

Spring 2018

Earth News, v41, Spring 2018

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

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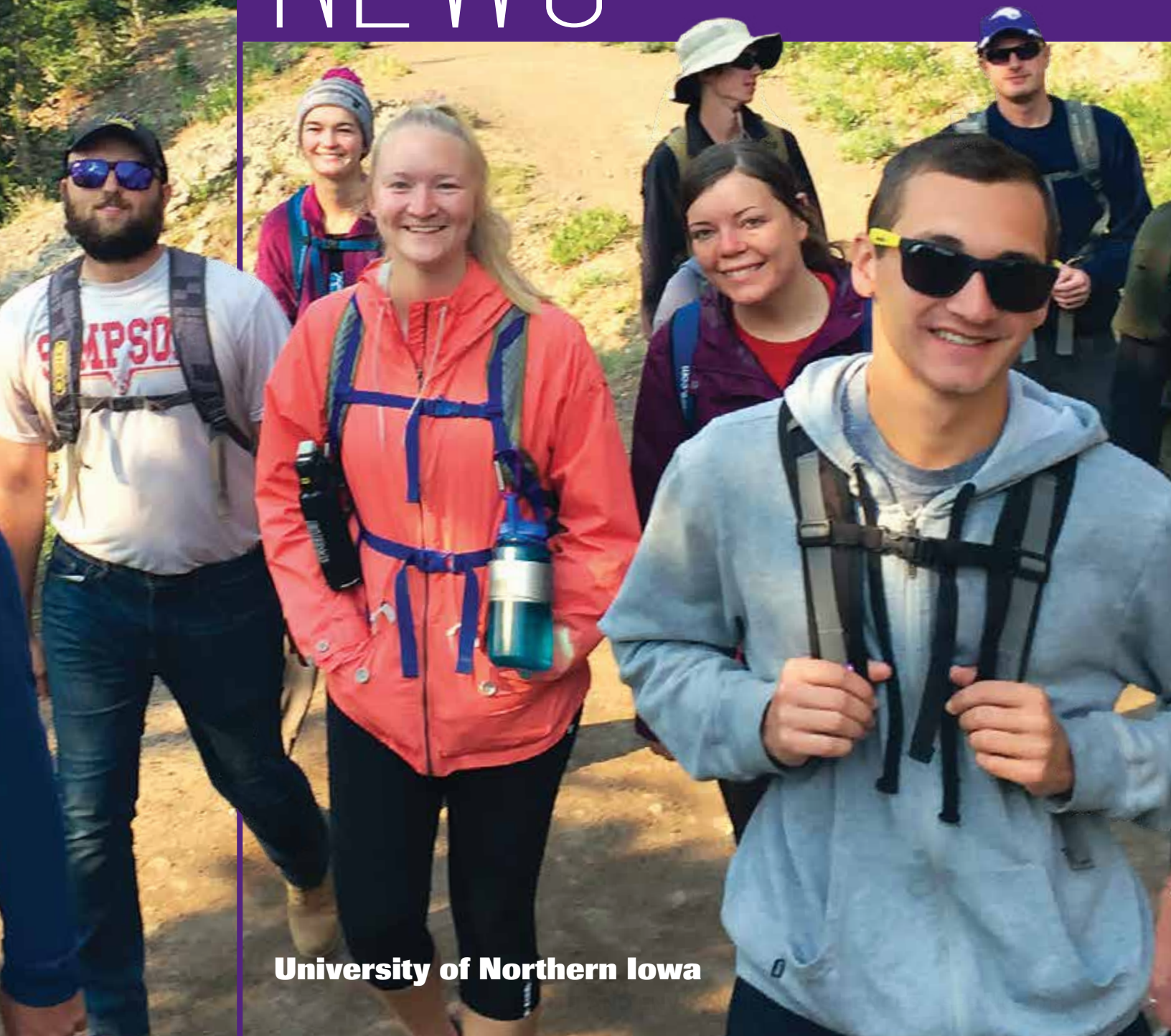
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EARTH

NEWS

VOL 41 | SPRING 2018

DEPARTMENT OF **EARTH AND ENVIRONMENTAL SCIENCES**



University of Northern Iowa



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DEPARTMENT OF
EARTH AND ENVIRONMENTAL SCIENCES

EARTH NEWS

FROM THE DEPARTMENT HEAD

SIOBAHN



MORGAN

A very warm “Hello” to the Alumni, Friends, and Family of the Department of Earth and Environmental Sciences at the University of Northern Iowa. It is a bit difficult to say warm given that the wind chill outside is quite far below 0° F. Hopefully, you will be reading this in a warmer setting.

As you will see in this newsletter, we continue to provide our students with memorable experiences, as well as the foundations necessary for their success. We have recently been spending quite a bit of time identifying the skills and knowledge that we want our majors to have upon their graduation from UNI. It isn't unusual to have measurable standards of skills and knowledge in many professions, and we want to make sure that our majors gain more than a grade from our courses. It is important that they have experiences and skills that are transferable to any profession.

There are a few highlights of the past year that I wanted to bring to your attention, which are mentioned in this newsletter—

- Larger average class sizes in our introductory courses
- Multiple field trip courses over the past year, and planned for 2018
- Multiple student research projects in all areas—geology, meteorology, astronomy and environmental sciences
- Record number of active members in Sigma Gamma Epsilon Chapter
- Unique faculty awards

One of the most important items coming forward this year is a new Bachelor of Science degree in Environmental Sciences. We have not had a B.S. since the closure of the Geology program, and that may have negatively affected

us in recruiting high-achieving students. This new program will appeal to those students interested in an intensive research program in Environmental Science, with emphasis areas in Air Quality, Geology and Hydrology possible. The Latham Hall research facilities are now enhanced by the new equipment for student projects in geological and air quality studies, funded by the Roy J. Carver Charitable Trust. We have plans for future equipment upgrades, which I'll hopefully be able to talk about in next year's newsletter!

The other major aspect of our department is that of service. Faculty are expected to provide service to various communities, such as the department, college, university, professional or local community related to their profession. You will again see an update of the “Sunday at the Quarry” event in this newsletter, one of our largest service projects, which includes quite a few majors as well as faculty. There are also smaller projects, such as visiting local schools, planetarium and observatory shows, helping folks identify rocks, fossils, and objects that sadly are usually not meteorites. This past year we had the large event for the total solar eclipse, which was unfortunately clouded out at UNI, but did provide the public a chance to see the eclipse from locations across the US and a chance to see real Moon rocks. I suspect quite a few of you have also provided your own services to the public and your communities over the past year—please let us know about those in the future.

As always, please let us know how things are going with you, and if you ever want to get in touch with us, drop us a line. I hope you all have a healthy and happy year!

FACULTY

UPDATES



KYLE GRAY

ASSOCIATE PROFESSOR OF
EARTH SCIENCE AND SCIENCE ED

This past year was somewhat uneventful. I continue to teach Inquiry into Earth and Space Science for the Elementary Ed majors and this spring I am teaching Earth Materials again. I am enjoying teaching that course. It is nice to interact with our majors and to teach something other than an introductory course. One new addition for me is a fieldtrip course to New Mexico. This June, Dr. Sedlacek and myself are taking a group of students to Northern New Mexico where we will explore a gigantic volcanic caldera, strange, tent-shaped rocks, and ancient native American ruins. We will also explore some of the issues related to placing a major city on the middle of the desert. Watch this space in 2019 for photos and exploits of our adventures.

My research continues to chug along. This year I am working with one of our Earth Science Teaching majors—Bradley O'Connell on my investigation of student misconceptions of mass extinctions. By the time you read this, Bradley will be presenting some of our findings at the North Central Section of the Geological Society of America.

This summer my son Alex and I did get back out to Washington to see my family. On one day we visited two volcanoes. We took this photo while visiting Mt. Rainier, but later that day we drove down and saw Mt. St. Helens. Geology in action!!



AARON SPURR

INSTRUCTOR OF SCIENCE ED AND
FIELD EXPERIENCE COORDINATOR

I continue to wear many teaching hats on campus: Inquiry into Earth and Space Science, Current Technologies in Science Teaching, Astronomy Lab, and Level 2 Field Experience. They each have a different student audience and I enjoy the variety.

My wife, Ann, still works as a part-time paraeducator at Hansen Elementary, and does book-keeping for a local contractor. Our son, Will, is a junior at UNI majoring in Earth Science and Computer Science, and our daughter, Sarah, is a 9th grader at Holmes Junior High. The only thing that is constant in my life is that the passage of time continues to accelerate and I wish it would slow down a bit.

**DR. CHAD HEINZEL
& DR. KYLE GRAY**

2017 CHAS Faculty Research/
Creative Activity Grants



CHAD HEINZEL

ASSOCIATE PROFESSOR OF GEOLOGY

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 Thing's* 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!

FACULTY AWARD



XINHUA SHEN

ASSISTANT PROFESSOR OF METEOROLOGY AND AIR QUALITY

Over the past year, I taught Elements of Weather, Air Quality Modeling, and Measurement & Analysis of Air Quality. In the Elements of Weather class, in order to increase students' engagement and help students understand the complicated science concepts, I included several fun experiments such as cloud in a bottle, mysterious hand holding water, the cooling balloon etc. In the Air Quality Modeling class, students learned using AERMOD modeling system to simulate how air pollutants disperse in the atmosphere, students also learned how to use CAMx model to conduct air quality researches. In the Measurement & Analysis of Air Quality class, except for teaching students how to use various instruments to observe air quality, analyze observation data, I also taught students how to write a scientific paper.

