NEWS RELEASE
Ocean Drilling Program

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Sept. 4, 1987

Leg 117.1

COLLEGE STATION -- The southwest monsoon, the periodic wind that annually brings torrential rains to Africa and parts of Asia, owes its existence to a variety of interrelated factors that have evolved over millions of years.

Scientists on board JOIDES Resolution, research vessel for the Ocean Drilling Program, will spend the next two months drilling for evidence of the monsoon's evolution. They will also investigate the tectonic history of the Oman margin, a geologically complex region that currently raises more questions than scientists can answer with the available information.

The southwest monsoon is a dominant component of the global climate. Today its force critically affects rainfall in Asia and Africa as well as regional atmospheric and oceanographic conditions. But scientists are curious about how and when the monsoonal system began and its subsequent influence on the ancient climates of Africa and Asia.

Previous deep-sea drilling investigations have allowed scientists to reconstruct the monsoon's history during the past 150,000 years, a period critical in human evolution. A primary objective of this

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cruise, scientists say, is to push that wall of time back more than 25 million years.

The monsoon is a relatively simple climatic phenomenon. From May to September, the Asian highlands of Tibet and the Himalayas are warmed, causing the air to rise over the hot land, creating a low pressure cell. Southwest winds replace the rising air on land with warm, moist air blown from the northwest Indian Ocean. The moist air condenses, creating a heavy rainfall. The process reverses in the winter when the monsoons change from a southwesterly to northeasterly direction.

Whatever effects the monsoon creates are eventually recorded in the depths of submarine sediment layers. The wind skims water off the surface of the Arabian Sea, for instance, allowing colder nutrient-rich middle and bottom waters to well up. Remains of the biota that thrive in these upwelling cells are being continually buried in sediment layers. The wind also blows dust and plant particles from the East African highlands which join the fossil remains from the upwelling cell, settling, layer upon layer, beneath the seafloor.

The uplift of the Himalayas marks another component of the monsoon's evolution. As the world's highest mountain range was being created, the Indus River carried sediment down from the Himalayas to the Indus Fan, where one of the expedition's planned drill sites is located. By reconstructing when sediments were deposited in the Indus Fan, scientists can explore how and when the Himalayan uplift affected the initiation and intensity of the monsoon.

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The climatic history of this part of the world, birthplace of humankind, is critical to our understanding of human evolution and migration. Information gained by reconstructing the monsoon's evolution through a time period of this magnitude will help researchers to better understand both human history and regional climatic behavior on a scale of millions rather than thousands of years.

A second objective of the cruise is to explore the tectonic history of the Owen Ridge, Oman Basin and Oman continental margin. Two factors puzzle scientists: an unusually thin layer of sediment in the Oman Basin, and the possibility that oceanic crust--originally created at a mid-ocean ridge--was pushed onto the continental margin by tectonic forces. These previously unknown geological anomalies have led scientists to reexamine previous hypotheses about how and when the ancient Tethys Sea closed and when India, Africa and Arabia reached their present positions on Earth's shifting face.

By accurately reconstructing this region's tectonic history, scientists may get a better handle on ongoing tectonic processes such as the African Rift Valley and the Gulf of Aden, both of which are in the early stages of an ocean's life cycle.

Co-chief scientists for the cruise are Dr. Warren Prell of Brown University, Providence, Rhode Island, and Dr. Nobuaki Niitsuma, Shizuoka University, Shizouka, Japan. Dr. Kay-Christian Emeis is the staff scientist, Texas A&M University, College Station.

JOIDES Resolution, officially registered as SEDCO/BP 471 and leased from SEDCO/FOREX, 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, France, Japan, West Germany and the United Kingdom.

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.

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.

"JOIDES Resolution will be in the Indian Ocean through 1988," says Dr. Philip D. Rabinowitz, director of the ODP. Eighteen months of drilling in this scientifically unexplored region will help give add four

us a better understanding of the geologic history of the Indian Ocean than we have ever had before."

