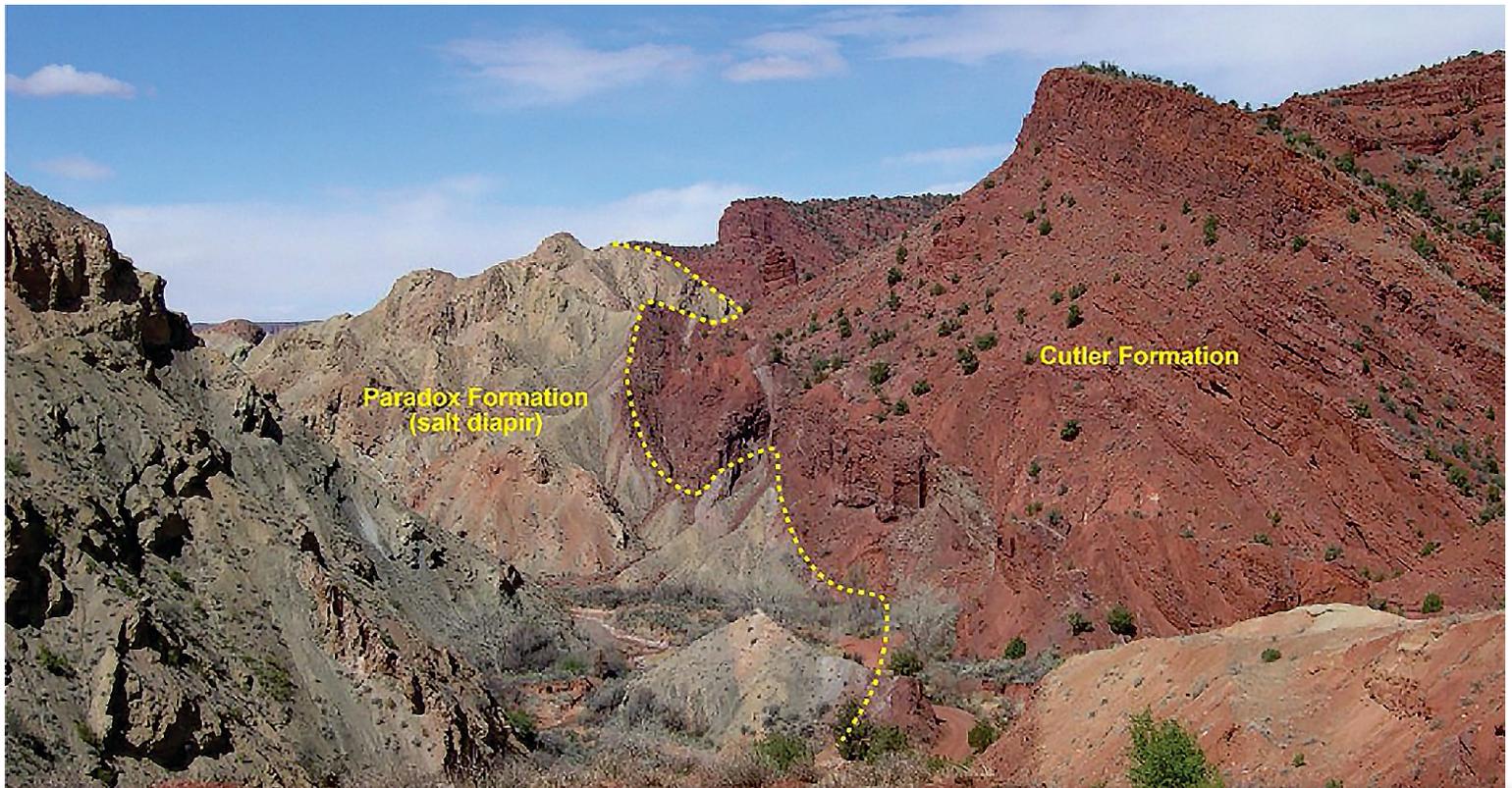


Geosciences Program Newsletter

For students, alumni, and friends of the Geosciences Program
Spring, 2022


COLORADO MESA
UNIVERSITY
Department of Physical and
Environmental Sciences



Onion Creek salt diapir in Professor Valley, Utah – this is the location of the Adam Trumbo Geosciences Program Field Trip on April 16th.

Geo-Linked In: How to Get Your First (or Next) Job in Geosciences - Cassie Fenton

The job market is hot these days! You might be a graduating geology student looking to enter the job market or you might be geology alumni looking for a job with better career opportunities or a higher salary. It's very likely you'll have more than one job in your career path, and it might take time and perseverance to reach that 'dream job' you're aiming for.

