

Southwest HYDROLOGY

The Resource for Semi-Arid Hydrology

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**Beyond
Stationarity**

Southwest Hydrology
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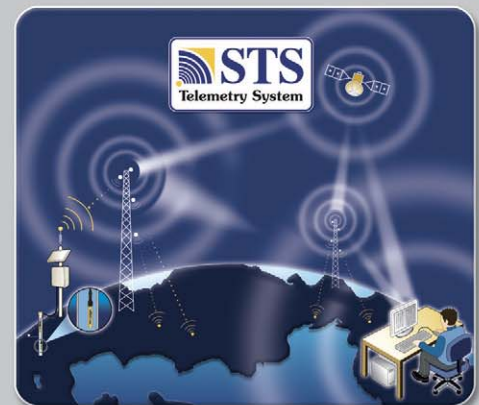
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A bimonthly trade magazine for hydrologists, water managers, and other professionals working with water issues.



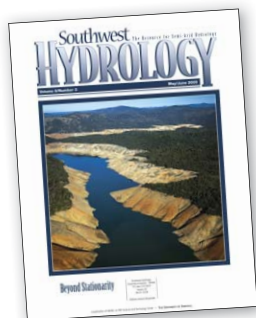
From the
Publisher

Water managers have long operated under an assumption of stationarity—the principle that natural systems operate within an unchanging range of variability. Under this assumption, flood control systems were designed, water rights were allocated, reservoirs were built, and cities grew. But climate change has introduced new extremes, from floods to droughts, that challenge our existing management systems, demanding that we seek new paradigms. This challenge is compounded by the fact that, according to a January 2009 Pew Research Center poll, dealing with global warming has fallen to the bottom of the public's top 20 domestic priorities for President Obama and Congress. Increased concern over the economy and related issues is likely a factor in waning interest in global warming, but so may be confusion over the numerous and conflicting predictions of the impacts of global warming, and whether anything can be done about it. Public interest notwithstanding, water managers cannot afford to ignore the possible effects of climate change on water resources, particularly in the West. In this issue, we look at how climate change projections are made and provide examples of how water managers are planning to cope with this uncertain future.

The Water Page is a new feature in this issue (page 30), designed to provide a snapshot of water resources in the Southwest. You'll find information on reservoir levels, snowpack, drought conditions, and recent weather extremes. Let us know what you like, and what's missing!

Thanks to all the contributors to this issue, and to our valued advertisers (listed on page 43) and sponsors (page 9). Together, you make this publication a success.

Betsy Woodhouse, Publisher



South Fork of Feather River in Lake Oroville, Feb. 3, 2009. Lake Oroville in northern California is the largest reservoir in the State Water Project, with a capacity of 3.5 million acre-feet. In early February, storage was only a little over 1 million acre-feet and delivery allocations for the year were just 15 percent of contractors' requests. Later that month Gov. Schwarzenegger proclaimed a statewide state of emergency due to drought. But this "drought" may actually be changing climate, as temperatures warm and less precipitation falls as snow. Photo from the California Department of Water Resources.

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Southwest Hydrology welcomes letters and contributions of news, project summaries, product announcements, and items for The Calendar. Send submissions by mail or email as shown below. Visit www.swhydro.arizona.edu for additional guidelines for submissions.

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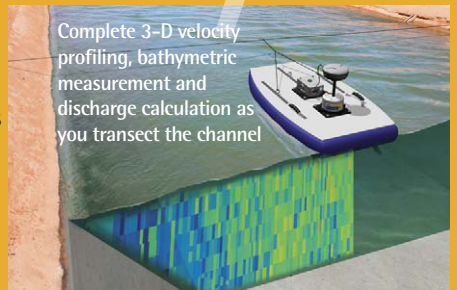


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Sound Principles. Good Advice.



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Beyond Stationarity

A 2008 article in *Science* declared, “Stationarity is dead.” Our water management systems are predicated on the assumption that natural systems vary within a relatively fixed range defined by historic records. But, as the article’s authors argue, the range is no longer stationary: climate change is breaking records and moving boundaries. Rising temperatures and new precipitation patterns will impact water supplies in the future, but the timing and amount of these impacts remain uncertain. How can we manage our water beyond stationarity? Articles in this issue explain how climate change projections are evaluated by experts worldwide, why model results can differ widely, and how those results are being reconciled. Information on future uncertainties and examples of transferable strategies for coping with change are offered.

18 IPCC: Handling a Hot Topic

Eric Barron

The work of the Intergovernmental Panel on Climate Change has become the gold standard for synthesizing the state of climate science. Its reputation rests on an accountable and transparent assessment process, the involvement of both governments and recognized experts, and an ability to convey the significance and certainty of its findings to the public.

20 Reconciling Projections of Colorado River Streamflow

Martin Hoerling, Dennis Lettenmaier, Dan Cayan, and Brad Udall

Modelers are working to reconcile significantly disparate projections of what Colorado River streamflow will look like by 2050. Studies focused on hydrologic modeling have narrowed the range of predictions; climate-model evaluation is the next step.

22 Scenario Planning: Making Strategic Decisions in Uncertain Times

Ralph Marra and Timothy Thomure

How can a utility proceed in planning in the face of uncertain climate change, population, regulations, and societal values? Tucson Water is using scenario planning to determine critical uncertainties about future water supply and to identify projects and programs that will prove the most viable and flexible over time.

24 Resources for Climate Planning and Adaptation

Holly Hartmann

Where can water managers and planners go to discover new approaches and tools for addressing climate change impacts on water resources? Here are a few valuable and comprehensive resources to help managers and planners in southwestern states anticipate and increase resilience to the impacts of climate change.

26 Coping with Climate Change at a Local Level

Elizabeth Willmott

King County, Washington, may not be an arid region, but it too faces dramatic impacts to its water resources from climate change. Through proactive planning for change and strategic management, King County is addressing water supply issues and reducing potential threats from flooding and sea-level rise.

28 Beyond Stationarity: Building the Center for Change

Kimery Wiltshire

The end of stationarity means we must rethink how to manage not just our water infrastructure, but also our water policy institutions. The Carpe Diem project is engaging political and policy leaders and scientists to identify opportunities for proactive, science-based policies that will meaningfully address climate change impacts on western water.

Publishing **Southwest Hydrology** furthers SAHRA’s mission of promoting sustainable management of water resources in semi-arid regions.



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