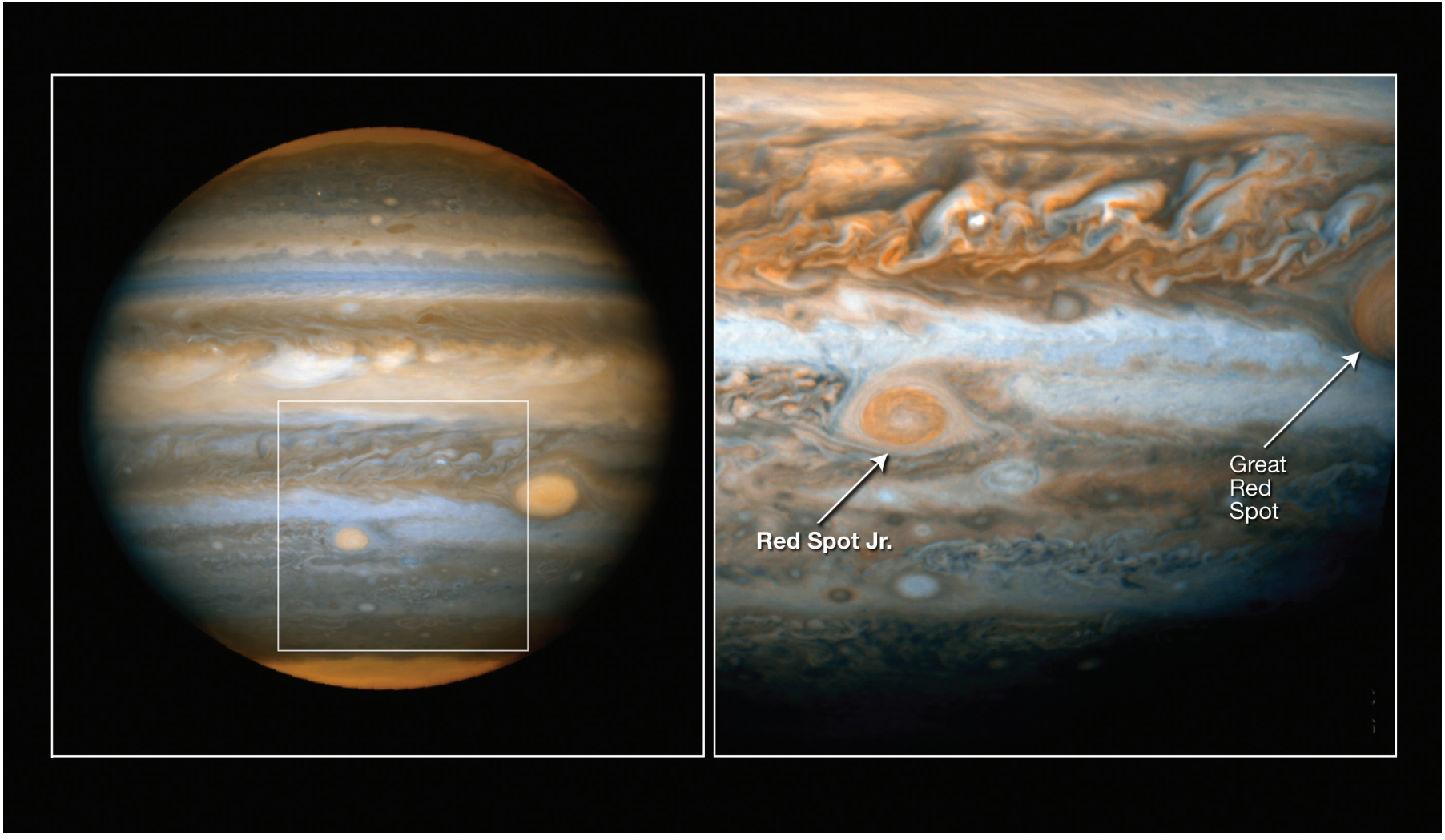


Jupiter's "Red Spot Jr."

