

# IAAS Monthly Astronomy Newsletter September 2018



The International Association for Astronomical Studies provides this newsletter as a service for interested persons worldwide.

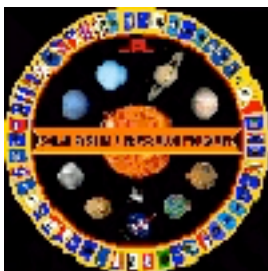


This newsletter is published on the World Wide Web at <http://www.ki0ar.com/astro.html> - The Home of KIØAR - and is received nationally and internationally. A PDF formatted downloadable version of the newsletter is at [http://www.ki0ar.com/current\\_nl.pdf](http://www.ki0ar.com/current_nl.pdf).

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. The RMRL **146.94** repeater is also linked with the WBØWDF Cripple Creek **447.400 MHz** repeater and [Allstar](#) nodes **28298, 28299, 29436**. We are also linked via Echolink, links are **k0jsc-r** and **canoncty** courtesy of KØJSC and KØGUR. More information on the WBØWDF repeater links, Allstar nodes and Echolinks can be found at [k0jsc.com](http://k0jsc.com). We are also linked with Allstar nodes in Florida as well, courtesy of KA4EPS. 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.

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](#)!**

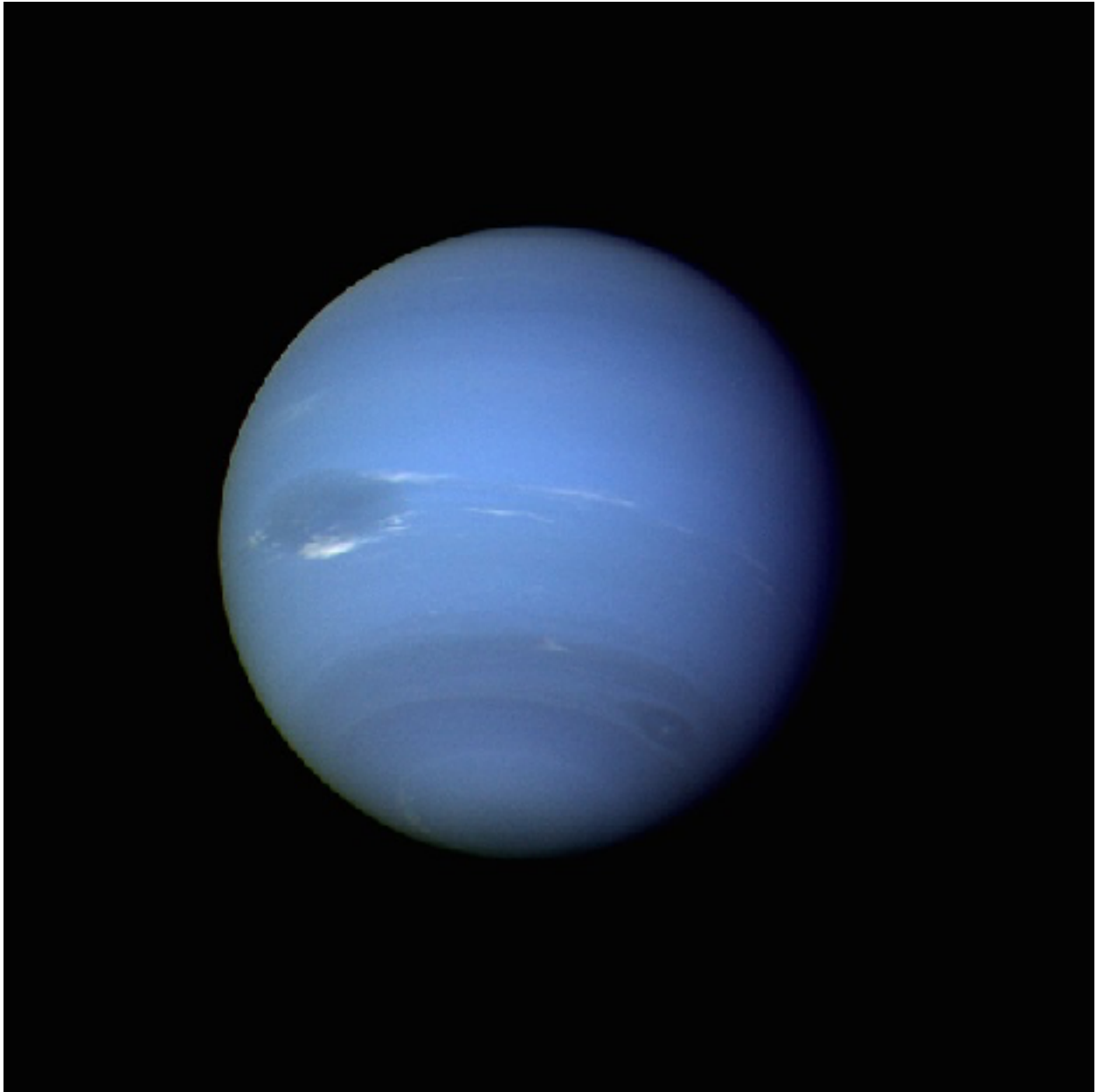
Shop Smile.Amazon.com, sign up or sign in to [smile.amazon.com](http://smile.amazon.com) and select the **International Association for Astronomical Studies**. 0.5% of every purchase will be donated to the group.

