Jeffrey M. Sadler

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Education

University of Virginia — Charlottesville, Virginia
Ph.D. in Civil and Environmental Engineering — *expected May 2019*

Brigham Young University — Provo, Utah
M.S. in Civil and Environmental Engineering — *April 2015*
B.S. in Civil and Environmental Engineering — *April 2013*

Research Experience

Doctoral Research — Jul '15 – present
Advisor: *Dr. Jonathan Goodall*

- Focused smart stormwater systems for mitigating urban flooding.
- Worked closely with interdisciplinary team including computer science, transportation, and social science faculty on NSF-funded project
- Used machine learning algorithm, Random Forest, to predict street flood severity in coastal city, Norfolk, Virginia, USA.
- Helped develop and implement metadata framework to describe and store environmental models in NSF-funded, web-based system HydroShare.
- Participated in writing multiple NSF grant proposals including funded $2.5 million CRISP project award.

Masters Research — Aug '13 – Apr '15
Advisor: *Dr. Daniel Ames*

- Designed Web API to stream environmental data from open-hardware data-loggers to standards-based, open-source data system, CUASHI HIS.
- Developed web service link from existing data sources to the community research repository HydroShare.

Publications and Presentations

Peer-Reviewed Journal Publications

Morsy M.M., Goodall, J.L., O'Neil, G., **Sadler, J.M.**, Voce, D., Hassan, G., Huxley, C. (2018) A Cloud-Based Decision Support System for Real-time Warning of Flooding Impacts to Transportation Infrastructure in Coastal Virginia. *Environmental Modelling and Software*. 107, 231-244. DOI: https://doi.org/10.1016/j.envsoft.2018.05.007

Essawy, B.T., Goodall, J.L., Zell, W., Voce, D., Morsy, M.M., **Sadler, J.M.**, & Malik, T. (2018) Integrating Scientific Cyberinfrastructure to Improve Reproducibility in Computational Hydrology: Example for HydroShare and GeoTrust. *Environmental Modelling and Software*. 105, 217-229. DOI: https://doi.org/10.1016/j.envsoft.2018.03.025

Sadler, J.M., Goodall, J.L., Morsy, M.M., Spencer, K. (2018) Modeling Urban Coastal Flood Severity from Crowd-Sourced Flood Reports Using Poisson Regression and Random Forest. *Journal of Hydrology*. 559, 43-55. DOI: 10.1016/J.JHYDROL.2018.01.044

Sadler, J. M., Haselden, N., Mellon, K., Hackel, A., Son, V., Mayfield, J., Blase, A., & Goodall, J. L. (2017). Impact of Sea-Level Rise on Roadway Flooding in the Hampton Roads Region, Virginia. *Journal of Infrastructure Systems*, 23(4), 05017006, DOI: 10.1061/(ASCE)IS.1943-555X.0000397.

Sadler, J. M., Goodall, J. L., & Morsy, M. M. (2017). Effect of Rain Gauge Proximity on Rainfall Estimation for Problematic Urban Coastal Watersheds in Virginia Beach, Virginia. *Journal of Hydrologic Engineering*, 22(9), 04017036; DOI: 10.1061/(ASCE)HE.1943-5584.0001563.

Morsy, M. M., Goodall, J. L., Castronova, A. M., Dash, P., Merwade, V., **Sadler, J. M.**, Rajib, M.A., Horsburg, J.H. & Tarboton, D. G. (2017). Design of a metadata framework for environmental models with an example hydrologic application in HydroShare. *Environmental Modelling & Software*, 93, 13-28; DOI: 10.1016/j.envsoft.2017.02.028.

Sadler, J. M., Ames, D. P., & Livingston, S. J. (2016). Extending HydroShare to enable hydrologic time series data as social media. *Journal of Hydroinformatics*, 18(2), 198-209; DOI: 10.2166/hydro.2015.331.

Sadler, J. M., Ames, D. P., & Khattar, R. (2016). A recipe for standards-based data sharing using open source software and low-cost electronics. *Journal of Hydroinformatics* 18 (2) 185-197; DOI: 10.2166/hydro.2015.092.

