

**STEVEN J. BURIAN, Ph.D., P.E., ENV SP**  
**Professor of Civil & Environmental Engineering**

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**EDUCATION**

**Ph.D. 1999**    **Civil Engineering;** The University of Alabama, Tuscaloosa, AL.  
**M.S.E. 1995**    **Environmental Engineering;** The University of Alabama, Tuscaloosa, AL.  
**B.S. 1993**    **Civil Engineering;** University of Notre Dame, Notre Dame, IN.

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**RESEARCH INTERESTS**

Dr. Burian's research helps to provide and protect clean water, reduce risk from water-related hazards, and improve performance of water systems from site to regional scales. Using computer modeling, systems analysis, hydroinformatics, and field studies, his research group contributes to the engineering of sustainable and resilient urban water infrastructure systems, including stormwater, wastewater, and water supply. Working in partnership with local stakeholders, such as Salt Lake City Department of Public Utilities, and supported by funding agencies, such as NSF, USAID, and NASA. Dr. Burian's team contributes practical approaches for sensing and modeling complex urban water systems, designing urban water infrastructure for sustainability, and building resilience in water systems facing aging infrastructure, climate change, and hazards.

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**PROFESSIONAL REGISTRATIONS**

- Professional Engineer, State of Utah
  - Envision™ Sustainability Professional (ENV SP)
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**PROFESSIONAL EXPERIENCE**

- **Professor (7/16 – present), Associate (7/09 – 6/16), and Assistant (8/03 - 6/09)**  
Dept. of Civil & Environmental Engineering, University of Utah, Salt Lake City, UT.
- **Director, Water Center (6/17-present)**  
University of Utah, Salt Lake City, UT. <http://water.utah.edu/>
- **Project Director, U.S.-Pakistan Centers for Advanced Studies in Water (12/14-present)**  
University of Utah, Salt Lake City, UT. <http://water.utah.edu/>

- **Associate Director, Global Change and Sustainability Center (4/12-present)**  
University of Utah, Salt Lake City, UT. <http://environment.utah.edu/>
- **Co-director, Sustainability Curriculum Development (1/11-6/14)**  
University of Utah, Salt Lake City, UT.
- **Assistant Professor (1/00 – 7/03)**  
Department of Civil Engineering, University of Arkansas, Fayetteville, AR.
- **NASA/ASEE Faculty Fellow (4/02-8/02)**  
Mesoscale Atmospheric Processes Branch, NASA Goddard Space Flight Center, Greenbelt, MD. **Research Topic:** Downscaling analysis coupling rain gauge and ground- and space-based radar rainfall data investigating urbanization influence on rainfall.
- **Visiting Faculty (6/01 – 8/01)**  
Energy and Environmental Analysis Group, Los Alamos National Laboratory, Los Alamos, NM. **Research Topics:** Urban canopy parameterizations; GIS processing of 3D urban terrain data; Urban land-atmosphere interaction.
- **Visiting Scientist (5/00 – 8/00)**  
Energy and Environmental Analysis Group, Los Alamos National Laboratory, Los Alamos, NM. **Research Topics:** Urban canopy parameterizations, GIS processing of 3D urban terrain data.
- **Graduate Research Assistant (6/98 – 12/99)**  
Energy and Environmental Analysis Group, Los Alamos National Laboratory, Los Alamos, NM. **Research Topics:** Pollutant transport through urban air and water pathways; Integrated airshed-watershed-water body modeling.
- **Graduate Research Assistant (8/96 - 6/98)**  
Department of Civil and Environmental Engineering, The University of Alabama, Tuscaloosa, AL. **Research Topics:** Stormwater management and modeling; Rainfall disaggregation.
- **Graduate Teaching Assistant (8/95 - 5/96)**  
Department of Civil and Environmental Engineering, The University of Alabama, Tuscaloosa, AL.

## TEACHING EXPERIENCE

### Funded Projects

- Development of Global Learning Outcomes and Assessment in the Department of Civil and Environmental Engineering, funded through the Office for Global Engagement and

College of Engineering at the University of Utah, (8/16/2016-5/14/2017), \$8,000. This project developed and tested global learning outcomes, assessment rubric, and assessment instruments.

- Pathway to Global Outcomes in Civil and Environmental Engineering, funded through a Global Learning Across the Disciplines (GLAD) grant from the University of Utah Office Global Engagement, (5/15/2015-5/14/2016), \$8,000. This Project enabled Civil and Environmental Engineering graduates to have an impact professionally in a global society by applying their skills in local and global contexts.
- Exploring Water Sustainability in Cities: A Course Module Linking Geoscience, Engineering, and Society, Funded through Carleton University (prime sponsor NSF through the Carleton InTeGrate Project), PI with Co-PIs M. Jha, M. Shepherd, G. Richard, (10/7/13-10/6/15), \$45,000.
- University of Utah Interdisciplinary Teaching Seed Grant Award, with E. Barbanell, Development of interdisciplinary engineering-philosophy course “Hydrotopia: Water in the West”, (7/1/08-6/30/09), \$8,000. Co-developed a new course with Ed Barbanell from Philosophy to integrate philosophy, planning, science, policy, and engineering students together to learn water management concepts, values, and technologies. The course was taught for the first time in the spring 2009 semester and every other semester subsequently until 2015. The student feedback was exceptional. Students are learning how different perspectives view sustainable water management and how integrating different perspectives can lead to a “Hydrotopia”.

### **Teaching Workshops**

- Wasatch Experience, Integrating Sustainability into Curriculum and Courses at the University of Utah, 2014 and 2016, Salt Lake City, UT.
- Flipped Classroom, U.S.-Pakistan Centers for Advanced Studies in Water, Mehran University of Engineering and Technology, 18 May 2017, Jamshoro, Sindh, Pakistan.
- Mentor, ASCE ExCEED Teaching Workshop, 2010-2012.
- Asst. Mentor, ASCE ExCEED Teaching Workshop, 2006-2009.

### **University Courses Taught**

#### **University of Utah, Department of Civil & Environmental Engineering**

- Undergraduate Required: Hydraulics (11 times), Hydrology
- Undergraduate/Graduate Elective: Hydrotopia: Water Management in the West (4 times), Stormwater Management and Design (2 times), Sustainability Practicum (4 times), Sustainable Urban Water Engineering (6 times), Professional Practice and Design (4 times)
- Graduate: Hydroinformatics (5 times), Advanced GIS, Flood Modeling and Simulation (3 times), Pipeline Hydraulic Analysis, Urban Hydrology Field Measurements (2 times), Watershed Modeling (2 times)

**Note:** All courses were developed as new courses or were significantly revised

#### **University of Arkansas, Department of Civil Engineering**

- Undergraduate Required: Hydraulics (5 times), Hydrology (3 times)
  - Graduate: Hydrologic & Hydraulic Modeling, Stormwater Quality Management (2 times)
- Note:** All courses were developed as new courses or were significantly revised

#### **The University of Alabama, Department of Civil & Environmental Engineering**

- Undergraduate Required: Computational Methods for Civil Engineers (second section), Environmental Chemistry Laboratory (laboratory section)

#### **Selected Professional Workshops and Short Courses Developed and Instructed**

- *Low Impact Development (LID) Approach to Stormwater Management*, 11-12 August 2018, Salt Lake City, UT.
- *Faculty Development Workshop*, Pakistan Science Foundation, 10-11 August 2017, Islamabad, Pakistan.
- *Climate Vulnerability Assessment and Adaptation of Water Systems*, U.S.-Pakistan Centers for Advanced Studies in Water, Mehran University of Engineering and Technology, 11-12 May 2017, Jamshoro, Pakistan.
- *Capacity Building to Advance the Education of Water Engineers to Achieve the Water Sustainable Development Goal*, 1-day workshop at the Water and Environment in the New Millennium: Education and Capacity Building. 3-5 December 2016, University of Tehran, Tehran, Iran. With Professor Andre Niemann, Professor Charlotte de Fraiture, and Dr. Mercedes Ward.

