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David Sims
UNH Institute for the Study of Earth, Oceans and Space

UNH Media Relations

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Contact: David Sims
603-862-5369
Science Writer
Institute for the Study of Earth, Oceans, and Space

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DURHAM, N.H. -- A new "black smoker" – a deep-sea mineral chimney associated with extraordinary ecosystems that thrive without sunlight – has been discovered at a depth of about 8,500 feet by a multi-institutional expedition currently exploring an unusual section of a volcanic ridge along the Pacific Ocean floor off Costa Rica.

Professor Karen Von Damm of the University of New Hampshire's Institute for the Study or Earth, Oceans, and Space (EOS) and Department of Earth Sciences is the hydrothermal vent expert on board the Research Vessel *Atlantis* currently plying the waters above the East Pacific Rise spreading center at 9 degrees north latitude.

The area is a place where the Earth "burps up a new skin" in a cloud of acidic black smoke and temperatures rise to more than 700 degrees Fahrenheit, and where giant tube worms and clams form colonies around the cracks that ring the globe.

Expedition leaders from Duke University, UNH, the University of South Carolina, and the Woods Hole Oceanographic Institution in Massachusetts, which operates the R/V *Atlantis* and its camera-studded robotic submersible, "Jason," that made the discovery, have named their new find the Medusa hydrothermal vent field.

The researchers chose the name to highlight the presence of a possibly-unique pink form of the jellyfish order Stauromedusae, and because of resemblances between the protruding tubework casings that festoon the chimney and "the serpent-haired Medusa of Greek myth," says expedition leader Emily Klein, a geology professor from Duke's Nicholas School of the Environment and Earth Sciences.

The bell-shaped jellyfish sighted near the vents "are really unusual, and the ones we found may be of a different species because nobody has seen types of this color before," adds Von Damm, a chemical oceanographer.

The vents themselves are unusual in that, Von Damm says, "A lot of people thought there wouldn't be hydrothermal activity in this area, but we have found at one vent and have good evidence there are more to find."

The first vent in the Medusa group was discovered at about 8 p.m. Mountain Time on Easter Sunday, right after the scientists aboard *Atlantis* had completed an Easter egg hunt.

Von Damm notes that the site *Atlantis* is studying is some 65 miles south of where she has worked for years and that there is a "really different magma supply down here."

While the unique biological life forms – including 8-foot-long tubeworms – associated with the black smokers draw a lot of attention, Von Damm's research concentrates more on seeing how a select group of these sites evolves temporally, as well as going to different locations to

see what their particular chemistries are. Having discovered new vents in a new region will stretch that aspect of the science further.

"Every vent has a little different chemistry, and that helps us understand the processes going on in the ocean crust. Each one gives us a different piece of the puzzle. And a biologist would say that over 500 new living species have been found at vents since they were first discovered," says Von Damm.

On board the *Atlantis* working with Von Damm are several others from New Hampshire.

Sarah Carmichael is a post-doctoral student in the Complex Systems Research Center at EOS and is responsible for the instruments being used to "sniff out" evidence of plumes coming from hydrothermal vents by measuring temperature, pressure, and optics in the water column. The plumes are created when cold seawater seeps through oceanic crust, is heated by the hot rocks at depth, and then rises and is discharged into the seawater super-heated and chemically altered.

Christopher Waters went to 9 North with Von Damn in March 2004 as a UNH Earth Sciences undergraduate. Now a graduate student in the MIT-Woods Hole Joint Program, some of the rocks he is now helping to collect with Jason will be part of his dissertation research.

Laura Preston is a 9th grade Earth sciences teacher at Salem High School. Like everyone on the cruise, she has several responsibilities, including writing daily dispatches and putting together the photo stories for the expedition's National Science Foundation-funded website (http://www.nicholas.duke.edu/OSCexpedition/). One of Preston's goals is to gain experience in using science data sets in her classrooms.

NOTE TO EDITORS: A high resolution digital photo of the "smoking" Medusa geothermal vent being examined by the undersea robot Jason II is available at http://unh.edu/news/img/medusaphoto.jpg.

Another of the pink, bell-shaped Stauromedusae jellyfish is available at

http://unh.edu/news/img/stauromedusaephoto.jpg.