

IAAS Monthly Astronomy Newsletter November 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.

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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.

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"Jupiter and its Galilean moons are on full display as the gas giant reaches opposition this month. Here, the mighty planet poses with its largest moons." Astronomy Magazine, November 2023, P. 28. - Paul Stewart

The Month At-A-Glance

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

The Moon

Phases:

- Last Quarter Moon occurs on the 5th.
- New Moon occurs on the 13th.
- First Quarter Moon occurs on the 20th.
- Full Moon occurs on the 27th.

- The Moon is at [apogee](#) (251,388 miles from Earth) on the 6th.
- The Moon is at [perigee](#) (229,795 miles from Earth) on the 21st.

Moon/Planet Pairs:

- The Moon passes 1.0° north of Venus on the 9th.
- The Moon passes 0.9° north of Antares on the 14th.
- Mercury passes 3° north of Antares on the 16th.
- The Moon passes 3° south of Saturn on the 20th.
- The Moon passes 1.5° south of Neptune on the 22nd.
- The Moon passes 3° north of Jupiter on the 25th.
- The Moon passes 3° north of Uranus on the 26th.
- Venus passes 4° north of Spica on the 28th.

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

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.)

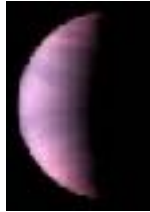
Planetary Highlights for November

"Saturn is already visible after dark while Jupiter is rising IN the eastern sky, beckoning for attention all night. Uranus is at its best for the year and Neptune is also on display — more of a challenge, but with a helpful star nearby. Venus continues its brilliant predawn showing all month and can't be missed, rising about four hours before the Sun." Astronomy Magazine, November 2023, P. 28.



Mercury

Sets at 6:16 p.m. on the 1st and about 5:48 p.m. by month's end. Look for Mercury in the evening sky. Look for Mercury just a few degrees above the southwestern horizon within 30 minutes after sunset. Mercury moves from the [constellation](#) of [Libra](#) into [Sagittarius](#) shining at [magnitude](#) -0.4 on the 30th.



Venus

Rises at 3:37 a.m. on the 1st and about 3:24 a.m. by month's end. Look for Venus to the east before sunrise. Venus moves from the constellation of [Leo](#) into [Virgo](#) shining at magnitude -4.3 on the 15th.



Earth

[Daylight Saving Time](#) ends for most of the U.S. on the 5th at 2:00 a.m. local time.



Mars

Is in [conjunction](#) with the Sun on the 18th. Mars sets at 6:11 p.m. on the 1st. After conjunction, Mars returns to the morning sky, rising about 6:45 a.m. by month's end. Mars is still too close to the Sun this month for observation. Mars moves from the constellation of [Libra](#) into [Scorpius](#) shining at magnitude 1.4 on the 15th.



Jupiter

Is at [opposition](#) on the 3rd, rising as the Sun sets. Jupiter rises at 6:01 p.m. on the 1st and about 2:53 p.m. by month's end. Jupiter can be spotted soon after sunset to the east. Jupiter is at its best

viewing for the year. Follow Jupiter across the sky all night long. Jupiter is in the constellation of [Aries](#) shining at magnitude -2.9.

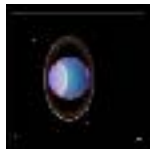


Major moons: The moon and three others cross Jupiter at nearly the same time. Jovian Icar to the west, outside this field of view.



Saturn

Is [stationary](#) on the 4th. Saturn rises at 3:10 p.m. on the 1st and about 12:14 p.m. by month's end. By the time the Sun sets, Saturn is visible in the south. Saturn is in the constellation of [Aquarius](#) shining at magnitude 0.7.



Uranus

Is at [opposition](#) on the 13th, rising as the Sun sets. Uranus rises at 6:27 p.m. on the 1st and about 3:26 p.m. by month's end. Uranus follows just about

15 minutes behind Jupiter. Uranus is at its best viewing for the year. Uranus is in the constellation of [Aries](#) shining at magnitude 5.7.



Uranus is now in opposition 20 days after Jupiter. The blue giant lies between the star Aldebaran and the Pleiades. Can you see it without binoculars or a telescope?



Neptune

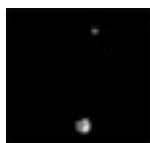
Rises at 4:08 p.m. on the 1st and about 1:09 p.m. by month's end. Look for Neptune following Saturn by about an hour. Neptune is in the constellation of [Pisces](#) shining at magnitude 7.7.

