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M E D I A R E L E A S E

Pacific Climate Snapshot

New *Nature* Study on Corals and Climate

Worldwide, scientists are keen to decipher the dynamics of climate processes. Now MARUM researcher Dr. Thomas Felis and a group of international marine scientists present a new piece of the global climate puzzle. They demonstrate that, unlike today, the tropical South Pacific was affected by *El Niño* events towards the end of the last ice age. The team investigated a fossil coral core that was drilled during the Tahiti Sea Level Expedition, an operation carried out by the European Consortium for Ocean Research Drilling (ECORD) under the auspices of the Integrated Ocean Drilling Program (IODP). The study is now being published in the online journal *Nature Communications*.

The final stage of the last ice age was literally initiated with considerable uproar. About 18,000 years ago the ice shields that then covered Canada, Greenland, and Scandinavia discharged massive icebergs into the Atlantic Ocean. This freshwater pulse weakened Atlantic Ocean currents for several millennia and even influenced the Asian monsoon. However, the impacts of this event on climate and weather phenomena in the tropical Pacific, and more specifically on the behaviour of the *El Niño-Southern Oscillation* (ENSO), have remained unclear. ENSO today is accompanied by considerable sea-surface temperature changes and followed by weather anomalies such as heavy rainfalls and droughts.

Now the South Pacific ENSO mystery of the past has been solved: “For the first time, our detailed investigations show that, in contrast to today, Tahiti was part of the ENSO sphere 15,000 years ago,” according to lead author Dr. Thomas Felis, who summarizes the most important finding: “The coral core data reveal that sea-surface temperatures in the tropical Pacific fluctuated in a typical ENSO mode of two to five years.”

“The singular aspect of this work is that the part of the core we investigated is only 60 centimetres long. However, it spans 22 years of continuous coral growth,” the geoscientist points out. 15,000 years ago the coral grew in the northern part of the reef system that borders the island of Tahiti; presumably in a water depth of less than five metres. In late 2005, when the ECORD drilling vessel *DP HUNTER* cored the coral, it was located 113 metres below current sea level, which has been rising steadily since the formation of the coral.

“This is a unique snapshot from our past climate”, Thomas Felis says. “The coral core archives 22 years of weather and climate. Because the core was so well preserved we were able to sample it very densely, achieving a monthly resolution for sea-surface temperature.” However, since the core covers only a short time span and in order to substantiate their findings, the coral experts cooperated with climate modellers, whose results fit well with the coral data: The computer model definitely mirrors the ENSO rhythm!

To read the paper please go to:
http://www.nature.com/ncomms/journal/v3/n7/full/ncomms1973.html

More information / interviews / images:

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