SECOND CONFERENCE ON
Water Resource Sustainability
Issues on Tropical Islands
Hilton Hawaiian Village Hotel
Honolulu, Hawaii

ORGANIZED AND SPONSORED BY
Water Resources Research Center
University of Hawaii at Manoa
Water and Environmental Research Institute of the Western Pacific
University of Guam
Puerto Rico Water Resources and Environmental Research Institute
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Virgin Islands Water Resources Research Institute
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Geology & Geophysics, University of Hawaii at Manoa
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USGS Pacific Islands Water Science Center, Honolulu, Hawaii
United States Geological Survey
Dear Conference Participant:

Aloha!

On behalf of the sponsors and the Technical Advisory Committee, I would like to welcome you to the 2015 Second Conference on Water Resource Sustainability Issues on Tropical Islands. Island communities are faced with a unique set of environmental and cultural issues pertinent to the management of water resources. Fresh water resources are under threat on many islands as the result of both overuse and contamination. Ocean waters in these tropical regions are ecologically sensitive and valuable, and similarly threatened by pollution. On some islands, sea level rise is degrading groundwater resources.

Most island communities are heavily dependent on importing essentials, such as food, fuel, and manufactured goods to satisfy their resource needs. In addition, population growth is putting increasing pressure on water resources. It is imperative that these threats to the welfare of island communities be addressed by sound scientific research before they reach crisis proportions. To prevent water shortages, sustainable management and protection of island water supplies is even more critical than it is on the continents, as island communities have no water resources for importation. Those tasked with resource protection and management need access to scientifically sound research that is specific to island environments.

The above issues are universal to island states, yet researchers in these far-flung and isolated places seldom have the opportunity to share knowledge and experience with one another, as they mainly work in isolation. The great distance that separates most island states from the larger centers of academia and government means that there is a less frequent exchange between researchers on the islands and their colleagues in the major population centers. Enhanced communication and collaboration between island researchers can provide a vital, synergistic link, which will strengthen all research programs. It is a truism that the greatest scientific advances usually result from a collaboration of researchers working together.

This meeting is divided into sessions covering a wide range of critical issues related to water resources sustainability, water quality, climate change and its impacts on water resources, water resources exploration, protection strategies for water resources, managing water demands and supplies, and coastal groundwater. Please take time to view the poster presentations that will be on display Day 2, December 2. The authors will be available to entertain your questions during the reception starting at 5:00 pm.

Finally, I wish to thank the sponsors and co-sponsors of this conference, and the technical advisory and organizing committees. I also wish to express my appreciation for the great help received from the WRRC staff and students.

Mahalo, and I hope you enjoy what I expect to be a very strong program and that the conference will be a great start for future collaboration.

Aly I. El-Kadi
Conference Chairman
ACKNOWLEDGMENTS

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University of the Virgin Islands (http://www.uvi.edu/research/water-
resources-research-institute/default.aspx)

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TECHNICAL ADVISORS
Aly I. El-Kadi, Associate Director, WRRC; Professor, Dept. of
Geology & Geophysics, SOEST, UHM
Stephen Anthony, Director, USGS Pacific Islands Water Science
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Tim Bodell, American Samoa EPA
Roger Fujioka, former Director, WRRC; Professor Emeritus,
School of Public Health, UHM
Earl Greene, Chief, Office of External Research, USGS
Shahram Khosrowpanah, Director, Water and Environmental
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Darren T. Lerner, Interim Director, WRRC; Director, Sea Grant
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Walter F. Silva-Araya, Associate Director, Puerto Rico Water
Resources and Environmental Research Institute
Henry Smith, Former Director, Virgin Islands Water Resources
Research Institute
Kristin Wilson Grimes, Director, Virgin Islands Water Resources
Research Institute

SESSION CHAIRS
Stephen Anthony, Director, USGS Pacific Islands Water Science
Center, Honolulu, Hawaii
Roger Fujioka, WRRC; School of Public Health, UHM
Earl Greene, Chief, Office of External Research, USGS
Shahram Khosrowpanah, Director, Water and Environmental
Research Institute of the Western Pacific, University of Guam
Darren T. Lerner, Interim Director, WRRC; Director, Sea Grant
College Program, UHM
Philip Moravcik, WRRC, UHM
Jorge Rivera-Santos, Director, Puerto Rico Water Resources and
Environmental Research Institute
Henry Smith, Former Director, Virgin Islands Water Resources
Research Institute