Thank you!

## In This Newsletter...

The Month At-A-Glance	4
The Moon	4
Phases:	4
Moon/Planet Pairs:	4
The Planets & Dwarf Planets	5
Planetary Highlights for September	5
Mercury	5
Venus	5
Earth	5
Mars	5
Jupiter	6
Saturn	6
Uranus	6
Neptune	6
Dwarf Planets	6
Ceres	6
Pluto	6
Astronomical Events	7
Meteor Showers	7
Comets	7
Eclipses	8
Observational Opportunities	8
Asteroids	8
Occultations	8
Member Meteor Sightings	9
Subscriber Gallery	10
Planetary/Lunar Exploration Missions	11
JPL Latest News	11
Juno	11
Cassini Legacy	12
New Horizons	12
Dawn	13
Mars Missions	14
JMARS	14
Laboratory for Atmospheric and Space Physics	15
MAVEN	15
Mars Science Laboratory - Curiosity	16
Mars Exploration Rover Mission (Spirit and Opportunity)	16
Mars Reconnaissance Orbiter Mission	17
Journey to Mars	19
Mars Missions Status	19
Astronomy Links and Other Space News	20
Colorado Astronomy Links	20

Radio Astronomy Links	20
Other Astronomy Links	20
Acknowledgments and References	20
Subscription Information	20
Keep looking UP!	20



*"Neptune appears at its best for the year in September. Although a telescope will show its tiny blue-gray disk, you won't see the stunning detail the Voyager 2 spacecraft revealed when it flew past in 1989. Astronomy Magazine, September 2018, p.36.  
NASA/JPL*

# The Month At-A-Glance

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

## The Moon

### Phases:

- Last Quarter Moon occurs on the 2nd.
- New Moon occurs on the 9th.
- First Quarter Moon occurs on the 16th.
- Full Moon occurs on the 24th.
  
- The Moon is at Perigee on the 7th, 224,533 miles from Earth.
- The Moon is at Apogee on the 19th, 251,578 miles from Earth.



### Moon/Planet Pairs:

- Venus passes  $1.4^\circ$  south of Spica on the 2nd.
- The Moon passes  $1.2^\circ$  north of Aldebaran on the 2nd.
- Mercury passes  $1.0^\circ$  north of Regulus on the 5th.
- The Moon passes  $10^\circ$  north of Venus on the 12th.
- The Moon passes  $4^\circ$  north of Jupiter on the 13th.
- The Moon passes  $2^\circ$  north of Saturn on the 17th.
- The Moon passes  $5^\circ$  north of Mars on the 20th.
- The Moon passes  $2^\circ$  south of Neptune on the 23rd.
- The Moon passes  $5^\circ$  south of Uranus on the 27th.

