

IAAS Monthly Astronomy Newsletter

November 2014



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 KI0AR - and is received nationally and internationally. A PDF formatted downloadable version of the newsletter is at 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](#) 146.94 MHz and 449.825 MHz repeaters. The RMRL 146.94 repeater is also linked with the WB0WDF Cripple Creek 447.400 MHz repeater and [Allstar](#) nodes 28298, 28299, 29436 and 40764 (linked to the RMRL 449.875 Eldorado Mountain repeater). More information on the WB0WDF repeater links and Allstar nodes can be found at k0jsc.com. The net meets on Tuesday nights at 7 P.M. Mountain Time (US).

The [Colorado Astronomy Net](#) now has a Facebook page. Be sure to "Like" us.

Special Notice to Denver, CO residents and visitors to the area: The Plains Conservation Center in Aurora hosts Full Moon Walks every month, weather permitting, on or near the night of the full Moon. Visit <http://www.plainsconservationcenter.org> for more information and directions.



S&S Optika hosts [Backyard Star Parties](#) in Littleton several times a month, weather permitting. Come down and enjoy the fun and check out their fine selection of optical instruments.

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

In This Newsletter...

The Month At-A-Glance	4
The Moon	4
Phases:.....	4
Moon/Planet Pairs:	4
The Planets & Dwarf Planets.....	4
Planetary Highlights for November	4
Mercury.....	5
Venus	5
Earth	5
Mars	5
Jupiter.....	5
Saturn	5
Uranus	5
Neptune	5
Dwarf Planets.....	6
Ceres.....	6
Pluto.....	6
Astronomical Events	7
Meteor Showers.....	7
Comets	7
Eclipses	7
Observational Opportunities (from evening to morning)	7
Asteroids	7
Occultations.....	8
Subscriber Gallery	9
Planetary/Lunar Exploration Missions.....	10
Cassini.....	10
New Horizons	11
Dawn	12
MESSENGER.....	13
Pack Your Backpack.....	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)	17
Mars Reconnaissance Orbiter Mission	18
Mars Odyssey Orbiter	19
Mars Missions Status.....	20
Astronomy Links and Other Space News.....	21
Colorado Astronomy Links.....	21
Other Astronomy Links.....	22

Acknowledgments and References.....25
Subscription Information25
Keep looking UP!25

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

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

The Moon

Phases:

- Full Moon occurs on the 6th.
 - Last Quarter Moon occurs on the 14th.
 - New Moon occurs on the 22nd.
 - First Quarter Moon occurs on the 29th.
-
- The Moon is at Perigee on the 2nd, 228,589 miles from Earth.
 - The Moon is at Apogee on the 14th, 251,243 miles from Earth.
 - The Moon is at Perigee on the 27th, 229,800 miles from Earth.



Moon/Planet Pairs:

- The Moon passes 5° north of Neptune on the 1st.
- Mercury passes 5° north of Spica on the 3rd.
- The Moon passes 1.3° north of Uranus on the 4th.
- Mars passes 3.7° south of Pluto on the 10th.
- The Moon passes 5° south of Jupiter on the 14th.
- The Moon passes 7° north of Mars on the 26th.
- The Moon passes 4° north of Neptune on the 29th.

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

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 November

Start your November evenings by looking to the southwest to catch a glimpse of Mars. Proceed eastward to spy Neptune and Uranus later after the skies are nice and dark. Jupiter follows in the predawn night. Mercury makes its best morning appearance this month in the skies just before dawn. Saturn and Venus are lost in the twilight glow of the Sun for most of this month. The annual Leonid meteor shower peaks mid-month and should put on a respectable show this year not being hindered by the waning crescent Moon.

Mercury

Is at greatest western elongation (19° above the eastern horizon) on the 1st. Look for Mercury during the first 2 weeks of month low to the eastern horizon about 90 minutes before sunrise. After that, Mercury becomes more difficult to spot. Mercury rises at 5:53 a.m. on the 1st and about 6:45 a.m. the month's end. Mercury moves from the constellation of Virgo into Scorpius shining at magnitude -0.6 on the 1st.



Venus

Having reached superior conjunction with the Sun last month, Venus remains lost in the twilight glow of the evening Sun. Venus sets within minutes after the Sun all month. Venus moves from the constellation Libra into Ophiuchus shining at magnitude -3.9 on the 15th.

Earth

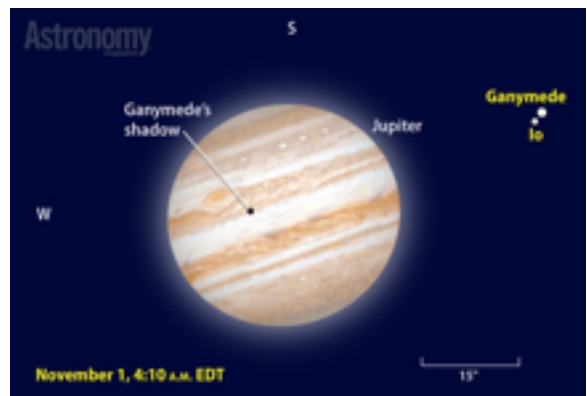
[Daylight Savings Time](#) ends at 2:00 a.m. local time on the 2nd for most of the United States.

Mars

Sets at 9:10 p.m. on the 1st and about 8:03 p.m. by month's end. Mars can be spotted low in the southwest soon after sunset. Mars is in the constellation of Sagittarius this month shining at magnitude 1.0.

Jupiter

Rises at 12:55 a.m. on the 1st and about 10:04 p.m. by month's end. Mutual events continue with the Jovian moons in November. Jupiter is in the constellation of Leo shining at magnitude -2.1.



