Department of Geosciences Newsletter

May 2016

Greetings from the Chair: Amy Larson Rhodes

Hello, Everyone! The Department of Geosciences hopes this newsletter finds you well. This year has been productively busy and filled with fervor. I find myself continually inspired by the intellect, energy, and commitment of our students, staff, and faculty. Our program continues to balance new initiatives with enhancements to existing activities, both of which keep our educational program fresh and relevant. You'll see examples as you read the newsletter, but I'll also highlight a few things here.

This fall, Jack Loveless' introductory course on Geographic Information Systems (GIS) partnered with two community non-profit organizations: Mass Audubon and the Kestrel Land Trust. The students created story maps and other spatial analyses of data to help promote the mission of these organizations.

Spring semester, Sara Pruss (paleontology) co-taught with Jack (structural geology) a new research-based course titled, "Field Studies of the Desert Southwest." The course began with a January field trip to Death Valley to examine the strati-

graphic record of mass extinction during the time of Snowball Earth, and it culminated this spring with student poster presentations at several venues.

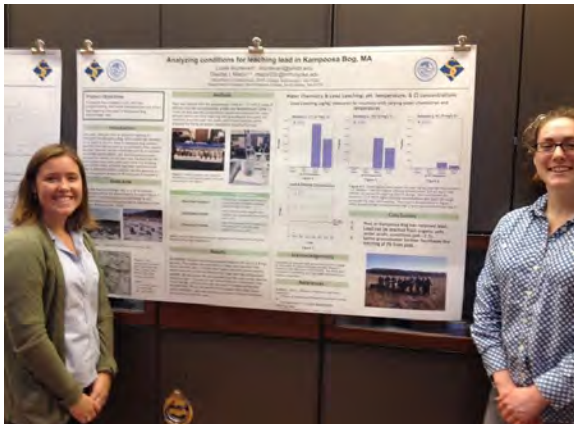
Also during January, Bosiljka Glumac (sedimentology), Al Curran (paleontology emeritus), and Jon Caris (Director of the Spatial Analysis Lab) returned to San Salvador Island, Bahamas to conduct a rapid assessment of coastal erosion following Hurricane Joaquin, which directly hit the island October 2015. Bosiljka will return with students to San Salvador in January 2017 to kick off her spring-semester Carbonate Sedimentology with various field-based projects.

John Brady (metamorphic petrology) continued his highly popular first-year seminar, "Geology in the Field," which still attracts many of our majors. His class' annual overnight field trip to Cape Cod remains a highlight. Last summer, Mark Brandriss (igneous petrology) brought 2 students (Emily DiPadova '16 and Bethaney Gulla-Devaney '18) to examine the igneous provinces visible on the Isle of Skye, Scotland. Their fieldwork on the many mega-xenoliths that they found served as the basis for Emily's senior honors' thesis and as an important gateway for Bethaney to study of geology.

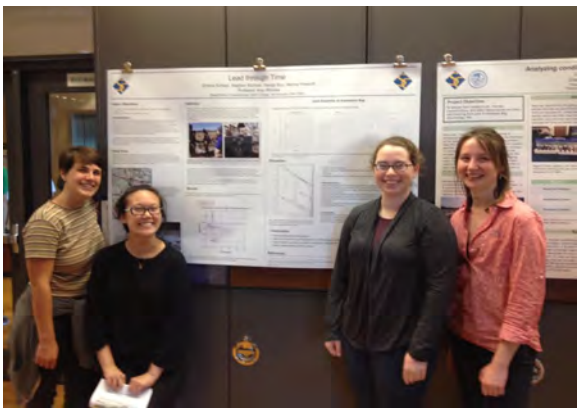
Bob Newton (surficial processes) began his new role as Director of CEEDS (Center for the Environment, Ecological Design, and Sustainability), which has enhanced connections between Geosciences and broader environmental programming at Smith. Through CEEDS, Bob now co-directs two interdisciplinary concentrations: one titled, "Sustainable Foods" and the second titled, "Climate Change."

On my own front, I recently completed a study that stemmed from a personal situation in northeastern Pennsylvania, where my family owns a cabin on a small lake near where natural gas development from the Marcellus Shale has taken hold. Until now, this region of PA had not experienced oil or natural gas extraction, meaning that the infrastructure and resource-use associated with shale-gas development is new. Rapid changes (and potential for change) had created tension between prospects for economic development and environmental impacts, both of which affect the quality of life of residents who live there. As a way to better understand the issues that relate to water, I sampled and analyzed drinking water from my neighbors' household wells as a way to establish baseline water quality for the region. The results were recently published in *Applied Geochemistry* (Rhodes and Horton, 2015). Last year, my Aqueous Geochemistry class (GEO301) went to the lake community to continue water sampling of groundwater and streams and also to hear a presentation by one of the landowners who organized a community coalition for negotiating gas leases with the natural gas companies. We also invited Robert Howarth from Cornell University to speak to us about methane leaks that can result from hydraulic fracturing and methane's long-term impact on climate. The GEO 301 students pursued different class projects aimed at understanding how interactions between groundwater and bedrock affect stream and groundwater chemistry, and this served as context for understanding the baseline water chemistry for this region.

This year, GEO 301 was inspired to understand the solubility of lead, due to the tragic situation of contaminated municipal drinking water in Flint, Michigan. The students designed experiments to test conditions of lead solubility, including soldering copper pipes with Pb-Sn solder and then testing them with different solution chemistries. The students also cored a local peatland (Kampoosa Bog, Stockbridge, MA) to see if lead—presumably a legacy from leaded gasoline—was stored in the peat, and if so, what kinds of reactions could release the lead back into solution. To their surprise, they did in fact discover significant lead in the peat, and they were easily able to leach the lead into solution by adjusting pH and chloride concentration of the water. They also had no trouble releasing Pb from their soldered pipes. The experiments were a lot of fun and enlightening. The students presented posters of their findings at the Five-College Geosciences Undergraduate Research Symposium this past April.

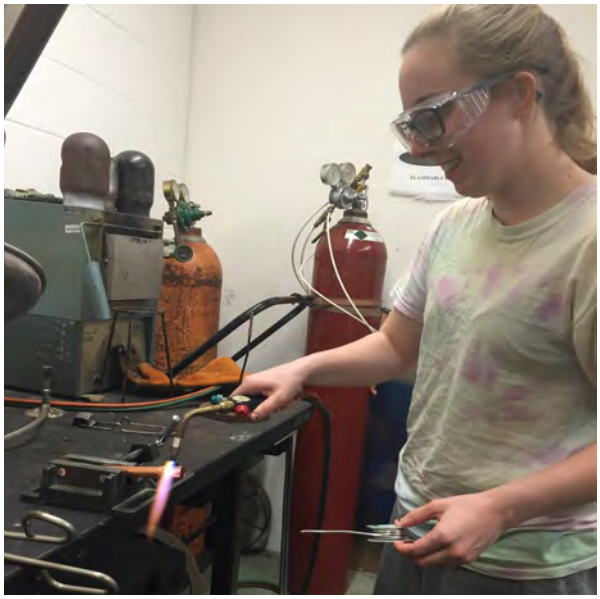


Claudia Mazur ('16 MHC) and Lizzie Sturtevant '18

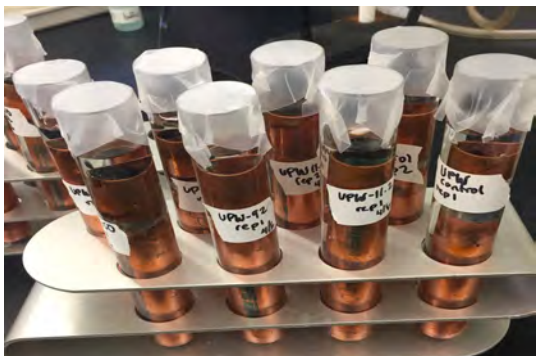


Emma Schlam ('16), Seulgi Son ('16), Meghan Sullivan ('16), and Marina Howarth ('18)

Aqueous Geochemistry students successfully sample peat and groundwater from a calcareous fen (Kampoosa Bog) in Stockbridge, MA on a mild February day.



Sarah Dickson ('16) solders an end cap to a copper pipe with lead-based solder in preparation of lead-leaching experiments for Aqueous Geochemistry.



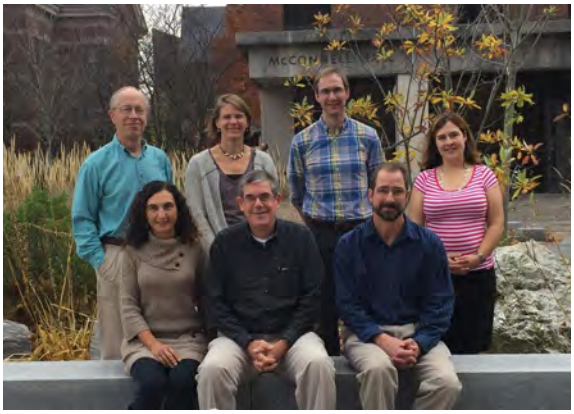
The pipes were reacted with various solutions for 6 days.

Study Group on Climate Change: Smith is currently undertaking a year-long investigation of how the college can strategically respond to climate change. I am co-chairing this Study Group along with Mike Howard, Smith's Vice-President for Finance. Members include students, faculty (including Bob Newton!), staff, alumnae, and members of the board of trustees. Together, we are conducting a comprehensive analysis of Smith's curriculum, co-curricular activities, culture, operations, and investments to articulate principles and recommendations for mitigating climate change and for working toward solutions. We expect our final report with recommendations to be released end of the fall semester. You can learn more about our charge and read brief summaries of our meetings at http://www.smith.edu/climatechange/. Feel free to contact me with your comments and suggestions.

Beginning in July, Bosiljka Glumac will be our new department chair. I'll be directing the Environmental Science and Policy (ES&P) Program for the next three years. Geology meets an introductory science requirement for the ES&P major, so geosciences is seeing an influx in enrollments broadly within our introductory geo courses. The variety of intro geo courses we offer continues to attract a broad cross section of students.

A big "shout out" goes to Bosiljka Glumac, our newsletter leader, and Donna Kortes, newsletter editor, for soliciting contributions and pulling the newsletter all together. Thank you to them, and thank YOU for your news and updates! Please keep in touch with us. We hope to see you when you return for reunion or at a GEO meeting!

Faculty Updates



Smith College Geosciences Faculty in the Rock Park outside the Science Center, November 2015. L to R standing: John Brady, Amy Rhodes, Jack Loveless, Sara Pruss; sitting: Bosiljka Glumac, Robert Newton, Mark Brandriss.

