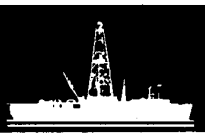
NEWS RELEASE
Ocean Drilling Program



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Leg 108.2

COLLEGE STATION, Texas -- Scientists returning from a two-month research cruise now have valuable information about what Earth's atmosphere, climate and ocean circulation were like during the last several million years.

The scientists, a 22-member international team, drilled off the coast of Northwest Africa on board JOIDES Resolution, the drill ship for the Ocean Drilling Program (ODP). They will return to their respective countries to further examine the data obtained from cores of sediment retrieved beneath the seafloor.

The water that covers two-thirds of Earth's surface is comparable to a huge circulatory system. Severe climatic and atmospheric changes like those that produced the ice ages affected not only the polar regions, but all of the worlds' oceans. On this expedition, the eighth ODP cruise since January 1985, scientists set out to document how the ocean in an equatorial region responded to worldwide climatic changes during the last six million years.

By studying ancient climate conditions as they occurred off the coast of Northwest Africa, scientists hope to determine if

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oceanic and atmospheric conditions in the equator are climatically linked to the polar regions. Scientists will base their comparisons on changes in the equator's surface ocean circulation, upwelling regions, wind circulation and land climate with changes in polar ice sheets, sea ice and ocean circulation in high-latitude areas.

Scientists also investigated the sediment samples for minute particles blown from the African continent. The fossilized records left by freshwater diatoms (one-celled organisms), grass skelton fragments called phytoliths, and silt and clay will help scientists better understand the climatic history of West Africa and the processes which contributed to its extreme desert conditions.

The region where the ship drilled is also one of upwelling zones. During upwelling, surface water is removed either by coastal winds or by trade winds north and south of the equator which create an equatorial divergence. Nutrient-rich middle and bottom waters move up to replace the surface water. For the first time, sediments with extreme rates of carbon accumulation were recovered from below a region of strong coastal upwelling. These sediments will provide vital geochemical information on how hydrocarbons accumulate in marine environments.

The ship drilled 27 holes at 12 sites between two degrees south and 22 degrees north of the equator in water depths up 4,746 meters (about three miles). The 3,841 meters (almost two-and-one-half miles) of cored sediment is the largest amount

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recovered in the history of ocean drilling. Because paleo-climatic studies require detailed sampling on the order of one sample every 10 centimeters (four inches), it will take several years to completely examine the samples and determine the most significant results from the expedition.

The preliminary results obtained on board the ship indicate that beginning between 2.5 to 3 million years ago, coastal upwelling and south equatorial divergence substantially intensified, continuing to about 500,000 years ago. Scientists based these conclusions on increases in the content of marine plankton (diatoms) and organic carbon in the sediment.

Scientists suggest that in addition to coastal upwelling and divergence, these changes may also represent an increased lateral movement of cool water toward the equator caused by stronger, eastern-boundary currents in each hemisphere during the last 3 million years. The Leg 108 results suggest that a clear correlation exists between this equatorial trend with similar changes in polar climates, but the exact nature of the link awaits an analysis of the orbital changes occuring at the frequency of 20,000 to 100,000 years.

The recovered sediment provided details about major changes in oceanic deep-water circulation occurring during the last 20 million years. Based on markedly improved preservation of calcium carbonate, the scientists learned that sediment rates strongly increased about 4.5 million years ago at sites less than

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than 4,000 meters and about 4 million years ago at deeper sites. The change in the calcium compensation depth reflects a gradual, but major displacement of deep-water masses.

Co-chief scientists for the cruise were Dr. William Ruddiman of Lamont-Doherty Geological Observatory, Columbia University, and Dr. Michael Sarnthein, Geologisch-Palaeontologisches Institut, Universitat Kiel, Federal Republic of Germany. Dr. Jack Baldauf was the Texas A&M University staff scientist representative.

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

The 470-foot-long drill ship's derrick towers 200 feet above the waterline. The heart of the floating research center is a seven-story laboratory stack which provides space and equipment for on board examination of sediment and hard-rock cores. Studies include 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. Texas A&M maintains shipboard scientific labs, provides logistical and

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technical support for shipboard scientific teams, manages post-cruise activities, is curator for the cores and publishes 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.

"Plans for other cruises this spring and summer include drilling at the Mid-Atlantic Ridge and in the Lesser Antilles off Barbados," announced Dr. Philip D. Rabinowitz, director of ODP.

The Mid-Atlantic Ridge cruise, a return visit for JOIDES Resolution, will involve deepening a hole initiated on a previous cruise. By studying core samples of new, volcanic rock, scientists hope to learn more about the history and process of seafloor spreading.

In early summer, the ship will drill off the islands of the Lesser Antilles at sites where the Atlantic tectonic plate is being subducted beneath the Caribbean plate.

(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; 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.)

Participating scientists were Dr. William Ruddiman, Lamont-Doherty Geological Observatory, Columbia University, and Dr. Michael Sarnthein, Geologisch-Palaentologisches Institut, Universitaet of Kiel, Federal Republic of Germany, co-chief scientists; Dr. Jack G. Baldauf, staff scientist, Texas A&M University; Jan Backman, Department of Geology, University of Stockholm, Sweden; Jan Bloemendal, Graduate School of Oceanography, University of Rhode Island; William Curry, Woods Hole Oceanographic Institution; Paul Farrimond, Organic Geochemistry Unit, School of Chemistry, University of Bristol, United Kingdom; Jean-Claude Faugeres, Laboratoire de Geologie-Oceanographie, Universite de Bordeaux I, France; Thomas Janecek, Lamont-Doherty Geological Observatory, Columbia University; Yuzo Katsura, Institute of Geosciences, University of Tsukuba Ibaraki, Japan; Helene Manavit, Laboratoire de Stratigraphie des Continents et Oceans, University Paris VI, France; James Mazzullo, Texas A&M University; Juergen Mienert, Geologisch-Palaeontologisches Institut und Museum der Universitaet Kiel, Federal Republic of Germany and Woods Hole Oceanographic Institution; Edward Pokras, Lamont-Doherty Geological Observatory, Columbia University; Maureen Raymo, Lamont-Doherty Geological Observatory, Columbia University; Peter Schulteiss, Institute of Oceanographic Sciences, United Kingdom; Ruediger Stein, Geologisch-Palaeontologisches Institut, Universitaet Giessen, Federal Republic of Germany; Lisa Tauxe, Scripps Institution of Oceanography, University of California; Jean-Pierre Valet, Centre des Faibles Radioactivites, C.N.R.S., France; Philip Weaver, Institute of Oceanographic Sciences, United Kingdom; and Hisato Yasuda, Department of Geology, Kochi University, Japan.