Saturn

Is in conjunction with the Sun on the 18th. Saturn, like Venus, is lost in the Sun's glow this month and is not visible. Saturn will return to the morning sky before dawn next month. Saturn is in the constellation of Libra shining at magnitude 0.5.

Uranus

Rises at 4:48 p.m. on the 1st and about 1:48 p.m. by month's end. Uranus is in a prime position for evening viewing. Uranus is in the constellation of Pisces shining at magnitude 5.7.

Neptune

Is stationary on the 16th. Neptune rises at 3:15 p.m. on the 1st and about 12:17 p.m. by month's end. Neptune is also in an optimum position for viewing the evening skies this month. Neptune is in the constellation of Aquarius shining at magnitude 7.9.

Dwarf Planets

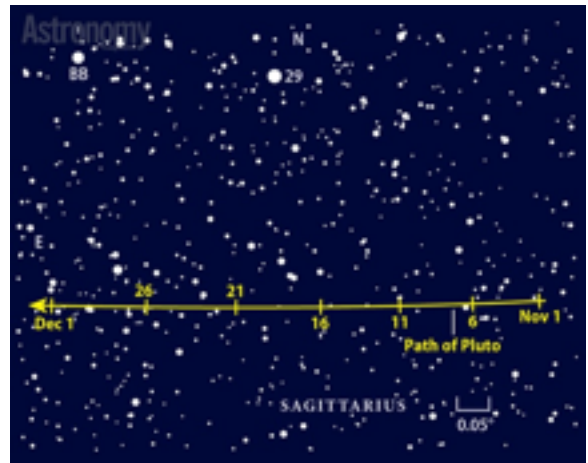
Ceres

Sets at 8:13 p.m. on the 1st and about 4:55 p.m. by month's end. Ceres is also lost in the evening twilight glow along with Venus this month and is not visible. Ceres will disappear behind the Sun next month to return to the morning sky next year. Ceres moves from the constellation of Libra into Ophiuchus shining at magnitude 8.9.

Pluto

Sets at 9:53 p.m. on the 1st and about 6:58 p.m. by month's end. 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 Leonids - The duration of this shower covers the period of Nov. 14-20. Maximum occurs on Nov. 17. The maximum hourly rate typically reaches 10-15, but most notable are periods of enhanced activity that occur every 33 years - events that are directly associated with the periodic return of comet Tempel-Tuttle. During these exceptional returns, the Leonids have produced rates of up to several thousand meteors per hour. The Leonids are swift meteors, which are best known for leaving a high percentage of persistent trains.

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

Comets

Comet Siding Spring (C/2013 A1) passed Mars within 81,000 miles on the 19th of October without incident. Even though we were not there to see it up close, we still have an opportunity to see this comet in the early evening sky shining around 9th magnitude. For best viewing, look for Comet Siding Spring with at least a 4-inch telescope sometime after the 10th of the month after sunset and before 7:30 p.m. local time.

Comet PANSTARRS (C/2012 K1) may be visible for observers close to or south of the equator.

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)*

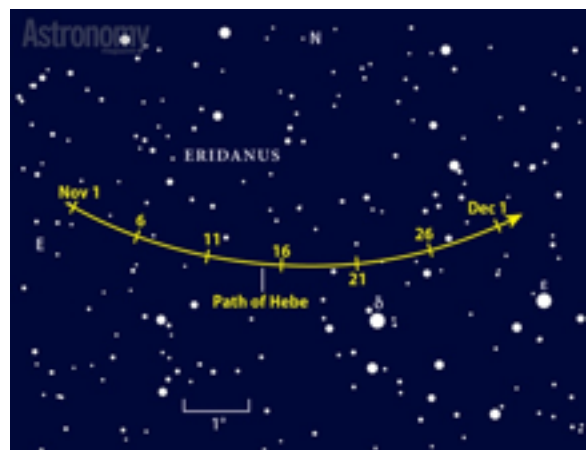
- Look for Mars to the southwest.
- Find Neptune and Uranus in the evening sky.
- Observe Jupiter in the early morning sky after midnight.
- Look for Mercury in the early morning sky before dawn.
- Observe the Leonids meteor shower around mid-month east of Orion and Sirius.

Asteroids

(From west to east)

- **Hebe** is at opposition on the 15th in the constellation of Eridanus.
- **Thalia** is in the constellation of Taurus.
- **Juno** is in the constellation of Cancer.

