Signs of water found on one of Saturn's moons

Planet has 31 known moons

Friday, March 10, 2006

Scientists think liquid water is spewing out of these fractures on the southern pole of Enceladus.

(CNN) -- The Cassini space probe has found evidence of geysers erupting from underground pools of liquid water on Saturn's moon Enceladus, scientists announced on Thursday.

High-definition pictures beamed back from the probe showed huge plumes of ice coming from the moon's south pole.

"We're inferring that there is a liquid water reservoir under the surface and it's erupting in a geyser-like fashion, maybe like the Yellowstone geysers you would see," said Linda Spilker, Cassini Deputy Project Scientist.

Spilker said it was very surprising to see this much activity on such a small, cold moon. The average temperature at Enceladus' south pole is minus 307 degrees Fahrenheit (minus 188 Celsius) -- that's a little warmer than the moon's equator, which was minus 316 Fahrenheit (minus 193 Celsius).

She said that the water was likely kept at the relatively warm temperature of 32 degrees Fahrenheit (zero Celsius) by tidal or radioactive forces. It freezes instantly as it escapes vents in the surface.

"At first we thought it might be like an ice volcano, with little ice particles coming out. And then, as the analysis continued, we looked at the amount of material coming out ... there had to be more of a pressure source underneath," she said.

Water might be an indication that life could exist on Enceladus. But Spilker was not ready to suggest life existed there.

"That's a very tough question to answer, but certainly something that we'll be thinking about now that there appears to be a liquid water source on Enceladus," she said.

"Because on the Earth, in ocean beds that are deep on the ocean floor, where there is no sunlight or anything, you get life forms that can exist in those conditions where you get the ingredients for life out of those volcanic vents."

Scientists are searching for signs of water on Mars and believe that Jupiter's moon Europa has a liquid ocean deep under its frozen crust. (Watch finding puts Enceladus in an elite group -- 1:22)

"Now Enceladus joins the ranks of those bodies, Mars and Europa, that have evidence of liquid water in them and also energy sources coming from radioactive heating and tidal heating that make

the very interesting places to look for the origins of life," said Torrence Johnson, a member of the Cassini team. "These are habitats that are similar to types of places we think life may have originated and could possibly survive in today."

The finding's were published in this week's issue of "Science."

Cassini is scheduled to fly within 217 miles (350 kilometers) of Enceladus in 2008, and Spilker said scientists may try to have it fly through the plumes and collect samples.

In the meantime, Spilker said Cassini probably would take measurements from a distance.

"Thinking ahead, maybe this might mean that some day we might want to land a probe near a crack on Enceladus or something and maybe be able to probe more precisely what's happening," she said.

Spilker said the findings already have answered some questions about Saturn's rings.

"One of the questions that Cassini came in with was that the E-ring around Saturn was thickest around Enceladus, and we knew somehow Enceladus was involved in being the source of the E-ring," she said. "And now we know how that's happening. Through these geyser-like plumes, that's the material that goes on to create the bulk of the E-ring."

Cassini, which was funded by NASA and the European and Italian space agencies, launched in 1997 and took seven years to make the 934 million-mile (1.5 billion-kilometer) trip to Saturn.

Last January, the European Huygens spacecraft detached from Cassini and landed on Titan, Saturn's largest moon.