GEOSCIENCES PROGRAM
NEWSLETTER

For students, alumni and friends of the Geosciences program | Spring 2025

COLORADO MESA UNIVERSITY

Department of Physical and Environmental Sciences

What are CMU Geosciences alumni doing?

- Andres Aslan

After graduating, CMU Geosciences students have followed a variety of career paths. To help our current students learn about what life with a geosciences degree might look like, as well as to keep all our friends and supporters aware of what our graduates are doing, we are keeping up with our alumni and publishing updates on what they are doing/ have done since they graduated. If you are an alumnus who would like to be included in a future newsletter, please let us know!

John Quigley ('05). John works in the industrial minerals sector and here is the latest from John: "I was living in Salt Lake City until three years ago when I moved to Wyoming. Covid changed the work environment with the ability to work remotely and I took the opportunity to relocate to the 'great wide open'. I live in Douglas, a small town in eastern Wyoming which gets me closer to my family in Nebraska and my brother in Denver. It has been a great move for me since I was ready to get out of the big city lifestyle and to some place more quiet and slower paced.

With regards to my job, this year will be 15 years with the same company, Graymont. We are a limestone/dolomite mining company and have quarry operations all around the world. I have managed the geology department, then the mining engineering department and also the GIS group. However, as a manager, the job required a lot of travel and I was on the road 60-80% of the time, which was fun for a while, but got to be too much and I lost my love for travel. Recently I decided to take a step back from the 'cat-herding' role and my current position is as a senior geologist. I am responsible for mining operations at some of our U.S. locations in Utah, Ohio, Wisconsin, and Pennsylvania. I now have a much better personal-professional work life balance and I enjoy traveling again. I have managed and worked on quite a few exploration projects (both Greenfield and Brownfield) and acquisitions over the years. I have had a lot of international experiences as well. Some of the places that I have conducted exploration and drilling projects are Peru, Chile, Australia, New Zealand, Costa Rica, Canada, Argentina, Dominican Republic, and Mexico. The photo is from the Cave of the Crystals in Mexico that I got an opportunity to go visit. It was awesome to see and was one of those geologist "bucket list items" that I couldn't pass up.

John Quigley ('05) on a visit to the Cave of Crystals in Mexico.

Mike Feil ('14). Mike recently changed jobs at RSI Entech here in Grand Junction. Mike was the lead geologist for the DRUM field teams and he is now currently the uranium leasing program field scientist. Mike is working with a small army of former Geo grads including: **Roan Hall ('21)**, **Trey Nusbaum-Green ('16)**, **Nolan McDonald ('16)**, **Mickey Guziak ('16)**, **Darby Spence ('18)**, **Katie Worrell ('18)** (who is also a Councilor for the Grand Junction Geological Society), as well as other former Geo grads. Mike helped lead the 2025 Spring Adam Trumbo field trip to Unaweep Canyon. Thanks Mike!

Caden Anderson ('21). Caden spoke to the students in Seminar this semester about life in graduate school and his experience in the mining sector when he worked for Ivanhoe Electric. Caden is currently working on a M.S. degree at Idaho State University with a focus on tectonics and sedimentation. He'll be working in western Idaho this summer collecting data and doing detrital-zircon analyses to better understand patterns of Mesozoic sedimentation. We look forward to getting an update from Caden next Fall at the GSA meeting in San Antonio!

Ben Haveman ('13). Ben is a project manager and geologist at Respec here in Grand Junction. Although Ben claims that his position is allowing him to spend more time in Grand Junction, he was in Oman for 6 weeks this spring! Ben is also currently the president of the Grand Junction Geological Society. Thanks Ben!

Sherri Randall ('22). Sherri is here in Grand Junction, and she is currently pursuing a M.S. degree in GIS through Denver University. Way to go Sherri!

Marshall Thurmon ('18). Marshall continues at his job with Field Geo Services (mudlogging, geochemistry, geosteering). Marshall and the "crew" **(Luke Davenport ('13)**, **Jordan Drake ('18))** recently opened a new office in Grand Junction at 2755 Winters Ave. in Grand Junction. Congratulations to FGS!

Rachael Lohse ('18). Rachael also spoke to the students in Seminar this semester. Rachael works as a MWD specialist for Total Directional Services in the Uinta Basin near Roosevelt, Utah. One of Rachael's co-workers is **Tyler Kruckenberg ('11)**. Recently Rachael and the team surveyed and logged geophysical data for the longest (15,940 ft!) horizontal well in drilled in Utah! The wells are being drilled in the Green River and Wasatch formations.

Rachael Lohse ('18) and **Tyler Kruckenberg ('11)** in the field as MWD specialists.

Tristan Bates ('19). Tristan also spoke to the students in Seminar this spring semester and he is working at Agapito Associates in Grand Junction. Tristan is the rock mechanics lab manager and a project geologist. His project work involves in situ 3-D stress testing and assessment of salt cavern storage facilities primarily in the Gulf Coast. Tristan works with **Andrew Schmidt ('23)**, current CMU Geology student **Haley Bellon**, and CMU adjunct professor **Joe Brinton.**

Marisa Connors ('14). Marisa also spoke to the students in Seminar this past spring and continues to have a full plate! Marisa is currently the Manager for the Grand Junction office of Yeh Engineering and oversees all the Grand Junction staff and projects while continuing to teach part-time for the Geosciences program as well as a Soils and Foundations course for the Construction Management program at CMU. Marisa is working with several Geo graduates including **Lisa Van Kirk ('21)**, the current lab manager for the Yeh office in Grand Junction, **Jon Hutson ('19)**, **Cole Wood ('22)**, and **Ben Chamberlain ('24)**.

Liam Posovich ('24). Liam also spoke to the students in Seminar this spring semester. Liam is currently the project geologist for Urano Mining, a Canadian-based uranium company with leases in the Uravan district and eastern Utah. Liam has become a geologic "swiss army knife" – his job encompasses field work on lease blocks, data compilation and GIS database management, hiring and working with subcontractors, and working with regulatory agencies on permitting.

Leyna Flann (formerly Weller) ('22). Leyna also spoke to the students in Seminar this spring semester about careers in GIS. Leyna is currently a GIS Analyst working for a non-profit organization in Columbia, MD where she and her husband reside. Leyna said that her GIS course in Database Management was probably the single most important course that prepared her for her career in GIS and she strongly recommends some coding (e.g., Python) expertise to those who might want to pursue a career in GIS.

Andy Darling ('09). Andy is currently an Instructor in the Department of Geology at Ft. Lewis College and he has just accepted a tenure-track position at Fort Lewis, which will begin in the Fall. Congratulations Andy!!

We love hearing from you so please let us know what you are up to so that we can share with the rest of the CMU Geo family!