Information about the Minor Planets can be found



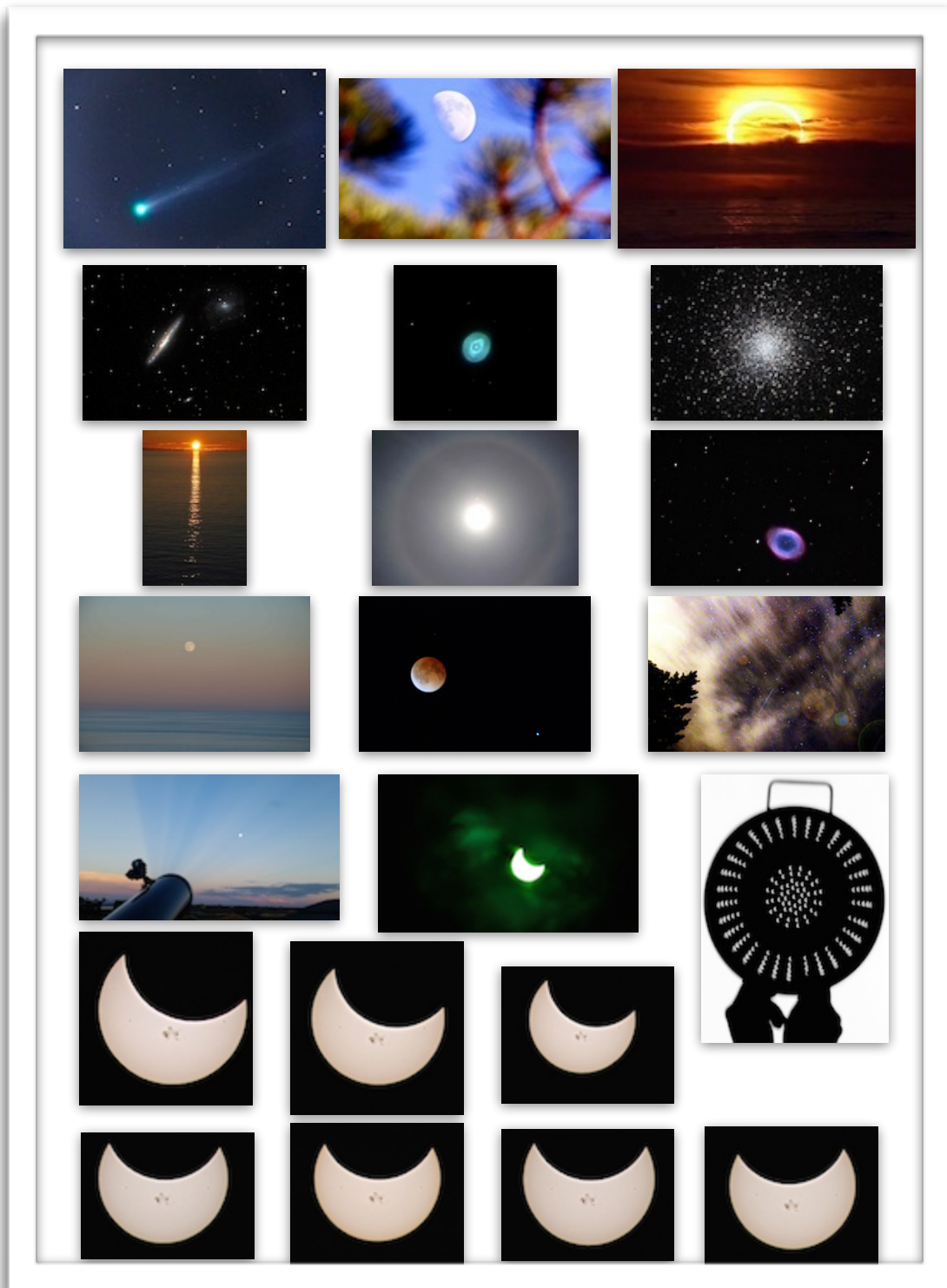
at <http://www.minorplanetobserver.com> the Minor Planet Observer web site.

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.

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.



Planetary/Lunar Exploration Missions

(Excerpts from recent mission updates)



Cassini
October 30, 2014
**Cassini Sees Sunny
Seas on Titan**
[Full-Res: PIA18432](#)

"As it soared past Saturn's large moon Titan recently, NASA's Cassini spacecraft caught a glimpse of bright sunlight reflecting off hydrocarbon seas.

In the past, Cassini had captured, separately, views of the polar seas and the sun glinting off them, but this is the first time both have been seen together in the same view.

The image is also available at: <http://www.jpl.nasa.gov/spaceimages/details.php?id=PIA18432>.

Also in the image:

-- An arrow-shaped complex of bright methane clouds hovers near Titan's north pole. The clouds could be actively refilling the lakes with rainfall.

-- A "bathtub ring," or bright margin, around Kraken Mare -- the sea containing the reflected sunglint -- indicates that the sea was larger at some point, but evaporation has decreased its size.

Titan's seas are mostly liquid methane and ethane. Before Cassini's arrival at Saturn, scientists suspected that Titan might have bodies of open liquid on its surface. Cassini found only great fields of sand dunes near the equator and lower latitudes, but located lakes and seas near the poles, particularly in the north.

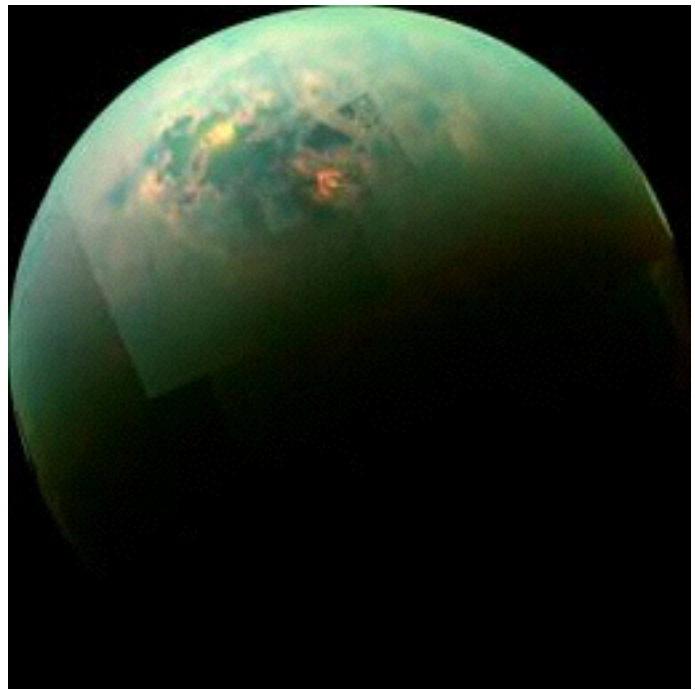
The new view shows Titan in infrared light. It was obtained by Cassini's Visible and Infrared Mapping Spectrometer (VIMS) on Aug. 21."

