THE OHIO STATE UNIVERSITY

SCHOOL OF
EARTHSCIENCES

March 2018 News Notes

Alumni Change Lives

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

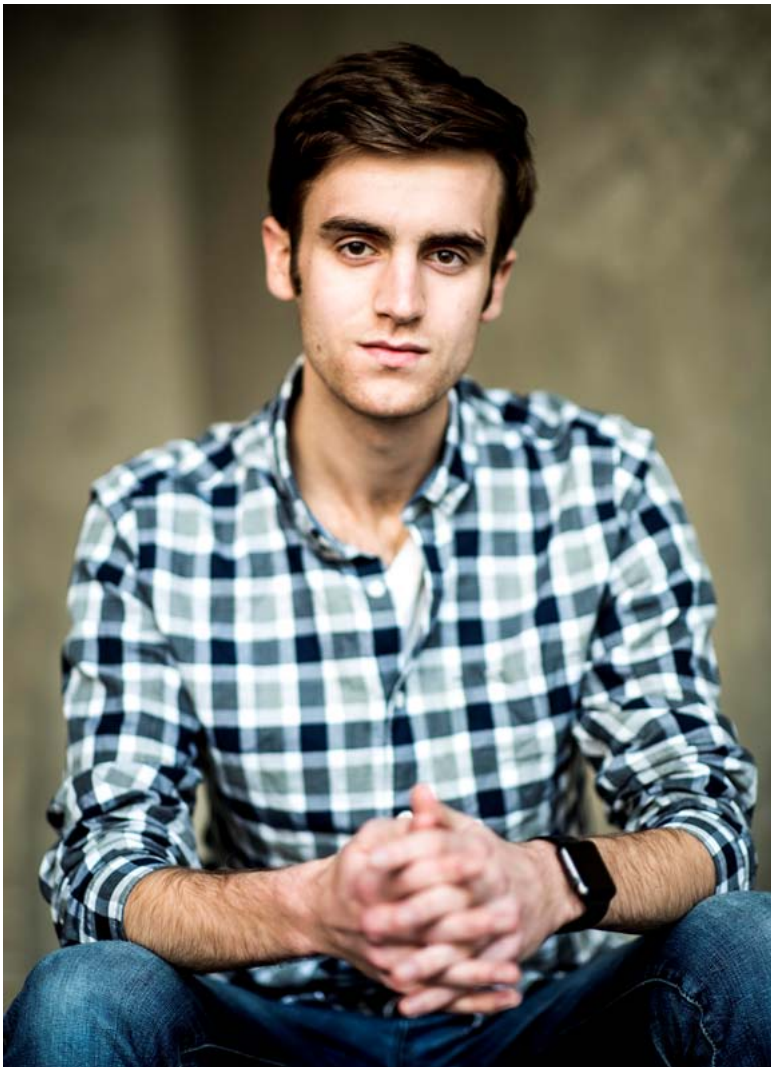
My graduate research is on the chemostratigraphy of the Knox Unconformity in the Appalachian Basin. The Knox Unconformity is one of the most important, albeit complex, aspects of Appalachian basin stratigraphy. It acts as a boundary between sediments deposited in a passive margin setting and sediments deposited in a foreland basin setting in the Appalachian Basin. The formation of this unconformity is attributed to a local tectonic event, known as the Taconic orogeny, and global sea level fall which occur during Middle Ordovician. My research is trying to revisit this interpretation, by refining the chronostratigraphy using strontium isotope stratigraphy. The effectiveness of this method has been documented by Dr. Saltzman and his former graduate students. Hopefully, this new research will offer new insight into the relative role of tectonic and global sea level fluctuation in the formation of the Knox Unconformity, and the Ordovician geological evolution of the Appalachian Basin in general. After finishing this research, I plan to present the data and findings in geoscience conferences such as GSA, AAPG, or AGU.

Friends of Orton Hall granted me opportunity to do fieldwork and process samples for my above-described research. The fieldwork was conducted in East River Mountain (near the boundary of Virginia and West Virginia), and Riverton in West Virginia during Summer 2017. This was my first experience doing fieldwork in the United States. The fieldwork not only greatly supported my research but also exposed me to some American culture which is very beneficial for me as an international student (I am fron Indonesia). I even had a close encounter with a black bear, who appeared out of nowhere!

