THE MULTIPLE CAUSES OF THE DUST BOWL

Thomas E. Gill[1] and Jeffrey A. Lee[2]

(1) Department of Geological Sciences, University of Texas at El Paso

(2) Department of Geosciences, Texas Tech University

The Dust Bowl was the greatest soil-conservation related disaster in USA history, focused in the Southern Great Plains during the 1930s, when the region experienced extreme wind erosion. The 1930s drought, apparently forced by sea-surface temperature changes perturbing the large-scale atmospheric circulation over North America, was severe, but neither unusual in the region nor extreme in length from a climatological perspective. The result was an intensifying multi-year drought in the Plains, encompassing both warm (growing) and cool (windy) seasons, causing a cascade of desiccation. Increased atmospheric aerosol loadings and increased frequency of cyclones crossing the region apparently further exacerbated Dust Bowl conditions. The drought reduced soil cohesion, increasing erodibility, and land cover, leaving the soil less protected from wind, while dry farming techniques then widely utilized in the region increased soil erodibility. Low crop prices (driven by the Great Depression), extremely poor harvests (driven by drought), and lack of knowledge of regionally-appropriate tillage practices left landowners unable to implement erosion control. The ultimate causes of the Dust Bowl thus were multiple- a simultaneous combination of drought and economic depression in a region where farmers had not yet learned appropriate and effective soil conservation techniques. Economic recovery, cessation of drought, and implementation of erosion control programs combined to end the Dust Bowl by the end of the 1930s. Many lessons were learned from the 1930s Dust Bowl for soil conservation and, while dust storms and droughts continue in the Southern Great Plains, their environmental effects have been greatly reduced to date.