

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

GSA Geophysics & Geodynamics Division Best Student Presentation Award

2024

Geological Society of America

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
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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 and second 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 	