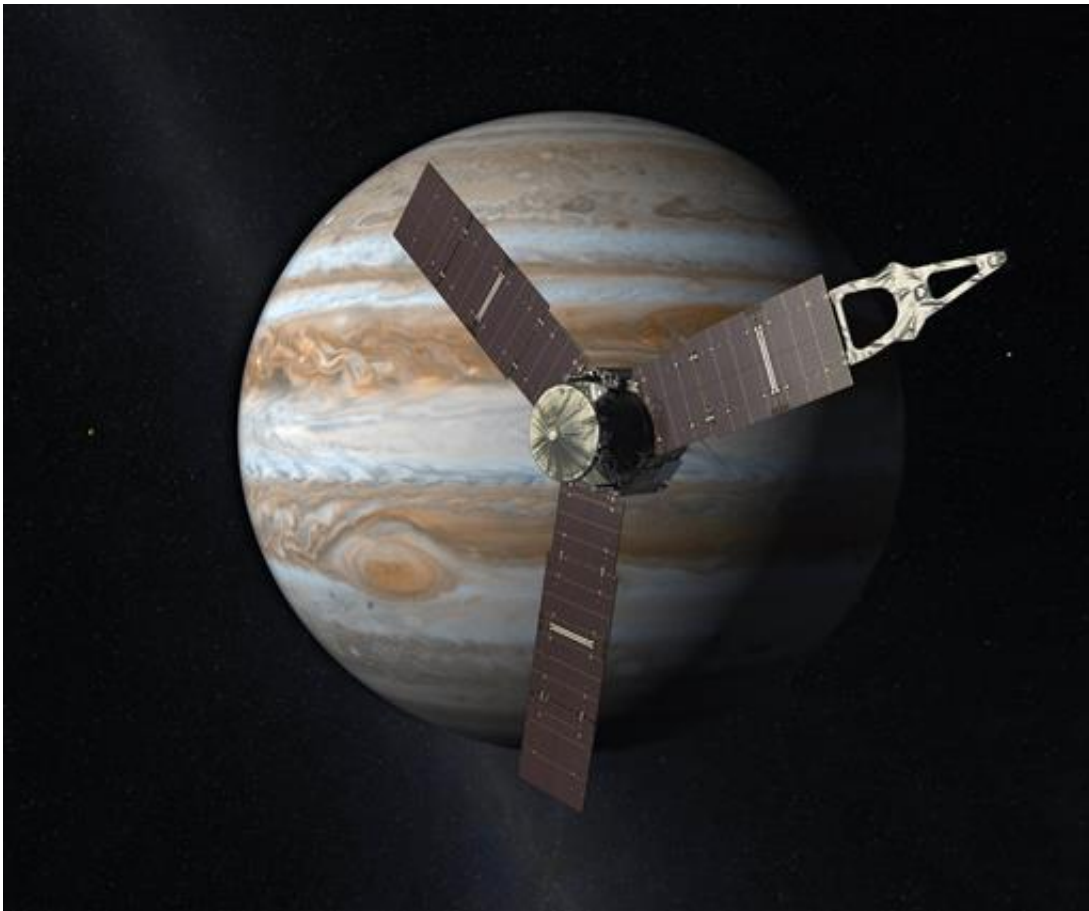


Destination Jupiter: What to expect during the Juno mission

July 6 2016, by Alicia Chang



This artist's rendering provided by NASA and JPL-Caltech shows the Juno spacecraft above the planet Jupiter. Five years after its launch from Earth, Juno is scheduled to go into orbit around the gas giant on Monday, July 4, 2016. (NASA/JPL-Caltech via AP)

Now that the Juno spacecraft is settled in orbit around Jupiter, the real work is about to begin.

Juno will fly closer to Jupiter than any other spacecraft, skipping over [cloud tops](#) and peering deep inside to uncover clues about the giant planet's formation. Scientists hope that understanding how Jupiter formed can help explain how Earth and the other planets evolved as well.

"Now the fun begins—the science," mission chief scientist Scott Bolton said after Juno's arrival Monday at the end of a five-year journey.

A look at what's coming up during the \$1.1 billion mission:

POST-TRIP CHECKUP

Juno was bombarded with radiation as it neared Jupiter, the largest planet in the solar system. As a precaution, its camera and science instruments were turned off during the arrival. Engineers will flip them back on this week and perform a complete check of the spacecraft to make sure everything is ready to go for the next 20 months.

