FOSSIL WETLANDS IN THE DESERTS OF THE AMERICAN SOUTHWEST

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Today, wetlands constitute ~0.3% of the total land cover in the deserts of the American Southwest, and encompass a variety of hydrologic settings, including seeps, springs, marshes, and wet meadows. These systems form in areas where water tables approach or breach the ground surface, most often near the distal toes of alluvial fans or where shallow faults or bedrock force ground water to the surface. When active, desert wetlands serve as important watering holes for local fauna, support vegetation that depends on access to ground water for survival, and act as catchments for eolian and alluvial sediments. The interaction between hydrologic systems (emergent ground water and surface water), biologic systems (plants and animals), and geologic systems (eolian and alluvial sediments) in wetlands creates unique and complex depositional environments that are preserved in the geologic record as ground-water discharge (or GWD) deposits. Here I present the results of ongoing investigations of GWD deposits along an east-west transect across the Mojave Desert and southern Great Basin, and compare the results to GWD deposits elsewhere in the American Southwest in an attempt to better understand what drove changes in hydrologic conditions in this region during the Pleistocene. I will also discuss innovative methods of dating GWD deposits that we have developed, which have implications for dating other types of Quaternary deposits in arid environments.