

SPATIAL DISTRIBUTION OF SEDIMENT AND POREWATER BIOGEOCHEMICAL CHARACTERISTICS IN LAKE OKEECHOBEE

Tracey Schafer^{1,2}, Paul Julian³, and Todd Z. Osborne^{1,2}

¹University of Florida, Gainesville, FL, USA

²Whitney Laboratory for Marine Biosciences, St. Augustine, FL USA

³Sanibel-Captiva Conservation Foundation, Sanibel, FL, USA

The benthic substrate of Lake Okeechobee is highly variable in both physical and biogeochemical attributes across its 460,000 acres. These attributes play a large role in the way nutrients are cycled between sediments and porewater. In order to map the changes in sediment and porewater chemistry over the last 15 years, approximately 180 sediment cores were collected using a piston corer. Additionally, a visual estimation of algal concentration and approximate water and sediment depth were collected at every site. After collection, sediments and associated porewater were extracted under an oxygen free environment and analyzed for nutrients and metals. Geostatistical analyses were conducted in ArcGIS to determine spatial patterns across the lake. The geostatistical models were then compared to previous mapping efforts conducted in 1998 and 2006 to determine system wide changes in sediment and porewater chemistry. This study found differences in spatial distribution of benthic substrates and their biogeochemical attributes. In addition, proximity to inlets and outlets have created a unique pattern of porewater chemistry throughout the lake that has changed over time. These unique patterns in sediment and porewater have the potential to further impact surface water quality and clarity across the lake.

PRESENTER BIO: Dr. Schafer is a postdoctoral researcher at the University of Florida Whitney Laboratory for Marine Biosciences. She studies biogeochemical cycling in a variety of aquatic systems, including restored wetlands, estuaries, and rivers.