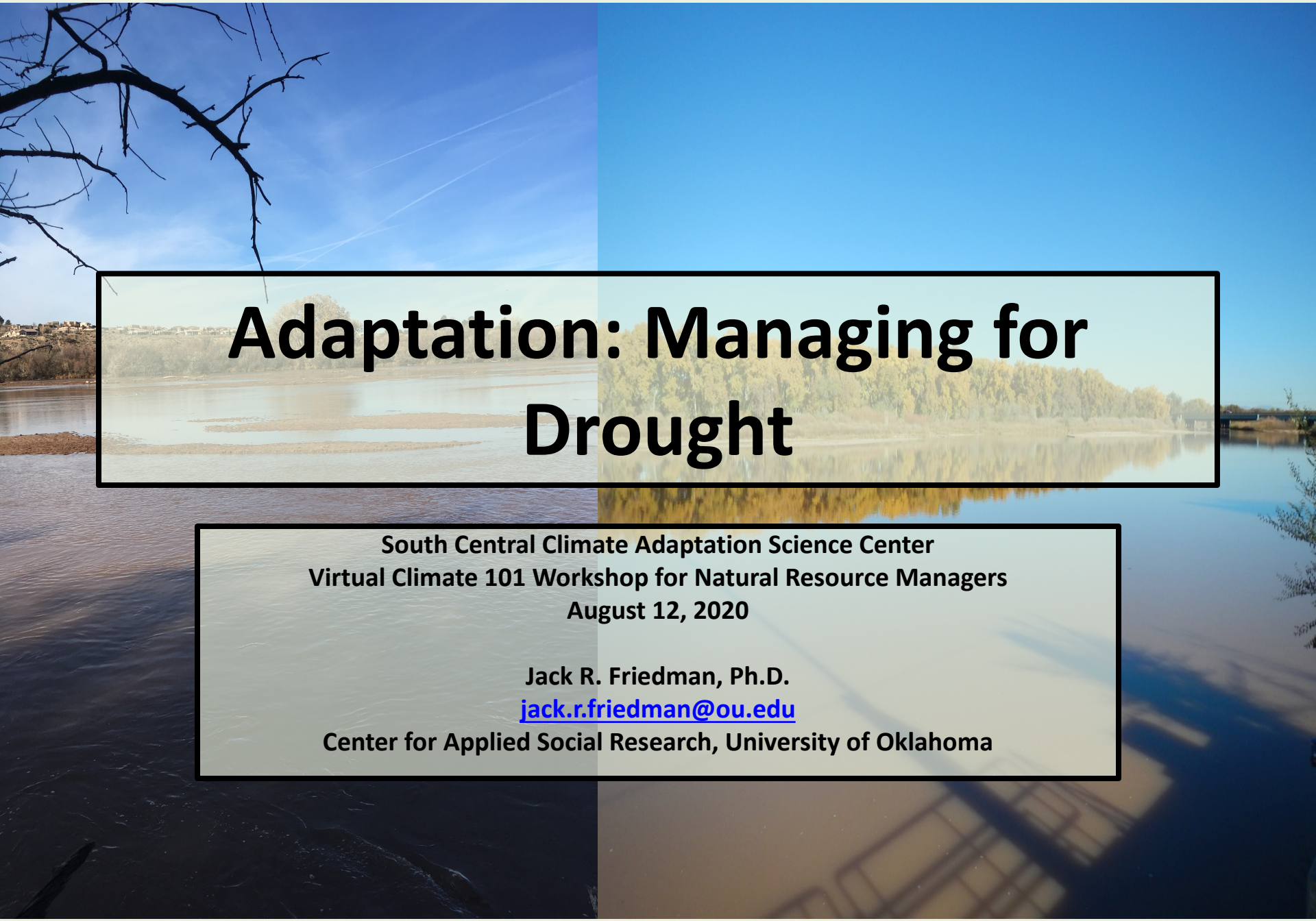

Adaptation: Managing for Drought

South Central Climate Adaptation Science Center
Virtual Climate 101 Workshop for Natural Resource Managers
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About Me