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

## The Planets & Dwarf Planets

[Planetary Reports](#) are generated by "TheSky" 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 September

"Four bright planets line up across September's early evening sky. Venus and Mars provide the bookends for this bonanza, with Jupiter and Saturn sandwiched between. You can look for Uranus and Neptune to come to the fore later in the evening. Neptune reaches opposition and peak visibility September 7, but it remains an inviting object all month. And Mercury rules the predawn sky early this month as it wraps up one of its finest morning appearances of the year." Astronomy Magazine, September 2018, p.36.

### Mercury

Is in superior conjunction on the 20th. Mercury will be visible low to the east about 30 minutes before sunrise during the first half of the month. Mercury rises at 5:04 a.m. on the 1st. Mercury will return to the evening sky after the 20th. Mercury sets about 7:03 p.m. by month's end. Mercury moves from the constellation of Leo into Virgo this month shining at magnitude -0.8 on the 1st.

### Venus

Sets at 9:01 p.m. on the 1st and about 7:28 p.m. by month's end. Venus shines it's brightest this month on the 21st, reaching magnitude -4.8. Venus is easy to spot to the west soon after sunset. Venus is in the constellation of Virgo this month shining at magnitude -4.7 on the 15th.

### Earth

The Autumnal Equinox occurs at 9:54 p.m. EDT on the 22nd.

### Mars

Is at perihelion (128.4 million miles from the Sun) on the 16th. Mars is still well placed for early evening viewing, rising at 5:55 p.m. on the 1st and about 4:13 p.m. by month's end. The global dust storm seems to be abating, making for better observation of the Red Planet. Mars is in the constellation of Capricornus shining at magnitude -1.7 on the 15th.

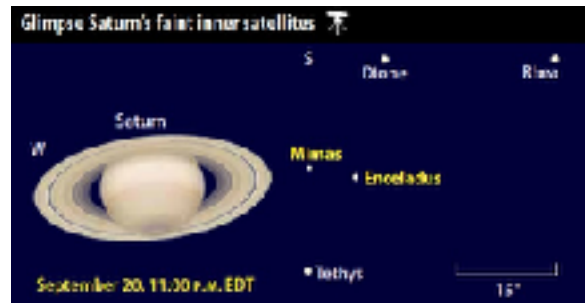


## Jupiter

Sets at 10:23 p.m. on the 1st and about 8:39 p.m. by month's end. Jupiter can be easily spotted to the southwest soon after sunset all month. Jupiter is in the constellation of Libra shining at magnitude -1.9.

## Saturn

Is stationary on the 6th. Saturn sets at 1:12 a.m. on the 1st and about 11:12 p.m. by month's end. Saturn is still near its peak visibility this month and looks quite spectacular through a telescope. In the vicinity of Saturn this month are the deep sky objects, the Trifid Nebula (M20), the Lagoon Nebula (M8). Observe this region of the Milky Way with a good pair of binoculars.



Saturn is in the constellation of Sagittarius shining at magnitude 0.4.

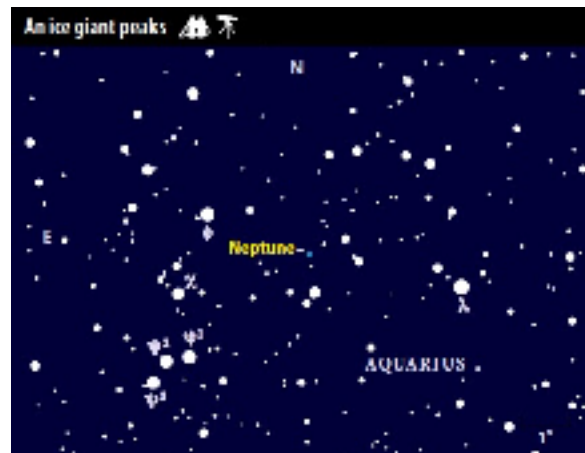
## Uranus

Rises at 9:34 p.m. on the 1st and about 7:33 p.m. by month's end. Uranus is rising early enough to be observed in the evening sky. Uranus is in the constellation of Aries shining at magnitude 5.7.

## Neptune

Is at opposition on the 7th, rising as the Sun sets. Neptune rises 7:42 p.m. on the 1st and about 5:42 p.m. by month's end. Neptune is well placed for evening viewing as well.

Neptune is in the constellation of Aquarius shining at magnitude 7.8.