Support Staff
Enji El-Kadi April Kam
Barbara Guieb Kevin Nishimura
Patricia Hirakawa

Abbreviations:
EPA Environmental Protection Agency
DLNR Department of Land and Natural Resources
PIWSC Pacific Islands Water Science Center
SOEST School of Ocean and Earth Science and Technology
UHM University of Hawaii at Manoa
USGS United States Geological Survey
WERI Water and Environmental Research Institute of the
Western Pacific
WRRC Water Resources Research Center
## Tuesday, December 1, 2015  ■  (presenters are highlighted in bold)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>07:00 – 09:00</td>
<td>Registration / Continental Breakfast</td>
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<tr>
<td>08:00 – 09:30</td>
<td>Welcome/Introductions by Conference Chair Aly I. El-Kadi</td>
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<tr>
<td></td>
<td>– Video welcome from Hawaii Senator Mazie Hirono</td>
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<tr>
<td></td>
<td>– Presentations by Earl Greene (USGS) and Center/Institute Directors</td>
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<tr>
<td></td>
<td>(Shahram Khosrowpanah, Jorge Rivera-Santos, Kristin Wilson Grimes,</td>
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<tr>
<td></td>
<td>and Darren Lerner)</td>
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<tr>
<td></td>
<td>– Panel discussion by Center/Institute Directors, Earl Greene (USGS),</td>
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<tr>
<td></td>
<td>Stephen Anthony (USGS PIWSC), and David Sumner (USGS Caribbean-</td>
</tr>
<tr>
<td></td>
<td>Florida Water Science Center)</td>
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</table>

### SESSION A • Sustainability Groundwater and Watershed Studies, Part 1 — Session Chair: Henry Smith

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Exploring Best-Practice Capacities of the Northern Guam Lens Aquifer.</td>
</tr>
<tr>
<td>09:55 – 10:20</td>
<td>Delwyn S. Oki. Unraveling the Role of Deep Groundwater Circulation</td>
</tr>
<tr>
<td></td>
<td>on the Coastal Freshwater-Lens System of Kona, Hawai‘i Island.</td>
</tr>
<tr>
<td>10:20 – 10:45</td>
<td>Paula A. Cutillo. Determining Groundwater Sustainability—A Public-</td>
</tr>
<tr>
<td></td>
<td>Trust Resource Perspective.</td>
</tr>
<tr>
<td>10:45 – 11:00</td>
<td>Break</td>
</tr>
</tbody>
</table>

### SESSION B • Water Resources Exploration — Session Chair: Darren Lerner

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>11:00 – 11:25</td>
<td>Susan S. Hubbard (invited), Haruko Wainwright, Anh Phuong Tran,</td>
</tr>
<tr>
<td></td>
<td>Craig Ulrich, Michael Commer, and Baptiste Dafflon. Next-Generation</td>
</tr>
<tr>
<td></td>
<td>Geophysical Characterization of Watersheds.</td>
</tr>
<tr>
<td>11:25 – 11:50</td>
<td>Donald M. Thomas, Robert B. Whittier, and Nicole Lautze.</td>
</tr>
<tr>
<td></td>
<td>Recent Findings of the Humu‘ula Groundwater Research Project and</td>
</tr>
<tr>
<td></td>
<td>Implications for Groundwater Modeling.</td>
</tr>
<tr>
<td>11:50 – 12:15</td>
<td>J. Lelemia Irvine and Oceana P. Francis. Island Sustainability—</td>
</tr>
<tr>
<td></td>
<td>Rooftop Rainwater Harvesting Study for Moku-o-Lo’e, O‘ahu, Hawai‘i</td>
</tr>
<tr>
<td></td>
<td>Islands.</td>
</tr>
<tr>
<td>12:15 – 13:15</td>
<td>Lunch</td>
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</tbody>
</table>

