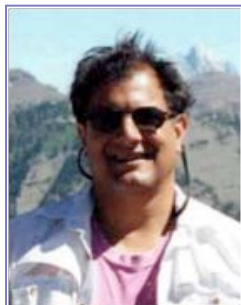


Earth & Environmental Sciences



A letter from the chair....



Dear friends, students, and alumni of Earth and Environmental Sciences,

I wish you the warmest of holiday greetings.

The EES department continues to be a vibrant academic community of highly talented faculty, staff, and students...albeit with change. Professor Bruce Hargreaves is set to retire after 38 years at Lehigh. We all wish Bruce and his family good health and much success for years to come.

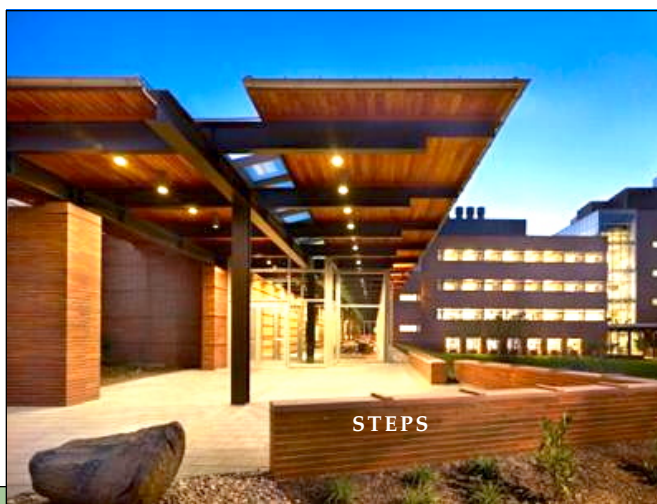
EES achievements in 2014 made it difficult to select what to highlight in the following pages. Noteworthy were the election of Professor Ken Kodama as a Fellow of the American Association for the Advancement of Science, the awarding of the Christian and Mary Linback award for distinguished teaching to Professor Frank Pazzaglia, and the selection of EES graduate student Helen Malenda as a National Science Foundation Fellow. The newsletter also gives me an opportunity to acknowledge the generosity of our alumni who have given their time to share their career experiences with our students or their wealth to EES to embellish the educational experiences we can provide.

For many earth and environmental scientists, a field setting always stirs emotions, provides awe and wonder, and inspires our curiosity. The field setting also provides a strong social learning environment where professor-student and peer-to-peer relations flourish. Inspirational field trips and summer field camp provides students with the opportunity to discover the breadth and scale of the many processes that have shaped the Earth. Thanks to the generosity of the Chevron Corporation and Chevron-EES alumni our field programs got a boost in 2014.

Basic discoveries are at the heart of every advance in science. Increasingly, this research demands specialized laboratory equipment or access to distant field localities. Alumni giving can accelerate our scientific discoveries and help us educate and prepare the next generation of future leaders. I hope you are impressed reading about your Alma mater.

Best Wishes for 2015,

David Anastasio, Ph.D., P.G.
Professor and Chairman



Save Some Trees!

The EES Department is offering an electronic only option for future newsletters. If you would like to receive your newsletter electronically, please email Nancy Roman, nr00@lehigh.edu, with e-newsletter in the subject line and your email address. You will receive an annual email blast with a link to the newsletter. This and past newsletters are archived on the department webpage see "after Lehigh" section.

Recognition



Ken Kodama Elected as AAAS Fellow

Kenneth P. Kodama has been elected as a Fellow of the American Association for the Advancement of Science. The following citation appeared in *Science* November 28, 2014: “For seminal contributions in the discipline of sedimentary paleomagnetism, and for exemplary service, benefiting students and the larger scientific community.”

Frank Pazzaglia Recognized for Distinguished Teaching

Frank Pazzaglia was awarded the Christian R. and Mary F. Lindback Foundation Award for distinguished teaching at Lehigh. Since 1961, the foundation has been recognizing outstanding faculty members at colleges and universities in Pennsylvania and New Jersey with the Lindback Award for Distinguished Teaching.



Frank made some of his epic polenta to thank the students who supported his nomination for the Christian R. and Mary F. Lindback Foundation distinguished teaching award!

Zicheng Yu is on the organizing committee for the Swiss Oeschger Centre for Climate Change Research’s 10th anniversary International Conference on Carbon Dioxide (ICDC10). The focus of ICDC10 is on changes in carbon dioxide and the carbon cycle, and their interactions and linkages with climate and human activities from the regional to the global scale and from the past into the future.

Helen Malenda receives prestigious NSF Fellowship

In April, 2014, Helen F. Malenda was one of a select group of PhD students in the United States awarded a National Science Foundation Graduate Research Program (NSF GRFP) Fellowship. The NSF GRFP’s mission is to recognize and support outstanding graduate students pursuing research-based graduate degrees in the STEM fields. The fellowship provides three years of funding for stipend and tuition. Helen came to Lehigh’s EES department from a consulting firm specializing in hydrogeological and environmental consulting and she is currently a second year PhD student working with Dr. Frank Pazzaglia. Helen is interested in geomorphology, active tectonics, and landscape evolution, as well as Quaternary geochronology. She spent the majority of her first year at Lehigh mapping fluvial deposits in two quadrangles in the Central Virginia Seismic Zone, locus of the widely-felt 2011 Mineral, Virginia M5.8 earthquake, as part of a funded USGS EDMAP project. Last spring she worked in Utah State University’s Luminescence Lab and, also spent time, in summer 2014, conducting fieldwork and attending a tectonic geomorphology in the northern Apennines offered by the Swiss Federal Institute of Technology in Zurich (ETH).



Alumni

C
O
P
P
E
R

Three alumni returned to Lehigh on September 12th. Can you tell who is Wegner, Popper, or Williams?

👤 **Jeffress Williams**, MS, '70, Lehigh, retired 43 years with the USGS and Coastal Engineering Research Center (coastal and shelf processes); currently consulting coastal scientist with appointments as a Senior Scientist Emeritus with USGS and the University of Hawaii.

👤 **George Popper**, PhD, '70, Lehigh, Israeli Geological Survey (stratigraphy); Bendix Field Engineering (uranium resource evaluation); currently U.S. Office of Surface Mining (reclamation of coal mine shafts and subsidence issues).

👤 **Robert Wegner**, PhD, '71, Rice, retired after 32 years with ExxonMobil (petroleum exploration research); 2010 President Houston Geophysical Society; is currently a consultant and lecturer Rice University and the University of Texas.



Photo above shows (from left) Williams, Popper and Wegner, hunkered down and barricaded in Williams Hall in a 3-floor grad student office in 1969.



Alumni News...

Andrée Bolduc, PhD, '92 has assumed the role of Director, Geological Survey Canada-Quebec, Earth Sciences Sector, effective July 15, 2014. She has national responsibilities for Environmental geoscience and Hydrogeology (<http://www.nrcan.gc.ca/earth-sciences/science/geology/environmental-geoscience/10894>).

Brent Zaprowski, PhD, '01, was recently promoted to the rank of Professor at the University of Salisbury, Maryland.

Kristin Carter, MS, '93, was promoted to Assistant State Geologist and Economic Geology Division Manager for the Pennsylvania Geological Survey.

Two former Lehigh undergrads have received GSA Division Awards this year. **Jack Ridge**, MS, '83, Tufts University, won the Kirk Bryan Award from the Quaternary Geology and Geomorphology Division and, **Chris Paola**, BS, '76, University of Minnesota, won the Sloss Award from the Sedimentary Geology Division.

Congratulations alums!

A note to share from Jeffress Williams.....

I'd like to thank you for hosting us Friday to talk a bit about our career experiences since graduating from Lehigh. You clearly put a lot of time and energy into making it a worthwhile experience for us as well, hopefully, for the students and faculty and we greatly appreciate all of the day's activities from the special parking to the beers at Molly's and the excellent dinner. The new EES bldg. is very impressive and the students are bright and motivated. We didn't leave our contact info in hard copy for the students nor copy of our ppt slides but feel free to make that available for students who might be interested in follow up.