## Dwarf Planets

### Ceres

Sets at 8:48 p.m. on the 1st and about 7:20 p.m. by month's end. Ceres will be difficult to spot now that it is setting within an hour or so after the Sun as it is nearly lost in the evening twilight glow. Ceres is in the constellation of Leo shining at magnitude 8.6.

### Pluto

Is stationary on the 30th. Pluto sets at 2:24 a.m. on the 1st and about 12:25 a.m. by month's end. Pluto lies almost halfway between Saturn and Mars. Pluto is in the constellation of Sagittarius shining at magnitude 14.2.

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

# Astronomical Events

## Meteor Showers

- The Alpha Aurigids - This shower's duration seems to persist from August 25 to September 6. Maximum occurs on September 1. The annual maximum hourly rate may be as high as 9, but outbursts of over 30 occurred in 1935, 1986, and 1994, and observers recorded up to 130 meteors per hour in 2007.
- The Epsilon Perseids meteor shower is a relatively new meteor shower which can be observed from September 4 to the September 14. The Epsilon Perseids peaks on the night of the September 9, morning of September 10. Observers may expect to see up to 5 or 6 meteors per hour during the peak.

For more information about Meteor Showers, visit Gary Kronk's Meteor Showers Online web page at <http://meteorshowersonline.com/>.

## [Meteor Shower Radiant Report](#)

Meteor Scatter (or Meteor burst communications) - [http://en.wikipedia.org/wiki/Meteor\\_burst\\_communications](http://en.wikipedia.org/wiki/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.

## Comets

Comet 21P/Giacobini-Zinner passes closest to the Sun and the Earth during the second week of this month, hopefully brightening to around 6th or 7th magnitude. Comet Giacobini-Zinner is passing through the constellations of Auriga into Gemini passing near several star clusters (M36, M37 & M38) during the second week of the month as well. Luckily, the Moon will not interfere with viewing during this time.

For information, orbital elements and ephemerides on observable comets visit the Observable Comets page from the Harvard-Smithsonian Center for Astrophysics. (<http://cfa-www.harvard.edu/iau/Ephemerides/Comets/index.html>)



For more information about Comets, visit Gary Kronk's Cometography.com web page at <http://cometography.com/>.

## Eclipses

- No eclipse activity this month.

## Observational Opportunities

(from evening to morning)

- Enjoy most all of the planets during the evening skies after sunset.
- Try to spot Comet 21P/Giacobini-Zinner passing through Auriga.

## Asteroids

(From west to east)

- **Vesta** is in the constellation of Sagittarius.
- **Urania** is at opposition on the 18th in the constellation of Pisces.
- **Juno** is in the constellation of Taurus.
- **Hebe** is in the constellation of Orion.

Information about the Minor Planets can be found at <http://www.minorplanetobserver.com> the Minor Planet Observer web site.



## Occultations



Information on various occultations can be found at <http://lunar-occultations.com/iota/iotandx.htm>, the International Occultation Timing Association's (IOTA) web site.

## Member Meteor Sightings

This is a new section where 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>
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>
3871-2015	2015-11-13 01:55 MST	CO	Charles N	<a href="#">3871a</a>

## [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.



August 21, 2017 - Total Solar Eclipse - "Bailey's Beads" and the "Diamond Ring"  
Taken by: Burness Ansell, Location: Guernsey, WY - More to come. I will be creating a special Solar Eclipse page to showcase subscriber contributions.

# Planetary/Lunar Exploration Missions

(Excerpts from recent mission updates)



## JPL Latest News

The Latest from Space

[JPL Latest News](#)

**August 30, 2018**

### Martian Skies Clearing over Opportunity Rover

[Full Article & Images](#)

"A planet-encircling dust storm on Mars, which was first detected May 30 and halted operations for the Opportunity rover, continues to abate.

With clearing skies over Opportunity's resting spot in Mars' Perseverance Valley, engineers at NASA's Jet Propulsion Laboratory in Pasadena, California, believe the nearly 15-year-old, solar-powered rover will soon receive enough sunlight to automatically initiate recovery procedures -- if the rover is able to do so. To prepare, the Opportunity mission team has developed a two-step plan to provide the highest probability of successfully communicating with the rover and bringing it back online."

