

Vulnerability to climate extremes and strategies for sustaining ecosystem services

Initial Team

University of Oklahoma

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Henry Neeman, OK Cyberinfrastructure
Initiative

Xiangming Xiao, Earth Obs. and
Modeling

Noble Foundation

Jon Biermacher, Agricultural Economist

Oklahoma State University

Tracy Boyer, Environmental Economics

David Engle, Water Resources Center

Sam Fuhlendorf, Natural Resources

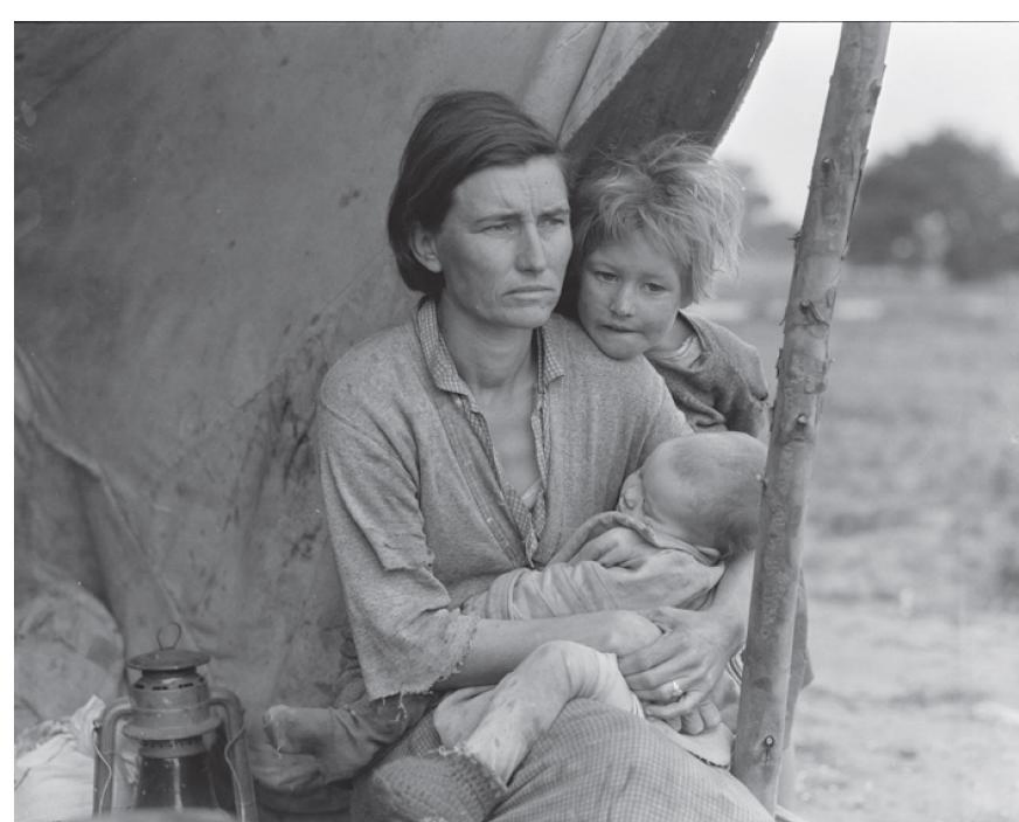
Tyson Ochsner, Soil Physics

Dave Shideler, Rural Economic Impact

Jeff Vitale, Coupled Climate-economic
Models

Chris Zou, Ecohydrology

Others?



“Aridity comparable to the 1930s Dust Bowl could stretch from Kansas to California by mid-century.”

