

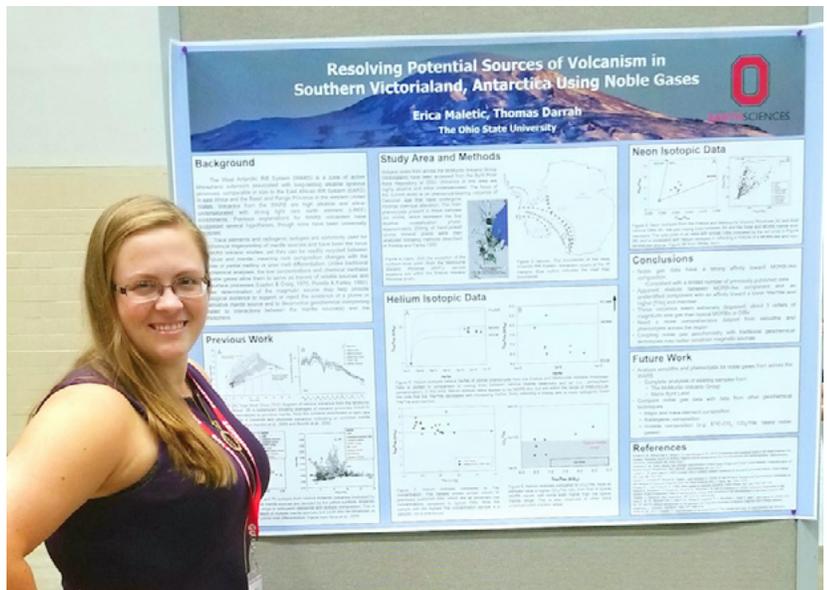
## November/December 2018 News Notes

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### Alumni Change Lives

Erica Maletic is a 4th year PhD student working with Professor Thomas Darrah. Here she describes how the Friends of Orton Hall fund helped support graduate studies. If you are interested in giving to support the Friends of Orton Hall or other funds, please visit our giving page ([link](#)).

I am studying the sources of volcanism in the West Antarctic Rift System, which is a continental rift similar in size and composition to the East African Rift System. There are many different hypotheses on what the sources of volcanism are in the West Antarctic Rift System, though none are universally accepted.



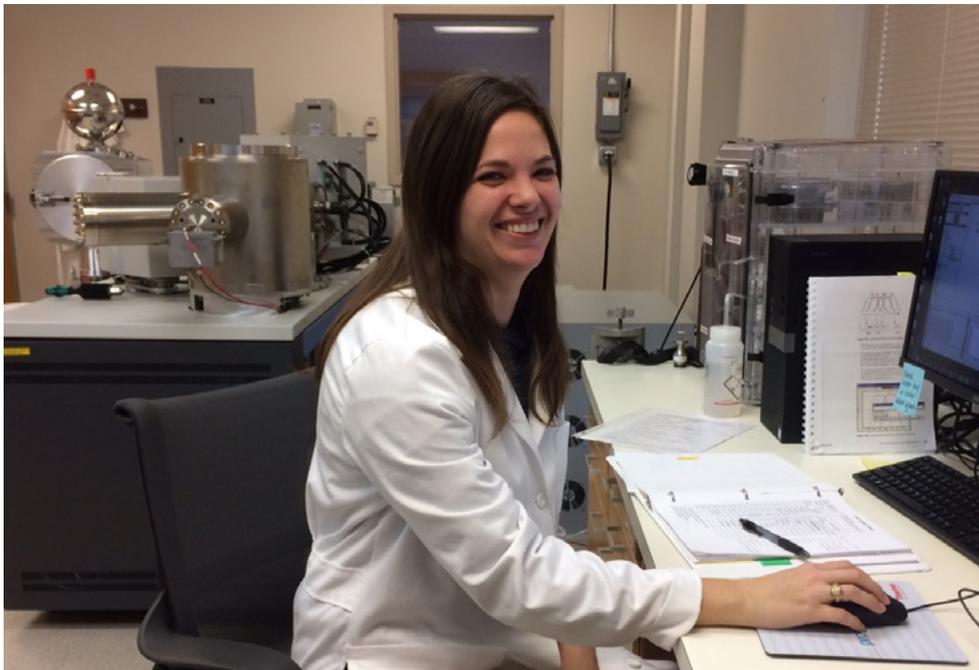
*Erica Maletic presenting her research.*

I hope to help solve this issue by analyzing noble gases, which are less affected by recycling and melt differentiation compared to more traditional ways of determining volcanic sources. Noble gases are used in many other areas around the world to determine sources of volcanism, but they are a very underutilized tool in this area.