In 2017, my article "Polyethylenimine Applications in Carbon Dioxide Capture and Separation: From Theoretical Study to Experimental Work" was published in Energy Technology. Undergraduate student Riley Mullins (Environmental Science major) was included as a co-author for her contribution on the literature review and manuscript editing. Based on the results from the Air Quality Modeling class projects and following researches, two conference presentations were presented at the Air and Waste Management Association's 110th Annual Conference and Exhibition. The first presentation was entitled *Estimating surface PM2.5 using satellite AOD observations and the NASA MERRA2 model simulations* and the second was *Characterizations of air quality weekend effect in Houston, Texas*. Students worked on those two projects were included as coauthors. Manuscripts for journal publications are under preparation. Students are always welcome to work together with me on research!



ALEXA SEDLACEK

ASSISTANT PROFESSOR OF GEOLOGY

Greetings to all! It is hard to believe that I am in my fifth year at UNI; the time passed quickly. Two events in particular illustrated this milestone, one professional and the other personal. Last spring, I watched a very special cohort of students graduate. They were the first class to completely overlap with my time in the department, and I watched their direction, passion, and confidence develop from uncertain freshmen to graduating seniors prepared to take on new, greater challenges. The second occurred in August when my daughter started kindergarten. Her busy schedule includes Girl Scouts, which I am leading with several others. I am currently trying to convince my co-leaders to let me take our troop to the landfill in April to highlight sustainability!

2017 was a busy and productive year for me. In March, I took a team of BETA Project students to the School of Earth Sciences at Ohio State University to prepare samples for strontium isotope analysis in the clean lab. In addition, I was invited to speak at the Department of Geological and Atmospheric Sciences at Iowa State University and at the Department of Earth and Environmental Sciences at the University of Illinois at Chicago. I also spoke at the American Association of University Women's Davenport-Bettendorf's meeting in September. In April, we will have a group of students presenting at the North-Central GSA meeting in Ames. Please stop by and say hello if you are in the area!



LEE POTTER

INSTRUCTOR OF EARTH SCIENCE

Fall and Spring saw me teaching Introduction to Geology and helping another institution teach Intro to Environmental Science. I am trying something new with the Geology Lab and we will see if this bears fruit. It is always good to get the creative juices flowing by doing something different. The Spring semester again has me team up with Dr. Alexa Sedlacek for a return to Big Bend National Park over Spring Break. Look for our travelogue in next year's Newsletter! We are cautiously optimistic that we will not be driven off the Permian Reef Trail in the Guadalupe Mountains by ice this year! My research interest has taken a turn toward weather as I have been analyzing rainfall changes in the Cedar Valley. On the home front, the family is fine, and finishing our 2016 flood rebuild. My wife Karen finished her Master's in TESOL and is practicing her teaching with the large immigrant population at Hawkeye Metro campus. Stay safe, and keep in touch.

FACULTY

UPDATES



**ALAN
CZARNETZKI**

PROFESSOR OF METEOROLOGY

I hope this greeting finds you in good health! During my 26th 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. I'm hoping to offer Weather Analysis and Forecasting in summer 2018 in an entirely online format, as I did in summer 2016. The online format is meant to make the course as accessible as possible to both our students and in-service science teachers. To those of you who may be teaching science, I hope you'll consider this course; it can be taken for graduate credit. The process of producing a weather forecast is a great way to apply the inquiry process in a real-world setting. Since it involves the use of conceptual and numerical models, material presented in this course and then transferred to a science classroom may help educators demonstrate they are meeting several targets set by the Next Generation Science Standards.

This past summer I participated in the 2017 Lake Michigan Ozone Study. An article on this project appears elsewhere in this newsletter. My work analyzing the volumes of data collected by our equipment keeps me busy between teaching, grading, advising, and other duties in the department.

Please consider sharing your favorite cloud or weather event photos with me. Maybe I can share your photo with students in my classes!

Best Wishes to all!



**MOHAMMAD
IQBAL**

PROFESSOR OF GEOLOGY

Dr. Iqbal is actively involved in a project in Nepal conducting environmental assessment of an urban river in the highly populated capital city of Kathmandu. The project team has just finished the third year of field work in the Kathmandu Valley. In addition, Dr. Iqbal advised several student projects last year dealing with Iowa's water quality. In fall 2017, Dr. Iqbal taught Introduction to Geology and a new course called Hydrology Seminar. His spring 2018 teaching duties include Introduction to Geology and Environmental Hydrology.



**THOMAS
HOCKEY**

PROFESSOR OF ASTRONOMY



SGE

Local Chapter Officers: Hannah Dietz, Paige La Plant, Madelynn Nelson and Heather Hammersley

Gamma Sigma at the University of Northern Iowa was recognized as a Quality Chapter for achieving excellence by providing a quality program to its members.

NEWSLETTER

This academic year has been another year full of volunteer work and fun events for the Gamma Sigma Chapter of Sigma Gamma Epsilon. We kicked off the school year with a welcome back picnic, where returning students could reconnect and new ones could meet the wonderful people that make up our department. It was sad not to see the familiar faces of those members who graduated last academic year, but we know they will tackle their next adventure with as much determination as they did their undergraduate career.

We are excited to welcome many new members this year to SGE! In the spring of 2017, we initiated 5 new members while in the fall we welcomed 11 to the honor society. These new members, along with the current ones, give us a total of 21 active members representing SGE for the year! The current officers are Paige LaPlant (President), Madelynn Nelson (Vice President), Heather Hammersley (Treasurer), and Hannah Dietz (Secretary).

SGE has been very active this year with several events. The two biggest ones, Sunday at the Quarry and Halloween House, were both a huge success. At the quarry, members helped to educate the public through family-friendly events such as breaking open geodes, learning about fossils, visiting the various educational booths, and even going down into the quarry! Later in the month of October, we were a part of the annual Halloween House in McCollum Science Hall. This year, our theme was "Triassic Terrors."

SGE set up sand pits filled with dinosaur bones that kids could dig through and win a prize. T-rex even made an appearance at our event!

At the beginning of the semester, we also organized a bake sale to fundraise for those families effected by the western wildfires. One of our members, Tyler Dursky, even spoke about the Earth Sciences at both the Cedar Falls and Waterloo city council meetings. Some other events we have been a part of include the Electronic and Hazardous Waste Recycling Event, Majors in Minutes, Water Quality Snapshot Event, Minerals with Interior Design, Under the Harvest Moon, Refill not Landfill, and Panther Plot Clean-Up.

The members of SGE have been very busy this year and we chose to end the semester by throwing a holiday party. Members and non-members were invited to eat good food and reminisce about the last couple of months. At the end, we did a white elephant gift exchange which was a huge hit.

Next year also promises to be very successful! There are many events that we will be a part of: Hartman's Maple Syrup Festival, Honors Week, Earth Day, and many more. Thank you for all of your support and we are excited to get going on all of these amazing opportunities!

PAIGE LAPLANT
Chapter President



TC and T-rex join up at the Triassic Terrors venue at the Halloween House in McCollum Hall.

2017 STUDENT CONGRATULATIONS

GRADUATES

SPRING 2017

KEITH DOORE

B.A. Earth Science & B.S. Physics

EMILY ENGLE

B.A. Earth Science

TAYLOR GARTON

B.A. Earth Science
B.A. Environmental Science

MATTHEW MCINTOSH

B.A. Earth Science
B.A. Environmental Science

NICHOLAS MILLS

B.A. Earth Science Teaching

RILEY MULLINS

B.A. Environmental Science

TERRA PEREZ

B.A. Environmental Science

SUMMER 2017

HAWRA ALGAZWI

B.A. Environmental Science

BOBBI MINARD

B.A. Environmental Science

NATALIE GALLEGOS NUNEZ

B.A. Environmental Science

MOLLY STANDARD

B.A. Earth Science

FALL 2017

MITCHELL KOELLNER

B.A. Environmental Science

DANIKA PATTEN

B.A. Earth Science
B.A. Environmental Science

SCHOLARSHIPS & AWARD WINNERS

KAYLA BECK

Earth Science BA
and Environmental Science BA
Jan Harken Scholarship
Jessica Allen Terri
Endowed Scholarship

RYAN BUTCHER

Earth Science BA
Summer Undergraduate Research
Program (SURP) Award

LILY CONRAD

Environmental Science BA
Louise Hearst Spear
Memorial Scholarship

KEITH DOORE

Earth Science BA and Physics BS
NASA Iowa Space Grant
Consortium Scholarship
CHAS STM Scholarship
Physics STM Scholarship

TYLER DURSKEY

Earth Science BA and
Environmental Science BA
Student Opportunities for Academic
Research (SOAR) Award

TAYLOR GARTON

Earth Science BA and
Environmental Science BA
Earth Science STM Scholarship

JAMES JANSSEN

Earth Science BA
Earth Science STM Scholarship

ELIZABETH KELLY

Environmental Science BA
Charles J Hearst Scholarship
Jessica Allen Terri Endowed
Scholarship

MITCHELL KOELLNER

Environmental Science BA
Louise Hearst Spear
Memorial Scholarship

PAIGE LAPLANT

Earth Science BA and
Environmental Science BA
Earth Science STM Scholarship
Summer Undergraduate Research
Program (SURP) Award

ALEC MASS

Environmental Science BA
Earth Science STM Scholarship

TERYN MUELLER

Earth Science BA
Earth Science STM Scholarship

MADELYNN NELSON

Earth Science BA and
Environmental Science BA
Larry A. Kelsey
Memorial Scholarship

ISAAC NEPPEL

Environmental Science BA
Louise Hearst Spear
Memorial Scholarship

DANIEL NIELSEN

Environmental Science BA
Earth Science STM Scholarship

BRADLEY O'CONNELL

Earth Science Teaching BA
Bill and Teri Brecht Scholarship

GRANT OLBERDING

Environmental Science BA
CHAS STM Scholarship
Donald and Marguerite
McKay Scholarship