John Brady

Where did the two years go since our last Geosciences newsletter? Certainly there was a lot of travel to see geology, geologists, and family. Trips included teaching a Global Engagement Seminar in Greece (June 2014), lecturing on Alumnae Travel trips to New Zealand (January 2015) and to Machu Picchu and the Galapagos (March 2016), presentations at GSA meetings in New Hampshire (March 2015) and Baltimore (November 2015), several visits to daughter Caitlin and family in Alaska, and other family visits to North Carolina, Ohio, and Vermont. I had a sabbatical leave during 2014-15 spent in Northampton (see below) and on some of those trips. I have been back in the classroom during 2015-16 with great students from our currently large cadre of Geosciences majors.

Although work continues on research projects in Greece, Montana, and the experimental lab, my intellectual focus has been on developing an online textbook on igneous and metamorphic petrology. Beginning with my sabbatical leave in the Fall of 2015, I have worked on learning the HTML5, Javascript, and other programming skills to create the interactive website I envision for this book. With the help of many people, especially Smith student Clémentine Hamelin '15, I have developed many animations and resources that will make this book special. These include phase diagrams that dynamically show mineral assemblages, isothermal sections, and lever rule proportions, norm calculations where the chemical analyses can be instantly changed with sliders, and a Rock Library where thin sections images can change to chemical or phase maps with the option to click on them to see the SEM/EDS spectra. There is great satisfaction when I create a new animation and I look forward to sharing it with students. My timeline is to have a useable textbook by the summer of 2018.

The photo of Nancy and me is in Queenstown, NZ in January 2015.

Mark Brandriss

I enjoyed another year full of rocks, the highlight being a trip to Scotland last summer to work with Emily DiPadova ('16) on her honors thesis, with Bethany Gulla-Devaney ('18) accompanying as field assistant. No matter how many times I return to the same areas, I always see something new, especially when accompanied by students who notice things I never have before. Speaking of geology in the field, I'm on leave this semester, and am writing these notes in a motel in Escalante, Utah, while preparing for a backpacking trip (with my son Owen, now 16 and as tall as me) into the Grand Staircase Escalante National Monument. It's my first trip to the canyonlands of southern Utah and I recommend it with enormous enthusiasm — we've been traveling through the most extraordinarily colorful geologic landscapes I've ever seen anywhere! May you all have similarly happy travels, wherever you are.

Al Curran

I am enjoying retirement greatly, and I continue to pursue my research interests in ichnology (the study of trace fossils), coral reefs – both fossil and modern, and Quaternary carbonates of the Bahamas. At this time last year, Jane and I spent 2 weeks in Japan, with the focus on attending an international ichnology workshop at Kochi University, in Kochi City, and field trips on Shikoku Island (SE Japan, the smallest of the 4 big islands). Side trips included touring in Kyoto, the Nara area, and Tokyo, including a bullet train ride between Kochi and Tokyo that featured a great view of Mt. Fuji! I was hoping to experience my first real earthquake on this trip (a small one would be just fine; don't all geologists have this wish?). I wasn't disappointed; in fact, we were doubly "blessed," with one earthquake occurring on our first morning in Tokyo as we were waking up in a high-rise hotel (34th floor of 35…), and another one two weeks later while we were in Narita Airport waiting for our departure from Tokyo for home. Fortunately there was no real damage or injury from either quake, but the thrill was there, along with full realization of the hazards that the Japanese people face every day in their geologically active setting.

This past winter we again spent three weeks in the Bahamas doing fieldwork, including an investigation of the effects of Hurricane Joaquin (Oct. 2015) on the coastlines of San Salvador. This was a cooperative project with groups from Smith (including Bosiljka Glumac and our Smith drone team), UConn, Temple, and Florida Gulf Coast University. All went very well, and we followed up with six weeks of R&R in Florida, on the beach just south of St. Augustine.

I didn't make it to Belize this past year (my first "miss" in 16 years, but I am going this June with the Smith Coral Reef Ed-Ventures team and its leaders, Professors David Smith and Denise Lello. I will be the group's all-purposes assistant. The rest of the summer will be split between Cape Cod (daughter and family), western Mass, and Washington State (son and family).

I'm sorry not to be able to attend our Smith geo-alum on-campus reunion this year; I will be away to attend yet another ichnology meeting with field trips, this time in Portugal. Nonetheless, on your next visit to the Smith campus, be sure to drop by the Geo Department for an update look. I'm in the subterranean habitat of Burton B-11, and, if I'm in, I will be very glad to see you!

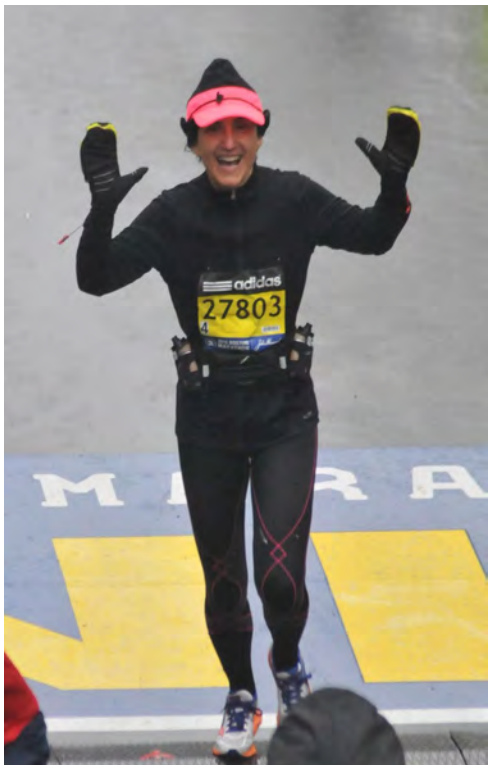
Al Curran contemplates purchasing a retirement-home lot in a poorly sited development cleared of mangroves and at sea level on Ambergris Caye, Belize…….well, not really!!!

Bosiljka Glumac

Following my Spring 2015 sabbatical leave I returned to full time teaching this year. In the Fall I had a small, but very engaging Sedimentary Geology group with whom I especially enjoyed spending time in the field locally, along the MA coast, and in NY state. This Spring I had a total of 70 students in my intro-level courses "Extraordinary Events in the History of Earth, Life and Climate" and "Archaeological Geology of Rock Art and Stone Artifacts." I absolutely love the energy of being in a classroom with so many students eager to learn about such a diverse range of topics! I also continue to enjoy traveling and working with students. Besides going to GSA Baltimore, I have continued my active involvement with SEPM (Society for Sedimentary Geology) through serving on a couple of different committees and organizing and hosting Eastern Section receptions with keynote speakers at both NE and SE GSA. This January I traveled to the Bahamas to assess the impact of October 2015 Hurricane Joaquin on San Salvador Island, which happened to be in the eye of the storm! In the Bahamas I mainly worked with Geo Prof. Emeritus Al Curran and Naomi Jahan '18. In the field we enjoyed the company of the Spatial Analysis Lab Drone Team (Jon Caris, Eliana Perlmutter '16, Alex Widstrand '18) and photographer Deedie Steele. This year I also enjoyed working with Anny Sainvil '17 (who is now studying at Frontiers Abroad New Zealand – a program specially designed for geoscience and environmental science majors, and which I had a chance to visit during my sabbatical leave in 2015), Geo seniors Sarah Dester AC '16J and Sarah Dickson '16, and with several AEMES and Early Research students. With one of them – Sydney Reyes Beattie '19 – I will be working this May at the ancient Maya capital of Mayapan on the Yucatan peninsula in Mexico in collaboration with archaeologists from SUNY Albany. In June I will travel to Italy to work as a Fellow at the American Academy in Rome, followed by a couple of weeks in Croatia where I continue to collaborate with local geoscientists.

On a personal note, the kids are getting big! Alex (12.5) is graduating from Smith College Campus School, and is passionate about soccer and baseball. Yelena (10.5) is finishing up the 4th grade and continues to love doing dance and gymnastics at a competitive level. Tony keeps busy with his directorship of the Science Center computing support group. Last Spring I trained for, ran, and finished my very first marathon – Boston 2015! – after completing the Couch to 5k training and running my very first race ever in March of 2013. I call it "Couch to Boston in 2 years!" For the second year in a row I was also the finisher of the Sugarloaf Mountain Athletic Club (SMAC) Race Series and I won their Most Improved Runner of the Year Award! I am currently running the SMAC Series again and I am registered for my second marathon this November in New York City! I better get started with my training!

Congratulations seniors and best wishes to all!



Bosiljka Glumac crossing the finish line of her first marathon - Boston 2015!

Bosiljka Glumac visiting the Frontiers Abroad New Zealand Program, 2015

Jack Loveless

I'm now finishing my 5th year at Smith and have continued to learn and appreciate what a wonderful department and college I have joined! The past two years since our last newsletter have been busy with research and teaching, both of which have involved working with talented, motivated students.

I spent my sabbatical in fall 2014 in the Department of Geosciences across the river at UMass, occupying a desk in Assistant Professor Haiying Gao's research space. It was a wonderful semester full of solid progress on two research projects and plenty of interaction with the UMass community. I attended weekly structural geology seminars run by Professors Mike Williams and Michele Cooke, and felt truly part of Michele's research group through participation in a research-in-progress seminar (which I continue to join most weeks). It was a wonderful opportunity to have a full semester devoted to research, and I also realized further what a fantastic community of scholars the Five Colleges is.

Emerson Lynch '15 carried out two semester of special studies work in the 2014–2015 academic year, working on subduction zone earthquake processes operating beneath her home state of Washington. Emerson will begin a PhD. program at Boston University this fall, continuing work on active tectonics, likely in the Pacific Northwest. Eli Bergman '17 joined the lab in summer 2015, working on development of an algorithm to automatically detect the occurrence of a relatively newly discovered type of fault activity: slow slip events. These events slip as in an earthquake, but the slip occurs over weeks to months (rather than the seconds to minutes of an ordinary earthquake), and they do not produce seismic shaking. Eli's ongoing work (as part of SURF 2016 and a thesis next year) is instrumental to understanding what these events might be revealing about the physical conditions of the subduction zone.

Sofia Johnson '19, a first-year STRIDE student, has been examining how the Cascadia Subduction Zone may influence smaller faults close to population centers, including faults directly beneath Seattle. This work is in collaboration with colleagues at Western Washington University, who are carrying out geomorphic studies of the Olympic Peninsula to try to constrain deformation rates over longer timescales.

Louisa Hall '15 worked on examining surface deformation in Japan, presenting a poster at Collaborations in 2015. This work contributed to a paper on how subduction zone processes offshore Japan may vary in space and time on timescales as short as a few years. This study of subduction zone processes has also facilitated a new collaboration with Hannah Baranes (UMass M.S. 2015) and her advisor, UMass Associate Professor Jon Woodruff. Hannah and Jon have been examining sediment cores in estuarine lakes in

southwest Japan and have found evidence of tsunami deposits caused by a massive earthquake in 1707. We're currently comparing their distribution of tsunami inundation to predictions based on my models of subduction zone processes.

