



Geological Society of America 2024 Conference

- Greg Baker

The CMU Geosciences Program was—as usual—well represented at the annual Geological Society of America meeting (GSA Connects 2024), this year in Anaheim, California. Six current students (**Grant Barnes, Mackina Chamberlain, Addison Early, Graceanne Hanson, Morgan Sholes, Zach Shomers**) and a recent former CMU Geosciences student (**Caden Anderson, '21**) attended the meeting. All students were involved as presenting authors on three different poster presentations. Mentoring faculty and GSA attendees also included CMU Geosciences faculty **Dr's. Andres Aslan, Greg Baker, and Verner Johnson**. We had great **MavRocks** gatherings for group dinners on two different evenings. Faculty and students were able to socialize in a more informal setting. **Jordan Walker ('20)**, who was presenting his Ph.D. research at GSA, joined us for dinner.

Dr. Baker had a particularly busy conference. In addition to being co-author on two of the CMU student poster presentations, Dr. Baker was elected Fellow of the Geological Society of America (see related article in this issue of the newsletter), led a one-day short course (“Drones in the Geosciences”), was a session advocate & chair (“Evolving Understanding of the Mechanics, Sedimentology, and Landscapes of Glaciers and Glaciation”), gave a talk (“Incorporating near-surface geophysical techniques into basic science research on alpine glaciers and glacier deposits”), and was a co-author on three other talks (“Fossil gastropods as Late Pleistocene paleoenvironmental proxies, White River Badlands, South Dakota, USA”; “Paleoenvironmental

significance of the last glacial Red Dog Loess, a Peoria Loess equivalent, White River Badlands, South Dakota, USA”; and “The vision and impact of classroom and field education”).

The CMU undergraduates attending their first meeting had lots to say:

“The GSA conference was one of the best experiences of my educational career to date. It was truly amazing to see all of the different talks, presentations, and booths, which showcased how versatile geosciences is.” – Morgan Sholes

“I would recommend attending the annual GSA meeting to every geology major. GSA opened my eyes to the wide array of applications of geology in a way that is not possible to convey in college courses. I believe I will look back on my experience at GSA as one of the foundational moments of my geology career.”

– Grant Barnes

“I would highly recommend that GEOL students, especially juniors and seniors, attend a national GSA conference! It is a fantastic chance to meet and talk to people in our field from the undergraduate level, all the way to PhD level, and people in the industry. I got to speak to many graduate programs and companies, such as Brunton and NASA, which was incredibly insightful! Not only is it a lot of fun, but it also allows you to get a glimpse of all the possible post-undergraduate pathways opportunities!”

– Addison Early

“The surprising aspect of GSA is the substantial amount that is learned in such a short period of time. I enjoyed being able to learn from peers across the nation and connect with their perspectives on various geology topics. A lot of learning also occurs in the oral sessions, which give students the opportunity to hear about subjects and research that they may not be familiar with already.” – Graceanne Hanson

“After attending this year’s conference, I would highly recommend a national GSA conference to future geology students, especially senior-level undergraduates. Attending a GSA conference is a significant eye-opening experience because it provides an opportunity to engage with modern geological research, network with professionals in the field, and gain insights into potential career or schooling paths. It also allows students to see firsthand how the concepts they’ve learned in class are applied in real-world scenarios and offers exposure to a wide range of specialties within our chosen field.” – Zach Shomers

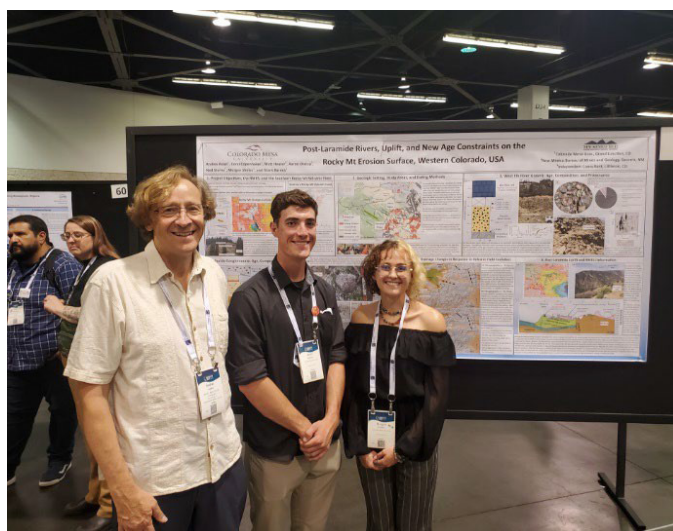
As a reminder, conference travel for students is typically funded either through research grants (Dr’s. Aslan, Baker, and Johnson, fortunately, all have grants supporting student participation in national conferences this year!), But equally important are donations from alumni as they facilitate non-funded students to have the opportunity to participate in the unique experience of scientific conferences. **Alexis Navarre-Stichler** (’00) and her husband **Jason** generously provided

initial funds to set up the Geology Student Research Fund that supports full-time

Visit <https://www.supportingcmu.org/>

1. Click on [**Ways to Give**] in the middle of the topic list at the top-center of the web page
2. Then click [**Scholarships**] and [**Give Now**]
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4. At the bottom of the form, for the funding options type in:

• **Geology Student Research Fund**



Left to right: Research advisor **Dr. Andres Aslan**, **Grant Barnes**, and **Morgan Sholes** present their poster on “Post- Laramide rivers, uplift, and new age constraints on the Rocky Mountain erosion surface in western Colorado.” Not present: **Coral Copenhagen**, **Matthew T Heizler**, **Aaron P Orelup**, and **Edward Sterne**.

