



Daniel B. Wright, Ph.D.

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Research Interests:

Understanding and managing extreme rainfall and flood risks at local and regional scales; physical, statistical, and stochastic hydrologic prediction; understanding climate impacts on extreme weather to increase resiliency; hydrologic applications of remotely-sensed precipitation from ground-based and satellite platforms.

Education:

Princeton University, Princeton, New Jersey

- Ph.D. in Civil and Environmental Engineering (2009-2013)
Supervisor: Prof. James A. Smith
Dissertation Title: Observation-Driven Understanding and Prediction of Urban Flood Hazard

University of Michigan, Ann Arbor, Michigan

- M.S.E. in Civil Engineering (2005)
Supervisor: Prof. Avery H. Demond
- B.S.E. in Civil and Environmental Engineering (with concentration in hydrology) (2001-2005)

Research and Professional Employment:

- **Assistant Professor**, Civil and Environmental Engineering-Water Resources, University of Wisconsin, Madison, Wisconsin (2016-present)
- **NASA Postdoctoral Program Fellow**, Hydrological Sciences Laboratory, NASA Goddard Space Flight Center, Greenbelt, Maryland (2014-2016)
- **Disaster Risk Management Analyst**, Latin America and Caribbean Regional Disaster Risk Management and Urban Unit, The World Bank, Washington, D.C. (2013-2014)
- **Graduate Student Researcher**, Hydrometeorology Research Group, Civil and Environmental Engineering, Princeton University, Princeton, New Jersey (2009-2013)
- **Water Resources Engineer**, JMS Ingenieros Consultores, San Pedro de La Paz, Chile (2008-2009)
- **Regional Sanitation Engineer**, Peace Corps Basic Sanitation, Monteagudo, Bolivia (2006-2008)

Teaching and Mentoring Experience:

- CEE716: Statistical Modeling of Hydrologic Systems. Spring 2017.
- CEE315: Hydrology. Fall 2016.
- CEE619: Special Topics in Hydrology: Dynamics of Floods and Flood Risks. Spring 2016.

- Doctoral Supervisor for Christopher Bosma, Guo Yu
- Master's Supervisor for Alexandra Sampson
- Co-supervisor for master's thesis, Aureline Grange, thesis title: "*Challenges of Flash Flood Distributed Hydrologic Modeling in Small Urban Watersheds*," (Ecole Polytechnique Fédérale de Lausanne and Princeton University), 2013.
- Invited lecturer for CEE460: Risk Analysis (Princeton University), 2013.
- Invited lecturer for CEE321: Water Resources Engineering (College of New Jersey), 2012.
- Assistant Instructor for CEE306: Hydrology (Princeton University), 2012.
- Lectures on trade-off concepts in engineering design for EGR102: Engineering in the Modern World (Princeton University), 2011.

Funded Research Proposals:

- *Development of a Web-based Stochastic Storm Transposition Toolkit for Physically-based Rainfall and Flood Hazard Analysis*, U.S. Bureau of Reclamation Office of Science and Technology. Co-Principal Investigator. Award term: 2016-2019. Total award: \$253,600. Award to UW-Madison: \$226,300.
- *A Regional Analysis Framework for Evaluating Satellite Rainfall Extremes in Complex Terrain for Landslide Hazards Applications*, NASA Precipitation Measurement Program. Co-Principal Investigator. Award term: 2016-2019. Total award: \$345,700. Award to UW-Madison: \$171,000.
- *A Toolkit for High-Resolution Rainfall and Flood Frequency Analysis using Stochastic Storm Transposition and IMERG Satellite Precipitation*, submitted to NASA Postdoctoral Fellowship Program. Award Date: June 2014. 2-year postdoctoral fellowship and travel support.

Peer-Reviewed Publications, in Review or in Press:

- **Wright, D.B.**, *Precipitation Information for Global Flood Modeling*, accepted, invited chapter for AGU Books volume on Global Flood Hazard Modeling.

