



# SOUTH CENTRAL CLIMATE SCIENCE CENTER

## Overview of the South Central Climate Science Center for ACCCNRS

*April 29, 2015*

Dr. Kim Winton  
Director, U.S. Geological Survey

Dr. Renee McPherson  
University Co-Director, University of Oklahoma



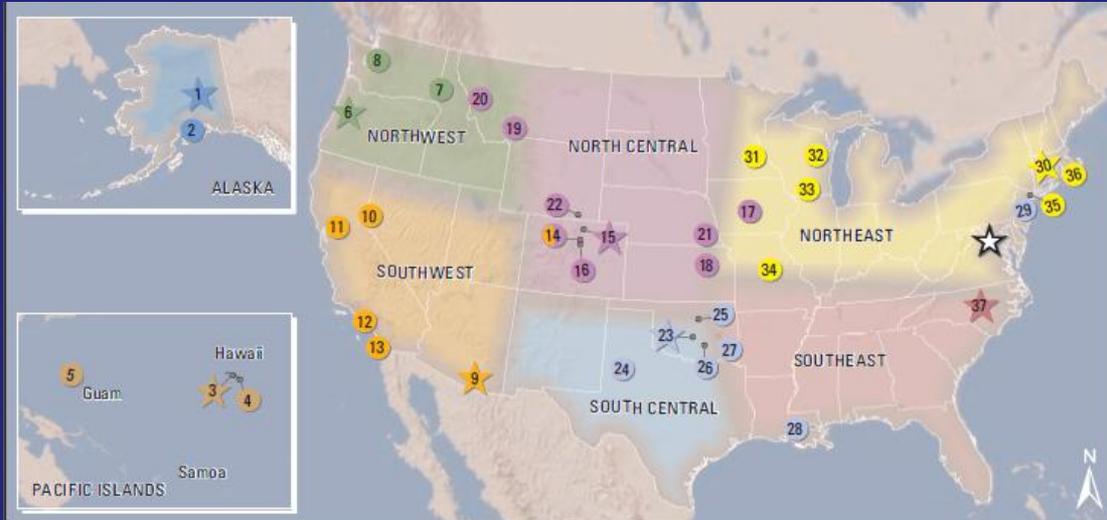
# DOI Climate Science Centers

NW – Oregon  
State University  
**Gustavo Bisbal**

NC- Colorado State  
