IAAS Monthly Astronomy Newsletter October 2023

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, please join the Colorado Astronomy Net on the Rocky Mountain Radio League's **K1DUN** repeater on **449.450 MHz** or other repeaters connected to the SKYHUBLINK system. The net meets on Tuesday nights at 7 P.M. Mountain Time (MDT-US) (Wednesday at 0100 GMT). Connecting to the SkyHubLink system will expand our coverage in the U.S., Canada and internationally. All Amateur radio operators worldwide are welcome. If anyone wishes to "listen" to the net, the RMRL provides a "Live Audio Feed" using Broadcastify.

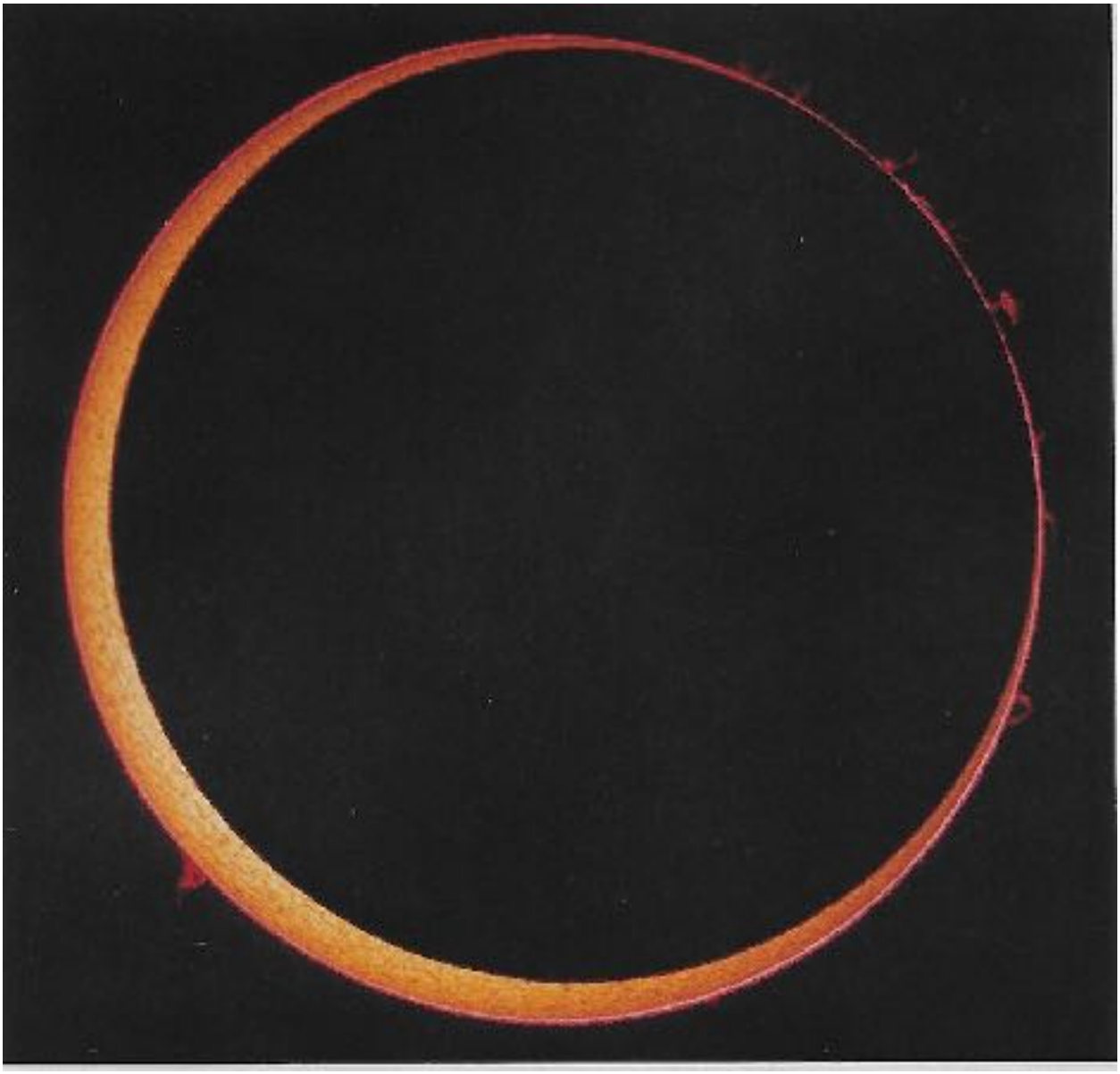
Obtain your Amateur Radio (Ham) License or your General Radio Operator's License (GROL)! Visit the South Metro VE Team website for more information. The South Metro VE Team provides test sessions by appointment only. Check the website for current information. All others interested in Amateur Radio, check 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.