### **SYNERGISTIC ACTIVITIES**

- Director, University of Utah Water Center ([water.utah.edu](http://water.utah.edu)). Burian helped organize and lead water researchers at the University of Utah (UU) in the establishment of a nexus for water-related research. With an emphasis on supporting interdisciplinary research, the Water Center catalyzes research teams, cultivates research projects and initiatives, and supports researchers with guidance, staff, and technical support. Burian serves as the director and facilitates coordination of the Water Center activities with other sustainability-related research entities at the University of Utah.
- Project Director, U.S.-Pakistan Centers for Advanced Studies in Water ([water.utah.edu/uspcasw](http://water.utah.edu/uspcasw)), 2014-present. Burian led the establishment of the USAID-funded USPCASW, creating a partnership between the University of Utah (UU) and Mehran University of Engineering and Technology (MUET) in Pakistan. Since the launch in 2014, the Center has instituted effective governance, initiated externally-funded research projects, developed a semester exchange program, and created MS and PhD degree programs in water engineering, water management, environmental engineering, and WASH sciences. Cross-cutting programs have also been created in technology commercialization, women's empowerment, sustainable development, and climate resilience. Overall, the collective efforts of USPCASW under Burian's leadership are supporting the multi-institution and multi-national USAID program to advance higher

education in Pakistan and other nations as part of the \$127 million USAID Centers for Advanced Studies Program.

- Associate Director, Global Change and Sustainability Center (GCSC) ([environment.utah.edu](http://environment.utah.edu)). Burian has served as Associate Director of the GCSC at the UU since 2012. Duties have included stimulating the formation of interdisciplinary teams for research, teaching, service, and outreach initiatives, with primary emphasis on large interdisciplinary research initiatives. For research, the directive has been to support large pan-campus interdisciplinary sustainability research initiatives, with special focus in areas related to water, infrastructure, hazards, energy, and climate. An example of success is the previously mentioned USPCASW project, funded by USAID. Recent effort has been directed toward developing an efficient process, administrative oversight, and tools to support interdisciplinary research team formation, research idea creation, proposal development, and successful proposal outcomes. In teaching, Burian co-led the creation of the Wasatch Experience Sustainability Teaching Workshop (<http://sustainability.utah.edu/academics/workshop.php>) with Professor Dan McCool at UU in 2014-2015, and is involved in the continued delivery of the workshop.
- Leadership, ASEE Civil Engineering Division. Serving in Division leadership positions from sequence of Secretary/Treasurer through Division Chair and Past Chair from 2014-2021.
- Principle Investigator, NSF InTeGrate Course Module on *Water Sustainability in Cities*. Worked with interdisciplinary team of researchers to produce new course module for use in wide range of water courses at undergraduate level, and extensible to graduate level. Module incorporates flipped classroom instruction, data-driven exercises, and project-based learning activities. The course materials are available through the InTeGrate project web site: [http://serc.carleton.edu/integrate/teaching\\_materials/water\\_cities/index.html](http://serc.carleton.edu/integrate/teaching_materials/water_cities/index.html)
- Organizer, 2014-2015 Wasatch Experience, Sustainability Teaching Workshop at the University of Utah. Helped to develop and deliver the first sustainability-focused teaching workshop experience at the University of Utah.
- Co-director, Sustainability Curriculum Development, University of Utah, 2011-2014. Activities included creating and delivering a sustainability teaching workshop, conducting fact-finding interviews with program directors across the country, soliciting input from faculty and students at the University of Utah, helping to design and implement two certificate programs, and developing teaching and learning materials related to sustainability.
- Mentor, American Society of Civil Engineers (ASCE) ExCEED Teaching Workshop. Participated as assistant mentor and mentor 2005-2012. Provided hands-on teaching and learning instruction to new civil engineering faculty members at national workshop. Delivered seminars and demonstrations on teaching and learning. Conduct collaborative scholarly activities related to engineering education.
- Interdisciplinary Team Teaching. Developed and co-taught several courses on interdisciplinary topics in sustainability and water resources. From 2008 to present, worked to integrate humanities and social sciences perspectives into water resources engineering by offering a multidisciplinary water resources management course

originally funded through the Office of Interdisciplinary Studies at the University of Utah. From 2007 to 2010, co-developed and co-taught an interdisciplinary service-learning sustainability practicum course with professors from Geology & Geophysics, Biology, and Architecture & Urban Planning.

- Project-Based Learning. Partnered on numerous occasions with local designers and engineers to engage students with team project experiences, service learning opportunities, and professional practice exposure.
- National Building Statistics Database (NBSD). Since 2004, developed and disseminated a high resolution database of urban canopy parameters for use by the mesoscale meteorological, climate, and atmospheric dispersion modeling communities.
- Selected Professional Service Commitments: Chair, ASCE Rainwater Harvesting Technical Committee; Executive Committee Member for Utah Section of American Water Resources Association; Member, Institute for Sustainable Infrastructure, Education and Training Committee; ASEE Civil Engineering Division Secretary/Treasurer (2015-2017), Mid-Term Director (2017-present).
- University Service Commitments: Executive Committee Member for Global Change and Sustainability Center.
- Mentored and hosted post-graduate researchers: Dr. Sangmin Shin (University of Utah postdoc, 2016-present), Dr. Fengli Zhang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, 2016-2017), Dr. Dasch Houdeshel (University of Utah postdoc, 2014), Dr. Maryam Astaraie-Imani (University of Exeter, Centre for Water Systems, 2014) Ms. Nidaa Al-Shakarchi (Iraq Ministry of Housing and Construction, 2011), Dr. Quanmin Bu (Jiangsu Province Security Department, China, 2013), Dr. Eun Sung Chung (Seoul National University, 2009-2010), Dr. Meichun Yan (Hohai University, 2008), Dr. Jae-Sung Jung (Suncheon National University, Korea, 2005-2006).