Alumni Spotlights

MJ Winey ('23). Since graduating in May of 2023, I have been working at Daub and Associates Inc. (D&A) in Grand Junction as a geologist. D&A is a collective of contracted geologists who specialize in geological, hydrological, environmental, permitting, and geotechnical work. One company we are contracted by is called Natural Soda, which is centrally located in the Piceance Creek Basin in western Colorado. Natural Soda solution mines nahcolite, which is naturally occurring sodium bicarbonate, or baking soda. D&A is responsible for the majority of geologic activities that occur at Natural Soda such as drilling new production wells, servicing groundwater monitoring wells, monitoring aquifer geochemistry, producing aerial/topographic maps, and producing well schematics.

My main roles include being a field geologist during drilling operations and producing computer generated maps/well schematics for Natural Soda, the EPA, and the BLM. During my time at CMU, I discovered that I thoroughly enjoy using computers and their application to geoscience. When I am not in the field, I spend the majority of my time using software such as AutoCad, Surfer, and LogPlot to produce geologic illustrations, gather data, and improve my technological geologic skills. I have been at D&A for a year and a half, and during that time I have been involved with the drilling of three production wells at Natural Soda. For these wells, I was the night geologist on site. My duties here look a little different than in the office, as I spend my time collecting, analyzing, and recording information from cutting samples. I also provide support in the form of geosteering, which is when the drill bit is steered based on geologic findings and gamma data, rather than being steered directionally.

During my time at D&A, I have learned how to use new software programs and how to relate them to geoscience studies, while also receiving valuable field experience! I continue to learn something new almost every day, which is one of my favorite parts of my job. While I have hopes to go to grad school, I'm currently enjoying my work at Daub and Associates, Inc.

MJ Winey ('23) in the field at the Natural Soda drilling site in the Piceance

Abby Winkler ('22) Assistant Geochemist at WSP, Lakewood

Growing up, I had an affinity for math and had proudly maintained a sizable rock collection since the age of five. Upon entering college, I saw chemistry as akin to an applied math degree, and I thoroughly enjoyed the majority of my chemistry courses during my time at Mesa. It was in the second semester of my degree that I took my first geology class, GEOL 113. Here is where I met **Dr. Cassie Fenton**, a practicing geochemist, who helped me realize I could merge my interests in both disciplines. With the guidance of my chemistry advisor, **Dr. James Ayers**, mentorship from Dr. Fenton as my research advisor, and advice from **Dr. Rick Livaccari** (now retired), we worked together to personalize the curriculum towards my newfound goal of becoming a geochemist.

It was **Dr. Andy Wolff** (now retired) who encouraged me to consider graduate school, and Dr. Fenton enthusiastically helped me navigate that path. Due to personal circumstances, I was only able to explore in-state programs, which ultimately led me to study at the Colorado School of Mines – the only institution in the state with an independent geochemistry program. I reached out to **Dr. Alexis Sitchler** at Mines,

a geochemist and a fellow Mesa alum. She understood my constraints and aspirations, and she welcomed me onto her research team for the National Science Foundation's Critical Zone Network in August of 2022.

In October of 2024, Mines sponsored my trip to a workshop in Maryland, where I had the pleasure of meeting Javiera Mulet from WSP. She introduced me to her boss, Felipe Vasquez, who strongly encouraged me to join their geochemistry team within WSP's mining division. My prior research experience in stable isotopes at Mesa and in AMD sediments at Mines made it so that I could contribute a unique perspective to their team despite having had no prior industry experience. Felipe worked to create an opportunity for me within their group, and in December of 2024, I received an internal referral from Sarah Doyle, a professional geochemist I had connected with prior to her employment at WSP. I have been truly blessed to have the active support of so many professors and professionals throughout my journey.

For students interested in a career in geochemistry, I have several suggestions. First, work on filling in your knowledge gaps. Focus on developing your technical writing skills and start research as early as possible. Take a coding or data management course, as well as microbiology – everything is interconnected! For chemistry students, I recommend courses in groundwater, mineralogy, and petrology. For geology students, analytical chemistry, environmental chemistry, and linear algebra would be beneficial. And, of course, take geochemistry with Dr. Fenton. Second, be active in your field and build connections. Attend seminars, conferences, and career fairs whenever possible, and make an effort to connect with professionals in your area of interest. Don't forget to talk to your professors either – they want to support you! Establishing a network early in your education can be tremendously useful once you begin shaping your career. But most importantly, do what you love and follow your gut. Feel free to reach out if you have any questions. Best of luck!

Abby Winkler ('22) in the field as a geochemist.

Detrital mineral dating in western Colorado and beyond

- Andres Aslan

For my sabbatical during the Fall semester of 2024, I had two main goals. First, I wanted to advance my research on the Cenozoic landscape evolution of western Colorado and secondly, I worked towards re-organizing the Physical Geology curriculum at the CMU-Montrose campus so that GEOL 111/111L could be offered in Montrose.

My research efforts focused on the use of detrital-mineral dating to improve our understanding of Cenozoic landscape evolution in our area by using a combination of sanidine 40Ar/39Ar and zircon U-Pb geochronology. These efforts included field work involving multiple collaborators and CMU geology students as well as lab work utilizing mass spectrometers at New Mexico Tech (Socorro) and Boise State University. Specific projects and collaborators included: 1) the Telluride Conglomerate near Montrose and the Lizardhead Pass area with Steve Cumella, former CMU geology student **Aaron Orelup ('22)** and current students **Grant Barnes** and **Adam Tuck**; 2) river gravels of the ancestral Gunnison River located near the Black Canyon of the Gunnison (Poverty Mesa) with professor **Rex Cole**, former student **Coral Copenhaver ('24)** and current student **Morgan Sholes**; 3) paleoaltimetry of San Juan volcanic tuffs in the Gunnison area with Allen Stork (Western State), Dave Marchetti (Western State), and Majie Fan (UT-Dallas); 4) the Goodenough unit (Grand Mesa) in collaboration with **Rex Cole** and former student **MJ Winey ('23)**; 5) the age of the Uinta Formation using a core sample donated by Jerry Daub (GJGS; Daub and Associates) in collaboration with **Rex Cole** and current student **Cait Parks**, and 6) the K/T boundary interval at Shale Ridge (DeBeque) in collaboration with Brann Johnson (GJGS, Texas A&M), current student **Zach Shomers**, and professor **Greg Baker**. Needless to say, I had lots of help in the field and now I have LOTS of samples in my garage!

