

Using 21st Century Technology to Better Manage Irrigation Water Supplies

*Seventh International Conference
on Irrigation and Drainage*

Pre-Conference Workshop — WinFlume



USCID

The U.S. society for irrigation and drainage professionals

*Cooperating Organization —
Environmental and Water Resources Institute
American Society of Civil Engineers*

**April 15-19, 2013
Phoenix, Arizona**

Program

Monday, April 15

12:00 noon - 1:00 p.m. **Registration**

1:00 p.m. - 5:30 p.m. **Workshop on WinFlume**

Moderator — **Albert J. Clemmens**, WEST Consultants, Inc., Tempe, AZ

Tuesday, April 16

7:00 a.m. - 5:30 p.m. **Registration**

8:00 a.m. - 11:30 a.m. **Field Tour**

The tour will visit the Salt River Project's Arizona Falls and the Arizona Canal at Scottsdale Waterfront.

10:00 a.m. - 11:00 a.m. **Speaker Workshop**

10 Do's and Don'ts for USCID Presentations: A Practical Guide for Improving Your PowerPoint Slides and Talks

Laura A. Schroeder, Schroeder Law Offices, Portland, OR

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — USCID President

Keynote Speaker — **Gao Zhany**, President, International Commission on Irrigation and Drainage; China Institute of Water Resources and Hydropower Research, Beijing, China

1:30 p.m. - 3:00 p.m. **Plenary Session I**

Moderator — **Brian T. Wahlin**, Conference Chairman and WEST Consultants, Inc., Tempe, AZ

Colorado River Basin Study

Terry Fulp, Lower Colorado Region, Bureau of Reclamation, Boulder City, Nevada

Salt River Project Update

Nina Mullins, Senior Director of Shareholder Operations, Salt River Project, Phoenix, AZ

The San Joaquin Valley: 20 Years Later

James E. Ayars, USDA-ARS, Parlier, CA; **Blaine R. Hanson**, University of California, Davis, CA; and **Bakhodir Mirzaev**, UNDP, Tashkent, Uzbekistan

3:00 p.m. - 3:30 p.m. **Break**

3:30 p.m. - 5:00 p.m. **Panel Discussion — Irrigation Delivery System Reliability**

Moderator — **Albert J. Clemmens**

5:00 p.m. - 5:30 p.m. **Meet the Exhibitors**

5:30 p.m. - 7:30 p.m. **Networking Reception and Exhibition**

Wednesday, April 17

7:00 a.m. - 5:30 p.m. **Registration**

7:00 a.m. - 8:00 a.m. **Continental Breakfast in Exhibit Hall**

8:00 a.m. - 10:00 a.m. **Plenary Session II**

Moderators — **Lauren C. Ploeger**, Franson Civil Engineers Inc., American Fork, UT; and **Nelson W. Plummer**, Water Resources Consultant, Scottsdale, AZ

Conjunctive Use Enhancements for Regional Water Management

Marc Rozman, GEI Consultants, Inc., Glendale, CA; **Dana Munn**, North Kern Water Storage District, Bakersfield, CA; **Isela Medina**, GEI Consultants, Inc., Bakersfield, CA; **Susan Ngo**, GEI Consultants, Inc., Glendale, CA; **Mark Hargrove**, GEI Consultants, Inc., Rancho Cordova, CA; **Samuel Schaefer**, GEI Consultants, Inc., Santa Barbara, CA; and **Teddy Huang**, GEI Consultants, Inc., Glendale, CA

Validation of a Decision Support System for Improving Irrigation System Performance

Kristoph-Dietrich Kinzli, Florida Gulf Coast University, Fort Myers, FL; **David Gensler**, Middle Rio Grande Conservancy District, Albuquerque, NM; **Ramchand Oad**, Colorado State University, Fort Collins, CO; and **Nabil Shafike**, New Mexico Interstate Stream Commission, Albuquerque, NM

On-Farm Strategies for Regulated Deficit Irrigation to Maximize Operational Profit Potential

