

# Marion A. McKenzie

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## Education

**University of Virginia**, Charlottesville, VA

*Doctorate of Philosophy in the Department of Environmental Sciences*

Expected December, 2024

Cumulative GPA: 3.94

Thesis: *The influence of dynamic landscapes on ice margin stability and ice flow speed: the effect of land emergence and variable subsurface environments on paleo ice flow behavior as an indicator of modern ice flow regimes*, Advised by Dr. Lauren Simkins

**Gettysburg College**, Gettysburg, PA

*Bachelor of Science, Summa Cum Laude*

Environmental Studies with Concentration in Earth System Science

Conferred May 19, 2019

Minor: Mathematics

Degree GPA: 3.93

Honors Thesis: *Using streamlined landforms to reconstruct and compare paleo-ice flow paths in Bardardalur, north Iceland and northwestern Pennsylvania*, Advised by Dr. Sarah Principato

## Research Experience

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

### Ph.D. Research Assistant

Fall 2019- Present

- Conceptualized and implemented the automation of glacial landform identification in 3 different ways, including coding a semi-automated tool to extract glacial landforms from LIDAR data
- Organized and executed a field research expedition to collect lake sediment cores and coastal outcrop samples including optically stimulated luminescence and radiocarbon samples in the Puget Lowland of Washington state in October 2020
- Conducted trace element, magnetic susceptibility, and grain size and shape analysis on discrete outcrop samples
- Worked in lab to acid-clean rhizons and prepare fieldwork materials and equipment

*University of Alaska, Fairbanks, Geophysical Institute*

Fairbanks, AK

### NSF Funded Research Experience for Undergraduates Student

Summer 2018

- Conducted research on the accuracy of permafrost degradation modeling using soil analysis techniques and the Geophysical Institute Permafrost Model developed at the University of Alaska Fairbanks.
- Conducted field work and collected soil samples from the Northern Slope of Alaska and around the Toolik Lake Field Station
- Learned to use and manipulate the Geophysical Institute Permafrost Model (GIPL) using collected and synthesized data
- Presented findings and final research paper to a board of peers and UAF professors and research faculty

*Gettysburg College, Environmental Studies Department*

Gettysburg, PA

### Cross-Disciplinary Science Institute Research Assistant

Summer 2017

- Participated in an 8-week program using ArcGIS to spatially analyze over 150 glacially formed streamlined landforms in a valley of northeastern Iceland
- Conducted a week of fieldwork in Iceland to ground truth previous spatial analyses

## Teaching Experience

*University of Virginia, School of Education*

Charlottesville, VA

### Summer Enrichment Program Course Instructor

Summer 2020

- Designed and taught online curriculum to 14 students in a 2 week (total 18 hour) course entitled "The Cool Cryosphere!"
- Students conducted experiments, group discussions, and presented final projects ranging from websites to videos to infographics related to cryosphere studies.

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

**Polar Environments Teaching Assistant**

Spring 2021

- Held office hours and assisted 26 undergraduate students to develop understanding of polar, glacial, and global systems
- Developed “data day” activities to provide students with hands on experience working with polar datasets

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

**Fundamentals of Geology Lecture Teaching Assistant**

Spring 2020

- Held office hours and assisted over 50 undergraduate students to develop basic skills and knowledge in geology
- Gave 2 lectures throughout the semester to over 50 students on varying topics
- Assisted in adapting and enhancing lab assignments to relate to local geology and current events

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

**Undergraduate Research Mentor**

Fall 2019- Present

- Independently worked with 2 undergraduate research students to develop a research question and plan
- Assisted in answering questions about data, ArcGIS, and conceptual ideas tied to the students’ research question
- Edited undergraduate student research proposals

*Gettysburg College, Environmental Studies Department*

Gettysburg, PA

**Environmental Studies Department Peer Learning Associate**

Fall 2017-Fall 2018

- Assisted over 20 undergraduate students to develop Earth Systems based field and writing skills
- Revised papers and answered questions during labs and field trips

## Professional Service and Fellowships

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

**Diversity, Equity, and Inclusion Committee Graduate Student Representative**

Fall 2020- Present

- One of two graduate students serving on an 11 person committee comprised of faculty, staff, postdocs, and undergraduate students tasked with providing mechanisms incorporating diversity, equity, and inclusion (DEI) practices into the departmental culture
- Developed a “Graduate Student Framework for DEI Recommendations” with two other graduate students and presented the framework at a town hall meeting of 90 department members
- Coordinated and collaborated with 3 committees and other department members to develop a departmental Code of Conduct, Mission Statement, and Bystander Intervention Training Program

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

**Departmental Social Chair**

Fall 2020-Present

- Organize weekly trivia emails (during COVID pandemic) to engage the department with social activities

*Sisterhood in Science United Mentoring Program*

**Mentor**

Fall 2020- Present

- Will meet with middle school to undergraduate aged girls three times a year to develop their personal interests in the sciences and provide them with resources to engage with the scientific community.

