

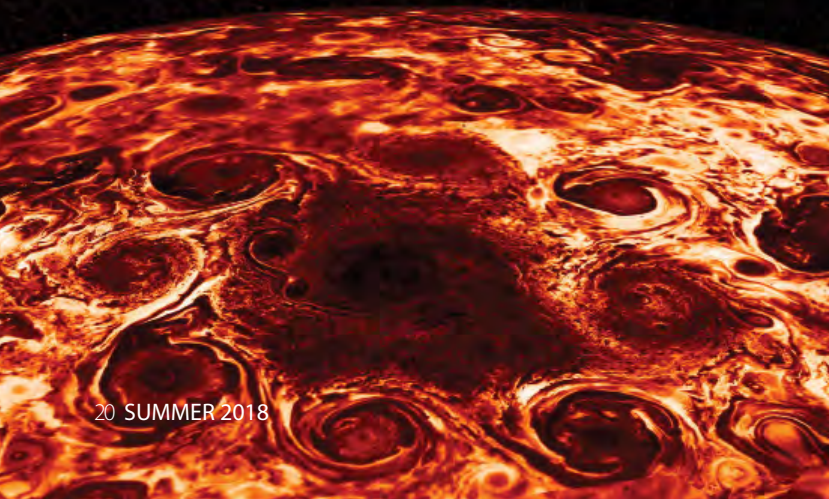


TEN HIGHLIGHTS FROM TWO YEARS AT JUPITER

1. Arrival at a Colossus
After an odyssey of almost five years and 1.7 billion miles, NASA's Juno spacecraft entered Jupiter orbit on July 4, 2016. Juno, with its suite of nine science instruments, is the first mission to make repeated excursions scraping the cloud tops, deep inside the planet's powerful radiation belts.

2.

Heat from Within
Juno scientists discovered densely packed cyclones and anticyclones that dominate the planet's polar regions, and the first detailed indications of an extraterrestrial dynamo, the engine creating Jupiter's magnetic field. Data collected by the spacecraft's Jovian InfraRed Auroral Mapper captures light emerging from deep inside Jupiter, probing the weather layer 30 to 45 miles below Jupiter's cloud tops.



NASA's Juno spacecraft arrived at the King of Planets in July 2016 and has been revealing Jupiter's secrets ever since. Here are 10 highlights from the Juno mission, led by SwRI's Dr. Scott Bolton.



4.

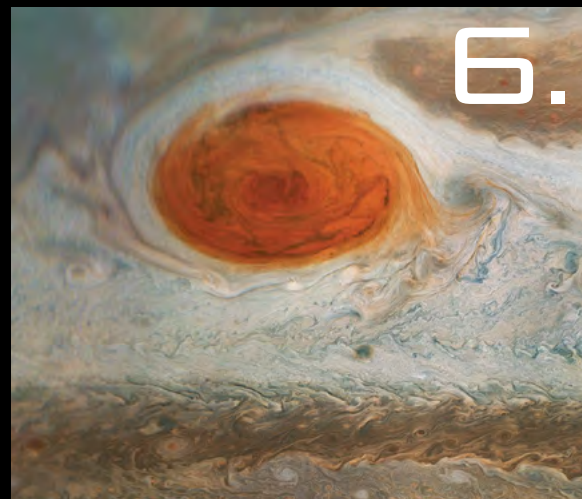
3.

The Ultimate Classroom
The Goldstone Apple Valley Radio Telescope (GAVRT) project lets students do real science with a large radio telescope in collaboration with Juno scientists. GAVRT data include Jupiter observations relevant to the mission.

Science, Meet Art
Juno carries JunoCam, a public outreach instrument. In a remarkable first for a deep space mission, the Juno team enlists the general public not only in planning what images JunoCam takes, but also in processing and enhancing the visual data. The results include some of the most stunning images in the history of space exploration.

5.

Beauty Runs Deep
Data collected by the Juno spacecraft during its first pass over Jupiter's Great Red Spot in July 2017 indicate that this iconic feature penetrates well below the clouds. The solar system's most famous storm appears to have roots that penetrate about 200 miles into the planet's atmosphere.



