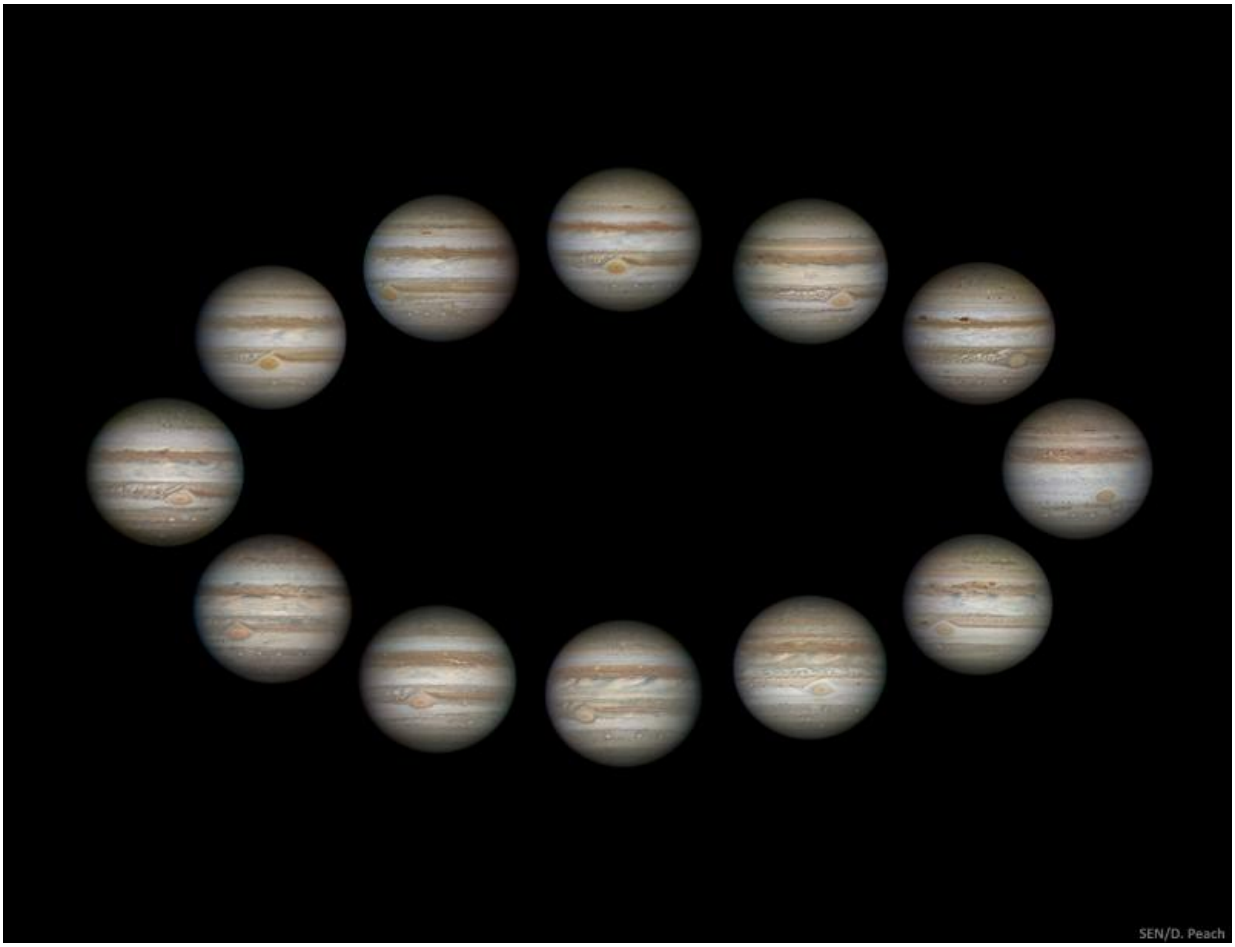
Once around the sun with Jupiter

July 9 2015, by Bob King



Jupiter takes 12 years to make one trip around the Sun. These 12 images were taken between 2003 and 2015. At far left, we see Jupiter in 2003. The years proceed counterclockwise with 2015 immediately above 2003. Credit: Damian Peach

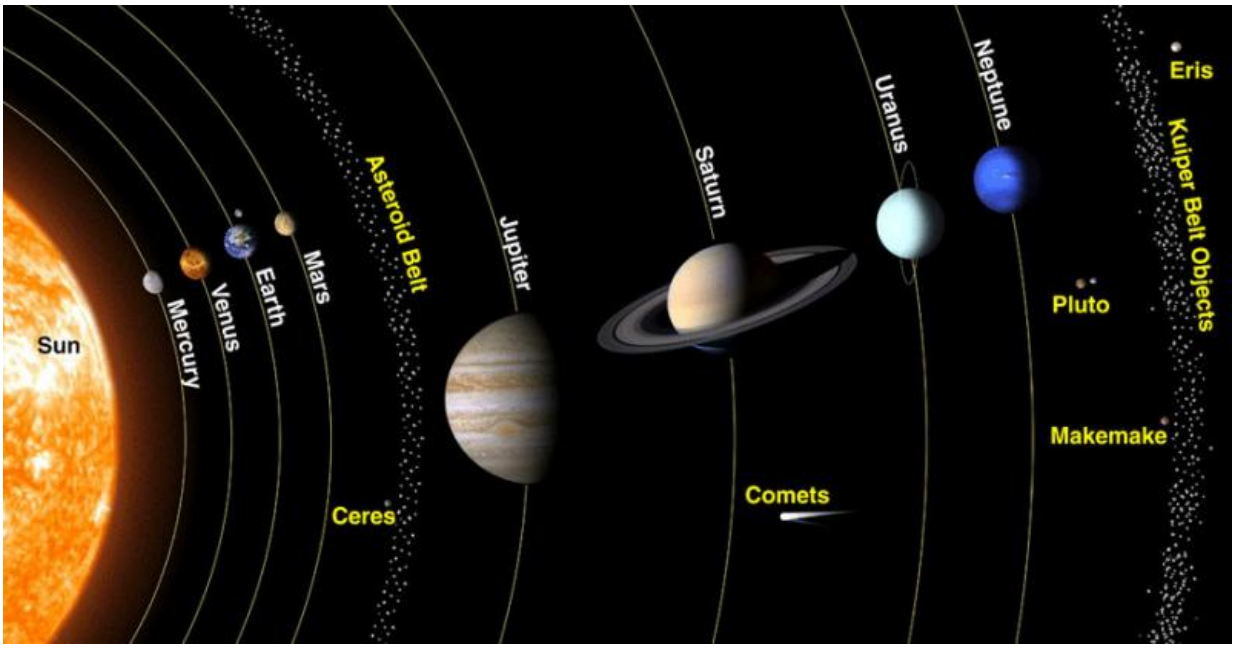
For Jupiterians (Jovians?) a trip around the sun takes 12 Earth years. If you were born today on the planet or one of its moons, you'd turn one year old in 2027 and reach the ripe old age of 12 in 2111.

