The Magnitude of Soil Organic Carbon in an Upland Ozark Forest Soil, with Consideration of Temporal and Spatial Variability. (S07-ficklin163759-Oral)

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Abstract:

Quantifying the mass of soil organic carbon requires accurate estimates of both bulk density and carbon concentrations; however, density estimates often are overestimated and carbon concentrations can be highly variable. When quantifying soil organic carbon contents for forest systems in or near carbon flux equilibrium, sampling strategies need to address the spatial and temporal variability of both bulk density and carbon concentrations. An investigation of organic carbon in the surface 30cm of an Ozark forest soil revealed significant variability of soil carbon and density, and overestimates of bulk density averaged 10%. An empirical approach to bulk density correction was employed and estimates of organic carbon mass were determined for three landforms within the forested landscape. Temporal variation of organic carbon was addressed by sampling each season for two years within each of the landforms. Organic carbon mass in the surface 30cm of mineral soil averaged 16.6-20.4 Mg/ha across the landforms, although 95% confidence intervals were as wide as 9 Mg/ha due to the spatial variability of bulk density and coarse fragment content.

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