

Petroglyphs



2015-16

# PETROGLYPHS

2015-16 EES Newsletter

5<sup>th</sup> Edition

## Message from the Chair: Peter Drzewiecki

Greetings from the Environmental Earth Science Department at Eastern, and welcome to the 2015-2016 edition of our departmental newsletter! The 2015/16 academic year was both active and exciting, and you can read some of the highlights in the pages that follow. The EES major continues to maintain strong enrollment numbers. Our faculty continues to offer challenging courses for our students, as well as engage them in undergraduate research projects. Several of the students have presented their work at national conferences. Finally, the year ended with our departmental celebration and award ceremony, and we sent about 15 new geoscientists out into the world.

There are some notable things that happened over the past academic year. For several years now, the department has run an annual field course to investigate geological concepts in some of the world's best natural laboratories. This newsletter describes the trip to Wyoming and Idaho that occurred in the summer of 2015. These trips have added a new, important dimension to the student's education. Several faculty members participated in leading field trips for the annual New England Intercollegiate Geological Conference last fall, helping to bring external visibility to the EES department. Finally, the department has approved a new minor in Environmental Health Science for interested students throughout the university. I invite you all to take a few minutes to read about these exciting developments.

As always, you can find this, and past Newsletters on our department website:

<http://www1.easternct.edu/environmentalearthscience/>

Enjoy the Newsletter!

**Inside this issue: Faculty Highlights, Student Research, Idaho-Wyoming Trip Report and other notable events and achievements!**

## FACULTY HIGHLIGHTS

### Catherine Carlson

I'm so pleased to announce that ECSU now offers new courses and a new minor in **Environmental Health Science**. Over the past year, I've worked diligently to make this happen, inspired by the U.S. Geological Survey's Circular 1383E, **U. S. Geological Survey environmental health science strategy—Providing environmental health science for a changing world**. As an environmentalist, I am excited to see that the environmental movement I joined over 45 years ago is maturing into an interdisciplinary field that integrates study of physical, living, and social environments to ensure the health and wellbeing of humans and ecosystems.

Today, few question the influence that the interplay of human activities, natural earth processes, and ecological processes has on both human health and the quality of the environment—we've come a long way. The **Environmental Health Science Minor** explores this interrelationship between human health and the environment. Although the minor is particularly appropriate for students majoring in environmental earth science, health sciences, and biology, it is also of great value to students whose careers will entail interacting closely with the general public. This minor also would benefit majors in communication, sociology, social work, and political science, among others.

The objectives of the minor are to (1) expand student awareness of environmentally-driven disease and injury, (2) assist students in pursuing careers in environmental health, public health, and environmental science, and (3) prepare students for graduate studies in environmental health science. To support these objectives, new courses have been designed and are now on the books: EHS 210 Intro to Environmental Health Science, EHS 324 Environmental Toxicology and Risk Management, EHS 410 Hydrogeology for Environmental Health Professionals, EHS 420 Occupational Health and Safety, and EHS 494 Supervised Field Experience. They join existing courses in GIS (EES 300/301 or 340), epidemiology (PBH 206), drinking water management (EES 323), and health and safety at hazardous waste sites (EES 423) in preparing students for employment and graduate study in environmental science. Fall 2016, **EHS 210 Intro to Environmental Health Science** will be offered for the first time, and students will be able to declare the **Environmental Health Science Minor**.

There has been so much interest in this emerging discipline that I have begun to explore whether offering a new major in Environmental Health Science may be warranted. Beyond interest, is there a need? The CT Bureau of Labor Statistics projects an average annual growth rate of 1.5%, or 34 job openings, for *Environmental Scientists and Specialists including Health*<sup>1</sup> and 0.5%, or 18 job openings, for *Occupational Health and Safety Specialists*<sup>2</sup>, from 2012 to 2022. That's a lot of new job openings in Connecticut each year. In addition, the U.S. Bureau of Labor Statistics projects an 11% increase from 2014 to 2024 for employment of *Environmental Scientists and Specialists including Health*, faster than the average for all occupations.<sup>3</sup> So, yes, there is a need, and job prospects are good.

The Environmental Earth Science Department was established in the 1970's when the modern environmental movement was gaining steam—recall the first Earth Day was in 1970. How wonderful that

40 some years later, EES once again takes a lead in environmental stewardship by offering the new Environmental Health Science Minor. For more information, check out the university's Minors webpage, the EES webpage, or contact me at [carlsonc@easternct.edu](mailto:carlsonc@easternct.edu) or (860)465-5218.

<sup>1</sup> Bureau of Labor Statistics, CT Department of Labor, *Occupation Profile—Environmental Scientists and Specialists, including Health*, on the Internet at <http://www1.ctdol.state.ct.us/jcc/profile.asp?sstrOccupationCode=192041> (visited June 22, 2016).

<sup>2</sup> Bureau of Labor Statistics, CT Department of Labor, *Occupation Profile— Occupational Health and Safety Specialists*, on the Internet at <http://www1.ctdol.state.ct.us/jcc/profile.asp?sstrOccupationCode=299011> (visited June 22, 2016).

<sup>3</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2016-17 Edition*, Environmental Scientists and Specialists, on the Internet at <http://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm> (visited Feb 21, 2016).

## **Dickson Cunningham**

The 2015-2016 academic year was action-packed and professionally satisfying on many fronts. Having now completed 4 years at Eastern, I no longer refer to my position as my new job! I now feel fully adapted and integrated into the EES department and the wider university community.

During the 2015 spring semester, I taught a new course on continental tectonics that culminated in an 11-day field trip to Idaho and Wyoming in Late May, 2015. This was a wonderful teaching experience during which 14 EES students were introduced to the Snake River Plain/Yellowstone volcanic province, the Cordilleran fold and thrust belt, and Basin and Range extensional tectonics. A separate more detailed report about the trip is included in this newsletter.

I continue to teach structural geology, mineralogy and igneous and metamorphic petrology and an introductory geology course. Increasingly, I am adding new field trip locations to my higher level courses as I discover new locations in eastern Connecticut that provide good teaching opportunities.

I supervised 2 undergraduate research projects that involved significant fieldwork and petrographic study. Rachel Mackewicz completed a study of petrological and structural variations within the Lebanon Gabbro. Rachel is from Lebanon and partly through her family connections, we were able to access many outcrops in the forested hills throughout the township. Careful examination of high-resolution LiDAR imagery led us to many remote outcrops that would have been difficult to find without the imagery. We identified the undeformed igneous core of the gabbro and a number of high-strain zones within the gabbro and in surrounding gneisses that indicated eastward-directed bulk displacement. Further west, Trent Stevens looked at a belt of kyanite schists adjacent to talc-tremolite-serpentine schists near Harwinton. We were able to identify relict olivine in the talc-serpentinite masses supporting the interpretation that the assemblage represents a highly dismembered zone of ophiolitic rocks and the likely location of a paleo-subduction zone.

In addition to service to the department, I was quite heavily involved in other activities with the university. I served on the President's Master Plan Committee during which we collaborated with outside consultants to produce a very positive long-term plan for physical growth of campus facilities with important educational, aesthetic, transportation, quality of life, and sustainability elements. I presented the plan at University Senate where I also serve as EES Senator. During the academic year, I chaired the 2015 CREATE

Conference (CREATE stands for Celebrating Research Excellence and Artistic Talent at Eastern). I was charged with leading the entire effort which involved a new organizational structure with separate task categories and task leaders to ensure that the conference went smoothly. The conference was held in the Student Center and was widely perceived to be bigger and better than ever with more than 300 students presenting their research and creative activity from all university departments. The conference committee really pulled together to ensure that the meeting went smoothly and we were very proud of our students and the quality of their work. EES was well represented with 8 presentations. In addition to CREATE, I also organized a new University Faculty Scholars Forum during spring, 2016 (a re-launch of the former 'Lunch and Learn' that had gone dormant) which is a bi-weekly series of faculty lectures and presentations open to all faculty and administrative staff on campus. The program is now up and running for the 2016-17 academic year also.

On the research front, I continue to be busy with my Central Asia research. During summer, 2015, I returned to China to carry out fieldwork in Ningxia and Nei Mongol provinces on the tectonic evolution of the circum-Ordos Block. The mountains to the west and north of the Ordos Block are actively deforming as a distant response to the Indo-Eurasia collision. For twenty-two years, I have been working on documenting the distribution of active faults, their kinematics and overall mountain building processes within the huge deformation field north of Tibet. My main Chinese collaborator, Zhang Jin was a former Royal Society postdoc with me in England and we are primarily focused on documenting the crustal architecture and evolution of the Helan and Lang Shan ranges. We expect to generate some strong publications on our recent Chinese fieldwork. During 2015, I also wrote or co-authored three peer-reviewed papers on tectonics-related topics in Central Asia.

In terms of other external activities, I gave a talk and poster at the national GSA meeting in Baltimore on the evolving northern margin of Tibet and tectonics of the Gobi Corridor region. I continue to serve on the Editorial Board of the Journal of Asian Earth Sciences and this year I also joined the editorial board of Lithosphere (GSA journal). I also gave invited talks at CCSU, Wesleyan, UCONN, and while in China, at the Ningxia Institute of Uranium Geology in Yinchuan, China.

On the personal front, my son is now 9 and very active in sports. He is a good ice hockey player and so we are hockey parents now travelling around to different rinks in CT as he plays other teams. During the year, we travelled to New Hampshire for a camping/hiking trip in the Crawford Notch area of the White Mountains and also went to Oregon to see family and ski on Mt Hood.

