

Melanie Dickson, Ph.D. student

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[in](#) [Melanie Dickson](#)

EDUCATION

- 08/2025 - Present **Ph.D., Civil Engineering, Specialization in Geotechnical Earthquake Engineering**
- Department of Civil, Construction, and Environmental Engineering, North Carolina State University
- GPA: 3.8
- 08/2023 - 08/2025 **M.S, Civil Engineering, Specialization in Geotechnical Engineering**
- Department of Civil, Construction, and Environmental Engineering, North Carolina State University
- GPA: 3.8
- 08/2018 - 08/2022 **B.S, Civil Engineering**
- Department of Civil, and Environmental Engineering, Pontificia Universidad Católica Madre y Maestra, Santo Domingo, Dominican Republic
- Thesis: Application of Geophysical Methods for Deterministic Seismic Risk and Liquefaction Potential Analysis: A Case Study of the Bávaro–Punta Cana Region. This work included Horizontal-to-Vertical Spectral Ratio (HVSr) analysis, Multichannel Analysis of Surface Waves (MASW), and Ground Penetrating Radar (GPR).
 - GPA: 3.8

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE)
- Geo-Institute (GI)
- Earthquake Engineering Research Institute (EERI)
- Seismological Society of America (SSA)
- Earthquake Engineering and Seismology Community Alliance in Latin America (E²SCALA)
- Member of the community of Woman in Engineering in the Dominican Republic (MIRD-RD)
- Dominican Association of Geology (SODOGEO)

HONORS, AWARDS, GRANTS

- 10/2025 – Present **William Averette Anderson (Bill Anderson) Fund Fellowship**
- 07/2024 **Earthquake Engineering Research Institute, Annual Meeting Registration Grant**
- 08/2023 **North Carolina State University, Graduate Merit Award**

EXPERIENCE

Research experience

08/2023 – Present **Graduate Researcher, Geohazards and earthquake engineering research laboratory, North Carolina State University**

- Applying data-driven and machine learning approaches to integrate social, environmental, and physical indicators into earthquake impact and recovery prediction frameworks. The research builds upon ground motion-based metrics and site response parameters, incorporating social metrics to develop more comprehensive and human-centered seismic hazard characterizations.

08/2023 – Present **Graduate Research Assistant, Geohazards and earthquake engineering research laboratory, North Carolina State University**

- Assisting in providing input ground motions for nonlinear time-history analyses of structural columns to investigate the effects of assumed damping models as part of a project under the National Cooperative Highway Research Program (NCHRP).
- Assisted in conducting field and geophysical testing for a project led by Dr. Cassie Gann-Phillips (then Ph.D. candidate) and supported by the NHERI Natural Hazards Reconnaissance (RAPID) Facility. The work included active and passive seismic site characterization methods—Multichannel Analysis of Surface Waves (MASW) and Horizontal-to-Vertical Spectral Ratio (HVSr)—at 12 sites across the North Carolina Coastal Plain and Piedmont regions.

01/2021 – 07/2022 **Undergraduate Research Assistant, Multi-Hazard Risk and Resilience Research Center (CIRRMA PUCMM), Pontificia Universidad Católica Madre y Maestra**

- Assisted in the project “Seismic Microzonation Study in the Bávaro–Punta Cana Region.”

Teaching experience

01/2025 – 04/2025 **Graduate Teaching Assistant of Engineering Geology, Department of Civil, Construction, and Environmental Engineering, North Carolina State University**

- Reviewed and evaluated student assignments, providing constructive feedback to support their understanding of course material.
- Conducted office hours to offer additional guidance and clarification on course topics.

08/2023 – 04/2024 **Graduate Teaching Assistant of Soil Mechanics Laboratory, Department of Civil, Construction, and Environmental Engineering, North Carolina State University**

- Delivered presentations on the theoretical background of each laboratory experiment and supervised the proper execution of laboratory tests.

- Assessed laboratory reports and quizzes, offering constructive feedback on students' performance and interpretation of results.
- Conducted office hours to provide additional assistance and guidance to students if they had any questions on the material covered in the lab or in theory.

01/2021 – 07/2022 **Undergraduate Teaching Assistant of Applied Geology Laboratory, Department of Civil, and Environmental Engineering, Pontificia Universidad Católica Madre y Maestra**

- Assisted during laboratory sessions by answering questions and clarifying concepts related to the topics being evaluated.
- Provided feedback on assignments and exams to help students improve their understanding of course material.
- Organized and led review sessions to reinforce key laboratory concepts and support student learning.

