ECOLOGICAL DROUGHT MANAGEMENT CHALLENGES

Understanding drought impacts to fish, wildlife, their habitats, & people

NATIONAL & REGIONAL CLIMATE ADAPTATION SCIENCE CENTERS

ALASKA

- Larger, more frequent wildfires
- Less snowpack & earlier melt
- Rapidly warming winters & springs

NORTHWEST

- More frequent wildfires
- Less snowpack & earlier melt
- Warmer winters & hotter summers

NORTH CENTRAL

- Competing water demands
- More rain, less snow
- Diverse seasonal warming trends across the region

GREAT LAKES

- Competing water demands
- Changing river flows & lake levels
- Impacts to forests & timber production

NORTHEAST

- More rain, less snow
- More intense short-term droughts
- Rich biodiversity at risk

PACIFIC ISLANDS

- More severe wildfires
- Invasive species are spreading
- Rich biodiversity at risk

SOUTHWEST

- Larger & more severe wildfires
- Competing water needs
- Forests are dying

SOUTH CENTRAL

- Competing water demands
- Rapid drought development
- More extreme & expensive drought & flood cycle

SOUTHEAST

- Competing water demands
- Changing water flows
- Rich biodiversity at risk

ECOLOGICAL DROUGHT IS:

Drought that impacts fish, wildlife, their habitats, & people

HOW OUR WORK IS DIFFERENT

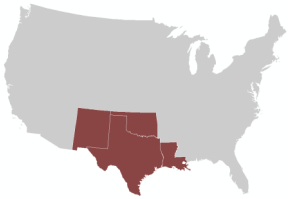
- Drought can change ecosystems, with **implications for human communities**
- But these **ecological impacts of drought** are not typically examined
- We are identifying how drought impacts ecosystems to **support adaptation planning**

Learn more:
casc.usgs.gov/science/ecological-drought

Symbols courtesy of the Integration and Application Network, University of Maryland Center for Environmental Science (ian.umces.edu/symbols/)

USGS science for a changing world

ADDRESSING MANAGEMENT CHALLENGES: SOUTH CENTRAL REGION



KEY CHALLENGES

- ► Competing water needs
- ► Droughts can develop quickly, making timely response difficult
- ► More extreme & expensive drought & flood cycle

DROUGHT WORK

- ► Identify connections between soil health, drought, & fire events
- ► Understand climate variability & its effects on water supply & key resources
- ► Support drought resiliency of our region's water resources

CONTACT US

South Central CASC

southcentralclimate.org

usgs.gov/casc/southcentral

Learn more about these projects:

usgs.gov/casc/ecodrought

DROUGHT IN THE SOUTH CENTRAL: AT A GLANCE

This is a region of extremes. Rainfall increases from west to east and temperatures increase from north to south. These patterns are expected to become more extreme as climate conditions change. For example, the spring of 2011 saw exceptional drought in the south and record flooding in the north.

The South Central is **susceptible to "flash droughts",** which are short in duration but have a fast onset. These droughts cause rapid decreases in soil moisture, with severe consequences for the water supply, agriculture, and ecosystems.

CHANGING WATER SUPPLY

OUR SCIENCE: Examined how the Red River's water supply might change. Found that the western part of the basin is at the greatest risk of experiencing reduced streamflow and that future floods and droughts in the basin will both be more extreme.

IMPACT: Used by tribes and municipalities in the region to inform adaptive drought management planning. The Chickasaw Nation is currently using these results in its drought planning efforts.

USERS: Chickasaw Nation • Choctaw Nation • Great Plains LCC • Gulf Coast Prairie LCC • Gulf Coastal Plains & Ozarks LCC

Learn more: https://go.usa.gov/xQhAu

DROUGHT MONITORING TOOLS

OUR SCIENCE: Identified regional drought information needs of farmers and ranchers and assessed which monitoring tools could best meet those needs. Found that most tools have been developed without input from this user group, highlighting a critical gap in communication.

IMPACT: Provides technical guidance for drought adaptation decisions within and beyond the South Central region. Supports the development of drought monitoring tools that are responsive to on-the-ground needs.

USERS: USDA • Gulf Coast Prairie LCC • National Drought Mitigation Center • Agricultural & ranching communities • Local conservation districts • Local emergency management agencies

Learn more: https://go.usa.gov/xQhAJ