

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** The Influence of Changing Climate on Water Cycling and Terrestrial Water Availability in the Southern Rockies Region

**Discipline:** Natural  
**Type of Project:** Research  
**Funding Agency:** USGS  
**Other Partners/Cooperators:** University of Wyoming  
**Effective Dates:** 8/1/2011 - 7/31/2015  
**Funding Amount:** \$115,000

**Investigators and Agency Representative:**

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**Project Abstract:** The research supported by the cooperative agreement will address important scientific questions relevant to the 2 of 12 SRLCC. The work will be structured around two central goals, each with multiple specific scientific questions.

Goal 1: Apply a soil water model to assess how altered temperature, precipitation and weather variability will influence temporal patterns of soil water content and utilization by vegetation

- 1.1: How might increasing temperature influence rates of evaporative water loss throughout the region, potentially decreasing water availability for plants?
- 1.2: How would changes in the seasonality of precipitation influence soil water availability through the soil profile?
- 1.3: What are the consequences of increasing variability in weather events and increasing frequency of extreme weather for seasonal and soil depth patterns of soil water availability?

Goal 2: Characterize the impact of these changes in water availability on the distribution of plant species and functional groups.

- 2.1: How and where do changes in soil water availability imply future changes in the distribution and abundance of plant functional groups?
- 2.2: How is the probability of successful plant regeneration (both germination and establishment) influenced by changes in water availability?

**Outcomes with completions dates:** July 31, 2011

**Keywords:** climate change, water cycling, water availability, Southern Rockies Region, USGS, University of Wyoming