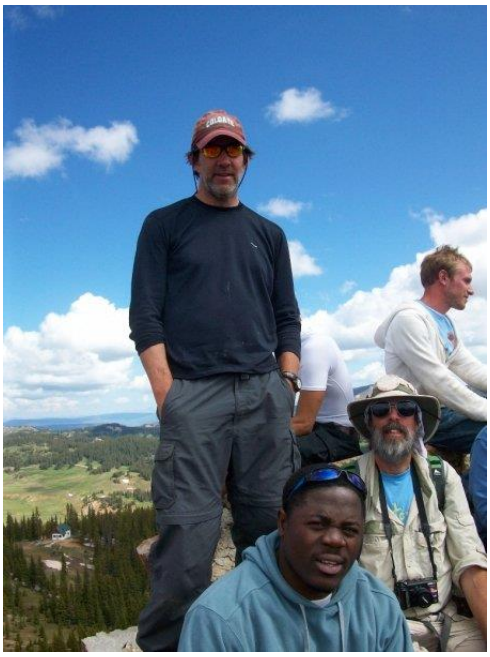
Message from the Head



Hi folks, I hope that all of you are well and that life is good. Cold weather has arrived in Athens, leaves are turning, classes are still full, and opportunities for geologists are still abundant. Good time to be part of the UGA geology department!

Our undergraduate enrollments continue to be strong, with our core classes in mineralogy, paleontology, and surficial geology all above 25, making it difficult to say if the student tsunami has crested or not. John Dowd has over 40 in hydrogeology, and our economic geology and GIS electives for the spring are both full already. Field School had 51 students this past summer, a new record, and although the challenges that all these high numbers present are manifold, I'm happy to say that we've not sacrificed rigor or quality in meeting the needs of all these great students.

Thanks to the hard work of our alumni board folks, both individually and collectively, we've made some important progress. For the first time since 1984, we had industry recruiters here in the department in September. Thanks to the hard work of Jeff Shellebarger and Skip Forsthoff, we had two Chevron recruiters here looking at our graduate students. And thanks to the good words put in by Russell Spears and Sally Pennington-Moore, we also had ExxonMobil recruit both our graduate and undergraduate students, and several have received field school offers, which is an important first step toward entry with EM. Finally, thanks to Jeff Blackmon and Katie Sechrist, for helping to get Newmont here to interview undergrads for internships, which has resulted in an offer of a summer internship for one of our students. The message that I take away from these successes is that when our alums in industry connect with our outstanding students, good things happen. All three companies have already indicated a desire to be here next fall!

Our fundraising efforts have been successful again this year, with important individual gifts from several alums, as well as continued corporate support for our programs from Chevron, Newmont, KaMin, and Active Minerals. Chevron has made a significant commitment to our graduate program, providing invaluable RA support for students directed by Steve Holland and Rob Hawman. Newmont continues to generously support the Geology Field School by providing scholarships to our most qualified students. KaMin has provided continuing support to our undergraduate research and equipment funds, allowing us to support these critical needs, and Active Minerals has also provided continuing support to our class travel fund to help keep our core and other classes in the field, where we all know important learning takes place.

Dr. Christian Klimczak has joined our faculty this fall as our new structural geologist. Christian received his Ph.D. from the University of Nevada-Reno and was a postdoctoral fellow at the Carnegie Institution in Washington, D.C. prior to arriving here in August. Christian has wide-

ranging research interests, from working on rock mechanics and brittle failure processes here on Earth, to thrust fault mechanics on the planet Mercury! He already has research funding from NASA, has a graduate student working on a M.S. project, and is gearing up to teach structural geology this spring for the first time – needless to say he's been busy. Check out the feature on Christian in this newsletter! Our other "new" faculty member, Adam Milewski, continues his research around the world on water resource problems. It's hard to believe he's already been here four years. My hope for the coming year is that Dean Dorsey will authorize us to bring on another new, young person to further energize us.

As always, I encourage our alums to stay in touch. It's NEVER a bad day when one of you lets me know about all the good things that you are doing. Your successes are our successes, and nothing validates our efforts here in Athens more than hearing that you have gone on to do great things. Please don't be a stranger to Athens, stop by anytime, we are always here!

Cheers,
Doug Crowe
Professor and Head

Message from Alumni Board Chair

Reflecting on my own experiences at UGA in the geology department, I think about all the assistance I received as a student from our faculty, staff, and supporters. I especially remember the wonderful faculty of the department that dedicated their careers to teaching us the greatness of geology that inspired us to succeed in it. Now as alumni, we should all be thinking about how we can have an impact on the quality of the geology program by speaking to students, hiring graduates, leveraging industry connections, and providing financial resources.