On the teaching side of things, I continue to have a great time teaching Introduction to GIS, Structural Geology, and Natural Disasters. In my introductory GIS class this past fall, student groups worked with the Kestrel Land Trust and Mass Audubon, carrying out GIS-based projects essential to those organizations' missions. It was incredible to see the students take charge of their projects and do excellent work on behalf of our community partners. This spring, Sara Pruss and I taught a project-based course called "Field Studies of the Desert Southwest," which started with a week-long trip to near Death Valley over interterm. Read more about this course elsewhere in this newsletter!
I look forward to hearing what Geosciences alumnae are up to, whether on campus at commencement and reunion, at national conferences, or via email!

Robert Newton

Another year has passed and once again it is Newsletter time. It has been a very busy year for me as I took over as Director of the Center for the Environment, Ecological Design and Sustainability (CEEDS) in July. It has been a steep learning curve but I am enjoying it!

On the research front, I have been continuing the work on Avery Brook, this year with Sally Carttar ('18) who looked at changes in sources of stream water in response to a rain event. Sally used changes in stream water chemistry in samples collected hourly during an October storm event to get a better understanding of the flow paths that water takes as it moves through the watershed.

Another project involved the continuation of research initiated by students in my yearlong research course for First Year students that I taught with Bob Merritt (Biology) in 2013-14. In that project we had the students look at biogeochemical cycling of mercury in the Ossipee Pine Barrens in New Hampshire. The Nature Conservancy is trying to restore the Pine Barrens to its natural state using controlled burns to reduce the growth of the forest understory. We were interested in finding out how burning affected mercury that had accumulated in soil organic horizons from atmospheric deposition during the industrial revolution. Students presented results from this project at the Northeast GSA meeting in Bretton Woods, New Hampshire. As part of this project we took sediment cores in a nearby pond to determine the local history of mercury deposition. We also analyzed these cores for other metals and found very high concentrations of lead and zinc that came from an abandoned lead mine that had been active for about 100 years starting in the 1820's. Emma Harnish ('18), a student from the First Year research course, continued the work this year as a Special Studies Project that examined the legacy of early mining on the local ecosystem. She compared metal accumulation in fish to the concentration in sediment to assess the rate of bioaccumulation.

Paradise Pond is continuing to fill with sediment but we are moving forward with a plan to sluice the sediment downstream. This past summer I worked with Marney Pratt (Biology) and six students; Maya Domeshek ('18), Mia Ndama ('17), Molly Peek ('18), Marcia Rojas ('18), Lizzie Sturtevant ('18), and Lyn Watts ('18) to set up a monitoring program to evaluate the possible downstream impacts of releasing sediment from the pond. In September we did a preliminary sluicing experiment where we opened the sluice gate at the bottom of the dam during a 3,000cfs flow event to see how much sediment could be flushed from the pond. Although we determined that almost 600 metric tons of sediment left the pond during this event, we found that most of this was sediment that came into the pond during the storm. During this event we were also able to use our new research vessel *RV Silty* together with our Acoustic Doppler Current Profiler (ADCP) to directly measure the velocity of sediment moving along the bottom of the pond. Lyn Watts ('18) developed this ADCP technique as part of a special studies project completed during the Fall semester. All the pond project work was presented at a symposium held in the Smith Conference Center in March and attended by representatives of all the regulatory bodies in charge of granting the final permits. At this time we are planning to move sediment this summer from the upstream part of the pond to the area just above the dam in preparation for the next sluice experiment that will most likely occur in the fall.

I have also been working with Jon Caris in the Spatial Analysis Lab to develop the ability to create high precision Digital Elevation Models (DEMs) from low altitude drone photos using "structure from motion" software. We have used this with some success in the pond project and are able to map the elevation of the bottom sediments to within a few centimeters by collecting photos during periods when pond has been drawn down.

This year's geomorphology class just got back from another successful Popham Beach trip. Despite an adverse tidal cycle (low tide at 6am and 6pm) we were able to complete surveys of the key lines and learned once again that "the tide waits for no one". Comparing the last few years of data we see a massive recovery is underway with sand accumulating throughout most of the system. We expanded this year's work to look more at the adjoining Seawall Beach as we were able to get permission to fly the drone there. I think permission to fly at Popham will come next fall. We invited the new Popham Beach Park Director, Meaghan

Hennessey along with Laura Sewell (Director Bates Morse Mountain Conservation Area) to our Saturday night dinner at Shortridge and had some great discussions.

I am also working on the Mandelle Experiment. This is a cooperative project involving faculty and students from ES&P and Geosciences, as well as staff from the CEEDS, the Office of Sustainability and Facilities Management. The original idea was generated in an ES&P course and site evaluation (infiltration tests) was done by this year's geomorphology class. As a result, the Mandelle Parking Lot (12 spaces) located near the Quad was paved last week with one side normal asphalt and the other permeable asphalt. I designed and installed a monitoring system for the parking lot that includes, dataloggers, lysimeters, wells, and a v-notch weir. The parking lot will serve as a lab for future students to determine if permeable pavement can work in this environment.

This year, I also had the opportunity to work with Heather Upin ('16) on her Keck Project/Honors Thesis that examined the origin of catastrophic flooding from Paulina Lake in Oregon. I love these types of projects where geomorphology, chemistry and mineralogy all play a key part in unraveling the geologic story.

Finally, I am about to start a new project in partnership with the Green Mountain Conservation Group in New Hampshire. This project involves creating an advisory committee to protect the Ossipee Aquifer. As part of this project we will be sampling and analyzing the chemistry of over 100 domestic wells within the aquifer to determine areas that are already stressed by anthropogenic activities.

On the home front, Jill and I lost our dog Lilly to a tick born disease last summer. It was a traumatic time for the whole family but we are moving on with many great memories of a life well lived (I am trying to forget about the sock incidents). Daughter Molly finished her Masters Degree at the Smith School for Social Work and now has her dream job working as the Associate Director of Residential Life at Bates College. JT is still working at Apple Computer and is working to finish his degree at Holyoke Community College. He is doing very well. Molly talked us into getting a new dog this fall so now we have Annie to partner with Wendy and as a bonus Molly got Tilly from the same breeder (yes they are all golden retrievers). Annie and Tilley are 3 weeks apart in age and have the same father. When they get together it is PUPPY CHAOS and they are together NOW so I am off to bring order to chaos! Hope you are all doing well and that you will stop by if you are in the area or send me a note if you are not.

RV Silty in action with Emma Harnisch '18 and Heather Upin '16 retrieving Uwitec core from the pond bottom

Sara Pruss

I am currently in my 9th year at Smith, and it has been a full and exciting year. From a professional standpoint, it has been a wonderful year filled with exciting student collaborations and fun in the classroom. My research lab was filled with 11 hard working students, and many of them came with me to Death Valley this January where Jack Loveless and I taught our new course-based research offering, *Field studies in the Desert Southwest*. Our 8 fearless students collected samples in the field and performed additional analyses during their Spring semester. This was a successful and exciting trip, and their projects have been great! In addition to the hard work they do in the lab, many of our members had some other successes worth reporting. Kelsey Moore is in her first year of graduate school at MIT, and she and I have had 2 professional reunions at conferences in Baltimore and Texas. Emma Roth and I will head to Scotland and Norway this summer to continue our work on early reef evolution, and of course, to have a reunion with Emma's Norwegian relatives. I learned in the last few weeks that I was awarded a National Geographic Research and Exploration Grant, which will make it possible for me to return my Namibia working on a new project on late Ediacaran biomineralization. I will likely do this work in September of this year – my first big trip on my year-long sabbatical!

In other exciting professional, I am finishing my term as the Director of AEMES (Achieving Excellent in Math, Engineering, and Sciences) Mentoring programs at Smith College. As director, I have overseen all programming aimed at recruitment

and retention of diverse students in the sciences. It is truly a privilege to work with these students and the faculty who are committed to them. In other professional news, I was presented with an award from the Geobiology and Geomicrobiology Division of GSA for Outstanding Contributions to Geobiosciences in Fall 2014 and, following all of that excitement, this past Fall, I had the privilege of being one of three faculty selected for the Sherrerd Award at Smith College for Distinguished Teaching. I join other esteemed recipients from our department, Bob Burger and John Brady, two colleagues whose teaching I aspire to emulate. This has been a very rewarding couple of years for me professionally, and I continue to feel so lucky to do this work.

On a personal note, my daughter Annabel is now 3-years-old and very much her own person. She likes to dance, cook, and climb everything. Her brother, Ethan, 6 years old, is thoroughly enjoying kindergarten Fall, and he accompanied me on my field work to Death Valley in May 2015, thanks to a little babysitting help from his grandparents. Upon returning, he has declared that camping is a lot more fun than sleeping in a bed, which bodes well for his future with me! David, who is the Associate Vice President of Finance at Smith College, continues to enjoy his work, and we are both delighted to continue to make improvements to our home in Florence, which we hope will soon be adorned with solar panels! All is happy and well in our home, and we are very grateful for that.

Sara Pruss with her son Ethan.

News from the SAL

Jon Caris

The Spatial Analysis Lab (SAL) continues its long tradition of working closely with Geosciences. In addition to supporting classes and scholarship, the SAL is out in the wild with drones.

Adventures in 2016 included deploying drones in a Rapid Assessment of coastal changes due to Hurricane Joaquin. Jon Caris, SAL Director, and two key students (Alex Widstrand '17 EGR, and Eliana Perlmutter '16 GEO) constituted the drone team that captured low altitude aerial imagery to support ground based surveys. In total, 9 missions were flown.

Later in the year, Jon and Scott Gilman, Spatial Analysis Lab post-bac Fellow, traveled with Bob Newton's Geomorph class to Popham Beach, Maine. Again, the drone team was called upon to capture imagery and establish a baseline image database to support future research. Some scary flying up on the ridge in high winds to capture the class dronie. It was worth it, but Jon may have to hand the stunt maneuvers over to a younger flyer!

San Salvador, Bahamas Testing Drone Configuration. Alex Widstrand ‘17, Jon Caris, and Eliana Perlmutter ‘16

Popham Beach, Maine 2016 Geomorphology field trip. Class Dronie from Shortridge Field Station

The GeoStars and Schalk Funds – Great Ways to Support Geosciences at Smith College

Thank you to all contributors to the GeoStars and Schalk Funds (Smith Fund 544399 and 544847 respectively)! Your contributions are used to support a range of geo-activity extras that require funding beyond what our always-tight departmental budget will allow. These funds support field-based education and research experiences for students, professional development for students at conferences, and opportunities for alumnae, students, and faculty to interact.

This year the funds from GeoStars helped with students' travel to the GSA Meeting in Baltimore, MD in November 2015 and the NE GSA Meeting in Albany, NY in March 2016. This fund was also used for the GSA Alumnae Reception and the Departmental Luncheon Lecture Series, in which several alumnae returned to campus to speak about their professional work.