The overarching objective of all these projects is to provide new information on the age and provenance of several poorly dated sedimentary units in our area, which will form the basis for interpreting the evolution of the western Colorado landscape. The 40Ar/39Ar sanidine dating efforts were carried out at the Argon Geochronology Lab at New Mexico Tech in Socorro with the gracious help of my collaborators Drs. Matt Heizler and Julia Ricci. Current students **Grant Barnes**, **Adam Tuck**, and **Morgan Sholes** accompanied me to New Mexico Tech to work in the lab. The U-Pb zircon dating was completed at Boise State University where I discovered the amazing geochronology facility run by Professor Mark Schmitz and his research team (special thanks to Darrin Schwartz!). **Grant Barnes** and **Morgan Sholes** also worked in the detrital zircon lab at Boise State. Funding for all of the work and student participation has come from the Unconventional Energy Center at CMU and the Colorado Geological Survey. Thank you!!

These research projects are in various stages of completion, but our research team has two papers in review in Geosphere, one paper in review in the American Journal of Science, and a fourth paper in review in The Mountain Geologist. I also presented some of our results at the national Geological Society of America meeting in Anaheim, CA and students and I will make additional presentations at the upcoming San Antonio GSA meeting in 2025. At last, some of the data that we've accumulated over the past few years is close to final publication. But to be honest, I accumulated so much new data during my sabbatical that now I need another sabbatical!

I also spent part of my sabbatical designing field trips and lab assignments with the purpose of offering Physical Geology and Lab (GEOL 111/111L) at the CMU-Montrose campus. Interest in the geology of the Montrose area is clearly evident. We had ~50 participants at the 2024 Fall GJGS Chenoweth Field Trip to the Montrose-Blue Mesa area of which I was a co-leader. The Montrose campus field trips that I put together are an outgrowth of the Chenoweth Field Trip. I also collected a wide

variety of rock samples from the greater Montrose area for lab exercises with the idea that students will be more engaged in rock identification if they are looking at samples from areas with which they have familiarity (e.g., Black Canyon, Uncompahgre Plateau, San Juan Mts). Currently I am teaching a section of GEOL 111/111L and I hope the Geoscience Program's presence can continue to grow at CMU-Montrose.

I also spent several weeks on a tour of Iceland (for fun), and the trip exceeded all my expectations. If you haven't been – go! Iceland is a combination of Hawaii and Yellowstone and gives a glimpse into what it would be like to live through an Ice Age. It was a thrill to visit geologic sites such as the Mid-Atlantic rift valley, Geysir (the origin of our term Geyser), Sandur (a geomorphic term for glacial outwash plain) as well as numerous volcanoes, glaciers, and waterfalls several of which were sets for scenes from movies/shows like Vikings, Game of Thrones, and Prometheus. One fascinating fact about the landscapes of Iceland is that because Iceland was completely buried by ice during the Ice Ages most of the volcanic eruptions that have taken place during this time were subglacial. Most of the magma never saw the light of day – bedded basalt flows locally veneer plateaus but much of the upland areas are represented by chaotic masses of structureless or contorted basalt that cooled beneath the ice. Only the biggest eruptions have pierced the ice caps such as during the 2010 Eyjafjallajokull eruption, which disrupted air traffic between the U.S. and Europe. Lastly, I was able to see one of the eruptions on the Reykjanes Peninsula (only ~30 miles from downtown Reykjavik – crazy!). Honestly, I'm ready to go back if anyone wants to go!

Andres, Adam Tuck, Morgan Sholes, and Grant Barnes at New Mexico Tech

Andres visiting the ca. 2500 yr BP Hverfjall cinder cone near Lake Myvatn

Andres at the foot of the Eyjafjallajokull volcano, which is capped by the Vatnajokull Ice Cap.

The August 23, 2024 fissure eruption south of Reykjavik

Geothermal International Energy Conference

- Javier Tellez

Last summer I attended the Geothermal International Energy Conference in Reykjavík, Iceland, with support from a grant through the Unconventional Energy Center at Colorado Mesa University. This conference provided a valuable opportunity to engage with global experts, explore advancements in geothermal technology, and gain insights that directly inform my research and teaching.

As part of the conference, I participated in field trips to two of Iceland's most significant energy sites. The first of these, Hellisheiði, is one of the world's largest geothermal power plants. We were able to observe firsthand how high-enthalpy geothermal systems are efficiently harnessed for large-scale power generation. We also toured Carbfix, the world's largest CO_2 sequestration facility, where cutting-edge technology is used to mineralize and store CO_2 in basaltic bedrock. This is an approach that has significant potential for carbon management in energy production.

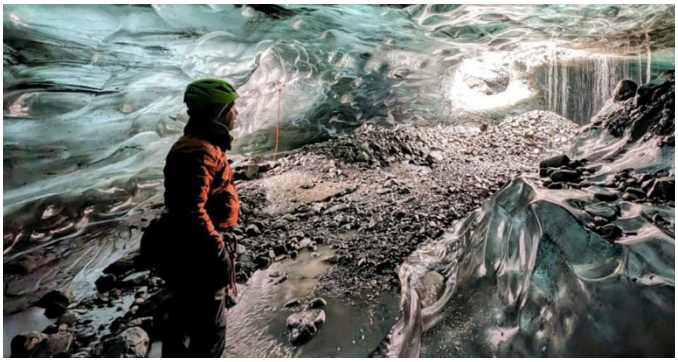
Throughout the conference I attended multiple panels discussing advancements in geothermal technologies, policy frameworks, and strategies for integrating geothermal into existing energy grids. A session of particular relevance focused on Colorado's challenges in transitioning to geothermal energy, especially on the Western Slope. The discussion highlighted both the technical and economic hurdles in unlocking the region's geothermal potential and reinforced the need for continued research and collaboration to develop viable solutions.

Beyond the conference, I also had the opportunity to explore Iceland's spectacular geology; a natural laboratory for understanding volcanic and geothermal processes. I visited glaciers, volcanoes, columnar basalt formations, and stunning waterfalls, witnessing firsthand the powerful geological forces that have shaped the island. These experiences provided additional perspective on the interplay between volcanism, hydrothermal activity, and reservoir development, further enriching my research in geothermal energy applications.

The images and videos taken during these geological explorations are now valuable teaching tools in CMU classrooms, helping students visualize key geologic processes. We use them to illustrate lava flows, volcanic activity, divergent tectonic boundaries, and basaltic formations. Notably, the basaltic lava flow formations in Iceland can be used as an excellent comparison to the ~10 Ma basalt flows that cap the Grand Mesa. Integrating real-world examples from Iceland into lectures helps students connect global geologic phenomena to local formations, enhancing their understanding of Earth's dynamic processes.

The knowledge and experiences I gained from the conference and field trips will directly influence coursework, research opportunities, and field trips for students interested in energy solutions and geological sciences. By integrating lessons from Iceland's advanced geothermal infrastructure, CO_2 sequestration methods, and unique geological features, students will be better equipped to explore not only geothermal, but multiple energy applications in Colorado and beyond. Exposing students to global best practices, emerging technologies, and the increasing focus on energy safety ensures they are better prepared to meaningfully contribute to the future of energy development.