We invited two Grand Junction community members, **Dr. Peter Schillig** and **Dr. Javier Tellez** to offer perspective on finding a job in today's environmental and petroleum fields. **Dr. Schillig** works in the Groundwater and Geochemistry Group at RSI EnTech, a local employer here in Grand Junction that is building stronger ties and interaction with the CMU Geosciences Program and our students/alumni. **Dr. Tellez** is an Assistant Professor in our Geosciences Program.

Perspective from the Environmental Industry

- *Dr. Peter Schillig*



Dr. Peter Schillig, RSI EnTech.

Since earning my Ph.D. in 2012, I have worked exclusively in the environmental industry. Presently, I'm a senior hydrogeologist in Grand Junction, Colorado, employed with RSI EnTech, contractor to the U.S. Department of Energy Office of Legacy Management. Prior

to moving to Grand Junction, I worked as a project manager for an engineering design firm near Boston, Massachusetts. During my career, I have conducted site investigations, remedial design evaluations and simulations, and litigation support. At both jobs, I have served as a hiring manager for geoscientists, and I wanted to share a few thoughts with you.

Career tracks and promotional potential in the environmental industry are generally related to your level of formal education. Candidates with bachelor's degrees competing for entry-level geologist positions are somewhat ubiquitous. The more desirable entry-level positions and competitive offers often go to candidates with quantitative skills (e.g., advanced math coursework including differential equations, statistical methods, and/or finite difference methods), higher level chemistry (including organic chemistry), GIS skills, programming skills (R, Python, VBA, etc.), and to candidates who completed a senior thesis. Entry-level jobs usually have a considerable fieldwork component and may include frequent or

prolonged travel. With a bachelor's degree, your career trajectory (and salary growth rate) will likely peak early. With that said, the experiences gained from entry-level positions have a way of focusing your career aspirations, and it is always an option to return to school for an advanced degree if you take time to get some work experience first.

With a graduate degree, you'll find that your career will advance more rapidly than those of peers with undergraduate degrees. In the environmental industry, a thesis-track master's degree is where you'll reach your peak hiring potential for most jobs as you'll have relevant research experience and more refined technical, quantitative, and communication skill sets. Geoscientists with doctoral degrees and/or post-doctoral experience are generally preferred for academic and research positions, though they are frequently sought by private industry to fill the most technically demanding roles. With that said, a Ph.D. will be considered overqualified for entry-level positions that do not require a graduate degree or positions with environmental firms that seek clients with smaller compliance or water rights projects. Regardless, if you choose to pursue a master's or doctoral degree, focus on relevant coursework at the graduate level that includes environmentally focused geology courses such as near-surface geophysics, geobiology, hydrogeology field camp, physical hydrogeology, aqueous geochemistry, groundwater modeling, and contaminant transport. Electives might include computer programming languages, finite difference methods, and hydrology courses in an engineering department. Early in your career, experience and skills learned in these courses will be heavily considered by hiring committees evaluating multiple applicants. Keep in mind that applicants can number in the dozens at the entry-level but drops off considerably for positions that require graduate degrees and/or years of experience (mid-level).

Also, as a final thought, if you choose to work in private industry, it is likely that your employer will strongly encourage you to obtain professional licensure (e.g., Professional Geologist, Professional Engineer, Certified Professional Geologist, Certified Hydrogeologist, etc.).

With the above in mind, here are some tips to consider when applying for your next job:

- *The best jobs go to those with advanced, relevant coursework and quantitative skills.*
- *Your resume is key to getting an interview and must stand out from the competition.*
- *Though painful to draft, cover letters are used to assess your writing ability.*
- *Have a professional review your resume and cover letter prior to submittal.*
- *In an interview, your interpersonal skills must shine to show that you're an (office) cultural fit.*
- *Company reputation is important as it should help set you up for success later.*

Perspective from the Energy Industry - Dr. Javier Tellez

Prior to attending graduate school in geology, I worked as a reservoir geologist for several years at Occidental Oil and Gas, and my experience there made me realize that many jobs in the energy business require fundamental skills combined with knowledge about new technologies used for hydrocarbon exploration.



Geology students at Colorado Mesa University have incredible potential for energy-related jobs. Western Colorado has one-a-of-a-kind outcrops that display the scale and extent of sedimentary deposits, stratigraphic architectures, and structural relationships of deformed rocks. Studying these outcrops provides CMU students with tools and knowledge that make them strong candidates for jobs in energy companies that rely on subsurface data to create, replicate and analyze geological frameworks to reduce uncertainty in hydrocarbon exploration and exploitation.

