IAAS Monthly Astronomy Newsletter
June 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.

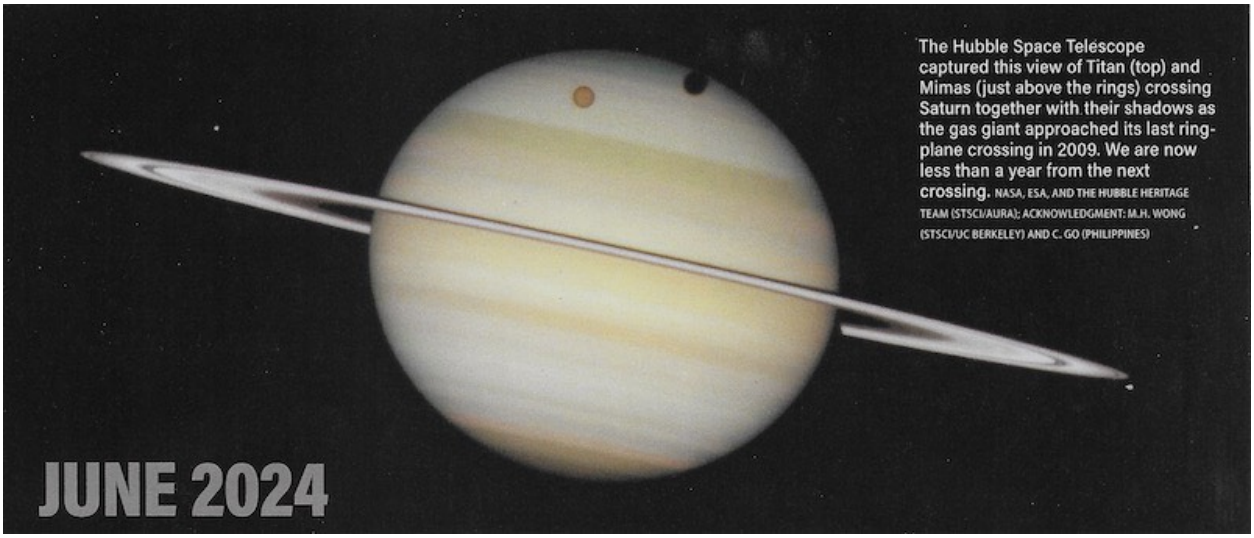
An Open Invitation - For amateur radio operators and scanner enthusiasts around the world, please join the Colorado Astronomy Net on the Rocky Mountain Radio League's **K1DUN** repeater on **449.450 MHz** or other digital and analog repeaters, Allstar nodes, Echolinks, DMR and internet links connected 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 Hubble Space Telescope captured this view of Titan (top) and Mimas (just above the rings) crossing Saturn together with their shadows as the gas giant approached its last ring-plane crossing in 2009. We are now less than a year from the next crossing." Astronomy Magazine, June 2024, p. 28. - NASA, ESA and the Hubble Heritage Team (STSCI/AURA); Acknowledgment: M.M. Wong (STSCI/UC Berkeley) and C. Go (Philippines)

In This Newsletter...

The Month At-A-Glance

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

The Moon

Phases:

- New Moon occurs on the 6th.
- First Quarter Moon occurs on the 14th.
- Full Moon occurs on the 21st.
- Last Quarter Moon occurs on the 28th.

- The Moon is at perigee (228,728 miles from Earth) on the 2nd.
- The Moon is at apogee (251,082 miles from Earth) on the 14th.
- The Moon is at perigee (229,464 miles from Earth) on the 27th.

Moon/Planet Pairs:

- The Moon passes 2° north of Mars on the 2nd.
- Mercury passes 0.1° south of Jupiter on the 4th.
- The Moon passes 4° north of Uranus on the 4th.
- The Moon passes 5° north of Jupiter on the 5th.
- The Moon passes 0.5° south of asteroid Juno on the 13th.
- The Moon is at apogee (251,082 miles from Earth) on the 14th.
- The Moon passes 1.2° north of Spica on the 16th.
- The Moon passes 0.3° north of Antares on the 20th.
- The Moon passes 1.0° north of dwarf planet Ceres on the 23rd.
- The Moon is at perigee (229,464 miles from Earth) on the 27th.
- The Moon passes 0.08° north of Saturn on the 27th.
- The Moon passes 0.3° north of Neptune on the 28th.
- Mercury passes 5° south of Pollux on the 29th.

