

Assessing the utility of the coral genus *Diploastrea* for paleoclimatic reconstructions

Emilie P. Dassié

Postdoctoral Research Scientist, Biology and Paleo Environment

Lamont-Doherty Earth Observatory

Abstract

Narrowing uncertainties in climate prediction is an economical and social need that could partially be addressed by the development of robust paleoclimatic record networks. *Porites* is the most widely used genus in studies using massive corals from the Pacific Ocean, however only a few Pacific *Porites* records span more than 100 years. A different slower growing coral genus, *Diploastrea*, has the potential to also generate multi-century length paleo-records. Despite some concerns about the sampling strategy for this coral genus, recent Paleoclimatic studies utilizing this genus have shown promising results (Watanabe et al., 2003; Bagnato et al., 2004, 2005). In this proposed work I aim to investigate and determine the most accurate sampling strategy for $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ in *Diploastrea* that will allow the extraction of a robust paleoclimatic signal. Using previously collected *Diploastrea* and *Porites* cores from coral colonies in the lagoon at Kandavu Fiji, I propose to assess the quality of *Diploastrea* for paleoclimate reconstructions. I will evaluate the sensitivity of $\delta^{18}\text{O}$ vs. sea surface temperature and sea surface salinity relationships for both coral genera. The results of this pilot project could provide the necessary data and proof of concept as well as background information and technique to prepare and submit a major proposal. This proposal would increase acquisition of data for the remaining coral cores, therefore extending the reconstruction of climatic variability further back in time.