The UGA family has done great things in supporting us. Now is the time to return that support to the geology program! Your gifts help support student field experiences, equipment repair, and undergraduate research assistance. We also have the opportunity to leave permanent impressions on the geology department through endowed gifts. To get more information, please contact Johnie Tucker (jptucker@uga.edu) in the Franklin College's Office of Development and Alumni Relations.

Donating is easy and can be done online in just a couple of minutes. Check out the link in the "Support the Department" section of the newsletter. We need your help in reaching our fundraising goals to support the mission critical aspects of the department. Every gift counts. Thank you for your support!

Alex Glover
Chair, UGA Geology Alumni Board

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Don Baker, OGM Reserves

Rick Deery, U.S. Dept. of the Interior

Mack Duncan, JM Huber (ret.)

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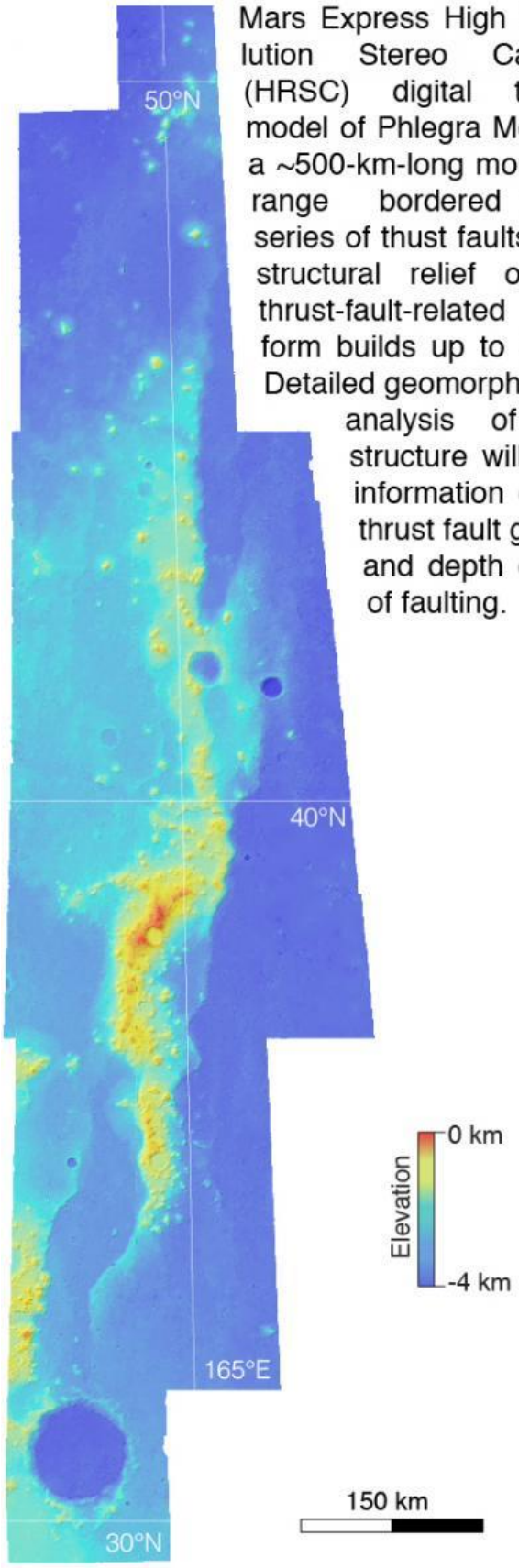


Mars Express High Resolution Stereo Camera (HRSC) digital terrain model of Phlegra Montes, a ~500-km-long mountain range bordered by a series of thust faults. The structural relief of the thrust-fault-related landform builds up to 3 km. Detailed geomorphologic analysis of this structure will yield information of the thrust fault growth and depth extent of faulting.

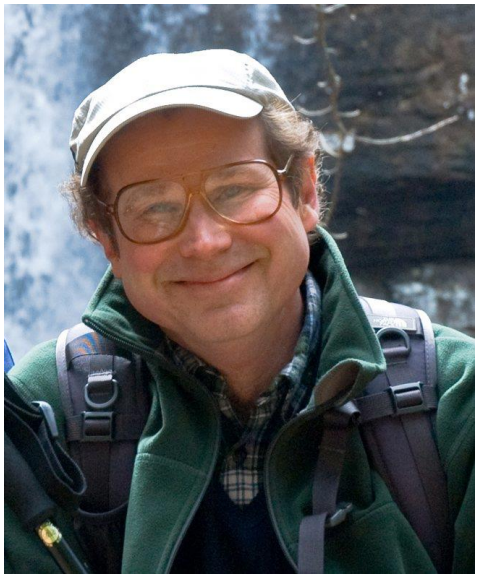
Research Spotlight

The geology department now hosts a Structural Geology and Geomechanics Laboratory (SGG), which is currently being built by the department's newest faculty member, Dr. Christian Klimczak (at left). SGG has modern computing equipment, as well as a variety of field gear for sampling and measuring geomechanical and petrophysical properties of rocks. Over the next two years, SGG will be expanded to include more computing stations and also microscopic equipment for petrographic and microstructural analyses.

