

W A T E R R E S O U R C E S

# IMPACT

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MANAGING CLIMATE  
CHANGE IMPACTS ON  
WATER RESOURCES

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# MANAGING CLIMATE CHANGE IMPACTS ON WATER RESOURCES

**C. MARK DUNNING ~ Guest Editor**  
**MICHELLE HENRIE ~ Associate Editor**

This issue of *Water Resources IMPACT* discusses adaption strategies, assessment and planning approaches, and solutions needed to prepare for future climate change impacts on water resources. It provides a lead-in for these and other questions that will be discussed at AWRA's 2011 Spring Specialty Conference, "Managing Climate Change Impacts on Water Resources: Adaption Issues, Options, and Strategies" to be held in Baltimore Maryland, April 18-20, 2011.

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WATER RESOURCES

# IMPACT

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**COVER PHOTO: Icy lake in Michigan during the winter. (istockphoto.com)**



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## INTRODUCTION: MANAGING CLIMATE CHANGE IMPACTS ON WATER RESOURCES

C. Mark Dunning, J. Rolf Olsen, and Gerald Schlke

**T**rends indicate that the Earth is warming and the warming will affect the hydrologic cycle, sea levels, ocean storms, and ecosystems and other natural resources. Debates on the causes of global warming – whether it is part of a natural cycle or due to human contributions – are less relevant to water managers than the need for prudent managers to prepare for and respond to the extreme events that will likely affect our nation’s water resources systems. Water resources management agencies at all levels must deal with the real consequences of climatic variations, whatever their causes.

Despite improvements in climate science, significant uncertainty remains about future climate, particularly at regional and local scales. However, one concept has gained wide acceptance: the hydrology we will experience in the future will likely be very different from the hydrology we have experienced in our recent past. Organizations are recognizing the need to plan for potential future conditions that may have greater variability in precipitation amounts and patterns than is suggested in the historical record.

Climate change adaptation activities are being initiated at all levels of government, academia, and the private sector. For example, in 2009 the Federal Interagency Climate Change Adaptation Task Force, comprised of more than 20 Federal Agencies, Departments, and Offices, was chartered to assess and make recommendations to the President on new Federal agency policies, programs, and collaborations that can better prepare the United States (U.S.) to respond to the impacts of climate change. The Task Force released its report in October 2010: (<http://www.whitehouse.gov/sites/default/files/microsites/ceq/Interagency-Climate-Change-Adaptation-Progress-Report.pdf>).

Numerous states also are developing climate change adaptation strategies. For example, in 2010 the Western Governors’ Association published a report: “Climate Adaptation Priorities for the Western States: Scoping Report” ([http://www.westgov.org/index.php?option=com\\_content&view=article&id=299:climate-adaptation-report-2010&catid=222](http://www.westgov.org/index.php?option=com_content&view=article&id=299:climate-adaptation-report-2010&catid=222)) assessing climate change related issues and opportunities. The State of California released its climate change adaptation strategy in 2009 (<http://www.climatechange.ca.gov/adaptation/index.html>).

Local entities and the private sector are also working on climate adaptation. For example, in 2010, the New York City Panel on Climate Change (NPCC) released its report “Climate Change Adaptation in New York City: Building a Risk Management Response” (<http://www.nyas.org/publications/annals/Detail.aspx?cid=ab9d0f9f-1cb1-4f21-b0c8-7607daa5dfcc>). Private sector examples of climate change adaptation planning include a group of water utilities that joined together to form the Water Utility Climate Alliance (WUCA) to advance action

on climate change adaptation (<http://www.wucaonline.org/html/>).

AWRA’s 2011 Spring Specialty Conference will bring together a diverse group of people and organizations to share their experiences and approaches to climate change adaptation. “Managing Climate Change Impacts on Water Resources: Adaptation Issues, Options, and Strategies” will be held in Baltimore, Maryland, April 18-20, 2011, and will focus on two key questions:

- 1, What climate adaptation strategies, decision-making approaches, planning and evaluation methods do water managers and water professionals need to prepare for climate change impacts on water resources?

2. What kinds of assessment and planning approaches do we need, what kind of solutions may be available, how much will they cost, what kinds of institutional adaptation may be necessary, and what might be the environmental and socioeconomic impacts and considerations that need to be taken into account?

This issue of *Water Resources IMPACT* focuses on similar questions. The authors come from a diversity of organizations including a water utility, a river basin commission, federal agencies, representatives of the Western States, and a nonprofit research organization. In addition, they are based in different regions of the country, including the Front Range of Colorado, the Delaware River Basin, the Great Lakes, and the Western U.S.

There are a number of common currents running through these articles. One theme is the need to make decisions under uncertainty using adaptive management and scenario analysis approaches.

Another theme is the need for collaborations and partnerships. Collaborations are essential between water managers and climate scientists, managers and decision makers need science-based information. They also need to engage scientists with “what if?” questions about water variability issues to obtain a better understanding of potential consequences of alternative management actions that may be under consideration. Local, state, regional, and federal partnerships are also important.

A third theme is the need for building more resilient and adaptive water management approaches into infrastructure and water management institutions, policies, and regulations.

We are extremely excited about the great program and the diverse group of people who are coming together for AWRA’s Spring Specialty Conference. We anticipate participation by scientists, engineers, researchers, practitioners, managers, regulators, and policy makers from a variety of interests. These interests include: governmental organizations at all levels, private sector, academia, nongovernmental organizations, stakeholder organizations, and development interests. We look forward to



## Introduction: Managing Climate Change Impacts on Water Resources . . . cont'd.

meeting everyone in Baltimore as we continue AWRA's venerable tradition of building "community, conversation, and connections" between and among professionals working in the emerging water resources related climate change adaptation field.

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## HAVE SOME COMMENTS ABOUT THIS ISSUE OF IMPACT? SEND US YOUR FEEDBACK

**Water Resources IMPACT** is in its 13th year of publication and we have explored a lot of ideas. We hope we have raised some questions for you to contemplate. "Feedback" is your opportunity to reflect and respond.

We want to give you an opportunity to let your colleagues know your opinions ... we want to moderate a debate ... we want to know how we are doing. For this issue send your letters by e-mail to:

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