

# GEOLOGICAL SCIENCES

ALUMNI NEWSLETTER

NOVEMBER 2018



# ALUMNI NEWSLETTER

## 2018

<b>From Our Department Chair</b>	2
<b>Faculty</b>	
News.....	4
<b>Visiting Speakers</b>	18
<b>Field Camp</b>	
Field course.....	19
<b>Research</b>	
Undergraduate research program.....	21
<b>Photo Gallery</b>	
Field trips.....	22
Awards.....	23
Field camp.....	24
Research.....	26
Outreach.....	27
<b>Students</b>	
Clubs.....	28
Undergraduate degrees, awards and scholarships.....	31
Graduate degrees.....	32
Graduate scholarships.....	33
Publications and presentations.....	34
<b>Development Activities</b>	
Contributions.....	37
Endowments.....	39
Enhancement/retention awards.....	40
Board members.....	42
From our board chair.....	43
<b>Alumni</b>	
Distinguished alumni award.....	44
News.....	45
In memoriam.....	47
Editor: Alan Whittington Composition: Marsha Huckabey	

On the cover: From left, Charlie Miles, David Nymberg, Ryan Yohler and Mikaela Ruga are all smiles following their graduation during the spring, 2018 semester. Congrats to all for receiving your master's degree!

## Roster

### Assistant Professors

Tandis Bidgolli (University of Kansas, 2014)  
Structural geology and thermochronology  
John W. Huntley (Virginia Tech, 2007)  
Paleontology and paleoecology

### Associate Professors

Francisco G. Gomez (Cornell University, 1999)  
Paleoseismology and neotectonics  
James D. Schiffbauer (Virginia Tech, 2009)  
Paleontology and geochemistry

### Professors

Martin S. Appold (Johns Hopkins University, 1998)  
Hydrogeology  
Mian Liu (University of Arizona, 1989)  
Geophysics  
Kenneth G. MacLeod (University of Washington, 1992)  
Paleontology and biogeochemistry  
Peter I. Nabelek (SUNY, Stony Brook, 1983)  
Trace-element geochemistry  
Eric A. Sandvol (New Mexico State University, 1995)  
Seismotectonics  
Kevin L. Shelton (Yale University, 1982)  
Economic geology  
Alan G. Whittington (Open University, 1997)  
Volcanology and crustal petrology

### Director of Field Studies

Miriam Barquero-Molina (University of Texas, 2009)  
Field methods

### Professors Emeriti

Robert L. Bauer (University of Minnesota, 1982)  
Precambrian geology  
Raymond L. Ethington (University of Iowa, 1958)  
Conodont biostratigraphy  
Thomas J. Freeman (University of Texas, 1962)  
Carbonate petrology  
Glen R. Himmelberg (University of Minnesota, 1965)  
Chemical petrology  
Cheryl A. Kelley (University of North Carolina, 1993)  
Aquatic geochemistry  
Michael B. Underwood (Cornell University, 1983)  
Sedimentology

### Staff

Tammy Bedford, Office support assistant IV  
Marsha Huckabey, Business support specialist II  
Stephen Stanton, Library information specialist II

## From Our Department Chair . . .

Dear Friends,

It's been another busy and productive year for MU Geological Sciences. I distinguish the two, because we all know they are not synonymous, but our students, faculty and staff are really doing a phenomenal job, and getting plenty of recognition for it. I will start with an incomplete list of some of the higher profile awards received by members of the department in 2018.

It's no secret that our department excels in research, but this last year has seen unprecedented recognition for our two most recent paleontology hires. Jim Schiffbauer received the President's Early Career Faculty Award for Excellence. This was presented by Dr. Mun Choi, the UM System President, who surprised Jim while he was teaching an introductory class in Keller auditorium. Dr. Choi was impressed that we have our research stars teaching General Education classes, and was intrigued to learn about MU's branch campus out in Sinks Canyon, Wyoming. Jim was also promoted to Associate Professor this year – congratulations! John Huntley received the Provost's Outstanding Junior Faculty Research and Creative Activity Award, the second time in three years it has gone to Geological Sciences.

The department is also very proud of its long history of teaching excellence, and this year Miriam Barquero-Molina received the Chancellor's Excellence Award for Outstanding Undergraduate Faculty. Nominations for this award come from students, and everyone who has taken a class from Miriam or worked with her knows that she was a very deserving recipient. She has transformed Field Camp and Sedimentology (now including Stratigraphy!), and recently began the same process with Structural Geology. Our faculty are not only great teachers, they are also strong mentors, and this year Peter Nabelek received a College of Arts and Science Blue Chalk award for academic advising.

Arianna Soldati received the Abell Science Education Award from the MU Office of Graduate Studies. This is the second consecutive year that this award has gone to a graduate student in Geological Sciences, reflecting the quality of our graduate instructors as well as the faculty. Arianna has been a pas-

sionate advocate and practitioner of science outreach, connecting what we do in our basement laboratories at MU with people all over Missouri. Last year she founded the "Science on Wheels" program, which takes MU graduate students around the state to talk about science and its applications. While at MU, Arianna was a National Geographic Young Explorer, and contributed to a new National Geographic book for kids "Absolute Expert: Volcanoes". Arianna received her doctorate in May and is now a Humboldt postdoctoral fellow at Ludwig Maximilians University, Munich, Germany.

The department recently submitted its 5-year report and strategic plan. Highlights include the multiple honors and awards received by our faculty, their level of external funding, the number of high-profile publications our faculty and students are authoring, and the high rate at which our graduates are finding employment in the geosciences. We also identified three major challenges: (i) maintaining three strong research groups, through faculty retention and hiring, (ii) recruiting undergraduate majors, and (iii) maintaining the size and strength of the graduate program, especially the PhD program. Essentially the message is that we have great people in the department, but we must continue to recruit more, even in times of diminishing resources.

In that vein, we are very pleased to have welcomed Tандis Bidgoli to the faculty this fall. Tандis has several years of industry experience, working for ExxonMobil, but returned to academia and now studies denudation, structural geology and tectonics in the western US, as well as injection-induced seismicity in Kansas and Oklahoma. We are also excited to welcome a second Preparing Future Faculty postdoc, Hector Lamadrid (PhD from Virginia Tech, then a postdoc at the University of Toronto). Hector is an experimental geochemist who uses fluid inclusions as tiny reaction vessels to study serpentinization and other hydrothermal reactions. With Sarah Jacquet joining us in fall 2017, this means that Geological Sciences has two of the nine PFF postdocs that have been supported campus-wide for the first two years of this program. This is great for our campus visibility and emphasizes the international reputation of our research programs.

To continue the momentum we have established, the Development Board just launched the "Geology Alumni Endowment Fund", with a goal of reaching

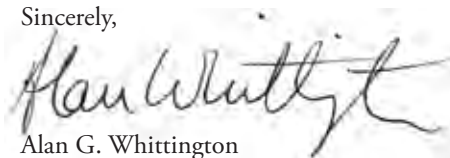
\$1 million in the corpus, at which point this will become the “Geology Alumni Endowed Professorship”. The aim is to provide research support for recruiting and retaining additional outstanding junior faculty. A major use of the fund will be to provide support for graduate research assistants, to help new faculty hit the ground running with their research programs, so this fund will directly benefit students as well as faculty. If you would like to support this initiative, please mark “New Geology Alumni Endowment Fund” on the check and envelope. You can also give online at <http://www.giving.missouri.edu>

We are planning an Alumni Reunion in the department on May 10-11, 2019, to coincide with the spring meeting of the Development Board. We will have oral and poster presentations by students, as well as an “open house” for informal discussions

with students and faculty, on Friday and Saturday. We hope as many alumni as possible can make the visit, whether for one day or two. If you know any teenagers who might be interested in pursuing a degree in geology, please bring them too!

We are all very grateful to the alumni and friends who have provided the support to make the department’s success possible. Please keep us informed of your activities, and please “like” us on Facebook at “MU Geology” and “MU Geology Field Camp” to get more frequent updates on our activities.

Sincerely,



Alan G. Whittington  
Chair and E.B. Branson Professor



On the left Alan Whittington and Truman the Tiger share a picture together before an alumni event in Kansas City in August, 2018. On the right Tammy Bedford (left), Truman the Tiger (middle of course!), and Marsha Huckabey (right) enjoy Staff Week on Lowry Mall where they played all sorts of fun games. Tammy was a finalist for one of the Chancellor’s Outstanding Staff Awards, and she and Marsha went to a reception at the Chancellor’s house during that week following the ceremony.

## Faculty News

(In their own words)

**M**artin Appold enjoyed a full year of activity during 2017-18. Master's student, Riaz Khan, completed his thesis on reactive transport modeling of CO<sub>2</sub> injected into saline formation water in the Farnsworth, Texas hydrocarbon field. Doctoral student, Sarah Smith, expanded her work on characterizing the fluorine content of Mississippi Valley-type ore forming fluids through SEM-EDS analysis of fluid inclusions, and quantifying the partitioning of Zn between dolomite and hydrothermal fluid through laboratory experiments. Master's student, Grace Allison, arrived in January and began working on a fluid inclusion study of the Lemhi Pass (Idaho-Montana) rare Earth element and thorium district. Undergraduate student, Emmy Glastetter, concluded her research project determining sulfur content in fluid inclusions from the Illinois-Kentucky fluorite district. Martin expanded his ongoing research in reactive transport modeling of CO<sub>2</sub> sequestration in the Farnsworth field to include interactions of petroleum with CO<sub>2</sub> and formation water. Recent former students, Ajit Joshi and Abdelsalam Hassan, began new jobs as a research scientist at the University of Tokyo and as a geologist at Excellence Logging in Tulsa, OK, respectively. Martin began serving as the faculty advisor for Geology Club, and helped lead a field trip to the Arbuckle Mountains in Oklahoma for our department's AAPG chapter. Martin taught three courses—Mineral and Energy Resources, Environmental Geology, and Hydrogeologic Processes, and concluded a multi-year effort of redesigning the department's online version of Principles of Geology. He served a third year as co-editor of Hydrogeology Journal.

**M**iriam Barquero-Molina taught Planet Earth and an upper-level undergraduate/graduate class about the Geology of the Western United States, which included a field trip to Death Valley, Owens Valley and the Eastern Sierras over Thanksgiving break. During spring 2018 Miriam taught Sedimentology and a Themes course on tectonic plates and national parks, aptly entitled Plates and Parks. In late May Miriam headed out to Wyoming to run our geology field camp, where she was until mid-July. This fall Miriam is teaching Structural Geology and, once again, Planet Earth.

**B**ob Bauer is enjoying retirement. He and Karen spent much of September traveling in the Canadian Rockies, but Bob continues to work with the

Campus Writing Program and continues his research in Wyoming.

**T**andis Bidgoli and her students had a very busy year. Together they were involved in more than 15 presentations at various workshops and conferences, including the Geological Society of America, American Geophysical Union, American Association of Petroleum Geologists, and Department of Energy. In addition to traveling to fun cities like New Orleans, Seattle, Salt Lake City, and Pittsburgh for these meetings they were active assembling their research findings into several publications. The most recent paper, published in Chemical Geology, focuses on testing the viability of conodonts, toothlike microfossils, for (U-Th)/He dating of carbonates and shales. Tandis and her doctoral student, Deserae Jennings, are looking forward to expanding on the findings of the study and collaborating with faculty at Mizzou as they advance conodont dating methods. Wei Wang, a visiting scholar from the China University of Geosciences in Wuhan, who worked with Tandis on his doctoral degree, successfully defended his dissertation and graduated over the summer. He will be returning to the U.S. in October and to join Tandis' new research group at Mizzou as a post-doctoral scholar. Wei will expand on research started during his doctorate focused on using detrital zircon geo- and thermochronology to constrain Late Mississippian-Early Pennsylvanian sediment transport and tectonics in southwestern Kansas and northwestern Arkansas. He and Tandis will also work together on developing new projects in China and expanding collaborations with Mizzou. Three of Tandis' master's students, Katie Graham, Jeff Jennings, and Andrew Hollenbach, have been busy finalizing their research and are slated to defend their theses this fall. Katie's research is focused on double dating of Eocene forearc and trench-slope sandstones in California to understand the exhumation history of potential source regions, while Jeff and Andrew are focused on injection-induced earthquakes in Kansas and Oklahoma.

**P**aco Gomez and the neotectonics research group had another busy year. Research projects have included domestic and international research. Four graduate students completed their studies. Kelly Hickcox successfully defended his master's thesis on the Debeque Canyon landslide in Colorado. Kelly currently works for the California Department of Water Resources. David Nymberg completed his master's research on neotectonics in the Noble Hills near Death Valley (eastern California). Charlie Miles finished his master's studies on the application of radar and lidar imaging to rockfall monitoring and

## FACULTY NEWS

now works for Geomni in Boulder, Colorado. Sean Polun defended his doctoral dissertation concerning neotectonics in the central Afar region of Ethiopia; he will begin a postdoc with the USGS this fall. Current students include Kimberly Moore, who is conducting her master's thesis research on neotectonics in the Avawatz Mountains (eastern California). Undergraduate student Dan Clapp is studying rock glacier kinematics. Two master's students have joined the neotectonics research group this fall: Allison Alcott (Bachelor of Science from Cornell University) will be studying thermal signatures and hydrology of rock glaciers in Colorado, and Will Kleeman (Bachelor of Science from MU) will be studying seasonal landslide kinematics in Wyoming. In addition, Paco is hosting Dr. An Li, a visiting scientist from the Chinese Earthquake Administration. Paco taught his classes on surficial processes (fall) and neotectonics (spring) – the former included a Labor Day weekend field trip to southern Colorado, and the latter involved a Spring Break trip to southern Death Valley.

