IAAS Monthly Astronomy Newsletter
April 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.

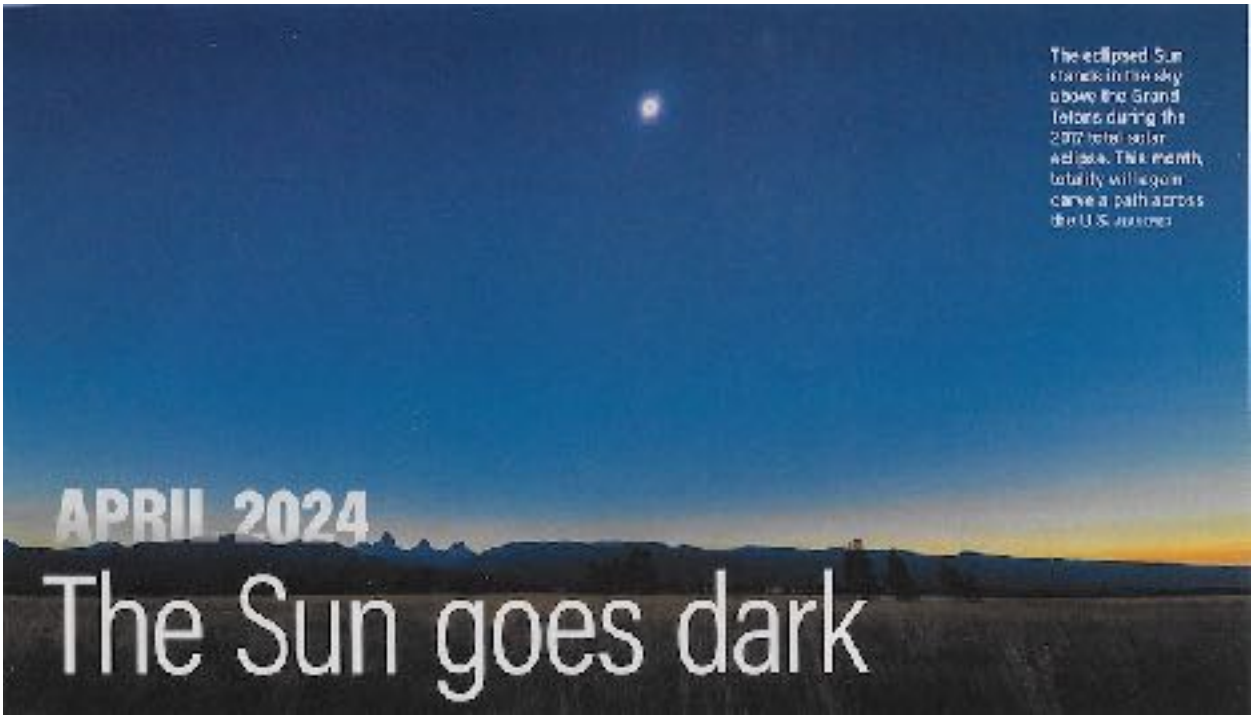
An Open Invitation - For amateur radio operators and scanner enthusiasts around the world, please join the Colorado Astronomy Net on the Rocky Mountain Radio League's **K1DUN** repeater on **449.450 MHz** or other digital and analog repeaters, Allstar nodes, Echolinks, DMR and internet links connected 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 eclipsed Sun stands in the sky above the Grand Tetons during the 2017 total solar eclipse. This month totality swill again carve a path across the U.S." Astronomy Magazine, April 2024, p. 28. - Alan Dyer

In This Newsletter...

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 at 2:21 p.m. EDT on the 8th.
- First Quarter Moon occurs on the 15th.
- Full Moon occurs on the 23rd.

- The Moon is at perigee (222,979 miles from Earth) on the 7th.
- The Moon is at apogee (252,043 miles from Earth) on the 19th.