### SESSION C • Protection Strategies for Island Watersheds and Aquifers — Session Chair: Jorge Rivera-Santos

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>13:15 – 13:40</td>
<td>Chittaranjan Ray (invited). Understanding the Fate of Chemicals in</td>
</tr>
<tr>
<td></td>
<td>Tropical Environments Site to Regional Scales.</td>
</tr>
<tr>
<td>13:40 – 14:05</td>
<td>Shahram Khosrowpanah, Mark Lander, Sydonia Manibusan, Bill Whitman,</td>
</tr>
<tr>
<td></td>
<td>and John Jocson. Watershed Management: Ugum, Piti-Asan, Geus</td>
</tr>
<tr>
<td></td>
<td>Watershed.</td>
</tr>
<tr>
<td>14:05 – 14:30</td>
<td>Scot K. Izuka. Assessing Groundwater Availability in Hawai‘i’s</td>
</tr>
<tr>
<td></td>
<td>Diverse Hydrogeologic Settings.</td>
</tr>
<tr>
<td>14:30 – 14:55</td>
<td>Mohammad H. Golabi and Sydonia Manibusan. In Situ Monitoring of</td>
</tr>
<tr>
<td></td>
<td>Watershed Following ‘Revegetation’ Efforts for Reducing Sedimentation</td>
</tr>
<tr>
<td></td>
<td>and Improving Water Quality in the Micronesian Island of Rota, CNMI.</td>
</tr>
<tr>
<td></td>
<td>Kaelepu: An Investigation of Flow Restoration, Mixing and Exchange</td>
</tr>
<tr>
<td></td>
<td>in an Urbanized Estuary to Help Define Restoration Alternatives.</td>
</tr>
<tr>
<td>15:20 – 15:35</td>
<td>Break</td>
</tr>
</tbody>
</table>

### SESSION C • Continued — Session Chair: Jorge Rivera-Santos

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:35 – 16:00</td>
<td>Donald E. Heacock and Michael H. Kido. Restoring Ecological</td>
</tr>
<tr>
<td></td>
<td>Integrity in Hawaiian “Mountain-to-Sea” Environments.</td>
</tr>
</tbody>
</table>

### SESSION D • Water Quality: Application of Technology and Adaptive Management — Session Chair: Roger Fujioka

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:25 – 16:50</td>
<td>Joseph D. Rouse. Studies of Enhancement of Sewage Treatment and</td>
</tr>
<tr>
<td></td>
<td>Composting of Sludge on Yap Island.</td>
</tr>
<tr>
<td>16:50 – 17:15</td>
<td>Amanda L. Cording and Stephanie E. Hurley. Adapting Bioretention</td>
</tr>
<tr>
<td></td>
<td>(Rain Garden) Designs to Maximize Nutrient and Sediment Pollution</td>
</tr>
<tr>
<td></td>
<td>Removal from Stormwater.</td>
</tr>
</tbody>
</table>
### Wednesday, December 2, 2015

07:00 – 09:00  Registration / Continental Breakfast

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**SESSION E • Water Quality: Surface Water — Session Chair: Roger Fujioka**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>Stanley B. Grant (invited)</td>
<td>From Rain Tanks to Catchments: Use of Low-Impact Development to Address Hydrologic Symptoms of the Urban Stream Syndrome.</td>
</tr>
</tbody>
</table>

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**SESSION F • Water Quality: Outreach and Education — Session Chair: Roger Fujioka**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:45</td>
<td>Mary J. Donohue, Chantal Chung, Matthew J. Gonser, and Patricia Macomber</td>
<td>Increasing Access to Safe Drinking Water for Rural Hawai’i Island Communities Utilizing Rainwater Catchment.</td>
</tr>
</tbody>
</table>

10:10 – 10:25  Break

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**SESSION G • Climate Change and Variability and Impacts on Water Resources, Part 1 — Session Chair: Stephen Anthony**

