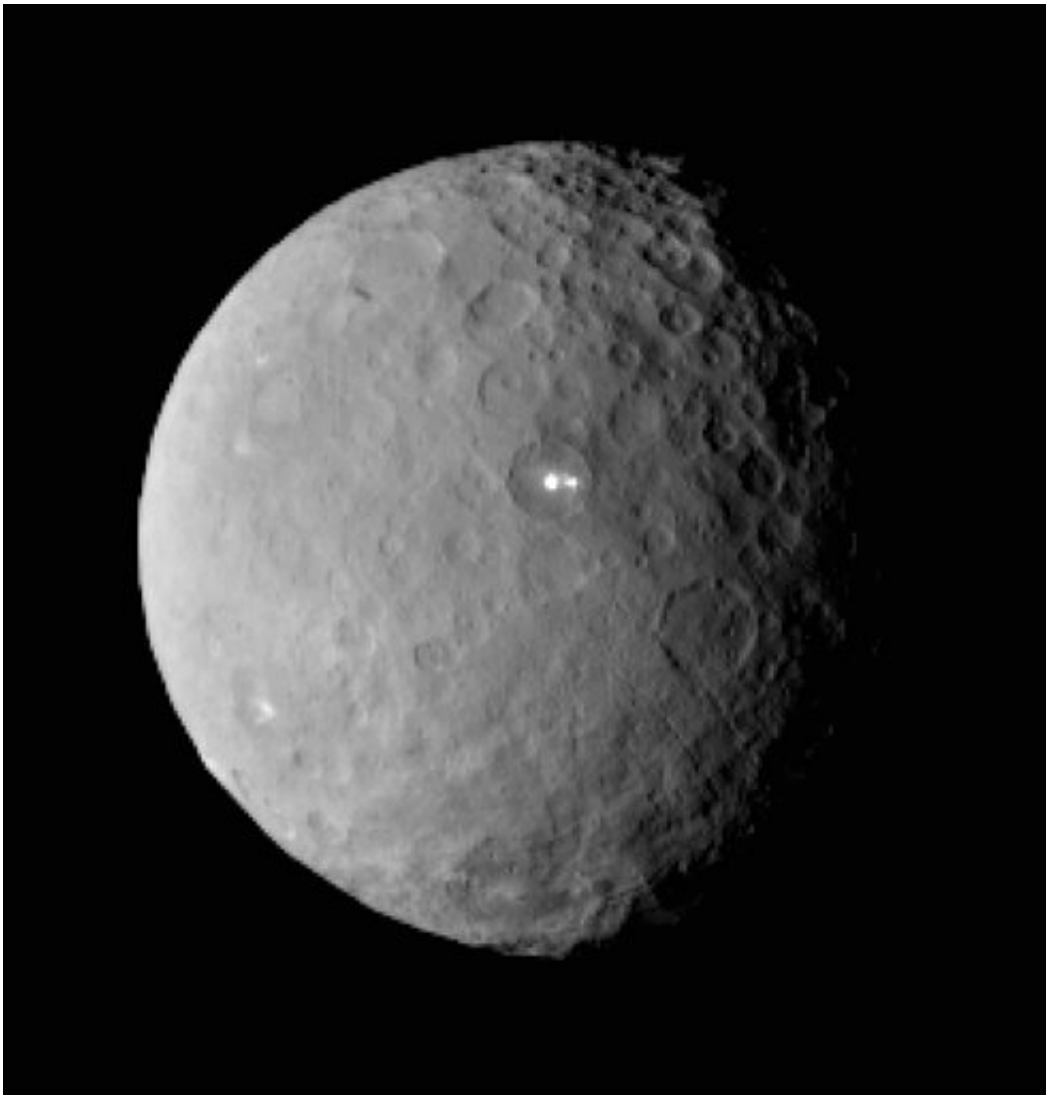


# Hello Ceres! NASA spacecraft on first visit to dwarf planet

March 6 2015, by Alicia Chang

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This Feb. 19, 2015 file image provided by NASA shows the dwarf planet Ceres, taken by the space agency's Dawn spacecraft from a distance of nearly 29,000 miles (46,000 kilometers). On Friday, March 6, 2015, NASA's Dawn spacecraft

arrives at the mysterious dwarf planet located in the asteroid belt between Mars and Jupiter after a nearly eight-year journey. Dawn, which previously visited Vesta, also in the asteroid belt, has already beamed back images of Ceres as it closes in. (AP Photo/NASA/JPL-Caltech/UCLA/MPS/DLR/IDA, File)

After a nearly eight-year journey, a NASA spacecraft on Friday flawlessly slipped into orbit around Ceres in the first visit to a dwarf planet.

The robotic Dawn craft will circle the dwarf planet for more than a year, exploring its surface and unraveling its mysteries.