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### **ACTIVE PROFESSIONAL MEMBERSHIPS**

- American Geophysical Union (AGU)
- American Society of Civil Engineers (ASCE)
- American Society for Engineering Education (ASEE)
- American Water Resources Association (AWRA)
- American Water Works Association (AWWA)
- Chi Epsilon (National Civil Engineering Honor Society)
- Water Environment Federation (WEF)

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### **HONORS AND AWARDS**

- 2019 Outstanding Professor of the Year, Department of Civil and Environmental Engineering, University of Utah
- 2019 Awarded Pakistan Civil Award “Sitara-i-Imtiaz” by President of Pakistan
- 2016 Outstanding Teacher, College of Engineering, University of Utah

- 2015 Outstanding Faculty Award, Department of Civil and Environmental Engineering, University of Utah
- 2013 Kingfisher Bend Ranch Excellence in Teaching Award, College of Engineering, University of Utah
- 2013 Outstanding Paper Award, Journal of Flood Risk Management, paper entitled 'Monte Carlo-based flood modelling framework for estimating probability weighted flood risk,' Kalyanapu, A. Judi, D, McPherson, T., and Burian. S.J. volume 5, 37-48.
- 2012 University of Utah Center for Teaching and Learning Faculty Fellow
- 2012 American Water Resources Association Utah Section, Outstanding Service in the Academic Sector
- 2012 Chi Epsilon Excellence in Teaching Award for the Rocky Mountain District
- 2011 Glen L. Martin Best Paper Award for the Civil Engineering Division of American Society for Engineering Education (ASEE)
- 2010 Department of Civil and Environmental Engineering Outstanding Researcher
- 2009 American Society of Civil Engineers Utah Engineering Educator of the Year
- 2007-2008 Department of Civil and Environmental Engineering Outstanding Undergraduate Teacher
- 2007 Early Career Teaching Award, University of Utah
- 2003-2004 ASCE Teacher Appreciation Award, Department of Civil & Environmental Engineering, University of Utah
- 2002-2003 Outstanding Researcher, Department of Civil Engineering, University of Arkansas
- 2002 Baum Teaching Grant Award, University of Arkansas
- 2001-2002 Outstanding Teacher, Department of Civil Engineering, University of Arkansas
- Tau Beta Pi, National Engineering Honor Society
- 1998 AWRA Alabama State Section Scholarship Award
- 1998 Alabama Water Environment Association (AWEA) Jim Gray Memorial Scholarship
- Best Oral Presentation, Ph.D. Category, 4<sup>th</sup> Annual Alabama Student Conference on Water Resources, April 17, 1998
- Graduate Council Research Fellow, The University of Alabama, 1997-1998
- President, 1997 Outstanding AWRA Student Chapter
- Best Student Paper, Graduate Division, 1997 AWRA / Universities Council on Water Resources (UCOWR) Student Paper Competition
- 1997 ASCE Tuscaloosa Chapter Service/Leadership Award

## **RESEARCH PROJECTS**

### **Grants and Contracts**

- Improving Urban Water Management by Bridging the Digital Divide between Urban Farmers and Soil Sensing, Nexus Institute and Global Change and Sustainability Center, Co-PI (with J. Carlisle and H. Kim), (5/16/2019-5/15/2020), \$29,600.

- Smart Water Data Acquisition and Analytics Technologies for Improving Efficiency of Water and Power Network Operations, Utah Science and Technology Research Initiative (USTAR), PI, (8/1/2017-5/15/2019), \$125,000.
- Application of Consequence-Based Resilience to Urban Water, Transportation, and Electric Power Infrastructure, Pacific Northwest National Laboratory, PI, (10/1/2016-9/30/2017), \$110,252.
- IRES: Life Cycle Management and Ecosystem Services Applied to Urban Agriculture, NSF, Co-PI with D. Apul (PI), C. Gruden (5/1/2016-4/30/2020), \$249,968.
- Urban Water Infrastructure Resiliency: Metrics, Model Linkage, and Sensitivity, Pacific Northwest National Laboratory, PI, (2/1/2016-10/31/2016), \$93,000.
- The Energy-Water-Food Nexus within the backdrop of an Urbanized Globe: How Can GPM Help? NASA, Co-PI with M. Shepherd (PI), M. Jin (Co-PI) (3/15/2016-3/14/2019), \$447,663 (\$123,905 Utah Budget).
- Prediction of Nonlinear Climate Variations Impacts on Eutrophication and Ecosystem Processes and Evaluation of Adaptation Measures in Urban and Urbanizing Watersheds, EPA, Co-PI with M. Barber (PI), R. Goel (Co-PI), S. Hinners (Co-PI), B. Clark (Co-PI), (9/1/2015-8/31/2018), \$999,969.
- EAGER: Developing experimental and modeling strategies to estimate nitrous oxide emissions from urban engineered ecosystems, NSF, Co-PI with R. Goel (PI), (5/15/2015-5/14/2017), \$95,418.
- U.S.-Pakistan Centers for Advanced Studies in Water, USAID, PI, (12/18/2014-12/17/2019), \$9.9 million
- Farmington Bay Water Budget Model, Jordan River/Farmington Bay Water Quality Council, PI, (3/1/2013-2/28/2014), \$88,848.
- A New Probabilistic Approach To Analyze Climate Variability Impacts on Eco-Hydrologic Response and Water Management System Reliability, University of Utah Funding Incentive Grant, Co-PI with C. Strong (PI), (5/15/13-5/14/14), \$29,000.
- Chapter on Geographic Data for the CB Agent Effects Manual No. 1, DTRA, Co-PI with S. Linger (PI) and P. Dennison (Co-PI), (5/15/2013-8/31/2015), \$505,000 (\$51,000 Utah Budget).
- Urban-Snow Relationships: Process Studies and a New Framework for Optimizing and Managing Urban Water Systems in the GPM Era, NASA, Co-PI with M. Shepherd (PI) and M. Jin (Co-PI), (5/15/2013-5/14/2016), \$455,521 (\$125,981 Utah Budget).
- Collaborative Research: Analysis of Decentralized Harvested Rainwater Systems Using the Urban Water Infrastructure Sustainability Evaluation (uWISE) Framework, NSF, Co-PI with D. Apul (PI), (8/15/2012-8/14/2016), \$308,000 (\$140,000 Utah Budget).
- Performance of Stormwater Bioretention Systems in Utah's Climate and Hydrologic Conditions, USGS, PI with Co-PI C. Pomeroy, (3/1/2012-2/28/2013), \$106,000.
- Collaborative Research: CI-WATER, Cyberinfrastructure to Advance High Performance Water Resource Modeling, NSF, Senior Personnel with N. Jones (PI) and many others, (1/1/2012-8/31/2015), \$3,435,873 (~\$600,000 Utah Budget).



- Impact of Humans on Precipitation Variability, Climate and the Water Cycle: Preparing for the GPM Era, NASA, Co-PI with M. Shepherd (PI) and M. Jin (Co-PI), (4/1/2010-3/31/2014), \$406,345 (\$100,000 Utah Budget).
- Water Solutions for Future Unconventional Oil Development, Institute for Clean and Secure Energy, University of Utah, PI, (7/01/08-3/31/2010), \$57,345.
- Water multi-infrastructure simulation technology (MIST): Validation and expansion of decision support, Los Alamos National Laboratory, PI, (6/14/07-6/14/08), \$39,881.
- New approaches to treat produced water and perform water availability impact assessments for U.S. oil sands and oil shale development, Utah Heavy Oil Center, Co-PI with R. Goel (PI), A. Hong (Co-PI), and B. McPherson (Co-PI), (5/15/07-11/14/08), \$130,000.
- Coupled biophysical-hydrological response to climate variability, University of Utah Funding Incentive Grant, PI with K. Hultine (Co-PI), (5/15/07-5/14/08), \$26,000.
- Impacts of humans on precipitation variability, climate, and water cycle, NASA, Co-PI with M. Shepherd (PI) and M. Jin (Co-PI), (2/1/2007-1/31/2010), \$471,774 (\$91,890 Utah Budget).
- Urban enhancements to meteorological modeling and observations, Defense Threat Reduction Agency (DTRA), PI with M. Shepherd (Co-PI) and M. Jin (Co-PI), (3/19/2007-8/31/2009), \$437,439.
- National building statistics database, Los Alamos National Laboratory, PI, (5/1/2004-4/30/2007), \$152,000.
- Graphical user interface development in ArcMap GIS for data management and pre-processing of EPANET water distribution models, Los Alamos National Laboratory, PI, (1/1/2004-3/31/2007), \$252,945.
- Development of regional regression equations for hydrologic estimates and precipitation depth, duration, frequency maps for the State of Arkansas, University of Arkansas, PI, (7/1/2004-6/30/2006), \$109,992.
- Understanding the impact of urbanization on short and long term precipitation variability and land surface hydrologic processes, NASA, Collaborative Team composed of NASA Goddard Space Flight Center (PI: Shepherd), University of Maryland (PI: Jin), and University of Utah (PI: Burian), (10/01/2003-9/30/2006), \$68,797 (Utah Budget).
- Analysis of 3D building databases for establishing urban morphological characteristics, Los Alamos National Laboratory, PI, (9/15/03-3/1/04), \$12,601.
- Acquisition of a High Accuracy/Resolution Landscape and Structure Characterization System (HARLS-CS) for Anthropology, Archaeology, Architecture, Biology and Geosciences, NSF Co-PI with Limp (PI), Kvamme, Bajwa, and Beaupre (8/1/03-7/31/06), \$349,452 (Major Research Instrumentation Award, made significant contributions to proposal, but left University of Arkansas before award arrived, no transfer of equipment/funds to U. of Utah).
- GIS-based BMP planning tool for stormwater quality management, Mack-Blackwell Rural Transportation Center, Arkansas State Highway and Transportation Department, PI with Co-PI F. Edwards (Co-PI), (7/01/02-6/30/04), \$198,735 (external: \$167,281).

