

ANTONIA GEERKE SEBASTIAN

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Department of Earth, Marine and Environmental Sciences · Environment, Ecology, Energy Program (E3P)

University of North Carolina at Chapel Hill · 104 South Road · Chapel Hill, NC · 27599

EDUCATION

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| Ph.D. | December 2016 |
| Civil & Environmental Engineering, Rice University. Advisor: Dr. Philip B. Bedient | |
| <i>Dissertation: Quantifying Flood Hazard & Risk in Highly Urbanized Coastal Watersheds</i> | |
| B.S. | May 2011 |
| Civil & Environmental Engineering, Rice University | |
| <i>Focus Areas: Urban Hydrology & Water Resources (II), Urban Infrastructure & Management (III)</i> | |

PROFESSIONAL EXPERIENCE

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| Assistant Professor , The University of North Carolina at Chapel Hill | 2020-present |
| <i>Department of Earth, Marine and Environmental Sciences — Environment, Ecology, and Energy Program (E3P)</i> | |
| <i>Adjunct Assistant Professor, Department of Environmental Science and Engineering</i> | |
| Director , UNC Sustainable Triangle Field Site | 2023-present |
| Parental Leave | Fall 2023 |
| Associate Research Scientist , Texas A&M University - Galveston Campus | 2018-2019 |
| <i>Department of Marine Sciences, The Texas Center for Beaches and Shores</i> | |
| Postdoctoral Researcher , Rice University | 2018-2018 |
| <i>Department of Civil & Environmental Engineering</i> | |
| Postdoctoral Researcher , Delft University of Technology | 2016-2017 |
| <i>Department of Hydraulic Engineering, EU Horizon2020 - BRIGAD</i> | |
| Netherlands America Foundation (NAF)/Fulbright Flood Management Fellow | 2014-2015 |
| <i>Department of Hydraulic Engineering, Delft University of Technology</i> | |
| Graduate Research & Teaching Assistant , Rice University | 2012-2016 |
| <i>Department of Civil & Environmental Engineering</i> | |
| Project Manager/Scientific Staff , Rice University | 2011-2012 |
| <i>Severe Storm Prediction, Education and Evacuation from Disasters (SSPEED) Center</i> | |

RESEARCH INTERESTS

Flood Hazard & Risk; Extreme Precipitation; Storm Surge; Coastal Resilience; Hydrologic & Hydraulic Modeling; Geospatial Statistics; Stochastic Modeling; Climate Change Impacts & Adaptation; Environmental Planning

HONORS & AWARDS

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| KLM Royal Dutch Airlines Innovation & Sustainability Award | 2022 |
| UNC Institute for the Environment, Faculty Fellow | 2022-present |
| UNC Center for Resilient Communities and Environment Scholars Program, Inaugural Scholar | 2022-present |
| NSF Next Generation of Hazards & Disasters Researchers Enabling Fellowship Program | 2019-2021 |
| Workshop for Early Career Geoscience Faculty (at Carleton College) Travel Award | 2020 |
| Civil & Environmental Engineering (CEE) Rising Stars (at MIT) Travel Award | 2017 |
| Workshop on Addressing the Challenges of Compound Events (at ETH Zurich) Travel Award | 2017 |
| Netherlands America Foundation (NAF)/Fulbright Fellowship in Flood Management | 2014-2015 |
| NSF Graduate Research Fellowship Program (GRFP), Honorable Mention | 2013 |
| San Antonio Water System (SAWS) Conservation Fellowship | 2010 |
| Rice University Center for Civic Engagement (CCE) Fellowship | 2009 |
| Federal Employee Education & Assistance (FEEA) Scholarship | 2007 |
| Congress Bundestag Youth Exchange (CBYX) Scholarship | 2006 |

PUBLICATIONS

Refereed Journal Articles (student or postdoc mentored or advised at the time of the research project)

1. Thomson, H., Zeff, H.B., Kleiman, R., **Sebastian, A.**, Characklis, G.W. (2023). Systemic Financial Risk arising from Residential Flood Damages: A Case Study of Hurricane Florence, *Earth's Future*, 11, e2022EF003206. doi: 10.1029/2022EF003206.
2. Hino, M., BenDor, T.K., Branham, J., Kaza, N., **Sebastian, A.**, Sweeney, S. (2023). Growing safely or building risk? Floodplain management in North Carolina, *Journal of the American Planning Association*, doi: 10.1080/01944363.2022.2141821.
3. Wang, Y.V., **Sebastian, A.** (2022). Equivalent Hazard Magnitude Scale. *Natural Hazards Earth Systems Sciences (NHESS)*, 22(12), 4103-4118, doi: 10.5194/nhess-22-4103-2022.
4. Wang, Y.V., **Sebastian, A.** (2022). Murphy Scale: A Locational Equivalent Intensity Scale for Hazard Events. *Risk Analysis*, doi: 10.1111/risa.13933.
5. Collins, E., Sanchez, G.M., Terando, A., Stillwell, C.C., Mitasova, H., **Sebastian, A.**, Meentemeyer, R.K. (2022). Predicting flood damage probability across the conterminous United States, *Environmental Research Letters*, 17, 034006, doi: 10.1088/1748-9326/ac4f0f.
6. Wang, C., Pavelsky, T.M., Yao, F., Yang, X., Zhang, S., Chapman, B., Song, C., **Sebastian, A.**, Frizzelle, B., Frankenberg, E., Clinton, N. (2022). Flood Extent Mapping During Hurricane Florence With RepeatPass LBand UAVSAR Images, *Water Resources Research*, 58(3), e2021WR030606, doi: 10.1029/2021WR030606.
7. **Sebastian, A.**, Bader, D.J., Nederhoff, C.M., Leijnse, T.W., Bricker, J.D., Aarkinof, S.G.J. (2021). Hindcast of pluvial, fluvial, and coastal flood damage in Houston, Texas during Hurricane Harvey (2017) using SFINCS. *Natural Hazards*, 109, 23432362, doi: 10.1007/s11069-021-04922-3.
8. Wang, Y.V., **Sebastian, A.** (2021). Community flood vulnerability and risk assessment: An empirical predictive modeling approach. *Journal of Flood Risk Management*, 14, e12739, doi: 10.1111/jfr3.12739.
9. Mobley, W., **Sebastian, A.**, Blessing, R., Highfield, W.E., Stearns, L., Brody, S.D. (2021). Quantification of Continuous Flood Hazard using Random Forest Classification and Flood Insurance Claims at Large Spatial Scales: A Pilot Study in Southeast Texas. *Natural Hazards and Earth System Sciences (NHESS)*, 21, 807-82, doi: 10.5194/nhess-2020-347.
10. Fagnant, C., Gori, A., **Sebastian, A.**, Bedient, P.B., Ensor, K.B. (2020). Characterizing spatiotemporal trends in extreme precipitation in Southeast Texas. *Natural Hazards*, doi: 10.1007/s11069-020-04235-x.
11. Juan, A., Gori, A., **Sebastian, A.** (2020). Comparing Floodplain Evolution in Channelized and Unchannelized Urban Watersheds in Houston, Texas. *Journal of Flood Risk Management*, 13(2), e12604. doi: 10.1111/jfr3.12604.
12. **Sebastian, A.**, Gori, A., Blessing, R., van der Wiel, K., Bass, B. (2019). Disentangling the relative impacts of human and environmental change on catchment response during Hurricane Harvey. *Environmental Research Letters*, 14, 124023. doi:10.1088/1748-9326/ab5234.
13. Mobley, W.⁺, **Sebastian, A.**⁺, Highfield, W.E., Brody, S.D. (2019). Estimating Flood Extent during Hurricane Harvey using Maximum Entropy in a Hazard Distribution Model. *Journal of Flood Risk Management*, doi: 10.1111/jfr3.12549. ⁺these authors contributed equally to this work
14. Lendering, K.T.⁺, **Sebastian, A.**⁺, Jonkman, S.N., Kok, M. (2019). Guidelines for assessing the performance of flood adaptation innovations within a risk-based framework. *Journal of Flood Risk Management*, doi: 10.1111/jfr3.12485. ⁺these authors contributed equally to this work
15. Couasnon, A.A., **Sebastian, A.**, Morales-Nápoles, O. (2018). A copula-based approach for modeling stochastic boundary conditions in a coastal catchment: An application to the Houston Ship Channel, Texas. *Water, Special Issue: Copulas in Hydrology*, 10(9), 1190-1209. doi: 10.3390/w10091190.
16. Paprotny, D., **Sebastian, A.**, Morales-Nápoles, O., Jonkman, S.N. (2018). Trends in European flood losses over the past 150 years. *Nature Communications*, 9, 1985. doi: 10.1038/s41467-018-04253-1.
17. Blessing, R., **Sebastian, A.**, Brody, S.D. (2018). Flood Risk Delineation in the U.S.: How much loss are we capturing? *ASCE Natural Hazards Review*, doi: 10.1061/(ASCE)NH.1527-6996.0000242.

