

NARI MILLER

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EDUCATION

Arizona State University

Tempe, AZ

PhD in Geomorphology

August 2014 - August 2024

Linking Process and Form in Carbonate Rock Through Cosmogenic ^{36}Cl Erosion Rates, Regolith Mass Balance, and Fluvial and Hillslope Topography

Williams College

Williamstown, MA

B.A. in Geosciences (with Honors) and Chemistry

Graduated 2012

RESEARCH EXPERIENCE

Spatial Data Analysis and Numerical Modeling

Tempe, AZ

Graduate Student

2014-present

- Model hillslope processes, estimate landform sensitivity to erosion parameters, analyze river profiles, work with spatial data in ArcGIS and MATLAB, plot data in Matlab and python.

Field Research

Graduate Student

2015 - 2018

- **Valencia, Spain:** Executed research plan, collected soil and bedrock samples for erosion measurement using cosmogenic ^{36}Cl and meteoric ^{10}Be (Field seasons 2015-2017)
- **Mallorca, Spain:** Collaborated with archaeology group, produced a geomorphic map of the Son Servera valley (2018)

Cosmogenic Nuclide Lab Work

Laboratories in AZ, VT and Germany

Graduate Student

2014-2019

- Processed soil samples for meteoric ^{10}Be extraction in University of Vermont's CosmoLab
- Prepared soil and rocks for element analysis
- Carbonate rocks for ^{36}Cl at the University of Köln, Germany

Water, Energy, and Biogeochemical Budgets Project

USGS, Boulder, CO

National Association of Geoscience Teachers Intern

June 2013-October 2013

- Measured water quality from long-term monitored sites and lake sediment gas emissions

Williams College Honors Thesis in Geosciences

Williamstown, MA

Paleoclimatology Research supervised by Professor Mea Cook

July 2011 - May 2012

- Thesis title: *Evidence for Methane Release from Laminated Bering Sea Sediments during the Penultimate Glacial Period*

TECHNICAL STRENGTHS EXPERIENCE

Computer Languages

Python, MATLAB

Software & Tools

LaTeX, Excel, Inkscape, ImageJ, ArcGIS

Data Analysis

Python Packages: Pandas, Matplotlib, GeoPandas, Folium

Landscape Evolution

Landlab, CRONUScalc

TEACHING AND MENTORING EXPERIENCE

Geochemistry

Lecturer

CSU Stanislaus, Turlock, CA

Spring 2020 and Spring 2022

- Taught a junior/senior-level course for Geology Majors, incorporating scientific writing and broad applications of the topic.

Earthquakes & Volcanoes, Geophysical Exploration

Lecturer

CSU Stanislaus

Fall 2021

- (Earthquakes & Volcanoes) Engaged GE students in learning and understanding these earth hazards from cultural, scientific, and historic perspectives.
- (Geophysical Expl.) Taught a junior/senior-level course for Geology Majors and guided them through shallow seismic surveys near campus.

Mentor Undergraduate Research

Supervisor

Tempe, AZ

Spring 2018-Summer 2020

- Oversaw and guided student participation in scientific methods of soil preparation, division, and rock crushing.

Field Geology II

Teaching Assistant

San Juan National Forest (CO) & Tonto NF (AZ)

June 2016-2019

- 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: food, vehicles, office materials.

Other ASU Courses taught

Teaching Assistant

Tempe, AZ

2015-2021

- Water Planet (2021): Taught and recorded online lab activities
- Historical, Physical, and Introductory Geology: Taught introductory hands-on geology labs for non-majors. Included short campus field trips to see local unconformities and fossils.
- Coordinated graduate TA's for introductory geology classes as Head TA (Fall '15 - Spring '16)
- Earth's Critical Zone and Introduction to Geology: Aided in grading

PROFESSIONAL DEVELOPMENT

CIENCIA Summer Institute

Participant

CSU Stanislaus

June 2021

- 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.

Quality Learning and Teaching Program, Intro & Advanced

Participant

CSU Stanislaus

Summer 2020 & 2021

- Learned best practices for clear and effective online teaching

Graduate Partners in Science Education

Student and Mentor

Tempe, AZ

Fall '16 - Spring '17

- Designed K-12 curriculum for after-school programs, incorporating science standards.

PAPERS

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

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, 2016, March, Vol 125, pp 84-95. DOI: 10.1016/j.dsr2.2016.02.006.

CONFERENCE & PRESENTATIONS

Miller, N, Heimsath, A., Bierman, P., Corbett, L., and Barton, M. (2024) 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.

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

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

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

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

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

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

GRANTS AND AWARDS

Rare Isotope Measurement Laboratory Seed Sample Analysis **Purdue University**
Awardee *April 2018*

- Awarded \$11,710 value of cosmogenic Chlorine-36 sample preparation and AMS measurements for a study of lithologic control of the landscape evolution of post-tectonic topography in Arizona and Spain.

Graduate & Professional Student's Association Travel Grant **Tempe, AZ**
Awardee *October 2017*

- Received \$950 to attend and present my work at the annual Geological Society of America Conference in Seattle, WA.

Woodside Grant Recipient**Tempe, AZ***Project Coordinator, \$1,500**2016*

- Initiated and mentored an undergrad-led student research project analyzing soil heavy metals in local community gardens.

REFERENCES

Arjun Heimsath, Arizona State University, phone: (480)965-5585, email: aheimsat@asu.edu

Kelin Whipple, Arizona State University, phone: (480)965-9508, email: kxw@asu.edu

Tom Sharp, Arizona State University, phone: (480)965-3071, email: tom.sharp@asu.edu