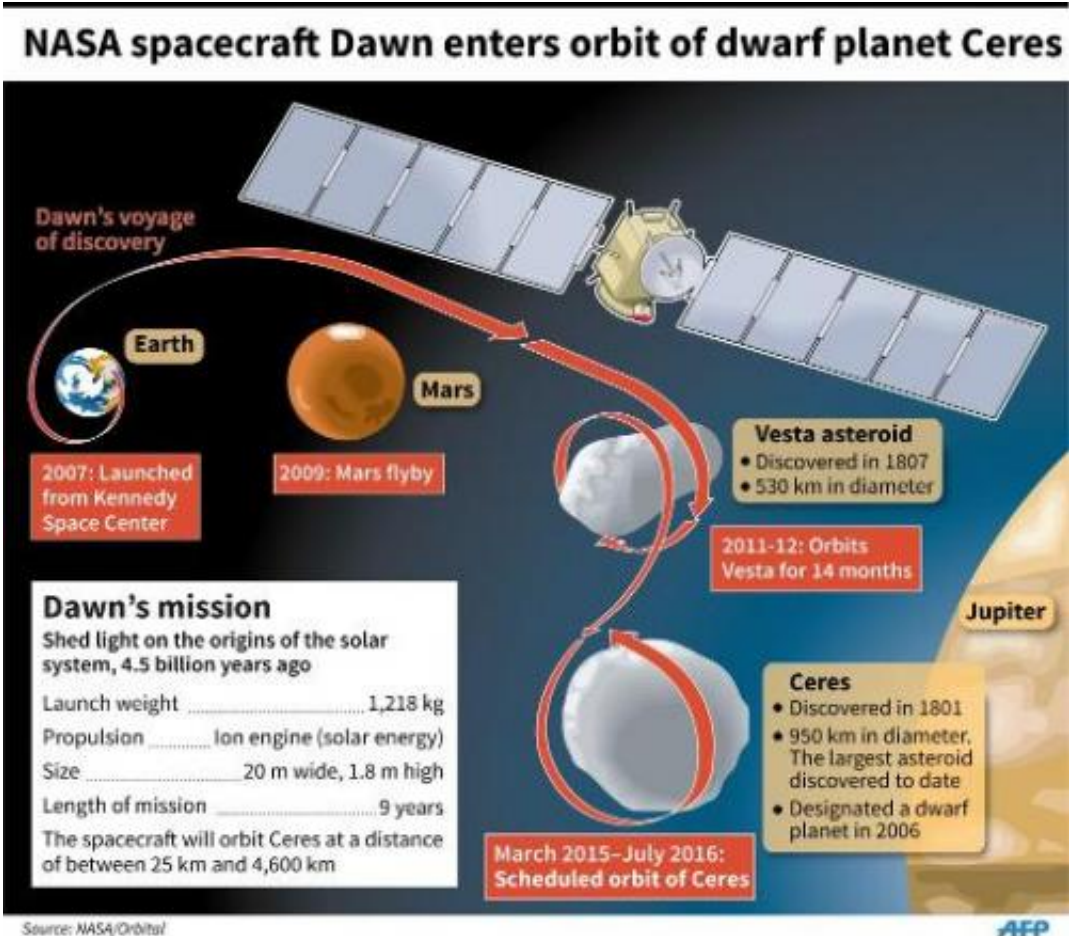
"It went exactly the way we expected. Dawn gently, elegantly slid into Ceres' gravitational embrace," said Marc Rayman, chief engineer for the \$473 million mission managed by NASA's Jet Propulsion Laboratory in Pasadena.

Ceres is the second and final stop for Dawn, which launched in 2007 on a voyage to the main asteroid belt, a zone between Mars and Jupiter that's littered with rocky leftovers from the formation of the sun and planets some 4½ billion years ago.

Dawn will spend 16 months photographing the icy surface. It previously spent a year at Vesta exploring the asteroid and sending back stunning close-ups of its lumpy surface before cruising onto Ceres, the largest object in the asteroid belt.

The 3-billion mile trip was made possible by Dawn's ion propulsion engines, which provide gentle yet constant acceleration and are more efficient than conventional thrusters.

As Dawn approached Ceres, it beamed back the best pictures ever taken of the dwarf planet. Some puzzling images revealed a pair of shiny patches inside a crater—signs of possible ice or salt.



Factfile on the US spacecraft Dawn and the latest stage of its mission to explore the origins of the solar system

Scientists hope to get a better glimpse of the spots when the spacecraft spirals closer to the surface. It'll also study whether previously spotted plumes of water vapor continue to vent.

"There are a lot of secrets that will be revealed," said mission scientist Lucy McFadden at NASA's Goddard Space Flight Center in Maryland.

The spacecraft glided into place at 4:39 a.m. Friday and flight controllers received confirmation about an hour later. The maneuver occurred without a tense moment, unlike other captures that require braking to slow down.

"The real drama is exploring this alien, exotic world," Rayman said.

Dawn is currently in Ceres' shadows and won't take new pictures until it emerges in April, he said.

Discovered in 1801, Ceres measures 600 miles across—as wide as Texas—and has a rocky core. It's named after the Roman goddess of agriculture and harvest. It was initially called a planet before it was demoted to an asteroid and later classified as a dwarf planet. Like planets, dwarf planets are spherical in shape, but they share the same celestial neighborhood with other similar-sized bodies.

With its massive solar wings spread out, Dawn is about the size of a tractor-trailer, measuring 65 feet from tip to tip. It carries an infrared spectrometer and a gamma ray and neutron detector to study the surface of Ceres from orbit.

The spacecraft was about 38,000 miles from Ceres when it began orbiting. In the coming months, it will spiral down to within 235 miles of Ceres' surface where it will remain long after the mission is over.

"Every time we get closer, we see more things that make us scratch our heads," said mission scientist Mark Sykes, who heads the Planetary Science Institute in Arizona.

Dawn almost never made it out to the inner solar system. The mission endured funding-related project cancellations and launch delays before it received the green light to fly.

Dwarf planets lately have become the focus of exploration.

This summer, another NASA spacecraft—New Horizons—is set to make the first visit to Pluto, which was downgraded to dwarf planet.

**More information:** Dawn mission: [dawn.jpl.nasa.gov/](http://dawn.jpl.nasa.gov/)

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