NARI V. MILLER

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Education

2024 Ph.D. in Geological Sciences
Arizona State University, Tempe, AZ
Advisor: Arjun Heimsath
Committee Members: Michael Barton, Duane DeVecchio, Heather Throop, Kelin Whipple

2012 B.A. in Geosciences (with Honors) and Chemistry
Williams College, Williamstown, MA
Advisor: Mea Cook

Field Research Experience

2018 Collaborated with University of Washington archaeology group (PI: Marcos Llobera) in the Son Servera Valley, Mallorca, Spain, and produced a geomorphic map to aid archeology field campaign planning.

2015 - 2017 Conducted fieldwork near Valencia, SP, for dissertation: collected soil and bedrock samples for erosion measurement using cosmogenic ^{36}Chlorine and *meteoric* ^{10}Beryllium.

2014 Collected shallow seismic measurements with a group to characterize material properties of different lithologic layers in the Grand Canyon (Nov 2014) and on a river trip in Desolation Canyon (April 2015).

2012 Albion College Field Camp, Wyoming and South Dakota
Interpreted and mapped the geology of structures, and units in: Elk Basin, Dead Indian Monocline, Snake River Valley, Seminoe National Forest, and the Black Hills.

Lab Research Experience

2016 - 2019 Soil and rock processing & pulverization for major, trace, and cosmogenic radionuclide element analysis in AZ.

2018 Conducted standard methods of isotope dilution to measure ^{36}Chlorine in carbonate samples at the University of Köln, Germany.

2017 Extracted meteoric ^{10}Be from soils in University of Vermont's CosmoLab.

2014 - 2016 Cosmogenic Nuclide Labwork in AZ (e.g. pack Be oxides for shipment).

2013 National Association of Geoscience Teachers Intern, with Water, Energy, and Biogeochemical Budgets Project, USGS, Boulder, CO.
Measured dissolved oxygen, turbidity, ions from long-term monitored sites. Collected water samples in Nome Creek Watershed, AK.

Teaching Experience

Summer 2025 **Water Planet**, as instructor of record. *A general-education science course that teaches quantitative thinking in the context of the energy budget of Earth.* Arizona State University, Tempe, AZ.

S20, S22 **Geochemistry**, as instructor of record. *Upper-level course for undergraduate Geology Majors.* California State University, Stanislaus, Turlock, CA

I incorporated case studies of geochemistry research to connect classroom topics with relevant issues. In writing their final project, students had to use campus library resources, create their own conceptual diagram and map of the data locations in context.

F21 **Geophysical Exploration**, as instructor of record. *Junior/senior-level course for Geology Majors.* California State University, Stanislaus, Turlock, CA

I introduced students to common geophysical techniques of assessing subsurface composition. Students designed a sampling plan and collected shallow seismic surveys near campus.

F21 **Earthquakes & Volcanoes**, as instructor of record. *General-education science course.* California State University, Stanislaus, Turlock, CA

I combined engaging videos and discussions of earth hazards in historical context with cultural and scientific perspectives.

S21 **Water Planet**, as teaching assistant. Primary instructor: Kelin Whipple. Arizona State University, Tempe, AZ.

I answered student questions during lab and recorded lab tutorials.

2016 – 2019 **Field Geology II** in Tonto National Forest, AZ, and San Juan National Forest, CO, as teaching assistant during the 3-week summer course. Primary instructors: Tom Sharp and Arjun Heimsath. Arizona State University.

Taught field observation and hypothesis testing, digital mapping, and note-taking to students in the field. Tutored students on interpreting and synthesizing their observations into reports.

Organized logistics for the 22-student, three-week course, including food, vehicles, office materials.

F17 **Earth's Critical Zone**, as teaching assistant. Arizona State University, Tempe, AZ. Held office hours and graded homework.

F14 - S16 **Historical, Physical, and Introductory Geology**, as teaching assistant. Arizona State University, Tempe, AZ. As the TA, I taught the lab sections.

Introductory hands-on geology labs for non-majors. Included short campus field trips to see local unconformities and fossils. Coordinated introductory geology graduate TA's as Head TA (F15 - S16)

Professional Development

2021 CIENCIA Summer Institute, Summer semester, CSU Stanislaus.

The Collaboration for Inclusive and Engaging Curriculum, Instruction, and Achievement brings STEM faculty together to learn and discuss best practices for teaching students from diverse backgrounds.

2020 & 2021 Quality Learning and Teaching Program, Summer semesters, CSU Stanislaus. Learned best practices for clear and effective online teaching.

2017 Participated in the Summer Institute on Earth-Surface Dynamics (SIESD), at the St. Anthony Falls Laboratory at the University of Minnesota, Aug 10-19.

F16 - S17 Graduate Partners in Science Education, Arizona State University.
As a participant, I designed K-12 curriculum for after-school programs, incorporating science standards.

Dissertation and Thesis

2024 Dissertation Title: *Linking Process and Form in Carbonate Rock through Cosmogenic 36-Chlorine Erosion Rates, Regolith Mass Balance and Fluvial and Hillslope Topography.*

2011 - 2012 Honors Thesis Research. Thesis title: *Evidence for Methane Release from Laminated Bering Sea Sediments during the Penultimate Glacial Period.*

Publications

In Prep **Miller**, N, Heimsath, A., Bierman, P., Corbett, L. and Barton, M. "Quantifying chemical erosion, dust accumulation, and sediment flux in carbonate landscapes."

