IAAS Monthly Astronomy Newsletter
August 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 late-summer stars wheel in the sky above Jumbo Rocks Campground at Joshua Tree National Park" Astronomy Magazine, August 2024, p. 28. - NPS/Alessandra Purg-Santana

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 4th.
- First Quarter Moon occurs on the 12th.
- Full Moon occurs on the 19th.
- Last Quarter Moon occurs on the 26th.

- The Moon is at apogee (251,840 miles from Earth) on the 8th.
- The Moon is at perigee (223,815 miles from Earth) on the 21st.

Moon/Planet Pairs:

- Venus passes 1.1° north of Regulus on the 4th.
- Mars passes 5° north of Aldebaran on the 5th.
- The Moon passes 1.7° north of Venus on the 5th.
- The Moon passes 7° north of Mercury on the 5th.
- Mercury passes 6° south of Venus on the 6th.
- The Moon passes 0.7° north of Spica on the 10th.
- Mercury passes 6° south of Regulus on the 11th.
- The Moon passes 0.004° south of Antares on the 14th.
- Mars passes 0.3° north of Jupiter on the 14th.
- The Moon passes 0.5° north of Saturn on the 20th.
- The Moon passes 0.7° north of Neptune on the 21st.
- The Moon passes 4° north of Uranus on the 25th.
- The Moon passes 6° north of Jupiter on the 27th.
- The Moon passes 5° north of Mars on the 27th.

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

Experts Pick the Top Stargazing Events for 2024

Weekly Rocket Report

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 August

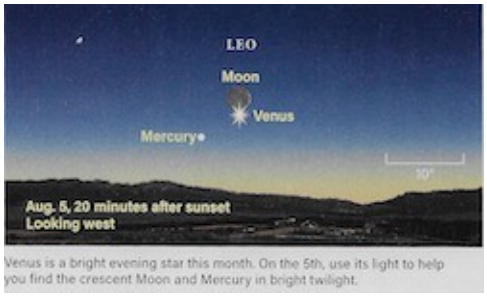
"Venus is a bright evening star for a short period after sunset, beckoning skywatchers to view the oncoming string of planets. Saturn puts on a great show when it rises in the late evening. You can also grab a pair of binoculars to spy Uranus and Neptune... The real spectacle of the month is the conjunction of Jupiter and Mars in Taurus on the 14th, visible in the early-morning hours. It's one sight you won't want to miss." Astronomy Magazine, August 2024, p. 28.

Mercury

Is stationary on the 4th. Mercury is in inferior conjunction on the 18th. Mercury is again stationary on the 27th. Mercury sets at 9:00 p.m. on the 1st. After conjunction, Mercury returns to the morning sky, rising about 5:05 a.m. by month's end. Look for Mercury low on the western horizon about 30 minutes after sunset during the first week of the month, and then to the east about 30 minutes before sunrise during the last week of the month. Mercury is in the constellation of Leo shining at magnitude 0.7 on the 31st.

Venus

Sets about 9:03 p.m. on the 1st and about 8:31 p.m. by month's end. Look for Venus low to the west about 30 minutes after sunset. Venus moves from the constellation of Leo into Virgo shining at magnitude -3.9 on the 15th.



Venus is a bright evening star this month. On the 5th, use its light to help you find the crescent Moon and Mercury in bright twilight.

Earth

N/A.

Mars

Rises at 1:25 a.m. on the 1st and about 12:39 a.m. by month's end. Look for Mars to the southeast before sunrise. Mars in is conjunction with Jupiter on the 14th. Mars is in the constellation of Taurus shining at magnitude 0.8.

Jupiter and Mars meet in a close conjunction the morning of Aug. 14. Uranus, visible with binoculars, is not shown but lies slightly higher in the sky, near the Pleiades.

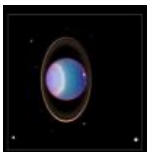
Jupiter

Rises at 1:50 a.m. on the 1st and about 12:06 a.m. by month's end. Look for Jupiter to the southeast before sunrise. Jupiter is in the constellation of Taurus shining at magnitude -2.2.

While you're trained on Jupiter for its conjunction with Mars, watch a triple event as the shadows of Io and Europa, as well as Io itself, cross the planet's disk. Not shown are Ganymede to Jupiter's east and Callisto to the west.

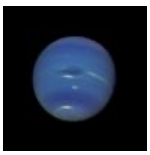
Saturn

Rises at 9:55 p.m. on the 1st and about 7:48 p.m. by month's end. Look to the south-southwest to spot Saturn late evening/early morning before sunrise. Saturn is in the constellation of Aquarius shining at magnitude 0.7.



Uranus

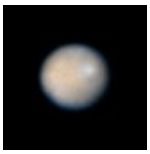
Rises at 12:46 a.m. on the 1st and about 10:42 p.m. by month's end. Look to the south to spot Uranus preceding Jupiter by about an hour or so. Uranus is in the constellation of Taurus shining at magnitude 5.8.



