

Claire E. Ruggles

STRUCTURAL GEOLOGY AND GEOPHYSICS PHD CANDIDATE

Objective

I am a PhD candidate at the University of Wisconsin – Madison using structural geology and geophysics to understand how magma is transported and stored in shallow volcanic systems. I am seeking to pursue a career in research where I can use these methods to locate potential sources for hazards and/or economic resources.

Education

University of Wisconsin – Madison

2021- Present

PhD Structural Geology and Geophysics, GPA: 3.87**Expected Graduation: Summer 2025**

Dissertation: "Direct and indirect observations of magma chambers using structural and geophysical methods"

Advisor: Dr. Basil Tikoff Distributed Minor in Statistics

Iowa State University

2018-2020

MS Structural Geology, GPA: 3.76

Thesis: "A multiple-pulse emplacement model for the Shonkin Sag laccolith, MT"

Advisor: Dr. Sven Morgan and Dr. Jacqueline Reber

University of Wisconsin – Madison

2014-2018

BS Geology and Geophysics, GPA: 3.53

Thesis: "Integrated fabric, U-Pb zircon ages, and zircon Hf data from the Hazard Creek complex, western Idaho"

Advisor: Dr. Basil Tikoff

Minors in Physics and German

Honors and Awards

Thomas E. Berg Award for Excellence in Teaching

2022, 2023, 2024

University of Wisconsin – Madison, Department of Geosciences

UW Madison Graduate Student Research Grant

2023

University of Wisconsin – Madison

GSA Graduate Student Research Grant

2019, 2022

Geological Society of America

GSA Geophysics & Geodynamics Division Student Research Grant

2021

Geological Society of America

Departmental Funding

2021

University of Wisconsin – Madison, Department of Geosciences

| | |
|---|-----------|
| Jack Kleinman Grant for Volcano Research The Community Foundation for Southwest Washington | 2021 |
| John Lemish Memorial Scholarship Iowa State University, Department of Geological and Atmospheric Sciences | 2020 |
| ExxonMobil/GSA Student Geoscience Grant ExxonMobil and the Geological Society of America | 2019 |
| Outstanding Mention for GSA Graduate Student Research Grant Geological Society of America | 2019 |
| Georgia and Carl Vondra Fellowship Iowa State University, Department of Geological and Atmospheric Sciences | 2018 |
| Eugene Cameron Scholarship University of Wisconsin – Madison, Department of Geosciences | 2018 |
| Field Camp Scholarship University of Wisconsin – Madison, Department of Geosciences | 2017 |
| Thermo-Fisher STEM Scholarship University of Wisconsin – Madison | 2014-2018 |

Publications

| | |
|--|------|
| C. E. Ruggles , S. Morgan, and J. E. Reber, 2021, A multiple-pulse emplacement model for the Shonkin Sag laccolith, Montana, USA. <i>Journal of Structural Geology</i> . 149. | 2021 |
|--|------|

Presentations

| | |
|---|------|
| C. E. Ruggles , C. Miller, B. Tikoff, and H. Le Mével, 2024, Mass flux and magma storage at the Laguna del Maule volcanic field: Magma reservoir evolution on human timescales. GSA Connects, Anaheim, Sept. 22-25. Poster. | 2024 |
| C. E. Ruggles , A. Flinders, and B. Tikoff, 2023, Imaging the structure of the summit region of Kilauea volcano through a high-resolution gravity survey. AGU Fall Meeting, San Francisco, Dec. 11-15. Talk. | 2023 |
| C. E. Ruggles , E. Watts, B. Schoene, and B. Tikoff, 2022, A multi-method approach to determining the emplacement history of the Duncan Hill pluton, WA: An analogue to modern magma emplacement in the North Cascades Arc. AGU Fall Meeting, Chicago, Dec. 12-16. Poster. | 2022 |
| C. E. Ruggles , S. Morgan, and J. Reber, 2021, An emplacement model for low-volume intrusions based on the Shonkin Sag laccolith, Montana. GSA Connects, Portland, Oct. 10-13. Talk. | 2021 |
| C. E. Ruggles , S. Morgan, and J. Reber, 2019, Pulses, folding and faulting: What can a structural perspective on the Shonkin Sag laccolith tell us about shallow magma emplacement? AGU Fall Meeting, San Francisco. Dec. 9-13. Poster. | 2019 |
| C. E. Ruggles , B. Tikoff, M. Patzke, K. Surpless, and J. Vervoort, 2018, Integrated fabric, U-Pb zircon ages, and zircon Hf data from the Hazard Creek complex, western Idaho. Joint Rocky Mountain/Cordilleran Annual Section Meeting, Flagstaff, May 15-17. Poster. | 2018 |