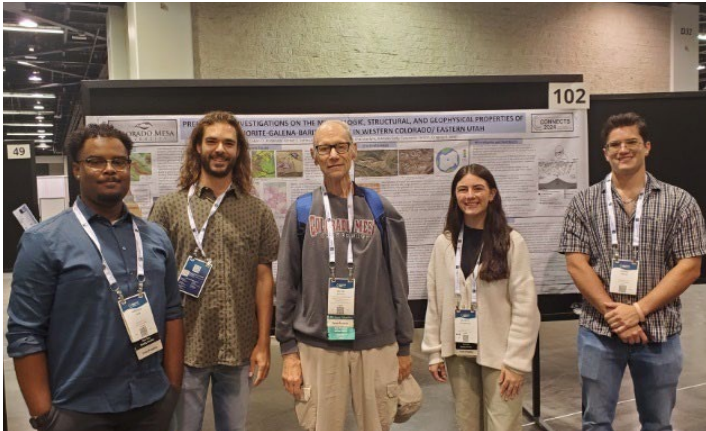
Geosciences Program NEWSLETTER

For students, alumni and friends of the
Geosciences program | Fall 2024

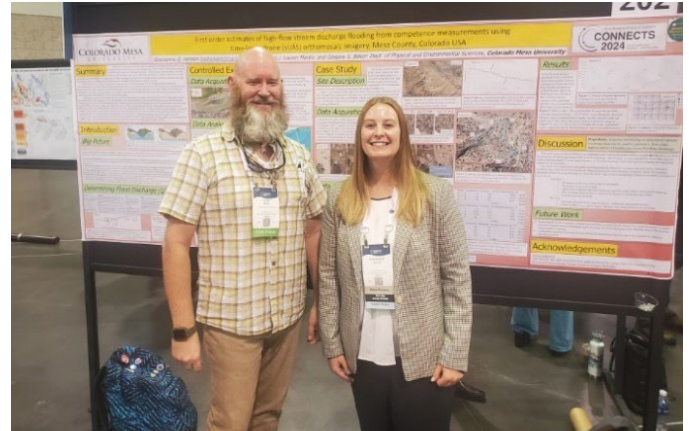


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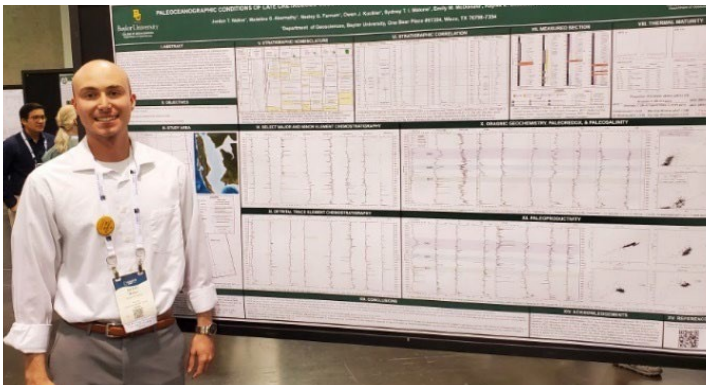
Department of Physical and
Environmental Sciences



Left to right: **Addison Early**, **Caden Anderson ('21)**, research advisor **Dr. V. Johnson**, **Mackina Chamberlain**, and **Emilio Topete ('24)** present their poster on "Preliminary investigations on the mineralogic, structural, and geophysical properties of a fluorite-galena-barite deposit in western Colorado/eastern Utah." Not present: research co-advisors **Dr. Cassandra Fenton** and **Dr. Gregory Baker**.



Research advisor **Dr. Gregory Baker** and **Graceanne Hanson** present their poster on "First-order estimates of high-flow stream discharge flooding from competence measurements using time-lapse drone (sUAS) orthomosaic imagery, Mesa County, Colorado, USA." Not present: CMU Environmental Sciences student **Lauren Martin**.



Jordan Walker ('20), now a Ph.D. Student in Geosciences at Baylor University, presents his poster on "Paleoceanographic conditions of late Cretaceous Colorado Group formations of the western Canadian sedimentary basin, Alberta, Canada."

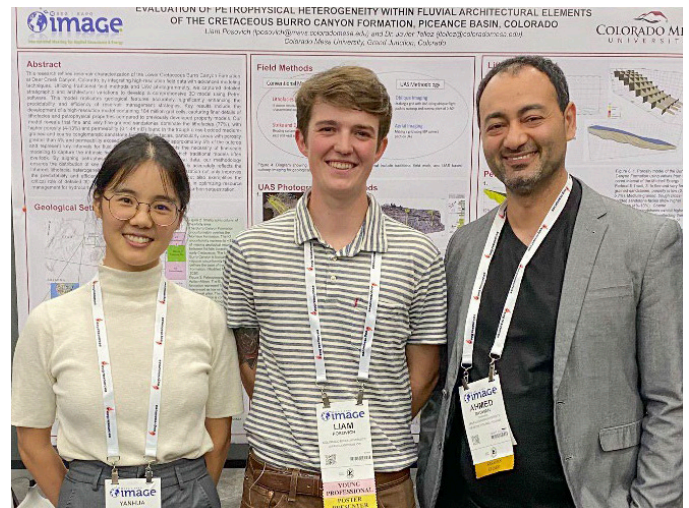
CMU Attends Image Conference In Houston

With support from the Unconventional Energy Center, **Dr. Javier Tellez** and students **Liam Posovich ('24)** and **Michael Longworth** had the opportunity to attend the **IMAGE International Conference of Applied Geoscience** in Houston, Texas, from August 28 to September 1, 2024. The conference provided a valuable platform for them to engage with the latest developments in reservoir characterization, modeling,

and geothermal studies. This experience is part of our program's broader mission to equip students with cutting-edge techniques, preparing them to tackle the pressing challenges of energy demand and supply. By immersing themselves in hands-on research, our students are developing the expertise necessary to contribute to future energy solutions



Left to Right **Michael Longworth**, **Dr. Javier Tellez**, and **Liam Posovich ('24)** at the entrance of the exhibition hall for the IMAGE International Conference of Applied Geoscience. Their participation reflects the dedication of our faculty and students to advancing research in reservoir characterization, modeling, and geothermal studies. We are proud to have them represent Colorado Mesa University on this international stage.



Liam Posovich ('24) (center), following his successful poster presentation on reservoir characterization and modeling at the IMAGE Conference, pictured here with the judges. His research and presentation highlight the caliber of work being conducted by our students. We congratulate him on his achievements and commend his professionalism throughout the event.

From the Coordinator's Corner - Cassandra Fenton

-Program and Faculty News

Hello, Geo Folks! As we wrap up another fall semester, I'm excited to share some program highlights, but first, let me thank our alumni, friends, and geo-community for your support. Your engagement through mentorship, donations, or simply cheering us on from afar, continues to make a positive difference in our program.

This past summer and fall have been seasons of exploration and growth. Here are some of the new things going on in the Geosciences.

