PRISM: PISCES Robotic International Space Mining Competition. J. C. Hamilton[1,2] and R. M. Kelso[1], [1]Pacific International Space Center for Exploration Systems (PISCES), 99 Aupuni St, St 212-213, Hilo, HI 96720. jch@hawaii.edu & rkelso54@gmail.com. [2]Department of Physics & Astronomy, University of Hawai`i - Hilo, 200 West Kawili St., Hilo Hawai`i 96720.

Introduction: PISCES will be hosting a university-level robotic space mining competition for international teams at our Planetary Analog Site at 9,000 ft. elevation level of Mauna Kea, Hawai`i. Entitled PRISM: Pisces Robotic International Space Mining, the event is intended to be a follow-on of the NASA Robotic Mining Competition (RMC) [1] as well as a more realistic challenge in a field test setting.

This year (2014) it will be conducted as an exhibition with invited teams.to be a full-scale test run of 2015 competition.

History: The 2012 NASA Lunabotics Champions, University of Alabama were invited to the 2012 PISCES conference in Kona during November. As part of that conference, an expedition to the PISCES analog test site was done with the UA team bringing their Lunabot modular designs for trial runs. Their performance and comments were encouraging to support a competition at this site in the future.

The concept of a World Series competition at the analog site was introduced by Kelso [2] at the 2013 PTMSS in Toronto. It was proposed for technical reasons as being at a more advance level that performances in the Lunabotics LunaPits. Mueller [1] presented an overview of the 2013 Lunabotics at that same conference. Shortly thereafter NASA announce some major changes in the Lunabotics program. It would be henceforth called the Robotic Mining Competition (RMC) and teams would be limited to those from United States universities.

Current Status: The need (and desire) for an international venue of this ISRU concept was immediate. Combining that need and the increase in technical and scientific fidelity by testing at an analog site resulted in PRISM.

PRISM would be based on the RMC Rules and rover parameters. Due to the implementation timescale, the 2014 plans call for an exhibition event with a few invited teams to prove the concept and determine alterations for 2015. The non-U.S. teams could use their 2013 Lunabot or modified if desired. The 2014 NASA RMC winner would be an automatic invite.

LunaPits would be replaced with multiple courses with a longer traverse, multiple obstacles (craters and rocks), possible "lava tube" tunnel shortcut. Heats would be similar in time (20 min) to RMC. Because of the remote location of the analog test site (and rquisite 4WD access), Mission Control would be distributed to a University of Hawaii - Hilo room ~20 miles distance so that interested public can participate.

References: [1] *NASA Robotic Mining Competition*,http://www.nasa.gov/offices/education/centers/kennedy/technology/nasarmc.htm [2] R. Mueller, *NASA Lunabotics Mining Competition: 2012 Results & Taxonomy/2013 Rules*. PTMSS 2013. [3] R. Kelso, *World Lunabotics Mining Competition - Using Analogue Test Sites on the Big Island of Hawaii for the World-Finals of Lunar Excavation Competitions: The Aloha Bowl*

Additional Information: More information about PRISM or the PISCES field site can be obtained by email from the first author and Logistics Manager. A field users guide and project initiation form are available. See also http://www.pacificspacecenter.com/