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 - <http://www.jpl.nasa.gov/missions>.

For special JPL programs and presentations in your area visit the JPL Solar System Ambassador web site at <http://www2.jpl.nasa.gov/ambassador/index.html>.



### Juno

**August 29, 2018**

### How a NASA Scientist Looks in the Depths of the Great Red Spot to Find Water on Jupiter

[Full Article & Images](#)

"For centuries, scientists have worked to understand the makeup of Jupiter. It's no wonder: this mysterious planet is the biggest one in our solar system by far, and chemically, the closest relative to the Sun. Understanding Jupiter is key to learning more about how our solar system formed, and even about how other solar systems develop.

But one critical question has bedeviled astronomers for generations: Is there water deep in Jupiter's atmosphere, and if so, how much?"

NASA's JunoCam website can be visited at: <https://www.missionjuno.swri.edu/junocam>

More information on the Juno mission is available at: <http://www.nasa.gov/juno>

The public can follow the mission on Facebook and Twitter at:

<http://www.facebook.com/NASAJuno>

<http://www.twitter.com/NASAJuno>



### **Cassini Legacy**

**July 30, 2018**

**Group Portrait**

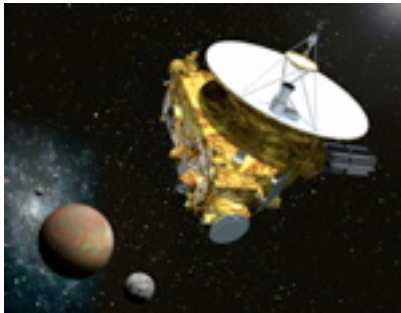
[Full Article & Images](#)

"On July 29, 2011, Cassini captured five of Saturn's moons in a single frame with its narrow-angle camera. This is a full-color look at a view that was originally published in September 2011 (see [PIA14573](#))."

Raw images are available at <http://saturn.jpl.nasa.gov/photos/raw/index.cfm>.

More information about Cassini is available at the following sites:

<http://saturn.jpl.nasa.gov> & <http://www.nasa.gov/cassini>.



### **New Horizons**

**August 28, 2018**

**Ultima in View**

*New Horizons Makes First Detection of Kuiper Belt Flyby Target*

[Full Article & Images](#)

"NASA's New Horizons spacecraft has made its first detection of its next flyby target, the Kuiper Belt object nicknamed Ultima Thule, more than four months ahead of its New Year's 2019 close encounter.

Mission team members were thrilled -- if not a little surprised -- that New Horizons' telescopic Long Range Reconnaissance Imager (LORRI) was able to see the small, dim object while still more than 100 million miles away, and against a dense background of stars. Taken Aug. 16 and transmitted home through NASA's Deep Space Network over

the following days, the set of 48 images marked the team's first attempt to find Ultima with the spacecraft's own cameras."

### [New Horizons gallery](#)

For more information on the New Horizons mission - the first mission to the ninth planet - visit the New Horizons home page: <http://pluto.jhuapl.edu/>.



#### **Dawn**

**July 24, 2018**

#### **What Looks Like Ceres on Earth?**

[Full Article & Images](#)

"With its dark, heavily cratered surface interrupted by tantalizing bright spots, Ceres may not remind you of our home planet Earth at first glance. The dwarf planet, which

orbits the Sun in the vast asteroid belt between Mars and Jupiter, is also far smaller than Earth (in both mass and diameter). With its frigid temperature and lack of atmosphere, we're pretty sure Ceres can't support life as we know it.

But these two bodies, Ceres and Earth, formed from similar materials in our solar system. And, after combing through thousands of images from NASA's Dawn spacecraft, which has been orbiting Ceres since 2015, scientists have spotted many features on Ceres that look like formations they've seen on Earth."

For more information on the Dawn mission, visit the Dawn home page: [http://www.nasa.gov/mission\\_pages/dawn/main/index.html](http://www.nasa.gov/mission_pages/dawn/main/index.html).



