

June 2015 News Notes

- Alumni Change Lives
- AAPG/SEG members attend AAPG ACE
- Grottoli conducts coral research in Hawaii
- Dobey participates in study abroad program
- Sethna presents SURE 2014 research at AIPG
- Brevia

Alumni Change Lives

Emma Oti is a graduate student working with Prof Ann Cook. Here Emma describes how the Friends of Orton Hall funding helped further her graduate studies.

I am studying climate change in the Arctic through examination of marine sediment cores. To analyze sediment cores, I implement an X-ray computed tomography (XCT) scanner, which unlike traditional investigation methods, nondestructively images the cores' interiors while providing information on Arctic Ocean circulations and sea ice conditions. In particular, my research uses the scanner's images to identify the occurrence and amount of bioturbation throughout the core. Bioturbation, which is the reworking of sediment due to the activities of benthic organisms, is a useful indicator of glacial and interglacial regimes. As a result, my primary objective is to quantitatively link the levels of bioturbation to glacial regimes, all while using nondestructive processes designed to retain the core for future research. The Friends of Orton Hall Grant has greatly supported this objective by providing me with the funding to attend my first conference and present my initial findings in the 2014 American Geophysical Union Fall Meeting. My poster presentation was entitled "Nondestructive X-Ray Computed Tomography Analysis of Sediment Cores: A Case Study from the Arctic Ocean".



AAPG/SEG members attend AAPG ACE

Over 24 OSU AAPG/SEG Student Chapter members and SES faculty attended the AAPG Annual Conference & Exhibition (ACE) from May 31st - June 3rd in Denver, Colorado.

At the Ohio State Alumni Breakfast, several alumni joined Dr. Tom Darrah, Dr. Joachim Moortgat, and the student chapter the morning of Monday June 1st for food, networking and all things OSU at AAPG ACE. Attendees also met up for a cocktail hour later that evening (photo above right), enjoying the Denver atmosphere.

At the OSU SES Exhibition Booth, chapter members promoted the Petroleum Geology & Geophysics program to prospective students and industry representatives (photo at right).

On June 4 and 5, chapter members took part in educational and geologic excursions in the Denver area (photo below right), thanks to the donation of geologic guides of the Front Range and Denver area by Alumnus Joe Newhart. Members were able to visit several different geologic locations around the Denver area, including Dinosaur Ridge, Squaw Mountain, Red Rocks, Golden Lookout, and the Front Range. Chapter members hope to start a Student Chapter tradition of consistent geologic field education in the coming years!



AAPG/SEG members attend AAPG ACE (cont.)

The following oral and poster presentations were given by SES faculty and students:

Dr. Tom Darrah: “Noble Gases Help Trace the Behavior of Hydrocarbons in Unconventional Oil and Gas Shales”. (Oral)

Dr. Joachim Moortgat: “Viscous and Gravitational Fingering in EOR and Carbon Sequestration”. (Oral)

Ben Grove (PhD student): “Using Noble Gases to Identify the Relationship Between Deformational Features and the Pathways of Geological Fluid Flow”. (Poster)

Levent Akcini (MS student): “Salt Diapirism and Slope Failure in the Carolina Trough, Eastern North American Margin”. (Poster)

Amin Amooie (PhD student): “A Parallel Black Oil and Compositional Multiphase Flow Simulator for Unstructured 3-D Finite Element Grids”. (Poster)

Jake Harrington (recent BS graduate): “Using Noble Gas Geochemistry to Characterize Sources and Migration of Fluids in the Eagle Ford Shale”. (Talk)

Grottoli conducts coral research in Hawaii

Professor Grottoli ([link](#)) and her research team are at the Hawaii Institute of Marine Biology ([link](#)) in Hawaii this month studying corals. The Grottoli coral research team (photo at right) in Hawaii (from left to right): Rowan McLachlan (PhD student), Kerri Dobson (PhD student), Casey Saup (Undergraduate student), and Professor Andrea Grottoli. Following the second hottest month on record since the 1940s, water temperatures in the main Hawaiian Islands reached 30°C in October 2014. The result of this ~2°C increase above normal summer temperatures was a severe bleaching event across the entire length of the Hawaiian Archipelago. In Kāneʻohe Bay where the Hawaii Institute of Marine Biology is located, 75% of the dominant coral species bleached. Bleaching is a stress response in corals whereby they lose their symbiotic algal partners and turn white. Prolonged bleaching can lead to disease, decreases in coral growth and reproduction, and even death. In addition, rising atmospheric carbon dioxide



concentrations are causing the oceans to become more acidic and potentially less hospitable to coral reefs. By the end of this century, seawater is predicted to be twice as acidic as it is today and bleaching events are expected to occur annually. Although tragic, the 2014 bleaching event in Hawaii provides a rare opportunity to experimentally test the ability of Hawaiian corals to recover from such events under the acidic ocean conditions expected in by the end of this century.