The Schalk fund, established in memory of Professor Marshall Schalk, is used primarily to support students attending field camps and conducting geological field research. This year the fund helped the following students gain field experience in these amazing places: Emily DiPadova '16 and Bethaney Gulla-Devaney '18 – Isle of Skye; Tessa McGann '16 – Death Valley; Emma Roth '17 and Courcelle Stark '18 – Newfoundland; Naomi Jahan '18 – Bahamas; Lyn Watts '17 and Mingxuan Chia '17 – Himalayas; Sydney Reyes Beattie '19 – Mexico; Heather Upin '16 - Rocky Mountains; and Emma Roth '17 – Norway.

Five College Geology Collaboration

Smith Geosciences continue to actively engage in the Five College Collaboration. In addition to taking courses at other Five College Institutions and sharing library resources, Geosciences students, faculty and staff also organize joint field trips and share research facilities and analytical equipment. Here are just some examples of this lively collaboration.

Our contribution to the Five College Geology Lecture Series this year was the talk "Permian Mass Extinctions at High Latitudes" by Dr. Paul Wignall from the School of Earth and Environment at the University of Leeds, UK, hosted by Sara Pruss. In the Fall John Brady spoke at the Five College Faculty Symposium and delivered the John Reid Memorial Lecture "Metamorphic Reaction Mechanisms Revealed by Pseudomorphs after Lawsonite from Syros, Greece." The following Smith students presented posters at the 37th Annual Five College Undergraduate Research Symposium at Amherst College this Spring: Sydney Reyes Beattie '19, Sarah Dickson '16, Hannah Francis '16, Naomi Jahan '18, Heather Upin '16, and the entire Amy Rhodes' Aqueous Geochemistry (GEO 301) class, which also included Marina Howarth '18, Claudia Mazur '16 (Mt. Holyoke College), Emma Schlam '16, Seulgi Son '16, Courcelle Stark '18, Elizabeth Sturtevant '18, and Meghan Sullivan '16.

Sara Pruss' Oceanography class enjoyed a research cruise that was partially funded by The College Marine Sciences Program, and her Death Valley class and research students Tessa McGann '16, Emma Roth '17, and Emma Schlam '16 used the UMass Stable Isotope Lab extensively this year. Sara Pruss' student Chiza Mwinde '18 also used the heavy mineral separation facility of Prof. David Jones at Amherst College, and her students Brenna Getzin '18 and Claudia Deeg '17 have worked closely with Prof. Mark Leckie at UMass. Heather Upin '16 (working with Bob Newton) and Emily DiPadova '16 (Mark Brandriss' advisee) used the XRF Lab at UMass to get data for their Honors Thesis research. Bob Newton's student Emma Harnisch '18 also used the XRF lab ITRAX core scanner at UMass for her research.

John Brady's Smith Petrology Class had joint fields trip with the Amherst Petrology Class to Cape Ann and to Vermont, and John is part of the Spectroscopy TUES grant collaboration together with Darby Dyar (Mt. Holyoke) and Eileen McGowan (Springfield College). Amherst College Profs. Anna Martini and David Jones had their isotope samples analyzed at Smith, and several Five College students were using our facilities in the CABR, SEM, CL and Experimental Petrology Labs.

Keck Geology Consortium

Each year two Smith College Geosciences majors participate in the research projects organized by the Keck Geology Consortium, which also includes Amherst College, Beloit College, Carleton College, Colgate University, The College of Wooster, Colorado College, Franklin & Marshall College, Macalester College, Mt. Holyoke College, Oberlin College, Pomona College, Trinity University, Union College, Washington and Lee University, Wesleyan University, Whitman College and Williams College. Jack Loveless served as our Keck Faculty Representative this year.

Heather Upin ’16 examined geochemical and geomorphologic evidence for prehistoric floods from a lake in Newberry Crater in central Oregon as a participant in the Keck project organized by Prof. Johan (Joop) Varekamp from Wesleyan University. Her Smith advisor was Prof. Robert Newton. Sarah Dickson ‘16 studied characteristic features of prodelta to delta front sandstones as part of the project on the Cretaceous sedimentology, stratigraphy and paleoecology of an Arctic foreland basin in the North Slope region of Alaska organized by Profs. Grant Shimer (Whitman College) and Paul McCarthy (University of Alaska Fairbanks), and advised in house by Profs. Sara Pruss and Bosiljka Glumac. Both students attended the Keck Geology Symposium at Oberlin College in April 2016.

Heather Upin ‘16 on Paulina Lake in Newberry Crater on a boat used for sampling.

GEO 302 Field Studies of the Desert Southwest

In winter–spring 2016, Sara Pruss and Jack Loveless taught a new advanced-level course, “Field Studies of the Desert Southwest.” We began the course with a week-long trip to the Las Vegas, Nevada region over interterm. Eight students, learning assistant Emma Roth ’18, and Sara and Jack spent time both west and east of Las Vegas, collecting samples for earth history projects spanning the Cambrian to the Triassic. Each day in the field was full of measuring stratigraphic section and collecting samples for five distinct projects. We hauled all of the samples home and students spent the spring semester cutting and analyzing thin sections, dissolving carbonates in acid to examine insoluble fossil material, and preparing samples for carbon isotope analysis at UMass, XRD analysis at Oxford, elemental analysis on our own SEM, and zircon analysis at Princeton (with sample prep. taking place across the river at Amherst College). Helena Tatgenhorst ’16 and Tessa Browne ’17AC looked at Cambrian oncoids. Ziqiu Zhang ’18 and Claudia Deeg ’17 found evidence of unusual fossil preservation in the Cambrian, while Courcelle Stark ’18 found similar evidence in Triassic limestones east of Las Vegas. Jessica Chang ’17 and Kaitlyn Klema ’16 documented the environmental conditions around the formation of archeocyathan reefs in the Cambrian, and Chiza Mwinde ’17 looked at the formation of Neoproterozoic carbonate fans. Throughout the semester, students led discussion of key papers on each of these topics, and everyone presented their research at Celebrating Collaborations in April, as well as the Science Center’s course-based research symposium held in McConnell Hall. The students carried out impressive work, diligently preparing their samples, drafting location maps and stratigraphic columns, summarizing their work in posters, and most importantly, thinking critically about what their analyses indicate about paleoenvironments in the Cambrian and Triassic. We plan to run this course every few years, alternating with Bosiljka Glumac’s research course, Carbonate Sedimentology, and other interterm field trip experiences. We already look forward to our next visit to the Desert Southwest!

GEO 302 Field Studies of the Desert Southwest

(L to R) Associate Professor Sara Pruss, Helena Tatgenhorst ’16, Chiza Mwinde ’18, and Ziqiu Zhang ’18 sampling the Cambrian Cararra Formation at Eagle Mountain, NV.

(L to R) Helena Tatgenhorst ’16, Claudia Deeg ’17, Sara Pruss, Ziqiu Zhang ’18, and Tessa Browne ‘17AC celebrating a good day of field work under clear skies in Nevada.

Death Valley selfie

GEO (ARC)112 Archaeological Geology, Spring 2016

Eric Johnson’s (UMass Archaeology) flint knapping demo in Bosiljka Glumac’s Spring 2016 Archaeological Geology of Rock Art and Stone Artifacts class.

GEO 232 Sedimentary Geology, Fall 2015, field trip to New York State.

(L to R) Eli Bergman ‘17, Heather Upin ’16, Emma Roth ’17, Helena Tatgenhorst ’16, Gabriel Chevalier ‘16 (Mt. Holyoke College), Bosiljka Glumac, June Cadenhead ’16; not pictured: Soyeon Kim ’17

GEO 309 Groundwater Geology, Spring 2016

Measuring hydraulic gradient conductivity at Harkness Brook during a rainy field trip. (L ro R) Maddy Meadows-McDonnell ‘18, Sally Carttar ‘18, and Hannah Francis ‘16.

Geosciences Luncheon Lecture Series

The Department continues to organize a lively luncheon series, partially funded by the GeoStars Fund and the Smith College Alumnae Association. Mark Brandriss organized the series in the Fall 2015, and Jack Loveless was the host in the Spring 2016.

In the Fall we had several special visitors, including Paul Wignall (University of Leeds, UK) and Paul Olsen (Columbia University) who spoke about mass extinctions; Pieter Visscher (UConn) who lectured about the Precambrian fossil record; Directors of the Frontiers Abroad New Zealand Program Max Borella and Dan Hikuroa; and the Honorary Degree recipient Sally Benson (Stanford University) who shared her expertise on climate, energy, and sustainability. The Fall Series also featured a report from the members of the Smith College Coral Reef Ed-Ventures, which is a marine education and research program in Belize, and Clementine Hamelin ’15 spoke about her research in Syros, Greece. Sara Pruss and Jack Loveless led an info session on graduate programs, and the semester ended with Honors Thesis students (Emily DiPadova, Hannah Francis, Tessa McGann, Heather Upin) giving progress reports on their research.

The Spring semester started by a presentation on Williams-Mystic Maritime Studies Program by the student participants Emily Volkmann ’16 and Kaitlyn Klema ’16, and the Admissions Director Mauro Diaz-Hernandez. The rest of the semester featured a series of excellent research talks by: Shannon Graham (MHC ’07, Post-doctoral fellow, Harvard University) on global tectonics; Kelsey Winsor ’07J (Post-doctoral research scientist, UMass Lowell) on climate and chemistry of rock glaciers in Antarctica; Emily Peterman (Bowdoin College) on zircons; Jen Axler ’11 (PhD candidate, Yale University) on high temperature metamorphism; Emma Harnisch ’18 on heavy metal contamination of pond sediments; and Sally Carttar ’18 on hydrochemical responses to rain events. Thank you to all the presenters, series organizers, co-sponsors, and to Mike Vollinger and Donna Kortes for arranging the food!

Kelsey Winsor ’07J (Post-doctoral research scientist, UMass Lowell) working on a rock glacier in Antarctica

Student/Faculty Publications

(*denotes student authors)

*Aluia, V., and Glumac, B., 2015, Petrographic and geochemical comparison of limestone and carbonate breccia from Cala Madonna with the classic Triassic shallowing-upward cycles of the Capo Rama Reserve (Sicily, Italy): Geological Society of America Abstracts with Programs, Annual Meeting, Baltimore, Maryland, v. 47(7), p. 362.

Bosak, T., Mariotti, G., Pruss, S. B., and Perron, J. T., 2014, Production of wrinkle structures and linear trails by moving aggregates, Geological Society of America Abstracts with Programs, v. 46, n. 6, p. 433.

Bosak, T., Newman, S., Pruss, S. B., and Mariotti, G., 2015, Formation and preservation of microbial textures in siliciclastic sediments, Geological Society of America Abstracts with Programs, v. 47, p. 853.

*Cao, Y.M., Curran, H.A., and Glumac, B., 2015, Testing the use of Photoshop and ImageJ for evaluating ichnofabrics, *in* Nara, M., ed., Abstracts, 13th International Ichnofabric Workshop - Inchofabric Studies Linking Past, Present and Future: Kochi, Japan, p. 51-52; AND Geological Society of America Abstracts with Programs, Annual Meeting, Baltimore, Maryland, v. 47(7), p. 343.

