

# IAAS Monthly Astronomy Newsletter

## May 2024



The International Association for Astronomical Studies provides this newsletter as a service for interested persons worldwide.



This newsletter is published on the World Wide Web at [The Home of KIØAR](#) - and is received nationally and internationally. Download the [PDF](#) formatted version of the newsletter.

An Open Invitation - For amateur radio operators and scanner enthusiasts around the world, please join the Colorado Astronomy Net on the [Rocky Mountain Radio League's K1DUN](#) repeater on **449.450 MHz** or other digital and analog repeaters, Allstar nodes, Echolinks, DMR and internet links connected to the [SKYHUBLINK](#) system. The net meets on Tuesday nights at 7 P.M. Mountain Time (US) (Wednesday at 0200 GMT). Connecting to the SkyHubLink system has expanded our coverage in the U.S., Canada and internationally. All Amateur radio operators worldwide are welcome. Anyone may listen to the net. The RMRL provides a "[Live Audio Feed](#)" using Broadcastify.

Obtain your Amateur Radio (Ham) License or your General Radio Operator's License (GROL)! Visit the [South Metro VE Team](#) website for more information. The South Metro VE Team provides test sessions by appointment only. Check the website for current information. All others interested in Amateur Radio, check out the [Amateur Radio Relay League](#) website to find out more information about becoming an Amateur Radio operator.

The [Colorado Astronomy Net](#) and the [IAAS](#) are on Facebook page. Be sure to "Like" us.

Donate to the [IAAS](#)!  
Your contributions are tax deductible.  
Thank you for your support!



Excerpts from JPL mission updates are provided as a public service as part of the [JPL Solar System Ambassador / NASA Outreach](#) program.



*"The planetary action moves to the morning sky this month, with several planets lining up. Here, (from bottom left) Mercury, Mars, Jupiter, and Venus stand in line in late 2015; the planetary players this May are Mercury, Mars, Neptune, and Saturn." Astronomy Magazine, May 2024, p. 28. - Alan Dyer*

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# The [Month At-A-Glance](#)

The current month's calendar displaying the daily astronomical events.

## The Moon

### Phases:

- Last Quarter Moon occurs on the 1st.
  - New Moon occurs on the 7th.
  - First Quarter Moon occurs on the 15th.
  - Full Moon occurs on the 23rd.
  - Last Quarter Moon occurs on the 30th.
- 
- The Moon is at [perigee](#) (225,659 miles from Earth) on the 5th.
  - The Moon is at [apogee](#) (251,432 miles from Earth) on the 17th.



### Moon/Planet Pairs:

- The Moon passes  $0.8^\circ$  south of Saturn on the 3rd.
- The Moon passes  $0.3^\circ$  south of Neptune on the 4th.
- The Moon passes  $0.2^\circ$  north of Mars on the 4th.
- The Moon passes  $4^\circ$  north of Mercury on the 6th.
- The Moon passes  $1.1^\circ$  north of asteroid Juno on the 16th.
- The Moon passes  $0.4^\circ$  north of Antares on the 23rd.
- The Moon passes  $0.9^\circ$  south of dwarf planet Ceres on the 27th.
- The Moon passes  $0.4^\circ$  south of Saturn on the 31st.
- The Moon passes  $0.02^\circ$  south of Neptune on the 31st.

*For reference: The Full Moon subtends an angle of  $\sim 0.5^\circ$ .*

[Experts Pick the Top Stargazing Events for 2024](#)



## The Planets & Dwarf Planets

[Planetary Reports](#) are generated by "[TheSkyX](#)" software. These reports provide predicted data for the planets on the first of each month for the current year. The rise and set times for the Sun and the Moon for each day of the month as well as meteor shower radiants are also included in the reports. These reports have been optimized for the Denver, Colorado location, however, the times will be approximate for other locations on Earth.

