

## **World Lunabotics Mining Competition - Using Analogue Test Sites on the Big Island of Hawai'i for the world-finals of lunar excavation competitions...."The Aloha Bowl"**

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**Introduction:** Over the last few years, NASA Kennedy Space Center has led a university-level competition designed to engage and retain students in science, technology, engineering and mathematics (STEM). This competition has encouraged the development of innovative lunar excavation concepts from universities which may result in clever ideas and solutions which could be applied to an actual lunar excavation device or payload. The challenge is for students to design and build an excavator, called a Lunabot, that can mine and deposit a minimum of 10 kilograms of lunar simulant within 10 minutes. The complexities of the challenge include the abrasive characteristics of the BP-1, the weight and size limitations of the Lunabot, and the ability to telerobotically or autonomously control the Lunabot from a remote mission control center. Over 50 teams from all over the world competed in last year's competition.

The Big Island of Hawai'i is perhaps the premier site in the world to test Lunar and Martian surface systems (robot rovers, human transport and habitation).

The Big Island's volcanic terrain and basaltic geology are nearly identical in many aspects to the Moon and Mars. The Pacific International Space Center for Exploration Systems (PISCES) and the State of Hawai'i are in the process of establishing a new analogue research park for collaborative/partnership work in analogue testing of robotic systems and resource utilization technologies.

At the 2012 PISCES conference, the 2012 Lunabotics winner, the University of Alabama, participated in the testing of its excavator in a bowl-shaped, basaltic terrain of Hawai'i's volcano.

This paper/presentation will brief early discussions of creating a world competition for Lunabotics. The concepts and format for a proposed world-competition based in Hawai'i will be presented.