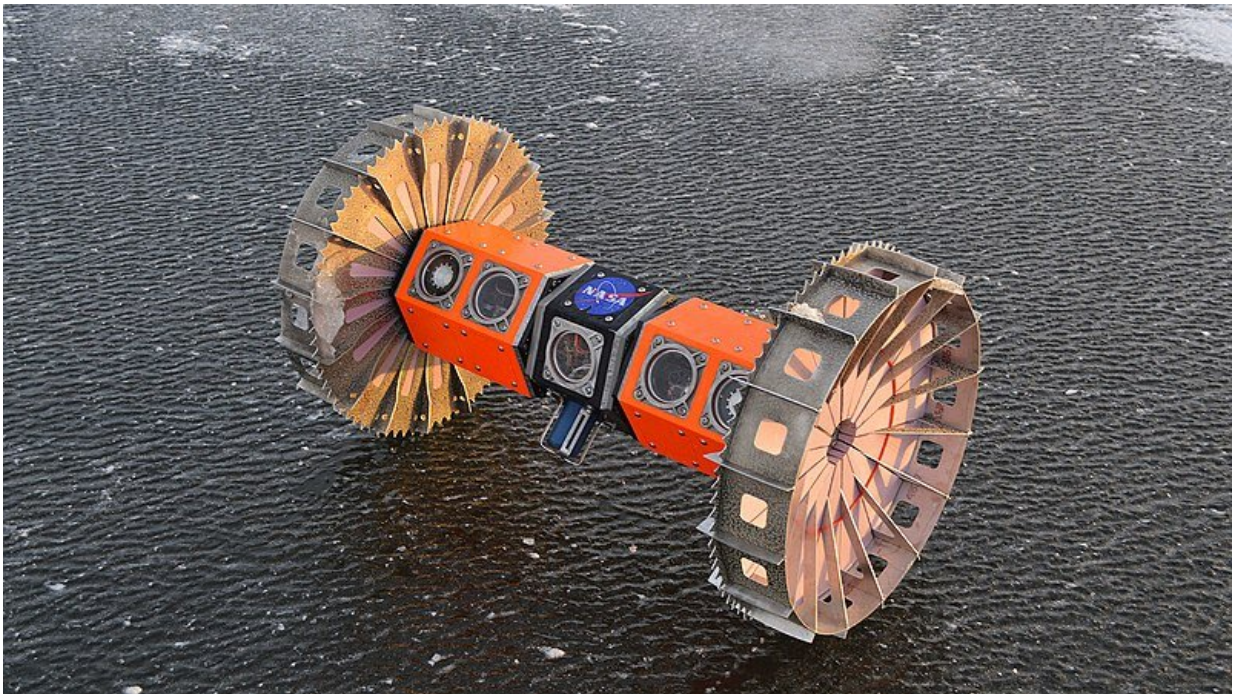


Autonomous BRUIE robot could help in the search for signs of life in space

April 3 2020, by Nicholas Smith



BRUIE (Buoyant Rover for Under-Ice Exploration) is an underwater rover prototype by NASA's Jet Propulsion Laboratory. The rover began testing in the Arctic in 2015 and it is meant to eventually explore the interior ocean of water worlds in the Solar System. BRUIE is buoyant and uses its two wheels to roll along beneath the ice and look for life. CC0 Public Domain

A new autonomous robot developed by engineers at NASA and tested in Antarctica by a team of researchers, including an engineer from The

University of Western Australia, is destined for a trip into outer space and could, in the future, search for signs of life in ocean worlds beyond Earth.

Dr. Dan Arthur, from UWA's School of Engineering teamed up with scientists from NASA's Jet Propulsion Laboratory to trial the "Buoyant Rover for Under Ice Exploration" (BRUIE) in [extreme temperatures](#) at Australia's Casey research station in Antarctica.

"BRUIE, a buoyant rover with two independent wheels, is designed to drive along the underside of ice crust and uses onboard instruments to detect compounds that are of interest to space scientists," Dr. Arthur said.

"This is the third iteration of the robotic technology, which was built at NASA's Jet Propulsion Laboratory (JPL), a division of Caltech in Pasadena, California."

The researchers have previously conducted trials of BRUIE in the Arctic and Alaska, with the aim of assessing the robot's suitability for a mission to [outer space](#).

"In the future, we will be reliant on technologies like BRUIE to enable the exploration of these ocean worlds and beyond," he said.

The team travelled to the icy continent with the Australian Antarctic Program, a Federal Government body that manages Australian stations and research activities in the region.

"We developed the project scope over a number of months and contributed to the general robotics work in the lead up to the trip," Dr. Arthur said.

The team of researchers from NASA's Jet Propulsion Laboratory, including Dr. Kevin Hand, who served as Deputy Chief Scientist for Solar System Exploration at JPL, and who runs JPL's Ocean Worlds Lab, said they had greatly enjoyed working with robotics professionals from Western Australia.

"WA is a uniquely well-resourced location for the development of autonomous robotics systems that interact with geology," Dr. Arthur said.

In addition to the researchers evaluating BRUIE's capability in outer space, the platform is being used on Earth to perform and support oceanographic research.

In the mid-2020s, NASA will launch interplanetary mission Europa Clipper, an orbiter which will orbit Jupiter and perform multiple flybys of its ocean moon Europa to capture scientific imagery and other data.

"Europa Clipper could be followed by a subsequent mission, which will aim to land on the surface of Europa and deploy an evolution of BRUIE, beginning the search for life on the icy moon," Dr. Arthur said.

Provided by University of Western Australia

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