UGA Geology News - 2018

Fall 2018 Newsletter

Good things come from?...Good things!

By Paul Schroeder, UGA Geology Head, September 10, 2018.

I want to update everyone with details about the profound effect of alumni and corporate donor giving has had on all of us here in UGA Geology. First, a little history. I don't need to remind you about the loss everyone felt by the economic impact of the 2008 Great Recession. Soon after 2008, the operating budget for the UGA Geology was slashed by nearly 50% and we were all asked to "do more with less". Please thank Dr. Mike Roden, who was Head at the time. He did a magnificent job and managed keep operations moving smoothly in what we reflect upon as tough financial times. The consequences of these cuts where deeply felt in our Department. Field trips, like those to Sapleo Island, the Blue Ridge, the kaolin mines, to the Valley and Ridge were curtailed. Travel opportunities for young faculty and grad students were stymied. Student and faculty participation in meetings, like AGU, GSA and Georgia Geological Society, dwindled. Jobs for graduates were hard to land. Hiring of faculty was effectively frozen. Missing these opportunities for networking and experiential learning, Geology faculty began to seek special funds from campus initiatives, started asking students to pay themselves, and in some cases faculty paid out of their own pocket. Recognizing the impact of the situation, we began to reach out to alumni and industry, with Doug Crowe at the epicenter of the effort. We can't fully explain in words, how much the generosity of people affiliated with UGA Geology (whether as alum and/or as corporate) has made a difference. Please let us share below some very specific examples of how funds donated to the Geology department have made a difference in past few years. Yes, the economy has improved. No, the Geology operating budget has increased. More good news comes from the fact that our undergraduates are becoming more involved in research. Our faculty is mentoring a large number of students that conduct research and the students go on to present their findings. We all know that research sometimes requires funds for analytics or to do fieldwork. You also can imagine that undergraduates don't always have the discretionary funds to travel and present their hard-earned results. We'll say this now and say it again; the activities described below would certainly have not been able to happen, if not for the generous sponsorship provided to the Geology UGA Foundation. Thank you for your support.

Good things 1: Undergraduate research

Undergraduate research is one of the best examples of "experiential learning". This is so important that UGA has created a website and new requirement for students (el.uga.edu). Pictured below are some of our undergrads that presented at the UGA Center for Undergraduate Research Opportunities (CURO), where over 400 posters and talks were delivered at the Athens Classic Center. Also below is a list of students and their topics presented just this past spring 2018. The funds and UGA Geology department resources (along with the faculty) were without a doubt key factors in making this happen. What we are also finding is that when the student's

research appears on their resume, the experience is spring boarding them on to top grad schools or jobs.

Undergraduate Spring 2018 Presentations at Professional Meetings (Faculty mentor)

- *Jacob Bowser* - Webster, C., Walker, S.E., Teeter, W.H. and Bowser, S.S. Update on the potential effects of ocean acidification on Antarctic marine bivalves. *Geological Society of America Abstracts with Programs* 49: doi: 10.1130/abs/2017AM–308140 (Walker)
- *Tyler Cannida* – "Petrography of Gneisses from the Mary Lou Quarry in Clinton, SC: Implications for Quantifying Mineral Compositions in the Critical Zone." CURO Symposium (Schroeder)
- *Jared Conner* – "Application of Biochar for Low-Cost Treatment of Agricultural Wastewater" CURO Symposium (Nzengung)
- *Laura Dupont* -"Evaluating human-driven environmental change using a stalagmite from northwestern Madagascar: implications for research and conservation" CURO Symposium (Railsback)
- *Laura Dupont* -"Evaluating human-driven environmental change using a Madagascar stalagmite" at the Summer School for Speleothem Science in Burgos, Spain, in August 2017 (Railsback)
- *Anthony Arbise* – "Implications of Strike-Slip Faulting for Plate Tectonics on Europa" CURO Symposium (Klimczak)
- *Bear Jordan* – "Changes in Clay Mineral Assemblages of Legacy Sediments in the Calhoun Critical Zone Observatory, SC: Evidence for Anthropogenic Landscape Change" CURO Symposium (Schroeder)
- *Bear Jordan, Sydney Lee* – "Descriptive Mineralogy of Georgia's Barrier Island Beaches" CURO Symposium (Walker)
- *Sophia Sanders* – "The Fate of Degraded Biotites in the Deep Critical Zone: Implications for the K-Uplift Hypothesis" CURO Symposium (Schroeder)

UGA Geology undergraduates presenting their research to the department.