*(Times are Mountain Daylight Time (MDT) unless otherwise noted. Times will vary slightly depending on your location.)*

### Planetary Highlights for May

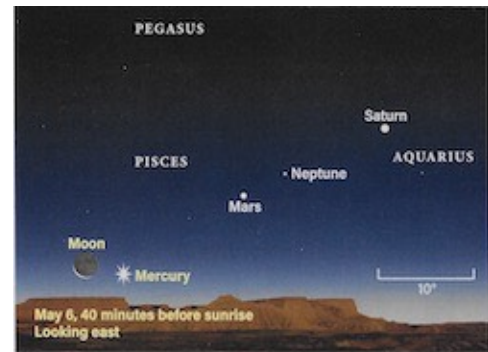
"The evening sky loses its last planet early in May, shifting the attention of planetary observers to the morning. Try to glimpse Jupiter before it's lost in the Sun's glow soon after sunset. Meanwhile, Mercury, Mars, Saturn, and Neptune are up before sunrise. A waning crescent Moon joins the group twice during May, adding beauty to the scene." Astronomy Magazine, May 2024, p. 28.



#### Mercury

Is at greatest western [elongation](#) (26°) on the 9th. Mercury rises at 5:10 a.m. on the 1st and about 4:50 a.m. by month's end. Look for Mercury low on the eastern horizon about 30 minutes before sunrise. Mercury moves from

the [constellation](#) of [Pisces](#) into [Taurus](#) shining at [magnitude](#) 0.3 on the 15th.



Mercury is back, now visible in the morning. Use the thin crescent Moon to find the smallest planet as it lines up with several others in the morning sky in early May. Note that Neptune is not visible without binoculars.



#### Venus

Rises at 5:42 a.m. on the 1st and about 5:33 a.m. by month's end. Look for Venus low to the east about 30 minutes before sunrise. Venus moves from the constellation of [Aries](#) into [Taurus](#) shining at magnitude -3.9 on the 15th.



#### Earth

N/A.



#### Mars

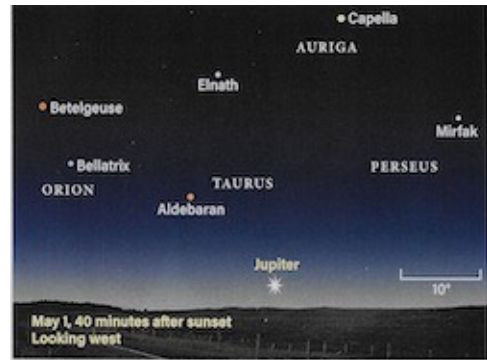
Is at [perihelion](#) (128.4 million miles from the Sun) on the 8th. Mars rises at 4:25 a.m. on the 1st and about 3:19 a.m. by month's end. Look for Mars low on the eastern horizon before sunrise. Mars is in the constellation of [Pisces](#) shining at magnitude 1.1.



## Jupiter

Is in [conjunction](#) with the Sun on the 18th. Jupiter sets at 8:53 p.m. on the 1st. After conjunction, Jupiter returns to the morning sky rising about 5:04 a.m. by month's end. By the time the Sun

sets, Jupiter is visible very low in the west during the first week of the month and possibly to the east before sunrise during the last week of the month. Jupiter is in the constellation of [Taurus](#) shining at magnitude -2.0.

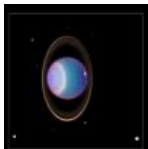


May 1, 40 minutes after sunset Looking west  
Jupiter shares the sky with the first few bright stars after sunset, but you'll need to catch it early in the month. Uranus (not shown) lies just to Jupiter's lower right; it is too dim and close to the Sun's glow to view.



## Saturn

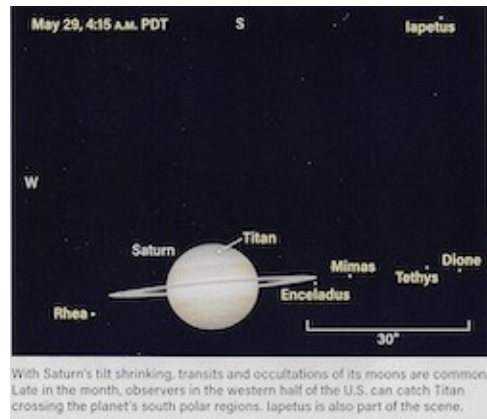
Rises at 3:54 a.m. on the 1st and about 1:58 a.m. by month's end. Look to the southeast to spot Saturn early in the morning before sunrise. Saturn is in the constellation of [Aquarius](#) shining at magnitude 1.0.



## Uranus

Is in [conjunction](#) with the Sun on the 13th. Uranus sets at 8:45 p.m. on the 1st. After conjunction, Uranus returns to the morning sky, rising about 4:38

a.m. by month's end. As with Jupiter, observers may be able to catch a glimpse of Uranus during the first week of May in the evening sky to the west and during the last week of May just before sunrise to the east. Uranus moves from the constellation of [Aries](#) into [Taurus](#) shining at magnitude 5.9.



