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University of British Columbia
Department of Earth, Ocean, and Atmospheric Sciences
2020-2207 Main Mall, Vancouver, BC V6T 1Z4

EDUCATION

Ph.D., Geology

Completion expected Aug 2025

University of British Columbia, Vancouver, British Columbia

- Candidacy achieved 2023
- Dissertation research topics:
 - Stratigraphic record of central Andean orogenesis and subduction zone geodynamics
 - Stable isotope paleoaltimetry of the central Andes
 - Method development in mineral separation techniques

M.Sc., Geology

2021

New Mexico Institute of Mining and Technology, Socorro, New Mexico

- Thesis: “Structural evolution of the Reserve graben, New Mexico, USA: Implications for late Cenozoic extension in the Rio Grande rift-southern Basin and Range province”

B.Sc., Geology, *cum laude*

2019

Brigham Young University, Provo, Utah

- Minor: Japanese

POSITIONS & TEACHING EXPERIENCE

Teaching Assistant/Research Assistant

University of British Columbia, Vancouver, British Columbia

2021-present

- EOSC 421: Advanced Sedimentology (2 times)
- EOSC 332: Tectonic Evolution of North America
- EOSC 323: Structural Geology I
- EOSC 320: Sedimentology
- EOSC 311: The Earth and Its Resources
- EOSC 223: Geologic Maps and Field Techniques
 - Lab section (1 time) and 1-week field course (2 times)

New Mexico Institute of Mining and Technology, Socorro, New Mexico

2019-2021

- EES 380: Igneous and Metamorphic Petrology
- EES 353: Structural Geology (2 times)
- EES 301: Sedimentology and Stratigraphy

Field and Laboratory Assistant

Brigham Young University, Provo, Utah

2017-2019

RESEARCH GRANTS

University of British Columbia, Vancouver, British Columbia

- 2024 Calgary Geo- and Thermochronology Lab Graduate Student Research Grant CAD \$10,000
- Highest-ranked proposal nationally
- 2022, 2024 Geological Society of America Graduate Student Research Grant CAD \$6,480
- 2022, 2024 American Association of Petroleum Geologists Grant-in-Aid CAD \$8,100
- 2023 SEPM Student Research Grant CAD \$1,485

New Mexico Institute of Mining and Technology, Socorro, New Mexico

- 2021 New Mexico Geological Society Kottowski Research Award CAD \$3,375
- Highest-ranked proposal statewide
- 2021 New Mexico Geological Society Cearley Geochronology Award CAD \$2,025
- 2020 New Mexico Geological Society Graduate Mentorship Award CAD \$2,025
- Funded mentored research opportunity for undergraduate assistant
- 2020 New Mexico Geological Society Cearley Research Award CAD \$3,375
- 2020 Four Corners Geological Society Master's Thesis Grant CAD \$1,350
- 2020 New Mexico Tech Graduate Student Association Travel Grants CAD \$2,700
- 2020 Anton and Anita Budding Graduate Research Award CAD \$1,350

MANUSCRIPTS

In preparation

Martin, S. G., Axen, G. J., van Wijk, J., Koning, D. J., Heizler, M. T., Insights into drivers for intraplate extension from the Rio Grande rift-Basin and Range-Colorado Plateau transition zone, New Mexico, USA

Martin, S. G., van Wijk, J., Ellis, N. M., Influence of oceanic plateau-subduction zone interactions on plate motion and plate boundary reorganization for the Caroline Plate, western Pacific Ocean

Keith, J. D., Christiansen, E. H., Chadburn, R., Harris, R. A., Thompson, T. J., Spencer, C. J., Thayn., S., Harrison, C., Jensen, C., **Martin., S. G.**, Martin, A. J., Jordan, L. R., Misuraca, T., Hood, S., A gigantic Miocene landslide moved 16 km from its source in the Wasatch Range, Utah, USA

SELECTED CONFERENCE ABSTRACTS & PRESENTATIONS

* = presenting author, underline = undergraduate mentee

Martin, S. G.*, Ellis, N., van Wijk, J., Wu, J., 2024, [Invited Presentation] Toward a “best-fit” tectonic reconstruction for the Caroline Plate: Oceanic plateau-subduction zone interaction as a driver for plate boundary reorganization?: 37th International Geological Congress (Busan, South Korea)

