THE OHIO STATE UNIVERSITY

SCHOOL OF
EARTHSCIENCES

July 2017 News Notes

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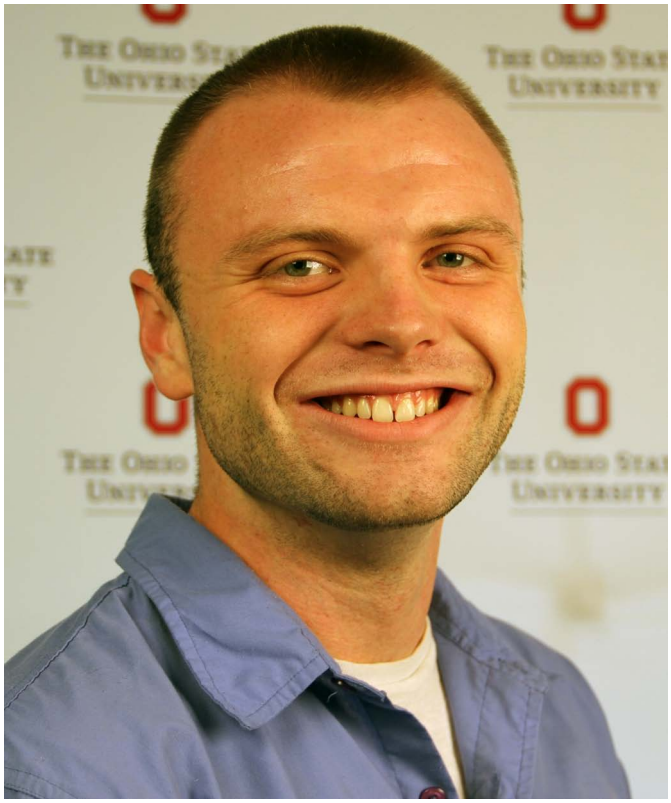
Alumni Change Lives

Myles Moore is a graduate student working with Dr. Tom Darrah. Here he describes how Friends of Orton Hall helped further his studies. If you are interested in giving to support the Friends of Orton Hall or other funds, please visit our giving page (link).



I received Friends of Orton Hall grant funds to travel to a national Geological Society of America (GSA) conference that took place September 25-28, 2016. This conference took place in Denver, Colorado and I was funded for the registration fee, travel and food for this event. I did a fifteen minute (twelve minutes for speaking, three minutes for questions) oral presentation in the "Unconventional Energy Resources" session entitled "Noble Gas, Hydrocarbon, and Nitrogen Isotopic Compositions of Coalbed Methane Reservoirs from the Illinois Basin". The goal of presenting this research was to explain to the coalbed methane community a more integrative approach to determine the source of natural gas forming within coal seams in the Illinois Basin. This new approach used the conventional hydrocarbon technique integrated with isotopic compositions of noble gas data. This talk also described the use of the nitrogen isotopic composition of gases to determine the source of large abundances of nitrogen gas in producing coalbed methane (CBM) wells. Another goal was to better hone my skills as a professional presenter and to network with other scientists conducting research in the field of CBM formation at a national conference. I would say this goal was accomplished because I spoke with another scientist that was conducting a similar study as myself but in the Black Warrior Basin (another geologic basin where CBM gases are being commercially produced). We chatted together to logistically work out a time that I could sample wells in the Black Warrior Basin to collaborate data to integrate noble gas data with the conventional hydrocarbon methods he has already began to gather data on.

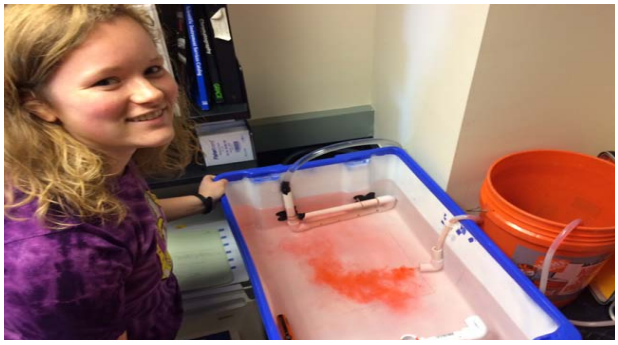
Visions of a Hydrogeology Learning Lab at Mirror Lake

SES is planning a hydrogeology learning lab facility for the Mirror Lake renovation.

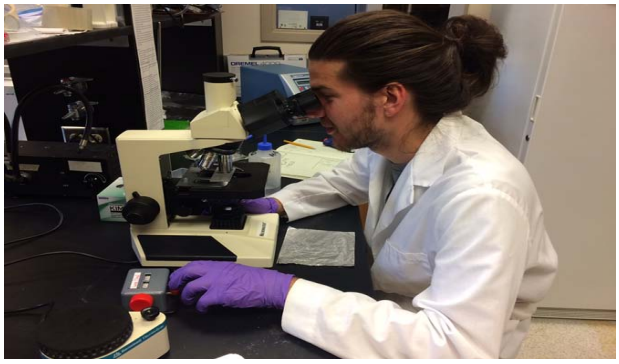
Our goal is to train students in standard hydrogeology field skills in our own backyard. We envision installing a monitoring well where students can measure groundwater levels, collect groundwater samples for chemical analysis, and conduct pump tests. We have already received permission to install the well as part of the Mirror Lake renovation project but need support from our alumni to make it happen!

