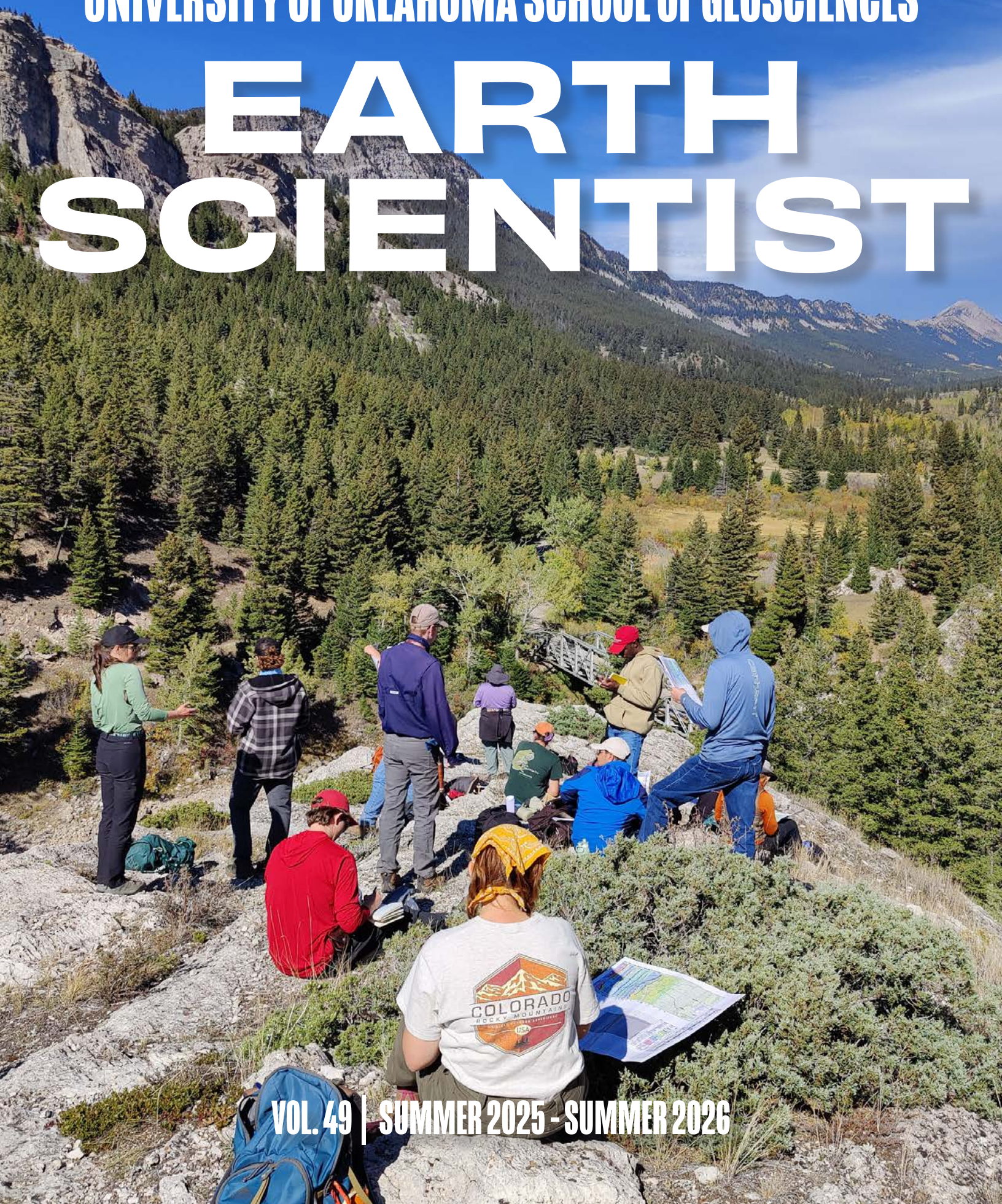


UNIVERSITY OF OKLAHOMA SCHOOL OF GEOSCIENCES

EARTH SCIENTIST



VOL. 49 | SUMMER 2025 - SUMMER 2026



GO TABLE OF CONT

ABOUT THIS ISSUE

EDITOR: Ashley Tullius and Matthew Pranter, Ph.D.

LAYOUT AND DESIGN: Ashley Tullius

CONTRIBUTORS: Geosciences Faculty, Students and Alumni

COVER PHOTO CREDIT: Gilby Jepson, Ph.D.

CONTACT US:

School of Geosciences
100 E. Boyd St., Room 710
Norman, OK 73019-1007

PHONE: (405) 325-3253

EMAIL: geology@ou.edu

WEBSITE: geosciences.ou.edu

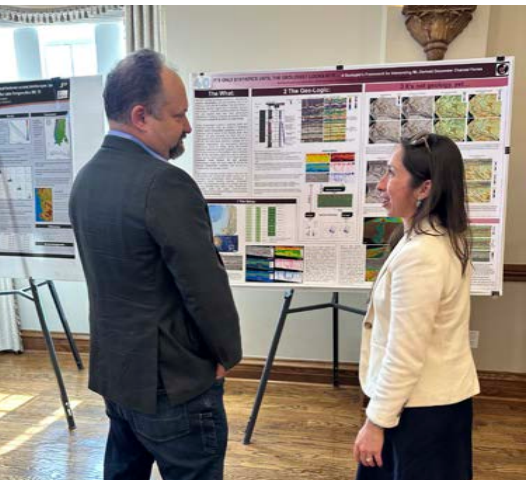
Did You Know: The *Earth Scientist* has showcased departmental news since 1982. Its earlier incarnation was known as the *Sooner Geologist*, which debuted in 1967. Thus, accounting for the rare exceptions of years unpublished, we are now on volume 49 of the

alumni magazine. And, prior to that, we have records of our alumni newsletters dating to 1959.

Earth Scientist is published annually, reporting on research, activities and programs associated with the University of Oklahoma School of Geosciences. It is prepared and distributed with private funds at no cost to the taxpayers of the State of Oklahoma.

The University of Oklahoma, in compliance with all applicable federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, sex, sexual orientation, genetic information, gender identity, gender expression, age, religion, disability, political beliefs, or status as a veteran in any of its policies, practices, or procedures. This includes, but is not limited to: admissions, employment, financial aid, housing, services in educational programs or activities, or health care services that the university operates or provides.

Additionally, individuals may visit www.ou.edu/eoo.



EVENTS

01

WELCOMES FROM

THE DIRECTOR
THE DEAN
THE AAC CHAIR

05

PEOPLE

FACULTY
STAFF
STUDENT ORGANIZATIONS

17

HIGHLIGHTS

AWARDS
IN THE FIELD
RESEARCH

50

ALUMNI

MEMORIALS
CONNECT



DIRECTOR'S LETTER

Matthew J. Pranter, Ph.D.

The School of Geosciences has wrapped up another outstanding year filled with momentum, discovery and celebration!

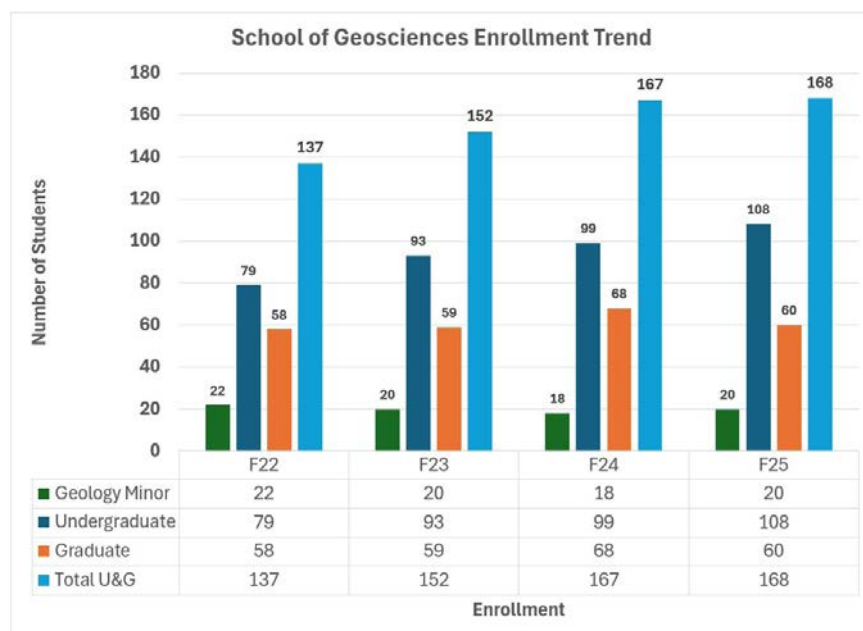
We're thrilled to report a rise in graduate applications, with graduate enrollments holding steady and undergraduate numbers gradually climbing. In fall 2025, we welcomed 108 undergraduate majors and 60 graduate students for a total enrollment of 168. Among our undergraduates, 46 are pursuing paleontology, 39 geology, 11 environmental geology, six petroleum geology, and six geophysics. Looking ahead, we're excited to welcome approximately 26 new B.S. students, nine M.S. students and six Ph.D. students this fall 2026. During the 2025/26 academic year, we proudly conferred degrees to 31 B.S., 13 M.S. and 2 Ph.D. students. Our talented students continue to shine — presenting talks and posters at national, international and internal conferences, publishing and submitting papers in

peer-reviewed journals, and earning numerous awards for excellence in scholarship, teaching, research and outreach. You'll find many of their inspiring stories throughout this issue.

One of the highlights of the year was our **Geosciences Student Research Symposium and Expo**, held in spring 2026 at Oklahoma Memorial Union. This vibrant event continues to expand and energize our geosciences community! Generously sponsored by the AAPG Foundation, Oklahoma Geological Foundation, Oklahoma City Geological Society, and 14 industry and government partners, the symposium featured short courses, lunch, research posters, exhibitors, networking opportunities and a festive awards reception. We were delighted to host 12 exhibitors who connected with participants, along with 72 registered students (63 of whom joined short courses) representing 14 universities. Forty-five students showcased their

work through posters. The four outstanding short courses were led by Molly Turko, Ph.D., Abidin Caf, Ph.D., Mike Soreghan, Ph.D. and Ming Suriamin, Ph.D., covering exciting topics including structural geology for natural resources, paleoclimate and paleotectonics, well-log analysis, and seismic interpretation.

Our research enterprise continues its impressive upward trajectory. In 2025, faculty submitted 25 proposals totaling \$8.5 million, securing \$4.1 million in research awards. Total research expenditures grew from \$1.2 million in FY2023 to \$1.9 million in FY2024 and approximately \$2 million in FY2025.



Faculty members also shared their expertise widely, publishing approximately 80 peer-reviewed journal articles and presenting ~82 peer-reviewed abstracts at professional society conferences.

On the teaching front, we delivered 57 regular graded courses with an average teaching load of ~3.4 courses per faculty member, producing 6,911 credit hours (~358 credit hours per faculty). Our faculty also inspired 1,492 students through General Education courses, while teaching 47 students from Petroleum and Geological Engineering and 45 from Energy Management. Field experiences remain a cornerstone of our program: 22 geology students attended the Bartell Field Camp in summer 2025, and we currently have 13 students at camp this summer. Although we have not offered a geophysics field camp in the past three years, we're looking forward to reviving it in 2027. We're also launching a new geophysics minor in fall 2026 — another exciting step forward!

For fall 2026, the school will be home to 20 tenured or tenure-track faculty (16.89 FTE, accounting for joint appointments). We are especially delighted to welcome three outstanding new assistant professors: Bre Rivera Waterman, Ph.D. whose work focuses on hydrogeosciences; Nevin Kozik, Ph.D. specializing in sedimentary geochemistry; and Aaron Ashley, Ph.D. whose expertise lies in hard rock geology and critical minerals. These talented scholars bring fresh energy and cutting-edge perspectives to our program.

None of this would be possible without the incredible generosity and engagement of our alumni, friends and industry partners. Their steadfast support provides vital funding for faculty, staff and students, powers our academic programs (including field camp), and

fuels our scholarship initiatives. Thanks to their contributions, we were able to award scholarships to ~60% of our undergraduate majors and 100% of our graduate students — totaling \$343,000 for undergraduates and \$165,500 for graduates in 2025-26.

We also celebrate some standout individual achievements:

- **Em Elder** was named the Outstanding Senior for the Mewbourne College of Earth and Energy. She completed her B.S. in Geology and is currently gaining valuable experience through a summer internship with Continental Resources in Oklahoma City.
- **Junle Jiang** received the MCEE Excellence in Research Award.
- **Lena Cole** earned the MCEE Excellence in Teaching Award.
- **Rebecca Fay** was honored with the MCEE Staff Excellence Award.

Please explore the rest of this issue for more inspiring stories about awards, events and programs across the school. I hope you enjoy this edition of the *Earth Scientist* as much as we enjoyed putting it together!



Matthew J. Pranter
Director and Eberly Family Chair
School of Geosciences



DEAN'S LETTER

John Antonio, Ph.D.

As dean of the Mewbourne College of Earth and Energy, it is always a pleasure to welcome readers to another edition of *Earth Scientist*. Each year, these pages provide an opportunity not only to celebrate the accomplishments of the School of Geosciences, but also to reflect on the increasingly important role that geoscience plays across our college, the University of Oklahoma and society more broadly.

One theme that stands out to me in this year's issue is the remarkable breadth of modern geoscience. The work of our faculty and students extends from understanding the fundamental processes that shape our planet to addressing some of society's most consequential challenges involving energy, water, Earth history, climate and environmental resilience. Increasingly, these challenges do not fit neatly within the boundaries of a single discipline. They require geoscientists, engineers, data scientists and many others to work together – and the School of Geosciences is playing an important role in building those connections.

