Mark K. Wang

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Center for Water and the Environment, J.J. Pickle Research Campus, Austin, TX

Education

The University of Texas at Austin — Austin, TX
Doctor of Philosophy | Civil Engineering — *Expected May 2026*
Master of Science | Environmental and Water Resources Engineering — *May 2022*

Columbia University — New York, NY
Bachelor of Science | Civil Engineering | Water Resources — *May 2016*

Franklin & Marshall College — Lancaster, PA
Bachelor of Arts | Cognitive Science | Music — *May 2016*

Research Experience

The University of Texas at Austin — Austin, TX
Graduate Research Assistant — *Sep 2020 – May 2026*

- Advisor: Prof. Paola Passalacqua
- Funding: NSF GRFP, NOAA AdSci, Planet Texas 2050, DOE SETx-UIFL

NOAA | National Weather Service | CUAHSI — Tuscaloosa, AL
2023 Summer Institute Course Coordinator — *June 2023 – July 2023*

- Coordinated activities for 23 fellows, planned program with advisors, compiled report

2022 Summer Institute Fellow — *June 2022 – July 2022*

- Developed a terrain-analysis based method for coupling riverine and coastal inundation

Fulbright Program, U.S. Department of State — Zhuhai & Shenzhen, China
Research Grantee — *June 2019 – Feb 2020*

- Studied low-impact development and stormwater management in the Pearl River Delta

Professional Experience

Water Utility, City of Austin — Austin, TX
Systems Planning Engineering Intern — *Mar 2020 – Sep 2020*

- Automated sewer peak-flow analyses, maintained GIS databases for infrastructure planning

Mease Engineering, P.C. — Quakertown, PA
Civil Engineer — *Oct 2017 – June 2019*

- Analyzed site hydrology, designed stormwater management systems for water quality

NYC Department of Environmental Protection — New York, NY
Assistant Civil Engineer — *June 2016 – Oct 2017*

- Managed green stormwater infrastructure projects, reviewed construction plans and contracts

Publications

Under review and in preparation

2. **Wang, M.**, Passalacqua, P., Coon, E., Rathore, S. S., & Perez, G. (in preparation). Probabilistic Flood Maps from Ensembles of Downscaled Compound Flood Inundation in Southeast Texas. *Water Resources Research.*

1. **Wang, M.**, Passalacqua, P., Moftakhari, H., & Hardage, B. (submitted). Rating Surfaces for Quantifying Compound Flooding at Points of Interest. *Hydrology and Earth System Sciences.*

Peer-reviewed

8. Michalek, A. T., Villarini, G., Done, J. M., **Wang, M.**, & Passalacqua, P. (accepted). Quantification of the Impact of Uncertainties in Flood Risk Projections Across the Delaware River Basin. *Earth's Future.*

7. Brelsford, C., Coon, E. T., **Wang, M.**, Rosenheim, N., Brake, N., Haselbach, L., & Passalacqua, P. (2026). Multi-Objective Urban Observational Strategies: A Risk-Based Framework for Expanding Flood Sensor Networks. *Water Resources Research*, *62*(1). https://doi.org/10.1029/2025WR041135

6. Shetty, N. H., **Wang, M.**, Elliott, R. M., & Culligan, P. J. (2025). Comparative Performance of Green Roof Systems with Smart Cisterns: Balancing Stormwater Capture and Irrigation Supply. *Water*, *17*(20). https://doi.org/10.3390/w17202987

5. Murphy, S., **Wang, M.**, Cheng, C.-S., Passalacqua, P., & Leite, F. (2025). Land-Use Analysis Using Infrastructure Representations and High-Resolution Flood Inundation Mapping Techniques. *International Journal of Disaster Risk Reduction*, *123*. https://doi.org/10.1016/j.ijdrr.2025.105518

4. **Wang, M.**, Passalacqua, P., Cai, S., & Dawson, C. (2024). c-HAND: Near Real-Time Coastal Flood Mapping. *Frontiers in Water*, *6*. https://doi.org/10.3389/frwa.2024.1329109

3. Shetty, N., **Wang, M.**, Elliott, R., & Culligan, P. (2022). Examining How a Smart Rainwater Harvesting System Connected to a Green Roof Can Improve Urban Stormwater Management. *Water*, *14*(14). https://doi.org/10.3390/w14142216

2. Shetty, N. H., Elliott, R. M., **Wang, M.**, Palmer, M. I., & Culligan, P. J. (2022). Comparing the Hydrological Performance of an Irrigated Native Vegetation Green Roof with a Conventional *Sedum* spp. Green Roof in New York City. *PLOS One*, *17*(4). https://doi.org/10.1371/journal.pone.0266593

1. Shetty, N. H., Hu, R., Mailloux, B. J., Hsueh, D. Y., McGillis, W. R., **Wang, M.**, Chandran, K., & Culligan, P. J. (2019). Studying the Effect of Bioswales on Nutrient Pollution in Urban Combined Sewer Systems. *Science of the Total Environment*, *665*. https://doi.org/10.1016/j.scitotenv.2019.02.121

