

# Amy C. Moser – Curriculum Vitae

Department of Earth Science  
University of California, Santa Barbara  
1006 Webb Hall, Santa Barbara, CA 93106-9630  
amoser@ucsb.edu | 717.449.8437 | amymoser.weebly.com

## PROFESSIONAL EXPERIENCE

---

**NSF Postdoctoral Research Fellow** Beginning January 2023  
Massachusetts Institute of Technology | Cambridge, MA  
University of Wisconsin-Madison | Madison, WI  
• Mentors: Dr. Matěj Peč, Dr. Chloë Bonamici

## EDUCATION

---

**Ph.D., Earth Science** Expected December 2022

### Certificate in College and University Teaching

University of California, Santa Barbara (UCSB) | Santa Barbara, CA  
• Dissertation: “Dating Deformation with Titanite”  
• Adviser: Dr. Bradley R. Hacker

**M.Sc., Geology** 2017

Utah State University | Logan, UT  
• Thesis: “Spatiotemporal Evolution of Pleistocene and Late Oligocene–Early Miocene Deformation in the Mecca Hills, Southernmost San Andreas Fault Zone”  
• Advisers: Dr. James P. Evans, Dr. Alexis Ault

**B.A., Geosciences, *Summa Cum Laude*** with honors in Earth and Environment 2014

Franklin and Marshall College (F&M) | Lancaster, PA  
• Thesis: “Structural Analysis of Anomalous Groundwater Flow at Boiling Springs Pennsylvania”  
• Adviser: Dr. Robert Walter

## TEACHING AND MENTORING

---

### COURSES TAUGHT (as instructor of record)

Earth 2, Physical Geology | UCSB 2020

### TEACHING ASSISTANTSHIPS

Earth 118, Summer Field Geology | UCSB 2019  
Earth 104B, Field Methods | UCSB 2018, 2019  
Earth 102C, Metamorphic Petrology | UCSB 2018  
Earth 6, Mountains, Boots, and Backpacks | UCSB 2017  
GEOL 5200, Field Camp | Utah State 2016  
GEOL 3700, Structural Geology | Utah State 2016  
GEO 110, The Dynamic Earth | F&M 2011, 2013

### MENTORING

*Undergraduate thesis students mentored* | UCSB  
• Michelle Chambers 2021–2022

*Undergraduates mentored in formal mentoring program (GEMSS)* | UCSB  
• Jillian Allison (now a graduate student in the Bren School, UCSB) 2020–2022  
• Emily Gates (now a graduate student at Western Washington University) 2020–2021  
• Keli McGuire (now an Environmental Scientist at GHD) 2020–2021

*Undergraduate laboratory assistants mentored* | UCSB  
• Alaina Rosenthal-Guillot 2020  
• Roxana Lagunas (now at USGS Kansas Water Science Center) 2019–2020

