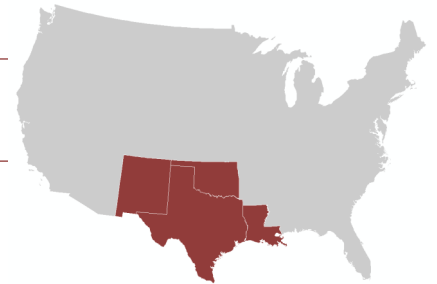




TEXAS

PROJECT HIGHLIGHTS

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



MANAGING FOR DROUGHT IN THE RED RIVER BASIN

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

WHAT:

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

RESULTS:

- Findings show that the western part of the 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 the impacts of water supply changes on people and wildlife.



ENHANCING WETLAND ADAPTATION

Tidal saline wetlands are an abundant feature of the Texas coast, where they buffer storm surge, filter water, reduce flooding, and provide fish and wildlife habitat. Sea-level rise is expected to force tidal saline wetlands to move inland, but uncertainty about how and where they will move impedes planning.

WHAT:

- South Central researchers mapped where future development and tidal saline wetland migration are expected to occur under potential sea-level rise scenarios. CASC scientists traveled to Texas to share these maps with managers.

RESULTS:

- South Central researchers found that warmer winters will transform coastal wetlands in the Gulf of Mexico by 2100. Mangrove forests will expand northward and replace salt marshes.

IMPACT:

- The City of Port Aransas and the Port Aransas National Estuarine Research Reserve requested customized maps to help guide land acquisition decisions and maximize the impact of present-day management decisions in Port Aransas.

MANAGING CHANGING FIRE REGIMES

Fire is a natural and necessary component of the South Central Plains ecosystem. However, fire suppression and more frequent droughts have led to a build-up of dry fuel loads, resulting in fires that burn hotter and impact the landscape more severely. Additionally, researchers expect to see an increase in wildfires as global average temperatures increase.

WHAT:

- Relatively few studies have examined the potential impact of rising temperatures on fire frequency in specific regions of the U.S. Using climate projections of future temperature and precipitation, South Central researchers were able to project future wildfire frequencies across Texas.

RESULTS:

- Researchers project that wildfires will increase in many areas of Texas, but decrease in some locations due to increased aridity in these locations.

IMPACT:

- The specificity of these projections can help managers identify what management strategies will work best for their areas of responsibility in the coming years and what they can do to prepare for changes in fire regimes on the landscape.



FOOD RESOURCES FOR MIGRATORY BIRDS

Submerged aquatic vegetation (SAV) communities provide essential calories for wintering waterfowl on the Texas coast. However, sea-level rise is posing new questions about the future availability of SAV.

WHAT:

- This project identified the relationship between SAV, salinity, and other environmental variables as a first step in understanding how sea-level rise might affect food availability for waterfowl.

RESULTS:

- Researchers found that water depth and salinity were the primary factors in determining the amount of SAV resources in a particular marsh. Researchers also found that brackish marsh and fresh marsh tended to produce similar quantities of SAV waterfowl food resources.

IMPACT:

- These results can help coastal resource managers identify cost-effective strategies for conserving habitat and food resources for migratory waterfowl and other coastal species.



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.