Since arriving at Eastern, I have seen the EES department continue to grow from strength to strength. EES is one of the leading departments on campus and this is due in large part to the hard work of our faculty, our commitment to our students, and our diverse talents and intellectual interests. I am proud to be in a department with such a bright future.





With Chinese collaborators in the Helan Shan, China. The haze is from nearby coal-fired power plants.



One of the spectacular canyons of the Shuozi Shan, Ningxia, Western China





Impressive folds of the Helan Shan fold-and-thrust belt, Ningxia, China.



With Sam on top of North Sugarloaf Mt, White Mountains, NH.



## Peter Drzewiecki

Greetings! I hope you have all had a wonderful and prosperous 2015/16. It has been my busiest year yet, both at Eastern and with my family, but fun and productive as well. I once more served as department chair for this academic year, taught a full course load on top of that, and mentored three students in undergraduate research.



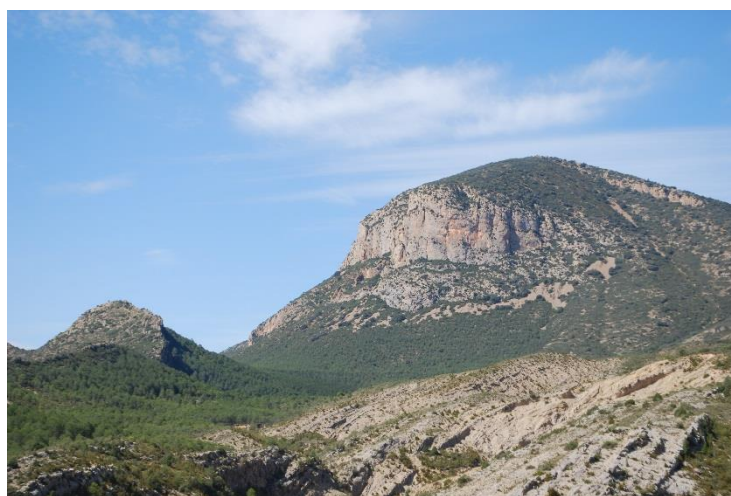
During the summer of 2015, my family took its usual trips to visit family in Buffalo and Maine. Maine was particularly beautiful this year with bright skies, big waves, and rustic scenery (see picture above). We fished, cruised Muscongus Bay by boat and kayak, hiked Mount Megunticook (the highest peak on the east coast), and enjoyed the unspoiled nature. Our big family trip was to San Francisco and Yosemite National Park. Highlights included exploring one of the nation's most interesting cities, walking through the redwoods of John Muir National Monument, hiking along the rocky shores of Point Reyes National Shoreline, learning to surf in Santa Cruz (OK... just the kids did this), whitewater rafting on the American River (below, left) and of course, witnessing the wonders of Yosemite National Park. In the park, we viewed the glacially-carved granite monuments of the Yosemite Valley (below, right), met some of the local wildlife up close, hiked through pine forests, around crystal-clear lakes, and over rocky outcrops, and watched the sunset from the top of Sentinel Dome.



The summer ended with a return to reality. In August, I had to get ready for classes, send my oldest daughter off to her second year of college, and update a guidebook for a field course in northeastern Spain that I am helping to run for the Norwegian Oil Company, Statoil.

The school year began, and in fall, I taught two sections of EES 130 (Ancient Environments) to a new crop of EES majors. I ran the previously mentioned field course in Spain in late September. It is much different

teaching a group of professional geologists, many of whom have been studying the science longer than me! The objectives of the course include observing the distribution of Cretaceous carbonate facies in outcrop, understanding their sequence stratigraphic architecture, and applying what is learned to hydrocarbon exploration. Below are two pictures... one of the “students” in the “classroom” (top), and the other of the scenic Sant Corneli mountain (bottom). A week after my return to Connecticut, Steve Nathan and I led a field trip for the New England Intercollegiate Geological Conference (NEIGC) to examine outcrops and cores from the Hartford Rift Basin. This trip was attended by local geoscientists, ranging from first-year students to professionals. During the spring semester, I taught EES 344 (Sedimentology and Stratigraphy). I also attended the Northeast Geological Society of America Meeting in Albany with several faculty members and students. Steve Nathan and I moderated a session on the Hartford Basin geology.



Professionally, I continue to work on two research projects. The first is to improve our understanding of the sedimentology and stratigraphy of the Hartford Basin. Two EES students, Whitney Plourde and Martha Denisky, worked with me on this project. Whitney correlated cores from one transect (drilled in the 1970's) to another drilled over the last few years. Martha completed the first year of a two-year Honors Thesis investigating the temporal and spatial distribution of organisms in the Hartford Basin. The second project I work on is investigating the origin of Cretaceous carbonate platforms in Spain. EES student Connor Dunleavy conducted a thin section investigation of the organisms that constructed these reefs.

I hope all is well with you and your families. I would love to know how things are going. Feel free to call (860-465-4322) or send an e-mail ([drzewieckip@easternct.edu](mailto:drzewieckip@easternct.edu)) if you have a few minutes.



## **Drew Hyatt**

This past year began with a return to the classroom following a spring 2015 sabbatical leave that enabled me to move along research at Dinosaur State Park, present on previous cross-disciplinary work from Georgia, and begin a new ground penetrating radar study. As well, I began to learn to use photogrammetric techniques in support of a variety mapping projects. These activities enabled me to work closely with Ryan Brodeur and Kevin Veilleux during the summer of 2015. As is explained in the undergraduate research summary both Kevin and Ryan were involved in the collection and analysis of ground radar data collected at the Church Farm property in Ashford Connecticut. Ryan focused on land-based sites imaging the interior of stratified drift, glacial pond deposits, and stranded floodplain/point bar sediments near the Hope River. In contrast, Kevin busied himself on Church Farm Pond collecting excellent GPR records that reveal a complex geophysical stratigraphy beneath the pond that archives a record of deglaciation. Although Ryan graduated at the end of the summer and was unable to present his findings due to work obligations, Kevin continued to meet and work with me in the fall ultimately presenting a poster at the spring 2015 CREATE meeting. Also this past fall I had a very enjoyable field methods class with 12 students returning to Bailey's Ravine for the final project.

Several unanticipated events arose this past year which kept me busy. First, in addition to serving on the promotion and tenure committee (which I was aware of), I was asked to chair a search for a new provost. This proved to be an interesting but very time-consuming assignment. Things seemed to be moving along well until, following 5 in-person interviews, the state instituted a hiring freeze effectively halting the search in its tracks. Oh well, I guess I'll have the pleasure of running this search again sometime in the future! Also arising in the fall, I returned to Canada for two very different gatherings with former colleagues and friends. First, and with considerable sadness, I returned to Queen's University in Kingston Ontario to speak at a memorial service for my Ph.D. supervisor, Dr. Robert Gilbert. Bob played a very big role in my life, I have collaborated with him on permafrost and sinkhole lake research, and he was a great friend and mentor to me. Trudy and I thought the world of Bob and we will both miss him. True-to-form Bob bequeathed a sizable endowment to the Geography Department to enable future scholars and students to pursue environmental science. The same week, I also travelled to McMaster University to join my former team-mates from the 1985 National Champion collegiate wrestling team (actually we tied with Concordia that year!). Our team, which included several Olympians, was inducted into the McMaster Athletic Hall of Fame. It was great fun seeing my former coach and almost the entire 1985 team as we caught up and relived a few stories from long ago. While most folk's hair seemed a bit thinner and greyer, and making weight would be more of a challenge nowadays, time seemed to have treated everyone well. It was a great evening and ceremony and I include below a few related photos, both new and old.

As alluded to above, throughout the fall and spring semesters of 2015-2016 I became increasingly interested in learning to use a photogrammetric software package called Agisoft Photoscan (first suggested to me by Peter Drzewiecki). This software builds highly detailed 3-dimensional computer models (called point-clouds) that consist of millions of survey-grade X-Y-Z data points derived from a series of overlapping photographs. These point clouds are used to construct textured photo-realistic models suitable for slicing, dicing, measuring, and 3D printing with incredible detail. As such, this technique brings together my interests in quantifying surface landforms (*i.e.* size, shape, spatial arrangement, *etc.*),

computing, and digital photography together. I have jumped in with both feet, although I am finding the devil is definitely in the details! This has resulted in several new research projects that involve EES students. In spring of 2016 Sydney Day undertook a practicum course with me to establish a workflow and to build Agisoft models of rock cores on loan from DEEP and to assess the accuracy of these models. Sydney did a fine job, demonstrating that linear measurements on her models had maximum errors of less than 0.5 mm. In fact, her efforts are informing new research projects begun in the summer of 2016 that include ongoing efforts to model conglomerate outcrops and a series of DEEP rock cores all in collaboration with Peter Drzewiecki. As well I have begun collaborating with Bryan Oakley to construct Agisoft models of an eroding bluff at Napatree point in support of Bryan's coastal change research agenda. These projects have involved our students and will lead to follow-up research and presentations by Jennifer Croteau (EES sophomore) and Haley Celotti (EES senior).