*Carttar, S. P. , and Newton, R. M., 2016, Hydrochemical response of Avery Brook to a fall rain event: The role of flowpath, 2016, Geological Society of America Abstracts with Programs, V. 48, no. 2,

*Cielos, T., *Kargbo, S., Newton, R.M., and Merritt, R. B., 2015, Effect of controlled burns on mercury sequestration and volatilization in the egetation of the Ossipee Pine Barrens Preserve, New Hampshire, USA, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 59.

Cohen, P.A., Macdonald, F.A., Pruss, S.B., Matys, E.D., and Bosak, T., 2015. Fossils of putative marine algae from the Cryogenian glacial interlude of Mongolia, Palaios, v. 30, p. 238-247, doi:10.2110/palo.2014.069

*Dickson, S., Shimer, G., McCarthy, P., and Glumac, B., 2016, Characteristic features of prodelta to delta front sandstones from the Cretaceous Nanushuk and Torok Formations, Slope Mountain, North Slope, Alaska: Proceedings of the 29th Annual Keck Geology Symposium.

*Dilek, S., *Morgan, J. M., Merritt, R. B. and Newton, R. M., 2015, Accumulation of mercury in fish from the Grand River, near Gallatin Missouri, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 59.

*Dwyer, C. H., Smith, E. F., Macdonald, F. A., and Pruss, S. B., 2014, Early Cambrian phosphatized archaeocyathans and small shelly fossils (SSFs) of southwestern Mongolia, Geological Society of America Abstracts with Programs, v. 46, n. 6, p.132.

Evans, E.L., J.P. Loveless, and B.J. Meade, 2015, Total variation regularization of geodetically and geologically constrained block models for the western United States, Geophysical Journal International, 202(2), 713–727.

Faggetter, L. E., Wignall, P. B., Sun, Y. and Pruss, S. B., 2015, The search for ROECE in Northwest Scotland, Geological Society of America Abstracts with Programs, v. 47, p. 65.

Glumac, B., Curran, H.A., and *Brisson, S., 2015, Subaerial seeps on Holocene carbonate eolian strata from Cat Island, Bahamas, *in* Glumac, B., and Savarese, M., eds., Proceedings of the 16th Symposium on the Geology of the Bahamas and other Carbonate Regions, Gerace Research Centre, San Salvador, Bahamas, p. 176-187.

González, G., P. Salazar, J.P. Loveless, R.W. Allmendinger, F. Aron and M. Shrivastava ,2015, Upper plate reverse fault reactivation and the unclamping of the megathrust during the 2014 Northern Chile earthquake sequence, Geology, 43(8), 671–674.

*Guo, X., *Smith, S., Newton, R. M., and Merritt, R. B., 2015, A comparison of mercury bioaccumulation in three species of fish from Cooks Pond, Madison, New Hampshire and Avery Brook, West Whately, Massachusetts, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 70.

*Harnisch, E E., and Newton, R. M., 2016, Heavy metal contamination of bottom sediments from past mining operations at Cooks Pond, Madison, New Hampshire, Geological Society of America Abstracts with Programs, V. 48, no. 2,

*Harnisch, E. E., *Scholars, E. Gabrielle, Newton, R. M. and Merritt, R. B., 2015, A history of mercury deposition in the Ossipee Pine Barrens as indicated by sediment cores from Cooks Pond, Madison, New Hampshire, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 97

*Kargbo, S., *Dilek, S., *Morgan, J., Anderson, M., Newton, R. M., and Merritt, R. B., 2016, Bioaccumulation of mercury in largemouth bass from Northwestern Missouri, Geological Society of America Abstracts with Programs, V. 48, no. 2,

Loveless, J.P. and B.J. Meade 2015, Kinematic barrier constraints on the magnitudes of future great earthquakes off the east coast of Japan, Seismological Research Letters, 86(1), 202 –209.

Loveless, J.P. and B.J. Meade 2016, Two decades of spatiotemporal variations in subduction zone coupling offshore Japan, Earth and Planetary Science Letters, 436, 19–30.

Mariotti, G., Pruss, S. B., Klepac-Ceraj, V., Summons, R. E., Newman, S., and Bosak, T., 2014, Where is the ooid factory? AGU Fall Meeting, San Francisco, CA.

Mariotti, G., Pruss, S. B., Perron, T. and Bosak, T., 2014 Microbial shaping of sedimentary wrinkle structures, Nature Geoscience, doi:10.1038/ngeo2229.

Mariotti, G., Pruss, S. B., Ai, X., Perron, T. and Bosak, T., 2016, Microbial Origin of Early Animal Trace Fossils? v. 86, p. 287-293.

*McGann, T. Smith, E. F., Faggetter, L. E., Wignall, P. B. and Pruss, S. B., 2015, New archaeocyathan reefs and chemostratigraphy of the Lower Cambrian Wood Canyon Formation, Death Valley, USA, Geological Society of America Abstracts with Programs, v. 47, p. 572

*Mhin, K. H., *Chen, Q., Newton, R. M. and Merritt, R. B., 2015, A comparison of mercury in the Avery Brook Watershed, West Whately Massachusetts with the Ossipee Pine Barrens, New Hampshire, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 65.

*Molitors B., E.G. and J.P. Loveless 2016, Investigating Impacts of Slow Slip Events on GPS Station Velocity and Subduction Zone Coupling in Cascadia, Geological Society of America Abstracts with Programs, 48 (2), Paper 33-4.

*Moore, K. R., Bosak, T., Macdonald, F. A., Newman, S., *Moore, K., Lahr, D.J.G., Pruss, S. B., 2014, Micrfossil assemblages in Cryogenian cap carbonates of Namibia, Zambia, and Mongolia, Geological Society of America Abstracts with Programs, v. 46, n. 6, p. 542.

*Moore, K., Bosak, T., Macdonalnd, F. A., Lahr, D. J.G., Newman, S. and Pruss, S. B., 2015, Microfossil assmeblages in the Cryogenian nonglacial interlude (~660-640 Ma) of Namibia, Zambia, Mongolia, and Arctic Alaska, Geological Society of America Abstracts with Programs, v. 47, p. 212.

Pruss, S. B., *Castagno, K. A., Fike, D. A., and Hurtgen, M. T., 2015, Carbon isotope ($\delta^{13}C_{carb}$) heterogeneity in deep-water Cambrian carbonates, western Newfoundland, Palaeogeography, Palaeoclimatology, Palaeoecology, v.

Pruss, S. B., *Dwyer, C. H., Smith, E. F., Macdonald, F. A., Tosca, N. J., Faggetter, L E., and *Zhang, Z., 2015, Phosphatic and glauconitic fossil preservation linked to redox oscillations in Cambrian oceans, Geological Society of America Abstracts with Programs, v. 47, p. 637.

Pruss, S. B., Payne, J. L., and *Westacott, S., Taphonomic bias of selective silicification revealed by paired petrographic and insoluble residue analysis of the Lower Triassic Virgin Limestone Member, western US, Geological Society of America Abstracts with Programs, v. 46, n. 6, p. 577.

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*Roth, E., and Pruss, S. B., 2015, The advent of the coral reef: Animal abundance in Upper Ordovocian Lourdes Formation reefs, western Newfoundland, v. Geological Society of America Abstracts with Programs, v. 47, p.351.

*Sainvil, A., and Glumac, B., 2015, Intriguing sedimentary structures from the Jurassic Turners Falls Formation of the Deerfield rift basin in Massachusetts: Geological Society of America Abstracts with Programs, Annual Meeting, Baltimore, Maryland, v. 47(7), p. 363.

*Schmid, A. S. and Newton, R. M., 2016, The potential for permeable pavement to mitigate stormwater runoff at Smith College, Northampton, MA, 2016, Geological Society of America Abstracts with Programs, V. 48, no. 2,

Scott, C., R.W. Allmendinger, G. González, and J.P. Loveless 2016, Coseismic extension from surface cracks reopened by the 2014 Pisagua, northern Chile, earthquake sequence, Geology, accepted March 28, 2016, doi:10.1130/G37662.1.

*Sturtevant, E. W., *Uyeda-Trackman, J. E., Newton, R. M. and Merritt, R. B., 2015, Impact of prescribed burns on soil mercury in the Ossipee Pine Barrens, New Hampshire, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 70.

*Tatgenhorst, H. M., *Perlmutter, E. R., Newton, R. M. and Fellows, J. 2015, LIDAR based digital elevation models as a tool for surficial geologic mapping in the Gilmanton, New Hampshire area, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 51.

Tosca, N., Pruss, S. B., and Strauss, J. V., 2015, A sedimentary fingerprint of oscillating redox through the Cambrian Period, Geological Society of America Abstracts with Programs, v. 47, p. 269.

*Underwood, H. and Rhodes, A.L., 2015, Soil survey of cation exchange capacity (CEC) in Eastern Hemlock (*Tsuga Canadensis*) and Black Birch (*Betula lenta*) Forests at the MacLeish Field Station, West Whately, MA, USA. Northeastern Geological Society of America Section Meeting, Bretton Woods, NH, Abstract 9-3.

*Upin, H. E., Newton, R.M. and Varekamp, J. C., 2016, A study of the geochemical and geomorphologic evidence for prehistoric floods from Paulina Lake, Central Oregon, Geological Society of America Abstracts with Programs, V. 48, no. 2,

*Upin, H. E. and Newton, R. M., 2015, Impact of logging on soil solution mercury in the Avery Brook Watershed, West Whately, Massachusetts, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 70.

*Watts, C. L., *Domeshek, M. G., *Sturtevant, *E. W., Rojas, *Marcia, and Newton, R.M., 2016, Sediment sluicing to manage sediment accumulation in Paradise Pond, Northampton, Massachusetts, Geological Society of America Abstracts with Programs, V. 48, no. 2,

Yellen, B., Woodruff, J. D., Cook, T.L. and Newton, R. M., 2016, Historically unprecedented erosion from Tropical Storm Irene due to high antecedent precipitation, Earth Surface Processes and Landforms, v. 41, p.677-684.

Yellen, B. C., Woodruff, J. D., Cook, T. L. and Newton, R. M., 2015, Did climate change cause extreme erosion during Hurricane Irene? Expectations moving forward, Geological Society of America Abstracts with Programs, V. 47, no. 3, p. 59.

*Zukswert, J.M., Bellemare, J., Rhodes, A.L., *Sweezy, T., *Gallogly, M., *Acevedo, S., and *Taylor, R.S., 2014, Forest community structure differs, but not ecosystem processes, 25 years after Eastern Hemlock removal in an accidental experiment. *Southeastern Naturalist*, v. 13 (Special Issue 6), p. 61-87.

*Zukswert, J.M., Bellemare, J., and Rhodes, A.L., 2014, Forest community and ecosystem structure, but not ecosystem processes, differ 25 years after Eastern Hemlock Removal in an "Accidental Experiment," 99th Ecological Society of America Annual Meeting, Sacramento, CA.