Again, thanks and good luck navigating your administrative duties.

cheers,
jeff williams

Grad Students

The 2014 Graduate Symposium occurs annually to showcase graduate student research and to bring together EES scientists past, present, and future. EES graduate students in residence present either an oral talk or poster accompanied by an abstract in professional meeting format. The graduate symposium is also our venue to host the next year's prospective graduate students. This year's symposium was held on February 20 and 21st. On Thursday afternoon, festivities began with an industry seminar, "Preparing for a career in the oil industry" by Lehigh alum, **Nathan Harkins**, ExxonMobil, PhD, '07, Penn State; MS '02 and BS '00, Lehigh. The talk was followed by a reception in the STEPS Concourse. On Friday, the symposium started off with the poster session during which eighteen students presented their research. The poster session was followed by oral presentations. This year, six students presented their research during the talk session. The program also included a keynote talk by Nathan Harkins, entitled "Controls on opening-mode fracture formation on a Laramide-style fold and implications for subsurface fracture prediction". After this year's talks and poster session ended, a cocktail hour, followed by the annual banquet, was held in the Wood Dining Room on the Mountaintop campus. As always, alumni are invited to attend the Graduate Symposium. This year, alumni attendees included **Al Benimoff**, PhD '84 **Allan Blanchard**, MS '86, **Bob Bond**, MS '85, **Chris Dempsey**, PhD '01, **Bob Gibson**, MS '86, Bob's son, Andrew, who received a geology degree at the Univ. of Buffalo, also attended. **Don Monteverde**, MS '84 and **Mike Serfes**, MS '84. The 2015 Graduate Symposium is scheduled for February 20 with invited alum speaker, **Sean Gulick**, PhD '99, University of Texas. Please let us know if you are interested in attending. Email Nancy Roman, nr00@lehigh.edu.

GRADUATE STUDENT SYMPOSIUM AWARDS



This year the **Best Talk Award** was shared by:

Daniel Minguez

“Paleomagnetism of the Devonian Marcellus Formation”

Jennifer Schmidt

“Quantifying Tectonic Controls on Cenozoic Yarlung Tsangpo River Evolution, Southern Tibet”

Runner up: **Mingkai Jiang**

“Biogeochemical Parameterizations of Pennsylvania Dairy Pasture – Implications for Ecosystem Modeling Under Climate Change”

Best Poster Award: **Jill Burrows**

Enhanced Zn Removal from AMD by Rapid Oxidation and Precipitation of Fe Oxides at Near Neutral Ph

Runner up: **Eric Ellison**

Characterizing Iron-Nitrogen Colimitation Interactions in a Chemostat Model of Freshwater Environments

Nathan Collins

Paul B. Myers, Jr. Distinguished Teaching Assistant Award. *The award recipient is chosen by the EES faculty and carries an unendowed cash award.*

Fastest talker* (self-explanatory) **Philip Martin, “Preliminary results of shear wave splitting beneath the Hangay Dome, Mongolia; Applications of automated shear wave splitting measurement techniques”

**Largest scale* (data covered the largest spatial and/or time scale)

Leonard Ancuta, “Thermochronology and geochemistry of lower crustal xenoliths, central Mongolia: Formation and evolution of the deep crust in an intracontinental setting”

**Most with least: mountain from a molehill* (got the most from her data)

Chandler Navara, “Effects of hybridization and habitat choice on fitness of black-capped chickadees (*Poecile atricapillus*)”

Most Striking* (most visually striking presentation) **Nathan Hopkins, “Insar-derived rock glacier flow in the Andes of Argentina: Preliminary results, variability, and commonality”

**The minimalist* (student presented the data most efficiently)

Zhongxiong Cui, “Crustal structure of the Arabian Plate: From new constraints of receiver functions”

Welcome to our newest graduate students!

Zheng Gong, BS, Nanjing University, (*Advisor:* Kenneth Kodama)
 Chandler Navara, BS, Lehigh University, (Robert Booth)
 Stephanie Souza, BS, Lehigh University, (Anne Meltzer)
 Jonathan Stelling, BS, Ramapo College, NJ (Zicheng Yu)
 Janelle Thumma, BS, University of Pittsburgh (Peter Zeitler)
 Rebecca Whiteash, BS, Kutztown University (Don Morris)

Grad student funding in 2014

Farney Funding

Cleary - Paludification of Arctic tundra on the north slope of Alaska: Induced by climate change or autogenic processes?

Navara - Effects of hybridization and habitat choice on fitness of black-capped chickadees (*Poecile atricapillus*)

Palmer Funds

Ancuta - Thermochronology and geochemistry of lower crustal xenoliths, central Mongolia: Formation and evolution of the deep crust in an intracontinental setting

Burrows - Enhanced ZN removal from AMD by rapid oxidation and precipitation of FE oxides at near neutral pH

Malenda - Surficial mapping and geomorphic study of south Anna River deposits, Virginia: Investigating the presence of ongoing and cumulative deformation in the central Virginia seismic zone

Graduate students' professional meeting attendance

Leonard Ancuta went to the AGU in San Francisco where he presented a poster. (*Peter Zeitler, advisor*)

Travis Andrews attended the 2014 Ecological Society of America in Sacramento and presented a poster on forest density change. (*Bob Booth, advisor*)

Jill Burrows gave a talk at the NE GSA in March, “Enhanced Zn removal from AMD by rapid oxidation and precipitation of Fe oxides at near neutral pH”. (*Stephen Peters, advisor*)

James Carrigan presented a poster at the National GSA Meeting “Recovering the unsteadiness of deformation with 10⁴ yr resolution, SE Pyrenees, Spain”. He also presented a poster at the Eastern AAPG Student Expo (*David Anastasio, advisor*)

Kate Cleary attended AGU and presented her poster “Long-term perspectives of shrub expansions and peatland initiation in Arctic Tundra on the north Slope of Alaska”. (*Zicheng Yu, advisor*)

Zhongxiong Cui went to the AGU meeting and presented a poster entitled “Characterization of high velocity layer in the lower crust of southern Tibet” (*Anne Meltzer, advisor*)

Nathan Hopkins gave a talk on the drumlins of New York and co-led the Friends of the Pleistocene field trip in NY. Nate also attended the National GSA in Vancouver and presented his research on Baltic Ice Stream

tills in Sweden as well as presenting a poster on the NY drumlins (*Ed Evenson, advisor*)

Mingkai Jiang attended the Ecological Society of America (ESA) annual conference held at Sacramento, CA in August, and gave a poster presentation. In addition, he went to MIT the Joint Program on the Science and Policy of Global Change this November and gave an oral presentation to the student group. (*Ben Felzer, advisor*)

Helen Malenda presented a poster at INSTOC at Cornell in Ithaca NY in September. She presented a talk at the VA Field Geologist Conference in Charlottesville in October and presented both a talk and poster at GSA in Vancouver. (*Frank Pazzaglia, advisor*)

Kalin McDannell went to the 14th International Thermochronology conference in Chamonix, France in September where he presented a poster. He also presented a poster at the fall American Geophysical Union meeting. (*Peter Zeitler, advisor*)

In the spring **Chandler Navara** attended The Lehigh Valley Ecology and Evolution Society (LVEES) meeting and won the award for Best Poster! (*Bob Booth, advisor*)

Jen Schmidt presented posters at the Amtrak Club Conference, Lehigh University and Thermo2014, Chamonix, France. Jen also gave a talk at the AGU Fall Meeting in San Francisco. (*Peter Zeitler, advisor*)

Stephanie Souza went to NE GSA and AAPG ACE. She presented posters at the AAPG Student Expo and the GSA Annual Meeting. (*Anne Meltzer, advisor*)

Click the newsletter link on our home page for an online pdf of the newsletter.
www.ees.lehigh.edu

Undergraduates

Undergraduate Symposium

The EES **Undergraduate Symposium** is held annually on the last Friday of the spring semester, April 25th. It is a forum for the presentation of undergraduate thesis research and awarding of undergraduate prizes. Honors thesis presentations follow a keynote talk by an EES undergraduate alumnus. The event is followed by the EES department picnic and the awarding of the P. B. Myers, Jr. Distinguished Teaching Assistant award.

