



Atlanta Geological Society Newsletter

The September 24 AGS meeting starts at 6:30 pm at the Fernbank Museum of Natural History located at 767 Clifton Road NE, Atlanta GA. 30307

Atlanta Geological Society September Speaker

“Deep Soil Core Monoliths: Artifacts of Soil Development”

Speaker Dr. Steve Fitzpatrick’s Bio:

Steve Fitzpatrick is a lecturer at Georgia State University Perimeter College. He obtained both his bachelor’s and master’s degree at the University of Georgia’s Department of Geology. Steve is primarily a hydrogeologist having done focused work on runoff, infiltration and kinematic pressure driven throughflow, as well as imaging the subsurface utilizing ground-penetrating radar. He has led numerous field trips in the North Georgia Piedmont, often taking students to hydrologically-critical sites such as developmentally challenged urban streams and ecosystems. Currently Mr. Fitzpatrick is working on a PhD in geochemistry at Georgia State University’s Geoscience Department investigating new mechanisms for characterizing sediment transport through routing methods and sediment fingerprinting analysis. He spends his spare time exercising, doing outdoors activities and playing guitar. Steve has a daughter, in high school, who has found an interest in oceanography.

Abstract:

Soil horization presents a visible history of soil development. There are several methods that have been used to study soils. One of those approaches, the creation of soil monoliths serves as a useful teaching aid in the study of the Earth’s critical zone where rock, soil, water, air, and organisms interact. Typical monolith preparation has so far been confined to the 1- to 2-m depth of the solum. Critical ecosystem services provided by soils also occur in materials from the deeper soil profile. Soil monolith preparation needs to take this new paradigm into account. Soil cores from such depths can be obtained during site investigations for studies of various engineering and environmental problems. The complexity of soil structure makes the preservation and presentation of cores into monoliths difficult. For mobile and vertical displays, a solution of acetone and polyvinylidene chloride (PVDC) at a 5:1 mass ratio can be used to create good structurally sound deep soil core monoliths. Several soil cores were obtained during installation of monitoring wells at two sites 2.5 km apart in the Piedmont of Georgia in the southeastern United States. To reduce health and safety risk, a well-ventilated location and use of protective gear, while handling and using chemicals, is essential to the process. The finished products are in display at the Geology Department, University of Georgia, Athens, GA in the USA.