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. JPL, a division of the California Institute of Technology, Pasadena, manages the mission for NASA's Science Mission Directorate in Washington. More information about Cassini is available at the following sites:

<http://www.nasa.gov/cassini>

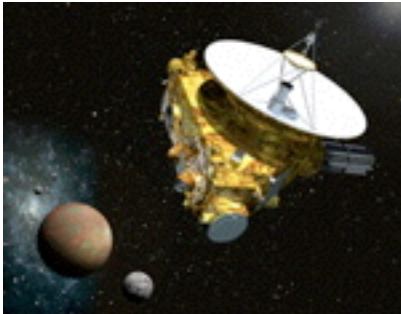
<http://saturn.jpl.nasa.gov>

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



Cassini Imaging Team's website - <http://ciclops.org>.

For the latest mission status reports, visit <http://saturn.jpl.nasa.gov/home/index.cfm>. The speed and location of the spacecraft can be viewed on the "[Present Position](#)" web page.



New Horizons

October 23, 2014

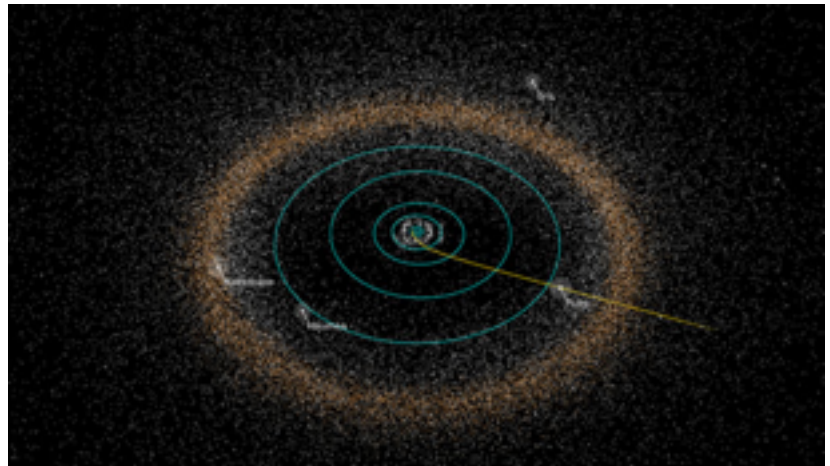
The PI's Perspective

KBO Hunting: How Hubble Rescued New Horizons

"As I write these words, New Horizons is cruising through the cold vacuum of space, almost three billion miles from Earth, still in hibernation and awaiting wakeup during the first week of December.

Last week, we were able to announce that, for the first time, we have located small, ancient Kuiper Belt Objects (KBOs) that New Horizons can reach with the fuel we expect to have onboard after we complete the Pluto mission.

This is big news! In fact, it's historic news, because it means that humankind now has the capability — for the first time — to explore KBOs."



[What is Pluto? -Video](#)

[Follow New Horizons on its journey to Pluto and beyond.](#)

"How Do We Get to Pluto? Practice, Practice, Practice"

Part I: The Encounter Begins - [Small mp4](#) (38 MB, 640x360)
- [Large mp4](#) (116 MB, 1280x720)

Part II: Passing Pluto - [Small mp4](#) (34 MB, 640x360)
- [Large mp4](#) (102 MB, 1280x720)"

Find New Horizons in the iTunes App Store here. (<http://itunes.com/apps/newhorizonsanasavoyagetopluto>)

[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/>.

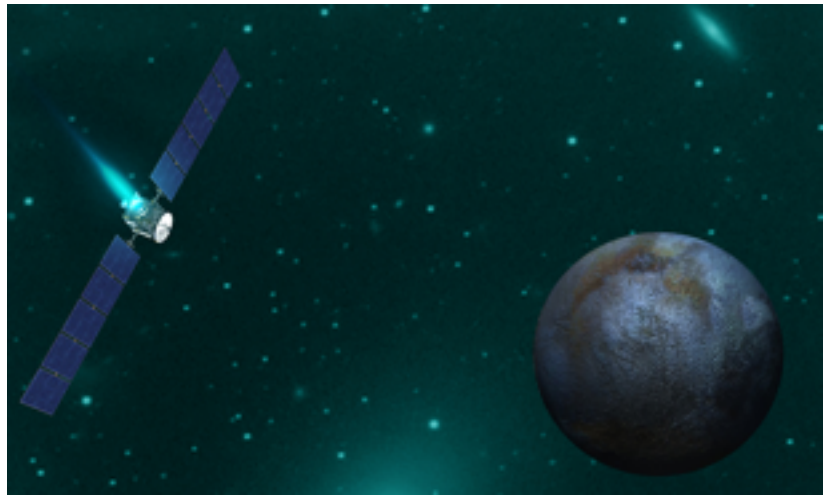


Dawn

September 16, 2014

Dawn Operating Normally After Safe Mode Triggered

"The Dawn spacecraft has resumed normal ion thrusting after the thrusting unexpectedly stopped and the spacecraft entered safe mode on September 11. That anomaly occurred shortly before a planned communication with NASA's Deep Space Network that morning. The spacecraft was not performing any special activities at the time.



Engineers immediately began working to restore the spacecraft to its normal operational state. The team determined the source of the problems, corrected them, and then resumed normal ion thrusting on Monday night, Sept. 15.

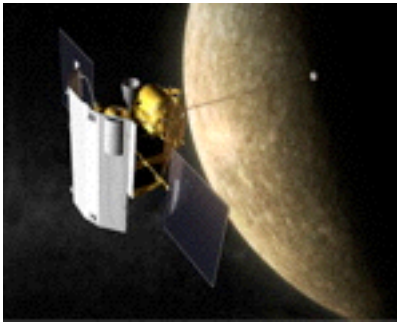
"This anomaly presented the team with an intricate and elaborate puzzle to solve," said Robert Mase, Dawn project manager at NASA's Jet Propulsion Laboratory in Pasadena, California.

