Summer 2019

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University of Northern Iowa. Department of Earth and Environmental Sciences.

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<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>FROM THE DEPARTMENT HEAD</td>
</tr>
<tr>
<td>4</td>
<td>FACULTY UPDATES</td>
</tr>
<tr>
<td>7</td>
<td>SGE CHAPTER NEWS</td>
</tr>
<tr>
<td>8</td>
<td>STUDENT RECOGNITION</td>
</tr>
<tr>
<td>9</td>
<td>SUNDAY AT THE QUARRY</td>
</tr>
<tr>
<td>10</td>
<td>STUDENT SPOTLIGHTS</td>
</tr>
<tr>
<td>14</td>
<td>STUDENT RESEARCH</td>
</tr>
<tr>
<td>16</td>
<td>HYDROLOGY NEWS</td>
</tr>
<tr>
<td>17</td>
<td>FACULTY AND AIPG AWARDS</td>
</tr>
<tr>
<td>18</td>
<td>A TRIP TO NEW MEXICO</td>
</tr>
<tr>
<td>20</td>
<td>BIG BEND 2018</td>
</tr>
<tr>
<td>22</td>
<td>THE IMPORTANCE OF GEOLOGY FIELD WORK</td>
</tr>
<tr>
<td>24</td>
<td>ALUMNI UPDATES</td>
</tr>
<tr>
<td>26</td>
<td>GIFTS FROM ALUMNI &amp; FRIENDS</td>
</tr>
<tr>
<td>27</td>
<td>CONTRIBUTION FORM</td>
</tr>
</tbody>
</table>
I hope you are all doing well and enjoying Iowa’s eclectic weather. As usual, things have changed in the Department of Earth and Environmental Sciences over the past year. One is the change of Administrative Assistants in the main office. After 10 years in our department, and more years at UNI than she would even want to count, Nora Janssen has retired and has much more time to visit her children, grandchildren and to travel around the country. We are pleased to add Noel Graff to the staff, and she’ll be answering phones in the office and correcting my typos in the future.

During the past year, we’ve added two new major programs – both of which are offered jointly with other departments. At this time students can major in five different degree programs through our department - Earth Science BA, Earth Science Teaching BA, Environmental Science BA, Environmental Science BS (a joint degree with biology), or Environmental Resource Management BA (a joint degree with biology, geography and health, recreation and community services). In addition, students can work toward minors in Earth Science, Earth Science Teaching, Air Quality, Geology, Astronomy and Environmental Earth Science. We have about 78 majors currently, the majority being Environmental Science BA/BS majors.

2018 also included two large trips to locales in warmer parts of the country, which are highlighted in this newsletter, as well as some significant accomplishments by our amazing students. As you’ll see in the Student Spotlight section, we have students continuing on to graduate programs in Geology and Hydrology. One thing I make sure to tell potential majors is “the name of your degree doesn’t define your potential careers – it is the knowledge, skills, and experiences that you gain while pursuing the degree”. Our majors go onto a range of careers or continue their education in non-science areas, such as law school, or public policy programs.

I hope to hear from you all in the future with updates about what you have been doing, and I also would ask that you consider supporting our programs and majors through various avenues. If you work for a geoscience company or organization that has internship or career opportunities, please pass those opportunities along to us. If you believe your employer would be a good location for a visit by our majors in one of our courses, please let us know – we are always looking for new locations to help our majors learn about various geoscience issues and the latest career opportunities. And we always greatly appreciate any financial support for our students. If you are able to contribute to one of our scholarships, please use the information provided in the newsletter to select a fund that is of interest to you.

I hope you have a good year and I am eager to hear from you!
Hello everyone,

Not much to report. Just trying to move forward, support my family, figure out what it means to be happy and do what I can to make our Earth a better place to live! Seems like we are living in the Stranger Things’ upside down!

Hope you all are happy and well. If you are ever in Cedar Falls or traveling by Reinbeck, stop by and I will buy the first round!

KYLE GRAY
ASSOCIATE PROFESSOR OF EARTH SCIENCE AND SCIENCE ED

It’s hard to believe that I just completed my 10th year at UNI! Where has the time gone? This past year I added Environmental Geology to my teaching repertoire. This is a fun class because we get to discuss the myriad of ways in which geology impacts modern society. (Who wouldn’t like talking about volcanoes, earthquakes and landslides?)

The trip last summer to New Mexico was a resounding success despite the heat and closed public lands. Check out our write up in this newsletter. Dr. Sed and I are already thinking about going back in the near future (but this time in May when it’s cooler).

My research goal this summer is to write up my findings on student beliefs about mass extinctions. This year I had two student assistants (Laura Fraser and Jordan Evans) who helped analyze the data and provided a much needed reliability to my findings.

I am looking forward to my annual summer visit to the Pacific Northwest (this time for my dad’s 90th birthday). I’ll also see if I can grab some amazing geology pics while out here.

Best wishes!

XINHUA SHEN
ASSISTANT PROFESSOR OF METEOROLOGY AND AIR QUALITY

I continue to teach Elements of Weather every semester and Air Quality Modeling during spring semester. Based on the results from the Air Quality Modeling class project, we submitted one abstract to the Iowa Academy of Science Annual Meeting, and another abstract to the International GEOS-Chem meeting that will be held at Harvard University.

I am trying to develop a new course Air Quality Management; the major contents include an overview of air quality, basic concepts of air quality modeling and measurement, air pollution control techniques, air quality laws and regulations. To prepare for the new course, I enrolled some management related courses such as the Environmental Finance, Introduction to Management, World Bank Group’s Introduction to Air Quality Management, etc. I’m hoping to offer Air Quality Management in the following spring semester.

Best wishes!
The past 12 months have been a year of many changes for me and my family. This is my 21st year at UNI. The biggest change in my teaching assignment has been team-teaching Orientation to Science Teaching (OST) with Jeff Morgan from the Physics Department. OST is now a different course than it was in the past. After a lot of thought, I decided it was time for Science Education to drop the Current Technologies in Science Teaching course (which I taught for 29 consecutive semesters) and intertwine its content with new version of the OST course. Fortunately, the Science Education faculty concurred. It’s the first time I’ve co-taught a course and I find it quite agreeable. Each semester I also teach Inquiry into Earth and Space Science, Astronomy Lab, and Level 2 Field Experience for secondary science teaching majors.

