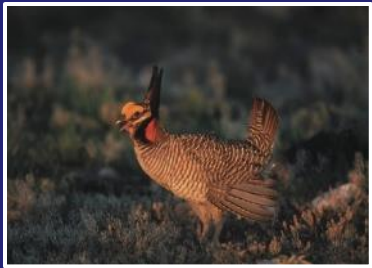




SOUTH CENTRAL CLIMATE SCIENCE CENTER

Two Basin Research Program



Oklahoma Clean Lakes & Watersheds Association
Annual Conference

5~6 April 2017

Mike Langston

Deputy Director, SC CSC, U.S. Geological Survey



Outline

- What is the SC CSC?
- What are the long-term climate projections for our region?
- What is SC CSC doing about it?

Department of the Interior Climate Science Center (CSC) Regions

The CSCs collaborate across boundaries to address shared ecosystems, watersheds, and landscapes

- ★ University of Alaska - Fairbanks
- University of Alaska - Anchorage

ALASKA



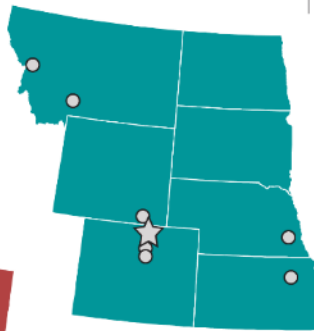
- ★ Oregon State University
- University of Washington
- University of Idaho

NORTHWEST



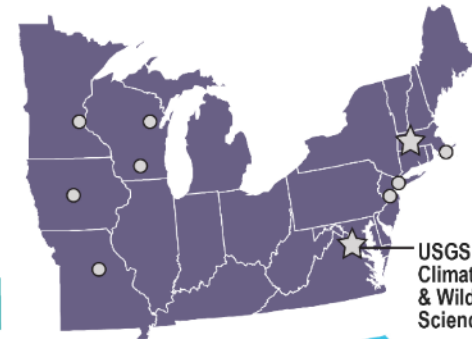
- ★ Colorado State University
- University of Colorado
- Colorado School of Mines
- Iowa State University
- Kansas State University
- Montana State University
- University of Nebraska - Lincoln
- University of Wyoming

NORTH CENTRAL



- ★ University of Massachusetts Amherst
- University of Minnesota
- College of Menominee Nation
- University of Wisconsin - Madison
- University of Missouri Columbia
- Columbia University
- Marine Biological Laboratory

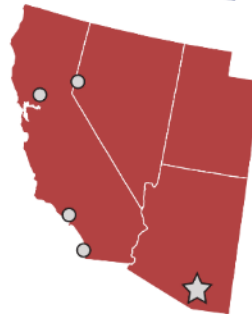
NORTHEAST



USGS National Climate Change & Wildlife Science Center

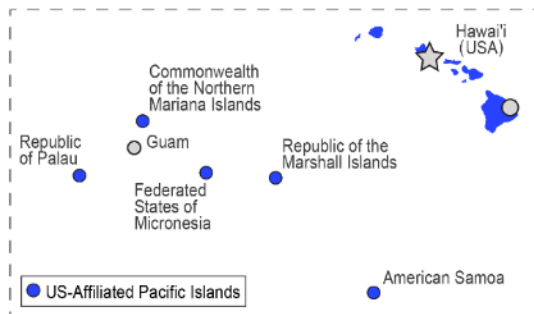
SOUTHWEST

- ★ University of Arizona
- Desert Research Institute (Nevada)
- University of California - Davis
- University of California - Los Angeles
- Scripps Institute of Oceanography
- University of Colorado



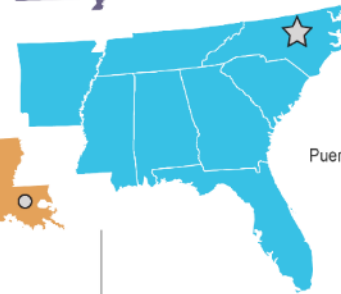
PACIFIC ISLANDS

- ★ University of Hawai'i at Mānoa
- University of Hawai'i at Hilo
- University of Guam