**RESEARCH****PUBLICATIONS**

- Hoover, W.F., Condit, C.B., Lindquist, P.C., **Moser, A.C.**, Guevara, V.E., (*accepted*), Episodic Slow Slip Hosted by Talc-Bearing Metasomatic Rocks: High Strain Rates and Stress Amplification in a Chemically Reacting Shear Zone. *Geophysical Research Letters*, [doi.org/10.1002/essoar.10512320.1](https://doi.org/10.1002/essoar.10512320.1).
- Cawood, T.K., **Moser, A.C.**, Borsook, A., and Rooney, A.D., 2022, New Constraints on the Timing and Character of Laramide Deformation, Fluid Flow, and Pegmatite Emplacement in Southeastern California: *in press at GSA Bulletin*. [doi.org/10.1130/B36251.1](https://doi.org/10.1130/B36251.1).
- Moser, A.C.**, Hacker, B.R., Gehrels, G.E., Seward, G.G.E., and Kylander-Clark, A.R.C., 2022, Linking Titanite U-Pb Dates to Coupled Deformation and Dissolution–Reprecipitation: Contributions to Mineralogy and Petrology, v. 40, no. 3, p. 1–27. [doi.org/10.1007/s00410-022-01906-9](https://doi.org/10.1007/s00410-022-01906-9).
- Moser, A.C.**, Ault, A.K., Stearns, M.A., Evans, J.P., and Guenther, W.R., 2021, Late Oligocene–Early Miocene Detachment Faulting in Crystalline Basement, Mecca Hills, CA, Documented with Zircon (U–Th)/He Date-eU-Visual Radiation Damage Patterns: *Tectonics*, v. 40, no. 9, p. 1–24, [doi.org/10.1029/2021TC006809](https://doi.org/10.1029/2021TC006809).
- Ault, A.K., Guenther, W.R., **Moser, A.C.**, Miller, G.H., and Refsnider, K.A., 2018, Zircon Grain Selection Reveals (De)coupled Metamictization, Radiation Damage, and He Diffusivity: *Chemical Geology*, v. 490, p. 1–12, [doi:10.1016/j.chemgeo.2018.04.023](https://doi.org/10.1016/j.chemgeo.2018.04.023).
- Moser, A.C.**, Evans, J.P., Ault, A.K., Bradbury, K.K., and Janecke, S.U., 2017, (U–Th)/He Thermochronometry Reveals Pleistocene Punctuated Deformation and Synkinematic Hematite Mineralization in the Mecca Hills, Southernmost San Andreas Fault Zone: *Earth and Planetary Science Letters*, v. 476, p. 87–99. [doi:10.1016/j.epsl.2017.07.039](https://doi.org/10.1016/j.epsl.2017.07.039).

**PUBLICATIONS, in preparation**

- Moser, A.C.**, Schwartz, J.J., Klepeis, K.K., Cottle, J.M., Seward, G.G.E., Kylander-Clark, A.R.C., Hacker, B.R., (*in prep*) Titanite Deformation Chronometry Reveals Miocene Amphibolite-Facies Deformation Along the Alpine Fault System, New Zealand, for *Journal of Metamorphic Geology*. (*manuscript available upon request*)
- Moser, A.C.**, Lusk, A.D., Attia, S., and Garber, J.M., (*in prep*), Titanite Petrochronology Reveals Timing and Temperature, Fluid Evolution During Ductile Deformation: An Example from Cretaceous Shear Zones in the Eastern Transverse Ranges, CA, USA, for *G-cubed*. (*manuscript available upon request*)

**GRANTS, AWARDS, AND FELLOWSHIPS**

NSF-EAR Postdoctoral Fellowship (\$180,000)	2022
Alex Johnson Memorial Award for Outstanding Student Mentoring   UCSB	2022
AGU Outstanding Student Presentation Award	2021
G.K. Gilbert Award for Best Colloquium Talk, Department of Earth Science   UCSB	2021
Peggy Dearth Wormington Field Studies Award   UCSB (\$1,000)	2021
Earth Science Graduate Opportunity Award   UCSB (\$2,150)	2020
Graduate Student Association Excellence in Teaching Award   UCSB	2020
Most Helpful Graduate Student (vote by graduate student peers)   UCSB	2020
Mucker's Coterie TA of the Year (undergraduate-voted TA award)   UCSB	2019
Mineralogical Society of America Student Research Grant (\$5,000)	2018
Chancellor's Doctoral Fellowship   UCSB	2017–2022
Geological Society of America Student Research Grant (\$2,400)	2016
American Association of Petroleum Geologists Student Research Grant (\$2,750)	2016
Association for Women Geoscientists Research Scholarship (\$1,000)	2016
College of Science M.Sc. Student Researcher of the Year   Utah State	2016
Department of Geology Outstanding Graduate Researcher   Utah State	2016