Last spring I completed my certification to become a Driver’s Education instructor. It’s something I’ve thought about doing for about 10 years and finally decided to go ahead. When I tell most people their response is typically something like, “What? Why? Are you crazy?” In all honesty, it’s not quite as terrifying as it sounds, but I have had a couple harrowing moments. I’ve been doing behind-the-wheel instruction continuously since last summer and enjoy it even more than I thought I would. It’s made me much more conscious of how I and other people drive. Honestly, the scariest thing isn’t riding with a student driver. The scariest thing is how badly other people drive! If I had $1 for every time I saw someone looking at their phone while driving in the past year, I think I could retire early.

Last summer we spent a week in the Denver area and my daughter, Sarah, and I went white water rafting for the first time. Our oldest, Will, spent two days rock climbing with a guide and made his highest climb to date - 1200 feet. My wife, Ann, continues to work as a part-time paraeducator at Hansen Elementary and as an accountant for a local contractor. Sarah is a sophomore at Cedar Falls High School, and Will plans to graduate from UNI in December with a double major in Earth Science and Computer Science. The most exciting news for our family is that Will is engaged to be married in July. It’s sometimes hard for me to wrap my head around that because my memories of him as a small child are pretty fresh and weren’t that long ago, at least in my mind.
As many of you know, we set a new record for fall through spring snowfall in Waterloo: 60 inches! Based on our climate records back to 1950, eight of Waterloo’s snowiest winters have occurred since 2001. My wife, Paula, and I were able to soak up some tropical sunshine in Hawaii during the semester break in January. My newsletter picture this year shows me and one of the beautiful sunsets we enjoyed. Warm memories of that trip have helped us weather the snow since our return.

This is my 27th year at the University of Northern Iowa. I continue my regular teaching duties with the Elements of Weather, Elements of Weather Lab, Air Quality, and Meteorology courses. This summer, Dr. Iqbal and I will be working with the Iowa Water and Air Quality project at UNI. This is an EPA-funded Environmental Education professional development program for middle and high school teachers. A one-week workshop on campus in June will be followed by three days of field trips in July. I’m looking forward to working with our group of teacher-participants this summer and during our follow-up in the coming academic year.

I hope you’ll consider sharing your best weather photos with me. It’s fun to show them to my students in Elements of Weather.

My best to all!

ALAN CZARNETZKI
PROFESSOR OF METEOROLOGY

FACULTY UPDATEs

MOHAMMAD IQBAL
PROFESSOR OF GEOLOGY

Dr. Iqbal was on professional development assignment during fall of 2018 to advance his research in Iowa as well as Kathmandu, Nepal. His Iowa projects included hydrologic investigations of Cedar River and several area lakes, including Lake Okoboji. He conducted three other projects in collaboration with the Black Hawk Soil and Water Conservation District, Hawkeye Community College, and City of Cedar Falls. In October, he traveled to Nepal to work on his on-going project dealing with the environmental assessment of Bagmati River. Several students from UNI and Tribhuvan University in Kathmandu assisted Dr. Iqbal in his research this year. This spring, Dr. Iqbal is teaching Environmental Hydrology and two sections of Capstone. Dr. Iqbal received the Black Hawk Soil and Water Conservation District’s 2019 Conservation Educator of the Year award.

THOMAS HOCKEY
PROFESSOR OF ASTRONOMY

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My best to all!
UNI's Gamma Sigma chapter of Sigma Gamma Epsilon, the National Earth Science Honor Society, bridges the gap between students within the Earth and Environmental Science department, and the community. Members of SGE provide service to the community through citizen science efforts, education, and program assistance. The organization consistently helps with (bi)annual events, such as water quality monitoring, toxic waste recycling, Sunday at the Quarry, Halloween House, and events at Hartman Reserve. However, members also organize and implement novel events, such as Tails on Trails, a collaborative event designed to connect the UNI community with local trails and also opportunities to adopt dogs from the Cedar Bend Humane Society. SGE members grow with one another within the realm of the natural world while leaving a lasting impact on the surrounding community.

LILY CONRAD
Chapter President
GRADUATES

SPRING 2018

KAYLA BAKER
B.A. Earth Science Teaching

KAYLA BECK
B.A. Earth Science
B.A. Environmental Science

BLAKE BORSCHERS
B.A. Environmental Science

RYAN BUTCHER
B.A. Earth Science

HANNAH DIETZ
B.A. Environmental Science
B.A. Biology

TYLER DURSKY
B.A. Earth Science
B.A. Environmental Science

BEN GAVIN
B.A. Environmental Science

ELIZABETH KELLY
B.A. Environmental Science

CANDICE KUCERA
B.A. Earth Science
B.A. Environmental Science

CHAD OLTHOFF
B.A. Earth Science

NOLAN SAGAN
B.A. Earth Science
B.A. Environmental Science

TYLER SCHLEY
B.A. Earth Science
B.A. Environmental Science

EDDIE TODD
B.A. Earth Science
B.A. Environmental Science

FALL 2018

KAYLA JASCHEN
B.A. Environmental Science

PAIGE LAPLANT
B.S. Environmental Science
B.A. Earth Science

MADELYNN NELSON
B.A. Earth Science
B.A. Environmental Science

BRADLEY O’CONNELL
B.A. Earth Science Teaching

CHRIS QUANDER
B.A. Earth Science

MELISSA SCHOER
B.A. Earth Science

DILLON TIMMERMAN
B.A. Environmental Science

KYLE TRILK
B.A. Earth Science

SCHOLARSHIPS & AWARD WINNERS

TIGER ANGEL
Earth Science BA
Charles J. Hearst Scholarship

LILY CONRAD
Environmental Science BS
Jessica Allen Terri Endowed Scholarship

EMILY HUNTINGTON
Earth Science Teaching BA
Bill and Teri Brehm Scholarship

JAMES JANSSEN
Earth Science BA
Earth Science STM Scholarship

EVAN EADES
Environmental Science BA and Geography BA
Summer Undergraduate Research Program (SURP) Award

PAIGE LAPLANT
Earth Science BA and Environmental Science BA
Earth Science STM Scholarship
Jan Harken Scholarship

ALEC MASS
Environmental Science BA
Earth Science STM Scholarship

TERYN MUELLER
Earth Science BA
Earth Science STM Scholarship

ISAAC NEPPPEL
Environmental Science BS
Knapp Earth Science Scholarship

DANIEL NIELSEN
Environmental Science BA
Earth Science STM Scholarship

GRANT OLBERDING
Environmental Science BA
CHAS STM Scholarship

JARED RANDALL
Environmental Science BA
Donald and Marguerite McKay Scholarship

NOLAN SAGAN
Earth Science BA and Environmental Science BA
Earth Science STM Scholarship

TYLER SCHLEY
Earth Science BA and Environmental Science BA
Purple and Old Gold Award