SOUTH CENTRAL

- ★ University of Oklahoma
- Texas Tech University
- Oklahoma State University
- Chicksaw Nation
- Choctaw Nation of Oklahoma
- Louisiana State University
- NOAA Geophysical Fluid Dynamics Laboratory



SOUTHEAST

- ★ North Carolina State University



- EXPLANATION**
- ★ CSC Host Institution
 - CSC Consortium Member

Our Approach

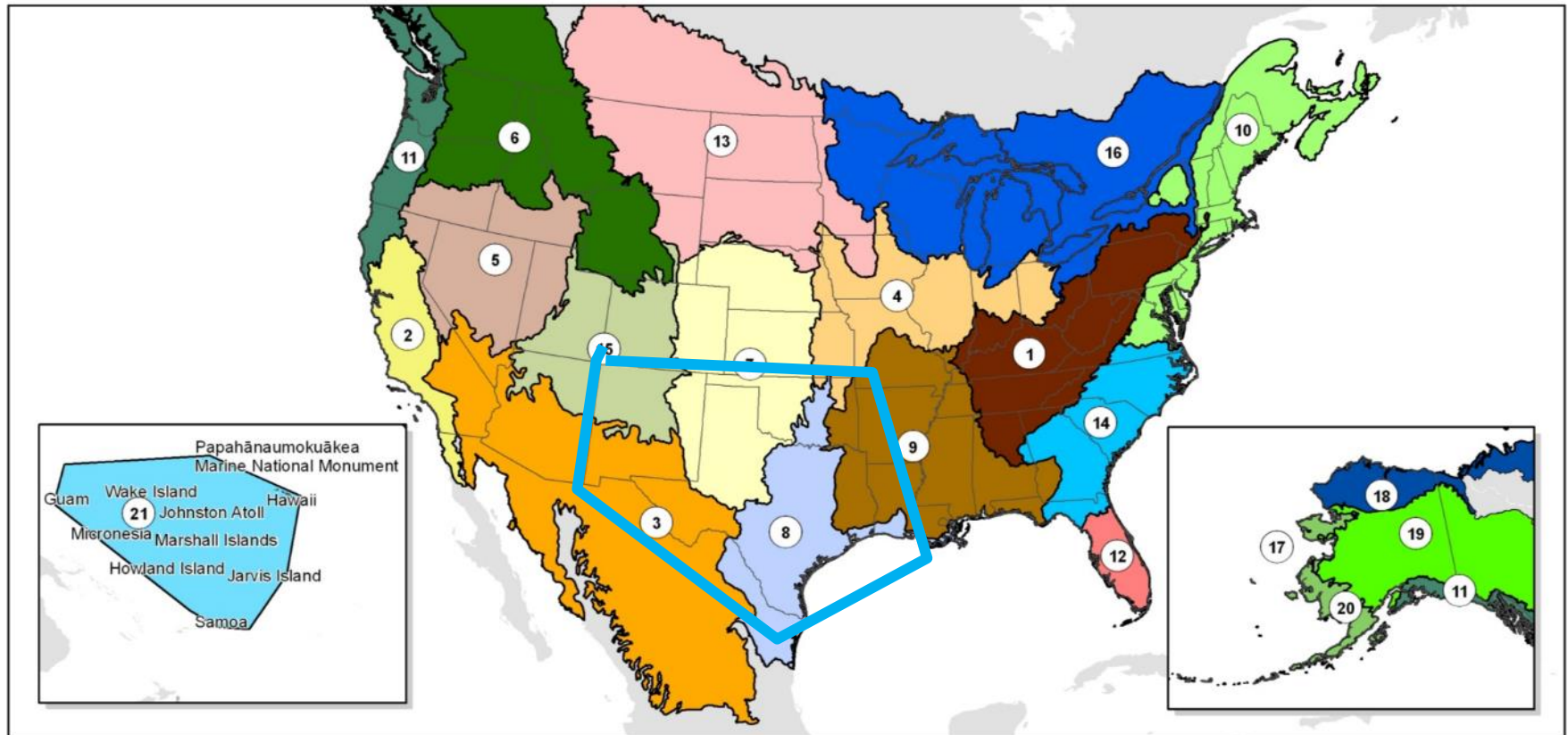


Actionable Climate Science for Natural and Cultural Resource Managers

Example: Spot Tailed Earless Lizard

- US FWS
- Texas Comptrollers Office
- University of Texas
- Texas Tech University

