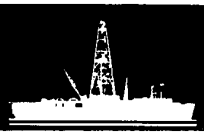
NEWS RELEASE
Ocean Drilling Program



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COLLEGE STATION, Tx -- Rocks from a volcanic ridge system and sediment containing the remains of ancient plant and animal life in the northeast Indian Ocean contain the history of the region's marine environment, say scientists on board the drill ship, JOIDES Resolution.

To learn more about the tectonic and environmental evolution of the Indian Ocean, the scientists will examine clues gathered from cores of rock and sediment recovered from beneath the seafloor. The 25 scientists from the U.S. and eight countries are participants in the Ocean Drilling Program (ODP), an international scientific campaign to discover more about Earth's physical history by probing beneath the ocean floor.

Scientists want to know more about how the Indian Ocean evolved through time because its ancient environment, geochemistry, and physical features are directly tied to today's climate and worldwide sea level. Knowledge about this region's geological history will also help them better understand the ongoing creation of the Red Sea and Gulf of Aden.

Part of the Indian Ocean's history lies within the basement rocks

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of the Chagos-Laccadive-Mascarene Ridge system. The linear ridges represent a chain of extinct volcanoes, sites of hot spots rising from deep within Earth's mantle. An active hot spot near Reunion Island, due east of Madagascar, is the parent that spawned the expired volcanoes which now form the ridge system.

Hot spots are punctures in the oceans' floors in which hot magma wells up, forming volcanoes. As a tectonic plate moves laterally over these fixed magma sources, it carries the volcanic formation with it, leaving the hot spot behind. The process creates a chain of volcanoes as the plate moves away from the hot spot, the oldest formation heading the ridge.

The ridges, which run north and south in the Indian Ocean, were placed in their present positions millions of years ago as India made its way northward. About 130 million years ago Australia, India and Antarctica were united into one megacontinent located near the present-day South Pole. As they separated, the South Atlantic and Indian Ocean began to open, marking the beginning of today's ocean systems. India continued to separate from Antarctica and move northwestward until about 53 million years ago when the continent collided with Asia, forming the Himalayas.

As the plate moved northward, it passed over the stationary hot spot near Reunion Island. This active hot spot, therefore, stands as a reference point to past geologic events. Scientists hope to chronicle how the ridges have changed as the drifting plate pulled them along. Once scientists have assigned dates to the expired hot spots along the length of the ridge, they can determine how Earth's crustal plates have moved through time. They can also construct the

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continents' orientations to each other at different stages in Earth's changing topographic configurations.

Scientists will also examine sediments containing skeletons of microscopic-sized plants and animals during the last 65 million years. The oceans act as giant reservoirs for the sediment deposits that blanket the plateaus and flanks of the ridges much like snow caps a mountain. The deposits contain the primary record of the geochemical cycles of calcium and carbon dioxide on Earth's surface.

Carbonate oozes found on higher elevations of the ridges disappear at a certain water depth, a phenomenon known as calcite compensation depth or CCD. A profile of these changes will help scientists reconstruct the movement of continents, patterns of oceanic circulation, Earth's climatic history, and glacial and interglacial episodes through time.

The current expedition marks the first of a nine-cruise investigation into Earth's physical history beneath the Indian Ocean.

Co-chief scientists for the cruise are Dr. Jan Backman of the University of Stockholm, Sweden, and Dr. Robert A. Duncan, Oregon State University, Corvallis. Dr. Andrew H. Macdonald is the Texas A&M University staff scientist.

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

The 470-foot-long drill ship's derrick towers 200 feet above the

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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.

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.

"During the rest of 1987 and most of 1988, JOIDES Resolution will drill in the Indian Ocean, the least scientifically explored of Earth's major oceans," said Dr. Philip D. Rabinowitz, director of ODP.

The evolution of the Indian Ocean is directly linked with the destruction of the ancient Tethys Sea, the origin of the Himalayan mountain range and the development of the circum-Antarctic current.

(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.)