WILLIAM SPURR
Earth Science BA and Computer Science BA
Earth Science STM Scholarship
NASA Iowa Space Grant Consortium Scholarship
C.W. Lantz Undergraduate Scholarship

GRETCHEH STEFFENSMEIER
Environmental Science BS
Louise Hearst Speer Memorial Scholarship

MADELYN STOEN
Environmental Science BA
Earth Science STM Scholarship

MORGAN STREFF
Environmental Science BA
Earth Science STM Scholarship

ANDREW THOMPSON
Environmental Science BA
Donald and Marguerite McKay Scholarship

LOGAN WINFORD
Earth Science BA and Physics BA
Larry A. Kelsey Memorial Scholarship
Summer Undergraduate Research Program (SURP) Award

RACHEL BECK
Environmental Science BA
Iowa Waste Reduction Center
Brewery Sustainability Practices
Cedar Falls, IA
Spring 2018

HANNAH DIETZ
Environmental Science BA and Biology BA
TestAmerica
Wet Chem Analyst
Cedar Falls, IA
Spring 2018

GRANT GLUECK
Environmental Science BA
McHenry County Conservation District
County Park Maintenance
Woodstock, IL
Summer 2018

MICHAEL GUSTAFSON
Environmental Sciences BA
Waterloo Iowa Water Works
Plant Operations
Waterloo, IA
Fall 2018

JAMES JANSEN
Earth Science BA
University of Northern Iowa
Astronomy Course Aide
Cedar Falls, IA
Fall 2018

PAIGE LAPLANT
Earth Science BA and Environmental Science BA
Hartman Nature Reserve
Naturalist
Cedar Falls, IA
Fall 2018

MADELYNN NELSON
Earth Science BA and Environmental Science BA
UNI Center for Energy and Environmental Energy
Green Iowa AmeriCorp
Land & Water Steward Member
Summer 2018

DAN NIELSEN
Environmental Science BA
Rocky Mountain Field Institute
Earth Corp
Black canyon Environmental Service Program
Colorado Springs, CO
Summer 2018

JENNIFER PAULEY
Environmental Science BA
South African Foundation for the Conservation of Costal Birds
Bird Rehabilitation Assistant
Port Elizabeth, South Africa
Spring 2018

ANDREW THOMPSON
Environmental Science BA
City of Davenport
Office of Clean Water Manager
Davenport IA
Spring 2018

DILLON TIMMERMAN
Environmental Science BA
Jefferson County Conservation
County Park Maintenance
Fairfield, IA
Summer 2018

EDDIE TODD
Earth Science BA and Environmental Science BA
UNI Conservation Corps
Green Iowa AmeriCorp
Naturalist
Cedar Falls, IA
Summer 2018

KYLE TRILK
Earth Science BA
Iowa Waste Reduction Center
Environmental Science Research Assistant
Spring 2018

INTERNSHIPS

RACHEL BECK
Environmental Science BA
Iowa Waste Reduction Center
Brewery Sustainability Practices
Cedar Falls, IA
Spring 2018

HANNAH DIETZ
Environmental Science BA and Biology BA
TestAmerica
Wet Chem Analyst
Cedar Falls, IA
Spring 2018

KYLE TRILK
Earth Science BA
Iowa Waste Reduction Center
Environmental Science Research Assistant
Spring 2018
This year’s event was marked by cold, windy weather. But that did not keep the hundreds of rock hounds away from the Raymond Quarry on October 7, 2018. A wide range of displays were provided, under the tent of course, to showcase rocks, minerals, fossils, water resources, soil science, flooding issues, conservation farming, and much more. The faculty members led busloads down into the quarry, but due to the weather, they were not allowed to stay down there for very long. Drs. Alexa Sedlacek, and Lee Potter coordinated the visits to the pit, while Dr. Kyle Gray and Aaron Spurr provided educational outreach with the “where does this come from” game.

The generosity of BMC Aggregates, L. C. makes this event possible, as well as the support of the various state, county and local agencies. We hope to see you all there on October 6, 2019!

Photos from Beverly Lundy and Julie Koob.
During her last year at UNI, Rachel Beck ’18 planned to pack her bags, move to North Carolina and become a yoga teacher after graduation. The environmental science major had finally — after a couple of years spent trying out several different majors — found a course of study she was passionate about. But she couldn’t see any job opportunities in the field that excited her as much as her studies.

“I’ve always had an interest in the environment [but] I didn’t know what I was going to do,” said Beck. “I tried field work, I liked it, but it didn’t seem like something I’d want to do forever. And I wasn’t super into the lab work. I like to be able to connect with people and speak to people.”

But an internship opportunity with UNI’s Iowa Waste Reduction Center (IWRC), an on-campus organization devoted to promoting sustainability throughout the community, opened Beck’s eyes to the opportunities available in her field — and led to key connections that helped Beck land a job perfectly suited to her skills.

Beck is the sustainability coordinator, brand ambassador and social media manager for Single Speed Brewing Co. The job is a novel blend of environmentalism and beer, and the variety of responsibilities she has allows her to incorporate her interests for both environmentalism and communication.

As an intern at IWRC, Beck performed waste and energy audits for small businesses throughout Iowa, including craft breweries, to help minimize their environmental impact. The work completely immersed her in the craft beer industry and allowed her to meet Dave Morgan, the founder and owner of Single Speed Brewing Co., which is one of the IWRC’s certified breweries.

At an event she was attending for her internship, Morgan offered her a job. It came as a surprise for Beck, who wasn’t sure what she wanted to do with her degree. “I really didn’t know what I was going to do with environmental science, so I got really lucky,” she said.

Beck is the first Single Speed staff member whose main duty is focused on sustainability, and she’s not only bringing ideas for how the business can improve their efforts, but she’s starting to find some new passions, too — “I’ve definitely developed a love of craft beer,” she said.

But her work is about so much more than that. For Beck, it’s also about spreading the word about sustainability. Because while Beck has enjoyed being able to blend a number of her interests with this position, ultimately, it’s her passion for environmentalism and sustainability that drives her. She enjoys being able to help encourage others to care about the environment — as an UNI alumna especially, she enjoys seeing her alma mater increase their efforts. “I’m really happy that UNI is starting to get more into sustainability and make it a priority,” she said.

