Infiltration Through Desert Pavements, Mojave Desert, CA, USA. (S01-young213783-oral)

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Abstract:
Desert pavements consist of a surface layer of closely packed gravel that overlies thin, gravel-poor vesicular A (Av) soil horizon. Well-developed Av profiles form distinct and highly structured prismatic peds, drastically reducing infiltration rates, and potentially impacting soil development, plant and biota diversity, and groundwater recharge. We sought to study how desert pavement development can impact the hydraulic conductivity characteristics in localized areas. Field sites were chosen at the Mojave Natural Preserve, near Kelso Dunes, CA, USA. The sites vary by parent material, clay and silt content, surface age, and variable degree of surface clast cover. Transects traversed pavement surfaces of variable development (poorly to well developed). Hydraulic conductivity was determined with a tension infiltrometer conducted at different tensions and initial water contents (to better estimate the potential for preferential flow). Sites with dry initial conditions were first analyzed at zero tensions to promote inter-ped flow. The tests were run again at a range of soil tensions to promote matrix flow. Differences in saturated conductivities were attributed to preferential flow around desiccated peds. Soil texture and structure were measured and described, respectively, allowing for the correlation of conductivity functions to soil surface age and physical characteristics.

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