Presentations

14. **Wang, M.**, Passalacqua, P., Coon, E., Rathore, S., & Perez, G. (2025). Probabilistic High-Resolution Flood Maps from Ensembles of Downscaled Compound Flood Inundation in Southeast Texas. *AGU Annual Meeting.*

13. Coon, E., Rathore, S., **Wang, M.**, Lieberknecht, K., Barbosa, S., & Passalacqua, P. (2025). Informing Compound Flood Mitigation Strategies Across Scales: Blurring the Lines Between Hydrologic and Hydraulic Models. *AGU Annual Meeting.*

12. Brelsford, C., Coon, E., **Wang, M.**, Rosenheim, N., Brake, N., Haselbach, L., & Passalacqua, P. (2025). Multi-Objective Urban Observational Strategies: A Risk-Based Framework for Expanding Flood Sensor Networks. *AGU Annual Meeting.*

11. **Wang, M.** (2025). Downscaling Compound Flood Estimates for Neighborhood-Scale Insights. *MultiSector Dynamics: Urban IFL Discussions on Emerging Approaches and Synergies.*

10. **Wang, M.**, Passalacqua, P., Coon, E., Rathore, S., & Perez, G. (2024). Downscaling Modeled Fluvial and Pluvial Flood Inundation to a Lidar Grid: A New Volume Conservative Method. *AGU Annual Meeting.*

9. **Wang, M.**, Passalacqua, P., & Preisser, M. (2024). A Near Real-Time Compound Flood Inundation Python Package. *AGU Annual Meeting.*

8. Passalacqua, P., **Wang, M.**, & Preisser, M. (2024). Acute on Chronic Stressors in Communities: When Flooding Is Not the Only Issue. *AGU Annual Meeting.*

7. Michalek, A., Villarini, G., Done, J., **Wang, M.**, & Passalacqua, P. (2024). Quantifying the Uncertainty of Ensemble Members and Downscaling Techniques in Flood Hazards and Their Associated Socioeconomic Impacts Across the Delaware River Basin. *AGU Annual Meeting.*

6. Coon, E. T., Perez, G., Rathore, S. S., Le, P. V., **Wang, M.**, Nduka, I., Persad, G., Lieberknecht, K., & Passalacqua, P. (2024). Informing Coastal Climate Impact Mitigation: Flood Frequency Analysis Under Changing Climate, Land Use, and Infrastructure. *Conference on Computational Methods in Water Resources (CMWR).*

5. **Wang, M.**, Passalacqua, P., & Moftakhari, H. (2023). Quantifying Compound Flooding in Southeast Texas: A Novel Approach for Assessing Impacts on Communities and Infrastructure. *AGU Annual Meeting.*

4. Abdelkader, M., **Wang, M.**, Ghanghas, A., Ferreira, C., & Mandli, K. T. (2022). QuiCFIM, a Quick GIS-Based Combined Flood Inundation Mapping Framework. *AGU Annual Meeting.*

3. Passalacqua, P., Preisser, M., **Wang, M.**, Bixler, P., Hooks, A., Hofmann, J., Haselbach, L., Moftakhari, H., Evans, H., Thies, C., & Maidment, D. (2022). Preparing for Future Floods: Leveraging Remotely Sensed Data, Modeling, and Social Science Information in a Multilayer Network Approach. *AGU Annual Meeting.*

2. **Wang, M.**, Passalacqua, P., Cai, S., & Dawson, C. (2022). c-HAND: Near Real-Time Coastal Flood Mapping. *AGU Annual Meeting.*

1. Shetty, N. H., & **Wang, M.** (2018). Performance of a "Next Generation" Green Roof with Irrigation and Smart Detention. *EWRI International Low Impact Development Conference.*

Grants & Awards

- Goyette Travel Award *2026*
- Trigg and Fannie E. Twichell Centennial Endowed Presidential Scholarship *2025 – 2026*
- John E. Kasch Endowed Graduate Fellowship *2020 – 2024*
- Dean's Prestigious Fellowship Supplement *2020 – 2023*
- CUAHSI Hydroinformatics Innovation Fellowship *2024*
- National Science Foundation Graduate Research Fellowship *2020 – 2023*
- Fulbright Study/Research Award *2019 – 2020*
- Fulbright Critical Language Enhancement Award *2019*
- *Magna cum laude* & Phi Beta Kappa, Franklin & Marshall College *2016*
- G. Kenneth Kohlmaier Family Scholarship *2011 – 2014*
- C. Richard Plank Scholarship *2011 – 2014*

Skills & Licenses

Programming

- Python, MATLAB, Bash, TEX, Julia, Git, NumPy, Matplotlib, Pandas, SciPy, scikit-learn, Slurm (HPC)

GIS & Engineering

- ArcGIS Pro, QGIS, GDAL, GeoPandas, Rasterio, GRASS GIS, AutoCAD, SWMM, HEC-RAS

Natural Languages

- **Native:** English | **Working proficiency:** Mandarin Chinese (spoken and written)

Licenses

- Engineer-in-Training (Pennsylvania License No. ET023499)