The energy industry offers many job options for geoscientists. Entry-level positions in geology require at least a bachelor's degree. One popular job to get with a bachelor's degree is mud-logging. A mudlogger describes and identifies rock types and sediment samples in real-time while wells are being drilled. Students are often hired for a mud-logging job without any previous experience. However, most employers do prefer candidates who have spent time in the field looking at and describing sedimentary rocks or working on core descriptions. A second job type is as a geotech. In this position, geologists work compiling data from well-logs, core, and seismic data to create and maintain a robust geologic database. A geotech is also in charge of creating maps and producing technical reports for private companies and governmental organizations. These jobs are essential for the collection, compilation, and management of data obtained from drilled wells, specialized tests, and seismic surveys.

A more specialized set of jobs in energy companies require a master's degree. These jobs provide opportunities to build a successful career within an energy company. When you pursue a master's degree in geosciences (geology, geophysics,

geochemistry, etc.), you obtain specialized skills to work as part of a team. Your team could include geologists, geophysicists, petroleum engineers, mechanical engineers, and finance professionals (to name just a few disciplines). As part of the team, you would work as a reservoir geologist, exploration geologist, seismic interpreter, or geophysicist. You would use fundamental concepts in stratigraphy, sedimentology, structural geology, seismic reflection, and well-log interpretation to contribute to the company's multidisciplinary team.

Students interested in applying as a geoscientist for an energy-related job should acquire and grow the following technical skills to help themselves stand out in the job market:

- *Structural and stratigraphic mapping and interpretation*
- *Core description and well-log interpretation*
- *Seismic reflection interpretation*
- *Data analysis*
- *Basic Coding, R, or Python*

Start looking for opportunities to work while studying. Students can find internships while still in school to learn alongside professional geologists. Volunteering, attending conferences, and signing up for professional organizations will grow your network and make it easier to know about available positions firsthand or even get a recommendation for a job.

Final reminders:

- *Create a professional LinkedIn account and start building your network online.*
- *Check out our CMU Geosciences Resources webpage, which includes information about Professional Geologist licensing around the USA.*

Coordinator's Corner

- *Andres Aslan*

Program & Faculty News

Welcome to the Spring 2022 newsletter! Campus continues to move towards a level of normalcy and in-person classes have become the "norm" once again although many of the classes have a strong online component.



Dr. Rex Cole lecturing to field trip attendees about Hermosa and Cutler deposits at Cascade Falls in Ouray.

The Fall 2021 semester was highlighted by the Grand Jct Geological Society-sponsored William Chenoweth Field Trip to Ouray, Colorado. The trip was led by Steve Cumella, Rex Cole, and myself, and ~50 students and GJGS members attended. The other big event of the semester was the GSA meeting in Portland, which was attended by 15 current CMU geology students and faculty (see article below). The semester was capped off by the December graduation of four of our students with Geology B.S. degrees.

Congratulations to our December graduates!



Dec. '21 graduation: (l to r) Alex Fenske, Caden Anderson, Dr. Verner Johnson, Rhett Dacuag, and Frank Martinez.

Now, the Spring 2022 semester has found our senior Geology students working busily on their senior theses. Students will present their work at the CMU Student Showcase on April 29th as well as at the May 4th Grand Junction Geological Society meeting. The following is a list of current students and their senior thesis topics.

Daniel Arinze (graduating Dec. 2022) – Magnetic survey of the Glade Park area in the Uncompahgre Plateau, Western Colorado.

Myah Baker (graduating May 2022) – WeCSIP: Analyzing stable isotopes in precipitation to create a preliminary local meteoric water line for Grand Junction, Colorado.

Karlie Hadden (graduating May 2022; accepted to Colorado School of Mines for grad school) – Spatial and temporal isostatic analysis of West-Central Colorado crustal elevations using simple equilibrium block models.

Amanda Hicks (graduating May 2022) – Using zircon U-Pb geochronology to reconstruct the paleogeography of Western Colorado during the Miocene and Pleistocene.

Kyle Karren (graduating May 2022) – 2021 Post-flood analysis of sediment transport and channel incision in Ladder Canyon, Colorado.

Thomas Marso (graduating May 2022) – Using cosmogenic ^3He dating to constrain slip rates of the Mead Slope Fault at Lake Mead, Arizona.