Stephen W. Smith, Regenes Management Group, Fort Collins, Colorado

Analysis of Water Resource Networks Using Parallel Coordinates

Leah Meeks and **David E. Rosenberg**, Utah State University, Logan, UT

10:00 a.m. - 10:30 p.m. **Break in Exhibit Hall**

10:30 a.m. - 12:00 noon **Plenary Session II — (continued)**

Rapid Implementation Program (RIP) to Improve Operational Management and Efficiencies in Irrigation Districts in Iraq

Gabriele Bonaiti and **Guy Fipps**, Texas A&M University, College Station, TX

Benefits of Farmer Participation in Irrigation Management: A Case Study of Mavan Network, Fars Province, Iran

Mohammad Gharesifard, Asmari Consulting Engineers, Shiraz, Iran

Impacts of Climate Change and Human Interventions on Lower Indus Basin

Khero Zarif and **Memon Mansoor**, Government of Sindh, Pakistan; and **Bakhshal Lashari**, Mehran University of Engineering and Technology, Sindh Pakistan

12:00 noon - 1:15 p.m. **Buffet Lunch in Exhibit Hall**

1:30 p.m. - 3:00 p.m. **Concurrent Session 1A — Evapotranspiration**

Moderators — **Bryan P. Thoreson**, Davids Engineering, Inc., Davis, CA; and **Kristoph-Dietrich Kinzli**, Florida Gulf Coast University, Fort Myers, FL

Estimating Crop Water Use with Remote Sensing: Development of Guidelines and Specifications

Hatim M. E. Geli and **Christopher M. U. Neale**, Utah State University, Logan, UT; **James Verdin**, USGS EROS Center, Sioux Falls, SD; and **Gabriel Senay**, NOAA/ESRL, Boulder, CO

Soil Scouts: Wireless Underground Soil Sensor Nodes

M. Johannes Tiusanen, University of Helsinki and Kuokka Agro Innovations, Ulvila, Finland

Role of Hot and Cold Pixel Concept in Remote Sensing Based Single Source Surface Energy Algorithms

George Paul, Kansas State University, Manhattan, KS; **Prasanna H. Gowda**, USDA-ARS, Bushland, TX; **P.V. Vara Prasad**, Kansas State University, Manhattan, KS; **Terry A. Howell**, USDA-ARS, Bushland, TX; **Robert M. Aiken** and **Stacy L. Hutchinson**, Kansas State University, Manhattan, KS; and **Christopher M.U. Neale**, Utah State University, Logan, UT

1:30 p.m. - 3:00 p.m. **Concurrent Session 1B — Water Quality**

Moderators — **James E. Ayars**, USDA-ARS, Parlier, CA; and **Samuel W. Schaefer**, GEI Consultants, Inc., Santa Barbara, CA

Improve Water Quality Monitoring by Using Electrical Conductivity as a Surrogate

Xinhua Jia, North Dakota State University, Fargo, ND

Grassland Bypass Project Treatment Techniques for Reduction of Salt Discharge to the San Joaquin River

Joseph C. McGahan, Summers Engineering, Inc., Hanford, CA; and **Dennis Falaschi**, Panoche Drainage District, Firebaugh, CA

Spatial and Temporal Distribution of Drainage and Solute Leaching in the Heterogeneous Urban Landscape Vegetation

Hamideh Nouri, **Simon Beecham** and **Ali Morad Hassanli**, University of South Australia, Adelaide, Australia

3:00 p.m. - 3:30 p.m. **Break in Exhibit Hall**

3:30 p.m. - 5:30 p.m. **Concurrent Session 1A — Evapotranspiration (continued)**

Evaluating the Performance of SEBAL ET Algorithm Under Advective Conditions

Mcebisi M. Mkhwanazi, **José L. Chávez** and **Allan A. Andales**, Colorado State University, Fort Collins, CO

Remote Sensing of Evapotranspiration and Root Zone Water Balance Modeling to Estimate Groundwater Extraction in the Kaweah River Delta of California

