MEDIA CONTACTS:
Pamela Baker-Masson
(202) 232-3900 ext. 223
pbaker@brook.edu

Aaron Woods
(409) 845-9322
aaron_woods@odp.tamu.edu

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FOR IMMEDIATE RELEASE

SCIENTISTS TO OBSERVE WATER DRAINING FROM OCEAN INTO SEAFLOOR

During the last 21 years, 200 million gallons of ocean bottom water have flowed down a drilled hole in the middle of the North Atlantic Basin into the underlying oceanic crust. Scientists believe the rate of water flow into the hole implies equally significant rates of lateral transport, similar to an underground river beneath the seafloor. Scientists drilled the hole in 1975 to collect rock and sediment core samples.

Leaving New York City on July 22, the Ocean Drilling Program will send a team of scientists and engineers to install an underwater observatory in this hole to study the effects of seawater circulation. In recent years, ODP scientists and engineers have developed a new kind of experiment to study different modes of fluid circulation. In this kind of experiment, selected ODP holes are instrumented with temperature, pressure and chemical sensors with multi-year data logger tools to monitor the subtle long-term signals of groundwater flow beneath the seafloor.

Data from these long-term experiments are retrieved by visiting the installations on the seafloor with manned submersibles or unmanned remotely-operated vehicles (ROVs). To date, such observatories have been installed in 10 holes in various geological settings near the northwest coast of the U.S. and the Caribbean.

The goals of the long-term observatory to be installed during ODP Leg 174B are to understand the underlying causes of such spectacular sub-seafloor groundwater flow in a setting without any obvious tectonic or thermal driving forces for the flow. Prior to the installation of the observatory, a few days of special short-term experiments and logging analyses will be conducted in the hole, to assess the fine-scale permeability and porosity structure that allows such massive amounts of groundwater flow. After installation of the long-term observatory, future plans are to revisit the site sometime in 1998 using a submersible or ROV to download the first installment of long-term data from the subsurface.

In recent decades, it has become clear that fluid flow is nearly ubiquitous beneath the seafloor, analogous in many ways to groundwater flow in the continents. Such flow occurs in several different characteristic modes beneath the seafloor, including (1) spectacular high-temperature hydrothermal vents near spreading centers, driven by the heat released during cooling of molten magma, (2) tectonically-forced fluid expulsion where tectonic plates collide at subduction zones,

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and (3) low-temperature hydrothermal circulation throughout much of the ocean basins.

The last mode of circulation may be the most important in geological terms, when integrated over geological time and the vast area of the ocean basins that exist away from active spreading centers. This flow has a profound effect on the chemical and thermal balance of the Earth. However, it produces very few manifestations on the seafloor, and may be the most difficult form of circulation to study except by ocean drilling.

The Ocean Drilling Program, an international partnership of scientific institutions and governments, explores the history and evolution of Earth's crust. The Ocean Drilling Program is funded principally by the National Science Foundation, with substantial contributions from its international partners. These include the Federal Republic of Germany, France, Japan, and the United Kingdom. Australia, Canada, Chinese Taipei, and Korea hold a joint partnership. Another partner is the European Science Foundation, consisting of Belgium, Denmark, Finland, Iceland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Turkey. The program is managed by Joint Oceanographic Institutions, a consortium of 10 U.S. institutions, with Texas A&M University responsible for science operations. Lamont-Doherty Earth Observatory is the operator for downhole logging.

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SCIENTISTS/ENGINEER CONTACTS:

Dr. Keir Becker, Chief Scientist
Rosenstiel School of Marine and Atmospheric Science, University of Miami
Internet: kbecker@rsmas.miami.edu
Work: (305) 361-4661
Fax: (305) 361-4632

Dr. Mitchell J. Malone, Staff Scientist
Ocean Drilling Program
Texas A&M University
Internet: mitchell_malone@odp.tamu.edu
Work: (409) 845-5218
Fax: (409) 845-0876

Eugene Pollard, Engineering
Ocean Drilling Program
Texas A&M University
Internet: eugene_pollard@odp.tamu.edu
Work: (409) 845-2161
Fax: (409) 845-2308

David Goldberg, Scientist
Borehole Research Group, Lamont-Doherty Earth Observatory
Internet: goldberg@lamont.ldeo.columbia.edu
Work: (914) 365-8674
Fax: (914) 365-3182