- Development of guidelines for construction best management practices, Arkansas State Highway and Transportation Department, Co-PI with F. Edwards (PI), (7/1/02-6/30/04), \$260,724 (external: \$210,409).
- Derivation of urban canopy parameters for mesoscale meteorological and plume dispersion models, U.S. EPA, PI, (6/01/02-2/28/03), \$21,848.
- Analysis of 3D building databases for establishing urban morphological characteristics, Los Alamos National Laboratory, PI, (2/01/02-1/31/03), \$15,985.
- Development of construction site stormwater pollution prevention BMP workshop, Arkansas Highway and Transportation Department, Co-PI with F. Edwards (PI), (10/16/01-6/30/02), \$56,080 (external \$40,000).
- Construction site erosion control BMP workshops, demonstrations, and demonstration of effectiveness, U.S. EPA and Arkansas Soil and Water Conservation Commission, Co-PI with F. Edwards (PI), T. Soerens (Co-PI), Steele (Co-PI), M. Boyer (Co-PI), (7/01/01-6/30/03), \$218,858 (external: \$178,443).

## **SOFTWARE AND DATABASES**

### **Software (most recent versions listed)**

- Flood Inundation Prediction Tool and Decision Support System, version 2 (2008). ArcGIS extension coded in Visual Basic .NET providing hydraulics model building capabilities, extreme rainfall flood simulation capability, and interfacing with damage estimation and consequence assessment software. Includes documentation (user manual and technical documentation). Programming Team: Dave Judi, Alfred Kalyanapu, Amanda Gilliland, Scott Mansell, Woo Suk Han.
- Dam Break Simulator, version 1 (2006). Visual Basic .NET code for simulating dam break hydrographs to feed into existing flood modeling tools. Includes documentation (user manual and technical documentation). Primary Programmer: Woo Suk Han.
- Hurricane Surge Inundation Simulator, version 1 (2006). Visual Basic .NET code for simulating inundation from hurricane storm surge events. Includes documentation (user manual). Primary Programmer: Scott Mansell.
- Water Distribution Model Builder (WDMB), Version 2.1 (2006). Visual Basic .NET ArcGIS extension for the National Infrastructure Simulation and Analysis Center's Water Infrastructure Simulation Environment. Includes documentation (user manual and technical documentation). Primary Programmer: Pooja Mutha.
- UMAP (Urban Morphological Analysis Processor), Version 2. (2005). Visual Basic for Applications (VBA) code for the ArcGIS geographic information system software package. Developed to process three-dimensional building data and compute gridded urban canopy parameters for mesoscale meteorological and urban dispersion models. Includes documentation (user manual and technical documentation). Primary Programmers: Andrew McKinnon and WooSuk Han.

## **Databases**

- National Building Statistics Database, Version 2. (2008). High-resolution gridded building statistics and morphological parameters for use in mesoscale meteorological and urban dispersion models. Version contains 42 cities in the U.S. accompanied by documentation and distributed on CD to 100+ member user group, LA-UR-08-1921, Los Alamos National Laboratory.
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## **EDUCATION RESEARCH PUBLICATIONS**

### **Peer-Reviewed**

21. Burian, S.J., Ward, M., Stevenson, D., Ahmad, S., Gates, T., Mahar, R.B., Lashari, B., Banuri, T., Chaudhry, A., Ullman, J.L., (2018). "Assessment of a peer mentoring program to build capacity for course development and delivery." *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 24-27 June, 2018, Salt Lake City, UT, USA.
20. Burian, S.J., Jha, M., Richard, G., Shepherd, J.M. (2017). "An interdisciplinary learning module on water sustainability in cities." *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 25-28 June, 2017, Columbus, OH, USA.
19. Burian, S.J., Ward, M., Banuri, T., Chaudhry, M.A., Ahmad, S., Lashari, B., Mahar, R.B., Stevenson, D., VanDerslice, J., Ansari, K., Babar, M., and Qureshi, A.L. (2017). "Higher education capacity building in water resources engineering and management to support achieving the sustainable development goal for water in Pakistan." *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 25-28 June, 2017, Columbus, OH, USA.
18. Burian, S.J., Ward, M., Banuri, T., Chaudhry, M.A., Ahmad, S., Lashari, B., Ansari, K. (2016). "Higher education capacity building to support achieving the sustainable development goal for water in Pakistan." *Water and Environment in the New Millennium: Education and Capacity Building*. 3-5 December 2016, University of Tehran, Tehran, Iran.
17. Schmucker, D., Burian, S.J., and Lenart, J. (2016). "A Civil infrastructure system perspective – Not just the built environment." *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 26-29 June, 2016, New Orleans, LA, USA.
16. Ward, M., Bowen, B., Burian, S., Cachelin, A., and McCool, D. (2016). "Institutionalizing sustainability curriculum at the University of Utah." *Journal of Environmental Studies and Sciences*, 6(1), 425-431, DOI 10.1007/s13412-015-0315-z.
15. Burian, S.J., Schmucker, D., Lenart, J., Tavakol-Davani, H., Romero, P., and Barber, M.E. (2016). "Developing global learning outcomes in a civil engineering program." *American*

*Society for Engineering Education (ASEE) Annual Conference Proceedings, 26-29 June, 2016, New Orleans, LA, USA.*