Our Partners: The LCCs



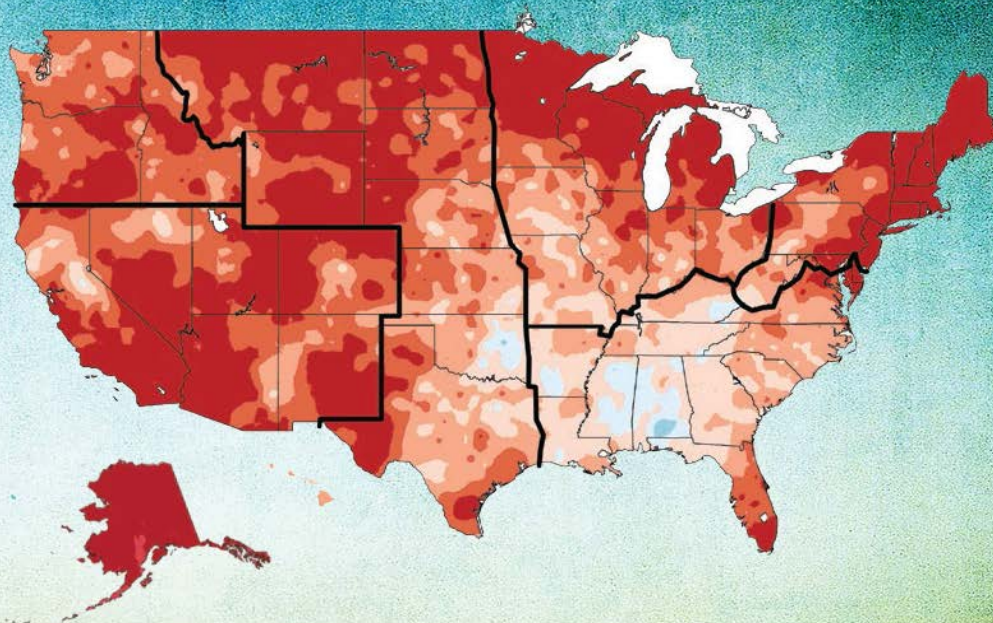
Landscape Conservation Cooperatives

- | | | | |
|---|-----------------------------------|-------------------------------------|----------------------------------|
| 1. Appalachian | 6. Great Northern | 12. Peninsular Florida | 18. Arctic |
| 2. California | 7. Great Plains | 13. Plains and Prairie Potholes | 19. Northwestern Interior Forest |
| 3. Desert | 8. Gulf Coast Prairie | 14. South Atlantic | 20. Western Alaska |
| 4. Eastern Tallgrass Prairie and Big Rivers | 9. Gulf Coastal Plains and Ozarks | 15. Southern Rockies | 21. Pacific Islands |
| 5. Great Basin | 10. North Atlantic | 16. Upper Midwest and Great Lakes | Unclassified |
| | 11. North Pacific | 17. Aleutian and Bering Sea Islands | |

