IAAS Monthly Astronomy Newsletter October 2020

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, when in the Denver metro area, please join the Colorado Astronomy Net on the Rocky Mountain Radio League's WØWYX **146.94 MHz** and **449.825 MHz** repeaters. Due to hardware issues, links with the Allstar node, Echolink and the Cripple Creek repeater are down until further notice. The net meets on Tuesday nights at 7 P.M. Mountain Time (US).

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 on the 1st Saturday of each month at our new Eagle Street Facility, The City of Centennial, 7272 South Eagle Street, Centennial, Colorado 80112-4244 at 9am.** Check the website for current info during these COVID-19 times. **

The Colorado Astronomy Net and the IAAS are on Facebook page. Be sure to "Like" us.

Excerpts from JPL mission updates are provided as a public service as part of the JPL Solar System Ambassador / NASA Outreach program.

Donate to the IAAS!

Shop Smile.Amazon.com, sign up or sign in to smile.amazon.com and select the **International Association for Astronomical Studies**. 0.5% of every purchase will be donated to the group. Thank you!

In This Newsletter...

"The Hubble Space Telescope captured this snapshot of Mars near its 2018 opposition. At the time, the Red Planet's surface detail was washed out by a planet-wide dust storm."
NASA ESA and STSci

The Month At-A-Glance

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

The Moon

Phases:

- Full Moon occurs on the 1st.
- Last Quarter Moon occurs on the 9th.
- New Moon occurs on the 16th.
- First Quarter Moon occurs on the 23rd.
- Full Moon occurs on the 31st.

- The Moon is at Apogee on the 3rd, 252,476 miles from Earth.
- The Moon is at Perigee on the 16th, 221,775 miles from Earth.
- The Moon is at Apogee on the 30th, 252,522 miles from Earth.

Moon/Planet Pairs:

- Venus passes 0.09° south of Regulus on the 2nd
- The Moon passes 0.7° south of Mars on the 2nd.
- The Moon passes 3° south of Uranus on the 4th.
- The Moon passes 4° north of Venus on the 13th.
- The Moon passes 7° north of Mercury on the 17th.
- The Moon passes 1.2° south of Pluto on the 22nd.
- The Moon passes 2° south of Jupiter on the 22nd.
- The Moon passes 3° south of Saturn on the 22nd.
- The Moon passes 4° south of Neptune on the 27th.
- The Moon passes 3° south of Mars on the 29th.
- The Moon passes 3° south of Uranus on the 31st.

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

"Mars reaches its peak this month, exceeding Jupiter in brilliance and dominating the sky all night. While you wait for Mars to gain altitude, Jupiter and Saturn are well placed in the early evening for spectacular viewing. But Mercury is a difficult early evening target. Ice giant Uranus reaches opposition in a sparse region of the sky; Neptune is dimmer but nearer a few brighter stars. Both are fine late-evening binocular challenges. Finally, well before dawn, Venus rises just a Moon-width away from Regulus." Astronomy Magazine, October 2020, P. 36.

Mercury

Is at greatest eastern elongation (26°) on the 1st. Mercury is stationary on the 13th. Mercury is in inferior conjunction on the 25th. Sets at 7:30 p.m. on the 1st and about 5:25 p.m. by month's end. Look for Mercury low to the west about 30 minutes after sunset during the first half of the month. Mercury is in the constellation of Virgo shining at magnitude 0.0 on the 1st.

Venus

Rises at 3:34 a.m. on the 1st and about 2:36 a.m. by month's end. Look for Venus in the east before sunrise. Venus moves from the constellation of Leo into Virgo shining at magnitude -4.0 on the 15th.

Earth

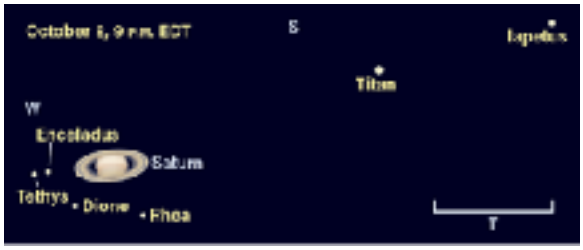
Daylight Saving Time begins for most of the U.S. on November 1st at 2 a.m. local time.

