

Carbon and Nitrogen stable isotope patterns in modern and geologic records from South Florida coastal ecosystems

**Samantha Evans
Dept. Earth Sciences/SERC
Florida International University
11200 SW 8th ST
Miami, FL, 33199**

South Florida coastal ecosystems have been influenced by changes in the timing and volume of freshwater flow from the Everglades in the last century as a result of extensive modification of the natural discharge patterns by water management canalization and levee building to facilitate agriculture and urbanization. Although there has been growing concern that biotic and water quality shifts are anthropogenic in origin, it is also questioned whether the changes are a consequence of long term natural fluctuations. With current efforts to “restore” the Everglades freshwater flow to Florida Bay, it is important to have a good understanding of the “natural state” of the system, thus paleoecological and paleoceanographic reconstructions, combined with study of biogeochemical cycling in the modern environment, have become increasingly important to management decisions.

The proposed study will focus on the application of nitrogen and carbon isotopic ratios ($^{15}\text{N}/^{14}\text{N}$ and $^{13}\text{C}/^{12}\text{C}$) of suspended particulate organic matter, water column dissolved nutrient pools, and sedimentary organics as unique natural recorders of marine nutrient cycling, biogeochemistry, and primary productivity. The purpose of this work is two-fold: 1) to more completely constrain modern C and N cycling in Florida Bay and the adjacent Florida Keys reef system in terms of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$; 2) findings in the modern environment will then be applied to the sedimentary record of Florida Bay, shedding light on past nutrient cycling, organic matter sources, and paleoproductivity in the bay and adjacent systems.