**GRANTS, AWARDS, AND FELLOWSHIPS, *continued***

GDL Foundation Fellowship (\$5,000)	2015
Rawnsley Science Prize (all-school science award)   F&M	2014
Geology Award   F&M	2014
Richard A. Shephard '56 Award in Mineralogy and Petrology   F&M	2014
Lloyd S. Yeakel Memorial Award in Geology and Sedimentology   F&M	2014
Phi Beta Kappa Academic Honor Society	2014

**INVITED TALKS AT CONFERENCES (*not repeated in abstract list*)**

- \***Moser, A.C.**, Lusk, A.D., Attia, S., 2022, Dating Deformation with Titanite: An Example From Cretaceous Shear Zones in Joshua Tree National Park: Rocky Mountain/Cordilleran Geological Society of America Joint Meeting, Abstract 2-1.
- \***Moser, A.C.**, Hacker, B.R., Cawood, T.K., Gehrels, G.G., Lusk, A.D., Attia, S., 2021, U–Pb Dates from Dynamically Recrystallized Titanite Directly Constrain Timing of Crystal-Plastic Deformation: American Geophysical Union Fall Meeting, Abstract V22A-05.

**MEETING ABSTRACTS**

- Hoover, W.F., Condit, C.B., **Moser, A.C.**, Lindquist, P.C., and Guevara, V.E., 2022, The Role of Metasomatism in Episodic Tremor and Slow Slip: Stress and Strain Rate Variations in a Chemically Reacting Shear Zone: Geological Society of America Annual Meeting, Abstract 186-3.
- Hoover, W.F., Condit, C.B., **Moser, A.C.**, Guevara, V.E., and Lindquist, P.C., 2022, Stress and Strain Rate Variations in a Chemically Reacting Shear Zone: The Role of Metasomatism in Producing Slow Slip and Tremor: Goldschmidt Conference, Abstract 12360.
- Moser, A. C.**, Hacker, B.R., Stoner, R. K., & Gehrels, G.E., 2019, Dating Dynamic Recrystallization: Microstructural Geochronology of Titanite: Geological Society of America Annual Meeting, Abstract 217-2.
- Cawood, T.K., Moser, A.C., and Borsook, A., 2019, Laramide Thrusting in SE California: New Age Constraints From Late Syn-Kinematic Pegmatites and Accessory Mineral Petrochronology: Geological Society of America Annual Meeting, Abstract 217-12.
- Moser, A.C.**, Hacker, B.R., and Schwartz, J. J., 2018, Directly Dating High-Temperature Deformation: Dynamic Recrystallization and U–Pb Resetting of Titanite: American Geophysical Union Fall Meeting, Abstract V33E-0284.
- Moser, A.C.**, Ault, A.K., Evans, J.P., Reiners, P.W., Stearns, M., and Guenther, W.R., 2017, Using Zircon (U-Th)/He Damage-Diffusivity Patterns to Quantify Detachment-Related Basement Exhumation in the Mecca Hills, CA: American Geophysical Union Fall Meeting, Abstract T13A-0487.
- Ault, A.K., Guenther, W.R., **Moser, A.C.**, Miller, G.H., Refsnider, K.R., 2017, (De)coupled Zircon Metamictization, Radiation Damage, and He Diffusivity: American Geophysical Union Fall Meeting, Abstract T12A-06.
- Moser, A.C.**, Evans J.P., Ault, A.K., Janecke, S.U., and Bradbury, K.K., 2016, Spatiotemporal Evolution of San Andreas Fault-Related Deformation in the Mecca Hills, Southern California, From Integrated Fault Zone Characterization and Low-Temperature Thermochronology: Geological Society of America Annual Meeting, Abstract 25-6.
- Evans, J.P., Bradbury, K.K., **Moser, A.C.**, Janecke, S.U., and Forand, D.H., 2016, The Development of Inner Damage Zones Around Faults and Their Relationship to Seismic Attributes in Faults: A Virtuous Feedback Amongst Seismicity, Fluid Flow, Heat, Alteration, and Deformation: Geological Society of America Annual Meeting, Abstract 25-1.
- Moser, A.C.**, Evans, J.P., Ault, A.K., Janecke, S.U., Bradbury, K.K., and Clausnitzer, S.M., 2015, Structural, Geochemical, and Thermal Evolution of the Southern San Andreas and Parallel Subsidiary Faults in the Mecca Hills, Southern California: American Geophysical Union Fall Meeting, Abstract T41A-2862.