May 29, 4:15 A.M. PDT  
With Saturn's tilt shrinking, transits and occultations of its moons are common. Late in the month, observers in the western half of the U.S. can catch Titan crossing the planet's south polar regions. Iapetus is also part of the scene.



## Neptune

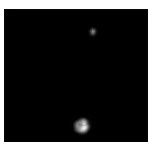
Rises at 4:21 a.m. on the 1st and about 2:21 a.m. by the end of the month. Look for Neptune before sunrise to the southeast. Neptune is in the constellation of [Pisces](#) shining at magnitude 7.8.

## Dwarf Planets



## Ceres

Is [stationary](#) on the 16th. Ceres rises at 1:18 a.m. on the 1st and about 11:21 p.m. by month's end. Ceres is visible in the early morning sky to the south. Ceres is in the constellation of [Sagittarius](#) shining at magnitude 8.3.



## Pluto

Is [stationary](#) on the 3rd. Pluto rises at 3:55 a.m. on the 1st and about 11:52 p.m. by month's end. Pluto is visible to the south before dawn. Pluto is in the constellation of [Capricornus](#) shining at magnitude 15.2.

As always, good luck at spotting Neptune, Ceres and Pluto, a large telescope and dark skies will be needed.

Constellation information provided by [Go Astronomy](#).

## Astronomical Events

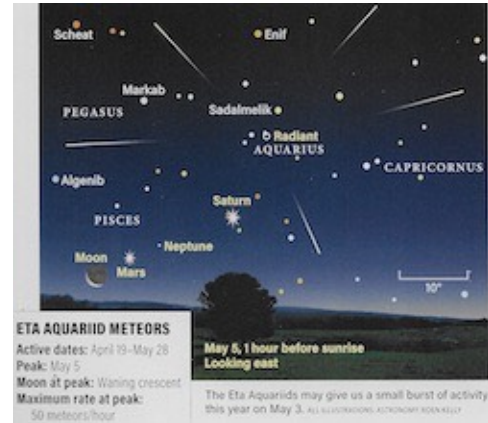


### Meteor Showers

- The Eta Aquariids [meteor shower](#) -

This shower is visible during the period of April 21 to May 12. It reaches maximum on May 5. During the period of greatest activity hourly rates usually reach 20 for observers in the northern hemisphere and 50 for observers in the southern hemisphere.

**"THIS IS THE YEAR** to watch the Eta Aquariid meteor shower. In addition to a favorable Moon (New Moon occurs May 7), Earth passes very close to a stream of debris ejected by Halley's Comet (the shower's parent object) about 3,000 years ago.



The shower is active from April 19 through May 28 and peaks on May 5. The radiant lies near Zeta ( $\zeta$ ) Aquarii and rises at 2:30 A.M. local daylight time in the continental U.S., reaching an altitude of  $20^\circ$  two hours later. This gives most observers a fine opportunity to watch for an hour or two before morning twilight. The predicted peak zenithal hourly rate is 50 meteors per hour but since the radiant is not overhead, observed rates are normally a dozen per hour.

However, this year could see an increase in rates the morning of May 3. Material left by Halley's Comet is affected by various gravitational resonances and the threads of debris wander like a silk scarf in a breeze. On the 3rd, Earth passes through a thread left by the comet in 985 B.C.E., potentially leading to more and brighter meteors. But like predicting the number of snowflakes in a snowstorm, such calculations are difficult and reality can vary greatly. One thing is for sure: It's worth observing a few days prior to the peak. If you do see a rise in the number of meteors, you're seeing the result of a passage of Halley's Comet some 3,000 years ago. How cool would that be?" Astronomy Magazine, May 2024, p. 29.

For more information about Meteor Showers, visit Gary Kronk's [Meteor Showers Online](#) web page.