When it comes to Single Speed, Morgan trusts Beck’s vision to make the impact she wants. And though that vision of the future is focused on large-scale environmental issues, Beck’s focus on the future is what helped her find personal success. After struggling to find a course of study she liked, and doubting whether she could find a job aligned with her interests, she realized she could create the future she wants to see. “I never thought that you could bring in environmental science and craft beer. I never even thought this would be my major. ... but then I realized I could tie it into things I actually enjoy,” she said. “If you’re in a major and think, ‘I don’t see what I’m doing with this, but I like the content,’ stick with it, because you don’t know what jobs are out there or the type of jobs that will be created. If you find something you like, even if it’s not your top choice, you can always make it what you want it to be.”
I started my time at the University of Northern Iowa as an Exercise Science major with the intentions of becoming a Physical Therapist. However, shortly after attending a Sustainability Conference my first semester, I decided to switch my major to Environmental Science in order to dedicate my education and career to understand and protect our natural world, specifically, our water resources. I have always found solace in nature and dedicating my life to encouraging a sustainable balance between resource use and human development, especially in this era of a changing climate and resource scarcity, only feels instinctual.

After graduation, I will work as a Snow Hydrology intern for the Natural Resource Conservation Service and the Idaho Water Resources Research Institute over the summer before beginning a Water Science and Management Master’s degree at New Mexico State University in the fall. My research will be a water issue analysis of the Rio Hondo basin in northern New Mexico focusing on key issues the community and professionals have identified. I will investigate these issues and develop an integrated socio-hydrologic plan designed to secure future water resources. The skills and knowledge gained from this research will tie very nicely into a future as a hydrologist for a government agency or working toward improving water resource security for an international nonprofit.

Over my time at UNI, my favorite memory is the feeling of being fully immersed in genuine support and kindness from the staff, faculty, and students within the Earth and Environmental science department; this instilled a desire to embrace challenge which will persist into my time as a graduate student and future career.
I decided to study geology after taking a trip to the Rocky Mountains with my family. All my life, I was interested in the Earth and collected rocks and minerals, but this was the first time I was seeing something so breathtaking in person. I wanted to have the opportunity to work and study in places just like the Rockies. I specifically chose volcanology after my field camp experience in Ecuador. This trip showed me the importance of studying such geologic features and I found the processes behind it fascinating.

I will be attending Northern Arizona University in the Fall of 2019 to pursue my MS in Geology. I will get to work on the Campanian Ignimbrite deposit in Southern Italy under the supervision of Dr. Michael Ort. After graduate school, I would like to work at a volcano observatory where I can monitor and study active volcanoes and help keep nearby communities safe.

My favorite memory as a student was the field trips we went on. To see the geological history and how systematic, yet unpredictable, nature can be was such a worthwhile experience. One of my favorite field trips was to the Devonian Fossil Gorge in Sedimentary Geology. It was a unique chance to see and walk across a seafloor at one point in Earth history rather than the usual outcrop that shows environmental change over geologic time. My favorite part of these field trips was at the end when we would regroup and put our observations together to figure out the geological history at that site.

I have also attached a picture of me in Ecuador. I am in front of Chimborazo, we spent the day mapping that part of the volcano.
I am a B.S. environmental science major with minors in air quality and mathematics. Science was always my favorite subject throughout middle and high school, but it was not until high school as I took my Earth and environmental science courses where I found my passion.

After graduation, I will attend graduate school for philosophy and theology. I hope to become a religious leader and focus on combing science and religion by informing the public about the distinctions and combinations of these two areas of study. There are many misconceptions and misinformation within these two areas, and I hope to address these issues to bring together scientists, religious communities, and the public. If this does not turn out, I would like to work with meteorology as a data analyst.

It is impossible to list all the amazing memories associated with this department! However, my favorite would be putting on the annual Halloween House with Sigma Gamma Epsilon (the earth and environmental honor society). The Halloween House is designed to teach kids about science by offering a small activity and providing them candy. Two years ago, our theme was dinosaurs and we had the children dig for dinosaur “bones” in sandboxes. I definitely saw myself in a few of the kids who complained about our dinosaur bones. It was weird to be told our “fossils” were inaccurate because they were too big, misshapen, not heavy enough, etc. by a 6-year old! One of the kids even pointed out the Velociraptor skull was completely inaccurate because the teeth were too large, the skull was misshapen, the eye sockets were too small, and the nostril slits were incomplete. I learned kids really like their dinosaurs that day.
IOWA ACADEMY OF SCIENCE ANNUAL MEETING
April 20-21, 2018 | Storm Lake, IA

DR. CHAD HEINZEL & PAIGE LAPLANT
An archaeometric analysis of Iron Age Ceramics, Western Sicily

DR. CHAD HEINZEL, ELIZABETH KELLY, MORGAN STREFF, RACHEL BECK, JAMES JANSSEN, NOAH BROCKSHUS, EVAN EADES, BLAKE BORCHERS, PIERCE MATT, MIKE BARRON
Integrating Diverse Technology Platforms into Geologic Field and Laboratory Courses

ELIZABETH KELLY & DR. CHAD HENIZEL
Particle Size and Heavy Mineral Analysis of Iowa Sandstone

EARTH AND ENVIRONMENTAL SCIENCE SEMINAR
April 23, 2018 | University of Northern Iowa

ALLY STANDEFER
Precipitation Type and Critical Atmospheric Thickness Values for Cedar Falls

EDDIE TODD
Low Level Winds on Peak Ozone Days Along the Western Shore During the 2017 Lake Michigan Ozone Study

TYLER SCHLEY
Sodar Observation of the Lake Breeze During the 2017 Lake Michigan Ozone Study

GSA NORTH CENTRAL MEETING
April 16-17, 2018 | Ames, Iowa

TRAY HICKIE, LUCAS KRAKOW, KAYLA BECK, NICOLE BISHOP, ASTORIA CHAO, JULIANA, HERRAN, MICHAEL LASHBROOK, MAKENZIE MALE, COURTNEY MASSEY, RILEY MCMORRAN, WILLIAM SPURR, TAMI WALLIN, JESSICA WAYSON, JOSHUA SEBREE, DR. ALEXA SEDLACEK, DR. XINHUA SHEN
Biogeochemical Evolution of The Atmosphere: The Beta Project

RILEY MCMORRAN, WILLIAM SPURR, EMMA SHIPLEY, MADELINE ROACH, JULIANNA HERRAN, JESSICA WAYSON, KAYLA BECK, MICHAEL LASHBROOK, LUCAS KRAKOW, DR. XINHUA SHEN, JOSHUA, SEBREE, DR. ALEXA SEDLACEK
Carbon Isotope Stratigraphy of the Little Cedar Formation In Eastern Iowa

DR. CHAD HEINZEL, ELIZABETH KELLY, MORGAN STREFF, RACHEL BECK, JAMES JANSSEN, NOAH BROCKSHUS, EVAN EADES, BLAKE BORCHERS, PIERCE MATT, MIKE BARRON
Integrating Diverse Technology Platforms Into Geologic Field And Laboratory Courses

