



CONGRESS

ADAPTIVE PLANNING & DESIGN IN AN
AGE OF RISK AND UNCERTAINTY

20
23

#EWRI2023

EWRICONGRESS.ORG

@ASCE_EWRI

Welcome to the World Environmental & Water Resources Congress 2023



Hello! On behalf of EWRI and the Congress Organizing Committee, I am honored to welcome you to Henderson/Las Vegas and the 2023 World Environmental & Water Resources Congress! Although Henderson/Las Vegas is known for world-class entertainment and hospitality, Southern Nevada is located in one of the driest regions of the country, where water is scarce and precious, and climate change's exacerbated impacts on water availability and environment are readily visible in Lake Mead levels and Colorado River shortages. Despite this, our community has risen to the challenge of managing this resource sustainably, through conservation, recycling, and innovative technologies. So, there is no better place to host the 2023 Congress to discuss major water and environmental challenges impacting the health of our planet and economic development around the world, such as climate change, drought, flooding, water infrastructure sustainability and resiliency, and environmental equity.

We're excited and looking forward to an in-person Congress and for a great week of networking and learning. Our agenda is packed with features on the latest research, case studies, policy and evolving best practices in water resources and the environment. You can download the conference app (<https://cdmcd.co/QMPQ5B>) to help organize your week. We hope that you take advantage of all the opportunities during the congress to share your ideas and feedback on issues impacting the environment and the water resources.

This year, the EWRI congress features some distinguished keynote speakers. The keynote speakers will share their expertise and visions in current water resources and environmental issues at the local, national, and international levels. The keynote speakers include:

- K. T. Rama Rao, Minister for Municipal Administration & Urban Development, Industries & Commerce, and Information Technology, Telangana, India
- David Gadis, Chief Executive Officer and General Manager, DC Water
- Maria Lehman, President, American Society of Civil Engineers (ASCE)
- Carol Haddock, Director of Houston Public Works
- John Entsminger, General Manager, Las Vegas Valley Water District and Southern Nevada Water Authority
- Jay Garland, Scientist and Division Director, EPA
- Chris Stone - Senior Principal, CLARKNEXSEN
- Jainey Bavishi, Assistant Secretary of Commerce for Oceans and Atmosphere and Deputy NOAA Administrator
- Doa Ross, Deputy General Manager, Engineering, Southern Nevada Water Authority and Las Vegas Valley Water District
- Sean McKenna, Executive Director of the Division of Hydrologic Sciences (DHS), Desert Research Institute (DRI)
- Camille Touton, Commissioner, U.S. Bureau of Reclamation

The congress starts with several technical workshops on Sunday, and the technical workshops continue through Tuesday. The conference will host many concurrent events between Monday through Thursday, including the technical sessions, keynote addresses, technical workshops, and an exciting Climate Resilience Symposium on Thursday. The technical presentations offer a wide range of water resources and environmental topics, with speakers ranging from government agencies, academia, nonprofits and industry.

We are fortunate to have attendance from several federal agencies such as NOAA, EPA, USACE and FEMA, joining us during the conference and for the Climate Resilience Symposium on Thursday. In addition, the Congress audience is global with attendees participating from Europe, Asia, Africa, and Australia.

While you are at the Congress, please take the opportunity to see and experience our city, rightly known as the entertainment capital of the world, by taking advantage of our technical tours. The variety of technical tour options we have include the Venetian Resort Las Vegas Sustainability Tour & Las Vegas Strip Shopping, the Kurt R. Segler Water Reclamation Facility (KRSWRF) & Alfred Merritt Smith Water Treatment Facility tour, the Clark County Regional Flood Control District tour, and the tour of Hoover Dam (Behind the Scenes).

Join us at the Sunday night Welcome Reception and the off-site casual meet-up on Tuesday evening sponsored by the Las Vegas EWRI Chapter. More importantly, make the most of your Congress experience with networking opportunities for potential lifelong friendships and mentoring. We are excited and look forward to meeting you!

Sri Kamojjala, P.E., D.WRE
Chair, 2023 EWRI Congress

Conference Organizing Committee



*Conference
Chair*

Sridhar Kamojjala, P.E.,
D.WRE, M.ASCE



*Technical
Co-Chair*

Sajjad Ahmad, Ph.D., P.E.,
M.ASCE



*Technical
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Heidi Dexheimer, P.E.,
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*Technical Tour
Coordinator*

Akash Sehdev, P.E., MBA



*Technical Tour
Coordinator*

Edward Demars,
P.E., PMP

Schedule-at-a-Glance

Sunday, May 21

8:00 a.m. - 12:00 p.m.	EWRI Governing Board Meeting
8:00 a.m. - 12:00 p.m.	Technical Workshop: Advances in CFD Applications in Water Infrastructure
8:00 a.m. - 12:00 p.m.	Technical Workshop: Molecular Biology Tools for Wastewater Engineers
8:00 a.m. - 12:00 p.m.	Technical Workshop: SWMM From Fundamentals to Applications
12:00 p.m. - 1:00 p.m.	Lunch (on your own)
12:00 p.m. - 6:15 p.m.	Registration
1:00 p.m. - 5:00 p.m.	Technical Workshop: Application of BioWin in Water Reclamation Facility
1:00 p.m. - 5:00 p.m.	Technical Workshop: Building the Next Generation of Intelligent Urban Water Systems
1:00 p.m. - 5:00 p.m.	Technical Workshop: Computations of Free Surface Flows in Open Conduits and Estuaries
1:00 p.m. - 5:00 p.m.	Technical Workshop: Drinking Water Treatment Challenges with Climate Change
1:00 p.m. - 5:00 p.m.	Technical Workshop: Modeling for Water Management in a Changing World
1:00 p.m. - 5:00 p.m.	Technical Workshop: Python Programming for Hydraulics Modeling
2:00 p.m. - 5:00 p.m.	AAWRE Board of Trustees Meeting
6:30 p.m. - 8:00 p.m.	ASCE Bookstore Open
6:30 p.m. - 8:00 p.m.	Poster Hall Open
6:30 p.m. - 8:00 p.m.	Welcome Reception (ticketed event)

Monday, May 22

7:30 a.m. - 4:00 p.m.	Registration (Closed for lunch from 12:00 p.m.– 1:00 p.m.)
8:00 a.m. - 10:00 a.m.	Opening Welcome Plenary, Parade of Award Winners, and Keynote Lectures
10:00 a.m. - 11:00 a.m.	Dedicated Exhibit Hall Hour
10:00 a.m. - 4:45 p.m.	ASCE Bookstore Open
10:00 a.m. - 4:45 p.m.	Poster Hall Open
11:15 a.m. - 12:00 p.m.	Council Awards
12:00 p.m. - 1:00 p.m.	Luncheon with Lunch Keynote (ticketed event)
1:00 p.m. - 2:30 p.m.	Concurrent Technical Session I
1:00 p.m. - 4:30 p.m.	Technical Workshop: Remote Sensing for Water Resources Modeling Applications - TMDL
2:30 p.m. - 3:00 p.m.	Coffee & Networking Break (Exhibit Hall)
3:00 p.m. - 4:30 p.m.	Concurrent Technical Session II
4:45 p.m. - 6:15 p.m.	Concurrent Technical Session III
6:30 p.m. - 7:30 p.m.	AAWRE Diplomate Awards Ceremony and Reception

Tuesday, May 23

7:00 a.m. - 8:00 a.m.	Coffee & Conversation with the Women-Water Nexus
8:00 a.m. - 4:00 p.m.	Registration (Closed for lunch from 12:00 p.m.– 1:00 p.m.)
8:15 a.m. - 8:45 a.m.	Welcome and Morning Announcements
8:45 a.m. - 9:45 a.m.	Keynote Lectures
10:00 a.m. - 11:00 a.m.	Mini Concurrent Technical Session
10:00 a.m. - 4:45 p.m.	ASCE Bookstore Open
10:00 a.m. - 4:45 p.m.	Poster Hall Open
11:15 a.m. - 12:00 p.m.	Council Awards
12:00 p.m. - 1:00 p.m.	Luncheon with Lunch Keynote (ticketed event)
1:00 p.m. - 2:30 p.m.	Concurrent Technical Session IV
1:00 p.m. - 2:30 p.m.	Technical Workshop: Developing Next-Generation Biological Wastewater Treatment Technologies: Bioelectrochemical Systems and Algal Based Bioremediation

1:00 p.m. - 4:30 p.m.
1:30 p.m. - 4:00 p.m.