DANIKA PATTEN

Earth Science BA and
Environmental Science BA
Student Opportunities for Academic
Research (SOAR) Award

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

Environmental Science BA
Knapp Earth Science Scholarship

WILLIAM SPURR

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

MADELYN STOEN

Environmental Science BA
and Philosophy BA
Earth Science STM Scholarship

MORGAN STREFF

Environmental Science BA
Earth Science STM Scholarship

ANDREW THOMPSON

Environmental Science BA
Donald and Marguerite
McKay Scholarship

INTERNSHIPS

KAYLA BECK

Earth Science BA and
Environmental Science BA
Manchester Fish Hatchery
Aquatic Invasive Species Crew
Summer 2017

LILY CONRAD

Earth Science BA and
Environmental Science BA
Natural Resources Conservation
Services, USDA, Mt. Vernon, WA
Soil Conservation Planner
Student Intern
Summer 2017

EVAN EADES

Environmental Science BA
and Geography BA
Panthera Sanctuary,
Madre de Dios, Peru
Conservation Voluntary Intern
Summer 2017

BEN GAVIN

Environmental Sciences BA
UNI GeotREE Center
National Hydrography Waterbody
Dataset for Iowa Project
Intern
Fall 2017

KAYLA JASCHEN

Environmental Science BA
Wisconsin Conservation Corps
Isle Royale National Park,
Keweenaw County, MI
Summer 2017

MITCHELL KOELLNER

Earth Science BA and
Environmental Science BA
American Testing, Quad Cities
Intern
Summer 2017

CHAD OLTHOFF

Earth Science BA
Dickenson County Conservation Board
Natural Resource Aid
Summer 2017

DUSTIN ROBERTS

Earth Science BA and
Environmental Science BA
Sac & Fox Settlement, Tama, IA
Natural Resources Intern
Summer 2017

NOLAN SAGAN

Earth Science BA and
Environmental Science BA
UNI Center for Energy and
Environmental Education
Conservation Corps
Student Fellow
Spring and Fall 2017

MOLLY STANDARD

Earth Science BA
Iowa County Conservation, Ladora, IA
Naturalist Intern
Summer 2017

MORGAN STREFF

Earth Science BA and
Environmental Science BA
Door County Adventure Center,
Sturgeon Bay, WI
Kayak Guide
Summer 2017

EDWARD TODD

Earth Science BA and
Environmental Science BA
UNI Conservation Corps
CEEE Program Assistant
Fall 2017

KYLE TRILK

Earth Science BA
Iowa Waste Reduction Center
Environmental Science
Research Assistant
Summer 2017



SUNDAY AT THE QUARRY

BY **LEE POTTER & SIOBAHN MORGAN**



October 8, 2017 marked another in a long line of Sunday at the Quarry events, hosted and sponsored by BMC Aggregates, L. C. This year displays by a range of geology and environmental agencies were on hand, including student assistants from the Earth and Environmental Sciences department, a display from the BETA Project, the Black Hawk County Gem and Mineral Club, the Black Hawk County Soil and Water Conservation Watershed Program, Iowa Geological Survey, Iowa Flood Center, and many more!



Well over 1200 guests were able to take part in educational activities at the top of the quarry, and the opportunity to visit the inner workings of an active limestone quarry with a visit to "The Pit". Drs. Brant, Sedlacek, and Potter, provided safety information and a discussion about what is mined, how it is mined, and how it is processed. Visitors were able to walk around, braving mud from recent rains, and look for minerals and fossils in recently blasted material. The buses just kept on coming, bringing fresh faces and fresh visitors. Pit leaders were joined later by Ryan Clark of the Iowa Geological Survey.

CODY

ALUMNI SPOTLIGHTS

MIRELES



Growing up in Forest City, Iowa, Cody Mireles always had a passion for “science and the dynamic Earth that surrounds us all.” He graduated from UNI in 2013 with a B.A. in geology and now resides in Texas where he is the chemistry team lead at Klein Collins High School.

“I started teaching in South Korea upon leaving UNI and eventually made my way to Houston, as many geologists do,” said Cody. “I found a job teaching and haven’t looked back. I wouldn’t change a thing since I left UNI. I only wish I were closer to Cedar Falls, due to the lack of Pancheros in Houston.”

During his time at UNI, Cody was an active member of “Geo-Thursdays” and thoroughly enjoyed the environment of Latham Hall. “Latham was amazing and made me and the rest of my department feel like a family.”

The classes he took at UNI not only prepared him in his field of study but also shaped his professionalism. That professionalism helps him today face difficult and uncontrollable circumstances that arise in the work place.

Looking back now, Cody misses the opportunities and relationships that his UNI experience provided. When asked what the biggest challenge was after graduation he responded, “Not having a student room at Latham anymore to meet up, socialize, play Catan and relax. I miss all of my fellow panthers.”

To other students in the science field, Cody suggests gaining a variety of skills that include both writing and working with technology. “Flexibility is the key to success,” he added. “Don’t be afraid to pivot but still keep your eyes on the goal.”

Cody also wants current students to know that they can look to him for guidance. “If you’re pursuing a degree in science education or are interested in teaching, look me up and I can put you in contact with people in the Houston area.”

ASHLEY

ALUMNI SPOTLIGHTS

WORTHY



UNI alumna, Ashley Worthy, graduated with a Bachelors of Arts in both Environmental Science and Earth Science in May 2015.

Ashley currently works as a project manager at TestAmerica in Richland, Washington, where she acts as a liaison for the lab and the client. TestAmerica is a network of environmental testing laboratories, with the Richland location focusing on radiochemistry.

“I have had several positions since I started with the company, and I took every opportunity offered in order to move forward,” added Ashley.

At UNI, she was involved in Sigma Gamma Epsilon, a student organization that focuses on earth sciences, and the Summer Undergraduate Research Program (SURP).

Ashley encourages all science majors to engage in some type of research with their professors. “Research is the most important thing you can do,” she explained. “Every interview I have had since graduating has asked me about it.”

The variety of courses she took at UNI has helped her to “pull knowledge and resources from multiple disciplines, which is essential in the environmental science field.”

For Ashley, the most challenging part after graduation was the options for employment. Because of this, she urges students to start developing career plans early.

“When you get a job, no matter how small or large the task, just say yes,” she said.

Finally, Ashley wants students to take advantage of every opportunity while they can.

“Do research, go on trips and take every field methods class that is offered. The Earth and Environmental science professors have an extensive amount of knowledge and experiences that are invaluable.”