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.)

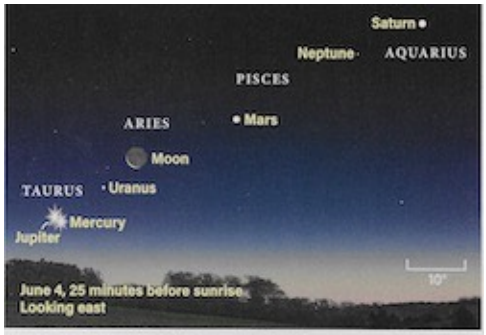
Planetary Highlights for June

"June's pre-dawn sky finds six planets strung along the ecliptic, spanning 72° on the 1st. In order of increasing elongation from the Sun, they are Jupiter, Mercury, Uranus, Mars, Neptune, and Saturn. A 24-day-old waning crescent Moon joins the line of objects, 16° east of Saturn. It's a great time to become acquainted with many planets all in one go, and during nice weather to boot.

Some of the planets switch places early in the month, while the Moon wanders across the line over the span of four days. Most are visible to the unaided eye, though Mercury is challenging as its elongation quickly diminishes in bright twilight after the 1st. Uranus and Neptune both require binoculars to spot." Astronomy Magazine, June 2024, p. 28.

Mercury

Is in superior conjunction on the 14th. Mercury rises at 4:50 a.m. on the 1st. After conjunction, Mercury returns to the evening sky, setting about 9:47 p.m. by month's end. Look for Mercury low on the eastern horizon about 30 minutes before sunrise during the first week of June and above the western horizon about 30 minutes after sunset during the last week of June. Mercury moves from the constellation of Taurus into Cancer shining at magnitude -0.7 on the 30th.



June opens with Jupiter and Mercury mingling in the morning sky. The smaller planet quickly disappears from view within days. Uranus and Neptune cannot be seen with the naked eye.

Venus

Is in superior conjunction on the 4th. After conjunction, Venus returns to the evening sky. Venus sets about 9:04 p.m. by month's end. Look for Venus low to the west about 30 minutes after sunset during the last half of June. Venus moves from the constellation of Taurus into Gemini shining at magnitude -3.9 on the 15th.

Earth

Summer solstice occurs at 4:51 P.M. EDT on the 20th.

Mars

Rises at 3:19 a.m. on the 1st and about 2:19 a.m. by month's end. Look for Mars to the southeast before sunrise. Mars moves from the constellation of Pisces into Aries shining at magnitude 1.0.

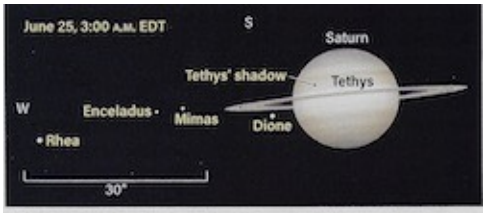
Jupiter

Rises at 5:04 a.m. on the 1st and about 3:29 a.m. by month's end. Look for Jupiter to the southeast before sunrise. Jupiter is in the constellation of Taurus shining at magnitude -2.0.

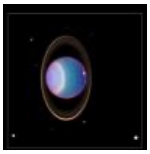
At the end of the month, the Moon has returned to the morning sky. Jupiter is rising earlier and stands above the bright red giant Aldebaran. Again, note that Uranus and Neptune require optical aid to spot.

Saturn

Is stationary on the 30th. Saturn rises at 1:58 a.m. on the 1st and about 11:58 p.m. by month's end. Look to the south to spot Saturn early in the morning before sunrise. Saturn is in the constellation of Aquarius shining at magnitude 1.0.

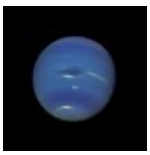


Early on June 25, Dione is closing in on Saturn; it will disappear shortly in an occultation. Meanwhile, Tethys and its shadow are transiting, with the moon appearing to just skim the southern edge of the rings.



Uranus

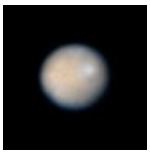
Is in conjunction with the Sun on the 13th. Uranus Rises at 4:38 a.m. on the 1st and about 2:45 a.m. by month's end. Look to the southeast to spot Uranus preceding Jupiter by about a half hour. Uranus is in the constellation of Taurus shining at magnitude 5.8.