- Anthropologists, Center for Applied Social Research, University of Oklahoma
- 2013-2018 Research on 4 watersheds in OK looking at drought/water across a range of socio-ecological systems (agriculture, forestry, tourism, urban, prairie/mixed-use)
- 2016-2020 Research on drought and water management across the Rio Grande/Bravo (from Colorado to the Gulf of Mexico, including portions of the Rio Conchos in Mexico)

Overview

- A Typology of Drought Decision Making in the Western United States: Synthesizing Across Cases to Understand Drought Preparedness and Response (In)actions
  - **Amanda E. Cravens,** U.S. Geological Survey; **Jen Henderson**, CIRES, University of Colorado, Boulder; **Jack Friedman**, University of Oklahoma; **Nina Burkardt**, U.S. Geological Survey; **Ashley E. Cooper**, U.S. Geological Survey; **Tonya Haigh**, National Drought Mitigation Center, University of Nebraska, Lincoln; **Michael Hayes**, University of Nebraska-Lincoln; **Jamie McEvoy**, Montana State University; **Stephanie Paladino**, MeroLek Research; **Adam K. Wilke**, University of Minnesota Water Resources Center; **Hailey Wilmer**, USDA-Agricultural Research Service Rangeland Resources and Systems Research Unit.
- Currently under review — DO NOT QUOTE

FOUR CRITICAL ELEMENTS IN OUR DROUGHT DECISION MAKING TYPOLOGY

- Element 1: Problem Definition
- Element 2: Actors
- Element 3: Decisions
- Element 4: Interactions

Drought Management: Poll #1

Element 1: Problem Definition
How the Drought Problem is Framed

- Is drought the primary problem or secondary problem?
- What is the spatial scale of the drought problem?
- What is the temporal scale of the drought?
- How is the type of drought being frame?
  - Meteorological
  - Agricultural
  - Hydrological
  - Ecological
- To what extent is a drought being defined by DRIVERS vs. IMPACTS
- Proactive (preparedness) vs. Reactive (responsiveness)

Rio Grande: ENVIRONMENT-DETERMINIST COGNITIVE MODEL OF HUMAN BEHAVIOR

Rio Grande: COMPACT COGNITION MODEL OF HUMAN BEHAVIOR

Rio Grande: Temporal and Spatial Decoupling in Drought Preparedness, Response, and Perception

- **Time**:
  - **When** are we "in a drought," and when should that trigger a response?
  - **When** does management need to shift from "business as usual" to "drought contingency" practices?
  - **When** will a sustained drought overwhelm a drought plan and what will that mean?
  - **When** are we "out of a drought," and what follows?

Element 2: Actors
Who Makes Decision About Drought

- What *actors* make decisions about a drought?
  - When is this about a "job title" vs. what people actually do.
- How much *agency* — the power and ability to affect a change or take a desired action — do different actors have?
- To whom or what are drought managers accountable?
  - Individual vs. Collective

Drought Management: Poll #2

Element 3: Decisions
What Decision or Actions are Taken in Response to Drought

- What is a decision?
  - Conscious choice between options
  - Deliberative judgment
- Does the scale of the management decision match the scale of the drought problem?

Types of Decisions in the Rio Grande

- Most drought decisions were **RESPONSIVE only to local conditions** and **fails to account for teleconnections**.
- Most drought decisions **shifted the burden of a drought to downstream users**
- Most drought decisions did not provide resilience to drought impacts; **drought plans simply concealed and deferred the impact of a drought**
- Most drought decisions were viewed as successful if the response made **the drought invisible to their constituents as long as possible**
- **Most drought decisions** were viewed as successful if regular people (the constituents) never **experienced** these water-limited-but-manageable situations

Drought Management: Poll #3

Element 4: Interactions
Dynamic Interactions among Actors, Decisions, and/or Problem Framings

- What connections are there between drought decisions? What relationship is there between drought actors?
- How much do different actors share a decision space and share a drought problem definition/framing?
- How do one actor's decisions constrain or enable another actor's decision or agency?
- How do decisions feedback across decision spaces?
- To what extent do decisions and actors interact across multiple spatial and temporal scales?