New Faculty

We are excited to welcome **Dr. Wade Aubin** as a new tenure-track faculty member! Wade earned his Ph.D. at the Jackson School of Geosciences at The University of Texas at Austin and brings with him expertise in petrology and volcanology, and an awesome collection of rock concert T-shirts (look out for those on Fridays!). When Wade interviewed with us last spring, he expressed his admiration for our university's commitment to undergraduate education and emphasized his own desire to give back and teach at a small school like the one he attended for his undergraduate degree. Wade will be teaching GEOL 340/340L, Igneous and Metamorphic Petrology, and plans to add an upper-level course in volcanology. This semester he's been building a great rapport with students in Principles of Geology lectures and lab (GEOL 111). Wade is proving to be a fantastic addition to our CMU Geosciences team.

We are also pleased to welcome **Dr. Mike Morse** as a new adjunct instructor for an evening section of

our Principles of Geology lab. Mike works for RSI EnTech here in Grand Junction and contacted me about his keen interest in teaching opportunities in our program. He started teaching an evening lab this semester. Our team of adjunct instructors -- **Jamie Walker, Marisa Connors, Joe Brinton**, and Mike inspire our 100-level students to learn and engage with hands-on activities and local, geology field trips.

Scholarships & Awards

CMU Geosciences students received almost \$41,000 in scholarships and awards for the 2023–2024 academic year. Thanks to the incredible generosity of the Grand Junction Geological Society (\$4000 in scholarships), the Grand Junction Gem and Mineral club (\$3000 in scholarships), and our community donors. This year marked a record \$30,000 distribution from the Forrest Nelson Endowed Geology Scholarship fund, benefiting 25 of our geoscience majors.

Program Activities

Geosciences faculty continue to enhance the student experience with events and field trips that embody CMU's Human-Scale University values. In early September we hosted our inaugural "Geo Welcome with Faculty and Students," fostering connections between first-year and seasoned geoscience majors and our faculty. This gathering provided students with

insight into faculty research and student research opportunities.

William (Bill) Hood, our philanthropic, volunteer lab manager reports that he has raised enough funds — alongside a matching contribution from our program— to acquire a new XRF instrument. Our faculty and students are ever grateful to Bill for maintaining a lab where our students gain 21st century laboratory and analytical experience.

Dr. Verner Johnson continues his long history of advocating for our geosciences students. Every semester, Dr. Johnson connects our majors with paid, part-time “geo job” opportunities within our program. He helps students navigate the ins and outs of using or obtaining work study and/or MavWorks here at CMU. This semester, we have seven students assisting and working alongside professors.

Amy O’Campo, our dedicated administrative assistant in the Department of Physical and Environmental Sciences, plays a vital role in connecting first-year students and newly declared geosciences majors with their faculty advisors. This essential step fosters meaningful relationships, encouraging students to engage in face-to-face conversations with their advisors about courses, career paths, and graduate school opportunities. We’re grateful for Amy’s hard work and commitment to helping our students thrive!

On November 9th, **Dr. Javier Tellez** hosted **Matthew Bauer**, a geologist at Agapito Associates Inc. and the president-elect of the Rocky Mountain Association of Geologists (RMAG). Matthew donated his expertise and time to teach a full day, Python short course

“Introduction to Python for Earth Scientists” at no cost to our geosciences students. This course, coordinated with Dr. Tellez and Agapito geologists **Tristan Bates (‘19)** and adjunct Instructor **Joe Brinton**, was also open to the public for a small fee. Thank you to Dr. Tellez, Matthew, Tristan, and Joe for your collaborative efforts to enhance our students’ coding skills!

In spring 2024, **Dr. Kerry Riley** launched the “Adventures in Geoscience - Inspiring Women to Rock” river-trip initiative. This 5-day river trip in the Colorado River Basin is planned for summer 2025 and invites ten women students from any CMU department to embark on this enriching geo-journey, completely free of charge, with all gear provided! Participants will not only build connections with other Mavs and faculty but also discover the world of geoscience “in its natural habitat.” Dr. Riley’s efforts enhance the visibility of our Geosciences Program throughout our Grand Valley community and showcase the diverse field trips and learning experiences available in our degree program. We thank businesses who are donating gear for trip and the donors who have contributed to make this trip possible. If you’re interested in supporting Dr. Riley’s initiative, please consider making a donation through this link or emailing Dr. Riley directly: <https://engage.supportingcmu.org/campaign/adventures-in-geoscience-inspiring-women-to-rock/c569935>

Dr. Riley also organized an expedition for our geosciences majors to the Rocky Mountain Cell of the Friends of the Pleistocene field trip the weekend of Oct 4-6th 2024 in the Fremont River

drainage basin in central Utah. Read more about this year's expedition "Fish Lake to Blue Gate Badlands: New paleoclimate and geomorphology research along the Fremont River, central Utah" in the FOP guidebook (<https://www.tylerehuth.com/fop-2024.html>).

CMU's Geosciences Program had a strong presence at the annual Geological Society of America (GSA Connects 2024) meeting in Anaheim this fall. Six students attended and participated in three different poster presentations. They were supported by faculty mentors **Dr's. Andres Aslan, Greg Baker,** and **Verner Johnson**. The faculty's mentoring was crucial in guiding students from their research projects to presenting at GSA, and we're proud of the collaborative effort that made this experience possible!

Dr. Javier Tellez attended the Applied Geoscience and Energy (IMAGE) Conference in Houston from August 26- 29, accompanied by students **Michael Longworth** and **Liam Posovich**. They presented research on reservoir modeling and geothermal energy. The conference provided a great opportunity to connect with industry experts and gain valuable insights that will enhance their work.

In the summer of 2024, **Dr. Julia McHugh** employed **Miriam Kane ('19)**, a current MS student at North Carolina State University, to work as a paleontology field assistant at the Museums of Western Colorado (MWC). Miriam helped excavate Jurassic fossils during the MWC Dinosaur Dig program and also educated the public on paleontology, geology, and resource management. The MWC Dinosaur Dig

program runs every summer and over the past ten years, has selected several CMU students for credit internships or paid assistantships to work at the museum fossil sites and in the museum collections.

This semester, I coordinated networking events and a resume workshop for geosciences students. Students attended a virtual Informational Session about CU's Department of Geological Sciences (CUB-GEOL) to learn more about the graduate school application process and research opportunities there. Joe Brinton and I worked together with Rick Parkins, the president of the Colorado Plateau section of the Society for Mining, Metallurgy, and Exploration (SME) to host a meetup between geosciences students interesting in mining careers and local SME members. Following last year's successful "How to Use ChatGPT to Leverage Your Resume" workshop, I ran another session this fall. In the process, we're teaching students how to use generative AI ethically, creatively, and appropriately.