Pictured above is part of the 2017 undergraduate researcher cohort. They presented at CURO and at our own departmental mini-session on the day of the awards ceremony. Some of this work has made its way to peer-reviewed publications!

Good things 2: New faculty hires

The three most recent faculty additions to UGA Geology include Drs. Christian Klimczak, Geoff Howarth, and Charlotte Garing. Each is a rising star. Without embarrassing them too much with accolades here, please visit their websites to see what they are doing. The Geology department has had an embarrassment of riches in the sense that during the search process for new faculty, the applicant pools were overwhelming deep with very, very qualified people. In essence, we got the best of the best. Associated with new faculty are newly renovated labs and work spaces. The human dimension is what is most important however. They are attracting excellent graduate students that are now studying Earth and other planets in ways never before possible.

New UGA Geology faculty: Charlotte Garing (left), Christian Klimczak (center), and Geoffrey Howarth (right).

The generous donations coming from alumni and industries have enabled these faculty to "start-up" their research programs and support graduate student research assistantships. As an FYI, it takes at least $23,000 to support a graduate student for 9 months of the academic year. To repeat the mantra… *good things, brings good things*. Meaning we now have more graduates' students matriculating and they are all doing exciting research. See below for a list of recent presentations by our graduate students:

Graduate Student presentations at Professional Meetings

- *Callihan M. B.*, and Klimczak, C.: Growth strategies and fault rock evolution of lunar graben. Geological Society of America, Annual Meeting, 2017, vol. 49, no. 6, #25-9, Seattle, WA, USA.
- *Crane, K. T.*, and Klimczak, C.: Tectonic patterns of shortening landforms in Mercury's northern smooth plains. Geological Society of America, Annual Meeting, 2017, vol. 49, no. 6, #25-8, Seattle, WA, USA.

