

## ALICIA L. BONAR

PhD Candidate – School of Geosciences, University of Oklahoma

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### **EDUCATION**

2018-*Present* Ph.D. in Geology, **University of Oklahoma**, Norman, OK  
2016-2018 M.S. in Geology, **New Mexico State University**, Las Cruces, NM  
2011-2015 B.S. in Geology, **West Virginia University**, Morgantown, WV

### **ACADEMIC EXPERIENCE**

2021-*Present* **Instructor of Record**, Univ. of Oklahoma, School of Geosciences  
Courses taught: (1) GEOL2014 – The Earth System  
2018-*Present* **Research/Teaching Assistant**, Univ. of Oklahoma, School of Geosciences  
Lab Courses Taught: (1) GEOL 1104 – The Dynamic Earth (non-science majors), (2) GEOL 1114 – Physical Geology for Science and Engineering Majors, (3) GEOL 3123 – Field Methods, (4) GEOL/METR 1034 – Native Science and Earth Systems  
2016-2018 **Lead Graduate Teaching Assistant**, New Mexico State Univ., Dept. of Geological Sciences  
Lab Courses Taught: (1) GEOL 111 – Survey of Geology, (2) GEOL 305 – Fossils and Evolution of Life, (3) GEOL 420 – Stratigraphy and Sedimentology, (4) GEOL 495 – Geology Field Camp

### **INDUSTRY EXPERIENCE**

2019-2020 **Environmental Specialist**, FEMA, Oklahoma City, OK

- Evaluated federally funded projects under the Robert T. Stafford Disaster Relief and Emergency Assistance Act for environmental and historic compliance
- Assisted the Public Assistance Program by meeting with applicants to discuss their options when repairing damaged facilities
- Documented and inspected damaged areas and structures
- Reviewed final projects under NEPA (National Environmental Policy Act), NHPA (National Historic Preservation Act), and EOs 11988 (Floodplain Management), 11990 (Protection of Wetlands), and 12898 (Environmental Justice)

### **EXPERTISE & RESEARCH/TEACHING INTERESTS**

**Geologic Skill Sets** – clastic sedimentology, stratigraphy, U-Pb detrital zircon geochronology, laser particle size analysis, applied inorganic geochemistry, paleoclimatology, and tectonics/basin sedimentation

**Research Interests** – generation and deposition of fine-grained sedimentary deposits in terrestrial and marine systems (modern & ancient), the preservation and impacts on atmospheric dust on the marine biosphere (modern & ancient), associations between dust and climate (ancient), and solutions for anthropogenic climate change. Current and past research areas: New Mexico and west Texas (Guadalupe Mountain National Park), western Tanzania, modern soil collection sites: Anza Borrego Desert, Puerto Rico, southern France and northeastern Spain.

**Teaching Interests** – Earth System Science, Paleoclimate, Sedimentology and Stratigraphy, Tectonics and Basin Sedimentation, Climate Systems

## **GRANT & PROPOSAL FUNDING**

### **Research Funding:**

2021 Elon Musk Xprize Carbon Removal Competition (*award amount: \$250,000*)

As a current research and business venture, our student-led team (Bison Underground) of geologists, soil scientists, environmental scientists, and policy experts (mostly from University of Oklahoma) is working to sequester atmospheric carbon via regenerative agricultural practices. I currently help with proposal writing, supporting literature review, data analysis and visualization, networking, and marketing.

*For more information:* [bisonunderground.com](http://bisonunderground.com)

Robberson Research Grant, Univ. of Oklahoma (*award amount: \$1,500*)

2017 Master's Thesis Funding (*total award amount: \$5,375*)

NMGS Grants-in-Aid (graduate student research; \$1,600), GSA Research Grant (graduate student research; \$1,775), RMS-SEPM Edwin D. McKee Grant (graduate student research; \$1,000), SEPM Foundation Grant (graduate student research; \$1,000)

### **Travel and Conference Funding:**

2021 Robberson Travel Grant, Univ. of Oklahoma (\$1000)

South-central GSA Travel Grant (\$300)

2020 NSF International Sedimentary Geosciences Congress Student Grant (\$500)

2018 GSA Cordilleran Section student travel grant (\$200)

GSA Rocky Mountain Section student travel grant (\$300)