Dwarf Planets



Ceres

Is in [conjunction](#) with the Sun on the 20th. Ceres sets at 6:44 p.m. on the 1st. After conjunction, Ceres returns to the morning sky, rising about 6:24 a.m. by month's end. Ceres is too close to the Sun this month for observation. Ceres moves from the constellation of [Libra](#) into [Scorpius](#) shining at magnitude 8.6.



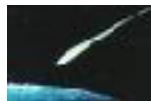
Pluto

Sets at 10:56 p.m. on the 1st and about 8:00 p.m. by month's end. Look for Pluto in the southwest 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 Leonids** - The duration of this [shower](#) covers the period of Nov. 14-20. Maximum occurs on Nov. 17. The maximum hourly rate typically reaches 10-15, but most notable are periods of enhanced activity that occur every 33 years - events that are directly associated with the periodic return of comet Tempel-Tuttle. During these exceptional returns, the Leonids have produced rates of up to several thousand meteors per hour. The Leonids are swift meteors, which are best known for leaving a high percentage of persistent trains.

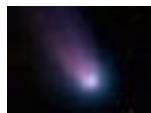


For more information about Meteor Showers, visit Gary Kronk's [Meteor Showers Online](#) web page.

[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

- **"WE'RE TREATED** for a whole week to [Comet](#) 62P/Tsuchinshan (also called Tsuchinshan 1) posing with [M44](#) while the Moon is out of the sky. The only catch is that it's not for evening or suburban observers. Plan to be outside the city, stay up past 1 A.M., and bring along at least a 4-inch scope to spy the 10th-magnitude fuzz. There's more to keep an eye out for: swift Leonids, [fireball](#) Taurids, and



another half-dozen minor meteor showers. And by 2 A.M., the slightly brighter Comet 103P/Hartley climbs up just below Hydra's head." Astronomy Magazine, November 2023, p. 34.

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 Pluto in the early evening.
- Look for Jupiter, Saturn, Uranus and Neptune in the evening and morning.
- Look for Venus in the morning.



Asteroids

(From west to east)

- **Flora** is in the constellation of [Aquarius](#).
- **Amphitrite** is in the constellation of [Pisces](#).
- **Lutetia** is in the constellation of [Cetus](#).
- **Melpomene** is at [opposition](#) on the 5th in the constellation of [Cetus](#).
- **Vesta** is stationary on the 2nd 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.

<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	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

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.

Annular Solar Eclipse

October 14, 2023



Movie Courtesy of Burness Ansell (KIØAR)

5 min 22 sec movie covering all of totality.

Location: 37° 12' 10.19" N, 109° 56' 02.05" W

Elevation: 5143 ft.

Taken with: Dwarf II, with solar filter, Movie mode

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](#)

October 24, 2023

How NASA Is Protecting Europa Clipper From Space Radiation

[Full Article & Images](#)

"To explore the mysterious ice-encrusted moon Europa, the mission will need to endure bombardment by radiation and high-energy particles surrounding Jupiter.

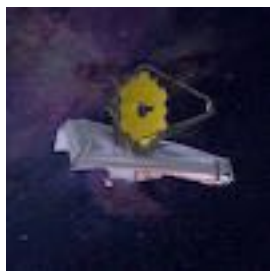
When NASA's Europa Clipper begins orbiting Jupiter to investigate whether its ice-encased moon, Europa, has conditions suitable for life, the spacecraft will pass repeatedly through one of the most punishing radiation environments in our solar system.

Hardening the spacecraft against potential damage from that radiation is no easy task. But on October 7, the mission put the final piece of the spacecraft's "armor" in place when it sealed the vault, a container specially designed to shield Europa Clipper's sophisticated electronics. The probe is being put together, piece by piece, in the Spacecraft Assembly Facility at NASA's Jet Propulsion Laboratory in Southern California ahead of its launch in October 2024."

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

October 30, 2023

The Crab Nebula Seen in New Light by NASA's Webb

[Full Article & Images](#)

"Exquisite, never-before-seen details help unravel the supernova

remnant's puzzling history.