You can see that breadth throughout this issue. Research within the school spans traditional and unconventional energy resources, geothermal energy, geological carbon storage, critical minerals, water resources, earthquakes and tectonics, paleoclimate, and much more. Particularly exciting to me are the places where these activities intersect with expertise elsewhere in Mewbourne College and across OU. For example, ongoing geothermal research brings geoscientists together with colleagues in petroleum and geological engineering, while work on carbon storage combines our understanding of Oklahoma's geology with sophisticated reservoir characterization, modeling and engineering. These are excellent examples of the collaborative approach that will increasingly define both research and education in Earth and energy.

We are also investing in the people who will expand that impact in the years ahead. This fall, the school welcomes three outstanding new faculty members whose expertise encompasses hydrogeosciences, sedimentary geochemistry, and hard-rock geology and critical minerals. Their arrival strengthens important areas for the school while also creating new opportunities for collaboration across the college and university. At the same time, the school's research enterprise continues its impressive trajectory, with \$4.1 million in research awards in 2025 and approximately 80 peer-reviewed publications by faculty.

Of course, our most important measure of success is the experience and accomplishments of our students. I am especially pleased to

see the continued growth of the Geosciences Student Research Symposium and Expo. This year's event brought together 72 students representing 14 universities, along with industry and government partners, for short courses, research presentations, networking and professional development. Experiences like these exemplify what we want for our students: rigorous academic preparation coupled with opportunities to conduct research, learn in the field, engage with professionals, and develop the relationships that will help launch successful careers.

I am equally encouraged by the growing connections among students across disciplinary boundaries. Our geoscience courses serve students from petroleum and geological engineering and energy management, while student organizations are increasingly engaging students from engineering and other areas of the university. That cross-pollination is important. The energy and environmental workforce of the future will need professionals who possess deep disciplinary expertise but who are also comfortable working across traditional boundaries.

None of this happens without people. Talented faculty and staff, outstanding students, dedicated alumni, and generous industry and community partners create the culture that makes the School of Geosciences special. Their support also has a very tangible impact: during 2025–26, a majority of geoscience undergraduate majors and all of the graduate students received scholarship support. That demonstrates an extraordinary investment in the next generation of geoscientists.

As I read the stories in this issue, I am reminded that the future of geoscience is not becoming narrower – it is becoming broader and more collaborative. The School of Geosciences is embracing that future while remaining grounded in the fundamental Earth science and field-based education that have long distinguished OU.

It is a privilege to serve as dean of the Mewbourne College of Earth and Energy and to support this exceptional community. I hope you enjoy reading about the remarkable people and work represented in this year's *Earth Scientist*, and I look forward to all that we will accomplish together in the year ahead.

Boomer Sooner!

John K. Antonio, Ph.D.

Dean and Lester A. Day Family Chair
Mewbourne College of Earth and Energy



AAC CHAIR'S LETTER

Jason Currie

Dear Alumni, Students, Faculty and Friends,

This past academic year has been another exciting and meaningful chapter for the Alumni Advisory Council. Our mission remains unchanged: to support the students, faculty and broader School of Geosciences community within the Mewbourne College of Earth and Energy. I am proud of what we have accomplished together, and even more excited about what lies ahead.

I want to sincerely thank our alumni, faculty, staff, Board of Visitors, the Oklahoma Geological Survey and the many friends of the school who continue to invest in this community. Your time, mentorship, financial generosity and personal involvement are what make this program exceptional. Together, we are building a foundation that recognizes outstanding achievement and propels the School of Geosciences toward its rightful place among the nation's top geoscience programs.

One of the highlights of this past year was attending the Mewbourne College of Earth and Energy Distinguished Awards Dinner, an evening that reminded all of us why this community matters so deeply. We had the honor of celebrating six remarkable individuals: John Doughtie, Bob Lord, H.W. "Dub" Peace, Mike Stice, Maj. Gen. P.T. Hill and James N. McCoy. Each of them has made lasting contributions across business, academia, science and the energy industry, and their stories of impact were both humbling and inspiring. Evenings like that one are a powerful reminder of what is possible when alumni stay connected to each other, to the school and to the next generation of geoscientists.

During the 2025–2026 academic year, School of Geosciences students were recognized through awards, fellowships and grants that collectively supported more than 37 students, totaling over \$65,000. Witnessing these achievements is one of the most rewarding aspects of this role as chair. The Spring Student Geoscience Expo was another highlight, showcasing the remarkable research and dedication of our students. Their work reflects the quality and culture that define this School. Throughout the year, there are many meaningful opportunities to reconnect with the school to network, hear faculty updates,

share stories and meet current students. I also understand that life is busy, and I want to address what I suspect is a lingering assumption: that staying involved requires a major commitment of time. It does not.

This year, I have a simple ask — choose just one event or one opportunity that resonates with you and make the effort to show up. That's it. Because if every alumnus and alumna did the same, the cumulative impact on our students and our school would be extraordinary. There are many ways to engage, including alumni gatherings at industry conventions such as AAPG IMAGE (Aug. 17–20, 2026) and NAPE (February 2027), the John D. Pigott Colloquium Series, student expos and on-campus events, and alumni and student organization pages on LinkedIn and social media through Pick & Hammer, AAPG, SEG, SWCS and Sigma Gamma Epsilon. If field work or travel commitments keep you away, the alumni webpage and LinkedIn are always open. We want to hear from you — wherever you are.

Our next AAC meeting is scheduled for November 2026, where we will review current activities, plan future alumni events and receive updates from faculty and director Mathew Pranter on the state of the school. The meeting will be followed by an alumni social — always a great evening. Looking further ahead, I am genuinely excited about the direction of the AAC. We are committed to expanding our fundraising capacity, deepening alumni engagement at every level and continuing to be a meaningful resource for the school, its faculty and its students.

For the latest news and events, please visit the AAC page at <https://www.ou.edu/mcee/geosciences/people/aac>

It is a genuine honor to serve as chair of the Alumni Advisory Council. This community — its people, its mission, its history — is something worth showing up for.

Boomer Sooner — and keep hiking those geology trails!

Jason Currie

Chair, Alumni Advisory Council

GEOSCIENCES FACULTY



MATTHEW PRANTER

PROFESSOR
DIRECTOR, SCHOOL OF
GEOSCIENCES
EBERLY FAMILY CHAIR



MICHAEL H. ENGEL

PROFESSOR
CLYDE BECKER CHAIR



HEATHER BEDLE

ASSOCIATE PROFESSOR
LISSA AND CY WAGNER
PROFESSOR,
EDITH KINNEY GAYLORD
PRESIDENTIAL
PROFESSORSHIP,
DIRECTOR, SUSTAINABLE
ENERGY SYSTEMS



TIMOTHY FILLEY

PROFESSOR



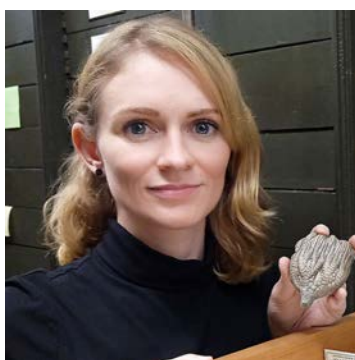
BRETT CARPENTER

ASSOCIATE PROFESSOR
WILLARD L. MILLER
PROFESSOR,
BRIAN E. AND SANDRA
O'BRIEN PRESIDENTIAL
PROFESSORSHIP



CAITLIN HODGES

ASSISTANT PROFESSOR



LENA COLE

ASSISTANT PROFESSOR
ASSISTANT CURATOR
OF INVERTEBRATE
PALEONTOLOGY, SAM
NOBLE OKLAHOMA
MUSEUM OF NATURAL
HISTORY



HAO HU

ASSISTANT PROFESSOR



SHANNON DULIN

ASSISTANT PROFESSOR
CHRIS J. CHEATWOOD
DIRECTOR, BARTELL
FIELD CAMP



JUNLE JIANG

ASSISTANT PROFESSOR

GEOSCIENCES FACULTY



HECTOR LAMADRID

ASSISTANT PROFESSOR



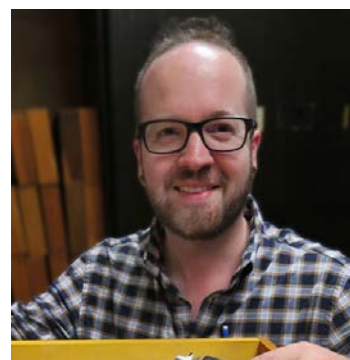
MICHAEL SOREGHAN

PROFESSOR
JAMES ROY MAXEY CHAIR



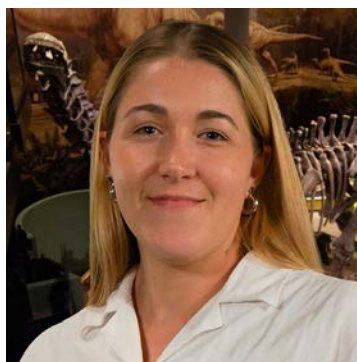
XIAOLEI LIU

ASSOCIATE PROFESSOR
NORMAN R. GELPHMAN
PROFESSOR



DAVEY WRIGHT

ASSISTANT PROFESSOR
ASSISTANT CURATOR
OF INVERTEBRATE
PALEONTOLOGY, SAM
NOBLE OKLAHOMA
MUSEUM OF NATURAL
HISTORY



JAC LUNG MUS

ASSISTANT PROFESSOR
ASSISTANT CURATOR
OF VERTEBRATE
PALEONTOLOGY, SAM
NOBLE OKLAHOMA
MUSEUM OF NATURAL
HISTORY



RICHARD LUPIA

ASSOCIATE PROFESSOR
FRANK AND HENRIETTA
SCHULTZ CHAIR,
ASSOCIATE DIRECTOR
AND HEAD CURATOR,
SAM NOBLE OKLAHOMA
MUSEUM OF NATURAL
HISTORY



LYNN SOREGHAN

PROFESSOR
DAVID L. BOREN
PROFESSOR,
EDWARD L. MCCOLLOUGH
CHAIR

EMERITUS FACULTY

YOUNANE ABOUSLEIMAN
JUDSON L. AHEARN
R. DOUGLAS ELMORE
M. CHARLES GILBERT
CHARLES W. HARPER, JR.
G. RANDY KELLER
DAVID LONDON
KURT J. MARFURT
SHANKAR MITRA
R. PAUL PHILP
ZE'EV RECHES
BARRY L. WEAVER
STEVE WESTROP

GEOSCIENCES STAFF



REBECCA FAY

ACADEMIC PROGRAM
COORDINATOR



GINGER LEIVAS

FINANCIAL ANALYST



GAIL HOLLOWAY

INSTRUCTOR AND
SENIOR ADMISSIONS
AND RECRUITMENT
COORDINATOR



LEAH MOSER

MANAGER OF
OPERATIONS AND
FINANCE



STEPHEN HOLLOWAY

LAB TECHNICIAN



ASHLEY TULLIUS

SENIOR STUDENT
PROGRAM
COORDINATOR

STAFF UPDATES

After 12 years of service to the School of Geosciences, **Ginger Leivas** has transitioned to a new role in the Mewbourne College of Earth and Energy's dean office as a research manager. Leivas will continue to help our faculty manage their grants and continue a close partnership with the school.

In July, **Zack Sanders** joined the Mewbourne College of Earth and Energy as research associate. In this newly established role, Sanders will work across all units in the college by providing support for faculty, researchers, students and staff in several dimensions, including technical support for equipment, research projects and teaching.



MEET THE NEW FACULTY



NEVIN
KOZIK

ASSISTANT PROFESSOR

Nevin Kozik is a marine biogeochemist, paleoceanographer and stratigrapher who is working on trying to understand the key mechanisms in the formation of organic matter-rich sediments. Understanding the factors that promote the formation of these sediments is particularly important, as the burial of organic matter is one of the strongest mechanisms controlling the concentration of greenhouse gases in the atmosphere (i.e., carbon dioxide, methane). By understanding the mechanisms that lead to the formation of these sediments, Kozik hopes to understand how long-term changes in the carbon cycle may have affected climate, which in turn influenced biodiversity during mass extinction and radiation events. To do this, he employs trace metal geochemistry as well as isotope geochemistry to assess the environmental conditions surrounding these sediments. These geochemical datasets give insight into the amount of ambient oxygen in the oceans (i.e., redox conditions) as well as the types and concentrations of

nutrients during the time of deposition. He is excited to continue examining large-scale research questions connecting changes in productivity and redox dynamics to fluctuations in ancient biodiversity during his time at the University of Oklahoma.

Kozik received his bachelor of science degree from the University of California Riverside, his master's and doctoral degrees at Florida State University. After finishing his doctorate, Nevin was a visiting assistant professor at Occidental College, before coming to the University of Oklahoma as a postdoctoral research associate. He has had extensive experience teaching students from a variety of backgrounds and skill levels. He believes in integrating field and laboratory observations to provide students with ample hands-on experiences. Nevin is excited to bring his expertise in geochemistry to the greater student body at the University of Oklahoma.

MEET THE NEW FACULTY



BRE RIVERA WATERMAN

ASSISTANT PROFESSOR

Water resources are increasingly shaped by the intersection of climate, land use and human decision-making. Understanding how these factors influence water quantity and water quality is central to the research of Bre Rivera Waterman, an interdisciplinary earth and environmental scientist joining the University of Oklahoma as an assistant professor of hydrogeosciences.