A UNIQUE HONOR

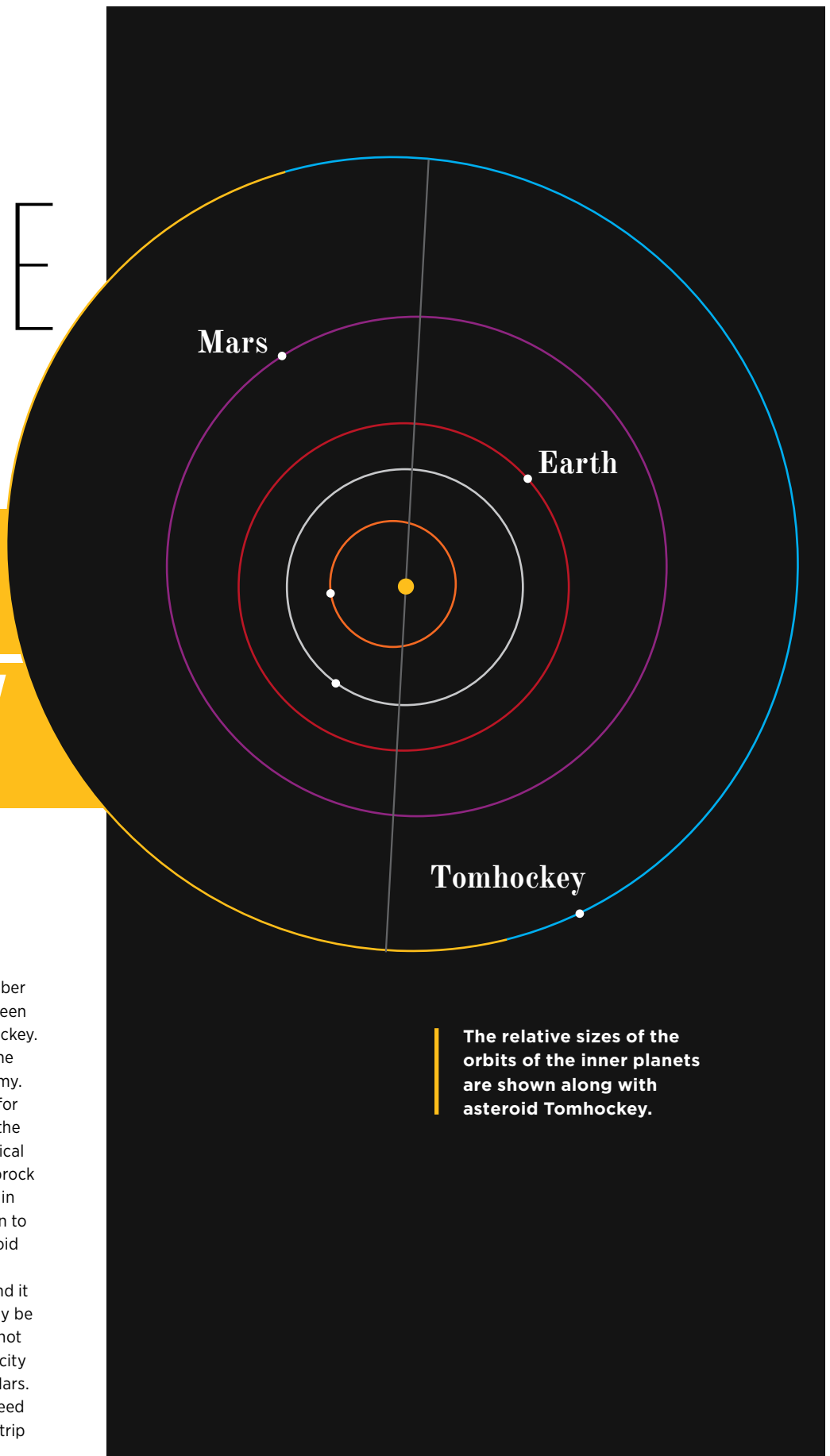
FOR

TOM

HOCKEY

BY **SIOBAHN MORGAN**

In early December 2017, Dr. Thomas Hockey was notified that asteroid number 25153, also known as 1998 SY53, has been formerly named in his honor as Tomhockey. This award is in honor of his work on the Biographical Encyclopedia of Astronomy. Previously Dr Hockey was recognized for this monumental project by receiving the American Astronomical Society Historical Astronomy Division's Donald E. Osterbrock Book Prize. But now there is an object in the asteroid belt that is officially known to astronomers as Tomhockey. The asteroid is located on average about 2.4 times further from the Sun than the Earth, and it takes 3.82 years to orbit the Sun. It may be debatable to some, but Tomhockey is not very eccentric, with an orbital eccentricity of only 0.098, not too different from Mars. If you want to see Tomhockey, you'll need either a very large telescope or take a trip to Latham Hall.



The relative sizes of the orbits of the inner planets are shown along with asteroid Tomhockey.



**IN MEMORIAM
1928 - 2018**

SHIRLEY TRAVIS

CROPPER

BY SIOBAHN MORGAN

It is with great sadness that we report the passing of Shirley Cropper, a sparkplug of energy in the Department of Earth Science from the 1970's to the early 1990's. Shirley came to UNI in a rather roundabout manner, first obtaining a music degree from Scripps College in California, and later enrolling in the Earth Science Master of Arts program at UNI. Following the completion of that degree in 1978, Shirley was hired as an adjunct instructor for the Elements of Weather class, sometimes teaching full-time, sometimes only part-time until the summer of 1991. She has also taught lab sections for the Physical Geology course, and provided private piano lessons. Shirley and her husband Joe were avid hikers who enjoyed the outdoors. Her travels have taken her to a range of exotic locales, such as the Annapurna Himalayas in Nepal and the Rift Valley in eastern Africa. She has participated in many activities with the faculty and students in the department during her time with us, and frequently attended department seminars after her retirement. Shirley's effusive personality will be sorely missed.

THE LAKE MICHIGAN

OZONE STUDY

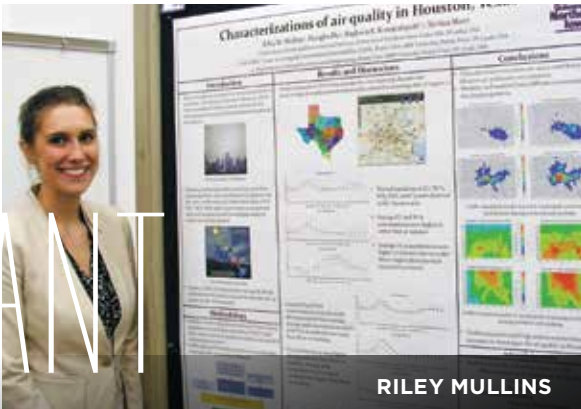
BY ALAN CZARNETZKI

In May and June 2017, Dr. Alan Czarnetzki participated in the observational phase of the 2017 Lake Michigan Ozone Study (LMOS 2017). This large field campaign to study ozone pollution along the western shore of Lake Michigan involved researchers from the University of Wisconsin, University of Iowa, University of Minnesota, Wisconsin DNR, Illinois EPA, NASA, the Lake Michigan Air Directors Consortium, and the University of Northern Iowa. Steve Smith, our department technician, and Dr. Czarnetzki deployed the department's sodar and radiometer to collect wind, temperature, and moisture profiles of the lower atmosphere along the lake shore just north of Chicago. The field campaign, which was covered in a news segment on National Public Radio, forms the basis for on-going research and policy work to improve air quality for millions of people affected by ozone pollution around Lake Michigan. Data collected by our equipment were examined by Environmental Science major Nolan Sagan in his fall 2017 undergraduate research project, "Effect of Mixed Layer Structure on Ozone Episodes in Zion, IL." Two additional students, Tyler Schley and Edward Todd, will conduct research projects in spring 2018 on the wind data collected by our equipment. In late September 2017, Dr. Czarnetzki shared preliminary results of our work at the LMOS 2017 data workshop in Chicago.

The radiometer (left) and sodar positioned at the field site in Zion, IL.



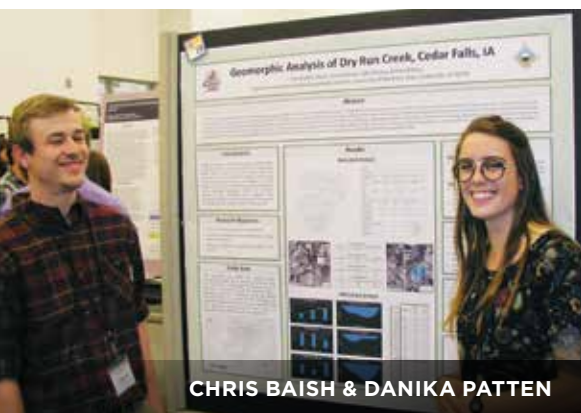
STUDENT RESEARCH



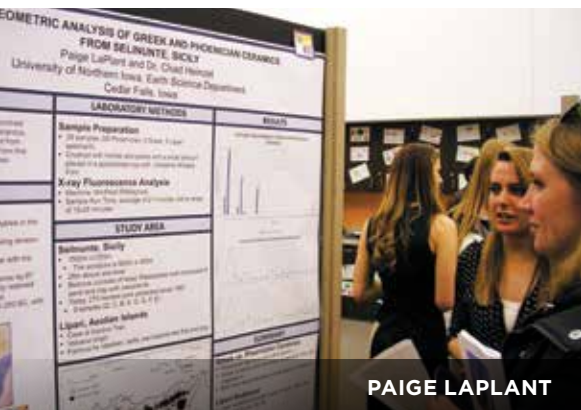
RILEY MULLINS



TERRA PEREZ



CHRIS BAISH & DANIKA PATTEN



PAIGE LAPLANT

129TH ANNUAL IOWA ACADEMY OF SCIENCE

March 24, 2017 | St Ambrose University, Davenport, Iowa

POSTER PRESENTATIONS

KEITH DOORE & DR. SIOBAHN MORGAN

Using Fourier Coefficients to Examine the Metallicity of the Milky Way and Other Galaxies

CLIFTON FOY & DR. CHAD HEINZEL

Geochemical Signatures of Quaternary Sediments within the Maquoketa Quadrangle (Jackson Co., Iowa)

JULIANA HERRAN, CODY MCCOY, MATTHEW MCINTOSH, DR. JOSHUA SEBREE, DR. ALEXA SEDLACEK & DR. XINHUA SHEN

Fog Chemistry in the Cedar Valley

PAIGE LAPLANT & DR. CHAD HEINZEL

Archaeometric Analysis of Greek and Phoenician Ceramics from Selinunte, Sicily

RILEY MULLINS, HONGBO DU, RAGHAVA KOMMALAPATI & DR. XINHUA SHEN

Characterizations of Air Quality in Houston, Texas | University of Northern Iowa & Prairie View A&M University

DANIKA PATTEN, CHRIS BAISH, TYLER DURSKEY, ANDY THOMPSON & DR. CHAD HEINZEL

Rascal Watershed Analysis of Dry Run Creek, Black Hawk County, Iowa

TERRA PEREZ & CHAD HEINZEL

Heat Treatment and its Effects on Eastern Iowan Chert

ELIZA ROSS & DR. CHAD HEINZEL

Cornelia Cameron's Geologic Work on the Southern Iowa Drift Plain

ANDY THOMPSON, TYLER DURSKEY, CHRIS BAISH, DANIKA PATTEN & DR. CHAD HEINZEL

Geomorphologic Analysis of Dry Run Creek, Cedar Falls, Iowa

SUSHIL TULADHAR, TARA NIDHI BHATTARAI, DR. MOHAMMAD IQBAL & DR. CHAD HEINZEL

Challenges of Hydrologic Sampling in a Highly Polluted River: A Learning Experience from Nepal | University of Northern Iowa & Tri-Chandra Campus, Tribhuvan University, Kathmandu, Nepal

IOWA SPACE GRANT CONSORTIUM RESEARCH AWARDS CEREMONY

March 24, 2017 | St Ambrose University, Davenport, Iowa

STEVEN GOMEZ, JULIANA HERRAN, JOSE LOPEZ, COURTNEY MASSEY, RILEY MCMORRAN, KATHERINE POTZKE, EMMA SHIPLEY, CLAIRE SNYDER, JESSICA WAYSON, DR. JOSHUA SEBREE, & DR. ALEXA SEDLACEK

The BETA Project

Note: This poster won a gold medal at this event.

SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM

July 28, 2017 | University of Northern Iowa

POSTER PRESENTATIONS

PAIGE LAPLANT & DR. CHAD HEINZEL

Archaeometric Analysis of Greek and Phoenician Ceramics from Selinunte, Sicily

RYAN BUTCHER & DR. CHAD HEINZEL

Geochemical Signatures of Quaternary Sediments from the East-Central and Southern Iowa Drift Plains

ILLINOIS-IOWA AMERICAN CHEMICAL SOCIETY UNDERGRADUATE RESEARCH CONFERENCE

November 4, 2017 | Ames, Iowa

WILLIAM SPURR, RILEY MCMORRAN, EMMA SHIPLEY, MADELINE ROACH, JULIANA HERRAN, JESSICA WAYSON, KAYLA BECK, DR. XINHUA SHEN, DR. JOSHUA SEBREE & DR. ALEXA SEDLACEK

Carbon Isotope Stratigraphy of the Little Cedar Formation, South Quarry, Waterloo, Iowa

JULIANA HERRAN, CODY MCCOY, MATTHEW MCINTOSH, DR. JOSHUA SEBREE, DR. ALEXA SEDLACEK & DR. XINHUA SHEN

Fog Chemistry in the Cedar Valley

EARTH AND ENVIRONMENTAL SCIENCES SEMINAR

December 4, 2017 | University of Northern Iowa

CHRISTOPHER QUANDER

Determining the Equinox using a Telephone Camera

NOLAN SAGAN

Mixed Layer Depth at Zion, Illinois during the Lake Michigan Ozone Study

LOGAN WINFORD

The 1869 Total Solar Eclipse as Observed from Burlington, Iowa

HYDROLOGY

NEWS

NSF PROJECT IN NEPAL CONTINUES FOR THE THIRD YEAR

BY **MOHAMMAD IQBAL**

The environmental assessment of Bagmati River in Kathmandu, Nepal continued for the third year of sampling. This is an international research collaboration between the Earth & Environmental Sciences Department at UNI and the Geology Department at Tribhuvan University (TU) in Nepal. In 2017, activities were focused on analysis of social and health issues relating to the population within the Kathmandu Valley. For many families along its bank, Bagmati is the only source of water for bathing, laundry, and other house-hold purposes. Many homes have their own way (unregulated) of collecting and treating the stream water before use. Children swim in this water routinely, and women get in direct contacts with the stream while collecting water for washing clothes and cleaning utensils. Surveys were carried out by way of visiting the neighborhoods, interviewing people on their health issues, aesthetics, and their use of Bagmati River to meet daily water requirements. Interview questions included (a) quantity of water used per day in the household, (b) their distance from the river, (c) level of dependence on river water, (d) probable access to alternate water source, (e) evidence of water-borne disease in the household, etc. Initially 140 homes were surveyed through personal visits by the project team. Survey results reveal some serious concern. Thirteen (13%) percent said that they do not have any bathing facilities, indicating their dependence on the adjacent river. When asked where they dispose of their waste water or household waste, 24% said they either fully or partially dispose of into the river or directly on the street. Close to 15% of those surveyed admitted that they depend upon the river for bathing, washing, religious and other purposes. It is clear from the chemical data that the hydrologic environment in the watershed has been severely deteriorated over the recent decades. Impact of pollution in the river has been on the people directly relying on the river for household as well as recreational activities. Urgent steps are required to save the Bagmati ecosystem from a potential environmental disaster in the near future. In the recent months, we have been in contacts with the Kathmandu city authority to convey our findings and recommend urgent steps for remedial measures.

PROJECT TEAM

DR. MOHAMMAD IQBAL, PI | UNI
DR. TARA NIDHI BHATTARAI | TU
DR. CHAD HEINZEL | UNI
SUSHIL TULADHAR | UNI
JUNU SHRESTHA | UNI
NIRMAL RAILA | TU
SUNITA MAGAR | TU



Students Cody McCoy and Matt McIntosh analyzing carbon in fog water samples.

CARVER

GRANT



BETA Project team members Julianna Herran and Astoria Chao presenting research results at ACS Undergraduate Research Conference.

Funded by the Roy J. Carver Charitable Trust, Department of Earth and Environmental Sciences acquired the new instruments for air quality studies. These instruments include: 1) A gaseous ammonia analyzer and a gaseous nitrogen oxides analyzer for ambient gas analysis; 2) A high-volume air sampler and a Partisol sequential air sampler for particulate sampling; 3) a Total Organic Carbon analyzer for chemical analysis of samples.

These instruments have been used in both our teaching and research projects, such as the UNI BETA project. Results of these projects were presented at the 129th Iowa Academy of Science Meeting, IL-IA ACS Undergraduate Research Conference, etc.

The acquisition of these instruments will further enhance our educational training infrastructure to include more hands-on operations into our environmental measurement related courses. This will have impact on many undergraduate students and graduate students here on UNI campus by involving students in several STEM disciplines.



2017-
2018



ALUMNI

IN

RESIDENCE

BY **SIOBAHN MORGAN**

1996 Geology BS Alum Jennifer (Weber) Erich visited the department as part of UNI's annual Alumni-in-Residence program in April of 2017. Distinguished graduates are invited by departments across the University, and are treated to a range of events, including receptions, campus tours, visits to classes, and meetings with current and former faculty. We were very happy to have Jennifer visit, and she was able to visit the *Fossils and Evolution* class taught by Dr. Alexa Sedlacek, and meet with a range of students. Jennifer was also able to visit some familiar haunts, such as the student room, the introductory geology lab and the rock-prep room. In the future the Alumni-In-Residence program will take place during the fall semester.

PICTURED BELOW

Left to Right: Thomas Hockey, Jennifer Erich, Siobahn Morgan, and Wayne I. Anderson in the Earth History/Paleo lab room.



ALUMNI UPDATES

KAREN ASHBAUGH

B.A. SCIENCE ('74)
KIRKLAND, WA

SALES & MARKETING

Thirty-seven plus years with IBM in multiple sales and marketing roles. Currently working for IBM Cloud Business Unit, WW Channel Sales team—program development and sales incentives. The job role requires a modest amount of travel and work from home office.

SCOTT BEASON

B.A. EARTH SCIENCE ('05)
M.S. ENVIRONMENTAL SCIENCE ('07)
ASHFORD, WA

PARK GEOLOGIST

Hello everyone! The past year has been a good one...very busy personally and professionally. As of August, I have worked with the Federal Government for 10 years (almost all of it at Mount Rainier National Park). The geology program at the park is steadily growing and should be pretty well funded the next few years (including a couple of seasonal and hopefully permanent positions). I've been working on using seismic data to help detect debris flows and maintaining a network of real-time stream gages in the park (which is complicated since our rivers like to catastrophically damage them during floods). This fall I helped co-lead a field trip to Mount Rainier and sponsor two technical sessions at the Geological Society of America Annual Meeting in Seattle. It was great to see Dr. Walters, Dr. Gray and Paula Even at the convention! I am now a homeowner as I purchased a house in Ashford, WA on a half-acre of land. My girlfriend, Teira, and the animals (2 dogs, a cat and a Leopard Gecko) are all doing very well! I hope everyone is doing well and send me an email if you're ever in the great Pacific Northwest!

BARB BERQUAM

B.A. EARTH SCIENCE (88)
M.A. EARTH SCIENCE ('91)
CEDAR FALLS, IA

My husband of 45 years and I have been blessed with good health in 2017. We have enjoyed our favorite hobbies at home and continue to travel, especially when the temps dip in Iowa. We live in the same house as our oldest son and daughter-in-law, along with our 4 grandchildren. We see our grandchildren most every day when we are home and love being part of their lives. We do a lot of gardening, Jim with the vegetables and Barb with the annual flowers and perennial plants. We planted lots of fruit trees and shrubs on our 13-acre property. We are beginning to see the 'fruits' of our labor as some of plantings are beginning to produce.

We traveled often in 2017. We visited Puerto Vallarta, Mexico for a couple of weeks last January. In March, we visited family in British Columbia. While in Vegas in April, we visited Hoover Dam, the red rocks of various parks nearby and made a trip up to Zion Natl Park. Before heading back to Iowa, Jim and I ventured on to the Grand Canyon. Our younger son (Tim) moved to Casper, Wyoming so we headed west again to visit him in June and again in July. With Casper Mountain to the south and the N. Platte River on the north, Casper is an attractive area. We hope to get out to visit this summer and do some fly fishing. We rounded out our travels last fall with trips to Utah, and again to Puerto Vallarta. While in Utah we hiked in Arches, Canyonlands, Capital Reef and Bryce Canyon National Parks as well as several state parks. These are truly DUDE experiences: deposition, uplift, deformation and erosion on a grand scale. We drove home via Casper to again visit with Tim. Then in late November as the weather started to cool in Iowa, we flew back to Puerto Vallarta for a couple of weeks of sun and sand. Retirement is good and we are enjoying life. What more could we ask for! I have fond memories of my years at UNI and wish you all well.

BRADLEY BLOCK

B.A. EARTH SCIENCE
B.A. NATURAL HISTORY INTERPRETATION ('93)
CUSTER, SD

CHIEF OF INTERPRETATION

Bradley continues to work in the interpretive profession and just entered into his ninth year at Jewel Cave National Monument. His assignments this past year included the creation and development of a new classroom space within the Monument's visitor center. He has also been working with a LA film company and the NPS Harpers Ferry Center with the development of a new park film, scheduled to be released in May 2018. And finally, with relation to the film, he has been designing the retro-fit of a new theater inside a former restroom building. The construction on the theater is planned for this winter, with an ending date around the release time of the new film.

He was once again elected to the Board of Directors for the National Association for Interpretation (NAI). He will serving a three-year term on the board and has taken on the task of trying to improve and enhance the membership development of college students within the profession. When not working within interpretation, he still coaches the special teams, defensive backs, and receivers for the local high school football team. He also started his first year as District Commissioner for the Black Hills Area Council of the Boy Scouts of America.