18. Jonkman, S.N., Godfroy, M., **Sebastian, A.**, Kolen, B. (2018). Brief Communication: Post-event analysis of loss of life due to hurricane Harvey. *Natural Hazards and Earth System Sciences*, doi: 10.5194/nhess-18-1073-2018.
19. Bass, B., Torres, J.M., Irza, J.N., Proft, J., **Sebastian, A.**, Dawson, C.N., Bedient, P.B. (2018). Surge Dynamics across a Complex Bay Coastline, Galveston Bay, TX. *Coastal Engineering*, doi: 10.1016/j.coastaleng. 2018.04.019.
20. Van Oldenborgh, G.J., Van der Wiel, K., **Sebastian, A.**, Singh, R., Arrighi, J., Otto, F., Haustein, K., Li, S., Vecchi, G., Cullen, H. (2017). Attribution of the extreme rainfall from Hurricane Harvey, August 2017. *Environmental Research Letters*, 12, 124009. doi: 10.1088/1748-9326/aa9ef2.
21. **Sebastian, A.**, Dupuits, E.J.C., Moráles-Napoles, O. (2017). Applying a Bayesian Network based on Gaussian Copulas to Model the Hydraulic Boundary Conditions for Hurricane Flood Risk Analysis in a Coastal Watershed, *Coastal Engineering*, 125, 42-50. doi: 10.1016/j.coastaleng.2017.03.008.
22. Anarde, K.A., Kameschwar, S., Irza, J.N., Nittrouer, J.A., Lorenzo-Trueba, J., Padgett, J.E., **Sebastian, A.** Bedient, P.B. (2017). Impacts of Hurricane Storm Surge on Infrastructure Vulnerability for an Evolving Coastal Landscape. *Natural Hazards Review*, doi: 10.1061/(ASCE)NH.1527-6996.0000265.
23. Torres, J.M., Bass, B., Irza, J.N., Proft, J., **Sebastian, A.**, Dawson, C.N., Bedient, P.B. (2017). Modeling the Hydrodynamic Performance of a Conceptual Storm Surge Barrier System for Galveston Bay. *ASCE Journal of Waterway, Port, Coastal, and Ocean Engineering*, doi: 10.1061/(ASCE)WW.1943-5460.0000389.
24. Brody, S.D., **Sebastian, A.**, Blessing, R., Bedient, P.B. (2015). Case-study results from southeast Houston, Texas: Identifying the impacts of residential location on flood risk and loss. *Journal of Flood Risk Management*, 11(S1), S110-S120. doi: 10.1111/jfr3.12184.
25. **Sebastian, A.**, Proft, J., Dietrich, C.J., Du, W., Bedient, P.B., Dawson, C.N. (2014). Characterizing hurricane storm surge behavior in Galveston Bay using the SWAN+ADCIRC model. *Coastal Engineering*, 88, 171-181. doi: 10.1016/j.coastaleng.2014.03.002.
26. Brody, S.D., Blessing, R., **Sebastian, A.**, Bedient, P.B. (2014). Examining the impact of land use/land cover characteristics on flood losses. *Journal of Environmental Planning and Management*, 57(8), 1252-1265. doi: 10.1080/09640568.2013.802228.
27. Fang, N., Dolan G., **Sebastian, A.**, Bedient, P.B. (2014). Case Study of Flood Mitigation and Hazard Management at the Texas Medical Center in the Wake of Tropical Storm Allison in 2001. *ASCE Natural Hazards Review*, 15(3). doi: 10.1061/(ASCE)NH.1527-6996.0000139.
28. Doubleday, G., **Sebastian, A.**, Luttenschlager, T., Bedient, P.B. (2013). Modeling Hydrologic Benefits of Low Impact Development: A Distributed Hydrologic Model of The Woodlands, TX. *Journal of the American Water Resources Association*, 49(6), 1444-1455. doi: 10.1111/jawr.12095.
29. Brody, S.D., Blessing, R., **Sebastian, A.**, Bedient, P.B. (2013). Delineating the Reality of Flood Risk and Loss in Southeast, TX. *ASCE Natural Hazards Review*, 14(2), 89-97. doi: 10.1061/(ASCE)NH.1527-6996.0000091.
30. Ray, T., Stepinski, E., **Sebastian, A.**, Bedient, P.B. (2011). Dynamic Modeling of Storm Surge and Inland Flooding in a Texas Coastal Floodplain. *ASCE Journal of Hydraulic Engineering*, 137(10), 1103-1110. doi: 10.1061/(ASCE)HY.1943-7900.0000398.

Refereed Journal Articles (In Preparation & Under Review)

1. Garcia, H., **Sebastian, A.**, Fitzmaurice, K., Thomson, H., Zeff, H.B., Characklis, G.W. Historical Inundation of Coasts and Streams (HINDCAST): A bottom-up approach to spatially explicit flood hazard and risk assessment of repetitive loss in North Carolina Watersheds. *Environmental Research Letters*, planned submission 01/2024.
2. Wagenblast, T., Filatova, T., Grimley, L.E., **Sebastian, A.**, Goyal, N. The impact of Social Influence on Household Flood Adaptation Agent-based modelling to explore opinion diffusion effects across different structures of social network, , planned submission 02/2024.
3. Quintal, H.C., **Sebastian, A.**, Grimley, L.E. Dello, K. Land cover and climate change projections generate non-linear increases in discharge and flood hazards across a large watershed in eastern North Carolina by end of century. *Science of the Total Environment*, planned submission 01/2024.
4. Bates, S.L., Eddy, M.C., **Sebastian, A.**, Salzberg, A. Integrating Green Infrastructure into the Watershed Flow and Allocation (WaterFALL) Model to Support Regional Planning, *Water Resources Research*, planned submission 12/2023.

5. Grimley, L.E., **Sebastian, A.**, Leijnse, T., Ratcliff, J., Luettich, R. Determining the Relative Contributions of Runoff and Coastal Processes to Flood Exposure across the Carolinas during Hurricane Florence. *Water Resources Research*, submitted 11/2023, *in review*.
6. Kazadi, A., Doss-Gollin, J., **Sebastian, A.**, Silva, A., FloodGNN-GRU: A Spatio-Temporal Graph Neural Network for Flood Prediction. *Environmental Data Science*, submitted 04/2023, *in review*.

Refereed Papers in Conference & Workshop Proceedings

1. Kazadi, A., Doss-Gollin, J., **Sebastian, A.**, Silva, A. (2022). Flood Prediction with Graph Neural Networks. Tackling Climate Change with Machine Learning: workshop at NeurIPS, 2022.
2. Wang, Y.V. , **Sebastian, A.** (2021). Empirical Numerical Simulation of Precipitation Events for Pluvial Flood Management. *Proceedings of ASCE Geo-Extreme 2021*, Savannah, GA, August 15-18, 2021.
3. Hino, M., BenDor, T., Branham, J., Kaza, N., **Sebastian, A.**, Sweeney, S. (2020). A Parcel-Scale Analysis of Municipal Floodplain Management in North Carolina. *2020 Association of Collegiate Schools of Planning (ACSP) Annual Conference*. *virtual due to COVID-19
4. Lee, Y., Kothuis, B.L.M., **Sebastian, A.**, Brody, S.D. (2019). Design of Transformative Education and Authentic Learning Projects: Experiences and Lessons Learned from an International Multidisciplinary Research and Education Program on Flood Risk Reduction. *2019 ASEE Annual Conference & Exposition*. Tampa, FL. June 16-19, 2019.
5. Winsemius, H.C., Ward, P.J., Salamon, P., Weiland, F.S., Budimir, M., Duncan, M., Van den Hurk, B.J.J.M., **Sebastian, A.** (2016). The Domino Effect: the Future of Quantifying Compound Events in Deltas. In *Proceedings from the 2016 Understanding Risk (UR) Forum: Building Evidence for Action*. Himmelfab, A. (Ed.). Washington, D.C: The World Bank, pp. 127-130.

Books & Chapters

1. **Sebastian, A.** (2022). Compound Flooding. In *Coastal Flood Risk Reduction: the Netherlands and the U.S. Texas Gulf Coast*, S.D. Brody, Y. Lee, B.L.M. Kothuis (Eds.). Oxford: Elsevier, Inc. pp. 77-88.
2. **Sebastian, A.**, Juan, A., Bedient, P.B. (2022). Urban Flood Modeling: Perspectives, Challenges and Opportunities. In *Coastal Flood Risk Reduction: Comparisons from the Netherlands and the U.S. Upper Texas Gulf Coast*, S.D. Brody, Y. Lee, B.L.M. Kothuis (Eds.). Oxford: Elsevier, Inc. pp. 47-60.
3. Brody, S.D., Highfield, W.E., **Sebastian, A.**, Blessing, R., Mobley, W., Atoba, K., Stearns, L. (2021). A Comprehensive Framework for Coastal Flood Risk Reduction: Charting a Course Towards Resiliency. In *A Blueprint for Coastal Adaptation*, C. Kousky, B. Fleming, A.M. Berger (Eds.). Washington, D.C.: Island Press, pp. 2-28.
4. **Sebastian, A.**, Gori, A. (2018). Flood Control Policy and Risk Management in the United States. In Chapter 12, *Hydrology and Floodplain Analysis*, 6th ed. by Philip B. Bedient, Wayne Huber, & Baxter Vieux. Upper Saddle River, NJ: Prentice Hall, pp. 675-716.
5. Highfield, W.E., **Sebastian, A.**, Vieux, B. (2018). GIS Applications in Hydrology. In Chapter 10, *Hydrology and Floodplain Analysis*, 6th ed. by Philip B. Bedient, Wayne Huber, & Baxter Vieux. Upper Saddle River, NJ: Prentice Hall, pp. 617-644.
6. **Sebastian, A.** (2012). Case Studies in Hydrologic Engineering: Water Resources Projects. In Chapter 13, *Hydrology and Floodplain Analysis*, 5th ed. by Philip B. Bedient, Wayne Huber, & Baxter Vieux. Upper Saddle River, NJ: Prentice Hall, pp. 720-750.
7. Fang, Z., **Sebastian A.**, Bedient, P.B. (2012). Modern Flood Prediction and Warning Systems. In Chapter 21, *Handbook of Engineering Hydrology Vol. 1: Fundamentals and Applications*. Eslamian, S. (Ed.), Boca Raton, FL: CRC Press Taylor & Francis Group, pp. 455-470.
8. Bedient, P.B. & **Sebastian, A.** (2012). An Introduction to Gulf Coast Severe Storms and Hurricanes. In Chapter 1, *Hurricane Ike: Lessons Learned and Steps to the Future*, P.B. Bedient (Ed.). College Station, TX: Texas A&M University Press, pp. 1-15.
9. Bedient, P.B. & **Sebastian, A.** (2012). Hurricane Ike. In Chapter 2, *Hurricane Ike: Lessons Learned and Steps to the Future*, P.B. Bedient (Ed.). College Station, TX: Texas A&M University Press, pp. 16-27.