Waterman's research integrates principles of hydrology, hydrogeology and biogeochemistry to better understand how water moves through landscapes and how that movement influences aquatic ecosystem health and overall water quality. Her work spans a wide range of spatial and temporal scales and leverages both open-source and field and laboratory-collected data to address pressing questions related to water resources. Broadly, her research focuses on disentangling how environmental controls, from geology, climate variability and land use change, interact to influence streamflow, groundwater use, nutrient cycling and downstream water quality. Much of her work has focused on agricultural systems across the Great Plains, where rapid expansion of corn and soybean production, changing climate conditions and increasing water demands are reshaping both landscapes and freshwater resources. Her graduate research examined how these changes influence streamflow dynamics and nitrate concentrations and export at watershed and regional scales, while also incorporating laboratory flume experiments investigating how the presence of emergent vegetation influences hydrodynamics and

nitrate removal in flowing waterways. More recently, as a postdoctoral researcher at the Kansas Geological Survey, Waterman's research has expanded to explore how economic drivers influence agricultural land use decisions by integrating predictive modeling and multi-objective optimization to evaluate tradeoffs among groundwater use, surface water quality and agricultural economic outcomes to identify more sustainable pathways under future climate and land use scenarios.

In addition to research and teaching, Waterman is passionate about scientific outreach, accessibility and mentorship. During her time as a graduate student and postdoctoral researcher in Kansas, she participated in and led outreach efforts with local communities to increase awareness of scientific research, water resource issues and STEM career pathways. She is also an AGU Voices for Science Fellow and has worked with science advocacy organizations, including the Scientist Network for Advancing Policy (SNAP), to communicate the importance of scientific research and funding to policymakers at both the state and federal levels. As a first-generation college student, Waterman cares deeply about creating supportive and inclusive spaces in the classroom, laboratory and broader scientific community. She is excited to join the OU community and looks forward to building collaborative research and educational opportunities across Oklahoma and the broader region. Outside of research and teaching, Waterman enjoys spending time outdoors, cooking and baking, staying active, and spending quality time with her family.

MEET THE NEW FACULTY



AARON
ASHLEY

ASSISTANT PROFESSOR

Geologic processes operating deep within the interior of Earth profoundly influence its surface environments and landscapes, tectonic activity, and the formation and distribution of critical mineral resources. Yet, most of the interior remains inaccessible to direct observation. Even the deepest borehole ever drilled penetrated only ~ 0.2 % of our planet's radius. Consequently, our understanding of the deep Earth relies largely on geophysical and geochemical observations. Accurately interpreting these observations requires a fundamental understanding of how Earth materials behave under the extreme pressures and temperatures within the planet. At the same time, geologic processes are themselves controlled by the physical and chemical behavior of rocks, minerals, magmas and fluids. Laboratory-based investigations of these materials are therefore critical for our understanding of Earth's interior.

Aaron Ashley is a petrologist and mineralogist whose research often focuses on the physical and chemical properties of minerals, rocks, magmas and fluids. Through

this work, he aims to better understand their roles in fundamental geologic phenomena, typically at high pressures and temperatures relevant for Earth's interior. He is also interested in how material properties can be used to detect and study subsurface features, such as critical mineral deposits and magma/fluid reservoirs. His research combines observations from the natural rock record with constraints from laboratory-based experiments and computational simulations.

Before joining OU, Ashley was a postdoctoral researcher at the Laboratoire Magmas et Volcans in Clermont-Ferrand, France, and previously at Florida State University in Tallahassee, Florida, where he also earned his doctorate. Before his graduate studies, he worked in the industry as a geotechnical geologist in Atlanta. This experience gives him a strong appreciation for the wide applicability of geologic research. Outside of research and teaching, he enjoys spending time with family and friends, hiking, exercising, and baking.

SIGMA GAMMA EPSILON

EM ELDER, PRESIDENT

The University of Oklahoma is home to the Gamma Chapter of Sigma Gamma Epsilon, the national honor society for the Earth sciences. Our chapter is dedicated to fostering collaboration among researchers, promoting academic excellence and supporting the professional development of geoscience students.

This year we welcomed nine new initiates to the honor society. Our officers (Em Elder, president; Aubrey Weed, vice-president/historian; Noor Ul Huda Choudhry, treasurer; and Nicolas Bell, secretary) and previous initiates celebrated our new members at fall and spring initiation ceremonies, which were followed by taking professional headshots, and finally by dinner at a local restaurant.

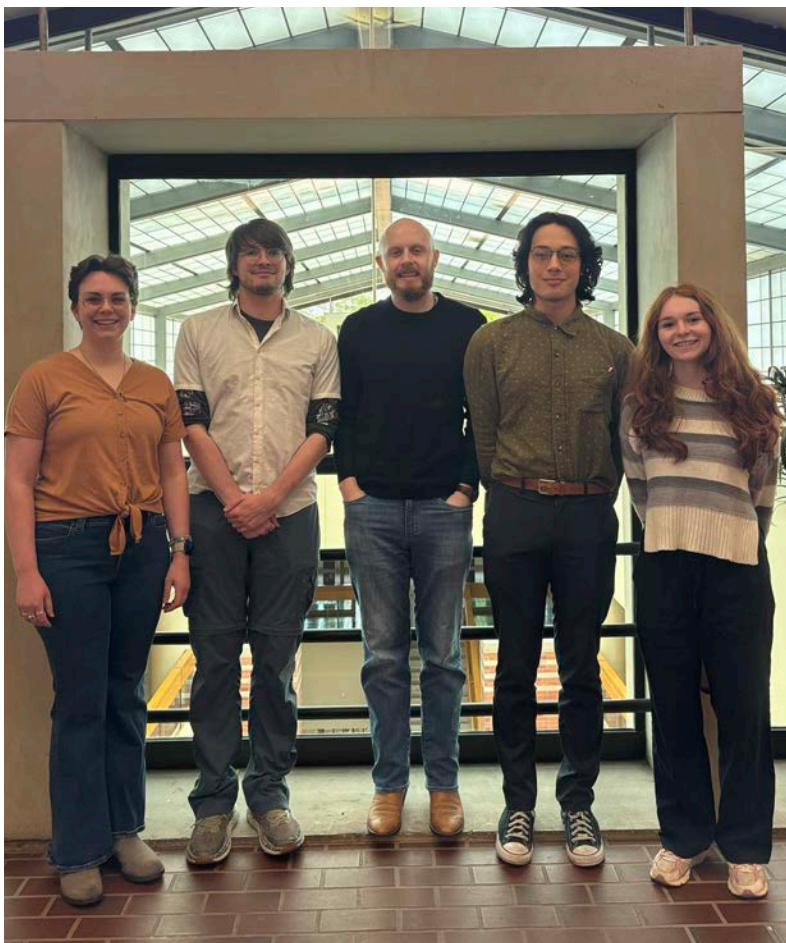
Throughout the fall 2025 and spring 2026 semesters, Sigma Gamma Epsilon hosted several academic and professional development presentations featuring distinguished geoscience professionals. The year began with “Do’s and Don’ts of Applying to Grad School,” presented by OU’s Matthew Pranter, who provided undergraduate students with valuable guidance on navigating the graduate school application process. In December, Tiffany Stephens shared insights from her diverse career path, discussing her experiences in law school, environmental consulting, and oil and gas exploration.

This year also marked the launch of our new GeoCareers series. Open to all geoscience students, GeoCareers aims to introduce students to the wide range of career opportunities available within the geosciences and help them explore potential paths after graduation. Our inaugural speakers included Lena Cole, who discussed careers in museums and collections management, and Andrew Oordt, who shared his experiences in environmental consulting. We look forward to continuing and expanding this series in the coming semesters.

Of course, Sigma Gamma Epsilon is not all work. Throughout the year, we organized social events designed to strengthen our community and foster connections among members, including pumpkin painting in October and a Valentine’s Day celebration in the spring.

The Gamma Chapter of Sigma Gamma Epsilon looks forward to another successful academic year. Leadership will transition to a talented new executive team: president Camden Pringle, vice president Elliot Harlan, treasurer Reagan Rasmussen, secretary Evelyn Burdett and historian Ethan Blair. We are confident they will continue to cultivate a vibrant professional and academic community while expanding opportunities for members. We are excited to see the chapter continue to grow and build upon its success in the years ahead.









SEG STUDENT CHAPTER

DAVID FLEENOR, PRESIDENT

In the 2025-2026 academic year, the SEG student chapter has strived for growth and variety for the club and for geophysics as a science. Through many of our events, including technical talks, volunteering, field trips and other simple fun events, we have continued to increase student involvement at both the graduate and undergraduate level. Each step of the way, we have sought to always stay true to the goals of the SEG national organization as well as the university. Our goals include promoting geophysics in all its aspects and promoting camaraderie for all students within the School of Geosciences.

During this academic year, we worked closely with researchers in the Oklahoma Geological Survey both as a means to expand students' knowledge of geosciences as well as to lessen the gap between the School of Geosciences and the survey. We worked with the survey's seismology team to showcase their cutting-edge research currently being worked on and to show students that there is more to geophysics outside of oil and gas. We organized a Petrel workshop with Dessy Saporinda, Ph.D., to showcase aspects of the software not often utilized in our coursework or research. We also organized a field trip to the Oklahoma Petroleum Information Center, run by the survey, to showcase the miles of core stored right here in Norman and to show students how the petroleum center's resources could help with research.

We participated in university-wide events to showcase geophysics to students across many disciplines. Within the Mewbourne College of Earth and Energy, we showcased the student organization to new students at the MCEE Welcome Back and to prospective students at Geosciences Day. Our student members participated in volunteer work at IMAGE as well as OU's Big Event. The student chapter provided support for students seeking to attend IMAGE and the HGS Student Expo in Houston through lodging, transportation and logistics. We also hosted a number of fun events for students to relax between all the hard work and stressful times. Our most prominent fun events were our geoscience trivia competitions. Through these competitions, we were able to send two teams to the Gulf Coast Regional Challenge Bowl to represent our chapter and the university.

This year, we saw increased membership and involvement from students at both the graduate and undergraduate level. These students included those in geosciences but also from various engineering disciplines. We are very grateful to all students and faculty that participated in our events. Our student chapter has sought to have a welcoming environment and we hope that we have assisted students in learning about geophysics.

As we end the year with a new group of officers taking the reins, all of us hope that we continue to see this growing enthusiasm in the students and that the chapter continues to share the passion for geophysics that we all have. Thank you again to all of those who have supported us and a huge thank you to all the guest speakers, without whom these events would not have been possible.





AAPG STUDENT CHAPTER

NICK EVETT, PRESIDENT

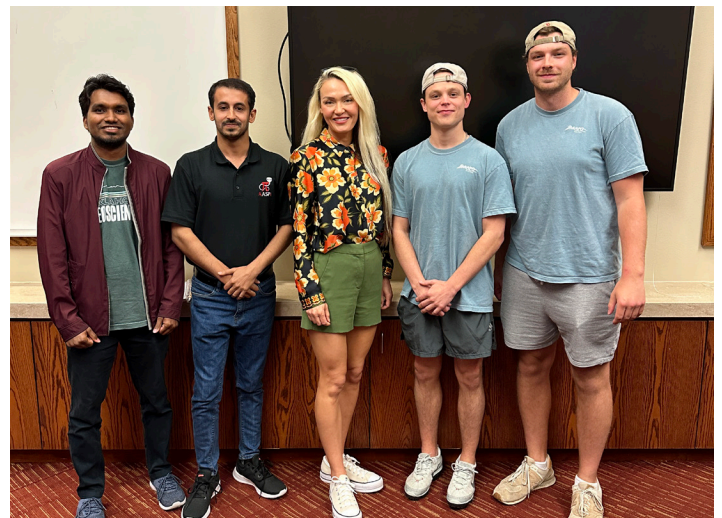
This past academic year was an exciting and productive step for the AAPG student chapter at OU. Our goal is to always introduce and support both undergraduate and graduate students in energy-related fields where they can gain knowledge from industry professionals across the nation. This past year we were able to incorporate a variety of events to achieve this goal.

With a new officer panel, we were able to introduce new industry professionals and alumni, and to incorporate more hands-on learning experiences for students where software workshops and tech talks were the focus throughout the year. These talks provided students with the knowledge of modern-day industry hurdles, new technologies and workflows, as well as career development advice in multiple geoscience disciplines. AAPG members benefited greatly from professionals discussing these new geoscience topics in oil and gas, critical minerals, exploration, and development.

Social events were mixed into the professional workshops

as we hosted events like TopGolf and social hours with industry professionals alongside alumni for members to get exposed to networking and begin strengthening their connections and friendships to build their professional careers in geosciences in a supportive community built by AAPG. Maintaining this balance between professional tech talks, workshops, and lunch and learns with social events remains an important goal in this chapter's mission.