DR. CHAD HEINZEL, TYLER DURSKY, DANIKA PATTEN, CHRIS BAISH
Geomorphic Analysis Of The Dry Run Creek Watershed, Black Hawk County (Iowa)

RYAN BUTCHER, DR. CHAD HEINZEL
The Geology and Natural History of Coppock Park (Marshall Co., Iowa) and It’s Adjacent Landscapes

Floral resource dynamics for pollinators in a central Iowa tallgrass prairie restoration - Lily Conrad, Ben Hoksch, and Dr. Mark C. Myers

Investigating the Cause for Variations in the Fourier Coefficients of c-type RR Lyrae Stars - Logan Winford and Dr. Siobahn Morgan
**EARTH AND ENVIRONMENTAL SCIENCES**  
**SUMMER 2019**

**DR. CHAD HEINZEL, PAIGE LAPLANT**  
*An Archaeometric Analysis of Iron Age Ceramics, Western Sicily*

**MICHAEL IRWIN, DR. MOHAMMAD IQBAL**  
*Comparing Hydrologic Characteristics Between Urban Lakes And Streams In A Small Watershed In Northeast Iowa*

**BRADLEY M. O’CONNELL, DR. KYLE GRAY**  
*Variation In Beliefs Held About The Number And Causes Of Mass Extinctions Between Science And Non-Science Majors*

**SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM**  
July 27, 2018 | University of Northern Iowa  
Poster Presentations

**LILY CONRAD & DR. MARK MYERS**  
*Floral Resources Dynamics for Pollinators in a Central Iowa Tallgrass Prairie Restoration*

**LOGAN WINFORD & DR. SIOBHAN MORGAN**  
*Investigating the Cause for Variations in the Fourier Coefficients of c-type RR Lyrae Stars*

**EVAN EADES, MORGAN STREFF, DR. CHAD HEINZEL**  
*The Geology and Natural History of the Cedar River*

**JENNIFER PAULEY, DR. CHAD HEINZEL, DR. LAURA JACKSON**  
*Soil Characteristics Affecting Weed Invasion on Conservation Reserve Program Pollinator Habitats*

**THOMAS BOVY & DR. CHAD HEINZEL**  
*Preliminary Delineation of the Black Hawk Creek Watershed*

**GEOLOGICAL SOCIETY OF AMERICA-ANNUAL MEETING**  
November 4, 2018 | Indianapolis, IN

**LILY CONRAD & DR. MOHAMMAD IQBAL**  
*A Hydrologic Comparasion of the Cedar River and West Okoboji Lake in Iowa*

**DR. ALEXA SEDLACEK, RYAN CLARK, RILEY MCMORRAN, NICOLE BISHOP, SCOTT WIEMAN, JOSHUA SEBREE, BRIAN WITZKE**  
*Application Of Carbon Isotopic Stratigraphy Of The Middle To Upper Devonian (Givetian-Frasnian) Cedar Valley Group In The Iowa Basin - New Data From A Core In North - Central Iowa*

**DR. KYLE GREY, BRADLEY O’CONNELL, DR. ALEXA SEDLACEK**  
*Misconceptions of Mass Extinctions: Differences Between Science and Non-Science Majors*

**EARTH AND ENVIRONMENTAL SCIENCE SEMINAR**  
December 3, 2018 | University of Northern Iowa

**ISAAC NEPPPEL**  
*Sunny Side Up: Solar Irradiance in Cedar Falls, Iowa*

**AMERICAN GEOPHYSICAL UNION ANNUAL MEETING**  
December 10-14, 2018 | San Francisco, CA

**DR. MOHAMMAD IQBAL, TARA NIDHI BHATTARAI, PRATIK POUDEL**  
*Hydrologic changes of Bagmati River in Kathmandu, Nepal over a 3 year period.*
This is an international collaboration between the Department of Earth and Environmental Sciences at UNI and the Geology Department, Tribhuvan University, Kathmandu, Nepal. The project, led by Dr. Mohammad Iqbal, deals with environmental assessment of Bagmati River in Kathmandu Valley, Nepal. The river has visibly turned into a highly polluted water body due to the dramatic increase in population and urban development in the valley in recent decades. The goal of the project is to find the primary avenues of pollution and recommend remedial measures to prevent a probable human environmental disaster in the area.

NSF PROJECT IN NEPAL CONTINUES FOR THE FOURTH YEAR

BY MOHAMMAD IQBAL

Dr. Mohammad Iqbal handing over his preliminary report of Bagmati study to the Deputy Mayor of Kathmandu Metropolitan City Ms. Hariprabha Khadgi Shrestha.

Pratik Poudel, Environmental Science major at UNI, collecting water samples from Bagmati River.

Sunita Magar (left) and Padma Nepal (right), geology students from Tribhuvan University, Nepal testing bagmati water at the site.
Chad is an associate professor in the Earth Science Department at UNI and partnered with the DRCWIP and the UNI Conservation Corps to conduct a stream assessment utilizing geomorphology students. This partnership started in fall of 2016 and incorporated 22 students with Chad overseeing them. Over 300 sites along the stream were visually assessed as well as soil cores taken to assess the banks of the stream. Chad trained the students on proper assessment techniques, oversaw the data interpretation, and contributed to the report as well. In May of 2017, a presentation was delivered to the 129th meeting of the Iowa Academy of Science on the research conducted. Over the summer and fall of 2017, Chad worked with students to complete the remaining stream segments. A finalized report is anticipated in March/April with the full stream assessment. This information will be utilized to update the DRCWIP Watershed Management Plan as required by the Iowa DNR. Without Chad’s assistance, this assessment would have fallen on the DRCWIP Project Coordinator and taking a significant amount of time away from other conservation initiatives. Chad contributed a significant amount of his own time to see the completion of the project. The students involved also received valuable technical skills and knowledge, which they will take with them into their future fields, as well as a greater appreciation for their local community thanks to this partnership. In addition to the award from the Black Hawk Soil and Water Conservation District, Dr. Heinzel was also the recipient of a 2018 Graduate College Summer Fellowship Award to investigate the geology and natural history of the Cedar River.