14. Gosselin, D., Burian, S.J., Lutz, T., and Maxson, J. (2016). "Integrating geoscience into education about environment, society, and sustainability using place-based learning: three examples." *Journal of Environmental Studies and Sciences*, 6(3), 531-540, DOI 10.1007/s13412-015-0238-8.
13. Schmucker, D. and Burian, S.J. (2015). "History and heritage as a vehicle for contemporary issues." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 14-17 June, 2015, Seattle, WA, USA.*
12. Burian, S.J. and Apul, D. (2015). "Cross-Institution Collaborative Learning (CICL) to connect water resources design with sustainability analysis." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 14-17 June, 2015, Seattle, WA, USA.*
11. Burian, S.J. and Reynolds, S.K. (2014). "Using a sustainable infrastructure rating system in the civil engineering capstone design course." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 15-18 June, 2014, Indianapolis, IN, USA.*
10. Burian, S.J., Horsburgh, J.S., Rosenberg, D.E., Ames, D.P., Hunter, L.G., and Strong, C. (2013). "Using interactive video conferencing for multi-institution, team-teaching." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 23-26 June, 2013, Atlanta, GA, USA.*
9. Burian, S.J. and Romero, P. (2012). "Engineering study abroad program on sustainable infrastructure combining engineering and non-engineering students." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 10-13 June, 2012, San Antonio, TX, USA.*
8. Blevins, M. and Burian (2012). "Analysis of the sustainability culture in civil and environmental engineering and mechanical engineering programs." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 10-13 June, 2012, San Antonio, TX, USA.*
7. Burian, S.J., Barbanell, E.M., Blevins, M. (2011). "Avoiding another Tower of Babel: Bridging communication barriers among students and instructors from civil engineering, humanities, and other disciplines in a multidisciplinary course." *American Society for Engineering Education (ASEE) Annual Conference Proceedings, 26-29 June, 2011, Vancouver, BC, Canada.*
6. Kunberger, T., Burian, S.J., Lutey, W.A., Morse, A.N., O'Neill, R., Sanford Bernhardt, K.L., and Welker, A.L. (2011). "Twenty-first century civil engineering: An overview of who, what, and

where.” *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 26-29 June, 2011, Vancouver, BC, Canada.

5. Burian, S.J. (2010). “Teaching sustainability in a civil engineering curriculum.” *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 20-23 June, 2010, Louisville, KY.
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## RESEARCH PUBLICATIONS AND PRESENTATIONS

(Mentees Underlined)

### **Peer-Reviewed Publications (Journal, Conference, Book Chapter, Report)**

95. Lee, S. and Burian, S.J. “Triple top line based sustainability measure for water distribution systems.” *Sustainability* (under review).
94. Devkota, J., Petit-Boix, A., Phillips, R., Vargas-Parra, M. Violeta, Alejandro, J., Gabarrell, X., Rieradevall, J., Burian, S., Apul, D. “Life cycle assessment of rainwater harvesting in urban neighborhoods: Implications of infrastructure configuration and demand patterns in the US and Spain.” *Journal of Hydrology* (under review).
93. Shin, S., Lee, S., Burian, S.J., Judi, D., and McPherson, T. “Evaluating resilience of water distribution networks to operational failures from cyber-physical attacks.” *Journal of Environmental Engineering* (accepted, in press).

92. Liu, S., Zheng, F., Wei, S., Liu, Q., Liu, N., Shao, Y., and Burian, S.J. "Building damage mapping based on Touzi decomposition using quad-polarimetric ALOS PALSAR data." *Remote Sensing* (accepted, in press).
91. Sowby, R.B. and Burian, S.J. (2020). "High-resolution energy intensity modeling to improve water distribution system performance." *Journal of Sustainable Water in the Built Environment*, 6(1), <https://doi.org/10.1061/JSWBAY.0000896>.
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### **Review Papers**

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4. Burian, S.J. and Brown, M.J. (2001). *Summary of Los Angeles, California urban building and land use/cover data*. Los Alamos Unclassified Report, LA-UR-01-4055, Los Alamos National

Laboratory, Los Alamos, NM, July 2001.

3. Burian, S.J., McPherson, T.N., Brown, M.J., and Turin, H.J. (2000). "Development of a stormwater model for the Ballona Creek watershed." *Los Alamos Unclassified Report (LA-UR-00-1849)*, Los Alamos National Laboratory, Presented at 1<sup>st</sup> Ballona Wetlands Symposium, May 17-18, 2000, Los Angeles, California.
2. Burian, S.J. (1999). "Long-term performance of wet-weather flow storage/release systems considering receiving-water impacts." *Ph.D. Dissertation*, Department of Civil and Environmental Engineering, The University of Alabama, Tuscaloosa, Alabama.
1. Pitt, R., Lilburn, M., Durrans, S.R., Burian, S., Nix, S., Voorhees, J., and Martinson, J. (1999). *Guidance manual for integrated wet weather flow (WWF) collection and treatment systems for newly urbanized areas (New WWF Systems)*. Final project report submitted to U.S. Environmental Protection Agency, Urban Watershed Management Branch, Edison, NJ.

**Presentations and Invited Talks (Presenter in bold; mentees underlined)**

155. **Burian, S.J.** (2019). "If we knew then what we know now: Learning from the USPCAS-W experience to improve faculty development in Pakistan." *International Conference on Promoting Quality Assurance in Higher Education*, Islamabad, Pakistan, December 4, 2019. (Invited)
154. **Burian, S.J.** (2019). "Lessons learned from five years of research capacity building in Pakistan to help develop local capacity for water security." *2019 Annual American Water Resources Association Conference*, Salt Lake City, Utah, USA, November 3-6, 2019.
153. Carlisle, J., **Burian, S.J.**, Kim, H., Patterson, A., Finlayson, S., Loomis, J., Stott, J., Hassan, D., Kim, E., Kim, K., and Kennington, N. (2019). "Wireless sensor network for soil moisture measurement and how it may influence urban vegetable gardener water use, attitudes, and behaviors." *2019 Annual American Water Resources Association Conference*, Salt Lake City, Utah, USA, November 3-6, 2019.
152. **Shin, S.**, Aziz, D., and Burian, S. J. (2019). "Investigating effects of water system augmentation on energy consumption and financial balance: application of system dynamics approach." *2019 Annual American Water Resources Association Conference*, Salt Lake City, Utah, USA, November 3-6, 2019.
151. **Choi, E.**, Shin, S., Aziz, D., and Burian, S. J. (2019). "A system dynamics model to evaluate climate resilience for agricultural water system in South Korea." *2019 Annual American Water Resources Association Conference*, Salt Lake City, Utah, USA, November 3-6, 2019.

150. **Burian, S.J.** (2019). "Building a National Water Center in Pakistan to address the Sustainable Development Goal for water." University of Utah Public Health Grand Rounds, September 24, 2019.
149. **Tavakol-Davani, Ha., Tavakol-Davani, He.**, and Burian, S.J. (2019). "Green infrastructure optimization to achieve natural hydrology conditions." *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019.
148. **Kreidler, M., Burian, S.J., Lee, S.**, Strong, C., Brooks, P., Briefer, L., Kirkham, T., and Stewart, J. (2019). "All canals lead to SLC: using systems modeling with stakeholder participation to inform management decisions for a complicated municipal water supply facing uncertain climate change impacts and population growth." *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019.
147. **Johnson, R.** and Burian, S.J. (2019). "Relating discharge to climate and urbanization in the urban-growth bound Jordan River basin, a tributary to Utah's Great Salt Lake." *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019.
146. **Shin, S., Jabeen, U., Aziz, D.**, Ahmed, W., Bano, R., and Burian, S.J. (2019) "Developing a system dynamics model to evaluate water and financial performance of water supply systems in Hyderabad, Pakistan." *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019. (poster)
145. **Shin, S., Lee, S.**, and Burian, S.J. (2019) "Adjusting operational interaction of components in water distribution systems to maximize recovered performance from cyber-physical attacks." *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019.
144. **Lee, S.**, Shin, S., and Burian, S.J. (2019). "Investigating impacts of pipe burst leakage to pipe roughness coefficient estimation" *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019.
143. **Lee, S., Shin, S.**, and Burian, S.J. (2019). "Framework for smart water network design to enhance rapidity and redundancy" *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019.
142. **Li, J.**, Burian, S.J., and Oroza, C. (2019). "Exploring the potential for simulating system-level controlled smart stormwater system." *ASCE-EWRI World Environmental & Water Resources Congress 2019*, Pittsburgh, Pennsylvania, USA, May 19-23, 2019. (poster)

