OCEAN • DRILLING • PROGRAM

News Release

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FOR IMMEDIATE RELEASE

Discovering Ancient Climates

Ocean Drilling Program scientists conclude expedition in San Francisco

San Francisco - After two months at sea working 12-hour shifts, seven days a week, scientists will savor the opportunity to touch dry land when they dock in San Francisco in June. The research crew is aboard the world's largest scientific drill ship, *JOIDES Resolution*, currently in the Pacific Ocean. The ship is outfitted with 12 laboratories, contains more than 100 computers and has the most advanced equipment enabling scientists to conduct research while at sea.

"San Francisco is the hub of some of the world's most prestigious scientific marine institutions and we hope our visit will contribute to the synergy generated for geoscience research," says Dr. Jeff Fox, director of science operations for the Ocean Drilling Program. "The scientific party coming off the ship will have collected core samples from off the coast of southern California that give us more information about a past ice age and future global warming."

Port call activities begin Monday, June 17 at 1 p.m. when scientists, local university administrators and government officials convene for guided tours aboard the ship, docked at Pier 32. Public lectures will be presented at the Delancey Street Foundation Town Hall beginning at 4:30 p.m. Public ship tours will be available on Tuesday, June 18 from 10 a.m. to 4 p.m.

The international team of scientists representing eight countries is currently investigating changes in ocean temperature, productivity and chemistry through the study of microfossils within the sediments. They are also observing changes in vegetation on land through changes in the sediments' pollen content.

"We know that changes in North Pacific ocean temperatures and currents have strongly affected temperatures and rainfall in North America, but we are still pretty much in the dark how often major oceanographic changes have occurred in the North Pacific Ocean and to what extent they have affected the climate of North America," says Dr. Mitch Lyle, a scientist with Boise State University and one of the lead investigators for this expedition. "We are particularly interested in studying the California Current, the south-flowing cold current along California, and the upwelling of cold subsurface waters along the coast, which not only causes the coastal fogs but also brings up nutrients to fertilize the growth of the plankton that are the basis of the highly productive coastal fisheries."

The research team is also tracking glaciers and winds by studying the mineral content of the clays which make up the rest of the sediments. The scientific team is studying climatic changes in the last few hundred thousand years in which they hope to resolve climatic events on the scale of about a hundred years, and will also study the more long-term evolution of the climate for the past 10-20 million years.

Both time frames are important in order to understand the global climate system. The shorter time

frame allows scientists to understand how much the world's climate can be perturbed by transient events like global temperature changes induced by man.

"It appears that fossil fuel burning has raised global temperatures by about one degree Fahrenheit in the last century," explains Lyle. While that doesn't sound like much, it is a quarter of the change that brought us out of the last Ice Age. We are searching for similar natural perturbations in the past to understand the way they resonate through the world's climate."

The longer records of climate events are also important, because no one knows how the latest Ice Age started even though it is now known to have begun 2.5 million years ago. Many hypotheses have been proposed, including chemical changes in the ocean induced by the erosion of the Himalayas, the perturbation of weather patterns by growing mountain ranges, and the closure of seaways between oceans, like the Panama seaway which existed between North and South America before 3 million years ago.

Each hypothesis proposes a different method to change the earth's temperature and induce the buildup of ice at the poles, with profound implications for factors which could change earth climate. None of the theories has yet gained strong support, however, since none has yet built up a reasonable body of evidence to support them. The process of trying to understand how these changes have taken place gives new insight into the processes which today keep our climate stable and which help to keep earth habitable.

The Ocean Drilling Program is funded by the U.S. National Science Foundation, Canada, Australia, the European Science Foundation Consortium, Germany, France, Japan, and the United Kingdom to investigate such topics as earth's history and evolution, climate change, and formation of the ocean crust.

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

Texas A&M University, science operator, operates and staffs the drill ship that retrieves core samples from strategic sites in the world's oceans. Lamont-Doherty Earth Observatory of Columbia University is responsible for downhole logging.

Note: U.S. members of JOIDES are: University of California at San Diego, Columbia University; University of Hawaii, University of Miami; Oregon State University; University of Rhode Island, Texas A&M University, University of Texas at Austin; University of Washington, and Woods Hole Oceanographic Institution. The European Science Foundation Consortium consists of Belgium, Denmark, Finland, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey.

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** For the television media, video footage is available in beta sp and beta formats showing life at sea with scientists and crew members working aboard the *JOIDES Resolution*.