In Memoriam

Lastly, we honor the recent passing of emeriti faculty **Dr. Jim Johnson** and all of the contributions he made to the education of generations of geoscientists and to the growth of our program between 1967 and 1999. His legacy will remain with us forever.

Thank you to everyone for your continued interest and support of the CMU Geosciences program. We hope everyone is well and that we hear from or see you soon!

Sincerely, **Cassandra Fenton**
Geosciences Program Coordinator

New X-Ray Fluorescence Instrument (Dr. Bill Hood)

X-ray fluorescence (XRF) is a non-destructive method to determine the chemical composition of materials. The geosciences program has a Bruker handheld XRF instrument, but it is dying. The x-ray tube is losing power and the instrument is old enough that the manufacturer will no longer service it. We have used our instrument on a variety of projects, both faculty and student. One significant use has been our ongoing study of the Mancos Shale. Another was **Dr. Rex Cole's** study of the basalt flows on Grand Mesa. Student projects have included examinations of selenium content of the white efflorescence's found on the Mancos Shale and the iron content of dolomites from the Green River Formation. Perhaps the most interesting use of the XRF was a joint study of cremated human remains we conducted with the CMU forensic anthropology group led by **Dr. Melissa Connor**. The FBI requested CMUs assistance to investigate the cremation remains of about 120 people. A funeral home was suspected of selling human bodies and body parts and substituting other materials for the cremation ashes. Our part in the project was to determine whether family members of the deceased people had received their loved one's ashes or a material that was something like cement. We examined the chemistry of known remains and several materials that could have been substituted for them and determined that we could easily and quickly see the difference using our XRF. Happily, all the ashes that we examined were bone residue, although two were contaminated with another material.



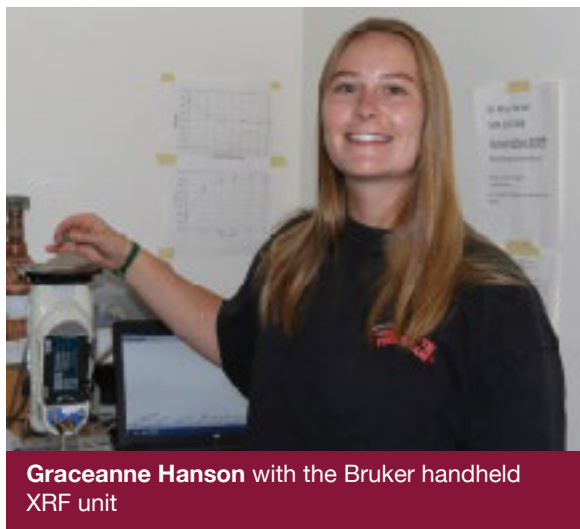
CMU Emeritus faculty **Dr. Rex Cole** and adjunct faculty **Dr. Bill Hood** in the Geosciences analytical lab which houses the Bruker handheld XRF unit.

To replace our instrument before it completely dies, I have been trying to raise the funds to purchase a new one. I submitted a grant proposal to the Unconventional Energy Center (UEC) requesting part of the needed funds. I am happy to report that I have received a grant of \$35,000 from the UEC, which when combined with a \$10,000 contribution from the geology program and \$10,000 from my account at the CMU Foundation, will allow us to go forward with the replacement. As part of the grant justification, I proposed to use the XRF to investigate the source of selenium water contamination in the farmland area north of the Colorado River in and around Grand Junction.

With the assistance of MavRocks student **Graceanne Hanson**, we will analyze samples of cuttings from several wells in the Mancos Shale to identify which sections of it are creating the

pollution. With the base of the Mancos Shale being at the Colorado River and the top at the Book Cliffs, we should be able to relate selenium-rich zones identified in the well cuttings to their position on the land surface.

Our hope is that this will show where remediation efforts should be prioritized, thereby saving cost to local governments.



Graceanne Hanson with the Bruker handheld XRF unit

Faculty Spotlight – Dr. Kerry Riley

CMU Geosciences Instructor **Dr. Kerry Riley** seeks opportunities to enhance undergraduate Geoscience education at Colorado Mesa University through professional development opportunities, enabling students to participate in a 3-day regional field trip, and

by leading an interdisciplinary outreach endeavor. This past summer (July-2024) Kerry attended the 10th annual Earth Educator Rendezvous in Philadelphia, PA (https://serc.carleton.edu/earth_rendezvous/2024/overview.html). The Earth Educator Rendezvous is part of the National Association of Geoscience Teachers (NAGT) On the Cutting-Edge professional development program. Kerry attended two workshops titled “Teaching with Investigation and Design in the Undergrad Science Classroom” and “Understanding Signals in the Soil”. She is integrating components of the workshops into course curriculum. She also participated in a ‘review camp’ where she helped peer-review the collections of teaching activities from Teach the Earth and NAGT-sponsored programs.

Kerry brought three students to the 2024 Rocky Mountain Cell Friends of the Pleistocene (FOP) Field Trip this fall. **Graceanne Hanson** (Sr-Geology/Env. Geology Major; 2nd FOP), **Faith Urbin** (‘23; 2nd FOP) and **Emilio Topete** (‘23; 1st FOP) all attended. This year the fieldtrip explored Fish Lake to Blue Gate Badlands: new paleoclimate and geomorphology research along the Fremont River, central Utah. The FOP began in 1934 and has no by-laws, no officers, and no formal membership. Anyone attending the annual field trip defines the membership. There are different FOP cells based on geographical location. The Rocky Mountain Cell was started in 1952 by Gerry Richmond and early FOP field trips were based out of locations such as Rocky Mountain National Park, Twin Lakes, CO, Medicine Bow-Laramie area, Jackson Hole, and Pinedale-Lander area in Wyoming.