Technical Workshop: Mapping Wetlands with Machine Learning
Technical Tour: Kurt R. Segler Water Reclamation Facility (KRSWRF) & Alfred Merritt Smith Water Treatment Facility (ticketed event)
Coffee & Networking Break (Exhibit Hall)
Concurrent Technical Session V
Concurrent Technical Session VI
Happy Hour at Parkway Tavern - presented by ASCE Younger Member Forum

Wednesday, May 24

8:00 a.m. - 8:30 a.m.
8:30 a.m. - 9:30 a.m.
8:30 a.m. - 3:00 p.m.
9:30 a.m. - 4:45 p.m.
9:45 a.m. - 12:00 p.m.
9:45 a.m. - 12:00 p.m.
12:15 p.m. - 1:15 p.m.
1:15 p.m. - 2:45 p.m.
3:00 p.m. - 4:30 p.m.
3:00 p.m. - 8:00 p.m.
4:45 p.m. - 6:15 p.m.

Welcome and Morning Announcements
Adapting to Climate Change Keynote Lectures
Registration (Closed for lunch from 12:00 p.m. – 1:00 p.m.)
ASCE Bookstore Open
Concurrent Technical Session VII
Technical Tour: Clark County Regional Flood Control District (CCRFCD) (ticketed event)
Luncheon with Lunch Keynote (ticketed event)
Concurrent Technical Session VIII
Concurrent Technical Session IX
Technical Tour: Venetian Resort Las Vegas Sustainability Tour & Las Vegas Strip Shopping Trip (ticketed event)
Concurrent Technical Session X

Thursday, May 25

8:00 a.m. - 4:00 p.m.

Technical Workshop: ASCE-EWRI Adapting to Climate Change Workshop

Friday, May 26

8:00 a.m. - 2:00 p.m.
12:00 p.m. - 1:00 p.m.

Technical Tour: The Hoover Dam (Behind the Scenes) (ticketed event)
Lunch (on your own)

ASCE-EWRI Staff

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ASCE Chief Sustainability Officer*
Brian Parsons, ENV SP, M.ASCE

*Conference & Member
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How will you customize
YOUR EWRI Congress
experience?

Download the 2023 EWRI
Congress mobile app:



Green Valley Ranch Floor Plan

MAIN BANQUET AREA Lobby Level

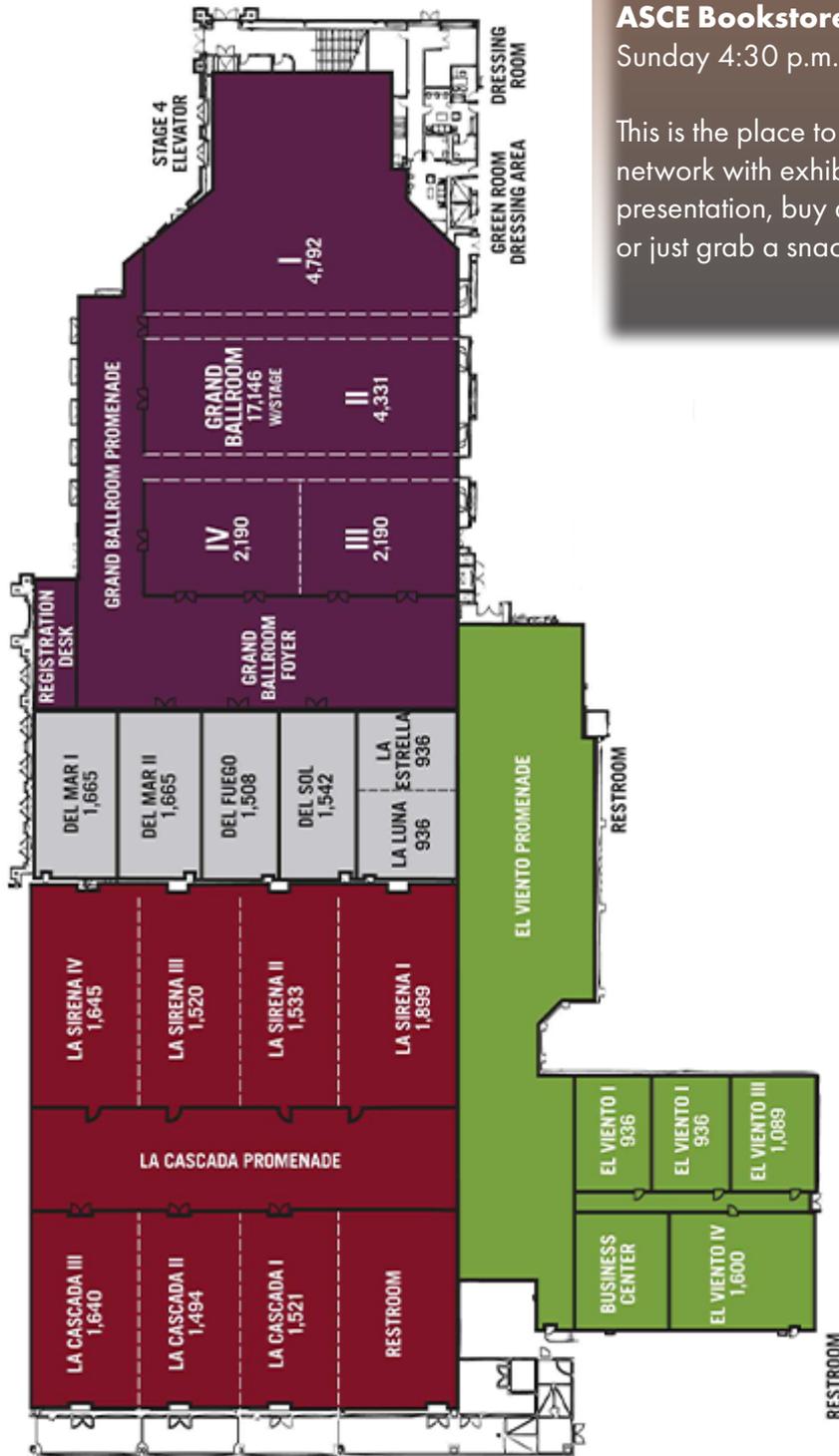


Exhibit Hall:

Sunday 6:30 p.m. – Tuesday 3:00 p.m.

Poster Sessions:

Sunday 6:30 p.m. – Tuesday 3:00 p.m.

ASCE Bookstore:

Sunday 4:30 p.m. – Wednesday 4:45 p.m.

This is the place to be... whether you want to network with exhibitors, engage in a poster presentation, buy a book for your collection, or just grab a snack. Stop by and say hello!

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Simply scan the QR code and start sharing your favorite conference experiences!

Or download it at: <https://join.photocircleapp.com/P3KXP0X64D>



EWRI Committee Meetings

The full listing of the EWRI Committee meetings occurring during Congress can be found online, in the Congress mobile app.

Please visit:

bit.ly/40kaegE

(or scan the QR code on page 5) to view the committee meetings taking place this week!



JOIN DRI...



A RECOGNIZED WORLD LEADER in basic and applied environmental research. Since 1959, DRI's research has advanced scientific knowledge on topics ranging from humans' impact on the environment to the environment's impact on humans. DRI has campuses in Las Vegas and Reno.



Impactful science, inspiring solutions.

FOR MORE INFORMATION

dri.edu/careers

Sunday | May 21

Welcome Reception *(ticketed event)*

6:30 - 8:00 p.m. | Grand Ballroom

Whether it's "welcome back" or "it's a pleasure to meet you", we are thrilled to see you in Henderson! We hope you can join us for the welcome reception and take the opportunity to reunite with old friends or create new memories.