Short Communications & Interdisciplinary Products

1. **Sebastian, A.** (2021, Fall/Winter). Delta. *Journal of Delta Urbanism*. pp. 114-115.
2. Van Oldenborgh, G.J., Van der Wiel, K., Sjoukje, P., Kew, S., **Sebastian, A.**, Otto, K., Haustein, K., Singh, R., Arrighi, J., Vecchi, G. (2019, September). Rapid attribution of the extreme rainfall in Texas from Tropical Storm Imelda. *World Weather Attribution*. <https://tinyurl.com/y6pl9b5o>.
3. Blessing, R., **Sebastian, A.** (2018, September). Out of Bounds: Rethinking U.S. Flood Risk Delineation. *EARTH Magazine*. <https://tinyurl.com/yaxf46eq>
4. Brand, N., **Sebastian, A.**, Kothuis, B. (2017, October). A Multidisciplinary Perspective on Texas' Flood Risk Challenge. *DeltaLinks Magazine*. Jonkman, S.N.J., Van Veelen, P., Rijcken, T. (Eds.), <https://tinyurl.com/y8zrh9av>.
5. Van Oldenborgh, G.J., Van der Wiel, K., **Sebastian, A.** (2017, September). Harvey: een meter neerslag in Houston, Klimaatverandering? *Meteorologica Magazine*. Bintanja, R. (Ed.), <https://tinyurl.com/ybf8dqp>.
6. Kothuis, B.L.M., Jonkman, S.N., **Sebastian, A.** (2016). Delta Planning and Design in the Houston Galveston Bay Region, Texas. In *Delta Interventions: Design and Engineering in Urban Water Landscapes*. Nillesen, A.L., Kothuis, B.L.M., Meyer, H., Palmboom, F. (Eds.). TU Delft Delta Infrastructures and Mobility Initiative. Delft, the Netherlands: Delft University Publishers, pp. 82-85.
7. **Sebastian, A.** (2015). Flood Mitigation in Multi-hazard Coastal Environments. In *Delft Delta Design: Houston Galveston Bay Region, TX*. Kothuis, B.L.M., Brand, A.D., **Sebastian, A.**, Nillesen, A.L., & Jonkman, S.N. (Eds.). Delft, the Netherlands: Delft University Publishers, pp. 69-71.

Technical Reports & White Papers

1. North Carolina Policy Collaboratory (2021). Final Report to the North Carolina State Legislature: Flood Resilience Study. Chapel Hill, NC: University of North Carolina. **many authors*
2. Sharp et al. (2018). Eye of the Storm: Report of the Governor's Commission to Rebuild Texas. College Station, TX: Texas A&M University. **many authors*
3. **Sebastian, A.**, Lendering, K.T., Kothuis, B.L.M., Brand, A.D., Jonkman, S.N., Van Gelder, P.H.A.J.M., Kolen, B., Comes, M., Lhermitte, S.L.M., Meesters, K.J.M.G., Van de Walle, B.A., Ebrahimi-Fard, A., Cunningham, S., Khakzad-Rostami, N., Nespeca, V. (2017). Hurricane Harvey Report: A fact-finding effort in the direct aftermath of Hurricane Harvey in the Greater Houston Region. Delft, the Netherlands: Delft University Publishers.
4. **Sebastian, A.**, Lendering, K.T., van Loon-Steensma, J.M., Paprotny, D., Bellamy, R., Willems, P., van Loenhout, J., Colao, M.C., Dias, S., Nunes, L., Rego, F., Koundouri, P., Xepapadeas, P., Vassilopoulos, A., Wiktor, P., Wysocka-Golec, J. A Testing and Implementation Framework (TIF) for Climate Adaptation Innovations. BRIGAIID Horizon2020 Programme, European Union.
5. Bedient, P.B., Dunbar, L., Blackburn, J.B., **Sebastian, A.**, Torres, J., Bass, B., Irza, J.N. (2015). Houston-Galveston Area Protection System (H-GAPS). SSPEED Center 2015 Annual Report. Rice University, Houston, Texas.
6. **Sebastian, A.**, Irza, J.N., Christian, J., Bedient, P.B. (2014). Galveston County Residential Surge Damage Model. Rice University, Houston, Texas.
7. Blackburn, J.B., Bedient, P.B., **Sebastian, A.** (2011). The Lone Star National Recreation Area: Economic Prosperity, Recreation and Flood Mitigation Based on Natural Assets: A Concept for the Upper Texas Coast. Rice University, Houston, Texas.
8. Bedient, P.B., Blackburn, J.B., **Sebastian, A.** (2011). Learning the Lessons of Hurricane Ike: Preparing for the Next Big One. SSPEED Center Phase I Report. Rice University, Houston, Texas.

PRESENTATIONS & POSTERS*Oral Conference Presentations *denotes presenter*

1. Garcia, H.*, Fitzmaurice, K., Characklis, G.W., Zeff, H.B., Thomson, H., **Sebastian, A.**, Validation of Machine Learning Methods for Reconstructing Repetitive Flood Damage Exposure in North Carolina, 1996-2020. *2023 AGU Fall Meeting*. San Francisco, CA. December 11-15, 2023.

2. Quintal, H.C.*, Garcia, H., Cawley, M., **Sebastian, A.**, Mapping Spatially Compounding Hazards across a North Carolina County using Random Forest. *2023 AGU Fall Meeting*. San Francisco, CA. December 11-15, 2023.
3. Dello, K.*, Davis, C., Fisher, E., **Sebastian, A.**, Thomson, H., M. Hino, M., Brannum, S. Climate change and flooding risk in North Carolina. *Pew Trusts Western NC Resilience Symposium*. Asheville, NC. April 11-12, 2023.
4. Grimley, L.E.*, Hollinger, K.E., Lackmann, G. **Sebastian, A.** Linking Tropical Cyclone Precipitation in Future Climates to Shifts in Flood Exposure. *2023 NC WRRRI Meeting*. Raleigh, NC.
5. Hollinger, K.*, Sebastian, A., Lackmann, G. Combining Atmospheric and Hydrodynamic Modeling to Quantify the Impact of Human Activity on Future Tropical Cyclone Flooding in Eastern North Carolina. *2023 AMS Annual Meeting*. Denver, CO. January 8-12, 2023.
6. **Sebastian, A.***, Hino, M., Kotheagal, N., Luettich, R., Dollar, N., Gardner, A., Stoutamire, B., Frankenberg, E. (2022). Muddy Waters Integrating Engineering and Social Science to Measure Household Impacts from Hurricane Exposure on Ocracoke, North Carolina. *2022 AGU Fall Meeting*. Chicago, IL.
7. Quintal, H.C.*, Dello, K. **Sebastian, A.** (2022). Flood Evolution under Anthropogenic Change: Non-uniform Flood Hazard Increases across Three Tributaries within an Eastern North Carolina City by End of Century. *2022 AGU Fall Meeting*. Chicago, IL.
8. Grimley, L.E.*, Leijnse, T., Ratcliffe, J., Luettich, R., **Sebastian, A.** (2022). Flooding at the Fringe: A Reduced-physics Model for Assessing Compound Flooding from Pluvial, Fluvial, and Coastal Hazards. *2022 AGU Fall Meeting*. Chicago, IL.
9. Garcia, H.*, **Sebastian, A.**, Thompson, H., Zeff, H.B., Characklis, G.W. (2022). Dynamic Vulnerability: Reconstructing Historical Flood Footprints and Exposure in Eastern North Carolina. *2022 AGU Fall Meeting*. Chicago, IL.
10. Zeff, H.B.*, **Sebastian A.**, Garcia, H., Thompson, H., Kleinman R., Characklis, G. (2022). Cascading financial risks in the residential property market as a result of consecutive flood events. *2022 AGU Fall Meeting*. Chicago, IL.
11. Kazadi, A.*, Doss-Gollin, J., **Sebastian, A.**, Silva, A. (2022). Flood Prediction with Graph Neural Networks. *Tackling Climate Change with Machine Learning: NeurIPS 2022*. November 28-December 9.
12. Garcia, H.G.*, Grimley, L.E., Smiley, A.M., Ruiz, J., Berke, P., Hino, M., **Sebastian, A.** (2022). Integrating Ecosystem Services into Flood Resilience Planning in New Bern, NC. NSF International Flood Conference on Management (NSF-ICFM8). Iowa City, IA. August 8-10, 2022.
13. Thompson, H.*, Characklis, G.W., Zeff, H.B., **Sebastian, A.**, Kleiman, R. (2022). Financial Risks and Equitable Resilience Implications arising from Residential Flood Damages in Eastern North Carolina Communities. *2022 EWRI Congress*. Atlanta, GA. June 5-8, 2022.
14. **Sebastian, A.***, Dello, K. (2022). Mapping community exposure to extreme heat and flood hazards in the Carolinas. *2022 European Geophysical Union General Assembly*. Austria, Vienna. May 23-27, 2022.
15. Smiley, A.M.*, Grimley, L.E., Garcia, H., Ruiz, J., Berke, P., Hino, M., Piehler, M., **Sebastian, A.** (2022). Integrating Ecosystem Services into Flood Resilience Planning in New Bern, NC. *Joint Aquatic Sciences Meeting*. Grand Rapids, MI. May 14-20, 2022.
16. Dello, K.*, **Sebastian, A.** (2022). *Catawba-Wateree Water Management Group (CWWMG) Annual Summit*. Richburg, SC. March 30, 2022.
17. Quintal, H.* , Dello, K., **Sebastian, A.** (2022). Staggered Hazards: Outdated Floodplain Maps Underestimate Extreme Flooding Under Future Climate and Land Use Land Cover Change. *2022 NC WRRRI Conference*. Raleigh, NC. March 23-24, 2022.
18. Zeff, H.B.*, **Sebastian, A.**, Thomson, H., Kleiman, R., Characklis, G.W. (2021). Staying afloat: How do mortgage incentives for uninsured homeowners affect systemic financial risk in a future with more extreme flooding? *2021 AGU Fall Meeting*. New Orleans, LA. December 13-17, 2021.
19. Wang, Y.V.*, **Sebastian, A.**, Kim, S.H., Piechota, T., Kafatos, M. (2021). Deep Learning for Spatial Interpolation of Rainfall Events. *2021 AGU Fall Meeting*. New Orleans, LA. December 13-17, 2021.
20. Hino, M.*, BenDor, T., Kaza, N., **Sebastian, A.**, Branham, J., Sweeney, S. (2021). One Step Forward, Two Steps Back: Managing Floodplain Development in North Carolina (Invited). *2021 AGU Fall Meeting*. New Orleans, LA. December 13-17, 2021.

