THE IUP GEOSCIENCE ALUMNI NEWSLETTER

GeoTidings

In this issue

Cover Photo: Comet NEOWISE captured by alumnus Chad Miedel '16 in July 2020

WINTER 2021 **Volume 10 Number 1**

New Science Building Updates

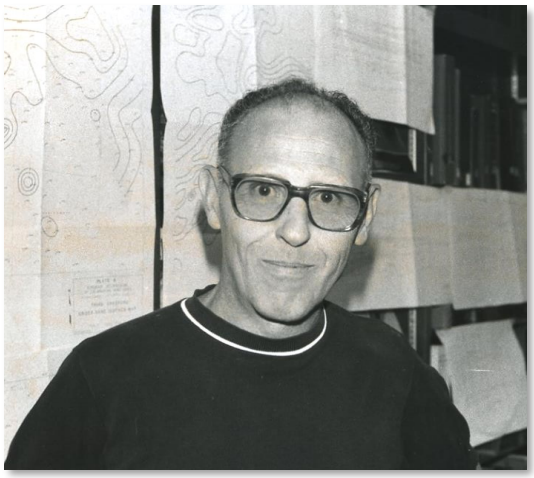
Progress on Kopchick Hall

Thanks to the generosity of many alumni and friends of IUP, the building that once seemed like a dream will soon be a reality, creating opportunities for students and fostering relationships that will impact our community, our region, and our world. The groundbreaking for our new science building, Kopchick Hall, occurred in September and the building is actively under construction. See https://www.iup.edu/natsciandmath/kopchick-hall/ for more details and for a live camera image of the construction.

Once completed, Kopchick Hall will be the hub of activity for all things science and math at IUP. The new 142,536-square foot building will include more than 51,600 square feet of laboratory space. It will be sited facing the Oak Grove and will be part of the center of campus. There will be a number of common spaces in the building — including a new planetarium underwritten by Geoscience alumni Tim and Deb Cejka — designed to showcase science and math to the wider university and local communities.

With its focus on research-teaching labs and student-centered lectures and tutoring rooms, and inviting common areas designed for collaboration, Kopchick Hall will truly transform how IUP delivers science education.

Naming a New Classroom for Walt Granata



With Kopchick Hall under construction, we have received several very generous donations from alumni. One of our very own Geoscience alumni, Dan Markey (class of ’77), is leading a **fundraising opportunity to name a classroom in Kopchick Hall after Dr. Walter Granata** (aka Doc G). Dr. Granata was one of the founding members of the newly created Geoscience Department in 1968 and served as department chair from 1972-1977. Doc G was instrumental in beginning the long standing tradition of leading excellent field trips which broadened our geologic understanding and created camaraderie in the Geoscience Department.

Dan Markey has generously committed $50,000 to match dollar-for-dollar with the goal to raise $100,000 to honor Doc G and the impact he made on the Geoscience Department, at IUP, and on all of the students he directly impacted. If you are a recent IUP graduate, you may not be aware how much of our current focus on student-faculty research owes to Doc G. He set the standard for our tradition of graduating well-trained field and lab geologists who go on to have outstanding careers.

Doc G led a Modern Carbonate Environments field trip to the Florida Keys in 1976. This photo was taken on the glass bottom boat at John Pennekamp Coral Reef State Park. L to R Eric Trinkle ‘77, Gary Nelson ‘77, Dan Markey ‘77, and Tom Bergstressor ‘77.

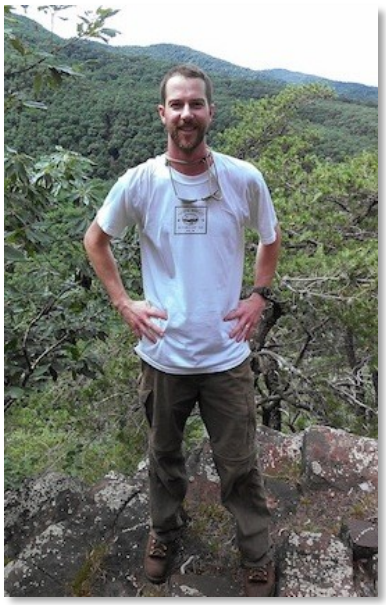
If you are interested in donating to this naming opportunity to honor Doc G, please visit:

www.iup.edu/givetoDocG

You may also honor Doc G by donating to the Walt Granata Foundation account which supports field geology experiences for Geoscience students. Information on how to donate to this and other department scholarships can be found on page 24.

If you have any questions, or if you wish to donate to another portion of the new building or initiate a different fundraising opportunity, contact Mary Jo Ludwig, Development Officer, at mjludwig@iup.edu or 724-357-1219 You may also contact Dr. **Nick Deardorff** (Geoscience Department Chairperson) at *n.deardorff@iup.edu* or 724-357-5625 if you have any questions.

Updates from the Chair



Hello Geoscience alumni and friends,

As you may have heard, there are rather large changes occurring at IUP right now, including a restructuring of colleges and programs, and retrenchment which involves the reduction of the current number of faculty at IUP. Last fall the IUP Administration began to publicly share their plans for **IUP NextGen**, many of which are discussed in the following link: https://www.iup.edu/news-events/academic-restructuring-plans/. As IUP alumni and friends of the Geoscience Department, I wanted to update you on a few of the key changes and goings on that directly affect our department.

First, IUP is currently engaged in the process of retrenchment, which involves the removal of tenured and tenure-track faculty, based on seniority, due to financial stresses on the university. The Geoscience Department received one retrenchment letter, which would have led to the loss of our least senior faculty member, Dr. Jonathan Warnock, at the end of this academic year. However, in December Dr. Greg Mount announced that he was leaving the university for another position outside of academia. The loss of Dr. Mount, which will be sorely felt, means Dr. Warnock's retrenchment letter was rescinded and he gets to stay at IUP, for which we are EXTREMELY grateful. We wish Dr. Mount success and happiness in his new position. Our department was rather lucky in only receiving one retrenchment letter, and unfortunately, we will be losing many fantastic colleagues from across campus. But our program remains strong.

Second, the Geoscience Department will merge with the Department of Geography and Regional Planning. This new merged department (yet to be named) will be housed in the Kopchick College of Natural Sciences and Mathematics. The merging of departments will initiate during spring 2021 and likely continue over the next year or so. While changes like this are often challenging, we are optimistic that this merger will benefit all programs involved and lead to exciting new collaborations with our Geography and Regional Planning colleagues. I can assure you the geology and earth and space education programs are not going away. We will continue to offer them as a combined and holistic BS in Geology degree, so that the quality of a Geoscience education offered at IUP will not be diminished.

Third, after demolishing our old home in Walsh Hall (see right), in September IUP broke ground on the new science building, Kopchick Hall, and is making steady progress on the new building. For more photos and details,

(Column continues on next page)

Updates from the Chair (con't)

check out https://www.iup.edu/natsciandmath/kopchick-hall/ where you can also view a live camera image of the construction. One of the very few benefits of the pandemic is there are fewer students on campus aggravated by having to walk around the giant hole in the middle of campus that will be Kopchick hall. This new facility is desperately needed, and we are all looking forward to its opening in Fall 2023.