Finally, it has remained a busy year at home as Trudy and I continue to adjust to being empty-nesters. While we don't get to see Jake and Hannah nearly as much as we would like, we had a great trip to Ottawa in the summer of 2015 with both kids. If you ever get the chance Ottawa in the summer is one of the best Canadian cities to visit (a few pics are included below in support of this statement). Speaking of great places to visit, Trudy also joined me in Iceland after the global field course finished for 6 days of hiking. I'll hold off on describing that trip as it will undoubtedly be part of the newsletter next year. Also during the past school year Trudy and I attended as many of Hannah's volleyball games for Plymouth State as we could. Needless to say I have to take off my Eastern hat when the warriors and panthers meet on the volleyball court.

In closing, while I feel the crunch of the impending fall 2016 semester, I look forward as always to seeing the students return, teaching my classes, working with students on undergraduate research, and catching up with my colleagues. I wish everyone well with their lives, and encourage alumni to send periodic updates so that we know what is new. Have a great year!

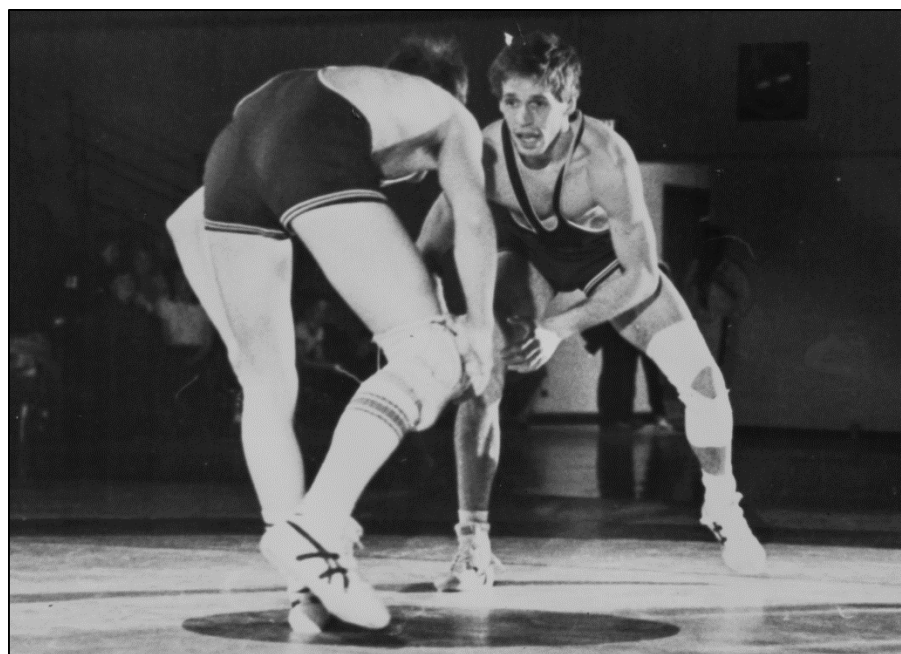


Getting a happy birthday hug from Hannah with her volleyball team-mates filling out the view.



A view of most members of the 1985 national Canadian Intercollegiate Athletic Union (CIAU) wrestling team. This team included a former Olympic coach (left-most person), two two-time Olympians (2<sup>nd</sup> and 3<sup>rd</sup> from the left), a former professional football player (5<sup>th</sup> from left), an ex-marine (4<sup>th</sup> from right), and former recipients of individual athlete hall of fame recognition. It was great to see everyone!

A long time ago, in a galaxy far-far away! A view of a much younger (and thinner) me in what proved to be a losing battle for the national championship in the 125 lb weight class in 1985.







Above, right-to-left: Trudy, Jake and I take a breather on a hike in the hills around Ottawa during a visit in the summer of 2015. Below: a view of the fireworks at Parliament buildings.

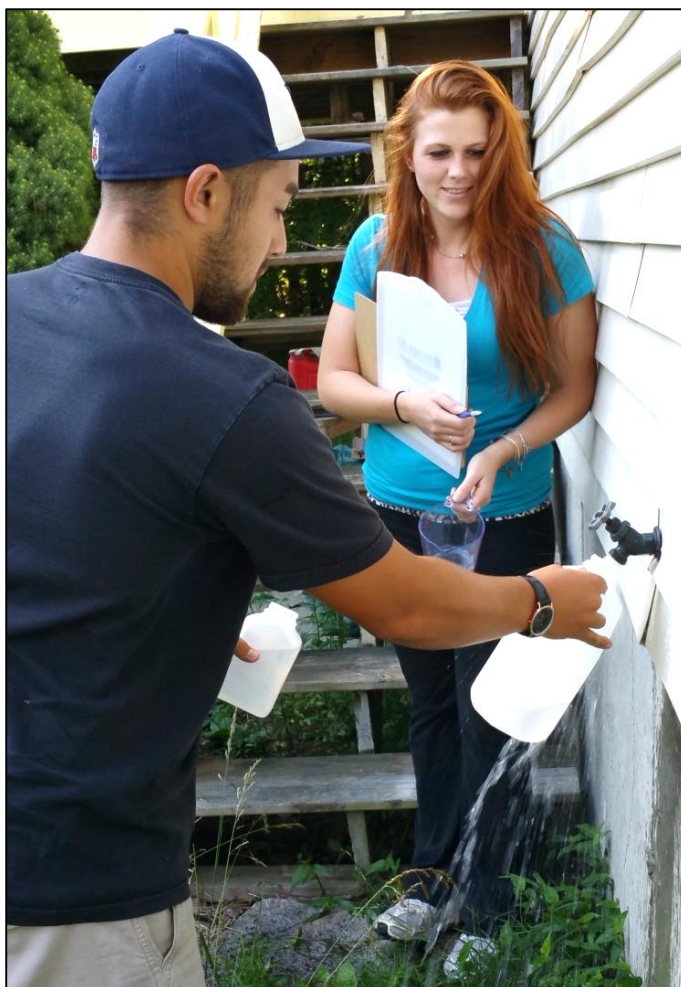


## **Meredith Metcalf**

Congratulations Graduates! Michelangelo once said, “The greater danger for most of us lies not in setting our aim too high and falling short; but in setting our aim too low, and achieving our mark.” I hope you will keep this in mind as you begin the next chapter of your amazing life journey.

Last summer was the last year of the Health and Life Sciences Career Initiative at Eastern. I worked closely with Samantha Boyle to teach many students the use of geographic information systems to address public health issues. Her assistance was detrimental – in the final week of the program, students conducted individual research projects that required advanced knowledge of the software and applied all their knowledge acquired throughout the program. The final products were showcased on GIS Day, which was hosted at Eastern this year, and two of the students from the summer program won awards.

Laura Markley’s honor’s thesis work on arsenic distributions in Lebanon sparked an interest at the town and state level. As such, my research on arsenic in bedrock wells continues. In the summer of 2015, Joel Hara, Sydney Day, and Katherine (Katie) Quimby assisted in the collection of additional groundwater samples in the high arsenic concentration area which Laura had identified. This sampling allowed for additional parameters to be measured in order to better understand the mobility of arsenic in these areas and to enhance the known distribution of arsenic in order to potentially find the source. In addition to sampling, Joel, Sydney, and Katie were responsible for analyzing other potential contaminants for Lebanon. These included uranium concentrations, manganese and iron concentrations, and chloride concentrations. They worked hard over the summer to research and analyze the data in great detail and they persevered through the fall semester as they prepared for presenting their findings at professional conferences. Their work was presented at the Northeast Regional Undergraduate Research, Scholarly and Creative Activity Conference in New Jersey, the Geological Society of America Annual Meeting in Maryland, and the Northeast Arc Users Conference in Vermont.

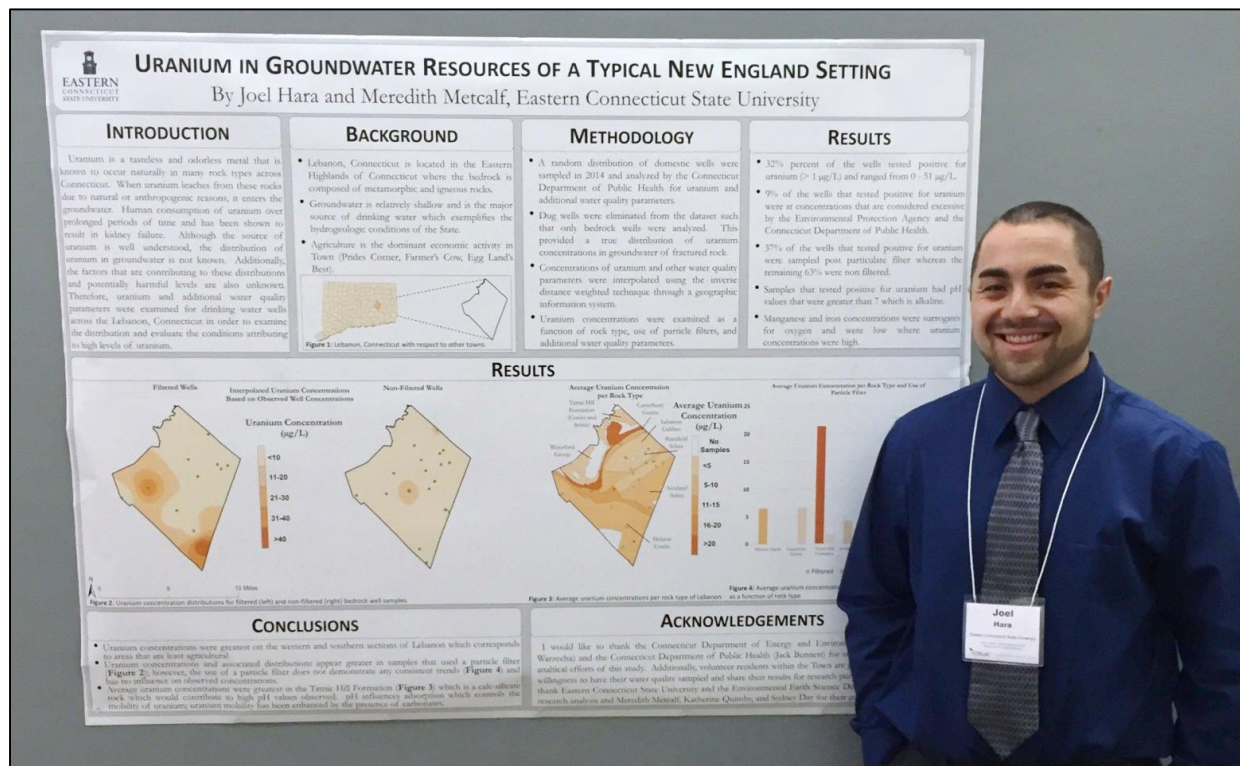


Joel Hara and Katherine Quimby collecting water samples in Lebanon, Connecticut.

