

# LAUREN E. GRIMLEY

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104 South Road ◊ Chapel Hill, NC 27514

## EDUCATION

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<b>PhD in Earth, Marine &amp; Environmental Sciences</b>	2020-Dec 2024
University of North Carolina at Chapel Hill. Advisor: Dr. Antonia Sebastian	
<b>MSc in Civil &amp; Environmental Engineering</b>	2016-2018
University of Iowa, Water Resources Focus. Advisor: Dr. Witold F. Krajewski <i>Thesis: Urban and rural flood forecasting: a case study of a small town in Iowa</i>	
<b>BSc in Civil &amp; Environmental Engineering</b>	2012-2016
Calvin University	

## PROFESSIONAL EXPERIENCE

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<b>Graduate Research Assistant</b>	2020-present
<i>Department of Earth, Marine and Environmental Sciences</i> University of North Carolina, Chapel Hill. NC	
<b>Visiting Researcher</b>	2021-present
<i>Department of Civil, Construction, &amp; Environmental Engineering, NC State</i> <i>Department of Multi-Actor Systems, Delft University of Technology</i> Fall 2022	
<b>Research Scientist: Water Resources</b>	2018-2021
The Water Institute of the Gulf. Baton Rouge, LA	
<b>Course Coordinator</b>	2018
<i>Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)</i> National Water Center Innovators Program. Tuscaloosa, AL	
<b>Graduate Research Assistant</b>	2016-2018
<i>Department of Civil &amp; Environmental Engineering, Iowa Flood Center</i> University of Iowa. Iowa City, IA	
<b>Research Fellow</b>	Summer 2017
<i>CUAHSI's National Water Center Innovators Program. Tuscaloosa, AL</i>	

## RESEARCH INTERESTS

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Flood Hazard and Risk Management, Urban and Coastal Hydrology, Socio-hydrology, Coupled Human-Natural Systems Modeling, Climate Change Adaptation

## HONORS & AWARDS

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Perkin Elmer Graduate Student Presentation Award Honorable Mention	2023
NSF International Research Experiences for Students in the Netherlands	2023
AGU Outstanding Student Presentation Award (OSPA)	2022
DeSIRE Conference Poster Competition Winner: Best Solution	2022
NSF-ICFM8 Young Investigators Award	2022
NC WRI Conference Student Poster Competition Honorable Mention	2022
Carolinas Climate Resilience Conference Student Poster Presentation Finalist	2021
UIowa Graduate & Professional Student Government Student Travel Grant	2017
Center for Global and Regional Environmental Research (CGRER) Student Travel Award	2017
American Council of Engineering Companies (ACEC) a/e ProNet Engineering Scholarship	2016
ACEC of Michigan Scholarship	2015, 2016
American Society of Civil Engineers (ASCE) West Michigan Branch Scholarship	2015

## PUBLICATIONS

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### PEER REVIEWED JOURNAL ARTICLES

1. Gold, A., Anarde, K., **Grimley L.**, Neve, R., Srebnik E.R., Thelen, T., Whipple, T., Hino, M. (2023) Data from the drain: a sensor framework that captures multiple drivers of chronic floods. *Water Resources Research*, doi: 10.1029/2022WR032392.
2. Villarini, G., Zhang, W., Miller, P., Johnson, D. R., **Grimley, L. E.**, and Roberts, H. J. (2021) Probabilistic rainfall generator for tropical cyclones affecting Louisiana. *International Journal of Climatology*, doi: 10.1002/joc.7335.
3. **Grimley, L. E.**, Quintero, F., and Krajewski, W. F. (2020) Streamflow Predictions in a Small Urban–Rural Watershed: The Effects of Radar Rainfall Resolution and Urban Rainfall–Runoff Dynamics. *Atmosphere*, doi: 10.3390/atmos11080774.