Finally, over the last year, along with the rest of the world, we have dealt with the Covid-19 pandemic. This has been an incredibly challenging year for everyone and those involved with the university are no exception. Our faculty and students had to rapidly transition to teaching and learning online last March and have continued their instruction in a combination of online, in-person, and hybrid (partially online and partially in-person) formats during the 2020-2021 academic year. This combination of teaching modalities is easily the most challenging way to teach at the university level. I have been EXTREMELY impressed with how innovative, understanding, and empathetic my colleagues have been in designing and implementing their courses this year and I have been equally impressed with how well our students have adapted. The grit and determination in Geoscience students is impressive.

During this challenging time may of you have reached out to provide advice or support (emotional, financial or otherwise), or simply to inquire as to how the university changes are affecting our department. Thank you all for your support, your concern, and for your active participation in our department. While things are changing, our Geoscience community is strong, thanks to you, and together we will continue to provide amazing opportunities for current and future students of the geosciences.

Nick Deardorff, Chair of Geoscience

Zoom into Geoscience Day 2021!

Save the date — the 47th Annual Geoscience Day will be held virtually on Friday, April 30, 2021

We invite all alumni to join us for our traditional end-of-semester celebration of student research in the Geoscience Department. We only have a few graduating seniors in this year's class, so we are inviting our rising juniors to present their plans for their senior research project as part of the days events. To minimize any risk of viral transmission, all of the student research presentations will be virtual using the Zoom platform, We have timed the presentations so that family, friends, and alumni can watch the senior talks over lunch that day.

Please keep an eye on your email for more information coming later in the semester.

Alumni News

In Memoriam

James Turner ‘75 passed along some sad news to us via our Facebook page:

“Jeff Mills (class of ‘75) passed away on the evening of January 25, 2021. Jeff was a skilled geologist who spent much of his career working the oil and gas plays along Texas gulf coast as an independent explorationist. Toward the end of his career, Jeff worked for the state of New Mexico as an environmental geologist specializing in the identification and remediation of underground storage tanks. I was honored to be counted among his friends along with many others who graduated from IUP with a degree in geoscience.”

TR Moore ‘76

Other than spending most of the year hunkered down at the farmhouse in Waynesburg to avoid COVID exposure, and doing Zoom meetings and online for various political activities (gee, does that sound familiar among all of us), my main activity was to testify as an expert witness for a truly unique twist on "gas in a water well" scenario. The judge has not yet ruled on the case, so I'll not pass on the details yet, but it will make an interesting talk for the students next year, when we can do things like that again.

No interesting geo-excursions or such, either. Booorrring. Just this morning, while making a grocery store run, I overheard the clerk use the phrase "mental health" and when it was my turn to check out I had to comment, "Mental health: I vaguely remember something like that." It's been a tough year all around. 2021 truly needs to be a start on "building back better" (regardless of your political perspective).

Dan Ziegler ‘77

My latest project was a Telluric Profiling program in Nigeria. My consulting company, First Order Exploration LLC in Conroe Texas, contracted with the Nigerian National Petroleum Company to use Telluric Profiling to identify oil and gas reservoirs in the subsurface. The project may last 2 months or longer.

The Nigerians are wonderfully warm people who have a desire to explore and find new reserves. Go here for more of my pictures:

https://link.shutterfly.com/nRhBUqh1kcb

Scott Ishman ‘82

After teaching geology at Southern Illinois University Carbondale for 20 years, this past July I was selected as interim dean for our new College of Agricultural, Life and Physical Sciences here at Southern Illinois University Carbondale.

Alumni News

Tom Schlosser ‘89

I graduated in 1989 and promptly moved to Maryland. I worked as a landscaper, parking garage operator and computer network engineer. None of which were fulfilling.

After 9/11 I joined the Navy Reserves and had since deployed twice to Kuwait and Djibouti Africa. This has led me back to science as I now work as a government contractor for the Navy in a Materials identification lab. Not exactly geology but close. I am responsible for radiological operations as well as scanning electron microscopy.

I have been happily married to my wife Anne for 27 years. We have 3 children, Patrick (25) who is active duty Navy, Lily-Jean (23) nursing major at Pitt and Virginia (20) bio-medical engineer at Pitt. Additionally we have one dog, three cats and four chickens. We live in southern Maryland and enjoy visiting family in Maine as well as international travel.

Wendy (Metcalf) Straatmann ‘92

While COVID-19 created numerous challenges for all in 2020, I was very fortunate to get to escape to the outdoors in Glacier National Park. Spectacular geology of course with glacial valleys and excellent stromatolite fossils but also a wonderful place to view wildlife and wild flowers.

With fewer visitors in the park, the wildlife took advantage and were out and about. Some came surprisingly close - never go without bear spray.

Steve Smith ‘01

Well, some year that was, as it still seems to be continuing. The family really did not do much this year, as most others likely have not either. The main reason outside of COVID-19 was that at the end of January 2020, I ended my fourteen plus years of service at the National Geospatial-Intelligence Agency. After a quick weekend, I began my new career as a Physical Scientist with the United States Geological Survey in February 2020. I am working at the National Civil Application Center in Reston, Virginia. A month and a half into my service with the USGS, we all went to telework status.

For me, even though I am mainly teleworking, my duties do require me to be in the building at least 1 day out of the week to assist in monitoring the active volcanoes for the Volcano

Alumni News

Disaster Assistance Program. That has been the fun part.Eventually I will possibly be assisting with providing information for wildland fires when the next season comes around. I have also been made a team leader for what is called the Global Fiducials Program, as the previous lead retired at the end of the year. That has been the not so fun part, mainly because I still have to learn more about it and come up with a whole new process to produce the imagery.

This working from home has been crazy, especially with an 8th grader also at home all day, everyday. My wife, Kate, has still had to go into school since the latest school year started in August 2020. Since she is in a special needs Pre-K classroom, as an assistant, they have been the ones back at school the entire school year. We did not take any long vacation in 202 due to the new job and eventually because of the virus shutting most things down. We do have plans to do our long family vacation this year, though. We will be camping the entire time, so we should be able to get to most places, even if the virus is not as under control at the time. It will be to mainly Utah, but some of Wyoming, Arizona, New Mexico, and Kansas will be in there for stops. The only draw back may be if the Navajo Nation can not open back up due to the lingering virus, in which case some of those sites will have to be skipped this year.

Here's hoping everyone is safe and healthy. Hopefully everyone can get the vaccine and that this virus gets under control sooner rather than later. Stay safe and I look forward to seeing everyone this year for Geoscience Day in person, and if not, virtually.

Respectfully,

Steve, Kate, and Aurora Smith

Wendy (Williams) Smith ‘05

I have been working as a federal employee for the PA Army National Guard doing logistics for the past year and a half. I’ve been in the National Guard now for what will be 16 years this May. I’m a Major and Executive Officer for the 228 Transportation Battalion at Fort Indiantown Gap.

My daughters are going to be nine and six this April. We have two cats and a one-year-old dog named Pepper.

Tom Lavanga ‘07

I am currently in my 14th year teaching physics. I taught Earth Systems for some of those years as well. We recently created a pair of half-year electives called Advanced Astronomy and Advanced Meteorology. These are for juniors and seniors who enjoyed what they learned as freshman in Earth Systems and want to learn some more. This is the 3rd year that I have been teaching the astronomy course.

Alumni News

Enjoying spending time with my family and our new puppy, Griffin. He is a 10-month old Goldendoodle. I hope everyone from the IUP family is well!