This fieldwork experience and research has expanded my perspective, and sharpened my skills as a geologist. I am deeply grateful to Friends of Orton Hall for providing me this opportunity.

A Trip to ELSI: An International Perspective

In Carl Sagan's grand vision of humanity's future in space famously published in 1994's *Pale Blue Dot*, Sagan designated Earth and space sciences as the field "with greatest international cooperation." "Almost always," he wrote about Earth and space scientists, "they discover work, complementary to their own, is being done by researchers in other nations; or that to solve a problem, you need data or perspective that is unavailable in your country." In other words, the answers to the profound questions put forth by Earth and space sciences will come from teams of diligent international researchers working in tandem. With that said, it is quite striking to see the physical manifestation of Sagan's idea of international scientific cooperation in the quiet neighborhood of Meguro-ku, Tokyo, Japan, at the new Earth-Life Science Institute (ELSI) at the Tokyo Institute of Technology.



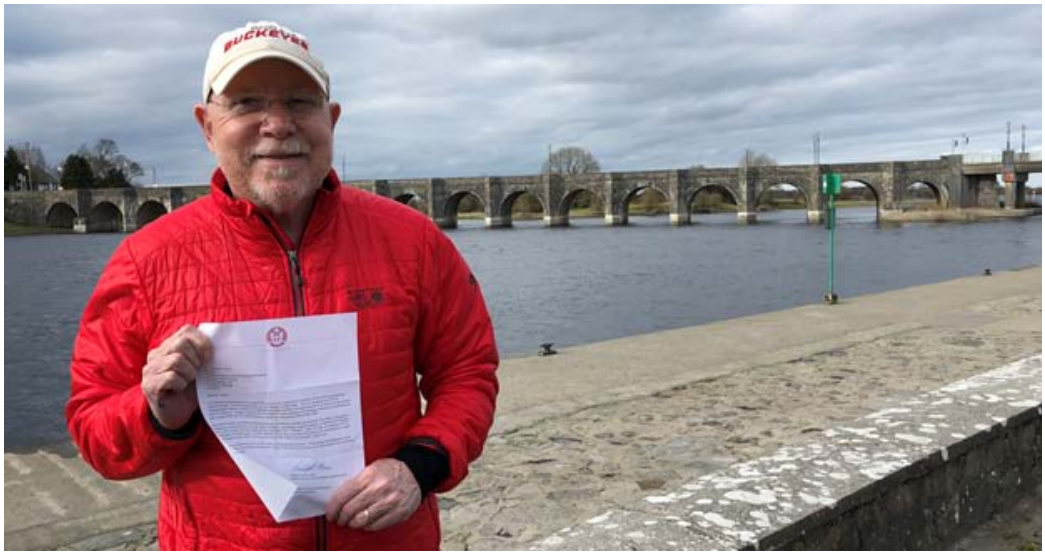
Scott D. Hull, SES Master's Student (Advisor: Dr. Wendy Panero). Photo courtesy of ELSI photographer Nerissa Escanlar.

The colossal mission of ELSI can be boiled down to obtaining a better understanding of what makes Earth a place where life can form, flourish, and evolve, and how we might go about extrapolating those findings out into the Cosmos in the search for extraterrestrial life. To accompany this mission, ELSI is home to state-of-the-art equipment and a mighty team of international biologists, astronomers, artificial life and machine learning experts, and, of course, geologists—all operating under the same roof. Consider also the revolving door of highly regarded visiting researchers and you'll realize that ELSI is a novel breeding ground for intellectual, interdisciplinary, cutting-edge inquiry. Indeed, it is Sagan's vision of scientists from all over the planet synchronously working together to solve extraordinarily complex scientific questions.

