



Media only: John Gibbons (202) 633-5187
Michele Urie (202) 633-2950

Feb. 9, 2009

Media Web site: <http://newsdesk.si.edu>

Scientists Uncover a Dramatic Rise in Sea Level and Its Broad Ramifications

Scientists have found proof in Bermuda that the planet's sea level was once more than 21 meters (70 feet) higher about 400,000 years ago than it is now. Their findings were published in the journal *Quaternary Science Reviews* Wednesday, Feb. 4.

Storrs Olson, research zoologist at the Smithsonian's National Museum of Natural History, and geologist Paul Hearty of the Bald Head Island Conservancy discovered sedimentary and fossil evidence in the walls of a limestone quarry in Bermuda that documents a rise in sea level during an interglacial period of the Middle Pleistocene in excess of 21 meters above its current level. Hearty and colleagues had published preliminary evidence of such a sea-level rise nearly a decade ago, which was met with skepticism among geologists. This marine fossil evidence now provides unequivocal evidence of the timing and extent of this event.

The nature of the sediments and fossil accumulation found by Olson and Hearty was not compatible with the deposits left by a tsunami but rather with the gradual, yet relatively rapid, increase in the volume of the planet's ocean caused by melting ice sheets.

A rise in sea level to such a height would have ramifications well beyond geology and climate modeling. For the organisms of coastal areas, and particularly for low islands and archipelagos, such a rise would have been catastrophic. The Florida peninsula, for example, would have been reduced to a relatively small archipelago along the higher parts of its central ridge.

"We have only to look at Bermuda to begin to assess the impact for terrestrial organisms or seabirds dependant on dry land for nesting sites," said Olson. "This group of islands in the Atlantic was so compromised as a nesting site for seabirds that at least one species of shearwater became extinct as well as the short-tailed albatross, marking the end of all resident albatrosses in the North Atlantic."

Determining the timing and extent of this global rise in sea level is not only important for interpreting the influence that it may have had on biogeographical patterns and extinctions of organisms on islands and low-lying continental coastal areas, it is also critical for anticipating the possible effects

SI-78-2009

of future climate change. This particular interglacial period is considered by some scientists to be a suitable comparison to our current interglacial period. With future carbon dioxide levels possibly rising higher than any time in the past million years, it is important to consider the potential effects on polar ice sheets.

Biogeographers, conservationists and many others in the biological sciences must take these findings into consideration, Olson urged. "These findings are incredibly important and have major relevance because of their potential predictive value since this sea-level rise took place during the interglacial period most similar to the present one now in progress. It thus becomes essential that the full extent and duration of this event be more widely recognized and acknowledged."

###