Peer-Reviewed Publications, Published or Accepted:

- **Wright, D.B.**, R. Mantilla, and C.D. Peters-Lidard. "[*A remote sensing-based tool for assessing rainfall-driven hazards*](#)," Environmental Modelling & Software 90 (34-54), 2017.
- Ayalew, T.B., W.F. Krajewski, R. Mantilla, **D.B. Wright**, S. Small. "[*Effect of Spatially Distributed Small Dams on Flood Frequency: Insights from the Soap Creek Watershed*](#)," Journal of Hydrologic Engineering, 04017011, 2017.
- **Wright, D.B.**, T.R. Knutson, J.A. Smith. "[*Regional Climate Model Projections of Rainfall from U.S. Landfalling Tropical Cyclones*](#)," Climate Dynamics, 0930-7575(1-15), 2015.
- **Wright, D.B.**, J.A. Smith, M.L. Baeck. "[*Flood Frequency Analysis Using Radar Rainfall Fields and Stochastic Storm Transposition*](#)," Water Resources Research, 50 (1592-1615), 2014.
- **Wright, D.B.**, J.A. Smith, G. Villarini, M.L. Baeck. "[*Long-term high-resolution radar rainfall fields for urban hydrology*](#)," Journal of the American Water Resources Association, 50(3:713-734), 2014.
- **Wright, D.B.**, J.A. Smith, M.L. Baeck, "[*Critical examination of area reduction factors*](#)," Journal of Hydrologic Engineering, 19(4:769-776), 2014.
- **Wright, D.B.**, J.A. Smith, G. Villarini, M.L. Baeck. "[*Estimating the frequency of extreme rainfall using weather radar and stochastic storm transposition*](#)," Journal of Hydrology, 448(150-165), 2013.
- Smith, J.A., M.L. Baeck, G. Villarini, **D.B. Wright**, W.F. Krajewski. "[*Extreme Flood Response: The June 2008 Flooding in Iowa*](#)," Journal of Hydrometeorology, 14(1810-1825), 2013.

- Yang, L., J.A. Smith, **D.B. Wright**, M.L. Baeck, G. Villarini, F. Tian, H. Hu. "[Urbanization and Climate Change: An Examination of Nonstationarities in Urban Flooding](#)," Journal of Hydrometeorology, 14(1791-1809), 2013.
- Smith, B.K, J.A. Smith, M.L. Baeck, G. Villarini, **D.B. Wright**, "[The Spectrum of Storm Event Hydrologic Response in Urban Watersheds](#)," Water Resources Research, 49(2649–2663), 2013.
- **Wright, D.B.**, J. A. Smith, G. Villarini, M. L. Baeck, "[Applications of Radar-Based Rainfall Estimates for Urban Flood Studies](#)," Stormwater and Urban Water Systems Modeling, Monograph 21 (Ed. W. James), Computational Hydraulics International, Guelph, ON Canada, 2013.
- **Wright, D.B.**, J.A. Smith, G. Villarini, M.L. Baeck. "[The hydroclimatology of flash flooding in Atlanta](#)," Water Resources Research, 48, W0524, 2012.
- **Wright, D.B.** and J.M. Schwenk, "[Aplicación de HEC-RAS 4.0 en el Cálculo del Comportamiento Hidráulico en Mini- y Pequeñas Centrales Hidroeléctricas](#)," Energía y Desarrollo, 26, August 2010.
- Towey, T., S.-C. Chang, A. Demond, **D. Wright**, N. Barabas, A. Franzblau, D. Garabrant, B. Gillespie, J. Lepkowski, W. Luksemburg, P. Adriaens, "[Hierarchical Cluster Analysis of Polychlorinated Dioxins and Furans in Michigan, USA, Soils: Evaluation of Industrial and Background and Congener Profiles](#)," Environmental Toxicology and Chemistry, 29(10):64-72, 2010.

Technical Reports:

- **Wright, D.B.**, "*Methods in Flood Hazard and Risk Assessment*," Technical Notes developed under the World Bank LCR Probabilistic Risk Assessment Program (CAPRA), The World Bank, 20 pp., 2016.
- **Wright, D.B.**, C.L. Linero, M.C. Rogelis. *The 24 December 2013 Christmas Eve Storm in Saint Lucia: Hydrometeorological and Geotechnical Perspectives*, Latin America and the Caribbean Regional Disaster Risk Management and Urban Development Unit, The World Bank, 113 pp., 2014.
- Government of Saint Lucia and the World Bank, *Saint Lucia Joint Rapid Damage and Needs Assessment: Flood Event of December 24–25, 2013*, World Bank Group, 66 pp. 2014.

Popular Media:

- **Wright, D.B.**, "*Shelter from the Storm: Urban Floods in Latin América*", Foreign Affairs Latinoamérica Sección ü, June 2013.

