ABSTRACT

Fire, erosion, and soil carbon (C) storage and persistence overlap in space and time. Increased erosion follows fires, and fire-altered or pyrogenic C (PyC, also referred to as black carbon) is redistributed vertically within soil profiles and laterally to lower landform positions along hillslopes, with important implications for post-fire C sequestration trajectory. In this talk, I will use results from the site of the 2013 Rim fire, which burned over 250,000 acres of land in Yosemite National Park and Stanislaus National Forest (California) to highlight how fire and erosion interact to affect soil organic matter (SOM) dynamics. This work uses a combination of elemental, isotopic, and other molecular-scale techniques to determine how fire severity and slope of the landscape interactively determine the nature and rate of SOM and PyC mobilization post-fire. Inferences derived from such investigations are critical for better integration of biogeochemical and geomorphological approaches to derive improved representation of mechanisms that regulate SOM persistence in dynamic landscapes that routinely experience more than one perturbation.

BIO

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