

Ethan William Oleson

Pronouns: He/Him/His

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DEPARTMENT OF GEOSCIENCES 

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RESEARCH INTERESTS

I am interested in understanding the evolution of modern and ancient sedimentary systems and their linkages to tectonic processes through the use and development of thermo/geochronologic techniques.

Geo/Thermochronology ● Tectonic Sedimentology ● Basin Analysis ● Mathematical Modeling of Geologic Processes ● Geochronology Methods Development ● Geochronology Statistics ● U-series Geochemistry

EDUCATION

2024-2028 - Ph.D., The University of Arkansas, Geoscience (sedimentology and geochronology).

- Advisor: G.R. Sharman
- Doctoral Academy Fellow

2024 - M.S., The University of Arkansas, Geology (fluvial geomorphology).

- Thesis: *"Environments and Controls of Erosional Bedforms in Soluble Channels."*
- Advisor: M.D. Covington

2022 - Field Camp: Indiana University Judson Mead Geologic Field Station —Cardwell, MT.

2022 - B.S., Montana State University, Earth Sciences (Geology with Honors) with a minor in pure Mathematics.

- Thesis: *"Thermal history of the basal Great Valley forearc near Wilbur Hot Springs, northern California."*
- Advisor: D.A. Orme

ACADEMIC EXPERIENCE

University of Arkansas (2022 - Present)

Research Assistant - UArk Clastic Stratigraphy Research Group and the Detrital Geochronology Laboratory (F'24 - Present)

Research Assistant - Carbonate Critical Zone Research Coordination Network —Data Committee and Boundaries and Scales Committee (S'23-F'23)

Teaching Assistant and Co-creator —GEOS 1154L: Introduction to Geology for Science Majors (F'23, F'25)

Teaching Assistant —GEOS 4686: Geology Field Camp (Arkansas, Colorado, and Montana) (Su'24).
GEOS 1111L: Introduction to Physical Geology Lab (F'22, S'23, F'23, S'24)

Field Teaching Assistant —GEOS 3514: Structural Geology (S'24), Intro to Speleology and Caving (F'22), Hogs and Owls (field trip in Arkansas with Rice University) (S'24)

Montana State University (2020-2022)

MSU Tectonic Sedimentology and Thermochronology (TEST) Research Group

- *Sedimentary Undergraduate Research - Great Valley Forearc. Specialty:* Low-Temperature AHe and ZHe Thermochronology
- Analysis performed at the University of Arizona (ANGL)

PUBLICATIONS

4. **Oleson, E.W.**, Sharman, G.R., Fekete, J.W., Malkowski, M.A., Crowley, J.L., *in prep for Geology*, Evaluating the accuracy of maximum depositional age estimations using a tandem LA-ICP-MS and CA-TIMS dataset.
3. **Oleson, E.W.**, Covington, M.D., and Plan, L., *in prep for JCKS*: Some environments and controls on the formation of erosional bedforms in caves: the effect of rock chemical and textural composition.
2. **Oleson, E.W.**, 2024, Environments and Controls of Erosional Bedforms in Soluble Channels [M.S. Thesis]: University of Arkansas, Fayetteville, AR, 112p.
1. **Oleson, E.W.**, 2022, Thermal history of the basal Great Valley forearc near Wilbur Hot Springs, northern California [Senior Thesis]: Montana State University, Bozeman, MT, 27p.