**G**len Himmelberg reports that he and Marilyn are doing reasonably well.

**J**ohn Huntley reports an exciting and productive year in the paleobiology group. Mikaela Ruga did a fine job completing and defending her master's thesis research. Her thesis comprised two projects: 1) a conservation paleobiology project addressing the influence of the last 1000 years of human predation on conch populations on San Salvador Island, the Bahamas, and 2) a multi-taxon bivalve sclerochemistry reconstruction of Holocene environmental conditions in the Pearl River Delta, China. The former is now in revision at the journal *Palaios* and the latter manuscript is in preparation. Mikaela had the enjoyable honor of being a teaching assistant at field camp this summer and is beginning an internship as a paleontologist with the National Park Service in Anchorage, Alaska. Doctoral students Gabriel Jacobs and Ranjeev Epa are beginning their second year and making good progress with their research. Gabriel is studying the taphonomy and paleoecology of Pleistocene glaciomarine fossils from Whidbey Island, Washington state. His project will compare community structure, parasite-host associations, and predator-prey interactions between his fossil samples, fossils from other locations, and modern ecosystems. Ranjeev continues his work on Plio-Pleistocene marine fossils from Florida, wherein he too will address fundamental questions of biotic interactions and community structure during a time of significant biotic turnover. It has been a

busy year for John as well, both professionally and personally. He had the good fortune to conduct fieldwork on Whidbey Island following last year's GSA meeting in Seattle as well as fieldwork on Ediacaran-Cambrian strata in Nevada in the late spring. This was quickly followed by six weeks of collaboration with colleagues in Erlangen, Germany (where he got to collect fossils from the Solnhofen Limestone) and Bologna, Italy in May and June and a conference in Xi'an, China in August. He is glad to be back in Columbia with his family and friends. Ranjeev, Gabriel, and John will all be presenting their projects on parasites in the fossil record at GSA in Indianapolis and he hopes to see many of you there.

**C**heryl Kelley is enjoying the freedom of retirement, and still comes into the department and lab on a regular basis.

**M**ian Liu taught Plate Tectonics, Engineering Geology, and a theme class of natural hazards last year and he also worked with students and visiting scientists on continental tectonics and earthquakes. Yuxuan Chen, who entered our doctoral program a year ago, has made good progress in studying the temporal patterns of large earthquakes. His results show that large earthquakes are neither quasi-periodical nor completely random, but occur in clusters that are separated by longer intervals of seismic quiescence. He has found ways to characterize such patterns and forecast long-term seismic behaviors for various regions. Mian reported the preliminary results at the 2018 Seismological Society of American annual meeting, and Yuxuan will present his results at the 2018 AGU meeting in Washington, D.C. Yifei Li, a visiting doctoral student from China, has been working with Mian on offsets of streams across strike-slip faults. Such stream offsets are among the most reliable landmarks for estimating long-term slip rates on the faults. Yifei's work shows that stream incision, which tends to straighten the stream channels, can cause significant error in the slip-rate estimations if surficial processes are not fully considered. Michael Olaniran, a master's student, has joined Mian's group this fall to study earthquakes. As in the past years, Mian's group has been energized by a fresh group of young visiting scientists from China. Dr. Yujiang Li worked with Mian on the crustal kinematics and dynamics in southeastern Tibetan Plateau. Their work challenges the long-standing model of tectonic extrusion and has stirred up hot debates among researchers of Asian tectonics. Dr. Keliang Zhang is using continuous GPS measurements and dynamic gravity data from the GRACE mission to quantify groundwater

depletion in North China, and Dr. Hui Wang, who has visited MU numerous times to qualify as a true Mizzou tiger, returned again to work with Mian on dynamic fault ruptures. Over the summer, Mian visited many research and educational institutions in China (10 cities, maybe a personal record). The most memorable trip was seeing the beautiful Karst towers in Guilin – for all these years he used photos from Guilin to teach Karst terranes in the intro class, but next time he will have photos with him in the picture.

Ken MacLeod was on leave in 2017-2018 and spent most of the fall on IODP Expedition 369 that sailed from Hobart, Tasmania in September, drilled a site in the Australian Bight south of the continent before spending most of the expedition at sites in the Mentelle Basin and on the Naturaliste Plateau in the SW Indian Ocean. They returned to Fremantle, Western Australia in November. Doctoral student Shannon Haynes also was a shipboard scientist. Despite some rough seas, the Expedition was quite successful. They recovered long intervals of Late Cretaceous and Paleogene pelagic sedimentation including samples spanning several critical boundaries as well as terrigenous and igneous rocks related to final fragmentation of Gondwana. The spring was spent analyzing samples with some travel to work with shipboard collaborators. This fall Ken is teaching *The Age of Dinosaurs* and a themes class on mass extinctions. Shannon, when not at sea, is working to finish up her her doctoral degree this fall while also working full time managing a research lab at Princeton. Master's student Kate Ferguson successfully defended her thesis addressing an assemblage of very well preserved Late Cretaceous fossils from an exposure of the Owl Creek Formation in Mississippi last fall. She is editing her thesis for publication, and is now working in environmental geology in Virginia. Second year master's student Laura Speir is working in the isotope lab and making excellent progress improving constraints on the temperature history of the Late Cambrian through the Early Ordovician. She will be presenting at the fall AGU meeting in Washington, DC. Finally, Emily Graham has matriculated. She arrives from UT-Dallas and will be studying ocean circulation and temperature history across the Eocene/Oligocene transition as recorded in samples recovered on Expedition 369.

Peter Nabelek had another enjoyable year teaching and advising his doctoral students Ashraf Gafeer and Elizabeth Kenderes (formerly Gammel). Last spring, after eighteen years, Peter rejuvenated the Theoretical Geochemistry course. It was entertain-

ing moving the material into the 21st century style of teaching, from an overhead format to Keynote presentations and to being able to model mineral and fluid assemblages in the department's computer lab. Peter and his wife Carol enjoyed Elizabeth's and Stuart's wedding in July in Volo, Illinois, and seeing there a number of former MU students.

Eric Sandvol and the seismology research group has continued work on two major field projects at either end of Asia. The most recent project was begin deployment of 33 seismic stations in the country of Myanmar during November 2018. The combined seismic stations from their international partners (Singapore, India, and Germany) will cover nearly the entire northern half of the country. In addition they continue our work to maintain a large seismic array that spans the Greater Caucasus mountains including the countries of Azerbaijan, Armenia, Georgia, and Russia. They just finished re-deploying 24 stations from Georgia to Armenia and Azerbaijan. This is a very large effort that will involve scientists from three US Universities and a large number of scientists from all of the countries involved. They also have a new project funded by the Air Force that studies the left censorship of seismic amplitudes in measuring seismic wave attenuation. Rayan Yassminh has continued her work on understanding the site amplification across the central and eastern U.S. using USArray data. She has recently begun to measure both horizontal and vertical amplification that should help us better understand far field seismic hazard across the central and eastern U.S. Rayan has also constructed models of uppermost mantle  $V_p$ ,  $V_s$ , and  $Q_s$  for the entire central and eastern U.S. She is using this data to construct maps of the temperature of the lithospheric mantle. Hongjun Hui is continuing his work on the effect of left censorship of high frequency wave seismic amplitudes and modelling of seismic attenuation. Hongjun has been working with MU Professor Scott Holan in Statistics to develop methods. Hongjun also has also continued his research on improving our understanding of the seismic signature of this complex slab geometry. Mike Gunnels has been working to create three dimensional crustal  $V_p$  and  $V_s$  model for the eastern Greater Caucasus, in addition to helping to maintain their seismic array in the Greater Caucasus. In addition to the tomographic work he has relocated earthquake hypocenters with a very high degree of precision that has allowed them to map fault zones that were previously not known or thought to be inactive. Mike's work is changing how we view the tectonics of the Eastern Greater Caucasus. Utku Kocum has also worked on our redeployment of station in the Eastern Greater Caucasus this fall. In addition he is working to create group veloc-

ity maps for the entire Caucasus region using ambient noise tomography. Anna Kulynych has been making measurements of shear wave splitting across the entire country of Myanmar. In addition, Anna will travel with Eric to help deploy their seismic stations in Myanmar during this November. Duyi Li is continuing to focus on a newly funded project focusing on the stability of high frequency seismic amplitudes that is supported by the Air Force Research Lab. Finally Mohaminul Islam has joined us from Dhaka University and he will be working on many aspects of their project in Myanmar but with a focus on shear wave splitting tomography.

Jim Schiffbauer's newsletter update last year indicated he had just submitted his dossier and is pleased to report that he has been granted tenure. While it may not look like it in print yet, this has been a highly productive year for his group. First and foremost, all three of his graduate students completed their degrees. Congrats to Jesse Broce, Tara Selly, and Stephanie Rosbach! Jesse Broce has moved on to a lecturer position at Towson University in Maryland. Tara Selly is now a postdoctoral fellow and manager of the X-ray Microanalysis Core here at Mizzou, and Stephanie has stayed in Jim's group for her doctoral degree. In addition, Jim welcomed a new master's student, Mikaela Pulsipher, from Utah State University, and now have three undergraduate geology majors and minors contributing to their research agenda (Brock Andreasen, Casey Thater, and MacKenzie Bowman). With postdocs Sarah Jacquet and Evan Anderson, it's a lively (and big!) group, and they have numerous projects underway. Currently they have three papers in press, one in review, and are closing in on submission of another 9-ish (realistically submitted by the end of 2018), in addition to the 4 papers already published in 2018. They've had (or will have, including those at this year's annual GSA meeting) 16 presentations at regional, national, and international conferences, and have taken two field trips together outside of Missouri—generously funded in part by the Arts & Sciences Dean's office. The first trip, attended by John Huntley, Sarah Jacquet, Tara Selly and Jim, was a field excursion to Nevada, sponsored by the Ediacaran Subcommittee of the International Commission on Stratigraphy. The next big trip was quite a bit further away, to Xi'an and Hanzhong, China, and included both a field excursion to several sites at the Ediacaran-Cambrian transition (attended by Stephanie Rosbach, Sarah Jacquet, Tara Selly, Evan Anderson, and Jim) and the International Conference on Ediacaran and Cambrian Sciences (ICECS, attended by the same group plus John Huntley). These were excellent trips, with great science and great company. At the ICECS meeting, Jim was officially

selected/announced as the Chair of the Ediacaran Series Division team, where his role will be to coordinate a group of international scientists to establish Series/Epoch boundaries (and choose type localities and Series names!) for the Ediacaran Period. He is honored by this appointment, and excited about the opportunity to help shape the geologic time scale. In addition to this, he was also awarded the MU System President's Award for Early Career Excellence. Jim is exceedingly grateful for this honor, and indebted to all of those wonderful people who have helped him along the way.

Kevin Shelton enters his 36th academic year at MU. He is spending his time working on several manuscripts and conducting fieldwork in Canada and the U.S. midcontinent. In August, Kevin spent a week looking at new prospects in the Pine Point MVT Zn-Pb ore district of Canada's Northwest Territories. Undergraduate Geoffrey "Stu" Webb completed his senior thesis under Kevin's direction, "Geochemistry of the Lucky Lake W-Zn-Pb deposit, NWT, Canada: Epithermal Overprinting of Magmatic Hydrothermal Systems" and has begun master's studies in petrology at the University of Notre Dame. This fall, Kevin is teaching Mineralogy and a 5-week class on Gems and Gemstones to a group of 115 non-majors.

Mike Underwood remained happily retired, splitting time between Columbia and Angel Fire, New Mexico. He also maintained research activity associated with the International Ocean Discovery Program.

Alan Whittington taught Igneous Petrology in the fall, with a weekend field trip to the Precambrian of Southeast Missouri, and Volcanology in the spring, with a spring break field trip to Colorado and New Mexico. Thomas Herbst joined the group after two years with the Missouri State Survey, joining Stuart Kenderes, Jesse Merriman, Aaron Morrison, and Arianna Soldati, as the five doctoral students in the experimental petrology-volcanology group. Alan attended several conferences, including GSA in Seattle, AGU in New Orleans, and the British Rheological Society in Bristol (UK). Over the summer Alan did fieldwork at the Mono-Inyo domes (Long Valley caldera, CA) with Stuart, and at Lassen Volcanic National Park (CA) with Thomas, taking time to visit JPL in Pasadena on the way, to check up on Aaron who did a 10-week internship studying cryovolcanism. In June, Alan led the Teton-Yellowstone field trip with field camp, and



also did a week in Yellowstone with Columbia Public Schools grades 8-11. In July, Arianna successfully defended her doctoral degree and was heavily featured in a National Geographic book on Volcanoes that she helped to write. She will start a Humboldt postdoctoral fellowship in München in the fall. The summer concluded with the 10th Cities on Volca-

noes conference in Naples, where Alan visited both Campi Flegrei and Vesuvius. Xander (14) grew bigger than both his parents, and he and Hamish (11) were excited to move to new schools. In addition to normal faculty duties, Angela served on several committees for the American Astronomical Society.