141. **Hansen, C.H.**, Wilkinson, G., and Burian, S.J. (2019). "Developing and implementing an early warning system for HABs in Utah Lake." *ASLO 2019 Aquatic Sciences Meeting: Planet Water Challenges and Successes*, San Juan, Puerto Rico, February 24-March 1, 2019.
140. **Hansen, C.** and Burian, S.J. (2018). "Short-term forecasting and decision support tool for algal blooms in a multi-lake system." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
139. **Johnson, R.** and Burian, S.J. (2018). "Integration of remote sensing data products for optimizing Great Salt Lake's ecosystem benefits." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
138. **Rafique, A.** and Burian, S.J. (2018). "Improving water supply, hydropower generation, and flood control objectives of Tarbela Dam by altering reservoir operations." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
137. **Tavakol-Davani, Hassan, Tavakol-Davani, Hessam,** and Burian, S.J. (2018). "A watershed scale life cycle assessment framework for stormwater management." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
136. **Tavakol-Davani, Hessam,** Tavakol-Davani, Hassan, and Burian, S.J. (2018). "Green infrastructure optimization to achieve natural hydrology of a semi-arid urban catchment." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
135. **Shin, S., Lee, S.,** Judi, D., McPherson, T., and Burian, S.J. (2018). "Impacts of operational failures by cyber attacks on water distribution networks." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
134. **Lee, S.** and Burian, S.J. (2018). "Investigation of preparedness of water distribution system using 4R based resilience metrics." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
133. **Lee, S.** and Burian, S.J. (2018). "Redundancy quantification of water distribution systems using time-dependent graph theory." *ASCE-EWRI World Environmental & Water Resources Congress 2018*, Minneapolis, Minnesota, USA, June 3-7, 2018.
132. **Lee, S.,** Shin, S., Burian, S., Judi, D., and McPherson, T. (2018) "Detectability-based resilience of water distribution system using failure finger print." *1st International WDSA/CCWI Joint Conference*, Kingston, Ontario, Canada, July 23-25, 2018 (oral).

131. Li, H., Hansen, C., Von Stackelberg, N., Goel, R., Burian, S., and **Barber, M.** (2018). "Assessing and modeling climate change impacts on cyanobacteria in Utah Lake." *2018 UCOWR/NIWR Annual Water Resources Conference*, June 26-28, Pittsburgh, PA.
130. **Burian, S.J.**, Ward, M., Stevenson, D., Ahmad, S., Gates, T., Mahar, R.B., Lashari, B., Banuri, T., Chaudhry, A., Ullman, J.L., (2018). "Assessment of a peer mentoring program to build capacity for course development and delivery." *American Society for Engineering Education (ASEE) Annual Conference Proceedings*, 24-27 June, 2018, Salt Lake City, UT, USA.
129. **Burian, S.J.** (2018). "Building research capacity in Pakistan to achieve the United Nations sustainable development goal for water." *Utah Section of the American Water Resources Association Annual Conference*, Salt Lake City, Utah, USA, May 16, 2018. (Invited Talk)
128. **Burian, S.J.**, Strong, C., Arens, S. (2018). "Green infrastructure optimization to achieve near natural hydrology conditions." *Utah City Engineers Association Annual Conference*, St. George, Utah, USA, January 25-26, 2018. (Invited Talk)
127. **Bano, R.**, Rafique, A., Hassan, D., and Burian, S.J. (2017). "Performance of Diامر Basha Dam under Changing Hydrology and Demand Management" *International Science Policy Conference on Climate Change*. Dec 18-20, 2017. Islamabad, Pakistan.
126. **Tavakol-Davani, He.**, Tavakol-Davani, Ha., Feng, Y., Burian, S.J. (2017). "Green infrastructure optimization to achieve near natural hydrology conditions." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017.
125. **Hansen, C.H.**, Goharian, E., Ahmed, W., and Burian, S.J. (2017). "Sensitivity of water system vulnerability to changing snowpack from dust deposition and climate change." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017.
124. Tamaddun, K., Kalra, A., Ahmed, W., Dars, G.H., Burian, S., and Ahmad, S. (2017). "Association of Indian Ocean climate variability with precipitation in Pakistan." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017.
123. Salemnia, A., Fereshtehpour, M., **Tavakol-Davani, He.**, Feng, Y., Judi, D., McPherson, T., and Burian, S.J. (2017). "Study of operational impact curves for transportation systems linking flood depth to vehicle speed." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017. (poster)

122. **Lee, S.**, Shin, S., and Burian, S.J. (2017). "Sustainability metrics for water distribution system using triple top line." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017.
121. Ahmed, W., **Hansen, C.H.**, Goharian, E., Shepherd, M., Ahmad, S., and **Burian, S.J.** (2017). "Data management and modeling for addressing the water-energy-food nexus in Pakistan." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017.
120. **Nishu, N.**, Burian, S.J., and Pomeroy, C. (2017). "Comparison of centralized and distributed water supply infrastructure for small communities." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017. (poster)
119. Ahmed, W., **Chaudhry, I.**, Ali, M., and **Burian, S.J.** (2017). "Coupling of SWMM and ArcGIS for drainage infrastructure management." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017. (poster)
118. **Sowby, R.B.**, and Burian, S.J. (2017). "Energy requirements for public water services in the United States." *ASCE-EWRI World Environmental & Water Resources Congress 2017*, Sacramento, California, USA, May 21-25, 2017.
117. **Burian, S.J.** (2017). "Changing paradigms of urban water infrastructure." *Wallace Stegner Center 22<sup>nd</sup> Annual Symposium – Water in the West: Exploring Untapped Solutions*, University of Utah, March 24, 2017 (Invited panel presentation).
116. **Burian, S.J.** (2017). "Water resilience research at the University of Utah." Presentation at *Water Resilience Research Forum* at the Utah Asia Campus, March 14, 2017.
115. **Petit-Boix, A.**, **Feng, Y.**, Burian, S.J., Apul, D., Josa, A., Rieradevall, J., and Gabarrell, X. (2016). "Environmental map of water and food self-sufficiency: integrating rainwater harvesting and urban agriculture in different climates." *LCA Food 2016*, Dublin, Ireland, 19-21 October, 2016.
114. **Grant, J.**, Weeg, M., Carlson, A., Wallace, H., **Feng, Y.**, Burian, S.J. (2016). "Use of green infrastructure to increase invertebrate biodiversity in the built environment." *Conservation Asia 2016*, Singapore, 29 June – 2 July, 2016.
113. **Burian, S.J.**, Ward, M., Banuri, T., Chaudhry, M.A., Ahmad, S., Lashari, B., Ansari, K. (2016). "Higher education capacity building to support achieving the sustainable development goal for water in Pakistan." *Water and Environment in the New Millennium: Education and Capacity Building*. 3-5 December 2016, University of Tehran, Tehran, Iran. (Invited keynote presentation)