**MEETING ABSTRACTS, continued**

- Bradbury, K.K., Evans, J.P., **Moser, A.C.**, Schulthies, S.A., 2015, Structural and Geochemical Characterization of Fault-Related Deformation in the Northeastern Block of the Southern San Andreas Fault, Mecca Hills, Southern California: American Geophysical Union Fall Meeting, Abstract T54B-01.
- Evans, J.P., Bradbury, K.K., **Moser, A.C.**, Springer, S., Forand, D., and Jacobs, J., 2015, Analysis of San Andreas Fault Zone Composition and Structure: Systematic Mineralogic and Structural Studies: Geological Society of America Annual Meeting, Abstract 74-5.
- Moser, A.C.**, Evans, J.P., Ault, A.K., Janecke, S.U., Bradbury, K.K., and Clausnitzer, S.M., 2015, Structural, Geochemical, and Thermal Evolution of the Southern San Andreas and Parallel Subsidiary Faults in the Mecca Hills, Southern California: Southern California Earthquake Center Annual Meeting, Abstract 274.
- Bradbury, K.K., Evans, J.P., **Moser, A.C.**, Schulthies, S.A., 2015, Structure and Mineralogical Characterization of Multiple Fault Traces in Painted Canyon Area, Mecca Hills, Southern San Andreas Fault System, California: Southern California Earthquake Center Annual Meeting, Abstract 258.
- Moser, A.**, Walter, R.C., Bechtel, T.D., Ismat, Z., and Potter, N., 2014, Investigation of Structural Control of Seemingly Anomalous Groundwater Flow at Boiling Springs, Pennsylvania: Geological Society of America Northeastern Section Meeting, Abstract 8-15.
- Grand Pré, C.A., Walter, R.C., Merritts, D.J., **Moser, A.C.**, Bernhardt, C., Potapova, M., and Hilgartner, W.B., 2012, A High-Resolution Multi-Proxy Record of Late Pleistocene and Holocene Climate Change from Great Marsh, Southeastern PA: Geological Society of America Annual Meeting, Abstract 145-4.

**INVITED SEMINAR TALKS**

Williams College, Geosciences Department	2022
University of Michigan, Petrology Seminar	2022
Oberlin College, Department of Geosciences	2022
Denison University, Earth and Environmental Sciences Department	2021
Pennsylvania State University, Hard Rock Café seminar	2020
University of Southern California, Lithospheric Dynamics seminar	2019
Franklin and Marshall College, Department of Earth and Environment	2017

**LABORATORY EXPERIENCE**

- Electron Beam Facility | UCSB* 2017–present
- Proficient using FEI Quanta 400f field-emission scanning electron microscope for EBSD, BSE, SE, CL, and EDS analyses
  - Proficient using Oxford Instruments CHANNEL 5 software for microstructural data acquisition and reduction
  - Experience with WDS X-ray mapping and quantitative element spot analyses using Cameca SE-100 electron microprobe
- Laser-Ablation Split-Stream (LASS) Facility | UCSB* 2017–present
- Proficient using Chromium 2 software, Photon Machines 193 nm excimer laser, Nu Instruments Plasma HR-ES multi-collector ICP, Agilent 7700x quadrupole mass spectrometer for laser-ablation split stream analyses of U-Th-Pb isotopes and trace-elements
  - Proficient in U-Th-Pb and trace-element data reduction using Iolite and Igor Pro
- Rock crushing and mineral separation | UCSB and Utah State* 2015–present
- Experience with jaw crusher, mini jaw crusher, water table, Frantz magnetic separator, and heavy liquids mineral separation techniques
  - Proficient in target mineral selection, epoxy mount preparation and polishing for laser-ablation analyses and noble gas extraction