PROFESSIONAL PRESENTATIONS

12. **Oleson, E.W.**, Sharman, G.R., Malkowski, M.A., and Crowley, J.L., 2025, Towards more accurate dating of stratigraphy: Integrating methods and approaches to create better chronologies: Detrital Geochronology Laboratory consortium with Chevron Technology, 2025 Meeting, Houston, TX.
11. **Oleson, E.W.**, Sharman, G.R., Fekete, J.W., Malkowski, M.A., Crowley, J.L., 2025, Evaluating the accuracy of maximum depositional age estimations using a tandem LA-ICP-MS and CA-TIMS dataset: Geological Society of America Connects 2025, San Antonio, TX.
10. Covington, M., **Oleson, E.**, Cooper, M., Hernández-Vergara, R., and Verde-Ramírez, 2025, Using erosional features to examine the importance of chemical and mechanical erosion in Sistema J2, Oaxaca, Mexico: Geological Society of America Connects 2025, San Antonio, TX.
9. **Oleson, E.W.**, Sharman, G.R. Malkowski, M.A., and Crowley, J., 2024, Accurate ages: Mitigating the effects of Pb loss in LA-ICP-MS dating: Detrital Geochronology Laboratory consortium with Chevron Technology, 2024 Meeting, Houston, TX.
8. Covington, M., Shobe, C., Luhmann, A.J., Abolins, M., Noble, M., **Oleson, E.W.**, Gao, Y., and Ye, M., 2024, Exploring the controls of karstification by analyzing karst surface drainage across the United States: Geological Society of America Abstracts with Programs, v. 56, n. 5, doi: 10.1130/abs/2024AM-405803 (Invited Lecture).
7. **Oleson, E.W.**, and Covington, M.D., 2023, Controls on the formation of erosional bedforms: Scallops: Geological Society of America Abstracts with Programs, v. 55, n. 6, doi: 10.1130/abs/2023AM-394289. *Abstract Upon Request*.
6. Cromwell, L., Baraza, T., Jones, M., **Oleson, E.**, Colton, R., Carton De Grammont, P., Covington, M., and Martin, J., 2023, From field to file: Promoting diversity within critical zone science through undergraduate student trainings: Geological Society of America Abstracts with Programs, v. 55, n. 6, doi: 10.1130/abs/2023AM-391041.

5. **Oleson, E.W.** and Covington, M.D., 2023, Controls on the formation of erosional bedforms: scallops: GeoHog Conference —Department of Geosciences, University of Arkansas, Fayetteville, AR. *Abstract upon request.*
4. Orme, D.A., Romero, M.C., Manta, R.J., **Oleson, E.W.**, Wakabayashi, J., 2022, Evidence for forearc basin initiation from the Great Valley forearc, California: Geological Society of America Abstracts, v. 54, no. 5 doi:10.1130/abs/2022AM-382062.
3. Orme, D.A., Romero, M.C., Manta, R.J., **Oleson, E.W.**, Surpless, K.D., 2022, Insights into forearc basin initiation from the Great Valley forearc, California: SEG-AGU Joint Workshop on Convergent Margins, Abstract.
2. **Oleson, E.W.**, 2022, Thermochronology of the Basal Great Valley Forearc Near Wilbur Hot Springs, Northern California: Earth Sciences Colloquium - Montana State University, Bozeman, MT. *Abstract upon request.*
1. **Oleson, E.W.**, Orme, D.A., 2021, The Relationship Between The Formation and Evolution of The Coast Range Ophiolite and Great Valley Forearc, Northern and Central California: Geological Society of America Abstracts, Paper No. 162-5, <https://doi.org/10.1130/abs/2021AM-367001>.

SOFTWARE

2. **Susan-the-text-editor**. A highly specialized text editor for MacOS designed for plain text, Python, and LaTe_X. (MacOS). *Available on GitHub.*
1. **Deepzoom-Image-Convertor**. A Python GUI to ceasilt convert .tifs to .jpgs and then to .dzi for high-resolution digital petrography. (Windows 10 & 11). *Available on GitHub.*

FIELD GUIDES AND WORKSHOP PUBLICATIONS

3. **Oleson, E.W.**, 2025, Tectonic sedimentology in the Tularosa basin, south-central New Mexico, *in* Dumond, G. and Potra, A., *eds.*, GEOS 5370V: Geology of Big Bend field guide: March 2025, 6 p.
2. **Oleson, E.W.**, and Covington, M.D., *eds.*, 2023, Training Workshop on Critical Zone Science: 2023 Field Guide: May 15th-17th, University of Arkansas, 28p.
1. **Oleson, E.W.**, 2023, Tularosa basin and Sacramento mountains: geology and history, *in* Dumond, G. and De Avila Fernandes, K, *eds.*, Extreme Climate and Geology of the southwest United States: Spring Geology Field trip, University of Arkansas, 3 p.