University  
**Jeff Morisette**

Alaska-  
University  
of Alaska  
**Steve Gray**

Pacific  
Islands –  
University  
of Hawaii  
**Dave  
Helweg**



NE - University of  
Massachusetts  
**Mary Ratnaswamy**

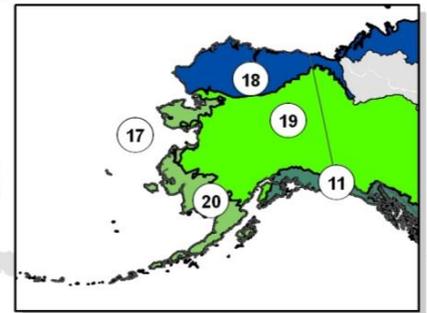
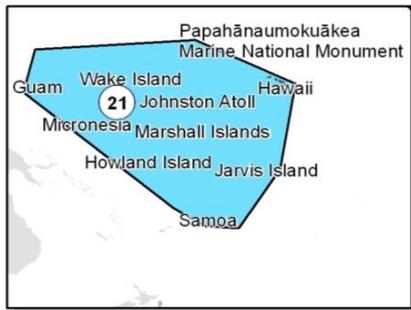
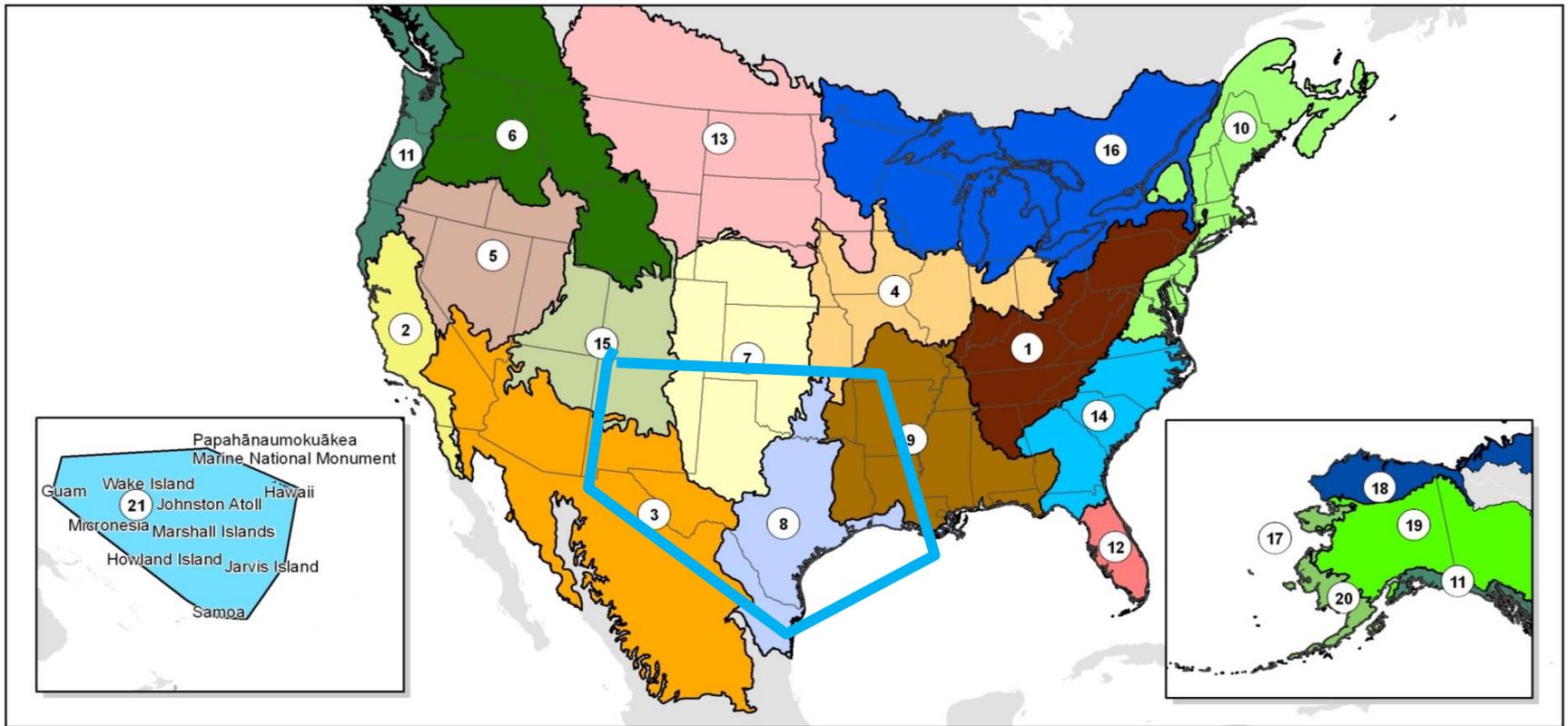
SE – North  
Carolina State  
University  
**Jerry McMahon**