Grottoli conducts coral research in Hawaii (cont.)

Grottoli's team, in collaboration with Dr. Rob Toonen's team at the University of Hawaii, are conducting experiments on bleached corals that were collected in November 2014 to measure the recovery rate of the bleached corals exposed to normal seawater to that of bleached corals exposed to more acidic seawater for one year. The first set of measurements were completed in November 2014. After 6 months, Grottoli and her team are back in Hawaii to assess the coral recovery (photos at right). So far, the experiment and measurements are going well. Observations of the corals reveal that one of the species is recovering very well, and the other suffered a lot of mortality, irrespective of ocean acidification. Further laboratory analyses will be conducted in Columbus to determine why one species is recovering and not the other. A final set of measurements will be made again in November 2015.



Grottoli research team in the field (clockwise from top left): Rowan and Casey cleaning the experimental tanks, Professor Grottoli preparing brine shrimp hatchlings to feed the corals, Porites compressa coral fragment in a respirometry chamber, Kerri and Casey preparing the respirometry chambers for coral measurements.

Results of this research will inform coral reef managers as to which species or reef regions are more resilient to global change conditions and better targets for protection. The results will be particularly relevant to management of the single largest conservation area under U.S. jurisdiction marine, the Papahānaumokuākea Marine National Monument and World Heritage site ([link](#)). It will also provide critical data input for models used to project the persistence of reefs in the future. Educationally, the research is providing a dynamic learning and training environment for two PhD students and four undergraduate students in the School of Earth Sciences. This work is funded by the National Science Foundation.

Blogging SES Field Camp



Mackenzie Scharenberg (BS student) is maintaining a blog ([link](#)) with status updates from this year's field camps, complete with photos, what students are learning, and fun field trips. The latest post from June 23 includes an update describing Mackenzie's personal impressions of field camp, plus a log of sites visited with photos (the Thistle landslide, Little Cottonwood Canyon, Alta, Crystal Geyser). In the above photo, Prof Terry Wilson lectures at an unconformity in Salina Canyon. Check out the blog to follow along SES Field Camp 2015!

Dobey participates in study abroad program

Zachary Dobey, an Earth Sciences undergraduate major following the Petroleum Geology and Geophysics concentration has received a full scholarship from the Department of Athletics to participate in the Ohio State Study Abroad Program. Zach, who expects to receive his B.S. in summer 2015 and has been a 4-year member of the men's soccer team, will participate in two classes, History 2210, "Classical Archaeology," and History 3267, "Modern Greece," for which Professor Timothy Gregory of the Departments of History and Anthropology, is the instructor. Zach's studies in Greece will be conducted in Athens and on the island of Kythira. As part of their summer study abroad, Zach and his fellow students will learn about principles, methods, and history of archaeological investigation in the ancient Greek and Roman world as illustrated through a selection of major classical sites. The course on modern Greece will include Greek history from 1453 to the present and cover the period of Turkish rule, the War of Independence, and Greece's emergence as a modern state. Congratulations and best wishes to Zach! Learn more about Zach's study abroad in Greece and the collaboration among the Department of Athletics, Student Athlete Support Services Office, and the Office of International Affairs that has made his study abroad possible [here](#).



Sethna presents SURE 2014 research at AIPG

Lienne Sethna, a junior in the School of Earth Sciences, presented her findings from her SURE summer 2014 research experience at the American Institute of Professional Geologists 6th Annual Conference at the end of April. Lienne's work focused on identifying organic matter the Utica Shale and worked with Ann Cook, Susan Welch, Julie Sheets and Edwin Buchwalter in the School of Earth Sciences and Dustin Crandall at the National Energy Technology Laboratory. Lienne was one of two undergraduates selected to present her work and gave an excellent talk.



Brevia

Helen Hayes passed away last month; she was 79 years old. Helen worked in the Geology Department for many years. She will be missed. You can find Helen's obituary [here](#).

Kevin Meyer (adviser: Prof Anne Carey) received an NSF EAPSI fellowship, as was mentioned in the March edition of the News. Kevin's summer research in Taiwan was recently covered by the OSU Arts & Sciences website [here](#); check it out for more details about Kevin's work. Congratulations, Kevin!

Prof Lonnie Thompson was recently featured in a story in the Toledo Blade ([link](#)). Congratulations, Lonnie!