Neptune

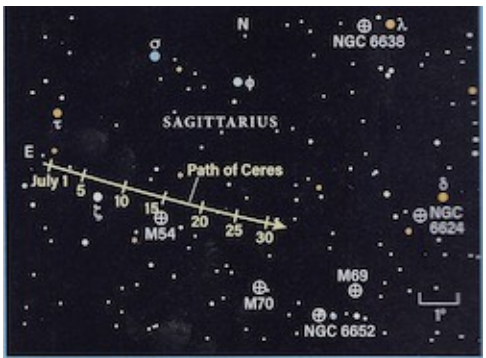
Rises at 10:17 p.m. on the 1st and about 8:14 p.m. by the month's end. Look for Neptune before sunrise to the south. Neptune trails Saturn by about a half hour. Neptune is in the constellation of Pisces shining at magnitude 7.7.

Dwarf Planets

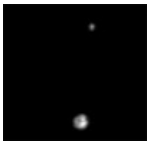


Ceres

Is stationary on the 26th. Ceres rises at 6:52 p.m. on the 1st and about 4:44 p.m. by month's end. Ceres is visible in the evening sky to the south and southwest. Ceres is in the constellation of Sagittarius shining at magnitude 8.2.



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



Pluto

Rises at 7:49 p.m. on the 1st and about 5:45 p.m. by month's end. Pluto is visible to the south and southwest late evening and early morning sky. 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 Northern Delta Aquarids** [meteor shower] extends from July 16 to September 10. Maximum occurs on August 13. The hourly rates reach a high of 10.

- **The Perseids** meteor shower is generally visible between July 23 and August 22. Maximum occurs during August 12/13. The hourly rate typically reaches 80, although some years have been as low as 4 and as high as 200. The meteors tend to be very fast, possess an average magnitude of 2.3 and leave persistent trains.

  "The Perseid Meteor Shower is favorable this year. The First Quarter Moon sets around midnight, offering hours of viewing in a dark sky when we are on the leading hemisphere of Earth as we orbit the Sun. As we plow into the stream, we'll see higher-velocity - and therefore brighter - meteors.

  The shower, a result of Comet 109P/Swift-Tuttle, is active from July 17 to Aug. 24 and peaks Aug. 12. Both the mornings of Aug. 11 and 12 should provide good rates; if poor weather is around, try Aug. 10 and 13 as well." Astronomy Magazine, August 2024, p. 29.

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 Olbers is fading but still presents a great target amid the stars of Melotte 111 midmonth.

- Comet **13P/Olbers** passes through the constellation of Ursa Major and Coma Berenices, shining around 8th to 9th magnitude this month.

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 (first week of August), Venus, 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, Jupiter and Mercury (last week of August) in the morning to the south and east.

Asteroids

(From west to east)

- **Pallas** is in the constellation of Serpens Caput.
- **Harmonia** is in the constellation of Sagittarius.
- **Iris** is at opposition on the 6th in the constellation of Aquarius.
- **Psyche** is at opposition on the 5/6th in the constellation of Capricornus.
- **Laeticia** is in the constellation of Pisces.
- **Eunomia** moves from the constellation of Perseus into Auriga.

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 (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.

M17 - Omega/Horseshoe Nebula

Courtesy of Roy Murray (KI7PKL)

M17, aka **The Horseshoe Nebula**, aka **The Omega Nebula** is located in the southern sky, in the constellation of Sagittarius. That constellation is so far south that one may have to catch it as it passes between the treetops. But that part of the sky is full of treasures, and well worth the effort. This was taken in early July 2024, with approximately five hours of data in 1 minute exposures, using my new SkyWatcher HEQ-5 mount and an ASI294MC Pro cooled astronomy camera.

Attention!! I will be eliminating the JPL and Mars stories from this section in the future. I will still provide the links to the missions but not the articles themselves. I do appreciate everyone's support after 25+ years of publishing this newsletter. Thank you!

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

July 25, 2024
How NASA's Roman Space Telescope Will Illuminate Cosmic Dawn

Full Article & Images

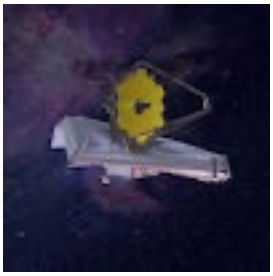
"Today, enormous stretches of space are crystal clear, but that wasn't always the case. During its infancy, the universe was filled with a "fog" that made it opaque, cloaking the first stars and galaxies. NASA's upcoming Nancy Grace Roman Space Telescope will probe the universe's subsequent transition to the brilliant starscape we see today — an era known as cosmic dawn.