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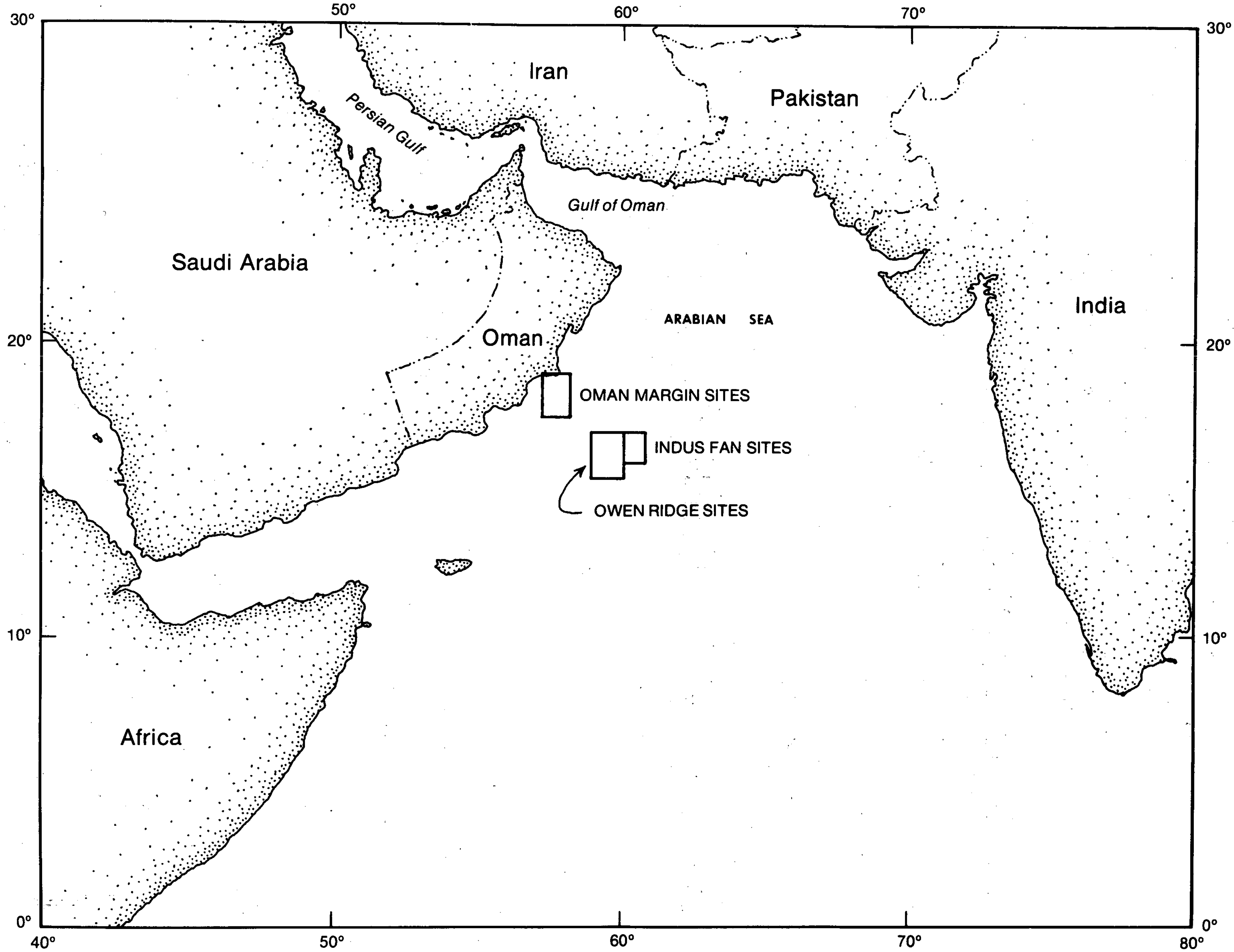
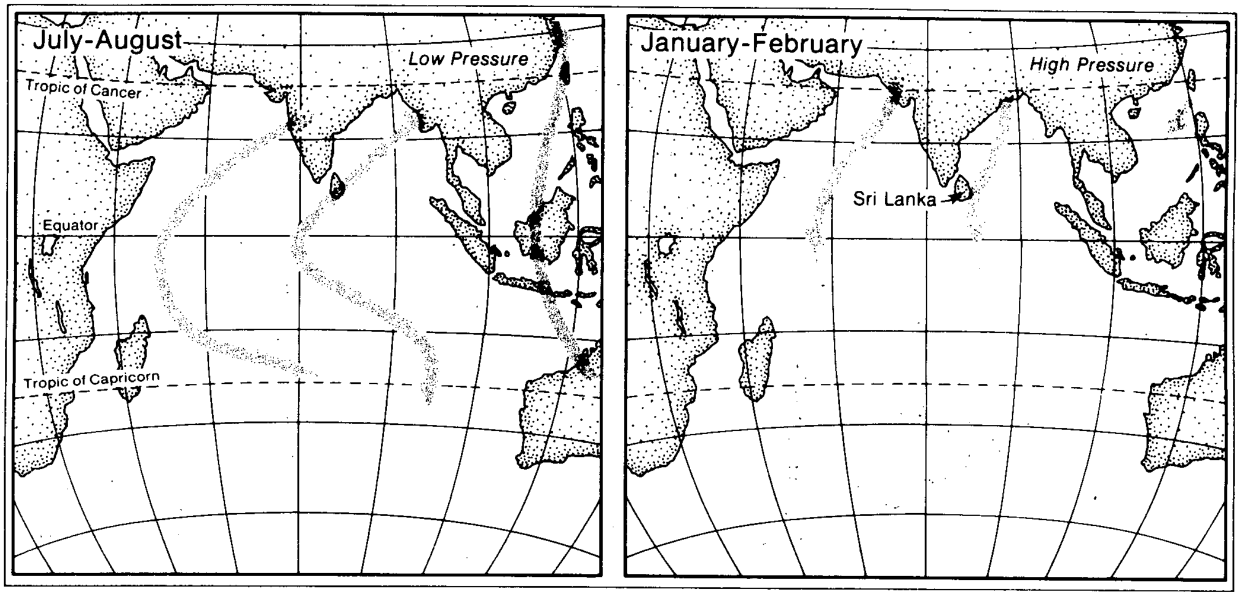
(Note: JOIDES institutions are: University of California at San Diego, Scripps Institution of Oceanography; Columbia University, Lamont-Doherty Geological Observatory; University of Hawaii, Hawaii Institute of Geophysics; University of Miami, Rosenstiel School of Marine and Atmospheric Science; Oregon 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.