His family is embarking on a milestone year, with his son Logan starting his senior year of high school. His daughter Darian is a freshman. Both are very involved in sports and drama, as well as student council and an outdoor recreation club. His wife (Cherri) entered her 21st year as an English teacher at the same high school, and she still coaches cheerleading.

On a personal level, the Block Family spent much of their 2017 travels visiting different colleges for Logan. From San Diego State University to Colorado State University, several plane flights over a three-month period kept them busy. He seems to have narrowed his choices down to Northern Arizona University in Flagstaff and believe it or not...the University of Northern Iowa. Keep your fingers crossed that he makes the right decision!

If anyone happens to be coming through western South Dakota, Bradley invites anyone and everyone to make a connection. There is so much to see and do...anything that might help a fellow Panther have a better vacation experience, he is all for the collaboration (and trip planning).

MARK BOLSON

B.A. GEOLOGY ('73)
THORNTON, CO

Retired since 2008. Keeping busy with the Denver Elks Lodge and the Colorado Elks Association.

MATT BOYCE

B.S. GEOLOGY ('04)
ARVADA, CO

PETROPHYSICIST

Hello all, I hope this message finds you well! It's been a few years since I've contributed to the Earth Science newsletter. I'm still living in Arvada, Colorado with my wife, Leidy, stepson, Juan Jose, son, Ian, and recent Jack Russell addition, Summer. From 2012 through 2015 I was working in Denver for a Houston-based energy company. With the 2015 oversupply of oil and downturn in oil price, I was laid-off when my company moved their regional office out of Denver. I spent Q4 2015 and all of 2016 un-employed; somehow, I couldn't find time to write for the newsletter ;). As my wife was still working, I made my time off enjoyable by biking, wrenching on bikes, and watching countless YouTube videos on astronomy, physics, and other equally "nerdy" subjects. In January 2017, a former colleague recruited me to start work as a part-time contract petrophysicist here in Denver. When my wife was laid-off this October I was able to go to a full-time contracting schedule. This position keeps me out of many meetings, freeing me to make progress on my projects! My position is flexible enough that I'm able to take vacation when I choose. This year we went on a family trip to San Diego with a few days dedicated to Sea World and Legoland. In 2018, Leidy is planning to spend significant time in Colombia with her family. She's going solo in January and then planning on taking the kids down over summertime (2-3 months). I'll likely join them in Colombia for a week or so during the summer. That's about as far as I can see into my past and future, so I'll wrap by saying all the best in 2018 to the wonderful faculty, students, and friends from UNI!

KIM BUELT

B.A. EARTH SCIENCE EDUCATION ('89)
M.A. SCIENCE EDUCATION ('93)
CEDAR RAPIDS, IA

HS ASSOCIATE PRINCIPAL

I taught Earth Science & Chemistry at Linn-Mar HS in Marion, IA for 18 years. I then obtained a 2nd Masters in Ed Leadership & this will be my 11th year as Associate Principal at the High School. My husband works for TIAA in Coralville and my son just graduated with a Civil Engineering degree & works in Cedar Rapids. In our spare time, we enjoy camping, boating, fishing, & biking.

BURTON TONY BURNS

B.A. EARTH SCIENCE ('84)
M.A. SCIENCE EDUCATION ('90)
CEDAR FALLS, IA

GEOLOGY/ PHYSICS TEACHER AND ACADEMY COORDINATOR

I am currently teaching two sections of Physics and one section of Geology. This is my 34th year of teaching science in the Waterloo Schools. I teach three sections in the morning and in the afternoon I am an Academy Career Coordinator. This position involves arranging job shadowing, speakers, field trips and supporting the Waterloo Career Center. My wife, Gigi Lanigan Burns (UNI Accounting 1985), recently retired and I am pondering when that time will be right for me as well. We have two daughters one of which is a teacher in Ankeny and the other is an Administrator with Unity Point Health. We have two grandchildren that we get to see frequently because they live nearby in Ankeny. I have enjoyed reading the Earth Science newsletter throughout the years. I have found it particularly interesting the numerous careers a degree in Earth Science from UNI has provided for so many of its graduates. Keep up the great work!

AMANDA EVEN

B.A. EARTH SCIENCE ('09)
ANNANDALE, VA

ASSISTANT DIRECTOR, ADVENTURE PROGRAMS

I am living in Northern Virginia and am currently in my 7th year with University Recreation & Wellness (RecWell) at the University of Maryland. This past year was filled with exciting times. In January, I ran my 10th marathon in order to accomplish my goal of running 10 marathons by age 30. In July, I got engaged to my partner Chris on a backpacking trip in the John Muir Wilderness. In November, the outdoor program for which I am the director, the RecWell Adventure Program, received the David J. Webb Program Excellence Award from the Association of Outdoor Recreation & Education (AORE). I'm looking forward to an exciting 2018 as Chris and I prepare for our wedding.

CINDY FREIBERG

B.A. EARTH SCIENCE ('94)
FARIBAUT, MN

NATIONAL ACCTS ESTIMATOR

Jim and I are both well, travelled to the North Shore for our fall trip to see Lake Superior and the many waterfalls. We love the geology in this region. Grandchildren are growing and doing well in school, and their many activities. Our children have their hands full as they now have busy preteens and teens in the house. I am still organizing quilt retreats and doing many crafts when the time permits. Summer and Fall I garden and can a lot of food to use in the winter months. Nothing tastes better! Stop or call if you head to the Twin Cities, we are around most weekends.



MOLLY HANSON

B.A. EARTH SCIENCE ('09)
DES MOINES, IOWA

EXECUTIVE DIRECTOR

It's been another year of adventures all around Iowa and beyond! January through June I participated in a 6-month leadership training program through the Des Moines chapter of the New Leaders Council. I learned some helpful new skills for my job and my future, made some great connections and met my (now) boyfriend Johnny. I spent the summer paddling with community leaders to help educate and get people excited about rivers and streams in Iowa and participated in Project AWARE on the Upper Cedar. I also ran a half marathon, biked new trails, participated in my first sprint triathlon and kayaked and tubed through whitewater courses in Charles City and Manchester. Working in the environmental non-profit world in Iowa is as rewarding as it is challenging and it's a comfort to know how many amazing warriors I have on my side. Johnny and I moved into an apartment downtown in the East Village and are saving our pennies for a puppy-someday. Peace and Joy to you and yours!

GAYLEN HIESTERMAN

B.S. GEOLOGY ('92)
CEDAR FALLS IA

BRANCH MANAGER

This past summer we enjoyed a week in the Glacier National Park area with family hiking, kayaking and wildlife viewing.

ELAINE HOUSKA

B.A. EARTH SCIENCE ('91)
CHESTER, VA

PHYSICAL THERAPIST

Hello to all. My biggest news from 2017 is that I got engaged on June 4th. Mike is a retired PE teacher. We met in January 2016 and had the common thread of loss, his wife and my mom both to small cell lung cancer. We have been working on combining two households while also taking time to enjoy camping, fishing and cowboy action shooting. His hope for 2018 is to get me out to relic hunt for civil war treasures and mine is to get him out to hunt for fossils. I hope this finds you all doing well and staying happy.

BOB LANCASTER

B.A. EARTH SCIENCE ('73)
M.A. EARTH SCIENCE ('76)
SOLON, IA

As of December 2016, I retired from LCI. After receiving my BA in 1973, I started teaching at Clear Creek (now Clear Creek Amana). In summer of 1975 I was offered a teaching assistantship and completed my MA in 1976. I then returned to Clear Creek for one additional year. I was then hired on at Regis in 1977 to teach physics and environmental science. I had always used my photography to help teach my science classes. A few years later, I was named Science Department Head. In 1984, I left teaching for an opportunity to work with computers in the business world. I worked at TLS in various positions until the company was sold in the mid 80's. Along with several co-workers, I founded LCI, a computer consulting firm based in Cedar Rapids. We designed, installed and managed LANs for hundreds of local and regional businesses throughout Eastern and Central Iowa, Western Illinois, SW Wisconsin. In 2003, I co-founded the Linn Area Photo Club, and under my leadership the club grew to over 150 active members. I have and continue to both compete and judge photography contests. I was a member of CR West Rotary, served on several boards, including the consolidation of three Catholic grade schools into a larger system serving the west side of Cedar Rapids.

Today, I am enjoying travelling with Renee, spoiling our four grandkids, and serving on the Solon Library Board. Each and every day, I try to get in a walk with my camera(s) of course. I am just over 60% of my goal of photographing all of the US National Parks. For 2018 we are planning to visit at least four additional national parks and a couple in Canada.

I cannot thank enough the professors at UNI for their encouragement of my photography, for their words of wisdom, for their continued help to make sure each individual student knows they are unique and above all for believing in the intrinsic value all their students possess.

RILEY MULLINS

B.A. ENVIRONMENTAL SCIENCE ('17)
IOWA CITY, IA

ENVIRONMENTAL HEALTH TECHNICIAN

I work for Linn County Public Health in their Air & Water Quality Branch and am also working towards my M.S. in Environmental Engineering & Science at the University of Iowa. Prior to my position with Linn County, I had an internship with the City of Coralville Engineering Department doing stormwater work. I live in Iowa City with my sister, who attends the University of Iowa for Environmental Policy and Planning.

SEAN NEWLIN

B.S. AIR QUALITY ('10)
BERKELEY, CA

RESEARCH ASSOCIATE

I will be wrapping up my Master of Public Policy at the Goldman School of Public Policy—University of California, Berkeley in May 2018. I've been focusing on issues related to climate change in the United States, especially assessing risk and identifying adaptive measures. I've also spent a significant amount of time working with the Center for Environmental Public Policy as we work through the implementation challenges of a new California rule protecting disadvantaged communities from localized poor air quality.

