

January 2018 News Notes

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Alumni Change Lives

Ken Peterman is a graduate student working with Dr. Mike Barton. 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](#)).

I received funds from Friends of Orton Hall to present my research at the American Geophysical Union annual conference in New Orleans, Louisiana during December 2017. The Friends of Orton Hall grant covered all of my travel expenses for the week, as well as conference registration fees. My research involves testing a new method to calculate the oxygen fugacity at which igneous rocks crystallize, and to determine if the Earth's mantle is heterogeneous with respect to oxygen fugacity, and hence redox state. Oxygen fugacity is an intensive variable that strongly affects the behavior of certain elements in magmas that are sensitive to changes in redox state, such as iron; and therefore ferromagnesian silicates, such as olivine. Since oxygen fugacity plays an important role in fractional crystallization, in principle it is possible to estimate oxygen fugacity from analyses of olivine in



equilibrium with the melt. During this conference, I was able to discuss my research with several other researchers from around the United States. One individual even offered to send me samples of fresh komatiites, which would tremendously benefit my research. It was also useful to compare this method with the methods that others have used to estimate oxygen fugacity for their research at AGU. As a result, I was able to see the uniqueness and advantages of the olivine-melt equilibrium method. Friends of Orton Hall helped me achieve my goal of learning more about other topics relevant to my research, and effectively communicating my research with others. Additionally, I received funds from FOH to have thin sections cut from samples that I collected from Iceland last year. These will later be analyzed for chemical data, which will be used to address many important questions relevant to my research. I would like to thank Friends of Orton Hall and its donors for making all of this possible.

Major Commitment to Field Camp Fund

As most of you are aware, Mike and Cindy Morgan established the SES Field Experience Fund ([link](#)) in 2009 to endow the SES Field Camp. The Morgans hoped that by endowing Field Camp, others would step forward with their support to help the School of Earth Sciences purchase and maintain vans, provide support for students to offset the costs of camp, and instructional support ([link](#)). Joe and Marcia Newhart gave very generously to this fund so that it now has a principal of nearly \$250,000, and the School has made Field Camp a priority going forward. Starting with the 70th Field Camp reunion this summer (very capably organized by Terry Wilson, Cristina Millan, Jim Collinson, David Elliot, Shelly Judge, and Tom Darrah, among many others), we are already planning for a 75th reunion with a fundraising campaign leading up to the event.



We are very pleased to report that shortly before the holiday break we received a major commitment that will set us well on our way toward the goal of endowing Field Camp. We were contacted by Jim and Pam Griffith, 30 year residents of Canton, Ohio and big Ohio State fans who also happen to be Ashley's parents. Ashley had spoken with them at length about our Field Camp, the impact it has on our students, and our efforts to fully endow field camp to lessen the burden on students and ensure its financial sustainability. Seeing an opportunity to make a meaningful impact on students through a program with a proven track record, the Griffiths have committed to contributing \$500,000 to the fund over the next 5 years.

We hear time and time again that our Alumni look back at Field Camp as one of the most satisfying (and difficult!) experiences of their lives, which makes them more thoughtful, disciplined, and contributes to their world view. We are thrilled to be better positioned to improve the long term support of this experience! We are so grateful to the Griffiths, the Newharts, and the Morgans for their generous support of Field Camp.

SES Students win AGU Outstanding Student Paper Awards

Please join us in congratulating SES's three winners of fall AGU Outstanding Student Paper Awards! These go to just the top 3-5% of the graduate student presentations at the Fall Meeting of the AGU in each section or focus group.

Samantha Carter, Ocean Sciences, "Long-Term Changes in Chemical Weathering in the Himalayan Region from Indus Fan Sediments"

Michaela King, Cryosphere, "Continuous Monthly Observations of Greenland Ice Sheet Discharge via Improved Multi-Decadal Flux Reconstructions of all Major Outlet Glaciers"

Joshua Martin, Mineral and Rock Physics, "Reproducible and Verifiable Equations of State Using Micro-fabricated Materials".