Anyone interested in Quaternary science is welcome to attend. The field trips highlight the importance of geology at the outcrop and on-going research / works in progress are often presented. During the days, opposing views are discussed and passionately debated leading to advancements in research. Evenings are times when everyone gathers around the campfire, laughing and singing songs from the official FOP songbook compiled of reimagined geology versions of old classics. For example, the following lyrics were written to the tune of “We Will Rock You” by the British rock group Queen, **“We will, we will FOP you! We will, we will FOP you! Following the Hot Spot. Snake River Plain. Yellowstone Caldera. That’s your game. You got ash on your face, big disgrace. Spewing ejecta all over the place.”** Selection of the next year’s trip and the leaders for that trip is conducted on the last evening. The leader(s) plan and lead the trip and produce a field trip guidebook (<https://www.tylerehuth.com/fop-2024.html>).

Students participated in conversations about cutting-edge research, graduate school, and career preparation with employees from the United States Geological Survey, Utah Department of Natural Resources, Utah Geological Survey, Colorado Geological Survey, professors and students (graduate and undergraduate) from other institutions (e.g., CU Boulder, Utah State University, Colorado State University, Boise State University, Utah Valley University, U of Utah). Trip leaders and professors ensured that fundamental concepts underlying research were clearly communicated so that everyone could stay engaged and gain new knowledge.

The value of work-life balance is modeled at a Rocky

Mountain FOP field trip. Three days of packed itinerary, critical evaluation of data and rigorous scientific debate are valuable. Equally valuable is the supportive, collaborative, and empowering community that represents the Rocky Mountain FOP. Dr. Riley has been attending the Rocky Mountain Cell FOP Field Trips since 2009 and she has gone on the following trips through the years: Lee’s Ferry, Henry Mountains, Path of the Bonneville Flood, Owyhee Mountains, and Moab. She has helped to lead two FOP field trips following her Master’s and Doctoral Research. FOP field trips have been impactful for CMU Geoscience students helping to build a long-lasting connection to Geoscience. The three students (past and present) had an extremely positive experience at the 2024 FOP Field Trip.

Kerry continues to work on the Adventures in Geoscience River Expedition planned for summer ‘25. This is a teaching expedition, where ten women students from across campus will participate in a 5-day river expedition down a river in the Colorado River Basin. The trip is offered at zero cost to the student with all gear provided. Dr. Riley aims to offer CMU women the opportunity to build connections with other women on campus, learn about topics in geoscience, and gain confidence in outdoor, scientific, and recreational pursuits.

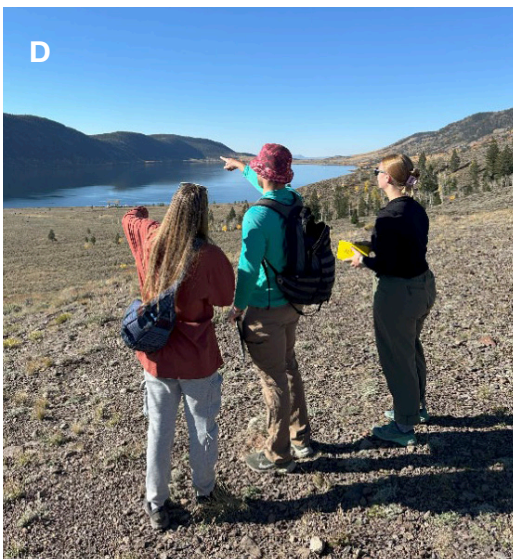
Geosciences Program NEWSLETTER

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Pictures above: a) Dr. Tammy Rittenour (Utah State University), **Emilio Topete ('23)**, **Faith Urbin ('23)**, and Dr. David Marchetti (Western Colorado University) in the Bluegate Shale Badlands. b) **Emilio Topete**, **Faith Urbin**, and **Graceanne Hanson** walking near Pando, UT (Home to an aspen stand that may be the largest living organism on Earth). c) **Graceanne Hanson** and Dr. Jen Pierce (Boise State University) at Fish Lake, UT. d) **Emilio Topete**, **Faith Urbin**, and **Graceanne Hanson** above Fish Lake,



Emilio Topete ('23), Faith Urbin ('23), and Graceanne Hanson at a fieldtrip stop in the Bluegate Shale Badlands led by Dr. Bob Anderson from CU Boulder on the 2024 FOP field trip.



Destiny Duarte ('22) on a Geology of Canyon Country 6-Day River Expedition during spring break 2022.

Faculty Spotlight – Dr. Mike Morse

Dr. Mike Morse is a new adjunct faculty in the CMU Geosciences program and is a hydrogeologist at RSI EnTech, LLC here in Grand Junction. Mike grew up in the Upper Peninsula of Michigan – an area rich in ancient geological wonders and natural beauty. This setting inspired Mike to study Geological Sciences at Michigan State University (B.S. 2008) and then Hydrology at Colorado School of Mines (Ph.D 2016). His graduate studies focused on the influence of rainfall and snowmelt on landslides that took him to project

sites in Oregon, California, North Carolina, and along I-70 in Colorado.

The primary mission of Mike's current work at RSI EnTech is to support the U.S. Department of Energy's Office of Legacy Management to ensure protection of human health and the environment at sites with a legacy of atomic energy. Here in the Grand Valley and the Colorado Plateau, these sites are where uranium ore was mined or

processed. For example, the team at RSI regularly monitors Las Colonias Park in Grand Junction where it is the former site of the Climax Uranium Mill which operated from 1950 to 1970. To this end, Mike and other hydrogeologists at RSI monitor and predict the movement of water through rocks and soil at these sites to evaluate the potential for contamination of groundwater aquifers and nearby surface water (e.g. rivers and ponds). The hydrogeologists are part of a team of many other scientists at RSI, including ecologists, geologists, soil scientists and environmental scientists.

Geological investigations at the former uranium milling sites are essential for understanding certain parameters (e.g. hydraulic conductivity, or the ability for water to be transmitted through a particular rock or soil layer) that influence the movement of water and contaminants. These investigations commonly include logging of core samples from drilling, surface mapping of outcrops and soils, geophysical surveys of boreholes and on the land surface, and drone-based aerial surveys. Hydrogeologists then use this data to develop visualization models of each site to evaluate and communicate important observations, and numerical flow models to predict future risk to groundwater resources.

Mike is also part of an ongoing collaboration between RSI and CMU's Department of Physical and Environmental Sciences to provide PES students with internship opportunities and support Senior Capstone studies. Internships are usually during the summer months and can support a variety of different project activities at RSI. Recently these activities have included field mapping of groundwater seeps, laboratory column testing of soil

samples, planting and monitoring of vegetation on disposal cell covers, and estimating potential evapotranspiration using leaf-area index surveys and satellite remote sensing data. Mike encourages anyone interested in future internship opportunities at RSI to please feel free to reach out to him directly at: mmorse@coloradomesa.edu.