Paige LaPlant (Environmental Science BS & Earth Science BA) was awarded a American Institute of Professional Geologist (AIPG) National Scholarship in April of 2018, based upon her excellent academic record and her essay submission. Paige’s essay was published in The Professional Geologist, volume 55, #3, and highlights the reasons behind her academic interest in geology.
In early June of last year, Drs. Gray and Sedlacek led 12 students to northern New Mexico where we explored the volcanic landscape and discussed the numerous environmental issues facing cities like Albuquerque. (This was a new trip for this department, within the long tradition of providing varied field opportunities. It was also a first for Dr. Gray who used to live in the area.) Besides seeing some gorgeous scenery, we also dealt with record temperatures that closed many of the national forests we planned to visit and wildfires in the area threatened to impact the air quality. Dr. Gray also led the trip while wearing a cast on one foot! Despite these drawbacks, the trip was definitely a resounding success.

The first part of the trip focused on the Jemez Mountains. This large volcanic field is home to world-class volcanic rocks, 1,000-year old ruins, and the Los Alamos National Laboratory (birthplace of The Bomb). The students mapped and described many types of volcanic rocks and visited the ginormous Valles Caldera. We also met a local geologist (and former colleague of Dr. Potter) who led a field trip along the boundary of the Colorado Plateau as well as an otherworldly landscape that has been used as a movie set.

During the second part of the trip, we explored the area in and around Albuquerque. Here we hiked a slot canyon carved into volcanic tuffs and marveled at the numerous tent rocks in the region. A side trip led us to an ice cave within a lava tube and saw signatures carved in the sandstones of El Morro National Monument by early Spanish explorers.

Besides soaking in the amazing geology of the region, the trip also included several opportunities to understand the complex environmental issues associated with living in a desert. We visited with people who work on these problems including a geologist working to clean up the legacy contamination in Los Alamos, a geologist and tribal member working to protect his ancestral homelands, and a representative from Albuquerque’s water district who described the many ways that the city has reduced its water usage.

Between the amazing scenery and wonderful local cuisine, we understand why New Mexico is called the Land of Enchantment.
Spring Break saw a return to Big Bend National Park and West Texas. A frequent destination since the early 1970s, the Department of Earth Environmental Science last visited the region in late 2015. Drs. Lee Potter and Alexa Sediacek teamed up to lead fifteen students on an odyssey as part of Environment and Natural History of Big Bend National Park. Following the 2015 reboot to better mesh with the Environmental Science Major, the trip was expanded to eleven days to better aid discussions of resource extraction, land and water use, air quality, environmental ethics, history, and people in the national parks.

The group camped outside the Park in Marathon and Terlingua. A new stop was the Waste Isolation Pilot Project (WIPP) near Carlsbad. We were able to spend time in the Marathon uplift. A full day was scheduled for the Permian Reef Trail at Guadalupe Mountains National Park and we were able to tour Carlsbad Cavern in all its grandeur. This was in addition to The Midland Petroleum Museum, Monahans Sand Dunes State Park, hikes into Dog Canyon and the Grapevine Hills, Fault-Appreciation Day in Boquillas Canyon, the Hot Springs, Ernst Tinaja, Luna's Jacal, and the Ross Maxwell Geologic Drive. The “Pinnacle” of the trip was the all-day hike in the Chisos Mountains, where the group split into smaller teams to tackle different hikes based on interest and ability. Those who made the 12+ mile South Rim loop or Emery Peak summit were rewarded with exceptional viability.

After hours, the group worked on journals, helped with meal planning and food prep (our chefs produced a delicious menu!), and explored the area. Those seeking 3000 - level credit also worked on an in-the-field research project to satisfy experiential learning requirements for majors. These included studies of magma volume, water quality of the Rio Grande, and sediment bed thickness in the Marathon Basin.

Trips at this time of year risk bad weather, but the group was spared intense cold, ice, heat and precipitation. We did suffer 65+ mph winds near Carlsbad that flattened tents and threatened to knock students down on the Permian Reef Trail. Instructors were overheard to say “We would travel with you all again.”
“Geologists do it on the rocks,” says a bumper sticker. Doing “it” can take a person into all kinds of situations, some of which can lead to high adventure and personal danger.

Geology is the study of the earth, so it makes sense that geology students become familiar with the surface of the planet on which we live. One cannot learn the subject from books alone, so most colleges and universities educating future geologists require study “in the field”. That means going out into nature to look at rocks, how they are distributed, how they might be folded, broken, and eroded to produce landscapes. Geological education also often requires a summer examining geologic features on long extended field trips or, as Penn State did when I was an undergraduate there, a mapping exercise.

Geologic mapping is the plotting of rock formations (bodies of rock) and their structures (folds and faults) onto paper that shows not only what is at the surface of the earth but also indicates what is below the ground. Mapping an area brings all the geologic education learned earlier in the classroom into perspective as the student is faced with a mountainside or other landscape to interpret and put onto a piece of paper.

In 1962 Penn State ran a primitive camp in the Tendoy Mountains of southwestern Montana. That was a turning point in my life as I evolved from a naive and not-so-bright student into one somewhat less naive (but perhaps still not-so-bright). The summer camp was five weeks long, and we slept in tents and ate our meals on a picnic table under a big canvas tarp. An outhouse (actually two - one for the men and one for the women) served our other needs. We were ten miles up a gravel road from the tiny town of Lima in a U.S. Forest Service campground. Even though this was a public space we saw only one or two other campers the whole time we were there. This remote site was some fifty miles from a grocery store and source of fresh meat. The cooking crew went to town (Dillon, Montana) on Mondays for groceries. They brought back meat and fresh strawberry pie from a cafe that had a national reputation for its scrumptious creation. We ate well that day but existed on limited fare the rest of the week. On Saturday afternoons we could go into town for a shower and to make phone calls if we wanted. Back then there were no cell phones. During the week we were mostly cut off from the rest of humanity.

Rob Scholten, our professor, had divided that part of southwestern Montana into chunks of landscape for students to map. Each area was assigned to one pair of students. Al was my mapping partner, and we were assigned a parcel of about 28 square miles on the south side of the Tendoy Range. We had four weeks to make a map of that land. Because our area was the farthest from camp we were given an ancient Jeep to get to and from
Geology students Marcia and Marianne campsite cooking during the geology field trip

our field site. The old vehicle could reach only 35 miles an hour on the highway, but it was good at getting around over the trails we needed to travel to reach the edge of our assignment. We walked over the entire 28 square miles.

One day Al and I decided to drive up as far as we could on the peaks so we could look out over our area from a higher perspective to see if we were missing anything. (Actually, we wanted just a bit more adventure that day, but we couldn’t admit that to Dr. Scholten.) The Lima Peaks (part of the Tendoy Range) reach a height of over 9,000 feet, but they are somewhat rounded and largely covered by talus. Talus is simply a mass of broken rock lying on a slope, and the rock pieces can range in size from gravel to boulders. Al and I could drive to a pretty high point on the north side of the Peaks but we would still have to get to the top of a ridge to look to the south over our mapping project.

