2017 National Capital Region Water Resources Symposium:

Applications of Remote Sensing and Space Technologies in Water Resources Management

Friday, April 7, 2017
8:00 a.m. – 5:00 p.m.

University of the District of Columbia (UDC)
David A. Clarke School of Law
4340 Connecticut Ave., NW, Washington DC

Introduction

This one-day symposium will bring together experts from governmental agencies, academia, the private sector, and non-profits to present and discuss innovations in water research, technology, policy and management to respect and reflect the value of water in the National Capital Region, as well as nationally and internationally. We hope that you will make the most of the opportunity to meet other water resources professionals across the region.

The National Capital Region, encompassing the District of Columbia, and parts of Maryland, Virginia and West Virginia, has unique and challenging opportunities for sustainable management of water resources and water infrastructures. The region makes up a large portion of the watershed for the Chesapeake Bay, the largest estuary in the U.S; contains rivers which provide for the water needs of nearly six million people; and hosts many organizations and entities that consider water resources as their primary focus. The role of the AWRA-National Capital Region Section is to focus water resources professionals on water resources issues in the national capital region.

The theme of 2017 Water Symposium is *Applications of Remote Sensing and Space Technologies in Water Resources Management*, a critical and futuristic topic that will be discussed by featured speakers in the plenary session.

Featured Speakers
(Plenary Session)


John Bolten


Glenn Moglen


John W. Jones


David Mocko


Stephen Newman

Dr. John Bolten is the Associate Program Manager of Water Resources for the NASA Applied Sciences Program. His research focuses on the application of satellite-based remote sensing and land surface hydrological modeling for improved ecological and water resource management. His most recent research includes the development of an improved hydrological decision support system for the Mekong River Commission, and a historical water budget analysis of the Lake Chad basin. Dr. Bolten is involved in several water resources management efforts in the Middle East, Central and North Africa, Southeast Asia, and United States. He is serving on the Panel on Global Hydrological Cycles and Water Resources for the 2017-2027 Decadal Survey for Earth Science and Applications from Space, and also serving as NASA DEVELOP Program Lead Science Advisor for the NASA Goddard Space Flight Center. Dr. Bolten has been awarded the Hydrospheric and Biospheric Sciences annual award for Outstanding Scientific Achievement for his leadership and development of the Middle East North Africa Land Data Assimilation System (MENA-LDAS). He received the M.S. and Ph.D. degrees in geology with an emphasis in hydrology and remote sensing from the University of South Carolina.

Dr. Glenn Moglen is a research hydrologist at the Agricultural Research Service in Beltsville, Maryland where his is the head of the Hydrology and Remote Sensing Laboratory. He is formerly a professor of Civil and Environmental Engineering at both the University of Maryland and Virginia Tech. Dr. Moglen is the current vice-president of the Environmental and Water Resources Institute of the American Society of Civil Engineers. His research focuses on the hydrologic modeling of land use and climate change. Dr. Moglen is

the author of a recent book on open channel flow. Dr. Moglen earned BS from the University of Maryland, MS from Colorado State University, and PhD from the Massachusetts Institute of Technology. Dr. Moglen is a registered professional engineer.

Dr. John W. Jones is a Research Geographer and Chief of the Biophysical Remote Sensing Project in the USGS Eastern Geographic Science Center. His current research is focused on the fusion of various types of remote sensed data to characterize spatial and temporal variations in the extent, volume and flow of terrestrial surface water, in part, to better represent those variations in hydrologic and biologic models. Throughout positions in state government, private industry and federal service, John has developed and applied remote sensing technology to interdisciplinary efforts aimed at improving resource management, natural disaster mitigation, and emergency response. His previous positions with the USGS were in the GIS Research Laboratory and the Senior Program Group for Geography. John received the Department of Interior Meritorious Service Award in recognition of exceptional contributions to the USGS in the fields of remote sensing and geographic analysis. He earned a B.A. in Geography from the University of Connecticut; an M.A. in Water Resource Planning and Management from the University of Nebraska; and a Ph.D. in Geography from the University of Maryland.

David M. Mocko is a Senior Research Scientist with Science Applications International Corporation (SAIC) supporting the Global Modeling and Assimilation Office (GMAO) and the Hydrological Sciences Laboratory (HSL) at NASA's Goddard Space Flight Center. David serves as a Co-PI on a proposal as part of the North American Land Data Assimilation System (NLDAS). He is a core team member for land-surface model integration and evaluation for the Land Information System (LIS) software framework. His research interests include land-surface modeling, drought monitoring and analysis, reanalyses, and the global energy and water cycle. David earned an M.S. in the Department of Atmospheric Science at Colorado State University.