## Visiting Scientists



Dr. Hui Wang (left) is from the Institute of Earthquake Sciences, China Earthquake Administration. Dr. Hui Wang came here in January 2018 to work with Mian Liu on fault ruptures that produce large earthquakes. He has visited MU a number of times and has become a true tiger. Dr. Keliang Zhang (right) is from the Institute of Geology, China Earthquake Administration. Dr. Zhang came to MU in January 2018 to work with Mian Liu on present-day crustal deformation. In particular, he is trying to quantify groundwater depletion in North China using GPS and gravity data.

---

FACULTY  
NEW FACULTY



Tandis Bidgoli, our most recent addition to the faculty in the department, comes to us from the University of Kansas (KU), where she has worked for the past few years as a scientist for the Energy Research Section of the Kansas Geological Survey and as a Courtesy Assistant Professor in the Department of Geology. She is a structural geologist and thermochronologist who is interested in understanding the time-scales, progression, and drivers of deformation and landscape evolution at the regional- and orogen-scale. Her current investigations are focused on understanding the pre-extensional configuration of the Basin and Range and related discrepancies in Miocene extension estimates, and understanding the timing and potential drivers of late Cretaceous to Eocene exhumation in the hinterland of the North American Cordillera. She has also started collaborating with colleagues at the China University of Geosciences in Wuhan on several projects focused the tectonic and drainage evolution of the South China and Yangtze blocks and their influence on the provenance and source-to-sink history of Cenozoic sediment in offshore basins in the South and East China seas. Another significant part of her research centers on injection induced seismicity in the U.S. midcontinent, a research area that builds on her prior industry experience as an Exploration Geologist for ExxonMobil.

Tandis is off to a great start at Mizzou. She is kicking off the new academic year by teaching GEOL 2130: Physical Geology for Scientists and Engineers. She has brought on a new master's student, Begum Kurtoglu, who comes to Mizzou from the Middle East Technical University in Ankara, Turkey (welcome, Begum!). Begum's funding comes from an American Chemical Society, Petroleum Research Fund grant that was awarded to Tandis while at KU. Tandis is also excited to announce that she and her collaborators at KU were recently awarded funding from the Department of Energy. The ~\$1.4M grant is part of a ~\$9.2M multi-institute, carbon storage project that is being led by Battelle Memorial Institute, but includes collaborators from Archer Daniels Midland Company, the Energy and Environmental Research Center at the University of North Dakota, Schlumberger, the Conservation and Survey Division at the University of Nebraska-Lincoln. Although most of the award will stay at KU, Tandis will be transferring a portion of the grant to Mizzou.



Sarah Jacquet is currently a Preparing Future Faculty Postdoctoral researcher at the University of Missouri, Columbia, USA. She completed her doctorate in 2016 at Macquarie University, Sydney Australia; her thesis focused on unravelling the early evolution and radiation of the phylum Mollusca from the lower Cambrian of East Gondwana. This broad focus was channeled into various fields of research including taxonomy, biostratigraphy, taphonomy, and early ontogeny of ancestral macro- and micromolluscs. Since then she has broadened her interests to include other phyla and time intervals, using x-ray microscopy to investigate and reconstruct the scleritome assembly of multi-element organisms. Among the diverse groups she has worked on recently are Devonian armored Machaeridians, Cambrian thick-shelled brachiopods, and the problematic tomotiids. Aside from the realm of virtual palaeontology, she is also a carbonate sedimentologist at heart, and will be investigating animal-sediment interactions at the onset of the Cambrian substrate revolution, as well as taphonomic constraints on the distribution of Cambrian small shelly faunas in Laurentia.

Since arriving at Mizzou, Sarah has been actively involved in professional organizations and outreach activities. She is currently serving as Chair of the Missouri University Postdoctoral Association (MUPA), which oversees professional development, social events and the wellbeing of all postdoctoral researchers on campus. She is also on the board for Science on Wheels, an outreach program founded by one of our own graduates, Dr. Arianna Soldati. This joint graduate and postdoctoral program travels across Missouri with the aim of providing everyone an opportunity to meet a scientist and to hear about the innovative research conducted at Mizzou.

**FACULTY**  
**POSTDOCTORAL FELLOW**

---

Hector Lamadrid started his scientific career in the National Autonomous University of Mexico (UNAM) working on the mineralogical and geochemical alterations (dolomitization, MVT ore deposits, and oil maturation) produced by fluid circulation (migration) in sedimentary systems (2004-2010). Later on, Hector obtained his Ph.D. from Virginia Tech (2011-2016) working with Prof. Robert Bodnar on high P-T geochemistry and experimental petrology where he worked on fluid-rock interactions in natural systems and studying the thermodynamic properties of fluids. Then, he obtained the “Roger E. Deane Postdoctoral Fellowship” at the University of Toronto (2016-2018) working with Prof. Zoltan Zajacz where he developed new experimental methodologies to better constrain the environmental factors (physical, chemical and biological) that affect the rate mechanisms on the hydration (serpentinization) and carbonation reactions that occur in low to high-temperature hydrothermal systems associated with ultramafic rocks.

Hector’s research interests comprise a wide range of geological problems that focus on the role of fluids (aqueous fluids, silicate melts, and other geofluids) in

different geological processes, how fluids interact with the surrounding rocks, and how these interactions evolve through time and space. Mainly, he studies hydrothermal systems and their associated alteration assemblages, as well as the equilibrium and disequilibrium reactions that occur when seawater infiltrates into the oceanic lithosphere near mid-ocean ridges (MOR) and later on during subduction. His main research line focuses on understanding the dissolution and precipitation mechanisms (hydration, dehydration, carbonation, etc.) that occur during serpentinization of the oceanic lithosphere near mid-ocean ridges (MOR) and later on during subduction, as well as the geochemical evolution of the associated fluids. These fluid-rock interactions are key to understand the physical, chemical and biological evolution of the Earth’s system. In his research, Hector integrates field, laboratory and experimental observations coupled with microanalytical and computational techniques to decipher the rock and fluid history and to reveal the physical and chemical processes that control the geologic evolution of the planet.



**FACULTY**  
**RESEARCH GRANTS**



From left Jim Schiffbauer, Tara Selly, Sarah Jacquet, Evan Anderson, Stephanie Rosbach, and David Marcano in Hanzhong, China. They attended a field-trip associated with the International Conference on Ediacaran and Cambrian Science, collecting fossil materials from several localities throughout Shaanxi Province. Funds from the College of Arts & Science partially provided for this trip.

### Active Research Grants

#### American Association of Universities

Alan Whittington and MU co-PI's \$20,000

#### American Chemical Society

Tandis Bidgoli \$110,000  
Alan Whittington \$110,000

#### IODP

Ken MacLeod \$45,000  
Ken MacLeod \$15,000

#### NASA

Alan Whittington \$365,000

#### National Science Foundation

Paco Gomez \$300,000  
Paco Gomez with MU Engineering \$350,000  
John Huntley \$522,000  
Mian Liu \$245,000

#### National Science Foundation (cont'd)

Peter Nabelek \$226,000  
Eric Sandvol \$108,000  
Eric Sandvol \$281,000  
Eric Sandvol \$609,000  
Jim Schiffbauer \$867,000  
Jim Schiffbauer \$599,000  
Alan Whittington \$135,000  
Alan Whittington \$262,000

#### U.S. Department of Defense

Eric Sandvol \$435,000  
Eric Sandvol \$485,000

#### U.S. Department of Energy

Martin Appold \$252,000

#### U.S. National Park Service

Paco Gomez \$39,800

## FACULTY PRESIDENTS AWARD



Monday, April 16, University of Missouri System President Mun Choi awarded UM System President's Awards to James Schiffbauer, an assistant professor of geological sciences at MU. Choi surprised Schiffbauer, with the President's Early Career Award for Faculty Excellence, which includes a \$5,000 prize. The award recognizes faculty who show exceptional promise in scholarship, research or creativity, as proven by significant accomplishments at the university.

During his six-year tenure in the MU College of Arts and Science, Schiffbauer has received both the 2016 MU Provost's Outstanding Junior Faculty Research and Creative Achievement Award, and the National Science Foundation's Faculty Early Career Development award in 2017. He has established a large, well-funded and highly productive research group at MU as well as a new, state-of-the-art imaging facility used in multi-disciplinary studies in collaboration with other research institutions.

"Dr. Schiffbauer is a well-respected researcher in the international geoscience community," said Kevin Shelton, professor of geological sciences at MU. "Even at a relatively early point in his career, he has developed a stellar reputation across a wide variety of geologic subdisciplines, including the fields of paleontology, taphonomy and electron microscopy. His level of research productivity is more typical of our most-talented full professors. Stated simply, Jim is a star whose career is blossoming at MU."

Schiffbauer's primary research interest is taphonomy, the study of how organisms decay and become preserved as fossils. His research has revealed the processes of fossilization, and he has targeted fossils from the "dawn of animal life" during the Ediacaran and Cambrian Periods (600–500 million years ago). Schiffbauer's research also encompassed fields outside of paleontology, including modern ecology, 3-D computer graphics and economic geology. Schiffbauer serves on the editorial boards of three journals, including *Geology*, the top-ranked journal that spans the geosciences.

"He is an excellent teacher and mentor and is one of our most-collegial faculty members, always ready to volunteer when a service task comes up," said Alan Whittington, chair and E.B. Branson Professor of Geological Sciences.

The UM System President's Awards are presented annually to faculty members across the four campuses of the UM System who have made exceptional contributions in advancing the mission of the university. Schiffbauer will be formally recognized by President Choi during an awards celebration in June.

## PROVOST JUNIOR FACULTY AWARD

Assistant Professor of Geological Sciences, Dr. John Warren Huntley, has been named as one of two recipients of the 2018 Provost's Outstanding Junior Faculty Research and Creative Activity Award.

"I am honored and grateful to receive this award from the Provost," Huntley said. "In reality, this award reflects the support and hard work of many people and organizations. The Department of Geological Sciences and the College of Arts and Science have provided vital support during my first years at Mizzou that enabled new research projects and successful grant proposals. My former and current Department chairs, Kevin Shelton and Alan Whittington, have provided valuable and timely mentoring during my time as a junior faculty member. Department colleague, Jim Schiffbauer, and the rest of the faculty, post-docs, and students of the Mizzou Paleobiology group have provided an intellectually-engaging and truly enjoyable environment in which to explore the history of life. Science is a collaborative process and I have certainly benefited from numerous,

generous collaborators, including Daniele Scarponi at the University of Bologna. The unwavering love and support I have received from my spouse, Laura, and daughter, Lydia, through the stressful and initially nomadic lifestyle of an early career academic makes this award all the sweeter."

Dr. Huntley is a paleobiologist whose work lies at the intersection of geology, ecology, and evolutionary biology. Specifically, he is interested in the evolution of parasite-host and predator-prey interactions through the 550 million years of animal life on Earth and how these interactions influenced the course of evolution. John's primary projects investigate the fossil record of parasitic flatworms

in marine, estuarine, and freshwater environments. Such parasites do not have a direct fossil record as they are quite small and do not produce mineralized skeletons. However, these trematodes induce the growth of characteristic malformations in their bivalve mollusk hosts that are readily fossilized.

Dr. Huntley is leading an international group of collaborators from Italy, Germany, and China, and has re-vitalized this avenue of inquiry in paleoparasitology. Perhaps their most striking discovery is the consistent relationship between sea level rise and increasing parasite prevalence noted across depositional environments,

multiple continents, and time. His work indicates that ongoing global warming and sea-level rise could lead to significant intensification of trematode parasitism, suppressed reproduction of common seafloor creatures, and negative impacts on marine ecosystems, ecosystem services, and, eventually, to human well-being.

Prof. Alan Whittington, Chair of the Department of Geological Sciences and a volcanologist, notes that John's expertise in statistics was also useful in helping to interpret experimental

data on the properties of lava. "This is just one example of John's wide-ranging intellectual curiosity and collegial nature" he said. "John is one of the driving forces behind our highly successful paleobiology research group. He's not just an outstanding researcher but is also a great teacher, advisor, and colleague".

Previous winners of the award include Professors Jim Schiffbauer, Eric Sandvol, and Professor Emeritus Mike Underwood of the Department of Geological Sciences. Dr. Huntley will receive the award at a ceremony in the fall of 2018.



## FACULTY

### CHANCELLOR'S AWARD

---



Miriam Barquero-Molina received the Chancellor's Excellence Award for Undergraduate Faculty this past spring. The Chancellor's Excellence Awards recognize the individual accomplishments of MU undergraduate and graduate students, faculty, and staff, as well as the group achievements of Recognized Student Organizations and their advisors. The Awards were created to honor Excellence, one of the University's four core values. This event celebrates outstanding students, faculty, and staff who have exemplified Excellence through their leadership and involvement on campus and in the community. Stuart Kenderes, current doctoral student in the department nominated Miriam for this award. His nomination statement said a lot about Miriam. Some excerpts include, "Miriam is an inspiration to her students. As a female field geologist, she is well aware of the biases that come with the discipline, and she is constantly working to undo them. A few recently undergraduate students of our department were on the university's swimming team, and Miriam would not only attend the events, but would also volunteer at the events. I know that these students appreciated her support." And lastly, Stuart says, "I do not think I would be capable of completing my degree if it was not for Miriam."







Professor Peter Nabelek in the Department of Geological Sciences is the recipient of this semester's Blue Chalk Award, which honors excellence in academic advising. Nabelek, who began his career at MU as an assistant professor in 1983, studies igneous and metamorphic processes in the lithosphere using geochemistry and computer simulations.

