

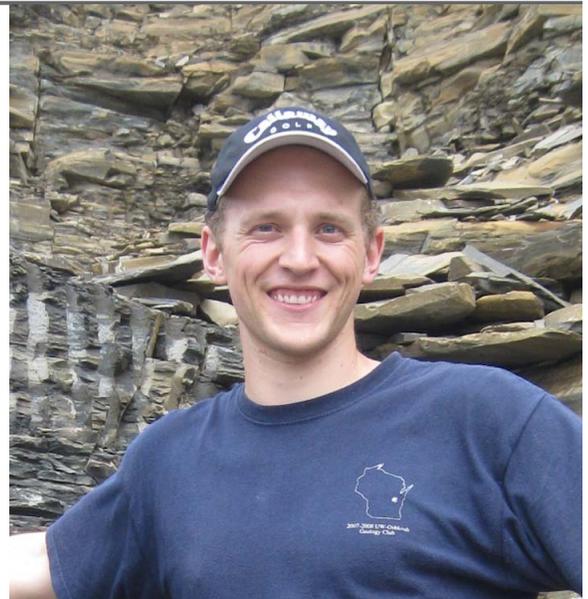
## May 2014 News Notes

- Alumni change lives
- Structure trip to Appalachians - Rain, snow, sleet (no hail!)
- Faculty Profile: Thomas Darrah
- Congratulations to Spring 2014 SES baccalaureate recipients
- Congratulations to SES award winners
- Prof Lonnie Thompson receives award
- Prof Andrea Grottoli attends CiC workshop
- Prof Ann Cook's group presents research
- SES professors collaborate on ice temperature remote sensing
- Brevia

### Alumni Change Lives

*Cole Edwards is a PhD student advised by Prof Matt Saltzman. Here, Cole describes how Friends of Orton Hall funding helped to support his graduate research.*

My research is focused on studying the interaction between the Ordovician biosphere and the environment during the largest biodiversification event in Earth's history. I am using carbon and sulfur isotopes as geochemical proxies for oxygenation in the atmosphere/ocean to test whether oxygenation played a role in fostering a three-fold increase in biodiversity known as the Great Ordovician Biodiversification Event (GOBE). I am studying a succession of carbonate rocks in east-central Nevada (Shingle Pass, South Egan Range) where I have conducted several seasons of fieldwork to describe and collect rock samples for isotopic analysis during the onset of this diversification event. A grant from Friends of Orton Hall fund has significantly helped to offset analytical costs for isotope work as well as provide travel assistance to present my results at the annual meeting of the Geological Society of America. The skills I have learned throughout the course of this Ph.D. research have broadened my understanding of carbonate geochemistry and I am very grateful for the Friends of Orton Hall fund to provide such an opportunity.



# Structure trip to Appalachians – Rain, Snow, Sleet

The annual Structural Geology class field trip began with a group of 44 setting off in pouring rain for the long drive to the Valley and Ridge province near Harrisburg, Pennsylvania. The first field day promised the same, but we were 'lucky' to have only on-and-off rain instead. A first in nearly 30 years of structure trips: taking strikes and dips in the snow and waking up to the pitter-patter of snow and sleet on our tents (!!). We visited a limestone quarry with beautiful en echelon veins at Winfield, PA, the spectacular 'Whaleback' anticline at Bear Valley strip mine near Shamokin, PA, then circled back to central Pennsylvania to see road and railroad cuts of the folds, faults and cleavage so well displayed in the region. Of course it warmed up and the sun came out just in time for sitting in the van for the long drive home to Columbus.... In spite of the weather conditions, the group was impressed by seeing so many structures 'in real life' and returned with a new sense of structural scale and enthusiasm for being a geology major.



## Faculty Profile - Thomas Darrah

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I grew up in Centralia, Pennsylvania where an anthracite coal mine fire decimated my rural town and forced the relocation of my family and hundreds of others from our community. I have vivid memories of finding smoking coal seams while hiking through the woods with my father, observing weekly checks of gas meters in our home by state officials, and smelling the sulfur-rich fumes of burning coal wafting throughout the town (see photo below). I imagine that the life-long interests and careers of many children are shaped by formative memories from their childhood like these, and this is certainly true of my passion for the geological sciences.