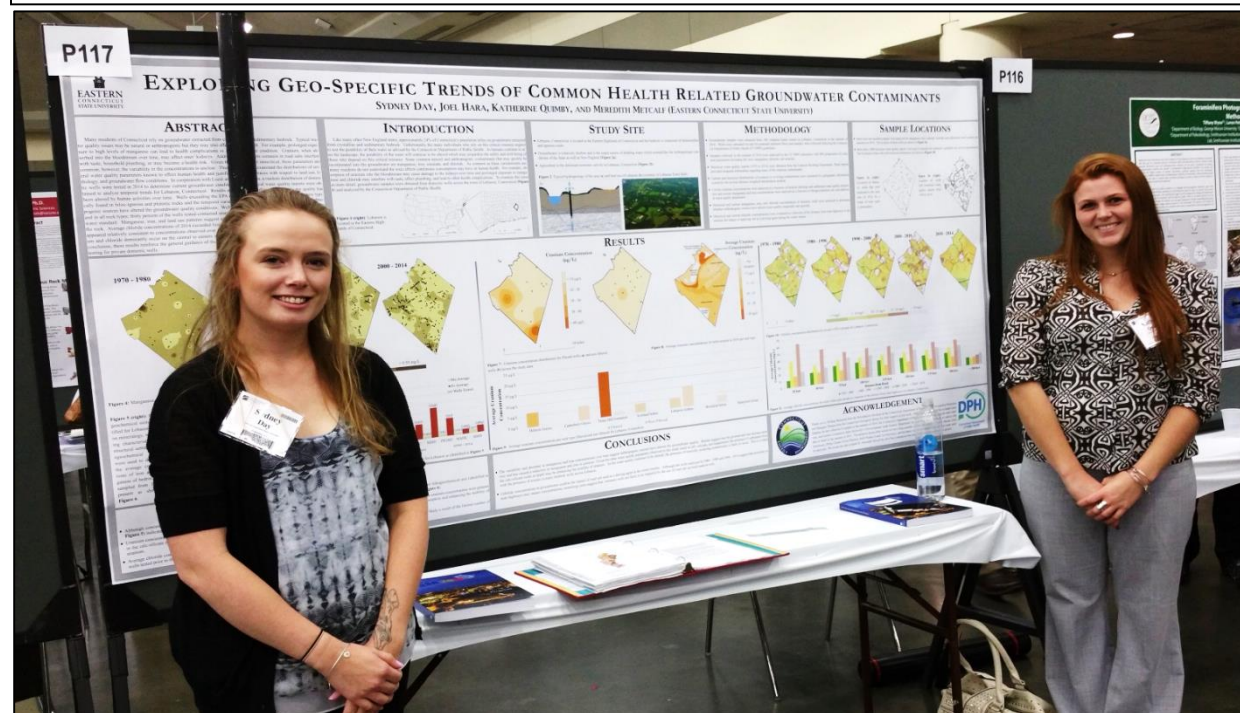
This summer I will be working with Madeleine Haynes and Jennifer Petrario collecting samples from Bozrah, Connecticut. The intent of this work is to statistically compare groundwater quality of bedrock wells in Bozrah to those in Lebanon given the similar geologic and hydrogeologic conditions. Additionally, this work will evaluate the influence of sediment filters on groundwater quality as previous research has



shown that the accumulation of oxides on the sediment filters is likely to alter the water quality conditions observed at the tap.



Joel Hara was one of eleven students to represent Eastern at the 2015 COPLAC Conference.



Sydney Day and Katherine Quimby represented Eastern at the Annual GSA meeting, Baltimore, MD.





Meredith Metcalf in front of a working windmill in Volendam.

In March, I participated in my husband's annual travel-study abroad program to Amsterdam, Berlin, and Copenhagen. The weather was a little colder than we had expected and we had to buy hats, gloves and scarves. Although the tours are typically historical and architectural, there is always a geological or sustainable component incorporated in the development of these past and current civilizations. For example, Amsterdam was a low-lying, wetland area and windmills were used to pump water out of the area and drain the land such that it could be used for agriculture and habitation. The windmills were later used for energy and they are now scattered throughout the landscape. We enjoyed the local cheeses and wines and watched a demonstration on the art of wooden shoe making. Berlin was beautiful! Germany is a leader in renewable energy and we were able to witness this incorporation into their current renaissance that they are going through. The City is trying to respect its pre-World War II history while reconstructing after heavy World War II bombing that gutted the city of landmarks

and monuments as it additionally grapples with reuniting East and West Germany. The 10-day tour ended in Copenhagen where the Dutch continue to be the happiest people on the planet, living in walkable communities that have always taken advantage of bicycle and other multimodal forms of transportation. If only we can incorporate this way of life back home 😊

## **Steve Nathan**

2015-2016 was an exciting year for me! I went on several wonderful trips, worked on a great research project during the summer and academic year with my students, and had a wonderful time teaching in the classroom.

Right after commencement May 2015 I joined Professor Cunningham and 14 students for an amazing fieldtrip to Idaho to see the volcanics of the Snake River Plain. The trip was culminated by our spending three full days exploring Yellowstone and Grand Teton National Parks. The students saw first-hand how the Yellowstone Hotspot track shaped the regional terrain into a beautiful landscape of natural wonders. During the trip everyone filled their phones/cameras with images of amazing geology, flora and, to name the faunal highlights: bison, elk and moose. It was an amazing trip!

After the Idaho trip and throughout the summer, EES majors Alex Fazzino and Kevin McCormick joined me in studying the geothermal properties of bedrock within the Hartford Basin. The three of us worked at a core repository operated by the City of Hartford's Metropolitan District Commission (MDC) in south Hartford. This research consisted of studying dozens of core boxes, taking hundreds of core photos and retrieving nearly two dozen bedrock samples (using a rock saw) for geothermal and geochemical analyses. For the geochemical analyses, Alex and Kevin spent several days working in the XRF laboratory (i.e., X-ray fluorescence spectrometry) at the Department of Geosciences, University of Massachusetts Amherst. There they prepped the samples for the XRF analyzer, measured the density of the rock samples and measured the thermal conductivity of the samples.

Somewhere in the midst of all this, my wife and I hopped a train and visited Washington, D.C. for four days to investigate all its white marble. Translation: we made first time visits to the U.S. Capitol, the Supreme Court, the Smithsonian Institution's lesser known gems (such as the National Postal Museum, a worthwhile side trip a few blocks from the National Mall), endless monuments and the headquarters of the National Geographic Society (which had an amazing exhibit on archeology, all based the theme of the Indiana Jones films).

The summer recharged me for the academic year, which consisted of my Sustainable Energy classes, various laboratory courses and Alex and Kevin continuing their summer research as Independent Studies. Kevin, assisted by Alex, stitched together over 230 images to produce a series of high resolution, full size, color corrected photo-mosaics of the bedrock cores we photographed during the summer. Alex, assisted by Kevin, cranked out very intriguing thermal conductivity analyses of over 20 core samples. I presented the preliminary findings of this and other data that I analyzed at the northeast regional meeting of the Geological Society of America in Albany, New York.

With the spring 2016 semester drawing to a close, I am now busily making plans for the summer. First, I will continue my geothermal research of the Hartford Basin, accompanied by Alex and a new EES student (Kevin is graduating). In addition, summer 2016 will include a new expansion of my research in climate change. I will be collaborating with my fellow EES faculty member, Bryan Oakley on a two day trip to Block Island, RI. There we hope to find a historical record of tropical storms and nor'easters preserved in the sediments of the island's kettle ponds that border Rhode Island Sound. Two EES students will join us and undoubtedly gain a great deal of research experience, all the while taking in the beautiful beaches and scenery the island is known for. I can't wait to go!

## **Bryan Oakley**

Wow! Why is it when we look ahead to the end of the semester it seems to arrive at a glacial pace, yet the beginning of the semester seems like yesterday? This was a busy academic year; in addition to my introductory courses, I taught Glacial and Quaternary Geology in the spring 2016 semester. On the home front, my kids continue to grow; Aidan is nearly 7 and Haley is approaching 4, and give my wife and me lots of fun and fast times (and even furious; if you have a toddler, you know!)! Aidan is counting the years until he is old enough to be Dad's field assistant at the beach, and Haley is just trouble (in a good way!)