Student/Faculty Research

Bergman, Eli ‘17 (Jack Loveless): Investigating Impacts of Slow Slip Events on GPS Station Velocity and Subduction Zone Coupling in Cascadia (SURF, Special Studies)

Browne, Tessa AC, (Sara Pruss) Investigating the Environmental Conditions that Fostered Oncoid Formation at the Lower-Middle Cambrian Transition, Carrara Formation, Death Valley, Nevada

Chang, Jessica '17 and Kaitlyn Klema '16 (Sara Pruss) Archaeocyathan Reefs of the Lower Cambrian Wood Canyon Formation, Death Valley, California

Cordero, Sabrina ’19 (Sara Pruss): Silicification in the Permain Kaibab Formation, Valley of Fire, Nevada (AEMES Student)

Cullison, Billie ’19 (Bosiljka Glumac): Unusual deposits from caves in Croatia (Early Research)

Deeg,Claudia ‘17(Sara Pruss): Deep sea sedimentation in the aftermath of the K-T extinction (Special Studies)

Dester, Sarah AC’16J (Bosiljka Glumac): Guide to decorative building stones on Smith College Campus (Special Studies)

Dickson, Sarah ‘16 (Bosiljka Glumac): Characteristic features of prodelta to delta front sandstones from the Cretaceous Nanushuk and Torok Formations, Slope Mountain, North Slope, Alaska” (Special Studies and Keck Geology Consortium Project)

Du, Kim ‘18(Sara Pruss): Microfossil abundances in Neoproterozoic samples from Arctic Alaska and Australia (AEMES student)

Francis, Hannah ’16 (Amy Rhodes) Experiments investigating retention of sodium in peatlands affected by road-salt pollution (Honors Thesis)

Getzin, Brenna ‘19 (Sara Pruss): Planktic and Benthic assemblages in ODP Core U1370, post-K-T extinction (Special Studies)

Grote, Emily ’18 (Bosiljka Glumac): Stable isotope analysis of speleothems from Palau, Micronesia (Early Research)

Hall, Louisa ’15 (Jack Loveless): Assessing changing patterns of interseismic deformation through time in Japan (Special Studies)

Hernandez, Mirella ‘19 (Bosiljka Glumac): Preservation potential of ice-crystal impressions in mud deposits: Implications for paleoclimate interpretations (AEMES research)

Jahan, Naomi ‘18 (Bosiljka Glumac): Storm-deposited coastal boulder ridges on San Salvador Island, Bahamas in the aftermath of Hurricaine Joaquin (Special Studies and Celebrating Collaborations poster)

Johnson, Sofia ’19 (Jack Loveless) Calculating interseismic stress rates on the Olympic Peninsula, Washington (STRIDE)

Klema, Kaitlyn'16 (Sara Pruss) Archaeocyathan Reefs of the Lower Cambrian Wood Canyon Formation, Death Valley, California

Lynch, Emerson ’15 (Jack Loveless): Investigating interseismic coupling on the Cascadia Subduction Zone (Special Studies)

McGann,Tessa ‘16 (Sara Pruss): Petrographic analysis of archaeocyathan reefs in the Wood Canyon Formation, Death Valley, CA (McKinley Fellowship, SURF student)

Mwinde, Chiza ‘18 (Sara Pruss): Sedimentological analysis and zircon extraction in the Ediacaran Rainstorm Member, western US (Special Studies)

Nolan, Rhiannon (Sara Pruss): Phosphatized archaeocyathans from the Cambrian of Mongolia

Opatovsky, Danielle ’16 ENV (Jack Loveless): “Mapping economic development in the Springfield area (Special Studies)

Reyes Beattie, Sydney ‘19 (Bosiljka Glumac): Archaeological; geology of limestone used by the pre-Colombian Maya peo-

ple from the Yucatan Peninsula, Mexixo (Early Research and Celebrating Collaborations poster)

Roth, Emma ‘18 (Sara Pruss): Abundance of skeletal fossils in Cambrian grainstones of the western US and western Newfoundland (Special Studies)

Sainvil, Anny’17 (Bosiljka Glumac): Sedimentary structures from the Jurassic Turners Falls Formations of the Deerfield rift basin in Massachusetts (Special Studies and GSA poster)

Schlam, Emma ‘16 (Sara Pruss): Carbon isotope stratigraphy of Cambro-Ordovician carbonates of western Newfoundland (Special Studies)

Schlam, Emma ’16, Sullivan, Meghan ’16, Son, Seulgi ’16, Howarth, M. ’18 (Amy Rhodes): Lead through time: The legacy of lead recorded in peat sediments, Kampoosa Bog, Stockbridge, MA (Course-based research)

Son, Seulgi ’16 (Jack Loveless): Elastic block modeling of the San Gorgonio subsection of the San Andreas Fault, California (Special Studies)

Stark, Courcelle ’18, Francis, Hannah ’16, and Sarah Dickson ’16 (Amy Rhodes): Measuring the corrosivity of chloride on lead pipe solder (Course-based research)

Stark,Courcelle ‘18 (Sara Pruss): Cambrian fossil abundance in the middle Cambrian Carrara Formation, Titus Canyon, Death Valley, CA (STRIDE student)

Sturtevant, Lizzie ’18, Mazur, Claudia ’16 MHC (Amy Rhodes): Analyzing conditions for leaching lead in peat from Kampoosa Bog, MA (Course-based research)

Stephani, Elizabeth ‘18 (Sara Pruss): Mineralogy of early skeletal organisms (AEMES student)

Tatgenhorst, Helena '16 and Tessa Browne AC (Sara Pruss): Investigating the Environmental Conditions that Fostered Oncoid Formation at the Lower-Middle Cambrian Transition, Carrara Formation, Death Valley, Nevada

Underwood, Hannah ’15 (Amy Rhodes): Soil survey of cation exchange capacity (CEC) in Eastern Hemlock (*Tsuga Canadensis*) and Black Birch (*Betula lenta*) Forests at the MacLeish Field Station, West Whately, MA, USA (Special Studies).

Zhang,Ziqiu ‘18 (Sara Pruss): Unusual preservation in the basal middle Cambrian Carrara Formation, Eagle Mountain, CA (AEMES student)

Geosciences Seniors

Class of 2016

Back row, L to R: Heather Upin, Emily DiPadova, Helena Tatgenhorst, Sarah Dickson, Tessa McGann, Eliana Perlmutter. Front row, L to R: Jane Weinstock, Kaitlyn Klema, Seulgi Son, Hannah Francis. Not pictured: June Cadenhead, Laura Henry, Emma Schlam.

Seniors taking a selfie at senior banquet. Helena Tatgenhorst, Jane Weinstock, Emily Dipadova, Heather Upin, Kaitlyn Klema, Sarah Dickson, Hannah Francis, Tessa McGann, Seulgi Son

GEO Honors students following their thesis defenses. L to R: Emily DiPadova, Tessa McGann, Heather Upin, Hannah Francis.

"Milk", cookies and rocks, that's all you'll ever need.

Alumnae News

Sally Halstead '67

I am still teaching in the adolescent unit at Silver Hill Hospital in New Canaan, CT. I love to go over minerals and rocks, Earth Science and fossils, with those of our patients who enjoy such things. For Chemistry, I haul out my book of wonderful European crystal photographs and teach the chemical formulae printed above them. At home, I am trolling through my dusty Geology books and planning a return to fieldwork and geology study when (if) I give up teaching. No way am I separating from my college notebooks on fieldwork, and the wonderful seminars I did with Robert Frank Collins!! We both love the fossils and mineral shows that come to our area; like old-time gypsies, the geologists arrive in trailers and campers, unpack their caravans, and delight us with cardboard cartons full of newspaper-wrapped rocks. The joy of discovering a crinoid treasure from the Cambrian, Ordovician plated fish, or anything at all, never palls. We have two kinds of pets in our house: one are furry felines, which curl on our beds and upholstered chairs; the rest are the stone critters, who delight us just as much (and never mess on the carpets). Like soft and hard-rock geology, we have soft and hard-tissue pets. And both cats and fossils scratch the furniture; I swear they grin at each other cooperatively. There's nothing like a trilobite to lay down tracks on a dining room table-leaf, which survived my mother's growing-up and my grandparents' holiday dinners, but is now scratched by this renegade woman's fossils, arranged in fetching display among the bits of surviving Steuben. In our home, the fossils are set out wherever we can readily enjoy them. We have squid framed on the dining room walls, a stingray in a standing frame (too heavy to hang), shrimp ditto, and ammonites all over the coffee tables and piano. The TV is framed between a hemimorph and a Tibetan salt lamp, balanced by trilobites and calcite elsewhere on the bench. And so it goes.

I look upon my life as a geological span divided into eras. There's been teaching, wetland teaching, publishing science stuff in NYC, environmental fieldwork, political and conservation activism, shoreline walks, and lots of poking around the woods, rocks and mineral shows in CT. I've worn out several pairs of field boots doing environmental and geology work, and it's time for another pair. Truly, one's life never ends, so long as there's a step to take to investigate an outcrop. My footsteps are savored for the hard feel of rock under the boots, or the squish of marsh mud in a sneaker. As Frodo quoted Bilbo, "The road goes ever on and on, down from the door where it began..." Ours is a track under forest trees, or no track at all. Or it's a road winding up in the northwest CT hills, en route to a Silurian landscape with a mineral show crouched under a ridge topped with slate-brooding clouds. The hills surround us with echoes of mountain-building and erosion; I hear them calling, and think of dinosaurs. When we drive to Hartford or New Haven, we eagerly look for the CT traprock and Triassic redbeds. I sometimes park to pick up fragments, and smile in a memory of Smith. On leaving Northampton after graduation, I made mother stop beside the road so I could collect some last-minute Trias. I will never grow old, nor Jack either, so long as we can touch the rocks where they've lived, and feel the ages warm under our fingers. The same sun warmed the dinosaurs, and we feel connected with every life, from every age.

I love the dusty books, the maps... I resonate watching the Indiana Jones movies. My life has been such, and you should tell Geology students to look for the earth under their feet, and not become bitter if their boots and jobs don't lead them into more exotic lands. We're really fortunate that our craft surrounds us. You can find fossils in a New York building's facing stone, schist and gneiss in Central Park, and tufa in southwestern gardens (it's used as mulch); fossils around the Abu Simbel access airport, and fragments that could be chipped by arrow-makers under every leaning rock in CT.

What a rich life! Thank you, Smith Geology Department, for giving me my start as a Scientist. I look back constantly, and smile.

Meg Thompson '69

I retired from 33 years of teaching at Wellesley in July, 2008, but am still geologizing on other fronts. At the moment I am finishing up a manuscript containing precise U-Pb dates for Paleozoic plutons in eastern Massachusetts, including the Cape Ann featured in John Brady's 2014 NEIGC trip. Photo is from trip I recently led to long-disputed glacial deposits at Squantum, MA for colleague Dan Brabander's class exploring "snowball earth" scenarios.