After leaving central PA, I headed north to the University of Rochester where I completed a B.S. in Geological Sciences in 2004. Following my college graduation, I returned home to work briefly as a coal mine engineer. This experience strengthened my geological interests in energy, geochemistry, and human health and propelled me towards obtaining a Masters in Geology from the University of Rochester in 2006 and a Doctorate in Geochemistry from the University of Rochester in 2009. I wrote my MS thesis on the noble gas geochemistry of gas emissions from volcanically active geothermal areas of the East African Rift (see photo below). I completed my PhD training under Dr. Bob Poreda who led me into the study of noble gas and trace element geochemistry of unconventional energy resources in the Appalachian Basin.



After earning my PhD, I completed a postdoctoral fellowship at UMass-Boston followed by a subsequent Research Scientist position at Duke University. At these universities, I expanded my scientific interests into medical geochemistry by focusing on the development of geochemical tracers for geological and anthropogenic contamination. In addition, over the past 5 years, I completed several federally-funded projects that examined the trace element composition of human bone, blood, and placenta as part of the National Institutes of Health-funded U.S. National Children's Study.

In Autumn 2013, I accepted a position as an assistant professor at The Ohio State University. My diverse interests in geochemistry have been welcomed within this setting. Since starting at Ohio State, I have taught Petroleum Geology and will offer a seminar on Black Shale Geochemistry as well as a course on the Geology of National Parks in upcoming semesters. I am currently constructing a state of the art laboratory that will allow me to examine the noble gas geochemistry of natural gases in energy basins and geothermal fields. Several undergraduate students are already conducting research from this lab as part of the Shell Undergraduate Research Experience and my graduate students will begin their research in August.

Field work is an integral component of my research. I currently have ongoing projects in areas spanning across North America, as well as in Ethiopia, Democratic Republic of Congo, South Africa, Australia, and Vietnam. Since joining Ohio State, I have also been working more locally on developing geochemical techniques to evaluate the geological migration of natural gas from black shales in the Marcellus and Eagle Ford shales. Our team has been working with industry and academic collaborators to improve the efficiency of shale gas extraction, while ensuring the safety of the environment and communities nearby. My early experiences clearly sparked my passions in geology and have led me down an interesting, exciting, and fulfilling career path. My hope is that I can instill the same enthusiasm for research and discovery in my own students.

# Congratulations to Spring 2014 SES baccalaureate recipients

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As part of the celebration of Spring 2014 commencement, 2014 undergraduates receiving their degrees with research distinction gave presentations of their thesis research in a mini-symposium on April 24, 2014. Shown in the photo below from left to right are the presenters—Shannon Hibbard (who will receive her BS with research distinction in Summer 2014), Colin Whyte, and Julia Young. The presentations were:

*Julia Young:* The role of bedrock geology on the aqueous chemistry in Cantabrian Rivers, Spain

*Colin Whyte:* Record of Ice Rafted Debris abundance variations at IODP Site 1308 in Central North Atlantic from 500,000 to 850,000 years ago

*Shannon Hibbard:* Controls on gravel composition in a proglacial environment, Kaunertal, Austria

Spring 2014 graduates and their degrees are listed below.

Daniel Barr, BS

Evan Blau, BS

Kathryn Bullinger, BA

Marc Cappell, BS

Daniel Enriquez, BS

Rachel Koons, BS *cum laude*

Natasha Lewis, BS *cum laude* with research distinction

Tyler Liston, BS *cum laude*

Henry Richter, BA

Andrew Thompson, BS

Colin Whyte, BS *cum laude* with research distinction

Julia Young, BA *magna cum laude* with Honors in the

Arts and Sciences and honors research distinction

Christina Zerda, BS *cum laude* with research

distinction



Photo by Anne Carey

# Congratulations to SES award winners

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The SES end-of-year banquet was held at the Faculty Club on April 16th. The following awards were presented at the banquet. Congratulations to all SES award winners!