Moon/Planet Pairs:

- The Moon passes 2° south of Mars on the 5th.
- The Moon passes 1.2° south of Saturn on the 6th.
- The Moon passes 0.4° south of Neptune on the 7th.
- The Moon passes 0.4° north of Venus on the 7th.
- The Moon passes 4° north of Jupiter, on the 10th.
- The Moon passes 4° north of Uranus on the 10th.
- Mars passes 0.5° north of Saturn on the 10th.
- Mercury passes 2° north of Venus on the 18th.
- Jupiter passes 0.5° south of Uranus on the 20th.
- The Moon passes 0.3° north of Antares on the 26th.
- Mars passes 0.04° south of Neptune on the 28th.

For reference: The Full Moon subtends an angle of ~0.5°.

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.

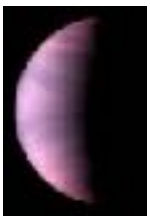
(Times are Mountain Daylight Time (MDT) unless otherwise noted. Times will vary slightly depending on your location.)

Planetary Highlights for April

"...There's an array of planets visible all month, as Jupiter and Uranus lie close together in a conjunction, with Comet 12P/Pons-Brooks located a few degrees from the pair. Venus is sliding behind the Sun, but Saturn and Mars grow in visibility in the pre-dawn sky. They are joined by Mercury, which switches from east to west of the Sun during the month." Astronomy Magazine, April 2024, p. 28.

Mercury

Is stationary on the 1st. Mercury sets at 8:42 p.m. on the 1st. Mercury is in inferior conjunction on the 11th. After conjunction, Mercury returns to the morning sky, rising about 5:10 a.m. by month's end. Mercury is stationary again on the 24th. Look for Mercury in the evening sky very low on the western horizon about 30 minutes after sunset during the first week of the month and then about 30 minutes before sunrise during the last week of the month. Mercury is in the constellation of Pisces shining at magnitude 1.3 on the 1st.



Venus

Rises at 6:12 a.m. on the 1st and about 5:42 a.m. by month's end. Look for Venus low to the east about 30 minutes before sunrise. Venus moves from the constellation of Pisces into Aries shining at magnitude -3.9 on the 1st.

Earth

N/A.

Mars

Rises at 5:27 a.m. on the 1st and about 4:25 a.m. by month's end. Look for Mars low on the eastern horizon before sunrise. Mars moves from the constellation of Aquarius into Pisces shining at magnitude 1.2.

Jupiter

Sets at 10:16 p.m. on the 1st and about 8:53 p.m. by month's end. By the time the Sun sets, Jupiter is visible low in the west. Jupiter is in the constellation of Aries shining at magnitude -2.0.

Saturn

Rises at 5:45 a.m. on the 1st and about 03:54 a.m. by month's end. Observe Saturn just before sunrise, low to the southeast. Saturn is in the constellation of Aquarius shining at magnitude 1.0.

Uranus

Sets at 10:34 p.m. on the 1st and about 8:45 p.m. by month's end. Uranus follows just a few minutes behind Jupiter, visible in the southwest soon after sunset. Uranus is in the constellation of Aries shining at magnitude 5.9.

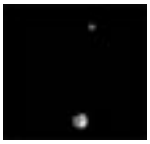
Neptune

Rises at 6:16 a.m. on the 1st and about 4:21 a.m. by the end of the month. Look for Neptune before sunrise, low on the eastern horizon after mid-month. Neptune is in the constellation of Pisces shining at magnitude 7.8.

Dwarf Planets

Ceres

Rises at 2:52 a.m. on the 1st and about 1:18 a.m. by month's end. Ceres is visible in the early morning sky to the southeast. Ceres is in the constellation of Sagittarius shining at magnitude 8.7.



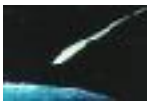
Pluto

Rises at 3:55 a.m. on the 1st and about 1:58 a.m. by month's end. Pluto is visible to the southeast before dawn. Pluto is in the constellation of Capricornus shining at magnitude 15.3.