The Oakley Family, October, 2015; Bryan, Aidan, Haley and Julie

My on-going research projects have continued, focusing on monitoring the shoreline on Block Island (collaborating with volunteers), Napatree Point and Misquamicut State Beach. This research has been assisted by numerous students over the years, with contributions from Tim Ciskowski, Cody Murphy and Mike DePinto during the 2015-2016 academic year. I have been named to the science advisory panel for the Napatree Point Conservation Area, and the Watch Hill Conservancy has funded my on-going monitoring at Napatree through 2018. The research on Napatree has garnered significant local and national attention. Locally, the Coastal Institute at the University of Rhode Island has named Napatree a designated example of natural coastal resilience and has commissioned a documentary on Napatree, which will be released in the fall of 2016, so stay tuned! Nationally, this research was featured on



'Xploration Awesome Planet', which aired in December 2015. Xploration Awesome Planet is a syndicated science program aimed at children and teenagers hosted by Philippe Cousteau (grandson of Jacques), and this can still be found on 'Hulu' here: <http://www.hulu.com/watch/880084> (link valid as of August, 2016).

Elsewhere, I recently published the Block Island Bluff Photo Database created with EES Students Mike Manzi, Brandan Sumeersarnauth and Samantha Boyle in the *Journal of Coastal Research* <http://www.icronline.org/doi/abs/10.2112/JCOASTRES-D-15-00216.1>. This on-line database serves as a 'virtual' field-trip for the bluffs of Block Island. The bluffs of Block Island represent a world-class exposure of a tectonic end moraine, and the complex stratigraphy and topography creates a vast array of landforms as the bluffs erode from waves during storms, as well as via surface water and groundwater processes. Utilizing Google Drive, Google Earth and Spreadsheet mapper, the images are housed on an external website, and accessed via the Google Earth KMZ file. This creates a relatively small file for the user to download, although the speed of the connection does impact how fast the images can be viewed inside of Google Earth. Check them out via my Eastern website! Dr. Hyatt and I, assisted by Eastern students Tim Ciskowski and Kevin Veilleux conducted a ground-penetrating radar survey on a portion of the famed Mohegan Bluffs, examining some pseudo-karst features that developed near the access road for Black Rock.



Tim Ciskowski and Kevin Veilleux discussing the pseudo-karst feature near the edge of the Mohegan Bluffs, Block Island, Rhode Island

Outside of Eastern I continue to be involved with the Rhode Island Shoreline Change Special Area Management Plan, which we hope will become a national model of science-based policy, aimed at guiding

sustainable development along the RI shoreline. Much of this work had been collaborative with Jon C. Boothroyd, Research Professor Emeritus at the University of Rhode Island and Rhode Island State Geologist, who passed away unexpectedly last fall. My colleagues and I have picked up the slack on the Beach SAMP and completed (45 map) update of Shoreline Change maps for Washington County, Rhode Island, available here: [http://www.crmc.ri.gov/maps/maps\\_shorechange.html](http://www.crmc.ri.gov/maps/maps_shorechange.html). We are in the process of completing 'projected' shoreline change maps for the south shore of Rhode Island, which depict the future position of the shoreline under both the historic and accelerated rates of shoreline change. These maps will hopefully serve as guidance for coastal communities and stake holders as they look to further develop the shoreline. Collaborating with John King at the Graduate School of Oceanography at URI, we just completed a technical report examining sand and gravel resources offshore of Rhode Island as part of a project funded by the Bureau of Ocean Energy Management, and we continue to work on a sediment budget using side-scan sonar, surface sediment grab samples and underwater video imagery for the same shoreline, funded by the Department of Interior and National Fish and Wildlife Federation. EES Student Cody Murphy has been actively working on various tasks regarding this project, and is busily interpreting sonar data and processing underwater video imagery during the spring and summer of 2016.

As many of my research projects are continual and on-going, I am always looking for motivated students to help with field and lab work, especially if you have already taken GIS! More information on these projects can be found on my website: <http://www1.easternct.edu/oakleyb/>



Prof. Oakley discussing coastal erosion and barrier island migration with Philippe Cousteau while taping a segment for Xploration Awesome Planet. We filmed the segment in October, 2015 on Napatree Point.

## **Paul Torcellini**

Sustainable energy education is coordinated through the Center for Sustainable Energy (CSE), housed by the EES Department. Dr. Torcellini is the endowed chair responsible for the center. The energy mix of the country is changing rapidly and keeping up with the changes is a constant process. This year will mark the first time that natural gas will exceed coal as an electricity source on a national basis. Renewable energy, especially solar electric and wind energy, are growing exponentially. Three faculty members in EES have invested in solar electric for their homes and are generating clean electricity. With these rapid changes, the curriculum is quickly adapting. Statistics used in classes are constantly being updated and new technologies are being brought to the classroom. The focus of the curriculum is not only around the educational aspects, but action oriented. Students work on assignments that relate their actions to environmental issues.

A highlight of the classes continues to be field trips to power plants including a combined cycle natural gas plant and a small-scale hydroelectric plant. The sustainable buildings class made a trip to a local zero energy house and other building tours show how decisions are made to be more sustainable. Students also designed and modeled their own sustainable houses.

During the previous year, 3 interns gained experience in working on integrating sustainability into the Eastern Campus along with the efforts of the Institute for Sustainable Energy. Eastern now uses Mixed Recycling meaning that everything that is recyclable can go into a recycling bin. Students helped to disseminate labels to hundreds of recycling containers around the campus to get the message out. They also assisted with a trash inventory of all dumpsters. New green dumpsters around campus are also getting the message out. Not only is recycling environmentally sound, but putting items into recycling bins saves Eastern money!

CSE has also been working on Municipal Action Plans to help local towns reduce their energy impact. Part of this effort, students have been learning about these plans and strategizing on ways to save energy for town buildings. To support this effort, energy monitoring equipment and auditing equipment has been purchased for student use in bringing the classroom to practical applications for saving energy. Students are learning how to use the data loggers and interpret data to look for energy waste.

We continue to expand our efforts on campus including hosting film "Reuse" and promoting recycling programs. Earth Day was a big success bringing together sustainability efforts.



## **EES Field Course to Idaho and Wyoming, 2015**

In May, 2015 14 intrepid young EES students joined Dickson Cunningham and Stephen Nathan on an 11-day field course to Idaho and Wyoming. The trip was the culmination of a new EES course on continental tectonics taught during spring, 2015. Many of the topics taught during the semester were reinforced on the trip in one of America's great geological playgrounds.

We flew to Boise and then headed SE to Twin Falls where we first examined the Miocene expression of Snake River Plain volcanism, including the stunning rheomorphic ignimbrites at Grey's Landing and the flood basalts and rhyolites along the Snake River gorge. Prior to the first outcrop stop, I warned the students that it was rattlesnake season, so they should be on the lookout. Then at our first stop, I nearly stepped on one only 20 feet from the van!

Next we headed to Craters of the Moon National Monument where we were treated to some of the most stunningly raw volcanic landscapes on Earth. We hiked various trails and saw different types of lavas, cinder and spatter cones, tumuli and other manifestations of pahoehoe inflation and deflation. We also explored the dark underworld in some of the park's large lava tubes.



We then headed NE and left the Snake River Plain and entered the Lost River Valley where we were introduced to the tectonic history of the Cordilleran fold-and-thrust belt in the Lost River Range. Highlights included the beautiful folds observed in the high mountains around Borah Peak and the spectacular 1983 M=6.9 Borah Peak earthquake rupture. This reminded us that Basin and Range extension continues in eastern Idaho and that we were in a tectonically active region. We drove up into the mountains west of the valley and hiked up to see some of the folded Carboniferous stratigraphy and were treated to glorious views of the distant Sawtooth Mts – and at foot level, our second rattlesnake!

We then crossed the Snake River Plain heading E on a long day to West Yellowstone. On the way we had a great hike up to the Menan Buttes tuff cone, viewed the magnificent Mesa Falls on the edges of the Island Park Caldera and saw the famous Madison Landslide which provided a very visible lesson on the risks of co-seismic landslides in mountainous regions.



Spectacular pahoehoe flood basalts, Craters of the Moon, Idaho.

We then spent 2 days in Yellowstone National Park and took in all that we could in one of the world's most spectacular geological settings. Of course we visited and walked through many geyser basins and geothermal areas. Old Faithful didn't disappoint, Mammoth Hot Springs' travertine terraces were beautiful and we were enthralled by the azure-blue thermal pools along the shores of Yellowstone Lake. We were equally awed by the thunderous Upper and Lower Falls of the Yellowstone River and the colorful hydrothermally altered silicic volcanics of the Yellowstone Gorge. In Hayden Valley, bison posed for our cameras and we saw elk and coyotes, but we apparently were 1 minute late for a grizzly sighting – however the students didn't complain!

We thoroughly enjoyed Yellowstone and were careful not to rush through it. We spent a lot of time discussing the prevailing hot spot theory and the volcanological and geomorphological record of 'super-eruptions'.