### [Meteor Shower Radiant Report](#)

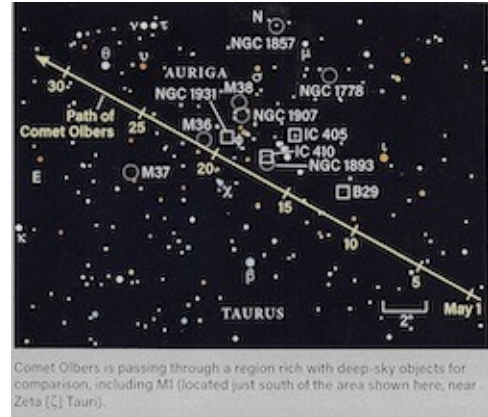
[Meteor Scatter](#) (or Meteor burst communications) -- "is a radio [propagation mode](#) that exploits the [ionized](#) trails of [meteors](#) during [atmospheric entry](#) to establish brief communications paths between [radio stations](#) up to 2,250 kilometres (1,400 mi) apart." Tune your shortwave or your HF amateur radio to 54.310 MHz USB CW and see if you

can hear any pings. Try other frequencies as well... 6m FT8 digital - 50.313 Mhz & 50.276 Mhz, JP-65 digital mode and the carrier frequencies of the lower VHF bands for TV channels 2, 3 & 4.

[Meteor Rx How-To](#) by Terry Bullett (WØASP).

## Comets

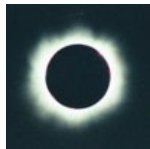
- [Comet 13P/Olbers](#) passes through the constellation of [Taurus](#) and [Auriga](#), visible about 60 minutes after local sunset shining around 8th magnitude.
- Comet [C/2021 S3 \(PanSTARRS\)](#) is fading from 8th to 9th magnitude during the first half of May crossing the star fields north of Deneb in the constellation of [Cygnus](#) before sunrise.
- Comet [12P/Pons-Brooks](#) may be visible with the naked-eye for a few more nights before it fades to binocular levels for observers south of the equator.



For information, orbital elements and ephemerides on observable comets visit [Observable Comets](#).

For more information about Comets, check out Gary Kronk's 6-volume series of books on [Cometography](#).

## Eclipses



- No [solar eclipse](#) activity this month.
- No [lunar eclipse](#) activity this month.

## Observational Opportunities

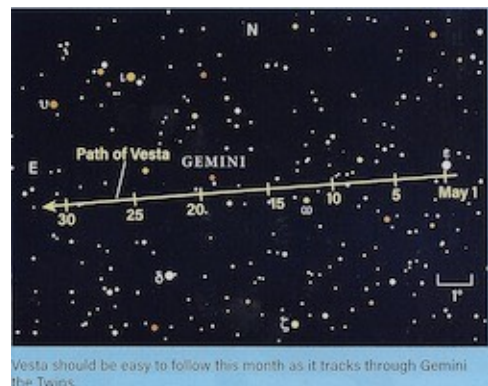
(from evening to morning)

- Look for Ceres, Pluto, Saturn, Neptune, Mars, Mercury and Venus in the morning.



**Asteroids**  
(From west to east)

- **Vesta** is in the constellation of [Gemini](#).
- **Herculina** is in the constellation of [Boötes](#).
- **Pallas** is at [opposition](#) on the 19th in the



constellation of [Hercules](#).

Information about the Minor Planets can be found at the [MinorPlanet.info](#) web site.

## Occultations



Information on various [occultations](#) can be found at the [International Occultation Timing Association's \(IOTA\)](#) web site.