"One of the most enjoyable and rewarding parts of my job as a professor is advising of students on both graduate and undergraduate levels," Nabelek says. "As a teacher of geology, I strive to give my students an appreciation of what our planet is made of and how it works. Ultimately, largely through their own efforts, the students become better citizens of the world. All my students begin their research projects in the field, usually camping on rocks that they will work on, often in some far-away place where they have never been before. And that is the easy part, because then comes preparation of rocks for chemical analysis by instruments that the students did not know existed. Sometimes results they are getting seem to go awry, but invariably a bit of advice on how to change a procedure brings success and joy to the student. After getting data comes the hardest part for the students, figuring out what the data tells us about a geologic process that we want to understand. All students are different, all have different talents. One has to be patient while students work their way toward excellence. I get rewarded when a student gives a successful presentation at a conference or writes a paper for a class journal, because that is when I know that he or she is now much better prepared to succeed in the world and knows much more about it than before."

**FACULTY**  
**PRESS RELEASE**

**Ice Volcanoes in Outer Space**  
**MU Receives NASA Grant to Study Cryovolcanism** (by Jordan Yount, College of A&S)

We are all familiar with the terrestrial or rocky planets in our solar system—Mercury, Venus, Earth, Mars, as well as a number of terrestrial satellites such as our moon or Jupiter’s moon, Io, but far less is known about the icy water worlds that populate our solar system. Since the late 1980s, spacecraft such as Voyager 2, Galileo, Cassini, Dawn, and New Horizons have revealed images of many of these water worlds, including Jupiter’s moon Europa, Saturn’s moons Enceladus and Titan, and Neptune’s moon Triton. Surface features on these bodies often resemble features on Earth associated with lava flows or calderas, and a number of these bodies have been observed erupting water or other volatile compounds that would be frozen solid at the surface temperature of the body, a process called cryovolcanism. So, who better to study these ice volcanoes or geysers than MU’s own lava expert, Professor Alan Whittington, chair of the Department of Geological Sciences?

“The Cassini satellite managed to fly through one of these plumes on Enceladus and measured what it was composed of, so the geysers are made of whatever the ocean is made up of under the ice,” Whittington says. “Somewhere in the interior there’s probably going to be something similar to Earth’s sea floor. We have mid-ocean ridges with volcanoes, which are great places for life such as tubeworms. On these bodies, we don’t think there are plate tectonics, but there should be warmth from hydrothermal circulations, and these are perhaps the most likely places in the solar system to find current life. The bodies that have a layer of water are most likely to harbor life.”

Whittington and geology doctoral student Aaron Morrison recently received word that NASA agreed to fund their research proposal, “Rheological Investigation of Cryovolcanic Lavas.” Rheology is the study of the properties and behavior of matter as it flows or deforms. The grant funding will pay for a new rheometer (a device to measure both the stress required to deform a material and its viscosity) for the geology department, and Morrison eventually will go the Jet Propulsion Lab (JPL) at the California Institute of Technology in Pasadena to expand upon the experiments he will begin at MU. Mor-

ison says he first heard of the concept of cryovolcanism while taking a course Whittington and his wife, astronomy Professor Angela Speck, co-teach on the science of our solar system. But Morrison says when the class finally broached the topic, Whittington admitted that scientists don’t know much about the phenomenon at this point.

“I’d never heard of this before, and I wanted to learn more,” Morrison says. Then Morrison accompanied Whittington to a Geological Society of America conference, where NASA scientists presented data from the New Horizons probe at Pluto.

“At the end of one of their talks they said, ‘What we really need right now is some rheological data on these findings, and I thought, ‘Well, that’s what I do—why don’t I contact these folks and see if we can do something cool?’” Morrison says. He says they can determine the composition of the surface ices/geysers from spectral analyses conducted by the probes and then synthesize those materials in the lab. Morrison will use the new rheometer to determine the viscosity of the briny liquids he will be testing.

Whittington says the goal of the research is to characterize and understand the chemical, mineralogical, and physical features of these planetary surfaces and the fluids that interact with the surface, and to understand the process of cryovolcanism and interpret the physical features it produces. He says he thought about looking at the rheology of cryolavas a decade ago, but that was before the probes had reached these outer bodies, and there was no funding available for the research. Whittington says the recent success of the Cassini probe plus plans to send a probe to Europa made it a good time to request funding.

“One of the nice things Aaron did in the proposal is to make the link clearly between making some basic measurements that need to be made and tying that to how we can improve our understanding of what the interior ocean might be made of,” he says. Whittington says probes to Europa and other water worlds will likely land near cryovolcanoes to sample bits of the interior oceans belched up to the surface. Those frozen chunks of ocean are the most likely to harbor life since life cannot exist on the surface, where temperatures range from -256°F at the equator to -364° at the poles.

## Visiting Speakers

A rich and varied program of visiting speakers was funded by our Williamson Family Endowment Fund. Last year's Williamson Family Colloquia and other seminars included:

**Tandis Bidgoli, University of Kansas**

Refining the space-time strain path of the central Basin and Range through low-temperature thermochronology: Implications for dynamic controls on Cenozoic intraplate deformation

**David Borrok, Missouri University of Science and Technology**

Water sustainability challenges in the Southeastern U.S.

**Clara Chan, University of Delaware**

Using modern Fe-oxidizing microbes to unravel the evolutionary and geologic history of Fe oxidation—includes sulfidic cave biofilms

**Simon A.F. Darroch, Vanderbilt University**

Evolutionary ecology and functional morphology of Ediacaran communities

**Hector Lamadrid, University of Toronto**

Hydrothermal alteration of the oceanic lithosphere and beyond

**Colin Jackson, Smithsonian Institution**

Early Episodes of high-pressure core formation preserved in plume mantle

**Kaj Johnson, Indiana University**

Measuring the Decadal Buildup to Megathrust Earthquakes in Japan

**Patricia Kelley, University of North Carolina Wilmington**

Why We Need Conservation Paleobiology: Just Ask Johnny Depp

**Karen Koy, Missouri Western State University**

Geologic Breakthroughs in Producing Assets: exGeo-Handbook for the Recently Deceased

**Martin Krueger, ConocoPhillips**

Geologic Breakthroughs in Producing Assets: examples

from coal bed methane, fractured basement, fractured reef carbonates, and oil shale

**Lin Li, University of Texas at Arlington**

Tectonic and Topographic Evolution of the Central Tibetan Plateau

**Nicole Lunning, Smithsonian Institution**

From Crusts to Cores: Investigating Asteroids Using Meteorites

**Josie Nevitt, U.S. Geological Survey**

Beyond elasticity: How faults deform the lithosphere and interact with each other

**Brandon Schmandt, University of New Mexico**

Investigation of Mount St. Helens earthquakes and magma plumbing with a hybrid natural and controlled source seismic survey

**Chenguang Sun, Rice University**

Unraveling crustal formation under the ocean



Martin Krueger (FC 2011, BS 2011) and current geology development board member, gave a presentation to our faculty, staff and students last spring, 2018.

## FIELD CAMP

### FIELD COURSE

It was a great summer at the University of Missouri Branson Geology Field Camp. We received 40 students from 16 different institutions: Appalachian State University, Binghamton University, Georgia Southern University, Indiana University Northwest, Middle Tennessee State University, Missouri S&T, North Carolina Chapel Hill, Sam Houston State University, Temple University, University of Kentucky, University of Mississippi (Ole Miss), UMKC, University of Pittsburgh, University of Tennessee at Chattanooga, Virginia Tech and University of Missouri (Columbia).

We were pleased that seven out of our 40 students qualified for scholarships from our alumni contributions to the camp's scholarship funds (see photo).

If you have a chance, visit our field camp website (<http://fieldcamp.missouri.edu/>) which is the main venue through which potential students learn about our camp. You can also "like" us and follow on Facebook at <https://www.facebook.com/Camp.Branson>.

Our new basin analysis project, led by Mark Sutcliffe and Drew Thomas, which we implemented for the first time in summer 2017, was again really successful, and a great complement to our groundwater and surface water hydrogeology, shallow seismic refrac-

tion and reflection and advanced structural analysis projects. It is pretty clear from our end-of-camp student surveys that many undergraduates choose Branson Field Camp because of our diverse projects in the last two weeks of camp. Many, of course, also choose Camp Branson because of positive recommendations from their friends, classmates and faculty mentors. Maintaining high standards for the quality of our teaching and instruction ensures that students will continue to come to our camp. It doesn't hurt, of course, that food at camp is some of the best students have ever had, probably in a long time! We had a new cook this year ... Lynne Smith, also one of our caretakers, stepped into the role of head cook, and with the help of her relative, Rhonda, whipped up some of the most excellent meals our camp has ever seen. If the rush for seconds every single night of camp is a testament to the quality of the food, I'd say we did pretty good. Lynne and Rhonda are a dynamic duo of food magicians, and I hope they are with us for many more years to come.

Thanks to all the faculty, instructors, teaching assistants, staff, alumni and friends whose contributions continue to help Camp Branson move forward.

Miriam Barquero-Molina, Field Camp Director



Field Camp TA's during facies analysis project in the Jurassic Sundance Formation, Derby Dome, Wind River Basin, Wyoming.



Summer, 2018 field camp scholarship recipients: Dan Clapp, Theresa Jones, Aaron Wilson, Tanner Avery, Sam Finnegan and Stephanie Caples.

**William B. Allen Scholar**

Cesar Garciar

**Donald S. Garvin Scholars**

Tanner Avery  
Stephanie Caples  
Theresa Jones  
Aaron Wilson

**Clayton H. Johnson Memorial Scholars**

Avery Tanner  
Samuel Finnegan

**George W. Viele Memorial Scholar**

Daniel Clapp

## Undergraduate Research Program

It has been more than 10 years since the department funded its first proposal to the undergraduate research program, supporting research by students enrolled in Senior Thesis credit hours. The program is funded from four Opportunities for Excellence in Geology Endowments (the Walter D. Keller, John and Betty Marshall, Gene and Thelma Schmidt, and Norman E. Smith funds). This unique program provides funds to enable undergraduates to conduct meaningful field- and laboratory-based research as part of their MU education, benefiting students in several ways:

- It encourages and rewards research early in students' academic careers, often before senior year.
- It is a great recruiting tool to attract students to our program.
- Our students will be more competitive and better prepared for graduate school and the work force.
- The program increases our visibility on campus and beyond.
- Integrating meaningful research into our undergraduate curriculum emphasizes the unique role our department plays in developing the geoscience workforce in Missouri

The number of requests averages about 4 per year, and most students request the maximum amount of \$3,000, which can be used for field and analytical expenses. Students receiving these awards have done fieldwork throughout the US and abroad. Several projects have resulted in student-authored papers in peer-reviewed journals. Many students who have completed senior thesis research have gone on to graduate school at MU or elsewhere, and some are now faculty members themselves.

We are extremely grateful to the donors to the Opportunities for Excellence in Geology Endowments who have provided research opportunities for so many students.



Congratulations to Geological Sciences major Stu Webb who presented the results of his senior thesis at the MU Undergraduate Research and Creative Achievements Spring Forum on April 17. His poster entitled "Geochemistry of the Lucky Lake W-Zn-Pb Deposit, NWT, Canada: Epithermal Overprinting of Magmatic Hydrothermal Systems" (co-authored with Profs. Kevin Shelton & Jim Schiffbauer, MU graduate student Sarah Smith and Hendrik Falck of the NWT Geological Survey) reflects a year-long project under the direction of Kevin Shelton. This research was supported by the John and Betty Marshall Opportunities for Excellence Fund, an endowment that helps fund undergraduate research experiences in our department. Stu began a master's degree program at the University of Notre Dame this fall.

PHOTO GALLERY  
FIELD TRIPS

Dan Clapp (MU student) on a geologic reconnaissance tour of the geology of Sinks Canyon, Wind River Mountains, Wyoming.



The Volcanology class taking a break from volcanoes to explore White Sands National Monument.

The Volcanology class on the edge of the Valles Caldera.



PHOTO GALLERY  
AWARDS



Sam Finnegan received the Estwing Hammer Award from Miriam Barquero-Molina, our field camp director. The award was given at our spring, 2018 geology development board meeting.



Dan Clapp received the Geology Development Board Outstanding Undergraduate Award from Miriam Barquero-Molina, our director of undergraduate students. The award was given at our spring, 2018 geology development board meeting.



Mikaela Ruga received the James H. Stitt Graduate Teaching Award from Tanya Heath (left). Tanya presented this award to Mikaela at our spring, 2018 geology development board meeting.



PHOTO GALLERY  
AWARDS/FIELD CAMP

Stuart Kenderes received the Outstanding Graduate Student Award from Paco Gomez, our director of graduate studies. This award was given at our spring, 2018 geology development board meeting.



Arianna Soldati (center) received the 2018 Abell Science Education Award. She is seated with Mark Volkmann (MU College of Education) and Matia Pistone (University of Lausanne).

Field camp students take notes during field lecture on Paleozoic stratigraphy of Sinks Canyon, Wind River Mountains, Wyoming.



**PHOTO GALLERY**  
FIELD CAMP



Group photo of our summer, 2018 field camp students on top of Mt. George.

Students learn about glacial features in Sinks Canyon, Wind River Mountains, Wyoming.



Jacob Haenni (MU Student) measures a stratigraphic section in the Jurassic Nugget Sandstone, Derby Dome, Wind River Basin, Wyoming.

