

# IAAS Monthly Astronomy Newsletter

## July 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.



**JULY 2024**

# A bull with two eyes

*"For a brief time this month, Taurus will appear to have two eyes as Mars (upper left) moves northwest of Aldebaran (below center), as in this 2023 photo. Comet C/2022 E3 (ZTF) is also visible here, to Aldebaran's lower left." Astronomy Magazine, July 2024, p. 28. - Alan Dyer*

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

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

## The Moon

### Phases:

- New Moon occurs on the 5th.
- First Quarter Moon occurs on the 13th.
- Full Moon occurs on the 21st.
- Last Quarter Moon occurs on the 27th.
  
- The Moon is at [apogee](#) (251,259 miles from Earth) on the 12th.
- The Moon is at [perigee](#) (226,749 miles from Earth) on the 24th.



### Moon/Planet Pairs:

- The Moon passes 4° north of Mars on the 1st.
- The Moon passes 4° north of Uranus on the 2nd.
- The Moon passes 5° north of Jupiter on the 3rd.
- The Moon passes 3° north of Mercury on the 7th.
- Jupiter passes 5° north of Aldebaran on the 13th.
- The Moon passes 0.9° north of Spica on the 13th.
- Mars passes 0.6° south of Uranus on the 15th.
- The Moon passes 0.2° north of Antares on the 17th.
- The Moon passes 0.4° north of Saturn on the 24th.
- The Moon passes 0.6° north of Neptune on the 25th.
- Mercury passes 3° south of Regulus on the 27th.
- The Moon passes 4° north of Uranus on the 29th.
- The Moon passes 5° north of Mars on the 30th.
- The Moon passes 5° north of Jupiter on the 30th.

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

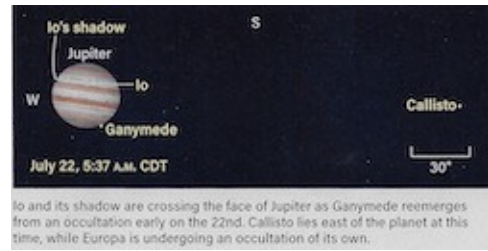
[Experts Pick the Top Stargazing Events for 2024](#)





## Jupiter

Rises at 3:29 a.m. on the 1st and about 1:50 a.m. by month's end. Look for Jupiter to the southeast before sunrise. Jupiter is in the constellation of [Taurus](#) shining at magnitude -2.1.

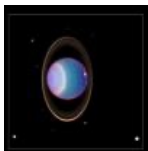


Io and its shadow are crossing the face of Jupiter as Ganymede reemerges from an occultation early on the 22nd. Callisto lies east of the planet at this time, while Europa is undergoing an occultation of its own.



## Saturn

Rises at 11:58 p.m. on the 1st and about 9:55 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 0.8.



## Uranus

Rises at 2:45 a.m. on the 1st and about 12:46 a.m. by month's end. Look to the southeast to spot Uranus preceding Jupiter by about an hour. Uranus is in the constellation of [Taurus](#) shining at magnitude 5.8.



## Neptune

Is [stationary](#) on the 2nd. Neptune rises at 12:24 a.m. on the 1st and about 10:17 p.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

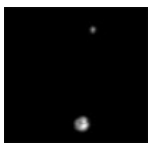


## Ceres

Is at [opposition](#) on the 5th. Ceres rises at 9:13 p.m. on the 1st and about 6:52 p.m. by month's end. Ceres is visible in the late evening and early morning sky to the south. Ceres is in the constellation of [Sagittarius](#) shining at magnitude 7.5.



The large, bright, main-belt world Ceres should be a simple find among the stars of Sagittarius' Teapot.



## Pluto

Is at [opposition](#) on the 23rd. Pluto rises at 9:53 p.m. on the 1st and about 7:49 p.m. by month's end. Pluto appears at its best for the year this month. Pluto is visible to the south before dawn. Pluto is in the constellation of [Capricornus](#) shining at magnitude 15.0.