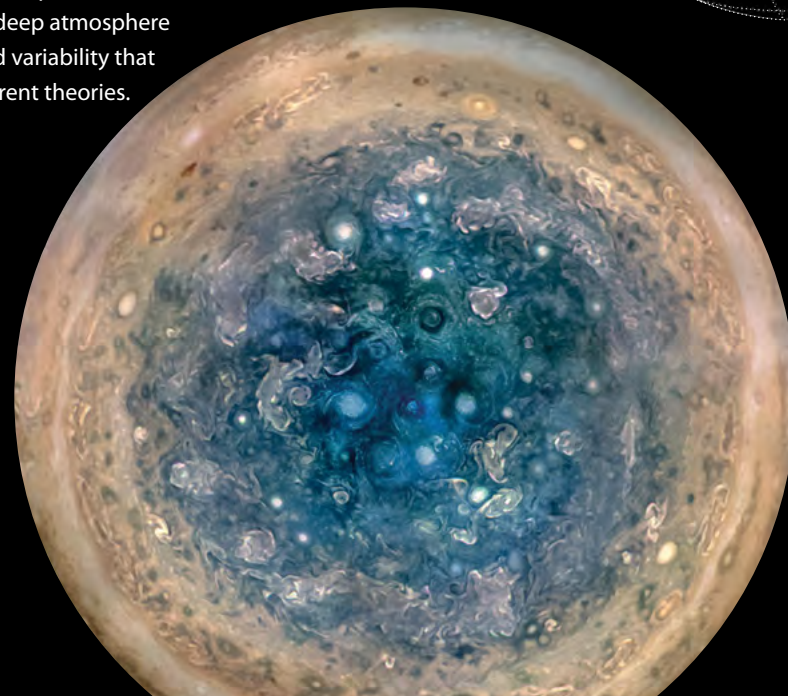
6.

Spotting the Spot
Measuring 10,159 miles wide (as of April 3, 2017), Jupiter's Great Red Spot is 1.3 times as wide as Earth. First spotted in 1830, the storm has possibly existed for more than 350 years, although lately, it appears to be shrinking. In July 2017, Juno passed directly over the spot, and JunoCam images revealed a tangle of dark, veinous clouds woven through a massive crimson oval, and showed that the giant storm appears to float between layers in Jupiter's deep atmosphere.

8.

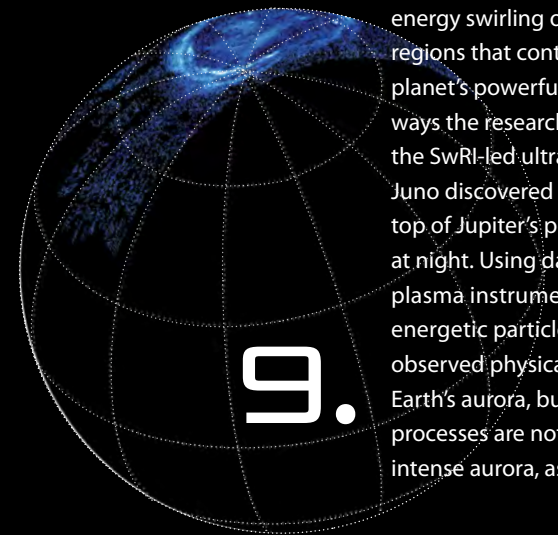
A Whole New Jupiter
It didn't take long for Juno to turn theories about how Jupiter works inside out. Among the early findings: Jupiter's poles are covered in giant cyclones nearly the size of Earth, swirling in dense, interactive clusters. Jupiter's iconic belts and zones also revealed surprises. The belts and zones were discovered to penetrate to a depth of 3000 km, while a newly discovered band near the equator persists far beneath the clouds, similar to Earth's tropical belt. Juno provided the first look into a giant planet's deep atmosphere and discovered variability that challenges current theories.

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7.

A Highly Charged Atmosphere
Powerful bolts of lightning light up Jupiter's clouds. In some ways, the lightning is much like what we see on Earth. In other ways, it's very different. For example, most lightning on Earth strikes near the equator; on Jupiter, it's mostly around the poles. Juno discovered the atmosphere is full of lightning, much more active than previously thought.



9.

Powerful Auroras, Powerful Mysteries
Juno has observed massive amounts of energy swirling over Jupiter's polar regions that contribute to the giant planet's powerful auroras — only not in ways the researchers expected. Using the SwRI-led ultraviolet spectrograph, Juno discovered the aurora at the very top of Jupiter's poles appears to turn off at night. Using data from the SwRI-led plasma instrument and APL-led energetic particle detectors, scientists observed physical processes that drive Earth's aurora, but at Jupiter, these processes are not the source of the most intense aurora, as they are at Earth.

10.

Extra Innings
In June, NASA approved an update to extend Juno's science operations until July 2021. This provides for an additional 41 months in orbit around Jupiter. Juno is in 53-day orbits instead of the originally conceived orbits of 14 days. The larger orbit will allow Juno to explore Jupiter's giant magnetosphere and monitor atmospheric storms for years, providing information on how the giant planet works. The spacecraft and all its instruments are healthy and operating normally.