Dynamics of Recent Sedimentation and Carbon Storage in the Cannon River Wilderness Park, Northfield, Minnesota: Implications for the Global Carbon Cycle. (S05-meyer002538-Poster)

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Abstract:

This study explores terrestrial sedimentation-carbon cycle dynamics as a potential sink for carbon mobilized by land use changes. Localized land-based carbon sequestration may hold much of the widely-postulated missing carbon. A combination of fieldwork and computer modeling were used to study carbon storage and geomorphic processes active in a small catchment in southeastern Minnesota, a site similar in land use history to the Coon Creek watershed (WI). At the study site, 3-5 m of mobilized sediment have accumulated, storing an average of 45000 g C m^-2 in the top 3 m. Stella models constructed to evaluate the relative roles of different biological and geomorphic processes acting in the system yielded final carbon and sediment volumes similar to those measured at the field site. Results suggest a post-settlement catchment history dominated by rapid sedimentation following initial tillage, and a recent transition to net sediment removal due to diminished sediment loads caused by soil conservation measures. Although further study is needed, field data and modeling results presented here suggest terrestrial sedimentation may account for a portion of the global carbon budget missing sink.

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