## PHOTO GALLERY RESEARCH

Visiting master's student Garima Lohani (Northern Illinois University) learns how to measure the viscosity of magma from Arianna Soldati (PhD 2018).



Shannon Haynes, current doctoral student in the department, watching a sailor-overboard drill from the port bow of the JOIDES Resolution. Shannon's advisor is Dr. Ken MacLeod.

Mike Gunnels, current master's student, working on a seismometer vault in the eastern Greater Caucasus. Mike is working under the supervision of Dr. Eric Sandvol.





Doctoral candidate Arianna Soldati talks to Fredericktown 8th graders about the geology of Tiemann Shut-Ins.

Brenna Halverson shows 7th and 8th grade students the effect of crystals on lava flow speed. Stuart Kenderes looks on while Aaron Morrison records video. The Missouri Youth Experience brings middle school students from St. Louis and Kansas City to spend a day on the MU campus.



From left Mike Gunnels, Stuart Kenderes, Elizabeth Gammel and Jesse Merriman, help out at the STEM Expo at Rockbridge School in Columbia, MO.



Geology Club is a student organization dedicated to enriching the student experience at MU through educational opportunities, fun, community-building, and outreach in a geological context. Geology Club meets biweekly and engages in a variety of activities, including seminars, field trips, games, rock and mineral competitions, movie nights, campouts, and service to schools and youth organizations. All students regardless of major and education level are welcome to our club. Whether you want to do something to empower our local teachers, broaden the minds of our local youth, or just have a fun time, Geology Club is a great way to do these things. For more information about Geology Club, visit our Facebook page, “Mizzou Geology Club”.

In the picture above those who won in the Pet Rock Competition held by the club were the following: In the Purchased/Gifts section - Thomas Herbst won every event (Best Sedimentary Rock, Best Igneous Rock, Best Fossil, Best Mineral Color, and Best Mineral Structure). For Best In The Show in this category Grace Allison won with the Megalodon Tooth.

In the Found Competition the Best Sedimentary Rock went to Will Kleeman; Best Igneous Rock to Thomas Herbst; Best Metamorphic Rock to Kimberly Moore; Best Fossil to Martin Appold (Geology Club Advisor); Best Mineral Color to Dan Clapp; Best Mineral Structure to Stuart Kenderes, and Best Pet Rock to MacKenzie Bowman. A great time was had by all!

Lexie Dickinson, President



Entering its fourth year, the MU Geology Graduate Society (MUGGS) continues its mission of promoting professional development opportunities for graduate students and fostering community among our graduate population. Earlier this spring, nine graduate students shared their research during the third annual Geology Student Research Forum. Members also helped renovate a geology themed display case on the MKT trail with plans to update/replace the samples within to better reflect Missouri geology. MUGGS also invited the Mineralogical Society of America Distinguished Lecturer, Dr. Clara Chan from the University of Delaware, to present her talk “Using modern Fe-oxidizing microbes to unravel the evolutionary and geologic history of Fe oxidation.” Members also participated in science outreach during the Columbia Public Schools STEM Expo. In an effort to improve the experience of incoming graduate students, the club drafted a welcome letter with helpful information not often communicated effectively (e.g. parking dates, housing info, etc.). During the fall semester, we have continued the tradition of team building exercises at MU’s Venture Out high ropes course. This is intended to be an annual event bringing new graduate students together with veteran graduate students to form camaraderie and support networks. All nine new graduate students attended this year (20 total participants) and the event was a rousing success. The club has also submitted funding requests to support students attending the annual Geological Society of America meeting in Indianapolis, Indiana. Fundraising will continue from last year to this year with our monthly Shakespeare’s Pizza fundraiser and a department calendar in conjunction with AAPG.

Aaron Morrison, President



The University of Missouri student chapter of the American Association of Petroleum Geologist (AAPG) had a successful spring semester. Club activities included a combination of education/professional development opportunities, as well as public outreach. Additionally, there has been activity pertaining to club governance and organization. AAPG hosted the Visiting Geologist Program: Ray Leonard presented a talk entitled “Oil in the 21st century and future challenges” for all students. We participated in Earth Science Week display and made HAZWOPER training available at well below cost for students to be able to have the training on their resume before looking for professional jobs. For interpersonal relationships between students, we created a field trip to the Arbuckle Mountains in Oklahoma at the end of the spring semester for no cost to students. Martin Appold was kind enough to lead the field trip and helped those in attendance with questions on the geology of the mountains and the hydrology of the area. We hosted two “Bad Science Movie Nights” where students could have an evening during the week to laugh with each other at movies such as Dante’s Peak, Armageddon and Volcano. One significant activity was the election of new officers in February. The new officers include four graduate students and one undergraduate student. Aside from the usual transfer of signatures and other procedures, an immediate action of the new officers was to organize a new Google Drive account to assist with club communications. The club also began discussing plans for the coming fall, including a possible field trip to collect geodes, host a fundraiser and made a new Facebook page to better communicate with the public. The club also was in line with our primary goal of professional development, and continued working with members, and other students, in preparation for professional certifications, including reviewing for the Associate Boards of Geology (ASBOG) exams and the Hazardous Waste Operations and Emergency Response (HAZWOPER) training. The club was represented by four students at the 2017 Rocky Mountain Rendezvous in Laramie, WY, in September 2017 and the club assisted with some of the costs of travel and participation. In terms of community outreach, in March, the club signed up to adopt a part of the M-K-T trail close to a stream system. The team was able to pick up 15 bags worth of trash and continues to monitor the site. There are upcoming plans to do another clean-up effort and that portion of the trail will be officially adopted in the fall.

Grace Allison, President

## Undergraduate Degrees

### **Bachelor of Science, Magna Cum Laude with Department and University Honors**

Kleeman, Edward W.

### **Bachelor of Science, with Department Honors**

Gilbert, Nicholas  
Laphim, Parichat  
Webb, G. Stuart

### **Bachelor of Science**

Costello, Kevin  
Elliott, Grant  
Glastetter, Emalyn  
Schulz, Caroline  
Sheffer, Jacqueline

## Senior Theses

### **Grant Elliott**

*Ground Based Radar Interferometry Measurements of the  
Slumgullion Earth Flow (San Juan Mountains, Colo-  
rado).*

**Advisor: Paco Gomez**

### **Emalyn Glastetter**

*Determination of the Sulfur Content of Ore Fluids in the  
Illinois-Kentucky Mississippi Valley-type District through  
SEM-EDS Analysis of Fluid Inclusion  
Decrepitates..*

**Advisor: Martin Appold**

### **Edward W. Kleeman**

*Geomorphic Correlation in the Noble Hills and Avawatz  
Mountains using Schmidt Hammer Rebound as a  
Weathering Proxy.*

**Advisor: Paco Gomez**

### **G. Stuart Webb**

*Geochemistry of the Lucky Lake Zn-Pb-W skarn deposits,  
NWT, Canada..*

**Advisor: Kevin Shelton**

## Awards

### **Estwing Hammer Award**

Samuel Finnegan

### **Geology Development Board Outstanding Undergraduate Award**

Daniel Clapp

## Scholarships

### **Boyd Scholar**

Jackson Clubb

### **James Mitchell Scholar**

Matthew Vincent

### **E.J. Palmer Scholar**

Daniel Clapp

### **Mrs. Pat Geology Scholar**

Samuel Finnegan

### **Raymond E. Peck Undergrad Scholar**

Elizabeth Fife

### **Edmond & Mary Raymond Scholar**

Elias Bunting

### **Pearl T. Sando Scholar**

Casey Thater

### **Gene Schmidt Scholar**

Morgan Gremminger

### **Fred Strothmann Scholar**

Daniel Shi



## Graduate Degrees

### Master of Science

#### Nicholas Benz

*New slip distributions hold implications for the next great earthquake in Cascadia*  
Advisor: Noel Bartlow

#### Kelly Hickcox

*Kinematic Analysis of the Debeque Landslide using Radar Interferometry and Change-Detection Photogrammetry, Mesa County, CO*  
Advisor: Paco Gomez

#### Riaz Khan

*Evaluation of the Geologic CO<sub>2</sub> Sequestration Potential of the Morrow B Sandstone in the Farnsworth, Texas Hydrocarbon Field using Reactive Transport Modeling.*  
Advisor: Martin Appold

#### Charles P. Miles

*Applications of ground based remote sensing tools to rockfall hazard monitoring*  
Advisor: Paco Gomez

#### Stephanie Rosbach

*Assessing soft tissue preservation in a variety of saline environments through actualistic decay experiments and an isotopic assessment of pyritized plant fossils from the Mazon Creek, IL*  
Advisor: Jim Schiffbauer

#### Mikaela Ruga

*Temporal trends in the Holocene: Exploring implications for conservation paleobiology through quantitative assessment of marine mollusks*  
Advisor: John Huntley

#### Ryan Yohler

*In the Land of HOBITSS Where the Slow Slip Events Lie*  
Advisor: Noel Bartlow

### Doctor of Philosophy

#### Jesse Broce

*Taphonomic Characteristics of Fossils in the BST Spectrum*  
Advisor: Jim Schiffbauer

#### Sean Polun

*Structural Geology, Tectonic Geomorphology, and Neotectonics of the Central Afar Rift, Ethiopia and Djibouti*  
Advisor: Paco Gomez

#### Tara Selly

*Biom mineralizers from the Proterozoic to Today: Assessing Taxonomy and Paleoecology through the Lens of Taphonomy*  
Advisor: Jim Schiffbauer

## Grants and Awards

### American Association of Engineering Geologists Tilford Scholarship Award

Kimberly Moore

### American Geophysical Union Outstanding Student Presentation Award

Arianna Soldati

### Gamma Alpha Gamma Dissertation Year Fellowship

Elizabeth Gammel

### Geological Society of America Student Research Grant

Sarah Smith-Schmitz

### Graduate Professional Council Travel Award

Elizabeth Gammel

Thomas Herbst

### Jack Kleinman Research Grant

Thomas Herbst

### Lunar and Planetary Institute Travel Grant

Aaron Morrison

### Society of Exploration Geophysicists Scholarship

Grace Allison

## Scholarships

### **Burst Grad Fellow**

Brenna Halverson

### **Davies Scholar**

Allison Alcott

### **Ethington Scholar**

Gabriel Jacobs

### **Freeman Scholar**

Emily Graham

### **Graduate School Scholars**

Brenna Halverson  
Michael Olanirani

### **GSSF Scholar**

Grace Allison

### **Harris Scholar**

Emily Graham

### **Himmelberg Scholar**

Brenna Halverson

### **Johns Scholar**

Thomas Herbst

### **Hal & Ruth Johnson Scholar**

Grace Allison

### **Walter D. Keller Scholar**

Anna Kulynych

### **Knotts Scholar**

Emily Cunningham

### **Knox Scholar**

Edward W. Kleeman

### **M. G. Mehl Field Geology Scholar**

Gabriel Jacob

### **Miles Scholar**

Kimberly Moore

### **Peck Graduate Fellowship**

Elizabeth Gammel

### **Raymond Outstanding Achievement Scholar**

Michael Olaniran

### **Rexroad Scholarr**

Laura Speir

### **Steyaert Scholar**

Mikaela Pulsipher

### **James H. Stitt Geology Scholar**

Mikaela Pulsipher

### **Thomasson Scholar**

Anna Kulynych

### **Tlapek Scholar**

Sarah Smith

### **Viele Scholar**

Laura Speir

## Student Publications

Huntley, J.W., Schiffbauer, J.D., **Avila, T.D.** and **Broce, J.S.**, 2018. Ecophenotypy, temporal and spatial fidelity, functional morphology, and physiological trade-offs among intertidal bivalves: *Paleobiology* 44:530-545. <https://doi.org/10.1017/pab.2018.14>

**Broce, J.S.** and Schiffbauer, J.D., 2017. Taphonomic analysis of Cambrian vermiform fossils of Utah and Nevada, and ramifications for chemistry of Burgess Shale-type preservation: *Palaios* 32: 600–619.

**Chen, Y.** and Nabelek, P.I., 2017. The influences of incremental pluton growth on magma crystallinity and aureole rheology: Numerical modeling of growth of the Papoose Flat pluton, California: *Contributions to Mineralogy and Petrology*, 172, 89, pp.16, doi: 10.1007/s00410-017-1405-6

**Field, J.D.**, Appold, M.S., Renson, V. and Coveney, R.M., Jr., 2018. Lead and sulfur isotope composition of trace occurrences of Mississippi Valley-type mineralization in the U.S. midcontinent: *Journal of Geochemical Exploration*, v. 184, p. 66-81.

**Gibson, B.M.**, Schiffbauer, J.D. and Darroch, S.A.F., 2018. Ediacaran-style decay experiments using mollusks and sea anemones: *Palaios* 33: 185–203.

Warny, S., Jarzen, D.M., **Haynes, S.J.**, MacLeod, K.G. and Huber, B.T., 2018. Late Cretaceous (Turonian) angiosperm pollen from Tanzania: A glimpse of past vegetation from a warmer climate: *Palynology*. doi:10.1080/01916122.2018.1477850.

Huber, B.T., Hobbs, R.W., Bogus, K.A., Batenburg, S.J., Brumsack, H.-J., Do Monte Guerra, R., Edgar, K.M., Edvardsen, T., Harry, D.L., Hasegawa, T., **Haynes, S.J.**, Jiang, T., Jones, M.M., Kuroda, J., Lee, E.Y., Li, Y.-X., MacLeod, K.G., Maritati, A., Martinez, M., O'Connor, L.K., Petrizzo, M.R., Quan, T.M., Richter, C., Riquier, L., Tagliaro, G.T., Tejada, M.L.G., Wainman, C.C., Watkins, D.K., White, L.T., Wolfgring, E. and Xu, Z., 2018. Tectonic, paleoclimate, and paleoceanographic history of high-latitude southern margins of Australia during the Cretaceous: Integrated Ocean Drilling Program: Preliminary Reports, v. 369, p. 1-39.