SW –University  
of Arizona  
**Steve Jackson**

SC - University  
of Oklahoma  
**Kim Winton**

AK, PI, and SE are single university hosts, the others are consortiums

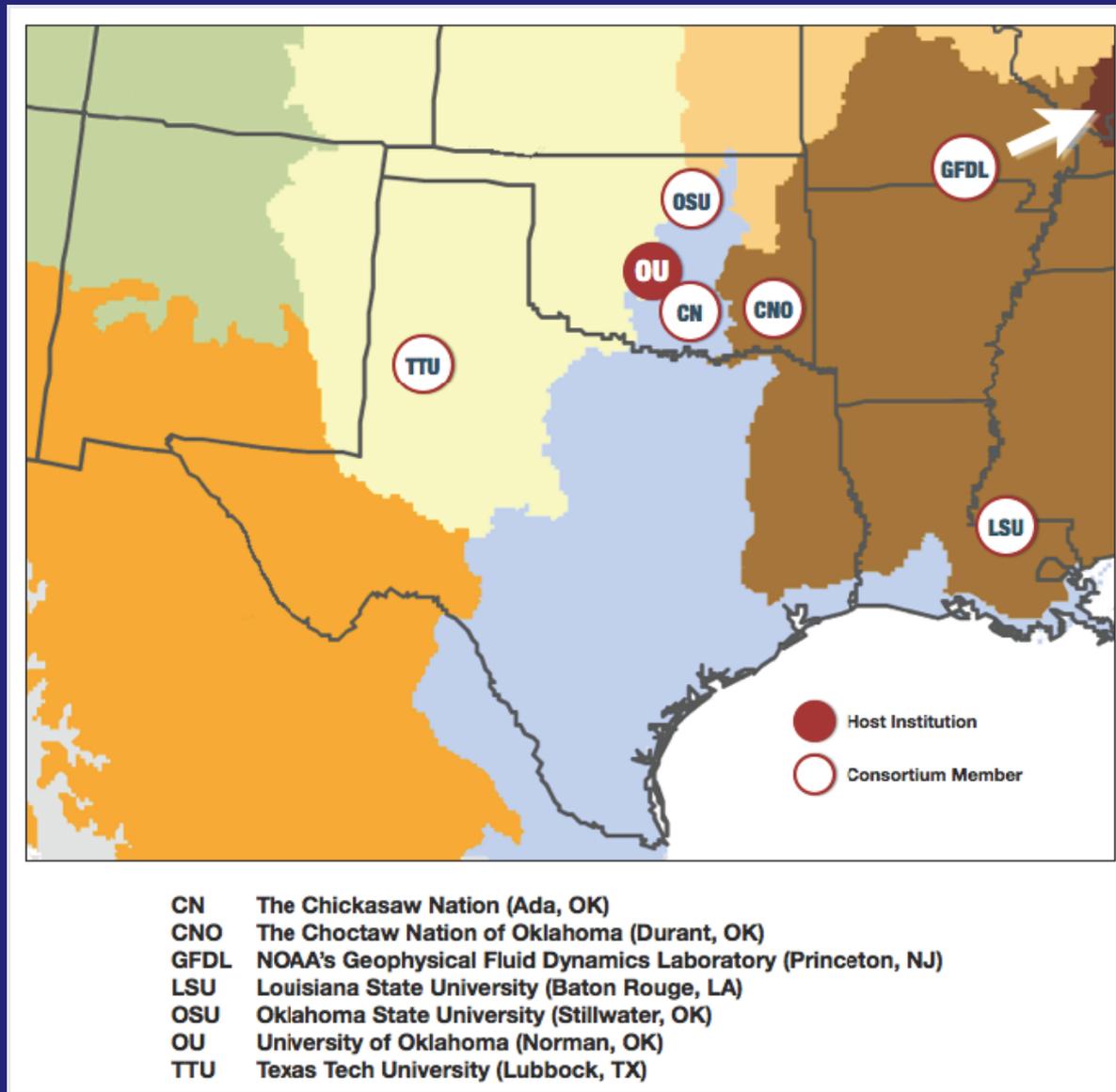
# LCC Geographic Boundaries



## 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 | 16. Upper Midwest and Great Lakes   | 21. Pacific Islands              |
| 5. Great Basin                              | 10. North Atlantic                | 17. Aleutian and Bering Sea Islands | Unclassified                     |
|   | 11. North Pacific                 |                                     |                                  |
|   |                                   |                                     |                                  |

# South Central CSC Consortium

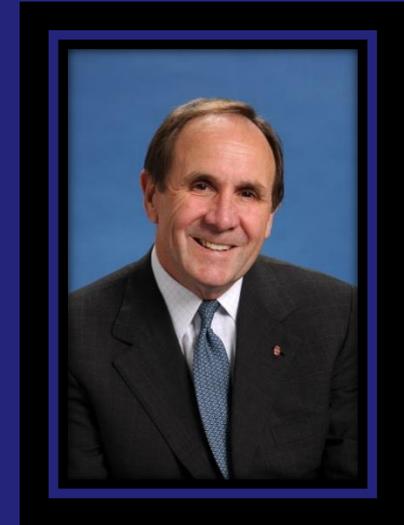


# Main Office Physical Assets



# Current SC-CSC Main Office

	Faculty/Staff/Post-docs	Graduate Students	Undergrads & Paid Interns
Male	5	1	9
Female	7	4	9
American Indian/Alaska Native	3		6
Asian	2	1	
Black or African American			3
White	6	4	5
Hispanic or Latino	1		4



# SC-CSC Main Office Personnel

- **Staff and Faculty:**

- **USGS Director** – Dr. Kimberly Winton
- **USGS Assistant Director** – Dr. Michael Langston
- **University Co-Directors** – Dr. Berrien Moore III & Dr. Renee McPherson
- **University Assistant Director** – Aparna Bamzai
- **Financial Administrator** – Terri Sarsycki
- **Chickasaw Nation Tribal Liaisons** – April Taylor & Kim Merryman

- **Research Staff and Post-docs:**

- **Research Scientist** – Dr. Carlos Gaitán (on-detail to NOAA/GFDL) & new EPSCoR position (begins 7/2015)
- **Post-doctoral Associates** – Dr. Derek Rosendahl, Dr. Esther Mullens, Dr. Manoj KC, & new EPSCoR position (begins 7/2015)

- **Students:**

- 3 graduate students (+2 beginning 8/2015)
- 5 undergraduate students (+1 beginning 5/2015)
- 11 summer undergraduates in 2014 (+11 beginning in 5/2015)

