

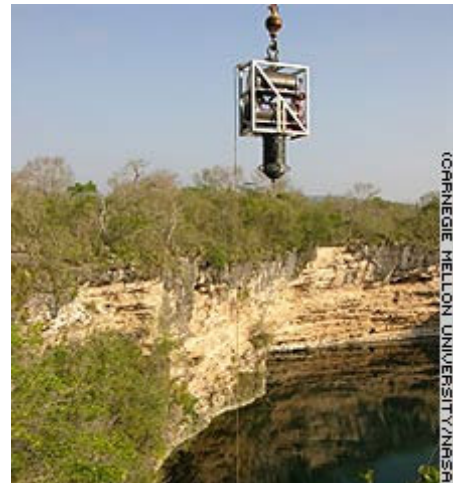
Robot probes sinkhole as proxy for Europa

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EL ZACATON, Mexico (Reuters) -- NASA is testing an underwater robot in one of Earth's deepest sinkholes in a first step toward searching for life on Jupiter's icy moon, Europa.

El Zacaton, near the Gulf coast of northeastern Mexico, is about 328 feet wide and more than 3,280 feet deep. It could easily hold the Eiffel Tower.

Scientists plan to map and take samples in the dark, water-filled fissure with the 1.5 ton DEPTHX robot over the next two weeks as a prelude to the proposed navigation of Europa's ice-capped oceans in about 20 years. (Watch NASA's mission to Mexico at work) The mission is the latest step in a 400-year-old endeavor to understand Jupiter and its distant moons.



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"We're so sure there's water on Europa that the real question is whether there is also life, whether there's something in the ocean that bugs can eat," said Chris McKay of the NASA Ames Research Center in California. "This robot is the ideal way to search," he said.

Lowered by a 60-ton crane, the battery-powered robot, nicknamed "Clementine" for its round shape and orange color, will make daily descents into the vertical cave known in Mexico as a cenote.

It will produce three-dimensional maps, collect rock samples and using floodlights, film nooks and crannies too deep for divers to reach.

Mars, Europa and Saturn's moon Enceladus are the only known places in the solar system known to have or have had water, the basis for life. Finding organisms different from those on Earth may provide scientists with answers to questions ranging from where diseases come from to how our sun and planets formed more than 4.5 billion years ago.

"Plants, animals, fungus, microbes and bacteria are the known forms of life. But there may be more branches to the tree on Europa," said John Spear, a microbiology expert at the Colorado School of Mines and part of the NASA project.

"Learning more about life tells you more about our own heritage and the benefits in health and medicine that could bring," he added.

Mapping oceans

The idea of mapping Europa's oceans with an automated robot was dreamed up by Texas scientist Marcus Gary at a barbecue in 2001. In 2003, his team won NASA funding for the \$5.3 million project.

Gary chose El Zacaton to do the first major test run of the robot, which is about the size of a small car, because its sheer depth meant the site was an unknown quantity. A U.S. diver died trying to swim to the bottom in 1994.

"It is an ideal testing ground because we can test out the robot's mapping powers in untried waters," Gary said.

Its great depth also means that many of its microbes live without light or oxygen and may be similar to what could exist on Europa.

Thought to have twice as much water as Earth, Europa has intrigued scientists ever since Italian astronomer Galileo Galilei observed Jupiter's four largest moons for the first time in 1610.

NASA hopes to take the probe to Antarctica in November 2008 to test it in much colder waters below the frozen ice that resembles Europa. If funding can be found, the scientists could send a much smaller version of the robot to Europa in about 20 years. "It takes at least five years to reach Europa so we'll have to be patient," McKay said.