

Parker, AL, PR Owens, Z Libohova, XB Wu, SR Archer & LP Wilding.2010. Use of Terrain Attributes as a Tool to Explore the Interaction of Vertic Soils and Surface Hydrology in South Texas Playa Wetland Systems. Journal of Arid Environments. In Press.

**Abstract:**

The objectives of this study were to assess the unique interface between geomorphology, hydric soils, surface hydrology, and plant ecology in playa landforms by: 1) characterizing playa soil properties; 2) quantifying playa microtopography; and 3) determine how watershed attributes dictate the potential for surface water accumulation following episodic precipitation events (tropical storms, hurricanes). Soils of 9 playa basins in the Rio Grande Plains of Texas, USA were analyzed for physical/chemical properties and their microtopography determined via transects. A DEM was used to calculate topographic wetness index (TWI) and evaluate the sizes of playa basins, the upland draining areas into each playa. There were no significant differences among playa soils. TWI showed the potential areas for surface water accumulation coinciding with playa location. TWI can be used as a tool to identify potential water accumulating areas. The soil, site characteristics, and weather conditions determine the duration of standing surface water.