After investigating what caused the spacecraft to enter safe mode, the Dawn team determined that it was likely triggered by the same phenomenon that affected Dawn three years ago on approach to the protoplanet Vesta: An electrical component in the ion propulsion system was disabled by a high-energy particle of radiation."

[Dawn's Virtual Flight over Vesta](#)

A gallery of images can be found online at: http://www.nasa.gov/mission_pages/dawn/multimedia/gallery-index.html.

For more information on the Dawn mission, visit the Dawn home page: http://www.nasa.gov/mission_pages/dawn/main/index.html.



MESSENGER

October 24, 2014

Third of Four Planned Maneuvers Extends MESSENGER Orbital Operations

"MESSENGER mission controllers at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., conducted the third of four maneuvers today to raise the spacecraft's minimum altitude sufficiently to extend orbital operations and delay the probe's inevitable impact onto Mercury's surface until

early next spring.

The first of the four maneuvers, completed on June 17, raised MESSENGER's altitude at closest approach from 115 kilometers (71.4 miles) to 156.4 kilometers (97.2 miles) above the planet's surface. The second of the four maneuvers, completed on September 12, raised MESSENGER's altitude at closest approach from 25.2 kilometers (15.7 miles) to 93.7 kilometers (58.2 miles) above the planet's surface. Because of progressive changes to the orbit over time, the spacecraft's minimum altitude has continued to decrease since September.

At the time of this most recent maneuver, MESSENGER was in an orbit with an altitude at closest approach of 26 kilometers (16.1 miles) above the surface of Mercury. With a velocity change of 19.37 meters per second (43.33 miles per hour), the spacecraft's four largest monopropellant thrusters (with a small contribution from four of the 12 smallest monopropellant thrusters) nudged the spacecraft to an orbit with a closest approach altitude of 185.2 kilometers (115.1 miles). This maneuver also increased the spacecraft's speed relative to Mercury at the maximum distance from Mercury, adding about 7.4 minutes to the spacecraft's eight-hour, five-minute orbit period."

The [MESSENGER app](#) is available for download on iTunes.

For more information on the MESSENGER mission, visit the MESSENGER home page: <http://messenger.jhuapl.edu/>.

Pack Your Backpack

Calling all explorers! Tour JPL with our new Virtual Field Trip site. Stops include Mission Control and the Rover Lab. Your guided tour starts when you select a "face" that will be yours throughout the visit. Cool space images and souvenirs are all included in your visit.

+ <http://virtualfieldtrip.jpl.nasa.gov/>

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>.

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](#)

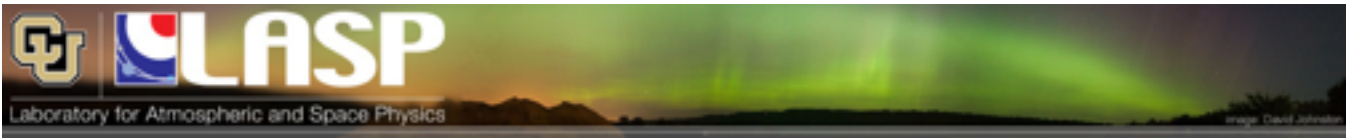


JMARS

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

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."

MAVEN

MAVEN Status Update: Oct. 31, 2014

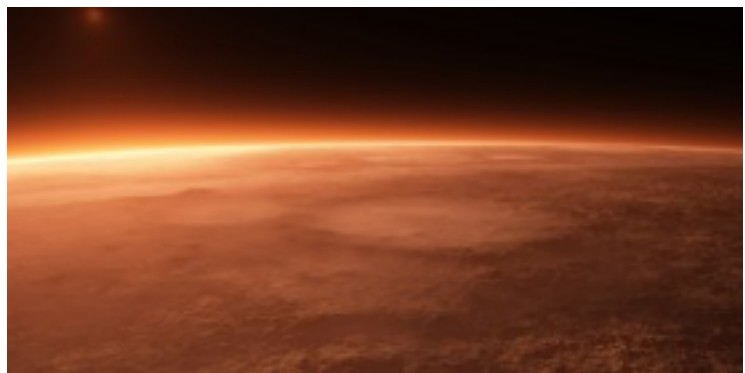
"David F. Mitchell, MAVEN Project Manager at NASA's Goddard Space Flight Center"



"October was a very busy time for the team. We performed a total of three engine burns this month in order to get MAVEN down to its planned science orbit with an orbital period of 4.6 hours and a periapsis (closest distance from the Mars surface) of 175 kilometers. The periapsis altitude is a bit higher than the original plan of 150 kilometers only because we've dialed in the MAVEN orbit to support the science team's atmospheric density

requirement versus a specific altitude.

We learn things about the Mars environment and adjust accordingly. All instruments have been successfully deployed and we safely "dodged" a comet. The scientists are poring over the data received from the Comet Siding Spring close encounter and we look forward to hearing about the exciting science results in the near future.



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



Mars Science Laboratory - Curiosity

October 09, 2014

NASA Prepares its Science Fleet for Oct. 19 Mars Comet Encounter

[\(Full image and caption\)](#)

"NASA's extensive fleet of science assets, particularly those orbiting and roving Mars, have front row seats to image and study a once-in-a-lifetime comet flyby on Sunday, Oct. 19. Comet C/2013 A1, also known as comet Siding Spring, will pass within about 87,000 miles (139,500 kilometers) of the Red Planet -- less than half the distance between Earth and our moon and less than one-tenth the distance of any known comet flyby of Earth.