Mars

Comes closest to Earth (38.6 million miles away) on the 6th. Mars is at opposition on the 13th, rising as the Sun sets. Mars rises at 7:28 p.m. on the 1st and about 4:56 p.m. by month's end. Mars is at its best viewing this month and can be viewed all night long. Mars is in the constellation of Pisces shining at magnitude -2.6.

Jupiter
Sets at 12:18 a.m. on the 1st and about 10:28 p.m. by month's end. Look for Jupiter soon after sunset to the southwest. Jupiter will be one of the first objects to be spotted to the southwest once the Sun sets. Jupiter is in the constellation of Sagittarius shining at magnitude -2.3.

Saturn
Sets at 12:55 a.m. on the 1st and about 10:53 p.m. by month's end. As with Jupiter, look for Saturn in the evening sky after sunset to the southwest. Now is a great time to get your binoculars or telescope out and observe Saturn in the evening sky. Saturn is in the constellation of Sagittarius shining at magnitude 0.4.



Uranus
Is at opposition (rising as the Sun sets) on the 31st. Uranus rises at 7:53 p.m. on the 1st and around 5:48 p.m. by month's end. Uranus is visible in the evening all night long. Uranus is in the constellation of Aries shining at magnitude 5.7.

Neptune
Rises at 5:51 p.m. on the 1st and about 3:47 p.m. by month's end. Neptune can be spotted to the southeast once the skies darken. Neptune can be observed almost all night long. Neptune is in the constellation of Aquarius shining at magnitude 7.8.

Dwarf Planets
Ceres
Is stationary on the 22nd. Ceres rises at 6:11 p.m. on the 1st and around 3:58 p.m. by month's end. The best time to spot Ceres will be around midnight, when it is highest in the south. Ceres moves from the constellation of Piscis Austrinus into Aquarius shining at magnitude 8.4.

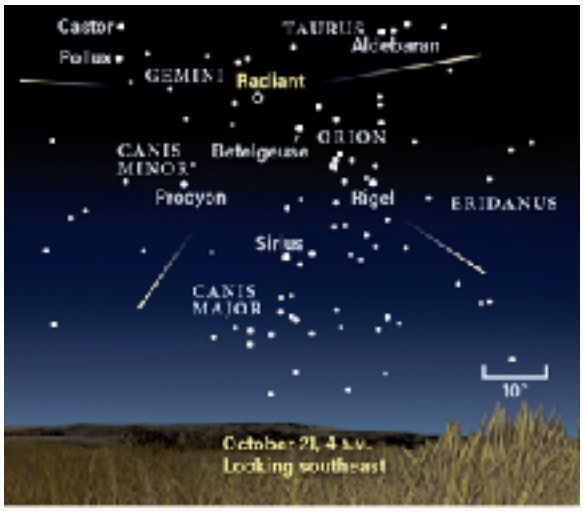
Pluto
Is stationary on the 4th. Pluto sets at 12:37 a.m. on the 1st and around 10:32 p.m. by month's end. Pluto is still between Jupiter and Saturn. Pluto is in the constellation of Sagittarius shining at magnitude 14.8.

As always, good luck at spotting Neptune, Ceres and Pluto, a large telescope and dark skies will be needed.

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

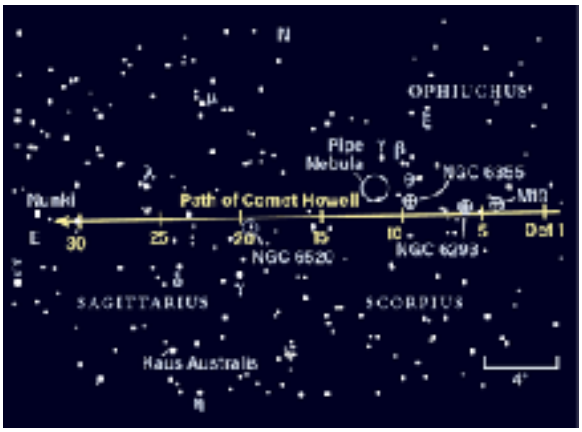
Meteor Scatter (or Meteor burst communications) -- "is a radio propagation mode that exploits the ionized trails of meteors during atmospheric entry to establish brief communications paths between radio stations up to 2,250 kilometres (1,400 mi) apart." Tune your shortwave or your HF amateur radio to 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

- "Sure to be a highlight of fall evenings, interplanetary visitor 88P/Howell is a must-see crossing the heart of our galaxy. Well within reach of a 4-inch scope under a dark sky, the soft gray light of ionized gases surrounding the comet's head should glow a distinct green in larger instruments.

