JUPITER'S GREAT RED SPOT IS SHRINKING

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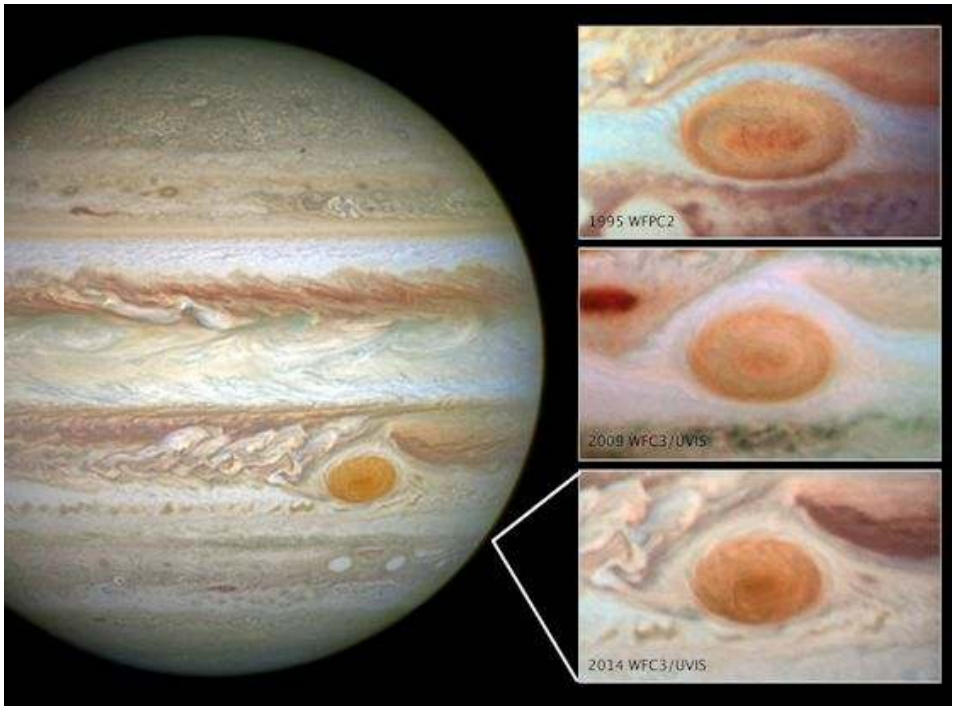
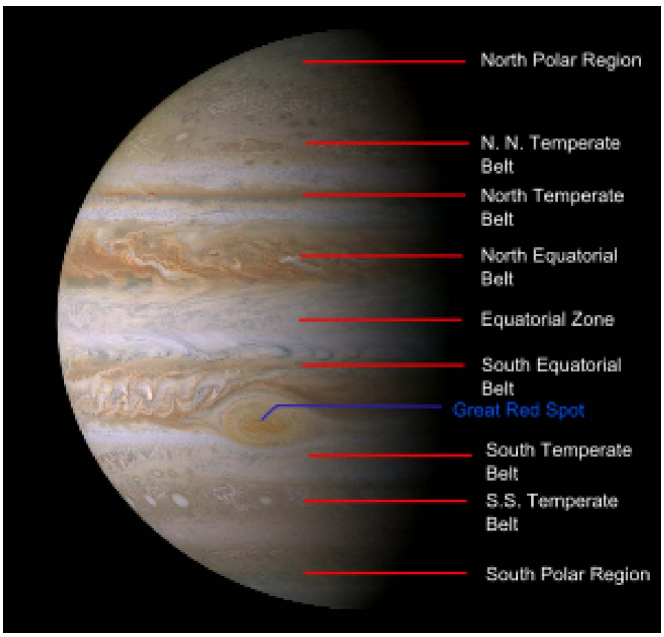
Jupiter's trademark Great Red Spot -- a swirling anti-cyclonic storm larger than Earth -- has shrunk to its smallest size ever measured.



Jupiter's Great Red Spot taken by the Hubble Space Telescope over a span of 20 years show that the Great Red Spot is shrinking. The Great Red Spot was first recorded by Giovanni Cassini in 1665 but then faded until 1830 and its present prominence in 1879

According to NASA's Goddard Space Flight Center in Greenbelt, Maryland, recent NASA Hubble Space Telescope observations confirm the Great Red Spot now is approximately 10,250 miles across, less than half the size of some historical measurements. Historic observations as far back as the late 1800s gauged the storm to be **as large as 25,500 miles** on its long axis. NASA Voyager 1 and Voyager 2 flybys of Jupiter in 1979 measured it to be 14,500 miles across. In 1995, a Hubble photo showed the long axis of the spot at an estimated 13,020 miles across. And in a 2009 photo, it was measured at 11,130 miles across. Beginning in 2012, amateur observations revealed a noticeable increase in the rate at which the spot is shrinking -- by 580 miles per year -- changing its shape from an oval to a circle. **It appears small eddies are feeding into the storm and these may be responsible for the accelerated change by altering the internal dynamics and energy of the Great Red Spot**.



The atmosphere of Jupiter is the largest planetary atmosphere in the Solar System. **It is mostly made of molecular hydrogen and helium in roughly solar proportions;** other chemical compounds are present only in small amounts and include methane, ammonia, hydrogen sulfide and water. Although water is thought to reside deep in the atmosphere, its directly measured concentration is very low. The oxygen, nitrogen, sulfur, and noble gas abundances in Jupiter's atmosphere exceed solar values by a factor of about three.

The atmosphere of Jupiter lacks a clear lower boundary and gradually transitions into the liquid interior of the planet. The upper ammonia clouds visible at Jupiter's surface are organized in a dozen zonal bands parallel to the equator and are bounded by powerful zonal atmospheric flows (winds) known as jets. The bands alternate in colour: the dark bands are called belts, while light ones are called zones. **Zones, which are colder than belts, correspond to upwellings, while belts mark descending air.** The origins of the banded structure and jets are not well understood. It is thought the bands and jets are just surface manifestations of deep circulation in Jupiter's mantle of molecular hydrogen, which is organized into cylinders. Vortices are thought to be relatively shallow structures with depths not exceeding several hundred kilometres. They reveal themselves as large red, white or brown spots (ovals). **The largest two spots are the Great Red Spot and the Oval BA, which is also red**. Smaller spots tend to be white. Most of the spots are anticyclonic. The Oval BA is about a third the size of Great Red Spot and formed in 2000 from the merging of three white ovals.

NASA's Juno spacecraft is hurtling toward Jupiter now, due to reach the giant planet in July 2016. Point-blank examination by Juno's instruments will undoubtedly help unravel the mystery. Stay tuned for updates from both Hubble and Juno.

AK, from NASA Notes