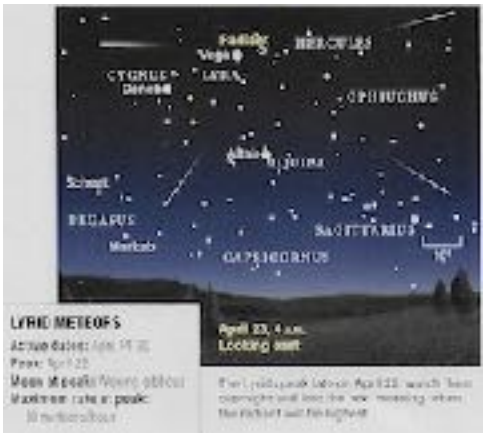
As always, good luck at spotting Neptune, Ceres and Pluto, a large telescope and dark skies will be needed.

Constellation information provided by Go Astronomy.

Astronomical Events



Meteor Showers



- **The Lyrids** meteor showers are typically visible between April 16 and 25. Maximum occurs during April 21-22. Although the maximum rate is about 10, there have been instances during the last 200 years when rates were near or over 100 per hour. The average magnitude of the meteors is near 2.4 and the speed is described as rapid. About 15% of the meteors leave persistent trains.

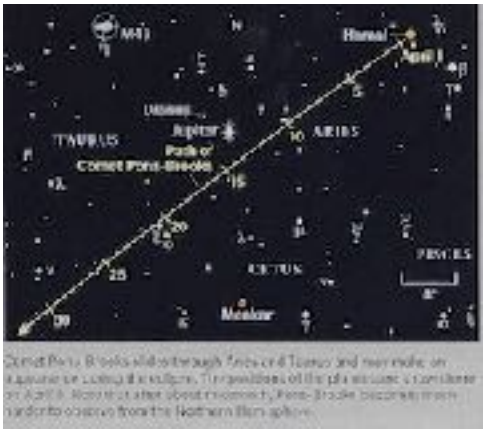
For more information about Meteor Showers, visit Gary Kronk's Meteor Showers Online web page.

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 **12P/Pons-Brooks** passes through the constellation of Aries and Taurus, visible about 60 minutes after local sunset. On the 10th, 12P/Pons-Brooks shares the early evening sky with Jupiter, Uranus and a thin crescent Moon, as well as the Pleiades (M45). It may brighten to 4th magnitude.

- Comet **C/2021 S3 (**PanSTARRS**)** is visible at 7th magnitude in the southeast passing through the constellation of Cygnus before sunrise.

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

- "It's here at last! The April 8 total eclipse of the Sun is visible from a narrow track spanning North America from southwest to northeast. While the majority of people across the U.S. will see a partial eclipse of varying degrees, millions will travel to be in that special location inside totality for the spectacle of seeing the corona surrounding the intensely black disk of the Moon as it covers the Sun, an apparent hole in the sky. So sudden is the drop in light during the last 30 seconds leading up to the event — an effect missed from all the partial zones — that totality observers often shout in joy and delight. While a partial eclipse is nice, a total one is the epitome of awe." Astronomy Magazine, April 2024, p. 28.

"The April 8, 2024, solar eclipse will be visible in the entire contiguous United States, weather permitting. People along the path of totality stretching from Texas to Maine will have the chance to see a total solar eclipse; outside this path, a partial solar eclipse will be visible."
Credits: NASA

Here are some links to follow:
NASA - 2024 Total Solar Eclipse
NASA - Total Solar Eclipse of 2024 Apr 08
NASA - Solar Eclipse Mini Lessons
Time & Date - April 8, 2024 — Great North American Eclipse (Total Solar Eclipse)

- No lunar eclipse activity this month.

Observational Opportunities

(from evening to morning)

- Look for Jupiter and Uranus in the evening.
- Look for Venus, Mars, Saturn and Ceres in the morning.