Research Experience

| | |
|--|--------------|
| PhD Dissertation University of Wisconsin – Madison Advisor: Dr. Basil Tikoff | 2021-Present |
| <ul style="list-style-type: none">Using a combination of structural geology and geophysics to investigate shallow magma transport and storageMethods include gravimetry, structural analyses, and rock magnetism | |
| Geology Internship , Hess Corporation | Summer 2024 |
| <ul style="list-style-type: none">Assessed prospectivity in the Gulf of MexicoMethods included seismic interpretation and rock physics analyses | |
| MS Thesis Iowa State University Advisor: Dr. Sven Morgan and Dr. Jacqueline Reber | 2018-2020 |
| <ul style="list-style-type: none">Investigated shallow magma emplacement using structural geologyMethods included structural analyses, rock magnetism, and thermal modeling | |
| USGS/NAGT Internship, Geodesy Intern , Cascades Volcano Observatory | Summer 2018 |
| <ul style="list-style-type: none">Aided in deploying semi-continuous GPS stations, gravity surveys, and GPS campaignsField sites include Three Sisters, OR, Mt. St. Helens, WA, and Lassen Volcanic Field, CA, respectively | |
| Undergraduate Thesis University of Wisconsin – Madison Advisor: Dr. Basil Tikoff | 2017-2018 |
| <ul style="list-style-type: none">Investigated the emplacement and deformational history of a granitic complex near the Western Idaho Shear Zone, IDMethods included microstructural analyses, and interpreting spatial patterns to U-Pb zircon ages and zircon Hf data | |
| Lab Assistant University of Wisconsin – Madison, Structural Geology and Tectonics Group | 2017-2018 |
| <ul style="list-style-type: none">Assisted in paleomagnetic and gravity surveys at the Laguna del Maule volcanic field, ChileAssisted in preparing graphs and figures for publication | |

Teaching Experience

| | |
|---|--------------|
| University of Wisconsin – Madison , Madison, WI | |
| Graduate Teaching Assistant , Department of Geosciences | 2021-Present |
| <ul style="list-style-type: none">Courses include Intro to Geologic Structures, Structural Geology, Introduction to Applied Geophysics, and Field Methods in Applied and Engineering GeophysicsInstructed lab sections and focused on one-on-one learningDeveloped and graded labs, homework, quizzes, and exams | |
| Undergraduate Students Advised | |
| <ul style="list-style-type: none">Will Hazeltine, Senior Thesis: "Gravity survey of the Borralan intrusion, Scotland", 2024Kate Akin, Senior Thesis: "Fabric study of the Borralan intrusion, Scotland", 2024Ann Everest, Field Assistant for Gravity Survey, 2024Patrick Penne, Senior Thesis: "Documenting variations in microstructures and petrology relative to emplacement features of the Duncan Hill pluton, WA", 2023Sophia Thompson, Field Assistant for Gravity Survey, 2023Kate Tobin, Field Assistant for Structural Survey, 2021 | |
| University of Wisconsin – Platteville/Baraboo , Baraboo, WI | Fall 2024 |
| Lecturer , Department of Civil Engineering | |
| <ul style="list-style-type: none">Lecturer for Physical GeologyTaught lecture and lab section for introductory geologyDeveloped syllabus, lecture content, exams, quizzes, and lecture assignments | |

| | |
|--|-----------|
| Wasatch-Uinta Field Camp , Utah | 2021-2023 |
| Head Teaching Assistant , Wasatch-Uinta Field Camp Consortium | |
| <ul style="list-style-type: none"> Traditional six-week field course based out of the Wasatch and Uinta ranges in Utah Topics include constructing geologic maps and cross-sections, rock identification, and interpreting geologic field data | |
| Iowa State University , Ames, IA | 2018-2020 |
| Graduate Teaching Assistant , Department of Geological and Atmospheric Sciences | |
| <ul style="list-style-type: none"> Courses include How Earth Works (Geol 100), Environmental Geology, and Geology for Engineers and Environmental Scientists Instructed labs, and graded labs, homework, and exams | |

Field Experience

| | |
|--|-----------|
| Gravity Fieldwork , Laguna del Maule volcanic field, Chile, Duration: Four weeks | 2024 |
| Field Camp Instruction , Wasatch-Uinta Field Camp, UT, Duration: Three six-week sessions | 2021-2023 |
| Gravity Fieldwork , Kilauea volcano, HI, Duration: Three weeks | 2023 |
| Field Course Instruction , Black Hills, SD, Duration: One week | 2022 |
| Field Assistant , Watersmeet, MI, Duration: Two days | 2022 |
| Structural Fieldwork , Duncan Hill pluton, Cascades, WA, Duration: Five weeks over two sessions | 2021,2022 |
| Structural Fieldwork , Shonkin Sag laccolith, Central MT, Duration: Two weeks | 2019 |
| Geodetic Fieldwork , Lassen volcanic field, CA, Duration: Two weeks | 2018 |
| Gravity Fieldwork , Mt St Helens, WA, Duration: Two days | 2018 |
| Geodetic Fieldwork , Three Sisters, OR, Duration: One week | 2018 |
| Gravity Fieldwork , Laguna del Maule volcanic field, Chile, Duration: Three weeks | 2018 |
| Field Camp , Wasatch-Uinta Field Camp, UT, Duration: Six weeks | 2017 |

Community Service

| | |
|---|-----------|
| Very Early Career Seminar Series , University of Wisconsin – Madison | 2023-2025 |
| <ul style="list-style-type: none"> Established, organized, and co-led inaugural year of series | |
| Geoscience Graduate Student Association , University of Wisconsin – Madison | 2021-2025 |
| <ul style="list-style-type: none"> Student Ombudsman, 2023-2024 GeoPath Chair, 2022-2023, 2024-2025 Secretary, 2021-2022 | |
| Association for Women Geoscientists , University of Wisconsin –Madison | 2021-2024 |
| <ul style="list-style-type: none"> Vice President, 2023-2024 Treasurer, 2021-2023 | |
| Geology Graduate Student Organization , Iowa State University | 2019-2020 |
| <ul style="list-style-type: none"> Vice President, 2019-2020 | |