Our Consortium

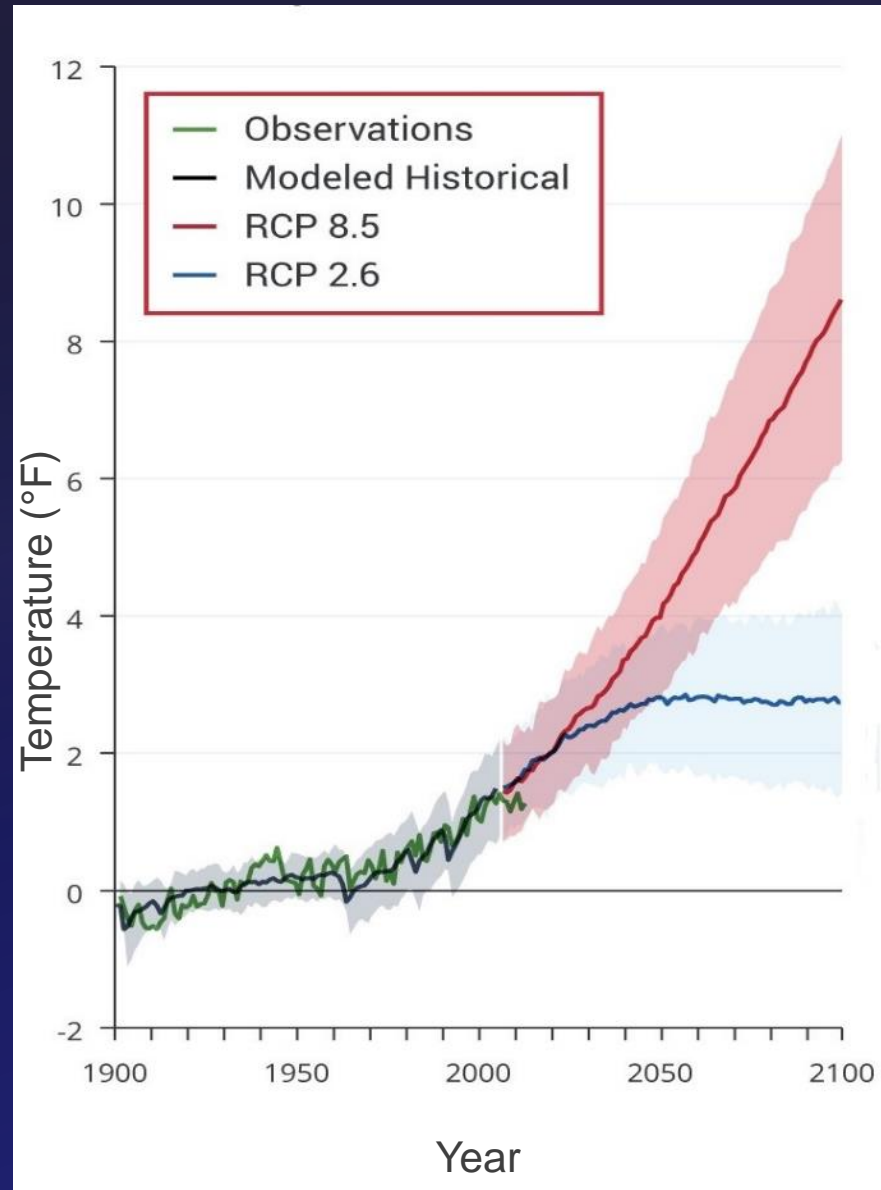


Climate Change Impacts in the United States



U.S. National Climate Assessment
U.S. Global Change Research Program

Projected Global Temperature Change



What is Forecast for the Climate of the Southern Plains?

- The climate will change
- “days over 100°F projected to...quadruple in the south by mid-century.”
- Similar increases in number of nights with lows above 80°F
- “Large parts of Texas and Oklahoma are projected to see longer dry spells”
- Very heavy precipitation events ... are projected to increase in all regions

Implications for Water Resources

A. Water Quantity

1. More evaporation
2. Reduced reservoir and lake levels
3. Increased demand from all sectors especially energy
4. More competition for water
 - a. Human vs. Human
 - b. Human vs. Nature
 - c. Nature vs. Nature

Implications for Water Resources

A. Water Quality

1. Higher temperatures may mean lower water quality (ex. more algae growth)
2. More intense storms mean
 - a. More erosion
 - b. More pollutants washed into streams
3. Reduced water levels in rivers and lakes may mean less dilution of pollutants