CHANGING COURSE

To enter Jupiter's orbit, Juno fired its rocket motor, putting it on a long, looping path that takes 53 days to complete. In late August, the spacecraft swings back around Jupiter for its first close-in view. But Juno eventually needs to swoop in closer to do its job. The mission kicks into high gear in October when Juno fires its engine again to tighten its orbit. Then every two weeks, the spacecraft will skim Jupiter's clouds to peek into its stormy atmosphere.



Jim Green, director, Planetary Science Division, NASA, left, talks during a media briefing joined by Scott Bolton, Juno principal investigator, second from left, Rick Nybakken, Juno project manager, second from right, and Heidi Becker, Juno radiation monitoring investigation Lead, at Jet Propulsion Laboratory (JPL) in Pasadena, Calif., on Monday, July 4, 2016. The solar-powered spacecraft is spinning toward Jupiter for the closest encounter with the biggest planet in our solar system. NASA's Juno spacecraft will fire its main rocket engine late Monday to slow itself down from a speed of 150,000 mph (250,000 kph) and slip into orbit around Jupiter. (AP Photo/Richard Vogel)

MOON MYSTERY

Juno made a discovery even before reaching its destination. As Juno zeroed in on Jupiter, its camera captured the massive planet appearing half-lit surrounded by its four main moons. NASA stitched the images together and created a time-lapse video showing the moons in action.

There was a surprise: Jupiter's second-largest moon, Callisto, appeared dimmer than scientists imagined. "We don't know why," said Bolton of the Southwest Research Institute in Texas.

CLOSEST LOOK

Previous missions to Jupiter have revealed stunning views of the planet's thick clouds and vivid auroras. Scientists are expecting the best photos and information yet from Juno.



Heidi Becker, right, Juno radiation monitoring investigation lead, discusses the challenges of radiation the Juno spacecraft will encounter as Rick Nybakken, Juno project manager, left, looks on during a briefing at the Jet Propulsion Laboratory (JPL) in Pasadena, Calif. on Monday, July 4, 2016. The solar-powered spacecraft is on it's way toward Jupiter for the closest encounter with the biggest planet in our solar system. NASA's Juno spacecraft will fire its main rocket engine late Monday to slow itself down from a speed of 150,000 mph (250,000 kph) and slip into orbit around Jupiter. (AP Photo/Richard Vogel)

"We get our first up and close personal look at Jupiter with all our eyes and ears open" later this summer, Bolton said.

The spacecraft carries nine instruments to map the planet. It will measure how much water is in Jupiter's atmosphere. This will shed light on where in the solar system Jupiter formed. It will also probe Jupiter's gravity and magnetic fields to determine what kind of core it has and what makes the northern and southern lights so intense. Juno will also study how deep the trademark Great Red Spot goes and why the centuries-old storm has shrunk in recent years.

FINALE

When Juno finishes its job, it will intentionally plunge into Jupiter's atmosphere and burn up. Galileo, the first [spacecraft](#) to orbit Jupiter, met the same fate after a 14-year mission. This fiery end expected in 2018 prevents any chance of accidentally crashing into Jupiter's moons, particularly Europa, considered a prime target in the hunt for microbial life in the solar system.



Scott Bolton speaks in a post-orbit insertion briefing at NASA's Jet Propulsion Laboratory following the solar-powered Juno spacecraft entered orbit around Jupiter on Monday, July 4, 2016, in Pasadena, Calif. (AP Photo/Ringo H.W. Chiu)



Michael Watkins, right, Scott Bolton, center, and Jim Green react in Mission Control at NASA's Jet Propulsion Laboratory as the solar-powered Juno spacecraft goes into orbit around Jupiter on Monday July 4, 2016 in Pasadena, Calif. (AP Photo/Ringo H.W. Chiu, Pool)

More information: Mission page: tinyurl.com/Jupitermission

© 2016 The Associated Press. All rights reserved.

Citation: Destination Jupiter: What to expect during the Juno mission (2016, July 6) retrieved 25 April 2024 from <https://phys.org/news/2016-07-destination-jupiter-juno-mission.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.