Neptune

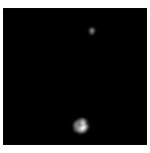
Rises at 2:21 a.m. on the 1st and about 12:24 a.m. by the end of the month. Look for Neptune before sunrise to the south. Neptune trails Saturn by about a half hour. Neptune is in the constellation of Pisces shining at magnitude 7.8.

Dwarf Planets



Ceres

Rises at 11:21 p.m. on the 1st and about 9:13 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 7.7.



Pluto

Rises at 11:52 p.m. on the 1st and about 9:53 p.m. by month's end. Pluto is visible to the south before dawn. Pluto is in the constellation of Capricornus shining at magnitude 15.1.

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 Arietids Meteor Showers** - This is the strongest daylight meteor shower of the year. The duration extends from May 22 to July 2, with maximum activity occurring on June 8. The hourly rate is near 60 at maximum.

- **The June Lyrids** - This shower is active during June 10 to 21, producing predominantly blue and white meteors at a maximum hourly rate of 8 per hour on June 15. The average magnitude of this shower is near 3, while 32% of the meteors leave trains.

- **The Zeta Perseids** - This daylight shower occurs during May 20 to July 5. Maximum occurs on June 13. Radar surveys have revealed the activity of this shower to be near 40 per hour.

- **The June Boötids** - This shower is currently active during June 27 to July 5 and possesses a maximum of activity that falls on the 28th... The shower is notable in that its meteors are primarily faint, with an average magnitude near 5; however, bright meteors do occur regularly.

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 [Auriga](#) and [Lynx](#), visible about 60 minutes after local sunset shining around 8th magnitude.
- Comet **C/2023 A3 (Tsuchinshan-ATLAS)** shines around 9th magnitude to the south near the [Virgo](#) cluster of galaxies.
- Comet **C/2021 S3 (**[PanSTARRS](#)**)** shines around 10th magnitude in the constellation of [Cepheus](#) 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

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

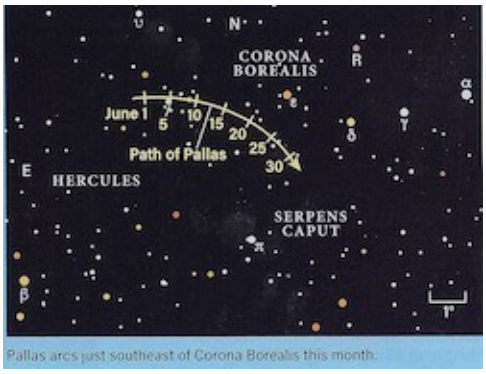
Observational Opportunities

(from evening to morning)

- Look for Mercury and Venus in the evening to the west.
- Look for Ceres, Pluto, Saturn, Neptune, Mars, Uranus and Jupiter in the morning to the south and east.

Asteroids

(From west to east)



- **Herculina** is in the constellation of [Virgo.](#)
- **Pallas** is in the constellation of [Corona Borealis](#).
- **Harmonia** is in the constellation of [Capricornus](#).
- **Iris** is in the constellation of [Aquarius](#).