21. **Sebastian, A.*** (2021). Shortfalls of Houston Flood and Insurance Coverage During Hurricane Harvey (Invited). *Propeller Club of Northern California Storms, Flooding & Sea Level Defense Conference*, San Francisco, CA. November 3, 2021. *virtual due to COVID-19
22. Zeff, H.B.*, Thomson, H., Kleiman, R., **Sebastian, A.**, Characklis, G.W. (2021). Distribution of Real Estate-related Flood Risk. *2021 Commercial Real Estate Data Alliance (CREDA) Conference*. September 30-October 1, 2021.
23. Hino, M.*, Branham, J., BenDor, T., Kaza, N., **Sebastian, A.**, Sweeney, S. (2021). Development patterns and the production of flood risk in North Carolina. *2021 Association of Collegiate Schools of Planning (ACSP) 61st Annual Conference*. October 7-9, 2021. *virtual due to COVID-19
24. Wang, Y.*, **Sebastian, A.** (2021). Empirical Numerical Simulation of Precipitation Events for Pluvial Flood Management. *Proceedings of ASCE Geo-Extreme 2021*, Savannah, GA, November 7-10, 2021.
25. Wang, Y.*, **Sebastian, A.** (2021). Leveraging Social Indicators to Model Community Vulnerability to Flooding for Risk Prediction. *46th Annual Natural Hazards Research and Applications Workshop: 2021 Researchers Meeting*. Boulder, CO, July 14-15, 2021. *virtual due to COVID-19
26. Wang, Y.*, **Sebastian, A.** (2021). Typology of Hazard Event Severity Metrics for Multi-Hazard Research. *2021 European Geophysical Meeting (EGU) Annual Meeting*. April 19-30, 2021 *virtual due to COVID-19
27. Wang, Y.*, **Sebastian, A.** (2020). Equivalent Magnitude Scale for Natural Hazard. *2020 AGU Fall Meeting*. December 1-17, 2021. *virtual due to COVID-19
28. Hino, M.*, BenDor, T., Branham, J., Kaza, N., **Sebastian, A.**, Sweeney, S. (2020). A Parcel-Scale Analysis of Municipal Floodplain Management in North Carolina. *2020 Association of Collegiate Schools of Planning (ACSP) Annual Conference*. *virtual due to COVID-19
29. Hino, M.*, BenDor, T., Branham, J., Kaza, N., Schwaller, N., **Sebastian, A.**, Sweeney, S. (2020). Measuring Floodplain Management Parcel-by-Parcel in North Carolina. *45th Annual Natural Hazards Research and Applications Workshop*, Broomfield, CO. *virtual due to COVID-19
30. BenDor, T.*, Hino, M., Branham, J., Kaza, N., Sweeney, S., **Sebastian, A.**, Salvesen, D. (2020). A parcel-scale analysis of floodplain buyouts and municipal flood risk reduction strategies in North Carolina (USA). *Association of European Schools of Planning (AESOP)*, Bristol, UK. *canceled due to COVID-19
31. Brody, S.D.*, Highfield, W.E. **Sebastian, A.**, Blessing R., Mobley, W., Atoba, K., Stearns, L. (2019). Measuring, Mapping, & Managing Flood Risk: A Pilot Program in Southeast Texas. *Resilience Rising: Research and Practice on Harvey and Hazards of the Future*, College Station, TX.
32. Maulsby, F.*, **Sebastian, A.**, Bedient, P.B. (2018). Probabilistic flood risk: quantifying uncertainty in flood hazard estimates and flood risk profiles for an urban watershed in Houston, TX. *2018 AGU Fall Meeting*. Washington, DC.
33. **Sebastian, A.***, Gori, A., Bass, B. Understanding the impacts of human and environmental change on catchment response during Hurricane Harvey (Invited). *2018 AGU Fall Meeting*, Washington, DC.
34. Blessing, R.*, **Sebastian, A.**, Highfield, W.E., Brody, S.D. (2018). Measuring, Mapping and Managing Urban Flood Risk: A Pilot Program in Southeast Texas. *2018 AGU Fall Meeting*. Washington, DC.
35. Fagnant, C.*, Gori, A., Ensor, K.B., **Sebastian, A.**, Bedient, P.B. (2018). Characterizing spatio-temporal trends in extreme precipitation across the southern Texas coast. *2018 AGU Fall Meeting*. Washington, DC.
36. **Sebastian, A.*** Modeling the Influence of Urbanization on the 1% Floodplain (Invited). *2018 SSPEED Urban Flooding & Infrastructure Conference: Moving Forward from Harvey*, Houston, Texas.
37. Mobley, W.* & **Sebastian, A.** Leveraging Machine Learning and Twitter to identify rescue needs during Hurricane Harvey. *2018 ACSP 58th Annual Conference*, Buffalo, New York.
38. Lending, K.T., **Sebastian, A.**, Jonkman, S.N.* Standard Framework for Evaluating the Performance of Temporary Flood Barriers. *7th International Conference on Flood Management (ICFM7)*, Leeds, United Kingdom.
39. Couasnon, A.A., Paprotny, D.*, Morales-Nápoles, O., **Sebastian, A.**, Hrachowitz, M., Jonkman, S.N. Application of a Bayesian Network-based hydrologic model to the United States. *7th International Conference on Flood Management (ICFM7)*, Leeds, United Kingdom.

40. de Ruiter, M.*, Engelhardt, J., de Ruig, L., **Sebastian, A.**, de Moel, H. Temporally-Dynamic Flood Vulnerability: The influence of watershed-scale adaptation and vulnerability reduction efforts on flood losses. *7th International Conference on Flood Management (ICFM7)*, Leeds, United Kingdom.
41. **Sebastian, A.*** Flood Hazard Delineation in the United States: Why are we ignoring compound floods? (Invited). *2016 Understanding Risk Forum: Building Evidence for Risk Action*, Venice, Italy.
42. Juan, A.*, **Sebastian, A.**, Gori, A. Comparing Floodplain Evolution in Channelized and Un-channelized Urban Watersheds in Houston, TX. *2016 EWRI World Environmental & Water Resources Congress*, Sacramento, CA.
43. **Sebastian, A.***, Blessing, R.*, Brody, S.D. Flood Risk Delineation in the U.S.: How much loss are we capturing? (Invited). *2016 SSPEED Avoiding Disasters Conference: How to Reduce Impacts from the Next Big Storm*, Houston, TX.
44. Irza, J.N.*, **Sebastian, A.**, Bedient, P.B. Quantifying Storm Surge Flood Damages for Coastal Community Structures: A Geospatial Approach for the Galveston Bay, Texas Region. *2015 World Environmental and Water Resources Congress*, Austin, TX.
45. **Sebastian, A.***, Brody, S.D., Blessing, R., Bedient, P.B. Evaluating the 100 year floodplain as an indicator of flood loss. *2014 World Environmental and Water Resources Congress*, Portland, OR.
46. **Sebastian, A.***, Proft, J., Dawson, C.N., Bedient, P.B. Examining the Behavior of Storm Surge from Hurricane Ike (2008) and Other Modeled Events. *National Hydrologic Warning Council 2013 Conference & Exposition*, Ponte Verde, FL.
47. Brody, S.D., Blessing, R., **Sebastian, A.*** Predicting Land Use/Land Cover Change in Coastal Texas: Assessing Hazard Resiliency in Freeport, TX. *2013 APA Texas Chapter State Planning Conference*, Galveston, TX.
48. **Sebastian, A.***, Bedient, P.B., Proft, J., Dawson, C.N. An evaluation of the magnitude and timing of storm surge in relation to storm path along the upper Texas coast. *2012 World Environmental and Water Resources Congress*, Albuquerque, NM.
49. Blessing, R.*, Brody, S.D., **Sebastian, A.**, Bedient, P.B. Examining the Influence of Development Patterns on Flood Damages along the Gulf of Mexico. *2012 World Environmental and Water Resources Congress*, Albuquerque, NM.
50. Brody, S.D.*, Blessing, R., **Sebastian, A.**, Bedient, P.B. Identifying Flood Risk and Vulnerability: Assessment of the Clear Creek Watershed. *2012 Severe Storm Prediction, Education, and Evacuation from Disasters Center Conference: Gulf Coast Hurricanes: Mitigation and Response*, Houston, TX.
51. **Sebastian, A.***, Bedient, P.B. Galveston Bay Coastal Protection Network: A SSPEED Center Proposal. *2011 Texas Floodplain Management Association Fall Conference*, San Antonio, TX.