SES Student-Built 'Buckeye Pi' Cluster Featured on NBC4



SES PhD student Amin Amooie and Physics undergrad Connor Basile in Dr. Moortgat's Computational Geosciences Group built a 512-core high-performance compute cluster out of open source hardware, the \$35-a-piece Raspberry Pi computer-on-a-board, funded by OSU's Office of Energy & Environment and Alumni Grants for Graduate Research and Scholarship. The completed 'Buckeye Pi' cluster was presented at the AGU Fall Meeting with generous support from FOH, and will be used to model a wide range of Earth Science problems, such as geological carbon sequestration. Brief coverage of this project aired on NBC4's 'New at 11' on Saturday 27th and again the morning of Sunday 28th. You can find more details here ([link](#)).

Dispatch Drone Provides Close Up of Orton Hall's Grotesques



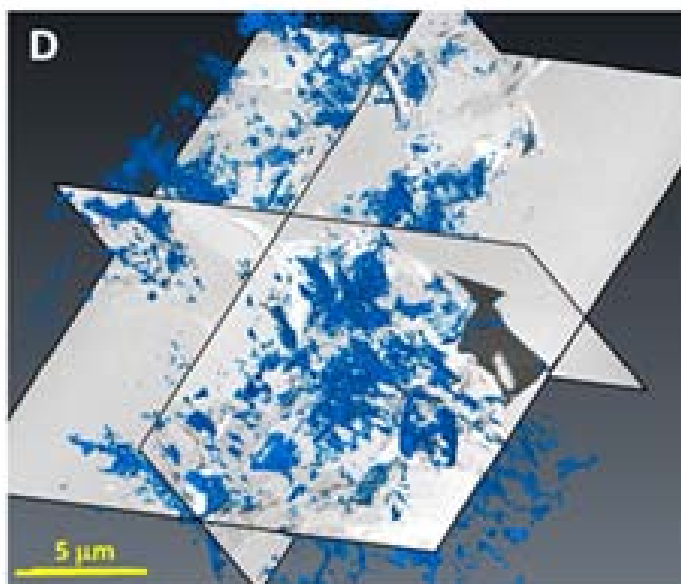
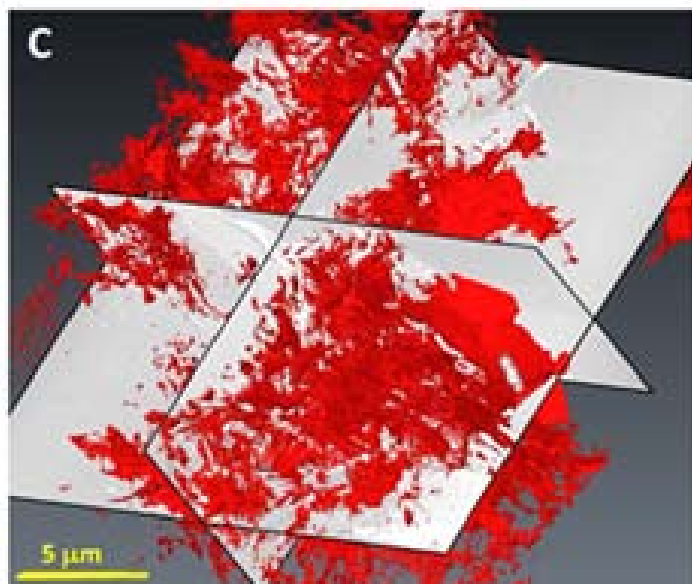
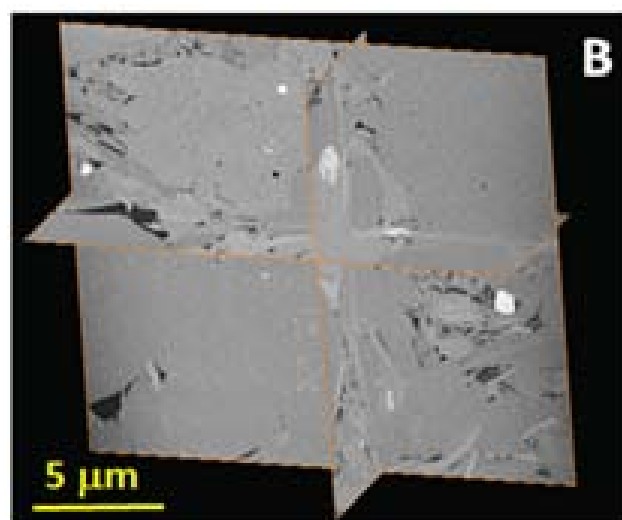
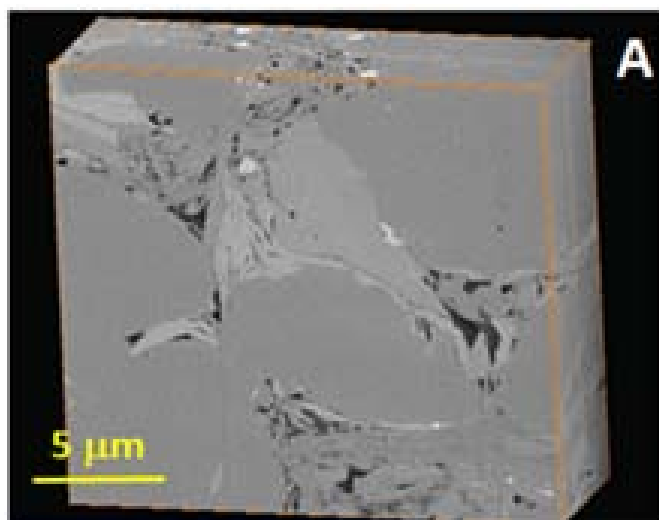
Completed in 1893, Orton Hall was built with many details that highlight Ohio geology. One feature is the 24 grotesques that are placed around the bell tower. Dr. William Ausich describes them as "carvings of prehistoric organisms that presumably might have lived in Ohio during Ancient times." New drone footage from the Dispatch allows us to see these grotesques from a new perspective. See the whole video here ([link](#)).