Monday | May 22

Welcome & Keynote Session

9:00 - 10:00 a.m. | Grand Ballroom

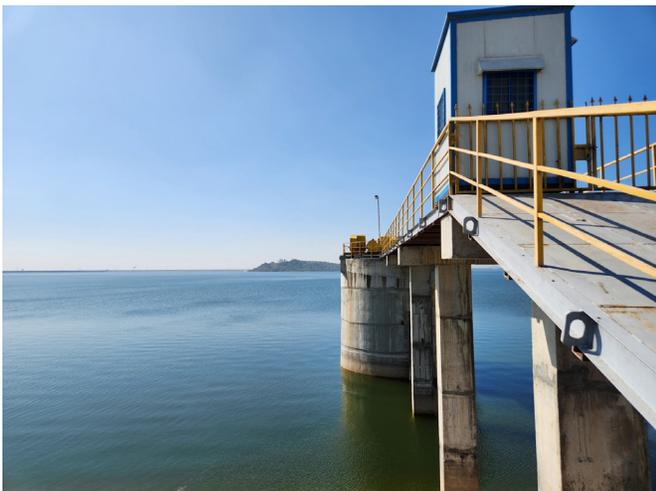


Sri Kalvakuntla Taraka Rama Rao,
Honorable Minister for IT, MA&UD,
Industries & Commerce, Government of
Telangana, Hyderabad

**"Many Benefits & Social Equity
from Lifting a River: Story of the
World's Largest Multi-stage Lift
Irrigation Project"**

The Kaleshwaram Lift Irrigation Project (KLIP), currently the world's largest multi-stage lift irrigation project, is a multi-purpose project on the Godavari River in Telangana, India. The project spans approximately 500 km (310 mi) and utilizes a canal network of more than 1,800 km (1,100 mi) to increase the total cultivable command area in addition to stabilizing the existing cultivable command area in drought-prone districts of Telangana.

With several large pumping facilities, dams and reservoirs, including pumps as large as 175,000 hp, the project is designed to produce a total of 240 thousand million cubic feet (TMC) of water for irrigation, industrial and municipal use. The presentation will cover the scale of the project facilities, the amazing speed at which these facilities are constructed, the social equity and enormous benefits the project provides to the State of Telangana, and the process that led to the success of the project.



Concurrent Award Lecture Events

11:15 a.m. - 12:00 p.m.

Margaret S. Petersen Award & Lecture (La Sirena I):

Cristiane Queiroz Surbeck, Ph.D., P.E., M.ASCE, F.EWRI

The UWRRRC Founders Award: Richard Field, P.E., D.WRE, (Ret), F.EWRI, BCEE, M.ASCE

UWRRRC Service to the Institute Award: James Lenhart, P.E., D.WRE

Ven Te Chow Award & Lecture (Del Mar I): Upmanu Lall, Ph.D., M.ASCE

The Hans Albert Einstein Award: Hongwei Fang, Ph.D., A.M.ASCE

J.C. Stevens Award: Arris S. Tijsseling, Ph.D.

Karl Emil Hilgard Hydraulic Prize: Benjamin Hohermuth, Ph.D., Robert M. Boes, Ph.D., Stefan Felder, Ph.D.

Monday Luncheon & Keynote *(ticketed event)*

12:15 - 12:45 p.m. | Grand Ballroom



**Maria C. Lehman, P.E., NAC, ENV
SP, F.ASCE**, ASCE 2023 President

"Engineering the Future"

With an expanding global population, we must take care of our aging infrastructure to meet current needs, and at the same time, move it into the future with innovative technologies and capabilities that will enable us to combat the problems of tomorrow. In this presentation, ASCE President Maria C. Lehman will share how we need to prepare future civil engineers to meet these challenges.

As the oldest engineering society in the United States, ASCE represents 150,000 members in 177 countries. ASCE stands at the forefront of a profession that plans, designs, constructs, and operates society's economic and social engine – the built environment – while protecting and restoring the natural environment.

AAWRE Diplomate Awards Ceremony & Reception

6:30 - 7:30 p.m. | La Sirena I

The AAWRE welcomes all EWRI Congress attendees to celebrate with the latest class of AAWRE Diplomates being inducted and the recipients of the 2023 AAWRE Award. Please join us for a beverage to toast your colleagues at this special free event!

Tuesday | May 23

Coffee and Conversation with the Women-Water Nexus

7:00 - 8:00 a.m. | La Sirena I

Join the Women Water Nexus (WWN) committee for an early morning networking session focused on Mentoring at All Levels. We will be discussing the benefits of establishing mentor relationships throughout the many phases of career and life. Light refreshments

Water Industry Leaders Panel

8:45 - 9:45 a.m. | Grand Ballroom

Join us for a discussion with water industry leaders on water industry infrastructure, climate change, environmental equity, and sustainability challenges.



Carol Haddock, P.E., Director, Houston Public Works

John Entsminger, General Manager Las Vegas Valley Water District and Southern Nevada Water Authority



David Gadis, Chief Executive Officer & General Manager, DC Water

Concurrent Award Lecture Events

11:15 a.m. - 12:00 p.m.

Julian Hinds Award & Lecture (La Sirena I): Ximing Cai, Ph.D., P.E., M.ASCE

Planning and Management Council Service to the Profession Award: David Rosenberg, Ph.D., M.ASCE

Royce J. Tipton Award & Lecture (Del Mar I): Michael D. Dukes, Ph.D., P.E., F.EWRI

The Arid Lands Hydraulic Engineering Award: Drew C. Baird, Ph.D., P.E., D.WRE, M.ASCE

Rudolph Hering Medal: John Sansalone, Ph.D., M.ASCE

Wesley W. Horner Award: Mathews J. Wakhungu, Ph.D., Noha Abdel-Mottaleb, S.M.ASCE, E.Christian Wells, Ph.D., Qiong Zhang, Ph.D., M.ASCE

Tuesday Luncheon & Keynote (ticketed event)

12:15 - 1:15 p.m. | Grand Ballroom



Jay Garland, Ph.D., Division Director, Environmental Protection Agency (EPA) National Exposure Research Laboratory

“Rethinking Our Water Systems: Perspectives from a Researcher with an Extraterrestrial Past”

Designers of long term space missions are challenged to develop life support systems in the absence of ecological services, requiring a framework based on recovery of resources from the “wastes” produced from human activity. The lack of any existing water systems in space provides a creative space with limited “sunk-cost” bias related to “the way things are.” This talk, from a researcher who spent 25 years working on bioregenerative systems in space before returning to Earth to work for EPA, will emphasize how Earth-based designers of water systems can employ the resource recovery paradigm and minimize existing biases to alternative design. Examples from current work on decentralized reuse options will be discussed, including the need to simultaneously reduce contaminant risks and life cycle impacts (i.e., balancing proximal and distal risks).

Technical Tour: Kurt R. Segler Water Reclamation Facility (KRSWRF) & Alfred Merritt Smith Water Treatment Facility (ticketed event)

1:00 - 4:00 p.m.

This is a two-part tour which provides an informational and educational opportunity to heighten the awareness of wastewater treatment issues and also will visit the facility that currently treats most of the Las Vegas Valley’s drinking water.

Wednesday | May 24

Morning Keynote Session

8:30 - 9:30 a.m. | Grand Ballroom

Chris Stone, P.E., F.NSPE, F.ASCE, LEED AP, Senior Principal, CLARK NEXSEN



“Challenges & Climate Issues for the Engineering Community”

Climate change is already contributing to the disruption of electrical distribution systems; overtaxed water and stormwater infrastructure; flooded neighborhoods, roads and transportation systems; deterioration of bridges and pipelines; and the premature failure of dams and other critical infrastructure. As sea levels rise, intensifying precipitation, increasing temperatures, and other extreme weather-related events affect America’s infrastructure at an accelerating rate, it is the duty of the engineering community to meet this challenge through our policies, planning, and professional practice in collaboration with other built environment stakeholders.

Conference Highlights

Jainey Bavishi, Assistant Secretary of Commerce for Oceans and Atmosphere and Deputy Administrator



“Building a Climate Ready Nation”

Technical Tour: Clark County Regional Flood Control District (CCRFCD) Facilities *(ticketed event)*

9:45 a.m. - 12:00 p.m.

This is an educational tour of regional flood control facilities (detention basins, channels, storm drains) in the Las Vegas Valley.

Wednesday Luncheon & Keynote *(ticketed event)*

12:15 - 1:15 p.m. | Grand Ballroom



Doa Ross, P.E., Deputy General Manager of Engineering at the Las Vegas Valley Water District and Southern Nevada Water Authority

“Doing Our Part: Meeting Water Demands in the Face of Scarcity”

With the aridification of the Colorado River Basin, and in the face of federally declared shortages on the river, learn how the Southern Nevada Water Authority continues to diversify its economy with growth while simultaneously reducing the overall water consumption. By developing programs to incentivize existing customers to use less water and implementing development codes that change the way water is used, Southern Nevada has been able to increase its population by over 800,000 while reducing its water consumptive use by 31%.