Javier at the wellhead of a geothermal well (left), main entrance of the Hellisheiði geothermal plant (upper right) and its extensive well and pipeline infrastructure (lower right). This facility, the largest of its kind, harnesses Iceland's vast geothermal resources for sustainable energy production, offering valuable insights for geothermal development in Colorado.



From the Coodinator's Corner

- Cassandra Fenton

Hi Geo Folks!

There's been a lot of great teamwork in our program this semester, and we're excited to share some of the highlights with you. Here are a few key activities and events from the Geosciences Program this spring:

Geosciences faculty continue to create valuable learning opportunities for our students through events and field trips. In early February, we hosted our second GeoConnect: Faculty and Student Meetup, where we welcomed **Dr. Andres Aslan** back from his sabbatical and introduced him to our current cohort of majors who had not yet met him. The gathering also provided students with another informal opportunity to meet with all of our Geosciences faculty. We discussed undergraduate research opportunities across the various fields our faculty specialize in. The event saw great turnout, with many new connections forming between first-year and upper-level majors.

Colorado Mesa University and our Geosciences Program had the honor of hosting Dr. John Kappelman from the Department of Anthropology and Earth and Planetary Sciences at the University of Texas at Austin. He delivered two captivating talks titled 'How Lucy Lived, and Died, and Why it Matters' and 'Adaptive Foraging Behaviors in the Horn of Africa during the Toba Supereruption'. The first talk, hosted as part of CMU's Faculty Colloquium series, attracted an interdisciplinary audience from across campus. We are grateful to Dr. Kappelman for sharing his groundbreaking research, engaging presentations, and excellent sense of humor with our students and faculty. A special thanks to **Dr. Wade Aubin** for coordinating Dr. Kappelman's visit!

Dr. Kerry Riley and her Hydrology and River Dynamics (GEOL 414/414L) students invited me and my WeCSIP undergraduate research students to join them on Grand Mesa in February. Together, we worked on digging snow pits, calculating snow-water equivalents, and collecting snow samples for stable isotope analysis. The snow data will be shared with students in my GEOL 351 Applied Geochemistry course. This hands-on, interdisciplinary learning experience provided an opportunity to explore various aspects of the hydrologic cycle in the upper Colorado River Basin's water resources. We connected the physical presence of the snowpack with isotopic tracking of moisture sources. We look forward to continuing this valuable fieldwork every winter.

In March, **Dr. Wade Aubin** and I led a field trip to Arches National Park, where we explored and studied the fascinating geology that makes the park so unique. We took students from our GEOL 111 Principles of Physical Geology classes and several MavRocks geology club members. **Dr. Larry Jones** (adjunct instructor at the CMU Montrose campus) and Dr. Kappelman joined us for the day. Students learned about salt tectonics and the geologic history of the park, observing relay faults, tipping points, joints, faults, grabens, and various types of natural arch formations. The weather was fantastic, but the geology was even better.

In April, **Dr. Verner Johnson**, **Dr. Andres Aslan**, **Michael Feil ('16)** , **Ben Havemann ('13)** , and **Caden Anderson ('21)** contributed to and co-led our annual, spring Adam Trumbo Memorial Field Trip, joined by **Dr. Rick Livaccari**, who took a brief break from retirement to share his structural geology research on Unaweep Canyon. This trip also provided an excellent opportunity to showcase **Dr. Johnson's** years of research, including his work with **Adam Trumbo**, on mineralization in sandstones and fault zones in the region.

Dr. Johnson and **Dr. Javier Tellez** have been doing some exciting work in the Geophysics class this semester, working together to teach cutting-edge technologies like PETREL software for applications to 3D seismic interpretation in our

Geophysics course (GEOL 404/404L). This has given students an invaluable opportunity to get hands-on experience with industry-standard tools, preparing them for real-world applications and giving them résumé ready skills.

Dr. Tellez has been leading a transformative effort to create shared learning spaces that we can all take pride in. (Remember WS 154? It's got a whole new look!) His focus has been on fostering an environment that benefits both faculty and students. Dr. Tellez has transformed our spaces into well-organized hubs where learning materials are easily accessible and ready for everyone to use. These improvements go beyond just tidying up; they're about creating a more collaborative and accessible environment that enhances the learning experience for everyone involved.

Dr. Tellez has also teamed up with our alumna, **Alexandra Price ('15)** from Veridien, to secure a generous donation of geophysical and geochemical data that will support a variety of student and faculty research projects.

It's great to see this level of collaboration and innovation!

Thanks to the generosity of our community, including the Grand Junction Geological Society and the Grand Junction Gem and Mineral Club, we were able to sponsor another successful scholarship season for our students. Nearly $40,000 in scholarships and awards will be distributed this spring, which will help significantly offset the cost of summer field camp for our students. Their hard work, coupled with the generous support of our community, truly makes a difference!

Finally, I'd like to share an inspiring message from a student who recently reached out to me via email:

"I am overwhelmingly happy with the experience I have had with the CMU Geosciences faculty. I tried to pursue a geoscience degree at another school, and the faculty was disconnected, but that has not been the experience I've had at CMU. You, along with the rest of the geoscience faculty, are a true inspiration, and I am happy to know each of you."

These words highlight the profound impact our faculty and community have on our students. I thank all of our faculty, students, alumni, and community members for making the Geosciences Program at CMU so exceptional. Your support, dedication, and passion are truly what set us apart. Thanks for being awesome!

Sincerely, Cassandra Fenton
Geosciences Program Coordinator

MavRocks!

- Javier Tellez

The MavRocks Geosciences Club, under the guidance of **Dr. Javier Tellez**, has remained dedicated to creating a diverse range of events that blend learning with fun. With activities tailored to students at all levels, the club ensures there's something for everyone passionate about geosciences.

One of the club's standout initiatives last semesters was the Senior Student Spotlight on our Instagram page. This feature highlights senior students, giving them a platform to share their experiences, achievements, and future goals. By showcasing their journeys, it offers valuable insights into internships, research opportunities, and career paths, helping newer students navigate their academic and professional futures. Beyond being informative, the spotlight fosters a strong sense of community, celebrating the accomplishments of seniors as they prepare for the next chapter of their careers.

Every semester, we host a Meet and Greet with Faculty, which has become a favorite among students. These informal gatherings, held over pizza and soda, provide a relaxed space for students to connect with professors, ask questions about coursework, research, and career opportunities, and build meaningful relationships with faculty. Many students have found mentorship and research collaborations through these interactions, strengthening their academic and professional growth.

To support academic success, the club organizes study sessions, where students collaborate on assignments, prepare for exams, and share strategies for tackling challenging coursework. Upper-level students often participate, offering guidance and study tips, making these sessions particularly beneficial for those navigating demanding geoscience courses.