**LABORATORY EXPERIENCE, continued**

*Arizona Radiogenic Helium Dating Laboratory | University of Arizona* 2016  
 • Operated noble gas extraction line for apatite, zircon, and hematite (U-Th)/He analyses

**FIELD RESEARCH EXPERIENCE**

*Joshua Tree National Park, Southern California* 2021

- Geologic mapping of Cretaceous ductile shear zones and associated aplite dikes
- Target sample collection for deformation chronometry and thermobarometry

*Cerro Muchacho Mountains, Southern California* 2020

- Geologic mapping of Cretaceous shear zones and associated ore deposits
- Target sample collection for titanite deformation chronometry

*Ivrea-Verbano Zone, Italy* 2019

- Sample collection and field descriptions of lower-crustal metapelites and metabasites

*Coast shear zone, British Columbia and Alaska* 2018, 2019

- Oriented sample collection
- Outcrop-scale structural characterization and analysis
- Target sample collection for titanite deformation chronometry

*San Andreas fault zone, Southern California* 2014–2016

- Outcrop-scale structural characterization and analysis of fault damage zones
- Target sample collection for apatite and zircon (U-Th)/He thermochronology

**PROFESSIONAL FIELD TRIPS, FIELD CLASSES, AND SHORT COURSES**

Field Petrology of Ophiolitic Crust (Semail Ophiolite, Oman) | UCSB 2019

Architecture and Evolution of the Crust during Continental Arc Magmatism: A Transect  
 Through the Coast Mountains Batholith | GSA Thompson Field Forum 2018

Structural and Stratigraphic Concepts Applied to Basin Exploration | ExxonMobil 2014

Field Camp, SW Montana and NE Wyoming | University of Houston 2013

Constraints on the Kinematics of Alpine Fault Zone Deformation | University of Otago 2013

**SERVICE****UCSB DEPARTMENT OF EARTH SCIENCE**

*Member, UC Santa Barbara Department of Earth Science URGE Pod* 2021

- <https://urgeo.org/pods/ucsb-earth-science/>

*Co-chair, Geoscience Enrichment and Mentoring for Students by Students (GEMSS)* 2020–2021

- Created peer mentoring program in UCSB Department of Earth Science
- Organized, moderated panels on geoscience careers and applying to graduate school

*Member, Student Committee for Justice, Equity, Diversity, and Inclusion* 2020–2021

*Co-president, Royal Geological Society of Goleta* 2019–2020

- Served as liaison between Earth Science faculty and graduate students

**OUTREACH**

*Guest speaker, Laguna Blanca School Science Research Program* 2019, 2020

*Graduate student participant on panel for post-graduate opportunities in Earth Science*

- UC Santa Barbara 2017–2019
- Santa Barbara City College 2019
- Occidental College 2018
- Utah State University 2015

**MEETING SESSIONS CONVENED**

*American Geophysical Union Fall Meeting* 2021

- Co-convenor: “Zooming in to see the big picture: Using nano- to micro-scale observations to better understand tectonic processes”

**MEETING SESSIONS CONVENED, *continued***

*Geological Society of America Annual Meeting*

2019

- Co-convenor: "How old, how long, and how fast: Establishing the absolute timing, duration and rates of mid- to lower-crustal deformation"

**INSTITUTIONAL PRESENTATIONS**

Speaker at TEDxUSU *Lift* – <https://www.youtube.com/watch?v=wDkH7Qpu6V4&t=12s>

2016

Speaker at Ignite USU – <https://www.youtube.com/watch?v=H26wMxB8Z2c>

2016

**PROFESSIONAL ORGANIZATIONS**

Geological Society of America

American Geophysical Union

Mineralogical Society of America

PetroNet

**ADDITIONAL WORK EXPERIENCE**

---

Earth Science Intern, Chevron Corporation – Houston, TX

2015