

# Upper Colorado River Basin *Climate Effects Network*

## Background

The Upper Colorado River Basin (UCRB) Climate Effects Network (CEN) is a science team established to provide information to assist land managers in future decisionmaking processes by providing a better understanding of how future climate change, land use, invasive species, altered fire cycles, human systems, and the interactions among these factors will affect ecosystems and the services they provide to human communities. The goals of this group are to:

1. Identify science needs and provide tools to assist land managers in addressing these needs.
2. Provide a Web site where users can access information pertinent to this region.
3. Provide managers technical assistance when needed.

Answers to the team's working science questions are intended to address how interactions among climate change, land use, and management practices may affect key aspects of water availability, ecosystem changes, and societal needs within the UCRB.



## Water

- What do climate modelers predict about future water availability (including groundwater, surface water, and soil moisture); what key uncertainties exist in these models, and can the models be improved or enhanced by known past changes in climate and water resources?
- What water availability changes will be due to regional and global factors such as climate variability and change, compared to local factors such as soil disturbance, impacts of invasive species, or wildfires; will changes be due to interactions between multiple factors?
- What water resources will be especially vulnerable to future changes?



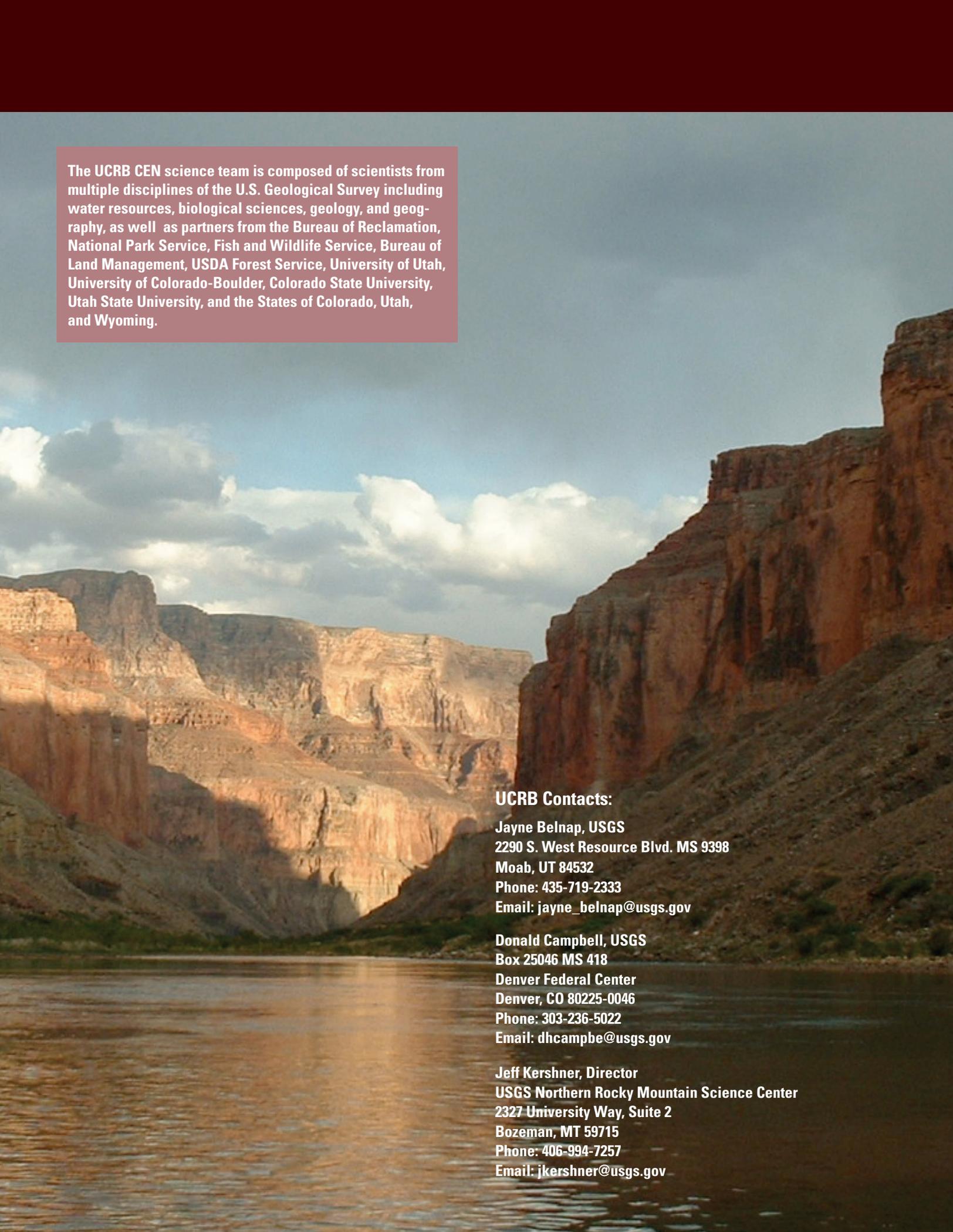
## Ecosystems

- What do climate modelers predict about future ecosystem changes; what key uncertainties exist in these models, and can the models be improved or enhanced by known past changes in ecosystems?
- What ecosystem changes will be due to regional and global factors such as climate variability and change, and nitrogen deposition, compared to local factors such as agriculture, recreation, energy development, invasive species, insect/disease outbreaks, or wildfires; will changes be due to interactions between multiple factors?
- What species, soils, biological communities, and ecological processes will be especially vulnerable to future changes?



## Society

- How will science information gathered about future changes in water and ecosystems assist in understanding the effects on economic, social, and cultural dimensions of human communities?
- How can we apply our understanding of vulnerability and resilience of human communities to support human adaptation to climate change in the region?
- How can science information assist resource management agencies in providing effective resource policy and management practices in the future?
- What decision support tools are best suited to provide decisionmakers, resource managers, and the public with the information and modeling tools necessary to respond to climate change?



The UCRB CEN science team is composed of scientists from multiple disciplines of the U.S. Geological Survey including water resources, biological sciences, geology, and geography, as well as partners from the Bureau of Reclamation, National Park Service, Fish and Wildlife Service, Bureau of Land Management, USDA Forest Service, University of Utah, University of Colorado-Boulder, Colorado State University, Utah State University, and the States of Colorado, Utah, and Wyoming.

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