If you are interested in donating a well, please contact:
Professor Audrey Sawyer
614-292-8383 (office)
sawyer.143@osu.edu
Financial, material, or logistical support are all welcome.

Year-Long Internship Students Study Coral Reefs



Margaret Otto demonstrating her seawater simulation experiments. Photo by Andrea Grottoli



Alec Moore counting coral algal cells in the microscope. Photo by Andrea Grottoli

Undergraduate students Margaret Otto and Alec Moore are completing a year-long internship in Dr. Grottoli's laboratory in the School of Earth Sciences. Margaret spent three weeks in Hawaii with Dr. Grottoli's team in March of 2016 assisting with the long-term coral experiments that are ongoing at the Hawaii Institute of Marine Biology. For her independent research, she has been running simulations to determine the rate of heat and chemical dissipation of the experimental seawaters as they drain from the tanks and enter Kaneohe Bay. Preliminary efforts suggest that this happens within a few meters of the outlet. Margaret will continue to work in Dr. Grottoli's laboratory over the coming academic school year and complete a senior thesis project based on her independent research. Alec has been working on revising the methods for counting algal cells in corals from different types of coral tissue preparations. He has successfully completed this method development. He also completed a senior thesis project to determine the natural variability in coral biomass, chlorophyll, and algal density across three species of Hawaiian corals from four sites around the island of Oahu. He successfully defended his thesis this spring (2017) and graduated with research distinction. He begins a masters in coral biology at the University of California-Riverside this fall. Many thanks to the W.H. Hoover Foundation for funding to Dr. Grottoli, which supported these two year-long internships.

Faculty Profile: Professor Steven K. Lower

My fascination with natural science can be traced back to a young age. I grew up in Sugarcreek, Ohio where I spent countless days outside in the company of one to four of my brothers. We spent time enjoying nature by hiking, biking, climbing, canoeing, camping, and even a few attempts at cow tipping. My interest in earth/planetary science began around middle school. I remember a science fair at The Baltic Junior High School, an educational mecca that was always bustling with horse-drawn buggies. With some minor help from my twin brother (now a Professor at OSU), I won a blue ribbon for a presentation of a now debunked, 9-planet model of the solar system (see photo). I enjoyed science, but sports were my true passion at that time. One of my finest moments is the day that my Belden Brick baseball team beat Ragersville in the greatest Little League Championship of the tri-village area; cue Bruce Springsteen's Glory Days. Soon thereafter, I came to realize that the brain in my 90-pound adolescent body would take me further than my brawn.

I was interested in both biological and physical sciences as an undergraduate. I earned a B.S. degree from Kent State University, majoring in biology and geology. I remained in Kent for a M.S. degree. My thesis focused on lead and hydroxylapatite and resulted in my first peer-reviewed papers in American Mineralogist and Geochimica et Cosmochimica Acta. I then earned my Ph.D. at Virginia Tech (Professor Durand is another Hokie) in what was then an emerging field called geomicrobiology. After graduation, I became an Assistant Professor at the University of Maryland where I remained for two years until a faculty position opened at OSU in 2003. At OSU, I have appointments in School of Earth Sciences (my primary unit), School of Environment & Natural Resources, and Microbial Infection & Immunity.

I am fortunate to work with a group of wonderfully gifted and diverse scientists that at present consists of two postdocs (Nadia Casillas-Ituarte, chemistry; Zach Oestreicher, microbiology), two Ph.D. students (Eric Mumper, geomicrobiology; Max Wheeler, nanoscience), one M.D. student (Alex DiBartola, orthopedics), and three undergraduate researchers (Jessica Howard, molecular genetics; Ashlee Balcerzak, environmental science; Megan Broughton; biology). Over the past few years, we have performed research in several areas including microbial infections of medical implants, magnetic bacteria, and nanoparticles. Grant support comes from NSF, NIH, and DOE. We are also working on a new NASA proposal to study microorganisms in space.

The educational aspects of being a Professor are just as enjoyable as the research. My primary teaching duties include two General Education courses: Planet Earth with 200 students and Environmental Science that enrolls up to 800 students. I lecture on topics such as evolution where I teach students about natural selection that takes place over millions of years as well as anthropogenic evolution happening right now (e.g., antibiotic resistant bacteria or something called CRISPR). These classes also provide a wonderful opportunity to teach non-science majors about global climate change. A highlight of my teaching is the annual undergraduate science conference (co-hosted with my professor brother) where 750+ students each present a poster in a one-day, peer-reviewed symposium at the Ohio Union. I've even found my way back to a middle school science classroom (minus the horse-drawn buggies) where I lead a couple outreach programs: a weeklong geomicrobiology field camp for ~100 middle school students each year; and a 10-day international field camp to the Island of Bonaire where ~15 middle school students study biomineralization.