For two months, I was hosted at ELSI by PI, Vice Director, and Tokyo restaurant ambassador Dr. John Hernlund. I spent two weeks as a student at ELSI's origins of life winter school. One week of the winter school was spent in the field in Japan's Izu Peninsula and Mount Hakone, and the other was spent listening to ELSI's guest and local researchers (including SES Ph.D Cayman Unterborn) speak about topics including water worlds, habitable zones, viral genetics, macrogenomics, chondrites, information theory, oceanic biogeochemical cycles, self-organization in artificial life, and machine learning. Outside of the winter school, I worked with Dr. Hernlund to advance my research on the computational modeling of core formation in terrestrial magma oceans and on expanding ideas with regards to core-mantle chemical communication using OIB isotope geochemistry.

The international perspective on active science I received near the ELSI Agora chalkboards, over bowls of ramen with groups of researchers, or between songs during late night karaoke brought forth new ideas and a higher awareness of research occurring in parallel with my own. I now find myself with contacts and friends scattered all over the world, a better perception of where my own research fits in, an appreciation for the knife's edge our planet's habitability seemingly sits on, and a taste for good sake.

Berry Lyons Receives Distinguished Scholar Award



Our own Berry Lyons is a recipient of the 2018 Ohio State Distinguished Scholar Award. This award recognizes Berry's exceptional contributions to research in fields as diverse as Antarctic science, urban geochemistry, and rock weathering. While this great honor was bestowed in a surprise phone call to Ireland arranged by the Provost (thanks Anne!), the best is clearly yet to come - Berry will be led out on the field at Ohio Stadium this Fall by Brutus to a ceremony honoring the 2018 Distinguished Scholars! The photo shows Berry with the letter that Prof Anne Carey hand-carried to Ireland from Pres. Drake and Provost McPheron about Berry's selection as 2018 Ohio State University Distinguished Scholar. Anne gave the letter to him while he received the provost's surprise phone call in Glassan, West Meath County with the news. Berry is pictured at a sampling site on the River Shannon, this one at at Shannonbridge in County Offaly, Ireland. Berry and Anne sampled about a dozen locations on a 2.5 day trip by car along the River Shannon and some of its tributaries. Congratulations Berry!

Earth Sciences Faculty Receive NSF CAREER Awards

The National Science Foundation's (NSF) Faculty Early Career Development (CAREER) Program offers the Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or

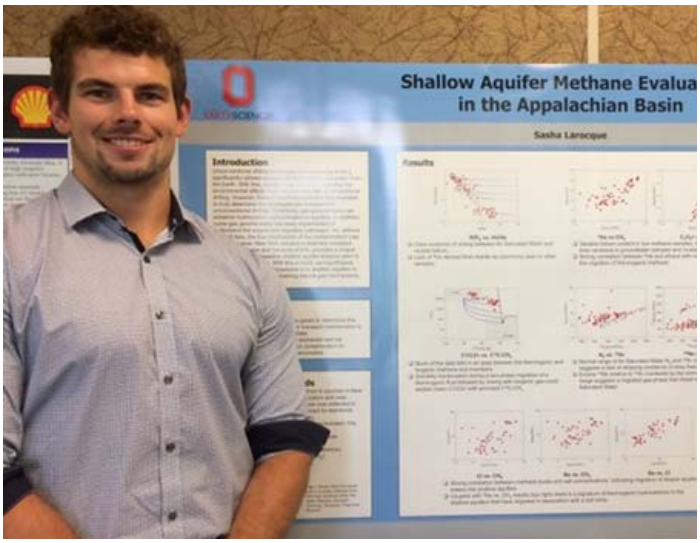
or organization. ASC's most recent recipients of the award are Ann Cook (left) and Audrey Sawyer (right), assistant professors in the School of Earth Sciences. Cook's award will enable her to study the occurrence, distribution, and amount of naturally occurring methane gas hydrates in the seafloor worldwide, as well as the link between these hydrates and global warming events. Sawyer's award will enable her to study the impacts of water table fluctuations — specifically, how groundwater chemistry evolves in response to water table fluctuations over a range of timescales.

SES Drills Well for Teaching on South Oval

On March 1st, Professor Audrey Sawyer's Water Issues class looked on as a well was drilled in our backyard. The 120-foot well penetrated two cavities in the Columbus Limestone. Students had the opportunity to describe cuttings and learn about rotary drilling. The well was generously donated by Jamison Drilling and will serve as a centerpiece in the new Mirror Lake Hydrogeology Learning Lab. The Hydrogeology Learning Lab, to be completed this spring, will provide opportunities for students to engage in hands-on field activities during lectures and labs. Those interested in more information on the lab should contact Dr. Audrey Sawyer (link).