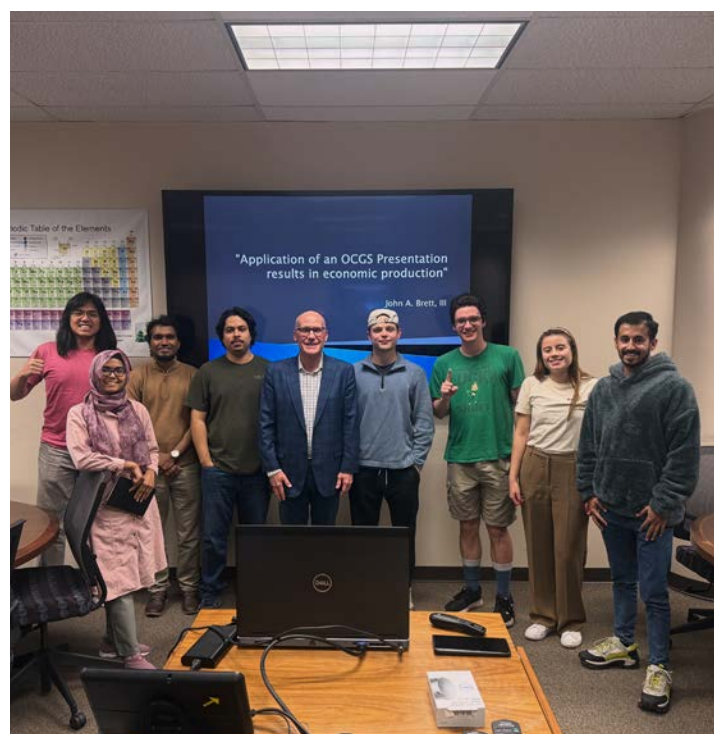
Important standout events that shaped AAPG this last academic year include AAPG Energy Week, IMAGE and HGS. AAPG Energy Week, taking place in April, hosted a variety of lunch-and-learns as well as social events. During this week the members participated in talks like Continental Resources' "A Day in the Life and Early Career", Buddy Price's "Re-Tooling Carbonate Ramp Models" and Ellen Polites' "Unlocking New Critical Mineral Resources". Hosting talks similar to these alongside social events like our Energy Week Happy Hour with alumni allowed for an immersive experience for AAPG members. The IMAGE and HGS conferences were



attended by AAPG officers as well as members interested in gaining the opportunity to network with industry leaders and seek job opportunities.

As we reflect upon the last year in AAPG's OU chapter, we are grateful to the faculty and staff who helped make these events possible, as well as the dedicated student body who attended our events. Thank you for your support!

Looking ahead, we are excited to build upon our growing involvement and interest into our energy focus while providing opportunity, knowledge, professional growth and community engagement for the future generations of geoscientists.





GEOSCIENCES DAY

**GAIL HOLLOWAY,
UNDERGRADUATE RECRUITER**

Our fifth annual Geosciences Day saw a great turnout! On March 6 the school hosted 23 students and their guests to highlight our programs, meet our professors and current students, and learn about our research opportunities. Attendees were mainly high school sophomores, juniors and seniors, with only one transfer student. While most were from Oklahoma, we did have a few students from Texas, Kansas and Colorado.



A generous grant from the Oklahoma Geological Foundation allowed us to provide participants with a quality experience. Matt Pranter started the day with an information session, presenting the highlights of the undergraduate experience in the school and allowing participants to ask questions. We continued with the expanded student panel we started last year, again inviting two alumni to join us. Faith Thompson (B.S. '23) from Boeing and Logan Crawford (B.S. '24) from Mewbourne Oil Co. talked about how their experiences at OU impacted their job searches and subsequent careers. They were joined by four undergraduates and one doctoral candidate representing all the different majors within the school who shared their experiences in geosciences, including research, field trips and life outside the classroom. The informal lunch allowed participants to talk with students and faculty. All five of the school's clubs had tables at the lunch, allowing them to showcase their events, interests and activities.





As in previous years, most of the day served to highlight the labs and research facilities. With the wide variety of professors participating and disciplines represented, we had something for all aspects of the geosciences. Before lunch, students started with a geophysics tour that combined graduate students showcasing real-world applications of geophysical techniques and Oklahoma Geological Survey scientists demonstrating seismic techniques.

For the afternoon, students rotated through eight different research spaces. Brett Carpenter demonstrated stress relationships, Caitlin Hodges worked with soil samples, graduate student Fred Zhao presented on biomarkers and geochemistry, Hector Lamadrid demonstrated experimental petrology, Heather Bedle and Nova Savage presented on the Sustainable Energy Systems program, Hao Hu and graduate student Eddie Ruark showed live data collected from their distributed acoustic sensor, graduate students Mackenzie Flynn and Declan Martin talked about climate change and dust, and graduate students Elisha Miller and Aubrey Weed discussed climate and sedimentation. With so many students interested in paleontology in recent years, we again offered an optional tour of the research labs at the Sam Noble Oklahoma Museum of Natural History led by Davey Wright. It is

extremely popular each year, so it was wonderful to be able to offer it again!

After five years of hosting this event, it is fantastic to see the impact it has on undergraduate recruiting. In our first four years, 24 of the 62 students attending (38.7%) committed to OU in one of the geosciences degrees. For this year's event, all seven of the high school seniors and the transfer student attending have committed to attend OU in geosciences in the fall, 30.4% of the total attendees. The remaining are high school juniors and sophomores. I will be following up with these students as they enter the application cycle to encourage them to apply.





Front row (left to right): Eliot Manning, Luis Muñoz-Santos, Kyra Royer, Emmanuel Castillo, April Moreno-Ward, Noor Choudry, Hilmi Putra. Back row (left to right): Steven Boll, Victoria Jones, Eddie Ruark, Jared Brown. Not pictured: Aspen Hein

STUDENT RESEARCH SYMPOSIUM AND EXPO

The Geosciences Student Research Symposium and Expo was held on March 13 at Oklahoma Memorial Union. Four short courses were taught by OU Geosciences, faculty, alumni and friends. In addition, 12 companies exhibited at the Expo: AAPG, AAPG Foundation, BP, Continental Resources, Devon Energy, Enercon Services, Inc., EOG Resources, Expand Energy, GSI Environmental, Matador Resources Co., Mewbourne Oil Co. and the Oklahoma Department of Environmental Quality! The Oklahoma City Geological Society and AAPG Mid-Continent Section also provided support for this event.

Forty-five students presented their research in the poster competition. The Oklahoma Geological Survey served as judges and awarded the top four students in each category prizes for their outstanding posters. The Oklahoma Geological Foundation sponsored the prize money.

A special thank you to the AAPG Foundation for their generous support of this event!

The winners are:

UNDERGRADUATE:

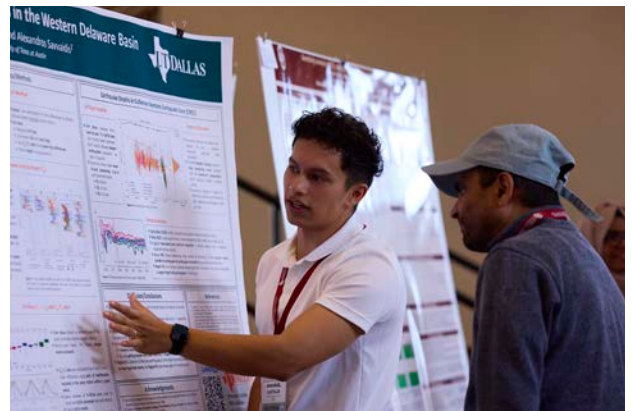
Eliot Manning
Kyra Royer
Aspen Hein
Steven Boll

MASTER'S:

Eddie Ruark
Jared Brown
Hilmi Putra
Victoria Jones

PH.D.:

April Moreno-Ward
Emmanuel Castillo
Luis Muñoz-Santos
Noor Choudhry





UNDERGRADS



GRADS



GEOSCIENCES SPRING AWARDS PICNIC

The School of Geosciences celebrated the end of the semester with an undergraduate vs. graduate kickball game during the annual spring picnic held at Rotary Park. With Professor Mike Soreghan serving as the pitcher for both teams, the **GRADUATE STUDENTS** defeated the undergraduate students with a close score of 17-13!



From left: Matthew Pranter, Noor Choudhry, April Moreno-Ward, Aspen Hein, Aiden Jackson, Em Elder, Braeden Moreland and Zhenyu Kang.

Additionally, we recognized the following students for their achievements:

**KIT BROWN ECHEVERRIA AND
CARTER HERROLD**
Outstanding Freshman

ASPEN HEIN
Outstanding Sophomore

AIDEN JACKSON
Outstanding Junior

EM ELDER
Charles Gould Award for Outstanding Senior in Geology

NATALIE MILLER
Alan Witten Award for Outstanding Senior in Geophysics

SILAS SNEAD
David Sterns Award for Outstanding Achievement

MACIE MENARD
Estwing Hammer Award for Excellence

DEREK PARKS
Stan Cunningham Excellence in Teaching Award

ZHENYU KANG
Ben Hare Excellence in Research Award (M.S.)

NOOR CHOUDHRY
Ben Hare Excellence in Research Award (Ph.D.)

APRIL MORENO-WARD
Frank A. Melton Memorial Research Award

BRAEDEN MORELAND
Staff Rock



STUDENT AWARDS AND HONORS

• **Em Elder** was selected as the Outstanding Senior for the Mewbourne College of Earth and Energy.

Eighteen geosciences students were selected to receive Oklahoma Geological Foundation awards **totaling \$50,000.**

• **Jack Chlebanowski** was awarded the Black Field Camp Grant.

• **Lima Akter Choiti** received the Oklahoma Geological Foundation Graduate Fellowship.

• **Kiera Crowley** received the Frederick H. and Lois M. Kate Award.

• **Aubrey Weed** was awarded the Ronnie K. Irani Earth Science Education Grant.

• **Andrew Oordt** received the David G. and Janet G. Campbell/Oklahoma Geological Foundation Native American Scholarship.

Six students were awarded Oklahoma Geological Foundation Fellowships:

- Md Montasir Akif
- Ian Taylor
- Alysha Zazubec
- Manoj Thapa

- Andrew Oordt
- Reagan Rasmussen

Eight students were awarded field camp grants from the Oklahoma Geological Foundation:

- Joshua Chandler
- Sarah Harrison
- Kamryn Nix
- Jacob Wilson
- Macie Menard
- Kyra Royer
- Evelyn Burdett
- Gabriel Weidman



STUDENT RESEARCH SPOTLIGHT

IAN TAYLOR, PH.D. STUDENT

As a Ph.D. student in the School of Geosciences, I have spent most of my time attempting to quantify net primary productivity in Mesozoic fossil soils (paleosols). Net primary productivity is a measure of how much carbon plants remove from the atmosphere and store each year through growth. By examining the organic carbon preserved in fossil soils and the fossil pollen they contain, I use probabilistic models to estimate how productive ancient ecosystems were tens to hundreds of millions of years ago.

Currently, I am investigating trends in primary productivity within the Moreno Hill Formation of western New Mexico. The Moreno Hill Formation represents roughly 2.3 million years of deposition, spanning approximately 90.9 to 88.6 million years ago. This interval encompasses the end of the Turonian, one of the warmest periods of the Cretaceous, and the beginning of the Coniacian, when declining atmospheric CO₂ levels were associated with a long-term cooling trend that persisted through the remainder of the Cretaceous. During my master's research under Dr. Richard Lupia, who is also my PhD advisor, I studied fossil pollen and petrified wood from this locality to better understand the ecology and climate of this Late Cretaceous floodplain that sat near the western margins of the Western Interior Seaway of North America.

The Moreno Hill Formation provides a unique opportunity to understand the dynamics of primary productivity in relation to floral ecosystem composition and organic carbon storage in soils through time. One hypothesis I am testing is that the rise of flowering plants (angiosperms) increased the amount of plant material entering soils through higher ecosystem productivity, thereby enhancing carbon storage. If this hypothesis is correct, increases in angiosperm abundance from the Turonian to the Coniacian should be accompanied by increases in both ecosystem productivity and soil organic carbon. What makes this question particularly exciting is that it allows us to investigate how one of the most important evolutionary events in Earth history, the rise of flowering plants, may have reshaped entire ecosystems. By combining fossil pollen, paleosols, and statistical modeling, I hope to better understand how these ancient landscapes functioned and how they responded to changes in climate and atmospheric carbon dioxide.







CONGRATULATIONS

TO OUR 2025-2026 GRADUATES

B.S. GEOLOGY

RYNE ANDREWS
EM ELDER
NICK EVETT
MACY GENZER
LEXI GOMME
THOMAS GOODMAN
FAITH HYLTON
AARON JONES
GYLLIAN LEBLANC
BEN MATSUMURA
MACIE MENARD
JERUSHA PEARSON
REANNA POINDEXTER
KYRA ROYER
SILAS SNEAD
ALLY STITT
JOY SUTTLES

MADDIE SZYNAL
AIDEN TRUMBLE
AUBREY WEED
GABRIEL WEIDMAN

M.S. GEOLOGY

NICOLAS BELL
JAMIE BOWIE
KIERA CROWLEY
KYLE FAHRSHAF AEI
MACKENZIE FLYNN
RYAN HAAG
DECLAN MARTIN
SEAN O'NEILL
SAVANNAH RIVERA

M.S. GEOPHYSICS

GABRIEL BELTRAN
JARED BROWN
HILMI PUTRA
DANI STORMS
YASIN UZUM

PH.D. GEOLOGY

DEREK PARKS
CHENXI XU

PH.D. GEOPHYSICS

APRIL MORENO-WARD

SUBSURFACE METHODS FIELD TRIP: A SPECTACULAR JOURNEY THROUGH COLORADO'S ANCIENT LANDSCAPES

MATTHEW PRANTER, PH.D.

Students in Subsurface Methods (GEOL 4233G) enjoyed an unforgettable hands-on learning adventure during the Fall 2025 field trip to the stunning Piceance Basin near Grand Junction, Colorado. This vibrant mix of **geology and geophysics students** explored world-class outcrops of Cretaceous fluvial and shallow-marine deposits that serve as outstanding surface analogs to productive subsurface reservoirs.