Steve Newman is the Chief of Terrain and Ice Engineering in the Remote Sensing/GIS Center of Expertise (RS/GIS CX) at the USACE Engineer Research and Development Center (ERDC), Cold Regions Research and Engineering Laboratory (CRREL). The focus of research within the RS/GIS CX include development of new techniques and algorithms for extracting actionable information for water resource management using space borne, airborne and terrestrial sensing systems. Broad research topics include evaluation and processing of MODIS and VIIRS data for snow covered area, development of new Synthetic Aperture Radar techniques for Snow Water Equivalent (SWE) estimation and LiDAR technologies for volumetric estimation of reservoir capacities. Steve earned B.S. in Forest Science and M.S. from the University of New Hampshire.

Program

8:00 a.m.	**~~ REGISTRATION ~~**	**Fifth Floor Lobby**
8:45 a.m.	**Opening & Welcome** • **Norm Starler,** Bowhead Professional Solutions, L.L.C, AWRA-NCR Section President • **Tolessa Deksissa,** Director, Water Resources Research Institute & Professional Science Master's Water Resource Management Program, University of the District of Columbia • **Sabine O'Hara**, Dean; **William W. Hare**, Assocaite Dean, College of Agriculture, Urban Sustainability & Environmental Sciences, University of the District of Columbia • **Tamim Younos**, Green Water-Infrastructure Academy, Washington, D.C. Symposium Chair & Vice President AWRA-NCR Section, Fellow Member AWRA Introduction to the Symposium Theme	**Room 518**
9:15 a.m.	**Keynote** **Dr. John Bolten,** Associate Program Manager of Water Resources, NASA Applied Sciences Program Introduction by **Elisabeth Eveleigh**, Virginia DGIF/CWF, AWRA-NCR President-Elect	**Room 518**
10:00 a.m.	**~~ Break ~~** **Please visit posters on display in the break area**	**Fifth Floor Lobby**

10:30 a.m. Noon	**Invited Panel:** Applications of Remote Sensing and Space Technologies in Water Resources Management **Moderator:** **Glenn Moglen,** Head, Hydrology and Remote Sensing Laboratory, USDA Agricultural Research Service, Beltsville, Maryland **Panelists:** **John W. Jones,** Research Geographer and Chief of the Biophysical Remote Sensing Project in the USGS Eastern Geographic Science Center **Stephen Newman,** Chief of Terrain and Ice Engineering at RS/GIS CX, USACE-ERDC **David Mocko,** Senior Research Scientist, SAIC at NASA Goddard Space Flight Center	**Room 518**
Noon	**Luncheon Speaker: Kenneth D. Reid,** Executive Vice President, American Water Resources Association Introduction by , **Cherie Schulz**, ICPRB, AWRA-NCR Past President **Lunch** (provided)	**Room 214**

Con-Current Sessions

1:15 p.m. - 2:45 p.m.	**A.** USGS Special Session: Remote Sensing of Rivers and Surface Water Bodies **B.** Stormwater and Flood Management **C.** Innovative Techniques for Water Management	A: Room 518 B: Room 505 C: Room 506
2:45 p.m.	**~~ Break ~~** **Please visit the posters on display in the break area**	Fifth Floor Lobby
3:00 p.m. 4:30 p.m.	**D.** Remote Sensing: Applications **E.** Water and Environment Management **F.** Building Resiliency in Water Management	D: Room 518 E: Room 505 F: Room 506
8:30 a.m. – 3:30 p.m.	**Poster Presentations**	Fifth Floor Lobby

Con-Current Sessions (A, B, C)
1:15 p.m. – 2:45 p.m.