- *Cronin, K*., Walker, S.E., Mann, R., Chute, A.S., Long, M. and Bowser, S.. 2017. Relatively fast growth and moderate longevity for the Antarctic Scallop, Adamussium colbecki, living in the coldest waters on Earth. Geological Society of America Abstracts with Programs 49:doi: 10.1130/abs/2017AM–306175
- *Laura Fackrell* – 2018 Development of Martian Regolith Simulants for Exploration of In Situ Resource Availability and Potential. 49th Lunar and Planetary Science Conference, Woodlands, TX.
- *Hutcheson, H*., Milewski, A., Rasmussen, T., Faustini, J., Graves, G., Dowd, J., Webster, C., Maher, S., 2017. Water Resources Inventory and Assessment for Felsenthal National Wildlife Refuge, Geological Society of America Annual Meeting.
- *Hutcheson, H*., Lord, C., Rasmussen, T., 2017. A Groundwater Risk Assessment of the USFS Southern Region.
- Klimczak, C., *Callihan, M. B., Crane, K. T*., Kling, C. L., and Byrne P. K.: Fault Rock Evolution of large Thrust Systems on Mars. 49th Lunar and Planetary Science Conference, 2018, #1083, Houston, TX, USA.
- Klimczak, C., *Crane, K. T*., Habermann, M.A., and Byrne P. K.: A statistical investigation into the spatial distribution of Mercury's pyroclastic activity. *Geological Society of America, Annual Meeting*, 2017, vol. 49, no. 6, #25-8, Seattle, WA, USA.
- *Knapp, Abigail S.*, 2017. Bloom in the Drought: an Integrated Investigation into the Hydro Drivers of Harmful Algal Blooms. River Basin Center Microconference.
- *Knapp, Abigail S*., 2018. Hydrologic Drivers of Harmful Algal Blooms in two Piedmont Reservoirs. Atlanta Geological Society, invited talk.
- *Knapp, Abigail S.*, Milewski, Adam M., and *Rotz, Rachel R*., 2017. Temporal Relationship between Drought-Precipitation Patterns and Freshwater Harmful Algal Blooms in Lake Allatoona, GA. Geological Society of America, Program with Abstracts.
- *LaPointe, C.* and Walker, S.E. 2017. Growth and longevity of the scallop Chesapecten nefrens (Calvert Cliffs, Maryland) during the Miocene Climatic Optimum and subsequent rapid cooling event. Geological Society of America Abstracts with Programs 49: doi: 10.1130/abs/2017AM–305148
- Long, M.C., Mann, R., Rudders, D., Roman, S., Chute, T., *Cronin, K*., and Walker, S.E. 2018. Growth rate measurement in scallops: revisiting Merrill after 50 years on the library shelf. National Shellfisheries Association, Seattle, Washington.
- *David F. Richards IV* , 2017 Rare Earth Distributions in the Critical Zone: Possible Roles of Pine Versus Hardwood Vegetative Covers. 36th Annual Technical Conference of the National Association of Black Geoscientists, Atlanta, GA
- *Rotz, R*., and Milewski, A. Inland Freshwater Lens Occurrence and Longevity in Response to Recharge Rate in Dry land Environments Using a Physical Laboratory Model. 2017, Geological Society of America Annual Meeting.
- *Christopher Smith* - "Effect of selected heavy metal elements on shallow-water benthic foraminiferal assemblages from Sapelo Island, Georgia and Little Duck Key, Florida: An investigation using the propagule method**."** GSA National Meeting, Seattle, WA.

Good things 3: Field trips

Field trips are the undoubtedly one of the most memorable experiences students can have. Although Georgia is mostly covered with kudzu, we all know that it hosts some of the most diverse geology of any state. Below are pictures from recent trips taken to beloved places that are type localities for any UGA geology student. This includes seeing: Sapelo Island, Grave's Mountain, Kaolin mines, Cloudland Canyon, Elberton granite, Stone Mountain, etc. Some things never change. To get to these sites we need vans, gas, a place to sleep, hearty food, field guides, and a passion to be outside regardless of climatic conditions. The donations and resources that enable our faculty and students to be the best are what make these trips possible. The budget cuts from 2008 have not and will likely never be restored to allow us to underwrite these trips as in the past. However, we continue to lead these field trips. Please let the photos (and smiles within) serve as evidence that these trips are taking place and the students are learning from the outcrops and networking with the people they meet.

