MICHELLE A. HUMMEL, PH.D.

Department of Civil Engineering, University of Texas at Arlington
Arlington, TX, USA

ACADEMIC APPOINTMENTS

Assistant Professor, University of Texas at Arlington, 2018-present

Graduate Student Researcher, University of California, Berkeley, 2015-2018

Research Fellow, Argonne National Laboratory, 2017

Research Fellow, Hydro Research Foundation, 2015-2016

EDUCATION

Ph.D., Environmental Engineering, University of California, Berkeley, 2018

M.S., Environmental Engineering, University of California, Berkeley, 2015

B.S., *summa cum laude*, Civil Engineering, Case Western Reserve University, 2014

RESEARCH INTERESTS

My expertise is in the areas of flood hazard modeling, exposure assessment, and coastal infrastructure adaptation. I specialize in the development of numerical and geospatial models to simulate flood hazards driven by extreme events and long-term sea-level rise. I use these models to quantify impacts on populations and critical infrastructure systems. I have previously studied regional patterns of flood exposure due to sea-level rise in the San Francisco Bay Area, considering community-level demographics, infrastructure dependencies, and shoreline adaptation. My current projects focus on (1) examining the impacts of flooding on water and transportation infrastructure along the Texas coast, (2) evaluating the effects of shoreline management and adaptation on surface-groundwater interactions in response to sea-level rise, and (3) applying distributed sensors and crowdsourced data collection approaches to assess the adaptive capacity and resilience of vulnerable Gulf Coast communities through a community-engaged research approach.

PUBLICATIONS

Naseri K, **Hummel MA** (accepted) A Bayesian copula-based nonstationary framework for compound flood risk assessment across the US coastlines. *Journal of Hydrology*.

Palinkas C, Orton P, **Hummel MA**, Nardin W, Sutton-Grier A, Harris L, Gray M, Li M, et al. (accepted) Innovations in coastal risk management with natural and nature-based features (NNBF): Lessons learned from three case studies. *Frontiers in Built Environment*.

Lubell M, Stacey MT, **Hummel MA** (2021) Collective action problems and governance barriers to sea-level rise adaptation in San Francisco Bay. *Climatic Change*, 167(46). doi: 10.1007/s10584-021-03162-5

Hummel MA, Griffin R, Guerry AD, Arkema K (2021) Economic evaluation of sea-level rise adaptation strongly influenced by hydrodynamic feedbacks. *Proceedings of the National Academy of Sciences*, 118(29). doi: 10.1073/pnas.2025961118

Hummel MA, Stacey MT (2020) Assessing the influence of shoreline adaptation on tidal hydrodynamics: The role of shoreline typologies. *Journal of Geophysical Research: Oceans*, 126(2). doi: 10.1029/2020JC016705

Hummel MA, Tcheukam Siwe A, Chow A, Stacey MT, Madanat SM (2020) Interacting infrastructure disruptions due to environmental events and long-term climate change. *Earth's Future*, 8(10). doi: 10.1029/2020EF001652

Mildenberger M, Lubell M, **Hummel MA** (2019) Personalized risk messaging can reduce climate concerns. *Global Environmental Change* 55, 15-24. doi: 10.1016/j.gloenvcha.2019.01.002

Hummel MA, Berry MS, Stacey MT (2018) Sea level rise impacts on wastewater treatment systems along the U.S. coasts. *Earth's Future* 6(4), 622-633. doi: 10.1002/2017EF000805

Hummel MA, Wood NJ, Schweikert A, Stacey MT, Jones J, Barnard PL, Erikson L (2018) Clusters of community exposure to coastal flooding hazards based on storm and sea level rise scenarios: implications for adaptation networks in the San Francisco Bay region. *Regional Environmental Change* 18(5), 1343-1355. doi: 10.1007/s10113-017-1267-5

Wang RQ, Herdman LM, Erikson L, Barnard P, **Hummel MA**, Stacey MT (2017) Interactions of estuarine shoreline infrastructure with multiscale sea-level variability. *Journal of Geophysical Research: Oceans* 122(12), 9962-9979. doi: 10.1002/2017JC012730

HONORS

- Association of College and University Educators (ACUE) Course in Effective Teaching Practices Fellow, 2021-2022
- International Conference on Flood Management Travel Grant, NSF, 2020
- Best Paper Award, Western Political Science Association, 2019
- Department of Homeland Security HS-STEM Graduate Fellowship, May-August 2017
- Hydro Research Foundation Fellowship, June 2015-May 2016
- Civil and Environmental Engineering Departmental Fellowship, UC Berkeley, August 2014-July 2015

PROFESSIONAL ASSOCIATIONS

- Member, American Geophysical Union
- Member, American Society of Civil Engineers
- Member, Coastal and Estuarine Research Federation
- Member, Tau Beta Pi