

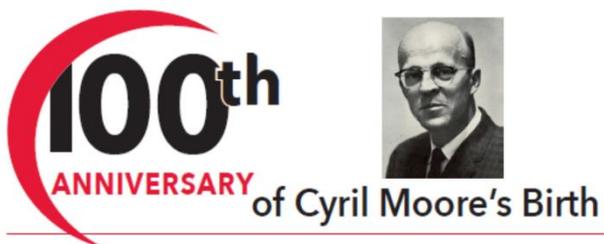
MSU GEOSCIENCE NEWSLETTER SPRING 2018

The MSU Geoscience Department newsletter is published once per semester in electronic format. It contains news of MSU Geoscience activities, what our current students and alumni are up to, descriptions of useful materials, potential job and internship opportunities, and reports of recent scientific discoveries and publications by your current and former MSU professors.

Sign up for the Newsletter by sending a request to be added to msugeoscience@gmail.com. The newsletter is currently edited by Dr. Collette. Please distribute this newsletter to anyone who might find it interesting!

GEOSCIENCE DEPARTMENT NEWS AND HAPPENINGS

A lot has been happening around the department since the last newsletter went out. We have a new student research grant – the Bob and Kathy Mau Undergraduate Student Research Grant, and we have just received our first two applications for those valuable research dollars. Over the next week or so, Geoscience faculty will be deliberating, weighing the applications and making an announcement as to who the student(s) are that were funded.



Cyril Moore, a faculty member, a Science Division Chair, and the namesake of the building that houses the Geoscience Department was born on February 4, 1918. To celebrate the anniversary of his birth, the MSU Division of Science is hosting an Open House.

The event, C. MOORE SCIENCE DAY, will be free and open to the public, and will take place in the Cyril Moore Science Center at MSU on Saturday, April 28, 2018 from 2 – 5 p.m.

Refreshments will be served starting at 2 p.m. Stop in and meet some of Cyril Moore's family! Faculty and current students will be available to chat about programs, student and faculty research projects. There will be a presentation about Cyril Moore, his contributions to the campus and community beginning at 3:30pm, and there will be a special one-time presentation of the Science Magic Show that will take place at 4:00pm in room 16! Be sure to bring your kids, browse the displays around the Departments, take in the recently set up display of fluorescent minerals, or bring in those rocks / fossils / meteorites that you would like to have identified!

Please send in memories, pictures, or whatever you would like to share about Cyril Moore or the Division of Science. COME AND HELP US CELEBRATE! If you would like more information, please contact Dr. Bob Crackel, the Division of Science 701-858-3852 or by email to Dr. [Robert Crackel](mailto:Robert.Crackel@msu.edu)



Be sure to check out the new fluorescent minerals display toward the west side entrance of Moore when you come in on the 100th anniversary of Cyril Moore's Birth on April 28th!

This Semester's SCI 480 Senior Seminar Presentations

Please make sure you make every effort to come out to see all of the Division of Science 480 Senior Seminar presentations, but most especially those by our Geoscience Majors. Chandler Jacob will be presenting his remote sensing work on Wednesday, April 18th and Eric Bollefer will be presenting his research on meteorite identification techniques on Wednesday, April 25th. As with all of our Senior Seminars, presentations will take place in room 231 on the second floor at noon sharp!



MSU Giving Day and the Division of Science

Giving Day, on Wednesday, April 11, 2018, is Minot State University's first-ever one-day fundraising event. The goal is to inspire people everywhere to come together, demonstrate their pride for MSU by

making a gift of any size while providing essential resources for generations of MSU students.

The Division of Science' Giving Day priorities are to fund instrumentation maintenance, repair, and replacement. The wear and tear on these instruments are not insubstantial - moving parts must be serviced and lubricated, pumps tested, X-ray tubes replaced, software and hardware updated or re-written. All of these are 'hidden costs' associated with procurement and use of these instruments, and without these vital services, these instruments will cease to function.