Kristopher Maurer (graduating May 2022) – ArcGIS database for the Cretaceous Williams Fork Formation in Coal and Plateau Creek Canyons.

Sherri Randall (graduating in May 2022) – Provenance of detrital sanidine grains in Miocene river gravels on Grand Mesa and the Uncompahgre Plateau, western Colorado.

Adam Trumbo Field Trip - April 16th, 2022

Another important Spring event is the annual Adam Trumbo Field Trip. This year, **Prof. Rick Livaccari** will lead the charge to Onion Creek in Utah, and details about the trip are in this newsletter. All current students and alumni are invited!

The Geosciences faculty are staying busy with various activities including Verner's implementation of ArcGIS Pro on campus, Rick preparing for the Adam Trumbo spring field trip, Cassie's work with Western State to compile isotopic data on precipitation in

the Grand Valley, Greg's preparation for summer Field Camp as the new Director, and Javier's introduction to CMU (see newsletter article). I'm still taking students to New Mexico Tech to work on detrital sanidine projects and GJGS member **Ray Guillemette** kindly



Ray Guillemette, the microscope wizard!

donated microscope equipment that allows us to do more grain picking at CMU. Thanks Ray!!

Also, congratulations to **Kerry Riley** for being accepted as an attendee at the May Geodesy Tools for Societal Issues/UNAVCO short course - *Change Detection with SfM and GPS/GNSS: Teaching Undergraduates in the Field*. Attendance at the short course will allow Kerry to implement new geodetic field method exercises in her courses, have a UNAVCO field engineer visit the CMU campus to help her with the implementation, and give her priority for funds to support the acquisition of educational equipment. Well done Kerry!

Lastly, a new Geosciences Student Research Fund has been established by **Dr. Alexis Navarre-Sitchler** ('00) and her husband **Jason Sitchler** (see article in newsletter), which we are very excited about! Student research is an important component of our students' education, and this new fund will undoubtedly help current and future students. Thank you Alexis and Jason!

Faculty Spotlight

- *Dr. Javier Tellez*

Dr. Tellez is a Colombian geologist that joined CMU in Fall 2021 as the new Sedimentology and Stratigraphy professor of the Geology program. He received his B.S. in Geology at the Universidad Nacional de Colombia in 2008 and joined Occidental Petroleum, where he worked as a reservoir geologist for six years. His professional experience includes reservoir characterization and modeling of siliciclastic deposits for hydrocarbon development and integrating seismic, core, well logs, and seismic attributes for de-risking oil and gas prospects.



In 2014 he moved to the U.S. to pursue his M.S. in Geology at the University of Oklahoma, working on seismic mapping and defining deep-water deposits in the North Carnarvon Basin, Australia. He fell in love with academia and continued pursuing his Ph.D. at the University of Oklahoma working on the characterization of unconventional siliciclastic reservoirs (e.g., tight sandstones of the Cretaceous Burro Canyon Formation and Mississippian mudstones) in multiscale studies to define depositional systems, stratigraphic architecture, and sedimentologic effects on fluid flow.

Javier considers himself a multidisciplinary geoscientist who primarily focuses on using new technologies applied to sedimentology, stratigraphy, and depositional systems analysis, for natural resources exploration and development. To build his research, Javier integrates multiple data types (e.g., outcrop, seismic, UAS-based models, and well logs) and analyzes them using various tools (e.g., machine learning, 3-D modeling) to evaluate the sedimentologic characterization, stratigraphic architecture, and spatial variability of rocks. He gained experience mentoring undergraduate and graduate research students working on hybrid projects that combined field work with computer-based data. His teaching experience includes courses like Introductory Petroleum Geology and Geophysics

and Reservoir Characterization and Modeling. At CMU, he teaches Sedimentology and Stratigraphy, Depositional Systems, Physical Geology, and Geology of Colorado. He plans to offer topic courses on Subsurface Methods and Survey of Energy Resources in upcoming semesters. Dr. Tellez's classes include laboratory or practical sessions with hands-on field or computer-based exercises that complement his classroom lectures. Javier's background and interests in technology and the energy industry, as well as with outcrop-based studies, makes him a perfect match to join the CMU Geosciences faculty.

2021 GSA Meeting in Portland

- Greg Baker

The CMU's Geosciences Program was well represented at the annual Geological Society of America meeting in Portland in Fall 2021. **Thirteen CMU Geology** students attended the meeting and a **total of eight** students were involved in two poster presentations. One poster



Portland GSA: (l to r) alumnus Ryan Hampton, Dr. Greg Baker, Sherri Randall, Amanda Hicks, Leyna Weller, Dr. Andres Aslan, Karlie Hadden, Myah Baker, Devin Horvat, Anja Riedel, Caden Anderson, Roan Hall.

