

Leg 200

Scientists Find Evidence of Cataclysmic Volcanic Event on Oahu

May 2002 A recent Ocean Drilling Program expedition, known as Leg 200, set out last December to drill a deep hole into the oceanic crust near the Hawaii-2 Observatory. Eventually, this hole will house a deep-sea observatory containing seismic and other geophysical, geochemical and microbiological monitoring equipment. Not only did scientists successfully accomplish the drilling, but they also found some unexpected results. In the true spirit of scientific discovery, scientists found evidence for a cataclysmic volcanic event that occurred two million years ago on the Hawaiian Islands.

Mid-oceanic volcanoes, such as the Hawaiian and Canary Islands, are so steep that large segments of the volcano often collapse in huge landslides onto the ocean floor. The Nuuanu landslide, for example, removed half of the island of Oahu two million years ago. While drilling Nuuanu landslide deposits in the Pacific Ocean 300km northeast of Oahu, ODP scientists encountered two layers of vitric tuff which were deposited on the seafloor at temperatures exceeding 200°C.

Leg 200 Co-Chief Scientist Ralph Stephen, Woods Hole Oceanographic Institution (USA), who led the expedition along with Co-Chief Junzo Kasahara, Earthquake Research Institute, University of Tokyo (Japan), remarked, "Our drilling results from Leg 200 indicate that this event was not merely a landslide, but a hot explosion. The same process could happen again to the Big Island."

Stephen continued, "The evidence indicates that this large landslide was associated with an explosive event similar to the Mount Saint Helens' eruption in Washington State in 1980 but was an order of magnitude larger. This pyroclastic event was so violent that it deposited extremely hot material three hundred kilometers offshore."

Under normal conditions the magma under a volcano is held in

place by the weight of the overlying rock. When the rock is removed by a large landslide, the hot magma explodes into the surrounding air and sea. Drilling on Leg 200 gave the first evidence that the Nuuanu landslide could have been associated with such a violent and hot event.

The more than 15 scientists from around the world who participated on the expedition will continue to study the cores obtained on this cruise for further scientific discoveries.

The Ocean Drilling Program (ODP) is an international partnership of scientists and research institutions organized to study the evolution and structure of the Earth. It is funded principally by the US National Science Foundation, with substantial contributions from its international partners. The Joint Oceanographic Institutions manages the program. Texas A&M University is responsible for science operations, and Lamont-Doherty Earth Observatory of Columbia University is responsible for logging services.

Contact: Kasey White Science Writer/Outreach
Coordinator Ocean Drilling Program 1755 Massachusetts Avenue,
NW Suite 700 Washington, DC 20036-2102

Phone: 202-232-3900 x240 Fax: 202-462-
8754 kwhite@joiscience.org

Photos showing life on board the drillship during this leg, both at work and play, are available on the web at <http://www-odp.tamu.edu/public/life/leg200.html>