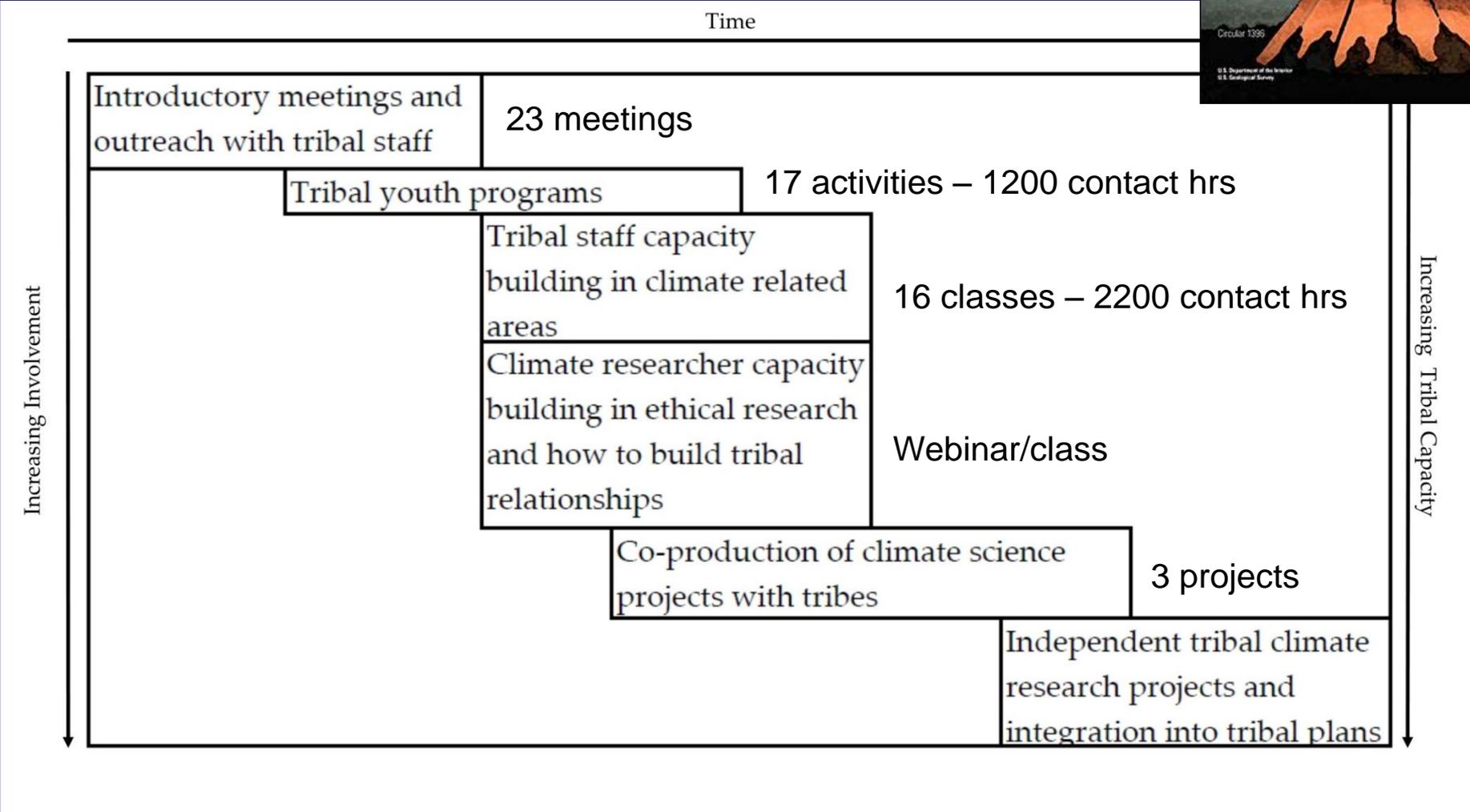
# SC-CSC Partnerships

- 7 Consortium members
- 6 LCCs
- 68 Tribes
- DOI Bureaus of Indian Affairs, Land Management, and Reclamation
- 6 USGS Science Centers (Water and Biology)
- USDA Southern Plains Regional Climate Hub
- NOAA Regional Integrated Sciences and Assessments (RISA) Program
- State natural resource management agencies

# SC-CSC Institutional Coordination

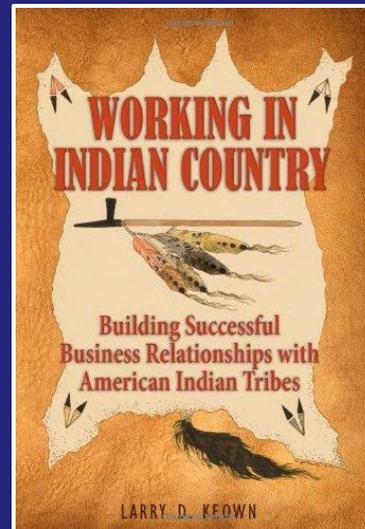
Over 200 engagements for coordination per year!		
<b>SCCSC</b>	Bi-weekly calls with all 7 consortium members	24
	Bi-weekly calls with NOAA-GFDL team	24
	Bi-monthly call and webinar with SAC	6
	Bi-monthly call and webinar with LCCs and other external partners	6
<b>LCC</b>	Attend 2 quarterly meetings per LCC	12
	Monthly calls for each LCC	72
	Great Plains LCC co-located – regular weekly meetings	52
	Assist LCCs with Tribal engagement (classes, meetings, vulnerability assessments)	
<b>Partner</b>	Monthly call with USDA Southern Plains Regional Climate Hub (share board)	12
	Monthly PI team meetings for NOAA Southern Climate Impacts Planning Program	12