### ARTICLES IN PREPARATION OR REVIEW

1. **Grimley L.**, Sebastian A., Leijnse T., Ratcliffe J., and Luettich R. (2022) Hindcasting pluvial, fluvial, and coastal flooding in the Carolinas during Hurricane Florence (2018) using SFINCS. *Water Resources Research*, in prep.

### TECHNICAL REPORTS

1. Roberts, H., Zou, S., Cobell, Z., **Grimley, L.**, Messina, F., Georgiou, I. (2021). Mid-Breton Sediment Diversion Surge and Wave Conditions. The Water Institute of the Gulf. Prepared for and funded by the Coastal Protection and Restoration Authority under Task Order 77. Baton Rouge, LA.
2. North Carolina Policy Collaboratory. Final Report to the North Carolina State Legislature: Flood Resilience Study. (2021) Chapel Hill, NC: University of North Carolina. *\*many authors*
3. The Water Institute of the Gulf (2019). Monitoring Plans for Louisiana’s System-Wide Assessment and Monitoring Program (SWAMP), Version IV. Prepared for and funded by the Coastal Protection and Restoration Authority (CPRA) under Task Order 6. Baton Rouge, LA. (235p) *\*many authors*
4. Aristizabal, F., **Grimley, L. E.**, Bales, J., Tijerina, D., Flowers, T., and Clark, E. P. (2018) National Water Center Innovators Program Summer Institute Report 2018.
5. **Grimley, L.**, Khanam, M., Tiernan, E., and Tijerina, D. (2017) National Water Center Innovators Program Summer Institute Report 2017: Hyper-resolution modeling in Urban Landscapes. doi: 10.4211/technical.20171009
6. Chang, J., Garousi-Nejad, I., **Grimley, L.**, He, S., Khanam, M., and Madsen, T., Tang, Q., Tiernan, E., Tijerina, D., and Turnipseed, C. (2017) National Water Center Innovators Program Summer Institute Report 2017: ADHydro Introduction and Workflow. doi: 10.4211/technical.20171009

## CONFERENCE PROCEEDINGS

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### ORAL PRESENTATIONS *\*denotes presenter*

1. **Grimley, L.E.\***, Hollinger, K., Sebastian, A., Lackmann, G. Linking Tropical Cyclone Precipitation in Future Climates to Shifts in Flood Exposure. *UNC EMES Perkin Elmer Research Symposium* Chapel Hill, NC. April 5, 2023. Graduate Student Presentation Award Honorable Mention
2. **Grimley, L.E.\***, Hollinger, K., Sebastian, A., Lackmann, G. Linking Tropical Cyclone Precipitation in Future Climates to Shifts in Flood Exposure. *NC WRI Conference* Raleigh, NC. March 22-23, 2023.
3. **Grimley, L.E.\***, Leijnse, T., Ratcliffe, J., Luettich, R., Sebastian, A. Flooding at the Fringe: A Reduced-physics Model for Assessing Compound Flooding from Pluvial, Fluvial, and Coastal Hazards. *AGU Fall Meeting* Chicago, IL. December 12-16, 2022. Outstanding Student Presentation Award (OSPA)
4. Smiley, A. M.\*, Garcia, H. G.\*, **Grimley, L. E.**, Ruiz, J., Berke, P., Hino, M., Sebastian, A. (2022). An Interdisciplinary Approach to Quantifying Flood Mitigating Ecosystem Services and Identifying Beneficiaries in New Bern, NC. *North Carolina Coastal Conference*. Raleigh, NC. November 7-8, 2022.
5. **Grimley, L.E.\***, Leijnse, T., Ratcliffe, J., Luettich, R., Sebastian, A. Hindcast of compound flooding from Hurricane Florence in eastern North Carolina using SFINCS. *NSF International Flood Conference on Management (NSF-ICFM8) Flood Workshop* Iowa City, IA. August 8-10, 2022.