Technical Tour: Venetian Resort Las Vegas Sustainability Tour & Las Vegas Strip Shopping Trip *(ticketed event)*

3:00 - 8:00 p.m.

Join the staff of The Venetian Resort Las Vegas for a very special behind the scenes sustainability tour to find out more about their award-winning sustainability program and how their property is reducing its impact on the environment.

Thursday | May 25

Adapting to Climate Change Workshop

8:00 a.m. - 4:00 p.m. | La Sirena I&II

Join EWRI and agency leaders to define and shape EWRI’s role in engaging with climate change adaptation. This workshop features presentations from agency leaders, practitioners, and academics framing climate change challenges and responses, available data, and the need for new and modified tools. Participants will also learn about ongoing work within ASCE and EWRI, such as Manual of Practice updates and coordination with NOAA. View page 11-12 for the detailed workshop agenda.

Thursday Luncheon & Keynotes

12:00 - 1:00 p.m. | La Sirena I&II

Sean McKenna, Ph.D., Executive Director of the Division of Hydrologic Sciences, Desert Research Institute



“The Sharp End of the Stick: Southwestern U.S. Under a Changing Climate”

Climate change has disproportionately impacted the American Southwest over the past 20 years. This presentation will cover some of the changes, improved understanding from research efforts and ways in which the Southwestern U.S. is adapting and trying to mitigate the impacts of climate change. Examples will be drawn from work at DRI and its partners.



Camille Calimlim Touton, 24th Commissioner of the U.S. Bureau of Reclamation

“Enhancing Water Resilience in the American West”

Bureau of Reclamation Commissioner Camille Calimlim Touton will discuss how historic investments from the Bipartisan Infrastructure Law and Inflation Reduction Act support the Biden-Harris administration’s Investing in America Agenda to enhance the resilience of the West to drought and expand access to clean, reliable drinking water for American families throughout the country.

Friday | May 26

Technical Tour: The Hoover Dam: Behind the Scenes *(ticketed event)*

8:00 a.m. - 2:00 p.m.

A trip to Nevada is not complete without feeling the vibrations on your feet created by the power of the water rushing through the pipes of the Hoover Dam.

ASCE-EWRI Adapting to Climate Change Workshop

Thursday, May 25, 2023

8:00 a.m. - 4:00 p.m.

La Sirena I&I

Time	Function
8:00 - 8:10 a.m.	Welcome & Opening Remarks
8:10 - 9:15 a.m.	<p>Panel I: Framing Climate Challenges & Responses/Solutions</p> <p>Civil infrastructure design must be resilient consistent with the climate associated with its location. In a dynamic climate environment, the design needs to either have a progression from overdesign to right-design with increasing extremes and have the ability to be adapted periodically as impacts from change manifest themselves. Scalable solutions connecting local to regional add benefit as supply reliability and hazard mitigation increasingly overlap with increasing extremes and variability. The panel will focus on current approaches – what are our initial responses to these challenges and what are we not able to address?</p> <p>Michael L. Anderson, Ph.D. PE, California State Climatologist Rosanna LaPlante, P.E., F.ASCE, Engineering & Environmental Services Division Leader, Engineering & Construction, Washington Suburban Sanitary Commission Lewis Linker, CPB Modeling Coordinator, Chesapeake Bay Program Office, Environmental Protection Agency</p> <p>Moderator: Rob Traver, Ph.D., P.E., D.WRE, F.EWRI, F.ASCE</p>
9:15 - 9:50 a.m.	<p>Panel II: Tools in Transition</p> <p>To include climate change in our designs and strategies requires an update to the tools that we use. Examples to be discussed are Atlas 14/15, FEMA Maps, Resiliency, Water Infrastructure Modeling, Data Sources, and others. This panel will focus on what tools and methods are available to the profession today, and a discussion of what ASCE – EWRI and our federal partners are working toward, and the time horizon for them being available.</p> <p>Sandra Pavlovic, P.E., M.S., M.B.A., Technical Lead for Atlas 14 Projects, National Weather Service, NOAA John Ingargiola, Lead Physical Scientist, FEMA Mitch Heineman, P.E., D.WRE, BCEE, CSO/SSO Management Discipline Leader, CDM Smith</p> <p>Moderator: Dr. Mari R. Tye, CEng MICE MASCE, Co-Chair, ASCE INSPIRE Conference Committee, Past Chair, ASCE Committee on Adaptation to a Changing Climate, Project Scientist II, Climate and Global Dynamics Laboratory (CGD)</p>
9:50 - 10:05 a.m.	Break

10:05 - 11:30 a.m.	<p>Panel III – Engineering innovation for Climate Adaptation - What is EWRI’s Role in Moving the Profession Forward</p> <p>A rapidly changing climate with disparate impacts of risks and resources across communities now places enormous responsibility on the EWRI community. This panel will focus on areas where significant transformations of the profession (e.g., methodologies, policies, practices and tools) are needed, and feasible, to respond to this challenge. The panel will share case studies that illuminate key issues and point to promising pathways for the future. A central focus of the panel will be the role of EWRI.</p> <p>Daniel Wright, Ph.D., A.M.ASCE, Associate Professor, University of Wisconsin-Madison Brett Sanders, Ph.D., A.M.ASCE, F.EMI, Professor, University of California, Irvine Barbara Chongtoua, P.E., M.ASCE, Mile High Flood District</p> <p>Moderator: Holly Piza, P.E., D. WRE, M.ASCE, Mile High Flood District</p>
11:45 a.m. - 1:00 p.m.	<p style="text-align: center;">Luncheon & Keynotes</p> <p style="text-align: center;">“The Sharp End of the Stick: Southwestern U.S. Under a Changing Climate” Sean McKenna, Ph.D., Executive, Director of the Division of Hydrologic Sciences, Desert Research Institute</p> <p style="text-align: center;">“Enhancing Water Resilience in the American West” Camille Calimlim Touton, 24th Commissioner of the U.S. Bureau of Reclamation</p>
1:10 - 1:40 p.m.	Reports & Discussion of Breakouts
1:40 - 2:40 p.m.	Panel: Rethinking our Approaches to Meet Climate Change
2:40 - 2:50 p.m.	Break
2:50 - 3:40 p.m.	Breakout - Next Steps and Actions for EWRI
3:40 - 4:00 p.m.	Closing Remarks & Next Steps

This workshop is part of an ASCE-wide effort to define and respond to the challenges that engineers face due to changing climate conditions. This effort aligns with EWRI’s Strategic Plan Goal #3, “regarding environmental & water resources, the natural and the built environment is safe, resilient, and sustainable.”

This workshop builds on ongoing efforts. In the first half of FY 2022, EWRI leaders attended several virtual meetings and roundtable discussions with other ASCE Institutes, Divisions, and Committees to collaborate on sustainability issues directly related to climate change. In March 2022, EWRI hosted an “Infrastructure & Climate Change Listening Session” at the Operation and Maintenance of Stormwater Control Measures (OMSW) Conference in Wilmington, North Carolina. In May 2022, EWRI hosted a similar session at the annual Congress. The listening sessions gave us a preliminary look at what our members and professional affiliates view as the most pressing issues.

Given the list of pressing issues related to climate change, EWRI’s Governing Board decided to organize a series of workshops to help jumpstart our organization’s efforts. This workshop will help EWRI focus its efforts to provide cutting-edge information to adapt to climate change, including Council and committee work to develop tools and guidance, and on opportunities to partner with other entities and ASCE committees, many of which will be represented at the workshop. It will also include an update on ongoing EWRI work, such as MOP updates and coordination with NOAA on updated climate guidance.

The Board encourages all EWRI committees to assist practitioners in using cutting-edge technologies and techniques by expanding and showcasing EWRI’s content focused on sustainability and resilience to climate change. EWRI can play an important role in providing guidance to practitioners as design protocols are re-examined. Perhaps all those “Rules of Thumb” and standard protocols we learned in school need to be adjusted going forward.

Find all the Words Related to Climate Change!