The group immersed themselves in the geology of the region. The Upper Cretaceous Iles and Williams Fork formations (part of the Mesaverde Group) form dramatic cliffs and canyon walls around the basin's perimeter. These same formations host major natural gas reservoirs just 10–50 miles away in the subsurface. For broader context, the team also examined the colorful Lower Cretaceous Burro Canyon and Dakota formations.

This exceptional outdoor classroom allowed students to observe, measure, and discuss the very rocks they would later characterize, map, and model in 3D using core, well logs, and outcrop data from the same area. The field experience brought the course's subsurface work to life, helping students connect surface observations to real-world interpretations of stratigraphy, structure, lithology distribution, petrophysical properties, and reservoir quality.

The trip took place in late September—typically one of the most beautiful times of year in the Rockies—and Mother Nature delivered perfect weather with clear blue skies and comfortable temperatures.

Trip Highlights:

- The group flew together from OKC to Denver, then embarked on a scenic drive west along I-70.
- First stop: Red Rocks Amphitheater, where, from a spectacular overlook, students placed their hands on the iconic **Great Unconformity**, studied the dramatic stratigraphy and structure, enjoyed sweeping views

of the Denver Basin, and discussed its vast oil and gas resources.

- After a relaxing lunch at scenic **Dillon Reservoir** with its turquoise waters and mountain backdrop, the caravan crossed Loveland and Vail Passes before dropping into the eastern edge of the Piceance Basin



Precambrian Gneiss (to the right, ~1700 Ma) overlain by Pennsylvanian Fountain Formation (to the left, ~300 Ma)



Lunch Stop at Dillon Reservoir!

- A memorable stop at **Rifle Gap** offered jaw-dropping views of near-vertical Cretaceous Mesaverde Group strata tilted dramatically near the White River Uplift.

- The heart of the trip centered around Grand Junction, where students explored Coal Canyon, Main Canyon, and Plateau Creek near Palisade, as well as multiple canyons along the Gunnison River between Grand Junction and Delta. Here they examined the flat-lying (5–10° eastward dip) Upper Cretaceous Iles and Williams Fork formations and the older Lower Cretaceous units.

Students gained a deep appreciation for the multi-scale heterogeneity within these ancient river systems, coastal plains, and shallow seas—and how those complexities influence fluid flow and reservoir behavior in the subsurface. Many thanks to Drs. Javier Tellez and Rex Cole of Colorado Mesa University for helping lead the trip.

Memorable Moments:

- Precambrian Gneiss (~1.7 billion years old) dramatically juxtaposed against the **Pennsylvanian Fountain Formation** (~300 million years old) at Red Rocks.
- Stunning panoramic views of the **Little Book Cliffs**, showcasing the Mancos Shale, Iles Formation, and Williams Fork Formation.



Little Book Cliffs – Upper Cretaceous Mancos Shale, Iles Formation, and Williams Fork Formation



Coal Canyon – discussing the lower Williams Fork Formation meandering fluvial deposits and their characteristics



Coal Canyon – a nice image of the group!

- Lively discussions at **Coal Canyon** over classic meandering fluvial deposits, including the famous “Amanda’s Point Bar” (Sandbody 6-50), where students explored multiple scales of heterogeneity.



Coal Canyon - Management Point Bar (aka Amanda’s Point Bar or Sandbody 6-50) – discussing multiple scales of fluvial lithological and stratigraphic heterogeneity and the impact on subsurface reservoir behavior

- Examining the **Ash Coal** with its distinctive bentonite volcanic ash layer (dated to 73.10 ± 0.12 Ma), beautifully exposed beneath a splay complex and point-bar deposits.



Ash Coal with bentonite bed (coal with volcanic ash) is overlain by a splay complex, scour surface, and point-bar deposits



Ash Coal with bentonite bed – results of detrital samidine and zircon dating suggest an age of 73.10 ± 0.12 Ma (Walker et al., 2021)

- Contrasting fluvial styles of Williams Fork meandering river deposits and reservoirs with braided river deposits of the lower Cretaceous **Burro Canyon Formation** through outstanding exposures along the Gunnison River valley.
- Beautiful side trips to view the geology of **Colorado National Monument** and the amazing Fall foliage - golden aspen and multicolored oak at the top of **Grand Mesa**.

This dynamic field trip not only strengthened the students’ field skills but also forged stronger connections between surface geology and subsurface reservoir characterization—preparing the next generation of geoscientists with both knowledge and inspiration. A truly colorful and unforgettable experience!



12 LEAGUES UNDER AN ANCIENT SEA: EXPLORING PALEOZOIC CARBONATES IN THE FIELD

KIERA CROWLEY, PH.D. STUDENT

Graduate students enrolled in GEOL 5353 (Paleozoic Carbonates & Sequence Stratigraphy) experienced a record-breaking field trip to the Franklin, Sacramento, and Guadalupe mountains of New Mexico and western Texas this past spring. Record-breaking, according to morning newscasters, due to the triple-digit temperatures blanketing southern New Mexico on the day of the infamous Permian Reef Trail hike — which alums of GEOL 4113 (Depositional Systems & Stratigraphy) will remember is the ~8.5 mile, 2k foot elevation trail that serves as the capstone to the undergraduate field trip, and which again plays a major role in the graduate course. Nevertheless, we persevered... and unpleasant temperatures did not prevent us from spending a wonderful week with Professor Lynn Soreghan exploring the exceptional Paleozoic carbonate deposits of paleo-equatorial Pangaea.

Our trip began in the Early Ordovician deposits of the Franklin Mountains, right outside of El Paso, Texas. Global climate was in a “greenhouse” period in the Early Ordovician, and this warm, watery world had high sea levels that experienced only minor fluctuations due to cyclic Milankovitch climate forcings and other factors. As we walked the outcrops on Scenic Drive, we followed the record of these low-amplitude fluctuations, observing meter-scale cycles in peritidal environments, which are

those near-shore environments spanning the tidal flats through the shallow subtidal. Alternating beds of shallow subtidal carbonates and reddened (oxidized) mud flat deposits preserve the record of such small bounces in sea level. Marine organisms, especially microbial algae, were prevalent in these rocks.

Our next stop in time and space was the Carboniferous deposits of the Sacramento Mountains, east of Alamogordo, New Mexico. The Mississippian strata we observed were much deeper in the basinal profile of the ancient ocean, and well below the tidal zone, so the carbonates were altogether different than those we'd seen in the Franklin Mountains. What dominated the landscape in these subphotic carbonate deposits were massive, 120m+ amplitude mounds of carbonate mud, formed from the activity of microbes that mediated the precipitation of clotted micrite. Much like reefs today, these Mississippian mud mounds formed a structure on which other marine organisms, including crinoids and bryozoans, could attach and live. Moving upsection, the Pennsylvanian strata recorded pronounced icehouse conditions and accompanying evidence for large-magnitude glacioeustasy, in addition to photic mounds composed of calcareous green algae.

Our last location, and the place where we spent most of our time, was in the Permian deposits of the Guadalupe Mountains, southwest of Carlsbad, New Mexico. The Permian world continued the "icehouse" regime, and thus the theme of changes in sea level that formed a complex carbonate mosaic along the basinal profile of

the ancient sea. Over three days, we hiked the mountains from multiple directions, with each trek providing unique perspectives on the evolving geometry of a carbonate ramp into a carbonate shelf, the large-scale sequences that left unconformities in up-slope deposits and clastic sediments in down-slope deposits, and the ways that changing climate affected lithological and biological composition at different positions along the depositional profile.

All told, we hiked over 40 miles on this trip... just about 12 leagues!





DEPSTRAT FIELD TRIP

LYNN SOREGHAN, PH.D.

In early fall, 2025, spirits were high in anticipation of our annual Depositional Systems & Stratigraphy trip to West Texas and adjoining New Mexico. And then politics intervened. An acrimonious government shutdown barred us from accessing the three national parks that we habitually visit: White Sands (NM), Guadalupe Mountains (TX), and Carlsbad Caverns (NM). Nevertheless, basking in the sunshine of the desert Southwest on lands not affected by the shutdown resurrected our spirits. We viewed the world-famous (among carbonate geologists) Mississippian Muleshoe Mound, hiked Dead Man Branch of Alamo Canyon to study ramp carbonates, and measured and logged the Pennsylvanian cyclothems in the Sacramento Mountains. In the Guadalupe Mountains we enjoyed a sunset hike to the Teepee, cooled off in the company of a few leeches at Sitting Bull Falls, and viewed the fabulous road cuts of the Delaware Mountain Group (deepwater clastics) near El Capitan. Yes, we missed out on the Big Reef Hike and associated celebratory summit photo but, on the bright side, suffered fewer blisters, scrapes, and thorns.



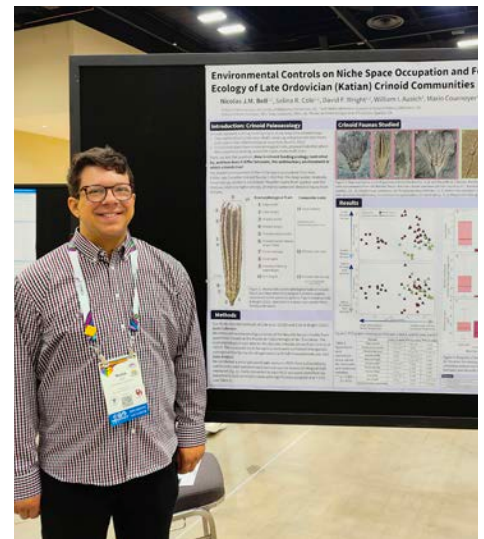
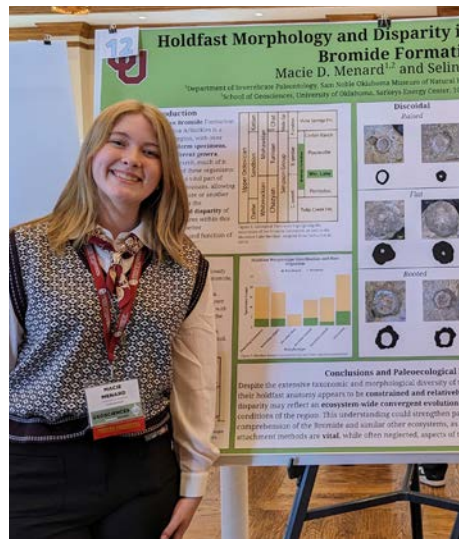


INVERTEBRATE PALEOBIOLOGY RESEARCH UPDATE

LENA COLE, PH.D., AND DAVEY WRIGHT, PH.D.

Invertebrate Paleobiology research continues to thrive at OU in the Cole and Wright labs. During the summer, Lena Cole and Davey Wright lead another month-long field expedition to remote Anticosti Island (Quebec, Canada) as part of continuing NSF-funded research on the Late Ordovician mass extinction. Graduate students Kiera Crowley (Wright lab) and Alysha Zazubec (Cole lab) participated in the field this year, along with collaborators from the American Museum of Natural History and Canada. A number of spectacular fossil finds were made, including the discovery of several new crinoid and trilobite species that will be described in the near future. Other fossils and field data that were collected will allow us to better understand the timing, magnitude, and drivers of the first mass extinction event in the history of life. More recently, Cole, Wright, Zazubec, and Crowley visited the Yale Peabody Museum and American Museum of Natural History to examine other collections of fossils from Anticosti Island to support ongoing research. Stay tuned for more highlights from research on Anticosti Island and the Ordovician mass extinction, which will be showcased in an upcoming exhibit curated by Cole and Wright at the Sam Noble Museum in November 2026.

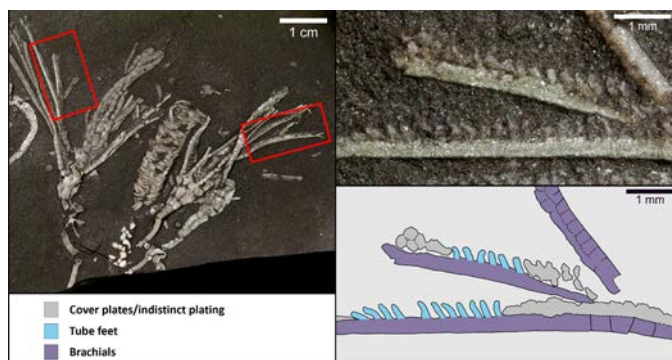




COLE LAB RESEARCH UPDATE

LENA COLE, PH.D.

Last year, one-in-a-million discovery was made—not from fieldwork, but from looking closely at old museum collections. During a visit to the Musée de paléontologie et de l'évolution in Montreal, some unusual features on a fossil crinoid turned out to be the oldest known example of soft tissues called tube feet, which crinoids use for feeding. Although there are millions of fossil crinoid specimens, only one other example of fossilized tube feet is known from the crinoid fossil record because soft tissues preserve so rarely. In collaboration with D. Wright and others, Cole led a study that established what these structures are, how they were preserved, and what they tell us about the ecology of long-extinct crinoid groups, which was published in Royal Society Open Science. Big thanks to MS student Nicolas Bell, who first noticed that something seemed strange about these fossils!



Students in the Cole lab have been very active in their research, grantsmanship, and conference presentations. Colby Higdon (B.S. '24) published his first paper, which

was a product of his undergraduate senior thesis. The paper made the cover of *Journal of Paleontology*, attracted a lot of press from local news sources, and even led to an interview with Telemundo. Colby rejoined the lab as a master's student in January 2026 to study the phylogeny of an enigmatic group of echinoderms called cyclocystoids, in addition to completing a revision of some of Colby's favorite fossils, the paracrinoids. Colby visited the University of Iowa's paleontology collections with Cole to study additional paracrinoid fossils in the spring and presented his research on paracrinoids at the Geosciences Research Symposium and Expo.