Martin, S. G., Saylor, J. E., Alvarez, P.*, Rafeeza, M., Kopystecki, H., Restrepo, J., 2024, Regional chronostratigraphy highlights asynchronous foreland-to-hinterland transition in the central Andes' Altiplano Basin: GSA Connects 2024 (Anaheim, California)

Kopystecki, H.*, **Martin, S. G.**, Saylor, J. E., 2024, Stable isotopes in hydrated volcanic glass indicate long-lived high elevations in the central Altiplano: GSA Connects 2024 (Anaheim, California)

- Martin, S. G.**, Ellis, N. M., van Wijk, J.*, 2023, An updated tectonic reconstruction for the Caroline Plate (Western Pacific) incorporating age constraints on oceanic plateau construction and kinematic effects of plateau-subduction zone interaction: AGU23 (San Francisco, California)
- Kopystecki, H.*, **Martin, S. G.**, Saylor, J. E., 2023, Stable isotopes in hydrated volcanic glass from the Corque syncline indicate long-lived high elevations in the central Altiplano, western Bolivia: GSA Connects 2023 (Pittsburgh, Pennsylvania)
- Martin, S.G.***, Saylor, J. E., Restrepo, J., Kopystecki, H., 2023, Toward a detailed 4D reconstruction of basin geometry, sediment provenance, and tectonic-geodynamic subsidence drivers in the central Andean Altiplano: GSA Connects 2023 (Pittsburgh, Pennsylvania)
- Rafeeza, M., Shekut, S. J.*, **Martin, S. G.**, Saylor, J. E., 2023, Evaluating models for foreland to hinterland basin transition in the Central Andean Plateau using detrital zircon geochronology: GSA Connects 2023 (Pittsburgh, Pennsylvania)
- Kopystecki, H.*, **Martin, S. G.**, Saylor, J. E., 2023, Revisiting the paleoelevation history of the central Altiplano using stable isotopes in hydrated volcanic glass from the Corque syncline, western Bolivia: Geological Association of Canada-Mineralogical Association of Canada-Society for Geology Applied to Mineral Deposits Joint Annual Meeting (Sudbury, Ontario)
- Martin, S.G.***, Saylor, J. E., Kopystecki, H., 2022, Deconvolving multiple subsidence mechanisms in retroarc Cordilleran geodynamics through basin analysis of the Altiplano Basin: GSA Connects 2022 (Denver, Colorado)
- Martin, S. G.***, Axen, G. J., van Wijk, J., Koning, D. J., Heizler, M. T., Whitman, C. J., 2021, Examining drivers for intraplate extension: Insights from the Reserve graben in the Colorado Plateau-Rio Grande rift-Basin and Range transition zone, New Mexico: GSA Connects 2021 (Portland, Oregon)
- Martin, S. G.***, Axen, G. J., van Wijk, J., Koning, D. J., Heizler, M. T., Whitman, C. J., 2021, Structural evolution of the Reserve graben, New Mexico: Implications for extensional tectonics at the junction of the Rio Grande Rift, Basin and Range, and Colorado Plateau: New Mexico Geological Society Annual Spring Meeting, v. 38 (Socorro, New Mexico)
- Whitman, C. J.*, **Martin, S. G.**, Axen, G. J., van Wijk, J., Heizler, M. T., Koning, D. J., 2021, Refining the age of the Reserve graben, west-central New Mexico, with $^{40}\text{Ar}/^{39}\text{Ar}$ dating: New Mexico Geological Society Annual Spring Meeting, v. 38 (Socorro, New Mexico)
- Martin, S. G.***, Keith, J. D., Palke, A. C., Valley, J. W., Turnier, R. B., Shigley, J. E., Chadburn, R., Martin, A. J., 2019, Refining sapphire genesis models for Yogo Gulch, Montana and Bingham Canyon, Utah: Evidence from trace elements, melt inclusions, and oxygen isotope ratios: GSA Annual Meeting 2019 (Phoenix, Arizona)
- Martin, S. G.***, Radebaugh, J., 2019, Investigating Titan's tectonic history from morphology, orientation, and elevation of ridges seen in Cassini RADAR imagery: GSA Annual Meeting 2019 (Phoenix, Arizona)
- Martin, S. G.***, Keith, J. D., Palke, A. C., Shigley, J. E., Chadburn, R., Martin, A. J., Kindred, T., Jordan, L., 2018, Insights into sapphire formation processes from Yogo Gulch, Montana and Bingham Canyon, Utah: GSA Annual Meeting 2018 (Indianapolis, Indiana)