Please visit the Division of Science Instrumentation Page linked [HERE](#) for more information on what we are seeking funding to accomplish, and how any gifts that we receive from this initiative will be used.

In other news, we are in the midst of nominating a student for our Outstanding Geology Senior Student of the Year Award. Look for an email announcement about who was chosen to follow soon, and join us later in the semester for a very informal presentation ceremony and second annual BBQ to roast this year's chosen recipient!

Dr. Hopkins To Depart Geosciences

In much sadder news, it is with deep regret that I have to report that our newest faculty member, Dr. Nathan Hopkins, has decided to leave Minot State University in search of greener pastures. Dr. Hopkins would like everyone to know that this decision was difficult, and based more on personal than professional reasons. Dr. Hopkins last semester will be this current Spring 2018 semester. Dr. Hopkins has been a fantastic resource to both students and his fellow faculty, a superb instructor, and a tireless researcher and research advisor. He would be a catch for any R1 or other university in the states or in the world. Please make sure to take the time to wish Dr. Hopkins well before he leaves us at the end of this semester.

REPORT: 2018 Spring Break GEOL 290 Regional Geology Fieldtrip to the Ozarks and Ouachitas of Missouri and Arkansas

“This year’s Regional Geology class traveled to the U.S. Interior Highlands of Missouri and Arkansas, better known as the Ozark Plateau and the Ouachita Mountains. From March 7th through 12th, seven students led by Dr. Hopkins, assisted by Geography professor Dr. Zeb Wallace, explored the geology and culture of a unique region that straddles the boundary between Midwest and South. As the North Dakota students learned, the world changes when you cross the glacial limit.

“After three days of driving through the pitiful remains of once-magnificent bedrock (i.e., Quaternary sediments), we reached our home for three nights in the St. Francois Mountains, the Precambrian core of the Ozark uplift. Here, we fought cold nights and wet weather, but persevered in the pursuit of ancient (~1.4 Ga) volcanic deposits, intrusive structures, and Rodinian landscapes.



A scenic vista from the recent Spring GEOL 290 Regional Geology fieldtrip. Photo courtesy of Dr. Nathan Hopkins.

“We also explored lead mineralization and the history of lead mining in the Cambrian Bonneterre Dolomite that flanks the St. Francois Mountains.



Geology 290 Students at the Great Unconformity – a worldwide interval of missing time that separates billion plus year old crustal rocks from much younger sedimentary units above. Students in the picture above are touching this interval of hundreds of millions of years of “missing time”.

“From the St. Francois mountains we traveled SW to the Ozark Underground Laboratory, where we were treated to rustic cabins at the world’s only privately-owned laboratory dedicated to the study of karst systems. Our stay here included a 9-hour tour of the surface and subsurface geomorphology and hydrology of karst systems, led by a practicing hydrogeologist with a half-century of experience. Needless to say, the students learned a lot.

“We concluded the trip in the sunny Ouachitas, where students experienced their first rocks with “bad attitudes,” at least on this trip. These rude rocks record the deformation associated with the Ouachita-Marathon Orogeny, part of the late-Paleozoic orogenic sequence that developed Pangaea. However, the major focus in Arkansas was to soak up as much sun before returning to north.

“Along the way, students explored a number of cultural topics. In Missouri, we discussed the geologic controls on the distribution of slave ownership and slave populations, as well as the profound influence of geology on civil war battle tactics. Throughout the Ozarks, we explored the relationships between karst landscapes and rural poverty.

-Dr. Nathan Hopkins

FACULTY NEWS AND HAPPENINGS

Dr. Joseph Collette



Dr. Collette being eaten by a 400+ million year old sandstone monster. Okay, not really – these wind- and water-produced caves in Anza Borrego State Park have a bewildering array of photo opportunities.

