Uncertainties Associated with Carbon Sequestration: Whole Profile Perspective in Sub-humid Prairie and Forest Soils. (S05-krug151231-Oral)

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Abstract:

This paper views soil organic carbon (SOC) in agricultural and natural systems through the lense of soil-forming factors and carbon-nutrient interactions. Geographically, we focus on the area around Illinois, the Prairie State, i.e., the heart of the Corn Belt. Dark, deep, organic-and nutrient-rich Corn Belt soils are especially well suited for high-yield production of corn and other grasses, and legume crops. Such soils were formed by massively-rooted native grasses and legumes growing deeply into geologically-young parent material under sub-humid climate. Pedogenic research indicates that naturally- and anthropogenically-induced changes in soil- forming factors are capable of producing discernable whole-profile changes in SOC and/or associated nutrients in natural and managed ecosystems in the decade-to-century timescale. Our findings indicate that the scope of SOC sequestration research needs to expand to encompass the pedogenesis of the whole soil profile on the long-term human timescale.

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