<table>
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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:25</td>
<td>Charles Fletcher (invited), Tiffany Anderson, and Matthew Barbee</td>
<td>Sea Level Rise Impacts in Hawaii.</td>
</tr>
<tr>
<td>10:50</td>
<td>Pao-Shin Chu, Chris O’Conner, Pang-Chi Hsu, and Kevin Kodama</td>
<td>Variability of Hawaiian Winter Rainfall During La Niña Events.</td>
</tr>
</tbody>
</table>

12:05 – 13:30  Lunch/Speaker: Senator Thomas Ada (invited)

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**SESSION H • Coastal Groundwater — Session Chair: Shahram Khosrowpanah**

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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30</td>
<td>Clare Robinson (invited)</td>
<td>Impact of Waves and Tides on Coastal Groundwater Dynamics and Pollutant Discharge to the Sea.</td>
</tr>
<tr>
<td>13:55</td>
<td>Isaac Santos (invited)</td>
<td>Tropical Islands as Submarine Groundwater Discharge Hotspots.</td>
</tr>
<tr>
<td>14:45</td>
<td>Craig R. Glenn, Joseph J. Kennedy, Henrietta Dulai, Paul G. Lucey, Jacque L. Kelly, and Joseph K. Fackrell</td>
<td>Coupling Aerial Infrared Imaging from Aircraft and Drone with Radon Time Series for Mapping and Quantifying Groundwater and Nutrient Discharge from Coastal Aquifers.</td>
</tr>
</tbody>
</table>

15:10 – 15:25  Break

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**SESSION I • Water Quality: Groundwater and Surface Water — Session Chair: Roger Fujioka**

<table>
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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:50</td>
<td>Eric Heinen De Carlo, Nathan Klinkhammer, Gary Klinkhammer, Chris Russo, and Randy Bremer</td>
<td>Use of an Automated Device Based on Zero Angle Photon-Spectroscopy (ZAPS) for Real-Time Monitoring of Biological and Chemical Pollutants of the Ala Wai Marina, Honolulu, Hawaii.</td>
</tr>
</tbody>
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**SESSION J • Sustainability Groundwater and Watershed Studies, Part 2 — Session Chair: Henry Smith**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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**SESSION P • Poster Session — Session Chair: Philip Moravcik**

17:05 – 19:00  Poster Session (see “Posters” section for details) / Reception
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<td>Registration / Continental Breakfast</td>
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<tr>
<td>10:10 – 10:25</td>
<td>Break</td>
</tr>
<tr>
<td>11:40 – 12:05</td>
<td>L. Stephen Lau (invited) and Ronald D.S. Lau. Historical Episodes of Water Sustainability in Hawai’i.</td>
</tr>
<tr>
<td>12:05 – 13:30</td>
<td>Lunch/Speaker: Josh Stanbro (invited)</td>
</tr>
<tr>
<td>15:10 – 15:25</td>
<td>Break</td>
</tr>
</tbody>
</table>
SESSION P-1: Sustainability (presenters are highlighted in bold)
- John Jun Dai and Clark C.K. Liu. RAM, RAM2, and What’s Next?
- Christopher Holloway and Pao-Shin Chu. Assessment of CMIP5 Ensemble’s Initial Conditions Used for Dynamical Downscaling Over Oahu, Hawaii.
- Jason Knoche, Joe Mcclure, and Dan Clegg. Reducing Irrigation Overuse Through Research into Precision Irrigation.
- Jason Levy and Peiyong Yu. Advances in Game-Theoretic Modeling for Disaster Risk Reduction Under Conditions of Climate Change in the Pacific Island Region.
- Ross Prizzia and Jason Levy. Interdisciplinary Hydro-Meteorological Disaster Resilience Education: The Disaster Preparedness and Emergency Management Program.
- Félix R. Román, José López-Morales, and Oscar Perales-Pérez. Recycled Tire Crumb Rubber to Remove Emerging Contaminants and Halogenated Organic Compounds from Water.
- Kevin Trick and David B. Field. Determining the Effect of Large-Scale Climate on Rainfall Variability of the Main Hawaiian Island.
- Peiyong Yu and Jason Levy. GIS and Semiparametric Analysis of the Effects of Wetland on Property Values in Oahu, Hawaii.