For those who enjoy the outdoors, MavRocks organizes hikes to Eagles Wing, Mica Mine, and other scenic trails around Grand Junction. These outings combine geology discussions with adventure, allowing students to apply their classroom knowledge in a real-world setting while exploring the region's natural beauty. The club also hosts movie nights, featuring both popular films and geology-themed documentaries, creating a casual space for students to relax and bond outside of the classroom.

A major highlight last November was a Python programming workshop, co-hosted with RMAG and led by Matthew Bauer. This course introduced students to coding for geoscience applications, covering data analysis and modeling techniques. With 20 students and alumni in attendance, the workshop was a great success, equipping participants with valuable technical skills applicable to research and industry.

Beyond academics, MavRocks fosters community through social events. Our Game Nights bring students together for friendly competition, while our Rock and Mineral Swap/Trade events allow geology enthusiasts to exchange specimens and knowledge. In the fall, we celebrated Halloween with a Costume Competition, where nearly all the faculty participated, making it a fun and memorable event!

Through these initiatives, the MavRocks Geosciences Club continues to provide an engaging and inclusive environment, where students can grow academically, build professional connections, and form lasting friendships. Whether you're hiking, coding, studying, or just enjoying a movie night, there's always something exciting happening!

MavRocks students and officers **Jacob Kitchens**, **Grant Barnes** and **Morgan Sholes** in one of the club activities (left). Game night with students (upper right). Outreach with elementary school students (lower right).

The activities and events that MavRocks sponsors for our amazing students relies on support from generous donations. If you would like to donate to MavRocks, please use the QR code below and follow the donation link.

New Course!! GEOL 470: Drone Explorations on Earth

- Greg Baker

After teaching a GEOL496: TOPICS course related to drone applications Earth Sciences three times over the past several years, with typically 12 upper-level undergraduates from various majors each time, **Dr. Greg Baker** finally received permission for an official permanent course number, GEOL470. This new 3-credit course, Drone Explorations on Earth, will officially be taught for the first time in Spring 2026, and in addition to being a new upper-level elective in the BS Geosciences degree and GIST Minor, will be used as a petitioned elective (as has been done in the past for numerous students) in Environmental Sciences, Anthropology and degrees from other majors across CMU campus.

Drone-related courses (involving sUAS, or small-unmanned aerial systems, according to the FAA) typically revolve around the mechanics of drones, the particulars of software, and basic data acquisition. The new GEOL470 course is designed to instead focus on allowing students to stay up to date with the applications of drone-related data in their field. Specifically, this course-based undergraduate research experience (CURE) culminates with students giving oral presentations and written reports on a semester-long Earth-science project of their choosing. As a result, students will not only understand the specific details of hardware & software but will also be able to use quantitative analysis of drone data through acquisition planning, data analysis, and data interpretation for hypothesis testing, all while experiencing a diverse array of applications/techniques through the projects of their peers.

Three course components include (i) the basics (FAA and other government rules & regulations, hardware, and software), (ii) applications of drone data (landscape analysis, archaeology, environmental monitoring, geologic mapping, water resources, etc.), and (iii) details of quantitative data analyses (spatial, multispectral, LiDAR, thermal, visualization). Students develop both oral & written reporting of their semester-long final projects (including interim reporting to the class), occasionally dovetailing and enhancing existing research projects with other professors.

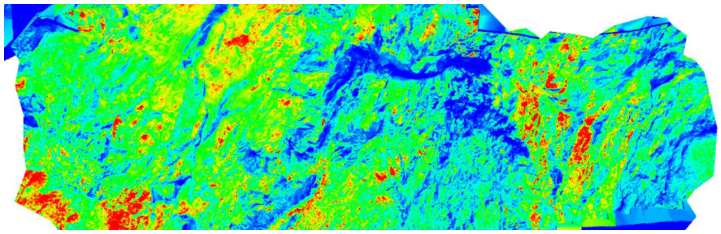
Upon satisfactory completion of this course, the students are expected to: Articulate and demonstrate current USA rules & regulations based on FAA Part 107 and associated safe-flying practices (Specialized Knowledge/Applied Learning); Acquire photogrammetric data using an sUAS (“drone”) (Specialized Knowledge/Applied Learning); Analyze and evaluate photogrammetric data to examine resulting models of the Earth surface & features (Critical Thinking); Devise and formulate a data acquisition, processing, and analyses plan using sUAS (“drones”) to test hypotheses related to Earth Science phenomena (Critical Thinking); and Summarize results of sUAS-based hypotheses testing with an oral presentation and written report (Communication Fluency/Information Literacy).

Some recent example final projects include:

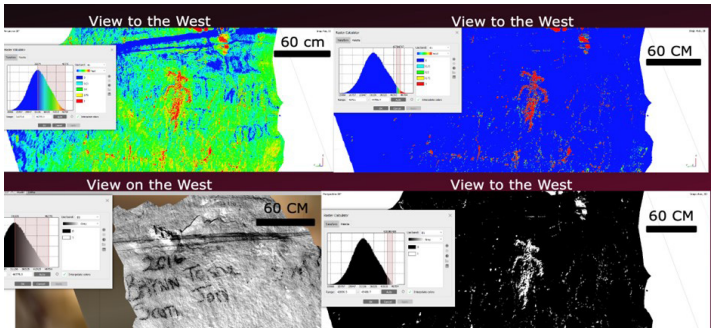
- The Use of Multispectral Drone Imagery in Mica Mines for Remote Mineral Identification
- Identifying Possible Locations of the Teller Indian School Cemetery Using sUAS-Derived and Publicly Available Aerial Imagery
- The Use of sUAS in the Time-lapse and Analysis of Burn Scar Slope Failure at Lapham Canyon, Colorado

- Using Orthoimagery to Measure Seasonal Mesoscale Changes in Snow Depth in Variable Real-World Terrain, Off S 16 ½ Road in Glade Park Colorado
- Assessing Spatial Estimates of Mass Wasting Debris for Modifying Whitewater Rafting Routes in the Colorado River Using Drones
- Digitally Restoring Petroglyphs through multispectral imaging

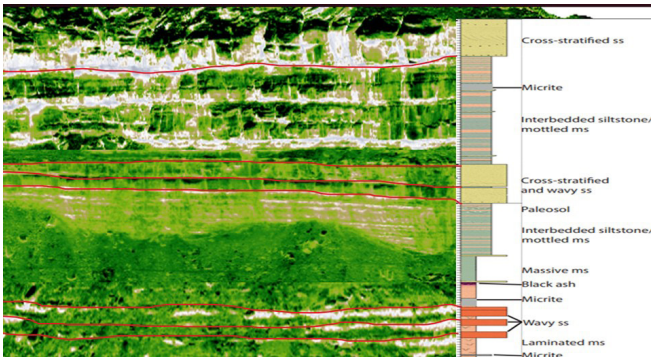
by using a Small Unmanned Aircraft Systems (sUAS)
- Drone (sUAS) Multispectral Imaging of Human Footprints for Enhanced Forensic Site Investigation
- Using sUAS multispectral camera to Identify Formations Present in the Dominguez – Escalante National Conservation Area, CO