In This Newsletter...



"During an annular solar eclipse, the Moon appears too small to completely cover the Sun. This shot of the Oct.3, 2005, eclipse shows prominences at the Sun's edge." Astronomy Magazine, October 2023, P. 28. - Stefan Seip - www.photomeeting.de

The Month At-A-Glance

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

The Moon

Phases:

- Last Quarter Moon occurs on the 6th.
- New Moon occurs on the 14th.
- First Quarter Moon occurs on the 22nd.
- Full Moon occurs on the 29th.

- The Moon is at apogee (251,920 miles from Earth) on the 9th.
- The Moon is at perigee (226,721 miles from Earth) on the 25th.

Moon/Planet Pairs:

- The Moon passes 3° north of Jupiter on the 1st.
- The Moon passes 3° north of Uranus on the 2nd.
- Venus passes 2° south of Regulus on the 10th.
- The Moon passes 6° north of Venus on the 10th.
- The Moon passes 0.8° north of Antares on the 18th.
- The Moon passes 3° south of Saturn on the 24th.
- The Moon passes 1.5° south of Neptune on the 25th.
- The Moon passes 3° north of Jupiter on the 29th.
- The Moon passes 3° north of Uranus on the 29th.

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

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.

(All times are local unless otherwise noted.)

Planetary Highlights for October

"An annular eclipse of the Sun on Oct. 14 is the big event this month, with most of the U.S. seeing a partial eclipse. Saturn is stunning in the evenings, while Jupiter is nearing its best for the year, visible all night. And it's a good time to track down Uranus and Neptune in binoculars. Venus dazzles in the morning sky, rising about four hours before the Sun. The second week of October is also a great time to view the zodiacal light." Astronomy Magazine, October 2023, P. 28.

Mercury

Is in superior conjunction on the 20th. Mercury rises at 5:44 a.m. on the 1st. After conjunction, Mercury returns to the evening sky. Mercury sets about 6:16 p.m. by month's end. Look for Mercury in the morning sky during the first 2 weeks of the month. Mercury moves from the constellation of Virgo into Libra shining at magnitude -1.1 on the 1st.

Venus

Is at greatest western elongation (46°) on the 23rd. Venus rises at 3:22 a.m. on the 1st and about 3:37 a.m. by month's end. Look for Venus low to the east before sunrise. Venus is in the constellation of Leo shining at magnitude -4.6 on the 15th.

Earth

N/A.

Mars

Sets at 7:18 p.m. on the 1st and about 6:11 p.m. by month's end. Mars is too close to the Sun this month for observation. Mars is in the constellation of Virgo shining at magnitude 1.6 on the 15th.

Jupiter
Rises at 8:13 p.m. on the 1st and about 6:01 p.m. by month's end. Follow Jupiter all night long as it traverses the sky. Jupiter is in the constellation of Aries shining at magnitude -2.9.

Saturn

Rises at 5:15 p.m. on the 1st and about 3:10 p.m. by month's end. By the time the Sun sets, Saturn is high enough in the southeast to enjoy almost all night long. Saturn is in the constellation of Aquarius shining at magnitude 0.6.

Uranus

Rises at 8:32 p.m. on the 1st and about 6:27 p.m. by month's end. Uranus follows just about 15 minutes behind Jupiter. Uranus is in the constellation of Aries shining at magnitude 5.7.