TALKS AND LECTURES

1. **Oleson, E.W.**, 2021, Cave Science: What and Why?, Summer Speaker Series – Lewis and Clark Caverns State Park, MT.

GRANTS

Total received by: 2026/01/05: \$15,850

5. (2025) Geological Society of America —Graduate Student Research Grant (\$2850)
4. (2025) American Association of Petroleum Geologists Grant-in-Aid (\$3000)
“Accurate ages: Mitigating the effects of Pb loss in zircon U-Pb geochronology”
3. (2023) Cave Conservancy Foundation Academic Fellowship in Karst Studies, M.S. Level (\$7000)

2. (2023) Geological Society of America —Graduate Student Research Grant (*\$2500*)
1. (2020) Northern Rocky Mountain Grotto —Small Grant (*\$500*)
LCCMS Long-Term Cave Climate Monitoring Sensor. *See “Non-Academic Publications”*

AWARDS AND SCHOLARSHIPS

- (2024-2028) University of Arkansas Doctoral Academy Fellowship
- (2024) The James Elliot Sherman Scholarship —*U of A Geosciences*
- (2023) Academic Fellow - Cave Conservancy Foundation
- (2023) The John W. Hess Research Grant in Karst Studies —Geological Society of America: Karst Division
- (2023) Alex T. Warmath Endowment for Graduate Assistantships in Petroleum Geology —*U of A Geosciences*
- (2023) Doy L. Zachary Endowed Scholarship —*U of A Geosciences*
- (2022) John G. Williams EGAA Petro Geo Scholarship —*U of A Geosciences*
- (2022) The South Dakota Great Faces Award —*The State of South Dakota*
- (2022) J.David Lowell Field Scholarship —*Geological Society of America*
- (2022) MSU Earth Science Colloquium Outstanding Undergraduate Presenter

TEACHING

Undergraduate students advised:

Caroline Chomel (B.S. exp. 2026) - UPb detrital zircon geochronology: zircon trace elements to identify batholith sources.

Avery Bannwarth (B.S. 2025) - UPb detrital zircon geochronology: processing and characterization of the FC Zircon standard.

AFFILIATIONS

- American Association of Petroleum Geologists (2024 - Present)
- Association of Women Geoscientists - *Member*
- SEPM - Society for Sedimentary Geology (2023 - Present)
- Geological Society of America —RM Section, Geochronology Division, Karst Division (2021 - Present)
- National Speleological Society (2019 - Present)
- Paha Sapa Grotto (SD) (2019 - Present)
- Boston Mountain Grotto (AR) (2022 - Present)
 - President (Present)
 - Vice-President (2025)
- Northern Rocky Mountain Grotto (MT) (2019-2021)

NON-ACADEMIC PUBLICATIONS

5. **Oleson, E.W.**, 2023, A caver's guide to the geologic history of the western U.S. with a particular treatment of the Rocky Mountain Region: Carbide Flash, v. 47, n. 1, p. 8-11.
4. **Oleson, E.W.**, 2022, Into the Mystic: 2022: Carbide Flash, v. 46, n. 1, p. 9-11.
3. **Oleson, E.W.**, 2021, Reflections of a Conservationist: NSS News Annual Cave Conservation Issue Vol.79 No.4., p.26-28.
2. **Oleson, E.W.**, 2021, LCCMS: A Long-Term Cave Climate Monitoring Sensor: NSS News July Issue Vol 79 No.7., p.10-11.
1. **Oleson, E.W.**, 2021, A Field Guide to Speleothems: UNPUBLISHED. Available for Download at www.ethanoleson.com