W Z V L O Z N Q V S I S E H T N Y S O T O H P V S
 L W S P I T D C G U E G S V G S H N Z Z C E K T N
 E I M T Y S W L W W L K N B A Y O B V I R I M Y O
 E M B N D W A T L I J N J H T R N R L I V T B E B
 C N O E A C O F B U Y B E E R O I H F S N Q S B R
 M I O X I D E S V E I V C R I C Q A Q A T M V Q A
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 C A E M D D J N X E M M K S J G I M Z O R U L D Q
 V B C T S C Y C I R T L Y Y D C J R T R D Z E H J
 V T S R N Q K Z L I D F S X J G J Z A X P I C N N
 D K R K J P U G N P M W C T J S D Y Z Z Z M X U W

Acidification	Landfill	Recycle
Climate Change	Megacities	Renewable
Emissions	Oxides	Resilience
Energy	Ozone	Variability
Glacier	Perfluorocarbons	Vulnerability
Green House Gas	Permafrost	Weather
Inundation	Photosynthesis	

Margaret S. Petersen Award & Lecture

For an outstanding woman in environmental and water resources.



Cristiane Queiroz Surbeck, Ph.D., P.E., M.ASCE, F.EWRI

Cristiane (Cris) Surbeck, P.E., Ph.D., is Chair and Professor of Civil Engineering at the University of Mississippi. She has been at UM since 2007. She has worked in academia and environmental consulting, with projects throughout the U.S. and abroad. She was elected and served as President of ASCE-EWRI from 2017 to 2018. In 2021, she published the textbook *Site Assessment and Remediation for Environmental Engineers*, published by Taylor & Francis. She is the 2021 recipient of the ASCE Mississippi section Engineer of the Year Award.

At the University of Mississippi, she teaches environmental and water resources engineering courses. Her research has focused on the fate and transport of pollutants in water, stormwater management, and sustainability. She led the university's chapter of Engineers Without Borders on three trips to work on projects in a rural village in Togo, West Africa. She is the recipient of three UM School of Engineering awards: Junior Faculty Research, Excellence in Teaching, and Faculty Service. Her consulting work included clean-up of soil and groundwater at hazardous waste sites, environmental assessment for manufacturing facilities, and stormwater monitoring programs.

She received a B.S. degree in civil engineering from the University of Maryland in 1995, and M.S. and Ph.D. degrees in environmental engineering from the University of California, Irvine in 2000 and 2007.

Cris is originally from Brazil – her father, four uncles, and one aunt are civil engineers. She moved to the United States with her parents at age 13. She lives with her husband Greg in Oxford. Their 20-year old son is a college student in California.

Lifetime Achievement Award

The Lifetime Achievement award is presented to members who are judged to have advanced the profession, exhibited technical competence, and significantly contributed to public service, research, or practice in the environmental and water resources profession.



Wayne C. Huber, Ph.D., P.E., M.ASCE

Wayne C. Huber, Ph.D., P.E. (FL), Life Member ASCE, D.WRE, Professor Emeritus of Civil and Construction Engineering at Oregon State University, has over 55 years of experience in management of stormwater, combined sewers, and nonpoint source runoff in urban areas, including simulation modeling, database formulation, receiving water impact evaluation, and control effectiveness assessment. He is a primary author of the original EPA Storm Water Management Model and contributed to the development of the current EPA SWMM5. His modeling expertise includes both urban hydrology and hydraulics as well as transport processes in natural waters.

His many publications include documents related to best management practices, low impact development, control trade-offs, and stormwater modeling and management methodologies. While a professor at the University of Florida and Oregon State University, he served as principal investigator or co-PI for projects sponsored by the EPA, the National Cooperative Highway Research Program, and the Water Environment Research Foundation related to stormwater modeling techniques and guidance methodology for evaluation, selection, placement, and design of BMP and LID facilities, as well as research for many other federal, state and local agencies during his career.

Among many of Dr. Huber's contributions to ASCE/EWRI are service as chair of the ASCE Water Resources Engineering Division Executive Committee, 1998-99, chair of the EWRI ASCE Urban Water Resources Research Council, 1990-92, and Associate Editor, ASCE Journal of Environmental Engineering. He was the 2007 recipient of the ASCE/EWRI Julian Hinds Award. Other significant national service includes National Academy of Sciences/National Research Council committee reviews of Everglades Restoration Progress. He resides in Portland, Oregon.



James Lenhart, P.E., D.WRE, M.ASCE

Jim is the owner of Stormwater Northwest in Portland, Oregon. He is the former Chief Technology Officer of Contech Engineered Solutions and was the technical founder of Stormwater Management Inc. which developed the Storm-Filter®. Jim is a named inventor of multiple US patents in the field of stormwater treatment. He has authored over 60 papers about water quality and stormwater treatment mostly from the results of applied research and stormwater monitoring programs. He has served as an adjunct instructor of Civil Engineering at Portland State University where he taught hydraulics and water resources engineering. Jim is an active member of the Water Environment Federation Stormwater Policy Committee, ASTM E64 on Stormwater Control Measures, ASCE EWRI, and served as Chair of the ASCE EWRI Urban Water Resources Research Council.

Jim holds a BS in Plant Sciences from the University of Arizona; a BS in Agricultural Engineering and MS in Water Resources Engineering from Oregon State University Jim is a professional Agricultural and Environmental Engineer with over 30 years of experience and is a Diplomate of the American Academy of Water Resources Engineers. Currently, Jim is working on the Stormwater Media Filtration Committee and the 2024 Stormwater Operations and Maintenance Conference. Jim is an avid cyclist, holds a Masters Certificate with the World Tae Kwon Do Federation, and enjoying his new granddaughter.



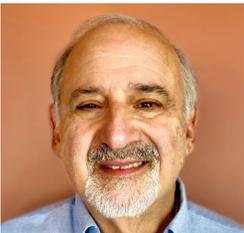
Levent Kavvas, Ph.D., F.ASCE

Levent is a Distinguished Professor of Water Resources Engineering at Department of Civil and Environmental Engineering at University of California, Davis, and is a Distinguished Member and Fellow of ASCE. He has been a member of ASCE over four decades. Currently, he is the Chair of ASCE/EWRI Watershed Council and Chair of the Council's Hydro-climate Technical Committee. Among his contributions to ASCE, he is the Founding Editor-In-Chief of ASCE Journal of Hydrologic Engineering. Besides having won various awards from ASCE, he is the recipient of the ASCE 2009 Ven Te Chow Award which is the highest honor that can be bestowed by ASCE to a Hydrologic Engineer. Together with his postdocs and graduate students, Levent developed a new methodology for the

estimation of maximum precipitation, to be used in the design of large hydraulic structures, over various regions of USA. The significance of this new method in hydrologic engineering design was recognized by ASCE by its 2016 J. James R. Croes Medal where the ASCE selection committee "particularly noted (that this new method) provides an alternative approach to estimate the probable maximum precipitation (PMP) that has potential to change the current engineering practice."

Jeffrey B. Bradley Service to the Institute Award

The Jeffrey B. Bradley Service to the Institute Award is given in recognition of extensive and outstanding service to the Institute.



Walter Grayman, Ph.D., P.E., D.WRE (Ret), F.EWRI, M.ASCE

For the past 40 years, Walter Grayman has been an independent consulting engineer specializing in the areas of water supply and water resources with emphasis on infrastructure, modeling, water quality, GIS and risk/security issues. He holds a Ph.D. and M.S. from the Massachusetts Institute of Technology and a B.S. degree from Carnegie Mellon University; all in civil engineering with a specialty in water resources. He has been active at the national level in the American Society of Civil Engineers for 40 years and is currently on the Governing Board of the Environmental and Water Resources Institute (EWRI).

Dr. Grayman has over 150 publications including co-editor of the ASCE/EWRI book *Toward a Sustainable Water Future: Visions for 2050* and contributing author for McGraw-Hill and Wiley Handbooks on *Water Distribution Systems* and *Water Supply Systems Security*. He was the 2013 ASCE Julian Hinds Award recipient and has received best paper awards from ASCE and AWWA. He is active in the areas of catastrophic risk, water crisis/pollution and engineering for resilience in the World Federation of Scientists.

Visiting International Fellows

This fellowship is granted annually to increase the participation of water resources and environmental professionals from developing countries in EWRI conferences, and to promote sustained professional and cultural exchange.



Nur Orak,
Turkey



Irene Gabriel,
Egypt



Gaurav Bhatt
India



Eugene Lenzemo,
Cameroon



Atif Mustafa,
Pakistan



Babar Naeem,
Pakistan

To apply for the 2024 Visiting International Fellowship, visit: bit.ly/40T2vH2

EWRI Fellows

EWRI Fellowship is granted to those who have been a member of EWRI for 10 or more years and have demonstrated accomplishments that have contributed significantly to the advancement or application of water resources or environmental engineering, science, and technology.

