

PISCES HAWAII

New Opportunities for Hawaii in Aerospace

www.pacificspacecenter.com



*PISCES Program Manager
Rodrigo Romo*

2017 promises to be an interesting year with exciting new opportunities emerging in the aerospace industry for Hawaii and across the globe.

We here at PISCES hit the ground running in January to start the new year off right. We set our sights on securing sustainable funding for our aerospace research by working closely with state lawmakers to prepare and submit legislation designed to benefit Hawaii's long-term business and economic development.

Hawaii Senators Glenn Wakai, Kai Kahele and Will Espero, as well as Representative Mark Nakashima all showed strong support in this effort, thinking outside of the box to envision sustainable sources of funding for PISCES' Basalt Research – an objective that stands to profit both the State of Hawaii's economy and the future of space exploration.

More generally speaking, the private sector of the aerospace industry is moving forward at launch speed. There are over 50 small launch vehicles under development

right now, and several companies plan to begin flights in 2017 using next-generation technology. Rocket Lab, a U.S.-based company with operations in New Zealand, plans to launch its first "Electron Rocket" this year. Virgin Galactic is working on its "LauncherOne," an air-launched rocket system, and Vector Space is also planning launches in 2017 to expand commercial spaceflight opportunities.

With the rapid growth of the Small Satellite Industry, both launch vehicles and launch sites are in high demand. Hawaii is a prime location for sending vehicles to space, offering the advantages of a near-equatorial launch site to this quickly emerging market. A Hawaii launch facility would create significant high-tech and manufacturing job growth for the state while stimulating new tracks of education and training courses for local university and college students.

Continue reading on pg. 3

ISSUE 2 FEBRUARY 2017

In this Issue:



HI-SEAS Scientists Begin Mission V on 'Mars'

Pg. 2



Students Face-Off at VEX Robotics Championship

Pg. 3

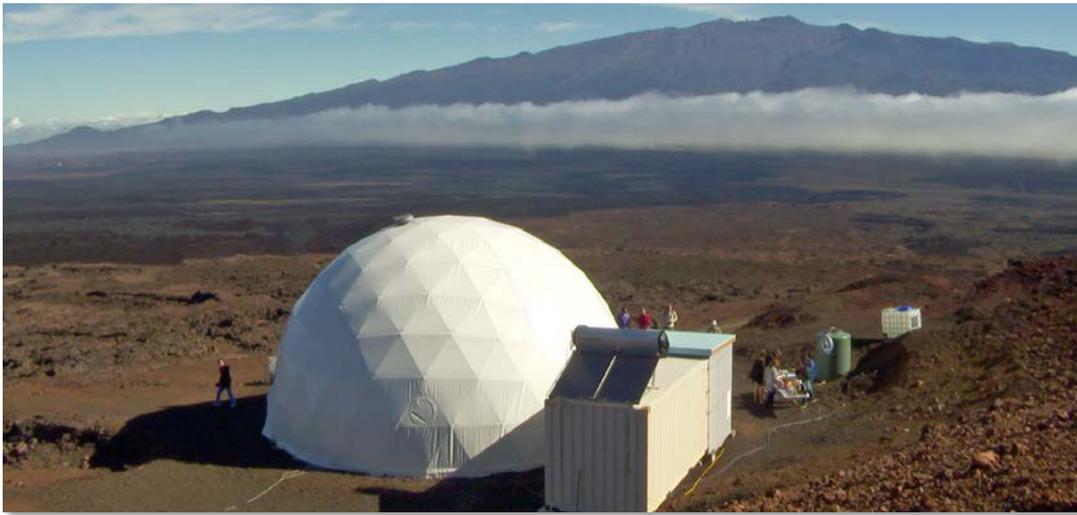


PISCES Remembers Hawaii's First Astronaut on Onizuka Day

Pg. 4

Hawaii Aerospace News

HI-SEAS Scientists Begin Fifth Mission on 'Mars'



Six scientists will live within the confines of this geodesic dome on the slopes of Hawaii Island's Mauna Loa volcano during the next eight months to study human interactions in isolation. Photo: HI-SEAS.

