

DROUGHT INDICATORS & PERCEPTIONS IN CIMARRON COUNTY, OK & UNION COUNTY, NM

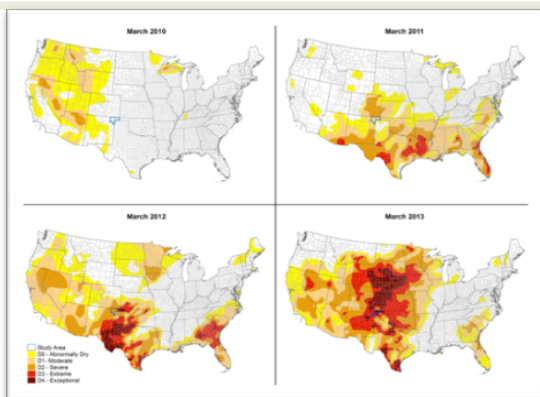


Figure 1. Annual comparison (2010-2013) of drought monitor classifications¹

Drought Indicators

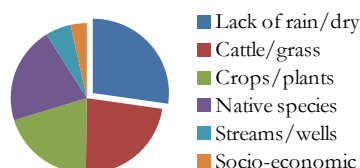
During the past century, the region has experienced six major drought events: 1909-18, 1930-40 (the Dust Bowl), 1952-58, 1962-72, 1975-1982, and 2000-present.^{2,3} Our survey (n=120) revealed that most households have experienced more than one drought in the region (two 24%, three 29%, four or more 21%). 3 out of 4 respondents agree that the *recent drought was worse than previous droughts* and 92% agree that the *current drought negatively impacts the entire community*.

Table 1. Survey respondents definitions of drought

Drought Type	Definition	Percent
Meteorological	Degree of dryness and duration	54%
Hydrological	Surface or subsurface water supply	4%
Agricultural	Susceptibility of crops, pasture, or cattle	20%
Socio-economic	Qualitative, human impacts	22%

Respondents most often *define drought* as meteorological rather than agricultural or socioeconomic. Very few defined drought as hydrological. ⁴ Still, a wide variety of *indicators of drought* were identified beyond lack of rain (27%), including agricultural impacts related to cattle and crops (43%), as well as ecosystem-based impacts(26%).

Indicators of Drought
n=353



Overall Lessons Learned

- Residents perceive the most recent drought to be the worst drought on record, regardless of previous drought experience.
- Most residents define drought as primarily meteorological in nature, although many identified indicators of drought illustrate the impact on agriculture, environment, and society.
- Multiple, historical experiences with drought raise questions about the links between contemporary climate change and drought. Residents see drought as cyclical and driven by natural causes, rather than human causes.

About the Project:

On-going regional drought in the Southern High Plains presents challenges to the ways farmers and ranchers manage their land use and herds.

This study presents results from a comparative analysis of two adjacent counties, Cimarron County, OK and Union County, NM. Since 2000, both have experienced what the U.S. National Drought Mitigation Center classifies as a “severe” (D2) to “exceptional” (D4) drought.¹ Our research explores the political, social, and environmental factors that influence socio-environmental vulnerability and resiliency to drought.

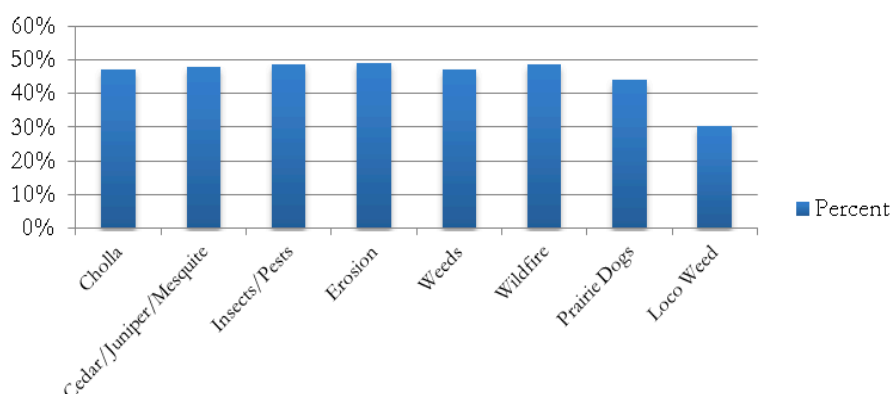
Methods:

- 120 household surveys selected from random geographic coordinates, geographically stratified to account for changes related to topography with 45 rural and 15 urban respondents per county
- Qualitative coding of drought data
- Statistics used to explore differences in adaptation by county
- Key informant interviews (n=40) with local stakeholders
- Oral histories with long term residents
- Remote sensing analysis and Geographic Information Systems (GIS)

Environmental Problems

Survey respondents identified a number of *land management issues* experienced during the last drought period. These included invasive plants, insects, and animals, as well as problems with wildfire and erosion. There were no significant differences between counties.

Environmental Problems (n=120)



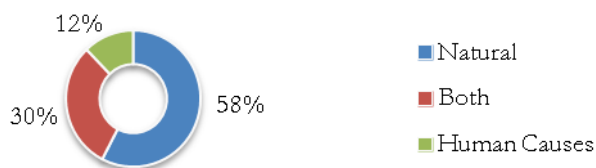
Information about Drought

Approximately 56% of respondents *discuss current water issues regularly with neighbors*. In terms of sources of information about drought, respondents rely on *family and friends* (53%), *internet* (40%), *soil and water conservation districts* (39%), *governments agencies* (36%), *local newspapers* (34%), and *church* (22%). Respondents in Union County were significantly more likely to get water information from their soil and water conservation district and local newspaper.

Drought and Climate Change

When asked if there was a link between climate change and drought, 42% of respondents disagreed, 46% agreed, and 12% neutral. Of those who agreed (n=67), only 8 respondents attributed drought to human causes alone, 38 respondents felt drought was natural, and 20 felt it was caused by both human and natural causes.

Link between climate change & drought



References

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2. Oklahoma Climatological Survey Climate Information Group. 2006. *Oklahoma Drought Update January 26, 2006*. [online] URL: <http://climate.ok.gov/newsmedia/releases/droughtupdate.pdf>. (accessed Jan. 7, 2009).
3. Tortelli, R.L. 1990. Floods and Droughts: Oklahoma National Water Summary 1988-1989: USGS, Water Supply Paper 2375. [on-line] URL: <http://ok.water.usgs.gov/drought/gen.clim.html>. (accessed May 31, 2016)
4. Wilhite, D. A., & Glantz, M. H. (1985). Understanding: the drought phenomenon: the role of definitions. *Water international*, 10(3), 111-120.

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Please visit our project webpage for more information, including maps, and fact sheets:

<http://biosurvey.ou.edu/Grasslands/main.html>

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