Early in the month, Howell and Sagittarius set in the southwest shortly after dusk. The dark-sky window before moonrise opens for one hour on October 5 and widens over the following nights. We quickly lose contrast on the 20th, thanks to a waxing crescent Moon.



Of particular interest is the 11th through the 13th, when Howell crosses the hindquarters of the Prancing Horse dust cloud. Visual observers will recognize this as the bowl of Barnard's Pipe Nebula. You can trap this wild stallion and still get to bed by 11 P.M." Astronomy Magazine, October 2020, P.42.

For information, orbital elements and ephemerides on observable comets visit the Observable Comets page from the Harvard-Smithsonian Center for Astrophysics.

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 in the early evening sky during the first half of the month.
- Look for Jupiter, Saturn, Neptune, Mars and Uranus in the late evening and early morning.
- Look for Comet Howell in the late evening.
- Look for Venus in the morning before sunrise.

Asteroids

(From west to east)

- **Fortuna** is in constellation of Aquarius.
- **Parthenope** is at opposition on the 23rd in constellation of Pisces.
- **Papagena** is in at opposition on the 25th constellation of Eridanus.
- **Flora** is in constellation of Cetus.
- **Eunomia** is in the constellation of Cancer.
- **Vesta** is in the constellation of Leo.

Information about the Minor Planets can be found at the Minor Planet Observer 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
3587-2015	2015-11-22 17:38 MST	CO	Kevin S	3587aw
3829-2015	2015-12-05 18:06 MST	CO	Burness A	3829a
3871-2015	2015-11-13 01:55 MST	CO	Charles N	3871a
986-2020	2020-02-21 22:20 MST	CO	Lukas S	986
3716-2020	2020-07-24 23:22 MDT	CO	Lukas S	3716

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.

Comet C/2020 F3 NEOWISE July 19, 2020

This image taken by Ed Hubbs (W6RDZ).

"**C/2020 F3 (NEOWISE)** or **Comet NEOWISE** is a long period comet with a near-parabolic orbit discovered on March 27, 2020, by astronomers during the *NEOWISE* mission of the Wide-field Infrared Survey Explorer (WISE) space telescope." (Wikipedia)

Planetary/Lunar Exploration Missions

(Excerpts from recent mission updates)

JPL Latest News

The Latest from Space

JPL Latest News

October 1, 2020
'Echo Mapping' in Faraway Galaxies Could Measure Vast Cosmic Distances

Full Article & Images

"Matter swirling around supermassive black holes creates bursts of light that "echo" in nearby dust clouds. These traveling signals could serve as a new cosmic yardstick. When you look up at the night sky, how do you know whether the specks of light that you see are bright and far away, or relatively faint and close by? One way to find out is to compare how much light the object actually emits with how bright it appears. The difference between its true luminosity and its apparent brightness reveals an object's distance from the observer.

Measuring the luminosity of a celestial object is challenging, especially with black holes, which don't emit light. But the supermassive black holes that lie at the center of most galaxies provide a loophole: They often pull lots of matter around them, forming hot disks that can radiate brightly. Measuring the luminosity of a bright disk would allow astronomers to gauge the distance to the black hole and the galaxy it lives in. Distance measurements not only help scientists create a better, three-dimensional map of the universe, they can also provide information about how and when objects formed."

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.

Juno

August 6, 2020
'Shallow Lightning' and 'Mushballs' Reveal Ammonia to NASA's Juno Scientists

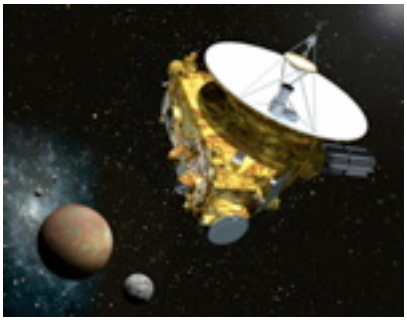
Full Article & Images

"New results from NASA's Juno mission at Jupiter suggest our solar system's largest planet is home to what's called "shallow lightning." An unexpected form of electrical discharge, shallow lightning originates from clouds containing an ammonia-water solution, whereas lightning on Earth originates from water clouds.