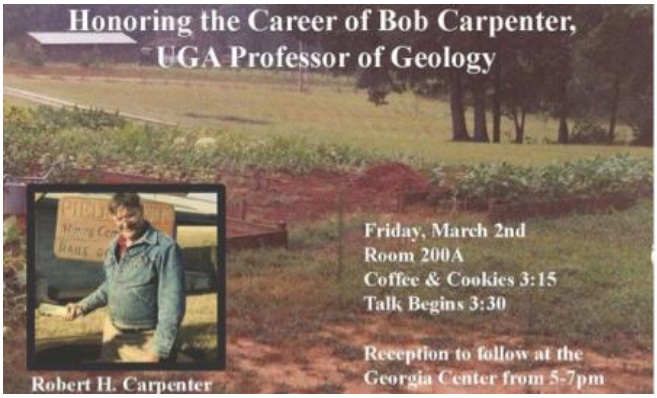

Graves Mountain Trip


Kaolin Mines Trip

Sapelo Island Trip

Good things 4: Alumni gatherings

Cheers to all of our alumni and friends of UGA Geology. We want to update everyone with new directions of our alumni advisory board. Initial charges to the board were to provide feedback on our programs of study and to help with networking for everyone to position students and alumni into productive careers. We strove to keep a balance of Industry, Government, and Academic perspective. In brief, networking has been quite successful (see more below on this topic). We have held several UGA alumni events in Houston, TX because there is a high concentration of UGA people living there. At the same time we have held several commemorative events here in Athens. In particular we have honored the contributions of Dr. Vernon Hurst and Dr. Bob Carpenter with tributes dedicated to recollections of their careers and with follow up socials at the Georgia Center for Continuing Education (see photos below). The tributes were videoed, so if you did not make or want to relive the moments, feel free to visit our website to hear the stories. In the process of holding these regional gatherings in Houston and Athens, we realized that alumni and their friends really enjoyed the opportunity to make new acquaintances and renew old friendships. The alumni advisory board revolves with new leadership each year, but we have decreed that all past members remain in emeritus status. This growing network of Friends of UGA Geology and the board now have a vision of holding regional annual to biannual socials. Our ability to foster these UGA Geology relations comes from the generous donations of time and finances. This would not be possible without your contributions.




Bob Carpenter tribute flyer (left) and Frank Lieth and Alex Glover from the UGA Geology Alumni board



Lots of smiles, memories, networking and geologist's favored beverages in Houston, TX

Good things 5: Industry networking

A direct outgrowth of Industry networking and support has been the visibility of UGA Geology excellence in teaching and in training of students for the workforce. Firstly, by getting our students to participate in internships, we are placing our graduates in a variety of sectors in the energy, petroleum, mining, and environmental fields. We have established relationships with Exxon-Mobil, Chevron, Newmont Mining, Vulcan Materials, Duke Energy, Barrick, KaMin, and BP. More tangibly, these have garnered research assistantships, funds to keep equipment running in our labs, and supported needs-based students in our field camp (in particular students that feel great financial pressure). UGA Geology grad students are now participating in the Imperial Barrel Award Program. In all cases, either by producing well-trained students or by providing research and analytics to industry, the UGA Geology department could not reach these high levels of excellence if not for the resources provided by industry. Finally, we are proud to note that UGA Geology has become a recruitment hub for Exxon-Mobil (and hopefully for other large industries). Each year, the best students from top Geology programs in the southeastern United States converge on UGA. We provide resources and infrastructure to host interviewees and the

industry personnel who also conduct a 2-day workshop to help the student learn about the challenges of oil/gas exploration. Athens Georgia is fortunately in a sweet spot geographically, economically, and academically to provide an optimal environment for this activity. The gifts given to UGA Geology by alumni and industry allow us to reach the distinction of being a program that is respected by all industry and our peer institutions. Our program is growing into aspirational status for other programs in the SE.

The Future: How can you help?

Finally, what can the UGA Geology Department use into the future to make us even better? We see road maps for the short-term (1 to 5 years) and long-term (5 to 30 years). Each road map is itemized by goals below. As we ponder how to make a lasting impression at UGA Geology by using what we have earned (both in mind and in resources) perhaps the points below can help you to materialize the real impact that giving can have. As these comments are written today, they are meant to be lasting, well beyond my tenure here at UGA and beyond all of our careers. The vision is leave something for generations and let the world know that not only is geology a cool career choice, but also one that makes a difference to the people that surround us. Thanks for taking the time to read this document.

Short-Term:

GEOLOGY FACILITIES SUPPORT FUND - This fund helps to keep our labs working. Examples include facilities open to all geology undergraduates and graduate students, such as the thin section and rock-saw lab, microprobe lab, X-ray diffraction lab, and isotope lab. Maintaining instruments is like owning a car… sometimes unexpectedly a part breaks and you need just to make repairs to keep things going. We try to alleviate down time and keep our students productive.