This year's symposium began with a presentation by Lehigh alumnus, **Ellyn Enderlin**, '08. Ellyn completed her PhD in Earth Sciences at Ohio State in 2013 and is currently a postdoctoral researcher at the



University of Maine, Orono. She spoke on "Glaciers Gone Wild: Rapid Changes in Greenland Glacier Behavior Initiated at the Ocean's Edge"

Oral presentations:

1st Place talk – **Brionna O'Connor*** "Exsolution of carbon dioxide from the Silver Creek AMD treatment system, New Philadelphia, PA" (Peters, Morris, and Hargreaves)

2nd place talk – **Andrew Moodie*** "Drainage divides, exhumation, and dynamic topography in active and ancient orogenic settings, the Gibraltar Arc and Appalachians" (Pazzaglia, Anastasio, and Zeitler)

Jordan Dykman* "Alignment and divergence of pedologic, geomorphic, and geochemical data for hillslope soils in central PA" (Pazzaglia, Peters, and Blake)

MaryBeth Lyons* "Changes in the optical properties of dissolved organic carbon during canopy interaction and shallow soil infiltration, Palmerton, PA" (Peters, Hargreaves, and Booth)

Marisa Repasch* "Determination of fold kinematics using anisotropy of magnetic susceptibility (AMS) fabrics, Sant Llorenç de Morunys, Eastern Spanish Pyrenees" (Anastasio, Kodama, and Parés)

Cathy Withers* "Efficient downscaling of climate model to predict future storm discharge for Monocacy Creek, Bethlehem, PA" (Felzer, Peters, and Ramage)

Poster presentations:

1st place – **Breanne Ensor** "Influence of overstory vegetation on the abundance of red-backed salamanders (*Plethodon cinereus*) in the forests of South Mountain" (Booth)

2nd place – **Erin Lau** "Analogue sandbox modeling of accretionary prism formation simulating rough and smooth crust subduction" (Anastasio)

Shayna Boulton "(U-Th)/He Detrital Apatite Thermochronology of the Selenga River Catchment of the Hangay Dome, Mongolia" (Zeitler)

Christopher Geist "AMS Magnetic Fabrics of the Late-glacial Dalby Tills, and the development of a sampling strategy for poorly consolidated, sandy tills in Skane County Sweden" (Evenson, Hopkins, Kodama)

Bob Mason "Relative influence of abiotic and biotic disturbance on species composition, tree establishment, and overall growth in the Lehigh University Experimental Forest" (Booth)

Andrew Moodie "Drainage divides, exhumation, and dynamic topography in active and ancient orogenic settings, the Gibraltar Arc and Appalachians" (Pazzaglia, Zeitler, and Anastasio)

Chandler Navara "Effects of Hybridization and Habitat Choice on Reproductive Success and Blood Parasite Infection Levels of Black-capped and Carolina Chickadees" (Booth and Amber Rice)

Elizabeth Odren "Holocene peat carbon accumulation at a permafrost bog near Fiasco Lake in the Yukon Flats of Alaska" (Yu, and thanks to Kate Cleary and Charly Massa)

Alexa Pastuck & Tori Wardamasky "Spring discharge and surface flow patterns on the north side of Blue Mountain at Lehigh Gap Nature Center (LGNC)" LEO Internship, Yasko)

Pooja Potti "Effects of a Transient Construction Site on Turbidity in a Pennsylvania Stream" (Pazzaglia)

Cody Raup "Correlating River Terraces of the South Anna River with Photogrammetric Analysis of Clasts" (Pazzaglia and Malenda)

Joseph Solly "Testing the role of AMD discharge slope and width/depth ratios on the precipitation of metals" (Peters)

*Honors Theses

ANNUAL Undergraduate AWARDS, 2014

Students are recognized at the annual EES Undergraduate Symposium each spring

J. Robert Munford Award **Jordan Dykman**
This award is given to the senior major who *Demonstrates Substantive Improvement over the Course of their Program of Study, and Attain, in the Senior Year, a Clear Record of Excellence.* Jordan has accepted an internship at ExxonMobil in Houston, Texas!

Donnel Foster Hewett Award **Chandler E. Navara**
This award goes to a senior in Geological Sciences *Who Best Demonstrates the Potential for Professional Excellence.* Chandler is currently in the 5th year Master's program and expects to graduate in 2015!

No 2014 recipients:

Handwerk Prize This prize is presented to a student for *Outstanding Achievement in the Fields of Chemistry, Materials Science and Engineering, or Earth and Environmental Sciences.*

David Hellekjaer Memorial Award,
The award is presented to a senior *who best exemplifies characteristics of David Hellekjaer.* The awardee is dedicated to the study of science, participates vigorously in sports, and demonstrates loyalty and contributes to a fraternity or sorority.



Enjoying some R&R and good eats at the annual EES department picnic!

BA/BS research projects funded by the Ryan Endowment Fund

Breanne Ensor

Erin Lau

MaryBeth Lyons

Robert Mason

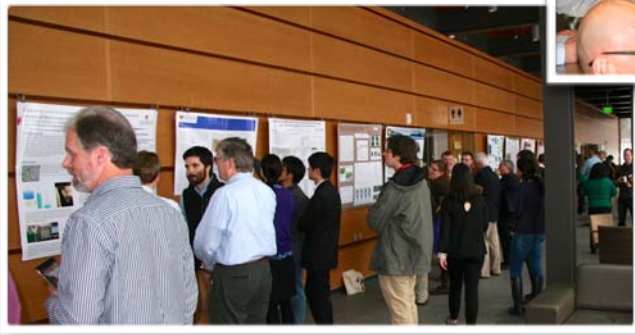
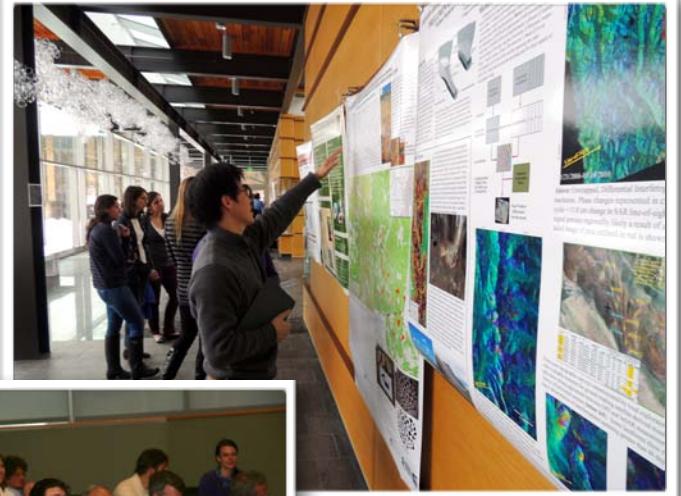
Chandler Navara

Joseph Solly

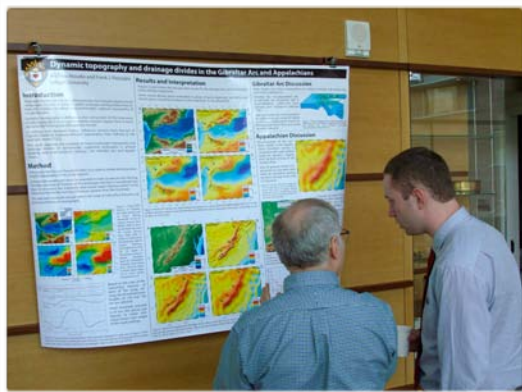
Graduate Symposium



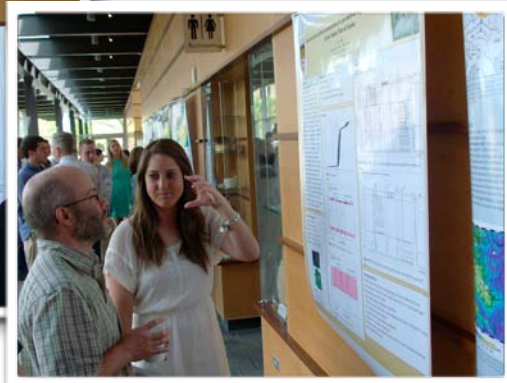
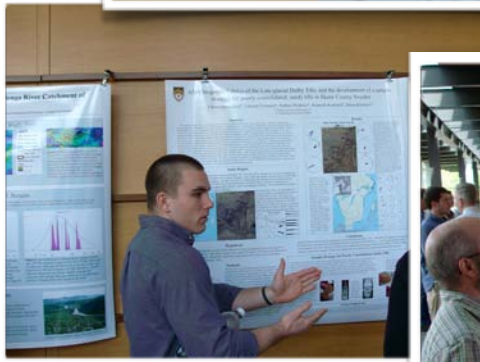
Symposium guest speaker, Nate Harkins, *Lehigh '00, '02*



