



SMITH COLLEGE

Department of Geosciences Newsletter

May 2018



Greetings from the Chair: Bosiljka Glumac

I am writing one more time as the Geosciences Department Chair, the 2-year role I will pass to John Brady this summer. As the Chair this year, I worked on submitting a request for a tenure track position in sustainable mineral resources to fill in a position that will be vacated after John retires a year from now. You will be hearing much more about this next year, so please stay tuned!

Somewhat unexpectedly, this year I ended up doing an unusual amount of service. I continued my involvement with SEPM (Society for Sedimentary Geology), and at Smith I served on the Science Center Committee on Diversity and

the Fellowship Committee, the Committee on Study Abroad, and the Archaeology Advising Committee. In addition, I was asked to join Faculty Council as a 1-year replacement, and in this role, I also served as a representative on CAP (Committee on Academic Priorities) and ACRA (Advisory Committee on Resource Allocation). These are some of the most influential College committees, and I learned a great deal about the institution and our shared governance in a very short time period!

At the same time, I kept teaching full time and advising students. In the Fall, I had one of the largest Sedimentary Geology classes with 22 students! Needless to say, executing the course field work was equally challenging and rewarding, and made possible by my invaluable TAs Casey Armanetti

'18 and Naomi Jahan '18. This Spring I enjoyed teaching Extraordinary Events in the History of Earth, Life and Climate (GEO 106) with 37 students, and Archaeological Geology of Rock Art and Stone Artifacts (GEO 112) with 26 students. I am the advisor for the magnificent class of 2020 with 12 GEO majors and 2 minors. This year I also advised 10 first-year LAAs (Liberal Arts advisees) and the successful Fulbright applicant to Germany – Casey Armanetti '18. Another GEO major, Molly Peek '18, also won a Fulbright Fellowship to Norway. Congratulations Casey and Molly!

Along the way I managed to do some research as well. In the Fall I worked with Alyssa Graveline '19 on subtidal Pleistocene limestone from the Bahamas before she left for a semester at Frontiers Abroad New Zealand. In January with Al and Jane Curran, and Abigail Beckham '19 I traveled for the first time to Great Inagua Island in The Bahamas. Our field work served as the base for Abigail's Spring 2018 research project on Pleistocene coral reefs. In the Spring, I also enjoyed working with eight Early Research students on assessing the impact of hurricanes in The Bahamas from Google Earth historical images.

My trip to GSA in Seattle this year was truly special because of the large number of current students and alumnae who attended the meeting and our reception, and owing to the company of my colleagues and former classmates from the University of Zagreb, Croatia – Profs. Blanka Cvetko Tešović and Igor Vlahović. This Spring I was also hosting Agnese Mannucci, a graduate student from the University of Florence in Italy, who worked closely with Abigail Beckham '19. I hope to see Agnese again soon, either in Croatia this summer or at the Fall GSA meeting in Indianapolis.

Not surprisingly, I continue to love spending time with my family here and in Croatia. My son Alex (14.5) is an 8th grader at JFK Middle School and an avid soccer player. My daughter Yelena (12.5) is a 6th grader at the Smith Campus School and a level 6 competitive gymnast. My spouse Tony Caldanaro (structural geologist by training) keeps busy directing the Science Center computing support group. Last October I was thrilled to finish the Chicago marathon, and I am currently registered for my 4th in Berlin, Germany this September. This May I was also very happy to complete the 7 Sisters, described as "12 miles of technical, single-track trail on an out-and-back course with over 3,500 ft. elevation gain, following the ridge-crest of the Holyoke Range" and "widely considered the most challenging trail race in the Northeast" (www.7sisterstrailrace.com).

I would like to congratulate you on all of your achievements this year, and to thank those who sent updates for this newsletter. We love hearing from you! Special gratitude goes to our Departmental administrative assistant Donna Kortes for putting the newsletter together. Not a small task at all! Thanks again and stay in touch!



Silly holiday family photo: Bosiljka Glumac and Tony Caldanaro with Yelena and Alex

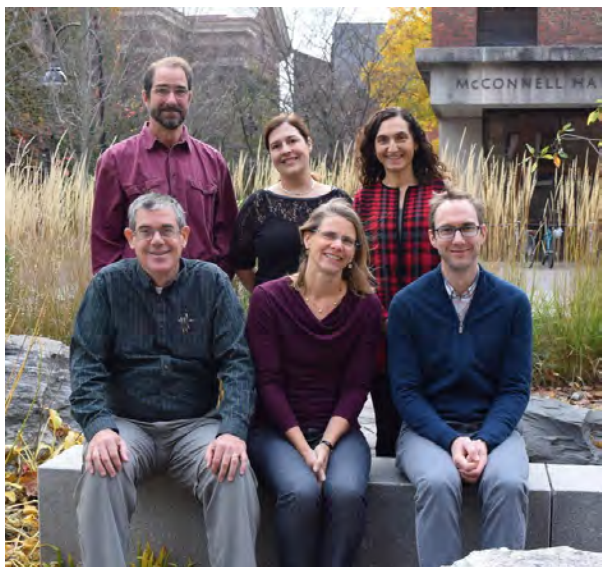


Bosiljka Glumac after finishing the Seven Sisters Trail Race with bib # 555 on 5/5.



Bosiljka Glumac's Spring 2018 Archaeological Geology (GEO 112) class participating in flint knapping demo by Eric Johnson, Research Professor and Director of UMass Archaeological Services .

Faculty Updates



2017/18 Smith College Geosciences Faculty (Left to Right):
Standing: Mark Brandriss, Sara Pruss, Bosiljka Glumac. Sitting:
Robert Newton, Amy Rhodes, Jack Loveless. Not pictured:
John Brady (on sabbatical leave)

John Brady

This has been a sabbatical leave year for me, working principally on an online petrology text, but also filled with travel and other adventures. Javascript coding is slow, but I am getting better at it. The online petrology website currently lives at Smith (<http://www.science.smith.edu/~jbrady/petrology/tour.php>) and is growing daily. To see it you will need (username: jbrady-guest, password: ReadMyT3xt). Most of my time has gone into developing animations and tools to make some of the difficult diagrams and concepts in petrology easier to understand. Highlights can be viewed from the "Website Tour" page link given above. I continue to work on the textbook-like topics sections that make use of the animations and tools. My hope is that the website will be hosted by the Mineralogical Society of America and be more generally available next year.

My travel this year was highlighted by a trip to Wyoming with friends (mostly from Smith) to see the total solar eclipse last August. The photo shows our group on a ridge where we had a perfect view of totality. If you were not able to be in the zone of totality in 2017, I highly recommend that you travel to see totality when another eclipse opportunity arises (2024?). It is difficult to convey what a special experience it is. Nancy and I also had the pleasure of joining two excellent Smith Alumnae Travel trips this year, one to Japan and one to Southern Africa. I learned a lot about the regional geology of those places for my lectures there, and we soaked in the different cultures. In Southern Africa, we got very close to many amazing animals. In part because the eclipse had us thinking about the moon, I am including for your thinking two photos I took of the moon.

Both views show a waxing moon, approximately half full. To confirm this, look at the pattern of Lunar maria. One photo was taken in Vermont in March. One was taken in South Africa in February.

I look forward to reading about your adventures when I receive the final version of this Newsletter, or seeing you at a reunion or a meeting. Whatever you are doing, your friends at Smith are interested and hope that you will stay in touch.



Waxing moons, about half full, taken in March and February 2018. The photos are shown as taken. Can you explain the difference?



John and Nancy Brady and friends watching the sun disappear behind the moon on a ridge 30 miles west of Casper, WY in August 2017.



GEO Senior Lecturer Mark Brandriss accepting the 2017 Sherrerd Award for Distinguished Teaching! Congratulations Mark! So well deserved!

Mark Brandriss

The academic year is wrapping up with a mineralogical development that could provoke nostalgia among many of you. After more than a quarter century, our venerable Scintag X-ray diffractometer finally gasped its last X-rays and was taken away to be reincarnated as whatever shiny new objects are born from recycled steel. We wish it good luck in its new endeavors. I know that many of you had complicated relationships with ol' Scintag, who could be your best friend one day and a mysterious stranger the next, but I hope you'll take a moment to reflect fondly on all the times she helped you identify unknown minerals and find hidden d-spacings. Bob Newton and I spent quite a bit of time interviewing replacement diffractometers this spring and ended up hiring a new state-of-the-art Rigaku SmartLab SE, who will arrive on campus and begin work this summer. Our colleagues who have worked with SmartLab SE in recent years say she is smart, efficient, extremely friendly, and easy to get along with. We're looking forward to working together for many years to come.

In the personal realm, my wife Rónadh Cox is eagerly wrapping up her 6-year term as chair of Geosciences at Williams College and resuming her life as an administratively unencumbered geology professor. Our son Owen will graduate from Mount Greylock High School in just a few weeks, and is thoroughly enjoying his final season of track and field (and his classes too, but mostly track and field). He'll be heading to the University of Vermont in the fall and already wears Catamount swag almost daily. He's stoked! We're heading to Ireland and Scotland for a family vacation in June, at the end of which I'll be meeting up with Sofia Johnson ('19) and Amy Hagen ('21) for a couple of weeks of field work in the magnificent Cuillin Mountains on the Isle of Skye.