Invited Presentations:

- **Wright, D.B.**, "*Data-Driven Assessment of Rainfall and Flood Hazards in a Changing World*," Environmental Engineering Seminar Series, Marquette University and the Global Water Center, Milwaukee, WI, March 3, 2017.
- **Wright, D.B.**, "*Horton's 'Rule of Data' Revisited: Alternatives for Rainfall and Flood Frequency Analysis in a Changing World*," Ven Te Chow Hydrosystems Laboratory Seminar Series, University of Illinois, Urbana-Champaign, IL, February 3, 2017.
- **Wright, D.B.**, "*Probabilistic Modeling of Extreme Rainfall and Nonstationary Flood Hazards Using Remote Sensing*," Atmospheric and Oceanic Sciences Colloquium, University of Wisconsin-Madison, Madison, WI, December 5, 2016.
- **Wright, D.B.**, "*Data-Driven Understanding of Rainfall and Floods in (Two) Changing Environments*," Water Resources Engineering and Environmental Fluid Mechanics seminar series, University of Wisconsin-Madison, Madison, WI, September 15, 2016.
- **Wright, D.B.**, "*Thunderstorms, Hurricanes, and the Flood Hydroclimate of the Eastern United States*," Nelson Institute Center for Climatic Research Climate, People, and the Environment Program seminar series, University of Wisconsin-Madison, Madison, WI, January 29, 2016.

- **Wright, D.B.**, *"Multi-Scale Flood Risk Estimation using Rainfall Remote Sensing,"* Civil and Environmental Engineering Department, Colorado State University, Fort Collins, CO, October 30, 2015.
- **Wright, D.B.**, *"Using Remote Sensing to Understand the Joint Probability of Extreme Rainfall and Flood Response,"* Dam Safety Office, U.S. Bureau of Reclamation, Denver, CO, October 29, 2015.
- **Wright, D.B.**, *"The Importance of Rainfall (and Rainfall Remote Sensing) for Understanding Floods and Flood Risks,"* Civil and Environmental Engineering Department, University of Texas Arlington, Arlington, TX, September 28, 2015.
- **Wright, D.B.**, C.D. Peters-Lidard, *"RainyDay: Open Source Extreme Rainfall Modeling,"* Engineering for Climate Extremes Partnership Workshop 3rd Annual Workshop, National Center for Atmospheric Research, August 20, 2015.
- **Wright, D.B.**, *"RainyDay: A Tool for the Assessment of Long-Term Flood Hazard using Rainfall Remote Sensing,"* National Weather Service Office of Hydrologic Development, Silver Spring, MD, May 14, 2015.
- **Wright, D.B.**, *"Rainfall, Hazards, and Hydrology: The Engineering Importance of Hydrometeorology and Remote Sensing,"* Civil and Environmental Engineering Department, University of Wisconsin Madison, Madison, WI, March 24, 2015.
- **Wright, D.B.**, *"Rainy Day: Toward Modern Flood Hazard Assessment using Remote Sensing,"* IIHR-Hydroscience and Engineering, University of Iowa, Iowa City, IA, January 23, 2015.
- **Wright, D.B.**, *"Hurricanes, Thunderstorms, and Urban Flooding in the Eastern United States,"* Center for Urban Environmental Research and Education, University of Maryland Baltimore County, Baltimore, MD, October 10, 2014.
- **Wright, D.B.**, *"Understanding Flood Hazards with Remote Sensing,"* Civil and Environmental Engineering Department, University of California Davis, Davis, CA, April 23, 2014.
- **Wright, D.B.**, J.A. Smith, T.R. Knutson, M.L. Baeck, *"Present and Future Impacts of Tropical Cyclones on Urban Flooding in the Eastern United States,"* AIR Worldwide, Boston, MA, July 30, 2013.
- **Wright, D.B.**, J.A. Smith, M.L. Baeck, *"Understanding Urban Flood Risk: Integrating Hydrology, Meteorology, and Climate Science,"* Columbia Water Center, Columbia University, New York, NY, June 21, 2013.
- **Wright, D.B.**, J.A. Smith, M.L. Baeck, *"Understanding Urban Flood Risk: Integrating Hydrology, Meteorology, and Climate Science,"* The Global Facility for Disaster Reduction and Recovery, World Bank Global Facility for Disaster Reduction and Recovery, Washington D.C., May 7, 2013.
- **Wright, D.B.**, J.A. Smith, M.L. Baeck, *"An Observation-Driven Approach to Rainfall and Flood Frequency Analysis Using High-Resolution Radar Rainfall Fields and Stochastic Storm Transposition,"* Nuclear Regulatory Commission Workshop on Probabilistic Flood Hazard Assessment, Washington D.C., January 29, 2013.
- **Wright, D.B.**, J.A. Smith, M.L. Baeck, J. Yeung, L. Yang. *"Rainfall modification in urban areas: no easy answers,"* Symposium on Fluid Dynamics and the Global Environment, Princeton University, Princeton, NJ, May 22, 2012.