SYNERGISTIC ACTIVITIES

Carbonate Critical Zone - Research Coordination Network. (NSF EAR-1905259)

- Instructor (Stratigraphy) - 2023 workshop at the University of Arkansas
- Member - Boundaries and Scales Working Group and Data Working Group

University of Arkansas Department of Geosciences - Outreach

- College and Career Fair Department Representative
- Leverett Elementary School STEM Night

University of Arkansas Department of Geosciences - Service

- Organizer and moderator of the Graduate School information session for undergraduates
- Geoscience Departmental Student Organization Member (2023 - Present)
- Alternate Graduate Student Representative to Faculty Meetings (2022-Present)

University of Arkansas Graduate and Professional Student Congress (GPSC)

- Ethics Committee Chair (2025 - Present)
- Justice, GPSC Judicial branch (2025 - Present)

FIELD EXPERIENCE

Western U.S.: California (Great Valley forearc), Montana, South Dakota (Black Hills), Wyoming (Bighorn Mountains)

Southwestern U.S.: New Mexico

South-central U.S.: Missouri (Ozarks), Arkansas (Ozarks and Ouachitas), Texas (Marathon uplift)

Eastern U.S.: Virginia

Select Caving Field Experience:

Wind Cave (SD); Great Expectations, Tres Charros, Bad Medicine (WY); Carlsbad Caverns - spirit world, lower cave, left-hand tunnel, Lechuguilla Cave (NM).

SKILLS

Python (proficient), R (novice), Octave (novice), Matlab (novice), and L ^A T _E X (very proficient)	Geochronologic analysis of accessory minerals
Chemical Abrasion, CA-ID-TIMS (Boise State University) (U-Th)/He Thermochronology of Zircon and Apatite	Zircon mounting: sticky, polished, indium
Adobe Indesign, Adobe Illustrator, Inkscape	Confocal microscopy
Leica LasX	ESRI ArcPro, QGIS, Cartopy
Windows, MacOS, and Linux (Debian-based)	Leica Petrographic and Picking Scopes
Pico Rock cutting saws	ESEM - Phillips XL30 ESEM
Emlid Reach RS2+ and Emlid Flow GPS Systems	Hydrologic dye tracing
Ultra-high vacuum systems	Schlumberger Petrel
ThermoFisher Axia ChemiSEM and TF Maps	GPlates
	ESI Lasers, Qtega, ICAP

RECENT COLLABORATORS

Mathew Malkowski (UT-Austin), Jim Crowley (BSU), Matthew Covington (UA), Devon Orme (MSU)

ELECTIVE COURSES

(*-taken as an undergraduate)

Tectonics of Sedimentary Basins*	Karst Hydrogeology
Processes and Products: from erosion to deposition	Critical Zone Science
Dynamics of Sediment Transport	Mathematical Modeling of Geologic Processes
Geologic Data Analysis	Nonlinear Dynamics & Chaos*
Mathematical Biology*	Advanced Linear Algebra*
Methods of Proof (mathematical proofs)*	Cyclic Basin Fill
Gemology	Statistical Inference
Sedimentary Petrology (UArk and MSU*)	Petroleum Geology

TRAINING

Montana State University

- MSU University Police Bystander Intervention (2019, 2020, 2021)
- Office of Institutional Equity Compliance Training (2021)
- Diversity and Inclusion Student Commons (DISC) SafeZone 1, 2, and 3 (2019, 2020, 2021)
- DISC Inclusion, Bias, and Microaggression Training (2021, 2022)
- Suicide and Suicidal Ideation Training (2019, 2020, 2021, 2022)
- Mental Health First Aid (2021)
- Clery Act Compliance Training (2019, 2020, 2021)

University of Arkansas

- Title IX (2022, 2023, 2024, 2025)
- Lab safety and chemical hygiene (2024, 2025)