Geophysical Research Abstracts
Vol. 21, EGU2019-12395, 2019
EGU General Assembly 2019

Effect of landcover and climate on selective erosional distribution of different soil organic matter pools

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The lateral distribution and decomposition of soil organic matter mobilized by soil erosion depends on factors such as the amount and type of precipitation, topography, the nature of mobilized organic matter (OM), potential mixing with mineral particles, and the stabilization mechanisms of the soil organic matter. But, as of late, there is very little data that shows how the the fate of carbon eroded from cultivated croplands, grasslands, and forested ecosystems can significantly different, based on the above factors. In this presentation, we will show results on relative distribution, in fractions, of carbon (C) eroded from hillslopes with contrasting land use and land cover. We highlight that more than 40% of the OM eroded from forested catchments is in free particulate OM, or OM physically protected inside relatively less-stable macroaggregates, compared to OM inside microaggregates or chemically associated with soil minerals. But, majority of C eroded from cultivated landscapes and grasslands tends to be chemically associated with soil minerals. We also show that climate, in particular amount of precipitation, plays major role in selectively transporting distinct pools of OM. Our results suggest that erosion is not likely to induce a terrestrial carbon dioxide sink in temperate forest ecosystems.