Jeff Dereume ‘08

Professionally, I switched roles in February, wrapping up a six month consulting role with private equity backed Olympus Energy and pivoting into a business development role with Sofranko Advisory Group, a small business consulting, financing, and brokerage firm in Wexford PA. The bulk of what I'm working on involves consulting with small business startups to navigate business acquisitions and divestitures, contract negotiations, and bank financing. Many of my geology skills, including analytical thinking, research methodology, and the desire to ask questions and develop a greater understanding have all proven useful and transferable in my new role.

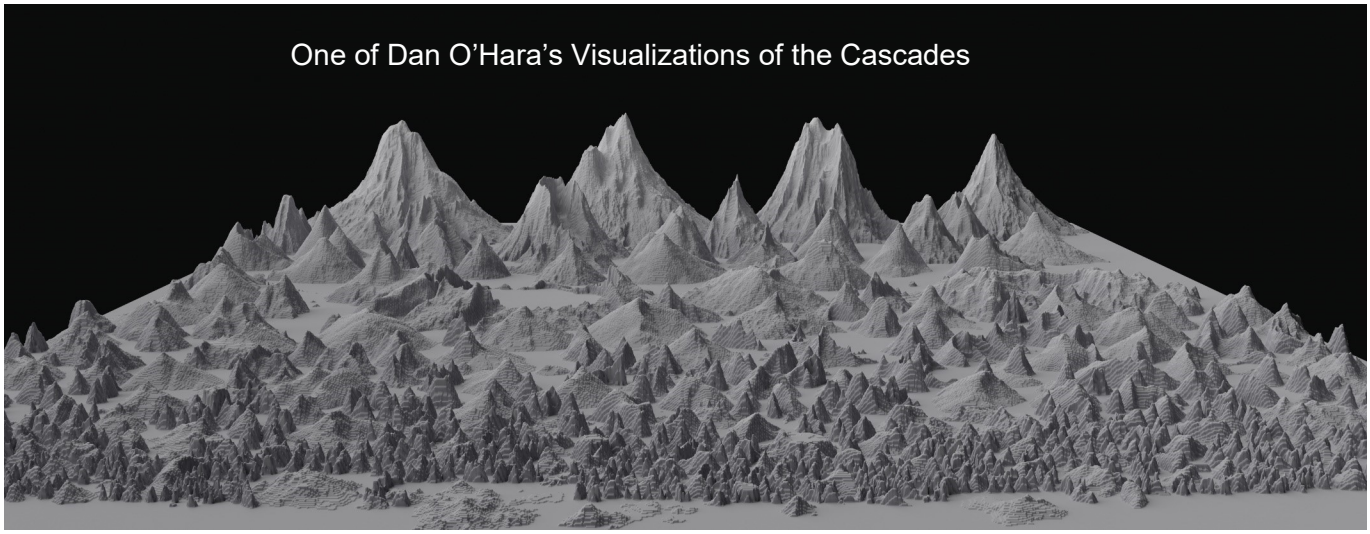
Personally, as with most of us, we've spent lots of time at home baking, exploring DIY, and binge watching Netflix. In May we welcomed a second daughter Maeve Magnolia Dereume who decided to show up 7 weeks early. She's super healthy and has been a great addition to the family.

We are looking forward to getting back out there in 2021, and using up those flight credits that accumulated in 2020. Happy New Year to everyone!

Dan O’Hara ‘14

I hope everyone is doing well and staying healthy. Despite everything going on throughout the world, 2020 was a very good year for me. In June, I published a paper in *Geology* that analyzed the connections between volcanoes and their underlying crustal magmatic structure in the Cascades (https://pubs.geoscienceworld.org/gsa/geology/article/48/11/1088/588083/Time-evolving-surface-and-subsurface-signatures-of). As part of the project, I determined boundaries and extracted topography of ~2100 edifices in the Pacific Northwest. Using this data, I became a grand prize recipient of AGU’s Michael H. Freilich Student

Alumni News



One of Dan O'Hara's Visualizations of the Cascades

Visualization competition at this year's conference.

Currently, my PhD adviser and I are creating posters of the edifices to sell as a fundraiser for victims of the recent Oregon fires. Finally, perhaps most exciting, the year ended with earning my PhD in Earth Science. Expanding on my current research, I am starting a post-doc at Vrije Universiteit Brussel (Belgium) in February, studying the long-term geomorphic evolution of volcanoes around the world (https://fard.research.vub.be/en/evolve).

Troy Berkey '15

My first semester of graduate school at the University of South Florida was a bit hectic; I spent the first two and half weeks of it in Idaho helping with a magnetic and gravity survey of the Blackfoot Reservoir, then halfway through the semester, I spent another ten days in the Cascades.
I've been playing catch-up since then, but all-in-all I am doing pretty well in my classes- Physical Volcanology, Geovisualization,& Intro to Inversion Theory. Most days, I feel somewhat lost, but from what I've heard, that's grad school in a nutshell.

On top of schoolwork, I'm also TA-ing Intro to Environmental Science (Jon would be proud). The expectations are pretty straightforward, although weekly grading for 164 students can become an arduous task. I think my maturity helps me a lot. I've never been behind with getting all my work done, but it does take up a fair portion of my time. I've found scheduling is an absolute necessity, a little this day, a few that day, and before you know it, you got them finished up just in time to start grading the next assignment. I can't complain, though, because that's what I asked for.

In general, I feel I've acclimated reasonably well to the academic environment down here, so much so that I've already begun planning my master's project. I am starting to develop a database to model realistic fissure eruptions for use with the MOLASSES modeling program. To validate the model database, I will be mapping the Gem Valley fissure this coming summer as well as comparing my results to other fissure eruptions, such as those found at Craters of the Moon, Hawaii, Laki, Springerville, and also Lunar and Mars fissures. The project will involve multiple components; I will need to develop a code to alter MOLASSES, as well as design a wrapper to run tens of thousands of instances of the program to create the database. I will

also have to perform a geophysical analysis using gravity and magnetics to determine how the fissure developed. What roles did the local stress regime and pre-existing topography play?

Lastly, I will be comparing this region to the Blackfoot Reservoir area to establish the local volcanic timing. Were the two features coeval in nature, or did the Blackfoot Volcanic Complex cause the fissure due to loading? We believe the two areas are related since they are adjacent to each other but probably developed from different controls. That's about all I understand of it as of now. And to make matters worse, there's very little research done on the area (just like Davis Lake), so I have to be extra vigilant to make sure my models are right.

Allie Berry ‘17

Despite all of the challenges brought on by 2020, I was very fortunate to be accepted to graduate school! I spent the last few years working for Ramboll as a field geologist in upstate New York and I absolutely loved it! However, I still was yearning to go back to school and continue my education. So fortunately enough I was accepted to University of Arizona. It turns out moving across the country during a pandemic is quite challenging but I’m happy to say I’m now settled in Tucson and enjoying all the sunshine I can get.

I’m currently in the second semester of my masters degree here. I’m working with Dr. Marcus Lofverstrom using the Community Earth System Model, Version 2 (CESM2) from NCAR to study the deglaciation of the Greenland Ice Sheet during the last interglacial period and also the future! I’m specifically interested in how the melt water will alter oceanic circulation and in turn atmospheric circulation. It’s a huge change from my original love of structure and tectonics but I’m enjoying the challenge and learning new things about our planet. Despite the challenges of remote/ online learning it’s been great to be back in school and in the academic setting. It doesn’t quite compare to my beloved IUP, but I’m learning to love it! It’s a fantastic program with great people and it’s been fun exploring the southwest.