In general, research at SGG focuses on the mechanics and architecture of faults and fault zones, which encompasses microscopic analyses of deformed rock, mapping and analysis of the structural relationships on the outcrop- and local-scale, and characterization of regional-scale fault zone architecture and fault-fold relationships in many interesting regions on Earth and also on the other terrestrial planetary bodies. Furthermore, questions addressing the role of tectonics for igneous processes, such as volcanism in compressional tectonic regimes and the mechanics of large igneous dike intrusions are of interest as well. Research conducted at SGG is of interest to a wide variety of curiosity-driven academic fields, as well as for the oil and mineral exploration industries.

Current research at SGG is funded by NASA's Research Opportunities in Space and Earth Sciences and involves a structural analysis of large thrust fault zones (up to 500 km in length, and up to 3 km of morphologic relief) on the planet Mars. Mars experiences no major erosional processes and so geomorphologic expressions of faults can be retained over geologic time scales. M.S. student Corbin Kling currently examines the geomorphology of several large thrust faults on topographic and image data returned by the Mars Global Surveyor (MGS), Mars Express, and Mars Reconnaissance Orbiter (MRO) spacecraft as part of his graduate thesis. Detailed geometric information of these thrust faults will yield clues to the depth of faulting and thus on the extent of the Martian seismogenic zone, a topic addressing a high-priority area in Mars research in light of the installment of a seismometer on the surface of Mars as part of NASA's Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight) lander mission in 2016. Thrust faulting on Mars and other planetary bodies lacking plate tectonics, such as Mercury and the Moon, is caused by the long-term cooling of the planetary interior and associated radial decrease of the planet.

Faculty Profile: Rob Hawman



Good things happening in the department-

I enjoy serving as one of our undergraduate advisors. We now have over 100 undergraduate majors. Last year I served as chair of the search committee for a new faculty member; we're all excited to welcome structural geologist Christian Klimczak to the department. Our Geology Club is still going strong with camping trips, work with professional organizations, and education/outreach in our public schools. Beginning in fall 2015, thanks to the generosity of Chevron, we'll have two new assistantships to support graduate students in their research.

Research with students-

Lately one of the most exciting things I've been involved with is "SESAME" (Southeastern Suture of the Appalachian Margin Experiment) with Karen Fischer of Brown University and Lara Wagner of UNC Chapel Hill. This has been a four and half year project funded by the NSF EarthScope program. We're using distant earthquakes to image the deep structure of the southern Appalachians, with a particular focus on the uppermost mantle. During the course of permitting our 85 stations, I met with numerous farmers and other landowners and in the process learned a bit about operations on large and small farms and the importance of the agricultural industry in Georgia. Quite a few of our graduate and undergraduate students helped with the fieldwork. During the course of the experiments we were invited to participate in education/outreach programs at the Georgia Mountain Center in Blairsville and at the Lincolnton School District. As of September 2014, we had worked with over 1300 students (15 at a time) doing hands-on exercises in seismology, plate tectonics, and mineralogy.

We've managed to do some science, too. I've been lucky to work with some very talented graduate students. So far we've used quarry blast and teleseismic data to map a crustal root beneath the highest elevations of the Blue Ridge Mountains (recent papers in GSA Bulletin with Scott Baker and Mohamed Khalifa and Geophysical Research Letters with Ph.D. student Horry Parker). Recently Horry published a single-author paper on the Brunswick magnetic anomaly of south Georgia (GSA Today) and is currently using earthquake data to constrain lithologies associated with the Alleghanian detachment. Master's students Daisy Gallagher, Bill Wylie, and Ryan Jubran have been using seismic and electrical resistivity data to study near-surface structure in the Inner Piedmont, karst in south Georgia, and a landslide in the mountains of North Carolina. We've also used SESAME and other EarthScope data in projects with undergraduates Jacqui Maleski, Abby Maxwell, and Nick Taylor.

Personal-

My wife Barbara teaches kindergarten in the public schools and private French horn lessons. We still play horn in the Athens Symphony. The big news is that we now have two grandsons a short hour away.