# Tribal Engagement Strategy



# Tribal Engagement

- Tribal Youth Programs
  - 8 Northern Indian Pueblos Council Youth Environmental Summer Camp
  - Preconference for Indian Education Summit
- Building Researcher Capacity
  - Working in Indian Country



# Tribal Engagement with Partners

- Tribal Staff Capacity Building
  - Climate 101 for Tribes with Southern Climate Impacts Planning Program (NOAA RISA)
  - Tribal Vulnerability Assessment Training with BIA & Chickasaw & Choctaw Nations
  - Environmental Problem Solving with GIS Training with USGS OK Water Science Center, and Bureau of Reclamation



# Partnership Outcomes

- “Get it done!” mentality allows Consortium and/or USGS to provide personnel, research seed funding, equipment, etc.
- Examples: Annual Researcher Workshop, continuation of socio-ecological assessment of ecosystem services, co-funding of inter-tribal workshops on climate variability



# Capacity Building

- Undergrad Summer Internship for Underrepresented Minorities
- New, online course (Fall 2016)
- Early-career researcher professional development



## New Course: Managing for a Changing Climate



• Co-taught by Dean Moore (A&GS), Dr. Martin (SoM), and Dr. McPherson (DGES)

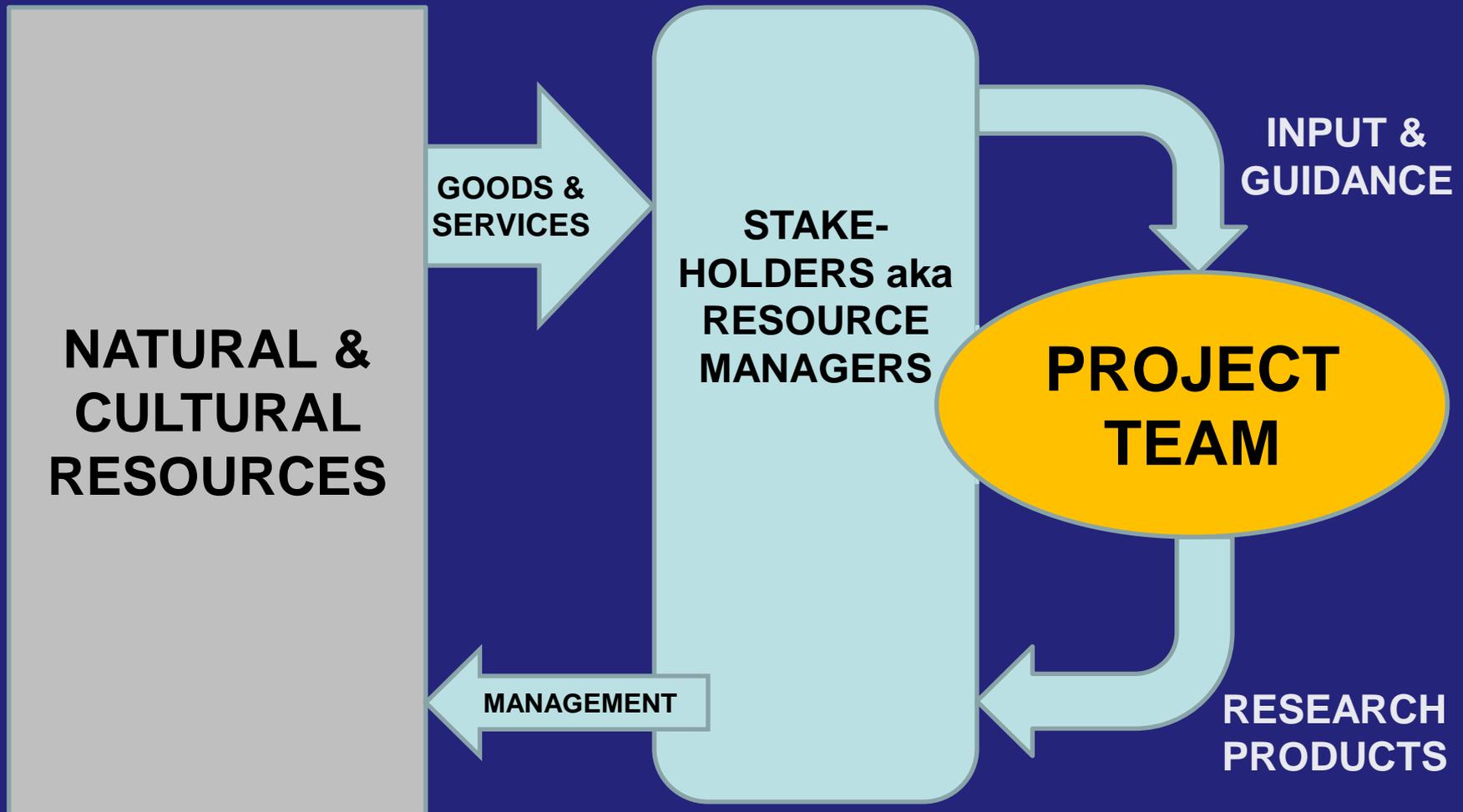
- Gain an understanding of the climate system & learn how climate varies
- Discover the impacts of climate change on our region & how they affect management decisions
- Understand how decisions are made under uncertainty
- Guest instructors from the research and management communities

