

USING CARBON AND OXYGEN ISOTOPIC VALUES FROM ACROPORID CORALS TO INTERPRET TEMPERATURE FLUCTUATIONS AROUND AN UNCONFORMABLE SURFACE ON SAN SALVADOR ISLAND, BAHAMAS

[GAMBLE, Valerie C.](#), Geology, Cornell College, 810 Commons Circle, Mt Vernon, IA 52314, v-gamble@cornell-iowa.edu, GREENSTEIN, Ben J., Geology, Cornell College, 600 First Street West, Mt Vernon, IA 52314, CARPENTER, Scott J., Geoscience, The Univ of Iowa, 121 Trowbridge Hall, Iowa City, IA 52242, and GONZALEZ, Luis A., Univ of Iowa, 121 Trowbridge Hall, Iowa City, IA 52242-1379,

Fossil specimens of *Acropora palmata* and *Acropora cervicornis* (~125 Ka) were collected from the Cockburn Town fossil reef on San Salvador Island, Bahamas. These corals were collected to determine whether stable isotope data support a drastic temperature fluctuation during the late Pleistocene as implied by ²³⁰Th dating of similar corals and also the sedimentologic record of the Cockburn Town reef (Wilson et al., 1998). Thin sections of *A. palmata* and *A. cervicornis* have been made to ensure accurate sampling and to assess the degree of diagenesis or alteration. Stable isotope data from skeletal carbonate material were collected to determine if the corals show residual signs of thermal stress and oxygen isotopic values as a measure of temperature and carbon isotopic values to indicate whether the corals contained symbiotic algae at the time of their demise. If the corals did not contain zooxanthellae, they responded to thermal stress similarly to modern corals. Evidence of bleaching from the Pleistocene age Cockburn Town fossil reef would provide a precedent for modern coral bleaching.

The oxygen and carbon isotopic values of *A. palmata* and *A. cervicornis* are similar to those of modern Acroporid corals (Carpenter et al., in preparation), and also to isotope data from other fossil corals of similar age from the Florida Keys. The data also follow a typical L shaped pattern of diagenesis (Martin et al., 1985) based on changing water/rock ratios from input of organic material into fluids. Diagenetic products produced a range from sparry calcite and whisker cements to micritic cements and micritized coral skeletal material, each with a varying isotope signal. Analysis of isotopic values from diagenetic products and marine cements is in progress, as well as analysis of cross cutting relationships in thin section. These data indicate that cement may yield more useful climate information than the Acroporids due to extensive diagenesis seen in the coral material.