Conference Presentations:

- **Wright, D.B.**, D. Kirschbaum, S. Yatheendradas, *"An Ensemble Generator for Quantitative Precipitation Estimation Based on Censored Shifted Gamma Distributions,"* American Geophysical Union Fall Meeting, San Francisco, CA, December 13, 2016.

- Kirschbaum, D.B., **D.B. Wright**, T. Stanley, S. Yatheendradas, "A Regional Analysis Framework for Evaluating Satellite Rainfall Extremes in Complex Terrain for Landslide Hazards Applications" (Poster), NASA Precipitation Measurement Mission Science Team Meeting, Houston, TX, October 24-28, 2016.
 - **Wright, D.B.**, "Dynamical Data-Driven Assessment of Long-term Flood Hazards in a Changing Environment," Society for Industrial and Applied Mathematics Conference on Mathematics of the Planet Earth, Philadelphia, PA, October 1, 2016.
 - **Wright, D.B.**, R. Mantilla, C.D. Peters-Lidard, "Using Remote Sensing to Understand the Joint Probability of Extreme Rainfall and Flood Response," American Geophysical Union Fall Meeting, San Francisco, CA, December 15, 2015.
 - **Wright, D.B.**, C.D. Peters-Lidard, T. Ayalew, R. Mantilla, F. Quintero, S. Yatheendradas, D. Kirschbaum, "RainyDay: A Remote Sensing-Driven Extreme Rainfall Simulation Approach for Hazard Assessment," European Geosciences Union General Assembly, Vienna, Austria, April 16, 2015.
 - Smith J.A., M.L. Baeck, L. Cunha, Y.-H. Ryu, **D.B. Wright**, B.K. Smith, M. Liu and A. Grange, "Empirical Analyses of the Hydroclimatology of Flooding for Small Urban Watersheds," American Meteorological Society Annual Meeting, Atlanta, GA, February 4, 2014.
 - **Wright, D.B.**, J.A. Smith, T.R. Knutson, M.L. Baeck, "Present and Future Impacts of Tropical Cyclones on Urban Flooding in the Eastern United States," American Geophysical Union Fall Meeting, San Francisco, CA, December 13, 2013.
 - Sedlar, F., V.Y. Ivanov, J.X. Shao, U. Narayan, F. Nardi, T.E. Adams, V. Merwade, **D.B. Wright**, J. Kim, S. Fatichi, E. Rakhmatulina, "The development of a hydrologic-hydraulic representation of an urban landscape: the case study of Nashville, Tennessee," American Geophysical Union Fall Meeting, San Francisco, CA, December 13, 2013.
 - **Wright, D.B.**, J.A. Smith, M.L. Baeck, "Rainfall and Flood Frequency Analysis Using High-Resolution Radar Rainfall Fields and Stochastic Storm Transposition", European Geosciences Union General Assembly, Vienna, Austria, April 6, 2013.
 - **Wright, D.B.**, J.A. Smith, G. Villarini, M.L. Baeck. "Applications of Radar-Based Rainfall Estimates for Urban Flood Studies," Stormwater and Urban Water Systems Modeling, Computational Hydraulics Incorporated. Toronto, Canada, February 22, 2012.
 - **Wright, D.B.**, J.A. Smith, G. Villarini, M.L. Baeck. "The Flood Hydroclimatology of Urban Environments in the Southeastern United States," American Geophysical Union Fall Meeting, San Francisco, CA, December 6, 2011.
 - **Wright, D.B.**, J.A. Smith, G. Villarini, M.L. Baeck. "Hydroclimatologic Analyses of Extreme Rainfall and Flooding in Atlanta, Georgia Using Long-Term Radar-Rainfall Datasets," American Geophysical Union Fall Meeting, San Francisco, CA, December 14, 2010.
 - Smith, J. A., M.L. Baeck, G. Villarini, B.K. Smith, **D.B. Wright**. "Urbanization and the Regional Rainfall Climatology of the Baltimore Metropolitan Region," American Geophysical Union Fall Meeting, San Francisco, CA, December 2010.
 - Chang, S.-C., P. Adriaens, T. Towey, **D. Wright**, A. Demond, B. Gillespie, A. Franzblau, D. Garabrant, "Analysis of Patterns in PCDD, PCDF and PCB Soil Concentrations from a Community in Michigan, USA," Dioxin 2006, Oslo Norway, August 21-25, 2006.
 - Towey, T., P. Adriaens, A. Demond, **D. Wright**, D. Gwinn, B. Gillespie, "Spatial Analysis of PCDD, PCDF, PCB Soil Concentrations from a Community in Michigan, USA," Dioxin 2006, Oslo Norway, August 21-25, 2006.
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Workshops /Special Courses:

- Participant in *Summer School on Atmospheric Modeling*, NOAA Geophysical Fluid Dynamics Laboratory, Princeton, NJ, July 2012.
- Climate science and water resources specialist and participant, Inter-University Student Initiative in Carbon Sequestration *Fall Meeting*, Princeton University, November 2011.
- Participant in three-week Advanced Study Program Summer Colloquium: *Statistical Assessment of Extreme Weather Phenomena Under Climate Change*, National Center for Atmospheric Research, Boulder, CO, June 2011.
- International development specialist for *Sustainable Energy Development in South America*, University of Michigan and Universidad de Concepción, Concepción, Chile, February 2008.

Honors:

- Recipient, NASA Postdoctoral Program Fellowship Award, 2014.
- Outstanding Reviewer, Journal of Hydrologic Engineering, 2014; 2015.
- Recipient, Computational Hydraulics International University Grant Program Award, 2012.
- Chi Epsilon Civil Engineering Honor Society, Univ. of Michigan Chapter, member since 2003.
- University of Michigan Dean's List 2002-2005 and Cum Laude graduate.
- Eagle Scout with Bronze Palm, Boy Scouts of America, awarded 1998.

Service:

- Secretary, Natural Hazards Focus Group, American Geophysical Union (2017-present).
- Session Co-chair, "*Weather and Climate Ensembles for Hydrologic Forecasting and Scenario Analysis*," American Geophysical Union Fall Meeting, 2016.
- Member, NASA Precipitation Measurement Mission Science Team (2016-present).
- Member, WCIP-ACWI Subcommittee on Hydrology, Extreme Storm Events Work Group (2016-present).
- Member, Early Career Scientists Committee, Natural Hazards Focus Group, American Geophysical Union (2015-2016).
- Proposal review panelist (for NASA), 2016.
- Session Co-chair, "*Monitoring, Prediction, and Hazard Mitigation of Hydroclimatic Extreme Events*," American Geophysical Union Fall Meeting, 2015.
- Co-organizer, Outstanding Student Paper Awards, Natural Hazards Focus Group, American Geophysical Union Fall Meeting, 2015.
- Peer reviewer for *Geophysical Research Letters*, *Journal of Climate*, *Water Resources Research*, *Journal of Hydrology*, *Journal of Geophysical Research: Atmospheres*, *Journal of Hydrometeorology*, *Hydrologic and Earth Systems Science*, *IEEE Transactions on Geoscience and Remote Sensing*, *Atmospheric Research*, *Journal of Hydrologic Engineering*, *Advances in Water Resources*, *Hydrological Processes*, *Journal of the American Water Resources Association*, AGU Books.
- Reviewer for "*Manual of Standard Practice for Radar Rainfall Data Estimation*" from ASCE and EWRI.
- Technical Mentor—Peru Project, Princeton University Engineers Without Borders, 2009-2015.
- Executive Board Member, University of Michigan BLUELab. 2004-2005.

Public Speaking:

- Invited speaker (on water services privatization in developing countries)—*Saturday FILM Series*, West Windsor Arts Council, January 2013.

- Invited speaker—*Collective Motion International Development Conference*, Princeton University, November 2010.
 - Invited speaker—*Peace Corps 50th Anniversary Celebration*, University of Michigan, October 2010.
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Memberships:

- American Society of Civil Engineers
 - American Geophysical Union
 - Engineers Without Borders
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Languages:

- English-native
- Spanish-advanced