Astronomers Watch the Birth of a Monster Storm

Monstrous hurricanes on Earth can stretch across the entire eastern United States. These storms, however, would be considered timid on Jupiter, where an oval-shaped spot about the size of Earth has recently emerged. Dubbed Red Spot Jr., this gigantic storm is only the little brother of Jupiter's trademark Great Red Spot.

The Great Red Spot is a mammoth oval disturbance that is so large it could swallow nearly three Earths. First spotted in 1664 by Robert Hooke, the storm has been raging on the planet for at least 342 years.

Red Spot Jr. is the first storm that astronomers watched develop on a gas giant planet. The huge spot formed between 1998 and 2000, when three small, white, oval-shaped storms merged together. Two of the white spots have been observed since about 1915, but they may have been present even earlier. The third white spot appeared in 1939. In December 2005, the newly formed single white spot turned red, like the much older Great Red Spot.

Astronomers are not sure why the spots are red. Some astronomers think the storms' hurricane-force winds, which can reach 400 miles per hour, dredge up material from deeper in Jupiter's atmosphere. This material, when exposed to ultraviolet light from the Sun, undergoes a chemical change that turns it red.

The Great Red Spot is thought to tower about 5 miles (8 kilometers) above the surrounding cloud tops. When viewed in infrared light, the red spots show some similarities that suggest Red Jr. also may rise miles above the cloud tops. The swirling patterns in the close-up image are clouds being shaped by high-speed winds.

On Earth, meteorologists routinely watch hurricanes form off the African coast, sweep across the Atlantic Ocean, and fall apart when they reach the colder waters of the northern Atlantic. Astronomers, however, rarely get the chance to witness the birth of storms on our solar system neighbors. Other planets are far away from Earth, so astronomers need powerful telescopes like the Hubble Space Telescope to track planetary weather. Storms on other planets also may take years to form.

Amateur and professional astronomers eagerly watched the emerging new red spot. Months later, Hubble snapped the first detailed images of Red Spot Jr. Researchers think the Hubble images may provide evidence that Jupiter is undergoing a global climate change.

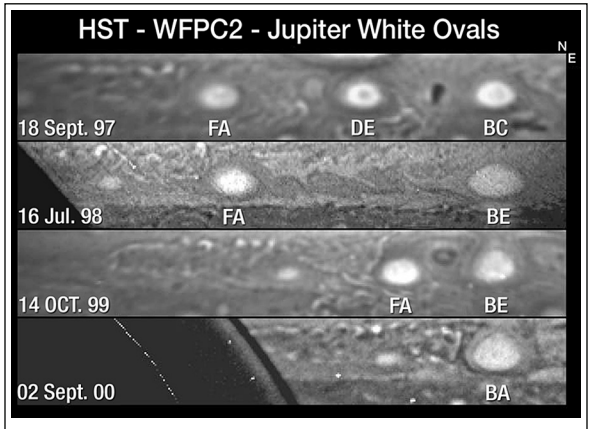
Red Spot Jr. and its big brother are moving in opposite directions around Jupiter. During the summer of 2006, they passed by one another. Astronomers do not expect them to merge because storms on Jupiter tend to remain on constant east-west paths.

Credits for Hubble image: NASA and ESA.

FAST FACTS

Distance from Sun: 483,600,000 miles (778,300,000 kilometers)

Diameter: 88,850 miles (143,000 kilometers)



A Monster Storm Is Born

These Hubble Space Telescope images show how three small, white, oval-shaped storms on Jupiter merged over three years, becoming one Earth-sized spot, dubbed Red Spot Jr. The September 1997 image shows all three storms, called FA, DE, and BC. In the July 1998 photo, two disturbances, DE and BC, have combined into one, called BE. The October 1999 image shows BE and FA approaching each other, and they later merge into a single storm, Red Spot Jr., as shown in the September 2000 image.

Credits: NASA and the NASA Jet Propulsion Laboratory.

You can get images and other information about the Hubble Space Telescope on the World Wide Web. Visit **http://hubblesite.org** and follow the links.

The corresponding classroom activity for this lithograph can be found at: **http://amazing-space.stsci.edu/eds/overviews/print/lithos/redspotjr.php** or may be obtained by contacting the Office of Public Outreach at the Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD 21218.

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