Byron Clark, Davids Engineering, Inc. and SEBAL North America, Inc., Davis, CA; **Lindsay Hall**, Davids Engineering, Inc., Davis, CA; **Larry Dotson**, Kaweah Delta Water Conservation District, Farmersville, CA; and **Grant Davids**, Davids Engineering, Inc. and SEBAL North America, Inc., Davis, CA

Estimating the Evapotranspiration of Urban Landscape Plants Using a Remotely-Sensed Vegetation Index

Hamideh Nouri, **Simon Beecha**, **David Bruce** and **Sharolyn Anderson**, University of South Australia, Adelaide, Australia

Estimation of Olive Evapotranspiration for a Drip-Irrigated Orchard Using Multispectral Satellite Images

S. Ortega-Farias, **R. Aguilar**, **Daniel de la Fuente**, **S. Ortega-Salazar**, **Fernando Fuentes** and **C. Poblete-Echeverría**, University of Talca, Chile

3:30 p.m. - 5:00 p.m. **Concurrent Session 1B — Water Quality (continued)**

The Role of Agriculture in Atmospheric Nitrogen Deposition in the Chesapeake Bay Watershed

William F. Ritter, University of Delaware, Newark, DE

The Use of Recycled Water for Irrigation of Turf and Landscape Plants: A Comparison of the Current State Regulations for Water Reuse

Anastasia E. M. Chirnside and **Stephanie Hahn**, University of Delaware, Newark, DE

Estimating Crop Water Use and Production of Deficit Irrigated Crops

Thomas J. Trout, USDA-ARS, Fort Collins, CO

Potential Nutrient Trading in the Chesapeake Bay Watershed To Meet TMDL Nutrient Load Reductions

William F. Ritter, University of Delaware, Newark, DE

6:30 p.m. - 7:00 p.m. **Reception**

7:00 p.m. - 9:30 p.m. **Dinner with Speaker**

Moderator — USCID President

Speaker — **George Seperich**, Arizona State University, Tempe, AZ

Thursday, April 18

7:00 a.m. - 5:00 p.m. **Registration**

7:00 a.m. - 8:00 a.m. **Continental Breakfast and Poster Session**

Evaluation of Surge Irrigation in the Lower Rio Grande Valley of Texas

H. Perea, Texas A&M AgriLife Research Center, Weslaco, TX; **E. Bautista**, USDA-ARS, Maricopa, AZ; **J. Enciso**, Texas A&M AgriLife Research Center, Weslaco, TX; **T. McLemore**, Harlingen Irrigation District, Weslaco, TX; and **S. Nelson**, Texas A&M University-Kingsville, Kingsville, TX

Event-Driven Hierarchical Control of Irrigation Canals

Anna Sadowska, **Bart De Schutter** and **Peter-Jules van Overloop**, Delft University of Technology, Delft, The Netherlands

8:00 a.m. - 10:00 a.m. **Concurrent Session 2A — Flood Control**

Moderators — **George V. Sabol**, Stantec Consulting, Inc., Phoenix, AZ; and **Yvonne Reinick**, Salt River Project, Phoenix, AZ

What Happens if the Canal Breaks? Tools for Estimating Canal-Breach Flood Hydrographs

Tony L. Wahl, Bureau of Reclamation, Denver, CO

GIS-Based Approach for Sediment Yield Calculations Using a Two-Dimensional Hydrologic/Hydraulic Model

Arban Londo and **Michael Gerlach**, Stantec Consulting, Inc., Phoenix, AZ; and **Shimin Li**, Flood Control District of Maricopa County, Phoenix, AZ

Hurricane Katrina and its Impacts to the Middle Rio Grande Region of New Mexico

Subhas K. Shah and **Ray Gomez**, Middle Rio Grande Conservancy District, Albuquerque, NM; and **Kristoph Kinzli**, Florida Gulf Coast University, Fort Myers, FL

