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’ 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.

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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