

Ceres, an icy little world, lets off some steam

By Los Angeles Times, adapted by Newsela staff on 01.29.14

Word Count **651**



Dwarf planet Ceres is located in the main asteroid belt, between the orbits of Mars and Jupiter, as illustrated in this artist's conception. Observations by the Herschel Space Observatory between 2011 and 2013 find that the dwarf planet is shooting steam into space. Photo: ESA/ATG medialab/NASA.gov

LOS ANGELES — It's hard to say just what Ceres is. It can be thought of as the largest asteroid. Or it can be seen as a mini-planet called a dwarf. During the 1800s, it was considered a regular planet.

Ceres confuses people because it is the largest and roundest object in a part of space filled with asteroids. But, most asteroids are not round like Ceres. They're lumpy.

Whatever it is, Ceres is looking more interesting these days. Scientists who study planets and space are called astronomers. They have discovered water vapor shooting off its surface. The vapor is like steam that is made when water is heated. The discovery of vapor could tell us something fascinating about the history of our solar system.

Astronomer Michael Koppers led the study. For the first time, he said, we have discovered water on an asteroid. (As you see, he thinks it's an asteroid.)

Ceres sits in a string of asteroids stretching between Mars and Jupiter. It is 590 miles wide.

Scouting Before Dawn Arrives

NASA is sending a spacecraft called Dawn to visit Ceres next year. But, Koppers had hoped to do a little advance scouting before that. The biggest question he wanted to answer: Is it full of water, or not?

Ceres isn't very dense for its size. That made astronomers believe it could have a high amount of water. If it did, it would likely be stored away as ice.

In the 1990s astronomers picked up signs of water in the light coming from Ceres. However, a study in 2011 could not back that claim up.

To settle the matter, Koppers and his team needed a very advanced telescope. They turned to the Herschel, a telescope sitting in space.

The team spotted clear signs of water coming from two dark spots. These were located on roughly opposite sides of Ceres.

Water was coming off Ceres at a quick pace. That made the scientists think there could be a lot of stored ice. Once melted, it could add up to more fresh water than we have on Earth.

The scientists aren't exactly sure how the ice is stored on Ceres. Nor do they know how it's turning into vapor.

It could be that heat from inside the planet is the cause. This could be making the water rise up as blasts of vapor. Or perhaps ice on the surface is melting and becoming vapor when the sun hits it.

In any case, water on Ceres wouldn't ever be in liquid form. Liquid water requires a thicker atmosphere (like Earth's). Without that, it doesn't remain stable. It just stays as vapor.

Questions To Be Answered

Whatever is going on, the larger question remains: Why is Ceres so wet? Another puzzling question: Why is Ceres so different from an asteroid named Vesta?

After all, Ceres is roughly the same distance from the sun as Vesta. Yet Vesta is completely dry. So how did Ceres hold onto its water when Vesta did not?

It turns out Ceres may not originally be from this part of the solar system. It probably came from somewhere out past the "snow line." Beyond this line, ice can exist in space. It is far enough from sun out there to not melt.

And how did water end up on Earth? Icy comets are the usual answer. But, Kupper said, it could just as well have been an asteroid. Asteroids are really just comets that don't have ice. But, now that ice has been found on one, that may change scientists' views.

Answering more questions about Ceres will have to wait. The Herschel space telescope isn't working anymore. But scientists won't have to wait too long: NASA's Dawn spacecraft will reach Ceres in spring 2015. It will give scientists a close look at this strange, distant world.

"I'm excited to see what Dawn is going to find out," said Koppers.

Quiz

- 1 According to the article, why does Ceres confuse people?
 - (A) because it has water
 - (B) because it has its own moon
 - (C) because it has an atmosphere
 - (D) because it has a spherical shape and is surrounded by asteroids

- 2 How did astronomers first find out about the likelihood of water on Ceres?
 - (A) They sent a manned mission to Ceres to study it.
 - (B) They sent a spacecraft to Ceres to gather evidence.
 - (C) They picked up signs of water in light coming from Ceres.
 - (D) They analyzed photographs to study the atmosphere of Ceres.

- 3 Select the paragraph from "Scouting Before Dawn Arrives" that contains a phrase that means "confirm."

- 4 Read this part from the article.

But, most asteroids are not round like Ceres. They're lumpy.

What is a synonym for the word "lumpy" as used in the sentence above?

- (A) thick
- (B) uneven
- (C) chunky
- (D) impure

Answer Key

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