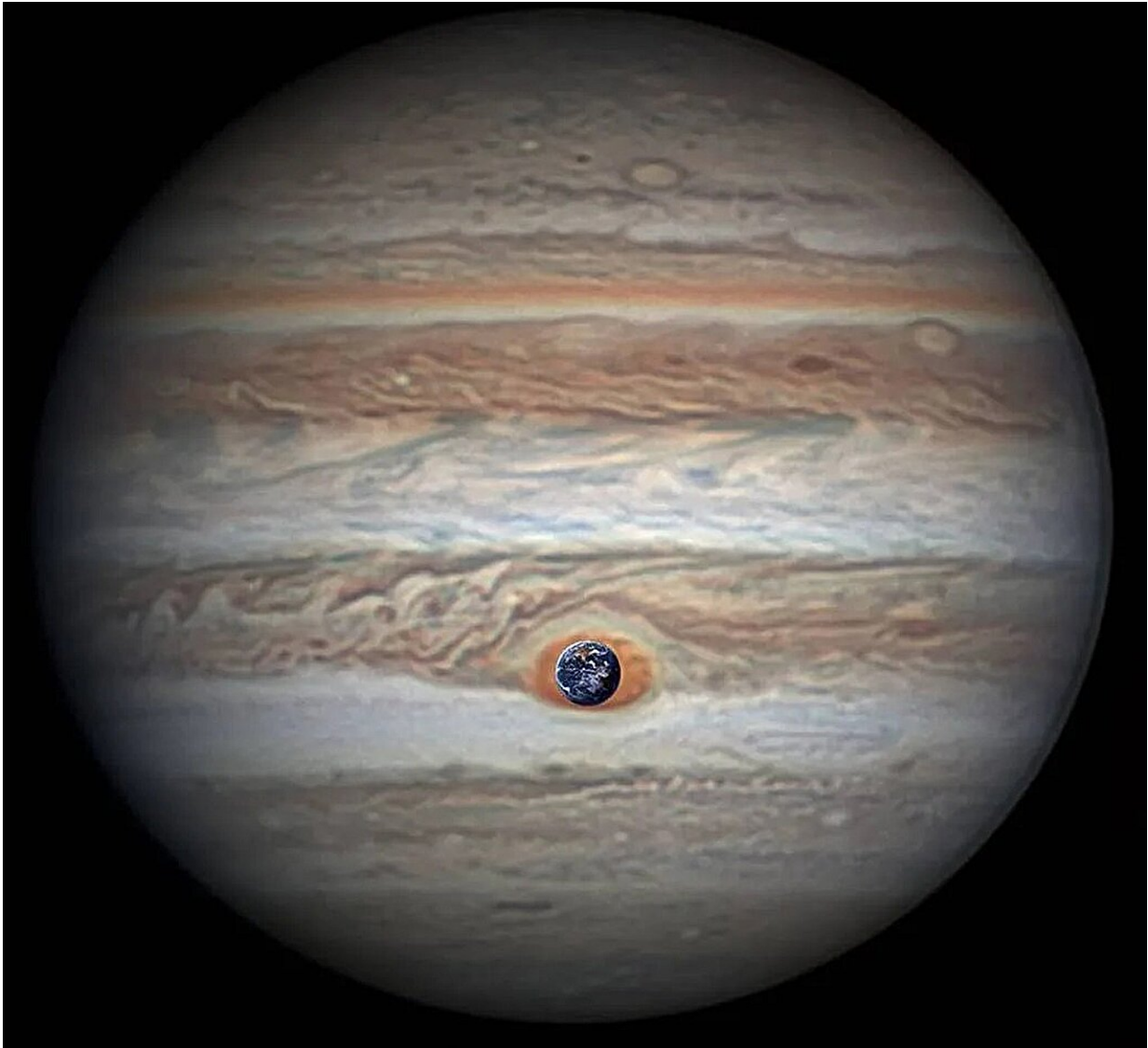


# Spot the king of planets: Observe Jupiter

February 15 2024, by Dave Prosper and Kat Troche

---



Jupiter's Great Red Spot is close to the size of Earth. Credit: NASA

Jupiter is our solar system's undisputed king of the planets. Jupiter is bright and easy to spot from our vantage point on Earth, helped by its massive size and banded, reflective cloud tops. Jupiter even possesses moons the size of planets: Ganymede, its largest, is bigger than the planet Mercury. What's more, you can easily observe Jupiter and its moons with a modest instrument, just like Galileo did over 400 years ago.

Jupiter's position as our solar system's largest planet is truly earned; you could fit 11 Earths along Jupiter's diameter, and in case you were looking to fill up Jupiter with some Earth-size marbles, you would need over 1,300 Earths to fill it up—and that would still not be quite enough. However, despite its awesome size, Jupiter's true rule over the outer solar system comes from its enormous mass. If you took all the planets in our solar system and put them together, they would still only be half as massive as Jupiter all by itself.

Jupiter's mighty mass has shaped the orbits of countless comets and asteroids. Its gravity can fling these tiny objects towards our inner solar system and also draw them into itself, as famously observed in 1994 when Comet Shoemaker-Levy 9, drawn towards Jupiter in previous orbits, smashed into the gas giant's atmosphere. Its multiple fragments slammed into Jupiter's cloud tops with such violence that the fireballs and dark impact spots were not only seen by NASA's orbiting Galileo probe, but also observers back on Earth.

Jupiter is easy to observe at night with our unaided eyes, as well-documented by the ancient astronomers who carefully recorded its slow movements from night to night. It can be one of the brightest objects in our nighttime skies, bested only by the moon, Venus, and occasionally Mars, when the Red Planet is at opposition. That's impressive for a planet that—at its closest to Earth—is still over 365 million miles (587 million km) away. It's even more impressive that the giant world remains very bright to Earthbound observers at its furthest distance: 600 million

miles (968 million km).

While the king of planets has a coterie of 95 known moons, only the four large moons that Galileo originally observed in 1610—Io, Europa, Ganymede, and Calisto—can be easily observed by Earth-based observers with very modest equipment.

These are called, appropriately enough, the Galilean moons. Most telescopes will show the moons as faint star-like objects neatly lined up close to bright Jupiter. Most binoculars will show at least one or two moons orbiting the planet. Small telescopes will show all four of the Galilean moons if they are all visible, but sometimes they can pass behind or in front of Jupiter, or even each other.

Telescopes will also show details like Jupiter's cloud bands, and if powerful enough, large storms like its famous Great Red Spot, and the shadows of the Galilean moons passing between the sun and Jupiter. Sketching the positions of Jupiter's moons during the course of an evening—and night to night—can be a rewarding project. You can [download](#) an activity guide from the Astronomical Society of the Pacific.

NASA's Juno mission currently orbits Jupiter, one of just nine spacecraft to have visited this awesome world. Juno entered Jupiter's orbit in 2016 to begin its initial mission to study this giant world's mysterious interior. The years have proven Juno's mission a success, with data from the probe revolutionizing our understanding of this gassy world's guts. Juno's mission has since been extended to include the study of its large moons, and since 2021 the plucky probe, increasingly battered by Jupiter's powerful radiation belts, has made close flybys of the icy moons Ganymede and Europa, along with volcanic Io.

Provided by NASA

Citation: Spot the king of planets: Observe Jupiter (2024, February 15) retrieved 29 April 2024 from <https://phys.org/news/2024-02-king-planets-jupiter.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.