

Water Resource Sustainability Issues on Tropical Islands

PROGRAM

Monday, November 14, 2011 ■ (presenters are highlighted in bold)

- 07:15 - 08:15 Registration/Continental Breakfast
08:15 - 08:40 Introduction: Conference Chair: **Aly I. El-Kadi**
Center Directors: **Chittaranjan Ray, Gary Denton, Jorge Rivera-Santos and Henry Smith**
08:40 - 08:50 Welcome: **Gary Ostrander**
08:50 - 09:20 Keynote Speaker: **Gary Gill**, Role of Hawaii's Department of Health in Water Protection as a Sustainable Resource
09:20 - 09:50 Keynote Speaker: **Takashi Asano**, The Role of Water Reuse in Water Resources Management

SESSION 1 • Wastewater – Session Chairs: Roger Fujioka and Joanna Seto

- 09:50 - 10:10 **Wojciech M. Jadwisieniczak**, The Current and Future Developments in Deep UV Solid State Technology for Water Purification (invited)
10:10 - 10:25 **Douglas R. Tait**, Dirk V. Erler, Andrew Dakers, Leigh Davidson and Badley D. Eyre, The ecoTrench: A Low Cost, Low Technology On-Site Treatment System for Removing Nutrient in South Pacific Nations
10:25 - 10:40 **Jessie Liu**, Noémi D'Ozouville, Josselin Guyot-Tephany and Delio Sarango, Water Management and Practices: Fecal Contamination of Household Water and Health Outcomes in Santa Cruz Island, Galápagos
10:40 - 10:55 Break
10:55 - 11:10 **Mohammad H. Golabi** and Manuel Duguies, Vetiver Grass System (VGS)—A Green and Low Cost Technology for Small Island's Waste Water Treatment Needs
11:10 - 11:25 **Marek Kirs** and Roger S. Fujioka, Application of Microbial Source Tracking Technologies in Recreational Waters Can Reliably Identify Risk from Sewage-Borne Pathogens in Tropical Regions
11:25 - 11:40 **Robert M. Kerns**, Lt. Lyle Setwyn, and Danielle Mauga, Bacteriological Contamination of Wells in American Samoa
11:40 - 11:55 **Ginamary Negrón-Talavera** and **Luis A. Ríos-Hernández**, Monitoring the Population Dynamics of Enterococci in Recreational Waters: A 24 Hour Odyssey
11:55 - 13:00 Lunch

SESSION 2 • Flooding – Session Chair: Jorge Rivera-Santos

- 13:00 - 13:20 **Edward Teixeira**, Impact of Disasters in Hawaii on Surface Water Systems (invited)
13:20 - 13:35 **Paul Hinds** and Vincent Cooper, Development of a Surface Runoff Prediction Model for Unplanned Hillside Developments in Trinidad
13:35 - 13:50 **Russell Yost**, Aly El-Kadi and John Yanagida, A Water Resources Win-Win Scenario: Capturing Flood Waters from the Kaiaka-Waiialua Watershed, North Shore, Oahu
13:50 - 14:05 **Scot K. Izuka**, Suspended-Sediment Transport in the Waikele Watershed, O'ahu, Hawai'i, During the Storm of December 11, 2008
14:05 - 14:20 **Walter F. Silva-Araya** and Federico García-Urbe, Modeling Mixed Flow Conditions in Surcharged Storm Systems
14:20 - 14:35 Break

