

Linking Regional Climate Data to Rural Perceptions of Climate Change

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Abstract

Climate change-induced droughts affect water supplies in the Western United States, significantly impacting vulnerable, rural areas. Wyoming serves as an insightful case study due to its geography and culture, featuring the origins of three significant river basins (Snake/Columbia, Green/Colorado, and Platte/Mississippi) and numerous rural communities. The repercussions of drought and water scarcity are profoundly felt within Wyoming's rural economies and extend into neighboring states, bearing regional and national consequences. The livelihoods of many rural inhabitants in Wyoming depend on variable precipitation, crucial for the state's leading sectors: energy, tourism, and agriculture. Rising temperatures result in earlier spring snowmelt, decreased runoff, and lower late-season water flows. Rural areas are forced to adapt to the shifting dynamics of water supply amidst unpredictable precipitation patterns. This study explores the link between seasonal changes in precipitation during drought periods in the Green, Snake, and Upper Platte river headwaters and examines how local rural communities perceive drought risks. Employing a mixed-methods approach that combines quantitative (such as climate and survey data analysis) and qualitative (focus group content analysis) methods, this research delves into the variability of precipitation and the perceptions of drought risk among communities in Wyoming, spatially and temporally. Furthermore, the use of a transdisciplinary, mixed methods approach—innovative within earth sciences—for studying environmental threats (like fires and floods) highlights collaborative strategies for building community resilience against climate change.

Keywords: Climate Change, Drought, Rural Communities, Wyoming, Environmental Hazards, Mixed Methods, Water Resources