We then drove south to Jackson and enjoyed viewpoints in Grand Teton National Park and then hiked around the famous Gros Ventre landslide. We spent an enjoyable evening eating and wandering around the shops in the fun tourist town of Jackson, Wyoming. The next day was a bit rainy and views at first were limited, but we stuck to our schedule and took the boat across Jenny Lake and hiked up Cascade Canyon in our soggy raingear. Once we arrived at the flat floor of this beautiful hanging valley, I reminded





**EES field trip participants** with the Lower Falls of the Yellowstone River behind us. From L-R – back row: Samantha Boyle, Michael Dolde, Josh Bartosiewicz, Michael Lundquist, Greg Minchik, David Seitlinger; Dan Grondin, Stephen Nathan; L-R front row: Brian Wicks, Robert Looney, Kurt Stefancyk, Jenny Petrario, Victoria Szamocki, Lindsey Belliveau, Jimmy Malcolm, Dickson Cunningham.

the group to keep their voices down because there is reportedly a lot of wildlife in the area. Then, 5 minutes later, we entered a meadow and there was a moose only 50 feet away! If only my geology predictions were as accurate as my wildlife predictions! On the hike, we examined the Precambrian gneisses and various intrusive masses. We also saw marmots, pikas and a fisher. The clouds also lifted and we were rewarded with gorgeous views of the castellated peaks of the high Tetons.

The next morning we rode the tram up to 10,500' Rendezvous Peak. In late May, it is still winter at the summit and we were in the clouds and a snowstorm for most of the time; we mostly shivered in the hut drinking cocoa surprised to be back in winter. We did have a few sunny breaks in the clouds and we examined the nearest outcrops and were surprised to find many drusy vugs with beautiful quartz crystals in many of them.

And then it was a long 6-hour drive back to Boise, and home. The trip was a wonderful experience for all of us and we will surely run it again in the future. There are few places in America that offer such diverse and exciting geology as Idaho and Wyoming.





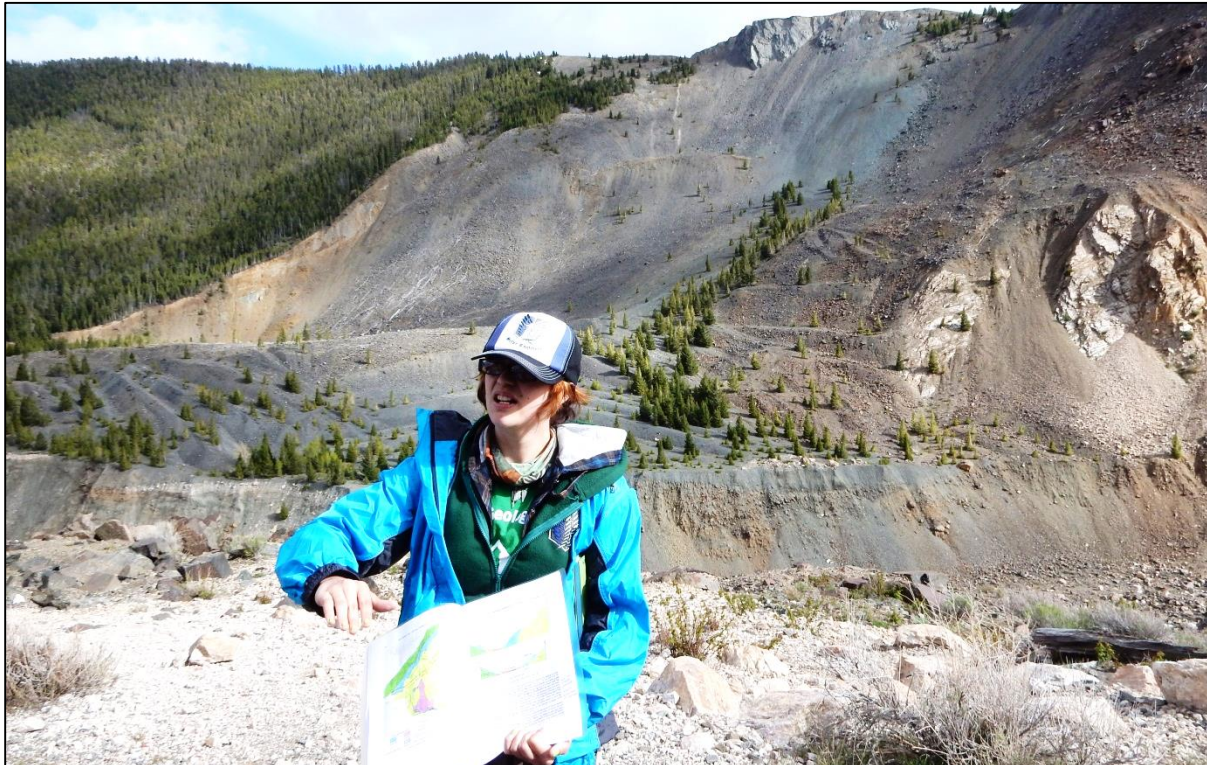
Above: EES group at Old Faithful, Yellowstone N.P. Below: Portal to the underworld at Yellowstone.







Group photo in front of Borah Peak and Lost River Range, Idaho.



Lindsey Belliveau giving her presentation on the Madison Landslide, near Yellowstone.





Jenny, David, Jimmy, Greg, Mike and Michael in Cascade Canyon, Grand Teton National Park



Some friends we made along the way.



## **Environmental Earth Science Student Research Projects, 2015-2016**

In the summer of 2015, six EES faculty members offered undergraduate research experiences to 12 students through the EES Exemplary Program Fund. Many of these students continued their projects throughout the 2015/2016 academic year, with the goal to present their results at the ECSU CREATE Conference, and/or a regional Geological Society of America conference. Below is a summary of the student projects.

### **Student: Rachael Mackewicz**

**Faculty Mentor: Dickson Cunningham**

### **Project: A Structural and Petrographic Study of the Lebanon Gabbro and Surrounding Gneisses, Eastern Connecticut**

**Description:** Rachael's project involved summer fieldwork investigating outcrops throughout Lebanon township to identify lithological variations within the Lebanon Gabbro and its contact relationships with surrounding metamorphic formations. Samples were collected for thin-section analysis of mineralogy, deformational fabrics and the kinematics of displacement. Approximately 40 outcrops were studied and sampled throughout the town and the results have been unexpected and significant. The major result is that the undeformed intrusive gabbro



comprises the high NE-SW trending ridge that crosses the township, whereas deformed and foliated gabbro defines the intrusion's southern margin suggesting a tectonic contact. In addition, outcrops of the Monson Gneiss west of the Lebanon Gabbro and Hebron Gneiss outcrops south of the gabbro contain impressive

*Rachael in front of Monson Gneiss outcrops, western Lebanon, CT.*

mylonitic zones characterized by NE-directed thrust transport. These are new results which bear directly on the tectonic history of eastern Connecticut.

**Follow-up:** Results of Rachael's research were presented at the CREATE conference in April, 2015.



**Student: Trent Stevens**

**Faculty Mentor: Dickson  
Cunningham**

**Project Title: Talc- and  
Kyanite-bearing  
Metamorphic Rocks from  
the Harwinton-New  
Hartford Slashers Ledges  
Formation: An Ophiolitic  
Suture in Western CT?**

**Description:** Trent's project involved a field and petrographic study of an unusual suite of talc-, tremolite- and kyanite-rich schists from the New



*Trent pointing to blue bladed kyanite crystals in a quartz vein within the Slashers Ledges Fm, Harwinton, CT. Close-up view of kyanite below.*

Hartford-Harwinton region of western CT. Trent's thin-sections consist of steatites, tremolite-actinolite schists, kyanite-muscovite schists with finger length kyanite blades in rocks that border the talc schists, and talc- and serpentinite-altered ultramafic cumulate rocks. The rocks may be ophiolitic and if so, they most likely represent a highly deformed and dismembered metamorphic assemblage from a cryptic suture zone. If confirmed, this would be a significant discovery for our understanding of Paleozoic terrane boundaries in Connecticut. At the time of writing, the petrographic analysis is mostly completed. Thin-section analysis has revealed relict olivine cores in serpentinitized peridotite consistent with an oceanic crustal origin for the talc-serpentine-rich rocks. Kyanite-phengite(?) schists bordering the talc-serpentinite schists may also represent original high-pressure assemblages associated with former subduction zone metamorphism.

**Follow-up:** Trent presented his results at the CREATE conference in April, 2016.



**Student: Whitney Plourde**

**Faculty Mentor: Peter Drzewiecki**

**Project: Interpretation and Correlation of Jurassic Lake Strata between Two Core Transects, Hartford Basin, Connecticut**



*Whitney Plourde and Peter Drzewiecki examine a core at the MDC core facility in Hartford.*

**Description:** EES senior Whitney Plourde spent 2 weeks in the summer of 2015 at the Hartford Municipal District Core Warehouse describing the sedimentology of three cores from a construction site in South Hartford. Upon completion of the field work, she processed and examined about 20 thin sections to look at the rocks in more detail. From this, she interpreted the tectonic, sedimentological, and climatic controls on the formation of depositional cycles within the strata. The rock layers record cyclic fluctuations in climate from arid playa environments to more humid perennial lake environments. There is also evidence of periods of soil formation during the dry phases. Once the cores were described and correlated to one another, Whitney examined three more previously-described cores from a 1970's construction project about 2.5 km away. She was able to define certain

characteristics and features of the cores from both locations that could be traced over that distance.

