

**Soil and Water Sciences Department  
UF Invited Speaker Seminar**

**Speaker:** [Allan Bacon, Ph.D.](#)  
**Assistant Professor**  
**Environmental Pedology**  
**Soil and Water Sciences Dept.**



**Title:** **The Hydropedology of Deep Podzolized Carbon in the Southeastern United States Coastal Plain**

**Date:** Friday, October 11, 2019

**Time:** 3:00 pm – 4:00 pm

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

Podzolization is a diverse and complex phenomenon whereby organic carbon (C) is mobilized in surface soils, hydrologically transported to the subsoil, and then immobilized with/by reactive metals. Podzolization in the Coastal Plain produces two distinct subsoil organic C pools; shallow podzolized C (SPC) and deep podzolized C (DPC). Although both pools have been recognized since the mid-20th century, and SPC has been extensively studied, focused investigations of DPC are nearly non-existent. DPC is subsequently an enigmatic component of the Coastal Plain landscape that represents an appreciable knowledge gap related to how soil hydrology and terrestrial C cycling interact across this low-lying region. Here, we survey the current hydropedologic understanding of DPC and present results from recent and ongoing investigations of DPC at a variety of scales. We show that DPC is predictably distributed across the region (closely related to geomorphology) and that it contains at least 1.1 billion tons of organic C (approximately equal to a temperate forest covering all of North and South Carolina). We also characterize biogeochemical gradients across multiple catenas and a regional database to reveal that DPC accumulates in response to phreatic zone hydrology (in sharp contrast to SPC which accumulates in response to vadose zone hydrology). Finally, we present profiles of stable C isotopes through DPC to argue that destabilization and oxidation of the massive terrestrial C pool of is highly sensitive to contemporary anthropogenic alterations to hydrology. Together, these findings not only distinguish DPC as an important, distinct, and previously underappreciated component of the terrestrial C cycle in the southeastern United States, they also highlight numerous opportunities to improve our understanding of interactions between soil hydrology and terrestrial C cycling in low-relief landforms through interdisciplinary investigations.

This seminar can be viewed via live or watched later via this link: [Dr. Allan Bacon](#). 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](#).