

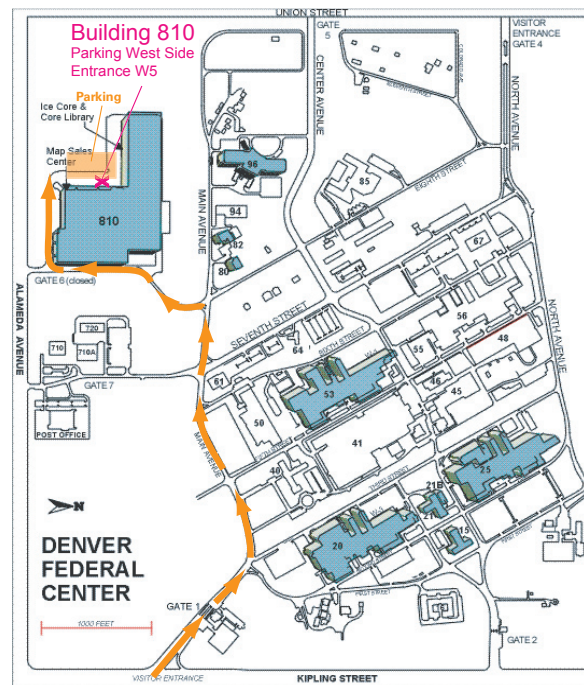
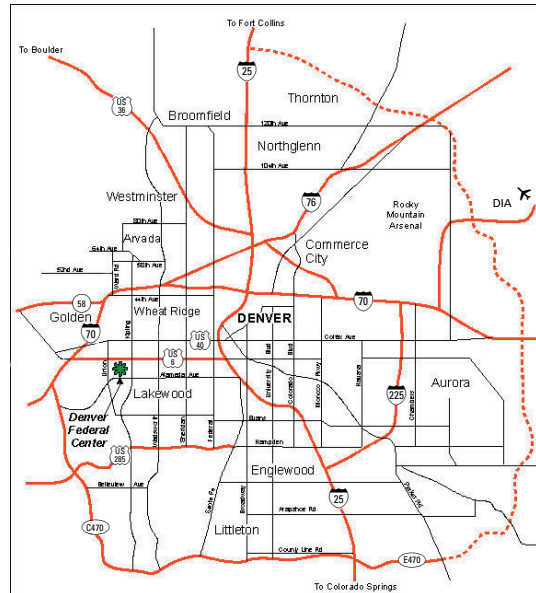
## Biographies

**Greg McCabe** is a Research Scientist in the National Research Program of the U.S. Geological Survey and is an adjunct professor at the University of Denver and the Metropolitan State College of Denver. He also is a research affiliate with the Institute of Arctic and Alpine Research at the University of Colorado. Greg is Chief of the Hydroclimatic Processes and Hazards project. His research interests include hydroclimatology, climate variability and change, synoptic climatology, climate teleconnections, and hydrologic modeling. Greg received his bachelor and masters degrees from the University of Delaware and a Ph.D. from Louisiana State University.

**Julio Betancourt** is a Research Hydrologist in the National Research Program of the U.S. Geological Survey and an adjunct professor at the University of Arizona in Tucson. For the past 23 years, he has been based at the University's Desert Laboratory, an 870-acre ecological reserve and scientific institution with a 100-year legacy in environmental research about deserts. His research interests are diverse, but can be generalized to how climate variability affects physical and biological systems on timescales from years to millennia. Julio received his undergraduate degree from the University of Texas and his graduate degrees from the University of Arizona.

**George Leavesley** is a Research Hydrologist in the National Research Program of the U.S. Geological Survey, Denver, Colorado. He is Chief of the USGS Precipitation-Runoff Modeling Project, conducting research on precipitation-runoff modeling, the coupling of atmospheric and hydrologic models, the simulation of the processes of snow accumulation and melt, and the development of modular modeling tools and techniques. George received his B.S. in Forestry and M.S. in Forest Hydrology from Pennsylvania State University, and his Ph.D. in Watershed Sciences from Colorado State University. He is an affiliate faculty member at Colorado State University and the University of Colorado.

**Eric Kuhn** is General Manager of the Colorado River Water Conservation District. The District is a water policy agency for Western Colorado covering all of the Yampa, White, Colorado, and Gunnison River drainages and part of the Dolores and Green River drainages. Eric has been employed with the Conservation District since 1981 and has been General Manager since 1996. Eric received a bachelor degree from the University of New Mexico (Engineering Science) and an MBA from Pepperdine University in 1980.



## Drought, Climate Variability, and Water Supply Workshop



## Water Supply Challenges and New Tools for Water Managers

January 24, 2005  
Lakewood, Colorado

## Introduction

The continuing drought has focused the attention of water managers on the scarcity of water in our rapidly growing state and the need for improved water management tools. For example, the need for water managers to have accurate streamflow predictions during the critical planning months leading up to snowmelt runoff has been heightened by the recent drought. Although droughts have historically been difficult, if not impossible, to predict, scientists at the U.S. Geological Survey (USGS) are leading the efforts to understand the spatial and temporal variability of droughts and improve streamflow forecasting.

Speakers include **Greg McCabe**, **Julio Betancourt**, and **George Leavesley** from the USGS, and **Eric Kuhn** from the Colorado River Water Conservation District. *Greg McCabe* will present the considerable and growing body of evidence that the current drought could persist for several more years. *Julio Betancourt* will discuss the implications of tree ring chronologies from the Western United States and how the rapid population growth in Colorado during the 1960's, 70's and 80's has coincided with some of the most favorable precipitation patterns observed in the past 500 years. *George Leavesley* will highlight his watershed modeling work and the implications for water supply managers in Colorado. *Eric Kuhn* will discuss science and policy issues related to consumptive use, Colorado River water usage, and how much water is really available for Coloradoans to use.

## Location

The meeting will be held in Lakewood, Colorado at the Denver Federal Center in the USGS Conference Room in Building 810 (please refer to the enclosed maps for directions).

## Time

The meeting will start at 10:00 AM and conclude at 5:00 PM.

## Agenda

### 9:00 –10:00 REGISTRATION

Entrance hall just outside of the USGS conference room in Building 810

### 10:00–10:10 INTRODUCTORY REMARKS

**10:10–11:10** What does recorded data from the last 150 years tell us about drought and climate variability, and what are the implications for water suppliers? — *Greg McCabe*

**11:10–12:10** What do tree rings tell us about drought and climate variability in the last 2,000 years? — *Julio Betancourt*

### 12:10–1:00 LUNCH

Box lunch available — \$10 per person, to be paid by each attendee. (**You must sign up in advance for the box lunch.** There is a cafeteria in Building 810 for those who do not sign up for the box lunch. If you sign up for the box lunch and find you cannot make it to the workshop, please let us know by Friday, January 21, 2005 to avoid being charged. All lunch RSVPs that are no shows will be charged.)

**1:00–2:00** How a watershed modeling approach could be used to provide better and more frequent forecasts, and improve estimates of uncertainty — *George Leavesley*

### 2:00–2:15 BREAK

**2:15–3:15** Science, policy, and Colorado water-supply issues related to drought — *Eric Kuhn*

**3:15–4:15** PANEL DISCUSSION  
Perspectives from Water Suppliers on Water Supply Forecasting Concerns in light of drought, climate variability and climate change issues. Experts from Denver Water, Northern Colorado Water Conservancy District, Southeastern Colorado Water Conservancy District, and Colorado Springs Utilities will share their concerns and outlooks for the future.

### 4:15–5:00 WRAP-UP

