

# An Assessment of Drought and Climate Vulnerability and Resilience in the Rio Grande Basin in New Mexico

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**Key Partner:** New Mexico Drought Monitoring Working Group

**End Users:** New Mexico Drought Monitoring Working Group, which includes state experts in water, the environment, wildfire, recreation and tourism, agriculture, and health

**Additional Resource Support:** National Integrated Drought Information System (NIDIS)

**Project Dates:** 2019 – 2022

## Summary of Impact

**Network expansion:** This project expanded CLIMAS's network of collaborators and stakeholders in New Mexico by connecting with the NM Drought Monitoring Working Group, state officials, and experts from multiple sectors including water, economy, fire, recreation, health, agriculture, and the environment.

**Shaping future drought research:** Drought research priorities that emerged from this project shaped new CLIMAS projects in the region by applying an equity focus.

**Disseminating findings:** The peer-reviewed publication generated from this project on equity and drought monitoring garnered interest from the Southwest Fire Science Consortium. They subsequently condensed the findings into a handout for their constituents to disseminate the project's key takeaways on the links between drought and wildfire to a wider audience.

## Problem Statement

The 2018 New Mexico Drought Plan identified the need for more in-depth assessments of drought and climate vulnerabilities to inform drought planning across the state. This project addressed this need by exploring stakeholder concerns and drought research priorities in the Rio Grande Basin.

## Research Focus

This project assessed drought and climate vulnerabilities and resilience from the perspectives of New Mexico residents and experts. The assessment engaged with areas of concern identified by the New Mexico Drought Monitoring Working Group, including water, economy, fire, recreation, health, agriculture, and the environment.

## Project Activities

**Interviews:** Conducted 9 key informant Interviews with members of the NM Drought Monitoring Working Group and regional drought experts to identify gaps in drought monitoring.

**Survey:** CLIMAS researchers co-developed a survey with partners Dave DuBois and Andrew Mangham to evaluate what kinds of drought monitoring information community partners want.

### *On research design:*

I was interested in identifying gaps in drought monitoring, especially for people across different communities or from different economic sectors and trying to understand who is missing at the table.

I asked people what their perspective on drought was. How do they define drought? How do they experience drought in their sectors? And what is missing?

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*Christina Greene, CLIMAS*

## Project Outputs

### **Report:**

Greene, C. 2024. *Drought Monitoring Insights from the New Mexico Drought Monitoring Working Group*. Tucson, AZ: Climate Assessment for the Southwest.

### **Peer-reviewed Publication:**

Greene, C., D.B. Ferguson. 2024. Equity, Justice, and Drought: Lessons for Climate Services from the U.S. Southwest. *Bulletin of the American Meteorological Society* 105(1): E45 – E58. <https://doi.org/10.1175/BAMS-D-22-0185.1>

## Selected Scientific Findings:

***Need for investment:*** Opportunities for strengthening drought monitoring in New Mexico include greater investments in physical drought data as well as investments in community engagement.

***Drought-related inequities:*** Drought impacts are not evenly distributed across society. Certain communities, often those already marginalized, experience more severe impacts, such as disparities in agricultural losses, water insecurity, and wildfire exposure.

***Improving drought monitoring:*** Current climate services often fail to capture the unequal ways in which people experience drought. There is a need for community engagement that is designed to build trust between drought researchers, agencies, and local communities, which will support drought monitoring that is better aligned with drought decision-making.

***Integrating local knowledge:*** Drought data and information often do not match the scale at which people make decisions. Integrating place-based knowledge can better support local decision-making, which involves recognizing and valuing different forms of expertise, including those from communities directly impacted by drought.

## Societal Impacts by Category

### ***Conceptual and Instrumental:***

- Findings from this project informed new CLIMAS projects around wildfire and aridity in the southwest. How social and economic inequities frame people's experiences with drought, aridity, and changing climate in the Southwest inform CLIMAS researchers approach to understanding equity concerns in experiences with wildfires.

### ***Capacity Building:***

- The peer-reviewed publication resulting from this project about equity and drought monitoring received interest from the Southwest Fire Science Consortium. They condensed findings into a handout for their constituents on connections between drought and wildfire: [Centering Equity and Justice in Drought and Wildfire Planning in U.S. Southwest](#).

### ***Connectivity:***

- This project established new connections in New Mexico through network building and interviews. The network continues to strengthen and expand through new CLIMAS projects in New Mexico on wildfire and aridity.
- Greene was invited to speak at the Arizona Wildland Urban Interface Summit to discuss equity issues in drought monitoring and management based on this work.