SESSION 3 • Climate – Session Chairs: Mark Lander and Chittaranjan Ray

- 14:35 - 14:55 **Thomas W. Giambelluca**, Qi Chen, Abby G. Frazier, Jon P. Price, Yi-Leng Chen, Pao-Shin Chu and Jon K. Eischeid, Introducing the New Rainfall Atlas of Hawai'i (invited)
14:55 - 15:15 **Richard J. Wallsgrove**, Maxine A. Burkett and David Penn, Hawai'i's Law & Policy Toolkit: Climate Change Adaptation and Water Resource Management (invited)
15:15 - 15:35 **Melissa L. Finucane**, Integrating Physical and Social Sciences to Support Decision Making about Fresh Water Resources on Pacific Islands (invited)
15:35 - 15:55 **Mark Chappell**, Potential Saline-Sodic Pedogenesis in Soils from Climate-Change Mediated Sea-Level Rise (invited)
15:55 - 16:10 **H. Annamalai**, The Current and Future Climate Conditions Over the Pacific Islands
16:10 - 16:25 **Mark A. Lander**, The Post World War II Observations of Climate in Micronesia: Sea Level Rise, Temperature Increases and Drying in the East
16:25 - 16:40 **Pao-Shin Chu**, Ying Ruan Chen and Thomas A. Schroeder, Trends in Precipitation Extremes and Return Levels in the Hawaiian Islands Under a Changing Climate
16:40 - 16:55 **Steven R. Fassnacht**, Sharla A. Stevenson and Graham Sextstone, Climate Change Near Kaloko-Honokohau National Historical Park and Implications for Water Resources Management
17:00 - 19:00 Icebreaker Reception

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Tuesday, November 15, 2011

- 08:00 - 08:30 Continental Breakfast
08:30 - 09:00 Keynote Speaker: **Jennifer Orme-Zavaleta**, Building a Research Program to Ensure Safe and Sustainable Water Resources

SESSION 4A • Water Resources Availability and Management – Session Chair: Gary Denton

- 09:00 - 09:20 **J. Sansalone**, G. Ying and G. Garofalo, Myths, Models and Measurement of Particle Transport and Fate (invited)
09:20 - 09:35 **Chester Lao**, Role of Deep Monitor Wells in Island Hydrology
09:35 - 09:50 **Delwyn S. Oki**, Trends in Groundwater Availability in Hawaii
09:50 - 10:05 **Lauren C. Roth Venu**, Ecological Engineering: Building Sustainable Island Communities with Nature in Mind
10:05 - 10:20 Break
10:20 - 10:35 **Kolja Rotzoll** and Aly El-Kadi, Numerical Simulation of Borehole Flow in Deep Monitor Wells in a Coastal Freshwater Lens, Pearl Harbor Aquifer, O'ahu, Hawai'i
10:35 - 10:50 **Ryan T. Bailey** and John W. Jenson, Analysis of Groundwater Resources of Atolls in the Federated States of Micronesia

SESSION 4B • Water Resources Availability and Management – Session Chair: Henry Smith

- 10:50 - 11:10 **Martin Roush**, The Path to Guam Waterworks Authority Overarching Sustainability: Building Leadership Capacity (invited)
11:10 - 11:25 **C.S. Papacostas**, Evolution of Island Water Rights in Hawaii
11:25 - 11:40 **Juan C. Santamarta Cerezal** and Jessica Rodriguez Martín, Advances in Exploitation of Underground Water Resources in Volcanic Islands Experiences and Methods in the Canary Islands, Spain, Europe
11:40 - 11:55 **Shahram Khosrowpanah**, The Impact of Guam's Population Growth on Island Water Resources
11:55 - 13:00 Lunch
13:00 - 13:15 **James Roumasset** and **Christopher Wada**, Planning for the Integrated Use of Groundwater, Recycled Wastewater, and Desalination
13:15 - 13:30 **Shane Epting**, Hawaiian Mythology and the Benefits of an Ecological Noble Lie: Water Resource Management, Sustainability, and the Curse of Pele

SESSION 5 • Panel Discussion – Session Chair: Tetsuzan Benny Ron

- 13:30 - 14:10 **L. Stephen Lau**, Learning About the Natural Waters in Humid Tropical Islands for Sustainable Communities Objectives (invited)
14:10 - 14:50 **Travis W. Hylton**, Guam Water Resources Management Study

