Sea-level history recorded in the Pleistocene carbonate sequence in IODP Hole 310-M0005D, off Tahiti

Yasunari Takahashi[1]; # Yasufumi Iryu[2]; Kazuhiko Fujita[3]; Gilbert Camoin[4]; Guy Cabioch[5]; Hiroki Matsuda[6]; Tokiyuki Sato[7]; Kaoru Sugihara[8]; M. Jody Webster[9]; Hildegard Westphal[10]

[1] Inst. Geol. & Paleontol., Tohoku Univ.; [2] Depart. Earth & Planetary Sci., Nagoya Univ.; [3] Univ. Ryukyus; [4] CEREGE; [5] IRD; [6] Dept. Earth Sci., Grad. Sch. Sci. Tech., Kumamoto Univ.; [7] Facul. Engineering & Resource Sci., Akita Univ.; [8] Earth System Science, Fukuoka Univ.; [9] Geosciences, Univ. of Sydney; [10] Geosciences, Univ. of Breme

Material cored during Integrated Ocean Drilling Program (IODP) Expedition 310 'Tahiti Sea Level' revealed that the fossil reef systems around Tahiti are composed of two major lithological sequences: a last deglacial sequence and an older Pleistocene sequence. The older Pleistocene carbonate sequence is composed of reef deposits associated with volcaniclastic sediments and was preserved in Hole 310-M0005D drilled off Maraa. Within an ˜70-m-thick older Pleistocene sequence (33.22-101.93 m below seafloor; 92.85-161.56 m below present sea level) in this hole, 11 depositional units are defined by lithological changes, sedimentological features, and paleontological characteristics and are numbered sequentially from the top of the hole downward (Subunits P1-P11). Paleobathymetry inferred from nongeniculate coralline algae, combined with that determined by using corals and larger foraminifers, suggests two major sea-level rises during the deposition of the older Pleistocene sequence. Of these, the second sea-level rise is associated with an intervening sea-level drop. It is likely that the second sea-level rise corresponds to that during Termination II (TII; the penultimate deglaciation; from Marine Isotope Stages 6 to 5e). Therefore, the intervening sea-level drop can be correlated with that known as the 'sea-level reversal' during TII. Because there are limited data on the Pleistocene reef systems in the tropical South Pacific Ocean, this study provides important information about Pleistocene sea-level history, the evolution of coral reef ecosystems, and the responses of coral reefs to Quaternary climate changes.