

NEWS RELEASE

Ocean Drilling Program



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COLLEGE STATION, TX -- Scientists on board the drill ship JOIDES Resolution are heading south for the winter, far south. But their pursuit is not that of conventional snowbirds. They left Punta Arenas, Chile, today to drill for two months in the Weddell Sea, an Antarctic basin plagued with foul weather, high winds, pack ice and massive icebergs.

The scientists are participants in the Ocean Drilling Program (ODP) and the purpose of their polar quest is to find out more about the ancient geological events that continue to have a global impact on today's climate and ocean circulation.

Millions of years ago, Antarctica, along with South America, India, Africa and Australia, formed Gondwanaland, the bottom half of a massive continent that geologists call Pangea. About 150 million years ago, Antarctica and Australia broke away from Africa and drifted south. This process is called plate tectonics, forces which cause the gigantic global plates to move slowly across Earth, carrying continents on their backs.

Scientists believe that Australia began to break away from the

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Antarctic continent about 50 million years ago. The split, the subsequent deepening of the Drake Passage and the prevailing westerly winds caused the Antarctic continent to be surrounded by a circumpolar current that is the largest in all the world's oceans.

Fossils comparable to those in South Africa, Antarctica's ancient neighbor, indicate that the previous climate in the region was much balmer than today's harsh environment. Lush forests and abundant animal life flourished on the island continent until about 36 million years ago when a gradual cooling trend brought massive glaciation. Although the continent is about as large as the United States and Mexico combined, glaciers cover 99 percent of its present-day surface.

The ice-capped continent is surrounded by huge masses of glacial water, the coldest and densest in the world. As this water enters the sea, it forms dense bottom water that begins moving northward into the Atlantic Ocean. The bottom-water mass crosses the equator and moves as far as 40 degrees north, about the same latitude of New Jersey, before it warms, decreasing its density.

Although the climate and atmosphere on both sides of the Atlantic are directly connected to the cold, massive bottom waters originating at the South Pole, scientists know very little about the region's geological history. Scientists do not know, for instance, if glaciation was constant or if the ice melted and reformed during the cooling period that occurred sometime between 36 to 6 million years ago, nor do they know why these glaciers formed in the first place. New information about the ancient environment and development of water masses at the South Pole will give scientists a better understanding

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of today's climate and ocean circulation.

Another goal of the expedition is to piece together a better reconstruction of the region's tectonic history. By learning more about when and how Antarctica broke away from the larger continent and arrived at its present pole-centered position, scientists will have a better understanding of when the circumpolar current developed.

One of the primary reasons that so little is known about this remote region is its extreme climate. JOIDES Resolution, the first scientific drill ship to operate in the Weddell Sea, will drill in January and February, Antarctica's austral summer. Pack ice and icebergs, however, may hinder drilling operations. As a precaution, ODP has leased the ice picket vessel, Maersk Master, to accompany the drill ship through the ice-laden waters. The ice picket vessel features a variety of methods to dispose of or remove large quantities of ice including towing icebergs out of the way or deflecting them with high-pressure water cannons. Scientific experiments will also be conducted on the Maersk Master in coordination with JOIDES Resolution.

The ship will drill seven sites in a clockwise direction, following the melting pattern of the ice. Four alternative sites farther north have been chosen in case extreme ice cover precludes drilling at the first-choice sites.

Co-chief scientists for the cruise are Dr. Peter S. Barker of Birmingham University, the United Kingdom, and Dr. James Kennett of the University of Rhode Island. Dr. Suzanne O'Connell is the Texas A&M University staff scientist.

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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, 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, paleomagnetism 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.

"ODP's next cruise will be in the South Atlantic. We will

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investigate the time of the opening of the South Atlantic as South America moved away from Africa," announced Dr. Philip D. Rabinowitz, director. "We will also continue investigating the flow of Antarctic bottom water into the North Atlantic Ocean."

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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 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.)