Al Curran

I'm continuing to pursue my research interests in retirement, with active projects in ichnology (the study of trace fossils), coral reefs – both fossil and modern, and Quaternary carbonates of the Bahamas. My big international trip last year (late April-early May) was to Taiwan to attend and present at The 14th International Ichnofabric Workshop, held at the National University in Taipei. This workshop included an excellent 5-day fieldtrip around the periphery of Taiwan, covering natural hazards, mud volcanoes, hot springs, coastal phenomena, the beautiful Marble Gorge National Park, and cultural stops, in addition to trace fossils. A several-day stopover in Maui on our return provided some much needed and enjoyable R&R time.

During the summer, in addition to beach time on Cape Cod, Jane and I organized a Curran family trip to Yellowstone N.P. in August. I hadn't been to Yellowstone in a long time, and most of the crew were making their first visit, so it was a real treat. If you haven't been, put Yellowstone high on your list – the park is beautiful, geologically alive, and a unique site in North America.

This past January, we again spent three weeks in the Bahamas doing fieldwork, starting with a week on Great Inagua with Prof. Bosiljka Glumac and her student Abigail Beckham (see photo). Our goal was to study and sample parts of the well-preserved Pleistocene fossil coral reef exposed at Devil's Point. Inagua has been hit by three major hurricanes in the past several years, including Irma, which passed directly over the island last September, leaving the island's infrastructure severely damaged. Power was restored, but many of the roads and a bridge that we used in the past to reach our field areas were out (and likely will stay that way). Rest assured that the Smith geo-team was not to be stopped, but the result was several very long "hikes."

Following Inagua, Jane and I continued on to San Salvador where we resumed work on several small projects. All went well on San Sal, and we followed up with six weeks of "retired-living time" in Florida, at Crescent Beach just south of St. Augustine.

This June, I am again going to Belize with the Smith Coral Reef Ed-Ventures team and its leaders, Professors David Smith and Denise Lello. This is the 19th year for this marine environmental education program for schoolchildren in San Pedro. My role is as the team's all-purposes assistant. I anticipate that the rest of the summer will be split between western Mass and Cape Cod (daughter and family).

It was great to see many Smith geo-alums at GSA in Seattle last fall, and I look forward to a good Smith turnout for GSA -Indianapolis in November. If this isn't your on-campus reunion year (or you can't attend this May), then be sure to

drop by the Geo Department on your next visit to the Smith campus. The department has a lot going on, and the labs are open. I'm located in the Burton B-11 subterranean habitat, and, if I am in, I will be very glad to see you!



January 2018, Geo-expedition to the remote island of Great Inagua, Bahamas; L-R: Casper Nixon (our guide), Bosiljka Glumac, Abigail Beckham (Geo-class of 2019), and Al Curran (photo by Jane Curran).

Jack Loveless

It's been another busy and enjoyable year for me at Smith. I've had wonderful students, both in classes and in my research lab, and it's been a lot of fun to work with them.

On the research front, I've continued working in several different global subduction zones, combining my work in analyzing the present-day deformation as seen by GPS observations with colleagues' work documenting earthquake processes over longer time scales. With colleagues across the river at UMass, I published a paper about historical tsunamis in southwest Japan and their potential connections to ongoing strain accumulation on the Nankai Subduction Zone. Hannah Baranes, a UMass PhD. student, led this study, along with her advisor, Jon Woodruff. A bit closer to home, I've continued work on a few projects in the Cascadia Subduction Zone. With colleagues at Western Washington University, I've been comparing patterns of modern strain accumulation with crustal fault activity on the Olympic Peninsula. I hope to head back to Washington this summer for some paleoseismic trenching across one of these faults. A separate but related project has stemmed from Eli Molitors-Bergman's senior thesis from last year on slow slip events in Cascadia. Eli spent the fall refining some of their analyses and preparing an excellent talk delivered at the AGU Fall Meeting in New Orleans, and we are actively preparing a manuscript that summarizes this research.

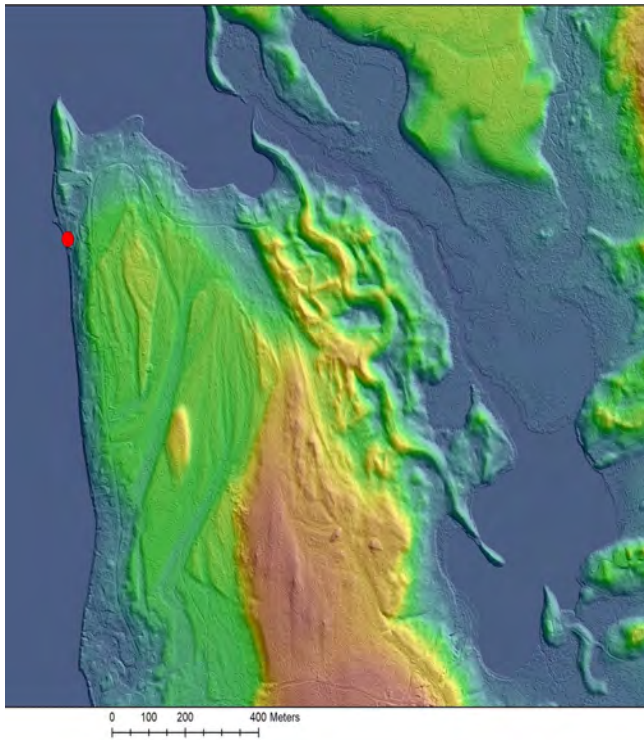
Juliette Saux '20 has made great progress in her STRIDE work this year, comparing the locations of slow slip events and subduction zone locking in Cascadia. I'm really excited to see where she takes this research during her SURF work this summer! Anna Pearson '21 has also been working in Cascadia, determining how stress from the subduction zone is imposed on the crustal faults mentioned above. AEMES Scholar Aurora Lopez '20 worked this year on determining whether or not the corrugated geometry of the South American subduction zone could influence the location of earthquakes, and she'll refine this analysis next fall in a special studies. Finally, Mylo Grote '18 carried out a fascinating analysis of how fault slip rates may have varied through time in Japan over time periods as short as a few years.

I taught Tectonics for the first time this past fall and had a lot of fun discussing plate motions with my students. I also taught my introductory GIS class, with students again carrying out group projects in partnership with the Smith Botanic Garden, the Office of Sustainability, the Kestrel Land Trust, and Mass Audubon. I was very happy to have the campus news office interview one group of students, showcasing their work in the Greycourt Gate, which then was picked up by some industry publications. This spring, I had a large Structural Geology course, and we suffered through some winter-like conditions during a few field trips but were rewarded with spectacular weather for our visits to outcrops of the Goshen Formation in Cummington in late April.

My wife, our two kids, and I continue to enjoy life in Northampton. My older daughter, Simona (7), became fascinated by sinkholes and did a project on them for her school science fair in March. She's equally enamored of red pandas, though, so I'm not reading too much into this geologic interest in terms of professional aspirations!

Robert Newton

Another spring comes to campus amid the ruins of the Neilson renovations. It has been a cold snowy spring but the weather has changed and I am looking forward to a great summer. I am finishing my term as CEEDS Director and am looking forward to a year-long sabbatical! I plan on doing some traveling, visiting old friends and colleagues, and, most importantly, writing up the many manuscripts that lay partially written on my desk. Jill and I plan to spend much of the fall in New Hampshire at our house on Silver Lake where there aren't as many distractions. Speaking of Silver Lake, the State of New Hampshire just released a new LiDAR data set that covers that area. The Digital Elevation Models produced by this data are STUNNING. The DEM below shows my house (red dot) in reference to the esker and crevasse fillings to the east and the outwash plain with the old stream channels clearly shown just behind the house.



Lidar based DEM for the Silver Lake area, New Hampshire. Red dot shows the location of Bob Newton's lake house.

Last summer I attended the 13th International Conference on Mercury as a Global Pollutant that was held in Providence, Rhode Island. Bob Merritt (Biological Sciences), Marc Anderson (CABR) and I presented two papers with students, one on the Cooks Pond project with Emma Harnisch '18, and the other on mercury in Missouri fish with Sophie Dilek '17. In addition, Rachel Neurath '09, Johan Varekamp (Wesleyan University) and I presented a paper on the history of atmospheric deposition of mercury from Block Island, Rhode Island. I also took a number of students to the Northeast GSA Section meeting in Burlington, Vermont where we presented a variety of papers ranging from looking at local versus regional sources of mercury and lead deposition at Cooks Pond (Harnisch '18, Newton, Anderson) to sources of solutes in a meltwater stream from a cold-based glacier in Svalbard Norway (Molly Peek '18, Newton, Anderson), to recovery of lakes in Maine from acidic deposition (Leah Tallent '19, Newton, Anderson) and finally, a study of the effectiveness of the Mandelle parking lot permeable pavement (Francesca Giardine '20, Newton, Anderson). It has been a busy year!