Undergraduate Symposium



Bruce Hargreaves enthusiastically congratulates Erin Lau who won runner up for Best Poster in the Undergraduate Symposium



Geological Society of America in Lancaster, PA

Lehigh research had a strong showing at the GSA Northeastern Section meeting in 2014. Some senior undergraduate majors presented their projects. Undergraduate students led more than half of EES's fifteen talks and posters. Students who attended were: Jordan **Dykman**, Mary Beth **Lyons**, Andrew **Moodie**, Brionna **O'Connor**, Marissa **Repasch**, Stephanie **Serritello**, Joe **Solly** and Cathy **Withers**. Joe Solly, BS 2014, was recognized with the best poster award.

We congratulate these students on their accomplishments!

Student attendance at professional society meetings is made possible with grants from our endowed funds.

Geoengineering: Insult to injury or last best hope?

This semester, students in our EES senior seminar EES 380: The Practice of Science, debated the pros and cons of geoengineering, the intervention in the Earth's system to counteract climate change. Students explored both solar radiation management and carbon dioxide removal techniques, including their potential to reduce global warming, and the impact these technologies would have on the environment and society. The debate provided an opportunity for our seniors to integrate and synthesize concepts they've learned in our major and to extend their knowledge and skills to new and complex problems. It also takes core concepts in EES and connects them directly to societal issues.

-Professor Anne Meltzer

SES Club report.....

by Robert Mason, SES Club President

For many seniors in the EES department, Society of Environmental Scientists has always been a tight-knit group of upperclassmen whose bond was admirable but intimidating. Now SES has opened its doors wider than ever, inviting underclassmen from all majors to sign up and experience the part of Lehigh that not only cares for and enjoys nature, but also seeks deeper understanding of the processes that shape our surroundings as well as the functions and services that result from those foundational principles.

SES has been busy during the fall 2015 semester. To encourage involvement SES has been planning more events while minimizing the amount of meetings; instead students in SES have access to a Google document and spreadsheet through which anyone in the club can share information and ideas. This semester SES has sponsored outings to Ringing Rocks County Park, Bethlehem's Bounty CSA, and Jacobsburg State Park where members learned about geologic hill slope processes, organic farming techniques, and ecologic mark-and-recapture methods respectively. Many members also attended the Foster Hewett lecture series, Environmental Initiative symposium, and the EES career night. All of these events have served to remind members that knowledge amassed in the classroom is powerful in its application to real-world professions.

As the fall 2015 semester comes to a close, SES will hold a peer-advisor registration session so students can guide each other through the schedule building process, providing insight on courses and requirements. The last event of the semester will likely be a movie night in December to give members a study break during finals week – something of an SES tradition. Despite the approaching winter months and waning appeal of outdoor activities, SES plans to maintain its momentum through the 2015 spring semester.

The SES Club officers are **Bob Mason**, president; **Tori Wardamasky**, vice-president; **Allyson McCarter**, secretary; and **Kerry Austin**, treasurer.



Alumni, send your news to Nancy Roman nr00@lehigh.edu

Congratulations 2014 Graduates!



PhD

Johanna Blake "Geologic, Tectonic, and Geochemical Signatures Leading to Arsenic in Groundwater in the Gettysburg Basin" (*advisor, Steve Peters*). After graduation, Johanna took some time and traveled across the U.S with her husband, Keith to arrive at her final destination, the University of New Mexico in Albuquerque where she has a post-doctoral position in the Department of Chemistry.

MS

Eric Ellison "Characterizing iron-nitrogen colimitation interactions in a chemostat model of freshwater environments" (*advisor, Steve Peters*). Eric is now living in Boulder, Colorado, where he began a job as a Senior Professional

BA

Grace M. Abel

Trista C. Barthol

Michael L. Eni

Research Assistant in the Geosciences Department at the University of Colorado. He manages a new laboratory facility providing Raman microscopy capabilities to users in the Geosciences department and and the university in general, with an emphasis on applying Raman microscopy and other analytical techniques to frontiers in geomicrobiology.

Katharine LeBoeuf, BS, '13 "Holocene Vegetation, Hydrology, and Fire in the North-Central Adirondacks of New York" (*advisor, Robert Booth*).

Michelle Spicer, BS, '13 "The Legacy of Planting: A Century-Long Experiment in Forest Development at Lehigh University" (*advisor, Robert Booth*). Michelle is currently in the PhD program in Biology at the University of Pittsburgh. She is researching tropical forest community dynamics. Her dissertation research will take place mostly in the permanent forest plots in the La Selva Biological Station in northeastern Costa Rica, and will likely focus on the compositional, spatial, and carbon accumulation changes in the forest

Rickie J. Hill

Nicole D. Lamb

Moira K. McGowan

Ariella T. Scales

BS

Shayna Boulton

Rachel R. Charles

Camille S. Delavaux

Jordan N. Dykman

Breanne L. Ensor

Natalie L. Frenberg

Brian J. Grelis

Rachel R. Henke

David M. Jabaut

Erin K. Lau

Anna Lim

MaryBeth Lyons

Andrew J. Moodie

Chandler Navara

Brionna H. O'Connor

Elizabeth A. Odren

Alexa N. Pastuck

Pooja S. Potti

Marisa N. Repasch

Daniela Rossi

Stephanie A. Serritello

Joseph A. Solly

Stephanie Souza

Nicolette S. Sra

Alexis N. Wachter

Catherine E. Withers

More than 56% of our 2014 graduates completed one or more undergraduate research projects as part of their EES degree!

EES 2014 graduates have Lehigh legacy connections

In May, the Earth & Environmental Sciences Department graduated five students who have a Lehigh legacy connection! Their parents, father, uncle, brother, or a combination of, have graduated from Lehigh.

Joe Solly carried on his family's Lehigh legacy. He was fourth generation Lehigh! His father, Carl, attended and was a member of Fiji. His grandfather, Joseph, graduated in 1949, after returning from Japan (he left Lehigh to join the Marines and fight in WWII); great grandfather, Walter, graduated in 1912 and, his great uncle, Howard also attended.

Joe explained that the legacy that his ancestors built at Lehigh encouraged him, from a young age, to continue the tradition. Since around second grade, when he got his first Lehigh T-shirt, he knew he wanted to be the fourth consecutive Solly male to attend.

Brian Grelis' father & brother attended Lehigh, his father graduated with a geology degree and his brother, an EES degree. Other EES Lehigh legacy connections include Grace

Abel, Camille **Delavaux**, and Alexa **Pastuck**. I spoke with Camille, Alexa, and Grace, collectively, about their thoughts on their personal Lehigh legacy. I heard similar comments from each, about growing up and hearing stories from those family alums. They now have acquired their own Lehigh experiences and have their own stories to share with their families when they inevitably hear "when I was at Lehigh" come up during Sunday dinners, holidays or family reunions.

It was apparent that each of their families are very proud of the fact that their children chose to carry on the Lehigh tradition.

Camille's father, mother, and brother all attended Lehigh (her mother, Marie-Helene Chabut, is a professor in Lehigh's Modern Foreign Language department). Camille's successful experience in Earth & Environmental Sciences has paved the way to her next challenge (which she was obviously very excited to announce). This fall she began graduate studies at Yale University's School of Forestry & Environmental Studies!