SESSION P-2: Water Quality
- Erin Allmann, Zi Wang, Si Sun, Marek Kirs, Mayee Wong, and Yuannan Lu. Monitoring of Hawai‘i’s Beaches Water Quality Using Enteric Viruses as Alternative Indicators.
- Patrick N. Casey. Keaouhu Aquifer Hydrologic Monitoring.
- Steven L. Colbert. Hydrology of Warm Anchialine Ponds at Kapoho, Hawaii.
- Jason Jaskowiak. Modified Leachfield Design for Highly Conductive Volcanic Substrates.
- Clark C.K. Liu and Philip Moravcik. Survey and Modeling Analysis of HDOT MS4 Highway Storm Runoff on Oahu, Hawaii.
- Dayananda Vithanage. Impacts from Current Wastewater Management on Water Resources of Small Islands.
**Mahalo Conference Participants**

### Presenter by Sessions

#### Featured Speakers
- **U.S. Hawaii Senator Mazie Hirono**, Washington, D.C.
- **Senator Thomas Ada**, 33rd Guam Legislature, Hagatna, Guam
- **Josh Stanbro**, Hawaii Community Foundation, Honolulu, HI

#### Session A • Sustainability Groundwater and Watershed Studies, Part 1
- **John Jenson**, Water and Environmental Research Institute of the Western Pacific, University of Guam
- **Delwyn S. Oki**, USGS, PIWSC, Honolulu, HI
- **Paula A. Cutillo**, National Park Service, Water Resources Division, Fort Collins, CO

#### Session B • Water Resources Exploration
- **Susan Hubbard**, Earth and Environmental Sciences, Berkeley Lab, CA
- **Donald M. Thomas**, Hawaii Institute of Geophysics and Planetaryology, UHM
- **J. Leleima Irvine**, Dept. of Civil and Environmental Engineering, UHM

#### Session C • Protection Strategies for Island Watersheds and Aquifers
- **Chittaranjan Roy**, Nebraska Water Center, Robert B. Daugherty Water for Food Institute, University of Nebraska
- **Shahram Khosrowpanah**, WERI, University of Guam
- **Scott K. Izuwa**, USGS, PIWSC, Honolulu, HI
- **Mohammad H. Golabi**, College of Natural and Applied Sciences, University of Guam
- **Robert E. Bourke**, Oceanit Laboratories, Honolulu, HI
- **Donald E. Heacock**, Hawaii Division of Aquatic Resources, DLNR, Lihue, HI
- **Paul J. Kemp**, Guam Waterworks Authority, Mangilao, Guam

#### Session D • Water Quality: Application of Technology and Adaptive Management
- **Joseph D. Rouse**, WERI, University of Guam
- **Amanda L. Cording**, Plant and Soil Science Dept., University of Vermont

#### Session E • Water Quality: Surface Water
- **Stanley B. Grant**, Dept. of Civil and Environmental Engineering, UC Irvine
- **Pedro J. Tarafa**, Dept. of Civil Engineering, University of Puerto Rico

#### Session F • Water Quality: Outreach and Education
- **Ali Fares**, College of Agriculture and Human Science, Prairie View A&M University
- **Mary J. Donahue**, Sea Grant College Program, SOEST, UHM

#### Session G • Climate Change and Variability and Impacts on Water Resources, Part 1
- **Charles Fletcher**, SOEST, UHM
- **Pao-Shin Chu**, Dept. of Atmospheric Sciences, SOEST, UHM
- **Md. Rashed Chowdhury**, Pacific ENSO Applications Climate Center, Joint Institute for Marine and Atmospheric Research, UHM
- **H. Annamalai**, International Pacific Research Center, UHM

#### Session H • Coastal Groundwater
- **Clare Robinson**, Civil and Environmental Engineering, Western University, Canada
- **Isaac Santos**, National Marine Science Centre, Southern Cross University, Australia
- **Henrietta Dulai**, Dept. of Geology & Geophysics, SOEST, UHM
- **Craig R. Glenn**, Dept. of Geology & Geophysics, SOEST, UHM

