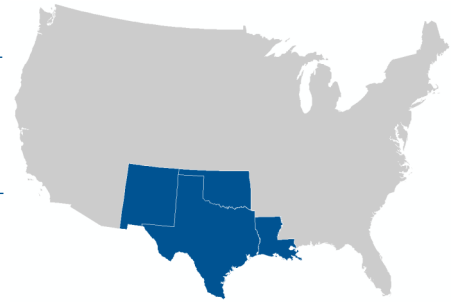# LOUISIANA

PROJECT HIGHLIGHTS

Louisiana falls within the domain of the South Central Climate Adaptation Science Center (CASC), managed by the USGS. Many of these projects are jointly funded by the Southeast CASC.

THE GULF COAST'S MIGRATING MANGROVES

Coastal wetlands purify water, protect communities from storms, store carbon, provide habitat for fish and wildlife, and offer opportunities for recreation and fishing.

WHAT:

- The South Central and Southeast CASCs examined how changes in temperature and rainfall could alter coastal wetlands in Gulf Coast states.

RESULTS:

- Warmer winters will transform coastal wetlands in the Gulf by 2100. Mangrove forests (comprised of trees) will expand northward and replace salt marshes (comprised of grasses). These shifts could affect the ecological and economic services wetlands provide.

IMPACT:

- Helps wetland managers in Louisiana and other Gulf states plan for future changes in wetlands and prepare for the related impacts to fish, wildlife, and ecosystem services.

IMPACTS OF EXTREME WINTER TEMPERATURES ON MANGROVES

Mangroves are particularly sensitive to extreme winter temperatures, and fair better in warmer climates. The winter of 2017-2018, during which extreme winter temperatures were experienced in the northern Gulf, presents an opportunity to improve our ability to forecast the effects of changing winter temperatures on mangroves.

WHAT:

- Building on previous work mapping mangrove migration, the South Central and Southeast CASCs are leveraging a community-curated collection of research sites, the Mangrove Migration Network, to identify and forecast the effects of extreme winter temperature on coastal wetlands.

IMPACT:

- This information will help federal and state land managers better understand how mangrove ecosystems may change over time, and evaluate how they might need to adapt current mangrove management practices and restoration activities.

The Effects of Sea-Level Rise on Aquatic Vegetation

Submersed aquatic vegetation (SAV) communities are highly productive ecosystems that provide significant ecological benefits to coastal areas, including essential calories for wintering waterfowl. However, the potential effects of sea-level rise pose questions about the future availability of SAV for waterfowl. Increasing salinity in freshwater and brackish marshes on the Gulf Coast is a primary concern.

WHAT:

- The South Central CASC mapped the distribution of SAV in coastal Louisiana, and determined the relationship between SAV occurrence and salinity - a necessary first step in understanding how sea-level rise might affect food availability for waterfowl.

RESULTS:

- Water depth and salinity were identified as the primary factors determining the amount of SAV available in marshes. SAV was found to occur less frequently in high salinity waters, however moderately saline waters (e.g. brackish zones) produced quantities of SAV similar to freshwater marshes.

IMPACT:

- This work directly benefits waterfowl managers with the Gulf Coast Joint Venture and USFWS in forecasting the effects of sea-level rise on the distribution and abundance of SAV resources, and the fish and wildlife populations that depend on them.

Training Tribal Nations in Climate Adaptation

Tribal nations represent some of the most vulnerable populations to climate change in the U.S., because of their reliance on the natural environment to sustain traditional ways of life, and a current lack of training and resources to respond to climate change impacts.

WHAT:

- The South Central CASC provided training opportunities to tribes in Louisiana to help increase basic knowledge of climate science, connect them with tools to assess their communities' vulnerabilities, and build skills in developing adaptation strategies. Employees of tribal environmental (or similar) departments and tribal leaders were targeted.

IMPACT:

- Tribal nations in Louisiana have expressed a need for access to information and resources that will enable them to make scientifically-informed resource management decisions in the face of climate change. Through these trainings, the climate-literacy of participating tribal nations was improved, and tribes were provided with tools to help them begin to carry out climate vulnerability assessments for their communities.

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.