Unique Methodology for Determining Ponding Floodplains Along Irrigation Canal Embankments

Brian Wahlin, WEST Consultants, Inc., Tempe, AZ; **Kathryn Gross**, Flood Control District of Maricopa County, Phoenix, AZ; and **Brent Travis** and **Riley Asburry**, WEST Consultants, Inc., Tempe, AZ

8:00 a.m. - 10:00 a.m. **Concurrent Session 2B — New Technology and Flow Measurement**

Moderators — **Randy Hopkins**, Provost & Pritchard Consulting Group, Clovis, CA; and **Vic DeGrande**, NOV Ameron, Phoenix, AZ

Mobile Canal Control, an Automatic Administration System for Manual Canal Operations Using Smart-Phone TECHNOLOGY

Peter-Jules van Overloop, **Rick Kuijten**, **Wouter Jan Klerk** and **Meinte Vierstra**, Delft University of Technology, Delft, The Netherlands

Regulating Reservoir and Lateral Improvements Result in Spillage Reduction

Bryan Thoreson, Davids Engineering, Inc., Davis, CA; and **Rick Massa**, Orland Water Users Association, Orland CA

GateKeeper: Salt River Project's Automated Gate Position and Flow Controller

Jamie Ashby, Salt River Project, Phoenix, AZ

Development of a Web-based GIS Management System for Agricultural Authorities in Iraq

Gabriele Bonaiti, **Dave Flahive** and **Guy Fipps**, Texas A&M University, College Station, TX

10:00 a.m. - 10:30 a.m. **Break with Poster Papers**

10:30 a.m. - 12:00 noon **Concurrent Session 2A — Technology**

Potential Savings of Water and Nutrients for the Bear River Canal Company

Jonna van D. Opstal and **Christopher M.U. Neale**, Utah State University, Logan, UT

Using 21st Century Technology to Grow One of the Earth's Most Renewable Resources — Trees, on 10,440 Hectares of Drip Irrigated Tree Farm

Nabil Mohamed, Greenwood Resources, Boardman, OR

Development of Fertigation Strategies: Modeling and Field Experiment

Eduardo Bautista, **Clinton Williams**, **Kevin Bronson**, **Theodor Strelkoff** and **Douglas Hunsaker**, USDA-ARS, Maricopa, AZ

10:30 a.m. - 12:00 noon **Concurrent Session 2B — New Technology and Flow Measurement (continued)**

"Spot" Measurements of Flow Rate Can Be "Good Enough" for California's Heightening Agricultural Measurement Requirements

Jeffrey C. Davids, H2oTech|RemoteTracker, Chico, CA; **Ryan Manes**, Manes Engineering, Chico, CA; **Sean P. Early**, Richvale Irrigation District, Richvale, CA; and **Lewis E. Bair**, Reclamation District No. 108, Grimes, CA

Discharge Measurements and Parshall Flume Rating Performance: The Colorado Experience

Thomas W. Ley, **Russell V. Stroud**, **Lee Cuning**, **Bill Tyner**, **Cheston Hart**, **Scott Veneman**, **Andrea Taillacq**, **Jerry Thrush**, **Craig Bruner**, **Dan Meyer**, **Brian Boughton** and **Phil DeArcos**, Colorado Division of Water Resources, Pueblo, CO

Influence of Side Contraction on Long-Throated Flume Calibration

Guanghua Guan and **Changde Wang**, Wuhan University, Wuhan, China; and **A. J. Clemmens**, WEST Consultants, Inc., Tempe, AZ

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — Representative, EWRI, ASCE

Program — ASCE Royce Tipton Award and Lecture

1:30 p.m. - 3:00 p.m. **Concurrent Session 3A — Evapotranspiration**

Moderators — **Thomas W. Ley**, Colorado Division of Water Resources, Pueblo, CO; and **Saleh Taghvaeian**, Colorado State University, Fort Collins, CO

Drip Irrigation Impacts on Evapotranspiration Rates in California's San Joaquin Valley

