

Statement of Research Interests

Growing up in the Finger Lakes Region of New York State, I have always had an interest in Limnology and the functioning of large lakes. Before examining aquatic systems of Florida, I spent time at Niagara University working with a limnologist who examined turbulent mixing and oxygen transport in the Lake Erie hypolimnion. I specifically examined the sediment oxygen demand in the central basin of Lake Erie. My Master of Science Degree in Fisheries and Aquatic Sciences from the University of Florida involved research on carbon dioxide supersaturation in Florida lakes, specifically factors regulating carbon dioxide partial pressures and Florida's contribution to global carbon emissions from freshwater bodies. I became very interested in the role of geology in determining baseline nutrient concentrations in Florida Lakes and other water bodies. This research was published in 2009 in the journal *Hydrobiologia*.

My current research interests involve understanding the biological, chemical and physical effects of nutrient loading on Florida waterways. This includes how long-term changes in freshwater input affect these systems biologically and chemically, and how and to what extent ecosystems are altered. I am particularly interested in examining how the biogeochemical cycling and transport of materials along the freshwater-estuary-ocean continuum is altered as a result of human perturbations to the landscape (e.g. land use changes). I spend much of my time developing and applying simplified limnological models to estimate the impact of nutrient loading to estuary systems, where few simplistic loading models exist. I also examine how long-term changes or patterns in our climate affect the functioning of the aquatic systems. I specifically look at multidecadal oscillations in sea surface temperature of the North Atlantic Ocean (AMO) and its relationship with long-term rainfall patterns and subsequent load to surface water bodies.

I have an increasing interest in utilizing geospatial tools to examine large-scale changes in landscapes. I look to quantify and relate changes in the landscape to chemical changes in water bodies. This may include changes in vegetation abundance or increasing development in the landscape. I hope to continue developing my skills in this area and incorporate this type of technology into more of my research projects.

In the future I will likely continue examining factors that affect nutrient load and cycling to surface water bodies. This will include the relationship of geology to water chemistry in lakes and water bodies. I also will likely stay focused on long-term changes in lake trophic state and how anthropogenic activities or long-term climate changes may contribute to these changes. This may include land use changes and urban development around surface waterways. Monitoring of water quality and community education surrounding lake management are important objectives of mine as well. I support the land-grant mission of bringing our knowledge of lake management, both chemical and biological components, to the citizens living and utilizing our surface water bodies.