Friends of Orton Hall funding allowed me to attend two conferences in 2018 to present my preliminary data. The first was the Goldschmidt Conference in Boston, MA in August, where I presented a poster titled "Resolving Potential Sources of Volcanism in Southern Victoria Land, Antarctica Using Noble Gases." Though a smaller conference, it is the premiere international conference on geochemistry. I was able to meet many scientists who do not usually attend conferences in the US and had many great discussions about not only my own research, but similar questions that they were trying to answer. I also received funding to partially support my trip to the Geological Society of America Annual Meeting in Indianapolis, IN in November, where I gave a talk on this same research, titled "Using Noble Gases to Determine Magma Sources in the West Antarctic Rift System." Though the GSA conference has a broader scope, I was able to present my research to a larger number of people, still have thought-provoking discussions, and see some interesting presentations. I am extremely grateful to the Friends of Orton Hall fund for helping me to attend both of these conferences.

## Samantha Carter receives prestigious Presidential Fellowship

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*Presidential Fellow Samantha Carter*

Samantha Carter was awarded a Presidential Fellowship by the Ohio State Graduate School. The Presidential Fellowship recognizes outstanding scholarly accomplishments and potential of doctoral students and provides a full year of support towards completion of their dissertations.

Samantha received her bachelor's degree in geology with minors in mathematics and geoinformatics from Texas A&M University in 2012. She earned her M.S. in Environmental and Earth Sciences at The University of Texas at Arlington in 2015 before continuing as a Ph.D. student with her current advisor, Elizabeth M. Griffith. Her MS thesis work using deep sea sediment cores (International Ocean Discovery Program "IODP" Expeditions 320/321) from the middle Miocene is published in *Geology* (Carter et al., 2016) and contributes novel data on marine export production over this time period.

Samantha moved to Ohio State with her advisor to continue the Ph.D. program in the School of Earth Sciences in 2017. Her first two dissertation chapters focus on reconstructing variability in the monsoon system over the past 11 million years, a topic of debate. The first chapter (and publication) of her Ph.D. reports pore water radiogenic strontium isotope data from two cores drilled in the Arabian Sea through the Indus Fan in 2015 (IODP Expedition 355). Samantha is currently writing up her second chapter while she is preparing and analyzing the clay fraction separated from the cores on the newly installed thermal ionization mass spectrometer in the School of Earth Sciences (photo above). Last year, she gave an oral presentation on the strontium isotope data at the Fall Meeting of the American Geophysical Union (AGU) and was awarded an Outstanding Student Paper Award. She has been invited to present at the Fall Meeting of AGU next month.

Her final project supported by the Presidential Fellowship focuses on expanding an existing advanced global carbon cycle model to include the barium cycle in the ocean and sediments. This modeling work will test our understanding of the barium cycle in our ocean – critical to validate the use of this geochemical proxy for reconstructing changes in the export of organic carbon from the surface of the oceans into the deep ocean.

## Professor Mark Kleffner has taught Earth Sciences 1100 100 times!

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*Professor Mark Kleffner*

When Professor Mark Kleffner walked into the classroom for the autumn semester section of Earth Science 1100, he could safely say he has hit a big milestone. Over the course of his 30-year career at The Ohio State University, he has taught the course at least 100 times. “I became a teacher because I have a passion for helping others learn, and over the years I think I have become better at making it possible for students to do that in this class,” said Kleffner, a professor in Earth Sciences at the regional Lima Campus. “I also incorporated more of my own personality, sense of humor, and research interests into the class.”

Kleffner has worked hard to connect with his college students and hone his skills as a teacher. Spending his time in the classrooms of a regional classroom has also allowed him to connect with learners from pre-K through seniors coming back to campus for classes in the Lifelong Learning Institute. In the process, he was named an Alumni Award for Distinguished Teaching recipient in 2012 and serves as a faculty mentor in the University Institute for Teaching and Learning. “One of the great advantages for students at Ohio State Lima is our quality of instruction,” said Interim Dean and Director Joe Brandesky. “Fully vetted professors teach our undergraduate courses on a regular basis. This term, one of our best, Mark Kleffner, celebrates teaching his 100th section of Earth Sciences 1100 and he continues to serve Ohio State Lima students at a very high level along with his esteemed colleagues.”

