

May 2016 News Notes

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Alumni Change Lives

Casey Saup is a graduate student under Prof Michael-Wilkins. Here, Casey describes how Friends of Orton Hall helped further her studies. If you are interested in giving to support the Friends of Orton Hall or other funds, please visit our giving page ([link](#)).

In September 2015, the Gold King Mine blowout released 3 million gallons of metal rich mine wastewater into Colorado's Animas River near Silverton, Colorado. The upper Animas watershed has a long history with mining, as historical mining (1872-1935) occurred in a time when health and environmental effects of mining were neither understood, nor a priority. As a result, the mining of gold, silver, lead, zinc, and copper has led to elevated trace element concentrations in many stream reaches. However, this most recent breach temporarily increased the levels of many trace elements in the river water and sediments,

including zinc, copper, lead, mercury, molybdenum, arsenic, strontium, and chromium to concentrations up to six times higher than the limits delineated by the Colorado Department of Public Health and Environment for domestic water. Much of this metal-rich contamination adsorbed to riverbed sediments, where it is currently immobilized. As these fluvial sediments are buried, anaerobic microbial metabolism will drive biogeochemical changes that influence metal mobility.

Following this spill, sediment samples from various locations along the Animas River were collected by a colleague, placed in microcosms, and sampled weekly to assess the extent of microbial activity and the impact on metal remobilization. In order to assess the impact of microbial metabolism on adsorbed metal release from sediments through time, ICP-MS analyses were necessary to measure aqueous metal concentrations. Preliminary data show the release of molybdenum, arsenic, and zinc through time, which match well with data showing changes in the microbial community composition (and associated metabolisms) through time. These results allow for insights into implications for downstream water quality and long-term contamination in monitoring



Casey Saup hiking Mauna Kea with the active volcano Mauna Loa in the background, Big Island, Hawaii—completely unrelated to this project!

in this impacted ecosystem. Without help from Friends of Orton Hall, I would have had a difficult time completing this experiment and determining the microbially catalyzed impacts of the Gold King Mine spill. This experiment represents the first effort to characterize the longer-term effects of microbial activity on water quality in this area, and will culminate in my first first-authored publication.

Congratulations to SES Award Winners

The SES end-of-year banquet was held at the Faculty Club on April 14th. The following awards were presented at the banquet. Congratulations to all SES award winners!

Undergraduate Scholarship Winners

Buschman: Rebecca Anderson
Ryan Heber
Chandler Adamaitis

Lieberman: Lindsey White
Beau Humphrey

Rector: Christina Jauregui
Brandi Lenz
Ally Brady

Shiple: Camaren Williams
Zuri Brooks
Cassiopeia Webb

Toivonen: Alan Mason
Christina Jauregui

Graduate Students in Earth Sciences Awards

*Distinguished 1st Year Graduate Student
“Estwing Award”:*

Corey Wallace
Colin Whyte

Distinguished Teaching Award:

Katie Treiber
Eric Mumper

Distinguished PhD Student “Johnson Award”:

Melissa Wrzesien

Best senior PhD Student “Spieker Book Award”
Brandon McAdams

Undergraduate Book Awards

Brian Ares
Joon Lee
Bryan O’Reilly

Graduate Students in Geodetic Sciences Awards

Book Awards:

John Brockmeier
Li-Chen Liu
Julio Neira Gutierrez

*Distinguished 1st Year Graduate Student
“Estwing Award”:*

Chaoyang Zhang
Jiaqi Zhang
Yu Zhang

*Distinguished Post Candidacy PhD Research
“Johnson Award”:*

Jinmei Pan

Heiskanen Award:

Thomas J. Johnson (NGA Project Scientist;
also former NASA program manager)

Junior Heiskanen Award:

Yuanyuan Jia

GEOS Chapter Update

Times are changing for the Geoscience in Energy at Ohio State (GEOS) student chapter! New board members have been elected for the 2016-2017 school year. Katie Treiber will serve as president of the chapter, with Jack Pelishek acting as vice-president, Colin Whyte as secretary, and Brent Lary as treasurer. Contact information for new board members is listed below; please direct your general chapter questions to Katie or Jack. The chapter will hold their next meeting in August to kick off the new school year and encourages anyone interested in joining the chapter to attend.