Cate Bressers ‘17

This is my first GeoTidings addition, so there’s a bit to cover. After graduating IUP, I went onto do an M.S. in Geophysics & Seismology at Penn State with a thesis on body wave tomography of the East African rift system. The summer of my first year, I was lucky enough to receive an internship offer from Chevron just outside of New Orleans, LA working as a geophysicist on AVO-supported

(amplitude versus offset) near-field exploration (exploration opportunities nearby already developed and producing fields) in the Gulf of Mexico Deepwater. After graduating in 2019, I went to work fulltime at Shell Oil Company in New Orleans, LA.

At Shell, I am an asset-based interpreter geophysicist for Gulf of Mexico Deepwater Development which means I analyze seismic data to plan, de-risk and provide real-time support to wells in locations where we're already producing oil. Currently I am working on providing geophysical analysis and real time support for my first well! There's an unexplainable excitement in updating your geophysical analysis at 2am as you watch the logs come in for a well that's being currently drilled. The subsurface continues to be a source of constant surprise and fascination. Being able to ask the right questions and understanding your uncertainties is a critical part of working in industry and I owe it to the excellent professors at IUP for giving me that foundation.

I've also been able to utilize my IUP Computer Science degree. In 2020 I started a digitalization group for newer employees (<5 years) to work on projects, upskill themselves and engage with the broader digitalization community. I've also become the liaison for newer employees and helped plan a local upskilling pilot program.

On a personal level, I got to enjoy a record-breaking hurricane season in New Orleans which was…interesting. My time in New Orleans (or the few months I had before Covid-19) has been an interesting experience that I'm glad to have had. However, I have received notice that my position and me will be moving to Houston in the next year or so and I am very excited for perhaps a less exciting life in some respects. In the meantime, my cats, my plants and I are thoroughly enjoying the southern year-round sun and warm weather. I feel extremely grateful to be largely untouched by 2020.

I can only wish everyone the best in their recovery from 2021 and am looking forward to a better future!

Cheers and take care!

Copeland Cromwell '19

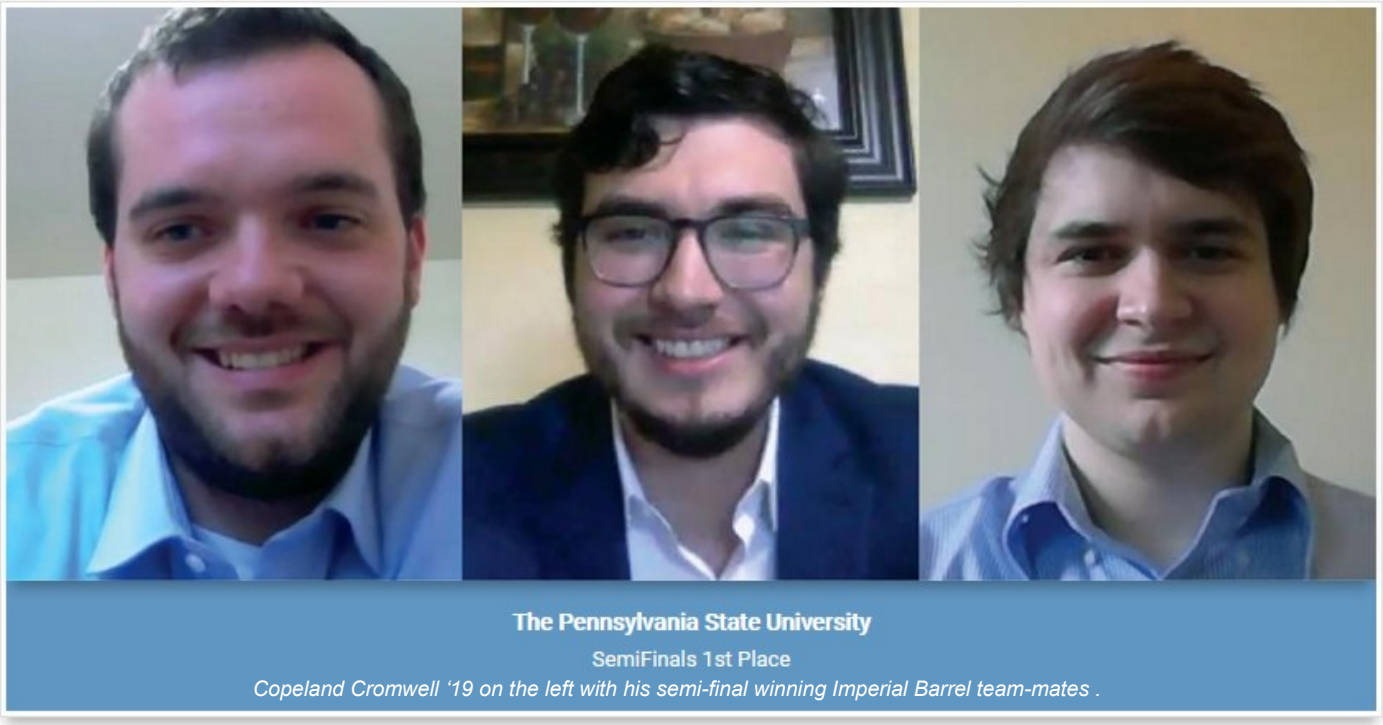
This year I joined the Penn State Imperial Barrel Award team in the annual IBA competition. It was quite an interesting year for this as the competition was remotely held

and much of our team's work and collaboration was done remotely. Our team was assigned a data set from the Danish North Sea for the competition. This basin is predominantly comprised of Cretaceous chalk reservoirs sourcing their hydrocarbons from Jurassic sandstones and marine shales. The area's tectonics in Permian times as well as climate led to substantial deposits of salts which were later reactivated in the Jurassic to form extensive salt diapirs in the Danish Central Grabem. These diapirs provide for extensive anticlinal forms which act as ideal traps in much of the area.

Using this data set, our team managed to secure first place in the IBA's Eastern section as the region's smallest team! After winning this we competed in the international competition but were beat out by schools in Paris and Saudi Arabia. This wasn't too bad because we did not lose to schools from Texas or Louisiana (the usual winners). I thought this to be a rewarding experience which benefited all team members and the school (Penn State got all the reward money).

In addition to this, I have been working this summer as an intern for the USGS's NEIC in Golden, Co. Not a bad place to spend the summer! The NEIC predominantly focuses on earthquake activity and related hazards within the United States. They regularly release tectonic summaries for earthquake sequences throughout the US and nearby nations. As such, I have been taking part in building earthquake animation models which depict earthquakes over the past century and over more recent time scales. These animations can be used to show map view earthquake locations as a function of time and magnitude.

Additionally, the program I have been working on allows users to plot transects across the map to yield depth cross-sections which animate in sync with the map view animations. Pretty neat!



Copeland Cromwell '19 on the left with his semi-final winning Imperial Barrel team-mates .

Faculty News — Karen Rose Cercone

I continue to serve as the Provost's Associate in the Division of Academic Affairs, assisting with curriculum, learning assessment and accreditation at IUP. I enjoy the challenges of this position, although with undergraduate enrollments declining and academic departments merging across campus, it has become much more stressful over the past few months.

Other new challenges have been more enjoyable. In the Spring of 2020, I offered to teach the first science class to IUP's Second Chance Pell cohort. These students are completing an Associate's Degree at IUP while also serving terms in a State Correctional Institution. I am happy to report that most of my Second Chance Pell students completed the class very successfully, despite issues with internet access caused by the Covid-19 pandemic.

