

# Dylan R. Sanderson

GitHub · Google Scholar · LinkedIn  
sandersondylan@gmail.com

## Summary

---

Civil engineer with nine years of experience in holistically assessing the impacts of natural catastrophes on communities. Expertise in developing and applying geospatial decision-support models with emphasis on water-related perils. Educational preparation as a coastal engineer with strong background in fluid mechanics, water wave processes, and geospatial tools. Proven ability to quickly learn new methods, communicate technical findings to non-technical audiences, and collaborate effectively within interdisciplinary teams.

## Experience

---

### National Institute of Standards and Technology 2023-2025

*National Research Council Postdoctoral Fellow*

- Independently learned both SFINCS and XBeach to simulate overland flooding driven by hurricane hazards. Process DEMs using Python, GDAL, and QGIS. Involved resampling and vertical / horizontal datum transformations,
- Developed geospatial decision-support models for community resilience planning for future climate change impacts. Involved assessing future flood impacts on buildings and infrastructure under multiple sea level rise scenarios.
- Independently developed own research proposal, secured funding through nationally competitive fellowship program, performed research, and prepared two manuscripts.

### Oregon State University 2018-2023

*Graduate Research Assistant*

- Contribute to IN-CORE, a spatially explicit decision-support tool for community resilience planning for natural catastrophes. IN-CORE considers the impacts of natural hazards on the built- (buildings, infrastructure) and social-environments (people, population dislocation).
- Member of three interdisciplinary teams addressing community resilience. Collaboratively worked with social scientists, engineers, economists, earth scientists, urban planners, and others.
- Collaboratively established a multi-institution seminar series for late stage graduate students to present their research. Completed with a team that was entirely remote.
- First author on five journal papers.

### US Army Corps of Engineers Research and Development Center 2016-2018

*Research Civil Engineer*

- Principal investigator for two coastal storm risk management models - Beach-fx and G2CRM - that are used throughout the US Army Corps of Engineers (USACE). Served as the primary point of contact for these two models across USACE.
- Independently managed an annual budget of approximately \$300k. This consisted of preparing contracts for future model development and team management.

## Education

---

**Ph.D.**, Civil Engineering, Oregon State University 2020-2023

**M.S.**, Civil Engineering, Oregon State University 2018-2020

**B.S.**, Ocean Engineering, Texas A&M University 2012-2016

## Courses and Technical Skills

---

**Select Graduate Coursework:** Advanced Spatial Statistics; Climate Change Impacts; Probability, Simulation, and Computing in Statistics; Machine Learning; Deep Learning; Resilience Engineering.