6. Garcia, H. G.\*, **Grimley, L.E.**, Smiley, A. M., Ruiz, J., Berke, P., Hino, M., Sebastian, A. Integrating Ecosystem Services into Flood Resilience Planning in New Bern, NC. *NSF International Flood Conference on Management (NSF-ICFM8) Flood Workshop*. Iowa City, IA. August 8-10, 2022.
7. Smiley, A. M.\*, Garcia, H. G., **Grimley, L. E.**, Ruiz, J., Berke, P., Hino, 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.

#### POSTER PRESENTATIONS

1. **Grimley, L. E.\***, Smiley, A., Garcia, H., Ruiz, J. Ecosystem and Infrastructure Exposure to Flooding from Hurricane Florence in New Bern, NC. *UNC EMES Perkin Elmer Research Symposium*. Chapel Hill, NC. April 5, 2023.
2. **Grimley, L.E.\***, Filatova, T., Sebastian, A. Exploring the Drivers of Household Participation in Voluntary Buyouts with an Agent-Based Model. *NC WRRRI Conference* Raleigh, NC. March 22-23, 2023.
3. Hayden-Lowe, J.\*, **Grimley, L.E.**, Anarde, K. Monitoring Coastal Flooding with Sunny Day Flood Sensors. *American Meteorological Society Annual Meeting*. Denver, CO. January 8-12, 2023.
4. Ruiz, J.\*, Garcia, H., **Grimley, L. E.**, Smiley, A. Flood Resilience Planning, Exposure, and Outcomes in New Bern, NC. *North Carolina Coastal Conference*. Raleigh, NC. November 7-8, 2022.
5. **Grimley, L. E.\***, Sebastian, A., Filatova, T. Exploring the Physical and Social Dimensions of Flooding: A Case Study of Household and Community Adaptation in Eastern North Carolina. *DeSIRE Conference 2022: Facets of Resilience Engineering*. Delft, Netherlands. November 3-4, 2022.  
Student Poster Winner: Best Solution
6. Hayden-Lowe, J.\*, **Grimley, L.E.**, Anarde, K. Monitoring Coastal Flooding with Sunny Day Flood Sensors. *NC State Summer Undergraduate Research Symposium*. Raleigh, NC. July 26-27, 2022.
7. Wagenblast, T.\*, Filatova, T., Noll, B., **Grimley, L.E.**, Sebastian, A. Influence of Social Networks in Private Climate Adaptation. *2022 Social Simulation Conference*. Milan, Italy. September 12-16, 2022.
8. Villarini, G.\*, Zhang, W., Miller, P., Johnson, D. R., **Grimley, L. E.**, and Roberts, H. J. Probabilistic rainfall generator for tropical cyclones affecting Louisiana. *Frontiers in Hydrology*. San Juan, Puerto Rico. June 19-24, 2022.
9. **Grimley, L. E.\*** and Sebastian, A. Exploring the effects of climate change on compound flooding in NC estuarine communities. *NC Water Resources Research Institute (WRRRI) Conference*. March 23-24, 2022.  
Student Poster Competition Honorable Mention
10. **Grimley, L. E.\*** and Sebastian, A. Attributing historical insured loss to compound flood mechanisms in eastern North Carolina. *AGU Fall Meeting*. New Orleans, LA. Dec 13-18, 2021.
11. Yuill, B. T.\*, Young, N., **Grimley, L. E.**, McCorquodale, A., and Roberts, H. J. The unique hydrodynamics of compound flooding in the transition zone and implications for estimating maximum surface water elevations. *AGU Fall Meeting*. New Orleans, LA. Dec 13-18, 2021.
12. **Grimley, L. E.\***, Sebastian, A., and Luettich, R. Flood hazards at the river-coastal interface of Carolina watersheds. *Carolinas Climate Resilience Conference*. Durham, NC. May 10-12, 2021.  
Student Poster Competition Runner-up
13. **Grimley, L. E.\***, Tijerina, D., Mariam K., Tiernan, E. D., Frazier, N., Ogden, Fred L., Steinke, R. C., Maxwell, R. M., and Cohen, S. Grid vs Mesh: The case of Hyper-resolution Modeling in Urban Landscapes. *AGU Fall Meeting*. New Orleans, LA. Dec 11-15, 2017. <https://doi.org/2017AGUFM.H53F1541G>
14. **Grimley, L. E.\***, Khanam M., Tiernan, E., Tijerina D. Unstructured Mesh Resolution in an Urban Watershed. *2017 CUAHSI Conference on Hydroinformatics*. Tuscaloosa, AL. July 25-27, 2017.
15. **Grimley, L. E.\***, Krajewski, W. F. Urban Hydrology. *Iowa Legislative Breakfast*. Des Moines, IA. February 2016.