## Member Meteor Sightings

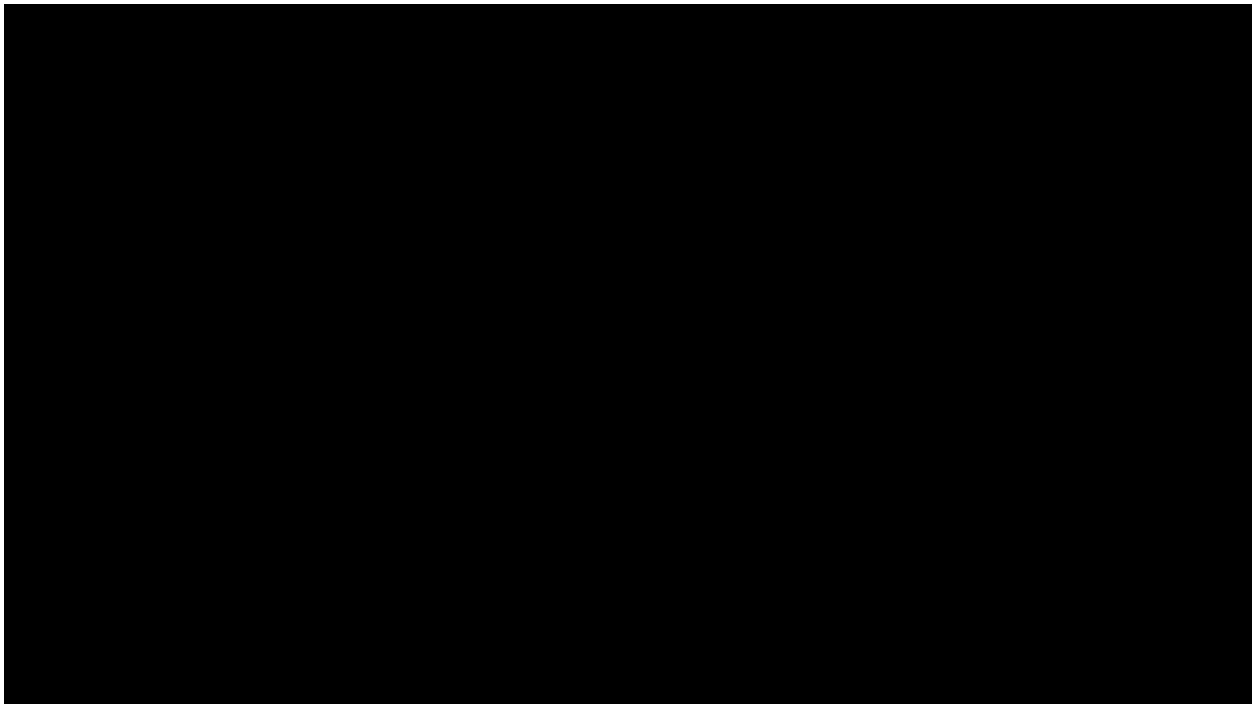
In this section I will post meteor, fireball, etc sightings that have been published on the [American Meteor Society](#)'s web site. I want to make this an active section of the web pages and newsletter and would like to publish the links to member sightings. If you have any published sightings, please provide me with the links and I will post them here for all to enjoy.

<u>Event ID</u>	<u>Date/Time</u>	<u>Location</u>	<u>Observer</u>	<u>Link</u>
3871-2015	2015-11-13 01:55 MST	CO	Charles N	<a href="#">3871a</a>
3587-2015	2015-11-22 17:38 MST	CO	Kevin S	<a href="#">3587aw</a>
3829-2015	2015-12-05 18:06 MST	CO	Burness A	<a href="#">3829a</a>
986-2020	2020-02-21 22:20 MST	CO	Lukas S	<a href="#">986</a>
3716-2020	2020-07-24 23:22 MDT	CO	Lukas S	<a href="#">3716</a>
4774-2021	2021-08-13 21:57 MDT	UT	Lukas S	<a href="#">4774</a>
7044-2021	2021-10-28 20:37 MDT	CO	Burness A	<a href="#">249058</a>
6763-2022	2022-10-06 05:56 CDT	OK	Mike C	<a href="#">6763</a>
5300-2023	2023-09-11 22:04 MDT	CO	Lukas S	<a href="#">5300</a>
578-2024	2024-01-28 23:05 MST	CO	Lukas S	<a href="#">578</a>

## [Subscriber Gallery](#)

I have created a web page containing images taken and submitted by subscribers to the email newsletter, check-ins to the Colorado Astronomy Net and readers of the online newsletter and some of my own images. Any one wishing to submit their images to the gallery, please let me know. The images must be taken by the submitter and be astronomy related. Please include a description and your information so that I can give proper credit to your work. I will post the most recent submissions here.

## **Total Solar Eclipse, April 8, 2024**



### **22 Minute Movie Courtesy of Burness Ansell (KIØAR)**

**Taken:** April 8, 2024

**Location:** Cape Girardeau, MO

**Camera:** [Dwarf II](#)

Compilation of video clips and stills - 11 minute video of totality  
(with annotations and music)

(click on the space above to activate)

If movie does not start, click link below:

[Total Solar Eclipse 040824](#)

# Planetary/Lunar Exploration Missions

(Excerpts from recent mission updates)



## JPL Latest News

The Latest from Space

[The Origin of JPL](#) (a Youtube video-1 Hour 29 minutes).