Alexa is the fifth member of her family to attend Lehigh. She was very upbeat and exuberant about her future while sharing with me how she plans to explore all the possibilities after graduation. She feels her Lehigh education prepared her well to now go out into the world and make her mark.... how the world is her oyster!

Grace reminisced how she knew she wanted to become a Lehigh student after she began to visit her brother when he was attending. She loved the atmosphere on campus and said she had no doubts about choosing Lehigh, and how she really looked forward to officially becoming a student. Fast forward... four years later, and now, thinking about her future, she spoke optimistically about beginning life *after* Lehigh! Her goal is to promote environmental causes and further public awareness about environmental issues.

After seeing their obvious enthusiasm, I'm sure that each of these EES grads will succeed whatever path they choose!

Congratulations EES graduates!

Bruce Hargreaves announces retirement

Bruce Hargreaves has announced his plans to retire from the tenured faculty with formal duties to end with the completion of the Spring 2015 semester. He started his career at Lehigh in the Biology Department in 1977 and was one of the charter members of EES when it was created. As Professor Emeritus of Earth and Environmental Sciences Bruce plans to continue his research and writing while allocating increased time for travel and outdoor recreation. He and his wife Stephanie Katz (who is retiring from her Spanish Lecturer position at Lehigh) plan to spend a significant part of each year living in northern California close to extended family. They also plan frequent visits to Bethlehem to see local family and friends and for Bruce's Pennsylvania research.



EES hosted two successful **Career Nights** in 2014.

On March 11th, the Career Night panel, left to right included:



Allan Blanchard, M.S. '86
EMS Environmental, Inc.
Kevin Porterfield,
Minerals Technology, Inc.
Aaron Frantz, M.S. '89
CDM Smith
Bob Bond, M.S. '85
Langan Engineering
Amy Shotmeyer, B.S. '05
DeCotis, FitzPatrick and Cole, LLP
Mike Kutney, M.S. '06
U.S. Environmental Protection Agency



Kristin Carter talks about a career with the Pennsylvania Geological Survey

On October 9, the invited panel included:

Amy Shotmeyer, B.A., '05
DeCotis, FitzPatrick and Cole, LLP
Kristin Carter, M.S. '93
Pennsylvania DCNR, PA Geological Survey
Bob Bond, M.S., '85
Langan Engineering and Environmental Services
Aaron Frantz, B.S., '89
CDM Smith
Lane Schultz, PhD, '74
Endless Mountain Energy, LLC
Doug Mayger
Minerals Technologies, Inc.
Andrew J. Gutshall
ECPA/NJ Lehigh Hanson, Inc.

ExxonMobil Integrated Basin Analysis Short Course

October 31–November 3

The ExxonMobil short course was held over the course of three days in the STEPS building. 12 EES students attended the course along with 19 students from other schools including Colgate, Bucknell, University of Massachusetts, SUNY Binghamton, Williams College and University of Rochester.

Bob Stewart and Dorien McGee were accompanied by **Tom Becker**, MS '02 and, **Luke Wilson**, MS '08 who interviewed the students for positions with ExxonMobil.

We congratulate three Lehigh students who recently received internship offers. **James Carrigan** and **Nathan Hopkins** will both be going to the Guadeloupe Mountain Field School and **Taylor Cummins**, '15 will be attending the Bighorn Basin Field School in 2015.

Newsworthy—

Lenny Ancuta and **Jill Burrows** were awarded a CAS Dean's summer fellowship. The award is made upon recommendation by the department and acknowledges excellent academic record to date and the quality of a research project.

Jonathan Stelling passed his PhD qualifying exam (advisor, Zicheng Yu)

This fall, three students presented their proposals and passed their general exam for the PhD program! They are: **Lillian Soto-Cordero**, "Intraplate seismicity and lithospheric structure Mid-Atlantic, Eastern United States" (advisor, Anne Meltzer); **Zhongxiang Cui**, "Structures of the continental lithosphere during continental collision: Lhasa Terrane" (advisor, Anne Meltzer), and **Helen Malenda**, "Geomorphic expression and distribution of cumulative co-seismic deformation on the United States mid-Atlantic passive margin" (advisor, Frank Pazzaglia).

OUTREACH

Saucon Rail Trail Service Learning Project



One of the growing challenges in teaching field geology is safe and legal access to outcrops. Recently, access to excellent outcrops for teaching purposes were made available when an 13-km stretch of SEPTA rail line in the Saucon Valley was leased to Hellertown, Lower Saucon Township, Upper Saucon Township, and Coopersburg for development of a rail-trail project. The new trail opened in 2012 and enjoys heavy community usage (<http://sauconrailtrail.org/>). The Spring 2013 EES 200 Earth history class, co-instructed by Frank Pazzaglia and Bruce Hargreaves, engaged a cohort of student volunteers in a service learning project to clean an outcrop along the trail not only to make it available for EES teaching and learning, but also so that it could serve as educational outreach, teaching trail users about the geology of Saucon Valley. With the help of the Saucon Rail Trail commission, Lower Saucon Township, and generous funding provided by EES, the Saucon Rail Trail, and the PA Highlands Trail Network of the Appalachian Mountain Club, these students cleaned an outcrop of Allentown Formation dolostone, developed an interactive website, and installed a sign explaining the outcrop and the local geology.



The outcrop is located in Lower Saucon Township just south of Meadows Road. It exposes dipping Allentown Formation dolostone that includes several beds containing well-developed stromatolites and cross-bedded oolites. The outcrop provides an excellent platform for teaching carbonate stratigraphy and depositional processes, particularly repeating, shallowing-up cycles. It is currently being used by the sed-strat and Earth history classes, and may also be used by our new introductory Earth systems course as well. A virtual geologic tour of the outcrop and more on the geology of the Saucon Valley can be found here: http://www.lehigh.edu/~fjp3/srt/srt_geology.html. A short video that shows the original condition of the outcrop and the students cleaning it up can be found here: http://www.lehigh.edu/~fjp3/srt/srt_outcrop_cleaning.mp4.



Participating in the service learning effort were Charlotte Malmberg, Kerry Austin, James Carrigan, Matt Moschella, Raghida Shariff, and Lorrie Carnes. Raghida Shariff contributed additional time and effort in the construction of the website.

Service learning is an important part of the professional development of EES students. We hope to engage in more of these projects along the Saucon Rail Trail or elsewhere in the Lehigh Valley. As an alumni, you are in an excellent position to contribute to service learning by your support of the Department and by making internship and summer opportunities known to our students.

Amtrak Club Meeting

The 3rd meeting of the Amtrak Club was hosted by STEPS on 16-17 May, 2014. The Amtrak Club is an informal geomorphology group that meets in the spring to openly share ideas and project results. It is run like a small AGU or GSA meeting with invited keynote presentations, contributed abstracts, and posters. This event is an early-career, under-represented STEM group, and

graduate student friendly event. Regardless of interests, faculty and students were welcome to attend. Of the fifty attendees, Lehigh participants included: Helen Malenda, Dave Anastasio, Jordan Dykman, and Frank Pazzaglia. The meeting was organized by Pazzaglia and was generously supported by the College of A&S, College of Engineering, Environmental Initiative, EES and CEE.

There were four half-day sessions, with keynote speakers presenting on:
 -Mid-Atlantic CZO research - [Nikki West](#), Penn State University, [Shale Hills CZO](#)
 -Geomorphic impact of a decade of mega-storms - [Josh Galster](#), PhD, '06, Montclair State
 -Sediment transport from analogue and field studies - [Panos Diplas](#), Lehigh University
 -Cosmogenics, erosion, and long-term landscape evolution - [Jane Willenbring](#), Univ. of Pennsylvania

Address change?
 Please send any change of address and/or an updated email address to Leigh Anne Fernandes
lef513@lehigh.edu

D. F. Hewett Seminar Series

Dr. Robert Hazen, D. Foster Hewett Seminar Series keynote speaker, met with a group of Freedom High School students before his keynote lecture.