**Merriman, J.D.**, Hofmeister, A.M., **Roy, D.** and Whittington, A.G., 2018. Temperature-dependent thermal transport properties of carbonate minerals and rocks: *Geosphere*, 14: 1961-1987. doi: 10.1130/GES01581.1

**Polun, S.**, Gomez, F. and Tesfaye, S., 2018. Statistical analysis of normal fault length and displacement in the amagmatic central Afar, Ethiopia and Djibouti: *Journal of Structural Geology*, 115, p.178-189, DOI: 10.1016/j.jsg.2018.07.018.

MacLeod, K.G., **Quinton, P.C.**, Sepúlveda, J. and Negra, H., 2018. Post-impact earliest Paleogene warming shown by fish debris oxygen isotopes (El Kef, Tunisia): *Science*, v. 360, p. 1467-1469, doi:10.1126/science.aap8525.

**Quinton, P.C.**, **Speir, L.**, Miller, J., Ethington, R. and MacLeod, K.G., 2018. Extreme heat in the early Ordovician: *Palaios*, v. 33, p. 353–360, doi:10.2110/palo.2018.031.

Huntley, J.W., **Selly, T.**, Shelton, K.L. and Schiffbauer, J.D., 2017. *Trilobite Predation*: Access Science McGraw-Hill Education. <https://doi.org/10.1036/1097-8542.YB170022>.

**Selly, T.L.**, **Hale, K.E.**, Schiffbauer, J.D., **Clapp, D.A.** and Huntley, J.W., 2018. The influence of environmental gradients on molluscan diversity, community structure, body size, and predation in a carbonate tidal creek, San Salvador (The Bahamas): *American Journal of Science* 318:246-273.

**Smith-Schmitz, S.E.** and Appold, M.S., 2018. Prediction of ore fluid metal concentrations from solid solution concentrations in ore-stage calcite: Application to the Illinois-Kentucky and Central Tennessee Mississippi Valley-type districts: *Geochimica et Cosmochimica Acta*, v. 225, p. 210-227.

**Soldati A.**, **Beem J.**, Gomez F., Huntley, J., **Robertson T.** and Whittington, A.G., 2017. Reconstructing a Monogenetic Eruption: Rheology and Morphology of a ~7ka Trachybasaltic Flow from the Cima Volcanic Field (CA): *Journal of Volcanology and Geothermal Research*, 347: 91-111, doi: 10.1016/j.jvolgeores.2017.09.005

**Soldati A.**, Gurioli, L., Harris, A., Rhéty, M., Villeneuve, N., Gomez, F. and Whittington, A.G., 2018. Textural, thermal, and topographic constraints on lava flow system structure: the December 2010 eruption of Piton de La Fournaise: *Bulletin of Volcanology*, 80:74, doi: 10.1007/s00445-018-1246-9

## Student Oral Presentations

**Rosbach, S.A.**, Muscente, A.D., Wittmer, J.M., Fike, D.A., Shelton, K.L. and Schiffbauer, J.D., 2018. Pyrite sulfur isotopic analysis of Mazon Creek fossils may provide clues on nodule formation: Geological Society of America Annual Meeting.

**Selly, T.**, Schiffbauer, J.D., Jacquet, S.M., Strange, M.A., **O'Neil, G.R.**, **Andreasen, B.D.**, Cai, Y., Huntley, J.W., **Thater, C.A.**, Nelson, L. and Smith, E.F., 2018. Taxonomic evaluation of a tubular assemblage from the terminal Ediacaran of Nevada: Geological Society of America, Abstracts with Programs, vol. 50, no. 6.

**STUDENTS**  
**PRESENTATIONS**

**Selly, T.**, Schiffbauer, J.D., Jacquet, S.M., Strange, M.A., **O'Neil, G.R.**, **Andreasen, B.D.**, Cai, Y., Huntley, J.W., **Thater, C.A.**, Nelson, L.L. and Smith, E.F., 2018. Taxonomic evaluation of a tubular assemblage from the terminal Ediacaran of Nevada: Geological Society of America Annual Meeting.

**Roy, D.**, Whittington, A., Hofmeister, A. and **Merriman, J.**, 2017. Non-magmatic thermal effects of intrusions: Geological Society of America Annual Meeting.

**Soldati, A.**, **Beem J.**, Gomez F., Huntley, J.W., **Robertson T.** and Whittington, A.G., 2017. Emplacement dynamics and timescale of a Holocene flow from the Cima Volcanic Field (CA): Insights from rheology and morphology: American Geophysical Union Fall meeting.

**Soldati, A.**, Harris, A., Gurioli, L., Rhéty, M., Villeneuve, N., and Whittington, A., 2017. Does lava remember its own thermal history? A new experimental approach to investigate subliquidus rheology applied to the December 2010 eruption of Piton de La Fournaise (La Réunion): IAVCEI, Portland OR

**Soldati, A.**, **Beem J.**, Gomez F., Huntley, J.W., **Robertson T.**, and Whittington, A.G., 2017. Emplacement dynamics and timescale of a Holocene flow from the Cima Volcanic Field (CA): Insights from rheology and morphology. Geological Society of America Annual Meeting.

**Soldati, A.**, 2018. What Happens To Moving Soft Rock When The Ground Goes Down?: American Geophysical Union Fall Meeting

## Student Poster Presentations

**Clapp, D.** and Gomez, F., 2018. Kinematic Analysis of Rock Glaciers on Mt. Mestas, Southern CO: Geological Society of America Annual Meeting, Indianapolis, IN.

**Epa, Y.R.**, Portell, R.W. and Huntley, J.W., 2018. Is there a link between parasitism, kleptoparasitism, and predation in marine bivalves? A case study from

the Plio-Pleistocene of northeastern Florida: Geological Society of America, Abstracts with Programs, vol. 50, no. 6.

**Gammel, E.M.** and Nabelek, P.I., 2017. Lithospheric structure control on changes in magma source over two magmatic pulses in the White-Inyo Range, CA: Geological Society of America, Abstracts with Programs. Vol. 49, No. 6, doi: 10.1130/abs/2017AM-305357.

**Herbst, T.**, Whittington, A.G., Pistone, M., Schiffbauer, J.D. and **Selly, T.**, 2018. Experimental vesiculation and outgassing of crystal-bearing dacite: Geological Society of America Annual Meeting.

**Hui, H.** and Sandvol, E., 2017. Dynamics of the Cyprean Slab beneath Central Anatolia: American Geophysics Union Fall Meeting, San Francisco.

**Jacobs, G.S.** and Huntley, J.W., 2018. Clams on ice: Glimpses of parasite-host interactions from Pleistocene shell beds of coastal Washington, USA: Geological Society of America, Abstracts with Programs, vol. 50, no. 6.

**Kenderes, S.**, Befus, K., Andrews, G. and Whittington, A., 2018. Using volatile contents to infer the emplacement mechanism of silicic lava flows: An FTIR study of Obsidian Dome, CA: Cities on Volcanoes 10, Napoli, Italy.

**Kenderes, S.**, Hofmeister, A.M., **Merriman, J.D.** and Whittington, A.G., 2017. Exploring the influence of texture and composition on the thermal transport properties of mudstones: American Geophysical Union Fall meeting, New Orleans LA.

**Kleeman, E.W.**, **Nymberg, D.** and Gomez, F., 2018. Ages estimates of alluvial surfaces in the southern Death Valley region using Schmidt hammer rebound and fault scarp degradation: Annual Meeting of the Association of Environmental and Engineering Geologists, Indianapolis, IN.

**Merriman, J.D.**, Whittington, A.G. and Hofmeister, A.M., 2017. Variability in rock thermal properties in the Late Archean crust of the Kapuskasing Structural Zone and implications for its thermal structure and metamorphic history: American Geophysical Union Fall meeting, New Orleans LA.

- Moore, K.D., Kleeman, E.W.** and Gomez, F., 2018. Geometric and geomorphic constraints on the growth of the Avawatz Mountains foothills, eastern California: Geological Society of America Annual Meeting, Indianapolis, IN.
- Morrison, A.,** Whittington, A., Zhong, F., Mitchell, K.L. and Carey, E.M., 2018. Rheological investigation of cryovolcanic slurries: Cryovolcanism in the Solar System workshop, Houston TX.
- Rosbach, S.A., Selly, T.** and Schiffbauer, J.D., 2018. The preservation potential of the black-backed land crab, *Gecarcinus lateralis*, assessed through field-based decay experiments: Implications for the preservation of arthropods: International Conference on Ediacaran and Cambrian Sciences.
- Rosbach, S.A.,** Muscente, A.D., Wittmer, J.M., Fike, D.A., Shelton, K.L., and Schiffbauer, J.D., 2018. Pyrite sulfur isotope analysis of Mazon Creek fossils may provide clues on nodule formation: Geological Society of America Annual Meeting, Indianapolis, IN.
- Ruga, M.R.,** Huntley, J.W. and Glascock, M., 2018. Trace element analysis of two Holocene bivalve taxa, *Cyrenodonax formosana* and *Potamocorbula amurensis*, as proxies for temperature and productivity in the Pearl River delta, China: Geological Society of America, Abstracts with Programs, vol. 50, no. 4.
- Selly, T.,** Schiffbauer, J.D., Jacquet, S.M., Strange, M.A., **O'Neil, G.R., Andreasen, B.D.,** Cai, Y., Huntley, J.W., **Thater, C.A.,** Nelson, L.L. and Smith, E.F., 2018. New data on a tubular assemblage from the terminal Ediacaran of Nevada: Taxonomic evaluation indicates a new species of *Conotubus* and a new cloudinid genus: International Conference on Ediacaran and Cambrian Sciences.
- Smith-Schmitz, S.E.** and Appold, M.S., 2017. Potential for the prediction of Zn concentrations in Mississippi Valley-type ore fluids from solid solution Zn concentrations in galena: Geological Society of America.
- Smith-Schmitz, S.E.** and Appold, M.S., 2018. Determination of F concentrations in ore-stage MVT fluids through SEM-EDS analysis of fluid inclusion decrepitates: Pan-American Current Research on Fluid Inclusions, Houston, TX, June 12-14.
- Smith-Schmitz, S.E.** and Appold, M.S., 2018. Determination of F concentrations in ore-stage MVT fluids through SEM-EDS analysis of fluid inclusion decrepitates: Gordon Research Conference on the Geochemistry of Mineral Deposits, Waterville Valley, NH, August 5-10.
- Soldati, A.,** 2017. Science on Wheels: Sowing interest in science in rural Missouri. Geological Society of America Annual Meeting, Seattle WA.
- Soldati, A., Beem J.,** Gomez F., Huntley, J.W., **Robertson T.** and Whittington, A.G., 2017. Emplacement dynamics and timescale of a Holocene flow from the Cima Volcanic Field (CA): Insights from rheology and morphology: Geological Society of America Annual Meeting, Seattle WA.
- Soldati, A. Beem, J.R.,** Chigna, G., Gomez, F., Gurioli, G., Harris, A.J.L., Huntley, J.W., Rhéty, M., **Robertson, T., Sehlke, A.,** Villeneuve, N., and Whittington, A.G., 2018. The effect of topography on the rheological and morphological evolution of basaltic lava flows: American Geophysical Union Annual Meeting.
- Soldati, A.,** Sant, C.J., Farrell, J.A., and Karson, J., 2018. The Effect of Bubbles On The Rheology Of Lava Flows: Insights From Large-Scale Two-Phase Experiments. American Geophysical Union Fall Meeting.
- Soldati, A.,** Gomez, F., Gurioli, L., Harris, A., Rhéty, M., Villeneuve, N. and Whittington, A., 2018. Topographic constraints on lava flow channel network architecture: The December 2010 Eruption of Piton de La Fournaise: Cities on Volcanoes 10, Napoli, Italy.
- Webb, G.S.,** Shelton, K.L., Smith, S., Schiffbauer, J.D. and Falck, H., 2018. Geochemistry of the Lucky Lake Zn-Pb-W skarn deposits, NWT, Canada: University of Missouri Spring Undergraduate Research Forum, April 17.
- Yassminh, R.** and Sandvol, E., 2017. Site Amplification in the Central U.S.: Towards and understanding of factors influencing the site effect: American Geophysics Union Fall Meeting.

## Investments in the Future

The Department of Geological Sciences gratefully acknowledges the financial support of alumni and friends who promote the recognition, welfare and progress of the Department of Geological Sciences and the University of Missouri. The University of Missouri's Jefferson Club recognizes donors whose cumulative cash gifts or pledges to MU, including corporate matching contributions, total a minimum of \$25,000 or whose deferred gifts total \$50,000 or more.



Fall, 2018 group picture of the Geology Development Board.

### Jefferson Club Members

#### Ambassadors

Mrs. Norman F. Jeffries  
Mr. and Mrs. Robert Weiser  
Mr. and Mrs. Ed Williamson

#### Very Distinguished Fellows

Drs. Alice M. and John F. Blount  
Dr. and Mrs. Tom Freeman Jr.  
Mr. B. Ray Holifield  
Dr. Herman Ponder  
Mrs. John W. Tlapek

#### Distinguished Fellows

Dr. and Mrs. Richard Bishop  
Mr. and Mrs. Richard G. Boyd  
Mr. and Mrs. Stephen T. Phillips  
Mr. Scott H. Raymond  
Mrs. Walter G. Staley Jr.