Please join us in congratulating the 2023 Class of EWRI Fellows:

Ramanitharan Kandiah, Ph.D., Dip (GIS), P.E., BCEE, PH, D.WRE, ENV SP, M.ASCE, F.EWRI

Sajjad Ahmad, Ph.D., P.E., F.ASCE, F.EWRI

Volodymyr Tarabara, Ph.D., M.ASCE, F.EWRI

Amir AghaKouchak, Ph.D., P.E., F.EWRI

Brett Sanders, Ph.D., EIT, F.EMI, M.ASCE, F.EWRI

David Watkins, Ph.D., P.E., F.EWRI

Andrew Potts, P.E., CPESC, M. ASCE, LEEP AP BD&C, F.EWRI

Shih-Chieh Kao, Ph.D., F.EWRI

Royce J. Tipton Award & Lecture

The Royce J. Tipton Award recognizes outstanding contributions to the advancement of water and soil aspects of irrigation by software development, promoting application of new technologies and through public and professional service.



Michael D. Dukes, Ph.D., P.E., F.EWRI

Michael D. Dukes is the Director of the Center for Land Use Efficiency that combines UF/IFAS urban and agricultural programs associated with best management practices. He is also a Professor and Irrigation Specialist at the University of Florida in the Agricultural and Biological Engineering Department.

Michael obtained a B.A.S. in Agricultural Engineering and an M.C.E. in Civil and Environmental Engineering from the University of Delaware. He obtained a Ph.D. in Biological and Agricultural Engineering from North Carolina State University. His interests are in the area of irrigation and water management, particularly in the area of efficient irrigation design and management, water conservation, and minimizing negative impacts of irrigated systems. Research activities include residential irrigation efficiency, and evaluation of "smart" irrigation control systems such as soil moisture sensor controllers or evapotranspiration based controllers. Extension efforts concentrate on implementation of irrigation control technologies to reduce over-irrigation and loss of nutrients.

He is a Fellow of American Society of Agricultural and Biological Engineers (ASABE) and active in several committees and standards activities. He received the 2011 ASABE Young Extension Worker Award and the 2016 John Deere Gold Medal Award. In 2019 he received both the Heerman Sprinkler Irrigation Award and the Evelyn E. Rosentreter Standards Award. He is Fellow of the American Society of Civil Engineers (ASCE), Environmental and Water Resources Institute (EWRI). He is also a UF Water Institute Faculty Fellow. He has also been active in the Irrigation Association and received the Excellence in Education Award in 2014. He recently received the 2023 Royce J. Tipton Award from ASCE. He is a licensed professional engineer in Florida and a residential Certified Irrigation Designer.

Journal of Irrigation and Drainage Engineering

Best Reviewer

Mohammad Najafzadeh, Ph.D.

Best Associate Reviewer

Seyed M. Hajimirzaie, Ph.D., P.E., M.ASCE.

Best Discussion

Garry Grabow, Ph.D., P.E.

For the Discussion of "Cylindrical Baffle Flume for Flow Measurements in Open Channels," by Aniruddha D. Ghare, Ankur Kappur, and Avinash M. Badar, Journal of Irrigation and Drainage Engineering, Volume 146, Issue 9, 2020

Best Technical Note

Shuai Guo, Ph.D., M.ASCE

Guo-Fen Chen

Yiyi Ma, Ph.D., A.M.ASCE

Lan Chen

Wenming Zhang, Ph.D., M.ASCE

"Experimental Study of the Hydraulic Performances of Continuous Transverse Grates," Journal of Irrigation and Drainage Engineering, Volume 147, Issue 9, 2021

Best Paper Award

Prabhakar Sharma, Ph.D.
Aviram Sharma, Ph.D.
Somnath Bandyopadhyay, Ph.D.

Anurag Verma
Poornima Verma, Ph.D

"An Integrated Site Selection Criterion for Aquifer Storage and Recovery," Journal of Irrigation and Drainage Engineering, Volume 148, Issue 5, 2022

Karl Emil Hilgard Hydraulic Prize

The Karl Emil Hilgard Hydraulic Prize is presented to the author or authors of the paper that is judged to be of superior merit in dealing with a problem of flowing water, either in theory or in practice.

Benjamin Hohermuth, Ph.D.

Robert M. Boes, Ph.D.

Stefan Felder, Ph.D.

"High-Velocity Air–Water Flow Measurements in a Prototype Tunnel Chute: Scaling of Void Fraction and Interfacial Velocity," Journal of Hydraulic Engineering, Volume 147, Issue 11, 2021

Hans Albert Einstein Award

The Hans Albert Einstein Award acknowledges significant contribution to the engineering profession in the areas of erosion control, sedimentation, and/or waterway development either in teaching, research, planning, design, or management.



Hongwei Fang, Ph.D., A.M.ASCE

Professor Fang held positions as Executive Associate Director of Office of Academic Planning, Director of Office of Development and Planning and Director of Research and Development Affairs Office, Tsinghua University. He has been the Provost of Southern University of Science and Technology since January, 2022.

Professor Fang mainly engages in research of numerical simulation of flow and sediment transport, eco-fluvial dynamics. He is the chief editor for the official journal of World Association for Sedimentation and Erosion Research, International Journal of Sediment Research (IJSR) and an associate editor for Journal of Hydraulic Engineering (JHE), the publication of American Society of Civil Engineers. He was recipient of the National Science Fund for Distinguished Young Scholars and was funded by the Yangtze River Scholar Program for Distinguished Professors.

Journal of Hydraulic Engineering

Best Paper Award

Please refer to the Karl Emil Hilgard Hydraulic Prize above.

Best Technical Note

Junke Guo, Ph.D., M.ASCE

"Generalized Bed-Load Function Based on Empirical Data," Journal of Hydraulic Engineering, Volume 147, Issue 8, 2021

Best Discussion

Please refer to the J.C Stevens Award below.

Best Reviewer

Keith Richardson, Ph.D.

Best Associate Editor

Nani Bhowmik, Ph.D., P.E.

Scott F. Bradford, Ph.D., P.E.

J.C. Stevens Award - Best Discussion



Arris S. Tijsseling, Ph.D.

Discussion of “Effect of Boundary on Water Hammer Wave Attenuation and Shape” by Huade Cao, Ioan Nistor, and Magdi Mohareb. Journal of Hydraulic Engineering, Volume 147, Issue 10, 2021

Urban Water Resources Research Council Founders’ Award

The UWRRRC Founders’ Award may be made annually to an individual for notable contributions that have served to advance engineering and science in the field of urban water resources research. This award was established to honor the Founders of EWRI’s Urban Water Resources Research Council, pioneers in the fields of urban water management and stormwater research

The award may be made annually to an individual for notable contributions that have served to advance engineering and science in the field of urban water resources research.



Richard Field, P.E., D.WRE (Ret), BCEE, M.ASCE

Richard Field, MCE, Chi Epsilon Nat’l CE Honor Society, PE NY & NJ, D.WRE (by Eminence), BCEE (by Eminence), M.ASCE, is a retired Environmental /Water Resources Engineer and his contributions to the urban water resources field and related research are extensive and provided national and international direction. His notable research and leadership have advanced engineering and science in the profession.

Through his 54 years of combined service with the USEPA, Naval Facilities Engineering Command, NYCDEP, Michael Baker Int’l and various other consulting firms Rich has developed and implemented the best practices for urban water resources protection.

His greatest contributions came as an engineer and research leader in his 42 years with the USEPA’s Urban Watershed Management Branch (UWMB), Edison, NJ where Rich developed, ascertained funding for, and directed approximately 600 research, development and/or demonstration projects including but not limited to: quality and quantity characterization, watershed/sewershed modeling, best management practices, roadway deicing, real-time control, in-line/off-line flow routing and storage, treatment and disinfection of combined and sanitary sewer overflow and urban stormwater runoff.

His direction and advocacy for research has resulted in over 1,000 R&D reports and more than 500 of a combination of peer-reviewed journal articles, conference/seminar papers and proceedings, posters, books and book chapters, films, and magazine and other related

publications. Rich has authored or co-authored over 900 of the aforementioned publications himself. His expertise has been sought and used nationally and worldwide and he's presented over 800 invited keynote addresses, conference papers, lectures, and organized seminars and served on numerous panels, committees, and councils.

