

Meanders as a scaling motif for understanding biogeochemical potential at the watershed scale

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Abstract

Studying the microbes present in meanders — the bendy, curvy paths of rivers — may prove to be a way of understanding much larger processes happening on the scale of entire watersheds. That's the finding of a new study by researchers at the University of California Berkeley. Scientists tested the idea that floodplain soils share a core microbiome that can be used to predict biogeochemical processes in watersheds. The group analyzed soil samples from the upper, middle, and lower parts of Colorado's East River. While the specific microbes from the various sections of the river differed, there was a core set of shared microbial activity across the three meanders. This included microbiomes enriched for aerobic respiration, aerobic CO oxidation, and thiosulfate oxidation with the formation of sulfur. The results suggest that meander-bound floodplains serve as functional zones that might be able to predict biogeochemical transformations in riparian zones. In this way, meanders could be scaling motifs useful for ecosystem modeling at the watershed scale.