

# SAMUEL G. MARTIN

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

## EDUCATION

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- Ph.D., Geology** Expected 2025  
*University of British Columbia, Vancouver, British Columbia*
- Dissertation research topics:
    - Stratigraphic record of subduction zone geodynamics in the central Andes
    - Comparison of paleoelevation records from multiple stable isotope proxies
    - Method development in dense 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

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- Teaching Assistant** 2021-present  
*University of British Columbia, Vancouver, British Columbia*
- Earth, Ocean, and Atmospheric Sciences 421: Advanced Sedimentology
  - Earth, Ocean, and Atmospheric Sciences 332: Tectonic Evolution of North America
  - Earth, Ocean, and Atmospheric Sciences 311: The Earth and Its Resources
  - Earth, Ocean, and Atmospheric Sciences 223: Geologic Maps and Field Techniques
    - Lab section and 1-week field course
- New Mexico Institute of Mining and Technology, Socorro, New Mexico* 2019-2021
- Earth and Environmental Science 380: Igneous and Metamorphic Petrology
  - Earth and Environmental Science 353: Structural Geology
  - Earth and Environmental Science 301: Sedimentology and Stratigraphy
- Research Assistant** 2019-2020  
*New Mexico Institute of Mining and Technology, Socorro, New Mexico*
- Field and Laboratory Assistant** 2017-2019  
*Brigham Young University, Provo, Utah*

## RESEARCH GRANTS

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### *University of British Columbia, Vancouver, British Columbia*

- 2022 American Association of Petroleum Geologists Grant-in-Aid CAD \$3,740
- 2022 Geological Society of America Graduate Student Research Grant CAD \$2,940

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

- 2021 New Mexico Geological Society Kottowski Research Award CAD \$3,200  
- Highest-ranked proposal statewide
- 2021 New Mexico Geological Society Cearley Geochronology Award CAD \$1,920
- 2020 New Mexico Geological Society Cearley Research Award CAD \$3,200  
- 2<sup>nd</sup>-highest ranked proposal statewide
- 2020 New Mexico Geological Society Graduate Mentorship Award CAD \$1,920  
- Funded mentored research opportunity for undergraduate assistant
- 2020 Four Corners Geological Society Master's Thesis Grant CAD \$1,280  
- 1 of 2 grants awarded; applicants from New Mexico, Utah, Colorado, and Arizona
- 2020 New Mexico Tech Graduate Student Association Travel Grants CAD \$2,560
- 2020 Anton and Anita Budding Graduate Research Award CAD \$1,280

## PUBLICATIONS & MANUSCRIPTS

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### *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., An updated tectonic model for the Caroline Plate, western Pacific Ocean: Implications for oceanic plateau-subduction zone interactions

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

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\* = presenting author

**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: Geological Society of America Annual Meeting, v. 53, 70-3 (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 <sup>40</sup>Ar/<sup>39</sup>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: Geological Society of America Annual Meeting, v. 51, 288-7 (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: Geological Society of America Annual Meeting, v. 51, 170-11 (Phoenix, Arizona)
- Martin, S. G.\***, 2019, Trace element, melt inclusion, and oxygen isotope characterization of sapphires from Bingham Canyon, Utah, and Yogo Gulch, Montana: Brigham Young University Student Research Conference (Provo, Utah)
- 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: Geological Society of America Annual Meeting, v. 50, 243-10 (Indianapolis, Indiana)
- Chadburn, R.\*, Keith, J. D., Harris, R., Christansen, E. H., Biek, R. F., Jensen, C. G., **Martin, S. G.**, Jordan, L., Kindred, T., Martin, A. J., 2018, New evidence for a mega-landslide origin for the East Traverse Mountains, Utah: Geological Society of America Annual Meeting, v. 50, 195-20 (Indianapolis, Indiana)
- Martin, S. G.\***, 2018, Mapping landslide-generated pseudotachylyte in Dry Creek Canyon, Utah: Brigham Young University Student Research Conference (Provo, Utah)

## **HONORS & AWARDS**

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### *University of British Columbia, Vancouver, British Columbia*

- 2022 Egil H. Lorntzen Scholarship CAD \$10,000

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

- 2021 Outstanding TA Award CAD \$128
- 2020 Jerry and Cynthia Durtsche Scholarship CAD \$640

### *Brigham Young University, Provo, Utah*

- 2019 Outstanding Field Camp Student Award CAD \$128
- 2015-2019 Academic Scholarship CAD \$30,353

## **RESEARCH EXPERIENCE**

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### **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, stable isotope paleoaltimetry at Pacific Center for Isotopic and Geochemical Research

- Tectonic subsidence analysis
- Isopach and isoscape maps for Cenozoic stratigraphy of Altiplano region
- Workflow optimization for density-based mineral separations
  - Use of hydrocyclones in sample processing

**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
    - <sup>40</sup>Ar/<sup>39</sup>Ar geochronology at New Mexico Geochronology Research Laboratory
    - Mentorship of undergraduate student (field geology, research presentation preparation)
  - Geodynamics and plate tectonic kinematics in the Indian and western Pacific Oceans
    - Paleo-water depth and minimum crustal age estimates from Deep Sea Drilling Program biostratigraphic data

**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)
    - Collaborators at 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**

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**University Courses**

- University of British Columbia, Vancouver, British Columbia* 2021-present
- Basin analysis
  - Isotopic systems in geoscience
- New Mexico Institute of Mining and Technology, Socorro, New Mexico* 2019-2021
- Geodynamics
  - <sup>40</sup>Ar/<sup>39</sup>Ar geochronology
  - Scientific communications
  - Petroleum exploration geophysics
- Brigham Young University, Provo, Utah* 2017-2019
- Geologic mapping and field methods (6-week field course)
  - Economic geology
  - Geophysics

## Short Courses

### *Geological Society of America*

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

## **SKILLS**

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- Software: Python, ArcMap and ArcGIS Pro, Adobe Illustrator
- Laboratory: Sample preparation and mineral separation techniques, grain mounting, petrographic microscope use, mass spectrometry
- Second language: Japanese (intermediate speaking proficiency)

## **VOLUNTEER WORK**

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**English as a Second Language Tutor** 2016

*Brigham Young University, Provo, Utah*

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

## **MEMBERSHIPS**

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- Geological Society of America (Geochronology, Sedimentary Geology divisions) 2018 - current
- American Association of Petroleum Geologists 2019 - current
- New Mexico Geological Society 2019 - current