Comet Siding Spring will have a close approach to Mars on Oct. 19, 2014. This artist's concept shows people in the Southern Hemisphere were to look in the night sky. Mars and the comet may be visible with binoculars. Credit: NASA/JPL-Caltech

Siding Spring's nucleus will come closest to Mars around 11:27 a.m. PDT (2:27 p.m. EDT), hurtling at about 126,000 mph (56 kilometers per second). This proximity will provide an unprecedented opportunity for researchers to gather data on both the comet and its effect on the Martian atmosphere.

"This is a cosmic science gift that could potentially keep on giving, and the agency's diverse science missions will be in full receive mode," said John Grunsfeld, astronaut and associate administrator for NASA's Science Mission Directorate in Washington. "This particular comet has never before entered the inner solar system, so it will provide a fresh source of clues to our solar system's earliest days."

Siding Spring came from the Oort Cloud, a spherical region of space surrounding our sun and occupying space at a distance between 5,000 and 100,000 astronomical units. It is a giant swarm of icy objects believed to be material left over from the formation of the solar system."

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 (requires Kinect)

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

Mars Exploration Rover Mission (Spirit and Opportunity)

October 14, 2014



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: Prepping for Comet Siding Spring Imaging- sols 3806-3812, October 08, 2014-October 14, 2014:

"Opportunity is on the west rim of Endeavour Crater heading towards 'Marathon Valley,' a putative location for abundant clay minerals only a mile (1.6 kilometers) to the south.

The rover is examining the ejecta field of the small crater named 'Ulysses' and preparing for observations of Comet Siding Spring later in the week. On Sol 3806 (Oct. 8, 2014), Opportunity took a late evening set of Panoramic Camera (Pancam) images as a preliminary test of imaging the comet.

On the next sol, Opportunity bumped 5 inches (13 centimeters) to get off some small rocks under the wheels. On Sol 3809 (Oct. 11, 2014), there looked to be a small rock underneath the left front wheel that might cause the rover to shift if the robotic arm is pressed against the surface target for a Rock Abrasion Tool (RAT) brush. So, a basic set of Microscopic Imager (MI) mosaics and an Alpha Particle X-ray Spectrometer (APXS) was performed without surface contact. Then a RAT preload test was done to see if the rover moved at all. Since no movement was observed, it was judged that the rover was stable enough to proceed with a RAT brush on Sol 3812 (Oct. 14, 2014).

That morning another comet imaging test was performed as a 'dress rehearsal' for the actual observations one week later. After the successful brush on Sol 3812, another MI mosaic was

collected and the APXS was placed for a multi-sol integration. Another 'amnesia' event occurred on the evening of Sol 3812, however it was benign to rover operations. The rover is otherwise in good health.

As of Sol 3812 (Oct. 14, 2014), the solar array energy production was 605 watt-hours with a slightly elevated atmospheric opacity (Tau) of 1.19 and a solar array dust factor of 0.763.

Total odometry is 25.34 miles (40.78 kilometers)."

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

Visit the Mars Exploration Rover page at <http://marsrovers.jpl.nasa.gov/home/index.html>.



Mars Reconnaissance Orbiter Mission

October 24, 2014

Mars Orbiter's Spectrometer Shows Oort Comet's Coma
([Full image and caption](#))

These two infrared images of comet C/2013 A1 Siding Spring were taken by the Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) aboard NASA's Mars Reconnaissance Orbiter on Oct. 19, 2014. This Oort Cloud comet was making its first voyage through the inner solar system.

Image Credit: NASA/JPL-Caltech/JHUAPL



"The Compact Imaging Spectrometer for Mars (CRISM) observed comet C/2013 A1 Siding Spring as the comet sped close to Mars on Oct. 19. CRISM recorded imaging data in 107 different wavelengths, showing the inner part of the cloud of dust, called the coma, surrounding the comet's nucleus.

Two images from CRISM presenting three of the recorded wavelengths are online at:

<http://www.jpl.nasa.gov/spaceimages/details.php?id=PIA15291>

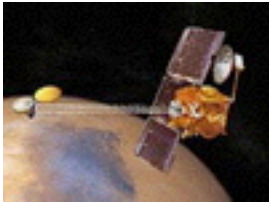
Comet Siding Spring -- an Oort Cloud comet that may contain material from the formation of the solar system some 4.6 billion years ago -- was making its first voyage through the inner solar system. CRISM and many other instruments and spacecraft combined forces to provide an unprecedented data set for an Oort Cloud comet.

The appearance of color variations in the CRISM observations of the inner coma could be due to the properties of the comet's dust, possibly dust grain size or composition. The full spectra will be analyzed to better understand the reason for the color variations."

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

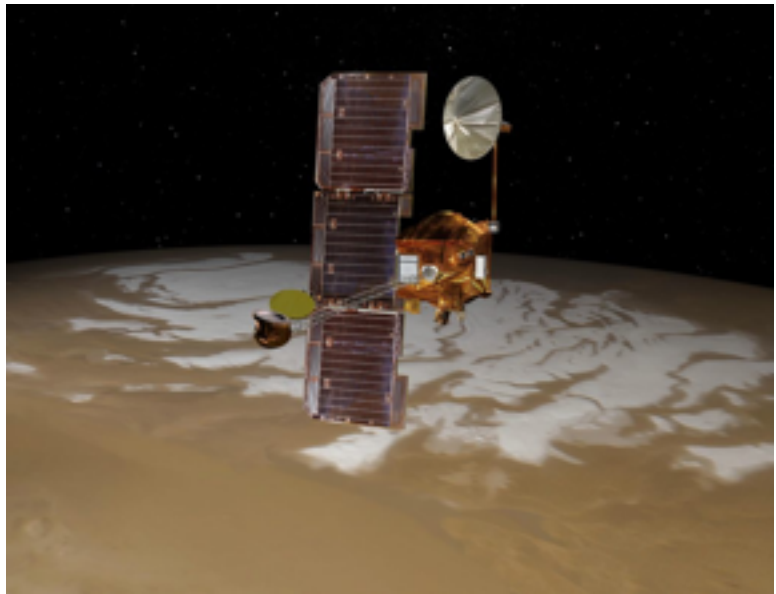
October 19, 2014

NASA's Mars Odyssey Orbiter Watches Comet Fly Near

[\(Full image and caption\)](#)

"The longest-lived robot ever sent to Mars came through its latest challenge in good health, reporting home on schedule after sheltering behind Mars from possible comet dust.