2016 Cook, M, Ravelo, A, Mix, A, Nesbitt, I and **Miller**, N,"Tracing subarctic Pacific water masses with benthic foraminiferal stable isotopes during the LGM and late Pleistocene," Deep Sea Research Part II: Topical Studies in Oceanography, March, Vol 125, pp 84-95. DOI: 10.1016/j.dsr2.2016.02.006.

Conference Posters and Presentations

2024 **Miller**, N., Heimsath, A., Bierman, P., Corbett, L., and Barton, M. Dust input to regolith and chemical erosion of carbonate hillslopes: a mass balance approach. Abstract 104-5. In Session "T39. What's the Cosmognosis? Recent Advances in Understanding Earth and Planetary Processes with Cosmogenic Nuclides (Posters)." Anaheim, CA, 23 September.

2019 **Miller**, N., *Spatial variations in hillslope morphology relate to lithology and base level*, Abstract No. 341241. Oral presentation at Geological Society of America, Phoenix, AZ, 25 September.

2018 **Miller**, N., *Quantifying bedrock erosion and coarse sediment transport in the tectonically quiescent, limestone landscape of Southeastern Spain*, Abstract No. 325110. Oral presentation at Geological Society of America, Indianapolis, IN, 6 November.

2018 *Millennial-scale geomorphic evolution of rocky semi-arid limestone hillslopes.* Geochemistry Guest Lecture Series, Stanislaus State University, Turlock, CA, Lecture presented 8 March.

2017 **Miller**, N., *Soil residence times of uncultivated hillslopes in Navarres, SP, and Arizona, US, using meteoric 10-Beryllium*, Abstract No. 359-7. Poster presented at Geological Society of America, Seattle, WA, 22-25 October.

2014 Cook, M., Ravelo, A., Mix, A., Nesbitt, I., **Miller**, N., *Tracing Bering Sea Circulation With Benthic Foraminiferal Stable Isotopes During the Pleistocene*, Abstract PP23D-08 presented at AGU Fall Meeting, San Francisco, CA, 15-19 December.

2012 **Miller**, N. and Cook, M., *Evidence for elevated methane flux in laminated Bering Sea sediments from the penultimate glaciation*, Abstract PP13B-2105 presented at AGU Fall Meeting, San Francisco, CA, 3-7 December.

Grants and Awards

2018 Free Seed Sample Analyses at PRIME Lab, Purdue University.
Awarded about $11,700 value of cosmogenic ^{36}Chlorine sample preparation and AMS measurements for a study of mechanical and chemical erosion and multi-scale sediment production in limestone terrain.

2017 Graduate & Professional Student's Association Travel Grant.
Received $950 to attend and present my work at the annual Geological Society of America Conference in Seattle, WA.

2016 Woodside Grant Recipient
Project Coordinator, $1,500. Initiated and mentored an undergrad in a research project analyzing heavy metals in local community gardens.

2012 The David Major Prize for Excellence in Geosciences, Williams College.

Mentoring Experience

S18 - F19 I trained two undergraduate geology students in sediment preparation methods (ASU) of size separation and rock pulverization.

S16 Introduced an undergraduate student to methods in soil quality research in the context of community gardens.

Service

2025 *Geomorphica* Copyeditor
I helped develop and apply copyediting rules for use in the Diamond Open Access journal *Geomorphica*.

2025 Proposal Reviewer
I reviewed student grant proposals for the Quaternary Geology and Geomorphology Division of the Geological Society of America.

2025 Invited Speaker

I summarized and presented ideas from *Regenesis: How to Feed the World without Devouring the Planet* by George Monbiot at the Institute of World Culture in Santa Barbara.

2025 Santa Barbara County Science and Engineering Fair Activity Coordinator.

I organized lab tours and activities at University of California, Santa Barbara, for 40 high school science fair students.

2024 Quaternary Geology and Geomorphology Division of Geological Society of America conference volunteer.

2015 - 2018 School of Earth and Space Exploration Colloquium Search Committee, Arizona State University.

I implemented a poll which elicited more student recommendations for speakers and a ranked-choice voting system to order student nominations, helping select diverse, excellent speakers for our weekly colloquium series.

2008 - 2012 Williams College Annual Winter Blitz Event Organizer and Co-President.

Annually, 150 students and community members weatherized 40 homes for low-income families. I helped organize publicity events, volunteer transportation, and created an inventory to efficiently track unused supplies.

Technical Expertise

Software Proficient in LaTeX, Excel, Inkscape, ArcGIS

Data Analysis and Visualization

Python (Proficient): Pandas, Matplotlib, GeoPandas, Streamlit, Landlab.
I created an interactive Mass Balance Model to accompany my 2024 GSA Poster. `https://carbonate-regolith.streamlit.app/`

MATLAB (Proficient): TopoToolbox (topographic analysis), CRONUScalc

References

Professor Arjun Heimsath	aheimsat@asu.edu	(480) 965-5585
Professor Kelin Whipple	kxw@asu.edu	(480) 965-9508
Professor Tom Sharp	tom.sharp@asu.edu	(480) 965-3071
Professor Rob Rogers	rrogers1@csustan.edu	(209) 664-6691