

## **CHARACTERIZATION OF PRECIPITATION TRENDS IN THE OGALLALA AQUIFER REGION**

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### **ABSTRACT**

Ideally, researchers and practitioners would like the ability to forecast precipitation patterns so that strategies can be developed to manage limited water resources. This is particularly important for regions where depleting aquifer is the main source of water for irrigated crops. Precipitation trends affect crop growth and management practices, yet current precipitation forecasting capability is limited. Given the demand for such information, it seems timely that the regional and spatial variability as well as annual distribution variability should be thoroughly examined. A long-term dataset of daily precipitation at 22 stations located between -104° to -100° W longitude and 33° to 42° N latitude was used to characterize the precipitation trends within the Ogallala Aquifer Region from Nebraska to Texas Panhandle. A detailed analysis identified precipitation trends, number of events and amounts and events by class across the Ogallala Aquifer Region. More than 50 percent of the annual precipitation occurs during the cropping season (May-September). Spatial analysis indicated annual precipitation increases with decrease in longitude (west to east). The smaller precipitation events (0.25-5 mm) account for more than 50 percent of the events per year, but produce only 13.7 percent of the annual average precipitation. Events with 5 to 50 mm account for 41 percent of the total events per year, but produce about 77 percent of the total annual precipitation. Results indicate there has been an increase in the number of precipitation events, mainly due to increase in the number of low to moderate intensity events. This trend is consistent irrespective of rain-gauge location. It was observed that annual average precipitation has been increased but was not statistically significant.