Future research involves continued work on the Paradise Pond project. We had hoped to do a sluicing experiment this summer to remove up to 10,000 cubic yards of sediment, but the Army Corps of Engineers wants another year of monitoring before they will extend their permit to do this. This year we will be doing another round of sediment coring and analysis for heavy metals (primarily lead) and will also expand our work to

look at upstream sources of sediment. Other projects involve looking at mercury versus selenium in fish and perhaps birds in areas of both New Hampshire and the Adirondacks. We are also going to examine cadmium contamination in fish and vegetation in the Cooks Pond system as we have found that the ore body sphalerite contains not only mercury but also high concentrations of cadmium. Since I plan on spending significant amounts of time in New Hampshire on my sabbatical, I plan to spend time hiking in the Sandwich Range where the recently released LiDAR data has revealed an amazing landscape that demands more geomorphic analysis.

The geomorphology weekend field trip returned to Popham Beach in Maine after missing last year. This year we had to go a couple of weeks earlier in the semester (March 7,8) in order to comply with the conditions of a permit that we received from the State of Maine to use a drone to collect photogrammetry data. Conditions were cold and windy, but with the expert help of Jon Caris and Tracy Tien from the Spatial Analysis Lab, who accompanied us on the trip, we were able to collect an awesome dataset. From this data we have begun to create a series of DEM's with vertical accuracies of better than 3cm and horizontal accuracies of around 1cm. The only problem is that it takes a lot of time to process the data but the students have completed an initial report that we will submit to the State of Maine when I finish creating the final DEM's.



Geomorphology students surveying on Popham Beach Maine. Coordinates of the photogrammetry target in bottom picture were used to calibrate the drone based DEM's.

In other news, the department has received funds to replace the old x-ray diffractometer with a brand new one. It should arrive in June and I have already collected some paleosol samples collected on last Fall's NEIGC field trip in northern New Hampshire. The general consensus from those on the trip is that these samples are at least pre-Wisconsinan and maybe much older. It should be fun to see what we find for a clay mineral assemblage.

Finally, I am continuing my work to protect local aquifers. I have been working, as a member of the Barnes Aquifer Advisory Committee (BAPAC) to help address the PFOA-PFOS contamination issues now facing the City of Westfield. In addition, I am continuing my efforts, working with the Green Mountain Conservation Group, to create a regional aquifer protection advisory committee for the Ossipee Aquifer in New Hampshire. In fact, I just returned from presenting at a workshop for officials from the 7 towns in the Ossipee area where we really tried to get this done. But, alas, our current political environment is making it really difficult to bring people together to address issues where the environment is perceived to be in conflict with economic development.

Well, on that note, I am going to end this before I get carried away. Hope you are all doing well and that you will stop and visit if you are in the area or send me a note if you are not.

Sara Pruss

I spent the 2017-18 academic year happily back to teaching and engaging in research with my students after my year-long sabbatical. My travels this year took me to places as far flung as western Australia, and some much closer, including the western US, Newfoundland, and even eastern Pennsylvania. One of my great joys this year was meeting up with some SPRUSS Lab alums in various corners of the world. I was able to celebrate receiving the Terry J. Beveridge Award in Banff, Alberta with Kelsey Moore '15, and that made it all the more special. Upon returning from Banff, I conducted a short field season in Lafayette, Pennsylvania, examining Cambrian carbonates, where Emma Roth '17, volunteered to be my field assistant for a few days. She and I had a happy reunion (also enjoyed by my kids, who had quite liked having Emma Roth camp in their backyard before our trip to Norway in 2016). Kelsey and I met up again, with her advisor at MIT, Tanja Bosak, and a postdoc in Shark Bay, western Australia, after more than 25 hours of flying time. We had a delightful time snorkeling among the world famous stromatolites, spotting emu, and enjoying the diversity of microbial mats and sediments. Then, in early October, I was reunited with Sophie Westacott '13 in western Newfoundland where she and I and a research team from Yale examined Early Paleozoic bioturbation for Sophie's thesis in the well exposed cliffs of the Port au Port Peninsula. In January 2018, Tessa McGann '16 joined my group of 3 first-year students to examine Triassic strata in the western US – with the added bonus that we were being

filmed for the new exhibit opening in the Smithsonian Institution in June 2019 entitled *Deep Time*. We will be featured talking about the end-Permian extinction and its consequences on evolution. Traveling is obviously one of the best parts of my job, but having a chance to do this with our alums is an even greater joy.

This year, we had many new additions to the SPRUSS lab, including 4 first-year AEMES and STRIDE students, Amy Hagen, Martha Slaymaker, Amelia Olsen, and Renee Revolorio Keith. We also had Vivienne Maxwell and Lorena Paras working as Early Research students on a variety of topics, and a bunch of new special studies students as well. These new additions have kept the lab vibrant and active and full of laughter this year. Highlights from the lab this year include a holiday party at the end of the Fall semester where we met up for cookie baking. In the Spring, we held our first joint lab meeting with Dave Jones's lab from Amherst College, where we all talked about our research and areas of overlap. And, nearly all of our lab members presented their exceptional research at Celebrating Collaborations at Smith College this April. It has been a fun and productive year for this group.



Sara Pruss and Sophie Westacott '13 on the Port au Port Peninsula, western Newfoundland

On a personal note, my son, Ethan, has become a great lover of hockey, and we spent many weekend days at various rinks in New England this winter. Annabel learned to skate as well, and this process went quickly for her, in part because of the 50' hockey rink that David installed in our backyard. David continues in his role as AVP of Finance at Smith and has been enjoying biking the various roads of western Massachusetts this last year. I continue to enjoy hiking all of the lovely trails around us, gardening, cooking, traveling and visiting with friends. We will take a family trip to Salt Lake City in a few weeks where I will be presented with the SEPM James Lee Wilson Award for contributions to sedimentary geology by an early career geologist. I am delighted to celebrate this honor with my family. Our lives are busy and full, and we look forward to our next adventures.



Sara Pruss and Kelsey Moore '15 at the award ceremony for Sara's Terry J. Beveridge Award at the 1st Geobiological Society Meeting, Banff, Alberta



SPruss lab holiday gathering at Sara's house in December 2017. Students from upper left Olivia Leadbetter '19, Rhiannon Nolan '19, Daniel Wood '19, Emily DeWitt '19, Chiza Mwinde '18, Amelia Olsen '21, Vivienne Maxwell '21, Ziqiu Zhang '18, Emma Becker '18, Martha Slaymaker '21, Amy Hagen '21, Renee Revolorio Keith '21, and Courcelle Stark '18

Amy Rhodes

Hi Everyone,

This has been another good year of water, rocks, and snowmelt. I'm currently wrapping up an enjoyable semester of teaching Aqueous Geochemistry with a lively group of 15 students. We engaged in some fun field trips collecting water samples in wetlands and rivers within the Mill River Watershed to look at relationships between water chemistry, mineral weathering, and nonpoint source pollution. I am still directing the Environmental Science and Policy (ES&P) Program. Geosciences has maintained strong ties with the ES&P Program, which has caused an increase in enrollments of our introductory geology courses. Our classes are attracting students with interdisciplinary interests who seek to connect geoscience with broader societal issues.

These interactions stretch me as well. This year, I enjoyed advising ES&P major Alexandra Davis '18 with her year-long special studies project on a design for assessing vulnerabilities different local communities may face with climate change. This project was in collaboration with the Pioneer Valley Planning Commission, which was evaluating how to effectively approach a regional climate change vulnerability assessment. Through her work, Alexandra strengthened connections between Smith and different city planners and sustainability officers that should extend to new projects for future Smith students.

On a personal note, I'm looking forward to a family trip to the national parks in Utah this June, with side trip to the north rim of the Grand Canyon. I can't wait to accompany Erik, Sylvia (age 15), and Linnea (age 11) to Arches National Park, which I haven't visited since I was 8 years old. I've had a great year of rowing too, and my team with Northampton Community Rowing and I medaled at a few regattas and was able to compete at the Head of the Charles Regatta this past October. I had a fun time as a faculty liaison to the Smith Crew team this year and participated in their annual erg-a-thon! I very much enjoyed catching up with Smith GEO alumnae Hannah Francis, Alana McGillis, Sarah Clifthorne, Sarah Dickson, and several others at the Geological Society of America 2017 Meeting in Seattle, Washington, and Laurel Mutti at Northeastern GSA in Burlington, Vermont. Hope to see you at a future meeting or your next visit to Northampton!



Aqueous Geochemistry students sample a wetland stream in Hatfield, MA, on a sunny Saturday in February.



Amy Rhodes (left) posing with teammates and boat called "Tsunami" after winning first place in Masters Women's 4+ at the Festival Regatta, Lowell, MA. The "Smith Geology" hat brought added strength!



On Family Weekend, GEO 101 students pose with some family members, friends, and Amy Rhodes on an outcrop of Holyoke Basalt, after enjoying the view of the Pioneer Valley from the top of Mt. Holyoke. GEO 101 students include Anais Main, Marva Tariq, Vivienne Maxwell, Iris Afantchao, Renee Revolorio Keith, Amelia Olsen, and Sarah Abowitz.

News from the Lab

Mike Vollinger -Technical Assistant



Mike Vollinger's graduation from UMass in May 2018 with his Masters Degree. Congratulations Mike!

Jon Caris, Tracy Tien —Spatial Analysis Lab (SAL)

The Spatial Analysis Lab (SAL) was the **convergence** of plenty geo classes this year – quite a **plateful**! We can hardly **fault** the **gneiss, tuff** bunch of geoscientists and we always have an **apatite** more. We entered a new **eon** of post-bac spatial fellow who **lithifies** upon previous post-bac's work – I (Tracy) **shale** in comparison!