Kleffner has seen big changes in his classroom over the years. When he started, transparencies, slides and 16mm film strips were the norm in the classroom. The state-of-the-art technology of the time was VHS videotapes. Today, Kleffner’s students are using interactive iPads supplied by the Digital Flagship initiative at Ohio State. He no longer requires a textbook. “Technology has made it easier to show in much better detail and in a more informative fashion how many geologic processes work,” Kleffner said. “Earth Sciences 1100 today is much more of an inquiry-based, hands-on learning experience. The class spends time not just in lab, but also in lecture, prior to the lab, working with actual specimens of minerals and rocks, volcanic products, glacial features and deposits, and fossils.” While the technology now available to him and his students is helpful, nothing can beat the chance to put your hands on the items in the large collection of specimens in the geology classroom. “I am always thrilled when I see that a student experiences an ‘a-ha’ moment during lab, when I can see that a student who didn’t completely understand a particular topic/concept from lecture suddenly figures it out because of the ‘hands-on’ format of lab,” Kleffner said.

One bright, and very popular, item has not changed much over the last 100 sections – Kleffner’s cheerful Peanuts ties. His first was a gift from his mother-in-law that he wore to class ahead of a visit with his in-laws during his second year on campus. “Several students commented positively about my wearing of a Peanuts tie in their written evaluations of the course at the end of the quarter,” Kleffner said. “I began wearing Peanuts ties more frequently, and finally to almost every class session. In the process, I also began to show my personality by working my sense of humor into the class. I discovered that a more relaxed atmosphere in class resulted in a better, more enjoyable learning environment for most students and for me.”

# Professor Griffith Field Trip

Professor Liz Griffith took her Earth Science 5621 Introduction to Geochemistry course on a field trip to SE Ohio to see first-hand the impacts and remediation of abandoned mine drainage on water in the region. The large class was split into two groups traveling and collecting data on October 20th and 21st in the unglaciated Allegheny Plateau region.



*Saturday's group at Lake Hope boat dock. Photo Credit: Liz Griffith.*

The class visited and collected data (pH, redox potential, temperature, conductivity, dissolved oxygen, alkalinity, total Fe, hardness) from four field sites characterized by both acid mine drainage that is not chemically remediated at Monday Creek and chemically remediated (addition of CaO) near Carbondale at Hewett Fork in the impaired or sacrifice zone and transition zone ~2 miles downstream of the Carbondale doser, as well as a dammed lake affected by acid mine drainage at Lake Hope State Park. We were also able to stop at the Hope Furnace, a charcoal iron blast furnace operated from 1854-1874 – and find slag from the production of high-grade iron, smelting iron ore here. Students measured waters discharging into the watersheds ranging from pH 2 to 10! They were simply amazed at the colors of the waters you can see here as well!



*Left Photos: Students collecting water samples. Above Photo: Sunday's group at Hope Furnace. Photo Credits to Liz Griffith, Casey Saup and a friendly biker.*

## Honors to Professor Grottoli and Professor Darrah

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### Professor Grottoli wins AGU Award

Professor Andréa Grottoli received the 2018 Ocean Sciences Voyager Award. The Ocean Sciences Voyager Award is from the American Geophysical Union (AGU) and is given in to mid-career scientist (10 to 20 years post-degree) in recognition of significant contributions and expanding leadership in ocean sciences. Her nomination announcement listed her significant contributions to geochemistry, coral biology and paleoceanography.

Professor Grottoli received her award on December 11, 2018 at the 2018 AGU Fall Meeting in Washington DC.



*Right: Professor Grottoli*

### Professor Darrah wins NGWA Award



Professor Tom Darrah received the 2018 NGWA John Hem Award. The National Ground Water Association is a not-for-profit professional society and trade association for the global groundwater industry. The John Hem Award for Excellence in Science & Engineering is presented by the Scientists and Engineers Section of NGWA in recognition of a significant, recent scientific or engineering contribution to the understanding of groundwater.

Professor Darrah was recognized at the NGWA Awards of Excellence Ceremony on Wednesday, December 5, 2018, during NGWA Groundwater Week in Las Vegas.

*Left: Professor Darrah*

# Coral Bleaching Research Coordination Network at Ohio State

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Professor Andréa Grottoli was recently funded by the National Science Foundation to establish the Coral Bleaching Research Coordination Network (Coral Bleaching RCN) ([link](#)). She is the Director of the RCN.