01/2022 – 04/2022 **Undergraduate Teaching Assistant of Aqueducts and Sewers, Department of Civil, and Environmental Engineering, Pontificia Universidad Católica Madre y Maestra**

- Provided feedback on students' final course projects, ensuring accuracy and clarity in technical design and analysis.
- Held individual sessions to assist students with questions related to course topics and project requirements.

Professional experience

07/2022 – 07/2023 **Geotechnical Assistant Engineer, Geoconsult, SRL, Santo Domingo, Dominican Republic**

- Conducted laboratory and in-situ testing to determine soil and rock properties and assess their suitability for construction: Multichannel Analysis of Surface Waves (MASW), sand equivalent test, specific gravity and absorption test on aggregates, visual classification of materials, Los Angeles abrasion test, unconfined compression test on soil and rock, Modified Proctor and CBR tests, and in-situ compaction test.
- Prepared geotechnical boreholes and stratigraphic profiles for various projects.
- Prepared geotechnical reports to provide comprehensive evaluation of soil and rock conditions at a construction site.

PROFESSIONAL SERVICE

07/2024 – Present **Seismic Design Competition Chair, EERI Student Leadership Council**

- Attended retreats focused on organizing the Seismic Design Competition for undergraduate students in 2025 and 2026, including developing the initial concept, competition rules, and annual design guidelines.

- Served as SDC Chair during the 2025 competition, evaluating structural models for compliance with design rules, assessing team oral presentations, and reviewing technical posters.

07/2024 – Present **Secretary of the Geotechnical Institute student organization, North Carolina State University**

- Organized technical workshops and coordinated guest speakers from academia and industry to deliver seminars and professional development sessions for geotechnical engineering students.
- Supported the annual planning and implementation of organizational goals and events.

10/2024 – 03/2025 **Outreach Chair of the EERI student chapter, North Carolina State University**

- Delivered a presentation at Southeast Raleigh High School, introducing students to the fundamentals of earthquake engineering and the concept of resilient communities.
- Presented a talk at North Carolina State University as part of the Girls and Boys Club program, introducing high school students to earthquake engineering through engaging hands-on activities.

07/2024 **Volunteer at the Natural Hazard Center Workshop**

07/2023 **Volunteer at the Training Workshop for School Safety Assessment Using the VISUS Methodology in the Dominican Republic, Pontificia Universidad Católica Madre y Maestra**

- Assisted with the organizational aspects of the event, primarily in developing documents that outlined the most effective routes for the inspection and multi-hazard risk assessment of schools across various regions of the Dominican Republic. These routes were later followed by participating students and faculty members.

12/2021 – 07/2022 **President of the EERI student chapter, Pontificia Universidad Católica Madre y Maestra**

- Served as Team Captain in the 2022 Seismic Design Competition (SDC), where undergraduate teams designed and constructed balsa wood towers to withstand earthquake ground motions. Our team received the “Best Seismic Performance” award.

12/2020 – 04/2022 **Outreach and Webmaster of the Civil Engineering Students Committee, Pontificia Universidad Católica Madre y Maestra**

- Organized and participated in university open house events to explain the different areas within the Civil Engineering Department and recruit incoming students.

- Organized workshops and webinars aimed at supporting the academic and professional development of civil engineering students.
- Managed the committee's social media accounts to promote events, share academic opportunities, and communicate departmental updates.
- Assisted in ensuring the smooth execution of workshop sessions and provided support to organizers and participants as needed.

02/2021

Co-founder of the American Concrete Institute student chapter, Pontificia Universidad Católica Madre y Maestra

PRESENTATIONS

Dickson, M., Cabas, A., & Loos, S. (July 2024). *Rethinking earthquake resilience: Uncovering the multidimensional factors shaping physical outcomes*. Poster presented at the Natural Hazards Center Workshop, Broomfield, CO.

RELEVANT SKILLS

Technical Skills

ArcGIS Pro, Python, MATLAB, R (basic statistics), AutoCAD, Google Earth, Microsoft Office Suite

Personal and Communication Skills

Fluent in Spanish and English; skilled in technical writing, oral and written communication, problem solving, team leadership, and public speaking. Experienced in social media management and effective team collaboration.

CERTIFICATIONS

2022

Community of Women in Engineering, and Drone Innovation Center, Santo Domingo, Dominican Republic

- "Drone pilote 101 - Photogrammetry for the supervision of civil works" Certificate