Jack's *Modeling Our World: Introduction to GIS (GEO 150)* **diverged** on Story Map projects on campus and beyond, such as following the **veins** of food supply and waste, managing invasive plant species, curating an immersive tour of significant trees from the Botanic Garden, and updating signage along MA DCR trails.

We traveled to Popham Beach, ME in two vans **k(r)amed** with *Geomorphology (GEO 251)* students, equipment, and snacks (Newton's first rule of fieldwork: never get separated from your lunch)! The **drone imagery** collected on the trip **solidified** assumptions that the beach environment is undergrounding drastic changes. Despite numerous verbal threats from our field trip leader, no piping plovers were hurt during this trip. Bob continues to be a rock-hard fan (off the charts on the **Mohs scale**) of the drone derived orthomosaics and Digital Elevation Models (DEM), as well as newly available LiDAR data for the entirety of New Hampshire.

The *Aqueous Geochemistry (GEO 301)* class ventured to the MacLeish Field Station (with Trimble Junos guiding their way) and collected stream chemical makeups at sample sites. The students then **agglomerated** in the Lab to produce maps displaying their findings.

We continue to see plenty of Geoscience students in our J-term courses - "Making it Work"™ with GIS and Drone Thinking. We expect the trend to continue as we offer a 1 credit drone course in the Fall called "Aerial Imagery and Cinematography." We've come a long way since the **Pleistocene** flying kites and building drones with Naomi Barshi '12 and Bob Newton.



Bob Newton - holding drone on startup - 2012



Kite Photography - 2012 with Naomi Barshi '12, Bob Newton, Jon Caris



Drone at Shortridge field station, Popham Beach, Maine - Geomorph 2018

Junior Year Abroad

Billie Cullison, Alyssa Graveline, Sofia Johnson, Meg Kikeri, Abby Lown, Rhiannon Nolan, (Class of 2019) - Frontiers Abroad—New Zealand

Hey Smith GEO department, kia ora from New Zealand!

We've been learning all about the Geology of New Zealand during our time at the University of Canterbury in Christchurch. We started our adventures by completing a 5-week field camp during which we travelled to a different geological setting in New Zealand each week - from limestone shore platforms in Kaikoura to spectacular volcanoes in the Taupo volcanic zone. We learned important field techniques and improved our mapping skills by trying to interpret the geologic history of every rock we came across. One of the weeks we spent hiking around on top of Mt. Ngauruhoe, better known as Mount Doom, and ended the week acting as disaster management in a simulated eruption - a couple towns survived.

We're spending the rest of our semester taking geology courses at the University of Canterbury in Christchurch, conducting our own geologic research while also traveling around the rest of the country on the weekends. Our research topics include making a geopark proposal for Banks Peninsula (Alyssa), evaluating the possibility of a geosite in Akaroa (Meg), creating a 3D model of a landslide using drone imagery (Rhiannon), searching for melt inclusions within scoria samples (Billie), analyzing the geochemistry of volcanic benches in Banks Peninsula (Abby) and investigating the origin of an orbicular granite sample from Karamea (Sofia). We've also gone on cool adventures like long road trips in campervans, backpacking through the Fjordlands and traveling to Australia! It's been very sunny and warm here, so we're a little relieved to have missed all of the snowstorms in Northampton! We're loving our time here and enjoying the refreshingly different lifestyle at UC. New Zealand has been a fantastic place to study Geology since there is so much diversity across a relatively small land area.



We're missing Alyssa and Meg :(



Alyssa and Sofia at the Tongariro Crossing during Field Camp

Other Departmental News

The GeoSars and Schlalk Funds—

Great Ways to Support Geosciences at Smith College

Thank you once again to all contributors to the GeoStars and Schlalk Endowed Funds (Smith Fund 544399 and 544847, respectively)! Your contributions are added to the endowment. Income from the funds is 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 Seattle, WA in October 2017 and the NE GSA Meeting in Burlington, VT in March 2018. This fund also helped support the GSA Alumnae Reception and the Departmental Luncheon Lecture Series.

The Schlalk fund, established in memory of Professor Marshall Schlalk, is used primarily to support students attending field camps and conducting geological field research. This year the fund helped Olivia Leadbetter '19 with research in Nevada, and Sofia Johnson '19 and Amy Hagen '21 with field work in Scotland.

Five College Geology Collaboration

Smith Geosciences continues to engage in fun and productive collaborative activities with The Five College Geology Consortium, which provides diverse opportunities and resources for Smith students and faculty. Our contribution to the Five College Geology Lecture Series this year was the talk "The Use of Watershed Based Studies to Answer Key Questions Concerning Global Contaminants and Environmental Change" by Douglas Burns, USGS Research Hydrologist, hosted by Bob Newton. Bob was our own speaker at the Five College Faculty Symposium this year (where he talked about the record of mercury contamination in Cook's Pond, New Hampshire), and 14 students presented 11 posters at the 39th Annual Five College Undergraduate Research Symposium at Amherst College last April.

Other examples of collaborative efforts include our Smith Oceanography class, which is an important component of the Five College Coastal and Marine Sciences Program and includes a research cruise partially funded by the Five Colleges. Two sections of our popular introductory field course were taught by wonderful UMass graduate student Raquel Bryant last fall, and another UMass grad student, Marissa Mnich, is already lined up to teach the class next year. Professor Sara Pruss and her students collaborated with Profs. David Jones (Amherst) and Mark Leckie (UMass) on various projects, while Professor Bosiljka Glumac and her students analyzed samples in Professor Stephen Burns' Stable Isotope Lab at UMass. We also hosted our Five College colleagues, with Anna Martini and her Amherst students coming to work in the Center for Aqueous Biogeochemistry Research (CABR) at Smith. Professor Jack Loveless served on thesis committees for two graduate students of UMass Professor Michele Cooke, and co-authored an article in Geophysical Research Letters paper with UMass Professor Jon Woodruff and his PhD student Hannah Baranes. Mike Vollinger, our technical specialist at Smith, helped many students with sample preparation at UMass, where he has a long and distinguished history as a lab guru.

The Five College Geology Consortium continues to maintain the EarthScope grid array seismometer installed at the Smith College's MacLeish Field Station in Whately, MA (www.earthscope.org; station L61B). The seismometer continuously senses, records, and transmits ground motions from a wide range of seismic sources, including local and distant earthquakes, volcanic eruptions, and other natural and human-induced activities. The output of this monitoring can be viewed live on the web at: <http://ds.iris.edu/ds/nodes/dmc/tools/stationmonitor/TA/L61B/>.

Plans are being made to run a Five College Geology field trip to the desert southwest (near Las Vegas) during Interterm 2019. UMass will be taking the lead on the field trip, but we expect to get faculty and student participants from the other four colleges.

Geosciences Speakers and Conversations

This year we tried some new things in our regular Geosciences lunchtime speaker series, including events in which all members of our Geosciences community could gather to discuss topics of shared interest. Among other ideas, students suggested that we periodically meet to discuss topics of societal relevance and their relationship to geosciences. To that end we decided to have departmental readings on subjects that lie at the intersection of science and society, doing the readings over winter and summer breaks and then meeting to discuss them early the following semester. Our first reading, to be done this summer, will be "Tales from an Uncertain World: What Other Assorted Disasters Can Teach Us About Climate Change" by Lisa Gardiner ('95). The societal impacts of geology were also highlighted when we assembled a group of students and faculty early in the spring to participate in an American Geosciences Institute webinar on critical minerals, which gave us some additional perspectives on this emerging field. It was an interesting follow-up to the mineral resources symposium we hosted last year.

Our traditional lunchtime speaker series once again brought numerous visitors to campus to share their discoveries and perspectives in diverse areas of the geosciences, interspersed with presentations by members of our own department. The speakers included:

Our Geoscience students, who shared their summer experiences in a group presentation titled *"Summer GEO Adventures: Where We Went, What We Saw, What We Did"*

Max Borella, of Frontiers Abroad New Zealand, who gave a presentation on various study abroad opportunities that have been extremely popular with our Geoscience majors in recent years

Kinuyo Kanamaru, visiting professor at Amherst College, who gave a wide-ranging presentation titled *"Natural to Anthropogenic Impact on Climate Change - Eastern Asia to Pioneer Valley"*. We're very pleased to report that Kinuyo will be teaching a course on climate change as a visiting professor at Smith this fall!

Mike Vollinger, our department's technical specialist, who presented the Master's thesis research he successfully defended at UMass in 2017: *"The Oxidation State of Hawaiian Magmas"*

Igor Vlahovic, University of Zagreb, a colleague and long-time friend of professor Bosiljka Glumac, who addressed the question: *"When Did Croatia Become Part of Europe?"*

Alyssa Pascuzzo ('15), now a graduate student at Brown University, who shared her other-worldly perspectives in a talk titled *"Space Rocks: From Earth to Mars and Beyond"*

José Constantine, professor at Williams College, who described the twists and turns of his research in *"The Role of Sand Grains in the Demise of Meandering Rivers"*

Doug Burns, hydrologist at the USGS, who was honored as our annual Five College Lecturer and discussed his work on *"The Use of Watershed Based Studies to Answer Key Questions Concerning Global Contaminants and Environmental Change"*

Carling Hay, professor at Boston College, who explained how solid earth geophysics influences the distribution of sea level change due to melting polar ice caps in a great talk titled *"Sea-Level Fingerprinting: Projecting into the Future by Revisiting the Past"*

Thivanka Ariyaratna, recent graduate of the University of Connecticut, who delivered a fascinating talk about discarded military ordnance in her presentation on *"Fate and Cycling of Explosive RDX in Simulated Coastal Marine Habitats"*

We're very pleased to thank all of our speakers, some of whom braved treacherous winter drives to meet with us here at Smith, and we're also very grateful to Donna Kortess and Mike Vollinger for keeping us well fed at these lunchtime events!