M.S. student Nicolas Bell and PhD candidate Alysha Zazubec both gave excellent presentations on their research at the annual GSA conference in San Antonio. They also secured funding to visit other museums in Chicago (Zazubec) and Cincinnati (Bell) to collect additional research data. Alysha submitted her first dissertation chapter for publication, and is now working on describing a new crinoid species from Anticosti.

Undergraduates Joy Suttles and Macie Menard also worked on research projects in the lab using fossil collections housed at the Sam Noble Museum. Macie presented her research on crinoid holdfasts from Oklahoma's Bromide Formation at the Geosciences Research Symposium and Expo and will be starting a Ph.D. at Baylor University. Next fall, the lab group is excited to welcome M.S. student Keeley Nelson, who completed her B.S. at Keel University in the UK.

WRIGHT LAB RESEARCH UPDATE

DAVID F. WRIGHT, PH.D.

My research and teaching focuses on understanding the major features of biological evolution using a combination of fossil specimens and computational modeling. This year in particular has been very exciting, with research activities and field-based expeditions, curatorial duties at the Oklahoma Museum of Natural History, and student accomplishments.

As a result of several grants, including a continuing award from the National Science Foundation and OU's Junior Faculty Fellowship, research activities this year resulted in numerous scientific publications, including the discovery of 7 new species of fossil crinoids, 1 new species of Ordovician brachiopod, and another ongoing project describing trilobites from Anticosti Island. I also published a theory-focused paper in *Palaeontology* outlining methodological advancements in paleontological phylogenetics for modeling morphological evolution.

This has also been a big year for student activities and accomplishments. In spring 2026, Kiera Crowley successfully graduated with a M.S. in Geology. Her thesis research focused on the phylogeny, macroevolution,

and biogeography of early Paleozoic crinoids across the end-Ordovician mass extinction. Kiera's thesis resulted in two chapters submitted for publication in peer-reviewed journals, with another manuscript in prep describing a new fossil crinoid species discovered during fieldwork. After graduating, Kiera will remain at OU to pursue a Ph.D. in my lab and maintains active interests in macroevolution, phylogenetics, and the breathtaking biodiversity of fossil marine invertebrates. Our lab was also joined by undergraduate Camden Pringle (B.S., 2028), who began work on a museum-focused research project quantifying the skeletal completeness of the crinoid fossil record. Moving forward, I'm happy to announce that my lab will welcome a new graduate student, Rebecca Couvillion (M.S.), in fall 2026. Rebecca will be joining us from Texas Tech University, where she graduated magna cum laude and studied Pennsylvanian conodonts from New Mexico. At OU, Rebecca will make use of our growing fieldwork collections at the Oklahoma Museum of Natural History to investigate patterns of morphological diversification in early Paleozoic crinoids from Anticosti Island (Quebec, Canada).



FAULTS, FLUIDS, AND GEOHAZARDS NEAR AND FAR

JUNLE JIANG, PH.D.

Our Crustal Dynamics & Computational Geophysics Group has pursued a widening range of research ambitions over the past year. Since we celebrated the arrival of new members a year ago, the expanded team has set in motion several projects, from intraplate fault systems in Oklahoma to geothermal fields in California, salt tectonics in Iran, subduction megathrusts in Chile, and then back to local classrooms. The common scientific thread through these efforts is a long-standing challenge in solid Earth geophysics: understanding how faults, fluids, and crustal rheology interact to produce seismicity, deformation, and geohazards at scales ranging from reservoir layers to tectonic plate boundaries.

Our research begins close to home — Oklahoma occupies a unique position in research on reservoir systems and fluid-induced seismicity. In collaboration with researchers at the Oklahoma Geological Survey, our ongoing investigation of the Pawnee and Prague regions is revealing how complex intraplate faults can be reactivated by fluid injection and how the rheology of rock formations shapes system behaviors. This work, drawing on decades of microseismic, geodetic, and

industrial records, is building toward a comprehensive picture of fault behavior relevant to both science and hazard management. The significance of this research was recognized this spring with a seed grant from the OU Data Institute for Societal Challenges (DISC) to study 4D fault-fluid-reservoir systems. Postdoc SeongJu Jeong is leading the analysis of the 2024 M5.1 Prague earthquake sequence, seeking to decipher how this event relates to the 2011 M5.7 earthquake that heralded Oklahoma's seismic surge and decay over the past 15 years. Our work will not only improve the understanding of the subsurface but also advance sustainable energy exploration and community safety.

How do fluid-rock interactions evolve and alter fault systems? What do crustal deformation processes reveal about rheology and heterogeneity? These common questions are being pursued across diverse tectonic settings. Postdoc Xiong Zhao has been studying the fault structure and salt rheology of the Zagros fold-and-thrust belt in Iran, using geodetic observations of a recent earthquake doublet to probe how the Hormuz salt formation mediates fault slip and postseismic relaxation,

an outstanding frontier in salt tectonics. Xiong is also developing Bayesian statistical methods to constrain the spatial heterogeneity of fault movements in the 2019 Ridgecrest sequence in California. MS student Zhenyu Kang is probing a different but related phenomenon: the interaction between shallow faults and aquifer systems in Salt Lake Valley in Utah, where seasonal groundwater fluctuations in a fault-bounded aquifer leave a measurable imprint on the deformation field. Together, these projects demonstrate that faults do not behave in isolation but interact with the fluid-saturated, rheologically complex crust around them.

None of these pursuits are possible without the team, and this year brought notable milestones. Ganiyat Shodunke and Segun Bodunde are both advancing toward their dissertation defenses. Ganiyat has published her first peer-reviewed paper about poroelastic reservoir deformation and extended her work in a DOE-funded geothermal energy project at Tuttle, Oklahoma, in collaboration with Dr. Runar Nygaard at MPGE. Segun has completed an NSF-funded five-month research internship at Fervo Energy, bringing his expertise in InSAR observations and poroelastic modeling into enhanced geothermal development. Manoj Thapa has two papers published or in revision, including work on landslide detection and mapping using satellite radar imagery in Oklahoma and Japan, and earthquake-dependent landslide susceptibility estimates in Nepal. Our two undergraduate researchers, Abrar Al Maamari and Salim Al Harasi, completed senior thesis projects on geothermal fields in California. Ganiyat,

Zhenyu, Xiong, and SeongJu led six presentations at the 2025 AGU Annual Meeting in New Orleans, LA. These achievements speak to the talent of our trainees and the supportive environment we are striving to build.

The launch of our NSF CAREER award in July 2025 marks a new chapter for the group. The project, “Bridging Multiscale Observations and Models of Megathrust Faulting and Subduction Zone Hazards,” focuses on the largest fault systems on Earth: the subduction megathrusts that generate the world’s greatest earthquakes and tsunamis. Using major earthquakes in Chile, Japan, and Alaska as natural laboratories, the project will integrate seismo-geodetic observations and computational models to unravel how megathrust faults slip, lock, and relax across timescales from seconds to decades. This award will support graduate students, postdocs, and a visiting student from Chile, deepening an international collaboration that connects our work in Norman to seismically active margins of South America and beyond. The methods we have developed for fault systems in Oklahoma, California, and Iran will be leveraged to study subduction zone processes. The scientific foundation remains the same; our questions and targets scale up.

The CAREER award carries an education mission that brings this global science back to Oklahoma. In collaboration with Jeffrey Baughman at Westmoore High School and OU TRIO Center, we are developing classroom

activities that translate cutting-edge geophysics research into accessible, compelling material for high school students, with an emphasis on quantitative skills and tools. The goal is to make the faults, fluids, and forces in the dynamic Earth we study visible and relevant to the communities these students live in. We also shared our work with broader audiences this year through interviews with Oklahoma Magazine and OU News. From Oklahoma’s subsurface and global tectonics to our classrooms, we hope to contribute to both the frontiers of geoscience and the communities closest to home.



RCML RESEARCH GROUP UPDATE

MATTHEW PRANTER, PH.D., MD. MONTASIR AKIF, AND LIMA AKTER CHOITI

Research in the **Reservoir Characterization and Modeling Laboratory (RCML)** spans the full spectrum of subsurface resources — from traditional oil and gas to cutting-edge geothermal systems and regional-scale carbon-storage assessments — helping shape a more informed energy landscape for the state.

Our team is advancing understanding across multiple domains:

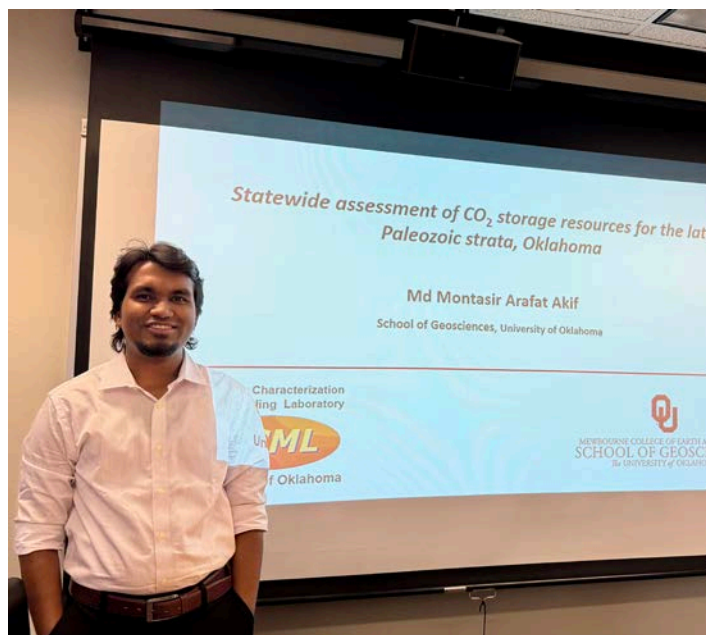
- **Conventional oil and gas reservoirs** — Detailed characterization and modeling of classic formations like the Pennsylvanian Prue Sandstone.
- **Unconventional hydrocarbon plays** — Innovative studies of shale and limestone/chert systems, including the Mississippian Limestone and Pennsylvanian Cherokee/Excello Shale.
- **Geothermal energy** — Assessing the heat potential of deep sedimentary formations such as the Pennsylvanian Hartshorne, Spiro, and Cromwell sandstones in the Arkoma Basin.
- **Carbon storage leadership** — Statewide evaluations of CO₂ storage resources across Oklahoma's Paleozoic strata.

Dr. Anna Turnini (former Ph.D. student) laid critical groundwork with her comprehensive evaluation of CO₂ storage resources in Oklahoma's **lower Paleozoic strata** (Turnini and Pranter, 2025a, 2025b). Drawing on data from **more than 80,800 wells** and modern well logs from **over 1,126 wells**, she constructed sophisticated 3D models of structure, lithology, porosity, and CO₂ density using advanced geostatistical techniques and regional geological correlations. Her work produced robust storage resource assessments following U.S. Department of Energy methodologies — a foundational resource for future carbon management in the state.

Pushing the Boundaries: Current Ph.D. Research

Md. Montasir Akif took this foundation to the next level by expanding assessments into the **Mississippian and Pennsylvanian strata**. Recognizing CO₂ density as one of the most uncertain — yet critical — parameters, Akif developed high-resolution **3D CO₂ density models** by coupling a detailed pressure-temperature framework with the **Peng–Robinson real-gas equation-of-state (EOS)**.

This innovation captures the non-ideal behavior of CO₂ under real reservoir conditions. The results are striking: **storage resource estimates increased by approximately 45–55%** compared to traditional ideal-gas approaches. This breakthrough underscores how sensitive — and improvable — carbon storage assessments truly are.



*Md. Montasir Akif, after successfully passing his Ph.D. general exam!
Congratulations Akif!*

Lima Akter Choiti is tackling another major source of uncertainty: **storage efficiency**. Through sophisticated **compositional reservoir simulations** and extensive sensitivity analyses, Choiti is illuminating the key variables that control how effectively CO₂ can be stored in Oklahoma's diverse geological formations. Her work is sharpening our ability to deliver precise, reliable estimates of the state's geological carbon storage potential.

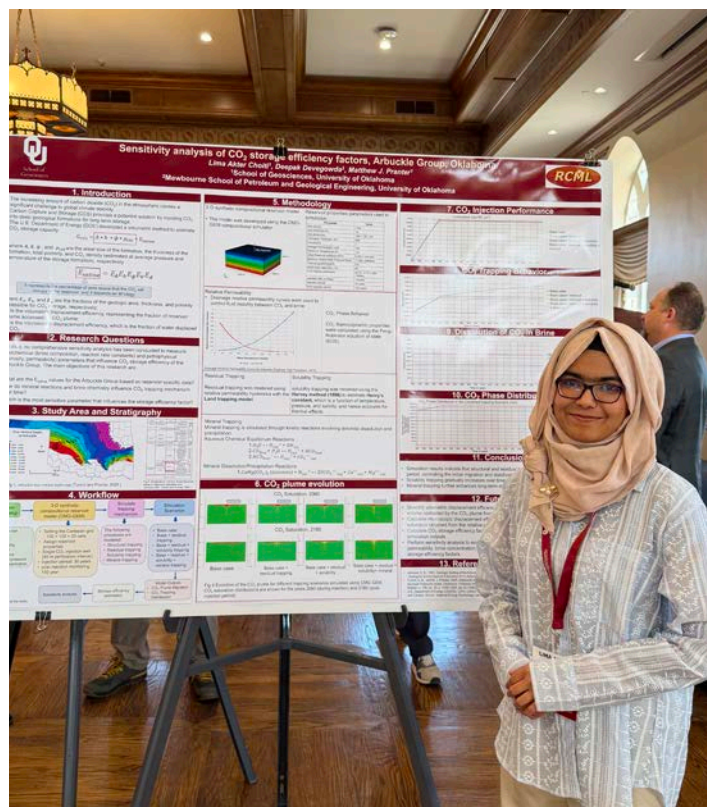
characterization and modeling of Pennsylvanian shales (Cherokee Shale) in the Anadarko Basin of Oklahoma. Eliot was awarded first place for undergraduate research at the **2026 Geosciences Research Symposium and Expo**.