112. **Rafique, A.**, Burian, S.J., Goharian, E., Riaz, K., and Chaudhry, I. (2016). "Flood Frequency Analysis and Water Management Modeling of Upper Indus River Basin." *ASCE-EWRI World Environmental & Water Resources Congress 2016*, West Palm Beach, Florida, May 23, 2016. (poster)
111. **Nishu, N.**, Goharian, E., and Burian, S.J. (2016). "Analysis of supply solution options to mitigate the water supply crisis in developing countries." *ASCE-EWRI World Environmental & Water Resources Congress 2016*, West Palm Beach, Florida, May 23, 2016. (poster)
110. **Tavakol-Davani, He.**, Goharian, E., Hansen, C., Tavakol-Davani, Ha., Apul, D. and Burian, S.J. (2016). "Rainwater harvesting ability to control climate change impacts on combined sewer overflows." *ASCE-EWRI World Environmental & Water Resources Congress 2016*, West Palm Beach, Florida, May 23, 2016. (presented in the 13th Urban Watershed Management Symposium).
109. **Burian, S.J.** (2016). "Urban water-energy-food nexus." *ASCE-EWRI World Environmental & Water Resources Congress 2016*, West Palm Beach, Florida, May 23, 2016 (Invited panel presentation).
108. **Hansen, C.**, Burian, S.J., and Dennison, P. (2016). "A Tale of Two Bays: Enhancing understanding of historical conditions and Evaluating Patterns of Water Quality in the Great Salt Lake." *ASCE-EWRI World Environmental & Water Resources Congress 2016*, West Palm Beach, Florida, May 23, 2016.
107. **Tavakol-Davani, Ha.** and Burian, S.J. (2016). "A watershed-scale life cycle assessment framework for rainwater harvesting systems." *ASCE-EWRI World Environmental & Water Resources Congress 2016*, 13th Urban Watershed Management Symposium, West Palm Beach, Florida, May 24, 2016.
106. **Feng, Y.**, Burian, S.J., Mitchell, S., and White, D. (2016). "Water demand estimation for urban agriculture in a semi-arid climate." *ASCE-EWRI World Environmental & Water Resources Congress 2016*. West Palm Beach, FL, May 22-26.
105. **Feng, Y.**, Burian, S.J., Petit-Boix, A., Josa, A., Rieradevall, J., Gabarrell, X., and Apul, D. (2016). "Life cycle assessment of the cost and the social and ecosystem services of rainwater harvesting in dry climates." in *ASCE-EWRI World Environmental & Water Resources Congress 2016*. West Palm Beach, FL, May 22-26 (poster).
104. **Goel, R.**, Barber, M, Burian, S., Hinners, S.J., and Adams, C. (2015). "Uncertainty in future water quality and quantity in the Jordan River." *Salt Lake County Watershed Symposium*, Salt Lake City, Utah, November 19, 2015.

103. **Burian, S.,** Jha, M., Richard, G., Shepherd, M. (2015). "Water sustainability in cities: An interdisciplinary geoscience and engineering teaching module." *American Water Resources Association (AWRA) Annual Conference*, Denver, Colorado, November 18, 2015.
102. **Burian, S.J.** (2015). "Mixing water and cities: Don't worry, it's a sustainable and resilient mocktail!" *Global Change and Sustainability Center Seminar Series*, Salt Lake City, Utah, November 3, 2015. (invited talk)
101. **Hansen, C., Goharian, E.,** and Burian, S.J. (2015). "Development of a Combined Change Factor Methodology (CCFM) for finer scale climate change impact assessment." *AWWA Intermountain Section Annual Conference*, Logan, Utah, September 17, 2015. (poster)
100. **Hansen, C.,** Burian, S.J., Porter, R.J., and Williams, G. (2015). "Statistical and artificial neural network models of remotely sensed water quality: Farmington Bay, Great Salt Lake, Utah." *AWWA Water Quality Technology Conference*, Salt Lake City, Utah, November 2015. (poster)
99. **Goharian, E.,** Dawadi, S., Ahmad, S., and Burian, S.J., (2015), "A tale of two cities: Comparison of water resource management system response under varying climate and population growth in Salt Lake City, UT, and Las Vegas, NV." *2015 UCOWR/NIWR/CUAHSI Conference*, 16-18 June, Las Vegas, Nevada.
98. **Burian, S.J.** and Apul, D. (2015). "Cross-institution collaborative learning (CICL) to connect water resources design with sustainability analysis." *American Society for Engineering Education (ASEE) Annual Conference and Exposition*, Seattle, Washington, June 16, 2015.
97. **Goharian, E.,** Burian, S.J., Bardsley, T., Strong, S., Niermeyer, J., Briefer, L., and Kirkham, T. (2015). "Evaluating sustainability tradeoffs of integrated urban water resources management alternatives." *2015 UCOWR/NIWR/CUAHSI Conference*, 16-18 June, Las Vegas, Nevada.
96. **Burian, S.J.** (2015). "Cyber-infrastructure to enhance access to data- and computationally-intensive modeling for water resources management." *Utah Digital Government Summit*, Salt Lake City, Utah, May 21, 2015. (invited talk)
95. **Feng, Y.,** Burian, S.J., Pardyjak, E.R., and Pomeroy, C.A. (2015). "Impacts of green infrastructure on the water budget and other ecosystem services in semi-arid urban areas." In: *Proceedings, World Environmental & Water Resources Congress*, 17-21 May 2015, Austin, Texas, USA. ASCE, Reston, VA.
94. **Goharian, E.,** Burian, S.J., Niermeyer, J., Briefer, L., Kirkham, L., and Bardsley, T. (2015). "Sustainability evaluation of decentralized urban water infrastructure using systems



- modeling.” In: *Proceedings, World Environmental & Water Resources Congress, 17-21 May 2015, Austin, Texas, USA. ASCE, Reston, VA. (poster)*
93. **Panthail, J.K.**, Brewer, S.C., and Burian, S.J. (2015). “Statistical modeling of the PM2.5-Albedo-Streamflow relationship in Parley’s Creek, Utah using MODIS albedo data.” In: *Proceedings, World Environmental & Water Resources Congress, 17-21 May 2015, Austin, Texas, USA. ASCE, Reston, VA. (poster)*
  92. **Tavakol-Davani, Ha.**, Burian, S.J., Devkota, J., and Apul, D. (2015). “Comparing life cycle costs and environmental impacts of green and gray infrastructures for stormwater control.” In: *Proceedings, World Environmental & Water Resources Congress, 17-21 May 2015, Austin, Texas, USA. ASCE, Reston, VA. (poster)*
  91. **Tavakol-Davani, Ha.**, Burian, S.J., Devkota, J., and Apul, D. (2015). “Comparing green and gray techniques for combined sewer overflow control.” In: *Proceedings, World Environmental & Water Resources Congress, 17-21 May 2015, Austin, Texas, USA. ASCE, Reston, VA.*
  90. **Goharian, E., Burian, S.J.**, Bardsley, T., Strong, C., Niermeyer, J., Briefer, L., and Kirkham, T. (2015). “Climate change and scenario planning utilizing integrated water resource management modeling: Case study of Salt Lake City.” *Water for Urban Areas: Managing Risks and Building Resiliency*, AWRA Spring Specialty Conference, American Water Resources Association, 29 March – 1 April 2015, Los Angeles, CA, USA.
  89. **Goharian, E.** and Burian, S.J. (2015). “Reliability assessment of Salt Lake City Water Supply System by using a dynamic-probabilistic systems approach.” *Water for Urban Areas: Managing Risks and Building Resiliency*, AWRA Spring Specialty Conference, American Water Resources Association, 29 March – 1 April 2015, Los Angeles, CA, USA.
  88. **Goharian, E.** and Burian, S.J. (2015). “A new metric integrating flooding and water shortage to evaluate vulnerability of water systems subject to climate change.” *Water for Urban Areas: Managing Risks and Building Resiliency*, AWRA Spring Specialty Conference, American Water Resources Association, 29 March – 1 April 2015, Los Angeles, CA, USA.
  87. **Tavakol-Davani, H.**, Goharian, E., Hansen, C., and Burian, S.J. (2015). “Climate change impacts on green infrastructure performance in Toledo.” *Water for Urban Areas: Managing Risks and Building Resiliency*, AWRA Spring Specialty Conference, American Water Resources Association, 29 March – 1 April 2015, Los Angeles, CA, USA.
  86. **Feng, Y.**, Burian, S., Pardyjak, E., and Pomeroy, C. (2014). “Impacts of green infrastructure on the water budget and other ecosystem services in subhumid urban areas.” *AGU Fall Meeting*, 15-19 December, San Francisco, CA, USA.