Other new findings suggest the violent thunderstorms for which the gas giant is known may form slushy ammonia-rich hailstones Juno's science team calls "mushballs"; they theorize that mushballs essentially kidnap ammonia and water in the upper atmosphere and carry them into the depths of Jupiter's atmosphere.

The shallow-lightning findings will be published Thursday, Aug. 6, in the journal Nature, while the mushballs research is currently available online in the Journal of Geophysical Research: Planets."

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.



New Horizons

August 27, 2020
Pluto Crater Named for New Horizons Pathfinder Tom Coughlin

Full Article & Images

"In nearly four decades as an engineer and manager at the Johns Hopkins Applied Physics Laboratory in Laurel, Maryland, Tom Coughlin was known for leading teams through tough assignments with dedication, enthusiasm and just the right amount of humor. And in the early 2000s he applied all of those traits as the proposal manager and first project manager for New Horizons, helping to shepherd the fledgling mission from design through flight confirmation.

Now, Coughlin is being honored for those roles with a tribute on the very world New Horizons was built to explore. Coughlin crater is one of four newly named features on the surface of Pluto, which New Horizons flew past in July 2015."

New Horizons gallery

Find New Horizons in the iTunes App Store.

For more information on the New Horizons mission -- the first mission to the ninth planet -- visit the New Horizons home page.

TESS

September 30, 2020

Search for New Worlds at Home With NASA's Planet Patrol Project

Full Article & Images

"Help NASA find exoplanets, worlds beyond our solar system, through a newly launched website called Planet Patrol. This citizen science platform allows members of the public to collaborate with professional astronomers as they sort through a stockpile of star-studded images collected by NASA's Transiting Exoplanet Survey Satellite (TESS).

"Automated methods of processing TESS data sometimes fail to catch imposters that look like exoplanets," said project leader Veselin Kostov, a research scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland, and the SETI Institute in Mountain View, California. "The human eye is extremely good at spotting such imposters, and we need citizen scientists to help us distinguish between the look-alikes and genuine planets."

Volunteers will help determine which TESS snapshots include signals from potential planets and which ones show planet impersonators."

For more news and information on the TESS mission, visit the Latest Tess Stories 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 WEATHER
Mars Daily Weather Report

Mars on the Go! NASA Be A Martian Mobile App
If you want the latest news as it happens, try our 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 combines all aspects of space exploration through our expertise in science, engineering, mission operations, and scientific data analysis. As part of CU, LASP also works to educate and train the next generation of space scientists, engineers and mission operators by integrating undergraduate and graduate students into working teams. Our students take their unique experiences with them into government or industry, or remain in academia to continue the cycle of exploration.

LASP is an affiliate of CU-Boulder AeroSpace Ventures, a collaboration among aerospace-related departments, institutes, centers, government labs, and industry partners."

LASP/MAVEN

September 14, 2020
LASP scientist determine that volcanic ash may have a bigger impact on the climate than we thought

Full Article & Images

"When volcanos erupt, these geologic monsters produce tremendous clouds of ash and dust--plumes that can blacken the sky, shut down air traffic and reach heights of roughly 25 miles above Earth's surface.

A new study led by the University of Colorado Boulder suggests that such volcanic ash may also have a larger influence on the planet's climate than scientists previously suspected."

Visit LASP and MAVEN for more information.

Mars 2020 - Perseverance

September 28, 2020
NASA's New Mars Rover Is Ready for Space Lasers

Full Article & Images

"Perseverance is one of a few Mars spacecraft carrying laser retroreflectors. The devices could provide new science and safer Mars landings in the future.

When the Apollo astronauts landed on the Moon, they brought devices with them called retroreflectors, which are essentially small arrays of mirrors. The plan was for scientists on Earth to aim lasers at them and calculate the time it took for the beams to return. This provided exceptionally precise measurements of the Moon's orbit and shape, including how it changed slightly based on Earth's gravitational pull."

Learn more about the upcoming Mars 2020 (Perseverance) mission.