Two Basin Research Program

Coproduction of Climate Science

The Rio Grande and the Red River



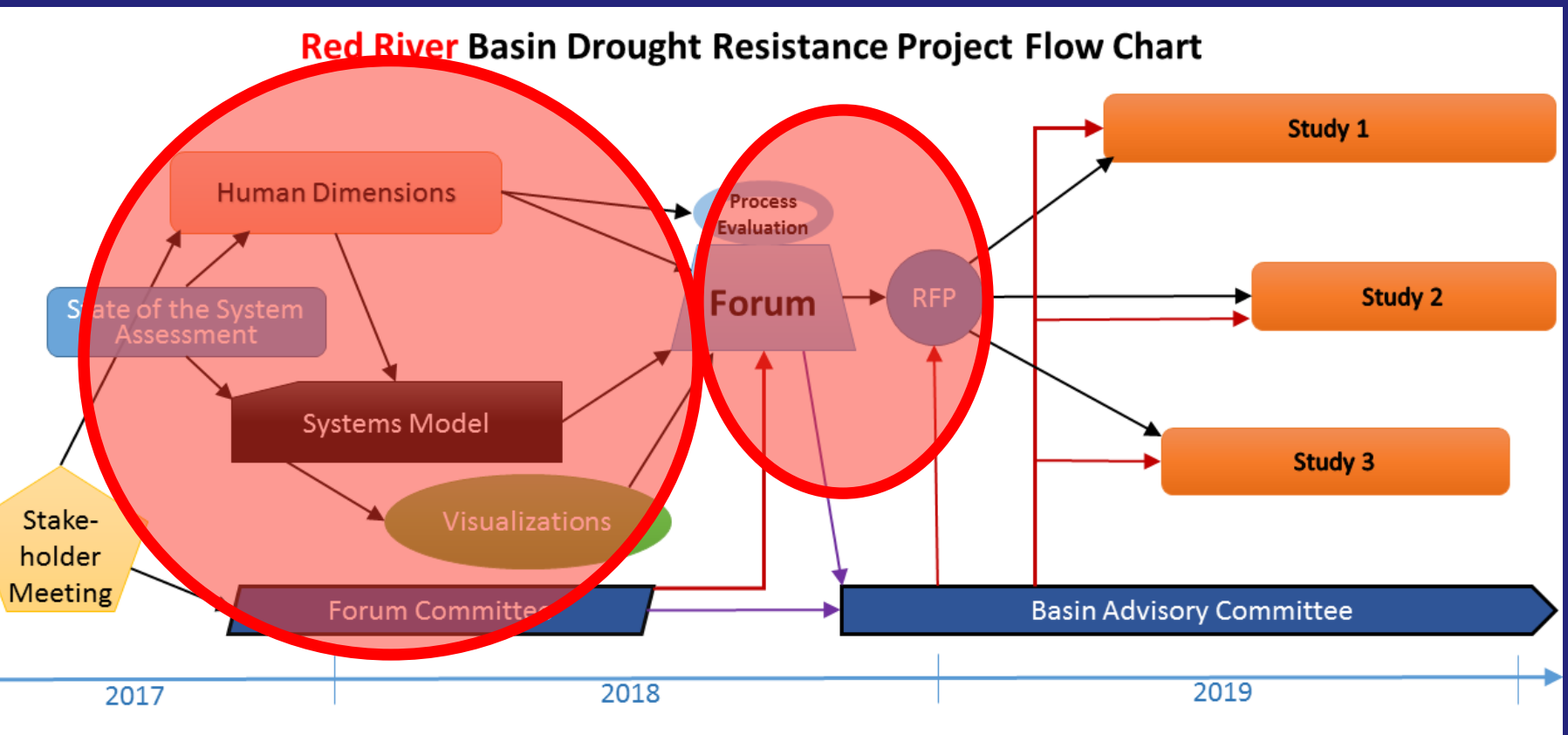
2013 – Impacts of Climate Change on Flows in the Red River Basin – Chickasaw Nation

2015 – State of the Science – Utah State Team

– Social Science and Systems Modeling – OU Team

The Two-Basins Project (Rio Grande & Red River)

- Initial focus is on a meeting, the **Forum**.
 - Items to the left of the Forum will support/inform it.
 - After the Forum, focus will be on the **Basin Advisory Committee**, which will represent stakeholder needs and guide research.
- The process below will be replicated in both the basins.
- Opportunities for Cross-CSC collaborations



Time Line

Rio Grande

2015: Initial Research

2016: Forum Planning

2017: Forum (Feb)

Advisory Comm.

RFP Released

2018 - ? : Additional Research
Additional Forums?

Red River

2017: Stakeholder Mtgs

2018: Initial Research

?? : Forum

Advisory Comm.

RFP Released

?? : Additional Research
Additional Forums?



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