*Fall 2015*  
**GEOG 3890 Section 001**  
*Tu/Th 3-4:15 PM*  
**3 credit hours**



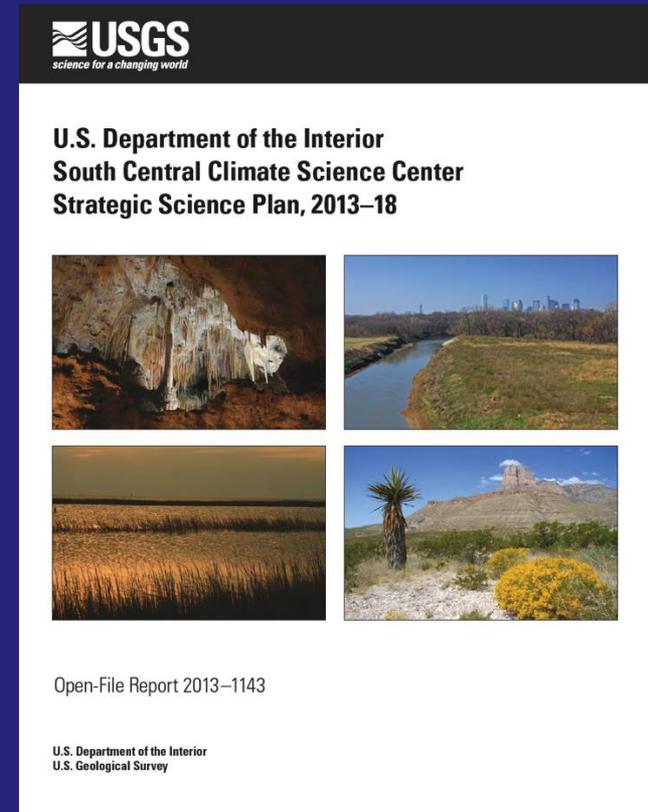
For more information, contact [aparna@ou.edu](mailto:aparna@ou.edu)

# Process for “Actionable Science”



# Co-Development of Science Strategy

- Short turnaround time
- Review about 40 agency science plans, conservation documents
- Tabulate the top 10 priorities (those that occurred most often)
- Review and consultation from LCCs and USGS



The first strategic science plan of the SC-CSC was released in 2013 as USGS Open-File Report 2013-1143 (available at <http://pubs.usgs.gov/of/2013/1143/>).

# SC-CSC Science Priorities

- 1) Climate change **adaptation**, mitigation, resiliency, and **vulnerability assessments**
- 2) Climate change effects on **ecosystems**
- 3) **Hydrologic** response to climate change
- 4) Climate change effects on **human populations**, socioeconomics, urbanization, cultural resources, and agricultural issues
- 5) Improved **monitoring** networks for resources affected by climate change and resource management
- 6) Improved management and sharing of climate change and geospatial **data**
- 7) Imperiled and **rare communities and invasive species**
- 8) Coastal response to **sea-level rise** and changing geomorphology
- 9) Biological response to climate change and disturbance, **conservation design**, and delivery
- 10) **Land-use and land-cover changes**

# Research Grant Competitions

Year	Research Funding	RFP Results			Notes
		SOIs	Proposals	Funded	
2012	\$500K	~100	30	7	
2013	\$1M+	~80	20	10	
2014	\$1M	~60	12	6	Also funding ecosystems “state of the science” project and additional tribal outreach.
2015	\$1M	~45	22	8	CSCs received \$3M increase for drought research.
2016	\$1M+ anticipated				No broad grants competition. Targeted funding for drought, Rio Grande River, and Red River.

# Benefits of the Consortium

- Research expertise
  - Regional evaluation of global climate models and downscaled climate projections
  - Coupled human-natural systems
  - Eco-hydrology and drought impacts
- Capacity building
  - Access to National Science Foundation awards, etc.
  - Youth & early-career development
  - Funding for scholarships, study abroad, etc.