("Preliminary structural and geophysical investigation of possible Cenozoic intrusive events along the northeast Uncompahgre Plateau in Western Colorado,

USA") featured ongoing research using the new magnetometer—purchased by a grant awarded to **Dr. Verner Johnson**—and involved Geology students **Caden Anderson, Rhett Dacuag, Karlie Hadden, and Devin Horvat**. This research was supervised by **Drs. Verner Johnson, Greg Baker, and Rick Livaccari**. The other poster ("Miocene rivers of Western Colorado: implications for the timing of river integration in the Rocky Mountains") summarized ongoing detrital-sandstone research, and involved Geology students **Sherri Randall, Leyna Weller, Aaron Orelup and Daniel Arinze**. This research was supervised by **Drs. Andres Aslan, Rex Cole and Matt Heizler** of New Mexico Tech. Other Geology students that attended the meeting were **Roan Hall, Amanda Hicks, Myah Baker, Abby Winkler, and Anja Riedel**. We also had a surprise visit from Geo alumnus **Ryan Hampton** ('14) who is currently finishing a M.S. degree at Central Washington University.

In addition to the poster presentations, our students attended numerous talks and poster presentations to broaden their horizons, attended short courses to obtain new skills, and participated in career-related meetings as well as learned about graduate school opportunities. What an opportunity!

Attending professional meetings such as GSA is strongly encouraged by the CMU Geosciences Program and we strongly believe that they can be significantly benefit the professional development of our students. **PLEASE NOTE:** Donating to the new Geosciences Student Research Fund would be a great way to support our students' participation in professional meetings such as GSA and AAPG. Without such support, our students would not have the financial means to partake in this—and other—eye-opening experiences.

We expect a strong showing again this fall (Fall 2022) when the GSA meeting will be in Denver, Colorado. We thank you in advance for any contributions that will help to facilitate student participation, and also would love to see you there if you are at the meeting or in the area!

Geosciences Student Research Fund

Alumna **Alexis Navarre-Sitchler** ('00), Professor of Geosciences and the **Ben Fryrear** Endowed Chair for Innovation and Excellence at the Colorado School of Mines, and her husband, **Jason Sitchler**, have made a substantial donation to the CMU Foundation to support a new **Geosciences Student Research Fund**. Matching funds were provided by EOG Resources, Inc. The goals of the fund are to support specific Geology student activities such as travel to professional meetings, student research involving expenses such as analytical costs, and field camp expenses. Travel to professional meetings and non-field-related research expenses are not currently provided for by the other Geosciences funds.

"Both Jason and I were active in research as undergraduate students and those research experiences played a vital role in our continued education in graduate school. We established this fund to support students at CMU as they learn through research and explore the forefronts of scientific discovery. Please join us in creating opportunities for CMU students to lead their own research projects and take their learning outside of the classroom."

– **Alexis Navarre-Sitchler**

If you are interested in donating to the new **Geosciences Student Research Fund**, or another of the funds supporting the Geosciences Program, the CMU Foundation has established a website with a list

and description of our current program funds and scholarships. No more checks in the mail!

To donate, simply visit:

<https://www.supportingcmu.com/geosciences>

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**.

Adam Trumbo Memorial Spring Field Trip - Rick Livaccari

April 16, 2022

The Geosciences Program will hold the annual Adam Trumbo Memorial Spring Field Trip on Saturday April 16th 2022. This year, the trip will visit Onion Creek, Utah.

Onion Creek is located east of Moab in Professor Valley along the River Road (Highway 128). Those students lucky enough to have taken the summer field camp from 2016 through 2019 had the experience of camping out here near Fisher Towers and doing field work in Onion Creek. For this field trip, we will revisit Onion Creek and the interesting and unique geologic features exposed in this area – specifically, the Onion Creek Salt Diapir/Salt Glacier.