GEOLOGY FIELD EXPERIENCE FUND - This fund allows our students to get into the field. Since the near 50% cut in our operating budget with the 2008 Recession, we no longer have the discretionary funds to pay for vans, gas, and accommodations to take core classes to the field. This includes trips to cherished places like Sapelo Island, Graves Mountain, and the Ridge and Valley. We now rely on these funds to help our majors get into the field, which you know is so important to the training of a good geologist. The best geologists are those that see the most geology.

GEOLOGY FUND - These funds allow us to target specific requests that are unique. This fund lets us promote visits from industry recruiters to speak to students about career options. These funds help us promote the department and highlight all the good things that our faculty, staff, and students do. We also highlight the activities of our alumni and carry out alumni events. If you are not sure about what fund to exactly donate to, then please give here because this is the one that helps us with the most discretion.

GEOLOGY STUDENT RESEARCH FUND - This fund was initiated by a gift given in the honor of Professor Vernon Hurst. The funds are specifically targeted to undergrads pursuing research

mentored by Geology faculty. The funds help a student travel to a field site for sample collection and they help students get analytical data needed for their research. The funds also help them present results at professional meetings, which leads to great networking. More and more undergrads are benefitting from this experiential learning. https://el.uga.edu/

GILLES AND BERNADETTE ALLARD GEOLOGY AWARD FUND - Provides awards to support field-related research expenses for Geology graduate students. A list of recipients to this prestigious award can be viewed on our award page. http://geology.uga.edu/departmental-awards

GEOLOGY INTERDISCIPLINARY FIELD PROGRAM (IFP) FUND - The purpose of this fund is to support the Geology IFP. This program has been running since 1988. Please visit the website http://ifp.uga.edu to get a full sense for the long history of the program and the unique experience that has been afforded to over 500 students from UGA and beyond. Funds are used to help meet needs-based requests and to help promote this unique program.

START-UP FUNDS FOR NEW FACULTY – Top Geoscience programs in the United States attract top faculty by providing funds to start up research programs. These funds are used for customizing lab space, equipment purchases, student support, and travel to promote their research agenda. Typical start up packages in Tier 1 geoscience programs range up to ½ million dollars. These funds come from many sources, such as indirect costs garnered from research grants. Funds matched from donations make achieving these dollar amounts possible.

Long-Term:

ENDOWMENT FOR GRADUATE STUDENT ASSISTANTSHIPS – Today, the typical stipend afforded to a grad student requires a commitment of about $23,000 for a 9-month (fall/spring) period. This often comes from teaching assistantships (TA) via the Franklin College in return for faculty teaching credit hours. An endowment that supports a research assistantship (RA) for the same amount would attract top students. An endowment can also provide 3-month (summer) support to either TA's or RA's. Having a sustainable resource like this is a key component to establishing a top geoscience department.

ENDOWMENT FOR NAMED POSITIONS – Endowed positions, such as professorships and chairs, are the pinnacles of the top geoscience departments. UGA Geology is clearly poised to enter into this arena. Our goal is to establish endowed positions. In addition to approval by the UGA President and Board of Regents, a funding agreement must be gifted or pledged over five years. These amounts are detail at https://provost.uga.edu/faculty-affairs/endowed-positions/. Having a sustainable resource like this is a key component to growing a top geoscience department.

ENDOWMENT FOR UNRESTRICTED ACTIVITIES – The highest capstone to any geoscience department is a mechanism to enable transformative experiences for the students and faculty. Such opportunities are often described as "once in a lifetime" and looked upon as pivotal decision moment in a career, we may less formally call that "aha" moment of sudden realization, inspiration, or comprehension. How does this happen? Well, if we knew how to guarantee this,

we'd be rich and donating large sums to UGA Geology. Life decisions often include calculated risks. We have a goal of enabling opportunities to have aha moments. Examples include providing funds to travel and study iconic geologic settings, host alumni networking events, enable better promotion resources, provide a matching fund to an ever so close chance to acquiring state of the art equipment. Having a sustainable resource like this would give latitude to make and sustain UGA as a place for truly one of world's top geoscience departments.

Students surveying the oyster beds at Sapelo Island