BENJAMIN NEWTON

B.A. EARTH SCIENCE ('97)
GRAND ISLAND, NE

ENVIRONMENTAL SUSTAINABILITY DIRECTOR

I accepted a position as the Environmental Sustainability Director at Central Community College that has campuses in Columbus, Grand Island, and Hastings, NE in the Fall 2016. A 1.7 MW wind turbine went into commission in January 2017 on the Hastings campus and we are now developing renewable energy curriculum for a program next Fall. I currently supervise one full time staff and seven energetic student interns. Also, a brand new energy efficient building was completed this fall in Kearney, NE. Check out all of our exciting sustainability initiatives at www.ccneb.edu/greentoday.

My daughter shares an interest in astronomy, geology, and ecology already! We witnessed the total solar eclipse in Central Nebraska on her first day of preschool and the first day of the fall semester. This summer we explored Northern New Mexico and camped at Sand Dunes National Park in Colorado. I am enjoying the wide open sky and the Nebraska Sandhills in contrast from Chicago where we lived for five years.

KATIE PATRICK

B.A. EARTH SCIENCE ('16)
B.A. ENVIRONMENTAL SCIENCE ('16)
CEDAR FALLS, IA

SAMPLE CONTROL TECH

LARRY SMITH

B.A. GEOLOGY ('79)
ANCHORAGE, AK

CHIEF GEOPHYSICIST

Still living and working in Alaska. Christine is retiring at the end of March from the Anchorage Museum when her project funding is finished. I'm still working and will continue doing exploration on the North Slope for another couple of years if that is in the cards. Brooks Range Petroleum has had a couple of very difficult years after project funding dried up when the price of oil fell below \$50/barrel. Hopefully, we'll get our first production online sometime in 2018 after scaling down the project to save capital dollars on the facility.

MARY ANN SMITH

B.A. EARTH SCIENCE ('68)
M.A. EARTH SCIENCE EDUCATION ('71)
PRINCETON, IL

Duane and I are enjoying our retirement years volunteering, enjoying our three grandchildren, and traveling. We just returned from a three-week tour of China, including the sights of Beijing and a cable car to the Great Wall, a bullet train up the Yellow Loess Plateau to see the Terra Cotta Soldiers, exploring the roof of the world in Lhasa, Tibet, and cruising the Three Gorges of the Yangtze. What an experience! I don't feel the least bit old but just got notice that our class will be honored at Homecoming 2018. Where has the time gone? I loved my years at UNI and enjoy reliving field trips and geology camps through the posts of today's students. Please keep them coming.

AARON STOLLEY

B.A. GEOLOGY ('14)
TEMPE, AZ

HYDROLOGIST 3

This October I was promoted into a supervisor position, Basic Data Unit Team Lead, in my division. I assist the Basic Data Unit supervisor in some day to day responsibilities as well as directly supervising several employees. The New Year will mark two years being employed by the State of Arizona.

KEN THOMPSON

B.A. EARTH SCIENCE ('75)
M.A. EARTH SCIENCE ('85)
EMPORIA, KS

PROFESSOR OF PHYSICAL SCIENCES EMPORIA STATE UNIVERSITY

After teaching 12 years in the Marshalltown School District in Iowa and now in my 26th year at Emporia State, I will retire at the end of the spring semester in May 2018. Currently, I am on a one-year, quarter-time phased retirement with most of my teaching responsibilities associated with a grant project. Wife, Deb, a UNI elementary education graduate, retired from teaching a couple of years ago. Deb taught in Green Mountain, Marshalltown and Emporia. She continues to stay active in education as a substitute teacher and as a tutor with many more opportunities to sub and tutor than she can accommodate. We are looking forward to a more relaxed lifestyle and taking many opportunities to travel. Son, Tyler, and his wife now live in the Kansas City area. He works as a chemical engineer. I look forward to news from alumni and current UNI faculty, staff and students. Best wishes to all!

DE ANNA TIBBEN

B.A. EARTH SCIENCE TEACHING ('92)
M.A. SCIENCE EDUCATION ('94)
MARSHALLTOWN, IA

INSTRUCTIONAL COACH

I'm in year two of this new stage in my career. I'm engaging in work that supports student learning beyond what I was able to do in my single classroom. Earth & Space Science is one strand of the Iowa Core Science Standards so I am able to help teachers develop lessons and learning opportunities for their students and get my "dose" of the content! My husband (Brad), kids (Jake 19, Abby 15), and I will be moving into our remodeled farmhouse mid-December. It's been a long 3 year process of remodeling. We've learned what to do and what not to do along the way! We'll be only 45ish minutes from Cedar Falls so hopefully we can be more involved with campus happenings! I hope you and yours have a blessed 2018!

ANGELA WEEPIE

B.A. EARTH SCIENCE ('00)
OELWEIN, IA

FITNESS INSTRUCTOR AND SELF-EMPLOYED LICENSED MASSAGE THERAPIST

This year was full of opportunities for astrophotography! A few of my family members traveled with me to Watkins Woolen Mill State Park in Missouri to witness the total solar eclipse this past August. The weather was clear and beautiful the day we arrived, but intermittent rain and cloudiness threatened to ruin our eclipse viewing! Lucky for us, the clouds cleared for most of the partial phases and all of totality. My family decided we are now eclipse chasers. It was quite the rush! We came home with tons of great pictures and memories. This year I also had the opportunity to photograph meteor showers, a couple planetary conjunctions, and beautiful Milky Way shots and moon rises from the dark skies of the Utah national parks. We are already preparing to bundle up for the total lunar eclipse in January 2018, weather permitting!

JENNIFER WITTENBURG

B.A. EARTH SCIENCE TEACHING ('06)
CEDAR FALLS, IA

PROGRAM MANAGER, IOWA AIR EMISSIONS ASSISTANCE PROGRAM

I have been working at the Iowa Waste Reduction Center for 11 years and have served as the Program Manager for the Iowa Air Emissions Assistance Program for a year and a half. I enjoy working with the DNR, EPA and Iowa small businesses. I got married in 2009 and have two daughters, ages six and three.

DEBBIE YERKES

B.A. GEOLOGY ('78)
COLUMBIA, SC

I have finally retired from the University of South Carolina. I spent 37.5 years there as an Assistant Documents Librarian in the best job in the world. I have no immediate plans, just reading, relaxing and figuring out what to do next.



SOLAR ECLIPSE PARTY

BY SIOBAHN MORGAN



Eclipse image from Logan Winford, current Earth Science BA.

On Monday, August 21, 2017, a total solar eclipse was visible across the United States from Oregon to South Carolina. The Earth and Environmental Sciences Department quite a few people involved with viewing the total eclipse.

On the UNI campus, where 90% of the Sun was covered up, about 1400 UNI students, faculty, staff and members of the community came into Rod Library to get free solar eclipse glasses and pin hole eclipse projectors. There were telescopes also available for safe viewing of the Sun. Unfortunately, the weather did not cooperate, so that only a few glimpses of the blocked Sun were visible through the clouds.

In conjunction with the solar viewing, the Iowa Academy of Science was able to obtain moon rocks from NASA Johnson Space Center Astro Materials Curation. A plastic disk containing moon rock samples was available for viewing throughout the event and it was watched over by UNI Police. Children and adults waited in anticipation to hold and view these rocks under a microscope and to ask questions of Eve Halligan, the Program Coordinator of the Iowa Academy of Science, and an alumnus of the Department.

There were also UNI STEM Ambassadors on hand to help participants utilize their smart phones to experience 3D Virtual Reality interfaces with various planets, moons, and other objects in our solar system. Participants also flipped through a set of NASA braille books about earth and space exploration. Marcy Seavey, UNI STEM Coordinator, was busy helping answer questions, directing people and collecting data about outside air temperature changes during the eclipse for NASA. The temperature outside the Rod Library began to drop 40 minutes before the eclipse peak and continued to drop for about 20 minutes before it began to heat back up.

A number of programs and organizations were essential in making the UNI Eclipse Party a success in spite of the weather. These included the Iowa Academy of Science, the Earth & Environmental Science department, UNI STEM, Rod Library, UNI Police, the GLOBE Program and NASA Johnson Space Center.

Pictures of crowd taken by University Photographer, Roland Ferrie.



STUDENT EXPERIENCE

CELESTE HOLLINGSWORTH

SOPHOMORE | EARTH AND ENVIRONMENTAL SCIENCES

“My eclipse experience was somewhat limited in what I saw due to the heavy cloud cover that we experienced at our location. I did see part of the eclipse, circa 10 minutes after 1st contact, which was extremely impressive. The whole eclipse experience didn’t become real for me until I got that first good look at the Moon crossing the Sun between the clouds. Unfortunately, the Sun decided to hide behind the clouds for good right before 2nd contact, so I didn’t get to experience the astronomical phenomena associated with that event.

Although I did not get to see totality, I did get to experience it. It was fascinating just how quickly it went from a rainy Monday afternoon to what appeared to be a cold sunset on a foreign planet. The sky was tinged with a reddish orange color all the way around, and you could see the bands of rain perfectly silhouetted against the off-color backdrop. I was still damp from the rainstorm we were caught in earlier out on the field, so the temperature drop felt like I had been shut in a refrigerator. I stood there in the darkness, and an uneasy, eerie feeling washed over me as I experienced something that my body felt was wrong on all levels. Then, just as quickly as the darkness had come, it was gone and we were standing in a football field staring up at rain clouds again. Just like that, the Great American Eclipse was over and I was on my way home; my view of our incredible universe forever expanding.”



