Legs 171 and 172

New evidence of meteorite impact found beneath seafloor

February 6, 1997 An international team of scientists studying deep-sea sediments off the coast of South Carolina has recovered new evidence of the large Caribbean meteorite impact that occurred 65 million years ago. Many scientists believe that meteorite collision led to the extinction of the dinosaurs and many other plants and animals at the end of the Cretaceous period.

Deep sea sediment cores collected during the current research expedition of the Ocean Drilling Program include a 3- to 8-inch-thick layer of debris that is the blanket of material (dust and gases) ejected into the atmosphere upon meteorite impact. "We recovered three cores spanning the last 65 million years that include not only a fantastic record of the meteorite's impact and resultant debris that was blasted into the upper atmosphere, but also a 2- to 4-inch-thick sedimentary record of microorganisms that reappeared in the ocean during that time period," said Dr. Richard Norris of the Woods Hole Oceanographic Institution and co-chief scientist for the expedition.

The airborne debris is thought to have triggered a dramatic decline in the global temperature making Earth uninhabitable for the dinosaurs. A mass extinction of marine microorganisms coincided with the disappearance of the dinosaurs. The sedimentary layer documenting the global repopulation contains some of the earliest new species of microorganisms, a rare find in the oceans. Marine sediments immediately beneath the debris layers show evidence of 'chaotic slumping' -- highly disturbed sediments. "This could be a result of an impact-related earthquake," said Dr. Dick Kroon, the other co-chief from the University of Edinburgh. "We envision a massive tidal wave breaking over the Florida platform and stirring up enormous quantities of sediment along the Atlantic seaboard."

The ODP scientists have been aboard the *JOIDES Resolution*, the world's largest scientific research vessel, for one month. The

drillship will come into the Port of Charleston on February 14, 1997. Admiral James Watkins, U.S. Navy (Retired), President of the Joint Oceanographic Institutions, will host a special tribute to Senator Fritz Hollings acknowledging his long-term support of the ocean sciences. The ceremony will take place on the Union Pier/Passenger Terminal adjacent to the drillship Saturday morning, February 15. The public is invited to tour the JOIDES Resolution free of charge on Sunday, February 16 from 10:00 a.m. - 4:00 p.m. **Note: for safety reasons, children under 14 years of age are not allowed to board the vessel**.

On February 18, the JOIDES Resolution will depart for the next two-month voyage to drill several sites between Bermuda and Florida. Sediment cores collected during this expedition will provide important new data that will help scientists better understand the ocean's role in global climate change. "The problem is we need very high sediment accumulation rates to study the short-term climate changes," said Lloyd Keigwin, of the Woods Hole Oceanographic Institution and co-chief scientist. "Because conventional oceanographic ships generally recover cores that are only up to a few tens of meters in length, we can recognize only a few of the important low frequency cycles. We need to use ODP's scientific drillship to retrieve sections of mud hundreds of meters long. These will represent one-to-two million years of climate history."

The long undisturbed climate record from the ODP cores will be directly compared to the climate record in other archives such as Greenland ice. By developing a long history of climate changes and establishing linkages all around the planet, climatologists can better understand the past climate fluctuations, enabling them to predict future climate change.

The Ocean Drilling Program is primarily funded by the US National Science Foundation and other research agencies in Australia, Belgium, Canada, Chinese Taipei, Denmark, Finland, France, Germany, Iceland, Italy, Japan, Korea, the Netherlands, Norway, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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, manages and staffs the drillship. Lamont-Doherty Earth Observatory of Columbia University manages the wireline services.

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