NASA's Mars Odyssey was out of communications with Earth, as planned, while conducting observations of comet C/2013 A1 Siding Spring on Sunday, Oct. 19, as the comet flew near Mars. The comet sped within about 88,000 miles (139,500 kilometers) of Mars, equivalent to about one-third of the distance between Earth and Earth's moon. Odyssey had performed a maneuver on Aug. 5 to adjust the timing of its orbit so that it would be shielded by Mars itself during the minutes, around 1 p.m. PDT (4 p.m. EDT) today, when computer modeling projected a slight risk from high-velocity dust particles in the comet's tail.



"The telemetry received from Odyssey this afternoon confirms not only that the spacecraft is in fine health but also that it conducted the planned observations of comet Siding Spring within hours of the comet's closest approach to Mars," said Odyssey Mission Manager Chris Potts of NASA's Jet Propulsion Laboratory, Pasadena, Calif., speaking from mission operations center at Lockheed Martin Space Systems, Denver.

Comet Siding Spring observations were made by the orbiter's Thermal Emission Imaging System (THEMIS). Resulting images are expected in coming days after the data is downlinked to Earth and processed. THEMIS is also scheduled to record a combined image of the comet and a portion of Mars later this week. In addition, the Odyssey mission is using the spacecraft's

Neutron Spectrometer and High Energy Neutron detector to assess possible effects on Mars' atmosphere of dust and gas from the comet."

[See the Mars As Art Gallery](#)

[Dulles Airport Full News Release](#)

[Global Martian Map](#)

A simulated fly-through using the newly assembled imagery is available online at http://www.nasa.gov/mission_pages/mars/missions/odyssey/20060313.html.

The fly-through plus tools for wandering across and zooming into the large image are at <http://themis.asu.edu/>.

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>.

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

Cloudbait Observatory, Guffey Colorado - <http://www.cloudbait.com> - Submit your fireball reports here. Interesting, knowledgeable site.

Colorado Springs Astronomical Society - <http://csastro.org> - The Colorado Springs Astronomical Society (CSAS) is a nonprofit organization dedicated to the enjoyment of the nighttime sky.

Denver Astronomical Society - <http://www.denverastrosociety.org> - Promotes the enjoyment and understanding of astronomical phenomena, history and lore by providing educational and observing opportunities for our members, general public, and outreach activities at the University of Denver's historic Chamberlin Observatory, schools, and nature centers.

Gateway2Space - <http://www.gateway2space.com> - More information about the Star Light -- Star Bright Observatory.

Little Thompson Observatory - <http://www.starkids.org/> - The Little Thompson Observatory (LTO) offers no-charge public access to the wonders of the night sky, either on one of our regularly scheduled [public nights](#), or as a [private group affair](#). When the weather co-operates, each session includes a guided tour of the sky using our large (18") telescope.

Mike Coletta's SatWatch - <http://www.kg0ufo.com> - Orbiting object and satellite watching. ORBITING OBJECT TRACKING ... It's the thrill of the chase. Promoting and supporting the hobby of amateur radio, Mike - KG0UFO, along with many other radio hobbyists around the globe use the reflected signals of the AF Space Fence to detect orbiting objects as they make their way over the US. - The AF Space Fence was shut down in Sept. 2013. These are recordings of Mike's many observations.

National Space Science & Technology Institute - <http://www.nssti.org> - NSSTI runs the Star Light--Star Bright Observatory in Colorado Springs, Colorado.

Northern Colorado Astronomical Society - <http://ncaastro.org/> - The purpose of our organization is to encourage the understanding & interest in the science & hobby of astronomy.

Rocky Mountain Star Stare - <http://www.rmss.org> - The Premier Star Party in The Rocky Mountains

Sangre Stargazers - <http://sangrestargazers.skymtn.com/> - New astronomy club in the Wet Mountain Valley of Custer County (about 45 miles due west of Pueblo, CO).

Southern Colorado Astronomical Society - <http://www.scaspueblo.com> - The Southern Colorado Astronomical Society, CSU-P and the Pueblo Nature and Raptor Center welcomes everyone to participate in the discovery of our night sky.

Other Astronomy Links

*****NEW*** Be an Astronomer right from your Window** - <http://www.blindschalet.com/kba-be-an-astronomer-right-from-your-window-240.html> - At-home astronomy techniques.

A Guide to the Galaxy Right from our Bedroom Window - <http://www.bedroomfurniturespot.com/guide-to-galaxies> - An interesting site suggested by the students from Lexington Middle School Science Club in Nebraska. Lots of good basic astronomy information.

A Kid's Guide to Astronomy - <http://www.jmacsupply.com/astronomy-guide-for-kids-a/316.htm> - A great site with other links to learn about stars and astronomy for kids of all ages.

"TheSky" Software - <http://www.bisque.com> - Astronomy software by Software Bisque.

A Short Guide to Celestial Navigation - <http://www.celnav.de/> - Celestial navigation is the art and science of finding one's geographic position by means of astronomical observations, particularly by measuring altitudes of celestial objects – sun, moon, planets, or stars.

