



News Release

Contact: Aaron H. Woods
Public Information Office
Voice: (409) 845-9322
Fax: (409) 845-1026
Internet: aaron_woods@odp.tamu.edu

Australia ♦ Belgium ♦ Canada ♦ Denmark ♦ Finland ♦ France ♦ Germany ♦ Greece ♦ Iceland ♦ Italy ♦ Japan ♦ Netherlands ♦ Norway ♦ Spain ♦ Sweden ♦ Switzerland ♦ Turkey ♦ United Kingdom ♦ United States of America

FOR IMMEDIATE RELEASE

Arctic Ocean Provides Clues to Global Climatic and Environmental Changes

College Station, Tx, May 22 – Scientists from seven different countries have decided to spend their summer vacation in the Arctic Ocean investigating the causes of global climate and environmental changes. The Ocean Drilling Program is planning a cruise from July 9 to Sept. 3 in this high northern latitude ocean because of the direct influences on global environment through the formation of permanent and seasonal ice-cover.

Sailing aboard the largest scientific drill ship, *JOIDES Resolution*, researchers will be studying the Arctic's effects on the transfer of sensible and latent heat to the atmosphere and deep-water formation and ventilation which control or influence both oceanic and atmospheric carbon chemistry.

“The Nordic sea water masses are sometimes referred to as the “lungs” of the present world oceans because they contribute significantly to the ventilation of global ocean water,” explains Dr. Peter Blum, a staff scientist with ODP. “Continuous sections of sediment cores from the deep ocean floor will allow us to reconstruct physical and chemical changes of these deep water masses with time, at scales of tens to millions of years, through analysis of biogenic, geochemical and lithological records.”

Seafloor sediments, containing minerals and skeletons of Arctic marine organisms, are a natural archive that records the environmental conditions of the Arctic Ocean and surrounding continents. In times past, Arctic waters were warmer and free of ice. The dramatic changes in climate that brought frigid conditions to both poles left a signature deep in the ocean floor that can be reached only by scientific drilling.

“Knowledge of the amplitude and timescale of natural climate variations is important because we need to assess whether these variations observed during the last century are natural occurrences or anthropogenically-induced,” explains Dr. Maureen Raymo, a co-chief scientist for the ODP expedition and researcher at the Massachusetts Institute of Technology. “These historic variations also help us predict how the climate system may respond to the even larger increases in greenhouse gases expected over the next century.”

This expedition follows the first exploration of Arctic Ocean floors during the summer of 1993 when ODP drilled the world's northernmost borehole located about 570 km from the North Pole.

The international team of about 50 scientists and technicians will be drilling holes and collecting core samples to better understand the deep and shallow water exchange between the Arctic Ocean and the Norwegian-Greenland Sea. These core samples will also provide information on water mass evolution, particularly initiation and variability of oceanic fronts in surface waters and northern source deep-water formation.

"We will be supplementing the north-south and east-west drill site transects begun in 1993 with about 15 additional holes at eight sites," says Dr. Blum. "This will provide sediment cores from the range of latitudes and water depths needed to reconstruct the history of these globally important water mass properties. Deeper targets (more than 500 m below sea floor) at the northern sites should constrain the timing of the opening of the Fram straight, the ultimate gateway for Arctic deep water flow into the world's oceans."

Other objectives for this cruise include investigating polar cooling and the evolution of low to high latitude thermal gradients in the northern hemisphere, sea-ice distribution, the glacial history of the circum-Arctic, Greenland and Northern Europe and the history of sedimentation.

The Arctic acquired its ice cover between five and 15 million years ago. During the past few million years, 26 gigantic glaciation events have affected northern polar seas and lands, making these regions one of the least accessible and explored on Earth.

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.

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.

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.

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, Greece, The Netherlands, Norway, Spain, Sweden, Switzerland and Turkey.

#