GEO Contributions to the Smith College Sigma Xi Chapter

Smith College continues to have an active local chapter of Sigma Xi: The Scientific Research Honor Society. The chapter organizes a luncheon lecture series that features a range of research talks by Smith College and visiting scientists, and attracts a large number of faculty, staff, and students to McConnell Hall every Tuesday.

Among this year's Sigma Xi speakers was GEO Prof. Bob Newton who served as the Director of CEEDS (Center for the Environment, Ecological Design and Sustainability), and spoke with Paul Wetzel, CEEDS Environmental Research Coordinator, about "Campus Weather Data to Study Climate Change: An On-Line Data Resource."

Other GEO speakers included Bosiljka Glumac who talked about "Stone Use by the Pre-Columbian Maya People in and around the City of Mayapán on the Yucatán Peninsula in Mexico," and John Brady on "Creating Online Learning Tools from the Ground Up."

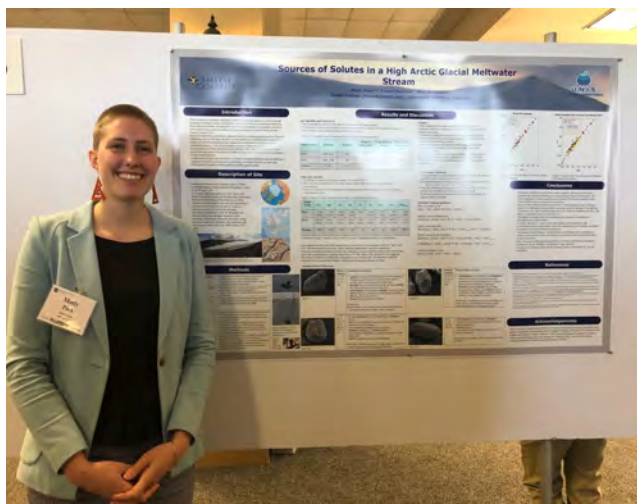
Our Senior Lecturer Mark Brandriss has been serving on the Sigma Xi membership committee, and GEO Seniors Casey Armanetti, Robin Austin, Mylo Grote, and Rebecca Matecha were elected to the Society this year, joining several of their GEO classmates who were elected previously. Congratulations!

GSA Seattle, WA—October 2017



It was great to have so many of our alumnae as well as the current students and faculty attend our reception at the 2017 GSA meeting in Seattle!

NEGSA Burlington, VT—March 2018



Molly Peek '18 presenting her poster on meltwater streams at NEGSA in Burlington, Vermont .



Francesca Giardine '20 presenting her poster on the Mandelle Parking Lot experiment at NEGSA in Burlington, Vermont.

Out in the Field



Sedimentary Geology and Paleontology joint field trip at Geer Road quarry in Western New York, September 2017



Sedimentary Geology and Paleontology joint field trip visiting a new spot outside of Seneca Falls, New York, September 2017



Sara Pruss' oceanography class on a research cruise out of Groton CT, run by Project O at Avery Point



Abigail Beckham '19 in the field on Great Inagua, Bahamas in January 2018, pondering peat exposures on the eroded beach in the aftermath of September 2017 Hurricane Irma



Amy Hagen '21, and Sara Pruss, looking at Triassic sediment in Southern Nevada with the Smithsonian crew filming in the background. Photo by Martha Slaymaker '21.



Bosiljka Glumac's Fall 2017 Sedimentary Geology (GEO 232) class on Plum Island, MA

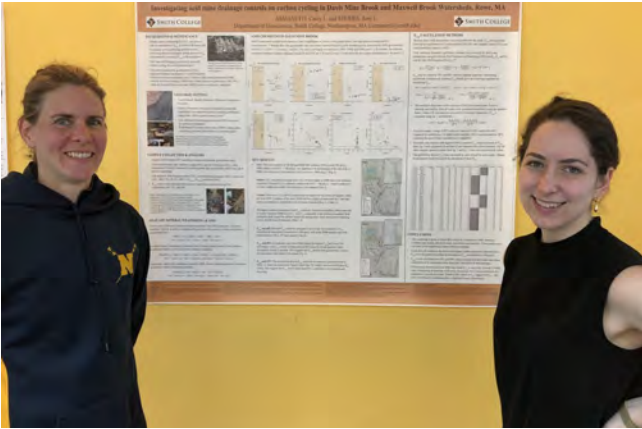


Students from left, Martha Slaymaker '21, Renee Revolorio Keith '21, and Amy Hagen '21, being filmed on their first field excursion in Southern Nevada with Sara Pruss



Fall 2017 joint Sedimentary Geology & Paleontology field trip to NYS

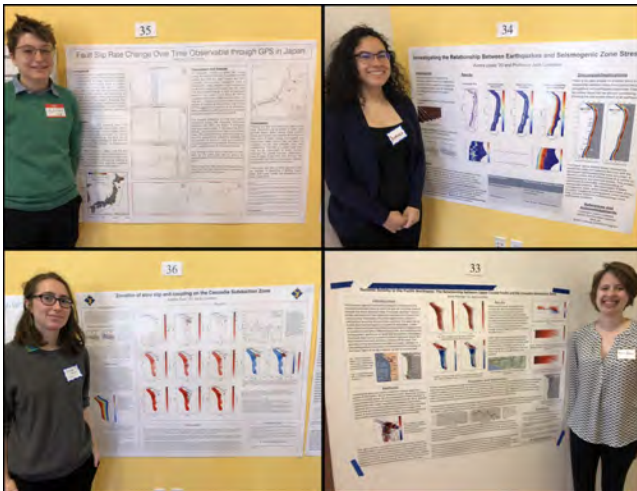
Celebrating Collaborations - April 21, 2018



Senior Casey Armanetti (right) presents a poster of her honors thesis research at Celebrating Collaborations on April 21, 2018, advised by Amy Rhodes (left).



SPruss lab presenters at Celebrating Collaborations. From left, Sara Pruss, Sara Daniel Wood '19, Vivienne Maxwell '21, Renee Revolorio Keith '21, Olivia Leadbetter '19, Emma Becker '18, Courcelle Strark '18, Martha Slaymaker '21, Amy Hagen '21, Amelia Olsen '21, Molly Megan '19, and Emily DeWitt '19.



Tectonics lab students present at Celebrating Collaborations, April 21, 2018. Clockwise from top-left: Mylo Grote '18 (Special Studies), Aurora Lopez '20 (AEMES), Anna Pearson '21 (STRIDE), and Juliette Saux '20 (STRIDE).



Bosiljka Glumac's Early Research Program students presenting a poster at Celebrating Collaborations at Smith College in April 2018 (L to R): Adrianna Grow '20J, Ursula Miguel '20, Lexie Leaser '21, Ibuki Sugiura '21, Jessie Hanners '21, Maria Mutka '21 and Kristine Lu '21 (not pictured: Em Papineau '21).

Student/Faculty Publications

(*denotes student authors)

Armanetti*, C.L. and Rhodes, A. L., 2018, Investigating acid mine drainage controls on carbon cycling in Davis Mine Brook and Maxwell Brook watersheds, Rowe, Massachusetts: Geological Society of America Abstracts with Programs, v. 50(2), doi: 10.1130/abs/2018NE-311068.



Casey Armanetti ('18) collects a water sample at Davis Mine Brook, Rowe, MA.

Baranes, H.E., Woodruff, J.D., Loveless, J.P., and Hyodo, M., 2018, Interseismic coupling-based earthquake and tsunami scenarios for the Nankai Trough: Geophysical Research Letters, 45(7), 2986–2994, doi:10.1002/2018GL077329.

*Beckham, A., Glumac, B., Curran, H.A., *Kortright, S., and Griffing, D.H., 2017, Petrographic analysis of encrusters on corals from Pleistocene reefs on San Salvador Island, Bahamas: Geological Society of America Abstracts with Programs, Annual Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-308343.

*Beckham, A., *Graveline, A., *Reyna Alvarez, N., Glumac, B., and Curran, H.A., 2017, Impact of bioturbation on Pleistocene carbonate subtidal sediments, Harry Cay site, Little Exuma, Bahamas: Insights from petrographic analysis: Geological Society of America Abstracts with Programs, Annual

Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-295410.

*Beckham, A., *Graveline, A., *Reyna Alvarez, N., Glumac, B., and Curran, H.A., 2017, Dynamics of physical deposition and bioturbation of Pleistocene carbonate subtidal sediments, Harry Cay site, Little Exuma, Bahamas: The 2nd Joint Symposium on the Natural History and Geology of the Bahamas, Gerace Research Centre, San Salvador, Bahamas, p. 2-3.