Dr. Greg Baker elected as GSA Fellow

Dr. Gregory Baker was elected as a lifetime Fellow of the Geological Society of America. For the students and faculty who know him this is no surprise. His passion for the geosciences and his dedication to learning and education is plain to see. His nomination letter reads in part:

“Dr. Baker has produced an impactful research record over his career, particularly in the field of near surface seismic reflection and ground-penetrating radar imaging; however, he is routinely involved as a critical contributor in solving interdisciplinary geoscience problems in fields as diverse as hydrogeology, archaeology, glaciology, geomicrobiology, and paleoclimatology using field-based technologies.”

“A passionate geoscientist and instructor, he has taught over 4400 students in 88 university courses during his 24 years as a professor, at both the graduate and undergraduate level (non-majors, majors). He has been the primary advisor for numerous successful graduate students (6 PhD and 14 MS) as well as lead research advisor for 28 undergraduate students (honors theses or senior research projects).

“Dr. Baker is a passionate advocate of summer geology field courses. Dr. Baker was Geology Field Camp Director at SUNY Buffalo for five years and is currently Field Camp Director at Colorado Mesa University (past 2 years). He taught Summer Geology Field Courses during 14 summers of his career.”

“Dr. Baker has achieved excellence in research and impact in teaching & learning. Over the trajectory of his career, his focus has shifted in emphasis from research-centered to teaching-centered, but he has excelled in both endeavors and provided continual contributions to GSA that are interdisciplinary and varied. His professional record meets and exceeds the metrics set for the distinction as GSA Fellow and his inclusion in this peer group will elevate its ranks.”

The award presentation was at the annual GSA conference in Anaheim, CA. Congratulations Dr. Baker!



Dr. Greg Baker and the GSA President **Dr. Chuck Bailey** at the Lifetime Fellow award presentation.

MavRocks student selected as Water Fellow

Senior **Graceanne Hanson** was selected as a 2024-2025 Colorado Water Fellow.

The CMU Water Fellows Program is an academic-year long curriculum designed to prepare students for careers in the water field and connect them to opportunities. This includes attendance at water conferences, field trips, and monthly meetings that delve into topics such as water law, water careers, water equity and justice, tribal perspectives, and one water approaches encompassing graywater, stormwater, and recycled water. The emphasis on a holistic, interdisciplinary understanding of water-related issues prepares the Water Fellows to navigate the complexities of the field. The CMU Water Center received about 15 applicants for the Water Fellows program and Grace was one of the top five candidates.

For more information about the program visit:

<https://www.coloradomesa.edu/water-center/water-fellows-program-2024-20251.html>



Graceanne on the Rocky Mountain Cell Friends of the Pleistocene (FOP) 2024 field trip.

Summer Field Camp, 2024

- Greg Baker, Field Camp Director

Summer Field Camp of 2024 was, as usual, a unique and exciting adventure! Student participants included **Maddie Bishop, Mackina Chamberlain, Coral Copenhaver, Ethan Freeburger, Brittlynn O'Dell, Morgan Sholes, Zachary Shomers, Hunter Stewart**, and **KennaLee Worster**. **Drs. Greg Baker, Verner Johnson, Julia McHugh**, and **Javier Tellez** were CMU faculty instructors this past summer. **Dr. Andres Aslan** is typically an instructor as well, but he was on sabbatical this summer. We were pleased that **Caden Anderson ('21)** joined us as co-instructor for all six weeks. **Andy Darling ('08)** also joined the group as a volunteer instructor with Dr. Johnson in the Henry Mountains.

We would like to acknowledge generous funding from alumni and friends of the CMU Geology Program who helped defer the cost for our students of attending field camp. Alumni recognize the importance of Field Camp in our degree program and they also remember the financial challenges for students. On behalf of the 2024 cohort, we thank you!!

RMAG C. Elmo and Kathleen W. Brown Field Camp Scholarship
(<https://rmagfoundation.org/scholarships/celmo-kathleenwbrown-field-camp-scholarship/>)

- **Ethan Freeburger**

Grand Junction Geological Society Field Camp Scholarships (<http://gjgs.org/>)

- **Mackina Chamberlain**
- **Coral Copenhaver**
- **KennaLee Worster**
- **Brittlynn O'Dell**
- **Morgan Sholes**

Forrest Nelson Endowed Geology Scholarships
(<https://coloradomesa.academicworks.com/donors/forrest-nelson-endowed-geology-fund>)

- **Madeleine Bishop**
- **Mackina Chamberlain**
- **Addison Early**
- **Brittlynn O'Dell**
- **Morgan Sholes**
- **Zachary Shomers**

Mark Garman Scholarship
(<https://coloradomesa.academicworks.com/opportunities/11777Z>)

- **Coral Copenhaver**
- **Hunter Stewart**

Grand Junction Gem & Mineral Club
(<https://www.grandjunctionrockclub.org/>)

- **Mackina Chamberlain**
- **Coral Copenhaver**
- **KennaLee Worster**

Before leaving this topic, if you are a previous donor, or want to become a new donor, and specifically help students attend future field camps, please consider

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contributing to one of the aforementioned supporting organizations (links provided, above) and/or to CMU scholarships! To donate directly to one of the CMU scholarships supporting our Field Camp students, please:

1. Visit <https://www.supportingcmu.org/>
2. Click on [Ways to Give] in the middle of the topic list at the top-center of the web page
3. Then click [Scholarships] and [Give Now]
4. When asked “What would you like your donation to support?” select [Other]
5. At the bottom of the form, type in one of the field camp funding options:

- Forrest Nelson Endowed Geology Scholarship
- Mark Garman Scholarship of the field camp funding options: **See schedule on the next page.**



From **Week 1**, students beginning a second measured section (to correlate with the previous section) using **Dr. Javier Tellez's** telescopic poles and bring green laser pointers—much better than the old wooden Jacob Staves!—from the top of the Entrada Fm through the Wanakah Fm to the base of the Morrison Fm.