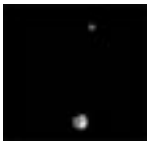
Neptune

Rises at 6:11 p.m. on the 1st and about 4:08 p.m. by month's end. Look for Neptune following Saturn by about an hour. Neptune is in the constellation of Pisces shining at magnitude 7.7.

Dwarf Planets

Ceres

Sets at 8:12 p.m. on the 1st and about 6:44 p.m. by month's end. Look for Ceres to the southwest in the evening after sunset. Ceres is in the constellation of Libra shining at magnitude 8.9.



Pluto

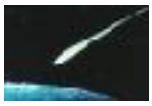
Is stationary on the 10th. Pluto sets at 1:01 a.m. on the 1st and about 10:56 p.m. by month's end. Look for Pluto in the south in the early evening when it is highest in the sky. Pluto is in the constellation of Sagittarius shining at magnitude 15.2.

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 Draconids - This shower is associated with periodic comet Giacobini-Zinner. The duration may extend from October 6 to 10, though the point of maximum is very sharply defined within a 4-hour interval on October 9, but the annual maximum hourly rates are not consistent. The radiant rarely produces any recognizable shower except during years especially close to the parent comet's perihelion passage. The meteors are slow and tend to be relatively faint. They are generally yellow.

- The Orionids - The duration of this meteor shower extends from October 15 to 29, with maximum occurring on (the morning of) October 21. The maximum hourly rate is usually about 20 and the meteors are described as fast.

- The Southern Taurids - This meteor shower is active from September 10 to November 20. Maximum occurs on the morning of October 10. Maximum hourly rate is 5 meteors per hour. The meteors are described as bright and move more slowly than typical meteors, making them prime subjects for imaging and viewing.

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 103P/Hartley 2 starts in the constellation of Auriga, passing through Gemini into Cancer this month. A 4-inch telescope or larger will be needed to spot the comet after midnight from

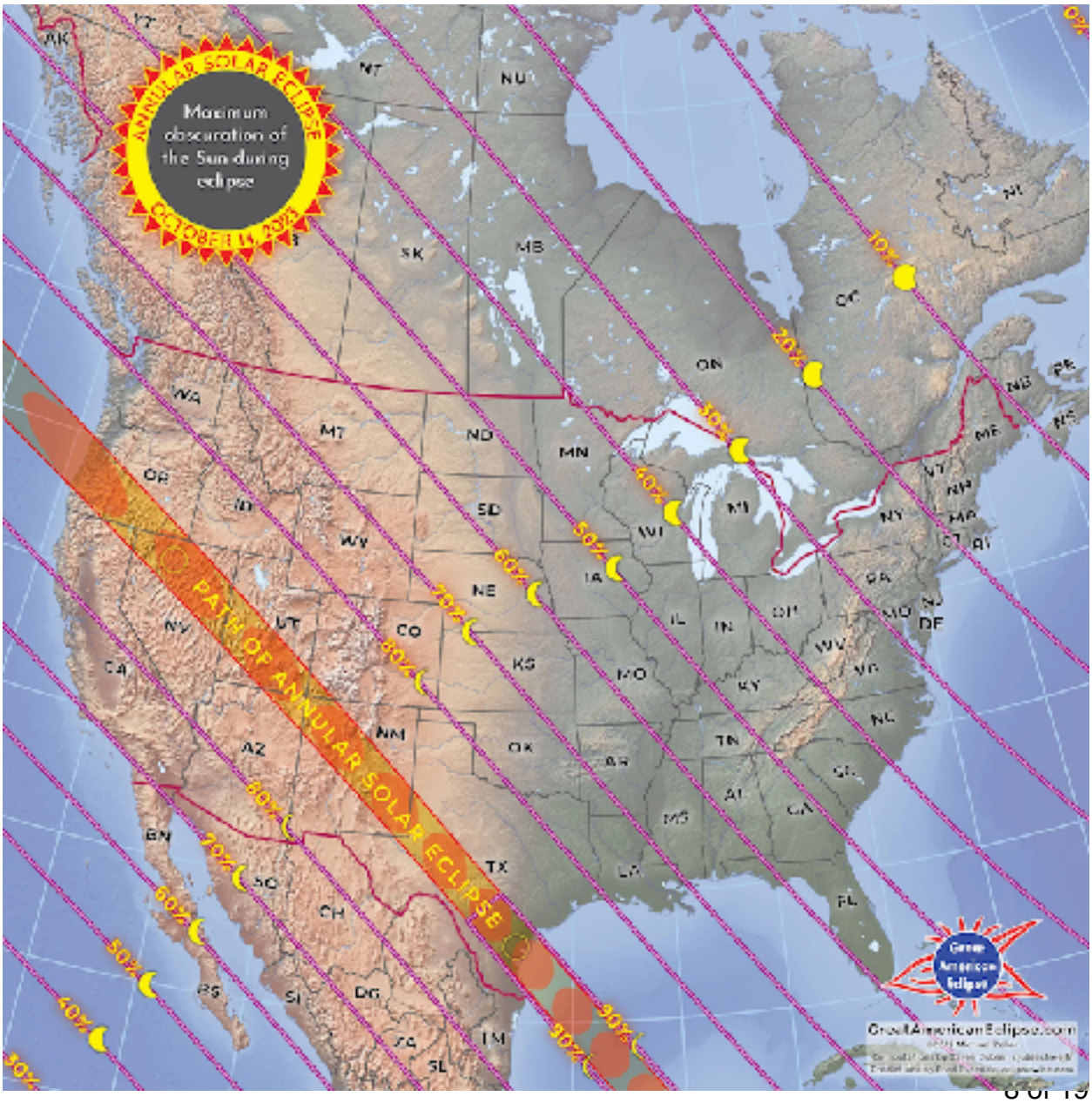
dark country skies.

