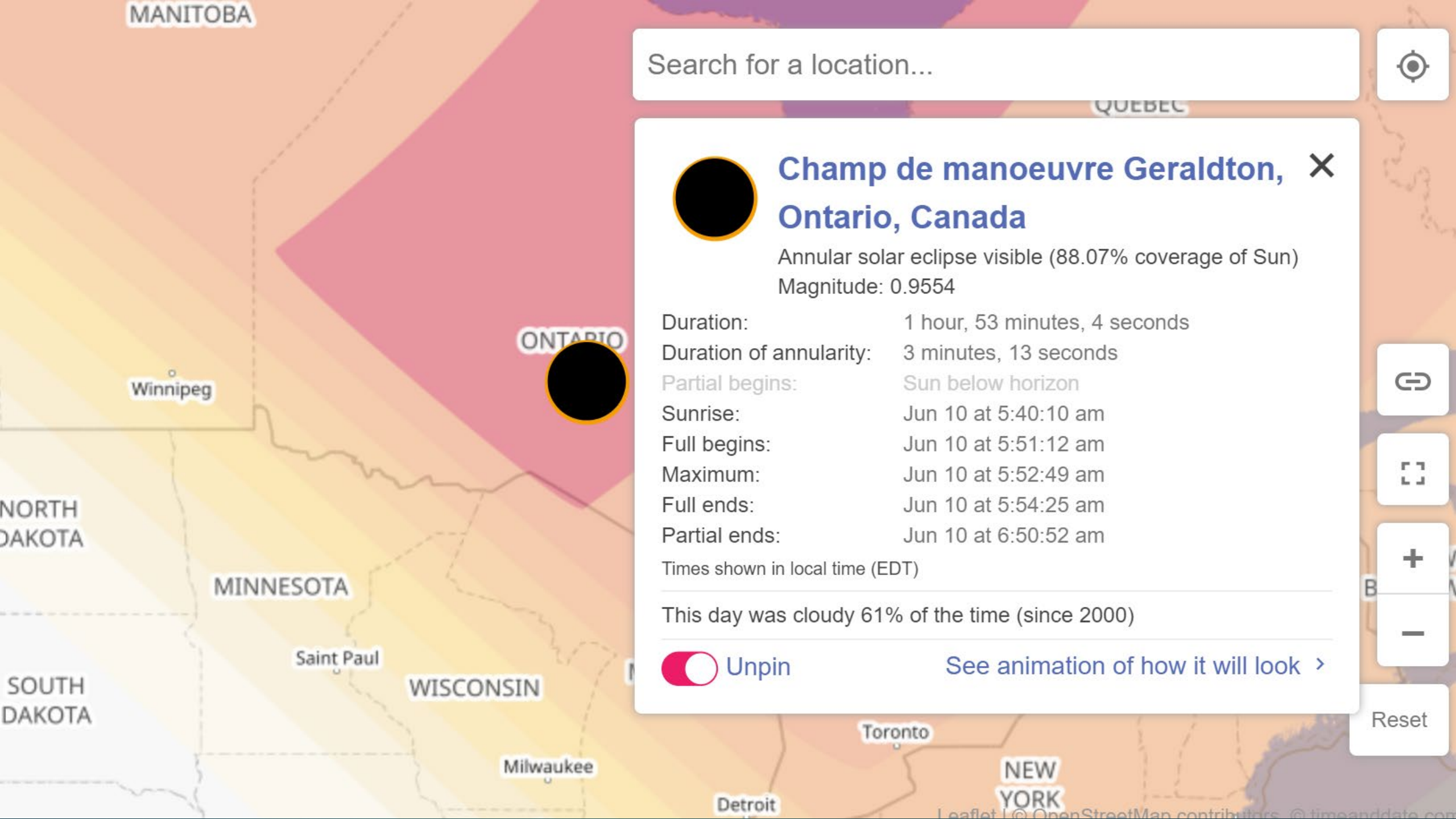
See animation of how it will look
Reset
Leaflet | © OpenStreetMap contributors, © timeanddate.com



Search for a location...

Champ de manoeuvre Geraldton, Ontario, Canada

Annular solar eclipse visible (88.07% coverage of Sun)
Magnitude: 0.9554

Duration:	1 hour, 53 minutes, 4 seconds
Duration of annularity:	3 minutes, 13 seconds
Partial begins:	Sun below horizon
Sunrise:	Jun 10 at 5:40:10 am
Full begins:	Jun 10 at 5:51:12 am
Maximum:	Jun 10 at 5:52:49 am
Full ends:	Jun 10 at 5:54:25 am
Partial ends:	Jun 10 at 6:50:52 am

