

Sr/Ca Ratios and ^{18}O in Corals as Records of Environmental Change during Past Glacial/Interglacial Periods

By

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The purpose of this project is to determine sensitivity of interannual sea-surface temperature variation, such as El Niño-Southern Oscillation (ENSO), to climate change over the last 500 ka. This will be accomplished using the analyses of submerged fossil corals from the Huon Gulf, Papua New Guinea, which is located in the West Pacific Warm Pool, an area affected by ENSO.

The Huon Gulf, off the eastern coast of Papua New Guinea, is the location of an active subduction zone. Corals in the Huon Gulf generally grow in shallow water and are slowly carried into deeper water on the subducting plate. Samples were collected primarily from the tops of platforms that grew during glacial terminations.

Fossil coral samples were collected at depths of 250 m to 2600 m. This study will focus on *Porites* corals, as Sr/Ca ratios and ^{18}O from *Porites* in this area have a linear relationship with sea surface temperature. The samples will be analyzed for Sr/Ca, ^{18}O , and dated using U-Th methods. Five samples will be used, each spanning 5-15 years, and will be analyzed with monthly resolution.

Sr/Ca ratios and ^{18}O in fossil corals have been used to gain windows in time of ENSO variability through a glacial/interglacial cycle, back to approximately 130 ka. This study will span four glacial cycles and will date to approximately 500 ka. This study will provide a better understanding of the relationship between interannual sea-surface temperature variation and climate change during glacial terminations.