Photo Credit: John H Fulton.

Congratulations to Sasha Larocque



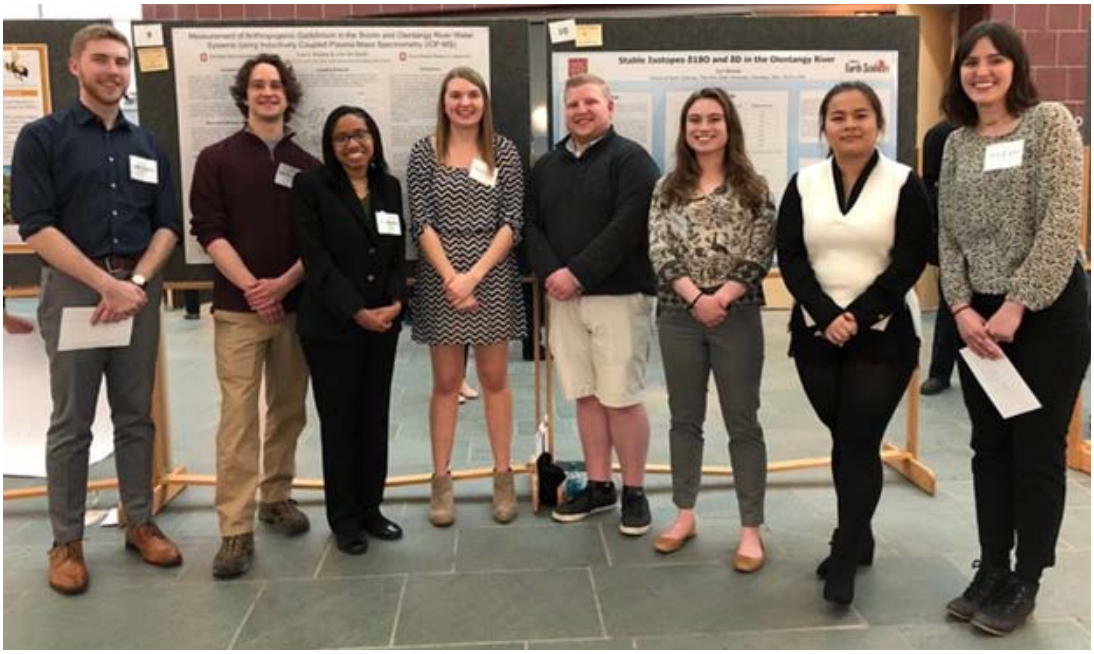
Congratulations to Earth Sciences major Sasha Larocque who will be competing in the NCAA Frozen Four in St. Paul, Minnesota on April 5 & 7. The road to the national championship comes after the Buckeye men's ice hockey team won their regional tournament in Allentown, Pennsylvania by beating Princeton 4-2 on Saturday and on Sunday dominating the defending national champions, Denver, by a score of 5–1. Defenseman Sasha had 4 blocks in yesterday's victory over Denver.

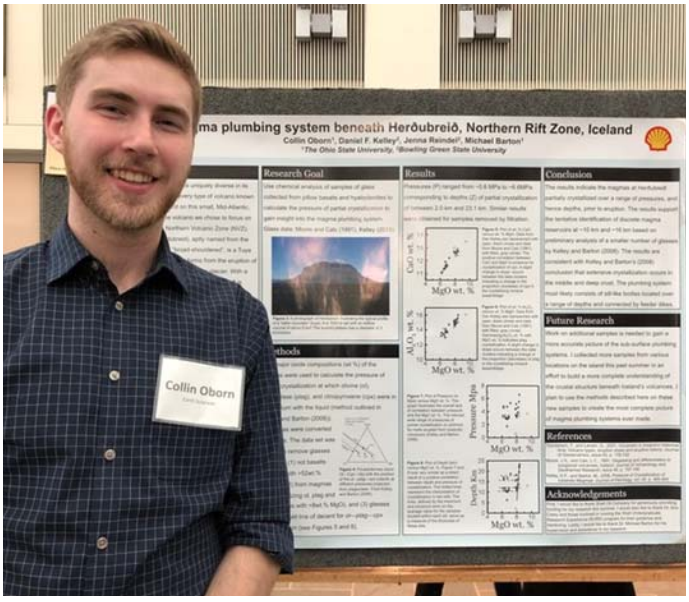
Sasha is among four of the Buckeyes who were named to the NCAA Ice Hockey Midwest Regional All-Tournament Team. Please congratulate Sasha when you see him.