"Something very fundamental about the nature of the universe changed during this time," said Michelle Thaller, an astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "Thanks to Roman's large, sharp infrared view, we may finally figure out what happened during a critical cosmic turning point." "

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

July 24, 2024

NASA's Webb Images Cold Exoplanet 12 Light-Years Away

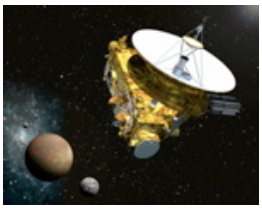
Full Article & Images

"An international team of astronomers using NASA's James Webb Space Telescope has directly imaged an exoplanet roughly 12 light-years from Earth. The planet, Epsilon Indi Ab, is one of the coldest exoplanets observed to date.

The planet is several times the mass of Jupiter and orbits the K-type star Epsilon Indi A (Eps Ind A), which is around the age of our Sun, but slightly cooler. The team observed Epsilon Indi Ab using the coronagraph on Webb's MIRI (Mid-Infrared Instrument). Only a few tens of exoplanets have been directly imaged previously by space- and ground-based observatories."

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 19, 2024

NASA's Juno Mission Captures the Colorful and Chaotic Clouds of Jupiter

Full Article & Images

"During its 61st close flyby of Jupiter on May 12, 2024, NASA's Juno spacecraft captured this color-enhanced view of the giant planet's northern hemisphere. It provides a detailed view of chaotic clouds and cyclonic storms in an area known to scientists as a folded filamentary region. In these regions, the zonal jets that create the familiar banded patterns in Jupiter's clouds break down, leading to turbulent patterns and cloud structures that rapidly evolve over the course of only a few days."

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.

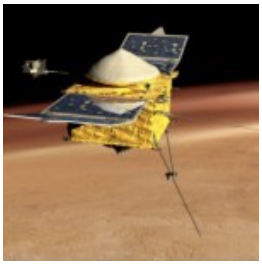
Laboratory for Atmospheric and Space Physics
"The Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder (CU) began in 1948, a decade before NASA. We are the world's only research institute to have sent instruments to all eight planets and Pluto.

LASP
July 22, 2024
LASP team awarded NASA technology grant to develop dust analyzer

Full Article & Images

"The lofting and transport of dust particles, which can be electrically charged and thus mobilized, pose a potential hazard to future lunar exploration. Dust particles can cover the surfaces of optical instruments, damage space suits, and degrade solar panels, as well as pose health risks if inhaled by astronauts.

While there is strong evidence that the lofting and transport of charged dust may occur on all airless bodies across our solar system and can dramatically reshape their surfaces, no missions have yet explored this phenomenon away from the lunar surface. On small bodies such as asteroids, Martian moons, and dormant comets, due to their low gravity, lofted dust particles are expected to be transported on a global scale or even escape from their parent bodies."



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

July 25, 2024
NASA's Perseverance Rover Scientists Find Intriguing Mars Rock

Full Article & Images

"*The six-wheeled geologist found a fascinating rock that has some indications it may have hosted microbial life billions of years ago, but further research is needed.*

A vein-filled rock is catching the eye of the science team of NASA's Perseverance rover. Nicknamed "Cheyava Falls" by the team, the arrowhead-shaped rock contains fascinating traits that may bear on the question of whether Mars was home to microscopic life in the distant past.

Analysis by instruments aboard the rover indicates the rock possesses qualities that fit the definition of a possible indicator of ancient life. The rock exhibits chemical signatures and structures that could possibly have been formed by life billions of years ago when the area being explored by the rover contained running water. Other explanations for the observed features are being considered by the science team, and future research steps will be required to determine whether ancient life is a valid explanation."

Learn more about the Mars 2020 (Perseverance) mission.

Mars Science Laboratory - Curiosity

July 18, 2024
NASA's Curiosity Rover Discovers a Surprise in a Martian Rock

Full Article & Images

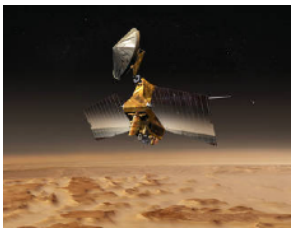
"*Among several recent findings, the rover has found rocks made of pure sulfur — a first on the Red Planet.*

Scientists were stunned on May 30 when a rock that NASA's Curiosity Mars rover drove over cracked open to reveal something never seen before on the Red Planet: yellow sulfur crystals.

Since October 2023, the rover has been exploring a region of Mars rich with sulfates, a kind of salt that contains sulfur and forms as water evaporates. But where past

detections have been of sulfur-based minerals — in other words, a mix of sulfur and other materials — the rock Curiosity recently cracked open is made of elemental, or pure, sulfur. It isn't clear what relationship, if any, the elemental sulfur has to other sulfur-based minerals in the area."

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.

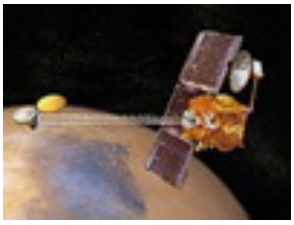
- The team has uploaded another full year of data, Mars Year 31 (Sep 2011 – Aug 2013). You'll find right here, ready for you to investigate.

- 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!

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Keep looking UP!

73 from KIØAR
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Email

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