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

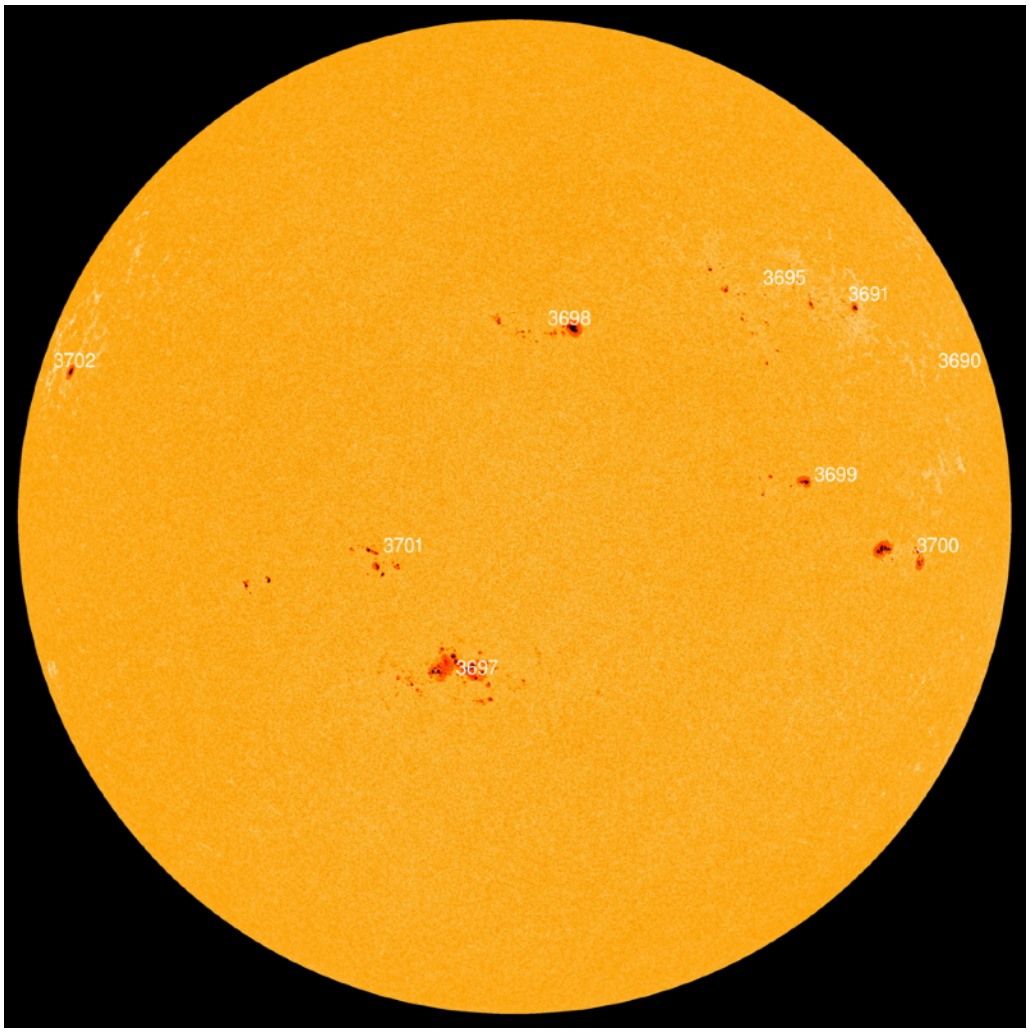
In this section I will post meteor, fireball, etc sightings that have been published on the American Meteor Society's web site. I want to make this an active section of the web pages and newsletter and would like to publish the links to member sightings. If you have any published sightings, please provide 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.

Our Active Sun - June 3, 2024



Courtesy of spacewearther.com
Taken: June 3, 2024

Sunspot AR3697 has a 'beta-gamma-delta' magnetic field harbors energy for X-class solar flares.
Credit: SDO/HMI

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

May 29, 2024
NASA to Measure Moonquakes With Help From InSight Mars Mission

Full Article & Images

"The technology behind the two seismometers that make up NASA's Farside Seismic Suite was used to detect more than a thousand Red Planet quakes.

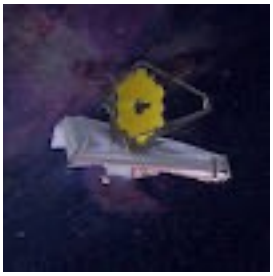
The most sensitive instrument ever built to measure quakes and meteor strikes on other worlds is getting closer to its journey to the mysterious far side of the Moon. It's one of two seismometers adapted for the lunar surface from instruments originally designed for NASA's InSight Mars lander, which recorded more than 1,300 marsquakes before the mission's conclusion in 2022.

Part of a payload called Farside Seismic Suite (FSS) that was recently assembled at NASA's Jet Propulsion Laboratory in Southern California, the two seismometers are expected to arrive in 2026 at Schrödinger basin, a wide impact crater about 300 miles (500 kilometers) from the Moon's South Pole. The self-sufficient, solar-powered suite has its own computer and communications equipment, plus the ability to protect itself from the extreme heat of lunar daytime and the frigid conditions of night."