Public outreach like this helps support all STEM education and careers

Dave Anastasio's

and students are recovering deformation rates from folds and faults. These data serve to inform our evolving ideas on what modulates rates of deformation. We are working on kinematics and rates of fault-related folding recorded by syntectonic strata in the Pyrenees. We are using paleomagnetic and high-resolution cyclostratigraphic age models with structural modeling to reconstruct fault slip rates at 10^4 - 10^5 time scales. I lead an international group working on tectonics and landscape evolution along the African-Eurasian tectonic plate boundary in the Betic Cordillera, Spain. And I am also involved in science curriculum development projects focusing on tectonics, climate change, and energy for middle school and college-age learning.

Gray Bébout

has recently been working with his graduate students in an NSF-funded study of surface-to-mantle carbon cycling, basing this work on exposures of metamorphic rocks in the Italian and French Alps. As a part of this work, Dr. Bébout compares inputs of carbon at modern subduction zones with outputs of carbon dioxide at the same margins in volcanic gases, collaborating with colleagues at the University of California-San Diego. Other work in his lab is aimed at identifying mineral phases capable of preserving nitrogen isotope signatures of ancient-Earth biogeochemical cycling, with particular attention paid to minerals known to also be abundant on the surface of Mars."

Robert Booth

received a faculty research grant for his proposal "Light intensity and peatland testate amoebae: assessing a potential new tool in the studies of peatland carbon accumulation".

Edward Evenson

has been traveling -- with his Ph.D student (Nathan Hopkins) he recently made two trips to the Skane region of southern Sweden to collect till samples for AMS magnetic analysis to decipher the behavior of the Baltic Ice Stream and to investigate the kinematics of till deformation during the youngest Swedish Glaciation. In January Ed lead a group of researchers to the high Andes of Argentina to investigate the origin and motion of rock glaciers and, in November, Ed, Nathan, Josh Stachnik and collaborators from the Cold Regions Research and Engineering Laboratory also ventured to the Matanuska Glacier in Alaska to collect samples to determine the style of basal ice deformation.

Ben Felzer

had a productive 2014, with five publications, including a climate impacts study with Dork Sahagian in *Climate Research*, and two papers about carbon dynamics first-authored by his students Mingkai Jiang and Shree Dangkal in *Crop Science* and *JGR-Biogeosciences*, respectively. He also was awarded an NSF grant with renowned Yale anthropologists to study the role of climate disasters on food supply and how societies have coped throughout human history. His undergraduate student, Peter Phelps, presented his STEPS/EI summer research on the economic impact of storms in the mid Atlantic states. Ben gave three talks in the spring, at the NE GSA meeting, University of West Virginia, and Penn State. He and his students Jien and Mingkai culminated their year with talks to the Joint

Bruce Hargreaves

continued his research on lakes and climate change. In northeastern Pennsylvania he has monitored the weather, solar radiation, and the hydrologic budget of Lake Lacawac since mid-1990's using automated instruments mounted on a raft. This past year he has been testing a new method to quantify heat exchange and evaporation rates from lake surfaces. The new method uses a tiny temperature sensor mounted a few feet above the lake surface. It measures the magnitude and duration of individual heat eddies. These data are compared hourly with other measures of heat and water flux, including a recently installed net radiometer and infrared thermometer measuring the lake surface temperature. Hargreaves plans to employ this new method in an evaporation study of Lake Tahoe (in California and Nevada), to develop an improved method for measuring and predicting evaporation rates in arid mountain lakes. Lake Tahoe is an important water supply in the region and predicting future rates of precipitation and evaporation in the lake and its catchment will be valuable to regional planners.

Ken Kodama

collected additional samples from Ediacaran age rocks from south China to complement the rocks he collected from South Australia in 2013. The goal of the studies is to determine, at high resolution, the duration of the Shuram C-isotope excursion that may record the oxidation of the oceans just before the explosion of metazoan life. Ken had a second book published in 2014, *Rock Magnetic Cyclostratigraphy*, co-authored with Linda Hinnov (Wiley-Blackwell). It details the techniques used to study the rocks collected from Australia and China.

Anne Meltzer, Francis J. Trembly Chair in Earth & Environmental Sciences, spent most of the month of August in Mongolia deploying broadband seismic stations in the vicinity of Lake Khovsgol and in the Gobi Altai as part of an ongoing NSF supported research project to investigate the origin of high topography in continental interiors. This deployment is the extension of previous work in the Hangay of Central Mongolia. Lake Khovsgol sits west of Lake Baikal. It is the second largest freshwater lake in Asia and like Baikal, sits in rift basin at the edge of the Siberian Craton. The deployment in the Gobi Altai sits at the transition between the Mongolian Altai and Gobi Desert astride two major strike-slip fault systems. The seismic arrays will record local, regional, and teleseismic earthquakes to look at lithospheric structure beneath the arrays.

Don Morris'

2014 Lehigh in Costa Rica program had strong student participation this year. A total of 16 students participated in the winter program which featured credit-bearing courses on Costa Rican Natural History and Sustainable Development. During the 7-week summer internship program, students worked at 3 separate sites in Costa Rica studying forest corridors which help to promote biodiversity. The final 10 days of the program featured students participating in several environmental community service projects in the Osa Peninsula and Monteverde region of Costa Rica.

Frank Pazzaglia

has been placing renewed effort in his interest on the causes of east coast earthquakes. Along with EES faculty and graduate students and

collaborators at four other universities, he is studying east coast seismicity and its role in driving crustal deformation and landscape evolution in the mid-Atlantic region.

Steve Peters'

geochemistry lab, along with collaborators in CEE and EES, landed an equipment grant to bring new types of environmental isotope analyses to Lehigh. The new Picarro Analyzers can measure the hydrogen and oxygen isotopic composition of water, and the carbon isotopic composition of carbon dioxide and methane. Recent work with Johanna Blake (Ph.D. 2014) will appear in a special issue on arsenic geochemistry in the *Science of the Total Environment*, due out this January. A field and modeling study of iron oxidation kinetics and Zn sorption (Jill Burrows, Ph.D. ant. 2015) is planned for a special issue of *Applied Geochemistry* dedicated to Gunter Faure. New projects on mercury in the Susquehanna River with Don Morris and graduate student Rebecca Whitehouse show exciting promise. We continue, with Frank Pazzaglia, to understand pedogenesis in middle Pleistocene soils of Eastern Pennsylvania, involving undergraduate student, Katherine Cummings.

Joan Ramage

continues to study glaciers and icecaps and is increasingly interested in the role of sea ice in affecting glacier behavior in the arctic. She also recently participated in an NSF funded effort "InTeGrate" to develop classroom tested teaching modules to engage students in understanding the earth system as it intertwines with key societal issues. She collaborated with Lisa Gilbert (Williams College) and EES alumnus Joshua Galster (G'06; Montclair State University) to create a hurricane hazards module.

Dork Sahagian

helped lead a field trip of EES students to the Burgess Shale in the Canadian Rockies, taught a course in Volcanology, did a project with Ben Felzer on regional impacts of climate change, conducted fieldwork in Mongolia, and started a new research project to explain why rivers meander (with CEE chair, Panos Diplas). In continuing efforts for outreach and public education regarding climate change, Dork spoke at the United Nations on sustainable development in light of climate change (UN news article at <http://www.un.org/climatechange/summit/2014/08/ngos-urge-strongest-possible-action-climate-change/>).

Zicheng Yu

led a small team to the region earlier this year to investigate reports that the moss peatbanks that cover the rocky slopes on some of the islands have turned a darker shade of green in recent years. Researchers found not only signs that moss species composition may be changing as the current climate grows warmer and wetter, but they also discovered evidence that such plants may have flourished nearly a millennium ago during another period of higher temperatures before slipping back into a colder climate. Online article:

[The Antarctic Sun: Rolling Stone Gathers No Moss](#)

Peter Zeitler, CAS Iacocca Professor, has three finishing doctoral candidates. Kalin, Jen, and Lenny who keep his lab busy analyzing samples from North America and Asia. Peter's current and former students, **David Schneider**, PhD, '00 and **Ryan McKeon**, PhD, '12, plus research scientist Bruce Idleman, all attended the Thermo2014 conference in Chamonix, France.

2014 EES Weekly SEMINARS

supported by the endowed *Bertolet and Blaustein Funds*

—EES seminars are scheduled every Friday, 12 noon in STEPS 101—

Please join us!

