

Sky News

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JUPITER'S GREAT BLUE SPOT

Jupiter's Great Blue Spot (GBS) isn't visible with through a telescope, like the Great Red Spot. GBS is the location of an unusual magnetic spot near Jupiter's equator. It appears blue in polarity images from the *Juno* spacecraft.

Jupiter's magnetic field is quite strange compared to other planets with magnetic fields. Earth has two magnetic poles, one in each hemisphere located at the spin axis, at our North and South Poles. Jupiter has a normal southern magnetic field, located at its spin axis at its South Pole. The northern magnetic pole is more like a field, with a swirled shape and more undefined. There is a third magnetic field that has the southern pole charge, located at its equator. It appears as a Great Blue Spot in magnetic images.

Jupiter could be experiencing a magnetic polar reversal, where the positive charge flips places with the negative charge. It has happened on Earth many, many times. It is recorded in the rocks formed on the Atlantic Ocean floor, spreading outward in two directions from the Mid-Atlantic Ridge. Earth's magnetic field is a result of the spinning liquid metallic core. Jupiter's liquid metallic hydrogen layer creates its magnetic field. The third magnetic field may just be a result of the hydrogen mixing with dissolved rock and ice, causing strange electrical currents. Jupiter's magnetic field is 20,000 times more powerful than Earth's magnetic field and is the strongest magnetic field in our solar system.

The following sources were used
for this issue of *Sky News*:

www.physics.valpo.edu, www.casonline.org,
<http://www.astropixels.com>,
www.skyandtelescope.com,
<http://www.nasa.gov>, www.earthsky.com,
Astronomy, and *Sky and Telescope*.

SMALLEST CONSTELLATIONS

The smallest constellation is in the Southern Hemisphere. The well-known Southern Cross is the smallest of the 88 constellations in our sky.

Equuleus, the Little Horse, is the second smallest constellation and smallest in the Northern Hemisphere. Pronounced "ee-KWOO-lee-us", the Little Horse can be found in the fall sky. It looks like a small parallelogram (leaning or squished square) and can be found in front of the nose of Pegasus "the Winged Horse". The stars of Equuleus are not very bright, but there are plenty of astronomical objects to see through a telescope.

ROGUE PLANET WITH AURORA

A rogue planet has been ejected from its solar system, and no longer orbits a star. They wander between stars. In 2016, scientists discovered one located about 20 light-years from Earth. Scientists have been able to learn some of its unusual traits using VLA (Very Large Array) radio telescope.

The planet is large, 12.7 times the mass of Jupiter. It's very hot, over 1,500° Fahrenheit (825° Celsius). It's probably a "failed star", somewhere between a planet and a brown dwarf. What's truly unusual is its magnetic field, which is about four million times stronger than Earth's. Imagine their intense auroral displays! Scientists don't know why it has such a powerful magnetic field. This discovery however, will allow astronomers a new way to detect rogue planets, by looking for their magnetic fields. Scientists estimate there may be one Jupiter-sized rogue planet for every four stars in our galaxy.

Astronomers believe the rogue planets may hold onto their hydrogen-helium atmospheres from their formations and could remain geologically active too.

OCTOBER PLANETS

Jupiter can be seen after sunset in the southwestern sky in the constellation Libra (the Scales). Jupiter is not visible for very long. It sets by 9:00 early in October, and by 8:00 at the end of the month when it begins to disappear in the Sun's glare. Jupiter looks like a bright, yellow-colored star.

Mercury cannot be seen most of October as it reaches superior conjunction, passing behind the Sun as seen from Earth. Mercury will return to the western sky after sunset and may be seen in the Sun's glare by Halloween, just below Jupiter. Mercury looks like a small white star.

Saturn can be seen low in the southwestern sky after sunset in the constellation Sagittarius (the Archer), above the "Teapot". Saturn's rings are great to view this month. Saturn sets before midnight, and by 10:00 at the end of the month. Saturn looks like an amber-colored star.

Venus cannot be seen this month as it reaches inferior conjunction, passing between the Sun and Earth on the 26th. Venus will return to the eastern predawn sky next month. Venus looks like a bright white star.

Mars can be seen passing low through the southern sky moving through the constellation Capricornus (the SeaGoat). Mars sets earlier every night, setting at 2:00 a.m. then by midnight on Halloween Mars looks like a rusty, orange-reddish colored star.

SKY DATES

October

- 1 - NASA's 60th anniversary
- 2 - Last quarter moon at 4:45 a.m.
- 4 - Moon passes 1.3° S of Beehive cluster
- 5 - Moon passes 1.8° N of Regulus
- Moon at perigee (closest point to Earth) at 227,166 miles at 5:29 p.m.
- New Moon at 10:47 p.m.
- 8 - **Draconid** meteor shower peaks (Class III)
- 11 - Moon passes 4.1° N of Jupiter
- 13 - Astronomy Day
- **CAS FREE viewing** at Conway 7 to 9 p.m.
- 14 - Moon passes 1.8° N of Saturn
- 15 - Mercury passes 6.2° S of Venus
- 16 - First Quarter Moon at 1:02 p.m.
- 17 - Moon at apogee (farthest point from Earth) at 250,621 miles at 2:16 p.m.
- 18 - Moon passes 1.9° N of Mars
- **Epsilon Geminid** meteor shower (Class II)
- 19 - **VU Observatory viewing** 8:30 p.m.
- 20 - Observe the Moon night
- 21 - **Orionid** meteor shower peaks (Class I)
- 22 - **Leonis Minorid** meteor shower (Class II)
- 23 - Uranus at opposition
- 24 - **Full moon** called Hunter, Blackberry, Fruit, Kindly, or Blood Moon at 11:45 a.m.
- 26 - Venus at inferior conjunction at 9:00 a.m.
- 27 - Moon passes 1.6° N of Aldebaran
- 29 - Mercury passes 3.1° S of Jupiter
- 31 - Last quarter moon at 11:40 a.m.
- Moon at perigee (closest point to Earth) at 229,525 miles at 3:05 p.m.
- Cross-quarter day (half-way point of fall)

OCTOBER SUNRISE AND SUNSET (times are for mid-month)

sunrise:	7:01 a.m.
sunset:	6:09 p.m.
length of daylight:	11 hours, 8 minutes
length of darkness:	12 hours, 52 minutes

This edition of the
Sky News
was written by
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LISTEN TO THE SUN

We feel the Sun's warmth on our skin, and we can see the Sun's light. Now we can listen to the sound of the Sun. You may even "feel" it on your skin!

The Sun vibrates. That vibration has a sound, or tone, that was recorded by *SOHO* (Solar and Heliospheric Observatory). Studying the vibrations, scientists will learn about the wide array of complex motions inside the Sun, including solar flares and coronal mass ejections at the surface. Turn it up so you can hear (and feel) the Sun at www.nasa.gov.