

# PLANET 10 TIMES EARTH'S MASS MAY HAVE SMACKED JUPITER LONG AGO

Relevant for: Geography | Topic: The Earth and the Solar System

In this artistic illustration, it shows the collision between a young Jupiter and a massive still-forming protoplanet in the early solar system. | Photo Credit: [Reuters](#)

Jupiter, the solar system's largest planet, may have been smacked head-on by an embryonic planet 10 times Earth's mass not long after being formed, a monumental crash with apparent lasting effects on the Jovian core, scientists have said.

The violent collision, hypothesized by astronomers to explain data collected by NASA's Juno spacecraft, may have occurred just several million years after the birth of the sun roughly 4.5 billion years ago following the dispersal of the primordial disk of dust and gas that gave rise to the solar system.

"We believe that impacts, and in particular giant impacts, might have been rather common during the infancy of the solar system. For example, we believe that our moon formed after such an event. However, the impact that we postulate for Jupiter is a real monster," astronomer Andrea Isella of Rice University in Houston said.

Under this scenario, the still-forming planet plunged into and was consumed by Jupiter.

Jupiter, a gas giant planet covered in thick red, brown, yellow and white clouds, boasts a diameter of about 1,43,000 km. Interior models based on Juno data indicated Jupiter has a large "diluted" core representing about 5% to 15% of the planet's mass comprised of rocky and icy material unexpectedly mixed with light elements like hydrogen and helium. "Juno measures Jupiter's gravity field to an extraordinary precision. Scientists use that information to infer Jupiter's composition and interior structures," said Shang-Fei Liu, associate professor of astronomy at Sun Yat-sen University in Zhuhai, China, and lead author of the research published in the journal *Nature*.

Computer models indicated that a head-on collision with a protoplanet — a planet in its formative stages — of roughly 10 Earth masses would have broken apart Jupiter's dense core and mixed light and heavy elements, explaining Juno's findings, the researchers said.

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