President - Katie Treiber (treiber.15@osu.edu)

Vice President - Jack Pelishek (pelishek.3@osu.edu)

Secretary - Colin Whyte (whyte.25@osu.edu)

Treasurer - Brent Lary (lary.6@osu.edu)

The GEOS chapter offers a unique opportunity for students to join the American Association of Petroleum Geologists (AAPG) and the Society of Exploration Geophysicists (SEG). These professional societies offer great benefits and can be included on a resume for students interested in pursuing a career in geophysics or the petroleum industry. Students may receive free AAPG student membership through Chevron at <http://www.aapg.org/about/membership/types/student> and free SEG student membership through CCG and Statoil at <http://seg.org/About-SEG/Membership/Join-SEG/Types-of-Membership/Student>. The perks of being an AAPG member include access to special Geoscience publications, workshop opportunities, and a chance to network with industry professionals at the annual AAPG ACE conference. SEG offers students access to the SEG digital library, discounts on books and workshops, scholarships, and professional development and networking. The GEOS chapter encourages all interested students to take advantage of this great opportunity!

Casey Saup Wins AIPG Scholarship

Casey Saup (adviser: Michael Wilkins) was recently awarded a scholarship from the American Institute of Professional Geologists. Here is Casey receiving her award. She was also awarded a fellowship from the Geological Society of America. Casey is currently working on understanding microbial processes that drive metal mobilization in mining-impacted watersheds in the western US.



Wilkins Lab Members Attend Short Course

Group members travel to Walnut Creek, CA, to learn new computational tools at the Department of Energy's Joint Genome Institute. Anne Booker from the research group traveled to California for a week-long course on new genomic tools hosted by the largest DNA sequencing center in the US. Such tools will be applied to microbial samples being recovered from hydraulically fractured shales in the Marcellus and Utica shales.



Anne Booker (left) was joined at JGI by Kayla Borton (Wrighton Lab, Microbiology – center), and Morgan Volker (Mouser Lab, Engineering – right).

New Paper from Wilkins Group

Graduate student Robert Danczak recently published some work investigating how snowmelt-driven discharge in the upper Colorado River drives biogeochemical changes in adjacent riparian aquifers. His work was performed at a site in western Colorado, and tracked both subsurface microbiology and geochemistry over a six-month period. Findings revealed that:

- Increases in river stage were responsible for increases in water table height in the adjacent aquifer
- Water table increases resulted in dissolved oxygen penetration into the normally anaerobic aquifer
- Dissolved oxygen reacted with reduced FeS and uranium phases, liberating dissolved ferrous iron and uranium into pore waters
- Functional shifts within the microbial community were observed in response to fluctuations in dissolved oxygen

The research, performed in collaboration with scientists at both Lawrence Berkeley National Laboratory and Pacific Northwest National Laboratory, was published in *Frontiers in Earth Science*: Danczak RE, Yabusaki SB, Williams KH, Fang Y, Hobson C, and Wilkins MJ (2016) Snowmelt induced hydrologic perturbations drive dynamic microbiological and geochemical behaviors across a shallow riparian aquifer. *Frontiers in Earth Sciences*. 4:57. doi: 10.3389/feart.2016.00057

Blogging Field Camp

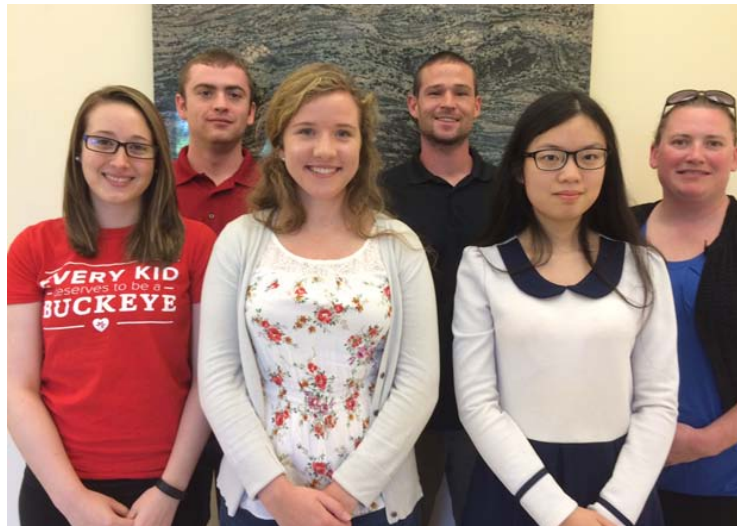


Three Earth Sciences undergraduate majors are blogging from Utah field camp and South Dakota field camp. Pictured to the left are Taylor Hollis, Ally Brady and Brandi Lenz, this year's field camp bloggers. Blogging from the Earth Sciences Utah field camp this summer will be Taylor Hollis and Brandi Lenz, second year majors in Earth Sciences, both following the Geological Sciences track. Utah blogging will begin in earnest in June but you can learn about the April structural geology field trip to the Blue Ridge Province at Taylor's and Brandi's blog here: <https://u.osu.edu/hollis.106/>