Publications in Progress

Sadler, J.S., Goodall, J.L., Behl, M., Morsy, M.M. Leveraging Open Source Software and Parallel Computing for Model Predictive Control Simulation of Urban Drainage Systems using EPA-SWMM5 and Python. In preparation for submission to *Environmental Modelling & Software*.

Sadler, J.S., Goodall, J.L., Morsy, M.M., Behl, M., Spencer, K. Assessing Utility of Active Stormwater Controls in Coastal Cities with Sea Level Rise. In preparation for submission to *Journal of Hydrology*.

Peer-Reviewed Conference Papers

Sadler, J.S., Goodall, J.L., Behl, M., Morsy, M.M. (Accepted 2018). Leveraging Open Source Software and Parallel Computing for Model Predictive Control Simulation of Urban Drainage Systems using EPA-SWMM5 and Python. Proceedings of the 11th International Conference on Urban Drainage Modelling, Sept. 23-26, Palermo, Italy.

Sadler, J., Ames, D., Khattar, R. (2014). Open-Hardware Meets Open Software for Environmental Monitoring. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), Proceedings of the 7th International Congress on Environmental Modelling and Software, June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2

Selected Conference Presentations

Sadler, J. M., Essawy, B., Goodall, J.L., Tarboton, D.G.(2018 *Invited*) Illustrating HydroShare's Functionality for Supporting FAIR Data Principles through an Example Use Case and Reproducibility Workshop. American Geophysical Union Fall Meeting, December 10-14, Washington D.C., USA.

Sadler, J. M., Goodall, J.L., Morsy, M.M., Spencer, K. (2017) Predicting Coastal Flood Severity using Random Forest Algorithm. American Geophysical Union Fall Meeting, December 11-15, New Orleans, Louisiana, USA.

Sadler, J. M., Morsy, M.M., Castronova, A., Essawy, B., Goodall, J.L., & Tarboton, D.G. (2017) Demonstrating Scientific Workflow Reproducibility through HydroShare. Presented at the CUAHSI HydroInformatics Conference, July 25-27, Tuscaloosa, Alabama, USA.

Goodall, J. L., **Sadler, J. M.**, Hassan, A., Rowlands, C., Wang, G., Morsy, M. M., Whitehouse, K., Johnson C. G. (2016) Stormwater Management in Virginia Beach Using Real-time Sensing, Modeling, and Control. Presented at World Environmental & Water Resources Congress, May 22-26, West Palm Beach, Florida, USA.

Sadler, J., Ames, D., Khattar, R., (2014). Open-Hardware Meets Open Software for Environmental Monitoring. 7th International Congress on Environmental Modelling and Software, June 15-19, San Diego, California, USA.

Sadler, J., Ames, D. (2014). Open-Hardware Meets Open Software for Environmental Monitoring. Presented at the American Water Resources Association GIS and Water Resources Conference, May 12-14, Snowbird, Utah, USA.

Awards and Honors

- 2016 Mid-Atlantic Transportation Sustainability Center University Transportation Center Outstanding Student of the Year.
- 2014 Winner of the Utah AWRA Student Paper Competition.

Teaching Experience

Instructor of Record for Water Resources Engineering Course *Spring '18*

- Co-instructed junior-level undergraduate Water Resources course.
- Was responsible for preparing lectures, homework sets, and exam questions.
- Developed new material for introducing Python and ArcGIS into course material.
- Course evaluations at average of school courses as first time instructor.

Teaching Assistant for Water Resources Engineering Course *Spring '17*

- Prepared materials for and delivered lectures for two class sessions.
- Assisted in developing exam questions including a design problem for final exam.
- Held office hours and assisted with grading.

Summer Enrichment Program Instructor *Summer '16*

- Taught high-achieving high school age students basics of hydrology and DIY electronics for environmental monitoring.
- Developed curriculum development for 22 class hours.
- Was mentored by Curry School of Education personnel regarding curriculum development and classroom management.

Skills

Software and Models: MODFLOW, HEC-HMS, TUFLOW, ArcGIS, SWMM, ArcPy, Linux

Programming Languages: Python, R, Visual Basic, HTML, Django, JavaScript, SQL, LaTex

Natural Languages: Italian (reading, writing, speaking)