I've been fortunate to earn a few science honors like these blue beauties from a science fair (notice the shirt), a NSF CAREER award (like Professor Panero), a PECASE award (like Professor Howat), and was selected as a Kavli Fellow by the National Academy of Sciences.

Berry Lyons Concludes 8 Years as SES Director

With the end of June 2017, Berry Lyons completed 8 years as the Director of SES and stepped out of that role. His immediate plans (aside from more time! less stress!) include professional travel during the summer, followed by Faculty Professional Leave (aka "sabbatical") during the 2017-18 academic year; Berry will spend the 2nd half of the academic year on a well-deserved Fulbright Fellowship in Ireland.

For OSU, the past 8 years have been marked by significant changes and fiscal headwinds; these have included the continued development of the consolidated College of Arts and Sciences, the academic transition from quarters to semesters, and the growing importance of enrollment-based budgets amid shrinking state support. Berry has successfully led SES through these challenging times with a steady hand, consistently guided by 2 questions: what is best for the School? And what is best for our students?

Major accomplishments under Berry's guidance have included:

- hiring 12 new SES faculty members, including meeting their space and research start-up needs maintaining and strengthening the SES tradition of mentoring junior faculty, so that SES continues to have an outstanding record of success in faculty tenure and promotion
- reorganizing and major restaffing of the SES office and support staff
- nurturing the growth of an energy research group within SES
- guiding the development, approval, and implementation of tracks within the B.S. major during the transition from quarters to semesters
- supporting the growth of the SES undergraduate population to its present number of 130-150 majors
- creatively supporting research and the Utah field geology course as foundations of the undergraduate experience in SES
- maintaining a strong and diverse graduate program
- by personal example, establishing an atmosphere of community within SES, encompassing undergraduates, graduate students, alumni, staff and faculty

Despite the demands on his time as Director, Berry has led the faculty by example. During the past 8 years he has compiled a record of teaching, research, and service that would reflect well on any "regular" (i.e., full-time) faculty member. He has taught at least one course in SES ~every quarter/semester, including the popular offerings of Introduction to Geochemistry and a graduate-level writing seminar, while also contributing regularly to courses in other units, such as the School of Environment and Natural Resources. He has authored or co-authored over 50 scientific papers, served as a lead investigator of the NSF-funded McMurdo Dry Valleys Long-Term Ecological Reserve project, and advised 3 Ph.D. students, 6 M.S. students, and 14 B.S. students. Outside SES, Berry has provided service to countless groups, including major contributions to OSU, the National Science Foundation, and SCAR (Scientific Congress on Antarctic Research).

And somehow amid all of this, Berry also has found the time and energy to continue to cheer for the broad spectrum of OSU sports teams and for his beloved Boston Red Sox.

In appreciation for Berry's contributions as Director, the SES faculty unanimously approved the following motion at its 4 May 2017 faculty meeting:
"The faculty of the School of Earth Sciences, on behalf of the entire School, gratefully recognizes Berry Lyons for his eight years of dedicated service as Director of SES."

We hope Berry enjoys the freedom of his upcoming sabbatical year, and we wish him all the best for the future.

On Friday, June 30, the faculty, staff, and a few graduate students gathered to present to Berry Lyons a certificate of the faculty's appreciation for his service of eight years as director of SES.

Saltzman Elected Fellow of the GSA

Professor Matthew Saltzman was elected fellow of the GSA. While elections were held in April 2017, this wonderful news was just announced publicaly a few weeks ago. Congratulations, Matt! You can see a full list of appointees here (link).

Saltzman Appointed Director of SES

Speaking of, Prof Matthew Saltzman was recently appointed as the new director of SES! Congratulations! Matt will include a message to Alumni in next month's News. From the College press release (link):

"Matthew Saltzman has been appointed to serve as director of the School of Earth Sciences, beginning July 1, 2017. Saltzman received his PhD at the University of California - Los Angeles in 1996. He joined Ohio State's School of Earth Sciences autumn 2000, after two-years as a visiting professor at the University of Iowa. He studies the role of the carbon cycle in climate change and biotic events during the past half billion years of Earth history."

Alumni gathering planned for September 9

The SES Alumni Committee is happy to announce that we'll be hosting a gathering for alumni on Saturday, September 9th, before the Oklahoma game, from 11am-2pm. Lunch will be provided, and the event will take place in Orton and Mendenhall Lab on campus. Stay tuned for additional details from Prof Derek Sawyer (sawyer.144@osu.edu)!