Poster Conference Presentations

1. Fitzmaurice, K.*, Garcia, H., **Sebastian, A.**, Thomson, H., Zeff, H.B., Characklis, G.W. Repetitive Flooding, Insurance Coverage, and Household Financial Stability in North Carolina. *2023 AGU Fall Meeting*. San Francisco, CA. December 11-15, 2023.
2. Grimley, L.E.*, **Sebastian, A.**, Hollinger, K., Lackmann, G. Present and Future Exposure to Compound Flooding from Tropical Cyclones in the Carolinas. *2023 AGU Fall Meeting*. San Francisco, CA. December 11-15, 2023.
3. Quintal, H.C.*, Serre, M., **Sebastian, A.** Evaluating spatial overlaps in heat and flood hazards using Bayesian Maximum Entropy: the case study of Durham, NC. *2023 NC WRRRI Meeting*. Raleigh, NC.
4. Garcia, H.*, **Sebastian, A.**, Fitzmaurice, K., Thomson, H., Zeff, H.B., Characklis, G.W. Exploring the Drivers of Household Participation in Voluntary Buyouts with an Agent-Based Model. *2023 NC WRRRI Meeting*. Raleigh, NC.
5. Grimley, L.E.*, Filatova, T., **Sebastian, A.** Exploring the Drivers of Household Participation in Voluntary Buyouts with an Agent-Based Model. *2023 NC WRRRI Meeting*. Raleigh, NC.
6. Dello, K., Runkle, J., Rivers, L., **Sebastian, A.**, Hino, M., O'Connell, C., Habron, G., Harrison, J., Anoruo, F., Malmin, N., Cawley, M., Gerald-Goins, T., Ward, R., Cashwell, H., Cothron, C. (2022) A Community-based Resilience Model on Climate and Health Equity in the Carolinas: the Carolinas Collaborative on Climate, Health, and Equity. *2022 AGU Fall Meeting*. Chicago, IL.

7. Lopez de Silva, A., Kazadi, A.*, Doss-Gollin, J., **Sebastian, A.** (2022). Flood Prediction with Graph Neural Networks. Neural Information Processing Systems (NeurIPS) 2022 Workshop: Tackling Climate Change with Machine Learning. Virtual. December 9, 2022.
8. Wagenblast, T.*, Filatova, T., Noll, B., Grimley, L.E., **Sebastian, A.** (2022). Influence of Social Networks in Private Climate Adaptation. *2022 Social Simulation Conference*. Milan, Italy. September 12-16, 2022.
9. Grimley, L.E.*, **Sebastian, A.** (2022). Exploring the effects of climate change on compound flooding in NC estuarine communities. *2022 NC WRRRI Conference*. Raleigh, NC. March 23-24, 2022.
10. Grimley, L.E.*, **Sebastian, A.** (2021). Quantifying the relative contribution of flood mechanisms that drive historical insured losses in eastern North Carolina. *2021 AGU Fall Meeting*. New Orleans, LA.
11. Quintal, H.*, **Sebastian, A.** (2021). Risky Business: How Humans Will Shape Floodplain Landscapes Over the 21st Century. *2021 AGU Fall Meeting*. New Orleans, LA.
12. Frankenberg, E., *et al.* (2021). The Dynamics of Extreme Events, People and Places: A Convergent Approach to Understanding Flooding Exposures and Impacts. *2021 AGU Fall Meeting*. New Orleans, LA.
13. Grimley, L.E.*, **Sebastian, A.** (2021). Flood hazards at the river-coastal interface of Carolina watersheds. *Carolinas Climate Resilience Conference*. Durham, NC.
14. Brannum, S.*, **Sebastian, A.** (2020). Characterizing Trends in Design Floods along Major Rivers in the Southeastern USA. *2020 AGU Fall Meeting*. *virtual due to COVID-19
15. Fagnant, C.*, Gori, A., Ensor, K.B., **Sebastian, A.**, Bedient, P.B. (2020). Characterizing spatio-temporal trends in extreme precipitation in Southeast Texas. *2020 Women in Statistics and Data Science*. Pittsburgh, PA.
16. **Sebastian, A.***, Mobley, W., Highfield, W.E., Brody, S.D. (2019). Leveraging Machine Learning and Twitter, to identify rescue needs during Hurricane Harvey. *2019 AGU Fall Meeting*. San Francisco, CA. doi: 10.1002/es-soar.10501349.1.
17. Mobley, W., **Sebastian, A.***, Blessing, R., Juan, A., Highfield, W.E. (2019). Random Forest Classification for Flood Hazard Mapping at Large Spatial Scales. *2019 AGU Fall Meeting*. San Francisco, CA.
18. Garner, M.*, **Sebastian, A.**, Hakkenberg, C., Juan, A., Gori, A., Bedient, P.B. (2019). Integrating annual Landsat imagery in a hydrologic impact analysis of localized land use change for a rapidly developing watershed in Houston, TX. *2019 AGU Fall Meeting*. San Francisco, CA.
19. Zeff, H.B.*, Characklis, G.W., **Sebastian, A.** (2019). Real estate debt and flood risk: who is financially exposed? *2019 AGU Fall Meeting*. San Francisco, CA.
20. Juan, A.*, Pranavesh, P., **Sebastian, A.**, Padgett, J.E., Bedient, P.B. (2019). Coupling Probabilistic Flood Inundation and Road Network Accessibility Modeling to Assess Flood Risk and Cascading Impacts from Severe Storms in Houston, TX. *2019 AGU Fall Meeting*. San Francisco, CA.
21. Zeff, H.B.*, Characklis, G.W., **Sebastian, A.**, Chiu, W.A., Kaihatu, J.M. (2019). The joint impacts of flooding and contaminated sediment deposition on private property owners in the wake of a storm surge event. *National Institute of Environmental Health Sciences (NIEHS) Superfund Research Program (SRP) 2019 Annual Meeting*. Seattle, WA.
22. Fagnant, C.*, Gori, A., Ensor, K.B., **Sebastian, A.**, Bedient, P.B. (2019). Characterizing spatiotemporal trends in extreme precipitation across the southern Texas coast. *Rice Oil & Gas High Performance Computing Conference*. Houston, TX.
23. Do, C.*, Juan, A., **Sebastian, A.**, Bedient, P.B. (2018). Characterization of compound flooding in a highly urbanized coastal watershed during Hurricane Harvey. *2018 AGU Fall Meeting*. Washington, DC.
24. de Ruiter, M.*, **Sebastian, A.**, Gori, A., Englehardt, J., de Moel, H. (2018). Assessing temporally-dynamic flood vulnerability using empirical building-type depth-damage curves: A case study of Houston. *2018 EGU Meeting*, Vienna, Austria.
25. **Sebastian, A.***, Juan, A., Gori, A., Maulsby, F., Bedient, P.B. (2017). Quantification of Interbasin Transfers into the Addicks Reservoir during Hurricane Harvey. *2017 AGU Fall Meeting*, New Orleans, LA.