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 Southern Delta Aquarids** - This [meteor shower](#) has a duration of July 14 - August 18. Maximum hourly rates of 15-20 occur on July 28/29.

- **The Northern Delta Aquarids** extends from July 16 to September 10. Maximum occurs on August 13. The hourly rates reach a high of 10.

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

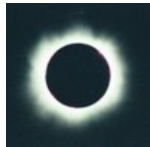
- [Comet C/2023 A3 \(Tsuchinshan-ATLAS\)](#) shines around 8th magnitude to the south of [Leo's](#) tail. By the end of the month, Tsuchinshan disappears in the evening twilight, but will return sometime in October.
- Comet **13P/Olbers** passes through the constellation of [Lynx](#) and [Leo Minor](#), visible about 60 minutes after local sunset shining around 8th magnitude.
- Comet **C/2021 S3 (PanSTARRS)** shines around 10th magnitude between the constellations of [Cepheus](#) and [Draco](#) 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, Venus, Comet Tsuchinshan and Comet Olbers in the evening to the west.
- Look for Ceres and Pluto in the late evening and early morning to the south and west.
- Look for Saturn, Neptune, Uranus, Mars and Jupiter in the morning to the south and east.



### Asteroids

(From west to east)

- **Pallas** is in the constellation of [Corona Borealis](#).
- **Harmonia** is at [opposition](#) on the 21st moving from the constellation of [Capricornus](#) into [Sagittarius](#).
- **Iris** is in the constellation of [Capricornus](#).
- **Psyche** is in the constellation of [Capricornus](#).
- **Eunomia** is in the constellation of [Taurus](#).

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.

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

## [Subscriber Gallery](#)

I have created a web page containing images taken and submitted by subscribers (or special images) 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.

### **Video: Pillars of Creation Visualization**



Courtesy of NASA

#### **Pillars of Creation Star in New Visualization from NASA's Hubble and Webb Telescopes**

(Click on the image above to view the Youtube Video)

Read more about the video in the [James Webb Space Telescope](#) article below.

# 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](#)

**June 27, 2024**

**Mapping the Red Planet With the Power of Open Science**

[Full Article & Images](#)

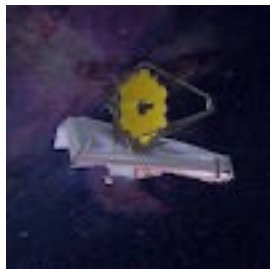
**"Combining images from orbit with images from the surface, a JPL-developed tool allows researchers to zoom in to see individual boulders and zoom out to see all of Mars.**

Mars rovers can only make exciting new discoveries thanks to human scientists making careful decisions about their next stop. The Mars 2020 mission is aimed at exploring the geology of Jezero Crater and seeking signs of ancient microbial life on Mars using the Perseverance rover. Scientists at NASA's Jet Propulsion Laboratory in Southern California used novel mapping techniques to direct both the rover and the flights of the Ingenuity helicopter, which rode to Mars on Perseverance — and they did it all with open-source tools."

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

**June 26, 2024**

**Pillars of Creation Star in New Visualization from NASA's Hubble and Webb Telescopes**

[Full Article & Images](#)

"Made famous in 1995 by NASA's Hubble Space Telescope, the [Pillars of Creation](#) in the heart of the [Eagle Nebula](#) have captured imaginations

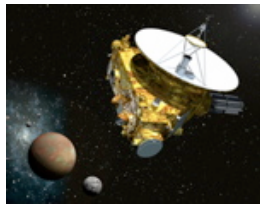
worldwide with their arresting, ethereal beauty.

Now, NASA has released a new 3D visualization of these towering celestial structures using data from NASA's [Hubble](#) and [James Webb](#) space telescopes. This is the most comprehensive and detailed multiwavelength movie yet of these star-birthing clouds.