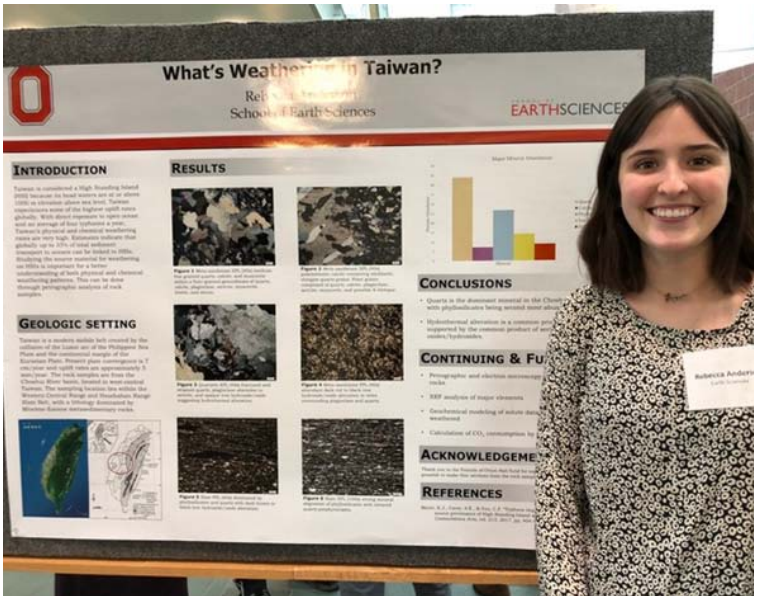
SES at the Undergraduate Research Forum

A group of undergraduate students working in the School of Earth Sciences presented their research posters at the Undergraduate Research Forum on March 21st. The event was very successful.

Congratulations to the winners from SES: Becky Anderson Colin Oborn, as well as to Sarah Solomon, who works with Prof Andrea Grottoli.







ALUMNI SPOTLIGHT

WENDY BOHON

Science Communication Specialist and Geologist for the Incorporated Research Institutions for Seismology (IRIS)

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WHERE HAS YOUR DEGREE TAKEN YOU?

My geology degree has taken me all over the world! I've installed GPS stations in Bolivia, done fault mapping in Argentina, performed paleoseismic trenching in India and have worked on tectonics related problems in Mexico, India, China, Argentina, Chile, Bolivia and the US.

HOW DID YOU GET WHERE YOU ARE TODAY?

My route to geology was kind of circuitous. I started out my academic career in Theatre but after taking a Geology class in college I fell in love with tectonics and got a dual degree in Theatre and Geology from James Madison University. From there I to moved to LA to pursue a career in acting which was, again, derailed by geology – this time in the form of the Hector Mine earthquake. After that *life shaking* event I went to work as the Education and Outreach Coordinator for the USGS Earthquake Hazards Program in Pasadena. Finally succumbing to the siren song of science, I went back to school and earned an M.Sc. in Geology from THE Ohio State University and a Ph.D. in Geology/Tectonics from Arizona State University.

WHAT ADVICE WOULD YOU OFFER TO FUTURE STUDENTS?

1. Be open to any and all experiences – you never know what will prove useful in the future.
2. Go to colloquium. Talk to the speaker. Ask questions even if you think they're dumb.
3. TEACH. This will teach you what you don't know.
4. Take every opportunity you can to improve your science communication skills. Write. Give talks. Teach. These skills are critical regards of what career you pursue, and as a scientist they are more important right now than ever.

> *"OSU gave me a firm foundation in key geologic concepts and classes and provided me with the skills and experience needed to perform high-level quantitative research. I also made excellent friends in the grad program that I still keep in touch with (and sometimes collaborate with) today."*