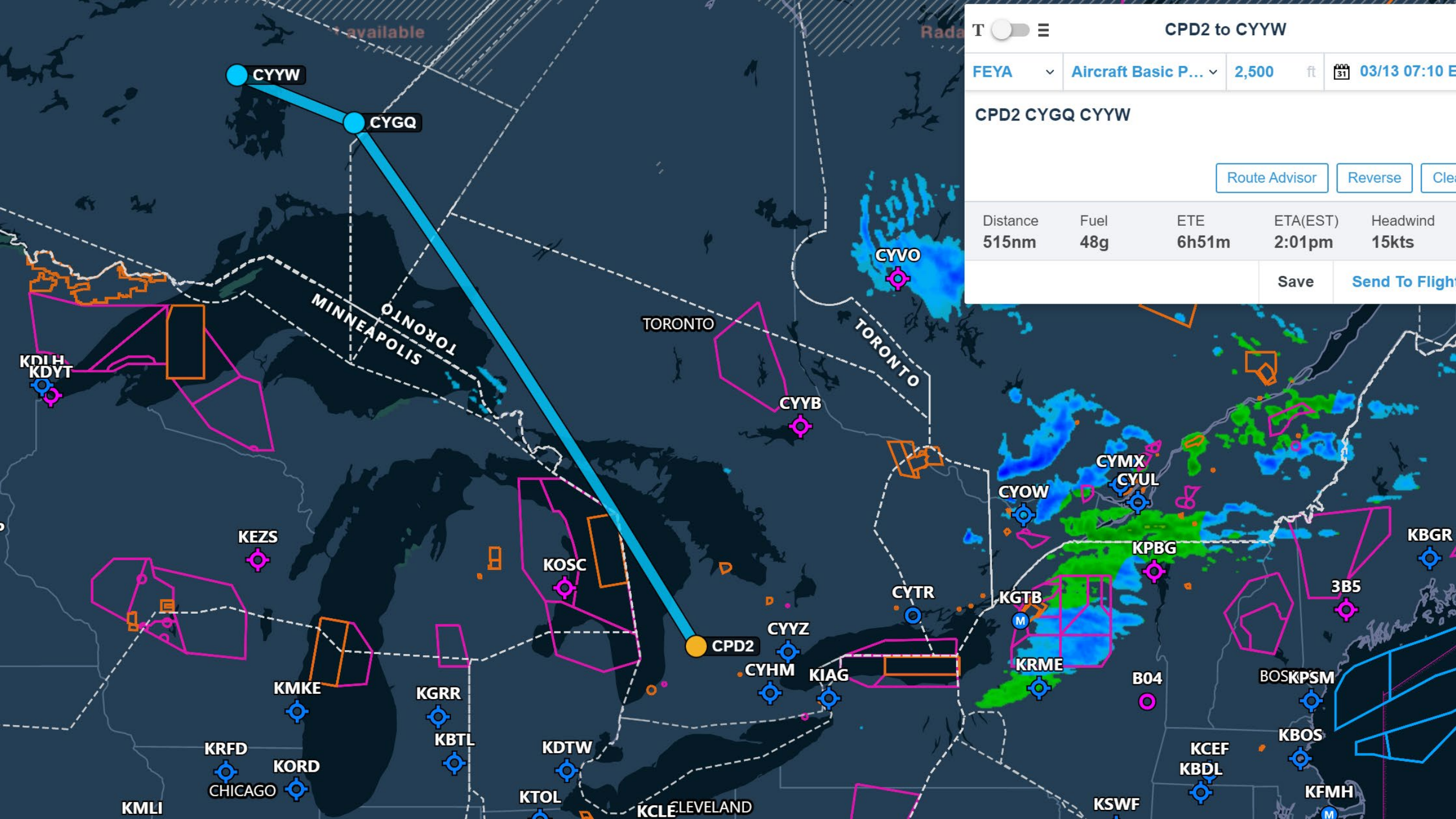
Times shown in local time (EDT)

This day was cloudy 61% of the time (since 2000)

Unpin

See animation of how it will look ›

Reset


CPD2 to CYYW
FEYA
Aircraft Basic P…
2,500 ft
03/13 07:10 E
CPD2 CYGQ CYYW
Route Advisor
Reverse
Distance 515nm
Fuel 48g
ETE 6h51m
ETA(EST) 2:01pm
Headwind 15kts
Save
Send To Flight
CYYW
CYGQ
CPD2
MINNEAPOLIS
TORONTO
CHICAGO
CLEVELAND
KDLH
KDYT
KEZS
KOSC
KMKE
KGRR
KBTL
KRFD
KORD
KMLI
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KBOS
KCEF
KBDL
KFMH
KSWF

Serendipitous Juno Detections Shatter Ideas About Origin of Zodiacal Light

- https://www.jpl.nasa.gov/news/serendipitous-juno-detections-shatter-ideas-about-origin-of-zodiacal-light
- Data from the NASA spacecraft's journey to Jupiter suggests that Mars may be shedding dust into interplanetary space.
- Look up to the night sky just before dawn, or after dusk, and you might see a faint column of light extending up from the horizon. That luminous glow is the zodiacal light, or sunlight reflected toward Earth by a cloud of tiny dust particles orbiting the Sun. Astronomers have long thought that the dust is brought into the inner solar system by a few of the asteroid and comet families that venture in from afar.
- But now, a team of Juno scientists argues that Mars may be the culprit. They published their finding in a March 9 paper in the Journal of Geophysical Research: Planets. An instrument aboard the Juno spacecraft serendipitously detected dust particles slamming into the spacecraft during its journey from Earth to Jupiter. The impacts provided important clues to the origin and orbital evolution of the dust, resolving some mysterious variations of the zodiacal light
- https://www.jpl.nasa.gov/news/serendipitous-juno-detections-shatter-ideas-about-origin-of-zodiacal-light

Questions?