"By flying past and amongst the pillars, viewers experience their three-dimensional structure and see how they look different in the Hubble visible-light view versus the Webb infrared-light view," explained principal visualization scientist Frank Summers of the Space Telescope Science Institute (STScI) in Baltimore, who led the movie development team for NASA's [Universe of Learning](#). "The contrast helps them understand why we have more than one space telescope to observe different aspects of the same object." "

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**

**June 26, 2024**

**NASA's Juno Gets a Close-Up Look at Lava Lakes on Jupiter's Moon Io**

[Full Article & Images](#)

*"Infrared imagery from the solar-powered spacecraft heats up the discussion on the inner workings of Jupiter's hottest moon.*

New findings from NASA's Juno probe provide a fuller picture of how widespread the lava lakes are on Jupiter's moon Io and include first-time insights into the volcanic processes at work there. These results come courtesy of Juno's Jovian Infrared Auroral Mapper (JIRAM) instrument, contributed by the Italian Space Agency, which "sees" in infrared light. Researchers [published a paper](#) on Juno's most recent volcanic discoveries on June 20 in the journal Nature Communications Earth and Environment."

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

June 21, 2024

Space instruments provide early warnings for solar flares

[Full Article & Images](#)

"When a solar flare leaps out from around the sun, a small fleet of scientific instruments designed and built at the University of Colorado Boulder form a first line of defense—spotting these massive eruptions before any other instrument in space, then relaying the information to Earth in seconds.

On June 25, the fourth and final instrument in this suite, known as the [Extreme Ultraviolet and X-ray Irradiance Sensors](#) (EXIS) program, is scheduled to launch into space. It will fly aboard the Geostationary Operational Environmental Satellite-U (GOES-U)—the latest in a series of [GOES-R satellites](#) that monitor weather on Earth from orbit. GOES-U, which will be renamed GOES-19 once it reaches geostationary orbit, will blast off from NASA's Kennedy Space Center in Florida on a SpaceX Falcon Heavy rocket.

Technician in a clean room "bunny suit" and mask works on an array of machinery covered in silver foil

A technician installs an EXIS instrument onto the solar pointing platform of the GOES-T satellite, which launched in 2022. (Credit: NOAA Satellites)

The event marks the culmination of nearly 20 years of work for scientists and engineers at CU Boulder's [Laboratory for Atmospheric and Space Physics](#) (LASP)."



### MAVEN

April 29, 2024

NASA Scientists Gear Up for Solar Storms at Mars

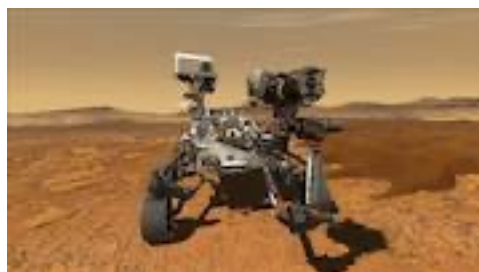
[Full Article & Images](#)

*"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**

**June 26, 2024**

**Detective Work Enables Perseverance Team to Revive SHERLOC Instrument**

[Full Article & Images](#)

*"After six months of effort, an instrument that helps the Mars rover look for potential signs of ancient microbial life has come back online.*

The SHERLOC (Scanning Habitable Environments with Raman & Luminescence for Organics and Chemicals) instrument aboard NASA's Perseverance Mars rover has analyzed a rock target with its spectrometer and camera for the first time since encountering an issue this past January. The instrument plays a key role in the mission's search for signs of ancient microbial life on Mars. Engineers at NASA's Jet Propulsion Laboratory in Southern California confirmed on June 17 that the instrument succeeded in collecting data.

"Six months of running diagnostics, testing, imagery and data analysis, troubleshooting, and retesting couldn't come with a better conclusion," said SHERLOC principal investigator Kevin Hand of JPL."