The 2024 Field Camp posse during **Week 1** near Lunch Loops, Grand Junction CO. Pictured (left to right) are **Coral Copenhaver, Mackina Chamberlain, Maddie Bishop, Hunter Stewart, Zachary Shomers, KennaLee Worster, Brittllynn O'Dell, and Morgan Sholes**. Co-instructor **Caden Anderson ('21)**, who participated for all six weeks, is in the back.



During **Week 1**, students getting a refresher in generating detailed telegraphic descriptions of rock in their fieldbooks from outcrop, as well as collecting bedding orientations and geographic locations.

Typical schedule and objectives (though it will vary from year to year):

WEEK	Brief Project Description	Course Student Learning Outcomes
01	Boot Camp week	Refresher and setting of expectations for specialized knowledge in Field Observation Skills; Field Data Collection; Field Notebook Skills; and creating a Geologic Map. Includes measuring sections and correlation.
02	Geologic bedrock mapping near Eagle's Wing, Uncompahgre Uplift	Scaffold the outcomes from Week 01 and add critical thinking in Stratigraphic Analysis; Rock and Mineral Identification; Structural Geology. An accurate geologic map in a field area having dipping sedimentary strata and complicated topography is produced, as well as a detailed written report developing quantitative & communication fluency through site analyses using 3-point problems and stereonet.
03	Geologic bedrock mapping at the Henry Mountains, Utah	Continued scaffolding of outcomes in Weeks 1 & 2, and adding critical thinking in igneous petrology, information literacy (by reading and citing "classic papers" on the Henry Mountains), and additional communication fluency by creating and then presenting group posters on results.
04	Geologic mapping and paleontological stratigraphic correlation in Rabbit Valley	Scaffolding knowledge/skills from Week 1-3, as well as adding critical thinking in paleontology (generating professional descriptions of fossils and fossil sites). This week also includes a written report developing communication fluency with the goal of extrapolating known fossil locations into unknown regions via details stratigraphic correlation.
05	Bedrock subsurface geologic model building and stratigraphic correlation, Escalante Canyon	Scaffold of Weeks 1-4, as well as enhancing specialized knowledge in subsurface geologic mapping and the development of 3D subsurface stratigraphic models. This week also includes a written report developing communication fluency with the goal of developing a sequence stratigraphic model of the field site.
06	Geologic surficial stream-terrace mapping, Browns Park	Scaffolding Weeks 1-5 knowledge/skills, plus add specialized knowledge in mapping surficial deposits, recognizing elevation relationships of stream terrace deposits, and developing critical thinking with respect to paleofluvial dynamics in the region. Information literacy is revisited by reading and citing "classic papers" on the fluvial history in northwest Colorado.

In addition to focusing on student learning outcomes in specialized knowledge/applied learning, quantitative fluency, communication fluency, critical thinking, and information literacy, all six weeks of the course include development of personal and social responsibility through repeated discussions and instructor embodiment of:

- **Teamwork and Communication** • **Safety Awareness**
- **Environmental Awareness** • **Professionalism**

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Also, there was time (but not much!) for additional experiential activities. During Week 04 **Dr. Julia McHugh** gave the students an exciting behind-the-scenes tour of the paleontology collections at the Museums of Western Colorado in Fruita, CO. During Week 06, **Dr. Greg Baker** took the students to the National Mining Hall of Fame and Museum in Leadville, CO.

We strive for continued improvement in the overall course pedagogy, and Dr. Baker would welcome any comments (gbaker@coloradomesa.edu) on ways to improve/ suggestions. We are already looking forward to Field Camp 2025!



Also from **Week 1**, learning to locate distant equal- elevation points and apparent dip of bedding from the Bang's Canyon parking lot.



From **Week 1**, students measuring a section through the Entrada & Wanakah Fms and the Tidwell Mbr of the Morrison Fm. Note the detailed generation of telegraphic rock descriptions in field books!



Students working on their 1-day simple geologic map from Boot Camp (**Week 1**) precisely identifying the Kayenta/Entrada Fms contact and thoroughly describing the contact boundary.

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From **Week 2**, students initial introduction to the edge of the mapping site and background on stratigraphic units.



From **Week 4** in the Rabbit Valley with **Dr. Julia McHugh**. Students diligently examining rocks and recording data (with Caden Anderson) while working on their mapping site that includes known (impressive!) dinosaur fossils within the Morrison Fm.



From **Week 3** in the Henry Mountains with **Dr. Verner Johnson** (far right) and **Caden Anderson** ('21, 2nd from right). **Andy Darling** ('08, 2nd from left) volunteered to assist as an additional co-instructor. Mount Hillers is prominent in the background, with the mapping project visible in the layered sedimentary/igneous units at the base of the dominant central intrusive igneous rocks.



From **Week 6** (near Cañon City, Colorado) at their final mapping project on North Twin. Normally the final week of field camp is led by **Dr. Andres Aslan** in Browns Park. Because Dr. Aslan was on sabbatical, **Dr. Greg Baker** led the last week in southern Colorado, staying at the University of Kansas field station. Complexly folded and faulted clastic & carbonate units presented a final mapping challenge! Note the student in the far upper left of the photo—brains working hard!



Crew coming out of the field area at North Twin on the last field day of the **Week 6** project—can you tell they are getting excited to finish?!?



Last gathering of the group on the last day of Field Camp 2024. They are a little more tan/sunburnt than the first week (see Picture 1). They are also in better shape after six weeks of near-daily hiking. They certainly should now be considered “geologists” instead of “geology students” — Congratulations crew!

GJGS Chenoweth Field Trip

-Wade Aubin

On September 7th, 2024 GJGS members and guests and CMU geosciences faculty and students gathered for the 6th annual William L. Chenoweth Memorial field trip. The trip was led this year by Laurie Brandt of Buckhorn Engineering in Montrose, **Dr. Andres Aslan** and **Dr. Rex Cole (emeritus)** of CMU Geosciences, Allen Stork from the geology program at Western Colorado University, and Ned Sterne, an independent geologist. The trip followed a transect from just west of Montrose, east through the Black Canyon of the Gunnison, and farther east to Blue Mesa Reservoir. Discussions focused on the

river terraces and geological hazards in and around Montrose, and erosion and landscape formation in the Gunnison River valley, including the capture of the Gunnison River by the Pre Cambrian basement rocks of the Black Canyon. The trip finished with a discussion of Tertiary volcanism in the San Juan Mountains and how it contributed to the landscape evolution of western Colorado. We had a great day in the field with a variety of rock types, thinking about and discussing some of the best geology in the State of Colorado!

