

Developing an Urban Drought Mitigation Plan in the South-Central United States

Wanyun Shao
Louisiana State University

Project Summary

My primary research goal is to examine how drought, as an extreme climatic event, is dealt with by policy-makers, community planners and water managers at the local level (urban areas) in the Southern United States. Three cities including Houston, Dallas and New Orleans have been selected as case studies (to make the comparative study more compelling, more cities are expected to be included on the list). To date, I examined existing drought plans at the state and local (selected cities) levels, as well as temporal patterns of drought and trends within the study area.

Results

Among the six states including Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee and Texas, only Texas (State Drought Preparedness Plan) and Oklahoma (Oklahoma Drought Management Plan) have drought plans. Surprisingly, at the local level, none of these three cities have drought plans either.

By using the R program, three heat maps were made to depict the drought temporal patterns of these study areas. Results demonstrate that all three climate divisions encompassing the cities shared the same drought periods with most of the country which experienced extensive drought in the 1930s and 1950s, and prolonged drought around year 2000.

The Kendall Tau Statistical Test was used to determine whether there was a climate trend of monthly and seasonal precipitation and temperature during 1895-2008 for these three climate divisions/cities. The result shows that there is no climate trend. The temperature and precipitation are highly variable. The results were inconsistent temporally.