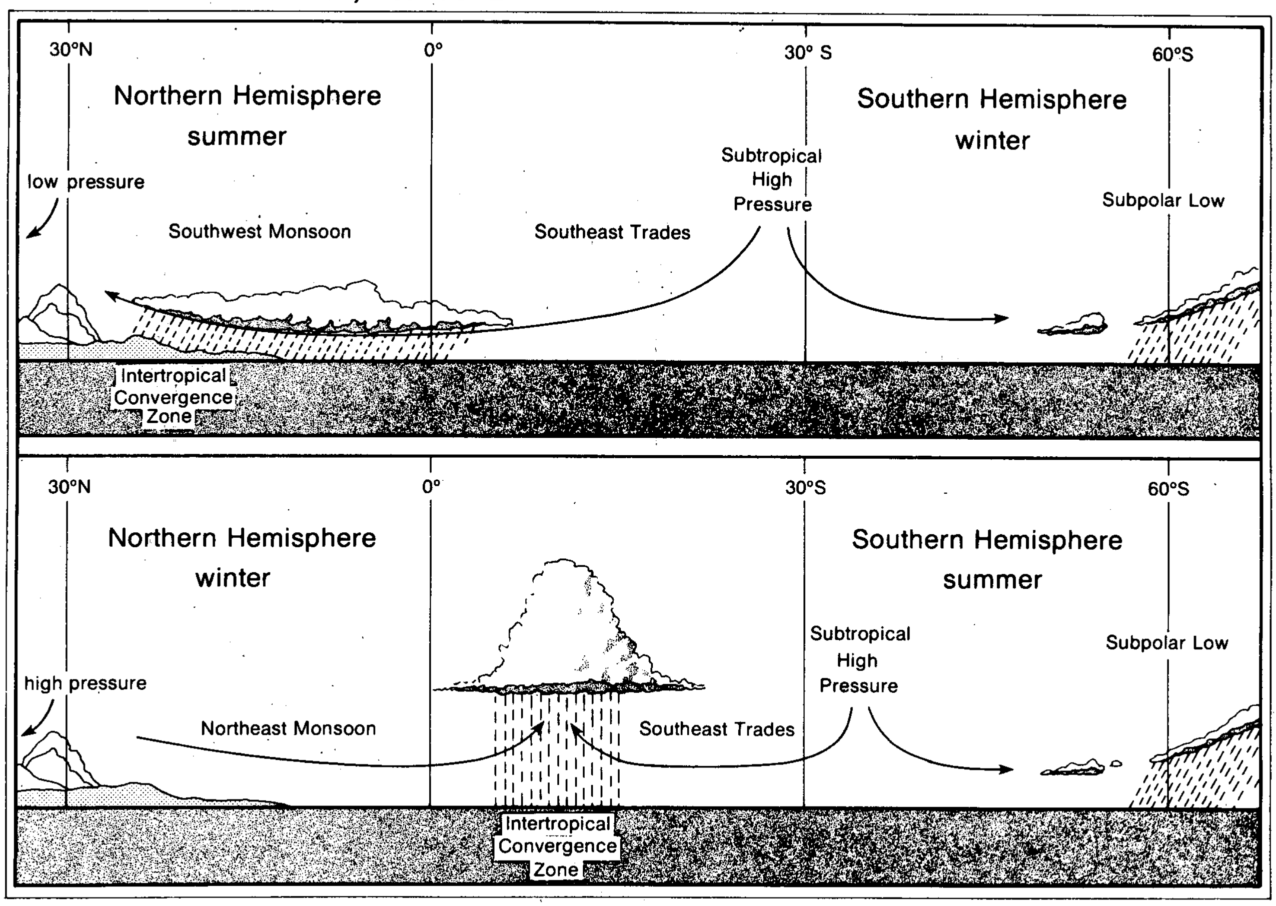
Non-U.S. members are Department of Energy, Mines, and Resources, Earth Sciences Sector, Canada; European Science Foundation Consortium for the Ocean Drilling Program, Belgium, Denmark, Finland, Iceland, Italy, Greece, the Netherlands, Norway, Spain, Sweden, Switzerland and Turkey; Bundesanstalt fur Geowissenschaften und Rohstöffe, 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.)



Leg 117: Owen Margin /Owen Ridge/ Indus Fan



Generalized Cross Section, Near 75° E



Scientists on Leg 117 will investigate how the monsoon cycle has evolved over the past 25 million years. The cycle as it exists today has two seasons. From May to September, the Asian highlands of Tibet and the Himalayas are warmed, causing the air to rise over the hot land, creating a low pressure cell. Southwest winds replace the rising air on land with warm, moist air blown from the northwest Indian Ocean. The moist air condenses, creating a heavy rainfall. The process reverses in the winter when the monsoons change from a southwesterly to northeasterly direction.