Asteroids

(From west to east)

- **Vesta** is in the constellation of Gemini.
- **Juno** is at stationary on the 18th in the constellation of Leo.
- **Herculina** is at opposition on the 8th in the constellation of Boötes.
- **Pallas** is stationary on the 4th 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.

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

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.

Solar Eclipse, August 2017

"Corona", "Bailey's Beads" and the "Diamond Ring"
Image Courtesy of Burness Ansell (KIØAR)
Taken: August 21, 2017
Location: Guernsey, WY
Camera: Nikon D80, with 400mm telephoto lens

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

March 27, 2024
NASA's Europa Clipper Survives and Thrives in 'Outer Space' on Earth

Full Article & Images

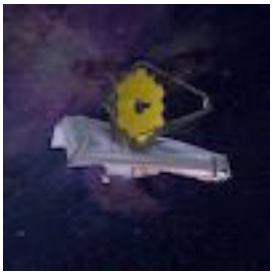
"A gantlet of tests prepared the spacecraft for its challenging trip to the Jupiter system, where it will explore the icy moon Europa and its subsurface ocean.

In less than six months, NASA is set to launch Europa Clipper on a 1.6-billion-mile (2.6-billion-kilometer) voyage to Jupiter's ocean moon Europa. From the wild vibrations of the rocket ride to the intense heat and cold of space to the punishing radiation of Jupiter, it will be a journey of extremes. The spacecraft was recently put through a series of hard-core tests at the agency's Jet Propulsion Laboratory in Southern California to ensure it's up to the challenge."

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

March 13, 2024
Cheers! NASA's Webb Finds Ethanol, Other Icy Ingredients for Worlds

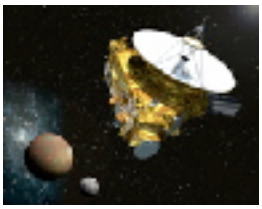
Full Article & Images

"***Editor's Note:*** *This article was updated March 13, 2024, to clarify the likelihood that chemicals found around IRAS 2A were present in the first stages of development of our solar system.*

What do margaritas, vinegar, and ant stings have in common? They contain chemical ingredients that NASA's James Webb Space Telescope has identified surrounding two young protostars known as IRAS 2A and IRAS 23385. Although planets are not yet forming around those stars, these and other molecules detected there by Webb represent key ingredients for making potentially habitable worlds."

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

March 4, 2024
NASA's Juno Mission Measures Oxygen Production at Europa

Full Article & Images

"*The ice-covered Jovian moon generates 1,000 tons of oxygen every 24 hours – enough to keep a million humans breathing for a day.*

Scientists with NASA's Juno mission to Jupiter have calculated the rate of oxygen being produced at the Jovian moon Europa to be substantially less than most previous studies. Published on March 4 in Nature Astronomy, the findings were derived by measuring hydrogen outgassing from the icy moon's surface using data collected by the spacecraft's Jovian Auroral Distributions Experiment (JADE) instrument."

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

March 7, 2024
Discovery Alert: a Long Year for a 'Cold Saturn'

Full Article & Images

"**The Discovery:** Two giant planets comparable to our own system's Saturn orbit a star not unlike our Sun some 700 light-years away. The outer planet has the longest year – 483 days – of any found so far by NASA's TESS (the Transiting Exoplanet Survey Satellite). It's also among the coldest.

Key Facts: The two planets, TOI-4600 b and c, could prove important to astronomers who investigate how large, gaseous planets form and evolve. And they begin to fill a gap in knowledge between gas giants like Jupiter and Saturn in our solar system, and "hot Jupiters" (as well as "warm Jupiters") elsewhere in our galaxy.