Over the summer, most of my time was spent helping faculty members at IUP become more familiar with distance learning to cope with the Covid-19 pandemic. Many IUP classes were updated for online delivery over the summer, assisting both students and faculty with the last-minute switch that the university made to a hybrid teaching model in 2020-2021.

Darwin, Konrad, and Mica along the Westmoreland Heritage Trail

In Fall 2020, I partnered with Dr. Jonathan Warnock to teach the lab portion of Historical Geology. All of the labs, including fossil identification, had to be transformed so students could complete them at home. Fortunately, the Geoscience Department had enough extra fossil specimens in its basement storage cabinets (thanks to Doc Taylor's fossil hoarding habit!) that I was able to create individual fossil sample kits and send them to each of the 12 students in lab.

Between our fossil kits and the magic of Google Streetview, we explored our region's geological history using rock outcrops along major highways and minor byways alike. The icing on the cake is that we were able to take virtual field trips in an hour that would have taken entire weekends of driving in real life!

I regret to say that I have no major dog sports accomplishments to report this year. All three of our border collies did get a lot of socially distanced exercise, from swimming at Moraine State Park to hiking on our local section of the Westmoreland Heritage Trail. This rails-to-trails project will eventually connect Trafford to Saltsburg, but it is already a big hit with hikers and bikers. You can learn more about the trail at https://westmorelandheritagetrail.com

Wishing a better new year to all!

Faculty News — Steven Hovan

Geoscience Professor Steve Hovan remains on professional leave from IUP while working as a Program Officer with the National Science Foundation.

Hovan is one of 4 Program Officers working with the Ocean Sciences Section in the Marine Geology and Geophysics Program. The primary focus of this program is to fund basic scientific research involving any geological records recovered from the seafloor and includes research on plate tectonics, sea floor volcanism, coastal sedimentation, and paleoclimate.

Hovan's primary duties involve the day-to-day operations associated with processing proposal reviews and making funding decisions for an annual budget of awards that total approximately $35M. In addition, he serves as liaison with the International Ocean Discovery Program, US Coastal Research Initiatives, marine repositories, and on the team of Program Managers for the interdisciplinary program called "Coastlines and People" that awards nearly $29M in support of large networks seeking to improve how people interact with our changing coastlines and the human built structures along it.

"Like everyone else, working during the pandemic has created some challenges to overcome, but the NSF has done a remarkable job keeping the funding process rolling along. I miss the direct interaction with the scientific community, but I spend a good deal of my day making up for it on Zoom!"

Hovan recently extended his appointment for another year and plans to continue his service to the NSF returning to IUP and the Geoscience Department in 2022.

When asked to sum up his experience with the NSF, Hovan notes that "Overall the experience is fantastic! I'm learning all sorts of fascinating, new ways that scientists study the earth and oceans and ways that we can learn from it. But I miss IUP, especially the close connections with students and fellow faculty".

Faculty News — Jon Lewis

Jon Lewis, like the rest of us, has been busy adapting to COVID19 realities. He feels lucky to have been able to continue with the academic trilogy of teaching, service and research in spite of the myriad challenges. This last year he was busy in the new digital classroom teaching *Foundations of Geology*, *Structural Geology* and a relatively new liberal-studies offering, *Geology of Natural Disasters*. His plans with Dr. Warnock to offer *Geology of the American SW* in eastern Utah and southern Colorado during Summer 2020 were naturally scuttled. He's working with temporary faculty colleague Michelle Chrpa and Dr. Coles to build a hybrid virtual-real field class for Summer 2021 here in the Appalachians. Look for reflections on that class in our next installment of *GeoTidings*.

On the research front Jon was able to start down a pretty typical path in January, with a trip to Taiwan with students Lindsey Aman and Susie Adams. Jon, Lindsey and Susie went to Taipei with Tim Byrne and Mike Chojnacki (UConn) for three purposes: to co-host an undergraduate-focused structural petrology workshop at National Taipei University of Technology (pictured below with Susie fourth from the left and Lindsey third from the right in the background), to help lead a field trip in the Central Range with a large group of undergraduates, and to do focused field data collection in support of the project. They departed Taiwan the same day that the first case of COVID19 was reported in Taiwan. The trip was a great success and we continue to pore over data and do analyses. Lauren and Susie presented the work at two meetings. Lauren gave a lightening talk to accompany their poster at the Japan Geosciences Union (JpGU) meeting in the Summer (abstract not publically available) and Susie led the way on a poster in October at the GSA meeting (https://gsa.confex.com/gsa/2020AM/meetingapp.cgi/Paper/358824). Well done Team Tecto!

Both of these presentations included recent graduate Lindsey Aman as co-author. Lindsey is now at WVU working on her MS! Pictured on the next page are Susie and Lindsey on the east coast of Taiwan in January 2020. We had been planning to return to Taiwan during the Summer but that was put on hold. Fingers crossed that we can return soon. Lastly, Jon was honored to work with a group of colleagues in Taiwan, including long-time collaborators Jian-Cheng Lee and Gong-Ruei Ho, to publish a paper that documents the surface expression of an active fault zone in western Taiwan. (https://www.sciencedirect.com/science/article/abs/pii/S0013795219320927).

The STEMSEAS project (http://mlp.ldeo.columbia.edu/stemseas/) kept Jon busy but in different ways than expected. During the Winter, co-PI Sharon Cooper

Faculty News — Jon Lewis

(Columbia U.) and Jon worked with colleagues to review >225 student applications, and they had selected students to go on six different seagoing voyages only to have it all come to a halt. Ultimately the STEMEAS project had to settle for a series of virtual experiences for our students. To do this Jon and Sharon turned to leadership at the University National Oceanographic Laboratories System (UNOLS, https://www.unols.org/) to look for opportunities for live ship-to-shore connections to research as it was slowly brought back online with strict COVID19 protocols in place.

Sharon and Jon presented results from the STEMSEAS project at the February Ocean Science Meeting in San Diego (the last large in -person meeting of the year!?) and then virtually in the Fall at the GSA and AGU meetings. STEMSEAS looks forward to a possible return to seagoing operations late in 2021! If you know any undergraduates that are STEM-inclined, point them our way.

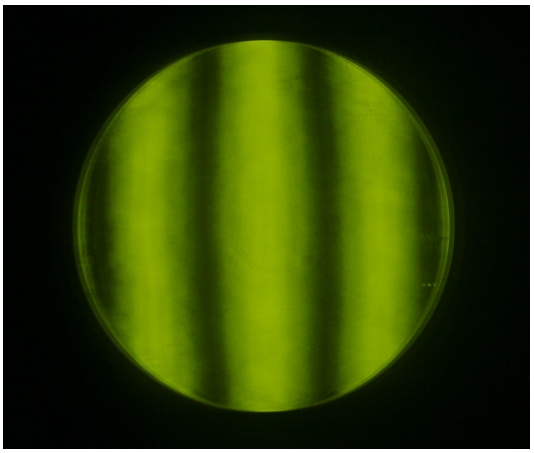
In the realm of professional service, Jon completed his 3-year stint on the International Ocean Discovery Program (IODP) Science Evaluation Panel (SEP). Following the Winter meeting at the Scripps Institution of Oceanography, the June meeting, originally slated for Trieste Italy (a COVID hotspot), was moved to virtual. The process with participants from literally all corners of the globe was very interesting, requiring Zoom meetings at odd hours. Jon has also been active as a member of the IODP Education and Outreach (E&O) Workshop Planning Committee. The committee is tasked with convening a workshop to craft the vision for IODP E&O to accompany the next generation of IODP (https://www.iodp.org/2050-science-framework). Jon also started serving as an advisor to the All-ABOARD (Alliance-Building Offshore to Achieve Resilience and Diversity) project, a new NSF-funded initiative that builds on the STEMSEAS model to foster institutional transformations.