The old Jeep took us up to the highest part of the mountain covered by grass. From there on, we would have to walk across the talus. The talus was made of sandstone and had boulders as big as one’s head mixed in with much finer material. I have walked over talus many times in my life, so this was no challenge. We parked the Jeep by an empty sheep-herder’s wagon, then packed our gear for the walk. We each carried a rock hammer, a Brunton compass (an essential piece of geologic equipment to measure angles and the like), aerial photos we were using that summer, and note books. We must have also had our lunch with us. The little bottle of dilute hydrochloric acid in our backpacks we used to indicate the presence of calcium carbonate wouldn’t be needed that day, but we always carried it.

We struck off across the talus toward a low spot on the ridge with great confidence, skipping from boulder to boulder. Several hundred feet below us on the slope was a bit of a cliff to which we paid little attention. The sun was shining and the air was pleasantly cool, as it mostly is in the Montana mountains on summer days.

As I made my way across the boulder field I thought I heard water running. “That’s odd”, I thought because we were thousands of feet above any stream and there was no melting snow above us. I stopped to listen and the sound stopped. I took another step and heard it again. Now my curiosity was really piqued. I took one more step as I looked at my feet, and realized the whole talus slope was moving downhill toward that cliff with every step. Were they about to set off a big landslide? Would they ever find our bodies under all these rocks? They would wonder why we never returned for supper that evening but could not begin the search until daylight the next morning. They wouldn’t even know where to look because we were out of our usual area. Within a few days they might find the Jeep, and by then our bodies would be rotting under the rocks in the thin air of that mountain.

“Hey Al”, I said in a trembling voice, “I think we might want to turn around!” He agreed, and we began to retrace our steps back to our vehicle. We got to the grass by the sheep-herder’s wagon and gave a big sigh of relief. We didn’t get the view we were hoping for but we cheated death that might have been waiting for us on the side of that mountain. We almost got more adventure than we bargained for.

Several days later I got a view of that mountainside with its talus slopes. Moving talus, such as we found ourselves standing on, differs in color from the stable material on either side. Yes, that mountain we tried to cross had two light-colored streaks running down the side, indicating the unstable nature of that mass of rock.

Geology summer camps provide many stories. They greatly advance maturity in becoming a geologist as well as a chance to grow up in ways to deal with physical and mental challenges among other persons living and working in sometimes challenging circumstances. Fortunately, Al and I survived the experiences of geology summer camp to return to our families and friends, as almost all geology students do.
SCOTT BEASON
B.A. EARTH SCIENCE & GEOLOGY
MINOR ('05)
M.S. ENVIRONMENTAL SCIENCE ('07)
ASHFORD, WA

PARK GEOLOGIST
Hello everyone from Washington State! This has been a very good last year. Very busy still, both personally and professionally.

After putting it off for over a decade, I finally took the ASBOG exams in October. I passed both the Fundamentals of Geology and Practice of Geology exams and I’m now a licensed geologist in Washington! Pretty cool... definitely recommend taking them early if you plan on doing it!

I’ve now been working with the federal government as the Park Geologist at Mount Rainier for a little over 11 years now. Still growing the geology program here... we’ve started a new program called Imminent Threats, which looks at roads and trails that are at an imminent risk of failure in a modest flood event. The staff analyzes the area, proposes solutions and helps implement them. I’m also continuing research on debris flow forecasting and real-time seismic monitoring of debris flows. We will be presenting the results of this work at the 7th International Conference on Debris Flow Hazard Mitigation in Golden, CO in June 2019 – definitely looking forward to that. I’ve also been working on glacier time-lapse cameras and maintaining the network of real-time stream gauges in the park (both of which are difficult due to the environment here!). All the data and everything is online at morageology.com - check it out!

Personally, I’m now a little over two years into home ownership. My girlfriend Teira and I have expanded our animal collection (now have two dogs, a cat, a leopard gecko, and FOUR chickens)! – All are doing very well... except when the puppy and rooster “play” with each other a little too much!

I hope everyone is doing well. I look forward to seeing everyone’s updates! If you’re ever around the area (western WA), please send an email and come visit!

BILL BRECHT
B.A. EARTH SCIENCE TEACHING ('72)
ST. CHARLES, MO

RETIRED EARTH SCIENCE TEACHER
After retiring from teaching earth science in 2002, I worked at the Lewis & Clark Museum in St. Charles. I became museum director in 2006 and have recently retired from that position. Continuing to work at the museum a couple days a week on a volunteer basis and serving on its Board of Directors takes up some of my time. Owning a couple of antique cars and involvement in car clubs also keeps me busy. My wife Teri (UNI, ’73) is active in a Sweet Adelines chorus and in the local chapter of the American Association of University Women.

JENNIFER ERICH
B.S. GEOLOGY & EARTH SCIENCE MINOR ('96)
HOUSTON, TX

EXXONMOBIL MANAGER
Hello from Houston! I’m almost to my 20th year at ExxonMobil, and I have just taken on a new role as Change Manager to help champion the Upstream reorganization that occurred in April. Yes you might be asking, what does this have to do with Geology? Good question! I keep asking that to myself! But duty calls, and I am excited to help be the face of change for the biggest structural reorganization since Exxon and Mobil merged in 1999. In other news, a fellow UNI graduate, Allyson Anderson Book recruited me to help support the American Geosciences Institute Foundation as a Trustee. I am happy to help support Allyson in her role and be a champion for the AGI and its mission to educate and connect people to the earth.

KEITH FRANCIS
B.S. GEOLOGY ('74)
M.A. REMOTE SENSING-U. OF MICHIGAN ('80)

PHYSICAL SCIENTIST (GIS/MAPPING)
Retired 2011, after 37 years Federal Service (including Dept of Defense Mapping, Suitland, MD) 36 years of soccer officiating, retired and traveling.

CINDY FREIBERG
B.A. EARTH SCIENCE & GEOGRAPHY MINOR ('94)
OSAGE, IA

LARGE PROJECT SALES
Jim and I are still traveling a lot around Wisconsin, Minnesota and Iowa to keep in touch with our children and grandchildren. I am working full time and Jim has retired so we found a perfect ranch to settle into at Osage. I still collect minerals and rocks from around the world... friends bring them to me! We are part of the sandwich generation and are blessed to have my parents and Jim’s Mom to see and help out as best we can. I have just entered a new decade this year on my birthday so my goal is to enjoy the next 10 years by traveling more and visit the many friends we have around the US. Take care and always look at those rocks under your feet.
**MOLLY HANSON**  
**B.A. EARTH SCIENCE & GEOLOGY MINOR (’09) DES MOINES, IOWA**

**EXECUTIVE DIRECTOR**  
Last year I became a home owner and a dog mom. My work has taken me to exciting places and introduced me to amazing people and watersheds. Advocacy, policy, education, outreach, fundraising, and public engagement— it is all part of our mission to help protect, restore and enjoy Iowa's rivers.