Meg Thompson '69, back row with big hat.

Barbara Evoy ‘78

Since leaving Smith in ’76 for UC Santa Cruz and finishing my undergrad and Earth Science Master’s there, I have been involved in California State government – first mining reclamation, then overseeing hazardous waste/landfills, developing water policy, financing water quality projects, and for the last six years – being in charge of Water Rights for the State. As 5 of these have been drought years, it’s been both incredibly interesting and incredibly “busy”!

Carol Birney de Wet ‘81

I continue to teach Sedimentology & Stratigraphy, plus a course on coral reefs, at Franklin & Marshall College. I finished a three year term as an Associate Dean of the Faculty and am enjoying being back in the classroom. My research has taken me to the Atacama Desert, Chile, Greenland, Iceland, and Scotland in the past few years, plus an ongoing collaboration with Gail Ashley (Rutgers Univ) on tufa deposits in Olduvai Gorge, Kenya. My geologist husband, Andy and I are empty-nesters but have lots of fun traveling and and working in our garden.

Carol Birney de Wet ‘81

Alison Hess ‘82

I just celebrated 30 years with the U.S. EPA as a senior program manager and hydrogeologist in the Region 2 office (New York, NY). After Smith, I earned an M.S. in Geosciences from the University of Arizona, where I was fortunate to conduct research on (and hike and camp in) the Grand Canyon National Park. EPA's annual leave provides lots of opportunity for travel, including a trip to Turkey with **Marian Berndt ('82)** to visit **Peri (Ataman) Holden ('83)**. Marian and **Dorothea (Withington) Hanchar ('83)** are staunch friends who graciously overlook my dismal lack of correspondence. Starting this fall, I expect to spend more time at Smith as my daughter enters the Class of 2020!

Donna Whitney ‘85

I am in year 4 (of 5) as head of the N.H. Winchell School of Earth Sciences at the University of Minnesota in Minneapolis. I have been involved in plans for a new (renovated) building and have hired 5 new faculty (including 3 women), so it has been a busy few years. I continue to do metamorphic petrology and tectonics research in field sites in Turkey, France, Norway, Australia, and New Caledonia. This year was my daughter Naomi's freshman year at Wellesley!

Donna Whitney ‘85—My Smith water bottle was very useful during field work in a remote region of central Australia.

Maria Honeycutt ‘95

I'm still working for the federal government (NOAA's Office for Coastal Management) near DC, enjoying the ups and downs of working at the intersection of coastal hazards, climate change, and national flood policy. If that's not busy enough, we've got two active kids to wrangle -- Nicole, who's 4 and loves our vacations in Utah's canyon country, and Luke, now 19 months old and still more interested in throwing rocks than inspecting them. I was so glad to make it up for our 20th reunion last May. While I couldn't bring my daughter this time, my son got to see one of his namesakes (see photo). Luke's middle name is Burton, which is both a family name and, of course, the name of Smith's second president and namesake for a building I spent many, many (mostly) happy hours in with wonderful friends and mentors. Best wishes to all the graduating seniors!

Maria Honeycutt ‘95 with her son Luke

Hali Kilbourne ‘98

I've been a professor at the University of Maryland Center for Environmental Science now for 7 years. I'm always looking for good graduate students interested in paleoclimate research (especially Smithies who would be competitive for fellowships). My husband (a chemical oceanographer) and I are raising a daughter who is 2 and who keeps us hopping. This year we have started our first professional collaboration and have a jointly advised PhD student. Last year we started a tradition of scheduling 6 hiking trips throughout the year so that the seasons don't flash by us without getting some outside fun and we are having fun with the series again this year. Inspired by Brian White and John Brady’s collaboration on the 50 Hikes in Massachusetts book, we hiked our way through 50 Hikes in Maryland and are now working on 50 Hikes in Northern Virginia.

Lena Fletcher ‘99

My name is Lena Fletcher, I was a geology major, class of '99. I now am a faculty member at the University of Massachusetts in the Department of Environmental Conservation. I have four sons and live in Montague, MA.

Lena Fletcher ‘99

Heather “Cricket” Sawick Kennedy ‘99

I'm currently living in Half Moon Bay, CA with my husband Adam and our kitty Tanooki. Adam is head of physiology at Calico Labs and I'm a crew trainer with NASA Ames Research Center. I actually train astronauts for a living! My payload is the Rodent Research mission, and we're working on ground-breaking research on the ISS which will provide us with invaluable data not only to help with conditions here on Earth (i.e., aging, bone healing, muscle atrophy, etc.) but how to mitigate the effects of long-term space travel since we're working hard toward longer-duration manned missions (including Mars!). Unfortunately they won't let me go to space (yet)....so I travel to Houston frequently, where I work with US astronauts as well as our international partners (ESA, CSA, JAXA, and Roscosmos) and teach them the ins & outs of successful rodent research techniques. Our next mission is scheduled to launch on April 8th on Space-X 8, so hopefully by the time this is printed, we'll have celebrated yet another groundbreaking and successful experiment!
I'd love to hear from fellow Smithies (and professors) I may have lost touch with as the years have gone by. Please feel free to look me up on Facebook, or email me at heather.s.kennedy@gmail.com!

Heather Sawick Kennedy ‘99 with Laura Duch ‘98 in Half Moon Bay last spring when she came for a visit!

Susan (Sooz) DeYoung Lundmark ‘01

After eight years working as an environmental consultant, I have switched gears and am now working full time for Salt Lake City in the Redevelopment Agency (RDA). The RDA encourages reinvestment in, and redevelopment of, blighted or otherwise underused parts of our city. I love the change, and find it so rewarding to work towards making the city a more walkable, sustainable, and transit-friendly place to be. Kevin and I have two little boys – Peter (5) and Isaac (1.5) – who are the lights of our lives and the funniest people we know. Peter is learning to read and ski, and Isaac is learning to talk and make every animal sound, so things are pretty exciting at our house! I hope to see many of you at Reunion in May!

Susan DeYoung Lundmark ‘01 with her husband Kevin and their sons Isaac and Peter.

Erica (Nichols) Siddall ‘04

Erica (Nichols) Siddall '04 moved back to London with her family in January 2015, to start a role in Shell in greenhouse gas emissions reduction. Husband Mark is training for Anglican ministry, and Daniel (2.5) is a little bundle of fun! We are having a great time touring on our tandem bicycle and are excited that we will be welcoming a new baby in September. Any geo alums passing through London should be in touch!!!"

Jess Pelaez ‘05J

I am currently involved in running the interdisciplinary environmental science and education organization I founded, Blueprint Earth. We presented collaborative student-led research at the annual AGU and GSA meetings last fall for the first time, and we are always looking for support, mentors, and research collaborators. Blueprint Earth has 74% female and 56% non-white minority participation!
Additionally, I am appearing on the new Discovery Channel series Trailblazers, where I conduct research on Reventador Volcano in Ecuador. I was invited to give a TEDx talk at the Claremont Colleges alongside former Texas senator Wendy Davis in February, and that was a wonderful experience. I'm hoping to make it back to Smith sometime in the next year, also!

Elizabeth Thomas ‘05

I'm wrapping up a postdoc in Geosciences at UMass Amherst and will be starting as an assistant professor in Geology at the University at Buffalo in Fall 2016. I'll be headed to Greenland this summer for field work on a project studying Holocene climate and ice sheet change. My husband, Jason, our son, Gus, and I had a wonderful time living in the Pioneer Valley this past summer. Now we're settling into our new home in Buffalo, biking to school, getting solar panels installed, and planting a veggie garden. Come visit us!

Elizabeth Thomas ‘05 with her husband Jason and their son Gus.

Sarah Pistone ‘06

I work for Calpine at the Geysers about 2 hrs north of San Francisco, which is the largest geothermal development in the world. I got hired as a Reservoir Engineer in 2011, but started a new position as Steamfield Engineer last summer. The Valley Fire was very destructive and burned very quickly last fall. Many of my neighbors lost their homes (fortunately mine survived) and 4 1/2 cooling towers burned down at work. 2016 has been a year of new growth and rebuilding. At home, I have been replanting my burnt land with native shrubs and flowers and doing lots of home projects. At work, I've been replacing burnt and damaged pipelines and managing the steamfield without the instrumentation, controls, and electrical that everyone was used to. If anyone is in the bay area and interested in traveling through wine country to get here, I'm happy to give tours. www.geysers.com sarah.pistone@calpine.com

Sarah Pistone ‘06

Katie (Dick) Crane ‘07

I am an environmental scientist at the Utah Department of Environmental Quality. I primarily regulate federal projects for the Military Munition Response Program (MMRP) within the state. The Program focuses on cleaning up discarded military munitions, unexploded ordnance, and their chemical residues; so pretty much I get to work on historical ranges and clean up bombs. I love it! My little girl, Kylie, just turned two, and my husband and I had a blast this winter teaching her to ski AND snowboard. I've also started running, and recently completed the Salt Lake City Half Marathon with Sooz Lundmark '01!

Katie (Dick) Crane ’07 with her husband and their daughter Kylie.

Marie Mclane ‘08

Since graduating from Smith I have traveled around the world and worked seasonally in the Antarctic and Arctic supporting scientific research groups in a variety of roles from science technician to heavy equipment operator. This year I have accepted the position of full-time Station Manager for Summit Station in Greenland, the largest US Arctic research station. I will deploy to Greenland for 5-6 months out of the year and will be based near the Denver headquarters for the remainder. I keep a blog about my polar experiences at: antarcticarctic.wordpress.com.

Marie McLane ‘08

Merilie Reynolds ‘08

I’m still in Edmonton with my husband, Tyler. I am nearing the end of the fourth year of my PhD at the University of Alberta. People have started asking when I will finish (May 2017?) but I am not too sensitive about that question *yet*. Academic highlights from the last year include publishing my first paper (in *Geology*!) and learning how to do some coding in Python to handle some big geochemical datasets. I continue to agitate quietly for action to address the extreme gender imbalance of our department’s faculty with this year’s initiatives including a student petition to the Dean of Science and the initiation of a speaker series that will bring a couple of female academics to visit the department each year. I’m also still playing Ultimate Frisbee: I’m now old enough to play with a “masters” women’s team, which has been lovely. Let me know if you find yourself in Edmonton; I'd love to connect with some more Smithies.

Christie Rowe '00 and Merilie Reynolds '08 in April 2016 at the University of Alberta, where Merilie is a PhD student and Christie was visiting as the keynote speaker for the department's annual Symposium. (April 2016)

Danielle Schmandt ‘09

I am in the first year of my PhD at the University of Adelaide in South Australia studying mineralogical characteristics of radionuclides in copper ores under Dr. Nigel Cook. Included is a photo of some of our research group on a site visit to Prominent Hill to learn about and test processing methods.

