MAPPING FLOATING WETLAND COVERAGE IN EVERGLADES STORMWATER TREATMENT AREAS USING DRONE IMAGERY

Katie Glodzik, and Mark Clark
  University of Florida, Gainesville, FL, USA

Stormwater treatment areas (STAs) in the Everglades Agricultural Area are large managed wetland areas used to filter phosphorus from surface water before it flows into the Everglades. Phosphorus levels in much of the Everglades are extremely low and a concentration of 10 parts per billion has been determined as a maximum threshold to protect ecosystem ecology. The STAs total 57,000 acres in area and consist of emergent wetland treatment cells, primarily of cattail, that then flow into submerged aquatic vegetation cells. In recent years, emergent wetland vegetation cells have developed patches of floating wetlands, mostly caused by vegetation mats breaking off the water bottom. This shift may affect phosphorus removal potential, since it often causes cattail to be replaced by less desirable species.

This study examined use of unmanned aerial vehicle (i.e., drone) imagery (3.6 cm grid cell resolution) to map vegetation, with the particular challenge of identifying floating cattail before it has transitioned to other species. Because floating and rooted cattail appear similar from an aerial view, yet they have different vertical profiles, fine-scale surface elevation data derived from the drone data was also used. These findings assist management of these systems by providing methods for finding problem areas on a large scale, for potential intervention. We also briefly present early findings from an examination of potential environmental factors that lead to these vegetation shifts.

PRESENTER BIO: Dr. Glodzik is a Postdoctoral Research Associate in the Soil and Water Sciences Department at University of Florida. In addition to remote sensing of wetland and coastal environments, her research interests include impacts of saltwater intrusion and hydrologic change to coastal ecosystems, and living shoreline development.