Mineralogical Control over Soil Organic Carbon Distribution in California Soil Developmental Sequences. (S05-rasmussen135813-Poster)

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Abstract:

It is important to understand the interaction between soil mineralogy and vegetative input as a controlling mechanism in soil carbon stabilization. We established soil developmental transects on granitic, andesitic and basaltic parent materials along the western flank of the Sierra Nevada and Cascade mountain ranges of California. The elevational transects encompass four forest biomes dominated by different tree species (Quercus douglasii, Pinus ponderosa, Abies concolor, Abies magnifica). Soil samples were analyzed for total C and N in bulk soil and particle size separates. Clay mineralogy in the <2-um fraction was determined by X-ray diffraction and selective dissolution. Total C data indicate that mid-elevation biomes contain the greatest amount of organic C in each transect and that C content varies by parent material: andesite>basalt>granite. Variations in clay mineralogy and short-range-order materials across parent materials may correspond to differences in C content, suggesting mineralogical control over C stabilization.

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