Update – Spring 2018.—This past Fall, Ana Swor completed and defended her Senior Seminar project detailing the geometry of a nearshore Cambrian age Sandstone deposit using a variety of methods. This deposit is important because it contains the earliest evidence for animals moving onto shore for the first time in the history of our planet and is well earlier than, for example, early amphibian-like fish, or early insects. Jesse Dalle will be continuing this work in the field this coming summer, and has written a plethora of grant proposals and sent them out seeking money with which to get this fieldwork done. So far, she has received one confirmation of funding – she has received a \$500 grant from AAPG (American Association of Petroleum Geologists) L. Austin

Weeks grants program – be sure to congratulate her if you see her around the building.

I'm closing in on completing part of a study that will be revising an unusual phyllocarid crustacean (think: cocktail shrimp, but with a bivalved carapace instead of a single valve covering the thorax). I continue to chip away at various other research projects as well.

Dr. Nathan Hopkins



Dr. Hopkins in the field during the Spring Semester GEOL 290 fieldtrip.

Update – Spring 2018.—Teaching and research continues. So far, I have had three teaching ‘firsts’ this semester. This was my first opportunity to teach GEOL 101 – Environmental Geology, and I’ve enjoyed approaching the Earth systems from a slightly different perspective. Additionally, this was my first stab at teach “Intro to Remote Sensing,” which has been a fun and interesting hands-on class. On top of that, I lead the Regional Geology trip for the first time. All of this new material has required a lot of planning and hard work, but it continues to be a fun semester.

“My research activities continue from last semester. Chandler Jacob is preparing to finish and present his senior thesis later this semester, and I have two other students actively working on or developing geomorphology projects – Haley Hanna and Zebulen Pulkinen. With any luck, winter will end and we can

get some fieldwork done soon! On top of that, I had the pleasure of presenting my research on the basal processes of the Matanuska Glacier, Alaska, at the American Geophysical Union Fall Meeting in December, and have accepted a special invitation to the upcoming Geological Society of America Annual Meeting in Indianapolis.

"This summer I will return to my old haunt as an instructor at Lehigh University's Field Camp. Five weeks of camping in the mountains of Wyoming and Idaho with a spectacular group of faculty and students – can't wait!
-Dr. Nathan Hopkins

Dr. Kati Kilroy



Dr. Kilroy at American Geophysical Union, AGU, Meeting in San Francisco, CA

Dr. John Webster

Update – Spring 2018.—During the latter part of fall semester, I completed heavy mineral analysis of one of the new samples of the Chalky Buttes Member conglomeratic sandstone (Chadron Formation) collected from the Stover Site. The Stover Site is producing fairly abundant vertebrate fossils, and in that sense is much like the late Eocene sandstone at the Medicine Pole Hills (MPH) site. Fossil evidence suggests that the Stover Site deposit (Chadronian-3) is slightly younger than the Medicine Pole Hills



Dr. Webster at the controls of the Division of Science's once again working Scanning Electron Microscope. If you look very hard at the left screen, you might just be able to make out some 'grungy' epidote! No – actually, he's looking at a meteorite sample!

deposit (Chadronian-2), but heavy minerals were very similar to the Medicine Pole Hills sandstone. There was abundant diopside, hornblende, and epidote in the 0.25-0.30 mm fraction. The very fine fraction (0.090-0.106 mm) yielded a combination of these MPH-type heavy minerals and more typical Chalky Buttes Member-type heavy minerals.

During late fall I also completed re-analysis of some samples from student projects to add to the number of heavy mineral analyses of the Chalky Buttes Member. These were combined with published analyses to interpret the significance of heavy mineral assemblages. This work was one component of a publication I worked on with Dr. Clint Boyd of the North Dakota Geological Survey dealing with the depositional history of the Chadron Formation. Description of paleosols within the Chadron Formation and fossil evidence from the Stover Site were the other two components of the publication, based on Clint Boyd's work. The publication was recently released by the North Dakota Geological Survey as Report of Investigation No. 120 Depositional History of the Chadron Formation in North Dakota.

