Use of Site-Specific SOC Data in Estimates of Carbon Flux for Small Watersheds. (S05-markewich141642-Poster)

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Abstract:

Monthly and event-based estimates of soil-organic carbon (SOC) efflux from small forested watersheds through erosion and sediment transport were derived for eight watersheds in the Lewis and Clark National Forest, Montana; two in the Ouachita National Forest, Arkansas; and two in the Holly Springs National Forest, Mississippi. When evaluated against the other components of a watershed mass balance for soil carbon, SOC and sediment flux measurements can be used to gage changes in soil-carbon pools related to changes in landuse and climate. SOC efflux from spring runoff during May 15-June 15, 1998-2000 varied from 114-368 kg at a 4.18 km2, dominantly lodgepole-pine watershed in the Tenderfoot Creek Experimental Forest (Lewis and Clark). SOC efflux yield was 0.000027-0.000088 kg/m2, which is negligible compared to SOC storage in the surface 10 cm-0.6 to 1 kg/m2. With no net SOC sequestration, SOC depletion would occur on a century-to-millenial scale, suggesting that forested landscapes are stable reservoirs for soil carbon. Forested watersheds could provide a reference for measurement of SOC gains resulting from reforestation and afforestation of marginal agricultural land.

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