HI-SEAS just began Mission V in a series of groundbreaking NASA-funded studies conducted by the University of Hawaii at Mānoa to assess long-term psychological effects on humans in isolation, in preparation for future human missions into deep space.

"Since 2012, HI-SEAS has been contributing to NASA's plans for long-duration space exploration," said HI-SEAS Principal Investigator and UH Mānoa Professor Dr. Kim Binsted. "We are an international collaboration of crew, researchers and mission support, and I'm proud of the part we play in helping reduce the barriers to a human journey to Mars."

Six carefully selected scientists – four men and two women – entered the geodesic Mars simulation habitat nestled on the slopes of Hawaii Island's Mauna Loa volcano on Jan. 19, marking the beginning of Mission V which will last eight months.

The crew includes engineers, a computer scientist, a doctoral candidate and biomedical expert who were selected from 700 applicants through a rigorous process of tests and interviews. These 'Martian' astronauts will perform EVA geological fieldwork in simulated space suits while concocting creative recipes at mealtime from shelf-stable ingredients. The HI-SEAS crewmembers will be continuously monitored by a team of leading researchers from across the U.S. and Europe. Researchers will closely observe and record a range of behavior data during team building activities, face-to-face interactions, and multiple stress and cognitive studies.

The latest HI-SEAS crew is following the completion of a year-long mission which successfully wrapped up in August, 2016. HI-SEAS first began isolation studies in 2013, and is among a rare group of facilities capable of supporting long-duration missions in confinement including Mars500, Concordia and the International Space Station.

On a related note, Dr. Binsted joined PISCES' Board of Directors in late 2016 to guide and support the organization's mission to advance aerospace and development in the State of Hawaii. For more information about Mission V and previous missions, visit HI-SEAS.org.

Right: The HI-SEAS Mission V crew (L-R): Brian Ramos, Laura Lark, Samuel Payler, Joshua Ehrlich, James Bevington, Ansley Barnard.



New Opportunities cont...

In outreach news, we brought together the Director of the Pacific Aviation Museum (PAM) and the Principal of Kea’au High School in January to discuss the future of the Space Shuttle and Flight Simulator – a mock Space Shuttle cockpit loaned to PISCES by PAM that was refurbished by Kea’au High School and Hawai’i Community College students, as well as members of the Civil Air Patrol. The simulator is not only a lot of fun, but offers students an inspiring educational experience. PAM and Kea’au High School say they will have a plan settled for the future of the shuttle cockpit this month.



PAM Executive Director Ken DeHoff inside the shuttle simulator.

had the honor of serving as a volunteer judge at the state VEX Robotics Championship held at Kea’au High School on Jan. 5. Teams from across the state attended the competition, and I was impressed with their work and aptitude for robotics and programming. Interacting with so many excited students reinforced my belief that it is imperative that we continue supporting local youth in STEM-related studies and careers.

PISCES is steadfastly committed toward this effort through our Internship Program and continuous outreach activities, preparing our bright young minds in Hawaii to excel in the competitive industries of the 21st century.

*-Rodrigo Romo
Program Director, PISCES*

Education & Outreach

Students Face-Off at Hawaii State VEX Robotics Championship



Hawaii high school students engage in a heated match between metal robots during the VEX Robotics Championship at Kea’au High School. Photo: PISCES.