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

- An annular solar eclipse occurs on the 14th. All of the continental U.S. will at least see a partial eclipse. Centerline of the eclipse follows a path from Oregon through the southeastern tip of Texas. Check out this link for the full path and more information.



Location	Partial Eclipse Begins	Annularity Begins	Maximum	Annularity Ends	Partial Eclipse Ends
Eugene, Oregon	8:06 a.m. PDT	9:16 a.m. PDT	9:18 a.m. PDT	9:20 a.m. PDT	10:39 a.m. PDT
Alturas, California	8:05 a.m. PDT	9:19 a.m. PDT	9:20 a.m. PDT	9:21 a.m. PDT	10:43 a.m. PDT
Battle Mountain, Nevada	8:06 a.m. PDT	9:21 a.m. PDT	9:23 a.m. PDT	9:25 a.m. PDT	10:48 a.m. PDT
Richfield, Utah	9:09 a.m. MDT	10:26 a.m. MDT	10:28 a.m. MDT	10:31 a.m. MDT	11:56 a.m. MDT
Albuquerque, New Mexico	9:13 a.m. MDT	10:34 a.m. MDT	10:35 a.m. MDT	10:39 a.m. MDT	12:09 p.m. MDT
San Antonio, Texas	10:23 a.m. CDT	11:52 a.m. CDT	11:54 a.m. CDT	11:56 a.m. CDT	1:33 p.m. CDT

- A partial lunar eclipse occurs on the 28th, visible in Europe, Africa, India and Asia.

Observational Opportunities

(from evening to morning)

- Look for Ceres and Pluto in the evening.
- Look for Jupiter, Saturn, Uranus and Neptune in the evening and morning.
- Look for Venus in the morning.
- Catch the solar eclipse on Saturday morning, the 14th.

Asteroids

(From west to east)

- **Pallas** is in conjunction with the Sun on the 1st.
- **Flora** is in the constellation of Capricornus.
- **Amphitrite** is at opposition on the 2nd in the constellation of Pisces.
- **Melpomene** is in the constellation of Cetus.
- **Vesta** is in the constellation of Gemini.
- **Metis** is in the constellation of Gemini.

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

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.

M42 & NGC 1977

September, 2023

The Orion (M42) and Running Man (NGC 1977) Nebulae

Image Courtesy of Bryan Gunsher (K6SKI)

Taken with: Canon T6 with a 75-300mm lens at 160mm, 30 second exposures x 104 frames plus Darks, Flats and biases. Tracked with a Sky-Watcher AZ GTi mount on an equatorial wedge. Stacked in Astro Pixel Processor, processing in Siril and Photoshop.