[JPL Latest News](#)

**April 22, 2024**

### **NASA's Voyager 1 Resumes Sending Engineering Updates to Earth**

[Full Article & Images](#)

**"After some inventive sleuthing, the mission team can — for the first time in five months — check the health and status of the most distant human-made object in existence.**

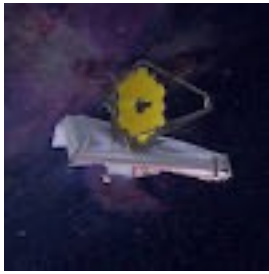
For the first time since November, NASA's Voyager 1 spacecraft is returning usable data about the health and status of its onboard engineering systems. The next step is to enable the spacecraft to begin returning science data again. The probe and its twin, Voyager 2, are the only spacecraft to ever fly in interstellar space (the space between stars).

Voyager 1 stopped sending readable science and engineering data back to Earth on Nov. 14, 2023, even though mission controllers could tell the spacecraft was still receiving their commands and otherwise operating normally. In March, the Voyager engineering team at NASA's Jet Propulsion Laboratory in Southern California confirmed that the issue was tied to one of the spacecraft's three onboard computers, called the flight data subsystem (FDS). The FDS is responsible for packaging the science and engineering data before it's sent to Earth."

Read the latest news and discoveries from JPL's dozens of active space missions exploring Earth, the solar system and worlds beyond.

[Past, Present, Future and Proposed JPL Missions](#)

For special JPL programs and presentations in your area visit the [JPL Solar System Ambassador](#) web site.



## James Webb Space Telescope

April 29, 2024

### Webb Captures Top of Iconic Horsehead Nebula in Unprecedented Detail

[Full Article & Images](#)

**"The mid-infrared instrument (MIRI), managed through launch by NASA-JPL, helped reveal for the first time the small-scale structures of the nebula's edge.**

NASA's James Webb Space Telescope has captured the sharpest infrared images to date of a zoomed-in portion of one of the most distinctive objects in our skies, the Horsehead Nebula. These observations show the top of the "horse's mane," or edge of this iconic nebula, in a whole new light, capturing the region's complexity with unprecedented spatial resolution.

Webb's new images show part of the sky in the constellation Orion ("The Hunter"), in the western side of a dense region known as the Orion B [molecular cloud](#). Rising from turbulent waves of dust and gas is the [Horsehead Nebula](#), otherwise known as Barnard 33, which resides roughly 1,300 light-years away."

More information on the James Webb Space Telescope mission is available at [The James Webb Space Telescope](#) website.

The public can follow the mission on [Facebook](#), [Twitter](#) and [YouTube](#).



## Juno

April 18, 2024

### NASA's Juno Gives Aerial Views of Mountain, Lava Lake on Io

[Full Article & Images](#)

*"Imagery from the solar-powered spacecraft provides close-ups of intriguing features on the hellish Jovian moon.*

Scientists on NASA's Juno mission to Jupiter have transformed data collected during two recent flybys of Io into animations that highlight two of the Jovian moon's most dramatic features: a mountain and an almost glass-smooth lake of cooling lava. Other recent science results from the solar-powered spacecraft include updates on Jupiter's polar cyclones and water abundance.

The new findings were announced Wednesday, April 16, by Juno's principal investigator Scott Bolton during a news conference at the European Geophysical Union General Assembly in Vienna."

Images from NASA's [JunoCam](#).

More information on the Juno mission is available at [Juno](#) and [Mission Juno](#). The public can follow the mission on [Facebook](#) and [Twitter](#).



## **TESS**

**April 24, 2024**

### **NASA's Planet-Hunting Satellite Temporarily on Pause**

[Full Article & Images](#)

"During a routine activity April 23, NASA's TESS (Transiting Exoplanet Survey Satellite) entered safe mode, temporarily suspending science operations. The satellite scans the sky searching for planets beyond our solar system.

The team is working to restore the satellite to science operations while investigating the underlying cause. NASA also continues investigating the cause of a separate safe mode event that took place earlier this month, including whether the two events are connected. The spacecraft itself remains stable."

For more news and information on the TESS mission, visit the [Latest TESS News](#) page.

[Past, Present, Future and Proposed JPL Missions.](#)

# Mars Missions

## [Be A Martian](#)



Mars website mobile version is here!  
Simply type  
<http://mars.jpl.nasa.gov>  
into your mobile browser.