Typology Based on Temporal Scales

Seasonal

- Irrigators (CO & NM)
- MRGCD
- Bureau of Reclamation

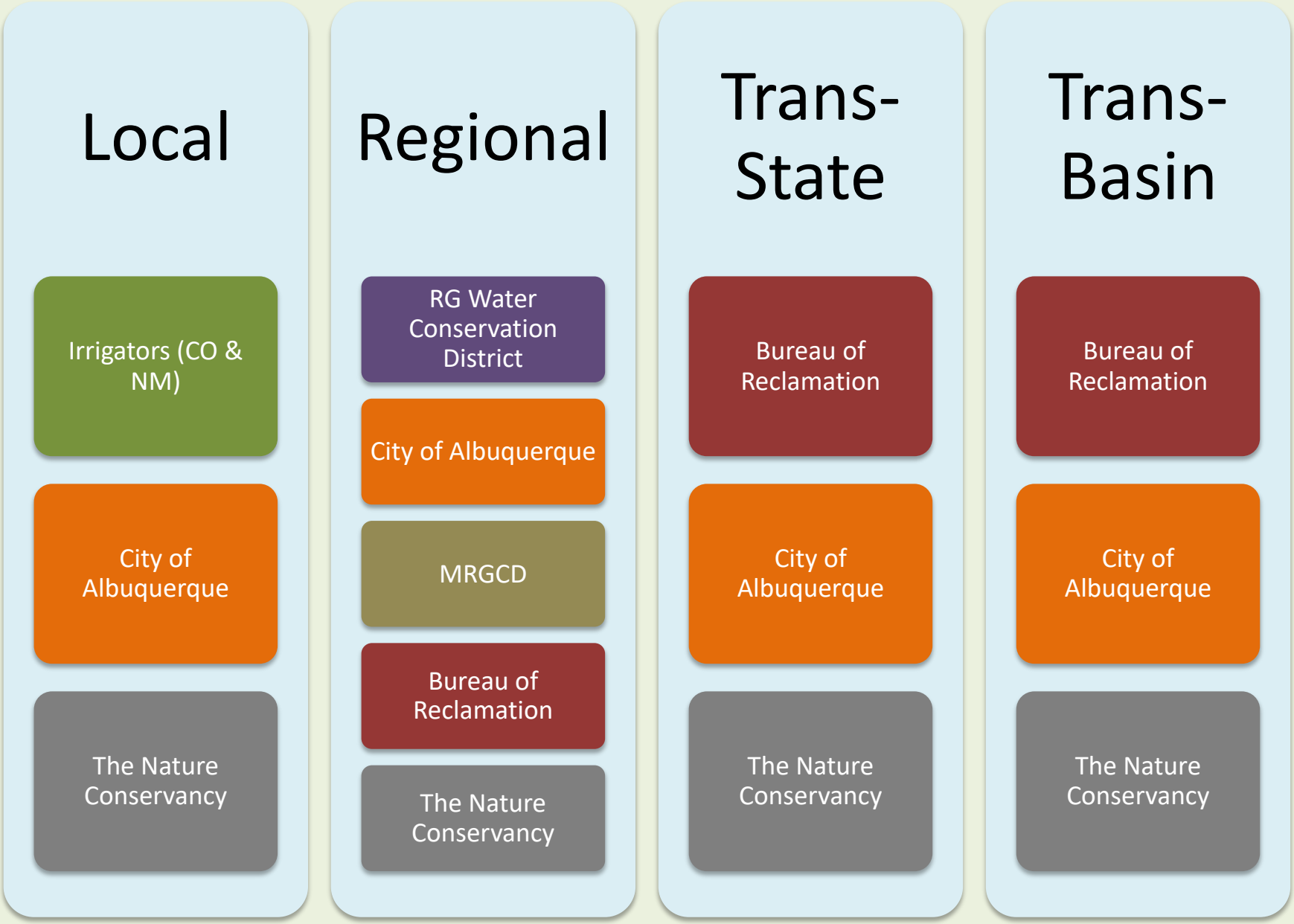
Annual

- Irrigators (CO & NM)
- RG Water Conservation District
- City of Albuquerque
- MRGCD
- Bureau of Reclamation

Decadal

- RG Water Conservation District
- City of Albuquerque
- Bureau of Reclamation
- The Nature Conservancy

Typology Based on Spatial Decision Making



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