Recent updates from Team Tecto graduates are as follows. Dan O'Hara, is now Dr. Dan O'Hara. Congratulations to Dan for finishing his PhD at the University of Oregon! Ellen Lamont is closing in on her PhD at Oregon State University! What it is about the Pacific NW and Team Tecto? Allie Berry moved from a consulting geology position in Syracuse to the MS program at the University of Arizona. As I understand it, she's doing climate and cryosphere modeling. Cate Bressers is working in the energy sector in New Orleans, which means that if we have a vaccine rolled out sufficiently this year, Team Tecto can catch up with her in NOLA at the AGU meeting. And, as noted above, Lindsey Aman is now at WVU working on her MS in the hydrogeology realm. Starting grad school during COVID19 has surely been surreal.

This update is incomplete so if you or someone you know is missing by all means reach out to Jon and get in touch!

Faculty News — Ken Coles

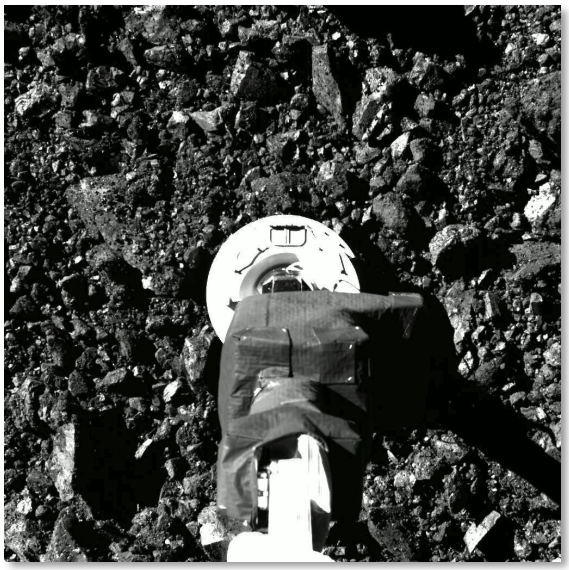
I applied for and was approved for a sabbatical in 2020-21. As we all know, the strangest era of teaching and work any of us can remember began just a few months earlier. As a result, essentially all of the planned work is underway at home. The Fall 2020 semester projects include first, finishing and testing several telescope mirrors and second, setting up a seismometer test in a local high school.



Ronchi test image of 10-inch telescope mirror that has been in storage in the Geoscience Department.

A telescope mirror is made by grinding a glass disk with progressively finer grades of grit, after which it is polished to a sphere and modified, or figured, to the correct shape (a paraboloid). It is fascinating that the polishing agent of choice is the rare-earth compound cerium oxide (CeO2). I first tackled a 6-inch mirror I began and polished many years ago at a workshop. After 10 weeks and much work with pitch (used as the polishing surface), I got that mirror to a nearly ideal shape. Another one that is also ready to aluminize and use is a 10-inch mirror shown in the test image. Emeriti professors Fred Park and Connie Sutton told me it was from a telescope donated many years ago. The surface has a few bumps and marks but the optical shape is excellent. On the back is inscribed "L Gearhart Clfd. PA 1959" (presumably Clearfield, PA). We'll be making a telescope for Department use with this mirror. Meanwhile, Mrs. Orlosky at Armstrong High School is hosting a test of a seismometer made of surplus geophones and a Raspberry Pi computer. We plan to use this equipment with local school students once in-person instruction resumes.

During the Spring 2021 semester I will be working with the NASA OSIRIS-REx mission. This spacecraft took a surface sample of the primitive, near-Earth asteroid Bennu this past October (see www.asteroidmission.org). By the time you read this, the spacecraft will begin a long journey back to Earth to return the sample in Fall of 2023. The mission is led by the University of Arizona, and the Principal Investigator, Dante Lauretta, has invited me to help write up the results in book form. Having completed the Atlas of Mars seems to have given me a reputation as a planetary atlas maker. Rather than being in residence in Tucson (which I will miss), I'm working remotely by the methods we have all come to know well this year.



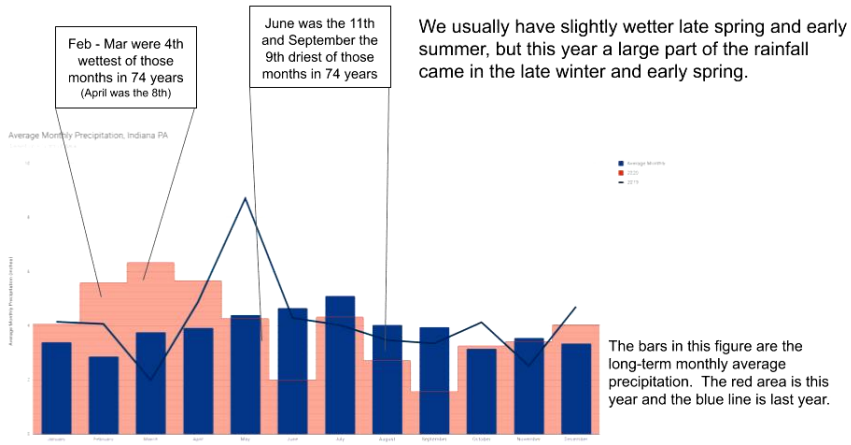
The OSIRIS-REx spacecraft approaches asteroid Bennu to collect a sample.

Stay safe, everyone!

Faculty News — Katie Farnsworth

Just how rainy is it here in Indiana PA?

Now you can find out, thanks to the work Professor Katie Farnworth has been doing with the Indiana County Stormwater Education Partnership. This coalition was formed back in the summer of 2014, spearheaded by the Indiana County League of Women Voters. Other early members included Evergreen Conservancy, Indiana County Conservation District, Indiana Borough, White Township, and Upstreet Architects, LLC.



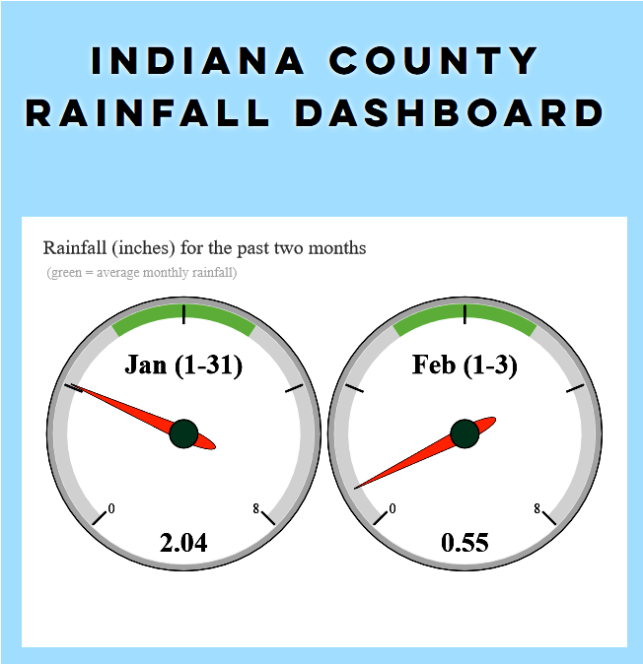
An example of the local rainfall data that Katie shares with the SEP and public

In 2015, Matt Genchur from White Township took over leadership of the SEP. That same month, the Geoscience and Geography departments of Indiana University of Pennsylvania (IUP) joined the group as partners. At this time, the SEP began to meet on the third Thursday of the month, with most meetings hosted by Indiana's very own Levity Brewing Company.