### **Mars on the Go! NASA Be A Martian Mobile App**

If you want the latest news as it happens, try out the "Be A Martian" app.

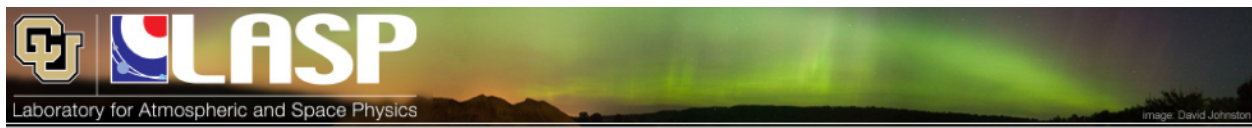
Download on Mobile Devices

[Android](#) | [iPhone](#) | [Windows Phone](#)



### **JMARS**

[JMARS](#) is an acronym that stands for Java Mission-planning and Analysis for Remote Sensing. It is a geospatial information system (GIS) developed by ASU's Mars Space Flight Facility to provide mission planning and data-analysis tools to NASA's orbiters, instrument team members, students of all ages, and the general public.



## Laboratory for Atmospheric and Space Physics

"The Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder (CU) began in 1948, a decade before NASA. We are the world's only research institute to have sent instruments to all eight planets and Pluto.



**LASP**

**April 22, 2024**

**9 ways LASP is a leader in Earth and climate science**

[Full Article & Images](#)

"Despite humans inhabiting Earth for around 300,000 years, we still have much to learn about the beautiful planet we call home. Yet only so much can be learned about Earth from the ground, prompting scientists to seek a view of Earth and its stellar neighborhood from above and beyond.

Since its founding in 1948, the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder has become a leader in climate and atmospheric science, producing an array of missions and instruments whose coverage ranges from the Earth's surface to the sun's orbit.

In celebration of Earth Day, we're featuring 9 ways that LASP is advancing crucial Earth and climate research:

1. Earth's radiation budget...
2. Solar irradiance...
3. Reflected radiation...
4. Solar reference spectrum...
5. Earth's atmospheric layers...
6. Noctilucent clouds...
7. Polar vortex...
8. Hunga Tonga eruptions 2022...
9. Using Earth to study other planets..."

(Visit the link above for full details.)



## **MAVEN**

**December 11, 2023**

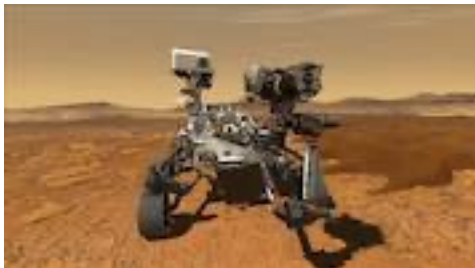
### **NASA's MAVEN Observes the Disappearing Solar Wind**

[Full Article & Images](#)

"In December 2022, NASA's MAVEN (Mars Atmosphere and Volatile Evolution) mission observed the dramatic and unexpected "disappearance" of a stream of charged particles constantly emanating off the Sun, known as the solar wind. This was caused by a special type of solar event that was so powerful, it created a void in its wake as it traveled through the solar system.

Due to this event, MAVEN's measurements at Mars showed that the number of particles making up the solar wind dropped significantly. Without the pressure of the solar wind, the Martian atmosphere and magnetosphere expanded by thousands of kilometers. MAVEN is the only asset currently at Mars able to simultaneously observe both the Sun's activity and the response of the Martian atmosphere to these solar influences."

Visit [LASP](#) and [MAVEN](#) for more information.



## **Mars 2020 - Perseverance**

**April 3, 2024**

### **Rock Sampled by NASA's Perseverance Embodies Why Rover Came to Mars**

[Full Article & Images](#)

*"The 24th sample taken by the six-wheeled scientist offers new clues about Jezero Crater and the lake it may have once held.*

Analysis by instruments aboard NASA's Perseverance Mars rover indicate that the latest rock core taken by the rover was awash in water for an extended period of time in the distant past, perhaps as part of an ancient Martian beach. Collected on March 11, the sample is the rover's 24th – a tally that includes 21 sample tubes filled with rock cores, two filled with regolith (broken rock and dust), and one with Martian atmosphere."

Learn more about the [Mars 2020 \(Perseverance\) mission](#).