Danielle Schmandt ‘09

Maya Wei-Haas ‘09

This year has been a big one for me: I got married, adopted a dog, finished my PhD, moved to Washington DC, and got a job! (Pretty much in that order.) I've barely caught my breath at this point. I am currently the assistant editor for science and innovations at Smithsonian.com. I also contribute articles and a few graphics to the site. It has been a pretty steep learning curve, but I love the work. I can't wait for another whirlwind year.

Maya Wei-Haas ‘09 with her dog Oscar in Tulsa, Oklahoma during their visit home for the holidays.

Kristen Rahilly ‘10

I am finishing up my two years of teaching eighth grade science in Como, Mississippi as part of the Mississippi Teacher Corps program. After receiving my M.A. in Curriculum and Instruction from the University of Mississippi in May, I will be moving to Albuquerque to begin my PhD in geology at the University of New Mexico! I am so very excited to be going back to the world of geology and will forever respect K-12 teachers - what a difficult job!

Ellie Maley ‘11

Ellie Maley (2011) transferred to Denver in December 2015 to take on a new role with CH2M as a Mining Geologist, and is working on mine reclamation projects in the western U.S. She loves living near Katherine Kravitz, and will be also working near her around Moab this summer!

Naomi Barshi ‘12

Christie Rowe '00 and Naomi Barshi '12 write in from Montreal! Christie is up for tenure this Fall at McGill University where she teaches Structure, Field Methods, Field School, and various graduate seminars. She has a posse of excellent students trying to unravel the evolution of faults deep and shallow. Naomi finished up her master's with Christie in August 2015 and has been teaching intro geology to undergrads ever since. This next year brings new adventures, first stop: home in Santa Cruz, CA. Next stop: any mountain will do.

Naomi Barshi ‘12 (left), Christie Rowe ‘00 (middle), and field assistant extraordinaire, Matt (right), doing fieldwork in Baja California in March 2014.

Alianora Walker ('11), Kate Durkin ('12), Katie Castagno ('12), Naomi Barshi ('12), and Paula Bürgi ('14) had a joyous reunion last December at AGU in San Francisco. We enjoyed catching up with Jack Loveless, who updated us on life by the shores of Paradise Pond. If you'd like to meet up with Smithies at conferences, keep an eye on the Geo-Alums list-serve for conference gatherings, and send a shout out if you're at a conference with no organized gathering (so far only GSA has a set reunion). If you're not on the list-serve, access it from the department homepage or here: http://div3lists.smith.edu/mailman/listinfo/geoalums See you next time!

Shawn Moore ‘13

I just recently moved to Salt Lake City, UT and am finishing up the second semester of my M.S. thesis at the University of Utah. I am working on a detailed sedimentological, stratigraphic, and geochemical analysis of the Agrio Formation, located in the Neuquén Basin of west-central Argentina. My project utilizes the Agrio Formation as a case study of ancient offshore marine environments in order to increase the understanding of depositional mechanisms and sediment distribution patterns within these types of systems. I was lucky enough to travel to Argentina for field work this past May, which was an amazing experience. Other recent geology trips have included looking at modern depositional systems near Galveston, TX and exploring the influences of salt tectonics on the geology around Moab, UT. Utah has a lot to offer in terms of amazing local geology and I am really enjoying the challenge of graduate school.

Shawn Moore ‘13

Kiara J. Gomez ‘14

Hello everyone! I am currently in Crete, Greece finishing up my coursework and soon starting my Master's thesis, where I will develop a systematic approach for characterizing petroleum oils using biomarkers. April was a month packed with travels, family visits, and difficult decisions. I had the wonderful opportunity to meet and talk with Elizabeth Thomas '05 about her exciting paleoclimate work at the University of Buffalo. After a long decision-making week, I have decided to accept a position in the PhD at the University of Texas at Austin! I am also excited to share that my mother and little brother have also decided to move to Austin! Many congratulations to Camille Dwyer '14 and Sarah Brisson '14 on their decision to pursue a PhD! On a personal note, I have been training for my first 10K of the year in May. I look forward to running around the beautiful landmarks of Chania, Crete.

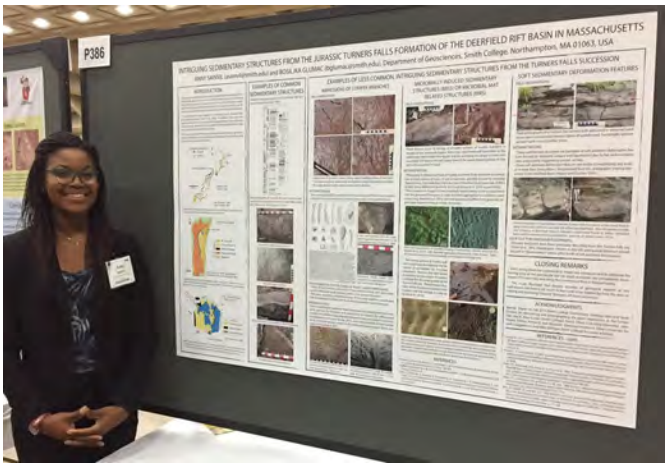
Kiara J. Gomez ‘14

Smith College GEO Club

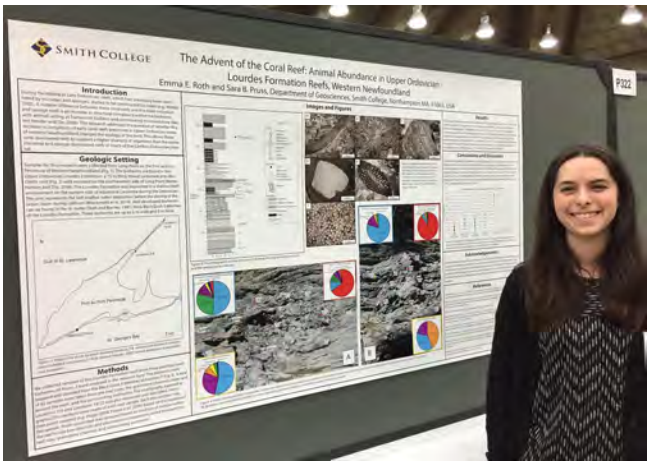
Geo Club at the Sunderland corn maze.

Geo Club at the Sunderland corn maze.

Alumnae Reception at GSA Baltimore, November 2016. Left to right – back row: Sarah Carmichael, Helen Lang, John Brady, Wendy Curtis, Susan Vincent, Jack Loveless, Sara Gonzalez, Amy Rhodes, Jen Axler, Melody Cao; front row: Kelsey Moore, Sarah Dickson, Bosiljka Glumac, Sophie Westacott, Sara Pruss.



Anny Sainvil ’17 presenting at GSA Baltimore



Emma Roth ’17 presenting at GSA Baltimore

Al Curran meets William "Strata” Smith (aka Roger Thomas from Franklin and Marshall College) at the GSA-Baltimore

Geosciences Photo Gallery

Petrology class field trip to Cape Ann, April 2016.

Back Row: Amherst student, Rebecca Matecha ‘18, Amherst student, Amherst student, Amherst student, Eliana Perlmutter ‘16, Amherst student Front Row: Amherst student, Heather Upin ‘16, Clementine Hamelin ‘15, Emily DiPadova ‘16, Naomi Jahan ‘18, Laura Henry ‘16, Junmanee Cadenhead ‘16, Enma Harnisch ‘18, Elias Molitors Bergman ‘17.

San Salvador, Bahamas: Flying Drone Mission.

(L to R) Eliana Perlmutter ‘16, Alex Widstrand ‘17, and Jon Caris

Emma Harnisch 18 splitting her Cooks Pond core for analysis on the ITRAX scanner at UMASS with help from Brian Yellen (UMASS).

FYS 103 Marconi Beach on Cape Cod Nov. 2105

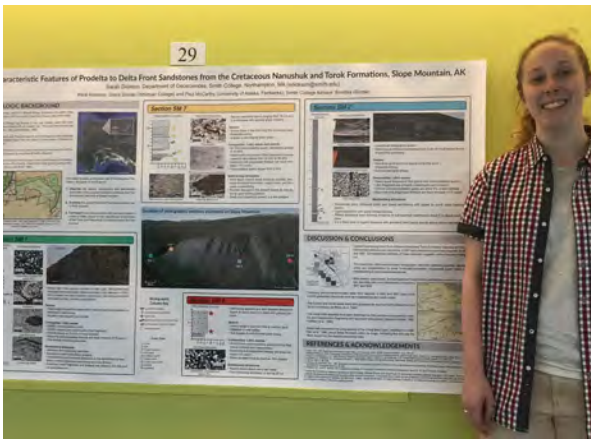
Back row: (L to R) Susannah Howard, Elsbeth Pendelton-Wheeler, Leah Tallent, Emily Hitchcock, Natalie LaBossier, Kyra McClary, Ruby Kohn, Sofia Johnson, Emily Dewitt, Caroline Novack, Mei Meadow, Sarah Elghazoly, Weijian Lin

Hannah Francis (’16) sampling peat at Hawley Bog, MA this summer as part of her senior honors thesis that investigated retention of sodium—from road salt—in wetlands.

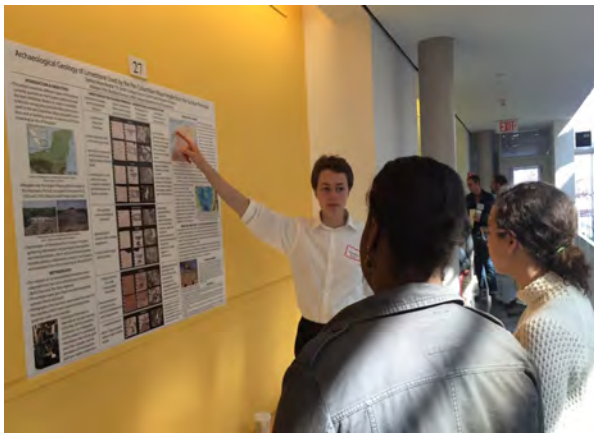
Jade Uyeda-Trackman (’18) and Emma Harnish (’18) extracting sediment core from the bottom of Cooks Pond, New Hampshire.

Lyn Watts (’17), Marcia Rojas (’17) and Maya Domeshek (’17) starting discharge measurement at Lamont Bridge.

Aqueous Geochemistry field trip to the Davis Pyrite Mine, Rowe, MA, April 2016. A pre-trip breakfast to a local sugar shack was good preparation! Back row (l-r): Meghan Sullivan (’16), Marina Howarth (’18), Emma Schlam (’16), Courcelle Stark (’18), Hannah Francis (’16), Sarah Dickson (’16). Front row (l-r): Lizzie Sturtevant (’18), Seulgi Son (’16), and Claudia Mazur (’16, Mt. Holyoke).



Sarah Dickson ‘16 presenting at Celebrating Collaborations, April 2016.



Sydney Reyes Beattie ‘19 presenting at Celebrating Collaborations, April 2016.

Naomi Jahan ‘18 presenting at Celebrating Collaborations, April 2016.

First day of class in GEO 102! A hike up Mt. Holyoke kicks off “Exploring our Local Geologic Landscape.”