**Follow-up:** Whitney moved to Seattle upon graduation in December. Although she was not able to present her work, she was co-author on a presentation based on her research at the 2016 Northeastern Geological Society of America meeting.



**Student: Kevin Veilleux**

**Faculty Mentor: Drew Hyatt**

**Project: Ground Penetrating Radar and Coring Studies at Church Farm Pond.**

EES senior Kevin Veilleux worked as part of a 3-member research team to collect ground penetrating radar (GPR) data on the Church Farm Pond as well as recovering a sediment core from the same site. This work, also related to that of Ryan Brodeur described separately, promotes an understanding of the subsurface geological conditions for sites in Eastern Connecticut. Field work at Church farm was undertaken over nearly 2 weeks in June of 2015. The research team used Trimble and Garmin Global Position Systems to measure survey locations as well as a Trimble VX spatial station to collect associated survey data (used more for the work undertaken by Ryan Brodeur). Since September, Kevin has focused on splitting, sampling and analyzing the sediment cores that were collected as part of an EES practicum course (EES 392). In winter of 2016, Kevin continued his research, learning GPR processing techniques in preparation for his poster presentation at the 2016 CREATE conference in spring.



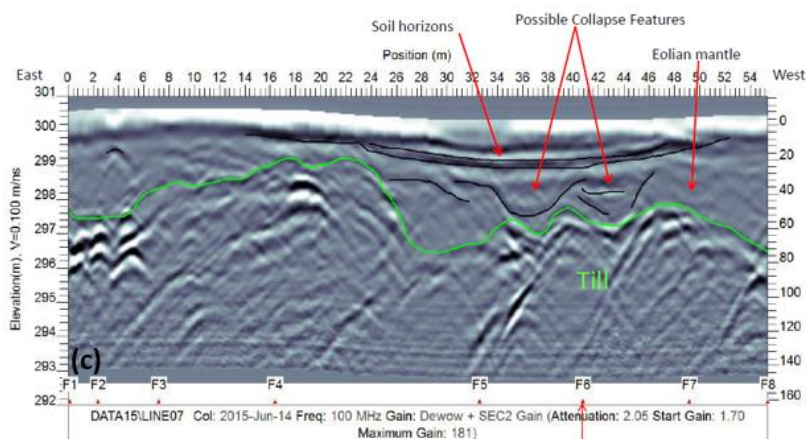
*Environmental Earth Science major Kevin Veilleux collects ground penetrating radar data while being towed across the Church Farm Pond. Kevin also collected sediment cores to constrain interpretations of radar data.*

**Student: Tim Ciskowski and Kevin Veilleux; Faculty Mentors: Bryan Oakley and Drew Hyatt**

**Project: Ground Penetrating Radar imaging of psudeokarst features (i.e. sinkholes) on Block Island.** EES junior Tim Ciskowski and senior Kevin Veilleux utilized ground penetrating radar and survey equipment to image subsurface conditions in the vicinity of several sinkholes on Block Island. The local landowner (The Nature Conservancy (TNC)) had concerns about the stability of the site, given that the psuedokarst features were located adjacent to both an access road for 6 homes and a public access parking area, as well as a 33 m (110 ft) bluff. This was near the site of a large landslide in 2001, and concerns centered on the depth and likelihood of future catastrophic bluff failure. Data processing revealed that these sinks were actually near-surface phenomena most likely associated with seepage from a larger-than-normal snow pack, and that the site could be remediated without the need to re-locate the road. This research allowed us to continue to foster our relationship with TNC, who have supported various logistics related to fieldwork on Block Island.



(a) EES students Tim Ciskowski (right) and Kevin Veilleux (left) collect 100 MHz GPR data across a sinkhole beside an access road and near (b) a large cliff on southern block island (supervisor B. Oakley for scale).



(c) GPR imagery indicates that sinks bottom-out on hard glacial till (green boundary), and most likely originated by snow melt infiltrating and draining laterally on top of the till to seep out of the cliff face. These findings supported decisions to remediate the sinkholes rather than moving the roadway.



**Student: Ryan Brodeur**

**Faculty Mentor: Drew Hyatt**

**Project: Ground Penetrating Radar Investigations of Common Near-surface Geologic Materials at the Church Farm Property near Ashford, CT**

**Description:** EES senior and recent graduate Ryan Brodeur, working with fellow student Kevin Veilleux, collected ground penetrating radar data and examined soil pits at several locations on the Church Farm property. In a follow-up independent study course during the summer of 2015, Ryan learned to analyze GPR data and he prepared a first draft of a scientific poster for presentation at CREATE 2016. Ryan's findings provide a clear indication as to how GPR imagery differs within sediments deposited by glaciers (i.e. till), as compared with river and pond deposits. Data were collected along 7 transects, some several hundred meters in length. As well two sites were imaged in sufficient detail to prepare a three-dimensional view of the subsurface. Excavated soil pits provided control on interpretations that will be critical in extending these findings to other sites in Eastern Connecticut.



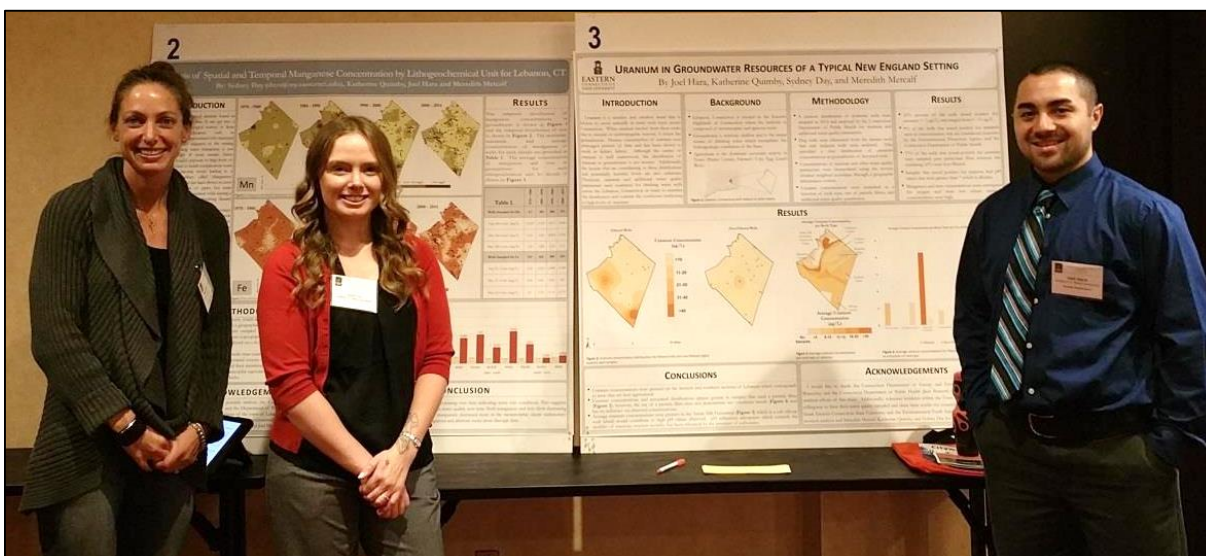
*EES students collect GPR data (a) along a mowed transect adjacent to the old farm house on the Church farm property. Ryan Brodeur (b) examines and describe sediments within a soil pit that was excavated at the crossing point for two GPR transects. These observations support interpretation of subsurface imagery.*

**Students: Sydney Day, Joel Hara, Katherine Quimby**

**Faculty Mentor: Meredith Metcalf**

**Project: Examining Common Contaminants in Groundwater Given the Potential Impact on Human Health**

**Description:** This research project allowed three students to explore several common water quality parameters that are known to cause health issues for Lebanon, Connecticut such as uranium, manganese, and chloride. Each student was provided the water quality database completed the previous year through funds awarded in the EES Summer Undergraduate Research Grant and the CSU-AAUP Research Grant. Each student was required to address and analyze a specific water quality issue through geographic information systems and determine what may be attributing to the distribution and temporal variability. Students also assisted in the collection of water samples such that they understood how the water quality data they were analyzing was collected the year prior. The three students collectively submitted an abstract and presented their findings as a poster presentation at the Geological Society of America Meeting in Baltimore, Maryland. Additionally, as requested in the budget, the students presented their individual findings as poster presentations at the Northeast Arc Users Conference in Burlington, Vermont.



*Sydney Day and Joel Hara (Katherine Quimby absent) presenting their individual work at the Northeast Arc Users Conference in November 2015.*



**Students: Alex Fazzino and Kevin McCormick**

**Faculty Mentor: Steve Nathan**

**Project: Hartford Basin Test Borings: A New Tool for Designing Better Geothermal Systems**

**Description:** Engaging two EES students in geothermal research. Both Alex and Kevin helped retrieve and analyze bedrock samples (i.e., test borings) of the Hartford Basin. These samples were first collected and are currently warehoused by the City of Hartford's Metropolitan District Commission (MDC) in south Hartford. This research consisted of identifying, photographing and retrieving suitable bedrock samples from the MDC warehouse. In addition, the samples were analyzed for their thermal conductivity and other physical/geochemical properties. Geochemical analyses (in particular, measuring the abundance of uranium, thorium and potassium) were also carried out at the XRF laboratory (i.e., X-ray fluorescence spectrometry) at the Department of Geosciences, University of Massachusetts Amherst; the students went to UMass to assist with this process. The resultant data was later computer modeled. Ultimately, the modeled data is intended to help better predict the thermal conductivity of these materials for the design of more efficient geothermal systems. Alex and Kevin gained experience in selecting and collecting 20 bedrock samples (i.e., test borings) from the MDC warehouse. At the warehouse they also photographed the bedrock cores (taking over 230 images), described cores, and use a rock saw to cut samples for later analysis at UMass (where they measured the thermal conductivity of the samples and prepared them for XRF analysis. **Follow-up:** Alex and Kevin presented their research as co-authors at the annual Geological Society of America Northeast Section meeting in Albany, NY.