Ph.D. students, Lima Akter Choiti and Md. Montasir Akif

Looking Ahead

By combining rigorous data integration, advanced modeling, and innovative simulation techniques, our research is reducing uncertainty, enhancing resource estimates, and paving the way for responsible energy development and carbon management. Exciting new developments in geothermal, unconventional reservoirs, and scalable carbon storage are on the horizon! Choiti and Akif will present their research at the 2026 IMAGE conference in Houston this August. We are very excited that Eliot Manning will join the RCML and start his M.S. program at OU this Fall 2026. Eliot earned his B.S. degree in Geology from the University of Kansas, and his M.S. research will focus on unconventional reservoir



Choiti showcasing her poster on sensitivity analysis of CO₂ storage efficiency factors at the 2026 Geosciences Research Symposium and Expo.





BALKANS DUSTS 2026

**MIKE SOREGHAN, PH.D., AND
ANDREW OORDT, PH.D. STUDENT**

Drs. Lynn and Mike Soreghan and PhD student Andrew Oordt led an NSF-Funded International Research Experience for Students (IRES) to the Balkans during June 2026. The goal of this 3-year project is to introduce undergraduates to international research on eolian dust, soils, loess, and loessite, while working within a cross-cultural research team environment. This year, there were 82 applicants from undergraduate institutions all over the US, and six students were selected—including Aspen Hein, an environmental geology undergraduate in the School of Geosciences.



The trip started in Belgrade, Serbia, where we spent a couple of days getting to know each other, discussing papers and research topics, and visiting cultural sites, such as the Museum of Yugoslavia and Kalemegdan Fortress. Then we went north to Novi Sad, Vojvodina, which lies in the Pannonian Basin. Novi Sad lies along the Danube, which transports vast amounts of silt that were reworked into some of the thickest and best-studied Quaternary loess deposits in Europe. Here we were accompanied by Serbian scientists, Dr. Tin Lukić and PhD student Petar Krsmanović. They explained how the loess deposits and interbedded soils record glacial-interglacial climatic swings over the last 400 ky and demonstrated methodology to analyze these deposits. Drs. Nemanja and Tiana Tomić guided us to a partially excavated Roman military camp and village (Viminacium) and an important archaeological site (Lepenski Vir), where Meso- and Neolithic people dwelled along the Danube River. Students also visited a vineyard in Fruška Gora and learned about *terroir* or the concept that local environmental factors such as climate, soil, and geomorphology all impart unique character to the wine grown in a specific region. This is an important part of the dust history of Northern Serbia as Fruška Gora is becoming well known for wine produced on the loess deposits.

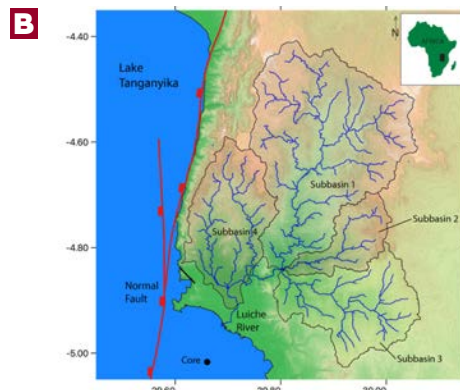
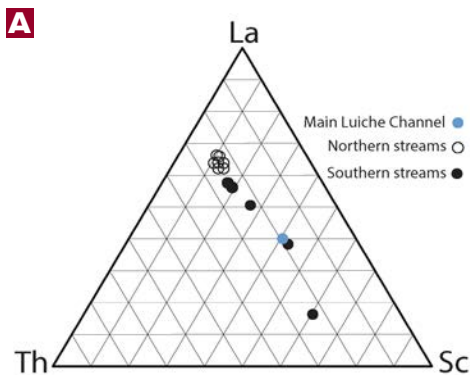
We then travelled to southern Serbia along with Dr. Slobodan Marković to examine Permian redbeds deposited on the eastern edge of the Central Pangean Mountains, which stretched all the way to Oklahoma on the western edge of Pangaea, where Permian redbeds are so familiar. There we measured sections, collected samples, and described the units. We stayed in spartan but quite quaint lodgings in the tiny village of Temska. We also met with a group of local villagers who successfully prevented the destruction of their local river by external investors who wanted to pipe the entire river into a distant reservoir to help power a hydroelectric dam. This pipe would have stopped all recharge of their aquifer and destroyed their way of life. This group was very inspiring in the larger conversation of how data center projects are consuming resources and affecting local people here in the United States.

Finally, we took a bus to Croatia; first stopping in Zagreb for a day of cultural sightseeing and a day at the University learning about soil micromorphology led by our Croatian colleagues, Drs. Ivor Perković, Goran Durn, and Vedran Rubinić. Then we went back into the field to describe and sample two different terra rossa sites (red soils hosted on karstic limestone) to ultimately determine the climatic history and provenance of the dust that composes the soil. We stayed in the lovely town of Skradin along the Adriatic coast. After long field days excavating soil profiles in the 95° F heat, the students could cool off with a swim in the estuary.

We plan for students to continue research on the data we collected during the trip at their home institutions or by traveling to OU. It was an amazing experience for the students, and we appreciate their hard work, dedication, and gratitude for the month-long journey to becoming young scientists.

UNDERGRADUATE RESEARCH PROJECT USING GEOCHEMICAL FINGERPRINTS TO EXAMINE CHANGES IN RIVER SEDIMENT IN LAKE TANGANYIKA

MIKE SOREGHAN, PH.D., AND ASPEN HEIN, UNDERGRADUATE STUDENT



A: Ternary diagram of initial results that the mud from different parts of the Luiche River watershed contain different trace element proportions.

B: Location map of the Luiche River watershed that drains into Lake Tanganyika.

C: Aspen working in the lab on processing the mud samples

D: One of the tributaries of the Luiche River showing land converted to agricultural fields (banana and corn).



Undergraduate environmental geology major Aspen Hein was awarded a summer research fellowship from the Office of Undergraduate Research and Creative Activity (URCA) through OU's Provost Office. Aspen's research project centers on documenting changes in the patterns of sedimentation into Lake Tanganyika, Africa, and is mentored by Dr. Michael Soreghan. Lake Tanganyika is a large rift lake in East Africa and is used as a model for understanding sedimentation in rift systems. It is also a major natural resource for nearly 10 million people that surround the lake as it supplies food, fresh water, and economic opportunity. Climate change and land-cover change are both impacting the surrounding watersheds and the nature and volume of sediment entering the lake, potentially impacting both the

ability to grow food and to catch fish.

Aspen's research involves studying the river system and its input to the lake—the Luiche River (see map and photo). This summer, Aspen is analyzing previously collected sediment samples collected from different parts of the watershed in order to use mineralogical and geochemical means to “fingerprint” the sediment from that part of the watershed. In working in the lab this summer, Aspen learned how to process samples and collect grain size data, prepare samples for geochemical analysis (see photo), and do point counts on thin sections of the river sands. Aspen's initial work shows that there are significant differences in the composition of the mud entering the trunk stream from the different parts of the watershed (see plot).



At the end of this summer, the plan is for Aspen to travel to the Continental Scientific Drilling Facility at the University of Minnesota to sub-sample a sediment core collected from the lake floor offshore of the Luiche River. At the facility, Aspen will learn techniques of core analysis and the overall importance of scientific cores to geoscience research. These sub-samples will provide a time series of potential changes in the chemistry of the mud that can be tracked back to changes in erosion and sediment transport from different parts of the Luiche watershed.

Aspen will present her summer research results at the UReCA research symposium on the OU campus and also at the Annual GSA Conference in Denver this October.



UNDERGRADUATE RESEARCH PROJECT

HOW MANY SPECIES OF *NEOTHAUMA* LIVE IN LAKE TANGANYIKA?

EVELYN BURDETT, UNDERGRADUATE STUDENT

In Lake Tanganyika there are extensive shell beds that carpet the coasts of this unique lake. Most of these unconsolidated shell accumulations on the lake floor are 200-3000 years old; the species of snail that creates them is still alive today, though compared to the vast number of shells of its ancestors are very rare today. *Neothauma tanganyicense* is a large freshwater aquatic snail that only lives in Lake Tanganyika and is the main component of the shell beds. These shell beds are crucial to the ecosystem around them as they provide a habitat for many fish and other invertebrates.

In my undergraduate research with Drs. Lena Cole and Michael Soreghan, I have previously investigated how morphometries of *Neothauma* correlate to the geography of the lake. The shells that we have are limited to the eastern side of the lake. Thanks to a Summer Fellowship grant from the Office of Undergraduate Research and Creative Activity (URCA) Summer, I will have the opportunity this summer to travel to the Royal Belgian Institute of Natural Sciences to visit their invertebrate collections which house *Neothauma* shells from hydrobiological expeditions to Lake Tanganyika in the 1800s through the 1900s. These collections are valuable as they provide samples from the western side of the lake. This will allow us to broaden our morphometrical comparison across the entirety of the lake and do an exploratory morphological comparison as well.

There are two very distinct ecophenotypes of *Neothauma*. One of which is very angular and has a stair stepped appearance caused by its pronounced keel, and harshly angled sutures. The majority of snails in the lake have a more rounded shape that is more commonly associated with snails. In the past different scientists debated over the taxonomic designation of *Neothauma* and if different morphologies could be considered different species. Our modern understanding of





taxonomy has changed since these expeditions took place, including our views on biological and morphological species concepts. More quantitative methods of determining taxonomy are available. There has also been the acceptance of subspecies and distinct eco-phenotypes as a designation. A second goal of this project is to collect geometric morphometric data, a statistical way to measure shell shape, and traditional morphometric data in order to statistically determine the taxonomic status of these morphotypes.

A final aspect of this project is working with the International Union for the Conservation of Nature to do an analysis on the conservation status of the *Neothauma tanganyicense* with consideration of the complex environmental factors at play.

I've really enjoyed the different aspects this project incorporates. It requires paleontology methods on sub-fossils, while considering factors like geography and biology which put it into context. I'm very excited for this research opportunity and to find out more about these important and dynamic snails!



THE USE OF GEOMORPHOMETRY TO ASSESS THE ENIGMATIC ORIGIN OF UNAWEEP CANYON

SEAN O'NEILL, M.S. STUDENT

Unaweep Canyon is a large valley that bisects the Uncompahgre Plateau of western Colorado but hosts no through-flowing axial stream; rather, two underfit creeks flow in opposite directions from a subtle divide within the canyon's valley-floor (Fig. 1; Fig. 2b). Widely recognized as enigmatic, formation of Unaweep Canyon remains debated, with hypotheses ranging from late Cenozoic fluvial incision to Pleistocene glaciation, to late Paleozoic glaciation and late Cenozoic fluvial exhumation followed by partial burial and abandonment. Thick Quaternary sedimentary fill in the valley floor (Fig. 2; a-b), and Mesozoic strata capping the plateau (Fig. 2; b-c; gray dashed lines) obscure much of the Precambrian hosted bedrock geometries of Unaweep Canyon, complicating morphometric assessment and precluding analyses such as cross-sectional interpretation and power-law model fittings. I addressed this challenge in my master's research by conducting quantitative basin morphometric analyses of 47 Precambrian-hosted tributaries within a ~37 km long section of Unaweep Canyon, comparing results against analogous analyses of Black Canyon of the Gunnison (fluvial control, $n=122$) and Yosemite Valley (glacial control, $n=18$). Statistics derived from hypsometric curves highlight strong differentiation between east and west Unaweep Canyon (Fig. 3c), with east Unaweep curves (convex in shape) grouping strongly with the fluvial control (Black Canyon; Fig. 3b) and west Unaweep curves (concave in shape) grouping with the glacial control (Yosemite Valley; Fig. 3a). Figure 4 provides a visual representation of the hypsometric integral and depicts different curves' associations with basin maturity.

Hypsometric statistics including the hypsometric integral (HI), skewness (SK), kurtosis (KU), density skewness (DSK), and density kurtosis (DKU), along with Inflection Point (I) metrics (E_h and h^*) were computed from a novel truncated, rescaled 'mid' hypsometric curve ($0.1-0.9 h/H$) designed to isolate Precambrian-dominated tributary

morphometries from the noise introduced by Quaternary valley-floor sediments and Mesozoic rim strata. Additional metrics including tributary summary statistics (area to relief ratio and log-transformed volume and relief), the Hypothetical Baseline Equilibrium Elevation (HBEE) – a proxy of a glacier's equilibrium line altitude that links present-day topography to possible past glaciations--, and the basin shape (BS) index were incorporated into a 12-variable principal component analysis (PCA) and average linkage cluster analysis. Unaweep Canyon was divided into two separate sections for analysis, with West Unaweep tributary basins representing wider morphometries than the narrower basins of East Unaweep Canyon. Additionally, unlike the amphitheater-shaped tributaries of western Unaweep Canyon, the dendritic and eastward-draining morphometries characterizing the tributaries of eastern Unaweep Canyon mimic the drainage pattern of the greater eastern Uncompahgre Plateau (Fig. 1). PCA results group West Unaweep tributaries with Yosemite's tributaries, and East Unaweep tributaries with Black Canyon's, indicating that tributary morphometries of West Unaweep Canyon reflect greater erosional maturity along with volumetric characteristics consistent with glacial erosion. The cluster analysis strongly supports a two-group separation between West Unaweep and Black Canyon, with PCA-backed interpretation suggesting a stronger clustering of Yosemite with West Unaweep rather than with Black Canyon. Results suggest that the Precambrian-hosted tributaries of West Unaweep Canyon are most consistent with a glacial origin. These findings represent the first application of quantitative tributary basin morphometric analysis to a potential deep-time paleovalley, with proposed ages of paleo glaciations being late Paleozoic (~300 Ma) and/or Neoproterozoic (~690 Ma). Additionally, the novel 'mid' hypsometric approach we developed offers a transferable method for morphometric study of ancient, sediment-laden landforms.