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

September 25, 2023
Historic Wind Tunnel Facility Testing NASA's Mars Ascent Vehicle Rocket

Full Article & Images

"The same facility that provided valuable testing for NASA missions to low-Earth orbit and the Moon is now helping the agency prepare to launch the first rocket from Mars.

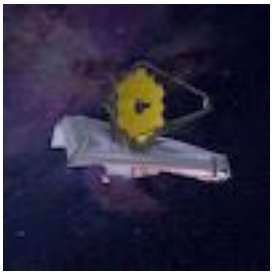
The MAV (Mars Ascent Vehicle) team recently completed wind tunnel testing at NASA's Marshall Space Flight Center in a facility that has been a critical part of NASA missions going all the way back to the Apollo program.

The same facility that provided valuable testing for NASA missions to low-Earth orbit and the Moon is now helping the agency prepare to launch the first rocket from Mars. The MAV is an important part of the joint plan between NASA and ESA (European Space Agency) to bring scientifically selected Martian samples to Earth in the early 2030s."

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

September 21, 2023
NASA's Webb Finds Carbon Source on Surface of Jupiter's Moon Europa

Full Article & Images

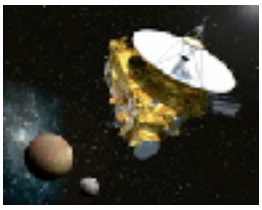
"Astronomers using data from NASA's James Webb Space

Telescope have identified carbon dioxide in a specific region on the icy surface of Jupiters moon Europa.

Jupiter's moon Europa is one of a handful of worlds in our solar system that could potentially harbor conditions suitable for life. Previous research has shown that beneath its water-ice crust lies a salty ocean of liquid water with a rocky seafloor. However, planetary scientists had not confirmed if that ocean contained the chemicals needed for life, particularly carbon.

Astronomers using data from NASA's James Webb Space Telescope have identified carbon dioxide in a specific region on the icy surface of Europa. Analysis indicates that this carbon likely originated in the subsurface ocean and was not delivered by meteorites or other external sources. Moreover, it was deposited on a geologically recent timescale. This discovery has important implications for the potential habitability of Europa's ocean."

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

July 26, 2023
NASA's Juno Is Getting Ever Closer to Jupiter's Moon Io

Full Article & Images

"*The spinning, solar-powered spacecraft will take another look of the fiery Jovian moon on July 30.*

When NASA's Juno mission flies by Jupiter's fiery moon Io on Sunday, July 30, the spacecraft will be making its closest approach yet, coming within 13,700 miles (22,000 kilometers) of it. Data collected by the Italian-built JIRAM (Jovian InfraRed Auroral Mapper) and other science instruments is expected to provide a wealth of information on the hundreds of erupting volcanoes pouring out molten lava and sulfurous gases all over the volcano-festooned moon."

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 30, 2023
Astronomers Discover Planets in NASA Kepler's Final Days of Observations

Full Article & Images

"A team of astrophysicists and citizen scientists have identified what may be some of the last planets NASA's retired Kepler space telescope observed during its nearly decade-long mission.

The trio of exoplanets – worlds beyond our solar system – are all between the size of Earth and Neptune and closely orbit their stars."

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
September 13, 2023

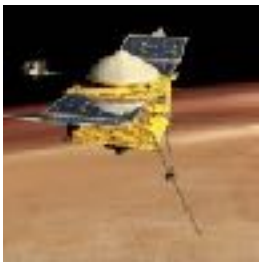
New project to probe how planets lose their atmospheres

Full Article & Images

"Scientists on a new project led by CU Boulder will develop "worlds in a box" to study the conditions that might make far away planets habitable.

The research is part of NASA's Interdisciplinary Consortia for Astrobiology Research (ICAR) program. Recently, the space agency selected seven teams to pursue explorations in the realm of astrobiology, the study of life beyond Earth.