2017 NMSU Graduate School student travel grant (\$400)

## **AWARDS & RECOGNITION**

2021 Sally Rahe Thomas Endowed Scholarship

Stan Cunningham Excellence in Teaching Award, Univ. of Oklahoma

2020 James W. Caylor Endowed Scholarship, Univ. of Oklahoma

West Texas Geology Foundation WinGS (Women in Geoscience Studies) Scholarship

2019 James A Gibbs Geoscience Endowment, Univ. of Oklahoma

2018 New Mexico Geological Society Outstanding Student Oral Presentation Award

Association of Women Geoscientists Outstanding Student Award

Frank Gouin Geology Scholarship, Univ. of Oklahoma

2017 Albuquerque Gem and Mineral Club Student Award

Timothy Frost Lawton Scholarship, New Mexico State Univ.

William Seager Endowed Scholarship, New Mexico State Univ.

2015 Alan C. Donaldson Endowed Scholarship (top 2 graduating geology majors), West Virginia Univ.

Graduated Summa Cum Laude, West Virginia Univ.

2013 Chesapeake Energy ECAS Scholarship, West Virginia Univ.

## **SHORT COURSES, WORKSHOPS, & TECHNICAL APPLICATIONS**

(5) Python and ArcMap workshop using integrated arcpy, presented by OU SEG Student Chapter, Instructor: Dr. Jennifer Koch, 2020

(4) Petrel Rock Physics and Quantitative Interpretation Workflows workshop, Instructor: Abidin Caf, 2020

(3) AASPI (Attribute Assisted Seismic Processing and Interpretation) short course, Instructor: Kurt Marfurt, 2019

- (2) Mixed Carbonate-Siliciclastic Sequence Stratigraphy with Application to the Delaware Basin, Instructor: Dr. Art Saller, 2019
- (1) Imperial Barrel Award competition, Team: UTEP/NMSU, Mentors: Dr. Rachele Kernan and Dr. Richard Langford, January-March 2017

### **INVITED SPEAKING ENGAGEMENTS**

- 2021 MSNBC News Affiliate – Live Interview on Xprize win at Bison Underground
- 2020 Univ. of Oklahoma (School of Geosciences) - Life After Grad School Series
- 2018 Albuquerque Gem and Mineral Club
- 2017 New Mexico State Univ. (Dept. of Geological Sciences) - Colloquium

### **PROFESSIONAL SERVICE**

- 2021 **PhD Student Representative** – School of Geosciences Faculty Hiring Committee, Univ. of Oklahoma  
**Reviewer** (journals/special publications) – *Journal of Sedimentary Research*  
**Co-convener** – Technical Session. *Geomorphology and Quaternary Geology*, GSA Joint North-Central and South-Central Section Meeting, Virtual Conference  
**PhD Student Representative** – Teaching and Research Support Committee, Univ. of Oklahoma
- 2020 **Invited Panelist** – New Graduate Teaching Assistant Orientation, Univ. of Oklahoma  
**Co-convener** – Topical Session T8. *Permian of the South-Central U.S.*, GSA South-Central Section Meeting, Fort Worth, TX
- 2019-2020 **PhD Student Representative** – Department of Geosciences Graduate Expectations Committee, Univ. of Oklahoma
- 2019 **Educational Outreach** – Oklahoma Geological Survey

### **PROFESSIONAL AFFILIATIONS**

- Geological Society of America (2015-Present)
- Society for Sedimentary Geology (2017-Present)
- International Association of Sedimentologists (2020-Present)
- Oklahoma City Geological Society (2020-Present)

### **PEER-REVIEWED PUBLICATIONS**

- (2) **Bonar, A.L.**, Hampton, B.A., and Mack, G.H, 2020, A comparison of sandstone modal composition trends from Early Permian (Wolfcampian) strata of the Abo Formation in the Zuni and Manzano Mountains with age-equivalent strata throughout New Mexico, New Mexico Geological Society, *Special Publications*, n. 14, p. 111-122
- (1) Pires de Lima, R., **Bonar, A.**, Coronado, D.D., Marfurt, K., and Nicholson, C., 2019, Deep convolutional neural networks as a geological image classification tool: *The Sedimentary Record*, v. 17, p. 4–9, doi:10.2110/sedred.2019.2.4.