**BRIDGET JACOBSON**  
**B.A. EARTH SCIENCE & BIOLOGY MINOR (’88) URBANDALE, IA**

**SCHOOL NURSE**  
School Nurse - Valley High School, WDM  
Watching education with interest in Iowa.

**MARY MEYER LESTINA**  
**B.A. ALL SCIENCES, B.A. EARTH SCIENCE TEACHING & METEOROLOGY MINOR (’00) IOWA CITY, IA**

**PHYSICS AND PHYSICAL SCIENCE TEACHER**  
I am currently in my 19th year teaching at City High School in Iowa City and enjoy teaching Physics and Physical Science. I love to travel and spend time with my family - my boys are now 11 and 8.

**CODY MCCOY**  
**B.A. ENVIRONMENTAL SCIENCE, EARTH SCIENCE MINOR & AIR QUALITY MINOR (’16) DES MOINES, IA**

**ENVIRONMENTAL SCIENTIST**  
I have been with Seneca Companies in Des Moines for over 2 years now. A big part of my job is conducting environmental assessments on behalf of the DNPR at gas stations, auto repair shops and anywhere else where petroleum contamination may enter the ground. I do a lot of soil and groundwater sampling along with corrective actions to remediate contamination in the soil or groundwater. I travel around the state and the Midwest, which makes for an exciting and ever changing fast-paced work environment.

**CHARLOTTE MCDERMOTT**  
**B.A. EARTH SCIENCE TEACHING (’03) M.A. SCIENCE EDUCATION (’12) MARION, IA**

**HIGH SCHOOL SCIENCE TEACHER**  
Hello! I feel like I’m a broken record replaying I’m in my 14th year teaching high school science (Earth, physical, biology, anatomy) at Linn-Mar High School in Marion, IA. My kids are finally getting old enough where I can travel again (something I’ve missed so much). Last summer, we did a trip to Yellowstone and the Black Hills... it was amazing. And my kids loved it. Can’t wait to take them to more geological phenomena!

**BOBBI MINARD**  
**B.A. ENVIRONMENTAL SCIENCE (’17) AMES, IA**

**PROGRAM COORDINATOR**  
I now live in the Des Moines area, and progressed from being an AmeriCorps member to running an AmeriCorps program at ISU. I really enjoy all the free things Des Moines has to offer, though I miss being able to drive five minutes and get across town. I adopted a dog from Cedar Bend, and we go on walks every day. Her hobby is chasing rabbits.

**SEAN NEWLIN**  
**B.S. AIR QUALITY (’10) BERKELEY, CA**

**STAFF SPECIALIST**  
In May 2018 I graduated from the Goldman School of Public Policy at the University of California - Berkeley with a master’s degree in public policy. After a brief fellowship in Oakland with the Beneficial State Foundation doing market research for the Clean Vehicle Assistance Program, a grant program here in California to make battery-electric and plug-in hybrid vehicles more accessible to lower-income families, I joined the Bay Area Air Quality Management District in their Strategic Incentives Division. Here I administer grants for projects in the San Francisco Bay Area that will reduce emissions from transportation sources by replacing existing vehicles with zero-emissions alternatives and reducing the number of single-occupancy vehicle trips. I love living in California and taking advantage of the easy access to the National Parks and wilderness areas, and I’m thankful every day for my experience at UNI and the incredible mentorship of Dr. CI.

**AMANDA PREPERATO**  
**B.A. EARTH SCIENCE (’09) ANNANDALE, VA**

**ASSISTANT DIRECTOR, ADVENTURE PROGRAMS**  
2018 was filled with excitement! In June, Chris and I got married in Ohio Pyle, PA surrounded by the people we love and in a place that is special to us. We were even able to take family and friends whitewater rafting on the Lower Yough the day before our wedding. We were fortunate to also be able to celebrate our marriage in Iowa with family and friends in August. For our honeymoon we traveled to Hawaii and were able to hike, snorkel, and stand up paddleboard. In November, I was honored to receive the Patsy Kott Service Award at the Association of Outdoor Recreation & Education (AORE) national conference. I continue to find new opportunities at the University of Maryland that keep me fulfilled and inspired.

**ANDY SHEETS**  
**B.A. EARTH SCIENCE, INTERPRETIVE NATURALIST & GEOLOGY MINOR (’13) WESTOVER, WV**

**ENVIRONMENTAL SPECIALIST II**  
Andy started working for SWCA in December of 2018, working out of their Pittsburgh office. He serves to help clients with wetland and aquatic resource delineation needs, primarily in PA, WV, and OH. He has also started working in partnership with a conservation focused non-profit in monitoring federal easement programs and is working toward a Professional Wetland Scientist designation.

**MARY ANN SMITH**  
**B.A. EARTH SCIENCE (’68) M.A. EARTH SCIENCE EDUCATION (’71) PRINCETON, IL**

**RETIRED EDUCATOR**  
Still active and in good health. Duane and I are heading to Denali, Barrow and Seward this summer. Roadside Geology of Alaska is in the mail.

**CATHY WILSON**  
**B.A. GEOLOGY (’83) IOWA CITY, IA**

**RETIRED TEACHER**  
Hi to all my fellow Panthers! At the end of the 2017-18 school year I retired after 31 years of teaching. I decided that I wanted to retire while I still loved what I did. While I spent the vast majority of my years teaching chemistry and physics, I tried to work the earth sciences and environmental sciences where ever I could. Hopefully, I was able to inspire a few students to look into the earth/environmental sciences a little bit more. I am taking this year off, and then I will find a new job (of some sort) to keep myself busy and active.
GIFTS FROM ALUMNI AND FRIENDS

JAN 1, 2018 - DEC 31, 2018

Wayne & Jan Anderson
Debra & Lee Bader
Barbara & James Berquam
BMC Aggregates, LC
April Czarnetzki
Mark & Bonnie Farland
Patty Johnson
Leslie Knapp
Sherm & Beverly Lundy
Charlotte & Adam McDermott
Milton and Kathleen Pierson
Dean & Ann Rigdon
Linda A Sliefert
MaryAnn & Duane Smith
Stanley & Kay Strike
Kenneth & Deborah Thompson
Yabin Tian

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