Orthomosaic of the eastern wall at Mica Mine (roughly 30m x 8m) showing multiband spectral mixing of the blue band and near-infrared in false-color imagery. Imagery results compared with petrographic analyses of the outcrop indicated a close link between quartz (red), plagioclase (green), and mica (blue). [Work by by **Hunter Stewart** in 2023]



Example of digital petroglyph reconstruction at a site with graffiti damage. Multispectral band separation can be used to isolate graffiti currently covering the petroglyph (bottom left) from the underlying petroglyph (top, and bottom right) at the same location, due to variability in wavelength reflectance. [Work by **Casey Davis** in 2024]



Enhanced correlation of band-mixed multispectral imagery of the Wanakah Formation in Dominquez Canyon with known stratigraphic variability. [Work by **Maddie Bishop** in 2024]

Student Research!

As part of their curriculum, CMU Geosciences students are required to take a geology course called Senior Seminar. This course is intended to teach students how to develop, execute, and complete a research project, and produce a written report of their research. Some students turn their research into an Honors Thesis. It affords students a unique opportunity to work closely with one or more faculty members, as well as an experience that can be significantly valuable in the workforce or when applying to graduate studies. It also provides faculty with an opportunity to mentor and coach students in research. The course is taught by Dr. Andres Aslan, and all faculty members have students conducting research with them on a wide variety of topics.

Students conducting research with Dr. Verner C. Johnson

Addison Early (graduation May '25). Addison is researching the structural analysis of the faults and mineral zones in the northwestern Uncompahgre Plateau. He collected structural data from outcrops along the Ryan Park Fault in the Pinon Mesa – Ryan Park area to better understand the lateral movement along the fractured zones related to the faulting activities. This was likely caused by uplift of the Uncompahgre Plateau during the Laramide Orogeny, or by the creation of the La Sal mountains during the Oligocene, which caused the principal stress orientations of our entire project area to shift.

Kyle Scheve (graduation May '27). Kyle is currently doing geophysical and geological research in the Hummingbird Mine area in the Unaweep Canyon. He used our GEM Magnetometer to collect magnetic data in the field. After the data was gathered, it was uploaded to ArcGIS Pro where it is being processed and used to create preliminary maps that could further help us to locate potential magnetic anomalies in our areas of interest. This will help us identify magnetic anomalies above the Hummingbird Mine area, that are spatially associated with zones of structural deformation and intense silicification, including mineral zones.

Students conducting research with Dr. Andres Aslan

Morgan Sholes (graduation May '25). Morgan is studying the age and origin of ancient river gravels on Poverty Mesa, located on the western edge of the Gunnison uplift near the Black Canyon. Morgan is using a combination of detrital sanidine 40Ar/39Ar and detrital zircon U-Pb geochronology to interpret the age and origin of the river gravels. The gravels could represent an ancestral Gunnison River deposit and may provide evidence for localized post-Laramide uplift of the Black Canyon.

Cait Parks (graduation May '25). Cait is using a core sample of the Uinta Formation from the north-central Piceance Basin (donated by Daub and Associates) combined with detrital sanidine 40Ar/39Ar and detrital zircon U-Pb geochronology to produce the first radiometric age constraints for the Uinta Formation in the Piceance Basin.

Grant Barnes (graduation May '26). Grant is researching the provenance of the Telluride Conglomerate at Sheep Mountain in the Lizardhead Pass area using a combination of gravel compositions along with detrital zircon U-Pb geochronology. Sheep Mountain represents the thickest section of the Telluride Conglomerate in the region. These deposits probably record a combination of uplift of the Needle Mountains and other sediment sources including a late Cretaceous volcanic field that once existed in the San Juan region.

Adam Tuck & Jordan Ruffner (graduation May '26). Adam and Jordan are conducting research on the Goodenough unit, which underlies late Miocene basalt flows of Grand

Mesa and overlies the Eocene Green River Formation. They are using detrital sanidine 40Ar/39Ar geochronology to evaluate the minimum and maximum ages for this enigmatic unit, which probably represents an episode of post-Laramide uplift(?) and filling of the southern Piceance Basin.

XDGEO research group - Supervisor Dr. Javier Tellez

Liam Posovich (Honor Thesis) – Completed – Spring 2024

Evaluation of Petrophysical Heterogeneity within Fluvial Architectural Elements of The Cretaceous Burro Canyon Formation, Piceance Basin, Colorado

Summary: The project aims to enhance reservoir characterization of the Lower Cretaceous Burro Canyon Formation by integrating high-resolution field data with advanced 3D modeling techniques. Using traditional field methods and UAV photogrammetry, a detailed 3D model was developed in Petrel software to accurately capture stratigraphic and petrophysical variations. This model improves the understanding of lithofacies distribution, porosity, and permeability, essential for predicting fluid flow behavior in the reservoir. By refining fine-scale heterogeneity, the study optimizes reservoir management strategies for hydrocarbon extraction, groundwater management, and carbon sequestration.

Michael Longworth (Research) – In Progress – expected Spring 2026

Exploring Geothermal Potential for Geo-Exchange and Hydrothermal Sedimentary Aquifer Projects (HSA) in the Piceance Basin, Colorado

Summary: This research aims to identify areas within the Piceance Basin with high geothermal gradient potential to repurpose existing oil and gas wells for geothermal energy extraction. The study evaluates whether this resource could support heating and cooling systems in public buildings across Mesa and Garfield counties, Colorado, using publicly available USGS well log data. A workflow was developed to integrate subsurface data and assess hot sedimentary aquifers, focusing on key formations such as Williams Fork, Iles, Dakota, and Burro Canyon. We have identified that organic-rich lithologies, such as the Cameo coal, influence geothermal gradients, with the highest temperatures observed in the south and southwest margins of the basin, providing a basis for future geo-exchange projects.

Maddie Bishop (Senior Thesis) – In progress – expected Spring 2025

Multispectral UAS-Based Analysis of Fluvial Sandstones and Stratigraphic Architecture of the Upper Cretaceous Williams Fork Formation, Colorado

Summary: This research aims to analyze the stratigraphic architecture and lithological distribution of the Lower Williams Fork Formation using multispectral unmanned aerial system (UAS) data and 3D geological modeling. Outcrop data from Main Canyon, Piceance Basin, Colorado, were collected and processed to generate high-resolution stratigraphic and lithological models, improving interpretations of fluvial sandstone connectivity and depositional environments. Multispectral imaging was used to differentiate lithologies based on mineralogical compositions, while photogrammetric techniques enhanced the resolution and spatial accuracy of the models. By integrating remote sensing with traditional field methods, this study refines subsurface correlations, depositional reconstructions, and reservoir connectivity analysis, with applications in sedimentology, petroleum geology, and environmental geoscience.