*Alex Fazzino (left photo) using a rock saw to cut inch thick slabs from bedrock test borings. Alex later analyzed the slabs at UMass Amherst for their thermal conductivity and geochemical properties. Kevin McCormick (right photo) crushes a bedrock core sample in the rock lab at the Department of Geosciences, UMass Amherst. UMass Geosciences XRF technician Pete Dawson looks on.*

**Students:** Tim Ciskowski and Cody Murphy

**Faculty Mentor:** Bryan Oakley

**Project:** Continued Monitoring of Shoreline Change: Misquamicut State Beach, Napatree Point and Block Island, Rhode Island

**Project:** Tim Ciskowski and Cody Murphy assisted (and at time led) the field collecting beach profiles and Last High-Tide Swash position at Misquamicut State Beach and Napatree Point under the supervision of the faculty PI. The specific goal at Misquamicut involves tracking the erosion/deposition of beach replenishment, added to Misquamicut State Beach in May, 2014. This work involves monthly beach profile surveys, as well as surveys mapping the position of LHTS and quarterly surveys mapping the surface of the beach using RTK-GPS. This work represents a continuation of currently unfunded research being conducted by the faculty PI, collecting beach profiles, mapping shoreline position and collecting RTK-GPS topographic models of the shoreline. This research has offered numerous EES students opportunities to learn valuable field skills. Tim and Cody also learned how to plot and interpret the beach profile data in the lab at Eastern Connecticut State University. Tim Ciskowski also participated in an effort to map pseudokarst features on the Block Island Bluffs, described separately.

**Follow-up:** Tim presented the results of this work at the April, 2016 CREATE conference.



*Environmental Earth Science majors Tim Ciskowski and Cody Murphy measuring beach profiles using the modified Emery (1960) method on Misquamicut State Beach, Westerly, RI: June 2015.*



# 2016 EES Student Award Ceremony

## Discipline Awards

Hard Rock: **Brandan Sumeersarnauth**

Soft Rock: **Whitney Plourde**

Geomorphology Recognition: **Kevin Veilleux**

GIS: **Madeleine Haynes**

Sustainable Energy Science: **Robert Diaz**

## Excellence Awards

Senior: **Ashley Houle, Whitney Plourde**

Junior: **Martha Denisky**

Sophomore: **Emma Avery**

Freshman: **Jennifer Croteau**

Environmental Earth Science Ambassador Award: **Jennifer Petrario**

Outstanding EES Major: **Rachel Mackewicz**



## **Northeast GSA 2016**

This spring EES students and faculty made their annual excursion to the Geological Society of America northeast section meeting in Albany, NY (March 20 to 23, 2016). As always, members of the EES department didn't just attend, they contributed their share to making the meeting a success. For example, EES student Joshua Bartosiewicz presented a poster on the "Benthic Geologic Habitats of Long Island Sound in the Vicinity of the Thimble Islands and Branford River, Connecticut, USA" which encapsulated his Independent Study with Assistant Professor Bryan Oakley. Professors Drew Hyatt and Peter Drzewiecki, and Assistant Professors Bryan Oakley and Steve Nathan also gave presentations; where Drzewiecki and Nathan also co-chaired an oral session on Mesozoic Rift Basins.

The trip was a great success. Taking in the hundreds of talks and posters, and even helping to judge the latter, our group of six students and four faculty made the very most of their Spring Break. Everyone learned a great deal, expanded their professional networks and had a LOT of fun. It's fair to say that we're all eagerly looking forward to next year's meeting in Pittsburgh, PA.

*2016 Northeast GSA attendees: Left to right: Drew Hyatt, Joel Hara, Haley Celotti, Peter Drzewiecki, Bryan Oakley, Liqi Ning, Timothy Ciskowski, Emma Avery, Joshua Bartosiewicz and Steve Nathan.*



## **NEIGC 2015**

NEIGC is a great conference to engage students (New England Intercollegiate Geological Conference). Unlike other conferences that have poster sessions, talks, workshops, etc., NEIGC is exclusively three days of fieldtrips. The meeting brings together educators and students, the private sector, government and other groups to showcase a broad range of field trips exploring all aspects of regional geology.

Last October the meeting spanned a wide range of fieldtrips across southern New England that EES students and faculty participated in. A highlight of meeting was the Sunday fieldtrip C4 (Oct. 11, 2015): "Fluvial and Lacustrine Facies of the Portland Formation, Hartford Basin, CT", led by EES Professor Peter Drzewiecki and assisted by Assistant Professor Steve Nathan. The fieldtrip spanned nearly the full day, during which approximately 15 participants (including six students) were guided through two field locations and the Connecticut DEEP core repository in Portland, CT, to study the Triassic Jurassic rocks of the Hartford Basin. The students got a lot out of the meeting and found it to be very worthwhile.

*Peter Drzewiecki describing the Portland Formation at the CT DEEP core repository in Portland, CT (left photo) and in the field (right photo).*





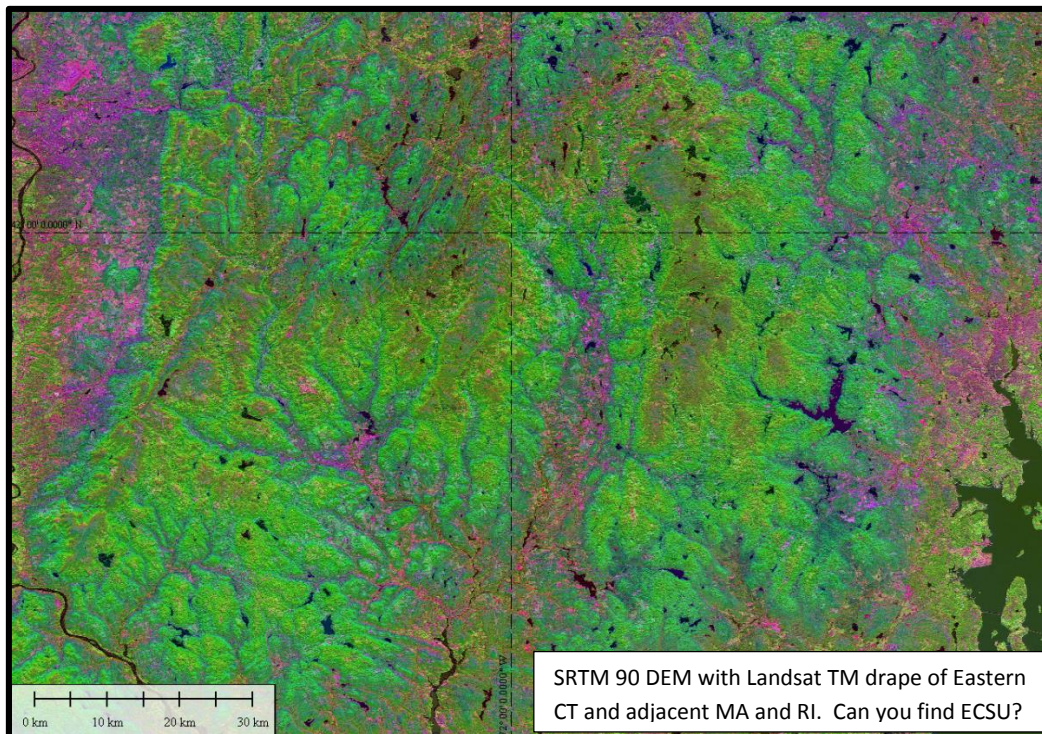
## Commencement, 2016



**Congratulations to  
the Class of 2016!**



# Annual Very Serious EES Faculty Christmas Holiday Photo





## For Our Alumni

### What are you up to?

We would very much like to include updates from EES alumni in our newsletters. If you would like to contribute, please e-mail responses to the following questions to either Zosia (carlquitz@easternct.edu) or Peter (drzewieckip@easternct.edu).

All the best for a great year!

### To help us build the next newsletter, please send the following:

1. Name, graduation year, current e-mail address.
2. Tell us what you do now (and if you would like us to include this information in the newsletter).
3. A brief paragraph telling us about your other activities since graduating.



*EES students on Menan Butte tuff cone, Snake River Plain, Idaho, May, 2015*

## Supporting EES Students

The faculty members of the EES Department are committed to providing our students with practical research, field, and presentation experience as often as possible. Many of the activities our students participate in are supported through the EES Founders Fund, which was established for these purposes. We welcome your tax-deductible donations to this fund and encourage you to contact Mr. Peter Dane at University Relations (860-465-4513), if you would like to learn more about how to contribute to experiences that open minds and support career development for new generations of EES students! Thank you in advance!

**Eastern EES Facebook Page:** Alumni, if you are not currently a member of the Eastern EES Facebook page, please email Bryan at [OakleyB@easternct.edu](mailto:OakleyB@easternct.edu) and he can send you the link. The Facebook page is a great way to stay connected to the department, as well as a growing resource for EES related jobs.