OCEAN ◆ DRILLING ◆ PROGRAM

News Release

Contact: **Aaron H. Woods**
Public Information Office
Voice: (409) 845-9322
Fax: (409) 845-1026
Internet: aaron_woods@odp.tamu.edu

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Media Contact: Pamela Baker-Masson
(202) 232-3900, ext. 223
pbaker@brook.edu

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FOR IMMEDIATE RELEASE

SCIENTISTS EXPERIENCE CREATION OF HYDROTHERMAL VENTS ON SEAFLOOR
JOIDES Resolution coming to San Diego, Oct. 17-20

During the current research expedition aboard the scientific drill ship *JOIDES Resolution,* two new hot springs were created on the seafloor. This event reactivated an ancient hydrothermal system which produced extensive mineral deposits on or just below the ocean floor.

The group of 25 scientists from nine countries are part of the Ocean Drilling Program (ODP) studying active seafloor hydrothermal systems, and the rich metal deposits they often produce. The ship was drilling about 150 miles west of Vancouver Island, Canada Sept. 17-23 when the creation of these new vents was witnessed.

Although water as hot as 286 C (547 F) is actively being expelled from the seafloor within a few miles of the drilling location, ODP research was focused on sampling the deposits formed by older, but now inactive vents. Natural hot springs on the seafloor are formed when seawater circulates through hot volcanic rocks, often located where new oceanic crust is being formed. Submarine hot springs are in the spotlight of such intense study because they are places where deposits rich in iron, copper, zinc, and other metals form.

"The metal deposits are of great interest to us not so much because they form a metal resource on the seafloor, but because of what they can tell us about how metallic ore deposits that we mine on land were formed millions of years ago," said Dr. Robert Zierenberg, a researcher with the University of California, Davis, and a co-chief scientist for this expedition. "Many of these metal deposits were originally created on the seafloor and have been pushed up onto the continents as the Earth's plates collide."

Scientists on board the *JOIDES Resolution* inspected the site of the new hydrothermal vent (hole 1035F) by lowering an underwater camera 2,448 meters to the seafloor. One of the first to witness the new vent was co-chief scientist Dr. Yves Fouquet, from IFREMER in Brest, France. "It was incredible, we couldn't even see the sea bed because hot water was rushing out of the hole so fast that it was carrying mud and rock fragments out of the hole and forming a cloud more than 30 m (100 ft) above the seafloor."

The new hydrothermal vents provide an unprecedented opportunity for scientists to study the life cycle of a seafloor hot spring and its associated biological community. Naturally occurring hydrothermal vents are known to have limited life spans, but how long any given vent lasts, how it evolves, and how the biological community it supports evolves is largely unknown. One of the biggest mysteries is how the animal communities manage to migrate from one vent to another. Dr. Melanie Summit, a microbiologist from the University of Washington says, "We can now start from time zero and watch how these sites become colonized. This is our first opportunity to watch how a new hydrothermal vent and the animal communities that thrive in these environments grow and change with time."

The U.S. National Science Foundation has responded rapidly to scientists' request to revisit this area of the Northeast Pacific in the near future. In October, scientists will use the research vessel Thompson, outfitted with a

robotic vehicle operated from the ship, to study the geology, chemistry, and biology of these new hydrothermal vents.

"Deep ocean drilling is the only method which allows us to collect samples used to develop a three dimensional picture of fluid flow, alteration, structure, size and composition of deposits and the processes involved in the evolution of these systems," says Dr. Fouquet.

The international research team are sealing instruments into the drill holes to monitor temperature and pressure changes during the next several years. The data will be stored in computers on the seafloor and will be recovered in the future when remotely operated vehicles (ROVs) or the research submersible ALVIN visit these sites. Scientists will then examine the records to see how events like nearby earthquakes and volcanic eruptions effect the flow of hot water from the vents.

The Ocean Drilling Program is funded by the U.S. National Science Foundation, Canada, Australia, South Korea, the European Science Foundation Consortium, Germany, France, Japan, and the United Kingdom to investigate such topics as earth's history and evolution, climate change, and formation of the ocean crust.

Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES), an international group of scientists, provides scientific planning and program advice. Joint Oceanographic Institutions, Inc., a nonprofit consortium of 10 major U.S. oceanographic institutions, manages the program.

Texas A&M University, science operator, operates and staffs the drill ship that retrieves core samples from strategic sites in the world's oceans. Lamont-Doherty Earth Observatory of Columbia University is responsible for downhole logging.

U.S. members of JOIDES are: University of California at San Diego, Columbia University; University of Hawaii, University of Miami; Oregon State University; University of Rhode Island, Texas A&M University, University of Texas at Austin; University of Washington, and Woods Hole Oceanographic Institution. The European Science Foundation Consortium consists of Belgium, Denmark, Finland, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey.

NOTE: The JOIDES Resolution will complete Leg 169 and dock in San Diego, Oct. 17 - 20. Media are invited to attend a press briefing with ODP scientists on board the research vessel, Friday, Oct. 18, 9:30 a.m. in the SEDCO Lounge. Following the briefing, media may visit the ship on guided tours. Local highschool marine science students will tour the ship the same day from 10 a.m. - noon. For interviews, photo opportunities and press briefing information, interested media should contact Pamela Baker-Masson (202) 232-3900 ext. 223 or Cindy Clark with the Scripps Institution of Oceanography at (619) 534-1294.

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Scientists Contacts:

Dr. Susan Humphris
Woods Hole Oceanographic Institution
(508) 457-2000 ext. 3451
susan@copper.whoi.edu

Scientists on the ship:
telephone -- 011-872-124-0707 (about $8 per minute for call)

Dr. Robert Zierenberg
University of California, Davis
jrs_robert_zierenberg@odp.tamu.edu

Dr. Yves Fouquet
IFREMER (Brest, France)
jrs_yves_fouquet@odp.tamu.edu