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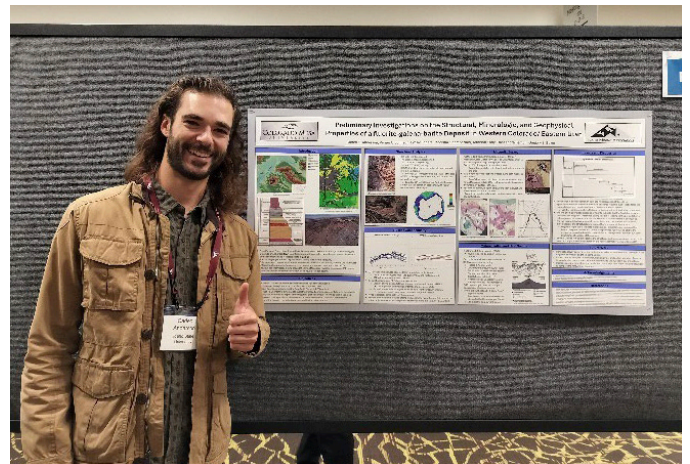
CMU current and former faculty and students pose for a picture in the Black Canyon of the Gunnison on the GJGS Chenoweth Field Trip in September.



Lunch stop for the field trip was at the Morrow Point Dam in the Black Canyon of the Gunnison. After lunch **Dr. Andres Aslan** explained the contribution of the Gunnison River to the landscape evolution of the western Rocky Mountains.



At one of the first stops of the day in Shavano Valley west of Montrose, **Dr. Rex Cole** explains the stratigraphy and sedimentology of the Dakota (Naturita) Formation, and its relationship to the underlying Burro Canyon Formation.



Caden Anderson ('21) with his poster on the Ryan Park-Pinon Mesa fluorite-galena-barite deposit at the 2024 Idaho Mining Conference. This poster was a synthesis of Caden's work over the last 2 years with **Dr. Verner Johnson**, **Emilio Topete**, **Mackina Chamberlain**, and **Addison Early**.

Adam Trumbo Memorial Spring Field Trip - 2025

The Geosciences Program plans to hold the annual Adam Trumbo Memorial Spring Field Trip on **Saturday, April 25th 2025**. **Dr. Verner Johnson, Michael Fiel ('16)** and **Caden Anderson ('21)** will lead a geological tour of Unaweep Canyon. If you are interested in attending, please email (waubin@coloradomesa.edu).

Scholarships & Awards

CMU Geosciences students earned nearly \$41,000 in scholarships and awards, thanks to the generous support of Forrest Nelson, the Grand Junction Geological Society (GJGS), the Grand Junction Gem and Mineral Club, and other community donors.

A distribution of \$30,000 was awarded from the **Forrest Nelson Endowed Geology Scholarship** fund to 25 CMU Geosciences students. Recipients were **Grant Barnes, Braden, Bensley, Cole Beyer, Madeleine Bishop, Caitlyn Boyle, Benjamin Chamberlain, Mackina Chamberlain, Owen Crown, Addison Early, Graceanne Hanson, Jacob Kitchens, Michael Longworth, Reuben Magner, Ava Marso, Damaris Mendes, Brittlynn O'Dell, Keith Pierce, Alexandria Rukcic, Emma Schoenstein, Morgan Sholes, Zachary Shomers, Steffen Teutsch, Kate Thiltgen, Adam Tuck,** and **Colton Zinke**.

Notable recipients of other awards include **Liam Posovich**, who received the prestigious **Rocky**

Mountain Association of Geologists Neal J. Harr Outstanding Student Award, and **Graceanne Hanson** and **Morgan Sholes**, who were awarded the **Richard D. Dayvault Endowed Memorial Scholarship**. **Graceanne Hanson** and **Ava Marso** were recognized as **Geosciences Program Tuition Scholarship** winners, while **Coral Copenhaver** and **Hunter Stewart** received the **Mark Garman Scholarships**.

Ethan Freeburger was selected for the **RMAG C. Elmo and Kathleen W. Brown Field Camp Scholarship**. **Kenna Lee Worster** received the **William C. Hood Student Research Award**, and **Emilio Topete** received the **Verner C. Johnson Geology/GIS Award**. The **Association of Women Geoscientists Award** went to **Mackina Chamberlain** and **Coral Copenhaver**. The **Grand Junction Gem & Mineral Club** awarded scholarships (\$1000 each) to **Mackina Chamberlain, Coral Copenhaver,** and **Kenna Lee Worster**. The **Grand Junction Geological Society (GJGS)** awarded Field Camp Scholarships (\$800 each) to **Mackina Chamberlain, Coral Copenhaver, Kenna Lee Worster, Brittlyn O'Dell,** and **Morgan Sholes**. **Liam Posovich, Coral Copenhaver** and **Ben Chamberlain** earned the **Best Student Presentations Awards** at the May 2024 meeting of the GJGS, which features student-research presentations.

In memoriam: Dr. Jim Johnson



We are saddened to announce the passing of former Emeritus Geosciences faculty member, Dr. Jim Johnson. He passed away peacefully on Tuesday, September 10 at Hope West Care Center in Grand Junction after suffering a stroke on August 25, 2024. Since joining Mesa College (now Colorado Mesa University) in 1967, Jim was a professor, head of the geology program, and towards the end of his tenure, Dean of the School of Sciences and Math until his retirement in 1999. During all those years, Jim constantly pushed for a strong emphasis in the geology program, especially for using the natural field laboratory in and around the Grand Junction area for teaching. He was also president of the Grand Junction Geological Society in 1970. For more information about Dr. Jim Johnson, see the article written about him in on page 4 of the Fall 2015 Geosciences Program Newsletter:

https://www.coloradomesa.edu/geosciences/documents/PES_Geosciences_Newsletter_1516_Final.



Geosciences Program Support

If you are interested in donating to the Geosciences Program, the CMU Foundation has established a website with a list and description of our current program funds and scholarships. To donate, simply visit:

<https://engage.supportingcmu.org/geosciences>

One of the areas of need is funding for students to attend professional meetings such as AAPG, GSA, or AGU. If you are interested in contributing to this area of need, please donate to the newly established Geosciences Student Research Fund. If you are interested in learning more about establishing a named fund to support the Geosciences program at CMU, please contact Rick Adleman at **970-248-1871**.