Amateur Radio Relay League - <http://www.arrl.org> - Information about amateur radio and how to become an amateur radio operator.

Astrogirl Homepage - <http://www.astrogirl.org> - Family friendly educational astronomy website.

Astronomical Lexicon - <http://www.ki0ar.com/astrolex.html> - Many of the astronomical terms used in this newsletter are defined here.

Astronomy Picture of the Day - <http://antwrp.gsfc.nasa.gov/apod/astropix.html> - A different picture of the cosmos every day.

Astronomy 2009 - <http://www.surveillance-video.com/astronomy-sept-2009.html> - This site has some good links a young, interested student wishes to share.

Black Hole Encyclopedia - <http://blackholes.stardate.org/> - Excellent site from StarDate - University of Texas McDonald Observatory (<http://mcdonaldobservatory.org/>)

Caelum Observatory - <http://www.caelumobservatory.com/index.html> - The LARGEST dedicated public telescope in the Southwest at the Mount Lemmon SkyCenter!

Celestial Bodies and Astronomy - <http://ellejet.com/celestial-bodies.php>.

Celestron Telescopes - <http://www.celestron.com/> - Celestron telescopes.

Clear Skies Observing Guides - <http://www.clearskies.eu> - CSOG, short for Clear Skies Observing Guides is a new concept in visual amateur astronomy. It is a digital publication that will enable observers to target all deepsky objects and carbon stars within reach of their equipment.

The Constellations and Their Stars - <http://www.astro.wisc.edu/~dolan/constellations/constellations.html> - Good site for finding out more about the 88 constellations and their associated stars.

CosmoQuest - <http://cosmoquest.org/> - The place where you map other worlds, explore our universe and contribute to science.

Distant Suns - <http://www.distantstars.com/> - Desktop Astronomy package for PCs.

EarthSky - <http://earthsky.org> - Astronomy news.

Green Laser - <http://www.greenlaser.com> - If you're looking for a reasonably priced laser pointer that is great for astronomy work, visit this site.

Groovy Adventures - <http://www.groovyadventures.com> - Unique adventures and vacations including astronomy related vacations.

Heavens Above - <http://www.heavens-above.com> - As the name implies - What's up in the heavens, particularly satellite passes.

The International Dark-Sky Association - <http://www.darksky.org> - To preserve and protect the nighttime environment and our heritage of dark skies.

informED: 10 Teaching Tools for Educators - <http://www.opencolleges.edu.au/informed/teacher-resources/> - informED - Teacher Resources.

iTelescope.net - <http://www.itelescope.net> - iTelescope.Net is the world's premier network of Internet connected telescopes, allowing members to take astronomical images of the night sky for the purposes of education, scientific research and astrophotography.

JPL Solar System Ambassador Program - <http://www.jpl.nasa.gov/ambassador/front.html> - "Volunteers Bringing the Solar System to the Public"

JPL Solar System - http://www.jpl.nasa.gov/solar_system/ - Jet Propulsion Laboratory information on our solar system.

Kids Space Center - Telescopes and Astronomy - <http://www.orlandofuntickets.com/kids-space-center-telescopes-and-astronomy/> - Another site suggested by a young student - Great info about telescopes.

Mars Exploration, Mars Rovers Information, Facts, News, Photos - <http://science.nationalgeographic.com/science/space/space-exploration/mars-exploration-article/> - National Geographic - Mars Exploration - Investigating the Red Planet.

Meade Advanced Products Users Group - <http://www.mapug-astronomy.net/> - Mapug-Astronomy Topical Archive & information resource, containing a massive 335 page archive of discussions about Meade equipment, and much more: observatories, observing lists, permanent piers, equatorial wedges, remote operations, software, eyepieces, etc.

My Stars Live - <http://www.mystarslive.com/> - Interactive Star Chart

NASA - Lunar and Planetary Science - <http://nssdc.gsfc.nasa.gov/planetary/planets/cometpage.html> - General information, Missions to Comets, Data, Press Releases, Meteors and Meteorites, Other topics of Interest.

NASA Science News - <http://science.nasa.gov/> - NASA missions, updates, astronomy news, excellent resource.

National Archives info on space exploration - <http://www.archives.gov/research/alic/reference/space-exploration.html> - Archives Library Information Center (ALIC) - Space Exploration - Information about the United States' space flight programs, including NASA missions and the astronauts who participate in the efforts to explore space.

Skymaps.com - <http://www.skymaps.com> - Free sky maps each month.

Skywatch Sightings from NASA - <http://spaceflight.nasa.gov/realdata/sightings/> - This site gives you the best times to watch the ISS pass over or near your location.

Space.com - <http://space.com> - Interesting space and astronomy articles.

Spaceflight Now - <http://spaceflightnow.com/> - Launches and satellite news.

SpaceLinks/Space Careers - <http://www.spacelinks.com/SpaceCareers/> - SPACELINKS is a specialist staffing consultancy sourcing and supplying high caliber professionals for a wide range of world class organizations in the Space and Defense industry.

"SpaceRef.com" - <http://www.spaceref.com/> - SpaceRef's 21 news and reference web sites are designed to allow both the novice and specialist alike to explore outer space and Earth observation.

Space Weather - <http://www.spaceweather.com> - Check out what the Sun is doing as seen from space.

Stellarium - <http://www.stellarium.org> - Free, downloadable planetarium/astronomy software.

Universe Today - <http://www.universetoday.com> - Short, interesting articles about space and related topics.

Wikisky - <http://www.wikisky.org> - WIKISKY is a non-commercial project. The main purpose of WIKISKY is to consolidate astronomical, astrophysical and other information about different space objects and astrophysical facts.

Acknowledgments and References

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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/

- Full documentation of the online administration system is available at 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

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