# American Water Resources Association
# 2015 SUMMER SPECIALTY CONFERENCE
## Climate Change Adaptation
**June 15 - 17, 2015**
**New Orleans, LA**

**Wednesday, June 17**
**10:30 AM – 12:00 Noon**
**SESSION 16: Planning for Action 2**

**Managing Stormwater Runoff from Urban Areas in Consideration of Predicted Climate Change Impacts in the Chesapeake Bay Watershed - Michael Williams**, Chesapeake Biological Laboratory, Solomons, MD

Mean annual temperature and precipitation in the Chesapeake Bay watershed, increased over the last century, and global climate models applied to this region generally project that these trends will continue throughout the year 2100. Higher temperatures and associated evapotranspiration may decrease total annual baseflow, even as stormflow events increase in magnitude and intensity, leading to more frequent and larger nutrient and sediment fluxes to receiving waters. Development will create more impervious surfaces, thereby increasing the ratio of stormflow to baseflow volumes. The possibility of increasing riverine flow associated with climate change this century necessitates an evaluation of various best management practices (BMPs) in urban areas to develop and utilize BMPs that optimize reductions in nutrient and sediment fluxes, as well as determine the extent to which these BMPs should be implemented. The headwaters of the Patuxent watershed are located in a highly developed urban corridor between Washington DC and Baltimore thus making it an ideal setting to explore potential climate change impacts in urban areas. Scenarios generated from a system of linked watershed and estuarine models were used to determine climate and land use change effects on Patuxent River runoff and estuarine water quality. The uncertainties of climate predictions and their implications regarding proactive mitigation approaches to manage pollutant fluxes from urban areas are discussed.

**States, Communities and Drought Planning - Deborah Bathke**, University of Nebraska-Lincoln, Earth & Atmospheric Sciences, Lincoln, NE (co-author: K. Helm Smith)

Planning to reduce vulnerability to drought is challenging: 1) As natural disasters go, drought is slow and stealthy. People and institutions often don't notice drought until it is well underway, missing the opportunities that early warning can provide. 2) Drought falls outside the traditional emergency management responses to natural disasters, as set forth in the Stafford Act of 1988 and amended by the Disaster Mitigation Act of 2000. 3) No single federal entity regulates water, let alone drought. 4) Planning and decision-making authority related to agricultural practices and land and water use is fragmented -- separated by discipline, jurisdiction and scale -- yet each influences the others and they combine to produce our

collective drought resilience. 5) Although the most local levels of government may have the fewest resources and the least access to data and a big-picture perspective, traditionally municipal matters such as zoning and water supply decisions have significant effects on patterns of water use and drought resilience. Fortunately, developments in recent years have enhanced awareness of the need to plan for drought. With the advent of the U.S. Drought Monitor in 1999 - a weekly map of the location and intensity of drought -- came the implicit message that drought isn't strictly a local matter or something that can only be measured separately by each type of water user. With the establishment of the National Integrated Drought Information System in 2006 came the mandate to create regional drought early warning pilot projects, connecting state-of-the-art drought monitoring science with the needs of stakeholders across sectors in specific basins and regions. Currently, we see a much-needed emphasis on integrating drought planning across sectors and scales, as well as growing awareness on the part of emergency managers that they can help increase drought resilience through multi-hazard planning and by participating in drought planning processes. Current examples of integrated efforts include: 1) State water and drought planning processes that incorporate basin-level stakeholder input. 2) States' work with public water suppliers to track, resolve and communicate public water supply issues. 3) Increased awareness and use of drought and water monitoring products in the NIDIS pilot areas. 4) Basin-led drought planning, incorporating stakeholders from municipalities of various sizes, agricultural producers, state resource managers and others. NIDIS and the National Drought Mitigation Center provide many resources and best practices for drought planning, including planning processes and techniques for ranchers, for small communities, for urban planners (produced with the American Planning Association), and for state planners. Through its Engaging Preparedness Communities working group and regular webinars, NIDIS is fostering a drought planning Community of Practice. Planning for drought also fosters climate change adaptation. In addition to resulting in greater resilience to a greater drought hazard, drought planning builds capacity for climate change mitigation and adaptation. As Australian policy analyst Daniel Connell has noted, drought is a force for truth: How societies respond to drought is a good indication of how they will respond to climate change.

**Approaching Resiliency with Experience from Users: A Look at the Water Resources Section of the U.S. Climate Resilience Toolkit - Nancy Beller-Simms**, NOAA Climate Program Office, Silver Spring, MD (co-author: D. Herring)

In June 2013, President Obama announced his Climate Action Plan, one of the motivations of which is that scientists and local planners recognize that improvements in the use and application of scientific data and insights can help communities, businesses, and resource managers improve resiliency in the face of current and future climate challenges. Through use of the Toolkit's information, data maps, and decision-support tools, users are better able to understand their risks, explore adaptation possibilities, and develop and implement climate resilience plans to better manage their climate- related risks and opportunities, and reduce their vulnerability to extreme events. The President's Climate Action Plan helps the Federal Government "continue to lead in advancing the science of climate measurement and adaptation and the development of tools for climate-relevant decision-making by focusing on

increasing the availability, accessibility, and utility of relevant scientific tools and information." To support this goal, two initiatives were launched: the Climate Data Initiative and Climate Resilience Toolkit. This talk will focus on activities associated with the latter. Participants in this session will be taken on a tour of the Climate Resilient Toolkit with highlights from several relevant topic areas (e.g., Coastal Flood Risk, Ecosystem Vulnerability, etc.), followed by an in-depth look at the newly released Water Resources section. We will showcase new and familiar tools, maps, and dashboards available on this site as well as case studies that show how water utility managers have used science-based tools, data products, and map layers. We will also highlight the "Climate Explorer," an interactive geobrowser that lets users access maps of climate-related stressors and people and assets impacted, and offers interactive graphs of historical temperature and precipitation data for observing stations all across the nation. We will discuss how we sought decision maker input in developing this site. Finally, we will discuss plans for public engagement and future development for the Toolkit, answering questions and soliciting participants' feedback.