**Programming Languages:** Python, Julia, Go.

**Geographic Tools, Software, and Packages:** QGIS, Geopandas, GDAL, Rasterio.

**Machine Learning Tools and Methods:** Flux.jl (Julia), Reinforcement Learning, PyTorch (beginner).

**High performance computing:** SLURM, Command-line.

## Peer Reviewed Papers

- [10] **Sanderson, D.**, and McAllister, T. (2025). Quantifying future local impacts of sea-level rise on buildings and infrastructure. *International Journal of Disaster Risk Reduction*. <https://doi.org/10.1016/j.ijdr.2025.105649>
- [9] Sen Gupta, H., Adluri, T., **Sanderson, D.**, Gonzalez, A., Nicholson, C., and Cox, D. (2024). Multi-objective optimization of mitigation strategies for buildings subject to multiple hazards. *International Journal of Disaster Risk Reduction*, 100. <https://doi.org/10.1016/j.ijdr.2023.104125>
- [8] Amini, M., **Sanderson, D.**, Cox, D., and Barbosa, A. (2024). Methodology to incorporate seismic damage and debris to evaluate strategies to reduce life safety risk for multi-hazard earthquake and tsunami. *Natural Hazards*. <https://doi.org/10.1007/s11069-023-05937-8>
- [7] Amini, M., Jeon, H., **Sanderson, D.**, Cox, D., Barbosa, A., and Cutler, H. (2023). Integrated Engineering-Economic Analysis for Multi-hazard Damage and Loss Assessment. *ASCE Journal of Infrastructure Systems*, 29(4). <https://doi.org/10.1061/JITSE4.ISENG-2229>
- [6] **Sanderson, D.**, and Cox, D. (2023). Comparison of National and Local Building Inventories for Damage and Loss Modeling of Seismic and Tsunami Hazards: From Parcel- to City-Scale. *International Journal of Disaster Risk Reduction*, 93. <https://doi.org/10.1016/j.ijdr.2023.103755>
- [5] **Sanderson, D.**, Cox, D., Amini, M., and Barbosa, A. (2022). Coupled urban change and natural hazard consequence model for community resilience planning. *Earth's Future*, 10(12). <https://doi.org/10.1029/2022.EF003059>
- [4] **Sanderson, D.**, Cox, D., Barbosa, A., and Bolte, J. (2022). Modeling regional and local resilience of infrastructure networks following disruptions from natural hazards. *ASCE Journal of Infrastructure Systems*, 28(3). [https://doi.org/10.1061/\(ASCE\)IS.1943-555X.0000694](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000694)
- [3] **Sanderson, D.**, Cox, D. and Naraharisetty, G. (2022). A spatially explicit decision support framework for parcel- and community-level risk and resilience assessment using Bayesian networks. *Sustainable and Resilient Infrastructure*, 7(5), 531-551. <https://doi.org/10.1080/23789689.2021.1966164>
- [2] **Sanderson, D.**, Kameshwar, S., Rosenheim, N., and Cox, D. (2021). Deaggregation of multi-hazard damages, losses, risks, and connectivity: An application to the joint seismic-tsunami hazard at Seaside, Oregon. *Natural Hazards*, 109(2), 1821-1847. <https://doi.org/10.1007/s11069-021-04900-9>
- [1] **Sanderson, D.**, Gravens, M., and Permenter, R. (2019). Methodology for identifying a subset of representative storm surge hydrographs from a coastal storm modeling database. *Journal of Coastal Research*, 35(5), 1095-1105. <https://doi.org/10.2112/JCOASTRES-D-18-00052.1>

## Manuscripts Under Review

- [2] **Sanderson, D.**, McAllister, T., and Helgeson, J. (Under review). Simulating Future Household Adaptation to Sea Level Rise using Agent-Based Modeling and Reinforcement Learning. Submitted to *International Journal of Disaster Risk Reduction*.
- [1] Meselhe, A., Cox, D., **Sanderson, D.**, and Tilt, J. (Under review). Human-centered connectivity and transportation network recovery following a Cascadia Subduction Zone Earthquake and Tsunami. Submitted to *Sustainable and Resilient Infrastructure*.

## Technical Reports and Notes

- [3] Johnson, B., and **Sanderson, D.** (2020). On the use of CSHORE for Beach-fx. *ERDC/CHL Technical Notes Collection* (ERDC/CHL CHETN-II-59), U.S. Army Engineer Research and Development Center, Vicksburg, MS. <http://dx.doi.org/10.21079/11681/37949>
- [2] **Sanderson, D.**, and Gravens, M. (2017). Representative storm selection tool: An automated procedure for the selection of representative storm events from a probabilistic database. *ERDC/CHL Technical Notes Collection* (ERDC/CHL CHETN-VIII-10), U.S. Army Engineer Research and Development Center, Vicksburg, MS. <http://dx.doi.org/10.21079/11681/26829>
- [1] Gravens, M., and **Sanderson, D.** (2017). Identification and selection of representative storm events from a probabilistic storm database. *ERDC/CHL Technical Notes Collection* (ERDC/CHL CHETN- VIII-9), U.S. Army Engineer Research and Development Center, Vicksburg, MS. <http://dx.doi.org/10.21079/11681/26341>