14:50 - 15:35 POSTER SESSION / Break – Session Chair: Philip Moravcik

SESSION 6 • Groundwater Recharge – Session Chair: Scot Izuka

- 15:35 - 15:50 **Adam G. Johnson**, Water-Budget Model and Estimates of Groundwater Recharge for Guam
15:50 - 16:05 **John W. Jenson**, Mark A. Lander and Richard H. Randall, Vadose Fast Flow in the Northern Guam Lens Aquifer, Guam, Mariana Islands
16:05 - 16:20 **Steve Parabolicoli**, The County of Maui's Water Reuse Program: A Key Component of Sustainable Water Resource Management in an Island Environment

SESSION 7 • Surface Water Quality – Session Chair: Scot Izuka

- 16:20 - 16:35 **John C. Hayes** and Billy J. Barfield, Modeling Runoff, Sediment and Water Quality Practices in an Island Environment Using IDEAL
16:35 - 16:50 **Shiang-Min-Chen**, Yu-Min Wang and I Tsou, Using Artificial Neural Network Approach for Modeling Rainfall-Runoff

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Wednesday, November 16, 2011

07:45 - 08:15 Continental Breakfast

SESSION 8 • Water for Energy – Session Chair: Delwyn Oki

- 08:15 - 08:35 **Jan C. War**, Economic Development Opportunities for Tropical Islands at the Natural Energy Laboratory of Hawaii Authority (invited)
- 08:35 - 08:50 **Keith R. Olson**, Historical Perspective of Environmental Monitoring at the Natural Energy Laboratory Hawaii Authority
- 08:50 - 09:05 **Shahram Khosrowpanah** and Leroy Heitz, Predicting Hydropower Potential on Ungaged Streams in Kosrae Island, the Federated States of Micronesia (FMS)
- 09:05 - 09:20 Deborah A. Solis, Scott Moncrief, Luis Vega, **Philip A. Potter**, Renee Kinchla, Tom Cook, Meghan Travers and Antti Koskelo, Assessing Hydroelectric Power Potential in the State of Hawaii

SESSION 9 • Submarine Groundwater Discharge – Session Chair: Craig Glenn

- 09:20 - 09:35 **Christine A. Waters**, Henrieta Dulaiova and Craig R. Glenn, Locating and Quantifying Coastal Groundwater Discharges Potentially Originating from a Wastewater Treatment Facility
- 09:35 - 09:50 **Daniel Amato**, Submarine Groundwater Discharge Increases Marine Macroalgal Photosynthesis
- 09:50 - 10:05 Break**
- 10:05 - 10:20 **Jacque L. Kelly**, Craig R. Glenn and Paul G. Lucey, Use of Thermal Infrared to Locate and Study Submarine Groundwater Discharge in the Hawaiian Islands
- 10:20 - 10:35 **M. Bayani Cardenas**, Peter B. Zamora, Kevin M. Befus, Fernando P. Siringan, Dirk V. Erler, Isaac R. Santos, Douglas Tait, Raymond S. Rodolfo and Mark R. Lopus, Off-Shore Electrical Resistivity Imaging for Multi-Scale Characterization of Near Shore Hydrogeologic Processes and Submarine Groundwater Discharge
- 10:35 - 10:50 **Kevin M. Befus**, M. Bayani Cardenas, Travis E. Swanson, Dirk Erler, Isaac Santos and Douglas Tait, Fluid and Heat Fluxes Across the Intertidal Zone
- 10:50 - 11:05 **Joseph J. Kennedy**, Craig R. Glenn and Henrieta Dulaiova, Evaluation of Anthropogenic Impacts on the Groundwater Flow from Two Coastal Springs, Maunaloa Bay, South Shore, O'ahu