26. Van Oldenborgh, G.J., Van der Wiel, K., **Sebastian, A.**, Singh, R., Arrighi, J., Otto, F., Haustein, K., Li, S., Vecchi, G., & Cullen, H. (2017). Attribution of the extreme rainfall from Hurricane Harvey, August 2017. *2017 AGU Fall Meeting*, New Orleans, LA.
27. Couasnon, A.A.*, **Sebastian, A.**, Morales-Nápoles, O. Modeling Stochastic Boundary Conditions in a Coastal Catchment using a Bayesian Network: An Application to the Houston Ship Channel, Texas. *2017 EGU Meeting*, Vienna, Austria.
28. **Sebastian, A.***, Juan, A., Brody, S.D., Bedient, P.B. (2016). Quantifying the Influence of Urbanization on a Coastal Floodplain. *2016 AGU Fall Meeting*, San Francisco, CA.
29. Irza, J.N.*, **Sebastian, A.**, Bedient, P.B. (2016). Quantification of Uncertainty for Residential Flood Damage Estimates. *2016 SSPEED Avoiding Disasters Conference: How to Reduce Impacts from the Next Big Storm*, Houston, TX.
30. **Sebastian, A.***, Dupuits, E.J.C., Morales-Nápoles, O., Jonkman, S.N. (2015). Assessing Flood Risk from Hurricane-induced Precipitation and Storm Surge: A Bayesian Network Approach. *2015 AGU Fall Meeting*, San Francisco, CA.
31. Bass, B.*, Torres, J.M., Irza, J.N., Proft, J., **Sebastian, A.**, Dawson, C.N., Bedient, P.B. Guiding Surge Reduction Strategies via Characterization of Coastal Surge Propagation and Internal Surge Generation within a Complex Bay/Estuary System, Galveston Bay, TX. *2015 AGU Fall Meeting*, San Francisco, CA.
32. **Sebastian, A.***, Dupuits, E.J.C., Morales-Nápoles, O., Jonkman, S.N. (2015). Statistical Analysis and Characterization of Tropical Cyclones and Surge Levels for the Houston-Galveston Region. *ASCE Coastal Structures and Solutions to Coastal Disasters Joint Conference 2015*, Boston, MA.
33. **Sebastian, A.***, Brody, S.D., Bedient, P.B. (2013). Evaluating the 100 year floodplain as an indicator of flood risk in low-lying coastal watersheds. *2013 AGU Fall Meeting*, San Francisco, CA.
34. **Sebastian, A.***, Bedient, P.B. (2012). Using NEXRAD Radar Rainfall to Calibrate a Development Impact Model in a Coastal Watershed. *2012 AGU Fall Meeting*, San Francisco, CA.
35. **Sebastian, A.***, Doubleday, G., Bedient, P.B. (2012). Distributed Hydrologic Modeling of LID in The Woodlands, Texas. *2012 AGU Fall Meeting*, San Francisco, CA.

Keynotes or Expert Panels

1. U.S. Congressional Conference on Human Adaptation Strategies for Waterway Challenges in Eastern North Carolina (2021). *Recent trends in hydrological extremes across the Southeastern U.S.* Greenville, NC. October 13, 2021.
2. FEMA National Advisory Council (NACo) Meeting (2019). *Improving Risk Visualization and Communication: A Pilot Program in Southeast Texas*. College Station, Texas. May 7-9, 2019.
3. The National Academies of Sciences, Engineering and Medicine (NASEM) ResilientAmerica Roundtable (2019). *Measuring, Mapping, and Managing Urban Flood Risk in Southeast Texas*. Washington, D.C. February 12-13, 2019.
4. Rijkswaterstaat, Ministerie van Infrastructuur en Waterstaat (2018). *Place-Based Research & Design: Collaboration between Universities in Texas and The Netherlands*. Houston, Texas. January 26, 2018.

Other Invited Lectures or Research Presentations (not listed above)

1. Seminar: Department of Marine, Earth, and Atmospheric Sciences (2023). *Delineating Flood Risk in the Coastal Zone: Leveraging Numerical Models and Administrative Data to Understand Evolving Hazards, Exposure and Vulnerability*. North Carolina State University, Raleigh, NC. February 6, 2023.
2. Seminar: City of Raleigh Stormwater Employee Committee (2022). *Constraining Future Hydrologic Extremes, Flood Hazards, and Exposure under a High-Emissions Scenario in the Neuse River Watershed*. Science Seminar Series. June 3, 2022. *presented by H. Quintal
3. Webinar: Knowledge Action Network on Emergent Risks and Extreme Events (Risk-KAN) (2022). *Attributing Flood Hazards to Human and Environmental Change: Insights from Hurricane Harvey and Southeast Texas*. Compound Events Webinar Series. April 5, 2022.

4. Seminar: North Carolina State University's Center for Geospatial Analysis (2022). *Attributing Flood Hazards to Anthropogenic Change: Insights from Hurricane Harvey and Southeast Texas*. North Carolina State University, Raleigh, NC. February 10, 2022. *virtual due to COVID-19
5. Guest Lecture: Harvard Graduate School of Design (2022). *A history of flood risk management in the Houston-Galveston Region: Establishing Current and Future Risks*. Harvard University, Boston, MA. February 4, 2022. *virtual due to COVID-19
6. Seminar: Department of Geography, Geology, and the Environment (2021). *Disentangling the Drivers of Decadal Trends in Flood Hazards in Southeast Texas*. Illinois State University, Normal, IL. October 29, 2021. *virtual due to COVID-19
7. Panelist: Leadership in Professional Research HON 296 (2021). NC State University, Raleigh, NC. September 29, 2021.
8. Panelist: College of Arts and Sciences New Faculty Orientation (2021). University of North Carolina at Chapel Hill, Chapel Hill, NC. August 16, 2021.
9. Guest Lecture: UNC Institute for the Environment (2021). *Understanding changes in watershed hydrology and their influences on flood hazards*. University of North Carolina at Chapel Hill, Chapel Hill, NC. August 10, 2021.
10. Seminar: Department of Marine Sciences (2021). *Delineating Flood Risk in Complex Coastal Systems*. University of North Carolina at Chapel Hill, Chapel Hill, NC. April 14, 2021. *virtual due to COVID-19
11. Disciplines-101 Collaboratory for Coastal Adaptation Over Space and Time (C-COAST) (2021). *Compound Flood Hazards*. University of North Carolina at Chapel Hill, Chapel Hill, NC. March 25, 2021.
12. Guest Lecture: Infrastructure and Environment Design AR 086 (2020). *A History of Flood Risk and Management of the U.S. Gulf Coast*. Delft University of Technology, Delft, the Netherlands. March 28, 2020. *virtual due to COVID-19
13. Seminar: Department of Environmental Science and Engineering (2020). *Delineating Flood Risk under Evolving Coastal Hazards*. University of North Carolina at Chapel Hill, Chapel Hill, NC. March 27, 2020. *postponed due to COVID-19
14. Guest Lecture: Coastal Resiliency & Sustainability (PLAN 641) (2019). *Accommodation: Resilience Strategies for Flood Mitigation*. Texas A&M University, College Station, Texas. April 15, 2019.
15. Seminar: Department of Marine Sciences/Marine Biology (2019). *Delineating Flood Risk under Evolving Coastal Hazards*. Texas A&M University at Galveston, Galveston, Texas. April 4, 2019.
16. Seminar: Environment, Ecology, and Energy Program (E3P) (2019). *Delineating Flood Risk under Evolving Coastal Hazards*. University of North Carolina at Chapel Hill, Chapel Hill, North Carolina. April 2, 2019.
17. Guest Lecture (2019). *The State of Texas: One Year after Hurricane Harvey*. Deltares, Delft, The Netherlands. January 30, 2019.
18. Seminar: Institute for Environmental Studies (2019). *Flood Mitigation Decision-making under Non-stationary Boundary Conditions*. Vrije Universiteit Amsterdam, The Netherlands. January 29, 2019.
19. Seminar: Department of Civil & Environmental Engineering (2018). *Delineating Flood Risk under Evolving Coastal Hazards*. Rice University, Houston, Texas. March 21, 2018.
20. Guest Lecture: Architecture Core Design Studio (ARCH 504) (2018). *Flood Risk Mitigation in the City of Houston*. Rice University, Houston, Texas. February 16, 2018.
21. Guest Lecture: Delft Infrastructure and Mobility Initiative (DIMI) - Integrated Design in Deltas Symposium: Houston after Hurricane Harvey (2017). *Flood Management in the Greater Houston Region*. Delft University of Technology, Delft, the Netherlands, October 20, 2017.
22. Research Presentation: CEE Rising Stars Workshop (2017). *Comparing Floodplain Evolution Under Varying Flood Risk Management Strategies*. Massachusetts Institute of Technology (MIT), Boston, Massachusetts, October 12-13, 2017.
23. Guest Lecture: Introduction to Water and Climate (CT3367) (2017). *Hydraulic Design in the Houston-Galveston Region, Texas*. Delft University of Technology, the Netherlands. September 12, 2017.

24. Research Presentation: 2nd Semi-Annual Meeting of Dutch Researchers Exploring Compound Events (Workshop) (2017). *Applying Bayesian Networks to Model Hurricane Boundary Conditions for the U.S. Gulf Coast*. Amsterdam, the Netherlands. September 1, 2017.
25. Guest Lecture: Probabilistic Design II (CIE 5310) (2017). *Using Continuous Bayesian Networks to Model Hurricane Boundary Conditions in the Houston-Galveston Region, Texas*. Delft University of Technology, the Netherlands. June 9, 2017.
26. Research Presentation: Addressing the Challenge of Compound Events (Workshop) (2017). *On the influence of Urbanization on Compound Flooding in Coastal Watersheds*. ETH Zurich, Switzerland. April 21, 2017.
27. Guest Lecture: ASCE/COPRI Louisiana State University Student Chapter (2016). *Flood Risk and Mitigation in the Houston-Galveston Region: Lessons Learned in the Netherlands*. Baton Rouge, LA. April 11, 2016.
28. Seminar: Department of Hydraulic Engineering (2015). *Assessing Flood Risk & Loss in Southeast Texas*. Delft University of Technology, Delft, The Netherlands. June 9, 2015.
29. Research Presentation: TU Delft and Texas A&M Colloquium (2014). *Low Impact Development: Applications in Heavy Rainfall Regions*. Delft University of Technology, Delft, The Netherlands. February 16, 2014.
30. Research Presentation: TU Delft and Texas A&M Colloquium (2013). *Flooding and floodplain management in Houston, TX: A gradual paradigm shift*. Texas A&M University at Galveston, Galveston, Texas. July 22, 2013.