#### **TESS**

**August 06, 2018**

#### **NASA's Planet-Hunting TESS Catches a Comet Before Starting Science**

[Full Article & Images](#)

"Before NASA's Transiting Exoplanet Survey Satellite (TESS) started science operations on July 25, 2018, the planet hunter sent back a stunning sequence of

serendipitous images showing the motion of a comet. Taken over the course of 17 hours on July 25, these TESS images helped demonstrate the satellite's ability to collect a prolonged set of stable periodic images covering a broad region of the sky -- all critical factors in finding transiting planets orbiting nearby stars."

For more news and information on the TESS mission, visit the [Latest Tess Stories](#) page.

# 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 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. <https://jmars.mars.asu.edu/>



## 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."



### MAVEN

August 09, 2018

**Tracing Mars Atmospheric Loss through Time: the Three Devils**

[Full Article & Images](#)

"Why is the surface of Mars no longer habitable?"

Sounds like a straightforward question, right? However, those nine words comprise one of the most vexing questions in planetary science. There is now overwhelming evidence that Mars was once a place where liquid water flowed on the surface and, thus, life as we know it could have thrived, at least episodically. Orbiters have identified branching networks of valleys that most likely were carved by rainwater or snowmelt. Rovers have driven through ancient streambeds and found minerals that can only be formed over many years underwater. However, such stable surface water requires an atmospheric surface pressure much higher than today's ~7 millibars (<1% of Earth's pressure) to prevent evaporation and cause greenhouse warming."

Visit [LASP](#) and [MAVEN](#) for more information.



## Mars Science Laboratory - Curiosity

August 30, 2018

Sol 2156: The Story of Stoer

[Full Article & Images](#)

"After an extremely productive couple of weeks, we are finishing up our work at Stoer! We'll take some quick ChemCam and Mastcam observations of the tailings dump pile [two sols] before packing up and starting our drive up the ridge towards our next drill location. As we leave Stoer, I'd like to take some time to share the story of how and why we came to drill this particular location."

To follow the Mars Curiosity rover and NASA on Foursquare, visit: <http://www.foursquare.com/MarsCuriosity> and <http://www.foursquare.com/NASA>



For information about NASA's partnership with Foursquare, visit: <http://www.nasa.gov/connect/foursquare.html>.

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

Visit the Mars Science Laboratory page at <http://mars.jpl.nasa.gov/msl>.



## Mars Exploration Rover Mission (Spirit and Opportunity)

August 29, 2018

**SPIRIT UPDATE: Spirit Remains Silent at Troy - sols 2621-2627, May 18-24, 2011:**

"More than 1,300 commands were radiated to Spirit as part of the recovery effort in an attempt to elicit a response from the rover. No communication has been received from Spirit since Sol 2210 (March 22, 2010). The project concluded the Spirit recovery efforts on May 25, 2011. The remaining, pre-sequenced ultra-high frequency (UHF) relay passes scheduled for Spirit on board the Odyssey orbiter will complete on June 8, 2011.

Total odometry is unchanged at 7,730.50 meters (4.80 miles)."

## **OPPORTUNITY UPDATE: Team Continues to Listen for Opportunity - sols 5183 to 5189, Aug. 23, 2018 - Aug. 29, 2018:**

"No signal from Opportunity has been heard since Sol 5111 (June 10, 2018). The dust storm on Mars continues its decay with atmospheric opacity ( $\tau$ ) over the rover site decreasing.

It is expected that Opportunity has experienced a low-power fault and perhaps, a mission clock fault and then, an up-loss timer fault. The project is continuing to listen for the rover either during the expected fault communication windows, or listening over a broader range of times using the Deep Space Network Radio Science Receiver.

The project is also sending a command three times a week to elicit a beep if the rover happens to be awake.

Total odometry is unchanged at 28.06 miles (45.16 kilometers)."

Landing sites link - <http://marsoweb.nas.nasa.gov/landingsites/>

Visit the Mars Exploration Rover page at <https://mars.nasa.gov/mer/home/>.



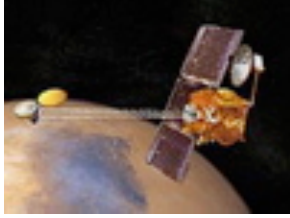
### **Mars Reconnaissance Orbiter Mission July 30, 2018 Mars Terraforming Not Possible Using Present-Day Technology**

[Full Article & Images](#)

"Science fiction writers have long featured terraforming, the process of creating an Earth-like or habitable environment on another planet, in their stories. Scientists themselves have proposed terraforming to enable the long-term colonization of Mars. A solution common to both groups is to release carbon dioxide gas trapped in the Martian surface to thicken the atmosphere and act as a blanket to warm the planet."