This semester I've started working with April Whittaker on heavy mineral analysis of Chadron

Formation South Heart Member samples, but teaching and committee work are occupying most of my time. In addition to teaching Minerals and Rocks, Structural Geology, and Seminar, I am teaching an Honors course – Thinking Outside the Box – which is focused on energy. I continue work with a committee that is developing a new degree program at MSU – a design-your-own-major type of program. We hope to have this new program in place by fall 2019.

Finally, some positive news about instrumentation – I’ve been able to get the scanning electron microscope running again. There are issues with the software, so some of the features are not functioning as they should, but at least it is usable for imaging and checking the chemical composition of mineral grains/crystals.

ALUMNI NEWS AND HAPPENINGS

Mandy Olson – ‘17



Mandy Olson at work for Zedi – a field services company serving petroleum production companies in the Bakken region.

“I work for Zedi, a company that has its own software, automation, measurement, lab, artificial lift, and field services in the production operations field. I started working for Zedi in December last year as the sole lab analyst in the Stanley ND laboratory. I mostly test the quality of hydrocarbons in natural gas, propane, butane, and natural gas liquids from

the Bakken region by using gas chromatography. I also conduct analysis on water from well sites in the Bakken to help companies treat their water for acid producing bacteria that compromise their piping and well systems. Zedi also has numerous labs that test the quality and physical properties of crude oil and water. I am working on expanding the services that we provide in Stanley currently to include these tests to better serve our customers in the Bakken.

-Mandy Olson

Nurkhair Teleu – ‘15



Nurk Teleu enjoying a bit of time away from his job underground to participate in a conference in Russia.

‘Nurk’, as some of you may remember him as recently shared a couple pieces of great news with us. First, he has been granted a scholarship to study at graduate school in Germany! Second, he’s been offered a job with Polymetal International in Russia!

“I have been offered a new job in the fastest-growing mining company in Russia. The company name is Polymetal International PLC, which explores precious metals such as gold, silver, zinc. I recently started working there as a Lead geomechanical engineer, and I must say there are many more responsibilities that come along with tasks.

“My responsibilities include, (but are not limited to) identifying and evaluating: the criteria to create

and maintain ground control of underground mines and slope stability of open pit mines, logging geological and geotechnical information to establish ground control and slope stability, mining engineering methods, etc. I am excited for a new job, new position and interesting tasks that offer new promises and opportunities to grow as a professional engineer in this big international company.

“Having received offers from both sides, now I am facing a crucial moment of choosing the direction of where I have to go to. In the midst of a decisive moment in my life, I still have time for a careful evaluation and weighting the benefits of both sides before I make the right decision for myself.

-Nurk Teleu

MSU Geoscience Alums - KEEP IN TOUCH!

We are making a concerted effort to keep in touch with our Geoscience Department alumni, and to build and maintain a master alum email contact list. If you know folks that have not received this newsletter who are MSU Geoscience alums, please ask them to submit their current email address to msugeosciences@gmail.com. Specifically, we’re looking for emails for: Awalt, Brody; Blacklock, Sara; Brandiezs, Bryan; Christensen, Allison; Collins, David; Dahl, Cordell; Evans, Colleen; Feist, Susan; Fogarty, Heather; Graves, Adam; Hodenfield, Cody; Hoff, Ryan; Hughes, Jean; Jacobson, Todd; Kight, Roy; Larsen, Jennifer; Longtin, Max; Marchand, Arin; McLeod, Jesse; Mohr, Brett; Pitt, Patrick; Ronning-Schemetz, Kathleen; Sande, Brent; Stover, Monica; Vachal, Lynnette; Warner, Colleen; Webb, Tina; Webb, Tina; Weidler, Jordan; Whitlow, Tim; Wiebe, Joseph.