Bryan Thoreson, Davids Engineering, Inc., Davis, CA; **Deepak Lal**, SEBAL North America, Inc. Davis, CA; and **Byron Clark**, Davids Engineering, Inc., Davis, CA

Irrigation-Induced Changes to the Near Surface Hydrometeorology for Sustainable Water Management

V. Sridhar, **W.T.A. Jaks** and **Korri Anderson**, Boise State University, Boise, ID

Corn Water Stress Thermography: Potentials and Limitations

Saleh Taghvaeian and **José L. Chávez**, Colorado State University, Fort Collins, CO; **Jon Altenhofen**, Northern Colorado Water Conservancy District, Berthoud, CO; and **Tom Trout** and **Kendall DeJonge**, USDA-ARS, Fort Collins, CO

1:30 p.m. - 3:00 p.m. **Concurrent Session 3B — New Technology and Flow Measurement**

Moderators — **Allbert J. Clemmens**, WEST Consultants, Inc., Tempe, AZ; and **Robert S. Gooch**, Salt River Project, Phoenix, AZ

Updates on Methodologies to Evaluate Irrigation Canal Lining

Gabriele Bonaiti and **Guy Fipps**, Texas A&M University, College Station, TX

The Use of Low Cost Pneumatic Sensors for Water Level Detection in Permanent Stream Gauge Stations

Kristoph-Dietrich Kinzli, Florida Gulf Coast University, Fort Myers, FL; and **David Gensler** and **Matthew Martinez**, Middle Rio Grande Conservancy District, Albuquerque, NM

Using Wireless Networking and Remote Sensor Monitoring in Pivot Irrigation

Dan Steele, FreeWave Technologies, Inc., Boulder, CO

3:00 p.m. - 3:30 p.m. **Break with Poster Papers**

3:30 p.m. - 5:30 p.m. **Concurrent Session 3A — Evapotranspiration (continued)**

Global Sensitivity Analysis of Weather Sensor Accuracy for Reference Evapotranspiration Estimation

Kendall DeJonge, USDA-ARS, Fort Collins, CO

Development and Distribution of Crop Coefficients via Remote Sensing in California's San Joaquin Valley

Byron Clark and **Deepak Lal**, SEBAL North America, Inc., Davis, CA; **Kris Lynn-Patterson**, University of California, Parlier, CA; **Blake Sanden**, University of California, Bakersfield, CA; and **Bryan Thoreson**, SEBAL North America, Inc., Davis, CA

Microclimate Effects of Urban-Fringe Irrigated Agriculture in a Desert Environment

Zohrab Samani, **Rhonda Skaggs** and **Bradley Griggs**, New Mexico State University, Las Cruces, NM

Applications of ET Remote Sensing in Colorado

Luis A. Garcia, Colorado State University, Fort Collins, CO

3:30 p.m. - 5:30 p.m. **Concurrent Session 3B — New Technology and Flow Measurement (continued)**

Automated Surface Irrigation

Tom Gill and **Dale Lentz**, Bureau of Reclamation, Denver, CO; and **Khaled Bali**, Cooperative Extension Imperial County, Holtville, CA

Verifying Conservation Estimates for On-Farm Agricultural Water Conservation Programs

Ana Ramirez, University of Texas, Austin, TX; **Stacy Pandey**, Lower Colorado River Authority, Austin, TX; and **David Eaton**, University of Texas, Austin, TX

On-Farm Irrigation Efficiency in New Mexico's Lower Rio Grande

Rasool Ahadi, **Zohrab Samani** and **Rhonda Skaggs**, New Mexico State University, Las Cruces, NM

Unique Replogle Flume Installations at the Truckee Carson Irrigation District

Stuart W. Styles, Irrigation Training and Research Center, San Luis Obispo, CA

Friday, April 19

8:00 a.m. - 5:00 p.m. **Field Tour**

This day-long tour will feature a visit to the San Carlos Irrigation Project.

(Updated February 3, 2013)