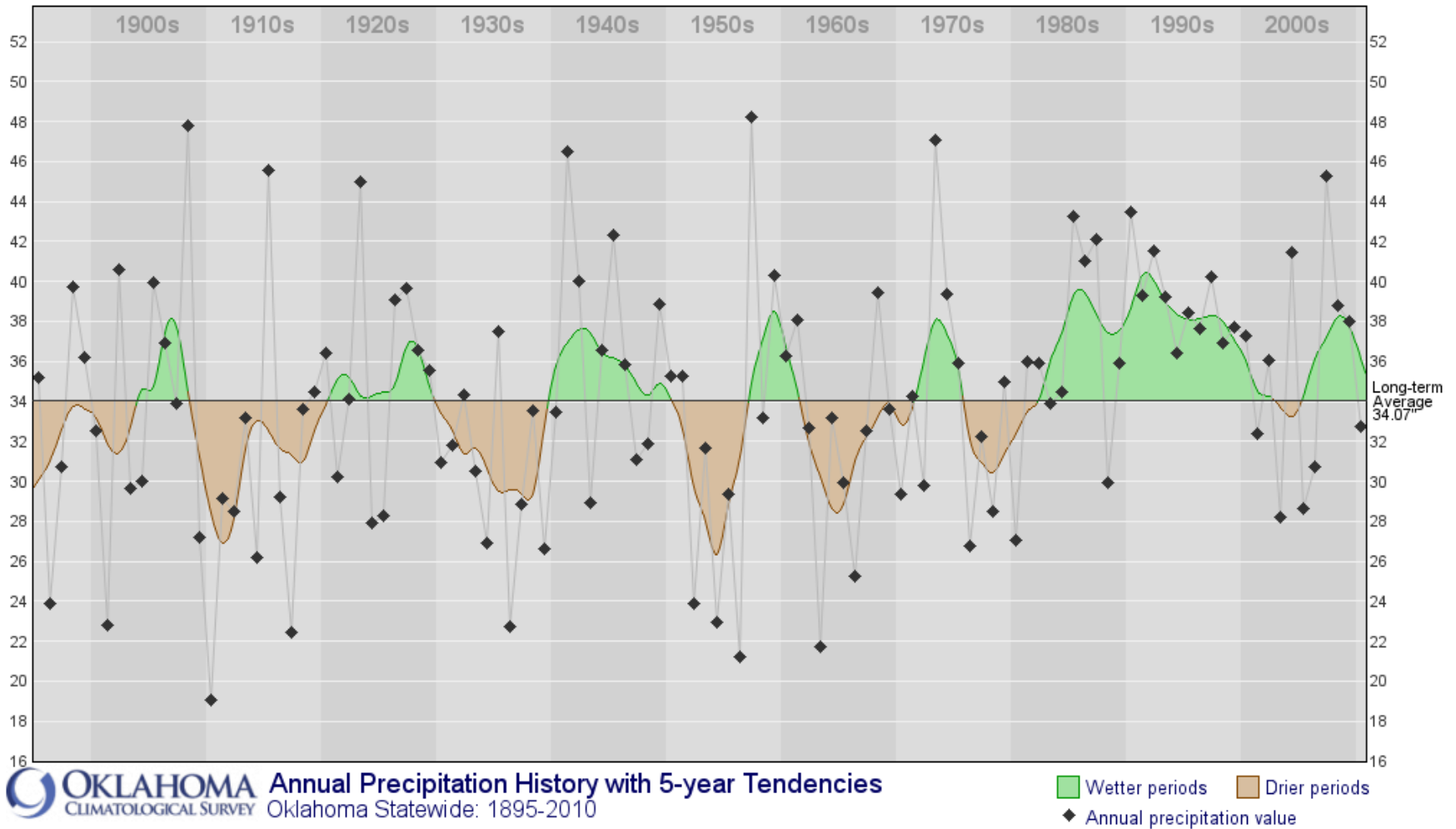


Hundreds of thousands fled the 1930s US Dust Bowl; more drought-spurred migrations are expected.

The next dust bowl

Drought is the most pressing problem caused by climate change. It receives too little attention, says **Joseph Romm.**

Variability in Rainfall



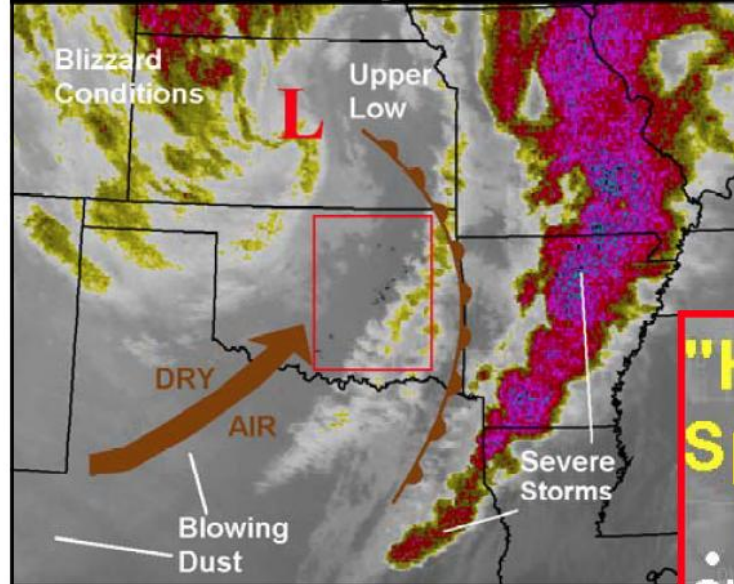
The Modern Dust Bowl

Differences in 1930s to 2010 and into the future

- More people-more demand on land and water
- Different water supply and water demand
- Different agricultural conditions- more soil conservation, less crop diversity
- Different land use patterns - rural vs. urban
- More woody plants - more catastrophic wildfires
- Global markets
- Energy development