Likewise, if you wish to continue receiving this newsletter once per semester, please make sure you send an update (and long-term stable) email address to msugeosciences@gmail.com with any email address changes that you may have.

If you would like to submit a piece for inclusion in the Alumni News and Happenings section of the newsletter, please write up a few paragraphs about where you are currently living, where you work, the kinds of work you are doing, and a photo of yourself (preferably in the field or lab) at work.

Also, if you would like to perhaps come in to MSU and give a talk to our current students about how you went about getting a job in geology, what you do in your current job, and some suggestions that might be helpful to people about to enter the workplace, we would love to host you! Please send an email to msugeosciences@gmail.com.

A.U.G.I.T.E. NEWS AND HAPPENINGS

Haley Hanna – President
Jesse Dalle– Vice President
Calob Werre – Treasurer
Jordan Torgunrud – Secretary



A.U.G.I.T.E. members Calob Were (pictured on left side in gray striped sweatshirt), and Haley Hana, Jesse Dalle, Emily Holter, Brady Halvorson, and April Whittaker (not in photo) all participated in the 2018 Science Open House. In this photo, students are playing 'The Erosion Game' on our Geoscience stream table.

A.U.G.I.T.E.—The Association of Undergraduate Geologists in Industry, Technology, and Education is the Minot State University Geology Club. It is an active University entity that sponsors geology-related fieldtrips outreach events, and brings in occasional speakers from geological industry to discuss issues that graduating students might soon face when entering the geological workplace.

During the Spring 2018 Semester, **A.U.G.I.T.E.** worked on one project. The club participated in the 2018 Science Open House at Minot State University. Members led discussions on various geological topics for this year's Science Open House, including where may, and where may not be good places to site your house in relationship to active streams and floodplains (photo previous page), what the rock cycle is and how it functions, and what makes some mineral specimens fluoresce while other minerals do not. We had great turnout from the local schools, and our MSU students got experience leading discussions and teaching others some of the things they themselves have learned while majors here at MSU. Great job everyone and many thanks for your hard work in this outreach!

Jordan Torgunrud, current AUGITE Club Secretary, previous Geology double-major, and tireless club advocate, has been accepted to graduate school at the University of Florida in Gainesville! Jordan will be working on problems related to polymers and sustainable biodegradable plastics and has been awarded a Teaching Assistantship! Make sure you congratulate Jordan when you see her around Cyril Moore this semester, and thank her for her efforts on your behalf in AUGITE!



SIGN UP FOR THE MSU GEOSCIENCES NEWSLETTER

If you are not receiving the MSU Geosciences Newsletter and want to, you can sign up by sending an email request to: msugeosciences@gmail.com.

We are always looking for news and information on alumni and what you are all doing now. If you would like to share some of your experiences, news, events, information, current or upcoming internships, or other information you think is interesting, please send a 2-3 paragraph write up about your news item to msugeosciences@gmail.com and I will add it to the next newsletter scheduled for Fall 2018.

If you know someone who is not receiving this newsletter who should, please feel free to share your copy, or to shoot us an email suggesting we add someone to our mailing list!

GEOSCIENCES Job and Internship Opportunities

Many thanks to Thomas Filkins for sending us these job and internship opportunities. Many of these internships are open to current students over a summer or two, and can lead to recruitment by the respective organizations following graduation. I strongly suggest our current students and any alums looking for a job take a look at these listings! Thanks again, Thomas!

These postings are VERY TIME SENSITIVE – meaning go apply NOW if you are interested!

Student Trainee (Dept. of Soil Conservation)
<https://www.usajobs.gov/GetJob/ViewDetails/496438500>

Environmental Field Scientist – ERT.
<https://chc.tbe.taleo.net/chc01/ats/careers/requisition.jsp?org=ERT&cws=1&rid=1921>

LOOK FOR OUR NEXT NEWSLETTER IN FALL 2018!