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Ecological Drought Knowledge and Knowledge Sharing among Decision Makers  
Sale Rhodes

MSU Earth Science and NOAA NIDIS Coping with Ecological Drought

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Increasing demand for water resources amidst decreasing water supply in the arid U.S. Mountain West has led to more frequent and more severe drought events. Changing climates, precipitation patterns, and temperature trends exacerbate this imbalance, leading to new drought concerns. Ecological drought represents the impact that drought events have on ecosystem functions and services, which in turn impact agricultural productivity and communities. Ecological drought is a socio-ecological systems (SESs) challenge, as recognizing and responding to ecosystem changes is critical to the functioning of the human, ecological, and entire interconnected system. The impacts of ecological drought threaten transformation of entire ecosystems, which requires adaptation. A multitude of drought tools, models, and information sources are available to help identify and anticipate drought events and corresponding impacts. However, we have little understanding of which tools and information are used by decision-makers (i.e., government agency scientists and practitioners) when managing or adapting to ecological drought. To better comprehend tool and information use, we asked decision-makers from state and federal natural resource agencies in Montana which tools and information sources they are aware of and use (e.g., empirical data, models, informal conversations, personal observation, etc.). Paramount to our inquiry was the inclusion of local knowledge as an information source because agricultural communities often hold deep local or experiential knowledge that is critical for climate adaptation. Our survey sought to examine which knowledge types are most used for ecological drought management (n=477; 21% response rate). In this talk I will present survey findings, sharing the most relied upon information sources and presenting novel or previously unappreciated sources of information for drought decision makers. These results explore the utility of conventional, empirical knowledge as well as local knowledge in decision making about ecological drought. Understanding what information is used and how it is shared will guide future data, tools, and information sharing programs to support real-time decision making about drought conditions that support agriculture and adaptation.