

ABSTRACT

Florida Bay and Biscayne Bay have been greatly affected by changes in water quality in the last century due to the anthropogenic modification of water flow and changing climate, resulting in alterations in the distribution and composition of marine organisms including algae, seagrass and invertebrates. Salinity and nutrient fluctuations were found to play a significant role in driving recent (ca. ~200 yrs) ecological changes in Florida Bay and Biscayne Bay, but paleoecological records from the pre-industrial, pre-development period have been insufficient to determine whether the magnitude of modern fluctuations exceeds natural levels. In order to address this issue diatoms preserved in sediment cores collected from across Florida Bay and Biscayne Bay will be used to determine how the magnitude of fluctuations in salinity, nutrient level and vegetation cover over the past few centuries compares to millennial-scale changes driven by long-term climatically-driven, natural phenomena. First, modern diatom communities will be sampled from over 100 sites in Florida Bay and Biscayne Bay to determine their relationship to these key environmental variables. These data will be used to environmentally calibrate the stratigraphic diatom record preserved in seven sediment cores collected from Florida Bay and Biscayne Bay. The ultimate goal of this research will be to distinguish between the climatic processes acting on South Florida environments and human introduced changes, and to study their influence on these areas.