## **Mars Science Laboratory - Curiosity**

**April 22, 2024**

**Why is Methane Seeping on Mars? NASA Scientists Have New Ideas**

[Full Article & Images](#)

"The most surprising revelation from NASA's Curiosity Mars Rover — that methane is seeping from the surface of Gale Crater — has scientists scratching their heads.

Living creatures produce most of the methane on Earth. But scientists haven't found convincing signs of current or ancient life on Mars, and thus didn't expect to find methane there. Yet, the portable chemistry lab aboard Curiosity, known as SAM, or Sample Analysis at Mars, has continually sniffed out traces of the gas near the surface of Gale Crater, the only place on the surface of Mars where methane has been detected thus far. Its likely source, scientists assume, are geological mechanisms that involve water and rocks deep underground.

If that were the whole story, things would be easy. However, SAM has found that methane behaves in unexpected ways in Gale Crater. It appears at night and disappears during the day. It fluctuates seasonally, and sometimes spikes to levels 40 times higher than usual. Surprisingly, the methane also isn't accumulating in the atmosphere: ESA's (the European Space Agency) ExoMars Trace Gas Orbiter, sent to Mars specifically to study the gas in the atmosphere, has detected no methane."

Visit the [Mars Science Laboratory](#) page.



## **Mars Reconnaissance Orbiter Mission**

**March 8, 2024**

**Martian Barchan Dunes**

[Full Article & Images](#)

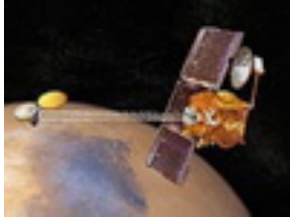
"On Jan. 16, 2020, the Mars Reconnaissance Orbiter (MRO) captured this image of two types of sand dunes on Mars: barchan and linear dunes.

The small dots are called barchan dunes, and from their shape we can tell that they are upwind. The downwind dunes are long and linear. These two types of dune each show the wind direction in different ways: the barchans have a steep slope and crescent-shaped "horns" that point downwind, while the linear dunes are stretched out along the primary wind direction. Linear dunes, however, typically indicate at least two different prevailing winds, which stretch out the sand along their average direction.

Barchan and linear dunes aren't just a Martian phenomenon – we can also see them on Earth. Astronauts aboard the International Space Station have snapped photos of them occurring in Brazil and Saudi Arabia."

## MARS RECONNAISSANCE ORBITER HIRISE IMAGES

View all of the archived [HiRISE](#) images.  
More information about the [MRO](#) mission is available online.



### Mars Odyssey Orbiter

November 28, 2023

NASA Orbiter Snaps Stunning Views of Mars Horizon

[Full Article & Images](#)

*"The Odyssey orbiter captured clouds and dust in the Red Planet's skies, along with one of its two tiny moons."*

Astronauts often react with awe when they see the curvature of the Earth below the International Space Station. Now Mars scientists are getting a taste of what that's like, thanks to NASA's 2001 Mars Odyssey orbiter, which completed its 22nd year at the Red Planet last month.

The spacecraft captured a series of panoramic images that showcases the curving Martian landscape below gauzy layers of clouds and dust. Stitched end to end, the 10 images offer not only a fresh, and stunning, view of Mars, but also one that will help scientists gain new insights into the Martian atmosphere."

## DAILY MARS ODYSSEY THEMIS IMAGES

Thermal Emission Imaging System ([THEMIS](#)) web site.

Visit the [Mars Odyssey Mission](#) page.

## Mars Missions Status

New Mars missions are being planned to include several new rover and sample collection missions. Check out the [Mars Exploration](#) web page.

## [Astronomy Links and Other Space News](#)

(If you have a link you would like to recommend to our readers, please feel free to submit it.)

[Colorado Astronomy Links](#)

[Radio Astronomy Links](#)

[More Astronomy Links](#)

## Acknowledgments and References

Much of the information in this newsletter is from "Astronomy Magazine" (Kalmbach Publishing), JPL mission status reports, "Meteor Showers - A Descriptive Catalog" by Gary W. Kronk and other astronomical sources that I have stashed on my book shelves.

The author will accept any suggestions, constructive criticisms, and corrections. Please feel free to send me any new links or articles to share as well. I will try to accommodate any reasonable requests. Please feel free to send questions, comments, criticisms, or donations to the email address listed below. Enjoy!

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## Keep looking UP!

73 from KIØAR

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