David Brain, professor in the Laboratory for Atmospheric and Space Physics (LASP) and Department of Astrophysical and Planetary Sciences (APS), will lead one of those teams. The $5 million effort will investigate over five years the phenomenon of atmospheric escape—how some planets, like Earth, hold onto their atmospheres while others, like Mars, don't."



MAVEN
June 22, 2023
NASA's MAVEN Spacecraft Stuns with Ultraviolet Views of Red Planet

Full Article & Images

"NASA's MAVEN (Mars Atmosphere and Volatile EvolutioN) mission acquired stunning views of Mars in two ultraviolet images taken at different points along our neighboring planet's orbit around the Sun.

By viewing the planet in ultraviolet wavelengths, scientists can gain insight into the Martian atmosphere and view surface features in remarkable ways.

MAVEN's Imaging Ultraviolet Spectrograph (IUVS) instrument obtained these global views of Mars in 2022 and 2023 when the planet was near opposite ends of its elliptical orbit."
Visit LASP and MAVEN for more information.

Mars 2020 - Perseverance

September 29, 2023
NASA's Perseverance Captures Dust-Filled Martian Whirlwind

Full Article & Images

"*The six-wheeled geologist spotted the twister as part of an atmospheric exploration of Jezero Crater.*

The lower portion of a Martian dust devil was captured moving along the western rim of Mars' Jezero Crater by NASA's Perseverance rover on Aug. 30, 2023, the 899th Martian day, or sol, of the mission. The video, which was sped up 20 times, is composed of 21 frames taken four seconds apart by one of the rover's Navcams.

Much weaker and generally smaller than Earth's tornadoes, dust devils are one of the mechanisms that move and redistribute dust around Mars. Scientists study them to better understand the Martian atmosphere and improve their weather models."

Learn more about the Mars 2020 (Perseverance) mission.

Mars Science Laboratory - Curiosity

September 18, 2023
NASA's Curiosity Reaches Mars Ridge Where Water Left Debris Pileup

Full Article & Images

"*Believed to be a remnant of powerful ancient debris flows, Gediz Vallis Ridge is a destination long sought by the rover's science team.*

Three billion years ago, amid one of the last wet periods on Mars, powerful debris flows carried mud and boulders down the side of a hulking mountain. The debris spread into a fan that was later eroded by wind into a towering ridge, preserving an intriguing record of the Red Planet's watery past."

Check out information about NASA's partnership with Foursquare.
Visit the Mars Science Laboratory page.

Mars Reconnaissance Orbiter Mission

April 25, 2023
NASA Retires Mineral Mapping Instrument on Mars Orbiter

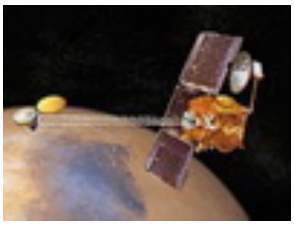
Full Article & Images

"*One of six instruments aboard the agency's Mars Reconnaissance Orbiter, CRISM produced global maps of minerals on the Red Planet's surface.*

NASA switched off one of its oldest instruments studying Mars on April 3, a step that's been planned since last year. Riding aboard NASA's Mars Reconnaissance Orbiter, CRISM, or the Compact Reconnaissance Imaging Spectrometer for Mars, revealed minerals such as clays, hematite (otherwise known as iron oxide), and sulfates across the Red Planet's surface for 17 years."

MARS RECONNAISSANCE ORBITER HIRISE IMAGES

View all of the archived HiRISE images.
More information about the MRO mission is available online.



Mars Odyssey Orbiter

March 15, 2023
Engineers Keep an Eye on Fuel Supply of NASA's Oldest Mars Orbiter

Full Article & Images

"*Measuring the fuel supply on Odyssey, a decades-old spacecraft without a fuel gauge, is no easy task.*

Since NASA launched the 2001 Mars Odyssey Orbiter to the Red Planet almost 22 years ago, the spacecraft has looped around Mars more than 94,000 times. That's about the equivalent of 1.37 billion miles (2.21 billion kilometers), a distance that has required extremely careful management of the spacecraft's fuel supply. This feat is all the more impressive given that Odyssey has no fuel gauge; engineers have had to rely on math instead."

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

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Keep looking UP!

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