

## Soil and Water Sciences Department Graduate Student Research Seminar

**Speaker:** **Carlos Quintero**  
**Ph.D. Dissertation Degree Candidate**

**Advisor(s):** Matthew Cohen, Ph.D.  
Todd Osborne, Ph.D.

**Title:** **Emergent Landscape Structure in Big  
Cypress National Preserve**

**Date:** Friday, November 8th

**Time:** 3:00 pm – 4:00 pm

**Location:** McCarty Hall A, Room G186



Karst features such as sinkholes, caves and springs are common on the Florida landscape and are thought to have been primarily created by abiotically mediated dissolution processes. The predominant landscape features of Big Cypress National Preserve are karst depressions, typically referred to as cypress domes, that hold large amounts of soil, water, and vegetation in their centers. Conditions within these landscape features suggest the presence of water-rock biotic feedbacks that may work to create weathering hotspots mediated by aqueous respiration. We first interrogated the regularity, size and geometry of cypress domes to test the hypothesis that landscape organization arises from biotically mediated feedbacks. We then examined spatial links between hydrology and vegetation distributions on this landscape to test the hypothesis that vegetation communities adhere to specific hydroperiod niches. Finally, we explored spatial variation in carbon fluxes on the landscape to test the hypothesis that aqueous respiration is a major factor driving landscape development. We found strong evidence that the wetland depression features are regularly patterned suggesting the influence of scale-dependent feedbacks and biotic influence on landscape development. We further found that hydrology is a necessary but not sufficient predictive factor controlling the distribution of vegetation on this landscape. Finally, we found that environmental conditions along the wetland-upland gradient were able to explain differences in relative weathering rates and consequently biotically mediated development of these depressional karst features.

This seminar can be viewed via live or watched later via this link: [Carlos Quintero](#). Viewers of the live stream may now ask questions by clicking on the message icon at the bottom. Questions will be read at the end during the question and answer portion. In addition, all seminars are archived for viewing on our [SWSD Seminar Page](#).