NASA's James Webb Space Telescope has gazed at the Crab Nebula, a supernova remnant located 6,500 light-years away in the constellation Taurus. Since the recording of this energetic event in 1054 CE by 11th-century astronomers, the Crab Nebula has continued to draw attention and additional study as scientists seek to understand the conditions, behavior, and after-effects of supernovae through thorough study of the Crab, a relatively nearby example.

Using Webb's NIRCam (Near-Infrared Camera) and MIRI (Mid-Infrared Instrument), a team led by Tea Temim at Princeton University is searching for answers about the Crab Nebula's origins.

"Webb's sensitivity and spatial resolution allow us to accurately determine the composition of the ejected material, particularly the content of iron and nickel, which may reveal what type of explosion produced the Crab Nebula," explained Temim."

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

October 25, 2023

Just in Time for Halloween, NASA's Juno Mission Spots Eerie "Face" on Jupiter

[Full Article & Images](#)

"On Sept. 7, 2023, during its 54th close flyby of Jupiter, NASA's Juno mission captured this view of an area in the giant planet's far northern regions called Jet N7. The image shows turbulent clouds and storms along Jupiter's terminator, the dividing line between the day and night sides of the planet. The low angle of sunlight highlights the complex topography of features in this region, which scientists have studied to better understand the processes playing out in Jupiter's atmosphere.

As often occurs in views from Juno, Jupiter's clouds in this picture lend themselves to pareidolia, the effect that causes observers to perceive faces or other patterns in largely random patterns.

Citizen scientist Vladimir Tarasov made this image using raw data from the JunoCam instrument. At the time the raw image was taken, the Juno spacecraft was about 4,800 miles (about 7,700 kilometers) above Jupiter's cloud tops, at a latitude of about 69 degrees north."

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

September 29, 2023

Discovery Alert: The Planet that Shouldn't Be There

[Full Article & Images](#)

"The discovery: A large planet is somehow orbiting a star that should have destroyed it.

Key facts: Planet 8 Ursae Minoris b orbits a star some 530 light-years away that is in its death throes. A swollen red giant, the star would have been expected to expand beyond the planet's orbit before receding to its present (still giant) size. In other words, the star would have engulfed and ripped apart any planets orbiting closely around it. Yet the planet remains in a stable, nearly circular orbit. The discovery of this seemingly impossible situation, relying on precise measurements using NASA's Transiting Exoplanet Survey Satellite (TESS), shows that planet formation – and destruction – are likely far more intricate and unpredictable than many scientists might have thought."

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.

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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
October 13, 2023

7 reasons to get excited about CU Boulder in space

[Full Article & Images](#)

"This year, the Laboratory for Atmospheric and Space Physics (LASP) celebrates its 75th anniversary—marking 75 years of CU Boulder's exploration of space, from the fringes of Earth's atmosphere to the wide expanse of interstellar space.

The university is just getting started. In the year ahead, scientists and engineers from across campus will take part in the first U.S. landing on the moon's south pole, launch several pint-sized satellites into orbit around Earth, and begin a journey to Jupiter's dark and frigid moon Europa.

Follow along to learn what the next year holds in store for CU Boulder in space."



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

October 26, 2023

NASA Is Locating Ice on Mars With This New Map

[Full Article & Images](#)

"The map could help the agency decide where the first astronauts to the Red Planet should land. The more available water, the less missions will need to bring.

Buried ice will be a vital resource for the first people to set foot on Mars, serving as drinking water and a key ingredient for rocket fuel. But it would also be a major scientific target: Astronauts or robots could one day drill ice cores much as scientists do on Earth, uncovering the climate history of Mars and exploring potential habitats (past or present) for microbial life.

The need to look for subsurface ice arises because liquid water isn't stable on the Martian surface: The atmosphere is so thin that water immediately vaporizes. There's plenty of ice at the Martian poles – mostly made of water, although carbon dioxide, or dry ice, can be found as well – but those regions are too cold for astronauts (or robots) to survive for long."

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



Mars Reconnaissance Orbiter Mission

April 25, 2023

NASA Retires Mineral Mapping Instrument on Mars Orbiter

[Full Article & Images](#)

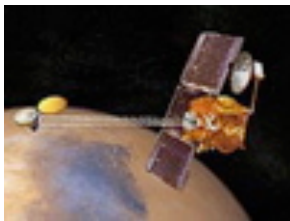
"One of six instruments aboard the agency's Mars Reconnaissance Orbiter, CRISM produced global maps of minerals on the Red Planet's surface.

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!

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- 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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