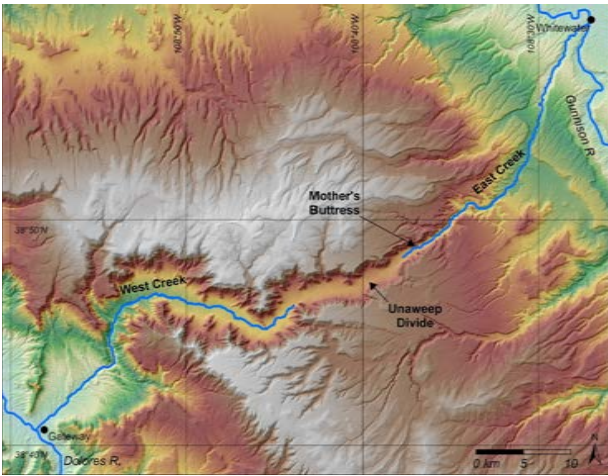


Fig. 1: Shaded relief map of Unaweep Canyon and the greater northern Uncompahgre Plateau. The two creeks occupying Unaweep Canyon emanate from a subtle, low-relief area (Unaweep Divide) in the main-valley floor. Mother's Butte is a landmark that coincides with the approximate beginning of East Creek and splits Unaweep Canyon into two separate sections for analysis, with West Unaweep tributaries representing wider morphometries than the narrower and more dendritic tributaries of East Unaweep Canyon. Tributary basins of East Unaweep flow east/northeast toward the Gunnison River, following the regional drainage divide of the Uncompahgre Plateau.

Fig. 2 – a: colluvial fans discernable by their dark green shrubbery preclude analyses of tributary basins' bedrock morphometries; b-c: Mesozoic-Precambrian bedrock unconformity surface (gray dashed line); d: example of a west Unaweep tributary valley included in multivariate morphometric analyses

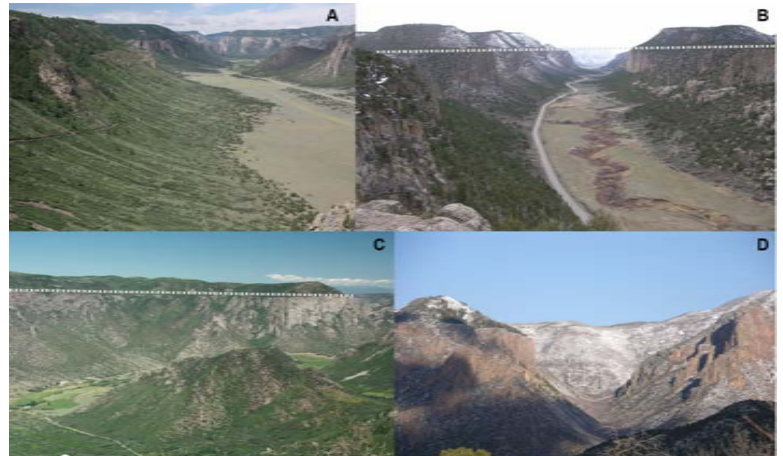


Fig. 3: Ten-basin sample hypsometric curves with digital elevation model reference figures for a: Yosemite Valley (glacial control), b: Black Canyon (fluvial control), and c: Unaweep Canyon. Note Unaweep's strong 2-group separation, representative of the split between east and west Unaweep, with east Unaweep tributaries associated with the fluvial control (Black Canyon; b) and west Unaweep curves associated with the glacial control (Yosemite; a).

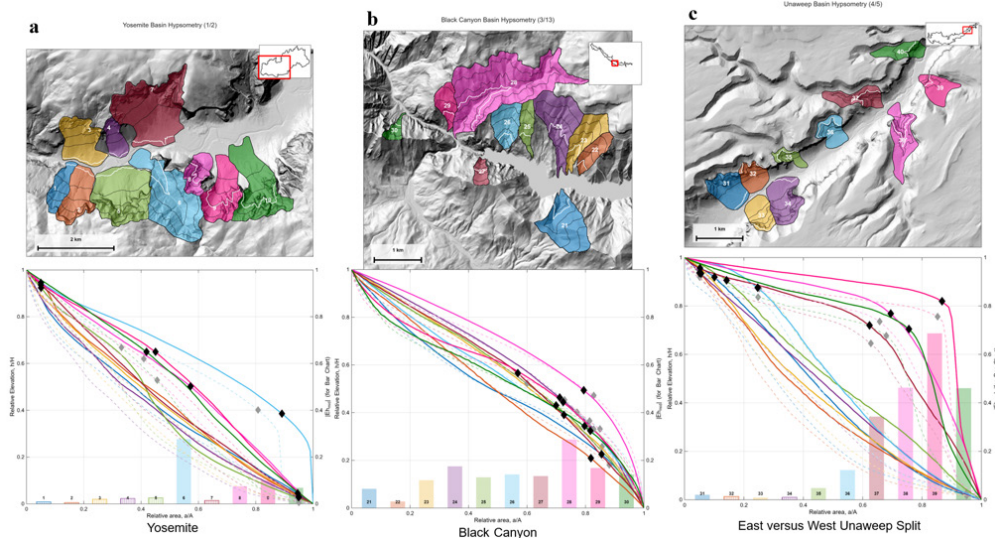
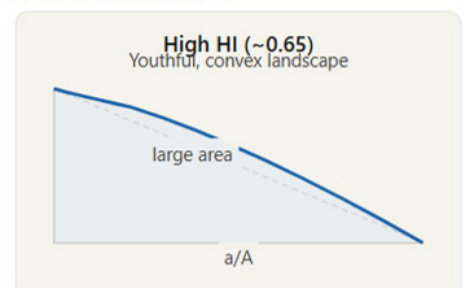
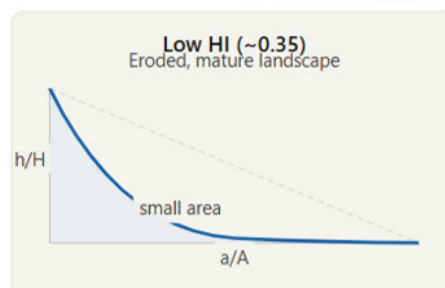


Fig. 4: Representations of high and low hypsometric integral (HI) values. HI represents the area beneath the hypsometric curve and can be used to assess tributary basin maturity. The y-axis on the hypsometric curve (h/H), represents a tributary's normalized elevation, and the x-axis (a/A) represents the normalized area across that elevation.

Hypsometric integral (HI) — area under the curve

$x = \text{relative area } (a/A, 0 \rightarrow 1) \quad y = \text{relative elevation } (h/H, 1 \rightarrow 0)$



BARTELL FIELD CAMP

SHANNON DULIN, PH.D.

This year was yet again another successful and fun year at Bartell Field Camp! This summer brought new field areas (Garden Park dinosaurs, anyone?), a new regional field trip (Book Cliffs!), and many new memories of the Colorado wilderness (all the cute foxes!). We had 13 geology students who were joined by 14 OU School of Visual Art (SoVA) students for the first two weeks, our third year of hosting SoVA at the facility. Bartell Field Camp was bustling with hard working students this field season.

We are working on expanding the curriculum at field camp to include a menu of activities for students in addition to our regular Grape Creek and Mixing Bowl localities. Our new geochemistry assistant professor, Nevin Kozik, joined us for half of the summer to get to know the geology in and around Cañon City. Kozik is working on creating geochemistry and hydrology-related field exercises for the future, which will include work with Kato Dee, Ph.D., a hydrologist based in Ft. Collins, CO. We returned to Leadville with an extended weekend trip led by Dee, where students were introduced to acid mine drainage and learned about how structural geology influences geologic hazards like landslides.

Jacqueline Lungmus, Ph.D., led our students for a paleontology module where they learned everything about field-based paleontology from permitting to prospecting, and in-situ fossil prep and jacketing. Lungmus took the students to numerous iconic fossil locations within the Jurassic Morrison formation and the more recent Florissant Fossil Beds. The story of the Bone Wars is always a big hit with the

class, and Bartell Field Camp is ideally situated near many of these (in)famous quarries.

The regional trip was led by OU Alumnus Javier Tellez-Rodriguez, Ph.D., along with Steven Adams, Ph.D. and Kozik, and was made possible with continuing donations by Chevron. The students traveled to western Colorado and Utah where they were able to track depositional and structural style changes from the Laramide Front across the Sevier Orogenic Belt. The students had basecamp at Colorado Mesa University in Grand Junction and traveled across the region. Highlights included a mapping and stratigraphy exercise in the Book Cliffs, a trip to Grand Mesa, and a stop at the Dotsero volcanics. The summer heat was turned up by the end of the regional trip, but the Phanerozoic rocks of the western U.S. made it all worth it. This trip was a unique experience for students to not only learn from locally based geologists but also fellow Sooners!

It was with a heavy heart that we learned of the passing of Denny Bartell this summer. He provided OU Geosciences with the enduring gift of the Bartell Field Camp, an outstanding facility with dedicated and irreplaceable staff and faculty. The experiences that students have at field camp are literally life-changing, and this summer was no different. Bartell Field Camp continues to grow, and we plan on expanding our curriculum and scope in the future. The gifts made by alumni and friends continue to make these field experiences unforgettable for our students, and we can't thank you enough.







ASSESSING THE ORIGIN OF SILT IN MEDITERRANEAN, GRANITOID-HOSTED SOILS

DECLAN MARTIN, M.S. STUDENT

In summer 2021 I had the privilege of traveling to France with Dr. Lynn Soreghan to sample modern sediment as part of a project to assess the influence of dust on weathering profiles in the region. This project was part of a grant funded by the National Science Foundation's International Research Experiences for Students (secured by Lynn and Mike Soreghan). The data I helped to collect eventually became the focal point of my Master's thesis. My research area expanded to Spain and I began to investigate weathering in Mediterranean, granitoid-hosted soils in northeastern Spain and southern France to test the efficacy of weathering for silt generation from coarse-grained parent materials. There has long been debate about the mechanisms of production of silt in sufficient volumes to form loess deposits. One hypothesis posed in the 1980s posits silt production via chemical weathering, specifically in tropical and mediterranean climates—but this idea has not been rigorously tested.

Revisiting this hypothesis, I collected granulometric and geochemical data from sample sites across Mediterranean France and Spain to assess the weathering and provenance of the silt. Textural and geochemical data indicate that, despite significant evidence for chemical weathering, these profiles are dominated by sand and gravel, with only minimal clay + silt. Provenance data indicate the influence of allochthonous additions of dust to several sample sites with contributions from sources in north Africa, as well as other potential sources in southern Europe. The lack of silt+clay sized particles produced in these weathering profiles is insufficient to create significant loess deposits, challenging the oft-cited hypothesis of the efficacy of chemical weathering for silt production.



MEMORIALS

In memory of our alumni gone too soon

James Albert Carter Jr.

Bobby J. Darnell

Robert H. Dunn

William J. Fulop

Bruce Furlow

James Carl Hansen

Gerald E. Harrington

William E. Harrison

Newcomb S. Hayes

Grant Larson Heard

Edward G. Hesler Jr.

Joe R. Horkey

John William Isom

Kenneth J Knowles

Frank D. Lovett

Caryn Damaris Maher

Eugene M. Nakayama

Gerald Jude Petzel

John Paul Pickhardt

Bernal Freeman Powers Jr.

Dan Howell Procter

Toulman Van Roberts

Elliott W. Wiltse

William Robert Witcher

**as reported to OU Advancement through July 2026*

SUPPORT



GEOSCIENCES



GIVE.OUFOUNDATION.ORG/MCEE



FIELD TRIPS

Please support our course-related field trips! OU geosciences students participate in amazing field-based experiences through many of their courses. We conduct exciting and educational field trips to the Arbuckle and Wichita mountains, Guadalupe and Sacramento mountains, Piceance Basin, and other localities. Each year, we also lead a First-Year Field Trip to Colorado and New Graduate Student Field Trip in Oklahoma.

JOHN D. PIGOTT MEMORIAL COLLOQUIUM SERIES

Your support allows us to host outstanding geoscientists for our weekly colloquium speaker series. John Pigott ("Dr. P") was a professor of geology and geophysics at the University of Oklahoma for more than 41 years (1981–2023). He was a strong advocate of the School of Geosciences and, importantly, was a champion of the weekly colloquium series.



FOLLOW US ON SOCIAL MEDIA

INSTAGRAM | LINKEDIN
FACEBOOK | X

@ougeosciences

VISIT
GEOSCIENCES.OU.EDU
TO LEARN
ABOUT
UPCOMING
EVENTS
AND WAYS
TO GET
INVOLVED



MEWBOURNE COLLEGE OF EARTH AND ENERGY
SCHOOL OF GEOSCIENCES
The UNIVERSITY of OKLAHOMA