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



## **Mars Science Laboratory - Curiosity**

**June 10, 2024**

**NASA Watches Mars Light Up During Epic Solar Storm**

[Full Article & Images](#)

*"In addition to producing auroras, a recent extreme storm provided more detail on how much radiation future astronauts could*

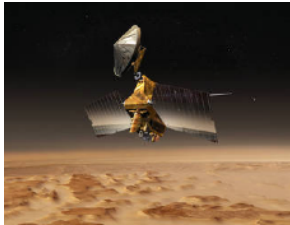
*encounter on the Red Planet.*

Mars scientists have been anticipating epic solar storms ever since the Sun entered a period of peak activity earlier this year called [solar maximum](#). Over the past month, NASA's Mars rovers and orbiters have provided researchers with front-row seats to a series of solar flares and coronal mass ejections that have reached Mars — in some cases, even causing Martian auroras.

This science bonanza has offered an unprecedented opportunity to study how such events unfold in deep space, as well as how much radiation exposure the first astronauts on Mars could encounter.

The biggest event occurred on May 20 with a solar flare later estimated to be an X12 — [X-class solar flares are the strongest of several types](#) — based on data from the [Solar Orbiter spacecraft](#), a joint mission between ESA (European Space Agency) and NASA. The flare sent out X-rays and gamma rays toward the Red Planet, while a subsequent coronal mass ejection launched charged particles. Moving at the speed of light, the X-rays and gamma rays from the flare arrived first, while the charged particles trailed slightly behind, reaching Mars in just tens of minutes."

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



## **Mars Reconnaissance Orbiter Mission**

### **April 29, 2024**

### **Major Martian Milestones**

[Full Article & Images](#)

"There's good news from NASA's [Cloudspotting on Mars](#) project! That's the project that invites you to help identify exotic clouds high in the Martian atmosphere.

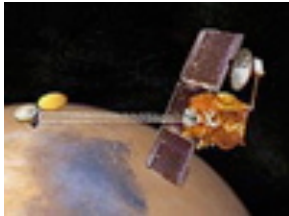
- Thanks to your help, the Cloudspotting on Mars project reached a huge milestone. Another full Mars year, Mars Year 30 (Oct 2009 – Sep 2011), has been completed! That's the second full Mars year of observations that has been analyzed since the project began.
- The team has uploaded another full year of data, Mars Year 31 (Sep 2011 – Aug 2013). You'll find [right here, ready for you to investigate](#).
- A new project from the Cloudspotting on Mars team has started its beta testing phase! In this new project, you'll pick out cloud shapes in data from NASA's Mars Atmosphere and Volatile Evolution (MAVEN) Mission. If you're willing to help beta test this project and provide feedback before it launches, please [send an email to the team](#). We'll let everyone know when this project officially launches, of course!

Congratulations to the Cloudspotting on Mars team and all the volunteers who have helped spot Martian clouds!"

## MARS RECONNAISSANCE ORBITER HIRISE IMAGES

View all of the archived [HiRISE](#) images.

More information about the [MRO](#) mission is available online.



### Mars Odyssey Orbiter

June 27, 2024

**NASA's Mars Odyssey Captures Huge Volcano, Nears 100,000 Orbits**

[Full Article & Images](#)

*"The 23-year-old orbiter is taking images that offer horizon-wide views of the Red Planet similar to what astronauts aboard the International Space Station see over Earth.*

NASA's longest-lived Mars robot is about to mark a new milestone on June 30: 100,000 trips around the Red Planet since launching 23 years ago. During that time, the 2001 Mars Odyssey orbiter has been [mapping minerals and ice](#) across the Martian surface, identifying landing sites for future missions, and relaying data to Earth from NASA's rovers and landers.

Scientists recently used the orbiter's camera to take a stunning new image of [Olympus Mons](#), the tallest volcano in the solar system. The image is part of a continuing effort by the Odyssey team to provide high-altitude views of the planet's horizon. (The [first of these views](#) was published in late 2023.) Similar to the perspective of Earth astronauts get aboard the International Space Station, the view enables scientists to learn more about clouds and airborne dust at Mars."

## 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: July 01, 2024