*Chang, J., *Eastman, E., *Howard, S., Glumac, B., Curran, H.A., and Savarese, M., 2017, Impact of October 2016 Hurricane Matthew on sediment-starved southern coast of Little Exuma Island, Bahamas: The 2nd Joint Symposium on the Natural History and Geology of the Bahamas, Gerace Research Centre, San Salvador, Bahamas, p. 3.

Delano, J., Amos, C.B., Loveless, J.P., Rittenour, T., Sherrod, B., and Lynch, *E.M., 2017, Influence of the megathrust earthquake cycle on upper-plate deformation in the Cascadia forearc of Washington State, USA: Geology, 45 (11), 1051–1054, doi:10.1130/G39070.1.

*Dilek, S., Andersen, M., Newton, R., and Merritt, R., 2017, Bioaccumulation of Methylmercury in Largemouth Bass from Missouri Farm Ponds., ICMGP2017 13th International Conference on Mercury as a Global Pollutant, Abstract Volume, p. 266.

*Du, K., Bosak, T., Newman, S., Macdonald, F.A., Lahr, D. J.G., and Pruss, S.B., 2017, Tubular microfossils preserved by Al-Si clasy in shallow water carbonate facies of the post-Sturtian Rasthof Formation (~660 Ma), northern Namibia: Geological Society of America Abstracts with Programs v. 49, n. 6.

Faggetter, L.E., Wignall P.B., Pruss, S.B., Jones, D.S. and Grasby, S.E., 2017, Mercury enrichments coincident with trilobite extinction at the Cambrian Series 2-3 boundary; an imprint of the Kalkarindji LIP: Geological Society of America Abstracts with Programs v. 49, n. 6.

*Francis, H., *Little, J.L., *Hecox, C.L., Rhodes, A.L., 2017 Experiments investigating Na-Ca Exchange on Peat to Understand Road Salt Retention in a Calcareous Fen: Geological Society of America Abstracts with Programs, v. 49(6), ISSN 0016-7592 doi: 10.1130/abs/2017AM-37641.

Glumac, B., 2017, Stable isotope analysis of carbonate components from lacustrine deposits of the Jurassic Turners Falls Formation, Deerfield rift basin, Massachusetts: A valuable hydrologic, diagenetic and stratigraphic tool: Geological Society of America Abstracts with Programs,

Annual Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-302782.

Glumac, B., *Howard, S., *Reyes Beattie, S., Peraza Lope, C., Masson, M.A., and Russell, B., 2017, Local stone utilization by pre-Columbian Maya people on the Yucatan peninsula in and around the city of Mayapan, Mexico: Geological Society of America Abstracts with Programs, Annual Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-296585

Glumac, B., and Curran, H.A., 2017, Plant-sediment interactions in terrestrial and shallow marine environments of the Bahamas: Examples and implications: The 2nd Joint Symposium on the Natural History and Geology of the Bahamas, Gerace Research Centre, San Salvador, Bahamas, p. 8.

Glumac, B., and Curran, H.A., 2017, Storm-deposited boulder ridges along rocky shorelines of San Salvador Island, Bahamas: Long-term monitoring and significance: The 2nd Joint Symposium on the Natural History and Geology of the Bahamas, Gerace Research Centre, San Salvador, Bahamas, p. 7-8.

Griffing, D.H., Glumac, B., Curran, H.A., Kortright, S., and *Beckham, A., 2017, Depositional history of Eemian reef deposits (Cockburn Town Member, Grotto Beach Formation) on San Salvador Island, Bahamas: Geological Society of America Abstracts with Programs, Annual Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-307524.

Hardebeck, J.L., and Loveless, J.P., 2018, Creeping subduction zones are weaker than locked subduction zones: *Nature Geoscience*, 11 (1), 60–64, doi:10.1038/s41561-017-0032-1.

*Harnisch, E., Newton, R.M., and Anderson, M.R., 2018, An Ecosystem Analysis of Legacy Heavy Metal Contamination in Central New Hampshire: Regional Atmospheric Deposition versus Localized Impacts from Historic Mining: Geological Society of America, Abstracts with Programs, Vol. 50, No. 2.

*Harnisch, E., Newton, R.M., Anderson, M., and Merritt, R., 2017, Impact of Historic Lead Zinc Mining on Mercury Accumulation in Fish from Cooks Pond, New Hampshire, USA: ICMGP2017 13th International Conference on Mercury as a Global Pollutant, Abstract Volume, p. 285.

*Howard, S., *Chang, J., *Eastman, E., Glumac, B., Curran, H.A., and Savarese, M., 2017, Impact of Hurricane Matthew (October 2016) on sediment-starved southern coast of Little Exuma Island, Bahamas: Geological Society of America Abstracts with Programs, Annual Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-295413 .

*Howard, S., *Reyes Beattie, S., Glumac, B., Peraza Lope, C., Masson, M.A., and Russell, B., 2017, Practical classification of stone used by pre-Columbian Maya people in and around the city of Mayapan, Yucatan peninsula, Mexico: Geological Society

of America Abstracts with Programs, Annual Meeting, Seattle, Washington, v. 49(6). doi: 10.1130/abs/2017AM-296591.

Katz, L.A., Aloisio, K.M., Horton, N.J., Ly, M., Pruss, S.B., Queeney, K., Rowen, C., and DiBartolo, P.M., 2017, A Program aimed toward inclusive excellence for underrepresented undergraduate women in the sciences: *CBE Life Sciences Education*, v. 16, doi: 10.1187/cbe.16-01-0029.

Meade, B.J., and Loveless, J.P., 2017, Block motion changes in Japan triggered by the 2011 great Tohoku earthquake: *Geochemistry, Geophysics, Geosystems*, 18 (7), 2459–2466, doi:10.1002/2017GC006983.

*Molitors Bergman, E.G., Evans, E.L., and Loveless, J.P., 2017, A 20-year catalog comparing smooth and sharp estimates of slow slip events in Cascadia, EOS, Transactions AGU, 98 (52), Fall Meeting Supplement, Abstract G42A-01.

*Moore, K.E., Bosak, T., Macdonald, F., *Du, K., Newman, S.E., Lahr, D.J.G., and Pruss, S.B., 2017, Pyritized Cryogenian cyanobacteria fossils from Arctic Alaska: *PALAIOS*, v. 32, p., 769-778.

*Neurath, R., Newton, R.M., and Varekamp, J., 2017, Mercury Records from Block Island, RI: ICMGP2017 13th International Conference on Mercury as a Global Pollutant, Abstract Volume, p. 181.

Newton, R.M., Anderson, M.R., and *Giardine, F., 2018, Effectiveness of Permeable Pavement Installed in Lake Hitchcock Sediments: Geological Society of America, Abstracts with Programs, Vol. 50, No. 2.

*Peek, M., Newton, R.M., and Anderson, M., 2018, Sources of Solutes in a High Arctic Glacial Meltwater Stream: Geological Society of America, Abstracts with Programs, Vol. 50, No. 2.

Pruss, S.B., *Dwyer, C.H., Smith, E.F., Macdonald, F.A., and Tosca, N. T., in press, Early Cambrian phosphatized fossils and small shelly fossils (SSFs) of southwestern Mongolia: *Palaeogeography, Palaeoclimatology, Palaeoecology*.

Pruss, S.B., and Knoll, A.H., 2017, Examination of microbialites in the Lower Ordovician Boat Harbour Formation, western Newfoundland, reveal environmental and ecological controls on Cambro-Ordovician microbial build ups: *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 485, p. 917-929.

Pruss, S.B., Westacott, S., *Stark, C., and Tosca, N., 2017, I can't quit you, Dave: New taphonomic insights from the Lower Triassic Virgin Limestone, western United States: Geological Society of America Abstracts with Programs v. 49, n. 6.

Pruss, S.B., Bush, A.M., Higgins, J.A., Leckie, R.M., and *Deeg, C., 2017, A post-extinction CaCO₃ saturation state crisis in the early Paleogene (Invited talk): Geological Society of America Abstracts with Programs, v. 49, n. 6.

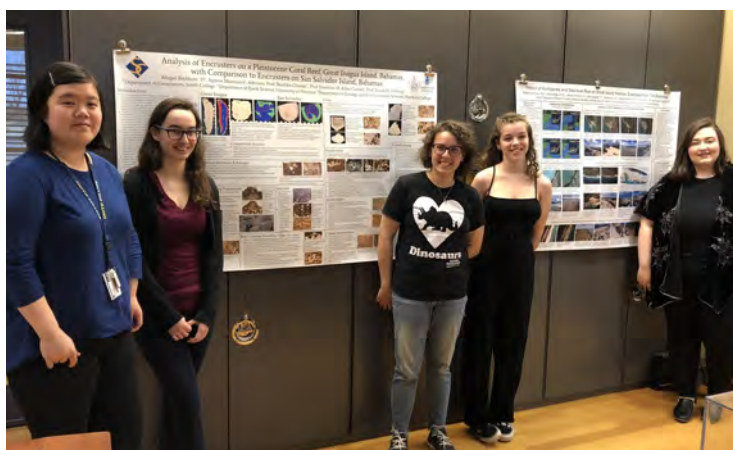
*Tallent, L., Newton, R.M., and Anderson, M.R., 2018, Recovery of Lakes in South Central Maine from Acidic Deposition: Geological Society of America, Abstracts with Programs, Vol. 50, No. 2.