Driving instructions are found in the following Google Maps link:

<https://goo.gl/maps/zqSNZsyiZkdBi7Df8>

From campus, it is a 1.5-hour, 82-mile, one-way drive. Let's plan on leaving campus at 7:30 am from the parking lot near Purchasing (corner of 12th Street & Kennedy). We have 3 college vans reserved for this field trip. If you drive separately, meet at the BLM parking area at the north end of Onion Creek, shown

in the Google Maps link, between 9-9:30am. The dirt road into Onion Creek is 2WD, but vehicles must have high clearance (almost 4WD in places). The road also crosses the stinky water of Onion Creek multiple times and the canyon is very narrow in places with limited space for parking along the side of the road. Because of this, we will need to reduce the number of vehicles we drive into Onion Creek. All participants should first meet at the BLM parking area and then we will consolidate the number of vehicles we actually drive into the canyon. Hopefully, we will just drive the 3 vans into the canyon.

The plan is to make 3 or 4 stops along Onion Creek, with one stop involving a hike of a little over 1 mile to look at the Onion Creek Salt Glacier Namakier. The hike is short, but there is no trail & it is rugged terrain. I anticipate that we will be at our final stop in Fisher basin (about 8 miles in) by mid-afternoon. At that point the field trip ends and we will drive back to our starting point at the BLM parkin area on the north side of Onion Creek.

Bring your own lunch, snacks & enough water to last you the entire day....

If you are an alumni and plan to attend, please email (aaslan@coloradomesa.edu).

Student Chapter of AAPG

- Kerry Riley and Javier Tellez

During the 2021 fall semester the CMU Student Chapter of AAPG focused on giving back to the community, preparing students for 'what comes next' after college, and networking/sharing about student-faculty research.

The club was involved with many community-outreach projects this fall. Bear Necessities is a division of Foster

Care in Mesa County. Club members organized the donation of items for Bear Necessities to reduce the need of daily items such as snacks, toiletries, gift cards to grocery stores and entertainment areas (e.g., Bananas Fun Park). Club members participated in Project Linus and made blankets for kids in the hospital. The club also hosted a small mineral sale to fundraise for future endeavors.

Many club members are graduating seniors and students organized graduate school preparation events. **Dr. Javier Tellez** spoke at one club meeting on the Graduate School Application Process. An excellent follow-up activity was a presentation by a guest speaker, **Dr. Alexis Navarre-Sitchler**, from the Colorado School of Mines (CSM). Alexis also visited informally with students and talked about graduate programs and research opportunities at CSM.

The chapter helped to sponsor ten club members attendance at the 2021 Geological Society of America meeting in Portland. Senior club officers also presented research during club meetings as well as at the December meeting of the Grand Junction Geological Society.

To wrap up a productive Fall semester, students elected the following club officers (who will train in the Spring semester): **Joey Meighan**-President, **Laura Kleim**-Vice President, **Leyna Weller**-Secretary, **Jackson Weber**-Treasurer, **KennaLee Rowley** - CAB Representative and Outreach Coordinator, and **Myah Baker**-Support. The club concluded the year by hosting a holiday party where **Dr. Ed Evenson** from Lehigh University gave an invited talk titled "Darwin the Geologist & His Boulders" about glacial geomorphology in Argentina.

If alumni or friends of the program want to give presentations to the AAPG chapter, please contact Dr. Javier Tellez jtellezrodrig@coloradomesa.edu.

Thanks again to everyone for all their help!!

Maverick Alumni

Several Geo alumni helped us out this Spring through a combination of Zoom meetings with current geology seniors in Seminar (GEOL 490) and by meeting with the Geosciences Program reviewer who was on campus and met with alumni via Zoom as part of the 5-year program review process that CMU requires. Having recent alumni speak with the students in Seminar is something that we have done for the past several years and the students have really appreciated the advice and information that alumni have provided. This year's alumni guest speakers included **Jordan Walker** ('20; finishing his M.S. at Southern Illinois Univ. and will begin a Ph.D. program at Baylor U. in the Fall), **Katie Worrell** (formerly Dykstra) ('18; employed by RSI in the technical reports section), **Jordan Drake** ('18; employed by Field Geo-Services), and **Rachael Lohse** ('18; employed by Scientific Drilling International as a MWD operator running drillhole electromagnetic telemetry products. Also, Jordan is engaged with **Nick Cholas** ('18) and they will be wed in the Spring. Congratulations Jordan and Nick!

Our panel of alumni who helped with the Program Review included: **Trey Nusbaum-Davis** ('16; employed by RSI), **Nolan McDonald** ('16), **Tristan Bates** ('19; recently started a new job with Agapito and Associates), **Ben Haveman** ('13; recently left Agapito and Associates and now works for RESPEC), **Marisa Boraas-Connors** ('14; employed by Yeh and Associates) and **Kasmira Workman** ('12) and **Keegan DePriest** ('15) both of whom work for Devon Energy in Tulsa.