

Robot plumbs Wisconsin lake on way to Antarctica, jovian moon

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A University of Illinois at Chicago scientist will lead a team testing a robotic probe in a polar-style, under-ice exploration that may have out-of-this world applications. But the team will keep to a venue that's much closer to home.

Peter Doran, associate professor of earth and environmental sciences at UIC, will lead the team Feb. 11-15 working in the icy waters of Lake Mendota off the campus of the University of Wisconsin, Madison.

They'll conduct an under-ice test of a NASA-funded robotic probe called ENDURANCE -- an acronym for Environmentally Non-Disturbing Under-ice Robotic ANTarctic Explorer.

The wintry Wisconsin conditions are hoped to simulate and to demonstrate whether the probe's systems can operate in icy conditions as a first test of using such a vehicle in a similar environment on Jupiter's moon Europa.

ENDURANCE is is a \$2.3 million project funded by NASA's Astrobiology Science and Technology for Exploring Planets Program. The probe is an underwater vehicle designed to swim untethered under ice, creating three-dimensional maps of underwater environments. The probe also will collect data on conditions in those environments use sensors to characterize the biological environment.

"Basically the game plan this week is to test the vehicle's performance in

a cold ice-covered environment," Doran said. "Up to now it's only been tested in relatively balmy environments like Texas and Mexico. We want to see what issues may come up by pushing it into the frigid water."

The next step by the research team is to ship the probe to Antarctica's permanently frozen Lake Bonney later this year. Bonney is a two-and-a-half mile long, mile-wide, 130 foot-deep lake located in the continent's McMurdo Dry Valleys. It lies perpetually trapped beneath 12 to 15 feet of ice.

ENDURANCE will map Bonney for a month, then do a second mapping in 2009. Data gathered will be relayed back to Chicago where it will be used by UIC's Electronic Visualization Laboratory to generate various 3-D images, maps and data renderings of the lake.

Science teams are developing and testing the technology for a possible underwater exploration mission on Europa far in the future. The probe is a follow-up to the Deep Phreatic Thermal explorer, a NASA-funded project led by Stone Aerospace that completed a series of underwater field tests in Mexico in 2007.

Source: University of Illinois at Chicago

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