Student /Faculty Research

Casey Armanetti '18 (Amy Rhodes): Effects of Mineral Weathering and Acid Mine Drainage on PCO₂ in Davis Mine Brook and Maxwell Brook Watersheds, Rowe, MA (Geosciences Honors Thesis)

Emma Becker '18 (Sara Pruss): Microfossil abundance and preservation in cap carbonates of central Australia (Special Studies)

Abigail Beckham '19 (Bosiljka Glumac) : Analysis of Encrusters on a Pleistocene Coral Reef on Great Inagua Island, Bahamas (Special Studies, Spring 2018, Celebrating Collaborations poster, and Five College Geology Student Research Symposium poster)



Bosiljka Glumac's research students presenting at the 5 College Geology Student Research Symposium at Amherst College, April 2018 (L to R): Kristine Lu '21, Abigail Beckham '19, Ursula Miguel '20, Lexie Leaser '21 and Adrianna Grow '20

Cullison '19, (Jack Loveless): Crustal block geometry of the Pacific Northwest (Informal research, fall 2017)

Alexandra Davis '18 (Amy Rhodes and Dano Weisbord) Designing a Framework for Assessing Climate Vulnerability in the Pioneer

Valley (Environmental Science and Policy Special Studies Project.)

Hannah Davis '20 (Jack Loveless): Statewide accessibility of Mass Audubon facilities (Informal research, spring 2018)

Emily DeWitt '19 (Sara Pruss): Small Shelly fossils assemblages from the Lower Cambrian Poleta Formation

Kim Du '18 (Sara Pruss): Microfossil abundances in Neoproterozoic samples from Namibia and Australia (Special Studies)

Alyssa Graveline '19 (Bosiljka Glumac): Stable isotope analysis of bioturbated and subaerially altered subtidal Pleistocene limestone from the Bahamas (Special Studies, Fall 2017)

Mylo Grote '18 (Jack Loveless): Temporal variation in crustal fault slip rates across Japan (Special Studies, spring 2018)

Adrianna Grow '20J, Ursula Miguel '20, Jessie Hinnners '21, Lexie Leaser '21, Kristine Lu '21, Maria Mutka '21, Em Papineau '21 and Ibuki Sugiura '21, (Bosiljka Glumac): Impact of Hurricanes and Sea-level Rise on Small Island Nations: Examples from The Bahamas (Early Research program, Spring 2018, Celebrating Collaborations poster, and Five College Geology Student Research Symposium poster)

Amy Hagen '21 (Sara Pruss): Unusual minerals in small size fractions of carbonate sand, Shark Bay, western Australia (STRIDE student)

Casey Hecox '19 (Amy Rhodes): Effect of Experimental Methods on Determining Cation Exchange Coefficients for Na-Ca Exchange Reactions on Peat. (Geosciences Special Studies Project.)

Naomi Jahan '18 (Mark Brandriss): X-ray mapping of chemical zonation in plagioclase from hybrid magmas of the Coast Plutonic Complex, Alaska (Special Studies)

Sofia Johnson '19 (Jack Loveless): Sharp estimates of interseismic coupling on the Cascadia subduction zone interface (SURF 2017)

Sofia Johnson '19 (Mark Brandriss): A petrographic analysis of igneous enclaves and their melt inclusions from the 1800 Hualalai Eruption on the island of Hawai'i (Special Studies)

Olivia Leadbetter '19 (Sara Pruss): Lower Cambrian reefs in the Harkless Formation, western Nevada (Special Studies)

ies)

Olivia Leadbetter '19 (John Brady): Exploring the Possibilities of "Big Data" as a Tool for Research and Education in Igneous and Metamorphic Petrology (SURF 2017)

Aurora Lopez '20 (Jack Loveless): Influence of deep subduction geometry on earthquake processes (AEMES)

Vivienne Maxwell '21 (Sara Pruss): Bioturbation in Lower Triassic carbonates (Early Research)

Molly Megan '19 (Sara Pruss): Mineralogy of early skeletal organisms (Special Studies student)

Chiza Mwinde '18 (Sara Pruss): Geochemical analysis of the Lower Triassic Montney Formation (Thesis Student)

Rhiannon Nolan '19 (Sara Pruss): Archaeocyath reefs and their extinction from the Cambrian of the western US (Special Studies)

Amelia Olsen '21 (Sara Pruss): Upper Cambrian Carbon isotope excursions and redox, northern Scotland (STRIDE student)

Lorena Paras '21 (Sara Pruss): Early Cambrian corallo-morphs of the Harkless Formation (Early Research)

Anna Pearson '21 (Jack Loveless): Stressing upper plate faults in Cascadia with subduction zone processes (STRIDE)

Renee Revolorio Keith '21 (Sara Pruss): Microfossils from the Rashtof Formation, northern Namibia (AEMES student)

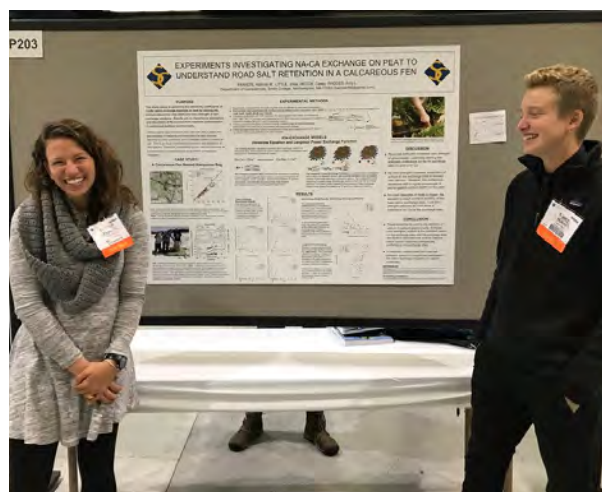
Juliette Saux '20 (Jack Loveless): Comparing coupling and slow slip distributions on the Cascadia subduction zone (STRIDE)

Martha Slaymaker '21 (Sara Pruss): Archaeocyath reef abundance in the Poleta Formation, western Nevada (AEMES student)

Courcelle Stark '18 (Sara Pruss): Small Shelly fossils in the Early Triassic (Special Studies student)

Daniel Wood '19 (Sara Pruss): Diversity and Abundance of benthic foraminifera, Shark Bay, Australia

Ziqiu Zhang '18 (Sara Pruss): Unusual preservation in the basal middle Cambrian Carrara Formation, Eagle Mountain, CA (Thesis Student)



Hannah Francis '16, (left) presents her honors thesis research in collaboration with Casey Hecox '19, (right) and Josie Little '17, (not shown) and Amy Rhodes at the 2017 Geological Society of America meeting in Seattle, Washington.



Sophie Westacott '15 enjoying a thrombolite mound in the Cambrian Cape Ann Formation, western Newfoundland.

Geosciences Seniors

Class of 2018

Casey Armanetti
Robin Austin
Sally Carttar
Brenna Getzin (GEO Minor)
Mylo Grote
Emma Harnisch
Naomi Jahan
Rebecca Matecha
Chiza Mwinde
Molly Peek
Courcelle Stark
Elizabeth Sturtevant
Jade Ziqiu Zhang

Congratulations!

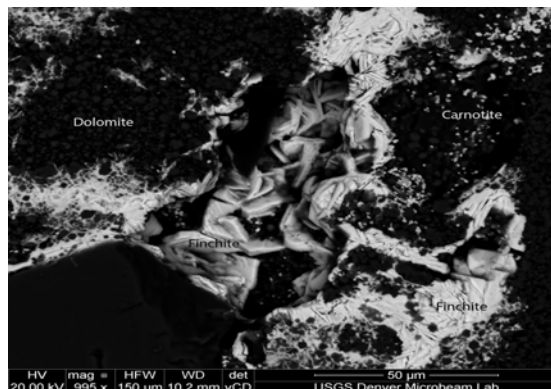
Alumnae News

Sally (Stanton) Hasted '67

Still teaching kids with emotional difficulties and addiction problems. For fun, my husband and I enjoy our fossils and minerals, and get outdoors onto beaches and enjoy rocks in place as much as possible.

Susan Hall '80

I continue with my work with USGS developing genetic models for and assessing the potential uranium in various regions and deposit types in the US. I also chair the International Atomic Energy Agency's "Uranium Group", which requires much travel to Europe. In a fun development, a USGS colleague and I recently discovered a new mineral, a uranium vanadate - the first strontium uranyl mineral - that we named finchite after a long time USGS uranium geologist. We collected finchite in 2015 from a calcrete-uranium deposit in northern Texas, part of a newly discovered uranium province in the US in the Southern High Plains region (<https://www.usgs.gov/news/new-uranium-mineral-named-usgs-scientist>). Finchite was recognized as a new mineral in 2017 by the International Mineralogical Association Commission on New Minerals, Nomenclature and Classification.



SEM image of finchite



Finchite

Lynda (Boop) Williams '80

I am currently a Research Professor in the School of Earth & Space Exploration, Arizona State University. We had the pleasure of having John Brady visit us this spring (January—spring here). He gave two great talks on his research and his on-line teaching development. I look forward to reading your newsletter.