Katie's work with the Stormwater Education Partnership kicked off in 2016 when she and her students began monitoring the quantities of local streams. Five sampling devices were placed at various points of Marsh Run to collect data. These devices are still currently collecting data in the same places they were set back then.

Since 2016, Katie has continued to build out Marsh Run and other local streams as a 'instrumented watershed' with rain gauges and other monitoring equipment. This long-running research has supplied several IUP students with the data for their senior projects and also helped Indiana Borough and White Township municipal planners better understand flood risks in our local watershed.

A real-time app on the ICSEP website displays the local rainfall for the past two months and shows how it compares to the average monthly rainfall for the same period of time. The web page also displays year-to-date rainfall. So far, 2021 has been unusually dry, but as IUP grads know, that will most likely change with the arrival of spring (and graduation day.)



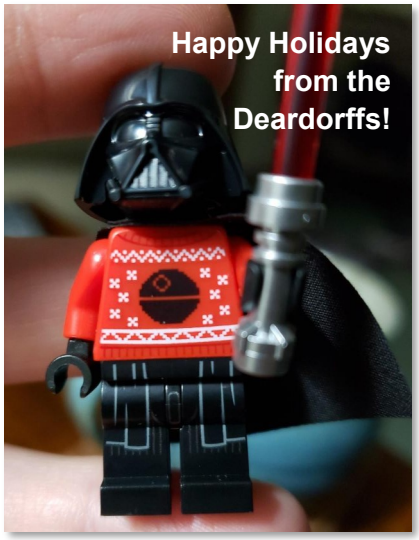
Faculty News — Nick Deardorff

Each year when I sit down to write my contribution to this newsletter, I enjoy thinking back on all the highlights of the year, both for the department and myself. This year creating that list of highlights has been a bit more difficult, as it has been an extremely challenging year. So instead, here is a list of skills I have acquired in the last year (I bet you have a similar list):

- Taking screenshots of my colleagues' goofy faces when their WiFi freezes during a zoom meeting.
- Wearing sweatpants to work for days on end. (I will not divulge my record for number of days in a row for this wardrobe; just know it is impressive.)
- The ability to keep working even though it sounds like explosions are going off upstairs as my children stomp and jump right over my head. (It's quite startling.)
- Pretending to be engaged in Zoom meetings by putting up an excel spreadsheet/ webpage/email on the screen in front of the Zoom window and near my camera (so it looks like you are looking at the other participants), allowing me to continue working on other things. Just make sure you are not typing too much, or it gives it away… and bob your head occasionally.

Here are some lessons learned as well:

- Steve got out just in time. I don't know how he knew there was a pandemic coming, but I am impressed by his foresight to hand off the chair position to me last January.
- I learned that 20 minutes of building with Legos is a rather refreshing break during the workday. A special thanks goes to my Lego gurus - Braden (nearly 8) and Colin (5), who demanded such breaks.



- Whiskey should be one of the main food groups.


Nick and his new furry friend Rocky.

- Therapy animals work! We just recently got an Australian Shepherd puppy, named Rocky, and he is certainly livening up our house right now. Dogs also make excellent foot-warmers.
- Finally, I learned this job is not as fun when you don't get to interact with students on a daily basis, but I am very thankful for the flexibility and support of my colleagues and the students in our Geoscience department.

Here's to a healthy and more productive 2021.

Cheers,

Nick

Faculty News — Jonathan Warnock

The last year has been a difficult one at IUP. In person instruction ended with Spring Break in March of 2020. Teaching geology digitally has presented challenges to work through, especially for my sample-heavy course load, including Paleontology and Sedimentology. A switch to digital specimens has made it possible for labs to continue, and there are a wealth of useful websites with 3D renderings of rocks and fossils and even fully rotatable thin sections in both plane and cross polarized light. Going digital in this way is an opportunity, however, and the labs and activities created to deal with COVID will be useful in class, assuming an eventual return to in-person instruction. 2020 was also notably difficult on IUP's campus as we faced, and are still reeling from, extensive cuts to the faculty. Retrenchments are made in the order of reverse seniority, so I was informed I would lose my job. I am only able to remain at IUP because Dr. Greg Mount resigned from Geoscience to take a non-academic position.

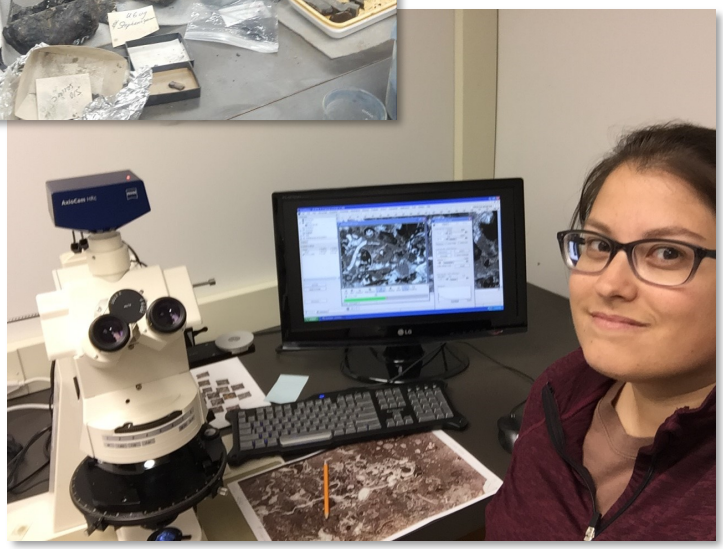
The last year has presented some good news as well. I was able to teach a new course, "The Geology of Climate Change" for the first time. This is the first course on IUP's campus to specifically and solely cover climate change, a significant step in modernizing the curriculum. For the second year in a row, I participated in a successfully funded NSF instrumentation grant, adding a high-quality laser scanner to IUP's toolkit. This will be particularly useful in making digital models of fossils for research. The first two papers resulting from my participation in an International Ocean Discovery Program expedition were published, with more work on the last 15 million years of Antarctic and Southern Ocean climate on the way (fingers crossed on good reviews for the NSF grants submitted to move that work forward).

Despite COVID, I was able to keep up summer field work, leading a very small crew that included IUP Geoscience students and alumni to continue science at the Cleveland-Lloyd Dinosaur Quarry, now part of Jurassic National Monument. We discovered a partial Diplodocus, the first-ever discovery of vertebrate fossil since the naming of Jurassic National Monument. Next year's efforts will focus on discovering how much of it is preserved. Here you can see 2020 Geoscience graduate Shane Parker with a string of articulated vertebrae, part of a pelvis, and a femur (there are some partially-exposed vertebrae scattered in the pit too). Hopefully 2021 brings continued successes and I don't get that retrenchment letter again.

Faculty News — Michelle Chrpa

Hello folks, I am happy to be part of the IUP faculty while Steve Hovan is on loan to the NSF. In addition to my role as an Instructor for Oceans and Atmospheres, I am also a graduate student at Texas A&M University working on completing my PhD dissertation. I am excited to gain some great experience teaching undergraduate courses at IUP.