Mars Science Laboratory - Curiosity

August 3, 2020

8 Martian Postcards to Celebrate Curiosity's Landing Anniversary

Full Article & Images

"NASA's Curiosity Mars rover has seen a lot since Aug. 5, 2012, when it first set its wheels inside the 96-mile-wide (154-kilometer-wide) basin of Gale Crater. Its mission: to study whether Mars had the water, chemical building blocks, and energy sources that may have supported microbial life billions of years ago.

Curiosity has since journeyed more than 14 miles (23 kilometers), drilling 26 rock samples and scooping six soil samples along the way as it revealed that ancient Mars was indeed suitable for life. Studying the textures and compositions of ancient rock strata is helping scientists piece together how the Martian climate changed over time, losing its lakes and streams until it became the cold desert it is today."

Follow the Mars Curiosity rover on Foursquare.

Check out information about NASA's partnership with Foursquare.

Mars Rover Landing - Free for the Xbox 360 (requires Kinect)

Visit the Mars Science Laboratory page.

Mars Reconnaissance Orbiter Mission
October 1, 2020
AI Is Helping Scientists Discover Fresh Craters on Mars

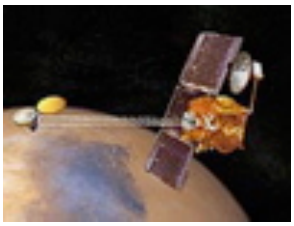
Full Article & Images

"It's the first time machine learning has been used to find previously unknown craters on the Red Planet.

Sometime between March 2010 and May 2012, a meteor streaked across the Martian sky and broke into pieces, slamming into the planet's surface. The resulting craters were relatively small -- just 13 feet (4 meters) in diameter. The smaller the features, the more difficult they are to spot using Mars orbiters. But in this case -- and for the first time -- scientists spotted them with a little extra help: artificial intelligence (AI)."

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 8, 2020
Three New Views of Mars' Moon Phobos

Full Article & Images

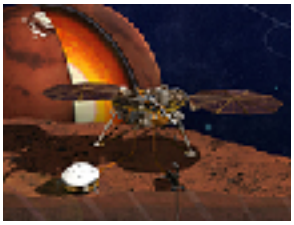
"Three new views of the Martian moon Phobos have been captured by NASA's Odyssey orbiter. Taken this past winter and this spring, they capture the moon as it drifts into and out of Mars' shadow.

The orbiter's infrared camera, the Thermal Emission Imaging System (THEMIS), has been used to measure temperature variations across the surface of Phobos that provide insight into the composition and physical properties of the moon. Further study could help settle a debate over whether Phobos, which is about 16 miles (25 kilometers) across, is a captured asteroid or an ancient chunk of Mars that was blasted off the surface by an impact."

DAILY MARS ODYSSEY THEMIS IMAGES
Thermal Emission Imaging System (THEMIS) web site.

The Odyssey data are available through a new online access system established by the Planetary Data System.

Visit the Mars Odyssey Mission page.



Mars InSight - Journey to Mars

InSight - Revealing the Heart of Mars
August 24, 2020
NASA Engineers Checking InSight's Weather Sensors

Full Article & Images

"Weather sensors aboard NASA's InSight Mars lander stopped providing data on Sunday, Aug. 16, 2020, a result of an issue affecting the sensor suite's electronics. Engineers at NASA's Jet Propulsion Laboratory in Southern California are working to understand the cause of the issue.

Called the Auxiliary Payload Sensor Suite (APSS), the sensors collect data on wind speed and direction, air temperature and pressure, and magnetic fields. Throughout each Martian day, or sol, InSight's main computer retrieves data stored in APSS' control computer for later transmission to orbiting spacecraft, which relay the data to Earth.

APSS is in safe mode and unlikely to be reset before the end of the month while mission team members work toward a diagnosis. JPL engineers are optimistic that resetting the control computer may address the issue but need to investigate the situation further before returning the sensors to normal."

Interactive selection of raw images taken by the cameras aboard InSight.

Learn more about the InSight mission.

Mars Missions Status

New Mars missions are being planned to include several new rover and sample collection missions. Check out the Mars Missions web page and the Mars Exploration 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

Other 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 KI0AR
Created by Burness F. Ansell, III
ki0ar@ki0ar.com

COO, Director of Aerospace Technologies, IAAS
JPL Solar System Ambassador, Colorado
Last modified: October 01, 2020