Kyle Scheve (Research) – In progress – expected Spring 2026

Enhancing Accessibility in Geoscience Education: Immersive Virtual Field Trips for Inclusive Learning

Summary: This research aims to enhance accessibility in geoscience education by developing immersive virtual field trips that provide an inclusive alternative to traditional field-based learning. Using three high-quality cameras, the project captures first- and second-person perspectives along with wide-angle footage to replicate the on-site experience. An instructor and a student guide the virtual experience, incorporating faculty commentary, interactive maps, and supplementary resources to enrich learning. These virtual field trips support students with physical disabilities, scheduling conflicts, or remote learning needs, ensuring broader access to geoscience education, including online Essential Learning courses.

Students conducting research with Dr. Cassie Fenton

Each of these students is contributing to the **WeCSIP research project** (Western Colorado Stable Isotopes in Precipitation Network), focused on the stable isotopic characterization of precipitation (snow and rain) on Colorado's western slope.

Andrew Christianson (graduation May '25). Andrew is investigating what drives seasonal changes in precipitation isotopes across the Upper Colorado River Basin. He's analyzing d-excess, δD, and $\delta^{18}O$ values from sites in Cedaredge, Grand Mesa, Grand Junction, and Fruita, CO, and comparing them with published data from Gunnison, Kremmling, CO, and Moab, UT. By examining seasonal patterns, Andrew aims to show that elevation is the primary control on d-excess, while also watching for influences from ENSO, monsoons, atmospheric rivers, and snowpack processes.

Brittlyn O'Dell (graduation May '25). Brittlyn is exploring how snowpack processes shape the isotopic signature of alpine snow. By analyzing δD and $\delta^{18}O$ in fresh snow and snow pit samples, she's tracking how values change with depth—and over time. Her work sheds light on how melting, refreezing, sublimation, wind, and vapor movement all impact the isotopes that help tell the story of snowpack evolution.

Steffen Teutsch (graduation December '26). Steffen is investigating how δD and $\delta^{18}O$ values in the Colorado and Gunnison Rivers reveal the influence of snowmelt and groundwater. By analyzing isotope ratios in surface water from nine sites across the Grand Mesa and Grand Valley—and comparing them to isotope signatures from Colorado snowpack and published groundwater data—he aims to untangle the relative contributions of snowpack meltwater and groundwater to river and stream discharge around Grand Junction, CO.

List of recent students and research 2024-present under lead supervisor Dr. Greg Baker

Casey Davis (Research) – Completed – Spring 2024

Publication submitted for peer review in Spring 2025

Restoring Petroglyphs by using a Small Unmanned Aircraft System (sUAS)

Summary: Petroglyphs are not only valuable archaeological artifacts, but they also hold immense historical and cultural significance. The use of multispectral sUAS to renew petroglyphs is intended to assist archaeologists in identifying petroglyphs which have deteriorated over time due to erosion and graffiti. To perform this experiment, multispectral drone (sUAS) imagery of four petroglyph clusters damaged by graffiti and erosion were collected at Rough Canyon Trail and compare the petroglyphs to standard RGB (red, green, blue)

images. The Rough Canyon petroglyphs appear to be Archaic in style (7,000 B.C. - 400 A.D.). They also appear pecked onto the rock instead of scratched or carved. However, several instances of chalk, charcoal, abrasion, and other destructive forms of graffiti have been perpetrated upon the petroglyphs. In an attempt to restore "pre-damage" reconstructions of the original features, sUAS data were collected using a multispectral camera with five distinct bands (blue, green, red, red edge, and near infrared). Detailed band-separation of spectral reflectivity using isolated multispectral analysis was able to separate out reflectivity bands dominated by the original petroglyphs relative to the graffiti and other erosional damage. The resulting images yielded fairly "clean" representations of the original features, when compared to other similar undistorted petroglyphs.

Lauren Martin (Research) – Completed – Spring 2024

Public Presentation: Hanson, G.Q., Martin, L., and Baker, G.S., 2024, First-order estimates of high-flow stream flooding discharge from competence measurements using time-lapse drone (sUAS) orthomosaic imagery, Mesa County, Colorado USA: Geological Society of America Abstract Program, Vol. 56, No. 5. doi: 10.1130/abs/2024AM-404888.

Using Drones to Estimate Peak Discharge in the Colorado River via Competence Measurements

Summary: Drones can be used is a multitude of applications, including quantifying peak discharge in streams, which is critical to flood prediction especially in regions (like the Western Slope of Colorado) with potentially high ephemeral stream discharge. However, methodologies for determining flood-stage flow in ephemeral stream is difficult. We hypothesized that drone (sUAS) data can be used to estimate peak discharge required to move coarse sediment in a river (known as competence). Calculated high flows found using a drone were similar to the high flows found using official stream gauges in the Colorado River, verifying the new methodology. Predicting high flows could be incredibly useful in areas that are prone to flooding and that have homes, businesses, and agriculture near a stream. By knowing the high flows before they happen, policy makers can make informed decisions about flood prevention and funding allocations if necessary.

Janelle Pethick (Research) – Completed – Spring 2024

Publication submission in prep for peer review in Summer 2025

Public Presentation: Pethick, J. and Baker., G.S., 2024, Drone (sUAS) multispectral imaging of human footprints for enhanced forensic site investigation: Presented at the 2023 Colorado Mesa University 15th Annual Student Showcase, April 26th 2024.

Drone (sUAS) Multispectral Imaging of Human Footprints for Enhanced Forensic Site Investigation

Summary: Small unmanned aircraft systems (sUAS), often referred to as "drones", are useful in helping forensic investigators with preliminary crime-scene site investigations. Using sUAS as a tool in forensics is being increasingly applied to (i) improve site safety exploration (if in rough or dangerous terrain) and/or (ii) eliminate contamination of the scene with other post-crime foot traffic. Although standard RGB (red, green, blue) photography and videography is already in use, this study proposes using multispectral and differencing of RGB images to enhance results. Specifically, collecting sUAS data at a test site using a multispectral camera with five distinct bands (blue, green, red, red edge, and near infrared) for detection of shoe tracks/prints in various substrates. Multispectral imaging allows for enhanced visualization of subtle features often less visible in standard RGB imagery. The experiment—with multiple trials of footprints—was conducted at a test site over three different substrates: dry dirt, mud (wet dirt), and gravel. Multispectral orthomosaic imagery using sUAS was analyzed to develop the optimal wavelength combination through a

normalized residual differencing method. Results highlight visible footprints with both multispectral and RGB images.

KennaLee Worster (Senior Thesis) – Complete – Spring 2024

Awarded 1st-Place Undergraduate Presentation by the Hydrogeology Division at the Geological Society of America national conference in 2023.