I started my geology career as a Marine Biology student at Florida Atlantic University in Boca Raton, Florida. It was an Introductory Physical Geology course that really changed my trajectory and pulled me into the world of Geosciences. I really enjoyed combining my enthusiasm for marine biology with Earth's complex history, some of my favorite courses were Marine Geology of Florida & Invertebrate Paleontology.



I finished my BS and took a gap year before heading back to FAU for a MS, where I worked on examining the geometric morphometrics of a bivalve from Northern Alaska. Using some tricks of photography and a shape analysis program, we were able to interpret whether this bivalve was changing throughout geological time and consequently knew more about the timing of the Bering Strait opening between Alaska and Russia. I think one of my greatest experiences as an undergraduate and graduate at FAU was the ability to participate in field trips that explored the regional geology of the Appalachians and the Rockies.

I enjoyed my time in academia so much that after earning my MS degree, I began a PhD at Texas A&M University. At TAMU, I am examining Pennsylvanian coal balls (picture left), carbonate concretions found in coal seams, which have marine organisms that record paleo-ocean chemistry. I interpret Ca/Mg seawater records from echinoderms using an electron microprobe. As a graduate student at FAU and TAMU, I found that I enjoyed not only research, but teaching various lab and field courses. I think the pre-Covid hands-on experience that Geoscience majors receive during their education is an exceptional opportunity. I look forward to a post-Covid return to teaching in lab and the field. I have participated as a Teaching Assistant for several capstone field courses for FAU, TAMU, & the University of Missouri and I believe I will have a chance to participate in the IUP Field Geology course this summer.

When I moved to start my graduate degree, I was surprised to find that East Texas had more climatic differences than South Florida, there was even one snowstorm day a few years ago! Moving to Pennsylvania to become a part of IUP is a first for me, I have never lived in a truly wintery area and I look forward to this new experience.

Emeritus Faculty News — John Taylor

Like many other families, the Taylors spent most of 2020 isolating at home, venturing out only for essential activities such as curbside grocery pick-ups …. and daily exercise/birding hikes south of campus, of course. With Joanne's diabetes and Kait's Down Syndrome placing them at greater risk from COVID, the entire family has sworn off other excursions such as eating out (even fast-food) or visiting the barber or hair stylist. When he doesn't have his hair pulled back into a substantial pony tail, and hasn't combed the beard for a while, Adam needs only to open his eyes widely to bear a stunning resemblance to Svengali! John finally reached the point where his hair had gotten so annoying that he let Joanne tear into it enthusiastically with scissors and a set of clippers purchased online. (Now you know why no family photo was provided for this newsletter.)

The photo provided here includes images of the ornate head and tail of one of those species, and Jim Loch pointing to the horizon from which the beautifully preserved agnostoids were recovered. (In case you're not sure whose head is whose, that's Jim's on the right with the stylish wool cap, and Lotagnotus's on the left….with fewer wrinkles.)

Having moved everything he needs to conduct his research home from campus at the outset of the pandemic, John succeeded in driving a few projects forward over the last year. Countless hours of specimen preparation and photography brought two in particular to the brink of completion. (Oh, shut up. It could happen.) A long-standing project with Jim Loch ('83) and John Repetski ('69) on Cambrian faunas from Nevada has challenged him to navigate the extensive literature (much of it in Chinese) on Lotagnostus to describe multiple species of that useful agnostoid arthropod genus they collected more than a decade ago over a brutally cold Memorial Day weekend.

The second, similarly challenging project involved a fauna from Alaska that is unequivocally Siberian. That one forced John to spend more hours than he cares to think about clawing through Russian books and papers he inherited from a host of senior colleagues, leaning heavily on Google Translate. You can imagine some of the bizarre interpretations that emerged from the program when he plugged in the esoteric text used to describe trilobite anatomy. His favorite example, so far, was what should have been translated as "Glabella with bluntly rounded front end." instead emerged as "Mr. Label with stupidly rounded front end." Hmmm, a rather apt description of the recently departed occupant of the Oval Office in the RUSSIAN literature. Coincidence? Probably not!

Scholarships: How You Can Help

As current Geoscience students juggle financing their college education with other responsibilities, they often look towards scholarships to help fill the gap. Additionally, the Geoscience Department has created funds to help support summer field courses and research opportunities. Through the support of generous alumni, faculty and staff members, emeriti professors, and friends, six scholarships and funding opportunities are available to current Geoscience students:

4530 - Geoscience Department Scholarship

4789 - Next Generation Field Geology Fund

0545 - Joseph C. Clark Research Scholars

4784 - Walter H. Granata Geologic Fund

4783 - Paul A. Prince Oceanographic Fund

5306 - Campbell-Grater Earth Science Education Scholarship

To increase the impact of these Geoscience scholarships, your support is critical. You can support current and future Geoscience students by designating your gift to any of these scholarship funds. To give now, go to https://www.iup.edu/geoscience/about/support-the-department/ to view descriptions of these scholarship funds or go directly to the IUP secure on-line giving form at www.iup.edu/giveagift to make your gift now. Be sure to select the "specific area at IUP" option and indicate your fund designation (see account numbers above) in the "other" area on the form.

For more information about how you can support one of these Geoscience scholarships or to discuss the process of establishing your own scholarship, please contact: Mary Jo Ludwig, Major Gift Officer, at 724-357-1219 or mjludwig@iup.edu. Additionally, Dr. Nick Deardorff, Department Chairperson (n.deardorff@iup.edu; 724-357-5625), can assist you with any questions you have about supporting the Geoscience Department.

I would like to support scholarships for IUP students in the Geoscience Department by making a gift to the Foundation for IUP.

Name(s):_____ IUP ID (if known):_@_____
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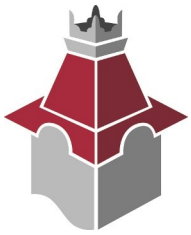
City: _____ State: _____ Zip Code: _____ Phone Number:_____
Email:_____ circle one: Home Cell

Please accept my support to the following scholarship for Geoscience (circle your fund preference):

4530 - Geoscience Department Scholarship
4789 - Next Generation Field Geology Fund
0545 - Joseph C. Clark Research Scholars
4784 - Walter H. Granata Geologic Fund
4783 - Paul A. Prince Oceanographic Fun
5306 - Campbell-Grater Earth Science Education Scholarship



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___ A pledge, payable in ☐1 ☐ 2 ☐ 3 ☐ 4 consecutive month installments

To make a one-time or recurring gift online, visit *www.iup.edu/giveagift*. To donate to the fundraising opportunity to name a new science building classroom after Dr. Walt Granata visit *www.iup.edu/givetoDocG*.

Please mail this form along with payment, if applicable to: Foundation for IUP, Sutton Hall, Room G1, 1011 South Drive, Indiana, PA 15705-1046. Please note on your check or envelope if your gift is for the Walt Granata classroom.

_____ *I prefer not to have my name included in IUP's online donor listing (please initial).*

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If you use the website link above, click on the gray box to view other IUP funds. Scroll to the end and then choose 'other'. You will be asked to fill in one of the specific account numbers below.

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The Joseph C. Clark Research Scholarship (630545)
The Walter Granata Memorial Fund (224784)
The Paul Prince Memorial Fund (224783)
The Next Generation Field Geology Fund (224789)

Photo of Nigerian countryside courtesy of DanZiegler '77