#### Fellows

Mr. and Mrs. Jack D. Burgess  
Mr. Timothy R. McHargue  
Mr. Gary C. Mitchell  
Mr. Jack F. Schindler

#### Members

Mr. and Mrs. David K. Baumann  
Mr. Dwight D. Brown  
Mr. James R. Frank  
Mr. and Mrs. Paul E. Gerdemann  
Mr. John J. Hebberger  
Ms. Susan J. Hebberger  
Mr. and Mrs. Harold E. Johnson III  
Mr. and Mrs. Andy Kemmer  
Mr. and Mrs. Ernie Knirk  
Mr. and Mrs. Larry M. Knox  
Ms. Jane Espy Meyer  
Mr. and Mrs. Robert C. Miles  
Mr. Gene W. Schmidt  
Mr. and Mrs. Robert K. Sylvester  
Dr. M. Ray Thomasson and Ms. Merrill Shields  
Mr. Tom Ware

## DEVELOPMENT ACTIVITIES

### CONTRIBUTIONS

#### 2017-18 Contributors (through June 30, 2018)

Baker, David  
 Bauer, Robert  
 Bishop, Richard S.  
 Blount, Alice & John  
 Buchanan, Donald  
 Canis, Wayne  
 Carroll, Cynthia  
 Clark, Mary  
 Cox, Randel  
 Cruse, Anna  
 Duewel, Dennis & Shirley  
 Elliott, John  
 Fagerlin, Stanley  
 Foster, Robert  
 Frank, James R.  
 Freeman, Rebecca  
 Fuerst, Alice & Leland  
 Gebhard, Paul  
 Gentile, Richard  
 George, Martha  
 Hebbeger, John & Susan  
 Hoare, Richard & Mary  
 Hood, William C.  
 Hunter, Bruce  
 Kasey, Arthur  
 King Jr., David  
 Knox, Larry & Sherilyn  
 Larsen, Michael

Maier, Stuart  
 Marshall, Jesse & Alma  
 McBride, Earle  
 McDougal, Joan  
 McHargue, Tim  
 McMahon, Peter  
 Miller, Jim  
 Miller, John  
 Minke, Joseph G.  
 Mitchell, Gary  
 Ojakangas, Dennis  
 Ojakangas, Richard  
 Ott, Henry & Marilyn  
 Otto, Elizabeth  
 Phillips, Alice  
 Pierce, Carol  
 Potts, Ray H.  
 Pritchard, Charles  
 Reesman, Arthur  
 Repetski, John  
 Rothbard, David & Madeline  
 Rudolph, Sharon  
 Schweig, Buddy  
 Stewart, Craig  
 Stewart, John & Mary  
 Surber, Emily  
 Sutcliffe, Mark  
 Thomas, Timothy

Tudor, Richard  
 Williams, James & Marilyn  
 Williamson, Ed & Connie  
 Zychinski, Tom

#### **Corporations and Matching Contributions:**

Chevron USA  
 ExxonMobil Foundation



Board members met with Chancellor Cartright before our spring, 2018 meeting.

## ENDOWMENTS

**Endowed Scholarship Funds**

William Burrows Allen Field Camp Scholarship  
 Mr. & Mrs. Richard G. Boyd Endowment Fund  
 John F. Burst Graduate Fellowship in  
 Industrial Minerals  
 David K. "Dai" Davies Memorial Scholarship Fund  
 Raymond Ethington Geology Student Scholarship Fund  
 Tom Freeman Geology Student Scholarship Fund  
 Richard P. Frey Memorial Paleontology Fund  
 Donald S. Garvin Geology Field Camp Scholarship  
 Geology Student Support Fund  
 Leonard D. Harris Scholarship  
 Glen Himmelberg Geology Student Scholarship Fund  
 Wallace B. Howe Fellowship in Geology  
 William Johns Geology Student Scholarship Fund  
 Clayton H. Johnson Memorial Scholarship Fund  
 Hal and Ruth Johnson Fellowship Fund  
 Walter D. Keller Scholarship Fund  
 Craig Russell Knotts Scholarship Fund  
 Knox Family Geology Scholarship Fund  
 Maurice G. Mehl Memorial Scholarship in Field  
 Geology  
 Miles Family Geology Scholarship Fund  
 Mitchell Family Endowment Fund  
 James G. Mitchell Memorial Fund in Geology  
 Ernest J. Palmer Memorial Scholarship  
 Mrs. Pat Scholarship for Geology Students

Raymond E. Peck Undergraduate Scholarship  
 Raymond E. Peck Graduate Fellowship  
 Robert W. Quearry Scholarship Fund  
 Edmond A. & Mary L. Raymond Scholarship  
 Raymond Outstanding Achievement Fund  
 Carl B. Rexroad Geological Sciences Endowment  
 Pearl Todd Sando Geology Scholarship  
 Endowment Fund  
 Schmidt Undergraduate Scholarship Fund  
 Steyaert Family Geology Scholarship Fund  
 James H. Stitt Memorial Scholarship Fund  
 Fred Strothmann Perpetual Geology Scholarship  
 W.A. Tarr Scholarship  
 Dr. M. Ray Thomasson Graduate Fellowship Fund  
 John W. Tlapek Geology Student Scholarship Fund  
 George Viele Geology Student Scholarship Fund  
 George W. Viele Memorial Geology Field Camp  
 Scholarship Fund

**Unrestricted Endowment Funds**

Lily Marie Carter Endowed Geology Fund  
 Geology Endowment Fund  
 Walter D. Keller Opportunities for Excellence  
 Endowment in the Geological Sciences  
 John & Betty Marshall Opportunities for  
 Excellence Endowment in Geology  
 Gene & Thelma Schmidt Geology Endowment  
 Norman E. Smith Opportunities for Excellence in  
 the Department of Geological Sciences



## DEVELOPMENT ACTIVITIES ENDOWMENTS

Walter and Katherine Staley Fund in Geological Sciences

John M. Ware Memorial Geology Endowment

Williamson Family Geology Endowment

### Other Endowed Funds

Camp Branson Endowment

Camp Branson Improvement Fund

Geology Faculty Enhancement Fund

Geology Faculty Retention Award

Janet E. and Gary C. Mitchell Family  
Camp Branson Fund

A.G. Unklesbay Travel Award

Robert J. Waldram Camp Branson Endowment

### Bequests

Blount Opportunities for Excellence in the  
Department of Geological Sciences

Cache Creek Exploration Co. Scholarship Fund

Norman & Shirley Jeffries Graduate Fellowship

Carl R. Swartzlow Memorial Geological Sciences  
Endowment Fund

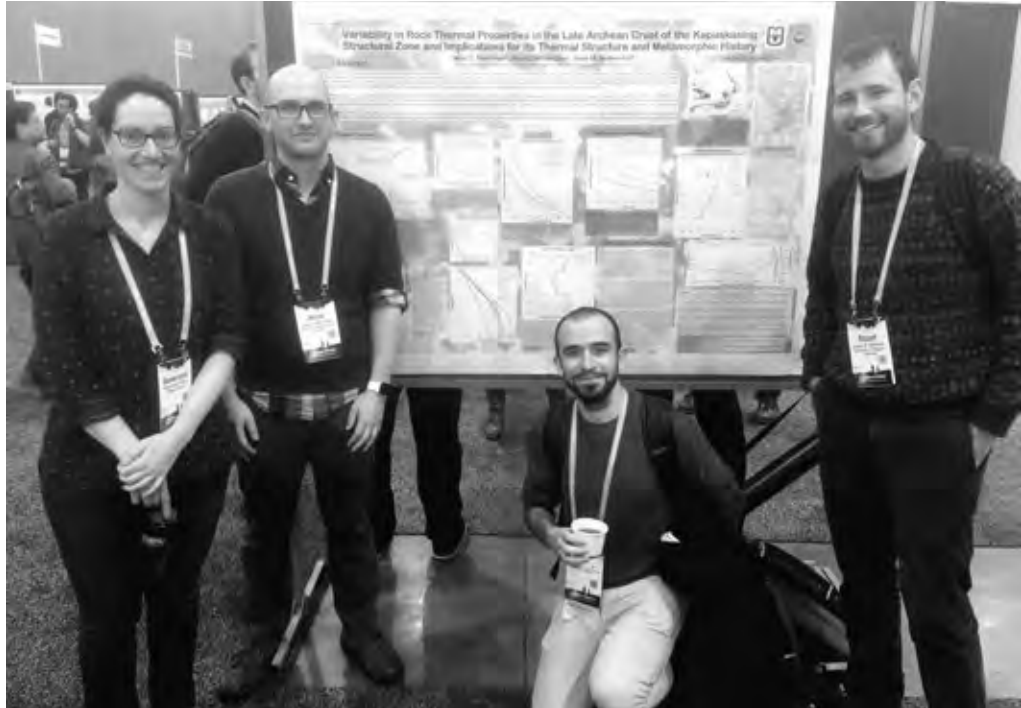
Robert and Sue Weiser Bequest

Ed and Connie Williamson Bequest

### Charitable Remainder Trusts

John & Betty Marshall Opportunities for Excellence  
in the Geological Sciences

Jack & Mildred Schindler Geological Sciences  
Endowment Fund



Genevieve Robert (PhD 2014), Jesse Merriman, Antonio Manjon-Cabeza (MS 2014) and Stuart Kenderes gather to critique Jesse's poster at AGU in New Orleans, December 2017.

**DEVELOPMENT ACTIVITIES**  
**ENHANCEMENT/RETENTION AWARDS**

---

Geology Faculty Enhancement and Retention Funds

The Geology Faculty Enhancement Endowment and the Geology Faculty Retention Awards funds were set up a few years ago by lead gifts from loyal alumni who recognize that our students' lives have been shaped by caring faculty mentors in the classroom, in the laboratory, and in the field.

These awards recognize and maintain the high quality of the faculty of our department.

**Faculty Enhancement/Retention Awards**

Paco Gomez  
John Huntley  
Ken MacLeod

**Raymond Faculty Enhancement Award**

Jim Schiffbauer

**Ed and Connie Williamson Retention Award**

Miriam Barquero-Molina



Jim Schiffbauer received the President's Early Career Award for Faculty Excellence.

## Geology Development Board Membership, December 2018

**Larry Knox, Chair**  
BHP Billiton (retired)  
Houston

**Martha George, Vice Chair**  
WesternGeco (retired)  
Nashville, Ill.

**Carey Bridges**  
Department of Natural Resources  
Jefferson City, Mo.

**Mary S. Clark**  
Department of Natural Resources (retired)  
Jefferson City, Mo.

**James Frank**  
Chevron (retired)  
Houston

**David Fulton**  
Consulting geologist  
Madison, Va.

**Aaron Johnson**  
AIPG  
Thornton, Colo.

**Harold E. Johnson III**  
University of Missouri

**Stuart Kenderes**  
University of Missouri

**Martin Krueger**  
ConocoPhillips  
Houston

**Alma Marshall**  
Retired  
St. Charles, Mo.

**Jesse Marshall**  
Retired  
St. Charles, Mo.

**Timothy R. McHargue**  
Chevron (retired)  
San Ramon, Calif.

**Gary Mitchell**  
Consulting geologist (retired)  
Highlands Ranch, Colo.

**Mike Quearry**  
Chevron (retired)  
Houston

**Scott Raymond**  
Marathon Oil Co. (retired)  
Littleton, Colo.

**Stephanie Rosbach**  
University of Missouri

**Buddy Schweig**  
USGS (retired)  
Denver, Colo.

**Mark Sutcliffe**  
Council Oak Resources  
Tulsa, Okla.

**Drew Thomas**  
Casillas Petroleum  
Tulsa, Okla.

**Ed Williamson**  
BP Amoco (retired)  
Houston

## From our Geology Development Board Chair ...

Fellow Alumni,

After four excellent years as Chair, Mike Quearry's terms ended and the opportunity to try and continue Mike's work falls to me. During Mike's tenure the Board added several new members whose efforts melded nicely with existing members. This provides a strong base which, when combined with Alumni support, is positioned to meet the challenges outlined by Mike in last year's letter, as well as new initiatives.

With respect to initiatives, this summer the Geology Alumni Endowment Fund officially came into existence. This fund, an outgrowth of an idea and exceptional work led by Jim Frank, provides funds for new Faculty hires as they work towards establishing their first research grants. It is designed to cover a three-year period, in a sense alleviating some of the "growing pains" encountered by new Faculty, especially in the current very challenging University environment. Initial distributions occur once the \$1,000,000 corpus is funded. There exists a current base of \$220,000. To encourage a, hopefully, relatively rapid growth, all donations receive a 1 to 1 match up to \$200,000. For those of you thinking of supporting this initiative, perhaps this 100% return on your gift will create additional incentive.

As a reminder of the impact of this type of Fund, the Faculty Retention Fund, established in 2011, has multiple times positively impacted the Geology Faculty. At the time of its formation, I believe it was the first such fund among our peer group of University Geology Departments. In case you aren't aware, this Fund, being the first at MU in any department, receives matching funds from the Dean of Arts & Science once an established annual amount is reached.

