



Reef response to sea-level and environmental changes during the last deglaciation. IODP Expedition 310 “Tahiti Sea Level”.

G. Camoin (1), C. Seard (1), P. Deschamps (1), J. Webster (2), E. Abbey (3), J.C. Braga (4), N. Durand (1), E. Bard (1), B. Hamelin (1), and Y. Yokoyama (5)

(1) CEREGE, CNRS, Aix-en-Provence, France (gcamoin@cerege.fr, 33 442971540), (2) School of Geosciences, The University of Sydney, NSW 2006, Australia, (3) School of Earth and Environmental Sciences, James Cook University, Townsville, Qld 4811, Australia, (4) Universidad de Granada, Estratigrafía y Paleontología, Campus Fuentenueva, 18002, Granada, Spain, (5) Department of Earth and Planetary Science, University of Tokyo, 113-0033 Tokyo, Japan

The last deglaciation have been characterized by a rapid sea-level rise and coeval abrupt environmental changes. The Barbados coral reef record suggested that this period has been punctuated by two brief intervals of accelerated melting (Melt Water Pulses), occurring at 14,000 and 11,300 cal-yr-BP, superimposed on a smooth and continuous rise of sea level. Although the timing, the amplitude or even the realities of those periods of accelerated sea-level rise have been actively debated, those catastrophic sea-level rises are thought to have induced reef drowning events.

The reef response to sea-level and environmental changes during the last deglacial sea-level rise at Tahiti is reconstructed based on a chronological, sedimentological and paleobiological study of cores drilled through the relict reef features occurring on the modern fore-reef slopes during the IODP Expedition 310.

Changes in the composition of coralgal assemblages coincide with abrupt variations in reef growth rates and characterize the response of the upward-growing reef pile to a non-monotonous sea-level rise and coeval environmental changes.

No major break in reef development occurred during between 16,000 and 10,000 cal-yr-BP when reefs accreted mostly through aggradational processes at growth rates averaging 10mm.yr-1, thus precluding any catastrophic impact on reef development such as the temporary cessation of reef growth as it was reported in the Barbados record. An incipient drowning and a general backstepping of the reef complex have been evidenced during the 14,600-13,900 cal-yr-BP time window implying that reef growth gradually lagged behind sea-level rise.

Acknowledgments

This work has been made possible thanks to the support both from the European Science Foundation (ESF) under the EUROCORES Programme EuroMARC (contract No. ERAS-CT-2003-980409 of the European Commission, DG Research, FP6) and from the CNRS-INSU through the « ECLIPSE » Programme.