Prior to retirement in 2018 Rich was a very active member of ASCE-EWRI and UWRRRC. For several years he Chaired the UWRRRC and the Urban Watershed Management Standing Committee and other Committees. He was an active participant in conference planning, e.g., EWRI Congresses, Stormwater Symposium, various specialty conferences, and the internationally recognized long-term UWMB seminar series in Edison, NJ.

Rich was an advocate for students and post-docs. Scott Struck and Shirley Clark two of his post-doctoral researchers were or are presently President of EWRI, respectively.

For his numerous outstanding achievements and contributions Rich has been the recipient of many awards, medals and accolades both nationally and internationally including but by far not limited to: the ASCE 1976 State of the Art for Civil Engineering Award, the UWRRRC 2002 Award for Long-Standing Contribution to the Improvement of Urban Stormwater Management in the US and Around the World and to Our Council, the WEF NYWPCA Award for Outstanding Peer-Reviewed Technical Publication, and a host of awards and medals from his past employers.

Simon W. Freese Environmental Engineering Award & Lecture

The Simon W. Freese Environmental Engineering Award and lecture is awarded to a distinguished person in the field of environmental engineering.



Lutgarde Raskin, Ph.D., AAM Fellow, WEF Fellow, NAE

Lutgarde (Lut) Raskin is the Vernon L. Snoeyink Distinguished University Professor of Environmental Engineering at the University of Michigan. She was previously a professor at the University of Illinois. Dr. Raskin is a pioneer in molecular microbial ecology applied to engineered water systems. She is developing anaerobic bioprocesses for resource recovery from waste streams and studying microbial aspects of drinking water systems. She has a strong interest in graduate education and mentoring and has advised approximately 20 postdocs and 100 graduate students, including about 30 Ph.D. students. She is an elected Fellow of the American Academy of Microbiology, the International Water Association, and the Water Environment Federation.

Past honors include the Rackham Distinguished Graduate Mentor Award, College of Engineering Stephen S. Atwood Award, the International Society for Microbial Ecology-International Water Association BioCluster Award, the Association of Environmental Engineering and Science Professors Frontier Award in Research, and the Water Research Foundation Paul L. Busch Award for Innovation in Applied Water Quality Research. She was elected to the U.S. National Academy of Engineering in 2021.

Rudolph Hering Medal

The Rudolph Hering Medal recognizes outstanding papers that contribute to the advancement of the environmental branch of the engineering profession.

Haochen Li, Ph.D., A.M.ASCE

John Sansalone, Ph.D., M.ASCE

"Benchmarking Reynolds-Averaged Navier-Stokes Turbulence Models for Water Clarification Systems," Journal of Environmental Engineering, Volume 147, Issue 9, 2021

Wesley W. Horner Award

The Wesley W. Horner Award recognizes papers that have contributed to the areas of hydrology, urban drainage, or sewerage.

Mathews J. Wakhungu, Ph.D.
E.Christian Wells, Ph.D.

Noha Abdel-Mottaleb, S.M.ASCE
Qiong Zhang, Ph.D., M.ASCE

"Geospatial Vulnerability Framework for Identifying Water Infrastructure Inequalities," Journal of Environmental Engineering, Volume 147, Issue 9, 2021

Journal of Hazardous, Toxic and Radioactive Waste***Best Research Oriented Paper***

Michael O. Schwartz

"Corrosion-Enhancing and Corrosion-Reducing Accessories in Bentonite Surrounding Copper Shielded Containers for Nuclear Waste," Journal of Hazardous Toxic and Radioactive Waste Volume 25, Issue 4, 2021

Best Practice Oriented Paper

Yinduo Chen, S.M.ASCE

John Bergendahl, Ph.D., P.E., M.ASCE

"Identification and Quantification of a Wide Variety of Inorganic Nanoparticles in Municipal Wastewater," Journal of Hazardous Toxic and Radioactive Waste, Volume 25, Issue 4, 2021

Best Associate Editor

Puspendu Bhunia, Ph.D.

Journal of Sustainable Water in the Built Environment***Best Paper***

Natalya Sokolovskaya, M.ASCE
Bridget Wadzuk, Ph.D., A.M.ASCE

Ali Ebrahimian, Ph.D., A.M.ASCE

"Modeling Infiltration in Green Stormwater Infrastructure: Effect of Geometric Shape," Journal of Sustainable Water in the Built Environment, Volume 7, Issue 2, 2021

Best Case Study

Ebrahim Ahmadisharaf, Ph.D., M.ASCE
Nasrin Alamdari, Ph.D., P.E., A.M.ASCE

Nasrin Alamdari, Ph.D., P.E., A.M.ASCE
Sahar Ghanbari

“Effectiveness of Retention Ponds for Sustainable Urban Flood Mitigation across Range of Storm Depths in Northern Tehran, Iran,” *Journal of Sustainable water in the Built Environment*, Volume 7, Issue 2, 2021

Urban Water Resources Research Council Outstanding Service Award

James Lenhart, P.E., D.WRE, M.ASCE

Ven Te Chow Award & Lecture

The Ven Te Chow Award recognizes lifetime achievement in the field of hydrologic engineering.



Upmanu Lall, Ph.D., M.ASCE

Dr. Upmanu Lall is the founding Director of the Columbia Water Center, the Alan and Carol Silberstein Professor of Engineering, and a Senior Research Scientist at the International Research Institute for Climate & Society at Columbia University. He is a Fellow of the American Geophysical Union, and of the American Academy of Arts & Sciences. He has received the Henry Darcy Award from the European Geophysical Union, and the Arid Lands Hydraulic Engineering, and the Ven Te Chow awards from the American Society of Civil Engineers, and presented the AGU Langbein and Borland lectures, among others.

Through the Columbia Water Center, he has led projects (in countries in all major continents) on water and climate sustainability, risk analysis and mitigation, infrastructure solutions, and the integration of financial instruments. His work ranges from basic research on hydroclimatology and data science to applied research on systems design and optimization, policy analysis and innovation, and financial strategies for climate risk mitigation. He conceived of and has been pursuing the “America’s Water Initiative” since 2014, and in this context has been developing research and advocacy towards comprehensive national water, energy, agriculture planning informed by climate, and decentralized, “solutions as the future direction for US and global water infrastructure.

Arid Lands Hydraulic Engineering Award

The Arid Lands Hydraulic Engineering Award recognizes original contributions in hydraulics, hydrology, planning, irrigation and drainage, hydroelectric power development, navigation applicable to arid or semi-arid climates, or contributions to the understanding and development of new technology in river basins.



Drew C. Baird, Ph.D., P.E., D.WRE, M.ASCE

Dr. Baird is a Hydraulic Engineer with the Bureau of Reclamation, Denver Technical Service Center and has had the vision to organize, support, and lead research to develop design processes that advances the state of the art in river engineering and river restoration. He envisioned, championed, helped secure funding, and provided leadership for numerous Reclamation research initiatives including the enhancement of transverse feature design based on hydraulic performance, integrating local channel conditions with reach and landscape scale processes, and preservation or re-establishment of the floodplain. Dr. Baird has led or participated in over 120 Reclamation projects, designs and studies during his career and spend over 35 years developing design, field research expertise that ultimately became the source for several Reclamation wide manuals and practice guidelines. He is the principal author of “Bank Stabilization Design Guidelines, and for “Guidelines for Evaluating Pipeline Channel Crossing hazards to Ensure effective Pipeline Burial.” Both publications’ emphasizes the unique aspects of the arid and semi-arid environments in the western U.S and application to ephemeral channels. He served as a contributing author of “Managing Infrastructure in the Stream Environment” another agency wide manual.

Dr. Baird is the author or co-author of more than 100 technical project reports, conference papers, design guidelines and journal articles, and has served as an expert witness in Federal District Court on endangered species compliance and river restoration. Reclamation named Dr. Baird as the 2001 “Engineer of the Year,” and he was a finalist for “Federal Engineer of the Year” in 2002.