HOW MANY

SNOWFLAKES

MAKE A

BLIZZARD

BY **SIOBANH MORGAN**

It was a sad day in October when the fridge in the student room gave up the ghost, as its trusty motor finally burned out. It was a valuable fixture in the student room, and obviously necessary for the well-being of our students. After all, where else could they store the leftover pizza from the seminars, their lunches and frozen Snickers?

After a discussion with the students in SGE about the best way to raise funds for a new fridge, it was determined that a go-fund-me type endeavor would be implemented. In an amazing display of generosity, the funds for the new fridge were donated in less than 48 hours! Who was responsible for this? Our alumni! The best part of this fund raising effort was the range of donations—anywhere from \$5 to \$100. When people come together to support a worthwhile cause, a lot can be accomplished.

In a short amount of time a new refrigerator was purchased, and delivered to the student room, and the extra funds were put into the Wandering Coprolite account to support student research and travel.

This outpouring of generosity by our alumni shows that even small contributions are meaningful, just like many small snowflakes can combine to make a powerful blizzard. Perhaps you have been reluctant to donate to any of the fund raising requests we have had in the past, but I would like to point out that every amount matters, especially when many are helping out.

I would encourage all alumni to consider making a donation to the department, especially to funds that support student scholarships or student research and travel. Be part of the blizzard!



GEOLOGY AND

INTERIOR DESIGN

BY ALEXA SEDLACEK

Visitors to Latham Hall find beautiful fossil and mineral displays on the first floor and student work in interior design or textiles and apparel in the display cases on the second floor. People often remark on the differences between Latham Hall's programs, but a new collaborative activity between the Department of Earth and Environmental Sciences and the School of Applied Human Sciences is quickly becoming a favorite tradition. In fall 2016, Gloria Stafford (Assistant Professor, Interior Design) and I decided to highlight a few of the beautiful specimens found in our geology collections. SGE students select their favorite rock, mineral, and fossil samples to bring into Dr. Stafford's Design Foundations (INTDSGN 1061) class as a source of design inspiration during their study of color theory. The interior design class breaks into teams, each with an SGE student, and each team builds a room design with paint samples, fabrics, wallcoverings, tiles and other materials around the colors and textures of one of the rock, mineral, or fossil samples. SGE students learn different design strategies, and we teach the interior design students a little bit about their sample's origins and properties. Our discussions have included aspects of Earth's history, how different materials are acquired, and current trends in room design. It is a highlight of the semester, and Dr. Stafford and I look forward to continuing this project for years to come.



BETA

UPDATE

BY ALEXA SEDLACEK



The Biogeochemical Evolution of The Atmosphere (BETA) Project is a 3 year interdisciplinary collaboration funded by the Iowa Space Grant Consortium and lead by Xinhua Shen and Alexa Sedlacek of the Earth and Environmental Sciences Department and Joshua Sebree of the Chemistry and Biochemistry Department. Our project introduces students to a wide range of field and laboratory research opportunities by focusing on the development of Earth's atmosphere at three key interval: Archean Eon, the Devonian Period, and modern atmosphere. This range of topics allows students to explore how laboratory models are designed to replicate the atmospheric conditions of the Earth's early atmosphere with Dr. Sebree, or to collect and analyze fog water, investigating nitrogen's potential transport by fog through the Cedar River watershed. Students involved in the Devonian project collect local limestone samples and analyze the rocks for the carbon and strontium composition, allowing us to assess the chemistry of the surface ocean during the time these rocks were deposited and linking it to atmospheric changes.

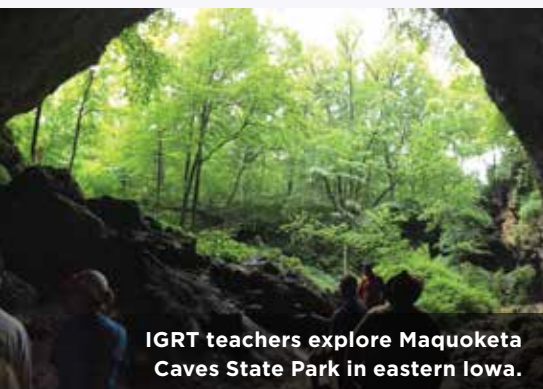
Over the past 2.5 years, 20 students from a range of departments have participated in various aspects of our research. This year Earth and Environmental Science majors involved in our project include Riley McMorran, William Spurr, Kayla Beck, and Lucas Krakow, and our recent graduates Bobbi Minard and Katie Patrick were previously involved in the project.

2017 proved to be an exciting and productive year for the team. In February, our team presented at UNI Day at the Capitol, highlighting our research to Iowa lawmakers. Over spring break, 3 students accompanied Alexa Sedlacek to the Radiogenic Isotope Laboratory housed at the School of Earth Science at The Ohio State University. They spent a week processing samples in the clean lab to prepare them for strontium isotopic analysis on the thermal ionization mass spectrometer. In addition to lab work, the Devonian team was able to access two different quarries for field work, thanks to Sherman Lundy of Basic Materials Company. Our undergraduate team also presented research at the Iowa Academy of Sciences in March, the Iowa Space Grant Consortium Research Awards Ceremony, where a team member received a gold medal while presenting the BETA Project poster, and the American Chemical Society Undergraduate Research Conference in November.

STEM STORIES

IOWA AND THE MEDITERRANEAN

BY GINGER L. HEUREUX



IGRT teachers explore Maquoketa Caves State Park in eastern Iowa.



UNI students exploring the Mediterranean.



From exploring caves in Iowa to studying Elymi people in the Mediterranean region, Dr. Chad Heinzl has done both. Chad is a professor in the Department of Earth and Environmental Science at the University of Northern Iowa and is involved with some valuable programs. Chad has always been interested in geology because of the stories the rocks and fossils tell. When he was younger he would talk about soils or the environment with his grandfather and explore nearby Maquoketa caves with his cousins, later going on to help build trails for the state park. When he was older, Chad worked for the county engineer's office surveying roads and working with the quarries. So, it seemed natural for Chad to pursue an education in geology, where he was encouraged and inspired by professors to obtain his master's and then doctorate.

As a Geoarcheologist, Chad looks at the Earth's surface to discover how it has changed over human history to learn about interactions between the people and the land. Geoarcheologists seek to understand human interactions with the Earth so that people can utilize land wisely and sustainably whether it be for agricultural purposes or for the oil and gas industry.

The *Iowa Geologic Resources for Teachers* and the *Italy Capstone* are just two of the programs Chad is involved with at UNI. The *Iowa Geologic Resources for Teachers* (IGRT) program has been offered annually for the last 15 years. The purpose of IGRT is to help teachers across the state become more knowledgeable in geology, especially local geology, and be able to take this new knowledge and samples back to their classrooms to share with their students. Rachael Woodley was one of the teachers that took part in IGRT this past summer.

Rachael is starting her 12th year at Waterloo East High as a science teacher. IGRT gave Rachael a feel for how geology impacts our everyday lives, such as in the construction of our roadways. She is interested in how this, now accessible and meaningful information, would impact the futures of her students.

The IGRT participants teach a variety of grade levels and subjects. The teachers study background information online and then come to UNI campus for 3-4 days for hands-on training. They also take tours of Maquoketa Caves, Devonian Fossil Gorge, and the Rockford Fossil Quarry. Rachael enjoys the fact that she now has more experience and knowledge of resources in Iowa. The activities are tailored so that the teachers are able to implement Next Generation Science and other subject standards with students. Courtesy of the ILPA and local producers such as Basic Materials, the teachers are able to obtain two graduate credits at a minimal cost.

Chad enjoys interacting with Iowa's teachers and helping them develop confidence to be

able to teach geology. He wants to help them use their existing knowledge to develop new knowledge. With her endorsement, Rachael is more enthusiastic and re-energized about geology. She can now offer geology and earth science classes and feels that she is better qualified teaching the subject. She hopes that the new fossils and rock samples featured in her classroom will spark interest in her students to understand, learn about, and possibly pursue a career in geology or earth science.

Spending time researching in the Mediterranean, particularly studying the ancient Sicilians, known as the Elymi, has led Chad to take students to this area in the summer as part of an *Italy Capstone* program. Students from UNI spend a week learning how the Romans lived and discuss sustainable practices. Then the students travel to Sicily to follow how the Elymians lived and look for clues as to why their civilization fell. This particular research is interdisciplinary and requires people from various areas of study work together to decipher the clues.

The island of Sicily, like Iowa, is agriculturally based, though the crops are different. Students are able to understand the Sicilian lifestyle as it parallels Iowa life. The students also visit a small island between Italy and Sicily with limited resources. It is here that Chad is able to educate students on the fragility of the resources on the island and what would happen if a major event occurred such as an earthquake or a drought. The different majors and backgrounds of the students lead to great discussions about these differences and what can be done improve our civilization.

All of these areas of exploration give students a sense of a different cultures and different ways you can live. We are in a rapidly changing world with environmental stressors becoming more intense. Studying the geology of different areas and the past lives of others can help the world's population move forward sustainably.

The IGRT and *Italy Capstone* allow Chad to mix it up locally and abroad. He helps teachers get excited about the landscapes in Iowa and introduces new students to this culture and people every year. His work and these programs have taught Chad to be a teacher; a mentor. He must be flexible and pull the strengths of out of each person's major or connection to increase social flexibility in how people interact and understand one another. Chad shared that "someone is not going to truly care about a place until a connection is made and the person feels that he/she is a participant in it."

Chad's advice to students is to "Get interested. Get passionate. Do as many things as you can, while you can, because it gets harder and harder after you graduate. Look for those opportunities to improve yourself. Don't let road bumps slow you down, inevitably some will. Don't quit."

GIFTS

ALUMNI FROM

AND FRIENDS

JAN 1, 2017 - DEC 31, 2017



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