# Leveraging Resources

- EPSCoR – Adapting Socio-ecological Systems to Increased Climate Variability
  - National Science Foundation and Oklahoma State Regents for Higher Education
  - \$24 million in funding to University of Oklahoma, Oklahoma State University, and partners over 5 years
- Southern Plains Regional Transportation Center
  - \$5.2 million over 2 years with possible extensions
  - U.S. Department of Transportation
  - Focus on weather and climate impacts



# Future Directions

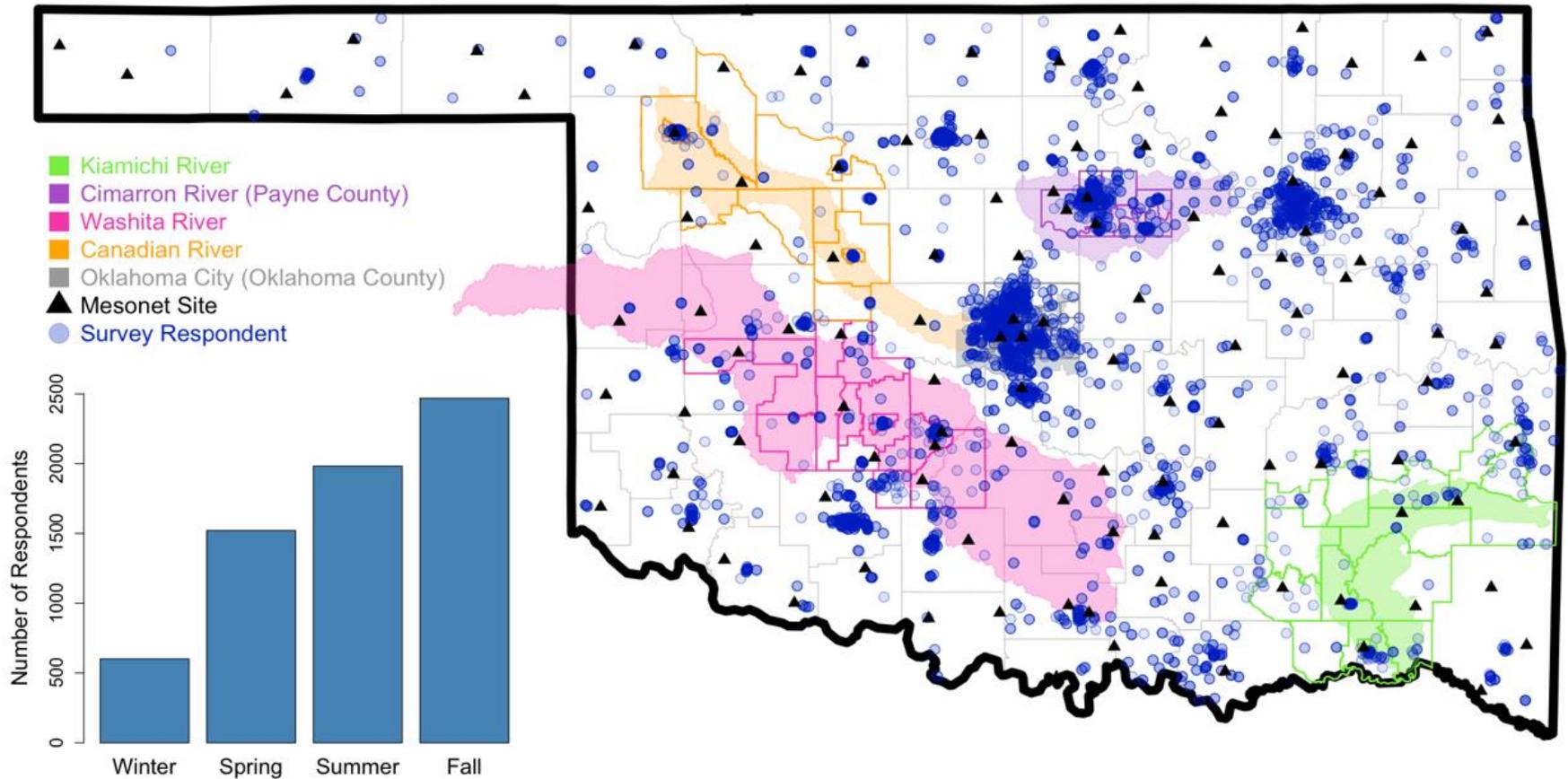
- Supplementary drought funding – partnering with 3 LCCs to integrate into conservation efforts and produce actionable science
- New Ecosystem Modeler Position – synthesis of science of ecosystem modeling for the region
- Annual Research Workshops produce proposals
  - Red River projects (funded by USGS)
  - Vulnerability Assessment Trainings for Tribes (USGS co-funded with BIA)
  - Paleo-climate and modeling study of past precipitation variability (submitted to NSF)

# Future Directions

- Place-based research – e.g., drought impacts & ecohydrology in the Red River and Rio Grande basins
- Develop “Consumer Reports” evaluation of global climate models & downscaling methods and stakeholder guidance documents in partnership with DOI, USGRCP, NOAA, USDA, & others
- Coupled human-natural systems research

