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Researchers from Utah and Wyoming Join Forces to Understand Complex Water Problems Facing Western States
Project to take comprehensive look at how different factors impact resources

SALT LAKE CITY – An interdisciplinary team of Utah and Wyoming researchers has received a $6 million, three-year award from the National Science Foundation (NSF) to develop a better understanding of the interconnectivity of natural and human water resources systems – a critical environmental sustainability problem facing both Western states.

The award will allow the team of researchers to develop high-performance computer modeling and computational resources (known as cyberinfrastructure or CI for short) to simulate and study how factors such as population growth, shifting land uses and climate variability will impact water storage and availability in the Intermountain West. This award is made under the NSF Experimental Program to Stimulate Competitive Research (EPSCoR), which supports states' efforts to enhance research, science and mathematics education, and workforce development.

The CI-WATER project includes researchers from Brigham Young University, the University of Utah, Utah State University, and the University of Wyoming. BYU and the University of Wyoming are the lead institutions for their respective states in the consortium.

"The work of this team, which includes some of the leading researchers in hydrology and related fields in the Western United States, will lead to a greater understanding of long-term water resource forecasting than ever before," said Norm Jones, a professor of civil and environmental engineering at BYU and the overall project lead. "The value of combining our expertise in one project cannot be overstated."

This award will enable the simulation of the hydrologic processes in greater detail, accounting more comprehensively for variability in topography, land cover, geology and water management infrastructure, leading to improvements in predictions needed to better plan and manage water resources. Researchers on this project also will have access to the new NCAR-Wyoming Supercomputing Center (NWSC) located near Cheyenne and slated to open in early 2012.

Public outreach and community engagement is a key element of the project. As part of the effort, public media partners Utah Education Network (UEN) and Wyoming PBS will bring results of the CI-WATER research to the public through community events and activities for teachers and students.

The award represents an early success for Utah's new EPSCoR office, which connects ideas and emerging technologies in target markets with entrepreneurs, industry leaders, students and researchers from Utah's research and regional colleges and universities. The goal of the office is to allow the state to more effectively compete for federal research funds.

"While numerous researchers have looked individually at the components that impact water systems, this project will allow a comprehensive examination of overall system sustainability," said Fred Ogden, civil engineering professor and University of Wyoming project leader.

According to Suzanne Winters, director of the Utah EPSCoR office, the interdisciplinary effort follows a model that Utah hopes to promote in its future research and development efforts.

"The CI-WATER project is an example of aggregating expertise across institutions – and, in this case, state lines – to encourage collaboration in areas that have huge impacts on our lives," Winters said. "Our new EPSCoR office will work with Utah's research institutions and regional colleges, public and higher education, and the Utah Science Technology and Research initiative to promote even more opportunities like this."

In its application to the National Science Foundation, the CI-WATER team said the project would ultimately result in "the development and use of large-scale, high-resolution computational water resources models to enable comprehensive examination of integrated system behavior through physically based, data-driven simulation. Successful integration requires data, software, hardware, simulation models, tools to visualize and disseminate results, and outreach to engage stakeholders and impart science into policy, management, and decisions."

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