HONORS & AWARDS

University of British Columbia, Vancouver, British Columbia

- 2023-2027 Four-Year Doctoral Fellowship ≥ CAD \$18,200/year
- 2023, 2024 Earth, Ocean, and Atmospheric Sciences Graduate Scholarship CAD \$2,500
- 2022, 2023 Egil H. Lorntzen Scholarship CAD \$11,000

New Mexico Institute of Mining and Technology, Socorro, New Mexico

- 2021 Outstanding TA Award CAD \$135
- 2020 Jerry and Cynthia Durtsche Scholarship CAD \$675

Brigham Young University, Provo, Utah

- 2019 Outstanding Field Camp Student Award CAD \$135
- 2015-2019 Academic Scholarship CAD \$32,014

RESEARCH EXPERIENCE

Ph.D. research

University of British Columbia, Vancouver, British Columbia 2021-present

- Sedimentary record of orogenesis and subduction zone geodynamics in the central Andes
 - Zircon U-Pb geochronology, basin analysis
 - Carbonate and volcanic glass stable isotope paleoaltimetry
 - Undergraduate student mentorship (field geology, thesis writing, conference presentation preparation, sample preparation)
- Workflow optimization for density-based mineral separations

M.Sc. research

New Mexico Institute of Mining and Technology, Socorro, New Mexico 2019-2021

- Intraplate extensional tectonics in southwestern North America
 - Fault kinematic analysis
 - $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology at New Mexico Geochronology Research Laboratory
 - Undergraduate student mentorship (field geology, conference presentation preparation)
- Geodynamics and plate kinematics in the Indian and western Pacific Oceans
 - Paleo-water depth and biostratigraphic age estimates from Deep Sea Drilling Program reports
 - Plate reconstruction using GPlates software

B.Sc. research

Brigham Young University, Provo, Utah 2017-2019

- Geochemical characterization of gem corundum deposit (north-central Utah)
 - Sample preparation for LA-ICP-MS, SIMS (trace elements and O-isotopes)
 - Collaboration with the Gemological Institute of America, University of Wisconsin-Madison, and Montana Bureau of Mines and Geology
- Mass movement and magmatic processes in the Basin and Range (Wasatch Range, Utah)
 - Field mapping
 - Sample preparation for zircon U-Pb geochronology
- Tectonic evolution of icy bodies in the solar system (Saturn's moon Titan)
 - Tectonic geomorphology using Cassini RADAR imagery in ArcGIS

NOTABLE COURSEWORK

University Courses

University of British Columbia, Vancouver, British Columbia 2021-present

- Teaching and Learning in Earth, Ocean, and Atmospheric Sciences
- Advanced Field Methods
- Geochronology and Thermochronology (online course at Dalhousie University)
- Basin Analysis
- Isotopic Systems in Geoscience

New Mexico Institute of Mining and Technology, Socorro, New Mexico 2019-2021

- Geodynamics
- $^{40}\text{Ar}/^{39}\text{Ar}$ Geochronology
- Scientific Communications

Brigham Young University, Provo, Utah 2017-2019

- Geologic Mapping and Field Methods (6-week field course)
- Economic Geology
- Geophysics

Short Courses

University of Utah, Salt Lake City, Utah

- Isotopes in Spatial Ecology and Biogeochemistry (SPATIAL) 2024

Geological Society of America

- Geological Applications in Geo-Thermo-Petro-Chronology 2021, 2023
- Detrital Geochronology Data 2021, 2022
- Introduction to Petroleum Structural Geology 2020

SERVICE IN SCIENCE & EDUCATION

Session Convener 2023

- GSA Connects 2023, Session T167: “New Insights into Controls on the Behavior of Orogenic Systems and their Associated Basins”
- Co-conveners: Julie Fosdick, Nicholas Perez

Honor’s Thesis Grader 2023-2024

University of British Columbia, Vancouver, British Columbia

- Provided detailed feedback on undergraduate thesis and final presentations

English as a Second Language Tutor 2016

Brigham Young University, Provo, Utah

- Provided weekly English tutoring for student preparing to take the TOEFL

MEMBERSHIPS

- Geological Society of America (Geochronology, Sedimentary Geology divisions) 2018-present
- American Geophysical Union 2023-present
- SEPM Society for Sedimentary Geology 2023-present
- American Association of Petroleum Geologists 2019-present
- New Mexico Geological Society 2019-present