Details: The decades-long hunt for exoplanets – planets around other stars – has so far yielded more than 5,500 that are confirmed to be scattered across the Milky Way, which likely contains hundreds of billions. But the prevailing detection method turns up relatively few "long period" planets, those with years lasting 50 days or more. This method, seeking "shadows," much more easily reveals planets orbiting their stars closely, with far shorter years. The search for shadows, called the transit method, captures the tiny dip in starlight as an orbiting planet crosses the face of its star."

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.

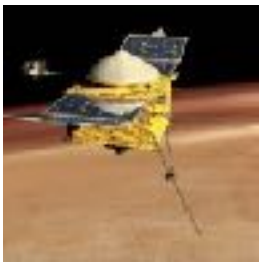
Laboratory for Atmospheric and Space Physics
"The Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder (CU) began in 1948, a decade before NASA. We are the world's only research institute to have sent instruments to all eight planets and Pluto.

LASP
March 12, 2024
LASP welcomes the Chancellor's Parent Society Leadership Board

Full Article & Images

"In February, the Laboratory for Atmospheric and Space Physics (LASP) hosted the Chancellor's Parent Leadership Society (CPLS) Board for their spring meeting, which included a presentation about LASP's work, students, and history, as well as a tour of the institute's facilities. LASP began celebrating its 75th anniversary in 2023.

The Parent Leadership Society is a group of donors who serve as university ambassadors and lead the CU Boulder parent community. To kick off the meeting, the new CPLS Board Chairs, Carlos and Marci Hamilton, and Vice Chairs, Chris and Katharine Roth, introduced Dr. Philip P. DiStefano, Chancellor of the University of Colorado Boulder, who last fall announced he will step down this year after holding the position since 2009."



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

February 29, 2024
Bunsen Peak Piques Interest

Full Article & Images

"Perseverance has continued its traverse west through the Margin unit. As the rover drives, images and data are obtained using instruments such as Mastcam-Z, Navcam, and SuperCam to track any changes in the chemistry or appearance of the rocks.

Along the way, the science team used these images to pick out an exciting rock named Bunsen Peak. This rock was intriguing because it stands tall among the surrounding terrain and has some interesting surface texture on its left face, as seen in the image above. Another feature of the rock that stood out in the image was the near vertical face directly in front of the rover. A vertical face piques the interest of the science team for a couple of reasons: first, a vertical face of a rock could give a cross-sectional view of any chemical or physical layering that might be occurring in the rock. Second, a vertical face is usually less dust-covered, which is good news for our scientific instruments!"

Learn more about the Mars 2020 (Perseverance) mission.

Mars Science Laboratory - Curiosity

December 28, 2023
NASA's Curiosity Rover Captures a Martian Day, From Dawn to Dusk

Full Article & Images

"*Videos from the rover show its shadow moving across the Martian surface during a 12-hour sequence while Curiosity remained parked.*

When NASA's Curiosity Mars rover isn't on the move, it works pretty well as a sundial, as seen in two black-and-white videos recorded on Nov. 8, the 4,002nd Martian day, or sol, of the mission. The rover captured its own shadow shifting across the surface of Mars using its black-and-white Hazard-Avoidance Cameras, or Hazcams."

Visit the Mars Science Laboratory page.

Mars Reconnaissance Orbiter Mission
March 8, 2024
Martian Barchan Dunes

Full Article & Images

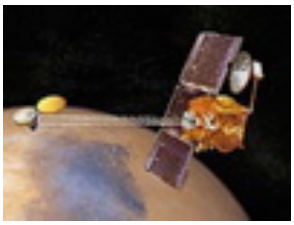
"On Jan. 16, 2020, the Mars Reconnaissance Orbiter (MRO) captured this image of two types of sand dunes on Mars: barchan and linear dunes.

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!

Subscription Information

- Email Newsletter archives.
- Full documentation of the online administration system.
- The latest version of the newsletter.

Keep looking UP!

73 from KIØAR
Created by Burness F. Ansell, III
Email

COO, Director of Aerospace Technologies, IAAS
JPL Solar System Ambassador, Colorado
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