#### OTHER INVITED LECTURES OR RESEARCH PRESENTATIONS (NOT LISTED ABOVE)

1. Presentation: NC Water Resources Research Institute (WRRRI) Advisory Committee Meeting. *Flooding in Estuarine Communities under Current and Future Climate Conditions*. Raleigh, NC. December 14, 2022.

2. Seminar: Department of Hydrology at Deltares. *Investigating risk dynamics using an integrated modeling approach*. Delft, Netherlands. November 29, 2022.
3. Software Release: Deltares Software Days. *Assessing Compound Flooding from Tropical Cyclones in Texas and the Carolinas*. Delft, Netherlands. November 16, 2022.
4. Seminar: Institute for Environmental Studies (IVM) Flood Working Group at the Vrije University (VU). *Investigating risk dynamics using an integrated modeling approach that considers the physical and social drivers of flooding*. Amsterdam, Netherlands. October 24, 2022.
5. Guest Lecture: Rising Waters: Strategies for Resilience (AMST 460H). *When Natural Hazards Become Disasters: The Role of Society in Managing the Impacts of Climate Change*. Chapel Hill, NC. October 26, 2021.

## GRANTS & FELLOWSHIPS

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1. CUAHSI Pathfinder Fellowship. *Investigating risk dynamics in coastal areas using an integrated modeling approach that accounts for the physical and social drivers of flooding*. (2022; \$2,500).
2. 4TU.DeSIRE Programme Young Resilience Fellowship. (2022; \$2,200).
3. NC Water Resources Research Institute (WRRI) and NC Sea Grant Graduate Student Research Funding. *Determining the impacts of nuisance flooding in a river-coastal community under future climate conditions* (03/01/2022-04/31/2023; \$10,000).
4. 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 Team: Anne Margaret Smiley (PhD), Lauren E. Grimley (PhD), Helena Garcia (PhD), Jacqueline Ruiz (BA)
5. UNC Chapel Hill Weiss Urban Livability Fellowship. (08/2020-05/2021; tuition and \$4,000)

## PROFESSIONAL INVOLVEMENT

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### SERVICE

American Geophysical Union Hydrology Section Student Subcommittee (H3S)	2021-2022
UNC-Chapel Hill Carolina Climate and Health Alliance (CCHA) Board Member	2021-2022
Louisiana RESTORE Act Center of Excellence Technical Point of Contact	2018-2020
Vice President of Students of IIHR-Hydroscience and Engineering (SIIHR)	2017-2018

### MEMBERSHIP

American Geophysical Union (AGU)  
 International Association of Hydrological Sciences (IAHS)  
 American Society of Civil Engineers (ASCE)

## TEACHING EXPERIENCE

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Graduate Research Consultant: Rising Waters (AMST 460H) <i>Office for Undergraduate Research, University of North Carolina</i>	Fall 2021
Graduate Teaching Assistant: Fluid Mechanics Lab (ENGR 2510) <i>Department of Civil &amp; Environmental Engineering, University of Iowa</i>	Spring 2018

## UNDERGRADUATE MENTORSHIP

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Kevin Gomez, <i>UNC-CH</i> , Channel Bathymetry Data	2022-2023
Jasmine Hayden-Low, <i>NC State</i> , Sunny Day Flooding Project	Summer 2022