

## A Perspective on Applied Water Resources Research for Use by Decision Makers: The Case of Drought in Semiarid North America

During the last decade, much of western North America has experienced sustained moderate-to-severe drought. Among the many consequences of this decade of drought are: reduced surface water supplies, massive forest mortality, increased wildland fire activity, degraded rangelands, enhanced wind erosion. In the United States of America, drought responses have included enhanced drought planning, development of a national initiative to improve drought preparedness, enhanced cooperation between states, improved information flows and drought-related online products, and efforts to expand and improve drought monitoring coordination. In northern Mexico, drought has also reduced water supplies, degraded rangelands, enhanced erosion, and decreased groundwater supplies. In both countries, the impacts of drought have also raised awareness of potential future impacts of climate change. Based on observations and modeling attribution studies, these include earlier snowmelt runoff, decreased snowpack, longer frost-free seasons, higher minimum temperatures, longer periods without precipitation, and greater likelihood of wildland fire. To date, in the USA, leading efforts to adapt to ongoing and projected climate changes have been led by individual municipalities, states, universities, and non-governmental organizations. In Mexico, the federal government is funding the development of state climate change adaptation plans. An essential part of these efforts are attempts to understand the needs of stakeholders, who require (a) guidance to determine realistic scenarios for land use and urban development planning, (b) reliable estimates of hydrologic parameters for infrastructure investments, and (c) flexible decision support tools to answer questions that encompass biophysical and social parameters and processes. This talk will provide research and stakeholder perspectives on the historic problem of drought in semiarid North America and the emerging needs for science-based knowledge to inform decision making on drought and climate change in the 21<sup>st</sup> century.