#### Session I • Water Quality: Groundwater and Surface Water
- **Gary R.W. Denton**, WERI, University of Guam
- **Eric Heinen De Carlo**, Dept. of Oceanography, UHM

#### Session J • Sustainability Groundwater and Watershed Studies, Part 2
- **Marek Kiris**, WRRC, UHM
- **Hla Htun**, Dept. of Natural Resources and Environmental Management, UHM

#### Session K • Sustainability Groundwater and Watershed Studies, Part 3
- **Kolja Rotzoll**, WRRC, UHM
- **Leroy F. Heitz**, WERI, University of Guam
- **Christopher Shuler**, Dept. of Geology & Geophysics, SOEST, UHM

#### Session L • Sustainability Integrated Programs
- **Rafael W. Rodriguez**, USGS Caribbean-Florida Water Science Center, Lutz, FL
- **John Engott**, USGS, PIWSC, Sacramento, CA
- **Melinda Dalton**, USGS, Water Availability and Use Science Program, Norcross, GA
- **Sarah N. Rosa**, USGS, PIWSC, Honolulu, HI
- **L. Stephen Lau**, Dept. of Civil Engineering (Professor Emeritus); WRRC (former Director), UHM
- **Roger Babcock Jr.**, WRRC, UHM
- **Daniele Spirandelli**, Dept. of Urban and Regional Planning, UHM
- **Oscar J. Abelleira Martinez**, Dept. of Agroenvironmental Sciences, University of Puerto Rico
- **Mark Lander**, WERI, University of Guam
- **Olkeba Tolessa Leta**, WRRC, UHM
- **Shellie L. Habel**, Coastal Geology Group, Dept. of Geology & Geophysics, SOEST, UHM
- **Ali Fares**, College of Agriculture and Human Science, Prairie View A&M University
- **Ken Carlson**, Dept. of Civil and Environmental Engineering, Colorado State University
- **John Jun Dai**, Dept. of Civil and Environmental Engineering, UHM
- **Christopher Holloway**, Dept. of Atmospheric Sciences, SOEST, UHM
- **Dan Clegg**, Monsanto Hawaii, Kiehi, HI
- **L. Stephen Lau**, Civil Engineering (Professor Emeritus); WRRC (former Director), UHM
- **Olkeba Tolessa Leta**, WRRC, UHM
- **Jason Levy**, Division of Public Administration, University of Hawaii–West Oahu
- **Ross Prizzi**, Division of Public Administration, University of Hawaii–West Oahu
- **Félix R. Román**, Dept. of Chemistry, University of Puerto Rico
- **David B. Field**, Hawaii Pacific University
- **Yin-Phan Tsang**, Dept. of Natural Resources and Environmental Management, Honolulu, HI
- **Stephen M. Westenbroek**, USGS, Wisconsin Water Science Center, Middleton, WI
- **Peiyong Yu**, Social Science Division, University of Hawaii–West Oahu

#### Session P-1
- **Yuanan Lu**, Dept. of Public Health Sciences, UHM
- **Daniel Amato**, Dept. of Botany, UHM
- **Patrick N. Casey**, State of Hawaii DLNR, Honolulu, HI
- **Steven L. Colbert**, Marine Science Dept., University of Hawaii at Hilo
- **Louise Economy**, Tropical Conservation Biology and Environmental Science Graduate Program, University of Hawaii at Hilo
- **Joseph K. Fackrell**, Dept. of Geology & Geophysics, SOEST, UHM
- **Jason Jaskowiak**, American Samoa Power Authority
- **Seo Jin Ki**, School of Environmental Science and Engineering, Gwangju Institute of Science and Technology, Republic of Korea
- **Philip Moravcik**, WRRC, UHM
- **William H. McDowell**, Dept. of Natural Resources and the Environment and NH WRRC, Durham, NH
- **Marcus Peng**, Dept. of Natural Resources and Environmental Management, UHM
- **Christina M. Richardson**, Dept. of Geology & Geophysics, SOEST, UHM
- **Megan A. Rippy**, Dept. of Civil and Environmental Engineering, University of California
- **Dayananda Vithanage**, Oceanit Laboratories, Inc., Honolulu, HI

---

*Invited speaker.