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Running Rivers Through: Artificial Floods a Challenge Says USU Expert



Water gushes from bypass tubes of Glen Canyon Dam during the 2004 high flow experiment. USU scientist Jack Schmidt says, while necessary, such tests present challenges. Courtesy Dale Blank, USGS.



Schmidt assumed his current post as chief of the USGS Grand Canyon Monitoring and Research Center in August 2011, while retaining an unpaid faculty position in USU's Department of Watershed Sciences.

High flow experiments, such as those used to simulate natural seasonal flooding on the Colorado River, are vital to the development of ecologically sustainable water management schemes of river systems, says a Utah State University river scientist.

“But large-scale experiments present distinct challenges and require substantial resources,” says Jack Schmidt, chief of the U.S. Geological Survey’s Grand Canyon Monitoring Center and professor in USU’s Department of Watershed Sciences. “It’s therefore critical that management agencies recognize these challenges and adopt standard, scientifically based principles to conduct these experiments.”

Schmidt and colleagues from the USGS, the Bureau of Reclamation, The Nature Conservancy, University of Washington, Oregon State University, University of California, Santa Barbara; Kansas State University, Australia’s Griffith University, Ball State University, Swiss Federal Institute of Aquatic Science and Technology and the National Marine Fisheries Service identify experimental challenges and principles to

address these challenges in the December 2011 issue of *BioScience*. Their findings stem from an international workshop funded by the National Center for Ecological Analysis and Synthesis.

Rivers present complex subjects for experimentation, the authors say, because they’re open systems that can’t be isolated from their social context.

“Unlike experiments on land, lakes or small streams, rivers can’t be disconnected from their networks,” says Schmidt, who assumed his current USGS post in August 2011, while retaining an unpaid USU faculty position.

Further, large river systems involve multiple stakeholders with diverse interests.

“For example, the Colorado River watershed covers part of seven states in the United States and two states in Mexico,” he says. “The river supplies critical water and power to more than 30 million people. In this case and others like it, water managers must make decisions to achieve multiple objectives.”

Despite the cost and obstacles, high flow experiments remain one of the few practical approaches to inform water policies and decisions with the level of certainty and precision needed for effective river management, says Schmidt, who was a science advisor to experimental floods carried out by the Bureau of Reclamation on the Colorado River in 1996, 2004 and 2008.

“Rivers are among our most vital and increasingly scarce resources,” he says. “High flow experiments are essential for developing water management schemes to address conservation as well as shifting water supply and demand caused by climate change and an increasing human population.”

Related Links

[“USU Prof Jack Schmidt to Head Grand Canyon Monitoring & Research Center,” *Utah State Today*](#)

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