

Stakeholder vulnerability to water stress in the South Platte River Basin

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Abstract. The impacts of human actions and climate change have caused accelerated or unexpected changes to the world we live in. Management of resources that are changing rapidly, and often across management boundaries, requires coordination of multiple stakeholders, management organizations, and many scales. The South Platte River Basin (SPRB), located in Northern Colorado, receives low precipitation but has high demand on water, due to high agricultural use and rapidly increasing urbanization. Increasing drought and temperatures compounds the demands on an already stressed water system. This paper contextualizes how the institutions that manage water interact with climate and ecosystem changes, and provides a methodology for assessing the vulnerability of the social-ecological system. To investigate how stakeholders interact with uncertainty in climate and water availability, we seek to understand: who are the important stakeholders impacting water supply; what are their preferences, fears, and expected outcomes from water; and what are institutional constraints for adaptation? Statistical analysis revealed that agricultural users are the most significant users affecting water supply. However, results from a series of interviews and focus groups show that water rights are quickly shifting to municipal and energy use, largely due to uncertainty under climate change and profitability of water transfers. Although agricultural users are the most vulnerable to climate and water uncertainty, a number of adaptation strategies exist to minimize risk.