A. USGS Special Session: Remote Sensing of Rivers and Surface Water Bodies **Room 518**	B. Stormwater and Flood Management **Room 505**	C. Innovative Techniques for Water Management **Room 506**
Moderator: Robert Mason, U.S. Geological Survey Office of Surface Water **The U.S. Geological Survey Dynamic Surface Water Extent Product Development and Evaluation Strategy.** John W. Jones, Research Geographer, Eastern Geographic Science Center, USGS. **Remote Sensing of River Discharge to Expand the U.S. Geological Survey Streamgaging Network.** Dave Bjerklie – Hydrologist, USGS New England Water Science Center; John Fulton, Hydrologist, USGS Colorado Water Science Center; Robert Mason, Chief, USGS Office of Surface Water. **Determining River Characteristics Using Remotely Sensed Data with Computational Models.** Jonathan M. Nelson, Paul J. Kinzl, Carl J. Legleiter, Richard R. McDonald, USGS Geomorphology and Sediment Transport Laboratory, Golden, Colorado; Brandon T. Overstreet, USGS Oregon Water Science Center, Portland, Oregon; Jeffrey S. Conaway, USGS Alaska Science Center, Anchorage, Alaska	**Moderator:** Alaina Armel, AECOM **Estimating Impacts of Storm Surge on Inland Flooding Along Rivers Using HEC-RAS 2D.** Srikanth Koka1, Dinakar Nimmala, Jeff Gangai,Mathini Sreetharan. Dewberry, Fairfax, VA. **Safe Conveyance of Rare Storm Events.** Brian E. Wagner. KCI Technologies, Inc. **Ensemble-Based Stormwater Runoff and Water Quality Modeling of A Highway in Suburban Maryland.** Jing Wang, Allen Davis, and Barton Forman. Dept. Civil and Environ. Eng. Univ. of Maryland, College Park. **Symposium on Flooding Around the Washington D.C. National Mall and Potential Solutions.** Piers Causton and Chris Manalo. American Society of Civil Engineers (ASCE) National Capital Section (NCS).	**Moderator:** Leila Farhadi, George Washington University **Future Technologies in Water Resources Management.** Courtney Greenley. Institute for Water Resources, USACE **Applications Discovery: Potential Water Management Applications Using the Upcoming NASA Ice, Cloud and Land Elevation Satellite-2 (ICESat-2) Measurements.** Sabrina Delgado Arias, Molly Brown, Vanessa Escobar, Michael F. Jasinski, Thomas Neumann. NASA Goddard Space Flight Center, and Department of Geographical Sciences, University of Maryland. **Open Science in Water Resources with the Jupyter Notebooks.** Jared Dorvinen. Dewberry, Fairfax, VA **USGS Elevation-Hydrography Pilot Study.** Sue Hoegberg. Dewberry, Fairfax, VA.

Con-Current Sessions (D, E, F)
3:00 p.m. – 4:30 p.m.

D. Remote Sensing: Applications **Room 518** **Moderator:** Sandra Pavlovic, National Water Center, NOAA National Weather Service **Correlating Watershed Remote Sensing Observations with Source Water Quality.** W. Josh Weiss, Luke Wang, Kinsey Hoffman, Justin Bartlett, Dustin West, (Hazen and Sawyer; Robert Allen, Riverside Technology, Inc.; Amita Mehta, (NASA-UMBC JCET; Christine Lee, NASA, Applied Sciences Program, Water Resources. **Assimilating Remote Sensing Land Surface State Data into the Coupled Water and Energy Balance Models.** Abedeh Abdolghafoorian and Leila Farhadi. Civil and Environmental Engineering Department, George Washington University, Washington, D.C. **Lessons Learned from Nutrient Management: Remote Sensing.** Yukiko Ichishima and John Hochheimer. Tetra Tech, Inc., Fairfax, VA. **Remote Sensing Technologies in the Environmental Monitoring and Management of Water Resources Pollution of the Caspian Sea From Petroleum and Gas Industry.** Emil Bayramov and Karen Knee. American University, Washington, D.C.	E. Water and Environment Management **Room 505** **Moderator:** Sinan Abood, U.S. Forest Service **Riparian Areas Mapping.** Sinan Abood and Linda Spencer. U.S. Forest Service, Washington D.C. **Investigating the Potential Impacts of Hydraulic Fracturing, an Analysis of the Potomac River Watershed.** Colin P. Casey and Karen Knee. American University, Washington D.C. **Decentralized Rainwater Capture: A Case Study of Potential Energy and Greenhouse Gas Reductions on a College Campus.** John Wiggins, Katherine O'Neill, and Tamim Younos. Environmental Studies Program, Roanoke College, Salem VA, and Green Water- Infrastructure Academy, Washington, D.C. **Predicting Residential Low Impact Development Adoption at the Homeowner Level.** Domenico C. Amodeo and Royce Francis.Department of Engineering Management and Systems Engineering, George Washington University.	F. Building Resliency in Water Management **Room 506** **Moderator:** Karin Bencala, ICPRB **Modeling the Recovery of Multiple Prioritized Capabilities in Critical Infrastructure Post-Distribution.** Domenico Amodeo and Roy Francis. Dept. Systems Eng., George Washington University, Washington, D.C. **Valuing the Protective Ecosystem Services of Natural and Nature Based Features in the Mid Atlantic Regions of the US.** Ali M. Rezaie, Celso Ferreira, Margaret Walls, Jessica Chu. Dept. of Civil and Environ. Eng. George Mason Univ. and Resources for the Future. **Application of a Simple Water Allocation Model.** Mani Shehni-Karam-Zadeh, Jorge Jose Escurra, and Tolessa Deksissa. WRRI, CAUSES/UDC and World Wildlife Fund. **Quantifying Impacts of Upstream Reservoirs on the Potomac River Due to Consumptive Use.** Beverly Lanza, Cherie Schultz and Celso Ferreira. Dept. of Civil and Environ. Eng. George Mason Univ., and ICPRB (moved to poster session).