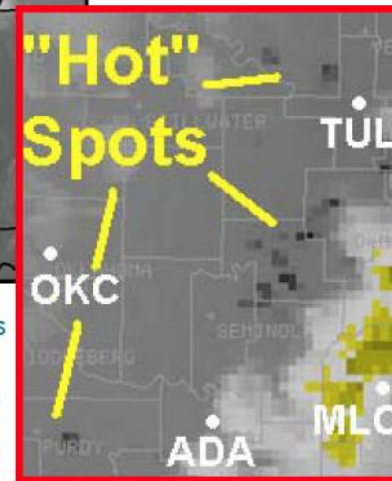
Wildfires Rage Across Northeast Oklahoma

7:45 PM Sunday Nov. 27, 2005

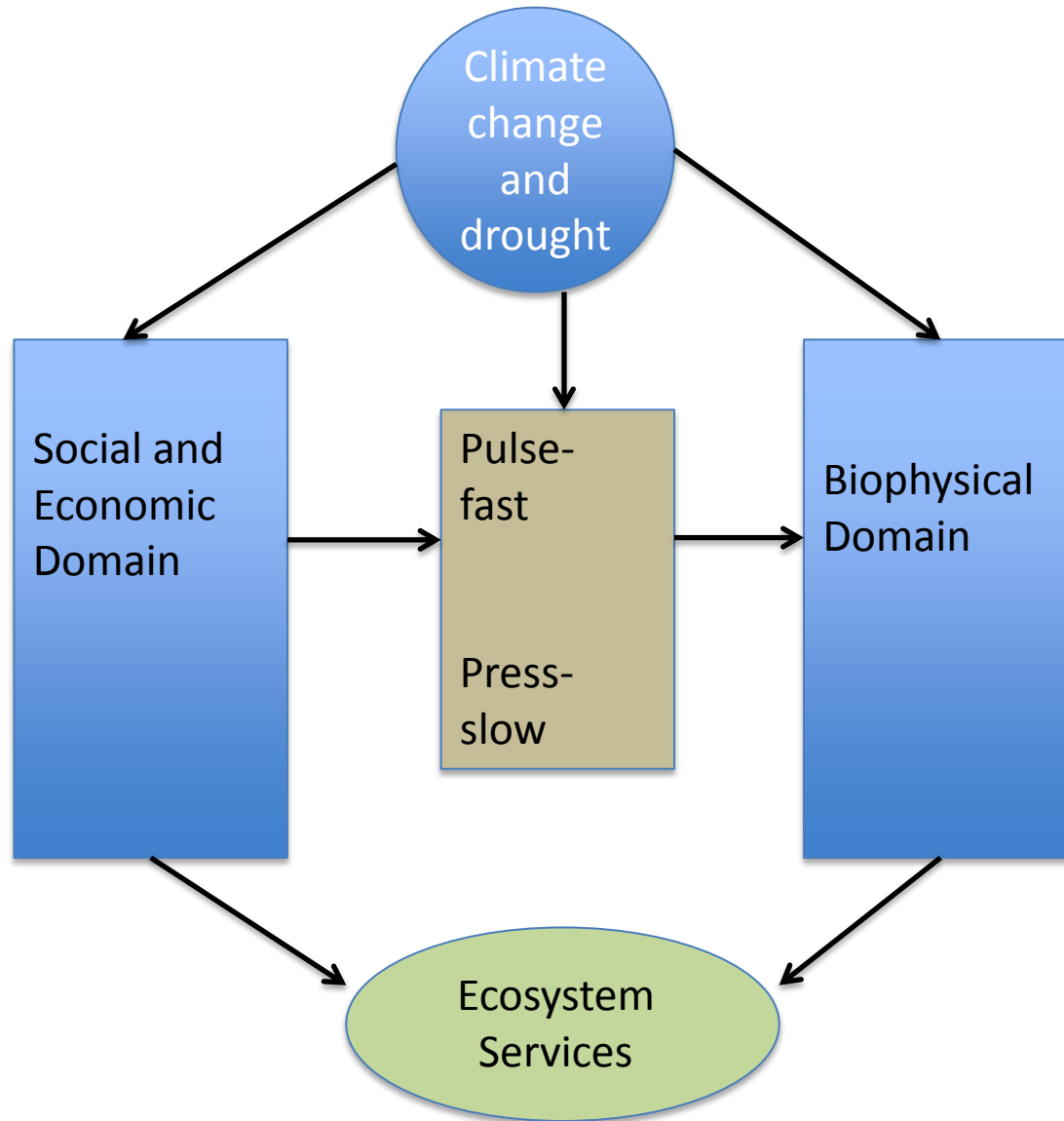


Thermal Infrared Satellite image (left) from the evening of November 27 shows the potent storm system responsible for the dangerous fire conditions.

In the zoomed area on the right, the dark spots are "hot" areas in the thermal image that correspond to the ongoing fires. The light grey to gold shades are areas of cooler cloud tops.



Research Framework



Questions

For the future

- Outcomes of managing for pulses versus managing for presses?
- Vulnerability response to variability in pulses and presses?
- Intervention scenarios for managing for pulses versus managing for presses?