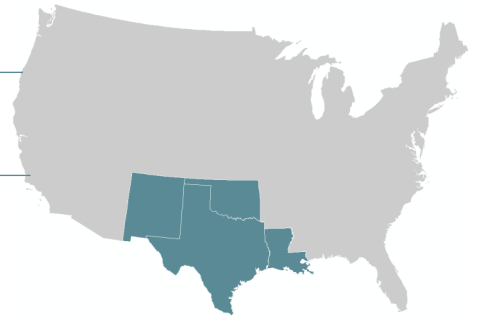




# OKLAHOMA

## PROJECT HIGHLIGHTS

*Oklahoma falls within the domain of the South Central Climate Adaptation Science Center (CASC), managed by the USGS.*



## MANAGING FOR DROUGHT IN THE RED RIVER VALLEY

*The Red River is a vital source of water for Oklahoma, supporting municipal drinking water supplies, crop irrigation, and recreational fishing for trophy catfish, bass, and gar.*

### WHAT:

- The South Central CASC modeled future temperature and precipitation changes in the Red River Basin to assess how streamflow might change in the future.

### RESULTS:

- The western part of the Red River Basin is at the greatest risk of experiencing reduced flow. Throughout the basin, peak flows will be higher and low flows will be lower – a finding that is consistent with the expectation that future floods will be more severe and droughts will be more extreme.

### IMPACT:

- The Chickasaw Nation is using these models in its drought contingency planning efforts to prepare for changes in water supply.



## COMMUNITY RESILIENCE TO DROUGHT

*Recent prolonged and severe droughts in Oklahoma – the worst the state has seen since 1956 – have had significant impacts on local economies. But why do some communities suffer less damage and recover faster than others?*

### WHAT:

- The South Central CASC examined past drought damages by county and identified factors that signal community resilience to drought.

### RESULTS:

- Between 1975 and 2010, all 77 counties in Oklahoma experienced impacts from drought, amassing over \$2 billion in damages to crops and properties.
- Counties far from large metropolitan areas with poor socioeconomic conditions are the most vulnerable to drought impacts.

### IMPACT:

- The National Drought Mitigation Center, Gulf Coastal Plans and Ozarks LCC, and Gulf Coast Prairie LCC are using these findings to help communities improve their drought risk management.

## DROUGHT MONITORING TOOLS FOR FARMERS AND RANCHERS

*Agricultural production contributed nearly \$8.5 billion in economic value to the state of Oklahoma in 2016. Yet the region is experiencing more frequent and severe droughts, with losses for farmers and ranchers amounting to \$1.6 billion in Oklahoma in 2011 alone.*

### WHAT:

- The South Central CASC evaluated a number of commonly used drought monitoring tools to determine which did the best job of anticipating potential impacts on major crops in the region.

### RESULTS:

- Two tools, the SPEI and Z-index, did the best job of tracking drought in the south-central U.S., while others performed relatively poorly.

### IMPACT:

- With the help of the Southern Climate Impacts Planning Program, guidance will be provided to farmers, ranchers, and water resource managers about how best to monitor drought for different scenarios.
- An app is being created that can be used to pinpoint the most effective indicator of drought based on the user's location.



## TRIBAL PLANNING FOR EXTREME WEATHER

*Climate change is poised to increase the frequency and intensity of extreme weather events, which may damage buildings and infrastructure, cause economic hardship, and endanger people's health – especially for tribal communities, who often lack the resources to prepare and respond.*

### WHAT:

- The South Central CASC trained tribal environmental professionals to identify their community's vulnerabilities and provided them with resources to support planning for extreme weather events.

### RESULTS:

- The connections formed through the CASC's work have resulted in the University of Oklahoma's Planning Division providing in-depth planning assistance to the Citizen Potawatomi Nation, Kaw Nation, Otoe-Missouria Tribe, Fort Sill Apache Nation, and Wichita and Affiliated Tribes.

### IMPACT:

- Tribal communities in Oklahoma have increased capacity to address extreme weather events and minimize damaging impacts to their communities and lands.



*The South Central CASC is hosted by the University of Oklahoma and has six partner institutions: Texas Tech University, Chickasaw Nation, Choctaw Nation of Oklahoma, Louisiana State University, Oklahoma State University, and the University of New Mexico.*

*The CASC works with natural and cultural resource managers to gather the scientific information and build the tools needed to help fish, wildlife, and ecosystems adapt to the impacts of climate change.*