Dr. Baird completed his B.S. in Civil Engineering in 1982 from the University of Utah, and then transitioned to his graduate program in Civil and Environmental Engineering at Brigham Young University earning an M.S. in 1983. While leading the Albuquerque Area Office River Analysis Team, he simultaneously completed his Ph.D., at the University of New Mexico’s Civil, Construction and Environmental Engineering Department in 2004. He has mentored graduate students and served as an outside member of several graduate committees at both New Mexico and Colorado universities and has presented invited lectures at national conferences and in university classes. He has served on numerous ASCE committees that include River Restoration, Sedimentation, and Reservoir Sedimentation committees, and served as a peer reviewer for ASCE journals for over two decades.

Journal of Hydrologic Engineering

Seminal Paper

Hoshin Vijai Gupta, P.E.

Soroosh Sorooshian, Ph.D., P.E.

Patrice Ogou Yapo, P.E.

“Status of Automatic Calibration for Hydrologic Models: Comparison with Multilevel Expert Calibration,” *Journal of Hydrologic Engineering*, Volume 4, Issue 2, 1999

Best Technical Paper

Vijay P. Singh, Ph.D., P.E., Dist.M.ASCE

Solomon Vimal, Ph.D. Candidate, S.M.ASCE

“A Unified Framework for Governing Equations of Hydrologic Flows,” *Journal of Hydrologic Engineering*, Volume 27 Issue 1, 2022

Best Case Study

Juliane Mai, Ph.D.

Étienne Gaborit, Ph.D.

Hervé Awoye, Ph.D

Emily A. Bradley

Daniel G. Princz

Mohamed E. Elshamy

Jimmy Lin, Ph.D.

Meghan McLeod

Oldrich Rakovec, Ph.D.

Narayan Shrestha, Ph.D.

Sungwook Wi, Ph.D.

Alain Pietroniro, Ph.D.

Bryan A. Tolson, Ph.D.

Vincent Fortin, Ph.D.

Tricia A. Stadnyk, Ph.D.

Frank Seglenieks, Ph.D.

Shervan Gharari, Ph.D.

Saman Razavi, Ph.D.

Xiaoqing Ni

Nandita B. Basu, Ph.D.

Luis Samaniego, Ph.D.

Prasad Daggupati, Ph.D.

Tim Hunter

Hongren Shen, Ph.D. Candidate

Nicolas Gasset

Lauren M. Fry, Ph.D.

André G. T. Temgoua

Amin Haghnegahdar, Ph.D.

Martin Gauch

Yongping Yuan, Ph.D.

Rohini Kumar, Ph.D.

Sabine Attinger, Ph.D.

Tirthankar Roy, Ph.D.

James R. Craig, Ph.D.

“Great Lakes Runoff Intercomparison Project Phase 3: Lake Erie (GRIP-E),” *Journal of Hydrologic Engineering*, Volume 26 Issue 9, 2021

Best Discussion

Isa Ebtehaj, Ph.D. Candidate

Hossein Bonakdari, Ph.D.

Ozgur Kisi, Ph.D., A.M.ASCE

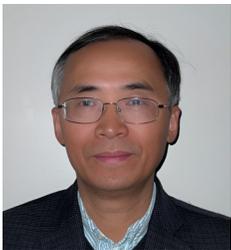
Discussion of "ANFIS Modeling with ICA, BBO, TLBO, and IWO Optimization Algorithms and Sensitivity Analysis for Predicting Daily Reference Evapotranspiration" by Maryam Zeinolabedini Rezaabad, Sadegh Ghazanfari and Maryam Salajegheh, Journal of Hydrologic Engineering, Volume 26, Issue 12, 2021

Best Associate Editor

Louis H. Motz, Ph.D., P.E., D.WRE

Julian Hinds Award and Lecture

The Julian Hinds Award recognizes the author or authors of a paper that is judged to make the most meritorious contribution to the field of water resources development. The award may also be made to an individual for notable performance, long years of distinguished service, or specific actions that advanced engineering in the field of planning, development, and management of water resources.



Ximing Cai, Ph.D., P.E., M.ASCE

Professor Ximing Cai is a leading researcher in integrated food, energy, and water systems (INFEWS) modeling and its applications to reservoir operation and river basin management. His current research projects include land and water resources availability assessment for bioenergy development and its impact on the environment, drought risk assessment under climate change, and forecast-informed reservoir operation and irrigation scheduling. Professor Cai is also one of the pioneers in watershed hydrologic modeling incorporating human interferences (e.g., flow regulation, water withdrawal, return flow, etc.) and economic evaluation. He has authored or co-authored over 210 peer reviewed journal papers, 3 books, and several monographs. He is an elected Fellow of the American Geophysical Union (AGU) and served as Editor for Water Resources Research (AGU, 2012-2017). He has worked as consultant to the World Bank, United Nations, and other international agencies. Before joining the faculty of the University of Illinois in 2003, Professor Cai was Research Fellow at the International Food Policy Research Institute (IFPRI) and International Water Management Institute (IWMI). He holds B.S. in Water Resources Engineering (1990) and M.S. in Hydrology and Water Resources (1994) from Tsinghua University, China, and Ph.D. in Civil Engineering (1999) from the University of Texas at Austin.

Water Resources Planning and Management Council Service to the Profession

This award recognizes and honors a person for outstanding leadership, activities, and achievement in service to the profession in the field of water resources planning through the institute, councils, local sections, or other organizational units of the society.



David Rosenberg, Ph.D., M.ASCE

I am a professor at Utah State University. I hold a joint appointment in the Department of Civil and Environmental Engineering and Utah Water Research Lab. I am grateful for the many people who provided mentorship and guidance so I can get to the point to receive this award for service to our profession. Presently my research goal is to make systems research more actionable. In my group's work we synthesize across disciplines. We work in the Colorado River Basin, Lake Urmia in Iran, Utah, and other western states at scales from seconds (toilet flushes, irrigation events, and water use reduction) to millennia (tree rings and more arid). We adapt management to changing conditions. We twine tools and processes to use tools. We engage parties early. We seek to change our research culture so we and more of our colleagues publicly share data, code, models, and directions to reproduce results. Want to see more? Click over to <http://rosenberg.usu.edu>.

*Journal of Water Resources Planning and Management**Best Research Oriented Paper***Seyed Mohammad Hassan Erfani, S.M.ASCE****Erfan Goharian, Ph.D., EIT, A.M.ASCE**

"ATeX:A Benchmark for Image Classification of Water in Different Waterbodies Using Deep Learning Approaches," Journal of Water Resources Planning and Management, Volume 148, Issue 11, 2022

Reproducibility Author Award

Camilo J. Bastidas Pacheco, Aff.M.ASCE
Nour A. Attallah, Ph.D., A.M.ASCE

Jeffery S. Horsburgh, Ph.D., Aff.M.ASCE

"Variability in Consumption and End Uses of Water for Residential Users in Logan and Providence, Utah, US," Journal of Water Resources Planning and Management, Volume 149, Issue 1, 2022

*Reproducibility Associate Editor Award***Adel M. Abdallah, D. Eng.***Quentin Martin Best Practice Oriented Paper*

Jinwen Wang, Ph.D.
Shuangquan Liu

Hao Zheng
Huan Chen

Cheng Chen, Ph.D.
Ran Liu

"How the Cooperation between Reservoir Operation and Unit Commitment Can Reduce Scheduled Spillages," Journal of Water Resources Planning and Management, Volume 148, Issue 7, 2022

Best Policy Oriented Paper

Bingyao Zhang, Ph.D. Candidate
Guangtao Fu, Ph.D.

Yu Li, Ph.D.
Chi Zhang, Ph.D.

Tingju Zhu, Ph.D., A.M.ASCE
Mengqiao Xu, Ph.D.

"Basin-Wide Water Resources Management Strategies Improve Cooperation Effectiveness and Benefits," Journal of Water Resources Planning and Management, Volume 148, Issue 5, 2022

*Seminal Paper***Malin Falkenmark, Ph.D.****Johan Rockström, Ph.D.**

"The New Blue and Green Water Paradigm: Breaking New Ground for Water Resources Planning and Management," Journal of Water Resources Planning and Management, Volume 132, Issue 3, 2006

*Best Associate Editor***Lina Sela, Ph.D.**

Best Reviewer (Journal of Water Resources Planning and Management (Continued))

Jorge E. Pesantez, Ph.D.

Kevin Lansey, Ph.D., M. ASCE

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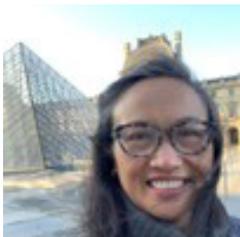
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