



BREN SEMINAR

POST-FIRE TRANSPORT AND PERSISTENCE OF PYROGENIC CARBON IN SOIL



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Associate Professor

Life and Environmental Sciences
University of California, Merced

Monday, February 5, 2018 11:00 – 12:00

Bren Hall 1414

Watch live at <https://ucsb.zoom.us/j/529656578>

“Dr. Asmeret Asefaw Berhe is a soil biogeochemist actively trying to understand how our dynamic environment affects what we do not see belowground. Her work is highly relevant to anyone interested in how fires affect more than just us, but our soils as well.”

— Timnit Kefela, PhD student, Bren School

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 Asmeret Asefaw Berhe is an Associate Professor of Soil Biogeochemistry at the Life and Environmental Sciences unit at University of California, Merced. Dr. Berhe was a UC President's Postdoctoral Fellow at UC Berkeley and UC Davis. Prior to that, Dr. Berhe received her PhD in Biogeochemistry from UC Berkeley, MS in Political Ecology from Michigan State University, and BS in Soil and Water Conservation from University of Asmara, Eritrea. Professor Berhe is the recipient of several awards including the National Science Foundation's CAREER award, the Young Investigator Award from Sigma Xi, and the Hellman Family Foundations award for early career faculty.

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