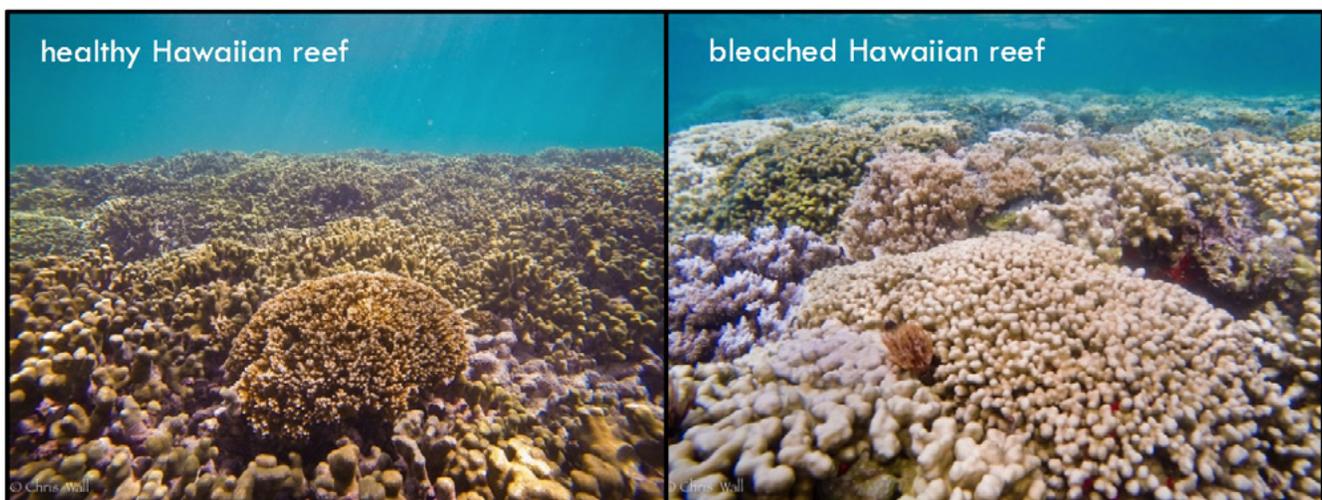
Temperature stress is the single largest threat to coral reefs globally and is the focal topic of the newly established Coral Bleaching Research Coordination Network (RCN). In July 2016, coral scientists from across the US participated in a workshop and recognized that to most effectively improve the rate of coral bleaching discovery, we would need to explore ways to increase efficiencies in how we conduct research, bring together researchers that do not traditionally work together, and create an interdisciplinary collaborative network. One way to increase efficiency is to develop recommendations in experimental protocols and in sample archiving so that (i) comparisons can be made across studies, species, and locations more easily, and (ii) so that experiments do not necessarily need to be repeated, provided sufficient coral material is appropriately archived and made available to the research community. Our ability to determine how corals may or may not survive this century will be enhanced by implementing systematic methods and experimental protocols, and coordinating and integrating interdisciplinary research efforts. These activities alone should help increase the rate of discovery in the field of coral bleaching.

The goal of the Coral Bleaching RCN is to work with the broader coral research community to develop protocol recommendations in coral bleaching research over the course of three workshops, and to facilitate interdisciplinary collaborative team formation. These goals will be addressed through four activity nodes: workshops, cyberseminars, student and Early Career Training, and RCN activity dissemination. The workshops are the centerpiece of the Coral Bleaching RCN and focus on three topics:

Workshop #1: Experimental Design Protocol Recommendations  
22-24 May 2019 at Ohio State University, Columbus, OH USA

Workshop #2: Sample Archiving Protocol Recommendations  
1-3 July 2020 at MARUM in Bremen, Germany

Workshop #3: Data Assimilation Protocol Recommendations  
26-28 May 2021 at Ohio State University, Columbus, OH USA  
the Coral Bleaching RCN, please contact Dr. Grottoli directly.



# BRYAN O'REILLY

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## WHERE HAS YOUR DEGREE TAKEN YOU?

After I graduated I ended up moving to the D.C. area and became a campaign team lead for Let America Vote. After that I moved to Wisconsin and got a job at Epic working on healthcare software. And now I'm excited to start grad school at University of Wisconsin!

## HOW DID YOUR EXPERIENCE AS AN SES STUDENT PREPARE YOU FOR THE FUTURE?

I think the research opportunities that I had at OSU and the abundance of research scholarships that are available set me apart in all the jobs I applied for. Also, the great leadership opportunities and working closely with the faculty gave me skills I needed to succeed in both politics and science.

## MOST MEMORABLE EXPERIENCE?

It's hard to pin down a single favorite memory, however all the opportunities we are given to get out into the field seems unique to geology. Those experiences are what I brag most about being a geology/OSU student.

## ADVICE FOR FUTURE SES STUDENTS?

Take the initiative to get to know professors and take all the leadership opportunities you can. The relationships you build are just as important as the knowledge you gain. I'd love to talk to anyone in SES who feels lost or who is unsure that pursuing a geology degree is the best decision they can make, so feel free to reach out.

“Take the initiative to get to know professors and take all the leadership opportunities you can. The relationships you build are just as important as the knowledge you gain.”



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