Impact of Aspect on Soil Genesis in a Semiarid Climatic Regime. (S05-smithaide161158-Poster)

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Abstract:

Aspectual differences that alter the microenvironment and influence soil formation have been studied extensively in a variety of climates. This research contributes to our understanding of aspectual differences on soil development by focusing on those differences in a semiarid climate, a climate that has recieved less research attention than humid climates. Big Bend National Park, Texas, is the site for this research because of its semiarid climate and relative freedom of human interference. The Lajitas series (Lithic Torriorthents) forms on igneous talus material and was selected for this study because its presence on Lone Mountain spans all aspect positions and it has been mapped as having a uniform parent material. Multiple soil pits were sampled on a uniform slope angle and slope position from all four aspects. Soil horizons were analyzed for routine soil properties, calcium carbonate, Fe-oxide content, the clay mineralogy, soluble cation and anion concentrations, CEC, the particle size distribution and the soil aggregate distribution. Results of this study indicate that the southern aspect has increased concentraion of Fe-oides, finer particle sizes and smaller aggregates compared to the northern aspect, in contradiction to findings in more humid environments. These results point to other factors; such as minor differences in parent material, as well as impact of rain drops play a more dominate role in soil formation than geographic aspect for a semiarid environment.

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