TEACHING & MENTORSHIP

Primary Instructor at UNC

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| Sustainable Triangle Field Site Capstone (ENEC 698) | Spring 2023 (7) |
| Special Topics "Rivers and Floods" (GEOL 590) | Spring 2021 (8) |
| Groundwater Hydrology (GEOL 435) | Fall 2020 (6), Fall 2021 (7), Fall 2022 (8) |

Postdoctoral Advisor (current position, affiliation)

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| Yi Victor Wang (Postdoc, Chapman University) | 2020-2021 |
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Graduate Student Advisor (university, track)

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| John Baer (UNC, MS) | 2023-present |
| Hunter Quintal (UNC, PhD) | 2022-present |
| Helena M. Garcia (UNC, PhD) *co-advised w/ M. Hino | 2021-present |
| Lauren E. Grimley (UNC, PhD) | 2020-present |
| Hunter Quintal (UNC, MS) | 2020-2022 |

Undergraduate Student Advisor (university, track) *denotes honors thesis supervisor

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| Connor Bassett (UNC, BS Honors Thesis) | Fall 2023-present |
| Valeria Orozco Saldarriaga (UNC, Independent Research) | Spring 2023-present |
| Kevin Gomez (UNC, Independent Research) | Fall 2022-Spring 2023 |
| Anna Keener (UNC, Independent Research) | Fall 2022 |
| Owen Ryerson (UNC, Independent Research) | Spring 2022 |
| Sarah Brannum* (UNC, BS Honors Thesis) | 2020-2021 |
| Hayden Brinke (UNC, Independent Research) | Fall 2020 |
| Daphne Dominique Charlot (UNC, IDEA Program) | Summer 2020 |

Graduate Student Committee Member (university, track) *denotes daily supervisor

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| Solomon Kica (UNC, PhD) | 2023-present |
| Kaitlin Karaffa (North Carolina State University, MS) | 2023-present |
| Jose Daniel Valez Castro (UNC, PhD) | 2023-present |
| Katherine Hollinger (North Carolina State University, PhD) | 2022-present |
| John David Ratcliff (UNC, PhD) | 2022-present |
| Anne Margaret Smiley (UNC, PhD) | 2022-present |
| Marissa Dudek (UNC, PhD) | 2022-present |
| Christopher Samoray (UNC, PhD) | 2021-present |
| Julianne Davis (UNC, PhD) | 2021-present |

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| Ted Langhorst (UNC, PhD) | 2020-2023 |
| Wayana Dolan (UNC, PhD) | 2020-2023 |
| Dirk Eilander (VU Amsterdam, PhD) | 2022 |
| Sarah L. Bates (UNC, MSPH) | 2021-2022 |
| John Malito (UNC, MSc) | 2020-2021 |
| Hope Thompson (UNC, MSPH) | 2020-2021 |
| Morgan Garner (Rice, MSc) | 2019-2020 |
| Daan Bader (TU Delft, MSc) | 2018-2019 |
| Ferne Maulsby* (Rice, MSc) | 2018-2019 |
| Pablo Sanchez Gomez* (Rice, MSc) | 2018-2019 |
| Luisa Torres Dueñas* (TU Delft, MSc) | 2018 |
| Feihong Liu* (TU Delft, MSc) | 2017 |
| Anaïs Couasnon* (TU Delft, MSc Cum Laude) | 2016-2017 |
| Martijn Schlepers (TU Delft, MSc) | 2014-2015 |

GRANTS & FELLOWSHIPS

Awarded (\$3.6 million in funding awarded to UNC; \$2.7 million direct)

1. Texas General Land Office. *Developing Effective Flood Risk Communication Tools for Texas Communities* (09/01/2023-08/31/2025; \$303,343 (UNC) of \$3,000,000); with R. Blessing (PI) and K. Stephens (co-I). **\$227,816 (direct) to UNC. UNC PI with R. Blessing (Texas A&M at Galveston) as Lead PI. Effort: 8.33%**
2. UNC School of Data Science and Society (SDSS) Seed Grant. *Finding Unconventional Housing in Risky Places* (07/01/2023-06/30/2024; \$49,911 (UNC)); with N. Kaza (PI) and M. Hino (co-PI). **\$98,125 (direct) to UNC. Co-PI with N. Kaza (UNC) as Lead PI. Effort: 0.13%**
3. DHS Coastal Resilience Center. *Identifying obstacles to equitable flood mitigation funding* (07/01/2023-06/30/2024; \$149,150 (UNC)); with M. Hino (PI). **\$98,125 (direct) to UNC. Co-PI with M. Hino (UNC) as Lead PI. Effort: 4.17%**
4. NASA-ROSES-2022 (NNH22ZDA001N-CNVOE). *Evaluation of Capella SAR Data for mapping high-tide flooding inundation extent* (02/01/2023-01/31/2024; \$99,307 (UNC)); with T. Pavelsky (PI) and M. Hino, C. Wang (co-Is). **\$63,863 (direct) to UNC. Co-PI with T. Pavelsky (UNC) as Lead PI. Effort: 4.17%**
5. North Carolina Office of Emergency Management. *Understanding North Carolina's Flood Risk in a Changing Climate* (01/01/2023-12/31/2026; \$162,000 (UNC) of \$700,000); with K. Dello (PI) and J. Bowden (co-I). **\$162,000 (direct) to UNC. UNC PI with K. Dello (NC State) as Lead PI. Effort: 8.33%**
6. Texas One Gulf (TONE). *Flood Risk and Vulnerability: Evaluation of the Fiscal, and Social Implications of Property Acquisition and Buyouts in Flood-prone Communities* (01/16/2023-01/15/2024; \$45,000 (UNC) of \$150,000); with M. Davlasheridze (PI) and K. Atoba, Q. Miao (co-Is). **\$29,247 (direct) to UNC. UNC PI with M. Davlasheridze (Texas A&M at Galveston) as Lead PI. Effort: 8.16%**
7. Looking Forward: NC A&T and UNC-CH Collaborative Research. *Improving Prediction of Flooding Associated with Tropical Cyclones in Eastern North Carolina* (09/01/2022-08/31/2024; \$76,362 (UNC) of \$200,000); with L. Liu, R. Luettich (PIs), and H. Li, Y. Lin (co-Is). **\$76,362 (direct) to UNC. Co-PI with R. Luettich (UNC) as PI. Effort: 0.00%**
8. NOAA-OAR-CPO-2021-2006677 Regional Integrated Sciences and Assessments (RISA) Program. *Innovating a Community-based Resilience Model on Climate and Health Equity in the Carolinas* (2021-2026; \$1,206,318 (UNC) of \$5.4 million); with K. Dello, J. Runkle, L. Rivers (PIs), and M. Hino, K. Stevenson, Hoffman, J. Harrison (co-Is). **\$812,296 (direct) to UNC. UNC PI with K. Dello (NC State) as Lead PI. Effort: 8.33%**
9. UNC Committee on Faculty Research and Scholarly Leaves. *Investigation of the Coupled Human-Natural System Dynamics Driving the Evolution of Household Flood Risk in the Neuse River Watershed, North Carolina* (01/01/2021-12/31/2021; \$10,000). Junior Faculty Development Award. **\$10,000 (direct) to UNC. Sole PI. Effort: 6.25%**
10. NSF CMMI. *Growing Convergence Research: Climate Resilience in the Coastal Zone* (10/01/2020-09/30/2025; \$1,149,999 (UNC)); with E. Frankenberg (PI) and R. Luettich, M. Piehler (Co-PIs). Award No. 2021086. **\$765,495 (direct) to UNC. Researcher with E. Frankenberg (UNC) as PI. Effort: 2.75%**

11. UNC Policy Collaboratory. *Strengthening Flood Resilience in Eastern North Carolina* (10/01/2019-06/01/2021; \$99,049). Session Law 2019-224. **\$99,049 (direct) to UNC. Sole PI. Effort: 8.33%**
12. UNC Policy Collaboratory. *Innovating floodplain buyouts: evaluating the buyout process and physical risk reduction through buyout targeting* (10/01/2019-06/01/2021; \$424,878); with T. BenDor (PI) and M. Hino, D. Salvesen, N. Kaza. Session Law 2019-224. **\$424,878 (direct) to UNC. co-PI with T. BenDor (UNC) as PI. Effort: 8.33%**
13. Texas General Land Office. *Measuring, Mapping, and Managing Flood Risk in Texas* (02/18/19-04/30/21; \$2,000,000); with S.D. Brody (PI) and W.E. Highfield (co-I). Contract No. 19-181-000-B574. **\$0 to UNC. co-PI with S. Brody (Texas A&M at Galveston) as PI.**
14. Senior Personnel: NSF PIRE. *Coastal Flood Risk Reduction Program: Integrated, multi-scale approaches for understanding how to reduce vulnerability to damaging events* (10/1/2015-09/30/2020; \$3,598,501); with S.D. Brody (PI) and J. Figlus, W. Merrell, W. Highfield, M. Davlasheridze (Co-PIs). Award No. 1545837. **\$0 to UNC. Researcher with S. Brody (Texas A&M at Galveston) as PI.**
15. Netherlands America Foundation (NAF)/Fulbright Fellowship in Flood Management. *Quantifying Flood Risk and Influencing Coastal Defense Planning* (09/01/14-05/31/15; \$10,800). **\$0 to UNC. Sole PI.**