Staff Profile: Julie Cox

Julie was a student in the department in the 1990s, and after working in other labs, she returned to UGA in 2002 to run the department's Stable Isotope Laboratory. This job entails assisting numerous undergraduates, graduate students, postdocs, and visiting scholars with their research involving light element stable isotopes. The lab also performs analyses for outside customers, many of whom are former students now at other universities or former associates of Norm Herz, who are carrying on his work with archeological marbles.

Since other labs on campus provide analyses of organic matter, the lab's focus is the stable isotope analysis of various mineral species. For example, we analyze C and O in carbonates, S in sulfides/sulfates, H in clays and other hydrous minerals, and O in silicates and oxides. Each mineral type requires a different preparation method, so Julie trains researchers in sample preparation and gas extraction techniques in addition to operation of the mass spectrometer for the final analysis. Julie is also responsible for all equipment maintenance in the lab.

Outside of lab work, Julie often designs posters and brochures for the department. She also coordinates the department's Interdisciplinary Field Program. This is the coast-to-coast field trip in introductory geology started over 25 years ago (then known as the Honors Geology Field Program). Through the years, the program has evolved into a more holistic exploration of North American natural history by including introductory anthropology and ecology in addition to physical and historical geology. Due to Julie's efforts, the department has been able to continue offering this amazing program to undergraduates from all majors seeking an outdoor, hands-on learning experience.

Graduate Student Profiles: Laura Fackrell and Horry Parker

Laura Fackrell is a M.S. candidate from Kansas City, Kansas specializing in geochemistry. Her research, under the direction of Dr. Paul Schroeder, focuses on the influence of trace metals and clays on the distribution of ammonia oxidizing bacteria and archaea in hot springs found in Kamchatka, Russia. Her research involves multidisciplinary techniques including X-ray diffraction, inductively coupled palm mass spectrometry, and polymerase chain reaction techniques. Activities Laura enjoys outside of studies include playing the guitar, boxing and running and spending time at church.

Horry Parker is a Ph.D. candidate specializing in the fields of earthquake seismology and tectonics. He worked with Dr. Rob Hawman to deploy an 85-station broadband seismometer array across Georgia, Florida, North Carolina, and Tennessee that operated from 2010-2014. His research involves analyzing signals from global earthquakes recorded on the array to provide new constraints on crustal and mantle structure across the southern Appalachians and Atlantic Coastal Plain. The results will provide new insight into lithosphere-scale processes accompanying continental collision and rifting. Aside from searching for the Moho, he enjoys exploring the mountains and rivers of the southeast on foot or by canoe.

Undergraduate Student Profile: Caroline Potterf and Jason Burwell

Caroline Potterf is a fourth year senior graduating in May 2015 with a bachelor's in geology. Caroline first became interested in Geology while attending an introductory geology course, at which point she was an art major. Her enjoyment of geology convinced her to change her major to a more lucrative option. Furthering her love of geology, Caroline completed the eight-week summer Interdisciplinary Field Program through UGA in 2013, a field trip that focuses on studies in geology, anthropology and ecology in the American West. She is currently working on a senior research project involving water quality analysis with Dr. Adam Milewksi in the Water Resources and Remote Sensing Lab. She also works at the Center for Advanced Ultrastructural Research as a lab assistant helping with SEM work. She was invited to join an ExxonMobil short course in the Guadalupe Mountains next semester in April.

Jason Burwell is an undergraduate geology major, graduating in the spring of 2015, whose interest in geology was peaked as a young boy collecting rocks in the back yard. His interests are in both sequence stratigraphy and ore deposits. Both passions were realized during his summer experiences with ore deposits in Colorado and New Mexico, and later research in sequence stratigraphy of the Gypsum Spring Formation in the Big Horn Basin. Currently, Jason is working with Dr. Steve Holland to decipher the Sundance Formation through well log analysis near the Big Horn Basin, Wind River Basin, and Green River Basin. In the upcoming year, Jason has been accepted into Newmont Mining Corporation's summer internship, as well as Exxon-Mobil's Guadalupe Mountains Field Course. He hopes that these programs will give him great experience in the industry, and help in his decision for a graduate program for next fall. Outside of geology, Jason is president of the nationally recognized Improv Athens, an improvisational comedy group that competes at the regional and nation level with other universities.

Support the Department

There are many ways to support the department. Financial contributions are most welcome. We also appreciate our alumni who give their time to speak to our students and new graduates about career opportunities, including internship programs, and career opportunities.

Make a Donation

The Department of Geology appreciates your financial support. Now more than ever, we need your help in providing our students with research opportunities, field trips to do the hands-on work that's so critical to becoming a geologist, and modern lab facilities where they can learn industry standard analytical techniques. Your support will help us to continue to provide these critical experiences to our students.

For more information about giving, please contact Johnie Tucker, at 706-542-3425 or via email at jptucker@uga.edu.

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