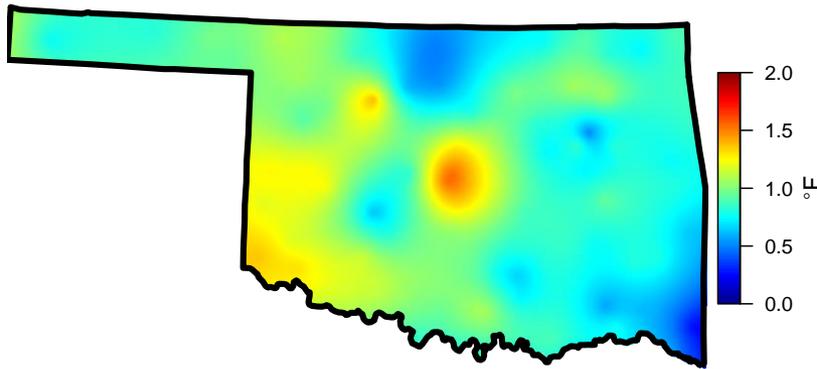
# Coupled Human-Natural Systems

MSISNet Data Collection: 2014

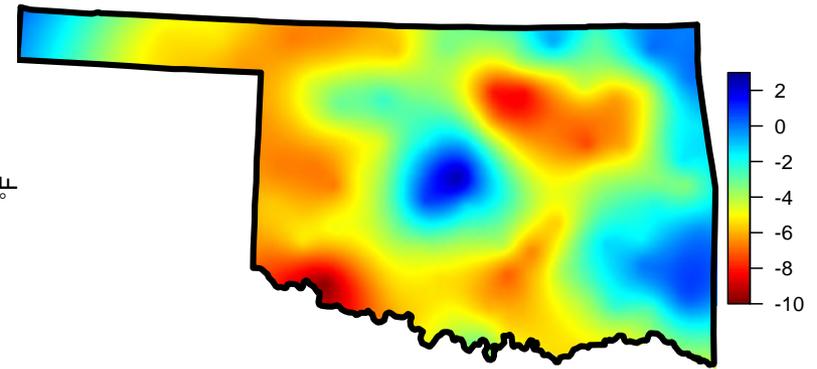


# Coupled Human-Natural Systems

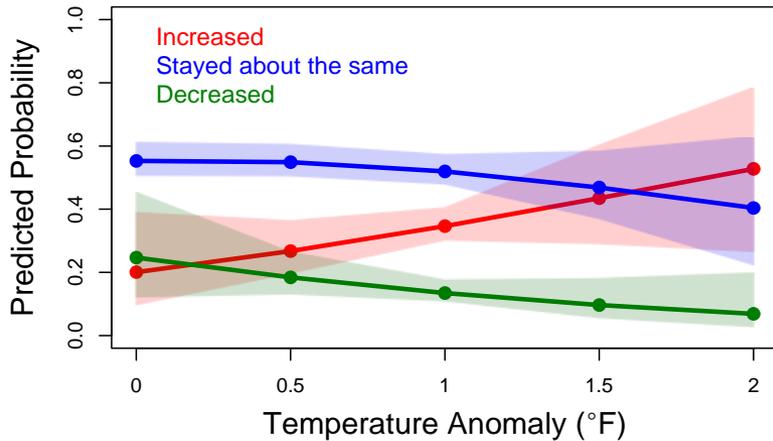
Measured Temperature Anomaly



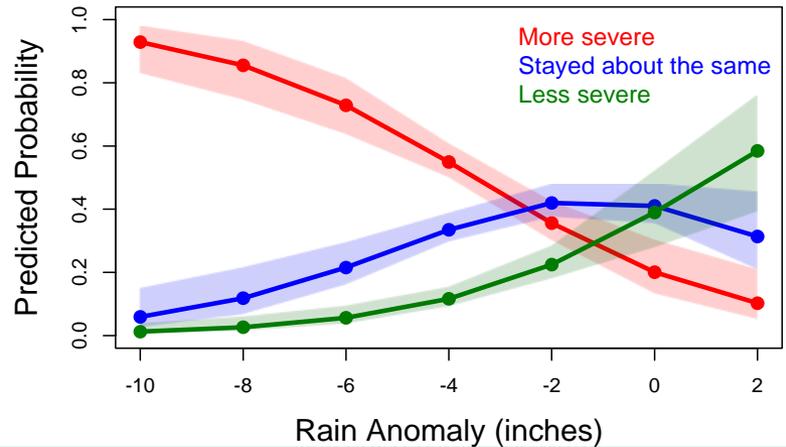
Measured Precipitation Anomaly



Measured Temperature Anomaly vs. Perceived Temperature Anomaly



Measured Precipitation Anomaly vs. Perceived Drought Anomaly



# Additional Resources

- Strategic Plan:
  - <http://pubs.usgs.gov/of/2013/1143/>
- Projects Funded:
  - <https://nccwsc.usgs.gov/display-csc/4f8c652fe4b0546c0c397b4a>
- Tribal Engagement:
  - <http://pubs.er.usgs.gov/publication/cir1396>
- Facebook



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