### **CONFERENCE PAPERS**

- (1) Pires De Lima, R., Marfurt, K., Duarte, D., and **Bonar, A.**, 2019, Progress and Challenges in Deep Learning Analysis of Geoscience Images: *European Association of Geoscientists & Engineers*, v. 2019, p. 1–5, doi:10.3997/2214-4609.201901607.

## **PUBLICATIONS IN PREPARATION OR SUBMITTED**

- (2) McGlannan, A., **Bonar, A. L.**, Pfeifer, L., Adams, S., Duarte, D., Cullen, A., and Soreghan, G., (2021, submitted to *Current Ripples*) An eolian origin for clastic fines of Devonian-Mississippian mudrocks of the Greater Midcontinent
- (1) **Bonar, A. L.**, Hampton, B., Mack, G., and Amato, J., Sediment dispersal trends and timing of basement-block uplift during the Early Permian phase of the Ancestral Rocky Mountains, New Mexico (in preparation for *Basin Research*)

## **REFEREED ABSTRACTS (\* indicates student mentee)**

- (9) **Bonar, A. L.**, Soreghan, G. S., Webb, N., Elwood Madden, M., Joo, Y., 2021, Geochemistry and potential origins of silt in granitoid-host soils from hot-humid and hot-arid climates: Geological Society of America Abstracts with Programs. Vol 53, No. 6, doi: 10.1130/abs/2021AM-366656
- (8) Roche, A.V.\*, **Bonar, A.L.**, Pfeifer, L.S., Soreghan, G.S., 2021 Exploring the reproducibility of laser particle size analysis, Geological Society of America Abstracts with Programs. Vol. 53, No. 3, 2021 doi: 10.1130/abs/2021NC-362712
- (7) Adams, S., **Bonar, A.**, Dulin, S., and Soreghan, G. S., 2021, Lessons and challenges of sedimentology field work taught online, Society for Sedimentary Geology, The International Sedimentary Geosciences Congress
- (6) **Bonar, A.L.**, Soreghan, G. S., Webb, N. D. S., and Elwood Madden, M. E., 2021, Silt contents of granitoid-based soils in hot-humid and hot-arid climates: Implications for the origin of silt, Society for Sedimentary Geology, The International Sedimentary Geosciences Congress
- (5) Adams, S., Dulin, S., and **Bonar, A. L.**, 2020, Methods and lessons learned from an attempt to replicate the field mapping experience online, Geological Society of America, *Abstracts with Programs*, v. 52, n. 6, doi: 10.1130/abs/2020AM-359337
- (4) McGlannan, A., **Bonar, A. L.**, Pfeifer, L., Adams, S., Duarte, D., Totten, C., Cullen, A., and Soreghan, G., 2019, A model for the origin of Devonian-Mississippian mudrocks in greater Midcontinent North America, Geological Society of America, *Abstracts with Programs*, v. 51, n. 5, doi: 10.1130/abs/2019AM-337810
- (3) **Bonar, A. L.**, Hampton, B., Mack, G., and Amato, J., 2018, Detrital zircon geochronology from early Permian synorogenic strata in New Mexico: Insights on uplift history and sediment dispersal during final stage Ancestral Rocky Mountain orogenesis, Geological Society of America, *Abstracts with Programs*. v. 50, no. 5, doi: 10.1130/abs/2018RM-313906
- (2) **Bonar, A. L.**, Hampton, B. A., Mack, G. H., and Amato, J. M., 2018, Sediment dispersal trends and timing of basement-block uplift during the Early Permian phase of the Ancestral Rocky Mountains, New Mexico: New Mexico Geological Society *Annual Spring Meeting, Proceedings Volume*, p. 19 (**AWARDED BEST STUDENT TALK BY NMGS**).
- (1) **Bonar, A. L.**, Hampton, B. A., Mack, G. H., and Amato, J. M., 2017, Provenance and sediment dispersal trends from Early Permian strata of the Abo Formation: Implications for drainage networks and basin fill

during the final phase of the Ancestral Rocky Mountain Orogeny in New Mexico, Geological Society of America, *Abstracts with Programs*, v. 49, no. 6, doi: 10.1130/abs/2017AM-302491

**MASTERS THESIS**

**Bonar, A.**, 2018, Provenance and sediment dispersal trends from Early Permian (Wolfcampian) strata of the Abo Formation in New Mexico, *M.S. Thesis*, New Mexico State Univ., 194 p.