Pending

1. NSF 23-609. *DISES-RCN: Catalyzing Flood Justice in the USA* (07/2024-06/2028; \$15,208 (UNC) of \$499,551); with E. Tellman (PI) and A. Flores, E. Tate, M. Hendricks (co-Is). **\$9,708 (direct) to UNC. co-PI with E. Tellman (Arizona) as PI. Effort: 1.7%**
2. NIH RFA-ES-23-007. *Center for Research on Communities, Risk, Sustainability, and Population Health (CRISPH)* (09/01/2023-08/31/2026; \$3,930,853); with E. Frankenberg (PI) and C. Davis, N. Dollar, M. Hino, N. Ingewesen, R. Luettich, C. Martin. Submitted 11/2023. **\$2,557,085 (direct) to UNC. Core Co-Lead with E. Frankenberg as PI. Effort: 20.8%**

Student Awards, Grants & Fellowships (as Lead Faculty Advisor)

1. NC WRRI and NC Sea Grant Graduate Student Research Funding. *Determining the impacts of nuisance flooding in a river-coastal community under future climate conditions* (03/01/2022-08/28/2023; \$10,000). Student Advisee: Lauren Grimley. **\$0 to UNC. Faculty Advisor. Effort: 0.0%**
2. NC Sea Grant Coastal Resilience Team Competition. *Incorporating Ecosystem Services into Flood Resilience Planning in New Bern, North Carolina* (01/01/2022-12/31/2023; \$20,000). Student Advisees: Anne Margaret Smiley (PhD), Lauren Grimley (PhD), Helena Garcia (PhD), Jacqueline Ruiz (BA). **\$0 to UNC. Lead Faculty Advisor. Effort: 0.0%**
3. NC WRRI and USGS 104(b) Student Program. *Understanding the Flood Mitigation Benefits of Buyouts: A Hydrologic Assessment of Property Acquisition in North Carolina Watersheds* (03/01/2021-02/28/2022; \$10,000). Student Advisee: Hunter Quintal (MS). **\$10,000 (direct). Lead PI/Faculty Advisor. Effort: 0.0%**
4. UNC Geological Sciences Charlie & Elaine Mims Undergraduate Research Fellowship. (01/01/2021-05/31/2021; \$700). Student Advisee: Sarah Brannum (BS). **\$700 (direct). Lead Faculty Advisor. Effort: 0.0%**

PROFESSIONAL SERVICE

External Committees

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|---|--------------|
| NSF Panelist | 2021-2023 |
| AGU Hydrology Section Horton Research Grant Review Panelist | 2021-2023 |
| ASCE Hydroclimatology and Engineering Adaptation (HYDEA) Subcommittee of the Committee on Adaptation to a Changing Climate (CACC) | 2021-present |
| ASCE Coasts, Oceans, Ports, and Rivers Coastal Engineering Sciences Committee | 2020-present |

Internal Committees

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| Member, Department of EMES Undergraduate Curriculum Committee | 2021-present |
| Member, Department of EMES Faculty Search Committee | 2023-2024 |
| Chair, Department of Geological Sciences Colloquium Committee | 2020-2021 |
| Member, Department of Geological Sciences Graduate Admissions Committee | 2020, 2021, 2024 |

Manuscript Reviewer

Nature Climate Change; Nature Communications; Geophysical Research Letters; Environmental Research Letters; Natural Hazards; Natural Hazard Earth System Science (NHES); ASCE Natural Hazards Review; Journal of Hydrology; Ocean Dynamics; Water Resources Research; Earth's Future; Water; Anthropocene; Risk Analysis

Professional Affiliation

American Geophysical Union (AGU); American Society of Civil Engineers (ASCE); International Association of Hydro-Environment Engineering and Research (IAHR); National Association of Geoscience Teachers (NAGT); Fulbright Alumni Association; Congress Bundestag Youth Exchange (CBYX) Alumni Network

Registered Engineer in Training (EIT), State of Texas, License No. 57722

OTHER SELECTED SERVICE

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| Board of Directors, Deltares USA | 2023-present |
| Guest Editor, Natural Hazards Earth System Sciences (NHES), <i>SI: Methodological innovations for the analysis and management of compound risk and multi-risk, including climate-related and geophysical hazards</i> | 2023-present |
| Resilience-Mitigation-Reduction Technical Advisory Group for NCDEQ's Flood Resiliency Blueprint | 2023-present |
| Town of Chapel Hill Booker Creek Stormwater Working Group | 2021-2022 |
| Greater Houston Flood Mitigation Consortium | 2017-2019 |
| Netherlands America Foundation (NAF) Houston Chapter, Education Committee Co-chair | 2018-2019 |
| Rice Alumni Volunteers for Admission (RAVA) Interviewer | 2016-2020 |
| NSF Program for International Research & Exchange (PIRE), Mentor | 2016-2021 |

WORKSHOP & CONFERENCE ORGANIZATION

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1. *Concurrent, Consecutive and Cascading Events: An Emerging Challenge for Risk Assessment and Management of Multi-hazards and Disaster Risk*. AGU Fall Meeting, Chicago, IL. December 12-16, 2022. *Primary Convener and Chair*.
 2. *Extreme Value Analysis and Application to Natural Hazards (EVAN) Conference*. University of Central Florida, Orlando, FL. May 17-19, 2022. *Scientific Committee*.
 3. *Concurrent, Consecutive and Cascading Events: An Emerging Challenge for Risk Assessment and Management of Natural and Natech Hazards*. AGU Fall Meeting, New Orleans, LA. December 13-17, 2021. *Primary Convener and Chair*.
 4. *AI and Machine Learning for Climate and Extreme Weather Prediction*. AGU Fall Meeting, New Orleans, LA. December 13-17, 2021. *Session Convener*.
 5. *Concurrent, Consecutive and Cascading Events: An Emerging Challenge for Risk Assessment and Management of Natural and Natech Hazards*. AGU Fall Meeting, San Francisco, CA. December 1-17, 2020. *Primary Convener and Chair*. *virtual due to COVID-19
 6. *AI and Machine Learning for Climate and Extreme Weather Prediction*. AGU Fall Meeting, San Francisco, CA. December 1-17, 2020. *Session Convener*. *virtual due to COVID-19
 7. *Concurrent, Consecutive and Cascading Events: An Emerging Challenge for Risk Assessment and Management of Natural and Natech Hazards*. AGU Fall Meeting, San Francisco, CA. December 9-13, 2019. *Session Convener*.
 8. *AI and Machine Learning for Climate and Extreme Weather Prediction*. AGU Fall Meeting, San Francisco, CA. December 9-13, 2019. *Session Convener*.
 9. *Compound and Cascading Events: an Emerging Challenge for Natural Hazard Risk Assessment and Management*. AGU Fall Meeting, Washington, D.C. December 10-14, 2018. *Session Convener*.
 10. *Urban Flooding & Infrastructure: Moving Forward from Harvey*. 2018 SSPEED Center Conference, Rice University, Houston, TX. February 21-22, 2018. *Session Convener*.
 11. *Spring 2017 BRIGAIID Meeting*. BRIGAIID European Union Horizon2020 Programme, Berlin, Germany. May 10-12, 2017. *Workshop Organizer*.
 12. *Fall 2016 BRIGAIID Meeting*. Bridging the Gap in Innovations for Disasters (BRIGAIID) European Union Horizon2020 Programme, Leuven, Belgium. November 16-18, 2016. *Workshop Organizer*.

13. *Avoiding Disasters: How to Reduce Impacts from the Next Big Storm*. 2016 SSPEED Center Conference, Rice University, Houston, TX. April 26-27, 2016. *Conference Organizer*.
14. *Hurricane Ike: 5 Years Later*. 2013 SSPEED Center Conference, Rice University, Houston, TX. September 24-25, 2013. *Conference Organizer*.
15. *Prediction of Coastal Surge Impacts and Sea Level Rise*. 2012 World Environmental and Water Resources Congress, Albuquerque, NM. May 20-24, 2012. *Session Organizer*.
16. *Gulf Coast Hurricanes: Mitigation And Response*. 2012 SSPEED Center Conference, Rice University, Houston, TX. April 10 - 11, 2012. *Conference Organizer*.

PROFESSIONAL DEVELOPMENT WORKSHOPS ATTENDED

**denotes external funding awarded for travel*

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| NSF Hazards Enabling Fellows Workshop II*, Colorado University at Boulder | 07/2021 |
| National Center for Faculty Development (NCFDD) Faculty Success Program | Fall 2020 |
| Early Career Geoscience Faculty Workshop*, SERC, Carleton College - <i>virtual due to COVID-19</i> | 07/2020 |
| NSF Hazards Enabling Fellows Workshop I*, Puerto Rico - <i>virtual due to COVID-19</i> | 06/2020 |
| Center for Faculty Excellence Course Design Institute, UNC Chapel Hill | 06/2020 |
| CEE Rising Stars Workshop*, Massachusetts Institute of Technology | 10/2017 |
| Preparing for the Academic Job Market, Rice University | 04/2016 |
| The Art of Science by Professor Roel Snieder, Delft University of Technology | 06/2015 |
| Freshman Writing Instructor Training, Rice University | 12/2013 |