New Publication From Prof Cole's Group

Prof. Dave Cole published a paper in *Energy and Fuels* with colleague Prof. Alberto Striolo at the University College of London. Because of a number of technological advancements, unconventional hydrocarbons, and in particular shale gas, have transformed the US economy. However, a number of challenges still need to be addressed. This review details recent advancements in computational and experimental approaches, which led to improved understanding of, in particular, structure and transport of fluids, including hydrocarbons, electrolytes, water, and CO₂ in heterogeneous subsurface rocks such as those typically found in shale formations. Related work was also presented by Prof Cole at AGU, under the title “Nanoscale pore features and associated fluid behavior in shale”, in the Union Session entitled “Shale Across Scales”. SES students Anne Booker and Alexander Swift and SES postdoc Reza Soltanian presented related work as well. The graphics below show:

- (A) Dual beam FIB/SEM reconstructed block volume of a deep Utica shale sample.
- (B) 3 D “fence” image
- (C) 3-D reconstructed images of kerogen (red) and
- (D) pores (blue) distributions. The 3-D reconstructed volumes have dimensions of 20 × 17 × 6.5 microns.

Striolo, A. and Cole, D. R. (2017) Understanding Shale Gas: Recent Progress and Remaining Challenges. *Energy and Fuels*, 31(10), 10300-10310 ([link](#)).



New Field Camp Website



The School of Earth Sciences is pleased to announce the launch of a new Field Camp dedicated website! The new site is now up and running and the URL is <https://u.osu.edu/sesfieldcamp>.

Our goal is to provide students (both within OSU and from other institutions) with the needed information to plan their summer field camp course, including what to expect, costs, logistics, equipment needs, etc. There is also a lot of other useful information related to our field station in Ephraim, Utah as well as some history of our 70+ year Field Program.

For Field Camp Alumni the new website highlights, among other things, as many as the group class photos since 1947 as we have been able to gather (go see if your class group photo is there!!). These are now in a pdf downloadable document, but we are slowly working to bring them up as jpegs in a higher resolution format. For those that could not attend the 70th alumni reunion in Ephraim last summer, there is a link to a commemorative booklet that includes a “State of Field Camp” introduction by Professor Emeritus Terry Wilson.

We hope you find the new website useful and easy to navigate. We will be updating our content with helpful information, articles, student blogs, newsletters and announcements periodically, so check us out from time to time.

For any questions, suggestions, feedback or comments related to Field Camp or to the new website, please [e-mail us](#).

Brevium

Mario Gutierrez, B.S. with Research Distinction with a concentration in Petroleum Geology and Geophysics, Spring 2016, is currently pursuing an M.S. degree at the University of Texas at Austin and was recently awarded an Endowed Presidential Scholarship there. Mario will begin work as an exploration geoscientist at Exxon Mobil upon graduation from UT. Mario was profiled on the UTIG website in early December: [link](#).