



## FOR IMMEDIATE RELEASE

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## River Project Promises Clarity, Security for State Water Resources

*UC Merced researchers with the Sierra Nevada Research Institute are taking mountain water monitoring to the next level with sensor network in the American River Basin*

MERCED, Calif. — Researchers at UC Merced are taking an important step toward a statewide water-monitoring system by installing wireless sensors across the American River basin.

The system, which is also being used in the Sierra Nevada, is designed to give continuous information about how much water is available to users, and could go live online at the beginning of 2013.

“Our research provides a template for the next-generation water system for California,” said UC Merced lecturer and researcher Robert Rice. “We will be able to accurately know the amount of snow across the Sierra Nevada, as well as the timing and magnitude of snowmelt, which provides our water.”

With low-cost sensors installed across the American River basin, scientists, water managers, farmers, flood-control managers and others will be able to get a much more detailed picture of the amount of water in the basin – water that supplies much of the

### Quick Facts

- UC Merced researchers are designing a next-generation water monitoring system.
- Low-cost sensors will give a clearer picture of water resources.
- Sensor system could be expanded to cover the entire state.

metro area with water for households, crops, ecosystems, power generation and recreation.

“The Sacramento Municipal Utility District is pleased that the Sierra Nevada Research Institute selected the American River Basin to evaluate this promising technology,” said principal civil engineer Dudley McFadden. “Our customer-owners expect SMUD to maximize our renewable and inexpensive hydroelectric resources. The better handle we have on the winter snowpack upstream from our storage reservoirs, the more we can rely on our forecast of summer hydropower.”

More than half a million residential, commercial and industrial connections receive water from the American River through 25 water purveyors that make up the Sacramento Water Forum, but that’s only one group of users.

The river contributes to serving millions of people as part of the federal Central Valley Project, an integrated system of dams, reservoirs, channels, canals, pumps and other conveyances that store and ship water throughout the state from the Shasta/Trinity area down to Bakersfield.

“A modern, accurate water-information system is critical for water security, especially given the changes brought about by climate warming in the mountains,” said Professor Roger Bales, director of UC Merced’s Sierra Nevada Research Institute.

“This project provides solid basic research as well as practical data we can use today, McFadden said. “With the changing climate, the distribution of the snowpack around watersheds appears to be changing as well. Methods we’ve used for decades to evaluate the snowpack and how much of it will be available the next summer — versus evaporating or soaking into the soil — simply don’t measure up anymore. What’s more, continuous monitoring permits us to observe directly how fast the snow is melting and pinpoint when the meltwater will arrive at our reservoirs each spring.”

This isn’t the first time this kind of research has been conducted – Bales and colleagues developed the technology by making comprehensive water measurements in the Southern Sierra Critical Zone Observatory, near Shaver Lake.

But this is a much bigger project than has been constructed before.

“We’re going from monitoring a 5-square-kilometer area to a 5,000-square-kilometer area in one big jump,” said engineering Professor Martha Conklin. “It’s a full-basin hydrologic observatory, and a prototype water information system.”

The distributed sensor network is being designed by Steven Glaser at UC Berkeley and Rice oversees the building and placement of the monitors, while Bales, Conklin and others work on different aspects of the project.

But they are only a few of many people and groups involved with – and interested in – the project.

“There are a lot of players,” Rice said, including the California Department of Water and the USDA’s agricultural research station in Boise, Idaho, which is running a long-term hydrologic experiment of its own and helping manage this large project.

Hydropower interests, energy agencies, irrigation districts and other water managers, as well as groups responsible for flood management, are eagerly awaiting the stream of data that will be available through the Department of Water Resource’s California Data Exchange Center website.

The data will be available to the public, and Rice said that will give other scientists the chance to use the information for their own research.

“It will be a place for the scientific community to work,” he said.

The project is also part of the Intelligent Water Infrastructure initiative at the Center for Information Technology Research in the Interest of Society (CITRIS) – one of four Gov. Gray Davis Institutes for Science and Innovation at the University of California.

| In 2011, CITRIS established a multi-disciplinary research team to provide technical and scientific leadership to address increasingly severe water supply problems. The team draws on expertise from the University of California campuses at Berkeley, Merced, Santa Cruz and Davis, and represents relevant world-leading research.

The National Science Foundation granted \$2 million for the monitoring system’s construction and placement, and Rice said the researchers plan to begin measurements before the snow begins to fly this fall, and have the data streaming by January, if not before.

Data gathered will include precipitation, snowmelt, snow-water content, soil-water storage and more.

Three groups of sensors are already in place, and three are being added this fall. Over the coming two years, researchers plan to place 12 to 15 more groups of sensors in the north, south and middle forks of the American River, which serves the Sacramento metro area, to paint an even clearer picture of the river basin’s water resources.

“This is just the next step,” Bales said. “Next, you could do the whole San Joaquin Valley, and eventually the whole state.”

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*UC Merced opened Sept. 5, 2005, as the 10th campus in the University of California system and the first American research university of the 21st century. The campus significantly expands access to the UC system for students throughout the state, with a special mission to increase college-going rates among students in the San Joaquin Valley. It also serves as a major base of advanced research and as a stimulus to economic growth and diversification throughout the region. Situated near Yosemite National Park, the university is expected to grow rapidly, topping out at about 25,000 students within 30 years.*