## **Undergraduate Book Awards**

Dan Enriquez  
Christina Zerda  
Erica Maletic

## **Dist. 1st Year Graduate Student “Estwing Award”**

Alyssa Ferraro  
Melissa Wrzesien  
Alex Rytel

## **Undergraduate Scholarship Winners**

*Buschman:* Benjamin Grove  
Hanna Brouman  
Jacob Harrington  
Casey Saup

*Lieberman:* Casey Saup  
Erin Lathrop  
Jordan Scheuermann

*Goldthwait:* Joshua Turney  
Jordan Scheuermann  
Jacqueline Mills

*Shipley:* Stephen Coss  
Jacqueline Mills

*Rector:* Kenneth Peterman  
Mackenzie Scharenberg  
Jordan Scheuermann

*SGE Tarr:* Brittany van Wagenen

*SGE Field Camp:* Connor Gallagher  
Brittany van Wagenen  
Andrew Burchwell

*AAPG Field Camp:* Mario Gutierrez

## **Dist. 1st Year Graduate Student in Geodetic Science**

Yunming Shao

## **Distinguished Teaching Award:**

Kelly Lazar

## **Michael Johnson Graduate Student Awards**

Maya Wei-Haas (Water, Climate & Environment)  
Cayman Unterborn (Solid Earth Dynamics)  
David Wright (Earth History)  
Ben Vander Jagt (Geodetic Science)

## **Distinguished Senior PhD “Spieker Book Award”:**

Cole Edwards

## **Distinguished Senior PhD in Geodetic Science:**

Kun Shang  
Jacob Heck

## **Heiskanen Award in Geodetic Science:**

Michael Durand

## **Junior Heiskanen Award in Geodetic Science:**

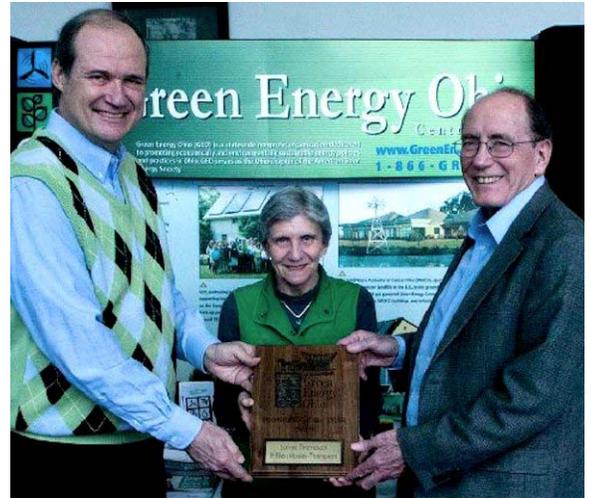
Sibel Uzun

## **Book Awards in Geodetic Science:**

Qui Guo  
Jinmei Pan  
Kefeng Zhu  
Dongyue Li

## Prof Lonnie Thompson receives award

Prof Lonnie Thompson (SES) and Prof Ellen Mosely-Thompson (Geography) won the Pioneers of the Year Award from Green Energy Ohio. The award was presented at the Statewide Spring Event in Worthington, on May 2 and 3. The citation notes that Prof Thompson "... and the OSU team have developed light-weight solar-powered drilling equipment for acquisition of histories from ice fields in the tropical South American Andes, the Himalayas, and on Kilimanjaro. These paleoclimate histories have advanced our understanding of the coupled nature of the Earth's climate system." Congratulations, Lonnie and Ellen!



## Prof Andrea Grottoli attends CiC workshop

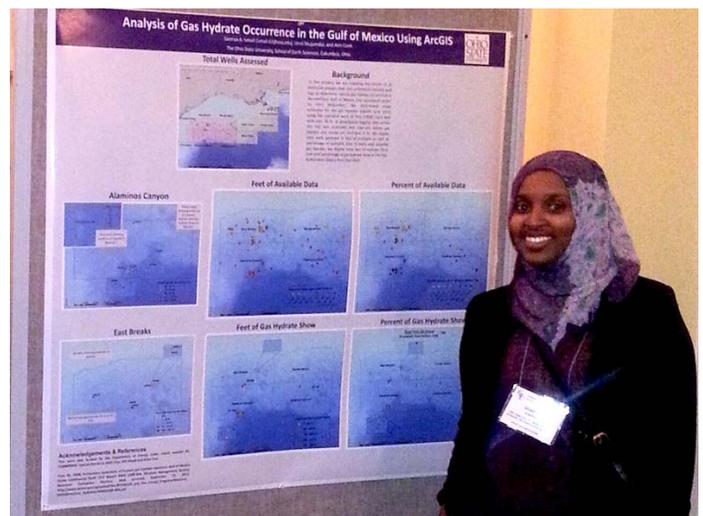
Prof. Andrea G. Grottoli, one of five CIC-Academic Leadership Program Fellows from the Ohio State University, attended the last of three workshops at the University of Illinois - Champaign-Urbana (see photo attached). Established in 1989, this intensive professional development fellowship program develops the leadership and managerial skills of faculty who have demonstrated exceptional ability and academic promise. Many of the program's nearly 1,000 Fellows have gone on to serve with distinction as college presidents, provosts, and deans.