Spring

January 24 Amber Rice, Biological Sciences, Lehigh University "The ecology of speciation and species differences"

January 31 David Hilton, Geosciences Research Division, Scripps Institution of Oceanography, UC, San Diego "The volatile geochemistry of the East Africa Rift System"

February 7 Walter Carson, Department of Biological Sciences, University of Pittsburgh

"On the causes and consequences of region-wide changes in the dynamics and disturbance regimes within the eastern deciduous forest of the U.S."

February 21 Nathan Harkins, ExxonMobil Upstream Research "Controls on Opening-mode fracture formation on a Laramide-style fold and implications for subsurface fracture prediction"

March 14 Anthony Broccoli, Environmental Sciences, Rutgers University "Heavy precipitation events in a warming climate: An analysis of regional variability and synoptic characteristics in CMIP simulations"

March 21 Larry Band, Dept. of Geography, UNC at Chapel Hill "Critical zone processes at the watershed scale: Hydroclimate and groundwater flow path mediated evolution of forest canopy patterns."

March 28 Sybil G. Gotsch, Biology Dept., Franklin and Marshall College "Life in the treetops: Ecophysiological strategies of canopy epiphytes in a tropical montane cloud forest"

April 4 Blair Schoene, Geosciences Dept., Princeton University. "Constraining crustal evolution on very short and very long time scales"

April 25 Ellyn Enderlin, Lehigh '08 Climate Change Institute, Univ. of Maine "Glaciers gone wild: Rapid changes in Greenland glacier behavior initiated at the ocean's edge"

Fall

August 29 EES Department summer slide show

September 5 David Sunderlind, Geology & Environmental Sciences, Lafayette College "Reconstructing environment, ecology, and climate in the paleogene of southern Alaska"

September 12 EES Alumni, Robert Wegner, George Popper, & Jeffress Williams, Career reflections in industry, academia, and government service"

September 17-19 D. Foster Hewett Seminar Series, Origin of Life

September 26 Dan McNamara, US Geological Survey "Constraints on recent earthquake source parameters, fault geometry and aftershock characteristics in Oklahoma"

October 10 Todd Sowers, Penn State "Glacial/Interglacial atmospheric methane changes: Correlations and conundrums"

October 24 Michael MacCracken, The Climate Institute "Global warming: What we've done and what needs to be done"

October 31 Thomas Becker, MS, Lehigh '02 ExxonMobil "A Petroleum Systems Approach to Geologic Carbon Sequestration: An Example from the Moxa Arch, Wyoming."

November 7 Bill Hay, Univ. of Colorado Museum "Earth in a greenhouse: A new view of the Cretaceous"

November 14 Gary Acton, Sam Houston State Univ. "A dynamic geomagnetic field revealed from coring a constellation of paleomagnetic stations in the ocean basins"

December 5 Michael Steckler, Lamont-Doherty Earth Observatory, Columbia Univ. "Bangladesh: Natural hazards in a tectonically-active delta"

2014 D. Foster Hewett Seminar Series

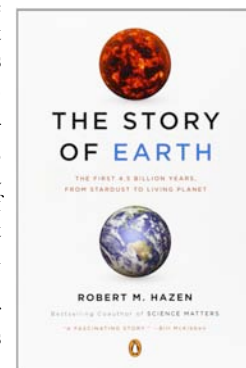
Origin of Life

This year's program was held September 17-19. Featured speakers were, **Robert Hazen**, Carnegie Institution Geophysical Laboratory. The keynote lecture was "Genesis: the scientific quest for life's origin",

Kenneth Williford, California Institute of Technology Jet Propulsion Laboratory "Looking for life on Mars (on Earth)",

Irene Chen, University of California Santa Barbara, Chemistry & Biochemistry, "Emergence and evolution in the RNA world", and **Lisa Kaltenegger**, Cornell University, Astronomy, "Searching for a second Earth: a fascinating interdisciplinary puzzle"

<http://www.ees.lehigh.edu/DFH/DFHmain.html>



Daniel Minguez, PhD candidate "this was an incredibly engaging line up of speakers. Thanks for making this happen, I had a great time during the symposium"

Jien Zhang, PhD candidate "Thank you all for organizing such a fantastic Foster Hewett Seminar this year! I did think it was great! I also believe our EES fellows benefit a lot from the talks!"

EES Research Staff
Graffiti

Spring 2015 invited speakers

23 Jan - Matthais Ruth, Northeastern Univ.

30 - Jan Karen Harpp, Colgate Univ.

6 Feb - Donna Jurdy, Northwestern Univ.

13 Feb - Christy Goodale, Cornell Univ

20 Feb - EES Graduate Symposium

27 Feb - Mary Voytek, NASA, Astrobiology

6 Mar - Beth Lambert, State of Massachusetts

20 Mar - Yiqi Luo, Univ. of Oklahoma

27 Mar - Adam Schlosser, MIT

3 Apr - Allison Duvall, Univ. of Washington

10 Apr - Kerry Gallagher, Univ. de Rennes

17 Apr - Dissertation thesis defense

24 Apr - Dissertation thesis defense

1 May - Undergraduate Symposium

Bruce Idelman

is beginning a new study in Alaska aimed at characterizing the continent-ocean transition and distribution of basement terranes beneath the eastern Aleutian island arc. On the home front, in addition to keeping various labs operating smoothly in STEPS, he is developing a new time-of-flight mass spectrometer for determining isotopic ratios in tiny argon samples.

Josh Stachnik

has been continuing work on the origin of high topography in central Mongolia from a recent deployment of seismic stations. Exciting new results are emerging from analysis of earthquakes recorded from around the world, showing variations in seismic properties from the surface to the upper mantle.

Charly Massa

studies paleoclimatology with Zicheng Yu

Click on this link to check our website for more details on our weekly seminars: [EES Weekly Seminar](http://www.ees.lehigh.edu/DFH/DFHmain.html)

Endowed funds for EES Students

This section highlights important EES endowment funds that help to support our graduate and undergraduate students. EES students are extremely grateful for the generosity of these alumni. In this issue, we have chosen to highlight the Hewett, Agocs, and Blaustein endowments and, in future newsletters, plan to highlight other endowments and the positive impact that these endowed gifts provide to EES students.



HEWETT

The Annual **Donnel Foster Hewett** Lecture Series is sponsored by the Department of Earth & Environmental Sciences and is supported by a bequest which was made to the department by one of its most distinguished alumni, Donnel Foster Hewett.

Hewett matriculated at Lehigh University in September 1898. Following graduation in 1902, he spent another year at Lehigh as an assistant in metallurgy and mineralogy under the direction of Joseph Barrell. After Joseph Barrell moved to the Department of

Geology at Yale in 1907, Hewett went there in 1909 to study geology and received his Ph.D. He had a career with USGS.

In May, 2004, the **William B. Agocs** estate generously endowed EES with funds to support graduate student research in geophysics. He was born in Allentown, PA on Nov. 20, 1911.

William B. Agocs received his B.S. and M.S. in Mining and then transferred to physics to work with Ewing. He received his Ph.D., the third given by the department, in 1946 with a thesis titled "A Method of Determining the Time Break on Deep Sea Seismic Records, and the Slope of the Sea Bottom and its Direction from Water Sound Arrivals". Agocs joined Kutztown University where he became head of the physics department (1964-1978) and established a seismic observatory.



William B. Agocs

AGOCS

The **Jacob Blaustein** lecture fund was established in 1981 with his generous gift to our department. Through the years, with this support, EES students have benefited greatly from those invited speakers who have shared their knowledge. Here's a bit of Blaustein's history...

Jacob Blaustein attended Lehigh for undergraduate engineering studies and was a member of the class of 1913. He left the university prior to graduating to help his father run the new business he founded in 1910 named the American Oil Company.

Born September 30, 1892, Jacob Blaustein grew to become one of his generation's most influential industrialists, diplomats, and international philanthropists. He was educated at Baltimore Polytechnic Institute and took



BLAUSTEIN

mechanical drawing lessons at the Maryland

Institute of Art prior to attending Lehigh where he studied mining engineering. The business he began with his father was responsible for the first drive-in filling station, the first visible gasoline pump, and the first anti-knock motor fuel, which Louis Blaustein named "Amoco."