Also blogging is Ally Brady, second year Honors student following the Earth System Science track. Ally is pursuing hydrogeology research under the direction of Frank

Schwartz and she is attending the Black Hills environmental geology field camp taught by the South Dakota School of Mines and Technology. Ally arrived in South Dakota on May 15, 2016 and she has several blog posts available now. You can read her blog at <https://u.osu.edu/brady.1460/> and learn about stream gauging and potentiometric surface mapping. Thank you to all three students for taking us in the field with them electronically.

Shell Undergraduate Research Experience Kickoff



Shell Undergraduate Research Experience 2016 began on May 23, 2016. Pictured above are 2016 Shell Undergraduate Research Experience (SURE) interns Nikki Kinash, Alan Mason, Elsa Saelens, Tom Copeland, Yuyu Li and Christina Jauregui. Not pictured are Collin Oborn and Alec Moore. Advising the students this summer are professors Mike Barton, Dave Cole, Ann Cook, Andréa Grottoli, Berry Lyons and Derek Sawyer. The program is overseen by Frank Schwartz and Anne Carey. Workshops on GIS, poster making, library databases and several other topics, and tours of Earth Sciences labs and facilities will be presented by Sue Welch, Julie Sheets, Michael Wilkins, Anne Carey, Derek Sawyer, Ann Cook, Orton librarian Danny Dotson, Stephanie Sherman, Berry Lyons, and Tom Darrah. The final poster session for the SURE program will occur on Thursday, July 14, 1–4 pm in 291 Mendenhall Laboratory. All are welcome to attend.

Remembering Professor Tom Taylor

Thomas N. Taylor passed away at his home in Lawrence, Kansas on April 28. He was 78 years old. Tom Taylor retired from the Department of Geological Sciences 21 years ago and accepted an Endowed Chair at Kansas University. Tom had spent most of his career at OSU in the Department of Botany. He transferred to Geological Sciences a year or so before his retirement. His wife Edith, also an accomplished paleobotanist, was also a member of our department and moved with Tom to KU where she was offered a position as Full Professor. Both were active in Antarctic science and members of Byrd Polar Research Center. They continued the work of Professor James M. Schopf in Antarctica. Schopf had found probably the best localities from the supercontinent Gondwana for preservation of Permian and Triassic plant fossils in an expedition to The Beardmore Glacier region in 1969. Tom, Edie, and numerous graduate students greatly expanded this research at OSU and KU on several Antarctic expeditions. Among other honors Tom was elected to the National Academy of Science while at OSU.

This piece was contributed by Prof Emeritus Jim Collinson, who had the privilege of working with Tom in Antarctica. Please also see the University of Kansas obituary for Tom ([link](#)).

Congratulations to alumna Alycia L. Stigall

Alycia L. Stigall will receive the Schuchert Award from the Paleontological Society at the Autumn meeting of the Geological Society of America. This prestigious award, colloquially known as “the best paleontologist under 40 years of age” is presented annually by the Paleontological Society. This is an early career award defined on the Society website as “The Charles Schuchert Award is made to a Member early in his or her career whose paleontological work reflects excellence and quality. Ordinarily, the recipient of the Charles Schuchert Award will be no more than fifteen (15) years past completion of his or her Ph.D.”



Alycia earned a B.S. degree from Ohio State University in 1999 (B.S. thesis advisor Loren Babcock), earned graduate degrees from the University of Kansas (M.S, 2001; Ph.D., 2004), and was a post-doctoral researcher at both Yale University and Ohio State University. Since 2004, she has been a faculty member at Ohio University, where she is presently a full professor in the Department of Geological Sciences ([link](#)).

Brevia

Prof Lonnie Thompson’s work was featured in *Discover Magazine*, in an article entitled “Peruvian Ice Caps Preserve a Legacy of Conquest” ([link](#)). Congratulations, Lonnie!

The current edition of the OSU College of Arts & Sciences magazine *Ascent* features SES undergraduate Elsa Saelens (adviser Prof Lyons), and her experience in Antarctica ([link](#)). Congratulations, Elsa!