Photo credit: Front L to R: Andrea Grottoli, Kimberly Arcoleo; Back L to R: Maurice Stevens, Andre Palmer, Chris Fairman. Photo by K Arcoleo.



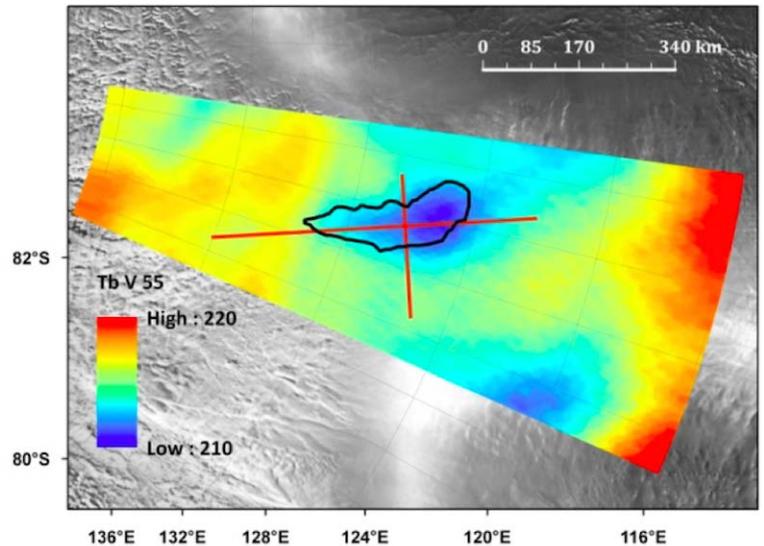
## Prof Ann Cook's group presents research

In March, PhD student Urmi Majumdar and undergraduate Samrya Ismail presented their research at the Gordon Research Conference on Natural Gas Hydrate Systems in Galveston TX. Their work is part of a DOE funded project lead by Prof Ann Cook, looking for new gas hydrate reservoirs in the northern Gulf of Mexico using petroleum industry well logs. Majumdar was also selected to give an oral presentation on her work at the Gordon Research Seminar preceding the main meeting. Pictured: Undergraduate Samrya Ismail at her poster.



# SES professors collaborate on ice temperature sensing

Prof Emeritus Ken Jezek and Prof Michael Durand are collaborating with colleagues in Electrical Engineering to develop and test a novel ultra-wideband radiometer. Impetus for the research grew out of a soon-to-be-published study, co-authored with the University of Washington, the European Space Agency (ESA) and the Institute of Applied Physics in Florence Italy, that demonstrates the potential for estimating subsurface temperature-profiles using ultra high frequency (UHF) electromagnetic emissions. The primary objective of the instrument is to measure subsurface temperature on the polar ice sheets. The goal is to use temperatures at depth to better constrain the total ice motion, which is strongly modulated by ice temperature. However the instrument may also prove useful in many other environments. The team's research is being funded by a \$3M, 3-year NASA grant to the team which is led by Professor Joel Johnson, Department of Electrical Engineering. A second NASA grant awarded to Professors Jezek and Johnson will fund additional studies of the emission physics. Airborne tests are planned over Greenland in 2016. The image above shows ESA UHF brightness anomaly from the Soil Moisture and Ocean Salinity mission over Lake Vostok, Antarctica. The lake (outlined in black) is overlain by almost 4 km of ice.



## Brevia

Prof Lonnie Thompson gave the Sixth Jeremy Gratham Lecture on Climate Change on April 9th, 2014 in Bangalore, India entitled, "Global Climate Change: A perspective from past climate in the world's highest mountains".

Prof Lonnie Thompson attended a 1 day meeting of most of the Indian glaciologists and the Secretary of Science and Technology of India to outline plans for the first ice core drilling project in the Indian Himalaya. India has over 10,000 glaciers and it is time to get a monsoon history from those glaciers.