## **MARS RECONNAISSANCE ORBITER HIRISE IMAGES**

All of the HiRISE images are archived here: <http://hirise.lpl.arizona.edu/>.  
More information about the MRO mission is available online at <http://www.nasa.gov/mro>.



**Mars Odyssey Orbiter**  
**July 27, 2018**  
**Mars in our Night Sky**

[Full Article & Images](#)

"Mars Close Approach to Earth

**See Mars in the Night Sky!**

Simply go outside and look up, contact your local planetarium, or look for a star party near you.

In 2018, Mars will appear brightest from July 27 to July 30

**Mars Close Approach is July 31, 2018**

That is the point in Mars' orbit when it comes closest to Earth. Mars will be at a distance of 35.8 million miles (57.6 million kilometers). Mars reaches its highest point around midnight -- about 35 degrees above the southern horizon, or one-third of the distance between the horizon and overhead. Mars will be visible for much of the night.

By mid-August, Mars will become fainter as Mars and Earth travel farther away from each other in their orbits around the Sun.

Miss seeing Mars Close Approach in 2018? The next Mars Close Approach is Oct. 6, 2020."

**DAILY MARS ODYSSEY THEMIS IMAGES**

Thermal Emission Imaging System (THEMIS) web site: (<http://themis.asu.edu/gallery>)

The Odyssey data are available through a new online access system established by the Planetary Data System at: <http://starbrite.jpl.nasa.gov/pds/>

Visit the Mars Odyssey Mission page at <http://mars.jpl.nasa.gov/odyssey/index.html>.



**Journey to Mars**  
**InSight - Revealing the Heart of Mars**  
**August 28, 2018**  
**NASA's InSight Has a Thermometer for Mars**

[Full Article & Images](#)

"Ambitious climbers, forget Mt. Everest. Dream about Mars.

The Red Planet has some of the tallest mountains in the solar system. They include Olympus Mons, a volcano nearly three times the height of Everest. It borders a region called the Tharsis plateau, where three equally awe-inspiring volcanoes dominate the landscape.

But what geologic processes created these features on the Martian surface? Scientists have long wondered -- and may soon know more.

NASA and DLR (German Aerospace Center) plan to take the planet's temperature for the first time ever, measuring how heat flows out of the planet and drives this inspiring geology. Detecting this escaping heat will be a crucial part of a mission called InSight (Interior Exploration using Seismic Investigations, Geodesy and Heat Transport), managed by NASA's Jet Propulsion Laboratory in Pasadena, California.

InSight will be the first mission to study Mars' deep interior, using its [Heat Flow and Physical Properties Package](#) (HP3) instrument to measure heat as it is conducted from the interior to the planet's surface. This energy was in part captured when Mars formed more than 4 billion years ago, preserving a record of its creation. That energy is also due to the decay of radioactive elements in the rocky interior."

Learn more about the InSight mission at: <http://www.jpl.nasa.gov/missions/insight/>

### **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: <http://mars.jpl.nasa.gov/missions/> and the Mars Exploration page: <http://marsprogram.jpl.nasa.gov/>.

## **[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 -

[http://ki0ar.com/pipermail/astronews\\_ki0ar.com/](http://ki0ar.com/pipermail/astronews_ki0ar.com/)

- Full documentation of the online administration system is available at [http://ki0ar.com/mailman/listinfo/astronews\\_ki0ar.com](http://ki0ar.com/mailman/listinfo/astronews_ki0ar.com).

- The latest version of the newsletter is accessible from <http://www.ki0ar.com/astro.html>.

## **Keep looking UP!**

73 from KI0AR

Created by Burness F. Ansell, III  
[ki0ar@ki0ar.com](mailto:ki0ar@ki0ar.com)

COO, Director of Aerospace Technologies, IAAS  
JPL Solar System Ambassador, Colorado  
Last modified: September 01, 2018