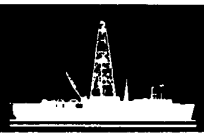
NEWS RELEASE
Ocean Drilling Program



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COLLEGE STATION, TEXAS -- Guadeloupe, Martinique, Barbados, Tobago and Trinidad. For most people these names conjure up the balmy days and exotic nights redolent of island life.

But to a team of scientists on board the drill ship JOIDES Resolution, these islands -- called the Lesser Antilles -- mean much more than a sunny day at the beach. For the next two months, the scientists will be casting an analytical eye at the region's turbulent geologic history which is responsible for its present-day idyllic configuration.

Stretching from the Virgin Islands at the upper point of the crescent to the islands just off the north coast of Venezuela, the Lesser Antilles is a complex geological structure called an island arc. These island groups are found all over the world and typically consist of an arc-shaped chain of volcanic islands bounded by a relatively shallow basin on the concave side and a deep trench and ocean on the convex side.

Scientists now know that a series of huge plates carry ocean and continental crust across Earth's surface. When two plates meet, several events can occur. The Lesser Antilles

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island arc is an expression of the volcanism created by the North American plate moving westwards and sliding under, or subducting beneath, the Caribbean plate at the rate of about two centimeters (almost an inch) a year.

As the North American plate moves under the Caribbean, sediments scraped off the under-thrusting plate are piling up, creating huge masses of crumpled rock and, in some instances, raising some areas above sea level as islands. The process is analogous to shoving your foot into a pile of dirt, accumulating a layer of dirt on top of your shoe. In plate tectonics, the pile transferred from one plate to another is called an accretionary prism. The island of Barbados, on the eastern edge of the Caribbean plate, is one portion of an accretionary prism that has built up above sea level.

The ship, a floating research center for the Ocean Drilling Program (ODP), will drill into the prism at four sites to recover cores of sediment. Scientists will examine these cores on board the ship for clues into the processes associated with active accretionary margins. The scientists are particularly interested in the structural and hydrologic characteristics of the prism formation.

At the base of the Barbados prism is what scientists call a decollement -- a detached surface -- that in this case separates the over-thrusting prism and the under-thrusting North American plate. Little is known about how these detachment planes develop and what their role is in active accretionary margins. Previous

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drilling results have shown that this particular decollement contains high-pore pressure and unusually warm fluids which migrate upward. Scientists hope to learn more about the nature of the pore pressure, the source of these high-temperature fluids and whether or not they are consistent throughout the detachment fault.

At one site, the ship will drill 800 meters (2,640 feet) through the accretionary prism, the decollement and the subducting sediments to the basement, which is the igneous rock that lies below the sediment layer. From the recovered cores of material, scientists will study the mechanics of the sediment -- how they pile up, fault and fold. They will also study the character of sediments being transported below the accreted pile.

Scientists will look specifically at the strength and deformation of the material to find out how it is altered in the different sequences. This information will help demonstrate what happens to sediments in accretionary prisms and how pore fluids are related to the process of offscraping and subduction. Paleontologists will also look at the microfossil record to learn how accretionary prisms evolve through time.

Another set of experiments will take place down the bore hole. Instruments will be lowered down the hole to determine the surrounding environment's temperature, permeability and distribution of pore pressures in the prism and the decollement.

Scientists hope that results from the drill sites will help them to better understand how accretionary prisms develop

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with time, how the sediment strength and pore water pressures control accretion compared to non-accretion (subduction) and how the accretionary process affects the surrounding geologic environment.

Co-chief scientists for the cruise are Dr. J. Casey Moore from the University of California at Santa Cruz and Dr. Alain Mascle from the Institut Francais du Petrole in France. Dr. Elliott Taylor is the ODP staff scientist from Texas A&M University.

JOIDES Resolution, registered as SEDCO/BP 471, is the research vessel of ODP which is funded by the United States National Science Foundation, Canada, the European Science Foundation Consortium for the Ocean Drilling Program, France, Japan, West Germany and the United Kingdom.

The ship departed Barbados on June 26 with a scientific party of 23 members from Canada, France, Japan, United Kingdom, the U. S. and West Germany. A technical crew of 23 and a ship's crew of 65 are also sailing. The ship will return to Barbados in mid- August.

The 470-foot-long drill ship's derrick towers 200 feet above the waterline. A seven-story laboratory stack provides facilities for on board examination of sediment and hard-rock cores. Laboratories contain space and equipment for studies in chemical, gas and physical properties, paleontology, petrology, paleomagnetics and sedimentology. Marine geophysics research is conducted while the ship is under way.

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Texas A&M University, as science operator, operates and staffs the drill ship and retrieves cores from strategic sites around the world. The science operator also ensures that adequate scientific analyses are performed on the cores. To do this, Texas A&M maintains shipboard scientific labs, provides logistical and technical support for shipboard scientific teams, manages post-cruise activities, is curator for the cores and of the scientific results.

Lamont-Doherty Geological Observatory of Columbia University is responsible for downhole logging.

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

"After drilling in the Caribbean, the ship will sail through the Panama Canal into the Pacific," announced Dr. Philip D. Rabinowitz, director for the program.

"In the fall she will drill at two sites off the coast of Central and South America. The first site -- about 300 miles off the coast of Central America -- will be at the deepest hole ever drilled into old ocean crust. The ship will deepen the 4,125-foot hole another 1,000 to 1,400 feet. During the last leg of 1986, the ship will drill into the Peruvian margin where the Pacific plate is sliding underneath South America," Rabinowitz said.

(Note: JOIDES institutions are: University of California at San Diego, Scripps Institution of Oceanography; Columbia University, Lamont-Doherty Geological Observatory; University of Hawaii, Hawaii Institute of Geophysics; University of Miami, Rosenstiel School of Marine and Atmospheric Science; Oregon State University, College of Oceanography; University of Rhode Island, Graduate School of Oceanography; Texas A&M University, Department of Oceanography; University of Texas at Austin, Institute of Geophysics; University of Washington, College of Ocean and Fishery Sciences; and Woods Hole Oceanographic Institution.

Non-U.S. members are Department of Energy, Mines, and Resources, Earth Sciences Sector, Canada; European Science Foundation Consortium for the Ocean Drilling Program, Belgium, Denmark, Finland, Iceland, Italy, Greece, the Netherlands, Norway, Spain, Sweden, Switzerland and Turkey; Bundesanstalt fur Geowissenschaften und Rohstoffe, Federal Republic of Germany; Institut Francais de Recherche pour l'Exploitation de la Mer, France; University of Tokyo, Ocean Research Institute, Japan; and Natural Environment Research Council, United Kingdom.)