*Earth Science Information Partners*

**Community Data Cluster Fellow**

December 2020-Present

- Records meeting notes, sends reminder emails to committee members, and will help organize and run the winter and summer conference sessions.
- Is in the process of developing data accessibility programming and assessing community data needs in Flint, Michigan related to the water crisis.

*University of Virginia, Department of Environmental Sciences*

Charlottesville, VA

**Undergraduate Research Mentor**

Spring 2021-Present

- Conduct bi-weekly meetings with an undergraduate mentor to develop career goals and provide resources related to their interests

## Professional Development

Co-reviewed submitted paper with Dr. Lauren Simkins for Polar Science journal  
Fundamentals of Learning for Science Mentors Course Certificate  
University of Virginia PhD+ Professional Seminar Participant

Fall 2020  
Summer 2020  
Fall 2020

## Skills

### Lab and Field Skills

- Collection of optically stimulated luminescence and radiocarbon samples
- Collection of lake sediment cores through handheld devices and vibracoring techniques
- Marine, freshwater, and terrestrial field skills including using transects, quadrats, water quality sampling tools, coring, and conducting plotless analysis
- Collection and analysis of soil samples by calculating trace element, magnetic susceptibility, grain size and shape, lost on ignition values, soil hydrometer values, bulk density, porosity, saturation degree, and thermal conductivity
- Proficient use of GNSS unit, Garmin GPS unit, and altimeter and Brunton compass for measuring glacial features

### Computer Skills

- Proficient coding in ArcPython
- Advanced use of ArcGIS and ArcGIS Pro to conduct analyses on spatial data
- Analysis of data in ArcGIS and code files using LaTeX and MatLab
- Basic level coding ability in MatLab, R, Java, and Python

## Grants and Fellowships

National Ocean Sciences Accelerator Mass Spectrometry Graduate Fellowship  
Double Hoo Research Grant  
Exploratory Research Award Grant  
Gettysburg College Student Conference Fund Grant  
Gettysburg College Student Senior Project Fund Grant  
Cross Disciplinary Science Institute Student Conference Travel Award  
National Science Foundation Conference Travel Funds

Fall 2021-Spring 2022  
Spring 2021  
Spring 2020  
Spring 2019  
Fall 2018  
Fall 2017 and 2018  
Summer 2018

## Honors and Distinctions

Graduate Student Association Award  
Henry W.A. Hanson Scholarship Award  
Gertrude Lawrence Ledford Scholarship Award  
David Wills Academic Scholar  
Deans List Scholar  
Gettysburg Senior Scholarship Award  
Dean Frank B. Williams Memorial Prize

Spring 2021  
Spring 2019  
Spring 2019  
Fall 2015-2019  
Fall 2015-2019  
Fall 2018  
Fall 2018

## Professional Memberships

American Geophysical Union Member  
Phi Beta Kappa, National Honors Society Member  
Pi Mu Epsilon, National Honorary Mathematics Society Member  
The Geological Society of America Member  
Pennsylvania Association of Environmental Professionals Student Member

2020-Present  
2019-Present  
2018-Present  
2018-Present  
2017-2020

## Abstract Publications

**McKenzie, M.A.,** Slawson, J., Simkins, L.M. 2020. Variability in Subglacial Bedforms at Assemblage and Regional Scales across the Deglaciated Puget Lowland, Washington State. American Geophysical Union Annual Meeting Abstract, Virtual.

**McKenzie, M.A.,** Romanovsky, V. E., Kholodov, A. L. 2019. The impact of permafrost forecasting accuracy on predicting the influence of Arctic vegetation type and disturbance events on permafrost degradation. Arctic Workshop Annual Meeting Abstract, Stockholm, Sweden.

**McKenzie, M.A.,** Principato, S.M., Benediktsson, I.O. 2019. Using streamlined landforms to reconstruct and compare paleo-ice flow paths in north Iceland and northwestern Pennsylvania. Arctic Workshop Annual Meeting Abstract, Stockholm, Sweden.

**McKenzie, M.A.,** Principato, S.M., Benediktsson, I.O. 2018. Using streamlined landforms to reconstruct and compare paleo-ice flow paths in north Iceland and northwestern Pennsylvania. Northeast GSA Annual Meeting Abstract, Portland, ME, USA.

**McKenzie, M.A.,** Principato, S.M., Benediktsson, I.O. 2018. Geomorphic evidence for a paleo-ice stream near Bárðardalur, north Iceland. Arctic Workshop Annual Meeting Abstract, Boulder, CO, USA.

**McKenzie, M.A.,** Principato, S.M., Benediktsson, I.O. 2017. Geomorphic evidence for a paleo-ice stream near Bárðardalur, north Iceland. GSA Annual Meeting Abstract, Seattle, WA, USA.