Donna Whitney '85

I am in year 6 (of 10...) as head of the School of Earth Sciences at the University of Minnesota. A big event here at UMN this academic year was the move of my department into a new building that we share with part of the School of Physics and Astronomy (SPA). That is great for many reasons, including that the associate head of SPA is an astronomer who graduated from Smith in 1984. Female department heads in science and engineering are very rare here, so it is interesting that two of the only ones are both Smith grads, and we now share a beautiful new science building.

Maria Honeycutt '95

Going on 10 years working on coastal hazards and national flood policy for the Federal govt., though it's been tough to see so little progress in building community resilience in the wake of the 2007 hurricanes. On the personal side, our family keeps going back to vacation in Grand Staircase and surrounding areas in Southern Utah each summer, though we did branch out to Northern AZ in 2017 (Coyote Buttes South - Paria/Vermillion Cliffs Wilder-

ness; North Rim of the Grand Canyon; Monument Valley). Our kids (now 6 and 3.5) are getting more interested in map reading/navigating and picking out "neat" rocks for Mama. Looking forward to more desert adventures this summer!



Maria Honeycutt '95 and family

Erika Klose '97

I just finished my tenth year in the classroom (seventh grade science) and began a new career as the K12 Technology Integration Coordinator for STEM and Computer Science for the West Virginia Department of Education. While it was very tough to leave the classroom, as a Coordinator for WVDE, I have the ability to impact the state with my ideas and enthusiasm for science, STEM, and computer science!

Erica (DiFilippo) Perozo '00

I have been working as a Senior Project Geochemist at S.S. Papadopoulos & Associates in Bethesda, MD for the past 7.5 years. I work on a variety of groundwater and contamination projects and I find myself coding quite a bit. I never thought I would describe myself as a coder, but it is such a useful tool for data reproducibility and handling large datasets. I strongly encourage all Geoscience majors to learn some basic coding languages before leaving Smith. It'll be an asset in grad school and beyond. In November, I was re-elected to the Scientists and Engineers Section Board for the National Groundwater Association (NGWA). This will be my second (at last for the near future) term with the board. I have worked on a few initiatives with the Board and NGWA, including lobbying on Capitol Hill for groundwater-related legislation and geoscience education and (hopefully) building a panel on diversity in the groundwater profession for the NGWA national meeting in December.

Julie A. Herrick '02

Hi everyone: My big news is that I've just moved from Denver to Minneapolis. So now I've joined my husband, Kota Minegishi, under one roof. Living in Denver was a great experience and I'm sad to move away, but thankfully I'll continue in my same position with the U.S. Geological Survey and I now have many reasons to revisit Colorado. Other big news: the snow has finally melted in Minnesota! My husband and I enjoyed the side benefits of the cold winter and spring (mainly cross-country skiing, ice skating, and finding the skyways of Minneapolis) but we're so happy to have our yard back. If anyone is traveling through the Twin Cities area, please give us a shout--we love to grill fish, onagiri, and radicchio.



Julie Herrick '02 with her husband Kota Minegishi

Erica (Nichols) Siddall '04

I am coming up on the 10 year anniversary of moving to England and starting work with Shell. It is definitely not what I expected at the time of graduating in 2004! But it is an exciting time to work within the field of climate change. On a personal note, our daughter Emily was born in August 2017, and we are enjoying life as a family of 4! (That being said, I have heard parenthood very aptly described as "being overrun by mammalian dependents," and that is spot-on for how I am feeling right now.) On the plus side, this summer we will move from London to the much smaller Chippenham, where we are looking forward to breathing fresh air. Our summer holiday will be a family cycle tour to our new house, camping over 11 days. If any geo alums are in England, give a shout!

Elizabeth Thomas '05

I'm wrapping up my second year as an assistant professor in the University at Buffalo Geology Department. The Organic and Stable Isotope Biogeochemis-

try Lab is up and running, and we're having a blast studying Quaternary climate in the Arctic and Asia, and starting a new project studying phytoplankton productivity during the Late Ordovician Mass Extinction. Last summer, I gave birth to our second son and got news that two of my NSF grant proposals were funded! Good things really do come in threes. This spring, I was delighted when Sandrine, an undergraduate working with me, returned from the GSA Northeastern Section meeting with a message of greetings from Bob Newton. It made me so happy to know that Smith Geologists support not just Smithies, but also the students of Smithies!

Merilie Reynolds '08

There isn't much new to report this year: I am still in Edmonton, Alberta, Canada, with my spouse, Tyler, and two dogs, Shade and Morgan, working towards finishing my PhD. No idea what is next for us – I vacillate daily between thinking about postdocs and leaving geology altogether, but I hear that's not abnormal for people near the end of a PhD. My adviser moved to a new position in Germany almost 3 years ago and that has been a challenge. But it's also meant I've gotten to spend some time in Berlin and Potsdam while visiting her, including 3 months in this last year. I am very excited to be traveling back to Smith in a couple of weeks for my 10 year reunion!



Merilie Reynolds' dogs Shade and Morgan on the sideline of an Ultimate Frisbee game.



Merilie Reynolds with Tyler, cross country skiing near the Rockies, a few hours from Edmonton.

Danielle Schmandt '09

I am finishing my Ph.D. this year at the University of Adelaide studying REE mineralogy and geometalurgy from the world-class Olympic Dam deposit, South Australia. Had a gneiss time exploring the big red continent with some of the oldest rocks on the planet but looking forward to moving back to the Northern hemisphere and getting back on the career track (*cue mining related job offers...)

Alianora Walker '11

I'm currently a masters student at San Jose State University studying the tectonic geomorphology of the San Andreas fault system here in the San Francisco Bay Area. I'm excited to spend my summer camping in Sonoma and mapping displaced alluvial fans. Hope all of you are well; head my way if you want to count really weathered tuffaceous clasts instead of going on a winery tour while you're in the area.

Naomi Barshi '12

Hi, All! Last year I sent a photo of me next to Franz Josef Glacier, Southern Alps, NZ, proudly sporting my Smith Geo hat. Well, my hat and I continue to travel the world and visit more glaciers, this time in the other Alps. Last Fall, I taught geology at Swiss Semester, a high school study-abroad program based in Zermatt, Switzerland, at the foot of the Matterhorn. Geology lab meant hiking out the back door into ophiolites and metasediments and the glaciers that top them. The peak right behind my head in the photo hosts some of the highest-pressure

rocks in the area, including omphacite-garnet eclogites. (If you'd like to know more about Swiss Semester, feel free to email me at naomibarshi@gmail.com or visit <http://swisssemester.org/>) Now I'm back in San Diego, CA, with my boyfriend and cat, tutoring low-income high school students who'll be the first in their families to attend college through a federal program called TRiO Upward Bound. But of course I can't stay put for long! This Fall, I'm off to the University of Wisconsin--Madison to start a PhD in structure, tectonics, and geoscience education with Basil Tikoff. See you in Madison!



Naomi Barshi '12

Sarah Brisson '14, Paula Burgi '14, Katie Castagno '12, Camille Dwyer '14

Sarah Brisson '14 is a second year PhD student at the University of Connecticut studying brachiopods from the Appalachian Foreland Basin during the Frasnian-Famennian Extinction. In addition, she enjoys doing scientific outreach in eastern Connecticut schools with the UConn Geosciences Graduate Student Group.

Paula Bürgi '14 is in the second year of a PhD at Cornell university, studying the impact of vegetation on satellite measurements of ground deformation. As president of the earth science graduate organization, she has most enjoyed organizing seminars where emeritus faculty discuss their research careers and give advice to graduate students.

Katie Castagno '12 is a PhD candidate in the MIT/WHOI Joint Program in oceanography where she studies the impacts of hurricanes on salt marsh sediment dynamics. She lives in Woods Hole, MA, where she teaches toddlers and tends a container garden in her spare time.

Camille Dwyer '14 is second year graduate student at the University of New Mexico studying Late Cretaceous Western Interior Seaway bivalves. She enjoys traveling around the United States to visit friends and is planning to travel to Paris, France for the International Paleontological Congress.



Camille Dwyer '14 and Sarah Brisson '14 enjoying hot drinks from Woodstar Café



Katie Castagno '12 coring salt marsh sediments



Paula Burgi '14 and Camille Dwyer '14 at Red Rocks Amphitheater



One of the many bears Emerson Lynch '15 encountered on Vancouver Island

Emerson Lynch '15

I'm finishing up the second year of my PhD in Earth Science at Boston University, where I'm studying the Beaufort Range fault, an Eocene thrust fault on Vancouver Island, BC, that we think is active today. My first field season last summer was full of amazing fault scarps and lots of local wildlife - most notably, bears! I'm excited to head back out in June for another six weeks. I've also been teaching intro earth systems labs, and in Fall 2016 our class got to Skype Naomi Barshi '12 on an IODP cruise! My students loved hearing about ship-board life and asking questions about subduction zones.



Emerson Lynch '15 with her very first sample of her PhD



Alumnae from the class of '08 at the GEO Reception at Smith in May 2018 (L to R): Ruth Indrick, Katie Shafer, Merilie Reynolds, Anna Lavarreda and Marie McLane



Alumnae from the class of '17 at the GEO Reception at Smith in May 2018 (L to R): Lyn Watts, Eli Molitors Bergman and Marlo Stein