



## SCIENCE & TECHNOLOGY

# Dwarf Planet Ceres Has Salty Ocean Deep Underground

August 14, 2020

Ceres is the largest object in the **asteroid belt** between the planets Mars and Jupiter. In a new study, scientists suggest this **dwarf planet** contains a large body of salty water under its cold surface.

The researchers describe Ceres as an “ocean world” - a place that could have the right conditions to support living organisms.

The study was released earlier this month in the publications *Nature Astronomy*, *Nature Geoscience* and *Nature Communications*.

The research is based on data gathered by NASA’s Dawn spacecraft, which flew as close as 35 kilometers to the surface of Ceres in 2018. The study provides evidence that the dwarf planet remains **geologically** active with cryovolcanism - volcanoes that produce icy material.

The scientists say their findings confirm the presence of a **reservoir** of salty water below the surface that has been slowly freezing. Planetary scientist and Dawn lead investigator Carol Raymond told the Reuters news agency it is this finding that makes Ceres an ocean world, even though liquid does not cover the whole dwarf planet.

“In the case of Ceres, we know the liquid reservoir is **regional scale** but we cannot tell for sure that it is **global**. However, what matters most is that there is liquid on a large scale,” Raymond said.

Ceres is about 950 kilometers around. The scientists centered their work on a 92-kilometer-wide **crater** formed when a large object hit Ceres about 22 million years ago. The crater has two bright areas caused by salt collections from liquid that reached the surface.

The scientists say the liquid started in a salt water reservoir hundreds of kilometers wide about 40 kilometers below the surface. When the large object crashed into Ceres, breaks in the dwarf planet's surface created openings for salty water to escape.

There are several other solar system bodies beyond Earth where there at least appear to be oceans below the surface. These include Jupiter's moon Europa, Saturn's moon Enceladus, Neptune's moon Triton and the dwarf planet Pluto.

Water is considered a major necessity for life. Scientists want to study whether Ceres was ever home to **microbial** life.

Planetary scientist Julie Castillo of NASA's Jet Propulsion Laboratory said there is major interest at this point in examining the possibility of life in Ceres's reservoir. That is especially true "considering it is cold and getting **quite** rich in salts," she added.

I'm Pete Musto.

*Will Dunham reported on this story for the Reuters news service. Pete Musto it for VOA Learning English. Bryan Lynn was the editor.*

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## Words in This Story

**asteroid belt** – *n.* a gathering of any one of thousands of small planets that circle around the sun

**dwarf planet** – *n.* an object in space that looks like a small planet but lacks certain technical qualities that are required for it to be classed as such

**geologically** – *adv.* in a way that relates to rocks, land, or processes of land formation

**reservoir** – *n.* a place where a liquid is stored

**regional** – *adj.* a part of a country or world that is different or separate from other parts in some way

**scale** – *n.* the size or level of something especially in comparison to something else

**global** – *adj.* involving the entire world

**crater** – *n.* a large round hole in the ground made by the explosion of a bomb or by something falling from the sky

**microbial** – *adj.* an extremely small living thing that can only be seen with a microscope

**quite** – *adv.* to a very noticeable degree or extent

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