Public Presentation: Worster, K. and Baker, G.S., 2023, Application of RGB and multispectral drone (sUAS) photogrammetry of alluvial fans in the Grand Valley of Colorado USA for detecting shallowly-buried channel features that may act as groundwater conduits: Geological Society of America Abstracts with Programs, Vol. 55, No. 6. doi: 10.1130/abs/2023AM-395359.

Application of RGB and multispectral drone (sUAS) photogrammetry of alluvial fans in the Grand Valley of Colorado USA for detecting shallowly-buried channel features that may act as groundwater conduits

Summary: Identifying shallow subsurface pathways of groundwater within alluvial fans is important for both fresh- and contaminated-water studies. Understanding the characteristics and behavior of paleochannels is essential for effective groundwater management and conservation efforts, and are especially critical in semi-arid environments such as the Grand Valley of the Western Slope of Colorado. Application of drone (sUAS) technologies can provide additional insights. Drone flights were conducted with a 20-megapixel RGB camera (for DEM analysis) and an RTK multispectral drone with 2-megapixel RGB, blue, green, red, red edge, and near infrared (NIR) cameras. Band-mixing results of the multispectral imagery, primarily through normalized-residual-differencing of selected bands, were compared to identify the clearest arrangement for highlighting surface reflectivity variations. At the test site, differencing the Blue and NIR bands (Blue-NIR)2 / (Blue+NIR)2 yielded the best expression of surface reflectivity variations hypothesized as a proxy for shallow (<1m) subsurface sedimentological variations.

Cole Beyers (Honors Thesis) – In progress – expected Spring 2025

Determination of Mesoscopic Fracture Kinematics from Drone-based Remote Sensing in Unaweep Canyon, Western Colorado, USA

Summary: Advancements in drone-based LiDAR and photogrammetry have revolutionized structural geology by enabling high-resolution mapping and fracture pattern analysis. Traditional field methods for analyzing fracture networks are often time-consuming, subject to human error, and/or impossible due to inaccessibility, whereas drone-based techniques provide a more efficient and accurate alternative. This study focuses on measuring orientations of surface fractures using drone-based LiDAR and photogrammetry near Unaweep Canyon, Colorado. A DJI M350 RTK drone equipped with a Zenmuse L2 LiDAR system and high-resolution RGB camera is used to collect spatial data to generate digital elevation models and fracture maps. The datasets will be analyzed using MATLAB FracPaQ to quantify fracture orientation, density, and length. Additionally, traditional field measurements via scanlines will be conducted to validate remote sensing results. By comparing drone-derived fracture data with field-collected measurements to determine kinematics, this study can evaluate the effectiveness of remote sensing techniques in structural analysis.

Graceanne Hanson (Honors Thesis) – In Progress – expected Spring 2025

Public Presentation: Hanson, G.Q., Martin, L., and Baker, G.S., 2024, First-order estimates of high-flow stream flooding discharge from competence measurements using time-lapse

drone (sUAS) orthomosaic imagery, Mesa County, Colorado USA: Geological Society of America Abstract Program, Vol. 56, No. 5. doi: 10.1130/abs/2024AM-404888.

Estimates of high-flow stream flood discharge from competence measurements using drone (sUAS) photogrammetery and LiDAR in an ephemeral stream, Mesa County, Colorado USA

Summary: Western Colorado is a semi-arid environment, known for its desert conditions averaging less than 10 inches (25cm) of precipitation annually. Ephemeral streams, however, supplement the flow of the Colorado River throughout the Grand Valley watershed through numerous tributary channels carved out of the Uncompahgre Plateau. Ephemeral flow is often unpredictable, controlled by large precipitation events and Spring snowmelt runoff. As the city of Grand Junction, Colorado, grows in population, continued development of residences, agricultural acreage, and infrastructure occurs. This growth comes with expanded hazard mitigation, especially when it comes to flood dangers. Ladder Creek, an ephemeral stream popularized by nearby recreation trails and prone to flash flooding, was analyzed to test new drone-based methodologies for determining maximum flooding discharge. These first-order approximations are based on the well-known 6th-power law and yield a well-constrained solution to predicting past highlow (flood) discharge. In this study, drone photogrammetry (using structure-from-motion, SfM, techniques) and LiDAR technology is employed to image the study area and yield quantitative data for analyses.

Zach Shomers (Research) – In progress – expected Spring 2025 (co-advised with Dr. Andres Aslan)

Preliminary Structural Investigation of Laramide-Aged Deformation, South Shale Ridge, Colorado USA

Summary: The timing and origin of structural deformation in strata of the Upper Mesaverde Group (Williams Fork Formation, Ohio Creek interval) as well as in overlaying Cenozoic formations near De Beque, Colorado, have not been well studied. New information on the origin and timing of deformation has implications for improving our understanding of the regional tectonic history. This study aims to determine whether the observed deformation primarily originated during the Late Cretaceous (early phase of the Laramide Orogeny), or at a later time. The research area is located along the western flank of the Piceance Basin and spans the Cretaceous-Paleogene boundary. Field investigations, including ground-based structural measurements of joints, fractures, and faults, are supplemented by high-resolution (<2cm/pixel) RGB and LiDAR drone (sUAS) imagery of the field area. By analyzing stress orientation patterns across the area, this study will determine whether structures align with the known Late Cretaceous stress field or indicate later tectonic influences. Stereonets, as well as further kinematic analysis will provide insights on the deformation history. The results of this study will contribute to the understanding of possible Laramide aged tectonic activity in western Colorado.

Students conducting research with Dr. Wade Aubin

Jacob Kitchens (graduation May '26). Jacob is studying the petrogenesis of post 20 Ma intrusions and dikes in the western San Juan Mountains. Magma compositions change distinctly in this region at ~25 Ma. Earlier intrusive and volcanic rocks have intermediate compositions and a strong crustal Proterozoic signature in their chemistry and in their isotopic ratios. After ~25 Ma compositions are mostly alkaline mafic and felsic magmas that show no evidence of Proterozoic crustal influence. Jacob is using major and minor element chemistry and isotopic variations in several <20 Ma intrusions and associated dikes in the Western San Juans to investigate this change in magmatic compositions.

In April, students from **Dr. Larry Jones'** Geology of Colorado (GEOL 105) class at CMU Montrose had a unique opportunity to explore one of Colorado's active coal mines. Led by Dr. Jones—formerly a geology instructor on the CMU Main Campus—students went underground for a guided tour of the West Elk Coal Mine. Their guide, CMU alumnus and Geosciences graduate **Cody Rapke ('15)**, is now the Chief Geologist at the site. The tour offered students a rare, hands-on experience with geology inside a working coal mine—an unforgettable way to see their classroom learning come to life and a powerful example of a Maverick making an impact in the field.

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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.