In 1922, the Blausteins incorporated the American Oil Company (AMOCO). Jacob spent his entire career in the oil industry, continually improving upon his father's innovations.

Blaustein played a major role in solidifying the new country of Israel as an important world power following WWII.

Jacob left a legacy of extensive international philanthropic work in scientific research and human rights advocacy.

Thank you to our alumni whose endowed bequests allow us to sustain our quality educational program.



Looking For EES Alumni Mentors

Are you willing to share career advice as a mentor for EES majors or recent graduates? We're looking for department alumni willing to serve as a resource for current majors and recent graduates as they contemplate career paths and choices. If you're willing to share your expertise and experience as guidance to help majors negotiate their first steps after Lehigh, let us know. We're looking to set up a password protected (Lehigh Login only for EES majors) part of our website with a list of alumni willing to be contacted for career advice. If you're willing to serve in this capacity or want to know more before committing please let us know (email Nancy Roman at nr00@lehigh.edu). We'll contact you directly as we implement this new endeavor.

EES Gifts

All gifts, no matter the size, contribute to the success of our program. We wish to thank the following alumni and others who have generously donated to the EES Department in 2014.

David J. Anastasio

Anonymous

George M. Banino '64

Robert C. Booth '55

Thomas P. Becker '02

Keith A. Brugger '78

Lori A. Burkert '06

Christopher D. Kwoka '78

Gary G. Lash '80

Frank R. Luther '76

Henry W. Seduski, Jr. '10

Amy E. Shotmeyer '05

Kevin Simons '72



Chevron Corporation

Glenn Maloney '75

Robert C. Marshall, '83

Brionna H. O'Connor '14

Joseph A. Solly '14

Karen L. Stuckey '75

Stephanie Souza '14

Patrick Burkhardt '94

Kristin M. Carter '93

Amanda M. Casteel '13

Louis Eni

Nina Eni

Richard B. Palmer '43

Margaret A. Pietrasz '78

Pooja S. Potti '14

John S. Rentschler '54

Lawrence A. Taylor '68

Allison L. Teletzke '12

Aram Terchurian '80

ExxonMobil

ExxonMobil Corporation

Roger Sassen '72

Robert L. Scamman '78

Margaret A. Scamman '80

Andrea J. Wagner '05

Kyle C. Wagner '08

Catherine E. Withers '14

Lawrence R. Glassman '17

Anthony A. Imhof '69

Mark H. Koelmel '79

Kristen M. Koelmel '77

Shell Oil Company



Brent Zaprowski '01

Marjorie Zimmerman '81

We apologize if we omitted your donation. If your donation check was cashed, you can be assured that your gift arrived safely at Lehigh. If your name should have appeared on this list of donations for 2014, please bring it to our attention and we will include an acknowledgement in our next newsletter. Please notify Nancy Roman nr00@lehigh.edu

A special thanks to Chevron Corporation and Chevron Alumni

A large 3-year gift from Chevron Corporation has restored EES Field Camp after a 1-year hiatus. Each summer for 39 consecutive years, department students and students from other top universities (74 different schools over the last decade) have departed South Mountain and ventured West in a classroom caravan to some of the country's most majestic places in the U.S. Rocky Mountains. Since 1975, more than 2,000 students have participated, embracing Mother Nature's zest for the unexpected, braving the elements, and working through summer snow, rain, wind, mud, intense heat, and life in an outdoor laboratory that led each of them to know, more intimately, the earth and processes that shape it. For many, Earth or Environmental scientists, the more than a month-long program began the process of launching their careers to become leaders in their field. The gift from Chevron funds a new full-time camp director and Professor of Practice in Earth and Environmental Sciences. During the academic year, we gain valuable support for our large non-major laboratory, Exploring Earth and other courses in the new faculty's specialty. The past

camp directors were Edward Evenson, 1975-2001 and, Frank Pazzalia, 2002-2013. Throughout its history, many students have received scholarships through generous alumni support of the Vic Johnson Field Camp Scholarship Fund.

Mr. and Mrs. **Anthony Imhof** '69, regular contributors to the Vic Johnson Field Camp Scholarship Fund, have generously increased their annual gift so that with the Chevron Corporate match it will provide a full field camp scholarship for a deserving student this year.

Dr. **Richard Palmer** '43, benefactor of the endowed Palmer Fund for Graduate Research, provided an additional matched gift to further support graduate student geological research.

Kris '77 and **Mark** '79 **Koelmel** gave generously in 2014 so that, with the Chevron corporate match, EES was able to take a highly inspirational and educational field trip to the Canadian Rocky Mountains this past summer with little cost to the participants. Read about the trip on page 16.

An Invitation to Get Involved and Support Your Department

The faculty and staff would like to extend an invitation to alumni to stay in contact with EES and to get involved with your Department. Contact us and let us know how you would like to be involved. Some activities and events open to all alumni include:

- The weekly Friday lunch and seminar (11 AM-1:00PM) in STEPS 101
- The Graduate Student Symposium, *Friday, February 20, 2015*
- Undergraduate Symposium, *Friday, May 1, 2015*
- Department picnic and awards presentations (following the Undergraduate Symposium on May 1st)

Many of the programs we offer in EES that allow us to excel in education and research are made possible by endowed accounts and donations established by alumni. We are always looking to augment our resource base for graduate and undergraduate research, EES Field Camp, faculty development, and/or Departmental laboratory and educational facilities. If you are in a position to donate, please fill out the form below with your gift and send it to us. We will acknowledge receipt as soon as it arrives. Please make your check payable to Lehigh University and we thank you, in advance, for your consideration and support.

Name: _____

Address: _____

Email: _____

If you prefer to give a donation online, you can simply visit the Lehigh giving page at mylehigh.lehigh.edu/makeagift and indicate EES in the comment box to select the EES department as your designation.

Don't forget about a possible a company match.

I prefer to make an unrestricted gift in the amount of \$ _____

I would like to make a donation to support the EES graduate programs in the amount of \$ _____

I would like to make a donation to support the EES undergraduate programs in the amount of \$ _____

I would like to make a donation to support field camp students, the Vic Johnson Scholarship Fund
in the amount of \$ _____

Total personal donation \$ _____

Employer matching gift (if applicable, include employers matching gift form) \$ _____

Grand Total \$ _____

Please send the completed form with your check payable to Lehigh University to:

Nancy Roman

Department of Earth & Environmental Sciences

Lehigh University, 1 W. Packer Ave., Bethlehem, PA 18015-3001

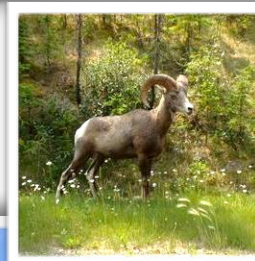
Department field trip to the Canadian Rockies

15

2014 Department Field Trip to the Canadian Rocky Mountains



For a week this summer the EES department toured the Canadian Rocky Mountains in Banff, Jasper and Yoho National Parks. The trip was made possible by a gift from **Mark '79** and **Kris '77 Koelmel**. The trip included 20 undergraduate and graduate students and was led by Professors Dave Anastasio, Don Morris, and Dork Sahagian. The trip was based out of Barrier Lake in the Kananaskis Valley at the Biogeosciences Center run by the University of Calgary. Using vans, we made stops from the plains and deformation front, through the foothills, Front Ranges, and Main Ranges of the mountains along the Bow River. We also made a one-day excursion up the Icefields Parkway to Athabasca Glacier in Jasper National Park, and went as far west as Field, BC in Yoho National Park to hike to the famous fossils at Walcott Quarry. To prepare for the final day 22 km assault high on Mount Stephen (1650 m elevation gain), each day included some hiking as well as wildlife sightings.



"the Canada trip made all of my hours studying and in the lab worth it. It's one thing to understand the concepts at Lehigh, and its a whole other thing to experience the processes firsthand. The trip catalyzed my incentive to learn" Raghida Sharif, BS '15