Poster Presentations

Fifth Floor Lobby

Progress Assessment for the Restoration of the Missouri River, Applications to the Chesapeake Bay and the Potential for Remote Sensing as an Evaluation Tool. Elizabeth Ryan, Gerald Galloway and Barton A. Forman. Department of Civil and Environmental Engineering, University of Maryland, College Park.

FloodNOW: Enabling real-time IoT flood forecasting on the George Mason Watershed. Melissa L. Rossi, Seth Lawler, and Celso M. Ferreira. Department of Civil, Environmental, and Infrastructure Engineering, George Mason University

Engaging the Applications Community of the Future Surface Water and Ocean Topography (SWOT) Mission. M. Srinivasan, Jet Propulsion Laboratory (JPL), California Institute of Technology, Pasadena, CA; A. Andral, Centre National d'Etudes Spatiales (CNES), Toulouse, France; F. Hossain, University of Washington, Seattle, WA; C. Peterson, MSU Science and Technology Center, Stennis Space Center, LA; E. Beighley, Northeastern University, Boston, MA

Vulnerability of Thermoelectric Power Generation in the United States and the Implications of Climate Change. Lu Liu, Mohamad Hejaz, Hongyi Li, Barton Forman, and Xiao Zhang. Department of Civil and Environmental Engineering, University of Maryland, College Park

Monitoring Semi-Volatile Organic Chemicals in Drinking Water By Solid Phase Extraction And Capillary Column Gas Chromatography. Yacov Assa, Mani Shehni-Karam-Zadeh, Sania Rose, Sebhat Tefera, and Tolessa Deksissa. Water Resources Research Institute, CAUSES/UDC.

Assessing the Effects of Fish Waste Addition to Composting of Vegetable Waste. Kailash Tilhoo, William Hare, Yacov Assa and Tolessa Deksissa. Water Resources Research Institute, CAUSES/UDC.

Advancing Soil Moisture Sensors Based Irrigation System. Sania Rose, Alondra Thompson, Harry Schomberg and Tolessa Deksissa. Water Resources Research Institute, CAUSES/UDC.

Analysis of Perchlorate in Waters by TOF Mass Spectrometer with AxION Direct Sample Analysis. Sebhat Tefera, Yacov Assa and Tolessa Deksissa. Water Resources Research Institute, CAUSES/UDC.

A Stormwater Runoff Collection and Treatment System for Urban Agriculture and Food Security. Musa Acar, Tolessa Deksissa, Jiajun Xu Department of Mechanical Engineering, University of the District of Columbia, and Water Resources Research Institute, CAUSES/UDC.

Development and Calibration of Automated Class A Evaporation Pan. Alimi, Lukman Obayopo, Cobbas Rewabson Limited, Federal Ministry of Environment, Abuja; and Olotu Yahaya, Department of Agricultural and Environmental Engineering, Federal Polytechnic, Auchi, Nigerua.

5:00 p.m.	**Optional Post- Symposium TOUR: UDC Campus Green Infrastructure** Led by **Dr. Tolessa Deksissa,** Director, DC Water Resources Research Institute & Professional Science Master's Water Resource Management Program	Meet in 1st floor lobby

Registration

All attendees, including presenters/moderators, are expected to register. Please register online by Monday, April 3 for the early bird discount. Payment is accepted online by credit card or by cash/ check payment at the event.

Step 1: Go online to the link: https://co.clickandpledge.com/sp/d1/default.aspx?wid=58557
Step 2: Fill out the registration fee section
Step 3: Fill out the contact information section
Step 4: Scroll down and click "SUBMIT" to complete the registration and payment

	Professionals		**Students**	
Registration Fees (includes lunch & coffee breaks)	**Member or Presenter/Moderator**	**Non-Member**	**Member or Presenter**	**Non-Member**
On-line thru April 3	$35	$50	$15	$25
On-site April 7	$50	$75	$25	$35

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