85. **Burian, S.J. (2014).** "Water infrastructure sustainability and resilience to urban disasters." *Korea Research Institute for Human Settlements*, Seoul, South Korea, August 7, 2014 (Invited Talk)
84. **Burian, S.J., Goharian, E., York, C., Tavakol-Davani, H., Feng, Y., Zahmatkesh, Z., and Panthail, J.K. (2014).** "Climate and urban water management influences on water levels in Farmington Bay near Salt Lake City, Utah." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
83. **Feng, Y.,** Burian, S.J., Pardyjak, E., Pomeroy, C., Elliott, G., and Brotherton, T. (2014). "Green roof water budget measurements using weighing lysimeters in Salt Lake City, Utah." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
82. **Goharian, E.** and Burian, S.J. (2014). "Using dynamic simulation to support integrated water resources management." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
81. **Goharian, E.,** Burian, S.J., Swain, N., Christensen, S., Das, D., Jones, N. (2014). "Web-based dynamics simulation reservoir system management tool for water supply utilities in Salt Lake City, Utah." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
80. **Houdeshel, C.D.** and Burian, S.J. (2014). "Identifying critical source areas along an engineering stormwater flow path in order to optimize stormwater green infrastructure placement." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
79. **Panthail, J.K.,** Burian, S.J., Goharian, E., and Houdeshel, D. (2014). "Simulation of the impact of urban air pollution on snowmelt runoff quantity and quality in the Parley's Creek Watershed in Salt Lake City, Utah." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
78. **Tavakol-Davani, H.** and Burian, S.J. (2014). "Accelerating stormwater modeling with distributed computing using HT Condor." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
77. **Tavakol-Davani, H.** Devkota, J., Apul, D., and Burian, S.J. (2014). "Comparing green and gray infrastructure solutions for the Toledo combined sewer system in terms of stormwater runoff control and life cycle environmental impacts." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.

76. **Tavakol-Davani, H.** Tavakol-Davani, H., Burian, S.J., and Muleta, M. (2014). "Uncertainty analysis of a coupled life cycle analysis and urban drainage model." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
75. **Zahmatkesh, Z.**, Goharian, E., Burian, S.J., Tavakol-Davani, H., and Karamouz, M. (2014). "A study of climate change impacts on urban runoff in a New York City watershed." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
74. **Zahmatkesh, Z.**, Tavakol-Davani, H., Burian, S.J., Goharian, E., and Karamouz, M. (2014). "Low-impact development (LID) implementation to mitigate climate change impacts on urban runoff." In: *Proceedings, World Environmental & Water Resources Congress*, 1-5 June 2014, Portland, OR, USA. ASCE, Reston, VA.
73. **Neupauer, R.M.**, Chan Hilton, A.B., Burian, S., Lauer, J.W., Mathisen, P., Mays, D.C., Nicklow, J.W., Olsen, M.S., Pomeroy, C., Ruddell, B., and Sciortino, A. (2013). "H2Oh!: Collection of classroom demonstrations and activities for improving student learning of water concepts." *Geological Society of America's 125<sup>th</sup> Anniversary Annual Meeting & Exposition*, 27-30 October, Denver, Colorado.
72. **Burian, S.J.**, Pomeroy, C., Houdeshel, D., Walsh, T., Reynolds, S., Orr, A., Tavakol-Davani, H., Feng, Y., Sandoval, K. (2013). "Experimental and computer modeling studies of green infrastructure performance in a semi-arid climate." *2013 Low Impact Development Symposium*, 18-21 August, Saint Paul, Minnesota.
71. **Apul, D.**, Devkota, J., Burian, S., and Tavakol-Davani, H. (2013). "Optimizing the use of harvested rainwater in buildings based on economic and environmental criteria." *Environmental Engineers and Scientists of 2050: Education, Research, and Practice*, 2013 AEESP 50th Anniversary Conference, 14-16 July, 2013, Golden, Colorado, USA.
70. **Burian, S.J.**, Barbanell, E., McCool, D., Ward, M., Ehleringer, J., and Bowen, B. (2013). "Interdisciplinary teaching and research at the University of Utah to address water sustainability in the Mountain West." *Annual Conference, Association for Environmental Studies and Sciences*, 19-23 June, Pittsburgh, PA.
69. **Burian, S.J.**, Strong, C., Pomeroy, C., Kochanski, A., Goharian, E. (2013). "Climate data access and urban water system modeling." *CI-WATER Symposium and 2nd Annual Conference*, Salt Lake City, Utah, 29-30 May 2013.
68. **Devkota, J.**, Apul, D.S., Burian, S.J., and Tavakol-Davani, H. (2013). "Sustainability of decentralized rainwater harvesting system - An approach to reduce potable water demand and storm water runoff." *Ohio Stormwater Conference*, Cincinnati, OH, May 2013.

67. **Devkota, J.**, Apul, D.S., Burian, S.J., and Tavakol-Davani, H. (2013). "Effect of building design on cost, energy, and emission payback periods of rainwater harvesting systems." *World Environmental and Water Resources Congress (EWRI 2013)*, Cincinnati, OH, May 2013.
66. **Goharian, E.**, Burian, S., Bardsley, T., Kirkham, T. (2013). "Evaluating the reliability of a water supply system based on system dynamics modeling: A Case Study of Salt Lake City, Utah." *2013 World Environmental and Water Resources Congress*, 19-23 May, Cincinnati, Ohio.
65. **Tavakol-Davani, H.**, Burian, S.J, Apul, D.S., and Devkota, J. (2013). "Integrating life-cycle assessment and long-term performance in urban water infrastructure analysis." *World Environmental and Water Resources Congress (EWRI 2013)*, Cincinnati, OH, May 2013.
64. **Bardsley, T.**, Burian, S., Strong, C., Goharian, E., Livneh, B., Wood, A., Kirkham, T., Briefer, L., Miller, P. (2013). "Assessing climate change risks to a municipal water supply: A pilot project incorporating downscaled climate projections, operational hydrologic modeling, and a systems planning model." *2013 CPASW Climate Prediction Applications Sciences Workshop*, 23-25 April, Logan, Utah.
63. **Bardsley, T.**, Burian, S., Strong, C., Goharian, E., Kirkham, T., Briefer, L., Livneh, B., Wood, A., Miller, P. (2013). "Assessing climate change risks to a municipal water supply: A pilot project incorporating downscaled climate projections, operational hydrologic modeling, and a systems planning model." *2013 Spring Runoff Conference*, 9-10 April, Utah State University, Logan, Utah.
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