These are just two examples of Board work with Alumni support that have greatly enhanced the educational opportunities for the geology students over the years. Added to the continuing efforts with Teaching Assistant stipends, much work on the MU Field Camp facility (recipient of the 2014 GSA/ExxonMobil Field Camp Excellence Award), and supplements that help research equipment in Columbia, the Geology Development Board and Alumni of MU continue to assist in providing a first-class geology education in difficult times.

The Geology Development Board always welcomes those with interest in joining and/or providing ideas and information. If you are one of these folks, please contact the Department of Geology or me. We really need your support to continue the tradition started in 1981.

Respectfully,

  
Larry Knox



## DISTINGUISHED ALUMNI AWARD

Dr. Jim Williams earned his BA (1951) and MA (1952) in Geology from MU, prior to embarking on a 40+ year career in public service through the Missouri Geological Survey and the Missouri



from state service, Jim has continued organizations, with a particular focus as a legislative 'watch dog' for issues relating to the practice of geology and science education. The Missouri Section of the American



Department of Natural Resources. Jim has played a central role in improving safety standards and regulation for Missouri's resources (e.g., water and mineral resources), as well as public safety (e.g., dam safety, environmental geology, establishment of the Missouri Earthquake Safety Commission). For example, Jim was an expert witness during the first Superfund Site Trial, helping to set the standards for Superfund Sites, and his efforts in Dam Safety were recognized by the Association of State Dam Safety Officer with an Outstanding Service & Merit Award in 2008. As State Geologist, Jim also oversaw the implementation for professional registration of geologists in Missouri (as well as contributing to the national standards). Following his retirement

Institute of Professional Geologists (AIPG) has honored Jim by naming its Outstanding Career Achievement Award after him – this is the section's highest honor that is awarded sparingly, and the national organization of the AIPG has honored him for his extensive public service (see attached citation from 2000). The impacts of Jim's career have affected each and every citizen in this state, and beyond. At a national scope, this has been reaffirmed most recently by the Association of Environmental & Engineering Geologists (AEG) recognizing Jim as the 2017 awardee of the Karl & Ruth Terzaghi Mentor Award – recognition for lifelong efforts in providing professional, ethical, and technical mentoring for practicing geologists.



Paco Gomez, Dan Clapp, Jim Williams, Marilyn Williams and Lynn Maring at the banquet.

## Alumni News

**Dewey Baker (FC '58, BS '60, MA '62)** writes, "I turned 85 in June. Keeping busy with the Charlotte Gem and Mineral Club. I am in reasonably good health." Dewey resides in Charlotte, North Carolina.

**Rachel Barker (FC '07, BS '08, MS '12)** is a senior geologist with Corterra Energy in Tulsa, Oklahoma.

**Charles W. Beierle (FC '62, BA '64, MA '77)** writes, "I am working with several volunteer naturalist groups to promote and teach the unique geology of the Texas Hill Country." Charles resides in Kingsland, Texas.

**Wayne F. Canis (MA '63, PhD '67)** resides in Reston, Virginia. He writes, "Hello to all."

**Cynthia J. Carroll (MA '83)** is a retired energy specialist with the State of Missouri.

**Robert W. Cochran (Undergraduate Student 1955-57)** writes that he is busier than ever. Robert writes, "I am still active in scouting, and encourage youngsters to at least take an introductory class in geology if for no other reason than to enrich their future travel experiences. I appreciated Doctors Mehl, Peck, Johnson, Bradley, et.al."

**Wendell Cochran (FC '53, BA '53, MA '56)** resides in Seattle, Washington.

**Fred Davis (BS '05)** just finished this third year as an assistant professor at the University of Minnesota Duluth. He just moved into his lab this summer and is hoping to be producing high-pressure experiments to study the petrology of Earth's mantle by summer's end.

**Farouk El-Baz (PhD '64)** reports that he received the 2018 International Inamori Ethics Prize at Case Western University on its 10th anniversary in September. He writes that this award is given in partnership with the Inamori Foundation of Kyoto, Japan.

**Stanley Fagerlin (PhD '80)** writes, "It was great to have Bruce and Sandy Hunter here for a much too brief visit last fall. I am looking forward to a visit this fall from Gary and Peggy Walter. Any oth-

ers from the 73-77 years are welcome in northern Wisconsin."

**Robert L. Foster (FC '60, MA '62, PhD '66)** continues to evaluate the Great Western/Maley gold prospect, Lander County, Nevada.

**Jim Frank (FC '75, BS '76, MA '79)** writes, "I'm in my third year of retirement from Chevron and enjoying some travel, golf (getting worse somehow), birding, and serving on some committees and boards, all of which keeps me busy. Our son Jack is a junior at Mizzou in the accountancy program and son Robert is a junior in high school with a college decision ahead. I'm enjoying my trips to Mizzou for the geology development board. If you haven't seen the campus in a few years, it's worth a trip; it really looks great."

**Alice Cooper Fuerst (MA '80)** continues to teach physical geology at the Metropolitan Community College in Kansas City on a part-time basis, but she is reducing it even more to be able to travel more. Last year she travelled to China, and this year Peru and Easter Island.

**Richard J. Gentile (BA '56, MA '58)** reports that he is keeping busy. Richard taught a vertebrate fossil collecting class in Badlands, South Dakota, and also published a geologic map of Cass County, Missouri.

**Richard Hagni (PhD '62)** reports that after teaching nearly 50 years at Missouri S&T, although retired for 18 years he remains active doing research, making professional presentations, and writing geology papers. Dick just published his 200th paper, his first in an open-access online journal headquartered in Switzerland. The paper is on the unusual occurrence of platy galena in the Trend, which formed as spinel twins of the octahedron and probably formed due to rapid deposition from oversaturated ore fluids.

**William Hood (FC '58, BA '59)** writes that although he is retired he is still doing some research as an adjunct professor at Colorado Mesa University.

**Bruce Hunter (FC '72, MA '76)** resides in Readfield, Maine.

**Art Kasey (Grad Student 1965-71)** writes, "At the age of 79 am I sad that I did not complete my PhD work in clay mineralogy under Dr. Walter Keller?"

No! Instead, I am very thankful to Dr. Keller in his direct help to my transition from PhD work to becoming a geosciences teacher of over 10,000 students! Great happiness and wonderful memories of the past four to five decades.”

**David T. King Jr. (PhD '80)** reports that he has new funding for work on Wetumpka and Flynn Creek craters and detrital zircons of the Gulf Coastal plain and in Belize. Davie will join the new Alabama CO<sub>2</sub> utilization and storage center at Auburn as a subsurface investigator later this year. David writes, “I have now supervised 40 master’s students. Our new doctoral program began in August.”

**David Leach (PhD '73)** reports that he is in the “process” of retiring in 2019. He writes, “It has been an enjoyable and interesting journey as an economic geologist and I will continue to work with graduate students as a research professor at the Colorado School of Mines. I was fortunate to receive the Meritorious Service Medal from the U.S. Geological Survey, the Penrose Gold Medal from the Society of Economic Geologists, and this year, the SGA-Newmont Gold Medal from SGA. I am indebted to my advisors, Alden Carpenter and Blair Hostetler, and to Tom Freeman and his carbonate geology course. I also thank Frank for his lively pranks.”

**Peter McMahon (FC '80, BS '81)** writes that he recently celebrated his 34th year of employment with the USGS in Denver, Colorado.

**Joseph G. Minke (PhD '69)** writes, “I am still working with the Park County, Colorado Water Preservation Coalition and the South Park City Museum during the summer months. I am enjoying attending a few events with the Colorado Scientific Society and the Park County Mining Association.”

**Thomas R. Moore (MA '81)** reports that he recently taught an Introduction to Geology class for Bethany College, using some materials recycled from being a TA for Tom Freeman. He writes, “Some things never change (much). The waves continue to propagate.”

**Russ Murphy (MS '86)** writes, “I am back in Houston after three years in Colorado. I miss the

mountains but enjoy the Mozambique project immensely. My youngest son headed to the University of Tennessee this fall and is an aerospace engineering major. My youngest daughter is a junior in high school. Howdy to Kevin Shelton, Wes McCall, John Rockhold and Andy Macias.”

**Hank Ott (BA '53, MA '57)** and wife Marilyn reside in Morrison, Colorado.

**Mike Quearry (FC '72, BS '73, MA '75)** reports that he and Eva are enjoying retirement. Mike writes, “I am now studying the geology of the world thru our travels! I still very much enjoy being on the Mizzou geology development board and visiting Mizzou twice a year for meetings.”

**Arthur Reesman (FC '59, MA '61, PhD '66)** reports that he hopes to get out and see some geology. Art resides in Franklin, Tennessee.

**Jerry Rhymer (FC '93)** writes, “I’d like to say hello to all the 1993 field campers! If you get to Oklahoma look me up!”

**Cecil Slaughter (FC '76, BS '76)** is currently working for the Office of Surface Mining Reclamation and Enforcement in Washington, D.C. as a hydrologist. In November he will have worked 30 years for the Department of Interior, and plans to work 3-5 more years before retiring. He and wife Sara plan to renew their passports and travel outside the United States in the near future.

**Laurence G. Trudell (FC '52, BA '56)** sends regards “to anyone who remembers me.” Laurence resides in Glenwood Springs, Colorado.

**George J. Ulmo (MA '76)** reports that he is enjoying the oil boom times in the Permian Basin again.

**Tom Ware (FC '48, BS '57, MA '51)** resides in Evergreen, Colorado where he is a sculptor.

**Paul Weaverling (FC '79, MS '87)** writes, “All the best to my fellow field campers and graduate students of yesteryear. I am hoping the years have treated you well and continue to do so. As of September 1 I am only 487 days until the last job assignment. A mere speck of sand on the time scale.”

**ALUMNI**  
**IN MEMORIAM**

**Robert (Bud) Weiser (FC '57, BA '58, MA '60)** reports that all is going good on Lake Norman north of Charlotte, North Carolina. Bud writes, "Sue, who I met at MU, and I were married 60 years in September, 2018. After five kids and three grandsons we are doing ok."

**James H. Williams (FC '50, BA '51, MA '52)** is a member of the Missouri Geologist Consortium to monitor and react to legislative proposals that pertain to science and education. Jim writes that he is retired from flying after 50 years, and attends various professional meetings.

**Eddie Williamson (MA '73)** reports that he is still retired and enjoying life in Katy, Texas where he and Connie are close to their grandkids. Ed writes, "I am still wondering how I used to find time to go to the office every day. Has anyone heard from Frank lately?"

## In Memoriam

**Charles M. Hoskin (Doctoral Student)** passed away on June 22, 2017, as reported by his family. "Skip" resided in Leesburg, Virginia and is survived by two daughters and a son, eight grandchildren, and seven great-grandchildren. He was 83 years old and loved Alaska and the studies he worked on all over the world.

**John Stewart (MS '84)** passed away in April, 2018 as reported by fellow alum, Aaron Johnson. John was the National Vice-President of AIPG and was on the ballot to become President-elect.

**David J. Steyaert, Sr. (MA '80)** was raised on a small, family farm in Cleveland, Missouri. He was the youngest of six children and spent his childhood enjoying the Missouri countryside, fishing, hunting and exploring. He earned his bachelor of science degree in Geology from UMKC, and his master of arts degree at Mizzou. While working on his degree at MU, David was a co-recipient of the A.I. Levorsen Memorial Award as a co-author of the Best Paper, 1981. David remained a die-hard Tigers fan and served on our Geology Development Board in Columbia, a position he held at his death. As an oil and gas geologist for 38 years, David lived in London, England and Albuquerque, New Mexico. However the majority of his professional life was spent in Denver, Colorado. He worked in geologic areas throughout the world, including off-shore Africa and California, as well as throughout the Rocky Mountain region. David was the owner of Impact Energy Resources in Denver, which he established in 1998. He always said he was the luckiest man on Earth because his hobby was his profession. Many family camping trips and vacations were spent learning geology as he examined and explained all the rock formations. David was a loving husband to Jennie and a devoted and proud father to his four children: Dave, Jr., Jen, Benjamin and Mary. David was an involved father who coached Little League baseball, taught Sunday School, timed track meets and shagged soccer balls. David was an avid outdoorsman. David passed away on Sunday, September 16, 2018, three days before his 64th birthday.



David Steyaert



## Geology Alumni Endowment Fund

At the Spring Development Board meeting, we officially launched the new “Geology Alumni Endowment Fund”. The aim of the fund is to provide research support for recruiting and retaining additional outstanding junior faculty. A major use of the fund will be to provide support for graduate Research Assistants, to help new faculty hit the ground running with their research programs.

Our goal is to reach \$1 million in the corpus, at which point this will become the “Geology Alumni Endowed Professorship”. Unlike traditional endowed professorships, which are typically reserved for senior faculty, this will be a 3-year award made to new junior faculty. We intend that this partnership between our alumni, the Department and the College of Arts and Science will result in continued hiring of outstanding junior faculty members, who will become homegrown stars in the classroom and in research.

If you would like to support this initiative, please mark “Geology Alumni Endowment Fund” on the check and envelope. You can also give online at <https://tinyurl.com/GeologyFund> or <http://www.giving.missouri.edu>, in which case please mark your donation “Geology Alumni Endowment Fund”. I am pleased to report that have made a strong start, with over \$220,000 raised to date. Thanks to the generosity of a leading supporter, we can match another \$200,000 in gifts dollar-for-dollar.



Jesse Hall landscape at dusk.



Geological Sciences  
University of Missouri