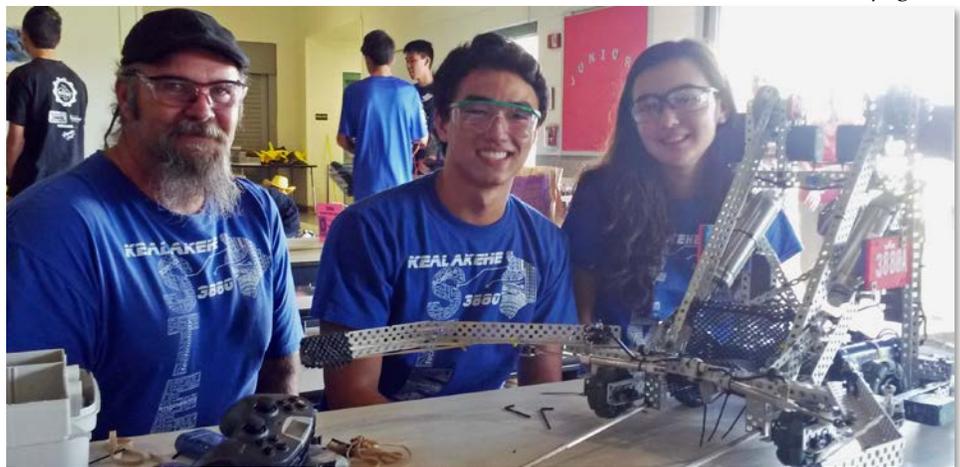
Over 200 students, volunteers and teachers assembled in a cafeteria on Jan. 5 at Kea’au High School on Hawaii Island for the Hawaii State High School VEX Robotics Championship. PISCES Program Manager Rodrigo supported the effort as a volunteer judge, interviewing teams and assessing their robot’s design and performance capabilities.

The competition challenged students to robotically pick up and throw foam jacks and cubes over a fence line using, competing with opponents against the clock and scoring bonus points for more difficult maneuvers.

Hawaii Rep. Mark Nakashima, who is an avid supporter of robotics for local students, attended the event and said a few words to the packed cafeteria amid clashing metal robots: “It’s very exciting to be here and see all of you competing.”

Students from Kealakehe High School, who are actively participating in PISCES’ Moon RIDERS program, also competed in the statewide championship with an innovative robot design. Moon RIDERS is a hands-on STEM learning project partnering NASA with two Hawaii high schools to design, build and launch a real-life experiment to the surface of the Moon.

(Continued on next page...)



Kealakehe High School robotics students and MoonRIDERS pose with their coach, Mike Hauck (left) and robot. Photo: PISCES.

Robotics Championship cont...

"The nice thing about this [competition] is it gives the students a more real-world application of their skills," said Mike Hauck, KHS Robotics team coach and mentor.

Thirty-eight teams participated in the day-long VEX championship from schools Islandwide, concluding with six victors from Kohala, Wailua, Pearl City (three teams) and Mililani High School. The winning teams will go on to compete in a national competition later this spring in Louisville, KY with some 1400 teams from schools across the country.



Rep. Mark Nakashima (L) and PISCES Program Manager Rodrigo Romo at the VEX Robotics Championship.



Pearl City High School robotics students explain their robot's design to two judges during the competition.



Follow PISCES online for center updates and the latest news on space science exploration and technology!

Education & Outreach

PISCES Remembers Hawaii's First Astronaut on Ellison S. Onizuka Day



Hundreds of students came to Onizuka Day at UH Hilo where PISCES staff and volunteers showed visitors lunar and Mars simulant soil and talked shop on robotics.

PISCES honored the memory of Hawaii's first astronaut, Ellison S. Onizuka on Jan. 28 at the University of Hawaii at Hilo during an annual education and outreach event commemorating the Hawaii Island native's life and legacy.

Local science and education organizations rallied to provide inspirational activities for hundreds of visiting students, and NASA Astronaut Kjell Lindgren came dressed for the occasion in a blue spaceflight jumper, sharing breathtaking video of Earth taken during his latest space flight.

"This event inspires kids to get excited about science and technology," said PISCES Education/Public Outreach and Logistics Manager, John Hamilton. "We're proud to be a part of this event every year, and commemorate the memory of Onizuka and his accomplishments. It also serves to highlight Hawaii's crucial role in past space missions as well as future ones to come."

Onizuka was one of seven NASA crewmembers who perished aboard the Space Shuttle Challenger on Jan. 28 in 1986 after the spacecraft tragically erupted into a smoky plume of flames minutes after launch.

Born in Kona, Onizuka excelled as a test pilot and flight instructor after joining the U.S. Air Force in 1970. NASA recruited him as an astronaut candidate in 1978 and he worked in various roles supporting spaceflight missions. Onizuka was posthumously promoted to the rank of Colonel and awarded the Congressional Space Medal of Honor. He continues to serve as a beacon of inspiration and hope to Hawaii's youth.

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