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

May 23, 2024

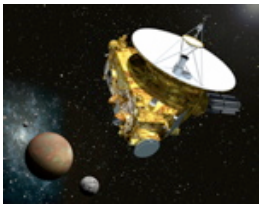
Galaxies Actively Forming in Early Universe Caught Feeding on Cold Gas

Full Article & Images

"Researchers analyzing data from NASA's James Webb Space Telescope have pinpointed three galaxies that may be actively forming when the universe was only 400 to 600 million years old. Webb's data shows these galaxies are surrounded by gas that the researchers suspect to be almost purely hydrogen and helium, the earliest elements to exist in the cosmos. Webb's instruments are so sensitive that they were able to detect an unusual amount of dense gas surrounding these galaxies. This gas will likely end up fueling the formation of new stars in the galaxies."

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

May 15 2024

NASA's Juno Provides High-Definition Views of Europa's Icy Shell

Full Article & Images

"*Imagery from the solar-powered spacecraft shows some intriguing features on the ice-encased Jovian moon.*

Images from the JunoCam visible-light camera aboard NASA's Juno spacecraft supports the theory that the icy crust at the north and south poles of Jupiter's moon Europa is not where it used to be. Another high-resolution picture of the icy moon, by the spacecraft's Stellar Reference Unit (SRU), reveals signs of possible plume activity and an area of ice shell disruption where brine may have recently bubbled to the surface."

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

May 23, 2024

NASA's TESS Finds Intriguing World Sized Between Earth, Venus

Full Article & Images

"Using observations by NASA's TESS (Transiting Exoplanet Survey Satellite) and many other facilities, two international teams of astronomers have discovered a planet between the sizes of Earth and Venus only 40 light-years away. Multiple factors make it a candidate well-suited for further study using NASA's James Webb Space Telescope.

TESS stares at a large swath of the sky for about a month at a time, tracking the brightness changes of tens of thousands of stars at intervals ranging from 20 seconds to 30 minutes. Capturing transits — brief, regular dimmings of stars caused by the passage of orbiting worlds — is one of the mission's primary goals."

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.

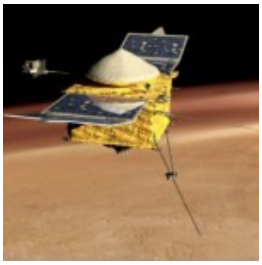
Laboratory for Atmospheric and Space Physics
"The Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder (CU) began in 1948, a decade before NASA. We are the world's only research institute to have sent instruments to all eight planets and Pluto.

LASP

May 16, 2024
LASP designated first Center of Excellence for Capacity Building in CubeSat Technologies

Full Article & Images

"The Committee on Space Research (COSPAR) has designated the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder a COSPAR Center of Excellence for Capacity Building in CubeSat Technologies. The partnership was announced by COSPAR President Pascale Ehrenfreund at a ceremony at LASP, which was attended by University of Colorado Boulder administrators, LASP senior leadership and scientists, and representatives from industry and NASA."



MAVEN

April 29, 2024
NASA Scientists Gear Up for Solar Storms at Mars

Full Article & Images

"*The Sun will be at peak activity this year, providing a rare opportunity to study how solar storms and radiation could affect future astronauts on the Red Planet.*

In the months ahead, two of NASA's Mars spacecraft will have an unprecedented opportunity to study how solar flares — giant explosions on the Sun's surface — could affect robots and future astronauts on the Red Planet.

That's because the Sun is entering a period of peak activity called solar maximum, something that occurs roughly every 11 years. During solar maximum, the Sun is especially prone to throwing fiery tantrums in a variety of forms — including solar flares and coronal mass ejections — that launch radiation deep into space. When a series of these solar events erupts, it's called a solar storm."

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

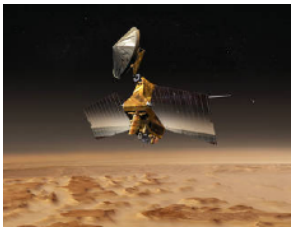
Full Article & Images

"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

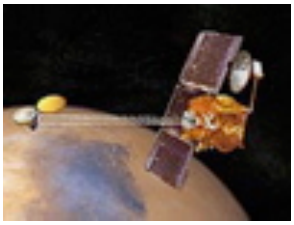
"On Jan. 16, 2020, the Mars Reconnaissance Orbiter (MRO) captured this image of two types of sand dunes on Mars: barchan and linear dunes.

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!

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
Last modified: June 01, 2024