In this remarkable montage, astrophotographer Damian Peach divides a year on Jupiter into 12 parts, with images spaced at approximately one-year intervals between February 2003 and April 2015. Like the planet, Peach was on the move; the photos were taken from four different countries with a variety of different telescopes and cameras.

On the tilted Earth, one year brings a full change of seasons as our planet completes a solar loop in 365 1/4 days. Jupiter's axial tilt is just 3° or nearly straight up and down, so seasons don't exist. One part of the Jovian year is much the same as another. Still, as you can plainly see, the solar system's biggest planet has plenty of weather.

Just look at the Great Red Spot or GRS. Through about 2008, it's relatively large and pale but suddenly darkens in 2010 at the same time the South Equatorial Cloud Belt (the wide stripe of clouds above the Spot) disappears. If you look closely at the Spot from year to year, you'll see another big change—it's shrinking! The GRS has been dwindling for several decades, but it's amazing how obvious the difference is in only a dozen years.

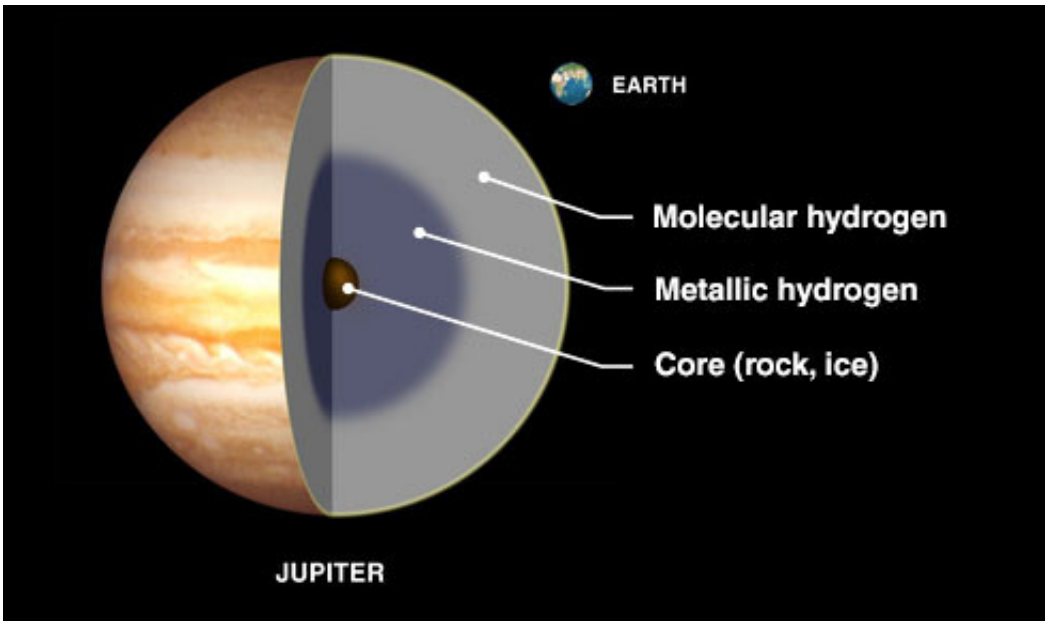
Lots of other smaller changes can be seen, too. On Earth, the primary heat source driving weather is the sun, but on Jupiter it's residual heat left over from the collapse of the primordial solar nebula, the vast cloud of dust and gas from which the sun and planets were formed.



Jupiter is the 5th planet from the Sun and the largest in the solar system with a diameter about 11 times that of Earth. Credit: NASA

It's HOT inside Jupiter. A thermometer stuck in its core would register between 23,500° and 63,000° F. That's too cool for nuclear fusion, the process that powers the sun, but plenty hot to heat the atmosphere and create magnificent weather. The planet gives off 1.6 times as much energy as it get from the sun. While hardly a star, it's no ball of ice either.

Jupiter and Venus still travel in tandem at dusk. Look about an hour after sunset a fist and a half high in the western sky. Venus is the bright one with Jupiter tagging along to the right. Fun to think that the light we see from Jupiter is reflected sunlight, but if we could view it with heat-sensing, infrared eyes, it would glow like an ember.



What we think Jupiter's interior looks like. Deep inside, pressure's so great that hydrogen is compressed into a "metallic" form that conducts electricity. Heat from the core powers winds and helps create clouds in Jupiter's atmosphere. Credit: NASA

Source: Universe Today