SESSION 10 • Groundwater Quality – Session Chair: Travis Hylton

- 11:05 - 11:20 **Alan Mair**, Robert B. Whittier, Aly I. El-Kadi and Daniel Chang, Adapting Drinking Water Source Vulnerability Assessments for the Hawaiian Islands
- 11:20 - 11:35 **Gary R.W. Denton** and Carmen M. Sian-Denton, A Retrospective Analysis of Water Quality Data for Chemicals of Concern in Guam's Groundwater: Emerging Trends and Future Concerns
- 11:35 - 11:50 **Joseph Fackrell** and Craig R. Glenn, Geochemical Composition of Ground and Nearshore Marine Waters at Ka'anapali, Maui, Hawaii
- 12:00 Box Lunch**

12:00 - 19:00 Field Trip

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Poster Presentations ■ (presenters are highlighted in bold)

- **L. Stephen Lau** and John F. Mink, Hydrology of the Hawaiian Islands
- **Joseph P. Morris**, Alex Anderson, Wojciech M. Jadwisienczak and R. Guy Riefler, Water Disinfection of *Bacillus subtilis* Spores Using Ultraviolet Light Emitting Diodes
- **Alan Mair**, Benjamin Hagedorn, Suzanne Tillery, Aly I. El-Kadi, Kyoochul Ha and Gi Won Koh, Estimating Groundwater Recharge Using a Water Balance Approach for Jeju Island, Korea
- **Brittany Anderson** and Jiasong Fang, Assessing Effects of Environmental and Human Land Use Change in a Coastal Wetland Using Lipid Biomarkers and Stable Isotopes
- **Joseph D. Rouse**, Goro Kobayashi and Hiroaki Fujii, High-Rate Biological Treatment Coupled with Sludge Reduction
- **Peter B. Zamora**, M. Bayani Cardenas, Raymond S. Rodolfo, Hillel B. Cabria, Kevin M. Befus and Ma. Isabel Senal, Tidal Response of the Subterranean Estuary Revealed by Electrical Resistivity Imaging and Hydraulic Monitoring
- **Juan C. Santamarta Cerezal** and Jesica Rodriguez Martín, Traditional Systems for Water Harvesting and Soil Conservation in Volcanic Islands. Case Study: The Canary Islands, Spain, Europe.
- **Yoko Yamamoto**, Sharon LePage, Barbara McLain, Carlos Andrade and Tetsuzan Benny Ron, Sustainability Isn't A New Idea: Teaching Ancient Hawaiian Ahupua'a Using Virtual Reality
- **Seo Jin Ki**, Bunnie S. Yoneyama, Philip Moravcik and Chittaranjan Ray, Use of Self-Organizing Map as an Advanced Bioassessment Tool: Assessment of Effect of Submarine Wastewater Outfall on Benthic Fauna Communities in Sand Island, Oahu
- **Vance Tomasu**, Alvina Lutu, Toru Kumagai and David Hafner, University of Hawaii Manoa Drainage Project
- **Yu-Chieh Lin**, Yu-Min Wang and I Tsou, Using ANN Approach to Recover the Missing Flow Records by the Data of Adjacent Stations in the Same Catchment
- **Seydou Traore** and **Yu-Min Wang**, GIS Dot Density Mapping Interface for Analyzing Soil Water Holding Capacity Change Due to Organic Matter Amendment in Western African Regions
- **T.M. Gregg**, J. Burns, A. Mokiau-Lee, K. Carlson and T. Takabayashi, The Effects of Community Structure and Water Quality on Coral Affliction Prevalence and Severity Around Hawai'i Island
- **Mara F. Cuebas-Irizarry**, Valeria Semidei-Rodríguez, Ginamary Negrón-Talavera and **Luis A. Ríos-Hernández**, The Dominant Population of Enterococci in Puerto Rico's Waterways
- **Yasson Duque-Amaya** and **Jorge Rivera-Santos**, Headwater Zone Delineation Using GIS: A Decision Making Tool for Sustainable Water Resources Management
- **Headquarters, Pacific Air Forces and Headquarters, Thirteenth Air Force**, Joint Base Pearl Harbor-Hickam, Hawaii: Operations PACIFIC ANGEL and PACIFIC UNITY